

SMI-Panama

Household Census and Survey Data Quality Report

Second Follow-up Measurement

October 2018



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This report of the Salud Mesoamérica Initiative (SMI) Panama household survey was produced in agreement with the Inter-American Development Bank (IDB). All analyses and writing were conducted by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington.

About IHME

IHME monitors global health conditions and health systems and evaluates interventions, initiatives, and reforms. Our vision is that better health information will lead to better-informed decision-making and higher achievement in health. To that end, we strive to build the objective evidence about what does and does not improve health conditions and health system performance. IHME provides high-quality and timely information on health, enabling policymakers, researchers, donors, practitioners, local decision-makers, and others to better allocate limited resources to achieve optimal results.

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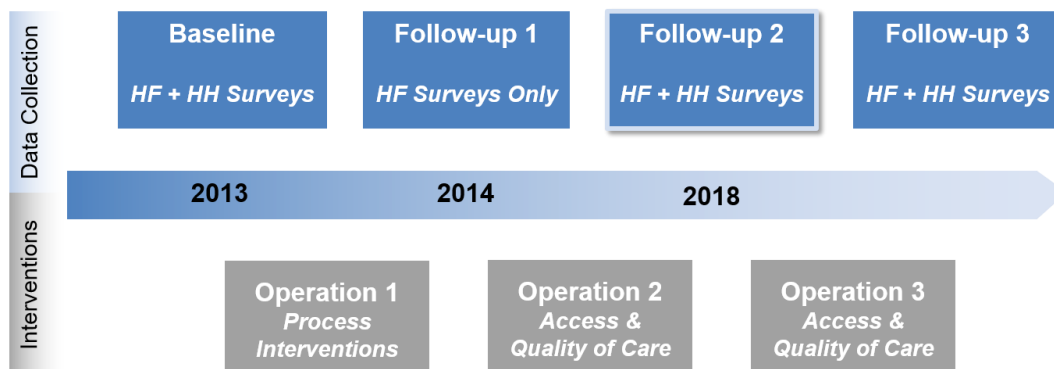
1 CHAPTER 1: INTRODUCTION

The Salud Mesoamérica Initiative (SMI) is a regional public-private partnership that brings together Mesoamerican governments, private foundations and bilateral and multilateral donors with the purpose of reducing health inequalities affecting the poorest 20% of the population in the region. Funding focuses on supply- and demand-side interventions, including evidence-based interventions, the expansion of proven and cost-effective healthcare packages, and the delivery of incentives for effective health services. One of its defining features is the application of a results-based aid (RBA) model that relies on performance measurement and enhanced transparency and accountability. The initiative focuses its resources on integrating key interventions aimed at reducing health inequalities that stem from the lack of access to quality reproductive, maternal, neonatal and child health services (including immunization and nutrition services) for the poorest quintile of the population.

1.1 Objectives

The objectives of the SMI evaluation are to assess whether countries are reaching the indicator targets set by the Initiative and to evaluate the results of specific interventions. In Panama, baseline data were collected at households and health facilities in intervention areas (2013). The first follow-up data collection took place at health facilities (2014), and this second follow-up measurement was performed at households and health facilities (2018). The use of health facility and household data collection methods permits the measurement of supply- and demand-side information on the Initiative. The pairing of the two types of surveys is a defining feature, designed to capture key indicators in a robust and multidimensional way. The timeline of data collection, evaluation, and interventions is shown in Figure 1.1.

Figure 1.1: SMI-Panama timeline



The objectives of the SMI-Panama second follow-up household survey are to capture household characteristics, reported maternal and child health data for women 15-49 years of age and for children 0-59 months of age, and anthropometric measurements including height, weight, and hemoglobin concentration for children. Community data collection permits the measurement of changes in health

status, access to health care, and satisfaction with health care, as well as an array of data points which give context to these factors.

Chapter 1 provides a general overview of the design and implementation of the SMI-Panama second follow-up household census and SMI-Panama second follow-up household survey and discusses the design and coverage of the study in intervention areas. The subsequent chapters present results of the SMI-Panama second follow-up household survey from intervention areas.

1.2 SMI household census and survey

The SMI household census is used to capture the age and sex distribution of all of the usual members of all households in selected segments. Basic information including relationship to the head of the household and marital status is also collected. Children aged 0-59 months who have one or more parent residing in the same household are linked to their mother and/or father by way of unique household member identification codes.

Data from the SMI household census are used to identify and select eligible households for the detailed interviews and the physical measurements module (Figure 1.2). The household survey is typically conducted within one month of the household census. The SMI household survey includes three components: the Household Characteristics Questionnaire, the Maternal and Child Health Questionnaire, and the Physical Measurements Module.

The household questionnaire collects information on the source of water, type of toilet facilities, exposure to secondhand smoke, ownership of various assets including durable goods, agricultural land, and livestock, and household expenses and sources of health care financing.

The Maternal and Child Health Questionnaire covers eligible women's background characteristics (including education, occupation, and exposure to media), access to health care, current health status, recent history of illness and associated medical expenses, fertility preferences, knowledge and use of family planning methods (including barriers to use), exposure to health system interventions, and satisfaction with community health workers. Women who have been pregnant in the last five years answer questions about birth history; antenatal, delivery, and postpartum care; birth spacing; breastfeeding; and infant feeding practices.

Caretakers of children aged 0-5 years are asked detailed questions for each child under age 5 on topics such as child's current health status, recent history of illness including diarrhea, fever, and acute upper respiratory infection and associated medical expenses, child's exposure to health system interventions, immunization, and supplementation history.

The Physical Measurements Module captures weight, height/length, and hemoglobin concentrations of children aged 0-59 months. Portable scales and height rods were used for the anthropometric measurements and hemoglobin levels were assessed in the field using a portable HemoCue™ machine. Medically trained personnel (i.e., anthropometrists or professional nurses) performed all assessments.

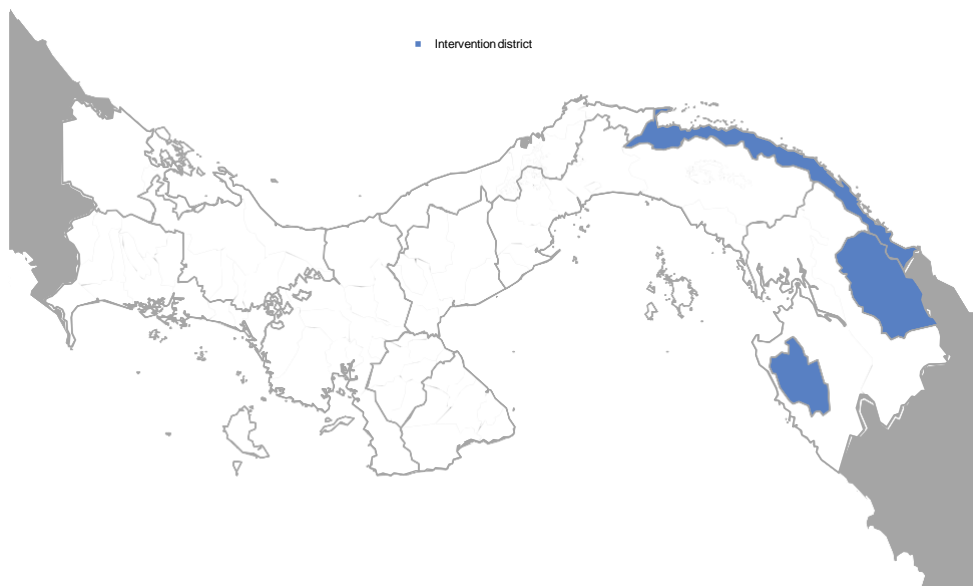
1.3 Methodology

The study design for the SMI-Panama second follow-up household survey provides representative estimates of the coverage of key health interventions and indicators for a geographic area that approximates the lowest wealth quintile of the population of Panama.

1.3.1 Study area

Panama is divided into ten provinces and three indigenous comarcas. Two comarcas were purposefully selected for SMI-Panama on the basis of their high concentration of residents in the country's lowest wealth quintile (Figure 1.3). From these two comarcas, a two-stage clustered random sample of eligible households was selected to reach the sample sizes shown in Table 1.1.

Figure 1.3: Map of Salud Mesoamérica Initiative study area



1.3.2 First-stage sample selection: census segments

The household survey uses a two-stage random sampling design in order to balance survey administration costs with the ability to make estimates representative of the population in the study area. For the SMI-Panama household census, the primary sampling unit (PSU) is the lugar poblado (populated place) from the 2010 Panama Population Census. A representative sample of these clusters (“segments”) was randomly selected from a sampling frame of all segments in SMI municipalities with probability

proportional to size, where size is measured by the number of occupied households. Samples for intervention and comparison strata, and for baseline and follow-up rounds, were selected independently.

A set of alternate segments was selected using identical methodology, to be surveyed in the event that any of the selected segments could not be surveyed and needed to be replaced due to security concerns, community rejection of the study, or a high proportion of absent households. In Panama in the 2018 follow-up survey, six segments in intervention areas were replaced due to community refusals. Each segment was replaced with a randomly selected alternate from the same district. Three communities refused participation after completing the census, but before starting the household survey. One segment was completely excluded from the sample after the local government revoked permission of the use of all data collected from the community members due to distrust of the government. The other two segments are included in the census data, but do not have any corresponding household data. At the baseline, four segments were replaced due to logistical reasons. In each case, a randomly selected alternate from the same district was used.

Due to the small size of communities in the study area during the second follow-up, two segments in Guna Yala were added to the sample. The census survey was completed in 57 segments and the household survey was collected for 55 segments. Counts by district of segments where data collection was completed successfully are shown in Figure 1.4.

Table 1.1: Number of segments per district in SMI area

		Intervention	
Province	District	2013	2018
Comarca Emberá	Cémaco	13	12
Comarca Emberá	Sambú	4	3
Comarca Guna Yala	Comarca Guna Yala	44	42

* Follow-up counts in this table reflect all 57 segments that completed census, but the household survey was conducted in only 55 segments.

1.3.3 *Second-stage sample selection: households*

The SMI-Panama second follow-up household census is conducted in each of the randomly selected segments prior to the SMI-Panama second follow-up household survey in order to identify all eligible women and children for second-stage sampling. Interviewers visit every household in the segment and create a household roster capturing the age and sex distribution of household members.

Eligible households are systematically selected from the complete census listing for participation in the SMI-Panama Household Survey. Thirty households are selected for participation, 25 households with at least one eligible child and five households with only eligible women. In order to ensure at least 30 complete interviews per segment, 10 backup households, eight with at least one eligible child and two with only eligible women, are selected at random in case of refusals or absent households.

Due to small size of communities in the intervention areas, nine segments in the second follow-up did not have a full selection of 30 households with eligible women and children for participation in the household

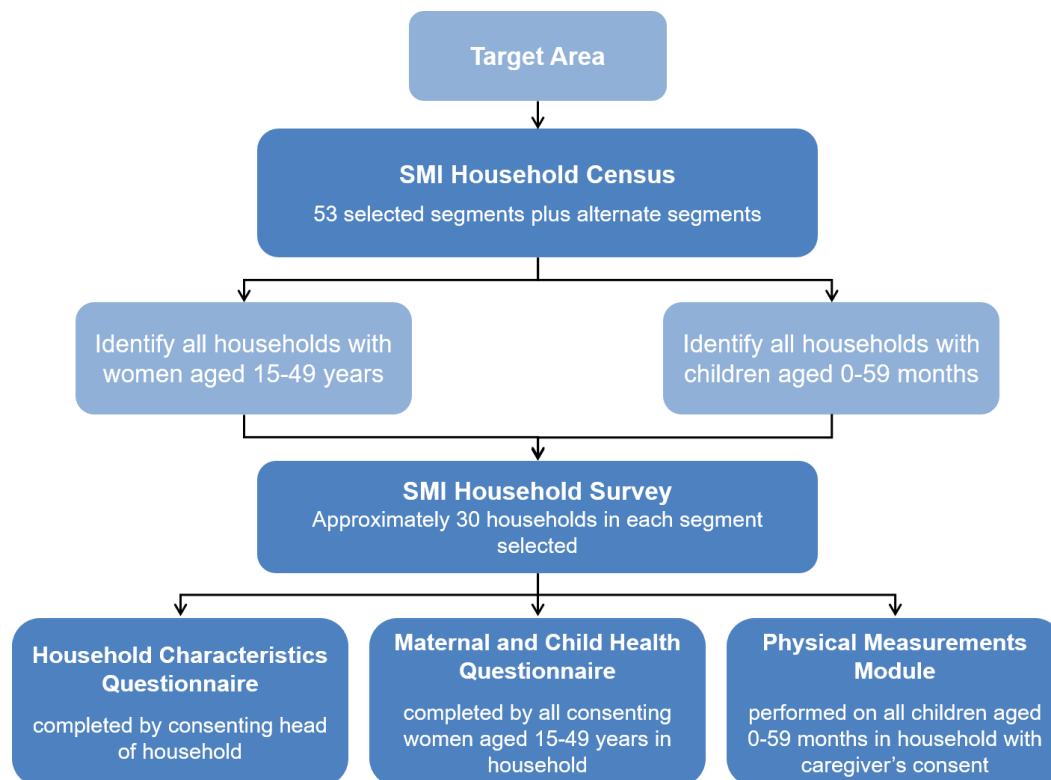
survey. For these segments, all households with eligible women and children were selected with certainty to participate in the household survey.

All women aged 15-49 years who are members of the selected household are eligible to be interviewed, and all children aged 0-59 months who are members of the selected household are eligible for the physical measurement module. Any household head or other individual knowledgeable about household characteristics and expenditures is permitted to respond to the household characteristics module, while any primary caregiver of a child 0-59 months is eligible to inform for the child health interview module, regardless of sex or age.

In addition, three households at baseline and four households at the second follow-up in each segment were randomly selected for water quality testing. These households were selected from a pool of the first 30 selected households in each segment via computer-generated random sampling from a uniform distribution. Based on power calculations, a sample of 133 households at baseline and 201 at the second follow-up was necessary to detect a change in the prevalence of high-quality water from 50% to 65%. An additional 38% of households was sampled to account for non-response and potential challenges in water quality testing.

A schematic diagram of the survey implementation is shown in Figure 1.5. Appendix A provides a detailed description of sampling methods.

Figure 1.5: Schematic diagram of SMI survey implementation



1.4 Survey implementation

1.4.1 *Data collection instruments*

Questionnaires were initially developed in English, and then translated to Spanish during the baseline measurement. To best reflect the issues most relevant to the region under study and the local language, the Spanish-language questionnaires were revised following input from key stakeholders and at the conclusion of the baseline and first follow-up pilot studies (described below). The revised Spanish-language surveys were then back-translated to English. Study areas included a substantial proportion of indigenous populations, the household survey was translated and back-translated to the most common indigenous languages in the study areas, Guna and Emberá. In order to allow the participation of non-Spanish speakers in the survey, the data collection team included interviewers proficient in Guna and Emberá who administered the survey in the local language.

All surveys were conducted using a computer-assisted personal interview (CAPI). The CAPI was programmed using DatStat Illume and installed onto computer netbooks. CAPI supports skip patterns, inter-question answer consistency, and data entry ranges. The aim of introducing CAPI to the field was to reduce survey time by prompting only relevant questions, maintain a logical answering pattern across different questions, decrease data entry errors, and permit rapid data verification.

1.4.2 *Training and supervision of data collectors*

Prior to data collection, meetings were held with community leaders from the Guna Yala and Emberá comarcas to sensitize them about the objectives and methods of the data collection, and obtain their approval and support for this work. At the baseline, a total of 43 people were trained in April 2013 to serve as supervisors and interviewers. Two training sessions for the second follow-up survey were conducted in Panama. Training for the data collection team in Emberá was completed in May 2018 and the training for Guna Yala data collectors was completed in June 2018. For household and census data collection, 5 surveyors and one anthropometrist were trained in Emberá and 12 surveyors and two anthropometrists were trained in Guna Yala. All surveyors underwent a week-long training, which included three days of in-classroom instruction and practice of interview application. Teams were split into their respective groups and given in-depth training and practice for each relevant component of data collection. The training included content of each survey, proper conduct of the survey, in-depth review of the instrument, and hands-on training on the CAPI software. Several community leaders from Emberá and Guna Yala attended the trainings. Surveyors participated in a two-day pilot data collection exercise in communities that were not selected to be part of the SMI sample, where they applied the census and household survey. IHME held debriefing and re-training sessions with surveyors post-pilot and provided continued training during the first week of data collection in sampled communities.

1.4.3 *Data collection, management, and analysis*

The SMI-Panama second follow-up household census, which captures basic demographic characteristics of all usual household occupants, was carried out between April 15, 2013 and August 8, 2013, at the baseline, and between May 7 and August 7, 2018 in the second follow-up.

Data collection for the SMI-Panama second follow-up household survey at the baseline began on May 1, 2013, and was completed on August 11, 2013. At the follow-up, data collection began May 29, 2018, and was completed on September 26, 2018. To assure completeness of the sample, field staff were instructed to return to selected households up to three times (on different days, and at least once on a weekend) in an attempt to complete the Household Characteristics Questionnaire, the Maternal and Child Health Questionnaire, and the Physical Measurements Module. Households that refused to participate or were absent at all three visits were substituted with randomly selected alternates.

Data collection teams, consisting of one supervisor and three to five interviewers were deployed to conduct the SMI household census and the SMI household survey. Supervisors were responsible for reviewing questionnaires for quality and consistency prior to departing to each segment. There were six supervisors overseeing the SMI household census and SMI household survey at baseline, and two supervisors overseeing the follow-up survey.

Data were collected using computer netbooks equipped with CAPI software. Field team leaders monitored the implementation of the survey and report feedback. Data collection using CAPI allowed data to be transferred instantaneously once a survey was completed via a secure connection to IHME.

IHME monitored collected data on a continuous basis and provided feedback. Suggestions, surveyor feedback, and any modifications were incorporated into the instruments and readily transmitted to the field.

Data analysis was conducted at IHME using STATA version 14 and R version 3. Performance and monitoring indicators were calculated at IHME following indicator definitions provided by IDB.

The total number of completed interviews with heads of households in the census is shown in Table 1.2, and the total number of completed interviews with heads of households in the household survey is shown in Table 1.3. The total number women of reproductive age who participated in the household survey for each comarca in Panama is shown in Table 1.4, and the total number of physical measurements of children aged 0-59 months performed, with corresponding response rates by comarca, is shown in Table 1.5. Response rates were calculated using the following formula: $([\# \text{ surveyed}] \div [\# \text{ selected participants}])$. High non-response may affect the reliability of the estimates.

According to the 2010 Panama Population Census, we expected a total of 20,756 occupied households in the 57 selected segments in the second follow-up. The SMI household listing exercise found 4,790 occupied households in these segments. Of the 4,790 occupied households, 4,650 completed the SMI household census, yielding a response rate of 97 % for this portion of the survey.

Based on information collected during the SMI household census, a subset of households were visited for individual interviews. A total of households were visited for the individual interviews in intervention areas during the second follow-up. Of these, a total of 1,528 Household Characteristics Questionnaires were completed with heads of households, yielding a household response rate of % in intervention areas.

Using the household roster completed as part of the SMI household survey, women of reproductive age (15-49 years) were identified in the intervention areas during the second follow-up from the sub-sample of interviewed households as eligible for the Maternal and Child Health Questionnaire. Of these women, successfully completed the questionnaire (0% in intervention areas). The household roster completed as part of the SMI household survey was also used to identify children aged 0-59 months as eligible for the Physical Measurements Module among the interviewed households in intervention areas during the second follow-up. of these children participated in either the interview or measurements module (0% in intervention areas).

Among those households that were occupied but did not complete the SMI household census, the majority of the non-response for households and individuals was due to household members refusing the interview or being absent.

Table 1.2: Households participating in the SMI census and response rates, by comarca

	Baseline 2013					Second Follow-Up 2018				
	No. Segments	No. households	No. households eligible	No. households censused	Census response rate, %	No. Segments	No. households	No. households eligible	No. households censused	Census response rate, %
Comarca Emberá	17	1296	1307	1290	98.7	15	1352	1166	930	79.8
Comarca Guna Yala	42	3677	5154	3655	70.9	42	4547	4129	3720	90.1
Total	59	4973	6461	4945	76.5	57	5899	5295	4650	87.8

*Response rate calculated as the number of complete or partial interviews over total occupied households.

Overall response rate = household response rate*census response rate.

Table 1.3: Households participating in SMI household survey and response rates, by comarca

	Baseline 2013					Second Follow-Up 2018				
	No. Segments	No. households selected	No. households interviewed	Household response rate, %	Overall response rate, %	No. Segments	No. households selected	No. households interviewed	No. households censused	Census response rate, %
Comarca Emberá	17	480	468	97.5	96.2	14	744	332	44.6	35
Comarca Guna Yala	42	1856	1727	93.0	66.0	41	1270	1206	95.0	85
Total	59	2336	2195	94.0	71.9	55	2014	1538	76.4	67

*Response rate calculated as the number of complete or partial interviews over total selected households

Table 1.4: Women participating in SMI women's health and/or pregnancy interview, by comarca

	Baseline 2013				Second Follow-Up 2018			
	No. women eligible	No. women interviewed	Woman response rate, %	Overall response rate, %	No. women eligible	No. women interviewed	Woman response rate, %	Overall response rate, %
Comarca Emberá	626	553	88.3	85.0	468	432	92.3	32.9
Comarca Guna Yala	2346	1900	81.0	53.4	1942	1769	91.1	77.9
Total	2972	2453	82.5	59.4	2410	2201	91.3	61.2

*Response rate calculated as the number of complete or partial interviews over total eligible women. All children aged 0-59 months who reside in interviewed households, based on the household roster completed as part of the SMI census, are selected for the caregiver interview and physical measurements.

Table 1.5: Children participating in SMI child health interview and/or physical measurements, by comarca

	Baseline 2013				Second Follow-Up 2018			
	No. children eligible	No. children participated	Child response rate, %	Overall response rate, %	No. children eligible	No. children participated	Child response rate, %	Overall response rate, %
Comarca Emberá	580	536	92.4	88.9	354	332	93.8	33.4
Comarca Guna Yala	1834	1590	86.7	57.2	1473	1394	94.6	81.0
Total	2414	2126	88.1	63.3	1827	1726	94.5	63.4

*Response rate calculated as the number of complete or partial interviews over total eligible women. All women aged 15-49 years who reside in interviewed households, based on the household roster completed as part of the SMI census, are selected for the interview.

1.5 Characteristics of Non-Participating Households

Data on selected households that were absent or declined to participate in the SMI Household Survey are drawn from the SMI Household Census. A total of 71 of the 0 households that were selected at the second follow-up did not complete the SMI Household Survey. Households that did not complete the SMI Household Survey are referred to as “replaced” households because they were substituted with alternate households selected from the same segment.

Replaced households consisted of one to 13 members (median six members). Six percent of these households were headed by a man, 21.1% of households were headed by a woman, and 73.2% were identified as dual-headed.

Table 1.6: Household characteristics, nonparticipating households

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Head of household						
Dual-headed household	80	69.0	4.6	52	73.2	5.7
Single head, female	27	23.3	3.7	15	21.1	5.1
Single head, male	9	7.8	2.9	4	5.6	3.1

Dual-headed households are those where (a) two individuals were identified as "head" by the respondent or (b) both the person identified as "head" and his or her spouse or partner are household members.

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Number of usual household members	116	0	1	5	6	9	18
Second follow-up 2018							
Number of usual household members	71	0	1	4	6	8	13

1.6 Report structure

The subsequent chapters present characteristics of the surveyed SMI-Panama sample in intervention areas only. Each table is presented for comparison areas only in Appendix D, and pooled intervention and comparison areas in Appendix E. Most tables take one of three forms. Tabulations of select-only-one question types are similar to Table 2.2(a). The categories are mutually exclusive, so the proportions sum to 100%. Counts are shown for non-response ("Don't know" or "Decline to respond" recorded), but these cases are always excluded from the denominator.

Tabulations of select-all-that-apply question types look like Table 2.4(a). As respondents can report more than one option, categories are not mutually exclusive, and thus proportions do not sum to 100%. The table shows affirmative cases (n) and non-missing cases (N). Non-response is the difference between non-missing cases (N) and the total sample eligible for that section of the questionnaire, indicated at the start of the chapter. Where statistics are reported for subpopulations, the size of the subpopulation is reported in the same table or the preceding table for straightforward comparison.

Tabulations of continuous variables, where respondents were requested to provide a numeric response, appear similar to Table 2.2(b) and present the range and quartiles (25th percentile, median, 75th percentile) in order to illustrate the distribution of responses across the sample. Counts of non-response are listed in the table and excluded from the count of non-missing cases (N).

2 CHAPTER 2: CHARACTERISTICS OF HOUSEHOLDS

This chapter provides a descriptive summary of the basic demographic, socioeconomic, and environmental characteristics of the households sampled for the SMI-Panama Baseline and Second Follow-up Household Survey.

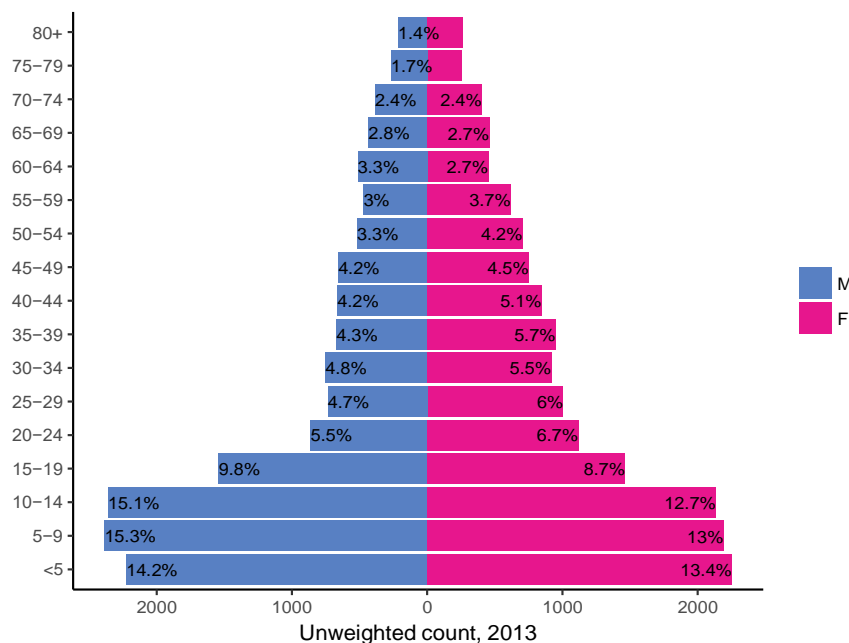
2.1 Characteristics of Participating Households

A total of 1,528 households in the Panama second follow-up completed the household characteristics questionnaire. In the baseline, 1,673 completed the survey. The remainder of this chapter is dedicated to a summary of the basic demographic, socioeconomic, and environmental characteristics of the households completing the household characteristics questionnaire.

2.2 Age and Sex Composition, SMI Census

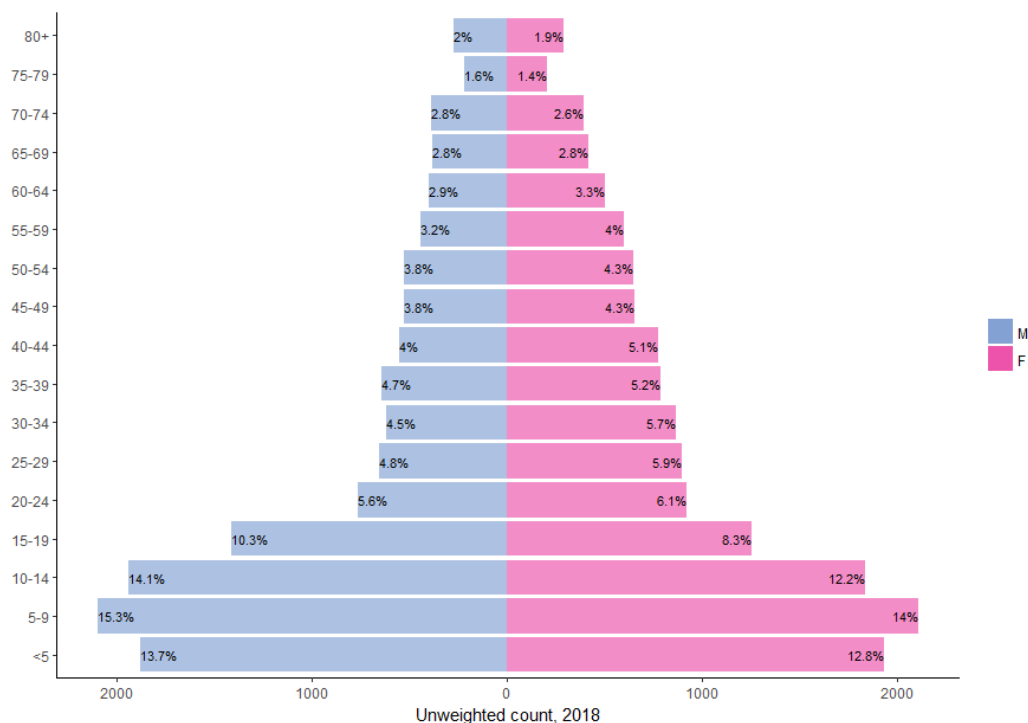
The unweighted distribution of the de facto household population in the surveyed households in the SMI-Panama household census by five-year age groups and by sex is shown for baseline (Figure 2.1) and second follow-up (Figure 2.2). Panama has a larger proportion of its population in the younger age groups than in the older age groups. Figure 2.2 indicates that in the second follow-up, just under 41% of the population in the Second Follow-up is under age 15 years, more than half (50%) of the population is in the economically productive age range (15-64), and the remaining 9% is age 65 and above.

Figure 2.1: Age and sex of census sample, unweighted percent distribution of de facto household population by five-year age groups, baseline survey



* 31 people were excluded due to missing age.

Figure 2.2: Age and sex of census sample, unweighted percent distribution of de facto household population by five-year age groups, follow-up survey



2.3 Household Characteristics, SMI Household Survey

The number of households, women and children in the sample are displayed in Table 2.1; and the percent distribution of households by head of household, number of usual members, and marital status are shown in Table 2.2.

Seventy percent of households in Panama identify as dual-headed in the second follow-up. Males are the head of the household in 9.7% of surveyed households in Panama, with females as the head of household in the remaining 19.8%. The median household size in Panama is seven members, with another 15% of households having nine or more members.

Table 2.1: SMI household survey sample sizes: number of total households, women 15-49 years of age, and children 0-59 months

	Baseline 2013	Second Follow-Up 2018
Households	1673	1528
Women	2452	2201
Children	2519	1726

Table 2.2: Household characteristics, SMI household sample

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Head of household						
Dual-headed household	983	75.1	2.0	1098	70.5	2.1
Single head, female	189	17.6	1.8	284	19.8	1.7
Single head, male	84	7.2	1.0	146	9.7	1.0

Dual-headed households are those where (a) two individuals were identified as "head" by the respondent or (b) both the person identified as "head" and his or her spouse or partner are household members

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Number of usual household members	1256	0	1	5	7	9	24
Second follow-up 2018							
Number of usual household members	1528	0	1	5	7	9	27

2.4 Drinking Water Access and Treatment

2.4.1 Sanitation facilities and waste disposal

A household's source of drinking water is an important determinant of the health status of household members. Contaminated drinking water can spread waterborne diseases, such as diarrhea or dysentery. Piped water, protected wells, and protected springs are expected to be relatively free of these diseases; whereas other sources like unprotected wells, rainwater, or surface water are more likely to carry disease-causing agents.

The percent distribution of households by source of drinking water, location of water source, and information about sanitation facilities is shown in Table 2.3. The majority of surveyed households (41%) have water piped to dwelling, and 59% of households have to go outside their home or yard to a water source.

Many households (21.9%) use a pit latrine and 6.3% of households use a flush toilet. Four percent of households report having no toilet, compared to 10.1% at baseline. Many households use a sanitary facility type not provided in the survey, most of these in Guna areas. Based on our fact-finding visits and the interviewers' observations, most households use toilets that drain over the sea.

Table 2.3: Household water source and sanitation facilities

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Household water source						
Piped to dwelling	635	39.9	4.2	689	41.0	4.7
Surface water	438	23.2	4.0	261	19.0	3.1
Piped to yard/plot	334	21.6	2.7	220	14.9	2.3
Rainwater collection	118	5.9	2.1	196	13.9	3.4
Protected dug well	12	0.6	0.4	27	2.0	1.0
Unprotected dug well	24	1.3	0.8	27	2.0	0.7
Tubewell/borehole	14	0.8	0.5	5	0.5	0.3
Unprotected spring	50	3.1	1.2	10	0.5	0.3
Public tap/standpipe	1	0.0	0	3	0.2	0.1
Protected spring	0	0.0	0	2	0.1	0.1
Tanker truck	0	0.0	0	0	0.0	0
Cart with small tank/drum	0	0.0	0	0	0.0	0
Bottled water	1	0.0	0	0	0.0	0
Water jug	0	0.0	0	0	0.0	0
Other	44	3.6	1.1	87	5.9	1.5
Don't know	2	0	0	0	0	0
Decline to respond	0	0	0	1	0	0
Time it takes to retrieve water (min)						
Water on premises	1186	78.8	4.4	1236	83.2	3.3
Less than 30 minutes	263	14.1	3.2	118	9.9	2.6
30 minutes or longer	121	7.1	2.6	92	6.9	2.0
Don't know	102	0	0	79	0	0
Decline to respond	1	0	0	3	0	0
Sanitation facilities						
Pit latrine	325	16.3	3.8	331	21.9	3.8
Flush toilet	34	2.3	0.9	109	6.3	1.7
No toilet	199	10.1	2.5	50	4.2	1.3
Pour flush toilet	9	0.5	0.2	52	3.5	0.7
Dry toilet	7	0.3	0.2	7	0.4	0.3
Other	1090	70.6	5.4	974	63.8	4.6
Don't know	9	0	0	1	0	0
Decline to respond	0	0	0	4	0	0

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Shared toilet/facilities	41	375	12.3	2.8	64	499	13.5	2.7

2.4.2 Cooking fuel sources

Cooking fuel source and the location for cooking food are included in Table 2.4. The percentage of households with a separate kitchen is also shown. The two most commonly reported cooking fuel sources

used in households during the second follow-up are gas tank (69.5%) and wood (55.6%). Among those households with non-missing responses as to what cooking fuel sources they use, 53.5% report normally cooking food inside house, 44.7% normally cook food inside the house, and 1.8% normally cook food outdoors. Fifty four percent of households have a separate kitchen.

Table 2.4: Cooking fuel source and cooking location

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Gas tank	968	1673	56.8	3.4	1062	1528	69.5	3.6
Wood	1136	1673	68.7	2.7	842	1528	55.6	3.9
Electricity	27	1673	1.6	0.4	33	1528	2.0	0.4
Coal	321	1673	20.4	2.1	24	1528	2.0	0.5
Straw/twigs/grass	3	1673	0.2	0.1	18	1528	1.2	0.5
No food cooked at home	2	1673	0.1	0.1	3	1528	0.1	0.1
Agricultural crops	2	1673	0.1	0.1	0	1528	0.0	0
Other	2	1673	0.2	0.1	0	1528	0.0	0

*categories not mutually exclusive (select all that apply)

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Location for cooking food, if cooking fuel source reported						
Inside house	695	39.0	3.9	805	53.5	4.2
In a separate building	930	58.7	3.8	692	44.7	4.2
Outdoors	13	0.6	0.2	28	1.8	0.4
Other	27	1.7	0.4	1	0.1	0.1
Don't know	2	0	0	0	0	0
Decline to respond	3	0	0	1	0	0

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Separate kitchen, if cooking fuel source reported and food cooked in the home	361	694	51.3	3.1	437	804	53.5	2.2

2.4.3 Household wealth

The median number of bedrooms per household is less than one (Table 2.5). Twenty six percent of households in the second follow-up own agricultural land and 0.2% of households rent agricultural land (Table 2.6).

The availability of durable consumer goods is a good indicator of a household's socioeconomic status. Table 2.6 shows the availability of selected consumer goods by household. The large majority

of households (66.5%) have mobile phone, and the most commonly owned items are electricity (62.4%), watch (44.1%), and radio (39.6%). Many households (4.6%) own a bicycle and 0.2% own a motorcycle/scooter.

Table 2.5: Number of bedrooms per household

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Number of bedrooms	1639	33	0	1	1	2	6
Second follow-up 2018							
Number of bedrooms	1454	74	0	1	1	2	6

Table 2.6: Household assets

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Household assets								
Mobile phone	989	1669	63.3	4.0	1035	1528	66.5	3.3
Electricity	874	1668	53.9	4.3	972	1527	62.4	3.2
Watch	636	1665	39.9	2.1	686	1526	44.1	2.0
Radio	1039	1670	63.1	2.1	585	1528	39.6	2.1
Television	560	1667	34.7	3.2	548	1528	34.9	2.4
Refrigerator	273	1665	16.4	2.2	311	1528	19.9	2.6
Computer	116	1668	7.9	1.5	38	1528	2.2	0.5
Landline phone	3	1668	0.2	0.1	12	1528	0.7	0.2
Guitar	11	1667	0.9	0.3	6	1528	0.3	0.2
Transportation assets								
Bicycle	107	1665	5.7	1.7	81	1528	4.6	1.7
Motorcycle/scooter	0	1668	0.0	0	6	1528	0.2	0.2
Car	0	1662	0.0	0	3	1528	0.2	0.1
Animal cart	0	1669	0.0	0	2	1528	0.1	0.1
Truck	1	1665	0.0	0	0	1528	0.0	0
Agricultural assets: Livestock ownership								
Chickens	442	1664	23.5	3.1	290	1528	19.0	2.5
Pigs	179	1666	9.9	1.4	96	1527	6.3	0.9
Horses, donkeys, or mules	55	1662	2.7	0.8	23	1528	1.6	0.5
Bull or milk cow	8	1666	0.3	0.2	0	1527	0.0	0
Sheep or goats	0	1658	0.0	0	1	1528	0.0	0

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Agricultural assets: Own or rent agricultural land						
No agricultural land	817	52.1	3.4	1017	70.1	2.6
Owens agricultural land	787	46.6	3.5	380	26.2	2.4
Rents agricultural land	4	0.2	0.1	1	0.2	0.2
Shared/community-held land	14	1.1	0.3	53	3.6	0.8
Don't know	46	0	0	67	0	0
Decline to respond	5	0	0	10	0	0

2.5 Household expenditure

2.5.1 Total expenditures by type

Households are surveyed about the amount of money spent over the last month. After reporting total household expenditures, households are then asked how much was spent on specific categories (e.g., food, housing, education, and medical care) over the last four weeks. Table 2.7 shows the itemized monthly expenditure per person living in the household summarized by expenditure quintile. All data are presented in current balboa (B/.), with no adjustment for inflation. Itemized expenditure information was sufficiently complete to report for 1200 households at the second follow-up. The lowest quintile in the study area spent less than 22 B/. per person over the last month in the second follow-up.

Table 2.8 shows the budget share, defined as the weighted average expenditure on each category across a quintile divided by the weighted average total itemized household expenditure in the same quintile. Table 2.8 shows that the poorest 20% of households in the study area spend 58.3% of their monthly expenditure on food, on average. In comparison, the wealthiest households spend 69.8% on food. The poorest households spent 0.2% of their expenditure on medical care, while the wealthiest spent 1.5%.

Table 2.7: Total itemized per- capita expenditure quintiles, current Panama Balboa

	N	DK/DTR	p20	p40	p60	p80
Baseline 2013						
Per capita monthly household expenditure	783	430	24	38	57	89
Second follow-up 2018						
Per capita monthly household expenditure	1200	4	22	41	59	91

* Not adjusted for inflation

Table 2.8: Itemized household expenditure by total household budget share

	Bottom quintile	2nd quintile	3rd quintile	4th quintile	Top quintile
Baseline 2013					
Food	71.3	74.9	72.1	75.6	75.9
Alcoholic beverages and tobacco	1.6	0.5	2.8	1.6	4.7
Education expenses	11.2	9.1	8.7	6.9	3.4
Furniture and domestic appliances	0.4	0.4	0.6	0.6	0.5
Recreation	0.1	0.1	0.2	0.2	0.4
Housing and utilities	5.2	6.0	6.4	5.9	4.3
Clothing and shoes	4.6	4.0	4.9	4.4	4.2
Transportation	2.3	1.7	1.7	1.9	2.4
Communication	1.4	1.4	1.5	1.4	1.7
Out-of-pocket medical expenses	1.8	1.6	0.8	1.2	1.9
Social security premiums	0.0	0.0	0.0	0.2	0.4
Private insurance premiums	0.0	0.1	0.0	0.0	0.0
Other costs to access health care	0.1	0.0	0.1	0.1	0.1
Second Follow-Up 2018					
Food	58.3	71.6	75.4	77.4	69.8
Alcoholic beverages and tobacco	0.1	0.7	0.5	0.8	1.3
Education expenses	19.9	10.5	7.5	6.6	5.7
Furniture and domestic appliances	0.0	0.3	0.3	0.5	0.5
Recreation	0.0	0.2	0.7	0.2	1.0
Housing and utilities	8.3	5.8	5.5	5.2	7.5
Clothing and shoes	9.8	6.8	6.4	6.0	6.7
Transportation	1.8	2.1	2.4	2.2	5.8
Communication	1.1	1.6	1.3	1.2	1.7
Out-of-pocket medical expenses	0.2	0.9	0.6	0.4	1.5
Social security premiums	0.4	0.0	0.2	0.1	0.1
Private insurance premiums	0.0	0.0	0.0	0.0	0.0
Other costs to access health care	0.0	0.1	0.1	0.0	0.0

2.5.2 Health expenditures

Of the 1200 households with expenditure data at the second follow-up, 179 reported having health expenditures in the last four weeks. Table 2.9 shows health expenditure by type among households reporting non-zero out-of-pocket health expenditure. Very few households had spending in each category.

Table 2.9: Out-of-pocket medical expenditures by type, last four weeks, current Panama Balboa

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Care by health professionals not requiring overnight stay	233	10	0	0	0	0	500
Care that required overnight stay in hospital/clinic	235	8	0	0	0	0	400
Other costs associated with overnight stay in hospital/clinic	233	10	0	0	0	0	300
Care by traditional/alternative healers/birth attendants	236	7	0	0	0	0	200
Medications prescribed by health personnel	230	13	0	0	0.9	7	100
Diagnostic and laboratory tests, X-rays, blood tests	231	12	0	0	0	0	70
Other health care products or services	231	12	0	0	0	0	60
Dentists	235	8	0	0	0	0	45
Care or non-prescription medications from pharmacist	228	15	0	0	0	0	34
Health products (glasses, hearing aids, prosthetics, etc.)	233	10	0	0	0	0	3
Second Follow-Up 2018							
Care by health professionals not requiring overnight stay	179	2	0	0	0	0	10
Care that required overnight stay in hospital/clinic	179	2	0	0	0	0	80
Other costs associated with overnight stay in hospital/clinic	179	2	0	0	0	0	50
Care by traditional/alternative healers/birth attendants	180	1	0	0	0	10	150
Medications prescribed by health personnel	178	3	0	0	0	8.3	150
Diagnostic and laboratory tests, X-rays, blood tests	179	2	0	0	0	0	400
Other health care products or services	179	2	0	0	0	0	1
Dentists	178	3	0	0	0	0	21
Care or non-prescription medications from pharmacist	180	1	0	0	0	0	30
Health products (glasses, hearing aids, prosthetics, etc.)	180	1	0	0	0	0	5

* Not adjusted for inflation

2.5.3 Source of health expenditure financing

Of the 1200 households with expenditure data at the second follow-up, 18 reported that members of the household went to a hospital and stayed overnight at least once during the last 12 months and paid for expenses associated with the overnight stays. The maximum paid for a hospital stay was 80 B/..

Table 2.10 shows the source and amount of financing for medical expenditures for overnight hospital stays. No single funding source was used by more than about 25% of households with hospital stays.

Table 2.10: Health care financing by source, last 12 months, current Panama Balboa

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Loan from a source other than family or friends	76	11	0	0	0	0	1990
Other source	77	10	0	0	0	22.3	1475
Items sold	75	12	0	0	0	0	800
Property sold	76	11	0	0	0	0	700
Political donations or grants	75	12	0	0	0	0	650
Savings	76	11	0	0	0	0	600
Any household member's current income	69	18	0	0	0	29.6	580
Money from relatives or friends outside the household	76	11	0	0	0	0	300
Reducing other household spending	73	14	0	0	0	0	200
Conditional cash transfer programs	77	10	0	0	0	0	100
Remittances from family or friends abroad	76	11	0	0	0	0	100
Health insurance plan payment/reimbursement	75	12	0	0	0	0	80
Second Follow-Up 2018							
Loan from a source other than family or friends	18	1	0	0	0	0	100
Other source	18	1	0	0	0	0	5
Items sold	18	1	0	0	0	0	1500
Property sold	18	1	0	0	0	0	10
Political donations or grants	18	1	0	0	0	0	50
Savings	18	1	0	0	0	0	2000
Any household member's current income	19	0	0	0	0	52.1	629.2
Money from relatives or friends outside the household	18	1	0	0	0	0	300
Reducing other household spending	18	1	0	0	0	0	20
Conditional cash transfer programs	18	1	0	0	0	0	0
Remittances from family or friends abroad	18	1	0	0	0	0	0
Health insurance plan payment/reimbursement	18	1	0	0	0	0	0

* Not adjusted for inflation

2.6 Households Water Quality

In each segment, three households at baseline and four households in the second follow-up were selected at random for water quality testing. At the same time as the administration of the Physical Measurements Module, trained data collectors took samples of each selected household's drinking water source. These samples were tested for the concentration of chlorine and for the presence of coliforms. Inadequate water quality is an important risk factor for many health conditions. Presence of coliforms can indicate the growth potential or presence of pathogenic organisms. Water chlorination is a method of purification that helps to prevent the growth and spread of waterborne diseases. During the second follow-up evaluation, water sources were also tested for *E. coli*, which indicates recent sewage or animal waste contamination in the water source.

Table 2.2 shows the results of the water quality tests. A total of 213 households' drinking water was tested in the second follow-up. Coliforms were present in 100% of the tested households and chlorine was present in 0%. In the second follow-up, 213 household water supplies contained *E. coli* (99.2%). Two

hundred thirteen households had sufficient overall water quality (0%), which was calculated based on the presence of coliforms and chlorine in the water supply.

Table 2.2: Household characteristics, SMI household sample

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Presence of coliforms	121	136	91.3	3.2	213	213	100.0	0
Presence of chlorine	3	136	2.2	1.3	0	213	0.0	0
Presence of E. coli*	0	137	0.0	0	211	213	99.2	0.5
Adequate water supply	1	136	0.9	0.9	0	213	0.0	0

* Data on E. coli was not collected at baseline.

3 CHAPTER 3: GENERAL CHARACTERISTICS OF RESPONDENTS

This chapter summarizes the demographic characteristics, socioeconomic status, and health status of women of reproductive age (15-49 years) participating in the SMI-Panama second follow-up household survey.

3.1 Demographic Characteristics

3.1.1 Age, marital status, relation to head of household

The age distribution of the de facto population of women of reproductive age participating in the women’s health or pregnancy interviews in Panama is shown in Figure 3.1 by five-year age groups. About 53% of all women participating in the second follow-up SMI-Panama household survey were younger than 30 years of age, 29% were between the ages of 30 and 39, and 19% were between the ages of 40 and 49. While 6% of women reported being married and 65% being partnered, 20% indicated they were never married. Ten percent of women were reported at the SMI-Panama census to be the head of household, 22.8% to be the spouse of the head of the household, and 39.1% to be the biological child of the head of the household.

Figure 3.1: Age of respondents, unweighted

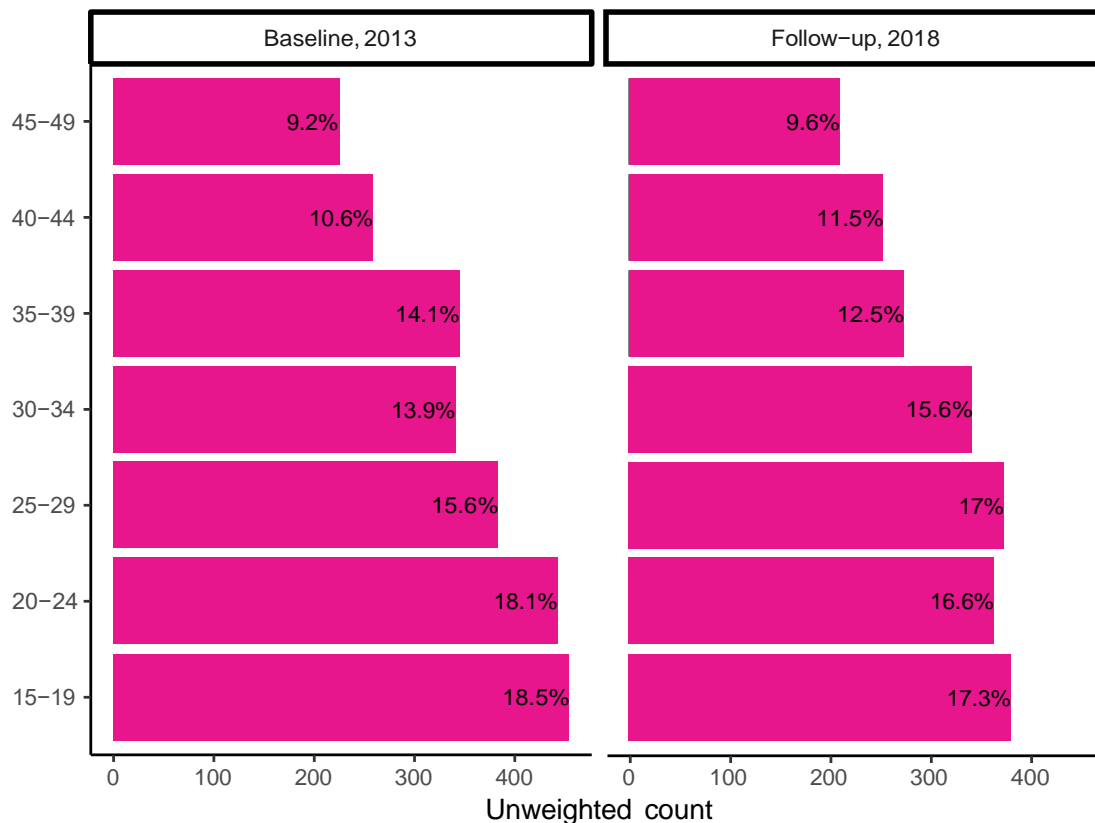


Table 3.1: Demographic characteristics of respondents

	Baseline 2013		Second Follow-Up 2018	
	n	%	n	%
Marital status				
Single	531	21.7	522	23.7
Married	211	8.6	144	6.5
Civil union/partnered	1499	61.1	1336	60.7
Divorced	10	0.4	2	0.1
Separated	156	6.4	165	7.5
Widowed	33	1.3	29	1.3
NA	7	0.3	0	0.0
Other	2	0.1	0	0.0
Don't know	2	0.1	1	0.0
Decline to respond	1	0.0	2	0.1
Respondent's relationship to head of household				
Head of household	170	6.9	210	9.5
Spouse	381	15.5	502	22.8
Biological child	648	26.4	860	39.1
Adopted or stepchild	24	1.0	56	2.5
Grandchild	81	3.3	140	6.4
Niece/nephew	39	1.6	38	1.7
Parent	5	0.2	1	0.0
Sibling	39	1.6	32	1.5
Daughter-in-law/son-in-law	62	2.5	92	4.2
Sister-in-law/brother-in-law	50	2.0	54	2.5
Grandparent	1	0.0	0	0.0
Mother-in-law/father-in-law	10	0.4	9	0.4
Other relative	23	0.9	28	1.3
Unrelated person	24	1.0	31	1.4
Partner	215	8.8	127	5.8
NA	676	27.6	10	0.5
Other	4	0.2	11	0.5
Don't know	0	0.0	0	0.0
Decline to respond	0	0.0	0	0.0

*At baseline, marital status is reported by the respondent in the Census. In the second follow-up, marital status is reported by the woman at the start of the Household Survey

* "NA" represents women who were missed in the census and added individually into the household survey, so relationship to the head of household was not registered.

3.2 Education Attainment and Literacy

Eighty three percent of second follow-up survey participants had some formal education (Table 3.2). For 52.4% of these women, the highest level of education completed was primary schooling. Literacy was assessed by asking respondents to read from a card the following sentence: "La salud del niño es muy

importante para su desarrollo en la vida.” Fifty seven percent of women surveyed were able to read the whole sentence. Twenty one percent of women could not read the sentence at all.

Table 3.2: Education attainment and literacy

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Ever attended school	1901	2352	79.1	3.2	1832	2181	82.7	2.0
Attended literacy course	190	2352	8.6	1.3	388	2178	17.5	1.8

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Educational attainment and literacy						
Primary	1124	58.6	3.3	897	52.4	2.6
Secondary	647	34.3	2.8	550	28.6	1.7
High school	64	4.1	1.0	320	16.0	1.7
University	58	3.0	0.5	62	3.1	0.6
Don't know	7	-	-	2	-	-
Decline to respond	1	-	-	1	-	-
Literacy						
Cannot read at all	551	25.5	3.1	417	21.0	1.9
Can read parts	363	14.6	1.2	459	21.5	1.6
Can read entire sentence	1422	60.0	3.1	1274	57.3	2.2
Visually impaired	1	0.0	-	3	0.2	0.1
Don't know	12	-	-	25	-	-
Decline to respond	4	-	-	4	-	-

3.3 Employment

As summarized in Table 3.3, the vast majority of respondents in the second follow-up were homemakers (84%). Of the 87 women who reported being employed and working at the time of the interview, most (97.1%) identified “Employee” as their occupational role.

Table 3.3: Employment

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Employment status						
Homemaker	1948	83.3	1.9	1791	84.0	1.5
Student	168	7.1	1.1	224	9.6	1.1
Employed/paid for work	182	7.9	1.0	87	3.7	0.6
Unable to work due to disability	10	0.6	0.2	32	1.6	0.4
Self-employed	0	0.0	-	11	0.6	0.2
Employed by a family member without pay	16	0.7	0.2	6	0.3	0.1
Retired	3	0.1	0.1	4	0.2	0.1
Employed, but did not work in last week	8	0.3	0.1	2	0.1	0.0
Don't know	12	-	-	14	-	-
Decline to respond	6	-	-	11	-	-
Occupational role, among women employed and being paid for work						
Employee	163	90.4	2.5	83	97.1	1.3
Independent contractor	11	6.6	2.4	4	2.9	1.3
Employer	5	2.0	0.9	0	0.0	-
Proprietor	3	1.0	0.7	0	0.0	-
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

* Self-employed option was not included in the baseline survey

3.4 Exposure to Mass Media

Respondents were asked about their exposure to newspapers, radio, and television. As displayed in Table 3.4, among women who demonstrated full or partial literacy in the second follow-up, 28.1% had weekly exposure to newspapers. Twenty six percent of all women had weekly exposure to radio, and 30.8% had weekly exposure to television.

Table 3.4: Exposure to mass media

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Newspapers, among literate women						
At least once a week	670	36.2	2.6	467	28.1	1.8
Less than once a week	573	33.1	1.8	530	33.1	2.1
Never	530	30.7	2.1	642	38.8	2.2
Don't know	8	-	-	17	-	-
Decline to respond	1	-	-	3	-	-
Not applicable	3	-	-	74	-	-
Radio						
At least once a week	1042	43.8	2.3	535	26.2	2.2
Less than once a week	532	22.8	1.6	507	25.5	2.6
Never	744	33.3	2.3	1038	48.4	2.7
Don't know	10	-	-	18	-	-
Decline to respond	0	-	-	3	-	-
Not applicable	25	-	-	81	-	-
Television						
At least once a week	898	38.4	3.2	642	30.8	3.1
Less than once a week	413	19.1	1.9	394	19.0	1.6
Never	979	42.5	3.4	1037	50.2	3.5
Don't know	21	-	-	13	-	-
Decline to respond	1	-	-	5	-	-
Not applicable	41	-	-	91	-	-

3.5 Access to Health Services

3.5.1 Proximity to health care facilities

Table 3.5 - Table 3.7 display the responses to several survey questions that were used to assess access to health care facilities. Respondents were asked to estimate proximity to health care facilities in terms of distance (kilometers) and travel time. Not surprisingly, respondents typically had more difficulty estimating distance to health care facilities. As shown in the tables below, “Don’t know” responses to the distance questions were exceedingly common.

Excluding the 1623 women who were unable to estimate the distance to the closest health facility in the second follow-up, 75% of women reported living 7 kilometers or less from a health facility (Table 3.5). Three-quarters of the sample indicated that it took less than 40 minutes to reach this facility by the usual means of transportation. One-quarter estimated the travel time from their household to the closest health facility to be 40 minutes or more.

Women were also asked for the travel distance and time to their usual health facility, if they had a usual health facility. Excluding the 1366 women who did not know the distance to the facility in the second follow-up, three-quarters of the women reported traveling up to 10 kilometers, and three-quarters of the women could travel to the closest facility in less than 33.3 minutes (Table 3.6).

Of the 912 women who reported a recent health facility visit for themselves or for family members in the second follow-up, three-quarters traveled less than 15 kilometers for care. Twenty-five percent of women traveled 15 to 300 kilometers for care. Half of women traveled for less than 12 minutes, and one-quarter spent 30 minutes or more traveling for care. The longest travel time reported for a recent illness was approximately 17 hours.

Table 3.5: Proximity to health care facilities: nearest health facility

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Distance, km	144	2208	0	0	0	3	150
Travel time, min	1299	958	1	5	10	60	2400
Second Follow-Up 2018							
Distance, km	559	1623	0	1	2	7	500
Travel time, min	1337	520	1	5	15	40	1800

Table 3.6: Proximity to health care facilities: usual health facility

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Distance, km	135	1931	0	0	0	3	150
Travel time, min	1310	725	1	5	10	60	3600
Second Follow-Up 2018							
Distance, km	538	1366	0	1	1	10	500
Travel time, min	1292	371	1	5	15	33.3	360

Table 3.7: Proximity to health care facilities: health facility for recent illness

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Distance, km	75	1575	0	0	0	2	150
Travel time, min	1033	580	1	5	10	60	1800
Second Follow-Up 2018							
Distance, km	291	912	0	1	3	15	300
Travel time, min	823	221	1	5	12	30	1020

3.6 Health Status

3.6.1 Current health status

Table 3.8 shows the self-rated current health status of all women participating in the survey. When asked to evaluate their current health status relative to the past year, 53.5% reported that their health was “about the same” in the second follow-up. While 44.4% reported that their health had improved, 2.1% reported worse health on the day of the interview, compared to last year. Eighty six percent could “easily” perform their daily activities (e.g., work, housework, and childcare). About 14% of women reported at least some degree of difficulty performing these tasks that was related to their health status.

Table 3.8: Current health status

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Current health relative to last year						
Better	1223	51.5	1.9	929	44.4	2.1
Worse	55	2.7	0.6	50	2.1	0.3
About the same	1070	45.8	1.8	1110	53.5	2.0
Don't know	5	-	-	84	-	-
Decline to respond	0	-	-	9	-	-
Ability to perform daily activities						
Easily	2169	91.8	1.2	1814	86.1	1.3
With some difficulty	159	7.6	1.2	277	12.0	1.2
With much difficulty	14	0.5	0.2	31	1.3	0.4
Unable to do	2	0.1	0.1	10	0.6	0.2
Don't know	9	-	-	33	-	-
Decline to respond	0	-	-	17	-	-

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Days in the last month that physical health was not good						
No days	2097	89.5	1.1	2064	96.5	0.6
1 to 3 days	115	4.9	0.5	59	2.7	0.6
4 to 7 days	104	5.5	0.8	16	0.7	0.2
7 to 29 days	0	0.0	-	0	0.0	-
All month	0	0.0	-	0	0.0	-
Don't know	35	-	-	39	-	-
Decline to respond	2	-	-	4	-	-
Days in the last month that mental health was not good						
No days	2177	94.7	1.1	2109	98.6	0.3
1 to 3 days	70	2.7	0.6	27	1.2	0.3
4 to 7 days	59	2.6	0.7	5	0.3	0.1
7 to 29 days	0	0.0	-	0	0.0	-
All month	0	0.0	-	0	0.0	-
Don't know	44	-	-	38	-	-
Decline to respond	3	-	-	3	-	-

3.6.2 Recent illness

Women were asked a series of questions about any illnesses or health problems they had in the two weeks preceding the interview. Out of the women in the second follow-up, 4% reported being sick during that time (Table 3.9). Of the 96 women who reported a recent illness, fever (24.3%), abdominal pain (13.1%), cough (11.5), and headache (11.5%) were the most commonly elicited specific complaints. Twenty percent of women specified a different health problem not listed in the questionnaire.

Table 3.9: Recent illness (in the last two weeks)

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Respondent was sick during the past two weeks	236	2341	11	1.2	96	2159	4	0.7

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Type of illness, among those sick in the past two weeks						
Fever	61	25.9	4.0	22	24.3	4.5
Abdominal pain	15	7.5	2.2	9	13.1	4.5
Cough	35	14.8	3.1	14	11.5	3.4
Headache	32	16.0	3.5	11	11.5	3.0
Diarrhea with vomiting	3	2.4	1.8	3	3.8	2.4
Skin rash/infection	10	3.4	1.0	2	3.1	2.2
Hypertension	0	0.0	-	2	3.1	2.3
Eye/ear infection	3	0.9	0.5	3	2.9	1.9
Vomiting	3	2.3	2.2	2	2.1	1.7
Asthma	5	1.6	0.7	2	1.6	1.2
Gynecologic problem	6	1.7	0.8	2	1.5	1.0
Blood in urine	0	0.0	-	1	0.8	0.8
Diarrhea without blood	2	0.5	0.4	1	0.7	0.7
Malaria	1	0.2	0.2	0	0.0	-
Tuberculosis	1	0.4	0.4	0	0.0	-
Bronchitis	4	1.3	0.6	0	0.0	-
Pneumonia	0	0.0	-	0	0.0	-
Diarrhea with blood	1	0.2	0.2	0	0.0	-
Anemia	1	0.2	0.2	0	0.0	-
Measles	0	0.0	-	0	0.0	-
Jaundice	0	0.0	-	0	0.0	-
Toothache	3	0.7	0.4	0	0.0	-
Stroke	1	0.3	0.3	0	0.0	-
Diabetes	0	0.0	-	0	0.0	-
HIV/AIDS	0	0.0	-	0	0.0	-
Paralysis	0	0.0	-	0	0.0	-
Obstetric problem	0	0.0	-	0	0.0	-
Chest infection	0	0.0	-	0	0.0	-
Swelling in legs, ankles, or feet	0	0.0	-	0	0.0	-
Other	49	19.6	3.1	17	20.1	4.7
Don't know	0	-	-	4	-	-
Decline to respond	0	-	-	1	-	-

Options for "Swelling in legs, ankles, or feet", "Blood in urine", and "Chest infection" were available only in the follow-up survey. In the baseline, "Chest infection" was included within the "Cough" answer choice.

3.6.3 Utilization of health services

Table 3.10 summarizes data regarding the utilization of health services among the 96 women who reported an illness in the two weeks preceding the second follow-up interview. Sixty eight (69.9%) of these women sought care at a health care facility. Many of these women attended a MINSA public health center health unit (43.2%); another 19.4% attended a MINSA public health post clinic. Only eleven women were hospitalized for their recent illness (19.6% of those who sought care).

Table 3.10: Utilization of health services for illness in the last two weeks

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Sought care for recent illness	111	235	46.2	5.4	68	93	69.9	5.2
Admitted to hospital for care*	6	106	3.8	1.5	11	62	19.6	6.8

* Among women who sought care at a public or private hospital, health center/clinic, mobile clinic, or other health facility; public health unit; private office; or pharmacy

Type of facility where care was sought	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
MINSAs public health center	47	44.9	7.5	30	43.2	7.8
MINSAs public health post	10	13.5	5.8	11	19.4	8.5
MINSAs public hospital	17	14.1	5.5	16	17.6	6.8
MINSAs public health sub-center	32	22.8	5.7	4	6.1	2.8
Traditional healer	0	0.0	-	3	6.1	4.8
Private health center/clinic	1	0.8	0.8	1	1.6	1.6
CSS public hospital	0	0.0	-	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	0	0.0	-	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private doctor's office	0	0.0	-	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
Community health worker	1	0.4	0.4	0	0.0	-
MINSAs public mobile clinic	1	0.9	0.9	0	0.0	-
Other	2	2.5	2.0	3	6.0	3.6
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

3.6.4 Insurance coverage

Less than 7% of women reported being covered by any type of health insurance in the second follow-up (Table 3.11).

Table 3.11: Insurance coverage

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
No insurance	2176	92.1	1.6	2028	92.9	2.3
Ministry of Health (MINSAs)	56	2.6	0.7	108	5.8	2.3
Social Security Fund (CSS)	108	5.1	1.3	28	1.2	0.3
Private insurance	2	0.1	0.1	0	0.0	-
Other	1	0.0	-	0	0.0	-
Don't know	10	-	-	12	-	-
Decline to respond	0	-	-	6	-	-

3.6.5 Other barriers to health care access

There are many other barriers to accessing health care. Women who reported that they sometimes or never sought care when they felt sick were asked what reasons prevented them from receiving health care when it was needed. Interviewers were instructed to ask in an open-ended manner for all applicable reasons, and to mark the appropriate response options in the questionnaire based on the woman's response. Table 3.12 summarizes the responses to this section. The most commonly cited factors influencing health care access in the second follow-up were the preference for treatment at home (37.5%) and the belief that the care is too expensive (32.8%). Thirty eight percent of women did not believe they were ill enough to seek treatment. Access and quality of care were also important barriers: 13% of women said the health center was too far away, 32.8% said care was too expensive, and 4.6% said the health center personnel were too difficult to deal with.

Table 3.12: Other barriers to health care utilization, women 15-49 years of age who were sick in the last two weeks but did not seek care

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Not sick enough to seek treatment	30	124	23.7	3.9	9	25	37.5	9.6
Care is too expensive	43	124	41.5	7.3	8	25	32.8	9.8
Treated self at home	25	124	19.9	3.4	5	25	20.7	8.0
Could not find transportation	26	124	21.8	5.7	3	25	14.5	10.0
Health center is too far away	35	124	27.4	7.1	3	25	13.0	6.5
Could not afford transportation	29	124	21.2	6.9	1	25	6.9	5.8
Too busy with work, children, or other commitments	4	124	3.9	1.9	1	25	6.9	5.8
Tried, but no staff was at the center	2	124	1.2	0.9	1	25	6.5	6.4
Religious or cultural beliefs	6	124	4.1	1.9	2	25	6.3	3.8
Did not want to go alone	5	124	3.1	1.7	1	25	4.7	3.9
It is difficult to deal with health center personnel	7	124	5.0	2.1	1	25	4.6	4.6
Health center infrastructure is poor	2	124	1.1	0.8	1	25	3.6	3.7
Health center does not have sufficient medicines	19	124	20.5	6.3	1	25	3.6	3.6
Did not know where to go	0	124	0.0	-	0	25	0.0	-
Health center is not well-equipped	5	124	2.7	1.2	0	25	0.0	-
Health center personnel not knowledgeable	1	124	3.3	3.1	0	25	0.0	-
Do not trust the personnel	2	124	1.7	1.2	0	25	0.0	-
Was previously mistreated	6	124	3.7	1.5	0	25	0.0	-
Tried, but was refused care	2	124	1.5	1.0	0	25	0.0	-
Could not get permission to go to the doctor	1	124	0.6	0.6	0	25	0.0	-
Other	12	124	11.4	4.4	0	25	0.0	-

*categories not mutually exclusive (select all that apply)

4 CHAPTER 4: EXPOSURE TO HEALTH SYSTEM INTERVENTIONS

This chapter summarizes the exposure of women to four health system interventions: community health worker interventions, breastfeeding interventions, child nutrition interventions, and child health interventions.

4.1 Exposure to Community Health Workers

Respondents were asked about their exposure to community health workers. Five percent of women reported meeting with a community health worker in the month preceding the second follow-up interview (Table 4.1). Four percent met only once, and 1.3% met two or more times.

Table 4.1: Exposure to community health workers, women 15-49 years

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Did not meet	2195	96.5	0.7	1672	94.9	1.0
One time	64	2.5	0.6	67	3.8	0.9
Two times	22	0.7	0.2	18	1.0	0.3
Three times	3	0.1	0.1	4	0.2	0.2
Four or more times	5	0.2	0.1	2	0.1	0.0
Don't know	56	-	-	127	-	-
Decline to respond	3	-	-	291	-	-

Referral and advice services provided by community health workers are summarized in Table 4.2. Among women who met with a community health worker in the last month during the second follow-up, vaccination for children was the most common service provided (42%). Advice about child nutrition counseling (29.7%) and family planning methods or counseling (16.2%) was also frequently reported.

Table 4.2: Services provided by community health workers, women 15-49 years

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Vaccination for children	71	95	69.6	5.3	39	91	42.0	9.4
Child nutrition counseling	56	96	57.1	7.6	28	90	29.7	5.2
Family planning methods or counseling	48	95	48.0	7.1	13	83	16.2	5.8
Referral for antenatal care	41	95	40.9	6.0	15	87	14.8	4.7
Referral for voluntary HIV/syphilis counseling and testing*	31	95	30.1	5.9	10	84	10.0	3.7
Referral for postnatal care	31	95	32.0	6.0	6	84	6.9	3.0
Referral for in-facility delivery	28	95	27.3	4.7	6	84	5.8	2.5
Information, education, and communication sessions (IEC)	34	95	35.5	6.5	7	85	5.8	2.8

* For the prevention of HIV/syphilis transmission from mother to child

	Second Follow-Up 2018			
	n	N	%	SE
Provided diarrhea treatment with ORS and zinc	16	88	15.6	4.5
Provided deworming treatments	17	88	14.8	5.1
Provided micronutrients	10	86	10.2	4.3
Other	38	86	47.8	10.0

Questions about these topics were not asked at baseline. They were added to the second follow-up survey to track exposure to SMI interventions.

4.2 Satisfaction with Community Health Workers

Women who met with a community health worker in the month preceding the interview were asked to assess their satisfaction with the following: number of visits, information provided by community health workers, and respectfulness of community health workers. Results are displayed in Table 4.3.

Table 4.3: Satisfaction with community health workers, women 15-49 years of age who met with community health workers in the last month

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Satisfaction with number visits from community health workers						
Very dissatisfied	12	9.3	4.0	18	10.0	3.2
Dissatisfied	20	19.6	4.9	9	6.1	1.8
Satisfied	71	67.9	6.0	130	78.0	3.8
Very satisfied	5	3.2	1.4	11	5.9	1.7
Don't know	11	-	-	10	-	-
Decline to respond	1	-	-	3	-	-
Satisfaction of knowledge and training of community health workers						
Very dissatisfied	11	8.3	3.9	15	8.6	3.2
Dissatisfied	10	10.5	3.8	7	3.6	1.5
Satisfied	82	78.0	5.7	136	82.4	4.0
Very satisfied	5	3.2	1.4	10	5.3	1.6
Don't know	11	-	-	10	-	-
Decline to respond	1	-	-	3	-	-
Satisfaction with information provided by community health workers						
Very dissatisfied	9	6.9	3.6	15	8.5	3.2
Dissatisfied	12	12.0	3.9	9	5.3	1.7
Satisfied	82	78.7	5.7	133	81.3	4.0
Very satisfied	4	2.4	1.2	10	4.9	1.6
Don't know	12	-	-	10	-	-
Decline to respond	1	-	-	4	-	-
Satisfaction with respectfulness shown by community health workers						
Very dissatisfied	9	7.0	3.7	15	8.6	3.2
Dissatisfied	13	12.9	4.2	10	5.6	1.7
Satisfied	78	77.6	5.5	131	79.3	4.3
Very satisfied	4	2.5	1.3	10	6.5	2.8
Don't know	15	-	-	11	-	-
Decline to respond	1	-	-	4	-	-

4.3 Counseling provided in health facilities

Respondents who had visited a health facility in the last 12 months (541 women at the second follow-up) were asked whether they were given counseling about certain topics by health center personnel. Approximately 23.4% of women in the second follow-up reported receiving guidance or advice about breastfeeding in the 12 months preceding the interview (Table 4.4). Approximately 34.2% of women in the second follow-up reported receiving guidance or advice about child nutrition in the 12 months preceding the interview (Table 4.4). Approximately 24% of women in the second follow-up reported receiving guidance or advice about danger signs for children's health in the 12 months preceding the interview (Table 4.4).

Table 4.4: Exposure to breastfeeding, child nutrition, and child health interventions, women 15-49 years

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Breastfeeding	395	1222	28.2	2.2	108	417	23.4	2.9
Child nutrition	575	1224	41.7	2.9	153	411	34.2	3.3
Danger signs for children's health	412	1215	29.0	2.4	113	409	24.0	2.8

4.4 Counseling provided in health facilities to women with children

In the follow-up survey, respondents who had visited a health facility in the last 12 months and who had children (441 women at the second follow-up) were asked whether they were given counseling about certain topics by health center personnel.

Table 4.5: Counseling provided in health facilities to women with children

	Second Follow-Up 2018			
	n	N	%	SE
Diarrhea treatment with ORS and zinc	66	337	17.2	2.5
Deworming	62	326	15.8	2.7
Micronutrients	42	328	10.0	2.2

Questions about these topics were not asked at baseline. They were added to the second follow-up survey to track exposure to SMI interventions.

5 CHAPTER 5: FAMILY PLANNING

This chapter summarizes key indicators related to the knowledge of, access to, need for, and use of family planning methods among women of reproductive age (15-49 years) participating in the SMI-Panama second follow-up household survey. At baseline, some questions were posed differently between Guna Yala and Embera segments. This is noted with each table, as applicable.

Family planning questions were asked only to women of reproductive age who were married or partnered. During the SMI-Panama baseline household survey, family planning questions were asked to women whose marital status was reported as “married” or “partnered” by the SMI-Panama household census respondent. During the second follow-up, the family planning section was instead conditioned on a question about marital status asked to the respondent herself at the start of the woman’s health interview. This captured participants who had a change in marital status between the census and household survey and participants whose marital status was incorrectly recorded in the census. At the baseline, 1,634 women qualified for the family planning questions, and at the second follow-up, 1,447 women qualified.

5.1 Knowledge of the Fertile Period

The successful use of family planning methods depends on an understanding of when during the menstrual cycle a woman is most likely to conceive. This is especially true for traditional methods such as the rhythm method (i.e., periodic abstinence) and the withdrawal method. To assess knowledge of the fertile period, women were asked if there are certain days when a woman is more likely to become pregnant, and when during the menstrual cycle those days occur. Responses to these questions are summarized in Table 5.1. In the second follow-up, 48% of women indicated that there were certain days when a woman is more likely to become pregnant, and of these women, only 8.4% identified the correct timing of the fertile period (halfway between two periods).

At baseline, women in Embera and Guna Yala segments were asked these questions differently. Women in Embera were asked whether there were certain days when a woman is more likely to become pregnant, and then the women identified the correct timing of the fertile period. In Guna Yala, women were asked to identify the correct timing of a woman’s fertile period, without the first question about fertile periods that was asked in Embera.

Table 5.1: Knowledge of the fertile period, women 15-49 years of age who are married or partnered

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Knowledge of the fertile period	374	423	93.4	17.7	233	480	48	5.4

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Knowledge of timing of fertile period, among women who know of fertile period						
Just before period	0	0.0	-	11	5.6	2.0
During period	2	0.5	0.5	4	1.2	0.6
Just after period	317	98.1	1.2	194	84.8	4.4
Halfway between periods	3	1.1	1.1	18	8.4	3.1
Other	1	0.3	0.3	0	0.0	-
Don't know	1	-	-	6	-	-
Decline to respond	0	-	-	0	-	-

5.2 Use of Family Planning Methods

5.2.1 Current use

The coverage of contraceptive methods is one of the indicators most frequently used to assess the success of family planning program activities. It is also widely used as a determinant of fertility. Women who said they had heard of a family planning method were asked if they were currently using that method. Table 5.2 displays the percentage of all women using at least one family planning method, as well as the percentage of women reporting use of more than one family planning method at the time of the interview. NA percent of all survey respondents in the second follow-up reported current use of at least one family planning method.

At baseline, women in Embera who said they had heard of a family planning method were then asked if they were currently using that method. In Guna Yala, women were asked if they were using any method of family planning, and then asked which method.

Women considered “in need” of family planning methods are those who are married or partnered, excluding those who report the following characteristics: does not have sexual relations, virgin, menopausal, infertile, hysterectomy, pregnant, or wants to become pregnant. Even women not considered “in need” of contraception may use a method. Table 5.3 shows the uptake of modern family planning methods among all married and partnered women (1.5%), and among women considered “in need” of contraception (1.7%).

Table 5.2: Current use of family planning methods, women 15-49 years of age who are married or partnered

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Currently in need of contraception	1711	2017	83.9	1.1	1276	1447	86.9	2.0
Current use of any method, among married or partnered women	275	2017	12.9	2.6	27	1447	1.5	0.4

Table 5.3: Current use of modern family planning methods, women 15-49 years of age who are married or partnered and in need of contraception

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Current use of any method, among women in need of contraception	258	1711	14.3	2.9	26	1276	1.7	0.5
Current use of modern method, among women in need of contraception	176	1711	10.0	2.0	20	1276	1.2	0.4

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Number of methods the respondent is currently using						
Not using any family planning methods	1456	85.9	2.8	1254	98.7	0.4
Using 1 family planning method	253	13.9	2.8	22	1.3	0.4
Using 2 family planning methods	2	0.2	0.2	0	0.0	-

Table 5.4 displays the percentage of all women using specific family planning methods. The methods most commonly in use during the second follow-up are injectables (1%) and other traditional method (0.9%).

Table 5.4: Current use of family planning methods, by type of method, for women 15-49 years of age who are married or partnered

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Injectable	162	2164	6.9	1.3	12	614	1.0	0.5
Other traditional method	23	2047	1.1	0.4	5	622	0.9	0.5
Female sterilization	26	2057	1.1	0.3	1	616	0.4	0.4
Implant	1	2040	0.0	-	2	615	0.2	0.2
Oral contraceptive	9	2123	0.5	0.3	1	613	0.1	0.1
Withdrawal	122	2047	5.1	1.3	1	612	0.1	0.1
Male sterilization	0	2041	0.0	-	0	615	0.0	-
Intrauterine device (IUD)	8	2078	0.6	0.3	0	615	0.0	-
Male condom	2	2086	0.3	0.2	0	614	0.0	-
Female condom	0	2033	0.0	-	0	614	0.0	-
Diaphragm	1	2040	0.0	-	0	613	0.0	-
Sponge	0	2030	0.0	-	0	612	0.0	-
Lactational amenorrhea	18	2034	0.6	0.2	0	613	0.0	-
Rhythm	10	2049	0.5	0.2	0	612	0.0	-
Emergency contraception (Plan B)	0	2032	0.0	-	0	615	0.0	-
Other modern method	0	2031	0.0	-	0	620	0.0	-

* categories not mutually exclusive (select all that apply)

5.3 Sources of Family Planning Methods

Information on where women obtain contraceptive methods is important for family planning program managers. The places where the most commonly used modern contraceptive methods (injection, female sterilization, and implant) were acquired are summarized in Table 5.5. The public sector is the source most commonly reported by users of most modern family planning methods.

Table 5.5: Source of modern family planning methods, women 15-49 years of age who are married or partnered

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Injectable						
MINSAs public health center	80	41.5	8.1	10	90.5	6.5
MINSAs public hospital	12	9.1	3.5	1	4.8	3.2
MINSAs public health sub-center	44	28.6	8.1	1	4.8	3.2
CSS public hospital	0	0.0	-	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	0	0.0	-	0	0.0	-
MINSAs public health post	14	12.7	8.0	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private health center/clinic	1	1.5	1.5	0	0.0	-
Private doctor's office	1	0.4	0.4	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
Community health worker	9	4.8	3.7	0	0.0	-
Traditional healer	0	0.0	-	0	0.0	-
Store	0	0.0	-	0	0.0	-
Market	0	0.0	-	0	0.0	-
Church	0	0.0	-	0	0.0	-
Friend/parent	2	1.5	1.1	0	0.0	-
MINSAs public mobile clinic	0	0.0	-	0	0.0	-
Other	0	0.0	-	0	0.0	-
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-
Female sterilization						
MINSAs public hospital	18	66.4	12.7	1	100.0	0.0
CSS public hospital	3	11.7	7.1	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	1	2.3	2.3	0	0.0	-
MINSAs public health center	3	16.0	10.8	0	0.0	-
MINSAs public health sub-center	0	0.0	-	0	0.0	-
MINSAs public health post	0	0.0	-	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private health center/clinic	0	0.0	-	0	0.0	-

(continued)

	n	%	SE	n	%	SE
Private doctor's office	0	0.0	-	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
Community health worker	0	0.0	-	0	0.0	-
Traditional healer	0	0.0	-	0	0.0	-
Store	0	0.0	-	0	0.0	-
Market	0	0.0	-	0	0.0	-
Church	0	0.0	-	0	0.0	-
Friend/parent	0	0.0	-	0	0.0	-
MINSA public mobile clinic	1	3.6	3.6	0	0.0	-
Other	0	0.0	-	0	0.0	-
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-
Implant						
MINSA public health sub-center	1	54.7	35.4	1	65.8	32.1
MINSA public health center	0	0.0	-	1	34.2	32.1
MINSA public hospital	0	0.0	-	0	0.0	-
CSS public hospital	0	0.0	-	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	0	0.0	-	0	0.0	-
MINSA public health post	0	0.0	-	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private health center/clinic	0	0.0	-	0	0.0	-
Private doctor's office	0	0.0	-	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
Community health worker	0	0.0	-	0	0.0	-
Traditional healer	0	0.0	-	0	0.0	-
Store	0	0.0	-	0	0.0	-
Market	0	0.0	-	0	0.0	-
Church	0	0.0	-	0	0.0	-
Friend/parent	0	0.0	-	0	0.0	-
MINSA public mobile clinic	0	0.0	-	0	0.0	-
Other	1	45.3	35.4	0	0.0	-
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

5.4 Non-Use and Interruption of Use of Family Planning Methods

Non-use and interruption of use of family planning methods are major concerns for family planning program managers.

5.4.1 Prevalence of interruption

The prevalence of interruption and non-use of family planning methods is summarized in Table 5.7. Of women participating in the second follow-up survey, 86.9% are considered “in need” of contraception (i.e., they did not report any of the following: does not have sexual relations, virgin, menopausal, infertile, hysterectomy, pregnant, or wants to become pregnant). Among these women in need, 0.4% reported any interruption in the use of family planning methods in the previous year.

Table 5.7: Interruption and non-use of family planning methods, among women 15-49 years of age who are married or partnered and in need of contraception

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Discontinuation rate*	31	1711	1.7	0.4	6	1276	0.4	0.2

* any interruption in use during the last year, among women in need of contraception

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Number of interruptions in use during the last year						
none	1680	98.3	0.4	0	0	-
once	27	1.5	0.4	0	0	-
2-6 times per year	4	0.2	0.1	0	0	-
7-12 times per year	0	0.0	-	0	0	-
>12 times per year	0	0.0	-	0	0	-

5.4.2 Reasons for non-use

Women who indicated they were not using any method on the day of the interview were asked to specify all reasons why they did not use a method. The interviewer matched responses provided by the respondent to a list of reasons in the questionnaire (Table 5.8). The most commonly cited reasons for non-use at the time of the second follow-up interview were, do not like to use contraception (12.8%), respondent knows no method (11.4%), and respondent is married (9.3%).

Table 5.8: Reasons for non-use of family planning methods, women 15-49 years of age who are married or partnered and who are not using family planning methods

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Do not like to use contraception	64	1851	3.1	0.6	177	1418	12.8	1.8
Knows no method	309	1851	17.0	1.4	172	1418	11.4	1.2
Married	327	1851	16.4	1.5	117	1418	9.3	1.3
Spouse or partner opposed to use	56	1851	2.9	0.7	83	1418	5.8	1.0
Infertile	43	1851	2.4	0.6	47	1418	3.4	1.0
Infrequently sexually active	47	1851	2.1	0.6	27	1418	2.1	0.6
Using contraception is uncomfortable	25	1851	1.2	0.4	32	1418	1.9	0.5
Breastfeeding	64	1851	2.9	0.6	26	1418	1.3	0.3
Currently pregnant	35	1851	1.6	0.4	13	1418	1.3	0.4
Against religious beliefs	50	1851	2.6	0.6	14	1418	1.2	0.5
Trying to become pregnant	22	1851	0.9	0.2	19	1418	1.2	0.4
Menopausal	69	1851	3.9	0.7	13	1418	1.0	0.3
Not sexually active	96	1851	6.0	0.8	9	1418	0.8	0.4
Unmarried	383	1851	22.7	1.8	7	1418	0.6	0.3
Opposed to use	331	1851	17.5	1.5	9	1418	0.6	0.2
The health facility is too far away	23	1851	1.3	0.5	11	1418	0.6	0.3
No menstrual period since giving birth	26	1851	1.1	0.3	7	1418	0.5	0.3
Knows no source for methods	12	1851	0.5	0.3	7	1418	0.5	0.2
Have undergone hysterectomy	6	1851	0.3	0.2	5	1418	0.4	0.2
Concerned about side effects	41	1851	2.1	0.4	5	1418	0.4	0.2
Using contraception interferes with normal body processes	33	1851	1.3	0.4	7	1418	0.4	0.2
Could not find transportation to a health facility	11	1851	0.5	0.2	2	1418	0.1	0.1
The method is too expensive	15	1851	0.9	0.3	2	1418	0.1	0.1
Preferred method was not available	9	1851	0.4	0.2	1	1418	0.1	0.1
Mistrust health center staff	9	1851	0.4	0.1	2	1418	0.1	0.1
Virgin	45	1851	2.3	0.5	1	1418	0.0	-
Others opposed to use	24	1851	1.2	0.4	0	1418	0.0	-
Could not afford transportation	9	1851	0.4	0.2	1	1418	0.0	-
No method was available	6	1851	0.2	0.1	1	1418	0.0	-
Health facility staff difficult to deal with	7	1851	0.3	0.1	0	1418	0.0	-
Other	55	1851	2.7	0.5	11	1418	0.7	0.3

* "Using contraception affects health" was an option offered in the second follow-up, but was not available at baseline.

0 women selected this as a reason for not using family planning at the second follow-up.

* categories not mutually exclusive (select all that apply)

5.5 Family Planning Intentions and Decision-Making

5.5.1 Participation in family planning decision

In this setting in the second follow-up, 78.6% of women report that decisions about family planning methods are jointly made by the respondent and her partner. In only 4.9% of cases, the decision to use family planning methods is up to the respondent's partner alone.

Table 5.9: Participation in family planning decision-making, women 15-49 years of age who are married or partnered and are currently using family planning methods

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Joint decision	325	41.6	3.2	50	78.6	6.9
Mostly the respondent	318	45.0	3.3	10	16.5	6.0
Mostly respondent's spouse/partner	47	6.6	1.2	4	4.9	2.8
Not applicable - not partnered	26	3.8	1.0	0	0.0	-
Others	24	3.0	0.8	0	0.0	-
Don't know	99	-	-	13	-	-
Decline to respond	20	-	-	4	-	-

5.5.2 Informed choice

With respect to use of family planning methods, “informed choice” refers to whether or not health care workers described other options for family planning methods, possible side effects associated with the method of choice, and how to respond to side effects if they occur. This information can be used to help women select an appropriate contraceptive method, and to assist users in coping with side effects (thus decreasing discontinuation rates for non-permanent methods).

Table 5.10 shows the percent of women currently using family planning methods who were told about other options for contraception (38.6% of women in the second follow-up).

Table 5.10: Family planning decision-making, informed choice, women 15-49 years of age who are married or partnered and who are currently using family planning methods

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Informed about other family planning options by a doctor, nurse, or community health worker	373	852	42.6	2.5	30	70	38.6	8.2

5.6 Exposure to Family Planning Information

5.6.1 Family planning messages delivered by health care providers

Respondents were asked about their exposure to family planning messages delivered by health care providers (Table 5.11). Thirty nine percent of women in the second follow-up reported being advised about family planning at the health care facility they attend during the past 12 months. Five percent of all respondents indicated that they had been visited by a health promoter who provided information about family planning in the last 12 months. Just 1.8% of respondents who had not attended a health facility in the last 12 months were visited by a health promoter who provided information about family planning.

Table 5.11: Family planning messages delivered by health care providers in the last 12 months, women 15-49 years of age who are married or partnered

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Discussion about family planning methods with staff member at a health facility	499	1127	42.3	2.7	122	288	39.0	3.8
Discussion about family planning methods during health promoter visit	177	2204	7.1	1.0	67	1089	5.3	0.9
Visit by promotor, among women who had not visited a health facility	34	1030	2.5	0.7	17	760	1.8	0.6

5.7 Age at First Birth

5.7.1 Age at first birth

Sixty nine percent of respondents in the second follow-up had ever given birth (Table 5.12). Of these women, the median age of the women when their first child was born was 18 years old. Only a quarter of women were 21 years old or older when their first child was born. Three percent of women reported a history of stillbirth, miscarriage, and/or abortion.

Table 5.12: Parity and age at first birth, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Ever given birth	1920	2353	78.3	1.4	1407	1939	69.4	2.0
Ever had a stillbirth, miscarriage, or abortion	125	2339	4.8	0.6	41	1540	2.7	0.8

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Age at first birth, among parous women	1667	0	10	16	18	20	41
Second follow-up 2018							
Age at first birth, among parous women	1215	0	12	16	18	21	251

6 CHAPTER 6: MATERNAL HEALTH CARE

This chapter summarizes key indicators pertaining to antenatal care, delivery care, and postpartum care for the most recent live birth in the last two years as reported by women of reproductive age (15-49 years) participating in the SMI-Panama second follow-up household survey. Participating women were interviewed about all live births in the last five years, but to reduce the impact of recall bias, results reported here are for each woman's most recent birth in the last two years. At the baseline, 1025 women were interviewed about at least one birth in the last two years. At the second follow-up, 691 women were interviewed about births in the last two years.

6.1 Antenatal Care

To reduce recall bias, data pertaining to antenatal care are summarized for a woman's most recent birth in the last two years.

6.1.1 *Antenatal care coverage*

Early and regular checkups by trained medical providers are important in assessing the physical status of women during pregnancy and provide an opportunity to intervene in a timely manner if any problems are detected. The Maternal and Child Health Questionnaire captured information from women on both overall coverage of antenatal care and the content of care received. To obtain information on source of antenatal care, interviewers recorded all persons a woman consulted for care. Timing of antenatal care was assessed by asking women how many weeks or months pregnant they were when they attended their first antenatal care visit. The same details were recorded for up to eight antenatal care visits.

The percentage of women with a birth in the last two years who attended at least one antenatal care visit for the most recent birth, and the percent distribution of timing of care among those who received any antenatal care are presented in Table 6.1. Definition of "most recent birth" changed between baseline and second follow-up. The type of facility where antenatal care was sought is detailed in Table 6.2.

Among women with a child under the age of 2 in the second follow-up, 59.5% attended at least one antenatal care visit and 58% of women had at least one antenatal care visit with a doctor or professional nurse. At the second follow-up, 19.8% of women had an antenatal care visit during the first trimester (first 12 weeks) with a doctor or professional nurse, compared to 29.8% at the baseline. The median age of gestation at the first antenatal care visit during the second follow-up was 3 months.

Table 6.1: Antenatal care coverage for the most recent birth in the last two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Attended at least one antenatal care visit	885	1017	85.5	2.4	373	574	59.5	3.3
Attended at least one antenatal care visit with doctor or professional nurse	813	1017	78.4	2.5	363	574	58.0	3.4
Antenatal care visit with doctor or professional nurse in the first trimester (12 weeks)	274	935	29.8	2.1	121	530	19.8	2.2

* Definition of most recent birth changed between baseline and second follow-up

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Month of gestation of first ANC visit	803	77	0.2	2	3	4	9
Second follow-up 2018							
Month of gestation of first ANC visit	329	44	0.2	2	3	4	9

Regarding the type of facility where antenatal care was usually sought during the second follow-up (Table 6.2), most women who attended antenatal care for their most recent delivery in the last two years sought care in a MINSa public health center (46.5%) or MINSa public hospital (18%). Only 16.8% of women sought antenatal care in a MINSa public health sub-center.

Table 6.2: Usual antenatal care location, women 15-49 years of age who attended at least one antenatal care visit for most recent birth in the last two years

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
MINSAs public health center	414	46.8	5.5	175	46.5	5.2
MINSAs public hospital	106	10.4	3.6	79	18.0	3.4
MINSAs public health sub-center	202	23.5	4.7	49	16.8	4.8
MINSAs public health post	83	9.8	3.5	44	12.9	4.5
Private doctor's office	3	0.3	0.2	5	0.9	0.4
Private health center/clinic	5	1.4	0.8	4	0.8	0.4
Community health worker	7	0.6	0.4	2	0.8	0.6
CSS public hospital	1	0.1	0.1	3	0.7	0.4
Private hospital	1	0.1	0.1	1	0.4	0.4
Other public health center	1	0.1	0.1	1	0.3	0.2
Other private health facility	0	0.0	-	1	0.3	0.3
Private mobile clinic	0	0.0	-	1	0.1	0.1
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	5	0.4	0.2	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
Traditional healer	1	0.2	0.2	0	0.0	-
MINSAs public mobile clinic	39	5.3	1.7	0	0.0	-
Other	9	1.0	0.4	7	1.6	0.6
Don't know	5	-	-	0	-	-
Decline to respond	0	-	-	1	-	-

6.1.2 Frequency of antenatal care visits

Antenatal care can be more effective in avoiding adverse pregnancy outcomes when it is sought early in the pregnancy and continues until delivery. According to the national norm in Panama, it is recommended that women receive a minimum of four antenatal care visits. The frequency of antenatal care visits is summarized in Table 6.3. Table 6.4 shows the percentage of women with four or more visits with skilled providers and according to best practices.

In the second follow-up, 37.2% of women reported having four or more antenatal care visits during their most recent pregnancy in the last two years. Seventeen percent of women reported having seven or more antenatal care visits during their most recent pregnancy.

The content of antenatal care is as crucial as the frequency of visits. As shown in Table 6.4, 35.9% percent of all women in the second follow-up survey had four or more antenatal care visits with at least one visit with a doctor or professional nurse, and with each of 10 defined best practices performed at least once during pregnancy (measurement of blood type, test for anemia, test for syphilis, test for HIV, test of blood glucose, test for proteinuria, measurement of maternal blood pressure, measurement of maternal weight, measurement of fundal height, and measurement of fetal heartbeat).

Table 6.3: Frequency of antenatal care visits for the most recent birth in the last two years, women 15-49 years of age

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
None	132	19.7	3.0	201	50.3	3.6
1-3 visits	128	18.6	2.1	58	12.6	1.7
4-6 visits	273	33.8	2.6	103	20.2	2.7
7-9 visits	204	27.8	2.5	87	16.6	2.4
10+ visits	1	0.1	0.1	3	0.4	0.3
Don't know	269	-	-	107	-	-
Decline to respond	0	-	-	15	-	-

Table 6.4: Frequency of antenatal care visits with skilled provider for the most recent birth in the last two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Four or more antenatal care visits, at least one of which was with doctor or professional nurse	414	748	51.6	3.2	188	452	35.9	3.8
At least four antenatal care visits, with at least one visit with a doctor or professional nurse, according to best practices*	39	745	5.2	1.5	27	452	6.5	1.8

*measuring blood type, anemia, syphilis, HIV, glucose, proteinuria, blood pressure, weight, fundal height, fetal heartbeat

6.1.3 Content of antenatal care

The content of antenatal care is an important indicator of quality of care. The coverage of key procedures was assessed among women who received any antenatal care for a birth in the last two years (Table 6.5 and Table 6.6). It is important to remember that the validity of these data hinge on the respondent's understanding of the question and her ability to recall events that may have occurred several years prior to the interview.

There was variation in performance of the 10 "best practice" procedures during the second follow-up: measured maternal weight (95.6%), measured maternal blood pressure (89.7%), measured fundal height (75.9%), measured fetal heartbeat (63.2%), tested for proteinuria (61.3%), measured blood type (58.8%), tested for anemia (54%), measured blood glucose (41.1%), tested for HIV (35.2%), and tested for syphilis (34.7%). Women were unfamiliar with several tests, as evidenced by the high number of missing responses for proteinuria and syphilis in particular.

Table 6.5: Content of antenatal care visits - best practices, among women 15-49 years who attended at least one antenatal care visit for most recent birth in the last two years

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Measured maternal weight	852	878	95.9	1.1	345	360	95.6	1.5
Measured maternal blood pressure	806	858	93.4	1.1	307	341	89.7	2.3
Measured fundal height	571	825	68.9	2.6	256	331	75.9	2.5
Measured fetal heartbeat	623	827	74.4	2.0	216	332	63.2	3.7
Tested for proteinuria	287	485	60.2	3.4	116	188	61.3	4.8
Measured blood type	381	529	72.4	2.6	117	205	58.8	4.8
Tested for anemia	339	508	67.9	2.8	97	183	54.0	5.2
Measured blood glucose	218	491	44.8	3.7	81	196	41.1	4.8
Tested for HIV	303	682	44.2	3.5	98	268	35.2	4.1
Tested for syphilis	139	436	33.4	3.6	61	182	34.7	5.0

Most women in the second follow-up had a collected blood specimen (87.6%) and a collected urine specimen (84.4%) collected during their antenatal care visits for the most recent birth during the past two years.

Table 6.6: Content of antenatal care visits - other services provided, among women 15-49 years who attended at least one antenatal care visit for most recent birth in the last two years

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Collected blood specimen	755	873	85.5	2.5	303	342	87.6	2.6
Collected urine specimen	750	878	84.1	2.5	292	349	84.4	2.5
Tested for diabetes	89	169	51.7	5.3	51	79	68.2	6.1
Performed an ultrasound	212	861	23.4	2.0	168	334	48.6	3.3
Offered an HIV test	311	698	44.4	3.4	105	273	37.5	4.2

6.1.4 Coverage of tetanus toxoid vaccinations during pregnancy

Tetanus toxoid injections are given during pregnancy for the prevention of neonatal tetanus. To prevent transmission of this potentially fatal infection, all women should be vaccinated with tetanus toxoid when they become pregnant. A baby is considered protected if the mother receives two doses of tetanus toxoid during pregnancy, with the second at least two weeks before delivery. However, if a woman was vaccinated previously, she only requires one dose during the current pregnancy. Five doses are considered adequate to confer lifetime immunity. To assess the coverage of tetanus toxoid vaccination, women who reported receiving any antenatal care during their most recent pregnancy were asked if they received tetanus toxoid injections.

As shown in Table 6.7, the coverage of sufficient tetanus toxoid vaccination during pregnancy was 40.8% among women who received antenatal care during the second follow-up. Thirty six percent of women received one vaccination during the pregnancy and 19.9% received two or more. Among women with antenatal care, 35.5% had never been vaccinated before and 44.7% had received a vaccine in the last 10 years. Among women who were not vaccinated during prenatal care visits, 20.9% had never been vaccinated.

Table 6.7: Coverage of tetanus toxoid vaccinations during pregnancy, among women 15-49 years who attended at least one antenatal care visit for most recent birth in the last two years

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Two or more injections during pregnancy	54	24.9	3.6	17	19.9	4.6
One injection during pregnancy, one <10 years before	21	10.2	2.2	16	20.9	5.5
One injection during pregnancy, none <10 years before	46	23.6	3.3	14	14.6	4.8
No injections during pregnancy, one or more <10 years before	26	11.2	2.7	16	23.8	6.5
No injections during pregnancy nor during the 10 years prior	60	30.1	3.9	13	20.9	6.2
Don't know	674	-	-	257	-	-
Decline to respond	1	-	-	40	-	-

6.1.5 Exposure to safe pregnancy messages

Women who received antenatal care were asked about a series of topics for which they might have received counseling or advice during their pregnancy. Table 6.8 shows the percentage of women in the second follow-up who were exposed to the following messages: counseled about pregnancy (88.5%); advised to deliver in a facility (74.7%); given information about in-facility delivery (70.7%); counseled about breastfeeding (63.1%); counseled about childcare (62.3%); counseled about nutrition during pregnancy (59.3%); counseled about danger signs during pregnancy (59.1%).

Exposure to safe pregnancy practices increased from baseline to second follow-up for all counseling categories. In the second follow-up, 34.2% of women were counseled about contraception after delivery compared to 37.1% at baseline. 18.1% of women in the second follow-up, compared to 13.5% at baseline, were advised to have a Cesarean section. Compared to 10.4% of women at baseline, 13.1% of women in the second follow-up were counseled about making a transportation plan for delivery.

Table 6.8: Exposure to safe pregnancy practices, women 15-49 years of age who attended at least one antenatal care visit for most recent birth in the last two years

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Counseled about pregnancy	695	850	81.2	1.8	302	345	88.5	2.2
Advised to deliver in a facility	566	820	67.8	3.1	241	318	74.7	3.6
Given information about in-facility delivery	549	810	66.4	3.2	228	318	70.7	3.3
Counseled about breastfeeding	575	821	69.0	2.1	209	328	63.1	3.4
Counseled about childcare	503	791	62.4	2.4	203	323	62.3	3.4
Counseled about nutrition during pregnancy	557	788	70.6	2.6	185	319	59.3	3.3
Counseled about danger signs during pregnancy	422	745	55.9	2.5	183	319	59.1	3.8
Counseled about contraception after delivery	314	803	37.1	2.8	104	305	34.2	3.0
Advised to have a Cesarean section	104	798	13.5	1.8	60	329	18.1	2.6
Counseled about making a transportation plan for delivery	72	792	10.4	1.6	43	333	13.1	2.2

6.2 Delivery Care

Proper medical attention and hygienic conditions during delivery can reduce the risk of complications, infections, and even death for the mother and newborn baby. Characteristics of the delivery, including place of delivery and assistance at delivery were captured for all births in the five years preceding the survey. To reduce recall bias, only data from the most recent delivery within the last two years are summarized.

6.2.1 Place of delivery

The location of the most recent birth and the means of transportation used to get to the facility are shown in Table 6.9. The majority of births occurred in MINSA public health centers (35%) and MINSA public hospitals (24.9%). Yet 11.3% of women reported giving birth at home or at another person's home. Deliveries in private-sector facilities were rare (0.8%). Among women who delivered in a facility, 54.8% indicated that they travelled by on foot (Table 6.10).

Table 6.9: Place of delivery for most recent birth in the last two years, women 15-49 years of age

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
MINSAs public health center	303	35.0	4.3	135	35.0	4.7
MINSAs public hospital	226	24.1	3.5	111	24.9	4.0
MINSAs public health sub-center	116	13.9	3.4	41	14.4	4.6
MINSAs public health post	44	5.5	2.2	30	9.3	3.5
Own home	157	18.2	3.0	32	9.0	2.2
Other house	5	0.4	0.2	5	2.3	1.3
CSS public hospital	12	1.0	0.4	5	1.1	0.5
Traditional healer	4	0.3	0.2	2	1.0	0.7
Private hospital	0	0.0	-	2	0.6	0.4
CSS polyclinic	2	0.5	0.4	2	0.4	0.3
Private health center/clinic	1	0.1	0.1	1	0.2	0.2
ULAPS/CAPPS	0	0.0	-	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private doctor's office	0	0.0	-	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
Community health worker	0	0.0	-	0	0.0	-
MINSAs public mobile clinic	0	0.0	-	0	0.0	-
Other	10	1.0	0.3	7	1.6	0.6
Don't know	1	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

Table 6.10: Transportation to place of delivery for most recent birth in the last two years, among women 15-49 years of age who delivered in a facility

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
On foot	384	698	52.7	5.0	182	318	54.8	5.9
Private vehicle	73	698	10.9	1.9	53	318	14.0	2.7
Other public transit	86	698	11.0	1.5	23	318	8.0	2.5
Ambulance	12	698	1.4	0.5	3	318	1.1	0.7

*categories not mutually exclusive (select all that apply)

Women were asked about the proximity to the health facility used to deliver. Of the 324 women from the second follow-up who delivered in a facility, 84 were able to estimate the distance to the facility (Table 6.11). The median number of women reported travelling less than 10 km. Fifty percent of women traveled more than zero hours to the facility to deliver.

Table 6.11: Proximity to health care facilities: health facility for delivery

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Baseline 2013							
Distance, km	46	657	0	0	0.7	2	100
Travel time, min	346	357	1	5	30	60	2880
Second follow-up 2018							
Distance, km	84	240	0	1.5	10	36.1	100
Travel time, min	251	73	1	10	20	120	2700

6.2.2 Assistance at delivery

The assistance a woman receives during childbirth has important health consequences for both mother and child. For women who did not deliver alone in the last two years (93.8% of all births in the second follow-up), the percentage by type of delivery attendant is detailed in Table 6.12. Among women who did not report being alone for delivery, several categories of personnel may have been in attendance. As can be seen in Table 6.12, most in-facility deliveries during the second follow-up were accompanied by a medical doctor (69.1%) and/or a professional nurse (40.2%). For 33.3% of the deliveries an midwife/comadrona was in attendance. For 13.4% a relative was in attendance.

Table 6.12: Types of attendants: assistance at delivery for most recent birth in the last two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Medical doctor	667	1012	64.1	3.8	491	672	69.1	3.3
Professional nurse	514	1010	50.5	3.3	281	658	40.2	3.2
Midwife/comadrona	427	1004	43.4	3.5	181	653	33.3	3.9
Relative	230	1007	23.2	2.3	85	654	13.4	1.6
Auxiliary nurse	176	993	19.0	1.7	63	651	8.8	1.5
Traditional healer	26	1005	2.9	0.9	29	656	4.1	1.2
Community health worker	20	996	1.9	0.6	6	651	0.8	0.4
Laboratory technician	13	992	1.2	0.4	6	649	0.7	0.3
Pharmacist	5	997	0.5	0.2	3	651	0.5	0.3
Other	33	1005	3.1	0.7	12	655	2.1	0.6

Forty three percent of women in the second follow-up delivered with one attendant, 33.3% with two attendants, and 13.3% with three attendants (Table 6.13). For women's most recent live birth in the past two years, 71.2% of deliveries had a skilled attendant present and 85% delivered with a skilled attendant in a health facility (Table 6.14).

Table 6.13: Number of attendants: assistance at delivery for most recent birth in the last two years, women 15-49 years of age

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
None	30	3.0	0.7	38	6.2	1.6
One	299	28.9	2.1	303	43.2	2.8
Two	337	32.2	1.9	229	33.3	2.7
Three	294	30.5	2.6	93	13.3	2.1
Four or more	60	5.3	0.9	28	4.0	1.1
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

Table 6.14: In-facility delivery with skilled birth attendant: assistance at delivery for most recent birth in the last two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Delivery with a skilled birth attendant in any health facility	674	875	76.3	3.2	321	370	85.0	3.1
Delivery with a skilled birth attendant	734	1013	71.0	3.9	510	672	71.2	3.4

6.2.3 Complications

Pregnancy complications are an important source of maternal and child morbidity and mortality. The type of delivery (vaginal or Caesarian section) among women with births in the last two years is detailed in Table 6.15 along with the percentage of planned in-facility deliveries. Table 6.16 displays the percentage of women with specific complications.

In the second follow-up, 25.6% of women indicated that they attended the facility for emergency care during their most recent birth in the last two years. Few women reported seizures prior to delivery (6.1%). Approximately 2.7% of infants were transferred to an intensive care unit after delivery, and 14.2% of women reported excessive bleeding after delivery (more than 1 cup over a two-day period of time).

Table 6.15: Mode of delivery for most recent birth in the last two years, women 15-49 years of age

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Mode of delivery						
Vaginal	847	96.8	0.5	343	97.5	0.8
Emergency c-section	11	1.1	0.3	6	1.4	0.7
Planned c-section	20	2.1	0.5	5	1.1	0.5
Don't know	1	-	-	2	-	-
Decline to respond	0	-	-	14	-	-
Reason for seeking delivery care, among in-facility births						
According to birth plan	534	82.0	2.6	218	73.1	3.1
Because of emergency	115	17.6	2.6	75	25.6	2.9
Other reason	4	0.5	0.2	2	1.3	1.3
Don't know	48	-	-	11	-	-
Decline to respond	2	-	-	18	-	-

Table 6.16: Delivery complications for most recent birth in the last two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Respondent experienced excessive bleeding in the first day after delivery	157	901	17.6	2.3	68	393	14.2	3.6
Respondent experienced seizures prior to delivery	30	963	3.7	1.1	33	481	6.1	1.1
Child entered neonatal intensive care unit after delivery	39	1015	3.8	0.7	18	628	2.7	0.8

6.2.4 Birth size and weight

Birth weight is a major determinant of infant and child health and mortality. Birth weight of less than 2.5 kilograms is considered low. For all births during the five-year period preceding the survey, mothers were asked about their perception of the child's size at birth: very large, larger than average, smaller than average, or very small. They were then asked to report the actual weight in kilograms if the child had been weighed after delivery. To reduce recall bias, only data from the most recent birth within the last two years are summarized below (Table 6.17).

In the second follow-up, many women perceived their infant to be average in size (72.7%). With most births occurring in institutional settings, it is not surprising that 68.4% of newborns were weighed at birth. Among those who were weighed, 8.2% weighed less than 2.5 kilograms according to the mother's recall (low birth weight).

Table 6.17: Birth size and weight for most recent live birth in the past two years, women 15-49 years of age

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Very large	24	2.3	0.5	6	0.8	0.4
Larger than average	72	8.9	1.6	47	7.9	1.3
Average	664	74.9	2.7	389	72.7	3.5
Smaller than average	106	10.5	1.4	70	14.2	2.2
Very small	30	3.4	0.7	30	4.4	1.1
Don't know	124	-	-	101	-	-
Decline to respond	0	-	-	48	-	-

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Child was weighed at birth	740	986	74.5	3.9	432	593	68.4	3.7
Low birth weight (<2.5kg), among those weighed	38	329	11.1	1.7	20	183	8.2	1.8

6.3 Early initiation of breastfeeding

Coverage of early initiation of breastfeeding is defined as the percentage of women who had a live birth in the past two years and put the child to the breast with one hour of birth. Table 6.18 shows that 95.3% of women initiated breastfeeding within one hour of birth.

Table 6.18: Early initiation of breastfeeding for most recent live birth in the past two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Early initiation of breastfeeding	861	973	88.2	1.5	626	660	95.3	1.1

6.4 Postnatal Care

Postnatal care is important both for the mother and the child to treat complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child. The postnatal period is defined as the time between the delivery of the placenta and 42 days (six weeks) following the delivery. The timing of postnatal care is important: the first two days after delivery are critical, because most maternal and neonatal deaths occur during this period.

Characteristics of postnatal care, including timing, location, and personnel providing care were captured for all births in the five years preceding the survey. To reduce recall bias, only data from the most recent delivery in the last two years are summarized in the tables below.

6.4.1 *Postnatal checkup for the mother*

Data on postnatal care for the mother are summarized in Table 6.19. Table 6.19 shows the percentage of women with a birth in the last two years who were checked at any time after delivery and within one week after delivery; and percentage by timing of the check for women with an in-facility delivery.

Only 50.6% of women recalled being checked after delivery during the second follow-up, and 20.4% reported being checked one week after delivery by a health care provider. Only 68.2% of women with an institutional birth recalled being checked every 15 minutes for the first hour post-partum.

Table 6.20 shows the percent distribution of women who were checked at any time after delivery by type of personnel. Among women with postnatal care visits in the second follow-up, most received care from a doctor (78.7%) or professional nurse (14.8%).

Table 6.19: Postnatal checkup for the mother for most recent live birth in the past two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Any checkup after delivery	505	968	51.9	2.8	249	499	50.6	3.3
Checked every 15 minutes during the first hour after delivery, among in-facility births	104	318	33.5	3.3	91	131	68.2	5.7
Checked within a week after delivery by a skilled provider	175	968	18.5	2.0	106	499	20.4	2.4

Table 6.20: Provider of care at first postnatal checkup for the mother, most recent live birth in the past two years, among women who attended at least one postnatal care visit

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Doctor	377	75.9	3.7	190	78.7	4.2
Professional nurse	90	18.2	2.6	41	14.8	2.8
Midwife/comadrona	3	0.7	0.5	12	5.8	3.3
Auxiliary nurse	14	3.3	1.2	1	0.4	0.5
Relative	0	0.0	-	1	0.3	0.3
Laboratory technician	1	0.2	0.2	0	0.0	-
Community health worker	11	1.5	0.9	0	0.0	-
Pharmacy assistant	0	0.0	-	0	0.0	-
Traditional healer	1	0.3	0.3	0	0.0	-
Professional midwife	0	0.0	-	0	0.0	-
Other	0	0.0	-	0	0.0	-
Don't know	7	-	-	4	-	-
Decline to respond	1	-	-	0	-	-

6.4.2 Postnatal checkup for the infant

The results regarding postnatal care for the neonate are shown in Table 6.21: percentage of women with a birth in the last two years whose infants were checked after delivery; percentage of infants who were checked by skilled personnel within 24 hours of delivery; and percentage of infants who were checked by skilled personnel within one week of delivery.

Approximately 65.4% of women in the second follow-up reported that their infant was checked at any time after delivery. Among all deliveries, 13.6% of women reported that a qualified medical professional (doctor, profession nurse, auxiliary nurse) checked on their infant within 24 hours of delivery. Table 6.22 shows the attendants for neonatal postnatal care. Most women indicated that a doctor performed a checkup (82.4%). Professional nurse and midwife/comadrona were also reported, though much less frequently.

Table 6.21: Postnatal checkup for neonate for woman's most recent live birth in the past two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Any checkup after delivery	676	981	68.1	2.8	369	552	65.4	3.5
Checked within 24 hours after delivery by a skilled provider	70	942	7.1	1.3	73	536	13.6	2.0
Checked within a week after delivery by a skilled provider	155	942	16.2	1.9	160	536	28.6	2.9

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Doctor	502	75.8	3.5	295	82.4	3.1
Professional nurse	100	16.2	2.6	48	11.7	2.0
Midwife/comadrona	2	0.3	0.2	12	3.6	2.2
Traditional healer	1	0.2	0.2	3	0.9	0.5
Auxiliary nurse	23	4.0	1.1	2	0.7	0.6
Relative	2	0.3	0.2	1	0.2	0.2
Laboratory technician	1	0.2	0.2	0	0.0	-
Community health worker	19	2.1	1.0	0	0.0	-
Pharmacy assistant	0	0.0	-	0	0.0	-
Professional midwife	0	0.0	-	0	0.0	-
Other	5	0.9	0.4	2	0.5	0.4
Don't know	16	-	-	5	-	-
Decline to respond	5	-	-	1	-	-

6.5 Vouchers, Incentives, and Maternal Waiting Homes

To increase use of their services, some facilities and waiting homes offer vouchers and incentives to women to attend care. Table 6.23 displays the percentage of women in the second follow-up who gave birth the past two years and received a voucher at a health facility. One percent of women received a voucher or financial assistance to attend antenatal care and 2.1% received a voucher or financial assistance for postpartum or postnatal care at a health facility.

Table 6.23: Voucher incentives for care-seeking for most recent live birth in the past two years, women 15-49 years of age

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Received a voucher or other form of financial assistance to attend antenatal care at a health facility	5	877	0.7	0.4	5	362	1.2	0.6

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
No voucher	688	98.3	0.6	299	97.9	1.1
Yes, for both woman and infant	7	0.8	0.3	4	1.3	0.7
Yes, for woman's care	3	0.5	0.3	2	0.8	0.6
Yes, for infant's care	2	0.4	0.3	0	0.0	-
Don't know	3	-	-	4	-	-
Decline to respond	0	-	-	15	-	-

Some facilities that attend deliveries have a **casa materna** or maternal waiting home nearby to provide women who live far away a place to stay while they await delivery or while they recover and prepare to travel home with their infant. Table 6.24 displays how women have commonly used maternal waiting homes during their most recent pregnancy in the past two years. 1.8% of women in the second follow-up report using a maternal waiting home before giving birth and 93.3% of these women report receiving counseling while staying at a maternal waiting home. On average, women stayed at a maternal waiting home for one day and spent 0 balboa.

Table 6.24: Use of maternal waiting homes for most recent live birth in the past two years, women 15-49 years of age

	Second Follow-Up 2018			
	n	N	%	SE
Used a maternal waiting home before giving birth	10	606	1.8	0.6
Among women who used maternal waiting homes				
Received counseling on health and parenting topics while at waiting home	5	6	93.3	7.2

	N	DK/DTR	Min	25th Percentile	Median	75th Percentile	Max
Second Follow-Up 2018							
Days spent in maternal home	7	0	1	1	1	1	2
Out-of-pocket cost to use maternal home, Balboa	8	2	0	0	0	0	52

7 Chapter 7: CHILD HEALTH

This chapter summarizes the health status of children aged 0-59 months whose caregivers participated in the SMI-Panama Second Follow-up Household Survey. All data summarized in this chapter are based on the caregiver's report.

7.1 Health status

The age and sex distribution of the de facto population of children aged 0-59 months participating in the caregiver interview module or the anthropometric measures in Panama at the second follow-up is shown in Figure 7.2 by six- or 12-month age groups.

Twenty one percent of children surveyed at baseline and 20% of children surveyed at the second follow-up were under 1 year old at the time of the interview. The age distributions of female and male children are similar.

Figure 7.1: Age and sex of children aged 0-59 months in child health survey or anthropometric measures of the de facto population by six- to twelve-month age groups, baseline survey unweighted

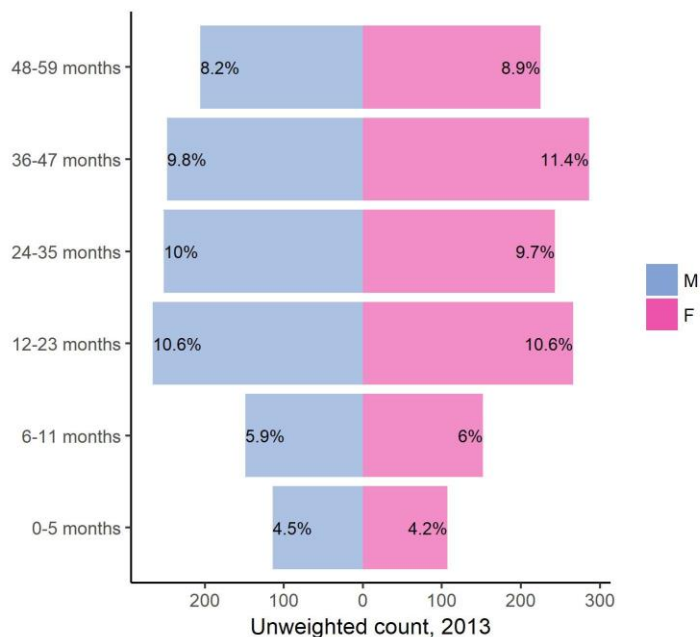
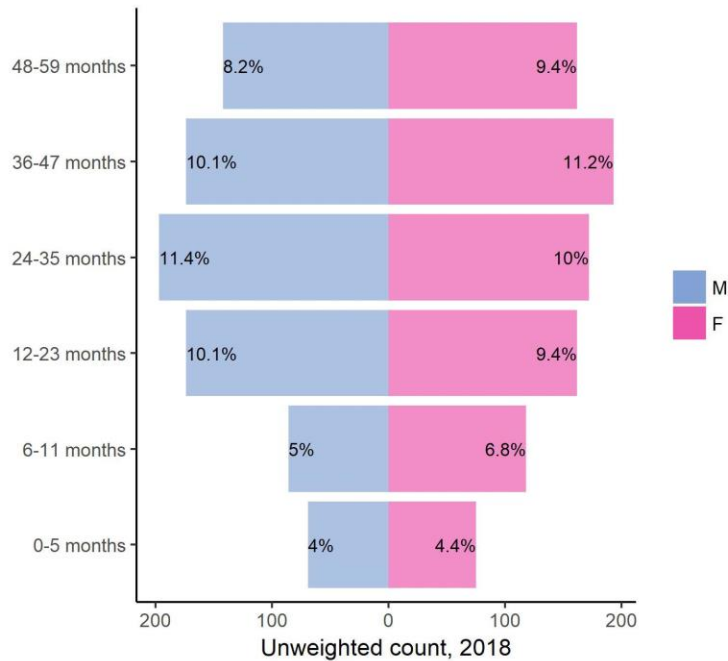


Figure 7.2: Age and sex of children aged 0-59 months in child health survey or anthropometric measures of the de facto population by six- to twelve-month age groups, follow-up survey unweighted



7.1.1 Current health status

Table 7.1 shows the current health status of all children aged 0-59 months, as reported by their caregivers. The table includes the caregiver’s evaluation of current health relative to health the previous year and the percentage of children who can easily perform daily activities. In the second follow-up, approximately 90.1% of children’s health was considered by their caregiver to be “good,” “very good,” or “excellent,” compared to 75.1% at baseline.

Relative to the past year, caregivers in the second follow-up evaluation reported that 47.6% of children’s health was “about the same” in the second follow-up. While 51.4% of children’s health had improved, 1% of children experienced reportedly worse health on the day of the interview, compared to last year. Eighty eight percent of children could “easily” perform their daily activities (e.g., playing and going to school) according to their caregivers. Eight percent of children had some degree of difficulty performing these activities, 1.4% of children had a significant degree of difficulty performing these activities, and 2.4% of children were unable to complete daily activities, according to their caregivers.

Table 7.1: Current health status, among children aged 0-59 months

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Current health status						
Excellent	472	21.9	1.9	642	38.7	2.9
Very good	403	20.0	1.8	271	16.3	1.8
Good	699	33.2	1.7	586	35.1	2.6
Fair	481	23.1	1.4	168	9.4	1.1
Poor	39	1.9	0.4	6	0.4	0.2
Don't know	2	-	-	4	-	-
Decline to respond	0	-	-	0	-	-
Health status relative to a year ago						
Better	891	55.6	2.1	637	51.4	2.5
Worse	32	1.9	0.4	14	1.0	0.3
About the same	694	42.6	2.1	574	47.6	2.5
Don't know	4	-	-	48	-	-
Decline to respond	1	-	-	1	-	-
Ability to perform daily activities						
Easily	1887	90.4	1.1	1375	87.9	1.2
With some difficulty	147	7.0	0.9	134	8.3	1.1
With much difficulty	15	0.9	0.3	23	1.4	0.4
Unable to do	32	1.7	0.4	37	2.4	0.6
Don't know	13	-	-	91	-	-
Decline to respond	2	-	-	17	-	-

7.1.2 Recent illness

Caregivers were asked a series of questions about any illnesses or health problems that their children had in the two weeks preceding the interview. In the second follow-up survey, approximately 12% of children were reported as sick during that time (Table 7.2). Of the 212 children who were recently ill, fever (33.4%), cough (29.2%), and diarrhea without blood (13.5%) were the most commonly specified complaints.

Table 7.2: Recent illness, among children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Child was sick in the last two weeks	531	2092	26.3	1.7	212	1664	11.8	1.4

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Recent illness among children ill in the last 2 weeks						
Fever	209	38.9	2.9	72	33.4	4.1
Cough	143	28.1	2.9	58	29.2	3.9
Diarrhea without blood	47	7.9	1.4	30	13.5	2.5
Asthma	49	9.6	1.8	11	5.2	2.1
Vomiting	5	1.0	0.5	9	3.9	1.4
Skin rash/infection	20	2.9	0.7	4	2.0	1.0
Bronchitis	6	1.2	0.6	2	1.3	0.9
Diarrhea with blood	6	1.1	0.5	2	1.3	1.0
Abdominal pain	2	0.5	0.3	2	1.2	0.8
Pneumonia	0	0.0	-	3	1.1	0.7
Eye/ear infection	2	0.7	0.5	2	1.1	0.7
Headache	2	0.5	0.4	2	0.8	0.6
Malaria	1	0.1	0.1	0	0.0	-
Tuberculosis	0	0.0	-	0	0.0	-
Anemia	0	0.0	-	0	0.0	-
Measles	0	0.0	-	0	0.0	-
Jaundice	0	0.0	-	0	0.0	-
Stroke	0	0.0	-	0	0.0	-
Diabetes	0	0.0	-	0	0.0	-
HIV/AIDS	0	0.0	-	0	0.0	-
Paralysis	0	0.0	-	0	0.0	-
Chest infection	0	0.0	-	0	0.0	-
Blood in urine	0	0.0	-	0	0.0	-
Difficulty urinating	0	0.0	-	0	0.0	-
Swelling in legs, ankles, or feet	0	0.0	-	0	0.0	-
Other	38	7.5	2.3	14	6.0	2.1
Don't know	1	-	-	1	-	-
Decline to respond	0	-	-	0	-	-

Options for "Swelling in legs, ankles, or feet", "Blood in urine", and "Chest infection" were available only in the follow-up survey. In the baseline, "Chest infection" was included within the "Cough" answer choice.

7.1.3 Utilization of health services for recent illness

Table 7.3 summarizes data regarding the utilization of health services among the 212 children who were sick in the two weeks preceding the interview. The table shows the percentage of children 0-59 months who were sick in the last two weeks for whom care was sought for recent illness and among these, the percent distribution by type of medical facility where care was sought and whether the child was hospitalized.

In the second follow-up survey, care was sought for 75.2% of these cases. Care was typically sought at MINSA public health center (46.5%) or MINSA public hospital (17.8%) facilities; some attended MINSA public health sub-centers (14.9%). Only thirteen children were hospitalized for their recent illness.

Table 7.3: Utilization of health services for recent illness in the last two weeks, among children 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Sought care for recent illness	347	531	64.1	4.1	160	212	75.2	3.4
Child was hospitalized for recent illness	16	172	9.7	2.3	13	81	15.7	4.6

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Type of medical facility where care was sought						
MINSA public health center	170	47.8	6.5	74	46.5	6.9
MINSA public hospital	37	9.9	4.9	34	17.8	4.5
MINSA public health sub-center	91	25.5	5.5	22	14.9	4.0
MINSA public health post	21	6.7	2.6	14	9.6	4.7
Traditional healer	9	2.5	1.2	5	3.2	1.7
Community health worker	1	0.6	0.6	1	1.3	1.3
CSS public hospital	1	0.1	0.1	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	0	0.0	-	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private health center/clinic	0	0.0	-	0	0.0	-
Private doctor's office	1	0.3	0.3	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
Pharmacy	1	0.2	0.2	0	0.0	-
MINSA public mobile clinic	9	3.5	2.3	0	0.0	-
Other	7	2.9	1.3	10	6.7	3.1
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

7.2 Acute respiratory infection

Acute respiratory infection is a leading cause of morbidity and mortality among children. Early diagnosis and treatment with antibiotics can prevent deaths resulting from pneumonia, a common acute respiratory disease. The prevalence of acute respiratory infection was estimated by asking caregivers whether their children aged 0-59 months had been ill with a cough accompanied by short, rapid breathing in the two weeks preceding the interview. If the child had symptoms of an acute respiratory infection, the caregiver was asked about what was done to treat the symptoms and feeding practices during the illness.

7.2.1 Prevalence of acute respiratory infection and fever

The prevalence of cough, suspected acute respiratory infection, and fever among children aged 0-59 months, as reported by their caregivers, is displayed in Table 7.4. In the second follow-up, 9% of children

experienced cough, 4.6% had symptoms of an acute respiratory infection, and 9% had a fever in the two weeks preceding the interview.

Table 7.4: Prevalence of suspected acute respiratory infection and fever in the last two weeks, among children 0-59 months

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Child had cough in the last two weeks, by type						
No cough	1653	79.4	1.6	1495	90.8	1.2
Cough without difficulty breathing	244	12.5	1.2	76	4.6	0.7
With difficulty breathing due to congested/runny nose	50	2.6	0.5	38	2.1	0.5
With difficulty breathing due to chest problem and congested/runny nose	69	3.1	0.4	22	1.3	0.4
With difficulty breathing due to chest problem	40	2.2	0.4	15	0.9	0.3
With difficulty breathing due to other reason	2	0.1	0.1	2	0.2	0.2
Don't know	35	-	-	15	-	-
Decline to respond	1	-	-	14	-	-

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Symptoms of acute respiratory infection in the last two weeks	166	2063	8.3	0.7	78	1649	4.6	0.7
Fever in last two weeks	425	2083	21.5	1.7	163	1663	9.0	1.2

7.2.2 Utilization of health services for suspected acute respiratory infection

Seventy percent of children with symptoms of acute respiratory infection were taken for evaluation and/or treatment of their condition at the second follow-up (Table 7.5).

Table 7.5: Utilization of health services for suspected acute respiratory infection in the last two weeks, among children 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Sought care for suspected acute respiratory infection	313	536	57.9	3.6	149	209	69.6	4.2

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Type of medical facility where care was sought						
MINSA public health center	155	47.5	6.7	68	44.4	7.4
MINSA public hospital	32	10.0	4.9	33	18.8	5.1
MINSA public health sub-center	80	24.6	5.6	19	14.6	4.4
MINSA public health post	18	6.1	2.6	17	11.9	5.9
Traditional healer	6	2.0	0.9	3	2.9	2.5
Community health worker	2	0.9	0.7	1	1.3	1.3
Other public health center	0	0.0	-	1	0.7	0.7
CSS public hospital	1	0.1	0.1	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private health center/clinic	0	0.0	-	0	0.0	-
Private doctor's office	1	0.3	0.3	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	1	0.4	0.4	0	0.0	-
Pharmacy	0	0.0	-	0	0.0	-
MINSA public mobile clinic	11	4.2	2.2	0	0.0	-
Other	8	3.8	1.6	7	5.4	2.9
Don't know	1	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

7.2.3 Utilization of medications for suspected acute respiratory infection

Seventy four percent of children with symptoms of acute respiratory infection were given some type of medication for their condition during the second follow-up (Table 7.6). Sixty eight percent of children were administered antibiotic syrups for a suspected acute respiratory infection. Acetaminophen (50.4%) and ibuprofen (0.7%) were also commonly administered. Nineteen percent of children received a treatment other than those listed.

Table 7.6: Utilization of medications for suspected acute respiratory infection in the last two weeks, among children 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Any treatment	387	533	72.4	3.3	160	204	74.5	4.4
Antibiotic injection	72	376	17.0	2.5	53	152	34.9	4.9
Antibiotic pill	14	376	3.8	1.0	12	150	9.3	2.5
Antibiotic syrup	223	377	57.0	3.8	108	152	67.7	3.2
Aspirin	9	375	2.4	0.8	3	149	1.8	1.0
Acetaminophen	186	377	50.0	4.0	73	149	50.4	4.7
Ibuprofen	4	374	0.8	0.4	1	146	0.7	0.7
Oral rehydration therapy	29	375	7.6	2.1	21	149	14.2	3.4
Other	69	375	17.8	2.3	25	147	18.6	4.0

7.2.4 Feeding practices during suspected acute respiratory infection

Data on feeding practices during the recent episode of suspected acute respiratory infection are summarized in Table 7.7. The table shows the volume of fluids and the volume of solids given during the illness. At the second follow-up, only 4.2% of children were given more fluids than usual. In total, 53% of children were offered less fluid than usual (or none at all). Thirty five percent of children were offered the same volume of solid food as usual during their illness. Approximately 65% of children were given less than the usual amount of solid food (or none at all).

Table 7.7: Feeding practices during suspected acute respiratory infection in the last two weeks, among children 0-59 months

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Volume of fluids (including breastmilk) given during illness						
No fluids	13	2.5	0.6	7	3.7	1.7
Much less	75	15.0	2.5	47	22.1	3.8
Somewhat less	165	28.7	2.8	52	27.0	4.4
About the same	255	48.9	2.9	85	43.0	4.6
More	26	4.8	1.2	7	4.2	2.0
Don't know	2	-	-	7	-	-
Decline to respond	0	-	-	4	-	-
Volume of solid foods given during illness						
No solids	17	3.3	0.8	13	6.6	1.7
Much less	67	14.0	2.5	48	23.6	3.6
Somewhat less	169	30.3	3.2	65	34.7	4.6
About the same	258	50.0	3.1	67	35.1	4.1
More	15	2.4	0.8	0	0.0	-
Don't know	4	-	-	11	-	-
Decline to respond	6	-	-	5	-	-

7.3 Diarrhea

Dehydration caused by severe diarrhea is a major cause of morbidity and mortality among children. Exposure to diarrheal disease-causing agents is frequently a result of use of contaminated water and unhygienic practices related to food preparation and disposal of feces. The prevalence of diarrhea was estimated by asking caregivers whether their children aged 0-59 months had had diarrhea in the two weeks preceding the interview. If the child had had diarrhea, the caregiver was asked about treatment and feeding practices during the diarrheal episode.

7.3.1 Prevalence

Table 7.8 shows the proportion of children aged 0-59 months with diarrhea in the two weeks preceding the interview, as reported by their caregivers (5.3% at the second follow-up). One percent of children had

bloody diarrhea.

Table 7.8: Prevalence of diarrhea in the last two weeks, among children aged 0-59 months

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
No diarrhea	1753	90.4	1.2	1457	94.7	1.0
Diarrhea without blood	175	9.1	1.1	74	4.5	0.9
Diarrhea with blood	10	0.5	0.2	10	0.8	0.3
Don't know	148	-	-	82	-	-
Decline to respond	8	-	-	54	-	-

7.3.2 Utilization of health services for diarrhea

In the second follow-up, 79.5% of children with diarrhea were taken for evaluation and/or treatment of their condition (Table 7.9). Care for these children was often sought in the public sector.

Table 7.9: Utilization of health services for diarrhea in the last two weeks, among children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Sought care for diarrhea	111	185	58.9	5.7	66	84	79.5	5.3

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Type of medical facility where care was sought						
MINSAs public health center	58	51.5	7.7	24	39.3	9.4
MINSAs public health sub-center	26	21.0	5.6	14	22.6	7.9
MINSAs public hospital	13	12.4	6.8	15	18.5	5.2
Traditional healer	3	2.5	1.5	3	3.4	1.8
MINSAs public health post	6	5.2	2.6	2	2.9	2.1
Community health worker	0	0.0	-	1	2.9	2.8
Pharmacy	1	0.5	0.6	1	1.4	1.3
CSS public hospital	0	0.0	-	0	0.0	-
ULAPS/CAPPS	0	0.0	-	0	0.0	-
CSS polyclinic	0	0.0	-	0	0.0	-
Other public health center	0	0.0	-	0	0.0	-
Private hospital	0	0.0	-	0	0.0	-
Private health center/clinic	0	0.0	-	0	0.0	-
Private doctor's office	0	0.0	-	0	0.0	-
Private mobile clinic	0	0.0	-	0	0.0	-
Other private health facility	0	0.0	-	0	0.0	-
MINSAs public mobile clinic	3	3.5	2.0	0	0.0	-
Other	4	3.5	1.6	6	9.0	4.3
Don't know	0	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

7.3.3 Utilization of treatments for diarrhea

A simple and effective response to dehydration caused by diarrhea is a prompt increase in the child's fluid intake through some form of oral rehydration therapy. Oral rehydration therapy may include the use of a solution prepared from commercially produced packets of powdered oral rehydration salts, commercially-produced bottled oral serums, or homemade fluids usually prepared from sugar, salt, and water. Other treatments, including zinc, may be administered as well.

Although care was sought in only 79.5% of diarrhea cases, 85.9% of cases were given some form of treatment at the second follow-up. Fluid made with powdered oral rehydration salts was the most common form oral rehydration therapy (64.1%). Nine percent of cases were treated with zinc syrup or pills. Ten percent of cases were treated with an antibiotic pill.

Table 7.10: Utilization of treatments for diarrhea during the last two weeks, among children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Any treatment	129	183	68.5	4.9	68	80	85.9	3.9
Fluids								
Fluid made with powdered oral rehydration salts	49	182	26.5	4.3	46	74	64.1	7.3
Bottled oral rehydration serum	58	182	30.5	3.9	37	76	47.8	7.0
Homemade fluid recommended by health authorities	19	181	9.3	2.1	22	73	29.6	4.9
Medications								
Antibiotic pill	11	180	6.9	2.1	7	68	9.6	4.8
Antidiarrheal pill	8	179	4.0	1.4	5	68	7.4	3.3
Zinc pill	2	179	1.2	0.8	3	68	5.0	2.6
Other type of pill	2	179	1.0	0.7	2	66	2.2	1.4
Unknown pill	0	180	0.0	-	0	67	0.0	-
Antibiotic injection	16	182	9.4	2.0	22	71	30.3	5.7
Non-antibiotic injection	2	180	0.9	0.7	4	69	5.2	2.8
Unknown injection	1	180	0.5	0.5	0	67	0.0	-
Intravenous therapy	8	181	3.6	1.4	4	68	4.8	3.6
Home remedy/herbal medicine	21	181	12.0	2.5	11	70	15.5	3.5
Antibiotic syrup	18	181	8.6	1.8	19	67	28.4	5.6
Antidiarrheal syrup	11	179	5.8	2.0	17	68	27.7	8.3
Zinc syrup	0	180	0.0	-	3	68	4.4	2.3
Other syrup	3	180	2.2	1.3	3	68	4.4	2.8
Unknown syrup	3	180	1.7	1.0	0	68	0.0	-
Other treatment	19	181	10.8	2.9	8	69	12.9	4.8

7.3.4 Feeding practices during diarrhea

Caregivers are encouraged to continue feeding children normally when they suffer from diarrheal diseases and to increase the fluids they are given. These practices help to prevent dehydration and minimize the adverse consequences of diarrhea on the child's nutritional status.

Data on feeding practices during the recent diarrheal episode are summarized in Table 7.11. The table shows the volume of fluids and the volume of solids given during the illness. Only 8.3% of children were given more fluids than usual in the second follow-up survey. Approximately 56% of children were offered less fluid than usual (or none at all). Twenty eight percent of children were offered the same volume of solid food as usual during their illness. Approximately 71% of children were given less than the usual amount of solid food (or none at all).

Table 7.11: Feeding practices among children aged 0-59 months who had diarrhea in the last two weeks

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
Volume of fluids (including breastmilk) given during illness						
No fluids	8	4.3	1.7	6	7.5	3.0
Much less	24	13.3	2.6	22	24.4	7.3
Somewhat less	55	31.3	3.7	22	24.4	6.7
About the same	84	44.6	3.9	27	35.4	7.0
More	12	6.5	2.1	5	8.3	4.6
Don't know	2	-	-	1	-	-
Decline to respond	0	-	-	1	-	-
Volume of solid foods given during illness						
No solids	6	3.0	1.2	11	13.1	4.2
Much less	24	14.7	3.0	19	22.4	4.9
Somewhat less	61	35.1	3.8	32	35.5	6.2
About the same	82	43.7	3.8	21	27.8	6.0
More	7	3.5	1.4	1	1.1	1.1
Don't know	5	-	-	0	-	-
Decline to respond	0	-	-	0	-	-

7.4 Immunization against common childhood illnesses

Information on immunization coverage was collected for all children aged 0-59 months whose caregivers participated in the survey. Both caregiver's report and review of vaccination card (if available) were used to determine coverage. A vaccination card was available for review for 1,263 children at the second follow-up (75.3% of the sample, unweighted). In Table 7.12, coverage is estimated by vaccine type to include all children with full compliance for age as specified in the national immunization scheme at the time of the survey, according to either an affirmative response from the caregiver that the immunization was received, or a mark that the immunization was received on the vaccination card (for children with a vaccination card available for review at the time of the interview). Children too young to have received a specific vaccine are counted as covered in order to maintain a comparable all-ages sample across vaccine types.

Table 7.12: Immunization against common childhood illnesses, children aged 0-59 months, according to caretaker recall and vaccination card

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
BCG vaccine (tuberculosis)	1712	1825	93.7	0.7	1272	1332	94.7	0.7
Hepatitis B vaccine	1205	1792	66.9	3.3	1007	1287	75.7	3.3
Pentavalent vaccine (DPT, HepB, Hib)	1581	1804	86.7	1.3	240	656	35.6	2.7
Rotavirus vaccine	1380	1796	76.3	1.5	1097	1291	83.6	1.7
Pneumococcal conjugate vaccine	813	1794	45.0	2.4	228	1249	18.4	1.3
Measles, mumps, and rubella (MMR) vaccine	1662	1833	90.6	0.9	1274	1354	93.5	1.4
Diphtheria, tetanus, and pertussis (DPT) vaccine	764	1854	41.6	1.1	549	1269	44.0	1.1
Tetavalent vaccine (DPT, Hib)	1689	1871	90.1	0.8	663	751	87.5	2.4

In Table 7.13, coverage estimates based on recall are summarized for the full sample, and coverage estimates based on vaccination card data are summarized among the subset with a vaccination card available for review. When considering only caregivers' recall, only 6.1% of children aged 0-59 months were fully immunized for age at the second follow-up survey, reflecting many "Don't know" or "Decline" responses that call into question the reliability and validity of the caregiver recall data. Caregivers were able to definitively answer the entire vaccine recall section for only 245 children at the second follow-up. Immunization coverage for children 0-59 months based only upon the vaccine card is 8.3%, and when combined with recall-based information, the estimate of full vaccination for age among children 0-59 months is 12.2%.

Table 7.13: Full immunization compliance for age, children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
According to caregiver's recall	79	728	10.1	1.8	13	245	6.1	1.7
According to vaccine card	438	2065	20.7	2.0	48	558	8.3	1.2
According to recall + card	476	1772	26.5	2.4	50	408	12.2	1.9

7.5 Deworming treatment

Administration of deworming treatment every six months has been shown to reduce the prevalence of anemia in children. Only 12.9% of children aged 12-59 months received at least two doses of deworming treatment in the year preceding the second follow-up interview (Table 7.14).

Table 7.14: Deworming treatment among children aged 12-59 months

	Baseline 2013			Second Follow-Up 2018		
	n	%	SE	n	%	SE
No deworming	958	61.4	2.4	664	57.8	2.3
One dose	464	29.9	1.8	374	29.2	2.1
Two or more doses	142	8.7	1.1	159	12.9	1.5
Don't know	55	-	-	95	-	-
Decline to respond	0	-	-	34	-	-

8 Chapter 8: INFANT AND YOUNG CHILDREN FEEDING PRACTICES

This chapter summarizes the feeding practices of infants and children aged 0-59 months whose caregivers participated in the SMI-Panama Household Survey. All data summarized in this chapter are based on the caregiver's report.

8.1 Breastfeeding

8.1.1 Exclusive breastfeeding

Coverage of exclusive breastfeeding is defined as the percentage of infants born in the six months prior to the survey who received only breast milk during the previous day. This information is obtained through a 24-hour dietary recall in which the caregiver indicates what the child consumed during the previous day and night. In Panama during the second follow-up, the sample includes 141 children who are under 6 months of age, and 88 of those children have sufficiently complete dietary recall information to determine whether they are exclusively breastfed. Table 8.1 shows that 64.9% of children under 6 months of age are exclusively breastfed.

8.1.2 Continued breastfeeding at 1 year

Coverage of continued breastfeeding at 1 year is defined as the percentage of children 12-15 months old who received breast milk during the previous day according to caregiver's dietary recall. In Panama during the second follow-up, the sample includes 134 children who are between 12 and 15 months of age, and 104 of those children have adequate responses to determine their breastfeeding status. Table 8.1 shows that 77.7% of children continue to receive breast milk at 1 year.

Table 8.1: Breastfeeding among children

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Exclusive breastfeeding among children <6 months	97	215	45.3	3.5	88	132	64.9	4.7
Continued breastfeeding at one year among children 12-15 months	114	158	72.0	3.8	104	134	77.7	4.6

8.2 Acceptable diet

8.2.1 Introduction of solid, semi-solid, or soft foods

Coverage of appropriate introduction of solid foods is measured as the percentage of infants 6-8 months of age who received solid or semi-soft foods during the previous day according to caregiver's dietary recall. In Panama during the second follow-up, the sample includes 92 children who are 6-8 months of age, and

92 of those children have sufficiently complete dietary recall information. Table 8.2 shows that 58.7% of children consumed solid or semi-soft foods.

8.2.2 Dietary diversity

Coverage of minimum dietary diversity is measured as the percentage of children 6-23 months of age who received foods from at least four food groups during the previous day according to caregiver's dietary recall. In Panama during the second follow-up, the sample includes 522 children who are 6-23 months of age, and 522 of those children have sufficiently complete dietary recall information to determine dietary diversity. Table 8.2 shows that 35.6% of children achieved the minimum dietary diversity during the previous day.

8.2.3 Meal frequency

Coverage of minimum meal frequency is measured as the percentage of children 6-23 months of age who received solid foods at least the minimum number of times the previous day, based on age and breastfeeding status. For breastfed children, the minimum is two times for children 6-8 months of age and three times for children 9-23 months of age. For non-breastfed children, the minimum number is four times for all children 6-23 months of age. This information is obtained through caregiver's dietary recall. In Panama during the second follow-up, the sample includes 522 children who are 6-23 months of age, and 239 of those children have sufficiently complete dietary recall information to determine meal frequency. Table 8.2 shows that 9% of children achieved the minimum meal frequency during the previous day.

8.2.4 Minimum acceptable diet

Coverage of minimum acceptable diet is measured for children 6-23 months of age. For breastfed children to meet the minimum acceptable diet they must have had at least the minimum dietary diversity and the minimum meal frequency during the previous day. For non-breastfed children to meet the minimum acceptable diet they must have had at least two milk feedings, as well as at least the minimum dietary diversity (not including milk feedings) and the minimum meal frequency during the previous day. This information is obtained through caregiver's dietary recall. In Panama during the second follow-up, the sample includes 522 children who are 6-23 months of age, and 464 of those children have sufficiently complete dietary recall information to determine minimum acceptable diet. Table 8.2 shows that 1.3% of children achieved the minimum acceptable diet during the previous day.

8.2.5 Consumption of iron-rich or iron-fortified foods

Consumption of iron-rich foods is measured as the percentage of children 6-23 months of age who receive an iron-rich food (e.g., liver, beef, or fish), an iron supplement, or a fortified food that is specially designed for infants and young children, or a food fortified in the home with a product that included iron during the previous day. This information is obtained through caregiver's dietary recall. In Panama during the

second follow-up, the sample includes 522 children who are 6-23 months of age and 522 of those children have sufficiently complete dietary recall information to determine iron consumption. Table 8.2 shows that 59.7% of children consumed an iron-rich food during the previous day.

Table 8.2: Acceptable diet among children 6-23 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Introduction of solid foods among children 6-8 months	87	101	87.5	3.1	55	92	58.7	6.0
Consumption of iron-rich foods among children 6-23 months	443	661	65.7	2.4	314	522	59.7	2.6
Minimum dietary diversity among children 6-23 months	119	661	18.0	2.3	190	522	35.6	2.6
Minimum meal frequency among children 6-23 months	84	392	20.3	3.4	22	239	9.0	2.4
Minimum acceptable diet among children 6-23 months	27	647	3.7	1.0	7	464	1.3	0.5

8.3 Micronutrient supplementation

8.3.1 Vitamin A

Interviewers asked the caregiver if their child received a dose of vitamin A in the last six months. Table 8.3 shows that of the 1,677 sampled children 0-59 months of age in the second follow-up, 26.8% received a dose of vitamin A in the last six months.

8.3.2 Iron

Interviewers showed the caregiver photos of common types of bottles, powders, or syrups and asked if their child received iron pills, powder, or syrup in the last day. Table 8.3 shows that of the 1,677 children 0-59 months of age in the second follow-up sample, 11.7% received a dose of iron in the last day.

Table 8.3: Vitamin A and Iron consumption among children 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Vitamin A in the last six months	481	1754	27.1	2.3	361	1258	26.8	2.4
Iron supplement the previous day	270	2074	12.7	1.1	203	1608	11.7	1.3

8.3.3 Packets of micronutrients

Interviewers showed the caregiver a card with packets of micronutrients (chispitas or Sprinkles) and asked how many packets their child received from a health facility and consumed in the last six months.

Children are intended to take 60 consecutive daily doses of micronutrient powder in each of three rounds, beginning at age 6, 12, and 18 months, with an adequate consumption considered to be 50 packets. Table 8.4 shows that among children 6-23 months of age sampled in the second follow-up, 99.8% received no packets of micronutrients from a health facility in the last six months.

Table 8.4: Micronutrient powders among children 6-23 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Received any micronutrient packets from health facility in the last six months	3	543	0.5	0.4	1	446	0.2	0.2
Consumed any micronutrient packets	4	544	0.8	0.5	1	446	0.2	0.2
Consumed adequate dose (≥ 50 packets) of micronutrient powders	0	544	0.0	-	0	446	0.0	-

* Identical questions were asked in baseline and second follow-up surveys, but the second follow-up interview included photos of the micronutrient products. The baseline survey predated the intervention, so it is possible that questions about receipt and consumption were interpreted by caregivers to include different types of micronutrient supplements at baseline.

9 CHAPTER 9: NUTRITIONAL STATUS IN CHILDREN

The nutritional status of children aged 0-59 months is an important outcome measure of children's health. The SMI-Panama Second Follow-up Household Survey collected data on the nutritional status of children by measuring the height and weight of all children aged 0-59 months residing in surveyed households, using standard procedures. Hemoglobin levels of these children were also assessed in the field, using a portable HemoCue™ machine, and these data were used to estimate anemia prevalence. As described in Chapter 1, medically trained personnel who were specifically trained to standardize the anthropometric and hemoglobin measurements conducted the testing. This evaluation allows identification of subgroups of the child population that are at increased risk of malnutrition. The parents of anemic children (hemoglobin level <11.0 g/dL, with altitude adjustment) were informed of this result in real-time and were referred for treatment to the appropriate health service.

Three indicators were calculated using the weight and height data – weight-for-age, height-for-age, and weight-for-height. For this report, indicators of the children's nutritional status were calculated using growth standards published by the World Health Organization (WHO) in 2006. The growth standards were generated using data collected in the WHO Multicenter Growth Reference Study. The findings of the study, whose sample included children in six countries (Brazil, Ghana, India, Norway, Oman, and the United States), describe how children should grow under optimal conditions. As such, the WHO Child Growth Standards can be used to assess children all over the world, regardless of ethnicity, social and economic influences, and feeding practices. The three indicators are expressed in standard deviation units from the median in the Multicenter Growth Reference Study.

A total of 1,677 children aged 0-59 months participated in the SMI-Panama second follow-up. In practice, 1,515 of these children underwent the physical measurement module. Height and weight data are presented for 1,515 of these children (100%, unweighted). One thousand three hundred eighty nine children 6-59 months of age were eligible for the anemia test. Hemoglobin was measured in 1,089 children (78.4%, unweighted, of children 6-59 months of age). Parental consent was refused for 290 children, zero were not measured because anthropometrists could not obtain a sufficient capillary blood sample or any sample at all, and six cases were not tested for other reasons (for example, because the child did not cooperate). The age and sex distribution of children participating in the physical measurement module in second follow-up is displayed in Figure 9.2 and Figure 9.4.

Figure 9.1: Height and weight measured: Age and sex of sample, unweighted percent distribution of the de facto population, baseline survey

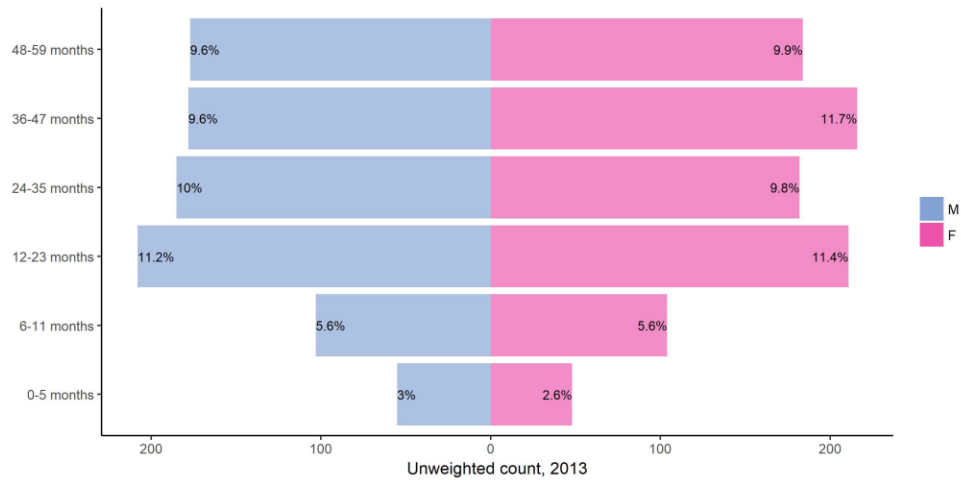


Figure 9.2: Height and weight measured: Age and sex of sample, unweighted percent distribution of the de facto population, follow-up survey

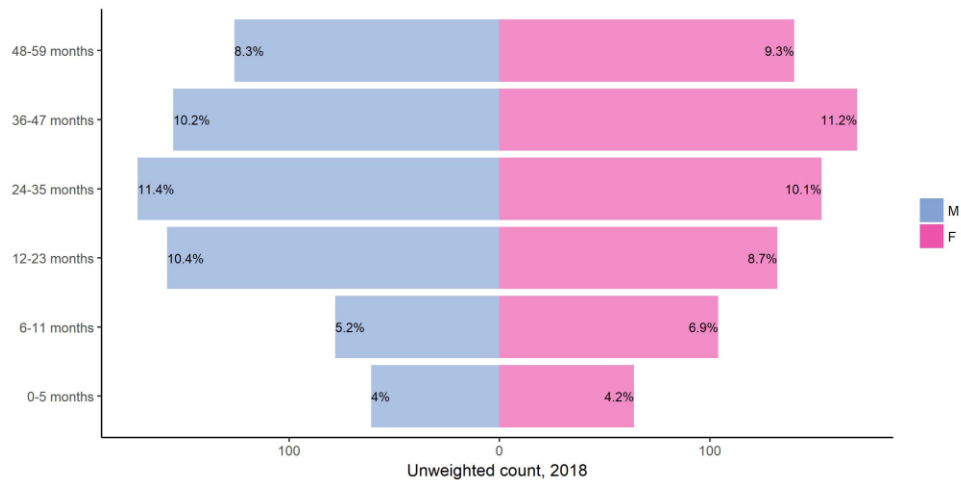


Figure 9.3: Hemoglobin measured: Age and sex of sample, unweighted percent distribution of the de facto population, baseline survey

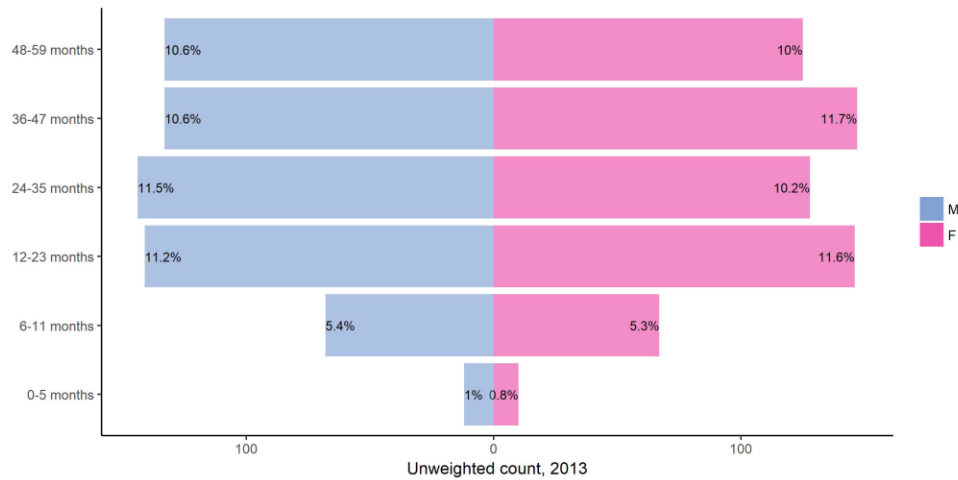
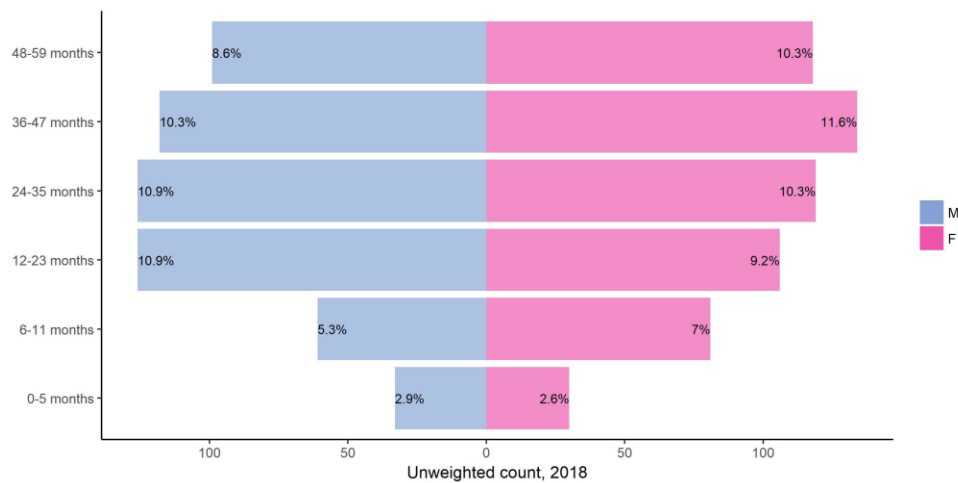


Figure 9.4: Hemoglobin measured: Age and sex of sample, unweighted percent distribution of the de facto population, follow-up survey



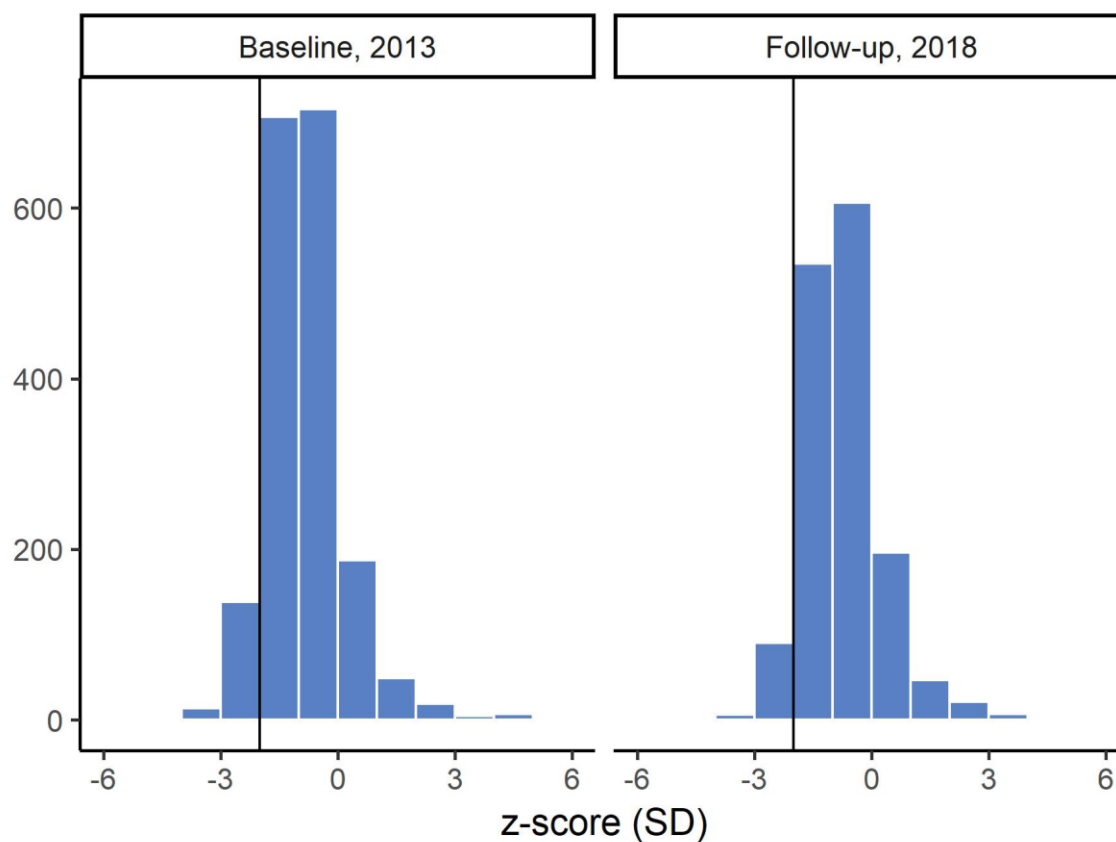
9.1 Weight-for-Age

Weight-for-age is a good overall indicator of a population's general health, as it reflects the effects of both acute and chronic undernutrition. The weight-for-age indicator does not distinguish between chronic malnutrition (stunting) and acute malnutrition (wasting); a child can be underweight because of stunting, wasting, or both. Children with weight-for-age below minus two standard deviations (-2 SD) are classified as underweight. Children with weight-for-age below minus three standard deviations (-3 SD) are considered severely underweight.

9.1.1 Unweighted distribution of weight-for-age z-scores

Figure 9.5 shows the distribution of weight-for-age z-scores among all children aged 0-59 months whose measurements were taken. The vertical black lines in the figure denote minus two standard deviations – children to the left of the line are classified as underweight.

Figure 9.5: Distribution of weight-for-age z-scores among children 0-59 months, unweighted



9.1.2 Prevalence of underweight

As shown in Table 9.1, 15.4% of children aged 0-59 months in the second follow-up are underweight (have low weight-for-age) and 3.2% are severely underweight. The proportion of underweight children is highest (16.8%) in the age groups 24 to 59 months and lowest (1.6%) among those under 6 months. Female children (12.6%) are less likely to be underweight than male children (17.9%).

Table 9.1: Prevalence of underweight in children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Prevalence of underweight in children 0-59 months, by sex and age (< -2 SD)								
Male	178	907	20.6	2.1	131	750	17.9	2.0
Female	165	946	18.5	2.0	95	763	12.6	1.6
0-5 months	4	103	3.7	1.9	2	126	1.6	1.0
6-11 months	32	207	16.3	2.5	17	182	10.2	2.4
12-23 months	87	419	21.8	2.7	55	290	20.4	3.1
24-59 months	218	1122	20.3	1.9	154	917	16.8	1.7
0-59 months	341	1851	19.3	1.7	228	1515	15.4	1.3
6-23 months	119	626	19.9	2.2	72	472	16.4	2.2
Prevalence of severe underweight in children 0-59 months, by sex and age (< -3 SD)								
Male	39	907	4.7	0.8	22	750	3.2	0.7
Female	37	946	4.2	0.8	20	763	2.8	0.7
0-5 months	2	103	1.7	1.3	1	126	0.8	0.8
6-11 months	9	207	3.3	1.2	2	182	1.2	0.9
12-23 months	23	419	5.4	1.3	9	290	3.9	1.4
24-59 months	40	1122	4.1	0.7	32	917	3.7	0.7
0-59 months	74	1851	4.2	0.5	44	1515	3.2	0.5
6-23 months	32	626	4.7	0.9	11	472	2.8	0.9
Prevalence of high weight for age in children 0-59 months, by sex and age (> 2 SD)								
Male	17	907	2.0	0.5	8	750	0.9	0.4
Female	17	946	1.9	0.5	20	763	2.6	0.7
0-5 months	21	103	22.9	5.0	20	126	15.7	3.8
6-11 months	4	207	1.4	0.7	2	182	1.0	0.7
12-23 months	4	419	1.0	0.5	6	290	1.8	0.9
24-59 months	5	1122	0.5	0.2	0	917	0.0	-
0-59 months	34	1851	1.9	0.4	28	1515	1.8	0.4
6-23 months	8	626	1.2	0.4	8	472	1.5	0.6

9.2 Height-for-Age

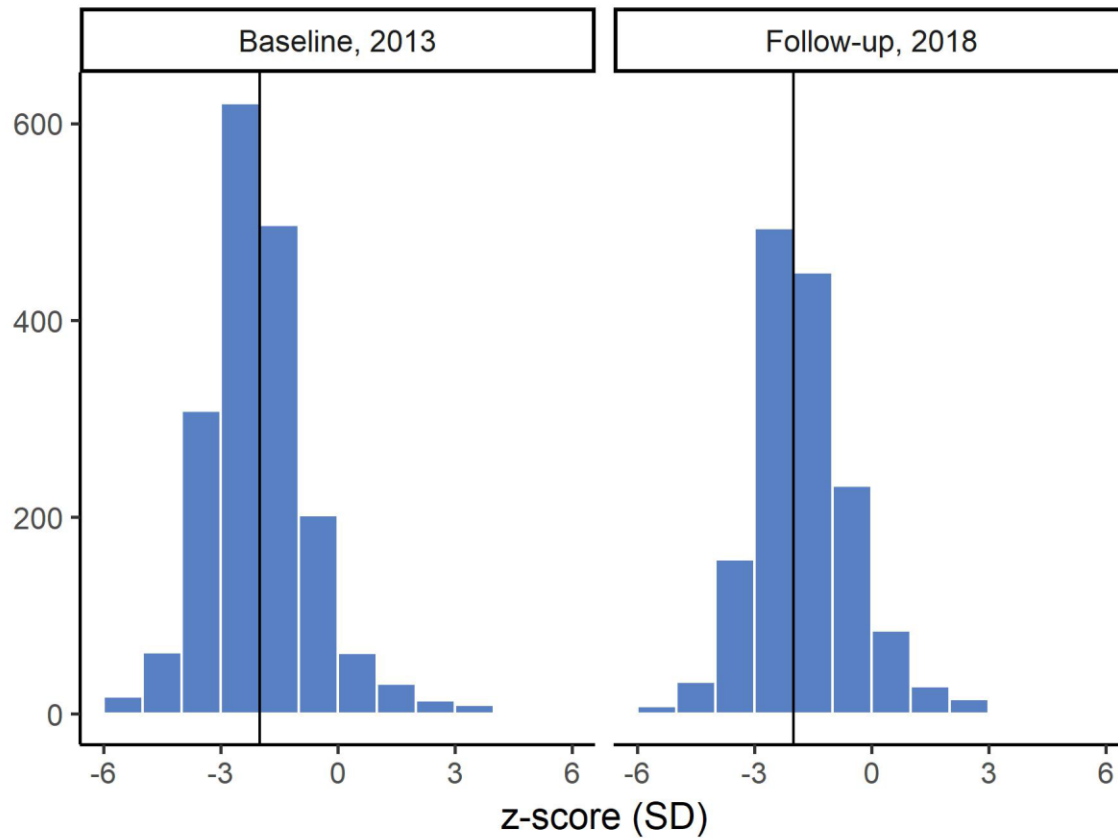
Height-for-age is an indicator of linear growth retardation and cumulative growth deficits in children. Children whose height-for-age z-score is below minus two standard deviations (-2 SD) from the median of the WHO reference population are considered short for their age (stunted) or chronically malnourished. Children who are below minus three standard deviations (-3 SD) are considered severely stunted. Stunting reflects failure to receive adequate nutrition over a long period of time and is affected by recurrent and chronic illness. Height-for-age, therefore, represents the long-term effects of malnutrition in a population and is not sensitive to recent, short-term changes in dietary intake.

9.2.1 Distribution of height-for-age z-scores

Figure 9.6 presents the distribution of height-for-age z-scores among all children aged 0-59 months whose measurements were taken. The vertical black lines in the figure denotes minus two standard deviations

– children to the left of the line are classified as stunted.

Figure 9.6: Distribution of height-for-age z-scores among children 0-59 months, unweighted



9.2.2 Prevalence of stunting

Table 9.2 presents the prevalence of stunting in children aged 0-59 months as measured by height-for-age. In the second follow-up, 47.4% of children under age 5 are stunted and 14.3% are severely stunted. Analysis of the indicator by age group shows that stunting is highest (57.3%) in children 24-59 months and lowest (2.3%) in children aged 0-5 months. Children 12-23 months old have the highest proportion of severely stunted children (21.2%) while the youngest age group (0-5 months) has the lowest proportion (0.8%). A higher proportion (52.1%) of male children is stunted compared with the proportion of female children (42.5%).

Table 9.2: Prevalence of stunting in children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Prevalence of stunting in children 0-59 months, by sex and age (< -2 SD)								
Male	510	906	57.3	2.9	376	750	52.1	2.8
Female	508	944	54.5	3.0	318	763	42.5	2.8
0-5 months	14	103	12.9	3.8	3	126	2.3	1.2
6-11 months	71	207	36.9	4.2	44	182	25.7	4.2
12-23 months	242	417	59.1	3.4	140	290	49.9	3.9
24-59 months	689	1121	61.9	2.7	509	917	57.3	2.8
0-59 months	1016	1848	55.7	2.7	696	1515	47.4	2.4
6-23 months	313	624	51.6	3.1	184	472	40.4	3.1
Prevalence of severe stunting in children 0-59 months, by sex and age (< -3 SD)								
Male	220	906	25.2	1.9	109	750	16.6	1.9
Female	179	944	20.0	2.3	90	763	11.8	1.7
0-5 months	4	103	3.6	1.8	1	126	0.8	0.8
6-11 months	30	207	14.4	3.1	10	182	5.8	2.0
12-23 months	119	417	29.3	3.3	54	290	21.2	3.0
24-59 months	244	1121	22.8	2.0	136	917	15.8	1.6
0-59 months	397	1848	22.3	1.9	201	1515	14.3	1.5
6-23 months	149	624	24.3	2.5	64	472	15.1	2.2

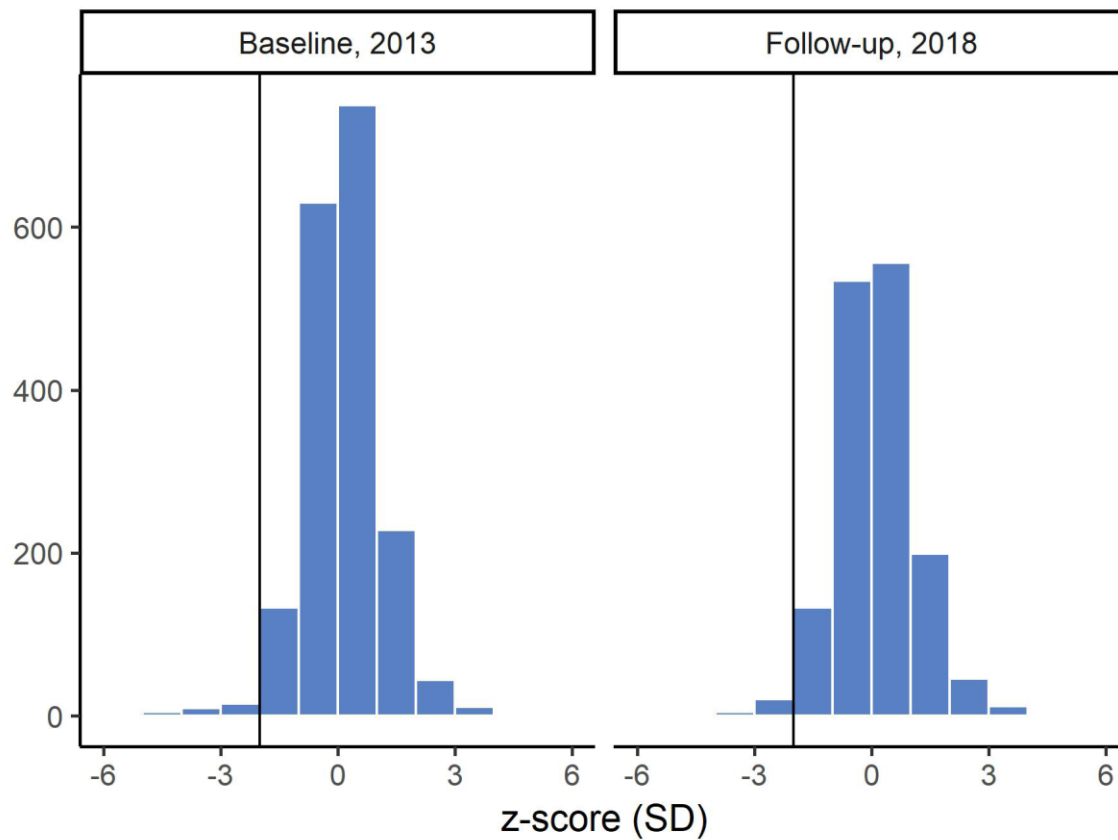
9.3 Weight-for-Height

The weight-for-height indicator measures body mass in relation to body height or length and describes current nutritional status. Children with z-scores below minus two standard deviations (-2 SD) are considered thin (wasted) or acutely malnourished. Wasting represents the failure to receive adequate nutrition in the period immediately preceding the survey and may be the result of inadequate food intake or a recent episode of illness causing loss of weight and the onset of malnutrition. Children with a weight-for-height index below minus three standard deviations (-3 SD) are considered severely wasted. This weight-for-height indicator also provides data on over-weight and obesity. Children more than two standard deviations (+2 SD) above the median weight-for-height are considered overweight or obese.

9.3.1 Distribution of weight-for-height z-scores

Figure 9.7 shows the distribution of weight-for-height z-scores among all children aged 0-59 months whose measurements were taken. The vertical black lines in the figure denote minus two standard deviations – children to the left of the line are classified as wasted.

Figure 9.7: Distribution of weight-for-height z-scores among children 0-59 months, unweighted



9.4 Prevalence of Wasting

Table 9.3 shows the breakdown of nutritional status of children aged 0-59 months as measured by weight-for-height by age groups and sex. In the second follow-up, 2.9% of children are wasted and 0.8% of children are severely wasted. Analysis of the indicator by age group shows that wasting is highest (4.3%) in children 12-23 months old and lowest (4.1%) in children aged 6-11 months. Male children are more likely to be wasted than female children (4.1% to 1.6%). Male children are slightly more likely to be severely wasted (1.2%) than females (0.4%).

Overweight and obesity affect a greater proportion of children in SMI areas Panama than wasting. In this sample, 3.1% of children are overweight or obese (weight-for-height more than +2 SD). The coexistence of both growth retardation and obesity reveals the burden of malnutrition in Panama.

Table 9.3: Prevalence of wasting in children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Prevalence of wasting in children 0-59 months, by sex and age (< -2 SD)								
Male	26	903	2.9	0.7	32	750	4.1	0.8
Female	27	943	2.7	0.6	12	763	1.6	0.5
0-5 months	3	103	4.3	2.3	4	125	2.6	1.3
6-11 months	10	207	3.4	1.2	6	182	4.1	1.8
12-23 months	17	417	3.6	1.1	13	290	4.3	1.3
24-59 months	23	1117	2.3	0.6	21	916	2.2	0.5
0-59 months	53	1844	2.8	0.5	44	1513	2.9	0.5
6-23 months	27	624	3.5	0.8	19	472	4.2	1.0
Prevalence of severe wasting in children 0-59 months, by sex and age (< -3 SD)								
Male	13	903	1.6	0.5	10	750	1.2	0.4
Female	11	943	1.0	0.3	3	763	0.4	0.3
0-5 months	2	103	3.4	2.2	1	125	0.9	0.9
6-11 months	6	207	1.8	0.9	0	182	0.0	-
12-23 months	7	417	1.6	0.6	5	290	1.7	0.7
24-59 months	9	1117	0.9	0.3	7	916	0.7	0.3
0-59 months	24	1844	1.3	0.3	13	1513	0.8	0.2
6-23 months	13	624	1.6	0.5	5	472	1.0	0.4
Prevalence of overweight in children 0-59 months, by sex and age (> 2 SD)								
Male	31	903	3.2	0.6	31	750	3.5	0.6
Female	30	943	2.8	0.6	21	763	2.8	0.6
0-5 months	12	103	11.9	3.2	20	125	16.3	3.8
6-11 months	14	207	6.0	1.6	8	182	4.8	1.8
12-23 months	13	417	2.8	0.8	7	290	2.0	0.9
24-59 months	22	1117	1.7	0.4	17	916	1.3	0.4
0-59 months	61	1844	3.0	0.4	52	1513	3.1	0.4
6-23 months	27	624	3.9	0.7	15	472	3.1	0.9

9.5 Anemia

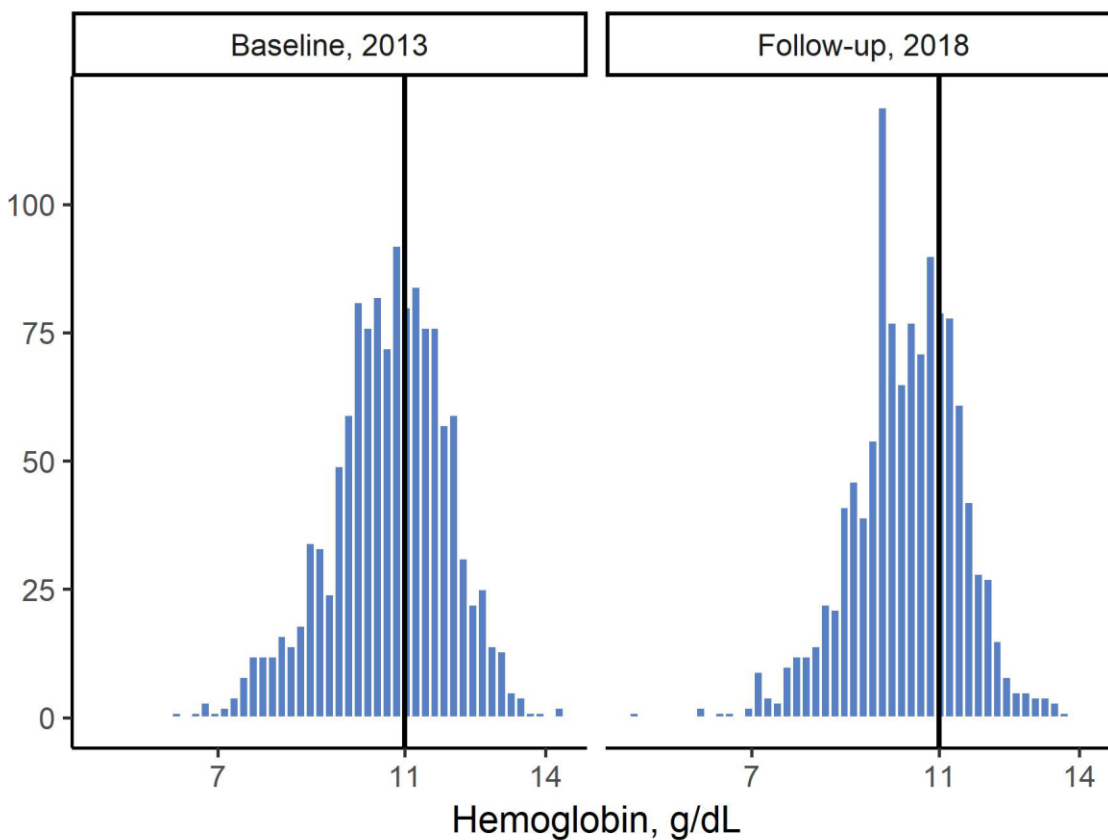
Anemia is a condition characterized by low concentration of hemoglobin in the blood. Hemoglobin is necessary for transporting oxygen to tissues and organs in the body. The reduction in oxygen available to organs and tissues when hemoglobin levels are low is responsible for most of the symptoms experienced by anemic persons. The consequences of anemia include general body weakness, frequent tiredness, and lowered resistance to disease. It is of concern in children because anemia is associated with impaired mental and motor development. Overall, morbidity and mortality risks increase for individuals suffering from anemia.

Common causes of anemia include inadequate intake of iron, folate, vitamin B12, or other nutrients. This form of anemia is commonly referred to as iron-deficiency anemia and is the most widespread form of anemia in the world. Anemia can also be the result of thalassemia, sickle cell disease, malaria, or intestinal worm infestation.

9.5.1 Distribution of hemoglobin values

Figure 9.8 shows the distribution of hemoglobin values (in g/dL) among children 0-59 months of age. The vertical black lines in the figure denote a hemoglobin concentration of 11.0 g/dL – children to the left of the line are classified as anemic.

Figure 9.8: Distribution of hemoglobin values among children 0-59 months, unweighted



9.5.2 Prevalence of anemia

Levels of anemia were classified as severe (<7.0 g/dL) and any (<11.0 g/dL) based on the hemoglobin concentration in the blood. The cutpoints for anemia are adjusted (raised) in settings where altitude is more than 1,000 meters above sea level, to account for lower oxygen partial pressure, a reduction in oxygen saturation of blood, and an increase in red blood cell production. Although some regions of Panama are mountainous and well above 1,000 meters, the majority of the population resides at lower levels. The highest elevation of a surveyed household at the second follow-up was 119 meters above sea level; 0% of children (unweighted) lived above 1,000 meters. Correction for elevation was applied to anemia diagnosis where data collectors measured altitude over 1,000m (using a handheld GPS device).

Children whose hemoglobin levels are below 11 g/dL are considered anemic, and children who have

hemoglobin levels below 7 g/dL are considered severely anemic. Table 9.4 indicates that 70% of children under age 5 in Panama are anemic. Overall, the anemia prevalence is mostly mild to moderate (69.6%), with only 0.4% of children under 5 years presenting as severely anemic. Anemia prevalence is highest among children aged 0-5 months (80.9%) compared with the other children. More than 87.7% of all children aged 6-23 months, our targeted population for anemia intervention, were found to be anemic.

Table 9.4: Prevalence of anemia, children aged 0-59 months

	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
Prevalence of anemia in children 0-59 months, by sex and age								
Male	366	632	58.7	2.9	403	563	72.6	3.0
Female	340	624	55.3	2.6	390	588	67.8	2.4
0-5 months	16	22	72.1	12.2	52	64	80.9	4.3
6-11 months	113	135	83.8	3.2	128	142	93.1	2.1
12-23 months	209	287	73.8	3.0	191	232	84.3	2.9
24-59 months	366	810	45.7	2.7	422	715	59.6	2.8
0-59 months	704	1254	56.8	2.2	793	1153	70.0	2.2
6-23 months	322	422	77.1	2.2	319	374	87.7	2.1
Prevalence of severe anemia in children 0-59 months, by sex and age								
Male	4	632	0.6	0.3	2	563	0.3	0.2
Female	2	624	0.2	0.2	3	588	0.5	0.3
0-5 months	0	22	0.0	-	0	64	0.0	-
6-11 months	2	135	1.5	1.0	1	142	0.5	0.5
12-23 months	1	287	0.2	0.2	2	232	0.8	0.6
24-59 months	3	810	0.3	0.2	2	715	0.3	0.3
0-59 months	6	1254	0.4	0.2	5	1153	0.4	0.2
6-23 months	3	422	0.6	0.4	3	374	0.7	0.4

APPENDIX A. SAMPLING DESIGN AND METHODOLOGY

A.1 Sample Size

Sample sizes were determined based on IDB's pre-specified plan for the second follow-up measurement to complete a full census of sampled segments (described in section A.2 "Sampling Procedures," below), followed by a survey of 1,564 selected eligible households in intervention areas. Households were eligible if they had at least one child aged 0-59 months or one woman aged 15-49 years.

In order to achieve the desired sample size of 1,564 households, we sought to complete interviews with residents of 30 randomly selected households in each of the 53 randomly selected segments in intervention areas. More specifically, we drew a sample of 30 randomly selected households with age-eligible women and/or children as residents, and then drew a backup sample of 10 households from the remaining households with eligible participants in the segment. Due to small community size, nine segments in the second follow-up did not have a full selection of 30 households with eligible women and children for participation in the household survey. For these segments, all households with eligible women and children were selected with certainty to participate in the household survey. In some cases, selected households were absent or declined to participate in the SMI-Panama Household Survey. These households were replaced in order by households from the backup sample for the same segment. In each selected household, all eligible women and children were selected to participate in the study. Informed consent was sought from each respondent to the household questionnaire and women's health interview, and from the guardian of each child participating in physical measurements. Occasionally, one or more eligible participants refused the interview despite other household members participating, or a survey was refused in course, resulting in a partially complete household result. Because multiple interviewers worked the sample simultaneously, in a handful of instances more than 30 surveys were completed. In the second follow-up, counts of complete households by segment range from 10 to 31 households. Fourteen segments with fewer than 30 complete households had one or two partially complete households, and two segments with 30 complete households have additional partially complete households. Data from partially complete households are used wherever individual modules are sufficiently complete.

A.2 Sampling Procedures

IDB identified 2 intervention comarcas in which to conduct the SMI household survey for the Initiative on the basis of their high concentration of residents in the country's lowest wealth quintile. From these 2 comarcas, a two-stage clustered random sample of eligible households was selected.

In this section, we describe the random sampling procedures for selecting the segments from the target area, and the households within the segment. An alternative sample was also selected in the event that the survey could not be conducted in the selected segments. Below we describe the selection of the primary and alternate samples.

A.2.1 Cluster sampling

Cluster sample sizes were determined based on the total estimated household sample size divided by a fixed cluster size “ μ ” of 30 households per segment. The primary sample at the second follow-up of 57 intervention clusters (segments) was randomly selected from a total of 158 intervention segments in 2 comarcas which, based on data from the 2010 Panama Population Census, contained 8,595 households. As stated previously, segments were selected with probability proportional to size and with replacement, as follows:

Size was represented by the number of occupied households within the segment, based on data from the 2010 Panama Population Census. We generated a variable for the cumulative number of households in each of the intervention sampling frame. We divided the cumulative total by the number of segments we meant to sample to obtain an interval length “ Δ .” A random starting point “ Σ ” was drawn from a uniform distribution between 1 and the interval length Δ . The n^{th} segment in the sample was the first segment whose cumulative number of households was greater than $\Sigma + (n - 1) * \Delta$.

After selecting the 57 total segments to be surveyed, a set of 25 alternate segments in intervention areas were randomly selected with probability proportional to size. These segments could be used in the event that any of the selected segments could not be surveyed and needed to be replaced due to security concerns, community rejection of the study, or a high proportion of absent households. In Panama in the 2018 follow-up survey, six segments in intervention areas were replaced due to community refusals. Each segment was replaced with a randomly selected alternate from the same district. Three communities refused participation after completing the census, but before starting the household survey. One segment was completely excluded from the sample after the local government revoked permission of the use of all data collected from the community members due to distrust of the government. At the baseline, four segments were replaced due to logistical reasons. In each case, a randomly selected alternate from the same district was used. Due to the small size of communities in the study area during the second follow-up, two segments in Guna Yala were added to the sample.

A.2.2 Household sampling

Within each randomly selected cluster, a complete household listing exercise was carried out, enabling the systematic selection of households for participation in the survey, based on household composition. All households in which women aged 15-49 years and/or children aged 0-59 months resided were eligible to be selected for the survey. Eligible households were sorted according to a random variable. The first 25 households with eligible children were selected for participation. The first five households with eligible women only were selected to complete the sample of 30 households. Ten additional households were identified as an alternate sample, eight with eligible children and two with eligible women only. These alternate households were substituted in order for selected households that were absent throughout the data collection or refused participation in the study.

APPENDIX B. SURVEY WEIGHTS, SAMPLING ERROR, AND DESIGN EFFECTS

B.1 Weighting Methodology

Survey weights reflect the three-stage cluster sampling design of the study. The primary sampling unit is referred to as the “segment.” The segment is censused, and 30 households with eligible participants selected at random. Within selected households, all women 15-49 years of age and all children 0-59 months of age are selected for participation in the survey. Design weights for households, women and children were generated according to the inverse probability of selection of the unit and incorporated into the merged datasets for analyses. The weights were calculated as follows for households:

$$\text{Weight} = \frac{1}{p(\text{selecting Household } Y)} = \frac{1}{p(\text{selecting Segment } X) * p(\text{selecting Household } Y \text{ in segment } X)}$$

where

$$p(\text{selecting Segment } X) = \frac{\# \text{ occupied households in Segment } X \text{ in 2010 Population Census}}{\text{Total } \# \text{ occupied households in target municipalities in 2010 Population Census}} * \# \text{ draws}$$

and the number of draws corresponds to the number of segments in the intervention area (57 at the second follow-up), and the total number of occupied households in target municipalities in the 2010 Panama Population Census corresponds to 8,595 households, and

if the household includes children under 5 according to the SMI-Panama census:

$$p(\text{selecting household } Y \text{ in segment } X) = \frac{\# \text{ households with age-eligible children interviewed for SMI in segment } X}{\# \text{ occupied households with age-eligible children in Segment } X \text{ from SMI census}}$$

or if the household does not include children under 5 according to the SMI-Panama census:

$$p(\text{selecting household } Y \text{ in segment } X) = \frac{\# \text{ households with eligible women but no eligible children interviewed for SMI in segment } X}{\# \text{ occupied households with age-eligible women but no children in Segment } X \text{ from SMI census}}$$

Minor modifications to this formula were used to calculate weights for women, children, and households with water quality testing as follows:

$p(\text{selecting woman } Z)$

$$= \frac{p(\text{selecting Segment } X) * p(\text{selecting Household } Y \text{ in Segment } X)}{\text{average number of women 15-49 years old per household in SMI census}} * p(\text{selecting Woman } Z \text{ in household } Y)$$

where the average number of women 15-49 years old per household in the sample was 1.3 (according to the SMI-Panama Household Census), and

if the household includes children under 5 according to the SMI-Panama census:

$p(\text{selecting Household } Y \text{ in Segment } X)$

$$= \frac{\# \text{ households with eligible children completing women's health survey for SMI in Segment } X}{\# \text{ occupied households with age-eligible children in Segment } X \text{ from SMI census}},$$

or if the household does not include children under 5 according to the SMI-Panama census:

$p(\text{selecting Household } Y \text{ in Segment } X)$

$$= \frac{\# \text{ households with eligible women but not children completing women's health survey for SMI in Segment } X}{\# \text{ occupied households with age-eligible women but not children in Segment } X \text{ from SMI census}},$$

and

$p(\text{selecting Woman } Z \text{ in Household } Y) =$

$$\frac{\# \text{ women in Household } Y \text{ completing the survey}}{\# \text{ women 15-49 years old residing in Household } Y \text{ from SMI census'}}$$

and

$p(\text{selecting Child } W)$

$$= \frac{p(\text{selecting Segment } X) * p(\text{selecting Household } Y \text{ in Segment } X)}{\text{average number of children 0-59 months old per household in sample}} * p(\text{selecting child } W \text{ in Household } Y)$$

where the average number of children 0-59 months old per household in the sample was 0.8 (according to the SMI-Panama Household Census), and

$p(\text{selecting Household } Y \text{ in Segment } X)$

$$= \frac{\# \text{ households completing children's health survey for SMI in Segment } X}{\# \text{ occupied households with age-eligible children in Segment } X \text{ from SMI census'}}$$

and

$p(\text{selecting Child } W \text{ in Household } Y)$

$$= \frac{\# \text{ children in Household } Y \text{ completing the survey}}{\# \text{ children 0-59 months residing in Household } Y \text{ from SMI census}}$$

and for households with water quality testing

$p(\text{selecting household } Y \text{ in Segment } X) =$

$$p(\text{selecting Segment } X) * p(\text{selecting Household } Y \text{ in Segment } X \text{ for water quality testing})$$

where

$p(\text{selecting household } Y \text{ in Segment } X \text{ for water quality testing}) =$

$$\frac{\# \text{ households completing SMI water quality testing}}{\# \text{ occupied households with age-eligible children in Segment } X \text{ from SMI census households}}$$

The weights yielded results which were similar to the unweighted results.

B.2 Sampling Errors

As described in Appendix A, a random sample of eligible households was selected from each of clusters (segments) which had been randomly sampled with probability proportional to size from the target intervention areas of the initiative. Although cluster sampling can improve efficiency when the target population is spread out over a large area, the resultant sample consists of observations that are not completely independent of one another. The standard errors presented throughout this report and in Appendix C account for this intra-class correlation, using Taylor-linearized variance estimation.

APPENDIX C. SMI HOUSEHOLD INDICATORS

Table C.1: Performance of payment indicators, SMI-Panama Second Follow-up Survey

Indicator	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
5710 Water in household of adequate quality	1	136	0.9	0.9	0	213	0.0	-
2020 Women (age 15-49) who did not wish to become pregnant and who were not using/not have access to family planning methods (temporary and permanent)	1535	1711	90.0	2.0	1256	1276	98.8	0.4
3020 Women (age 15-49) who received at least four antenatal care visits by skilled personnel (doctor or nurse) in their most recent pregnancy in the last two years*	414	1024	38.3	2.5	188	691	24.2	2.7
4020 Women (age 15-49) who received postpartum care by skilled personnel (doctor or nurse) within the first 48 hours in their most recent pregnancy in the last two years	128	968	13.4	1.8	57	499	10.9	1.8
4100 Infants receiving neonatal care by skilled personnel (doctor, nurse, or auxiliary nurse) in a health facility within 48 hours of birth in the last two years	119	1072	10.8	1.5	98	582	16.7	2.5
5025 Children 12-23 months who received MMR vaccine according to card	318	449	69.1	3.3	224	312	71.0	2.5
5030 Children 12-59 months who received 2 doses of deworming in the last year	142	1564	8.7	1.1	159	1197	12.9	1.5
5060 Children 0-59 months who received ORS in the last episode of diarrhea in the past two weeks	1	182	0.6	0.6	4	69	6.2	3.1

*As at baseline definition, women who didn't know how many ANC checks they had or didn't know who attended them are counted as zero.

Table C.2: Performance of monitoring indicators, SMI-Panama Follow-up Survey

Indicator	Baseline 2013				Second Follow-Up 2018			
	n	N	%	SE	n	N	%	SE
1080 Women aged 15-49 with a live birth in the last year	374	2353	12.7	0.7	269	2182	11.2	0.7
1090 Women aged 15-19 with a live birth in the last year	60	449	13.0	1.9	39	380	9.3	1.4
2010 Women (age 15-49) currently using (or whose partner is using) a modern method of family planning	176	1711	10.0	2.0	20	1276	1.2	0.4
2030 Women (age 15-49) who report having stopped using a method of family planning during the previous year	31	299	10.2	2.5	6	39	16.4	6.1
4110 Women (age 15-49) with a birth in the last two years who can recognize at least 5 danger signs in newborns	186	762	22.7	3.4	182	516	39.2	3.5
6010 Women 15-49 who report having any illness in the past two weeks	236	2341	11.0	1.2	96	2159	4.0	0.7
3010 Women (age 15-49) who received at least one antenatal care visit by skilled personnel (doctor or nurse) in their most recent pregnancy in the last two years	813	1017	78.4	2.5	363	574	58.0	3.4
4010 Women (age 15-49) delivered in hospital/health center with skilled attendant in their most recent pregnancy in the last two years	674	875	76.3	3.2	321	370	85.0	3.1
4022 Women (age 15-49) who received postpartum care by skilled personnel (doctor or nurse) within the first 24 hours in their most recent pregnancy in the last two years	83	968	7.7	1.5	39	499	8.1	1.7
4030 Women (age 15-49) who received postpartum care within 7 days with skilled personnel (doctor, nurse, or pro. midwife) in their most recent pregnancy in the last two years*	175	968	18.5	2.0	106	499	20.4	2.4

(continued)

Indicator	Baseline 2013				Second Follow-Up 2018			
	n	N	%	-	n	N	%	SE
4040 Women (age 15-49) who received postpartum care by skilled personnel (doctor or nurse) within 24 hours after delivery, a second check before 7 days, and a third check between 7 and 42 days after delivery in their most recent pregnancy in the last two years	0	968	0.0	-	1	499	0.3	0.3
5050 Children born in the last two years who were breastfed within one hour after birth	974	1102	87.9	1.4	684	722	95.4	1.0
5020 Children (0-59 months) fully vaccinated for age, according to vaccine card and recall	476	1772	26.5	2.4	50	408	12.2	1.9
5040 Children 0-5 months who were exclusively breastfed on the previous day	97	215	45.3	3.5	88	132	64.9	4.7
5080 Children 12-15 months who were breastfed on the previous day	114	158	72.0	3.8	104	134	77.7	4.6
5090 Children 6-8 months who received solid or semi-solid food on the previous day	87	101	87.5	3.1	55	92	58.7	6.0
5100 Children 6-23 months who received foods from 4 or more food groups during the previous day	119	661	18.0	2.3	190	522	35.6	2.6
5110 Children 6-23 months breastfed or complimentary feeding who received solid, semi-solid, or soft foods the minimum number of times or more during the previous day	84	392	20.3	3.4	22	239	9.0	2.4
5120 Children 6-23 months who received the minimum acceptable diet (apart from breastmilk) during the previous day	27	647	3.7	1.0	7	464	1.3	0.5
5130 Children 6-23 months who received iron-rich or iron-fortified foods during the previous day	443	661	65.7	2.4	314	522	59.7	2.6
1050 Children 0-59 months with hemoglobin <110g/L	704	1254	56.8	2.2	793	1153	70.0	2.2
1070 Children 0-59 months with height < -2 SD of the mean of the reference population for age	1016	1848	55.7	2.7	696	1515	47.4	2.4

Indicator	Baseline 2013			Second Follow-Up 2018		
	N	mean	SE	N	mean	SE
6090 Average out-of-pocket household itemized health expenditure for the last month (Panama Balboa)	239	30.7	6.8	181	30.5	4.6
6100 Average household itemized expenditure for the last month (Panama Balboa)	1658	289.7	35.4	1524	315.9	12.3
6080 Average travel time to nearest health facility (min)	1299	62.7	12.1	1337	40.9	7.0
6085 Average distance to nearest health facility (km)	144	4.2	1.4	559	16.4	6.3
6120 Average wait time at most recent visit to a health facility (min)	4	90.5	43.5	1	10.0	-
6082 Average travel time to delivery location for most recent birth in the last two years (min)	346	122.4	23.6	251	135.4	29.6