

*My Childhood, My Future*



# Early Childhood Development in Libya



WORLD BANK GROUP



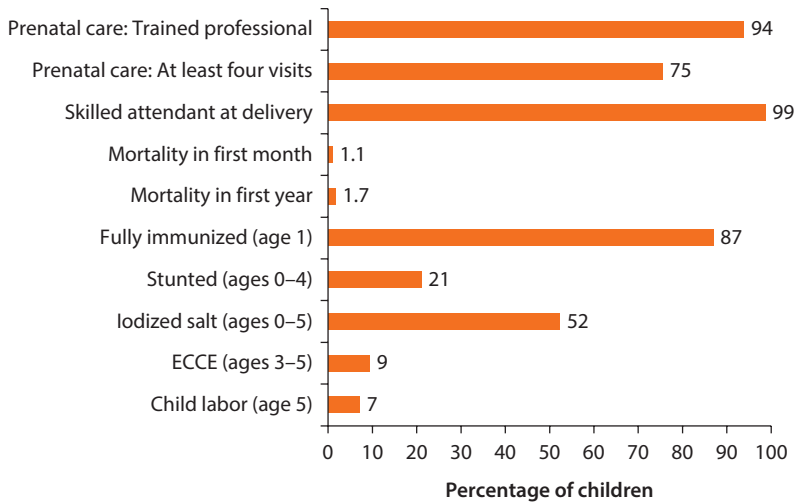
# Libya

## The State of Early Childhood Development in Libya

Early childhood development (ECD) in Libya has a number of gaps that need to be addressed in order for children to attain their full potential for early development. Figure 10.1 presents summary indicators for ECD in Libya. In terms of prenatal and delivery care, although 99 percent of births had a skilled attendant at delivery, 94 percent of births received prenatal care, and only 75 percent received regular prenatal care (at least four visits). In the first month of life, 1.1 percent of children die, and in the first year of life, 1.7 percent of children die. With 87 percent of children age one fully immunized, Libya has room for improvement. Malnutrition is a problem in Libya, where 21 percent of children are stunted and only half (51 percent) of children have access to adequately iodized salt. Only 9 percent of three- to five-year-olds attended early childhood care and education (ECCE) and around 7 percent of children engaged in child labor at age 5.

This chapter presents the status of ECD in Libya. The health status of children is examined through indicators (see box 10.1) of early mortality, prenatal care, and having a skilled attendant at birth. Children's nutritional status is measured by stunting (height-for-age), as well as the availability of micronutrients, specifically iodine. To assess early learning and early work, the analysis looks at attendance of ECCE and child labor. To better understand the context and conditions that influence ECD outcomes, the analysis also examines background factors that may be associated with ECD outcomes at the individual, household, and community levels and their relationships (see annexes 10A, 10B, and 10C for additional information on the data and these relationships). For the overall country context, see box 10.2. Finally, the analysis measures the gaps and extent of inequality in ECD outcomes.

The analysis is based on the latest available data: The Pan Arab Project for Family Health survey (PAPFAM) from 2007. The data cover different dimensions of early childhood from before a child is born up until the age of school entry (age six years in Libya). If more indicators were available and examined, they could

**Figure 10.1 ECD Summary Indicators**

Source: World Bank calculations based on Libya Pan Arab Project for Family Health (PAPFAM) 2007.

Note: ECCE = early childhood care and education; ECD = early childhood development.

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### Box 10.1 ECD Indicators Examined in Libya

Prenatal care  
 Skilled attendant at delivery  
 Neonatal mortality (dying in the first month)  
 Infant mortality (dying in the first year)  
 Fully immunized  
 Stunting/Height-for-age  
 Salt iodization  
 Early childhood care and education  
 Child labor

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provide an even richer picture of ECD in Libya. While under normal circumstances ECD indicators change relatively slowly, on the ground today, in light of the ongoing conflict in Libya, there may have been more rapid and substantial changes, providing both new challenges and new opportunities to improve ECD in Libya.

### ***Survival, Health Care, and Nutrition***

The first step in healthy ECD is simply surviving early childhood. In Libya, seven children under the age of one die every day.<sup>1</sup> Infant mortality, which refers to children dying before their first birthday, is 17 deaths per thousand births.<sup>2</sup> This is well below the average rate for the Middle East and North Africa (MENA) region (24 per thousand) (UNICEF 2014). Most of infant mortality is composed of neonatal mortality—children dying within the first month of life. In Libya,

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**Box 10.2 Summary of Development Indicators in Libya**

Libya is an upper-middle-income country with a gross domestic product per capita in 2012 of about \$10,456 (in current US dollars, table B10.2.1). Libya has an estimated population of 6.2 million, of which 29 percent are under the age of 15. The average life expectancy at birth is 75 years as of 2012, which is a substantial improvement since 1990, when it was 69 years.

**Table B10.2.1 Libya's Socioeconomic Indicators**

	1990	2012
Total population (millions)	4.3	6.2
% of population under 15	42	29
GDP per capita (current US dollars)	\$6,785	\$10,456
Life expectancy at birth (years)	69	75

Sources: United Nations Development Programme (UNDP) 2014; World Development Indicators.

Note: Gross domestic product (GDP) per capita is 2009.

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11 children out of every thousand born die during their first month of life, below the regional average of 15 in every thousand (UNICEF 2014). Infant mortality has been falling over time in Libya—down from around 33 children per thousand in 1990—and, unlike many other countries in the region, Libya has made substantial progress in reducing neonatal mortality, which has halved from 22 in 1990 (World Development Indicators).

Children are at risk for poor development even before birth. Each year almost ten thousand children in Libya are born without receiving prenatal care, putting children (and mothers) at risk. While 94 percent of live births<sup>3</sup> did receive prenatal care from a health professional, only 75 percent received regular prenatal care, with four or more visits. There are two gaps in prenatal care coverage: the 6 percent of births who are not receiving prenatal care at all, and the 18 percent of births who received some prenatal care, but not regular care. Use of prenatal care, has expanded slowly; in 1995, 81 percent of births received prenatal care, and there has been only a 12 percentage point increase in the 12 years to 2007 (World Development Indicators). However, the current rate is above the MENA region average of 83 percent (UNICEF 2014).

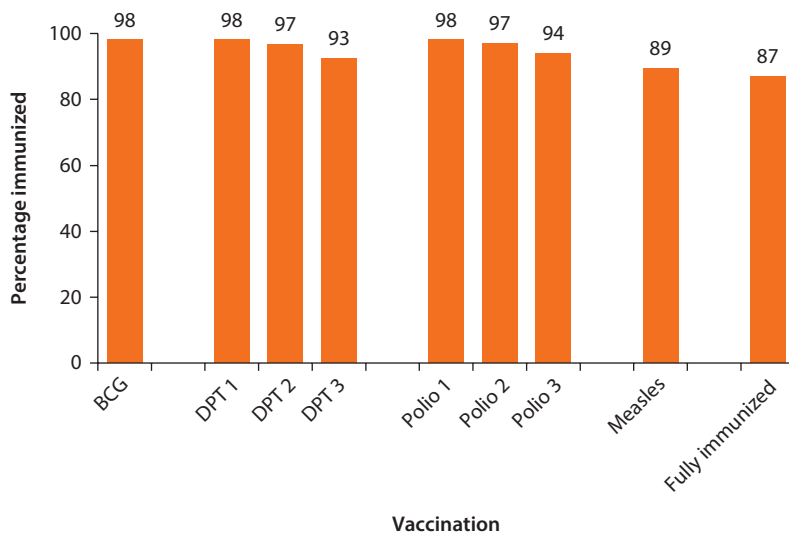
Delivery with a skilled attendant is also an important component of reducing newborn mortality and illness. Almost all (99 percent) of births<sup>4</sup> were attended by a health professional. Libya has been doing well on delivery care for decades; in 1995, the rate was already at 94 percent (World Development Indicators). Libya is well above the regional average for delivery care of 79 percent (UNICEF 2014): however, comparing delivery care and prenatal care, there is clearly greater access to skilled delivery care than prenatal care, especially regular prenatal care. That the same women are receiving delivery care but not prenatal care suggests that staff or facilities for care exist, and are accessible, but are underutilized for prenatal care.

The full immunization of children plays an important role in reducing childhood diseases that can hamper growth or cause death (Molina 2012). In Libya, 87 percent of children age one have been fully immunized,<sup>5</sup> putting the 13 percent of children who are not fully immunized at risk of early illness and death. Children are considered fully immunized if they have received immunizations for all six major preventable childhood diseases: tuberculosis, diphtheria, whooping cough, tetanus,<sup>6</sup> polio,<sup>7</sup> and measles. Children should be fully immunized by 12 months of age; this analysis focuses on children 12–23 months to allow for optimal parental recall. While BCG (Bacillus Calmette-Guérin) coverage is quite high (98 percent), the third polio dose and the third DPT (diphtheria, pertussis, tetanus) dose have 93–94 percent coverage, and the measles vaccine has 89 percent coverage (figure 10.2).

One in every five children in Libya is stunted (21 percent). This is one-fifth of the future workforce that will be less productive in their working years, due to almost entirely preventable malnutrition. Children in Libya start their lives on fairly healthy footing in terms of nutrition, measured by height-for-age; however, they experience a substantial falling off from healthy growth. Figure 10.3 shows how Libyan children fare compared to a healthy reference population.<sup>8</sup> It is during the first two years of life that children experience a substantial falling off from healthy growth. At birth, children are, on average, only 0.2 standard deviations (SDs) below the reference population. Within the first year, their growth falters further, to about 0.5 SD below the reference population by age one. At ages two to four, children fluctuate between 0.8 and 1.0 SD below the reference population.

Micronutrients such as iron, vitamin A, zinc, and iodine play an important role in both physical and cognitive development. Iodine plays a vital role in cognitive

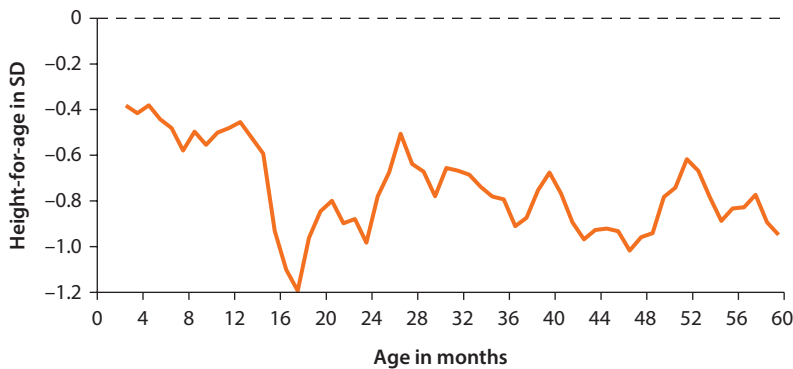
**Figure 10.2 Percentage of Children Aged 12–23 Months Immunized, by Vaccination**



Source: World Bank calculations based on Libya PAPFAM 2007.

Note: BCG = Bacillus Calmette-Guérin (tuberculosis vaccine); DPT = diphtheria, pertussis, tetanus.

**Figure 10.3 Average Height-for-Age Compared to Healthy Reference Population, in Standard Deviations by Age in Months**



Source: World Bank calculations based on Libya PAPFAM 2007.

Note: SD = standard deviation.

development, and iodine deficiency is the most common cause of preventable mental retardation and brain damage in the world (El-Zanaty and Way 2009). Iodized salt is the primary means for delivering iodine to children. Since only 52 percent of children under the age of five live in a household with sufficiently iodized salt, half of the children in Libya are at great risk for impaired cognitive development.<sup>9</sup>

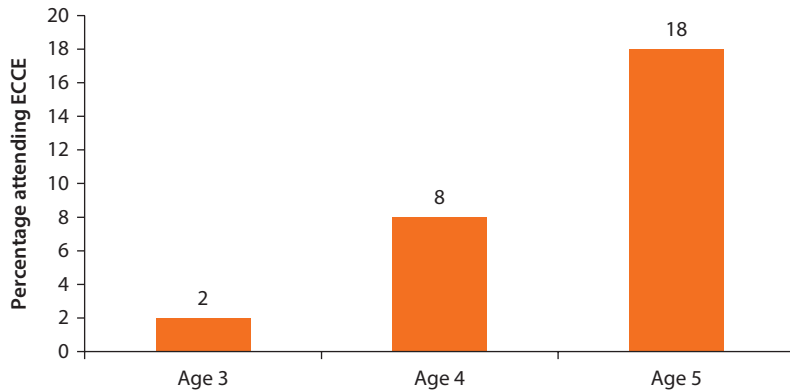
### **Early Learning and Early Work**

Evidence has shown that ECCE improves cognition and socioemotional development, with benefits that can last a lifetime. In Libya, just 9 percent of children ages three to five are attending an ECCE program, with the majority (91 percent) of children missing out on this important opportunity to develop and to prepare for primary school. Figure 10.4 presents the percentage of children who have ever attended ECCE, by age. As the figure shows, only 2 percent of three-year-olds, 8 percent of four-year olds, and 18 percent of five-year-olds are attending some type of ECCE. This pattern means that 82 percent of children in Libya will reach primary school age (age six) without attending ECCE.

ECCE in Libya is mainly composed of kindergartens; some mosques and home education programs also provide ECCE. Kindergartens are more likely to be formal programs with educational curricula designed to prepare children for school. As figure 10.5 shows, most of the children in Libya who are attending ECCE do so in a kindergarten (63 percent), which suggests that while ECCE attendance rates are low, children are primarily attending programs with stronger educational components.

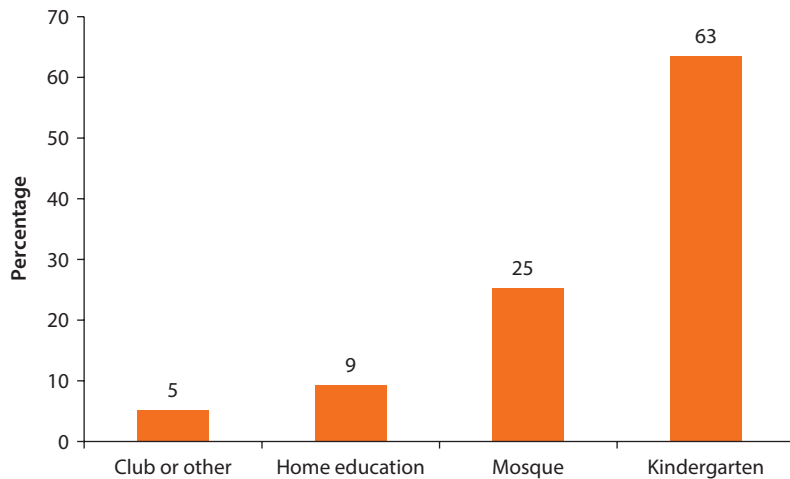
While doing household chores, working in a family business, and working for others<sup>10</sup> may build character and skills, for children at age five, these activities will be dangerous and limit their ability to enter and succeed in school. In Libya, 7 percent of five-year-olds are engaged in child labor, which puts them at risk in terms of their health, safety, and ability to successfully transition into school. Almost all five-year-olds engaged in child labor were doing household chores

**Figure 10.4 Percentage of Children Aged 3–5 Currently Attending ECCE**



*Source:* World Bank calculations based on Libya PAPFAM 2007.  
*Note:* ECCE = early childhood care and education.

**Figure 10.5 Type of ECCE Attended, Children Who Currently Attend ECCE, Ages 3–5**



*Source:* World Bank calculations based on Libya PAPFAM 2007.  
*Note:* ECCE = early childhood care and education.

(96 percent). Only around 1 percent of those engaged in child labor were working in a job, and 9 percent were working in a family business.<sup>11</sup>

**Key Factors Affecting Early Childhood Development**

A number of background characteristics at the child, family, and community levels affect ECD outcomes: gender, parents’ education, household socioeconomic status (wealth),<sup>12</sup> and geographic location (region or governorate). Understanding these relationships can help identify why some children have poor ECD outcomes and which children to target with policy or programmatic interventions.

### ***Survival, Health, and Nutrition***

Background characteristics affect the chances that a child will die in the first year of life in Libya. Boys have a higher chance of dying in the first year of life than girls, but this is a common pattern globally due to genetic factors (Hill and Upchurch 1995). The wealth of a child's household, the level of education of his or her mother, and the region where they reside are strongly associated with a child's survival chances. Children from households in the bottom three quintiles are more likely to die before their first birthday, compared to children in the fourth or richest 20 percent of households. Also, children whose mothers have less than a complete preparatory education are more likely to die before their first birthday than children whose mothers have a complete preparatory education or higher. In terms of region, children in Fezzan are more likely to die before their first birthday than children in other regions.

Taking into account the influence of other characteristics, the gender of the child, household wealth, father's education, and region of residence significantly<sup>13</sup> influence a child's chances of survival. After accounting for other characteristics, female children are significantly less likely to die in their first month and year. Children from the fourth 20 percent of households are also significantly less likely to die in their first month as compared to the poorest 20 percent of households. Moreover, a child with a father who has completed higher education has a significantly lower chance of death in the first year than one who has a father with no education. Finally, children in Fezzan are significantly more likely to die in their first month or first year than children from Tripolitania.

Use of prenatal care, especially regular prenatal care, is closely associated with wealth, education, and geography. While 97 percent of births in the richest fifth of households received prenatal care, 90 percent of births in the poorest fifth of households did so. The gap is larger for regular care—78 percent versus 67 percent. The differences between a mother with no education and a mother with higher education are greater still than the differences between the poorest and richest fifth of households. Births in Fezzan are the least likely to receive any prenatal care (92 percent), while births in Tripolitania are the least likely to receive regular prenatal care (74 percent). In several districts—Gebel Akhdar, El Marj, Al Merqeb, Zawia, and Wadi El Haya—rates of prenatal care are below 90 percent.

After accounting for other characteristics, use of prenatal care is significantly higher and increases in the third through richest fifth of households as compared to the poorest fifth of households. The chance of having regular care is significantly higher in all the other wealth levels compared to the poorest fifth of households. Mothers with more education, especially higher education, are significantly more likely to have prenatal care and regular prenatal care. Having a partner with complete secondary education increases the chance of any prenatal care, while a partner with higher education increases the chance of both any and regular prenatal care.

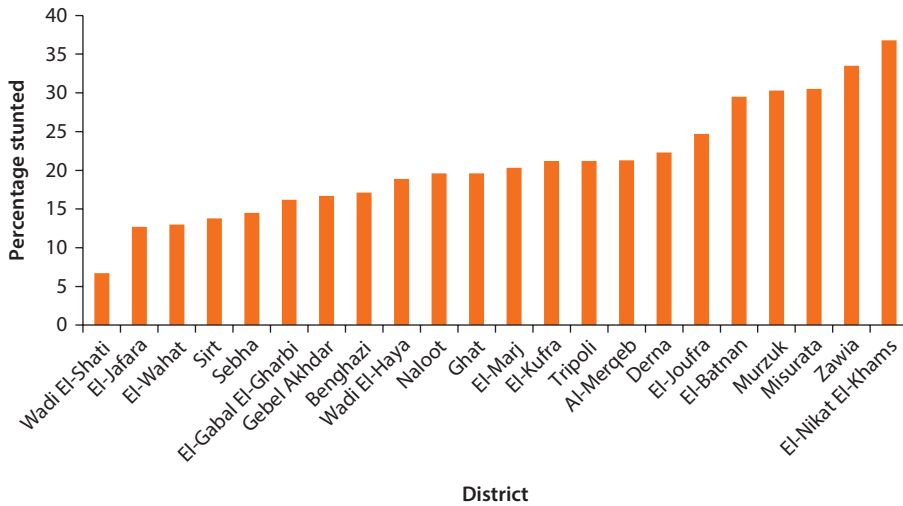


Differences based on wealth and education are relatively small in terms of births attended by a skilled attendant, since coverage is nearly universal (99 percent). Differences based on geography are actually greater for delivery care than prenatal care. While Tripolitania has almost 100 percent coverage of skilled delivery care, and Cirenaica 98 percent, Fezzan has 92 percent coverage. After accounting for other characteristics, Fezzan and Cirenaica have significantly lower rates of delivery with a skilled attendant than Tripolitania. More educated mothers significantly increase the chances of using skilled delivery care, but the effects of father's education are smaller and less often significant. There are no significant differences based on wealth.

Although there are no systematic differences in immunization rates based on wealth or parents' education, there are large differences based on district of residence. Targeting of districts with rates below 90 percent with immunization campaigns is warranted. Only El Marj, Benghazi, El Wahat, El Joufra, and Tripoli have passed the 90 percent mark; all other districts have full immunization rates below 90 percent for 12–23-month-olds. The differences in immunization rates based on wealth are small, with the middle 20 percent of households achieving the highest immunization rate. Libya is struggling to reach mothers with no education with its immunization campaigns; the rate of immunization for children with uneducated mothers is 69 percent. After accounting for other characteristics, children in the middle fifth of households in terms of wealth are more likely to be immunized than the poorest children. Children also have increased chances of being immunized with increased maternal education. Father's education has no significant effect on the chances of immunization. There are no statistically significant differences by gender.

Stunting rates do not show sizable differences by wealth, suggesting that in Libya, public health and nutrition quality problems are driving stunting rather than poverty and the ability to afford food. As with wealth, the relationship between stunting and parental education is unclear, with rates similar across different maternal and paternal education levels. Male children are slightly more likely to be stunted (22 percent) than female children (20 percent). There are some geographic differences; children in Tripolitania have a 22 percent stunting rate, while children in Fezzan and Cirenaica are at 18 percent and 19 percent, respectively. It is particularly interesting to compare with the average height-for-age in standard deviations. While Fezzan and Cirenaica have very similar rates of stunting, the average height-for-age is actually better in Fezzan—suggesting that a particular subpopulation has acute nutritional problems in that region—while Cirenaica has a poorer average height-for-age but similarly acute stunting. There are wide variations in stunting based on governorate (figure 10.6), with Misurata, Zawia, El Nikat El Khams, and Murzuk having stunting levels above 30 percent.

Taking into account other characteristics, geography continues to be the main circumstance related to stunting. Children are significantly less likely to be stunted if they are in Fezzan or Cirenaica, as compared to Tripolitania. Only Fezzan does better on height-for-age. The only wealth level with any differences in stunting or height-for-age is the second fifth of households, which has a

**Figure 10.6 Percentage of Children Aged 0–4 Years Stunted, by District**

Source: World Bank calculations based on Libya PAPFAM 2007.

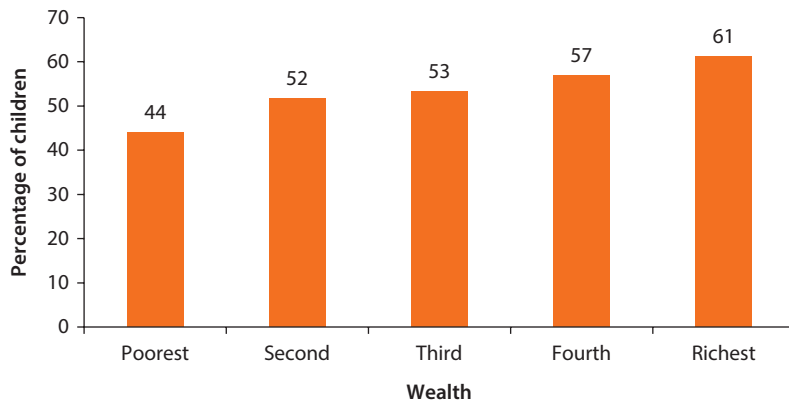
significantly higher height-for-age. Female children are less likely to be stunted and have higher average height-for-age. There are no differences in stunting or height-for-age based on mother's education, but children with a father with a complete secondary or higher education have significantly lower stunting and higher height-for-age. Children with a father with even a basic education have greater height-for-age.

Wealth, parents' education, and geographic location are strongly associated with opportunities for healthy brain development for children in Libya. Iodine plays an important role in brain development, and poorer children are less likely to have access to iodized salt. Children in the poorest fifth of households have the lowest rates of salt iodization, 44 percent, while children in the richest fifth of households have a 61 percent chance of having adequately iodized salt (figure 10.7). A similar gradient is seen with parents' education. Differences in access to iodized salt based on geography are quite large. While Tripolitania and Fezzan have salt iodization between 63 and 69 percent, Cirenaica has only 19 percent salt iodization. The largest differences are at the district level. For instance, Zawia has 91 percent access to iodized salt, while a number of other districts are below 10 percent. After accounting for other characteristics, children in Fezzan are significantly more likely to have iodized salt, while children in Cirenaica are less likely, compared to Tripolitania. Iodized salt prevalence is significantly higher with greater wealth. Use of iodized salt also increases significantly with mother's education, but not father's education.

### **Early Learning and Early Work**

In Libya, it is children from the most advantaged backgrounds who are attending ECCE, despite the fact that early childhood education has the greatest

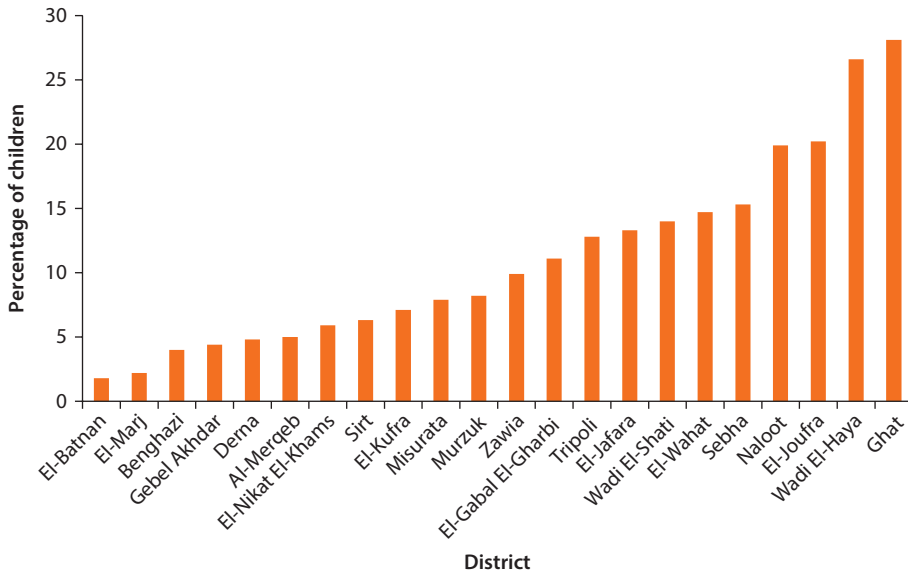
**Figure 10.7 Percentage of Children Aged 0–5 with Adequately Iodized Salt, by Wealth**



Source: World Bank calculations based on Libya PAPFAM 2007.

benefits for disadvantaged and vulnerable children. While a three- to five-year-old child from the poorest fifth of households has a 5 percent chance of attending ECCE, a child from the richest fifth of households is almost three times more likely to attend ECCE—a 14 percent chance of doing so. Similar differences are observed when comparing parents with no education to those with higher education. Substantial differences in ECCE attendance based on geography also occur, with a 17 percent ECCE attendance rate in Fezzan, 10 percent in Tripolitania, and only 5 percent in Cirenaica. As figure 10.8 shows, there are very different attendance rates by district, ranging from 2 percent in El-Batnan and El-Marj to 28 percent in Ghat. Even after accounting for multiple characteristics, there are significant differences in ECCE attendance across the different background characteristics. Children in Fezzan are more likely, and children in Cirenaica less likely, to attend ECCE, compared with Tripolitania. ECCE attendance increases significantly with wealth and with both mother's and father's education. Interestingly, females are significantly more likely to attend ECCE than males.

Engagement in child labor does not have a strong relationship with children's background characteristics. Child labor may endanger the physical, cognitive, and social-emotional development of young children and act as a barrier to school entry. In Libya, 7 percent of children age five were engaged in some type of work in the week preceding the survey, mostly household chores. There are no clear differences in rates of child labor based on wealth, but children with uneducated parents are more likely to be engaged in child labor. Children in Fezzan are also much more likely to be engaged in child labor. After accounting for other characteristics, children in Fezzan are more likely to be engaged in child labor than children in Tripolitania. Children whose mothers have a basic education are also less likely to be engaged in child labor than children with uneducated mothers, but no other education status was statistically significant.

**Figure 10.8 Percentage of Children Aged 3–5 Currently Attending ECCE, by District**

Source: World Bank calculations based on Libya PAPFAM 2007.

Note: ECCE = early childhood care and education.

### Children Face Unequal Opportunities for Healthy Development

Children in Libya face unequal opportunities for healthy development, based on factors beyond their control. To measure the extent of inequality, the analysis calculates (a) the percentage of opportunities that needed to have been distributed differently for equality of opportunity to have occurred for each of the ECD indicators, and (b) the chance of whether these differences might have occurred by random variation (table 10.1). For prenatal care and skilled delivery care, 2.0 and 0.7 percent of opportunities would have had to be distributed differently for there to have been equality of opportunity. While these numbers are low due to the high rates of coverage, their statistical significance shows that the gaps in coverage are unequally distributed. There are nearly equal opportunities for children to get immunized regardless of their circumstances. While there are unequal chances to die early in life, since this is a rare occurrence, we cannot definitively say whether or not these differences are due to chance. Children face unequal opportunities for healthy brain development, in terms of access to iodized salt. There is substantial inequality in terms of ECCE; 23.7 percent of chances to attend ECCE needed to have been distributed differently in order for children to have equality of opportunity.

Wealth, mother's education, and geography make the largest contributions to children's unequal chances. Table 10.2 shows the different contributions of circumstances to inequality for different outcomes as percentages. Wealth plays a particularly large role in inequality in prenatal care, iodized salt, and ECCE,

**Table 10.1 Percentage of Opportunities to Be Redistributed**

	<i>Dissimilarity index</i>
Prenatal care	2.0*
Skilled delivery	0.7*
Neonatal mortality	30.7
Infant mortality	25.8
Fully immunized	2.7
Iodized salt	16.9***
Stunted	6.3
ECCE	23.7***
Child labor	25.7

*Source:* World Bank calculations based on Libya PAPFAM 2007.

*Note:* Significance level: \* = chance < 5%, \*\* = chance < 1%, \*\*\* = chance < 0.1%. ECCE = early childhood care and education.

**Table 10.2 Contributions of Background Characteristics to Inequality**

*Percentage*

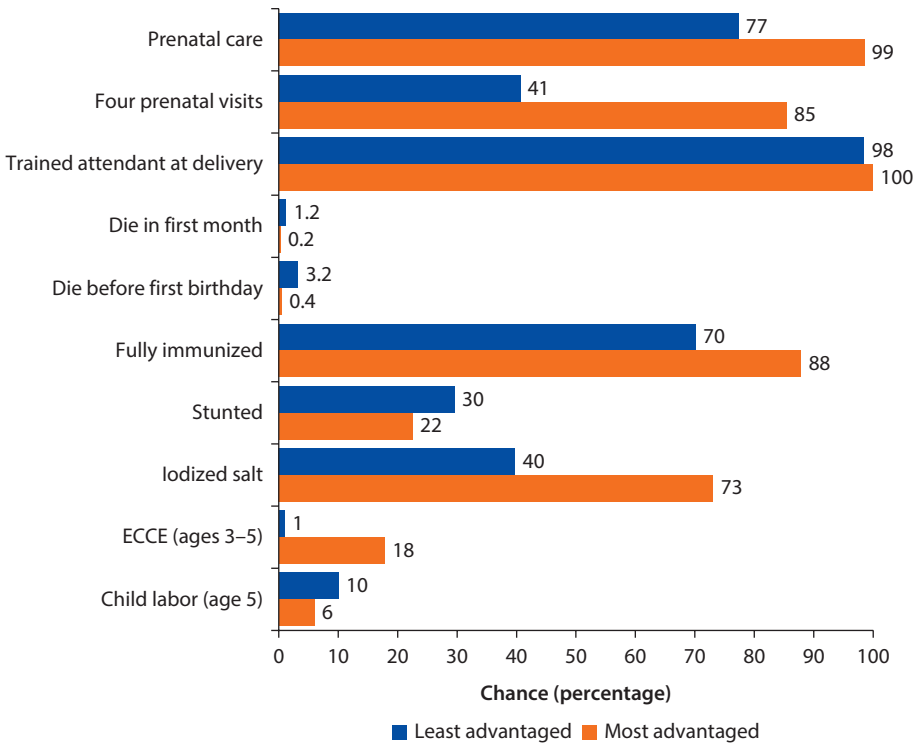
	<i>Wealth</i>	<i>Mother's education</i>	<i>Father's education</i>	<i>Region</i>	<i>Child's sex</i>
Prenatal care	21.8	48.5	27.5	2.2	n.a.
Skilled delivery	2.3	17.7	12.6	67.3	n.a.
Neonatal mortality	15.6	11.7	17.6	31.9	23.2
Infant mortality	15.2	14.9	21.2	33.4	15.2
Fully immunized	26.4	20.7	21.7	1.3	1.9
Iodized salt	6.7	5.1	4.7	83.4	0.1
Stunted	20.9	35.0	16.9	12.6	14.6
ECCE	23.1	20.2	15.6	37.2	4.0
Child labor	7.8	12.7	11.5	67.9	0.1

*Source:* World Bank calculations based on Libya PAPFAM 2007.

*Note:* Shapley decompositions of the dissimilarity index. n.a. = not applicable; ECCE = early childhood care and education.

contributing around a fifth to a quarter to inequality for each of these measures. Mother's education is particularly important in the inequality for prenatal care, stunting, and ECCE. Father's education plays a small but important role in inequality for these outcomes as well. Residence in different regions matters for all outcomes except prenatal care and immunizations, and especially for inequality in access to iodized salt and ECCE. A child's gender contributes very little to inequality.

Children in Libya face very different opportunities for healthy development based on just a few characteristics. Early childhood is when cycles of poverty and inequality are transmitted across generations. If we observe a child from the poorest 20 percent of households and with uneducated parents (a least advantaged child) and compare that child to one who has parents with higher education and is from the richest 20 percent of households (a most advantaged child), we find that they have very different chances of healthy ECD. Figure 10.9 presents the chances of different ECD indicators for these "least advantaged" and "most advantaged" individuals.

**Figure 10.9 Most Advantaged and Least Advantaged Simulations**

Source: World Bank calculations based on Libya PAPFAM 2007.

Note: Shapley decompositions of the dissimilarity index. ECCE = early childhood care and education.

On every indicator, the least advantaged child faces a poorer chance of healthy development. Comparing the least and most advantaged, the gap in prenatal care is 22 percentage points, and the gap in regular prenatal care is 43 percentage points. The least advantaged child is five times more likely to die in the first month, and seven times more likely to die in the first year of life. The least advantaged child is 18 percentage points less likely to be immunized and 8 percentage points more likely to be stunted. There is a 33 percentage point gap in salt iodization. The largest difference is in ECCE attendance, where the most advantaged child is 17 times more likely to attend ECCE than the least advantaged child. The least advantaged child is also almost twice as likely to be engaged in child labor.

## Conclusions

Children in Libya are falling short of their full potential for healthy development. Although skilled delivery care rates are high and mortality is low, prenatal care and immunizations show important gaps. Stunting rates are high in Libya, leading to substantial deficits in children's human development that will have

lifetime impacts. Only half of children have access to adequately iodized salt, putting the remaining half of children at risk for impaired cognitive development. ECCE attendance rates are quite low. In addition to facing challenges to their development, children face unequal chances for healthy development based on circumstances beyond their control. Wealth, geographic differences, and parents' education all contribute to inequality, which is substantial for all outcomes, but particularly acute for ECCE.

## **Annex 10A: The Data**

### ***The Data Set***

The analysis utilizes cross-sectional data on the well-being of women and children collected in the Pan Arab Project for Family Health survey (PAPFAM) for 2007 in Libya. The PAPFAM survey has a household questionnaire that includes important background characteristics of individuals and families. It also has a questionnaire for ever-married women ages 15–49, which captures information on important components of ECD, such as prenatal care, skilled assistance with the delivery of children, and children's immunizations. Weight and height data are collected for children under five years of age. The survey is nationally representative and includes data that allow for an analysis of the relationship between ECD and child and household indicators within Libya. See League of Arab States (2009) for additional information in the final report on the survey.

### ***The Sample***

The 2007 PAPFAM dataset for Libya sampled 18,629 households, 12,234 ever-married women ages 15–49, and 12,550 children younger than age five (anthropometric measures). The analysis in this chapter is weighted in order to be representative at the national level. The sample sizes reported (N) in each of the tables are based on the unweighted number of observations in the data.

## Annex 10B: Indicators by Background Characteristics

**Table 10B.1 Indicators by Background Characteristics**

	<i>Prenatal care—trained professional</i>	<i>Prenatal care: at least four visits</i>	<i>Skilled attendant at delivery</i>	<i>Die in first month</i>	<i>Die before first birthday</i>	<i>Fully immunized</i>	<i>Stunted</i>	<i>Height-for-age (SD)</i>	<i>Iodized salt</i>	<i>ECCE (aged 3–5)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (aged 0–4)</i>
<b>Gender</b>												
Male				1.4	2.2	86.8	22.1	−0.81	52.7	8.0	6.8	51.6
Female				0.6	1.2	87.1	19.8	−0.70	52.3	10.6	7.3	48.4
<b>Wealth quintile</b>												
Poorest	89.7	66.9	98.2	1.1	1.9	83.5	21.9	−0.85	44.1	4.6	7.9	23.7
Second	93.3	74.8	98.7	1.3	1.9	88.4	21.8	−0.67	51.7	7.9	5.2	21.7
Third	95.4	79.2	98.8	1.5	2.4	91.4	20.3	−0.76	53.3	10.6	6.7	22.2
Fourth	95.5	80.5	98.8	0.4	1.0	83.9	21.0	−0.78	57.0	10.9	6.8	18.5
Richest	96.5	78.0	98.8	0.8	1.2	86.8	19.2	−0.71	61.2	14.3	8.5	13.9
<b>Woman's education</b>												
Never attended	82.9	51.5	95.4	1.3	2.4	68.8						
Some primary	86.6	64.6	98.0	1.3	2.0	90.8						
Complete primary	92.0	72.6	98.4	1.5	2.3	87.0						
Complete preparatory	95.1	77.1	98.8	0.7	1.5	90.6						
Complete secondary	96.2	79.1	99.2	1.1	1.6	86.9						
University+	97.4	84.0	99.3	0.8	1.4	88.0						
<b>Partner's education</b>												
Never attended	85.0	60.5	93.1	1.4	2.8	84.7						
Some primary	84.9	62.4	97.8	0.9	1.8	85.1						
Complete primary	92.8	72.1	98.5	0.8	1.4	90.4						
Complete preparatory	92.8	74.8	98.7	1.2	1.7	88.8						

*table continues next page*



**Table 10B.1 Indicators by Background Characteristics** (continued)

	<i>Prenatal care—trained professional</i>	<i>Prenatal care: at least four visits</i>	<i>Skilled attendant at delivery</i>	<i>Die in first month</i>	<i>Die before first birthday</i>	<i>Fully immunized</i>	<i>Stunted</i>	<i>Height- for-age (SD)</i>	<i>Iodized salt</i>	<i>ECCE (aged 3–5)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (aged 0–4)</i>
Complete secondary	95.5	77.0	99.1	1.4	2.2	84.5						
University+	96.8	83.1	99.2	0.3	0.5	88.9						
Don't know	85.1	62.9	93.9	1.2	2.3	74.2						
<b><i>Mother's education</i></b>												
None							22.2	−0.74	38.6	3.2	11.2	7.7
Read							16.7	−0.67	52.6	7.9	6.5	1.9
Read and write							21.5	−0.80	51.7	7.6	8.4	15.5
Basic							22.2	−0.84	49.6	8.3	2.9	19.6
Secondary or equivalent							19.0	−0.68	54.3	10.6	7.7	36.3
University+							22.9	−0.80	57.8	14.0	6.6	18.5
Missing or don't know							22.6	−0.54	51.4	0.0	18.4	0.5
<b><i>Father's education</i></b>												
None							24.6	−0.97	41.5	3.6	17.4	3.2
Read							19.0	−0.94	35.7	9.5	4.7	1.4
Read and write							21.2	−0.84	49.3	5.1	8.6	12.6
Basic							21.9	−0.81	48.5	6.6	5.1	23.7
Secondary or equivalent							20.8	−0.75	54.4	10.5	6.5	37.8
University+							19.6	−0.60	59.0	13.5	7.2	19.3
Missing or don't know							21.9	−0.94	48.2	14.2	7.9	2.0
<b><i>Region</i></b>												
Tripolitania	93.8	73.4	99.7	1.0	1.7	86.0	22.3	−0.78	63.2	9.9	5.3	66.1
Fezzan	91.7	75.0	91.5	2.4	3.4	85.7	18.4	−0.60	68.6	17.2	26.9	7.8
Cirenaica	94.3	80.9	98.0	0.9	1.3	89.6	18.6	−0.76	19.0	5.3	5.1	26.1
<b><i>Districts</i></b>												
El-Batnan	93.0	74.2	96.9			67.9	29.5	−1.28	23.3	1.8	1.2	2.6
Derna	96.5	81.6	99.7			85.5	22.3	−0.84	22.6	4.8	9.9	2.5

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**Table 10B.1 Indicators by Background Characteristics** (continued)

	<i>Prenatal care—trained professional</i>	<i>Prenatal care: at least four visits</i>	<i>Skilled attendant at delivery</i>	<i>Die in first month</i>	<i>Die before first birthday</i>	<i>Fully immunized</i>	<i>Stunted</i>	<i>Height-for-age (SD)</i>	<i>Iodized salt</i>	<i>ECCE (aged 3–5)</i>	<i>Child labor (age 5)</i>	<i>Percent of children (aged 0–4)</i>
Gebel Akhdar	85.4	66.1	91.2			88.6	16.7	−0.53	4.7	4.4	5.6	3.4
El-Marj	88.7	64.3	99.1			95.2	20.3	−0.74	3.1	2.2	10.8	3.1
Benghazi	98.1	92.7	99.7			92.9	17.1	−0.81	28.2	4.0	4.4	9.9
El-Wahat	96.5	83.7	98.6			92.4	13.0	−0.54	11.9	14.7	1.6	3.6
El-Kufra	93.8	73.6	97.6			84.4	21.2	−0.54	8.1	7.1	8.0	0.9
Sirt	97.6	90.1	97.8			66.7	13.8	−0.47	63.0	6.3	17.9	2.7
El-Joufra	95.7	82.3	96.9			92.0	24.7	−0.98	73.7	20.2	0.0	0.8
Misurata	93.5	74.5	99.8			82.5	30.5	−0.88	59.3	7.9	2.6	10.9
Al-Merqeb	81.2	64.8	99.8			78.4	21.3	−0.73	64.2	5.0	3.7	8.9
Tripoli	98.8	87.2	100.0			97.1	21.2	−0.79	69.4	12.8	4.1	17.0
El-Jafara	99.1	80.1	99.6			83.9	12.7	−0.40	61.5	13.3	14.0	9.8
Zawia	89.1	64.4	100.0			81.0	33.5	−1.24	90.5	9.9	0.0	5.6
El-Nikat El-Khams	93.5	44.6	100.0			85.9	36.8	−1.28	23.6	5.9	0.0	5.0
El-Gabal El-Gharbi	93.0	57.0	99.2			87.7	16.2	−0.81	62.5	11.1	0.9	5.0
Naloot	93.7	63.3	98.8			89.8	19.6	−0.69	59.8	19.9	24.2	1.3
Sebha	96.3	82.3	96.9			83.4	14.5	−0.55	89.6	15.3	43.9	2.2
Wadi El-Shati	92.3	72.9	91.2			86.1	6.7	0.49	71.0	14.0	7.7	1.5
Wadi El-Haya	79.2	59.6	87.8			79.9	18.9	−0.79	42.5	26.6	11.4	1.5
Murzuk	95.3	79.2	87.2			88.5	30.3	−1.20	61.6	8.2	56.2	1.4
Ghat	90.3	64.3	79.0			87.4	19.6	−0.86	62.1	28.1	28.6	0.4
<b>Total</b>	93.8	75.5	98.7	1.1	1.7	86.9	21.0	−0.76	52.5	9.3	7.0	100.0
N (observations)	7,771	7,238	7,769	9,735	9,735	1,888	10,281	10,281	13,308	6,897	2,136	9,809

*Source:* World Bank calculations based on Libya PAPFAM 2007.

*Note:* Governorate-level data for neonatal and infant mortality is omitted due to small sample size. Other blank cells indicate not applicable or not available. ECCE = early childhood care and education; SD = standard deviation.

## Annex 10C: Relationship between ECD Indicators and Background, When Accounting for Multiple Characteristics

**Table 10C.1 Relationship between ECD Indicators and Multiple Background Characteristics**

	<i>Prenatal</i>	<i>Prenatal four visits</i>	<i>Delivery</i>	<i>Neonatal mortality</i>	<i>Infant mortality</i>	<i>Fully immunized</i>	<i>Iodized salt</i>	<i>Stunting</i>	<i>Height-for- age (SD)</i>	<i>ECCE</i>	<i>Child labor</i>
<b><i>Region—compared to Tripolitania</i></b>											
Fezzan			–	+	+		+	–	+	+	+
Cirenaica		+	–				–	–		–	
<b><i>Wealth—20% of households—compared to poorest</i></b>											
Second		+					+		+	+	
Third	+	+				+	+			+	
Fourth	+	+		–			+			+	
Highest	+	+					+			+	
<b><i>Woman's education—compared to no education</i></b>											
Some primary		+				+					
Complete primary	+	+	+			+					
Complete preparatory	+	+	+			+					
Complete secondary	+	+	+			+					
Higher education	+	+	+			+					
<b><i>Partner's education—compared to no education</i></b>											
Some primary											
Complete primary			+								
Complete preparatory											
Complete secondary	+		+								
Higher education	+	+			–						
Don't know/missing											
<b><i>Mother's education—compared to no education</i></b>											
Read							+				
Read and write							+			+	
Basic							+			+	–

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**Table 10C.1 Relationship between ECD Indicators and Multiple Background Characteristics** (continued)

	<i>Prenatal</i>	<i>Prenatal four visits</i>	<i>Delivery</i>	<i>Neonatal mortality</i>	<i>Infant mortality</i>	<i>Fully immunized</i>	<i>Iodized salt</i>	<i>Stunting</i>	<i>Height-for- age (SD)</i>	<i>ECCE</i>	<i>Child labor</i>
Complete secondary							+			+	
Higher education							+			+	
Don't know/missing										-	
<b>Father's education—compared to no education</b>											
Read							-				
Read and write											
Basic									+		
Complete secondary								-	+	+	
Higher education								-	+	+	
Don't know/missing										+	
<b>Female</b>				-	-			-	+	+	
<i>P</i> -value (model)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000
Observations (N)	7,762	7,229	7,760	9,726	9,726	1,885	13,308	10,444	10,444	6,844	2,136
R-squared									0.007		
Pseudo R-squared	0.077	0.048	0.197	0.055	0.044	0.043	0.129	0.006		0.058	0.093

*Source:* World Bank calculations based on Libya PPFAM 2007.

*Note:* Blank cells indicate no statistically significant relationship. Woman's education and partner's education only applicable for prenatal care (and four visits), delivery, mortality, and immunizations. Mother's education and father's education only applicable for iodized salt, stunting, height-for-age, ECCE, and child labor. + = chance < 5% and positive, - = chance < 5% and negative; ECCE = early childhood care and education; ECD = early childhood development; SD = standard deviation.

## Notes

1. Based on 2007 annual number of births (UNICEF 2008) and the infant mortality rate calculated from PAPPAM.
2. Both infant and neonatal mortality rates are calculated based on deaths in the 12–59 months preceding the survey.
3. The Libya 2007 PAPPAM asks about prenatal care for the most recent live birth in the past five years only. Since live births are likely to be associated with prenatal care, the percentage of births not receiving prenatal care is likely to be an underestimate of the percentage of pregnancies not receiving prenatal care.
4. As was true for prenatal care, delivery questions are asked about live births in the last five years only. Since live births are likely to be associated with care by a health professional, the percentage of live births with a health professional is likely to overestimate the number of deliveries with a health professional.
5. As with prenatal and delivery care, these questions were asked of the most recent live birth in the past five years.
6. The DPT vaccine is a combination vaccine that covers diphtheria, whooping cough (pertussis), and tetanus. Children must receive three doses to be fully immunized.
7. Children must receive three doses to be fully immunized against polio.
8. The units show how Libyan children are, on average, different from the reference population in terms of standard deviations.
9. More than 15 ppm of iodine in the salt.
10. The survey asked about working for the family, working in a job in the past year, and doing household chores in the past week. All are considered child labor.
11. Note that percentages add up to more than 100 percent because children could be engaged in multiple types of labor.
12. Wealth is defined in terms of which 20 percent of households a child falls into, based on an asset (wealth) index of durable goods.
13. Throughout, we use a 5 percent level of significance.

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