Yemen National Social Protection Monitoring Survey (NSPMS): 2012-2013
Final Report

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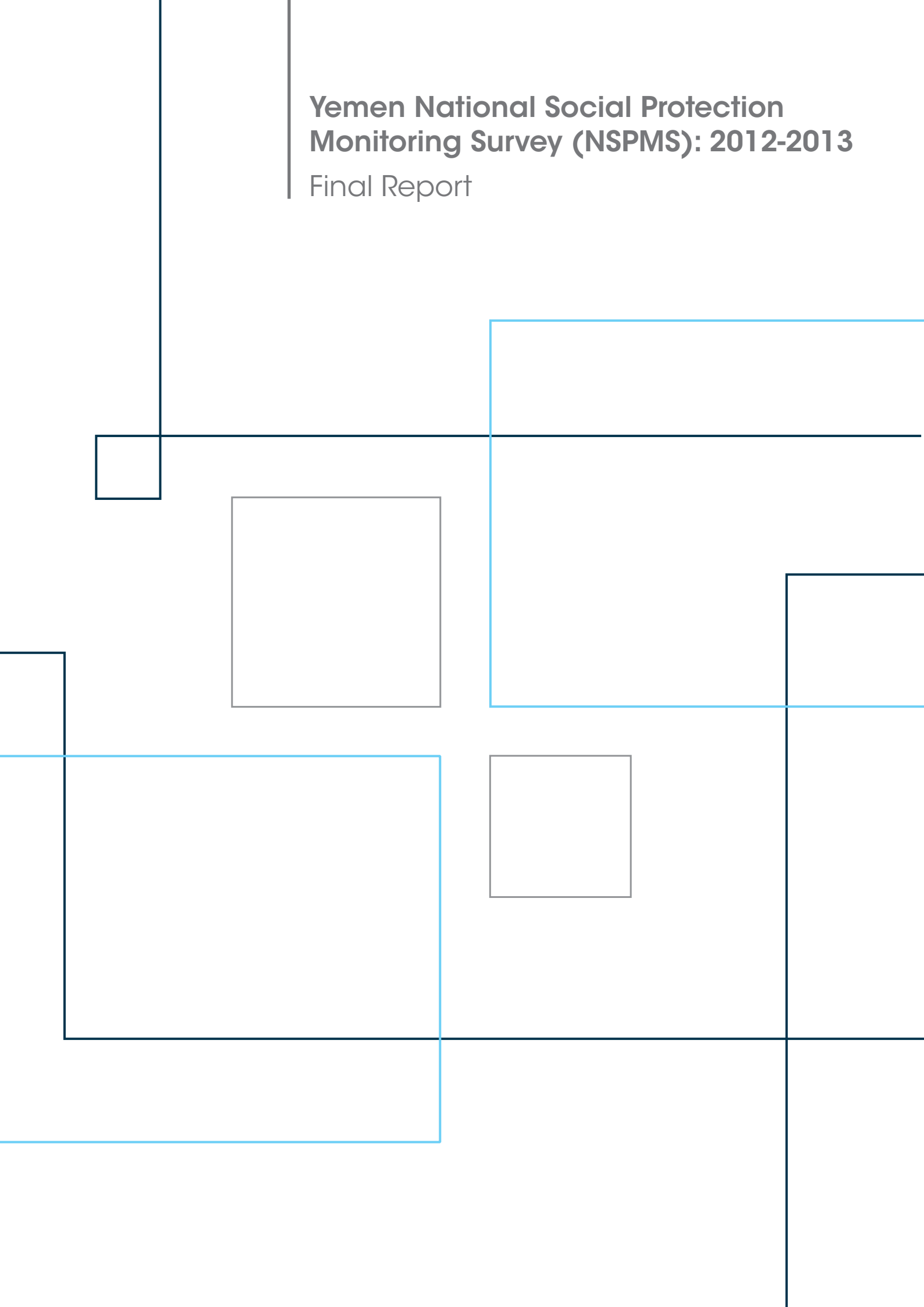Ministry of Planning & International Cooperation

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Acknowledgements

Foreword

In Yemen, one of the poorest countries in the Middle East and North Africa region, one half of the population lives below the poverty line. The Transitional Programme for Stabilization and Development, 2012-2014 and the Mutual Accountability Framework have identified the expansion of social protection mechanisms as a key priority for improving the living conditions of the poorest people in Yemen. Moreover, the National Dialogue Conference outcomes clearly state that every citizen has the right to social protection if unable to support his/her household. The National Social Protection Monitoring Survey (NSPMS) provides the data necessary for the Government to formulate comprehensive and adequate social protection mechanisms to meet the needs and guarantee the rights of Yemen's poorest citizens, especially children, youth and women.

The NSPMS has two key objectives - to monitor social protection and living conditions of poor and vulnerable households in Yemen; and to document the impact of the public unconditional cash transfer programme administered by the Social Welfare Fund (SWF). This evidence is key for future child-sensitive and human rights-based social protection programming because the NSPMS provides comprehensive national data on social protection, housing, water and sanitation, education, child health and nutrition, child protection, food security, work and income, and livelihoods. It is a household longitudinal survey that covered all governorates in Yemen through four rounds of data collection conducted over a 12-month period from October 2012 to September 2013. The technical team, under the leadership of the Ministry of Planning and International Cooperation, included the Central Statistical Organization, the SWF, the Ministry of Social Affairs and Labour, the Ministry of Public Health and Population, the Ministry of Education, the Ministry of Finance, the Social Fund for Development and academia. This report was officially launched by the Ministry of Planning and International Cooperation and UNICEF in June 2014.

The NSPMS found the SWF to be commendably pro-poor and the only source of income for some families. Without this benefit, families would be unable to buy even the most basic food items. The survey revealed that one third of the population of Yemen are covered by the SWF cash transfer programme, which is in line with SWF administrative data, but also found that many more poor people are not covered. Less than half of the poorest quintile in Yemen are beneficiaries of the programme, while around a quarter of the beneficiaries are in fact not poor or vulnerable and therefore eligible for graduation from the SWF. This finding calls for urgent efforts to develop and implement graduation mechanisms – to graduate the non-eligible households and enrol the poorest.

This report also provides comprehensive and critical information on the inequities in Yemen that have a real impact on the poor and vulnerable, especially children, and prevent them from accessing basic social services. One third of Yemenis in the poorest households have to walk more than 30 minutes to access water. Only half of children in the poorest households are enrolled in basic education, with greater disparities among the poorest girls, of whom only around one third are enrolled. The rate of birth registration is low, at 17 per cent, with great disparities between the poorest and richest children and between urban and rural areas. Malnutrition continues to be a major issue facing children in Yemen, with around half of all Yemeni children under age five years chronically malnourished. From an equity perspective, malnutrition is a major issue cutting across both rich and poor, although poor children are more vulnerable; over half of all poor children and one quarter of the richest children under five are chronically malnourished.

The low levels of access by the poorest households and their children to basic social services and social protection mechanisms call for urgent action by the Government of Yemen and development partners to support a minimum package of basic social services and social transfers, targeted towards the poorest populations in both rural and urban areas. The NSPMS report encompasses a wealth of information that will facilitate substantial improvements in the lives of children, youth and women in Yemen.

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UNICEF Yemen Representative

Dr. Mohammed Al-Maitami
Minister of Planning and International Cooperation

Contents

Acronyms and Abbreviations

ATT   Average treatment effect on the treated

BCG   Tuberculosis vaccine

CCT   Conditional cash transfer

CFSS   Comprehensive Food Security Survey

CISD   Comprehensive, Integrated and Sustainable Development

CSO   Central Statistical Organisation

CSS   Comprehensive Social Survey

DPT   Combined diphtheria/pertussis/tetanus vaccine

DHS   Demographic and Health Survey

EA   Enumeration area

EPI   Expanded programme on immunization

FAO   Food and Agricultural Organization of the United Nations

FCS   Food Consumption Score

FGM/C   Female genital mutilation/cutting

GCC   Gulf Cooperation Council

GER   Gross enrolment ratio

HBS   Household Budget Survey

HFIAS   Household Food Insecurity Access Scale

IFPRI   International Food Policy Research Institute

ILO   International Labour Organisation

IPC-IG   International Policy Centre for Inclusive Growth

MENA   Middle East and North Africa

MICS   Multiple indicator cluster survey

MOPIC   Ministry of Planning and International Cooperation

MOSAL   Ministry of Social Affairs and Labour

NCHS	National Center for Health Statistics
NDC	National Dialogue Conference
NER	Net enrolment ratio
NSPMS	National Social Protection Monitoring Survey
OPV	Oral polio vaccine
ORT	Oral rehydration therapy
PAPFAM	Pan Arab Project for Family Health
PATT	Population average treatment effect on the treated (see ATT)
PMT	Proxy means test
PSM	Propensity score matching
SATT	Sample average treatment effect on the treated (see ATT)
SFD	Social Fund for Development
SPM	Social Protection Monitoring
SWF	Social Welfare Fund
TPSD	Transitional Programme for Stabilization and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UN-Habitat	United Nations Human Settlements Programme
WFP	World Food Programme
WHO	World Health Organization

Executive Summary

The Yemen National Social Protection Monitoring Survey (NSPMS) is a household longitudinal survey with a nationally representative balanced sample of 6,397 households (of an initial sample of 7,152). Each household in the balanced sample was visited on a quarterly basis over a 12-month period between October 2012 and September 2013. The survey had two key objectives: (1) to provide up-to-date data on how the poor and vulnerable have coped since the 2011 crisis; and (2) to produce evidence on the targeting of the Social Welfare Fund (SWF) cash transfer programme and to assess its impact on some developmental indicators. The NSPMS provides data on the SWF, living conditions, water, sanitation, education, child nutrition, child and maternal health, child protection, work and income, livelihoods and food security.

This Executive Summary encompasses a description of the sampling design, key indicators of the survey and findings of the SWF impact assessment.

NSPMS Sampling Design

- The design of the NSPMS nationally representative sample took into consideration the need to assess the SWF. Thus, it oversamples both the poor population as per the 2007 Yemen poverty map estimates (at the district level) as well as SWF beneficiaries and potential beneficiaries.

- The total survey sample size was set at 7,560 households, but only 7,152 households were actually interviewed in the first round. The two largest sources of attrition were due to security reasons in the governorates of Sa'ada, for which no data are analyzed in this report, and Al-Jawf, which suffered complete attrition in round 4 (July–September 2013).

- Indicators shown in the NSPMS report were calculated using the balanced sample – households that were interviewed in all four rounds (6,397 households) – and the longitudinal weights, even when reporting on a specific round.

- The balanced sample of 6,397 households corresponds to around 90 per cent of the initial sample of 7,152 households interviewed in round 1.

Social Protection – Social Welfare Fund

THE SWF EXPANSION

- The SWF is an unconditional cash transfer paid by the Government of Yemen to citizens who are temporarily or permanently unable to sustain themselves and whose families are not able to support them. It is comprised of two broad categories: (1) social categories (elderly, disabled and orphans); and (2) economic categories (unemployed male and female without a breadwinner).

- The population living in households with at least one SWF beneficiary increased from 30 per cent in round 1 of the survey (October–December 2012) to 35 per cent in round 4 of the survey (July–September 2013).

- The 2012–2013 SWF expansion was due to the incorporation of new beneficiaries into the programme. New beneficiaries were identified in the 2008 Comprehensive Social Survey (CSS) and selected through a proxy means test (PMT), but were only systematically incorporated into the programme from October 2012 onwards. In this report, beneficiaries that joined the programme before the 2008 CSS are referred to as "old beneficiaries". The latter were not selected through a PMT, unlike the new beneficiaries.

- New beneficiaries correspond to about 33 per cent of the total number of beneficiary households.

POVERTY ESTIMATES AND AN ASSESSMENT OF SWF TARGETING

- Applying the PMT formula to the NSPMS data set yields an estimated poverty rate of 45 per cent.

- New SWF beneficiaries are poorer and more concentrated among the extreme poor than the old SWF beneficiaries and the overall population according to the PMT formula. Whereas 29 per cent of the new beneficiaries are extremely poor, only 19 per cent of the old beneficiaries fall into this category. This result suggests that the PMT formula performs better than the former subjective method when used to try to identify the extreme poor.

- However, it is still necessary to improve coverage, as 44 per cent of the extreme poor are not covered by a programme that already covers 35 per cent of the population. The persistence of the relatively high level of inclusion error – 27 per cent of SWF beneficiaries are not vulnerable or poor – can be partially explained by the failure to graduate the "old SWF beneficiaries" who did not qualify according to the PMT formula, which sums up to 273,000 cases according to the 2008 CSS.

- Despite the evidence that the PMT methodology has improved the quality of the targeting of the SWF, it has done so to a very limited extent. This is basically due to two structural factors: (1) the difficulty in disentangling the monetary poor from the non-poor using observable variables given high levels of income poverty and low levels of income inequality; and (2) the mismatch between the demographic pattern of the extreme poor and the poor and the SWF social and economic categories.

- The poor and extreme poor households have a relatively larger proportion of children, particularly aged 0-9 years, but this group tends to be underrepresented among SWF beneficiaries.

- In order to improve the quality of the targeting, it would be necessary to graduate the non-eligible SWF beneficiaries as per the PMT ranking of households.

- To make social protection more child-sensitive in Yemen, the Government could either revise the SWF categories to favour the inclusion of extreme poor families with children and/or to complement Yemen's social protection system with an intervention that targets poor families with children (e.g., child allowance and conditional cash transfer programmes).

Household living conditions

DURABLE DWELLINGS

- Only 52 per cent of the household dwellings are built of durable material. This is largely due to the low incidence of durable materials to build floors (54 per cent), in contrast to the durable materials for roofing (91 cent) and walls (86 per cent).

- In urban areas, 81 per cent of the dwellings are durable compared to 43 per cent in rural areas.

- Household dwellings in the richest quintile have a greater likelihood of being made of durable materials (88 per cent) compared to those in the poorest quintile (11 per cent).

CROWDING

- About 39 per cent of households have more than three persons per room (crowding). In rural areas, 45 per cent of households are crowded compared to 22 per cent in urban areas.

- About 58 per cent of the households in the poorest quintile live in crowded households compared to 10 per cent in the richest quintile.

ELECTRICITY

- Around 75 per cent of households have access to electricity, which includes electricity from public/ private grid, cooperative and generators. About 97 per cent of urban households have access to electricity compared to 67 per cent in rural areas.

- Only 23 per cent of households in the poorest quintile have access to electricity as the main source of light compared to 100 per cent in the richest quintile.

- Electricity from the public grid (61 per cent) and kerosene lamps (18 per cent) are the main sources of light. The former is mainly found in urban areas (94 per cent), compared to 50 per cent in rural areas.

SOLID FUELS FOR COOKING

- Around 35 per cent of households use solid fuels for cooking. Almost half of rural households (46 per cent) use this method for cooking, compared to 4 per cent in urban areas.

- Solid fuels are largely used by households in the poorest quintile (79 per cent), compared to just 3 per cent in the richest quintile.

USE OF BEDNETS

- About 17 per cent of the households in Yemen use bednets. The use of bednets is more common in rural areas (20 per cent) than in urban areas (7 per cent).

- Differences between wealth quintiles are not very relevant. About 20 per cent of the poorest quintile use bednets compared to 14 per cent of the richest.

WATER AND SANITATION

- About 29 per cent of households have access to water inside the dwelling. In urban areas, access reaches 48 per cent of households compared to 23 per cent in rural areas.

- There are large differences across wealth quintiles: 49 per cent of the richest households have access to piped water inside the dwelling compared to 9 per cent of the poorest.

- Only 3 per cent of the population use an appropriate method to treat drinking water: 10 per cent in urban households and 1.1 per cent in rural ones.

- About 10 per cent of richest households use an appropriate method to treat drinking water, compared to 0.4 per cent of the poorest households.

- In 23 per cent of households, residents have to walk more than 30 minutes to access water, with disparities between rural and urban areas: only 4 per cent of households in urban areas compared to 27 per cent in rural areas.

- Around 28 per cent of the households in the poorest wealth quintile spend more than 30 minutes to fetch water, compared to 0 per cent in richest quintile.

- Households in Yemen in the period July–September 2012 consumed 30 litres of water per day per person. In urban areas, consumption was 52 litres compared to 23 litres in the rural areas.

- About 82 per cent of the households had soap for hand washing in the week prior to the survey between April and May 2013, with about 92 per cent in urban and 75 per cent in rural areas.

- About 62 per cent of the households in the poorest wealth quintile had soap for hand washing compared to 97 per cent in the richest wealth quintile.

- Only 53 per cent of household members have access to improved sanitation.

- The majority of urban households (92 per cent) have a proper sanitation system, compared to less than 39 per cent in rural areas.

- The use of improved sanitation facilities is nearly universal among the richest quintile (96 per cent) compared to only 5 per cent for the poorest.

Education

YEARS OF SCHOOLING AND EXPECTED YEARS OF SCHOOLING

- The average years of schooling for those aged 25 and older is very low, at four years (less than the complete primary education).

- Adult women have on average only two years of schooling compared to six years for adult men.

- Adult men in the poorest quintile have three years of schooling compared to 11 years in the richest quintile. Women in the poorest quintile have virtually no education – a half year of schooling – while women in the richest quintile have five years of schooling.

- The expected of years of schooling of a child who entered school in the 2012–2013 school year is nine years. Gender inequity is due to fall in the future as boys are expected to have two more years of schooling than girls (10 for boys and eight for girls).

NET INTAKE RATIO, GROSS ENROLMENT RATIO AND NET ENROLMENT RATIO

- As for net intake ratio, only 34 per cent of children aged six years are enrolled in basic education (39 per cent in urban areas compared to 32 per cent in the rural areas).

- The gross enrolment ratio (GER) in basic education (grades 1–9) is 82 per cent. There are large gender disparities as it only reaches 76 per cent for girls compared to 88 per cent for boys.

- The GER in basic education is much higher in urban areas (95 per cent) than in rural areas (78 per cent). Gender disparities are more striking in rural (88 per cent boys and 68 per cent girls) as opposed to urban areas, where girls reach 100 per cent GER as compared to 90 per cent for boys, but the latter difference is not statistically significant unlike the one observed in rural areas in favour of boys.

- The richest quintile has a GER in basic education of 98 per cent compared to 53 per cent in the

poorest quintile. For boys, the difference between richest and poorest quintile is 95 per cent against 63 per cent and for girls, it is even more striking, 100 per cent against 42 per cent.

- The net enrolment ratio (NER) is much lower than the GER rates: 72 per cent against 82 per cent and 24 per cent against 44 per cent for basic and secondary education, respectively.

- The NER in basic education is 83 per cent in urban areas compared to 69 per cent in rural areas.

- The NER in basic education for girls in rural areas is as low as 62 per cent, compared to 86 per cent in urban areas. For boys, the difference is smaller: 80 per cent in urban compared to 77 per cent in rural areas.

- The richest quintile has a NER in basic education of 85 per cent compared to 48 per cent of the poorest quintile. The NER for boys reaches 83 per cent in the richest quintile against 56 per cent for the poorest. For girls, it varies from 86 per cent in the richest to 40 per cent in the poorest quintiles.

- The NER in secondary education is 24 per cent. In urban areas it reaches 41 per cent and a dismal 17 per cent in rural areas.

- The richest wealth quintile has a NER in secondary education of 45 per cent compared to 4 per cent for the poorest quintile. Among boys, the difference is 46 per cent against 6 per cent, and for girls it is 43 per cent against 1 per cent.

LITERACY

- About 14 per cent of children aged 10–14 years are illiterate. Children living in rural areas are more likely to be illiterate when compared to the ones living in urban areas, 18 per cent and 4 per cent respectively. Boys are less likely to be illiterate (10 per cent) compared to girls (19 per cent). In the richest quintile, just 1 per cent of this age group is illiterate compared to 40 per cent in the poorest quintile.

- For those aged 15 years and over, nearly half of the population (42 per cent) is illiterate (about 58 per cent for women compared to 22 per cent for men). In urban areas, the illiteracy rate for this group reaches 25 per cent, compared to 50 per cent in rural areas. In the richest quintile, 21 per cent are illiterate compared to 68 per cent in the poorest quintile.

- The literacy rate for young people (15–24 years) is 79 per cent (about 90 per cent for males and 69 per cent for females). In urban areas it reaches 92 per cent, compared to 74 per cent in rural areas. In the richest quintile, the literacy rate for this age group is 95 per cent, compared to 52 per cent among the poorest.

REASONS FOR NON-ENROLMENT

- The main reasons for children not being enrolled in school are "cannot afford to attend school" and "not interested in school". For children aged 6–11 years, the major reason is "not able to afford school" (38 per cent), followed by lack of interest in school (32 per cent), while for older children the latter reaches 29 per cent compared to 17 per cent of the former.

ABSENTEEISM

- About 16 per cent of the enrolled students were absent more than three times in the 30 days prior to the survey. Absenteeism rates are slightly higher for girls than boys and slightly higher for younger children compared to children aged 10–14 years. Urban and richer children are also more likely to be absent from school.

- However, absenteeism due to the need to work or help with domestic chores – 11 per cent of total absences – is more likely among boys (12 per cent) than girls (10 per cent). It is also more prevalent among children in rural areas (14 per cent) compared to 6 per cent in urban areas.

- In the richest quintile, those absent due to work and domestic chores reach 5 per cent of the absentees compared to 22 per cent in the poorest quintile.

Child Health and Nutrition

CHILD VACCINATION RECORDS

VACCINATION CARDS

- About 54 per cent of children aged 12–59 months had vaccination cards in July, August and September 2013. For younger children aged 12–23 months, the figure is higher at 59 per cent, which is almost 11 percentage points higher than the percentage of children having vaccination cards in 2006 (48 per cent), according to the 2006 Multiple Indicator Cluster Survey (MICS).

- About 40 per cent of the children aged 12–23 months in the poorest quintile have a vaccination card compared to 72 per cent in the richest quintile.

VACCINATION COVERAGE

- About 70 per cent of children aged 12–23 months received the tuberculosis (BCG) vaccine at any point before the survey, about 48 per cent according to the vaccination card information plus 22 per cent as reported by the mother/caretaker.

- According to the vaccination cards, only 45 per cent of children aged 12–23 months received BCG vaccine before their first birthday.

- About 79 per cent of the children aged 12–23 months received the first dose of pentavalent vaccine (60 per cent as per the vaccination card and 19 per cent as per the mother's history). The percentage declines for subsequent doses of pentavalent, to 73 per cent for the second dose and 69 per cent for the third dose.

- According to the vaccination cards, 60, 54 and 50 per cent of children aged 12–23 months respectively received the first, second and third doses of the pentavalent vaccine before age 12 months. Virtually the same percentages are found concerning polio vaccine.

- About 86 per cent of children aged 12–23 months received the first dose of polio vaccine (62 as per vaccination card and 24 as per mother's history). This coverage declines to 80 and 77 per cent respectively for the second and third doses.

- The coverage for measles vaccine by age 12 months is at 40 per cent, which is lower than the rates for the other vaccines. Overall, 66 per cent of children aged 12–23 months are vaccinated against measles (46 per cent as per the vaccination card and 20 per cent as per mother's history).

- The percentage of children aged 12–23 months who had taken all the recommended vaccines (fully vaccinated) by their first birthday, as per their vaccination cards, is quite low at only 15 per cent. The overall figure, taking into account the mother's history and considering any time before the survey, is 34 per cent (19 per cent according to the vaccination card and 14 per cent as per mother's history).

- There are no significant differences between male and female children with respect to receiving any of the vaccines.

- However, urban children are more likely to be vaccinated than rural children. For instance, 84 per cent of children in urban areas received the BCG vaccination in their first year of life compared to 66 per cent of children in rural areas.

- Approximately 61 per cent of children living in the poorest households had received the measles vaccine compared to 83 per cent of children living in the richest households. A similar pattern of inequity is also observed for other vaccines.

CHILD NUTRITION

- About 45 per cent of children aged 6–59 months were stunted in July–September 2013, 10 per cent were affected by wasting and 33 per cent were underweight.

- Children living in rural areas had a worse nutritional status compared to urban children for all three nutritional indicators. Around 46 per cent of the children in rural areas were stunted against 27 per cent in urban areas in July–September 2013.

- Wasting is slightly more prevalent among boys than girls. About 15 per cent of boys were found to be wasted in round 1, compared to 11 per cent of girls. This difference is smaller in round 4, with rates of 11 and 9 per cent, respectively.

- There are marked differences in the prevalence of malnutrition across wealth quintiles. In the poorest wealth quintile, 48 per cent of children were stunted compared to 20 per cent in the richest quintile (round 4). In the richest wealth quintile, fewer children (4 per cent) were wasted compared to 14 per cent in the poorest wealth quintile.

- Only 13 per cent of infants (under six months of age) were exclusively breastfed (round 4).

- Infants living in urban areas were twice as likely to be exclusively breastfed (22 per cent) than those in rural areas (11 per cent) in round 4.

- Almost half of infants had diarrhoea in the 14 days prior to the surveys (44 per cent in round 1 and 41 per cent in round 4).

- Infants receiving only breast milk had a lower prevalence of diarrhoea (19 per cent in round 1 and 15 per cent in round 4) compared to those who were breastfed in association with the consumption of water/sweetened water (39 per cent in round 1 and 24 per cent in round 4).

- Approximately one fourth of children who had had diarrhoea were treated with some kind of oral rehydration therapy (27 per cent in round 1 and 21 per cent in round 4).

- Approximately 31 per cent of children aged 6–23 months had the minimum dietary diversity, eating food from at least four of the food groups in the day preceding the survey in round 1 (October–December 2012) and 40 per cent in round 4 (July–September 2013)

- A larger percentage of children in urban areas (61 per cent) reach the minimum dietary diversity compared to rural children (35 per cent) (round 4).

- Fewer children in the poorest quintiles (poorest, second and third) reach the minimum dietary diversity – between 30 and 40 per cent – than those in the richest quintile – between 55 and 62 per cent. However, the percentage is relatively low even among the richest.

- Adequate dietary diversity was observed in 63 per cent of children of mothers with secondary education, compared to just 34 per cent of children of mothers without any formal education.

Maternal Health

- Antenatal care coverage – considering only one visit – reached 64 per cent of pregnant women in Yemen in July–September 2013 (urban: 78 per cent; rural: 60 per cent). This represents an upward trend in antenatal care coverage for at least one visit in comparison to previous surveys (47 per cent in MICS 2006 and 41 per cent in Pan-Arab Project for Family Health (PAPFAM) 2003).

- However, coverage of antenatal care is still low based on the WHO recommendation that antenatal care should consist of at least four visits during pregnancy. Only 26 per cent of women attended the minimum of four visits in 2013 (urban: 43 per cent, rural: 22 per cent). Ten years ago, it was even lower at 14 per cent (PAPFAM 2003).

- There is a huge gap between the richest and the poorest for utilization of antenatal care. Women living in households in the richest quintile had a coverage rate of 86 per cent and around 50 per cent had the recommended four antenatal visits. By contrast, 40 per cent of the poorest women used antenatal care, but only 6 per cent had at least four visits.

- The percentage of women living within 30 minutes of a health facility who had four or more antenatal consultations was 33 per cent, compared to 10 per cent for those living one hour or more away from the nearest health facility.

- The percentage of women delivering in a health facility is quite low, at 27 per cent in 2013.

- There is a significant difference between rural and urban areas; about 46 per cent of women in urban areas have delivered in a health facility compared to 22 per cent in rural areas.

- The percentage of women in the richest quintile who had delivered in a health facility is more than five times larger than the percentage of women in the poorest quintile (57 per cent and 9 per cent, respectively).

- Only 37 per cent of the delivering women were attended by skilled health personnel during childbirth (round 4).

Child Protection

BIRTH REGISTRATION

- Only 17 per cent of children under five years of age were registered in Yemen in October–December 2012.

- About 11 per cent of the children under five years of age in rural areas had birth certificates, compared to 43 per cent in urban areas.

- The prevalence of birth registration was 22 per cent in 2006 (MICS). Thus, there was a reduction in birth registration between 2006 and 2012. This was mainly due to a decrease in birth registration in rural areas from 16 per cent in 2006 (MICS) to 11 per cent in 2013 (NSPMS).

- About 3 per cent of those in the poorest quintile had their births registered, against slightly more than half (54 per cent) in the highest wealth quintile.

ORPHANS

- About 5 per cent of children are orphans. There is no significant differences in the prevalence of orphanhood between rural and urban areas or among wealth quintiles.

CHILD MARRIAGE

- Around 15 per cent of Yemeni girls aged 15-19 years were already married by July–September 2013. This prevalence rate is down from 19 per cent according to the MICS 2006. The rate was slightly higher in rural (15 per cent) than in urban areas (13 per cent) and no major differences were observed between areas and wealth quintiles, even though both the poorest and richest quintiles seem to have a higher prevalence than the second and middle quintiles.

- About 14 per cent of women aged 15–49 years were married by age 15. No large differences were observed between urban (15 per cent) and rural areas (14 per cent). Women in this age group from the poorest quintile are more likely to be married (17 per cent) than those from the richest quintile (12 per cent), but the difference is not statistically significant.

FEMALE GENITAL MUTILATION/CUTTING

- About 14 per cent of the girls aged 0–14 years and 16 per cent of women aged 15–49 years had undergone FGM/C. The Family Health Survey conducted in 2003 showed a prevalence of 22 per cent among women aged 15–49 years, which indicates that FGM practices have decreased in Yemen.

- The prevalence of FGM/C among girls and women (15–49 years) is highest for the poorest wealth quintile (26 per cent) and declines until the middle quintile (11 per cent) and then increases in the richest quintile (14 per cent).

CHILD LABOUR

- About 21 per cent of children aged 6–14 years in Yemen were working in July–September 2013.

- The prevalence of child labour (6–14 years) is higher for girls (25 per cent) than boys (18 per cent) and much higher in rural (25 per cent) than in urban areas (5 per cent).

- The incidence of child labour in urban areas is higher for boys (7 per cent) than for girls (3 per cent) compared to rural areas, where it is higher for girls (31 per cent) than for boys (21 per cent).

- About 94 per cent of labourer children work as unpaid family workers (89 per cent of boys and 98 per cent of girls).

- About 84 per cent of labourer children aged 6–14 years work in the agriculture sector. In rural areas, 86 per cent of the labourer girls work in the agriculture sector compared to 91 of the labourer boys.

- Around 5 per cent of children in the richest quintile work, compared to 37 per cent in the poorest quintile.

- Among labourer children, 66 per cent were enrolled in school in 2012–2013. About 58 per cent of labourer boys were enrolled in school compared to 75 per cent for girls.

- Urban labourer children are more likely to be enrolled in school (87 per cent) than rural labourer children (65 per cent).

- While just 44 per cent of the labourer children in the poorest quintile are enrolled in school, almost 100 per cent of these children in the richest quintile are enrolled.

- As for children aged 6–14 years old who were enrolled in school, 16 per cent were working in October– December 2012 and 20 per cent were working in July–September 2013 (school holiday months).

- Children enrolled in school in rural areas face a much higher risk of working than their counterparts in urban areas (25 per cent compared to 5 per cent).

- In the richest quintile, about 6 per cent of the children enrolled in school were working, compared to 35 per cent in the poorest quintile.

VIOLENCE AGAINST CHILDREN

- In round 1 (October–December 2012), about 9 per cent of households reported at least one child or adolescent who had experienced a violent incident. This fell to 4 per cent in round 4 (July–September, 2013).

- Violence is more prevalent in urban areas, where about 11 per cent of households had adolescents or children subjected to at least one form of violence, compared to 2 per cent in rural areas (round 4).

- Among the types of violence that children or adolescents had been exposed, political violence affected 18 per cent of households experiencing any type of violence by the end of 2012. By July, August and September 2013, this figure had declined slightly to 17 per cent, while terrorist activities became
more prevalent, at 22 per cent.

- Political violence and terrorist activities are the most prevalent types of violence (24 and 21 per cent) in urban areas, while in rural areas, the most common types of violence are tribal violence (32), car accidents (30) and terrorist activities (25).

- Around 65 per cent of mothers or primary caregivers agree that children should be beaten when they make mistakes. This figure is considerably lower in urban areas (46 per cent) than in rural ones (72 per cent).

- While about 77 per cent of the mothers in the poorest households agree that children should be beaten in case of a mistake, less than half of the mothers in the richest ones agree with it (46 per cent).

- The higher the level of education of the head of household, the lower was the percentage of mothers who agree about beating children when they make a mistake.

- Mothers or primary caregivers were asked about which method is the most effective to discipline children. About half (50 per cent in round 4) believe that reprimand is the most effective method to discipline children, followed by cursing/shouting (30 per cent) and beating (10 per cent).

- Children are subjected to physical punishment by their mothers or the primary caregivers in 66 per cent of households and subjected to verbal abuse in 74 per cent. Physical punishment against children is higher in rural areas (73 per cent) than urban areas (46 per cent).

- The prevalence of physical abuse is significantly lower among both the richest households – 43 per cent against 79 per cent in the poorest households – and those whose heads have a higher level of schooling – 57 per cent against 70 per cent when the head of household has no schooling.

Work and Income

LABOUR FORCE PARTICIPATION, UNEMPLOYMENT RATE AND OCCUPATION

- About 58.3 per cent of the Yemeni population aged 15–65 years were participating in the labour market from October 2012 to September 2013. The participation rate is higher in rural (63.4 per cent) compared to urban areas (44.6 per cent).

- The labour force participation rate is higher for males (73.5 per cent) than for females (44.3 per cent).

- The average open unemployment rate is at 9 per cent, but it hides tremendous differences across different categories. For instance, the unemployment rate is much higher for males (11.2 per cent) than females (4.2 per cent). The unemployment rate in urban areas reaches 15 per cent, compared to 7.3 per cent in rural ones. The unemployment rate is much lower for the lowest quintiles (7.4 per cent) than for the richest ones (13.3).

- Open unemployment in Yemen is an urban phenomenon that affects mainly young men entering the labour market. The unemployment rate of young men aged 15–24 years who live in urban areas fluctuates at around 30 per cent.

- About 48 per cent of workers are employed in agriculture; 75 per cent of female workers and 25 per cent male workers are in agriculture. In rural areas, 57 per cent of the working population is in the agriculture sector compared to 12 per cent in urban areas.

- The wealth quintiles show a clear pattern where individuals in the poorest quintile work more in agriculture (68 per cent) than those in the richest quintile (15 per cent).

- As a consequence of the importance of agriculture as a source of employment in the country, about 42 per cent of the workers are unpaid family members. The rest of working population is divided as follows: 45 per cent of workers are paid workers, 12 per cent are self-employed and 1 per cent are employers.

- About 86 per cent of female workers are unpaid family workers, compared to 10.6 per cent for male workers. For the latter, 70 per cent are paid workers, 17.5 are self-employed and 2.5 per cent are employers. Only 10 per cent of female workers are paid workers, 3.5 per cent are self-employed and 0.2 per cent are employers.

- In urban areas, 75 per cent of workers are paid workers compared to 38.1 per cent in rural areas. The self-employed have a relatively similar prevalence in rural and urban areas, 11.5 and 12.7 per cent respectively.

- As for wealth quintiles, the poorest (37.3 per cent) are much less likely to be paid workers than the richest (70 per cent).

- About 87 per cent of workers are in the private sector compared to 13 per cent who work for the Government.

- Yemenis work on average 34 hours per week, urban workers for 37 hours and rural workers for 33 hours per week. The poorest quintile work fewer hours (32 hours) than the richest quintile (37).

- As for the different rounds of the NSPMS, there was only a reduction in hours worked – 32 hours – in round 4 (July–Sept 2013), which is probably explained by Ramadan (July 2013).

WORK INCOME

- The monthly real average income of Yemenis with positive work income is 35,656 Yemeni rials ($165, United States dollars) at October 2012 prices; if workers with "zero income" (e.g., unpaid family workers) are included in the calculation, the average work income falls to 20,156 rials ($94).

- The average monthly work income for male workers is 36,343 Yemeni rials (31,742 including zero income) and for female workers is 28,775 Yemeni rials (3,591 including zero income).

- Rural workers' average monthly work income is 32,624 Yemeni rials (15,945 including zero income) compared to 42,591 Yemeni rials (37,507 including zero income) for urban workers.

- As for wealth quintiles, workers in the poorest quintile have lower monthly work income 23,343 Yemeni rials (11,007 including zero income) compared to those in the richest quintile 52,988 Yemeni rials (43,911 including zero income).

OTHER SOURCES OF INCOME

- The SWF transfer has the largest coverage of households among the non-work sources of income, at 30 per cent of the households on average between October 2012 and September 2013, followed by remittances (15 per cent), pensions (7 per cent) and charity (6 per cent). The other sources of income were quite residual.

- Among the residual sources of income are the income from the Social Fund for Development (SFD) cash for work programme, whose coverage was never beyond 0.5 per cent; social security; Martyrs and Veterans Fund; Agricultural and Fishery Promotion Fund; regional and/or international programmes; Disability Fund; Authority of Tribal Affairs; dividends; dowry; rent or sale of assets; and others.

- The SWF, remittances and charity transfers are relatively more prevalent in rural areas, respectively 34, 16, and 7 per cent, compared to 25, 11, and 4 per cent in urban areas. On the contrary, pensions are more prevalent in urban than rural areas, 12 per cent compared to 5 per cent.

- The SWF income has a much lower incidence in the richest quintile (16 per cent) compared to the poorest (35 per cent) and second (36 per cent) quintiles. Charity has similar pattern: 10 per cent for the poorest quintile and 2 per cent for the richest one.

- Pensions are much more prevalent among the richest (16 per cent) and very minimal at the poorest quintiles (2 per cent). The incidence of remittances is lower in the poorest quintile (9 per cent) and higher for the other quintiles, particularly the fourth one (20 per cent).

- Old SWF beneficiaries (17 per cent) have a higher incidence of remittances than non-beneficiaries (13 per cent). As for charity, the old beneficiaries have a higher incidence (12 per cent) compared to new beneficiaries (9 per cent) and non-beneficiaries (4 per cent).

- As for the different rounds of the NSPMS, there has been an increase in coverage of the SWF from 29 to 33 per cent of households between round 1 and round 4 (from 30 to 35 per cent of the population) and of remittances from 14 to 16 per cent, but the latter may be related to the Ramadan period in July 2013.

Livelihoods: agriculture and livestock

LAND ACCESS AND CULTIVATION

- About 43 per cent of Yemeni households have access to land. In rural areas, this percentage is higher, 54 per cent.

- Old and new SWF beneficiary households are more likely to have access to land (53 and 57 per cent, respectively) than non-beneficiaries (38 per cent). However, old beneficiaries are less likely to cultivate their land than non-beneficiaries and new SWF beneficiaries.

- The average area cultivated by agricultural households in Yemen is 0.5 hectare per household.

- Households in rural areas that have access to land tend to cultivate relatively more of it than urban ones (59 compared to 43 per cent).

AGRICULTURAL CROPS

- Overall, qat was the most reported crop cultivated in the last agricultural season between the survey months of January and April 2013, when more than 70 per cent of households with some agricultural production reported cultivation of this crop. Qat is followed by grains and cereals, and animal feed.

- Only 36 per cent of agricultural households have sold some of their crops from the last agricultural season. There is a clear seasonal pattern, with most of the selling activity of the last crop production reported between January and March (winter period).

- Logistic regression results show that qat is by far the crop most likely to be sold, followed by vegetables and then others and fruits. Households that produce cereals and grains are much less likely to sell any of their crops, suggesting that these products are mostly used for household consumption.

- The average quarterly real revenue of the crop sales for agricultural households that sold some of their output during the 12 months of the NSPMS was 151,990 Yemeni rials ($ 700) at October 2012 prices.

LIVESTOCK

- About 57 per cent of agricultural households have livestock. On average, 23 per cent of those who had livestock had sold some of it in the three months before the interview.

- The poorest quintiles (74 per cent), SWF beneficiaries and in particular the new SWF beneficiaries (77 per cent) are much more likely to report having some livestock than the richest quintiles (26 per cent) and SWF non-beneficiaries (50 per cent).

- The average quarterly real revenue of livestock sales for agricultural households that sold some of their output during the 12 months of the NSPMS is less than 20 per cent of the amount reported for agriculture, about 32,230 rials ($ 150) at October 2012 prices.

- Sheep and goats stand out as the most reported animal category and the only category which is more likely to be sold. They are also the most prevalent livestock in the country; 70 per cent of households report raising them, followed by cows and hens, which are mostly likely used either for production of dairy products and eggs or for the agricultural household's own consumption. Cows and hens seem to follow a pattern similar to the one observed for cereals and grains for the agricultural household's own consumption.

AGRICULTURAL INVESTMENT

- Only 14 per cent of agricultural households reported buying some inputs in the past three months.

- The average amount invested in these inputs was quite minimal, at 4,292 rials (October 2012 prices).

Food Security

FOOD INSECURITY PREVALENCE

- The prevalence of food insecurity ranged from 23 to 31 per cent of households during the four quarters of the NSPMS. The peak of 31 per cent was observed in the first quarter of 2013.

- Rural households are more likely to be food insecure, ranging from 28 to 39 per cent than urban households, varying from 16 to 10 per cent.

- Nearly half of the population in the poorest quintile is food insecure, with large variations depending of the time of the year (ranging from 39 to 52 per cent), whereas fewer households in the richest quintile were food insecure over this period, and also without much variation (4 to 5 per cent).

- Old and new SWF beneficiaries have higher levels of food insecurity than non-beneficiaries.

COPING WITH FOOD INSECURITY

- The most prevalent actions to cope with food deprivation are consuming fewer food items, reducing dietary diversity (ranging from 75 to 90 per cent of food-insecure households), eating smaller meals (ranging from 54 to 74 per cent of food-insecure households) and reducing the number of daily meals (36 to 52 per cent of food-insecure households).

- Among the severe food-insecure households, there is large variation along the four quarters of the NSPMS, with 46 per cent (October–December 2012) to 18 per cent (July–August 2013) reporting that household members went to sleep hungry because there was not enough food.

SOURCE OF INCOME TO ACCESS FOOD

- About 70 per cent of households say that salaries are one of the main sources of income to buy food. More said so in urban (83 per cent) than in rural areas (64 per cent).

- Among the food insecure (extreme and moderate), government assistance is cited by about 21 per cent of the households.

- Own production, own livestock and farm wages are only relevant in rural areas, where each one is cited by about 12 per cent of households. The relatively low prevalence for own production and own livestock in the rural areas reveals the limits of food crop production in Yemen.

- Remittances are also an important source of income to buy food, particularly in rural areas (11 per cent).

- The SWF is a much more important source of income for food purchases than remittances. Moreover, with the gradual expansion of the SWF, its importance has also grown over time. Between July and September 2013, 70 per cent of the households with some SWF beneficiary mentioned government assistance as the source of income to purchase food, up from 20 per cent between October and December 2012.

Estimation of SWF Impacts

METHODOLOGY

- There are some key limitations for the use of the NSPMS for a robust impact evaluation: (1) there is no proper baseline as the majority of the SWF beneficiaries were already receiving the SWF transfers at the time of the survey, thus one cannot compare before and after the programme for most beneficiaries; (2) the four quarters of the NSPMS do not overlap, so even if one wanted to implement differences-in-differences it would not involve the same months (quarters) in a consecutive year, which is the ideal scenario due to seasonality effects; (3) different types of beneficiaries (old and new beneficiary) and the irregularity of payments can potentially affect how households spend the cash transfers and their implications for the outcomes being measured in the NSPMS report; and (4) changes in the way some indicators were measured across rounds. Thus, it is best to interpret each of these household programme impact estimates with caution and at most as "suggestive" of potential programme effects.

- Impact estimates were calculated for all SWF beneficiaries compared to similar non-beneficiaries and, separately, for old and new beneficiaries compared to non-beneficiaries. SWF beneficiaries are called the treated group and non-beneficiaries the comparison group.

MAIN RESULTS

- The propensity score estimates confirmed that new SWF beneficiaries were more likely to be poor (as identified by the PMT) and have higher predicted probabilities of SWF receipt than the comparison group members. Similarly, the new SWF beneficiaries are also more likely to be poorer than old beneficiaries.

- Being elderly is not a statistically significant predictor of new beneficiaries, where it is one of the strongest predictors of treatment for older beneficiaries.

- The household-level impact analyses do not suggest any effects of the SWF on crowding in households, access to health facilities, food security or borrowing money.

- As for expenditures on food, we find that all of the estimated effects are positive and most are also statistically significant, particularly for old SWF beneficiaries. The fact that the estimated effects are smaller for new beneficiary households could reflect that many of these households had been receiving the SWF for a very short time before the NSPMS was administered, as well as the fact that the newer beneficiaries were poorer than older beneficiaries.

- The pattern for household expenditures on utilities is mixed, with one small, positive, statistically significant effect of the SWF on old beneficiary households' use of the cash transfers for expenditures on utilities (electricity bills).

- As for household income and agricultural production, we find that income from work and from agricultural production are both significantly reduced among the old SWF beneficiary households. Estimates for SWF effects on land cultivation show that beneficiaries were less likely than non-beneficiaries to cultivate land, except for old beneficiaries, who were more likely to cultivate land compared to the comparison group of non-beneficiaries (statistically significant).

- New SWF beneficiaries are more likely to make investments in agricultural inputs and are also significantly more likely to possess livestock than non-beneficiaries. These impacts seem to be consistent with the implementation of the programme for new beneficiaries, who received irregular, lump-sum payments (when payments resumed by the end of 2012). For more details on the expansion of SWF, see the section at the beginning of this Executive Summary under the heading "Social Protection – Social Welfare Fund".

- Other findings reported for livelihood outcomes reveal that old SWF beneficiary households rely less on crop and livestock sales and their own production as a main source of food with receipt of the SWF.

- There are statistically significant reductions in the probability that both boys and girls of younger (6–11 years) and older (12–14 years) ages were absent from school (in round 3 of the NSPMS when school was in session) if their households were receiving the SWF.

- Impact estimates suggest higher rates of child labour and unpaid family work for new female SWF beneficiaries ages 6–11 years (compared to non-beneficiaries) while school was still in session (round 3) and higher rates of unpaid family work for males 6–11 and 12–14 years (also new beneficiaries).

- When looking at the round 4 outcomes when children were not in school (holiday period), most of the coefficient estimates – for new and older beneficiaries and both groups combined – are positively and statistically significant, suggesting that receipt of the SWF is associated with more child labour and unpaid family work when children are not in school.

- To further investigate the patterns in child labour, the effects of the SWF on child labour and unpaid family work were estimated separately for rural and urban children. Focusing only on rural children, results show higher rates of child labour only among male SWF beneficiaries, aged 12–14 years, when these children are not in school (i.e., in round 4). For girls (6–11 and 12–14 years) and younger rural boys (6–11 years), there is no statistically significant impact for old or new beneficiaries on child labour in either rounds 3 or 4. In terms of unpaid family work, for both females and males, estimates of a higher rate of unpaid family work are only found when the beneficiaries are not in school, and particularly among new beneficiaries. Thus, for all groups of rural children, higher rates of child labour are not found among SWF beneficiaries during the school year.

- There is no statistically significant result among the estimates for anthropometric outcomes for children aged 6–59 months, including underweight, stunting and wasting (and for global, moderate and severe levels).

- Similarly, although almost all of the coefficient estimates of the impact of the SWF on vaccinations for children (age 12–23 months) are positive, only two of these estimated effects (for new and older beneficiaries combined) are statistically significant. These impact estimates suggest that receipt of the SWF may be associated with a greater likelihood of receiving the measles vaccination and all three doses of pentavalent vaccine.

CONCLUSION: RECOMMENDATIONS FOR THE SWF TOWARDS A MORE CHILD-SENSITIVE SOCIAL PROTECTION INTERVENTION

- Improving the targeting and/or the focus of the programme, especially to cover more extreme poor people with children. In any future revision of the PMT formula, the demographic composition of the household, particularly the number of children in different age groups within the 0–17 year interval, should be considered.

- The unemployed and women without a breadwinner are SWF categories whose eligibility seems harder to verify. Perhaps more important than having women without a breadwinner as a key vulnerable group would be to prioritize women as the main beneficiary (SWF cardholder) within an eligible household as per the PMT formula, even if they are not the considered within the category of women without a breadwinner. Likewise, those who were eligible because they were unemployed when they joined the SWF are not likely to be unemployed for a long spell. Thus this category should either be changed or must stay only for a shorter period in the programme as already stated (but not implemented) in the SWF legislation. The latter mandates a revision of the eligibility status for the economic categories (unemployed and women without a breadwinner) every two years, and for the social categories every five years.

- If it is not possible to prioritize the inclusion of families with children due to the current legislation of the programme and its categories, other programmes such as an unconditional child allowance or a conditional cash transfer with soft health and education conditionalities could be implemented to make Yemen's social protection policy more child-sensitive.

- Soft conditionalities to families with school-aged children are measures that have the potential to boost the impact of the programme. The impact evaluation results suggest that special attention should be paid to younger children (due to prevalence of domestic chores) and older children (due to prevalence of child labour) when designing complementary programmes to support SWF beneficiaries. Thus, soft conditionalities can be a good instrument, as they are not implemented in a strict manner so that children who do not have access to school or health centres are not excluded from the programme. Soft conditionalities focus on the message of the programme that promotes actions that improve children's well-being, which has been shown in other challenging contexts to be as effective (and less exclusionary) than strict conditionalities.

- The productive impacts found for new beneficiaries are suggestive that lump-sum irregular payments may trigger a different impact than the regular payment. The latter are more likely to have impacts on food consumption and security than the former.

- Based on the productive impacts found for those who received the lump sum, the Government could consider a lump-sum payment for those who are graduating from the programme due to non-eligibility as per the PMT formula and refer them to other programmes aimed at increasing productivity. This would reduce the inclusion errors of the programme and open space for the inclusion of eligible families currently not receiving assistance from the programme.

- Finally, revising the value of the benefit, which has not been adjusted since 2008, and ensuring its regular payment are important measures to ensure that the programme has its intended impacts.
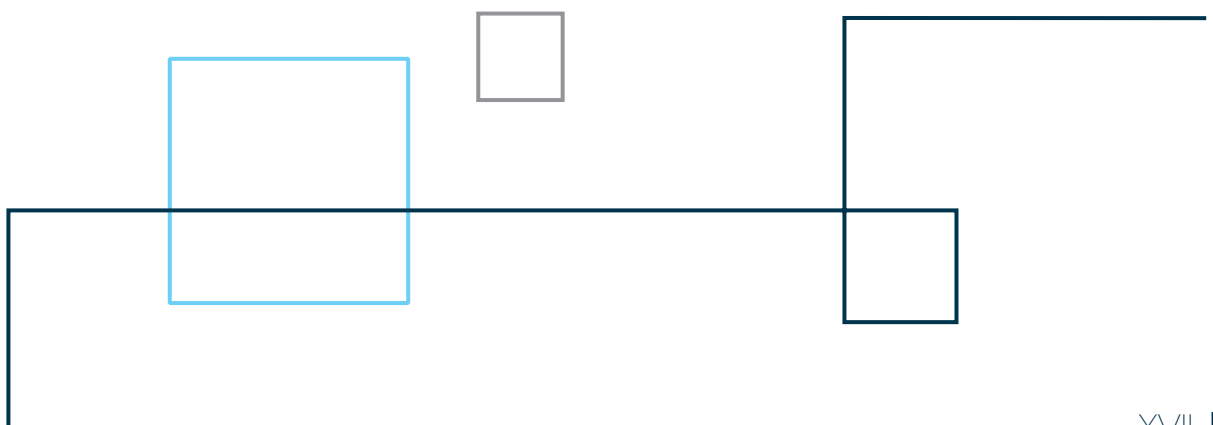
1 Introduction

1.1 Yemen Context Review

Yemen joined the 'Arab Spring' that prevailed in several countries in the Middle East and North Africa (MENA) region[1] during 2011. The crisis started in February 2011 as mass protests and evolved into violent clashes and armed conflict. The 2011 crisis had major negative economic and social impacts and exacerbated the existing fragile situation. Yemen is one of the poorest countries in the MENA region, with poverty rates estimated at 35 per cent in 2005-2006,[2] 43 per cent in 2009,[3] 54 per cent in 2011[4] and then reduced to 45 per cent according to the 2012 National Social Protection Monitoring Survey (NSPMS) estimates presented in this report. Yemen's population is around 25.2 million people, and at 3.02 per cent, the country has one of the highest population growth rates globally, with the population expected to double in the next 23 years.[5] This increases the demand for educational and health services, drinking water and employment opportunities. Yemen faces a severe water shortage, with available groundwater depleting at an alarming rate.[6] Yemen continues to occupy the last place in the gender gap index rankings of 134 countries and remains the only country in the world to have closed less than 50 per cent of its gender gap.[7] The 2011 crisis added a huge burden on poor and vulnerable households, which represent the majority of the population in Yemen, due to the sharp increase in the prices of food and fuel and interruption of electricity and public water supplies.

THE TRANSITIONAL PERIOD

On 23 November 2011, a resolution to the crisis was initiated with the signature of the Gulf Cooperation Council's (GCC) Initiative and the Agreement on the Implementation Mechanism for the Transition Process.[8] As a result, a transitional government was appointed, and the Transitional Programme for Stabilization and Development (TPSD) was developed for the period of 2012-2014. Given the transitional nature of the government, the existing 4th Socio-Economic Development Plan for Poverty Reduction 2011-2015 was no longer applicable and was replaced by the TPSD. The TPSD focuses on six priorities: economic growth; infrastructure; social protection; human resources development; role of private sector; and good governance. The Government is leaning towards extending the TPSD until the end of 2016 and is preparing for the formulation of the developmental transitional framework in line with the National Dialogue Conference (NDC) outcomes.

THE NATIONAL DIALOGUE CONFERENCE AND THE NEW CONSTITUTION

The GCC initiative and its Implementation Mechanism entailed that the President of Yemen and the National Reconciliation Government are responsible for organizing a comprehensive National Dialogue Conference involving all political and civil actors. The NDC was launched in March 2013 and concluded in January 2014. The NDC included nine working groups on: (1) the southern issue; (2) the Sa'ada issue; (3) issues of national dimensions, reconciliation and transitional justice; (4) State-building; (5) good governance; (6) building foundations and role of army and security; (7) independent bodies and special social and environmental issues; (8) rights and freedoms; and (9) comprehensive, integrated and sustainable development (CISD). The NDC outcome document released in January 2014 will be the basis for formulating the new Yemeni Constitution.[9]

In its final report, the NDC also recommended a regional federal structure for the country based on six regions (Azal, Saba, Al- Al-Janad, Tehama, Aden and Hadhramout) and the capital, Sana'a City. This recommendation has started a renewed decentralization process across the country, with the support of the international community. The precise and final structure of Yemen's future federal regions will be enshrined in the new Constitution. Following this recommendation, this report is the first one to calculate indicators disaggregated by these regions. Thus, in this report, governorates were grouped according to the following classification:

1. Hadhramout Region (governorates: Al-Mahrah; Hadhramout; Shabwa; Socotra); Mukalla city is the capital of Hadhramout Region;

2. Saba Region (governorates: Al-Jawf; Al-Baidha; Mareb) ; Mareb city is the capital of Saba Region;

3. Aden Region (governorates: Abyan; Lahj; Al-Dhale'e; Aden); Aden city is the capital of Aden Region;

4. Al Janad Region (governorates: Ibb; Taiz); Taiz city is the capital of Al- Janad Region;

5. Azal Region (governorates: Sa'ada; Amran; Dhamar; Sana'a); Sana'a city is the capital of Azal Region;

6. Tehama Region (governorates: Hajjah; Mahweet; Rayma; Hodeida); Hodeida city is the capital of Tehama Region.

Social protection received the required attention from the NDC working groups and is specified in different outcomes. The 'rights and freedom' first outcome referred to social protection, which states that "Every citizen has the right to social protection in case the citizen cannot support him/herself or his/her family".[10] In the final plenary recommendations, the rights and freedom group calls upon the Government to protect, support and develop the Social Welfare Fund (SWF). Outcome 5 of the CISD group midterm plenary states that priority should be given to scaling up social protection mechanisms to improve the living conditions of the poor. The CISD final plenary report included a priority outcome on food security and social protection. This outcome calls for supporting and improving the efficiency of the SWF. It also recommends increasing the financial allocations for the SWF, on the condition that targeting is first improved and there is no interference from community leaders in identifying the poor. In addition to the support to SWF, the CISD calls for implementing conditional cash transfers (CCTs) focused on education.[11] Under the section on social development, the CISD also calls for ensuring social protection programmes for low-income and the poorest households, as well as conducting a comprehensive evaluation of the SWF to better promote its effectiveness and fair outreach. The final outcome under the social development section calls for ongoing development of working modalities and legislations of social protection mechanisms and ensure linkages with the wider government social policies, such that these programmes constitute a key component of a wider socioeconomic framework. The final NDC communiqué includes a statement on social protection that emphasizes the importance of providing health care for all citizens and promoting social protection systems that will facilitate equal opportunities.

The constitutional development process started after the conclusion of the NDC. The Constitutional Drafting Committee was established by presidential decree in early March and was given a year to draft the Constitution. It is scheduled to be put to referendum in January 2015, one year after the conclusion of the NDC. The NDC outcomes will be the basis for drafting the new Constitution.[12]

1.2 Background on the National Social Protection Monitoring Survey

THE UNICEF SOCIAL PROTECTION MONITORING PILOT

During the 2011 crisis, there were numerous reports on the deteriorating living conditions of Yemeni households, especially the poor and most vulnerable. However, there was no existing mechanism in place to provide routine data on the impact of the crisis on vulnerable households.

For this reason, UNICEF Yemen launched the pilot Social Protection Monitoring (SPM) survey on 29 June 2011. The survey aimed to establish routine access to disaggregated household data for monitoring trends over time on how vulnerable populations were coping with the crisis in Yemen. Data collection from 120 households from three governorates (Sana'a, Hodeida and Amran) was initiated as part of a pilot phase. In each governorate, poor subdistricts were selected as per the poverty map based on the Household Budget Survey (HBS) 2005-2006. Within these selected subdistricts, 40 households were identified among those that receive SWF support. The questionnaire included questions on housing and household members' characteristics; food security and nutrition; child protection; water and sanitation; and child health. In addition, the questionnaire included an initial series of intake questions that include school enrolment, exam attendance, as well as child protection questions related to female genital mutilation/cutting (FGM/C) and birth registration.

Twelve rounds of biweekly data collection were conducted in the 120 targeted households in Sana'a, Amran and Hodeida from June to December 2011, followed by two additional rounds of data collection on a monthly basis in January and February 2012. The reports were shared with a wide range of national and international organizations.

The SPM pilot rounds revealed that the 2011 crisis negatively impacted poor Yemeni households and illustrated the struggle they faced to ensure minimum nutrition and other basic requirements for their children.[13] The food security and nutrition indicators in all rounds were alarming, especially those related to child nutrition. The percentage of children below age five years who were consuming red beef, fish and chicken was only 11.4 per cent, and only 27 per cent of households reported legume intake by children under five years of age. In addition, 66 and 36 per cent of households respectively reported consuming no meat and no eggs. The sense of food insecurity was significantly high, with 36 per cent of households reporting at least one household member having gone to bed hungry and 35 per cent reporting decreased numbers of meals for children under age five years due to lack of adequate food at home. The peak of household consumption coincided with receipt of SWF cash transfers.[14]

Child protection indicators worsened largely due to violent incidents and the deteriorating security situation during the violent armed conflict. From the children's perspective, their communities were not secure; about 15 per cent of children were afraid to play outside their homes increasing to 25 per cent during the peak of violence with the deterioration of the security situation. Child health indicators also deteriorated during the 2011 crisis, with suspected measles cases reported from Sana'a and Hodeida. In fact, the suspected incidents signalled the start of the measles outbreak in the last quarter of 2011. The prevalence of diarrhoea and cough was as high as 37 and 45 per cent respectively. At the peak of the crisis, health services, especially in security affected areas, were not functional. The crisis also impacted water and sanitation and led 31 per cent of households to consume less water due to increased prices, which was due to the scarcity and the sharp increase of fuel prices. In fact, 29 per cent of households reported that they did not have enough water for drinking. Hygiene practices were of major concern, with only 56 per cent of households reporting having enough water for hand washing.[15]

The results of the pilot SPM made clear the need for a national social protection monitoring survey to further investigate the coping mechanisms of poor people and the impact of social protection programmes, especially the SWF.

THE NATIONAL SOCIAL PROTECTION MONITORING SURVEY

The alarming results of the SPM survey during the 2011 crisis led to an urgent call to establish a social protection monitoring mechanism in all Yemeni governorates. The original thinking was to have real-time monitoring with a light questionnaire, basically scaling up the real-time SPM of 2011. However, after a

wide consultation with technical experts from the Government, UNICEF, other United Nations agencies and development partners, the methodology was further modified into a full-fledged survey on social protection. Inquiring on a broad range of development areas was the only way to ensure detailed knowledge of the existing social protection mechanisms and how they influence the utilization of basic social services and related child developmental outcomes. This would give UNICEF, the Government of Yemen and development partners the evidence needed to go forward with future social protection programming and targeting. The TPSD for 2012-2014[16] included social protection as a key component. However, prior to the NSPMS there were no recent data to advise the Government on the performance of the existing social protection programmes, and/or to inform the design of new programmes.

The NSPMS was designed and implemented by UNICEF and the Ministry of Planning and International Cooperation, in collaboration with the International Policy Centre for Inclusive Growth (IPC-IG/UNDP), which was responsible for the survey design and analysis, and Interaction in Development, which was responsible for the survey data collection). The NSPMS was developed under the technical guidance of a multisectoral committee including representatives of the Central Statistical Organisation (CSO), the SWF, the Ministry of Social Affairs and Labour, the Ministry of Public Health and Population, the Ministry of Education, the Ministry of Finance and Sana'a University. The NSPMS had two key objectives: (1) to provide up-to-date data on how poor and vulnerable populations have coped in Yemen since the 2011 crisis; and (2) to provide evidence on the targeting of the cash transfer programme administered by the SWF and to assess its impact on some important developmental indicators. Such evidence is key for future child-sensitive and human rights-based social protection programming. The NSPMS provides national data on health, nutrition, water, sanitation, health, education, child protection, food security, social protection programmes, work, income, production and consumption.

The NSPMS is a household panel survey through which each household in the sample was visited on a quarterly basis over 12 months between October 2012 and September 2013. These four visits allowed monitoring of the living conditions of the sampled households during the different seasons and enabled analysis of household responses to shocks.[17] The pilot social protection monitoring revealed that households increased their consumption patterns during the disbursement of SWF cash transfers, and it is crucial to examine this effect at national scale. Most families in Yemen depend on agriculture, either directly or indirectly, which is mainly sustained by rain-fed irrigation systems.[18] There is evidence that household consumption in rural areas is dependent on the harvesting seasons, and during the dry seasons, food security poses a major concern.[19] Thus, households have the potential to benefit greatly from tailored social protection programmes that bridge the food security and consumption gap.[20] The NSPMS collected data monthly and calculated indicators on a quarterly basis from the same sample of households to capture fluctuations in their living conditions, in particular with regard to food security and work and income.[21]

The NSPMS target population was the Yemeni resident population (excluding non-household communities such as refugees, nomads and internally displaced persons, hotels, dormitories, prisons and hospitals). Aligned with its objective to enable an impact assessment of the SWF, the survey sampling of the NSPMS aimed to allowing comparative assessment between population subgroups of programme beneficiaries and non-beneficiaries along several points in time. Thus, the NSPMS sample was selected following a stratified two-phase sampling design. In phase 1, enumeration areas (EAs) were the primary sampling units and a stratified cluster sampling procedure was implemented with unequal selection probabilities, considering the 21 governorates of Yemen as strata. In phase 2, households were selected from each selected EA by a stratified simple random sampling procedure.

The total survey sample size was approximately 7,560 households. In each of Yemen's 21 governorates, 30 EAs were selected (phase 1) and in each sampled EA, 12 households were selected (phase 2). Sample size allocation to phase 2 strata took into account the impact assessment needs, focusing on providing higher probabilities of finding counterfactual matches for the treatment cases (SWF beneficiaries) as a crucial input for the econometric analysis discussed in chapter 11 of this report. In the first phase of the NSPMS sample design, EAs were geographically stratified by governorate and selected using a probability proportional to size (PPS) sampling scheme, in which the size variable is the number of poor people in the district to which the EA belong. It should be noted that EAs within the same district had the same size variable value and, hence, the same selection probability. The second phase of the NSPMS sample was designed based on a screening (listing) operation conducted in each selected EA during the first phase of the sampling procedure. A screening process was carried out between 1 and 22 September 2012 with the

aim of identifying and classifying every household located in each of the selected EAs into three groups: (1) treatment stratum: households with at least one beneficiary of the SWF programme (with at least one payment already received); (2) control 1 stratum: households with at least one resident either selected or registered for the SWF programme but without any beneficiaries; and (3) control 2 stratum: households with all their residents not registered for the SWF programme.[22]

Listed households in each enumeration area were then randomly selected according to the following rule: five households are allocated to the treatment stratum; five to the control 1 stratum; and two to the control 2 stratum. Such an allocation aims to increase the probability of finding counterfactual matches for the treatment cases (SWF beneficiaries) in the impact analysis. Due to security reasons, the Saa'da sample was not regularly interviewed in the four rounds and there was full attrition of the EAs from this governorate in round 1 (October-December, 2012). Similarly, four EAs in other locations with security problems were not replaced in time for the field work. Thus, of 7,560 households initially selected for the sample, only 7,152 households were actually part of the NSMPS initial sample.

About 6,968 of these 7,152 households were successfully interviewed, yielding a general response rate of 97.5 per cent in the first round of the NSPMS (October-December 2012). Response rates did not vary between urban and rural areas. Of the total 6,968 households interviewed in the first round (baseline), only 6,943 remained for the baseline analysis. Twenty-six households were excluded due to problems (falsification) in the listing of households in two EAs – EA 19 (November) and EA 30 (December), which were detected in the midline survey (Round 2: January-March 2013). Therefore, the households of both EAs were excluded (24 in total) and the sampling weights for households in that governorate were adjusted accordingly. The other major source of attrition throughout the 12-month data collection process was the governorate of Al-Jawf. The security situation made it very difficult to collect data for all EAs in this governorate and no household was interviewed there in round 4.

Cross-sectional and longitudinal sampling weights described in the appendix of this report were calculated to reflect not only the NSPMS sampling design but also the application of adjustment terms for dealing with unit non-response cases found in the four waves. It is possible to calculate cross-sectional indicators for each round using the cross-section weights as well as longitudinal indicators using the longitudinal weights. It is important to emphasize that any statistical inference using this database **must** use the sampling weights provided in the database and take into account the sampling design to yield correct estimates and inference. More information will be provided in the website in which the dataset and its documentation will be available for download by the last quarter of 2014. Almost all indicators shown in this report were calculated using the balanced sample – households that were interviewed in **all** four rounds (6,397 households) – and the longitudinal weights corresponding to it, even when reporting on a specific round. Any exception to this procedure is duly acknowledged in the report. The balanced sample of 6,397 households corresponds to 89.5 per cent of the initial sample of 7,152 households.

This report is the final NSPMS analytical report, prepared after the four rounds were conducted during the period October 2012-September 2013. The baseline report was launched on 26 June 2013. One year later, on 26 June, 2014, the final assessment report was launched.

THEORETICAL FRAMEWORK

The Definition of Social Protection

Social protection is a set of public policies and programmes aimed at preventing, reducing and eliminating economic and social vulnerabilities to poverty and deprivation, which are also essential to the realization of the rights of children, women and families to an adequate standard of living and essential services. Social protection strengthens the capacity of families to care for their children and overcome barriers to services.[23] The NSPMS adopts this definition due to its focus on the linkages between social protection and realization of the rights of children and caregivers.

Integrated and Transformative Social Protection Framework

The NSPMS focuses on the assessment of the SWF cash transfer programme – the largest social protection programme in Yemen. The SWF assessment is seen through the lenses of the Social Protection Floor's Integrated Social Protection Framework[24] and the Transformative Social Protection Framework,[25] while maintaining the focus on child-sensitive social protection, based on the understanding that poverty and deprivation are multidimensional and dynamic.[26] Integrated social protection systems address multiple

and compounding vulnerabilities faced by children and their families through a multisectoral and systems-based approach. They entail addressing social and economic vulnerabilities; providing a comprehensive set of multiple interventions based on a population's needs and context; and facilitating intersectoral coordination.[27] A social protection floor is the first level of an integrated national social protection system that helps realize human rights for all through guaranteeing universal access to essential services (such as health, education, housing, water and sanitation and other services as nationally defined) and providing social transfers, in cash or in kind, to guarantee income security, food security, adequate nutrition and access to essential services.[28] Transformative social protection addresses equity, empowerment and social justice. It emphasizes the role of social justice and broadens the scope of social protection from the narrow 'safety net' approach, which is related only to safeguarding lives and livelihoods in contexts of chronic and acute economic risk and vulnerability.[29]

While adopting the integrated and transformative model, the NSPMS recognizes that any protective, preventive, promotive or transformative social protection mechanism should be integrated with such essential basic services as health, education, housing, water and sanitation to have an impact on the realization of human rights. The NSPMS aims to identify synergies between the 'economic' (protective, preventive, promotive) and 'social' (transformative) roles performed by several social protection measures. The NSPMS conceptual framework is based on the understanding that a comprehensive and coherent package of social protection measures can support a development agenda in Yemen that maximizes the reduction of both poverty and inequity. To better illustrate the NSPMS integrated and transformative social protection framework, figure 1 below shows how the NSPMS captures both social services and transfers; investigates the vulnerabilities facing children and caregivers; and studies the geographical and financial access to essential services.

Following this framework, this report has 12 chapters including this introduction. Chapter 2 documents the evolution of the SWF between October 2012 and September 2013 and analyzes the quality of its targeting. Chapter 3 discusses the indicators on household living conditions (crowding, housing durability, access to water, etc.). Chapter 4 focuses on education indicators and highlights the determinants of children who are out of school as well as reasons for absenteeism of those who are enrolled in school. Chapter 5 covers child health, including vaccination, anthropometric indicators and feeding practices, and chapter 6 looks at maternal health indicators. Chapter 7 discusses the indicators related to child protection with a focus on child labour. Chapter 8 presents labour market indicators and the sources of income of the Yemeni population. Chapter 9 discusses livelihoods (agriculture and livestock) in Yemen. Chapter 10 focuses on food security indicators. Chapter 11 discusses the propensity score matching methodology used to estimate the impact of the SWF on a series of indicators, and the key results that were identified. Chapter 12 contains some concluding remarks. Each chapter includes numerous figures and tables, some of which are included in the chapter body with the rest found in a separate section at the end of the chapter.

Figure 1:
NSPMS Theoretical Framework
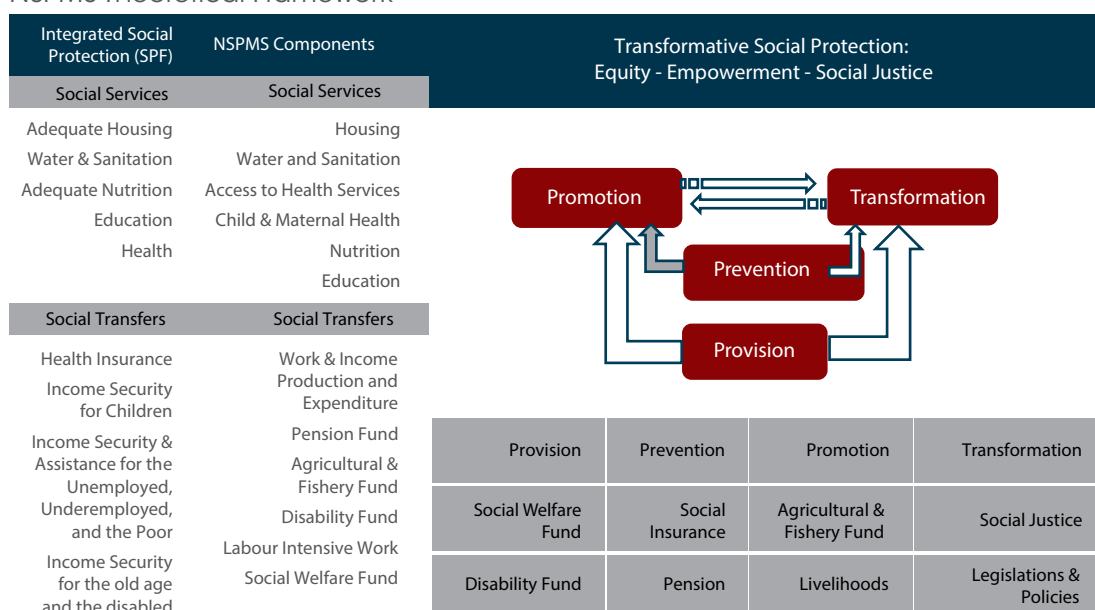
Source: Authors' elaboration.

2 Yemen's Social Welfare Fund

2.1 Origins and Objectives

The SWF is the most important cash transfer social assistance programme in Yemen and one of the largest programmes of this nature in the MENA region. According to the NSPMS, about 35 per cent of the population lived in a household where there was at least one SWF beneficiary in the third quarter (July-September) of 2013. The SWF was created in 1996 as a compensation mechanism for the poor population to mitigate the negative impact of the removal of food subsidies. The SWF provides financial help for individuals in certain social and economic groups who are less likely to be economically active either on a permanent or temporary basis.

The 2008 SWF law and the 2009 SWF operations manual define the eligible population as those from the following social and economic categories:

Social:
- disabled: fully and permanently; partially and permanently; fully or partially temporarily. The common condition is that the person is unable to work either permanently or temporarily due to the disability or chronic illness. The partially permanent disabled, for instance, includes those suffering from chronic diseases such as diabetes, asthma, tuberculosis, heart disease, kidney failure, rheumatism, cancer, AIDS, hepatitis, anaemia and several psychological disorders;

- orphans (under 18 years old whose parents are either dead or disappeared, also for those between 18 and 25 years if they are enrolled in college or technical education);

- elderly people (above age 55 for women and 60 for men).

Economic:
- women without a breadwinner in the household (single, widowed or divorced women not remarried) whose breadwinner is absent for any reason and does not support them. They need to be above age 18, unless they are widowed or divorced with at least one child;

- unemployed: a man who does not have a public or private job and/or whose income/earnings are below the level of the SWF cash assistance. The potential beneficiaries must be between 18 and 60 years old.

These individual-based eligibility criteria should be further refined through the assessment of the standard of living of the families of these individuals. Thus, besides belonging to one of these categories, individual eligibility would also depend on the family's poverty status.[30] The legal conditions that apply to any applicant to the SWF programme are that: (1) the individual or his/her family has no source of income (either from property, business or work) that might compensate for the lack of government assistance; and (2) the individual or his/her family has no relative legally obliged to support him financially. However, a clear mechanism to approximate the poverty status of the families of beneficiaries and potential beneficiaries was only approved in 2010 and formally applied to all beneficiaries and potential beneficiaries in 2011 using the database of the 2008 Comprehensive Social Survey (CSS).

The 2007 Yemen Poverty Assessment revealed the need for an urgent reform of the SWF targeting mechanism. Based on the 2005-2006 HBS, this assessment documented the rapid expansion of the SWF between 1998 and 2006, when it reached 1 million beneficiaries. This figure corresponded to roughly 14 per cent of extremely poor and 13 per cent of poor people in the country.[31] However, the poverty assessment also pointed out that this expansion was accompanied by a deterioration in the quality of the targeting of the programme. Whereas in 1998 about 40 per cent of the beneficiaries were not poor, by 2005-2006 this figure had increased to 45 per cent. Moreover, the nominal value of the transfer had remained constant since 2000, which made it very ineffective to reduce poverty in 2006. The benefit amounted to only 4 per cent of the poverty line and 15 per cent of the average poverty gap.[32]

The results of the poverty assessment and the enactment of the 2008 SWF law triggered a series of reforms of the programme. The most important was the implementation of a survey (or a census of poor people) in the country that entailed the reassessment of all SWF beneficiaries and potential new beneficiaries according to a proxy means test (PMT) formula. The CSS took place in 2008, using information from the 2005-2006 HBS and the 2004 Population Census to estimate the number of poor people in each governorate and district. This indicator was used to inform how many beneficiaries and/or potential new beneficiaries should be included in the survey at the district level.[33] Thus, this poverty map has informed the geographical targeting of the quotas in the CSS by governorate and districts.

A PMT formula developed with the technical assistance of the World Bank was adopted to assess the poverty status of the families of existing beneficiaries and of potential new beneficiaries. The PMT weights used to assess the poverty status of the families were based on a multivariate linear regression of the logarithm of the per capita expenditure on a series of household-level variables, head of household personal characteristics and area of residence and governorate. Data used in the regression were taken from the 2005-2006 HBS[34] and the same variables used in the regression to get the weights of the PMT were also collected by the CSS. Thus, in order to predict the value of the household per capita expenditure using the CSS database of actual or potential SWF beneficiaries, these weights were multiplied by the same HBS variables used in the regression analysis. Based on the predicted per capita expenditure, households were classified into groups A,B,C and D (poor) and E and F (non-poor), according to cut-off points that vary by both governorate and area of residence (rural and urban) to take into account differences in the cost of living.

According to the Ministry of Social Affairs and Labour,[35] about 1,602,991 'cases' (individuals) that were registered in the CSS (77 per cent in rural areas and 23 per cent in urban areas) met the requirements of the social and economic categories, pending verification of their poverty status. Existing beneficiaries accounted for 63 per cent of the total number of interviewed households/cases (1,007,770), while 37 per cent (595,221) were new cases.

The results of the PMT indicated that some 273,000 'old' beneficiaries (around 27 per cent of the total number of beneficiaries in 2008) fell into categories E and F and therefore should lose their SWF beneficiary status. Among the new potential beneficiaries, only 12 per cent were classified into categories E and F (non-poor and thus non-eligible for SWF); the vast majority of the potential new beneficiaries was considered eligible for the programme.

According to the World Bank et al.,[36] the main challenge to the SWF since the CSS database has been analyzed through the PMT formula is to remove the ineligible recipients from the programme. Due to the political sensitivity of excluding beneficiaries from the programme, especially after the 2011 crisis, the old beneficiaries, unlike the new beneficiaries, were not effectively screened by the PMT method.

In the meantime, some of the eligible new beneficiaries (selected by the PMT) received a first SWF benefit payment in the first quarter of 2011. However, when the crisis struck their payment was suspended due to lack of funds; only in the last quarter of 2012, 15 months (five quarters) later was their payment resumed and new beneficiaries incorporated. This process coincided with the data collection of the NSPMS, and it was documented by the survey as shown in the next subsection. As for the old beneficiaries, their payment was not suspended during the 2011 crisis.

In principle, SWF benefits for beneficiaries who fall into the economic category should last for two years, and five years for social category beneficiaries (or the period defined in the enrolment). After this period, all beneficiaries would need to update their information on the database generated from the CSS, so that their eligibility could be reassessed. Apparently, this reassessment based on case management has not been implemented yet.

The SWF operations manual also highlights the need to link SWF beneficiaries, particularly the unemployed, with complementary programmes related to adult education, skills-building programmes, microfinance and job intermediation. One of the reasons for suspension of the benefit is refusal of a job by the unemployed beneficiary. CCT programmes for children's education are also mentioned as a complementary programme that could be linked to the SWF. It is interesting to note that the SWF has a CCT-type of conditionality, as beneficiaries' failure to enrol their school-age children in school is listed as one of the reasons for suspension of the benefits. However, these sanctions were never enforced.

Another important reform in 2008 was the increase in the amount of the benefit; in part due to the food price crisis, the monthly maximum amount received by a beneficiary household increased from 2,000 to 4,000 Yemeni rials. More than 90 per cent of SWF beneficiary households have just one beneficiary (the person who is registered with the SWF to receive the money). The beneficiary receives 2,000 rials per month plus an additional 400 rials for each dependant up to a maximum of six family members. As payments are made quarterly, this translates into a maximum benefit of 4,000 rials per month and 12,000 rials per quarter. Payments are supposed to take place every quarter, mostly through the post office or cashiers[37] and a small minority through banks.

These new SWF benefit values were introduced in the second half of 2008. The accumulated inflation[38] of 76.58 per cent from July 2008 to September 2013 (last month of the NSPMS) means that the real value of the 4,000 rials is actually 2,265.30 rials at July 2008 prices. Thus, most of the 100 per cent increase granted to the SWF benefit in 2008 has already been eroded by inflation, which may jeopardize the impact of the programme on the living standards of the beneficiaries.

The current value of the maximum quarterly transfer is $56 (United States), which is approximately $18.30 per month and less than roughly $0.60 per day per family. In a typical family of six, that would give a per capita benefit of $0.10 per day. Basgash et al.[39] mention that this amount is only enough to buy six pieces of bread. However, they report that beneficiaries who were part of their interviews and focus group discussions mentioned that they value the regularity of the transfer and that the benefit has mostly been used to pay for electricity and water bills, send their children to school, purchase food and finally to repay debts. There were some differences in their responses depending on the local context (urban or rural) and whether the beneficiary was a woman (more concerned about a child's education and food availability) or man (worried about repaying debts). In chapter 11 of this report, we will assess differences in a series of indicators of well-being between SWF beneficiaries and non-beneficiaries; thus, it is important to bear in mind the limited scope that the transfer has to affect these indicators in a substantive way.

THE SWF AND THE NSPMS: AN OVERVIEW OF SWF IMPLEMENTATION IN 2012-2013

The incorporation of the new beneficiaries identified in the 2008 CSS has taken place in an uneven and unbalanced way. A sizeable group of them were paid once in the first quarter of 2011, after which their payments were suspended due to lack of funds. The payments to these new SWF beneficiaries resumed in the last quarter of 2012, jointly with the gradual inclusion of the remaining new beneficiaries in the database, at the same time that the NSPMS was going into the field.

The new beneficiary households that had received the first payment back in 2011 were receiving the accumulated amount for the five quarters as a lump sum, which amounted to 30,000 rials (60,000 rials) for those who receive the SWF benefit minimum (maximum) amount of 6,000 rials (12,000 rials) quarterly, whereas old beneficiary households were normally paid during the crisis. This process of incorporation of new

beneficiaries has been captured by the NSPMS throughout its 12 months of data collection. Table SWF.1 shows that the population living in households with at least one beneficiary of the SWF increased from 30 per cent in round 1 of the survey (October-December 2012) to 35 per cent in round 4 (July-September 2013).

Table SWF.1:
Proportion of SWF Beneficiaries (%), Yemen, 2012-2013

Round	Households	Individuals
Oct-Dec 2012 (round 1)	28.60	29.86
Jan-Mar 2013 (round 2)	31.03	32.64
Apr-Jun 2013 (round 3)	32.54	34.48
July-Sep 2013 (round 4)	33.10	35.28

Source: NSPMS, All Rounds.

At the beginning of 2013, the SWF administrative information accounted for 1,507,093 regular beneficiaries as shown in Table SWF.2.[40] About 51 per cent of these beneficiaries were under the economic categories and 49 per cent were under the components of the social categories. The largest individual category was the elderly, 34.6 per cent of the total number of beneficiaries, followed by the two economic categories, namely, the unemployed, at 27.6 per cent, and women without a breadwinner, at 23.5 per cent. Persons with a disability account for 10.6 per cent of the total number of SWF beneficiaries, and the number of orphans was quite residual, at 0.4 per cent. Comparing this distribution to the one of the NSPMS sample, we can see that the distribution of the NSPMS is quite similar to the total population of SWF beneficiaries. This is quite impressive as no SWF administrative information was used in the sampling strategy of the NSPMS. The relevant difference between the two distributions is that our sample was not able to capture a similar proportion of orphans compared the one reported by the SWF administrative information.

Table SWF.2:
Distribution of SWF Beneficiaries by Categories According to SWF Administrative Information and the NSPMS Sample

Categories	Number of beneficiaries	%	NSPMS Sample	%
Social				
Permanent fully disabled	38,983	2.6	74	2.3
Permanent partially disabled	115,201	7.6	223	7.0
Temporary fully/partially disabled	5,724	0.4	11	0.4
Orphans	7,235	3.8	53	1.7
Elderly	520,879	34.6	1,145	36.0
Economic				
Women without breadwinner	353,469	23.5	743	23.3
Unemployed men	415,602	27.6	936	29.4
Total	1,507,093	100.0	3,185	100

Source: NSPMS (Round 1) and SWF administrative information.

As for the division between old and new beneficiaries, table SWF.3 shows that 33 per cent of the SWF beneficiaries were new beneficiaries, i.e., they started receiving SWF benefits after the 2008 CSS, which means they were accredited into the programme in 2011, but their payment was not normalized until after October 2012.

Table SWF.3 also shows that Al-Jawf (56 per cent), Al-Baidha (55 per cent) and Hajjah (54 per cent) are the governorates with relatively larger proportion of new beneficiaries, which means that relative to the

number of old beneficiaries, the SWF expanded more in these governorates after the 2008 CSS and the implementation of the PMT formula. Nevertheless, the largest proportion of beneficiaries is found in the most populous governorates – Taiz (13 per cent), Hodeida (10 per cent) and Ibb (9 per cent) – as their absolute numbers of poor people are higher, regardless of their poverty rates.

Table SWF.3:
Number of Beneficiaries by Governorate and Case Type (Old and New Beneficiary), Yemen, First Quarter 2013

Governorate	Old beneficiary	%	New beneficiary	%	Total	%
Ibb	117,885	84%	21,989	16%	139,874	9%
Abyan	36,437	73%	13,768	27%	50,205	3%
Sana'a City	51,924	75%	17,358	25%	69,282	5%
Al- Baidha	26,729	45%	33,061	55%	59,790	4%
Taiz	142,390	75%	47,800	25%	190,190	13%
AL-Jawf	23,325	44%	29,164	56%	52,489	3%
Hajjah	65,488	46%	75,682	54%	141,170	9%
Hodeida	100,221	69%	44,264	31%	144,485	10%
Hadhramout Al-Mukila	34,548	81%	7,978	19%	42,526	3%
Hahdramout Saiuon	22,605	74%	7,782	26%	30,387	2%
Dhamar	63,308	90%	7,021	10%	70,329	5%
Shabwa	35,366	58%	25,147	42%	60,513	4%
Sa'ada	28,413	75%	9,601	25%	38,014	3%
Sana'a	38,894	66%	19,978	34%	58,872	4%
Aden	33,889	83%	7,123	17%	41,012	3%
Lahj	44,378	54%	37,841	46%	82,219	5%
Mareb	17,311	70%	7,520	30%	24,831	2%
Mahweet	26,298	70%	11,090	30%	37,388	2%
Al-Mahrah	12,426	96%	524	4%	12,950	1%
Amran	43,172	54%	36,851	46%	80,023	5%
Al-Dhale'e	25,015	56%	19,910	44%	44,925	3%
Rayma	23,532	66%	12,087	34%	35,619	2%
Total	1,013,554	67%	493,539	33%	1,507,093	100%

Source: SWF administrative information.

The NSPMS had a specific module to capture a rich set of information about the SWF beneficiaries. However, some of the information proved to be very poorly reported by beneficiary household respondents, particularly the questions related to which year and month the beneficiary (or beneficiaries) in the household started receiving the SWF benefit, for which information was missing for half of the households which said that they had at least one SWF beneficiary. This information is important because it would allow us to separate out old and new beneficiaries. This is especially significant as the new beneficiaries, unlike the old ones, had to pass a PMT to receive the benefits. Moreover, new beneficiaries were receiving lump-sum payments particularly in rounds 1 (October-December 2012) and 2 (January-March 2013) whereas old beneficiaries received normal payments. This lump-sum payment may have affected expenditure and consumption decisions as well as other indicators analyzed in this report, so that new beneficiaries may have experienced different impacts of the SWF when compared both to non-beneficiary households that never received the transfer and old beneficiaries that had been receiving the transfer without such a long period of interruption, although delays in payments were frequent for this group, as reported in Bagash et al. (2012) and as can be seen in the round 4 data of the NSPMS discussed below.

One way to circumvent this problem is to merge the NSPMS with the SWF administrative database in order to identify new and old SWF beneficiaries. This was done through the SWF card number asked during the survey interviews. However, because some of the beneficiaries did not provide their SWF card number at the moment of the interview,[41] it was necessary to develop a methodology to separate the old and the new SWF beneficiaries in the NSPMS database. This methodology is described briefly below.

Table SWF.4 shows the classification of SWF beneficiaries in our sample into new and old beneficiaries as per the SWF administrative information. There are 734 SWF beneficiaries in the NSPMS that were not matched with the SWF administrative database due to insufficient information to perform the match (mostly lack of knowledge of the SWF card number or misreporting). These are the cases for which we have developed a methodology based on the total amount of SWF transfers received during round 1 (October-December 2012) and the self-reported year of accreditation into the programme.

Table SWF.4:
Distribution of Beneficiary Type by Year of Enrolment in SWF, Yemen, 1997-2011

Year	Old	New	Missing	Total
1997	213	0	0	213
1998	205	0	0	205
1999	304	0	0	304
2001	211	0	0	211
2002	22	0	0	22
2003	197	0	0	197
2004	202	0	0	202
2005	200	0	0	200
2006	398	0	0	398
2007	199	0	0	199
2008	12	0	0	12
2011	2	984	0	986
Missing	3	0	734	737
Total	2,168	984	734	3,886

Source: NSPMS (Round 4) and SWF administrative information.

From table SWF.4, it is also clear that new beneficiaries started receiving SWF benefit only in 2011. These are the cases that only received one payment in the first quarter of 2011, and then when payment resumed, received a lump sum in 2013. The latter can be clearly identified in the NSPMS data. Figure SWF.1. depicts the histogram of the SWF payments in the first (October-December 2012) and fourth (July-September 2013) rounds of the NSPMS. Whereas there are spikes for values around 30,000 rials and above, especially for 60,000 rials in round 1 (white bars), the spikes in round 4 (grey bars) are mostly around 6,000, 12,000 and 24,000 rials. Figure SWF.2 shows that the payments shown in figure SWF.1. corresponded largely to payments in arrears for 12 months or more, whereas in round 4, payments were mostly in arrears for six months, and in round 1, they were related to arrears from 12 to 18 months, with a peak at 15 months, which explains the larger benefit values observed for round 1 in figure SWF.1.

In order to impute the type of beneficiary (old or new) to the households whose beneficiaries were not matched into the SWF administrative database (table SWF.4), the following procedure was adopted. Based on the self-reported definition of the SWF beneficiary in round 4 of the NSPMS, households where classified as new beneficiaries if their individual beneficiary had:

1. Received 30,000 rials or more in round 1;

2. Received less than 30,000 rials but became a SWF beneficiary after 2011 in round 4.

Figure SWF.1:
Distribution of SWF Payments (in Yemeni Rials), Yemen, 2012-2013

How much did this household receive from the swf in the last payment?
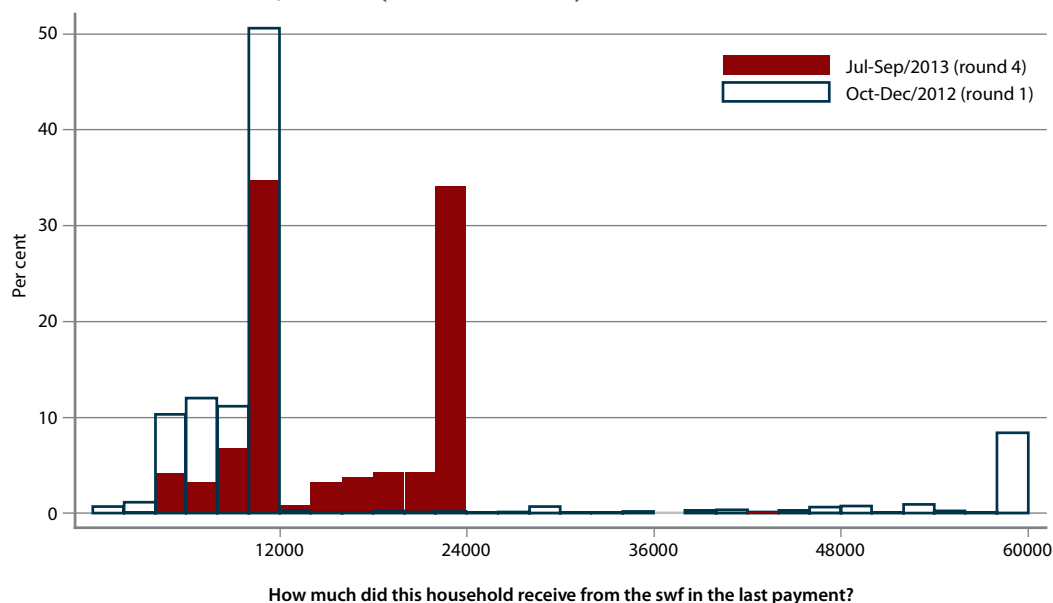
Source: NSPMS, Rounds 1 and 4.

Figure SWF.2:
Period of Reference in Months of Last SWF Benefit Received, Yemen, 2012-2013

What was the corresponding period of the last payment?
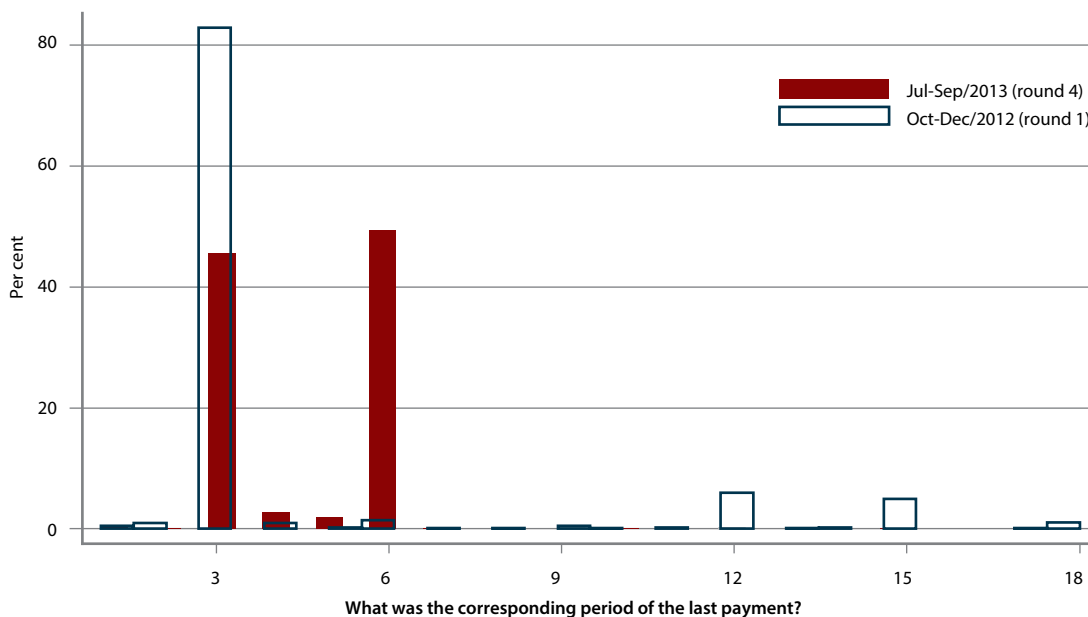
Source: NSPMS, Rounds 1 and 4.

This imputation was restricted to households which stayed in the NSPMS for the four rounds (balanced sample), as we are interested in documenting separately the evolution of indicators for new and old beneficiaries. Figure SWF.3 shows the distribution of SWF payments by type of beneficiary for both round 1 and round 4. It makes clear the difference in the amounts paid in round 1 and round 4 for the new beneficiaries. Moreover, in round 4 there is no difference between the distributions of payment between the two types.

Based on the classification described above, table SWF.5 shows that 35.2 per cent of the Yemeni population live in a household with at least one SWF beneficiary. One third of the households are new beneficiaries which started benefiting from the programme after the 2008 CSS and the use of the PMT to select new beneficiaries.

Figure SWF.3:
Distribution of SWF Payments by Beneficiary Type (in Yemeni Rials), Yemen, 2012-2013
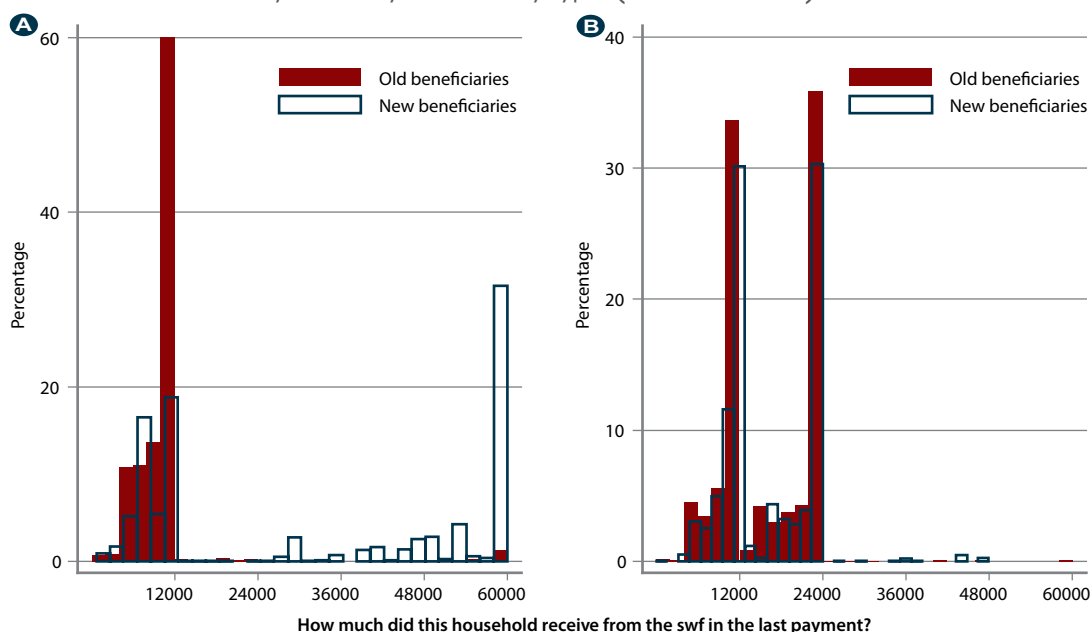
*Sources: **A** - NSPMS (Round 1), **B** - NSPMS (Round 4).*

Table SWF.5:
Classification of Yemeni Population by Beneficiary Status (%), Yemen, 2013

	Population	SWF beneficiary population
Old beneficiary	23.4	66.5
New beneficiary	11.8	33.5
Total beneficiary	35.2	100
Remaining Population	64.8	
Total	100.0	

Source: NSPMS, Round 4.

As for how beneficiaries are paid, the NSPMS shows that most SWF benefit payments (74 per cent)are done through the post office, followed by cashiers (14 per cent) as shown in table SWF.6. Only a tiny proportion of beneficiaries get their benefit through banks. There are no major differences between old and new beneficiary in terms of payment methods, although a lower proportion of new beneficiaries get their payment through the post-office and a higher proportion through another type of payment and cash from cashiers. Also, new beneficiaries are more often paid via Al-Amal Bank, whereas old beneficiaries are paid via CAC Bank.

Even though SWF beneficiaries in the NSPMS have reported values that are different (and in some cases) smaller than what is normally paid through the SWF, it is hard to prove through the NSPMS data that values lower than the regular amount (or multiples of it) are due to irregular fees charged by the people responsible for delivering the cash to the beneficiaries, as suggested in the SWF qualitative assessment.[42] At least part of the difference in values may be measurement error due to misreporting, rounding and digit preference.

However, it is striking that the few payments made through banks have much clearer spikes in the right amounts than other payments methods. Figure SWF.4 shows that payments reported to have been made through banks (white bars with black border) show much less dispersion of values than payments received through other methods (grey bars). Moreover, the spikes of the distribution of the SWF payments made by banks do correspond to the normal values of SWF (including multiples of it). This striking difference between bank payment and other methods raises the question of how to better monitor the amount of money that is actually reaching the beneficiary in order to avoid leakage and fraud that can jeopardize the objectives of the programme of smoothing consumption and fighting poverty.

Table SWF.6:
Prevalence of Payment Methods by Type of Beneficiary (%), Yemen, 2013

Payment method	Total	Old	New
Post Office	74.4	76.16	69.46
CAC Bank	1.0	1.42	0.38
Al-Amal Bank	0.4	0.06	1.11
Cash from cashier	14.0	12.82	15.48
Other (proxy, representative from Post Office, sheik, etc.)	10.2	9.54	13.58

Source: NSPMS, Round 4.

Figure SWF.4:
Distribution of SWF Benefit Received by Payment Method, Yemen, 2013
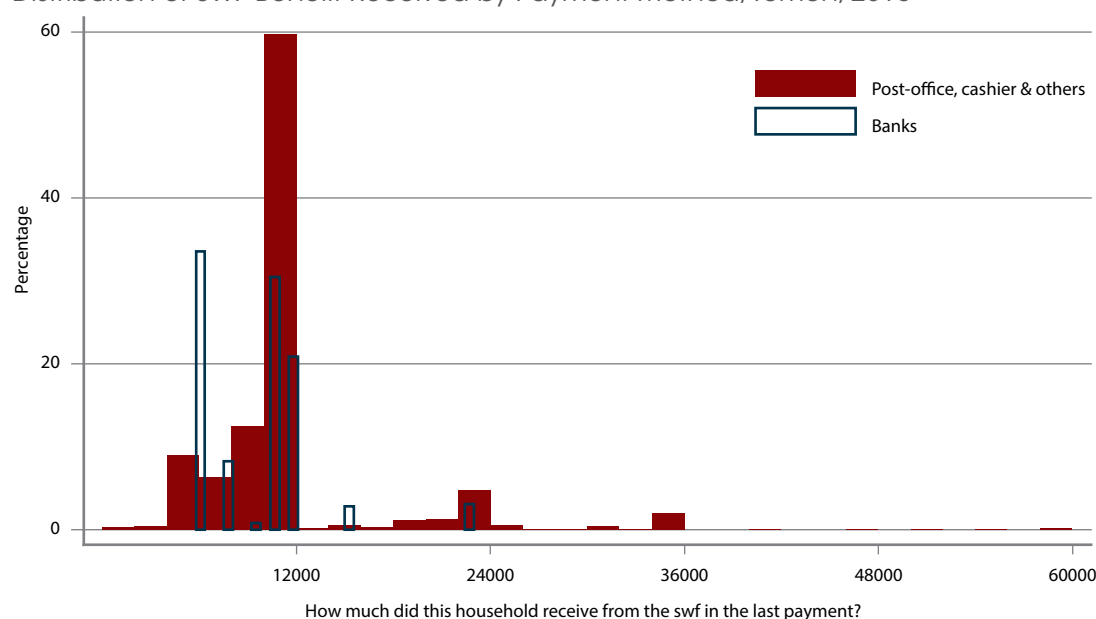
Source: NSPMS, Round 4.

2.2 The Targeting of the SWF

As discussed in the introduction of this section, a PMT formula was developed to be applied to the 2008 CSS database in order to better target the SWF benefits to those more in need. This formula classifies beneficiaries and potential beneficiaries into groups A, B, C, D, E and F, where E and F are the non-poor. We have applied the PMT formula to the NSPMS data and the results are summarized in table SWF.7.

According to the PMT formula, about 45.3 per cent of the Yemeni population were living in poverty[43] (groups A to D) by the end of 2012 (round 1). Extreme poverty (A+B) was at 14.3 per cent. Table SWF.7 also shows the distribution of SWF beneficiaries and their two subsets, old and new beneficiary groups, across the PMT groups. The new beneficiaries seems to be poorer and more concentrated among the extreme poor than the old beneficiary group and the overall population. Whereas 29 per cent of the new beneficiaries are extreme poor according to the PMT formula, only 19 per cent of the old beneficiaries fall into this category. However, for the overall poor population, both groups show a similar pattern: 54.7 per cent of the new beneficiaries and 53.8 per cent of the old beneficiaries are actually poor. This performance is similar to the one observed in a previous assessment of the SWF (2007 poverty assessment), suggesting a leakage around 45 per cent of the SWF towards the non-poor (groups E and F).

Nevertheless, it is interesting to observe that the PMT formula did not help to improve the targeting performance as much as one would expect using the poor/non-poor divide. Yet, looking at the extreme

poverty, it is clear that the PMT has helped to increase the proportion of extreme poor among the SWF beneficiaries at the expense of the better-off group (F). Thus, it seems that the use of PMT targeting in the Yemeni context performs better than the former subjective method when trying to identify the extreme poor.

Table SWF.7:
Distribution of Beneficiary Status by PMT Groups, Yemen, 2012

GROUP	Non-beneficiaries	Old beneficiary	New beneficiary	Total
A	1.7	3.7	4.2	2.5
B	8.1	15.3	24.7	11.8
C	12.3	14.2	8.4	12.3
D	18.5	20.5	17.4	18.8
Poor (A+B+C+D)	40.5	53.8	54.7	45.3
E	18.6	16.7	18.2	18.1
F	40.9	29.5	27.1	36.6
Non-Poor (E+F)	59.5	46.2	45.3	54.7
Poor + Non-Poor	100.0	100.0	100.0	100.0

Source: NSPMS, Round 1.

As for the coverage of each PMT group, table SWF.8 shows that the smaller under-coverage is observed for the extreme poor group (A+B), and then under-coverage increases with the PMT groups, revealing the good performance of the SWF at excluding those who are better off. However, it is still necessary to improve coverage, as 44 per cent of the extreme poor are still not covered by a programme that covers 35 per cent of the population.

Table SWF.8:
Distribution of PMT Groups by Beneficiary Status, Yemen, 2012

PMT groups	Non-beneficiaries	Old beneficiary	New beneficiary	Total
A	44.2	35.5	20.3	100
B	44.3	30.9	24.8	100
C	64.5	27.4	8.1	100
D	63.3	25.9	10.9	100
E	66.3	21.9	11.9	100
F	72.1	19.1	8.8	100
Total	64.5	23.7	11.8	100

Source: NSPMS, Round 1.

Two factors may help to explain the difficulty of the PMT in improving the targeting of the SWF in a substantive way. The first factor relates to levels of income inequality and poverty in Yemen. High levels of income poverty as shown above combined with low levels of income inequality make it harder to try to predict income poverty status based on a small set of observable variables. This challenge was pointed out by Leite et al.[44] in an assessment of the SWF PMT, in which the authors highlighted the small gap between the poor and the non-poor, making it very difficult to characterize the income poor. Figure SWF.5 shows that there is an association between higher levels of poverty and inequality in a cross-country comparison. However, Yemen is situated below the regression line (red round symbol in the graph), which means that given its level of poverty, it has less inequality that what would be expected. For this reason, we opt to classify the income poverty levels given by the PMT formula into extreme poor (A+B), moderate poor (C+D), vulnerable (E) and non-poor (F). Jointly with the wealth quintiles, this classification will be used to assess inequities in access to public utilities, health and education services as well as child indicators, work and income, and food security.

Targeting Analysis Based on the Wealth Index

We find somewhat different results in terms of targeting performance when assessing the targeting using the Wealth Index similar to the ones calculated in the2006 MICS. This finding reinforces the difficulty in clearly identifying the poor based on observable variables in a country with high levels of poverty and low inequality. Table SWF.9 shows that, differently from the PMT group results, the wealth quintile analysis suggests that old SWF beneficiaries seem slightly more concentrated at the lower end of the distribution of the wealth index than the new beneficiaries. Nevertheless, the key message that the programme is slightly pro-poor is still true, using this alternative measure of household well-being instead of the predicted per capita household expenditure as in the PMT groups.

Table SWF.9:
Distribution of SWF Beneficiary Groups by Wealth Quintiles, Yemen, 2012

Wealth quintiles	Non-beneficiaries	Old beneficiaries	New beneficiaries	Total
Poorest	19%	22%	21%	20%
Second	19%	25%	18%	20%
Third	18%	23%	22%	20%
Fourth	19%	21%	25%	20%
Richest	25%	9%	14%	20%
Total	100%	100%	100%	100%

Source: NSPMS, Round 1.

Similar to the results based on the PMT groups, the Wealth Index results reported in Table SWF.10 suggest sizable exclusion of the poorest (quintile) and more vulnerable population (second and third quintile) that needs to be tackled. However, it also shows that the SWF targeting is able to exclude the richest quintile from the programme.

Table SWF.10:
Distribution of Wealth Quintiles by SWF Beneficiary Groups, Yemen, 2012

Wealth quintiles	Non-beneficiaries	Old beneficiaries	New beneficiaries	Total
Poorest	61%	27%	12%	100%
Second	60%	30%	11%	100%
Third	59%	27%	13%	100%
Fourth	61%	24%	15%	100%
Richest	81%	11%	8%	100%
Total	65%	24%	12%	100%

Source: NSPMS, Round 1.

Throughout this section, we will concentrate the results based on the results based on the PMT groups as they offer a more accurate description of monetary poverty in Yemen, allowing poverty cut-off points to vary by governorate and area of residence (rural and urban), unlike the wealth index that is estimated for the country as whole.

Figure SWF.5:
Association Between Poverty and Inequality, Selected Countries
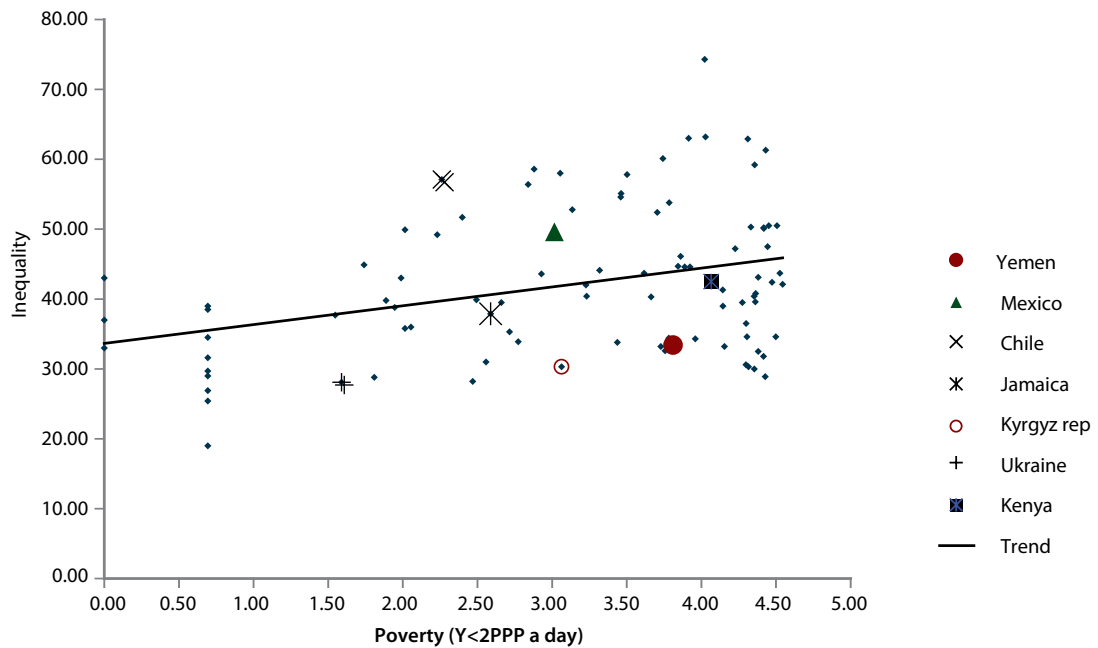
Source: Leite et al. (2011).

The second factor has to do with the categorical nature of the SWF targeting. The categories of the SWF and the demographic profile of beneficiary households are not necessarily most prevalent among the poorest households in Yemen. Figure SWF.6 shows the age structure of both SWF beneficiaries and the eligible population as per the social and economic categories. It is striking how similar the two distributions are.

Figure SWF.6:
Age Structure of Both SWF and SWF-eligible Population (Categories), Yemen, 2012

Proportion of SWF beneficiares

Proportion of SWF categories (eligible)
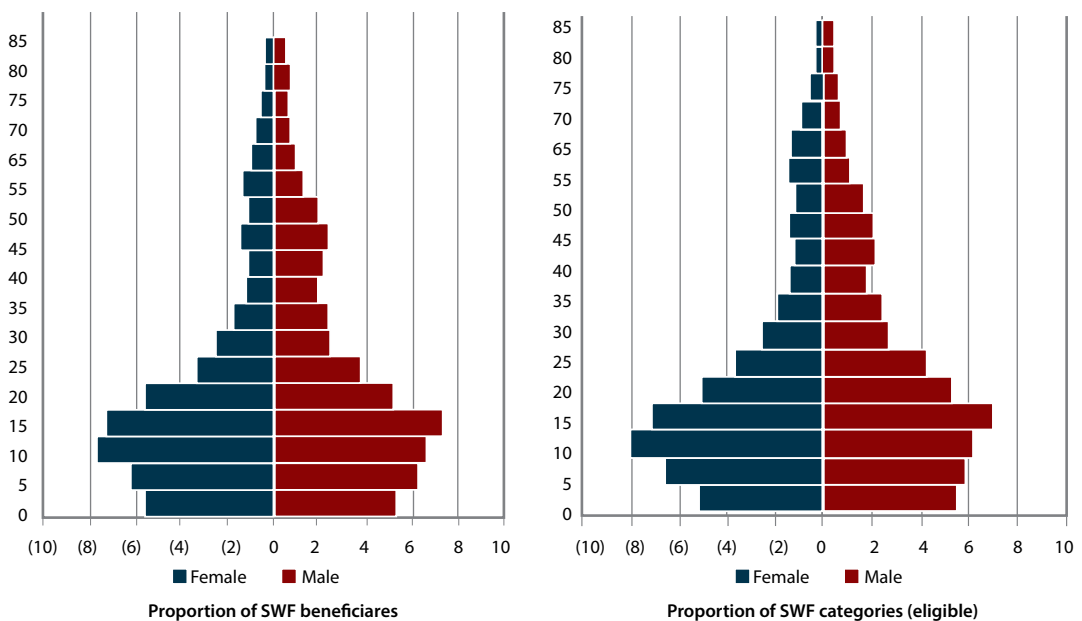
Source: NSPMS, Round 1.

Figure SWF.7 shows the distribution of the age pyramid for four groups: total population; SWF beneficiaries; the extreme poor (A+B); and the poor (A to D). Compared with the total population distribution by age groups,

the SWF beneficiary households have a lower proportion of children and a relative larger proportion of elderly people. This pattern is similar for both the male and female populations. The distribution of the poor and extreme poor, particularly the latter, is much broader at the base than that observed for the total population and for SWF beneficiaries. This suggests that the age distribution of SWF beneficiaries is at odds with the age structure of the poor and extremely poor populations. Such a result is not surprising given the similarity between the age structure of SWF beneficiaries and their social and economic categories as shown in figure SWF.6.

Figure SWF.7:
Distribution of Age Pyramid of the Total, SWF Beneficiary, Extreme Poor and Poor Populations, Yemen, 2012
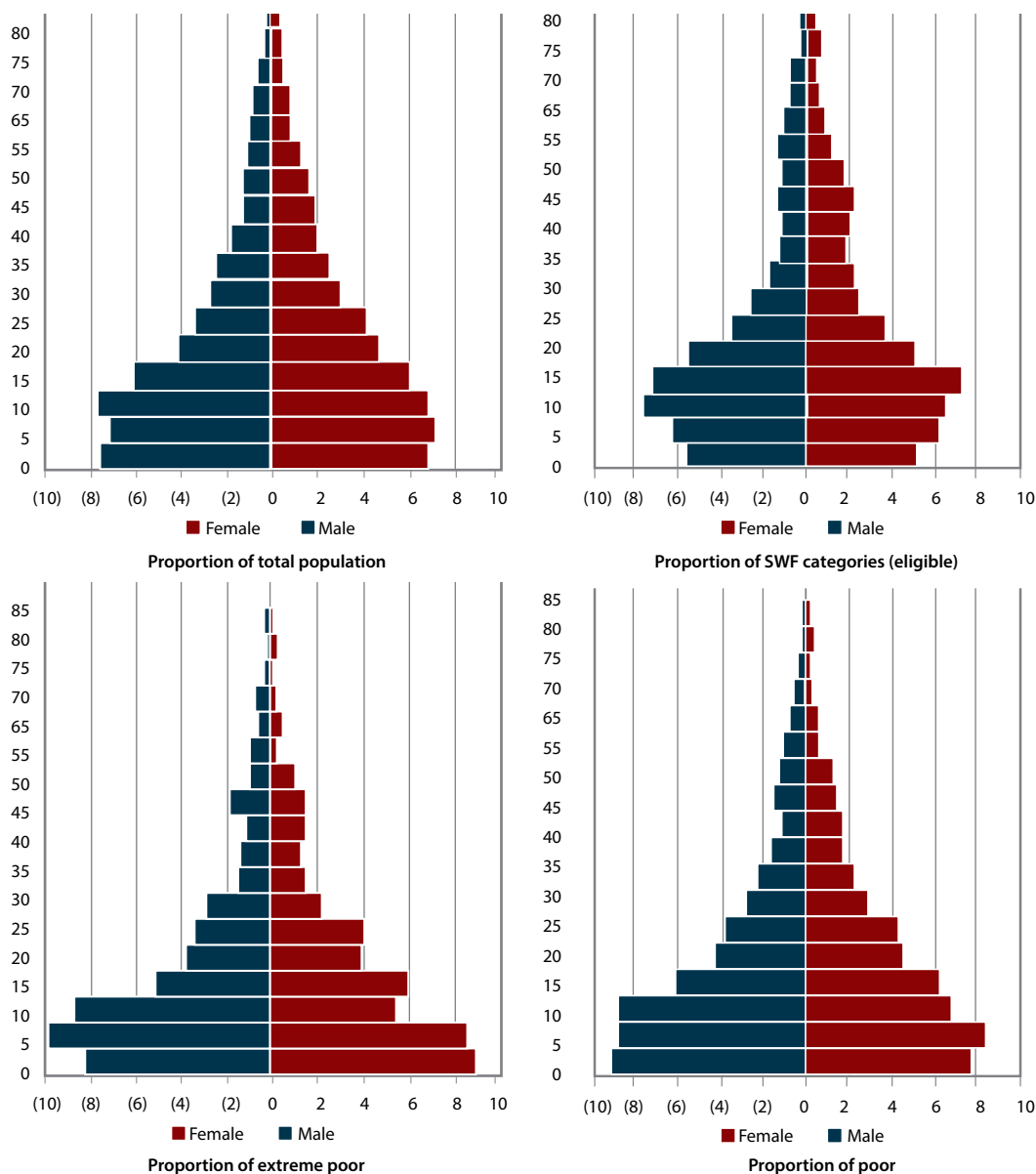
Source: NSPMS, Round 1.

Figure SWF.8 adds the disaggregation of SWF beneficiaries between old and new types to this discussion. As mentioned in the introduction to this section, whereas new beneficiaries were screened by the PMT formula, old beneficiaries were selected based on their categorical characteristics and some subjective assessment of their needs. In comparing the age pyramid distribution of old and new beneficiaries, it is clear that the age distribution of the new beneficiaries is much more concentrated among the younger ages (broader in the base) than the age structure of the group of old beneficiaries. Moreover, its shape is also

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closer to the one illustrating the poor and extreme poor seen in figure SWF.6. This analysis corroborates the findings of the targeting analysis summarized in table SWF.7. Thus, even though the PMT formula does contribute to making the SWF more pro-poor (better targeted), particularly among the extreme poor, its potential to dramatically change the targeting performance of the programme is very limited by the difficulty of having a clear set of variables (and weights) to distinguish between the poor and the non-poor and by the age profile of the SWF categories that does not match the age profile of the poor and extreme poor population in Yemen.

Figure SWF.8:
Distribution of Age Pyramid of the Total, SWF, Old SWF Beneficiaries and New SWF Beneficiaries, Yemen, 2012
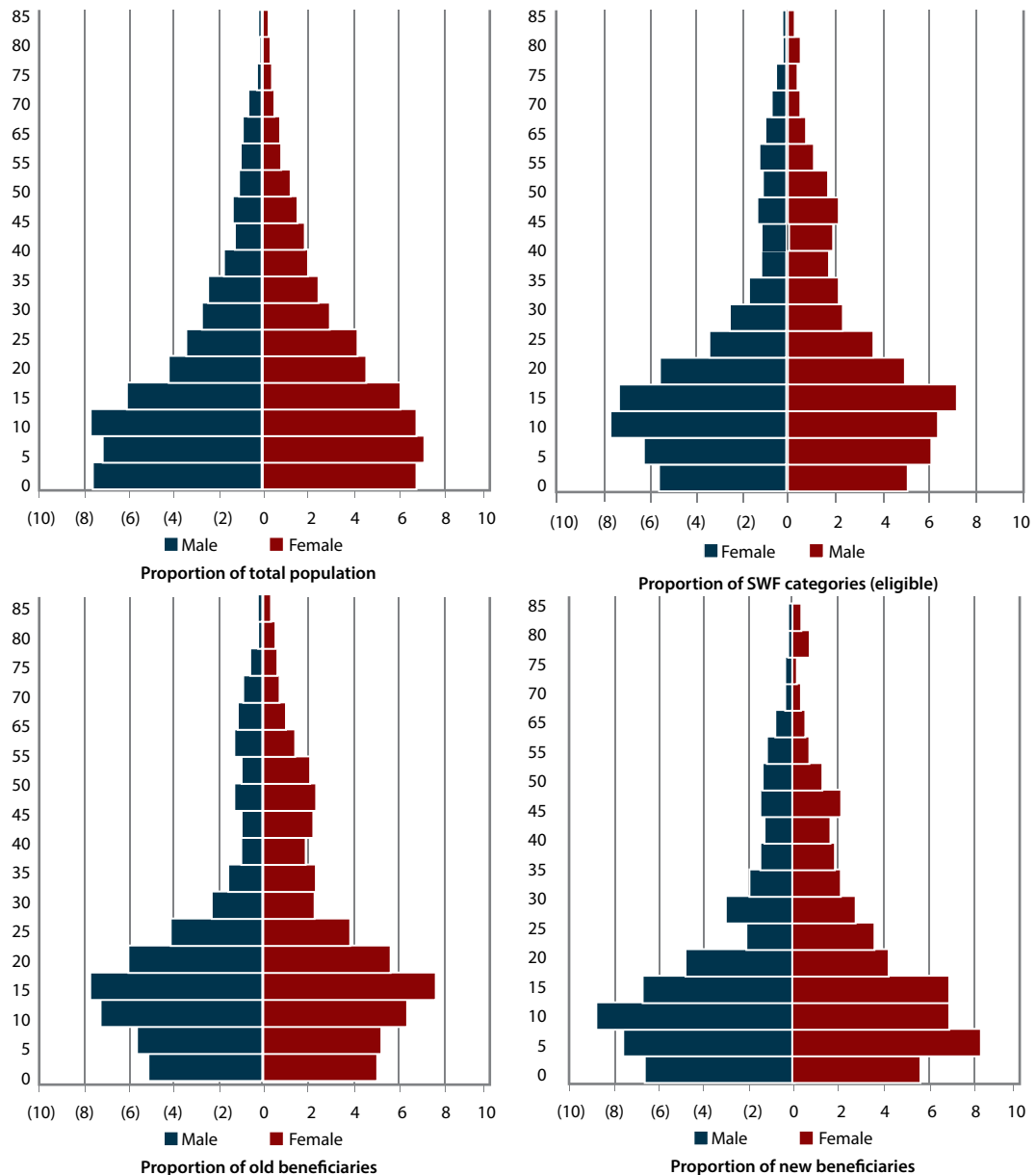
Source: NSPMS, Round 1.

2.3 Concluding Remarks

Based on the NSPMS data, four basic messages come out from the SWF implementation and targeting assessment:

1. The SWF is a large cash assistance programme that was covering 35 per cent of the population of Yemen by mid-2013;

2. the SWF is active on the ground and has resumed payments to the 'new beneficiaries' that were due to be incorporated into the programme in 2011, although delays still happen as documented in round 4 of the survey (July-September 2013), when a large proportion of beneficiaries received the amount equivalent of two quarters due to arrears;

3. the SWF is slightly pro-poor with regards to its target. It does a relatively good job in excluding most of the top income group (F) from the programme, but it fails to incorporate about 44 per cent of the extreme poor (A+B);

4. there is evidence that the PMT methodology has improved the quality of the targeting of the SWF, but it has done so to a very limited extent. This is basically due to two factors:

   a. the difficulty in disentangling the poor from the non-poor using observable variables given high levels of income poverty and low levels of income inequality;

   b. the mismatch between the demographic pattern of the extreme poor and the poor and the SWF social and economic categories. The poor and extreme poor households have a relatively larger proportion of young people, particularly children 0-9 years old, but this group tends to be underrepresented among SWF beneficiaries and SWF social and economic categories.

The persistence of the relatively high level of inclusion error (leakage) can be partially explained by the failure to graduate the 'old beneficiaries' – around 273,000 – who did not qualify according to the PMT formula. This would have rendered the distribution of old beneficiaries more similar, in a demographic perspective, to the one of new beneficiaries.

However, perhaps more worrying than the leakage to the non-poor is the high level of exclusion error observed in the survey. In order to decrease this exclusion error, more than reducing the inclusion errors captured by the PMT (releasing resources to be used elsewhere), it is necessary to revise the SWF categories and/or to complement Yemen's social protection programmes with an intervention that targets families with young children. This is a 'win-win' strategy, as it would better proxy the demographic composition of the poor and even more of the extreme poor, and at the same time would address key developmental objectives and enforce children's rights. As it is shown in the rest of this report, the children of Yemen suffer from multiple deprivations and a consistent social protection system needs to be responsive to these challenges. Thus, social assistance programmes that facilitate access to health and education and at the same time improve the food expenditure/consumption and dietary diversity of poor and extreme poor families are fundamental to improvement of the living standard of children in the country.

Thus, the challenge for the SWF is to continue its expansion with clearer targeting criteria and to graduate those who do not qualify for the programme. A medium-term staggered graduation process, as suggested by Bagash et al.,[45] could be designed with clear rules and adequate information for the beneficiaries, especially the old ones. The implementation of the legal minimum period of two years for economic categories and five years for the social categories to have the eligibility status reassessed seems to be an important first step. Such a process would enhance the targeting performance of the programme (reducing both exclusion and inclusion errors) and improve its transparency. Priority for the incorporation of new beneficiaries should be given to the poorest and more vulnerable households, in line with the spirit of the 2008 SWF Law, rather than simply using the social and economic categories without any PMT filter or further consideration about who are the most prevalent categories among the poor and extreme poor as shown in this section. As shown in this chapter, it is important to think about ways to include more families with children in the programme.

Some experiments are taking place at the district level with the replacement of non-eligible beneficiaries by eligible cases. These pilots must be evaluated and if proved successful could be scaled up. This process should be facilitated with the current implementation of the new SWF Monitoring and Information System and new communication strategy that will improve accountability and transparency of the programme. Finally, given the erosion of the real value of the SWF benefit caused by inflation, it is important to consider a mechanism to update the current values.

3 The State of Household Living Conditions

Adequate housing and shelter is a human right recognized by Article 25 of the Universal Declaration of Human Rights: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control". In addition, it is also an economic, social and cultural right recognized by Article 11 of the International Covenant on Economic, Social and Cultural Rights.

To fulfil this right it is not enough to have access to a place to live. This shelter/house needs to have the essential elements for a dignified human life, such as durable structure and safe access to electricity, water and sanitation, among others. This section seeks to describe Yemeni household living conditions and their main characteristics through the following indicators:

Housing characteristics:
- durability of housing;
- crowding;
- access to electricity;
- access to solid fuels;
- household use of bednets;

Water:
- drinking water sources;
- use of adequate water treatment;
- time to source of drinking water;

- water consumption;

Sanitation:
- use of improved sanitation facilities.

To allow comparability with the 2006 multiple indicator cluster survey (MICS),[46] the same methodology for calculating housing indicators has been adopted as far as possible in the present chapter.

3.1 Durability of Housing

Durability of housing is defined as the percentage of households whose housing unit is considered durable, judging by the materials used to build the roof, walls and floor. According to the United Nations Human Settlement Programme (UN-Habitat),[47] "durable housing is generally defined as a unit that is built on a non-hazardous location and has a structure permanent and adequate enough to protect its inhabitants from the extreme of climate conditions such as rain, heat, cold, and humidity." The criteria that define permanent housing can vary by countries. For example, "wood is considered durable in developed regions, but not in most developing countries. Other building materials are classified as rudimentary (e.g., mud or palm), but in certain cases, they are recorded as permanent".[48]

In the NSPMS, households were asked about the nature of their roof, wall and flooring materials. In order to define which materials are considered 'durable' in the specific case of Yemen, the experts from Interaction consulting – responsible for the NSPMS data collection – and UNICEF Yemen were consulted.
A housing unit can be classified as durable if it is built out of the materials listed in box H.1:

Box H.1:
Durable Physical Structure Materials Used to Build a House

Durable roof	Durable walls	Durable floor
Reinforced concrete	Fine-finished stone	Concrete
Wood covered by cement	Rough stone	Tiles
Wood covered by clay layer	Concrete blocks	Stone
	Sun-dried mud bricks (adobe)	Marble

Source: Adapted from UN-HABITAT (2006).

Table H.1 shows the percentage of households that have a durable roof, walls and floor, separately. In the first column, the three main physical structure materials are combined to determine house durability, i.e., the percentage of households that have all three durable materials together.

A high percentage of Yemeni households use durable walls and especially durable roof materials in their construction: 86.3 per cent use adequate materials for walls, and 90.6 per cent for roofing. Among the durable materials for walls and roofs, the use of fine-finished stone and concrete blocks (wall) and reinforced concrete (roof) is more prevalent in non-poor households as shown in table H.3. The strong association between building materials (wall and roof) and level of poverty is observed when performing F-tests (table H.4).

With regard to the material used for the floor, only slightly more than half of Yemeni households have a durable floor, and the difference between areas of residence is very high: 81.9 per cent in urban and 44.3 per cent in rural residences (table H.1). Among the durable materials for flooring, the use of concrete (46.9 per cent) and tiles (20.6 per cent) is predominant among the non-poor (table H.3). Although the flooring categories have been used in the calculation of wealth index, the association between them was tested and, as expected, a positive association was observed (table H.4).

Results show that the richer the household, the greater the likelihood that durable materials are used for building. In addition, durable materials that are more resilient and have better finishing, such as fine-finished stone (wall), reinforced concrete (roof) and tiles (floor), are more prevalent in the upper quintile of the wealth distribution (table H.1).

As for topographical areas, less than 10 per cent of the households in the Red Sea coastal area are constructed out of durable materials, and in the remaining areas (Arabian Sea coastal area, mountainous and plateau/desert), more than 55 per cent of the households are classified as durable.

Due to a very low prevalence of use of durable material in floors in Yemen, only 52.4 per cent of the Yemeni households were considered made of durable material (table H.1). As expected, this percentage has not significantly changed since the end of 2012 (table H.2).

3.2 Crowding

Crowding is defined as the percentage of households living in crowded conditions, which means more than three persons sharing the same room.[49] The absence of sufficient living area can have adverse effects on people's physical and mental health due to several reasons, such as poor hygiene practices, lack of privacy and sleep, among others.

In Yemen, 38.8 per cent of households have more than three persons per room (table H.5). The situation is worse in rural areas, where the incidence of crowding reaches 44.5 per cent of households. In urban area, 21.9 per cent of households are deprived of sufficient living space. The crowding indicator drops considerably along the wealth quintiles. Figure H.1 shows that two thirds (67.7 per cent) of the extreme poor households live in crowded conditions and consequently are more likely to suffer from the associated problems. This percentage falls to 24.7 per cent when considering the non-poor households. Approximately 62 per cent of the crowded households have an additional problem of not having roof, floor and walls constructed out of durable materials (figure H.2). Again, the Red Sea coastal area presents the worst indicator, with almost 60 per cent of the households considered crowded.

Figure H.1:
Percentage of Crowded Households (More than Three Persons per Room) by Levels of Poverty, Yemen, 2013
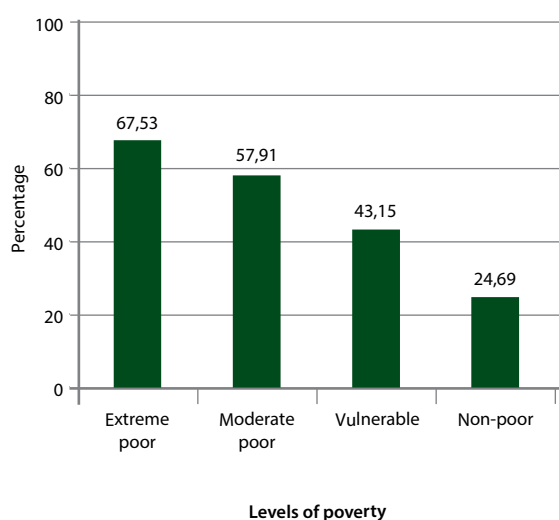
Figure H.2:
Percentage of Crowded Households (More than Three Persons per Room) by Status of Housing Durability, Yemen, 2013
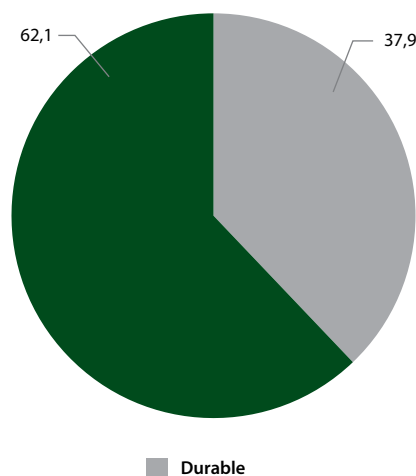
Source: NSPMS, Round 4.

3.3 Access to Electricity

The main sources of light in Yemeni households are electricity from the public grid (60.7 per cent) and kerosene lamps (18 per cent), as shown in table H.6. The former is mainly found in urban areas, being present in 93.5 per cent of urban households, while only half (49.5 per cent) of the households in rural areas have access to electricity from the public grid. Generators are used by 9.7 per cent of Yemeni households.

By disaggregating the two main sources of light in Yemen – which represent 78.7 per cent of households – it is evident that electricity from the public grid is basically used by the richest households and kerosene lamps by the poorest households (figure H.3).

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Table H.6:
Percentage of Households by the Main Source of Light in the House,
Yemen, 2013

Source of light	Total			Urban			Rural		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Electricity from the public grid	60.71	55.63	65.80	93.51	88.72	98.30	49.52	43.38	55.66
Electric light from the private grid	1.90	0.68	3.11	0.55	-0.19	1.29	2.35	0.75	3.96
Electric light from the cooperative	2.26	-0.20	4.73	0.53	-0.21	1.28	2.85	-0.42	6.13
Generator (for household or more than one household)	9.71	7.31	12.11	2.16	-0.08	4.41	12.28	9.19	15.37
Kerosene lamp	18.01	14.39	21.64	2.11	0.22	4.01	23.44	18.75	28.13
Gas lamp	2.64	1.72	3.56	0.01	-0.01	0.03	3.53	2.29	4.77
Other	0.61	0.30	0.93	0.00	.	.	0.82	0.40	1.24
Lamp with battery or charger	3.97	2.79	5.15	1.04	-0.38	2.46	4.97	3.46	6.48
Candles	0.19	0.02	0.35	0.07	-0.03	0.18	0.23	0.01	0.44
Sample	6,397			1,462			4,935		
Population	3,129,072			795,998			2,333,073		

Source: NSPMS, Round 4.

Figure H.3:
Percentage of Households Using the Two Main Sources of Light by Level of Poverty,
Yemen, 2013
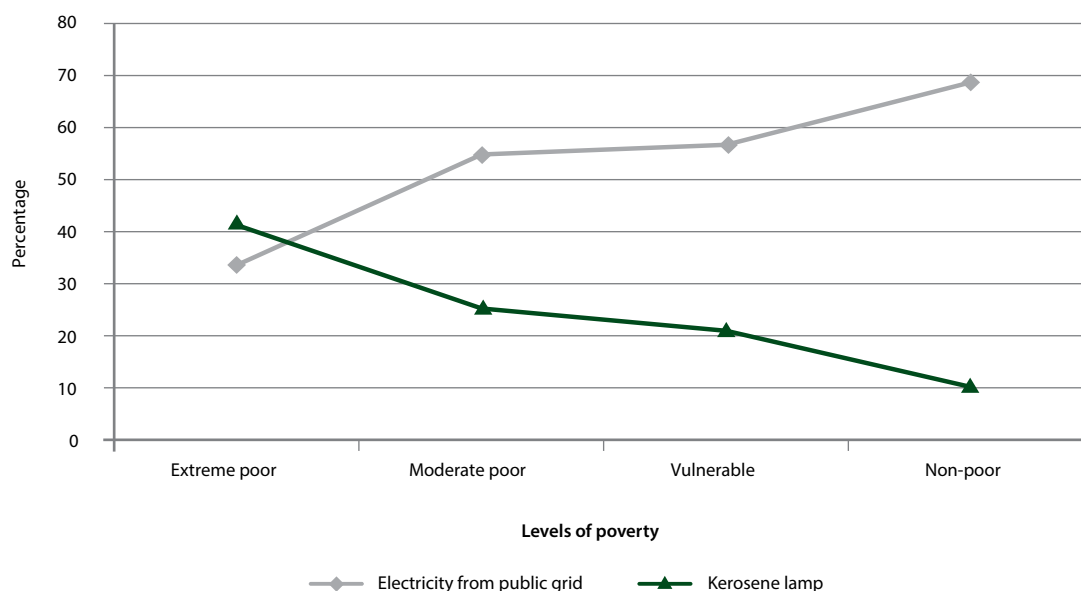
Source: NSPMS, Round 4.

Around 74.6 per cent of households have access to electricity, which includes electricity from public/private grid, cooperatives and generators (97 per cent in urban and 67 per cent in rural areas) (table H.7). This access is especially concentrated in the non-poor households according to the level of poverty, as shown in figure H.4.

Figure H.4:
Percentage of Households with Access to Electricity, by Level of Poverty,
Yemen, 2013
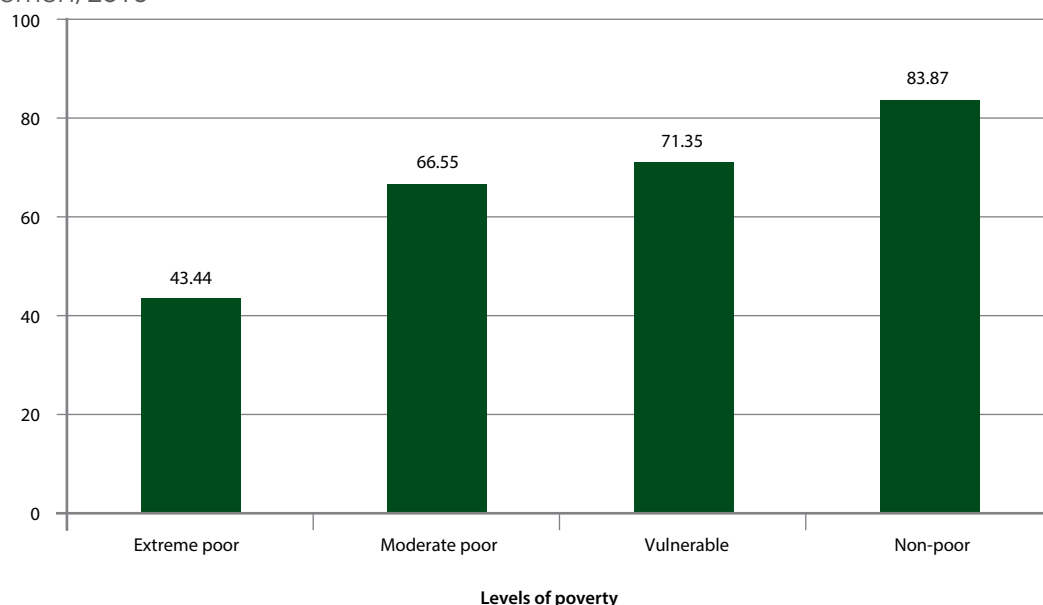
3.4 Access to Solid Fuels

Access to solid fuels is defined as the percentage of households using solid fuels as the primary source of domestic energy for cooking. The energy is usually released through combustion and this procedure is strongly associated with the risk of developing adverse health effects, such as respiratory infections, chronic obstructive pulmonary disease and lung cancer, among others. According to the MICS 2006, solid fuels include wood, charcoal, crop residues and dung. In the NSPMS questionnaire, the categories of solid fuel are firewood, charcoal and animal dung.

Around 35 per cent of Yemeni households use solid fuels for cooking (table H.13). Since this method requires a less advanced technology and is based on elements basically found in rural areas, almost half of rural households (45.6 per cent) use this method for cooking, against 4.1 per cent in urban areas. In addition, solid fuels are largely used by households in the bottom poverty distribution (65.5 per cent), compared to 28 per cent of the non-poor households. The use of solid fuels is very low in the Arabian Sea coastal area (5.2 per cent), especially if compared to its high use in the Red Sea coastal area (45.20 per cent).

3.5 Household Use of Bednets

This indicator measures the percentage of households whose members use bednets when sleeping. This information is especially important in Yemen, where the incidence of malaria remains problematic. According to the World Health Organization (WHO),[50] Yemen is one of the countries with a moderate or high malaria burden (incidence, severity and mortality).

About one in six (17.1 per cent) of the total number of households in Yemen use bednets (table H.14). It is more common in rural areas, reaching around 20 per cent of households, against 7.4 per cent in urban areas. No statistical difference is observed between the prevalence of using bednets and either wealth quintile or education of the head of household. When dividing Yemen according to its topography, only 5.5 per cent of the households in the Red Sea coastal area use bednets. In the mountainous and plateau/desert areas, this figure reaches 20 per cent.

3.6 Water and Sanitation

The distribution of the population by source of drinking water is shown in table H.15. The most common sources of drinking water in Yemen are piped water inside the dwelling (28.6 per cent) and tanker truck

(16.1 per cent). The best source of drinking water – piped water inside the dwelling – is present in almost half of urban Yemeni households but in only 22.5 per cent of rural households.

According to the results presented in table H.15, there are basically three main sources of water in urban areas: piped water inside the dwelling (47.2 per cent); jerry can-filtered water (20.8 per cent); and tanker truck (19.1 per cent). In rural households, the main source is piped water inside the dwelling (22.5 per cent), but the diversity of sources is wider: tanker truck (15.1 per cent); tube well or borehole connected to pipes (13.1 per cent); protected dug well (8 per cent); and unprotected dug well (7.5 per cent).

Table H.15:

Percentage Distribution of Household Members by Source of Drinking Water and Area of Residence, Yemen, 2013

Source of drinking water	Total			Urban			Rural		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Piped water inside the dwelling	28.56	24.14	32.98	47.21	36.97	57.45	22.46	17.46	27.47
Piped water inside the compound	7.00	4.66	9.35	0.32	-0.18	0.81	9.19	6.11	12.27
Public tap or standpipe outside the compound	5.74	3.17	8.31	2.44	-1.13	6.01	6.82	3.65	9.99
Tubewell or borehole connected to pipes	9.98	6.79	13.18	0.43	0.09	0.77	13.11	8.98	17.24
Protected dug well	6.21	4.13	8.30	0.63	-0.55	1.80	8.04	5.31	10.76
Unprotected dug well	5.70	4.20	7.20	0.21	-0.21	0.63	7.49	5.50	9.48
Protected spring	2.31	1.04	3.58	0.32	-0.29	0.93	2.96	1.30	4.63
Unprotected spring	2.09	1.17	3.01	.	.	.	2.78	1.55	4.00
Rainwater harvesting/cistern	2.72	1.50	3.94	1.65	-1.08	4.38	3.06	1.68	4.44
Cart with small tank/drum	0.11	0.03	0.19	0.10	-0.05	0.26	0.11	0.02	0.21
Tanker-truck	16.09	12.66	19.52	19.12	10.94	27.30	15.10	11.29	18.91
Surface water	5.67	4.33	7.02	0.44	-0.41	1.28	7.39	5.58	9.19
Bottled water	1.10	-0.40	2.60	4.46	-1.42	10.34	0.00	0.00	0.00
Jerry can-filtered water	6.03	3.78	8.29	20.80	14.37	27.23	1.21	-0.88	3.30
Other	0.68	0.12	1.24	1.88	-0.26	4.02	0.29	0.06	0.51
Population	23,239,084			5,724,804			17,514,280		
Sample	49,757			10,790			38,967		
Missing*	0			0			0		

Source: NSPMS, Round 4.
*Note: *Missing information on the main source of water (no response + other) is not included in the statistics.*

If one considers as access to improved drinking water having piped water inside the dwelling, piped water inside the compound, public tap or standpipe outside the compound, tubewell or borehole connected to pipes, protected dug well and protected spring (table H.16, indicator 1), urban areas present a lower percentage of the population using this improved source (52.8 per cent) than rural areas (63.3 per cent), with an overlap in the confidence intervals. When looking at the distribution of individuals according to this indicator by levels of poverty, there is no difference between poor and non-poor individuals. Similar patterns are found when adding rainwater harvesting/cistern to the indicator representing access to improved drinking water (table H.17, indicator 2).

When adding tanker-truck, bottled water and jerry can-filtered water to the indicator of access to improved drinking water indicator (table H.18, indicator 3), there are significant differences between rural and urban areas and across levels of poverty. According to this indicator, 86.3 per cent of Yemen's population have access to improved drinking water sources. In the urban areas, this percentage almost reaches 100 per cent (99.2 per cent) while in the rural areas it is 82.1 per cent. Disaggregating by wealth quintile, there is a gradual rise in the percentage of people accessing improved drinking water as the wealth quintile increases, starting from 69.6 per cent among the poorest and reaching almost all individuals in the richest quintile (99.6 per cent).

Wider differences between urban and rural populations and wealth quintiles exist when considering only access to piped water inside the dwelling (table H.19 and figure H.5). Approximately 48.1 per cent of the population in urban areas have access to piped water inside the dwelling, compared to only 22.5 per cent of the population in rural areas. Large differences are also evident by wealth quintile: 49 per cent of the richest people have access to piped water inside the dwelling, compared to 8.5 per cent of the poorest ones. Considering the topographic areas, there are also remarkable differences, with only 18.3 per cent of the population in the Mountainous area with access to public piped water compared to 72.4 per cent of the population of the Arabian Sea coastal area.

Figure H.5:
Percentage of Household Members with Access to Piped Water inside the Dwelling, Yemen, 2013
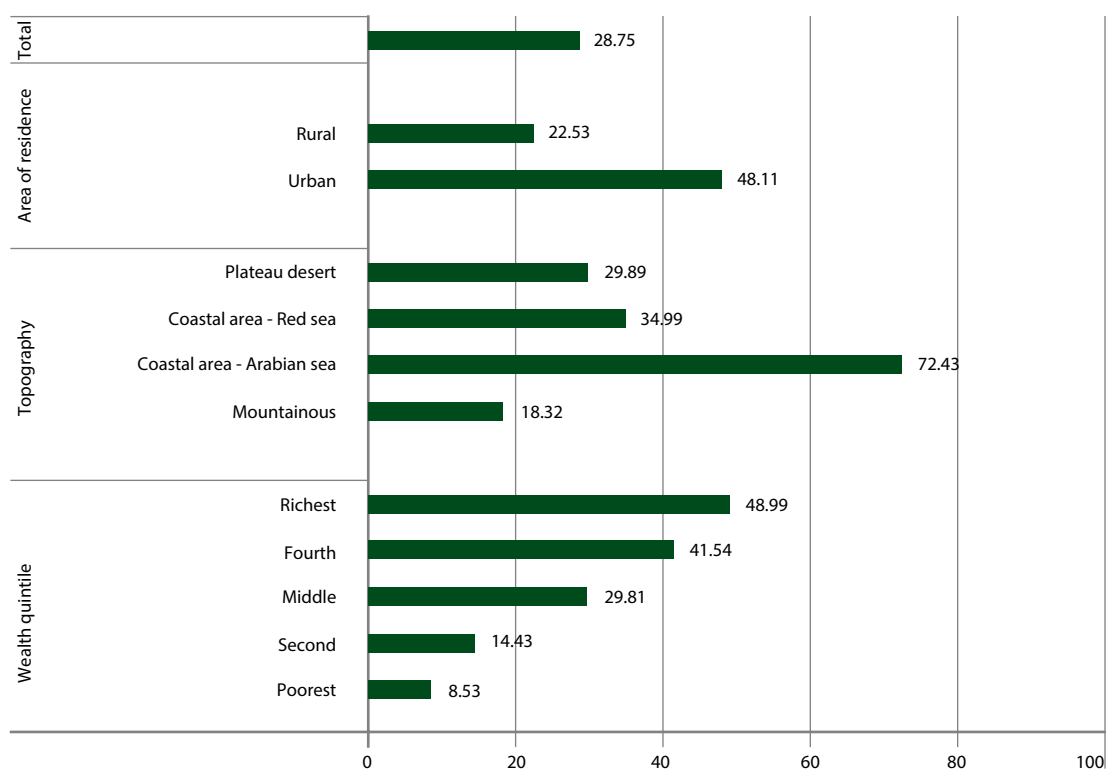
Source: NSPMS, Round 4.

Table H.20 and figure H.6 show the percentage of the population who use in-house appropriated water treatment, which includes boiling, use of ceramic or sand filter, boiling and filtering and adding effervescent pills. In Yemen, only 3.22 per cent of the population use an appropriate method to treat their water: 9.7 per cent in urban households and 1.1 per cent in rural ones. The percentage of the population who treat water at home to make it safer to drink increases considerably by wealth quintile: 10.7 per cent of the richest, against 0.4 per cent of the poorest individuals. There is no difference in the percentage of the population who use in-house methods to treat drinking water between those who have access to improved water sources and those who access unimproved sources, although it would be expected that the latter should be more careful with the water they drink, since it is not safe.

Households were asked about the amount of time members take to collect water – excluding those households whose main source of water is located inside the dwelling or compound, or collected from a cart with a small tank/drum or surface water. Table H.21 shows that 77.3 per cent of households access water by walking for less than 30 minutes. Rural households are at a disadvantage, as only 73.2 per cent of households have their main source of water close to the household, compared to 96.1 per cent in urban areas. Households whose head has low schooling and that are at the bottom of the wealth quintile distribution spend more time collecting water.

Figure H.6:
Percentage of Household Members Using an Appropriated Method to Treat Water, Yemen, 2013
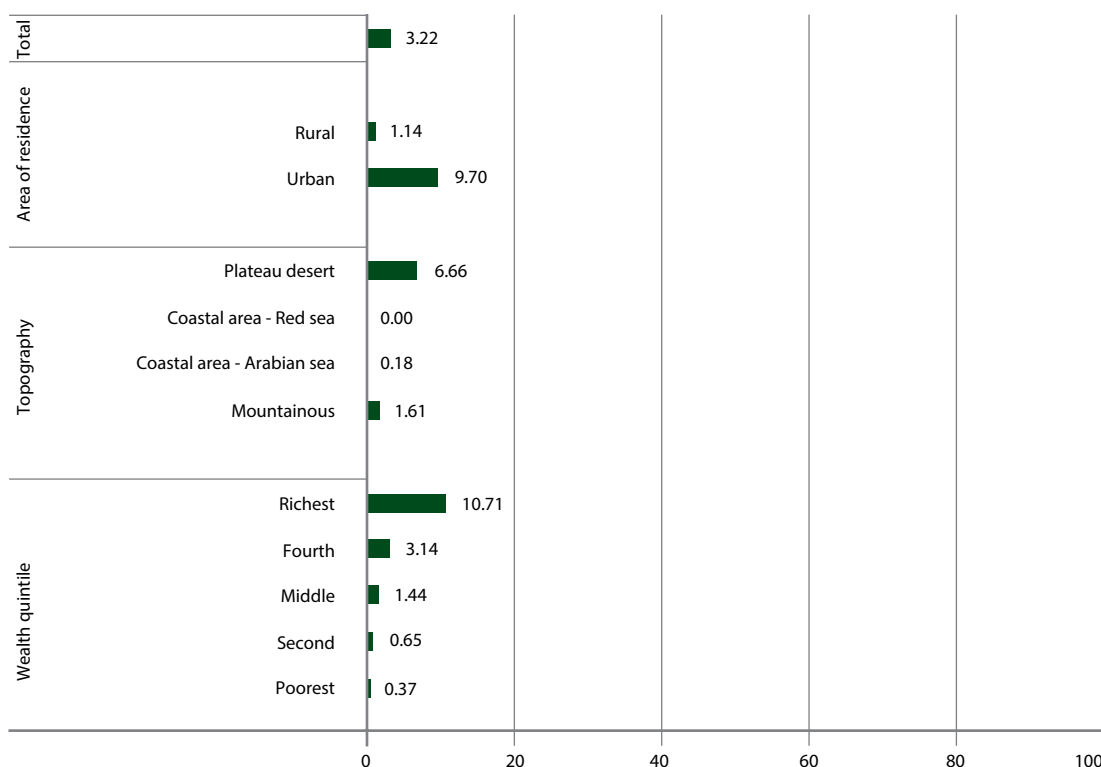
Tables H.22, H.23 and H.24 show respectively the average amount of water consumed by households in the 30 days prior to the interview (indicator 1); the average amount of water consumed per person in the same reference period (indicator 2); and the average per-capita amount of water consumed per day (indicator 3). All the numbers are expressed in litres, and are based on the consumption of the following water sources: (1) piped water inside the dwelling; (2) piped water inside the compound; (3) public tap or standpipe outside the compound; (4) tubewell or borehole connected with pipes; (5) protected dug well; (6) unprotected dug well; (7) protected spring; (8) unprotected spring; (9) rainwater harvesting/cistern; (10) tanker-truck; (11) surface water; (12) bottled water; (13) jerry can- filtered water; and (14) others.

In Yemen, households consumed on average 6,271 litres per month of water in July, August and September 2013 (10,381 litres in urban areas and 4,927 litres in rural areas). The quantity varies considerably by the level of education of the head of household, ranging from 5,206 litres in the households whose heads have no schooling and rising to 8,072 litres in the households whose heads have secondary education or more. Similarly, the wealthier the household, the higher the water consumption: 12,598 litres in the richest (upper wealth quintile) and 3,883 litres in the poorest (bottom wealth quintile). Among the topographic regions, the Arabian Sea coastal area shows by far the highest water consumption (10,351 litres) and the mountainous area shows the lowest consumption (3,875 litres). Indicators 2 and 3 follow the same trend: rural, poor and less educated households consume less water than urban, rich and highly educated households. The topographic regions with the highest and the lowest consumption are the Arabian Sea coastal and mountainous areas, respectively.

Tables H.25–H.28 show the availability of soap for washing hands (table H.25), body (table H.26), clothing (table H.27) and utensils or house compound (table H.28) in the household. Most of the Yemeni households have soap available: 82 per cent of the households have it available for washing hands, 85.3 per cent for washing the body, 94.4 per cent for washing clothing and 89.1 per cent for washing utensils. There are important differences between rural and urban areas, topographic areas and wealth quintiles. While only 77.6 per cent of rural households have soap available for washing hands, in urban areas, 94.8

per cent of the households have it. The percentage of households with soap available for washing hands increases considerably by wealth quintile: 97.4 per cent of the richest and only 61.9 per cent of the poorest households. The mountainous area has the lowest percentage of households with soap available for washing hands (74 per cent), followed by the Red Sea coastal area (76.5 per cent), the plateau/desert area (90.4 per cent) and finally by the Arabian Sea coastal area (90.4 per cent), which has the highest percentage of households with soap available. The remaining indicators on soap availability present the same trend, with a reduced difference between urban and rural areas and among topographic areas and wealth quintiles.

Improved sanitation is also a selected indicator for monitoring progress towards the Millennium Development Goals. The target is the same as the safe drinking-water indicator – namely, to halve the proportion of the population without access to improved sanitation facilities. According to WHO and UNICEF, [51] "an improved sanitation facility is one that hygienically separates human excreta from human contact". The categories for improved sanitation facilities are: flush or pour toilet discharging to public piped sewer; flush or pour toilet discharging to septic tank; flush or pour toilet latrine connected to a cesspit; ventilated improved pit toilet latrine; and pit latrine with slab as hole cover.

In Yemen, 52.5 per cent of household members use an improved source of sanitation (table H.29). The majority of the urban population (92.3 per cent) has a proper sanitation system, compared to less than 40 per cent of the population in rural areas. The use of improved sanitation facilities is nearly universal among the richest population (96.34 per cent), while only 5.1 per cent of the poorest are using an improved sanitary means of excreta disposal.

3.7 Concluding Remarks

Household living conditions in Yemen present many challenges. Starting with the most basic element, which is shelter, half of Yemeni households are built out of non-resilient roofing, walls and floor materials (non-durable households). In addition, around 39 per cent of households are overcrowded (more than three persons sharing the same room), of which 62 per cent are built out of non-durable materials. This suggests a high degree of housing vulnerability, which usually is associated with devastating health outcomes.

Although 60.7 per cent of Yemeni households have access to electricity from the public grid, only 8.6 per cent of the poorest households (lowest wealth quintile) have it provided by the duty bearers (Government) and 61 per cent must resort to kerosene lamps. Around 69.6 per cent of the poorest households have access to improved drinking water sources (considering the indicator 3, the least restrictive), but only 8.5 per cent have access to piped water inside the dwelling. Similarly, the use of improved sanitation facilities varies greatly by socioeconomic status, occurring in just 5.1 per cent of the poorest households while nearly universal use is observed among the richest households (96.3 per cent).

All these figures show a high degree of inequality in living conditions, which tends to intensify the disadvantages already suffered by the poor population.

3.8 Tables

Table H.1:
Percentage of Households Living in a Housing Unit Considered as Durable**
Judging by the Materials Used to Build the Roof, Walls and Floor, Yemen, 2013

	Durable			Roof			Wall			Floor		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	52.43	48.33	56.53	90.61	88.17	93.06	86.34	83.67	89.02	53.83	49.74	57.93
Area of residence												
Urban	80.78	74.26	87.30	97.08	94.06	100.11	94.07	91.55	96.60	81.88	75.36	88.39
Rural	42.89	38.23	47.56	88.42	85.24	91.59	83.72	80.30	87.13	44.34	39.64	49.03
Region												
Sana'a City	99.52	99.18	99.85	99.98	99.93	100.02	99.71	99.43	99.99	99.57	99.25	99.89
Hadhramout	35.24	24.10	46.38	96.21	93.93	98.49	48.36	35.29	61.42	47.54	36.80	58.29
Saba	71.62	61.45	81.78	99.37	98.83	99.91	75.72	65.88	85.56	81.34	72.48	90.20
Aden	77.55	72.39	82.70	97.74	95.87	99.61	91.98	88.27	95.70	77.25	72.10	82.39
Al-Janad	54.02	43.15	64.89	94.28	88.34	100.21	93.89	87.83	99.95	54.05	43.18	64.91
Tehama	21.37	15.07	27.68	73.65	67.34	79.97	76.15	69.64	82.66	21.40	15.09	27.72
Azal	63.76	55.57	71.95	99.82	99.57	100.07	97.45	95.86	99.05	65.18	57.01	73.36
Topography												
Mountainous	56.98	50.08	63.88	99.03	98.40	99.66	98.23	97.38	99.08	57.36	50.44	64.27
Arabian Sea	74.04	65.31	82.76	97.60	96.17	99.04	84.94	78.62	91.26	76.01	68.06	83.96
Red Sea	9.47	2.35	16.59	58.63	48.97	68.28	58.92	48.54	69.31	9.47	2.35	16.58
Plateau/desert	63.96	58.57	69.35	95.24	92.81	97.67	86.51	83.56	89.46	66.76	61.40	72.13
Wealth quintile												
Poorest	10.87	7.12	14.62	68.06	60.65	75.47	68.61	61.38	75.84	11.23	7.43	15.02
Second	39.44	32.20	46.67	92.96	89.50	96.43	91.68	87.79	95.57	40.01	32.82	47.20
Middle	56.37	47.96	64.79	96.85	93.65	100.06	93.15	89.75	96.54	58.42	49.98	66.86
Fourth	79.73	75.27	84.18	99.64	99.27	100.01	89.93	87.05	92.82	82.13	77.98	86.28
Richest	88.38	84.15	92.61	99.97	99.91	100.03	91.23	87.17	95.29	90.03	85.91	94.14
Level of Poverty												
Extreme poor	24.53	16.63	32.43	74.09	59.77	88.41	66.11	52.61	79.61	26.04	18.06	34.01
Moderate poor	34.11	27.49	40.74	86.00	80.54	91.45	80.39	74.75	86.04	35.51	28.97	42.06
Vulnerable	40.63	33.04	48.22	89.26	83.75	94.76	84.18	78.11	90.26	42.24	34.66	49.82
Non-poor	68.47	63.73	73.20	95.53	93.90	97.16	92.68	90.73	94.63	69.94	65.23	74.66
Head of household's education												
None	36.99	32.10	41.87	82.85	77.80	87.91	78.95	74.18	83.71	38.11	33.23	42.98
Basic	51.74	45.87	57.61	92.36	89.14	95.57	86.84	83.07	90.60	53.66	47.82	59.50
Secondary +	78.30	73.04	83.55	98.94	98.20	99.68	95.93	94.53	97.34	79.28	74.11	84.45
Quran & Literacy	55.14	39.70	70.59	99.11	98.17	100.04	94.59	91.61	97.58	57.49	41.80	73.18
Population	3,086,301			3,111,435			3,114,593			3,106,895		
Sample	6,215			6,312			6,342			6,318		
Missing*	182			85			55			79		

Table H.2:

Percentage of Households Living in a Housing Unit Considered as Durable Judging by the Materials Used to Build the Roof, Walls and Floor, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	47.82	43.86	51.79	49.89	45.62	54.15	49.88	45.61	54.14	52.43	48.33	56.53
Area of residence												
Urban	77.66	70.76	84.55	78.85	71.75	85.96	78.85	71.75	85.96	80.78	74.26	87.30
Rural	37.65	33.50	41.80	40.05	35.33	44.78	40.04	35.31	44.77	42.89	38.23	47.56
Region												
Sana'a City	96.19	92.96	99.42	97.53	94.94	100.11	97.53	94.94	100.11	99.52	99.18	99.85
Hadhramout	37.38	23.64	51.13	40.46	26.86	54.06	40.46	26.86	54.06	35.24	24.10	46.38
Saba	70.77	62.06	79.48	76.15	68.14	84.15	76.15	68.14	84.15	71.62	61.45	81.78
Aden	85.56	80.67	90.46	80.74	75.39	86.09	80.73	75.37	86.08	77.55	72.39	82.70
Al-Janad	34.95	25.17	44.73	47.34	36.32	58.37	47.34	36.32	58.37	54.02	43.15	64.89
Tehama	19.19	13.29	25.09	19.21	12.83	25.60	19.21	12.83	25.60	21.37	15.07	27.68
Azal	62.39	54.11	70.66	58.89	50.29	67.49	58.86	50.26	67.45	63.76	55.57	71.95
Topography												
Mountainous	45.01	38.37	51.65	50.65	43.59	57.71	50.64	43.58	57.70	56.98	50.08	63.88
Arabian Sea	73.64	65.34	81.94	81.06	74.48	87.64	81.06	74.48	87.64	74.04	65.31	82.76
Red Sea	8.55	1.40	15.71	8.54	1.53	15.55	8.54	1.53	15.55	9.47	2.35	16.59
Plateau/desert	64.48	59.11	69.86	63.23	57.70	68.77	63.22	57.69	68.75	63.96	58.57	69.35
Wealth quintile												
Poorest	6.52	3.28	9.77	9.42	6.67	12.17	9.42	6.67	12.17	10.87	7.12	14.62
Second	27.98	21.87	34.08	32.86	25.89	39.82	32.86	25.89	39.82	39.44	32.20	46.67
Middle	48.95	40.31	57.59	53.85	44.88	62.82	53.83	44.86	62.80	56.37	47.96	64.79
Fourth	79.53	74.50	84.56	78.96	74.04	83.88	78.93	74.01	83.85	79.73	75.27	84.18
Richest	89.67	85.27	94.07	87.76	83.21	92.32	87.76	83.21	92.32	88.38	84.15	92.61
Level of Poverty												
Extreme poor	29.48	19.77	39.18	28.25	19.34	37.16	21.66	14.81	28.51	24.53	16.63	32.43
Moderate poor	34.90	28.63	41.16	30.78	24.42	37.13	31.39	25.43	37.35	34.11	27.49	40.74
Vulnerable	49.38	42.08	56.68	45.77	38.02	53.53	49.47	41.33	57.61	40.63	33.04	48.22
Non-poor	57.91	57.72	58.09	66.16	66.02	66.31	65.78	65.65	65.92	68.47	68.35	68.58
Head of household's education												
None	35.51	30.67	40.36	33.09	28.07	38.11	33.04	28.05	38.03	36.99	32.10	41.87
Basic	44.21	37.72	50.70	50.61	44.75	56.47	50.74	44.90	56.58	51.74	45.87	57.61
Secondary +	72.51	66.37	78.65	75.43	69.11	81.75	75.58	69.27	81.89	78.30	73.04	83.55
Quran & Literacy	56.08	42.06	70.11	52.99	37.71	68.28	53.07	37.75	68.39	55.14	39.70	70.59
Population	3,089,115			3,072,103			3,071,841			3,086,301		
Sample	6,264			6,236			6,235			6,215		
Missing*	131			161			162			182		

Source: NSPMS, All Rounds.
Note: * Missing information including 'other' and 'no response' are not included in the statistics.

Table H.3:
Percentage Distribution of Durable Materials for Wall, Roof and Floor, by Levels of Poverty, Yemen, 2013

Wall material				Roof material				Floor material			
	Value	**95% CI**			**Value**	**95% CI**			**Value**	**95% CI**	
		Lower	**Upper**			**Lower**	**Upper**			**Lower**	**Upper**
Fine-finished stone (8.12)				**Reinforced concrete (13.7)**				**Concrete (36.8)**			
Extreme poor	4.80	2.55	7.05	Extreme poor	4.37	0.00	8.74	Extreme poor	19.87	12.89	26.84
Moderate poor	5.14	1.75	8.53	Moderate poor	7.97	3.98	11.97	Moderate poor	25.27	19.85	30.68
Vulnerable	5.72	2.61	8.84	Vulnerable	10.08	5.91	14.24	Vulnerable	28.99	22.62	35.37
Non-poor	10.71	7.31	14.11	Non-poor	18.84	14.58	23.09	Non-poor	46.90	41.96	51.85
Rough stone (37.8)				**Wood covered by cement (29.0)**				**Tiles (14.3)**			
Extreme poor	34.78	24.56	44.99	Extreme poor	19.86	10.11	29.61	Extreme poor	1.69	0.13	3.24
Moderate poor	34.79	28.48	41.11	Moderate poor	30.15	24.38	35.92	Moderate poor	7.32	3.40	11.23
Vulnerable	39.63	31.53	47.72	Vulnerable	32.12	25.67	38.56	Vulnerable	10.00	5.11	14.88
Non-poor	38.89	34.01	43.77	Non-poor	28.90	24.67	33.13	Non-poor	20.62	15.89	25.34
Concrete blocks (38.8)				**Wood covered by clay layer (47.4)**				**Stone (2.2)**			
Extreme poor	25.81	15.40	36.22	Extreme poor	49.10	37.25	60.95	Extreme poor	4.46	1.89	7.02
Moderate poor	37.43	30.64	44.21	Moderate poor	47.00	40.77	53.23	Moderate poor	2.79	1.71	3.87
Vulnerable	37.19	29.95	44.42	Vulnerable	46.25	38.58	53.93	Vulnerable	2.86	1.65	4.07
Non-poor	41.88	37.27	46.48	Non-poor	47.62	42.62	52.61	Non-poor	1.44	0.91	1.97
Sun-dried mud bricks (adobe) (1.3)								**Marble (0.2)**			
Extreme poor	0.49	0.11	0.87					Extreme poor	0.00	0.00	0.00
Moderate poor	2.22	-0.11	4.56					Moderate poor	0.05	-0.05	0.16
Vulnerable	1.05	-0.67	2.77					Vulnerable	0.08	-0.01	0.18
Non-poor	1.05	0.29	1.81					Non-poor	0.29	-0.08	0.67

Source: NSPMS, Round 4.

Table H.4:
F Test: Building Materials Versus Levels of Poverty,
Yemen, 2013

Durable material (WALL)	Level of Poverty				
	Extreme	Moderate	Vulnerable	Non-poor	Total
Inadequate	0.20	0.32	0.20	0.28	1.00
	0.34	0.20	0.16	0.07	0.14
Adequate	0.06	0.21	0.17	0.56	1.00
	0.66	0.80	0.84	0.93	0.86
Total	0.08	0.22	0.18	0.52	1.00
	1.00	1.00	1.00	1.00	1.00

Pearson:

Uncorrected   chi2(3)   = 335.0566

Design-based F(2.77, 1515.37)= 15.2161   P = 0.0000

Sample	6,342
Population	3,114,593

Durable material (ROOF)	Level of Poverty				
	Extreme	Moderate	Vulnerable	Non-poor	Total
Inadequate	0.22	0.33	0.20	0.25	1.00
	0.26	0.14	0.11	0.04	0.09
Adequate	0.06	0.21	0.17	0.55	1.00
	0.74	0.86	0.89	0.96	0.91
Total	0.08	0.22	0.17	0.52	1.00
	1.00	1.00	1.00	1.00	1.00

Pearson:

Uncorrected   chi2(3)   = 292.1136

Design-based F(2.66, 1452.37)= 10.7944   P = 0.0000

Sample	6,312
Population	3,111,435

Durable material (FLOOR)	Level of Poverty				
	Extreme	Moderate	Vulnerable	Non-poor	Total
Inadequate	0.13	0.31	0.22	0.34	1.00
	0.74	0.64	0.58	0.30	0.46
Adequate	0.04	0.15	0.14	0.68	1.00
	0.26	0.36	0.42	0.70	0.54
Total	0.08	0.22	0.18	0.52	1.00
	1.00	1.00	1.00	1.00	1.00

Pearson:

Uncorrected   chi2(3)   = 751.8450

Design-based F(2.78, 1518.28)= 46.0371   P = 0.0000

Sample	6318
Population	3,106,895

Source: NSPMS, Round 4.

Table H.5:
Percentage of Households Living in Crowded Conditions (More than Three Persons per Room), Yemen, 2012-2013

	Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	40.32	36.89	43.76	40.05	36.61	43.48	38.77	35.46	42.07
Area of residence									
Urban	22.46	16.48	28.44	22.15	16.18	28.12	21.92	16.10	27.75
Rural	46.42	42.48	50.36	46.15	42.20	50.10	44.51	40.69	48.34
Region									
Sana'a City	9.38	4.23	14.54	8.30	3.48	13.12	10.19	4.11	16.27
Hadhramout	22.33	12.72	31.93	21.31	11.64	30.97	11.84	6.50	17.18
Saba	24.74	16.53	32.95	24.57	16.61	32.54	31.22	22.68	39.76
Aden	38.31	32.76	43.86	38.67	33.00	44.34	34.47	29.04	39.91
Al-Janad	46.30	38.14	54.47	45.70	37.59	53.81	43.40	35.56	51.24
Tehama	56.51	48.89	64.13	56.52	48.86	64.18	54.42	47.09	61.75
Azal	30.71	24.36	37.06	30.57	24.16	36.99	34.29	27.49	41.08
Topography									
Mountainous	43.54	38.65	48.44	43.25	38.39	48.12	41.45	36.58	46.33
Arabian Sea	34.58	25.87	43.29	34.34	25.45	43.22	23.67	17.15	30.19
Red Sea	61.87	49.96	73.77	62.05	50.07	74.03	59.41	48.19	70.62
Plateau/desert	28.19	23.82	32.56	27.71	23.37	32.05	29.11	24.65	33.56
Wealth quintile									
Poorest	60.26	53.24	67.29	61.08	54.03	68.14	57.76	50.80	64.72
Second	53.23	46.88	59.58	53.21	46.83	59.59	55.24	49.42	61.06
Middle	41.63	33.86	49.41	40.16	33.01	47.31	37.14	30.19	44.09
Fourth	29.78	24.47	35.10	28.88	23.61	34.16	26.45	21.29	31.60
Richest	9.03	5.58	12.48	9.03	5.54	12.52	9.49	5.52	13.46
Level of Poverty									
Extreme poor	69.44	61.22	77.67	67.94	59.43	76.46	67.53	57.95	77.12
Moderate poor	58.57	51.92	65.22	58.96	53.04	64.87	57.91	51.80	64.02
Vulnerable	40.65	33.92	47.38	36.96	30.25	43.67	43.15	36.03	50.28
Non-poor	24.21	24.12	24.31	25.11	25.00	25.22	24.69	24.60	24.77
Head of household's education									
None	44.89	39.53	50.26	43.44	38.07	48.81	40.36	34.93	45.80
Basic	45.18	39.59	50.77	46.32	40.70	51.95	45.83	40.18	51.48
Secondary +	28.40	22.07	34.73	28.50	22.15	34.85	27.70	21.63	33.78
Quran & Literacy	32.21	19.46	44.95	30.06	17.52	42.61	34.25	21.19	47.31
Population	3,129,072			3,129,072			3,129,072		
Sample	6,397			6,397			6,397		
Missing*	0			0			0		

Table H.7:
Percentage of Households with Access to Electricity**
as the Main Source of Light, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	73.23	69.10	77.36	73.02	68.76	77.28	73.02	68.76	77.28	74.58	70.50	78.65
Area of residence												
Urban	95.87	92.59	99.16	96.12	92.15	100.09	96.12	92.15	100.09	96.76	93.73	99.79
Rural	65.50	60.30	70.71	65.14	59.75	70.53	65.14	59.75	70.53	67.01	61.81	72.21
Region												
Sana'a City	98.24	95.62	100.86	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Hadhramout	93.43	90.20	96.67	92.47	88.15	96.79	92.47	88.15	96.79	92.36	88.12	96.61
Saba	81.65	73.19	90.11	76.65	66.59	86.71	76.65	66.59	86.71	78.71	69.07	88.35
Aden	83.31	76.52	90.09	81.37	74.21	88.54	81.37	74.21	88.54	81.28	74.01	88.56
Al-Janad	73.84	63.54	84.15	76.76	67.02	86.49	76.76	67.02	86.49	78.28	69.23	87.34
Tehama	51.08	41.70	60.45	50.86	40.52	61.20	50.86	40.52	61.20	55.42	45.33	65.52
Azal	80.30	73.33	87.26	76.98	69.14	84.82	76.98	69.14	84.82	76.06	68.43	83.69
Topography												
Mountainous	73.27	67.06	79.47	71.42	65.10	77.74	71.42	65.10	77.74	73.14	67.24	79.03
Arabian Sea	93.33	88.61	98.04	90.93	84.77	97.10	90.93	84.77	97.10	90.30	83.68	96.92
Red Sea	47.72	33.68	61.76	49.90	33.92	65.88	49.90	33.92	65.88	53.35	38.06	68.64
Plateau/desert	81.44	76.51	86.38	82.21	77.27	87.14	82.21	77.27	87.14	83.11	78.37	87.85
Wealth quintile												
Poorest	14.20	8.96	19.43	19.58	12.42	26.74	19.58	12.42	26.74	23.22	16.45	29.98
Second	70.76	63.97	77.56	69.52	62.88	76.16	69.52	62.88	76.16	73.35	67.13	79.57
Middle	94.79	92.43	97.15	91.61	88.53	94.69	91.61	88.53	94.69	92.33	89.44	95.22
Fourth	99.17	98.52	99.82	96.48	93.97	98.99	96.48	93.97	98.99	95.40	92.68	98.11
Richest	99.69	99.09	100.29	99.63	99.09	100.17	99.63	99.09	100.17	99.55	99.00	100.09
Level of Poverty												
Extreme poor	55.72	44.24	67.21	55.06	44.86	65.27	48.33	37.82	58.84	43.44	32.07	54.82
Moderate poor	62.57	55.07	70.06	61.96	53.84	70.08	63.61	56.50	70.73	66.55	59.17	73.93
Vulnerable	75.34	69.32	81.37	73.77	66.99	80.55	76.77	71.12	82.42	71.35	64.21	78.48
Non-poor	81.61	77.80	85.42	82.49	78.64	86.35	81.66	77.79	85.53	83.87	80.31	87.42
Head of household's education												
None	60.75	54.57	66.93	61.23	54.59	67.86	61.46	54.85	68.06	63.78	57.23	70.34
Basic	75.67	70.07	81.27	73.63	68.23	79.03	73.50	68.08	78.92	75.46	69.99	80.94
Secondary +	89.37	85.51	93.23	89.81	86.25	93.36	89.81	86.25	93.36	89.78	86.28	93.29
Quran & Literacy	84.11	76.29	91.94	79.21	70.08	88.34	79.18	70.04	88.33	80.37	71.45	89.30
Population	3128417.3			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
*Notes: * Missing information not included in the statistics.*
*** Electric light: electric light from the public grid, electric light from the private grid, electric light from the cooperative and generator.*

Table H.8:
Percentage of Households with Access to Electricity from Public Grid as the Main Source of Light, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	59.14	54.02	64.26	60.27	55.17	65.38	60.27	55.17	65.38	60.71	55.63	65.80
Area of residence												
Urban	92.85	88.00	97.69	93.11	88.14	98.07	93.11	88.14	98.07	93.51	88.72	98.30
Rural	47.64	41.50	53.77	49.07	42.92	55.22	49.07	42.92	55.22	49.52	43.38	55.66
Region												
Sana'a City	98.24	95.62	100.86	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Hadhramout	79.30	68.30	90.30	78.76	67.45	90.08	78.76	67.45	90.08	77.33	65.83	88.83
Saba	64.66	50.41	78.91	64.67	49.80	79.54	64.67	49.80	79.54	61.00	45.69	76.30
Aden	78.88	71.53	86.22	76.58	68.78	84.39	76.58	68.78	84.39	77.46	69.52	85.39
Al-Janad	58.20	45.13	71.28	62.24	49.48	75.01	62.24	49.48	75.01	65.71	53.25	78.17
Tehama	29.73	19.44	40.01	30.65	20.36	40.94	30.65	20.36	40.94	30.40	19.94	40.86
Azal	67.01	56.89	77.13	67.25	57.12	77.38	67.25	57.12	77.38	65.69	56.12	75.25
Topography												
Mountainous	55.77	47.26	64.28	56.76	48.29	65.24	56.76	48.29	65.24	58.89	50.62	67.15
Arabian Sea	89.86	84.23	95.48	86.64	79.45	93.83	86.64	79.45	93.83	87.71	80.23	95.18
Red Sea	22.33	8.15	36.52	24.69	10.23	39.15	24.69	10.23	39.15	23.31	9.13	37.49
Plateau/ desert	74.27	67.86	80.67	75.70	69.46	81.94	75.70	69.46	81.94	75.11	68.90	81.31
Wealth quintile												
Poorest	5.43	2.44	8.42	7.50	4.17	10.83	7.50	4.17	10.83	8.59	4.71	12.48
Second	43.63	34.35	52.91	47.96	38.81	57.12	47.96	38.81	57.12	50.51	41.19	59.83
Middle	70.91	62.48	79.34	71.04	62.63	79.45	71.04	62.63	79.45	71.81	63.68	79.93
Fourth	93.63	91.20	96.06	92.24	89.06	95.41	92.24	89.06	95.41	89.92	86.28	93.55
Richest	96.34	92.60	100.08	96.26	92.49	100.03	96.26	92.49	100.03	95.90	92.09	99.71
Level of Poverty												
Extreme poor	44.91	33.76	56.06	45.55	35.26	55.83	38.67	28.80	48.55	33.71	23.31	44.11
Moderate poor	50.43	42.50	58.35	52.49	44.25	60.74	52.53	44.89	60.16	54.87	46.92	62.83
Vulnerable	62.10	53.81	70.38	59.32	51.12	67.52	61.32	53.87	68.76	56.70	48.28	65.11
Non-poor	65.49	65.29	65.69	67.91	67.73	68.08	68.45	68.29	68.62	68.69	68.54	68.84
Head of household's education												
None	45.77	39.39	52.15	47.39	40.81	53.97	47.31	40.76	53.86	48.06	41.39	54.72
Basic	62.54	55.57	69.51	62.40	56.07	68.73	62.68	56.41	68.96	62.72	56.50	68.95
Secondary +	74.53	67.34	81.72	76.72	70.00	83.43	76.72	70.01	83.44	76.97	70.33	83.61
Quran & Literacy	75.25	65.68	84.82	66.50	54.56	78.44	66.45	54.50	78.41	68.46	56.58	80.33
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
Note: * Missing information not included in the statistics.

Table H.9:
Percentage of Households with Access to Electricity From Private Grid as the Main Source of Light, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	2.99	1.55	4.43	2.02	0.69	3.34	2.02	0.69	3.34	1.90	0.68	3.11
Area of residence												
Urban	0.42	-0.06	0.89	0.53	-0.14	1.21	0.53	-0.14	1.21	0.55	-0.19	1.29
Rural	3.87	1.96	5.78	2.52	0.77	4.28	2.52	0.77	4.28	2.35	0.75	3.96
Region												
Sana'a City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hadhramout	8.01	-2.50	18.52	5.65	-4.89	16.19	5.65	-4.89	16.19	5.58	-4.96	16.12
Saba	3.22	1.35	5.10	1.54	0.16	2.93	1.54	0.16	2.93	10.38	-1.05	21.82
Aden	0.60	0.00	1.20	1.51	-0.53	3.55	1.51	-0.53	3.55	1.82	-0.32	3.96
Al-Janad	3.24	0.45	6.02	4.37	0.28	8.46	4.37	0.28	8.46	2.05	-0.83	4.93
Tehama	4.61	0.97	8.25	0.04	-0.04	0.12	0.04	-0.04	0.12	0.11	-0.05	0.26
Azal	1.31	-0.71	3.33	1.93	-0.99	4.86	1.93	-0.99	4.86	2.50	-0.65	5.65
Topography												
Mountainous	3.06	1.09	5.03	3.72	0.82	6.62	3.72	0.82	6.62	3.16	0.75	5.58
Arabian Sea	1.59	0.32	2.86	0.58	-0.36	1.52	0.58	-0.36	1.52	0.10	-0.05	0.26
Red Sea	4.72	-0.46	9.90	0.06	-0.06	0.19	0.06	-0.06	0.19	0.05	-0.05	0.16
Plateau/desert	2.37	0.09	4.65	1.36	-0.47	3.18	1.36	-0.47	3.18	1.70	-0.31	3.71
Wealth quintile												
Poorest	1.76	-0.03	3.55	1.26	-0.38	2.90	1.26	-0.38	2.90	1.22	-0.43	2.87
Second	6.26	2.34	10.18	2.75	0.71	4.80	2.75	0.71	4.80	1.80	0.16	3.44
Middle	3.32	0.98	5.66	3.15	0.28	6.01	3.15	0.28	6.01	2.64	0.40	4.89
Fourth	1.41	0.47	2.35	0.60	0.00	1.19	0.60	0.00	1.19	1.28	0.11	2.45
Richest	1.92	-1.62	5.47	2.37	-1.23	5.98	2.37	-1.23	5.98	2.71	-0.95	6.37
Level of Poverty												
Extreme poor	1.67	0.21	3.13	1.12	-0.08	2.32	1.17	0.02	2.32	1.13	0.19	2.07
Moderate poor	3.32	0.68	5.97	1.15	0.26	2.05	1.92	0.34	3.50	1.63	0.05	3.21
Vulnerable	2.70	-0.02	5.42	1.69	-0.24	3.62	2.07	0.14	4.00	0.74	0.20	1.29
Non-poor	3.14	3.12	3.16	2.80	2.78	2.82	2.22	2.20	2.24	2.51	2.50	2.53
Head of household's education												
None	3.19	1.28	5.10	1.18	0.37	1.98	1.57	0.38	2.75	1.50	0.38	2.63
Basic	2.48	0.12	4.83	2.17	-0.02	4.36	1.70	0.24	3.17	2.05	0.48	3.61
Secondary +	3.18	0.82	5.53	2.01	0.06	3.97	2.01	0.06	3.97	1.45	0.39	2.51
Quran & Literacy	4.05	0.99	7.11	6.74	-0.10	13.57	6.75	-0.10	13.59	5.45	-1.10	12.00
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.10:
Percentage of Households with Access to Electricity from Cooperative as the Main Source of Light, Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | | Round 4 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	3.59	1.61	5.57	2.00	0.08	3.92	2.00	0.08	3.92	2.26	-0.20	4.73
Area of residence												
Urban	0.97	-0.13	2.07	1.50	-0.35	3.35	1.50	-0.35	3.35	0.53	-0.21	1.28
Rural	4.48	1.88	7.08	2.17	-0.32	4.67	2.17	-0.32	4.67	2.85	-0.42	6.13
Region												
Sana'a City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hadhramout	1.35	0.09	2.62	0.89	-0.11	1.88	0.89	-0.11	1.88	1.00	-0.21	2.20
Saba	3.86	-2.14	9.87	3.40	-2.46	9.26	3.40	-2.46	9.26	1.72	-1.00	4.43
Aden	1.24	-0.39	2.86	1.05	-0.40	2.51	1.05	-0.40	2.51	0.59	-0.52	1.70
Al-Janad	4.02	-0.18	8.22	0.04	-0.04	0.12	0.04	-0.04	0.12	0.19	-0.19	0.57
Tehama	5.16	-0.23	10.56	3.70	-2.73	10.14	3.70	-2.73	10.14	5.70	-2.80	14.21
Azal	4.64	0.80	8.48	3.95	0.51	7.38	3.95	0.51	7.38	2.61	0.18	5.05
Topography												
Mountainous	4.36	1.45	7.27	2.03	0.55	3.52	2.03	0.55	3.52	0.79	0.11	1.47
Arabian Sea	0.17	0.01	0.34	0.06	-0.05	0.16	0.06	-0.05	0.16	0.05	-0.04	0.15
Red Sea	7.95	-0.68	16.58	6.05	-4.33	16.42	6.05	-4.33	16.42	9.31	-4.37	22.98
Plateau/desert	1.38	-0.07	2.82	0.45	-0.19	1.10	0.45	-0.19	1.10	0.98	-0.02	1.98
Wealth quintile												
Poorest	1.54	0.26	2.83	1.88	-1.46	5.22	1.88	-1.46	5.22	2.23	-1.54	5.99
Second	7.49	3.27	11.71	1.41	0.23	2.59	1.41	0.23	2.59	3.12	-0.03	6.26
Middle	6.95	0.95	12.95	4.45	-0.34	9.24	4.45	-0.34	9.24	4.61	-1.06	10.28
Fourth	1.01	-0.01	2.02	1.79	0.27	3.31	1.79	0.27	3.31	0.95	-0.08	1.98
Richest	0.50	-0.14	1.15	0.38	-0.22	0.98	0.38	-0.22	0.98	0.08	-0.03	0.19
Level of Poverty												
Extreme poor	3.30	1.23	5.37	0.79	0.09	1.48	0.77	0.05	1.49	0.42	-0.10	0.94
Moderate poor	2.63	0.79	4.48	1.26	0.09	2.42	2.42	-0.51	5.35	1.89	0.03	3.75
Vulnerable	2.29	0.60	3.98	2.84	-1.44	7.12	1.69	0.37	3.02	3.52	-1.20	8.24
Non-poor	4.70	4.65	4.76	2.34	2.31	2.37	2.12	2.10	2.15	2.28	2.24	2.32
Head of household's education												
None	2.84	1.36	4.32	2.06	-0.56	4.68	2.05	-0.55	4.65	2.57	-0.94	6.07
Basic	4.10	1.56	6.64	1.67	0.44	2.89	1.68	0.45	2.91	2.02	0.29	3.75
Secondary +	4.85	0.12	9.58	2.58	-0.96	6.13	2.58	-0.96	6.13	2.38	-1.54	6.30
Quran & Literacy	1.06	-0.40	2.51	1.10	0.07	2.14	1.10	0.07	2.14	1.08	-0.04	2.21
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.11:
Percentage of Households with Access to Electricity from Generator as the Main Source of Light, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	7.51	5.51	9.51	8.73	6.31	11.15	8.73	6.31	11.15	9.71	7.31	12.11
Area of residence												
Urban	1.64	0.08	3.20	0.98	-0.06	2.02	0.98	-0.06	2.02	2.16	-0.08	4.41
Rural	9.51	6.91	12.12	11.37	8.20	14.54	11.37	8.20	14.54	12.28	9.19	15.37
Region												
Sana'a City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hadhramout	4.77	1.82	7.72	7.18	3.65	10.70	7.18	3.65	10.70	8.46	3.81	13.10
Saba	9.90	3.80	16.01	7.03	1.69	12.38	7.03	1.69	12.38	5.62	1.87	9.37
Aden	2.59	1.00	4.19	2.23	0.73	3.73	2.23	0.73	3.73	1.41	0.47	2.35
Al-Janad	8.38	3.85	12.91	10.10	3.61	16.60	10.10	3.61	16.60	10.33	4.87	15.80
Tehama	11.58	6.35	16.81	16.47	10.38	22.55	16.47	10.38	22.55	19.22	12.48	25.95
Azal	7.34	3.21	11.46	3.85	1.06	6.64	3.85	1.06	6.64	5.26	1.74	8.78
Topography												
Mountainous	10.08	6.92	13.24	8.90	5.46	12.34	8.90	5.46	12.34	10.30	6.72	13.87
Arabian Sea	1.71	0.46	2.95	3.66	1.40	5.91	3.66	1.40	5.91	2.43	0.76	4.11
Red Sea	12.71	4.15	21.27	19.10	8.50	29.71	19.10	8.50	29.71	20.68	10.53	30.83
Plateau/desert	3.43	1.83	5.02	4.70	2.37	7.02	4.70	2.37	7.02	5.33	2.61	8.04
Wealth quintile												
Poorest	5.47	1.89	9.04	8.94	3.24	14.65	8.94	3.24	14.65	11.17	6.57	15.78
Second	13.38	7.51	19.25	17.39	11.31	23.47	17.39	11.31	23.47	17.93	11.56	24.30
Middle	13.61	8.53	18.68	12.97	7.46	18.49	12.97	7.46	18.49	13.27	8.11	18.43
Fourth	3.12	1.25	4.99	1.85	0.95	2.76	1.85	0.95	2.76	3.25	1.58	4.93
Richest	0.93	0.01	1.85	0.62	-0.22	1.47	0.62	-0.22	1.47	0.86	-0.11	1.82
Level of Poverty												
Extreme poor	5.84	2.86	8.82	7.61	1.79	13.43	7.71	1.67	13.76	8.18	3.73	12.63
Moderate poor	6.18	3.87	8.49	7.06	4.09	10.02	6.75	4.46	9.05	8.16	4.68	11.64
Vulnerable	8.25	3.74	12.76	9.92	5.64	14.20	11.69	6.70	16.68	10.39	5.81	14.97
Non-poor	8.27	8.23	8.31	9.44	9.39	9.50	8.86	8.82	8.91	10.38	10.33	10.43
Head of household's education												
None	8.96	6.02	11.89	10.60	6.58	14.62	10.53	6.54	14.53	11.65	7.47	15.84
Basic	6.55	3.49	9.61	7.39	4.24	10.55	7.43	4.26	10.61	8.67	5.43	11.91
Secondary +	6.82	3.62	10.02	8.49	4.79	12.20	8.49	4.78	12.20	8.98	5.31	12.65
Quran & Literacy	3.76	-0.63	8.15	4.87	1.03	8.72	4.88	1.03	8.73	5.38	2.21	8.55
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
Note: * Missing information not included in the statistics.

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Table H.12:

Percentage of Households with Kerosene Lamp as the Main Source of Light, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	22.44	18.67	26.21	18.99	15.30	22.67	18.98	15.30	22.67	18.01	14.39	21.64
Area of residence												
Urban	2.74	0.09	5.38	2.91	0.04	5.79	2.91	0.04	5.79	2.11	0.22	4.01
Rural	29.16	24.39	33.94	24.47	19.72	29.22	24.46	19.72	29.21	23.44	18.75	28.13
Region												
Sana'a City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hadhramout	3.13	1.33	4.93	3.19	1.47	4.90	3.19	1.47	4.90	2.49	1.12	3.86
Saba	4.75	1.42	8.07	3.89	1.76	6.02	3.89	1.76	6.02	3.47	0.26	6.68
Aden	15.00	8.45	21.54	5.36	2.19	8.53	5.42	2.24	8.61	9.13	4.13	14.14
Al-Janad	22.52	13.50	31.55	16.00	7.91	24.10	16.00	7.91	24.10	17.90	9.36	26.43
Tehama	45.86	36.81	54.90	43.33	33.57	53.10	43.33	33.57	53.10	37.17	27.88	46.46
Azal	10.50	5.61	15.38	11.41	6.65	16.17	11.33	6.60	16.07	10.46	5.95	14.98
Topography												
Mountainous	20.95	15.41	26.49	17.39	12.41	22.37	17.38	12.40	22.36	17.68	12.51	22.85
Arabian Sea	4.91	0.58	9.25	2.11	0.48	3.74	2.11	0.48	3.74	2.96	0.52	5.40
Red Sea	48.30	35.11	61.49	44.96	30.19	59.74	44.96	30.19	59.74	40.73	26.50	54.95
Plateau/desert	15.16	10.69	19.64	11.67	7.64	15.70	11.67	7.64	15.70	10.56	6.85	14.27
Wealth quintile												
Poorest	74.48	68.72	80.25	62.83	54.77	70.89	62.83	54.77	70.89	60.93	53.26	68.60
Second	23.95	17.46	30.44	20.54	14.81	26.26	20.48	14.76	26.20	15.68	10.86	20.50
Middle	2.75	1.00	4.51	1.93	0.90	2.96	1.97	0.93	3.02	3.21	1.31	5.10
Fourth	0.21	0.02	0.41	0.50	0.16	0.85	0.50	0.16	0.85	1.62	0.08	3.17
Richest	0.00	0.00	0.00	0.03	-0.03	0.08	0.03	-0.03	0.08	0.10	-0.04	0.24
Level of Poverty												
Extreme poor	32.18	23.83	40.54	26.28	19.40	33.15	31.35	22.62	40.08	41.33	28.44	54.23
Moderate poor	32.77	25.41	40.13	27.73	20.07	35.40	26.88	20.57	33.20	25.34	18.37	32.30
Vulnerable	21.99	16.15	27.83	20.23	13.97	26.50	17.10	11.86	22.34	21.03	14.27	27.79
Non-poor	14.94	11.43	18.46	12.19	8.84	15.54	12.84	9.49	16.19	10.30	7.55	13.04
Head of household's education												
None	33.15	27.43	38.88	28.72	22.55	34.88	28.55	22.42	34.68	26.90	20.56	33.24
Basic	20.28	14.97	25.59	18.22	13.59	22.86	18.34	13.68	23.00	17.20	12.20	22.19
Secondary +	9.26	5.52	13.01	5.66	2.78	8.54	5.60	2.73	8.48	5.23	2.43	8.02
Quran & Literacy	9.96	3.74	16.19	13.17	6.25	20.10	13.19	6.26	20.13	14.82	6.68	22.96
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.13:
Percentage of Households with Access to Solid Fuels**
as the Primary Source of Domestic Energy, Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | | Round 4 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	37.90	33.80	42.00	39.59	35.56	43.62	39.60	35.57	43.62	34.98	30.93	39.03
Area of residence												
Urban	3.73	0.99	6.47	5.27	2.02	8.51	5.27	2.02	8.51	4.09	0.93	7.25
Rural	49.62	44.71	54.54	51.41	46.77	56.05	51.42	46.78	56.06	45.59	40.59	50.58
Region												
Sana'a City	1.73	-0.60	4.06	3.52	-1.01	8.06	3.52	-1.01	8.06	0.61	-0.59	1.80
Hadhramout	11.09	6.75	15.43	16.43	9.94	22.91	16.43	9.94	22.91	10.17	6.30	14.05
Saba	29.33	17.16	41.50	38.79	25.77	51.82	38.79	25.77	51.82	26.62	15.36	37.88
Aden	11.38	7.69	15.07	30.17	23.11	37.24	30.17	23.11	37.24	20.02	13.67	26.36
Al-Janad	43.46	32.63	54.30	35.40	25.80	44.99	35.40	25.80	44.99	28.54	19.46	37.63
Tehama	57.19	47.79	66.59	57.40	48.63	66.17	57.40	48.63	66.17	53.59	44.03	63.15
Azal	47.71	39.31	56.12	50.47	40.56	60.38	50.50	40.59	60.42	53.72	44.20	63.24
Topography												
Mountainous	46.09	39.23	52.96	46.34	39.91	52.78	46.34	39.91	52.78	42.19	35.44	48.95
Arabian Sea	2.34	0.76	3.92	13.91	6.87	20.94	13.91	6.87	20.94	5.23	1.65	8.81
Red Sea	51.88	37.44	66.31	50.81	36.91	64.71	50.81	36.91	64.71	45.20	30.18	60.21
Plateau/desert	29.01	23.46	34.57	31.73	25.94	37.53	31.75	25.95	37.55	27.78	22.25	33.31
Wealth quintile												
Poorest	84.35	78.94	89.76	83.19	77.15	89.23	83.19	77.15	89.23	78.92	72.34	85.49
Second	49.57	42.88	56.26	49.51	42.51	56.51	49.51	42.51	56.51	44.11	37.04	51.19
Middle	25.95	19.77	32.13	31.95	24.37	39.52	31.95	24.37	39.52	24.53	18.68	30.37
Fourth	13.94	9.12	18.76	17.51	12.49	22.52	17.54	12.52	22.55	13.78	9.18	18.38
Richest	3.87	1.13	6.60	5.52	2.27	8.78	5.52	2.27	8.78	3.41	0.96	5.86
Level of Poverty												
Extreme poor	60.47	50.91	70.03	60.14	50.73	69.55	67.21	58.69	75.73	65.57	55.64	75.51
Moderate poor	41.97	34.92	49.02	47.98	40.35	55.61	42.28	35.49	49.06	40.23	33.32	47.13
Vulnerable	36.32	28.92	43.73	35.79	28.89	42.69	39.52	31.37	47.67	34.78	27.84	41.72
Non-poor	32.21	32.09	32.33	32.09	31.97	32.21	32.62	32.50	32.74	28.04	27.95	28.13
Head of household's education												
None	54.25	49.02	59.47	52.81	47.06	58.56	52.49	46.76	58.23	46.87	40.97	52.78
Basic	32.73	26.59	38.87	38.05	32.28	43.81	38.24	32.46	44.02	35.04	29.54	40.54
Secondary +	17.41	12.79	22.04	18.52	13.81	23.23	18.52	13.80	23.24	15.62	11.72	19.51
Quran & Literacy	33.57	21.96	45.17	47.72	31.98	63.45	47.86	32.11	63.61	34.58	22.55	46.61
Population	3,110,288			3,095,005			3,095,005			3,104,115		
Sample	6,354			6,304			6,304			6,312		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
*Notes: * Missing information not included in the statistics.*
*** Access to solid fuels includes firewood, charcoal and animal dung.*

Table H.14:
Percentage of Households Whose Members Use Bednets When Sleeping, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	15.99	13.05	18.94	14.99	12.50	17.49	15.00	12.50	17.49	17.07	14.49	19.64
Area of residence												
Urban	6.25	3.01	9.48	7.80	4.39	11.21	7.80	4.39	11.21	7.40	4.32	10.48
Rural	19.32	15.52	23.11	17.45	14.30	20.59	17.45	14.31	20.60	20.36	17.07	23.65
Region												
Sana'a City	4.77	-3.75	13.29	0.96	-0.77	2.68	0.96	-0.77	2.68	1.14	-0.67	2.95
Hadhramout	27.08	16.89	37.27	26.93	16.46	37.40	26.93	16.46	37.40	34.57	26.84	42.29
Saba	28.38	17.71	39.05	12.09	4.04	20.14	12.09	4.04	20.14	37.21	31.07	43.35
Aden	17.44	12.65	22.24	21.08	15.93	26.23	21.08	15.93	26.23	27.26	21.20	33.32
Al-Janad	23.01	13.69	32.34	17.05	9.97	24.12	17.05	9.97	24.12	11.58	5.27	17.88
Tehama	11.76	7.36	16.16	10.56	7.07	14.06	10.56	7.07	14.06	14.78	9.75	19.81
Azal	10.10	6.20	14.00	17.80	11.25	24.36	17.83	11.27	24.39	18.46	11.91	25.01
Topography												
Mountainous	20.78	14.69	26.87	20.95	15.99	25.91	20.96	16.01	25.92	20.01	15.61	24.41
Arabian Sea	19.93	11.13	28.72	10.21	5.97	14.46	10.21	5.97	14.46	16.64	9.91	23.36
Red Sea	10.06	2.94	17.19	5.29	1.41	9.17	5.29	1.41	9.17	5.49	0.42	10.56
Plateau/desert	13.05	9.75	16.36	13.94	10.28	17.60	13.94	10.28	17.60	19.29	15.05	23.52
Wealth quintile												
Poorest	18.32	11.93	24.70	16.72	10.89	22.55	16.74	10.91	22.57	20.17	13.81	26.52
Second	16.99	10.80	23.17	17.98	13.10	22.86	17.98	13.10	22.86	17.25	10.55	23.95
Middle	18.32	13.01	23.62	13.90	10.04	17.76	13.90	10.04	17.76	13.52	9.78	17.26
Fourth	14.44	11.07	17.81	16.38	12.06	20.70	16.38	12.06	20.70	20.02	15.30	24.74
Richest	10.91	5.50	16.31	8.79	4.31	13.26	8.79	4.31	13.26	13.54	8.55	18.54
Level of Poverty												
Extreme poor	23.38	15.26	31.51	15.60	10.50	20.70	16.43	11.00	21.86	20.53	13.60	27.45
Moderate poor	15.94	11.41	20.47	16.07	11.95	20.20	17.34	13.06	21.63	16.59	12.52	20.65
Vulnerable	17.62	10.12	25.13	15.13	10.45	19.82	14.94	10.57	19.31	19.32	14.13	24.52
Non-poor	14.11	14.06	14.17	14.22	14.16	14.28	13.41	13.36	13.46	15.98	15.92	16.04
Head of household's education												
None	15.65	11.99	19.30	12.49	9.75	15.22	12.83	10.03	15.63	16.00	12.66	19.33
Basic	15.33	11.03	19.64	16.65	12.32	20.99	16.30	12.16	20.44	19.00	14.00	24.01
Secondary +	16.11	10.23	21.99	15.24	10.92	19.56	15.38	11.07	19.69	15.91	11.97	19.85
Quran & Literacy	19.62	10.55	28.69	20.36	11.56	29.16	20.32	11.55	29.09	18.28	9.98	26.57
Population	3,126,718			3,129,072			3,129,072			3,129,072		
Sample	6,385			6,397			6,397			6,397		
Missing *	0			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.16:
Percentage of Household Members Using Improved Drinking Water Sources
(Indicator 1),** Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	60.76	56.17	65.34	60.75	56.22	65.29	60.06	55.48	64.63	60.22	55.62	64.82
Area of residence												
Urban	52.84	43.54	62.14	53.70	43.99	63.40	54.84	45.25	64.42	52.32	41.82	62.82
Rural	63.34	58.10	68.58	63.01	57.95	68.08	61.74	56.51	66.98	62.76	57.71	67.81
Region												
Sana'a City	29.99	14.19	45.80	26.79	10.95	42.62	25.76	10.48	41.04	18.48	5.59	31.37
Hadhramout	75.78	67.20	84.36	79.93	71.97	87.88	80.85	73.55	88.15	75.11	67.26	82.96
Saba	50.93	35.29	66.57	47.18	32.60	61.76	55.56	38.55	72.57	46.32	34.71	57.94
Aden	67.59	59.70	75.48	53.47	44.51	62.44	55.90	46.44	65.37	55.21	45.57	64.85
Al-Janad	73.48	63.65	83.30	76.12	66.57	85.67	72.19	62.20	82.17	76.79	68.08	85.50
Tehama	55.48	45.90	65.06	62.20	53.59	70.82	61.97	53.17	70.76	61.97	52.67	71.27
Azal	55.86	44.40	67.32	52.88	41.14	64.62	51.45	40.09	62.82	54.25	42.96	65.55
Topography												
Mountainous	60.01	52.61	67.41	58.16	50.53	65.80	57.01	49.12	64.90	59.41	52.19	66.63
Arabian Sea	80.83	72.27	89.39	82.02	72.56	91.49	84.34	75.46	93.21	82.07	73.10	91.04
Red Sea	73.58	58.84	88.33	80.49	67.65	93.33	80.32	68.16	92.48	84.13	71.90	96.36
Plateau/desert	53.34	46.46	60.22	52.43	45.66	59.19	51.36	44.51	58.21	48.33	41.31	55.35
Wealth quintile												
Poorest	52.36	41.71	63.01	63.93	56.11	71.75	62.15	53.39	70.92	62.97	54.47	71.47
Second	60.58	52.87	68.28	64.18	56.42	71.93	60.04	52.10	67.98	61.99	54.62	69.37
Middle	70.95	63.69	78.20	65.41	57.45	73.36	64.37	56.26	72.49	66.45	58.63	74.27
Fourth	62.30	54.59	70.02	57.32	49.50	65.14	59.11	51.66	66.56	58.30	50.62	65.99
Richest	57.74	47.49	68.00	55.07	44.91	65.22	56.57	46.44	66.71	51.88	40.51	63.25
Level of Poverty												
Extreme poor	58.44	46.95	69.93	62.01	52.38	71.64	61.66	52.09	71.23	58.15	47.01	69.29
Moderate poor	60.67	53.53	67.81	61.57	54.60	68.54	62.82	55.94	69.70	61.33	53.72	68.95
Vulnerable	56.81	48.51	65.11	58.77	50.78	66.76	57.14	48.84	65.43	60.18	52.79	67.58
Non-poor	63.68	57.68	69.69	60.45	54.35	66.54	58.55	52.72	64.37	60.21	54.55	65.86
Head of household's education												
None	60.20	54.08	66.32	66.56	61.29	71.84	64.75	59.05	70.45	65.88	60.37	71.38
Basic	60.00	53.32	66.68	58.28	51.37	65.18	59.28	52.51	66.04	57.47	50.78	64.16
Secondary +	60.30	51.82	68.77	55.95	47.55	64.36	54.62	46.39	62.85	54.78	45.36	64.20
Quran & Literacy	69.93	55.42	84.44	56.16	41.92	70.40	55.59	41.49	69.69	59.15	45.64	72.67
Population	21,741,657			22,609,041			22,873,383			23,081,201		
Sample	46,768			48,632			49,053			49,543		
Missing *	224			198			202			214		

Source: NSPMS, All Rounds.
*Notes: * Missing information on the main source of water (no response + other) are not included in the statistics.*
** This indicator includes: piped water inside the dwelling, piped water inside the compound, public tap or standpipe outside the compound, tubewell or borehole connected to pipes, protected dug well and protected spring.

Table H.17:
Percentage of Household Members Using Improved Drinking Water Sources (Indicator 2),** Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	63.15	58.61	67.69	63.06	58.64	67.48	62.82	58.30	67.34	62.95	58.39	67.51
Area of residence												
Urban	54.73	45.46	64.00	55.47	45.86	65.08	55.97	46.36	65.58	54.00	43.46	64.55
Rural	65.90	60.70	71.09	65.49	60.59	70.39	65.03	59.92	70.15	65.83	60.87	70.79
Region												
Sana'a City	29.99	14.19	45.80	26.79	10.95	42.62	25.76	10.48	41.04	18.48	5.59	31.37
Hadhramout	75.99	67.43	84.55	80.19	72.25	88.13	82.05	74.92	89.18	77.14	69.63	84.66
Saba	50.98	35.34	66.62	47.18	32.60	61.76	55.56	38.55	72.57	46.39	34.79	57.98
Aden	69.74	62.00	77.47	55.48	46.77	64.19	58.68	49.42	67.94	56.94	47.42	66.46
Al-Janad	76.68	67.12	86.24	81.00	72.23	89.77	76.60	67.08	86.13	81.50	73.37	89.63
Tehama	57.14	47.67	66.61	63.70	55.18	72.22	65.06	56.43	73.70	63.68	54.47	72.90
Azal	60.84	48.93	72.76	55.24	43.35	67.13	53.95	42.41	65.49	58.45	46.61	70.28
Topography												
Mountainous	63.84	56.64	71.03	63.19	56.08	70.30	63.14	55.54	70.74	64.72	57.89	71.55
Arabian Sea	80.83	72.27	89.39	82.02	72.56	91.49	84.34	75.46	93.21	82.07	73.10	91.04
Red Sea	73.65	58.95	88.35	80.49	67.65	93.33	80.32	68.16	92.48	84.13	71.90	96.36
Plateau/desert	55.55	48.63	62.47	53.20	46.45	59.94	52.19	45.33	59.05	49.92	42.76	57.09
Wealth quintile												
Poorest	54.52	43.97	65.07	65.40	57.79	73.00	64.30	55.78	72.82	64.96	56.68	73.24
Second	63.28	55.64	70.92	67.34	59.79	74.88	65.83	57.95	73.71	66.12	58.77	73.47
Middle	74.33	67.39	81.27	68.75	61.24	76.27	66.48	58.58	74.38	69.50	62.03	76.98
Fourth	65.89	58.25	73.54	60.85	53.18	68.53	63.01	55.54	70.47	63.04	55.49	70.59
Richest	57.90	47.64	68.16	55.40	45.24	65.56	56.85	46.71	66.98	52.03	40.64	63.41
Level of Poverty												
Extreme poor	59.99	48.46	71.51	63.78	54.29	73.26	63.37	53.93	72.81	60.56	49.57	71.55
Moderate poor	63.69	56.70	70.68	63.80	56.93	70.68	66.17	59.43	72.92	63.54	55.93	71.15
Vulnerable	59.20	50.83	67.57	61.39	53.49	69.29	60.68	52.47	68.88	63.39	56.24	70.55
Non-poor	65.87	59.93	71.81	62.91	56.90	68.92	60.88	55.02	66.75	63.18	57.53	68.82
Head of household's education												
None	63.36	57.30	69.43	69.18	64.14	74.23	68.25	62.84	73.65	68.57	63.25	73.90
Basic	62.10	55.54	68.67	60.35	53.48	67.23	61.16	54.38	67.94	59.75	53.06	66.44
Secondary +	62.04	53.53	70.56	58.39	50.00	66.78	57.35	49.04	65.66	58.72	49.09	68.35
Quran & Literacy	70.26	55.79	84.74	57.41	43.36	71.46	58.44	44.74	72.13	60.22	46.80	73.64
Population	21,741,657			22,609,041			22,873,383			23,081,201		
Sample	46,768			48,632			49,053			49,543		
Missing *	224			198			202			214		

Source: NSPMS, All Rounds.
*Notes: * Missing information on the main source of water (no response + other) are not included in the statistics.*
*** This indicator includes: piped water inside the dwelling, piped water inside the compound, public tap or standpipe outside the compound, tubewell or borehole connected to pipes, protected dug well, protected spring and rainwater harvesting/cistern.*

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Table H.18:
Percentage of Household Members Using Improved Drinking Water Sources
(Indicator 3),** Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	84.31	81.43	87.20	85.17	82.59	87.75	85.48	82.76	88.21	86.34	83.95	88.72
Area of residence												
Urban	97.48	95.01	99.95	98.36	96.03	100.69	98.29	95.87	100.71	99.23	98.26	100.21
Rural	80.01	76.21	83.81	80.95	77.57	84.32	81.35	77.77	84.92	82.19	79.00	85.37
Region												
Sana'a City	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Hadhramout	94.82	91.96	97.68	96.01	92.50	99.53	97.11	94.99	99.23	92.86	88.37	97.34
Saba	83.47	74.53	92.40	84.09	75.48	92.70	84.21	75.55	92.87	81.08	71.62	90.54
Aden	91.40	87.30	95.50	78.56	71.69	85.43	83.15	76.30	90.01	83.23	76.78	89.67
Al-Janad	86.29	78.55	94.03	90.85	85.08	96.62	87.98	80.99	94.96	92.09	87.70	96.49
Tehama	70.84	64.11	77.58	77.14	71.61	82.66	79.61	74.02	85.20	77.72	71.45	83.98
Azal	83.60	77.33	89.87	81.21	74.17	88.26	80.07	73.25	86.88	83.96	77.84	90.08
Topography												
Mountainous	75.54	69.86	81.22	75.53	70.16	80.91	77.33	71.70	82.97	78.55	74.10	82.99
Arabian Sea	97.55	94.94	100.15	94.21	89.44	98.98	95.34	90.90	99.78	94.40	89.65	99.16
Red Sea	89.51	80.89	98.13	95.91	92.34	99.48	95.66	91.69	99.62	97.51	94.69	100.33
Plateau/desert	89.13	85.39	92.86	89.48	85.91	93.05	88.29	84.44	92.14	88.70	84.98	92.42
Wealth quintile												
Poorest	57.65	47.56	67.73	70.51	63.51	77.50	68.60	60.64	76.57	69.58	61.76	77.40
Second	74.72	68.76	80.68	78.08	72.39	83.77	78.75	72.89	84.60	79.08	73.82	84.34
Middle	91.74	89.02	94.47	87.30	82.97	91.62	87.69	83.38	92.00	89.70	86.60	92.79
Fourth	97.98	96.70	99.27	92.73	89.45	96.02	94.76	91.97	97.55	95.36	93.10	97.61
Richest	99.57	98.92	100.22	99.75	99.53	99.97	99.91	99.80	100.02	99.64	99.32	99.95
Level of Poverty												
Extreme poor	80.68	73.71	87.65	80.65	74.50	86.79	83.01	77.83	88.19	82.39	76.95	87.84
Moderate poor	83.68	79.24	88.13	83.08	79.05	87.11	85.42	81.85	88.99	84.92	81.12	88.72
Vulnerable	82.41	76.40	88.42	85.52	81.52	89.52	86.19	82.46	89.93	82.26	76.98	87.53
Non-poor	87.20	84.07	90.33	88.64	85.68	91.60	86.21	82.30	90.12	90.09	87.68	92.50
Head of household's education												
None	79.01	74.79	83.22	81.23	77.45	85.00	81.62	77.63	85.61	82.40	78.73	86.07
Basic	84.02	79.57	88.47	86.24	82.94	89.54	86.84	83.61	90.06	86.58	83.37	89.79
Secondary +	92.81	89.91	95.71	91.57	88.80	94.34	90.76	87.52	94.01	93.41	91.12	95.69
Quran & Literacy	89.46	83.44	95.49	81.02	72.00	90.05	83.37	75.78	90.96	83.82	76.39	91.25
Population	21741657			22609041			22873383			23081201		
Sample	46768			48632			49053			49543		
Missing *	224			198			202			214		

Source: NSPMS, All Rounds.
*Notes: * Missing information on the main source of water (no response + other) are not included in the statistics.*
*** This indicator includes: piped water inside the dwelling, piped water inside the compound, public tap or standpipe outside the compound, tubewell or borehole connected to pipes, protected dug well, protected spring, rainwater harvesting/cistern, tanker truck, bottled water and jerry can- filtered water.*

Table H.19:
Percentage of Household Members with Access to Piped Water Inside the Dwelling, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	28.27	23.88	32.65	27.47	23.07	31.87	26.43	22.05	30.81	28.75	24.31	33.20
Area of residence												
Urban	49.08	39.70	58.46	48.88	39.26	58.50	50.47	40.72	60.22	48.11	37.83	58.40
Rural	21.47	16.51	26.43	20.62	15.72	25.52	18.67	13.91	23.43	22.53	17.50	27.55
Region												
Sana'a City	27.10	11.10	43.09	24.81	9.18	40.44	22.46	6.98	37.94	17.34	4.68	30.00
Hadhramout	68.19	59.09	77.29	71.81	63.27	80.35	72.52	64.40	80.64	70.34	61.84	78.83
Saba	34.02	19.03	49.02	26.66	12.31	41.00	26.47	11.03	41.90	24.65	13.34	35.95
Aden	40.37	30.96	49.78	38.04	28.90	47.18	35.51	26.52	44.50	39.21	30.14	48.28
Al-Janad	15.55	6.71	24.40	17.98	8.26	27.70	19.20	8.85	29.55	25.75	15.42	36.08
Tehama	24.59	13.82	35.35	24.12	13.58	34.66	20.36	10.80	29.92	24.03	13.83	34.24
Azal	26.67	16.46	36.87	21.08	11.68	30.47	21.41	12.10	30.73	21.14	12.24	30.03
Topography												
Mountainous	13.36	7.07	19.64	14.39	7.64	21.13	14.74	7.53	21.94	18.32	11.15	25.48
Arabian Sea	73.43	64.18	82.68	76.59	66.32	86.85	72.52	60.04	85.01	72.43	60.32	84.54
Red Sea	34.83	17.68	51.98	35.93	18.54	53.32	29.21	13.48	44.94	34.99	18.20	51.78
Plateau/desert	33.76	27.05	40.46	29.63	23.29	35.97	29.80	23.48	36.12	29.89	23.70	36.07
Wealth quintile												
Poorest	3.94	0.37	7.51	4.67	0.91	8.43	2.83	0.04	5.62	8.53	2.58	14.49
Second	15.35	7.85	22.86	16.72	9.32	24.12	13.24	5.84	20.65	14.43	7.57	21.29
Middle	25.76	16.68	34.83	24.58	15.64	33.53	23.05	14.37	31.72	29.81	20.66	38.95
Fourth	42.31	34.74	49.88	40.32	32.85	47.78	41.17	33.78	48.57	41.54	34.16	48.91
Richest	53.91	43.68	64.13	51.51	41.42	61.60	52.25	42.23	62.28	48.99	37.83	60.15
Level of Poverty												
Extreme poor	19.14	12.22	26.06	22.24	12.24	32.25	15.47	8.69	22.24	16.72	8.42	25.03
Moderate poor	28.05	20.99	35.11	27.57	20.19	34.95	27.73	20.44	35.03	27.20	20.67	33.72
Vulnerable	30.94	23.29	38.58	31.18	23.28	39.07	33.32	24.11	42.53	35.12	25.52	44.72
Non-poor	30.68	24.55	36.82	28.05	22.55	33.56	26.51	21.51	31.51	30.97	25.38	36.57
Head of household's education												
None	21.90	16.88	26.92	23.50	17.95	29.04	23.21	17.70	28.73	25.93	20.39	31.47
Basic	31.20	24.56	37.84	27.38	21.07	33.69	26.99	20.85	33.14	26.57	20.52	32.62
Secondary +	36.32	27.69	44.95	34.21	25.57	42.85	31.15	22.48	39.81	35.33	26.62	44.05
Quran & Literacy	28.56	14.35	42.77	26.99	8.92	45.06	26.20	8.15	44.24	32.22	14.49	49.95
Population	21,741,657			22,609,041			22,873,383			23,081,201		
Sample	46,768			48,632			49,053			49,543		
Missing *	224			198			202			214		

Source: NSPMS, All Rounds.
Note: * Missing information on the main source of water (no response + other) are not included in the statistics.

Table H.20:
Percentage of Household Members Using an Appropriate Method to Treat Water, * *
Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | | Round 4 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	3.00	1.31	4.68	3.27	1.37	5.17	3.34	1.60	5.07	3.22	1.37	5.08
Area of residence												
Urban	9.05	2.69	15.41	9.98	2.83	17.13	8.12	1.88	14.36	9.70	2.86	16.54
Rural	0.98	0.59	1.36	1.12	0.47	1.77	1.79	0.78	2.80	1.14	0.36	1.91
Region												
Sana'a City	16.68	0.46	32.90	19.64	1.61	37.67	17.11	0.70	33.53	24.09	7.79	40.39
Hadhramout	1.98	-0.35	4.30	1.12	0.09	2.14	0.22	-0.22	0.67	0.07	-0.04	0.18
Saba	0.96	-0.04	1.96	4.94	-2.05	11.93	0.10	-0.07	0.26	0.17	-0.08	0.42
Aden	1.31	-0.13	2.74	2.56	0.13	4.99	2.81	0.74	4.89	2.20	-1.48	5.88
Al-Janad	0.13	-0.05	0.31	0.07	-0.03	0.17	1.22	-0.93	3.36	0.00	0.00	0.00
Tehama	1.17	0.28	2.06	0.06	0.00	0.12	0.15	0.02	0.29	0.30	-0.11	0.71
Azal	5.13	2.62	7.63	6.17	2.97	9.37	6.98	3.67	10.29	5.18	2.62	7.75
Topography												
Mountainous	1.35	0.67	2.04	1.43	0.50	2.36	1.65	0.75	2.54	1.61	0.31	2.91
Arabian Sea	2.35	-0.31	5.01	2.59	-0.18	5.35	4.15	0.25	8.06	0.18	-0.09	0.45
Red Sea	0.44	-0.40	1.28	0.00	0.00	0.00	1.86	-1.64	5.37	0.00	0.00	0.00
Plateau/desert	5.78	1.62	9.95	6.60	1.89	11.30	5.54	1.44	9.64	6.66	2.18	11.14
Wealth quintile												
Poorest	0.76	0.02	1.50	0.61	-0.10	1.33	2.06	-0.81	4.92	0.37	-0.31	1.05
Second	0.38	0.14	0.62	0.76	0.01	1.51	0.92	0.09	1.74	0.65	-0.10	1.39
Middle	1.85	0.79	2.90	1.48	0.54	2.42	2.09	0.88	3.29	1.44	0.60	2.29
Fourth	3.58	1.58	5.58	2.63	1.07	4.19	3.19	1.17	5.21	3.14	1.32	4.97
Richest	8.42	0.67	16.17	11.38	2.59	20.18	9.10	1.25	16.95	10.71	1.99	19.43
Level of Poverty												
Extreme poor	0.99	0.44	1.54	7.28	-1.67	16.22	4.23	0.54	7.92	2.45	0.48	4.41
Moderate poor	5.57	0.38	10.75	2.55	1.09	4.01	4.78	-0.26	9.81	4.83	-0.92	10.58
Vulnerable	1.83	0.29	3.38	2.17	0.06	4.27	1.73	0.01	3.45	1.52	0.27	2.76
Non-poor	2.16	1.18	3.14	2.54	-0.19	5.28	2.56	1.24	3.88	3.16	0.75	5.57
Head of household's education												
None	1.66	0.84	2.48	1.33	0.51	2.16	2.08	0.52	3.64	1.14	0.33	1.96
Basic	2.78	1.23	4.32	4.24	0.82	7.67	2.63	1.22	4.03	3.12	-0.07	6.32
Secondary +	6.37	-0.31	13.06	5.86	-0.67	12.38	7.16	0.76	13.57	7.38	0.94	13.82
Quran & Literacy	0.64	-0.06	1.35	1.12	-0.12	2.37	0.97	0.07	1.87	1.62	-0.79	4.04
Population	21,813,997			22,657,715			22,898,805			23,150,602		
Sample	46,756			48,670			49,125			49,638		
Missing *	236			160			130			119		

Table H. 21:

Percentage of Households that Have Access to Water in Less than 30 Minutes of Walking, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	71.14	66.41	75.87	71.98	.	.	73.02	68.20	77.85	77.32	.	.
Area of residence					.	.					.	.
Urban	92.41	83.56	101.26	93.26	.	.	92.27	82.79	101.75	96.05	.	.
Rural	67.05	61.59	72.50	67.66	.	.	68.89	63.36	74.42	73.24	.	.
Region												
Sana'a City	97.81	95.20	100.41	99.61	.	.	99.93	99.80	100.07	99.91	.	.
Hadhramout	71.84	55.51	88.17	68.32	.	.	66.30	49.41	83.18	78.30	.	.
Saba	65.72	45.97	85.46	68.88	.	.	62.91	43.92	81.90	51.71	.	.
Aden	76.27	65.68	86.86	66.26	.	.	75.01	68.23	81.79	75.25	.	.
Al-Janad	85.45	79.07	91.84	82.39	.	.	82.34	74.98	89.70	85.93	.	.
Tehama	55.85	45.99	65.70	56.63	.	.	59.30	48.83	69.77	64.20	.	.
Azal	58.34	49.58	67.09	72.95	.	.	72.14	65.20	79.09	80.79	.	.
Topography												
Mountainous	68.48	62.78	74.17	64.76	.	.	68.38	62.75	74.01	68.56	.	.
Arabian Sea	98.18	96.15	100.20	88.65	.	.	92.43	82.91	101.95	91.80	.	.
Red Sea	76.18	54.73	97.63	87.34	.	.	82.32	62.77	101.88	91.94	.	.
Plateau/desert	72.21	64.99	79.43	74.66	.	.	73.42	65.55	81.29	82.13	.	.
Wealth quintile												
Poorest	58.57	49.04	68.10	65.76	.	.	61.35	51.47	71.22	71.47	.	.
Second	69.33	61.67	76.99	65.35	.	.	67.87	60.61	75.13	71.86	.	.
Middle	77.69	70.92	84.46	76.27	.	.	83.63	77.65	89.60	77.83	.	.
Fourth	85.91	77.70	94.11	75.16	.	.	79.94	72.70	87.18	87.11	.	.
Richest	98.06	95.67	100.45	99.06	.	.	99.51	98.82	100.19	99.80	.	.
Level of Poverty												
Extreme poor	69.95	61.74	78.15	74.52	.	.	66.39	54.38	78.40	79.50	.	.
Moderate poor	66.57	56.42	76.71	68.91	.	.	68.81	59.68	77.95	78.93	.	.
Vulnerable	68.85	60.27	77.42	66.32	.	.	73.18	66.67	79.70	70.94	.	.
Non-poor	74.81	69.75	79.87	74.98	.	.	76.96	72.28	81.65	78.20	.	.
Head of household's education											.	.
None	63.48	56.44	70.52	66.64	.	.	65.46	57.54	73.37	71.48	.	.
Basic	75.51	69.15	81.87	72.21	.	.	76.91	71.36	82.46	82.17	.	.
Secondary +	83.99	78.38	89.61	84.65	.	.	84.74	79.25	90.22	81.84	.	.
Quran & Literacy	73.54	59.64	87.44	63.03	.	.	68.82	57.50	80.15	80.44	.	.
Population	1,597,278			1,669,884			1,651,636			1,592,604		
Sample	3,255			3,315			3,247			3,181		
Missing *	18			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.22:
Average Amount of Water Consumed by Households (in Litres) in the 30 Days Prior to the Interview (Indicator 1), Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	6278	5783	6773	5684	5335	6034	5798	5477	6119	6271	5862	6680
Area of residence												
Urban	8995	7291	10700	7594	6782	8405	8487	7475	9500	10381	8914	11848
Rural	5353	5005	5700	5033	4609	5456	4880	4560	5200	4927	4599	5255
Region												
Sana'a City	10490	6180	14799	7619	6712	8527	11588	10038	13139	17647	16234	19059
Hadhramout	13482	11965	15000	14494	12179	16809	14306	12740	15872	14136	12647	15625
Saba	8232	4924	11539	5867	5342	6391	6316	5781	6851	6961	6286	7636
Aden	7058	5888	8229	6960	6116	7803	5981	5526	6436	5864	5341	6387
Al-Janad	4339	3663	5015	4258	3512	5004	3885	3537	4234	3791	3555	4026
Tehama	5021	4631	5411	4630	4191	5068	4516	4157	4874	4762	4213	5312
Azal	5585	4988	6183	4385	4018	4753	4602	4132	5072	4406	3949	4863
Topography												
Mountainous	4294	4004	4583	4169	3673	4666	3915	3673	4157	3875	3666	4084
Arabian Sea	10895	9012	12778	12134	10343	13926	11148	9270	13025	10351	8429	12273
Red Sea	5996	5457	6535	5597	4968	6225	5475	4893	6058	5785	4967	6603
Plateau/ desert	7730	6552	8909	6256	5623	6889	7036	6340	7733	8354	7418	9291
Wealth quintile												
Poorest	4512	4147	4876	3932	3643	4220	3981	3566	4396	3883	3585	4181
Second	4446	4056	4836	4742	3857	5627	4205	3874	4537	4329	4006	4652
Middle	4886	4471	5302	4609	4154	5064	4616	4243	4989	4788	4327	5250
Fourth	7104	6434	7773	6494	5913	7075	6645	6014	7276	7179	6494	7864
Richest	11427	9247	13608	9395	8146	10644	10462	9196	11728	12598	10977	14220
Level of Poverty												
Extreme poor	7651	6795	8508	6985	6093	7878	7461	6377	8545	7173	6140	8206
Moderate poor	6769	6066	7472	5704	5210	6198	5985	5510	6460	6477	5793	7162
Vulnerable	7134	5161	9108	5725	5005	6445	6417	5386	7448	6106	5357	6855
Non-poor	5419	-124359	135198	5398	-130615	141411	5120	-81736	91975	6103	-192194	204400
Head of household's education												
None	5663	5284	6041	5394	4822	5965	5231	4852	5610	5206	4898	5513
Basic	5907	5321	6493	5753	5072	6434	6010	5350	6671	6377	5672	7082
Secondary +	7682	6015	9349	6134	5625	6643	6571	5845	7297	8072	7027	9117
Quran & Literacy	7182	5458	8907	5440	4472	6408	5219	4310	6128	5710	4838	6581
Population	3,125,064			3,129,072			3,129,072			2,985,735		
Sample	6,379			6,397			6,397			6,124		
Missing *	16			0			0			273		

Source: NSPMS, All Rounds.
Note: * Missing information not included in the statistics.

Table H.23:
Average Amount of Water Consumed per Person (in Litres) in the 30 Days Prior to the Interview (Indicator 2), Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	897	829	965	821	768	873	841	798	884	921	861	981
Area of residence												
Urban	1309	1076	1541	1122	988	1257	1270	1116	1423	1587	1363	1810
Rural	760	712	808	722	660	784	701	659	742	713	662	764
Region												
Sana'a City	1431	890	1973	1076	898	1254	1662	1335	1989	2624	2185	3064
Hadhramout	1594	1400	1788	1805	1495	2116	1771	1609	1934	1809	1586	2031
Saba	1031	608	1454	759	712	806	835	798	872	910	858	963
Aden	1115	903	1328	1037	900	1173	894	835	953	886	803	969
Al-Janad	602	504	700	591	481	701	548	507	589	531	492	569
Tehama	802	751	854	740	673	806	719	662	775	756	668	845
Azal	740	672	808	589	554	625	619	575	663	596	555	637
Topography												
Mountainous	606	569	643	591	518	663	561	533	588	553	526	581
Arabian Sea	1540	1274	1805	1702	1417	1987	1556	1325	1786	1519	1226	1813
Red Sea	948	860	1036	877	766	989	856	749	964	899	752	1045
Plateau/desert	1073	915	1230	891	799	984	1007	915	1099	1218	1091	1345
Wealth quintile												
Poorest	723	676	771	635	590	679	647	575	720	618	573	663
Second	678	628	729	720	588	852	631	582	681	645	601	688
Middle	685	623	746	644	571	716	653	604	701	669	602	736
Fourth	963	868	1057	903	813	992	933	846	1020	1024	916	1132
Richest	1436	1167	1705	1215	1022	1407	1346	1173	1519	1711	1487	1935
Level of Poverty												
Extreme poor	616	559	673	589	528	650	653	589	718	677	548	806
Moderate poor	841	769	914	725	663	787	754	701	808	796	729	863
Vulnerable	1031	762	1300	848	747	948	928	796	1060	899	789	1008
Non-poor	987	892	1082	987	889	1086	947	869	1026	1082	974	1189
Head of household's education												
None	809	752	865	784	700	868	776	724	829	774	724	824
Basic	882	801	962	849	750	948	885	801	968	953	845	1060
Secondary +	1119	888	1349	903	815	992	960	855	1064	1211	1059	1363
Quran & Literacy	757	583	932	627	521	733	614	515	712	680	566	794
Population	21,869,266			22,785,503			22,981,109			22,042,769		
Sample	46,869			48,830			49,255			47,673		
Missing *	123			0			0			2084		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.24:
Average Amount of Water Consumed per Person (in Litres) per Day (Indicator 3),
Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	30	27	32	27	25	29	28	26	29	30	28	32
Area of residence												
Urban	43	35	51	37	33	42	42	37	47	52	45	60
Rural	25	23	27	24	22	26	23	22	24	23	22	25
Region												
Sana'a City	47	29	65	36	30	41	55	44	66	87	72	102
Hadhramout	53	46	59	60	49	70	59	53	64	60	52	67
Saba	34	20	48	25	23	27	28	26	29	30	28	32
Aden	37	30	44	34	30	39	29	27	31	29	26	32
Al-Janad	20	16	23	19	16	23	18	17	19	17	16	19
Tehama	26	25	28	24	22	27	24	22	25	25	22	28
Azal	24	22	27	19	18	20	20	19	22	20	18	21
Topography												
Mountainous	20	19	21	19	17	22	18	17	19	18	17	19
Arabian Sea	51	42	60	56	47	66	51	44	59	50	40	60
Red Sea	31	28	34	29	25	33	28	25	32	30	25	35
Plateau/desert	35	30	41	29	26	32	33	30	36	40	36	44
Wealth quintile												
Poorest	24	22	25	21	19	22	21	19	24	20	19	22
Second	22	21	24	24	19	28	21	19	22	21	20	23
Middle	22	20	24	21	19	24	21	20	23	22	20	24
Fourth	32	29	35	30	27	33	31	28	34	34	30	37
Richest	47	38	56	40	34	47	45	39	50	57	49	64
Level of Poverty												
Extreme poor	20	18	22	19	17	21	21	19	24	22	18	26
Moderate poor	28	25	30	24	22	26	25	23	27	26	24	28
Vulnerable	34	25	43	28	25	31	31	26	35	30	26	33
Non-poor	33	29	36	33	29	36	31	29	34	36	32	39
Head of household's education												
None	27	25	28	26	23	29	26	24	27	25	24	27
Basic	29	26	32	28	25	31	29	26	32	31	28	35
Secondary +	37	29	45	30	27	33	32	28	35	40	35	45
Quran & Literacy	25	19	31	21	17	24	20	17	23	22	18	26
Population	21,869,266			22,785,503			22,981,109			22,042,769		
Sample	46,869			48,830			49,255			47,673		
Missing *	123			0			0			2,084		

Source: NSPMS, All Rounds.
*Note: * Missing information not included in the statistics.*

Table H.25:
Percentage of Households that Had Soap Available for Hand Washing in the Week Prior to the Survey, Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper
Total	81.62	78.98	84.26	81.98	79.53	84.43	81.96	79.51	84.41
Area of residence									
Urban	88.10	84.10	92.09	94.82	91.85	97.79	94.82	91.85	97.79
Rural	79.41	76.16	82.66	77.60	74.52	80.67	77.57	74.49	80.64
Region									
Sana'a City	77.29	68.40	86.18	90.96	83.68	98.25	90.95	83.66	98.24
Hadhramout	95.89	93.10	98.67	97.17	95.63	98.71	97.17	95.63	98.71
Saba	95.78	93.62	97.94	94.00	91.37	96.63	94.00	91.37	96.63
Aden	92.61	90.23	94.98	83.54	77.84	89.24	83.54	77.84	89.24
Al-Janad	87.89	82.88	92.89	80.87	74.15	87.60	80.87	74.15	87.60
Tehama	66.57	60.28	72.87	75.58	71.12	80.04	75.51	71.05	79.97
Azal	82.82	77.33	88.31	80.60	75.29	85.92	80.60	75.29	85.92
Topography									
Mountainous	80.64	76.65	84.63	74.06	69.57	78.56	74.01	69.52	78.51
Arabian Sea	96.42	93.62	99.22	95.75	92.84	98.66	95.75	92.84	98.66
Red Sea	75.45	66.04	84.87	76.54	67.48	85.60	76.54	67.48	85.60
Plateau/desert	83.02	79.28	86.76	90.44	87.39	93.49	90.44	87.38	93.49
Wealth quintile									
Poorest	57.13	49.71	64.55	61.99	55.72	68.25	61.90	55.63	68.16
Second	80.27	75.90	84.64	78.33	73.69	82.97	78.33	73.69	82.97
Middle	89.84	86.62	93.06	87.36	83.88	90.84	87.36	83.88	90.84
Fourth	91.81	88.50	95.12	89.96	86.53	93.38	89.95	86.53	93.37
Richest	94.42	90.71	98.13	97.35	93.98	100.72	97.35	93.98	100.72
Level of poverty									
Extreme poor	78.44	70.72	86.17	69.79	59.13	80.44	67.10	55.24	78.97
Moderate poor	76.32	70.19	82.45	77.74	73.42	82.06	78.41	74.21	82.61
Vulnerable	83.39	78.92	87.86	81.61	77.23	85.99	82.42	78.06	86.78
Non-poor	84.55	84.49	84.60	86.91	86.87	86.95	86.67	86.63	86.71
Head of household's education									
None	74.04	69.65	78.44	76.12	72.29	79.95	76.23	72.42	80.04
Basic	83.51	78.95	88.07	82.75	78.57	86.93	82.64	78.44	86.85
Secondary +	90.77	87.26	94.28	90.93	87.45	94.41	90.86	87.38	94.35
Quran & Literacy	89.53	84.70	94.37	79.97	71.59	88.35	80.16	71.78	88.54
Population	3,127,358			3,129,072			3,129,072		
Sample	6,388			6,397			6,397		
Missing *	7			0			0		

Source: NSPMS, Rounds 1, 2 and 3.
Notes: There is no comparable information on soap availability in the household in Round 4.
* Missing information not included in the statistics.

Table H.26:
Percentage of Households that Had Soap Available for Body Washing in the Week Prior to the Survey, Yemen, 2012-2013

	Round 1			Round 2			Round 3		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	84.54	81.93	87.15	85.33	82.94	87.73	85.33	82.93	87.72
Area of residence									
Urban	85.99	81.08	90.90	94.08	91.06	97.11	94.08	91.06	97.11
Rural	84.05	80.96	87.13	82.35	79.40	85.31	82.34	79.38	85.30
Region									
Sana'a City	68.16	56.18	80.14	87.30	79.36	95.24	87.30	79.36	95.24
Hadhramout	96.98	95.24	98.73	98.11	97.01	99.21	98.11	97.01	99.21
Saba	95.44	92.92	97.96	95.82	93.63	98.01	95.82	93.63	98.01
Aden	93.40	91.28	95.51	86.75	81.52	91.98	86.69	81.43	91.94
Al-Janad	88.31	83.34	93.27	81.86	75.15	88.58	81.86	75.15	88.58
Tehama	72.28	65.87	78.70	82.82	78.59	87.04	82.82	78.59	87.04
Azal	93.89	91.02	96.75	85.83	80.72	90.93	85.83	80.72	90.93
Topography									
Mountainous	87.76	84.42	91.11	81.53	77.51	85.54	81.50	77.49	85.52
Arabian Sea	96.55	94.21	98.89	97.13	94.84	99.41	97.13	94.84	99.41
Red Sea	76.86	67.46	86.26	76.87	67.79	85.94	76.87	67.79	85.94
Plateau/desert	82.71	78.69	86.73	91.21	88.22	94.20	91.21	88.22	94.20
Wealth quintile									
Poorest	63.60	56.02	71.18	67.35	60.97	73.72	67.35	60.97	73.72
Second	86.43	82.66	90.19	82.91	78.62	87.19	82.91	78.62	87.19
Middle	92.31	89.53	95.09	90.90	87.85	93.95	90.86	87.80	93.91
Fourth	93.13	90.28	95.97	93.55	90.68	96.41	93.55	90.68	96.41
Richest	91.11	85.38	96.83	96.20	92.45	99.95	96.20	92.45	99.95
Level of poverty									
Extreme poor	81.62	74.19	89.05	73.30	62.42	84.19	70.07	57.81	82.32
Moderate poor	78.73	72.52	84.94	80.31	75.99	84.62	81.70	77.61	85.79
Vulnerable	86.70	82.43	90.97	86.68	82.74	90.62	86.12	82.03	90.20
Non-poor	87.57	87.52	87.63	90.04	90.01	90.08	90.03	90.00	90.07
Head of household's education									
None	78.87	74.51	83.22	79.81	75.96	83.66	79.94	76.11	83.77
Basic	85.84	81.39	90.30	85.65	81.43	89.87	85.54	81.29	89.79
Secondary +	90.98	86.35	95.61	93.60	90.35	96.85	93.60	90.35	96.85
Quran & Literacy	93.56	89.73	97.38	86.42	79.21	93.64	86.40	79.18	93.63
Population	3,127,358			3,129,072			3,129,072		
Sample	6,388			6,397			6,397		
Missing*	7			0			0		

Source: NSPMS, Rounds 1, 2 and 3.
Notes: There is no comparable information on soap availability in the household in Round 4.
* Missing information not included in the statistics.

Table H.27:

Percentage of Households that Had Soap Available for Clothes Washing in the Week Prior to the Survey, Yemen, 2012-2013

	Round 1			Round 2			Round 3		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	92.65	90.96	94.34	94.43	92.90	95.96	94.43	92.90	95.96
Area of residence									
Urban	94.60	91.47	97.72	97.88	96.27	99.49	97.88	96.27	99.49
Rural	91.99	89.94	94.03	93.25	91.29	95.22	93.25	91.29	95.22
Region									
Sana'a City	92.41	85.21	99.62	96.66	92.17	101.15	96.66	92.17	101.15
Hadhramout	98.39	97.12	99.66	99.50	98.95	100.04	99.50	98.95	100.04
Saba	95.33	92.79	97.87	94.11	89.36	98.86	94.11	89.36	98.86
Aden	97.00	95.90	98.09	94.52	92.17	96.87	94.52	92.17	96.87
Al-Janad	92.26	87.63	96.88	91.39	86.65	96.12	91.39	86.65	96.12
Tehama	85.80	82.09	89.51	92.98	90.00	95.95	92.98	90.00	95.95
Azal	98.91	97.97	99.84	98.56	97.81	99.30	98.56	97.81	99.30
Topography									
Mountainous	93.50	90.81	96.20	94.42	91.90	96.95	94.42	91.90	96.95
Arabian Sea	97.90	96.47	99.32	98.58	97.29	99.87	98.58	97.29	99.87
Red Sea	87.68	82.08	93.29	88.94	82.69	95.19	88.94	82.69	95.19
Plateau/desert	93.15	90.62	95.68	96.24	94.65	97.83	96.24	94.65	97.83
Wealth quintile									
Poorest	80.01	73.86	86.16	86.29	81.04	91.55	86.29	81.04	91.55
Second	93.39	90.93	95.85	93.35	90.47	96.24	93.35	90.47	96.24
Middle	96.57	95.01	98.12	97.25	95.90	98.59	97.25	95.90	98.59
Fourth	98.18	97.07	99.29	98.32	97.60	99.04	98.32	97.60	99.04
Richest	97.57	94.13	101.01	98.79	96.67	100.90	98.79	96.67	100.90
Level of poverty									
Extreme poor	88.35	81.30	95.40	89.78	83.29	96.27	88.77	81.89	95.65
Moderate poor	90.32	87.02	93.62	92.36	88.98	95.73	92.66	89.50	95.82
Vulnerable	93.04	89.35	96.72	92.39	88.05	96.74	93.36	89.45	97.27
Non-poor	94.59	94.56	94.62	97.27	97.26	97.27	96.96	96.95	96.97
Head of household's education									
None	89.98	87.59	92.38	92.36	90.23	94.48	92.41	90.30	94.52
Basic	92.51	88.56	96.47	94.35	91.25	97.46	94.31	91.19	97.44
Secondary +	96.50	93.65	99.36	97.87	96.09	99.66	97.87	96.08	99.66
Quran & Literacy	97.78	96.01	99.54	94.50	89.62	99.38	94.49	89.60	99.37
Population	3,127,358			3,129,072			3,129,072		
Sample	6,388			6,397			6,397		
Missing *	7			0			0		

Table H.28:
Percentage of Households that Had Soap Available for Cleaning Utensils and House Compound in the Week Prior to the Survey, Yemen, 2012-2013

	Round 1			Round 2			Round 3		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	87.98	86.02	89.94	89.07	87.20	90.93	89.06	87.20	90.92
Area of residence									
Urban	89.47	85.22	93.71	97.66	96.38	98.94	97.66	96.38	98.94
Rural	87.47	85.19	89.75	86.13	83.70	88.56	86.13	83.70	88.56
Region									
Sana'a City	83.54	74.91	92.17	97.36	94.95	99.77	97.36	94.95	99.77
Hadhramout	97.68	96.23	99.14	98.82	97.99	99.64	98.82	97.99	99.64
Saba	94.11	91.21	97.00	91.23	85.71	96.75	91.23	85.71	96.75
Aden	95.48	93.89	97.08	94.87	92.55	97.20	94.87	92.55	97.20
Al-Janad	94.19	90.11	98.26	91.53	86.79	96.28	91.53	86.79	96.28
Tehama	80.91	76.75	85.08	88.06	84.65	91.47	88.06	84.65	91.47
Azal	81.92	76.63	87.21	74.23	68.32	80.15	74.20	68.29	80.11
Topography									
Mountainous	89.34	86.58	92.11	84.18	80.74	87.61	84.18	80.74	87.61
Arabian Sea	96.22	93.94	98.50	98.32	96.98	99.65	98.32	96.98	99.65
Red Sea	86.94	81.12	92.77	87.99	81.56	94.43	87.99	81.56	94.43
Plateau/desert	85.69	82.10	89.28	93.14	90.72	95.56	93.13	90.70	95.55
Wealth quintile									
Poorest	72.05	65.60	78.51	74.39	68.57	80.21	74.39	68.57	80.21
Second	88.96	85.64	92.28	87.01	83.64	90.39	87.01	83.64	90.39
Middle	93.46	91.16	95.76	93.22	90.61	95.82	93.22	90.61	95.82
Fourth	92.95	89.68	96.23	94.63	92.18	97.09	94.61	92.15	97.06
Richest	95.67	91.66	99.68	99.68	99.25	100.11	99.68	99.25	100.11
Level of poverty									
Extreme poor	81.80	73.68	89.92	85.84	79.10	92.57	83.17	75.97	90.38
Moderate poor	87.39	84.32	90.47	85.67	81.74	89.59	86.66	83.06	90.26
Vulnerable	87.70	83.44	91.97	89.65	85.47	93.83	89.46	85.51	93.41
Non-poor	89.49	89.45	89.53	91.39	91.37	91.41	91.41	91.39	91.43
Head of household's education									
None	84.38	81.54	87.23	85.41	82.71	88.11	85.49	82.81	88.17
Basic	88.57	84.59	92.55	88.71	85.12	92.31	88.64	85.03	92.25
Secondary +	92.32	88.38	96.26	96.13	94.62	97.63	96.12	94.62	97.63
Quran & Literacy	94.03	90.23	97.83	86.51	80.01	93.02	86.49	79.98	93.01
Population	3,127,358			3,129,072			3,129,072		
Sample	6,388			6,397			6,397		
Missing*	7			0			0		

Source: NSPMS, Rounds 1, 2 and 3.
Notes: There is no comparable information on soap availability in the household in Round 4.
* Missing information not included in the statistics.

Table H.29:
Percentage of Household Members Using Improved Sanitation Facilities,**
Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	62.81	58.50	67.12	50.46	46.14	54.78	50.42	46.11	54.74	52.48	48.22	56.75
Area of residence												
Urban	94.26	90.84	97.68	92.47	88.55	96.40	92.50	88.60	96.40	92.27	88.00	96.54
Rural	51.74	46.68	56.79	36.68	32.12	41.23	36.61	32.07	41.15	39.42	34.81	44.04
Region												
Sana'a City	99.41	98.29	100.54	98.13	95.45	100.80	98.15	95.50	100.79	98.22	95.85	100.59
Hadhramout	91.86	87.84	95.88	85.66	81.21	90.10	85.53	81.06	90.01	84.00	78.87	89.12
Saba	74.45	62.58	86.32	57.46	43.88	71.04	57.34	43.79	70.89	61.81	49.53	74.08
Aden	79.78	73.95	85.60	65.13	58.80	71.46	65.03	58.67	71.40	68.46	61.98	74.94
Al-Janad	66.80	56.68	76.93	43.28	32.85	53.72	43.29	32.85	53.73	46.15	35.45	56.85
Tehama	26.75	19.23	34.27	22.83	15.65	30.00	22.81	15.65	29.96	24.29	17.11	31.47
Azal	63.05	52.03	74.06	49.98	38.75	61.22	49.89	38.68	61.10	52.46	41.82	63.09
Topography												
Mountainous	58.84	52.03	65.65	36.23	29.15	43.30	36.20	29.13	43.28	41.11	34.23	48.00
Arabian Sea	95.92	92.62	99.23	93.70	89.88	97.52	93.69	89.85	97.52	94.10	90.41	97.79
Red Sea	27.24	15.87	38.61	23.45	12.22	34.67	23.36	12.17	34.54	26.73	15.38	38.09
Plateau/desert	75.85	70.72	80.99	68.66	63.11	74.21	68.62	63.08	74.17	67.46	61.61	73.31
Wealth quintile												
Poorest	9.73	4.71	14.75	4.55	2.28	6.83	4.55	2.28	6.83	5.05	2.80	7.30
Second	48.17	40.10	56.25	27.87	21.65	34.09	27.87	21.65	34.09	30.55	23.42	37.68
Middle	68.02	59.58	76.46	49.41	40.83	57.98	49.37	40.79	57.94	51.97	43.79	60.15
Fourth	90.25	86.44	94.07	74.04	68.34	79.73	74.00	68.30	79.70	78.63	73.31	83.94
Richest	98.66	97.32	100.00	96.29	94.22	98.37	96.29	94.22	98.37	96.34	94.48	98.19
Level of Poverty												
Extreme poor	55.03	43.06	66.99	41.40	30.99	51.80	36.78	27.30	46.25	35.46	24.75	46.16
Moderate poor	59.45	52.21	66.69	43.72	35.90	51.54	45.24	37.91	52.57	49.99	42.53	57.46
Vulnerable	67.11	59.79	74.44	53.56	46.01	61.11	58.87	51.11	66.64	49.08	40.74	57.43
Non-poor	66.59	61.51	71.68	58.47	53.28	63.66	56.21	51.03	61.38	60.76	55.84	65.68
Head of household's education												
None	48.41	42.36	54.46	36.36	31.01	41.71	36.83	31.47	42.19	36.72	31.46	41.99
Basic	67.17	61.70	72.64	51.69	45.18	58.20	51.17	44.67	57.68	54.68	48.26	61.10
Secondary +	81.81	76.58	87.05	72.52	66.17	78.88	72.43	66.07	78.78	73.93	67.92	79.95
Quran & Literacy	66.39	47.61	85.17	49.70	34.43	64.98	49.58	34.36	64.80	58.64	44.77	72.52
Population	20,824,202			22,710,803			22,906,046			23,110,989		
Sample	43,870			48,588			49,011			49,449		
Missing *	3,122			242			244			308		

4 Education

Education is one of the key factors for human development and poverty reduction in Yemen.[52] Around the world, a substantial literature shows the strong association between education and income, and also reveals the robust effect of education on non-income indicators such as health, longevity and violence, among others.[53] Within the framework of the Yemen's *Strategic Vision 2025*,[54] the education component stands out as one of the most important elements to be monitored to achieve higher standards of living and decent lives for individuals and society at large. In this sense, a better understanding of the current educational process in Yemen, especially among school-age children, is essential to guide the future of social policy.

The education indicators selected for this study seek to shed light on the overall picture of education in Yemen in 2012-2013. To allow comparability with previous reports such as the 2006 MICS,[55] the same methodology to calculate education indicators has been adopted as far as possible. The indicators are:

- average years of schooling;
- gross enrolment ratio (GER);
- net enrolment ratio (NER);
- net intake ratio;
- gender parity index;
- illiteracy/literacy ratios;
- school meals;
- support from CCTs.

The present report identifies the main bottlenecks and highlights the key dimensions that hinder further progress to achieving educational progress. The analysis pays special attention to the traditional indicators used for the Millennium Development Goals such as net enrolment ratio, literacy ratio of 15–24-year-olds and the gender parity index. The report will also provide detailed analysis of two issues: (1) school-age children

who were out of school in the 2012-2013 academic year; and (2) the dynamics of absenteeism throughout the four rounds of the NSPMS for the children who were enrolled in the school in the 2012-2013 academic year. The report will first provide a current picture of the general state of Yemeni education, allowing a more in-depth analysis over time of major advances and setbacks.

All the education indicators are based on the structure of the Yemeni education system, as shown in box ED.1.

Box ED.1:
The Structure of Education in Yemen

Levels of education	Grades	No. of Years	Age (in years)
Basic	1–9	9	6–14
Primary	1-6	6	6-11
Lower secondary	7-9	3	12-14
Secondary	10–12	3	15–17
Tertiary	-	4–6	18+

Source: UNESCO, International Bureau of Education, 2010-2011.
Note: Age column refers to the correct age for students to be enrolled in the corresponding level of education.

4.1 Average Years of Schooling in Yemen

The NSPMS reveals a very low level of formal education in Yemen in 2012. The average number of years of schooling achieved by Yemenis aged 25 and older was 4.2, representing less than the full basic education (table ED.1). The low educational performance in Yemen might have serious effects on economic growth, as it is translated into higher rates of unemployment and/or lower productivity and wages, among other problems. When disaggregating by gender, the situation is even worse for women: 2.3 years of schooling against 6.3 for men.

Years of schooling is strongly associated with wealth status (figure ED.1). The average years of schooling for men in the poorest quintile is 2.8, compared to 10.5 years in the fifth quintile. Women in the bottom quintile have virtually no education, with an average of 0.5 years of schooling; in the upper quintile women have 5.3 years of schooling on average.

Figure ED.1:
Average Years of Schooling of Population Aged 25 Years and Older by Wealth Quintiles, Yemen, 2012
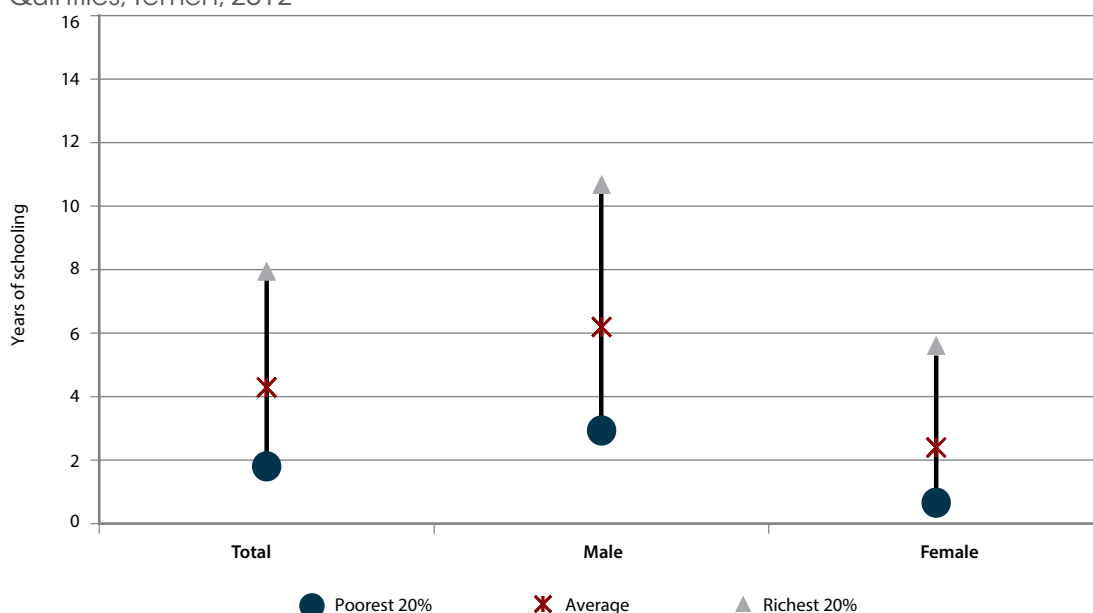
Source: NSPMS, Round 1.

The above numbers represent Yemen's current scenario. To forecast the average years of schooling of the children now entering school, the indicator for expected years of schooling is used. According to UNESCO,[56] expected years of schooling is the number of years of schooling that a child of school-entrance age can expect to receive at the end of his/her school trajectory if the current pattern of age-specific enrolment ratios persists throughout the child's school life.

Age-specific enrolment ratios may vary by age. While it might be expected that the pattern would show participation steadily declining from the entry level, with improvements over entry cohorts reinforcing this pattern, the reality is more complex. Figure ED.2 shows a typical curve, with a peak in enrolment around ages 9–11 years due to late entry and dwindling enrolment at older ages.

Figure ED.2:
Age-specific Enrolment Ratios in Basic, Secondary and Tertiary Education for Ages 5-45 Years, Yemen, 2012
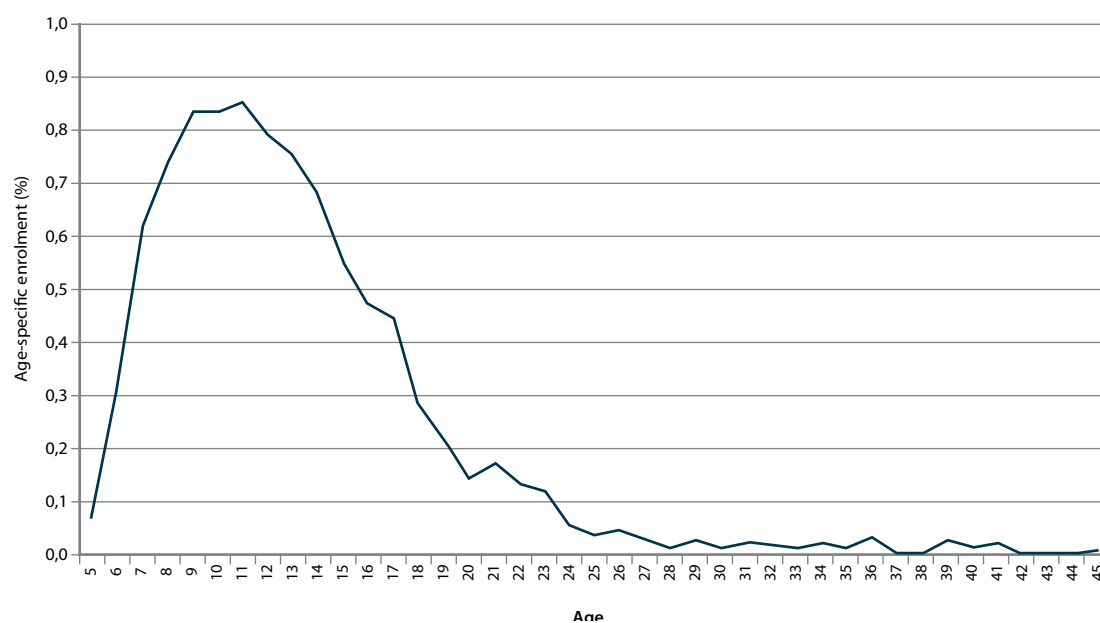
Source: NSPMS, Round 1.

Due to the meagre enrolment ratios above 25 years of age, the selected age range for the calculation of the expected years of schooling is 5–25 years. Table ED.2 shows that the expectancy of years of schooling for a Yemeni child who entered school in the 2012-2013 school year is 9.3. Boys are expected to have, on average, 2.3 more years of schooling than girls (10.4 for boys and 8.1 for girls).

Table ED.2:
Expected Years of Schooling, Yemen, 2012

Population aged 5-25 years	Expected years of schooling
Total	9.3
Male	10.4
Female	8.1

Source: NSPMS, Round 1.

4.2 Access to Education

Previous studies have shown that Yemen has relatively lagging enrolment rates and high gender disparities in schooling compared to other Middle Eastern countries.[57] This section addresses the issue of access to

education by considering the analysis of traditional indicators related to school enrolment such as gross and net enrolment ratios, and unveiling who the out-of-school children are by describing their main characteristics.

CHILDREN CURRENTLY ENROLLED IN SCHOOL

Figure ED.3 provides the percentage of children of basic and secondary school age (6–17 years) who are enrolled in school, regardless of the level of education. From ages 6 to 10 years, the proportion of children enrolled in school increases monotonically, peaking at age 11 years for boys and 10 years for girls and then decreasing. At six years of age, which is the official age for school entry, all children were expected to be enrolled in and attending school, although at this point fewer than 40 per cent of children have started their educational trajectory. This is a cause for concern because late entrance is usually associated with academic failure. Except at the age of six years, girls have a lower level of enrolment than boys at all other ages, which leads to a gross enrolment rate for basic and secondary of 63 per cent for the age group 6–17 years, compared to 75 per cent for boys. In the last round of NSPMS (July to September 2013), 99 per cent of currently enrolled children aged 6-17 years stated the intention to enroll in the next school year.

Figure ED.3:
Percent Distribution of Children Currently Enrolled in
School by Age, Yemen, 2012
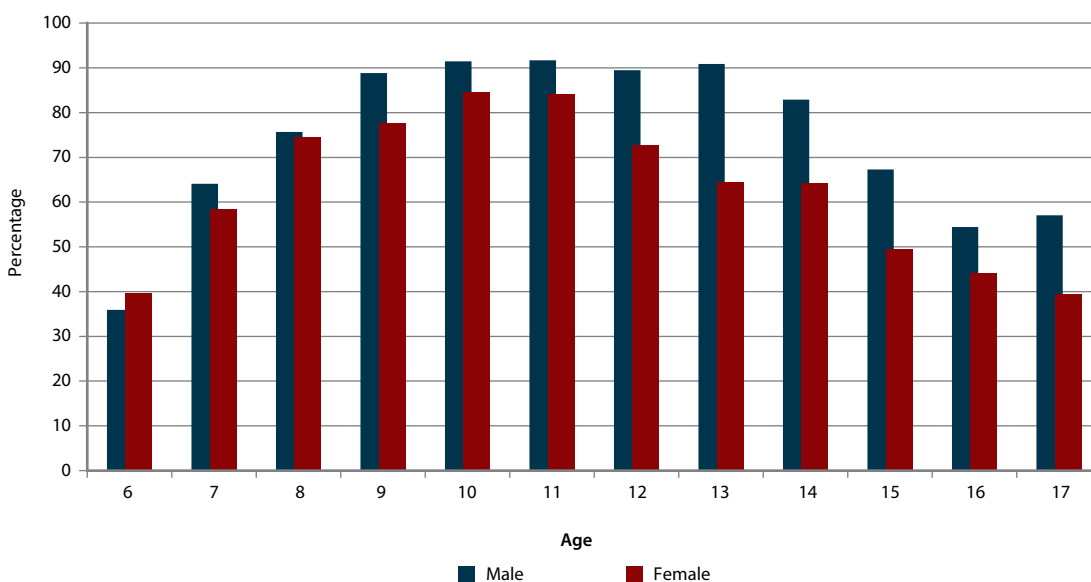
Source: NSPMS, Round 1.

In addition to this general picture, a number of indicators are used to map patterns of school enrolment. First, the net intake ratio (table ED.3) shows the proportion of the population of official school-entrance age who are enrolled in basic education. In Yemen, only 33.5 per cent of children aged six years are enrolled, and girls are more likely than boys to enter school at the correct age (37 versus 30 per cent). When comparing these statistics with those collected by the 2006 MICS, as shown in figure ED.4, it is notable that these numbers have dropped over time, especially in urban areas. Disregarding the hypothesis of low-quality information, we can assume that the rapid population growth coupled with the impact of the 2011 crisis on the provision of education services may have reduced both supply and demand for education.[58] The F-tests in tables ED.3a and ED.3b show that there is no association between net intake ratio and wealth status for girls, and the association for boys is very weak (i.e., wealthier boys are slightly more likely to be enrolled in basic education at six years of age). We find the same pattern for the association between net intake ratio and the mother's education.

Other important indicators of access to education are the GER and NER.

The GER shows the proportion of persons who are enrolled in basic and secondary education, regardless of age, with the purpose of revealing the general level of participation in these two educational levels. The GER in Yemen reaches 82.1 per cent in basic education and 44 per cent in secondary education (tables ED.4a and ED.4b). This is low compared with the majority of MENA countries, where the average of GER in basic

and secondary education reached 106 and 70.2 per cent respectively in 2011, according to the World Bank indicators. Total Yemeni urban GER in basic education surpasses 90 per cent, with a higher ratio for girls (100.2 per cent) than boys (90.4 per cent). Across topographic areas, GER varies between 64.7 and 87.9 per cent for basic education and between 15.1 and 49.1 per cent for secondary education, with the Red Sea coastal area having the lowest percentage and the Arabian Sea coastal area having the highest for both levels of education. In some regions, such as Sana'a City, this statistic even exceeds 100 per cent for basic education, revealing that there are more people enrolled at this level of education than the corresponding official age group of 6–14-year-olds for basic education. However, high GERs do not necessarily mean that the educational system is efficient in the way it puts all the school-age children into school. The ratio might also increase due to negative factors such as late entry into school and high repetition ratios.

Figure ED.4:
Percentage of Population Aged six Years Enrolled in Basic Education,
Yemen, 2006 and 2012
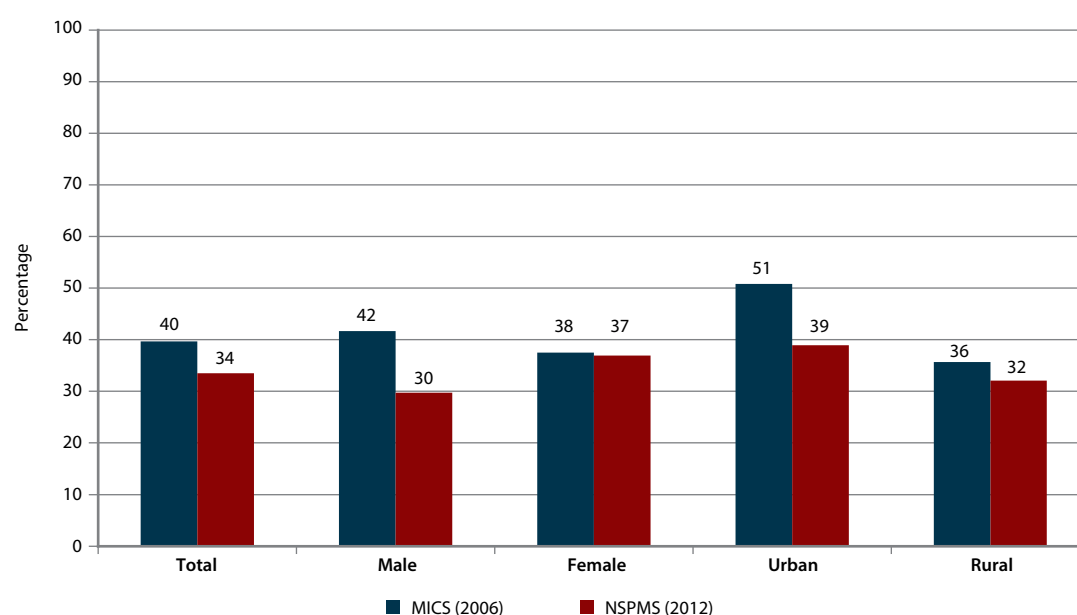
Source: NSPMS (Round 1) and MICS 2006.
Note: The MICS 2006 includes only those children aged six years enrolled in the first grade of basic education, based on the estimated age as of the beginning of the school year. In our study, we also include those children enrolled in the second grade of basic education (7 per cent of the total aged six years currently enrolled in basic education), as they might be turning seven years old and so have started school at the correct age.

For that reason, NER is used as a complementary indicator, as it shows the proportion of the official age group corresponding to basic (6–14 years old) and secondary education (15–17 years old) and excludes over-aged and under-aged enrolment. In this sense, NER is more appropriate to assess the internal efficiency of the educational system. Moreover, it is one of the educational indicators for monitoring progress in the official list of the Millennium Development Goals.

Tables ED.5 and ED.6 present the NER results for basic and secondary levels disaggregated by area of residence, sex, region, topography, wealth quintile, level of poverty, mother's education and beneficiary status. To analyze progress over time, figure ED.5 summarizes the main findings in those tables and compares them with the 2006 MICS.

The NSPMS shows that around 72 per cent of Yemeni children aged 6–14 years were enrolled in basic education in the 2012-2013 school year. A comparison to the 2006 MICS shows the pace of progress has been very slow, as net enrolment increased by only four percentage points in six years, which is mainly explained by the increase of seven percentage points in girls' enrolment in basic education. However, the percentage is still very low (62 per cent in rural areas), especially given that the National Basic Education Development Strategy (2003–2015), launched in 2002, aimed to increase enrolment in basic education, particularly for girls and in rural areas, to reach 95 per cent of 6–14-year-olds by 2015. A huge effort would be necessary to increase enrolment in basic education for rural girls by almost 33 percentage points in the next three years.

Achieving universal education might be even more difficult when the focus is on enrolment in secondary education. Only 23 per cent of the Yemeni population aged 15–17 years are enrolled in this level. This percentage has basically remained constant when compared to 2006, but the composition has changed: there was an increase of four percentage points in girls' enrolment, while the boys' enrolment dropped by five percentage points.

Figure ED.5:
Percentage of Population Enrolled in Basic (6–14 years old) and Secondary (15–17 years old) Education, Yemen, 2006 and 2012
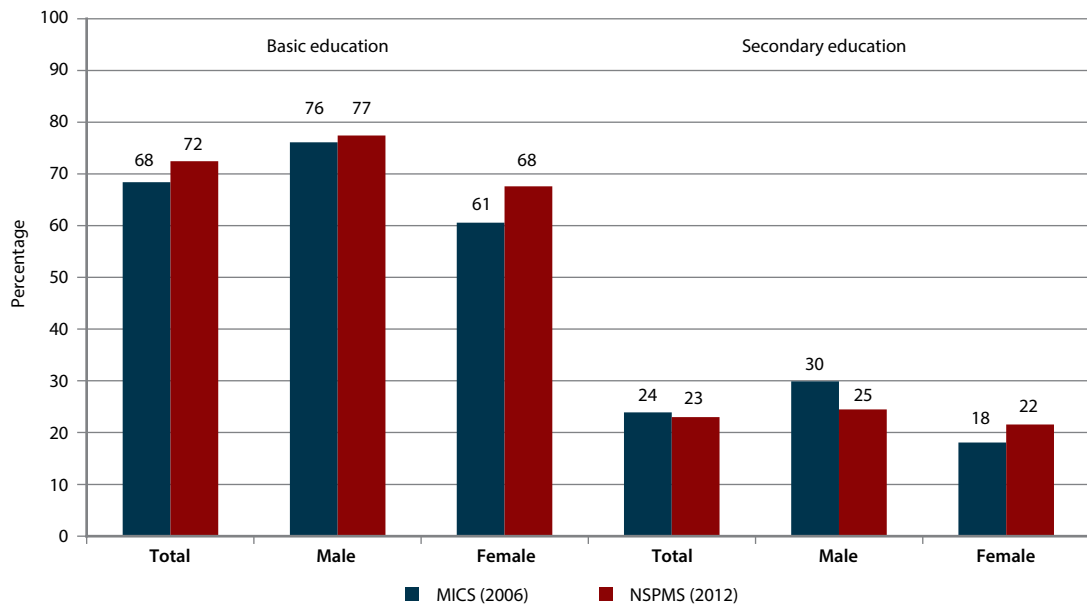
Source: NSPMS (Round 1) and MICS 2006.

The results of disaggregation by urban/rural residences show that girls in rural areas are consistently less likely to be enrolled in basic education than urban girls (62 and 86 per cent respectively). For boys, the difference is smaller: 80 per cent in urban and 76 per cent in rural areas. This result demonstrates that family attitudes toward girls' schooling, particularly in rural areas, seem to be the major constraint to their school enrolment. Several studies suggest that the problem is associated with the shortage of female teachers.[59] In addition, the lack of both schools close to home and schools for girls only, especially in rural areas, usually appear as the crucial factors involved in the decision to send girls to school. With regard to secondary education, the area of residence strongly influences participation in both urban and rural areas. One of the explanations for the low school enrolment in rural areas compared to urban ones might be related to the supply side, including lack of school buildings and trained teachers in remote areas.[60]

The following analysis shows the relationship between basic and secondary net enrolment with wealth index and mother's schooling. F-tests were used to test the statistical association among variables. A positive association indicates that net enrolments in basic and secondary education are significantly higher for the richest students (see tables ED.5a and ED.6a).

Figure ED.6 highlights the difference between the first and fifth wealth quintiles, showing that socioeconomic conditions play an important role in school participation in basic and secondary education for boys and girls. Girls in the top quintile are more than twice as likely to be enrolled in basic education than those in the bottom quintile. The wealth gap becomes worse for secondary education: for each boy in the first quintile enrolled in this level there are seven boys in the fifth quintile. In the case of females, the difference is alarming: in the richest quintile around 43 per cent of girls aged 15–17 years are enrolled in secondary education, while in the poorest quintile this figure is virtually zero, only 1.1 per cent. A number of factors might be responsible for this troubling figure, including cultural aspects that affect girls in particular, such as the shortage of females teachers and the way that households cope with economic downturns by making their children engage in several activities to make ends meet.

Figure ED.6:
Net Enrolment in Basic and Secondary Education by
Wealth Quintiles, Yemen, 2012
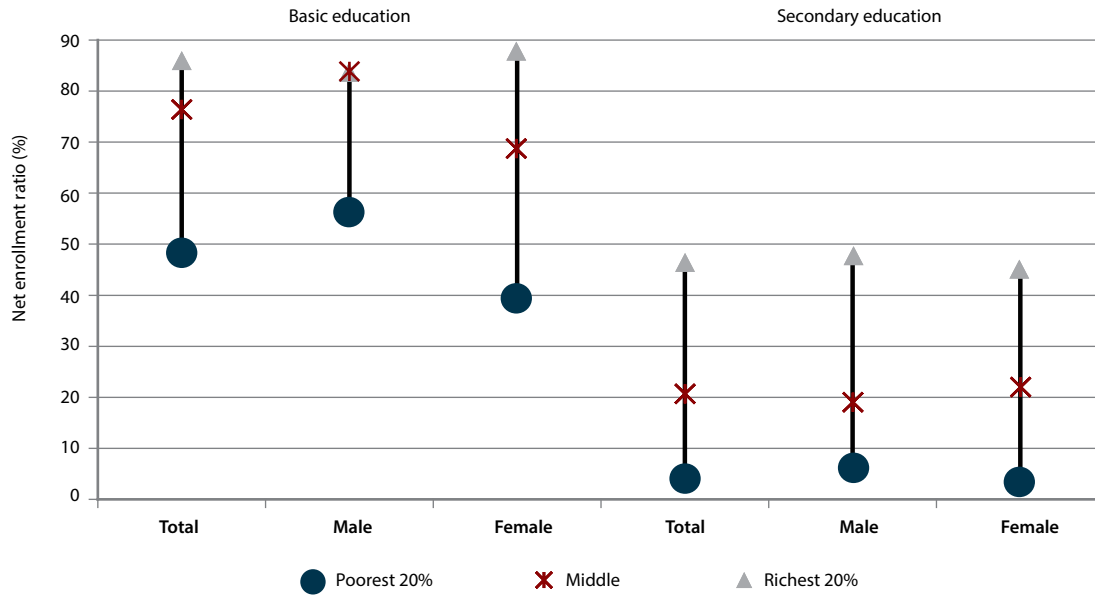
Source: NSPMS, Round 1.

With regard to the association between net enrolment and the mother's education, the F-test (tables ED.5b and ED.6b) show a positive association. As seen in figure ED.7, in basic education, the difference in enrolments is basically between those children whose mothers do not have any schooling and those children whose mothers received basic or secondary education. The gap is striking at the secondary level, and all three degrees of the mother's schooling are associated with both boys' and girls' enrolment. It suggests that the higher the level of the mother's education, the higher the chance of the child going further on his/her educational trajectory.

Figure ED.7:
Net Enrolment in Basic and Secondary Education by Mother's
Schooling, Yemen, 2012
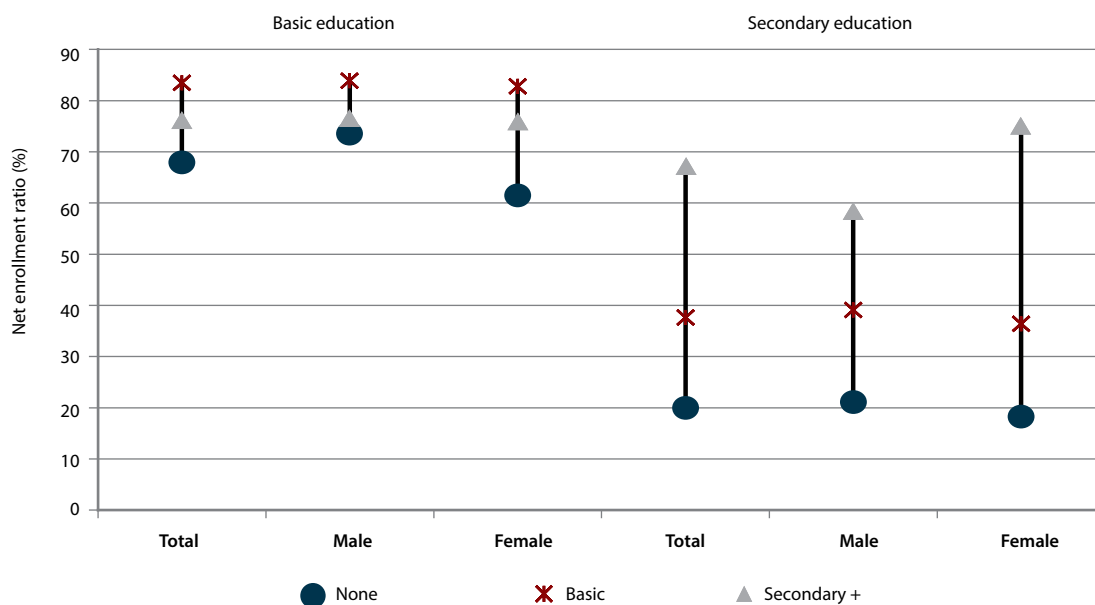
Source: NSPMS, Round 1.

All the figures presented so far notably show that boys perform better than girls in terms of educational achievement. Gender differences in NERs can be summarized through the gender parity index (table ED.7). This index shows the proportion of girls enrolled in basic/secondary education compared to boys and is another important dimension of monitoring progress towards gender equality and women's empowerment.

In Yemen, the gender gap in gross enrolment is lower in basic education than in secondary education, with 86 and 65 girls, respectively, for every 100 boys enrolled. The reason for the greater gender inequality in secondary education is the low enrolment of girls in the past as well as the higher dropout rates for girls in higher grades.[61]

4.3 Illiteracy and Literacy Ratios

Literacy skills are crucial for both children's educational development and adults' social and economic well-being, since all other learning depends on the ability to read and write. This indicator is widely used to summarize the level of development in a country, as the required data can be easily obtained from household surveys or censuses.

The measure of illiteracy/literacy included in this report is divided into three age groups:

1. 10–14 years old – child illiteracy;

2. 15+ years old – youth/adult illiteracy;

3. 15–24 years old – youth literacy.

The first seeks to capture illiteracy among children. The second aims to capture illiteracy among adults, and it is commonly used in international reports as an indicator of a country's socioeconomic development.[62] The third is one of the three education indicators for monitoring progress in the official list of the Millennium Development Goals. The results can be seen in tables ED.8, ED.9 and ED.10.

The NSPMS observed that in 2012, 14 per cent of children aged 10–14 years were unable to read or write in their native language (table ED 8). This is a high rate if one thinks that the process of formal literacy development occurs at the beginning of the educational trajectory, and at the age of 10 years, a child should not have a problem reading and writing. Children living in rural areas are more likely to be illiterate (18 per cent) compared to those in urban areas (4 per cent). Children from households that do not benefit from the SWF had a lower illiteracy rate, 13 per cent. In contrast, NSPMS observed 17 per cent of illiterate children from households of old beneficiaries and 15 per cent of new beneficiaries.

Among adults aged 15 years and over, nearly half of the population (44 per cent) are illiterate (table ED. 9). Although this statistic has been reduced over time for the population as a whole (from 62.7 per cent in 1994-1995 to 55.7 per cent in 1999-2000, according to the 2004 national education report[63], the gap between female and male illiteracy increased over the last two decades.

In 1994-1995, the rate for females was just less than twice the rate for males (82.8 against 43.1 percent). In 1999-2000, for each illiterate male there were just over two illiterate females (36 against 74.1 per cent). According to the latest data from 2013, the situation has worsened; for each illiterate man there were 2.5 illiterate women (24 and 58 per cent). Therefore, despite the reduction of the illiteracy rate among males and females over time, men continue to have an advantage in acquiring formal education. This applies not only to the older generations but also to the current situation in Yemen.

LITERACY AMONG YOUTH: TRACKING THE MILLENNIUM DEVELOPMENT GOALS

One of the indicators for monitoring educational progress towards the Millennium Development Goals is the literacy of 15–24-year-olds. In Yemen, 79 per cent of the population in this age group are literate. For men and women, the figures are 90 and 69 per cent (table ED.10). By comparing these figures with those found in previous reports, we can see that there has been a breakthrough in progress in this indicator. In 2006, for example, 35 per cent of women aged 15-24 years were literate, according to the 2006 MICS.

Figure ED.8:
Percentage of Young People Aged 15 to 24 Years Who Can Read and Write, by Sex, Yemen, 2012-2013
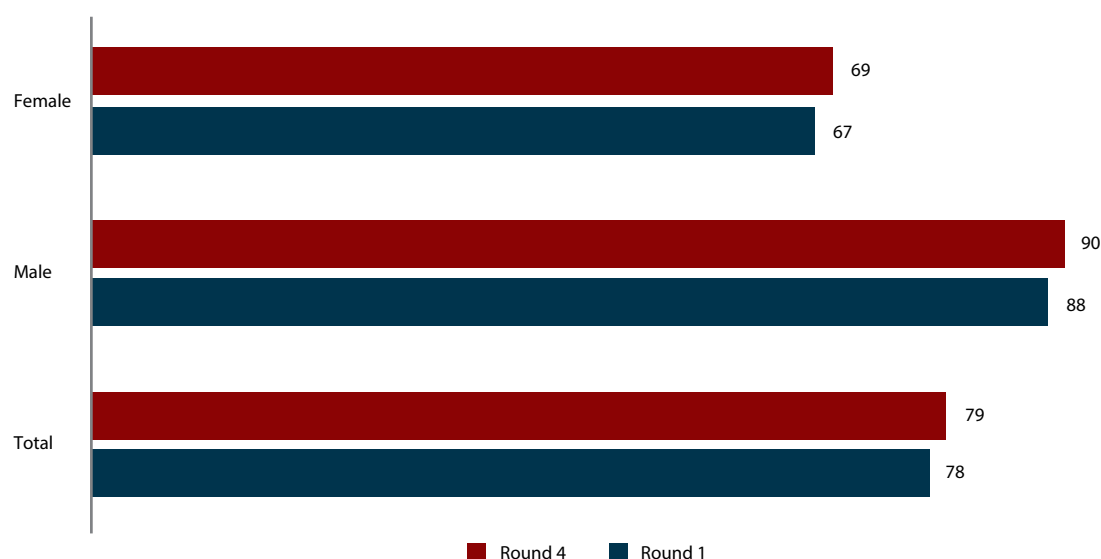
Source: NSPMS, Rounds 1 and 4.

4.4 Cash Transfer Programmes and School Meals

Children from poor and disadvantaged families, particularly girls in rural areas, seem to be the most vulnerable students. Strengthening the demand side might be an important strategy to keep them in school, in addition to incentivizing school enrolment by out-of-school children. CCT and school meal programmes, for example, might be essential.

In the NSPMS, children currently enrolled in basic and secondary education were asked if they received support from CCTs. School subsidies both reduce the cost of education and increase family income. Given that education is a normal good – as family income increases, demand for education also increases – the relaxation of budget constraints allows parents to make more investments in children's schooling.[64]

Table ED.11:
Percentage of Students Aged 5-25 Years Who Receive Meals to Eat in School or to Take Home or Receive Cash Assistance From Conditional Cash Transfers, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	1.91	0.88	2.95	0.35	0.07	0.62
Area of residence						
Urban	0.43	-0.14	1.00	0.16	0.00	0.31
Rural	2.51	1.09	3.92	0.43	0.04	0.81
Population	5,537,790			5,738,613		
Sample	11,325			11,924		
Missing*	642			108		

Source: NSPMS, Rounds 1 and 4.
Note: * Missing information not included in the statistics.

Table ED.11 shows that only 1.7 per cent of students aged 5–25 years received assistance (0.43 per cent in urban areas and 2.5 per cent in rural areas) during round 1. Disregarding the possibility of poor-quality

information, these meagre numbers highlight the need to improve and develop those programmes, given the evidence of their positive impact on school enrolment and attendance in other countries. The lower figures for round 4 of the NSPMS are largely due to school holidays in that period.

4.5 Out-of-school Children in Yemen

Among the countries in the MENA region, Yemen has one of the highest populations of children who are out of school.[65] Data from the NSPMS reveal that during the 2012-2013 school year, some 1.6 million girls and boys aged 6-14 years were not enrolled in the education system.[66] This means that more than a quarter (27.5 per cent) of the basic school-age population is out of school.

States Parties to the Convention on the Rights of the Child recognize the right of the child to education. To achieve this right progressively and on the basis of equal opportunities for boys and girls and regardless of their families social and economic status, Governments should make primary education compulsory and free to all and encourage the development of different forms of secondary education that, if not free, should be subsidized for those in need.

Besides denying a fundamental human right, exclusion from the formal educational system also has long term implications for a country's social and economic development. At the individual level, the literature shows that low investments in education are strongly associated with higher levels of violence, precarious health, early pregnancy, low productivity and lower earnings.[67]

At the macro level, in spite of existing compelling motives for a positive association between human capital and growth, empirical findings for the MENA region do not necessarily support the link between human capital investment and economic growth.[68] The apparent lack of association has been explained by several factors, namely, the low quality of education in the region,[69] the high inequality in the distribution of education resources,[70] which reduces the impact of education on productivity,[71] and the limited opportunities for educated workers to get a job,[72] among others. The weak association can then be attributed to some extent to the complexity of accounting for all the intervenient variables, many of them structural, into the statistical models rather than to education not fostering development.

With regard to social gains of education, studies have shown that increased educational attainment for women reduce fertility levels in MENA countries. The decrease in the number of children per women has several advantages, such as improving child health and education and women's empowerment, as well as reducing population growth and consequently pressure on the education system in the long run.[73]

Considering the benefits of increasing children's access to school and the fact that education is a fundamental human right as well as a key enabler for children to access other rights, this study intends to explore the characteristics of Yemeni out-of-school children and seek to identify the factors associated with this phenomenon. This is particularly relevant in the current context, in which UNESCO[74] has identified a decrease in the rate of reduction of out-of-school children in countries where the problem of exclusion from education is more prevalent, including Yemen.

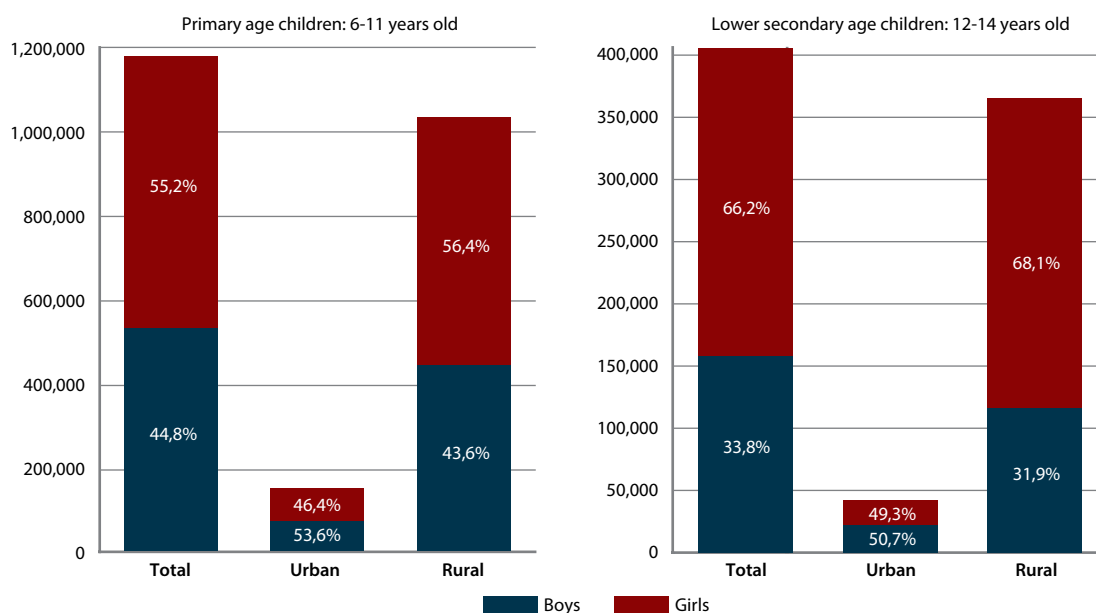### WHO ARE YEMEN'S OUT-OF-SCHOOL CHILDREN?

As of 2012-2013 school year, approximately 1.2 million primary school-age (6-11 years) girls and boys and 400,000 lower secondary school-age (12-14 years) were out of school in Yemen.[75] Figure ED.9 indicates that the majority of out-of-school children live in rural areas.[76] This was the case for both primary and lower secondary-age students. Girls were less likely to be enrolled in school than boys.

The distribution of out-of-school children varies by age, as shown in figure ED.10. The U-shaped curve reflects both late entry into the school system and premature dropout. The latter is especially prevalent for girls over the age of 12 years. At the official school entry age of six years, around 63 per cent of girls and 70 per cent of boys were not enrolled in school. The gender gap is inverted around the age of nine years, with a higher prevalence of school dropout among girls than boys. From age 12 onwards – the official age to start the second cycle of basic education – the proportion of out-of-school girls increases considerably.

Figure ED.11 contrast the percentage of both primary and lower secondary school-age children not enrolled in school for two groups, those who had never attended school and those who had previously

attended school. As expected, most (90.8 per cent) of those who were out of school at primary school age (6-11 years) had never been enrolled in school, with minimal differences between boys and girls. This is primarily due to the failure to enrol at earlier ages. Among the lower secondary school-age children (12-14 years) who were out of school, around 46 per cent had never attended school and 53 per cent had been enrolled previously.

Figure ED.9:
Number of Out-of-school Children by Age Group, Yemen, 2012

Primary age children: 6-11 years old

Lower secondary age children: 12-14 years old

Source: NSPMS, Round 1.

Figure ED.10:
Proportion of Out-of-school Children by Age and Sex, Yemen, 2012
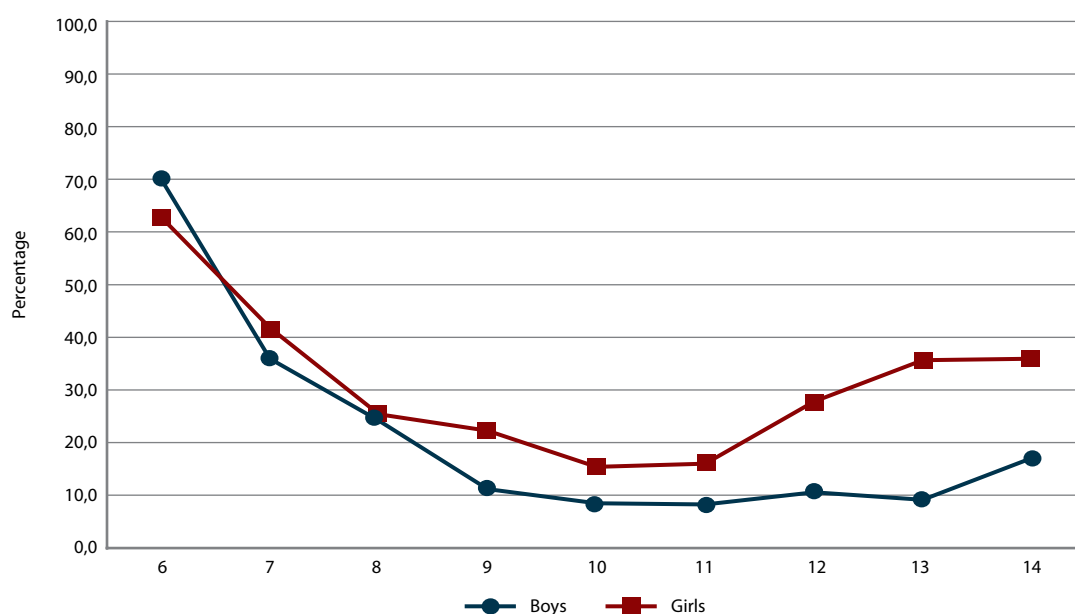
Source: NSPMS, Round 1.

Figure ED.11:
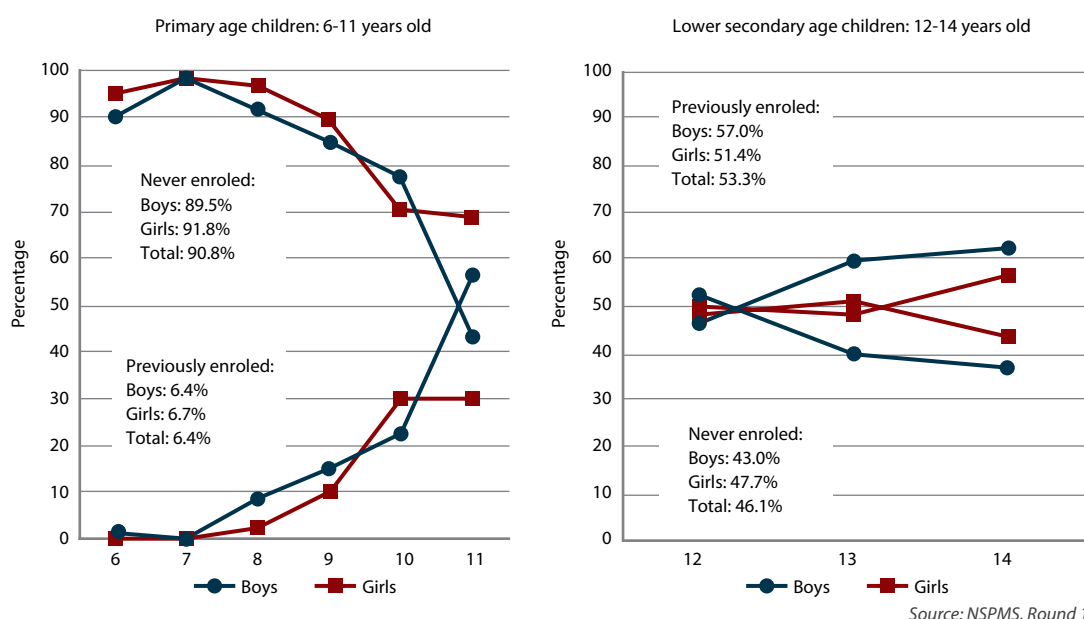Proportion of Out-of-school Children by School Exposure, Yemen, 2012

Primary age children: 6-11 years old

Never enroled:
Boys: 89.5%
Girls: 91.8%
Total: 90.8%

Previously enroled:
Boys: 6.4%
Girls: 6.7%
Total: 6.4%

Lower secondary age children: 12-14 years old

Previously enroled:
Boys: 57.0%
Girls: 51.4%
Total: 53.3%

Never enroled:
Boys: 43.0%
Girls: 47.7%
Total: 46.1%

● Boys ■ Girls

Table ED.12:
Percentage of Students Previously Enrolled in School by Reasons for not Being Enrolled Anymore, Yemen, 2012

| Reasons for not being enrolled in school	6-11 years old			12-14 years old		
	Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper
Cannot afford to attend	37.6	14.6	68.1	17.0	11.8	23.9
Disinterested in school	32.2	16.1	53.9	28.6	22.1	36.1
Helping parents at work	6.4	2.7	14.3	12.0	7.7	18.4
Lack of female teachers	6.2	2.1	16.7	4.8	2.5	8.9
School is too far from home	5.1	2.2	11.4	8.6	4.7	15.0
Work	4.7	1.7	12.4	11.1	5.4	21.4
Mixing of boys and girls	1.4	0.4	4.8	4.8	2.7	8.6
Teachers not available	1.2	0.2	8.0	0.0	0.0	0.1
Taking care of siblings	0.6	0.2	2.0	3.1	1.2	7.5
Disability	0.4	0.0	2.7	0.3	0.1	0.7
Illness	0.1	0.0	0.6	1.4	0.3	5.8
Got married	0.0	0.0	0.0	0.4	0.1	2.7
No latrine for use	0.0	0.0	0.0	0.0	0.0	0.1
Felt that it was enough school	0.0	0.0	0.0	2.6	1.1	5.8
Family refused or ignorant	0.0	0.0	0.0	0.1	0.0	1.0
Bad treatment of teachers / fear	0.0	0.0	0.0	0.1	0.0	0.7
Other	4.2	1.5	11.3	5.1	2.3	11.1
Sample	159			566		
Population	73,390			211,677		
Missing*	8			18		

For out-of-school children who were previously enrolled, the survey inquired about the main reason for dropping out of school. Among those aged 6-11 years, around 37.6 per cent answered they could not afford to attend school and 32.2 per cent said they were not interested in attending school (table ED.12). This figure is a cause for concern as it might reflect the low attractiveness of the school system for both children and parents. With regard to children aged 12-14 years, the lack of interest in attending school stands out as the main reason for dropping out (28.6 per cent), followed by other reasons such as 'cannot afford to attend' (17 per cent); helping parents at home (12 per cent); and work (11 per cent).

Figure ED.12 shows the distribution of out-of-school children by mother's and father's schooling and wealth quintiles. A high proportion of out-of-school children aged 6-11 years are raised by mothers and fathers with no education (77.7 and 39.5 per cent respectively). While this finding is not surprising, the magnitude is much larger than one would expect, especially for mothers' schooling. Among the lower secondary-age children, the majority of children live with mothers and fathers with no education (87.4 and 55.7 per cent, respectively). With regard to the wealth quintiles, figure ED.12 highlights the difference between the first and fifth wealth quintiles, showing that socioeconomic conditions of the family play an important role in school enrolment. Children aged 6-11 years in the bottom quintile are more than four times as likely to be out of school compared with those in the top quintile. The wealth gap becomes worse for lower secondary-age children: for each out-of-school child in the top quintile, there are almost 11 children in the bottom quintile. Wealthier families are more likely to fund school fees and materials and subsistence expenses, in addition to allowing their children to devote their time to study rather than to work and/or domestic chores.

Figure ED.12:
Percentage Distribution of Out-of-school Children by Socioeconomic Status, Yemen, 2012

Primary age children: 6-11 years old

Lower secondary age children: 12-14 years old
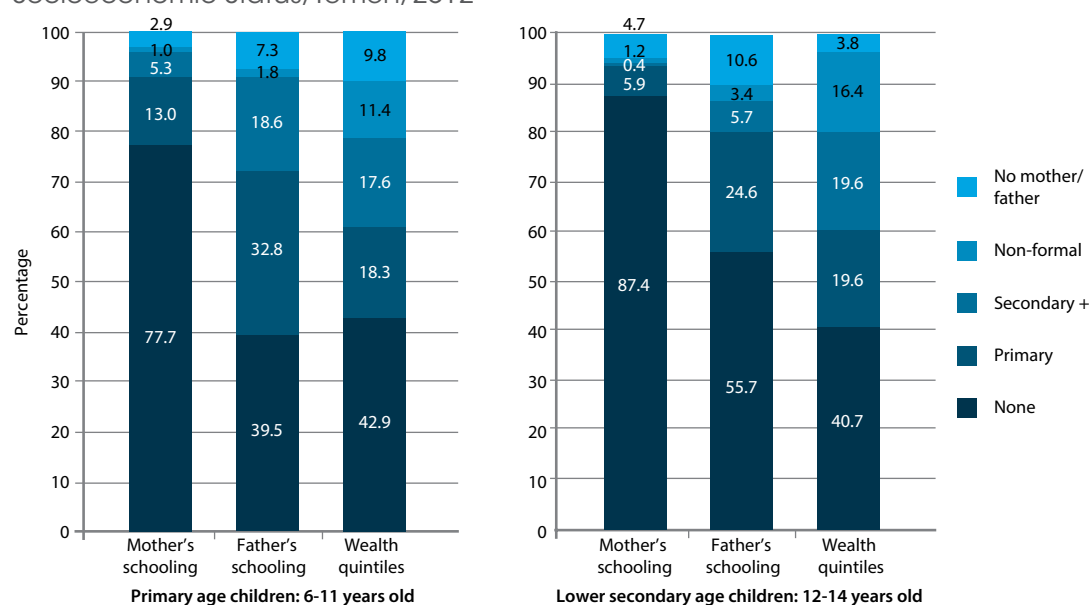
Source: NSPMS, Round 1.

The trade-off between school and work is a problem faced by Yemeni families, due to the high opportunity cost to the socioeconomically disadvantaged of sending their children to school.[77] A number of factors might be responsible for this situation, varying from the interaction between cultural traits and inadequate infrastructure that affect mostly girls – such as the shortage of fem ale teachers and appropriate toilets, which makes the family less willing to send their girls to schools, particularly for secondary education – to economic shocks (lower yields due to drought) and illness in the family that compel families to have their children either contribute to domestic chores or work outside the home. Table ED.13 shows that of the total number of out-of-school children aged 6-11 years, 16.4 per cent were working in the month prior to the survey, and 97 per cent of those children were working as unpaid family workers and 3 per cent as paid workers. The figure is more alarming for those aged 12-14 years, approximately half of whom were working – 84 per cent as unpaid family workers and 16 per cent as paid workers.

Table ED.13:
Percentage of Children Who Were Working in the 30 Days Prior to the Survey, by School Exposure, Yemen, 2012

	Out of school			Enrolled in school		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
6-11 years old						
Total	16.4	11.67	22.8	11.89	9.3	15.2
Unpaid family worker	97.3	92.7	99.0	99.3	98.6	99.7
Paid worker	2.7	1.0	7.3	0.7	0.3	1.4
12-14 years old						
Total	49.5	41.3	57.8	23.5	18.5	29.5
Unpaid family worker	83.6	-	-	94.9	-	-
Paid worker	16.4	-	-	5.1	-	-

Source: NSPMS, Round 1.

ASSOCIATED FACTORS TO THE OUT-OF-SCHOOL CHILDREN: LOGISTIC REGRESSION RESULTS

In this section, we present the results of a logistic regression to explore which factors are associated with the probability of a child being out of the school system. Multivariate regression analysis improves the understanding of the association among variables, since it minimizes misinterpretations caused by the existence of confounding factors. We use a logistic regression model to determine the probability of a child being out of school as a function of a set of variables related to personal characteristics, family background and area of residence.[78] Nine models were estimated separately by age group (6-14; 6-11; 12-14 years) and sex, and the results are presented in tables ED.14 (total), ED.15 (boys) and ED.16 (girls).

Results for the Total Population

According to the models, girls are more likely to be out of school than boys. This difference is most evident among older children (12-14 years), where the odds ratio reaches 0.21 indicating that boys have 79 per cent lower risk of being out of school.

Age is also a significant factor determining school enrolment. Odds ratios smaller than 1 in Models 1 and 2 suggest that children aged 7-14 years have a lower risk of not being enrolled at school compared to children of six years, which is the official age of entry into the education system. Furthermore, the risk is even lower for those aged 10 to 11 years. In Model 3, which compares children aged 13 and 14 years with those aged 12 years, the odds ratio is greater than 1 suggesting a shift after 11 years of age, wherein the probability of not enrolling in school begins to increase. The regression results confirm the U-shaped relationship between age and school enrolment presented in the section above.

As for area of residence (urban or rural) the model shows no statistical association with the child's probability of being out of school. At first glance, the result seems counterintuitive since the descriptive analysis presented before showed a very high number of children out of school in rural areas. The lack of statistical significance of this variable suggests a strong correlation with other predictors. In fact, when analyzing separately each of the covariates and their association with the urban/rural variable, it was found that the inequality between urban and rural places is primarily explained by the wealth index, since rural areas have the worst indicators for variables such as housing, assets and other variables that are included in the calculation of the wealth index.[79]

Regarding the topographic region, it is observed that children aged 12-14 years living in the Arabian Sea coastal area have a much higher chance of being out of school compared to children living in the

mountainous area. The odds of not enrolling in school are 320 per cent higher. The lower secondary-age children living in the plateau/desert are also less likely to be enrolled in school compared to those living in the mountainous area.

No association was found between mother's education and the likelihood of children being out of school. This also seems to be a counterintuitive result, since there is extensive international literature showing that mother's education is one of the most important factors in explaining children's educational outcomes. Other studies in Yemen have shown a negative association between mother's education and out-of-school children.[80] In fact, in the univariate analysis (section 2), mother's education is shown as particularly relevant to explain children's school participation. However, because mother's education is strongly associated with the level of wealth, this variable is no longer significant in the multiple regression. This implies that, holding the wealth condition constant, children with either an educated or uneducated mother have the same probability of being in or out of school.

With regards to father's education, even after controlling for the wealth condition, results show that children whose fathers have secondary education or more are less likely to be out of school (odds ratio 0.53 for children aged 6-11 years; odds ratio 0.27 for children aged 12-14 years) compared with children whose fathers have no schooling. This is an important finding because it suggests that, regardless of income, highly educated fathers are more likely to perceive the importance of ensuring the continued education of their children.

Children's wealth condition is a very strong predictor of their chances to be enrolled in school or not. From the second to the fifth wealth quintile, the probability of being out of school decreases for children aged 6-11 years and 12-14 years, compared with the same age children in the first wealth quintile. In other words, this result shows that a good socioeconomic condition is a crucial determinant of a parent's decision regarding their children's education.

Another key predictor that affects children's probability of being out of school is whether the child has any disability. Children with special needs or children living with any disability are more likely to be excluded from the educational system. This is especially the case for those aged 6-11 years, where the odds of being out of school are 370 per cent greater for children with no special needs.

With regard to work, those who had worked during the 30 days preceding the survey are twice as likely to be out of school compared with those who were not working. This association is not observed among those children aged 6-11 years, which suggests that the low enrolment in lower secondary education might be also related to the high opportunity cost of adolescents enrolling in school.

Also concerning the age group 12-14 years, children who live in SWF beneficiary households have a greater chance of being out of school compared with children who live in non-beneficiary households. One hypothesis that may explain this result is that the amount of the transfer does not compensate for the opportunity cost of sending the children to school. The typical SWF beneficiaries, according to the targeted social and economic categories, are the elderly, disabled, orphans, women without breadwinner and the unemployed. Thus, a SWF beneficiary household may need the child to help out with domestic chorus or work activities (paid or unpaid) more than households with similar socioeconomic status that are not receiving SWF assistance. Moreover, there is no educational conditionality attached to the benefit, nor it is targeted to school-age children.

Other variables, such as whether the child has experienced any violent incidents outside of the home and whether the child lives in a household that has experienced any socioeconomic shock in the last three months or is food secure, do not show statistical association with the likelihood of the child being out of school, although in the univariate models they do. As mentioned earlier, this may be related to the existence of correlation among predictors.

Table ED.14:
Regression Results for the Total Population, Yemen, 2012

Variables	Model 1 6-14 years old		Model 2 6-11 years old		Model 3 12-14 years old	
	A	B	A	B	A	B
Outcome:						
Out-of-school children (1=yes; 0=no)						
Covariates						
Male	0.49***	0.47***	0.70**	0.69**	0.21***	0.21***
Age						
6	*reference*		*reference*		-	-
7	0.23***	0.22***	0.24***	0.23***		
8	0.10***	0.09***	0.10***	0.09***		
9	0.06***	0.06***	0.06***	0.06***		
10	0.03***	0.04***	0.04***	0.04***		
11	0.04***	0.05***	0.04***	0.05***		
12	0.05***	0.06***			*reference*	
13	0.07***	0.07***			30	1.29
14	0.10***	0.10***			2.12***	2.05***
Urban	0.72	0.73	0.76	0.82	0.71	0.71
Topography						
Mountainous	*reference*		*reference*		*reference*	
Coastal Area - Arabian Sea	2.12**	2.27**	1.67	1.70	4.19***	4.18***
Coastal Area - Red Sea	1.32	1.44	1.55	1.48	1.37	1.57
Plateau Desert	1.50*	1.60***	1.26	1.29	2.07**	2.27***
Mother's education						
No schooling	*reference*		*reference*		*reference*	
Some education	0.73	0.84	0.77	0.91	0.58	0.63
Quran & Literacy	0.64	0.69	0.59	0.62	0.91	0.91
Absent mother	1.13	1.12	1.18	1.10	1.03	0.96
Father's education						
No schooling	*reference*		*reference*		*reference*	
Basic	0.69	0.71	0.66	0.65*	0.80	0.76
Secondary or more	0.48***	0.53**	0.53**	0.54*	0.27***	0.24***
Quran & Literacy	0.50*	0.54	0.42*	0.42	0.69	0.71
Absent father	0.84	0.77	0.84	0.76	0.82	0.79
Wealth quintiles						
1st	*reference*		*reference*		*reference*	
2nd	0.32***	0.31***	0.30***	0.28***	0.30**	0.33**
3rd	0.31***	0.29***	0.26***	0.25***	0.41**	0.44**
4th	0.24***	0.22***	0.21***	0.19***	0.30**	0.32**
5th	0.18***	0.17***	0.21***	0.18***	0.09***	0.09***

Disable children	4.30***	4.09***	4.68***	4.58***	3.57*	2.9
SWF beneficiary	1.42**	1.37**	1.19	1.16	1.94***	1.88***
Experienced violence outside home	0.92	0.87	0.82	0.80	1.09	0.98
Child labour	1.70**	1.99***	1.43	1.62	2.01***	2.05***
Food secure	0.94	0.94	0.84	0.87	0.98	0.98
Experienced shock	1.04	1.00	1.27	1.20	0.73	0.78
Constant	11.76***	11.27***	11.81***	11.81***	0.64	0.61
Sample	12.134		8.245		3.889	
Population	5,827,310		3,913,544		1,913,766	
Number of groups	-	4.441	-	3.924	-	2.785
Obs. per group: min.	-	1	-	1	-	1
average	-	2.6	-	2.0	-	1.4
max.	-	15	-	12	-	5
Prob >chi2	-	0.0000	-	0.0000	-	0.0000
Prob >F	0.0000	-	0.0000	-	0.0000	-

Source: NSPMS, Round 1.
Notes: 1) Legend: * p<0.05; ** p<0.01; *** p<0.001.
2) Model A is based on the svy logit estimation (using complex sampling weight),
and do not take into account the dependency among children in the same household.
3) Model B is based on the xtlogit estimation (using simple weight),
and do take into account the dependency among children in the same household.

COMPARING RESULTS FOR BOYS AND GIRLS

Tables ED.15 and ED.16 show the logistic regression results estimated separately for boys and girls. The idea is to assess to what extent factors associated with being out of school differ between boys and girls.

Children, girls and boys, aged 7-14 years are less likely to be out of school (odds ratio lower than 1) compared to children aged six years (Models 4 and 7). However, the risk of being out of school for girls surpasses the risk for boys. For example, the odds ratio for girls aged 14 years is equal to 0.25 but for boys it is 0.03. In the models 6 and 9, restricted to children aged 12-14 years, age is statistically significant only for 14 year-old girls, indicating that the probability of being out of school for girls aged 14 years is about twice as large as girls aged 12 years. For boys, we do not observe any difference between the two age groups.

When looking at area of residence, the results show another striking difference between boys and girls. Girls in urban areas are less likely to be out of school than those living in rural areas. This is specifically the case for lower secondary-age girls. Some reasons for this finding include sociocultural factors, such as the tradition of early marriage in rural areas, the reluctance of many parents to send girls to mixed gender schools and negative social attitudes towards girls' education. In addition, the number of schools in rural areas is lower compared to urban areas, especially at the lower secondary school level.[81] Lack of appropriate toilets, with water and separate facilities for boys and girls, and lack of female teachers are also factors that make it harder for girls in rural areas to enrol in school.

For girls, having a father with secondary education or more is important in explaining whether she will be in or out of school, but not basic education. That is to say, girls with fathers with secondary or higher education have lower chances of being out of school compared to those with fathers with no education. However, there is no difference for those whose parents have no education or only basic education. For boys, having fathers with either basic or non-formal education is an important factor determining the likelihood of sending their sons to school, compared with boys whose fathers have no schooling.

Table ED.15:
Regression Results for Boys, Yemen, 2012

Variables	Model 4 6-14 years old		Model 5 6-11 years old		Model 6 12-14 years old	
	A	B	A	B	A	B
Outcome:						
Out-of-school children (1=yes; 0=no)						
Covariates						
Age						
6	*reference*		*reference*		-	-
7	0.14***	0.16***	0.14***	0.16***		
8	0.07***	0.08***	0.07***	0.08***		
9	0.02***	0.03***	0.02***	0.03***		
10	0.01***	0.01***	0.01***	0.01***		
11	0.01***	0.02***	0.01***	0.02***		
12	0.02***	0.02***			*reference*	
13	0.02***	0.02***			1.12	1.07
14	0.03***	0.04***			2.2	2.24
Urban	1.23	1.41	1.07	1.26	2.63*	2.41*
Topography						
Mountainous	*reference*		*reference*		*reference*	
Coastal Area - Arabian Sea	2.26*	2.18*	1.93	1.92	6.40**	6.63**
Coastal Area - Red Sea	2.31**	2.22**	3.96***	3.53***	1.04	1.44
Plateau Desert	1.49	1.58*	1.2	1.24	2.32*	2.68***
Mother's education						
No schooling	*reference*		*reference*		*reference*	
Some education	0.66	0.69	0.66	0.69	0.72	0.75
Quran & Literacy	0.49	0.52	0.59	0.55	0.32	0.35
Absent mother	0.86	0.77	1.17	0.93	0.42	0.45
Father's education						
No schooling	*reference*		*reference*		*reference*	
Basic	0.48**	0.50**	0.50*	0.52**	0.52	0.57
Secondary or more	0.50*	0.53*	0.67	0.69	0.11**	0.10***
Quran & Literacy	0.20***	0.22***	0.25***	0.24**	0.14*	0.14*
Absent father	0.73	0.67	0.87	0.8	0.5	0.52
Wealth quintiles						
1st	*reference*		*reference*		*reference*	
2nd	0.31***	0.29***	0.29***	0.27***	0.30**	0.31**
3rd	0.32***	0.33***	0.26***	0.27***	0.38	0.42
4th	0.22***	0.20***	0.17***	0.16***	0.26*	0.30*
5th	0.16***	0.15***	0.20***	0.17***	0.01**	0.01**

Disable children	7.48***	6.76***	5.13**	4.69**	8.96***	6.17*
SWF beneficiary	1.92**	1.71**	1.46	1.34	2.44**	2.68***
Experienced violence outside home	0.85	0.82	0.88	0.87	0.89	0.85
Child labour	2.34**	2.47***	1.65	1.73	3.85***	3.58***
Food secure	1.31	1.28	1.21	1.15	1.4	1.49
Experienced shock	0.87	0.89	1.34	1.29	0.41*	0.47
Constant	7.53***	6.88***	8.05***	8.00***	0.09***	0.07***
Sample	6.259		4.181		2.078	
Population	2,998,538		1,890,711		1,107,828	
Number of groups	-	3.469	-	2.783	-	1.720
Obs. per group:						
min.	-	1	-	1	-	1
average.	-	1.8	-	1.4	-	1.3
max.	-	10	-	7	-	5
Prob >chi2	-	0.0000	-	0.0000	-	0.0000
Prob >F	0.0000	-	0.0000	-	0.0000	-

Source: NSPMS, Round 1.
Notes:1) Legend: * p<0.05; ** p<0.01; *** p<0.001.
2) Model A is based on the svy logit estimation (using complex sampling weight),
and do not take into account the dependency among children in the same household.
3) Model B is based on the xtlogit estimation (using simple weight), and do take into account the
dependency among children in the same household.

The wealth index significantly affects a child's likelihood to be out of school for both boys and girls aged 6-11 years. For adolescents (12-14 years), only girls in the fifth wealth quintiles are less likely to be out of school compared with those in the first quintile. It suggests that higher socioeconomic status plays a crucial role in the permanence of adolescent girls in the education system.

Children with special needs have a higher chance of being out of school. This result applies for both boys and girls aged 6-11 years but only for boys aged 12-14 years. In other words, adolescents girls with special needs have the same probability of being out of school compared to adolescents girls without special needs, and it might reflect the very low school participation of older girls.

SWF beneficiaries and child labour are relevant predictors only for boys aged 12-14 years, as they increase the likelihood of being out of school. None of these characteristics is significantly associated with girls being out of school.

Table ED.16:
Regression Results for Girls, Yemen, 2012

Variables	Model 7 6-14 years old		Model 8 6-11 years old		Model 9 12-14 years old	
	A	B	A	B	A	B
Outcome:						
Out-of-school children (1=yes; 0=no)						
Covariates						
Age						
6	*reference*		*reference*		-	-
7	0.32**	0.26***	0.32***	0.27***		
8	0.13***	0.09***	0.13***	0.10***		
9	0.11***	0.08***	0.11***	0.09***		
10	0.06***	0.06***	0.06***	0.06***		
11	0.08***	0.08***	0.08***	0.08***		
12	0.13***	0.14***			*reference*	
13	0.21***	0.18***			1.63	1.60
14	0.25***	0.22***			2.19***	1.97**
Urban	0.50**	0.53*	0.59*	0.63	0.32**	0.35**
Topography						
Mountainous	*reference*		*reference*		*reference*	
Coastal Area - Arabian Sea	1.97*	2.34**	1.52	1.66	3.39**	3.58***
Coastal Area - Red Sea	0.98	1.10	0.81	0.81	1.68	1.67
Plateau Desert	1.48	1.65**	1.32	1.32	1.68	1.88*
Mother's education						
No schooling	*reference*		*reference*		*reference*	
Some education	0.76	0.84	0.76	0.80	0.67	0.70
Quran & Literacy	0.74	0.82	0.52	0.60	1.53	1.44
Absent mother	1.24	1.63	1.04	1.35	1.46	1.32
Father's education						
No schooling	*reference*		*reference*		*reference*	
Basic	0.87	0.81	0.84	0.80	0.97	0.96
Secondary or more	0.46**	0.47**	0.48*	0.49*	0.34**	0.32***
Quran & Literacy	0.72	0.71	0.50	0.49	1.39	1.40
Absent father	0.94	0.81	0.91	0.83	0.97	0.94
Wealth quintiles						
1st	*reference*		*reference*		*reference*	
2nd	0.29***	0.27***	0.29***	0.27***	0.29*	0.32*
3rd	0.29***	0.26***	0.25***	0.23***	0.42*	0.41*
4th	0.23***	0.22***	0.22***	0.22***	0.28*	0.28**
5th	0.17***	0.15***	0.19***	0.18***	0.12***	0.11***

Disable children	3.09**	2.61**	5.87***	5.52***	1.19	1.08
SWF beneficiary	1.12	1.06	0.96	0.91	1.40	1.37
Experienced violence outside home	0.91	0.76	0.73	0.65	1.40	1.26
Child labour	1.3	1.54*	1.24	1.30	1.32	1.41
Food secure	0.68*	0.72	0.67*	0.69	0.75	0.76
Experienced shock	1.28	1.11	1.39	1.25	1.14	1.16
Constant	10.28***	11.67***	12.03***	14.15***	0.89	0.87
Sample	5.875		4.064		4.064	
Population	2,828,771		2,022,833		805.938	
Number of groups	-	3.343	-	2.706	-	513
Obs. per group:						
min.	-	1	-	1	-	1
average	-	1.7	-	1.5	-	1.2
max	-	11	-	9	-	3
Prob >chi2	-	0.0000	-	0.0000	-	0.0000
Prob >F	0.0000	-	0.0000	-	0.0000	-

Source: NSPMS, Round 1.
*Notes: 1) Legend: * p<0.05; ** p<0.01; *** p<0.001.*
2) Model A is based on the svy logit estimation (using complex sampling weight),
and do not take into account the dependency among children in the same household.
3) Model B is based on the xtlogit estimation (using simple weight),
and do take into account the dependency among children in the same household.

This analysis of out-of-school children using data from the first round of the NSPMS highlights the challenging situation of education in Yemen. It shows that interventions aimed to reducing the number of children excluded from the educational system need simultaneously to address issues including late entrance into school, the barriers to girls' education, constraints for children with special needs and low educational opportunities for children from poor households.

Enrolling and keeping younger children in school is one of the major challenges. About two thirds of children aged six years and another 40 per cent of children aged seven years are not enrolled in school. Late entrance into school is usually associated with academic failure, including low achievement and late dropout.[82] Therefore, it would be important to implement policies that can increase participation of children aged six and seven years and avoid the possible negative effects of delayed entry.

Girls are twice as likely to be out of school than boys. This is not a recent problem, and it has been vastly documented in the literature. This is especially true in rural areas, where major differences still exist. Some strategies aimed at improving Yemeni girls' access to schools have been implemented, such as the Health and Environmental Education Project in Ibb and Abyan governorates[83] and the Second Basic Education Development Project supported by the World Bank, and it would be important to evaluate their results in order to expand them to other parts of the country.

This analysis has also identified that children with special needs or any constraint in performing daily activities are much less likely to be enrolled in school. An inclusive school would imply the possibility of interaction, acceptance, socialization, adaptation of the individual to the group and especially the school adapting to serve these individuals. This issue needs to be addressed to reduce the numbers of children who are out of school due to their special needs.

Improving the income status of poor households seems to be another issue that indirectly affects the probability of child enrolment. Wealthier families generally have parents with higher levels of education, and are therefore better equipped to support their child throughout the school years. Parents at the bottom of the wealth index are at a great disadvantage because they lack the financial and social support needed to guide the education of their children. Policies that can ease these financial constraints, and change attitudes towards education (and schools) and improve the quality of education and of school facilities on the supply side can greatly contribute to reducing the number of out-of-school children in Yemen.
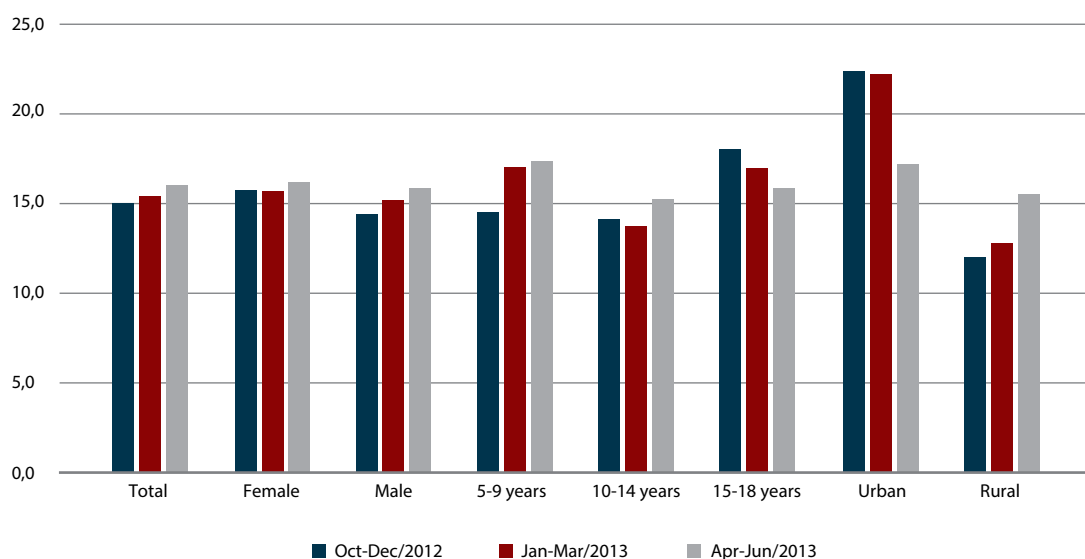
4.6 Absenteeism

The NSPMS asked students who were currently enrolled in basic and secondary school if they had been absent from school in the 30 days prior to the survey, and, if yes, how many days they were absent, excluding holidays and school vacations. Missing classes is a problem both for absent students, as it tends to be difficult for them to catch up on missed school work, and for schools, which face additional work in ensuring special measures to monitor and evaluate the development of the absent children. Regular attendance is essential, since a high absenteeism ratio is often associated with academic failure and school dropout.

The analysis focuses on the children aged 5–18 years, who comprise 96 per cent of the population currently enrolled in basic and secondary education. Approximately 15.5 per cent of all children aged 5–18 years enrolled in basic and secondary education missed three or more days in the 30 days before the survey interview. This figure is an average for the first three rounds of the NSPMS, covering the period October 2012 to June 2013. We excluded the fourth round as it includes the holidays and therefore has fewer observations for this variable. The complete information for all rounds separately is reported in table ED.17.

Figure ED.13 shows absenteeism rates for different population groups. From October-December 2012 to April-June 2013, the point estimate suggests an increase in absenteeism over time, but this increase is not statistically significant. Similarly, there is no difference over time in absenteeism for girls and between girls and boys. As for age groups, absenteeism seems slightly lower for those aged 10-14 years than for the younger and older groups, but again these differences are not statistically significant. Finally, absenteeism seems to be much more prevalent in urban than in rural areas, even though in the third round (April-June 2013), there is a considerable increase in absenteeism for rural students, at the same time as the prevalence of absenteeism seems to drop in urban areas from as high as 22 to 17 per cent. However both changes lack statistical significance.
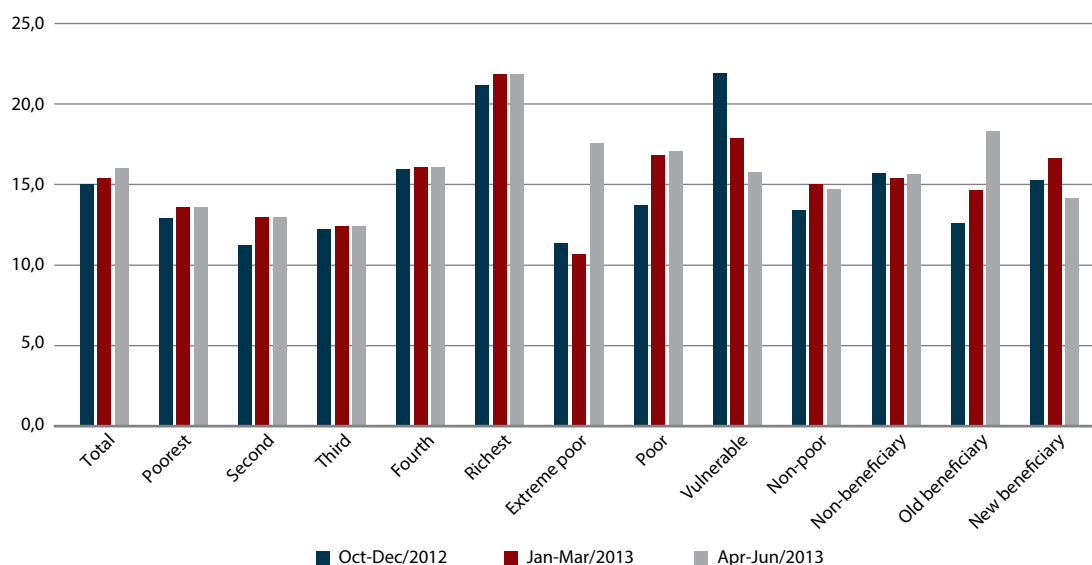
Figure ED.13:
Percentage of Absent Students by Sex, Age Group and
Area of Residence, Yemen, 2012-2013

Unlike most indicators for education and living conditions analyzed in this report, higher levels of absenteeism do not seem to be associated with lower socioeconomic status or poverty. Figure ED.14 shows that the absenteeism rate of the richest wealth quintile seems to be higher than for all other quintiles, including the poorest one. Similarly, the extreme poor and the poor seem to have a lower absenteeism rate than the vulnerable and non-poor. Non-SWF beneficiaries and new SWF beneficiaries have very similar absenteeism rates and so do the old SWF beneficiaries, despite an apparent sharp increase in the third round (April-June 2013). None of these differences are statistically significant, but these results suggest that unlike other indicators, absenteeism rates may not be directly linked to families' socioeconomic status.

Figure ED.14:
Percentage of Absent Students by Wealth Quintiles, Poverty Level and
SWF Beneficiary Status, 2012-2013

In order to better understand this indicator, it is important to look at the reasons for students who missed three classes or more in the previous 30 days. This is not an easy task, as 33 per cent of the students (see figure ED.15) replied 'other' when asked about it with a pre-defined list of possible responses. After analyzing the open-ended answers for 'other' in the database for round 1 (which had the highest prevalence of 'other' at 54 per cent), it became clear that two types of answers were common: travel for a variety of reasons (10 per cent); and supply constraints such as teacher's strike, school under renovation, classes suspended by teachers or no books to attend school (21 per cent). Thus, the 'other' category was not mistakenly capturing alternatives that were already in the questionnaire, but was capturing important alternatives that had been left out.

Now that we know that 'other' in figure ED.15 is a catch-all variable capturing school supply problems and travel, we can discuss the other reasons given by students for missing classes. The second most mentioned one was illness (33 per cent), followed by 'not interested in school' (15 per cent) and work and domestic chores (12 per cent). The other reasons pre-defined in the survey, including violence, were somewhat residual.

Figure ED.15:
Reasons for Missing Three or More Days of School in the Last 30 Days, Yemen, 2012-2013

- Illness
- Not interested in school
- Difficult to get to school
- Violence
- Work and domestic chores
- Dislike teachers
- Others
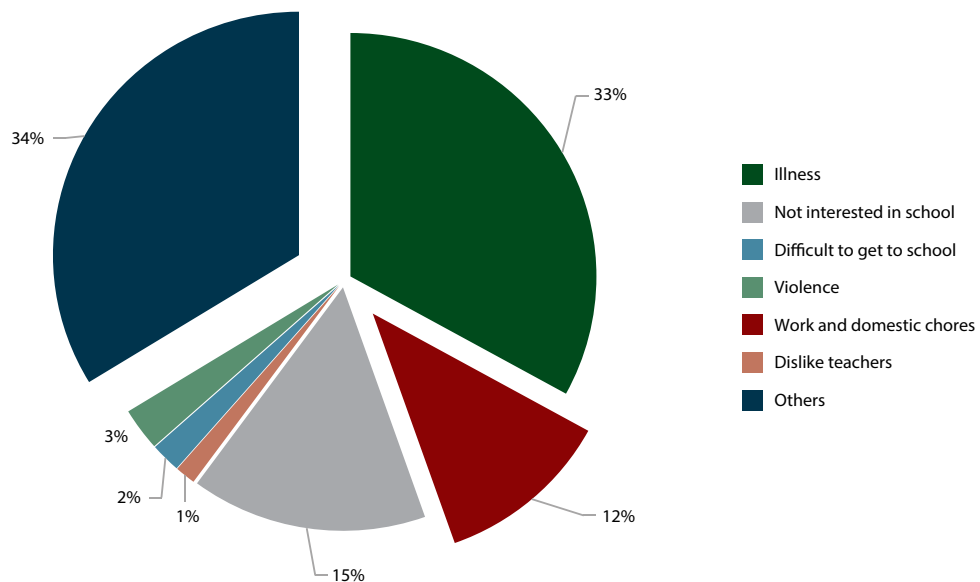
Source: NSPMS, Rounds 1, 2 and 3 (aggregated).

It is important to look more closely at the profile of students who are missing classes because they have to work or help with domestic chores, to see how it compares with the general profile of those who have missed classes.

The first big difference between the profile of absent students who miss class to work or help parents with domestic chores and that of all absent students is that the former consists mostly of rural students. The difference between rural and urban children shown in figure ED.16 is statistically significant. The incidence of absent students aged five to nine years compared to older groups is lower due to older children having to work.

In figure ED.17, the differences are even more striking. Now children from the poorest wealth quintile and the extreme poor are much more likely to be absent from school due to work than

children from the other quintiles and poverty levels, even though the difference is statistically significant just for the wealth quintiles. No difference is observed among those with different SWF beneficiary status.
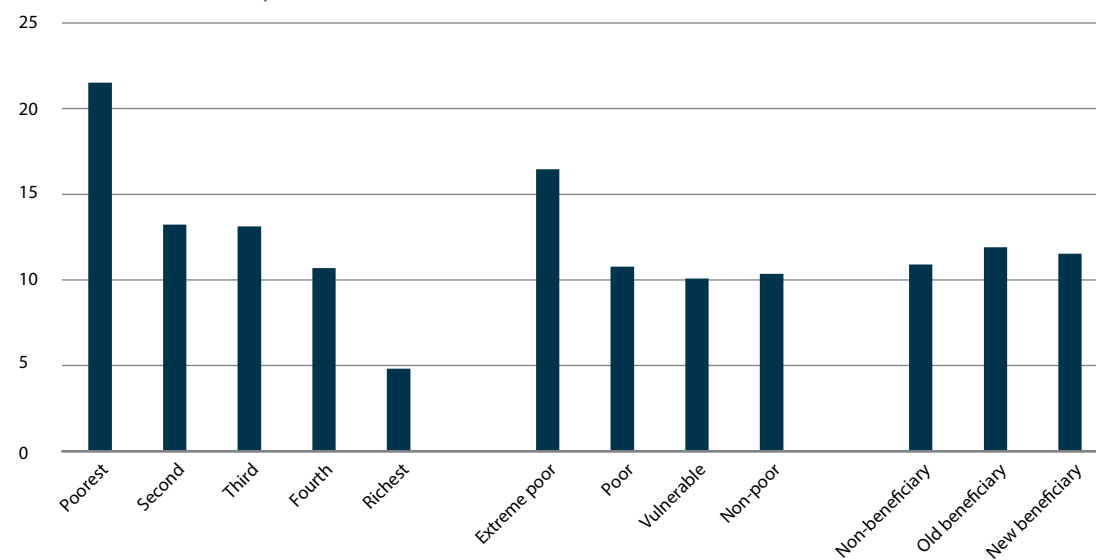
Figure ED.16:
Percentage of Absent Students Due to Work by Round, Sex, Age Group and Area of Residence, Yemen, 2012-2013
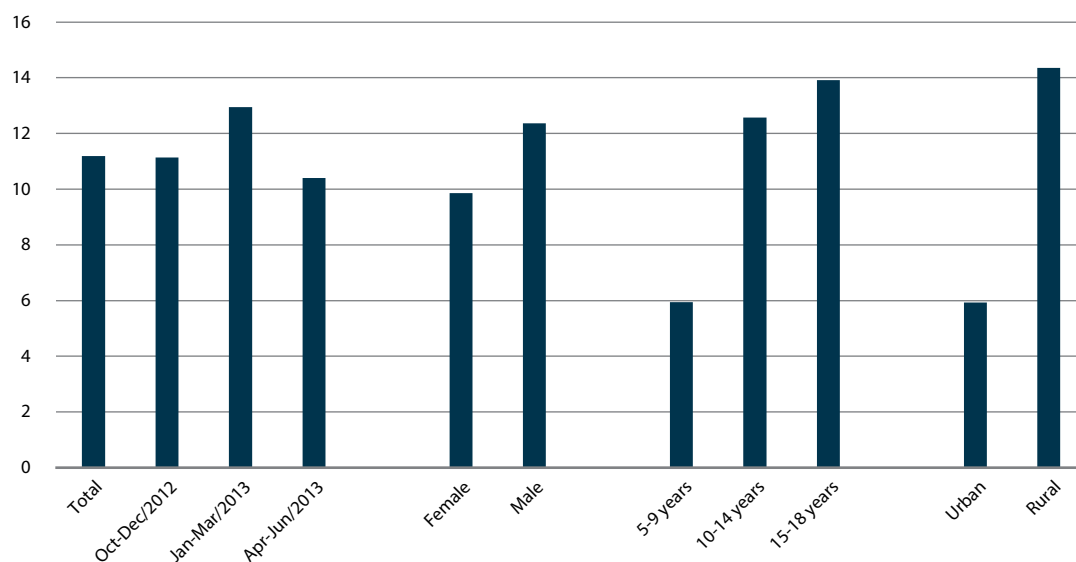
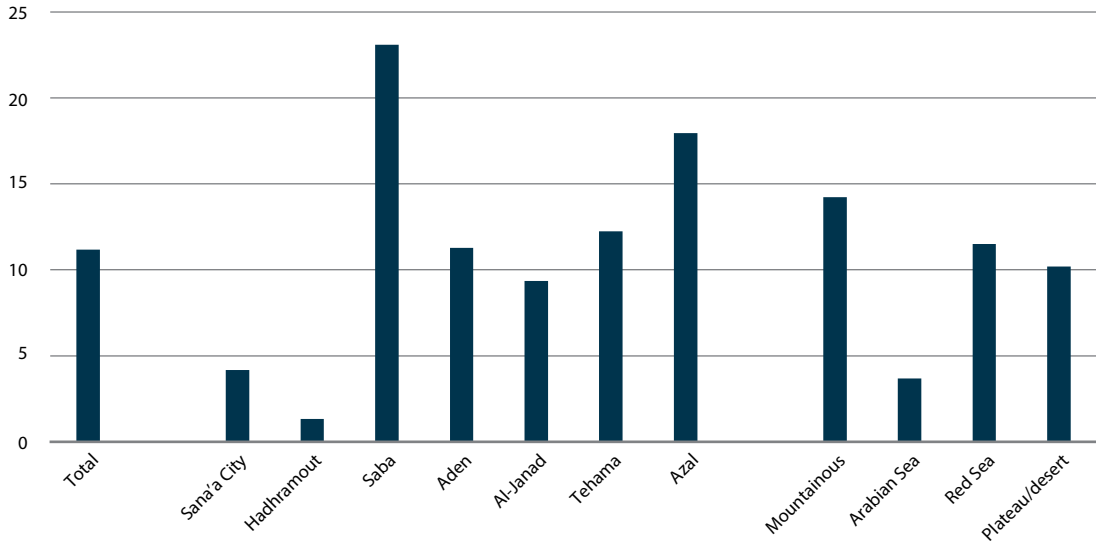*Source: NSPMS, Rounds 1, 2 and 3 (aggregated).*

Figure ED.17:
Percentage of Absent Students Due to Work by Wealth Quintile, Poverty Level and SWF Beneficiary Status, Yemen, 2012-2013

Source: NSPMS, Rounds 1, 2 and 3 (aggregated).

Figure ED. 18 show the differences in the prevalence of absent students due to work by regions and topography. Sana'a City and Hadhramout are the two regions with the lowest prevalence. The Arabian Sea coastal area also has a very low prevalence of students absent for this reason. There are no statistical differences among the other regions and areas despite the variations in point estimates.
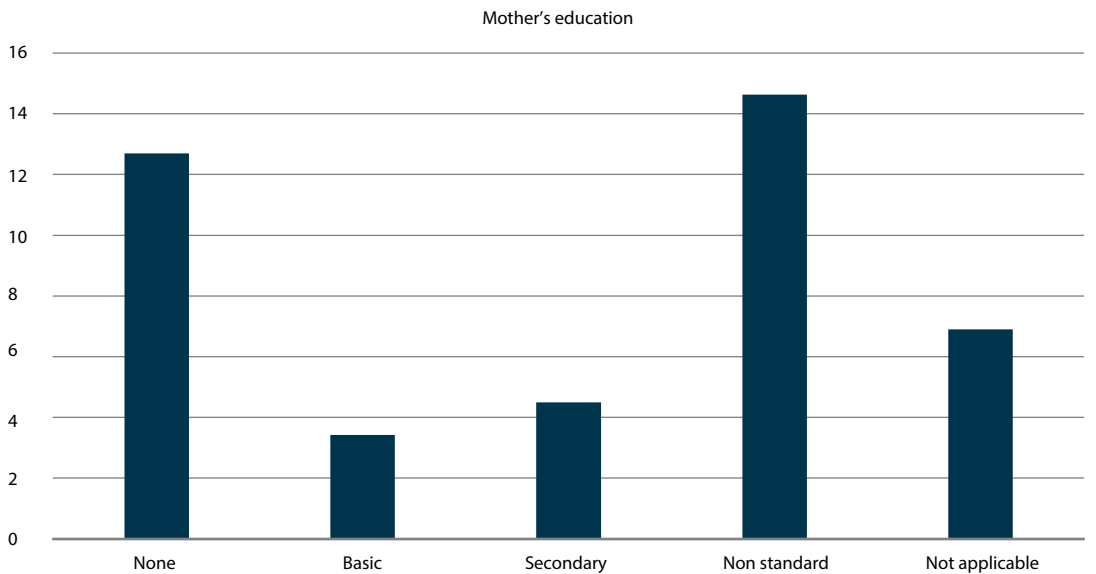
Figure ED.18:
Percentage of Absent Students Due to Work, by Regions and Topographical Areas, Yemen, 2012-2013

Source: NSPMS, Rounds 1, 2 and 3 (aggregated).

Finally, figures ED.19 and ED.20 show that mothers and fathers with no education are more likely to have their children absent from school due to work compared to those with basic (mothers) and secondary (mothers and fathers) education.
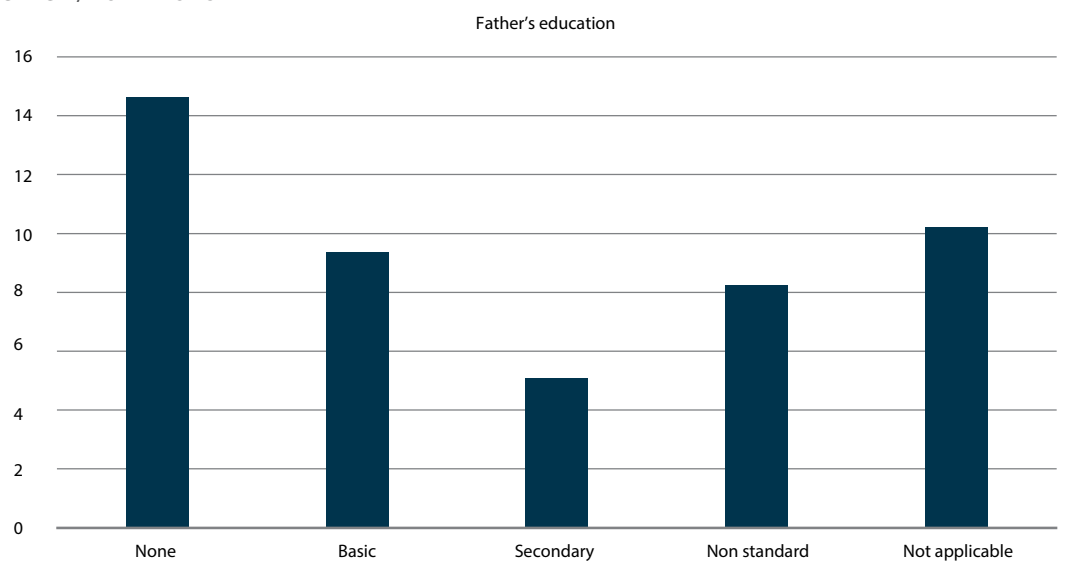
Figure ED.19:
Percentage of Absent Students Due to Work, by Mother's Education, Yemen, 2012-2013

Source: NSPMS, Rounds 1, 2 and 3 (aggregated).

Figure ED.20:
Percentage of Absent Students Due to Work, by Father's Education,
Yemen, 2012-2013

Father's education

Source: NSPMS, Rounds 1, 2 and 3 (aggregated).

4.7 Concluding Remarks

The very low average number of years of schooling achieved by the Yemeni adult population – 4.2 years or incomplete primary (six years) – reflects the low investment in education made by older generations. However, not much can be done to improve this statistic, as it relies essentially on people who are not supposed to return to formal education.

Special attention should therefore be paid to the young people who will soon be starting or have already started their educational trajectory, where there is ample room for improvement. Yemen's educational system is seen as having undergone substantial reform since 2002, when the Government endorsed the National Basic Education Development Strategy 2003–2015, with the main goal of increasing the level of schooling of the school-age population.

In fact, if one takes into account the current pattern of age-specific enrolment ratios, the expected years of schooling of a child who is now entering school is 9.3 years, i.e., five years more than the average for the adult population. It is worth mentioning that this is the maximum (upper bound), as it might be inflated by repetition, since it is based on gross rather than net enrolment.

Despite signs of progress, the challenges ahead are still staggering. A very low percentage of children – only 34 per cent – start basic school at the official age of six years. Surprisingly, the basic school intake does not differ by wealth quintile or mother's education, which suggests that this problem is widespread in the population. Therefore, future policies should encourage parents to send their children to school at the official starting age.

Another important finding is the low investment in girls' education, especially in rural areas and among orphans and socioeconomically disadvantaged girls. Only 68 per cent of girls aged 6-14 years in rural areas are enrolled in basic education. With this result, Yemen is not currently on track to achieve the goal of reaching 95 per cent of enrolment in basic education by 2015 as established in the National Basic Education Development Strategy. A huge effort would be necessary to increase enrolment in basic education for rural girls by almost 27 percentage points in the next three years.

As much as access to education is needed for girls, it depends, to some extent, on the availability of female teachers. If nothing changes, girls might fall into a trap where the barrier to educating girls will be a barrier to hiring teachers due to the shortage of educated females. It is a vicious circle that has to be

broken to fulfil girls' educational potential for positive social transformation. CCTs for disadvantaged girls should be considered as a strategy to improve their schooling.

A lack of interest in studying stands out as the main reason why children are not attending school. Getting out-of-school children into school is another important challenge, which involves overcoming both supply- and demand-side constraints. Limited access to quality schooling, coupled with the lack of familiar incentives, might encourage children to start work at an early age. In the short term, child labour can be seen as a good opportunity both in terms of developing a professional career and helping with domestic costs. Proactive measures to prevent or minimize child labour should be strengthened to increase children's school enrolment and attendance.

Children from families with lower socioeconomic backgrounds are more likely to be out of school or absent from school due to the need to work or support their families with domestic chores. Girls are more likely to be out of school, particularly in rural areas. Children from rural areas seem to be more likely to be absent from school to work or help their families with domestic chores. Although the questionnaire did not ask directly about the quality of the school, the fact that so many students say they are out of school or are absent because they have no interest in going to school suggests that school may not be attractive for them and/or their parents. When giving reasons for being absent from school, a large proportion of students pointed to a lack of teachers, strikes by teachers, the lack of books and school renovation, which are clear supply-side constraints to children attending school and learning.

On the demand side, policies that could make school more attractive to students and their parents are important. Cash for education and school feeding programmes, which have very low coverage in Yemen, should be piloted, evaluated and, depending on results, scaled up. On the supply side, it is important that schools be in good condition, especially with separate toilets for boys and girls. It should also be ensured that there are enough female teachers, especially for secondary education, so that girls are not prevented from enrolling and attending school for this reason.

In sum, the problems of overage enrolment in basic education, low levels of schooling among underprivileged girls and a lack of persistence in progressing towards higher grades are the three main challenges that need to be addressed to increase levels of education in Yemen.

4.8 Tables

Table ED.1:
Average Years of Schooling of Adult Population Aged
25 Years or More, Yemen, 2012

	Total			Male			Female		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	4.20	3.84	4.55	6.29	5.88	6.70	2.28	1.88	2.69
Area of residence									
Urban	6.80	6.13	7.47	8.88	8.07	9.69	4.85	3.96	5.75
Rural	3.22	2.91	3.52	5.30	4.91	5.69	1.33	1.02	1.64
Region									
Sana'a City	7.62	6.75	8.50	10.15	8.93	11.36	5.24	4.13	6.34
Hadhramout	4.92	4.17	5.67	7.15	6.36	7.95	2.55	1.88	3.23
Saba	4.02	3.18	4.87	6.19	5.01	7.37	2.17	1.12	3.23

⌐→

Aden	5.32	4.84	5.79	7.33	6.78	7.88	3.10	2.47	3.74
Al-Janad	4.62	3.64	5.60	6.57	5.50	7.63	3.03	1.82	4.24
Tehama	2.37	1.89	2.85	4.05	3.32	4.77	0.81	0.48	1.15
Azal	3.28	2.66	3.90	5.87	4.99	6.76	1.05	0.62	1.48
Topography									
Mountainous	3.81	3.31	4.32	6.05	5.41	6.69	1.91	1.37	2.44
Coastal area - Arabian Sea	5.86	5.21	6.50	7.43	6.71	8.14	4.07	3.24	4.89
Coastal area - Red Sea	2.44	1.70	3.18	4.02	2.95	5.09	0.91	0.36	1.46
Plateau/desert	4.98	4.35	5.60	7.23	6.56	7.90	2.91	2.11	3.71
Wealth quintile									
Poorest	1.63	1.28	1.99	2.79	2.28	3.29	0.50	0.23	0.78
Second	2.93	2.45	3.41	4.92	4.27	5.57	1.01	0.62	1.40
Middle	3.71	3.03	4.38	6.13	5.35	6.91	1.75	0.92	2.59
Fourth	4.43	3.98	4.89	6.64	6.04	7.24	2.45	1.94	2.95
Richest	7.77	7.14	8.40	10.47	9.83	11.10	5.26	4.22	6.29
Level of poverty									
Extreme Poor	3.28	2.42	4.15	5.18	4.19	6.18	1.54	0.59	2.50
Moderate Poor	3.51	3.04	3.97	5.32	4.64	6.00	1.79	1.38	2.19
Vulnerable	4.57	3.91	5.24	6.79	5.91	7.66	2.47	1.90	3.03
Non Poor	4.84	4.26	5.42	7.18	6.57	7.79	2.80	2.03	3.57
Head of household's education									
None	1.78	1.49	2.06	2.56	2.19	2.94	1.05	0.78	1.32
Basic	4.14	3.80	4.47	6.17	5.82	6.52	2.03	1.55	2.50
Secondary +	8.61	8.10	9.12	12.88	12.51	13.24	4.73	3.75	5.71
Quran & Literacy	4.95	3.50	6.40	10.18	8.68	11.67	2.76	1.22	4.29
Mother's education									
None	7.44	6.80	8.08	8.58	7.97	9.19	4.62	3.13	6.12
Basic	11.49	9.49	13.49	12.12	9.93	14.32	10.17	6.40	13.94
Secondary +	14.32	11.94	16.70	13.82	12.64	15.00	14.40	11.73	17.07
Quran & Literacy	11.30	9.23	13.37	11.22	8.86	13.57	11.67	9.78	13.55
Absent Mother	3.18	2.91	3.46	5.11	4.68	5.54	1.80	1.54	2.06
Beneficiary status									
Non Beneficiary	4.89	4.41	5.37	6.99	6.45	7.54	2.85	2.25	3.44
Old Beneficiary	3.07	2.72	3.41	4.96	4.50	5.41	1.55	1.23	1.87
New Beneficiary	2.91	2.33	3.48	5.06	4.23	5.90	1.01	0.71	1.31
Population	7,630,128			3,645,114			3,985,013		
Sample	16,740			7,905			8,835		
Missing*	638			400			238		

Source: NSPMS, Round 1.
*Note: * Missing information on enrolment and level of education are not included in the statistics.*

Table ED.3:
Percentage of Children of School-age Entry (6 Years Old) who are Currently Enrolled in Basic Education,** Yemen, 2012

	Net Intake in Basic Education								
	Total			Boys			Girls		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	33.52	26.55	40.49	29.75	22.10	37.39	36.93	27.10	46.77
Area of residence									
Urban	38.91	19.78	58.04	34.86	14.73	54.99	43.85	20.25	67.44
Rural	32.10	25.04	39.17	28.13	20.49	35.77	35.43	24.65	46.22
Region									
Sana'a City	52.89	9.89	95.88	44.84	-4.13	93.81	62.79	18.03	107.54
Hadhramout	24.71	6.43	43.00	29.97	2.83	57.10	17.00	4.40	29.59
Saba	34.42	13.81	55.02	39.02	11.41	66.63	29.20	4.93	53.47
Aden	25.93	15.39	36.47	23.63	11.93	35.33	28.26	10.96	45.57
Al-Janad	28.94	15.79	42.09	29.06	12.62	45.50	28.85	13.23	44.47
Tehama	36.11	23.38	48.85	20.21	10.18	30.24	48.62	29.72	67.51
Azal	34.76	21.88	47.64	39.09	21.88	56.30	30.66	14.07	47.25
Topography									
Mountainous	27.76	19.31	36.21	30.66	20.34	40.99	25.65	15.38	35.93
Coastal area - Arabian Sea	33.99	13.28	54.70	39.24	12.85	65.63	26.77	2.78	50.76
Coastal area - Red Sea	41.65	23.84	59.45	9.38	-0.21	18.98	69.52	49.97	89.07
Plateau/desert	34.67	22.68	46.67	37.30	23.40	51.20	31.82	17.76	45.88
Wealth quintile									
Poorest	29.79	17.18	42.40	16.91	6.59	27.22	45.33	24.77	65.90
Second	37.60	24.91	50.29	36.72	21.31	52.13	38.39	19.18	57.60
Middle	29.23	12.04	46.43	21.84	7.74	35.94	32.87	10.88	54.86
Fourth	37.08	26.76	47.41	41.50	28.87	54.14	33.29	18.23	48.35
Richest	36.18	13.89	58.48	37.48	13.14	61.81	34.48	7.79	61.17
Level of poverty									
Extreme Poor	12.31	6.05	18.57	13.82	5.72	21.92	10.59	4.36	16.82
Moderate Poor	39.60	26.16	53.03	31.89	17.33	46.44	47.26	29.26	65.26
Vulnerable	30.19	15.14	45.24	24.83	8.49	41.16	35.77	11.59	59.95
Non Poor	38.95	27.97	49.93	40.48	26.26	54.70	37.93	21.96	53.89
Head of household's education									
None	26.30	15.89	36.70	19.74	11.16	28.33	31.75	14.78	48.73
Basic	34.69	24.64	44.74	35.12	22.88	47.37	34.17	18.53	49.81
Secondary+	44.93	28.17	61.69	35.13	15.07	55.18	52.79	33.50	72.07

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Quran & Literacy	13.00	-2.76	28.76	4.94	-2.53	12.41	16.49	-4.00	36.98
Mother's education									
None	33.17	25.61	40.73	27.29	19.36	35.22	38.61	26.63	50.60
Basic	29.22	15.82	42.62	26.15	11.02	41.29	32.26	11.32	53.20
Secondary +	43.42	11.11	75.74	63.69	24.22	103.15	34.32	0.69	67.95
Quran & Literacy	65.61	39.98	91.24	60.72	20.15	101.29	69.00	36.86	101.14
Absent Mother	9.67	-1.42	20.77	10.97	-5.25	27.19	6.75	-1.58	15.08
Beneficiary status									
Non Beneficiary	35.30	26.09	44.50	31.19	20.91	41.48	38.92	25.99	51.85
Old Beneficiary	30.53	23.56	37.49	26.11	16.58	35.64	34.68	25.15	44.21
New Beneficiary	26.55	15.95	37.14	26.02	14.25	37.79	27.08	11.75	42.41
Population		718,532			341,463			377,069	
Sample		1,450			724			726	
Missing*		15			7			8	

Table ED.3a:
F-tests: Net Intake in Basic Education versus Wealth Quintiles, Yemen, 2012

Net intake in basic education (TOTAL)	Wealth quintiles					
	Poorest	Second	Middle	Fourth	Richest	Total
Not enrolled	0.26	0.19	0.23	0.14	0.17	1.00
	0.70	0.62	0.71	0.63	0.64	0.66
Enrolled	0.22	0.23	0.19	0.17	0.20	1.00
	0.30	0.38	0.29	0.37	0.36	0.34
Total	0.24	0.20	0.22	0.15	0.18	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.26, 1579.02)}=$ 0.2746 $P = 0.8591$					
Sample	1,450					
Population	718,532					

Net intake in basic education (BOYS)	Wealth Quintiles					
	Poorest	Second	Middle	Fourth	Richest	Total
Not enrolled	0.33	0.18	0.17	0.12	0.19	1.00
	0.83	0.63	0.78	0.59	0.63	0.70
Enrolled	0.16	0.25	0.11	0.21	0.27	1.00
	0.17	0.37	0.22	0.42	0.37	0.30
Total	0.28	0.20	0.15	0.15	0.22	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.15, 1217.17)}=$ 1.8518 $P = 0.1328$					
Sample	724					
Population	341,463					

Net intake in basic education (GIRLS)	Wealth Quintiles					
	Poorest	Second	Middle	Fourth	Richest	Total
Not enrolled	0.18	0.20	0.30	0.16	0.15	1.00
	0.55	0.62	0.67	0.67	0.66	0.63
Enrolled	0.26	0.21	0.25	0.14	0.14	1.00
	0.45	0.38	0.33	0.33	0.34	0.37
Total	0.21	0.20	0.28	0.15	0.15	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.56, 1345.73)}=$ 0.2485 $P = 0.8924$					
Sample	726					
Population	377,069					

Source: NSPMS, Round 1.

Table ED.3b:
F-tests: Net Intake in Basic Education versus Mother's Education, Yemen, 2012

Net intake in basic education (TOTAL)	Mother's education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.65	0.24	0.07	0.01	0.03	1.00
	0.67	0.71	0.57	0.34	0.90	0.67
Enrolled	0.65	0.20	0.11	0.03	0.01	1.00
	0.33	0.29	0.43	0.66	0.10	0.33
Total	0.65	0.23	0.09	0.01	0.02	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(2.12, 1030.24)}= 1.1804$ $P = 0.3093$					
Sample	1,444					
Population	714,263					

Net intake in basic education (BOYS)	Mother's Education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.68	0.25	0.03	0.01	0.04	1.00
	0.73	0.74	0.36	0.39	0.89	0.71
Enrolled	0.62	0.22	0.12	0.03	0.01	1.00
	0.27	0.26	0.64	0.61	0.11	0.29
Total	0.66	0.24	0.06	0.01	0.03	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(2.95, 1135.98)}= 2.1791$ $P = 0.0899$					
Sample	722					
Population	337,897					

Net intake in basic education (GIRLS)	Mother's education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.63	0.23	0.12	0.01	0.02	1.00
	0.61	0.68	0.66	0.31	0.93	0.63
Enrolled	0.67	0.19	0.10	0.03	0.00	1.00
	0.39	0.32	0.34	0.69	0.07	0.37
Total	0.64	0.22	0.11	0.02	0.01	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(2.34, 881.31)} = 0.5434$ $P = 0.6089$					
Sample	722					
Population	376,367					

Source: NSPMS, Round 1.

Table ED.4a:
Percentage of Population Enrolled in Basic Education, Yemen, 2012

	Gross Enrolment in Basic Education								
	Total			Boys			Girls		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	82.06	78.61	85.51	88.19	83.77	92.61	75.59	71.19	79.98
Area of residence									
Urban	95.26	88.44	102.07	90.36	81.01	99.71	100.24	92.58	107.91
Rural	78.13	74.37	81.89	87.56	82.54	92.58	68.07	63.35	72.78
Region									
Sana'a City	105.93	93.43	118.43	99.77	79.10	120.43	110.74	98.77	122.72
Hadhramout	95.18	88.54	101.82	105.54	97.43	113.65	85.07	76.23	93.91
Saba	80.90	75.90	85.89	86.47	79.86	93.08	75.87	68.44	83.31
Aden	85.04	79.11	90.96	91.13	84.64	97.62	77.67	69.32	86.01
Al-Janad	85.96	77.17	94.74	92.70	81.94	103.45	77.53	65.68	89.38
Tehama	67.19	60.60	73.79	73.64	65.19	82.09	60.53	51.69	69.36
Azal	81.42	75.69	87.14	90.12	82.49	97.75	73.07	66.71	79.44
Topography									
Mountainous	85.54	80.71	90.36	95.31	90.70	99.92	75.25	68.18	82.31
Coastal area - Arabian Sea	87.90	79.93	95.87	91.09	80.62	101.57	84.91	76.24	93.58
Coastal area - Red Sea	64.71	54.06	75.35	67.12	53.49	80.75	61.87	47.91	75.84
Plateau/desert	84.78	79.60	89.95	89.47	83.25	95.69	79.93	73.28	86.59
Wealth quintile									
Poorest	53.31	45.90	60.72	62.96	54.12	71.80	41.45	30.16	52.74
Second	84.56	79.17	89.95	94.92	87.85	102.00	74.97	67.82	82.11
Middle	85.92	79.96	91.88	94.82	86.91	102.72	76.75	69.23	84.27
Fourth	94.05	89.35	98.75	99.04	93.01	105.07	89.07	83.12	95.01
Richest	97.61	89.48	105.74	95.43	84.61	106.24	100.05	89.95	110.14
Level of poverty									
Extreme Poor	68.15	59.63	76.68	78.70	65.49	91.90	55.20	46.25	64.16
Moderate Poor	80.01	74.57	85.45	84.60	78.79	90.41	75.36	66.69	84.04
Vulnerable	87.61	79.68	95.54	94.25	84.67	103.84	80.57	71.85	89.29
Non Poor	87.61	82.89	92.33	93.22	85.41	101.03	81.86	76.61	87.12
Mother's education									
None	78.54	74.34	82.75	86.83	81.21	92.45	69.45	64.08	74.82
Basic	90.95	84.91	96.98	91.13	83.16	99.09	90.77	82.90	98.65
Secondary +	78.77	66.68	90.87	78.95	56.73	101.17	78.63	64.24	93.01
Quran & Literacy	94.70	83.72	105.68	99.23	85.17	113.28	89.03	75.81	102.26
Absent Mother	91.77	78.23	105.31	100.09	85.26	114.93	82.48	67.64	97.31
Beneficiary status									
Non Beneficiary	83.52	78.73	88.31	88.66	82.59	94.73	78.24	72.32	84.17
Old Beneficiary	81.82	77.14	86.51	89.04	82.31	95.76	73.81	67.64	79.97
New Beneficiary	75.26	66.66	83.86	84.68	73.93	95.43	64.59	55.83	73.35
Population	18,837,196			9,361,596			9,475,600		
Sample	40,853			20,219			20,634		
Missing*	119			64			55		

Source: NSPMS, Round 1.
*Note: * Missing information on enrolment and level of education are not included in the statistics.*

Table ED.4b:
Percentage of Population Enrolled in Secondary Education, Yemen, 2012

	Gross Enrolment in Secondary Education								
	Total			Boys			Girls		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	44.04	37.54	50.53	53.07	43.53	62.60	34.70	26.41	42.98
Area of residence									
Urban	66.60	52.13	81.07	78.88	55.54	102.23	53.86	35.59	72.13
Rural	35.69	28.93	42.44	43.49	34.64	52.34	27.61	19.11	36.11
Region									
Sana'a City	68.86	54.34	83.38	79.67	61.13	98.20	58.85	29.94	87.77
Hadhramout	34.21	21.72	46.69	46.34	27.11	65.57	21.61	9.05	34.16
Saba	38.13	21.08	55.17	56.60	34.33	78.88	24.02	6.89	41.16
Aden	38.65	29.34	47.96	57.84	43.88	71.81	23.46	14.82	32.09
Al-Janad	63.72	45.09	82.36	79.52	48.06	110.98	49.86	29.96	69.75
Tehama	22.97	14.18	31.75	25.50	15.45	35.56	19.48	8.55	30.40
Azal	33.60	21.20	46.00	40.20	22.08	58.33	25.14	9.45	40.82
Topography									
Mountainous	49.12	38.34	59.91	60.40	44.45	76.34	38.81	25.84	51.78
Coastal area - Arabian Sea	33.54	19.39	47.70	40.41	16.16	64.66	27.28	13.32	41.24
Coastal area - Red Sea	15.12	5.03	25.20	14.57	3.36	25.77	16.04	-0.26	32.34
Plateau/desert	48.99	38.84	59.14	61.87	46.29	77.44	35.70	22.13	49.27
Wealth quintile									
Poorest	16.02	4.71	27.34	22.80	5.75	39.86	8.84	1.16	16.52
Second	30.10	17.64	42.56	34.24	20.40	48.09	24.91	8.30	41.52
Middle	43.17	31.92	54.42	50.90	34.76	67.03	36.96	21.01	52.92
Fourth	47.94	36.12	59.77	58.76	40.03	77.48	34.67	20.40	48.93
Richest	70.87	53.85	87.90	88.05	59.36	116.74	54.76	35.03	74.49
Level of poverty									
Extreme Poor	24.57	15.23	33.91	29.74	15.75	43.73	19.43	4.99	33.86
Moderate Poor	38.04	29.19	46.89	47.17	33.60	60.74	28.48	18.61	38.35
Vulnerable	55.97	41.55	70.39	70.90	53.55	88.24	41.97	19.55	64.40
Non Poor	49.16	35.92	62.40	56.21	35.37	77.05	41.38	26.70	56.06
Mother's education									
None	37.58	31.79	43.37	43.45	35.45	51.46	30.75	22.85	38.65
Basic	56.97	38.21	75.73	71.08	49.67	92.50	45.14	14.10	76.17
Secondary +	149.48	46.89	252.08	213.65	-12.21	439.50	91.39	61.56	121.22
Quran & Literacy	89.84	47.80	131.88	135.21	58.04	212.38	54.35	17.89	90.81
Absent Mother	31.26	18.14	44.38	44.08	15.18	72.97	23.92	11.66	36.18
Beneficiary status									
Non Beneficiary	46.85	37.75	55.95	57.55	43.41	71.70	35.94	24.76	47.11
Old Beneficiary	41.96	33.04	50.89	49.28	35.58	62.98	34.43	23.36	45.51
New Beneficiary	34.84	23.56	46.11	40.39	20.64	60.14	28.56	15.91	41.20
Population	18,837,196			9,361,596			9,475,600		
Sample	40,853			20,219			20,634		
Missing*	119			64			55		

Source: NSPMS, Round 1.
*Note: * Missing information on enrolment and level of education are not included in the statistics.*

Table ED.5:

Percentage of Population Aged 6-14 Enrolled in Basic Education, Yemen, 2012

	Net Enrolment in Basic Education								
	Total			Boys			Girls		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	72.24	69.43	75.06	76.64	73.04	80.23	67.60	64.00	71.20
Area of residence									
Urban	82.93	78.27	87.60	79.92	72.13	87.70	86.01	82.04	89.98
Rural	69.06	65.82	72.30	75.68	71.62	79.74	61.99	57.69	66.28
Region									
Sana'a City	88.43	83.04	93.82	82.95	71.81	94.10	92.71	87.18	98.23
Hadhramout	79.18	74.40	83.96	84.92	79.42	90.42	73.58	66.52	80.63
Saba	74.65	69.81	79.49	78.78	73.28	84.28	70.93	64.12	77.74
Aden	74.67	70.07	79.27	80.39	75.46	85.31	67.76	61.34	74.18
Al-Janad	76.62	69.13	84.11	82.85	73.24	92.47	68.83	59.17	78.49
Tehama	58.79	52.84	64.74	61.66	55.48	67.85	55.82	47.31	64.32
Azal	73.66	68.86	78.45	80.07	74.31	85.83	67.51	61.99	73.04
Topography									
Mountainous	75.98	71.72	80.24	83.83	79.66	88.01	67.71	61.96	73.47
TCoastal area - Arabian Sea	79.21	73.08	85.34	80.58	73.92	87.25	77.93	70.43	85.43
Coastal area - Red Sea	56.76	47.41	66.11	56.19	45.77	66.62	57.42	43.87	70.97
Plateau/desert	73.72	69.95	77.49	77.41	72.47	82.35	69.92	65.07	74.77
Wealth quintile									
Poorest	48.29	41.28	55.29	55.86	48.11	63.60	38.98	27.86	50.10
Second	73.90	69.58	78.21	79.87	75.07	84.68	68.37	61.87	74.87
Middle	76.45	71.68	81.21	83.87	78.10	89.63	68.80	62.66	74.94
Fourth	82.33	78.57	86.08	85.95	82.24	89.67	78.71	73.69	83.73
Richest	84.45	79.05	89.85	82.71	73.99	91.44	86.40	81.48	91.31
Level of poverty									
Extreme Poor	60.08	53.55	66.61	68.73	58.56	78.90	49.45	41.06	57.84
Moderate Poor	69.36	64.94	73.79	73.22	68.52	77.92	65.46	58.34	72.58
Vulnerable	77.60	71.87	83.33	81.28	74.39	88.18	73.69	66.31	81.07
Non Poor	77.90	73.90	81.89	81.48	75.24	87.71	74.23	69.95	78.52
Mother's education									
None	67.90	64.52	71.28	73.71	69.54	77.87	61.52	56.85	66.19
Basic	83.40	79.56	87.24	84.04	77.83	90.26	82.77	77.94	87.60
Secondary +	76.16	64.44	87.88	76.35	54.73	97.98	76.00	61.89	90.10
Quran & Literacy	85.25	77.64	92.86	89.33	81.92	96.75	80.13	68.45	91.80
Absent Mother	74.96	64.74	85.18	83.06	70.77	95.35	65.92	55.78	76.06
Beneficiary status									
Non Beneficiary	74.74	70.93	78.55	78.53	73.68	83.37	70.85	65.93	75.77
Old Beneficiary	68.77	65.11	72.43	74.36	69.52	79.21	62.55	57.34	67.75
New Beneficiary	65.17	58.45	71.90	71.20	63.66	78.73	58.35	50.19	66.52
Population	5,881,240			3,020,743			2,860,497		
Sample	12,296			6,325			5,971		
Missing*	58			33			25		

Table ED.5a:
F-tests: Net Enrolment in Basic Education versus Wealth Quintiles, Yemen, 2012

Net enrolment in basic education (TOTAL)	Wealth Quintiles					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Not enrolled	0.41	0.20	0.17	0.12	0.10	1.00
	0.52	0.26	0.24	0.18	0.16	0.28
Enrolled	0.15	0.21	0.22	0.21	0.21	1.00
	0.48	0.74	0.76	0.82	0.84	0.72
Total	0.22	0.21	0.21	0.19	0.18	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.67, 1993.72)} = 29.0111$ $P = 0.0000$					
Sample	12,296					
Population	5,881,240					

Net enrolment in basic education (BOYS)	Wealth Quintiles					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Not enrolled	0.45	0.17	0.14	0.11	0.14	1.00
	0.44	0.20	0.16	0.14	0.17	0.23
Enrolled	0.17	0.20	0.22	0.20	0.20	1.00
	0.56	0.80	0.84	0.86	0.83	0.77
Total	0.24	0.20	0.20	0.18	0.18	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.21, 1741.39)} = 14.8187$ $P = 0.0000$					
Sample	6,325					
Population	3,020,743					

Net enrolment in basic education (GIRLS)	Wealth Quintiles					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Not enrolled	0.38	0.22	0.20	0.13	0.07	1.00
	0.61	0.32	0.31	0.21	0.14	0.32
Enrolled	0.12	0.23	0.21	0.22	0.22	1.00
	0.39	0.68	0.69	0.79	0.86	0.68
Total	0.20	0.22	0.21	0.19	0.17	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.21, 1739.26)} = 22.3365$					
Sample	5,971					
Population	2,860,497					

Source: NSPMS, Round 1.

Table ED.5b:

F-tests: Net Enrolment in Basic Education versus Mother's Education, Yemen, 2012

Net enrolment in basic education (TOTAL)	Mother's Education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.78	0.12	0.06	0.01	0.03	1.00
	0.32	0.17	0.24	0.15	0.25	0.28
Enrolled	0.64	0.23	0.07	0.03	0.04	1.00
	0.68	0.83	0.76	0.85	0.75	0.72
Total	0.68	0.20	0.06	0.02	0.04	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F(3.02, 1640.53)= 8.0948$ $P = 0.0000$					
Sample	12,245					
Population	5,849,120					

Net enrolment in basic education (BOYS)	Mother's Education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.78	0.13	0.06	0.01	0.03	1.00
	0.26	0.16	0.24	0.11	0.17	0.23
Enrolled	0.67	0.21	0.06	0.03	0.04	1.00
	0.74	0.84	0.76	0.89	0.83	0.77
Total	0.69	0.19	0.06	0.03	0.04	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F(2.45, 1327.40)= 1.8545$ $P = 0.1472$					
Sample	6,303					
Population	3,006,295					

Net enrolment in basic education (GIRLS)	Mother's Education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.79	0.11	0.05	0.01	0.04	1.00
	0.38	0.17	0.24	0.20	0.34	0.33
Enrolled	0.61	0.25	0.08	0.03	0.04	1.00
	0.62	0.83	0.76	0.80	0.66	0.67
Total	0.67	0.20	0.07	0.02	0.04	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F(2.83, 1528.56)= 9.3902$ $P = 0.0000$					
Sample	5,942					
Population	2,842,826					

Source: NSPMS, Round 1.

Table ED.6:

Percentage of Population Aged 15-17 Enrolled in Secondary Education, Yemen, 2012

	Net Enrolment in Secondary Education								
	Total			Boys			Girls		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	23.46	19.04	27.88	24.50	19.15	29.85	22.39	15.13	29.64
Area of residence									
Urban	40.75	30.26	51.25	42.95	30.63	55.27	38.47	19.92	57.01
Rural	17.06	13.41	20.71	17.65	13.58	21.72	16.44	10.34	22.54
Region									
Sana'a City	48.49	31.10	65.88	48.22	35.07	61.38	48.73	17.56	79.90
Hadhramout	16.80	9.24	24.35	20.58	10.58	30.58	12.87	2.97	22.76
Saba	23.31	6.49	40.13	30.36	10.54	50.19	17.94	1.86	34.01
Aden	21.41	16.19	26.63	31.88	24.02	39.74	13.12	7.74	18.50
Al-Janad	30.47	20.53	40.40	27.81	11.86	43.76	32.80	17.98	47.61
Tehama	8.88	5.10	12.65	8.94	5.16	12.72	8.79	2.29	15.30
Azal	17.55	9.91	25.19	22.25	9.96	34.54	11.53	5.27	17.80
Topography									
Mountainous	24.93	18.14	31.71	24.80	14.03	35.56	25.05	15.41	34.68
Coastal area - Arabian Sea	17.18	8.80	25.55	20.99	6.86	35.12	13.70	6.28	21.11
Coastal area - Red Sea	5.97	1.04	10.91	4.84	1.07	8.60	7.88	-3.24	19.00
Plateau/desert	27.97	20.50	35.44	31.70	24.83	38.56	24.12	10.54	37.71
Wealth quintile									
Poorest	3.76	1.86	5.65	6.29	3.12	9.45	1.08	-0.29	2.44
Second	14.03	6.02	22.04	12.00	6.53	17.47	16.58	0.80	32.36
Middle	20.72	13.08	28.35	19.07	11.83	26.30	22.04	10.21	33.88
Fourth	25.44	17.63	33.25	31.94	19.31	44.57	17.45	9.63	25.28
Richest	44.75	33.12	56.38	46.20	34.56	57.85	43.39	23.46	63.32
Level of poverty									
Extreme Poor	12.36	4.68	20.03	11.69	5.77	17.60	13.02	-0.90	26.94
Moderate Poor	19.70	14.14	25.26	22.16	13.25	31.08	17.12	10.35	23.88
Vulnerable	31.53	17.38	45.69	33.20	20.82	45.58	29.97	6.57	53.37
Non Poor	25.90	19.23	32.57	26.08	17.24	34.92	25.70	15.45	35.95
Mother's education									
None	19.88	16.06	23.69	21.26	16.19	26.33	18.27	12.88	23.65
Basic	37.55	18.40	56.70	38.98	22.71	55.24	36.36	4.88	67.83
Secondary +	67.18	44.64	89.72	58.47	23.69	93.24	75.07	47.51	102.62
Quran & Literacy	41.67	16.78	66.57	43.88	13.24	74.52	39.95	2.65	77.25
Absent Mother	8.07	3.72	12.42	11.05	3.23	18.88	6.36	1.16	11.56
Beneficiary status									
Non Beneficiary	27.72	20.86	34.59	27.97	19.55	36.39	27.47	16.47	38.47
Old Beneficiary	18.26	14.52	22.01	22.27	16.18	28.36	14.14	9.30	18.98
New Beneficiary	14.12	8.50	19.75	13.40	6.45	20.36	14.94	6.31	23.57
Population	1,654,685			841,625			813,060		
Sample	3,627			1,787			1,840		
Missing*	6			5			1		

Source: NSPMS, Round 1.
*Note: * Missing information on enrolment and level of education are not included in the statistics.*

Table ED.6a:
F-tests: Net Enrolment in Secondary Education versus Wealth Quintiles,
Yemen, 2012

Net enrolment in basic education (TOTAL)	Wealth Quintiles					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Not enrolled	0.17	0.23	0.23	0.20	0.16	1.00
	0.96	0.86	0.79	0.75	0.55	0.77
Enrolled	0.02	0.12	0.19	0.23	0.43	1.00
	0.04	0.14	0.21	0.25	0.45	0.23
Total	0.14	0.20	0.22	0.21	0.23	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.19, 1709.30)} = 12.8538$ $P = 0.0000$					
Sample	3,627					
Population	1,654,685					

Net enrolment in basic education (BOYS)	Wealth Quintiles					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Not enrolled	0.17	0.26	0.21	0.20	0.15	1.00
	0.94	0.88	0.81	0.68	0.54	0.76
Enrolled	0.04	0.11	0.15	0.30	0.41	1.00
	0.06	0.12	0.19	0.32	0.46	0.25
Total	0.14	0.22	0.19	0.23	0.22	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.25, 1658.23)} = 13.6534$ $P = 0.0000$					
Sample	1,787					
Population	841,626					

Net enrolment in basic education (GIRLS)	Wealth Quintiles					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Not enrolled	0.17	0.20	0.25	0.20	0.17	1.00
	0.99	0.83	0.78	0.83	0.57	0.78
Enrolled	0.01	0.14	0.24	0.15	0.46	1.00
	0.01	0.17	0.22	0.17	0.43	0.22
Total	0.14	0.18	0.25	0.19	0.24	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(2.75, 1366.47)} = 5.2709$ $P = 0.0018$					
Sample	1,840					
Population	813,060					

Source: NSPMS, Round 1.

Table ED.6b:
F-tests: Net Enrolment in Secondary Education versus Mother's Education, Yemen, 2012

Net enrolment in basic education (TOTAL)	Mother's education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.77	0.12	0.01	0.02	0.08	1.00
	0.80	0.62	0.33	0.58	0.92	0.76
Enrolled	0.62	0.24	0.08	0.04	0.02	1.00
	0.20	0.38	0.67	0.42	0.08	0.24
Total	0.73	0.15	0.03	0.02	0.07	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(2.43, 1302.60)}= 7.4793$ $P = 0.0002$					
Sample	3,606					
Population	1,636,845					

Net enrolment in basic education (BOYS)	Mother's education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.81	0.11	0.01	0.01	0.06	1.00
	0.79	0.61	0.42	0.56	0.89	0.75
Enrolled	0.67	0.21	0.06	0.03	0.02	1.00
	0.21	0.39	0.58	0.44	0.11	0.25
Total	0.77	0.13	0.03	0.02	0.05	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(3.28, 1665.33)}= 4.8302$ $P = 0.0017$					
Sample	1,778					
Population	834,357					

Net enrolment in basic education (GIRLS)	Mother's education					
	None	Basic	Secondary +	Quran & Literacy	Absent Mother	Total
Not enrolled	0.73	0.14	0.01	0.02	0.11	1.00
	0.82	0.64	0.25	0.60	0.94	0.78
Enrolled	0.56	0.27	0.10	0.04	0.02	1.00
	0.18	0.36	0.75	0.40	0.06	0.23
Total	0.69	0.17	0.03	0.02	0.09	1.00
	1.00	1.00	1.00	1.00	1.00	1.00
Pearson: Design-based	$F_{(2.13, 1053.17)}= 3.9912$ $P = 0.0167$					
Sample	1,929					
Population	802,488					

Source: NSPMS, Round 1.

Table ED.7:
Gender Parity Index: Ratio of Girls to Boys Enrolled in Basic and Secondary Education, Yemen, 2012

	GPI of Gross Enrolment Ratio		GPI of Net Enrolment of Ratio	
	Basic	**Secondary**	**Basic**	**Secondary**
Total	0.86	0.65	0.88	0.91
Area of residence				
Urban	1.11	0.68	1.08	0.90
Rural	0.78	0.63	0.82	0.93
Region				
Sana'a City	1.11	0.74	1.12	1.01
Hadhramout	0.81	0.47	0.87	0.63
Saba	0.88	0.42	0.90	0.59
Aden	0.85	0.41	0.84	0.41
Al-Janad	0.84	0.63	0.83	1.18
Tehama	0.82	0.76	0.91	0.98
Azal	0.81	0.63	0.84	0.52
Topography				
Mountainous	0.79	0.64	0.81	1.01
Coastal area - Arabian Sea	0.93	0.68	0.97	0.65
Coastal area - Red Sea	0.92	1.10	1.02	1.63
Plateau/desert	0.89	0.58	0.90	0.76
Wealth quintile				
Poorest	0.66	0.39	0.70	0.17
Second	0.79	0.73	0.86	1.38
Middle	0.81	0.73	0.82	1.16
Fourth	0.90	0.59	0.92	0.55
Richest	1.05	0.62	1.04	0.94
Level of poverty				
Extreme Poor	0.70	0.65	0.72	1.11
Moderate Poor	0.89	0.60	0.89	0.77
Vulnerable	0.85	0.59	0.91	0.90
Non Poor	0.88	0.74	0.91	0.99
Mother's education				
None	0.80	0.71	0.83	0.86
Basic	1.00	0.64	0.98	0.93
Secondary +	1.00	0.43	1.00	1.28
Quran & Literacy	0.90	0.40	0.90	0.91
Absent Mother	0.82	0.54	0.79	0.58
Beneficiary status				
Non Beneficiary	0.88	0.62	0.90	0.98
Old Beneficiary	0.83	0.70	0.84	0.63
New Beneficiary	0.76	0.71	0.82	1.11
Population	18,837,196	18,837,196	5,881,240	1,654,685
Sample	40,853	40,853	12,296	3,627
Missing*	119	119	58	6

Source: NSPMS, Round 1.
*Note: * Missing information on enrolment and level of education are not included in the statistics.*

Table ED.8:
Percentage of Children Aged 10-14 Years who Cannot Read and Write, Yemen, 2012-2013

	Round 1			Round 4		
	Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper
Total	18.40	14.64	22.15	14.37	11.02	17.73
Sex						
Boys	13.47	9.24	17.69	9.88	6.54	13.21
Girls	24.10	23.99	24.21	19.40	19.29	19.51
Area of residence						
Urban	7.05	3.93	10.18	4.01	2.07	5.95
Rural	22.25	17.55	26.95	17.88	13.65	22.11
Region						
Sana'a City	8.17	2.40	13.93	2.82	-0.12	5.76
Hadhramout	5.43	2.93	7.94	4.22	1.94	6.50
Saba	11.73	6.73	16.73	12.10	6.51	17.70
Aden	13.48	8.98	17.98	12.51	8.55	16.47
Al-Janad	9.33	3.92	14.74	7.44	2.18	12.70
Tehama	44.62	34.47	54.78	33.69	23.75	43.62
Azal	11.53	7.94	15.12	9.53	5.87	13.19
Topography						
Mountainous	12.44	8.16	16.72	9.85	6.03	13.67
Arabian Sea	10.21	4.69	15.74	9.07	3.78	14.37
Red Sea	48.08	31.60	64.56	40.34	25.54	55.14
Plateau/desert	14.44	10.92	17.96	9.65	6.82	12.48
Wealth quintile						
Poorest	46.34	35.85	56.83	40.32	29.82	50.82
Second	19.88	12.18	27.59	11.99	8.06	15.91
Middle	12.72	8.35	17.09	10.81	6.43	15.19
Fourth	7.58	4.52	10.63	5.65	3.17	8.13
Richest	3.51	1.06	5.97	1.24	0.50	1.98
Level of Poverty						
Extreme poor	24.02	18.52	29.53	30.97	21.65	40.30
Moderate poor	29.19	20.39	37.98	22.22	15.52	28.92
Vulnerable	10.96	5.68	16.24	11.35	6.10	16.59
Non-poor	10.04	6.49	13.58	5.52	3.30	7.73
Head of household's education						
None	29.11	22.70	35.51	25.24	18.06	32.41
Basic	17.27	10.54	24.00	13.61	8.46	18.77
Secondary +	5.12	1.69	8.55	4.01	1.04	6.97
Quran & Literacy	9.50	1.66	17.34	5.25	1.66	8.85
SWF status						
Non-beneficiary	16.53	11.46	21.60	13.42	8.62	18.21
Old beneficiary	22.97	18.58	27.35	16.95	13.31	20.60
New beneficiary	20.05	12.45	27.66	15.12	9.20	21.03
Population	3,225,443			3,263,567		
Sample	6,618			6,745		
Missing*	5			251		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information not included in the statistics.*

Table ED.9:
Percentage of Population Aged 15 Years or Over who can not Read and Write,
Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	42.32	40.00	44.64	42.12	39.83	44.41
Sex						
Boys	25.38	23.21	27.55	24.10	21.96	26.25
Girls	58.50	58.45	58.55	58.47	58.43	58.52
Area of residence						
Urban	25.08	21.64	28.52	25.13	22.12	28.15
Rural	48.72	46.14	51.31	48.48	45.99	50.97
Region						
Sana'a City	19.84	14.71	24.98	20.36	16.08	24.65
Hadhramout	32.15	26.46	37.84	33.66	27.38	39.93
Saba	35.69	30.01	41.37	36.60	30.63	42.56
Aden	35.19	31.55	38.84	37.68	34.31	41.06
Al-Janad	37.42	32.54	42.30	37.24	32.01	42.47
Tehama	60.80	56.06	65.54	59.52	54.76	64.28
Azal	48.91	44.50	53.31	45.96	42.14	49.78
Topography						
Mountainous	42.72	39.35	46.09	42.21	38.77	45.64
Arabian Sea	28.73	23.52	33.94	32.48	26.70	38.25
Red Sea	61.01	53.31	68.71	60.78	53.36	68.20
Plateau/desert	37.54	34.14	40.93	36.72	33.63	39.81
Wealth quintile						
Poorest	69.39	65.36	73.42	67.56	62.99	72.13
Second	52.21	48.62	55.79	51.06	47.04	55.08
Middle	41.80	37.05	46.55	42.62	37.98	47.25
Fourth	35.10	31.83	38.37	34.30	31.30	37.29
Richest	19.93	17.22	22.65	20.75	17.97	23.54
Level of Poverty						
Extreme poor	51.68	45.78	57.58	55.47	47.93	63.02
Moderate poor	47.95	44.03	51.86	46.30	42.67	49.94
Vulnerable	37.11	32.77	41.46	44.93	40.40	49.46
Non-poor	37.41	34.61	40.21	35.47	32.88	38.06
Head of household's education						
None	60.53	57.74	63.32	57.56	54.23	60.90
Basic	33.35	30.74	35.96	36.27	33.77	38.78
Secondary +	21.26	18.84	23.68	21.63	19.30	23.97
Quran & Literacy	29.45	24.16	34.74	39.61	34.60	44.62
SWF status						
Non-beneficiary	38.50	35.33	41.67	38.66	35.50	41.82
Old beneficiary	48.62	46.32	50.93	47.84	45.52	50.16
New beneficiary	47.85	44.60	51.09	47.17	43.48	50.87
Population	12,512,998			12,254,522		
Sample	27,666			26,764		
Missing*	19			2,304		

Source: NSPMS , Rounds 1 and 4.
*Note: *Missing information not included in the statistics.*

Table ED.10:
Percentage of Population Aged 15 to 24 Years who can Read and Write,
Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	77.54	74.88	80.21	78.97	76.22	81.72
Sex						
Boys	88.42	85.86	90.98	89.77	87.23	92.32
Girls	66.92	66.85	66.99	68.61	68.53	68.70
Area of residence						
Urban	89.65	86.10	93.21	91.76	88.96	94.56
Rural	73.09	69.88	76.30	74.12	70.79	77.45
Region						
Sana'a City	90.81	84.58	97.03	94.67	90.92	98.43
Hadhramout	87.72	83.13	92.30	87.17	82.27	92.08
Saba	87.12	82.16	92.07	81.71	75.39	88.03
Aden	81.05	76.06	86.05	81.76	78.18	85.34
Al-Janad	84.48	79.92	89.05	84.01	77.64	90.38
Tehama	60.82	53.24	68.40	63.62	56.38	70.85
Azal	70.23	64.53	75.93	74.42	68.47	80.38
Topography						
Mountainous	78.56	75.19	81.94	79.52	75.15	83.88
Coastal area - Arabian Sea	86.46	80.49	92.44	84.19	78.09	90.29
Coastal area - Red Sea	60.18	47.96	72.39	61.32	50.05	72.59
Plateau/desert	80.50	76.56	84.43	83.16	79.80	86.53
Wealth quintile						
Poorest	46.92	40.82	53.03	52.06	45.40	58.73
Second	68.99	61.73	76.24	70.79	63.31	78.27
Middle	81.00	75.67	86.33	79.59	74.29	84.90
Fourth	85.64	81.97	89.31	88.14	85.00	91.28
Richest	94.03	91.15	96.92	95.02	92.56	97.49
Level of Poverty						
Extreme poor	64.04	58.44	69.65	58.87	50.78	66.95
Moderate poor	72.25	67.30	77.21	76.86	72.11	81.61
Vulnerable	84.45	80.22	88.69	77.83	72.35	83.30
Non-poor	83.06	79.48	86.63	85.84	82.55	89.13
Head of household's education						
None	68.47	64.46	72.47	70.38	66.13	74.64
Basic	79.71	75.70	83.72	81.74	77.37	86.11
Secondary +	91.93	88.32	95.54	93.00	90.09	95.91
Quran & Literacy	86.37	79.30	93.43	80.97	73.56	88.37
Mother's education						
None	78.62	75.25	81.99	80.30	77.16	83.45
Basic	95.45	91.52	99.37	97.35	95.72	98.98
Secondary +	98.39	96.51	100.27	99.01	97.87	100.15
Quran & Literacy	96.41	92.42	100.40	93.86	88.62	99.10
SWF status						
Non-beneficiary	78.71	74.86	82.55	80.39	76.30	84.48
Old beneficiary	75.45	72.16	78.73	77.17	73.69	80.65
New beneficiary	76.90	73.26	80.54	76.38	70.22	82.54
Population	4,581,921			4,445,159		
Sample	10,302			9,848		
Missing*	5			1,121		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information not included in the statistics.*

Table ED.17:
Absenteeism Rate (Ages 5-18 Years) by NSPMS Rounds, Yemen 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	15.0	12.0	18.1	15.4	12.6	18.2	16.0	13.8	18.2	12.8	5.8	19.8
Sex												
female	15.7	10.8	20.7	15.7	12.2	19.1	16.2	13.3	19.1	13.0	5.1	20.9
male	14.4	11.7	17.1	15.2	11.6	18.8	15.9	13.3	18.5	12.6	5.5	19.8
Age Child												
5-9 years	14.5	11.0	18.0	17.0	13.3	20.8	17.3	14.0	20.7	21.0	8.2	33.8
10-14 years	14.1	10.8	17.5	13.8	10.8	16.7	15.2	12.5	18.0	11.0	4.7	17.3
15-18 years	18.1	12.2	23.9	17.0	11.8	22.1	15.8	12.7	19.0	7.5	2.7	12.3
Area of residence												
urban	22.4	13.3	31.4	22.2	15.1	29.3	17.2	12.0	22.3	5.6	0.3	11.0
rural	12.0	9.6	14.4	12.8	9.8	15.8	15.5	13.1	17.9	17.6	7.0	28.3
Region												
Sana'a City	23.9	7.9	39.9	28.2	14.3	42.0	13.7	5.9	21.6	0.5	-0.3	1.3
Hadhramout	10.7	-1.9	23.3	15.8	9.7	22.0	5.4	2.8	8.1	3.3	-1.4	7.9
Saba	12.0	2.5	21.5	10.3	1.4	19.2	4.5	2.2	6.7	0.0	0.0	0.0
Aden	32.8	23.9	41.7	22.2	16.6	27.8	32.3	26.4	38.2	18.3	18.3	32.9
Al-Janad	4.7	2.7	6.7	5.1	2.6	7.6	15.1	10.1	20.1	0.0	0.0	0.0
Tehama	14.5	7.4	21.6	13.9	8.1	19.6	14.9	10.5	19.4	19.0	19.0	31.0
Azal	19.0	12.0	25.9	22.8	14.4	31.3	16.7	12.0	21.5	25.9	25.9	52.8
Topography												
Mountainous	10.9	7.6	14.2	10.1	6.2	14.0	13.9	10.6	17.2	13.8	6.2	21.4
Arabian Sea	18.9	2.9	35.0	25.5	15.8	35.2	28.2	16.0	40.3	2.8	-1.5	7.0
Red Sea	16.9	5.0	28.7	17.4	7.8	26.9	20.9	11.8	30.1	19.4	2.1	36.6
Plateau/desert	18.4	12.8	23.9	19.4	14.4	24.3	15.0	11.9	18.2	11.1	-2.5	24.6
Mother's education												
None	13.9	11.3	16.6	7.2	1.2	13.2	12.2	9.6	14.8	14.5	5.8	23.1
Basic	19.4	9.0	29.8	0.0	0.0	0.0	12.4	7.3	17.6	3.3	0.7	5.8
Secondary +	17.0	7.5	26.5	0.0	0.0	0.0	16.8	6.5	27.1	23.2	0.1	46.3
Quran & Literacy	4.3	0.3	8.3	4.8	-1.1	10.7	19.7	9.1	30.3	6.3	-2.0	14.7
Absent Mother	10.4	5.1	15.8	0.0	0.0	0.0	27.4	16.1	38.6	22.5	3.7	41.4
Father's education												
None	15.9	11.1	20.7	2.2	-0.8	5.2	14.0	10.3	17.7	17.3	2.1	32.6
Basic	14.8	11.2	18.4	29.7	8.2	51.3	13.2	9.7	16.8	10.1	3.1	17.2
Secondary	17.6	10.3	25.0	0.0	0.0	0.0	11.4	7.0	15.9	9.6	0.8	18.4
Quran & Literacy	5.8	1.4	10.1	3.7	-6.2	13.7	16.0	3.1	29.0	6.4	-1.2	14.0
Absent Father	9.0	6.1	11.9	4.9	-2.8	12.5	17.7	9.1	26.3	24.8	-2.3	52.0
Wealth Quintiles												
Poorest	12.9	6.0	19.8	13.6	7.8	19.3	13.6	11.9	25.0	15.7	6.4	24.9

Second	11.2	8.2	14.2	13.0	7.3	18.6	13.0	13.6	22.4	19.7	1.3	38.1
Third	12.2	7.3	17.1	12.4	8.3	16.6	12.4	12.4	21.5	19.9	7.7	32.1
Fourth	16.0	9.4	22.5	16.0	10.8	21.3	16.0	10.7	18.5	4.1	1.5	6.6
Richest	21.2	12.0	30.3	21.9	13.9	29.8	21.9	9.2	18.8	11.2	-5.7	28.2
Level of Poverty												
Extreme Poor	11.3	6.9	15.7	10.7	7.6	13.7	17.6	11.9	23.2	26.1	-7.0	59.3
Poor	13.7	9.8	17.7	16.8	11.5	22.1	17.1	13.2	20.9	16.7	4.4	28.9
Vulnerable	21.9	12.1	31.7	17.9	11.8	24.0	15.8	10.9	20.6	9.3	1.8	16.8
Non-Poor	13.4	9.8	17.0	15.0	10.4	19.6	14.7	11.8	17.6	7.1	3.2	11.1
SWF status												
Non-beneficiary	15.7	11.4	19.9	15.4	12.0	18.8	15.6	12.7	18.5	9.3	3.4	15.2
Old beneficiary	12.6	10.1	15.2	14.6	11.6	17.6	18.3	15.1	21.5	14.1	7.9	20.3
New beneficiary	15.3	10.4	20.2	16.6	8.1	25.1	14.2	10.1	18.3	34.3	-2.1	70.8
Sample	10,404			10,522			10,839			3,034		
Population	5,168,461			5,228,233			5,264,517			1,262,377		

Source: NSPMS, All Rounds.

Table ED.18:
Proportion of Absent Students Due to Work or Domestic Chores, Yemen, 2012-2013

	Value	95% CI	
		Lower	Upper
Total	11.2	9.1	13.2
Sex			
Female	9.9	7.3	12.4
Male	12.4	9.7	15.0
Age of the child			
5-9 years	5.9	3.5	8.4
10-14 years	12.6	9.0	16.1
15-18 years	13.9	9.6	18.2
Area of residence			
Urban	5.9	2.8	9.0
Rural	14.4	11.7	17.0
Region			
Sana'a City	4.2	0.9	7.4
Hadhramout	1.3	0.4	2.2
Saba	23.1	4.1	42.0
Aden	11.3	8.7	13.9
Al-Janad	9.4	3.2	15.5
Tehama	12.2	8.0	16.5
Azal	18.0	12.6	23.3
Topography			
Mountainous	14.2	11.0	17.5
Arabian Sea	3.7	1.3	6.1
Red Sea	11.5	3.7	19.3
Plateau/desert	10.2	7.2	13.2
Mother's education			
None	12.7	9.8	15.6
Basic	3.4	0.8	6.0
Secondary	4.5	0.9	8.1
Quran & Literacy	14.6	2.2	27.1
Absent Mother	6.9	3.5	10.3
Father's education			
None	14.6	10.6	18.5
Basic	9.3	5.5	13.0
Secondary +	5.0	2.4	7.7
Quran & Literacy	8.1	-0.6	16.8
Absent Father	10.3	5.2	15.4
Wealth Quintiles			
Poorest	21.5	13.7	29.4
Second	13.2	9.1	17.4
Third	13.1	9.0	17.2
Fourth	10.7	7.1	14.3
Richest	4.8	2.0	7.6
Level of Poverty			
Extreme Poor	16.5	9.3	23.6
Poor	10.8	7.5	14.0
Vulnerable	10.1	5.5	14.7
Non-Poor	10.4	7.7	13.0
SWF status			
Non-beneficiary	10.9	8.1	13.7
Old beneficiary	11.9	9.5	14.3
New beneficiary	11.5	7.8	15.2
Sample	8,617		
Population	3,868,855		

Source: NSPMS, Rounds 1, 2 and 3 (aggregated).

5 Child Health and Nutrition

This chapter presents informatiton on the following aspects related to children's health in Yemen:

- vaccination;
- child nutrition;
- infant and young child feeding practices;
- Breastfeeding;
- Diarhorrea and oral rehydration therapy (ORT).

5.1 Vaccination

Vaccination plays a key role in efforts to achieve Millennium Development Goal 4, which aims to reduce child mortality. Vaccines have saved the lives of millions of children since the launch of the expanded programme on immunization (EPI) in 1974. Efforts to accelerate the reduction of child mortality in Yemen through vaccination have focused on increasing national coverage of vaccination against the EPI diseases through regional and national campaigns (especially against polio and measles), and on adding new vaccines to Yemen's protocol schedule.

There have been two major recent changes to the Yemeni vaccination schedule. In 2005, the diphtheria/pertussis/tetanus (DPT) vaccine was replaced by the pentavalent vaccine, which is a combined vaccine protecting children against DPT, hepatitis B and *haemophilus influenzae* type B. In 2011, the Ministry of Public Health and Population introduced the pneumococcal vaccine as part of the routine vaccination programme.

According to the Second National Millennium Development Goals Report, published in 2010, national campaigns against polio resulted in Yemen's recognition in 2009 as a polio-free country, based on WHO standards. National vaccination campaigns against measles during the period 2006-2009 were also very effective in controlling the spread of that disease.

Because maintaining high vaccination coverage rates requires continuous campaigns over time, vaccination campaigns have been a constant effort in Yemen. Table CH.1 shows the vaccination campaigns that took place in 2012 and 2013. The dates of the most recent vaccination campaigns are important, because this report's analysis of vaccines coverage in Yemen focuses on children aged 12-23 months who have received a specific vaccine by the age of 12 months.

Table CH.1:
Vaccination Campaigns, Yemen, 2012-2013

Period	Campaign type	Number of targeted governorates	Children's age
Polio vaccine			
Jan. 2012	NIDs	All (21) governorates	Below five years
Mar. 2012	NIDs	All (21) governorates	Below five years
Jun. 2012	NIDs	All (21) governorates	Below five years
Nov. 2012	sNIDs	2 governorates	Below five years
Jan. 2013	NIDs	All (21) governorates	Below five years
Jun. 2013	sNIDs	10 governorates	Below five years
Jul. 2013	NIDs	All 21 governorates	Below five years
Oct. 2013	sNIDs	14 governorates	Below five years
Dec. 2013	NIDs	All (21) governorates	Below five years
Measles vaccines			
Mar. 2012	NIDs	All (21) governorates	Below ten years
Jul. 2013	sNIDs	(1) governorate (Sa'ada)	Below ten years

Source: UNICEF Yemen.
Notes: NIDs = National Immunization Days/Campaigns; sNIDs = Subnational Immunization Days/Campaigns.

According to UNICEF and WHO guidelines, a child is considered fully vaccinated if he/she has received during his/her first year of life: the BCG (tuberculosis) vaccine; three doses of DPT (which was replaced by the pentavalent combination vaccine in 2005); three doses of oral polio vaccine (OPV); and one dose of measles vaccine.

The vaccination schedule recommended by WHO is as follows: BCG and the first dose of OPV (zero dose) should be given at birth; the three doses of pentavalent, OPV and pneumococcal vaccines should be given at approximately two, three and four months of age; and measles should be given at nine months. As the survey was conducted between October 2012 and September 2013 and the indicators to be analyzed in this section include children younger than 24 months, both pentavalent and pneumococcal vaccines were already fully introduced in the Yemeni vaccination schedule.

During the four rounds of the NSPMS, caretakers were asked to show the vaccination card for every children under five years of age. The enumerators copied the vaccination information from the card onto the NSPMS questionnaire. If there was no vaccination card, the mother was asked to recall whether or not the child had received each of the vaccines and, in case of multiple doses, enumerators also asked how many times the vaccine was given. It is important to bear in mind that given the longitudinal nature of the NSPMS, households were visited four times over a 12-month period. These sequential visits allowed us to improve the information on children's vaccination histories, as they increased the likelihood of having access to the vaccination cards and to find better informed interviewees on the children's vaccination histories. Some adjustments were made to the raw data in order to give consistency to the longitudinal data as per a protocol that has been proposed jointly by UNICEF Yemen, Interaction in Development and IPC . Basically, there were inconsistencies in terms of vaccines that were reported to have been taken in a specific round and reported as not taken in subsequent round(s). In these cases, whenever the child was reported as vaccinated in a given moment, we considered he/she as vaccinated in the following rounds.

It is important to highlight a change in the methodology of collecting information about vaccination (and vitamin A supplementation) in the last round of the NSPMS. For the first three rounds, if the vaccination card was not shown, the enumerator was advised to ask the caregiver to recall if the child had received each of the vaccines. With this information, the enumerator would give different codes for children whom the caretaker

said were vaccinated or were not vaccinated. In the fourth round, probing questions were introduced to help caretakers to recall each vaccine given to the child. Questions such as, "Has (name) ever received a BCG vaccination against tuberculosis – that is, an injection in the arm or shoulder that usually causes a scar?" or "Has (name) ever received any vaccination drops in the mouth to protect him/her from getting diseases – that is polio?", were added to the fourth round of the questionnaire. These questions increased the number of children who were reported to be vaccinated in round 4, compared to the first three rounds, which did not have any probing questions.

Overall, about 53.5 per cent of Yemeni children aged 12-59 months had vaccination cards in July, August and September 2013 (table CH.2).[84] When considering younger children (12-23 months of age), this percentage increases to 59.1 per cent, which is almost 11 percentage points higher than the percentage of children having vaccination cards in 2006, according to the MICS (48.3 per cent). There are significant differences in the percentage of children aged 12-23 months having a vaccination card across regions and areas of residence, wealth quintiles and level of the mother's education (table CH.2 and figure CH.1). Less than 40 per cent of the children in the poorest quintile have a vaccination card, compared to 72.4 per cent in the richest quintile. The region with the highest percentage of children with vaccination card is Sana'a City (91 per cent) and the lowest percentage is found in Saba (35.2 per cent). A mother with basic education increases the chances of a child having a vaccination card compared to non-educated mothers (from 52.7 versus 69.6 per cent).

Figure CH.1:
Percentage of Children who Have the Vaccination Card, by Region of Residence, Wealth Quintile and Mother's Education, Yemen, 2013
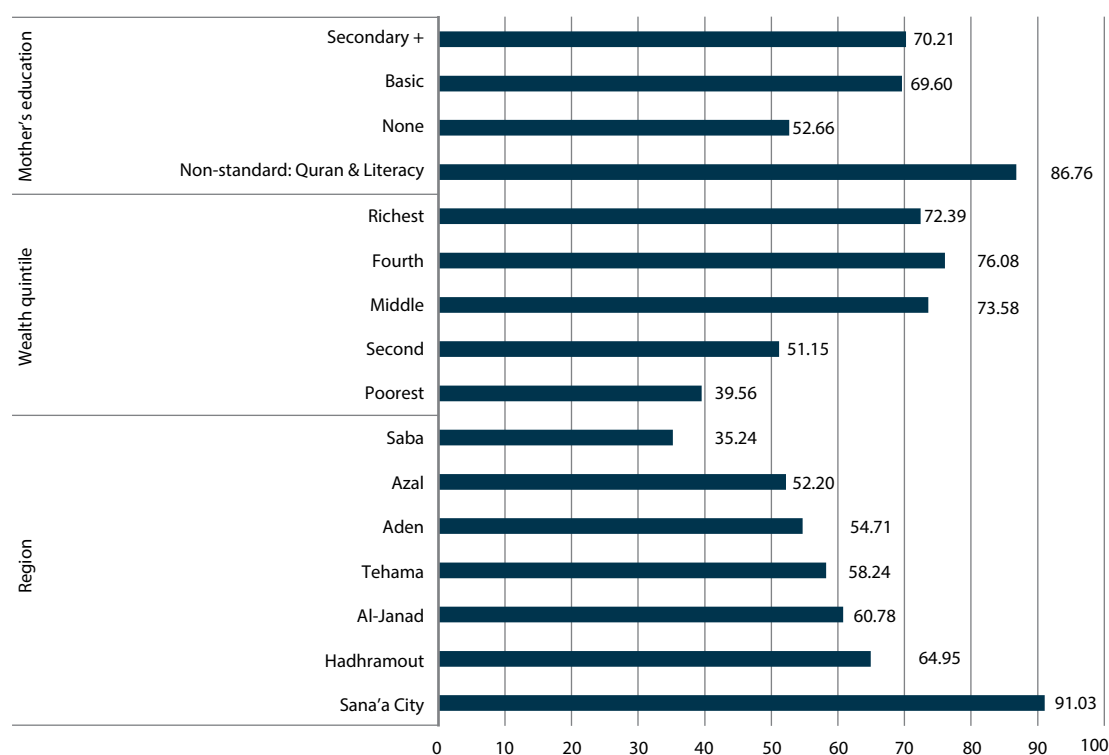
Source: NSPMS, Round 4.

The percentage of children aged 12-23 months who have received each of the vaccines is shown in tables CH.3, CH.4, CH.5 and CH.6 (rounds 1, 2, 3 and 4 respectively). Only children old enough to be fully vaccinated (at least 12 months of age) are included. These tables show the percentage of children vaccinated by other age groups (24-35 months, 36-47 months and 48-59 months) and for all children aged 12-59 months; and by source of the vaccination information (the vaccination card or reported by caretaker/mother). When the source of information is the vaccination card, the tables also show the percentage of children who were vaccinated in the first year of life among those who were vaccinated.

The comparison between age groups reveals that the highest percentage of children who received each of the vaccines is higher for the youngest children (12-23 months) in comparison to children from other age groups, which suggests the success of recent vaccination efforts and campaigns in Yemen (figure CH.2). Moreover, the majority of children are vaccinated in the first year, which is strongly recommended by WHO and UNICEF guidelines (figure CH.3).

Figure CH.2:
Percentage of Children Aged 12-59 Months Vaccinated Against Childhood Diseases in the First Year of Life by Age Group, Yemen, 2013
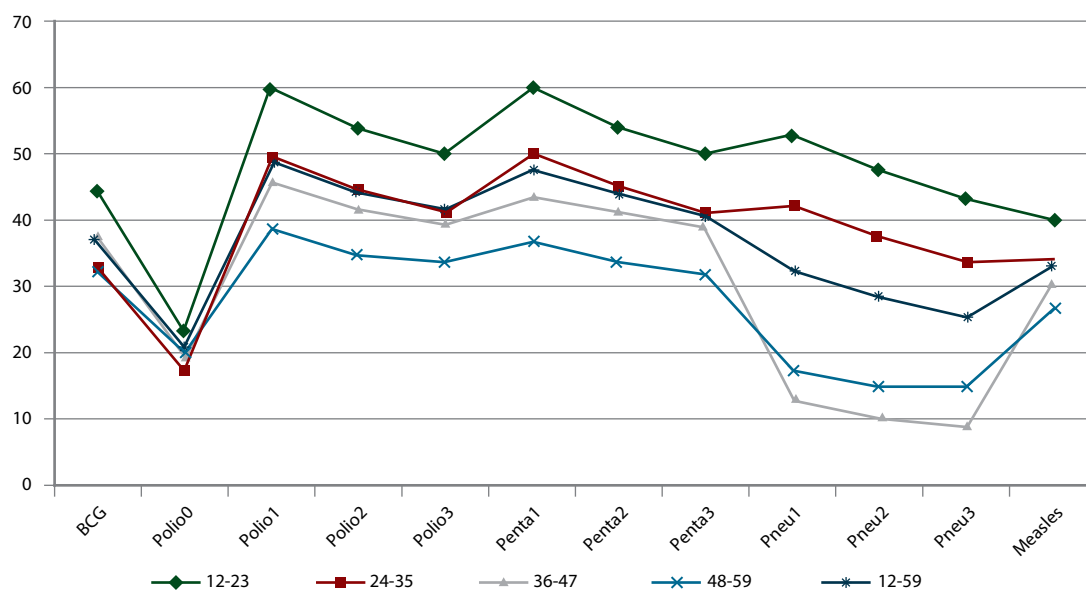
Source: NSPMS, Round 4.

Figure CH.3:
Percentage of Children Aged 12-23 Months Vaccinated Against Childhood Diseases at Any Time Before the Survey and in the First Year of Life, Yemen, 2013
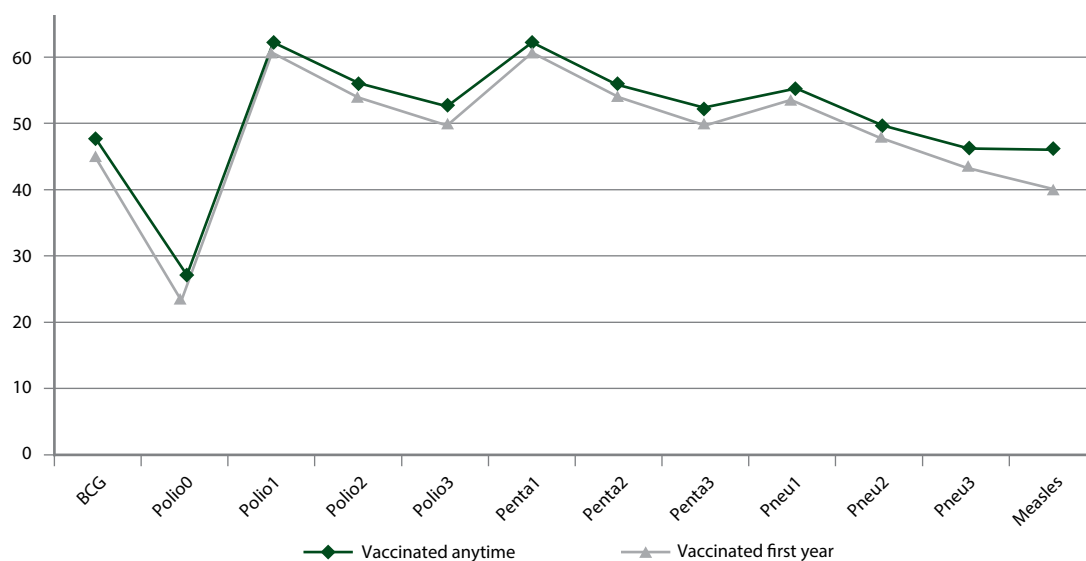
Source: NSPMS, Round 4.

Considering only the information from the vaccination card, approximately 45 per cent of children aged 12-23 months received the BCG vaccine by the age of 12 months, and around 22 per cent more children were reported as vaccinated by the mother/caretaker (figure CH.4).

The first dose of pentavalent was given in the first year to 60 per cent of the children. The percentage declines to 53.9 per cent for the second dose and 49.9 per cent for the third dose (figure CH.4). Similarly, 60.3 per cent of children received one dose of OPV by age 12 months, which declines to 49.9 per cent by the third dose. The coverage for measles vaccine by 12 months is lower than for the other vaccines, at 39.9 per cent. The percentage of children who had received all the recommended vaccines by their first birthday is low, only 14.5 per cent. These figures consider as immunized in the first year only children whose information was taken from the vaccination card since information on dates of vaccination are only available there. However, there are still children whose mother reported a child as vaccinated who may have been fully vaccinated in his/her first year of life. Thus, the 14.5 per cent is a lower bound for the fully vaccinated.

Figure CH.4:
Percentage of Children Aged 12-23 Months Vaccinated Against Childhood Diseases According to the Vaccination Card in the First Year of Life and According to Mother's Report, Yemen, 2013
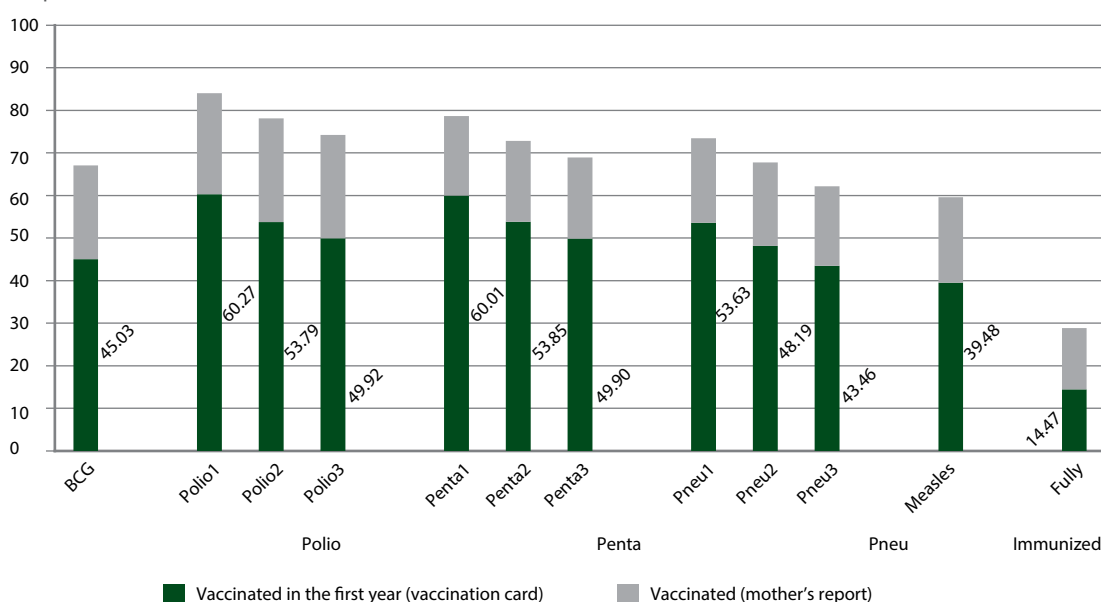
Source: NSPMS, Round 4.

Tables CH.7–CH.12 show vaccination coverage rates among children 12-23 months by background characteristics for each of the vaccines: BCG; third dose of polio, pentavalent and pneumococcal vaccines; and one dose of measles vaccine. These figures reflect children who received a vaccination at any time before the survey and are based on information from both vaccination cards and mothers'/caretakers' reports. From the tables, it is evident that there are no significant differences between the percentages of male and female children with respect to receiving any of the vaccinations. However, area of residence, mother's education and wealth of the household appear to have a strong association with the probability of being vaccinated.

Children living in urban households were more likely to have received vaccines compared to children living in rural households. For instance, 84.4 per cent of children in urban areas received the BCG vaccination compared to 66.3 per cent of their rural counterparts. The highest percentage of vaccinated children is found in the Arabian Sea coastal area and the lowest in the Red Sea and in the mountainous areas (considering children fully vaccinated, these figures are 57, 15.8 and 26.3 per cent respectively). Most of the children in Sana'a City are vaccinated (92 per cent against measles) and the second highest prevalence of vaccinated children is usually found in Aden (77.6 per cent against measles). The worst areas in terms of the percentage of immunized children are Tehama and Saba (58.7 per cent were immunized against measles and 54.2 per cent had received BCG).

Children whose mothers or caretakers have only basic education were still more likely to be vaccinated against childhood diseases compared to children with mothers who had never received any education. More than 82 and 92.3 per cent of children born to mothers with basic and secondary education respectively, received the third dose of pentavalent vaccine while only 60.4 per cent children whose mothers have no education were vaccinated. The differentials among wealth quintiles are also striking. Approximately 61 per cent of children living in the poorest households had received the measles vaccination compared to 83 per cent of children living in the richest households. Figures CH.5 and CH.6 show the differentials in terms of percentage of children aged 12-23 months vaccinated with BCG by areas and regions of residence, wealth quintile and mother's education. As mentioned above, similar differentials can be found for the other vaccines.

Figure CH.5:
Percentage of Children Aged 12-23 Months Vaccinated Against Tuberculosis (BCG) at Any Time before the Survey According to Vaccination Card and Mother's Report, Yemen, 2013
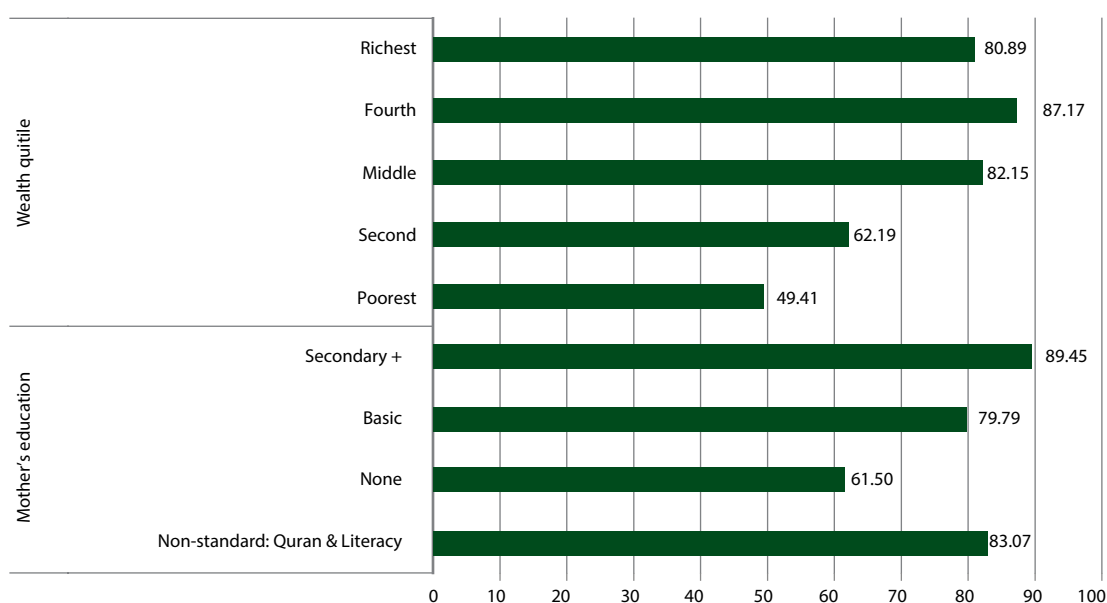
Source: NSPMS, Round 4.

Compared with the 2006 MICS, approximately 67.2 per cent of children age 12-23 months had received BCG vaccine by the age of 12 months and 60 per cent had received the third dose of polio vaccine. In 2013 (round 4 of the NSPMS), around 67 per cent (information from the vaccination card added to information on mother's report) of children aged 12-23 months had received BCG by 12 months and 74 per cent had received the third dose of OPV. The notable results for polio coverage may reflect the recent vaccination campaigns in Yemen.

Table CH.13:
Percentage of Children Aged 12-23 Months Immunized Against Childhood Diseases at Any Time before the Survey, by Round, Yemen, 2012-2013

Vaccine	Round 1	Round 2	Round 3	Round 4	Percentage change between Round 1 and Round 4
BCG	52.27	60.37	64.85	69.81	33.55
Polio3	60.37	71.44	70.60	76.78	27.17
Penta3	58.11	70.11	70.30	71.56	23.13
Pneu3	45.29	60.76	60.84	64.73	42.93
Measles	57.02	66.88	64.79	66.06	15.84

Source: NSPMS, All Rounds.

Table CH.13 shows the percentage increase in the coverage of each of the selected vaccines over the rounds of the NSPMS: BCG; third dose of polio, pentavalent and pneumococcal vaccines; and at least one dose of measles vaccine. There is a rise in coverage of all vaccines, with the highest increase (43 per cent) corresponding to the third dose of pneumococcal vaccine and the lowest increase to the measles vaccine.

5.2 Child Nutrition

Malnutrition is part of a vicious cycle involving underlying causes which means that undernourishment is related not only to biological but also to social factors.[85] Some factors that affect malnutrition directly, known as immediate causes, are inadequate dietary intake and incidences of disease. Other causes, no less important, are socioeconomic in nature and influence children's nutritional conditions in a number of ways. For instance, poverty can lead to low levels of parental education, poor availability and quality of food, and decrease access to water and sanitation and adequate health care, all of which raise the risks of disease and poor nutrient intake. The determinants of child nutrition are shown in figure CH.6 below.[86]

Figure CH.6:
Conceptual Framework of the Determinants of Child Malnutrition
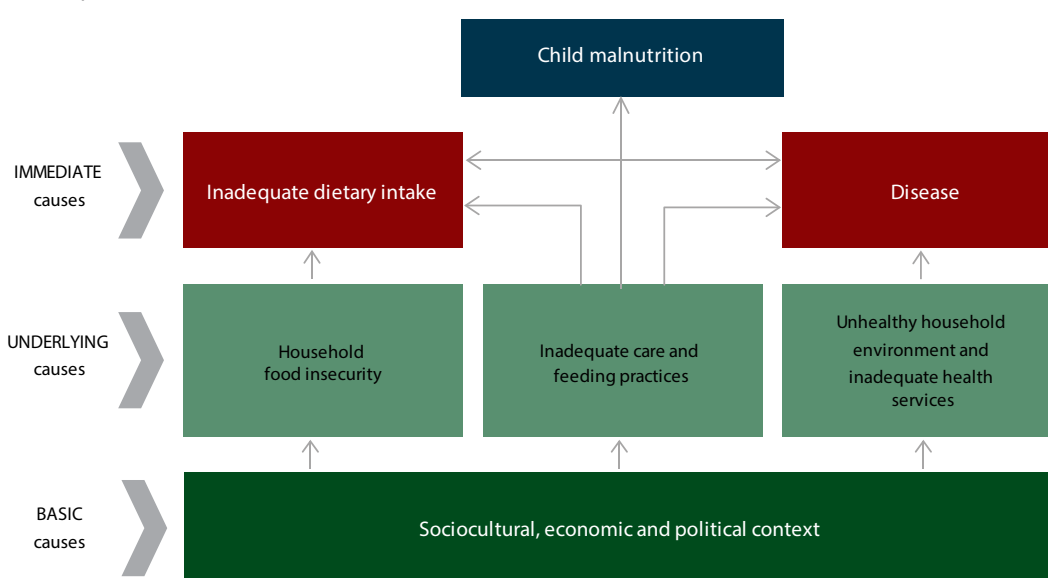
Source: Adapted from UNICEF, 2013.

The NSPMS used anthropometric measures (weight and height, or length for children under 24 months of age) and clinical signs (bilateral oedema) of all children under 60 months of age to derive the following indicators of child nutrition.[87]

1. Wasting: a child too thin for his or her height/length. Wasting is measured with a weight-for-height z-score below -2 SD to classify moderate and severe wasting. It is a sensitive indicator of recent nutritional status and is a robust predictor of under-five mortality. A severe case of wasting is defined with a z-score below -3 SD and/or presence of bilateral oedema. A child suffering from severe wasting has an increased mortality risk of nine-fold when compared to a nourished child;[88]

2. Stunting: a child too short for his or her age. Stunting is measured with a height-for-age z-score below -2 SD to classify moderate and severe stunting. It is a result of a combination of long-term insufficient intake and/or frequent infections. In general, it takes place before two years of age, and the effects (delayed motor development, impaired cognitive function and low school performance) are mostly irreversible;

3. Underweight: a child too thin for his or her age. Underweight is measured with a weight-for-age z-score below -2 SD to classify moderate and severe underweight. A child who is underweight can also be stunted or wasted or both. Its presence intensifies the impact of disease and is also responsible for a large proportion of under-five deaths.

The NSPMS analysis includes 25,644 observations with valid age information below five years of age when combining the four rounds. There was missing information for length/height (1,370 observations) and weight (1,300 observations). There were two approaches for exclusion of biologically implausible values for length/height and weight using longitudinal and cross-sectional information. The longitudinal implausible values were defined by evaluating each child's growth according to the child growth velocity charts for children aged 0-24 months by sex from the 2006 WHO Child Growth Standards. The growth velocity presents the expected growth of length/height and weight of a child for each z-score (from -3 to + 3 z-score) in three- and six-month increments. We calculated the growth of a child between rounds and compared it to what would be acceptable according to WHO standards. It was considered an implausible biologically growth when it suggested a decrease in child length/height (after taking into consideration the error measurement between enumerators) or an implausible increase in growth for length/height and weight (a value greater than the growth expected for a child with a positive three z-score. There were 3,914 observations excluded with biologically implausible longitudinal growth. We then applied flexible criteria for exclusion of biologically implausible values for wasting, stunting and underweight if z-score was greater or lower than 3 standard deviation of the observed mean (known as the 'smart flags' methodology). The NSPMS had 489 biologically implausible measures for wasting, stunting and underweight for all rounds, which keeps it below the WHO recommendation of 1 per cent for each round (1995). However, looking at age groups, children below the age of six months had the highest percentage of implausible measures (above 1 per cent) for all indicators even after the longitudinal cleaning; for this reason, we used only information for children aged 6-59 months (see table CH.15).

Missing information and biologically implausible measures were excluded from the analyses, which resulted in a sample of 22,556 observations from children aged 6-59 months, combining all rounds.

Table CH.15:
Number of Observations and Missing Values in Nutrition Indicators for Children Aged 6-59 Months, Yemen, 2012-2013

	Round 1	Round 2	Round 3	Round 4	Total
Wasting					
Number of observations	3,536	4,445	4,834	4,866	17,681
Missing	1,742	1,235	981	917	4,875
Stunting					
Number of observations	3,537	4,445	4,834	4,865	17,681
Missing	1,741	1,235	981	918	4,875
Underweight					
Number of observations	3,578	4,448	4,838	4,873	17,737
Missing	1,700	1,232	977	910	4,819
Sample	**5,278**	**5,680**	**5,815**	**5,783**	**22,556**

Source: NSPMS, All Rounds.

CHILD NUTRITIONAL STATUS

Child nutritional status has been used widely to assess the adequacy of diet and growth in infancy as it reflects overall child health, and in turn, a population's general health. The situation of Yemeni children is alarming. Nearly half of children below five years of age were stunted, and wasting affected around 10 per cent of children. This is a critical situation as compared to a well-nourished population. which should not expect more than 2 to 3 per cent of children under five years of age to be malnourished.[89]

The prevalence of wasting decreases after the child's first birthday and remains at a lower level as the child develops. Stunting peaks when the child reaches the age of two years (prevalence of 50 per cent in round 1 and 56 per cent in round 2) and then levels out when the child reaches age four years, with a decrease along the study period (46 per cent in round 1 and 35 per cent in round 4 for four-year old children).

The prevalence of underweight shows a different pattern from both indicators, with a slight decrease among children under age five years (figure CH.7).

Table CH.16:
Prevalence of Global and Severe Wasting, Stunting and Underweight
for Children Aged 6-59 Months, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Wasting												
Global	13.75%	10.72%	16.78%	8.28%	6.14%	10.43%	7.57%	5.76%	9.38%	9.71%	7.47%	11.95%
Severe	4.21%	2.44%	5.99%	0.95%	0.08%	1.82%	1.94%	0.94%	2.95%	1.02%	0.44%	1.60%
Sample	3,536			4,445			4,834			4,866		
Population	1,978,973			2,389,504			2,556,208			2,525,832		
Stunting												
Global	46.48%	41.82%	51.13%	44.05%	40.11%	47.99%	42.05%	37.96%	46.14%	42.49%	37.89%	47.10%
Severe	20.29%	15.50%	25.08%	14.76%	11.52%	17.99%	14.52%	11.67%	17.36%	12.60%	9.73%	15.47%
Sample	3,537			4,445			4,834			4,865		
Population	1,979,185			2,389,504			2,556,208			2,525,816		
Underweight												
Global	37.41%	32.46%	42.36%	30.20%	25.91%	34.50%	28.72%	25.30%	32.13%	32.41%	28.26%	36.57%
Severe	10.46%	7.87%	13.05%	6.93%	4.89%	8.98%	6.89%	4.82%	8.96%	7.03%	4.84%	9.23%
Sample	3,578			4,448			4,838			4,873		
Population	1,989,666			2,390,162			2,557,258			2,526,952		

Source: NSPMS, All Rounds.

Figure CH.7:
Percentage of Child Malnutrition for Children Aged 6-59 Months, Yemen, 2012-2013
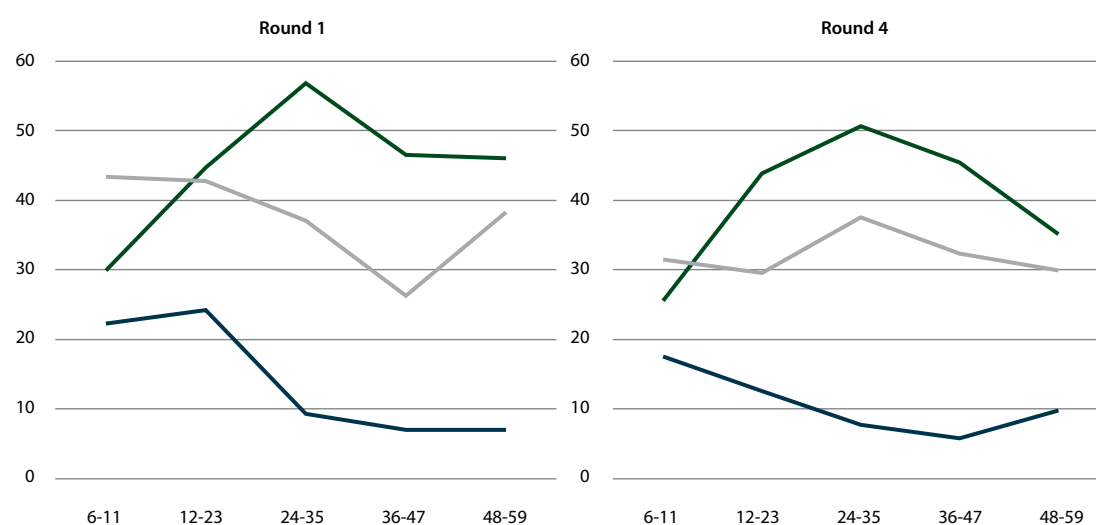
Source: NSPMS, Rounds 1 and 4.

Figure CH.8 presents nutritional status disaggregated by child sex and area of residence. Boys are slightly more affected by malnutrition than girls for the wasting indicator; 15 per cent of boys were wasted in contrast with 11 per cent of girls. These differences narrow in round 4, with 11 per cent of boys wasted compared to 9 per cent of girls.

Children living in rural areas had a worse nutritional status when compared to children in urban areas for all three nutritional indicators, with a slight improvement from round 1 to round 4. The prevalence of stunting was 51 per cent for children living in rural areas and 32 per cent in urban areas in round 1. In round 4, almost 46 per cent of the children in rural areas were stunted compared to 27 per cent in urban areas.

Figure CH.8:
Percentage of Child Malnutrition by Child Sex and Area of Residence, Yemen, 2012-2013
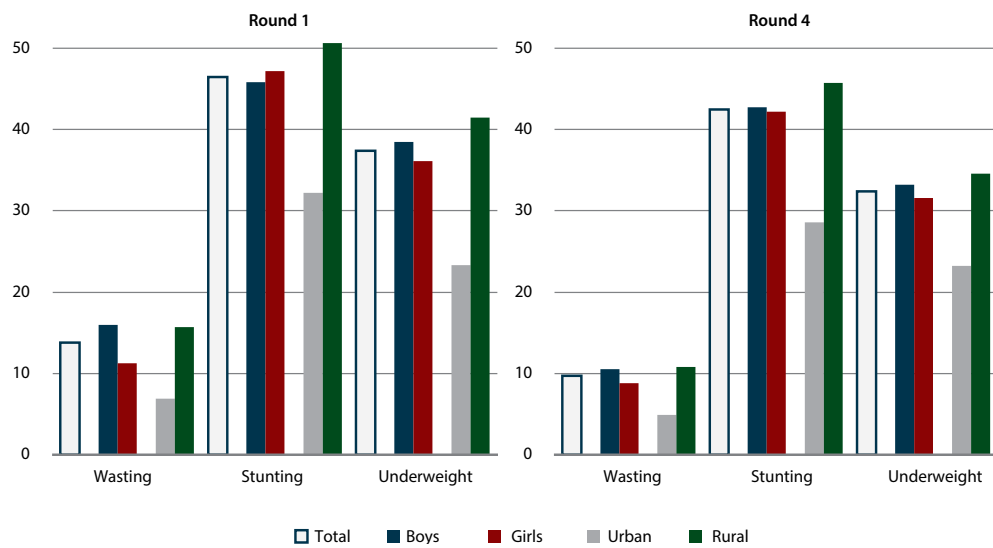
Source: NSPMS, Rounds 1 and 4.

Figure CH.9:
Percentage of Child Malnutrition by Wealth Quintile, Yemen, 2012-2013
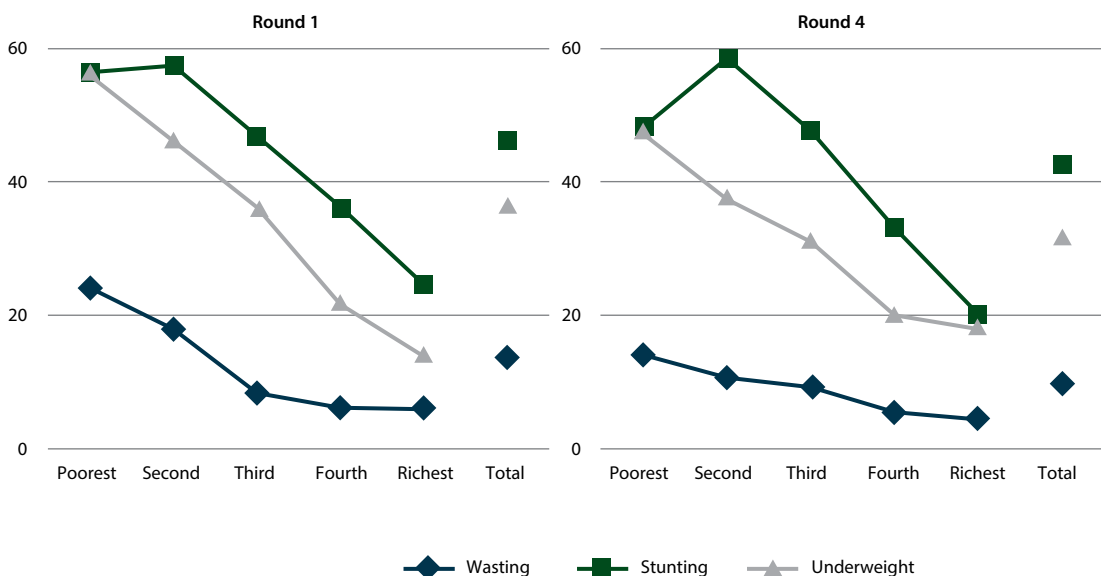
Source: NSPMS, Rounds 1 and 4.

Malnutrition affects the poorest and richest, but the intensity is higher among the poorest children. Figure CH.9 shows the prevalence of global wasting, stunting and underweight by wealth quintile for round 1 and round 4. There are marked differences in the prevalence of malnutrition between wealth quintiles. In the richest quintile, few children were wasted (ranging from 6 to 4 per cent from round 1 to round 4), while 24 per cent were wasted in the poorest quintile in round 1 and 14 per cent in round 4. In the lowest quintile, half of children were stunted (range 56 to 48 per cent in rounds 1 and 4), but this figure fell to around 20 per cent in the highest wealth quintile (range 24 to 20 per cent in rounds 1 and 4). The same trend can be seen for level of poverty and mother's educational level (see tables CH.17–CH.19).

5.3 Infant and Young Child Feeding Practices

Feeding practices influence a child's nutritional status, growth, development and overall health. The NSPMS used a number of indicators to better understand feeding practices for children under two years of age, based on the WHO recommended practices.[90]

Breastfeeding

Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Exclusive breastfeeding protects against dying from diarrhoea and pneumonia, the two leading killers of children under age five years.[91] Table CH.20 shows that in both rounds 1 and 4 of the NSPMS, only 13 per cent of infants were exclusively breastfed (children under six months of age). Infants living in urban areas were at least twice as likely to be exclusively breastfed (31 per cent, round 1 and 22 per cent, round 4) than those in rural areas (9 per cent, round 1; and 11 per cent, round 4). If we consider that in addition to breast milk, the infant also received water and sweetened water, 37 per cent of infants were predominantly breastfed in round 1 and 47 per cent in round 4. Nevertheless, the majority of children born in the last 24 months of the survey received breast milk (ranging from 94 per cent in round 1 to 98 per cent in round 4). Breastfeeding is a usual practice, regardless of the area of residence, wealth, region or mother's education. Among children below age two years who had ever been breastfed, about 72 per cent start breastfeeding within one hour after birth. The early initiation of breastfeeding is important for both the mother and the child. It helps start the production of breast milk, offers immune protection for the newborn and reinforces the bond between mother and child. About 80 per cent of children aged 0-24 months were breastfed within one hour after birth. This figure increases to 88 per cent if we consider initiation of breastfeeding within 24 hours.[92]

Table CH.20:
Percentage of Children Aged 0–5 Months who are Exclusively or
Predominantly Fed with Breast Milk, Yemen, 2012-2013

	Round 1			Round 4		
	Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper
Exclusive breastfed						
Total	13.58	5.42	21.74	13.43	8.05	18.82
Area of residence						
Urban	31.22	2.90	59.54	22.38	3.54	41.21
Rural	8.64	4.55	12.73	11.19	6.36	16.03
Predominantly breastfed						
Total	36.86	26.02	47.70	47.29	39.17	55.40
Area of residence						
Urban	52.07	28.97	75.17	26.01	6.94	45.08
Rural	32.60	21.20	43.99	52.61	44.32	60.91
Population		266,468			324,653	
Sample		573			614	

Source: NSPMS, Rounds 1 and 4.

BREASTFEEDING AS A PROTECTIVE FACTOR AGAINST CHILD MORBIDITY: DIARRHOEA AND ORT

If children are weaned prematurely, they begin to lose the immunological benefits of breast milk while being exposed to unsafe food, water and unsanitary environments.[93] Almost half of infants under six months of age had diarrhoea (44 per cent in round 1 and 41 per cent in round 4). Feeding recommendations represent one of the most important interventions for controlling diarrhoeal disease and can also stop the lethal synergy between malnutrition and repeated illness. Infants receiving only breast milk had a lower prevalence of diarrhoea (19 per cent in round 1 and 15 per cent in round 4) when compared to breastfeeding combined with water/sweetened water (39 per cent in round 1 and 24 per cent in round 4) (table CH.26).

Since diarrhoea is such a common cause of disease and death, especially among children, and because ORT is not expensive and is effective and adaptable, it became a powerful intervention for improving children's health.[94] Not surprisingly, the WHO treatment guidelines endorse treating diarrhoea at home by increasing fluid intake as soon as it starts.[95] Overall, approximately one fourth of Yemeni children who had had diarrhoea were treated with some kind of ORT (27 per cent in round 1 and 21 per cent in round 4).

Table CH.24:
Breastfeeding Practices for Children Aged 0-5 Months According to the Episode of Diarrhoea in the Previous 14 Days, Yemen, 2012-2013

		Child had diarrhoea			Child did not have diarrhoea		
		Value	**95% CI**		**Value**	**95% CI**	
			Lower	**Upper**		**Lower**	**Upper**
	Total	44.89	40.88	48.90	55.11	51.10	51.10
	Breastfeeding status						
Round 1	Exclusive breastfeeding	18.67	3.00	34.33	50.09	39.74	60.44
	Predominant breastfeeding	39.31	19.98	58.63	49.62	38.30	60.95
	Use of ORT package	26.82	20.36	33.28	-	-	-
	Total	41.40	38.32	44.48	58.60	55.52	61.68
	Breastfeeding status						
Round 4	Exclusive breastfeeding	15.07	1.93	28.20	31.55	22.58	40.53
	Predominant breastfeeding	24.20	10.10	38.30	32.93	20.90	44.96
	Use of ORT package	21.31	16.50	26.12	-	-	-

Source: NSPMS, Rounds 1 and 4.

COMPLEMENTARY FEEDING

It is a vulnerable period when an infant begins to receive complementary food. For children aged 6-23 months, breast milk is recommended as an important source of nutrients during illness. The percentage of children between 12 and 15 months of age who were still breastfeeding was 68 per cent in round 4 (July-September 2013), falling to 38 per cent for older children (20-23 months). The continuation of breastfeeding[96] is important in the context of Yemeni children as studies showed it reduces mortality for malnourished children.[97]

Inappropriate complementary feeding heightens the risk of malnutrition, illness and mortality. The WHO[98] indicates that children aged 6–23 months must eat daily food from at least four of the following seven groups: (1) grains, roots and tubers; (2) legumes and nuts; (3) dairy products (milk, yogurt, cheese); (4) flesh foods (meat, fish, poultry and liver/organ meats); (5) eggs; (6) vitamin A-rich fruits and vegetables; and (7) other fruits and vegetables.

Approximately only one third (31 per cent) of children aged 6–23 months had the minimum dietary diversity, eating food from at least four of the food groups in the day preceding the survey. We found differences when disaggregating minimum dietary diversity by wealth quintile and mother's education. The figure for the lowest wealth quintile is 22 percentage points lower than for the highest wealth quintile (62 per cent among the richest versus 39 per cent among the poorest). Differences are also remarkable when comparing the mother's education. Sixty-three per cent of children of mothers with secondary education achieved adequate dietary diversity, compared to 34 per cent of children of mothers without any formal education (figure CH.10). Table CH.27 presents minimum dietary diversity disaggregated for topography, region and mother's education.

Figure CH.10:
Percentage of Children Aged 6-23 who Had the Minimum Dietary Diversity by Wealth Quintiles and Mother's Education, Yemen, 2012-2013
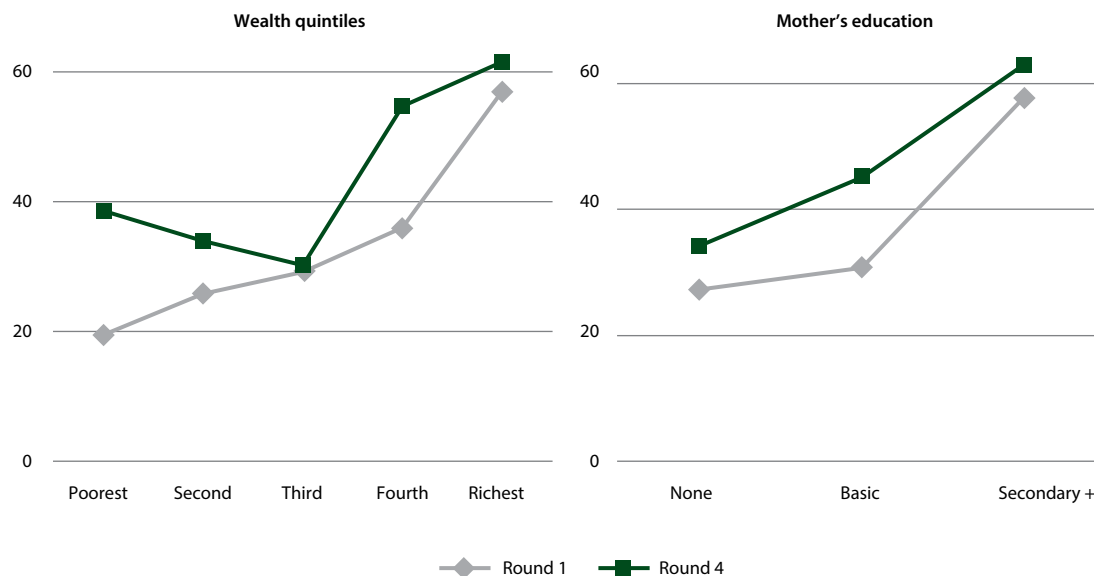
Source: NSPMS, Rounds 1 and 4.

VITAMIN A SUPPLEMENTATION

The lack of a diverse diet makes children more susceptible to micronutrient deficiencies. In Yemen, vitamin A supplements are recommended for children aged 6-59 months every four to six months. In round 1, 40 per cent of children received Vitamin A supplements. In round 4, the NSPMS used probing questions when asking child's mother or caregiver about vitamin A supplementation, which shows an increase of reporting information from 25 to 54 per cent from round 1 to round 4. A similar trend was observed for children receiving vitamin A supplements when the information was retrieved from the health card (from 15 per cent in round 1 to 29 per cent in round 4).

Figure CH.11:
Percentage of Children Aged 6-59 Months who Received Vitamin A Supplements, Yemen, 2012-2013
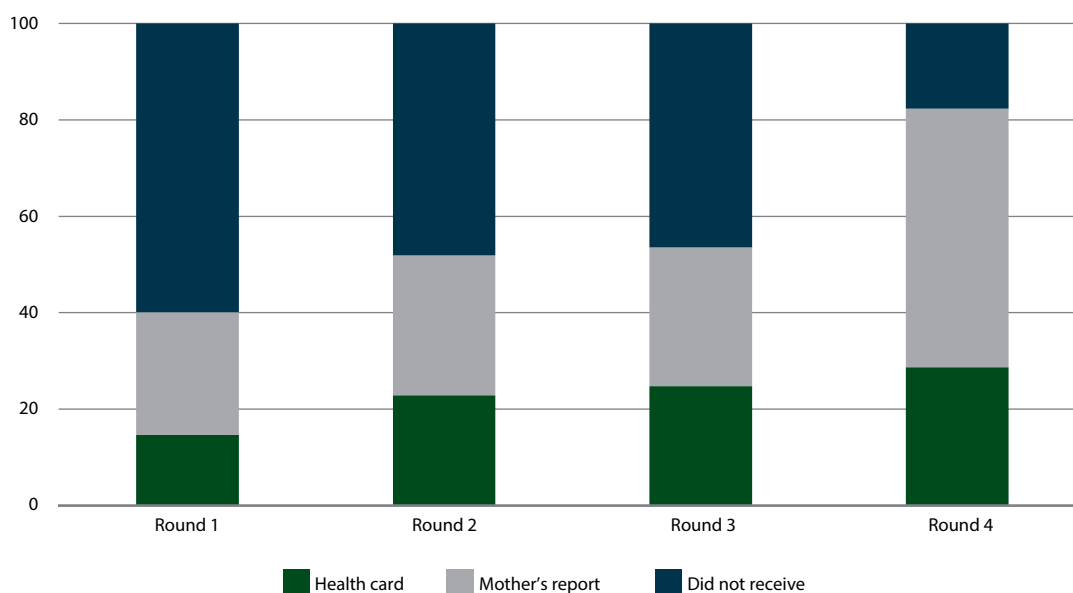
Source: NSPMS, All Rounds.

5.4 Concluding Remarks

The nutritional situation of Yemeni children is critical by WHO standards, with NSPMS findings of global acute malnutrition in 10 per cent of children under five years old and nearly half of all children (42 per cent) with chronic malnutrition. These findings corroborate those from the 2011 Comprehensive Food Security Survey (CFSS), which found 13 per cent of children with global acute malnutrition and 47 per cent with chronic malnutrition.[99] Malnutrition is associated with area of residence, mother's education, wealth quintiles, diarrhoea-related morbidity and the nutritional status of the mother. Infant feeding practices were very poor. The duration of exclusive breastfeeding is shorter than recommended, with only 13 per cent of infants below six months of age being exclusively breastfed. Most infants aged 6–23 months received complementary foods after six months, although with low dietary diversity (less than four food groups). Vitamin A supplementation reaches 82 per cent of children aged 6-59 months, according to information retrieved from the health card and mother's information.

5.5 Tables

Table CH.2:
Percentage of Children who Have the Vaccination Card, Yemen, 2012-2013

	Children aged 12-59 months						Children aged 12-23 months					
	Round 1			Round 4			Round 1			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	51.36	46.07	56.64	53.52	48.59	58.46	56.94	49.82	64.05	59.06	52.01	66.11
Sex												
Boys	53.25	47.26	59.23	55.31	49.81	60.80	57.06	48.11	66.01	59.65	50.72	68.58
Girls	49.29	49.03	49.55	51.59	51.37	51.81	56.79	56.10	57.48	58.42	57.80	59.05
Area of residence												
Urban	64.53	52.62	76.44	66.82	55.75	77.89	73.18	60.52	85.83	74.11	60.63	87.60
Rural	48.04	42.29	53.80	50.32	44.84	55.79	53.88	45.86	61.89	56.16	48.31	64.02
Region												
Sana'a City	77.64	63.21	92.07	82.71	70.83	94.58	86.22	69.28	103.16	91.03	78.02	104.04
Hadhramout	63.89	56.56	71.22	65.12	56.61	73.64	70.08	61.56	78.61	64.95	53.06	76.84
Saba	36.92	23.78	50.06	42.56	30.55	54.57	28.42	9.90	46.93	35.24	9.66	60.81
Aden	56.41	47.69	65.13	57.64	49.87	65.41	53.12	40.26	65.99	54.71	42.78	66.63
Al-Janad	57.06	42.44	71.67	56.86	43.23	70.50	60.07	41.34	78.80	60.78	43.90	77.67
Tehama	43.27	35.39	51.15	46.85	38.65	55.05	49.39	38.21	60.58	58.24	45.73	70.75
Azal	43.11	35.00	51.23	45.56	37.43	53.69	56.58	42.94	70.23	52.20	37.13	67.27
Topography												
Mountainous	50.40	41.53	59.26	52.31	43.97	60.64	56.66	45.02	68.30	58.60	48.20	69.00
Arabian Sea	63.25	52.30	74.21	63.38	53.50	73.25	67.12	56.89	77.35	62.20	48.90	75.49
Red Sea	38.25	24.23	52.27	42.39	28.35	56.42	45.43	24.55	66.31	51.40	28.99	73.81
Plateau/ desert	57.48	50.78	64.17	58.88	52.61	65.15	61.77	53.36	70.18	63.55	53.95	73.14
Wealth quintile												
Poorest	32.70	23.99	41.41	35.58	27.50	43.66	32.88	20.08	45.68	39.56	25.97	53.15
Second	42.67	32.70	52.65	46.79	35.81	57.77	50.05	37.68	62.42	51.15	38.22	64.09
Middle	60.02	49.01	71.03	60.63	50.61	70.66	74.49	62.27	86.70	73.58	60.82	86.35

Fourth	65.84	56.97	74.71	69.29	60.48	78.10	74.58	64.72	84.44	76.08	66.90	85.25
Richest	68.02	58.18	77.86	71.48	62.76	80.21	74.37	62.69	86.05	72.39	57.48	87.31
Level of Poverty												
Extreme poor	47.04	34.49	59.60	44.17	31.70	56.64	46.72	26.61	66.83	52.54	34.53	70.54
Moderate poor	48.15	40.49	55.81	48.93	40.45	57.42	52.84	40.78	64.90	52.80	38.55	67.04
Vulnerable	49.32	38.98	59.67	56.39	46.80	65.98	59.88	45.65	74.11	66.63	53.95	79.31
Non-poor	57.47	49.39	65.54	59.41	52.24	66.58	64.33	54.20	74.47	65.91	56.90	74.93
Head of household's education												
None	46.13	39.56	52.70	50.85	44.39	57.31	52.65	41.08	64.21	62.99	53.10	72.87
Basic	52.14	43.20	61.08	51.29	43.61	58.98	58.09	45.63	70.55	51.79	39.43	64.14
Secondary +	55.42	45.03	65.80	59.09	49.36	68.81	61.91	49.51	74.31	63.72	51.87	75.56
Quran & Literacy	68.96	51.42	86.49	61.99	44.70	79.27	69.86	49.46	90.25	65.54	35.89	95.19
Mother's education												
None	42.59	36.92	48.26	47.31	40.75	53.87	48.51	39.79	57.23	52.66	42.68	62.65
Basic	66.49	58.05	74.94	62.54	55.22	69.86	76.20	66.75	85.65	69.60	60.99	78.21
Secondary +	66.73	54.84	78.62	69.35	58.86	79.83	64.21	44.66	83.77	70.21	50.61	89.81
Quran & Literacy	69.07	52.57	85.56	50.69	29.67	71.71	77.74	45.32	110.17	86.76	70.61	102.91
SWF status												
Non-beneficiary	51.11	44.34	57.88	53.27	46.95	59.59	56.05	46.83	65.28	56.89	47.84	65.95
Old beneficiary	50.51	45.54	55.47	54.14	49.30	58.97	59.13	51.14	67.13	68.24	61.25	75.23
New beneficiary	54.59	46.30	62.88	54.39	46.18	62.60	59.22	42.80	75.65	59.70	43.86	75.54
Population	2,344,626			2,639,597			638,953			675,117		
Sample	4,690			5,198			1,270			1,285		

Source: NSPMS, Rounds 1 and 4.

Table CH. 3:

Percentage of Children Aged 12-59 Months Vaccinated Against Childhood Diseases at Any Time before the Survey and in the First Year of Life, Yemen, 2012

By age groups according to:	Percentage of children who received:													Number of children
	BCG	Polio0	Polio1	Polio2	Polio3	Penta1	Penta2	Penta3	Pneu1	Pneu2	Pneu3	Measles	Fully	
12-23 months														
Vaccination card														
Vaccinated anytime	23.98	13.86	37.46	34.56	31.89	37.81	34.19	32.11	34.15	30.45	28.37	29.13	8.53	
Vaccinated first year	22.85	12.60	36.51	32.70	28.32	36.92	32.83	29.14	32.85	28.76	25.50	23.05	6.38	1,270
Mother's report	28.29	21.38	29.06	29.03	28.49	28.82	27.40	26.00	18.00	17.19	16.92	27.89	17.66	
24-35 months														
Vaccination card														
Vaccinated anytime	26.91	15.05	34.26	33.24	31.21	30.76	31.93	29.48	8.29	6.26	5.50	26.33	6.47	
Vaccinated first year	24.85	13.66	31.71	30.78	28.13	28.86	28.86	26.68	6.18	3.86	3.35	20.18	4.50	1,313
Mother's report	28.83	24.85	30.80	30.66	29.73	30.37	28.67	27.43	22.55	21.58	20.69	27.37	18.72	
36-47 months														
Vaccination card														
Vaccinated anytime	26.86	16.87	31.56	29.00	26.97	31.28	28.77	26.26	9.59	8.19	7.18	24.99	10.95	
Vaccinated first year	23.12	13.14	29.35	25.78	23.17	28.26	24.90	22.69	6.46	4.79	4.60	18.79	6.81	1,198
Mother's report	25.22	23.04	28.76	28.67	27.46	28.27	26.68	26.30	22.21	21.04	20.42	27.48	20.44	
48-59 months														
Vaccination card														
Vaccinated anytime	23.58	13.37	30.41	29.94	27.83	29.65	30.02	28.10	6.05	5.97	5.48	26.49	9.37	
Vaccinated first year	22.16	11.55	28.78	28.33	24.91	28.03	28.57	26.18	4.44	4.40	3.96	21.48	6.71	909
Mother's report	32.48	27.83	34.39	33.79	32.32	33.42	31.94	31.02	18.88	18.49	18.19	30.05	22.83	
12-59 months														
Vaccination card														
Vaccinated anytime	25.43	14.81	33.74	31.96	29.73	32.58	31.43	29.17	15.19	13.24	12.12	26.81	8.65	
Vaccinated first year	23.37	12.83	31.89	29.65	26.39	30.75	28.96	26.33	13.17	10.97	9.80	20.90	5.99	4,690
Mother's report	28.57	24.08	30.57	30.38	29.38	30.07	28.52	27.50	20.50	19.64	19.10	28.07	19.65	

Source: NSPMS, Round 1.

Table CH.4:
Percentage of Children Aged 12-59 Months Vaccinated Against Childhood Diseases at Any Time before the Survey and in the First Year of Life, Yemen, 2013

By age groups according to:	Percentage of children who received:													Number of children
	BCG	Polio0	Polio1	Polio2	Polio3	Penta1	Penta2	Penta3	Pneu1	Pneu2	Pneu3	Measles	Fully	
12-23 months														
Vaccination card														
Vaccinated anytime	35.81	24.19	51.63	48.32	45.75	50.67	48.72	45.77	46.19	43.50	41.44	40.46	17.60	
Vaccinated first year	32.21	19.41	50.27	45.71	40.73	49.15	46.32	41.11	44.79	41.25	36.96	31.35	11.78	1,285
Mother's report	24.56	21.76	23.79	24.90	25.68	23.29	23.48	24.33	18.66	19.67	19.31	26.42	15.78	
24-35 months														
Vaccination card														
Vaccinated anytime	40.53	21.39	49.40	46.60	43.84	44.99	45.76	43.83	22.32	19.05	17.56	39.42	13.39	
Vaccinated first year	36.39	17.06	47.57	42.69	39.29	43.22	41.94	39.69	20.00	16.11	14.55	29.45	6.93	1,384
Mother's report	27.79	26.77	24.91	26.70	26.36	26.37	25.33	24.67	24.34	23.17	22.64	26.54	19.03	
36-47 months														
Vaccination card														
Vaccinated anytime	30.94	20.49	35.92	35.31	32.93	35.62	34.88	32.67	13.57	13.09	11.67	31.53	15.30	
Vaccinated first year	28.01	15.41	34.46	32.23	29.42	33.78	31.95	29.49	10.48	8.88	7.66	23.80	8.88	1,244
Mother's report	31.07	30.78	32.28	32.05	32.30	31.83	31.23	31.22	28.81	27.97	27.73	32.65	27.14	
48-59 months														
Vaccination card														
Vaccinated anytime	32.46	18.98	39.88	38.41	36.56	39.31	38.20	36.44	14.50	12.16	11.21	35.39	14.99	
Vaccinated first year	28.80	14.16	38.26	35.88	33.20	37.77	35.88	33.26	13.15	10.32	9.30	29.19	9.14	1,117
Mother's report	34.60	32.78	35.65	35.39	34.02	34.06	33.52	33.16	30.01	29.10	28.80	33.73	28.07	
12-59 months														
Vaccination card														
Vaccinated anytime	35.23	21.39	44.69	42.57	40.15	43.01	42.29	40.06	24.84	22.59	21.09	36.93	15.31	
Vaccinated first year	31.62	16.65	43.12	39.50	35.98	41.34	39.39	36.22	22.79	19.77	17.69	28.55	9.16	5,030
Mother's report	29.21	27.72	28.72	29.40	29.27	28.54	28.04	28.01	25.15	24.69	24.32	29.54	22.08	

Source: NSPMS, Round 2.

Table CH.5:

Percentage of Children Aged 12-59 Months Vaccinated Against Childhood Diseases at Any Time before the Survey and in the First Year of Life, Yemen, 2013

By age groups according to:	BCG	Polio0	Polio1	Polio2	Polio3	Penta1	Penta2	Penta3	Pneu1	Pneu2	Pneu3	Measles	Fully	Number of children
12-23 months														
Vaccination card														
Vaccinated anytime	41.97	26.11	57.65	53.17	47.92	57.34	53.34	48.47	52.64	48.19	43.67	41.08	18.38	
Vaccinated first year	38.41	20.61	55.98	50.66	44.45	55.43	50.85	45.01	50.93	45.82	40.32	33.34	11.68	1,324
Mother's report	22.88	19.90	21.27	21.87	22.68	20.73	21.18	21.83	16.71	17.02	17.17	23.71	14.00	
24-35 months														
Vaccination card														
Vaccinated anytime	39.03	22.36	49.57	46.96	44.32	49.71	46.73	44.41	30.18	26.44	24.36	40.91	14.02	
Vaccinated first year	35.16	17.18	47.46	42.40	37.97	47.64	42.56	38.89	27.37	22.91	19.86	29.34	7.17	1,367
Mother's report	26.69	24.87	25.12	25.50	24.95	24.86	24.39	23.49	22.46	22.07	21.70	25.21	19.68	
36-47 months														
Vaccination card														
Vaccinated anytime	34.17	21.00	40.88	39.26	36.42	39.02	38.41	35.50	16.14	15.94	13.56	34.12	16.76	
Vaccinated first year	30.35	14.97	38.27	34.50	32.42	36.07	33.89	31.82	11.64	9.52	8.75	25.43	8.73	1,283
Mother's report	30.27	31.80	30.19	31.71	32.44	31.53	30.98	31.38	27.87	26.86	26.78	32.49	25.07	
48-59 months														
Vaccination card														
Vaccinated anytime	33.67	21.66	40.50	39.00	37.02	40.17	38.83	37.31	19.38	16.44	15.97	35.42	16.78	
Vaccinated first year	29.84	15.81	38.33	36.42	32.92	38.12	36.22	32.86	17.54	13.84	12.59	29.15	10.11	1,167
Mother's report	35.04	33.63	35.82	35.80	34.23	33.76	33.33	32.91	30.79	30.07	29.56	33.71	28.86	.
12-59 months														
Vaccination card														
Vaccinated anytime	37.51	22.90	47.72	45.08	41.82	47.14	44.82	41.82	30.56	27.67	25.19	38.13	16.46	
Vaccinated first year	33.74	17.28	45.60	41.44	37.30	44.90	41.34	37.54	27.83	23.93	21.16	29.42	9.40	5,141
Mother's report	28.28	27.06	27.56	28.20	28.13	27.25	27.02	26.97	23.98	23.55	23.37	28.38	21.39	

Source: NSPMS, Round 3.

Table CH. 6:
Percentage of Children Aged 12-59 Months Vaccinated Against Childhood
Diseases at Any Time before the Survey and in the First Year of Life, Yemen, 2013

By age groups according to:	Percentage of children who received:													Number of children
	BCG	Polio0	Polio1	Polio2	Polio3	Penta1	Penta2	Penta3	Pneu1	Pneu2	Pneu3	Measles	Fully	
12-23 months														
Vaccination card														
Vaccinated anytime	47.78	26.96	61.67	55.63	52.47	61.45	55.65	52.54	55.01	49.96	46.04	45.98	19.25	
Vaccinated first year	45.03	23.10	60.27	53.79	49.92	60.01	53.85	49.90	53.63	48.19	43.46	39.48	14.47	1,299
Mother's report	22.02	24.45	23.78	24.35	24.30	18.63	18.99	19.02	19.83	19.59	18.69	20.08	14.36	
24-35 months														
Vaccination card														
Vaccinated anytime	36.58	22.89	51.61	48.81	46.81	51.63	48.78	46.58	44.45	41.15	39.15	46.08	18.41	
Vaccinated first year	33.16	17.45	49.61	45.10	41.13	49.64	45.43	41.20	42.15	37.52	33.60	34.20	11.12	1,371
Mother's report	30.37	32.74	29.62	30.12	29.80	26.47	26.29	25.29	26.17	26.03	25.41	27.65	20.05	
36-47 months														
Vaccination card														
Vaccinated anytime	41.27	23.96	48.21	45.86	43.13	46.31	45.72	42.83	17.30	15.08	12.47	38.12	15.81	
Vaccinated first year	37.85	18.65	45.86	41.63	39.26	43.67	41.41	39.00	12.91	10.00	8.71	30.96	9.14	1,336
Mother's report	31.37	34.24	34.50	36.91	37.90	30.57	30.69	30.59	32.21	29.97	29.68	31.96	24.16	
48-59 months														
Vaccination card														
Vaccinated anytime	36.69	27.21	40.99	38.47	38.29	39.12	37.10	35.69	20.40	19.23	19.10	35.70	20.37	
Vaccinated first year	32.26	20.18	38.61	34.88	33.94	36.83	33.69	31.73	17.66	15.02	14.56	26.73	11.31	1,192
Mother's report	37.46	40.54	39.86	40.93	39.41	38.65	39.39	38.47	39.76	39.91	39.14	38.23	30.52	
12-59 months														
Vaccination card														
Vaccinated anytime	40.73	25.14	51.07	47.61	45.50	50.13	47.28	44.83	34.95	31.93	29.67	41.77	18.36	
Vaccinated first year	37.27	19.81	49.06	44.27	41.39	48.04	44.07	40.87	32.24	28.28	25.57	33.13	11.50	5,198
Mother's report	29.97	32.64	31.56	32.70	32.54	28.10	28.33	27.85	28.99	28.34	27.70	29.06	21.87	

Source: NSPMS, Round 4.

Table CH.7:
Percentage of Children Aged 12-23 Months Vaccinated Against Tuberculosis (BCG) in the First Year of Life, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	52.27	44.78	59.76	60.37	53.30	67.43	64.85	58.27	71.43	69.81	63.55	76.06
Sex												
Boys	54.49	44.71	64.27	61.80	52.42	71.19	64.58	55.10	74.06	69.51	60.31	78.70
Girls	49.64	48.96	50.32	58.79	58.19	59.39	65.18	64.89	65.47	70.15	69.88	70.42
Area of residence												
Urban	70.84	58.93	82.74	79.08	66.28	91.88	83.67	72.81	94.53	84.42	73.79	95.04
Rural	48.77	40.24	57.30	56.76	48.87	64.65	60.75	53.04	68.45	66.31	58.93	73.69
Region												
Sana'a City	83.35	64.50	102.20	91.96	78.98	104.94	96.77	92.65	100.89	97.77	95.17	100.38
Hadhramout	66.79	47.45	86.13	71.44	56.57	86.30	76.73	65.22	88.24	75.03	61.28	88.78
Saba	26.76	14.51	39.02	45.03	21.29	68.77	55.85	39.41	72.29	64.06	48.77	79.36
Aden	56.65	45.02	68.29	74.32	64.44	84.20	82.19	74.77	89.60	93.07	89.90	96.24
Al-Janad	56.43	37.72	75.13	58.80	41.95	75.64	65.80	50.52	81.08	73.01	58.54	87.47
Tehama	34.49	24.84	44.15	41.85	31.37	52.33	46.55	34.98	58.11	54.90	41.87	67.92
Azal	61.81	47.28	76.33	69.73	56.50	82.96	69.82	55.99	83.66	65.05	51.34	78.75
Topography												
Mountainous	57.01	45.43	68.59	68.00	58.32	77.67	68.40	58.39	78.41	71.30	61.87	80.73
Arabian Sea	82.88	68.77	97.00	80.04	66.17	93.92	90.48	82.96	98.00	95.76	91.75	99.77
Red Sea	17.25	8.35	26.14	20.95	10.52	31.39	35.76	19.71	51.81	46.85	26.44	67.27
Plateau/desert	60.27	50.68	69.85	69.86	60.73	78.99	70.37	61.18	79.56	75.15	66.55	83.74
Wealth quintile												
Poorest	26.62	15.72	37.52	36.59	24.62	48.55	39.06	27.76	50.37	49.41	36.82	61.99
Second	49.44	37.30	61.58	55.38	42.43	68.32	63.33	49.93	76.73	62.19	47.55	76.83
Middle	72.18	58.83	85.54	76.17	63.64	88.71	76.19	64.20	88.18	82.15	72.44	91.86
Fourth	63.78	51.15	76.41	77.41	67.97	86.85	83.54	76.26	90.82	87.17	80.41	93.92
Richest	69.96	55.16	84.76	79.32	66.23	92.41	78.88	59.30	98.47	80.89	64.80	96.99
Level of poverty												
Extreme poor	32.92	15.66	50.18	50.02	32.04	68.00	50.66	38.75	62.58	63.19	48.03	78.36
Moderate poor	49.61	36.19	63.03	56.14	42.35	69.93	61.40	49.59	73.21	62.25	50.24	74.26
Vulnerable	49.70	35.78	63.62	62.69	47.43	77.96	70.06	54.55	85.57	82.10	72.21	92.00
Non-poor	65.33	54.99	75.68	70.32	60.86	79.78	71.19	61.87	80.50	71.81	62.45	81.16
Head of household's education												
None	41.32	30.62	52.02	50.97	41.20	60.75	53.37	44.26	62.47	60.33	49.67	71.00
Basic	60.62	47.39	73.85	61.15	48.40	73.89	69.58	59.23	79.93	71.28	61.61	80.96
Secondary +	67.65	56.84	78.46	74.44	64.19	84.70	75.18	64.94	85.42	81.00	71.43	90.56
Quran & Literacy	32.13	13.33	50.94	67.44	37.87	97.00	68.35	37.88	98.82	70.99	39.50	102.48
Mother's education												
None	42.05	33.16	50.93	48.97	39.22	58.72	56.67	46.37	66.97	61.50	51.32	71.69
Basic	70.05	59.12	80.99	76.21	68.09	84.34	75.34	67.15	83.52	79.79	71.76	87.82
Secondary +	77.48	60.34	94.63	85.59	70.07	101.11	83.52	67.81	99.23	89.45	79.13	99.76
Quran & Literacy	49.81	9.09	90.54	66.52	32.77	100.26	74.55	45.02	104.07	83.07	59.05	107.08
SWF status												
Non-beneficiary	50.63	40.86	60.39	57.47	48.56	66.39	63.36	54.59	72.13	68.46	59.97	76.95
Old beneficiary	57.99	50.05	65.93	69.40	62.50	76.30	66.21	58.92	73.49	70.54	63.90	77.18
New beneficiary	53.95	36.78	71.12	66.70	52.50	80.90	74.04	62.82	85.25	77.47	66.43	88.52
Population	638,953			675,117			713,940			682,709		
Sample	1,270			1,285			1,324			1,299		

Table CH.8:
Percentage of Children Aged 12-23 Months Vaccinated Against Polio (Third Dose) in the First Year of Life, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	60.37	52.96	67.79	71.44	64.47	78.40	70.60	64.30	76.90	76.78	71.23	82.32
Sex												
Boys	59.07	49.31	68.84	72.87	63.73	82.00	71.02	60.12	81.92	73.74	63.45	84.02
Girls	61.92	61.26	62.57	69.87	69.27	70.47	70.09	69.74	70.44	80.29	80.14	80.44
Area of residence												
Urban	72.56	61.32	83.81	80.20	67.39	93.02	83.09	72.23	93.95	85.65	75.55	95.76
Rural	58.08	49.56	66.59	69.75	61.86	77.64	67.88	60.84	74.91	74.65	68.41	80.90
Region												
Sana'a City	80.52	59.64	101.40	91.46	78.70	104.22	94.60	90.01	99.18	97.70	95.31	100.08
Hadhramout	75.73	61.97	89.49	79.59	67.38	91.80	81.36	71.41	91.32	74.25	60.36	88.15
Saba	39.75	20.61	58.89	45.95	22.43	69.47	50.27	32.90	67.64	61.33	44.87	77.79
Aden	61.56	50.54	72.57	75.45	65.97	84.92	82.22	73.01	91.44	92.24	88.23	96.24
Al-Janad	61.69	42.96	80.42	66.57	48.82	84.33	65.92	52.13	79.71	68.15	54.10	82.21
Tehama	45.90	34.11	57.69	66.82	54.14	79.49	62.17	48.82	75.52	80.15	73.10	87.20
Azal	72.50	61.53	83.47	78.56	67.96	89.16	78.15	67.96	88.35	72.94	61.71	84.17
Topography												
Mountainous	64.65	53.80	75.51	77.09	68.06	86.13	70.67	60.93	80.40	67.40	58.49	76.32
Arabian Sea	89.28	81.18	97.38	84.31	72.37	96.26	88.29	79.98	96.59	93.70	89.18	98.22
Red Sea	33.35	15.86	50.84	46.16	25.36	66.96	49.33	28.93	69.72	83.88	73.12	94.63
Plateau/desert	64.83	55.94	73.72	76.49	68.58	84.40	78.44	71.16	85.71	81.13	74.36	87.89
Wealth quintile												
Poorest	32.30	20.03	44.56	49.57	35.06	64.08	50.43	36.40	64.45	72.25	62.76	81.75
Second	62.75	51.36	74.13	73.23	61.40	85.06	62.94	44.86	81.03	58.76	39.43	78.09
Middle	77.67	66.66	88.68	84.66	75.96	93.36	83.82	75.27	92.36	83.71	74.56	92.86
Fourth	69.24	57.98	80.51	84.85	77.52	92.19	86.25	79.49	93.02	87.69	81.11	94.26
Richest	80.17	69.94	90.39	86.89	78.11	95.68	91.61	85.58	97.64	89.60	81.04	98.15
Level of Poverty												
Extreme poor	42.84	24.37	61.31	58.26	39.15	77.38	59.55	46.59	72.51	73.08	61.81	84.35
Moderate poor	56.89	43.55	70.22	64.19	50.42	77.97	63.57	50.75	76.38	81.12	73.02	89.22
Vulnerable	62.06	48.94	75.17	83.55	75.40	91.70	82.67	72.93	92.41	83.96	74.92	92.99
Non-poor	71.42	62.09	80.75	81.42	73.89	88.95	74.53	59.23	89.83	71.12	56.70	85.54
Head of household's education												
None	50.02	38.61	61.42	68.74	58.15	79.33	67.61	57.57	77.64	77.41	70.93	83.88
Basic	67.72	55.59	79.85	66.72	53.70	79.73	65.05	50.93	79.17	70.01	56.10	83.91
Secondary +	67.65	56.20	79.10	82.41	73.96	90.87	78.63	68.43	88.84	82.73	73.38	92.09
Quran & Literacy	70.77	50.00	91.55	81.30	58.23	104.36	89.01	76.03	101.99	87.89	73.65	102.12
Mother's education												
None	51.08	41.77	60.39	64.11	54.06	74.15	61.56	53.32	69.79	71.19	63.53	78.85
Basic	76.68	67.34	86.02	79.94	72.02	87.87	81.66	74.05	89.27	82.22	74.49	89.96
Secondary +	85.43	74.41	96.45	92.74	85.31	100.18	92.61	83.18	102.04	92.46	82.94	101.97
Quran & Literacy	55.51	14.25	96.77	77.85	46.30	109.40	81.71	53.69	109.74	93.92	83.59	104.26
SWF status												
Non-beneficiary	59.63	49.96	69.29	69.51	60.73	78.29	68.24	60.27	76.22	76.22	68.96	83.49
Old beneficiary	66.08	57.80	74.35	78.02	71.84	84.20	75.80	68.54	83.06	77.79	71.31	84.26
New beneficiary	56.44	39.79	73.09	74.69	63.16	86.23	79.11	69.86	88.36	78.71	68.65	88.77
Population	638,953			675,117			713,940			682,709		
Sample	1,270			1,285			1,324			1,299		

Source: NSPMS, All Rounds.

Table CH.9:
Percentage of Children Aged 12-23 Months who Received Pentavalent Vaccine
(Third Dose) in the First Year of Life, Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | | Round 4 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	58.11	50.54	65.68	70.11	63.10	77.11	70.30	64.01	76.60	71.56	65.43	77.68
Sex												
Boys	55.24	45.42	65.07	71.01	61.89	80.13	70.32	59.46	81.18	69.33	58.46	80.20
Girls	61.51	60.84	62.19	69.12	68.51	69.72	70.28	69.93	70.63	74.13	73.87	74.39
Area of residence												
Urban	66.49	54.10	78.87	77.81	64.55	91.06	83.33	72.48	94.18	84.55	73.93	95.17
Rural	56.53	47.85	65.22	68.62	60.70	76.55	67.46	60.44	74.48	68.45	61.60	75.29
Region												
Sana'a City	80.13	58.25	102.02	88.64	74.17	103.11	94.60	89.65	99.54	97.79	95.45	100.13
Hadhramout	71.06	55.29	86.82	76.75	63.58	89.93	81.14	71.19	91.10	86.16	76.95	95.38
Saba	38.33	19.53	57.12	42.51	16.55	68.47	50.04	32.64	67.43	54.67	37.79	71.55
Aden	53.49	42.35	64.63	73.21	63.39	83.03	84.15	76.50	91.80	85.58	79.76	91.40
Al-Janad	61.31	41.98	80.63	67.22	49.30	85.13	66.53	52.51	80.54	68.14	54.06	82.21
Tehama	42.31	30.77	53.85	63.55	50.93	76.16	59.64	46.27	73.01	61.31	47.48	75.14
Azal	73.08	62.33	83.84	78.58	67.98	89.18	78.11	67.91	88.30	72.81	61.75	83.88
Topography												
Mountainous	62.83	51.55	74.12	75.74	66.59	84.88	70.17	60.54	79.80	64.49	56.11	72.87
Arabian Sea	75.88	56.92	94.83	84.16	72.20	96.11	88.61	80.34	96.88	91.99	86.06	97.91
Red Sea	31.31	14.07	48.54	45.81	25.05	66.57	48.95	28.49	69.41	59.30	37.93	80.66
Plateau/desert	63.93	55.03	72.82	74.42	66.23	82.60	78.34	71.06	85.62	81.97	75.57	88.37
Wealth quintile												
Poorest	29.67	18.00	41.35	47.59	33.28	61.91	49.29	35.32	63.26	57.81	43.75	71.87
Second	59.30	47.40	71.19	71.99	60.15	83.83	61.42	43.59	79.24	52.40	34.19	70.61
Middle	77.83	67.23	88.43	83.96	75.10	92.82	83.01	74.30	91.72	81.13	71.31	90.96
Fourth	67.84	56.39	79.29	83.34	75.48	91.20	87.49	81.24	93.73	87.16	80.52	93.80
Richest	76.65	65.32	87.99	83.83	73.96	93.69	91.93	86.03	97.82	94.79	90.89	98.68
Level of Poverty												
Extreme poor	40.02	22.01	58.02	58.22	39.07	77.36	60.46	47.65	73.28	70.57	58.70	82.45
Moderate poor	53.59	40.14	67.05	62.55	48.68	76.42	63.52	50.71	76.33	65.69	52.80	78.58
Vulnerable	57.76	44.28	71.25	81.33	72.82	89.85	81.69	71.75	91.63	82.16	72.63	91.69
Non-poor	71.21	61.62	80.80	80.00	72.32	87.69	73.89	58.70	89.07	70.99	56.79	85.20
Head of household's education												
None	49.44	37.94	60.94	68.60	57.95	79.26	68.04	58.05	78.02	67.43	57.40	77.47
Basic	63.28	50.44	76.11	65.06	52.11	78.02	64.24	50.20	78.28	65.36	51.46	79.26
Secondary +	66.16	54.64	77.69	78.75	69.63	87.86	77.93	67.67	88.19	81.80	72.34	91.27
Quran & Literacy	66.12	43.86	88.37	81.21	58.13	104.29	88.84	75.79	101.89	87.57	73.20	101.95
Mother's education												
None	47.05	37.80	56.31	62.07	52.07	72.06	60.56	52.40	68.73	62.42	54.25	70.59
Basic	77.15	67.95	86.34	78.96	70.74	87.19	81.96	74.31	89.62	82.55	74.92	90.18
Secondary +	87.19	78.23	96.14	94.68	89.01	100.35	94.89	86.58	103.20	92.32	82.79	101.84
Quran & Literacy	55.51	14.25	96.77	77.85	46.30	109.40	82.26	54.22	110.31	89.55	69.90	109.21
SWF status												
Non-beneficiary	58.43	48.54	68.31	68.72	59.90	77.55	68.30	60.33	76.28	70.13	62.17	78.09
Old beneficiary	57.76	48.99	66.53	75.02	68.54	81.50	74.67	67.44	81.91	75.47	68.89	82.04
New beneficiary	56.66	40.06	73.26	72.13	60.12	84.13	77.59	68.04	87.14	74.36	62.39	86.34
Population	638,953			675,117			713,940			682,709		
Sample	1,270			1,285			1,324			1,299		

Source: NSPMS, All Rounds.

Table CH.10:
Percentage of Children Aged 12-23 Months Vaccinated Against Pneumonia
(Third Dose) in the First Year of Life, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	45.29	38.00	52.58	60.76	52.89	68.62	60.84	51.52	70.16	64.73	58.51	70.95
Sex												
Boys	41.77	32.63	50.91	66.32	57.11	75.53	66.41	55.82	77.00	62.48	51.49	73.48
Girls	49.47	48.77	50.16	54.65	53.90	55.39	54.06	53.42	54.70	67.33	66.97	67.69
A rea of residence												
Urban	64.75	52.12	77.38	64.60	45.56	83.64	70.15	53.17	87.12	74.75	59.23	90.27
Rural	41.62	33.70	49.54	60.01	51.39	68.64	58.81	48.26	69.37	62.33	55.71	68.95
Region												
Sana'a City	66.79	36.60	96.98	50.41	7.66	93.15	41.09	2.91	79.28	71.22	30.20	112.25
Hadhramout	61.43	53.25	69.62	70.78	55.61	85.95	71.45	59.88	83.03	68.30	57.06	79.54
Saba	37.85	19.11	56.59	41.49	15.48	67.51	49.58	32.06	67.10	54.68	37.78	71.59
Aden	58.81	48.16	69.47	75.69	66.36	85.02	82.89	75.42	90.35	84.73	78.85	90.60
Al-Janad	32.04	15.67	48.42	45.47	27.80	63.14	45.17	23.65	66.68	54.39	43.46	65.32
Tehama	36.26	25.22	47.29	61.41	48.64	74.17	58.95	45.59	72.31	59.59	45.69	73.48
Azal	63.11	47.91	78.30	78.25	67.60	88.90	77.85	67.63	88.07	72.38	61.21	83.54
Topography												
Mountainous	36.62	25.44	47.80	63.31	50.87	75.75	57.84	40.91	74.76	60.18	52.45	67.91
Arabian Sea	72.55	63.79	81.31	82.83	70.82	94.83	83.34	73.47	93.21	86.65	78.22	95.08
Red Sea	30.24	13.31	47.16	44.65	23.90	65.41	48.47	27.82	69.13	52.39	30.80	73.98
Plateau/desert	59.18	49.82	68.55	62.78	51.70	73.86	67.45	56.97	77.94	72.24	62.94	81.53
Wealth quintile												
Poorest	27.98	16.36	39.61	41.55	27.89	55.21	44.59	31.01	58.17	48.68	35.13	62.22
Second	44.69	32.09	57.30	68.29	56.37	80.21	56.46	39.36	73.56	49.57	31.87	67.26
Middle	48.77	28.03	69.52	61.20	38.84	83.56	62.65	41.03	84.27	77.67	66.94	88.40
Fourth	47.08	32.83	61.34	77.05	67.60	86.50	81.87	73.97	89.77	85.51	78.48	92.54
Richest	74.53	62.42	86.65	70.89	49.01	92.76	74.55	50.91	98.18	79.02	62.21	95.82
Level of Poverty												
Extreme poor	28.88	16.04	41.73	55.49	36.50	74.48	57.10	44.05	70.16	57.24	41.52	72.95
Moderate poor	47.44	35.75	59.13	49.84	35.12	64.57	59.91	47.36	72.46	58.38	45.18	71.59
Vulnerable	50.42	35.98	64.87	72.86	61.32	84.39	54.96	34.87	75.05	80.56	70.50	90.62
Non-poor	49.37	36.99	61.75	69.18	58.23	80.13	67.22	52.78	81.66	64.31	50.55	78.07
Head of household's education												
None	39.93	29.52	50.33	64.17	53.51	74.83	63.45	53.42	73.48	58.63	47.93	69.33
Basic	44.74	31.80	57.68	55.17	42.17	68.18	53.20	39.82	66.58	59.40	45.78	73.02
Secondary +	54.19	40.90	67.48	77.29	68.12	86.45	74.58	64.20	84.96	73.97	60.76	87.18
Quran & Literacy	61.47	38.59	84.35	37.67	7.30	68.04	51.93	13.81	90.04	87.54	73.15	101.93
Mother's education												
None	39.70	31.29	48.10	54.04	43.54	64.53	52.88	40.06	65.70	55.95	47.78	64.11
Basic	52.81	36.91	68.71	71.20	62.23	80.16	72.17	63.34	81.00	73.74	65.01	82.48
Secondary +	67.05	48.96	85.15	69.16	41.24	97.08	72.52	44.43	100.61	87.39	74.11	100.68
Quran & Literacy	54.23	13.13	95.34	86.11	69.65	102.57	89.68	75.45	103.91	93.92	83.59	104.26
SWF status												
Non-beneficiary	45.45	36.12	54.78	58.74	48.85	68.63	57.71	45.75	69.67	62.25	54.35	70.14
Old beneficiary	51.77	43.22	60.32	66.70	58.77	74.63	68.60	61.06	76.15	69.51	61.52	77.50
New beneficiary	34.42	20.09	48.74	65.74	51.88	79.61	70.49	58.25	82.73	73.05	60.56	85.54
Population	638,953			675,117			713,940			682,709		
Sample	1,270			1,285			1,324			1,299		

Source: NSPMS, All Rounds.

Table CH.11:

Percentage of Children Aged 12-23 Months Vaccinated Against Measles
(at Least One Dose) in the First Year of Life, Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | | Round 4 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	57.02	49.58	64.46	66.88	59.86	73.91	64.79	58.48	71.11	66.06	60.08	72.03
Sex												
Boys	54.40	44.65	64.15	66.84	57.54	76.14	62.39	51.47	73.31	59.27	48.32	70.22
Girls	60.13	59.45	60.80	66.93	66.32	67.54	67.73	67.37	68.09	73.90	73.70	74.10
Area of residence												
Urban	74.62	63.80	85.43	75.89	62.24	89.53	70.78	54.31	87.25	73.27	57.32	89.23
Rural	53.70	45.17	62.24	65.15	57.24	73.06	63.49	56.67	70.30	64.33	58.01	70.64
Region												
Sana'a City	83.98	64.86	103.10	85.93	66.91	104.95	87.36	68.53	106.20	92.12	80.96	103.29
Hadhramout	72.51	57.24	87.77	74.96	61.56	88.37	77.07	66.67	87.47	73.41	59.75	87.08
Saba	37.96	19.18	56.73	45.74	22.18	69.30	49.89	32.18	67.59	54.18	36.66	71.70
Aden	60.82	49.69	71.95	72.01	62.14	81.88	73.17	63.32	83.02	77.57	68.66	86.48
Al-Janad	53.29	34.59	71.99	60.66	43.02	78.31	59.79	46.78	72.81	63.20	50.24	76.15
Tehama	42.63	31.46	53.80	63.34	50.84	75.84	56.83	43.32	70.34	58.75	45.25	72.26
Azal	73.97	63.34	84.60	73.69	62.32	85.06	72.96	61.85	84.06	65.69	54.28	77.09
Topography												
Mountainous	59.78	48.30	71.25	69.95	60.17	79.73	63.80	54.62	72.98	59.57	51.66	67.48
Arabian Sea	87.50	77.97	97.04	84.09	72.64	95.54	85.50	76.81	94.19	85.84	75.92	95.76
Red Sea	25.35	10.39	40.30	44.76	24.06	65.46	43.44	23.74	63.14	55.29	34.51	76.06
Plateau/desert	65.61	56.75	74.46	72.65	64.35	80.95	73.62	65.83	81.40	75.24	68.00	82.49
Wealth quintile												
Poorest	30.40	19.08	41.71	45.82	31.80	59.85	49.94	35.88	64.00	60.60	47.66	73.54
Second	53.30	40.78	65.82	66.68	54.06	79.29	55.71	38.81	72.62	46.71	29.99	63.43
Middle	73.43	59.98	86.89	76.76	64.18	89.34	75.52	63.11	87.92	79.40	68.89	89.90
Fourth	69.34	58.38	80.30	82.55	74.77	90.33	72.44	57.76	87.13	72.24	57.06	87.42
Richest	81.71	72.40	91.03	83.17	73.05	93.29	88.63	80.83	96.43	82.06	70.90	93.22
Level of Poverty												
Extreme poor	41.44	22.90	59.99	51.17	33.25	69.09	56.21	43.55	68.87	62.24	50.87	73.62
Moderate poor	53.20	39.95	66.45	60.90	47.01	74.79	61.64	49.06	74.22	66.88	54.97	78.80
Vulnerable	56.71	43.18	70.23	79.65	70.29	89.01	69.90	53.92	85.89	71.54	54.52	88.57
Non-poor	68.24	57.98	78.51	76.96	68.30	85.62	68.39	53.50	83.28	64.03	50.18	77.89
Head of household's education												
None	48.63	37.31	59.94	64.00	53.42	74.59	63.42	53.41	73.42	65.32	55.21	75.44
Basic	65.67	53.32	78.02	61.89	49.02	74.76	61.25	47.42	75.09	62.34	49.11	75.57
Secondary +	62.57	49.75	75.40	77.23	66.53	87.94	64.82	50.60	79.05	65.03	51.45	78.61
Quran & Literacy	48.08	22.58	73.58	80.01	56.57	103.45	86.01	70.72	101.30	88.01	73.84	102.17
Mother's education												
None	49.22	39.93	58.50	59.78	49.88	69.69	58.82	50.84	66.80	61.86	53.94	69.77
Basic	73.38	62.79	83.96	77.59	69.35	85.83	71.48	60.83	82.13	70.71	60.34	81.09
Secondary +	68.58	47.62	89.54	82.84	66.79	98.90	82.18	66.17	98.19	85.80	74.11	97.50
Quran & Literacy	69.50	30.49	108.50	73.68	41.51	105.85	78.02	49.56	106.47	36.54	-3.64	76.71
SWF status												
Non-beneficiary	56.13	46.57	65.70	65.33	56.47	74.19	63.28	55.25	71.31	65.56	57.71	73.42
Old beneficiary	61.71	53.18	70.24	73.55	67.16	79.94	69.79	62.50	77.09	70.28	63.09	77.47
New beneficiary	55.51	38.74	72.29	67.16	53.64	80.68	67.03	53.81	80.24	62.17	49.66	74.67
Population	638,953			675,117			713,940			682,709		
Sample	1,270			1,285			1,324			1,299		

Source: NSPMS, All Rounds.

Table CH.12:
Percentage of Children Aged 12-23 Months Fully Vaccinated* in the First Year of Life, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	26.18	20.42	31.95	33.38	27.26	39.50	32.37	25.98	38.77	33.61	26.89	40.32
Sex												
Boys	27.87	19.57	36.18	33.89	26.11	41.66	29.84	22.44	37.24	31.06	23.08	39.03
Girls	24.18	23.88	24.48	32.82	32.35	33.29	35.46	35.03	35.89	36.56	36.09	37.04
Area of residence												
Urban	41.26	25.54	56.97	56.53	39.83	73.24	52.25	35.77	68.74	50.82	34.27	67.37
Rural	23.34	17.48	29.20	28.92	23.21	34.63	28.04	21.77	34.31	29.49	22.81	36.17
Region												
Sana'a City	52.88	16.23	89.53	74.25	48.15	100.34	66.80	33.61	100.00	72.60	46.49	98.72
Hadhramout	21.58	13.27	29.89	31.96	21.27	42.65	31.09	15.62	46.55	32.57	15.07	50.06
Saba	23.23	11.94	34.53	25.35	11.31	39.38	27.37	16.58	38.16	31.35	19.21	43.49
Aden	38.01	27.18	48.84	46.10	35.23	56.97	50.27	37.23	63.30	57.26	44.51	70.00
Al-Janad	20.94	8.53	33.34	23.13	11.52	34.75	20.22	8.47	31.96	19.64	6.27	33.00
Tehama	13.95	8.60	19.29	25.19	17.62	32.76	22.22	14.97	29.46	24.31	16.62	32.00
Azal	45.43	30.69	60.17	43.66	29.94	57.38	49.07	34.85	63.29	40.46	28.82	52.09
Topography												
Mountainous	29.18	18.57	39.79	34.12	25.05	43.18	29.93	19.60	40.26	26.34	16.12	36.57
Arabian Sea	33.15	23.42	42.88	47.31	34.98	59.64	48.21	28.99	67.43	57.03	42.41	71.64
Red Sea	7.60	2.80	12.40	12.18	4.82	19.54	12.91	5.26	20.56	15.81	7.05	24.57
Plateau/desert	31.52	22.22	40.83	42.21	31.13	53.30	43.17	33.00	53.34	46.40	36.01	56.78
Wealth quintile												
Poorest	15.20	7.96	22.43	19.51	11.25	27.76	18.24	10.84	25.64	23.86	14.91	32.82
Second	22.11	12.22	31.99	29.78	19.82	39.74	27.84	17.25	38.43	24.17	13.41	34.94
Middle	33.96	16.87	51.04	39.12	21.36	56.88	37.42	20.87	53.98	37.12	21.24	53.00
Fourth	37.72	22.30	53.14	42.56	30.16	54.96	43.97	30.03	57.91	42.65	28.66	56.65
Richest	32.01	14.06	49.96	53.41	34.01	72.82	49.64	28.21	71.08	49.89	30.96	68.82
Level of Poverty												
Extreme poor	22.96	7.03	38.90	30.34	16.20	44.48	30.92	19.96	41.89	42.41	30.53	54.28
Moderate poor	26.77	16.13	37.41	25.37	16.15	34.58	32.47	22.57	42.37	32.43	21.39	43.47
Vulnerable	19.41	10.65	28.17	35.56	21.74	49.39	29.97	13.71	46.24	27.16	14.81	39.51
Non-poor	30.21	21.02	39.40	42.35	31.63	53.08	34.48	24.30	44.66	34.51	23.34	45.69
Head of household's education												
None	22.06	13.59	30.53	27.41	20.01	34.80	30.49	22.78	38.19	29.34	21.59	37.09
Basic	29.39	19.24	39.54	35.44	24.47	46.41	33.32	22.18	44.46	33.62	22.56	44.69
Secondary +	33.55	19.37	47.72	45.31	31.52	59.10	37.22	25.95	48.49	43.16	30.95	55.38
Quran & Literacy	10.89	2.79	18.99	24.86	3.50	46.23	24.98	3.36	46.59	24.88	2.18	47.58
Mother's education												
None	23.33	16.51	30.15	24.87	18.30	31.44	25.93	18.32	33.54	28.95	20.09	37.81
Basic	29.33	16.87	41.79	42.31	30.53	54.09	37.80	27.70	47.90	32.46	23.23	41.70
Secondary +	38.15	19.20	57.10	58.10	36.09	80.11	51.81	29.25	74.37	70.76	52.79	88.72
Quran & Literacy	37.91	-2.75	78.56	61.54	26.93	96.16	70.14	40.16	100.13	30.63	-4.94	66.20
SWF status												
Non-beneficiary	24.37	17.67	31.06	32.13	24.27	39.99	30.85	22.63	39.06	32.90	23.92	41.88
Old beneficiary	29.39	21.24	37.55	40.85	33.79	47.91	39.82	32.01	47.62	38.51	31.33	45.68
New beneficiary	32.82	12.44	53.19	30.03	16.30	43.75	29.86	16.42	43.31	29.99	18.01	41.98
Population	638,953			675,117			713,940			682,709		
Sample	1,270			1,285			1,324			1,299		

Source: NSPMS, All Rounds.
*Note: * 'Fully vaccinated' refers to all children who received BCG vaccine;*
three doses of pentavalent and polio vaccine; and one dose of measles vaccine.

Table CH.14:
Biologically Implausible Values for Wasting, Stunting and Underweight Indicators, by Age Group and Rounds, Yemen, 2012-2013

	Round 1	Round 2	Round 3	Round 4
Wasting				
Age group (in months)				
0–5	2.03%	1.43%	4.19%	3.70%
6–11	1.14%	1.28%	0.53%	0.99%
12–23	0.55%	0.58%	0.35%	0.71%
24–35	0.43%	0.54%	0.00%	0.25%
36–47	0.00%	0.39%	0.27%	0.35%
48–59	0.30%	0.22%	0.30%	0.00%
Total	0.59%	0.63%	0.59%	0.74%
Stunting				
Age group (in months)				
0–5	1.12%	1.63%	1.54%	1.75%
6–11	0.22%	0.00%	0.52%	0.40%
12–23	0.33%	0.39%	0.26%	0.36%
24–35	0.00%	0.63%	0.59%	0.51%
36–47	0.00%	0.29%	0.45%	0.26%
48–59	0.15%	0.44%	0.30%	0.20%
Total	0.23%	0.51%	0.51%	0.49%
Underweight				
Age group (in months)				
0–5	3.10%	1.42%	1.10%	1.23%
6–11	0.67%	0.91%	0.71%	0.99%
12–23	0.66%	0.58%	0.52%	0.71%
24–35	0.75%	0.54%	0.17%	0.50%
36–47	0.11%	0.39%	0.36%	0.35%
48–59	0.29%	0.44%	0.40%	0.00%
Total	0.76%	0.63%	0.46%	0.54%

Source: NSPMS, All Rounds.

Table CH.17:
Prevalence of Wasting for Children Aged 6-59 Months, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	13.75	10.72	16.78	8.28	6.14	10.43	7.57	5.76	9.38	9.71	7.47	11.95
Moderate	9.60	7.05	12.15	7.33	5.29	9.37	5.65	3.94	7.35	8.70	6.68	10.71
Severe	4.21	2.44	5.99	0.95	0.08	1.82	1.94	0.94	2.95	1.02	0.44	1.60
Sex												
Boys	15.98	11.65	20.32	8.70	5.48	11.92	9.02	6.10	11.94	10.57	7.51	13.63
Girls	11.27	11.19	11.35	7.82	7.78	7.86	6.02	6.00	6.04	8.81	8.76	8.86
Age group (in months)												
6–11	22.30	12.71	31.89	7.13	3.62	10.63	10.73	4.30	17.15	17.53	10.34	24.72
12–23	24.22	15.87	32.57	15.25	8.62	21.89	8.88	3.95	13.81	12.60	8.32	16.87
24–35	9.23	4.30	14.17	7.11	3.11	11.11	6.98	3.74	10.22	7.68	3.63	11.73
36–47	6.93	3.22	10.64	5.92	1.36	10.48	6.59	2.20	10.99	5.77	2.69	8.84
48–59	6.93	2.89	10.96	4.56	1.76	7.36	5.95	2.69	9.20	9.81	3.96	15.67
Area of residence												
Urban	6.92	3.35	10.49	2.86	1.05	4.67	4.34	2.19	6.49	4.87	2.72	7.02
Rural	15.73	12.01	19.44	9.60	7.00	12.20	8.33	6.17	10.48	10.84	8.12	13.55
Region												
Sana'a City	4.37	0.20	8.54	0.80	-0.05	1.65	2.84	0.57	5.11	5.26	1.30	9.22
Hadhramout	8.44	2.76	14.12	3.04	0.64	5.45	5.58	1.45	9.71	6.41	3.18	9.65
Saba	14.37	4.24	24.50	5.10	2.44	7.75	9.49	4.65	14.34	6.40	3.06	9.73
Aden	11.19	7.00	15.39	9.53	5.22	13.85	9.63	5.92	13.34	6.87	3.81	9.93
Al-Janad	13.51	6.72	20.31	10.60	5.42	15.77	6.79	2.91	10.67	11.40	5.83	16.98
Tehama	21.24	14.19	28.28	13.14	8.11	18.16	11.44	7.21	15.67	13.18	8.13	18.22
Azal	9.73	5.53	13.94	1.96	0.69	3.23	3.53	1.68	5.37	6.01	3.56	8.46
Topography												
Mountainous	12.40	7.94	16.87	7.09	3.69	10.50	5.84	3.33	8.35	7.46	4.26	10.66
Arabian Sea	7.57	1.84	13.30	2.02	-0.05	4.08	5.43	1.23	9.62	6.40	2.92	9.88
Red Sea	27.78	17.04	38.52	20.43	13.12	27.73	17.71	11.71	23.72	21.21	12.58	29.85
Plateau/desert	7.96	5.31	10.62	3.73	1.85	5.62	4.64	3.05	6.22	6.40	4.20	8.60
Wealth quintile												
Poorest	24.13	16.42	31.83	14.25	8.64	19.86	11.94	7.21	16.67	14.11	8.28	19.93
Second	17.94	11.04	24.84	10.88	5.47	16.30	10.68	6.11	15.24	10.76	6.10	15.42
Middle	8.36	3.45	13.27	5.53	1.40	9.66	2.95	1.70	4.20	9.29	3.28	15.31
Fourth	6.18	3.53	8.83	3.81	1.79	5.83	3.88	2.26	5.50	5.55	3.30	7.81
Richest	6.02	2.36	9.67	2.10	0.76	3.43	5.34	2.61	8.06	4.45	2.15	6.74
Level of poverty												
Extreme poor	17.49	9.21	25.77	9.99	3.61	16.37	8.37	3.42	13.32	13.78	5.27	22.29
Poor	17.74	11.96	23.52	10.30	6.01	14.59	9.05	5.40	12.71	10.23	6.67	13.80
Vulnerable	8.41	3.17	13.65	8.61	3.18	14.04	7.49	2.54	12.43	7.90	3.78	12.03
Non-poor	11.18	6.42	15.94	5.22	2.31	8.13	5.64	2.89	8.38	8.65	4.85	12.44
Head of household's education												
None	18.99	13.89	24.09	10.30	6.42	14.19	10.56	6.79	14.32	11.06	7.17	14.94
Basic	14.29	8.83	19.75	6.83	3.17	10.48	5.30	3.48	7.12	7.94	5.34	10.53
Secondary +	5.20	2.28	8.12	6.16	2.34	9.98	6.20	2.64	9.76	8.81	3.22	14.40
Quran & Literacy	10.96	-0.01	21.93	15.23	-2.16	32.63	11.34	-0.15	22.84	16.78	1.62	31.95
Mother's education												
None	16.35	12.03	20.68	9.60	6.57	12.63	8.01	5.51	10.51	9.80	6.87	12.73
Basic	9.68	5.76	13.59	6.62	2.51	10.72	7.24	4.01	10.48	10.17	5.95	14.39
Secondary +	6.18	1.58	10.79	5.87	-1.47	13.20	5.66	-1.22	12.54	7.57	0.19	14.96
Quran & Literacy	15.21	-4.63	35.06	0.96	-0.27	2.18	3.76	-1.36	8.89	6.47	-0.58	13.53
Population	1,978,974			2,389,504			2,556,208			2,525,832		
Sample	3,536			4,445			4,834			4,866		

Source: NSPMS, All Rounds.
Note: Missing information are not included in the statistics.

Table CH.18:
Prevalence of Stunting for Children Aged 6-59 Months, Yemen, 2012-2013

| | Round 1 | | | Round 2 | | | Round 3 | | | Round 4 | | |
| | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | | Value | 95% CI | |
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	46.48	41.82	51.13	44.05	40.11	47.99	42.05	37.96	46.14	42.49	37.89	47.10
Moderate	26.18	22.51	29.86	29.29	25.33	33.25	27.53	24.13	30.94	29.89	25.24	34.54
Severe	20.29	15.50	25.08	14.76	11.52	17.99	14.52	11.67	17.36	12.60	9.73	15.47
Sex												
Boys	45.85	39.81	51.89	43.95	38.78	49.12	40.89	35.42	46.36	42.72	37.77	47.67
Girls	47.17	46.96	47.37	44.16	44.00	44.32	43.29	43.14	43.44	42.25	42.04	42.47
Age group (in months)												
6–11	29.88	15.30	44.46	30.22	17.20	43.23	29.50	19.64	39.35	25.54	17.17	33.91
12–23	44.78	35.41	54.15	47.80	39.46	56.14	43.14	36.84	49.44	43.85	34.54	53.16
24–35	56.82	48.35	65.29	50.62	42.88	58.37	49.98	42.08	57.88	50.68	43.76	57.61
36–47	46.54	39.02	54.05	43.57	35.93	51.20	41.53	34.12	48.94	45.44	37.32	53.55
48–59	46.07	35.60	56.54	39.56	31.84	47.28	38.37	31.04	45.70	35.13	28.03	42.22
Area of residence												
Urban	32.18	23.16	41.19	34.16	25.69	42.64	31.72	24.04	39.40	28.56	20.30	36.81
Rural	50.62	45.78	55.46	46.45	42.19	50.71	44.47	39.78	49.16	45.74	40.62	50.85
Region												
Sana'a City	34.65	16.28	53.02	46.35	30.28	62.41	43.75	32.28	55.23	36.78	22.32	51.24
Hadhramout	19.73	11.71	27.76	20.29	14.79	25.80	15.99	10.48	21.50	14.76	8.89	20.63
Saba	33.10	19.14	47.05	36.47	23.47	49.47	27.23	16.49	37.97	29.44	19.47	39.41
Aden	38.75	27.47	50.03	20.57	14.02	27.11	23.72	18.00	29.45	17.75	12.49	23.01
Al-Janad	48.70	37.96	59.44	50.00	41.05	58.96	55.07	46.65	63.50	59.25	48.41	70.09
Tehama	48.28	39.46	57.09	43.25	35.96	50.54	35.05	26.22	43.89	36.31	29.51	43.12
Azal	56.16	49.27	63.05	54.53	47.27	61.78	54.09	47.03	61.15	54.98	46.78	63.17
Topography												
Mountainous	51.41	44.68	58.15	51.03	44.93	57.14	53.19	47.39	59.00	55.35	47.56	63.13
Arabian Sea	11.89	4.56	19.23	9.29	3.73	14.85	12.29	6.42	18.16	7.82	3.55	12.08
Red Sea	54.05	40.37	67.74	48.16	36.56	59.76	39.97	24.64	55.30	41.70	29.69	53.70
Plateau/desert	39.58	33.43	45.73	38.17	32.45	43.88	34.13	29.01	39.25	32.19	26.44	37.95
Wealth quintile												
Poorest	56.41	46.75	66.06	52.03	43.84	60.23	47.33	36.98	57.68	48.19	39.17	57.21
Second	57.44	46.92	67.97	55.17	45.36	64.98	54.64	45.36	63.92	58.50	49.41	67.60
Middle	46.91	37.62	56.20	44.87	36.26	53.48	42.37	33.93	50.80	47.59	38.57	56.60
Fourth	36.28	27.35	45.21	31.78	24.19	39.37	34.56	26.22	42.91	33.17	25.18	41.17
Richest	24.67	14.29	35.06	26.77	18.55	34.98	23.06	15.65	30.46	20.19	12.59	27.78
Level of poverty												
Extreme poor	57.97	45.05	70.88	43.99	34.04	53.94	43.65	32.56	54.73	44.50	31.58	57.41
Poor	42.16	35.19	49.13	40.05	33.53	46.56	40.64	34.19	47.10	42.94	36.89	48.99
Vulnerable	44.34	32.77	55.90	47.44	37.13	57.74	39.11	29.63	48.59	42.17	32.74	51.60
Non-poor	46.92	39.89	53.94	45.92	37.91	53.93	44.50	36.71	52.28	41.56	34.20	48.92
Head of household's education												
None	50.51	43.30	57.71	42.81	36.72	48.91	39.29	32.41	46.17	40.77	35.07	46.46
Basic	57.06	51.08	63.04	50.60	42.98	58.22	48.29	40.79	55.79	45.43	37.95	52.92
Secondary +	28.97	19.95	37.99	34.96	27.16	42.75	33.96	26.69	41.22	34.18	26.42	41.95
Quran & Literacy	30.22	13.70	46.74	41.23	23.92	58.55	46.25	28.54	63.96	60.16	45.70	74.62
Mother's education												
None	54.56	48.61	60.51	50.44	45.30	55.58	47.87	41.84	53.91	49.07	42.60	55.54
Basic	33.76	25.11	42.42	35.34	28.92	41.76	33.38	27.05	39.71	34.42	28.22	40.61
Secondary +	30.01	17.27	42.75	26.10	13.57	38.64	28.19	18.54	37.84	24.30	14.00	34.59
Quran & Literacy	49.05	25.36	72.75	38.24	17.63	58.86	39.81	22.02	57.60	40.12	22.23	58.02
Population	1,979,185			2,389,504			2,556,208			2,525,816		
Sample	3,537			4,445			4,834			4,865		

Table CH.19:
Prevalence of Underweight for Children Aged 6-59 Months, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	37.41	32.46	42.36	30.20	25.91	34.50	28.72	25.30	32.13	32.41	28.26	36.57
Moderate	27.13	23.06	31.19	23.28	19.53	27.03	21.90	19.11	24.69	25.40	21.94	28.87
Severe	10.46	7.87	13.05	6.93	4.89	8.98	6.89	4.82	8.96	7.03	4.84	9.23
Sex												
Boys	38.53	31.63	45.43	29.63	24.30	34.96	30.28	25.53	35.04	33.22	28.33	38.10
Girls	36.17	35.93	36.41	30.85	30.70	31.00	27.04	26.92	27.15	31.57	31.41	31.73
Age group (in months)												
6–11	43.35	29.51	57.19	33.15	20.36	45.94	29.51	19.57	39.44	31.54	22.89	40.20
12–23	42.81	33.84	51.78	33.37	25.30	41.44	27.28	20.61	33.95	29.54	21.75	37.34
24–35	37.13	28.52	45.74	29.53	22.26	36.80	31.01	23.82	38.20	37.62	29.94	45.30
36–47	26.26	19.21	33.31	24.31	17.57	31.05	28.44	21.33	35.55	32.37	25.03	39.70
48–59	38.26	28.26	48.26	32.02	23.86	40.19	27.55	20.89	34.21	29.87	22.31	37.43
Area of residence												
Urban	23.32	15.52	31.11	15.71	10.14	21.28	18.02	12.02	24.02	23.27	15.94	30.60
Rural	41.48	35.81	47.15	33.72	28.80	38.65	31.22	27.35	35.09	34.54	29.73	39.36
Region												
Sana'a City	22.58	8.99	36.16	18.71	10.08	27.33	24.78	12.17	37.40	41.18	25.92	56.43
Hadhramout	14.44	8.15	20.74	11.88	7.12	16.64	11.75	6.68	16.83	11.12	6.41	15.84
Saba	20.98	14.48	27.48	17.82	11.40	24.23	23.36	16.57	30.15	16.98	10.82	23.13
Aden	24.14	17.57	30.70	15.02	9.98	20.06	14.93	11.06	18.79	11.62	8.24	15.00
Al-Janad	40.64	28.81	52.47	38.18	27.35	49.01	34.15	25.34	42.95	40.01	27.80	52.22
Tehama	49.65	39.60	59.70	32.38	24.20	40.57	32.53	26.36	38.71	36.39	29.79	43.00
Azal	34.73	28.18	41.28	33.67	27.96	39.37	30.33	24.24	36.43	34.04	27.66	40.41
Topography												
Mountainous	37.62	32.00	43.25	33.69	27.33	40.04	31.03	26.37	35.68	32.33	25.59	39.08
Arabian Sea	10.32	3.88	16.76	8.26	3.02	13.50	9.25	4.42	14.07	8.97	4.62	13.31
Red Sea	63.59	48.54	78.65	45.27	30.16	60.37	44.34	31.97	56.71	51.22	38.34	64.10
Plateau/desert	24.90	19.75	30.05	20.54	16.50	24.58	20.60	16.52	24.68	25.23	20.03	30.44
Wealth quintile												
Poorest	55.86	45.11	66.62	39.05	28.74	49.36	39.15	30.52	47.78	47.22	38.08	56.37
Second	46.12	36.61	55.63	44.62	32.61	56.63	39.65	32.30	47.00	37.45	28.53	46.38
Middle	36.16	26.96	45.37	28.35	21.02	35.68	23.23	17.76	28.70	31.01	23.41	38.62
Fourth	21.68	15.12	28.25	17.70	12.33	23.08	17.85	12.48	23.22	20.03	14.08	25.97
Richest	13.84	6.90	20.79	11.46	5.14	17.77	14.59	8.55	20.64	17.96	9.11	26.80
Level of poverty												
Extreme poor	54.27	40.58	67.97	36.49	26.04	46.95	33.91	22.94	44.89	37.92	24.60	51.24
Poor	35.95	28.25	43.65	26.71	20.11	33.31	30.84	26.14	35.54	35.96	29.39	42.52
Vulnerable	30.94	21.25	40.63	28.79	21.09	36.49	25.87	17.39	34.34	29.75	21.89	37.61
Non-poor	35.17	28.95	41.39	30.55	21.91	39.19	25.47	20.18	30.75	29.05	22.69	35.41
Head of household's education												
None	44.77	36.43	53.11	28.03	21.78	34.29	29.66	24.69	34.62	32.51	26.95	38.07
Basic	41.91	34.78	49.03	34.64	25.89	43.38	31.45	25.50	37.41	35.81	29.01	42.61
Secondary +	21.14	13.88	28.39	25.61	18.46	32.77	21.93	16.21	27.66	24.84	17.69	31.98
Quran & Literacy	31.07	10.20	51.94	29.64	11.32	47.97	31.13	13.20	49.07	35.49	16.69	54.28
Mother's education												
None	45.87	39.85	51.89	36.49	30.67	42.32	33.66	29.32	37.99	36.94	31.04	42.84
Basic	24.35	18.10	30.60	21.42	15.41	27.44	20.85	15.02	26.68	25.58	19.40	31.76
Secondary +	19.27	7.64	30.91	12.99	4.23	21.76	15.06	6.61	23.50	25.72	13.30	38.14
Quran & Literacy	28.85	9.31	48.38	26.19	7.05	45.33	26.14	10.41	41.88	28.74	11.92	45.55
Population	1,989,666			2,390,163			2,557,258			2,526,952		
Sample	3,578			4,448			4,838			4,873		

Source: NSPMS, All Rounds.
Note: Missing information are not included in the statistics.

Table CH.21:
Percentage of Children Born in the Last 24 Months who Were Ever Breastfed, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	94.22	92.46	95.99	97.97	97.28	98.67
Sex						
Boys	93.40	90.62	96.18	97.68	96.58	98.79
Girls	95.22	95.20	95.24	98.31	98.30	98.31
Area of residence						
Urban	97.12	94.90	99.34	98.77	97.84	99.71
Rural	93.54	91.43	95.65	97.77	96.93	98.61
Region						
Sana'a City	97.83	94.67	100.99	99.55	98.94	100.16
Hadhramout	96.33	94.09	98.57	96.98	94.25	99.71
Saba	95.36	92.01	98.71	94.38	90.14	98.61
Aden	92.67	88.29	97.04	98.82	97.66	99.98
Al-Janad	95.88	92.75	99.01	98.74	97.64	99.85
Tehama	93.11	89.17	97.05	98.04	96.81	99.27
Azal	92.33	87.65	97.01	96.99	94.80	99.17
Topography						
Mountainous	94.09	91.62	96.56	96.97	95.46	98.47
Arabian Sea	96.81	94.02	99.59	98.87	98.10	99.65
Red Sea	95.82	92.53	99.12	99.35	98.44	100.26
Plateau/desert	93.20	89.70	96.71	98.26	97.40	99.12
Wealth quintile						
Poorest	94.10	90.60	97.60	98.11	96.42	99.80
Second	91.14	85.87	96.41	97.92	96.55	99.29
Middle	96.43	94.32	98.54	96.34	93.71	98.96
Fourth	95.90	94.02	97.79	98.57	97.50	99.65
Richest	94.87	90.32	99.43	98.36	96.88	99.84
Level of poverty						
Extreme poor	92.65	88.07	97.24	96.66	93.83	99.48
Poor	94.36	91.47	97.26	97.73	96.44	99.02
Vulnerable	97.47	95.80	99.14	97.84	96.11	99.56
Non-poor	93.24	89.33	97.15	98.77	98.14	99.40
Head of household's education						
None	94.08	91.50	96.66	97.01	95.42	98.59
Basic	94.19	91.01	97.38	98.25	97.20	99.29
Secondary +	95.31	91.40	99.21	98.77	98.00	99.53
Mother's education						
None	93.02	90.37	95.66	98.39	97.53	99.25
Basic	96.26	93.73	98.78	97.95	96.79	99.12
Secondary +	97.22	94.95	99.49	95.99	92.70	99.28
Population	1,233,186			1,284,631		
Sample	2,431			2,498		

Source: NSPMS, Rounds 1 and 4.

Table CH.22:
Percentage of Children Born in the Last 24 Months who Were Put to the Breast within One Hour of Birth, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	79.34	74.24	84.44	72.78	68.05	77.51
Sex						
Boys	79.35	72.07	86.64	72.60	66.61	78.59
Girls	79.32	79.12	79.52	72.99	72.77	73.20
Area of residence						
Urban	61.30	46.19	76.41	69.38	57.11	81.65
Rural	83.77	79.26	88.28	73.66	68.47	78.85
Region						
Sana'a City	25.78	2.95	48.60	40.77	22.08	59.46
Hadhramout	77.98	60.27	95.69	86.11	74.73	97.50
Saba	74.30	61.34	87.26	78.59	64.56	92.62
Aden	84.67	77.68	91.66	65.72	57.54	73.91
Al-Janad	95.53	91.65	99.42	88.94	82.07	95.80
Tehama	76.38	66.16	86.61	63.40	54.39	72.42
Azal	78.02	70.35	85.70	73.67	64.30	83.03
Topography						
Mountainous	86.97	82.32	91.63	78.50	71.56	85.43
Arabian Sea	86.92	78.54	95.30	83.11	69.95	96.28
Red Sea	77.55	62.18	92.93	57.75	43.64	71.87
Plateau/desert	71.34	61.97	80.71	72.48	65.21	79.75
Wealth quintile						
Poorest	85.75	78.25	93.25	79.11	69.31	88.91
Second	83.38	75.81	90.95	74.19	62.08	86.30
Middle	82.20	74.41	90.00	80.76	70.37	91.15
Fourth	76.21	65.58	86.85	76.85	62.36	91.35
Richest	63.77	45.84	81.71	58.95	41.58	76.32
Level of poverty						
Extreme poor	91.47	87.16	95.78	74.28	62.19	86.36
Poor	75.83	65.06	86.60	68.93	59.71	78.14
Vulnerable	69.90	56.57	83.23	68.82	57.74	79.91
Non-poor	81.85	75.46	88.24	77.24	70.47	84.01
Head of household's education						
None	80.55	73.40	87.70	72.51	65.93	79.09
Basic	83.11	76.25	89.98	76.69	69.32	84.05
Secondary +	68.68	54.68	82.68	65.64	54.95	76.32
Mother's education						
None	81.81	76.62	87.00	73.57	67.13	80.00
Basic	76.34	66.20	86.48	74.46	66.41	82.50
Secondary +	77.28	59.05	95.51	63.50	51.96	75.04
Population		1,161,947			1,258,595	
Sample		2,271			2,384	

Source: NSPMS, Rounds 1 and 4.

Table CH.23:
Percentage of Children Born in the Last 24 Months who Were Put to the Breast within 24 Hours of Birth, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	88.73	85.00	92.46	87.57	83.55	91.59
Sex						
Boys	88.40	83.44	93.35	88.50	83.96	93.03
Girls	89.13	88.97	89.28	86.52	86.33	86.70
Area of residence						
Urban	75.68	63.12	88.24	83.81	72.53	95.10
Rural	91.94	89.02	94.86	88.54	84.50	92.58
Region						
Sana'a City	51.11	30.22	71.99	52.27	30.97	73.57
Hadhramout	91.48	82.14	100.81	96.14	93.25	99.02
Saba	89.58	76.37	102.78	94.05	89.06	99.05
Aden	97.27	95.36	99.19	88.65	83.10	94.19
Al-Janad	96.54	93.57	99.52	91.14	84.93	97.35
Tehama	87.94	79.96	95.93	86.51	77.06	95.97
Azal	86.20	79.74	92.66	91.22	87.44	95.01
Topography						
Mountainous	93.50	90.38	96.61	88.69	83.90	93.49
Arabian Sea	97.02	94.62	99.41	96.84	94.11	99.56
Red Sea	87.46	75.63	99.29	85.74	71.75	99.73
Plateau/desert	83.29	76.42	90.16	85.86	79.17	92.54
Wealth quintile						
Poorest	94.84	92.19	97.49	94.35	89.97	98.73
Second	90.39	83.45	97.33	85.93	75.29	96.56
Middle	88.52	81.60	95.45	89.00	80.24	97.76
Fourth	85.15	74.48	95.82	95.48	91.95	99.01
Richest	80.39	67.42	93.36	79.31	60.08	98.53
Level of poverty						
Extreme poor	95.72	92.61	98.83	90.69	81.56	99.82
Poor	89.50	83.27	95.73	86.75	80.37	93.13
Vulnerable	78.68	64.67	92.69	87.05	79.08	95.02
Non-poor	89.72	84.91	94.52	87.24	80.80	93.68
Head of household's education						
None	89.17	84.20	94.13	87.47	82.03	92.91
Basic	91.84	87.47	96.21	88.45	82.16	94.74
Secondary +	82.06	70.65	93.48	86.50	77.65	95.35
Mother's education						
None	91.32	87.85	94.78	87.52	82.06	92.98
Basic	87.93	80.36	95.50	88.70	82.67	94.73
Secondary +	82.17	63.63	100.71	82.91	68.56	97.27
Population	1,161,947			1,258,595		
Sample	2,271			2,384		

Table CH.25:
Percentage of Children 12–15 Months of Age who are Fed with Breast Milk,
Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	57.75	44.06	71.44	68.55	60.05	77.04
Sex						
Boys	65.49	48.12	82.85	78.28	68.78	87.77
Girls	50.68	48.85	52.50	58.87	57.88	59.86
Area of residence						
Urban	75.96	56.00	95.92	73.67	54.44	92.91
Rural	54.70	39.39	70.00	67.47	58.21	76.72
Region						
Sana'a City	73.68	49.03	98.33	78.99	46.05	111.93
Hadhramout	68.04	50.65	85.43	91.60	79.60	103.61
Saba	77.46	57.93	96.99	65.78	45.81	85.76
Aden	67.63	49.14	86.12	67.01	50.81	83.20
Al-Janad	42.57	11.63	73.51	75.31	59.09	91.53
Tehama	69.88	44.30	95.47	69.84	49.26	90.42
Azal	46.67	21.05	72.29	49.28	35.94	62.61
Topography						
Mountainous	54.18	30.97	77.38	63.40	52.00	74.79
Arabian Sea	82.14	67.34	96.93	64.95	36.41	93.48
Red Sea	62.28	27.18	97.38	67.36	26.46	108.26
Plateau/desert	55.47	42.10	68.83	74.17	62.21	86.14
Wealth quintile						
Poorest	46.90	21.73	72.08	57.95	38.25	77.64
Second	73.82	59.99	87.65	71.04	55.97	86.11
Middle	42.69	5.51	79.86	74.10	60.43	87.77
Fourth	65.82	47.60	84.05	71.11	54.95	87.27
Richest	60.39	35.73	85.05	72.82	53.11	92.53
Level of poverty						
Extreme poor	83.77	71.59	95.95	68.39	53.40	83.38
Poor	50.70	28.84	72.57	73.97	54.94	92.99
Vulnerable	59.65	41.14	78.17	77.18	63.76	90.60
Non-poor	50.98	25.35	76.61	61.47	48.35	74.58
Head of household's education						
None	63.93	46.15	81.71	75.59	64.29	86.90
Basic	36.27	11.63	60.91	66.88	51.93	81.83
Secondary +	70.52	55.31	85.73	68.26	51.64	84.88
Mother's education						
None	64.14	48.46	79.83	63.72	51.09	76.35
Basic	47.23	21.35	73.10	75.09	60.43	89.75
Secondary +	71.43	49.35	93.52	69.75	44.54	94.96
Population	230,786			204,715		
Sample	450			448		

Source: NSPMS, Rounds 1 and 4.

Table CH.26:
Percentage of Children 20–23 Months of Age who are Fed with Breast Milk,
Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	43.70	33.27	54.12	38.25	27.01	49.49
Sex						
Boys	46.06	33.29	58.83	42.69	26.78	58.60
Girls	39.96	38.15	41.76	33.05	31.87	34.24
Area of residence						
Urban	59.30	39.71	78.89	41.14	21.12	61.15
Rural	39.85	27.93	51.77	37.77	25.05	50.49
Region						
Sana'a City	57.13	8.22	106.03	28.52	-2.52	59.55
Hadhramout	49.58	35.65	63.50	40.97	21.08	60.86
Saba	49.73	12.37	87.09	8.92	-5.33	23.18
Aden	34.24	14.47	54.02	71.07	57.33	84.81
Al-Janad	37.67	12.33	63.00	28.94	6.83	51.04
Tehama	55.33	35.66	75.00	42.35	19.62	65.09
Azal	15.60	0.79	30.42	29.45	8.95	49.96
Topography						
Mountainous	41.48	25.06	57.89	25.88	10.69	41.08
Arabian Sea	45.00	30.02	59.99	65.64	46.62	84.67
Red Sea	67.56	41.58	93.54	38.12	10.42	65.82
Plateau/desert	36.45	21.80	51.10	49.18	33.73	64.62
Wealth quintile						
Poorest	51.53	30.28	72.77	37.65	13.92	61.38
Second	46.22	20.54	71.89	40.75	21.73	59.76
Middle	26.26	10.97	41.55	27.80	2.36	53.24
Fourth	32.59	13.23	51.96	39.89	17.11	62.66
Richest	55.96	29.13	82.80	54.07	33.06	75.08
Level of poverty						
Extreme poor	26.50	12.58	40.42	65.92	50.15	81.69
Poor	57.10	43.95	70.25	22.13	9.10	35.16
Vulnerable	81.44	67.85	95.02	35.80	7.86	63.73
Non-poor	17.61	1.59	33.63	49.21	32.31	66.12
Head of household's education						
None	42.64	27.43	57.85	39.85	22.05	57.64
Basic	49.66	31.30	68.01	39.49	22.96	56.02
Secondary +	41.23	20.28	62.18	42.34	23.07	61.61
Mother's education						
None	48.57	35.34	61.80	35.87	20.56	51.17
Basic	36.61	18.31	54.91	42.00	26.11	57.88
Secondary +	14.58	-5.06	34.21	53.62	26.90	80.34
Population		183,982			255,329	
Sample		386			441	

Source: NSPMS, Rounds 1 and 4.

Table CH.27:
Percentage of Children Aged 6-23 Months According to Whether They Received Food from Four or More Food Groups in the Previous Day, Yemen, 2012-2013

	Round 1			Round 4		
	Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper
Total	30.77	24.97	36.58	39.96	32.79	47.12
Sex						
Boys	33.74	26.11	41.38	41.94	32.37	51.52
Girls	27.09	26.80	27.38	37.65	37.32	37.99
Area of residence						
Urban	32.44	19.46	45.42	61.23	45.73	76.73
Rural	30.40	23.88	36.92	34.49	26.99	41.98
Region						
Sana'a City	47.51	15.06	79.97	83.68	62.85	104.52
Hadhramout	65.80	48.92	82.68	67.51	53.90	81.12
Saba	30.28	12.14	48.42	31.54	17.73	45.35
Aden	27.62	17.31	37.92	57.54	47.90	67.18
Al-Janad	27.66	14.14	41.17	23.35	10.71	35.98
Tehama	22.69	15.94	29.44	51.87	40.48	63.26
Azal	30.39	18.55	42.23	13.78	3.57	23.99
Topography						
Mountainous	31.29	21.42	41.16	28.36	18.70	38.03
Arabian Sea	49.77	22.07	77.47	64.03	53.60	74.45
Red Sea	20.27	9.79	30.74	56.43	39.89	72.98
Plateau/desert	32.54	24.35	40.73	40.40	28.81	51.99
Wealth quintile						
Poorest	19.48	10.91	28.06	38.68	21.65	55.72
Second	25.89	15.98	35.80	33.93	20.65	47.20
Middle	29.14	18.20	40.08	30.29	18.30	42.28
Fourth	35.99	24.58	47.40	54.73	41.36	68.10
Richest	57.14	41.60	72.68	61.68	41.40	81.96
Level of poverty						
Extreme poor	31.19	17.41	44.97	37.53	21.22	53.85
Poor	28.84	18.89	38.79	46.85	36.13	57.57
Vulnerable	33.19	19.48	46.90	36.94	21.59	52.28
Non-poor	31.13	20.82	41.44	37.19	25.83	48.56
Head of household's education						
None	27.91	20.69	35.12	43.93	32.82	55.04
Basic	30.14	18.07	42.21	33.03	23.64	42.42
Secondary +	32.82	21.18	44.46	48.71	35.17	62.25
Quran & Literacy	48.73	27.92	69.53	29.36	7.90	50.83
Mother's education						
None	27.19	20.54	33.85	34.11	24.64	43.57
Basic	30.65	21.54	39.76	45.12	35.08	55.16
Secondary +	57.85	40.37	75.33	63.05	41.36	84.74
Quran & Literacy	12.08	1.42	22.75	15.20	-1.93	32.32
Population	966,718			959,978		
Sample	1,858			1,884		

Source: NSPMS, Rounds 1 and 4.
Note: Missing information are not included in the statistics.

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6 Maternal Health

Every year, thousands of girls and women die because of complications during pregnancy or childbirth or within six weeks of delivery. However, most of these complications could be prevented or treated with access to adequate reproductive health services (including antenatal care and good-quality emergency obstetric care) and support from skilled attendants at delivery.[100] The NSPMS asked a number of questions about maternal care for women of reproductive age who had given birth in the five years preceding the survey. These questions cover antenatal care, institutional delivery and whether they had been assisted by skilled personnel.

6.1 Antenatal Care

The antenatal period presents opportunities for monitoring the pregnancy and providing pregnant women with interventions that improve maternal health as well as the health and survival of infants.[101] This period may inform women and families about possible risks at delivery, ensuring that pregnant women deliver in a health facility or, at least with the assistance of a skilled health care provider.[102]

Considering at least one visit, antenatal care coverage reached 64 per cent of pregnant women in Yemen in 2013. Figure MH.1 shows an upward trend in antenatal coverage for at least one visit from previous surveys. However, coverage of is still low if one considers the WHO recommendation that antenatal care should consist of four visits during pregnancy. Only 26 per cent of women attended the minimum of four visits in 2013. Ten years ago, it was even lower, at 14 per cent (see figure MH.2).

Despite the low rate of coverage of the recommended minimum of four visits, improved antenatal care usage was most pronounced for women living in rural areas. The NSPMS observed coverage of 22 per cent in 2013 compared to only 8 per cent recorded by the 2003 Yemeni National Family Survey (see figure MH.2).

The coverage of at least one antenatal care visit increased to 78 per cent for women in urban areas, compared to 60 per cent for women in rural areas. Figure MH.3 shows that despite the improvement from previous years, there is a huge gap in antenatal care according to the area of residence. About 43 per cent of women living in urban areas report at least four antenatal visits, while only 22 per cent of women in rural areas had that level of antenatal care.

Figure MH.1:
Antenatal Care Coverage for Women who Attended at Least One Visit, Yemen, Selected Years

■ At least one visit

1991-1992 DHS: 26%
1997 DHS: 34%
2003 PAPFAM: 41%
2006 MICS: 47%
2012 NSPMS: 62%
2013 NSPMS: 64%
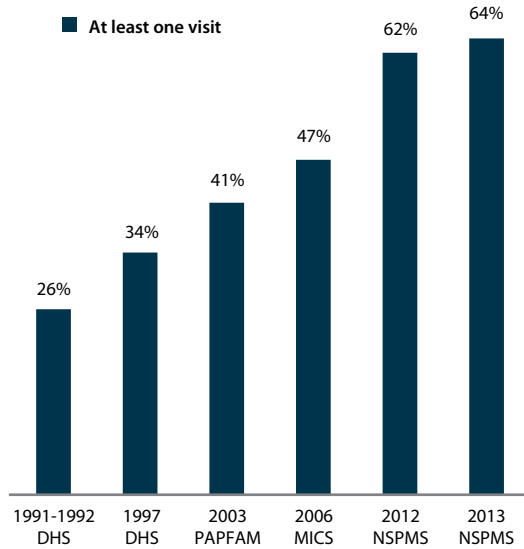
Figure MH.2:
Antenatal Care Coverage for Women who Attended at Least Four Visits, by Area of Residence, Yemen, Selected Years

At least four visits

■ Total   ■ Urban   ■ Rural

2003 PAPFAM: Total 14%, Urban 33%, Rural 8%
2012 NSPMS: Total 27%, Urban 43%, Rural 22%
2013 NSPMS: Total 26%, Urban 43%, Rural 22%
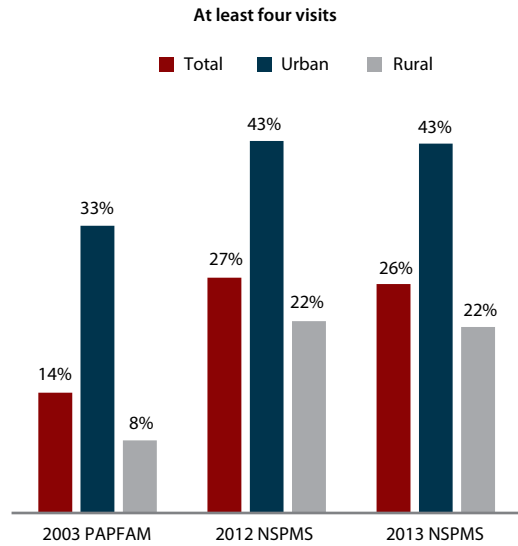
Source: UNICEF 2012, PAPFAM 2003 and NSPMS (Rounds 1 and 4).

Figure MH.3:
Antenatal Care Coverage in Number of Visits by Area of Residence for Women Aged 15-49 Years who Had Given Birth in the Past Five Years, Yemen, 2012-2013

Urban   Rural

■ No visits   ■ From 1-3 visits   ■ 4 or + visits
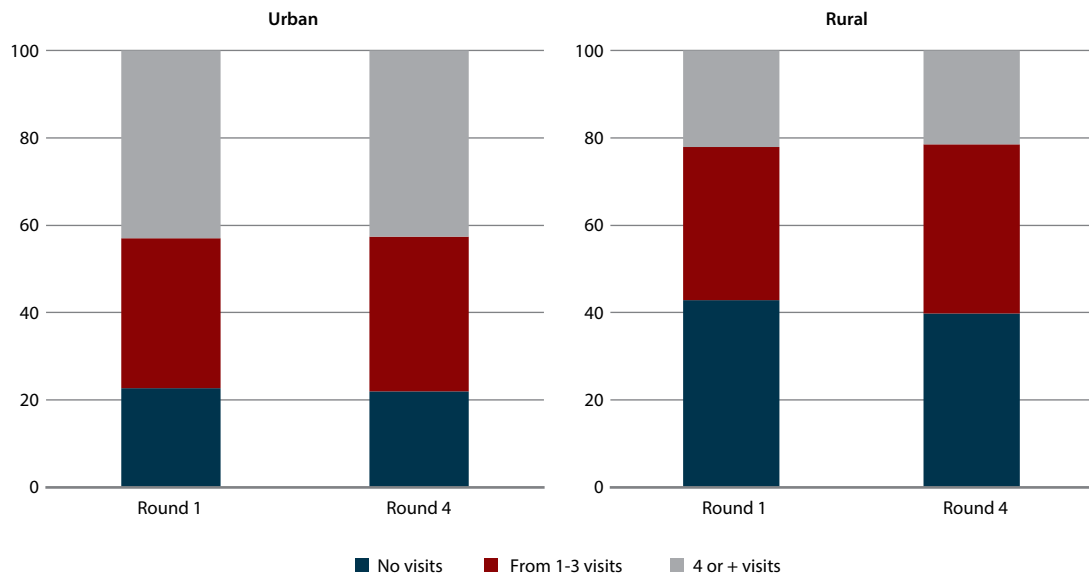
Source: NSPMS, Rounds 1 and 4.

The Hadhramout region had the highest rate of antenatal care coverage for both indicators:
89 per cent for at least one visit and 59 per cent for the recommended four visits in round 4.
It is a marked difference compared to the Tehama region, which has the lowest rate of coverage
(43 per cent of women with at least one visit and only 20 per cent with the recommended four visits).

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Overall, there were no improvement between round 1 and round 4, with the exception of Saba and Aden, with a percentage change of 34 per cent and 29 per cent for antenatal care coverage of at least one visit. Coverage of at least one antenatal visit increased in Saba from 56 to 75 per cent and in Aden from 62 to 80 per cent, when comparing round 1 and round 4. The improvement of the minimum four antenatal care visits, unfortunately, was not observed for any of the regions during the data collection period.

Figure MH.4:
Antenatal Care Coverage by Region for Women Aged 15-49 Years who Had Given Birth in the Past Five Years, Yemen, 2012-2013
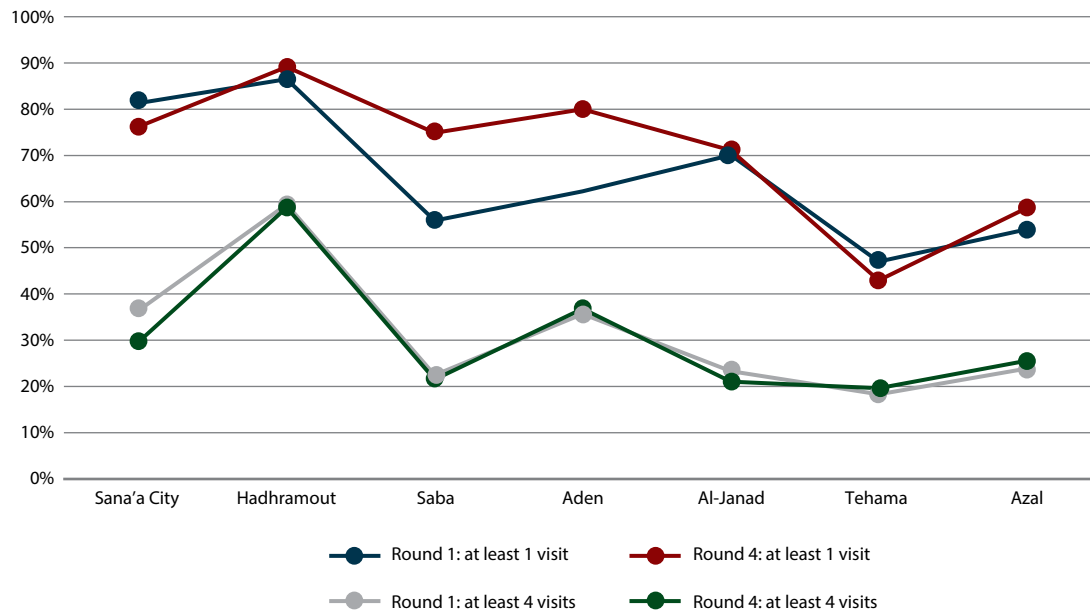
Source: NSPMS, Rounds 1 and 4.

Figure MH.5:
Antenatal Care Coverage for Women Aged 15-49 Years who Had Given Birth in the Past Five Years by Wealth Quintiles, Yemen, 2012-2013

Source: NSPMS, Rounds 1 and 4.

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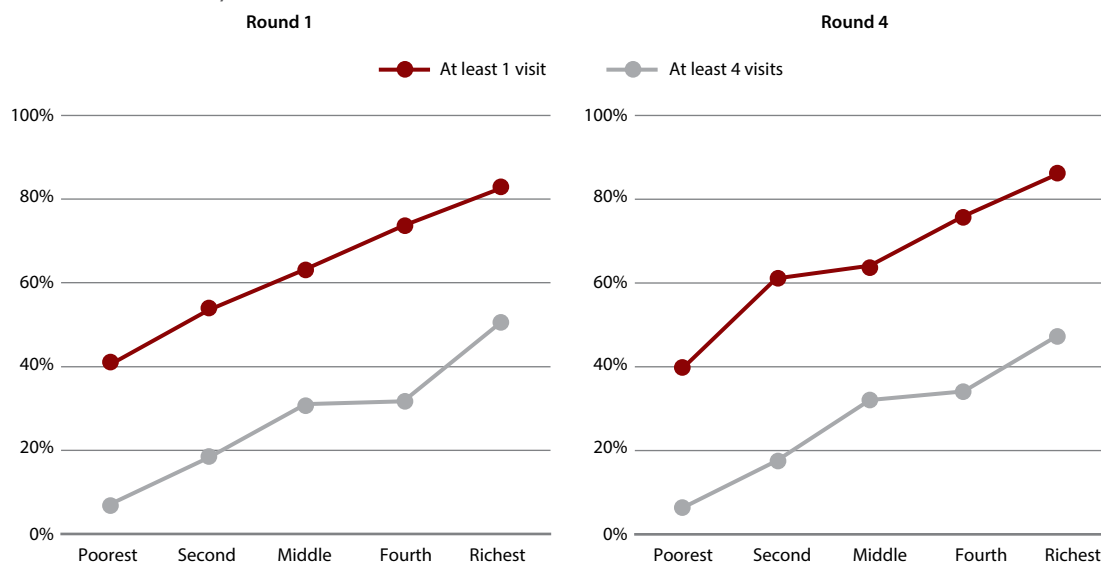
Figure MH.5 shows antenatal care use for at least one visit and at least four visits disaggregated by wealth quintiles. There is a huge gap between the richest and the poorest for utilization of antenatal care. Women living in households in the richest quintile had a coverage rate of 86 per cent and around one of two women reached the recommended four antenatal visits (50 per cent in round 1 and 47 per cent in round 4). By contrast, 60 per cent of the poorest women did not use antenatal care and only 6 per cent had at least four visits.

Figure MH.6:
Antenatal Care Coverage for Women Aged 15-49 Years who Had Given Birth in the Past Five Years by Level of Poverty, Yemen, 2012-2013

Round 1 / Round 4

Legend: No visitis | From 1-3 visits | 4 or + visits
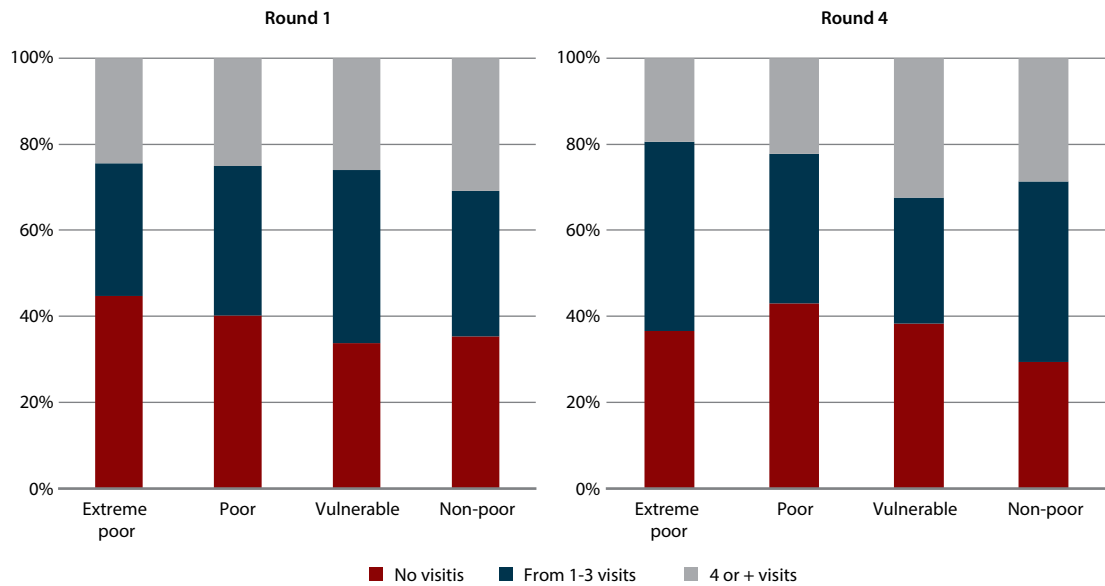
Source: NSPMS, Rounds 1 and 4.

Figure MH.7:
Antenatal Care Coverage for Women Aged 15-49 Years who Had Given Birth in the Past Five Years by Level of Formal Education, Yemen, 2012-2013

No antenatal visit | At least 1 antenatal visit | At least 4 antenatal visits

Legend: None | Basic | Secondary +
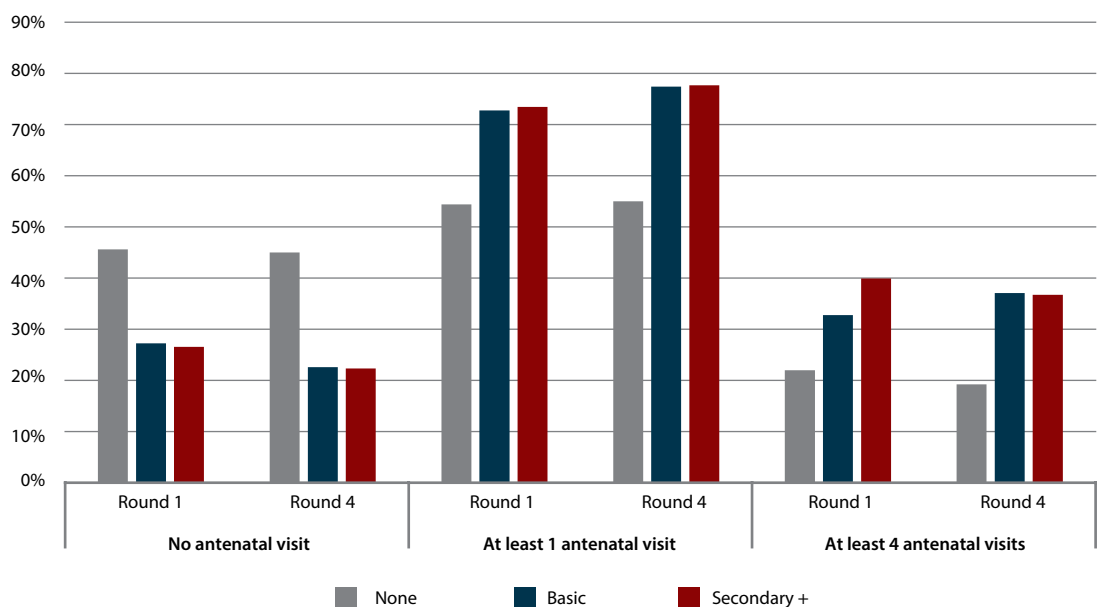
Source: NSPMS, Rounds 1 and 4.

Figure MH.6 shows coverage according to the number of visits by level of poverty (based on the PMT groups). Regardless of the level of poverty, poor women were less likely to use the recommended four antenatal care visits. Only 2 in 10 women in the poorest level use at least four visits (ranging from 20 per cent in round 1 and 19 per cent in round 4)

Also revealing is the disparity in the percentage of Yemeni women using antenatal care according to their level of education. The greatest difference lies between having no and some education. Most educated women use antenatal care more (77 per cent with basic education and 78 per cent with at least secondary education in round 4). Considering a minimum of four antenatal care consultations during the previous pregnancy, 37 per cent of women with some education received the minimum number of visits. By contrast, only 19 per cent of women with no education had at least four antenatal consultations in round 4.

The distance from the health facility can be a factor preventing the use of antenatal care. One third (33 per cent) of women living within 30 minutes of a health facility had four or more antenatal consultations. Although this can be considered a fairly low prevalence, when the household was located one hour or more away from the nearest health facility, the percentage of women reporting at least four antenatal consultations decreased to 10 per cent in round 4. The proximity of a health facility may improve antenatal care coverage but does not guarantee the achievement of the minimum of four visits.

Tables MH.1 and MH.2 at the end of this chapter show the previous results of antenatal care coverage with confidence intervals and add other levels of disaggregation such as topography and head of household's education.

Figure MH.8:
Antenatal Care Coverage for Women Aged 15-49 Years who Had Given Birth in the Past Five Years by Distance in Minutes From Health Facility, Yemen, 2012-2013
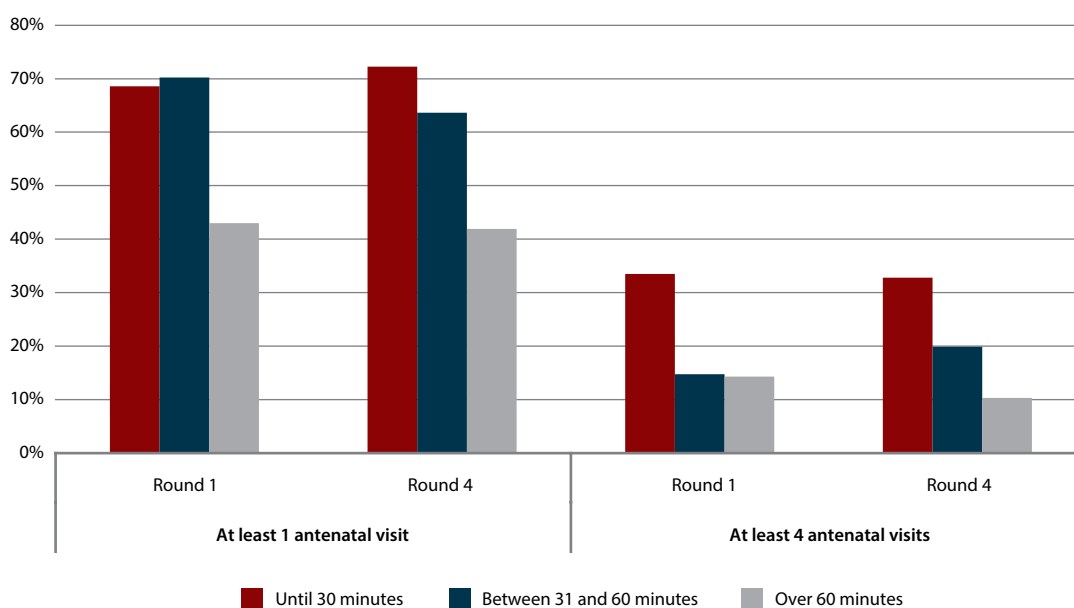
Source: NSPMS, Rounds 1 and 4.

6.2 Delivery Care

Another important factor for maternal health is the possibility to deliver at a health facility and be assisted by a skilled health personnel during the delivery. In Yemen, the percentage of women delivering in a health facility is quite low: just 27 per cent in 2013. There is a significant difference between rural and urban areas, with 46 per cent of women in urban areas delivering in a health facility compared to 22 per cent in rural areas (see table MH.3 at the end of this chapter).

The disparity by wealth is even greater. The percentage of women delivering in a health facility in the richest quintile is more than five times larger than the percentage of women in the poorest quintile (57 and 9 per

cent, respectively). Among women with no education, 19 per cent delivered at a health facility, increasing to 39 and 38 per cent for women with basic and secondary education, respectively.

Figure MH.9:
Percentage of Women Aged 15–49 Years with at Least One Live Birth in the Past Five Years who Delivered in a Health Facility by Wealth Quintile and Women's Education, Yemen, 2012-2013
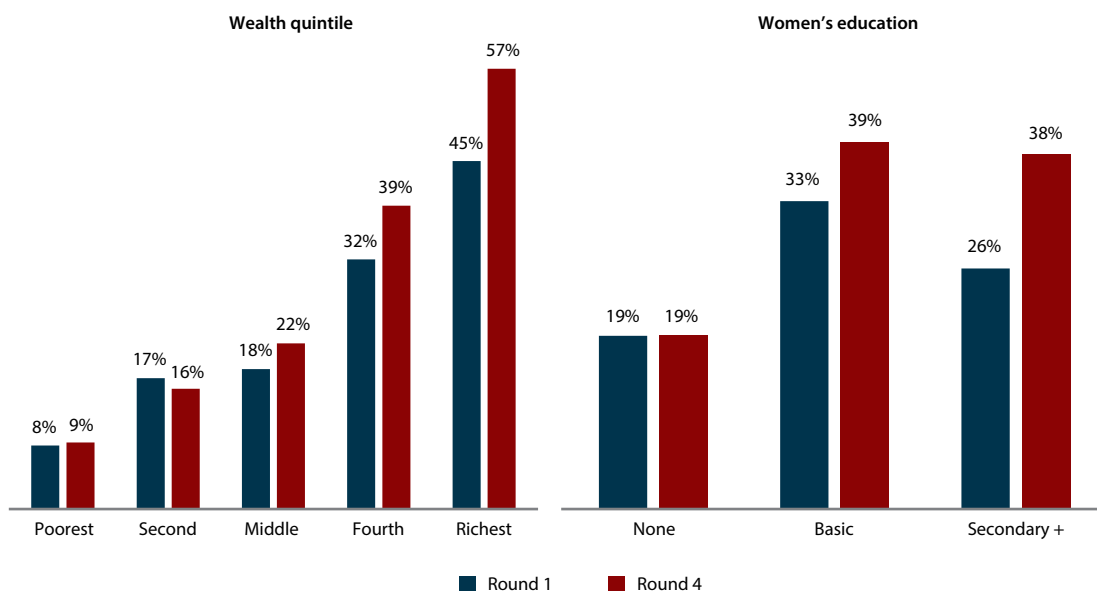
Source: NSPMS, Rounds 1 and 4.

Delivering a baby in a health facility is also related to use of antenatal care. Forty-six per cent of women who had had at least four antenatal visits delivered in a health facility, compared to 15 per cent of women who did not use antenatal care. Although the reasons for delivering in a health facility were not asked, previous access to the health system via antenatal care may play a role in a woman's delivering in a health facility.

Figure MH.10:
Percentage of Women Aged 15–49 Years With at Least one Live Birth in the Past Five Years who Delivered in a Health Facility by Antenatal Coverage, Yemen, 2012-2013
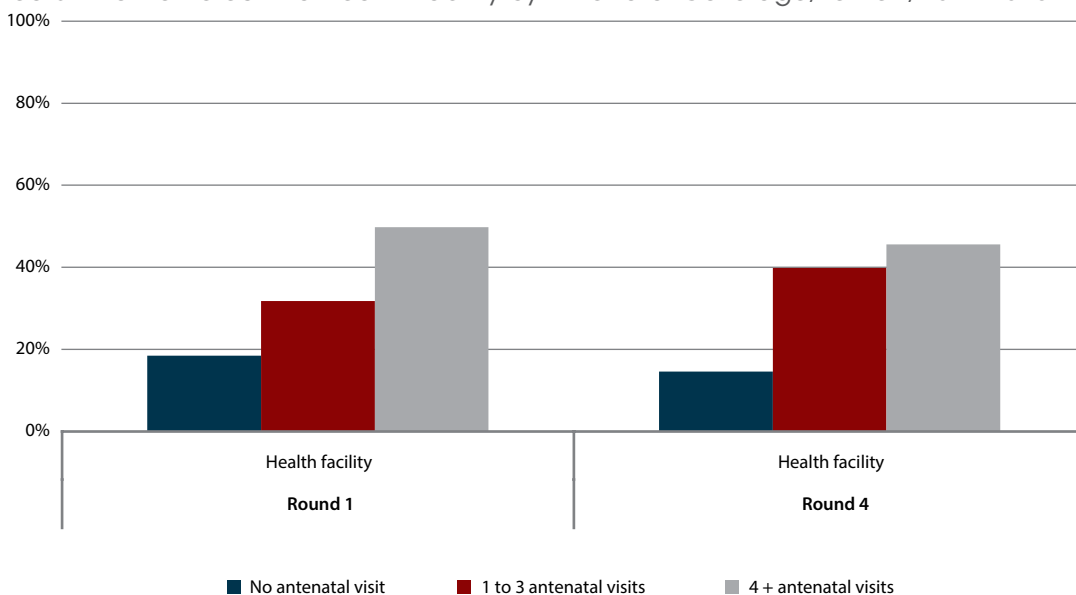
Source: NSPMS, Rounds 1 and 4.

Regardless of place of delivery, it is important to know if a woman received care from a skilled health worker. Table MH.4 shows the percentage of women who were attended by skilled personnel such as a doctor, nurse or midwife during childbirth. The percentage of women having been attended by skilled health personnel during childbirth is 37 per cent for the whole country, while the figure for women who delivered at home was only 16 per cent for round 1 and 14 per cent for round 4.

Table MH.4:
Percentage of Women Aged 15–49 Years who Had at Least One Live Birth in the Past Five Years who Were Attended During Childbirth by Skilled Health Personnel, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	35.02	30.52	39.52	37.13	33.15	41.10
Home	16.74	11.45	22.03	14.18	10.53	17.83
Health facility	93.77	90.90	96.63	98.23	97.05	99.41
Population		1,852,901			1,938,062	
Sample		3,758			3,927	

Source: NSPMS, Rounds 1 and 4.

6.3 Concluding Remarks

Antenatal coverage improved with 6 in 10 Yemeni women having used at least one antenatal care visit in 2013. Despite the improvement in coverage, the number of visits does not reach the minimum four visits recommended by WHO for monitoring the pregnancy. When asked about the number of antenatal visits, only 26 per cent of women reported having attended the minimum of four visits, compared to just 14 per cent 10 years ago.

The disparity by wealth is the most striking. Only 6 per cent of poor women use the recommended four visits in contrast with 47 per cent of the richest women. Women with some formal education tend to use more antenatal care, which stresses yet again the importance of education to improving health. The lack of access to health services still remains a challenge as most deliveries were at home, with very few of those attended by skilled health personnel (14 per cent in round 4).

6.4 Tables

Table MH.1:
Percentage of Women Aged 15–49 Years with at Least One Live Birth within the Past Five Years who Had no Antenatal Visit and the Percentage who Received at Least One Antenatal Care Visit from Skilled Health Personnel During Previous Pregnancy, Yemen, 2012-2013

	No antenatal visit						At least one antenatal visit					
	Round 1			Round 4			Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	37.99	33.66	42.33	35.63	31.72	39.54	62.01	57.67	66.34	64.37	60.46	68.28
Place of delivery												
Home	43.90	38.35	49.45	43.39	38.74	48.05	56.10	50.55	61.65	56.61	51.95	61.26
Health facility	18.45	18.36	18.54	14.61	14.50	14.72	81.55	81.46	81.64	85.39	85.28	85.50

Area of residence												
Urban	22.69	15.07	30.30	21.90	13.50	30.29	77.31	69.70	84.93	78.10	69.71	86.50
Rural	42.87	37.37	48.38	39.80	35.35	44.25	57.13	51.62	62.63	60.20	55.75	64.65
Region												
Sana'a City	18.73	5.26	32.20	23.84	4.47	43.21	81.27	67.80	94.74	76.16	56.79	95.53
Hadhramout	13.55	6.24	20.86	10.92	6.32	15.51	86.45	79.14	93.76	89.08	84.49	93.68
Saba	44.10	31.59	56.62	25.09	16.79	33.40	55.90	43.38	68.41	74.91	66.60	83.21
Aden	37.79	30.86	44.71	20.03	15.08	24.97	62.21	55.29	69.14	79.97	75.03	84.92
Al-Janad	29.94	19.39	40.50	28.87	20.06	37.68	70.06	59.50	80.61	71.13	62.32	79.94
Tehama	52.95	42.58	63.32	57.07	48.28	65.87	47.05	36.68	57.42	42.93	34.13	51.72
Azal	45.97	36.83	55.11	41.36	32.67	50.05	54.03	44.89	63.17	58.64	49.95	67.33
Topography												
Mountainous	42.83	34.93	50.72	42.06	35.73	48.40	57.17	49.28	65.07	57.94	51.60	64.27
Arabian Sea	11.75	6.02	17.48	10.26	5.12	15.40	88.25	82.52	93.98	89.74	84.60	94.88
Red Sea	43.33	26.29	60.37	44.84	31.22	58.45	56.67	39.63	73.71	55.16	41.55	68.78
Plateau/desert	34.83	30.22	39.43	29.01	23.50	34.51	65.17	60.57	69.78	70.99	65.49	76.50
Wealth quintile												
Poorest	59.52	48.11	70.93	60.46	52.54	68.38	40.48	29.07	51.89	39.54	31.62	47.46
Second	46.59	37.28	55.90	39.00	30.75	47.26	53.41	44.10	62.72	61.00	52.74	69.25
Middle	36.67	27.33	46.02	35.89	25.63	46.15	63.33	53.98	72.67	64.11	53.85	74.37
Fourth	26.41	19.94	32.88	24.04	17.29	30.79	73.59	67.12	80.06	75.96	69.21	82.71
Richest	17.42	9.60	25.24	14.06	4.58	23.54	82.58	74.76	90.40	85.94	76.46	95.42
Level of poverty												
Extreme poor	44.77	32.72	56.83	36.62	27.92	45.33	55.23	43.17	67.28	63.38	54.67	72.08
Poor	40.11	32.91	47.31	42.98	35.71	50.25	59.89	52.69	67.09	57.02	49.75	64.29
Vulnerable	33.81	25.58	42.04	38.23	27.31	49.16	66.19	57.96	74.42	61.77	50.84	72.69
Non-poor	35.31	28.46	42.17	29.42	24.36	34.49	64.69	57.83	71.54	70.58	65.51	75.64
Head of household's education												
None	45.95	38.78	53.13	40.56	34.40	46.72	54.05	46.87	61.22	59.44	53.28	65.60
Basic	38.65	30.57	46.73	36.06	29.96	42.15	61.35	53.27	69.43	63.94	57.85	70.04
Secondary +	30.89	23.95	37.83	26.22	18.67	33.76	69.11	62.17	76.05	73.78	66.24	81.33
Quran & Literacy	19.82	7.13	32.52	47.07	27.33	66.80	80.18	67.48	92.87	52.93	33.20	72.67
Women's education												
None	45.61	39.56	51.65	45.01	40.09	49.93	54.39	48.35	60.44	54.99	50.07	59.91
Basic	27.29	20.12	34.45	22.59	16.75	28.42	72.71	65.55	79.88	77.41	71.58	83.25
Secondary +	26.59	15.60	37.58	22.36	10.49	34.24	73.41	62.42	84.40	77.64	65.76	89.51
Quran & Literacy	21.46	7.83	35.10	35.97	15.24	56.70	78.54	64.90	92.17	64.03	43.30	84.76
Household distance from health facility												
Until 30 min	31.42	26.49	36.34	27.73	22.94	32.53	68.58	63.66	73.51	72.27	67.47	77.06
Between 31 and 60 minutes	29.76	11.56	47.97	36.37	24.47	48.27	70.24	52.03	88.44	63.63	51.73	75.53
Over 60 minutes	56.99	49.56	64.42	58.06	50.46	65.66	43.01	35.58	50.44	41.94	34.34	49.54
Population	1,858,535			1,938,062			1,858,535			1,938,062		
Sample	3,772			3,927			3,772			3,927		

Source: NSPMS, Rounds 1 and 4.
Note: Missing information is not included in the statistics.

Table MH.2:
Percentage of Women Aged 15–49 Years with Live Birth within the Past Five Years who Received Antenatal Care from Skilled Health Personnel During Previous Pregnancy (1-3 Visits and at Least 4 Visits), Yemen, 2012-2013

	1-3 antenatal visits						At least 4 antenatal visits					
	Round 1			Round 4			Round 1			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	34.82	30.49	39.14	37.93	34.54	41.32	27.19	23.40	30.97	26.44	22.47	30.41
Place of delivery												
Home	35.90	30.81	41.00	37.34	33.09	41.58	20.20	16.04	24.36	19.27	14.40	24.14
Health facility	31.76	31.49	32.04	39.84	39.59	40.09	49.79	49.53	50.04	45.55	45.35	45.76
Area of residence												
Urban	34.33	25.14	43.53	35.42	28.14	42.71	42.98	31.09	54.87	42.68	34.15	51.22
Rural	34.97	30.00	39.94	38.69	34.87	42.51	22.16	18.22	26.09	21.51	17.05	25.97
Region												
Sana'a City	44.78	28.47	61.08	46.47	34.44	58.49	36.49	10.05	62.94	29.69	13.87	45.51
Hadhramout	27.07	20.01	34.13	30.34	20.03	40.65	59.37	52.77	65.98	58.74	47.35	70.13
Saba	33.45	24.31	42.59	53.35	42.83	63.87	22.44	11.26	33.63	21.56	11.54	31.58
Aden	26.49	20.85	32.13	43.18	36.92	49.45	35.72	28.30	43.15	36.79	31.21	42.37
Al-Janad	46.71	37.89	55.52	50.10	42.04	58.16	23.35	16.58	30.12	21.03	13.22	28.84
Tehama	28.67	17.90	39.45	23.25	16.96	29.55	18.38	11.07	25.69	19.67	10.57	28.78
Azal	30.09	22.86	37.32	33.05	26.11	39.98	23.94	16.40	31.48	25.59	16.26	34.92
Topography												
Mountainous	36.92	31.07	42.77	38.27	32.51	44.04	20.25	15.17	25.33	19.66	13.14	26.19
Coastal area - Arabian Sea	27.05	19.29	34.82	31.57	21.14	41.99	61.19	51.62	70.77	58.18	46.46	69.89
Coastal area - Red Sea	35.20	17.82	52.57	27.39	17.41	37.38	21.47	9.61	33.34	27.77	12.76	42.78
Plateau/desert	33.66	27.45	39.87	42.78	37.99	47.56	31.51	24.51	38.52	28.22	23.36	33.08
Wealth quintile												
Poorest	33.29	21.50	45.07	33.24	25.18	41.30	7.19	3.51	10.88	6.30	2.77	9.83
Second	35.16	24.91	45.41	43.58	34.83	52.33	18.25	12.32	24.18	17.42	10.65	24.18
Middle	32.31	21.92	42.71	32.08	24.26	39.89	31.01	19.68	42.35	32.03	22.50	41.57
Fourth	41.90	33.95	49.85	41.86	34.67	49.05	31.70	24.24	39.15	34.11	25.92	42.29
Richest	31.99	20.43	43.55	38.57	30.34	46.81	50.60	34.36	66.83	47.36	36.58	58.15
Level of poverty												
Extreme poor	30.81	18.72	42.90	43.94	35.71	52.18	24.42	15.21	33.63	19.43	11.78	27.08
Poor	34.86	26.97	42.76	34.75	28.79	40.72	25.02	18.35	31.70	22.26	16.10	28.43
Vulnerable	40.12	29.51	50.73	29.33	21.02	37.63	26.07	17.29	34.86	32.44	22.05	42.84
Non-poor	33.81	27.98	39.63	41.84	35.78	47.89	30.88	24.66	37.10	28.74	23.36	34.12
Head of household's education												
None	33.78	26.49	41.08	38.79	33.10	44.49	20.26	15.77	24.76	20.64	15.46	25.82
Basic	32.69	26.81	38.57	38.77	31.90	45.65	28.66	22.42	34.90	25.17	18.10	32.24
Secondary +	36.04	27.53	44.54	37.03	29.59	44.47	33.07	23.36	42.79	36.75	28.58	44.92
Quran & Literacy	44.49	22.15	66.82	32.57	18.11	47.04	35.69	15.86	55.52	20.36	8.97	31.76
Women's education												
None	32.34	26.18	38.51	35.72	31.40	40.05	22.05	17.42	26.68	19.27	14.32	24.22
Basic	39.92	31.99	47.86	40.37	33.87	46.88	32.79	24.10	41.47	37.04	30.30	43.78
Secondary +	33.51	20.97	46.04	40.94	31.27	50.60	39.91	27.35	52.46	36.70	27.13	46.27
Quran & Literacy	37.96	17.15	58.77	51.19	28.06	74.33	40.58	21.20	59.96	12.83	3.59	22.07
Household distance from health facility												
Until 30 min	35.08	30.15	40.01	39.45	35.14	43.76	33.50	28.33	38.67	32.82	27.32	38.31
Between 31 and 60 minutes	55.51	31.17	79.86	43.75	32.77	54.72	14.72	3.91	25.54	19.88	11.23	28.54
Over 60 minutes	28.72	21.88	35.55	31.66	24.81	38.50	14.29	9.21	19.37	10.28	6.15	14.42
Population	1,858,535			1,938,062			1,858,535			1,938,062		
Sample	3,772			3,927			3,772			3,927		

Source: Rounds 1 and 4.

Table MH.3:
Percentage of Women Aged 15–49 Years with at Least One Live Birth in the Past Five Years who Delivered in a Health Facility, Yemen, 2012-2013

	Round 1			Round 4		
	Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper
Total	23.67	20.05	27.29	27.30	23.54	31.06
Area of residence						
Urban	36.44	25.80	47.08	46.03	35.88	56.17
Rural	19.60	16.10	23.09	21.62	18.05	25.18
Region						
Sana'a City	27.75	6.64	48.86	48.95	27.48	70.42
Hadhramout	52.35	41.49	63.21	60.28	50.49	70.07
Saba	41.18	27.31	55.04	50.91	37.10	64.71
Aden	40.02	33.28	46.77	38.31	31.48	45.14
Al-Janad	15.69	9.48	21.90	19.53	11.01	28.06
Tehama	10.89	5.77	16.01	12.18	7.02	17.33
Azal	26.57	17.64	35.50	26.69	18.42	34.96
Topography						
Mountainous	17.21	12.77	21.65	21.43	15.48	27.39
Coastal area - Arabian Sea	50.14	40.91	59.38	57.70	46.54	68.86
Coastal area - Red Sea	11.99	3.62	20.36	13.95	5.48	22.42
Plateau/desert	31.07	23.93	38.21	34.23	28.23	40.24
Wealth quintile						
Poorest	8.23	5.45	11.00	8.66	5.47	11.85
Second	17.01	11.43	22.58	15.67	10.90	20.45
Middle	18.18	13.14	23.21	21.54	16.08	27.00
Fourth	32.45	24.70	40.20	39.38	31.20	47.57
Richest	45.20	30.07	60.32	57.12	44.98	69.26
Level of poverty						
Extreme poor	20.58	14.29	26.87	23.74	16.77	30.71
Poor	21.98	16.24	27.73	23.20	17.43	28.98
Vulnerable	28.98	19.69	38.26	20.24	13.00	27.48
Non-poor	23.90	17.96	29.84	34.07	27.87	40.27
Head of household's education						
None	18.47	14.37	22.58	24.36	19.47	29.24
Basic	23.23	17.23	29.23	21.70	16.96	26.43
Secondary +	28.22	19.38	37.06	38.16	28.62	47.70
Quran & Literacy	33.96	15.54	52.38	29.89	13.40	46.37
Womem's education						
None	18.58	14.83	22.34	19.08	15.24	22.92
Basic	33.01	24.75	41.26	39.26	32.37	46.15
Secondary +	25.85	17.41	34.29	38.07	28.18	47.95
Quran & Literacy	26.48	10.38	42.57	21.88	6.99	36.76
Population	1,858,535			1,938,062		
Sample	3,772			3,927		

7 Child Protection

Enormous violations of children's rights to protection take place in every country. These human rights violations are under-recognized and under-reported and threaten child survival and development. Children who are subjected to violence, exploitation, abuse and neglect are at risk of death, poor physical and mental health, HIV infection, educational problems, displacement, homelessness, vagrancy and poor parenting skills later in life. Under the Convention on the Rights of the Child and other international treaties, all children have the right to be protected from harm. Preventing and responding to violence, exploitation and abuse are essential to ensuring children's rights to survival, development and well-being. The vision and approach of UNICEF is to create a protective environment, where girls and boys are free from violence, exploitation and unnecessary separation from family; and where laws, services, behaviours and practices minimize children's vulnerability, address known risk factors and strengthen children's own resilience. This approach is human rights-based and emphasizes prevention as well as the accountability of Governments. It enhances aid effectiveness by supporting sustained national capacities for child protection. Finally, it reflects children's own roles and resilience as agents of change and actors in strengthening the protective environment.[103]

This section of the NSPMS report aims to contribute to this subject by presenting information on the following indicators related to the protection of children in Yemen:

- birth registration;
- children without a primary caregiver;
- child marriage;
- FGM/C;
- child labour.

7.1 Birth Registration

Birth registration is the fundamental means to protect children from being deprived of their identity, ensuring their name and nationality.[104] In addition, birth and death rates directly determine population growth rates.

As vital rates are better measured when based on data from birth and death registration systems, it is central to monitor the completeness of these systems. However, in many developing countries, systems for registering births and deaths are absent or incomplete because of deficiencies in the coverage of events or geographic areas. As a consequence, other indicators may be inaccurately estimated or misstated. For example, the age at enrolment in school may be over- or underestimated, particularly when parents prefer that children start school at an age other than the official age. This sort of problem is especially common in societies where registration of births is not strictly required.[105] Therefore, it is indispensable to develop efficient systems to ensure the registration of every child shortly after birth.[106]

Table CP.1 presents the percentage of Yemeni children under age five years who were reported as having their birth registered. The NSPMS reveals that the births of only 15.2 per cent of children under five years of age were registered in Yemen by the period July-September 2013,[107] with no significant difference between boys and girls. The percentage of birth registration among children under five is as low as 9.7 per cent in rural areas and 38 per cent in urban areas.

A comparison between these figures and those reported by the 2006 MICS reveals a reduction in the overall percentage of birth registration among children under five years of age in Yemen between 2006 and 2012. According to the MICS, the prevalence of birth registration was 22.3 per cent in 2006, compared to 15.22 per cent as reported by the NSPMS in 2012. The NSPMS suggests that the reduction was due mainly to decreased birth registration in rural areas, from 16.4 per cent in 2006 to 9.7 per cent in 2012. The prevalence of registration in urban areas did not change over the same period, remaining at around 38 per cent.

There are also important differences across topographic areas and geopolitical regions (figure CP.1). While 82 per cent of the children under five are registered in the Arabian Sea coastal area, in the Red Sea coastal area, this figure reaches 3.29 per cent (with a coefficient interval including zero). Among the geopolitical areas, the highest percentage of registered children is found in the Hadhramout area (72 per cent) and the lowest in Tehama (only 2.3 per cent).

Figure CP.1:
Percentage of Children Under Five Years of Age whose Births Were Registered by Areas and Regions of Residence, Yemen, 2013
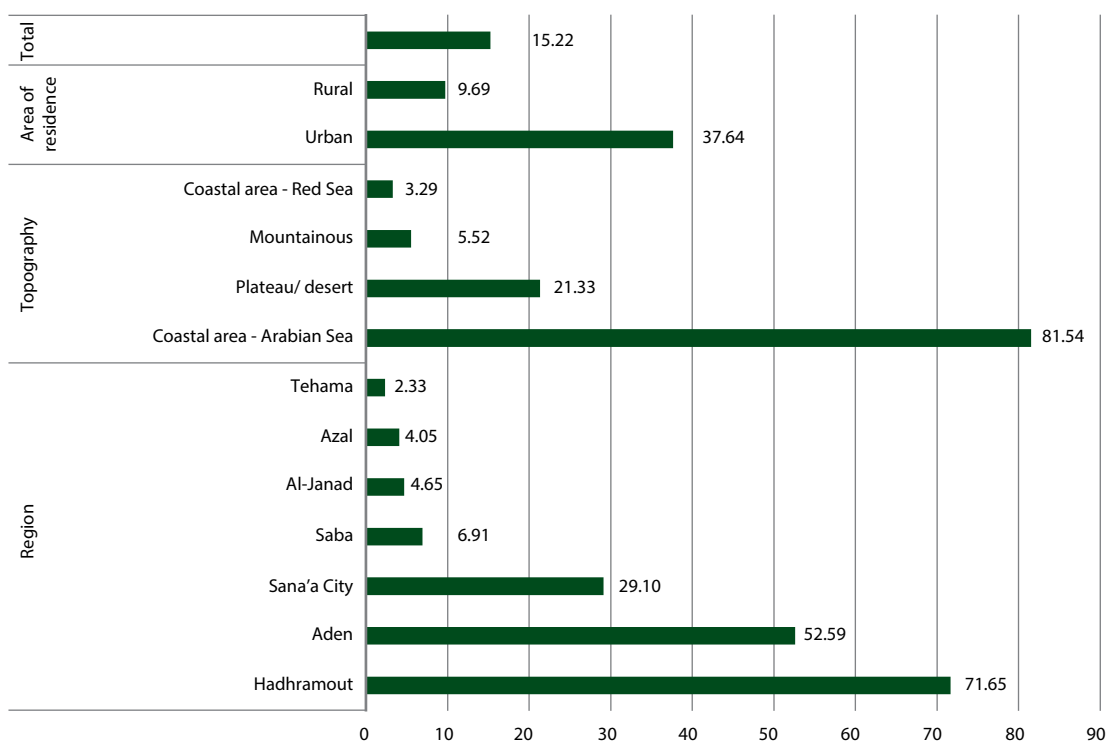
Source: NSPMS, Round 4.

The prevalence of birth registration is significantly higher for children whose mothers have at least secondary education (21.5 per cent) than for children whose mothers have no education (11.8 per cent). There are remarkable differences in the prevalence of birth registration between wealth quintiles. In the lowest quintile, virtually 0 per cent of children have their birth registered, whereas slightly more than half (51 per cent) are registered in the highest wealth quintile (figure CP.2).

Figure CP.2:
Percentage of Children Under Five Years of Age whose Births
Were Registered by Head of Household's Education and Wealth Quintiles,
Yemen, 2013
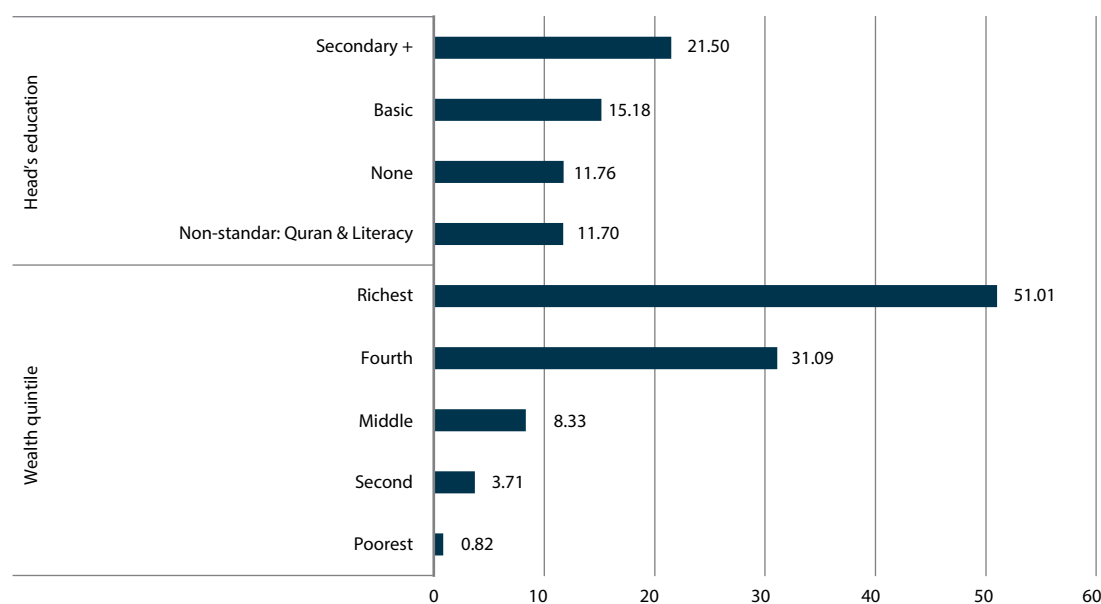
Source: NSPMS, Round 4.

The strong association between prevalence of birth registration and both wealth quintile and mother's education is confirmed when performing the F-tests (table CP.2).

7.2 Children Without a Primary Caregiver

As children may be at higher risk of neglect or exploitation if their parents/caregivers are not available to assist them,[108] assessing the capacities of families and communities to take care of orphans is essential for improving their well-being. The objective is to ensure that orphans' enrolment in school and access to shelter, good health and social services remain on an equal basis with non-orphaned children.[109] For these reasons, it is important to identify the prevalence of children without a primary caregiver among Yemeni children.

The prevalence of orphans (at least one dead parent) among children under age 18 years in Yemen is shown in table CP.3. Overall, NSPMS data show that 4.9 per cent of Yemeni children are orphans, with no significant differences between rural and urban areas or among wealth quintiles. There are small but significant dissimilarities among regions. The highest prevalence of children who lack a primary caregiver is found in the mountainous areas (6.1 per cent) and the lowest is in the Arabian Sea coastal area (2.4 per cent). Saba and Azal regions have the highest percentage of children with at least one deceased parent (8.2 and 6.7 per cent, respectively). Hadhramout has the lowest percentage of children without a primary caregiver (2.5 per cent).

7.3 Child Marriage

In several parts of the world, parents encourage the marriage of their daughters for both financial and social reasons. Child marriage violates and interferes with the girl child's right to development and survival. One of the consequences of early marriage is early and frequent pregnancies, which increases the

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probability of maternal death among this age group. In Yemen, pregnancy-related deaths are the leading cause of mortality for girls aged 15–19 years.[110]

Figure CP.3:
Percentage of Women Aged 20 -49 Years First Married/in Union by Age 18 Years by Topographic and Geopolitical Areas, Yemen, 2013

Area	Value
Topography	
Coastal area - Red Sea	30.38
Coastal area - Arabian Sea	32.82
Plateau/ desert	43.97
Mountainous	44.86
Region	
Aden	30.10
Tehama	34.21
Hadhramout	36.01
Al-Janad	43.83
Saba	44.78
Sana'a City	51.56
Azal	54.75
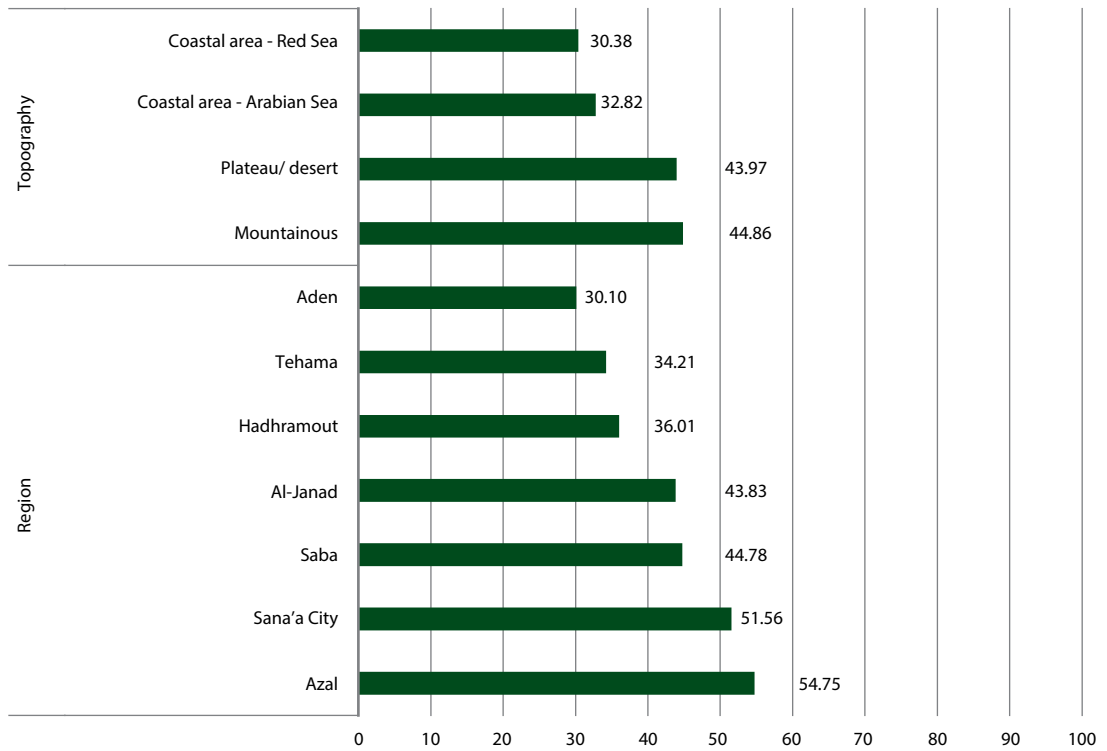
Source: NSPMS, Round 4.

Figure CP.4:
Percentage of Women Aged 20-49 Years Old First Married/in Union by Age 18 Years by Women's Education, Yemen, 2013

Education	Value
Secondary +	
Basic	
None	
Non-standard: Quran & Literacy	
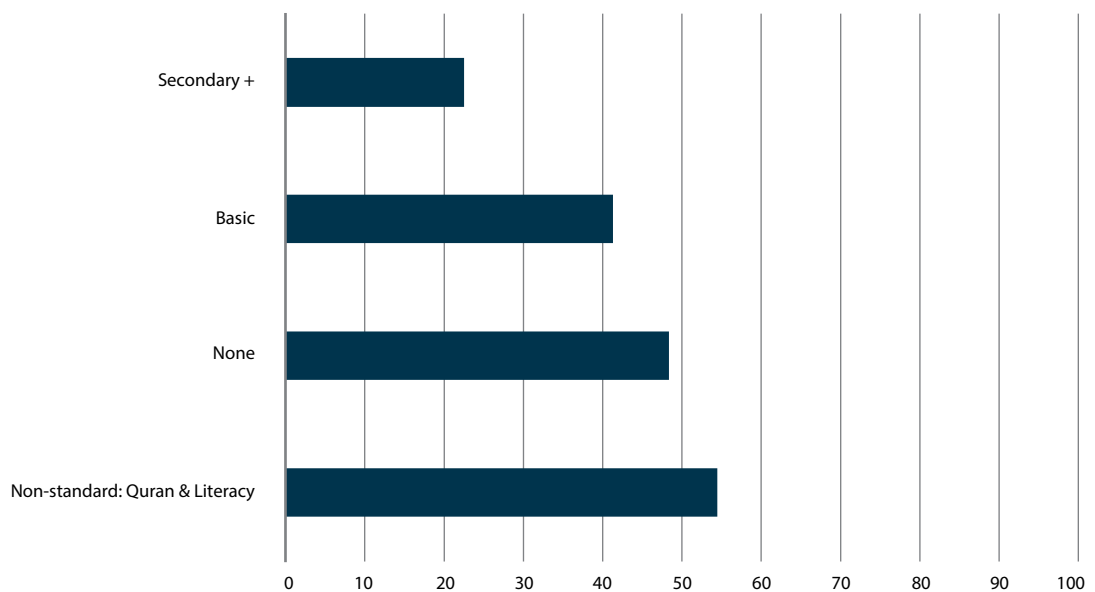
Source: NSPMS, Round 4.

Child marriage may contribute to the vicious cycle of malnutrition in Yemen. Adolescent girls, who are usually undernourished, are less likely to finish growing before their first pregnancy. Early pregnancy can siphon away nutrients a girl child needs to develop properly. This leads to maternal malnutrition, which is a major risk factor in maternal mortality. In addition, a malnourished mother is at a higher risk of having a low-birth-weight baby, who could be at risk of dying before the first birthday, and at risk for having chronically malnourished children who would reproduce this cycle.

Tables CP.4 and CP.5 show respectively two indicators for incidence and one for prevalence of child marriage in Yemen. Table CP.4 shows that 41.6 per cent of women aged 20–49 years old were married by age 18 years in 2013, and 14.3 per cent of women aged 15–49 years were married by age 15. As also documented by the MICS, NSPMS data show a continuous decline in the percentage of married women at early ages over time, as 14.7 per cent of Yemeni women aged 15-19 years were married in 2013 (table CP.5), down from 19 per cent in 2006. There is no significant difference in incidence and prevalence of child marriage between urban and rural areas in Yemen.

Figure CP.5:
Percentage of Women Aged 20-49 Years First Married/in Union by Age 18 Years by Level of Poverty, Yemen, 2013
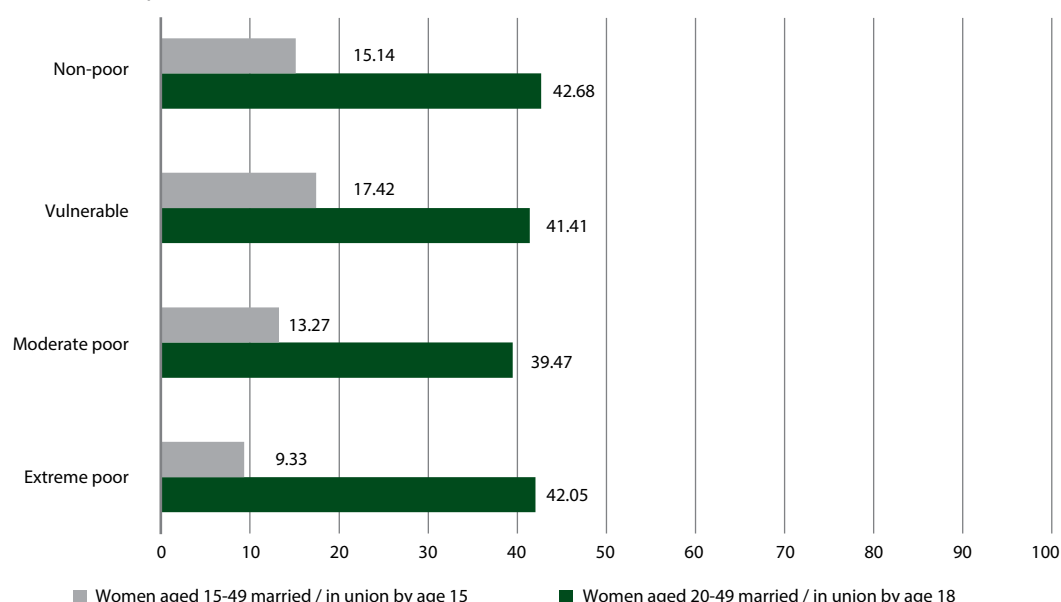
Source: NSPMS, Round 4.

Looking at the prevalence of child marriage among girls aged 15-19 years (table CP.5) across different groups, differences are only statistically significant for geopolitical regions and for the girls' educational level. Sana'a City has the lowest percentage of girls currently married (3.8 per cent) and Aden, Tehama, Azal and Saba regions have the highest prevalence (ranging from 16 to 22 per cent). The analysis by level of education and wealth quintiles shows that the lowest percentage of girls marrying early in life is found among those with the highest level of education, while the lowest is in the intermediate quintiles. For example, the 23,3 per cent of Yemeni girls aged 15–19 years with no education are married, compared to 12.5 per cent of those with at least a basic education (table CP.5). According to the wealth quintiles, 19.4 per cent of girls aged 15–19 years in the poorest quintile are currently married. This figure decreases to 6.1 per cent for girls in the middle quintile.

In analyzing the incidence of child marriage indicators, it is possible to identify stronger differences between groups of women of distinct characteristics in comparison to the prevalence of child marriage in Yemen. Figure CP. 3 shows the percentage of women aged 20- 49 years who were married or in union by 18 years of age, by to topographic and geopolitical areas. The highest percentage of women aged 20-49 years who were married by age 18 is found in the Azal (54.8 per cent) and Sana'a City (51.6 per cent) areas and the lowest percentages are found in Aden (30.1 per cent), Tehama (34.2) and Hadhramout (36 per cent). Disaggregation by topographic area shows that approximately 31 per cent of women aged 20-49 years in the coastal areas were married by age 18, compared to 44 per cent in the mountainous and plateau/desert areas.

Figure CP.4 reveals the differences, by education, in the percentage of women aged 20-49 years who were married or in union when they were 18 years old. While 22.8 per cent of women with at least secondary education are married by age 18, almost half of the ones who have no education are married by that age.

As for levels of poverty, the NSPMS reveals no difference among poor and non-poor women in terms of being married by age 18 years, but there is a difference when they marry earlier (by age 15). Figure CP.5 shows that while 9.3 per cent of extremely poor women aged 15-49 years are married by 15 years of age, 15.1 per cent of the non-poor women are married by the same age. The percentage of women aged 20-49 years who are married by age 18 years remains virtually the same across the levels of poverty (around 40 per cent).

7.4 Female Genital Mutilation/Cutting

According to UNICEF,[111] FGM/C is "the partial or total removal of the female external genitalia or other injury to the female genital organs for cultural or other non-therapeutic reasons". This practice violates women's rights to health and to physical integrity, and it is usually done without their consent. FGM/C causes serious immediate and long-term health consequences including severe pain, shock, urine retention, infertility, obstructed labour and infection leading to death.[112]

Table CP.6 shows the percentage of girls (0–14 years) and women (15–49 years) who have undergone FGM/C. The youngest women present a marginally lower percentage of FGM/C than the older ones, although this difference is not statistically significant (13.9 per cent among girls aged 0–14 years and 15.6 per cent among women aged 15–49 years). There are no significant differences between rural and urban areas. The 2003 Family Health Survey revealed a prevalence of 21.5 per cent among women aged 15-49 years, which indicates that FGM/C practices have decreased in Yemen. These findings are in line with the UNICEF report,[113] which mentions the slow but steady decline in the prevalence of FGM/C during the past decades, stating that "older girls and younger women are less likely to have undergone any form of this harmful traditional practice than older women".

Figure CP.6:
Percentage of Women Aged 0-14 Years and 15-49 Years who Have Undergone Female Genital Mutilation/Cutting by Topographic and Geopolitical Areas, Yemen, 2013
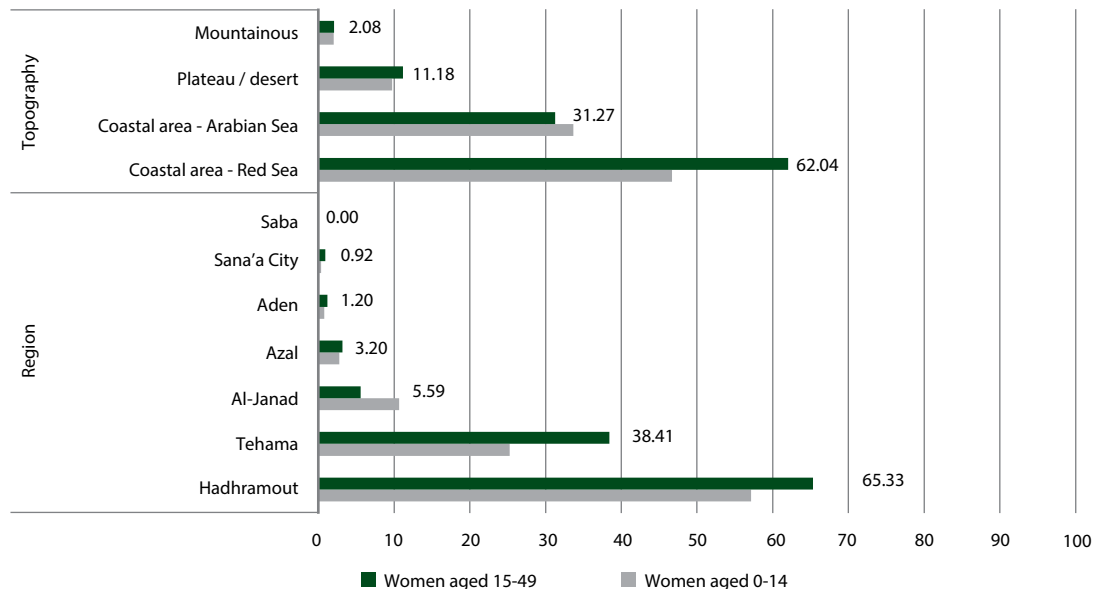
Source: NSPMS, Round 4.

According to the topography and region, figure CP.6 shows significant differences in terms of prevalence of FGM/C. For instance, 62 per cent of women aged 15-49 years old have undergone the procedure in the Red Sea coastal area, while virtually none of women in the mountainous region have. Remarkable differences are found when comparing FGM/C prevalence among women in Hadhramout with the remaining regions: 65.3 per cent

of women in Hadhramout have undergone FGM/C, while this figure reaches 38.4 per cent in Tehama, 5.6 per cent in Al-Janad, 3.2 per cent in Azal, 1.2 per cent in Aden, 0.9 per cent in Sana'a City and 0 per cent in Saba.

The NSPMS suggests that education is an important factor related to the prevalence of FGM/C. Among girls aged 0–14 years, 15.8 per cent of those whose mothers have no education have undergone FGM/C, while only 3.7 per cent of those whose mothers have at least secondary education have done so (table CP.6). Among women aged 15–49 years, 20.6 per cent of those with no education have undergone FGM/C and the figure decreases to 8 per cent among the most educated (with secondary education or more).

According to the analysis by wealth quintiles (table CP.6), the prevalence of FGM/C among girls and women is highest for the poorest wealth quintiles and declines until the middle quintile, after which it increases again. However, in the richest quintile, the rate of prevalence is still only slightly higher than half of the poorest one. For instance, 26.2 per cent of girls aged 0–14 years in the poorest quintile have undergone FGM/C, while in the middle and richest quintiles, these figures are 10.7 and 14 per cent, respectively.

The NSPMS data suggest that the wealth of the family is not strongly associated with FGM/C as opposed to the educational status of the mother. This suggests that FGM/C is mainly related to inherited social beliefs and norms rather than the family's socioeconomic status. It also implies that female education has the potential to break the vicious cycle of harmful practices.

7.5 Child Labour

It is understood that, regardless of the duration or type of activity, work is inappropriate for children and may jeopardize their development. For the purpose of this study, child labour is defined as the percentage of children aged 6-14 years who are employed in remunerated and non-remunerated activities.

It is important to highlight that for rounds 1 to 3, the NSPMS collected data on child labour for children who were at least six years old. Children aged five years were included in round 4. The analysis is focused on the indicators for children aged 6-14 years old (tables CP.7–CP.9) for two main reasons: these indicators are comparable between the rounds of the NSPMS; and because we are interested in understanding the concomitance between school and work for children enrolled in school (the age range 6-14 years includes children of compulsory school age). However, in order to compare NSPMS results with the ILO report on child labour in Yemen (2013),[114] the outcomes related to prevalence of child labour are also estimated for children aged 5-17 years.

Figure CP.7:
Percentage of Children Aged 6-14 Years who are Employed by Sex and Area of Residence, Yemen, 2013
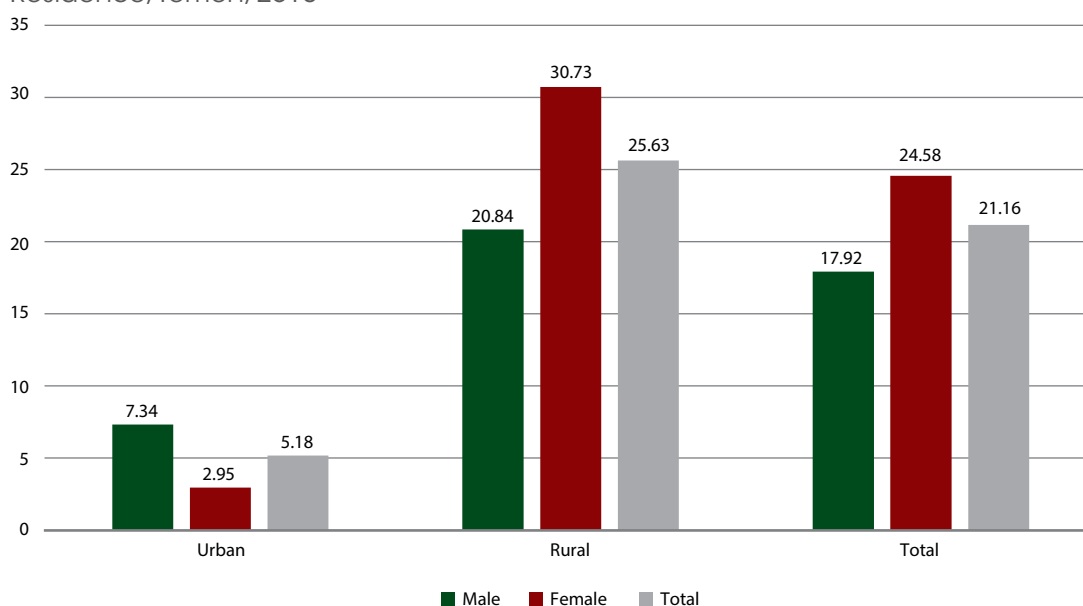
Source: NSPMS, Round 4.

Figure CP.7 shows that 21.2 per cent of Yemeni children aged 6-14 years old are working (table CP.7). The prevalence of child labour is higher for girls (25 per cent) than boys (18 per cent) and much higher in rural (25 per cent) than urban areas (5 per cent). Interestingly, in urban areas the incidence of child labour is higher for boys (7.3 per cent) than for girls (3 per cent), while in rural areas it is 30.7 per cent for girls and 21 per cent for boys.

Table CP.8 reveals that 94 per cent of children work as unpaid family workers, and the proportion varies from 89 per cent for males to 98 per cent for females. As expected, the majority of unpaid family workers are usually employed in agriculture; 84.1 per cent of children aged 6-14 years old in the agricultural sector (figure CP. 8). In rural areas, 85.5 per cent of the girls and 90.5 per cent of boys who work are in the agricultural sector.

Table CP.8:
Percentage of Children Aged 6-14 Years who are Employed by Job Status and Sex, Yemen, 2013

	Unpaid family workers	Paid Worker	Self-employed
Male	88.97	10.06	0.96
Female	97.51	2.46	0.03
Total	93.79	5.77	0.44

Source: NSPMS, Round 4.

Figure CP. 8:
Percentage of Children Aged 6-14 Years Working in the Agriculture Sector by Sex and Area of Residence, Yemen, 2013
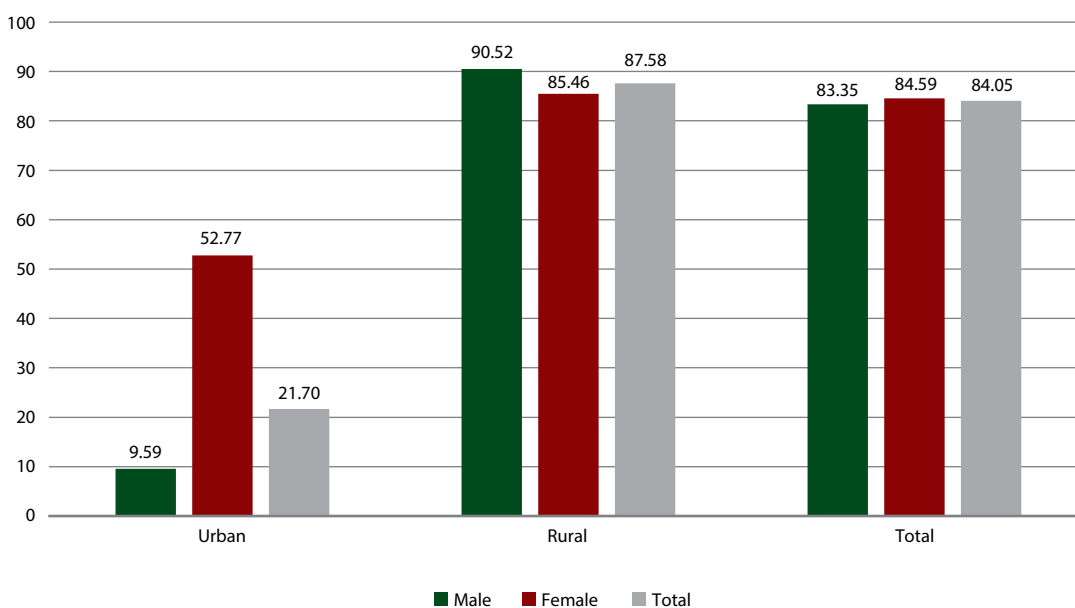
Source: NSPMS, Round 4.

Besides the abovementioned differences in the prevalence of child labour between girls and boys and rural and urban areas, there are significant discrepancies according to wealth quintiles, the education of the head of household and topographic areas and geopolitical regions. As shown in figure CP.9, 35 per cent of children aged 6-14 years living in the Red Sea coastal area were working in July, August and September of 2013, compared to less than 3 per cent of children in the Arabian coastal area. Disaggregation by geopolitical regions shows that Hadhramout and Sana'a City have the lowest prevalence of child labour (0.3 and 5.1 per cent, respectively) and Tehama and Azal have the highest prevalence (31.6 and 26.9 per cent, respectively).

Figure CP.9:

Percentage of Children Aged 6-14 Years who are Employed by Topographic and Geopolitical Areas, Yemen, 2013

Topography

- Coastal area - Arabian Sea: 2.75
- Plateau / desert: 14.18
- Mountainous: 24.76
- Coastal area - Red Sea: 34.99

Region

- Hadhramout: 0.33
- Sana'a City: 5.08
- Saba: 6.98
- Aden: 13.88
- Al-Janad: 22.07
- Azal: 26.91
- Tehama: 31.56
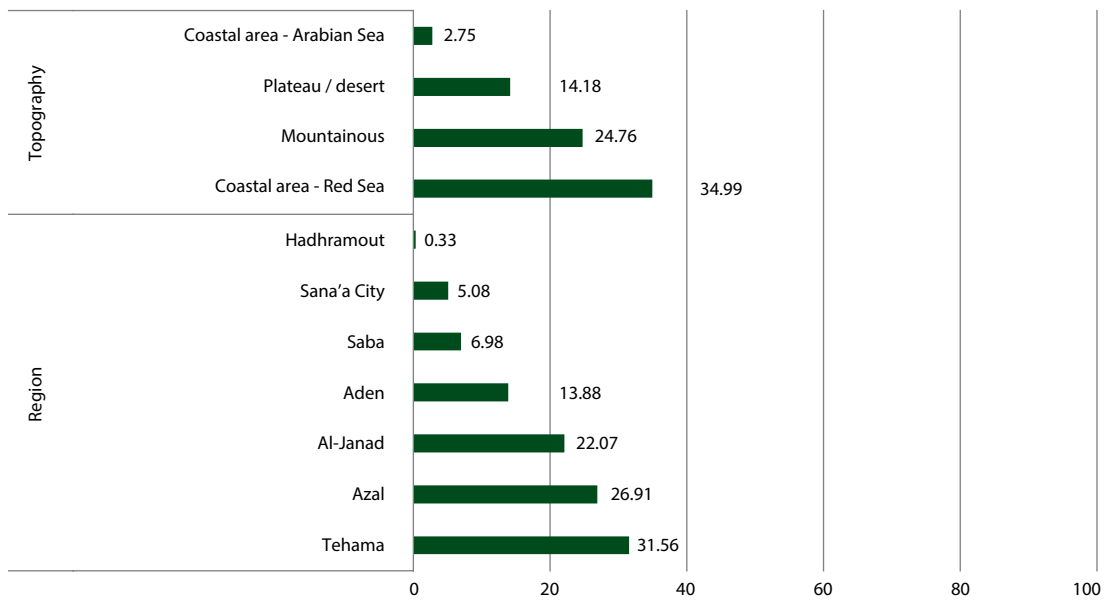
Source: NSPMS, Round 4.

Figure CP.10:

Percentage of Children Aged 6-14 Years who are Employed by Mother's and Head of Household's Education and Wealth Quintiles, Yemen, 2013

Figure 10a: by wealth quintiles

- Richest
- Fourth
- Middle
- Second
- Poorest

Figure 10b: by mother's and head's education

- Secondary +
- Basic
- None
- Non-standard: Quran & Literacy

■ Mother's education   ■ Head's education
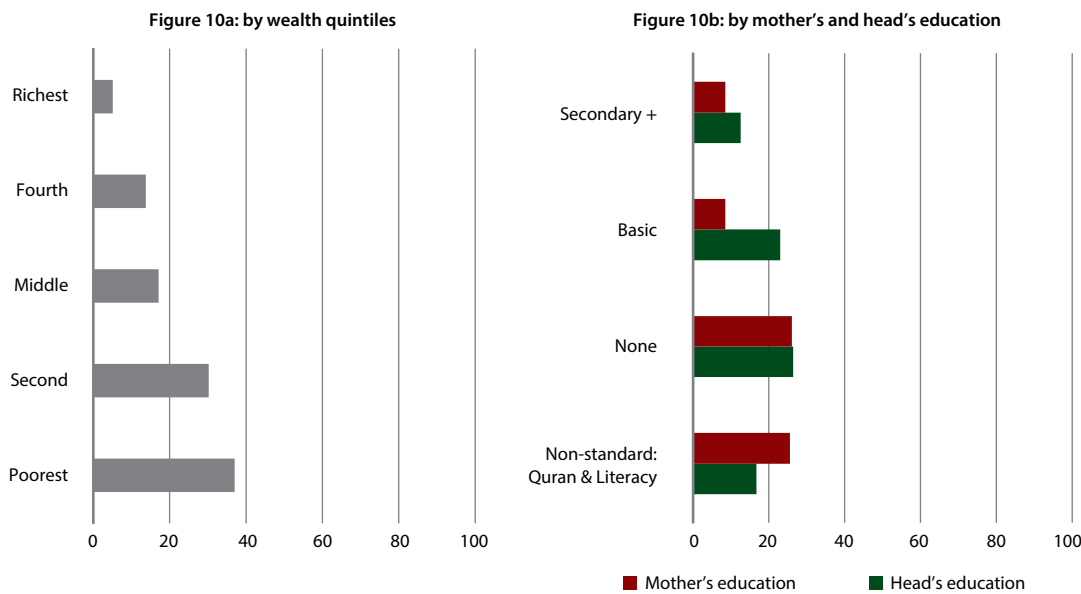
Source: NSPMS, Round 4.

Figure CP.10a shows the percentage of children aged 6-14 years by wealth quintiles and head of household's education. The differences are striking. Around 5 per cent of children in the richest quintile are working compared to 37 per cent in the poorest one. As expected, the head of household's education is an important factor in determining the probability of children working: 12.6 per cent of children living in a household whose head has at least secondary education are working, compared to 26.4 per cent if the head of the household has no education (figure CP. 10b). When referring to the education of the mother instead of the head of household, there is no difference in terms of prevalence of child labour if the mother or the head of the household has no education: the percentage of children working is around 26 per cent. Nevertheless, if the mother has secondary education, the estimated percentage of children working is 8.5 per cent (lower than the 12.6 per cent of children whose head of the household has secondary education); however, its 95 per cent confidence also includes zero, implying no difference (table CP.7 and figure CP.10b).

According to the 2010 Yemen National Child Labour Survey,[115] around 1,614,000 children aged 5-17 years were working in 2010, representing 21 per cent of children in this age group. The NSPMS estimates that by July, August and September of 2013, the 23.6 per cent of children in Yemen were working. This would suggest an increase in the prevalence of child labour; however, this needs to be taken with caution, as there is an implicit seasonality while comparing these figures. As the reference period of the ILO report is November 2010, it should be compared to the prevalence of employed children in the first round of the NSPMS (which corresponds to October, November and December 2012).

For that round, though, there is only information on child labour for children aged 6-17 years: almost 21.7 per cent of these children were working by the end of 2012. Taking into account children aged five years, this indicator would be reduced (as these are the youngest children and therefore are expected to have the lowest probability of working). One may conclude that there has not been any reduction in child labour between 2010 and 2012-2013.

There has been an increase over time in the prevalence of child labour between October-December 2012 and July-September 2013. We cannot say that this is a trend as this type of comparison would need to cover the same period of two consecutive years, which is not the case of the NSPMS. However, it does suggest some seasonal effects linked to the school academic year and holiday period as observed in figure CP.11.

Figure CP.11:
Percentage of Children Aged 6-14 Years who are Employed by Head of Household's Education and Wealth Quintiles, Yemen, 2012-2013

Prevalence of child labour (6-14 years)

Source: NSPMS, All Rounds.
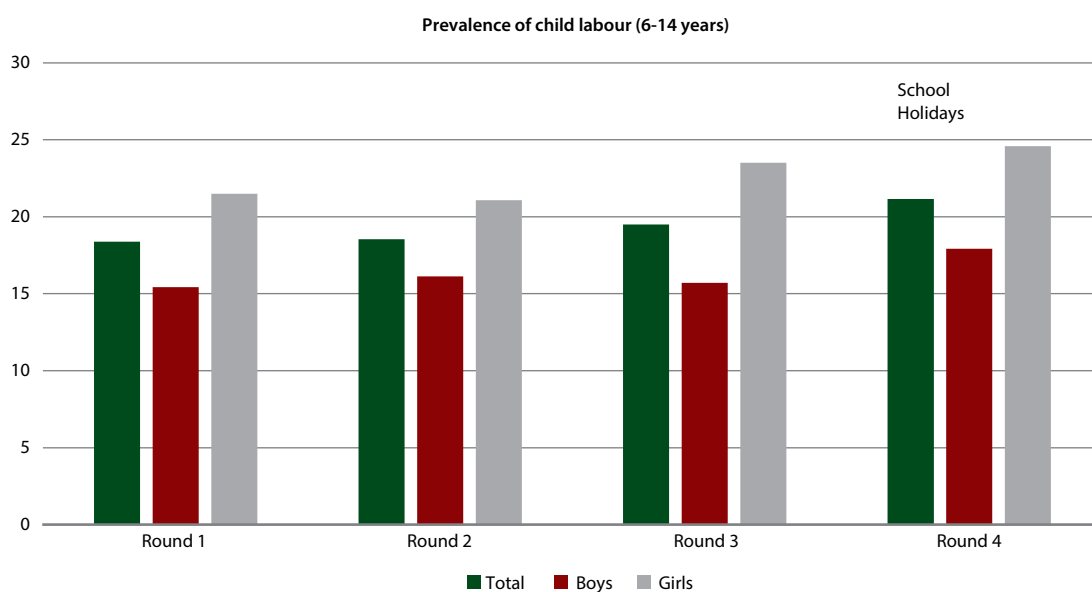
Looking at the overlap between school enrolment and work for children aged 6-14 years, the NSPMS shows that among labouring children, 65.7 per cent were enrolled in school in round 4 (table CP.9). There are important

differences when considering individual family composition, area of residence and region with regards to school enrolment for labourer children. While 58 per cent of labourer boys are enrolled in school, this figure reaches 75 per cent of girls. Living in urban areas increases the chances of school enrolment for labourer children compared to rural areas (from 64.5 to 87.2 per cent). The percentage of working children who are enrolled in school varies from 22.1 per cent in Hadhramout (with the 95 per cent confidence interval including zero) to 87.4 in Sana'a City. Considering the topographic areas, slightly more than half of labourer children in the Red Sea coastal area enrolled in school compared to 73 per cent in the mountainous area (figure CP. 12).

Figure CP. 12:
Percentage of Children Aged 6-14 Years who are Enrolled in School Among Those Children who Work (Labourer Students) by Area and Region of Residence, Yemen, 2013
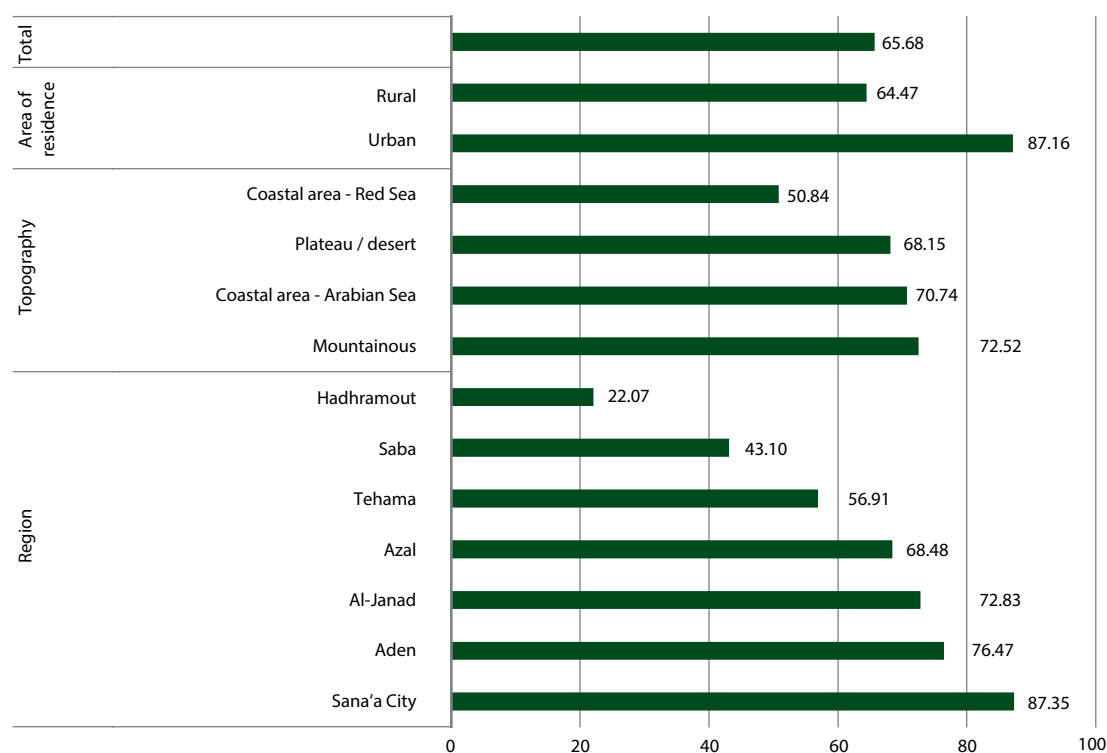
Source: NSPMS, Round 4.

Table CP.9 reveals the importance of the head of household's education on the chances of a labouring child aged 6-14 years being enrolled in school. Approximately 88 per cent of children whose household head has secondary education are enrolled in school, against only 57 per cent of children whose household head has no education. Differences among wealth quintiles merit highlighting (figure CP. 13). Overall, 65.7 per cent of working children in Yemen are enrolled in school, but this falls to only 44 per cent in the poorest quintile and increases to nearly 100 per cent in the richest one. Once more, girls are worse off than boys as the percentage of working girls who are enrolled school in the poorest quintile is 20 percentage points lower than for their male counterparts.

According to the 2010 Yemen National Child Labour Survey, an estimated 69.7 per cent of non-working children aged 5-17 years were enrolled in school in November 2010, against a corresponding rate among working children of 53.6 per cent. The NSPMS estimates that 73.7 per cent of non-working children aged 6-17 years were enrolled in school in October, November and December 2012. This decreases to 52.5 per cent when the working children are considered.

As for children aged 6-14 years old who were enrolled in school, 19.8 per cent of them were working in the period July-September 2013 (table CP.10). This percentage increased significantly between the round 1 (October, November and December 2012) and round 4 (July, August and September 2013), from 15.9 to 19.8 per cent. At least part of this increase in the percentage of working children among the ones enrolled

in school may be due to the fact that most children enrolled in that academic year were on school holidays for some of the months of round 4.

Figure CP.13:
Percentage of Children Aged 6-14 Years who are Enrolled in School Among Those Children who Work (Labourer Students), Yemen, 2013
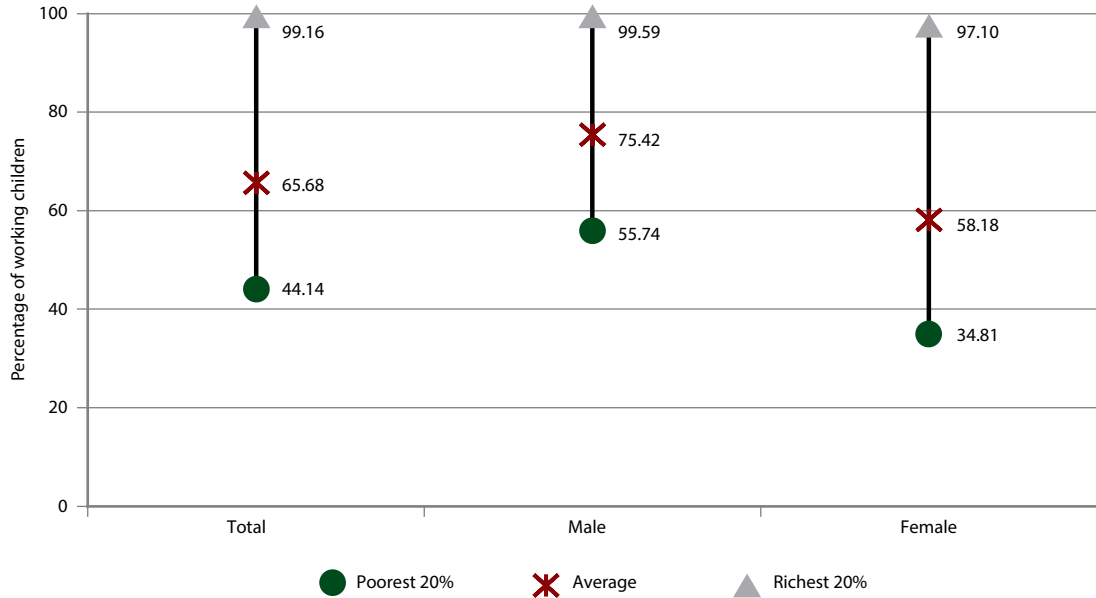
Figure CP.14:
Percentage of Children Aged 6-14 Years who Work and Study Among Those Children who are Enrolled in School (Student Labourer) by Area and Region of Residence, Yemen, 2013
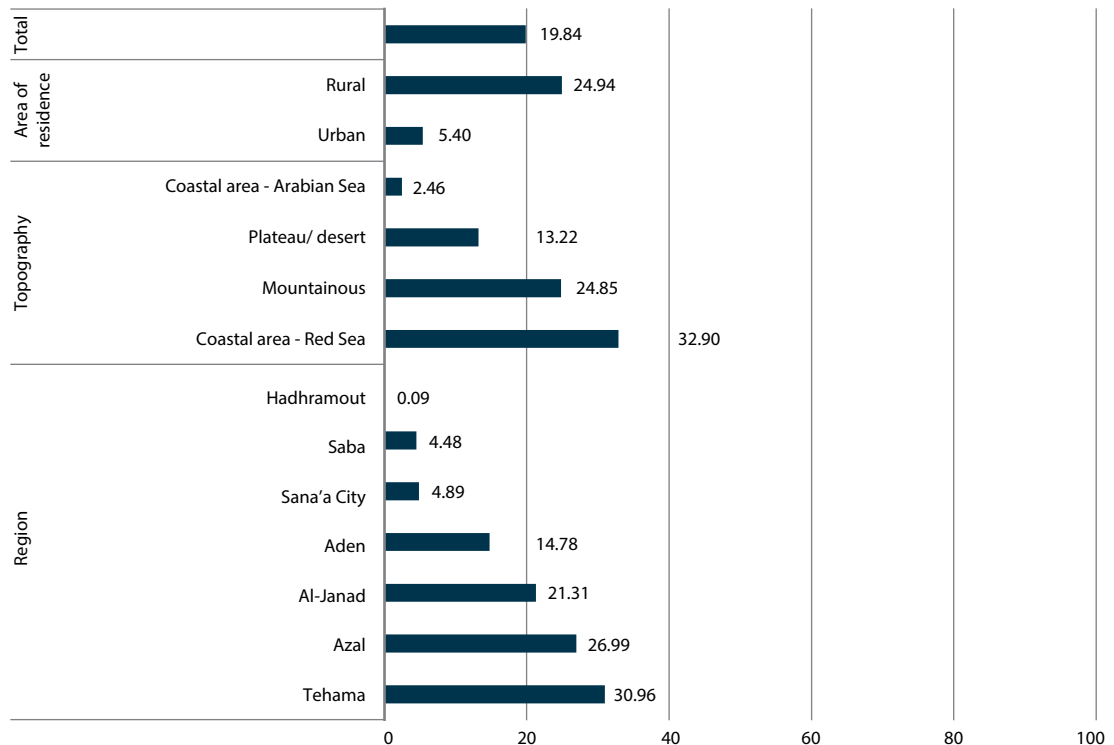
Figures CP.14 and CP.15 show the main differences in terms of prevalence of child employment among children aged 6-14 years attending school. Children enrolled in school in rural areas present a much higher risk of working than their counterparts in urban areas (5.4 against 24.9 per cent). The highest concentration of children enrolled in school who are working is in the Red Sea coastal area (32.9 per cent) and the lowest is in the Arabian Sea coastal area (2.4 per cent with the 95 confidence interval including zero). Among the geopolitical regions, in Hadhramout, virtually 0 per cent of children enrolled in school are working, but in Tehama, 31 per cent of them are working (figure CP.14). Having a mother with secondary education reduces the percentage of children enrolled in school and working, from 24.5 to 9.6 per cent compared to the mothers with no education, but zero is included in the 95 per cent confidence interval (figure CP.15). Differences among wealth quintiles are striking: 6 per cent of the children enrolled in school were working in the richest quintile compared to 35 per cent of children in the poorest quintile.

Figure CP.15:
Percentage of Children Aged 6-14 Years who Work and Study Among Those Children who are Enrolled in School (Student Labourer) by Wealth Quintile and Mother's Education, Yemen, 2013
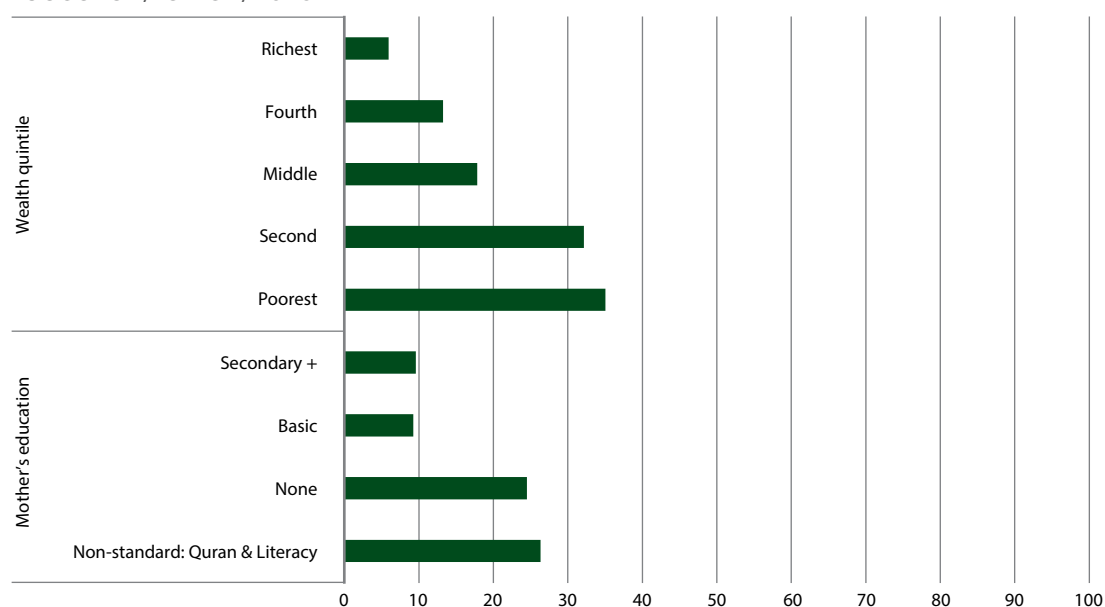
Source: NSPMS, Round 4.

7.6 Violence Against Children

The indicators presented in this section deal with issues of violence against children, which include physical and verbal punishment, children's anxiety over a safe place to play outside, and incidents of violence in the community. All of these problems have devastating consequences for children's health, ability to learn and well-being. By identifying the causes of these issues, violence against children could be preventable.

The unit of analysis of all the indicators of violence against children is the household that had at least one child aged 17 years or less during the period when the survey was conducted.

CHILDREN'S VULNERABILITY TO VIOLENCE

Table CP.11 shows the percentage of households with at least one child aged 17 years or less who experienced any incident of violence in his/her community in the three months before the interview. Round 1 of the NSPMS revealed that 9.2 per cent of households have reported at least one child or adolescent who has experienced a violent incident. This percentage fell dramatically after 12 months so that in round 4, it was less than 4 per cent. Disparities are striking between urban

and rural areas. Violence is more prevalent in urban areas, with 10.8 per cent of households with adolescents or children subjected to at least one form of violence, compared to 1.6 per cent in rural areas in round 4 (table CP.11). Tables CP.12 and CP.13 show the distribution of households according to the main causes of violence faced by Yemeni children, considering the whole country and disaggregating urban and rural areas, respectively. Political violence affected 18.2 per cent of households experiencing any type of violence by the end of 2012, which might be due to the fact that data collection started in October 2012, and the impact of the 2011 crisis was still persistent. By July, August and September 2013, the percentage of political violence reduces slightly to 16.6, with the 95 per cent confidence interval including zero. Concerning the known causes of violence, in round 1 the most prevalent cause of violence was political (18.2 per cent), compared to round 4, when the most prevalent was related to terrorist activities (22.2 per cent).

Table CP.12:
Percentage of Households with at Least One Child Aged 17 Years or Less for which at Least One Child was Reported as Experiencing Any Incident of Violence in the Three Months Preceding the Survey by Type of Violence, Yemen, 2012-2013

Type of Violence	Round 1			Round 4		
	Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper
Landmines or other explosive devices	17.07	7.23	26.91	3.11	-0.68	6.91
Tribal violence	10.40	4.90	15.89	18.10	3.95	32.26
Seeing scenes of violence or killing	6.82	2.61	11.02	1.21	-0.32	2.74
Political violence (demonstrations, etc)	18.23	7.54	28.92	16.55	-4.74	37.83
Criminal acts (gang activities, looting, etc.)	3.85	0.89	6.80	0.28	-0.05	0.60
Physical violence	0.13	-0.01	0.28	0.91	-0.37	2.18
Sexual violence	0.83	-0.09	1.75	-	-	-
Car accidents	12.74	-3.14	28.63	15.29	0.85	29.72
Terrorist activities (fighting, shooting, etc.)	12.15	6.14	18.16	22.20	9.06	35.34
Other	17.78	10.34	25.23	22.36	2.32	42.39
Population	246,062			108,292		
Sample	600			263		
Missing*	19			27		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

When comparing the most common types of violence (among the known ones) between urban and rural areas (table CP.13), in urban areas, political violence and terrorist activities are the most prevalent (23.8 and 21.07 per cent). In rural areas, the most common types of violence are tribal violence (32.05 per cent, car accidents (29.9 per cent) and terrorist activities (24.8 per cent).

The occurrence of violence varies mainly by topography and region. Figure CP.16 shows that the highest rates of prevalence of violence are found in urban areas (10.7 per cent), in the topographic areas of Arabian Sea (8.2 per cent) and plateau/desert (7.8 per cent) and in the regions of Sana'a City (14 per cent) and Aden (11.1 per cent). There are also variations in the percentage of violent incidents by wealth quintile. The richest quintiles present the highest prevalence of violence (5.9 per cent in the fourth quintile and 11.2 per cent in the richest one), with the lowest rates of prevalence in the poorest quintiles (0.7 and 1.42 per cent in the poorest and second quintiles, respectively).

Table CP.13:

Percentage of Households with at Least One Child Aged 17 Years or Less for which at Least One Child Was Reported as Experiencing any Incident of Violence in the Three Months Preceding the Survey by Type of Violence and Area of Residence, Yemen, 2012-2013

Type of Violence	Urban						Rural					
	Round 1			Round 4			Round 1			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Landmines or other explosive devices	14.32	1.31	27.33	3.47	-1.77	8.70	23.34	11.47	35.21	2.31	-0.39	5.01
Tribal violence	5.22	-0.32	10.76	11.98	-7.17	31.14	22.19	9.99	34.39	32.05	14.51	49.59
Seeing scenes of violence or killing	5.51	0.61	10.42	0.50	-0.37	1.37	9.79	2.30	17.28	2.82	-1.59	7.24
Political violence (demonstrations, etc)	22.44	6.16	38.72	23.80	-4.59	52.20	8.63	-3.77	21.03	-	-	-
Criminal acts (gang activities, looting, etc.)	5.14	0.85	9.43	0.40	-0.08	0.87	0.90	-0.78	2.58	-	-	-
Physical violence	0.14	-0.05	0.33	1.31	-0.63	3.24	0.11	-0.06	0.29	-	-	-
Sexual violence	0.66	-0.38	1.70	-	-	-	1.22	-0.62	3.05	-	-	-
Car accidents	14.55	-7.88	36.98	8.87	-5.21	22.95	8.63	0.58	16.68	29.92	3.36	56.47
Terrorist activities (fighting, shooting, etc.)	11.25	3.89	18.61	21.07	3.75	38.38	14.19	3.44	24.95	24.80	6.04	43.56
Other	20.76	9.91	31.61	28.61	0.61	56.60	11.01	2.52	19.49	8.11	-0.89	17.10
Population	171,004			75,273			75,058			33,019		
Sample	348			118			252			145		
Missing*	7			9			12			18		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Figure CP.16:

Percentage of Mothers Reporting that their Children or Other Children in the Community Were Affected by Incidents of Violence in the Three Months Preceding the Survey, According to Area and Region of Residence, Yemen, 2013
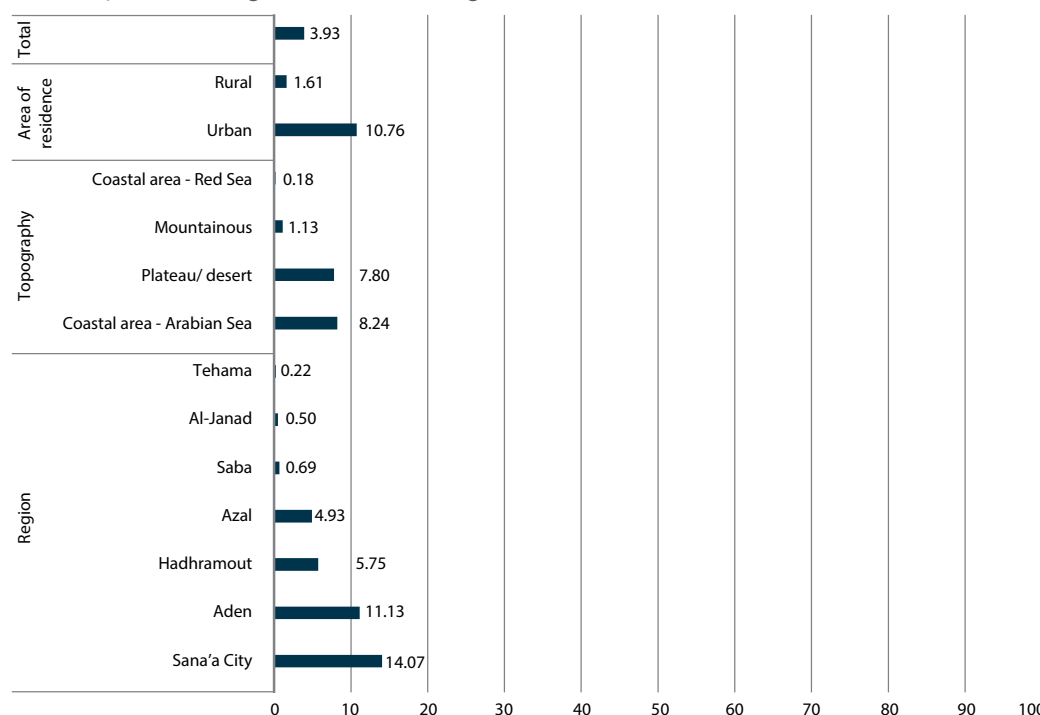
Source: NSPMS, Round 4.

ADULTS' PERCEPTIONS OF VIOLENCE TOWARDS CHILDREN

In 65.2 per cent of Yemeni households, mothers or the primary caregivers agree that children should be beaten when they make mistakes (table CP.14). This figure is considerably lower in urban (46 per cent) than in rural (71.8 per cent) areas. Sana'a City and Hadhramout have a lower percentage of mothers agreeing on children being beaten whenever they make a mistake (32.7 and 51.2 per cent), and Saba has a greater concentration of mothers who agree on this statement (80.6 per cent). By wealth quintiles, while 77.4 per cent of the mothers in the poorest households agree that children should be beaten in case of a mistake, less than half of the mothers (46.4 per cent) in the richest ones agree. According to the level of poverty, 80 per cent of the extreme poor believe children should be beaten compared to 61 per cent of the non-poor. The higher the level of education of the head of household, the lower the percentage of mothers who agree about beating their children when they make a mistake.

Mothers or primary caregivers were asked about which method is the most effective to discipline children. Figure CP.17 shows that half of mothers (or primary caregivers) believe that reprimand (49.8 per cent in round 4) is the most effective method to discipline children, followed by cursing/shouting (30.4 per cent) and beating (9.9 per cent).

Figure CP.17:
Percentage of Households with at Least One Child Aged 17 Years or Less by the Most Effective Method to Discipline Children, According to their Mothers or Primary Caregivers, Yemen, 2012-2013
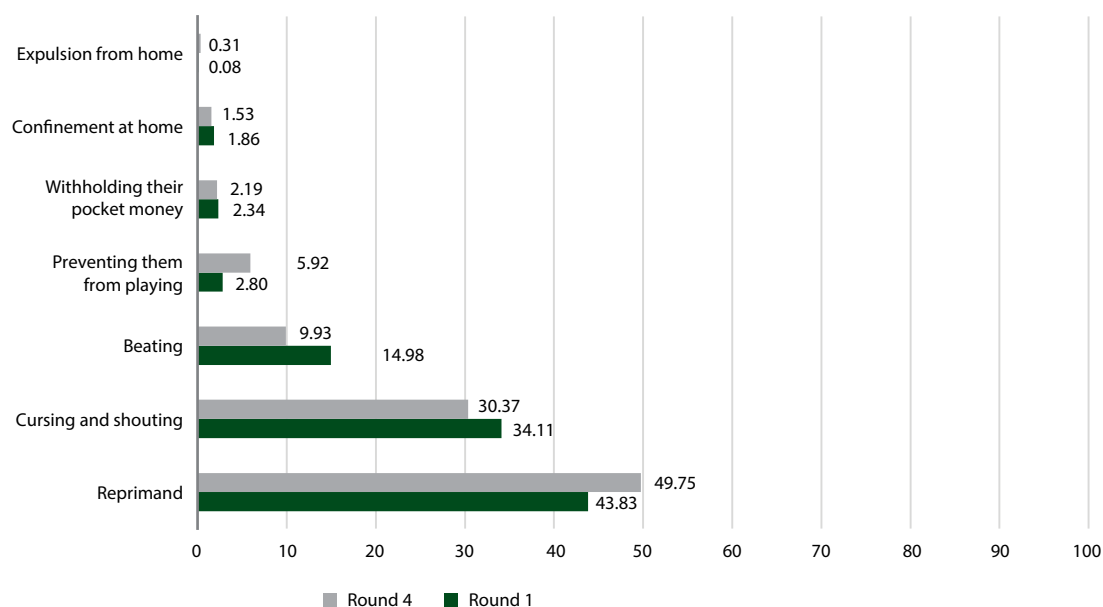
Source: NSPMS, Rounds 1 and 4.

PREVALENCE OF PHYSICAL VIOLENCE AND VERBAL ABUSE TOWARDS CHILDREN

Children are subjected to physical punishment by their mothers or primary caregivers in 66.4 per cent of households (table CP.15) and to verbal abuse in 73.7 per cent of households(table CP.16). Physical punishment of children is higher in rural (73.2 per cent) than urban (46.3 per cent) areas; no statistically significant difference is observed with regard to verbal punishment between different areas of residence. Hadhramout has one of the lowest percentages of mothers who needed to physically punish or verbally insult their children in the 30 days preceding the survey; Al-Janad and Saba had the highest percentages. Physical punishment took place in 47.3 per cent of households in Hadhramout, 84.5 per cent of households in Saba and 90.7 per cent of households in Al-Janad.

Physical abuse drop considerably among both the richest households and those whose heads have a higher level of education. For example, in the bottom wealth quintile, children are physically punished in 78.5 per cent of households, against 43.4 per cent in the upper wealth quintile; similarly, 83.8 per cent of

extremely poor children are physically punished when they make mistakes, against 59.2 per cent of non-poor children. Disaggregating by the level of education of the head of household shows that children are physically punished in 69.8 per cent of households headed by people with no education, versus 56.6 per cent of households headed by individuals with secondary education. This result suggests that children living in socioeconomically disadvantaged households face a higher risk of verbal and physical violence.

7.7 Concluding Remarks

In examining several dimensions of child protection in Yemen, we found some worrying indicators, but also some progress. Birth registration is an area where much progress needs to be made, particularly in rural areas. Early child marriage seems to be decreasing, but the incidence is still high. Similarly, the incidence of FGM/C seems to be declining, with education standing out as a key factor in its prevention. Education also seems to be a major determinant of the prevalence of physical and verbal abuse of children.

Concerning the prevalence of employment, girls are worse off than boys. They have a significantly higher risk of employment than boys, besides being significantly less likely to attend school. Low household income also represents a risk factor associated with a higher likelihood of employment among children. The education of the mother and head of household is another strong determinant of employment and lower school attendance. Investment in education, therefore, seems to have wider effects for children protection.

7.8 Tables

Table CP.1:
Percentage of Children under Five Years of Age whose Births were Registered, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	17.35	14.36	20.34	15.22	12.62	17.82
Sex						
Boys	18.83	14.91	22.75	15.17	12.02	18.33
Girls	15.70	15.64	15.75	15.28	15.23	15.33
Area of residence						
Urban	43.02	34.44	51.59	37.64	28.82	46.45
Rural	10.69	7.94	13.44	9.69	7.02	12.35
Region						
Sana'a City	37.61	23.43	51.78	29.10	12.23	45.98
Hadhramout	74.11	66.85	81.36	71.65	64.61	78.68
Saba	21.59	5.89	37.29	6.91	-2.19	16.01
Aden	41.70	34.10	49.29	52.59	45.99	59.19
Al-Janad	5.78	0.39	11.18	4.65	0.95	8.36
Tehama	5.54	1.97	9.11	2.33	-0.04	4.70
Azal	11.19	6.03	16.36	4.05	1.51	6.59
Topography						
Mountainous	7.44	3.39	11.49	5.52	2.93	8.10
Arabian Sea	72.68	61.46	83.90	81.54	74.11	88.97
Red Sea	4.89	0.41	9.38	3.29	-0.45	7.03
Plateau/desert	26.43	21.22	31.64	21.33	16.69	25.97
Wealth quintile						
Poorest	3.30	0.95	5.65	0.82	0.09	1.56
Second	4.33	1.27	7.39	3.71	1.83	5.60
Middle	9.46	5.45	13.47	8.33	4.34	12.33
Fourth	29.37	22.88	35.85	31.09	24.18	37.99
Richest	54.38	44.64	64.12	51.01	38.19	63.83

Level of Poverty						
Extreme poor	17.13	11.02	23.24	18.09	8.96	27.22
Moderate poor	20.48	14.06	26.90	14.93	10.91	18.95
Vulnerable	14.37	9.04	19.70	15.16	10.18	20.15
Non-poor	15.74	11.52	19.96	14.28	10.84	17.71
Head of household's education						
None	12.01	8.00	16.03	11.76	8.24	15.28
Basic	17.10	11.58	22.62	15.18	10.45	19.90
Secondary +	27.09	20.98	33.20	21.50	15.98	27.01
Quran & Literacy	12.56	2.69	22.43	11.70	4.29	19.12
Population		2,938,680			3,241,045	
Sample		5,847			6,395	
Missing*		4			2	

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Table CP.2:
F test: Birth Certificate Versus Wealth Quintiles and Head of Household's Education, Yemen, 2013

Does the child has a birth certificate?	Wealth quintile					
	Poorest	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
No	0.32	0.25	0.20	0.14	0.09	1.00
	0.99	0.96	0.92	0.69	0.49	0.84
Yes	0.01	0.05	0.10	0.33	0.51	1.00
	0.01	0.04	0.08	0.31	0.51	0.16
Total	0.27	0.22	0.19	0.17	0.16	1.00
	1.00	1.00	1.00	1.00	1.00	1.00

Pearson:

  Uncorrected $chi2(4)$ = 1344.3867

  Design-based $F(3.05, 1648.35)$= 63.5994 $P = 0.0000$

Sample	5,322
Population	2,667,839

Does the child has a birth certificate?	Head of household's educational attainment				
	None	**Basic**	**Secondary**	**Quran & Lit.**	**Total**
No	0.35	0.39	0.20	0.06	1.00
	0.88	0.85	0.79	0.88	0.85
Yes	0.26	0.38	0.31	0.05	1.00
	0.12	0.15	0.22	0.12	0.15
Total	0.33	0.39	0.22	0.06	1.00
	1.00	1.00	1.00	1.00	1.00

Pearson:

  Uncorrected $chi2(3)$ = 66.5901

  Design-based $F(2.87, 1564.42)$=   3.1791 $P = 0.0250$

Sample	6,395
Population	3,241,045

Source: NSPMS, Round 4.

Table CP.3:
Percentage of Children Under Age 18 Years with at Least One Deceased Parent,
Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	5.16	4.15	6.17	4.91	3.95	5.86
Sex						
Boys	5.47	4.08	6.85	5.05	3.76	6.35
Girls	4.83	4.83	4.83	4.75	4.74	4.75
Area of residence						
Urban	4.30	2.15	6.45	3.85	1.74	5.96
Rural	5.41	4.26	6.56	5.20	4.12	6.28
Region						
Sana'a City	4.00	1.74	6.25	3.36	0.87	5.84
Hadhramout	2.50	1.40	3.59	2.46	1.21	3.71
Saba	9.03	3.83	14.24	8.23	4.14	12.33
Aden	4.11	2.75	5.48	3.42	2.27	4.58
Al-Janad	5.00	2.75	7.25	4.48	2.36	6.59
Tehama	4.86	3.09	6.63	5.08	3.34	6.81
Azal	6.92	3.99	9.86	6.95	4.12	9.79
Topography						
Mountainous	6.47	4.47	8.47	6.09	4.22	7.96
Arabian Sea	2.47	1.16	3.78	2.43	1.18	3.68
Red Sea	2.69	1.39	4.00	2.94	1.52	4.36
Plateau/desert	5.20	3.89	6.52	4.81	3.55	6.07
Wealth quintile						
Poorest	4.45	3.13	5.77	4.81	3.24	6.38
Second	4.77	2.98	6.57	4.68	2.89	6.47
Middle	7.04	4.65	9.43	6.72	4.34	9.10
Fourth	5.60	2.41	8.79	5.34	2.12	8.55
Richest	3.95	1.78	6.12	3.85	1.45	6.25
Level of Poverty						
Extreme poor	7.71	3.81	11.61	4.91	2.54	7.28
Moderate poor	3.91	2.72	5.10	4.94	2.89	6.99
Vulnerable	3.90	1.67	6.14	4.47	2.17	6.77
Non-poor	5.93	4.28	7.57	5.07	3.72	6.43
Head of household's education						
None	7.02	5.20	8.84	6.38	4.83	7.93
Basic	4.07	2.55	5.60	4.39	2.61	6.16
Secondary +	3.75	2.05	5.45	3.42	1.69	5.14
Quran & Literacy	4.53	0.26	8.81	5.06	1.00	9.12
Population	11,019,720			11,731,026		
Sample	22,940			24,445		
Missing*	0			0		

Source: NSPMS, Rounds 1 and 4.
Note: * Missing information is not included in the statistics.

Table CP.4:
Incidence of Child Marriage,
Yemen, 2012-2013

	Percentage of women aged 20 to 49 years first married/in union by age 18						Percentage of women aged 15 to 49 years first married/in union by age 15					
	Round 1			Round 4			Round 1			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	43.40	40.62	46.18	41.58	38.68	44.47	15.30	13.52	17.08	14.34	12.51	16.16
Area of residence												
Urban	43.95	38.75	49.15	41.54	35.44	47.65	15.10	11.35	18.85	15.40	10.82	19.98
Rural	43.18	39.76	46.59	41.59	38.23	44.95	15.39	13.34	17.43	13.92	12.07	15.77
Region												
Sana'a City	50.38	40.41	60.36	51.56	43.64	59.48	14.85	8.71	20.99	18.87	9.25	28.48
Hadhramout	31.46	26.17	36.75	36.01	29.48	42.54	5.73	3.99	7.46	5.61	3.94	7.28
Saba	45.35	34.99	55.71	44.78	36.22	53.33	13.04	8.68	17.39	9.43	6.18	12.68
Aden	32.58	27.41	37.74	30.10	25.22	34.98	13.40	10.26	16.54	10.61	7.75	13.47
Al-Janad	46.93	40.90	52.96	43.83	36.30	51.36	15.55	11.15	19.94	14.68	10.41	18.96
Tehama	34.92	28.98	40.86	34.21	28.32	40.11	14.34	10.79	17.90	13.16	9.82	16.50
Azal	59.45	52.74	66.17	54.75	48.50	61.01	22.78	18.38	27.18	20.94	17.11	24.76
Topography												
Mountainous	46.47	41.89	51.05	44.86	40.35	49.38	16.86	13.80	19.92	15.62	12.64	18.61
Arabian Sea	31.63	26.69	36.57	32.82	25.38	40.25	9.49	5.86	13.13	8.16	5.06	11.26
Red Sea	31.66	22.49	40.83	30.38	21.57	39.18	12.71	7.37	18.04	11.51	6.46	16.55
Plateau/desert	46.75	42.52	50.99	43.97	39.09	48.84	15.58	12.86	18.30	15.00	11.94	18.06
Wealth quintile												
Poorest	46.06	39.58	52.54	45.75	39.26	52.25	15.82	12.17	19.48	17.37	13.43	21.31
Second	44.67	38.20	51.14	42.10	35.56	48.65	16.54	12.69	20.40	13.27	10.26	16.28
Middle	40.73	35.29	46.16	39.76	34.52	45.01	15.29	11.27	19.30	14.59	10.66	18.52
Fourth	44.58	39.65	49.51	45.04	40.22	49.87	17.29	14.06	20.52	14.99	11.80	18.17
Richest	41.67	36.10	47.24	38.49	31.13	45.84	12.05	8.05	16.04	11.99	8.18	15.81
Level of Poverty												
Extreme poor	43.98	37.58	50.38	42.05	36.78	47.32	11.90	8.59	15.22	9.33	6.61	12.05
Moderate poor	39.91	35.15	44.67	39.47	35.40	43.54	14.02	11.27	16.77	13.27	10.42	16.11
Vulnerable	48.80	42.57	55.04	41.41	36.13	46.68	18.21	13.53	22.89	17.42	13.00	21.85
Non-poor	43.46	38.88	48.03	42.68	37.81	47.56	16.10	13.25	18.95	15.14	12.35	17.94
Women's education												
None	49.26	45.12	53.41	48.34	43.86	52.82	21.57	18.88	24.26	20.61	17.85	23.37
Basic	44.88	40.40	49.36	41.30	36.88	45.72	12.84	9.91	15.77	12.14	9.29	14.99
Secondary +	22.82	16.36	29.28	22.50	15.56	29.44	3.05	0.71	5.39	4.09	1.05	7.12
Quran & Literacy	44.98	32.77	57.19	54.47	37.61	71.34	19.83	10.74	28.91	17.55	8.04	27.06
Population	3,903,923			4,157,179			5,220,658			5,553,125		
Sample	8,133			8,665			11,131			11,843		
Missing*	39			3			40			3		

Source: NSPMS, Rounds 1 and 4.
Note: * Missing information is not included in the statistics.

Table CP.5:

Percentage of Girls Aged 15-19 Years who are Currently Married or in Union, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	12.63	9.90	15.36	14.73	11.75	17.70
Area of residence						
Urban	10.45	5.39	15.51	13.01	7.05	18.98
Rural	13.40	10.13	16.67	15.34	11.93	18.75
Region						
Sana'a City	3.55	0.49	6.61	3.80	0.87	6.73
Hadhramout	10.22	3.87	16.56	11.86	5.51	18.22
Saba	16.81	9.00	24.62	21.74	12.94	30.54
Aden	16.56	9.56	23.56	16.02	9.01	23.04
Al-Janad	6.82	3.04	10.59	12.44	5.63	19.26
Tehama	12.13	5.41	18.85	16.44	9.44	23.45
Azal	24.31	17.14	31.49	21.41	14.73	28.10
Topography						
Mountainous	13.21	8.79	17.64	15.44	10.29	20.59
Arabian Sea	21.31	11.01	31.60	18.40	8.91	27.88
Red Sea	8.02	-0.56	16.61	14.77	3.60	25.93
Plateau/desert	12.05	8.02	16.09	13.44	9.77	17.10
Wealth quintile						
Poorest	16.56	8.64	24.48	19.41	9.00	29.82
Second	8.63	3.82	13.45	6.66	4.06	9.25
Middle	7.39	4.43	10.35	6.09	3.71	8.47
Fourth	17.18	10.74	23.63	15.10	8.53	21.67
Richest	13.62	7.16	20.08	11.99	6.43	17.54
Level of Poverty						
Extreme poor	14.70	6.34	23.06	16.77	9.19	24.35
Moderate poor	9.01	6.18	11.85	18.26	11.41	25.12
Vulnerable	10.50	5.08	15.92	8.99	4.85	13.13
Non-poor	15.89	10.69	21.09	14.05	10.09	18.02
Women's education						
None	24.08	15.51	32.64	23.31	15.55	31.07
Basic	9.59	7.31	11.86	12.47	9.08	15.87
Secondary +	8.01	3.17	12.86	12.03	5.91	18.16
Quran & Literacy	1.62	-1.62	4.85	15.67	-2.90	34.24
Population		1,316,808			1,395,947	
Sample		2,999			3,178	
Missing*		0			0	

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Table CP.6:

Percentage of Women Aged 0-14 and 15-49 Years who Have Undergone FGM/C, Yemen, 2012-2013

	Women aged 0-14 years						Women aged 15-49 years					
	Round 1			Round 4			Round 1			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	15.09	11.04	19.14	13.93	10.03	17.83	16.76	13.41	20.11	15.59	12.47	18.70
Area of residence												
Urban	12.51	6.11	18.92	11.81	5.42	18.20	14.82	9.41	20.23	14.84	9.02	20.66
Rural	15.79	10.84	20.75	14.47	9.73	19.22	17.52	12.92	22.11	15.89	11.62	20.15
Region												
Sana'a City	0.54	-0.11	1.18	0.35	-0.16	0.86	1.00	-0.18	2.19	0.92	-0.10	1.93
Hadhramout	58.37	48.31	68.43	57.14	45.11	69.17	65.73	58.50	72.95	65.33	57.83	72.82
Saba	0.15	-0.05	0.36	0.00	0.00	0.00	0.04	-0.03	0.10	0.00	0.00	0.00
Aden	2.00	0.44	3.56	0.76	-0.31	1.83	2.17	0.77	3.56	1.20	0.23	2.18
Al-Janad	12.00	1.72	22.28	10.69	0.32	21.05	8.56	2.17	14.96	5.59	0.56	10.61
Tehama	26.69	16.20	37.18	25.27	15.15	35.40	37.03	27.11	46.96	38.41	28.51	48.31
Azal	3.18	-0.06	6.41	2.78	-0.69	6.24	3.50	-0.04	7.04	3.20	-0.24	6.64
Topography												
Mountainous	2.53	0.70	4.36	2.05	0.51	3.58	3.39	0.47	6.31	2.08	0.57	3.59
Arabian Sea	37.06	20.93	53.20	33.67	18.09	49.24	33.99	22.05	45.93	31.27	19.87	42.67
Red Sea	48.65	29.49	67.80	46.70	27.87	65.54	59.06	43.89	74.24	62.04	47.07	77.02
Plateau/desert	10.27	6.69	13.85	9.75	6.11	13.39	12.53	8.34	16.71	11.18	7.31	15.05
Wealth quintile												
Poorest	26.22	14.86	37.57	23.44	12.51	34.36	26.85	18.16	35.55	26.16	17.37	34.95
Second	16.60	7.56	25.64	16.00	6.95	25.06	19.42	12.16	26.69	19.51	12.31	26.70
Middle	5.45	2.95	7.94	5.05	2.63	7.48	12.24	4.80	19.68	10.66	3.87	17.45
Fourth	11.32	7.27	15.36	11.70	7.31	16.09	12.93	8.36	17.50	12.98	8.62	17.33
Richest	14.12	6.53	21.70	14.22	6.56	21.87	14.78	9.28	20.27	13.96	8.68	19.24
Level of Poverty												
Extreme poor	22.35	9.27	35.44	22.16	8.05	36.28	19.91	11.28	28.54	20.25	11.70	28.79
Moderate poor	17.53	11.31	23.75	16.87	10.54	23.19	21.27	16.30	26.24	23.79	17.63	29.96
Vulnerable	15.94	7.23	24.66	15.70	6.50	24.91	13.57	8.05	19.10	14.87	9.16	20.59
Non-poor	8.96	6.19	11.72	8.00	5.39	10.61	13.73	9.38	18.08	10.02	6.89	13.15
Mother's and Woman's Education, respectively												
None	17.07	11.59	22.54	15.83	10.34	21.33	20.48	15.39	25.56	20.62	15.48	25.75
Basic	13.85	7.92	19.78	13.70	7.98	19.42	14.67	11.18	18.15	14.15	10.95	17.36
Secondary +	4.17	0.37	7.98	3.73	0.21	7.26	10.03	5.30	14.77	7.97	4.42	11.52
Quran & Literacy	13.61	4.03	23.18	12.46	1.81	23.11	22.68	11.33	34.03	10.09	3.24	16.94
Population	4,476,136			4,835,155			5,210,992			5,546,949		
Sample	9,345			10,077			11,113			11,827		
Missing*	73			9			58			22		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Table CP.7:
Percentage of Children Aged 6-14 Years who are Currently Engaged in Economic Activity (Remunerated and Non-remunerated) in the 30 Days Prior to the Survey, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	18.38	15.15	21.6	18.53	16.06	20.99	19.5	16.98	22.01	21.16	18.54	23.77
Sex												
Boys	15.42	11.91	18.93	16.13	13	19.25	15.71	12.55	18.87	17.92	14.36	21.48
Girls	21.49	21.42	21.57	21.07	21.02	21.13	23.5	23.44	23.55	24.58	24.53	24.63
Area of residence												
Urban	3.54	1.37	5.71	4.1	1.79	6.41	3.19	1.72	4.66	5.18	1.62	8.74
Rural	22.78	18.97	26.6	22.62	19.71	25.52	24.1	21.18	27.03	25.63	22.63	28.64
Region												
Sana'a City	3.72	-0.67	8.11	4.89	-0.1	9.88	3.99	0.56	7.41	5.08	0.15	10.01
Hadhramout	0.64	0.05	1.23	1.24	0.18	2.3	0.25	0.04	0.46	0.33	0.1	0.57
Saba	7.92	4.43	11.41	6.5	3.67	9.34	9.62	3.7	15.55	6.98	3.45	10.51
Aden	3.95	2.17	5.74	6.19	4.29	8.1	10.34	7.46	13.23	13.88	11	16.76
Al-Janad	14.19	8.07	20.3	21.76	15.13	28.38	17.84	11.3	24.38	22.07	14.82	29.32
Tehama	32.15	23.96	40.34	28.81	23.65	33.97	31.67	26.23	37.11	31.56	26.36	36.77
Azal	27.91	21.35	34.47	22.37	17.44	27.3	26.27	20.8	31.73	26.91	21.35	32.47
Topography												
Mountainous	19.01	14.73	23.3	21.96	18.46	25.46	22.7	19.24	26.16	24.76	21.2	28.31
Arabian Sea	2.6	0.18	5.02	1.75	0.44	3.06	3.01	1.15	4.86	2.75	0.58	4.92
Red Sea	39.63	27.04	52.22	32.78	22.96	42.6	34.46	24.27	44.66	34.99	24.73	45.24
Plateau/desert	10.99	8.07	13.9	11.31	8.45	14.17	12.24	9.33	15.14	14.18	10.66	17.71
Wealth quintile												
Poorest	33.4	24.55	42.25	36.88	31.2	42.56	36.96	30.95	42.96	37.01	30.57	43.46
Second	25.86	20.24	31.48	26.51	21.46	31.55	27.09	22.09	32.09	30.25	24.3	36.21
Middle	15.5	11.27	19.72	13.78	10.74	16.83	15.52	12.12	18.91	17.11	13.49	20.72
Fourth	10.03	6.2	13.86	10.91	8.01	13.81	13.53	10.07	16.99	13.76	9.63	17.89
Richest	3.1	0.49	5.71	2.03	-0.04	4.09	2.29	0.19	4.38	5.07	0.29	9.85
Level of Poverty												
Extreme poor	21.24	13.64	28.83	20.38	12.13	28.63	21.92	13.09	30.74	26.91	16.11	37.7
Moderate poor	19.63	13.28	25.98	19.11	15.31	22.9	20.88	16.81	24.94	21.11	17.19	25.03
Vulnerable	14.26	9.04	19.48	20.42	15.61	25.23	18.85	13.94	23.75	20.11	14.94	25.28
Non-poor	18.05	14.13	21.97	15.92	12.55	19.3	17.15	13.62	20.68	19.4	15.8	23
Head of household's education												
None	28.93	23.26	34.61	23.44	19.79	27.08	23.75	19.99	27.52	26.43	21.65	31.2
Basic	14.3	10.54	18.07	20.56	15.97	25.14	22.72	18.09	27.35	22.99	18.65	27.34
Secondary +	9.34	6.64	12.05	9.35	6.65	12.05	10.02	7.08	12.96	12.58	8.79	16.36
Quran & Literacy	11.23	4.08	18.38	17.62	7.88	27.36	16.65	7.12	26.18	16.72	8.77	24.67
Mother's education												
None	23.66	19.56	27.75	22.96	19.71	26.22	24.43	21.12	27.74	26.1	22.74	29.45
Basic	6.92	3.8	10.04	10.41	7.02	13.8	8.55	5.65	11.45	8.5	5.38	11.61
Secondary +	2.75	-0.21	5.7	1.55	0.56	2.54	3.07	0.94	5.2	8.53	-0.91	17.98
Quran & Literacy	9.99	1.94	18.04	15.94	7.14	24.73	22.83	11.38	34.28	25.53	12.88	38.19
Population	5,903,911			6,087,226			6,150,480			6,234,188		
Sample	12,354			12,794			12,909			13,054		

Table CP.9:
Percentage of Children Aged 6-14 Years who Work and Study among Children who are Attending School (Student Labourers), Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	15.93	12.53	19.33	16.30	13.89	18.71	17.30	14.70	19.90	19.84	16.99	22.69
Sex												
Boys	13.22	9.70	16.74	15.39	12.09	18.69	14.75	11.50	18.00	18.20	14.44	21.96
Girls	19.22	19.09	19.35	17.39	17.33	17.44	20.35	20.28	20.43	21.80	21.73	21.87
Area of residence												
Urban	3.34	1.07	5.62	3.73	1.17	6.29	3.22	1.55	4.89	5.40	1.18	9.63
Rural	20.66	16.43	24.88	20.79	17.86	23.72	22.30	19.16	25.45	24.94	21.59	28.29
Region												
Sana'a City	3.57	-1.05	8.18	4.39	-0.64	9.42	3.96	0.30	7.62	4.89	-0.36	10.14
Hadhramout	0.11	0.00	0.22	0.31	-0.09	0.71	0.06	-0.04	0.16	0.09	-0.02	0.21
Saba	4.80	2.27	7.33	5.03	3.03	7.02	9.35	2.30	16.39	4.48	2.44	6.52
Aden	3.04	1.27	4.81	5.99	3.87	8.10	10.28	6.82	13.74	14.78	11.33	18.23
Al-Janad	13.92	7.72	20.13	19.92	13.83	26.02	16.17	9.85	22.49	21.31	14.45	28.18
Tehama	30.28	21.15	39.41	27.45	22.22	32.67	30.38	24.80	35.96	30.96	24.29	37.63
Azal	25.72	17.50	33.95	19.54	14.22	24.86	24.09	18.02	30.16	26.99	20.40	33.59
Topography												
Mountainous	18.80	13.64	23.96	20.96	16.90	25.02	22.03	17.84	26.22	24.85	20.51	29.20
Arabian Sea	1.64	-0.89	4.17	0.97	0.12	1.83	2.24	0.49	4.00	2.46	-0.06	4.98
Red Sea	39.79	25.25	54.34	29.78	20.22	39.33	32.81	21.55	44.07	32.90	20.29	45.51
Plateau/desert	7.57	5.11	10.03	9.38	6.53	12.23	9.81	7.00	12.62	13.22	9.19	17.25
Wealth quintile												
Poorest	33.20	21.35	45.05	37.02	31.03	43.00	35.36	28.10	42.62	35.02	27.94	42.10
Second	26.21	19.67	32.75	27.13	21.27	32.98	27.51	21.41	33.61	32.17	24.87	39.47
Middle	14.52	9.49	19.54	12.25	8.73	15.78	15.49	11.52	19.46	17.84	13.41	22.27
Fourth	8.90	4.85	12.94	9.74	6.48	13.00	12.18	8.65	15.70	13.25	8.57	17.94
Richest	2.85	0.06	5.64	2.18	-0.16	4.52	2.49	0.11	4.88	5.95	0.33	11.56
Level of Poverty												
Extreme poor	18.96	9.16	28.75	16.74	9.52	23.95	20.50	11.14	29.87	26.64	14.57	38.71
Moderate poor	16.97	10.13	23.81	15.96	11.87	20.05	16.51	12.63	20.39	19.60	14.63	24.57
Vulnerable	13.31	7.26	19.36	20.12	14.17	26.07	18.08	12.21	23.96	17.09	11.82	22.37
Non-poor	15.36	11.40	19.32	14.56	10.95	18.18	16.31	12.46	20.17	19.24	14.99	23.49
Head of household's education												
None	25.93	18.64	33.23	21.26	16.73	25.78	22.42	17.47	27.38	24.92	19.07	30.77
Basic	13.46	9.16	17.77	18.37	14.17	22.57	19.82	15.68	23.95	22.57	18.19	26.94
Secondary +	9.15	6.11	12.18	9.64	6.57	12.71	10.30	6.95	13.66	13.16	8.79	17.53
Quran & Literacy	9.94	1.85	18.03	14.09	4.69	23.50	14.33	5.05	23.61	14.58	6.87	22.28
Mother's education												
None	21.53	16.99	26.07	20.33	17.01	23.65	21.82	18.29	25.36	24.49	20.77	28.22
Basic	7.36	3.78	10.94	10.79	7.10	14.47	9.02	5.69	12.35	9.26	5.50	13.02
Secondary +	0.96	0.15	1.76	1.23	0.38	2.07	2.83	0.74	4.93	9.60	-1.13	20.32
Quran & Literacy	8.97	1.78	16.15	15.88	6.97	24.79	23.52	10.45	36.58	26.34	12.81	39.88
Population	4,344,863			4,403,173			4,387,296			4,367,315		
Sample	8,849			9,007			9,024			9,031		
Missing*	0			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information is not included in the statistics.*

Table CP.10:

Percentage of Children Aged 6-14 Years who Work and Attend School among Children who Work (Labourer Students), Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	63.79	.	.	63.63	58.47	68.80	63.31	57.26	69.36	65.68	59.91	71.46
Sex												
Boys	67.33	.	.	73.14	65.77	80.51	70.97	63.77	78.18	75.42	68.36	82.49
Girls	61.11	.	.	55.92	55.69	56.15	57.89	57.58	58.20	58.18	57.89	58.47
Area of residence												
Urban	82.81	.	.	78.53	62.58	94.47	85.43	76.33	94.53	87.16	76.51	97.82
Rural	62.91	.	.	62.87	57.59	68.14	62.48	56.25	68.71	64.47	58.54	70.40
Region												
Sana'a City	90.05	.	.	81.81	57.82	105.80	90.53	75.22	105.85	87.35	71.71	102.99
Hadhramout	14.05	.	.	20.35	5.83	34.87	20.79	-17.92	59.50	22.07	-7.26	51.41
Saba	45.29	.	.	53.46	40.45	66.47	67.14	50.08	84.20	43.10	26.72	59.49
Aden	58.34	.	.	67.55	53.95	81.14	70.73	60.65	80.80	76.47	67.67	85.27
Al-Janad	76.38	.	.	73.16	61.51	84.81	68.73	55.49	81.97	72.83	57.61	88.05
Tehama	55.66	.	.	57.27	48.69	65.84	57.02	46.24	67.79	56.91	47.50	66.33
Azal	68.26	.	.	61.53	51.69	71.37	64.94	55.60	74.29	68.48	59.00	77.96
Topography												
Mountainous	75.33	.	.	72.03	66.50	77.56	71.71	64.96	78.46	72.52	65.03	80.01
Arabian Sea	52.62	.	.	44.25	25.48	63.02	59.26	38.69	79.83	70.74	46.21	95.27
Red Sea	57.17	.	.	50.77	39.52	62.01	52.17	37.54	66.80	50.84	38.23	63.46
Plateau/desert	52.64	.	.	61.97	52.58	71.37	59.47	50.10	68.83	68.15	58.31	77.98
Wealth quintile												
Poorest	48.10	.	.	48.80	40.90	56.69	45.78	35.42	56.14	44.14	35.86	52.42
Second	75.00	.	.	76.78	70.72	82.84	74.98	68.32	81.65	77.32	71.51	83.12
Middle	71.87	.	.	70.90	62.54	79.26	76.48	69.04	83.93	79.69	72.65	86.72
Fourth	73.81	.	.	72.12	59.86	84.38	73.65	61.93	85.37	78.42	66.66	90.17
Richest	83.26	.	.	94.47	86.40	102.54	94.99	87.08	102.90	99.16	97.99	100.32
Level of Poverty												
Extreme poor	54.19	.	.	51.56	45.75	57.37	53.50	46.25	60.74	54.56	44.05	65.08
Moderate poor	60.75	.	.	55.25	46.16	64.33	52.02	40.56	63.47	60.16	48.39	71.93
Vulnerable	73.66	.	.	74.28	65.94	82.62	76.80	69.50	84.10	59.72	45.70	73.74
Non-poor	68.11	.	.	75.36	68.13	82.59	75.62	68.07	83.18	78.92	72.61	85.24
Head of household's education												
None	56.55	.	.	57.34	50.11	64.57	57.60	50.51	64.68	56.65	48.96	64.33
Basic	69.96	.	.	62.49	53.24	71.75	60.51	48.90	72.12	66.56	55.17	77.96
Secondary +	86.12	.	.	89.35	84.47	94.23	88.62	83.50	93.75	88.29	83.33	93.25
Quran & Literacy	68.23	.	.	61.90	49.03	74.78	67.56	56.45	78.68	69.21	56.85	81.58
Mother's education												
None	61.93	.	.	60.17	54.46	65.87	60.12	.	.	62.08	.	.
Basic	92.25	.	.	86.70	80.22	93.19	86.60	.	.	86.63	.	.
Secondary +	29.40	.	.	72.82	44.80	100.84	80.24	.	.	97.13	.	.
Quran & Literacy	78.50	.	.	86.80	73.85	99.76	89.68	.	.	87.97	.	.
Population	1,084,903			1,127,823			1,199,039			1,319,050		
Sample	1,893			2,249			2,439			2,676		
Missing*	0			0			0			0		

Source: NSPMS, All Rounds.
*Note: * Missing information is not included in the statistics.*

Table CP.11:
Percentage of Mothers Reporting that Their Children or Other Children in the Community were Affected by Incidents of Violence in the Three Months Preceding the Survey, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	9.15	6.69	11.60	3.93	2.28	5.58
Area of residence						
Urban	24.50	16.19	32.81	10.76	4.71	16.82
Rural	3.77	2.50	5.03	1.61	0.86	2.36
Region						
Sana'a City	23.15	10.61	35.68	14.07	1.45	26.69
Hadhramout	13.65	6.40	20.91	5.75	2.19	9.32
Saba	1.67	0.54	2.81	0.69	-0.11	1.48
Aden	30.27	20.49	40.04	11.13	3.07	19.18
Al-Janad	5.37	-0.99	11.73	0.50	-0.48	1.48
Tehama	0.82	0.28	1.37	0.22	0.00	0.44
Azal	7.33	3.73	10.93	4.93	1.18	8.68
Topography						
Mountainous	3.12	1.37	4.88	1.13	0.32	1.94
Coastal area - Arabian Sea	32.16	21.22	43.10	8.24	3.52	12.95
Coastal area - Red Sea	1.37	-0.46	3.19	0.18	-0.08	0.44
Plateau/desert	15.28	9.69	20.88	7.80	3.68	11.92
Wealth quintile						
Poorest	2.82	0.38	5.26	0.66	0.16	1.17
Second	2.61	1.22	4.00	1.42	0.13	2.70
Middle	3.74	2.09	5.38	1.50	0.69	2.32
Fourth	11.61	8.14	15.08	5.94	2.94	8.94
Richest	27.39	17.10	37.68	11.19	3.76	18.63
Level of Poverty						
Extreme poor	10.31	5.81	14.81	2.70	1.33	4.08
Moderate poor	9.38	6.49	12.27	4.21	1.63	6.78
Vulnerable	9.24	3.61	14.87	2.43	0.57	4.30
Non-poor	8.68	4.32	13.04	4.58	2.17	6.98
Head of household's education						
None	3.88	2.63	5.13	2.07	0.77	3.37
Basic	8.48	5.96	11.00	3.44	1.63	5.26
Secondary +	17.46	9.73	25.19	7.25	2.49	12.00
Quran & Literacy	14.48	4.27	24.69	4.58	-2.39	11.54
Mother's education						
None	11.13	6.80	15.45	3.22	0.80	5.63
Basic	4.32	-4.23	12.86	0.00	0.00	0.00
Secondary +	11.01	-8.00	30.02	0.00	0.00	0.00
Quran & Literacy	7.93	-7.81	23.68	0.00	0.00	0.00
SWF status						
Non-beneficiary	9.78	6.53	13.04	3.97	1.90	6.05
Old beneficiary	6.60	4.79	8.40	3.49	1.62	5.35
New beneficiary	10.08	5.92	14.23	4.59	1.85	7.32
Population	2,690,521			2,752,915		
Sample	5,427			5,540		
Missing*	19			27		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Table CP.14:
Percentage of Mothers who Strongly Agree or Somewhat Agree that Children
Should be Beaten when They Make Mistakes in Order to Properly Raise Them,
Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	62.55	58.31	66.79	65.23	61.79	68.68
Area of residence						
Urban	46.42	37.52	55.32	45.97	38.21	53.72
Rural	68.17	63.57	72.76	71.82	68.37	75.27
Region						
Sana'a City	45.03	27.87	62.18	32.70	17.12	48.27
Hadhramout	47.58	35.88	59.28	51.24	42.02	60.46
Saba	67.29	57.52	77.07	80.58	74.00	87.15
Aden	57.81	50.38	65.25	63.92	57.24	70.60
Al-Janad	61.67	49.82	73.52	69.46	60.88	78.04
Tehama	64.75	58.29	71.21	69.31	63.48	75.14
Azal	76.20	69.88	82.53	70.40	63.89	76.91
Topography						
Mountainous	70.32	62.27	78.37	73.36	68.55	78.17
Coastal area - Arabian Sea	58.08	46.15	70.01	65.74	54.54	76.94
Coastal area - Red Sea	55.85	45.30	66.40	62.21	52.04	72.38
Plateau/desert	57.92	51.55	64.30	57.87	52.13	63.61
Wealth quintile						
Poorest	74.63	67.69	81.56	77.44	71.06	83.83
Second	67.58	59.69	75.47	70.55	64.06	77.03
Middle	66.75	58.75	74.74	69.17	63.17	75.17
Fourth	58.71	52.35	65.08	59.35	52.57	66.12
Richest	41.73	31.38	52.09	46.36	36.44	56.28
Level of Poverty						
Extreme poor	76.20	68.43	83.98	79.75	71.86	87.64
Moderate poor	68.76	62.93	74.59	67.03	61.05	73.02
Vulnerable	64.31	56.09	72.54	68.33	60.88	75.79
Non-poor	54.36	47.65	61.08	60.56	55.42	65.71
Head of household's education						
None	72.17	67.96	76.38	69.26	64.79	73.74
Basic	59.08	50.77	67.40	67.65	62.50	72.80
Secondary +	50.54	41.85	59.23	53.31	45.51	61.10
Quran & Literacy	64.98	51.00	78.95	75.71	64.84	86.59
Mother's education						
None	59.47	50.40	68.53	58.22	47.76	68.69
Basic	74.84	40.85	108.84	21.07	-15.07	57.21
Secondary +	9.60	-7.77	26.97	82.86	48.27	117.46
Quran & Literacy	12.19	-10.11	34.49	62.68	21.08	104.27
SWF status						
Non-beneficiary	60.22	54.67	65.77	65.40	60.84	69.95
Old beneficiary	65.95	61.39	70.52	65.49	60.83	70.16
New beneficiary	70.46	62.69	78.23	63.91	55.29	72.52
Population	2,665,921			2,742,661		
Sample	5,364			5,515		
Missing*	82			52		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Table CP.15:
Percentage of Mothers Reporting that They Physically Punished Any of Their Children in the 30 Days Preceding the Survey, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	64.23	60.77	67.70	66.38	62.99	69.78
Area of residence						
Urban	48.41	41.07	55.74	46.33	38.37	54.29
Rural	69.81	66.07	73.54	73.22	70.09	76.35
Region						
Sana'a City	48.44	35.13	61.74	38.35	20.66	56.04
Hadhramout	39.49	27.81	51.17	45.95	38.90	52.99
Saba	65.88	55.30	76.47	71.75	62.02	81.47
Aden	49.17	41.01	57.32	65.46	58.88	72.05
Al-Janad	76.74	68.37	85.10	75.59	67.75	83.44
Tehama	58.33	52.28	64.37	67.66	61.78	73.55
Azal	80.32	74.80	85.85	70.30	63.84	76.75
Topography						
Mountainous	78.57	74.08	83.06	75.06	70.44	79.68
Coastal area - Arabian Sea	56.20	44.27	68.13	56.73	46.49	66.97
Coastal area - Red Sea	45.56	33.97	57.16	59.94	49.28	70.59
Plateau/desert	58.24	52.40	64.08	61.37	55.40	67.34
Wealth quintile						
Poorest	72.10	65.14	79.06	78.50	72.76	84.23
Second	70.32	63.69	76.95	74.27	68.07	80.48
Middle	72.50	66.36	78.64	69.01	62.33	75.69
Fourth	57.41	50.55	64.27	62.79	56.29	69.29
Richest	46.30	36.89	55.71	43.36	33.46	53.26
Level of Poverty						
Extreme poor	77.13	70.90	83.37	83.84	77.18	90.51
Moderate poor	67.74	62.02	73.46	71.98	66.66	77.29
Vulnerable	65.09	56.68	73.50	69.62	62.63	76.62
Non-poor	58.53	52.65	64.40	59.21	54.00	64.43
Head of household's education						
None	66.82	62.42	71.23	69.80	66.11	73.48
Basic	64.80	58.18	71.42	67.39	61.92	72.86
Secondary +	57.10	48.85	65.36	56.60	48.80	64.40
Quran & Literacy	74.49	63.56	85.42	79.58	70.37	88.79
Mother's education						
None	69.01	61.65	76.38	67.86	58.67	77.06
Basic	18.04	-15.06	51.14	18.10	-15.62	51.82
Secondary +	72.16	28.50	115.82	82.86	48.27	117.46
Quran & Literacy	18.07	-12.15	48.29	88.58	73.30	103.86
SWF status						
Non-beneficiary	64.16	59.53	68.80	65.19	60.57	69.81
Old beneficiary	63.79	59.47	68.10	67.24	63.05	71.42
New beneficiary	65.45	57.65	73.25	72.67	66.75	78.59
Population	2,652,937			2,732,518		
Sample	5,313			5,473		
Missing*	133			94		

Source: NSPMS, Rounds 1 and 4.
*Note: * Missing information is not included in the statistics.*

Table CP.16:
Percentage of Mothers Reporting that They (or Their Partner or Any Adult Household Member) Had to Shout at or Verbally Insult Any of Their Children in the 30 Days Preceding the Survey, Yemen, 2012-2013

	Round 1			Round 4		
	Value	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**
Total	79.46	76.91	82.01	73.71	70.85	76.58
Area of residence						
Urban	76.41	69.33	83.50	66.73	59.86	73.60
Rural	80.53	77.61	83.46	76.10	72.52	79.69
Region						
Sana'a City	90.57	84.24	96.91	73.85	63.08	84.61
Hadhramout	46.82	35.22	58.42	47.27	40.02	54.51
Saba	79.54	73.08	86.01	84.52	76.38	92.66
Aden	62.96	55.72	70.21	70.28	64.18	76.39
Al-Janad	93.58	89.97	97.19	90.78	86.63	94.92
Tehama	70.78	64.83	76.74	64.12	57.11	71.13
Azal	88.37	84.39	92.35	72.47	66.49	78.45
Topography						
Mountainous	90.35	87.44	93.26	83.83	80.29	87.37
Coastal area - Arabian Sea	62.95	51.30	74.59	64.69	54.42	74.96
Coastal area - Red Sea	59.39	48.25	70.53	50.10	37.34	62.86
Plateau/desert	79.01	74.92	83.10	74.32	69.86	78.77
Wealth quintile						
Poorest	84.12	79.80	88.43	80.31	75.18	85.44
Second	81.14	75.31	86.97	77.77	70.82	84.73
Middle	80.40	73.80	87.01	73.60	65.67	81.54
Fourth	74.69	68.62	80.76	70.00	63.81	76.20
Richest	75.98	68.88	83.07	65.06	57.16	72.97
Level of Poverty						
Extreme poor	84.48	79.30	89.66	84.24	77.53	90.95
Moderate poor	76.94	71.78	82.10	73.58	68.58	78.58
Vulnerable	83.20	76.85	89.54	72.20	65.21	79.20
Non-poor	78.47	74.40	82.55	72.44	68.09	76.78
Head of household's education						
None	79.65	76.17	83.14	73.78	69.53	78.03
Basic	78.30	73.15	83.44	73.17	68.38	77.95
Secondary +	78.70	72.86	84.55	70.85	63.70	78.00
Quran & Literacy	87.10	80.27	93.94	88.06	80.53	95.60
Mother's education						
None	78.38	72.14	84.62	70.98	61.59	80.37
Basic	88.63	70.70	106.55	93.13	81.75	104.51
Secondary +	95.73	86.16	105.29	82.86	48.27	117.46
Quran & Literacy	15.51	-10.81	41.83	87.72	71.72	103.71
SWF status						
Non-beneficiary	78.77	75.29	82.24	72.46	68.90	76.03
Old beneficiary	79.66	76.00	83.31	76.30	72.63	79.97
New beneficiary	83.43	79.09	87.76	76.96	69.11	84.81
Population	2,651,757			2,737,770		
Sample	5,312			5,469		
Missing*	134			98		

Source: NSPMS, Rounds 1 and 4.
Note: * Missing information is not included in the statistics.

8 Work and Income

8.1 Labour Market Conditions by Age and Sex

The best indicator for understanding how individuals take part in the labour market is the labour force participation rate, disaggregated by age and sex, as defined by the ILO. These rates are estimated as the number of people active in the labour force, i.e., the members of the working-age population who are either working or actively looking for a job, divided by the number of people of working age. The open unemployment rate is another indicator that is regularly monitored. However, in developing countries, where the formal labour market is not fully developed, open unemployment rates tend to be smaller. This is even more common in countries where large segments of the population work on their livelihoods (in agriculture). Thus, it is important to complement the labour force participation rate and the unemployment rate analysis with a thorough analysis of employment in agriculture and the proportion of unpaid family workers. This section undertakes such an analysis for Yemen based on the NSPMS data.

There have been profound changes in women's participation in the labour force in recent decades in both developed and developing countries. The gender gap between male and female economic participation is still high but is declining over time, especially in more developed economies. The labour market conditions for males in Yemen follow a pattern that is observed in many other countries around the world.[116] Labour force participation rates are lower for younger and older individuals and relatively stable (and high) in the prime ages.[117] The rate of labour force participation for males aged 30–44 years is about 90 per cent and declines to about 34 per cent for those aged 70 and over according to the NSPMS data for round 4 (figure WI.1).

Some stylized facts also pertain to female labour force participation. First, it presents a U-shaped curve in relation to economic development.[118] Second, it has a strong relationship to trends in fertility levels and the role of women in society.[119] In Yemen, as in other Middle Eastern countries, female labour force participation is also affected by political institutions and social norms.[120]

Thus, female labour force participation rates are much lower than those of males (figure WI.1). In general, female labour force participation is high at younger ages when most women are unmarried and childless, declines as

women get married and stays low for the rest of the age distribution.[121] The rate of labour force participation for women aged 30–39 years is 55 per cent compared to 93 per cent for man. However, both rates follow a similar pattern, increasing with age to prime-age individuals and starting to decline rapidly after 40 years of age. For women older than age 70, labour force participation is about 10 per cent, against 34 per cent for men.

The other important indicator for understanding the labour market is the unemployment rate. Following the ILO definition of 'open unemployment' as those actively look for a job, figure WI.1 shows how the unemployment rate varies with age in Yemen. The unemployment rate follows a U-shaped curve along the age of the individuals for ages 15-65 years (the working-age population according to our definition). Unemployment rates are higher for younger persons, reach a minimum among the adult population and start growing again as people age. This pattern is largely determined by the male unemployment rate, which is much higher than the female unemployment rate, particularly, at the extremes of the age range. Unemployment rates for male youth (15-24 years) are 23 per cent, compared to under 7 per cent for females in the same age group. However, the low level of unemployment for women may be masking a very idiosyncratic type of insertion into the labour market observed in Yemen, namely, the large proportion of women employed in agriculture and working as unpaid family workers. Figure WI.1 also shows how working in livelihoods and being an unpaid family worker has a clear gender divide. Most employed women are unpaid family workers working in agriculture across the age structure; for men this is not the case, particularly during the prime age when fewer of them work in the agricultural sector or are unpaid family workers.

Figure WI.1:
Participation Rate, Unemployment Rate, Livelihoods, Unpaid Family Members by Age Groups, Yemen, 2013
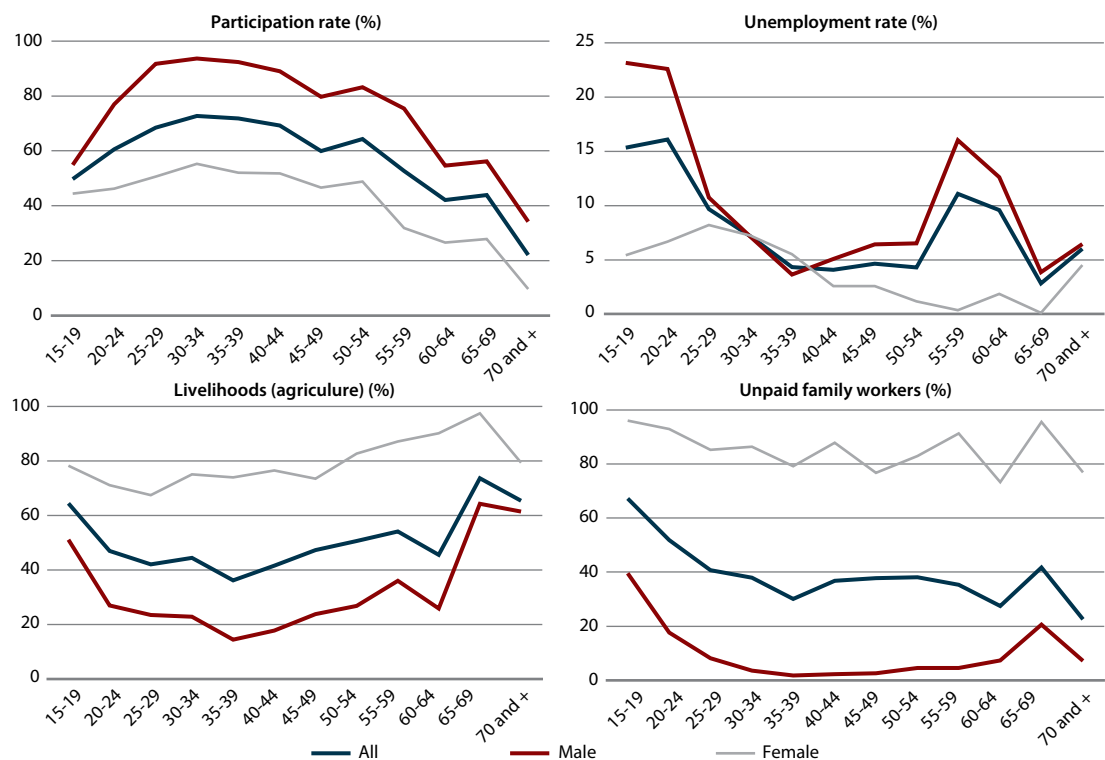
Source: NSPMS, Round 4.

8.2 Unemployment, Employment, Hours Worked and Monthly Work Income

Table WI.1 shows the consolidated data for all rounds of the NSPMS related to labour force participation rate, unemployment rate, proportion of occupied population working in livelihoods and proportion of unpaid

family workers. It disaggregates these indicators along several dimension to offer a clear picture of the heterogeneities hidden by national averages.

According to the NSPMS, on overage about 58.3 per cent of the Yemeni population aged 15-65 years were participating of the labour market during the NSPMS. The indicator differs significantly for the urban and rural areas of the country. While 63.4 per cent of the working-age population are part of the labour force in rural areas of Yemen, just 44.6 per cent are economically active in urban areas. Overall, the rates are also different for males and females, as shown previously; males (73.5 per cent) are more engaged in the labour market than females (44.3 per cent). The participation rates also differ according to the relationship of the individual with the head of household. For example, the participation rate of the head of the household is 80 per cent, compared to 50 per cent for their spouses. As for regions, the participation rates are higher in Tehama (72 per cent) and Azal (67 per cent) regions and lower in Hadhramout (34 per cent) and Sana'a City (41 per cent).

With regard to the topography, participation rates are higher in the mountainous areas (64 per cent) and the Red Sea coastal area (68 per cent) and lower in the plateau/desert area (52 per cent) and in the Arabian Sea coastal area (45 per cent).

As for the wealth quintiles, the NSMPS data show that the lowest quintiles have much higher participation rates than the richest one. However, for the poverty levels there are no remarkable differences among the poor and non-poor groups. Similarly, there are no striking differences between individuals in households with different SWF status, even though the point estimate for new beneficiaries (61 per cent) is higher than for old beneficiaries and non-beneficiaries (58 per cent for both). Finally, looking across rounds shows a lower level of participation in round 1 (October-December 2012) than for all other rounds. We will come back to this later in this section to identify what may have caused this.

The average unemployment rate is relatively low, at 9 per cent, but it hides tremendous differences across different categories. First, it is much higher for males (11.2 per cent) than for females (4.2 per cent). Second, in urban areas, it reaches 15 per cent but it half that figure (7.3 per cent) in rural areas. Third, it varies widely across regions, reaching 18 per cent in Sana'a City, 17.5 per cent in Saba and 13.6 per cent in Aden. The low unemployment rates in Azal and Al-Janad bring down the national averages. As for topography, the Arabian Sea coastal area show the highest unemployment rate, around 15 per cent, followed by the plateau/desert (11.3 per cent), Rea Sea coastal area (8.5 per cent) and the mountainous area (6.2 per cent).

As for wealth quintiles, the unemployment rate is much lower for the lowest quintiles than for the richest ones. Again, such differences are not observed using poverty levels or SWF beneficiary status. Similar to what was observed for the participation rate, the unemployment rate for round 1 is much lower, actually one half of the rate that was observed for the other rounds. Overall, open unemployment in Yemen is an urban phenomenon that affects mainly young men entering the labour market. The combination of these three factors can lead to a very high unemployment rate. The unemployment rate of young men aged between 15-24 years who live in urban area is about 28 per cent. Figure WI.2 compares the urban male unemployment rate for youth (15-24 years) and all urban males in working age (15-65 years). Despite showing the same trends, the unemployment rate of young urban males is 10 percentage points higher than the rate for the entire male urban population. Its peak occurred in the second round (January-March 2013) when it reached 31 per cent

Table WI.1 also shows that most workers in Yemen (48 per cent) are employed in the agricultural sector. As emphasized earlier, agriculture is the main sector of occupation for women; about 75 per cent of them are working in the agricultural sector, compared to 29 per cent of males. Not surprisingly, it is also the sector where most spouses work (75 per cent). In rural areas, 57 per cent of the working population are in the agriculture sector, compared to just 12 per cent in urban areas. Tehama and Azal have the highest proportion of individuals engaged in agriculture, 62 and 59 per cent, respectively. Sana'a City as an urban area has the lowest proportion (3.3 per cent). As for topography, the Red Sea coastal area and the mountainous areas have the highest proportion of workers involved in agriculture (54 and 53 per cent, respectively). The wealth quintiles show a clear pattern of the poorest quintiles (68 per cent) working more in agriculture than the richest ones (15 per cent). Again, this pattern is not clear when we use the PMT-based poverty groups, although the extreme poor have the highest point estimate, 54.5 per cent. As for SWF status, old SWF beneficiary household members seem more likely to work in agriculture than non-beneficiaries.

In Yemen, 42 per cent of workers are unpaid family members. This figure, as mentioned previously, is largely driven by the particular way that Yemeni women enter the labour market. About 86 per cent of the working women in Yemen are unpaid family workers, against just 10.6 per cent of men. Unlike many countries, where

unpaid family workers is almost synonymous with child labour, in Yemen, unpaid family workers are also deeply associated with women's work in agriculture. It is important to bear in mind that the figures in table WI.1 refer to the working-age population aged 15 to 65 years. Child labour and its insertion in the labour market are analyzed separately in chapter 7 on child protection.

Figure WI.2:
Unemployment Rate for Urban Males, Yemen, 2012-2013

Urban male unemployment rate (%)

— Urban male unemployment rate young (15 to 24)
— Urban male unemployment rate all (15 to 65)
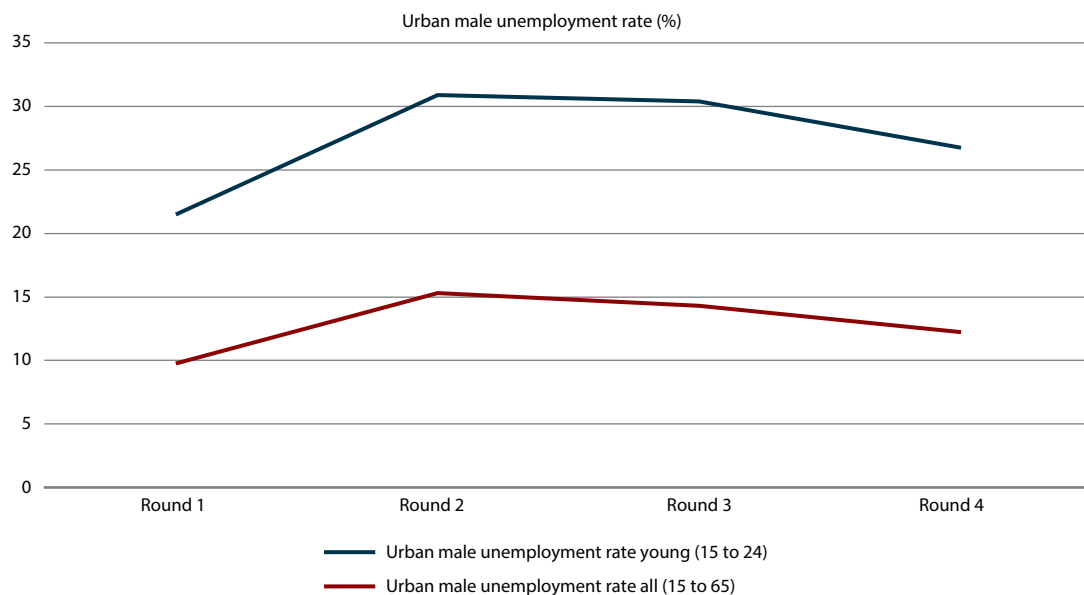
Source: NSPMS, All Rounds.

Figure WI.3:
Monthly Labour Force Participation Rate and Unemployment Rate by Sex, Yemen, 2012-2013

— All   — Male   — Female
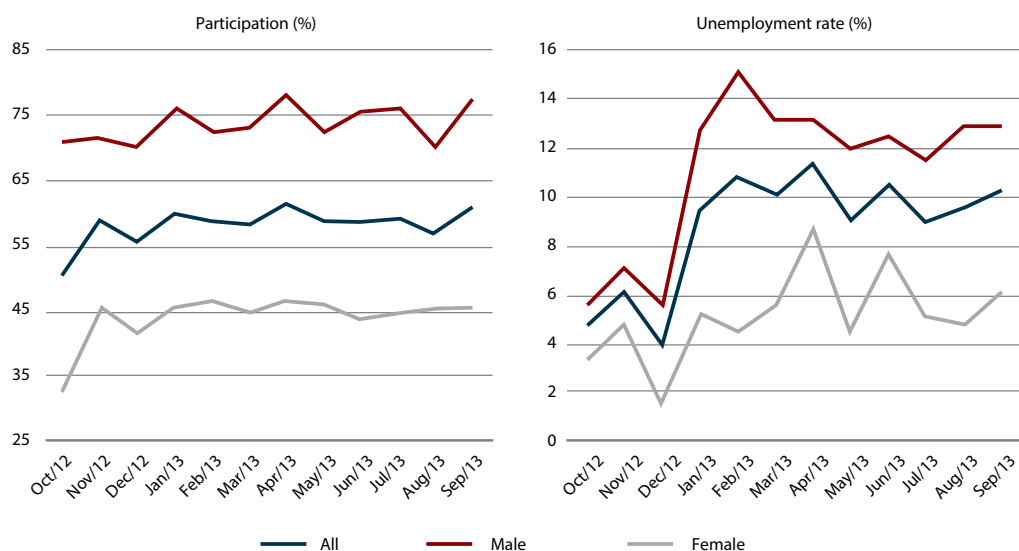
Source: NSPMS, All Rounds.

Before analyzing other work indicators, hours worked and monthly average wages in Yemen, we will look again at the labour force participation rate and the unemployment rate in order to explain their lower incidence in the first round of the NSPMS (October-December 2012).

Figure WI.3 shows that the lower level of the participation rate indicator in round 1 (October-December 2012) is largely influenced by the October 2012 female participation rate. This rate increases by 10 percentage points from October to November, which suggests that there might have been a problem in the data collection for this specific part of the questionnaire in that first month of the interview. One possible explanation, as the same jump was not observed for the male subsample, is that some unpaid family workers were actually counted as inactive during data collection. To reinforce this argument, it is striking that female unpaid family workers were estimated at 75 per cent in October 2012 and then jumped to 86 per cent in November in 2012, fluctuating around this latter value for the other months of the NSPMS. As for the unemployment rate, a similar pattern is observed for both males and females; the rate is low for the three months of round 1, but there is a particular dip in December that is stronger for women. Thus, it is hard to have a clear explanation for this lower rate of unemployment.

Finally, figure WI.4 shows differences across rounds for both participation and unemployment rates within the same region that could help to identify whether the behaviour of round 1 was localized or widespread. For the labour participation rate, it is clear that round 1 for the Aden region is an outlier in relation to the other rounds, particularly rounds 3 and 4. These differences are statistically significant despite large the confidence intervals. For all other regions, the variations seem to be normal and within the confidence intervals.

As for the unemployment rate, the large differences between round 1 and the other rounds seem to be spread across several regions. Saba, Al-Janad, Tehama and to a lesser extent Hadhramout show large variations in the unemployment rate between round 1 and the other rounds, particularly round 4. All these differences are statistically significant. They may be related to how unemployment was perceived and captured in rural areas during the first round, since regions with larger (or relatively larger) urban populations such as Sana'a City and Aden show much more stable levels of unemployment across the rounds. It is difficult to find a clear explanation for this difference, however.

Figure WI.4:
Quarterly Participation and Unemployment Rates by Region of Residence, Yemen, 2012-2013
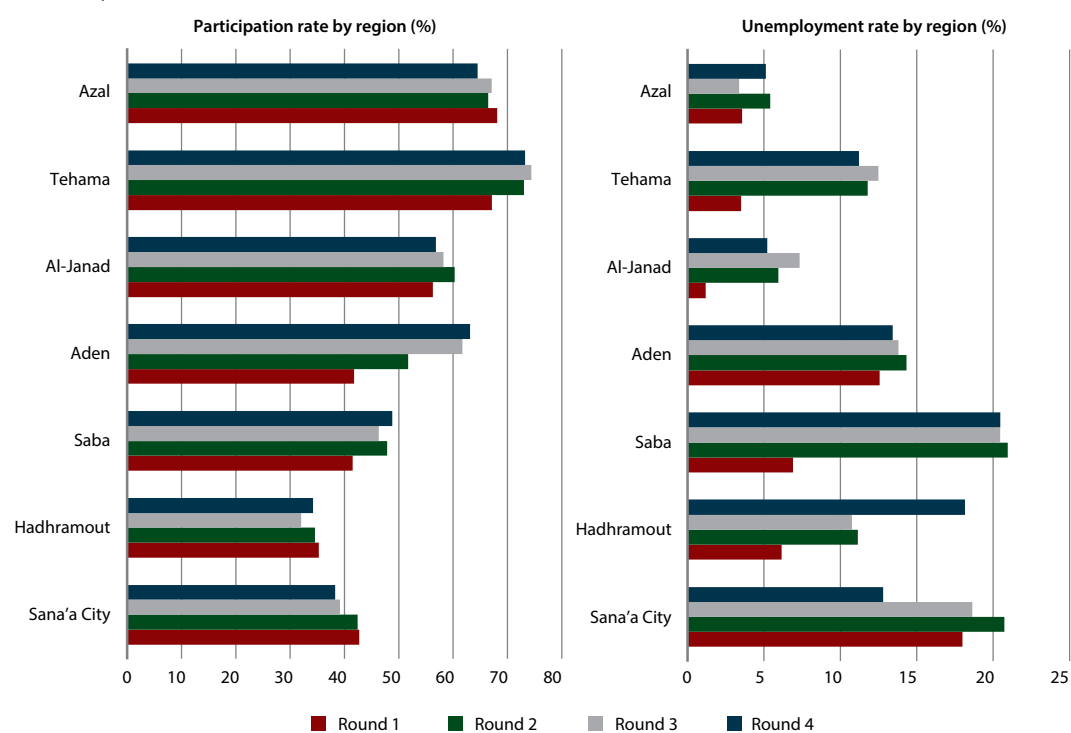
Source: NSPMS, All Rounds.

Table WI.2 summarizes the information about Yemeni workers by job status – paid workers and self-employed (employers is the residual category and is not shown) – and type of employer (private sector or government).

About 45 per cent of workers are paid workers. Self-employed workers account for 12 per cent of the occupied population. Thus paid workers, unpaid workers and the self-employed make up 99 per cent of the occupied population. Employers are a residual 1 per cent of the working population. About 70 per cent of the male occupied population consists of paid workers, 17.5 per cent are self-employed, about 10 per cent are unpaid workers and 2.5 per cent are employers. For female workers we have the opposite figures; only 10 per cent are paid workers and a residual 3.5 per cent are self-employed, leaving 0.2 per cent as employers. While the majority of the urban working population (75 per cent) is made up of paid workers, in rural areas they account for just 38.1 per cent. The self-employed have a relatively similar prevalence in rural and urban areas, 11.5 and 12.7 per cent respectively. Sana'a City and Hadhramout are the regions with the highest prevalence of paid workers (above 70 per cent) and Azal has the lowest (29 per cent). As for the self-employed they show a very similar distribution for the different regions. The Arabian Sea coastal area has the highest prevalence of paid workers (77 per cent) and the mountainous area, the lowest (37.6 per cent). Self-employed workers seem to be particularly more prevalent in the Red Sea coastal area (15.6 per cent) and in the plateau/desert area (13 per cent). As for wealth quintiles the poorest (37.3 per cent) are much less likely to be paid workers than the richest (70 per cent). Again, using the poverty classification shows no clear patterns, although the extreme poor show a lower point estimate (38.5 per cent) than the non-poor (50.7 per cent) for the prevalence of paid workers. For self-employed workers, there are no differences in prevalence either across wealth quintiles or levels of poverty. As for SWF status, the new SWF beneficiaries seem to be less likely to be paid workers (37 per cent) than non-beneficiaries (48 per cent). No differences were observed for self-employment. Finally, no significant differences across rounds were observed for either of these job statuses, as one would expect.

About 99.7 per cent of Yemeni workers work either for the private sector (86.9 per cent) or the Government (12.8 per cent). Among men, 19 per cent work for the Government, compared to only 4 per cent of women. Similarly, a higher proportion of urban workers (33 per cent) work for the government than rural workers (8 per cent). Sana'a City has the highest proportion of workers in the government (39 per cent) and Tehama has the lowest (5.7 per cent). As for topography, the Arabian Sea coastal area has the highest prevalence of government workers (28 per cent) and the Red Sea coastal area has the lowest prevalence (5 per cent). As for quintiles, poverty levels and SWF status, all indicators show that the poorest and the SWF beneficiaries are less likely to have a government job. No differences were observed across survey rounds.

Table WI.3 shows average hours worked and the monthly real average work income for those with positive income and also including those with zero income (unpaid). The work income includes payment in cash as well as the estimated value of in-kind payments. The monthly nominal values were all deflated into Yemeni rials as of October 2012 using the consumer price index.

The results indicate that Yemenis worked on average 34 hours per week. Men work, on average, 40 hours per week compared to 25 hours for women. Urban workers work 37 hours, and rural workers work 33 hours per week. Workers in the Arabian Sea coastal area work more hours per week (39) compared to other areas of the country. The poorest quintile work fewer hours (32) than the richest quintile (37). There are no difference across poverty levels. As for SWF status, old beneficiaries (32) seem to work fewer hours than the non-beneficiaries (35), but new beneficiaries work similar hours as non-beneficiaries (34). As for the different rounds of the NSPMS, there was only a reduction of the hours worked in the fourth round (July-September 2013) – 32 hours – which is largely explained by the Ramadan period.

The monthly real average income of Yemenis with positive work income is 35,656 Yemeni rials (165 United States dollars); if including the 'zero income' workers in the calculation, the work income falls to 20,156 rials ($94). As most of the 'zero income' are unpaid family workers, categories that are overrepresented among them will have the larger discrepancies between the two ways to calculate the average monthly income. Thus, the average monthly income for male workers falls from 36,343 to 31,742 rials and the female workers' average monthly income falls from 28,775 to 3,591 rials. Similarly larger decreases are observed for rural workers (32,624 to 15,945 rials) compared to urban ones (42,591 to 37,507 rials). As for wealth quintiles, the poorest quintile has lower work income than the richest one according to any of the work income indicators; the same, in a somewhat attenuated way, is observed for different income levels. As for SWF status, old beneficiaries seem more likely to have lower work income than non- beneficiaries. As for the different NSPMS rounds, round 1 shows much lower work income than the other rounds, although it is not clear what could have caused this difference.

8.3 Other Sources of Income at the Household Level

Table WI.4 shows the incidence of non-work sources of income in Yemeni households on a quarterly basis, as well as their average quarterly value (at October 2012 prices in Yemeni rials) for recipient households and as an average for all households in the country. Table WI.4 reports all sources of non-work income asked in the NSPMS. However, it is clear that some of these sources of income are very residual. Thus, further disaggregation and analysis are done only with sources of other income that over a 12-month period (NSPMS field data collection) had an incidence of at least 6 per cent.

Among the residual sources of income are the income from the SFD cash for work programme, whose coverage was never beyond 0.5 per cent; social security; Martyrs and Veterans Fund; Agricultural and Fishery Promotion Fund; regional and/or international programmes; Disability Fund; Authority of Tribal Affairs; dividends; dowry; rent or sale of assets; and others. The last two have much higher incidence than the others on the list.

We focus on the largest sources of non-work income, namely, SWF, remittances and inter-household transfers, pension funds and income from charity organizations. Table WI.5 shows the disaggregation of the incidence of these other source of income. The SWF has the largest coverage of households (30 per cent), followed by remittances (14.5 per cent), pensions (6.5 per cent) and charity (6.4 per cent). The SWF, remittances and charity are income transfers that are relatively more prevalent in rural areas, 33.5, 15.8, and 7.3 per cent, respectively, compared to 25, 11, and 4 per cent in urban areas. On the contrary, pensions are more prevalent in urban than rural areas, 12.3 compared to 4.5 per cent.

At the regional level, there are no major differences in SWF incidence, except for a much lower incidence in Sana'a City (17 per cent) compared to all other regions, where it varies from 33 to 36 per cent. As for remittances incidence, there are major regional differences. In Saba region, almost 45 per cent of the households receive some remittances, whereas in Sana'a City and in Tehama region, only 7.4 and 5.1 per cent receive some income from this source. Pension incidence also has a very different regional pattern; Aden and Sana'a City have incidences of 23.6 and 17.4 per cent respectively, and the other regions are below 6 per cent. Pensions seem to be more prevalent in regions that have larger cities. Income from charity organizations has a very low incidence in Sana'a City and Saba, below 1 per cent, while it is more prevalent in Al-Janad and Tehama, where 9 and 8.2 per cent of the households receive some income from charity organizations.

As for topographical areas, the differences in SWF incidence are not significant, although the Red Sea coastal area shows a smaller point estimate at 25.5 per cent. All other areas have a similar incidence of around 31 per cent. The households from the Red Sea coastal area are also less likely to receive remittances and pensions, but have the higher incidence of income from charity organizations. The coastal area of the Arabian Sea is the region with the highest incidence of pensions, 20 per cent. The plateau/desert and mountainous areas have the lowest incidence of households reporting income from charity organizations.

With regard to wealth quintiles, there is a clear pattern that is summarized in figure WI.5. SWF has a much lower incidence in the richest quintiles compared to the poorest and second quintiles. Pensions are much more prevalent among the richest and very minimal at the poorest quintiles. Charity follows a similar pattern to the one observed for the SWF coverage across quintiles but on a much lower scale. As for remittances, the incidence is lower in the poorest quintile and higher for the other quintiles, particularly the fourth one. Extremely poor households are more likely to be SWF beneficiaries (43 per cent) and to receive some income from charity (12 per cent). However, unlike for the wealth quintiles, among recipients of pensions and remittances, there is no statistically significant difference between the incidence indicators for different poverty levels, including between the extreme poor and the non-poor. Similarly, there are no major differences among the SWF status categories for pensions and remittances. In fact, old SWF beneficiaries have a higher incidence of remittances than non-beneficiaries. As for charity, the old beneficiaries have a higher incidence of 12.2 per cent compared to new beneficiaries, 8.5 per cent, and non-beneficiaries, 4.1 per cent.

As for the different rounds of the NSPMS, the incidence indicators suggest an increase in coverage of the SWF from 29 to 33 per cent and of remittances from 14.4 to 16.3 per cent, but the latter may be related to the Ramadan period in July 2013. Incidence of income from pensions also shows some increase over time and the same is observed for charity; the latter also may also be related to the Ramadan period.

Figure WI.5:

Incidence of Other Sources of Income by Wealth Quintile, Yemen, 2012-2013

Incidence of other sources of income (%)

Source: NSPMS, All Rounds (aggregated).
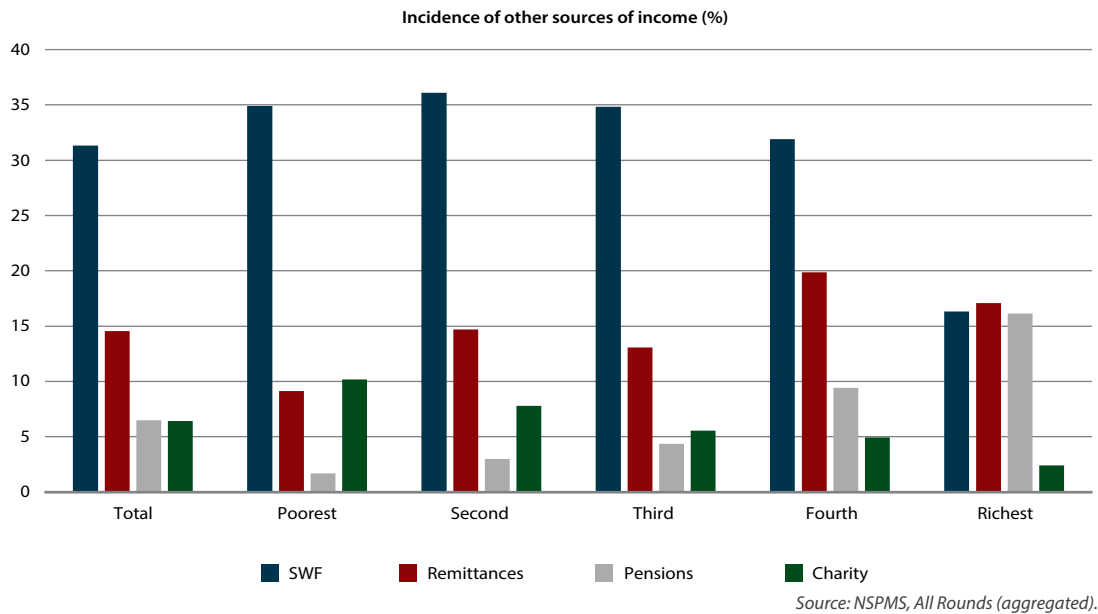
Figure WI. 6 summarizes the information shown in table WI.4 for the four major sources of non-work income in Yemen. From the different graphs, it is clear that the highest average value of non-work income comes from pension funds (reaching 80,000 Yemeni rials in round 1), which as seen above, has a pro-rich incidence. The average real quarterly pension benefit is five times the average real quarterly value of the SWF benefit. However, given its low coverage, its contribution to the average income of all Yemeni households is similar to the contribution made by SWF income. Remittances comes second in terms of the average value per beneficiary household, above 50,000 rials per quarter, but its contribution to the average quarterly income of all households is somewhat higher than that of SWF and of pension funds, since it has an intermediary coverage (15 per cent). It is interesting to observe the higher average value of the SWF benefit in rounds 1 and 4, which as discussed in chapter 2 above on the SWF, reflects the payment of benefits in arrears. Finally, the average benefit per household of the income from charity organizations is much lower than the one from SWF, and given its low incidence, its contribution to all households is minimal.

8.4 Concluding Remarks

The analysis of the work and income module of the NSPMS showed the importance of using more than one or two labour market indicators, e.g., labour force participation rate and/or unemployment rate, to fully capture the main features of the Yemeni labour market.

This analysis showed very strongly that labour force participation rate and unemployment rate levels are greatly affected by the manner in which women participate in the labour market. Working mostly in agriculture as unpaid family workers, women tend to have lower participation rates, but also a very low unemployment rate and very low income from the work they do taking care of the land and providing the livelihood for their families. The second aspect hidden by the aggregate data refers to the extremely high unemployment rate faced by urban young men (aged 15-24 years). The unemployment rate for this age group fluctuates around an average of 28 per cent, which is 10 percentage points above the rate for all urban males. Even though a higher unemployment rate for youth is a stylized fact in the labour market literature, as at this age, the young boys are still experimenting with different occupations and gaining experience, these extremely high levels are worrying and may have very damaging consequences in areas such as crime, drug abuse and violence. Policies to tackle urban young male unemployment and to increase women's productivity and allow them to be able to generate income from their work seem to be two clear priorities based on the analysis of the NSPMS.

As for the other sources of income, the analysis showed again how the SWF is the more pro-poor source of income in Yemen and how pensions are associated with the well-off, at least according to the wealth quintiles. After the SWF benefit, the most prevalent sources of non-work income in Yemen are remittances and inter-household transfers; these sources of income are not particularly pro-poor and have also showed a very unbalanced regional distribution. Nevertheless, it is important to acknowledge the substantial contribution of remittances to the total budget of families. Given their coverage (15 per cent) and its average value, remittances distribute more income than the SWF benefits in the country. Finally, the analysis showed the limited impact of the income transfers of charity organizations.

Figure WI.6:
Household Average Real Income by Source (Quarterly Data), Yemen, 2012-2013
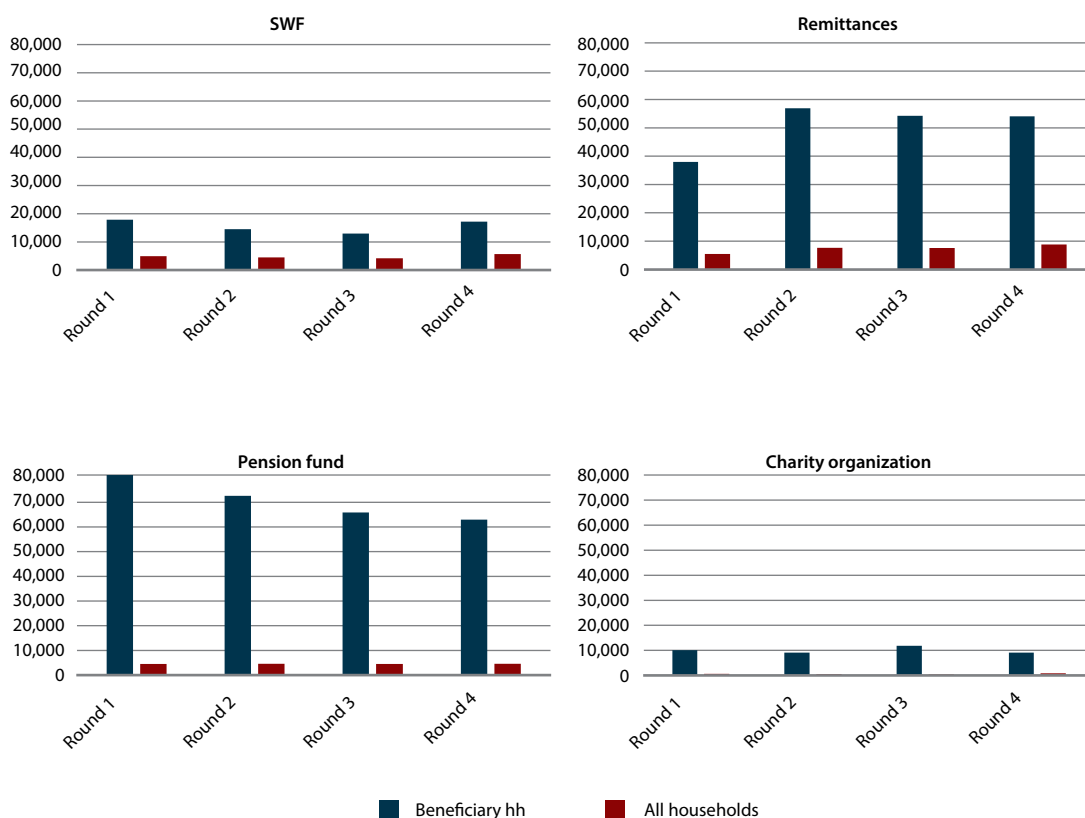
Source: NSPMS, All Rounds.

8.5 Tables

Table WI.1:
Labour Force Participation, Unemployment, Livelihoods and Unpaid Family Workers, Yemen, 2012-2013

	Labour Force Participation			Unemployment Rate			Livelihoods			Unpaid family workers		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	58.3	56.4	60.2	8.8	7.9	9.8	47.8	44.9	50.7	41.7	39.3	44.1
Sex												
Male	73.5	71.9	75.1	11.2	10.1	12.4	28.8	26.0	31.6	10.6	8.8	12.4
Female	44.3	41.6	47.0	5.2	4.2	6.2	75.0	71.1	78.9	86.3	82.3	90.2
Relation to head of household												
Head	79.9	78.0	81.7	5.0	4.3	5.8	28.9	25.8	32.1	5.1	4.3	5.9
Spouse	49.9	46.7	53.2	3.6	2.5	4.7	74.9	70.8	79.1	86.5	82.4	90.5
Son/Daughter	59.1	56.5	61.7	15.2	13.2	17.3	46.4	42.4	50.4	44.4	40.4	48.5
Son/Daughter-in- law	36.7	31.8	41.6	3.2	1.9	4.5	69.7	60.5	78.8	84.7	75.1	94.4
Grandchild	40.0	29.5	50.5	13.7	8.0	19.4	66.5	53.6	79.4	65.5	55.4	75.6
Parents	23.3	18.3	28.3	3.2	0.9	5.6	89.3	84.7	93.8	82.6	73.7	91.6
Brothers/sisters	58.0	51.5	64.5	15.9	11.7	20.0	44.1	34.7	53.6	43.5	34.5	52.4
Nephews/nieces	43.6	27.1	60.1	12.8	1.6	24.0	23.0	3.3	42.7	57.6	34.8	80.4
Grandparents	3.3	0.5	6.1	0.0	0.0	0.0	100.0	100.0	100.0	58.1	15.3	101.0
Other relative	25.7	16.6	34.8	8.3	3.4	13.2	70.2	54.1	86.3	77.4	66.5	88.3
Not related	17.0	-3.4	37.3	14.5	-11.0	40.0	15.3	-14.5	45.2	2.9	-4.0	9.7
Area of residence												
Urban	44.6	40.8	48.4	14.7	12.1	17.3	11.9	7.2	16.7	10.1	6.4	13.8
Rural	63.4	61.5	65.3	7.3	6.4	8.2	56.5	54.0	59.0	49.3	47.4	51.3
Region												
Sana'a City	40.7	33.3	48.0	17.7	13.2	22.1	3.3	0.9	5.7	6.7	1.0	12.4
Hadhramout	34.1	31.9	36.2	11.4	8.6	14.2	17.9	11.3	24.4	15.2	7.8	22.5
Saba	46.1	39.6	52.6	17.5	12.1	22.8	45.3	33.1	57.4	47.2	35.8	58.5
Aden	54.7	51.4	57.9	13.6	11.4	15.8	34.7	31.0	38.3	35.3	31.6	39.1
Al-Janad	57.9	54.3	61.5	4.9	3.7	6.2	45.1	38.6	51.5	43.4	37.5	49.4
Tehama	72.0	68.2	75.7	9.9	8.0	11.8	61.9	56.9	67.0	44.7	41.6	47.8
Azal	66.5	62.9	70.2	4.4	2.9	5.8	59.1	52.9	65.4	54.3	49.8	58.9
Topography												
Mountainous	63.5	60.6	66.4	6.2	4.9	7.5	53.3	49.4	57.2	51.4	48.0	54.7
Arabian Sea	45.1	41.2	49.0	14.7	10.6	18.8	21.6	12.8	30.4	12.8	8.2	17.4
Red Sea	67.7	61.9	73.5	8.5	5.8	11.2	54.2	45.9	62.4	38.7	33.4	43.9
Plateau/desert	51.9	48.7	55.2	11.3	9.6	13.0	41.4	35.7	47.0	35.0	30.7	39.3
Wealth Quintiles												
Poorest	76.8	74.2	79.3	7.4	6.2	8.7	68.3	64.4	72.3	51.7	49.6	53.8
Second	67.2	64.4	70.0	7.8	6.2	9.4	54.6	50.0	59.1	48.9	46.5	51.4
Third	60.5	56.9	64.2	6.5	5.0	8.0	52.0	47.3	56.7	44.4	39.6	49.3
Fourth	51.3	48.7	54.0	10.6	8.4	12.7	36.4	31.0	41.8	37.5	31.3	43.6
Richest	42.3	37.8	46.7	13.3	10.4	16.2	15.1	9.2	20.9	15.3	9.7	20.8
Level of Poverty												
Extreme Poor	57.8	54.3	61.3	8.9	7.1	10.7	54.5	49.5	59.5	49.3	46.0	52.6
Poor	58.2	55.0	61.4	9.9	8.5	11.4	46.9	42.6	51.1	40.8	37.4	44.3
Vulnerable	57.4	53.9	60.8	9.8	7.2	12.3	46.4	42.2	50.7	38.9	35.7	42.1
Non-Poor	58.9	56.5	61.2	7.7	6.5	8.9	46.9	42.4	51.4	41.0	37.3	44.6
Period												
Oct.-Dec. 2012	55.4	53.2	57.5	5.1	3.9	6.3	48.1	44.6	51.7	37.8	34.8	40.8
Jan.-Mar. 2013	59.0	56.9	61.1	10.2	8.8	11.6	46.9	43.7	50.1	42.6	40.2	45.1
Apr.-June 2013	59.7	57.7	61.7	10.2	8.8	11.6	47.5	44.6	50.4	42.6	40.1	45.0
July-Sep. 2013	59.1	56.8	61.3	9.6	8.4	10.8	48.7	45.7	51.6	43.8	41.3	46.2
SWF status												
Non-beneficiary	57.9	55.3	60.6	7.5	6.4	8.6	44.2	40.4	48.0	38.5	35.6	41.5
Old beneficiary	58.1	56.1	60.1	11.6	10.1	13.2	54.7	51.6	57.8	45.6	42.9	48.2
New beneficiary	60.9	58.1	63.7	9.2	7.2	11.2	51.2	45.1	57.2	49.6	44.0	55.1
Sample	108,141			60,793			53,877			53,866		
Population	49,356,355			28,769,708			26,225,832			26,219,341		

Source: NSPMS, All Rounds (aggregated).

Table WI.2:
Paid Workers, Self-employed, Private Sector and Government,
Yemen, 2012-2013

	Paid Worker			Self-Employed			Private			Government		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	45.4	42.6	48.1	11.8	10.7	12.8	86.9	84.7	89.1	12.8	10.6	15.0
Sex												
Male	70.1	67.0	73.3	17.5	15.9	19.1	80.6	77.7	83.4	19.1	16.3	21.9
Female	9.9	6.0	13.8	3.5	2.5	4.6	96.0	94.0	98.0	3.9	1.9	5.9
Relation to head of household												
Head	69.7	66.9	72.4	22.6	20.6	24.6	77.0	73.5	80.6	22.7	19.2	26.3
Spouse	9.7	5.9	13.6	3.4	1.9	4.9	94.5	90.7	98.3	5.2	1.4	9.0
Son/Daughter	47.9	44.0	51.8	7.2	5.5	8.9	90.7	88.5	92.9	9.1	7.0	11.3
Son/Daughter-in-law	13.9	4.2	23.5	1.4	0.1	2.7	92.3	82.6	102.1	7.4	-2.4	17.1
Grandchild	29.0	18.6	39.4	4.8	0.3	9.3	95.2	89.3	101.1	4.8	-1.1	10.7
Parents	6.0	3.0	8.9	10.9	2.3	19.5	98.4	96.4	100.4	0.5	0.2	0.9
Brothers/sisters	47.7	39.0	56.4	8.4	4.0	12.8	90.1	85.6	94.6	9.8	5.3	14.3
Nephews/nieces	33.7	4.0	63.3	8.8	-1.1	18.6	98.1	95.8	100.4	1.9	-0.4	4.2
Grandparents	29.4	-15.1	73.9	12.5	-11.0	35.9	100.0	100.0	100.0	0.0	0.0	0.0
Other relative	17.6	8.6	26.5	4.9	1.1	8.8	95.0	91.5	98.5	5.0	1.5	8.5
Not related	51.6	41.8	61.3	45.5	31.8	59.3	93.3	77.3	109.3	6.7	-9.3	22.7
Area of residence												
Urban	75.3	69.4	81.1	12.7	9.7	15.6	66.5	58.7	74.4	32.9	25.0	40.8
Rural	38.1	35.9	40.4	11.5	10.4	12.7	91.9	90.7	93.0	8.0	6.8	9.1
Region												
Sana'a City	76.4	65.9	87.0	13.2	7.5	19.0	59.9	43.3	76.5	39.1	22.2	56.1
Hadhramout	71.1	62.9	79.2	12.9	9.7	16.2	77.2	67.3	87.2	21.9	11.7	32.2
Saba	37.9	27.7	48.1	12.5	9.1	15.9	81.0	72.7	89.3	19.0	10.7	27.2
Aden	53.5	50.1	57.0	9.2	7.4	10.9	80.6	78.0	83.2	19.0	16.4	21.6
Al-Janad	47.2	41.1	53.3	8.6	6.5	10.8	88.4	83.0	93.8	11.4	6.1	16.8
Tehama	42.0	38.7	45.3	13.1	11.2	15.1	94.1	92.1	96.1	5.7	3.8	7.7
Azal	29.0	23.1	35.0	14.7	12.1	17.2	89.3	85.9	92.7	10.5	7.1	13.9
Topography												
Mountainous	37.6	33.8	41.3	9.8	8.4	11.2	90.5	88.2	92.7	9.3	7.2	11.5
Arabian Sea	77.2	71.9	82.6	7.9	5.3	10.5	71.7	63.3	80.1	27.9	19.4	36.3
Red Sea	45.7	40.3	51.1	15.6	12.7	18.5	94.9	92.2	97.7	4.9	2.1	7.6
Plateau/desert	50.7	45.3	56.1	12.9	10.9	14.9	80.6	75.6	85.7	19.1	14.0	24.1
Wealth Quintiles												
Poorest	37.3	34.6	40.0	10.7	8.6	12.8	96.3	95.0	97.6	3.5	2.2	4.8
Second	39.8	37.6	42.0	10.7	8.7	12.8	92.8	90.7	94.9	7.0	4.9	9.1
Third	41.4	36.8	46.0	13.0	10.6	15.3	91.2	88.7	93.6	8.6	6.2	11.1
Fourth	47.3	40.3	54.3	13.3	10.9	15.6	84.2	80.8	87.6	15.3	11.9	18.7
Richest	70.0	61.3	78.8	12.1	8.1	16.1	60.0	51.3	68.6	39.8	31.0	48.5
Level of Poverty												
Extreme Poor	38.5	34.2	42.9	10.7	8.3	13.1	90.9	88.5	93.3	8.8	6.4	11.1
Poor	46.6	42.6	50.6	11.3	9.7	12.8	90.2	87.8	92.5	9.3	7.0	11.6
Vulnerable	48.3	44.8	51.7	11.7	9.7	13.8	87.7	84.4	91.0	12.2	8.8	15.5
Non-Poor	45.6	41.3	49.9	12.4	10.7	14.2	83.3	79.4	87.2	16.6	12.7	20.5
Period												
Oct.-Dec. 2012	47.4	44.1	50.6	13.2	11.4	15.0	86.0	83.5	88.5	13.5	11.1	15.9
Jan.-Mar. 2013	44.8	41.7	48.0	11.5	9.8	13.2	86.6	84.3	89.0	13.2	10.8	15.5
Apr.-June 2013	45.0	42.2	47.8	11.1	9.7	12.6	87.5	85.3	89.7	12.4	10.2	14.5
July-Sep. 2013	44.3	41.5	47.1	11.2	9.9	12.5	87.5	85.2	89.8	12.3	10.0	14.6
SWF status												
Non-beneficiary	47.7	44.1	51.3	12.6	11.1	14.2	83.7	80.3	87.1	16.1	12.7	19.5
Old beneficiary	43.5	40.9	46.1	9.9	8.7	11.1	91.4	89.9	92.8	8.1	6.7	9.5
New beneficiary	37.3	30.5	44.1	11.2	9.3	13.2	93.6	91.8	95.4	6.2	4.4	8.1
Sample	53,866						53,865					
Population	26,219,342						26,217,583					

Source: All Rounds (aggregated).

Table WI.3:
Hours Worked per Week and Monthly Work Income, Yemen, 2012-2013

	Hours worked			Real average monthly income (excluding 0 income)			Real average monthly income (including 0 income)		
	Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Total	34	33	35	35,656	33,382	37,931	20,167	18,531	21,803
Sex									
male	40	39	41	36,343	34,050	38,636	31,742	29,792	33,693
female	25	25	26	28,775	21,498	36,052	3,591	1,663	5,520
Relation to head of household									
Head	39	38	40	39,557	36,569	42,545	35,888	33,095	38,681
Spouse	25	24	26	34,207	22,637	45,777	4,263	1,698	6,827
Son/Daughter	35	34	36	29,791	27,159	32,423	16,673	14,766	18,579
Son/Daughter-in-law	25	23	27	30,316	22,914	37,717	4,576	1,289	7,862
Grandchild	33	30	36	24,035	16,912	31,157	8,371	4,847	11,895
Parents	27	26	29	17,454	12,087	22,821	1,547	883	2,210
Brothers/sisters	37	33	41	35,290	23,145	47,435	19,556	11,360	27,753
Nephews/nieces	36	28	44	21,095	13,538	28,652	9,023	3,243	14,803
grandparents	29	23	36	2,966	.	.	871	-449	2,191
Other relative	27	19	34	27,787	23,108	32,465	6,620	3,094	10,147
Not related	34	24	44	12,155	2,193	22,118	11,372	2,772	19,972
Area of residence									
urban	37	35	39	42,591	38,060	47,122	37,607	32,668	42,545
rural	33	32	34	32,624	30,283	34,964	15,945	14,843	17,048
Region									
Sana'a City	39	34	44	46,888	37,428	56,347	41,799	32,078	51,519
Hadhramout	45	43	47	34,827	30,694	38,960	29,578	25,141	34,015
Saba	30	29	32	50,435	43,583	57,286	24,657	16,935	32,378
Aden	31	30	33	39,284	36,052	42,516	23,759	21,267	26,251
Al-Janad	35	34	37	33,523	28,398	38,648	18,859	14,605	23,113
Tehama	32	31	33	26,925	24,574	29,277	14,585	12,899	16,271
Azal	34	32	35	43,273	35,537	51,010	18,646	15,282	22,011
Topography									
Mountainous	34	33	35	34,821	30,757	38,885	16,441	14,372	18,510
Coastal area - Arabian Sea	39	36	41	37,089	33,087	41,091	31,571	27,591	35,550
Coastal area - Red Sea	33	31	35	23,606	20,423	26,788	14,371	11,715	17,028
Plateau/desert	34	33	35	41,967	38,338	45,596	26,136	22,874	29,398
Quintiles									
Poorest	32	31	34	23,343	21,762	24,923	11,007	10,244	11,769
Second	32	31	34	27,841	25,763	29,920	13,817	12,777	14,857
Third	34	32	35	32,333	28,613	36,052	17,271	15,465	19,078
Fourth	36	35	37	39,929	35,600	44,259	24,048	21,650	26,446
Richest	37	35	40	52,988	47,820	58,155	43,911	39,028	48,793
Level of Poverty									
Extreme Poor	35	33	36	32,253	27,126	37,380	16,193	13,532	18,853
Poor	34	33	35	31,543	27,902	35,185	18,309	16,118	20,499
Vulnerable	34	33	35	34,879	31,262	38,497	20,651	18,009	23,293
Non-Poor	34	33	35	39,609	36,100	43,117	22,388	19,615	25,162
Period									
Oct.-Dec. 2012	35	34	36	35,396	33,151	37,642	21,386	19,567	23,205
Jan.-Mar. 2013	35	34	36	34,434	32,018	36,850	19,210	17,484	20,935
Apr.-June 2013	34	33	35	37,814	33,336	42,292	20,839	18,218	23,461
July-Sep. 2013	32	31	33	35,011	32,337	37,684	19,230	17,383	21,077
SWF status									
Non-beneficiary	35	34	35	38,370	35,506	41,235	22,995	20,633	25,358
Old beneficiary	32	32	33	27,841	26,268	29,414	14,649	13,570	15,729
New beneficiary	34	32	36	37,027	29,117	44,936	17,683	14,719	20,647
Sample	53,254			28,470			53,883		
Population	25,866,295			14,833,629			26,226,443		

Source: NSPMS, All Rounds (aggregated).

Table WI.4:
Other Income Sources at the Household Level, Yemen, 2012-2013

	Incidence	Average quarterly income (YER Oct 2012)		Sample	Population
		Beneficiary hh	All households		
SWF					
Oct.-Dec. 2012	27.7	17,862	4,951	2,751	856,256
Jan.-Mar. 2013	30.8	14,527	4,470	3,145	958,993
Apr.-June 2013	32.3	12,942	4,174	3,313	1,004,570
July-Sep. 2013	32.9	17,185	5,659	3,347	1,027,860
Pension fund					
Oct.-Dec. 2012	5.6	81,030	4,513	466	174,189
Jan.-Mar. 2013	6.3	72,637	4,556	543	196,236
Apr.-June 2013	6.9	65,853	4,527	582	215,128
July-Sep. 2013	7.3	62,968	4,589	575	227,939
LIWP/CFW-SFD					
Oct.-Dec. 2012	0.2	22,123	41	36	5,820
Jan.-Mar. 2013	0.5	53,440	268	48	15,708
Apr.-June. 2013	0.3	43,454	149	46	10,732
July-Sep. 2013	0.3	35,114	94	30	8,405
SOCIAL SECURITY					
Oct.-Dec. 2012	0.7	14,545	102	41	21,867
Jan.-Mar. 2013	0.1	33,103	40	17	3,744
Apr.-June 2013	0.1	57,976	57	15	3,085
July-Sep. 2013	0.3	34,058	89	18	8,148
MARTYRS AND VETERANS					
Oct.-Dec. 2012	0.1	35,366	49	9	4,335
Jan.-Mar. 2013	0.1	25,997	16	8	1,959
Apr-June 2013	0.1	18,512	11	8	1,833
July-Sep. 2013	0.1	138,957	91	8	2,038
Agricultural and Fishery Promotion Fund					
Oct.-Dec, 2012	0.0	619,969	29	1	148
Jan.-Mar. 2013	0.0	1,164	0	3	1,245
Apr.-June 2013	0.0	3,556	1	3	484
July-Sep. 2013	0.0	13,203	2	2	363
Regional and/ or International programmes					
Oct.-Dec. 2012	1.2	13,074	155	147	37,007
Jan.-Mar. 2013	5.0	9,418	471	254	156,347
Apr.-June 2013	2.5	11,596	293	166	79,187
July-Sep. 2013	3.4	6,673	227	349	106,347
Disability Fund					
Oct.-Dec. 2012	0.0	10,162	3	8	1,019
Jan.-Mar. 2013	0.1	9,498	10	10	3,442
Apr.-June 2013	0.1	5,503	4	7	2,165
July-Sep. 2013	0.0	6,236	2	4	1,097
Authority of Tribal Affairs					
Oct.-Dec. 2012	0.0	14,360	4	11	905

Jan.-Mar. 2013	0.0	5,811	2	8	1,160
Apr.-June 2013	0.0	1,565	0	3	780
July-Sep. 2013	0.1	8,988	11	8	3,875
Charitable Organizations					
Oct.-Dec. 2012	6.6	10,116	663	613	204,886
Jan.-Mar. 2013	6.5	9,098	595	376	204,528
Apr.-June 2013	3.5	11,808	416	202	110,298
July-Sep. 2013	9.1	9,113	826	587	283,623
Remittances or transfers received from others					
Oct.-Dec. 2012	14.4	37,969	5,479	1,213	451,346
Jan.-Mar. 2013	13.4	56,915	7,644	1,161	420,124
Apr.-June 2013	14.0	54,255	7,604	1,245	438,578
July-Sep. 2013	16.3	54,053	8,810	1,326	509,849
Dividends					
Oct.-Dec. 2012	0.2	12,472	22	12	5,486
Jan.-Mar. 2013	0.0	12,302	4	7	1,097
Apr.-June 2013	0.0	7,422	2	5	1,035
July-Sep. 2013	0.1	32,286	18	4	1,747
Dowry					
Oct.-Dec. 2012	0.2	117,628	229	16	6,078
Jan.-Mar. 2013	0.4	134,542	480	27	11,153
Apr.-June 2013	0.2	168,209	270	16	5,018
July-Sep. 2013	0.3	229,019	574	19	7,846
Rent or sale of assets					
Oct.-Dec. 2012	2.9	107,506	3,110	92	90,481
Jan.-Mar. 2013	3.1	111,120	3,425	90	96,431
Apr.-June2013	2.6	116,768	2,981	93	79,871
July-Sep. 2013	3.0	175,294	5,243	97	93,561
Others					
Oct.-Dec. 2012	3.4	72,341	2,465	405	106,573
Jan.-Mar. 2013	5.3	69,949	3,677	495	164,440
Apr.-June 2013	9.7	49,293	4,778	651	303,318
July-Sep. 2013	14.1	26,660	3,753	931	440,336

Source: NSPMS, All Rounds (aggregated).

Table WI.5:
SWF, Remittances, Pensions and Charity: Household Incidence (Percentage),
Yemen, 2012-2013

	SWF			Remittances and transfers			Pensions			Charity		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	31.3	29.2	33.5	14.5	13.0	16.1	6.5	5.0	8.0	6.4	5.3	7.5
Area of residence												
urban	24.9	20.4	29.4	10.9	7.8	14.0	12.3	7.2	17.4	3.9	2.3	5.4
rural	33.5	31.1	35.9	15.8	13.9	17.7	4.5	3.5	5.6	7.3	5.9	8.6
Region												
Sana'a City	17.1	10.5	23.6	7.4	3.1	11.8	17.4	4.4	30.4	0.0	0.0	0.1
Hadhramout	36.3	28.9	43.6	26.2	20.6	31.7	5.1	3.3	6.9	6.2	4.3	8.0
Saba	34.4	25.6	43.2	44.7	33.8	55.6	4.2	1.2	7.3	0.6	0.3	1.0
Aden	34.6	30.3	38.9	23.5	19.2	27.9	23.6	18.7	28.4	7.5	4.4	10.5
Al-Janad	30.0	25.1	34.9	15.2	11.4	19.1	1.9	0.4	3.4	8.9	5.8	12.1
Tehama	32.8	28.8	36.7	5.1	3.7	6.6	1.0	0.1	1.8	8.2	6.2	10.1
Azal	32.9	27.7	38.1	15.2	11.8	18.7	5.2	2.9	7.6	3.3	2.0	4.7
Topography												
Mountainous	33.7	30.2	37.2	17.2	14.3	20.2	3.6	2.2	5.0	6.0	4.6	7.4
Arabian Sea	31.2	24.3	38.1	15.3	10.0	20.6	20.0	13.7	26.4	8.4	4.9	11.8
Red Sea	26.5	21.1	31.9	3.1	1.2	5.0	0.2	0.0	0.5	11.2	6.4	15.9
Plateau/desert	31.0	27.5	34.5	16.8	14.2	19.4	10.2	6.7	13.7	4.4	3.1	5.7
Quintiles												
Poorest	34.9	29.5	40.2	9.1	7.0	11.2	1.7	0.5	2.9	10.2	6.9	13.4
Second	36.1	31.3	40.9	14.7	11.3	18.1	3.0	1.5	4.4	7.8	5.6	10.0
Third	34.8	29.6	40.0	13.1	10.2	15.9	4.4	2.8	5.9	5.6	4.0	7.2
Fourth	31.9	27.5	36.2	19.9	16.4	23.3	9.4	6.5	12.3	4.9	3.5	6.4
Richest	16.3	12.2	20.5	17.1	12.9	21.2	16.1	9.2	23.1	2.4	0.9	3.9
Level of Poverty												
Extreme Poor	42.7	34.9	50.5	14.9	11.0	18.8	6.1	4.1	8.1	11.8	6.7	16.9
Poor	35.4	31.1	39.6	13.2	10.6	15.7	4.8	3.5	6.1	6.8	5.2	8.5
Vulnerable	32.7	28.3	37.2	12.1	10.2	14.0	6.0	3.8	8.3	6.4	4.6	8.3
Non-Poor	26.6	23.9	29.3	16.1	13.8	18.5	7.6	5.0	10.3	5.2	4.1	6.3
Period												
Oct.-Dec. 2012	28.6	26.4	30.8	14.4	12.5	16.3	5.6	4.1	7.0	6.6	5.1	8.0
Jan.-Mar. 2013	31.0	28.8	33.3	13.4	11.5	15.3	6.3	4.7	7.9	6.5	4.9	8.2
Apr.-June2013	32.5	30.2	34.8	14.0	12.2	15.9	6.9	5.3	8.5	3.5	2.0	5.0
July-Sep. 2013	33.1	30.8	35.4	16.3	14.2	18.4	7.3	5.6	9.0	9.1	6.7	11.4
SWF status												
Non-beneficiary	-	-	-	13.3	11.4	15.3	6.6	4.6	8.6	4.1	2.9	5.4
Old beneficiary	-	-	-	17.3	15.2	19.4	6.4	4.6	8.1	12.2	10.2	14.2
New beneficiary	-	-	-	16.3	13.1	19.5	6.2	3.6	8.9	8.5	5.9	11.1
Sample	25,576			25,577			25,578			25,580		
Population	12,512,722			12,512,866			12,513,221			12,513,794		

Source: NSPMS, All Rounds.

9 Livelihoods – Agriculture and Livestock

Yemen has a semi-arid to arid climate. Its rainy season takes place during spring and summer (March-September), which corresponds to rounds 3 and 4 of the NSPMS. The Red Sea convergence zone is active from March to May and brings rain mainly to the areas at higher altitudes (mountainous areas) in the west of the country. The monsoon inter-tropical convergence zone reaches Yemen in July–September (round 4), and its influence lasts longer in the south. The topography of Yemen varies widely from sea level to inter-mountain plains, steep slopes and rugged high mountains (3,666 metres). There is a clear relationship between mean annual rainfall and topography. Rainfall rises from less than 50 millimetres along the Red Sea and Gulf of Aden coasts to a maximum of 500–800 millimetres in the Western Highlands and decreases steadily to below 50 millimetres inland.[122] Topography and climate patterns largely determine agricultural production and the livelihood of the rural and agricultural population in Yemen.

The International Food Policy Research Institute[123] has shown that agriculture and food processing are responsible for about 13 per cent of Yemen's GDP. Most of the agricultural production is concentrated in the Upper and Lower highlands. Qat accounts for more than one third of the agricultural contribution to the GDP, followed by vegetables and fruits, which that make up another third of agricultural GDP. Livestock and cereals contribute about 20 and 10 per cent respectively to agricultural GDP. Qat is concentrated almost exclusively in the upper and lower highlands, and other water-intensive crops such as fruits and vegetables are also grown in the coastal areas of the Red Sea and in the Tihama Plain. Food crops and food processing are responsible for about 50 per cent of household consumption expenditures, but Yemen imports most of its food. Processed food constitutes the largest share of consumption, followed by cereals, qat, vegetables and fruits.

As seen in chapter 8, agricultural activities are the main source of occupation in Yemen, according to the NSPMS. About 48 per cent of the working population (aged 14-65 years) is involved in agriculture. Thus, to have a good understanding of the well-being of the Yemeni population, it is crucial to examine their livelihoods and their means of producing their food and generating income from agriculture, livestock or fishing. It is striking that 79 per cent of the people occupied in agriculture are unpaid family workers, working

in their family's land, followed by paid workers (14 per cent) and the self-employed (6 per cent). Even when restricting the analysis to the head of household, the proportion of unpaid family workers is still high, at around 16 per cent, but the bulk of the occupied head of households are paid workers (49 per cent) and self-employed (33 per cent). Such figures reveal the precariousness and low productivity of agricultural activities in Yemen.

9.1 Land Access and Ownership

Table LV.1 shows the agriculture-related indicators using the aggregated information of the four rounds of the NSPMS. About 43.4 per cent of Yemeni households have access to land. In rural areas, this percentage is higher, at 54 per cent. As for regions, Azal, Al-Janad and Saba show the highest percentage of households with access to land, 61.7, 55.3 and 54.9 per cent respectively, while Sana'a City, an urban area, has only 15 per cent.

There are wide disparities in land access across topographical areas. In the mountainous areas, 62 per cent of the households have access to land, followed by the plateau/desert area (37 per cent), the Red Sea coastal area (24.6 per cent) and the Arabian Sea coastal area (only 17.3 per cent).

Figure LV.1:
Percentage of Households with Land Access by Legal Entitlement, Yemen, 2012-2013

Does any member of the household have access to land?

■ No   ■ Yes, freely loaned   ■ Yes, tennant, partner, sharecropper   ■ Yes, owner (legal or de facto)

Source: NSPMS, All Rounds.
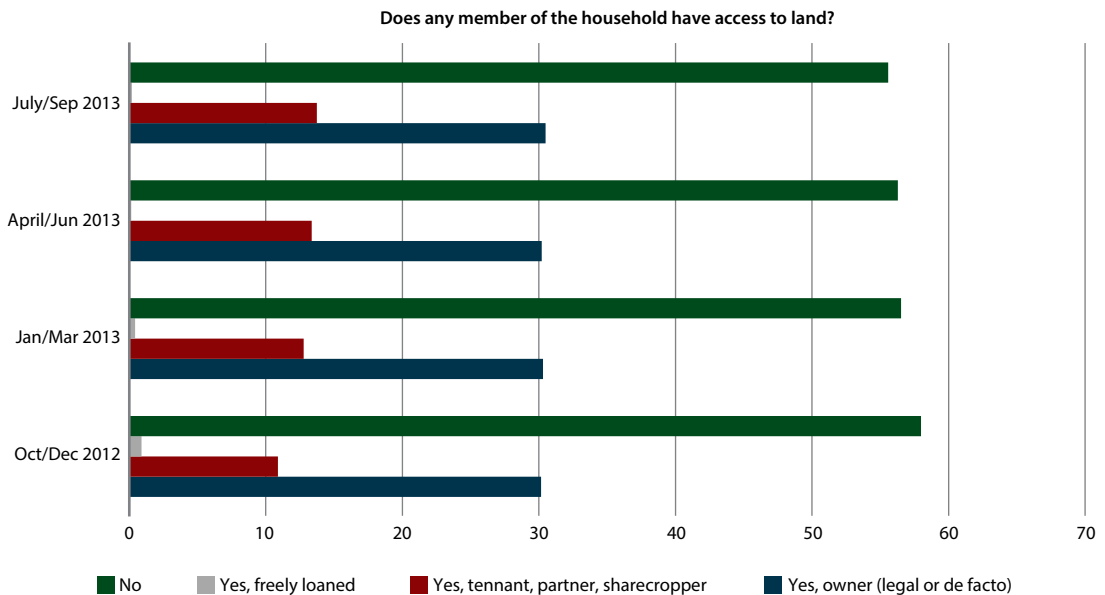
The proxies for poverty (PMT groups) and families' socioeconomic status (wealth index) show very different patterns for land access. Whereas the indicators for the PMT groups show that both the extreme poor and the non-poor are more likely to have access to the land and to cultivate it, the wealth index quintiles show the opposite, that the poorest and the richest quintiles are less likely to have access to land. However, this is statistically significant only for the richest quintile. It seems that access to land does not correlate in a consistent way with different measures of living standards in Yemen. This is reinforced by the indicators disaggregated by beneficiary status. Old and new SWF beneficiary households are more likely to have access to land (53 and 57 per cent, respectively) than non-beneficiaries (38 per cent). Old beneficiaries are less likely to cultivate their land than non-beneficiaries and new beneficiaries.

Even though land access can vary during the year, the data show that there are no statistically significant differences across the four rounds of the NSPMS. However, from July to September 2013, the point estimate suggests a higher proportion of households with access to land in round 4. This is in line with the increase in the proportion of households who cultivate their land in the same period.

Figure LV.1 shows for each NSPMS round the percentage of households that reported having access to land by type of access or legal entitlement. It is interesting to observe that the proportion of owners (legal or de facto) does not change across rounds, around 30 per cent, whereas the proportion of those who have access to

land because they are tenants, partners or sharecroppers increases slightly over time (from 11 to 13.7 per cent) and seems to follow the same pattern of land utilization showed in figure LV.2.

9.2 Land Cultivation

Not all land that is owned by a household is cultivated throughout the year and with the same intensity. Larger areas seem more likely to be cultivated between May and December[124] than between January and March. The NSPMS found the cultivation peak to be September 2013, when 86 per cent of the land was cultivated, which coincides with the end of the rainy season. According to FAO,[125] "the cropping pattern is based on cereals (barley, wheat, sorghum) and pulses in the rainy season June–August when livestock are kept away from cultivated terraces and fodder is harvested to be fed either green or made into hay to be fed during dry seasons (winter period)". Such a pattern seems to be confirmed by the NSPMS data as shown in figures LV.2 and LV.3.

Figure LV.2:
Percentage of Households Whose Land is Cultivated, Yemen, 2012-2013
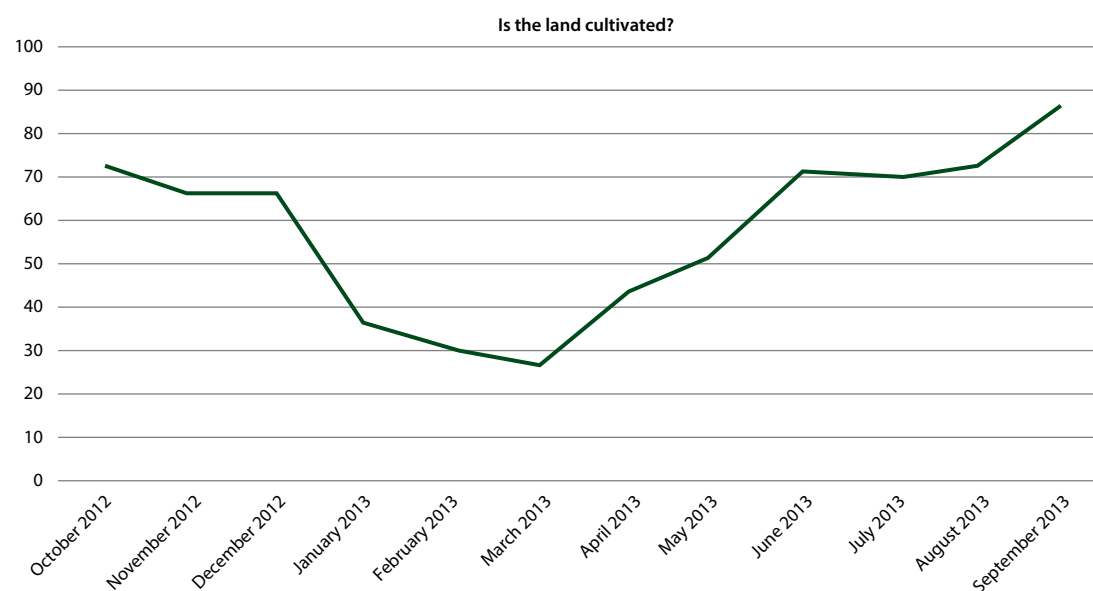
Source: NSPMS, All Rounds.

 The annual average area cultivated by agricultural households in Yemen is 0.5 hectares per household (table LV.1). This estimate is lower than 2001 agricultural census estimates of 0.6 hectares. However, the latter figure is within the confidence interval of the NSPMS estimate, and for round 4 (July-September 2013), the NSPMS estimate actually reaches 0.6 hectares. It is also the same figure found in the WFP CFSS. As for the topographical areas, the Arabian Sea and Red Sea coastal areas seem to have on average more cultivated land than the other areas. Thus, even though these areas have the lowest proportion of households with access to land and among them the lowest proportion of households who cultivate their land, the area cultivated per household tends to be larger than in other areas of the country.

Table LV.1 shows that households in rural areas that have access to land tend to cultivate relatively more of it than urban households (59 versus 43 per cent). The Azal region has the highest proportion of households that cultivate their land (76.2 per cent) and so do the mountainous area in the topographic classification (66.9 per cent). As for poverty level and wealth quintiles, there are no statistically significant differences among the different groups with regard to the proportion of households that cultivate their land.

Figure LV. 3 below shows the different patterns of land cultivation according to Yemen's topographical areas. The pattern of the mountainous area is the one that influences most the national figures, largely due to the higher level of land access by households in that area.

Figure LV.3:
Percentage of Households Whose Land is Cultivated by Topographical Area, Yemen, 2012-2013

Land cultivation

Mountainous
Coastal area - Red Sea
Coastal area - Arabian Sea
Plateau / desert
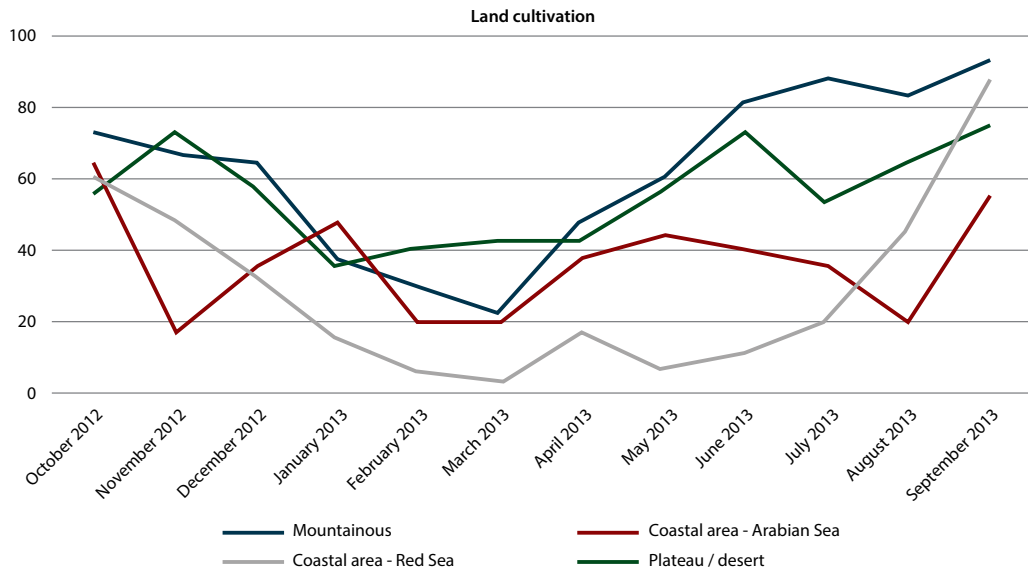
Source: NSPMS, All Rounds.

9.3 Crops, Livestock, Revenue and Investment

The NSPMS also asked agricultural households about the crops they had cultivated in the last season. Figures LV.4–LV.8 show the crop cultivation patterns across the year for the whole country and for each topographical area. Overall, qat stands out as the most reported crop cultivated in the last agriculture season – between January and April 2013, more than 70 per cent of the households with some agricultural production have reported the cultivation of this crop in the last agriculture season, followed by grains and cereals, and then animal feed. Just like the indicators for access to land and cultivated land, the national pattern is largely determined by what is observed in the mountainous topographical area, where qat production is dominant, followed by grains and cereals. A very similar pattern is observed in the plateau/desert area. In the coastal areas of the Arabian Sea and the Red Sea, there is basically no qat production. In the Arabian Sea coast, animal feed, vegetables and fruits are predominant, and in the Red Sea coastal area, animal feed and grains and cereals dominate.

According to the last indicator in table LV.1, only 36 per cent of agricultural households declared to have sold some of their crops of the last agricultural season. There is a clear seasonal pattern, with most of the selling activity of the last crop production reported between January and March (winter period). The Arabian Sea coastal area has the highest proportion of agricultural households that manage to sell some of their crops, 60 per cent, and in the Red Sea coastal area, only 12.4 per cent sell some of the crops they produce. The regions of Saba, Aden and Azal have a higher proportion of agricultural households selling their crops. There is no clear pattern for poverty level and wealth quintiles. The indicators for wealth quintiles suggest that the richest quintiles sell more than the poorest one, but in terms of poverty levels, there is no clear differences among the four groups. Likewise, the SWF beneficiary status indicators do not suggest statistically significant differences among the three groups, even though the point estimate is higher for non-beneficiaries.

In order to assess in a synthetic way which crops were more likely to be sold by agricultural households, we ran a logistic regression to estimate the odds ratio of selling some of the last crop production, conditioning on the topographical area and month of the interview. The results (table LV.2) show that qat is the crop whose producers are by far more likely to sell some crop, followed by vegetables and then others and fruits. Households that produce cereals and grains are much less likely to sell any of their crops, suggesting that these products are mostly used for their own consumption. Notice, however, that NSPMS only has information on the crops cultivated by the household; the data do not disaggregate which crop was sold by the household and only informs whether the household has sold any of its crops. As for topography, households in the Arabian Sea coastal areas are more likely to sell their crops than all others areas, and those in the mountainous areas are less likely to sell their crops.

Figure LV.4:
Percentage of Agricultural Households by Types of Crop Cultivated in the Last Agricultural Season (all Topographic Areas), Yemen, 2012-2013
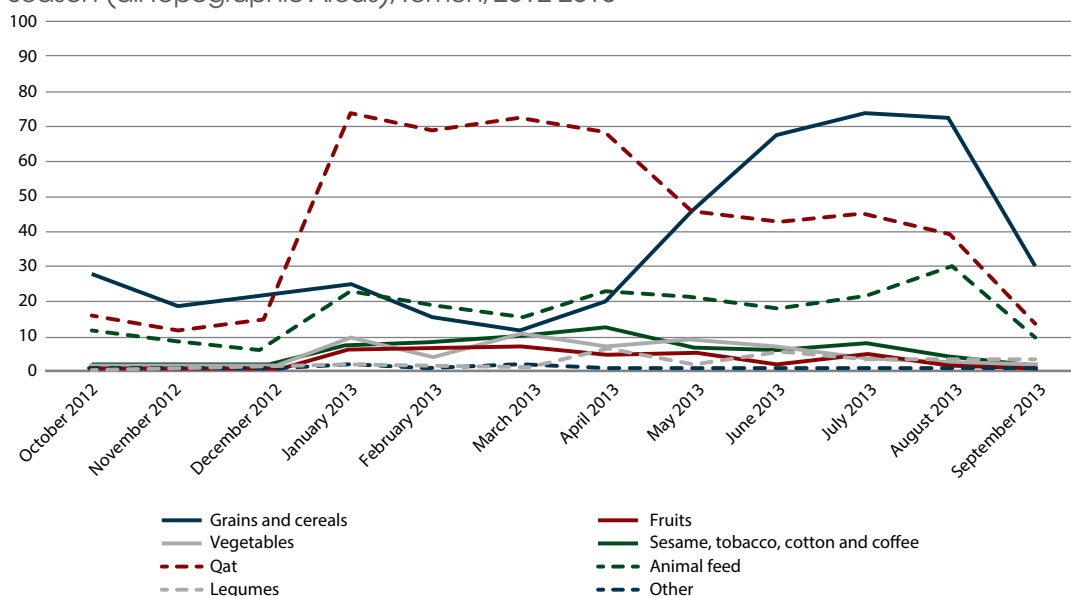
Source: NSPMS, All Rounds.

Figure LV.5:
Percentage of Agricultural Households by Types of Crop Cultivated in the Last Agricultural Season (Mountainous Area), Yemen, 2012-2013
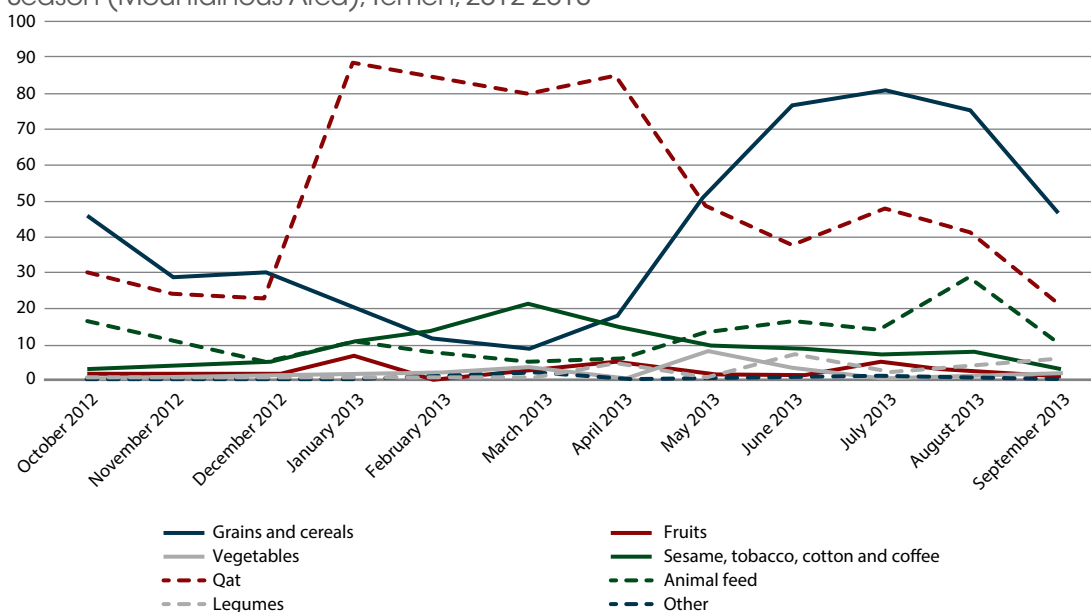
Source: NSPMS, All Rounds.

The average quarterly real revenue of the crop sales for agricultural households which sold some of their output during the 12 months of the NSPMS was 151,990 Yemeni rials (700 United States dollars) at October 2012 prices (table LV.3). Revenues tend to be higher in the Saba region and for the richest quintiles. There is no clear pattern for poverty level with overlapping confidence intervals or for the topographical areas. The same applies to the SWF status, but non-beneficiaries show higher point estimates. Higher revenues are reported in the period January-March 2013, but again, confidence intervals are large and overlap for the different periods.

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Figure LV.6:
Percentage of Agricultural Households by Types of Crop Cultivated in the Last Agricultural Season (Arabian Sea Coastal Area), Yemen, 2012-2013
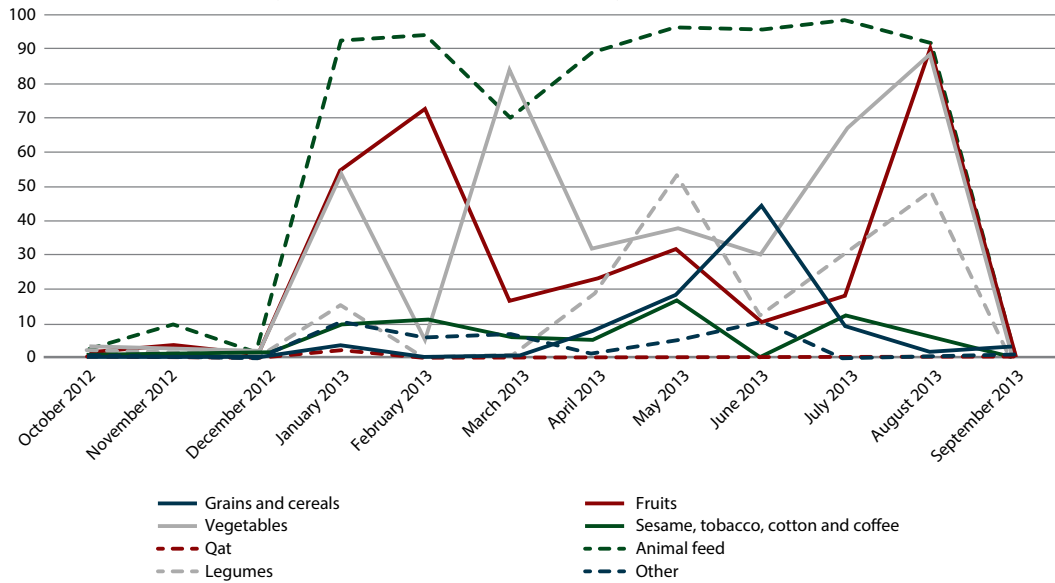
Figure LV.7:
Percentage of Agricultural Households by Types of Crop Cultivated in the Last Agricultural Season (Red Sea Coastal Area), Yemen, 2012-2013
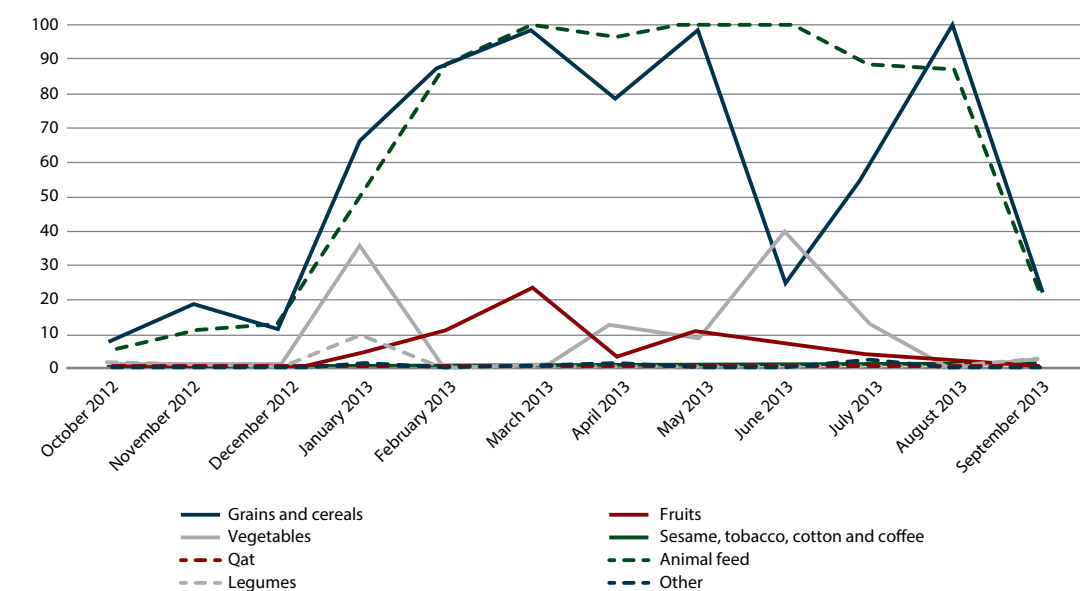
It is important to bear in mind that quarterly revenue is not the household's net agricultural income but rather the gross revenue received on a quarterly basis from selling crops, for those who have sold some in the past three months.

Table LV.3 shows that 57 per cent of agricultural households have livestock, and that on average, about 23.1 per cent with livestock had sold some of it in the three months before the interview. Livestock seems to be less prevalent in the Arabian Sea coastal areas and in the plateau/desert, where respectively 37.3 and 48.1 per cent of households reported having some livestock compared to higher proportions in the mountainous

areas (63.2 per cent) and in the Red Sea coastal area (68.7 per cent). The different measures of poverty in the case of livestock show a similar pattern; the poorest quintiles, the extreme poor and SWF beneficiaries, particularly new SWF beneficiaries, are much more likely to report having some livestock than the richest quintiles, the non-poor and non-beneficiaries of the SWF.

Figure LV.8:
Percentage of Agricultural Households by Types of Crop Cultivated in the Last Agricultural Season (Plateau/Desert Areas), Yemen, 2012-2013
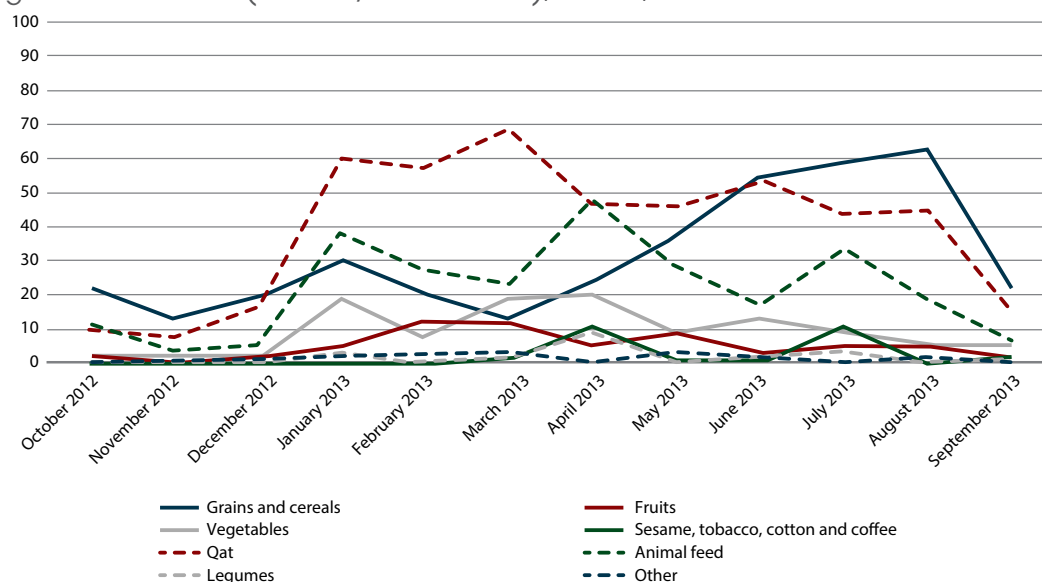
Source: NSPMS, All Rounds.

Table LV.2:
Odds Ratio of Selling Some of the Crop Cultivated in the Last Season, Yemen, 2012-2013

	Odds Ratio	**p-value**
Mountainous	0.58	0.042
Arabian Sea - coastal	2.58	0.097
Red Sea - coastal	0.92	0.830
Cereal	0.48	0.000
Fruits	3.62	0.000
Vegetables	13.61	0.000
Sesame, tobacco, cotton and coffee	1.29	0.265
Qat	18.80	0.000
Animal feed	1.29	0.125
Legumes	0.88	0.636
Others	6.20	0.000
Constant	0.14	0.000

Source: NSPMS, All Rounds (aggregated).
Note: Month dummies included, but not reported.

Unlike cultivated land, there is no clear seasonal pattern or monthly variation for animal husbandry, as one would expect. Despite not showing much variation across the regions of Yemen with regard to the livestock possession, the sale of livestock is much more predominant in the Aden and Tehama regions in comparison to the others. Al-Janad shows a very low proportion of agricultural households engaged in the sale of livestock

compared to other regions. Lower proportions of livestock sales are observed in the mountainous area and in the plateau/desert area. The wealth quintiles suggest that the poorest sell less of their livestock than the richest, but neither the poverty-level analysis nor the SWF beneficiary status show the same difference in a statistically significant way.

The average quarterly real revenue of livestock sales for agricultural households that sold some of their output during the 12 months of the NSPMS is less than 20 per cent of the amount reported for agriculture, about 32,230 Yemeni rials ($150) at October 2012 prices (table LV.3). No major differences are observed for the different disaggregations, but the wealth quintile indicators suggest that the poorest have lower real revenue from livestock sales.

As for the type of animals more likely to be sold in Yemen, sheep and goats stand out as the most reported category and the only one for which the odds ratio is statistically significant. They are also the most prevalent livestock in the country; 70 per cent of the households report raising them, followed by cows and hens, which are mostly likely used either for dairy and egg production or household consumption. Cows and hens seem to have a pattern similar to the one observed for cereals and grains for the agricultural household's own consumption.

Table LV.4:
Odds Ratio of Selling Livestock, Yemen, 2012-2013

	Odds Ratio	p-value	Households (%)
Mountainous	0.52	0.08	-
Arabian Sea - coastal	1.18	0.27	-
Red Sea - coastal	2.70	0.73	-
Camel	2.40	0.61	1.5
Cow	1.15	0.15	45.5
Sheep and goats	7.94	1.89	69.2
Hens	1.22	0.17	44.6
Pigeons	2.86	0.85	3.9
Rabbits	1.28	0.38	1.4
Bees	1.81	0.68	2.1
Donkeys	2.22	0.26	43.5
Horses	1.93	1.10	0.3
Other	1.66	1.83	-
Constant	0.02	0.01	-

Source: NSPMS, All Rounds (aggregated).
Note: Month dummies included, but not reported. Plateau/desert is the reference category for topographical areas.

Table LV.5 shows whether agricultural households have spent some resources on agricultural inputs (seeds, fertilizers, pesticides, fishing nets, wages, water for irrigation, etc.) and the amount of the total investment in the past three months. These questions were only asked for rounds 2, 3 and 4 and are presented as average for these three periods. There seems to be a higher proportion of agricultural households purchasing inputs in round 4 (July-September 2013) and round 3 (April-June 2013) than in round 1 (January-March 2013). However, on average only 14 per cent of agricultural households reported paying for some inputs. Higher than average proportions were observed in Azal and Saba regions, in the mountainous and plateau/desert areas. Differences between the poorest and richest quintiles, different levels of poverty and different SWF statuses are not statistically significant.

The average amount invested was quite minimal, at 4,292 rials (October 2012 prices). The highest levels of investment were observed in Azal and Saba regions and in the plateau/desert area. No other difference was found to be statistically different given the low prevalence of investment among agricultural households.

9.4 Concluding Remarks

A large proportion of rural households in Yemen (44 per cent) have access to land; however, only 58 per cent of these households actually cultivated it, and among those who cultivated it, only 36 per cent were able to sell some of their surplus. Thus, on a quarterly average basis, only 9.2 per cent of the rural households in Yemen were able to sell some of their production between October 2012 and September 2013.

The NSPMS indicators have confirmed the large proportion of households involved in the production of qat. There is also some evidence that this crop is the one most likely to allow rural households to produce some marketable surplus. Other crops such as sesame, tobacco, cotton and coffee are not associated with a higher likelihood of crop selling. More worryingly, from a food security perspective for a country that imports cereals, agricultural households that produce cereals and grains seem to be less likely to trade their surplus, which suggests the limited capacity of local production to meet internal demand.

As for livestock, sheep and goats seem to dominate both trade and overall animal husbandry. Hens and cows seem to be less 'tradable' and similar to cereals and grains, serve to meet household food needs with dairy products (cows), eggs and meat (chicken).

Few agricultural households reported purchasing inputs for their production, and when asked how much they had invested, the amounts were quite minimal, which correlates with the small areas that are cultivated, but also suggests that without investing in inputs, they are unlikely to increase their productivity and produce tradable surplus.

Overall, the findings in this section reinforce the idea that low productivity in the agricultural sector masks unemployment through reliance on unpaid family workers. Such low productivity is a major challenge to fighting poverty and improving the living standards of Yemeni families. Policies that incentivize the production of cereal, grains, vegetables and fruits and curb the production of qat – which as the data suggest, is likely to be the more profitable at the moment – are necessary to support long-term improvement in food security. Households with SWF beneficiaries seem to face similar challenges; a larger proportion of SWF beneficiaries actually have access to land compared to the national average, so policies that increase the productivity of rural households are likely also to have a beneficial effect on the livelihood of SWF beneficiaries.

9.5 Tables

Table LV.1:
Livelihood: Agriculture and Livestock Indicators (I), Yemen, 2012-2013

	Land access (%)			Land cultivated (%)			Area cultivated (ha)*			Agr. Prod. Sold (%)		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	43.40	40.28	46.52	57.99	54.8	61.2	0.49	0.28	0.70	35.9	30.6	41.1
Area of residence												
Urban	12.39	8.73	16.06	43.16	29.95	56.37	0.42	0.03	0.80	28.83	11.19	46.47
Rural	53.98	50.62	57.34	59.15	55.94	62.36	0.49	0.27	0.71	36.29	30.84	41.73
Region												
Sana'a City	14.95	7.53	22.38	60.52	36.00	85.03	0.11	-0.04	0.25	18.14	-6.92	43.20
Hadhramout	27.86	21.64	34.07	57.22	48.30	66.14	0.88	0.23	1.53	31.36	21.65	41.06
Saba	54.89	44.92	64.86	34.45	20.81	48.09	1.15	0.17	2.12	57.28	36.87	77.70
Aden	36.46	31.11	41.81	40.46	34.84	46.08	1.95	-0.48	4.38	53.48	44.41	62.54
Al-Janad	55.27	46.51	64.02	56.40	51.20	61.60	0.11	0.07	0.16	20.47	12.40	28.55
Tehama	35.38	30.33	40.42	54.28	47.71	60.85	0.48	0.31	0.65	28.41	21.47	35.35
Azal	61.74	53.63	69.86	76.20	70.31	82.09	0.40	0.28	0.53	52.76	43.42	62.10
Topography												
Mountainous	61.64	56.43	66.85	63.85	59.88	67.81	0.40	0.07	0.72	32.65	25.49	39.81
Arabian Sea	17.29	11.23	23.35	36.76	25.55	47.96	1.95	1.28	2.62	60.09	45.42	74.76
Red Sea	24.35	17.40	31.29	32.75	23.33	42.16	1.52	0.91	2.13	12.41	4.77	20.05
Plateau/desert	37.23	32.66	41.79	56.94	51.21	62.66	0.45	0.32	0.58	44.91	36.08	53.73
Wealth quintile												
Poorest	42.75	36.64	48.85	52.40	47.41	57.39	0.28	0.19	0.36	26.61	18.92	34.29
Second	52.19	46.93	57.45	56.03	51.47	60.60	0.35	0.24	0.46	29.71	22.99	36.44
Middle	54.63	47.87	61.39	61.20	55.52	66.88	0.32	0.18	0.46	36.16	25.39	46.93
Fourth	39.12	32.87	45.38	66.23	59.76	72.69	1.08	0.07	2.08	50.30	40.46	60.13
Richest	25.65	19.81	31.49	53.48	42.04	64.92	0.45	0.24	0.65	41.33	25.76	56.89
Level of Poverty												
Extreme poor	52.17	43.67	60.68	58.35	52.32	64.39	0.68	0.47	0.89	36.68	27.41	45.95
Moderate poor	34.53	29.85	39.22	51.64	45.84	57.44	1.04	-0.09	2.18	35.72	29.58	41.86
Vulnerable	38.83	33.31	44.35	59.53	53.38	65.68	0.38	0.26	0.50	32.50	22.98	42.03
Non-poor	48.25	44.35	52.15	59.87	55.61	64.12	0.31	0.23	0.39	36.80	29.79	43.81
Period												
Oct.-Dec. 2012	41.98	38.28	45.68	68.72	63.94	73.50				34.66	27.83	41.48
Jan.-Mar. 2013	43.48	40.16	46.79	31.24	26.40	36.08	0.48	0.29	0.67	51.72	43.47	59.97
Apr.-June 2013	43.71	40.30	47.13	55.59	50.10	61.08	0.36	0.28	0.45	36.72	30.58	42.86
July-Sep. 2013	44.43	41.04	47.83	76.42	72.59	80.25	0.58	0.16	1.01	29.98	24.76	35.19
SWF Status												
Non-beneficiary	37.92	34.33	41.51	59.28	55.20	63.35	0.54	0.19	0.89	38.90	31.56	46.23
Old beneficiary	53.09	48.63	57.55	53.56	49.95	57.17	0.36	0.27	0.44	30.64	25.60	35.69
New beneficiary	57.73	50.85	64.62	61.45	54.90	67.99	0.53	0.30	0.76	32.69	26.37	39.01
Population	12,512,832			5,431,531			2,246,952			3,153,034		
Sample	25,578			12,624			5,313			7,280		

Source: NSPMS , All Rounds (aggregated).
Note: * This indicator was not collected in Round 1.

Table LV.3:
Livelihood: Agriculture and Livestock Indicators (II), Yemen, 2012-2013

	Crop revenue (YER)			Livestock (%)			Livestock sales (%)			Livestock revenue (YER)		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	151,990	120,264	183,715	56.8	53.1	60.6	23.1	20.7	25.5	32,240	28851	35630
Area of residence												
Urban	74,329	40,408	108,251	11.9	8.6	15.2	16.2	10.1	22.2	36,540	25,069	48,012
Rural	155,564	122,680	188,449	72.2	68.8	75.5	23.5	21.0	26.0	32,073	28,557	35,590
Region												
Sana'a City	223,463	-168,208	615,134	3.1	0.0	6.2	22.0	7.9	36.1	78,941	45,171	112,711
Hadhramout	109,145	52,940	165,349	69.9	59.4	80.4	17.7	13.4	22.0	35,435	28,290	42,579
Saba	493,147	334,128	652,165	63.2	48.8	77.6	18.7	12.1	25.3	57,705	26,029	89,382
Aden	184,470	117,542	251,399	55.3	48.9	61.7	45.9	40.7	51.2	34,384	31,592	37,176
Al-Janad	55,334	15,534	95,133	54.6	45.2	64.1	5.4	2.4	8.4	28,894	20,079	37,708
Tehama	129,347	62,720	195,973	67.7	61.3	74.1	31.3	26.2	36.3	26,690	20,937	32,443
Azal	158,097	111,053	205,140	63.5	55.3	71.8	19.1	14.9	23.3	38,540	27,981	49,100
Topography												
Mountainous	112,909	80,354	145,463	63.2	56.9	69.4	12.6	10.3	14.8	37,442	29,332	45,552
Arabian Sea	144,848	89,575	200,121	37.3	29.0	45.5	35.9	26.4	45.4	43,822	36,395	51,249
Red Sea	261,924	-89,533	613,381	68.7	59.6	77.8	41.6	33.6	49.6	26,326	19,418	33,234
Plateau/desert	202,310	137,119	267,501	48.1	42.5	53.7	23.9	20.2	27.6	32,947	29,796	36,097
Wealth quintile												
Poorest	51,755	41,292	62,218	74.7	70.4	79.1	27.0	22.5	31.5	29,461	22,548	36,374
Second	78,554	59,206	97,902	66.8	60.2	73.4	21.9	16.5	27.4	27,899	24,190	31,609
Middle	209,068	144,172	273,965	61.8	55.4	68.2	19.8	14.8	24.9	34,041	26,818	41,265
Fourth	156,401	112,369	200,433	48.2	41.9	54.5	22.9	18.8	26.9	37,601	28,012	47,191
Richest	275,268	144,444	406,092	25.6	18.9	32.3	20.8	15.5	26.2	43,247	35,862	50,632
Level of Poverty												
Extreme poor	220,631	153,639	287,624	81.8	76.0	87.7	14.6	10.9	18.4	32,806	28,510	37,101
Moderate poor	117,372	44,693	190,051	59.6	54.0	65.3	9.4	7.0	11.8	31,291	24,524	38,058
Vulnerable	138,781	85,219	192,342	55.6	49.2	62.1	13.2	9.6	16.9	29,510	23,622	35,398
Non-poor	153,619	112,721	194,518	51.3	46.7	56.0	16.1	13.4	18.8	34,177	28,285	40,068
Period												
Oct.-Dec. 2012	95,211	72,704	117,718	55.7	51.6	59.7	26	22.8	29.2	33,122	29,354	36,890
Jan.-Mar. 2013	202,760	135,983	269,537	55.4	51.3	59.4	21.6	18.3	24.9	30,666	26,268	35,064
Apr.-June 2013	163,785	113,734	213,837	57.9	54.1	61.8	21.6	18.4	24.7	29,299	24,574	34,024
July-Sep. 2013	160,775	114,721	206,828	58.4	54.6	62.2	23.2	20.1	26.3	35,401	26,787	44,016
SWF Status												
Non-beneficiary	172,347	129,290	215,403	50	45.4	54.5	23.2	19.8	26.5	32,690	27,416	37,964
Old beneficiary	120,292	72,109	168,474	68.2	64.2	72.3	22.5	19.4	25.6	32,144	28,617	35,672
New beneficiary	103,912	72,141	135,684	76.6	71.8	81.3	23.8	19.6	28	30,379	26,110	34,649
Population	1,122,017			12,513,987			7,116,402			1,640,549		
Sample	2,775			25,582			16,798			4,163		

Source: NSPMS, All Rounds (aggregated).

Table LV.5:
Livelihood: Investment in Inputs, Yemen, 2012-2013

	Investment in inputs* (%)			Input expenditure* (YER)		
	Value	95% CI		Value	95% CI	
		Lower	Upper		lower	Upper
Total	13.8	11.8	15.7	8,070	4,292	11,847
Area of residence						
Urban	1.4	0.7	2.2	502	212	791
Rural	18	15.6	20.4	10,652	5,644	15,659
Region						
Sana'a City	1.3	-0.1	2.7	1050	-595	2696
Hadhramout	9.3	6.3	12.2	1,998	1,223	2,773
Saba	16.4	7.9	24.9	15,419	821	30,018
Aden	11.9	8.8	14.9	6,115	3,312	8,919
Al-Janad	13.5	10.2	16.8	1,936	960	2,912
Tehama	11.6	9	14.2	2,779	1,515	4,043
Azal	26.8	18.6	35	32,138	11,039	53,237
Topography						
Mountainous	18.5	15	22	9,278	1,155	17,400
Arabian Sea	8	3.9	12.2	3,649	1,769	5,529
Red Sea	6.7	3.9	9.5	1,436	651	2,221
Plateau/desert	13	9.8	16.2	10,520	4,755	16,284
Wealth quintile						
Poorest	9.4	7	11.8	1,682	1012	2353
Second	15	12.2	17.9	3,417	2231	4603
Middle	18.6	14.6	22.5	13,724	4627	22820
Fourth	18.7	13.7	23.6	16,016	3186	28847
Richest	7.4	3.5	11.3	7,056	2523	11589
Level of Poverty						
Extreme poor	14.6	10.9	18.4	10,034	3,502	16,565
Moderate poor	9.4	7	11.8	9,103	-752	18,958
Vulnerable	13.2	9.6	16.9	8,722	791	16,652
Non-poor	16.1	13.4	18.8	6,941	4,759	9,123
Period						
Oct.-Dec. 2012						
Jan.-Mar. 2013	9.2	7.2	11.3	9,571	1,865	17,278
Apr.-June 2013	13.5	11	16	8,175	3,768	12,582
July-Sep. 2013	18.6	15.8	21.5	6,463	4,657	8,268
SWF Status						
Non-beneficiary	13.1	10.8	15.4	7,679	4,508	10,849
Old beneficiary	14.1	12.1	16.2	4,189	2,374	6,003
New beneficiary	17.5	13.1	21.9	19,201	-3,285	41,687
Population	9,387,215			9,387,167		
Sample	19,191			19,190		

Source: NSPMS, All Rounds (aggregated).
*Note: * No data for Round 1.*

10 Food Security

The goal of eradicating poverty and hunger established by the Millennium Development Goals reinforced the commitment to ensure food security. The concept of food security addresses the issue of access to food and its linkage with poverty "when all people at all times have both physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".[126]

The concept highlights the multidimensional nature of food security, with four aspects to be accounted for: (1) the availability of a sufficient quantity of food, how food is produced and distributed; (2) economic access to a variety of foods to meet individual micronutrient needs; (3) the stability of access to food with the absence of feelings of deprivation, restricted choice or anxiety; and (4) the respect of the social and cultural preferences of food.[127]

Based on this definition, the assessment of household food security in Yemen is particularly important given the country's high level of poverty and chronic malnutrition.[128] In addition, Yemen's dependency on imported food makes it more vulnerable to economic instability and exchange rate fluctuations, as observed during the 2008 and 2011 economic crises.

In this section, we present two measures used in the NSPMS to assess household food insecurity: (1) household food consumption, looking at the composition of diet (dietary diversity and frequency) using the Food Consumption Score (FCS); and (2) psychosocial dimensions of household coping strategies using well-known questions based on the Household Food Insecurity Access Scale (HFIAS). In addition, the NSPMS provides a rare chance to verify the seasonality of food insecurity, as it collected information on household food insecurity for each quarter during a 12-month period (October 2012 to September 2013).

10.1 Yemen Food Security Situation: the Food Consumption Score

Food insecurity is measured at household level. Table FS.1[129] presents the prevalence of food (in)security by the number of households and the population living in those households. The inadequate availability of and

access to food can be temporary, due to short-term shocks, or persistent, due to long-term lack of resources. The prevalence of food insecurity range from 22 to 31 per cent during the year, which corresponds to the total number of people suffering from severe and moderate household food insecurity. In absolute numbers, this figure means that at any time during the year, at least 5 million people in Yemen had limited or insufficient access to adequate food to cover their basic nutritional needs. The peak of food insecurity over this 12-month period was during the first quarter of 2013, when an additional 2 million people became food insecure. This period coincides with the winter and dry season in Yemen, and it is also the period with lower land cultivation (see chapter 9 on livelihoods).

The decrease of food security during the period January-June compared to July-October suggests that households are not able to maintain their food consumption patterns during the dry season, even with food imports. The difficulty in accessing food can be seen by the steady prevalence of food insecurity throughout the year, namely, a minimum of one quarter of the population is moderately or severely food insecure regardless of the season.

Table FS.1:
Prevalence of Food (In)security by Households and Members of the Households, Yemen, 2012-2013

	Round 1 Oct-Dec 2012		Round 2 Jan-Mar 2013		Round 3 Apr-Jun 2013		Round 4 Jul-Sept 2013	
	N	%	N	%	N	%	N	%
Households								
Food security	2,373,703	75.88	2,072,486	66.23	2,193,629	70.10	2,334,161	74.60
Food insecurity	754,714	24.12	1,056,586	33.77	935,443	29.90	794,910	25.40
Moderate	356,361	11.39	548,946	17.54	557,305	17.81	540,930	17.29
Severe	398,354	12.73	507,640	16.22	378,138	12.08	253,981	8.12
Households	3,128,417		3,129,072		3,129,072		3,129,072	
Sample	6,395		6,397		6,397		6,397	
Household members								
Food security	16,956,959	77.47	15,704,677	68.92	16,649,850	72.45	17,840,722	76.77
Food insecurity	4,930,356	22.53	7,080,826	31.08	6,331,259	27.55	5,398,362	23.23
Moderate	2,413,375	11.03	3,712,072	16.29	3,862,949	16.81	3,667,633	15.78
Severe	2,516,981	11.50	3,368,754	14.78	2,468,310	10.74	1,730,729	7.45
Population	21,887,315		22,785,503		22,981,109		23,239,084	
Sample	46,992		48,830		49,255		49,757	

Source: NSPMS, All Rounds.

WHERE ARE THE FOOD INSECURE?

The area of residence affects the access to and availability of an adequate diet. Households in rural areas are more likely to be (severely) food insecure, independent of the season. The prevalence of food insecurity in urban households ranged from 10 to 16 per cent during the year, while in rural households, it ranged from 27 to 40 per cent, with a peak of 20 per cent of severe food insecurity in the first quarter of the year (figure FS.1).

Food insecurity varies throughout the country, with some regions more affected than others by different seasonal patterns. Figure FS.2 presents the food insecurity indicator (the sum of households with moderate and severe food insecurity) for Yemen's regions for every quarter from October 2012 until September 2013. The peak of food insecurity was observed in the Tehama region in the first semester of 2013, with almost half of the households food insecure (46 per cent of households). This region had the worst situation of food insecurity, with at least 30 per cent of households facing food deprivation during the year. The seasonality of food insecurity was clearly seen in the region of Aden, where it ranged from 15 to 40 per cent of households over this 12-month period.

Figure FS.1:
Percentage of Food Insecurity Status by Area of Residence and Data Collection Period, Yemen, 2012-2013

Severe ■ Moderate
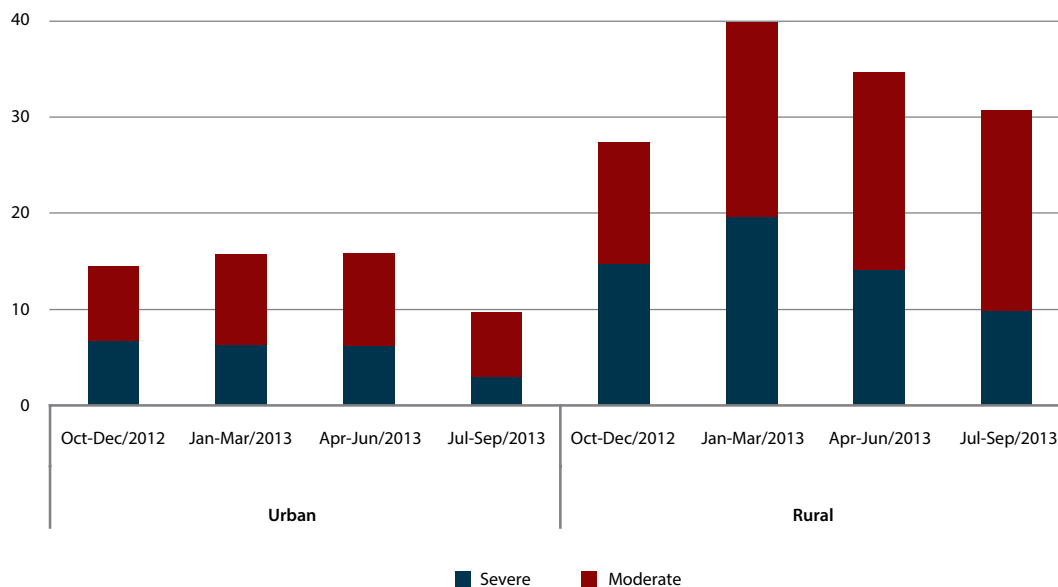
Figure FS.2:
Percentage of Food Insecurity by Region and Data Collection Period, Yemen, 2012-2013

Tehama — Aden — Saba — Al-Janad — Azal — Hadhramout — Sana'a City
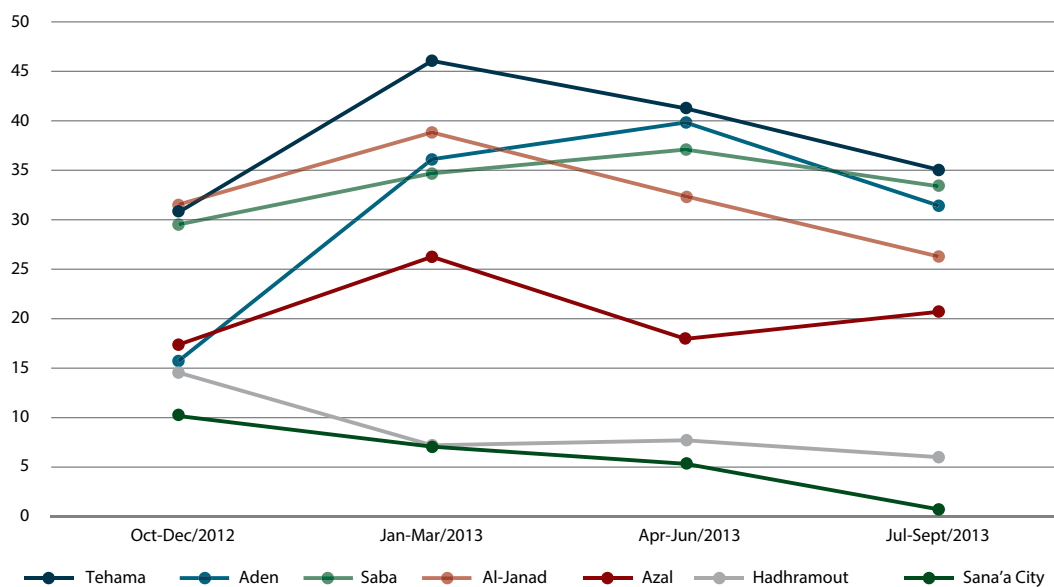
Geographic location is an aspect to consider in explaining the availability of and access to food. The Arabian Sea coastal area had the lowest prevalence of food insecurity during the 12-month period (ranging from 9 to 14 per cent of food insecurity during the study period) with small variation.

Households located in a mountainous area had the worst food insecurity indicator (ranging from 29 to 39 per cent), followed closely by households in the plateau/desert geographic area, with a prevalence ranging from 23 to 30 per cent, most of it from households with severe food insecurity (ranging from 7 to 17 per cent).

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Figure FS.3:
Percentage of Food Insecurity Status by Topographic Areas and Data Collection Period, Yemen, 2012-2013
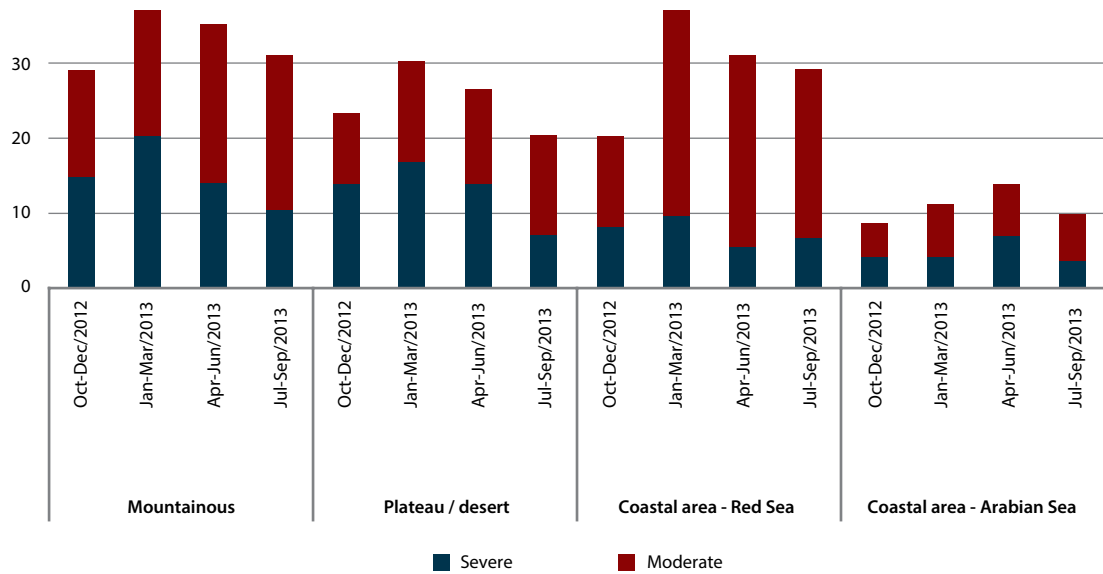
Sources: NSPMS, All Rounds.

WHO ARE THE FOOD INSECURE?

Figures FS.4 and FS.5 disaggregate food security status by wealth quintiles and level of poverty. It is clear that food deprivation is one of the aspects of poverty. The poorest households had much worse access to food than the richest. Figure FS.4 shows the percentage of households that are food insecure (moderate and severe) over the 12-month period of the NSPMS according to wealth quintiles. Nearly half of the population in the bottom wealth quintile is food insecure, with larger variation depending of the time of the year (39 to 52 per cent), while fewer households in the top quintile were food insecure over this period, and with less variation (4 to 5 per cent).

Figure FS.4:
Percentage of Food Insecurity by Wealth Quintiles and Data Collection Period, Yemen, 2012-2013
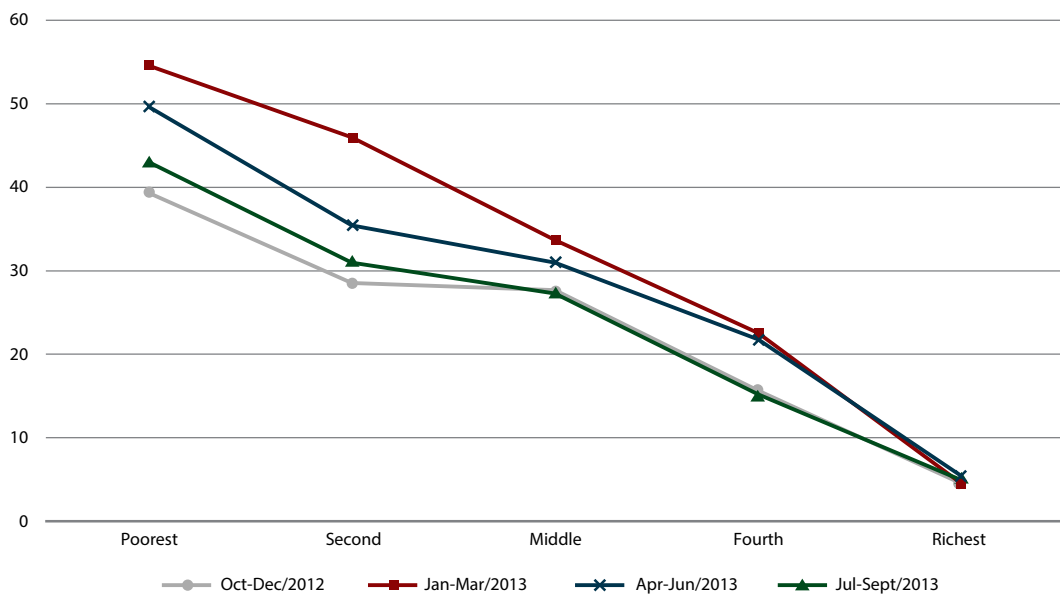
Sources: NSPMS, All Rounds.

Extremely poor households were the most food insecure and non-poor households were the least food insecure, although to a lesser extent than the differences observed between the poorest and the richest quintiles. For households that are moderately poor or vulnerable, the prevalence of food insecurity was either comparable to the extremely poor or the non-poor, which shows the dynamic nature of food insecurity and the vulnerability of households that are unable to guarantee food security throughout the year. Similarly, old and new SWF beneficiaries also show higher levels of food insecurity than non-beneficiaries (see figure FS.6). They also show the same seasonal pattern, with higher levels of food insecurity observed between January and March 2013. The increase in food insecurity between round 1 and round 2 of the NSPMS was sharper for the new SWF beneficiaries.

Figure FS.5:
Percentage of Food Insecurity by Level of Poverty and Data Collection Period, Yemen, 2012-2013

Sources: NSPMS, All Rounds.
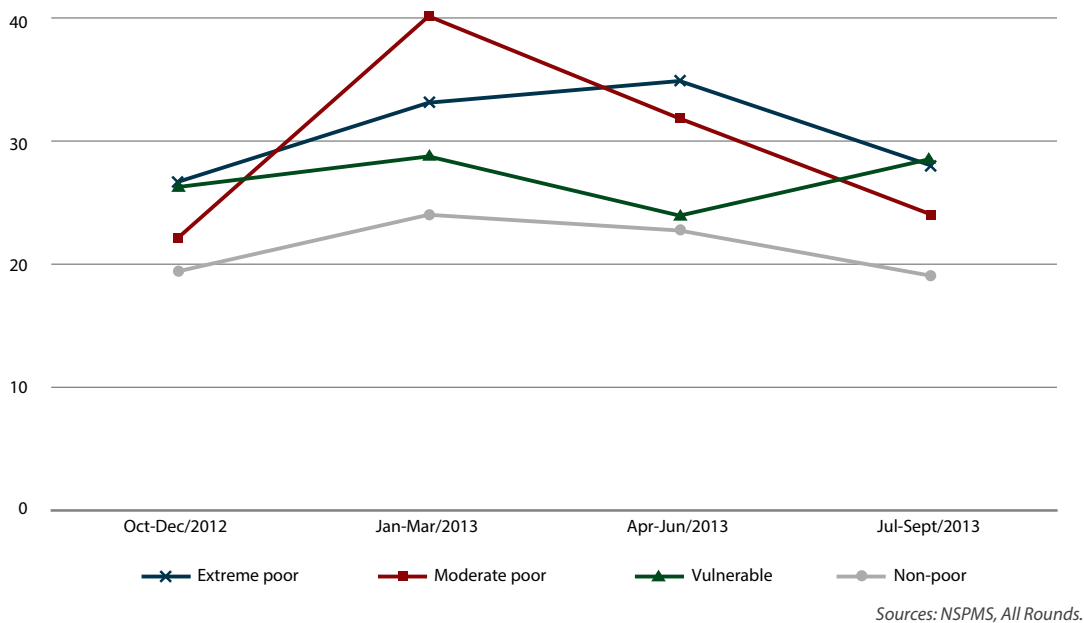
Figure FS.6:
Percentage of Food Insecurity by SWF Beneficiary Status, Yemen, 2012-2013

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Food insecurity - Apr-Jun/2013

Food insecurity - Jul-Sep/2013

Severe   Moderate

Source: NSPMS, All Rounds.
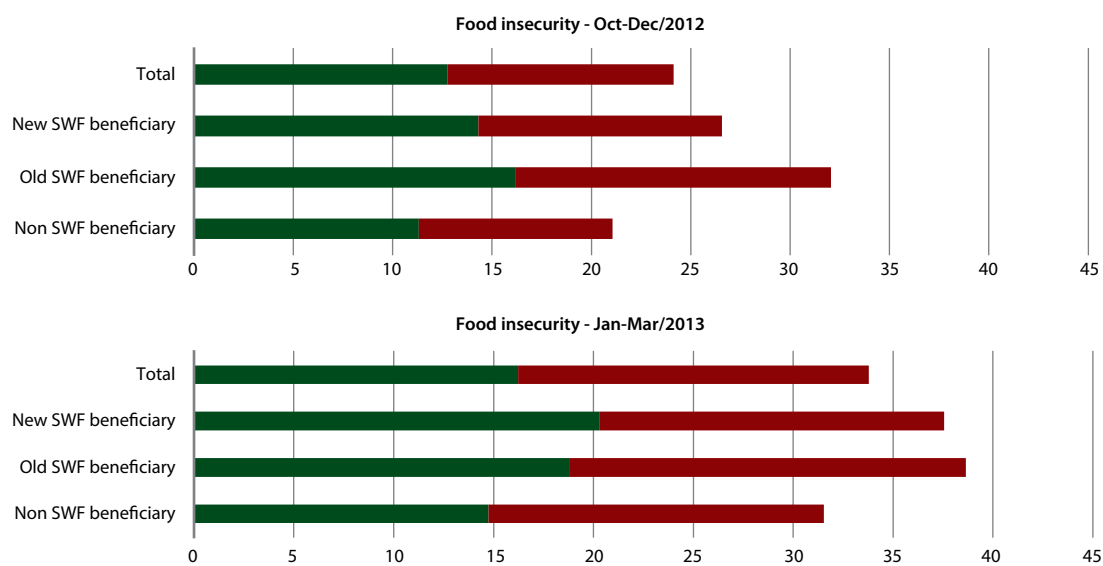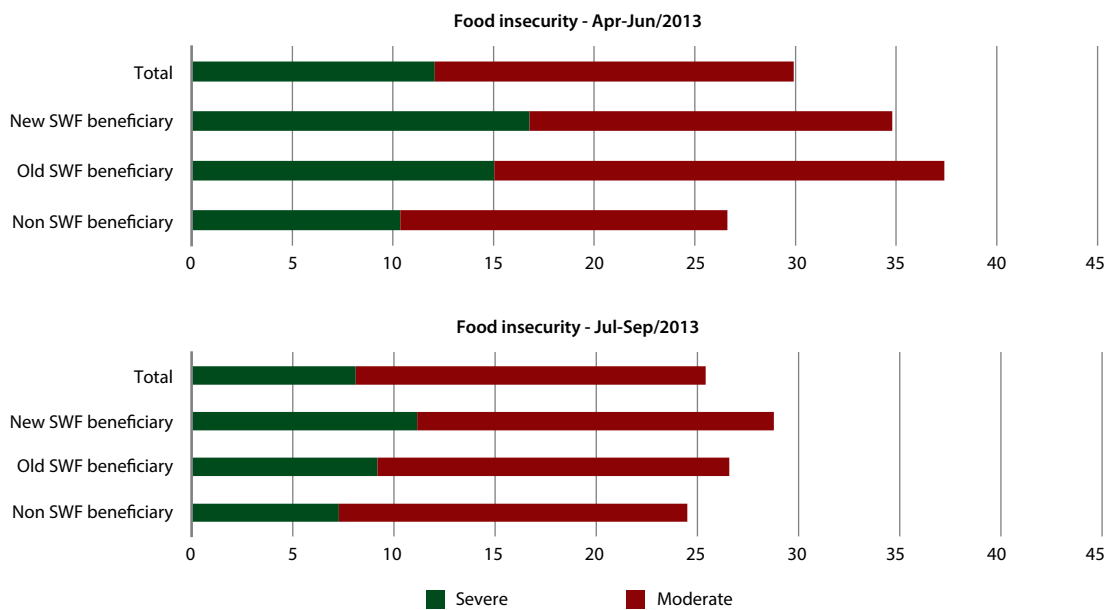
WHAT ARE PEOPLE EATING?

As mentioned above, the FCS is an indicator based on food diversity and on the frequency with which food items are consumed. Tables FS.5–FS.7 show the average weekly consumption (in days) of each food group used in the FCS calculation. These are aggregate figures for the four rounds of the NSPMS. Disaggregated indicators for different population groups are also shown. The tables also include coffee, qat, tobacco and other drinks that are not considered in the FCS calculation.

The food groups with higher weights in the FCS calculation are those with a higher energy value, good protein content and micronutrients with high absorption.[130] The food groups receive weights according to the nutritional value of their components. The group with higher weights includes dairy products, meat, fish and chicken and eggs (weight 4). The second group is made up of beans, pulses and nuts (weight 3); the third group is made up of grains, tubers and roots (weight 2); the fourth group is comprised of fruits and vegetables (weight 1); and the fifth group is comprised of oil and butter, and sugar and honey (weight 0.5).

On average, dairy products (excluding butter) are consumed 3.2 times per week, followed by meat (2.1 times), eggs (0.6 times) and beans (1.4 times). Except for the daily grain and cereal consumption, 6.4 times per week, the food groups with higher weight in the FCS are not (on average) consumed as they should be. Coffee, sugar and honey, and oil and fat have higher weekly consumption, 6.2, 5.5, and 4.9 respectively, than vegetables (1.5) and fruits (0.5). Qat has also a high consumption incidence with an average of 3.2.

The extremely and moderately food insecure households consume much less of all food groups, including qat and coffee. But the differences on nutritive food groups is sharper than the one observed for qat and coffee. There are striking differences between the poorest and the richest quintiles in the average consumption of dairy products, with the former being consumed 2.7 days per week compared to four days per week of the latter. There are no major differences among different SWF beneficiaries or poverty levels.

10.2 Household Strategies for Coping with Food Insecurity

Households facing food insecurity have developed complex strategies for coping with it. Although coping strategies vary with local and cultural conditions, the nature of such strategies can be compared, as there is a common pattern in the sequence of responses. Basically, when the severity of food insecurity increases, households' responses become progressively more serious and threatening to livelihoods.

The NSPMS has also subjectively assessed household food insecurity by asking about households' perceptions of the availability of food items in the household and how they cope with food insufficiency. Table FS.8 shows the percentage of both food-insecure (severe and moderate)

and food-secure households that answered positively to five questions listed below. Those questions measured food access and are based on the HFIAS.[131]

Both food-insecure and food-secure households are very concerned about the possibility of not having enough food for their families, but households suffering from food insecurity adopt some strategies to cope with food deprivation. Household mechanisms for coping with hunger initially involve reducing food variety and portion size and then evolve to restricting the frequency of meals in a day. The most prevalent action is to consume fewer food items, reducing dietary diversity (ranging from 75 to 90 per cent of food-insecure households), followed by eating smaller meals (ranging from 54 to 74 per cent of food-insecure households) and by reducing the number of daily meals (36 to 52 per cent of food-insecure households). Among the severely food-insecure households, there is huge variation along the 12-month period, with 46 to 18 per cent reporting that household members went to sleep hungry because there was not enough food.

Table FS.8:
Percentage of Households According to the Respondent's Feelings of Uncertainty or Anxiety Over Food in the Past 30 Days Prior to the Survey, Yemen, 2012-2013

		Worries that the household would not have enough food	Eat a limited variety of food items due to a lack of resources	Because there is not enough food		
				Eat smaller meals in a day	Eat fewer meals in a day	Go sleep hungry
Round 1 Oct-Dec/2012	Food secure	68.63	58.74	40.87	28.12	16.01
	Food insecure:					
	Moderate	88.20	85.91	59.26	40.37	26.80
	Severe	91.13	84.61	74.59	61.81	46.90
Round 2 Jan-Mar/2013	Food secure	79.33	66.09	39.23	26.33	14.64
	Food insecure:					
	Moderate	92.98	90.79	64.31	49.56	27.00
	Severe	85.79	81.69	65.83	52.71	29.91
Round 3 Apr-Jun/2013	Food secure	79.88	64.73	36.37	22.13	11.17
	Food insecure:					
	Moderate	88.40	83.11	57.04	40.28	21.41
	Severe	92.35	75.25	54.08	37.08	24.38
Round 4 Jul-Sep/2013	Food secure	77.86	62.33	35.56	17.79	9.93
	Food insecure:					
	Moderate	81.93	78.00	55.70	36.53	15.18
	Severe	86.92	80.98	58.09	36.36	18.60

Source: NSPMS, All Rounds.

10.3 Main Source of Food

Table FS.9 shows that in the 12-month period of the NSPMS, the most important source of income to buy food was non-farm salaries (which also includes pensions); about 70 per cent of the households mention salaries as one of the main sources of income to buy food. More do so in urban areas (83 per cent) than in rural areas (64 per cent). The second most important source is assistance from the Government or NGOs (16 per cent). Among the food insecure (severe and moderate), assistance is cited by about 21 per cent of the households. Own production, own livestock and farm wages are only relevant in rural areas, where each one is cited by about 12 per cent of the households. The relatively low response for own production and own livestock in the rural areas shows the limits of food crop production in Yemen. The country relies heavily on food imports, yet large parts of its natural resources – mostly land and water – are used for

the cultivation of qat (see section on livelihoods), mostly in the mountainous areas, which as seen above, is also the most food insecure topographical area in the country.

Table FS.9:
Percentage of Households According to Main Source of Income for Buying Food by Region of Residence and Food Insecurity Status, Yemen, 2012-2013

	Total	Urban	Rural	Severe	Moderate	Secure
Own production	9.4	0.8	12.3	6.2	6.0	10.7
Own livestock	9.2	1.3	11.9	7.7	8.6	9.6
Farm Wages	9.4	3.2	11.6	17.1	11.3	7.7
Small business	6.3	7.4	5.8	2.8	5.6	7.0
Charity	2.5	2.5	2.5	7.2	3.2	1.6
Salaries	69.2	83.9	64.2	57.4	66.9	71.8
Remittances	9.5	6.5	10.6	6.5	7.5	10.5
Assistance	15.9	11.1	17.6	21.3	20.6	14.0
Family	10.8	6.5	12.3	14.3	14.1	9.5
Others	8.4	10.2	7.7	8.7	6.5	8.7

Source: NSPMS, All Rounds (aggregated).

Figure FS.7:
Percentage of Households that rely on Government Assistance to Purchase Food by SWF Beneficiary Status, Yemen, 2012-2013
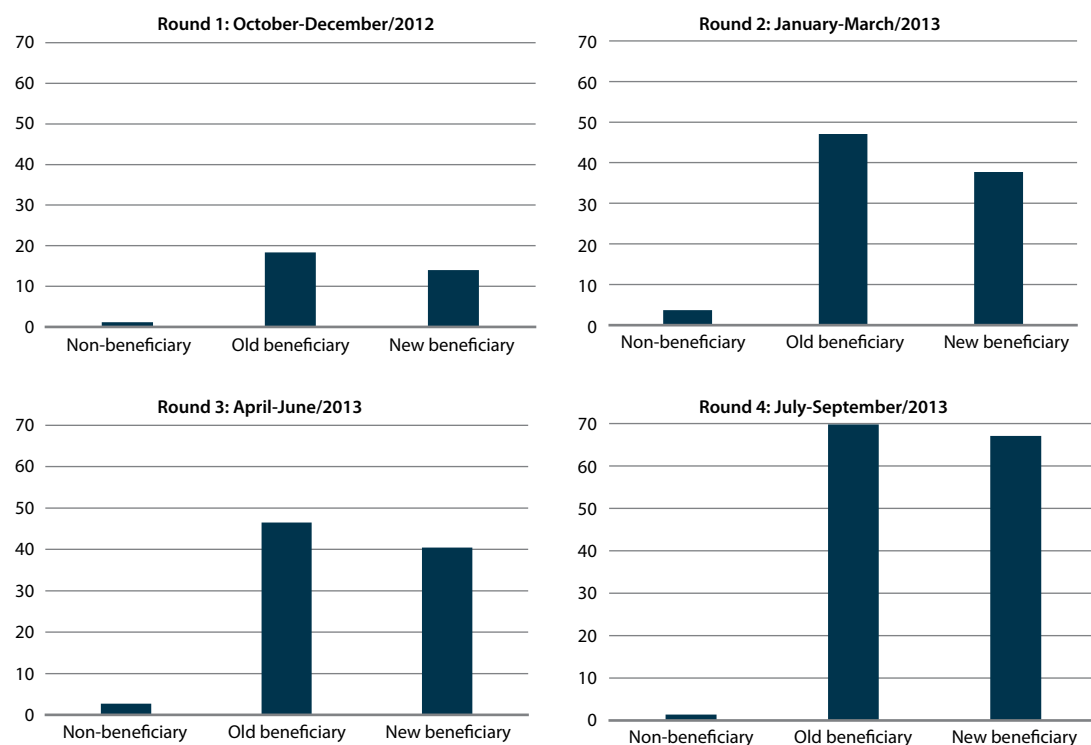
Source: NSPMS, All Rounds.

Remittances are also an important source of income to buy food, particularly in rural areas (10.6 per cent). However, they have a limited role for the food insecure compared to the food secure. This is interesting because as seen in chapter 8 on work and income, remittances are responsible for a similar amount of

resources as SWF benefits at an aggregate level, but their coverage is much lower than that of the SWF. Thus, it is natural that the SWF is a much more important source of income for food purchases than remittances.

The question on the most important sources of income to purchase food did not directly ask about the use of SWF resources to that end, but figure FS.7 shows some clear evidence that most households that mentioned government or NGO assistance as the source of income are likely to be SWF beneficiaries. Moreover, with the gradual expansion of the SWF for the new beneficiaries, its importance has grown over time. Between July and September 2013, 70 per cent of the households with some SWF beneficiary mentioned government assistance as the source of income to purchase food. This figure was just below 20 per cent in October-December 2012.

Tables FS.10 and FS.11 show the complete indicators for other variables such as wealth quintiles, level of poverty, region, topography area and sex of the head of household.

10.4 Comparison with Other Studies

Comparing the NSPMS figures with those from the CFSS, one observes an improvement in the prevalence of food security of 36 per cent, if we compare a similar data collection period. The fluctuation of food insecurity across the years (2009, 2011 and 2012) shows that the change was largely due to a fall in the size of the moderately food-insecure population, since the prevalence of severe food insecurity has basically remained constant (11.8 to 12.7 per cent of the population).

Table FS.12:
Prevalence of Food Insecurity (% of Population), Yemen, 2009, 2011 and 2012

Year	Severely food insecure	Moderately food insecure	Total food insecure	Food secure
	A	B	A+B	C
Nov.-Dec. 2009	11.8	19.7	31.5	68.5
Nov.-Dec. 2011	22.2	22.3	44.5	55.5
Oct.-Dec. 2012	12.73	11.39	24.12	75.88
Jan.-Mar. 2013	16.22	17.54	33.77	66.23
Apr.-June 2013	12.08	17.81	29.90	70.10
July-Sep. 2013	8.12	17.29	25.40	74.60
% change (Nov.-Dec. 2011/ Oct.-Dec. 2012)	-42.65	-48.92	-45.79	36.72

Sources: NSPMS (All Rounds) and WFP (2012a).
Note: The 2009 CFSS uses a different threshold to describe food security. Therefore, moderately food-insecure households are not directly comparable from the 2009 CFSS to the 2011 CFSS or the 2012 NSPMS, as the threshold for this group is not consistent (only severe food insecurity is comparable). However, the 2011 CFSS and 2012 NSPMS use the same threshold for all the three groups, allowing direct comparison.

10.5 Concluding Remarks

The results discussed in this section highlight a complex situation of food insecurity in Yemen, as shown by the high prevalence of food insecurity in the country, limited access to a diverse and balanced diet and widespread anxiety and concern related to food insecurity. The improvement in food security observed during the year was mostly due to a reduction in the prevalence of the moderate food insecurity, whereas the prevalence of severe food insecurity has not changed in a similar way. The profile of food-insecure households reveals, not surprisingly, that the most vulnerable populations are basically the ones residing in rural areas and who have poor socioeconomic conditions. Special attention should be paid to children, who are especially vulnerable to a poor diet, which increases the likelihood of illness and hinders their educational performance, reducing their capacity to profit from better opportunities in their adult life. The report also highlights the importance of the SWF as a source of income to purchase food and brings more evidence to the well-known challenge of increasing food availability through more food crop production at the national level.

10.6 Tables

Table FS.2:
Percentage of Households which are Food Secure, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	75.88	73.20	78.56	66.23	62.83	69.64	70.10	67.35	72.86	74.60	72.08	77.11
Area of residence												
Urban	85.48	80.38	90.57	84.28	79.26	89.29	84.22	78.80	89.64	90.37	86.65	94.08
Rural	72.60	69.26	75.94	60.08	55.90	64.25	65.29	62.01	68.56	69.22	66.33	72.10
Region												
Sana'a City	89.82	83.33	96.31	92.92	87.96	97.87	94.64	90.43	98.85	99.25	98.33	100.18
Hadhramout	85.43	78.88	91.97	92.79	88.42	97.16	92.29	86.67	97.90	93.99	89.18	98.81
Saba	70.47	62.60	78.33	65.30	56.52	74.08	62.90	52.17	73.63	66.62	56.40	76.85
Aden	84.25	81.23	87.28	63.89	57.17	70.61	60.18	53.20	67.16	68.58	62.05	75.12
Al-Janad	68.48	60.98	75.97	61.18	51.41	70.96	67.64	59.78	75.50	73.71	67.44	79.97
Tehama	69.24	63.57	74.92	53.94	47.62	60.26	58.75	54.08	63.42	64.94	59.94	69.94
Azal	82.61	78.41	86.81	73.74	68.69	78.79	82.03	77.27	86.79	79.30	74.39	84.22
Topography												
Mountainous	71.00	66.33	75.67	61.36	55.07	67.66	64.88	59.76	70.00	68.93	64.71	73.16
Arabian Sea	91.29	87.26	95.32	88.86	83.01	94.70	86.14	79.11	93.17	90.15	82.95	97.35
Red Sea	79.78	71.73	87.83	61.74	50.62	72.87	69.01	61.22	76.81	70.86	63.76	77.97
Plateau/desert	76.69	72.14	81.24	69.66	64.95	74.37	73.44	68.74	78.14	79.66	75.58	83.74
Wealth quintile												
Poorest	60.65	53.33	67.96	45.41	37.64	53.17	50.32	44.50	56.15	56.93	50.17	63.69
Second	71.45	66.71	76.20	54.01	47.13	60.89	64.58	59.21	69.95	69.01	63.88	74.15
Middle	72.34	65.53	79.14	66.30	59.62	72.98	69.05	62.53	75.56	72.71	65.67	79.75
Fourth	84.34	80.30	88.39	77.46	72.78	82.14	78.21	73.28	83.13	84.82	80.92	88.72
Richest	95.51	92.90	98.12	95.49	93.24	97.74	94.60	91.93	97.26	95.08	91.40	98.77
Level of Poverty												
Extreme poor	68.82	60.31	77.33	61.99	52.98	71.00	61.03	51.59	70.48	69.73	60.31	79.14
Moderate poor	76.05	71.42	80.67	56.97	50.54	63.40	64.43	58.99	69.87	71.76	66.91	76.62
Vulnerable	71.79	65.32	78.26	67.72	61.54	73.91	72.73	67.65	77.82	68.66	60.26	77.06
Non-poor	78.60	78.54	78.66	71.69	71.60	71.78	74.04	73.97	74.10	78.55	78.50	78.60
Head of household's education												
None	67.57	63.62	71.52	58.89	54.58	63.21	63.12	59.23	67.00	68.40	64.30	72.50
Basic	79.86	75.71	84.01	66.14	60.49	71.80	69.79	64.99	74.59	73.81	69.21	78.40
Secondary +	86.33	82.42	90.23	77.58	72.38	82.79	78.23	72.77	83.69	86.89	83.02	90.77
Quran & Literacy	69.16	55.51	82.81	68.76	52.12	85.40	85.10	78.97	91.23	70.64	53.31	87.96
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		

Source: NSPMS, All Rounds.
Note: Missing information is not included in the statistics.

Table FS.3:
Percentage of Households which are Moderately Food Insecure, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**		**Value**	**95% CI**	
		Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
Total	11.39	9.79	12.99	17.54	15.09	20.00	17.81	15.44	20.18	17.29	15.03	19.55
Area of residence												
Urban	7.75	5.13	10.36	9.44	6.46	12.42	9.67	6.19	13.14	6.75	3.92	9.57
Rural	12.63	10.67	14.60	20.31	17.26	23.35	20.59	17.70	23.48	20.88	18.19	23.57
Region												
Sana'a City	5.55	0.69	10.42	6.53	1.80	11.26	4.61	0.60	8.61	0.67	-0.25	1.60
Hadhramout	7.06	3.02	11.10	4.33	1.76	6.89	4.38	2.31	6.46	3.34	1.19	5.50
Saba	18.12	11.80	24.44	20.57	14.25	26.89	21.20	13.33	29.07	23.39	16.36	30.42
Aden	6.11	4.11	8.10	14.06	10.46	17.66	15.70	11.42	19.98	19.08	14.07	24.10
Al-Janad	14.43	10.47	18.38	21.12	14.79	27.44	23.37	16.03	30.71	19.89	13.61	26.17
Tehama	13.32	9.78	16.87	23.43	17.88	28.99	24.56	20.62	28.49	24.46	20.17	28.74
Azal	10.65	7.44	13.86	14.53	10.69	18.38	10.31	6.93	13.69	11.85	8.59	15.11
Topography												
Mountainous	14.14	11.48	16.80	18.33	14.88	21.77	21.12	16.71	25.52	20.60	16.44	24.77
Arabian Sea	4.52	2.10	6.93	6.97	2.29	11.66	6.87	2.85	10.88	6.25	0.17	12.33
Red Sea	12.11	6.94	17.27	28.59	18.48	38.70	25.54	18.56	32.52	22.43	16.45	28.40
Plateau/desert	9.32	7.16	11.49	13.46	10.87	16.05	12.66	9.94	15.37	13.31	10.43	16.19
Wealth quintile												
Poorest	15.45	11.17	19.72	26.11	19.39	32.82	28.87	23.09	34.64	25.13	19.84	30.42
Second	14.16	11.11	17.21	23.24	17.65	28.83	22.92	18.56	27.28	21.77	17.09	26.45
Middle	13.43	9.76	17.11	19.37	13.10	25.63	18.99	13.17	24.81	22.20	15.02	29.38
Fourth	10.46	6.85	14.06	12.66	9.45	15.87	11.84	8.24	15.44	10.20	6.97	13.43
Richest	1.57	0.62	2.53	2.95	1.18	4.72	2.63	1.30	3.97	4.04	0.72	7.36
Level of Poverty												
Extreme poor	12.77	8.02	17.52	19.17	12.14	26.21	22.70	14.41	30.98	16.23	9.03	23.43
Moderate poor	12.25	9.07	15.42	22.11	16.31	27.91	20.73	15.88	25.58	19.80	16.01	23.59
Vulnerable	14.30	9.42	19.19	16.27	10.85	21.68	15.47	11.63	19.31	21.46	12.99	29.93
Non-poor	9.51	9.49	9.53	15.15	15.10	15.19	16.14	16.09	16.19	14.97	14.93	15.00
Head of household's education level												
None	15.47	12.58	18.35	20.74	17.08	24.41	20.37	17.10	23.64	21.31	17.74	24.87
Basic	9.05	6.53	11.56	17.01	12.65	21.37	18.23	14.05	22.41	17.14	13.39	20.89
Secondary +	6.46	4.12	8.81	12.79	9.01	16.57	15.08	10.32	19.84	9.79	6.23	13.35
Quran & Literacy	16.33	4.27	28.39	18.85	0.75	36.94	9.68	5.08	14.29	21.55	3.51	39.58
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6,397			6,397		

Source: NSPMS, All Rounds.
Note: Missing information is not included in the statistics.

Table FS.4:
Percentage of Households which are Severely Food Insecure, Yemen, 2012-2013

	Round 1			Round 2			Round 3			Round 4		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	12.73	10.66	14.81	16.22	13.96	18.49	12.08	10.40	13.77	8.12	6.63	9.61
Area of residence												
Urban	6.78	2.44	11.11	6.28	2.36	10.21	6.11	3.01	9.22	2.89	1.20	4.58
Rural	14.77	12.22	17.31	19.61	16.74	22.49	14.12	11.98	16.26	9.90	7.96	11.84
Region												
Sana'a City	4.62	-0.11	9.35	0.56	-0.03	1.14	0.76	-0.11	1.62	0.07	-0.02	0.17
Hadhramout	7.52	4.02	11.01	2.88	-0.25	6.02	3.33	-1.67	8.33	2.66	-1.85	7.18
Saba	11.41	6.29	16.53	14.13	8.81	19.45	15.90	9.89	21.91	9.99	4.85	15.13
Aden	9.64	7.13	12.15	22.05	16.02	28.09	24.11	18.11	30.12	12.33	8.55	16.12
Al-Janad	17.10	11.45	22.74	17.70	11.02	24.39	8.99	5.52	12.46	6.40	3.15	9.66
Tehama	17.43	12.60	22.26	22.63	18.78	26.47	16.70	13.15	20.24	10.60	7.21	13.99
Azal	6.74	4.41	9.07	11.73	7.85	15.61	7.66	4.50	10.81	8.85	5.55	12.15
Topography												
Mountainous	14.86	11.45	18.27	20.31	15.66	24.96	14.01	11.06	16.95	10.47	7.73	13.20
Arabian Sea	4.20	1.44	6.96	4.17	0.54	7.80	7.00	1.39	12.61	3.60	-0.89	8.09
Red Sea	8.11	1.86	14.36	9.67	5.11	14.23	5.44	1.68	9.21	6.71	2.89	10.53
Plateau/desert	13.99	10.15	17.82	16.88	13.03	20.72	13.90	10.62	17.18	7.04	4.81	9.26
Wealth quintile												
Poorest	23.91	17.31	30.51	28.49	22.53	34.45	20.81	15.99	25.63	17.94	13.33	22.56
Second	14.39	10.75	18.02	22.75	16.03	29.47	12.50	8.41	16.59	9.22	5.99	12.44
Middle	14.23	9.57	18.89	14.33	10.16	18.50	11.96	8.92	15.00	5.09	3.38	6.80
Fourth	5.20	3.43	6.97	9.89	6.22	13.55	9.96	6.43	13.48	4.98	2.88	7.09
Richest	2.92	0.55	5.28	1.56	0.35	2.78	2.77	0.45	5.09	0.88	-0.76	2.52
Level of Poverty												
Extreme poor	18.41	11.22	25.60	18.84	12.12	25.55	16.27	10.73	21.81	14.04	8.17	19.92
Moderate poor	11.71	7.98	15.44	20.92	16.22	25.62	14.84	11.37	18.30	8.43	5.61	11.25
Vulnerable	13.91	9.69	18.13	16.01	12.16	19.87	11.79	8.28	15.31	9.88	5.66	14.09
Non-poor	11.89	11.85	11.93	13.16	13.10	13.22	9.82	9.80	9.85	6.48	6.47	6.50
Head of household's education level												
None	16.97	13.82	20.12	20.36	17.40	23.32	16.51	13.61	19.42	10.30	8.00	12.59
Basic	11.10	7.72	14.48	16.85	12.01	21.69	11.98	9.01	14.95	9.06	6.13	11.99
Secondary +	7.21	4.00	10.42	9.63	5.71	13.54	6.69	4.33	9.05	3.32	1.89	4.74
Quran & Literacy	14.50	4.86	24.15	12.39	6.74	18.05	5.22	1.79	8.64	7.82	1.63	14.00
Population	3,128,417			3,129,072			3,129,072			3,129,072		
Sample	6,395			6,397			6397			6,397		

Source: NSPMS, All Rounds.
Note: Missing information is not included in the statistics.

Table FS.5:
Weekly Food Consumption in Average Number of Days by Food Groups (I),
Yemen, 2012-2013

	Dairy			Meat			Eggs			Beans		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	3.2	3.0	3.3	2.1	2.0	2.3	0.6	0.5	0.7	1.4	1.2	1.5
Food Insecurity												
Extreme	0.4	0.3	0.4	0.4	0.4	0.5	0.1	0.1	0.1	0.2	0.2	0.2
Moderate	0.7	0.6	0.7	1.0	0.9	1.1	0.2	0.2	0.3	0.6	0.5	0.7
Food Secure	4.2	4.1	4.4	2.7	2.5	2.9	0.8	0.7	0.9	1.8	1.6	1.9
Sex (hh)												
Male	3.2	3.0	3.3	2.2	2.1	2.3	0.6	0.5	0.7	1.4	1.3	1.5
female	3.1	2.8	3.4	1.6	1.4	1.8	0.5	0.3	0.6	1.2	0.9	1.5
Area of residence												
urban	3.2	2.8	3.6	3.1	2.8	3.4	1.1	0.9	1.3	2.8	2.4	3.2
Rural	3.2	3.0	3.3	1.8	1.7	2.0	0.4	0.4	0.5	0.9	0.8	1.0
Region												
Sana'a City	3.9	3.3	4.6	3.0	2.5	3.5	1.2	0.8	1.5	3.9	3.3	4.4
Hadhramout	4.5	4.1	4.9	4.2	3.8	4.6	0.9	0.7	1.1	1.9	1.7	2.2
Saba	2.7	2.2	3.2	1.8	1.2	2.3	0.6	0.5	0.7	1.5	0.8	2.2
Aden	2.4	2.2	2.6	2.8	2.6	3.1	0.9	0.8	1.0	1.3	1.2	1.4
Al-Janad	3.1	2.8	3.4	1.4	1.1	1.6	0.5	0.3	0.7	1.3	0.9	1.7
Tehama	2.7	2.5	2.9	1.9	1.6	2.2	0.2	0.2	0.3	0.7	0.5	0.9
Azal	4.0	3.7	4.2	2.1	1.8	2.4	0.8	0.6	0.9	1.3	1.1	1.5
Topography												
Mountainous	3.3	3.1	3.5	1.4	1.2	1.5	0.4	0.3	0.5	1.0	0.8	1.2
Arabian Sea	3.1	2.7	3.6	4.0	3.6	4.5	1.1	0.9	1.2	1.9	1.7	2.2
Red Sea	2.6	2.2	3.0	2.5	2.1	2.9	0.3	0.2	0.4	0.7	0.4	1.1
Plateau/desert	3.3	3.1	3.6	2.5	2.3	2.7	0.9	0.7	1.0	2.0	1.7	2.2
Head of household's education												
None	3.0	2.8	3.1	1.8	1.7	1.9	0.4	0.4	0.5	0.9	0.8	1.0
Basic	3.2	3.0	3.4	2.2	2.0	2.4	0.5	0.5	0.6	1.3	1.1	1.5
Secondary +	3.4	3.1	3.8	2.8	2.5	3.1	1.0	0.8	1.2	2.3	1.9	2.7
Quran & Literacy	3.6	3.0	4.2	1.6	1.4	1.9	0.5	0.3	0.6	1.3	1.1	1.6
Wealth Quintile												
Poorest	2.7	2.5	3.0	1.3	1.0	1.5	0.2	0.2	0.2	0.4	0.3	0.5
Second	3.0	2.8	3.3	1.6	1.4	1.8	0.4	0.3	0.5	0.8	0.7	0.9
Third	3.0	2.7	3.3	1.8	1.6	2.1	0.4	0.4	0.5	1.0	0.8	1.2
Fourth	3.3	3.0	3.6	2.6	2.4	2.9	0.8	0.7	0.8	1.7	1.5	2.0
Richest	4.0	3.6	4.4	3.8	3.5	4.1	1.4	1.2	1.7	3.3	2.9	3.7
Level of Poverty												
Extreme Poor	3.1	2.7	3.4	2.1	1.8	2.5	0.6	0.4	0.7	1.0	0.7	1.2
Poor	3.0	2.8	3.3	2.2	2.0	2.4	0.5	0.4	0.6	1.2	1.0	1.4
Vulnerable	2.9	2.6	3.2	2.1	1.9	2.3	0.5	0.4	0.7	1.4	1.1	1.7
Non-Poor	3.4	3.2	3.6	2.2	2.0	2.4	0.7	0.6	0.8	1.6	1.4	1.8
Period												
Oct-Dec/2012	3.4	3.2	3.6	2.5	2.3	2.7	0.9	0.8	1.1	1.6	1.4	1.8
Jan-Mar/2013	3.0	2.8	3.2	1.9	1.8	2.1	0.5	0.4	0.6	1.3	1.1	1.4
Apr-Jun/2013	2.9	2.7	3.1	2.1	1.9	2.3	0.5	0.4	0.6	1.4	1.2	1.5
Jul-Sep/2013	3.4	3.2	3.6	2.1	1.9	2.2	0.5	0.4	0.6	1.3	1.2	1.5
SWF status												
Non-beneficiary	3.2	3.0	3.4	2.3	2.1	2.5	0.7	0.6	0.8	1.6	1.4	1.8
Old beneficiary	3.1	2.9	3.3	1.7	1.6	1.9	0.4	0.4	0.5	1.0	0.9	1.0
New beneficiary	3.2	2.9	3.5	2.0	1.7	2.4	0.5	0.4	0.6	1.1	0.9	1.3
Sample	25,585			25,585			25,585			25,585		
Population	12,515,050			12,515,050			12,515,050			12,515,050		

Source: NSPMS, All Rounds (aggregated).

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Table FS.6:
Weekly Food Consumption in Average Number of Days by Food Groups (II),
Yemen, 2012-2013

	Grains, tubers and roots			Vegetables			Fruits			Oil and fats		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	6.4	6.4	6.5	1.7	1.6	1.9	0.5	0.4	0.6	4.9	4.8	5.1
Food Insecurity												
Extreme	6.4	6.3	6.4	0.6	0.5	0.7	0.1	0.0	0.1	2.8	2.5	3.1
Moderate	6.4	6.4	6.5	1.0	0.9	1.2	0.2	0.2	0.3	4.0	3.7	4.2
Food Secure	6.5	6.5	6.5	2.0	1.9	2.2	0.6	0.6	0.7	5.5	5.4	5.6
Sex												
Male	6.4	6.4	6.5	1.7	1.6	1.9	0.5	0.4	0.6	5.0	4.8	5.1
Female	6.4	6.4	6.5	1.4	1.1	1.6	0.5	0.3	0.6	4.7	4.4	5.1
Area of residence												
Urban	6.4	6.4	6.4	2.4	2.0	2.7	0.8	0.7	0.9	5.7	5.4	6.0
Rural	6.5	6.4	6.5	1.5	1.3	1.6	0.4	0.3	0.5	4.7	4.5	4.9
Region												
Sana'a City	6.5	6.5	6.5	2.3	1.9	2.7	1.0	0.8	1.2	6.3	6.1	6.4
Hadhramout	6.3	6.2	6.4	1.6	1.4	1.8	0.7	0.6	0.8	5.1	4.8	5.4
Saba	6.5	6.5	6.5	1.1	0.7	1.5	0.6	0.4	0.8	5.9	5.8	6.1
Aden	6.2	6.2	6.3	1.1	1.0	1.2	0.5	0.4	0.6	5.4	5.2	5.6
Al-Janad	6.5	6.5	6.5	1.9	1.5	2.4	0.3	0.2	0.3	4.3	3.8	4.7
Tehama	6.5	6.5	6.5	2.0	1.7	2.4	0.5	0.3	0.6	4.4	4.1	4.6
Azal	6.5	6.5	6.5	1.2	0.9	1.4	0.6	0.5	0.7	5.6	5.4	5.8
Topography												
Mountainous	6.5	6.5	6.5	1.6	1.3	1.8	0.3	0.3	0.4	4.7	4.4	4.9
Arabian Sea	6.1	5.9	6.2	1.6	1.3	1.8	0.5	0.4	0.7	5.2	4.9	5.4
Red Sea	6.5	6.5	6.5	2.2	1.7	2.7	0.5	0.3	0.8	5.1	4.5	5.7
Plateau/desert	6.4	6.4	6.5	1.7	1.4	1.9	0.6	0.6	0.7	5.1	4.8	5.4
Head of household's education												
None	6.4	6.4	6.5	1.5	1.3	1.8	0.3	0.3	0.4	4.5	4.3	4.7
Basic	6.4	6.4	6.5	1.4	1.3	1.5	0.5	0.4	0.6	5.0	4.8	5.2
Secondary	6.5	6.4	6.5	2.4	2.0	2.8	0.8	0.6	0.9	5.4	5.2	5.7
Quran & Literacy	6.5	6.5	6.5	1.6	1.2	1.9	0.4	0.3	0.5	5.2	4.8	5.6
Wealth Quintile												
Poorest	6.5	6.5	6.5	1.4	1.0	1.7	0.2	0.1	0.3	3.5	3.1	3.9
Second	6.4	6.4	6.5	1.5	1.3	1.7	0.3	0.2	0.4	4.6	4.4	4.9
Third	6.5	6.4	6.5	1.5	1.2	1.8	0.5	0.3	0.6	5.2	4.9	5.4
Fourth	6.4	6.4	6.4	1.6	1.4	1.8	0.7	0.6	0.7	5.7	5.6	5.9
Richest	6.4	6.4	6.5	2.7	2.3	3.2	1.0	0.8	1.1	6.0	5.9	6.2
Level of Poverty												
Extreme Poor	6.4	6.4	6.5	1.2	0.9	1.4	0.4	0.2	0.6	4.5	4.0	5.1
Poor	6.4	6.4	6.5	1.6	1.3	1.9	0.4	0.3	0.5	4.9	4.6	5.1
Vulnerable	6.4	6.4	6.5	1.7	1.5	1.9	0.5	0.4	0.6	5.1	4.8	5.3
Non-Poor	6.5	6.4	6.5	1.9	1.7	2.1	0.6	0.5	0.7	5.0	4.8	5.2
Period												
Oct.-Dec. 2012	6.4	6.4	6.4	1.7	1.5	1.9	0.5	0.4	0.6	5.1	4.9	5.3
Jan.-Mar. 2013	6.4	6.4	6.5	1.7	1.5	1.9	0.4	0.3	0.4	4.8	4.7	5.0
Apr.-June 2013	6.5	6.5	6.5	1.6	1.4	1.8	0.5	0.4	0.7	4.8	4.7	5.0
July-Sep. 2013	6.5	6.5	6.5	1.9	1.7	2.1	0.6	0.5	0.7	5.0	4.8	5.1
SWF status												
Non-beneficiary	6.4	6.4	6.5	1.9	1.6	2.1	0.6	0.5	0.6	5.1	4.9	5.3
Old beneficiary	6.4	6.4	6.5	1.4	1.3	1.5	0.3	0.3	0.4	4.5	4.4	4.7
New beneficiary	6.5	6.4	6.5	1.4	1.2	1.6	0.5	0.3	0.6	4.7	4.3	5.0
Sample	25,585			25,585			25,585			25,585		
Population	12,515,050			12,515,050			12,515,050			12,515,050		

Source: NSPMS, All Rounds (aggregated).

Table FS.7:
Weekly Food Consumption in Average Number of Days by Food Groups (III),
Yemen, 2012-2013

	Sugar and honey			Coffee			Other drinks			Qat			Tobacco		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	5.5	5.4	5.6	6.2	6.2	6.3	0.2	0.1	0.2	3.2	3.0	3.3	2.7	2.5	2.8
Food Insecurity															
Extreme	4.0	3.7	4.3	5.8	5.6	5.9	0.1	0.0	0.2	2.1	1.8	2.4	1.9	1.6	2.1
Moderate	4.9	4.7	5.1	6.2	6.0	6.3	0.0	0.0	0.0	2.5	2.3	2.8	2.6	2.3	2.9
Food Secure	5.8	5.8	5.9	6.3	6.3	6.4	0.2	0.2	0.3	3.5	3.3	3.7	2.8	2.6	3.0
Sex															
Male	5.5	5.4	5.6	6.2	6.2	6.3	0.2	0.1	0.2	3.3	3.1	3.4	2.7	2.5	2.9
Female	5.5	5.2	5.8	6.1	6.0	6.2	0.1	0.1	0.1	2.0	1.7	2.4	1.7	1.4	2.0
Area of residence															
urban	5.8	5.5	6.1	6.3	6.2	6.4	0.3	0.1	0.4	3.4	3.0	3.7	2.7	2.3	3.1
rural	5.4	5.2	5.5	6.2	6.1	6.3	0.1	0.1	0.2	3.1	2.9	3.3	2.6	2.4	2.9
Region															
Sana'a City	6.3	6.1	6.4	6.4	6.3	6.5	0.3	0.1	0.5	3.9	3.2	4.7	3.1	2.4	3.8
Hadhramout	5.4	5.2	5.6	6.2	6.1	6.3	0.7	0.5	0.9	0.9	0.7	1.1	1.4	1.2	1.6
Saba	6.3	6.1	6.4	6.4	6.3	6.5	0.2	-0.1	0.5	2.7	2.2	3.3	1.2	0.9	1.6
Aden	5.8	5.7	5.9	6.2	6.2	6.3	0.3	0.2	0.4	2.4	2.2	2.6	1.5	1.3	1.7
Al-Janad	6.4	6.3	6.4	6.4	6.4	6.5	0.2	0.0	0.3	3.2	2.8	3.5	2.4	2.0	2.8
Tehama	4.4	4.1	4.7	6.0	5.8	6.1	0.0	0.0	0.0	3.0	2.7	3.3	3.6	3.1	4.0
Azal	5.1	4.9	5.4	6.2	6.2	6.3	0.1	0.0	0.1	4.6	4.3	4.9	3.0	2.7	3.4
Topography															
Mountainous	5.8	5.6	6.0	6.3	6.3	6.4	0.1	0.0	0.1	3.5	3.3	3.8	2.3	2.1	2.6
Arabian Sea	5.9	5.7	6.0	6.2	6.1	6.3	0.5	0.3	0.6	1.7	1.4	2.1	1.9	1.6	2.2
Red Sea	5.4	4.9	5.9	6.0	5.7	6.2	0.0	0.0	0.1	2.6	2.1	3.0	4.4	3.8	5.0
Plateau/ desert	5.1	4.8	5.4	6.2	6.2	6.3	0.3	0.2	0.4	3.3	3.0	3.6	2.3	2.1	2.6
Head of household's education															
None	5.2	5.0	5.4	6.2	6.1	6.2	0.1	0.1	0.1	2.8	2.6	3.0	2.9	2.7	3.2
Basic	5.4	5.2	5.6	6.2	6.1	6.3	0.2	0.1	0.2	3.2	3.0	3.5	2.7	2.5	3.0
Secondary	5.9	5.7	6.0	6.4	6.3	6.4	0.3	0.1	0.4	3.6	3.2	3.9	2.0	1.6	2.4
Quran & Literacy	5.8	5.6	6.1	6.3	6.2	6.4	0.1	0.0	0.1	3.6	3.0	4.1	2.7	2.0	3.4
Wealth Quintile															
Poorest	4.5	4.1	4.9	5.9	5.7	6.1	0.1	0.0	0.1	2.5	2.2	2.7	3.3	2.9	3.7
Second	5.5	5.2	5.7	6.2	6.1	6.3	0.0	0.0	0.1	3.2	2.9	3.5	2.6	2.3	3.0
Third	5.8	5.6	6.0	6.3	6.2	6.4	0.1	0.0	0.1	3.5	3.3	3.8	2.7	2.3	3.1
Fourth	5.7	5.6	5.9	6.3	6.3	6.4	0.2	0.2	0.3	3.4	3.1	3.8	2.2	1.9	2.5
Richest	6.1	5.9	6.2	6.4	6.4	6.5	0.5	0.3	0.7	3.3	2.9	3.8	2.2	1.7	2.6
Level of Poverty															
Extreme Poor	5.4	5.1	5.7	6.2	6.1	6.3	0.3	0.1	0.5	2.9	2.5	3.3	2.9	2.6	3.2
Poor	5.3	5.1	5.5	6.0	5.9	6.1	0.1	0.1	0.2	3.0	2.7	3.3	3.1	2.8	3.3
Vulnerable	5.5	5.3	5.7	6.3	6.2	6.4	0.1	0.1	0.2	3.0	2.7	3.3	2.5	2.2	2.9
Non-Poor	5.6	5.4	5.7	6.3	6.3	6.4	0.2	0.1	0.2	3.4	3.2	3.6	2.4	2.2	2.7
Period															
Oct.-Dec. 2012	5.4	5.3	5.5	6.1	6.0	6.2	0.4	0.2	0.5	3.3	3.1	3.5	2.6	2.4	2.9
Jan.-Mar. 2013	5.4	5.2	5.5	6.2	6.2	6.3	0.1	0.1	0.2	2.9	2.7	3.1	2.6	2.4	2.8
Apr.-June 2013	5.5	5.4	5.6	6.3	6.2	6.4	0.0	0.0	0.1	3.2	3.0	3.5	2.6	2.4	2.8
July-Sep. 2013	5.6	5.5	5.7	6.3	6.2	6.3	0.1	0.0	0.1	3.3	3.0	3.5	2.8	2.6	3.0
SWF status															
Non-beneficiary	5.6	5.5	5.7	6.3	6.2	6.3	0.2	0.1	0.3	3.2	3.0	3.4	2.5	2.3	2.8
Old beneficiary	5.2	5.0	5.4	6.2	6.1	6.2	0.1	0.1	0.1	2.9	2.7	3.1	2.8	2.6	3.0
New beneficiary	5.2	4.9	5.6	6.2	6.2	6.3	0.1	0.1	0.2	3.4	3.1	3.7	3.0	2.6	3.4
Sample	25,585			25,585			25,585			25,585			25,585		
Population	12,515,050			12,515,050			12,515,050			12,515,050			12,515,050		

Source: NSPMS, All Rounds (aggregated).

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Table FS.10:
Percentage of Households by Main Source of Income to Buy Food (I), Yemen, 2012-2013

	Own production			Own livestock			Farm wages			Small business			Charity		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	9.4	8.0	10.8	9.2	7.9	10.5	9.4	8.0	10.9	6.3	5.2	7.3	2.5	2.0	3.1
Food Insecurity															
Extreme	6.2	4.5	7.9	7.7	5.4	10.0	17.1	13.1	21.2	2.8	1.9	3.8	7.2	5.5	8.9
Moderate	6.0	4.7	7.4	8.6	6.3	10.8	11.3	8.6	13.9	5.6	3.1	8.1	3.2	2.3	4.1
Food Secure	10.7	8.9	12.6	9.6	8.1	11.1	7.7	6.4	9.0	7.0	5.7	8.3	1.6	1.0	2.2
Sex															
male	9.6	8.1	11.0	9.3	7.9	10.7	9.7	8.2	11.2	6.5	5.4	7.6	2.4	1.9	3.0
female	7.6	5.6	9.5	8.2	6.0	10.4	5.9	3.6	8.2	3.5	1.4	5.5	3.7	2.4	5.1
Area of residence															
urban	0.8	0.3	1.3	1.3	0.5	2.0	3.2	0.5	5.9	7.4	5.1	9.8	2.5	0.9	4.1
rural	12.3	10.6	14.1	11.9	10.3	13.5	11.6	9.7	13.4	5.8	4.7	7.0	2.5	2.0	3.1
Region															
Sana'a City	0.2	0.0	0.4	0.1	-0.1	0.4	0.9	0.1	1.8	5.9	1.7	10.1	0.6	0.1	1.0
Hadhramout	1.9	0.7	3.0	9.3	6.4	12.2	3.7	2.0	5.3	5.8	3.1	8.4	1.9	0.7	3.1
Saba	11.5	3.0	20.0	9.1	3.5	14.8	5.9	2.8	9.1	5.9	3.0	8.9	1.4	-0.1	3.0
Aden	5.8	4.0	7.7	21.4	17.4	25.3	7.2	4.3	10.2	3.7	2.2	5.3	4.8	2.1	7.5
Al-Janad	9.0	6.1	11.9	2.2	1.0	3.4	6.6	4.2	9.0	3.5	2.0	5.0	0.8	0.1	1.5
Tehama	11.6	9.8	13.4	13.0	9.6	16.4	14.2	10.5	17.9	5.5	3.8	7.2	4.7	3.5	5.9
Azal	16.1	10.4	21.8	8.4	5.9	11.0	14.5	10.3	18.7	14.1	10.2	18.0	1.1	0.6	1.6
Topography															
Mountainous	15.6	12.7	18.6	5.3	4.1	6.6	11.3	8.5	14.2	5.7	3.9	7.5	1.7	1.0	2.4
Arabian Sea	0.8	0.1	1.5	11.7	6.5	16.9	8.3	3.1	13.6	3.5	1.3	5.6	2.0	1.1	2.9
Red Sea	3.4	2.0	4.8	17.7	12.4	23.0	5.3	2.9	7.8	8.3	5.5	11.1	2.7	1.2	4.2
Plateau/desert	7.1	5.3	8.9	8.9	6.9	11.0	9.5	6.7	12.3	6.4	4.8	8.0	3.4	2.2	4.5
Quintiles															
Poorest	10.4	8.0	12.8	14.1	10.9	17.4	16.2	12.4	19.9	3.4	2.2	4.7	4.3	2.9	5.6
Second	11.0	9.0	13.0	9.6	6.7	12.5	11.5	8.3	14.6	4.5	2.9	6.1	2.3	1.4	3.2
Third	12.8	9.0	16.6	8.6	5.9	11.3	9.2	6.5	11.9	7.3	4.7	9.8	1.9	1.2	2.6
Fourth	9.3	6.5	12.2	8.6	6.5	10.8	6.5	4.5	8.5	9.0	5.6	12.4	2.1	1.3	2.9
Richest	2.5	1.0	4.1	3.6	2.3	4.8	1.9	0.8	3.0	7.9	5.2	10.7	1.7	-0.3	3.6
Level of Poverty															
Extreme Poor	12.4	8.6	16.1	17.8	13.8	21.9	14.4	10.3	18.4	8.2	4.9	11.6	4.0	2.0	6.0
Poor	8.3	6.4	10.1	10.5	8.1	13.0	9.7	7.4	12.0	8.3	5.8	10.8	3.0	2.1	3.9
Vulnerable	9.1	6.7	11.4	9.2	6.7	11.8	9.6	7.2	12.1	5.4	3.7	7.2	2.2	1.5	3.0
Non-Poor	9.6	7.8	11.4	6.9	5.4	8.4	8.3	6.4	10.3	5.1	3.9	6.4	2.1	1.2	2.9
Period															
Oct.-Dec. 2012	14.3	11.0	17.6	8.8	7.1	10.4	8.3	6.6	10.1	6.6	5.2	7.9	2.4	1.8	2.9
Jan.-Mar. 2013	8.0	6.3	9.6	8.9	7.1	10.7	10.0	8.2	11.8	8.4	6.4	10.3	2.7	1.7	3.6
Apr.-June 2013	6.9	5.6	8.3	9.5	7.8	11.2	9.7	7.9	11.5	4.9	3.7	6.1	2.0	1.1	2.9
July-Sep. 2013	8.3	6.9	9.8	9.6	8.0	11.2	9.7	7.9	11.4	5.2	3.9	6.4	3.1	2.0	4.2
SWF status															
Non-beneficiary	8.3	6.7	9.9	7.6	6.0	9.2	8.0	6.4	9.5	6.6	5.3	7.9	1.5	0.9	2.1
Old beneficiary	11.2	9.2	13.3	12.3	10.5	14.2	12.6	10.3	15.0	4.2	3.2	5.3	4.8	3.6	6.0
New beneficiary	12.5	9.1	15.9	12.6	9.7	15.4	12.0	7.7	16.3	8.7	4.3	13.1	4.1	2.5	5.6
Sample	25,585			25,585			25,585			25,585			25,585		
Population	12,515,050			12,515,050			12,515,050			12,515,050			12,515,050		

Source: NSPMS, All Rounds (aggregated).

Table FS.11:

Percentage of Households by Main Source of Income to Buy Food (II), Yemen, 2012-2013

	Salary			Remittances			Assistance			Family			Others		
	Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI		Value	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Total	69.2	66.7	71.7	9.5	8.2	10.9	15.9	14.6	17.2	10.8	9.7	12.0	8.4	6.9	9.8
Food Insecurity															
Extreme	57.4	53.0	61.7	6.5	4.9	8.2	21.3	18.4	24.3	14.3	12.1	16.5	8.7	6.9	10.5
Moderate	66.9	63.1	70.8	7.5	5.8	9.3	20.6	16.9	24.2	14.1	11.5	16.6	6.5	4.8	8.1
Food Secure	71.8	68.7	74.8	10.5	8.9	12.1	14.0	12.6	15.3	9.5	8.2	10.8	8.7	6.9	10.6
Sex															
Male	71.3	68.7	73.9	8.9	7.6	10.2	15.0	13.6	16.3	8.9	7.8	10.0	8.4	6.9	9.9
female	43.4	36.2	50.6	17.6	11.6	23.5	27.7	23.0	32.4	34.7	28.6	40.8	7.9	5.7	10.1
Area of residence															
Urban	83.9	78.7	89.2	6.5	4.2	8.8	11.1	8.6	13.6	6.5	3.9	9.1	10.2	5.5	14.9
Rural	64.2	61.4	67.0	10.6	8.9	12.3	17.6	16.0	19.2	12.3	11.0	13.7	7.7	6.7	8.8
Region															
Sana'a City	84.7	72.6	96.8	3.9	0.9	6.9	3.8	1.9	5.62	0.8	0.3	1.3	11.9	4.1	19.6
Hadhramout	71.5	66.1	77.0	29.4	23.0	35.9	14.2	9.8	18.6	5.4	2.8	8.1	1.3	0.6	2.0
Saba	48.8	36.5	61.1	32.6	23.0	42.3	12.6	8.2	16.9	12.1	6.9	17.3	34.6	26.6	42.7
Aden	78.6	75.5	81.8	9.7	5.7	13.7	14.4	12.0	16.9	18.9	14.9	23.0	7.4	5.7	9.1
Al-Janad	75.1	70.6	79.7	11.9	8.4	15.5	15.9	12.7	19.1	7.1	5.1	9.0	5.8	1.5	10.1
Tehama	66.2	62.2	70.2	3.5	2.3	4.6	19.3	16.8	21.8	13.7	11.4	16.0	6.2	4.9	7.6
Azal	53.7	45.4	62.0	6.5	4.0	9.0	18.7	15.4	22	12.1	9.5	14.7	11.8	9.5	14.1
Topography															
Mountainous	63.6	58.9	68.3	11.2	8.6	13.8	17.5	15.1	19.8	12.0	9.9	14.2	7.2	5.6	8.8
Arabian Sea	81.5	76.5	86.5	11.6	6.6	16.6	14.4	9.7	19.1	9.9	6.5	13.2	4.4	2.5	6.2
Red Sea	75.5	72.0	79.0	1.6	0.6	2.7	15.4	11.1	19.7	13.2	10.4	16.1	6.3	4.3	8.4
Plateau/desert	70.2	65.8	74.7	11.1	8.8	13.4	14.8	12.6	17	8.7	6.8	10.5	11.1	7.9	14.4
Quintiles															
Poorest	59.9	55.5	64.3	4.9	3.2	6.5	21.1	17.5	24.8	14.3	12.1	16.5	7.6	6.0	9.3
Second	65.6	61.4	69.8	8.8	5.9	11.8	18.9	15.9	21.9	12.7	10.5	15.0	7.3	5.5	9.0
Third	67.5	62.1	73.0	8.4	6.1	10.7	16.5	13.4	19.5	10.8	8.2	13.4	7.5	5.4	9.6
Fourth	72.5	67.1	77.9	13.9	10.5	17.2	14.1	11.6	16.6	9.2	7.3	11.1	8.5	6.2	10.7
Richest	83.9	77.7	90.1	12.9	8.9	16.8	6.9	5.0	8.83	5.9	2.5	9.3	11.4	5.2	17.7
Level of Poverty															
Extreme Poor	68.7	63.8	73.6	11.2	7.2	15.2	24.6	20.3	28.9	6.7	4.8	8.6	7.5	5.5	9.5
Poor	69.1	65.2	73.0	8.9	6.6	11.3	16.8	14.6	19	9.1	7.6	10.6	8.1	6.0	10.1
Vulnerable	72.2	68.5	75.8	7.0	5.5	8.5	16.8	13.9	19.6	10.3	8.4	12.3	7.3	5.5	9.0
Non-Poor	68.3	64.8	71.7	10.5	8.5	12.6	13.6	11.8	15.4	12.7	10.7	14.7	9.1	6.6	11.5
Period															
Oct.-Dec. 2012	65.5	62.2	68.8	7.8	6.4	9.2	6.4	5.3	7.41	11.7	9.9	13.5	12.1	9.7	14.5
Jan.-Mar. 2013	68.0	65.1	70.9	9.6	8.0	11.2	17.1	15.1	19	11.0	9.3	12.6	5.9	4.8	7.0
Apr.-June 2013	71.3	68.4	74.3	10.0	8.5	11.5	16.6	14.5	18.6	9.3	7.7	10.8	7.5	5.6	9.5
July-Sep. 2013	72.0	69.1	74.9	10.8	9.0	12.5	23.7	21.5	25.9	11.3	9.6	13.1	7.9	5.9	10.0
SWF status															
Non-beneficiary	72.9	69.8	76.0	9.3	7.6	11.1	2.2	1.3	3.19	8.9	7.5	10.4	8.1	6.1	10.0
Old beneficiary	62.5	59.5	65.5	9.2	7.7	10.7	45.4	43.1	47.7	16.1	14.1	18.1	8.2	6.9	9.5
New beneficiary	60.1	53.5	66.7	11.4	8.2	14.7	39.8	35.9	43.8	11.5	8.8	14.1	10.4	7.6	13.1
Sample	25,585			25,585			25,585			25,585			25,585		
Population	12,515,050			12,515,050			12,515,050			12,515,050			12,515,050		

Source: NSPMS, All Rounds (aggregated).

11 Estimation of the Impact of the Social Welfare Fund

As discussed in chapter 2 of this report, the SWF was launched in 1997 to provide financial help for individuals less likely to be economically active either on a permanent or temporary basis and to improve the welfare of poor and vulnerable households in Yemen. Households receive unconditional cash transfers that are intended to support purchases that will improve their well-being, such as food, health care, materials to make home repairs and others. In 2008, a PMT, developed with technical assistance from the World Bank, was applied in assessing poverty status and in classifying the surveyed households as poor or non-poor (taking into account geographical area of residence and cost of living). The findings showed that approximately 27 per cent of SWF beneficiaries who were receiving the benefit as of 2008 fell into the 'non-poor' categories. Alternatively, only 12 per cent of the 'potential beneficiaries' were classified as not poor. Thus, the findings of this analysis suggested that some of the 'older' beneficiary households were likely to differ from newer beneficiaries in terms of their poverty status and possibly in other ways that might affect their use of the cash transfers and the impact of the SWF on households. Moreover, new beneficiaries only started receiving the benefit in the last quarter of 2012, and many of them received a lump sum varying from 30,000 to 60,000 Yemeni rials corresponding to the payments for the five quarters that were in arrears, since they were due to have started receiving the transfer in 2011, when some of them received a first payment. The lump-sum payment is another source of difference between new beneficiaries who received it and old beneficiaries who were paid the normal amounts over the NSPMS data collection period.

In 2012, the NSPMS was designed to generate knowledge about existing social protection mechanisms in Yemen and how they influence the utilization of basic social services and related child developmental outcomes. More specifically, the NSPMS data are intended for two purposes: (1) regular monitoring of social protection and living conditions and information on how poor and vulnerable populations are coping in Yemen; and (2) to produce evidence on the impact of the SWF cash transfer programme and inform improvements in future social protection efforts and programme targeting. The broad outcomes of interest in the impact evaluation, including health, nutrition, child development, water and sanitation, education, child protection, child labour, food security, work and income, and production have been described in considerable detail in the preceding sections of this report.

The NSPMS is longitudinal in design, covering a sample of 7,152 households, and (to date) has been administered to these households four times over the period October 2012-September 2013. The surveys reached two main types of households: (1) 'treatment' households, which had at least one SWF beneficiary with a minimum of one payment received; and (2) 'comparison group' households, who either had (a) at least one selected or registered SWF beneficiary but were not yet receiving payments; or (b) no household members registered for the SWF programme. Each household in the NSPMS sample was visited on a quarterly basis to allow for monitoring of their living conditions during different seasons of the year. The balanced sample is actually comprised of 6,397 households. Given that a majority of families depend either directly or indirectly on agricultural production, household consumption and poverty fluctuate seasonally with the weather and agricultural production.

11.1 Data and Impact Evaluation Strategy

The conditions for an 'ideal' impact evaluation do not exist (and are unlikely to be constructed in the future) for the SWF in Yemen. As with most social welfare and poverty reduction programmes, households or individuals are not randomly assigned to receive the benefit (i.e., the SWF). We are using the NSPMS data that have been collected from households (from October 2012 to September 2013) to generate the SWF impact estimates. However, we recognize that these data have a number of limitations for use in an impact evaluation that are important to discuss prior to their analysis. We first address these data limitations and then describe the strategy that we pursue for examining SWF impacts in light of these constraints.

LACK OF PROPER BASELINE

In the absence of random assignment to the SWF, which would facilitate causal identification of impacts, we need an alternative strategy for creating statistically equivalent treatment and comparison groups for estimating SWF impacts. We assume that there is non-random selection into treatment, as households eligible for the SWF need to apply to receive the benefits. Thus, households that are receiving the SWF may differ from non-beneficiaries not only in their treatment status, but also in terms of other characteristics that could affect both receipt of the SWF and the outcomes of interest in the evaluation.

In addition, it is important to establish statistical equivalence of the treatment and comparison groups at baseline, that is, prior to any receipt of the treatment (SWF cash transfers). Once statistical equivalence at baseline (prior to treatment) is confirmed, then it is more plausible to argue that any observed differences in the outcomes between treatment and comparison group members are attributable to the SWF. However, for many of the SWF beneficiary households in the NSPMS data, we are not able to obtain a true baseline measure of their characteristics prior to grant receipt. In particular, the 'older' SWF beneficiaries could have been receiving the cash transfers for four or more years prior to the NSPMS data collection. Currently, the measures from round 1 of the NSPMS are being used as a kind of 'pseudo' baseline for the impact analysis. We recognize, however, that this is a flawed approach; we discuss further below how this complicates the analysis of SWF impacts and how we handle this issue in the estimation.

SEASONALITY IN THE DATA

As discussed above, the NSPMS was designed to monitor the living conditions of households across the different seasons of the year, given the well-known differences from season to season in conditions for agricultural production, the risk of poverty and other health and social consequences of limited access to food and reduced household consumption. In addition, children's educational outcomes are also of interest in the evaluation, and thus the likelihood that children will be in school (as opposed to being on holiday from school) or at greater risk of engaging in child labour will also differ by season. Because of these expected differences in the environmental conditions of households over the course of the four rounds of the survey, ideally, differences in outcomes between treated (SWF beneficiary) and comparison group (non-beneficiary) households should only be compared in the same season.

If there was a second full year of NSPMS data collection (i.e., four more rounds in a 'follow-up' year), it would then be possible to construct 'difference-in-difference' estimates of the impact of the SWF. That is, the change in a given outcome between round 1 (or 2, 3 or 4) of the first year and round 1 (or 2, 3 or 4) of the follow-up year could be calculated and then compared (or differenced) between the treatment (SWF beneficiaries) and comparison groups (non-beneficiaries). However, because there is only a single year of data collection – with

one measure for households for each season/round – it is not possible to construct appropriate difference-in-difference impact estimates. Thus, in the analysis, we can compare differences in outcomes for a given round of measures between the treatment and comparison group members, which is a weaker strategy for identifying programme impacts. This approach to estimating impacts requires us to assume that outcome trajectories (or the rates of change in outcomes) for programme beneficiaries would have been the same as those for non-beneficiaries in the absence of treatment. Furthermore, we do not have the data necessary to check if this assumption is correct, so this will remain as a potential threat to the validity of the impact evaluation results.

IRREGULARITIES IN TREATMENT

If the SWF programme implementation proceeded as intended, beneficiary households would receive cash transfers in equal amounts of up to 4,000 Yemeni rials per month paid quarterly. A single beneficiary receives 2,000 rials per month, and an additional 400 rials per month is paid for up to five other family members. Thus, the maximum transfer a household should receive in a given year is 48,000 rials (paid in four equal payments of a maximum of 12,000 rials each). However, as described in chapter 2 of this report, payments were made irregularly to some beneficiaries, particularly those who were new beneficiaries beginning in 2011. Rather than receiving the cash transfers in equal sums quarterly, more than one third of this group received a large lump-sum payment of 60,000 rials (the accumulation of back payments) in the final quarter of 2012. For this group and other new beneficiaries, their receipt of SWF payments was just beginning (and was uneven) at the time that the first round of the NSPMS data collection was getting underway.

The irregularities in payments for newer beneficiaries could potentially affect how households spend the cash transfers and their implications for the outcomes we are measuring in this study. A 2014 report on the Lesotho Child Grants Programme, another unconditional social cash transfer program, described a similar situation in which beneficiaries received the total intended amount of cash transfers, but the payment schedule was not followed and transfers were frequently made in "lumpy disbursements" rather than quarterly.[132] The evaluation of this programme found that the irregular payment cycle did not allow households to smooth their consumption across the year, which in turn could limit the effectiveness of the cash transfers in helping families to cope with economic shocks.

INCONSISTENCIES IN MEASURES ACROSS FOUR ROUNDS OF NSPMS DATA COLLECTION

In order to track outcomes over time and use data such as those collected in the NSPMS to assess programme impacts, it is critical that the same measures are used in each round. However, for a number of outcomes, in particular, for vaccination measures, changes were made across survey rounds in how those data were gathered. These measurement issues were discussed in earlier in this report (see chapter on child health), so they will not be restated here. It is important to note, however, that this makes it more difficult to distinguish changes in outcomes that might be associated with receipt of the SWF transfers from differences possibly due to how the measures changed across the rounds. At a minimum, this introduces another source of error to be concerned about in the estimation of programme impacts.

11.2 Non-experimental Evaluation Strategy

As discussed earlier, selection into the SWF programme was not random, and therefore, we need to employ an estimation strategy that enables us to rule out alternative causal interpretations and address the potential problem of selection bias (i.e., that those receiving the SWF may differ in systematic, unmeasured ways from the comparison group of non-beneficiaries). From existing methodological research, we know that it is important to collect pre-test data on the outcomes and at several pre-intervention times, if possible; select comparison groups to minimize initial differences; and obtain data on other variables correlated with both outcomes and selection into treatment for predicting selection into treatment and estimating programme impacts. Working within the data limitations described above, we estimate non-experimental models that rely on statistical adjustments for selection and attempt to minimize differences between the treatment and comparison groups through matching.

In particular, we use propensity score matching (PSM) methods that measure programme impact as the average difference in outcomes for treated units minus a weighted average of outcomes for comparison units.[133] The weights are a function of observed characteristics, X, of the treatment and comparison groups:

$$\Delta^{ATT} = \frac{1}{n} \sum_{i \in T} \left\{ Y_i^1 - \sum_{j \in C} w(X, i, j) Y_j^0 \right\}.$$

There are a variety of approaches to matching that can be employed, and the differences among them generally centre on to their approach to estimating the weights, w(X, I, j).

The propensity score is the probability of receiving a treatment (i.e., the SWF) given X, denoted $P(D = 1 | X$ or simply $p(X)$. Rosenbaum and Rubin (1983) proved that when it is valid to match units based on a set of covariates, X, it is equally valid to match on the propensity score. In other words, the probability of participation summarizes all the relevant information contained in the X variables, allowing for matching on a single variable, the propensity score, instead of an entire set of covariates. In this way, the propensity score serves as a balancing score for X, assuring that for a given value of the propensity score, the distribution of X will be the same for treated and comparison units.

Accordingly, we construct a statistical comparison group by matching treated units to comparison units with similar values of the propensity to receive programme benefits. In other words, if SWF beneficiaries and comparison group members have the same propensity scores, the distribution of X across these groups will be the same:

$$Y0 \perp D \mid X \implies Y0 \perp D \mid P(X),$$

and they can be compared on the basis of their propensity scores alone, where D is receipt of the SWF. The difference between their mean outcomes is then calculated to yield an estimate of the average impact of the treatment on the treated, and after-matching balancing tests are used to assess the quality of the matches.

The validity of this approach relies on two assumptions: (1) conditional mean independence, that is, conditional on the observed characteristics, comparison group members have the same mean outcomes as the treatment group would have in the absence of the programme; and (2) sufficient common support (or overlap in the distribution of propensity scores for treatment and comparison) to produce valid matches.[134] Prior studies suggest that PSM is more likely to provide reliable, low-bias estimates of programme impacts when the same data (or survey instruments) are used for treatment and comparison groups; the data include variables that identify programme participation (selection into treatment), and treatment and comparison units are from the same localities.[135] The NSPMS data allow us to meet these three conditions, subject to the important caveat that the data do not provide true 'pre-treatment' measures for a significant proportion of SWF beneficiaries in the sample (as noted above). We discuss the details of our PSM estimation approach in the following section.

11.3 SWF impact Model Specification and Estimation

TREATMENT AND COMPARISON GROUPS

In light of the differences among SWF (sampled) beneficiaries in the length of time receiving the SWF and irregularities in payments of cash transfers for newer beneficiaries, we estimate SWF programme impacts for three treatment groups: (1) any household with at least one SWF beneficiary and with a minimum of one payment received; (2) older beneficiaries, i.e., households that began receiving the SWF before 2008 or did not have the PMT applied to verify eligibility; and (3) new beneficiaries whose eligibility was confirmed by the PMT or first began receiving the SWF in 2011 or afterward. In defining the comparison group, we use only those households with no residents registered for the SWF programme. Many of the households that were selected to receive the SWF (by the PMT) but were classified as not yet receiving payments at the time of the NSPMS were later found to have received a transfer, so these households were re-categorized as new beneficiaries. Thus, each of the three treatment groups are compared to (or matched with) the same group of non-beneficiaries in the impact estimation.

EFFECTS ESTIMATED

The particular parameter that we are interested in estimating is the average treatment effect on the treated (ATT), which measures the impact of the programme on households that received the cash transfers:

$$ATT = E(Y1 - Y0 \mid D=1).$$

Because we are using survey data (the NSPMS) that are intended to represent the SWF target population, we also have the option of estimating the sample or population ATT. The sample ATT (or SATT) is calculated on the unweighted survey sample, while the population ATT (or PATT) takes into account the sampling design. In reporting the impact evaluation results here, we show the simple differences in outcomes between the SWF beneficiaries and non-beneficiaries (i.e., unmatched, unadjusted estimates); the matched ATT (from the PSM models); and the PATT that adjusts the matched estimates for the sampling design. The standard errors for the PATT estimates are also corrected to account for the sampling design. We show sample code for the impact estimation in Appendix IE.1.

It is also important to reiterate that SWF beneficiaries had been receiving the cash transfers for varying lengths of time when the NSPMS data were collected – some older beneficiaries for many years and some new beneficiaries for less than one year. Thus, we anticipate heterogeneity in effects due to the varying lengths of treatment as well as the irregularities in the cash transfer payments, and also because of the differing characteristics of the households receiving SWF cash transfers. We estimate impacts using outcomes measured in the fourth round of the NSPMS, unless otherwise noted in our reporting of the results. For example, we estimate impacts on children's absences from school using data from the third round of the NSPMS, as children are not in school during the months when the fourth round of data were collected. For child labour, we estimate impacts in both rounds 3 and 4 to examine the effects of the SWF when children are in school as well as out of school.

First-stage PSM model specification (predicting SWF benefit receipt)

There are three basic steps in PSM estimation: (1) estimating the propensity score; (2) choosing a matching algorithm that will use the estimated propensity scores to match non-beneficiaries to beneficiaries; and (3) estimating the impact of the intervention with the matched sample and calculating standard errors. Here, we focus on the first step of estimating the propensity scores (i.e., the 'first-stage' model).

In specifying the first-stage model of selection (into the SWF) or programme participation, it is important to include variables or measures that determine who receives the benefit. The most obvious set of predictors to include are any explicit targeting criteria that are used to determine programme eligibility. For the SWF, these include indicators that correspond to the basic eligibility criteria shown below (and defined accordingly); specifically, the presence in the household of: unemployed or low-income adult males; women over age 18 years without a breadwinner; a disabled household member; the elderly; and/or orphaned children under 18 years of age. Given that the PMT was used to confirm the eligibility of households for the SWF beginning in 2008, we also include the PMT measure for each household.

Table IE.1:
Eligibility Criteria for Social Welfare Fund in Yemen

Main category	Subcategory	Definition
Economic	Unemployed	Men unemployed or employed with income less than the SWF cash transfer amount
	Women without a breadwinner	Women who are widowed, divorced, or unmarried (if over age 18)
Social	Disabled or severely ill	Individuals who are temporarily/permanently disabled/ill and unable to work
	Elderly	Men over the age of 60; women over the age of 65
	Orphans	Child without a source of income or caretaker under the age of 18 (or between 18 and 25 if attending university)

Source: Authors' elaboration based on SWF (2009).

In addition to the variables that captured the eligibility criteria, following Dugoff et al. (2014) recommendation for applying propensity score methods to complex surveys (such as the NSPMS), we included in the first-stage model a variable that accounts for the survey sampling strategy (and the fact that higher sampling weights

were assigned to EAs with lower poverty levels). Finally, we also included other measures from the NSPMS that we expected might be correlated with both outcomes and selection into the SWF. These included whether the head of household could read and write, age and marital status of the head of household, whether an apartment or home was rented, household possession of various assets (e.g., refrigerator, sewing machine, motor vehicles, etc.), and region and topography indicators.

The results of the first-stage model estimated to predict participation using the treatment group comprised of any household with at least one SWF beneficiary and with a minimum of one payment received are shown in table IE.2. This table presents three models: one that includes the basic eligibility criteria only (model 1); a model that adds the variable that adjusts for the sampling design (model 2); and a third model that adds other covariates potentially correlated with both outcomes and selection into the SWF. The results show that each of the eligibility criteria are statistically significant predictors of SWF benefit receipt (see model 1 of table IE.2). When the sample weight and other predictors are added (see models 2 and 3), only the indicator for orphans does not maintain statistical significance as a predictor of treatment. In each of these models (among the eligibility criteria), having an elderly household member or a woman without a breadwinner are most strongly correlated with benefit receipt. Correspondingly, being married is negatively related to SWF benefit receipt (as is the ability of the head of household to read and write); and the age of the head of household is positively associated with treatment (see model 3). As expected, possessing assets such as a refrigerator, water pump, truck or bicycle are negatively associated with SWF receipt, although we find the opposite for car ownership. Compared to Aden (the reference category for region), households in the other regions (except Hadhramout) are significantly less likely to be SWF beneficiaries, as are those residing in the Arabian Sea coast.

In table IE.3, we show the 'full' model 3 results for each of the three different treatment groups (all beneficiaries, new beneficiaries and older beneficiaries). Importantly, it is clear from comparing these results across the three groups that the factors predicting receipt of SWF benefits are different for new versus older beneficiaries. Whereas the PMT is not a statistically significant predictor of receipt of the SWF by older beneficiaries, it is one of the most important predictors of treatment for the new beneficiaries. Correspondingly, being elderly is not a statistically significant predictor of new beneficiaries, where it is one of the strongest predictors of treatment for older beneficiaries. An orphan in the household is not a statistically significant predictor in any of the models, whereas a woman without a breadwinner is a statistically significant predictor of treatment in each of the models. There are few differences across the models in terms of how the other household characteristics predict SWF receipt.

In our estimation of the first-stage models, we found that using the 'full' models (shown in table IE.3) yields distributions of propensity scores for the treated and comparison groups that are more similar and facilitate better matches in the PSM estimation. Thus, the impact estimates that we present in this report are all generated using the propensity scores (predicted values of treatment) obtained from estimating the first-stage models shown in table IE.3. Figures IE.1–IE.3 show the distributions of the propensity scores, for treatment and comparison group members, for each of the three treatment groups. As was evident in examining the coefficients of the variables in the first-stage models, these figures also illustrate how the predicted probabilities of SWF benefit receipt differ for older versus new beneficiaries. As discussed above, new beneficiaries were more likely to be poor (as identified by the PMT) and have higher predicted probabilities of SWF receipt than the comparison group members.

MATCHING STRATEGY

We now describe the details of how we used the propensity scores to match treatment and comparison households and produce the impact estimates. Early matching strategies compared one comparison group member with a given treated case, known as one-to-one matching, but it has since been confirmed that impact estimates are more stable and make better use of available data if they consider all comparison cases that are sufficiently close to a given treated case. The matching strategy or algorithm that we use specifies how we determine whether a given comparison case is sufficiently 'close' in terms of its characteristics to be matched to a particular treated case. Although allowing a specific case to be used in many comparisons may inflate sampling error, more often the benefits of close matches outweigh these other costs.

In this analysis, we use two primary strategies for matching: nearest neighbour matching; and radius matching. Nearest neighbour matching is one of the most straightforward matching procedures. An individual from the comparison group is chosen as a match for a treatment group member in terms of the closest propensity score (or the case most similar in terms of observed characteristics). The algorithm specifies

the number of neighbours that will be matched to a given treatment group member. Variants of nearest neighbour matching include 'with replacement' and 'without replacement,' where, in the former case, an untreated individual can be used more than once as a match and, in the latter case, is considered only once. We use matching with replacement with the objective to obtain closer matches.

Another strategy for avoiding the risk of poor matches is to use radius matching, which specifies a 'caliper' or maximum propensity score distance by which a match can be made. The basic idea of radius matching is that it uses not only the nearest neighbour within each caliper, but all of the comparison group members within the caliper. In other words, it uses as many comparison cases as are available within the caliper, but not those that are poor matches (based on the specified distance). This approach does not limit the number of cases that are matched with a given participant, as long as those cases are 'close' enough.

We match treatment and comparison group cases at the household level (i.e., based on household eligibility for the SWF and other household characteristics). For both the estimation of household-level and individual-level programme impacts, the matching takes place at the household level. In estimating individual-level outcomes, we randomly sample an individual from the household of an age relevant for the particular outcome. For example, for education/schooling outcomes, we estimate separately the models for females and males and focus on (i.e., sample) children ages 6-11 years to estimate programme impacts on children's enrolment and attendance in school. Anthropometric measures – underweight, stunting and wasting – are used in estimating SWF impacts on children aged 6-59 months, and vaccinations are examined for children aged 12-23 months (although we also assess to what extent children are fully immunized for those aged 12-59 months). This contributes to varying sample sizes in the estimation of SWF impacts, which we report for each impact estimate.

In all of our PSM analyses, we specify a common support, which will remove cases from the analysis for which we are not able to find matches as specified (i.e., within a given caliper). We use a relatively narrow caliper of 0.001, which is necessary to achieve balance for all covariates that we use in matching. In reporting the results, we present the simple differences in outcomes (i.e., unmatched, unadjusted estimates) along with their sample sizes, and we also present the matched (ATT) estimates from the PSM models with the number of cases on the common support. If some cases are dropped from the PSM analysis due to a lack of common support, this is reflected in a lower sample size for the PSM estimation. In general, we lose less than 1 per cent of the cases in any given estimation.

In addition, as discussed above, we produce a third estimate, the population average treatment effect on the treated (PATT) that takes into account the sampling design (which is described in detail in the 2013 Baseline Analytical Report). Thus, for each outcome examined in the impact analysis, we present nine estimates: the unadjusted, unmatched estimates, the PSM ATT estimates and the PATT estimates for each of the three treatment groups, all beneficiaries and (separately) new beneficiaries and older beneficiary households. The standard errors presented with the PATT estimates are likewise corrected to appropriately account for the sampling design.

BALANCING TESTS

An important step in assessing the quality of matching is to perform tests that check whether the propensity score adequately balances characteristics between the treatment and comparison groups. Formally, the objective of these tests is to verify that treatment is independent of unit characteristics after conditioning on observed characteristics (as estimated in the propensity score model),

$$D \perp X | p(X)$$

where X is the set of characteristics that are assumed to satisfy the conditional independence assumption. In other words, after conditioning on p(X), there should be no other variable that could be added to the conditioning set of the propensity score models that would improve the estimation, and after the application of matching, there should be no statistically significant differences between covariate means of the treatment and comparison units. We perform these tests after the matching process, which is necessary to compare differences in time-invariant covariates (that are unaffected by treatment) for the resulting matched sample.

In examining the results of after-matching balancing tests, we are checking to see if any differences remain in the covariate means between the treatment and comparison groups in the matched sample. If all differences have been eliminated, we are more likely to obtain unbiased treatment effects. If differences remain, refinements to the propensity score model specification should be made to improve the resulting balance, or a different matching approach should be considered. It is also important to emphasize again that achieving

balance for the resulting matched sample does not ensure that a given estimate of the treatment effect is unbiased. There is no corresponding test for the conditional independence assumption; that is, we are not able to check for difference between the treatment and comparison groups for characteristics that we do not observe (and that may influence selection into treatment and outcomes following treatment).

We conducted many balancing tests in the context of this estimation, as we worked to determine the best specification for the first-stage model (predicting SWF receipt) and to estimate SWF impacts using PSM. Table IE.3 presents the balancing test results for the final first-stage model specification that we used in the impact analyses for the three treatment groups. The key finding of the balancing tests is that after matching, there are no statistically significant differences in any of the covariate means between the treatment and comparison groups, and this finding holds for all three treatment groups. As discussed above, the first-stage model included: variables that captured the SWF eligibility criteria; other measures from the NSPMS that we expected might be correlated with both outcomes and selection into the SWF (including characteristics of the head of household and the dwelling, as well as household assets); region and topography indicators; and the survey sampling variable (which reflects that higher sampling weights were assigned to EAs with lower poverty levels). It is our assessment that it would be difficult to improve on this first-stage model specification with the existing data, and given that the covariate means all balance after matching, we are satisfied in using this approach to estimating SWF impacts.

11.4 Impact Estimation Results

We summarize the results of the SWF impact estimation in two ways, presenting the impact estimates in tables as well as graphically. We begin our discussion of these results with the household-level impact estimates, followed by the impact estimates for individual household members.

HOUSEHOLD-LEVEL SWF IMPACTS

Table IE.5 shows the household impact estimates, that is, coefficient estimates from the PSM estimation and the population adjusted coefficients (and unmatched estimates), along with their standard errors and sample sizes. Statistically significant results are shown in boldface. In addition, these results are displayed graphically in figures IE.4–IE.30, which makes it easier to visually compare the size of the different estimates for the three treatment groups. On the graphs, the bars represent the coefficient estimates: a bar above zero shows a positive coefficient estimate and a bar below zero represents a negative coefficient estimate. The lines through these bars represent a 95 per cent confidence interval for the estimated effects (based on the standard errors); when these lines cross zero, this suggests that the estimate is too imprecisely estimated to determine the direction of the effect (i.e., positive or negative).

First looking to table IE.5, the estimates highlighted in boldface suggest that we find some statistically significant effects of the SWF on about one half of the outcomes estimated, although the direction of the effects may not always be what one would expect. In our interpretation of the results, we look at the unadjusted, unmatched results only as a guide to understanding how unmeasured selective differences between the treatment and comparison groups might be confounding our impact estimates. For example, the unadjusted, unmatched estimates for durable materials suggest that households receiving the SWF are significantly less likely to have durable materials in their housing. However, when matching analyses are performed (and when the matched estimates are adjusted for the sampling design), the differences in the use of durable materials between treated and untreated households is no longer statistically significant. This suggests that the households receiving the SWF are more disadvantaged or poorer than those not receiving the cash transfers, and that adjusting for these differences is important in estimating impacts.

For some indicators shown in table IE.5, the interpretation of the results might be more complex. For example, there is a statistically significant, positive increase in the use of solid fuels by new beneficiary households (which is larger after matching and when accounting for the sampling design). Because the 2011 political and economic crisis drove up prices of basic household goods and solid fuels and reduced households' access to these essential items, the increase in the use of solid fuels might be interpreted as a positive impact of the programme on the newer (and generally poorer) SWF beneficiaries. At the same time, the 2013 Baseline Analytical Report noted that solid fuels pose health risks to household members, and that households in the bottom quintile of the wealth distribution use them at much higher rates, while wealthier households tend to use more advanced technologies. Thus, if poorer households do not have access to

better fuel sources, an increase in the use of solid fuels might be interpreted as a positive impact; but over the longer term, one might want to see the substitution of solid fuels for more advanced technologies among lower-income households. The data currently available for the evaluation do not allow us to examine the latter potential effect of the SWF.

The household-level impact analyses do not suggest any effects of the SWF on crowding in households, access to health facilities, food security or borrowing money. The two statistically significant estimates for the electricity access measures, suggesting that newer beneficiaries were less likely to have access to public or private electricity sources, could reflect unmeasured selection into the SWF or the short time that newer beneficiaries had been receiving the cash transfers before the NSPMS data were collected. The handful of other statistically significant coefficient estimates tend to follow a similar pattern; that is, SWF beneficiaries are less likely to have improved sanitation and bednets, and they are likely to have greater distances to water sources and to have lower water consumption. On the contrary, the adjusted matched (PATT) estimates for piped water suggest that older beneficiary households are significantly more likely to have access to piped water than non-beneficiaries.

We also suspect that unmeasured selection, that is, beneficiary households are more disadvantaged and have worse outcomes in the absence of any intervention, even after controlling for observable characteristics, may be reflected in some of the estimates of household expenditures of the SWF. For example, the final outcome shown in table IE.5 (and figure IE.30) reports SWF expenditures on children's education, clothing and health (estimated with the sample of children in the household under 18 years of age). The unadjusted estimates are negative (and one is statistically significant), while the coefficients that adjust for observed differences among beneficiaries and non-beneficiaries are all positive, and the estimate for older beneficiaries is also statistically significant. Alternatively, for SWF expenditures on food (figure IE. 28), we see that all of the estimated effects are positive, and most are also statistically significant. The fact that the estimated effects are smaller for new beneficiary households could reflect, as noted above, that many of these households had been receiving the SWF for a very short time before the NSPMS was administered, as well as the fact that the newer beneficiaries were poorer than older beneficiaries (and unmeasured selection might therefore play a bigger role in the estimation for this group).

Figure IE.28:
Estimated Effects of Social Welfare Fund on Household Food Expenditures, Yemen, 2013
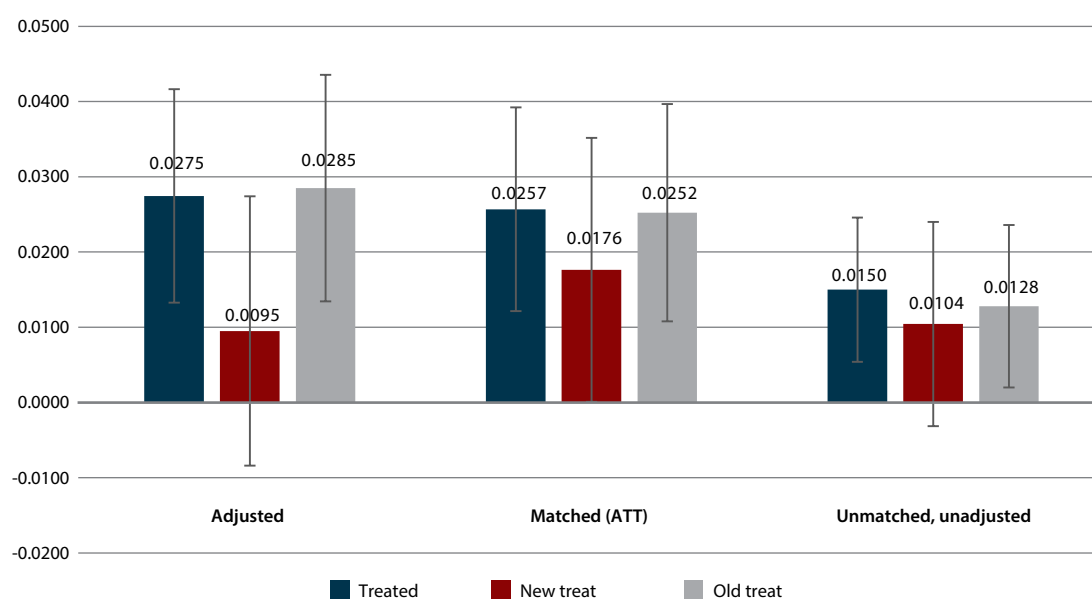
Source: NSPMS, Round 4.

The pattern for household expenditures on utilities is mixed, with one small, positive statistically significant effect of the SWF on older beneficiary households' use of the cash transfers for expenditures on utilities (figure IE.29).

Figure IE.29:
Estimated Effects of Social Welfare Fund on Household Utility Expenditures, Yemen, 2013
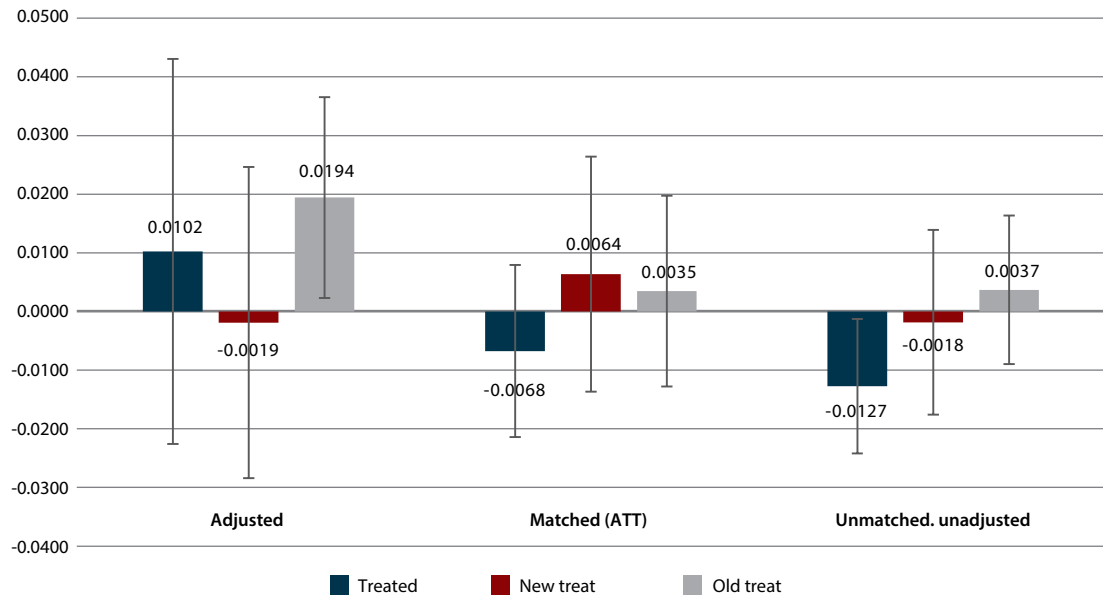
Turning to measures of household income and agricultural production (Figures IE.23–IE.27), we find that income from work and from agricultural production are both significantly reduced among the older SWF beneficiary households. To the extent that older beneficiary households actually include more elderly family members, as clearly suggested by the first-stage model predicting access to the SWF, this relationship might be expected and interpreted positively, i.e., in the sense that access to the SWF payments allows older household members to retire from work and production. The estimates for SWF effects on land cultivation are mostly negative, with the exception of one positive (statistically significant), population-adjusted coefficient estimate for older beneficiaries.

Figure IE.24:
Estimated Effects of Social Welfare Fund on Household Investments in Agricultural Inputs, Yemen, 2013
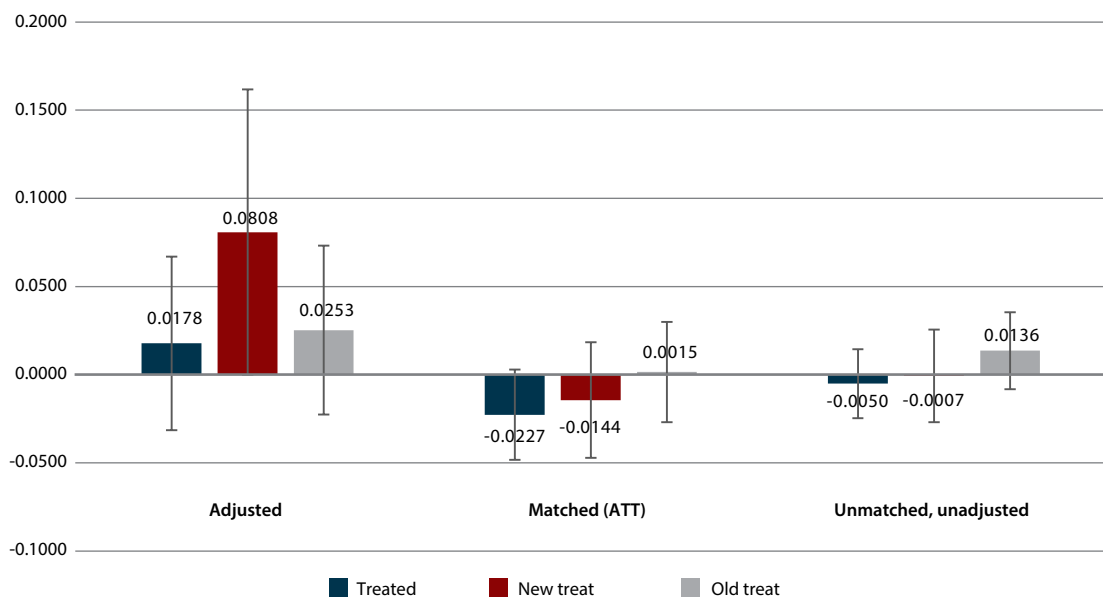
The other findings reported for livelihood outcomes mostly support a story of older beneficiary households relying less on crop and livestock sales and their own production as a main source of food with receipt of the SWF. On the other hand, we see a different pattern for new beneficiary households. New SWF beneficiaries are more likely to make investments in agricultural inputs (see the PATT estimates in figure IE. 24) and, they are also significantly more likely to possess livestock than non-beneficiaries (figure IE. 25). These impacts seem to be consistent with the implementation of the programme for new beneficiaries, who received irregular, lump-sum payments (when payments resumed). As discussed above, the literature suggests that lump-sum payments may be spent differently than regular monthly or quarterly benefits – that is, on bigger, one-time expenditures – although we suggest that this outcome should be monitored in the future to determine whether this or another explanation for these observed patterns might hold over time.

Figure IE.25:
Estimated Effects of Social Welfare Fund on Livestock Possession, Yemen, 2013
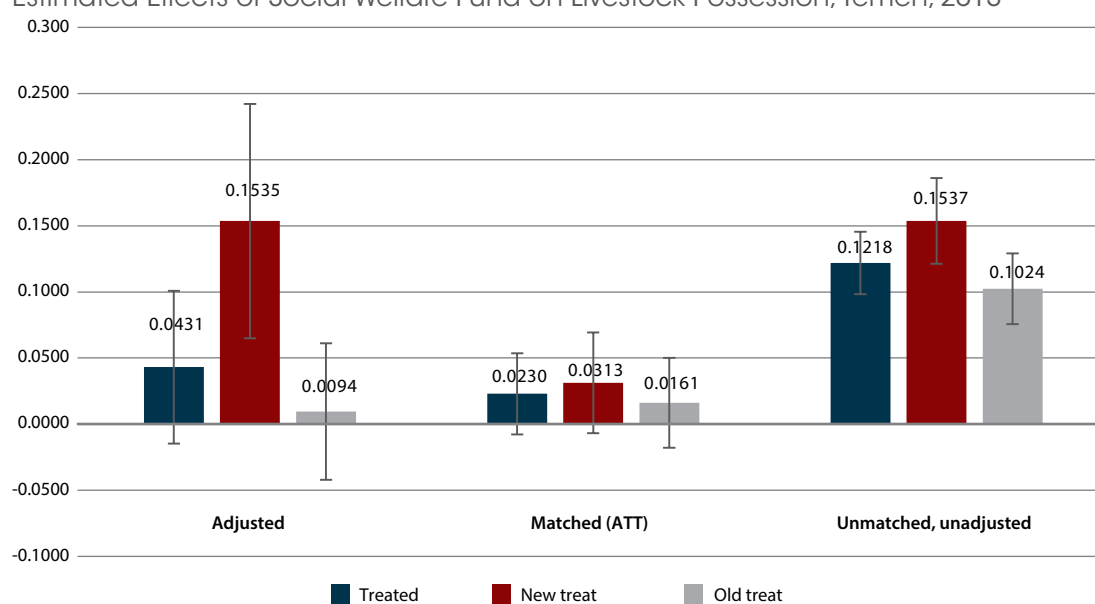
Source: NSPMS, Round 4.

More generally, in light of the many problems associated with the NSPMS data for estimating SWF programme impacts, i.e., the lack of proper baseline measures, differences and irregularities in disbursement of SWF payments, and seasonality and inconsistencies in measures, it is best to interpret each of these household programme impact estimates with caution and at most as 'suggestive' of potential programme effects. Indeed, it is more likely that these impact estimates are confounded by measurement issues, both in terms of the timing of outcome measures relative to disbursement of treatment (which differed for older and new beneficiaries) and the potential for lingering selection bias (due to the challenges in targeting the SWF efficiently). For example, as noted above, the measurement of outcomes in the NSPMS took place very shortly after the first disbursement of SWF payments for many new beneficiaries, leaving little opportunity for households to have responded behaviourally (e.g., adjusting consumption), or for evaluators to address seasonal variation in the measures.

SWF IMPACTS ESTIMATED FOR INDIVIDUALS (SAMPLED) WITHIN HOUSEHOLDS

There are a number of outcomes of interest in the SWF evaluation that apply only to household members of specific age groups. We have estimated these outcomes by (again) matching at the household level, while randomly sampling one individual in the relevant age range for a given household for the specified outcome. Table IE.6 presents the estimated impacts of the SWF for these outcomes and shows the age range of the household members for which they were computed (as applicable). As in table IE.4, we show the population adjusted (PSM) coefficients, the PSM estimates (unadjusted), and the unmatched, unadjusted estimates, along with their standard errors and sample sizes. Statistically significant results are highlighted in boldface, and all of the results are also depicted in figures IE.31–IE.78.

We have three main measures of educational outcomes for school-aged children. We estimate these outcomes separately for males and females and for younger (6-11 years) and older (12-14 years or 14-15 years) children. The first measure shown in table IE.6 was constructed from the fourth round of the NSPMS when it was asked if the children intended to enrol in school again for the next school year. We estimated this outcome for children at the ages when they would be most likely to stop their schooling (11-12 and 14-15 years for females and 14-15 years for males). For the new beneficiaries, the estimated effect is always positive, suggesting that these children are more likely to be enrolling in school again if their households are receiving the SWF, but only the unmatched, unadjusted estimates are statistically significant. Looking at the next measure, we find statistically significant reductions in the probability that both male and female children of younger (6-11 years) and older (12-14 years) ages were absent from school (in round 3 of the NSPMS when school was in session) if their households were receiving the SWF (see the PATT estimates). About 19 per cent of all children had absences from school in round 3, suggesting that receipt of the SWF might be associated with substantial reductions in the probability of being absent (by .07-.08).

Figure IE.34:
Estimated Effects of Social Welfare Fund on Absence from School (Girls 6-11 Years), Yemen, 2013
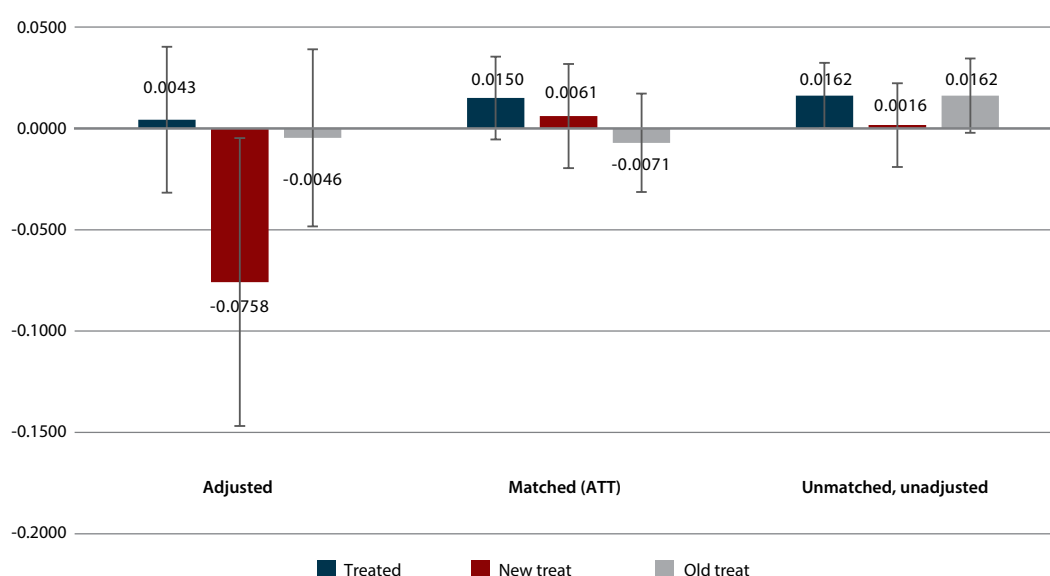
Source: NSPMS, Round 3.

In terms of number of absences in a 30-day period, the average reported number of absences in round 3 (for school-aged children) was 1.65, and three fourths of these children were absent one or fewer days. The PSM estimates and unadjusted, unmatched estimates suggest that school-aged children receiving the SWF (for each gender age group) were absent on average about one quarter of a day more than non-beneficiaries. However, when adjusted for the sampling weights, the matched coefficient estimates are smaller and no longer statistically significant. (See also figures IE.31–IE.41).

The next set of outcomes presented in table IE.6 (and figures IE.42–IE.57) are focused on child labour and unpaid family workers. As in the examination of schooling outcomes, we estimated these outcomes separately for males and females and for younger (6-11 years) and older (12-14 years) children. In addition, we estimated these effects for both rounds 3 and 4 of the NSPMS, as children were on vacation from school during the round 4 of the survey. We expect that any reductions in child labour or unpaid family work associated with receipt of the SWF might be more likely to be observed while children are still in school.

Nearly all of the estimated coefficients for child labour and unpaid family work are positive, although only a few are statistically significant for outcomes measured in round 3 for new beneficiaries. The PATT estimates suggest higher rates of child labour and unpaid family work for female SWF (new) beneficiaries ages 6-11 years (compared to non-beneficiaries) while school was still in session and higher rates of

unpaid family work for males aged 6-11 and 12-14 years (also new beneficiaries) in this survey round. Alternatively, when looking at the round 4 outcomes when children were not in school, most the of the coefficient estimates, for new and older beneficiaries and both groups combined, as well as after matching and adjusting for the sampling design, are positively and statistically significant, suggesting that receipt of the SWF is associated with more child labour and unpaid family work when children are not in school (estimates ranging from about 0.02-0.10). Adjusting for selection into the SWF using PSM does not noticeably change the estimated effects, thus, we do not suspect that unmeasured factors are the primary reason we observe these relationships.

Figure IE.35:
Estimated Effects of Social Welfare Fund on Absence from School (Girls 12-14 Years), Yemen, 2013
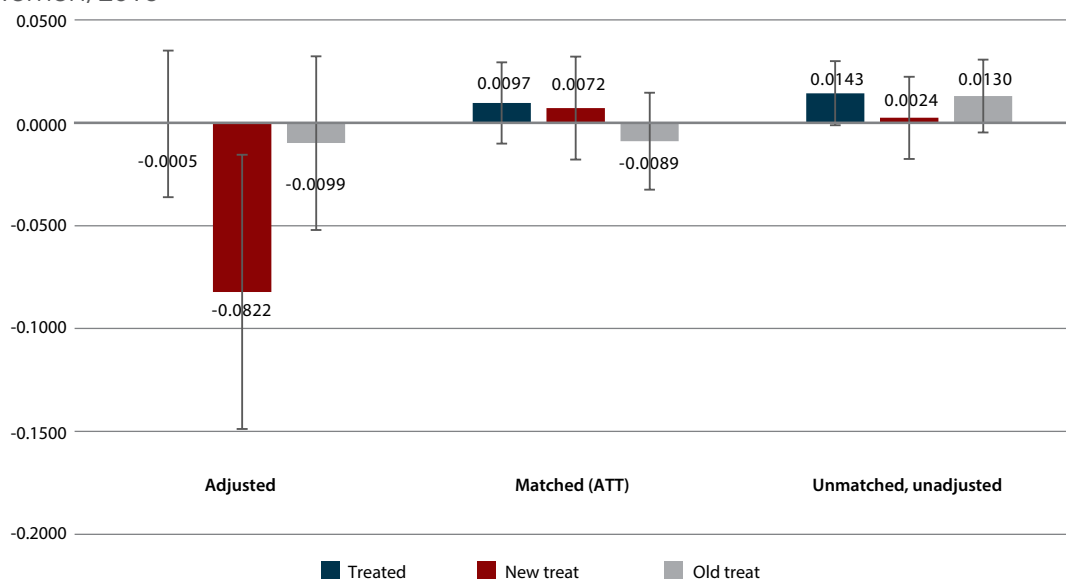
Source: NSPMS, Round 3.

Figure IE.36:
Estimated Effects of Social Welfare Fund on Absence from School (Boys 6-11 Years), Yemen, 2013
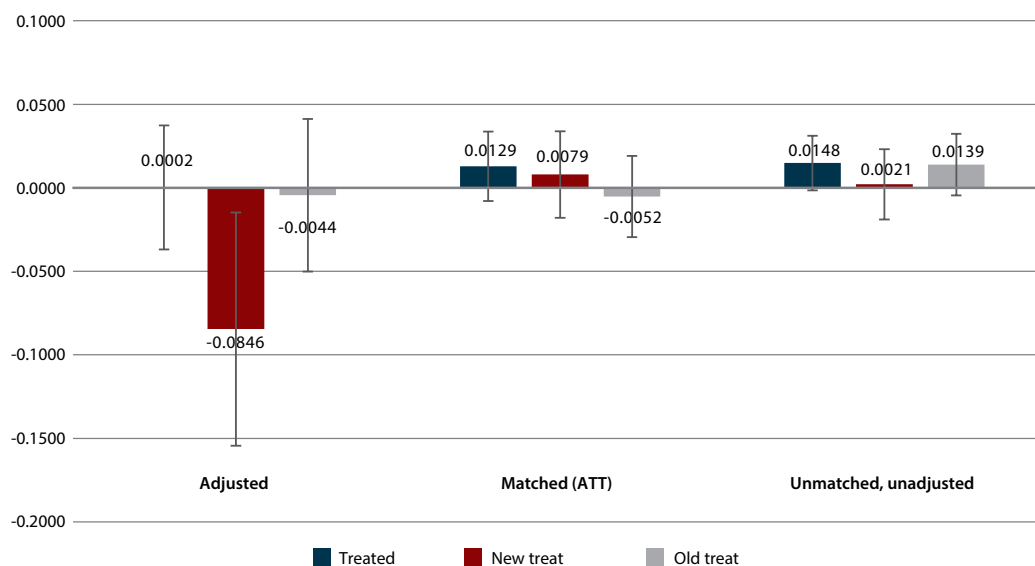
Source: NSPMS, Round 3.

Figure IE.37:
Estimated Effects of Social Welfare Fund on Absence from School (Boys 12-14 Years), Yemen, 2013
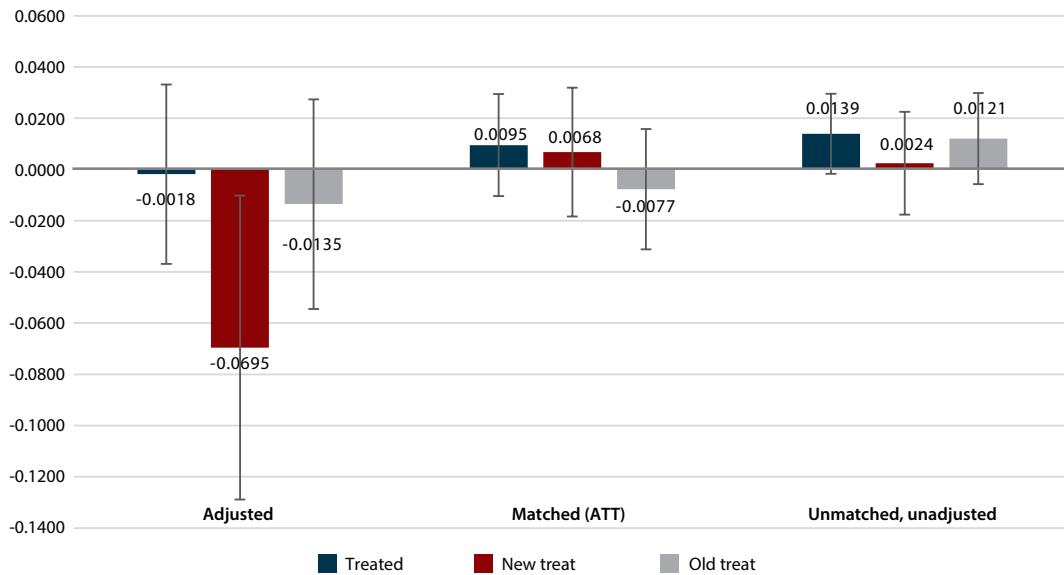
Source: NSPMS, Round 3.

To further investigate the patterns in child labour, we also estimated the effects of the SWF on child labour and unpaid family work separately for rural and urban children. For each of these female-male child age groups, matching using only urban children loses large numbers of treated cases off the common support, particularly for older beneficiaries, and PATT standard errors cannot be estimated. Therefore, we describe the results (available in detail upon request from the authors) for the rural children only (who constitute 77 per cent of the children in the study sample).

We find that when focusing only on the rural youth, we only see higher rates of child labour among male SWF beneficiaries aged 12-14 years when these children are not in school (i.e., in round 4). For girls (6-11 and 12-14 years) and younger rural boys (6-11 years), we find no statistically significant impacts for old or new beneficiaries on child labour in either rounds 3 or 4. In terms of unpaid family work, for both females and males, we again only see a higher rate of unpaid family work when the beneficiaries are not in school, and particularly among new beneficiaries.

Thus, for all groups of rural youth, we are not finding higher rates of child labour among SWF beneficiaries during the school year, even though we assume that we have some unmeasured selection due to the fact that we do not have baseline controls for child labour (i.e., before receipt of the SWF). As we know that beneficiaries are more disadvantaged than non-beneficiaries, these results could imply that child labour among the targeted households is going down while the children are in school (i.e., because we are not observing higher rates during that time). However, we do see higher rates of unpaid family work when children are not in school (in round 4); is it possible that families are trying to make up for some forgone child earnings (i.e., because of reduced labour during the school year)? If families are making such shifts to allow their children to acquire more education, this could be a positive finding of these analyses.

The next set of impacts estimated were for anthropometric outcomes for children aged 6-59 months, including underweight, stunting and wasting (and for global, moderate and severe levels). Table IE.6 and figures IE.58–IE.66 present these results. We find no statistically significant results among the PATT estimates, and only a couple of statistically significant estimates among the unadjusted PSM results (one for new beneficiaries and the other for older beneficiaries). It is possible (given the number of estimates produced) that these latter effects were due to chance. Especially for new beneficiaries, the limited timeframe from the first SWF payment to the NSPMS round 4 measurements makes it unlikely that any noticeable effects on children's physical development (attributable to receipt of the SWF) would be observed.

Similarly, although almost all of the coefficient estimates of the impact of the SWF on vaccinations for children (aged 12-23 months) are positive, only two of these estimated effects (for new and older beneficiaries combined) are statistically significant (see table IE.6 and figures IE.67–IE.72). These impact estimates

suggest that receipt of the SWF may be associated with a greater likelihood of receiving the measles vaccination and all three doses of the pentavalent vaccine.

Among other child outcomes shown in table IE.6 and figures IE.73–IE.77, we likewise see few statistically significant effects. The results suggest an increase in children's vulnerability to violence among SWF beneficiaries, which may be related to unmeasured factors associated with their risk of exposure to violence, although we cannot confirm this empirically. There is also one statistically significant association between receipt of the SWF and a reduction in the prevalence for malnutrition among new beneficiaries.

Finally, we estimated one outcome for adult males sampled from households – whether or not they were unemployed (see table IE.6 and figure IE.78). Although the unadjusted, unmatched estimates and one PSM estimate suggest an increase in unemployment among adult males, after adjusting for the sampling design, the effects are very small and imprecisely estimated.

11.5 Concluding Remarks

As noted above, the lack of proper baseline measures provided by the NSPMS and other seasonality and irregularities in the data make it problematic to interpret the results discussed here as true impacts of the SWF. The timing of outcome measures relative to disbursement of treatment (which differed for older and new beneficiaries) also complicates this analysis. For some results, such as children's absences from school and household expenditures on food, it might be more plausible to argue that the SWF could have an immediate effect on beneficiaries in the household. We suggest that these analyses be pursued again if additional rounds of the NSPMS are collected that might also allow for a differences-in-differences impact estimation (particularly for households that most recently began to receive SWF payments).

11.6 Tables and Figures

Table IE.2:
Predicting SWF Benefit Receipt: Results of Probit Estimation, Yemen, 2012

	Model 1 (n=6561)			Model 2 (n=6391)			Model 3 (n=6295)		
	Coefficient	Std. Error	Z-value	Coefficient	Std. Error	Z-value	Coefficient	Std. Error	Z-value
Constant	3.333	0.492	6.77	3.457	0.506	6.83	2.499	0.681	3.67
Disabled	0.162	0.037	4.43	0.159	0.037	4.25	0.205	0.040	5.08
Elderly	0.414	0.035	11.89	0.381	0.036	10.71	0.270	0.042	6.38
Orphan	0.086	0.044	1.97	0.070	0.045	1.57	0.052	0.048	1.10
Not employed	0.225	0.042	5.31	0.184	0.043	4.26	0.145	0.045	3.22
Woman without breadwinner	0.369	0.035	10.44	0.353	0.036	9.77	0.324	0.039	8.23
PMT	-0.312	0.042	-7.35	-0.308	0.044	-7.07	-0.199	0.058	-3.44
Sample weight				-0.00029	0.00002	-13.23	-0.00024	0.00002	-10.16
Sana'a City							-0.102	0.098	-1.04
Hadhramout							0.091	0.061	1.49
Saba							-0.256	0.069	-3.68
Al-Janad							-0.364	0.074	-4.95
Tehama							-0.517	0.067	-7.77
Azal							-0.226	0.066	-3.42
Mountainous							0.002	0.044	0.04
Arabian coast							-0.152	0.062	-2.48
Red Sea coast							0.080	0.082	0.98
Mud housing							0.000	0.044	-0.01
Apartment							-0.263	0.079	-3.34
Sewing machine							0.000	0.057	0.00
Rent home							0.105	0.146	0.72
HH head reads/writes							-0.182	0.040	-4.53
HH head age							0.006	0.001	4.19
Married							-0.205	0.060	-3.40
Refrigerator							-0.171	0.045	-3.82
Bicycle							-0.214	0.085	-2.50
Motorcycle							-0.078	0.070	-1.12
Truck							-0.547	0.158	-3.47
Car							0.253	0.048	5.25
Water pump							-0.184	0.085	-2.18
Tractor							0.247	0.263	0.94
Pseudo R2 value	0.0675			0.0903			0.1199		

Source: NSPMS, Round 1.

Table IE.3:

Predicting SWF Benefit Receipt: Full Models for Three Treatment Groups, Yemen, 2012

	All beneficiaries			New beneficiaries			Older beneficiaries		
	Coefficient	Std. Error	Z-value	Coefficient	Std. Error	Z-value	Coefficient	Std. Error	Z-value
Constant	2.499	0.681	3.67	4.974	0.882	5.64	-0.022	0.758	-0.03
Disabled	0.205	0.040	5.08	0.131	0.053	2.48	0.245	0.045	5.49
Elderly	0.270	0.042	6.38	0.053	0.056	0.94	0.392	0.047	8.39
Orphan	0.052	0.048	1.10	0.031	0.063	0.50	0.047	0.052	0.91
Not employed	0.145	0.045	3.22	0.126	0.058	2.18	0.133	0.050	2.65
Woman without breadwinner	0.324	0.039	8.23	0.162	0.052	3.11	0.423	0.043	9.72
PMT	-0.199	0.058	-3.44	-0.496	0.075	-6.62	-0.046	0.064	-0.71
Sample weight	-0.00024	0.00002	-10.16	0.000	0.000	-7.36	0.000	0.000	-7.92
Sana'a City	-0.102	0.098	-1.04	-0.018	0.128	-0.14	0.006	0.113	0.05
Hadhramout	0.091	0.061	1.49	0.009	0.081	0.11	0.088	0.068	1.30
Saba	-0.256	0.069	-3.68	-0.121	0.085	-1.43	-0.113	0.080	-1.40
Al-Janad	-0.364	0.074	-4.95	-0.562	0.100	-5.64	0.002	0.082	0.03
Tehama	-0.517	0.067	-7.77	-0.405	0.083	-4.85	-0.241	0.076	-3.17
Azal	-0.226	0.066	-3.42	-0.096	0.082	-1.17	-0.004	0.076	-0.06
Mountainous	0.002	0.044	0.04	0.055	0.057	0.98	-0.113	0.050	-2.24
Arabian coast	-0.152	0.062	-2.48	-0.347	0.083	-4.17	-0.011	0.068	-0.16
Red Sea coast	0.080	0.082	0.98	-0.042	0.112	-0.37	0.082	0.090	0.90
Mud housing	0.000	0.044	-0.01	-0.030	0.056	-0.54	0.053	0.050	1.08
Apartment	-0.263	0.079	-3.34	-0.051	0.100	-0.51	-0.371	0.095	-3.91
Sewing machine	0.000	0.057	0.00	0.043	0.074	0.59	-0.028	0.064	-0.43
Rent home	0.105	0.146	0.72	-0.017	0.206	-0.08	0.101	0.159	0.64
HH head reads/writes	-0.182	0.040	-4.53	-0.020	0.051	-0.38	-0.211	0.045	-4.65
HH head age	0.006	0.001	4.19	0.005	0.002	2.89	0.008	0.002	5.27
Married	-0.205	0.060	-3.40	0.170	0.088	1.92	-0.251	0.063	-3.97
Refrigerator	-0.171	0.045	-3.82	-0.217	0.058	-3.74	-0.136	0.050	-2.70
Bicycle	-0.214	0.085	-2.50	-0.269	0.118	-2.28	-0.227	0.097	-2.35
Motorcycle	-0.078	0.070	-1.12	-0.056	0.092	-0.62	-0.027	0.079	-0.35
Truck	-0.547	0.158	-3.47	-0.375	0.196	-1.91	-0.640	0.194	-3.30
Car	0.253	0.048	5.25	0.129	0.061	2.11	0.270	0.053	5.07
Water pump	-0.184	0.085	-2.18	-0.303	0.119	-2.55	-0.203	0.095	-2.14
Tractor	0.247	0.263	0.94	0.433	0.310	1.40	0.191	0.314	0.61
Pseudo R2 value	0.1199			0.0897			0.1516		

Source: NSPMS, Round 1.

Table IE.4:
After-matching Balancing Test Results, Yemen, 2012

Variable	All SWF beneficiaries				New beneficiaries				Older beneficiaries			
	Mean				Mean				Mean			
	Treated	Control	t-test	p>|t|	Treated	Control	t-test	p>|t|	Treated	Control	t-test	p>|t|
Disabled	0.327	0.325	0.18	0.860	0.293	0.307	-0.73	0.468	0.353	0.349	0.28	0.781
Elderly	0.522	0.522	-0.02	0.983	0.405	0.408	-0.14	0.890	0.596	0.594	0.12	0.905
Orphan	0.198	0.198	0.05	0.958	0.170	0.178	-0.50	0.620	0.215	0.224	-0.69	0.489
Not employed	0.212	0.210	0.17	0.862	0.212	0.209	0.20	0.838	0.208	0.220	-0.95	0.342
Woman w/o breadwinner	0.528	0.542	-1.15	0.252	0.413	0.436	-1.08	0.282	0.596	0.598	-0.08	0.936
PMT	11.506	11.499	0.78	0.437	11.453	11.452	0.05	0.958	11.525	11.503	1.86	0.063
Sample weight	314,310	316,470	-0.15	0.878	279,670	319,010	-1.47	0.141	332,980	310,770	1.44	0.150
Sana'a City	0.043	0.043	-0.02	0.982	0.044	0.043	0.19	0.850	0.043	0.039	0.65	0.517
Hadhramout	0.176	0.174	0.27	0.789	0.148	0.144	0.26	0.792	0.180	0.177	0.25	0.802
Saba	0.106	0.104	0.34	0.734	0.133	0.122	0.78	0.434	0.091	0.096	-0.54	0.588
Al-Janad	0.102	0.104	-0.27	0.789	0.066	0.068	-0.24	0.814	0.125	0.127	-0.26	0.798
Tehama	0.189	0.201	-1.31	0.189	0.197	0.203	-0.34	0.737	0.202	0.207	-0.39	0.698
Azal	0.160	0.153	0.79	0.431	0.189	0.191	-0.10	0.921	0.147	0.150	-0.24	0.810
Mountainous	0.386	0.397	-1.02	0.309	0.441	0.435	0.30	0.764	0.365	0.391	-1.67	0.094
Arabian coast	0.144	0.139	0.58	0.561	0.087	0.083	0.32	0.752	0.158	0.150	0.74	0.459
Red Sea coast	0.060	0.061	-0.20	0.845	0.045	0.048	-0.31	0.755	0.074	0.062	1.57	0.116
Mud housing	0.441	0.449	-0.65	0.514	0.444	0.452	-0.41	0.681	0.455	0.457	-0.10	0.924
Apartment	0.045	0.041	0.94	0.346	0.058	0.057	0.04	0.969	0.038	0.031	1.26	0.208
Sewing machine	0.106	0.101	0.74	0.461	0.106	0.109	-0.23	0.822	0.106	0.094	1.31	0.192
Rent home	0.015	0.015	-0.13	0.898	0.010	0.012	-0.40	0.688	0.017	0.016	0.35	0.727
HH head reads/writes	0.462	0.463	-0.13	0.896	0.523	0.505	0.83	0.408	0.426	0.418	0.58	0.560
HH head age	50,372	50,767	-1.07	0.285	47,537	48,514	-1.57	0.117	52,189	52,064	0.26	0.798
Married	0.845	0.841	0.49	0.628	0.923	0.917	0.49	0.623	0.808	0.821	-1.05	0.295
Refrigerator	0.329	0.330	-0.07	0.942	0.279	0.277	0.11	0.909	0.343	0.342	0.02	0.983
Bicycle	0.034	0.036	-0.52	0.604	0.027	0.028	-0.24	0.808	0.034	0.035	-0.05	0.963
Motorcycle	0.064	0.066	-0.30	0.761	0.064	0.063	0.10	0.919	0.066	0.065	0.11	0.912
Truck	0.008	0.010	-0.85	0.394	0.011	0.012	-0.23	0.815	0.007	0.008	-0.42	0.678
Car	0.192	0.185	0.77	0.444	0.198	0.195	0.17	0.869	0.193	0.189	0.32	0.746
Water pump	0.040	0.046	-1.17	0.241	0.031	0.028	0.40	0.691	0.041	0.043	-0.39	0.694
Tractor	0.005	0.005	-0.03	0.977	0.005	0.007	-0.38	0.702	0.004	0.005	-0.72	0.470

Source: NSPMS, Round 1.

Table IE.5:
Estimated Difference Associated with Treatment, Yemen, 2012-2013

Outcomes of individuals sampled from the household		Adjusted estimates (PATT)			Matched (ATT)			Unmatched		
		Treat Estimate (std error) N	Newtreat Estimate (std error) N	Oldtreat Estimate (std error) N	Treat Estimate (std error) N	Newtreat Estimate (std error) N	Oldtreat Estimate (std error) N	Treat Estimate (std error) N	Newtreat Estimate (std error) N	Oldtreat Estimate (std error) N
School enrollment (Round 1)										
Female	11-12 yrs	-0.0016 (0.0059) 10,839	0.0053 (0.0059) 7,364	-0.0075 (0.0074) 8,563	0.0031 (0.0041) 10,839	0.0078 (0.0048) 7,364	0.0012 (0.0049) 8,563	0.0004 (0.0032) 11,165	0.0091 (0.0039) 7,523	-0.0065 (0.0037) 8,770
	14-15 yrs	-0.0017 (0.0060) 10,870	0.0052 (0.0058) 7,388	-0.0077 (0.0074) 8,591	0.0029 (0.0040) 10,870	0.0079 (0.0048) 7,388	0.0013 (0.0048) 8,591	0.0001 (0.0032) 11,200	0.0086 (0.0039) 7,548	-0.0066 (0.0037) 8,800
Male	14-15 yrs	-0.0015 (0.0061) 10,836	0.0057 (0.0059) 7,367	-0.0075 (0.0075) 8,565	0.0030 (0.0041) 10,836	0.0085 (0.0048) 7,367	0.0013 (0.0049) 8,565	0.0003 (0.0032) 11,163	0.0090 (0.0039) 7,527	-0.0066 (0.0037) 8,771
Absent from school (Round 3)										
Female	6-11 yrs	0.0043 (0.0180) 9,321	-0.0758 (0.0355) 6,309	-0.0046 (0.0218) 7,316	0.0150 (0.0102) 9,321	0.0061 (0.0129) 6,309	-0.0071 (0.0122) 7,316	0.0162 (0.0081) 9,603	0.0016 (0.0103) 6,447	0.0162 (0.0092) 7,508
	12-14 yrs	-0.0005 (0.0178) 9,980	-0.0822 (0.0334) 6,764	-0.0099 (0.0211) 7,842	0.0097 (0.0099) 9,980	0.0072 (0.0125) 6,764	-0.0089 (0.0118) 7,842	0.0143 (0.0078) 10,287	0.0024 (0.0100) 6,921	0.0130 (0.0088) 8,042
Male	6-11 yrs	0.0002 (0.0185) 9,172	-0.0846 (0.0349) 6,201	-0.0044 (0.0228) 7,254	0.0129 (0.0104) 9,172	0.0079 (0.0130) 6,201	-0.0052 (0.0122) 7,254	0.0148 (0.0081) 9,455	0.0021 (0.0105) 6,334	0.0139 (0.0092) 7,444
	12-14 yrs	-0.0018 (0.0175) 9,854	-0.0695 (0.0297) 6,694	-0.0135 (0.0205) 7,759	0.0095 (0.0099) 9,854	0.0068 (0.0126) 6,694	-0.0077 (0.0118) 7,759	0.0139 (0.0078) 10,160	0.0024 (0.0100) 6,847	0.0121 (0.0089) 7,954
Absences in 30 days (Round 3)										
Female	6-11 yrs	0.1967 (0.2339) 9,742	-0.1485 (0.2659) 6,567	0.2537 (0.2382) 7,660	0.2795 (0.1070) 9,742	0.2907 (0.1435) 6,567	0.0487 (0.1220) 7,660	0.2519 (0.0883) 10,005	0.2944 (0.1138) 6,707	0.2515 (0.0959) 7,852
	12-14 yrs	0.1781 (0.2060) 10,414	-0.2443 (0.2539) 7,032	0.1705 (0.2369) 8,192	0.2519 (0.1045) 10,414	0.2577 (0.1401) 7,032	-0.0197 (0.1188) 8,192	0.2092 (0.0853) 10,699	0.2610 (0.1107) 7,191	0.2001 (0.0931) 8,393
Male	6-11 yrs	0.2091 (0.2102) 9,599	-0.2138 (0.2672) 6,463	0.1911 (0.2524) 7,597	0.2799 (0.1091) 9,599	0.2912 (0.1452) 6,463	-0.0069 (0.1231) 7,597	0.2108 (0.0886) 9,861	0.2573 (0.1157) 6,598	0.2069 (0.0966) 7,789

	12-14 yrs	0.1643	-0.1548	0.1128	0.2512	0.2532	-0.0085	0.2086	0.2588	0.1971
		(0.1996)	(0.2598)	(0.2285)	(0.1045)	(0.1403)	(0.1184)	(0.0853)	(0.1106)	(0.0931)
		10,289	6,962	8,111	10,289	6,962	8,111	10,574	7,117	8,307

Child labor (Round 3)

Female	6-11 yrs	0.0190	0.0556	0.0247	0.0071	0.0250	-0.0024	0.0032	0.0310	0.0030
		(0.0179)	(0.0242)	(0.0234)	(0.0097)	(0.0122)	(0.0114)	(0.0076)	(0.0097)	(0.0086)
		10,634	7,326	8,276	10,634	7,326	8,276	10,932	7,477	8,453
	12-14 yrs	0.0209	0.0453	0.0080	0.0096	0.0227	-0.0067	0.0031	0.0297	-0.0005
		(0.0178)	(0.0250)	(0.0188)	(0.0094)	(0.0116)	(0.0108)	(0.0072)	(0.0093)	(0.0082)
		11,660	8,051	9,076	11,660	8,051	9,076	12,000	8,222	9,275
Male	6-11 yrs	0.0260	0.0391	0.0265	0.0121	0.0197	-0.0023	0.0053	0.0300	0.0040
		(0.0184)	(0.0255)	(0.0234)	(0.0099)	(0.0123)	(0.0115)	(0.0078)	(0.0100)	(0.0088)
		10,584	7,301	8,293	10,584	7,301	8,293	10,890	7,446	8,475
	12-14 yrs	0.0253	0.0461	0.0227	0.0115	0.0194	-0.0045	0.0016	0.0270	-0.0011
		(0.0181)	(0.0247)	(0.0226)	(0.0095)	(0.0117)	(0.0108)	(0.0073)	(0.0093)	(0.0083)
		11,601	8,038	9,043	11,601	8,038	9,043	11,944	8,208	9,238

Child labor (Round 4)

Female	6-11 yrs	0.0424	0.0657	0.0513	0.0186	0.0401	0.0255	0.0197	0.0478	0.0210
		(0.0205)	(0.0266)	(0.0238)	(0.0099)	(0.0124)	(0.0116)	(0.0078)	(0.0099)	(0.0088)
		10,766	7,427	8,376	10,766	7,427	8,376	11,057	7,582	8,554
	12-14 yrs	0.0380	0.0492	0.0355	0.0202	0.0388	0.0224	0.0199	0.0496	0.0186
		(0.0187)	(0.0291)	(0.0198)	(0.0095)	(0.0118)	(0.0110)	(0.0074)	(0.0094)	(0.0084)
		11,805	8,157	9,187	11,805	8,157	9,187	12,138	8,332	9,387
Male	6-11 yrs	0.0515	0.0550	0.0510	0.0253	0.0438	0.0260	0.0246	0.0560	0.0253
		(0.0203)	(0.0304)	(0.0232)	(0.0100)	(0.0125)	(0.0116)	(0.0079)	(0.0101)	(0.0089)
		10,721	7,405	8,396	10,721	7,405	8,396	11,020	7,554	8,579
	12-14 yrs	0.0436	0.0507	0.0437	0.0218	0.0376	0.0219	0.0188	0.0490	0.0177
		(0.0197)	(0.0287)	(0.0221)	(0.0096)	(0.0119)	(0.0111)	(0.0075)	(0.0095)	(0.0084)
		11,751	8,151	9,156	11,751	8,151	9,156	12,086	8,325	9,352

Unpaid family worker (Round 3)

Female	6-11 yrs	0.0391	0.0681	0.0229	0.0183	0.0104	0.0138	0.0534	0.0743	0.0549
		(0.0266)	(0.0265)	(0.0209)	(0.0116)	(0.0144)	(0.0132)	(0.0089)	(0.0115)	(0.0100)
		12,000	7,951	9,408	12,000	7,951	9,408	12,294	8,104	9,652
	12-14 yrs	0.0370	0.0611	0.0174	0.0196	0.0057	0.0145	0.0528	0.0738	0.0528
		(0.0269)	(0.0273)	(0.0198)	(0.0116)	(0.0140)	(0.0131)	(0.0088)	(0.0114)	(0.0099)
		12,162	8,075	9,533	12,162	8,075	9,533	12,463	8,229	9,779
Male	6-11 yrs	0.0447	0.0705	0.0239	0.0195	0.0026	0.0136	0.0537	0.0736	0.0543
		(0.0267)	(0.0243)	(0.0206)	(0.0116)	(0.0141)	(0.0131)	(0.0088)	(0.0115)	(0.0099)
		12,075	8,001	9,485	12,075	8,001	9,485	12,375	8,153	9,730

	12-14 yrs	0.0397	0.0633	0.0222	0.0201	0.0050	0.0146	0.0525	0.0733	0.0521
		(0.0268)	(0.0267)	(0.0207)	(0.0115)	(0.0140)	(0.0130)	(0.0088)	(0.0114)	(0.0099)
		12,185	8,093	9,554	12,185	8,093	9,554	12,482	8,248	9,797
Unpaid family worker (Round 4)										
Female	6-11 yrs	0.0586	0.1091	0.0264	0.0229	0.0218	0.0173	0.0572	0.0829	0.0563
		(0.0272)	(0.0299)	(0.0212)	(0.0114)	(0.0142)	(0.0131)	(0.0088)	(0.0115)	(0.0099)
		12,225	8,079	9,675	12,225	8,079	9,675	12,511	8,218	9,883
	12-14 yrs	0.0569	0.1065	0.0171	0.0238	0.0213	0.0174	0.0563	0.0830	0.0544
		(0.0273)	(0.0297)	(0.0177)	(0.0113)	(0.0140)	(0.0130)	(0.0087)	(0.0114)	(0.0098)
		12,383	8,202	9,789	12,383	8,202	9,789	12,676	8,340	9,998
Male	6-11 yrs	0.0605	0.1141	0.0208	0.0228	0.0210	0.0169	0.0575	0.0831	0.0560
		(0.0269)	(0.0277)	(0.0175)	(0.0113)	(0.0141)	(0.0130)	(0.0087)	(0.0115)	(0.0098)
		12,278	8,109	9,723	12,278	8,109	9,723	12,569	8,250	9,930
	12-14 yrs	0.0577	0.1063	0.0165	0.0243	0.0206	0.0169	0.0569	0.0841	0.0542
		(0.0270)	(0.0296)	(0.0172)	(0.0113)	(0.0141)	(0.0130)	(0.0087)	(0.0113)	(0.0098)
		12,411	8,226	9,814	12,411	8,226	9,814	12,704	8,367	10,021
Anthropometric outcomes: children ages 6-59 months (Round 4)										
Underweight GLO		-0.0082	-0.0589	-0.0100	0.0178	0.0000	0.0104	-0.0139	0.0035	-0.0093
		(0.0297)	(0.0495)	(0.0349)	(0.0228)	(0.0292)	(0.0272)	(0.0171)	(0.0224)	(0.0200)
		2,696	1,995	2,134	2,696	1,995	2,134	2,845	2,052	2,268
Underweight MO		-0.0058	-0.0533	-0.0212	0.0052	0.0023	-0.0018	-0.0164	0.0010	-0.0132
		(0.0269)	(0.0468)	(0.0327)	(0.0214)	(0.0271)	(0.0254)	(0.0158)	(0.0208)	(0.0185)
		2,692	1,994	2,131	2,692	1,994	2,131	2,841	2,051	2,265
Underweight SE		-0.0019	-0.0054	0.0111	0.0137	-0.0016	0.0122	0.0030	0.0029	0.0048
		(0.0137)	(0.0176)	(0.0175)	(0.0114)	(0.0158)	(0.0136)	(0.0090)	(0.0117)	(0.0106)
		2,696	1,995	2,134	2,696	1,995	2,134	2,845	2,052	2,268
Stunting GLO		-0.0115	0.0013	-0.0319	0.0361	0.0661	-0.0355	-0.0016	0.0526	-0.0142
		(0.0391)	(0.0559)	(0.0377)	(0.0249)	(0.0317)	(0.0295)	(0.0185)	(0.0243)	(0.0216)
		2,690	1,990	2,130	2,690	1,990	2,130	2,839	2,047	2,264
Stunting MO		-0.0225	0.0266	-0.0406	-0.0035	0.0487	-0.0462	-0.0143	0.0024	-0.0121
		(0.0389)	(0.0466)	(0.0334)	(0.0226)	(0.0286)	(0.0266)	(0.0168)	(0.0220)	(0.0196)
		2,690	1,990	2,130	2,690	1,990	2,130	2,839	2,047	2,264
Stunting SE		0.0110	-0.0253	0.0087	0.0397	0.0174	0.0107	0.0127	0.0502	-0.0021
		(0.0194)	(0.0341)	(0.0255)	(0.0171)	(0.0239)	(0.0201)	(0.0131)	(0.0173)	(0.0148)
		2,690	1,990	2,130	2,690	1,990	2,130	2,839	2,047	2,264
Wasting GLO		-0.0086	-0.0126	-0.0279	0.0063	-0.0110	0.0005	0.0021	-0.0121	0.0100
		(0.0166)	(0.0182)	(0.0231)	(0.0138)	(0.0168)	(0.0172)	(0.0104)	(0.0134)	(0.0124)
		2,690	1,990	2,130	2,690	1,990	2,130	2,839	2,047	2,264

Wasting MO	-0.0135	-0.0166	-0.0363	-0.0015	-0.0194	-0.0079	-0.0052	-0.0202	0.0001
	(0.0161)	(0.0173)	(0.0221)	(0.0131)	(0.0158)	(0.0164)	(0.0097)	(0.0126)	(0.0117)
	2,686	1,989	2,127	2,686	1,989	2,127	2,835	2,046	2,261
Wasting SE	0.0049	0.0040	0.0089	0.0078	0.0084	0.0091	0.0076	0.0082	0.0102
	(0.0041)	(0.0054)	(0.0092)	(0.0047)	(0.0064)	(0.0058)	(0.0041)	(0.0048)	(0.0046)
	2,690	1,990	2,130	2,690	1,990	2,130	2,839	2,047	2,264

Vaccinations: children 12-23 months (Round 4)

BCG	0.0298	-0.0003	0.0060	0.0088	0.0084	0.0121	0.0032	-0.0182	0.0126
	(0.0429)	(0.0142)	(0.0000)	(0.0121)	(0.0192)	(0.0104)	(0.0079)	(0.0113)	(0.0081)
	1,091	876	926	1,091	876	926	1,336	961	1,053
Measles	0.0538	-0.0007	-0.0032	0.0282	-0.0083	-0.0068	0.0086	-0.0013	0.0137
	(0.0265)	(0.0000)	(0.0000)	(0.0158)	(0.0195)	(0.0148)	(0.0085)	(0.0122)	(0.0095)
	432	824	884	432	824	884	674	910	1,037
3rd dose of Pentavalent	0.0509	0.0248	0.0158	0.0423	0.0167	0.0052	0.0122	0.0042	0.0082
	(0.0322)	(0.0231)	(0.0000)	(0.0188)	(0.0302)	(0.0198)	(0.0125)	(0.0167)	(0.0145)
	1,275	1,010	1,067	1,275	1,010	1,067	1,529	1,084	1,225
3rd dose of Polio	0.0436	0.0293	0.0056	0.0341	0.0164	0.0006	0.0136	0.0043	0.0101
	(0.0317)	(0.0225)	(0.0000)	(0.0189)	(0.0285)	(0.0201)	(0.0125)	(0.0167)	(0.0146)
	1,291	1,024	1,074	1,291	1,024	1,074	1,548	1,102	1,236
Vitamin A (last 6 months)	0.0172	-0.0069	-0.0008	-0.0035	0.0141	0.0029	-0.0161	-0.0400	0.0006
	(0.0314)	(0.0541)	(0.0350)	(0.0186)	(0.0231)	(0.0226)	(0.0129)	(0.0167)	(0.0153)
	4,941	3,624	3,906	4,941	3,624	3,906	5,182	3,751	4,110
Fully immunized (Children age 12-59 months)	0.0040	-0.0368	0.0073	0.0280	0.0270	0.0257	0.0165	0.0079	0.0228
	(0.0259)	(0.0450)	(0.0319)	(0.0190)	(0.0236)	(0.0232)	(0.0142)	(0.0183)	(0.0168)
	3,307	2,437	2,607	3,307	2,437	2,607	3,444	2,498	2,734

Other child outcomes (Round 4)

Minimum diet diversity	0.0173	-0.0220	0.0316	-0.0216	-0.0070	-0.0068	-0.0291	-0.0698	-0.0361
	(0.0734)	(0.0000)	(0.0000)	(0.0373)	(0.0473)	(0.0449)	(0.0264)	(0.0348)	(0.0310)
	1,181	912	954	1,181	912	954	1,356	973	1,086
Prevalence-diarrahea	0.0344	0.0734	-0.0006	0.0091	0.0253	-0.0127	0.0045	0.0490	0.0033
	(0.0608)	(0.0741)	(0.0606)	(0.0396)	(0.0540)	(0.0477)	(0.0270)	(0.0374)	(0.0311)
	1,133	885	961	1,133	885	961	1,332	944	1,101
Child's vulnerability to violence	-0.0011	-0.0122	0.0369	0.0244	0.0138	0.0296	0.0103	0.0157	0.0184
	(0.0310)	(0.0142)	(0.0149)	(0.0050)	(0.0065)	(0.0056)	(0.0041)	(0.0053)	(0.0045)
	20,957	13,769	16,757	20,957	13,769	16,757	21,447	13,991	17,197

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Prevalence severe malnutrition	-0.0007	-0.0051	0.0142	0.0089	-0.0031	0.0283	0.0080	-0.0028	0.0120
	(0.0102)	(0.0038)	(0.0098)	(0.0087)	(0.0090)	(0.0140)	(0.0057)	(0.0064)	(0.0070)
	1,049	838	895	1,049	838	895	1,253	892	1,036
Prevalence malnutrition GLO	-0.0087	-0.0133	-0.0047	0.0113	-0.0583	0.0325	0.0063	-0.0118	0.0206
	(0.0198)	(0.0284)	(0.0223)	(0.0183)	(0.0237)	(0.0253)	(0.0126)	(0.0164)	(0.0150)
	1,049	838	895	1,049	838	895	1,253	892	1,036
Unemployed-adult males	0.0002	-0.0043	0.0042	0.0007	0.0213	0.0035	0.0222	0.0261	0.0200
	(0.0129)	(0.0137)	(0.0154)	(0.0073)	(0.0097)	(0.0085)	(0.0059)	(0.0077)	(0.0064)
	11,160	7,268	8,912	11,160	7,268	8,912	11,417	7,403	9,111

Source: NSPMS, Round 1, 3 and 4.

Figure IE.1:
Distribution of Propensity Scores for Treatment and Comparison Groups
(Model Including all SWF Beneficiaries and Full Model Specification), Yemen, 2012
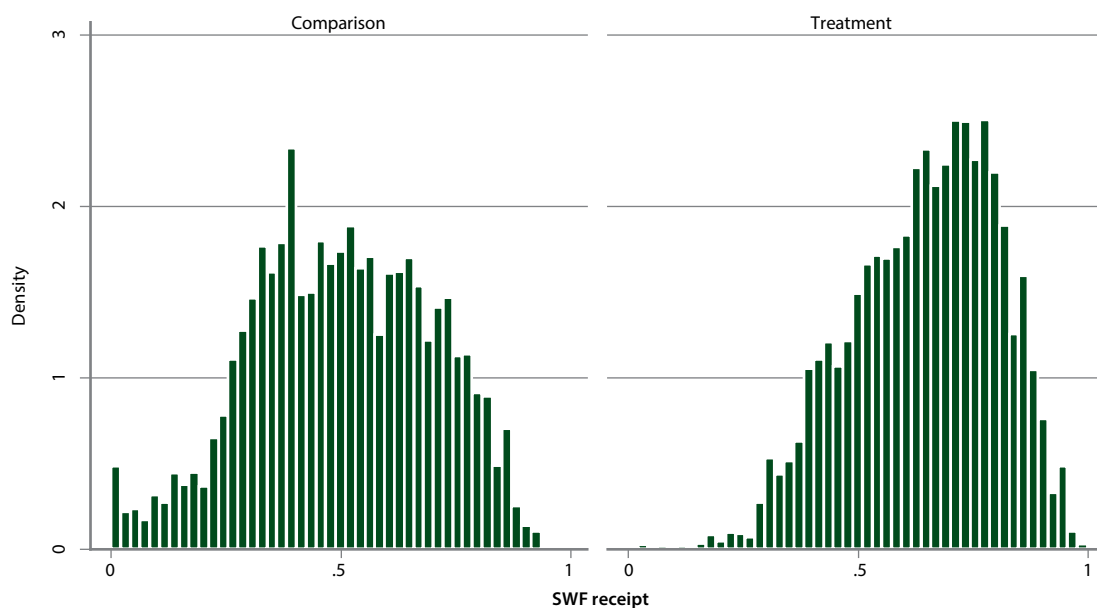
Source: NSPMS, Round 1.

Figure IE.2:
Distribution of Propensity Scores for Treatment and Comparison Groups (Model Including Only New SWF Beneficiaries and Full Model Specification), Yemen, 2012
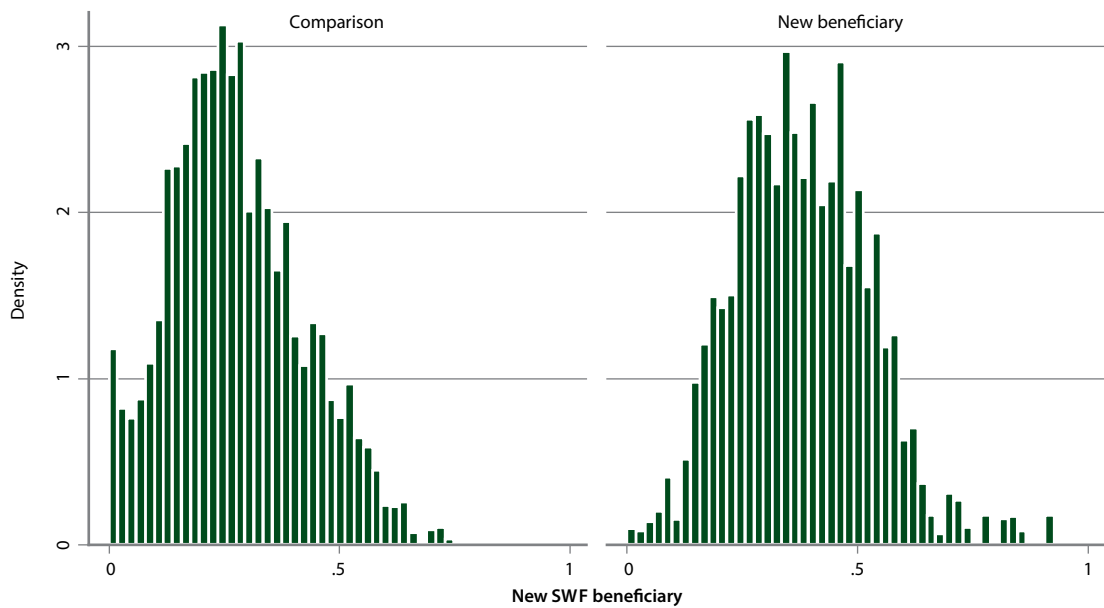
Source: NSPMS, Round 1.

Figure IE.3:
Distribution of Propensity Scores for Treatment and Comparison Groups (Model Including Only Older SWF Beneficiaries and Full Model Specification), Yemen, 2012
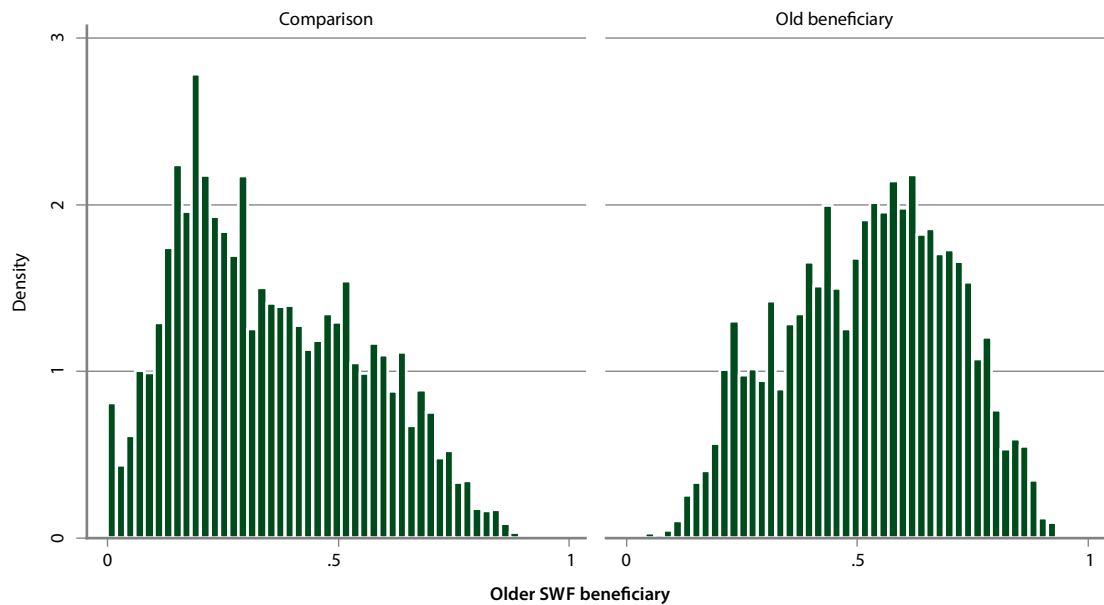
Source: NSPMS, Round 1.

Figure IE.4:
Estimated Effects of Social Welfare Fund on Household Crowding, Yemen, 2013
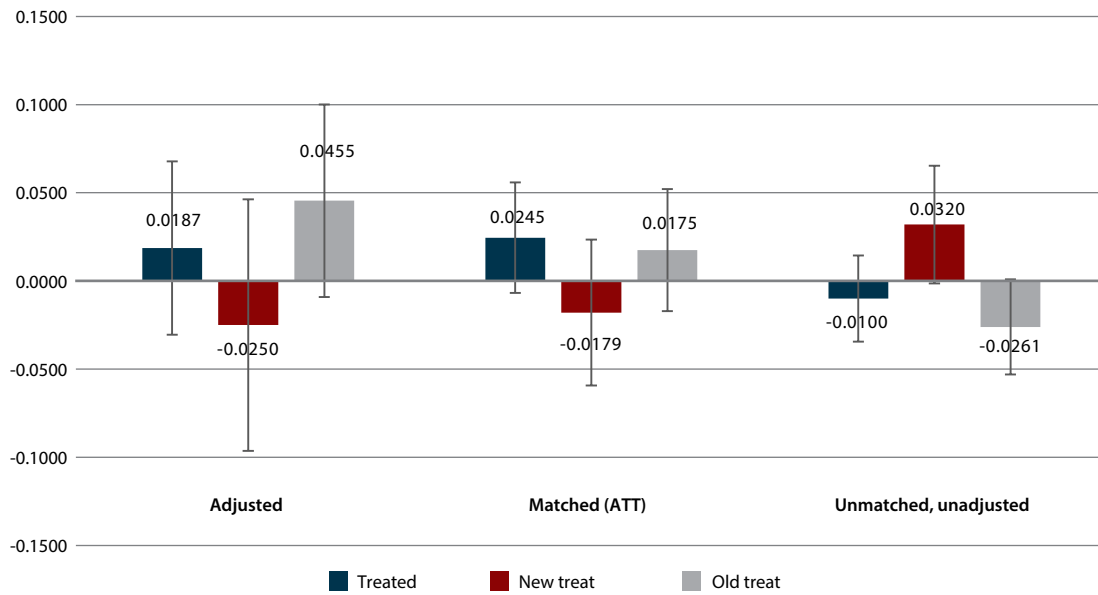
Figure IE.5:
Estimated Effects of Social Welfare Fund on Durable Material, Yemen, 2013
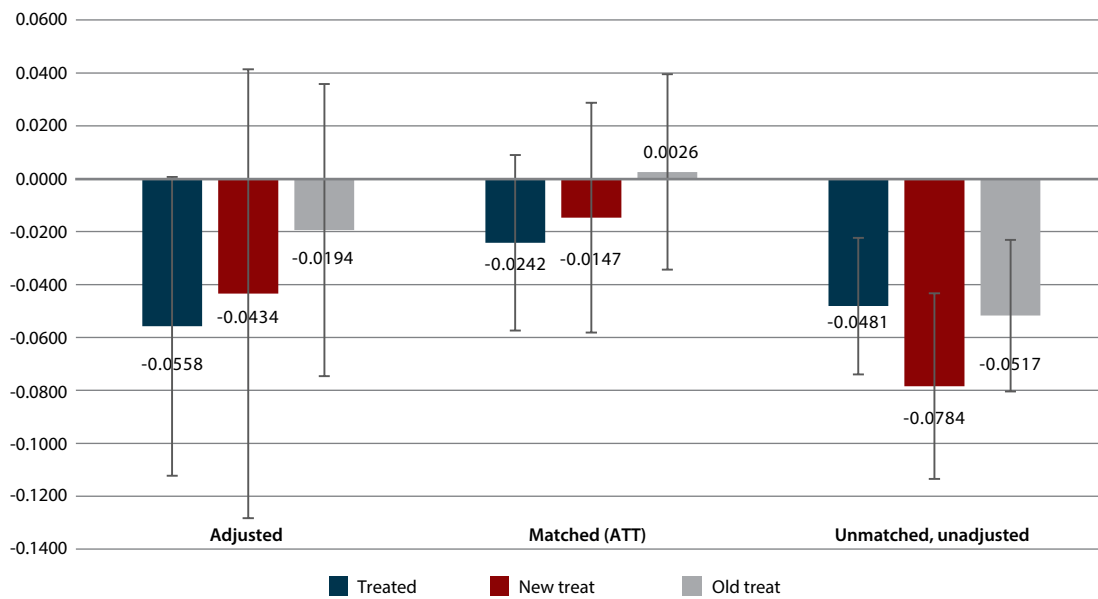
Figure IE.6:
Estimated Effects of Social Welfare Fund on Solid Fuels, Yemen, 2013
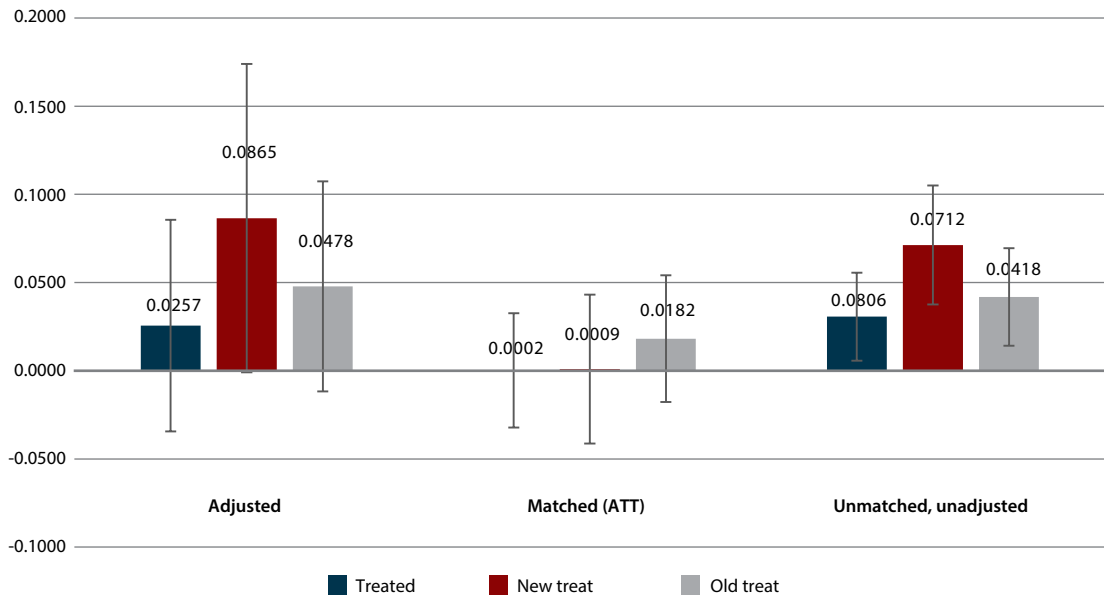
Source: NSPMS, Round 4.

Figure IE.7:
Estimated Effects of Social Welfare Fund on Electricity Public Grid, Yemen, 2013
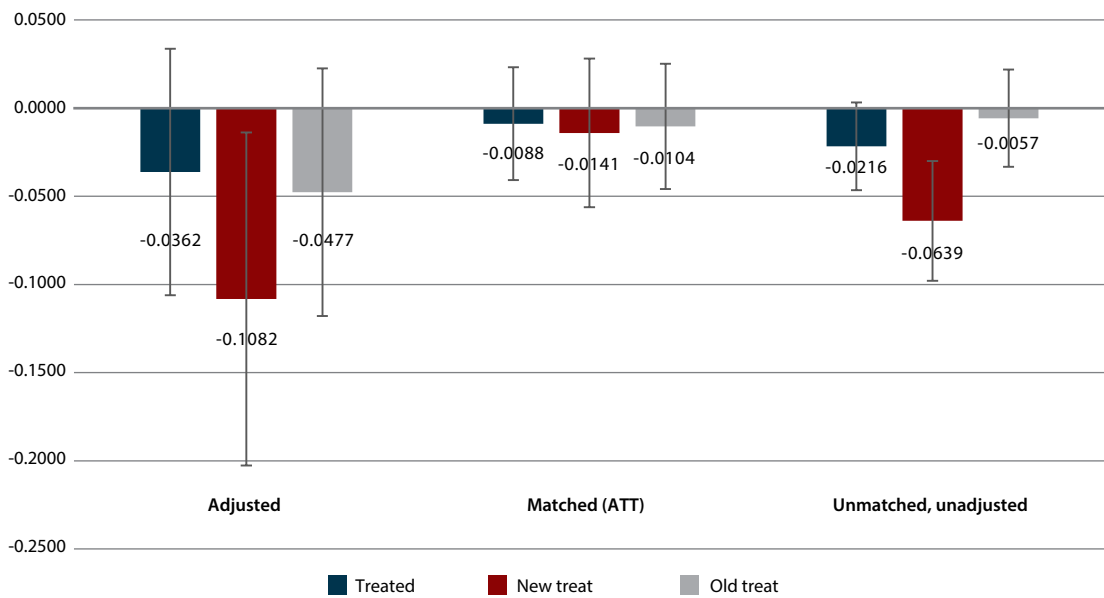
Source: NSPMS, Round 4.

Figure IE.8:
Estimated Effects of Social Welfare Fund on Electricity Private Grid, Yemen, 2013
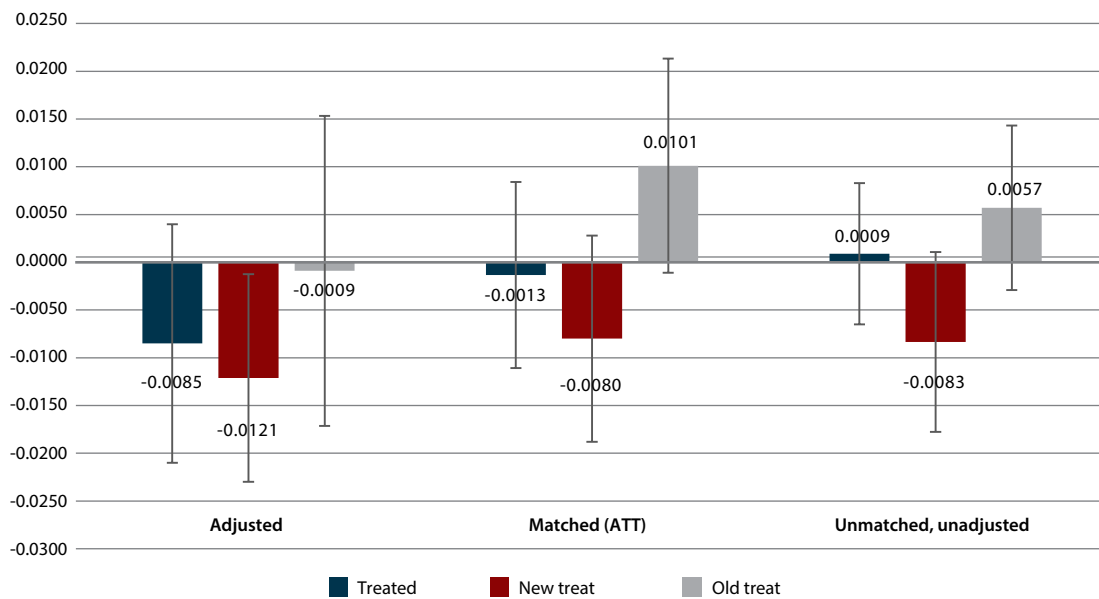
Source: NSPMS, Round 4.

Figure IE.9:
Estimated Effects of Social Welfare Fund on Electricity Cooperative, Yemen, 2013
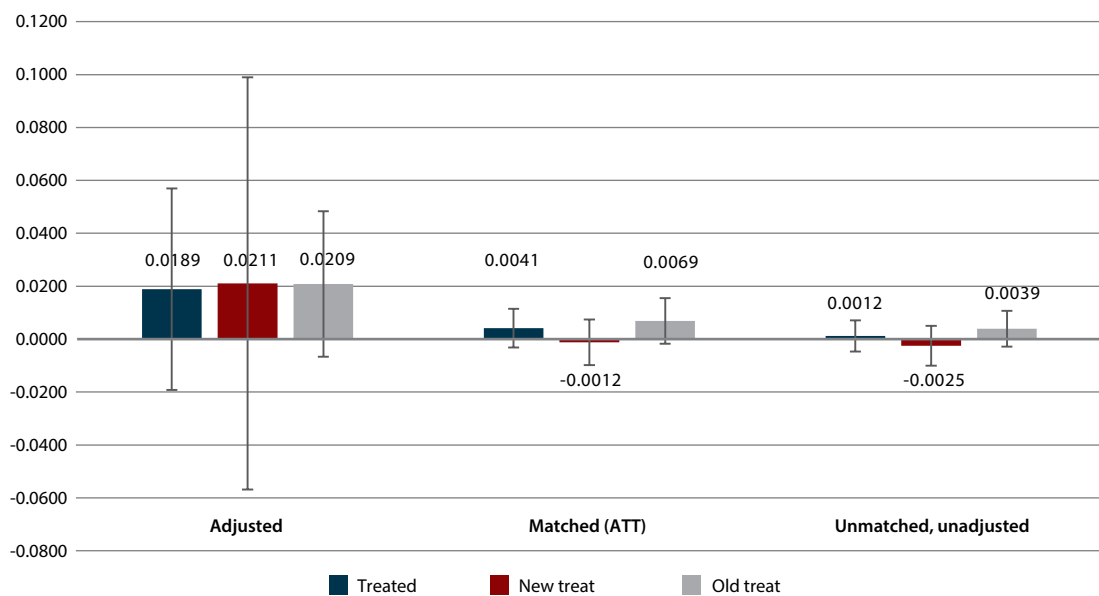
Source: NSPMS, Round 4.

Figure IE.10:
Estimated Effects of Social Welfare Fund on Electricity Generator, Yemen, 2013
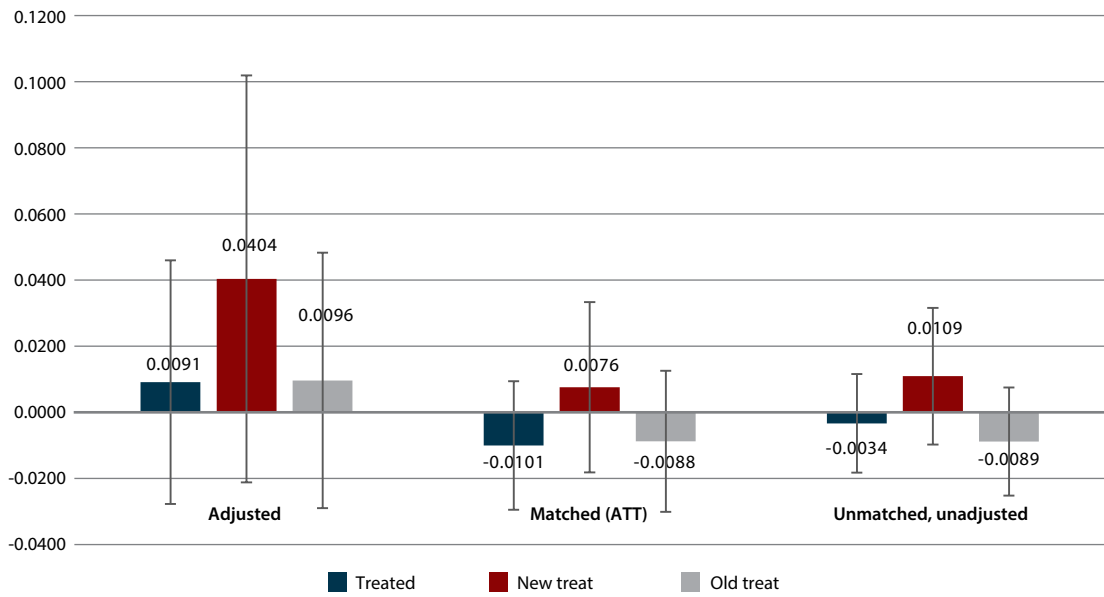
Source: NSPMS, Round 4.

Figure IE.11:
Estimated Effects of Social Welfare Fund on Improved Sanitation, Yemen, 2013

Source: NSPMS, Round 4.

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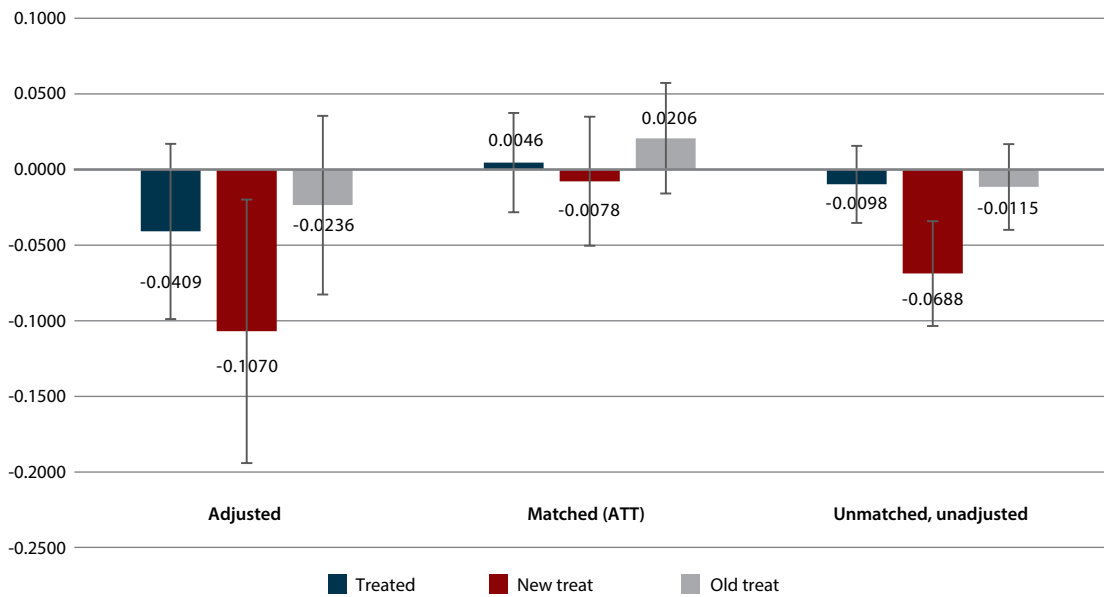
Figure IE.12:
Estimated Effects of Social Welfare Fund on Distance to Water, Yemen, 2013
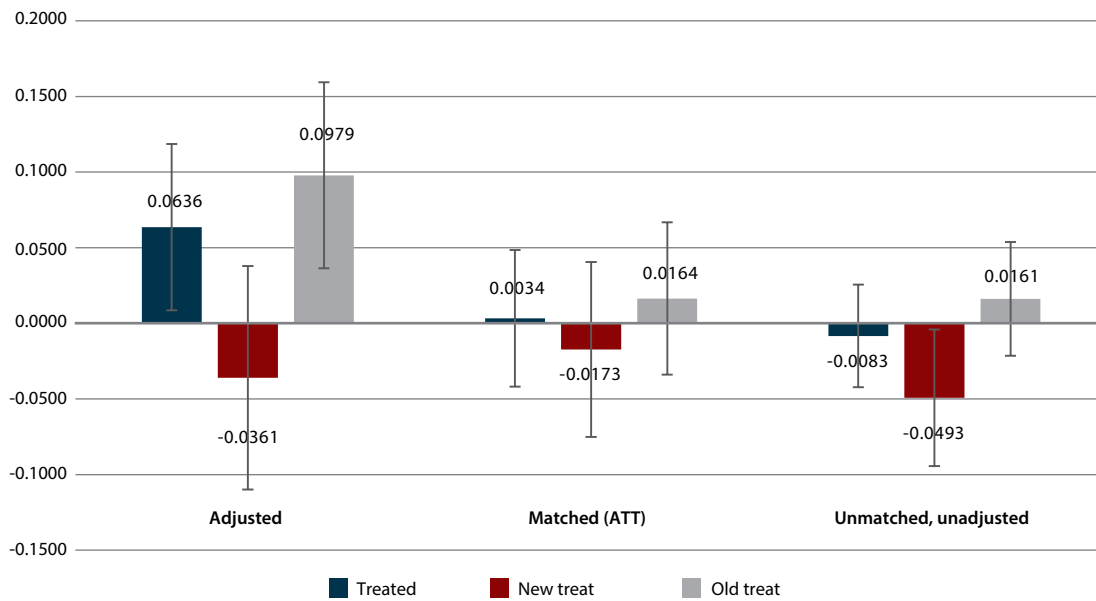
Source: NSPMS, Round 4.

Figure IE.13:
Estimated Effects of Social Welfare Fund on Piped Water, Yemen, 2013
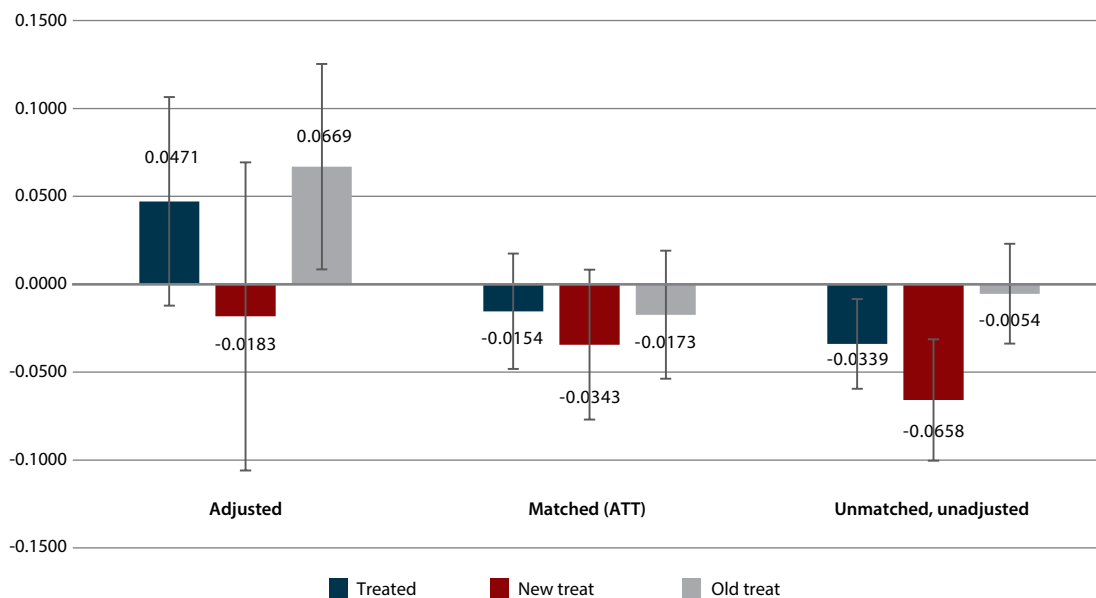
Source: NSPMS, Round 4.

Figure IE.14:
Estimated Effects of Social Welfare Fund on Water Consumption, Yemen, 2013
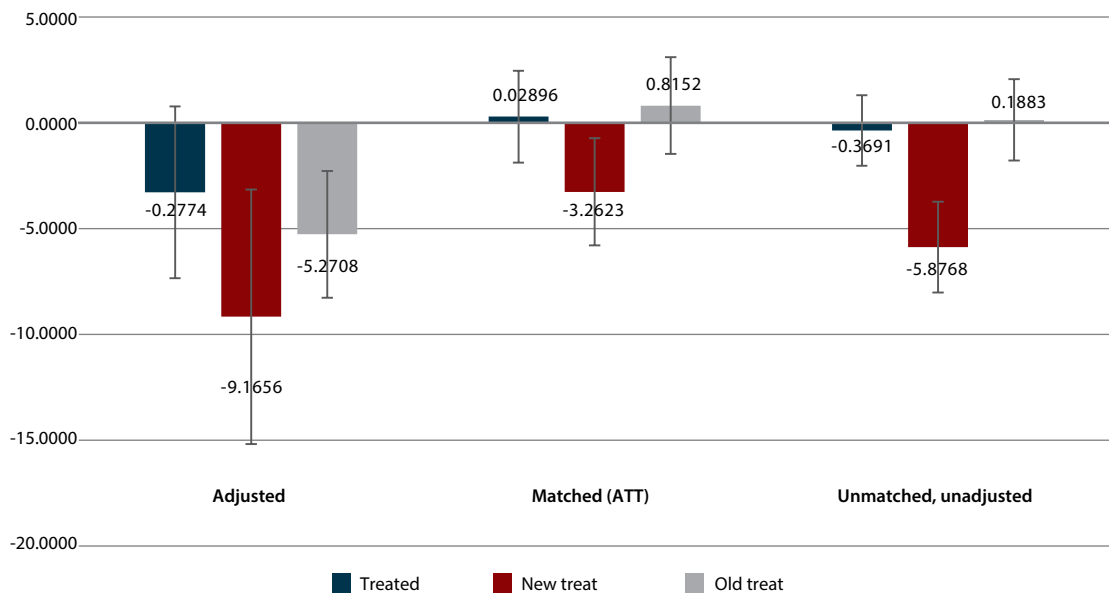
Source: NSPMS, Round 4.

Figure IE.15:
Estimated Effects of Social Welfare Fund on Bednets, Yemen, 2013

Source: NSPMS, Round 4.

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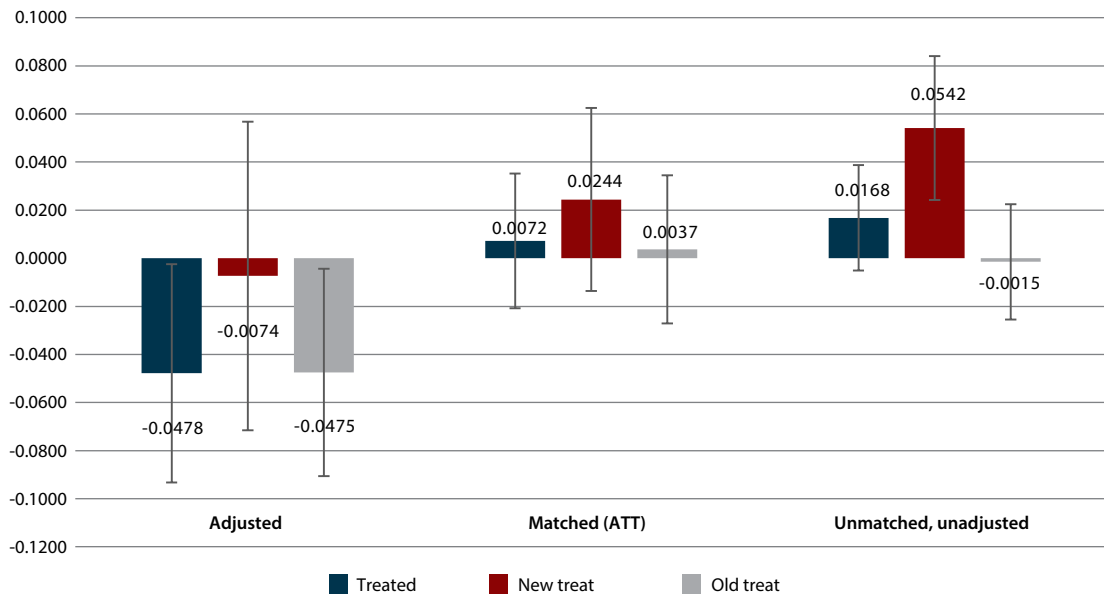
Figure IE.16:
Estimated Effects of Social Welfare Fund on Access to Health Facility, Yemen, 2013
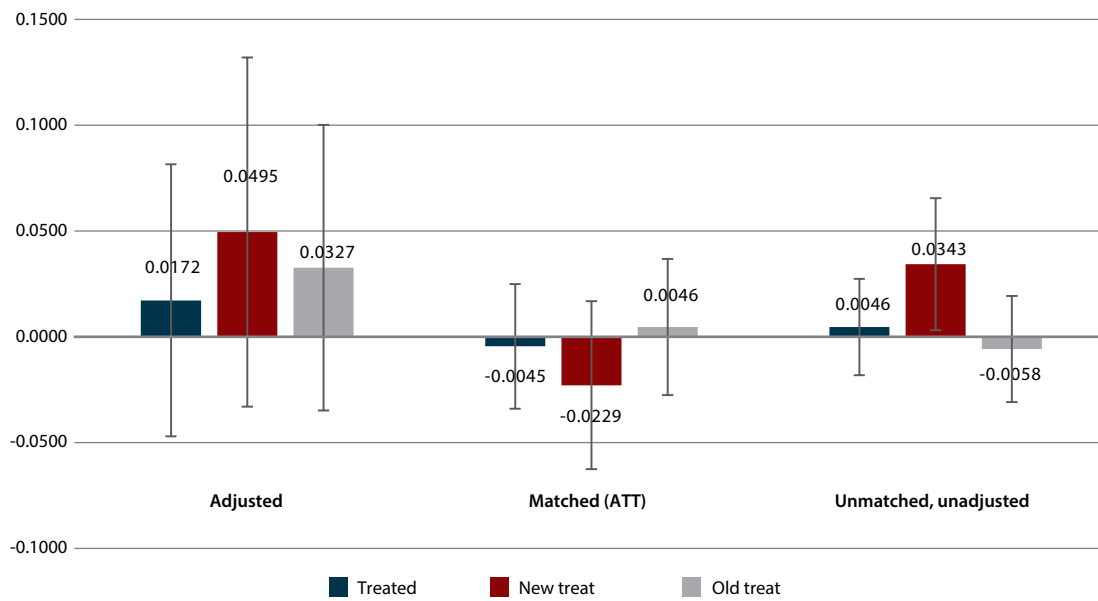
Source: NSPMS, Round 4.

Figure IE.17:
Estimated Effects of Social Welfare Fund on Food Security – Food Secure, Yemen, 2013
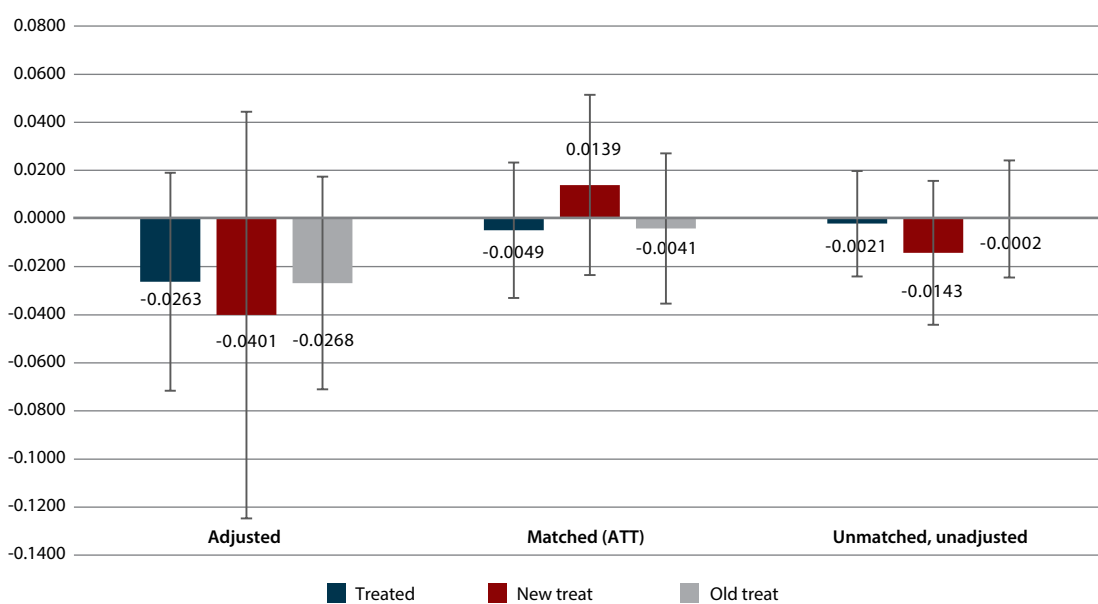
Source: NSPMS, Round 4.

Figure IE.18:
Estimated Effects of Social Welfare Fund on Food Security – Moderately Insecure, Yemen, 2013
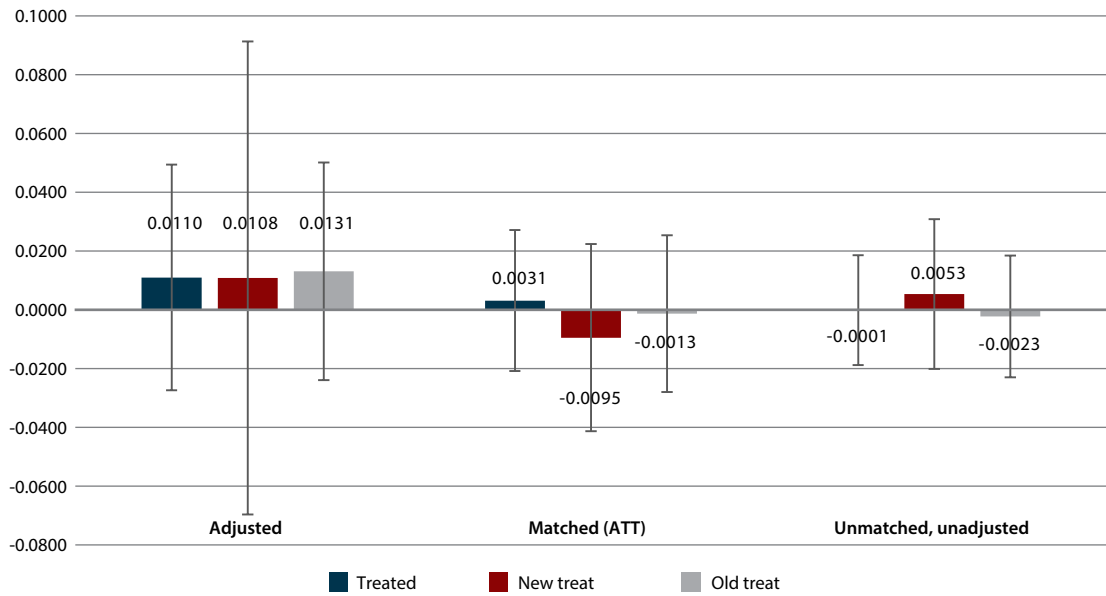
Figure IE.19:
Estimated Effects of Social Welfare Fund on Food Security – Severely Insecure, Yemen, 2013
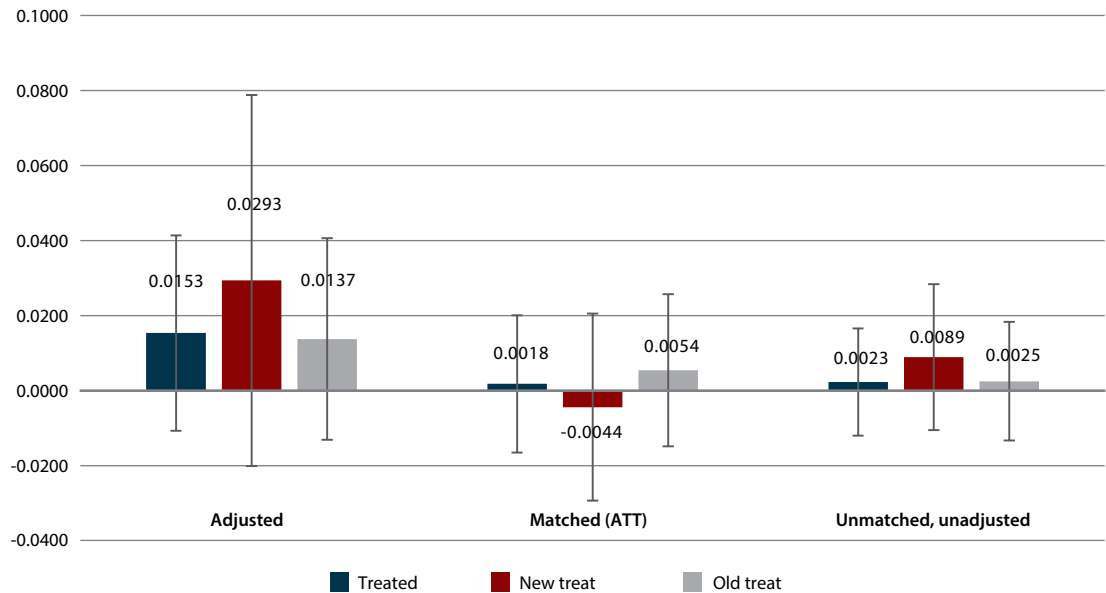
Figure IE.20:
Estimated Effects of Social Welfare Fund on Income From Work,
Yemen, 2013
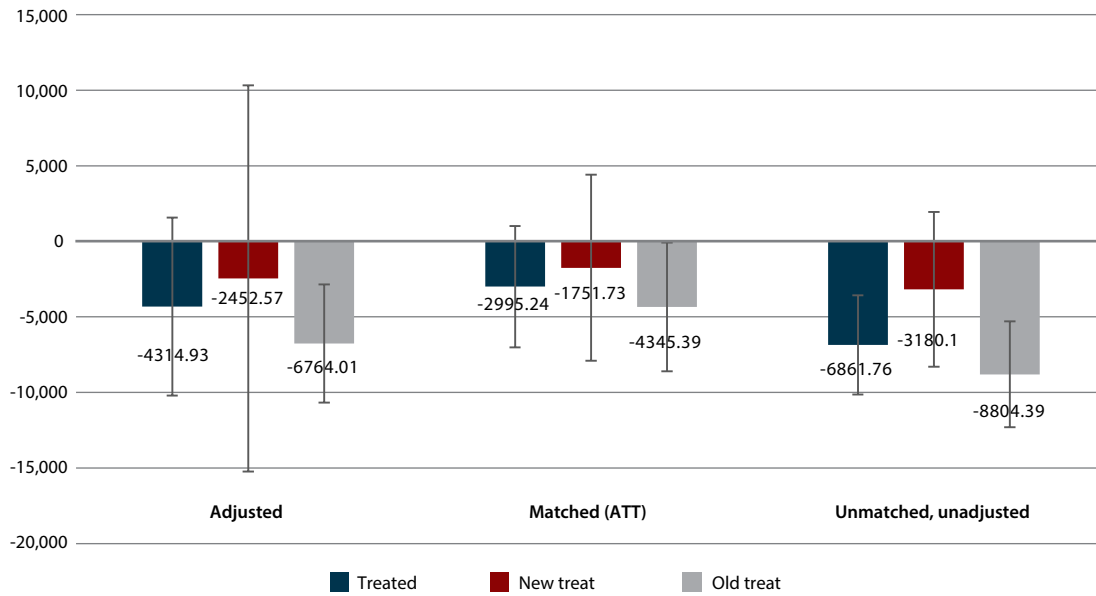
Source: NSPMS, Round 4.

Figure IE.21:
Estimated Effects of Social Welfare Fund on Borrowed Money,
Yemen, 2013
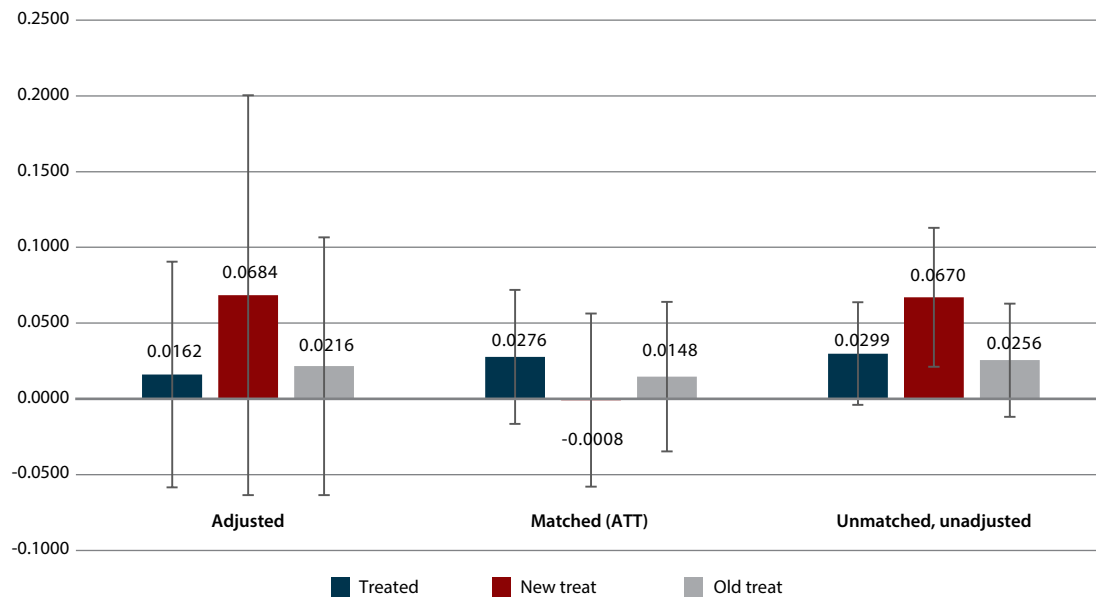
Source: NSPMS, Round 4.

Figure IE.22:
Estimated Effects of Social Welfare Fund on Agricultural Income, Yemen, 2013
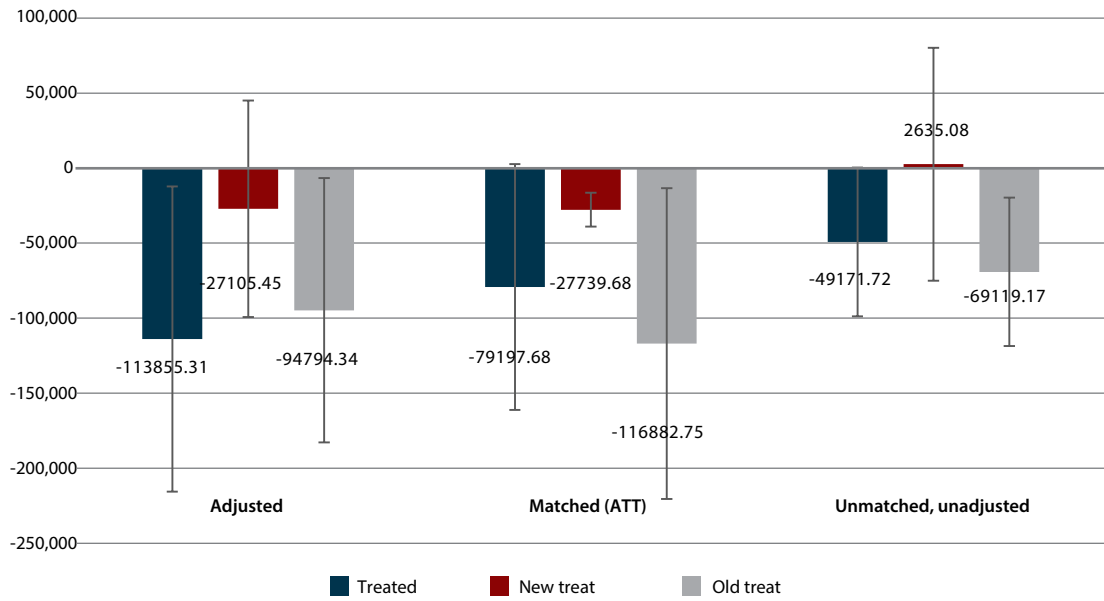
Source: NSPMS, Round 4.

Figure IE.23:
Estimated Effects of Social Welfare Fund on Land Cultivation, Yemen, 2013
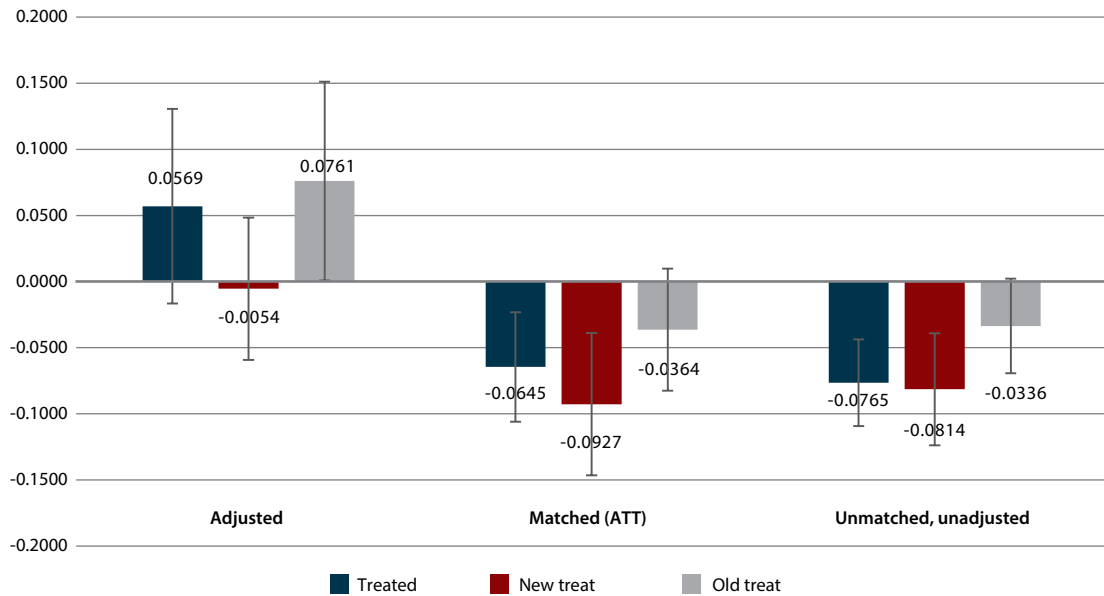
Source: NSPMS, Round 4.

Figure IE.26:
Estimated Effects of Social Welfare Fund on Crop or Livestock Sales by Households, Yemen, 2013
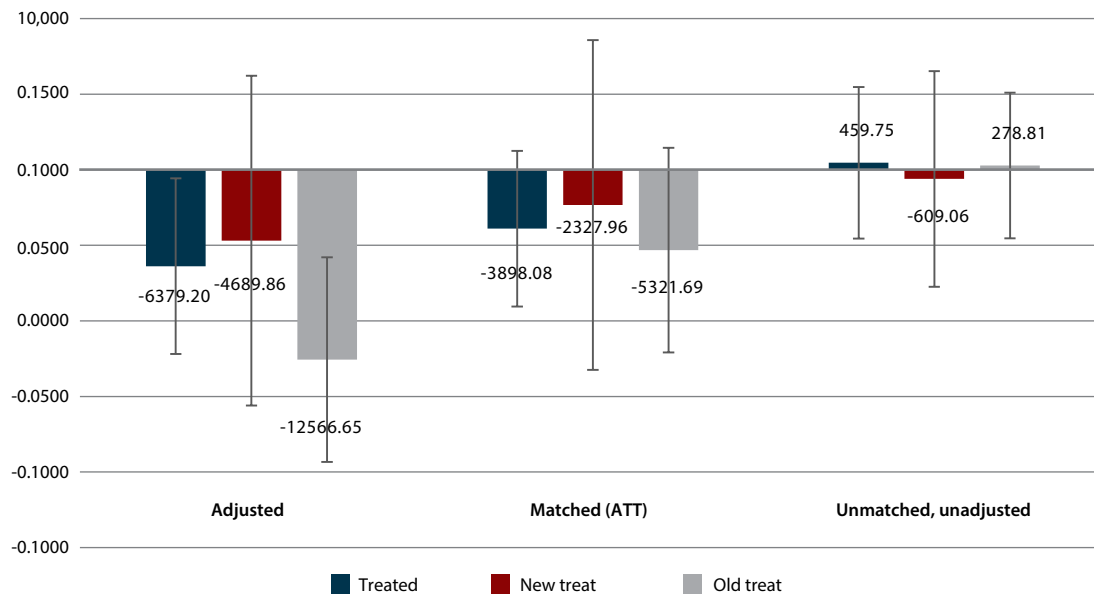
Source: NSPMS, Round 4.

Figure IE.27:
Estimated Effects of Social Welfare Fund on Main Source of Food from own Agricultural Production, Yemen, 2013

Source: NSPMS, Round 4.

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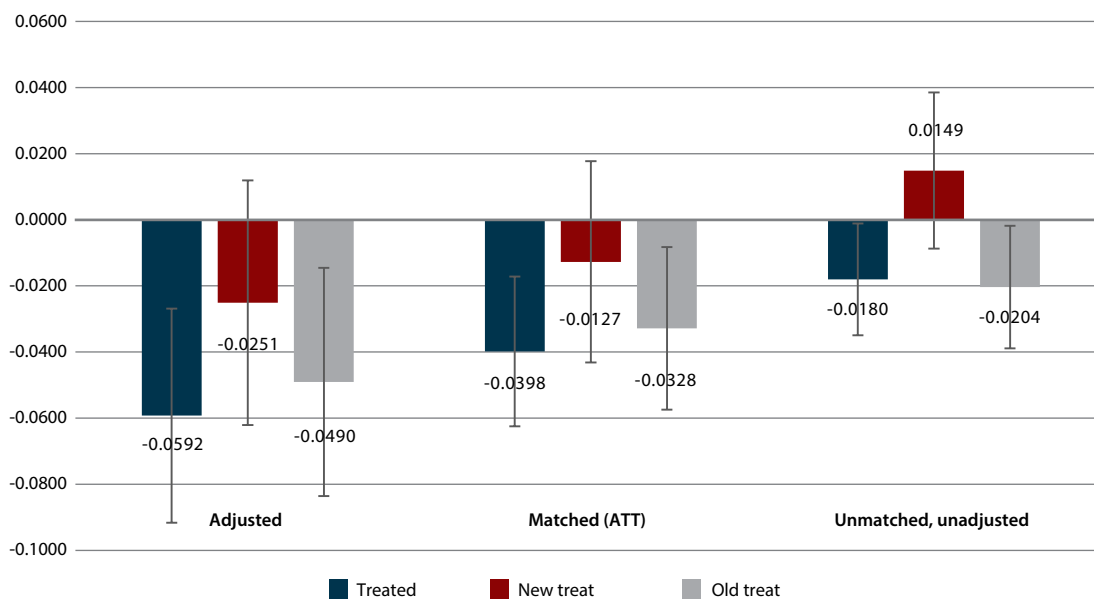
Figure IE.30:
Estimated Effects of Social Welfare Fund on Expenditures on Children's
Education, Clothing and Health, Yemen, 2013
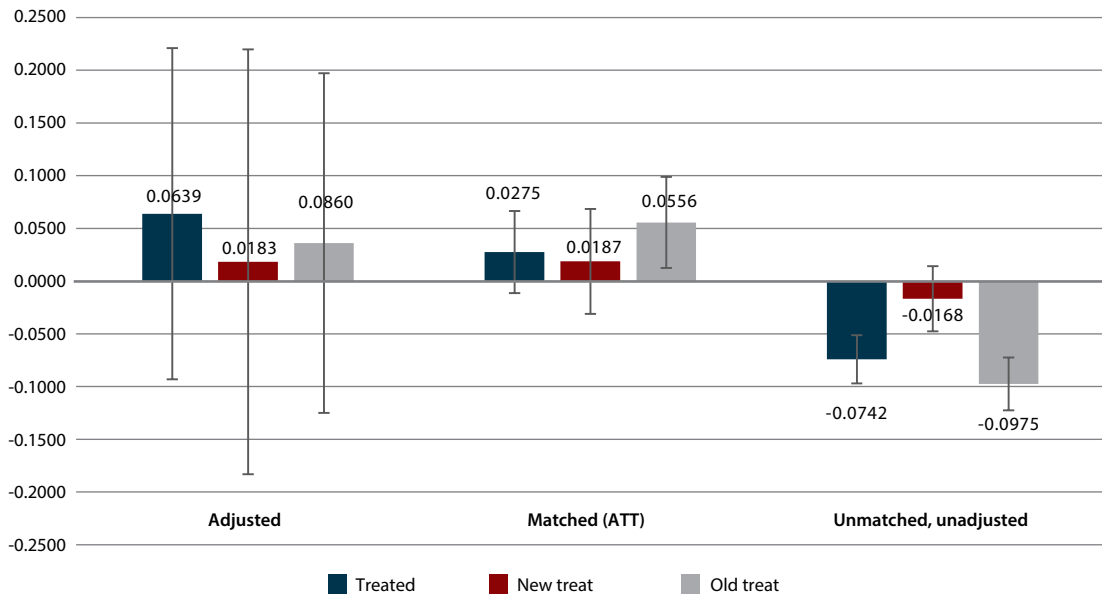
Source: NSPMS, Round 4.

Figure IE.31:
Estimated Effects of Social Welfare Fund on School Enrolment (Girls 11-12 Years),
Yemen, 2012
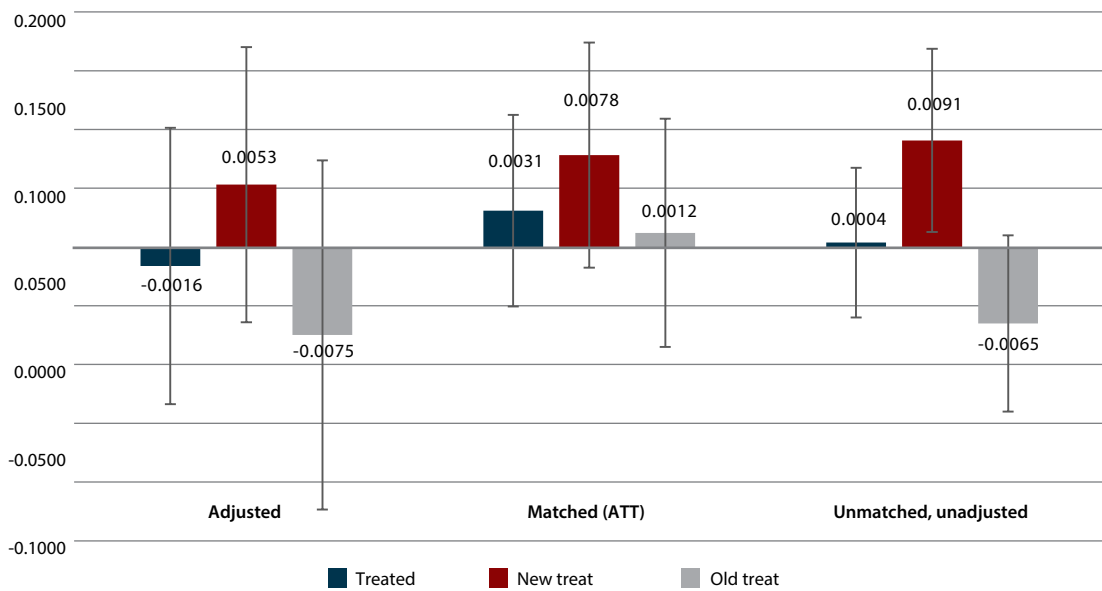
Source: NSPMS, Round 1.

Figure IE.32:
Estimated effects of Social Welfare Fund on School Enrolment (Girls 14-15 Years),
Yemen, 2012
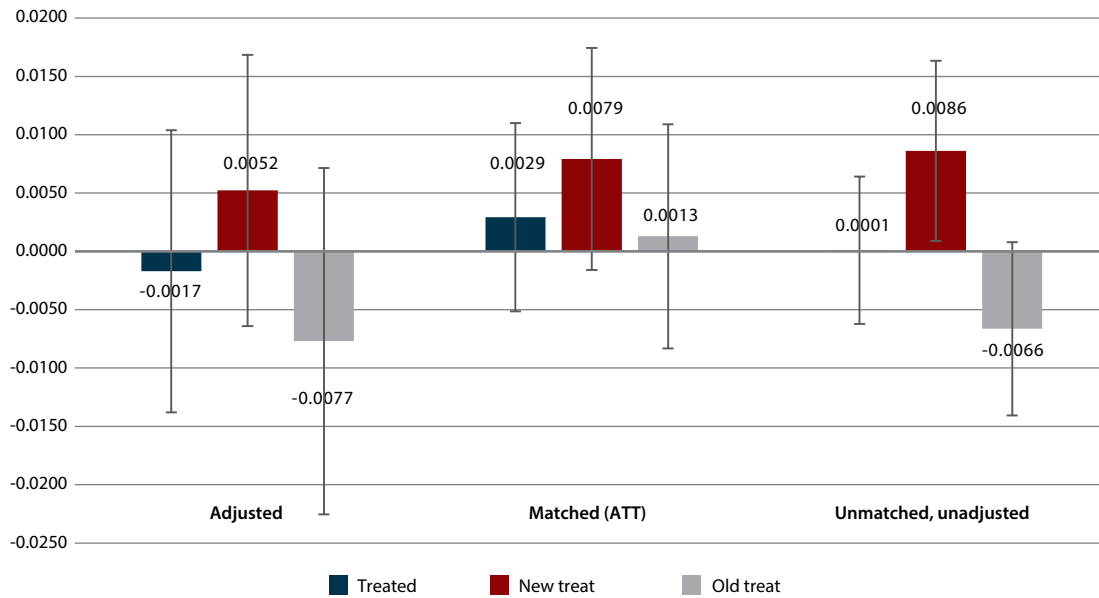
Source: NSPMS, Round 1.

Figure IE.33:
Estimated effects of Social Welfare Fund on school enrolment (Boys 14-15 Years),
Yemen, 2012
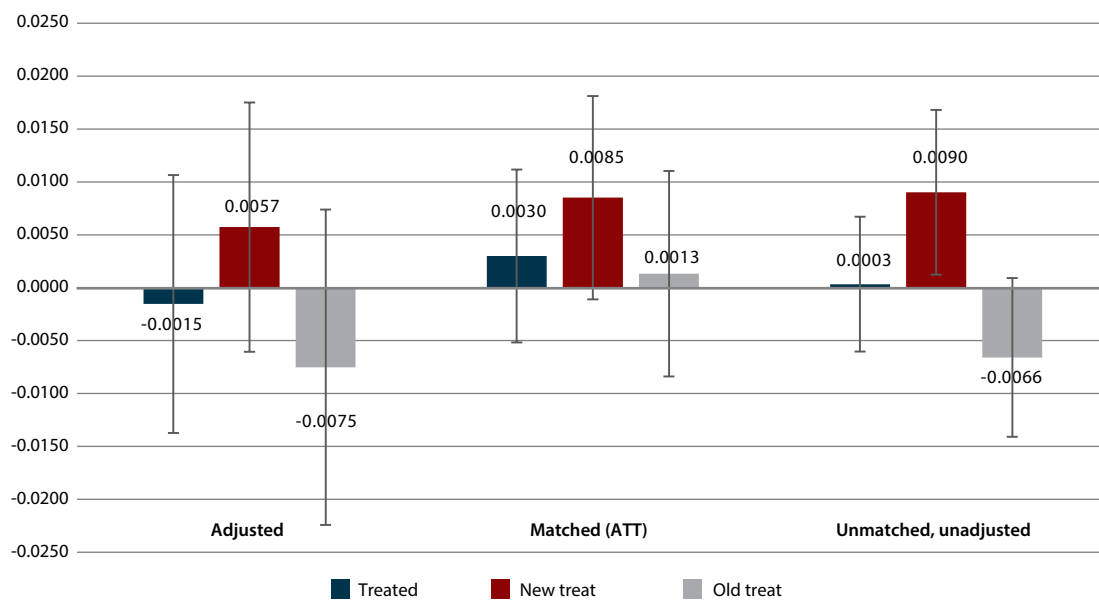
Source: NSPMS, Round 1.

Figure IE.38:
Estimated Effects of Social Welfare Fund on Absences in 30 Days (Girls 6-11 Years), Yemen, 2013
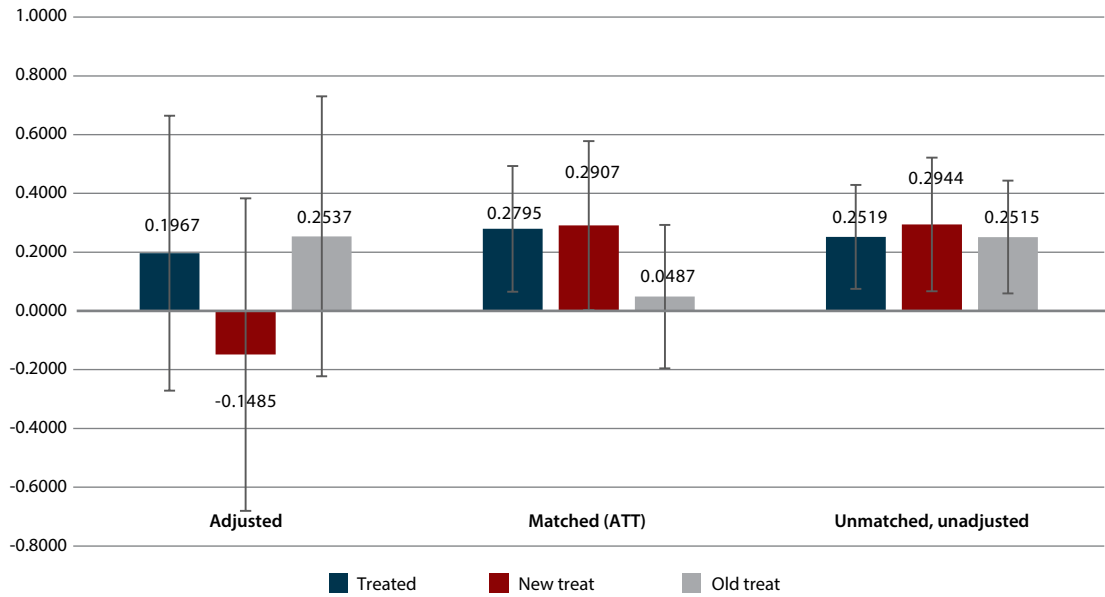
Source: NSPMS, Round 3.

Figure IE.39:
Estimated Effects of Social Welfare Fund on Absences in 30 Days (Girls 12-14 Years), Yemen, 2013
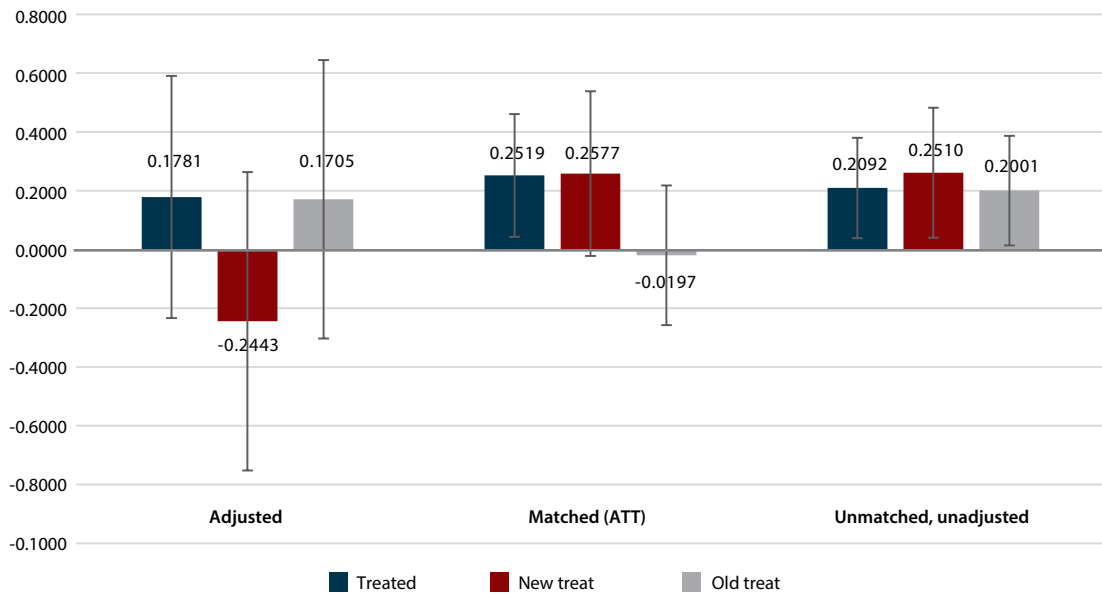
Source: NSPMS, Round 3.

Figure IE.40:
Estimated Effects of Social Welfare Fund on Absences in 30 Days (Boys 6-11 Years), Yemen, 2013
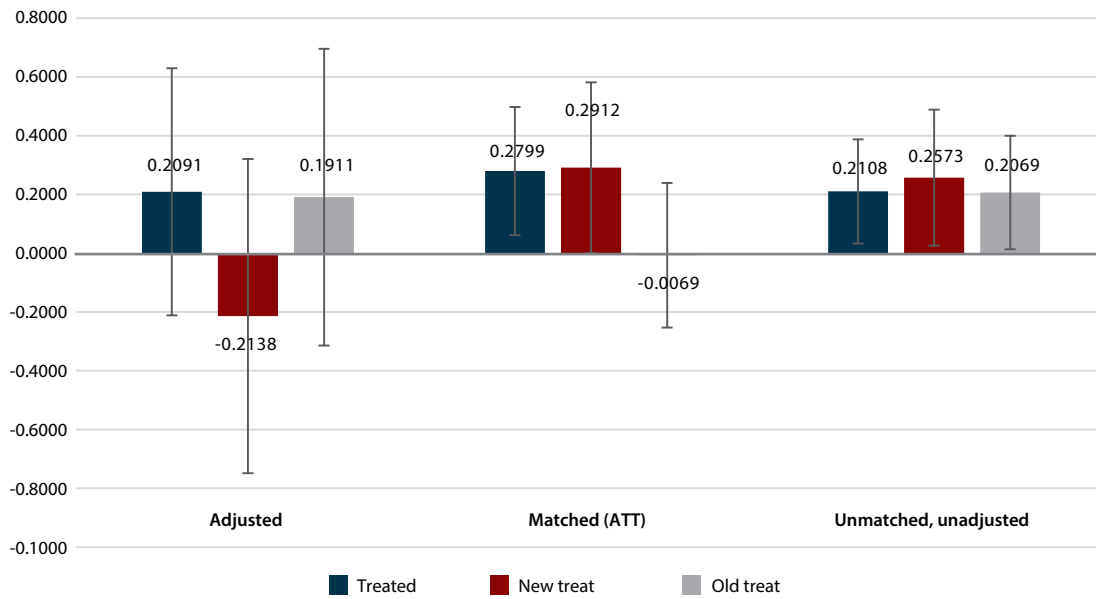
Source: NSPMS, Round 3.

Figure IE.41:
Estimated Effects of Social Welfare Fund on Absences in 30 Days (Boys 12-14 Years), Yemen, 2013

Source: NSPMS, Round 3.

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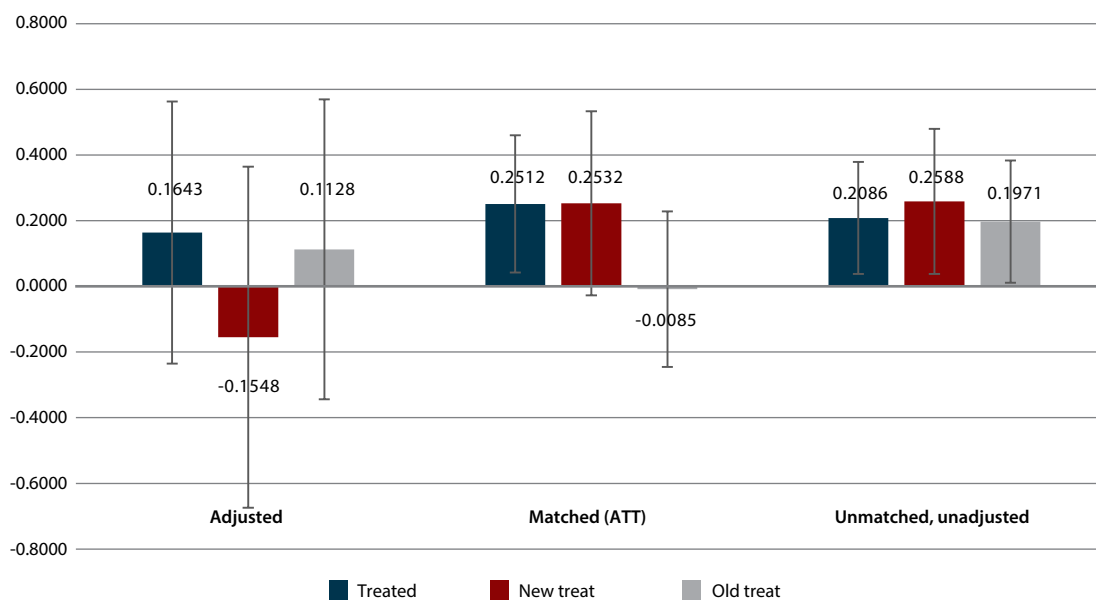
Figure IE.42:
Estimated Effects of Social Welfare Fund on Child Labour (Girls 6-11 Years), Yemen, 2013

Treated · New treat · Old treat
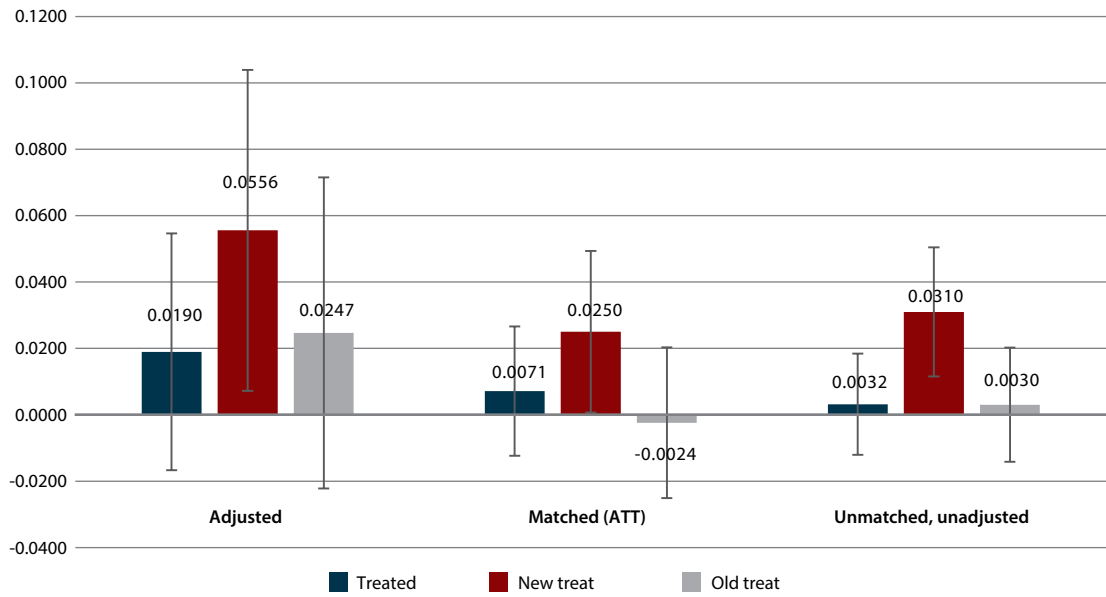
Figure IE.43:
Estimated Effects of Social Welfare Fund on Child Labour (Girls 12-14 Years), Yemen, 2013

Treated · New treat · Old treat
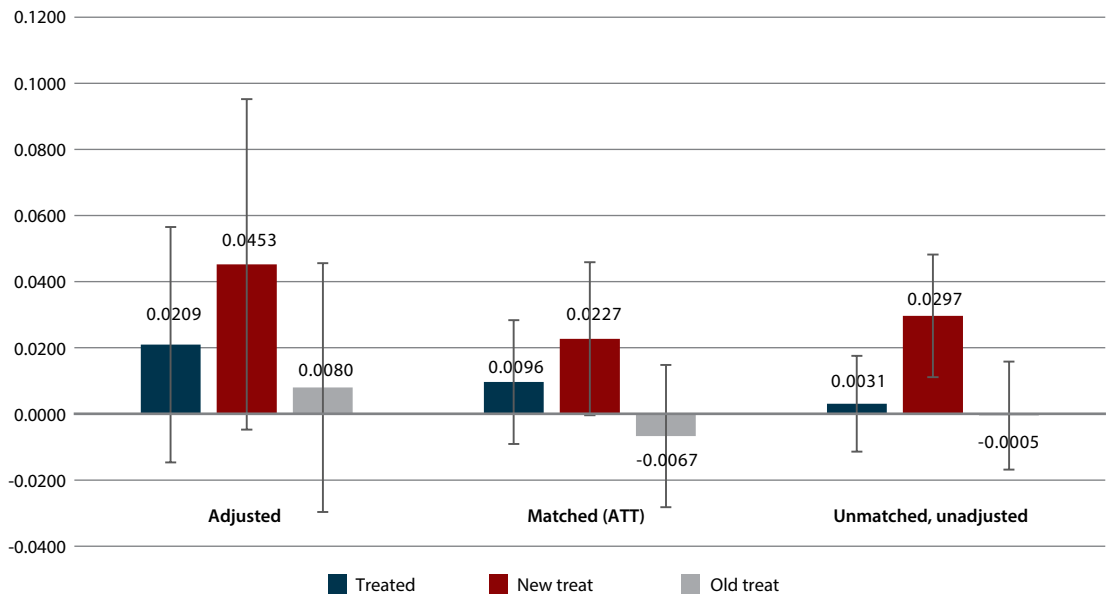
Figure IE.44:
Estimated Effects of Social Welfare Fund on Child Labour (Boys 6-11 Years),
Yemen, 2013
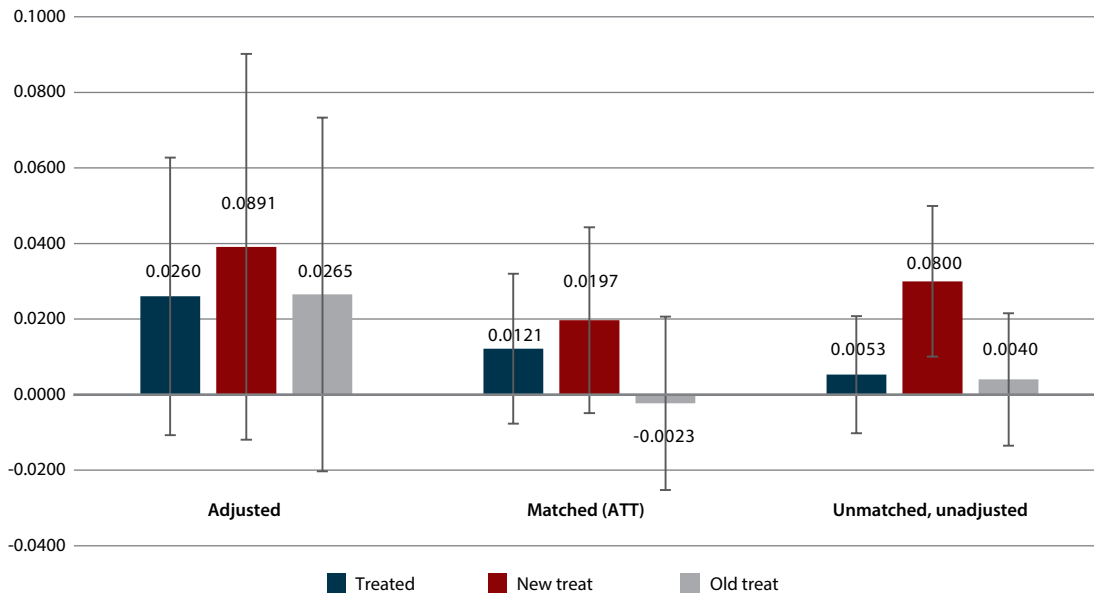
Source: NSPMS, Round 3.

Figure IE.45:
Estimated Effects of Social Welfare Fund on Child Labour (Boys 12-14 Years),
Yemen, 2013
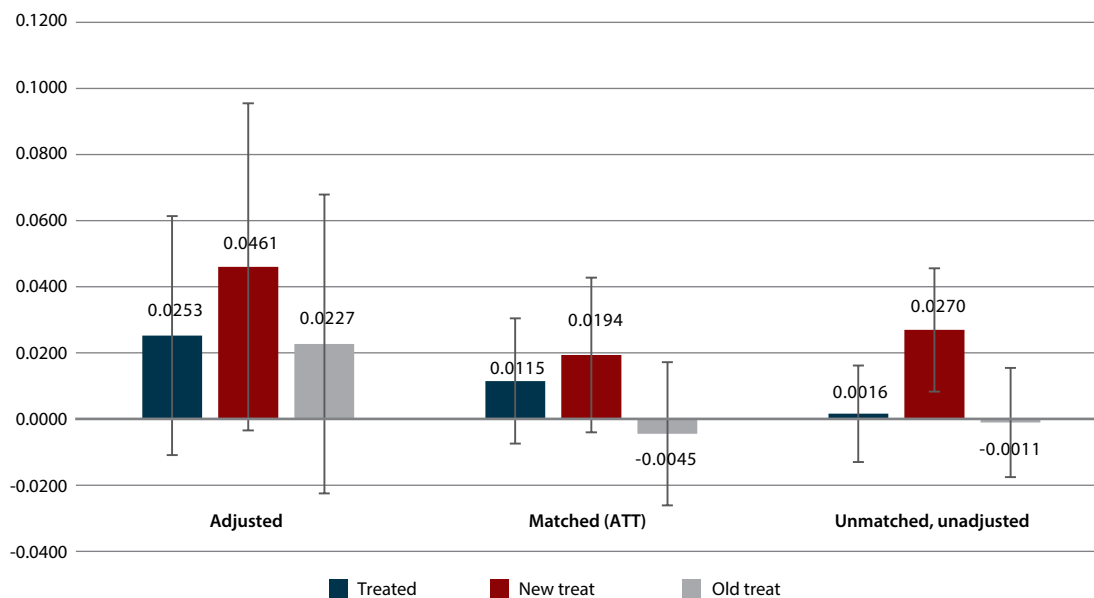
Source: NSPMS, Round 3.

Figure IE.46:
Estimated Effects of Social Welfare Fund on Child Labour (Girls 6-11 Years), Yemen, 2013
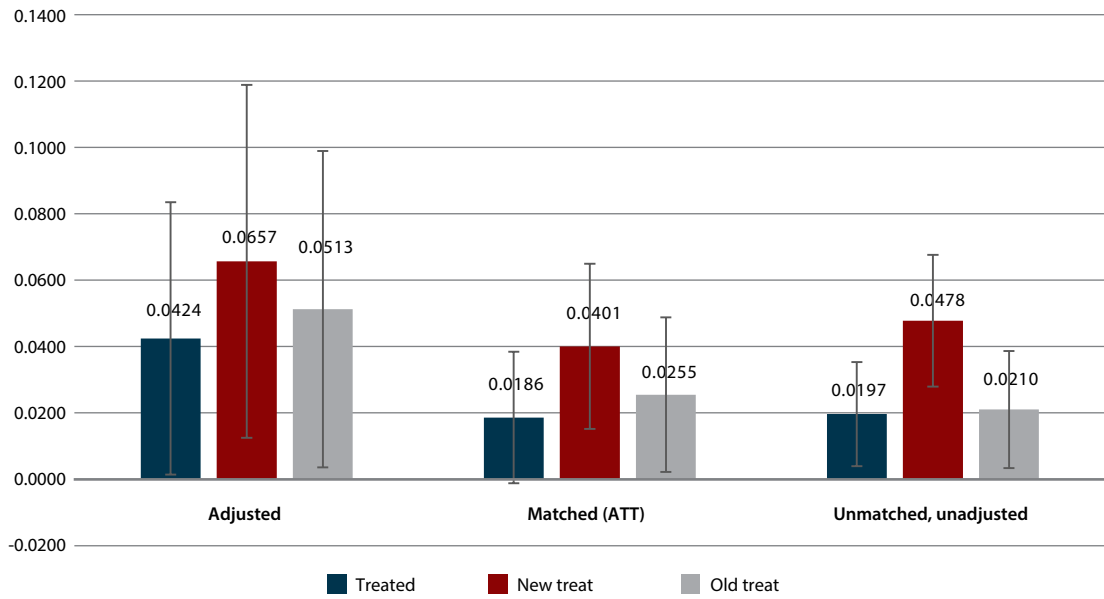
Source: NSPMS, Round 4.

Figure IE.47:
Estimated Effects of Social Welfare Fund on Child Labour (Girls 12-14 Years), Yemen, 2013
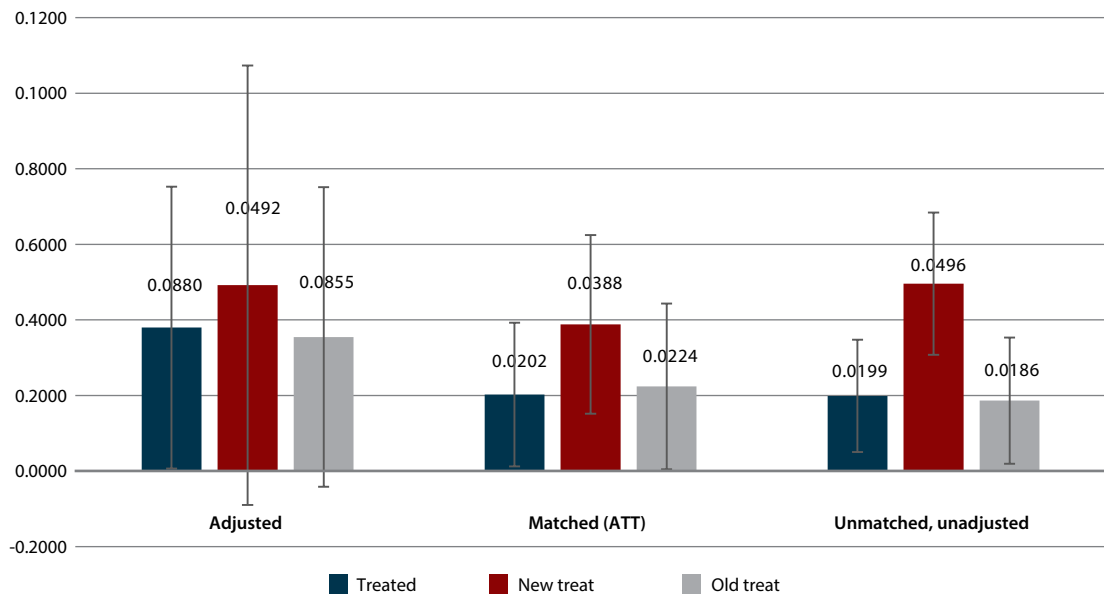
Source: NSPMS, Round 4.

Figure IE.48:
Estimated Effects of Social Welfare Fund on Child Labour (Boys 6-11 Years),
Yemen, 2013
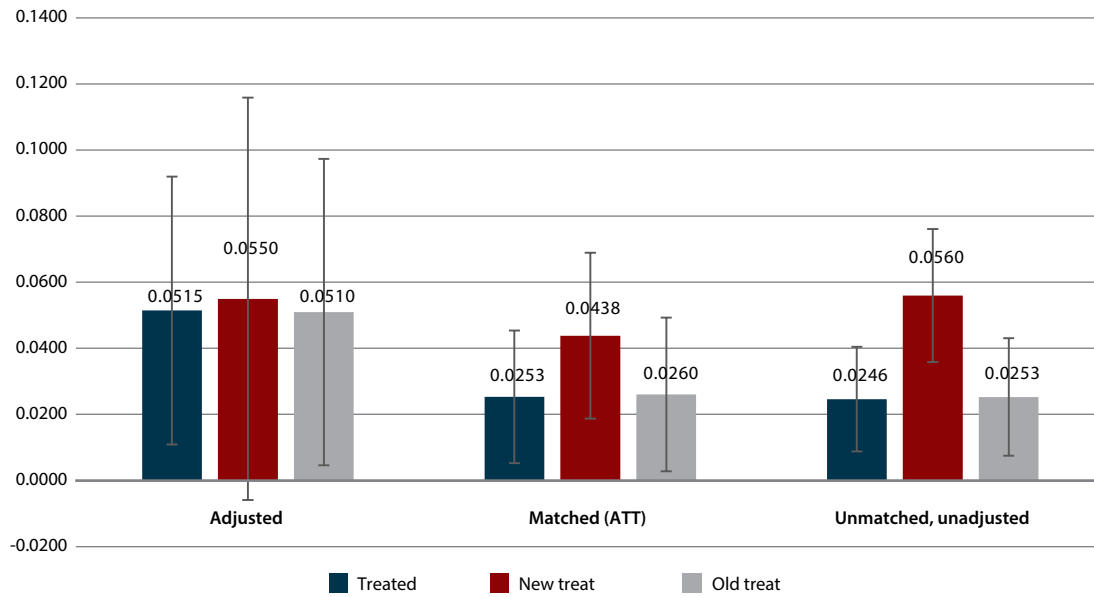
Figure IE.49:
Estimated Effects of Social Welfare Fund on Child Labour (Boys 12-14 Years),
Yemen, 2013
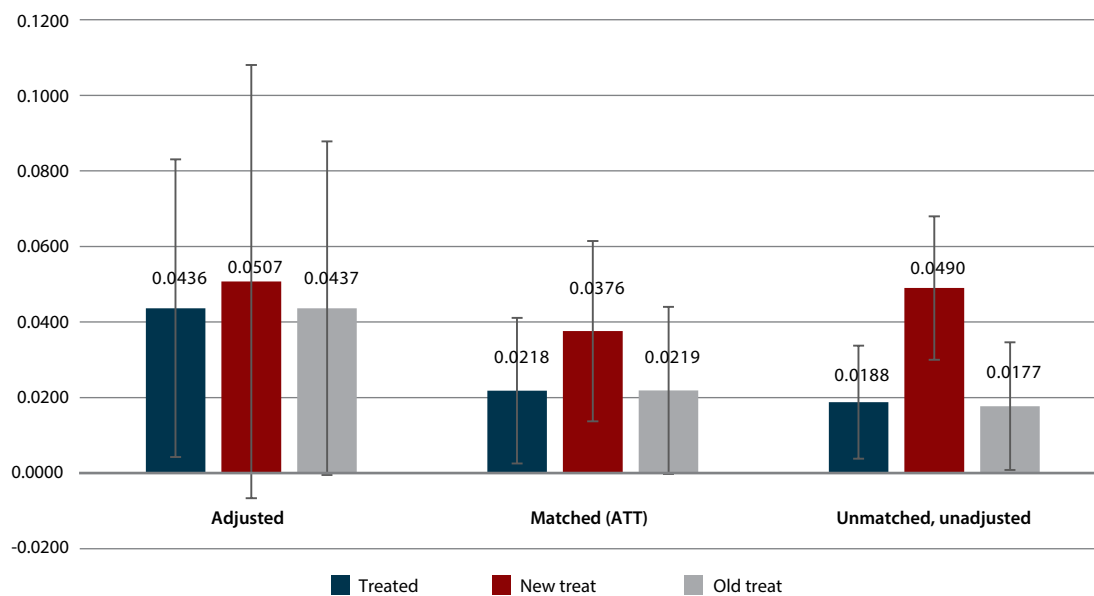
Figure IE.50:
Estimated Effects of Social Welfare Fund on Unpaid family Worker
(Girls 6-11 Years), Yemen, 2013
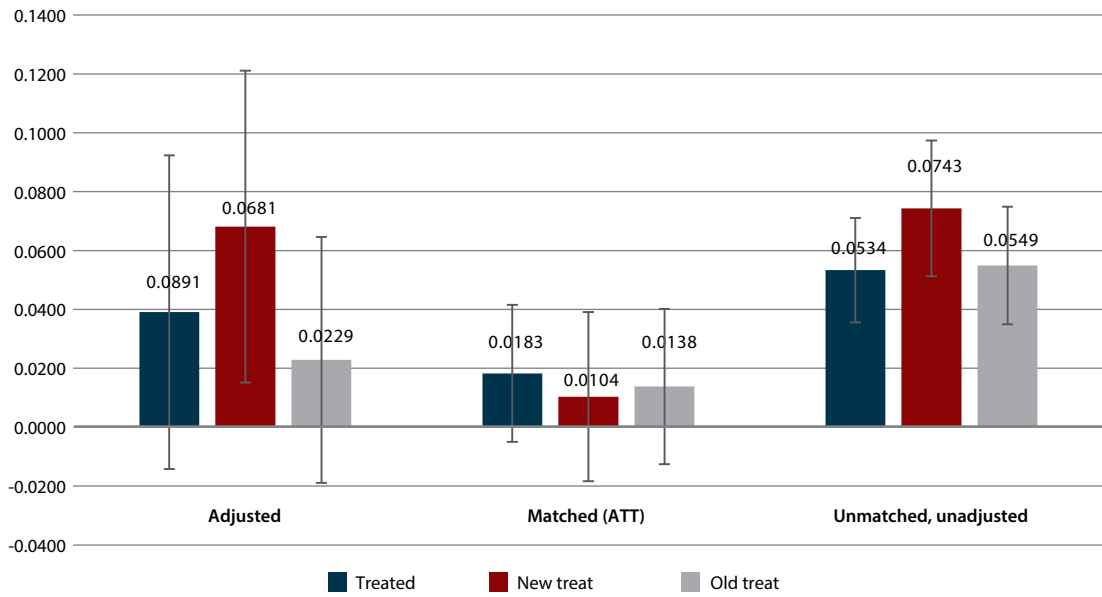
Source: NSPMS, Round 3.

Figure IE.51:
Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Girls 12-14 Years), Yemen, 2013
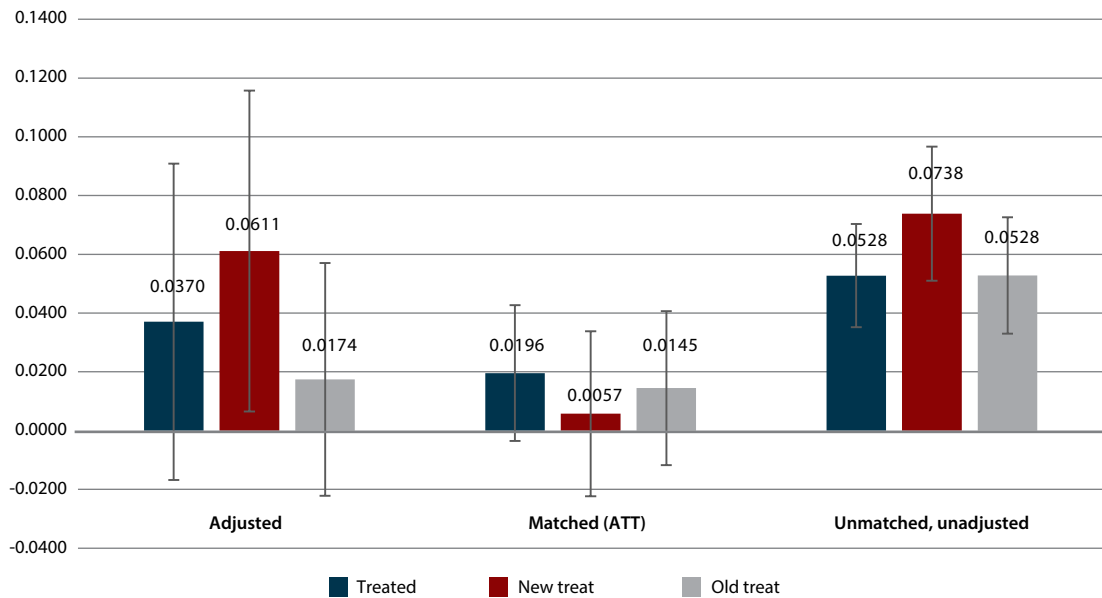
Source: NSPMS, Round 3.

Figure IE.52:
Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Boys 6-11 Years), Yemen, 2013
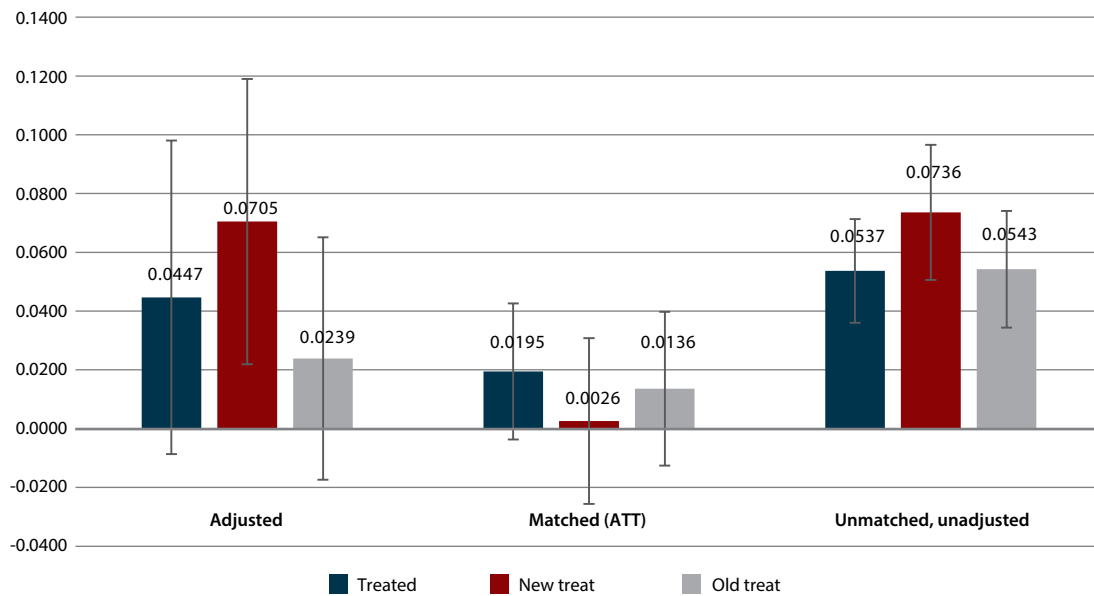
Source: NSPMS, Round 3.

Figure IE.53:
Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Boys 12-14 Years), Yemen, 2013
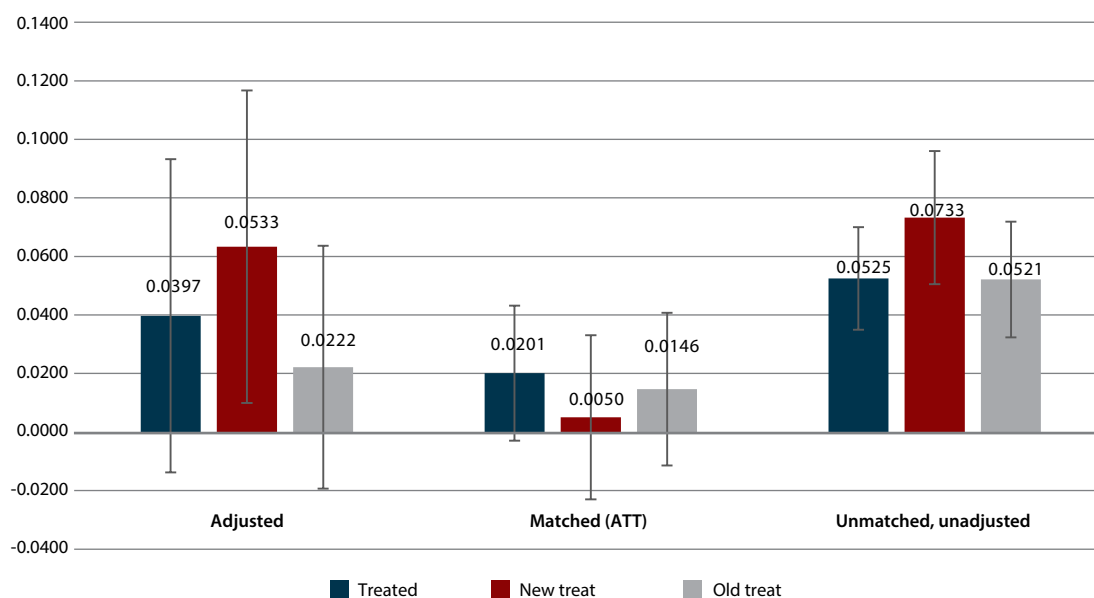
Source: NSPMS, Round 3.

Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Girls 6-11 Years), Yemen, 2013
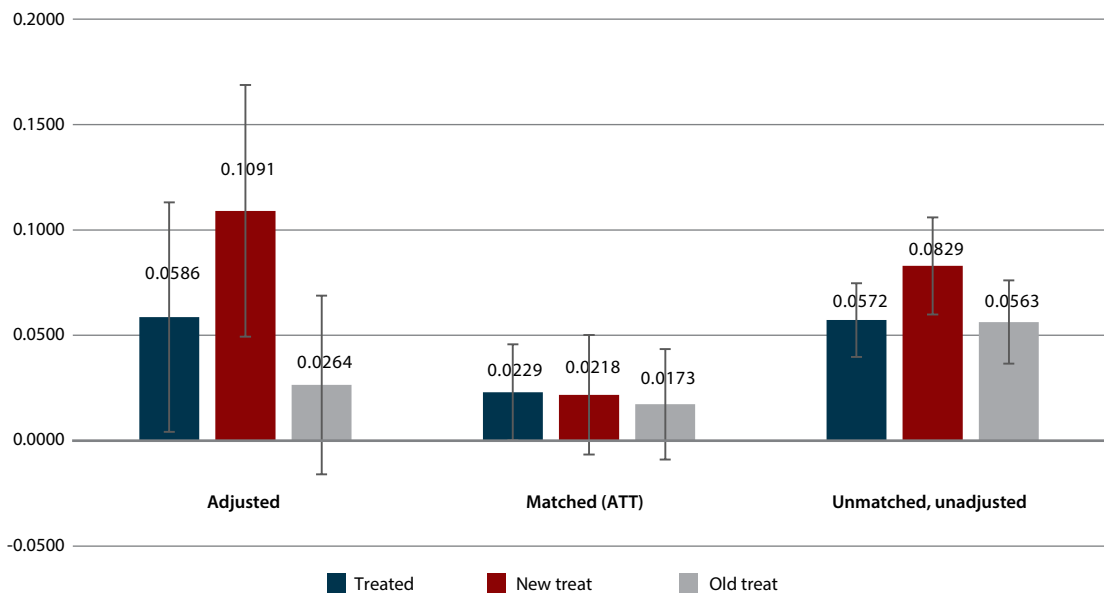
Source: NSPMS, Round 4.

Figure IE.55:
Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Girls 12-14 Years), Yemen, 2013
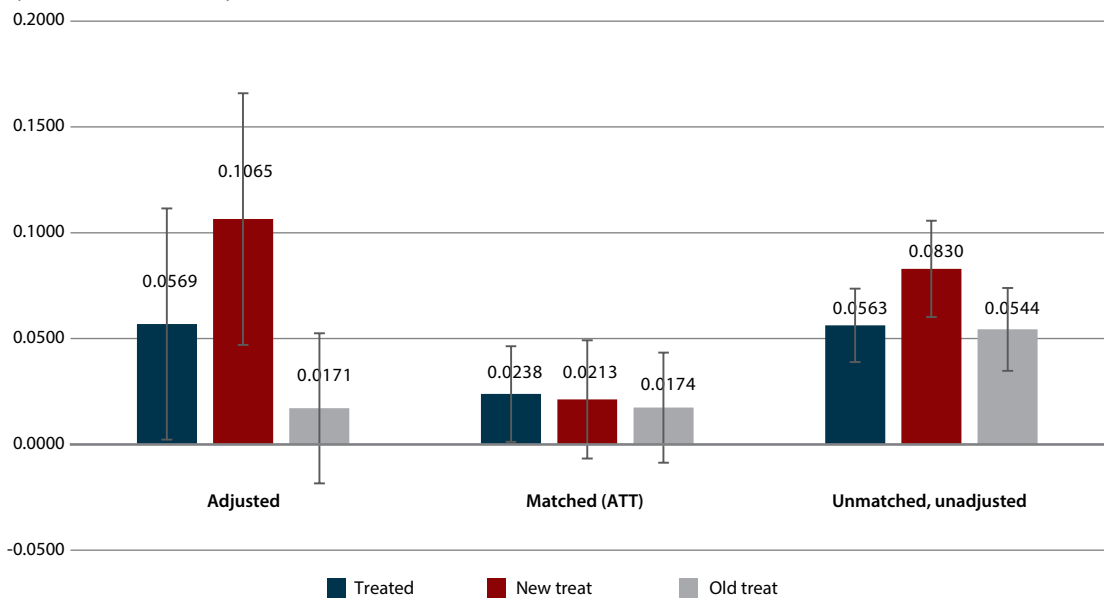
Source: NSPMS, Round 4.

Figure IE.56:
Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Boys 6-11 Years), Yemen, 2013
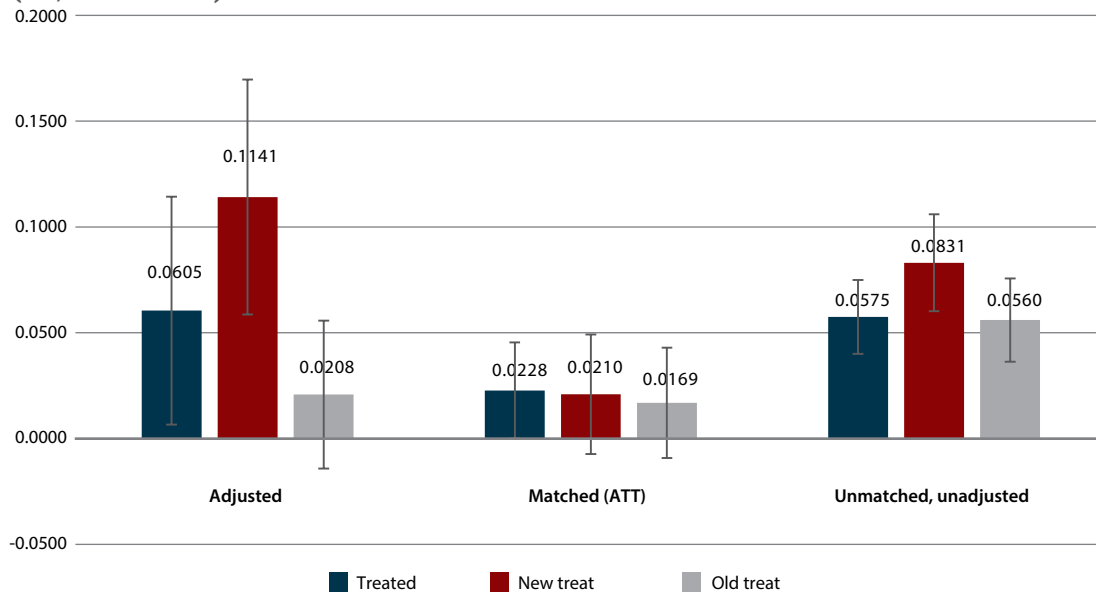
Source: NSPMS, Round 4.

Figure IE.57:
Estimated Effects of Social Welfare Fund on Unpaid Family Worker
(Boys 12-14 Years), Yemen, 2013
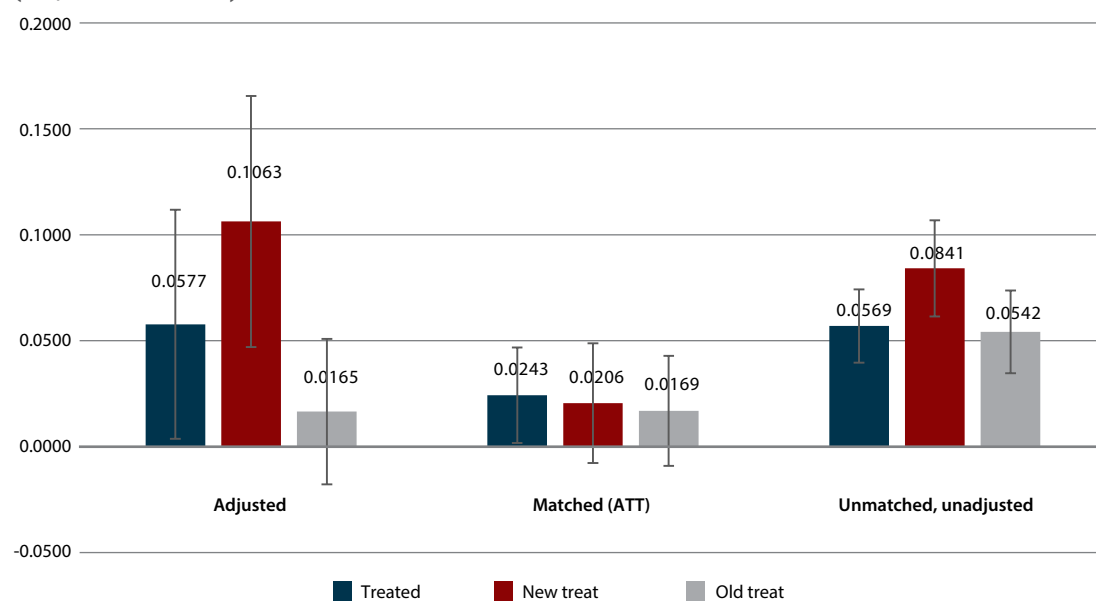
Source: NSPMS, Round 4.

Figure IE.58:

Estimated Effects of Social Welfare Fund on Global Underweight for Children Aged 6-59 Months, Yemen, 2013
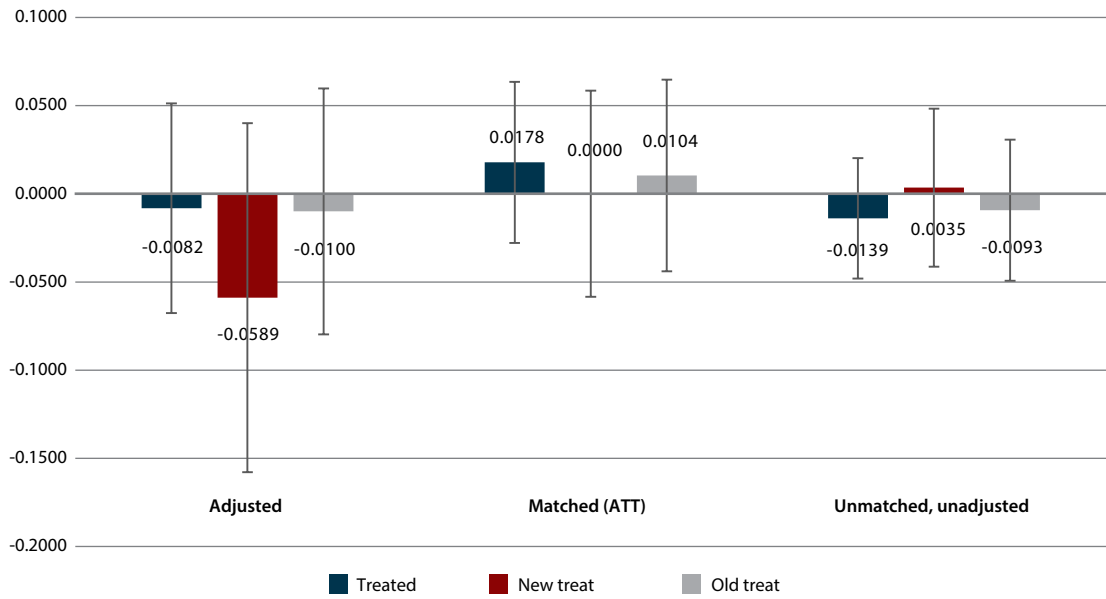
Figure IE.59:

Estimated Effects of Social Welfare Fund on Moderate Underweight for Children Aged 6-59 Months, Yemen, 2013
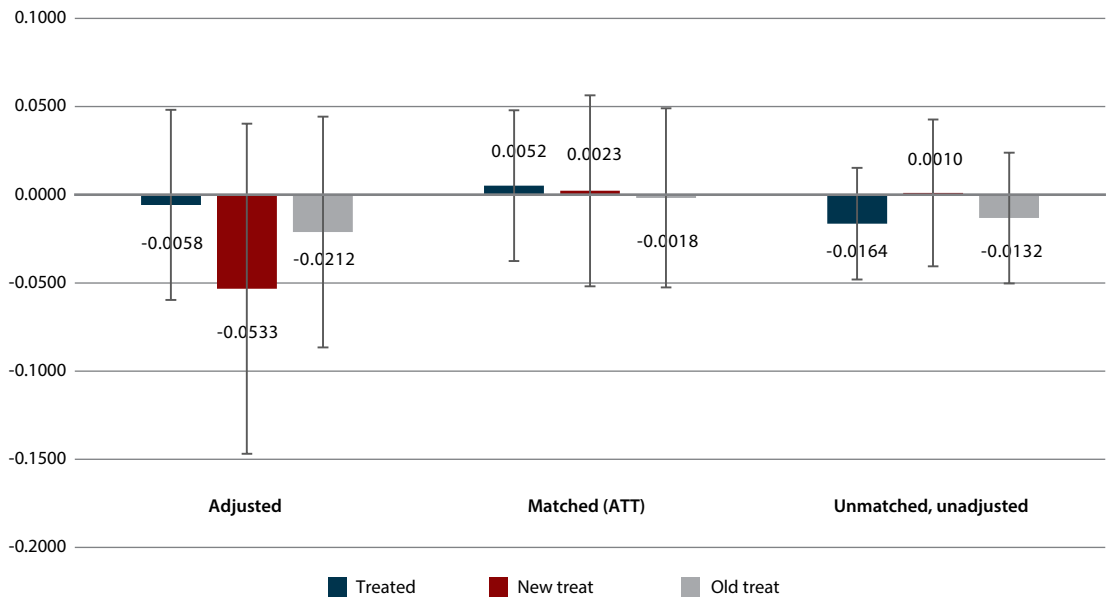
Figure IE.60:
Estimated Effects of Social Welfare Fund on Severe Underweight for
Children Aged 6-59 Months, Yemen, 2013
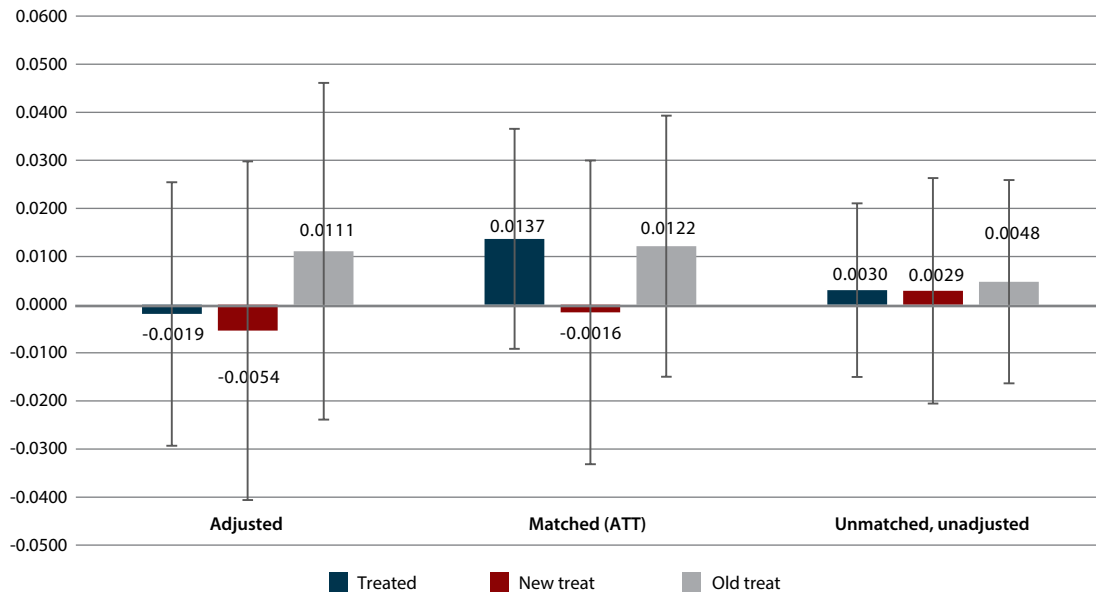
Source: NSPMS, Round 4.

Figure IE.61:
Estimated Effects of Social Welfare Fund on Global Stunting for
Children Aged 6-59 Months, Yemen, 2013
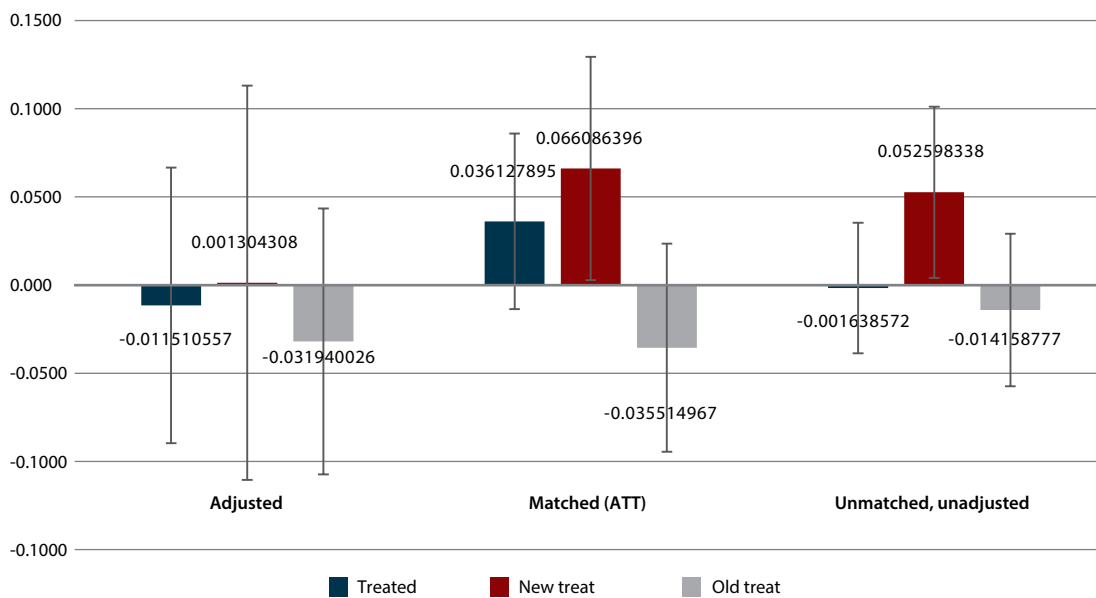
Source: NSPMS, Round 4.

Figure IE.62:
Estimated Effects of Social Welfare Fund on Moderate Stunting for
Children Aged 6-59 Months, Yemen, 2013
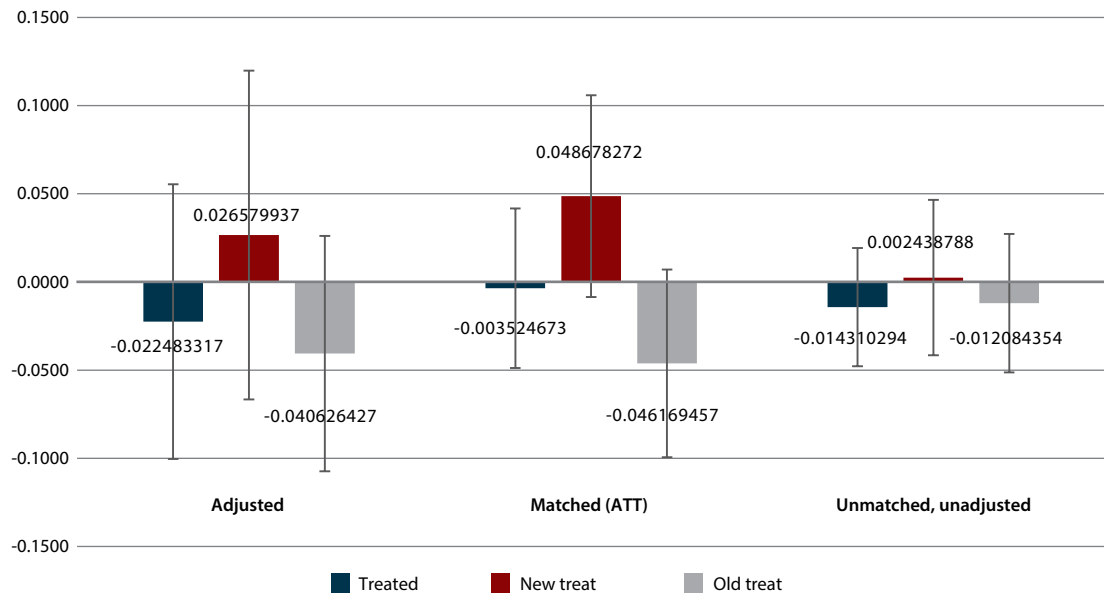
Figure IE.63:
Estimated Effects of Social Welfare Fund on Severe Stunting for
Children Aged 6-59 Months, Yemen, 2013
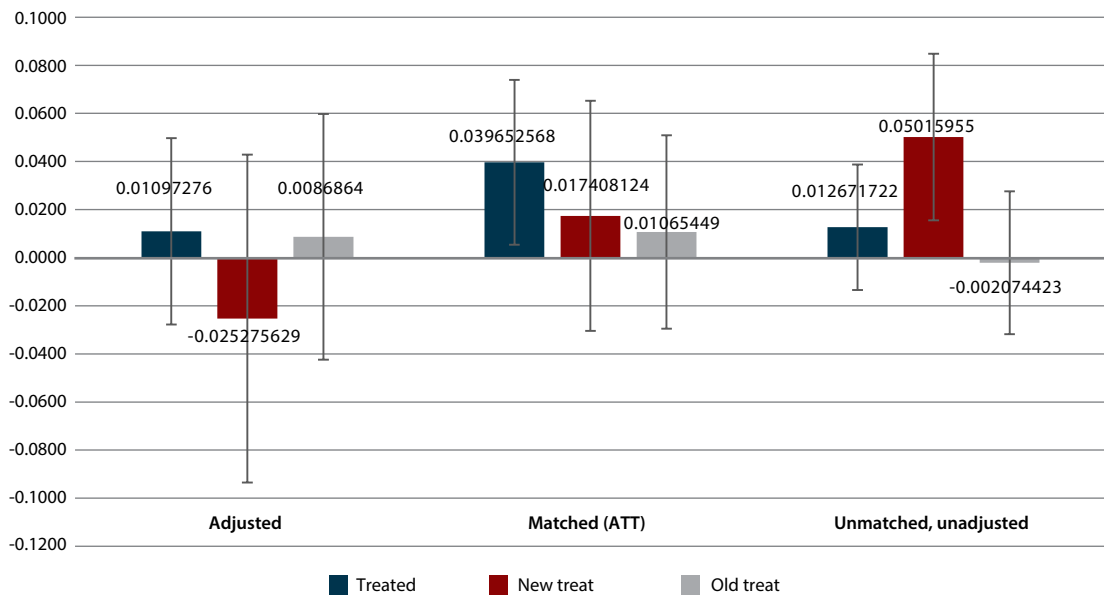
Figure IE.64:
Estimated Effects of Social Welfare Fund on Global Wasting for
Children Aged 6-59 Months, Yemen, 2013

-0.008630608
-0.012583457
-0.027927877
0.006294058
0.000507357
-0.010960671
0.002137549
0.01004941
-0.012074484

Adjusted   Matched (ATT)   Unmatched, unadjusted

■ Treated   ■ New treat   ■ Old treat
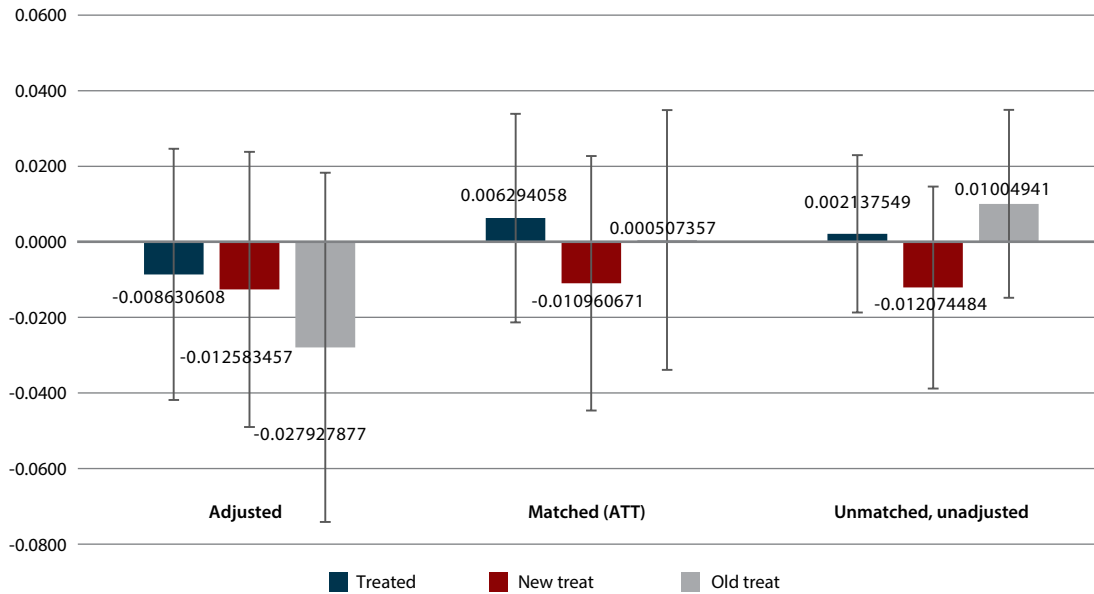
Source: NSPMS, Round 4.

Figure IE.65:
Estimated Effects of Social Welfare Fund on Moderate Wasting for
Children Aged 6-59 Months, Yemen, 2013

-0.013519112
-0.016601639
-0.036310016
-0.001515152
-0.007900102
-0.019379845
-0.005235581
0.00010683
-0.02018888

Adjusted   Matched (ATT)   Unmatched, unadjusted

■ Treated   ■ New treat   ■ Old treat

Source: NSPMS, Round 4.

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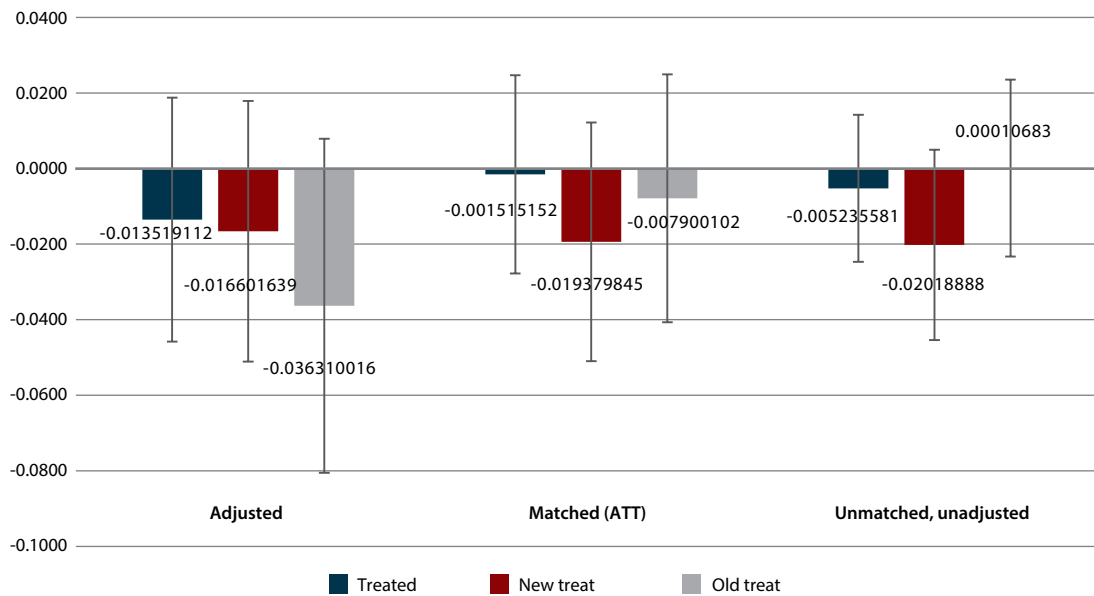
Figure IE.66:
Estimated Effects of Social Welfare Fund on Severe Wasting for
Children Aged 6-59 Months, Yemen, 2013
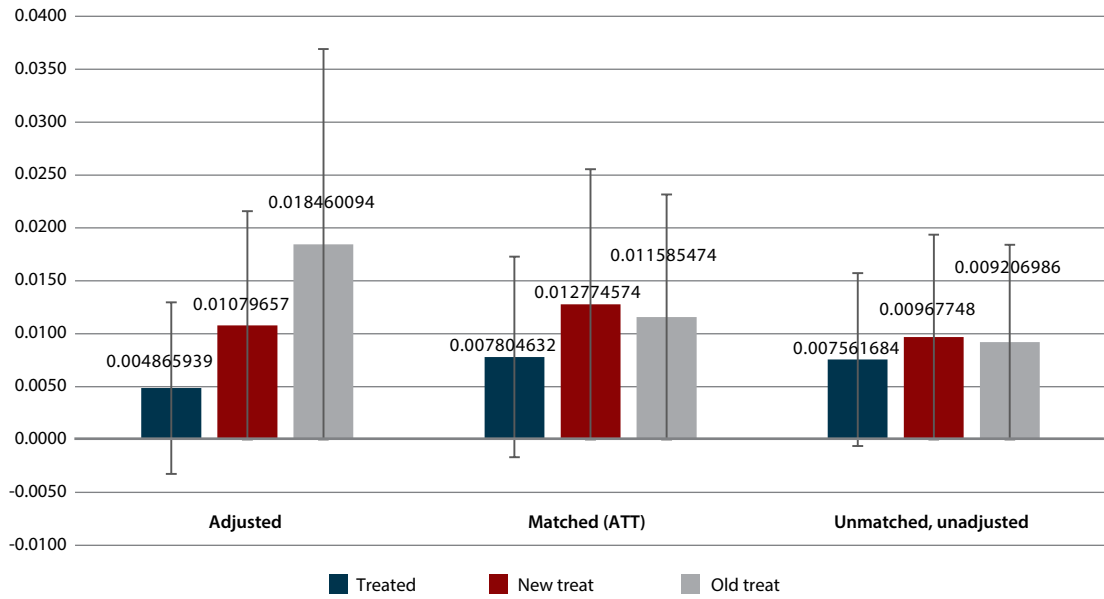
Source: NSPMS, Round 4.

Figure IE.67:
Estimated Effects of Social Welfare Fund on Vaccinations – BCG Vaccine
(Children Aged 12-23 Months), Yemen, 2013
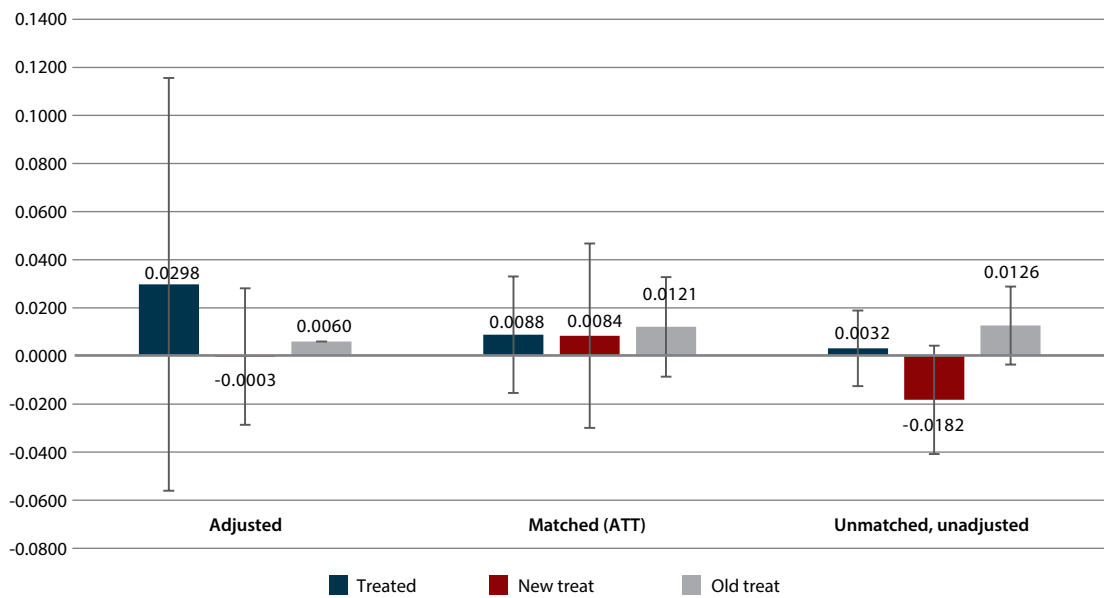
Source: NSPMS, Round 4.

Figure IE.68:
Estimated Effects of Social Welfare Fund on Vaccinations – Measles Vaccine
(Children Aged 12-23 Months), Yemen, 2013
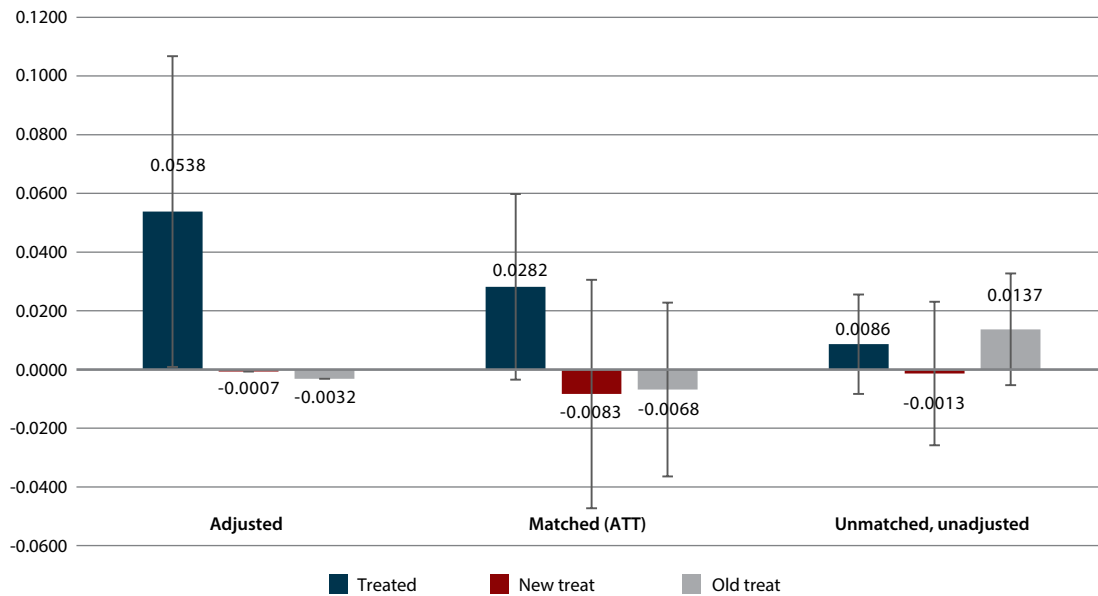
Source: NSPMS, Round 4.

Figure IE.69:
Estimated Effects of Social Welfare Fund on Vaccinations – Third Dose of
Pentavalent Vaccine (Children Aged 12-23 Months), Yemen, 2013

Source: NSPMS, Round 4.

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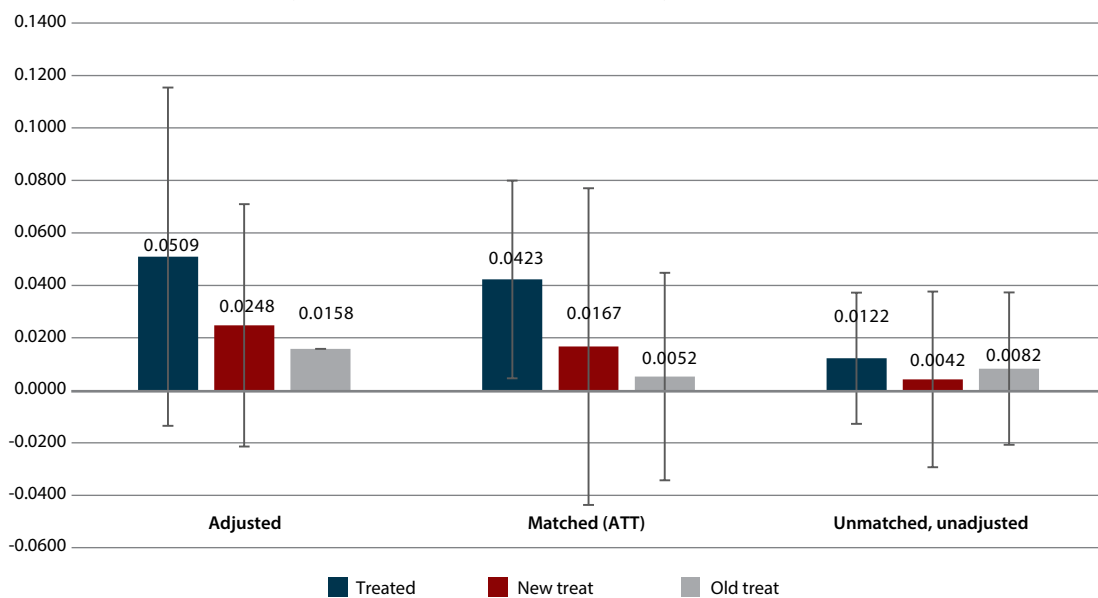
Figure IE.70:

Estimated Effects of Social Welfare Fund on Vaccinations – Third Dose of
Polio Vaccine (Children Aged 12-23 Months), Yemen, 2013
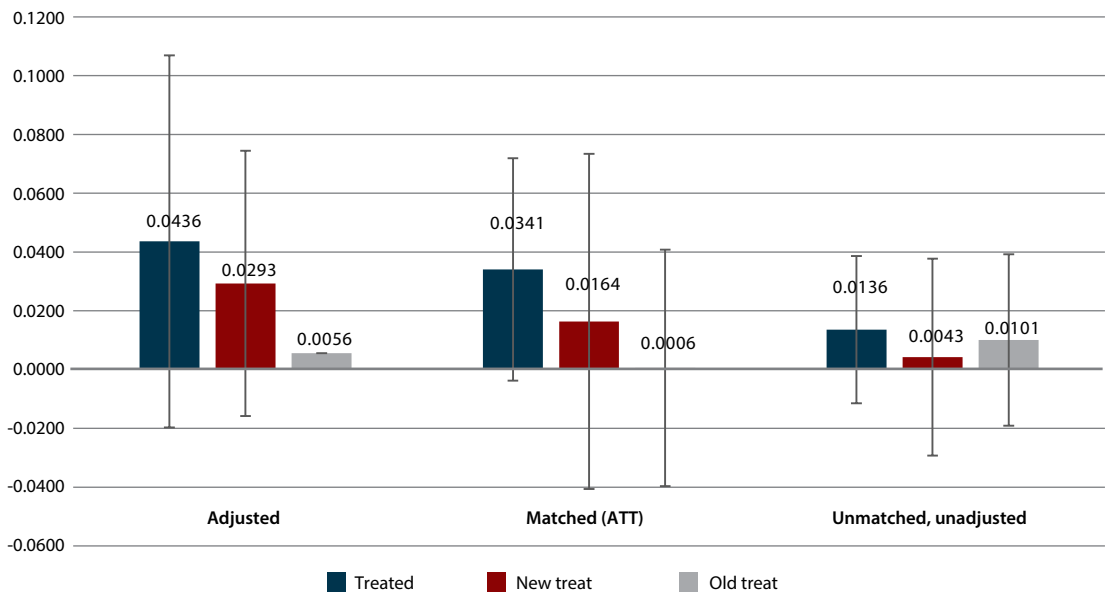
Source: NSPMS, Round 4.

Figure IE.71:

Estimated Effects of Social Welfare Fund on Vitamin A Supplementation
for Children Aged 12-23 Months, Yemen, 2013
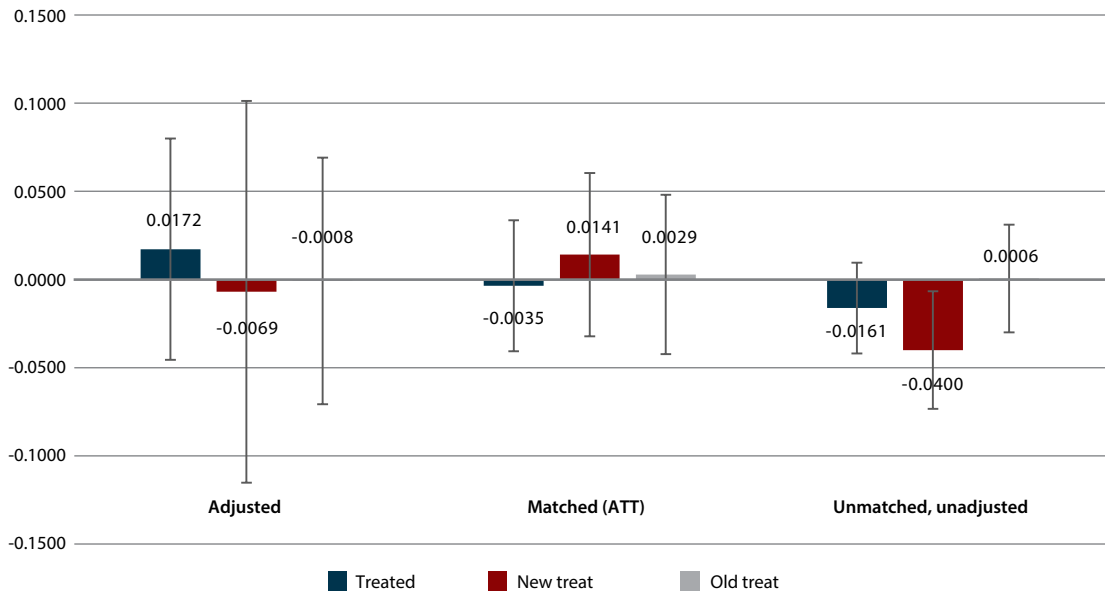
Source: NSPMS, Round 4.

Figure IE.72:
Estimated Effects of Social Welfare Fund on Vaccinations – Fully Immunized
(Children Aged 12-59 Months), Yemen, 2013
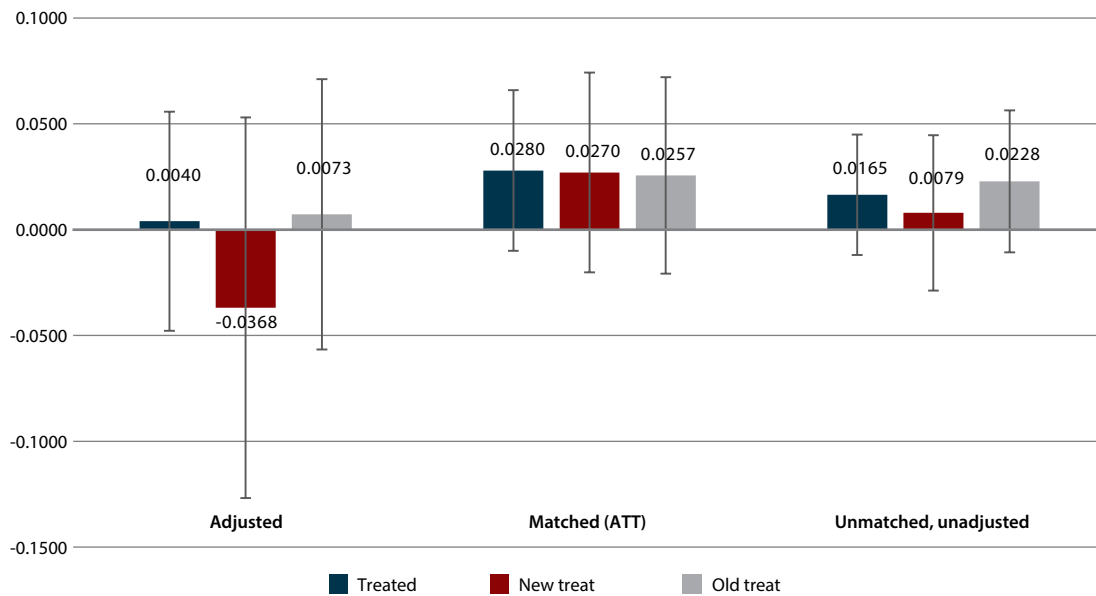
Source: NSPMS, Round 4.

Figure IE.73:
Estimated Effects of Social Welfare Fund on Minimum Dietary Diversity for
Children Aged 6-23 Months, Yemen, 2013
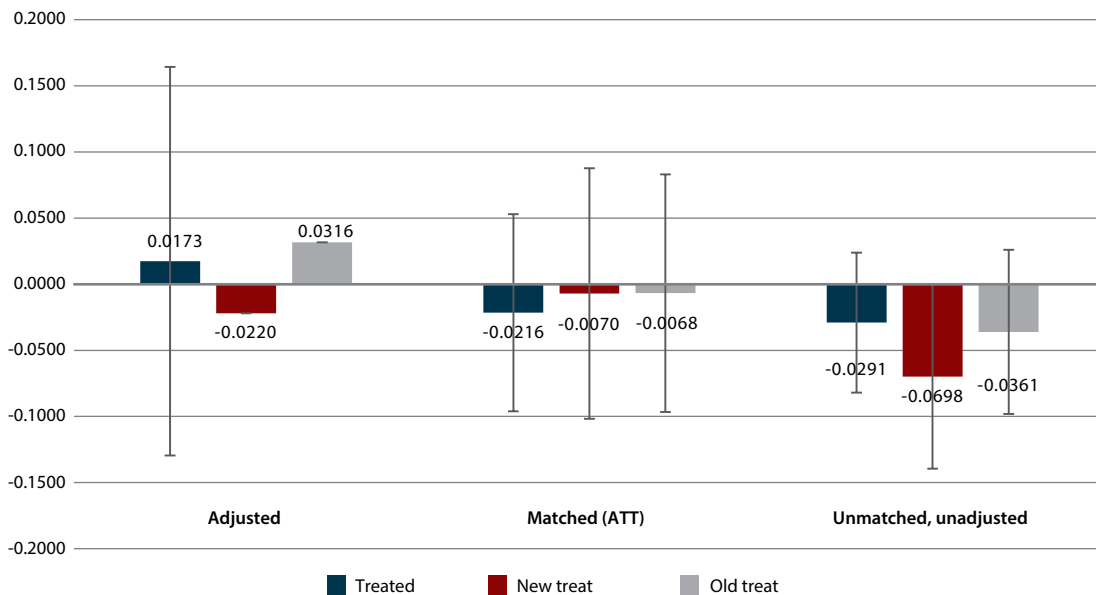
Source: NSPMS, Round 4.

Figure IE.74:
Estimated Effects of Social Welfare Fund on Prevalence of Diarrhoea for Children Aged 0-59 Months, Yemen, 2013
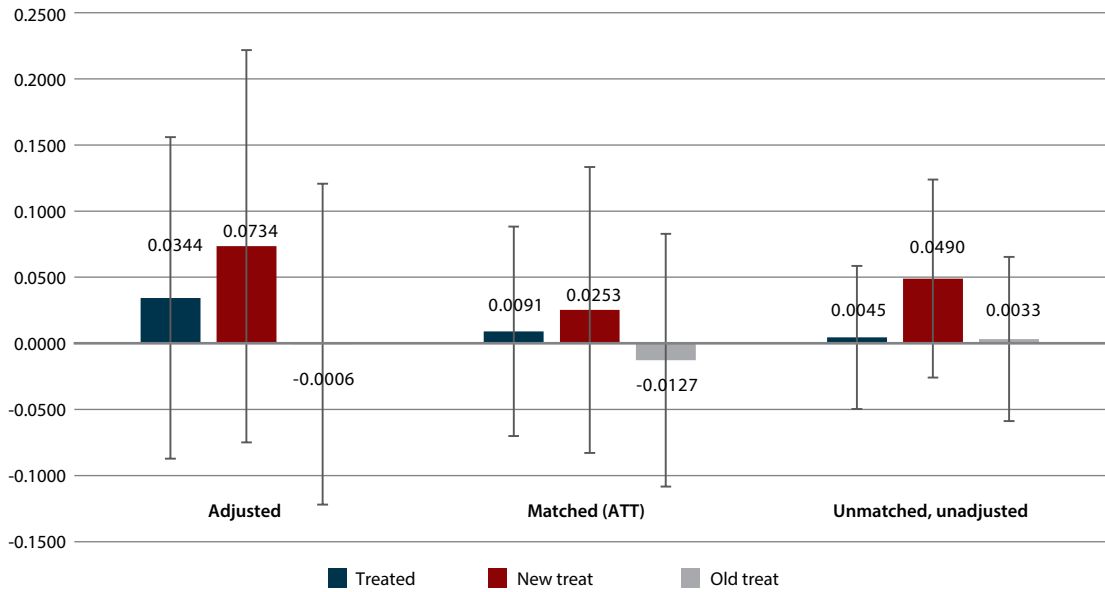
Source: NSPMS, Round 4.

Figure IE.75:
Estimated Effects of Social Welfare Fund on Children's Vulnerability to Violence (Households with at Least One Child under 18 Years Old), Yemen, 2013
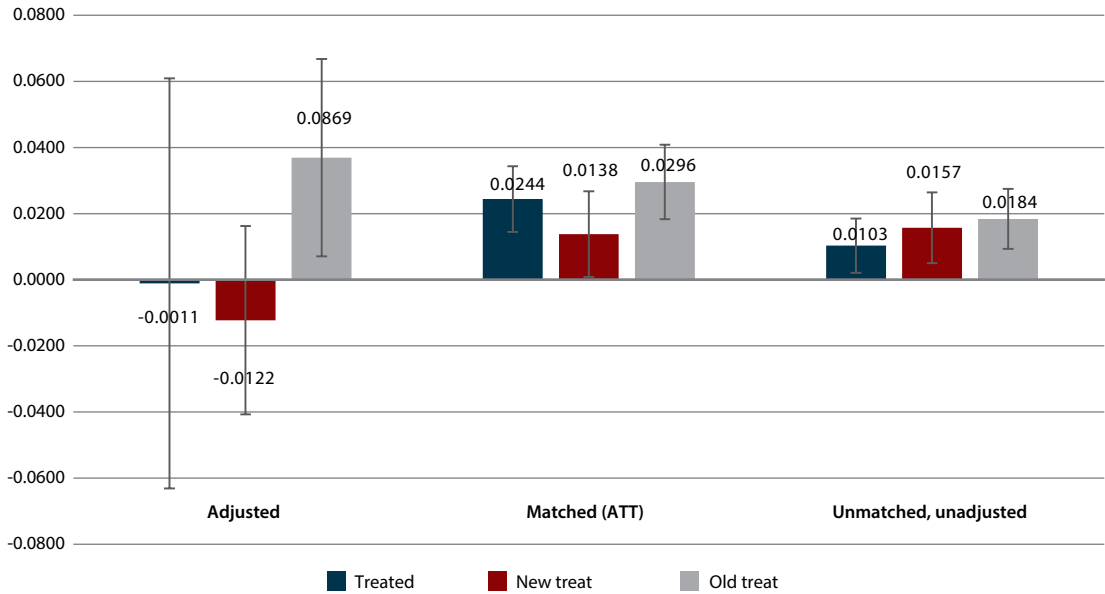
Source: NSPMS, Round 4.

Figure IE.76:

Estimated Effects of Social Welfare Fund on Prevalence of
Severe Malnutrition for Children Aged 6-59 Months, Yemen, 2013
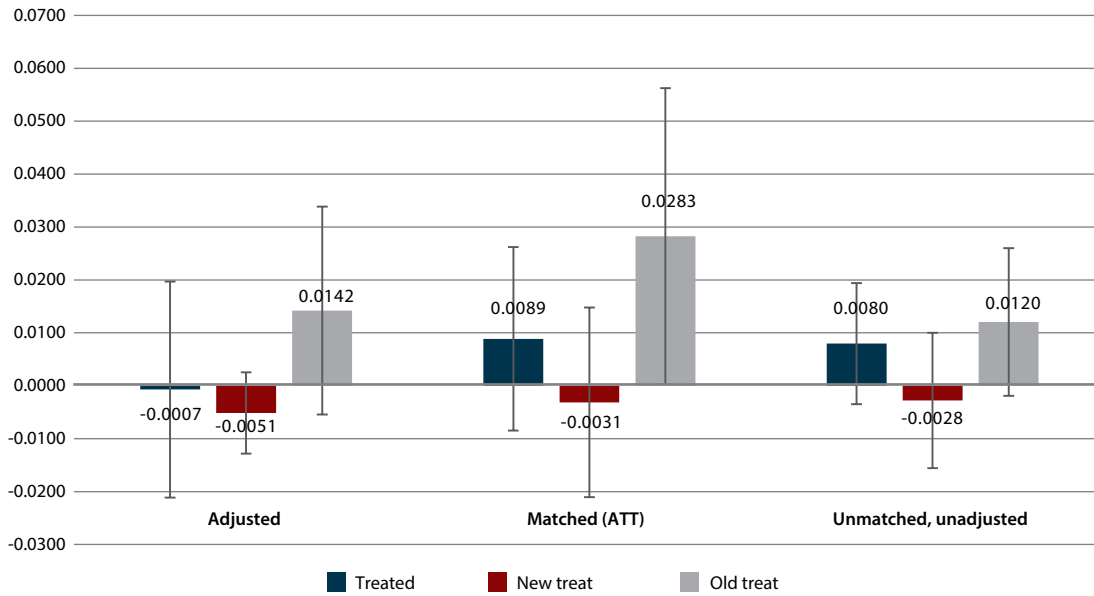
Source: NSPMS, Round 4.

Figure IE.77:

Estimated Effects of Social Welfare Fund on Prevalence of
Global Malnutrition for Children Aged 6-59 Months, Yemen, 2013
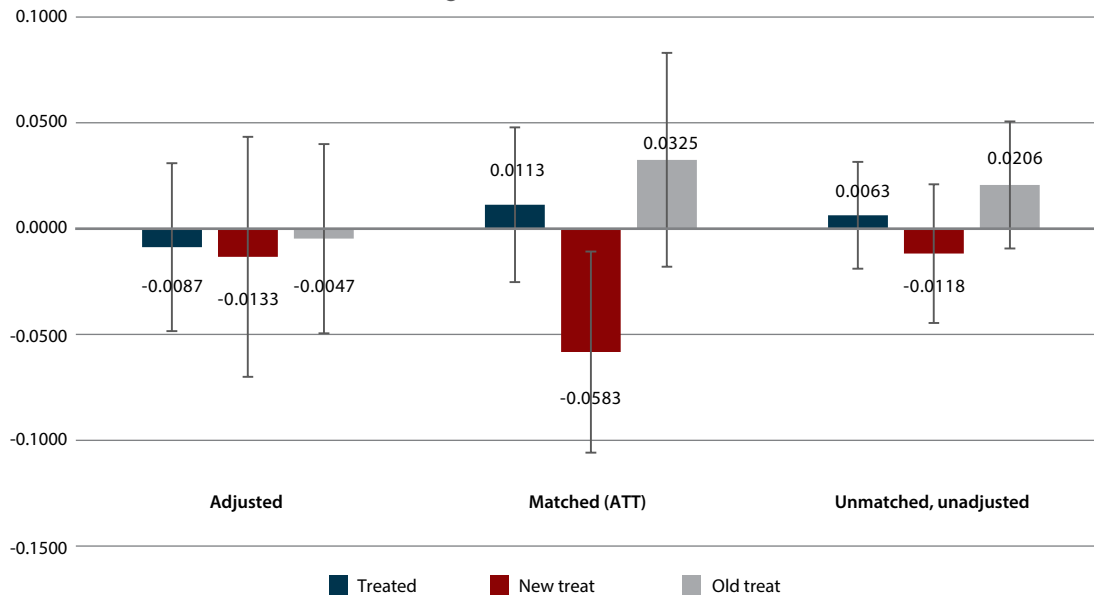
Source: NSPMS, Round 4.

Figure IE.78:
Estimated Effects of Social Welfare Fund on Adult Male Unemployment, Yemen, 2013
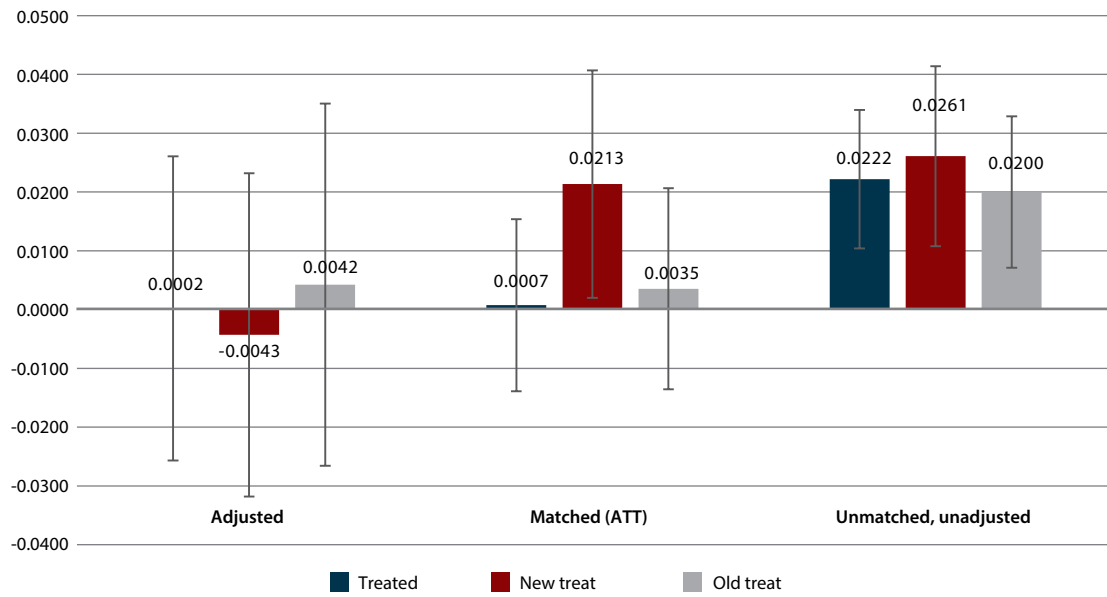
Source: NSPMS, Round 4.

Appendix IE.1

SAMPLE ESTIMATION CODE FOR IMPACT ESTIMATION

```
psmatch2 newtreat_r1, outcome(crowding2_r4) pscore(psnewwgt_all) neighbor(3) caliper(0.001) comm

tempvar w2

quietly gen double `w2' = _weight^2 if _treated == 0

quietly sum `w2'

tempname wtot

scalar `wtot' = r(sum)


svy: mean crowding2_r4 _crowding2_r4 if _treated == 1 & _support == 1 & !missing(adj_weight_w1ew2ew3ew4_r1)

tempname m1t m0t var1 var0 patt sepatt eb eV N1

scalar `N1'  = e(N)

matrix `eb'  = e(b)

scalar `m1t' = `eb'[1,1]

scalar `m0t' = `eb'[1,2]

scalar `patt' = `m1t' - `m0t'

matrix `eV'  = e(V)

scalar `var1' = `eV'[1,1]

scalar `var0' = `eV'[2,2]


scalar `sepatt' = sqrt(`var1' + `var0'*(`wtot'/`N1'))


display "PATT:  `= round(`patt', 0.000000001)'"

display "S.E.: `= round(`= sqrt(`var1' + `var0'*(`wtot'/`N1'))', 0.000000001)'"
```

12 Conclusion

This report summarizes the main findings of the NSPMS as per its two main objectives: (1) to fill in the information gap on the living conditions of the Yemeni population, especially the poor and the vulnerable, after the 2011 crisis; and (2) to assess the targeting of the most import social protection mechanism in Yemen, the SWF, and its impact on several dimensions of well-being.

The different chapters have highlighted the inequity in the access to adequate living conditions, health and education services, with a particular focus on children's protection and well-being. They also covered the productive dimension of Yemeni households, looking at work and income, non-labour income and livelihoods and food security.

The report has emphasized the challenges in improving access to adequate housing conditions, particular in the area of sanitation for the poorest households in the country. It has documented the low levels of years of schooling and the persisting gender inequalities in access to education. It has investigated which factors are associated with out-of-school children and how child labour contributes to absenteeism of the poorest children. It has also shown that malnutrition persists as a huge problem in Yemen with high-levels of stunting, wasting and underweight. It has documented some improvements in vaccination coverage, but it also shown that there are still significant gaps in coverage between children from different socioeconomic backgrounds. Some progress has been made in the area of antenatal care, but the indicators are still very low by any international standards.

The NSPMS has also shown that the Yemen labour market is characterized by low levels of female labour force participation. Female workers are mostly linked to agriculture (livelihoods) and the overwhelming majority work as unpaid family members. As a side effect, their open unemployment rate is quite low, which drives down the national figures. As for the open unemployment rate, the NSPMS has shown that urban male youth unemployment can be as high as 28 per cent, suggesting that this is one of the major challenges facing the Government. On livelihoods, the NSPMS shows that rain-fed agriculture leads to low levels of land cultivation during the winter/dry season, which seems to be associated with higher levels of food insecurity in rural areas. Very few households use their own production as their main source of income to purchase/access food. Urban and rural wages are the major source of income to buy food, followed by the SWF, which is particularly

important in the rural areas. The importance of the SWF as a source of income to buy food increased between October 2012 and September 2013. About 70 per cent of the SWF beneficiaries mentioned it as one of the main sources of income to purchase food in round 4 of the NSPMS (July-September 2013). Thus, it is very worrying that there have been no SWF payments since January 2014, which will prevent poor and vulnerable households from accessing as much food as in 2013.

The NSPMS data were merged with the administrative data to allow a better analysis of the targeting performance of the SWF, differentiating between old (before 2008) and new beneficiaries (after 2008). The analysis has shown that the PMT adopted in 2008 has enabled the inclusion of more extreme poor people into the SWF. It has also shown that the demographic profile of the SWF social and economic categories are not necessarily in line with the demographic profile of the poor, particularly the extreme poor, in Yemen. Young children, for instance, are overrepresented among the extreme poor and underrepresented among the SWF beneficiaries, particularly among old beneficiaries.

The NSPMS data document the expansion of the SWF during the last quarter of 2012 and the first three quarters of 2013. New beneficiaries received the five-quarter lump-sum benefit payment to make up for arrears, and more new beneficiaries were incorporated into the programme. As of July-September 2013, about 35 per cent of the Yemeni population lived in households with at least one SWF beneficiary.

The impact assessment of the SWF does not have the ideal setting of a robust impact evaluation with a proper baseline and random allocation of beneficiaries, thus most results are suggestive of the potential impacts of the programme (not conclusive). We actually observe very few impacts as far as PATT estimates go, which is not surprising given the low level of the transfers and the irregularity of payments (which also determines differences between old and new beneficiaries impacts). Some of these impacts may still be due to pre-treatment differences (unmeasured selection) that we were not able to control for using cross-sectional propensity score matching. Nevertheless, the application of PSM impact evaluation methodology has confirmed the results of the targeting assessment as per the differences between old and new beneficiaries, confirming that new beneficiaries tend to be poorer than old beneficiaries. The impact assessment has also shown some heterogeneity of the potential impacts of the programme for the two types of SWF beneficiaries. For instance, old beneficiaries who received more regular payments throughout the NSPMS data collection period (and also before it) seemed to spend more on food and the payment of electricity bills than non-beneficiaries. This result is in line with the theoretical prediction of the impact of a regular and predictable cash transfer payment. Differently, new beneficiaries who were not receiving the quarterly payment before the last quarter of 2012 and received a lump sum for the payment in arrears do not seem to have spent more on food consumption or payment of electricity bills, but were more likely to spend on agricultural inputs and livestock. This expenditure pattern is compatible with the receipt of a relative large amount and irregular payments.

The SWF also seem to be associated with a lower level of school absenteeism for children aged e 6-11 and 12-14 years (boys and girls) living in a household with a new SWF beneficiary. Some increase in child labour, mostly as unpaid family workers, was also found for new SWF beneficiaries during the holiday period (round 4, July-September2013), which suggests that complementary programmes are necessary to deal with the high levels of child labour, especially among the poorest families.

13 References

Al-Qudsi, S. (2003). 'Family background, school enrollments and wastage: evidence from Arab countries', Economics of Education Review, 22, 567–580.

Al-Qudsi, S.S. (1998). 'Labour participation of Arab women: estimates of the fertility to labour supply link', Applied Economics, 30(7): 931–941.

Amaral, E. (2012). 'The Decomposition of Economic Outcomes as a Result of Changes in Brazil's Male Age–Education Structure', Population Research and Policy Review, 31(6): 883–905.

Bagash, Thabet, P. Pereznieto and K. Dubai (2012) "Transforming Cash Transfers: Beneficiary and community perspectives on the Social Welfare Fund in Yemen. ODI. Mimeo.

Becker, G. (1965). 'A Theory and the Allocation of Household Time and Resources', Economic Journal, 70: 493–517.

Bjerke, W. (2011). 'The Impact of Infectious Disease on Chronic Disease: A Review of Contemporary Findings', Journal of Social, Behavioral & Health Sciences, 5(1): 45.

Blundell, R. and T. MaCurdy (1999). 'Labor supply: A review of alternative approaches', Handbook of Labor Economics, Vol. 3: 1559–1695.

Breisinger, C. Ecker, O., Funes, J.; Yu, B. (2010) Food as the Basis for Development and Security: a strategy for Yemen. IFPRI Discussion Paper 01036 December 2010

Breisinger, C., Ecker, O., Al-Riffai, P., Robertson, R, Thiele, R., Wiebelt, M. (2011) " Climate Change, Agricultural Production and Food Security:

Evidence from Yemen" Kiel Working Paper No. 1747. November 2011

Breisinger, C. et al. (2011). 'Impacts of the Triple Global Crisis on Growth and Poverty: The Case of Yemen', Development Policy Review, 29(2): 155–184.

Brownson, R. C. and F.S. Bright (2004).'Chronic disease control in public health practice: looking back and moving forward', Public Health Reports, 119, 230–238.

Card, D. (1999).'The causal effect of education on earnings' in O. Ashenfelter and D. Card (eds) Handbook of Labor Economics, Vol. 3. Amsterdam, Elsevier: Chapter 30.

Central Statistical Organisation, Yemen, *Statistical Year Book*, 2012.

Clark, R. and R. Anker (1990). 'Labour Force Participation Rates of Older Persons: an international comparison', International Labour Review, 129(2): 255–271.

Clark, R. and R. Anker (1993). 'Cross-national analysis of labor force participation of older men and women', Economic Development and Cultural Change, 41(3): 489–512.

Clark, R., A. York and R. Anker (1999). 'Economic Development and Labor Force Participation of Older Persons', Population Research and Policy Review, 18: 411–432.

Cochran, W.G. (1977). Sampling Techniques. New York, NY, Wiley.

Colton, N.A. (2010). 'Yemen: A Collapsed Economy', The Middle East Journal, 64(3): 410–426.

Costa, D.L. (2000). 'From Mill Town to Board Room: The Rise of Women's Paid Labor', Journal of Economic Perspectives, 14(4): 101–122.

Central Statistical Organisation (2013), 2012 Statistical Yearbook

CSO-HBS. 2005/2006. Household Budget Survey. Central Statistical Organization, Sana'a: Republic of Yemen.

Cutler, D. and A. Muney (2006).'Education and Health: Evaluating Theories and Evidence', NBER Working Paper, No. 12352.Cambridge, MA, National Bureau of Economic Research.

de Onis, M., C. Garza, C.G. Victora, M.K. Bhan and K.R. Norum (eds) (2004). 'The WHO Multicentre Growth Reference Study (MGRS): Rationale, planning, and implementation', Food and Nutrition Bulletin, 25(Supplement 1): S3–S89.

Devereux, Stephen and Rachel Sabates-Wheeler (2004). Transformative social protection . IDS Working Paper Series, No. 232, Brighton: Institute of Development Studies.

Dugoff, E. H., Schuler, M. and E.A. Stuart (2014) Generalizing observational studies: applying propensity score methods to complex surveys. Health Service Research. 2014 Feb;49(1):284-303. doi: 10.1111/1475-6773.12090.

Edmonds, E. (2007). 'Child Labor'. NBER Working Paper No. 12926. Cambridge, MA, National Bureau of Economic Research.

Edmonds, E. (2008). Defining child labour: A review of the definitions of child labour in policy research. Geneva, International Labour Office, ILO International Programme on the Elimination of Child Labour.

EU. Support to the Social Welfare Fund IV- Action Fiche. Brussels: European Union, 2013.

Food Security Information System & Central Statistical Organisation (FSIS-CSO) (2011).Food Security Baseline Survey 2010. Governorate of Hodeida.

FAO (2006) Yemen - Country Pasture/Forage Resource Profiles

Goldin, C. (1994). 'The U-shaped female labor force function in economic development and economic history', NBER Working Paper, No. w4707.Cambridge, MA, National Bureau of Economic Research.

Government of Yemen, World Bank and United Nation Development Programme (2007). Poverty Assessment, Vol. I (Main Report).Mimeo. Sana'a, Government of Yemen.

Hausmann, Ricardo, Laura D. Tyson, and Saadia Zahidi." The Global Gender Gap Report. "World Economic Forum, Geneva, Switzerland. 2009. <http://www.weforum.org/pdf/gendergap/report2009.pdf> (accessed July 2010).

Heckman, J.J. (1993). 'What has been learned about labor supply in the past twenty years?', The American Economic Review, 83(2): 116–121.

Horvitz, D.G. and D.J. Thompson (1952). 'A Generalization of Sampling Without Replacement from a Finite Universe', Journal of the American Statistical Association, 47(260): 663–685.

IFPRI (2010) Impacts of the Triple Global Crisis on Growth and Poverty in Yemen. International Food Policy Research Institute- February 2010.

IFPRI (2012) Managing Transition in Yemen-An Assessment of the Costs of Conflict and Development Scenarios for the Future. International Food Policy Research Institute, 2012.

ILO (2011). Social Protection Floor Advisory Group, 'Social Protection Floor for a Fair and Inclusive Globalization. the Advisory Group Chaired by Michelle Bachelet convened by the ILO with the collaboration of the World Health, 2011.

ILO (2009). Social Protection Floor Initiative: Manual and strategic framework for joint UN country operations. Geneva: ILO and WHO.

IPEC/CSO (2013).Working children in the Republic of Yemen: The results of the 2010 national child labour survey. Geneva: International Labour Office, ILO International Programme on the Elimination of Child Labour and the Central Statistical Organisation (CSO) of the Republic of Yemen.

Isaki, C.T. and W.A. Fuller (1982). 'Survey Design under the Regression Superpopulation Model', Journal of the American Statistical Association, 77(377): 89–96.

Jones N., C. Harper, S. Pantuliano, and S. Pavanello; with K. Kyunghoon, S. Mitra, and K. Chalcraft. 2009. Impact of the economic crisis and food and fuel price volatility on children and women in the MENA region. Working paper 310. London and New York: Overseas Development Institute and UNICEF.

Khattab, D.O. (2011). 'The effect of education on the participation of women in Arab labor force', Working Paper (unpublished manuscript).

Killingsworth, M.R. and J.J. Heckman (1986). 'Female labor supply: A survey', Handbook of Labor Economics, Vol. 1(1): 103–204.

Leite, P., Ersado, L., Hong, M. and El-Gamal, Y. (2011) 'SWF cash transfer program'. Mimeo. Power point presentation. December 2011.

MacKian, S. (2003).A Review of Health Seeking Behavior: Problems and Prospects. Manchester, Health Systems Development, University of Manchester, UK.

Mammen, K. and C. Paxson (2000).'Women´s Work and Economic Development', Journal of Economic Perspectives, 14: 141–165.

Ministry of Health and Population and UNICEF (2006).Multiple Indicator Cluster Survey: Monitoring the situation of children and women. Sana'a, Ministry of Health and Population and UNICEF.

Ministry of Health (2003). Family Health Survey. July 2003, Yemen.

MOPIC, World Bank, United Nations, European Union, Islamic Development Bank. Joint Social and Economic Assessment. World Bank, 2012.

MOPIC. Transitional Program for Stabilization and Development (TPSD) 2012-2014. Sana'a: Ministry of Planning and International Cooperation of Yemen, 2012.

MOSAL (2008).The Comprehensive Social Survey 2008 – Final Report. Mimeo. Sana'a, Ministry of Social Affairs.

NDC. 2013. Final National Dialogue Conference Outcome Document. Sana'a: The National Dialogue Conference Secretariat.

Ohlsson, E. (1998). 'Sequential Poisson Sampling', Journal of Official Statistics, 14(2): 149–162.

PAPFAM (2003) Yemen Family Health Survey. MOPHP of Yemen. Available at: <http://www.mophp-ye.org/arabic/docs/Familyhealth_english.pdf>.

Pencavel, J. (1986). 'Labor supply of men: a survey', Handbook of Labor Economics, Vol. 1(1): 3–102.

Potter, F. (1988). 'Survey of Procedures to Control Extreme Sampling Weights', Procedures of the Survey Research Methods Section. Alexandria, VA, American Statistical Association.

Republic of Yemen (2002a). Poverty Reduction Strategy Paper 2003–2005. Sana'a, Government of Yemen. World Bank and IMF.

Republic of Yemen (2002b). Yemen's Strategic Vision 2025. Sana'a, Government of Yemen.

Republic of Yemen (2004). Education in Republic of Yemen: The National Report. Sana'a, Government of Yemen.

Ricci, F. and M. Zachariadis (2012). 'Education Externalities on Longevity', Economica.doi: 10.1111/ecca.12013.

Riniker, Kristy S. 2012. Women's Health in Yemen: Factors Influencing Maternal and Infant Health, Fertility Rates, the Public Health Care System, Education, and Globalization [Internet]. Journal of Global Health Perspectives. 2012 Oct 30. Available from: <http://jglobalhealth.org/article/womens-health-in-yemen-factors-influencing-maternal-and-infant-health-fertility-rates-the-public-health-care-system-education-and-globalization-2/>.

Ross, M.L. (2008). 'Oil, Islam, and women', American Political Science Review, 102(1): 107.

Roudi, F. (2011). Youth Population and Employment in the Middle East and North Africa: Opportunity or Challenge? Washington, DC, Population Reference Bureau.

Rubin, D.B. (1976). 'Inference and Missing Data', Biometrika, 63: 581–590

Sack, D.A. (1991).'Use of oral rehydration therapy in acute watery diarrhoea. A practical guide. Johns Hopkins University School of Hygiene and Public Health, Baltimore, Maryland', Drugs, April, 41(4): 566–73.

Särndal, Swensson and Wretmann (1992). Model Assisted Survey Sampling. New York, NY, Springer-Verlag.

Schultz, T.P. (2001). 'School subsidies for the poor: evaluating the Mexican Progresa poverty program', Journal of Development Economics, 74(1): 199–250.

Seidel, R. (2005). Behavior Change Perspectives and Communication Guidelines on Six Child Survival Interventions. Washington, DC, Academy for Educational Development, Global Health, Population & Nutrition Programs and Baltimore, MD, Johns Hopkins University, Center for Communications Programs.

SFD (2012).Annual Report. Sana'a: Social Fund for Development.

SWF (2009) Operations Manual. Version 1. Mimeo.

Tipping, G. and Segall, M. (1995).'Health Care Seeking Behaviour in Developing Countries: an annotated bibliography and literature review', Development Bibliography, No. 12.Brighton, Institute of Development Studies, Sussex University.

UNDP (2007). The Millennium Development Goals in the Arab Region 2007: A Youth Lens. New York, NY, UNDP.

UNDP Yemen country profile. 2010. <http://www.undp.org.ye> (accessed July 2010).

UNESCO Institute for Statistics (2009).Education Indicators: Technical Guidelines. Paris, United Nations Educational, Scientific and Cultural Organization.

UNESCO International Bureau of Education (2011).World Data on education, VII Ed. 2010/11. Paris, United Nations Educational, Scientific and Cultural Organization.

UNICEF (2005a).United Nations Children's Fund, Guide to Monitoring and Evaluation of the National Response for Children Orphaned and Made Vulnerable by HIV/AIDS. New York, NY, United Nations Children's Fund.

UNICEF (2005b).Yemen FGM/C country profile. New York, NY, UNICEF.

UNICEF (2007).'A World Fit for Children Statistical Review', Progress for Children, No. 6.New York, NY, United Nations Children's Fund.

UNICEF (2007).'Accelerating Girl's Education in Yemen: Rethinking Policies in Teachers Recruitment and School Distribution', Division of Policy and Planning Working Paper. New York, NY, UNICEF.

UNICEF(2012). " Social Protection Strategic Framework." Strategy- Integrated Social Protection Systems: "Enhancing Equity for Children", 2012.

UNICEF (2012). Yemen Maternal, Newborn & Child Survival. Childinfo Monitoring the situation of children and women. Available at:<http://www.childinfo.org/files/maternal/DI%20Profile%20-%20Yemen.pdf>.

UNICEF (2012)."Social Protection Monitoring Pilot in Sana'a, Amran, and Hodeida." 2012.

UNICEF (2013).Improving Child Nutrition: The achievable imperative for global progress, New York, NY, United Nations Children's Fund.

UNICEF/WHO (2009).Diarrhoea: Why children are still dying and what can be done. New York, NY, United Nations Children's Fund and Geneva, World Health Organization.

United Nations (1959).Declaration of the Rights of the Child. New York, NY, United Nations.

United Nations (2009).The Millennium Development Goals Report 2009. New York, NY, United Nations.

United Nations Human Settlements Programme (UN-HABITAT) (2006). State of the World's Cities Report 2006/2007: 30 Years of Shaping the Habitat Agenda. Nairobi, UN-HABITAT.

USAID (1992).Policy Determination. Definition of Food Security. Washington, DC, US Agency for International Development.

USAID-FANTA (2007). Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access, Version 3. Washington, DC, US Agency for International Development, Food and Nutrition Technical Assistance project.

Vieira, M.D.T. (2009). Analysis of Longitudinal Survey Data. Saarbrücken, VDM Verlag.

Vieira, M.D.T. and C. Ferraz (2013).The Technical Report on the Sampling Design for the Yemen National Social Protection and Monitoring Survey. Updated version. Brasília, International Policy Centre for Inclusive Growth.

WFP (2008). Vulnerability Analysis and Mapping – Food consumption analysis: calculation and use of the food consumption score in food security analysis. Rome, World Food Programme.

WFP (2012).The State of Food Security and Nutrition in Yemen. Comprehensive Food Security Survey. Rome, World Food Programme.

WHO (1995).'Physical status: the use and interpretation of anthropometry: Report of a WHO Expert Committee', Technical Report Series, No. 854. Geneva, World Health Organization.

WHO (2003).The Management of Nutrition in Major Emergencies. Geneva, World Health Organization.

WHO (2006).WHO child growth standards: length/height-for-age, weight-for-age, weight-for-length, weight-for height and body mass index-for-age: methods and development. Geneva, World Health Organization.

WHO (2008).Indicators for assessing infant and young child feeding practices. Part 1: Definitions. Geneva, WHO/UNICEF/IFPRI/UCDavis/FANTA/AED/USAID.

WHO (2010). 'WHO Anthro for personal computers, Version 3.2.2, 2011: Software for assessing growth and development of the world's children'. Geneva, World Health Organization, <http://www.who.int/childgrowth/software/en/> (accessed 3 June 2013).

WHO/UNICEF (2003).Global strategy for infant and young child feeding. Geneva, World Health Organization/United Nations Children's Fund.

World Bank, United Nations, European Union, Islamic Development Bank, MOPIC (2012).World Development Indicators 2012. Washington, DC, World Bank.

World Bank, United Nations, European Union and Islamic Development Bank (2012).Joint Social and Economic Assessment for the Republic of Yemen.

World Food Programme (2008). Vulnerability Analysis and Mapping – Food consumption analysis: calculation and use of the food consumption score in food security analysis. Rome, World Food Programme.

World Food Programme (2012a).The State of Food Security and Nutrition in Yemen. Comprehensive Food Security Survey. Rome, World Food Programme.

World Food Programme (2012b).Measuring results, sharing lessons. Annual Evaluation Report. Rome, World Food Programme, Office of Evaluation.

World Health Organization (2003). Antenatal care in developing countries: promises, achievements and missed opportunities: an analysis of trends, levels and differentials, 1990-2001. Available at: <http://www.childinfo.org/files/antenatal_care.pdf>.

World Health Organization (2006).Strategic plan for malaria control and elimination in the WHO Eastern Mediterranean Region, 2006-2010.

World Health Organization (2006).WHO Guidelines on hand hygiene in health care.

World Health Organization and UNICEF (2010). Progress on Sanitation and Drinking-Water: 2010 Update.

WHO, UNICEF, UNFPA and the World Bank (2012), Trends in Maternal Mortality: 1990 to 2010, WHO, Geneva, 2012.

14 Annex

Technical report on the longitudinal sampling weights for the Yemen National Social Protection and Monitoring Survey

1 Introduction

This report describes the statistical procedures adopted for calculating the longitudinal sampling weights of the NSPMS. The NSPMS has the Yemeni resident population (excluding non-household communities such as refugees, nomads and internally displaced persons, hotels, dormitories, prisons and hospitals) as its target population. The NSPMS is a longitudinal household survey that aims to provide quarterly estimates of parameters, and to accommodate the impact assessment of the SWF programme. Longitudinal NSPMS data currently available provide the necessary information for the implementation of the techniques described here.

This report is organized in three further sections. Section 2 revises the main aspects of the NSPMS sample design that guided the longitudinal sampling weights composition. Section 3 presents the building steps of the longitudinal sampling weights, and section 4 includes some concluding remarks.

2 The NSPMS Sample Design

The NSPMS follows a two-phase sampling design. In phase one, a stratified cluster sampling design with unequal selection probabilities is taken, where EAs are considered as the primary sampling units (clusters) selected within each governorate (stratum). In phase two, a stratified simple random sample of households is selected from each EA selected at the first phase. The second-phase stratification is based on screening

information raised at the first phase sample, and comprises three groups: one treatment and two control groups. Twelve households were sampled from each EA, as presented in table 1. Thirty EAs were selected from each of the 21 governorates, providing a total sample size of 7,560 households.

Table 1:
Second-phase Strata Groups and Sample Size Allocation

Stratum	Description	Sample allocation
i)	Treatment	5
ii)	Control 1	5
iii)	Control 2	2

Further detailed descriptions on the NSPMS sample design can be found in Vieira and Ferraz (2012).

3 Longitudinal Sampling Weights

In the longitudinal surveys context, two types of sampling weights have to be calculated: (1) cross-sectional weights at round t for use with single wave analyses for each round t; and (2) longitudinal weights at round t for use with longitudinal analyses considering rounds up to round t.

Cross-sectional weights allows for new entrants and adjusts for non-response at each wave and, when population census data are available, population weighting adjustments that relate to population distributions at time t may be applied. Methodology adopted for calculating cross-sectional weights at round 1 of the NSPMS was described in Ferraz and Vieira (2013) and was also adopted for calculating NSPMS cross-sectional weights for rounds 2, 3 and 4.

Alternative approaches may be adopted for developing longitudinal weights. In fact, we could calculate as many as 2t -1 sets of longitudinal weights to allow for analysis of all possible combinations of non-response patterns in a panel of t rounds. However, as for most longitudinal surveys (the British Household Panel Survey, for example), we have adopted here the simplified approach which deals only with attrition non-response and which results in the necessity of calculating t sets of longitudinal weights. Under this approach, only cases who have responded at each round up to and including the latest round of the survey will have positive longitudinal weights at that round.

If we consider, for example, a survey with two waves, then the longitudinal weight at wave 2 could: (1) account for unequal selection probabilities at wave 1; (2) adjust for unit non-response which may occur at waves 1 and 2; and (3) adjust (via post-stratification, raking or calibration) so that weighted sample estimates for certain auxiliary variable match their respective known population parameters. Longitudinal weights, therefore, allow for different selection probabilities and non-response at wave 1 and attrition, and are adjusted, at each wave, to take account of previous wave respondents' absence through refusal at the current wave or through some other way of sample attrition. Longitudinal weights are calculated in order to guarantee the property that weighted sample moments are consistent for population moments with respect to the joint sampling/non-response probability distribution.

Longitudinal sampling weights described in this report reflect the NSPMS sampling design and also the application of adjustment terms for dealing with unit non-response cases found at the first round of data collection process and attrition. The lack of currently available up-to-date population census data prevented us from applying calibration adjustments to the longitudinal weights.

Retaining notation used by Vieira and Ferraz (2012), and Ferraz and Vieira (2013), let the following quantities be defined:

π_{hi} is the first phase inclusion probability of EA i within governorate h;

$\pi_{gj|hi}$ is the second phase conditional inclusion probability of household j within group g given the selected EA t within governorate h;

$\pi_{higj} = \pi_{hi} \pi_{gj|hi}$ is the inclusion probability of household j within group g, at EA i of governorate h.

Moreover, let:

$d_{hig\,j} = 1/\pi_{hig\,j}$ be the basic cross-sectional sampling-design-weight for household j within group g, at EA i of governorate h.

In order to cope with the attrition problem, a longitudinal weighting adjustment procedure based on the simplified approach described above was adopted to correct the basic sampling-design-weight.

Let $\phi_{hig,t} = \dfrac{m_{h(r),t}}{m_h} \dfrac{n_{g/h\,i\,(r),t}}{n_{g/hi}}$ be the estimated propensity score for responses within group g at EA

i whithin governorate h to be considered for the longitudinal weighting adjustment at round t. In this

expression, m_h is defined as the number of EAs selected in governorate h, $m_{h(r),t}$ is the number of EAs that

were surveyed at all rounds up to round t, $n_{g/hi}$ is the sample size in the classification stratum g within EA i of

governorate h, and $n_{g/hi(r),t}$ is the number of households that responded the questionnaire at all rounds up to

round t in the classification stratum g within EA i of governorate h.

Then: $\pi_{hig\,j} = \pi_{hi}\,\pi_{g\,j\,|\,hi}$.

$\tilde{w}_{hi\,g\,jt} = \dfrac{d_{hi\,g\,j}}{\phi_{hi\,g\,t}}$ is the sample longitudinal weight at round t adjusted for unit nonresponse and attrition at

governorate h, within EA i and group g.

Details on the NSPMS cross-sectional sampling weights can be found in Ferraz and Vieira (2013).

4 Concluding remarks

This report presented information on the NSPMS longitudinal sampling weights building process. This information is useful for the release of official estimates based on longitudinal survey data, including estimates for changes over time and policy evaluation based upon impact econometric analysis, which should allow for the consideration of the longitudinal sampling weights.

Further information on methodology for the analysis of longitudinal complex survey data, considering weights and all the other sampling design features, may be found in Vieira and Skinner (2008) and Vieira (2009). Moreover, both a theoretical and an empirical study on the impacts of complex sampling designs in longitudinal analysis of socioeconomic and demographic data are presented in Skinner and Vieira (2007).

5 References

Ferraz, C. and Vieira, M. D. T. (2013) Technical Report on the Cross-Sectional Sampling Weights for the Yemen National Social Protection and Monitoring Survey. Technical Report. Brasília, International Policy Centre for Inclusive Growth.

Vieira, M. D. T. and Ferraz, C. (2012) The Technical Report on the Sampling Design for the Yemen National Social Protection and Monitoring Survey. Technical Report. Brasília, International Policy Centre for Inclusive Growth.

Skinner, C. J. and Vieira, M. D. T. (2007) Variance Estimation in the Analysis of Clustered Longitudinal Survey Data. Survey Methodology, v. 33, p. 3-12.

Vieira, M. D. T. (2009) Analysis of Longitudinal Survey Data. 1. ed. Saarbrücken: VDM Verlag Dr. Müller, v. 1, 246 p.

Vieira, M. D. T. and Skinner, C. J. (2008) Estimating Models for Panel Survey Data under Complex Sampling. Journal of Official Statistics, v. 24, p. 343-364.

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2. Central Statistical Organisation (CSO) Household Budget Survey (HBS) 2005-2006.

3. IFPRI 2010.

4. World Bank et al 2012.

5. CSO 2012.

6. UNDP 2010.

7. Hausmann, Tyson and Zahidi 2009.

8. World Bank et al 2012.

9. Details on the NDC and the Constitution Drafting Committee are available at: <http://www.ndc.ye>.

10. NDC 2013.

11. NDC 2013.

12. NDC 2013.

13. World Bank et al, 2012.

14. UNICEF, Social Protection Monitoring Pilot in Sana'a, Amran and Al-Hodeidah, 2012.

15. UNICEF, Social Protection Monitoring Pilot in Sana'a, Amran, and Hodeida 2012.

16. MOPIC 2012.

17. IFPRI 2012.

18. SFD 2012.

19. SFD 2012.

20. SFD 2012.

21. UNICEF, Social Protection Strategic Framework 2012.

22. For more details on the NSPMS sampling design, see a technical note here: <http://www.ipc-undp.org/pub/eng/tp08/technicalnote01.pdf>.

23. UNICEF 2012.

24. ILO 2009.

25. Devereux 2004.

26. UNICEF, Social Protection Strategic Framework 2012.

27. UNICEF, Social Protection Strategic Framework 2012.

28. ILO 2009.

29. Devereux 2004.

30. MOSAL, 2008.

31. Government of Yemen, 2007.

32. Government of Yemen, 2007.

33. MOSAL, 2008.

34. These variables are similar to the ones used in the calculation of the wealth index used throughout this report, although the latter uses principal component analysis (pca) and is not a regression-based proxy means test.

35. MOSAL, 2008.

36. World Bank et al., 2012.

37. Bagash et al. (2012) in their qualitative assessment of SWF found that beneficiaries are frequently (and illegally) charged handling fees by cashiers.

38. Based on Yemen's consumer price index.

39. Basgash et al., 2012.

40. Note that at the time of the NSPMS baseline, there were still more of 119,000 individuals who qualified as SWF beneficiaries but had not started receiving the benefit. Nevertheless their distribution among the categories was almost identical to that reported for beneficiaries in table SWF.1.

41. According to field reports, the reason that many of those who failed to present their cards was because the card was kept by their proxies.

42. Bagash et al. 2012.

43. This figure is higher than the 38.5 per cent poverty rate reported in the 2007 poverty assessment and based on the 2005-2006 HBS. Simulations undertaken by the International Food Policy Research (IFPRI) suggested a poverty rate of 42 per cent in 2009 and of 54.5 per cent by the end of 2011 (World Bank et al., 2012). Thus, the 2012 NSPMS estimates suggests that poverty rates were down to levels close to the 2009 IFPRI estimates.

44. Leite et al (2011).

45. Bagash et al., 2012.

46. Ministry of Health and Population and UNICEF, 2008.

47. UN-Habitat 2006: 64.

48. UN-Habitat, 2006: 64.

49. UN-Habitat, 2006:.71.

50. WHO, 2006.

51. WHO/UNICEF, 2010: 34.

52. Republic of Yemen, 2002a.

53. Card, 1999; Cutler and Muney, 2006; Ricci and Zachariadis, 2012.

54. Republic of Yemen, 2002b.

55. Ministry of Health and Population and UNICEF, 2008.

56. UNESCO (2009).

57. Al-Qudsi, 2003; UNDP, 2007.

58. World Bank, 2013.

59. UNICEF, 2007; World Bank, 2013.

60. World Bank, 2013.

61. UNICEF, 2007.

62. Republic of Yemen, 2004. The previous Human Development Index adopted adult literacy as one of the components for the education dimension.

63. Government of Yemen, 2004.

64. (Schultz, 2001; Becker, 1965).

65. World Bank, 1999; 2007.

66. According to UNESCO (2005), out-of-school primary and lower secondary-aged children are those who are not enrolled in the educational system. Children who attend non-formal or pre-primary education are considered to be out-of-school as per this definition.

67. Card, 1999; Cutler and Muney, 2006; Ricci and Zachariadis, 2012.

68. World Bank, 2007.

69. Chapman and Miric, 2009.

70. World Bank (p.60, 2007) computed the Education Gini for the MENA region and revealed that Yemen had the highest degree of inequality in the distribution of education attainment.

71. Stephan and Francesca, 2008.

72. Urdinola et al., 2010; O'Sullivan et al., 2011.

73. Al-Qudsi, 1998; Population Reference Bureau (PRB) 2007 World Population Data Sheet; World Bank, 2007.

74. UNESCO, 2013.

75. In Yemen, the official age range for primary school is 6 to 11 years, and 12 to 14 years for lower secondary school. In the 2012-2013 school year, there were around 5.8 million Yemeni children aged 6-14 years.

76. From the total number of children aged 6-14 years, around 77 and 23 per cent lived in rural and urban areas, respectively.

77. ILO, 2012.

78. See Annex for more detail.

79. For a more detailed description of the construction of the wealth index see a technical note here: <http://www.ipc-undp.org/pub/eng/tp08/technicalnote05.pdf>.

80. Al-Qudsi, 2003; Sánchez, M. 2010.

81. UNICEF, 2007.

82. Angrist and Kruger, 1992; Fertig and Kluve, 2005.

83. Hampel and Kuwairan, 2006.

84. Most of the figures cited in the text correspond to the fourth round: July, August and September 2013 (the most recent data). The information on the remaining rounds will be useful when looking at the trend over the rounds.

85. WHO, 1995.

86. UNICEF, 2013.

87. These measures use as a reference the WHO Child Growth Standards from 2006.

88. UNICEF, 2013.

89. WHO, 1995.

90. WHO 2008.

91. UNICEF, 2013.

92. The indicators for children ever breast fed and early initiation of breastfeeding within one hour and 24 hours are shown in tables CH.21–CH.23 at the end of this chapter.

93. Seidel, 2005.

94. Sack, 1991.

95. WHO, 2005.

96. Tables CH.25 and CH.26 at the end of this chapter show continuing breastfeeding for ages one and two years.

97. WHO, UNICEF 2010.

98. WHO 2008.

99. (WFP, 2012).

100. United Nations, 2009.

101. WHO, 2003.

102. Ministry of Health and Population and UNICEF, 2006.

103. UNICEF Child Protection Strategy, 2008.

104. Ministry of Health and Population and UNICEF, 2006.

105. World Bank, 2012.

106. UNICEF, 2007.

107. The figures cited in the text refers to months: July, August and September of 2013 (information collected for round 4 of the NSPMS). When there is a relevant change between rounds 1 and 4, both periods are mentioned. Otherwise, only the most recent data (round 4) are commented on in the text.

108. Ministry of Health and Population and UNICEF, 2006.

109. UNICEF, 2005a.

110. Ministry of Health and Population and UNICEF, 2006.

111. UNICEF 2005b.

112. UNICEF, 2005b.

113. UNICEF 2007.

114. ILO report on child labour in Yemen (2013).

115. ILO 2013.

116. Amaral, 2012; Mammen and Paxson, 2000; Goldin, 1994; Pencavel,1986.

117. Amaral, 2012; Clark and Anker, 1990; 1993; Pencavel, 1986.

118. Mammen and Paxson, 2000; Goldin, 1994.

119. Mammem and Paxson, 2000; Costa, 2000.

120. Ross, 2008; Al-Qudsi, 1998.

121. Al-Qudsi, 1998.

122. FAO, 2006.

123. IFPRI, 2010.

124. The figures for October-December refer to 2012 (round 1) and for May-September to 2013 (rounds 2 and 3), but seem to depict a seasonal pattern, even though we did not have the same periods for more than one year.

125. FAO, 2013.

126. FAO, World Food Summit, 1996.

127. Wiesmann et al., 2009.

128. WFP, 2012.

129. Tables FS.2–FS.4 at the end of the chapter show the complete indicators for other variables such as area of residence, wealth quintiles, level of poverty, region, topography and head of household's educational level with confidence intervals.

130. WFP, 2008.

131. Coates et al, 2007.

132. <http://www.fao.org/fileadmin/user_upload/p2p/Documents/Lesotho_CGP_overall_policy_brief_WEB.pdf>.

133. Heckman, Ichimura and Todd, 1997; Smith and Todd, 2005.

134. Rosenbaum and Rubin 1983.

135. Heckman, Ichimura and Todd 1997 and 1998.
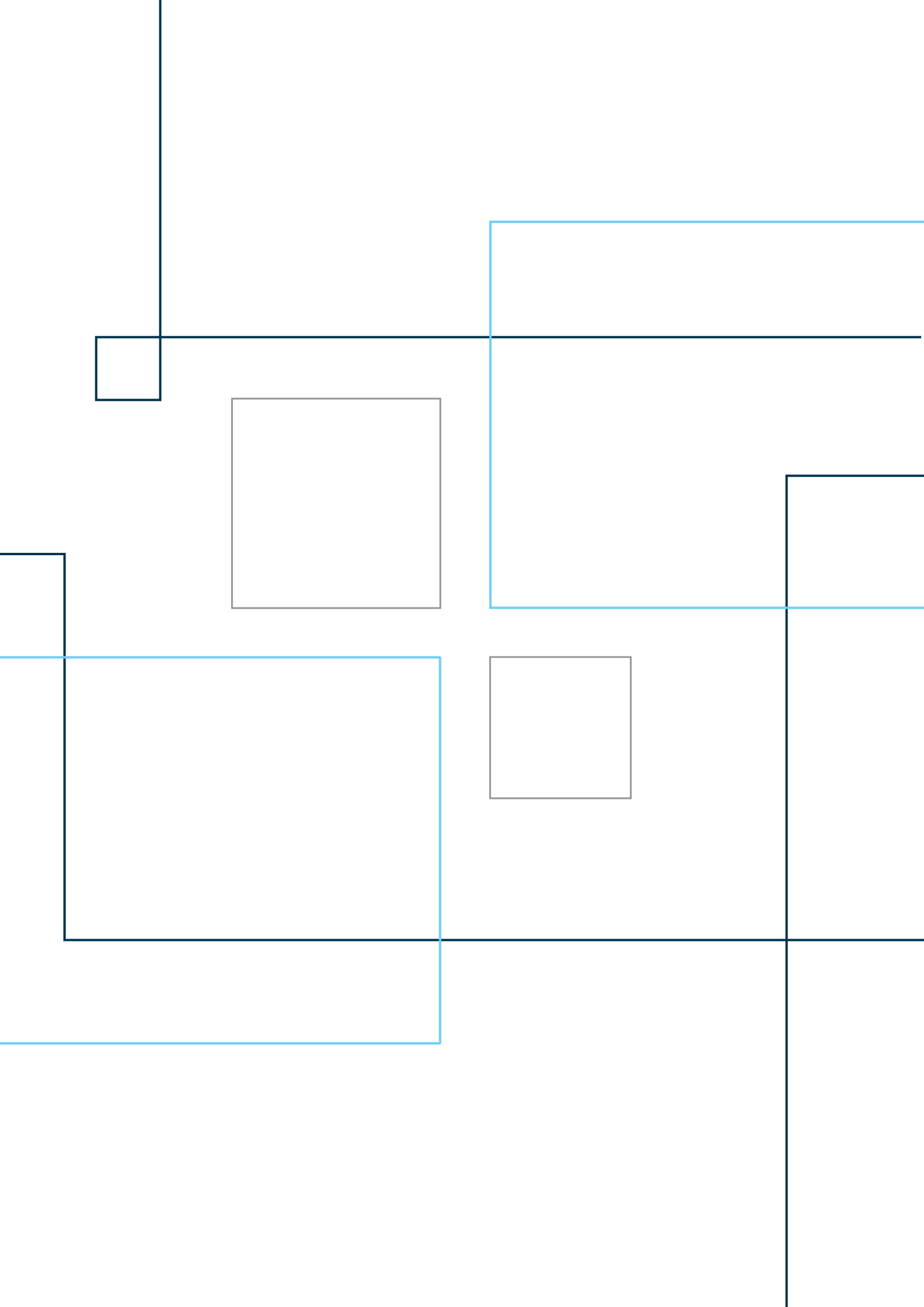
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