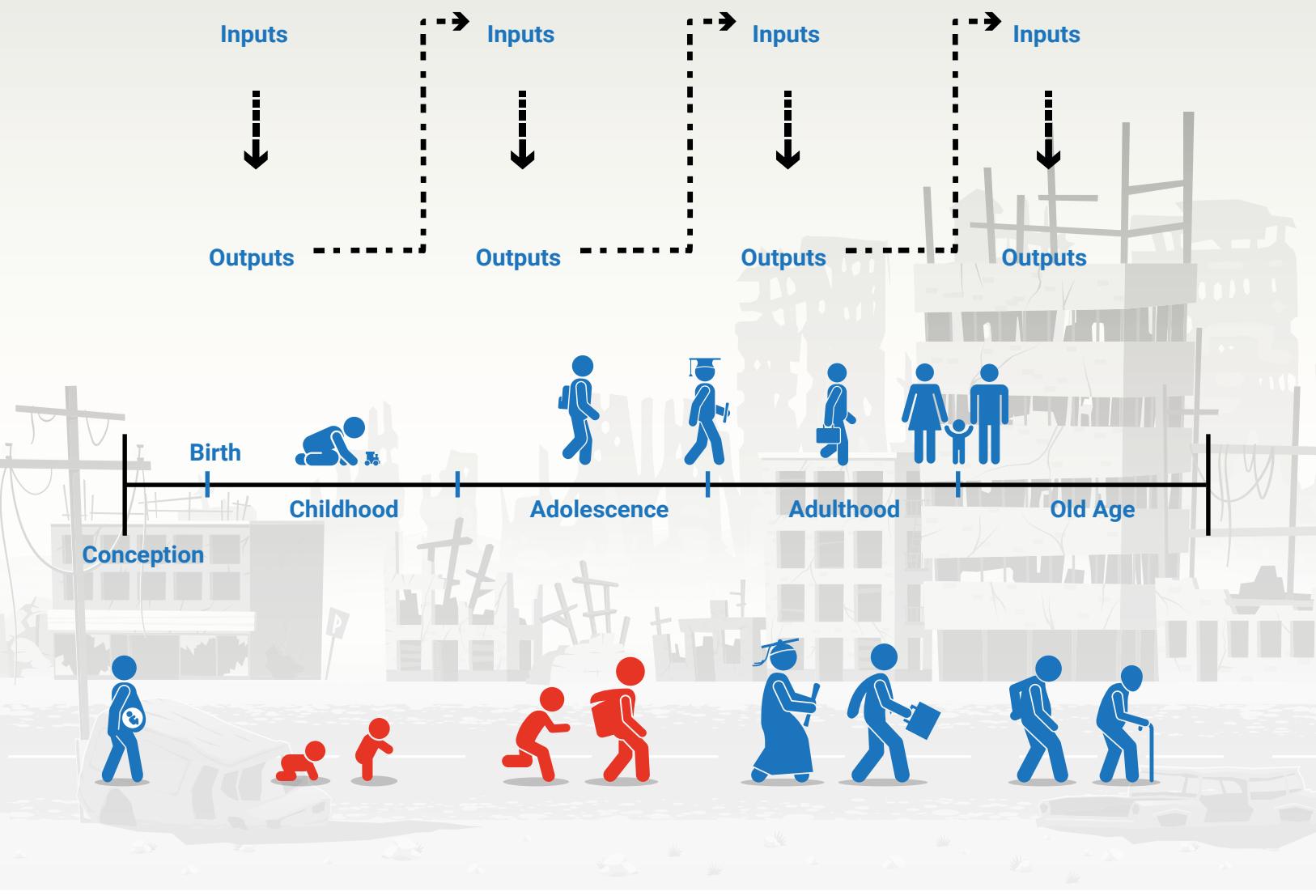


The Impact of Conflict from Childhood to Adulthood Evidence for the Arab Region

Trends and Impacts in Conflict Settings

Issue No. 5

UNITED NATIONS
الاسكوا
ESCWA

Shared Prosperity Dignified Life

UNITED NATIONS
الاسكوا
ESCWA

Shared Prosperity **Dignified Life**

VISION

ESCWA, an innovative catalyst for a stable, just and flourishing Arab region

MISSION

Committed to the 2030 Agenda, ESCWA's passionate team produces innovative knowledge, fosters regional consensus and delivers transformational policy advice. Together, we work for a sustainable future for all.

E/ESCWA/ECRI/2017/2

Economic and Social Commission for Western Asia

The Impact of Conflict on Human Development from Childhood to Adulthood: Evidence for the Arab Region

Trends and Impacts in Conflict Settings
Issue No. 5

United Nations
Beirut

United Nations publication issued by ESCWA, United Nations House,
Riad El Solh Square, P.O. Box: 11-8575, Beirut, Lebanon.

Website: www.unescwa.org.

Acknowledgements

The present report was written by Valentina Calderón-Mejía and Fernando Cantú based on primary research. It builds on a series of background papers by Valentina Calderón-Mejía, Fernando Cantú and Shogher Ohannessian. The study was carried out under the direction of Youssef Chaitani (Chief, Conflict, Occupation and Development Section), and Tarik Alami (Director, Emerging and Conflict-Related Issues Division) who provided critical feedback at various stages of the research.

Belkacem Ayachi, Laure Bokobza, Federica Foiadelli, Lubna Ismail, Anastasia Janzer-Araji and Shogher Ohannessian provided outstanding and tireless research assistance. The report would not have been possible without Shogher's and Belkacem's leadership and dedication. The study also benefited from insightful comments from, and discussions with, the participants at the Conference on the Socioeconomic Impact of Conflict: A Life Cycle Approach, Recent Research and Implications for the Arab Region, organized by the Economic and Social Commission for Western Asia (ESCWA) in partnership with the American University of Beirut Department of Economics.

Executive Summary

While the economic and political costs of conflicts are well understood, the human development repercussions have not been adequately discussed. Conflict is a particularly intense type of shock that unambiguously affects individuals in all aspects of life. Conflict causes disruption and destruction of many sorts, affecting people at all stages of life. The present study puts the individual at the centre of the analysis, to understand how the recent conflicts of the Arab region have affected human development. By concentrating on the effects of conflict on several critical periods of life, we provide evidence of the effects of conflict exposure in infancy, early childhood, childhood, and the transitions into adulthood.

Since the foundations of later-life success are for the most part built in the early years, children exposed to conflict will most likely carry the effects of conflict throughout their lives. Food insecurity, deterioration of family resources, and reduction of family investments in children will have devastating long-term consequences on children in conflict-ridden countries across the region. In the absence of critical interventions designed to enhance opportunities of children affected directly and indirectly by conflict, inequalities will be reinforced.

Fundamentally, human development is economic development. Therefore, understanding the main channels through which conflict harms individuals during the different stages of life, from early childhood and the formative periods to youth and economically active life, is essential to support the economic recovery efforts and economic development for the Arab region. The results of the study show complex ways in which armed conflict affects human development, and the challenges that those countries will face to meet the 2030 Agenda for Sustainable Development. For the Arab region, framing the complex situations of conflict around the Sustainable Development Agenda represents an opportunity to carry out interventions to promote human development.

Contents

List of Tables

List of Figures

Abbreviations and Acronyms

ACLED	Armed Conflict Location and Event Data
DHS	Demographic and Health Survey
DID	difference in differences
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization
GDP	gross domestic product
GED	Georeferenced Event Dataset
GTD	Global Terrorism Database
HBS	Household Budget Survey
IBC	Iraq Body Count
IDP	internally displaced person
IHSES	Iraq Household Socioeconomic Survey
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organization
IPC	integrated food security phase classification
ISIL/ISIS	Islamic State of Iraq and the Levant/Islamic State of Iraq and Syria
LFP	labour force participation
LSMS	Living Standards Measurement Study
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
NGO	non-governmental organization
PAPFAM	Pan-Arab Project for Family Health
PDS	Public Distribution System
PRIO	Peace Research Institute Oslo
SCAD	Social Conflict Analysis Database

SDG	Sustainable Development Goal
START	Study of Terrorism and Responses to Terrorism
UNDESA	United Nations Department of Economic and Social Affairs
UCDP	Uppsala Conflict Data Program
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief Works Agency for Palestine Refugees in the Near East
USAID	United States Agency for International Development
WHO	World Health Organization

Introduction: Conflict and Human Development

The 2030 Agenda for Sustainable Development is a global framework put in place to promote prosperity around the world and strengthen universal peace.[1] Conflict has been a major obstacle towards development, and the attainment of durable peace should take centre stage for the realization of the Agenda and its main goals, known as Sustainable Development Goals (SDGs).[2] Conflict affects all aspects of development and increases poverty. Manifestations include hunger and malnutrition; limited access to education and other basic services; social discrimination and exclusion; and lack of participation in decision-making.

Progress towards sustainable development has been seriously compromised in the Arab region because of armed conflict. According to a broadly used international definition of armed conflict, the Arab region hosted 27 per cent of the world's active conflicts in 2016.[3] Half of the countries in the region experienced at least one episode of conflict during the past five years. Armed conflict is a particularly intense type of shock, causing disruption and destruction of many types that unambiguously affect individuals in all aspects of life. Recent conflicts in the region have been particularly destructive, displacing millions of people, disrupting livelihoods and destroying infrastructure. Those conflicts have led to famine and disease. They have halted the provision of public services. In turn, those things have adversely affected health outcomes, educational trajectories and labour-market opportunities of individuals of all ages in conflict-affected countries.

Violent conflict affects individuals in different ways. Individuals at specific lifetime stages suffer different impacts. For example, conflict can affect children and adults in different ways. Children can be more vulnerable to diseases and might be forced to interrupt their schooling trajectories, while adults might experience reduced employment or livelihood opportunities. Education, for example, protects adults in conflict situations. Children who experience a severe conflict-related trauma and children forced to drop out of school at an early stage or who never enrolled in school, will most likely never attain the skills required to achieve their full earning potential. In addition, malnutrition in early childhood is likely to impair cognition in children who do not complete primary school. They are likely to earn less money in their jobs than those with higher levels of education. Deprivations in early childhood nutrition, school interruptions and reduced labour-market opportunities are likely to affect the development path of the region for generations to come and represent the true costs of conflict.

While research on conflict has for the most part concentrated on studying global patterns and drivers of conflict, new research is emerging on the microlevel impacts of conflict. Microlevel research allows a better understanding of the

mechanisms that explain the different ways in which conflict has an impact on individuals during their lives: different forms and consequences of violence for different age groups, vulnerable populations and subnational patterns.

The present report investigates into the lasting effects of conflict exposure in the Arab region during the different stages of life. The analysis identifies how conflict affects individuals from conception to adulthood, providing evidence of the effects of conflict in infancy, childhood and the transitions into adulthood. The purpose of the study is to understand the complex way in which the recent escalation of conflicts and civil wars across the region has had an impact on human development, and the challenges that those conflicts pose to meeting the 2030 Agenda for Sustainable Development.

Complexity notwithstanding, focusing on the individual, and identifying vulnerable groups of the population, creates a window of opportunity that allows for timely interventions in order to mitigate the effects of conflict in both the short and long run. For the Arab region, framing the complex situations of conflict around the Agenda for Sustainable Development represents an opportunity for interventions to promote human development. Fundamentally, human development is economic development. Therefore, understanding the main channels through which conflict harms individuals during the different stages of their life cycles, from early childhood and the formative periods to youth and economically active life, is essential to support the economic recovery efforts for the Arab region.

Scope and limitations

The various conflicts across the Arab region have disrupted livelihoods, created poverty traps and increased inequality. In the present study, we select several key indicators at different stages of life to understand how exposure to conflict has affected individuals. Recent research points to the importance of understanding how conflicts affect human development. The adverse conditions brought about by those conflicts shape lifetime outcomes, as they affect the skill-formation process at different stages of life. By understanding those different stages of human development, we can better recognize what critical interventions should be carried out at each stage of life.

We frame the study using the life-cycle skill-formation model. This model shows the skill-formation process from conception to old age, to demonstrate how human capabilities are developed across a lifetime. It provides a theoretical framework to understand how conflicts can affect individuals of different ages in divergent ways. It also points to critical life periods that are particularly sensitive to adverse conditions.

The report focuses on two countries, Iraq and Yemen, for which household microlevel data and subnational conflict data were available for periods before and after the onset of recent armed conflict. The availability of microlevel data imposed the following time frame for the analysis: the conflict in Iraq between 2003 and 2013 (the year of the most recent survey), and the first wave of violence in Yemen between

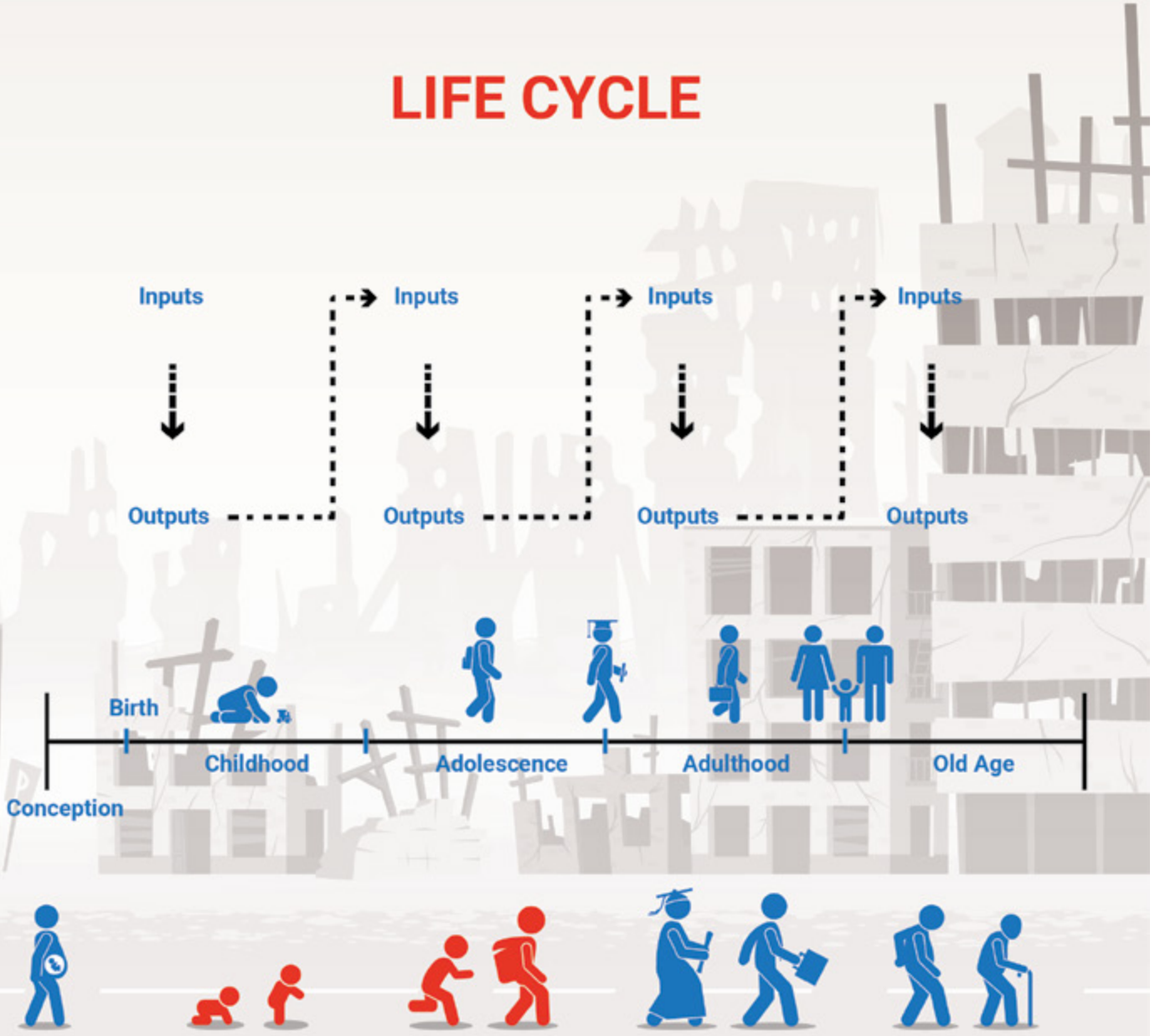
2011 and 2013. The present report also provides detailed descriptive statistics for Libya and the Syrian Arab Republic during the pre-conflict period, in order to provide a more comprehensive view of the challenges that conflict has inflicted on the Arab region.

The report is novel in several ways. It is the first microlevel comprehensive study of the impacts of conflict carried out for selective countries in the Arab region. The availability of representative microlevel data for Iraq and Yemen, as well as subnational violence data, enables identification of how exposure to and timing of conflict affects development outcomes at different stages of life. The report provides quantitative evidence on the costs of conflict in terms of human development and potential generational implications. It puts the human development cost of conflict at the forefront and provides several policy recommendations for interventions at critical life stages.

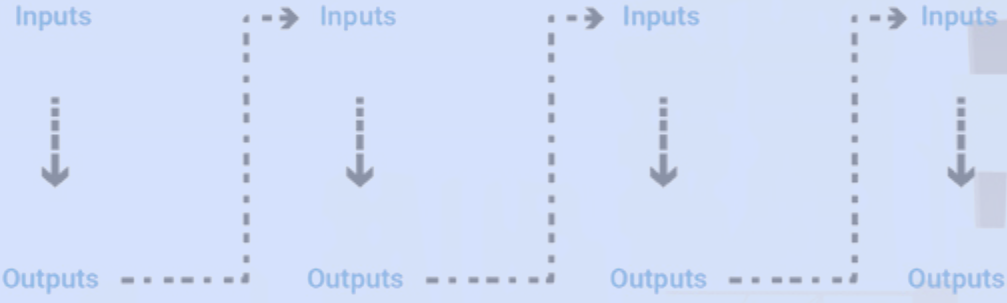
The analysis carried out for the study has several limitations. It comprehensively covers only two of the conflicts in the region, namely the conflicts of Iraq and Yemen. Only suggestive evidence on the conflicts of Libya and the Syrian Arab Republic is presented, due to the unavailability of microdata after the conflicts erupted. Because of data limitations, only a handful of outcomes are evaluated at different stages of life for Iraq and Yemen. Estimations are made in cross-sectional data, which does not make it possible to follow individuals throughout their life cycles. Therefore, the evidence of how outcomes of one stage of life affect subsequent stages is only suggestive. The databases on armed conflict and the household data surveys used throughout the report are at governorate level, which means that the results rely on geographical variation of conflict at governorate level and do not enable further subnational disaggregation or inference. Forcibly displaced populations are not captured in the study because, for the most part, they fall outside the sampling framework followed by the household surveys. As forcibly displaced populations are among the population groups most affected by conflict, the analysis based on household data could underestimate the full impact of armed conflict on human development. While the report used state-of-art identification methods for estimations, understanding causal impacts is challenging. The study also utilized several robustness checks, but the estimates are only suggestive of causation.

The report is organized as follows: Chapter 1 introduces the economics of skills formation during different stages of life and provides the theoretical foundation of the study; chapter 2 shows evidence of the impact of conflict on infant mortality and early childhood nutrition; chapter 3 estimates the impact of conflict on schooling trajectories for children and youth; chapter 4 studies labour-market transitions for youth and adults, and the likely consequences of conflict; and chapter 5 summarizes the main conclusions and presents suggestions for the way forward.

1. The Effects of Conflict on Skill Formation over Different Stages of Life



LIFE CYCLE


Inputs
Inputs
Inputs
Inputs
Outputs
Outputs
Outputs
Outputs


Birth
Childhood
Adolescence
Adulthood
Old Age
Conception

1. The Effects of Conflict on Skill Formation over Different Stages of Life

A. Understanding how conflict affects human development

The present report investigates how armed conflict affects human development. Individuals in conflict-ridden countries are subject to adverse environments, profoundly affecting their short-term and long-term well-being. Exposure to conflict has direct effects on health, schooling trajectories and ultimately all lifetime socioeconomic outcomes. The numerous conflicts in the Arab region have seriously compromised long-term human development progress in countries directly affected by conflict and beyond.

Violence has affected the region both at the micro and the macro level. Those effects have been felt directly by individuals in the countries concerned, but the adverse effects have extended to the whole region and beyond. While the regional conflicts have been widely studied at the macrolevels, few studies have focused on the multiplicity of devastating effects of conflict at the microlevel. To adequately frame the study, we use the skill-formation framework. This framework provides a guide to understanding how skills are formed during different periods of life, from conception to old age. This theoretical framework allows understanding of how shocks experienced at different stages of life can affect human potential. Conflict is one of the most pervasive types of shock an individual can experience, touching individuals of all ages. The present chapter introduces the skill-formation model to explain how skills and abilities are developed over an individual's lifetime, and how shocks experienced at different stages can generate disadvantages.

B. Skill formation over different stages of life

Recent research on economics has concentrated on skill formation over different stages of life.[4] This literature shows skills to be multiple in nature and susceptible to environmental influences.[5,6]

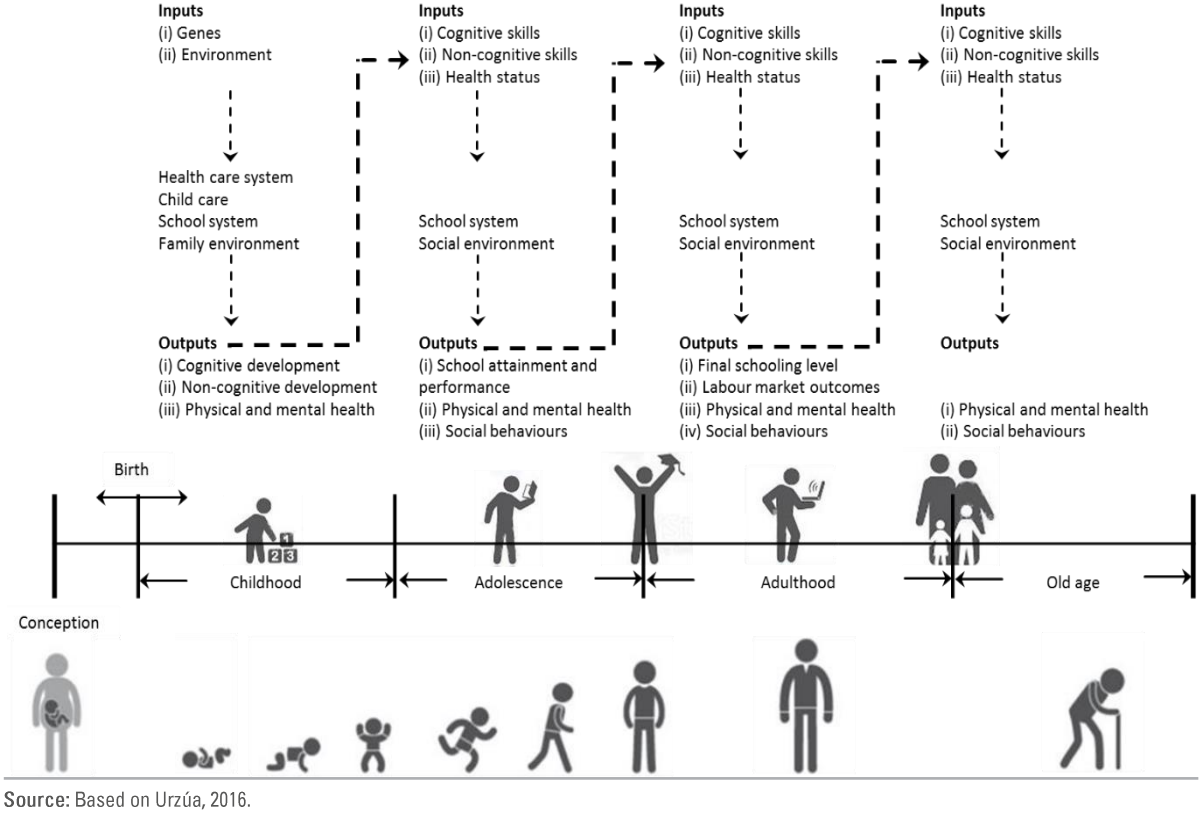
By skills, we refer to health status plus cognitive and social-emotional abilities, not simply to completed years of education or specific levels of training. While cognitive ability appears to be an important predictor of success in life,[7] social-emotional abilities (for example, perseverance, motivation, risk aversion, self-esteem and self-control) appear to be equally important in determining aspects of social and economic life.[8]

Individuals are diverse in terms of a vast array of abilities which could account for a substantial

portion of the variation in individual lifetime socioeconomic success.[9] While there are genetic components to both cognitive and social-emotional abilities, environmental interventions also play a key role in determining those skills. Different abilities are formed and shaped at different stages of the life cycle. Cunha and Heckman (2007) emphasize that, when the opportunities for the formation of those abilities are missed, remediation is costly.

The skill-formation model developed by Cunha and Heckman (2007) is a multistage process. Each stage corresponds to a period in a person's life cycle, from conception to death. Inputs or investments at each stage produce outputs. At each stage of life, the output is the level of skill achieved during that stage. Skills differ in their malleability at different stages of life. Skill development can be more productive at a given stage relative to another, known as sensitive periods for skill development. If certain skills can be produced only at a given stage of life, those stages are called critical periods.[10] The important feature of the skill-formation model is that the skills produced at one stage become the inputs for the skills attained at subsequent stages, or what is referred to as "self-productivity". Skills acquired in one period will determine the skills acquired in future periods. Figure 1 shows a representation of the skill-formation technology over different stages of life.

Figure 1. Skill formation over different stages of life



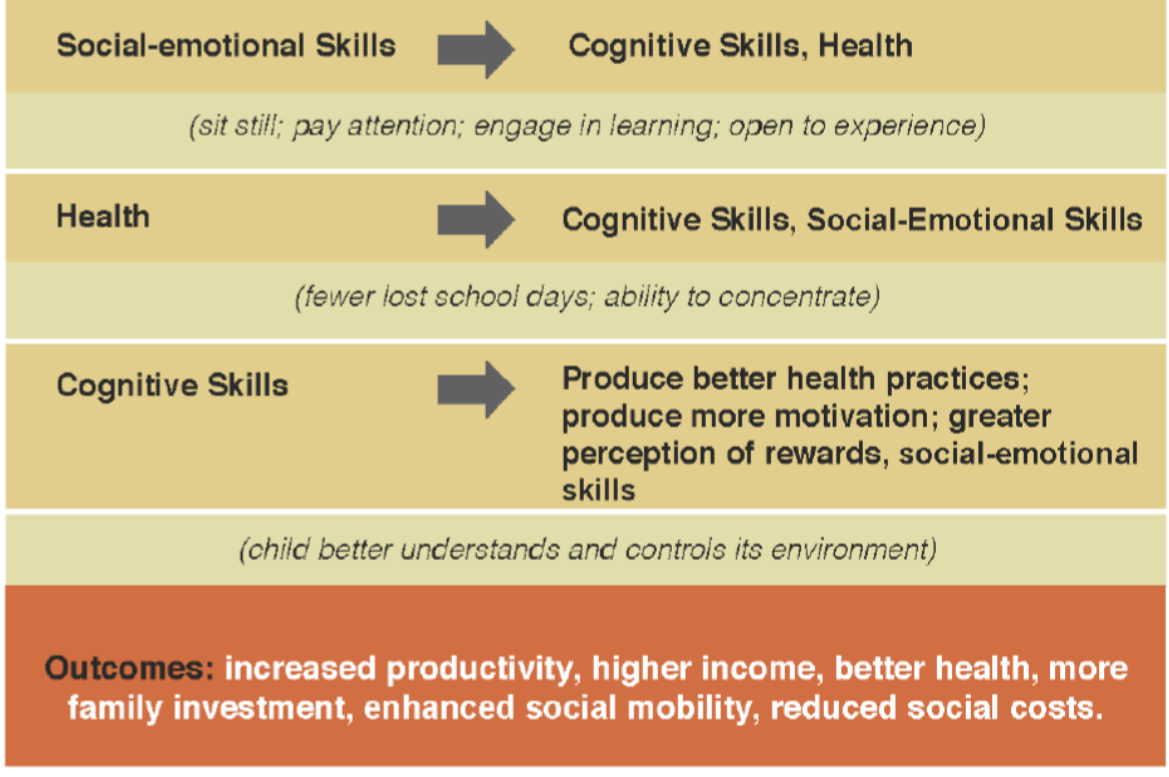
Source: Based on Urzúa, 2016.

Skills are complementary, implying that skills produced at one stage will raise the productivity of investment at subsequent stages. By investments, we mean investments carried out by parents, as well as public policy interventions. Complementarity suggests that early investment should be followed by later investment if early investment is to be productive. Together, complementarity and self-productivity produce multiplier effects, which explain how skills beget skills, or abilities beget abilities.[11] Figure 2 illustrates complementarity of skills.

Families are major producers of those skills. Family type refers to parental education, ability and altruism towards their children, rather than simply to socioeconomic status. Parenting matters, and the true measure of child advantage and disadvantage is the quality of parenting received.[12] Much learning takes place within the family, so shocks affecting families will have profound implications for skill formation over the life cycles of family members.

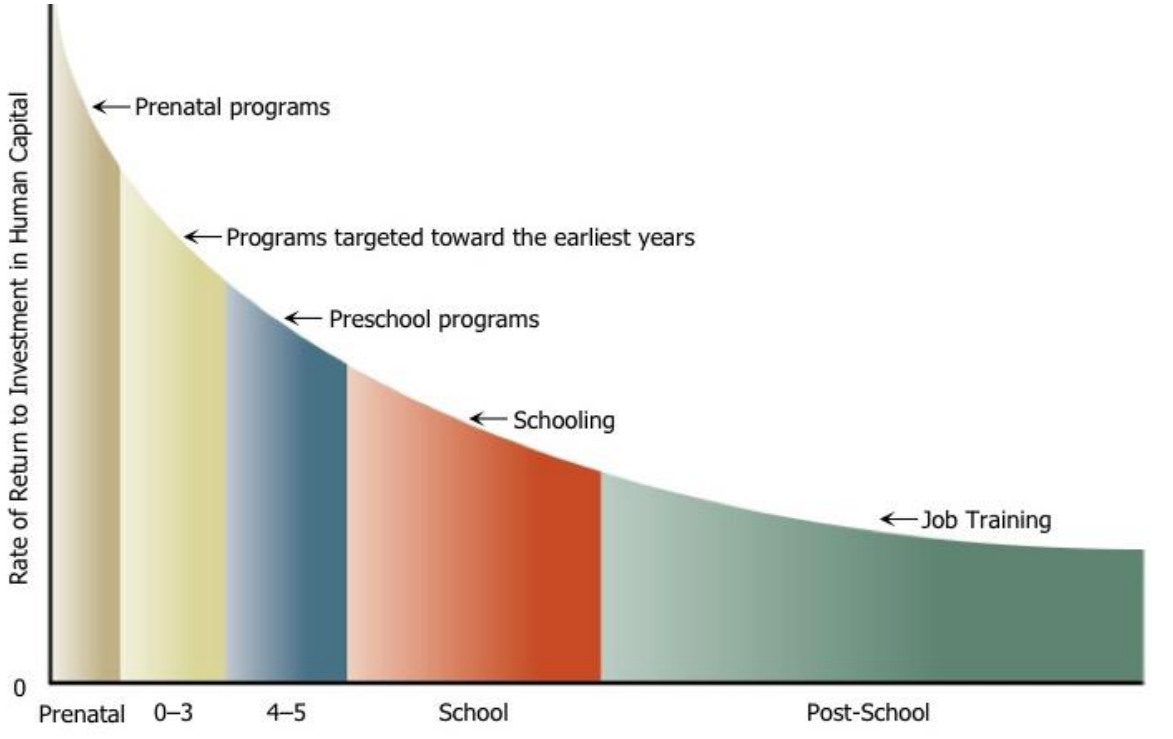
Figure 3 depicts the sensitive and critical periods for investments on skill formation over different stages of life. Investments in early childhood appear to be critical for lifetime outcomes.

Figure 2. Skills beget skills



Source: The Heckman Equation "Human Development is Economic Development". Available at https://heckmanequation.org/assets/2017/01/F_San-Diego-JB-HO_SLIDES_2016-02-23b_jbb.pdf.

Figure 3. The Heckman Curve



Source: The Heckman Equation. Available at https://heckmanequation.org/resource/the-heckman-curve/.

The model of skill formation recognizes that human development is a dynamic process that starts in the womb. Conti and Heckman (2014) identify sensitive and critical periods for investments in human capital. The foundations for adult success and failure are laid down early in life.[13]

Early environments have a lasting effect on child, adolescent and adult achievement. Heckman (2006) shows that, although adaptation continues throughout life, human abilities are formed in a predictable sequence of sensitive periods, during which abilities and the behaviours they mediate are most plastic and, therefore, most sensitive to environmental influences.[14] If important investments in skills are not undertaken at sensitive and critical periods, differences in the ability of children will appear at early ages and persist. Likewise, shocks experienced at critical periods that interrupt the skill-formation process will most likely have lifelong consequences. Because of the complex and multistage process of skill formation, children exposed to conflict in early life will most likely carry those disadvantages throughout their lifetimes.

C. Effect of conflict on the skill-formation process

Shocks experienced early in life are likely to have long-lasting effects. Evidence from epidemiology and economics suggests that shocks in early childhood can have a permanent detrimental effect on an individual's health over his or her life course.[15] Shocks affect physiology and have a negative cumulative effect on several adult socioeconomic outcomes. Shocks in early life negatively affect current and future health status. They increase the likelihood of early death; disrupt educational trajectories; reduce wages and economic opportunity; and increase the likelihood of poverty.[16]

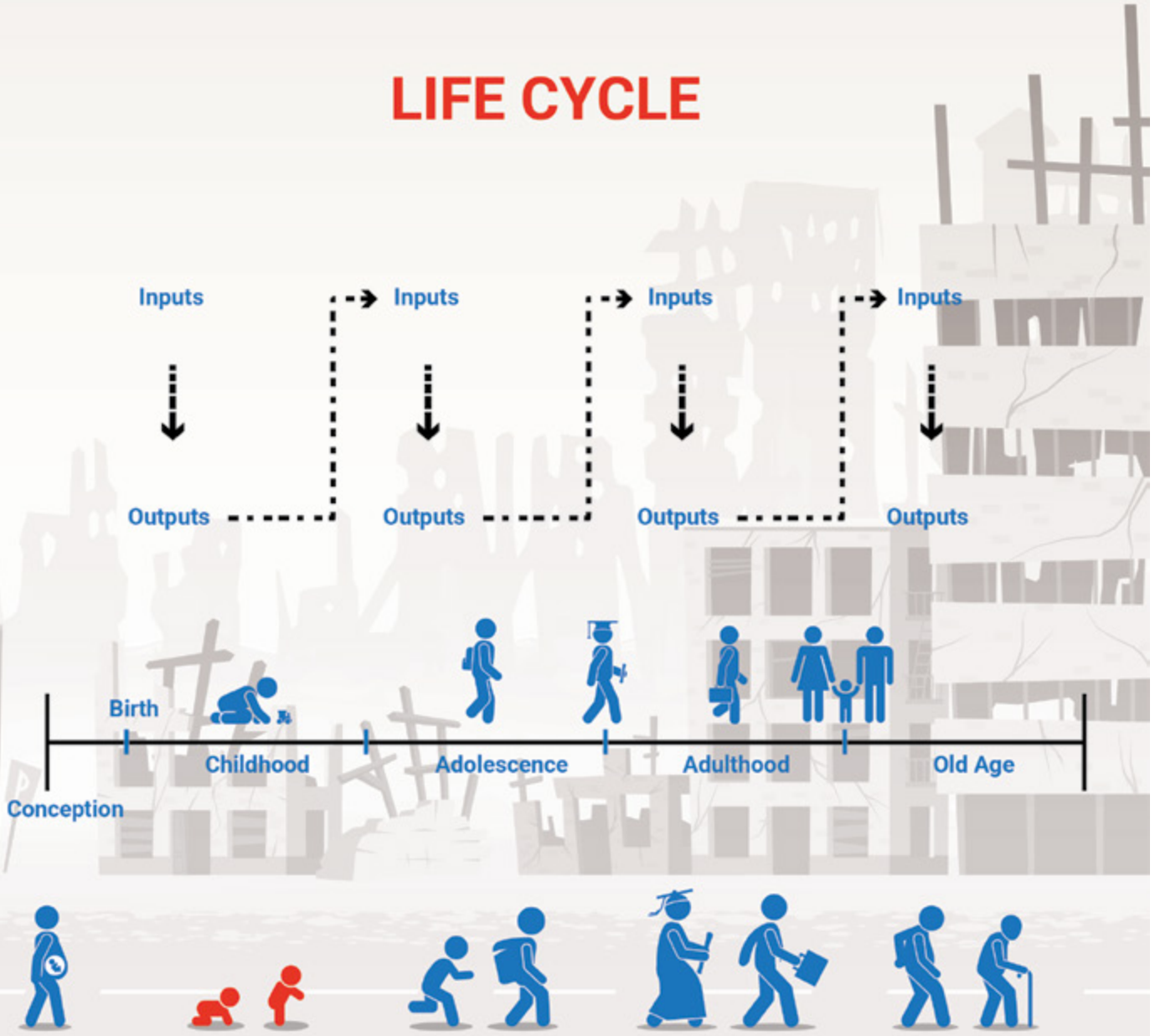
Shocks experienced early in life are particularly detrimental because they disrupt the acquisition of skills. Skill formation directly depends on the stock of past skills. If a negative shock occurs at an influential stage of the life cycle, it will affect not only the child's current development but also reduce future accumulation of skills or abilities.[17]

Conflict appears to be the type of shock that affects all aspects of sustainable development, hitting families and individuals at their core. The impact of conflict on child nutritional status has been extensively studied for developing countries.[18] The impact of conflict on the nutritional status of children is of interest because those outcomes appear to be associated with early death, physiological and cognitive development, long-term development and overall health.

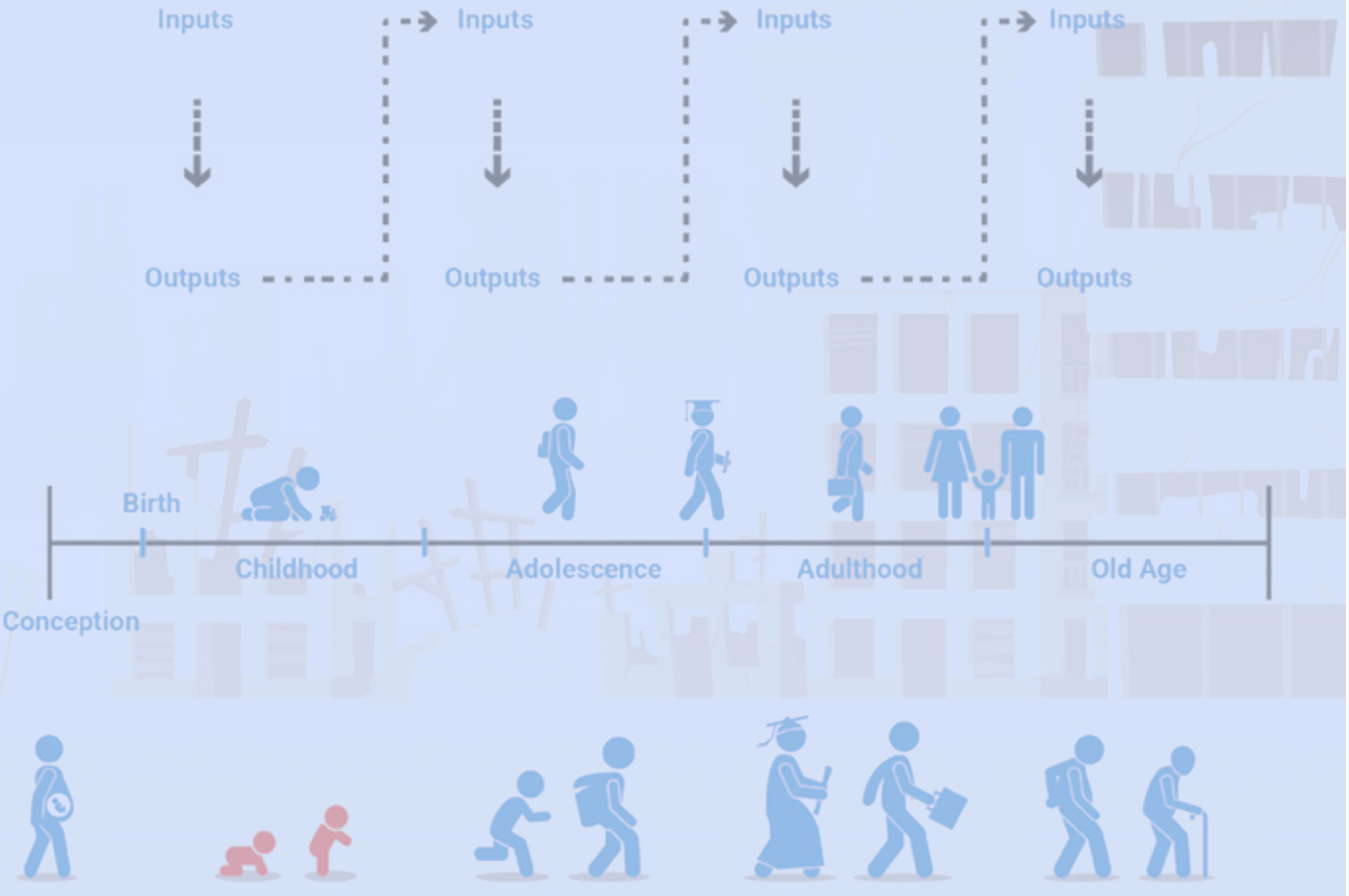
A growing body of literature in economics documents the many detrimental ways in which conflict affects human development. Studies show that exposure to violent conflicts negatively affects infant mortality;[19] early childhood health developmental outcomes;[20] educational trajectories;[21] and labour-market prospects.[22]

Recent conflicts in the Arab region have been particularly destructive, displacing millions of people and disrupting livelihoods. The present report presents compelling evidence of the costs of conflict in the region, suggesting that those conflicts have far more devastating consequences than previously thought because they interfere directly with the skill-formation process of generations of children and youth across the region. Chapter 2 examines the role of demographics in the Arab region; the association between conflict and food insecurity; and how exposure to conflict affects infant mortality and child malnutrition.

2. The Impact of Conflict on Infant Mortality and Early Childhood Nutrition



LIFE CYCLE


Inputs
Inputs
Inputs
Inputs
Outputs
Outputs
Outputs
Outputs
Birth
Conception
Childhood
Adolescence
Adulthood
Old Age

2. The Impact of Conflict on Infant Mortality and Early Childhood Nutrition

The present chapter examines how the shocks brought about by conflict affect individuals during early childhood. Child mortality is a direct and indirect consequence of conflict. Children can become the direct casualties and targets of violence. Indirect deaths are caused by consequent disease, hunger or lack of care. There is, however, limited evidence on the significance and magnitude of those effects.

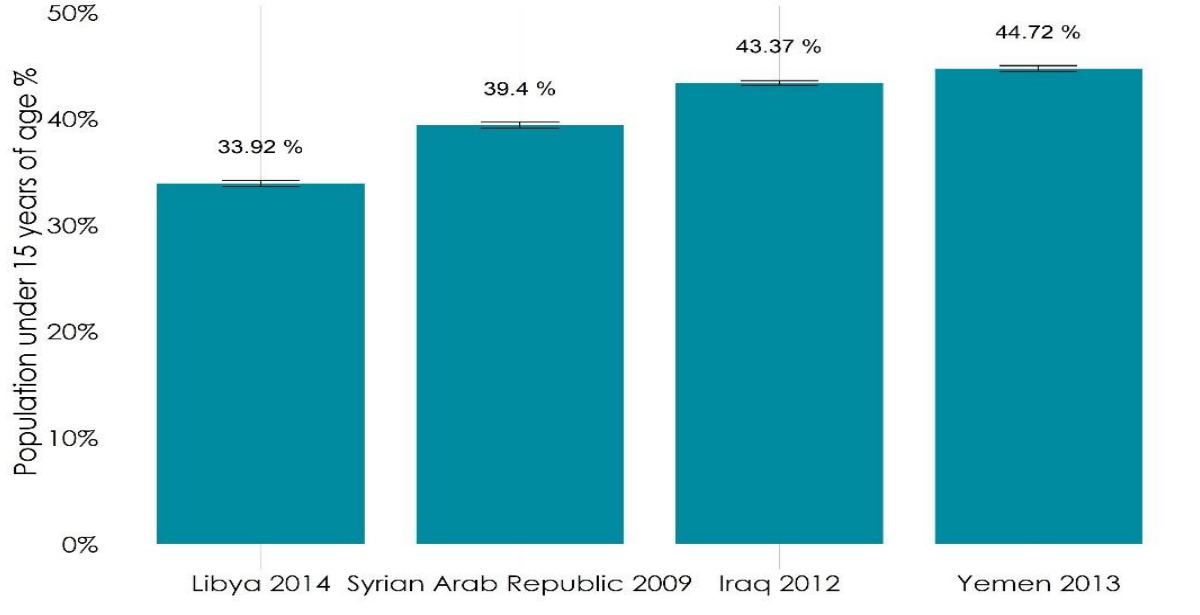
This chapter focuses on the impact of conflict on early childhood mortality and nutrition. Children are particularly vulnerable to deprivation as they are more frequently subject to adverse conditions, which put them at a disadvantage from the start, and lower levels of human capital investments that affect lifelong health and productivity.[23] Early disadvantage, if left untreated, most likely leads to social and economic difficulties in the long run. Ultimately, the life-cycle skill-formation model suggests that, just as advantages accumulate, so do disadvantages.[24]

A. Conflict and demographics in the Arab region

To understand how recent conflicts in the Arab region have affected individuals over their life cycles, it is important to recognize the role of demographics, especially in the conflict-ridden countries of Libya, the Syrian Arab Republic and Yemen. Those countries have an exceptionally large youth bulge, with more than 50 per cent of the population under the age of 24.[25] Currently, the population of the Arab region is considerably young, with children under the age of 15 accounting for one third of the population in the region at large, and more than 40 per cent of the population in Iraq and Yemen. For conflict-ridden countries, youth poses enormous challenges: A larger proportion of individuals at critical stages for investments in human capital will be exposed to negative shocks brought about by war. Figure 4 shows the proportion of the population under the age of 15 in Iraq, Libya, Syrian Arab Republic and Yemen, using the most recent available data.

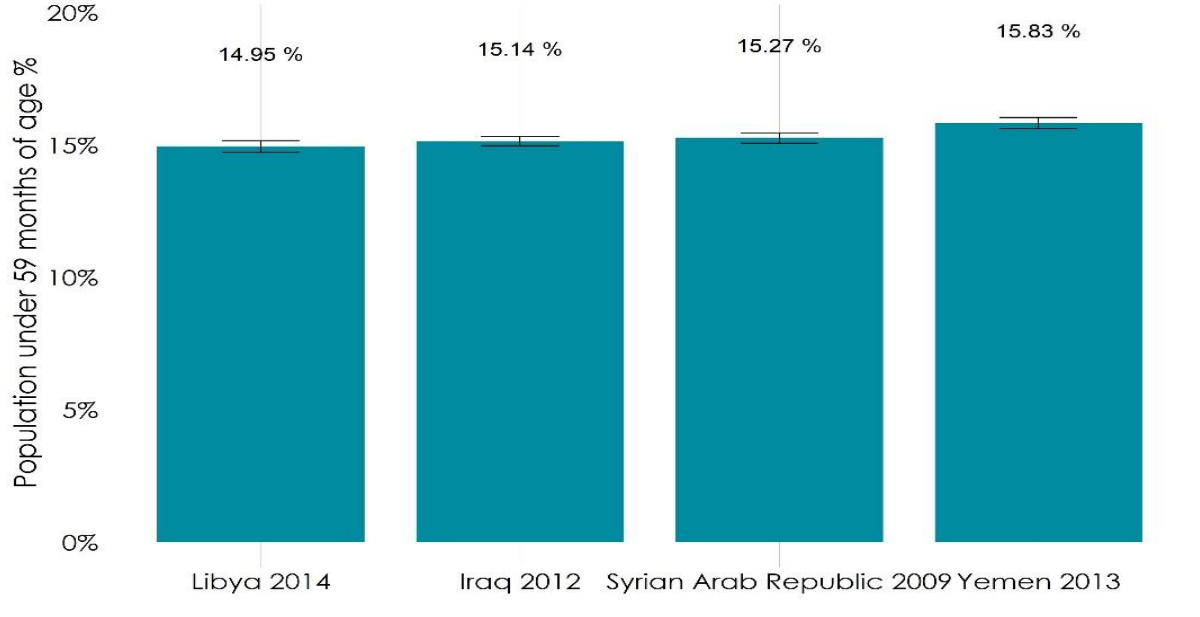
A large proportion of the population in the countries mentioned above comprises children under the age of 5. Nutritional deprivation in those countries poses major health concerns and development challenges and exacerbates the already relatively high infant, child and maternal mortality rates. Fertility rates appear to have remained high, with those aged five years or below representing more than 10 per cent of the population. Such demographic patterns demonstrate why conflict represents a major threat to human development in general and in those countries in particular.

Figure 4. Population under 15 years of age in conflict-affected countries



Sources: ESCWA calculations based on data from the Demographic and Health Surveys (DHS) 2013 for Yemen; the Living Standards Measurement Study (LSMS) 2012 for Iraq; the Pan-Arab Project for Family Health (PAPFAM) 2009 for the Syrian Arab Republic; and PAPFAM 2014 for Libya.

Figure 5. Population under 5 years of age in conflict-affected countries



Sources: ESCWA calculations based on data from LSMS 2012 for Iraq; DHS 2013 for Yemen; PAPFAM 2014 for Libya; and PAPFAM 2009 for the Syrian Arab Republic.

Conflicts in the region have damaged public service provision and physical infrastructure, including water delivery, roads, schools and health clinics. Conflicts have led to increased food insecurity and the prevalence of infectious diseases. Those factors have directly disrupted the skill-formation process for many children, accumulating inequalities and disadvantages. Childhood circumstances are an important determinant of the future outcomes of any individual and the outcomes of future generations. Adverse environments place children at risk for social and economic failure.[26] While the life-cycle framework underscores the importance of well-being at an early age, it also highlights the risks for development associated with experiencing shocks during decisive stages.

The prospects of children in those countries appear to be discouraging. They face serious disadvantages as they are exposed to more frequent and intense shocks that directly affect their development and well-being. Sadly, the youth bulge in those countries represents a risk rather than an opportunity, jeopardizing opportunities for generations to come. The following section describes how different shocks brought about by conflict have contributed to child mortality and the deterioration of the nutritional status of children in Iraq, Libya, the Syrian Arab Republic and Yemen.

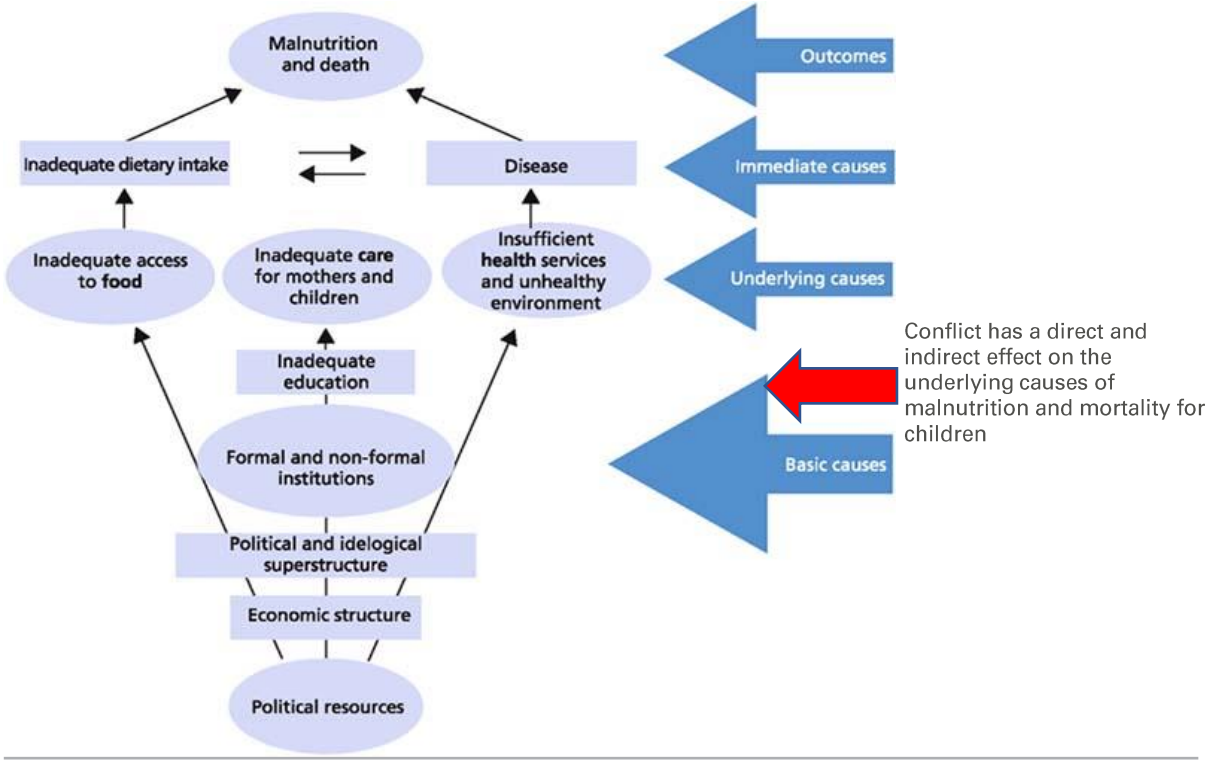
B. Conflict and the underlying causes of mortality and malnutrition

According to the United Nations Children's Fund (UNICEF) framework for malnutrition,[27] shown in figure 6, inadequate food intake and disease are immediate causes of undernutrition that both contribute through parallel causal pathways (for example, a sick child will not be able to take in enough food due to diarrhoea, vomiting and low appetite, while a hungry child is weak and predisposed to disease). Inadequate maternal, infant and young child-care practices act on both the food and health pathways. Conflict can have potential detrimental effects on food insecurity, inadequate care for mothers and children, and reduction in the provision and availability of health services.

Food insecurity and conflict are closely associated. Exposure to conflict disrupts livelihoods and food systems. It forces people to migrate. Conflict increases the cost of living as markets are disrupted and goods become scarcer. It can lead to a decrease or suspension of public transfers. The protracted conflicts in the Arab region could intensify further because of food insecurity. Food insecurity across the conflict-ridden countries in the region has most adversely affected the most vulnerable populations, including the forcibly displaced, women, children and the poor. In those countries, protracted conflicts have compounded the effects of already scarce natural resources and have increased food insecurity.

In the four conflict-ridden countries discussed here, social safety nets have been severely compromised, reducing the ability of families to cope with food insecurity.[28] The poor in those countries are most vulnerable to food insecurity, and particularly children and mothers are put at increasing risk of mortality and malnutrition.

Figure 6. Conceptual framework for the causes of malnutrition in society



Source: FAO, 2001; and UNICEF, 1990.

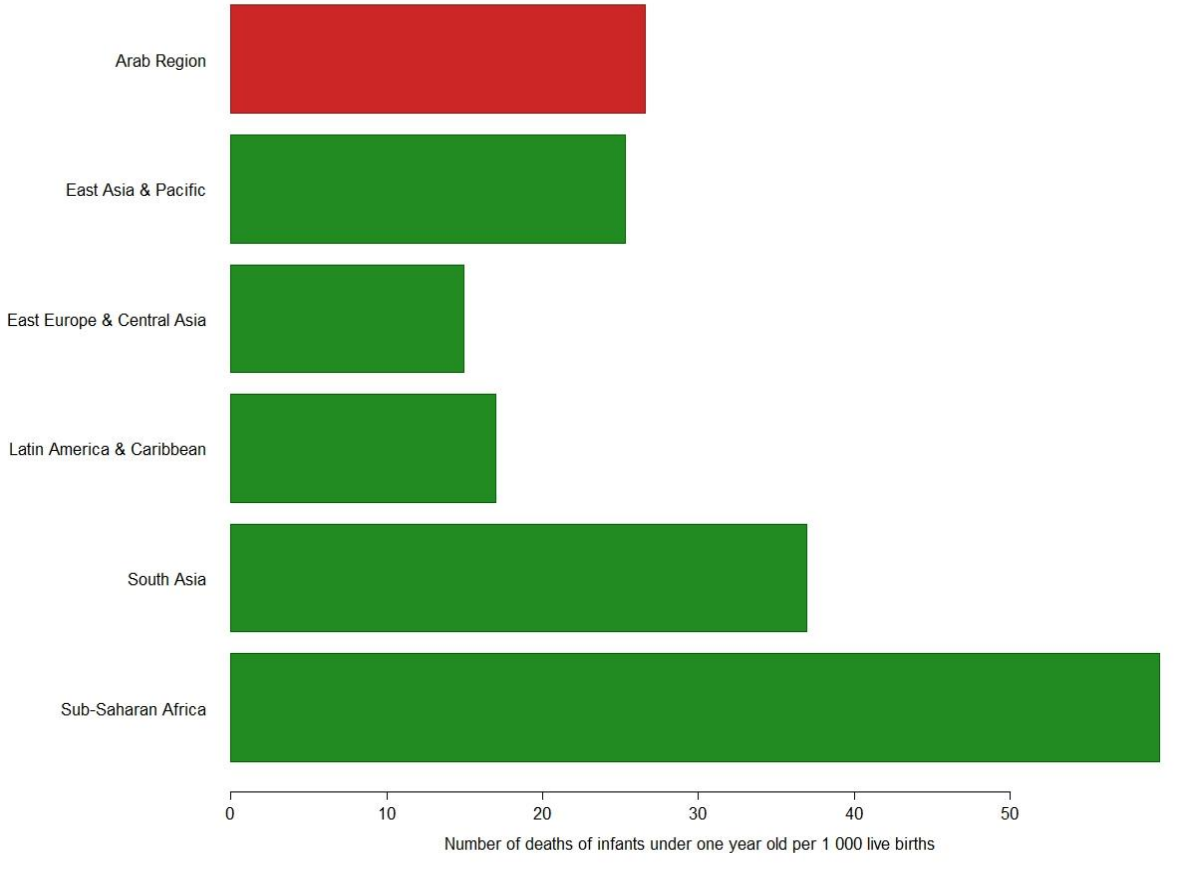
Food insecurity has directly translated into poor maternal and child health. Health and sanitation services have been partially destroyed and are often inaccessible, especially in areas experiencing higher-intensity conflict. Access to quality food has become increasingly strained, negatively affecting maternal health and that of children.[29] Mothers and children of poorer households are more vulnerable to food insecurity and likely to have less access to health services and social protection networks.

Food insecurity has direct links to malnutrition, particularly among the most vulnerable populations. It is a major contributor to disease and early deaths for women and children. Maternal health and early childhood nutritional outcomes are key determinants for survival and development over the course of the life cycle. Children in war-torn countries face unequal chances to develop their full potential, which will constitute a tremendous challenge for social and economic development in those countries and the Arab region in general. The following section explores how conflict in Iraq and Yemen has affected infant mortality and provides some suggestive evidence of the effects of food insecurity on infant mortality rates in Libya and the Syrian Arab Republic.

C. Trends on infant mortality for Iraq, Libya, the Syrian Arab Republic and Yemen

Infant mortality in the Arab region declined until recent decades. Figure 7 depicts regional median infant mortality. The Arab region exhibits higher mortality rates than other comparable regions, such as Latin America, East Asia and the Pacific. Yet, it still ranks below Sub-Saharan Africa and South Asia. Arab countries have shown an impressive decline in child mortality rates during the past few decades. However, gaps in mortality by gender and socioeconomic status have persisted.[30] Large socioeconomic disparities in child health are evident in almost every country in the region, and most likely have been exacerbated by conflict.

Figure 7. Median incidence of infant mortality, developing countries by region (estimated average 2005-2015)



Source: ESCWA calculations based on data from Child Mortality Estimates Database. https://childmortality.org/data (accessed 20 April 2017).
Notes: The bars represent regional medians. Only low- and middle-income countries were considered.

Conflict appears to be a critical factor affecting children's health and mortality. Food insecurity mostly affects vulnerable populations, and lack of health services is likely to affect maternal and child well-being. Conflicts increase the exposure to long-term deprivation of food and public health services. Conflict is associated directly and indirectly with child mortality. Indirect deaths are caused by consequent disease, hunger or lack of care. Indirect deaths and prevalence of disease occur via various channels. Stress experienced by mothers during pregnancy appears to translate into a higher likelihood of poor outcomes at birth (stunting and low birth weight), suggesting that conflict has more far-reaching negative effects than the direct effects borne by those directly touched by conflict.[31]

Food deprivation and insecurity are directly associated with poor health and a lower probability of survival. In Iraq, Libya, the Syrian Arab Republic and Yemen, food insecurity has been particularly damaging for vulnerable populations, especially children. In those countries, large proportions of the population are considered food insecure.

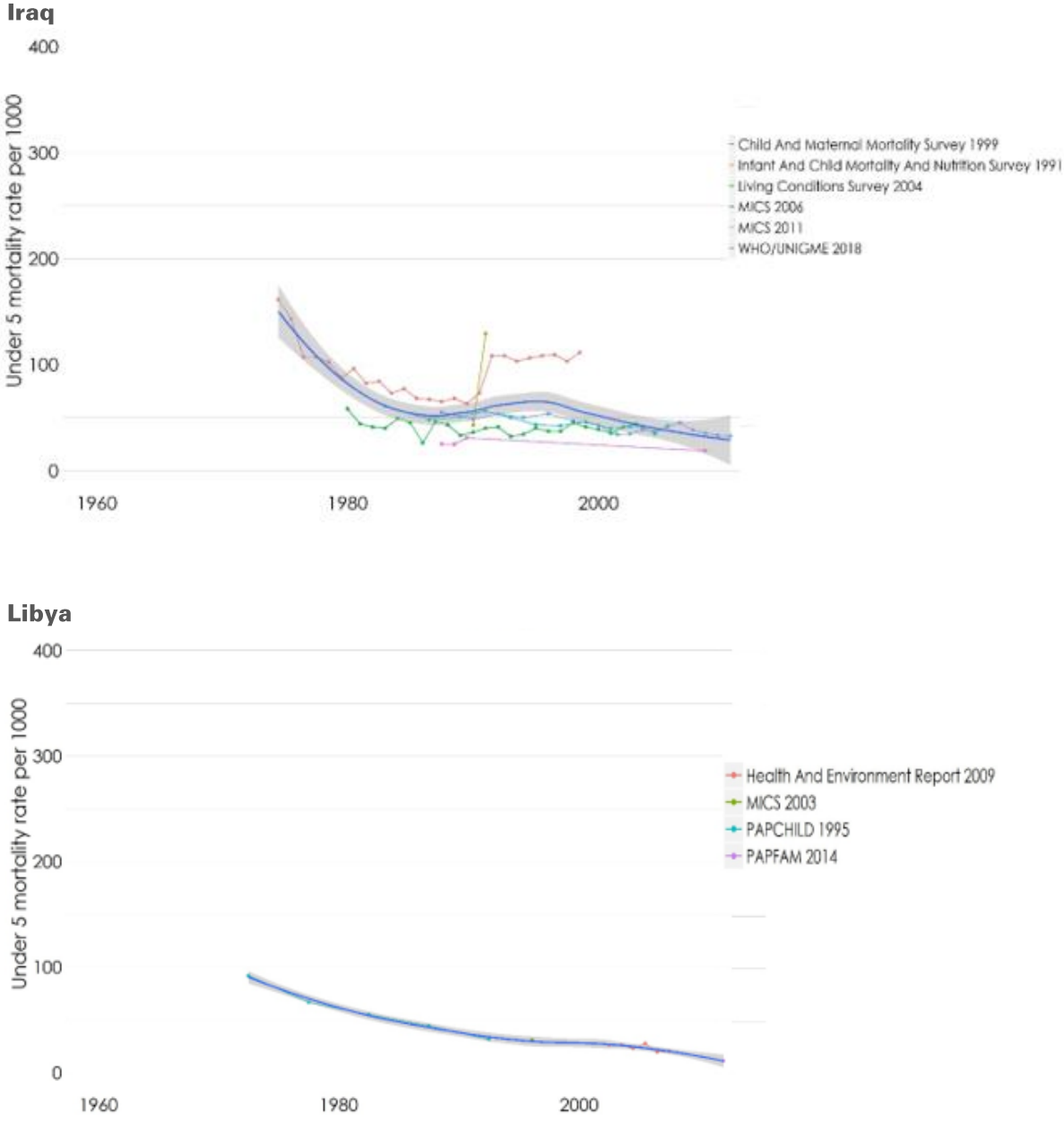
Infant mortality, defined as the mortality of children by 12 months of age, appeared to have been declining during the past 60 years worldwide. Reducing child mortality was one of the eight Millennium Development Goals (MDGs). Between 1990 and 2015, the global under-5 mortality rate declined by more than half, dropping from 90 to 43 deaths per 1,000 live births.[32] However, fragility and conflict appear to be reversing those trends in conflict-prone regions.

Countries in the Arab region have made remarkable progress in reducing infant mortality rates. However, conflicts across the region are threatening that progress. In the conflict-ridden countries of the Arab region, children are dying of preventable causes due to the lack of adequate nutrition, water and sanitation facilities, and to reduced access to basic health-care services. Figure 8 shows the trends in infant mortality in Iraq, Libya, the Syrian Arab Republic and Yemen since 1950. All countries registered an important decline in mortality rates during that period. However, the trends were constructed from observed data that do not reflect the most recent developments in terms of violence and armed conflict. Indeed, the decades-long progress on maternal and child health has most likely started to regress because of recent conflict, with a probable detrimental effect on child mortality.

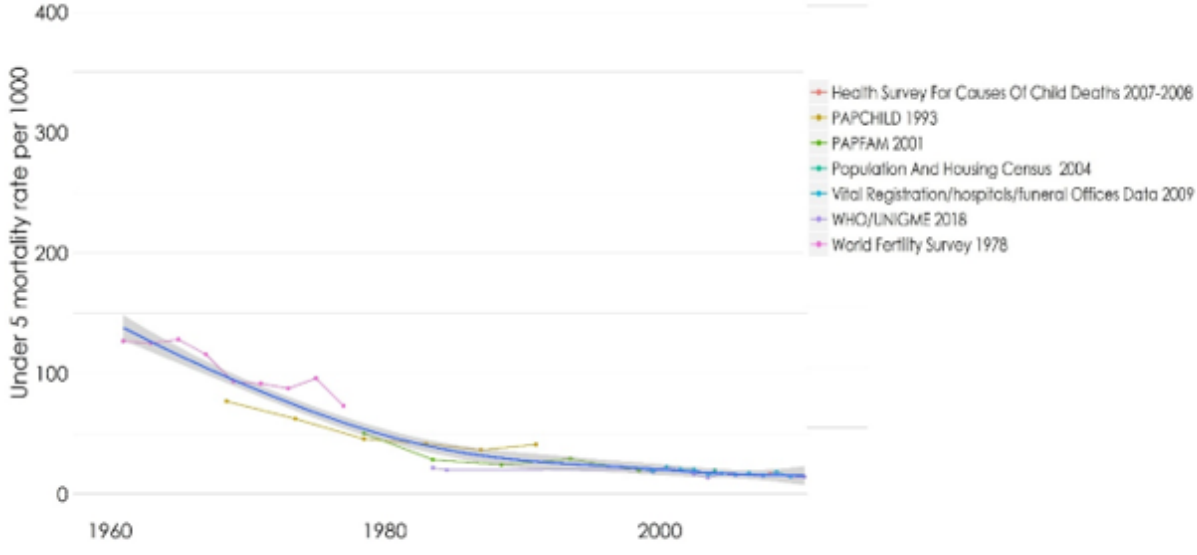
Data collected in those countries before and after their respective conflicts could enable the assessment of the causal impact of conflict on infant mortality. The following section presents estimates of the impacts of conflict on infant mortality for Iraq and Yemen.

Literature on conflict has provided consistent evidence that violent conflict is associated with higher rates of infant and child mortality. Guha-Sapir and Van Panhuis (2004), O'Hare and Southall (2007), and Guha-Sapir and D'Aoust (2010) have found a significant relationship between conflict and child mortality by using aggregate-level measures. In terms of types of conflict, Ali (2014) deduces that neonatal mortality is highly associated with international conflicts, while postnatal and infant mortality are more highly associated with civil wars.

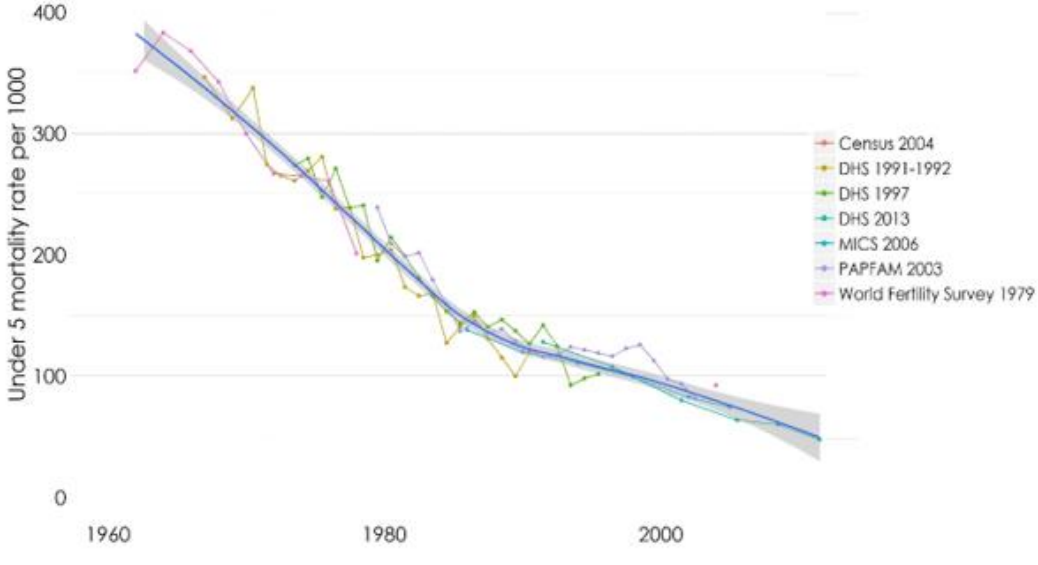
Figure 8. Trends in infant mortality rates



Syrian Arab Republic



Yemen



Source: Child Mortality Estimates Database. https://childmortality.org/data (accessed May 2019).

Numerous studies have used available household-level survey data and appropriate identification methodologies to establish the causal linkages between conflict and mortality rates in children. Among them, Kiros and Hogan (2001) found that children born in communities suffering from conflict and food shortages in Ethiopia showed higher mortality rates. De Walque (2005) also found that conflict caused an increase in child mortality during the Khmer Rouge period in Cambodia, with no significant differences between household type (urban/rural) or the level of the mother's education. Dagnelie, De Luca and Maystadt (2014) and Lindskog (2016) focused on the impact that the civil wars in the Democratic Republic of Congo had had on infant mortality. Both studies identified a detrimental effect. In addition, the former study found strong evidence suggesting that survival of girls was especially affected by conflict. Using municipal-level data in Colombia, Urdinola (2004) found that political violence was associated with increases in infant mortality rates.

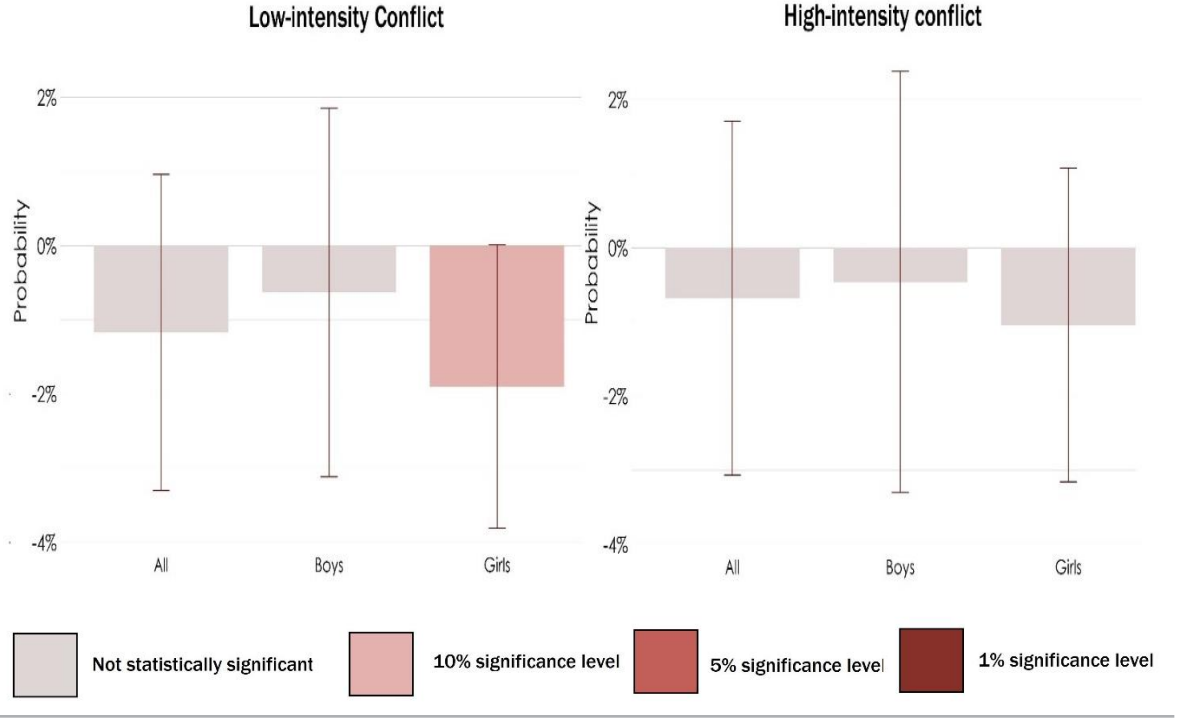
There are numerous channels through which conflict could affect infant and child mortality. Malnutrition, food insecurity, and lack of clean water and sanitation all worsen the general health of the population, particularly among the most vulnerable groups, including children. War-induced stress during pregnancy could potentially affect the health status of new-borns. Violence could also affect access to health infrastructure, including prenatal and postnatal care and birth assistance. Conflict frequently causes diversion of financial and human resources, possibly affecting the quality or interrupting health programmes. Conflict-driven displacement also puts the affected population in situations that are detrimental to their health and well-being. There is still, however, limited evidence on the significance and magnitude of such effects. To name a few examples, Coghlan and others (2006) argue that deaths in conflict-affected regions of the Democratic Republic of Congo were due to preventable causes such as malnutrition and infectious diseases, with young children disproportionately affected. Verwimp and Van Bavel (2005) found that children born during a displacement crisis in Rwanda had lower chances of survival, with a higher impact on girls than on boys. Kudo (2016) concluded that a war-induced increase in malaria infections of pregnant mothers led to more infant deaths in Liberia.

Infant mortality rate is one of the indicators that provide a useful insight both into the health status of the population and the effectiveness of the health services offered in the community.[33] Using microdata for Iraq and Yemen before and after the conflict, we estimate the effects of conflict intensification on infant mortality. The data contain information on mothers' fertility histories and on children's health at birth. We also control the number of brothers and sisters alive at the time of a child's birth as well as parental socioeconomic variables. We take advantage of the timing and location variations of conflict events at the subnational level to identify the causal impact of conflict on the probability of dying during the first year of life. For both Iraq and Yemen, we define two periods that we consider the pre-conflict and conflict periods. In the following section, we present the estimated probability of dying during the first year of life for the average child during the pre-conflict and conflict periods.

1. Infant mortality in Iraq

We begin by defining the pre-conflict and conflict periods in Iraq. Children born before the invasion of the country by a coalition led by the United States in March 2003 were considered as being born in the pre-conflict period, while those born thereafter are part of the conflict period. Exploiting regional variations of conflict intensity, we estimate the effect of conflict on the probability of dying in infancy. We define a measure of monthly conflict intensity, and we use two different thresholds for intensity. The first threshold ("lower-intensity conflict") is 10 conflict-related deaths per governorate and month, while the second threshold ("higher-intensity conflict") is 25 conflict-related deaths per governorate and month. Based on those two levels of exposure, we construct an indicator variable for conflict that takes the value of 1 if the child was exposed to at least one month of conflict (that is, one month of lower- or higher-intensity conflict) in his/her governorate since conception and up to his/her first birthday. The results are summarized in figure 9.

Figure 9. Marginal effect of armed conflict on the probability of infant mortality, Iraq[34]



Source: ESCWA calculations based on data from Iraq Multiple Indicator Cluster Surveys (MICS) 2006 and 2011.

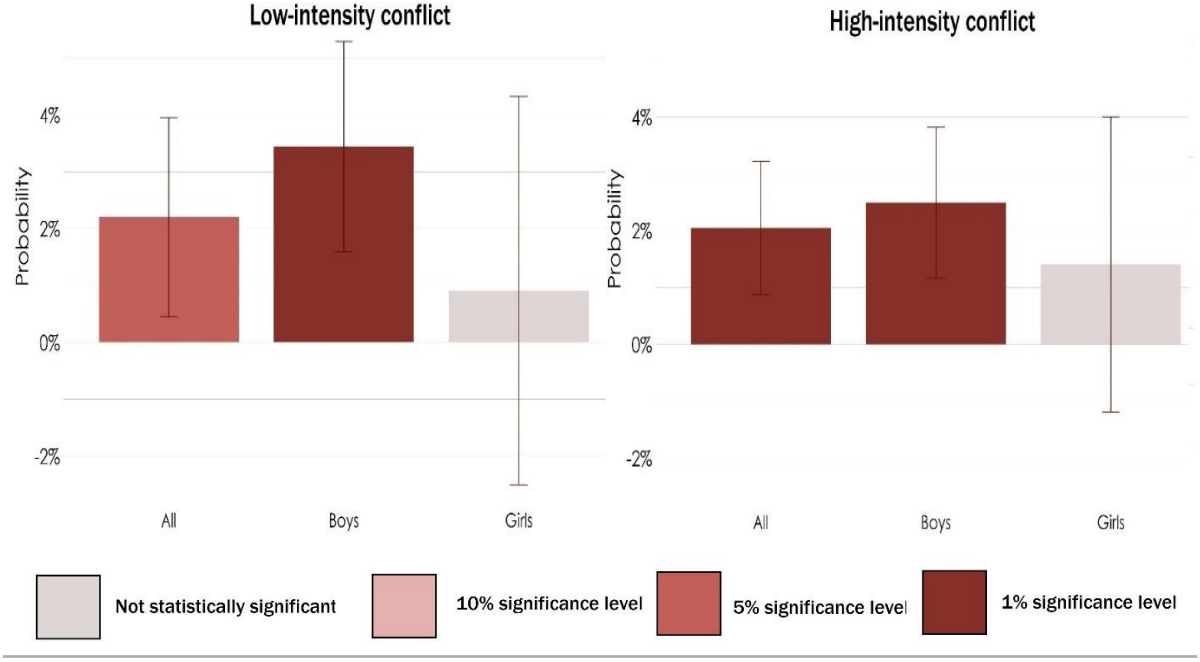
Notes: The bars show the estimated effect of armed conflict on the probability of infant mortality, including separate effects for girls and boys. Those probabilities are calculated using a linear probability model for infant mortality. Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths since birth and up to the first birthday.

The estimates suggest that the escalation of violence since 2003 does not appear to have affected the secular trend of a declining infant mortality observed since the 1950s. Exposure to conflict intensity does not appear to have any statistically significant effect on infant mortality. The results are statistically significant and negative only for girls exposed to lower-intensity conflict.

2. Infant mortality in Yemen

In Yemen, the conflict period begins in January 2011 and runs until 12 months prior to the data collection. The pre-conflict phase refers to a period equal in length but ending in January 2011. Exploiting regional variations of conflict intensity, we estimate the effect of conflict on the probability of dying in infancy. The results are summarized in figure 10. Regions of lower- and higher-intensity conflict are defined according to the thresholds described above. Our results suggest a positive association between conflict intensity and infant mortality for boys exposed to episodes of both lower- and higher-intensity violence. An exposure to a lower-intensity conflict would increase the likelihood of a boy's dying within the first 12 months of life by about 3.7 percentage points and being exposed to a higher-intensity conflict would increase the likelihood of a boy's dying within the first 12 months of life by about 2.5 percentage points.

Figure 10. Marginal effect of armed conflict on the probability of infant mortality, Yemen[35]



Source: ESCWA calculations based on data from Yemen DHS 2013.

Notes: The bars show the estimated effect of armed conflict on the probability of infant mortality, including separate effects for girls and boys. Those probabilities are calculated using a linear probability model for infant mortality. Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths since birth and up to the first birthday.

D. Conflict and early childhood nutrition

While the loss of life is the ultimate cost of civil conflicts, conflicts also affect children in other detrimental ways. Understanding how conflict affects early childhood is critical as it can affect skill formation and have consequences over the life cycle. Shocks experienced early in life are particularly detrimental because they disrupt the acquisition of skills. As described in the previous chapter, skill formation directly depends on the stock of past skills. If a negative shock occurs at an influential stage of the life cycle, it will affect not only the child's current development but also reduce future accumulation of skills and abilities.[36] The impact of conflict on the nutritional status of children is of interest because those outcomes appear to be largely associated with cognitive development, long-term development and overall adult health.[37]

Extensive literature has documented life-long socioeconomic effects of events during early life.[38] Stress experienced by mothers during pregnancy appears to translate directly into a higher likelihood of poor outcomes at birth. Food insecurity, added to insufficient provision of health services plus unhealthy environments, is likely to affect children of all ages, impairing their physical, emotional and cognitive development. Conflicts also affect family composition and coping strategies, seriously disrupting the caring capacity of community and family, especially mothers.[39] During conflicts, it is crucial to protect the nutritional status of mothers, as it is essential for protecting the nutritional status of infants and children. Preserving the integrity of the family is crucial for the nutritional welfare of children and their long-term development.[40]

Shocks experienced from conception to early life can have profound negative effects on child development.[41] Children exposed to violence in early childhood will most likely carry the costs of conflicts throughout their lives. Several studies quantify the detrimental effects of conflict on health and nutritional status of children in early childhood.[42] The findings of those papers conclude that exposure to conflict is detrimental to child health and long-term development.

Camacho (2008) and Mansour and Rees (2012) examine the relationship between intrauterine exposure to armed conflict and birth weight in Colombia and the State of Palestine, respectively. Their findings suggest that women who experience stress during the early stages of pregnancy are at increased risk of having children with low birth weights. Valente (2011); Akresh, Lucchetti and Thirumurthy (2012); and Minoiu and Shemyakina (2014) focus on the impact of conflict on child health, specifically on the effect of conflict on stunting. Their identification strategies use exogenous variation in a conflict's geographic extent and timing, in addition to the exposure of different birth cohorts to fighting.

Beyond affecting life expectancy and health outcomes, conflicts can impair the skill-formation process. In a recent study on the effects of early childhood exposure to conflict in Colombia, Duque (2017) confirms that exposure to conflict in early childhood has a detrimental effect on the acquisition of skills (cognitive and non-cognitive). Her study also defines critical

ages and identifies heterogeneous effects of conflict for different stages of the life cycle.

Malnourishment reduces growth in children, increases the likelihood of disease and can increase the likelihood of early death. Nutritional outcomes of children are measured using several anthropometric indicators: the three most common measures are wasting (acute malnutrition), stunting (chronic malnutrition) and underweight (general malnutrition). Of those measures, chronic malnutrition is the most relevant. It severely increases morbidity and mortality; reduces physical, cognitive and economic capacity; and elevates health risks in adulthood.[43] While height is a marker for the long-term nutritional status, weight appears to be a proxy for short-term nutritional status. Cognitive development and height share common inputs early in life, and thus height can be used as a proxy for cognitive development.[44] There is growing evidence suggesting that the strong correlation of height and skills applies to developing countries.[45] Height is also associated with social-emotional skills.[46] Early childhood nutritional status appears to be integral to cognitive and social-emotional development.

The current section concentrates on the impact of conflict on stunting of children 0-59 months old. Stunting, or linear growth failure, serves as a marker of multiple cognitive and social-emotional developments, and helps assess the impact of conflict on children's development potential during different stages of life.

The World Health Organization (WHO) uses z-scores to express population-based nutritional assessments. A z-score is established as the commonly used cut-off-based prevalence. The WHO Global Database on Child Growth and Malnutrition uses a z-score cut-off point of <-2 standard deviations from the median to classify low weight-for-age, low height-for-age and low weight-for-height as moderate and severe undernutrition, and <-3 standard deviations from the median to define severe undernutrition. The cut-off points of >+2 standard deviations from the median classifies high weight-for-height as overweight in children.[47] Table 1 shows the classification of malnutrition severity by prevalence ranges among children under five years of age.

Table 1. Classification for assessing severity of malnutrition by prevalence ranges among children under 5 years of age

Indicator	Severity of malnutrition by prevalence ranges (percentage)			
	Low	Medium	High	Very high
Stunting	<20	20-29	30-39	>=40
Underweight	<20	10-19	20-29	>=30
Wasting	<5	5-9	10-14	>=15

Source: WHO Global Database on Child Growth and Malnutrition.

The three most commonly used anthropometric indices to assess children's growth status are weight-for-height, height-for-age and weight-for-age. According to WHO, these indices can be interpreted as follows:[48]

- Low height-for-age: Stunted growth reflects a process of failure to reach linear growth potential because of suboptimal health and/or nutritional conditions. On a population basis, high levels of stunting are associated with poor socioeconomic conditions and increased risk of frequent and early exposure to adverse conditions such as illness and/or inappropriate feeding practices. In many such settings, prevalence starts to rise at the age of about three months. The process of stunting slows down at around three years of age, after which mean heights run parallel to the reference. Therefore, the age of the child modifies the interpretation of the findings: for children in the age group below 2-3 years, low height-for-age probably reflects a continuing process of "failing to grow" or "stunting". For older children, it reflects a state of "having failed to grow" or "being stunted". Stunting is defined as height-for-age less than -2 z-scores below median WHO growth standards. Severe stunting is defined as height-for-age less than -3 z-scores below median WHO growth standards;
- Low weight-for-height: Wasting indicates in most cases a recent and severe process of weight loss, often associated with acute starvation and/or severe disease. However, wasting can also be the result of a chronic unfavourable condition. Provided there is no severe food shortage, the prevalence of wasting is usually below 5 per cent, even in poor countries. Typically, the prevalence of low weight-for-height shows a peak in the second year of life. Wasting is defined as weight-for-height less than -2 z-scores below median WHO weight-for-height standards. Severe stunting is defined as weight-for-height less than -3 z-scores below median WHO weight-for-height standards;
- Low weight-for-age: Weight-for-age reflects body mass relative to chronological age. It is influenced by both the height of the child (height-for-age) and his or her weight (weight-for-height). Its composite nature makes interpretation complex. For example, weight-for-age fails to distinguish between short children of adequate body weight and tall, thin children. Short-term change, especially reduction in weight-for-age, reveals change in weight-for-height. In general, the worldwide variation of low weight-for-age and its age distribution are similar to those of low height-for-age. Underweight is defined as weight-for-age less than -2 z-scores below median WHO weight standards. Severe stunting is defined as weight-for-age less than -3 z-scores below median WHO weight standards.

Childhood stunting is the best overall indicator of children's well-being and long-term development. It also accurately reflects social inequalities amongst vulnerable populations. The most important factors contributing to stunted growth and development are poor maternal health and nutrition during and after pregnancy; inadequate child feeding practices; and infection. Different channels can affect nutrition of children in early ages. Stress during pregnancy appears to translate into lower birth weight and shorter stature of children. Poor dietary content is

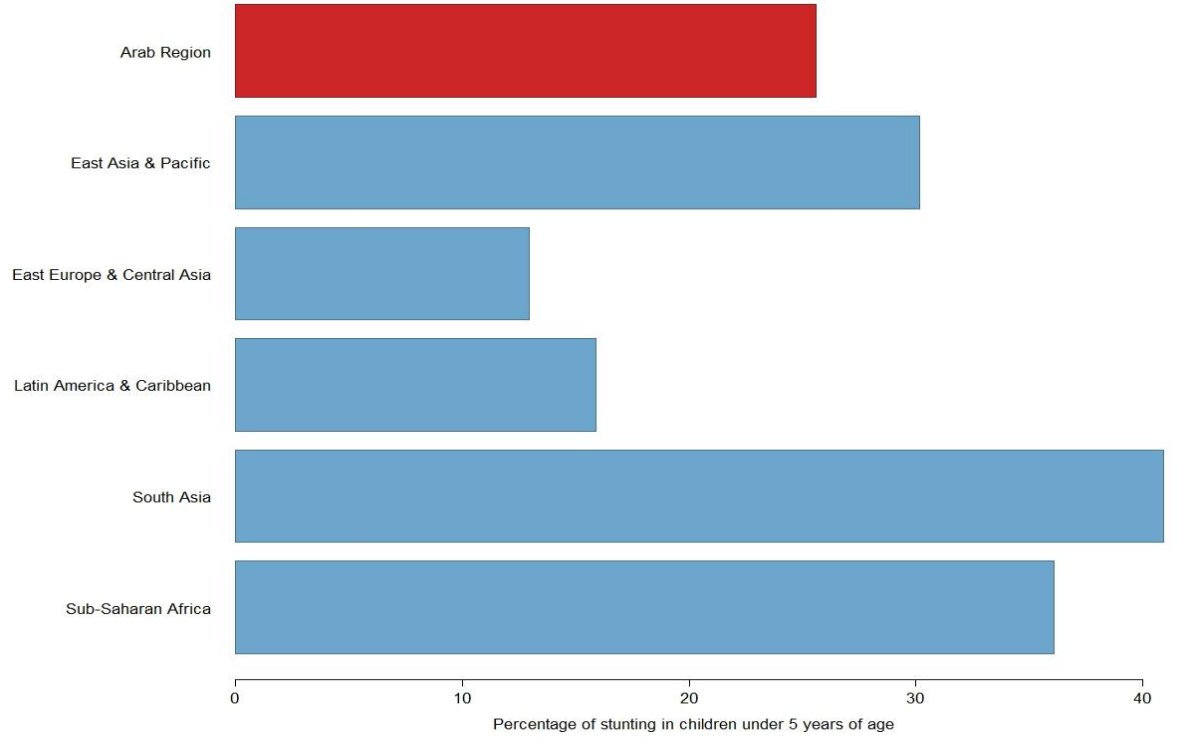
directly related to growth retardation. Stunting, ill health and malnutrition, coupled with inadequate early stimulation, put children at risk for diminished cognitive development.

There are critical windows for nutritional interventions against stunting. If those windows are missed, stunting becomes difficult to overcome. Stunting often begins in utero and continues for at least the first two years of postnatal life, so the first two years of life appear to be the most critical.

Therefore, while stunting can be reversible up to about age 2, it is rarely reversible thereafter. Stunting has been directly associated with decreased cognitive development, poorer school performance, decreased productivity later in life, and lower income.[49]

Disease and inadequate dietary intake are the immediate factors causing undernutrition in the region. Figure 11 shows regional median stunting rates. The region has a higher prevalence of stunting than other regions of similar levels of development. Conflicts across the region have most likely increased the likelihood of undernutrition.

Figure 11. Median incidence of stunting in children under 5 years of age by region, developing countries (estimated average 2005-2015)



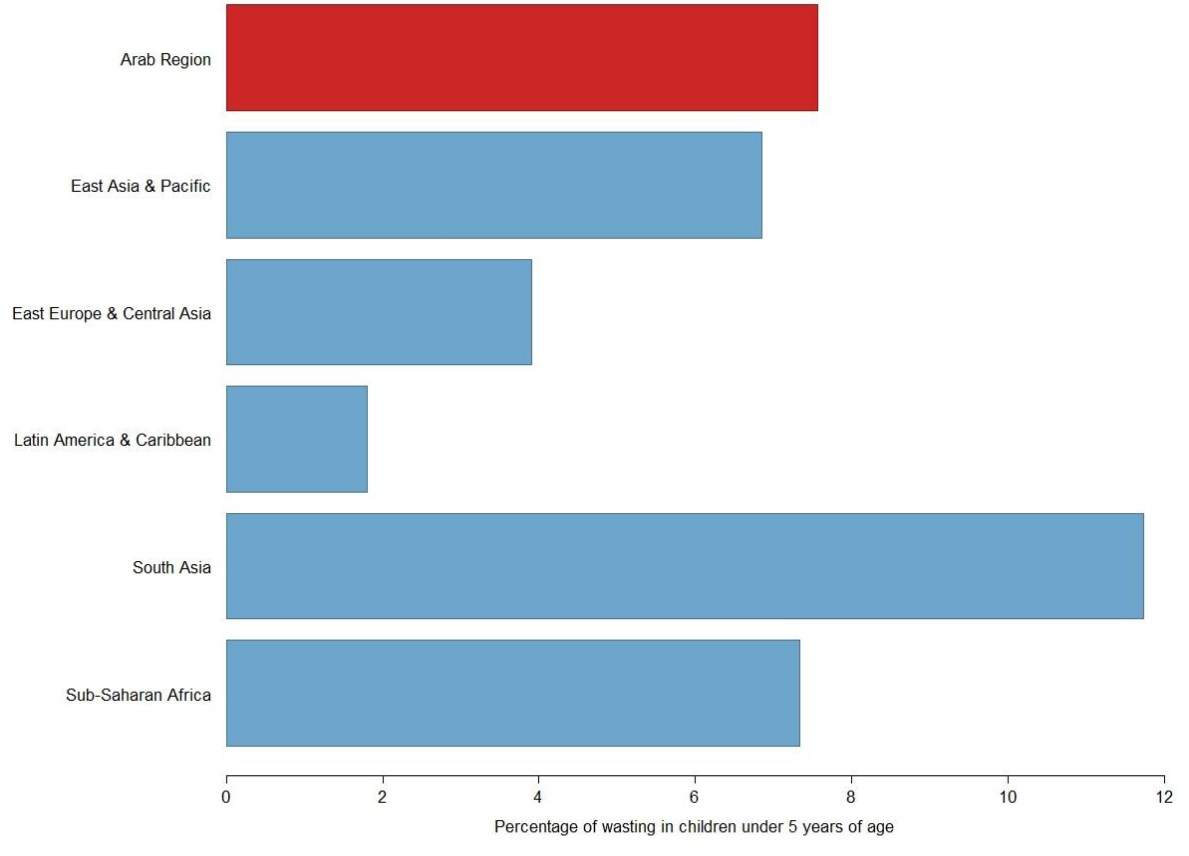
Source: ESCWA calculations based on data from UNICEF.

Notes: The bars represent regional median. Only low- and middle-income countries are considered.

Wasting appears to be prevalent in the Arab region, with the median for the region ranking only below East Asia and the Pacific, as depicted in figure 12. The consequences of undernutrition most likely have worsened in conflict-afflicted countries such as the Syrian Arab Republic and Yemen, where large proportions of the population are on the brink of famine.

Underweight does not appear to be as much of a problem as stunting and wasting, suggesting that children in the region mostly get sufficient daily calorie intake. But underweight could occur in parallel with poor diets and micronutrient deficiencies, including deficiencies of iodine, vitamin A and iron for children and women of childbearing age.[50] Figure 13 shows regional medians for underweight children in developing countries.

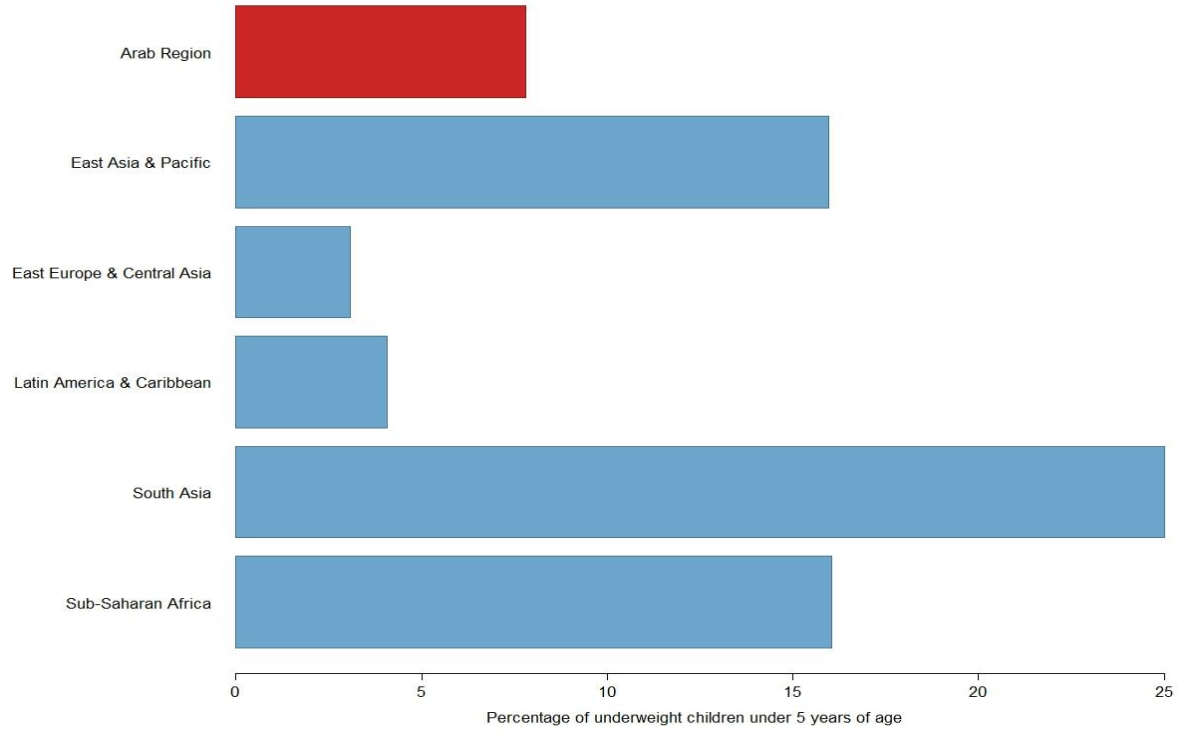
Figure 12. Median incidence of wasting in children under 5 years of age by region, developing countries (estimated average 2005-2015)



Source: ESCWA calculations based on data from UNICEF.

Notes: The bars represent regional medians. Only low- and middle-income countries are considered.

Figure 13. Median incidence of underweight in children under 5 years of age by region, developing countries (estimated average 2005-2015)



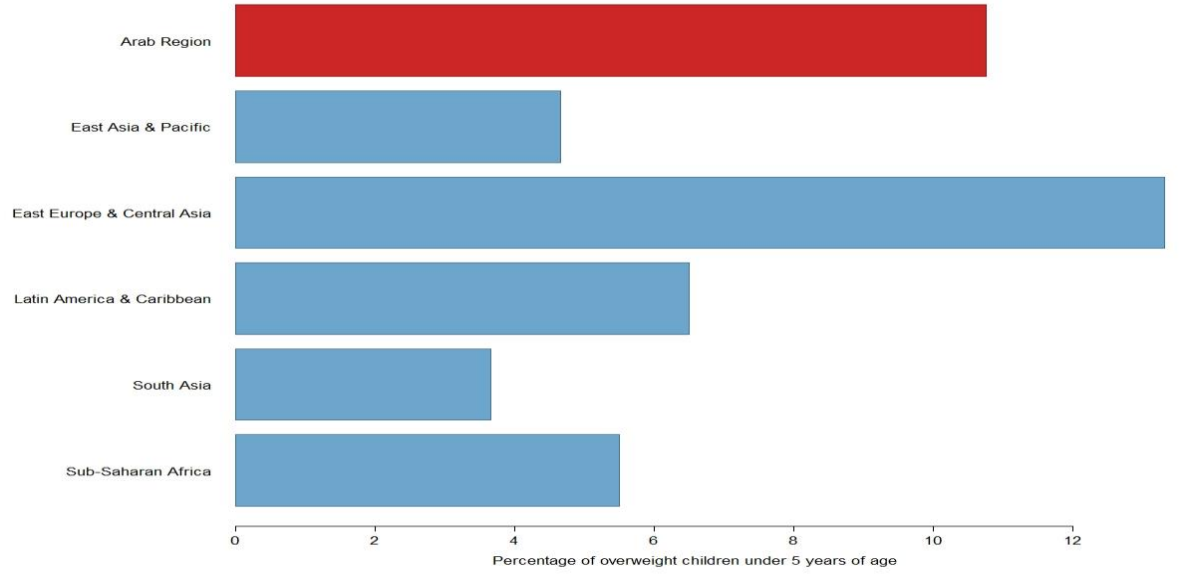
Source: ESCWA calculations based on data from UNICEF.

Notes: The bars represent regional medians. Only low- and middle-income countries are considered.

Further evidence of meeting the calorie requirements is provided in figure 14, showing the median incidence of overweight in children under 5 years of age by region. The region ranks second among other developing regions, with a rate only below that of Eastern Europe and Central Asia.

Malnutrition remains a major health problem for the region, most likely worsening with conflict escalation. Diet-related chronic diseases exert a heavy toll and contribute to morbidity and mortality rates. They also can impair the skill-formation process. The inputs required to grow to an adequate size are the same as those required for adequate brain development. Thus, adequate nutrition is key for the skill-formation process. A comprehensive strategy should be set in place to improve the nutritional status of individuals throughout the life cycle by encouraging countries to reposition nutrition as central to their development agenda.[51]

Figure 14. Median incidence of overweight in children under 5 years of age by region, developing countries (estimated average 2005-2015)



Source: ESCWA calculations based on data from UNICEF.

Notes: The bars represent regional medians. Only low- and middle-income countries are considered.

Stunting is particularly worrisome from the life-cycle perspective and is pervasive in the Arab region. The large prevalence of stunting in those countries has devastating long-term consequences for the children affected, as they will have fewer opportunities relative to their non-deprived counterparts. Those disadvantages translate into weaker physical and cognitive health in childhood and adulthood, and a lifetime of lower productivity and opportunity. In Iraq, Libya and the Syrian Arab Republic (pre-conflict), one fifth to one quarter of children were stunted. In Yemen, the problem was more pervasive, with more than 50 per cent of children stunted. According to the World Health Organization (WHO), that problem was related to dietary quality and public health rather than to the wealth level of households.[52] With conflicts intensifying in those countries, dietary quality and provision of health care no doubt worsened, most likely increasing the prevalence of stunting further.

In addition to the Arab region's poor dietary quality and deficient provision of health services for children and expectant mothers, it ranks low in the existence of early childhood development programmes. This will prevent children of the region from achieving their full physical, cognitive and emotional potential.[53] Regional conflicts have increased the risk factors for childhood malnutrition, with the likelihood of strong negative impacts of exposure to violence on children's short-and long-term nutritional status and development. Table 2 shows the severity of malnutrition by prevalence ranges for countries affected by conflict in the Arab region.

Table 2. Severity of malnutrition by prevalence ranges (percentage)

Indicator	Iraq 2006	Iraq 2011	Yemen 2006	Yemen 2013	Syrian Arab Republic2006	Syrian Arab Republic 2009	Libya 2007
Stunting	Medium (27.01)	Low (19.63)	Very high (57.10)	Very high (46.11)	Medium (28.39)	Medium (27.79)	Medium (21.08)
Underweight	Low (6.94)	Low (6.42)	Very high (36.94)	Very high (39.70)	Low (10.06)	Low (10.22)	Low (5.63)
Wasting	Medium (5.83)	Medium (6.55)	High (13.74)	Very high (16.64)	High (10.34)	High (11.57)	Medium (6.54)

Source: ESCWA calculations based on data from MICS 2006 and 2011 for Iraq, Household Budget Survey (HBS) 2006 and DHS 2013 for Yemen, PAPFAM 2006 and 2009 for the Syrian Arab Republic, and PAPFAM 2007 for Libya.

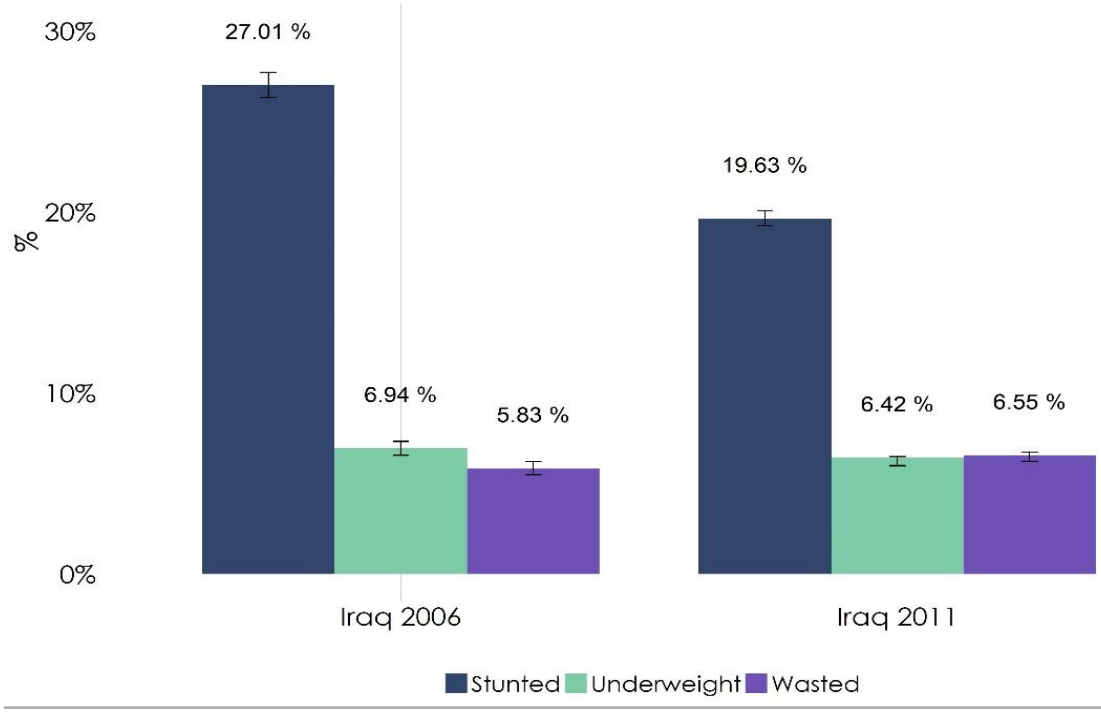
The following section contains estimates of the direct impact of children's exposure to conflict in several countries of the Arab region. For Iraq and Yemen, we use the most up-to-date microdata surveys and detailed subnational level exposure to war, including the intensity of violence at the governorate level, to understand how conflict has affected the nutritional status of children. We provide suggestive evidence on the impact of conflict on nutritional outcomes of children in Libya and the Syrian Arab Republic.

1. Conflict and early childhood nutrition in Iraq

After the 1990 Iraqi invasion of Kuwait, the United Nations imposed sanctions blocking trade with Iraq. In response, President Saddam Hussein established the Public Distribution System (PDS) to provide food and other necessities to all Iraqis. Still today, PDS provides basic staple commodities (rice, wheat flour, vegetable oil, sugar and baby milk formula). Prior to 2003, PDS was the largest food distribution system in the world. The system was, however, inefficient and applied to all households regardless of socioeconomic status, making the programme extremely expensive.[54] Since the intensification of conflict during the years that followed, PDS suffered from supply-chain disruptions and the government becoming cut off in more conflict-intense areas.[55] While some households reported receiving only partial rations, others, such as those internally displaced, were cut off completely, contributing to high food insecurity, especially in areas of intense conflict.

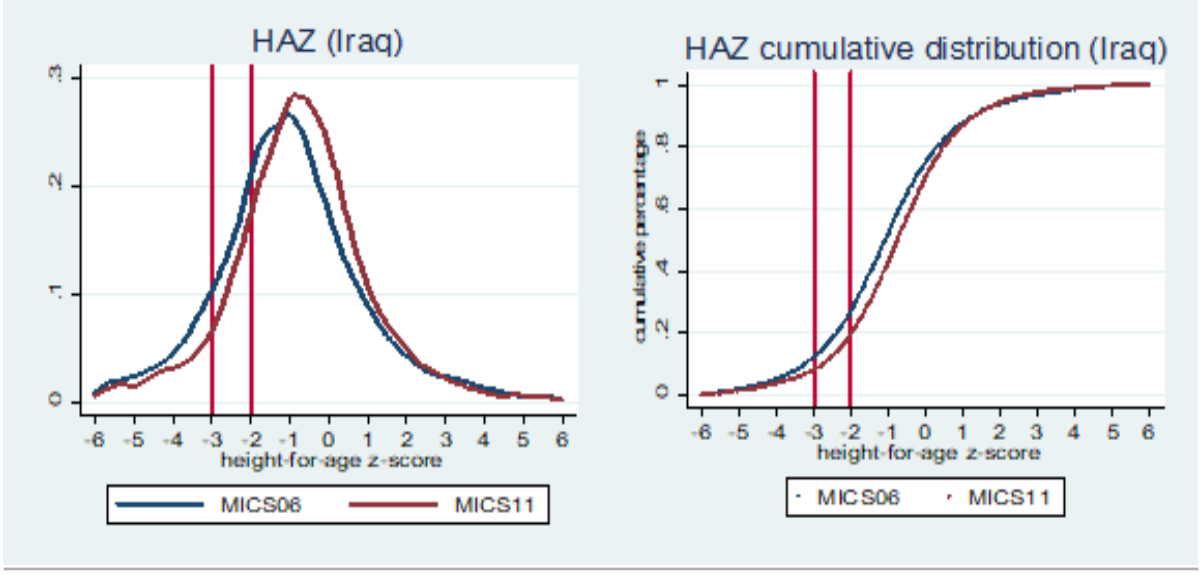
Figure 15 depicts the proportion of children that were stunted, wasted and underweight in Iraq in 2006 and 2011. While there was a reduction in the levels of stunted children 0-59 months of age from 27.1 per cent in 2006 to 19.6 per cent in 2011, the proportion of wasted and underweight children remained unchanged for the most part.

Figure 15. Stunted, underweight and wasted children 0-59 months of age, Iraq, 2006 and 2011



Source: ESCWA calculations based on data from Iraq MICS 2006 and 2011.

Figure 16. Stunting rates based on height-for-age z-scores, Iraq, 2006 and 2011



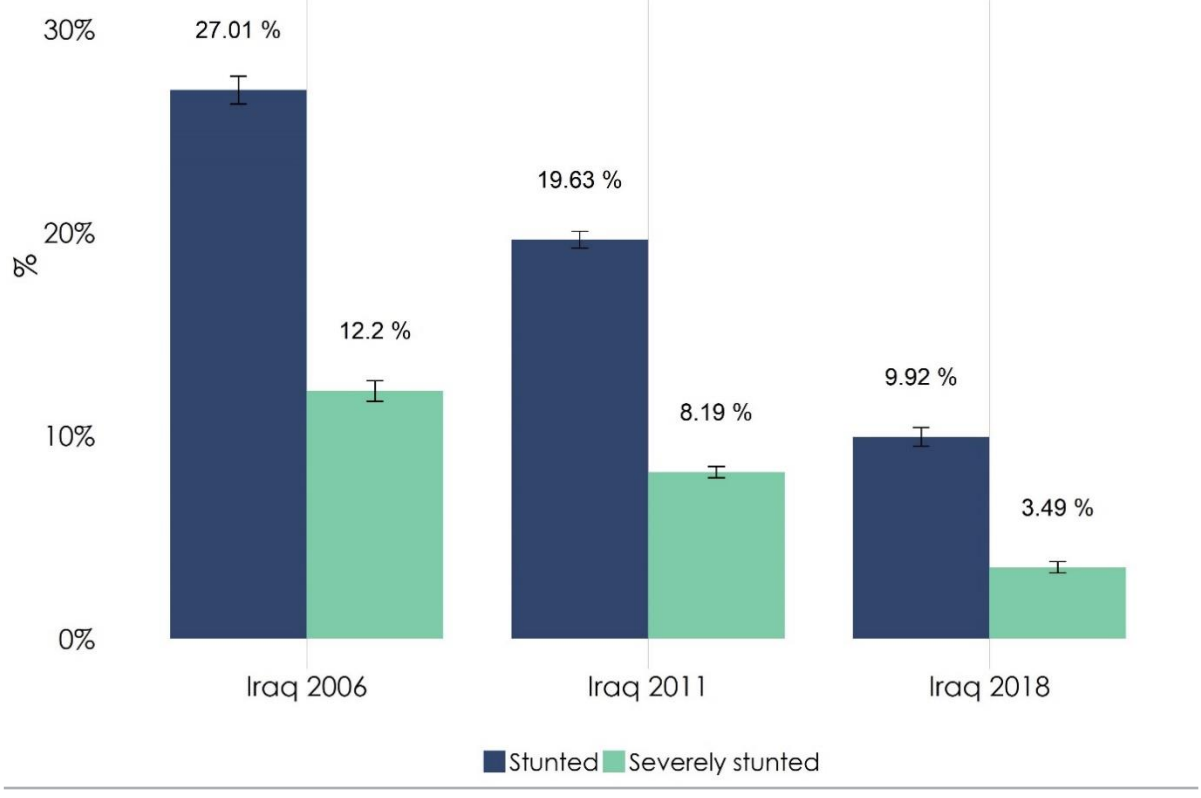
Source: ESCWA calculations based on data from Iraq MICS 2006 and 2011.

Figure 16 shows the kernel densities and cumulative distributions of the height-to-age z-scores. The national stunting rates showed some improvement from a proportion of 27 per cent in 2006 to 20 per cent in 2011. Those reductions were not uniform across governorates in Iraq, and conflict could have been a crucial factor.

Among the children affected by stunting, some showed more severe malnutrition that led to even lower height-for-age ratios. Those children were classified as severely stunted. Figure 17 shows how the prevalence of stunting and severe stunting changed between 2006 and 2011. Severe stunting remained stubbornly high.

Table 3 shows the stunting rates by governorate in Iraq in 2006 relative to 2011. An increase in the prevalence of stunting in Baghdad and Al-Anbar, governorates that host more than 25 per cent of the children ages 0-59 months, can be observed. Similarly, in other areas affected by conflict, such as Diyala, only a moderate reduction in the prevalence of stunting was registered.

Figure 17. Stunting and severely stunting rates, Iraq, 2006, 2011 and 2018



Source: ESCWA calculations based on data from Iraq MICS 2006, 2011 and 2018.

Table 3. Stunting rates by governorate, Iraq, 2006 and 2011 (percentage)

Governorate	Iraq 2006					Iraq 2011				
	Stunted		Severely stunted		Population aged 0-59 months	Stunted		Severely stunted		Population aged 0-59 months
	Mean	Standard deviation	Mean	Standard deviation		Mean	Standard deviation	Mean	Standard deviation	
Dohuk	19.61	39.72	5.82	23.43	3.64	16.17	36.83	4.91	21.61	3.66
Ninewa	26.73	44.28	10.24	30.34	11.92	20.5	40.38	5.64	23.07	9.75
Suleimaniya	11.63	32.09	2.88	16.74	3.9	8.57	27.99	2.77	16.41	4.12
Kirkuk	22.25	41.63	10.03	30.06	2.37	8.51	27.92	1.88	13.58	4.27
Erbil	20.48	40.39	10.18	30.26	3.86	14.58	35.3	5.82	23.41	4.62
Diyala	29.24	45.52	14.2	34.93	4.22	26.59	44.2	10.98	31.27	3.87
Al-Anbar	28.68	45.26	17.35	37.89	4.75	31.33	46.39	15.87	36.55	4.48
Baghdad	27.36	44.6	12.81	33.43	20.25	28.72	45.26	15.72	36.41	18.2
Babil	27.44	44.65	12.92	33.57	5.62	10.4	30.53	3.29	17.85	6.13
Karbala	19.81	39.88	7.84	26.89	3.45	13.68	34.38	4.05	19.72	3.41
Wasit	29.71	45.72	11.06	31.38	4.01	19.66	39.75	6.94	25.41	3.53
Salahaddin	24.25	42.88	9.35	29.12	5.34	21.21	40.89	9.79	29.73	4.75
Al Najaf	26.89	44.36	11.19	31.54	3.91	25.51	43.62	11.88	32.38	4.24
Al Qadisiya	33.19	47.11	16.34	36.99	3.93	16.4	37.04	5.36	22.53	3.84
Al Muthanna	31.1	46.31	13.54	34.23	2.82	16.98	37.56	7.48	26.31	2.54
Thi-Qar	33.91	47.37	16.04	36.72	5.62	15.33	36.03	5.35	22.52	6.27
Missan	34.38	47.52	16.19	36.85	3.27	14.48	35.2	4.98	21.76	3.61
Basrah	31.01	46.28	16.52	37.16	7.12	18.16	38.56	6.49	24.65	8.72
Iraq	**27.01**	**44.4**	**12.2**	**32.73**	**100**	**19.63**	**39.72**	**8.19**	**27.42**	**100.00**

Source: ESCWA calculations based on data from Iraq MICS 2006 and 2011.

Beyond the observed differences in the prevalence of stunting across regions, perhaps one of the groups most severely affected by conflict is the displaced population. FAO estimates that 3 million people are internally displaced, equivalent to about 10 per cent of the Iraqi population.[56] Those populations have their livelihoods disrupted and are likely to be deprived in multiple ways. LSMS of 2012 in Iraq allows disaggregating by conflict-related migration status. The sample is divided by migration due to conflict, internally displaced persons (IDPs), and non-IDPs.

Figure 18 suggests a larger likelihood of being stunted for children of internally displaced families (red line) compared to non-displaced families (blue line). The estimates suggest more

prevalence of stunting among internally displaced children compared to children who are not internally displaced. At every point of the distribution, displaced children were likely to have lower stature.

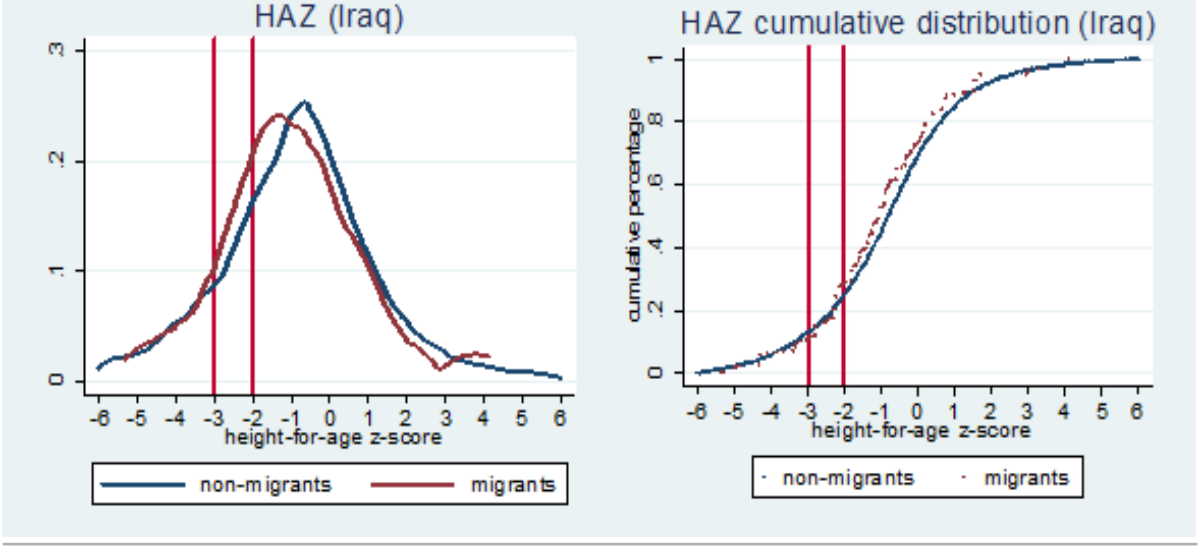
Exploiting regional variations of conflict intensity, we estimate the effect of conflict on the probability of being stunted for children aged 0-59 months. Two levels of exposure are defined, namely, lower-intensity conflict (living in a governorate that experienced at least one episode of conflict resulting in 10 deaths since conception until 59 months of age) and higher-intensity conflict (living in a governorate that experienced at least one episode of conflict resulting in 25 or more deaths).

The estimates are summarized in figure 19. The results suggest a positive association between conflict intensity and stunting for girls and boys alike, and for children exposed to both conflict of lower and higher intensity. The effects are more pronounced for children exposed to more intense violence.

We also estimate the effects of conflict on the likelihood of severe stunting. Figure 20 depicts the probability of severe stunting in children, by sex and level of exposure to violence in Iraq for the average child. The risk of severe stunting was significantly higher in the most conflict-intense regions.

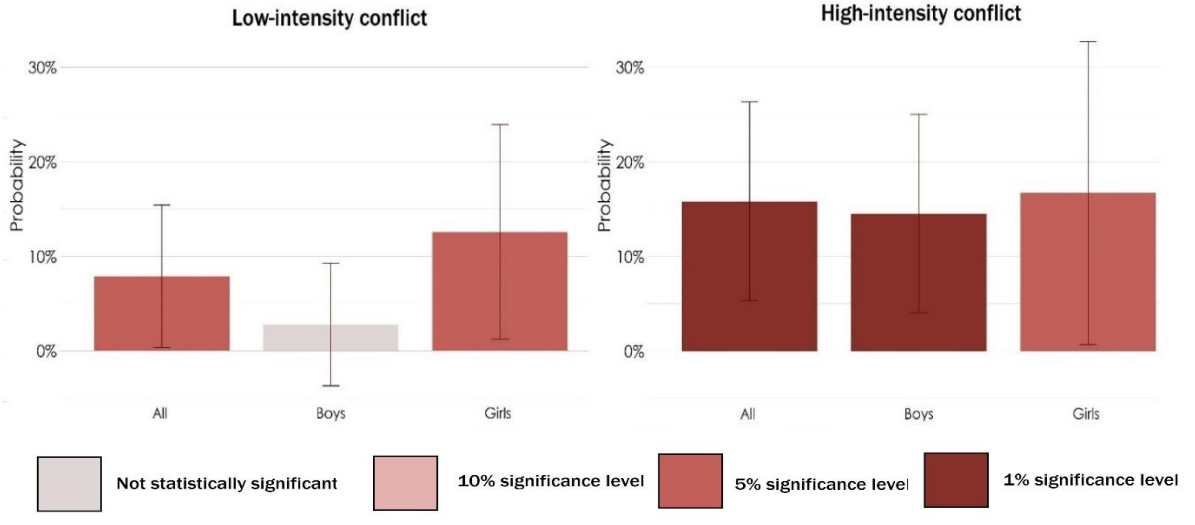
Conflict appears to be responsible for the worsening child nutritional status in Iraq. The risk of stunting and severe stunting was significantly higher in the most conflict-intense regions. Despite the persistently high prevalence of stunting in children 0-59 months in the country, there is a lack of information about the prevalence and risk factors associated with stunted and severely stunted children, especially in areas exposed to prolonged violence.

Figure 18. Stunting rates based on height-for-age z-scores by conflict-related migration status, Iraq



Source: ESCWA calculations based on data from Iraq LSMS 2012.

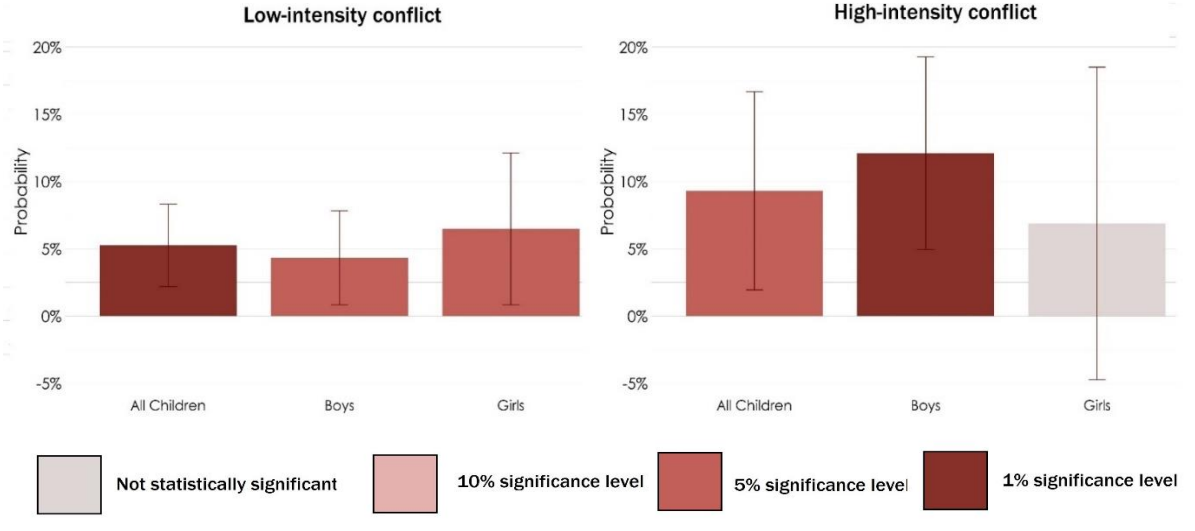
Figure 19. Marginal effect of armed conflict on the probability of stunting, Iraq[57]



Source: ESCWA calculations based on data from Iraq MICS 2000, 2006 and 2011; and LSMS 2007 and 2012.

Notes: The bars show the estimated effect of armed conflict on the probability of stunting for children aged 0-59 months, including separate effects for girls and boys. Those probabilities are calculated using a linear probability model for stunting. Stunting is defined as having a z-score of height for age under -2 standard deviation from the WHO Child Growth Standards median. Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths since conception and up to 68 months.

Figure 20. Marginal effect of armed conflict on the probability of severe stunting, Iraq[58]



Source: ESCWA calculations based on data from Iraq MICS 2000, 2006 and 2011; and LSMS 2007 and 2012.

Notes: The bars show the estimated effect of armed conflict on the probability of severe stunting for children aged 0-59 months, including separate effects for girls and boys. These probabilities are calculated using a linear probability model for severe stunting (see annex for more details). Severe stunting is defined as having a z-score of height-for-age under -3 standard deviation from the WHO Child Growth Standards median. Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths since conception and up to 68 months.

The results suggest that the likelihood of stunting increased for the average child aged 0-59 months exposed to both lower- and higher-intensity conflict.[59] There are substantial deficits in children's nutritional status in the country, most likely due to poor nutritional content of diets, inadequate feeding practices, inaccessibility to health services, and poor water and sanitation provision. While stunting rates have declined at the national level, the decline has not been uniform across regions of the country, with more conflict-intense areas suffering from high prevalence of stunting and severe stunting that appears to be directly associated with the intensification of conflict. Such regional differences will further exacerbate inequalities among children. Progress in the improvement of children's growth and nutrition needs in more conflict-intense areas of the country should be a priority of the local and national authorities.

2. Conflict and early childhood nutrition in Yemen

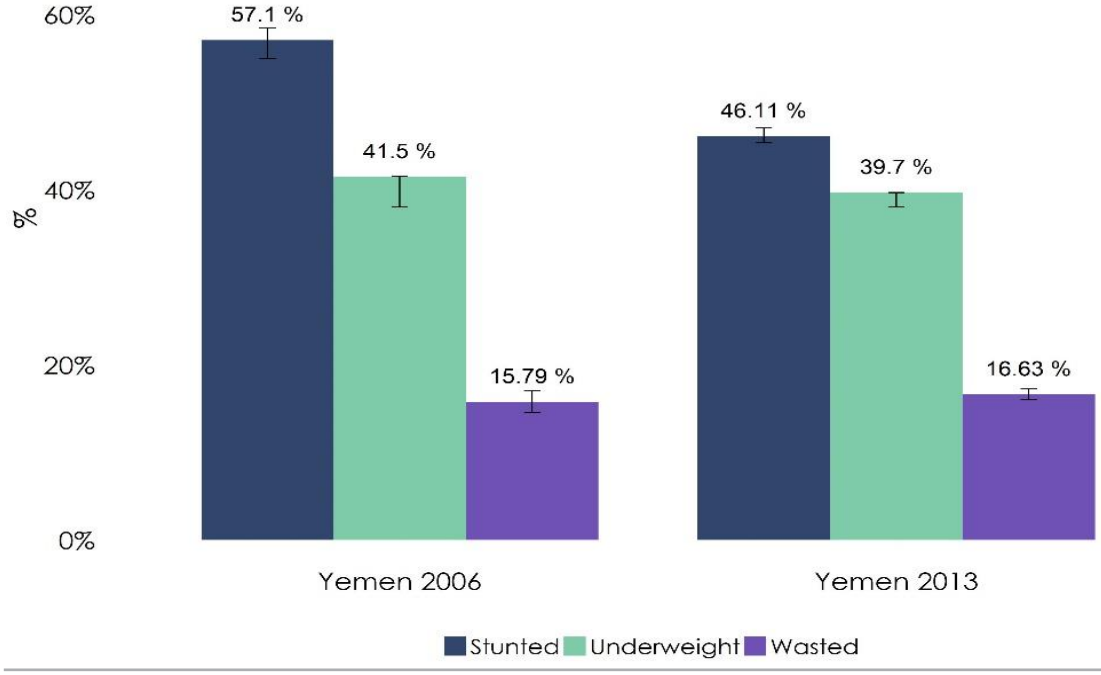
Even before conflict broke out in December 2011, Yemen ranked as the one of the most food-insecure nations in the world. Lack of agricultural land and severe water scarcity make Yemen dependent on imports for most food and water requirements. With poverty levels among the highest in the world, a large proportion of the population is dependent upon humanitarian assistant for most basic food needs. Millions of people in Yemen are on the brink of famine, the most vulnerable being mothers and children.

Yemeni children suffer from high rates of both acute and chronic malnutrition. Malnutrition is directly related to inadequate child feeding practices, including scatter breastfeeding, and poor nutrition due to the low consumption of animal proteins and large deficiencies in micronutrients. Mothers appear to transmit their poor nutritional status onto their children. The conflict exposes households to unprecedented vulnerabilities, namely, social unrest and outbreaks of violence; increased food and fuel prices; and reduced access to markets and food in large areas of the country. Yemen is fully dependent on international markets for food, remaining highly vulnerable to international events. The conflict has seriously eroded the purchasing power of the population, especially among the poor. Figure 21 shows the percentage of stunted, wasted and underweight children 0-59 months of age in Yemen in 2006 and 2013.

Since March 2015 and the recent intensification of violence, the situation has become dismal, with more than 25 per cent of the population considered to be in a state of emergency, and another 36 per cent of the population in a state of crisis, according to the integrated food security phase classification (IPC).[60] The most affected areas are those facing higher conflict intensity, with the worst-affected governorates being Lahej, Taiz, Abyan, Sa'ada, Hajjah, Hodeidah and Shabwah.[61] As the conflict continues to intensify, the nutrition situation will continue to deteriorate.

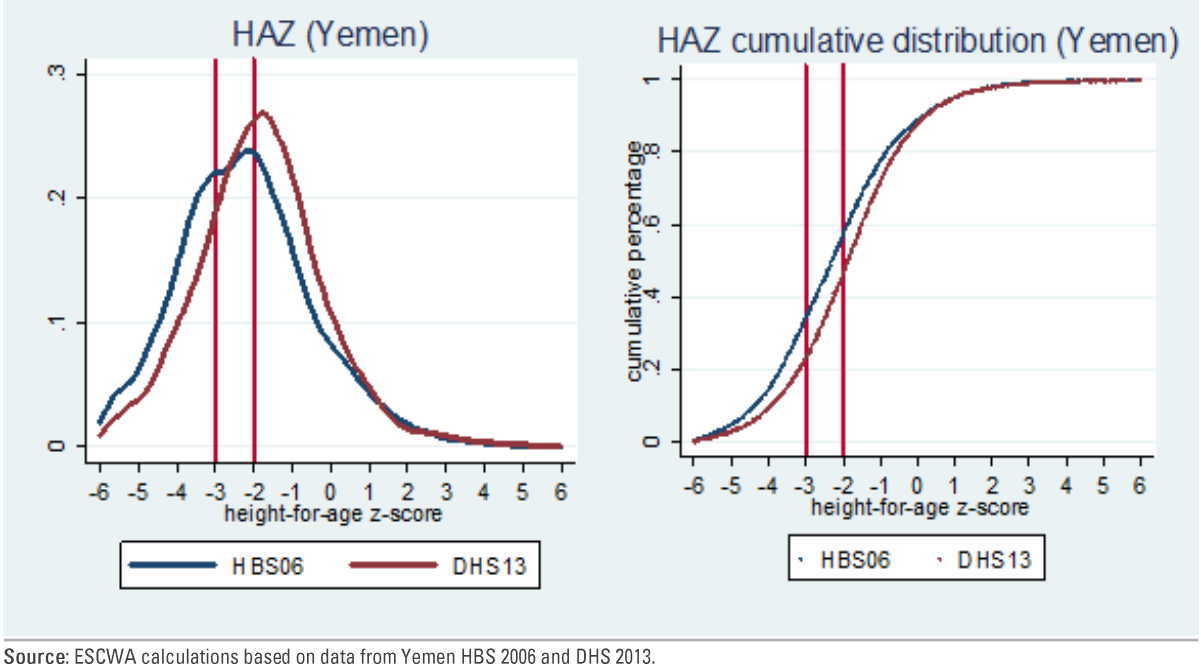
The current section examines the impact of conflict on nutritional outcomes of children in Yemen, using household survey microdata from 2006 and 2013, in addition to regional conflict intensity. While those surveys do not capture the most intense periods of the Yemeni conflict, the data still provide significant insights about children in conflict-ridden areas.

Figure 21. Stunted, wasted and underweight children 0-59 months of age, Yemen, 2006 and 2013



Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.

Figure 22. Stunting rates based on height-for-age z-scores, Yemen, 2006 and 2013

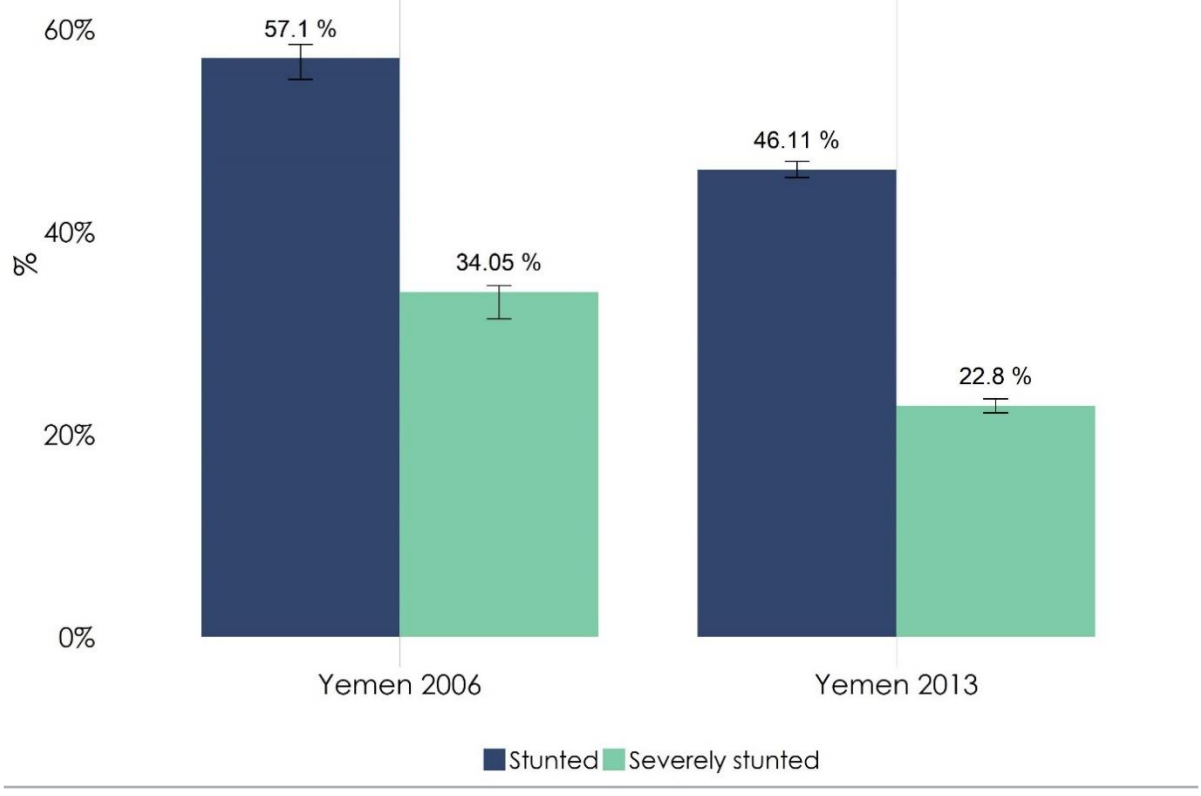


Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.

Figure 22 shows the distribution of stunting for 2006 (blue line) and 2013 (red line). More indicative of the stunting status of the country is the second panel, which shows the cumulative proportion of children whose height for age falls below a certain number. Any shift to the right of the curve indicates better height-for-age measures and, therefore, less incidence of stunting. The proportion of stunted children in Yemen in 2006 was 57 per cent (where the blue line crossed the height-for-age mark of -2) while that proportion remained high in 2013, at 46 per cent (where the red line crossed the -2 mark). Given the intensity of the current conflict, an increase in stunting levels in the country is expected. While some moderate progress was made between 2006 and 2013 to reduce stunting prevalence in Yemen, malnutrition rates remain stubbornly high. The intensification of the Yemeni conflict since 2015 has most likely, at least partially, reversed any progress. Today, the country is on the brink of famine.

The most severe cases of stunting diminished from 2006 to 2013 but remained at very high levels. Yemen still ranks among the countries with the highest prevalence of stunting and severe stunting in the world. Figure 23 shows the change in stunting and severe stunting prevalence between 2006 and 2013.

Figure 23. Stunting and severely stunting rates, Yemen, 2006 and 2013



Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.

Table 4. Stunting rates by governorate, Yemen, 2006 and 2013 (percentage)

Governorate	Yemen 2006					Yemen 2013				
	Stunted		Severely stunted		Population aged 0-59 months	Stunted		Severely stunted		Population aged 0-59 months
	Mean	Standard deviation	Mean	Standard deviation		Mean	Standard deviation	Mean	Standard deviation	
Ibb	76.04	42.71	47.65	49.97	10.11	47.53	49.97	22.96	42.08	10.76
Abyan	36.27	48.13	14.65	35.40	1.85	23.89	42.68	7.58	26.50	1.99
Sana'a City	43.83	49.64	21.13	40.84	7.91	29.84	45.79	10.21	30.30	8.03
Al Bayda	72.39	44.75	41.53	49.32	2.64	35.33	47.83	17.18	37.74	4.21
Ta'izz	44.80	49.76	21.19	40.89	11.57	46.51	49.91	19.04	39.29	12.59
Al Jawf	77.78	41.63	61.68	48.68	1.89	55.38	49.76	31.34	46.44	0.91
Hajjah	37.09	48.34	21.37	41.02	7.95	58.10	49.37	33.37	47.18	6.46
Al Hudayda	55.82	49.68	33.35	47.17	12.46	47.06	49.95	24.35	42.95	12.68
Hadramout	33.06	47.08	16.68	37.31	4.99	29.98	45.86	12.93	33.58	4.64
Dhamar	71.33	45.25	46.17	49.88	9.14	58.86	49.24	35.40	47.85	8.05
Shabwah	47.55	50.01	27.68	44.80	2.15	28.84	45.34	15.94	36.63	1.96
Sa'dah	64.38	47.92	37.81	48.52	4.42	57.67	49.45	34.71	47.65	2.94
Sana'a	66.56	47.26	47.51	50.03	4.77	48.01	49.99	23.21	42.24	5.83
Aden	32.99	47.08	15.14	35.89	2.13	24.79	43.23	6.47	24.63	2.60
Lahj	60.34	49.00	35.65	47.97	2.64	38.82	48.78	15.01	35.75	2.56
Ma'rib	65.61	47.57	36.24	48.14	1.06	40.32	49.09	19.35	39.54	0.79
Al Mahwit	80.89	39.36	51.42	50.03	2.22	54.34	49.84	27.51	44.69	3.23
Al Mahrah	21.60	41.24	10.32	30.48	0.43	24.00	42.78	9.34	29.14	0.39
Amran	75.83	42.84	53.86	49.89	4.65	57.33	49.49	29.46	45.61	4.23
Al Dala	63.71	48.14	36.82	48.29	2.68	51.28	50.02	26.49	44.16	2.47
Raimh	60.71	48.91	35.51	47.93	2.35	61.94	48.58	36.22	48.09	2.67
Yemen	**57.10**	**49.5**	**34.0**	**47.39**	**100.00**	**46.11**	**49.85**	**22.80**	**41.96**	**100.00**

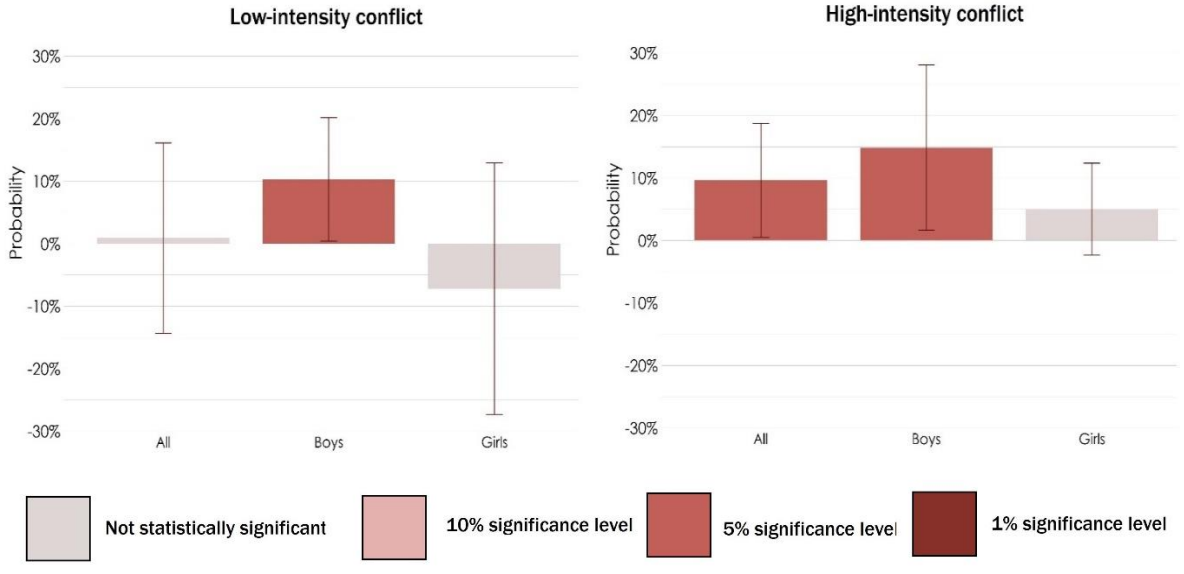
Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.

The nutrition indicators in the country registered a stark heterogeneity, with stunting rates ranging from 30 per cent to 62 per cent of children across different governorates. Table 4 shows the prevalence of stunting across governorates.

Exploiting regional variations of conflict intensity, we estimate the effect of conflict on the probability of being stunted for children aged 0-59 months. The results are summarized in figure 24. We see how conflict leads to an increase in the probability of stunting, particularly in regions of higher conflict intensity. Although the detrimental effects were felt by both girls and boys, they seem to have been more severe in the case of boys.

Figure 25 shows the marginal effect of armed conflict on the probability of severe stunting in children, by sex and level of conflict intensity. The likelihood of severe stunting increased, especially for children exposed to more intense violence at the threshold of 25 or more deaths. The increase affected girls and boys in similar percentages.

Figure 24. Marginal effect of armed conflict on the probability of stunting, Yemen[62]



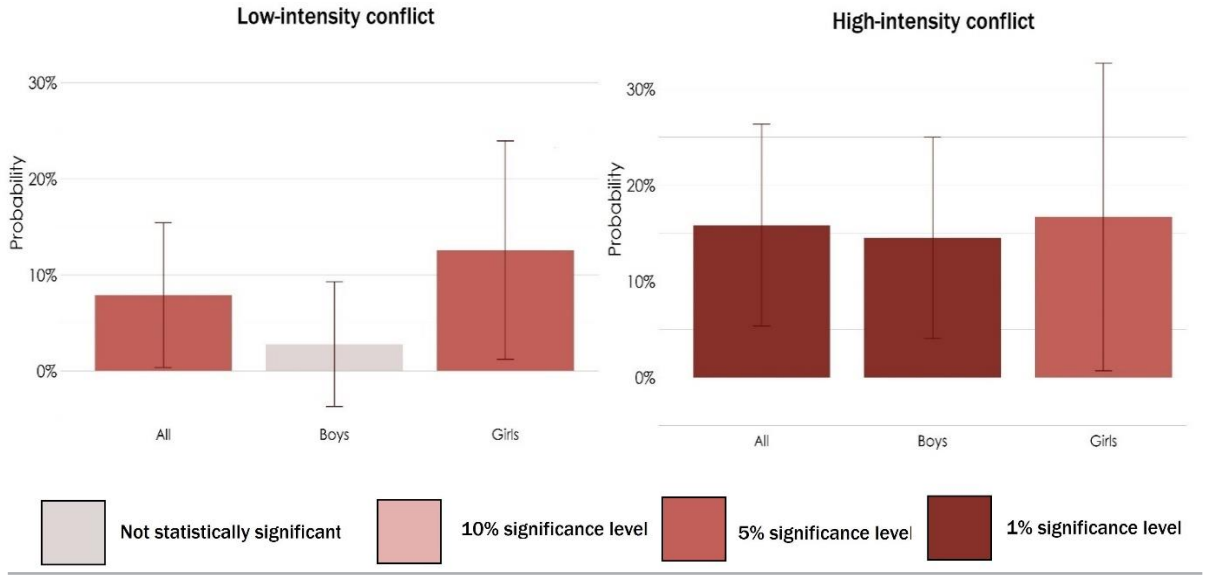
Source: ESCWA calculations based on data from Yemen MICS 2006, HBS 2006 and DHS 2013.

Notes: The bars show the estimated effect of armed conflict on the probability of stunting for children aged 0 to 59 months, including separate effects for girls and boys. Those probabilities are calculated using a linear probability model for stunting (see annex). Stunting is defined as having a z-score of height for age under -2 standard deviation from the WHO Child Growth Standards median. Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths since conception and up to 68 months.

Because the risk of famine has been increasing in Yemen, following increased levels of conflict after 2015, we can expect poorer health outcomes for children in the short and medium term, and for generations to come, because the intergenerational transfer of health capital is closely linked with intergenerational transmission of poverty. The international community should give urgent attention to breaking the intergenerational cycle of malnutrition.

Famine leaves debilitating costs for the population that endure for generations, perpetuating a cycle of poverty and aid dependency. In Yemen, the extended periods of malnutrition that children have been subjected to in the lead-up to famine can result in an increase in the prevalence of stunting, poorer health and arrested human capital accumulation. The impact on countries afflicted by food shortages is generational: large numbers of people unable to reach their full potential, resulting in lost incomes and fewer opportunities. To improve the nutritional status of Yemeni children, urgent action needs to be taken against famine. Furthermore, pro-poor programmes should be implemented, especially in conflict-ridden regions, to arrest the effects of famine and promote adequate child development.

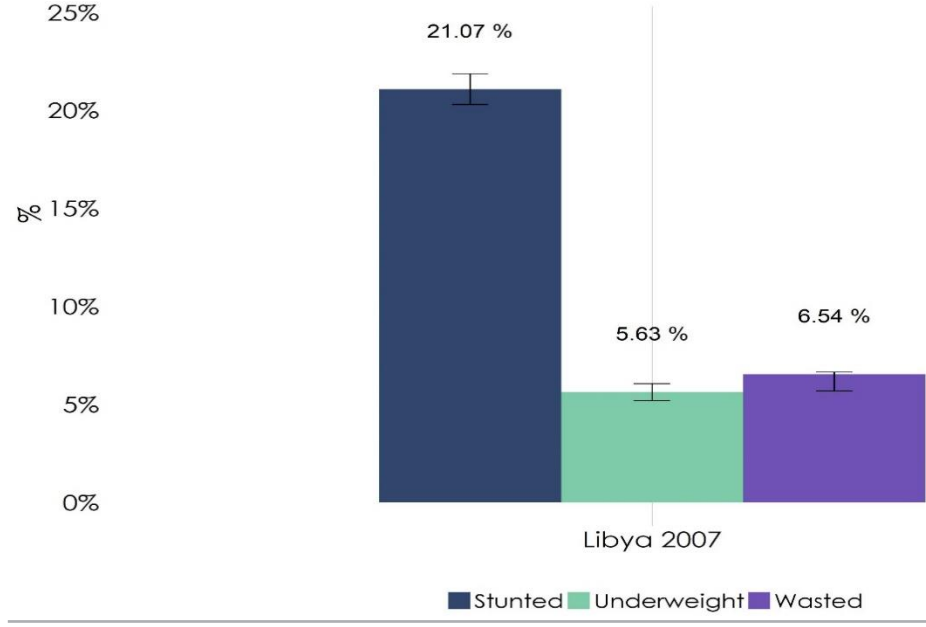
Figure 25. Marginal effect of armed conflict on the probability of severe stunting, Yemen[63]



Source: ESCWA calculations based on data from Yemen MICS 2006, HBS 2006 and DHS 2013.

Notes: The bars show the estimated effect of armed conflict on the probability of severe stunting for children aged 0 to 59 months, including separate effects for girls and boys. Those probabilities are calculated using a linear probability model for severe stunting (see annex). Severe stunting is defined as having a z-score of height for age under -3 standard deviation from the WHO Child Growth Standards median. Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths since conception and up to 68 months.

Figure 26. Stunted, wasted and underweight children 0-59 months of age, Libya, 2007



Source: ESCWA calculations based on data from Libya PAPFAM 2007

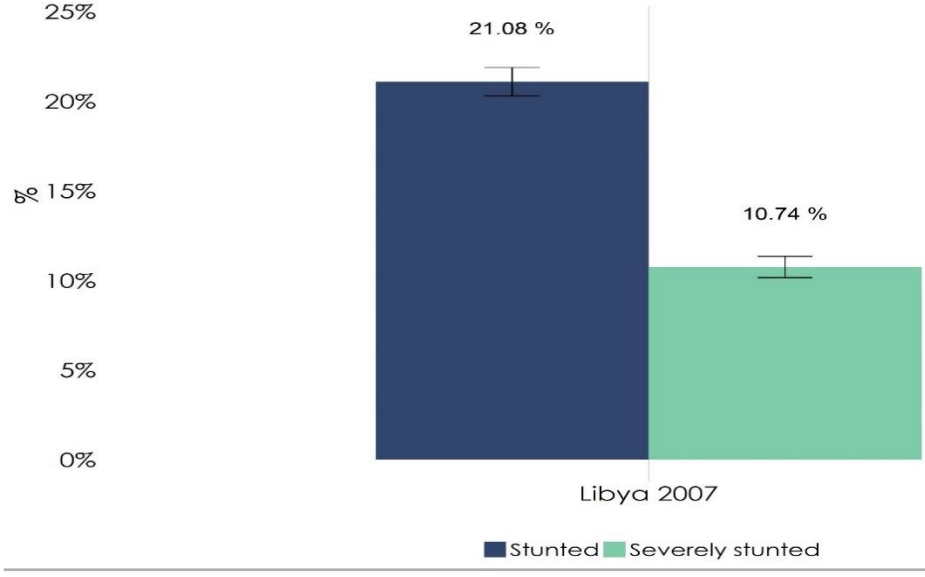
3. Conflict and early childhood nutrition in Libya

Stunting rates in Libya are high despite the presence of food subsidies across the country. In the past, public health and nutrition quality problems drove stunting rather than poverty and the ability to afford food. However, the episodes of armed conflict in recent years have affected the ability of the State to provide public health services and increase the quality of food available. Figure 26 shows the percentage of stunted, wasted and underweight children 0-59 months of age in Libya in 2007.

Libya had medium levels of stunting and medium levels of wasting already in 2007. That worrisome trend could well have been further deteriorated with the intensification of conflict since 2011. Figure 27 shows the stunting and severely stunting rates for children 0-59 months of age in Libya in 2007.

While the causes of malnutrition are numerous and multifaceted, there is no denying that the intensification of the Libyan conflict may have played a significant role in the deterioration of child nutritional status. The immediate determinants of malnutrition in Libyan children appear to be associated with food insecurity and the deterioration of health-service provision. In the human capital-formation life cycle framework, those health shocks experienced in early life will carry lifelong consequences. The deterioration of nutritional outcomes coincides with sensitive periods in the evolution of health and cognitive skills. The Government of Libya and the international community should give special attention to developing policies aimed at improving the coping mechanisms against the effects of conflict on family income, child and maternal nutrition, stress and health.[64]

Figure 27. Stunting and severely stunting rates, Libya, 2007



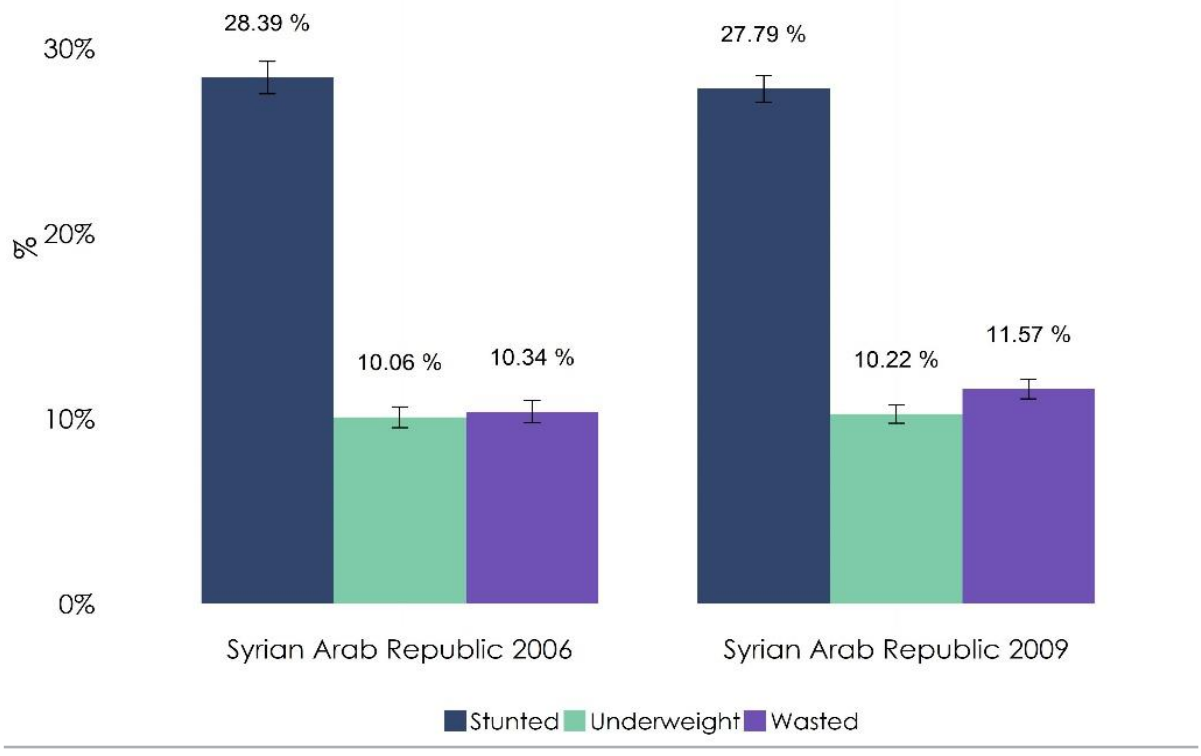
Source: ESCWA calculations based on data from Libya PAPFAM 2007.

4. Early childhood nutrition in the Syrian Arab Republic (pre-conflict)

Nutritional outcomes for children in the Syrian Arab Republic were troublesome even before the start of conflict in 2011. The country had a stubbornly high prevalence of stunting, wasting and underweight among children 0 to 59 months of age. The high prevalence of malnutrition was most likely associated with the poor quality of diet. The 2015 World Bank report on early childhood development in the region described a large cyclical component to malnutrition in the Syrian Arab Republic during the pre-conflict period. Since then, the destruction of livelihoods, food insecurity and forced migration have worsened the situation for Syrian children.[65] Figure 28 shows the percentage of stunted, wasted and underweight children 0-59 months of age in the Syrian Arab Republic in 2006 and 2009.

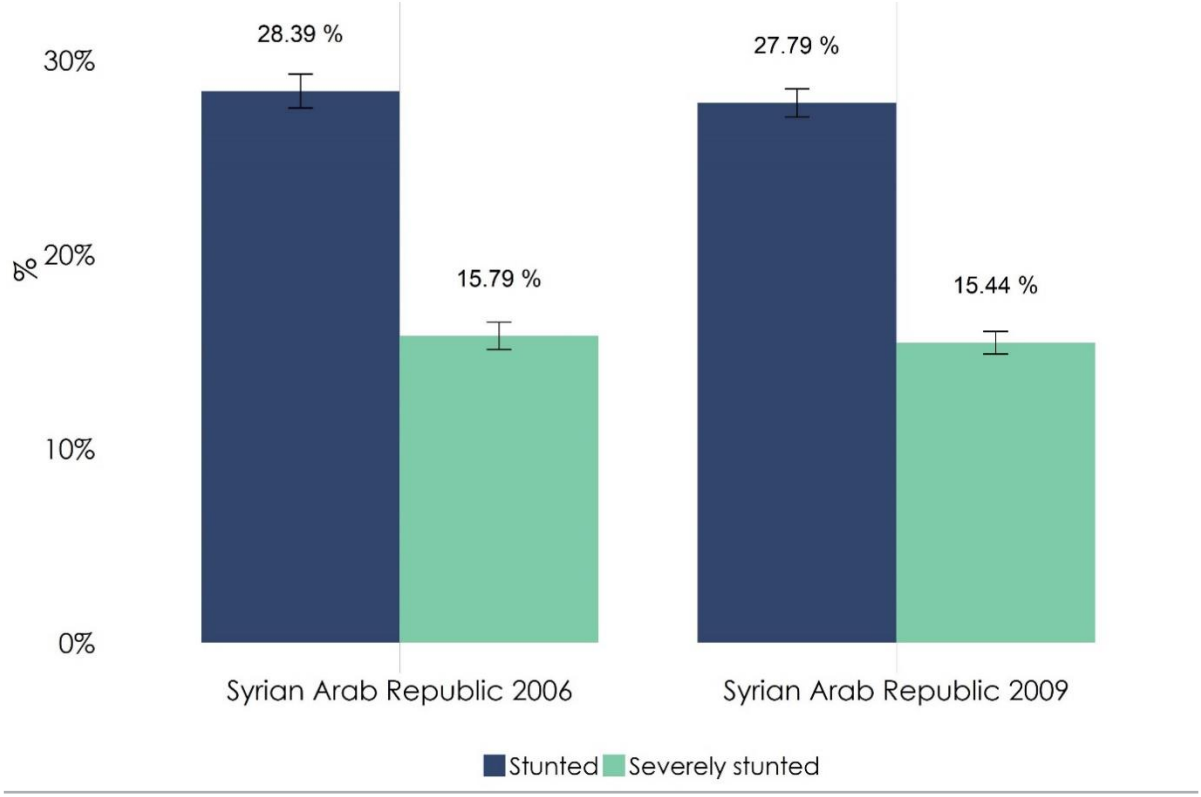
Severely stunting rates appear to have been stubbornly high for children 0-59 months of age in the Syrian Arab Republic in the pre-conflict period, affecting at least 15 per cent of children in that age group. Figure 29 shows the stunting and severely stunting rates in the Syrian Arab Republic during those two years, when almost no progress was achieved in reducing the prevalence of stunting.

Figure 28. Stunted, wasted and underweight children 0-59 months of age, Syrian Arab Republic, 2006 and 2009



Source: ESCWA calculations based on data from the Syrian Arab Republic MICS 2006 and PAPFAM 2009.

Figure 29. Stunting and severely stunting rates, Syrian Arab Republic, 2006 and 2009



Source: ESCWA calculations based on data from the Syrian Arab Republic MICS 2006 and PAPFAM 2009.

After six years of conflict, Syrians are facing the largest humanitarian crisis in the world, with grave consequences for children. The nutritional status of children continued to drastically deteriorate after 2011. It is highly likely that the Syrian conflict has led to a lost generation of children, which will have missed the sensitive and critical windows for investments in health and human capital. The human capital losses associated will be the heftiest toll of the conflict, consequences that will be felt in the region and beyond for generations to come.[66]

E. Conclusion

Evidence from the conflicts in Iraq, Libya, the Syrian Arab Republic and Yemen suggests that those conflicts have had important consequences on human development and life cycle, health and human capital formation. Although the evidence in relation to child

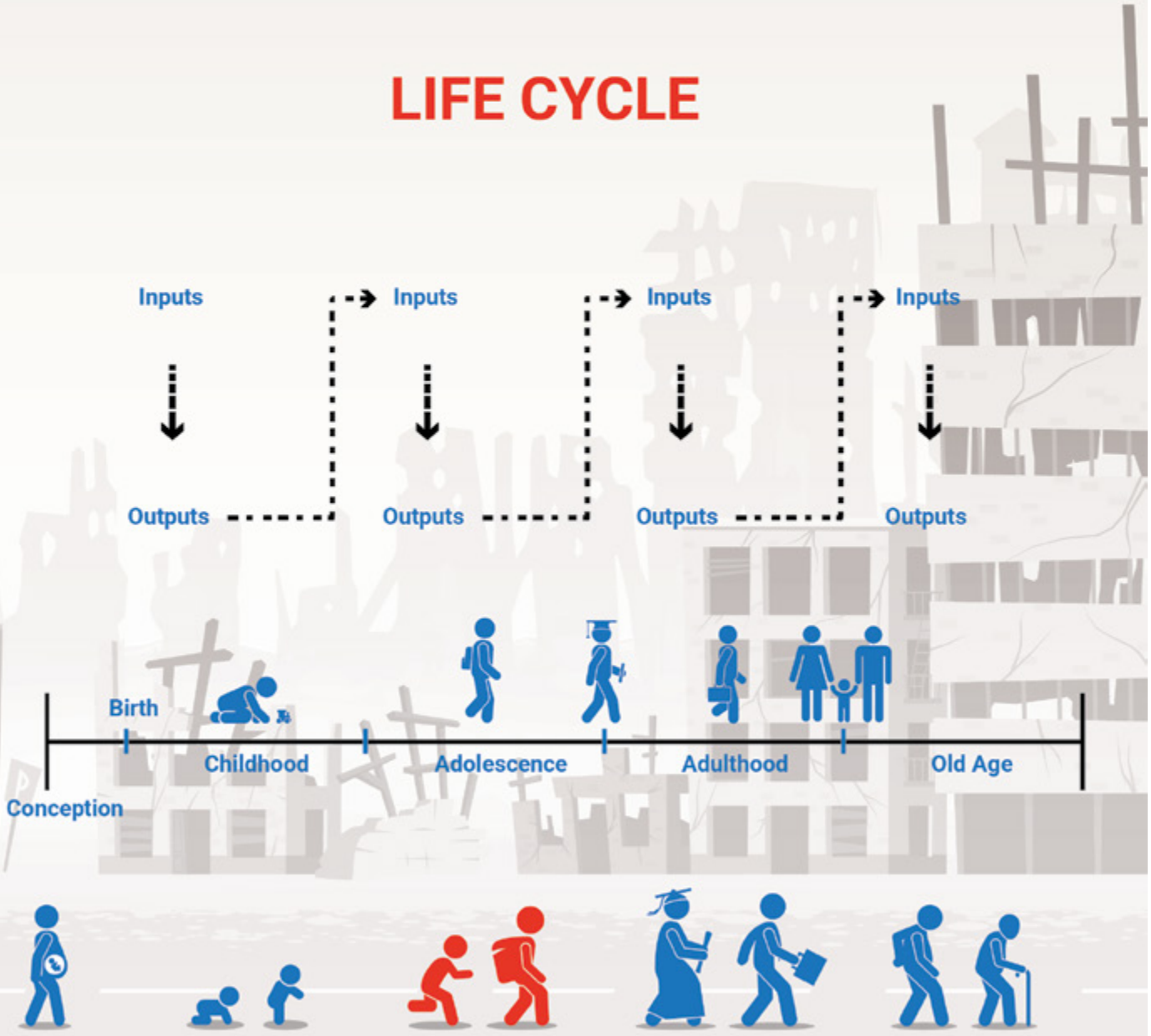
mortality remains inconclusive, clear and significant effects of conflict were found on nutritional outcomes of children in Iraq and Yemen. Stunting appears to be an even more damaging effect of conflict on children, as it will most likely impair all future developmental outcomes. Stunting also brings about a more troubling matter, as stunted parents are likely to carry their disadvantages for generations to come, contributing to self-perpetuating intergenerational deprivation.

Conflict in the Arab region has exposed a large proportion of children in early stages to disadvantage. In the absence of critical interventions that help even out opportunities, inequalities will be reinforced. The present chapter explored how conflict has affected children in early stages and presents suggestive evidence of how the conflicts in the region could be putting children at risk in terms of development. Food insecurity, the deterioration of family resources and the reduction in family investments in children will most likely have devastating consequences on children in those countries. The effects on human development will be the most devastating consequences of the conflicts in the Arab region for generations to come. Countries in conflict across the region are urged to intervene to mitigate the impact of malnutrition on children to promote sustainable economic and social development.

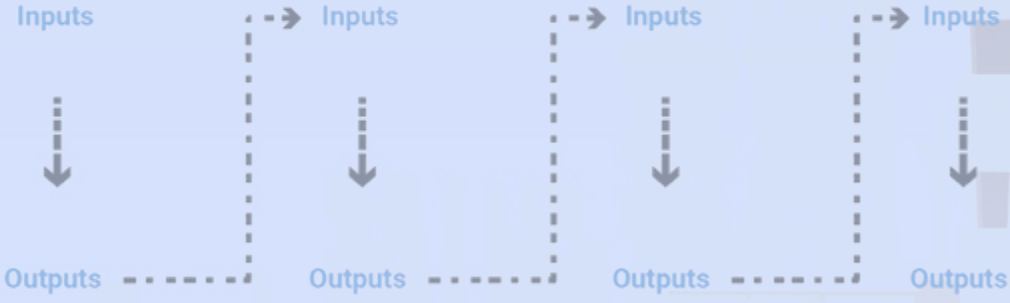
In the life cycle skill-formation model, the foundations of success in later life are, for the most part, built in the early years. The present report brings urgent attention to the needs of children in the countries in conflict in the Arab region, as they will likely carry the most devastating consequences of the shock. Armed conflict appears to have contributed to the deterioration of child health, thus impairing adequate cognitive and socioemotional development.

These findings have policy implications. While the conflicts in the region appear to have had permanent effects on child development, urgent interventions are required to mitigate those effects, at least partially. Famine should be prevented at all costs in those countries, especially in the Syrian Arab Republic and Yemen, where children appear to be most affected by conflict. Social safety nets can help exposed families improve their coping strategies against hunger and financial distress. Policies aimed at improving care and feeding practices, as well as adequate stimulation in early years, need to be set in place, most importantly in conflict-afflicted areas.

3. The Impact of Conflict on School Attainment and Progression



LIFE CYCLE


Inputs
Inputs
Inputs
Inputs
Outputs
Outputs
Outputs
Outputs


Birth
Childhood
Adolescence
Adulthood
Old Age
Conception

3. The Impact of Conflict on School Attainment and Progression

A. Introduction

Recent evidence emphasizes the detrimental impact of conflict on education attainment and progression. Evidence based on household survey data suggests that school-age children who have been exposed to conflict have lower educational achievement, are more likely to drop out of school and complete fewer years of education.

Most of the literature about the impacts of conflict on education has focused on differences in attainment across cohorts. Cross-national analyses find that conflict reduces enrolment and attendance.[67] Evidence from microdata confirms those findings, with case studies for Bosnia,[68] Tajikistan,[69] Rwanda,[70] Cote d'Ivoire,[71] and Colombia.[72]

Evidence on the ways conflicts affect quality of education are scarcer. Education quality could be affected through reductions in the supply of schools, schools operating intermittently and/or lack of qualified teachers. Migration also can reduce the quality of learning in host communities.[73] Cross-national studies suggest that conflict has a detrimental effect on the quality of learning.[74] Duque (2017) finds that conflicts inhibit cognitive and social development, with important negative consequences to learning.

While the vast majority of papers find causal evidence of the impact of conflict on school attainment, there appears to be more resilience in primary education. Lai and Thyne (2007) and Chen, Loayza and Reynal-Querol (2008) find stronger negative effects of conflict for children of secondary-school age. Older children are more likely to become child soldiers,[75] drop out of schools to join the labour force,[76] or drop out of school to help with household chores. From the supply side, teachers can be targets of direct violence, leading to reduced educational provision and quality,[77] while school destructions are also associated with a decline in attendance.[78]

In addition to reducing skill formation, conflict has detrimental consequences on future employment and earnings. In many conflict settings, differential impacts on educational outcomes are observed by gender, with girls faring worse in most cases. Lower educational attainment also has been associated with higher vulnerability and higher risk of deprivation and multidimensional poverty. Evidence suggests that there are long-term consequences of conflict on skill formation, and that the burden is disproportionately borne by the poor during times of conflict. The present chapter examines how exposure to armed conflict has affected schooling investments of children in Iraq and Yemen.

Before 2011, almost all children in the region were enrolled in primary school. Literacy rates were 95 per cent for those aged 15-24.[79] Since then, many children have dropped out of school in Iraq, Libya, Syrian Arab Republic and Yemen. The present chapter focuses on education attainment and progression for school-aged children and youth (aged 6-17). Education is often disrupted because of conflict, with generations of children likely to remain out of school, with grim prospects for their future. Conflict-afflicted countries in the region are likely to have generations of children without any formal schooling or with only a poor-quality education. However, not only those children directly touched by conflict will suffer its detrimental impact. Those disproportionally large numbers of younger children and young adults among displaced populations could crowd local children out of schools.

Formal schooling is of the foremost importance for children in the process of skill formation during different stages of life. Civil conflicts, however, often compromise the availability and quality of schools. In war-torn countries, schools are often destroyed; teachers and students are forced to flee violence; and/or resources are diverted from the education sector to other sectors, reducing the availability and quality of learning.

Research in economics suggests that children are often forced to drop out of school as a coping mechanism to transitory poverty shocks experienced by their families, or because they are forced to migrate. It is likely that children forced to drop out of school, or who have never enrolled in formal schooling, will remain out of school during the years that follow. In the life cycle skill-formation framework, critical investments in skills made during childhood and adolescence are key determinants of lifetime success. The frequency and intensity of conflicts in the Arab region have most likely affected schooling trajectories of children in those conflict-afflicted countries, indicating large social costs that violence has on human development. While most macrolevel studies of the impact of conflict on schooling outcomes of children found negligible impacts,[80] microlevel data evidence suggests important and long-term negative effects of conflict on education outcomes.[81]

Educational trajectories are particularly compromised by exposure to conflict. Attendance declines because children drop out of schools or never enrol. The years children spend in school decline.[82] There is an increase in the likelihood of the need to repeat years, reducing grade progression.[83] Justino (2011) provides a summary of how conflicts affect schooling trajectories and the accumulation of skills for children and youth, severely decreasing their labour market prospects. Justino, Leone and Salardi (2014) find evidence linking poor schooling performance and low labour-market prospects to the incidence of conflict and conflict intensification.

There are severe supply barriers to education in conflict-afflicted countries. The destruction of infrastructure makes access to schools more difficult. Schools are also often destroyed or used for other purposes, such as military bases, or as shelters for the internally displaced. Moreover, conflicts reduce the availability of teachers.

Still, beyond those supply-side challenges, conflict can curb demand for education. In a review of the literature, Justino (2016) discusses different mechanisms through which that occurs. Youth and children might be coerced or conscripted by armed groups, or might join voluntarily, thus dropping out of school. Student safety might be at risk as schools can be direct targets of violence, forced recruitment and sexual assault, especially where schools, students and teachers are targeted.[84]

Conflicts also compromise the school performance of children. Exposure to violence can prompt health hazards in early childhood, which can permanently affect the ability of children and youth to learn and perform well in school. Poor performance can cause children to drop out of school prematurely if they perceive lower returns in educational investment.[85] The transitory poverty shocks produced by conflict shift the roles and economic responsibilities among household members. As household income falls, more household members might have to participate in the labour market, shifting economic and household responsibilities between children and adults, therefore reducing the number of hours available for school and learning. Conflicts also reduce labour-market prospects, leaving little incentive to pursue school over work.[86]

Education systems in conflict-affected countries must be resurrected. Formal schooling during critical life stages is crucial for determining better lifelong outcomes. Children who are not in school today in the region will most likely face worse earning prospects than children who remained in school, with the reduction in earning potential of each individual child having severe repercussions for the economies of the region. Children who interrupt their educational trajectories will most likely rely largely on government assistance or have higher rates of criminal behaviour and other problems.

B. The impact of conflict on school trajectories in Iraq

1. School enrolment in Iraq

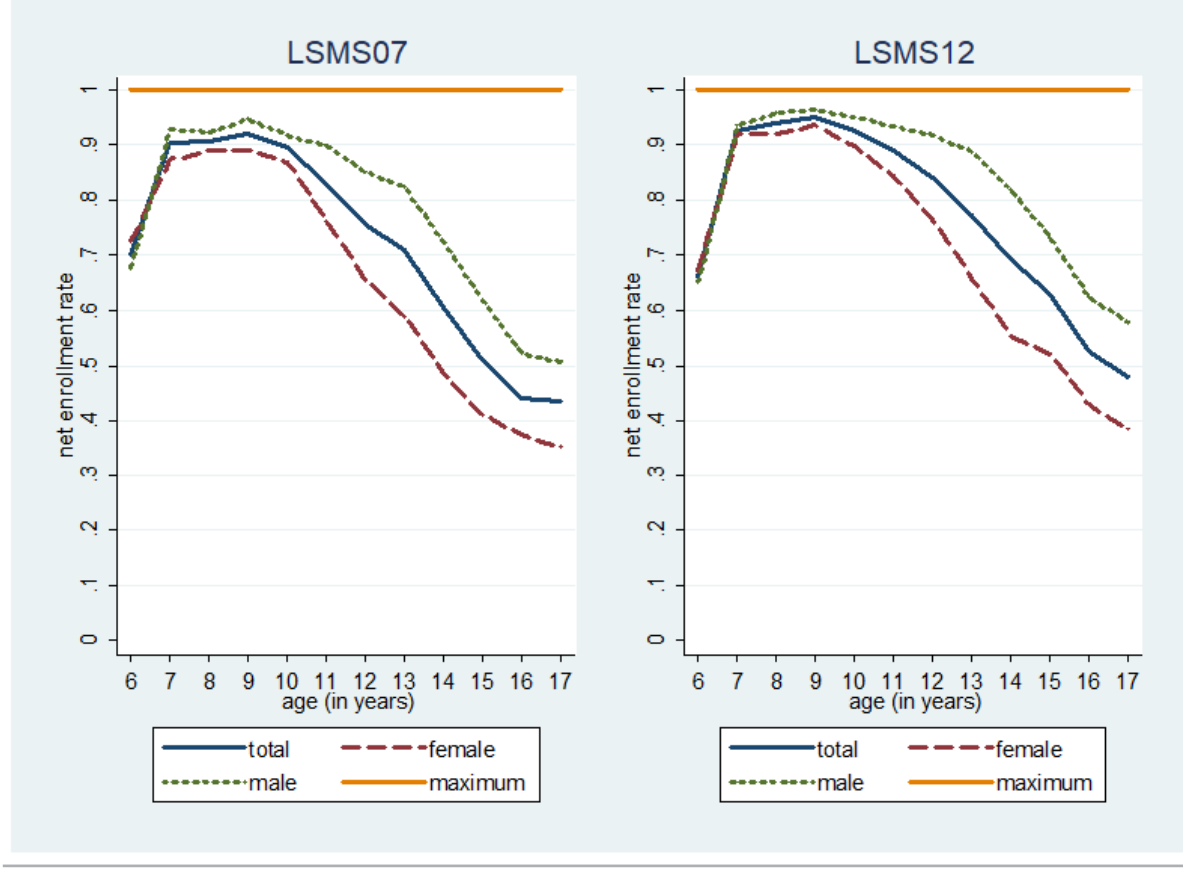
Since the 2003 invasion by the coalition led by the United States, the education sector has suffered major setbacks because of lack of resources, politicization, security threats and corruption. With the intensification of conflict, schools were damaged and destroyed. Ongoing violence is posing new challenges in conflict-intense governorates. In an insecure atmosphere where schools have been targeted, many parents must choose between education and safety for their children, with girls once again the most affected.[87]

Enrolment rates for children of primary-school age are below 90 per cent and below 70 per cent for children of secondary-school age. Figure 30 presents educational attainment rates for girls and boys aged 6-17. The horizontal axis represents age; the vertical axis represents the percentage of children enrolled in school. The figure shows enrolment rates at every age for children in primary and secondary schooling.

There are several observations regarding the first set of results: For most age ranges, there are large differences between male and female aggregate enrolment outcomes, the differences frequently in favour of males and statistically

significant. Dropout rates start increasing early, at about age 12, with more substantial differences for males and females, with females dropping out at earlier ages. The spike observed in enrolment rates between the ages of 6 and 7 reflects delayed enrolment. Enrolment rates improved slightly between 2007 and 2012, to a lesser degree for girls. The national enrolment rate never reached 100, leaving open the possibility that a small but non-negligible percentage of children never actually enrol in school. Delayed entry and school dropout leads to an ''inverted-U'' age enrolment profile. That pattern is of concern, because evidence suggests that children who enter late are also more likely to exit early. After age 10, the opportunity costs of schooling increase and children are more likely to leave school to join the labour force or devote a larger share of their time to household work, reducing the overall years of education those children will acquire.

Figure 30. Age-enrolment profiles, Iraq, 2007 and 2012



Source: ESCWA calculations based on data from Iraq LSMS 2007 and 2012.

2. Maximum schooling, average years in school and average years of schooling in Iraq

In addition to enrolment rates, average years in school and average years of schooling are examined. Average years in school are obtained by cumulatively adding age-specific net enrolment rates. That summation yields the expected or average number of years that individuals will spend in school by a given age, according to the enrolment patterns currently observed in the country.[88]

Figure 31 shows the average years in school and average years of schooling for children aged 6-17 in Iraq. The horizontal axis represents age in years; the vertical axis represents years of schooling. The green line represents the maximum years of schooling a child will attain at a given age and allows measurement of how children are faring relative to their actual years of schooling (red line) and their actual years in school (blue line). If all children of a given age were enrolled in school, and all children were successfully progressing in school as they aged, then average years in school and average years of schooling should be equal to the 45-degree line. The green line indicates that, at age 7, the maximum years of schooling a child will have are equal to 1. At age 8, the maximum years of education will be equal to 2, and so forth, up to 12 by age 17.

Average years in school are the net enrolment rate expressed as a proportion. On average, by the time children were 6 years old, they had spent 0.66 years in school in Iraq in 2012 relative to 0.7 in 2007. Both average years in school and average years of schooling are proxies for education quality. Those indicators appear to have deteriorated across periods, with the red and blue lines dropping, for all ages, further away from the green line that indicates the maximum years of schooling for every age. Children in Iraq acquired fewer years of schooling on average, as well as staying in school for shorter time spans. There were also substantial differences in how effectively the educational system of Iraq turned children's time in school into actual learning (grades completed), with the gap increasing.

Average years in school depicted in figure 31 by the blue line represents the expected or average number of years that an individual will spend in school by a given age, according to the enrolment patterns currently observed in the country. That measure is another way to graphically represent the age-specific net enrolment rates, as it is the cumulative sum of enrolment rates. It represents the number of years a child will spend in school, with no assumptions about school progression. Average years of schooling, represented by the red line, represent the average years of education a child will acquire at every age. In theory, in an effective schooling system, every year spent in school should translate into an effective year of education acquired. However, if there are a lot of repeated years, those indicators will differ.

The blue line measures average years in school, while the red line measures average years of schooling. It should be noted that, at age 6, the gap between those two segments was relatively small during the initial period. However, a gap was clearly visible because of

the non-trivial delayed entry observed in Iraq during both 2007 and 2012.

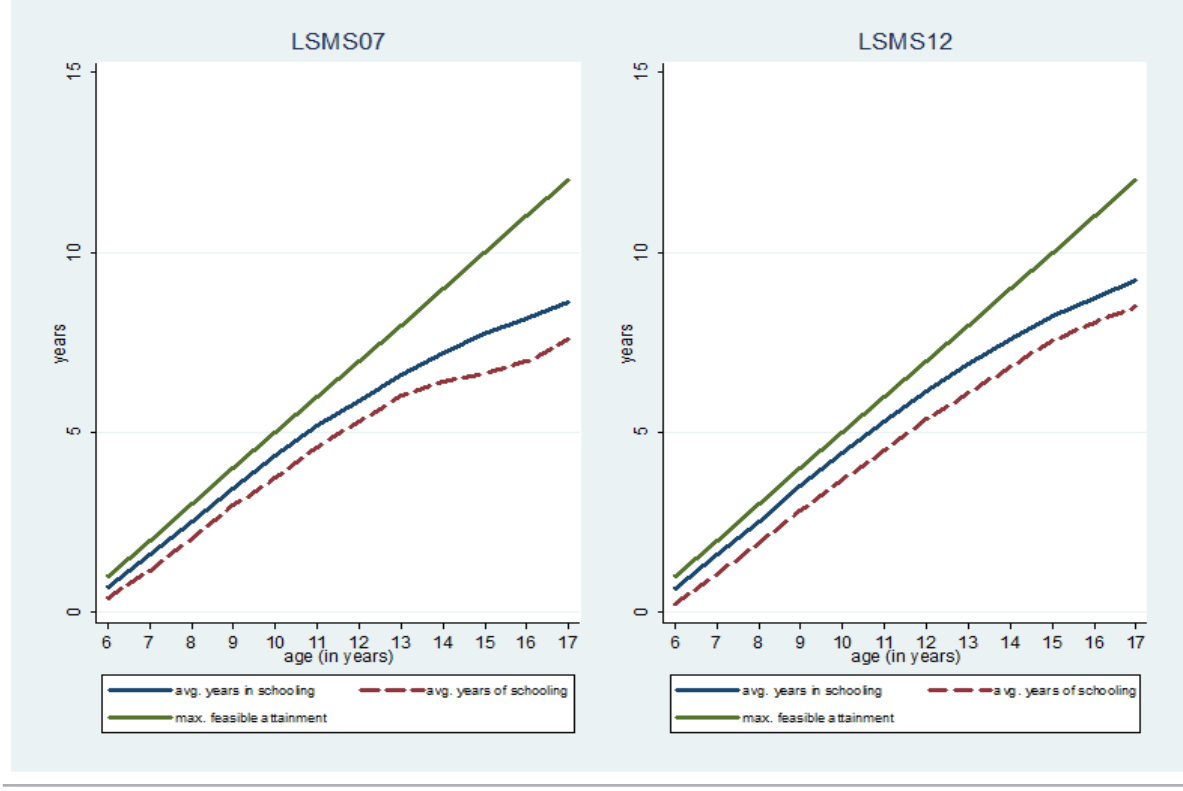
Before age 10, enrolment rates were high, but dropout rates increased especially in the year 2012 relative to 2007.The average number of years spent in school at every age declined across the period, with those differences being statistically significant. Average years of schooling appear to have declined at all ages. The simple graphs imply grim prospects for children in the light of conflict, with large detrimental effects for their future and the future of generations to come.

C. Estimating the impact on school progression in Iraq

1. School enrolment in Iraq

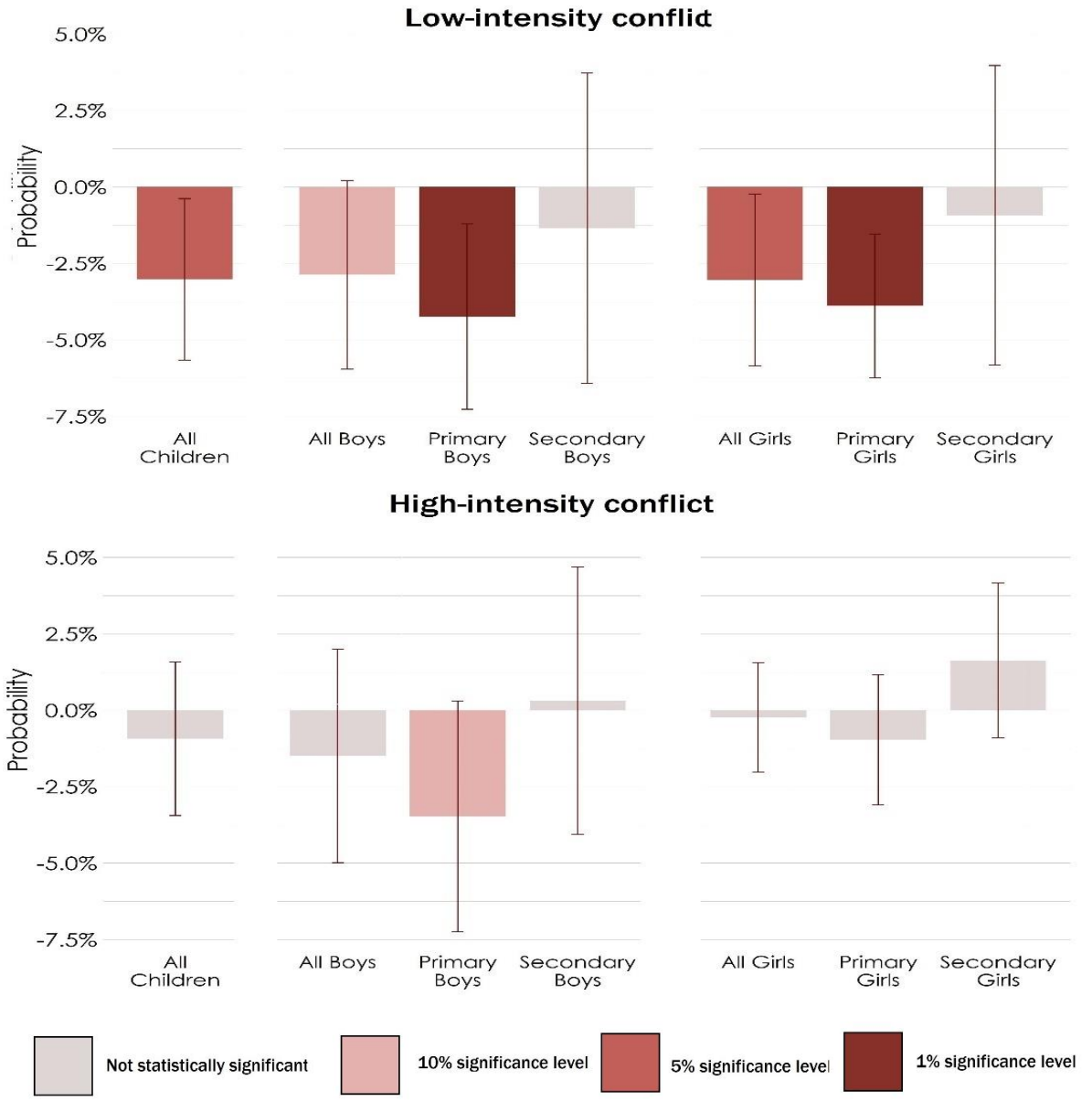
The present section explores the effect of differential exposure to conflict on educational outcomes of children aged 6-17 in Iraq. We consider two broad indicators for educational outcomes: school enrolment and the average number of years of schooling. We examine the schooling variables of children by governorate, sex, level and exposure to conflict.

Figure 31. Average years in school and average years of schooling, Iraq, 2007 and 2012



Source: ESCWA calculations based on data from Iraq LSMS 2007 and 2012.

Figure 32. Marginal effect of armed conflict on school attendance, Iraq[89]



Source: ESCWA calculations based on data from Iraq MICS 2000, 2006 and 2011; and LSMS 2007 and 2012.

Notes: The bars show the estimated effect of armed conflict on the probability of attending school, including differentiated effects for girls and boys, and for primary and secondary education. Those probabilities are calculated using a linear probability model for school attendance by educational level (see annex). Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths during the previous 12 months.

We estimate the impact of conflict on enrolment rates using a difference-in-differences (DID) approach. This approach relies on differences in exposure to conflict across region and time for children of different ages. The identification of the effects of conflict is based on the inter-temporal variation in conflict intensity between governorates. The DID approach allows estimating changes in the outcome variables over time that are specific to the exposure to different violence intensity. Exposure is defined according to two thresholds: firstly, exposure to conflict is defined as living in a governorate that experienced at least one incident of violence resulting in 10 deaths in each month, during the past 12 months (lower-intensity conflict); and secondly, exposure to conflict is defined as living in a governorate that experienced at least one incident of violence resulting in 25 or more deaths in each month, during the past 12 months (higher-intensity conflict). The decision on whether to enrol in school in the current year has been modelled as a dummy variable that is equal to 1 if a child is enrolled in school and zero otherwise. Further explanation of the methodology is provided in the annex.

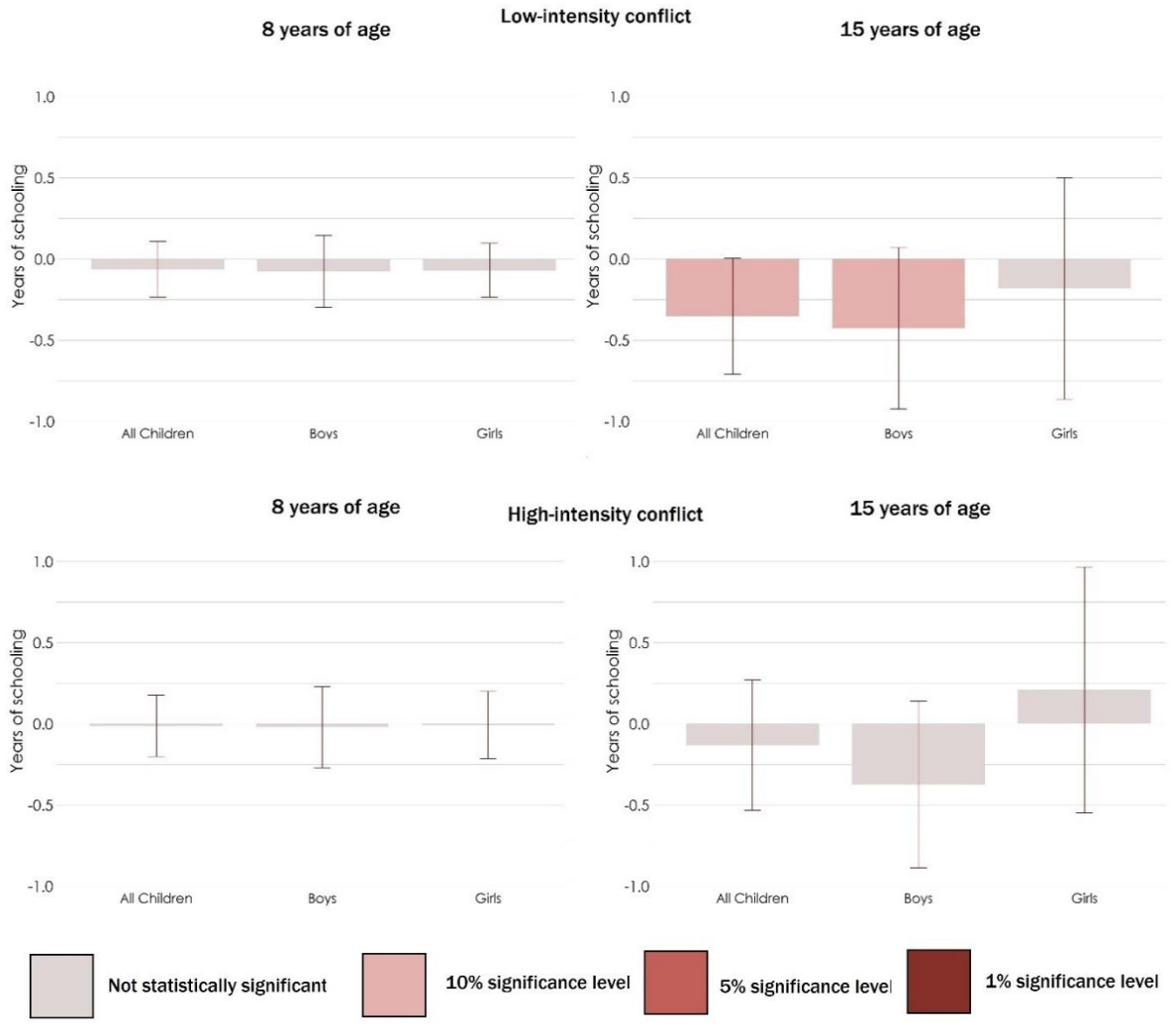
The estimation of the probability of enrolment for the average child of primary age and secondary age suggest that, between 2007 and 2012, there was a marked decline in the likelihood of school enrolment for average primary-aged children exposed to lower threshold of violence. The effect was particularly significant for primary-aged girls and boys. We found no statistically significant effects for exposure to conflict of secondary-aged children, exposed to neither lower- nor higher-intensity conflict. The results are summarized in figure 32.

2. The impact of conflict on average years of schooling in Iraq

The impact of conflict on average years of schooling has been estimated using the DID approach. As above, the identification of the effects of conflict is based on the inter-temporal variation in conflict intensity across governorates. Years of schooling is a stock variable, so that averaging over different ages could also reflect other demographic changes between cohorts. For this reason, two moments in the middle of each educational level were chosen as a summary of the trends in school completion. The dependent variables were the average years of schooling of a child aged 8 and a youth aged 15. Further explanation of the methodology is provided in the annex. Our estimates suggest that, between 2007 and 2012, there was a decline in the average years of schooling attained by the average 15-year-old boy exposed to lower-intensity conflict. The effects for girls did not appear to be statistically significant at age 8 or age 15 in exposure neither to lower- nor higher-intensity conflict. The results are summarized in figure 33.

The results indicate catastrophic prospects for children in Iraq, as they show that secondary-aged boys are, on average, acquiring fewer years of schooling. They are more likely to become school dropouts at a younger age, missing critical timely investments in human capital, with devastating consequences for their future.

Figure 33. Marginal effect of armed conflict on years of schooling, Iraq[90]



Source: ESCWA calculations based on data from Iraq MICS 2000, 2006 and 2011; and LSMS 2007 and 2012.

Notes: The bars show the estimated effect of armed conflict on years of schooling, including differentiated effects for girls and boys, and for two age groups (end of primary and secondary education). Those coefficients were calculated using a linear model for years of schooling by educational level (see annex). Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths in the previous 12 months.

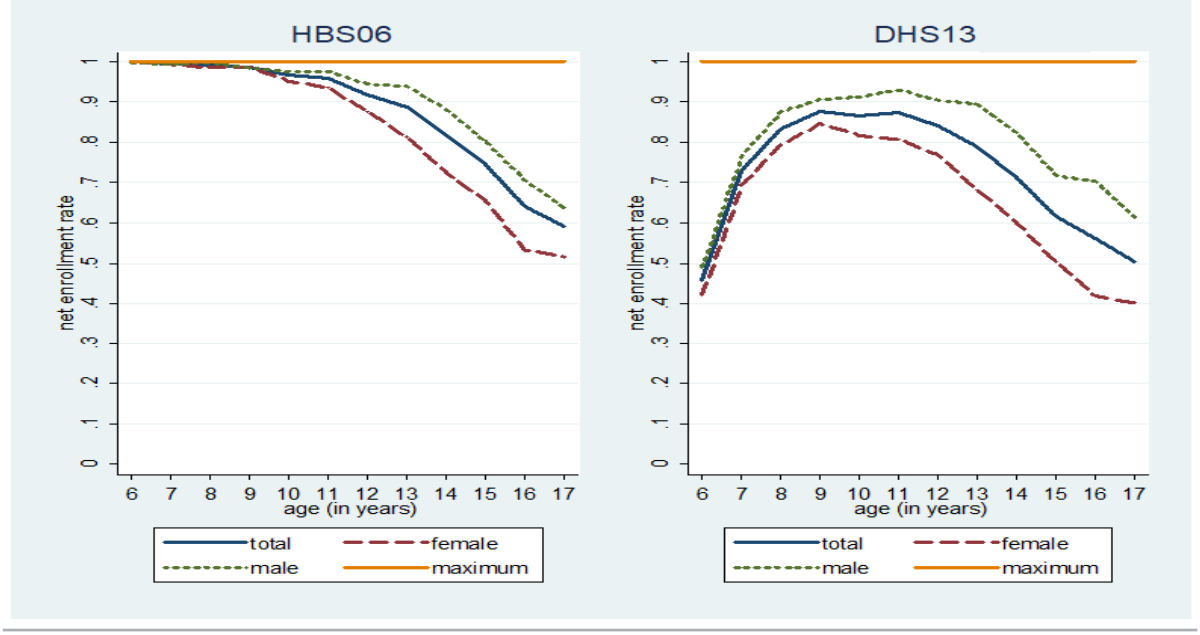
D. The impact of conflict on school trajectories in Yemen

1. School enrolment in Yemen

The current section presents an estimation of enrolment rates and school progression in Yemen using household surveys (MICS 2006, HBS 2006 and DHS 2013) to analyse the impact of conflict on schooling progression. Figure 34 shows enrolment rates at every age for children in primary and secondary schooling. The horizontal axis represents age; the vertical axis represents the percentage of children enrolled in school.

There are several observations regarding the results. In Yemen, for most age ranges, there were large differences between male and female aggregate enrolment outcomes, the differences usually favouring males and being statistically significant. Dropout rates started increasing early, at about age 10, with females dropping out at earlier ages. The spike observed in enrolment rates between ages 6 and 7 reflected delayed enrolment. There was a substantial decline in overall enrolment rates for girls across the timescale. The national enrolment rate never approached 100, probably signifying that a small but non-negligible percentage of children never actually entered school. Delayed entry and dropping out had led to an ''inverted-U'' age-enrolment profile. That pattern is of concern because evidence suggests that children who enter late are also more likely to exit early. After age 10, the opportunity costs of schooling climb. Children are more likely to leave school and start working, reducing the overall years of education those children will acquire.

Figure 34. Age-enrolment profiles, Yemen, 2006 and 2013



Source: ESCWA calculations based on data from Yemen MICS 2006 and DHS 2013.

2. Maximum schooling, average years in school, and average years of schooling in Yemen

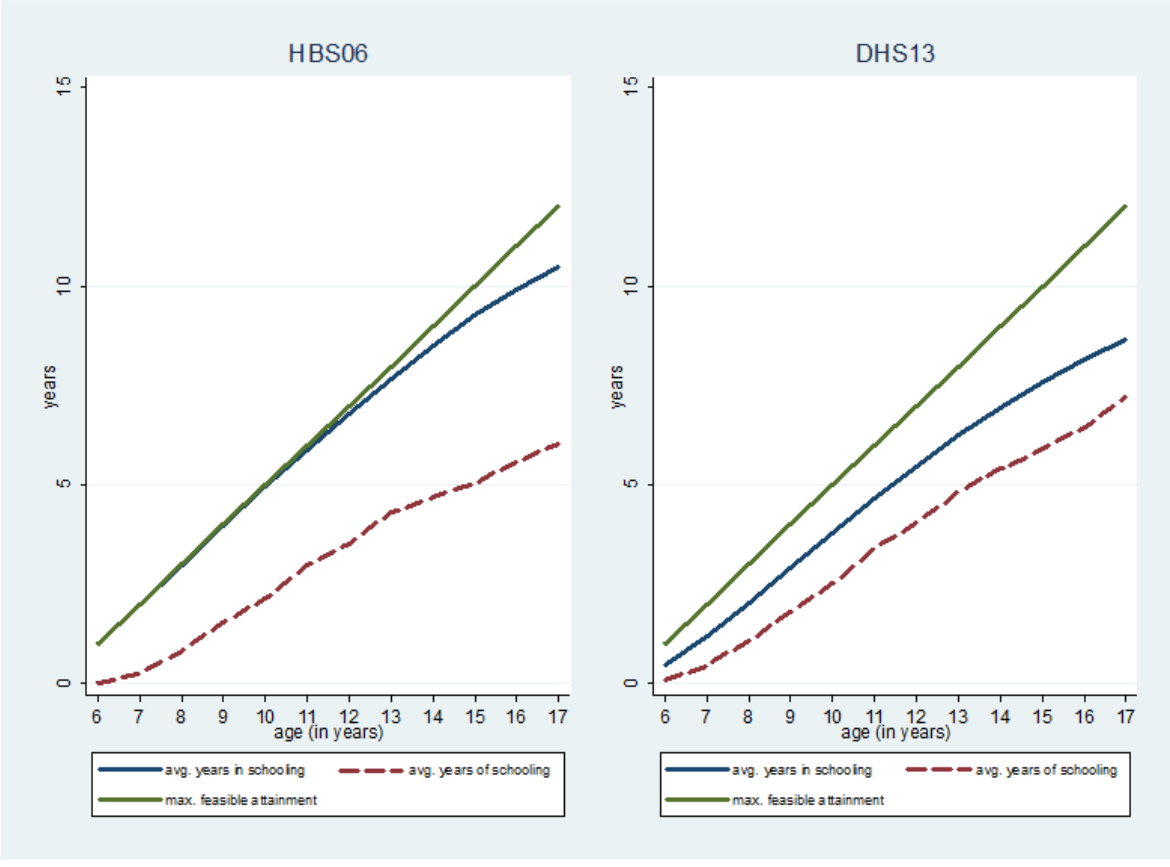
Figure 35 shows the average years in school and average years of schooling for children aged 6 to 17 in Yemen. The horizontal axis represents age in years; the vertical axis represents years of schooling. The green line represents the maximum years of schooling a child will attain at a given age and, therefore, enables measurement of how children fared relative to their actual years of schooling and actual years in school.[91] The green line indicates that, at age 7, a child's maximum years of schooling would be equal to 1. At age 8, the maximum years of education would be equal to 2, and so forth, up to 12 by age 17. Average years in school are the net enrolment rate expressed as a proportion. On average, by the time children were 6 years old, they had achieved a rate of 0.49 in 2013, compared to 0.9 in 2006. The decline was dramatic, with average years in school for 6-year-olds dropping by half between 2006 and 2013. Both average years in school and average years of schooling are proxies for education quality. Those indicators appear to have deteriorated during the time frame, with the red and blue line dropping for all ages further away from the green line showing the maximum years of schooling for every age.

The blue line in figure 35 represents the expected or average number of years that an individual will spend in school by a given age, given the enrolment patterns currently observed in the country. This measure is another way of graphically representing age-specific net enrolment rates, the cumulative sum of enrolment rates. It represents the number of years a child will spend in school, with no assumptions about school progression. The red line represents the average years of schooling, which are the average years of education a child will acquire at every age. In theory, in an effective schooling system, every year spent in school should translate into an effective year of education acquired. However, if there is a lot of repetition of years, those indicators will differ.

At age 6, the gap between those two segments was relatively small in the initial period. It was clearly visible because of the non-trivial delayed entry observed in the country during both 2006 and 2013. In Yemen, the distance between the lines is wider in both time periods, suggesting that years in school are not effectively translating into years of schooling, more dramatically so in 2013 than in 2006.

In Yemen, the average number of years spent in school at every age appears to have declined. Average years of schooling appear to have also declined at all ages. The simple graphs show grim prospects for children in the light of conflict, with large detrimental effects for their future and the future of generations to come.

Figure 35. Maximum schooling, average years in school and average years of schooling, Yemen, 2006 and 2013



Source: ESCWA calculations based on data from Yemen MICS 2006 and DHS 2013.

E. Estimating the impact on school progression in Yemen

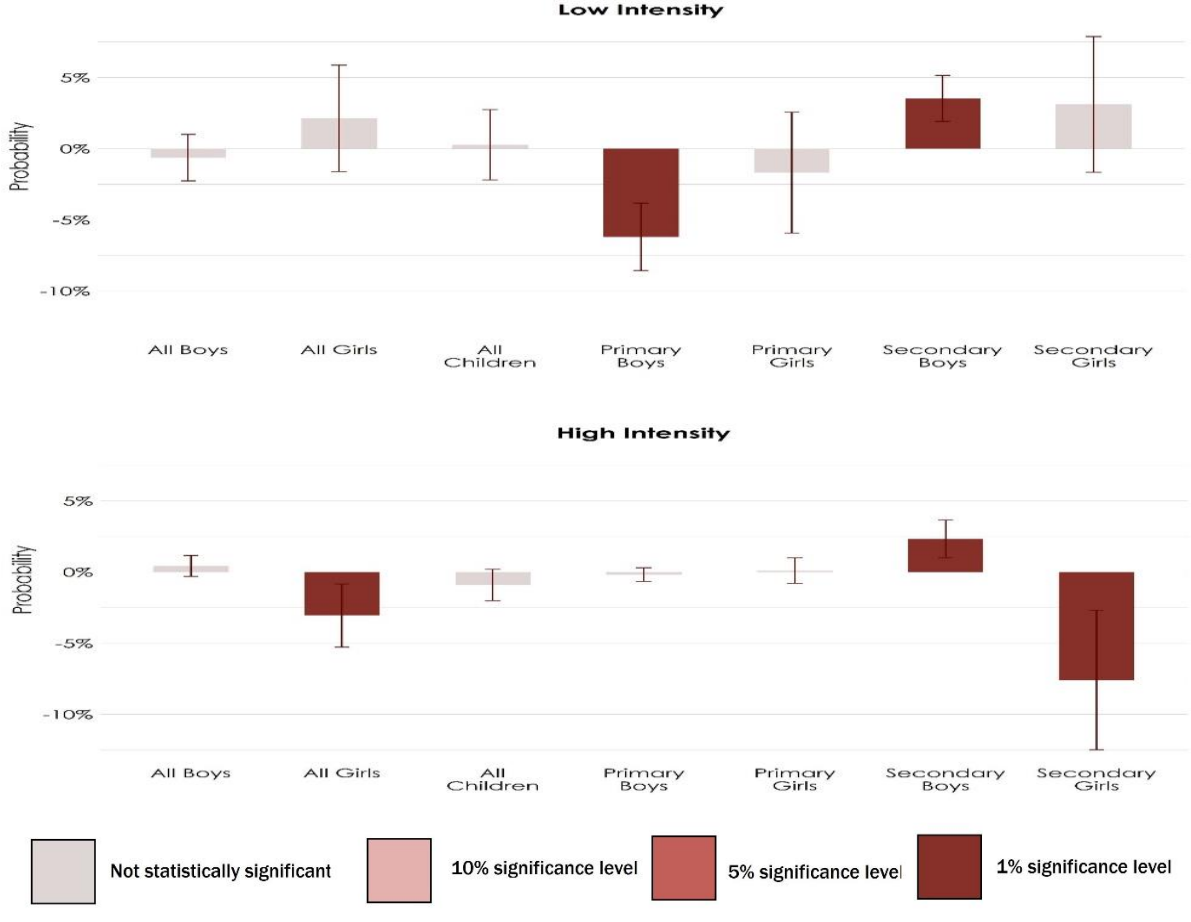
1. School enrolment in Yemen

The current section explores the effect of differential exposure to conflict on educational outcomes on children aged 6-17 in Yemen. As above, we consider two broad indicators for educational outcomes: school enrolment and the average years of schooling. We examine the schooling variables of children by governorate, gender, level and exposure to conflict. To identify the effect of those conflicts on school enrolment, years in school and years of schooling, we examine the regional variations in the conflict intensity over time.

We estimate the impact of conflict on enrolment rates using a DID approach (see annex). The decision on whether or not a child should enrol in school in the current year has been modelled as a dummy variable that is equal to 1 if a child is enrolled in school and zero otherwise. We

estimate the probability of enrolment for the average child of primary age and secondary age by two different levels of exposure to conflict, as shown in figure 36. Lower-intensity conflict exposure (higher-intensity conflict exposure) is defined as being exposed at least once to an episode of violence resulting in at least 10 (25) deaths during the previous 12 months. Our estimates suggest that, between 2006 and 2013, there was a marked decline in the likelihood of school enrolment for the average primary-aged boys exposed to lower-intensity conflict, and a marked declined in the likelihood of school enrolment for secondary-aged girls exposed to high-intensity conflict. There was a small but non-negligible increase in enrolment for secondary school-aged boys exposed to higher- and lower-intensity conflict regions, counteracting the effects of conflict exposure, as shown in the annex

Figure 36. Marginal effect of armed conflict on school attendance, Yemen[92]



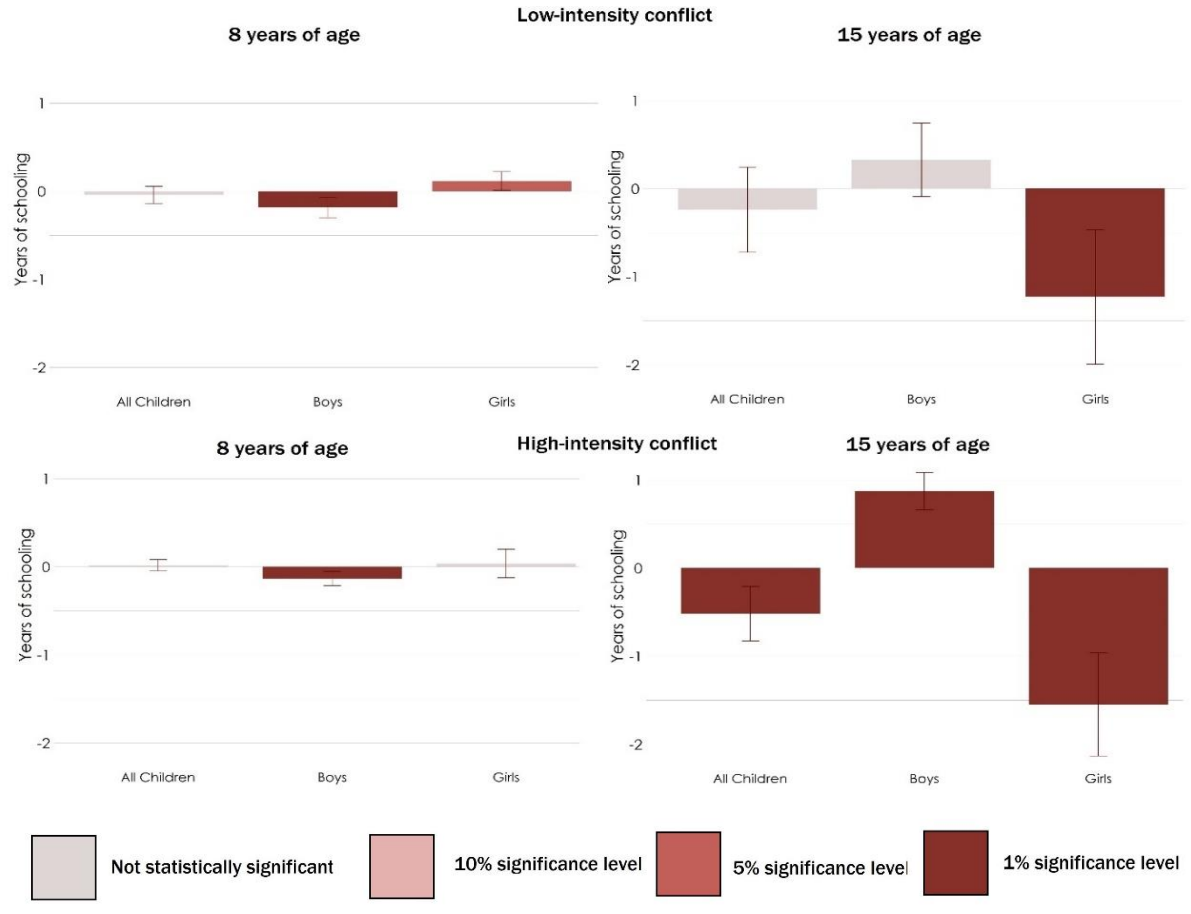
Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.

Notes: The bars show the estimated effect of armed conflict on the probability of attending school, including differentiated effects for girls and boys, and for primary and secondary education. Those probabilities were calculated using a linear probability model for school attendance by educational level (see annex). Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths during the previous 12 months.

2. The impact of conflict on average years of schooling in Yemen

The current section estimates the impact of conflict on average years of schooling. The dependent variable here is a child's average years of schooling. Further explanation of the methodology is provided in the annex. Our estimates suggest that, between 2007 and 2012, there was a marked decline in the average years of schooling attained by the average child of secondary age and for both levels of conflict intensity. The effects appeared to be particularly significant for girls. The results are summarized in figure 37. The overall decline in the average years of schooling of Yemeni children, and its consequences for future human capital, is of great concern, considering that Yemen is already a country with limited engines of potential growth.

Figure 37. Marginal effect of armed conflict on years of schooling, Yemen[93]



Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.

Notes: The bars show the estimated effect of armed conflict on years of schooling, including differentiated effects for girls and boys, and for two age groups (end of primary and secondary education). Those coefficients were calculated using a linear model for years of schooling by educational level (see annex). Exposure to lower-intensity (higher-intensity) conflict is defined as living in a governorate that experienced at least one month of conflict with 10 (25) or more conflict-related deaths during the previous 12 months.

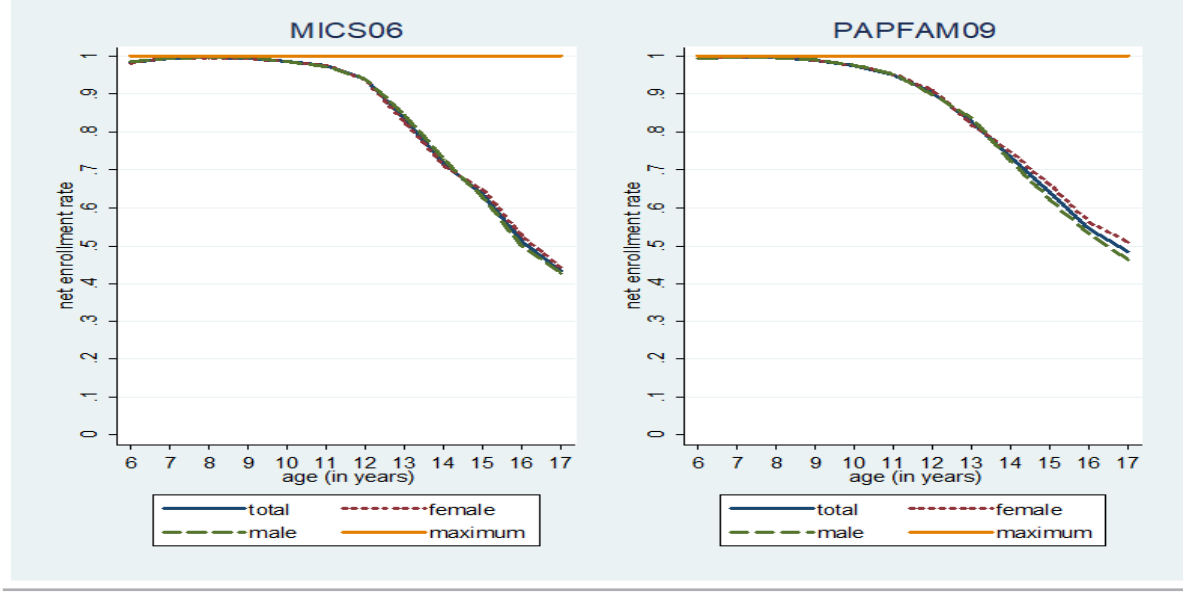
F. Education in the Syrian Arab Republic, pre-conflict

Before the conflict, the Syrian school system was one of the most developed in the Arab region,[94] with universal coverage in primary, and enrolment rates above 70 per cent in lower secondary schools. Figure 38 presents age-enrolment profiles for nationally representative samples during 2006 and 2009. The figure suggests that the system efficiently translated years spent in school into actual years of schooling.

During both 2006 and 2009, school enrolment rates were above 90 per cent until age 13, when they started to decline. During those years, there were no statistical differences between enrolment rates of girls and boys. The country showed one of the largest youth bulges of the region, with 46 per cent of the population 18 years of age or younger in 2009.[95]

Since the war started in 2011, at least one quarter of schools in the Syrian Arab Republic have been closed, destroyed, used as sheltering by the internally displaced or used as military bases. Save the Children (2015a) estimates that school enrolment rates have plummeted to less than 50 per cent at the national level for primary education, and are even lower where prolonged heavy fighting has taken place. UNICEF estimates that at least 2.26 million children were out of school in the Syrian Arab Republic at that time, and that 7 out of 10 school-age refugee children are not attending school outside their home country.[96] More dramatically, many Syrian children have never enrolled in school inside or outside the Syrian Arab Republic, and many children are dropping out of schools and not returning, especially amongst the displaced.

Figure 38. Age enrolment profiles, Syrian Arab Republic, 2006 and 2009

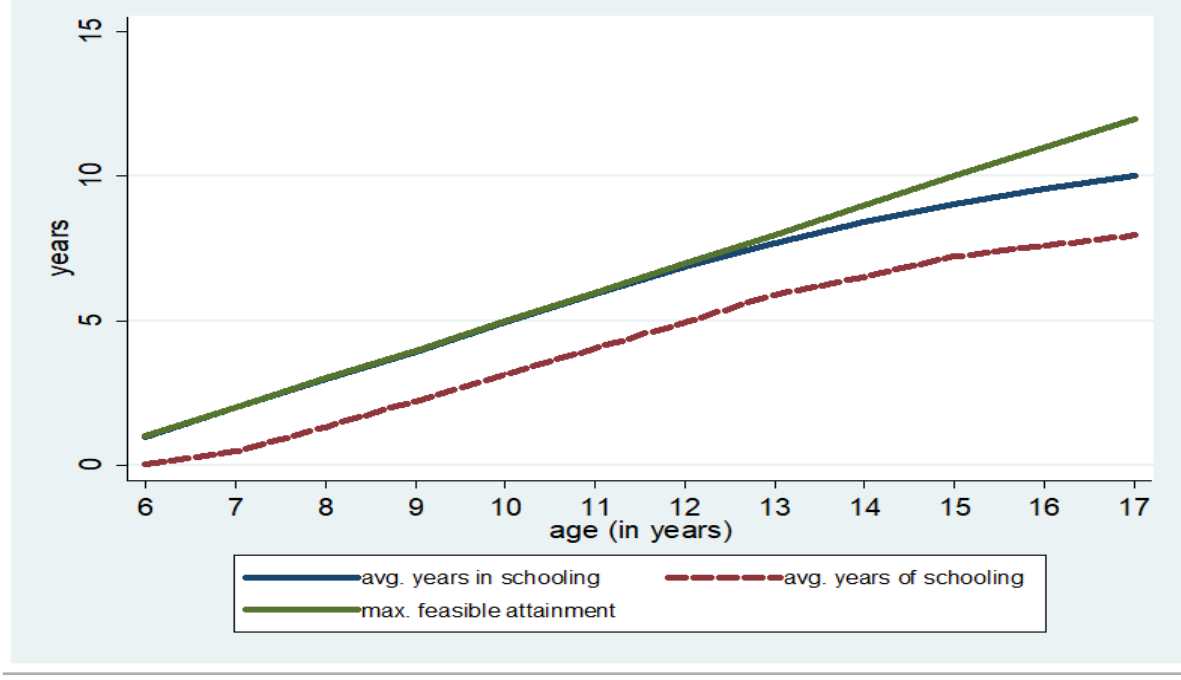


Source: ESCWA calculations based on data from Syrian Arab Republic MICS 2006 and PAPFAM 2009.

Figure 39 shows the maximum schooling, average years in school, and average years of schooling in the Syrian Arab Republic in 2006. The figure shows that children aged 6-13 had spent an average of seven years in school and had completed by age 13 an average six years of schooling. The country's education system was successfully turning the contact of children with the school system into years of schooling and excelling in terms of enrolment rates and years of schooling for both girls and boys. The average years spent in school and the average years of schooling of Syrian children will have declined drastically since 2011.

The situation has completely shifted since the conflict started and intensified. Children who were, for the most part, enrolled in schools up until age 13 are now facing a very different reality, with some children being conscripted by armed groups and put into combat roles, while others are forced into labour or child marriage in order to cope with the poverty conditions of their families. Given the importance of certain investments in children during critical periods of their lives, and the complementarity of those investments over time, the war-torn Syrian Arab Republic faces challenging prospects for the future. An extensive body of research in economics and psychology has identified the windows for child development critical for building adult success.[97]

Figure 39. Maximum schooling, average years in school and average years of schooling, Syrian Arab Republic, 2006



Source: ESCWA calculations based on data from Syrian Arab Republic MICS 2006.

G. Conclusion

The present chapter contributes to a comprehensive understanding of the effects of civil conflict on a wide range of educational outcomes. While the conflicts of Iraq, Libya, the Syrian Arab Republic and Yemen have had devastating consequences on educational trajectories of children and youth, those conflicts have had sizeable spillover effects for the rest of the Arab region and beyond. What is most worrisome is the fact that there are no signs of abatement. Conflicts seem to be increasing in intensity, in addition to becoming protracted and contagious.

The immediate and long-term impacts are overwhelming. The conflicts have seriously disrupted human capital accumulation for generations of children in the region. The wars have hampered the quality of nutrition, in turn deteriorating health and educational outcomes through different channels, affecting skill formation and seriously curtailing economic and political opportunities. The conflicts have significantly compromised the skill-formation process, generating a deficit that could require many generations to overcome. Less education, lack of opportunities and the significant war capital brought about by the conflicts are likely to lead to higher incidences of criminality and radicalization. Poor education is likely to lead to insufficient labour-market options, which could contribute to underperformance in schools and increasing dropout rates. In one study, unemployment and idleness were the most common motivations for participating in rebel movements and joining street gangs.[98]

Understanding the main channels through which conflict harms individuals during the different stages of their life cycles, from early childhood and the formative periods to youth and economically active life, is essential to support the humanitarian and development assistance targeting the most vulnerable groups. It would also help support peacebuilding and recovery policies.

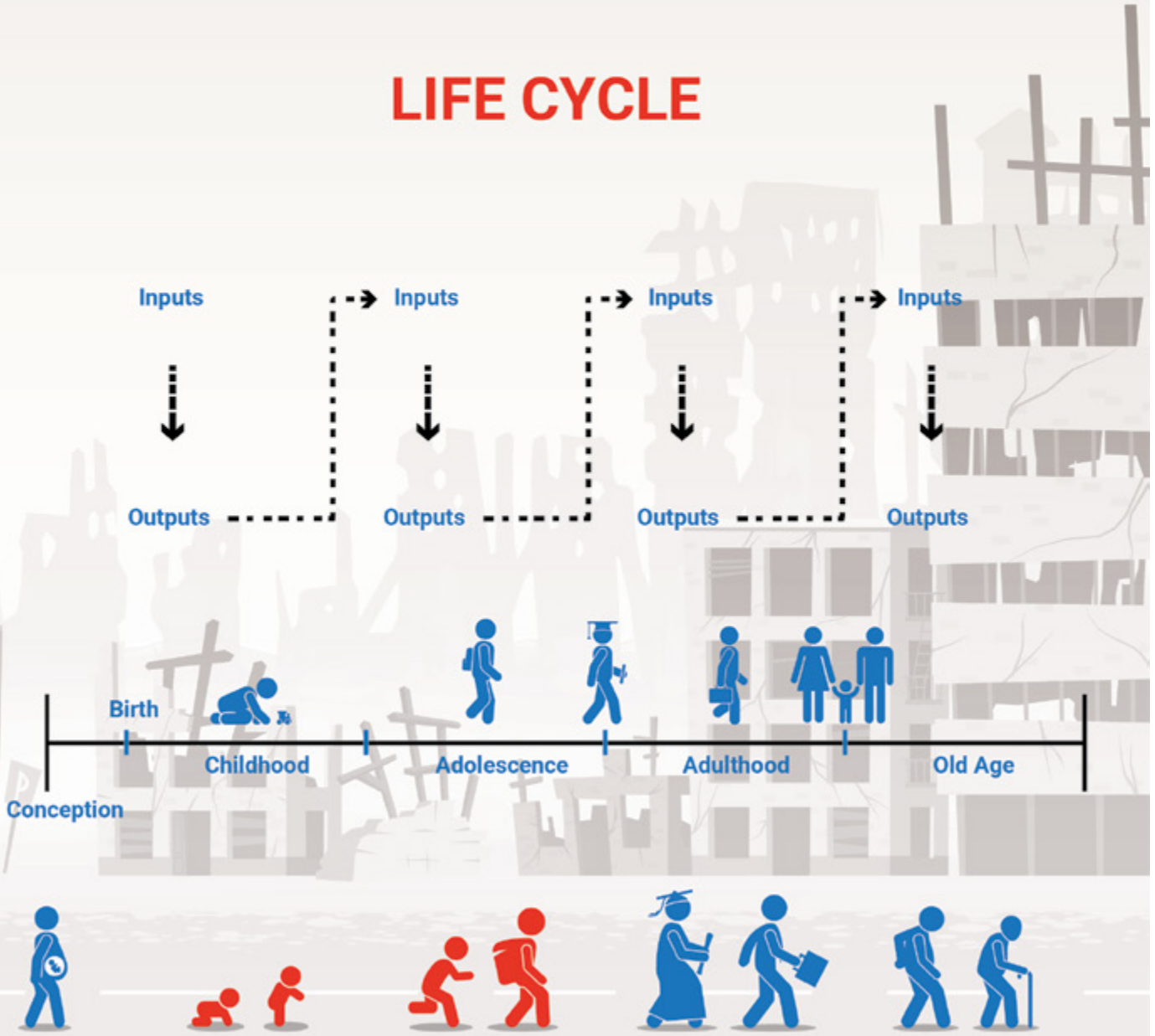
Justino (2016) provides a series of recommendations for improving provision of schools in conflict settings and in the aftermath of conflicts. Building formal education systems in the aftermath of violent conflicts is a task riddled with severe constraints in terms of supply and demand. While conflict-affected countries are likely to face steep difficulties in providing educational services, education plays a key role for the economic recovery of households and countries affected by conflict.[99]

The present chapter shows how inequalities of investments in human capital could perpetuate conflict, increasing inequalities across groups and increasing grievances for large segments of the population. The persistence of economic and other inequalities, which often manifest themselves in low educational attainment and employment opportunities for large sections of children and young people, could provide critical triggers for future violence.[100]

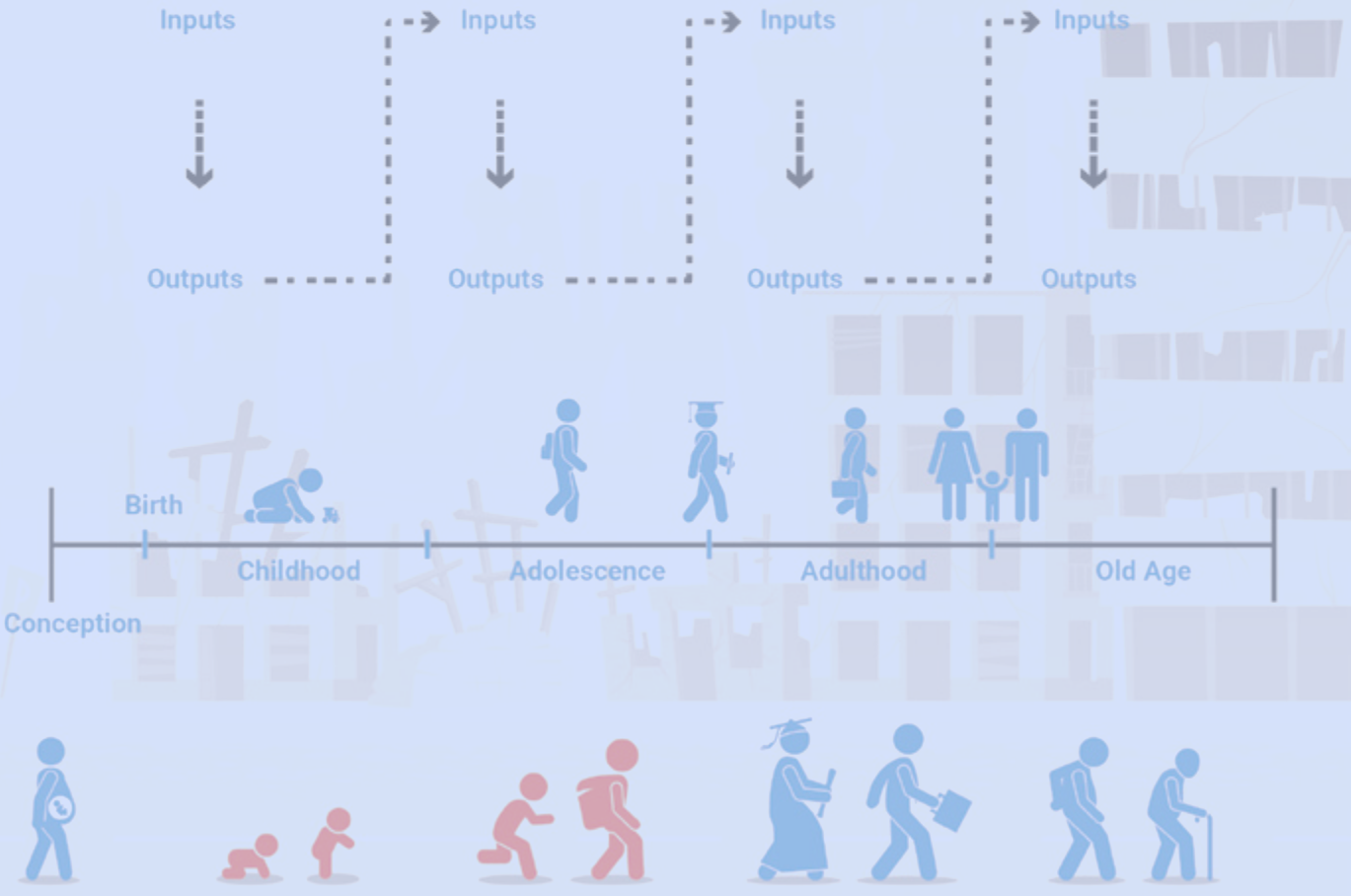
Countries in the region, particularly those affected by conflict, must prioritize the return of children to schools if recovery, peace and sustainable development are to take firm root at national and regional levels. Schools should become important enabling environments for children and youth to develop their full potential.

The present chapter shows the complex ways in which conflict affects human capital accumulation in the countries examined and the Arab region as a whole. Important and timely interventions should be undertaken by countries in the immediate aftermath of conflict, to target vulnerable populations with interventions aimed at increasing the potential of human capital.

4. Conclusions



LIFE CYCLE


Inputs
Inputs
Inputs
Inputs
Outputs
Outputs
Outputs
Outputs
Birth
Childhood
Adolescence
Adulthood
Old Age
Conception

4. Conclusions

While the economic and political costs of conflicts are well understood, the human development repercussions have not been adequately discussed. Conflict unambiguously affects individuals in all aspects of life and should be studied at the level of the individual. The present report focuses on the lasting effects of conflict exposure during different stages of life in the Arab region using microlevel survey data for Iraq, Libya, the Syrian Arab Republic and Yemen and analysing the impact of conflict on human development using the skill-formation model.

Conflict is a particularly intense type of shock that causes disruption and destruction of many types, affecting people at all stages of life. Recent conflicts in the Arab region have been particularly destructive, displacing millions of people, disrupting livelihoods and destroying infrastructure. The present report sheds light on the heterogeneous ways in which conflict impacts critical periods of life. Conflicts across the Arab region have led to famine and disease. Conflicts have halted the provision of public services, in turn, adversely affecting health outcomes, educational trajectories and labour-market opportunities for individuals of all ages. The present report identifies how conflict affects individuals from conception to adulthood, providing evidence on the effects of conflict exposure during infancy, early childhood, childhood and the transition into adulthood.

For conflict-ridden countries, youth poses enormous challenges. The Arab region has an exceptionally large youth bulge, with approximately 20 per cent of the population between the crucial ages of 15 and 24 years. Children under age 15 account for one third of the population in the region, and more than 40 per cent of the population in Iraq and Yemen. From a life cycle perspective, a large proportion of individuals at the critical ages for human capital investments will be exposed to negative shocks brought about by war.

Since the foundations of later-life success are, for the most part, built in the early years, children exposed to conflict will carry the effects of conflict throughout their lives. Food insecurity, deterioration of family resources and reduction of family investments in children will have devastating long-term consequences on children in conflict-ridden countries across the region. In the absence of critical interventions designed to enhance opportunities of children affected directly and indirectly by conflict, inequalities will be reinforced.

The present report documents how armed conflict has an impact on infant mortality and the nutritional situation of children exposed to violence. The broad causes of malnutrition include inadequate household food security, poor health care and deficient care practices.

Our estimates suggest that the nutritional status of children is associated with conflict intensity. It is important to note that, in Iraq, Libya, the Syrian Arab Republic and Yemen, the nutritional status of children was generally unsatisfactory even before the conflict. The protracted nature of those conflicts suggests more serious and devastating consequences on children and their lifelong prospects.

Evidence from the conflicts of Iraq, Libya, Syrian Arab Republic and Yemen suggests that those conflicts have had devastating consequences on human development and life cycle, health and human-capital formation. Stunting appears to be the most damaging effect of conflict on children, as it will impair all future developmental outcomes. Stunting also brings about a more troubling matter because stunted parents will most likely carry their disadvantages for generations to come, contributing to self-perpetuating intergenerational deprivation. Countries in conflict across the region are urged to intervene to mitigate the impact of malnutrition on children in order to promote sustainable economic and social development.

There are several policy implications of our findings. While the conflicts in the region appear to have had permanent effects on child development, urgent interventions are required to mitigate those effects, at least partially. Famine should be prevented at all costs in those countries, especially in the Syrian Arab Republic and Yemen, where children appear to be most affected by hunger. Social safety nets can help exposed families improve their coping strategies against hunger and financial distress. Policies aimed at improving care and feeding practices, as well as adequate stimulation in early years, need to be set in place, especially in conflict-afflicted areas.

The conflicts in Iraq, Libya, the Syrian Arab Republic and Yemen have also had devastating consequences on educational trajectories of children and youth. In those countries, schools have been destroyed or are being used as shelters, resulting in an increasing proportion of children who were forced to drop out of school or who never enrolled. The persistence of economic and education inequalities, which often manifest themselves in low educational attainment and employment opportunities for large sections of children and youth, can become a critical trigger for future violence.[101]

The conflicts in those countries have had sizeable spillover effects for the rest of the Arab region and beyond. Jordan and Lebanon have had immense struggles coping with the influx of refugees, for example.

What is most frightening is the fact that there are no signs of abatement. Wars seem to be increasing in intensity, in addition to becoming protracted and contagious. The immediate and long-term impacts are overwhelming. The conflicts have seriously disrupted human capital accumulation for generations of children in the region. The wars have hampered nutrition. They have weakened health and educational outcomes through different channels, affecting skill formation and seriously curtailing economic and political opportunities. Conflicts have significantly compromised human development, generating a deficit that is likely to require many generations to overcome. Less education, lack of opportunities and the

significant war capital brought about by conflicts are also likely to lead to a higher incidence of criminal activity.[102]

Understanding the main channels through which conflict harms individuals in the different stages of their life cycle, from early childhood and the formative periods to youth and economically active life, is essential to support humanitarian and development assistance, targeting the most vulnerable and the most affected groups. It will also assist in supporting peacebuilding and recovery policies.

Resurrecting formal education systems in the aftermath of violent conflicts is a task riddled with severe constraints of supply and demand. While war-torn countries will face steep difficulties providing educational services, education plays a key role for the economic recovery of households and countries affected by conflict. Inequalities in investments in human capital could perpetuate with conflict, increasing inequalities across groups and increasing grievances for large segments of the population. The persistence of economic and other inequalities, which often manifest themselves in low educational attainment and employment opportunities for large sections of children and young people, could prove to be a critical trigger for future violence.

Countries in the region must prioritize bringing conflict-afflicted children back into schooling in order to promote national stability, in the short and long term. Schools should become important enabling environments for children and youth to develop their skills in order to reach their full potential. Important and timely interventions should be carried out by countries in the immediate aftermath of conflict, especially addressing the most vulnerable populations.

As of today, the region provides few opportunities for youths transitioning from school to the labour market. The skills acquired in the traditional education system do not seem to meet the requirements of the labour market. Aggregate labour-market indicators for the Arab region reflect the disconnection between the demand and supply for skills, with the highest global and youth unemployment rates of any region of the world. Unmet expectations of youth are one of the biggest challenges of the region, with conflicts likely to reinforce inequalities and discontent amongst youth. Violence is a likely consequence.

Addressing unemployment is one of the most pressing challenges for the Arab region, and for conflict-afflicted countries elsewhere. Conflicts in Iraq, Libya, the Syrian Arab Republic and Yemen have exacerbated the existing challenges for youths transitioning into the labour market. The mismatch between what the labour market offers and what young people expect continues to grow, which, in turn, could be conducive to more violence in the region and beyond.[103] Apart from the mismatch of labour demand and supply, regional countries in conflict must pay attention to the large segments of the population affected directly and indirectly by conflict. With generations of children having little or no formal schooling, the region will face huge challenges.

Countries in conflict rely heavily on public redistributive safety net programmes, such as food rations and pensions. As the conflicts intensify and continue, the provision

of those services will be another increasing challenge.

The region, and countries in conflict generally, needs strategies that target skills development during the post-conflict and reconstruction period. Children should be brought back into schooling, and the quality of education provided improved. Enhancing training programmes and preventing the human-capital arrest of populations affected by conflict should be prioritized.

Countries hosting refugees should focus on development rather than short-term humanitarian assistance. Large-scale development projects in agriculture, infrastructure and manufacturing, particularly those that are labour-intensive, can create employment opportunities and play a positive role in mitigating the suffering of the displaced population and their hosts. The displaced populations could improve their daily lives while preparing for sustainable solutions and for an eventual return to their home countries, while host countries would benefit from improved infrastructure, service delivery systems, agricultural production and the general environment that originally declined with the arrival of refugees.

Last but not least, there is an urgent need for extensive and quality data. The region needs to develop methods for monitoring the impact of conflict on populations so that priority sectors and vulnerable populations can be identified, and targeted interventions designed and implemented.

Annex: Data and Methodology

The present report attempted to measure the association between armed conflict and development outcomes over different stages of the life cycle. The basic identification strategy used to assess those impacts relied on mining microlevel data to identify different levels of exposure to violence and then evaluate the results on the variables of interest. That approach had important data requirements and followed a special specification of the regression model to identify the effect of armed conflict. The annex describes in detail the methodology, as well as the type and sources of data used. It also presents, for each of the topics covered in the report, a dedicated section with specification details, summaries of the data, and results of the estimation exercises, and robustness checks.

1. Data

Numerous studies have examined the relationship between armed conflict and development outcomes through aggregate, national-level data.[104] While that body of research provided valuable insights into the linkages between variables, it faced several limitations. Conflicts are frequently contained to limited geographical areas, or their intensity varies considerably from one territory to another within the same country, so the use of country-level data could mask and underestimate the effect on the population that is directly hit by the violence. Armed conflict and sustainable development have a complex association in which the cause-effect link flows in both directions, in addition to numerous factors that affect both variables and make it difficult to differentiate the separate effects. The statistical methodologies applied in such cross-country, nation-level studies can identify only the degree of correlation between conflict and development outcomes, without necessarily establishing causality. Finally, a close inspection of the data available shows that some of the macrolevel variables frequently considered (for example, child mortality or labour-market outcomes) are not always observed but, rather, interpolated through estimates obtained from econometric models. While that can be effective in certain circumstances, a conflict could be disruptive enough to make the actual outcomes very different from the values forecasted by those models. The study of the causal effect on development outcomes requires richer, more detailed data.

One way to overcome some of the problems mentioned above is to rely on microlevel socioeconomic data, a type of data where the unit of observation is the individual or the household. It is typically collected through surveys applied to a representative sample of the population. The surveys typically cover several topics related to livelihoods and human development (including household composition, housing conditions, education levels, health status, nutrition and food security indicators,

and sources of income). The present section describes the type and sources of the data that inform the analysis.

(a) Household surveys

The estimation methodology described above has important data requirements. It needs household surveys representative of the population at the subnational level before and after the armed conflict being studied. It also relies on different degrees of violence intensity per region, to compare those households that were directly impacted by conflict with those that were not. If different degrees of individual exposure to violence could be determined from the surveys, that information also would be used. The approach calls for surveys that measure the development outcomes of interest following established and comparable definitions. That type of information unfortunately is not available for all the countries in conflict within the Arab region. In most cases, only surveys prior to the armed conflict are available. Only Iraq and Yemen have enough household surveys required for the identification strategy. The analysis presented in the present report will be extended to other countries in future, when additional surveys become available.

Table A.1 presents the household surveys covered in the analysis. A total of five surveys were considered for Iraq. The three Multiple Indicator Cluster Surveys (MICS) for the years 2000, 2006 and 2011 (Waves 2, 3 and 4, respectively) are co-implemented by the United Nations Children's Fund (UNICEF) and conform to that institution's long-standing experience in developing statistical monitoring tools of the well-being of children and women. The two Iraq Household Socioeconomic Surveys (IHSES) for the years 2007 and 2012 belong to the World Bank's Living Standards Measurement Survey (LSMS) programme. For Yemen, three surveys were used: MICS 2006 (Wave 3), the Household Budget Survey carried out in 2006, and the Demographic and Health Survey (DHS) of 2013, part of the DHS programme implemented by the United States Agency for International Development (USAID). The most recent surveys for Libya and the Syrian Arab Republic are also included in the table, but they cover only the time prior to the start of the recent armed conflicts. They were included in the present study in order to describe the pre-conflict development situation in those countries.[105] Those surveys were the main source of microlevel data about development outcomes over the different stages of the life cycle: infant mortality, child nutrition, educational indicators and labour-market outcomes. The surveys generally allowed the estimation of data disaggregated up to the governorate level. Further geographical precision was not allowed by the sampling methods employed.

The availability of survey data constrained the time coverage of the analysis. For Iraq, the survey MICS 2000 served as the main source of information for the pre-conflict period. The surveys MICS 2006 and IHSES 2007 were carried out after the invasion and the first period of high conflict intensity, and as one of the deadliest phases of the conflict was starting. The surveys MICS 2011 and IHSES 2012 were implemented after that phase had ended and during the least violent period of the conflict. However, the most recent wave of the conflict is not yet covered by

any survey. Future reports will include new data when available.

For Yemen, the Household Budget Survey (HBS) 2006 and MICS 2006 preceded the start of the conflict. The data collection for DHS 2013 took place after the first wave of the conflict and could be used as a source of information on the impact of the violence on the population, but only for this first wave. Future surveys would be able to provide information on the consequences on human development of the most recent, and vastly more intense and catastrophic, wave of the Yemeni conflict. A timeline and general description of the conflicts in Iraq and Yemen are included below.

Table A.1 Household surveys used in the analysis

Country	Survey name	Start of data collection	End of data collection	Number of households in sample	Number of individuals in sample	Agencies involved
Iraq	Multiple Indicator Cluster Survey (MICS)	Oct-00	Dec-00	13,211	99,478	UNICEF, Central Organization for Statistics and Information Technology, Council of Ministers, Planning Commission
	Multiple Indicator Cluster Survey (MICS)	Feb-06	Jun-06	18,136	116,106	UNICEF, Central Organization for Statistics and Information Technology, Kurdistan Regional Statistics Office, Ministry of Health
	Household Socioeconomic Survey	Feb-06	Dec-07	17,822	127,189	World Bank, Central Organization for Statistics and Information Technology, Kurdistan Regional Statistics Office
	Multiple Indicator Cluster Survey (MICS)	Feb-11	May-11	36,592	238,327	UNICEF, Central Organization for Statistics and Information Technology, Kurdistan Regional Statistics Office, Ministry of Health
	Household Socioeconomic Survey	Jan-12	Jan-13	25,146	176,042	Central Organization for Statistics and Information Technology, Kurdistan Regional Statistics Office, Ministry of Planning, Living Conditions Statistics Directorate
Libya	National Survey on Family Health	May-07	Oct-07	18,629	118,183	League of Arab States - Pan Arab Project for Family Health (PAPFAM), National Centre of Disease Control, Ministry of Health, others
	National Survey on Family Health(*)	Jan-14	Mar-14	18,579	101,872	League of Arab States - Pan Arab Project for Family Health (PAPFAM), Bureau of Statistics and Census, National Centre of Disease Control, others
Syrian Arab Republic	Multiple Indicator Cluster Survey (MICS)	Jan-06	Jun-06	19,019	107,369	UNICEF, Central Bureau of Statistics, League of Arab States - Pan-Arab Project for Family Health (PAPFAM)

Country	Survey name	Start of data collection	End of data collection	Number of households in sample	Number of individuals in sample	Agencies involved
	Family Health Survey	Nov-09	Apr-10	24,883	127,733	League of Arab States - Pan Arab Project for Family Health (PAPFAM), Syrian Office of Statistics, UNICEF, UNFPA
Yemen	Multiple Indicator Cluster Survey (MICS)	Aug-06	Sep-06	3,586	26,082	UNICEF, Ministry of Public Health and Population, League of Arab States - Pan-Arab Project for Family Health (PAPFAM)
	Household Budget Survey (HBS)	Apr-05	Mar-06	13,136	98,941	UNDP, World Bank, Central Statistical Organization
	Demographic and Health Survey (DHS)	Jan-13	Dec-13	17,351	120,923	Central Statistical Organization, Ministry of Public Health and Population

Source: ESCWA.

(*) The 2014 wave of the National Survey on Family Health for Libya appears to be problematic for some indicators, and these poor responses lead to low data quality. Specifically, school attendance showed a straight-line and pattern of responses indicating that the data may not represent the respondent's actual situation. Moreover, similar problems are observed for anthropometric information collected in the survey.

(b) Data for the intensity of armed conflict

In addition to household surveys, the estimation methodology required a measure of conflict intensity. However, in parallel to problems described above for macrolevel data, country-level measures of conflict (such as the total number of battle-related deaths) were insufficient. What was needed was an indicator that provided information on the intensity of violence with a higher geographical and temporal precision.

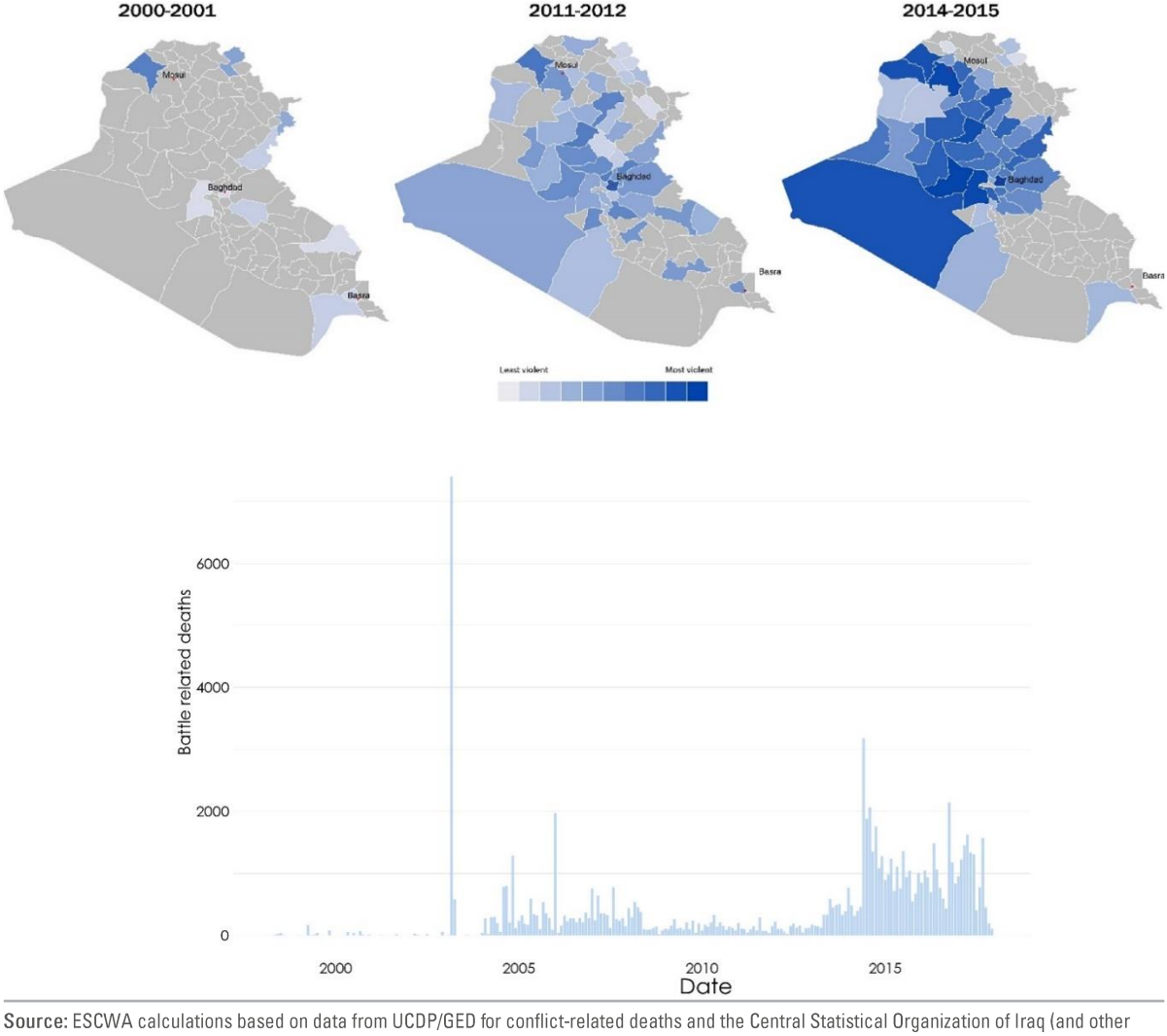
There were several other options available in the literature, although not all of them provided the coverage required for the present study. The most widely known database is the Georeferenced Event Dataset (GED) produced by the Uppsala Conflict Data Program (UCDP).[106] This is a database with violent events as the unit of observation. A violent event is broadly defined as an "incident where armed force was used by an organized actor against another organized actor, or against civilians, resulting in at least 1 direct death at a specific location and a specific date".[107] It covers events from 1989 to 2017 (in its current version 18.1) and is linked to the other databases produced by the institute, including the well-established Armed Conflict Dataset of UCDP and the Peace Research Institute Oslo (PRIO). Each event is accompanied by information on the actors involved, the type of incident, the geographical location, and an estimate of deaths caused by the incident.

For the present study, the GED was the main source of data on armed conflict because of its broad definition, the precise geographical information that enabled calculation of

measures of conflict intensity at the subnational level, and the extensive information that it provided for each event.[108]

Figure A.1 presents the main trends of conflict in Iraq for the period covered in the present study (2003 and afterwards), according to the GED database. The maps show the distribution of violence per governorate for each year from 2003 until 2016. The panel at the bottom of figure A.1 shows the monthly total number of civilian deaths for the entire country.

Figure A.1 Distribution of conflict-related deaths per 100,000 inhabitants by governorate, Iraq



Source: ESCWA calculations based on data from UCDP/GED for conflict-related deaths and the Central Statistical Organization of Iraq (and other sources) for population by governorate.

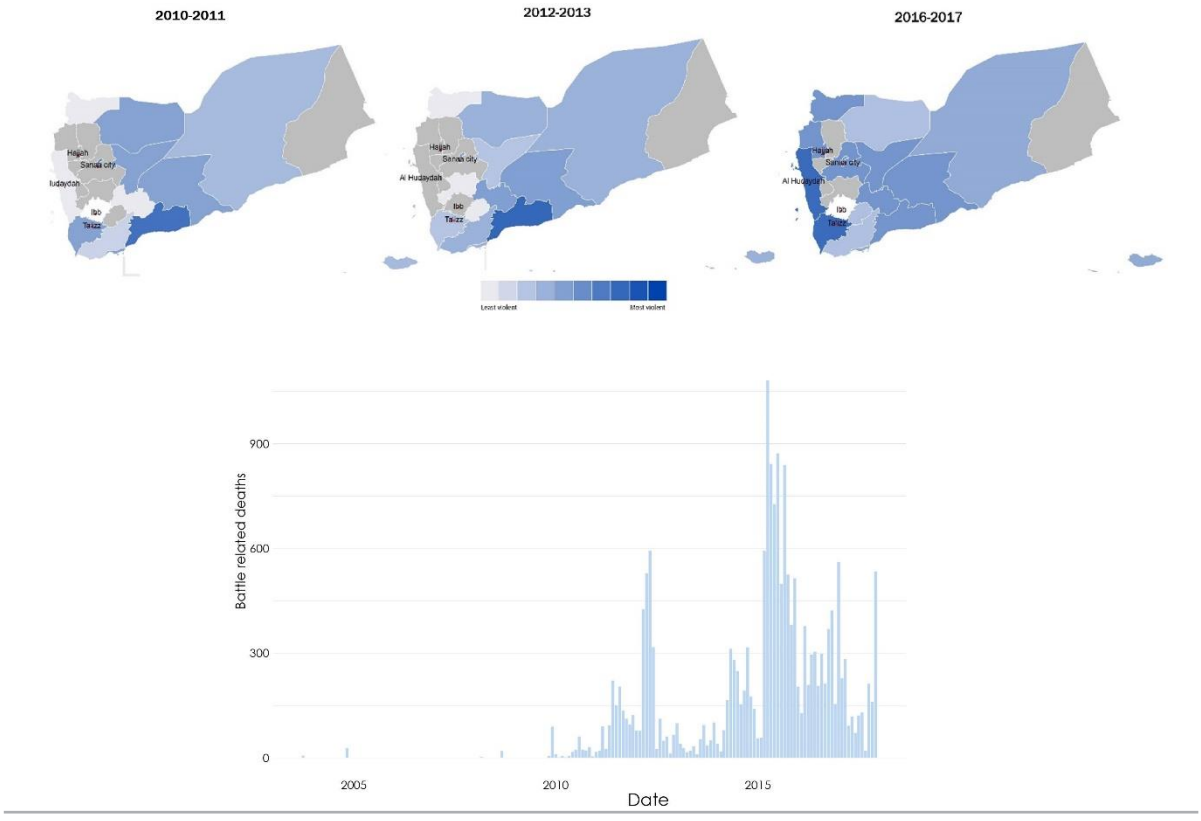
Notes: The maps show the geographical distribution of conflict-related deaths per 100,000 population by governorate and year according to the GED database, with darker colours indicating a higher number of deaths per 100,000 population along a logarithmic scale (for easier depiction of the geographical distribution of violence). The bar chart shows the monthly number of conflict-related deaths per 100,000 population for the entire country (with no logarithmic transformation). See the last sections of this annex for a map of Iraq referencing the names of the governorates.

The armed conflict in Iraq broke out in 2003 in the aftermath of the invasion of the country by a coalition led by the United States. That was the first peak of the conflict, with most deaths concentrated in the governorates of Baghdad, Karbala and Al Najaf. Communal violence quickly spread, and an insurgency formed against the foreign forces and the newly formed Government, leading to one of the most lethal phases of the conflict, with a peak of civilian deaths in 2006. Violence was mostly located in Baghdad and in the governorates of Diyala and Al Anbar. The conflict gradually subsided, and the years 2010 to 2012 were the least violent since the beginning of the conflict. The United States withdrew most of its troops during that period. However, violence propagated once again. Against that background, the Islamic State of Iraq and the Levant (known as ISIL or under the Arabic acronym Daesh) gained power and occupied large areas of the country and the neighbouring Syrian Arab Republic. That led to the third peak in violence, mostly concentrated in the governorates of Nineveh, Salah ad-Din, and Al Anbar.[109] Violence persisted at high levels throughout 2016.

For Yemen, figure A.2 provides a visualization of conflict-related deaths for the most recent waves of violence that were covered in this study (2011 and afterwards), according to the GED dataset. The maps show the geographical distribution of violent events per governorate and year, while the panel at the bottom shows the total number of monthly conflict-related deaths for the entire country.[110]

The figure shows how a first wave of armed conflict followed the uprising of 2011 that eventually led to the departure and resignation of President Ali Abdullah Saleh. The violence was concentrated in the governorates of Al Bayda', Sana'a and Lahij. A consensual presidential election took place in 2012, leading to the election of the former Vice President, Abd Rabbuh Mansur Hadi. The intensity of the conflict gradually declined after that period, although only temporarily. Violence reappeared in 2014 and afterwards between supporters of the elected Government and opposition groups, led by Ansarullah and supporters of former President Saleh. Opposition militias marched on the capital city, enacted a controversial constitutional declaration and placed an interim governing body. The president fled to Aden and installed a temporary capital there. Then, a coalition of Arab countries led by Saudi Arabia began military operations against the opposition forces. During the second wave of the conflict, violence was more intense in the governorates of Sana'a and Aden, with other significant pockets of violence in places such as Shabwah, Al Mahrah, Lahij, Al Jawf and Sa'dah. In parallel, during the entire period, there were sporadic but regular attacks, with support from the United States, against Al-Qaeda and other extremist groups.

Figure A.2 Distribution of conflict-related deaths per 100,000 inhabitants by governorate, Yemen



Source: ESCWA calculations based on data from UCDP/GED for conflict-related deaths and population data from the Central Statistical Organization of Yemen.

Notes: The maps show the geographical distribution of conflict by governorate and year, as measured by the number of conflict-related deaths per 100,000 population according to the GED database, with darker colours indicating higher number of conflict event per 100,000 inhabitants along a logarithmic scale (for easier depiction of the geographical distribution of violence). The bar chart shows the monthly number of conflict-related deaths per 100,000 population for the entire country (with no logarithmic transformation). See the last sections of this annex for a map of Yemen referencing the names of the governorates.

2. Methodology

The analysis relies on a generalized difference in differences (DID) identification strategy. The two-group two-period DID design is intuitive, but it does not accommodate the complexity encountered in applications, which often involve treatment exposures in multiple groups and multiple time periods.[111] The main features of the DID design also apply in a broader set of conditions. When we have two or more groups and two or more periods, D_{gt} = 1 if the treatment is active in group g and period t; otherwise, D_{gt} = 0, as in the two-group two-period case, the core assumption in the generalized DID is that any unmeasured determinants of the outcomes are either time invariant or group invariant.

The method can be expressed according to the following formula:

$$Y_{gt} = a_g + b_t + \delta D_{gt} + \varepsilon_{gt}$$

where Y_{gt} is the development outcome (in the present study: infant mortality, stunting, school enrolment and years of schooling) for child *g* observed at time *t*.

In this equation, δ is the treatment effect parameter, that captures the causal effect of conflict on the dependent variable. The generalized DID stems from the same common trend assumption involved in the simple two-group two-period DID but accommodates for more variation in the details of the research design.[112]

The generalized version of the DID methodology, allowed for a more flexible treatment variable, using different start dates of conflict for each governorate, switching on and off depending on the monthly exposure to conflict and intensity. The generalized DID turned out to be a "two-way fixed effects" regression model, with fixed effects for governorate and for time period.

The widely used social science definition of armed conflict was developed by the Uppsala Conflict Data Program (UCDP). It defines conflict as a contested incompatibility that concerns a government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year.

We determined the thresholds of violence exposure and the variable for exposure to conflict on the basis of this definition. We defined exposure to conflict as a dummy variable indicating exposure to events resulting in 25-49 battle-related deaths per month, as well as a dummy variable indicating 50+ battle-related deaths per month, for each individual since the moment of conception (10 months prior to the respective birth date). We also estimated the number of months of exposure to violence at each threshold for each individual in the sample. The main assumption of the model was that outcomes in treated and untreated units would follow a common path through time in the absence of a treatment effect, in this case the absence of conflict. That assumption needed to be verified in order to validate the estimation results. We conducted a set of robustness checks to validate the common-trends assumption, and we presented some graphs suggesting there is a common trend in our variables of interest prior to the conflict. The parallel trends assumption requires that the trends in the outcome variable for both conflict afflicted regions and non-conflict afflicted regions during the pre-conflict era are similar. This assumption does not require that the level of the outcome variable for the different regions be the same in the pre-treatment era.

Moreover, we presented several graphs of the different outcomes of study, suggesting the parallel trend assumption is met for all those outcomes.

3. Specification and results for each development outcome

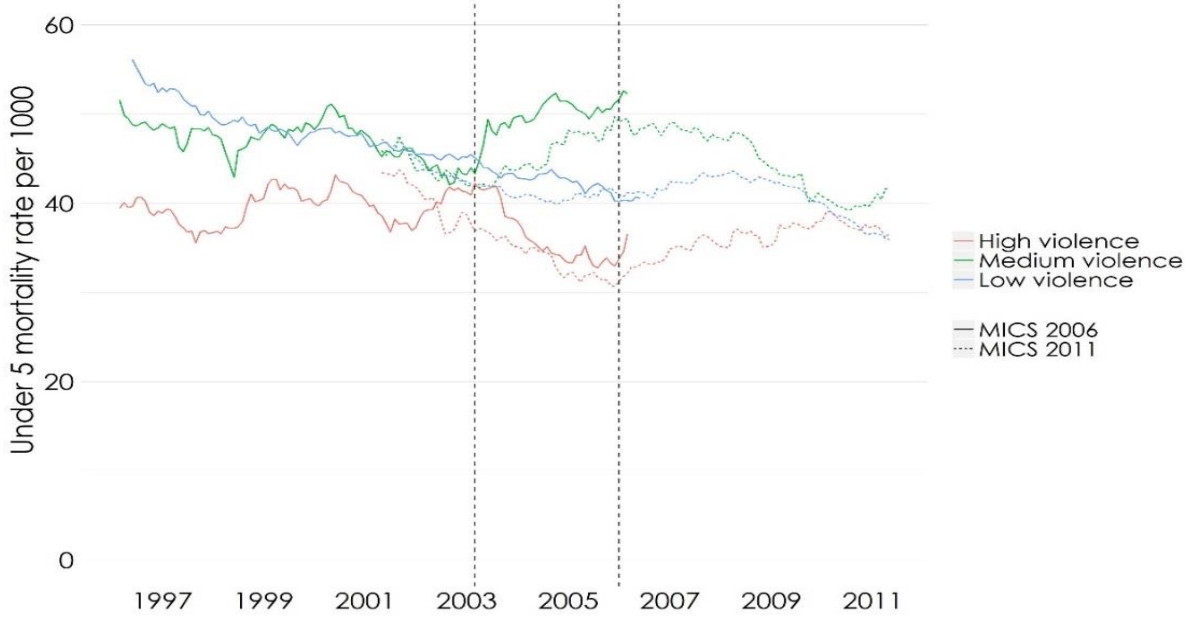
The present section presents a detailed account of the model specifications followed, organized by each of the development outcomes that were studied along the stages of life. It also presents descriptive statistics of the variables of interest, as well as the results of the statistical estimation.

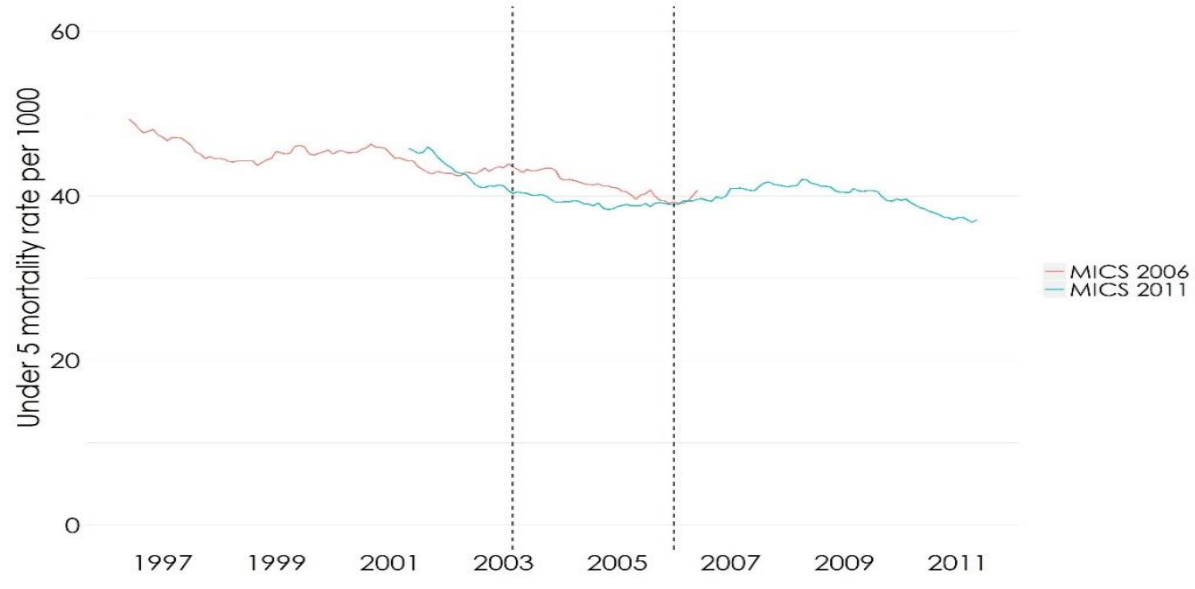
(a) Infant mortality

The variable infant mortality accounts for all children born alive but who died before their first birthday. That variable is built from the birth history registered for all mothers in the sample, which is available only for MICS 2006 and 2011 for Iraq, and DHS 2013 for Yemen.

The parallel trends assumption is the most critical assumption for the internal validity of DID models. Although there is no statistical test for this assumption, visual inspection is useful when observation is made for a long period of time. The parallel trends assumption requires that the trends in infant mortality across regions are similar before the onset of conflict. Figures A.3 and A.4 depict the trends in infant mortality by conflict intensity for Iraq and Yemen respectively, since 1997. The graphical inspection by conflict intensity suggests the parallel trend assumption is met for the period prior to 2003 in Iraq, and for the period prior to 2011 in Yemen.

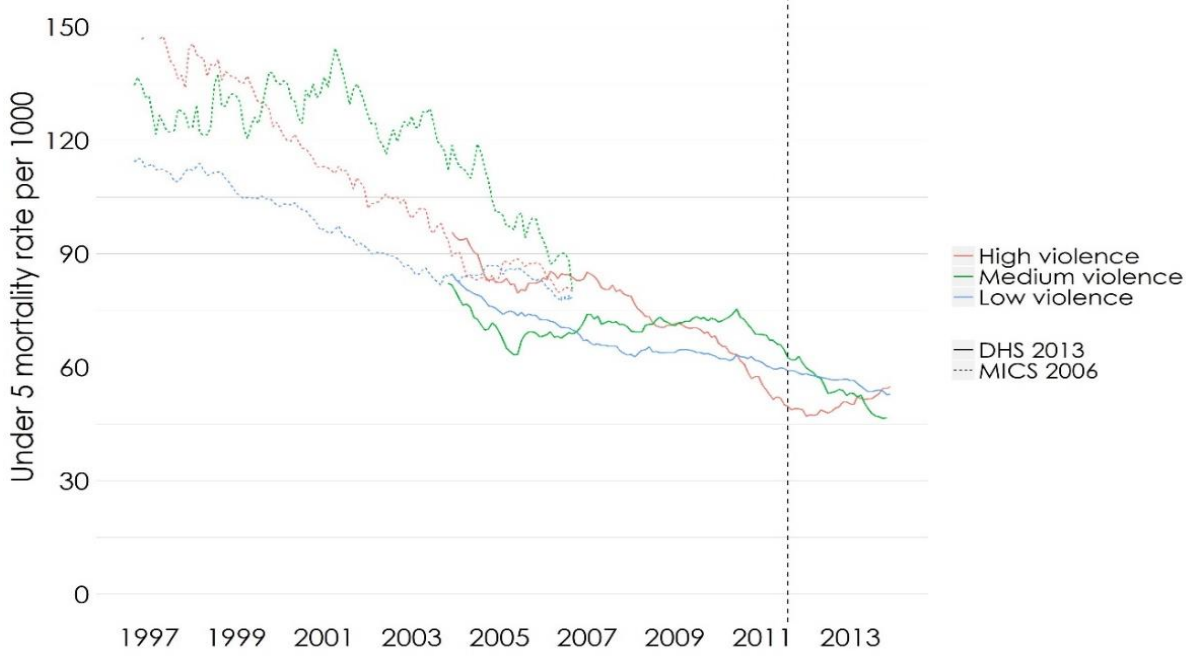
Figure A.3 Infant mortality trend by level of conflict, Iraq

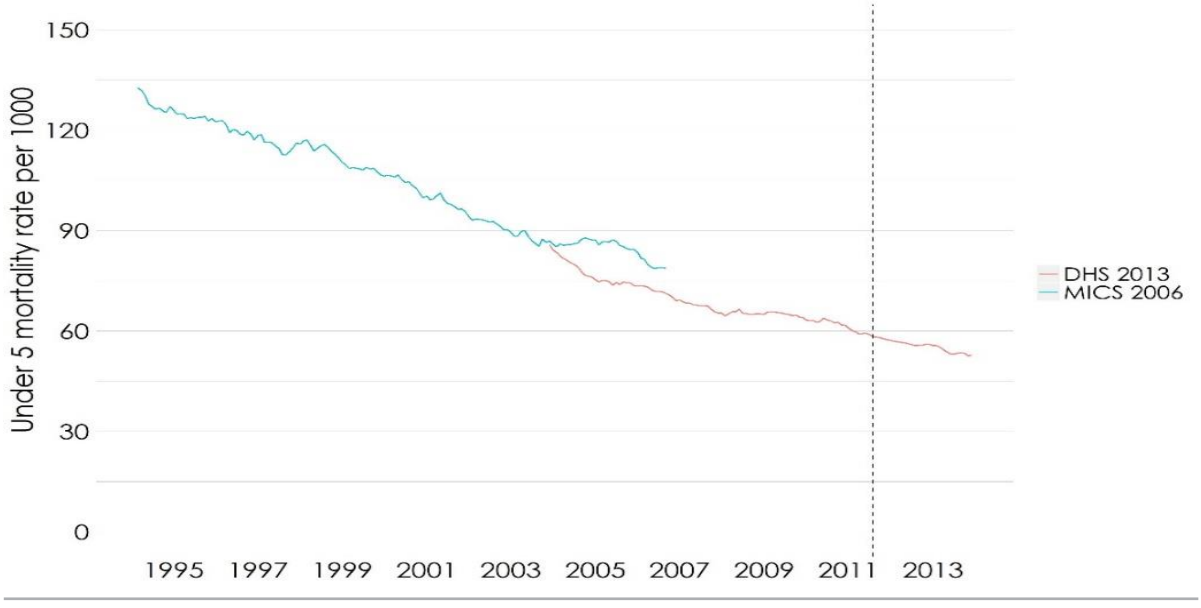




Source: ESCWA calculations based on data from Iraq MICS 2006 and 2011.

Figure A.4 Infant mortality trend by level of conflict, Yemen





Source: ESCWA calculations based on data from Yemen MICS 2006 and DHS 2013.

Table A.2 shows the observed probability of dying within the first year after birth according to a partial list of household characteristics for two of the surveys. For Iraq, infant mortality was higher for boys than for girls, and that increased markedly when the child was part of a multiple birth or when there was already a history of child mortality in the family. It did not seem to vary substantially according to the sex of the household head, the mother's level of education, housing characteristics (overcrowding or availability of improved sanitation and water facilities) or region. Yet, there was a gradually decreasing trend of infant mortality as the income of the household increased, as proxied by the wealth index calculated from the surveys. Similar findings were valid for Yemen, with the exception that there seemed to be a clearer influence of the mother's level of education on mortality, in which more highly educated mothers had lower rates of infant mortalities in their families. There also were fewer infant deaths in households headed by women. Infant mortality rates were higher in rural households.

We estimated a linear probability model for the probability of dying within the first 12 months of life.

We estimate the following regression:

$$Y_{gt} = a_g + b_t + \delta_M D_{gt} + \delta_H D_{gt} + \varepsilon_{gt}$$

Where $Y_{gt} = 1$, if the individual died in the first 12 months of life, and zero otherwise.

As regressors, the model includes the structure of the DID methodology described above. Exposure to conflict (the treatment) is defined

as living in a governorate that experienced at least one month with 25-49 conflict-related deaths for the first threshold ("lower-intensity conflict") and 50+ conflict-related deaths or more for the second threshold ("higher-intensity conflict") from the moment of conception up to the first birthday. We included in the estimations only those children born up to 12 months before the field work of each survey, in order to confirm whether or not the baby survived the first year.

In addition, we included a full list of background characteristics of the children, to consider other factors that could affect mortality and, in that way, isolate the impact of conflict. That included child, mother and household characteristics, the age of the mother at the birth up to a cubic polynomial, the number of brothers and sisters under and over 5 years old alive at the time of birth (included separately), and the total number of children in the household.[113] Governorate and year-fixed effects were also included in the model.

Table A.2 Infant mortality by background characteristics, Iraq and Yemen (percentage)

	Iraq		Yemen
Survey	2006	2011	2013
Gender			
Male	4.16	3.95	5.26
Female	3.36	3.34	4.72
Mother's education			
No education	2.07	4.03	5.27
Primary	3.71	3.64	4.67
Secondary	3.52	3.55	4.33
Post-secondary	3.32	2.82	3.25
Mother is married	3.82	3.76	4.93
Child part of a multiple birth	10.50	14.29	23.66
Gender of household head			
Male household head	3.65	3.64	5.03
Female household head	5.78	3.80	4.23
Overcrowded housing	2.91	2.85	4.78
Improved water sources	3.87	3.64	5.25
Improved sanitation facilities	3.61	3.60	4.10
Wealth quintiles			
Poorest	-	3.89	6.37
Second	-	3.76	6.09
Middle	-	3.49	4.55
Fourth	-	3.32	3.96
Richest	-	3.26	3.43
Region			
Urban	3.89	3.54	3.85
Rural	3.59	3.78	5.34

Source: ESCWA calculations based on data from MICS 2006 and 2011 for Iraq, and DHS 2013 for Yemen.

Table A.3 Estimated coefficients for infant mortality model, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	(-0.0117)	(-0.0064)	(-0.0190)*	0.0220**	0.0372***	0.009
	(-0.0101)	(-0.0118)	(-0.0091)	(-0.0102)	(-0.0093)	(-0.0164)
δ_H	(-0.0068)	(-0.0047)	(-0.0105)	0.0204**	0.0263***	0.014
	(-0.0113)	(-0.0134)	(-0.01)	(-0.0078)	(-0.0064)	(-0.0125)
Observations	84,934	43,666	41,268	18,158	9,415	8,743
R-squared	0.8243	0.8278	0.8221	0.932	0.9357	0.9321
Child characteristics	▫	▫	▫	▫	▫	▫
Parents characteristics	▫	▫	▫	▫	▫	▫
Household characteristics	▫	▫	▫	▫	▫	▫

Source: ESCWA calculations based on data from MICS 2006 and 2011 for Iraq, and DHS 2013 for Yemen.

Notes: Linear probability model of death within first 12 months of life for children of Iraq and Yemen, with a DID specification. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

Table A.3 shows a summary of the estimation results for Iraq and Yemen. The table shows only the marginal effect of conflict exposure on the probability of dying during the first year of life. The first row corresponds to δ_M, exposure to lower-intensity conflict, while the second row corresponds to δ_H, exposure to higher-intensity conflict. The estimation results indicate that exposure to conflict had no significant effect on infant mortality for Iraq. By contrast, exposure to both low- and high-intensity conflict had a positive, significant effect on the probability of dying before the first year of life in the case of Yemen.

(b) Stunting

Stunting is an indicator of long-term nutritional deficiencies and health problems. It is also an important marker of brain development.

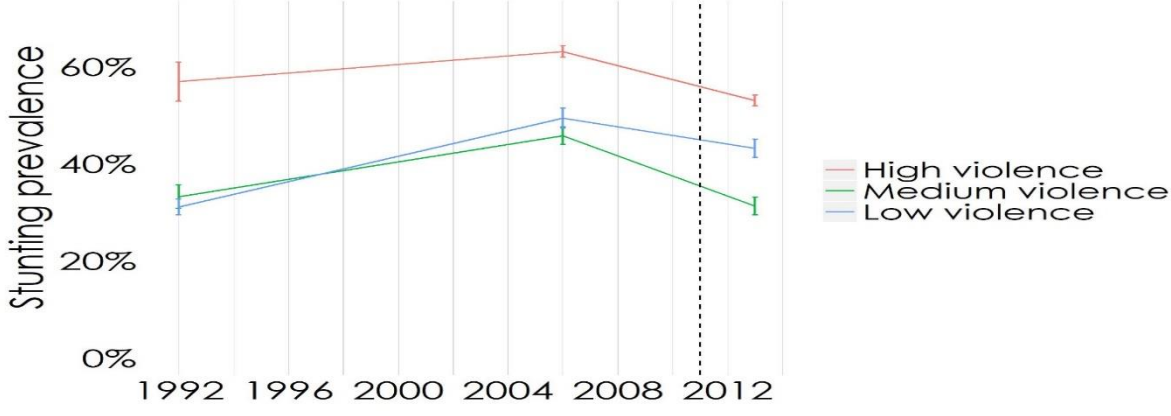
Operationally, the height of children aged 59 months or less (that is, under 5 years of age) is measured as part of the survey process. The recorded heights are compared to an average distribution for the age of the children, provided by the World Health Organization (WHO), leading to a standardised z-score. All children with a score under -2 (that is, two standard distributions below the mean of the normalized height-for-age score) are identified as stunted; those under -3 standard deviations are classified as severely stunted.

Figures A.5 and A.6 show the trends in stunting prevalence by violence level in Iraq and Yemen respectively, since 1995. The parallel trends assumption requires that the trends in stunting prevalence across regions are similar before the onset of conflict. In the case of Iraq, the medium and high violence

governorates appear to follow a similar trend in the period 1996-2003; however the low violence governorates appear to have a declining trend throughout the period 1996-2018. In the case of Yemen, the parallel trend is clearer in the period prior to 2011 for all three levels of violence.

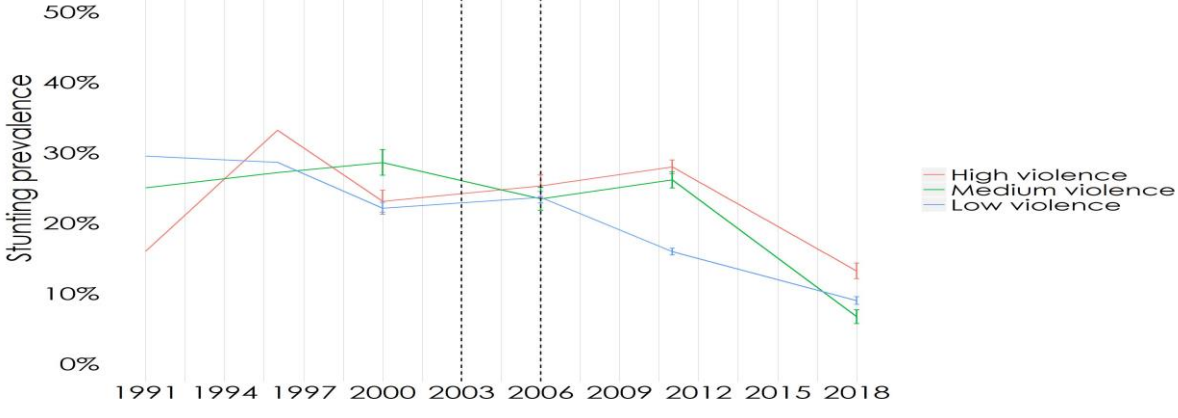
To further understand the trends in stunting prevalence in Iraq, we also provide a graphical representation of the trends in stunting by year of birth for children 0-59 months of age, 0-12 months of age, 12-59 months of age and 24-59 months of age in the case of Iraq (figure A.7).

Figure A.5 Stunting prevalence trend by level of conflict, Iraq



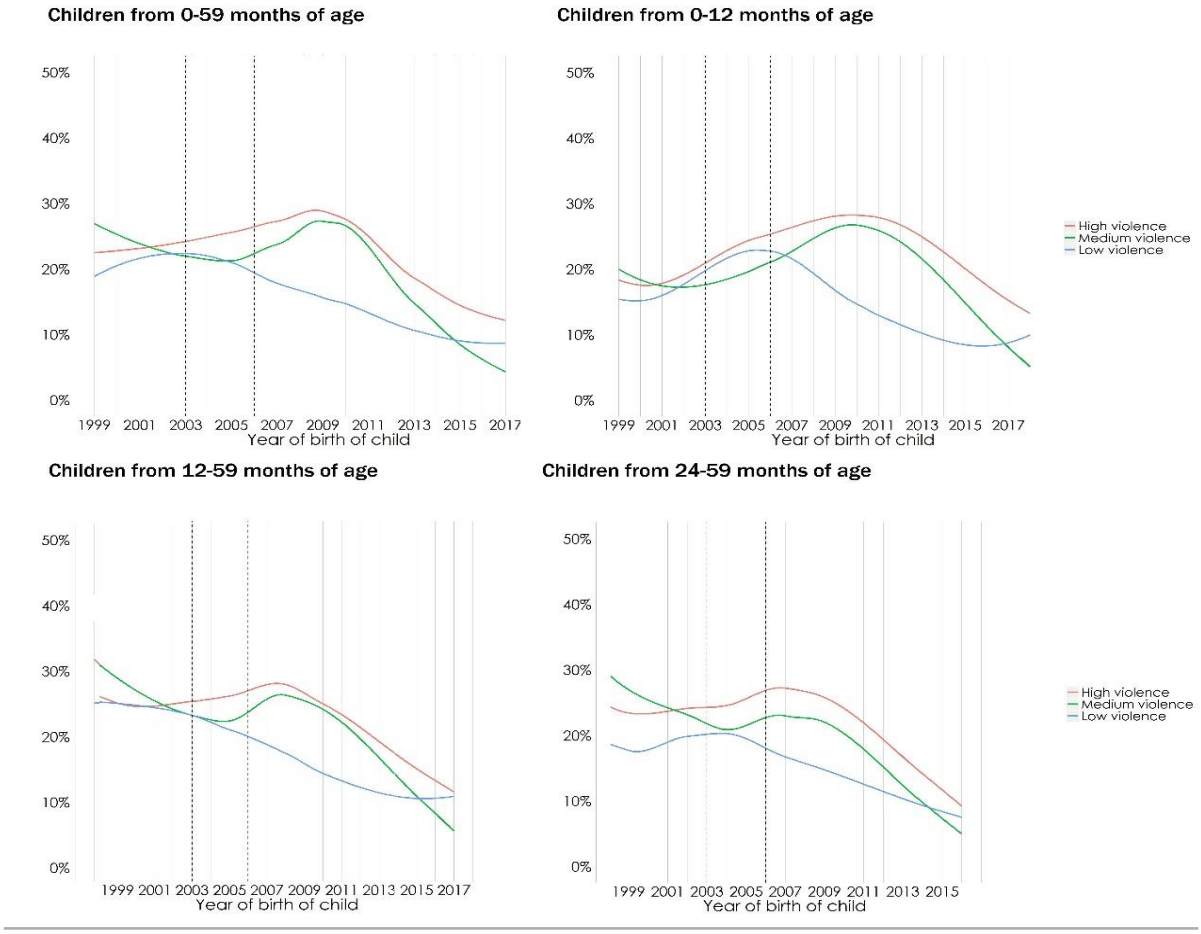
Source: ESCWA calculations based on data from MICS 2006, 2011 and 2018 for Iraq.

Figure A.6 Stunting prevalence trend by level of conflict, Yemen



Source: ESCWA calculations based on data from MICS 2006, 2011 and 2018 for Iraq

Figure A.7 Stunting prevalence trend in Iraq by level of conflict and by age bracket



Source: ESCWA calculations based on data from MICS 2006, 2011 and 2018 for Iraq.

Table A.4 shows the stunting rates for Iraq according to certain background characteristics. Stunting was higher for children aged 18-23 months, which has been identified as a crucial stage of child development. Stunting is more common in children whose mother is dead or does not live in the same household. Stunting rates become less common when the mother is more educated. The same set of variables for the father does not seem to have a clear correlation. While the basic household characteristics (such as overcrowding or lack of water and sanitation facilities) do not appear to have a close correlation with stunting, it appears that, as expected, richer households and those in urban communities exhibit lower stunting rates. The figures show that, in general, stunting rates fell between 2006 and 2011.

Table A.4 Stunting rates by background characteristics, Iraq (percentage)

	2006		2011	
	Stunted	Severely stunted	Stunted	Severely stunted
Gender				
Male	28	13	20	9
Female	26	11	19	8
Age group				
0-17 months	23	13	17	8
18-23 months	35	19	26	12
24-59 months	28	11	20	8
Mother does not live in household	16	3	25	9
Mother is dead	32	16	27	15
Mother's education				
No education	34	8	14	6
Primary	29	13	20	8
Secondary	24	11	18	8
Post-secondary	18	8	17	8
Father does not live in household	28	14	14	5
Father is dead	33	15	19	9
Father's education				
No education	18	11	18	4
Primary	28	12	21	8
Secondary	26	12	19	8
Post-secondary	25	12	15	7
Overcrowded housing	27	11	21	8
Improved water sources	25	11	19	8
Improved sanitation facilities	26	12	20	8
Wealth quintiles				
Poorest	-	-	22	9
Second	-	-	21	8
Middle	-	-	18	7
Fourth	-	-	19	9
Richest	-	-	18	9
Region				
Urban	25	11	19	8
Rural	30	14	21	9

Source: ESCWA calculations based on data from Iraq MICS 2006 and 2011.

Note: The figures show the average stunting rates according to background characteristics.

Table A.5 shows the same information for Yemen. Stunting rates in Yemen were higher than in Iraq, but they showed the same decreasing trend between 2006 and 2013. The rest of the findings were also similar. While the characteristics of the father were not highly correlated to stunting, those of the mother were. Children from rural or poorer households tended to be more stunted. One difference was the incidence of stunting by age group. While it was higher for the group aged 18-23 months in 2006, the rate then increased more for the oldest age group in the sample (24-59 months of age).

Table A.5 Stunting rates by background characteristics, Yemen (percentage)

	2006		2013	
	Stunted	Severely stunted	Stunted	Severely stunted
Gender				
Male	58	37	47	25
Female	56	31	45	21
Age group				
0-17 months	42	25	28	13
18-23 months	65	43	49	25
24-59 months	63	37	56	28
Mother does not live in household	63	44	53	30
Mother is dead	38	29	36	17
Mother's education				
No education			53	28
Primary	51	28	41	18
Secondary	42	22	35	16
Post-secondary	29	11	24	7
Father does not live in household	51	28	38	18
Father is dead	58	32	56	24
Father's education				
No education	-	-	58	32
Primary	60	35	49	25
Secondary	55	32	43	21
Post-secondary	52	30	37	16
Overcrowded housing	59	35	52	28
Improved water sources	54	31	49	25
Improved sanitation facilities	54	31	37	16
Wealth quintiles				
Poorest	-	-	59	33
Second	-	-	55	29
Middle	-	-	48	24
Fourth	-	-	38	16
Richest	-	-	26	8
Region				
Urban	45	23	33	14
Rural	61	38	51	26

Source: ESCWA calculations based on data from Yemen HBS 2006 and DHS 2013.
Note: The figures show the average stunting rates according to background characteristics.

We estimate the following regression:

$$Y_{gt} = a_g + b_t + \delta_M D_{gt} + \delta_H D_{gt} + \varepsilon_{gt}$$

Where $Y_{gt} = 1$ if the child aged 0-59 months of age was stunted, and zero otherwise. Likewise, we estimate a similar regression for the probability of being severely stunted.

Linear probability models of the stunting for children under 5 years of age were estimated for both Iraq and Yemen. As before, DID structure was included in the model to capture the effect of conflict on the probability of stunting. The impact of conflict is identified with a difference-in-difference approach contrasting stunting trends in regions exposed to different conflict intensities to regions which remained relatively safe during the conflict; using our violence thresholds, we clustered violence by low and high.

The regression included child, family and household characteristics. Most of them are listed in the previous tables, in addition to child's age and child's age squared, mother's age and mother's age squared, father's age and father's age squared, and number of children in the household linear and squared. Governorate and year-fixed effects were also included in the model. Separate models were fitted for the probability of stunting and of severe stunting.

Results from the regressions are summarized in table A.6. The first column shows the estimation for stunting rates in Iraq and the second column for Yemen. We observed a significant overall decline in stunting, corresponding to generalized global trends in improvements in health, nutritional content of diets and other factors. However, when we identify those individuals exposed to conflict at the two different thresholds (δ_M and δ_H), we observe that exposure to conflict has a countervailing effect. Stunting for children exposed to conflict does not decline at the same pace as it does for children not exposed to conflict, applying for both Iraq and Yemen, with stronger effects for children exposed to higher levels of violence in their governorates. Parallel results are obtained in columns three and four, which correspond to the probability of severe stunting in Iraq and Yemen, respectively.

Table A.6 Estimated coefficients for the stunting models, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	0.0788**	0.0291	0.1260**	0.0087	0.1027**	(-0.0724)
	(-0.0357)	(-0.0319)	(-0.0544)	(-0.0731)	(-0.0472)	(-0.0966)
δ_H	0.1582***	0.1483***	0.1660**	0.0960**	0.1482**	0.0497
	(-0.0498)	(-0.0492)	(-0.0766)	(-0.0439)	(-0.0635)	(-0.0353)
Observations	74,732	38,060	36,672	26,402	13,452	12,950
R-squared	0.0465	0.056	0.0423	0.1503	0.1342	0.1767
Child characteristics	◘	◘	◘	◘	◘	◘
Parents characteristics	◘	◘	◘	◘	◘	◘
Household characteristics	◘	◘	◘	◘	◘	◘

Source: ESCWA calculations based on data from MICS 2006 and 2011 for Iraq, and HBS 2006 and DHS 2013 for Yemen.

Notes: Linear probability model of stunting for Iraq and Yemen with a DID structure. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

Table A.7 Estimated coefficients for the severe stunting models, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	0.0525***	0.0419**	0.0647**	0.013	0.031	(-0.0138)
	(-0.0145)	(-0.0164)	(-0.0268)	(-0.0346)	(-0.0401)	(-0.0348)
δ_H	0.0930**	0.1190***	0.0688	0.0668**	0.0617*	0.0822***
	(-0.035)	(-0.0327)	(-0.0551)	(-0.0268)	(-0.0336)	(-0.0283)
Observations	74,732b0	38,060	36,672	26,402	13,452	12,950
R-squared	0.05	0.0543	0.0468	0.1045	0.1026	0.1135
Child characteristics	◘	◘	◘	◘	◘	◘
Parents characteristics	◘	◘	◘	◘	◘	◘
Household characteristics	◘	◘	◘	◘	◘	◘

Source: ESCWA calculations based on data from MICS 2006 and 2011 for Iraq, and HBS 2006 and DHS 2013 for Yemen.

Notes: Linear probability model of stunting for Iraq and Yemen with a DID structure. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

(c) School attendance

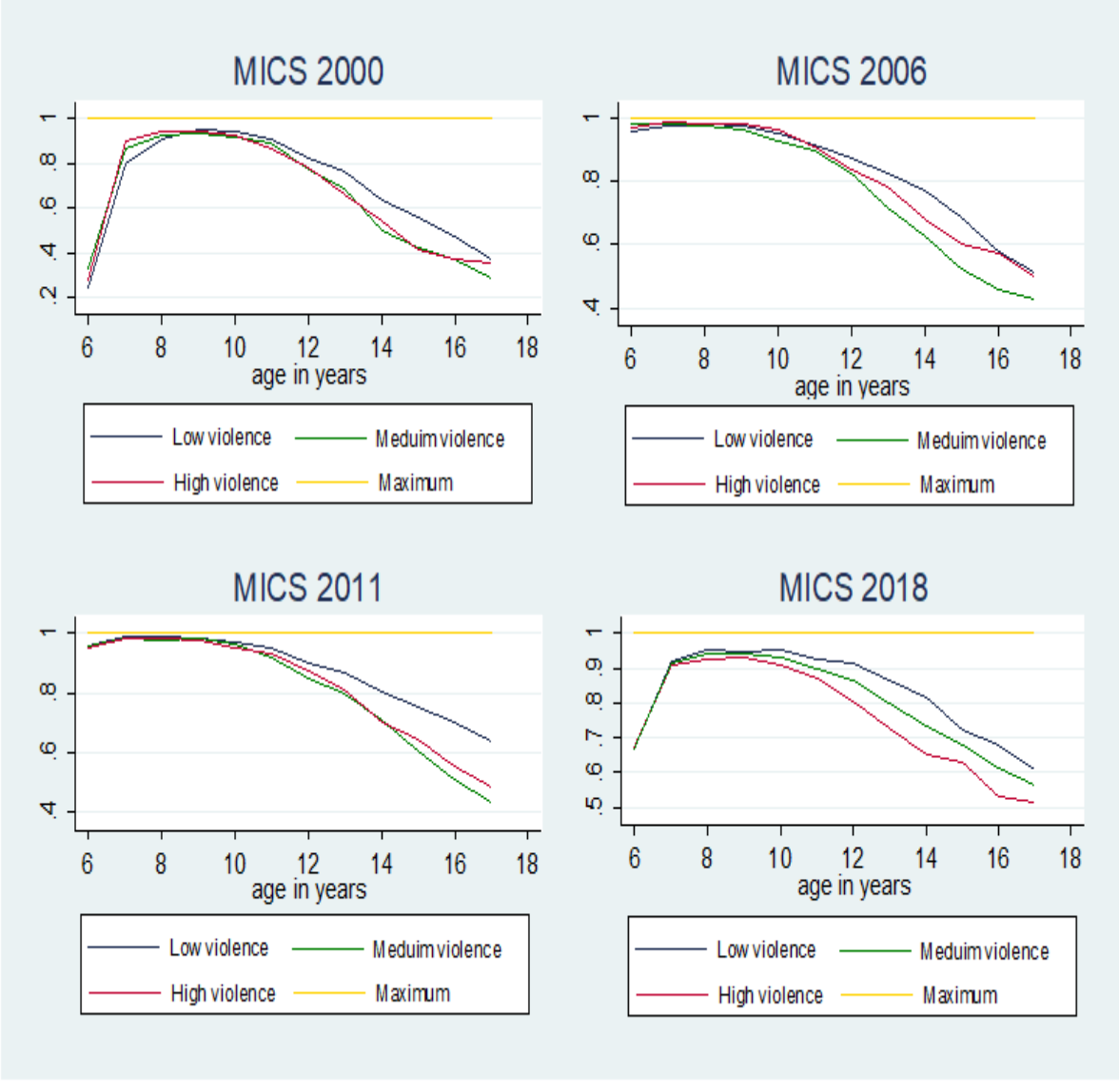
The variable net enrolment rate accounts for all children between 6 and 17 years old who are attending school, using figures from the household surveys of the two countries. Tables A.7 and A.8 show the average enrolment rates for children of primary age (6-11) and secondary age (12-17) according to background characteristics in all available surveys of Iraq and Yemen, respectively. The enrolment rate was higher for boys than for girls with regard to both age groups. It was lower for children of secondary age than for those of primary age for both boys and girls. It appeared that school enrolment rates were higher for more educated mothers and fathers; for households with higher incomes (proxied by the wealth index calculated from the surveys); and for urban areas compared to rural regions.

Figure A.8 depicts the enrolment profiles by violence level and age in Iraq for the years 2000, 2006, 2011 and 2018. It shows that the low violence governorate has higher enrolment at all ages for all years, but enrolment profiles follow similar trends. Notably, from 2000 to 2006, delayed enrolment is eliminated and close to universal primary achieved. By 2011, there is a small increase in delayed enrolment, but enrolment up to age 11 is almost universal. In 2018, the situation drastically changes, with a pronounced increase in delayed enrolment, followed by significantly lower primary school attendance and larger enrolment gaps at all ages across regions.

Figure A.9 depicts the enrolment profiles by violence level and age in Yemen for the years 2006 and 2013. The data confirm that in both years the lowest enrolment is for the highest violence governorates.

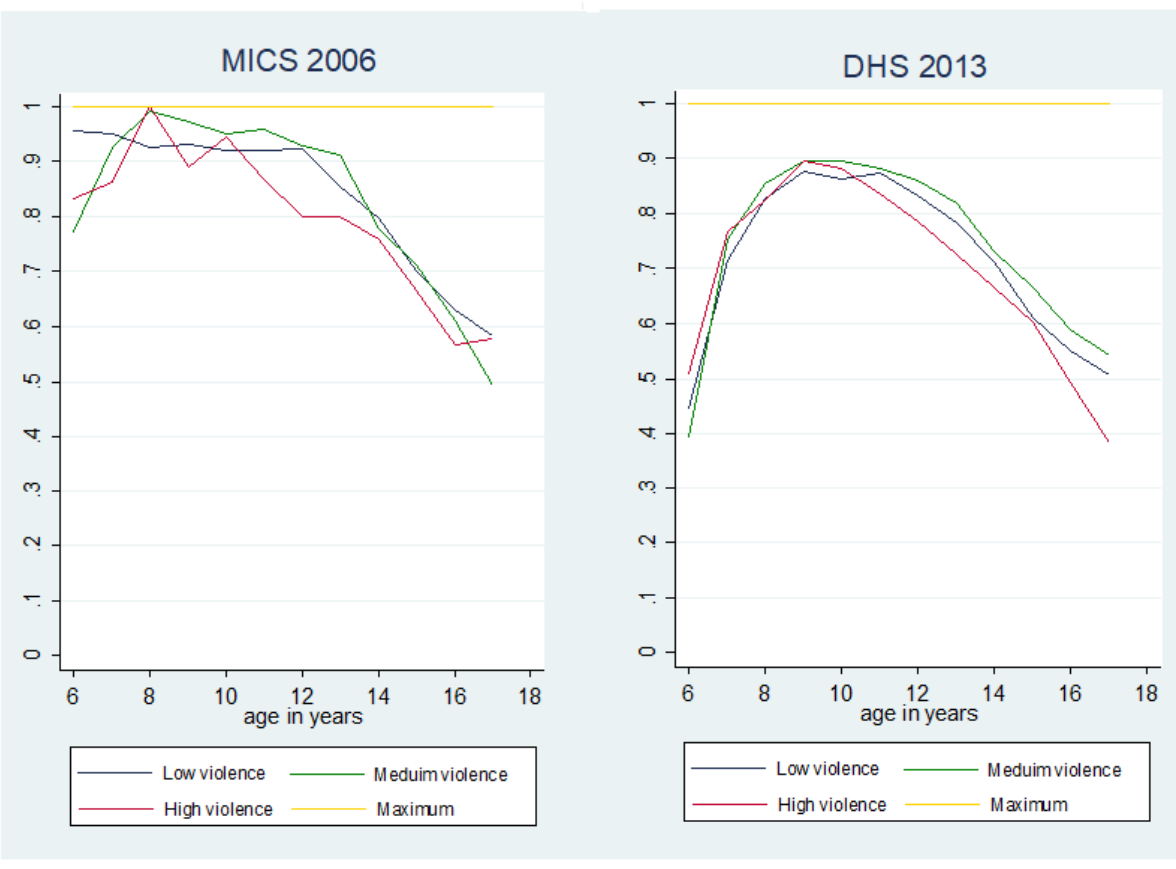
Furthermore, figures A.10 and A.11 show enrolment trends for children aged 6-11 in Iraq and Yemen, respectively.

Figure A.8 Enrolment profiles by age and level of violence, Iraq



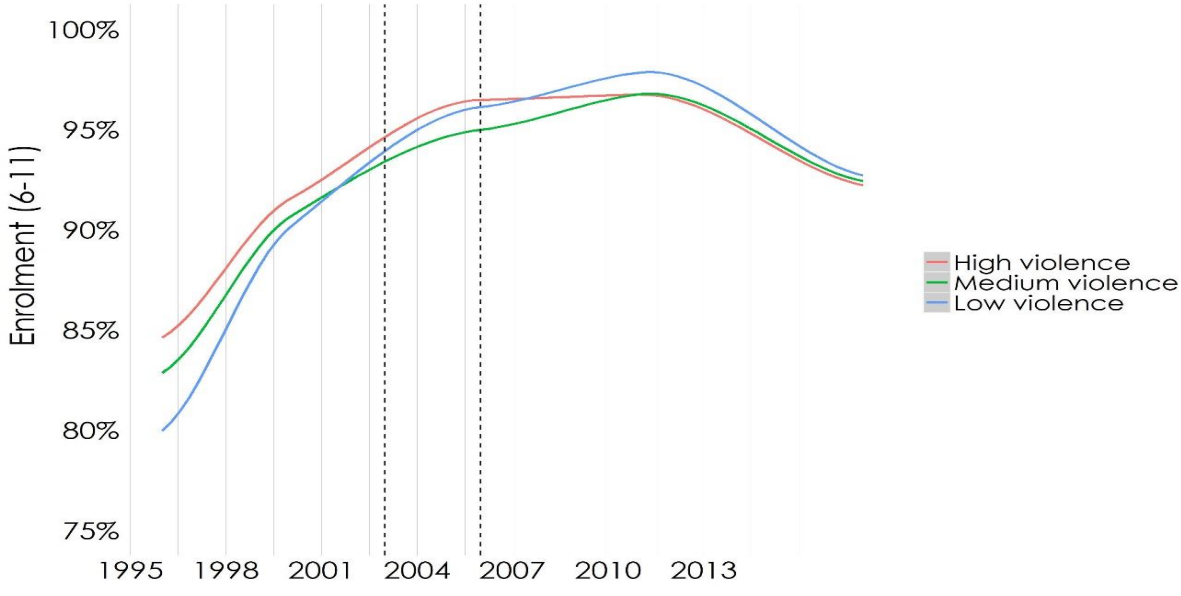
Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and 2018.

Figure A.9 Enrolment profiles by age and level of violence, Yemen



Source: ESCWA calculations based on data from Yemen MICS 2006 and DHS 2013.

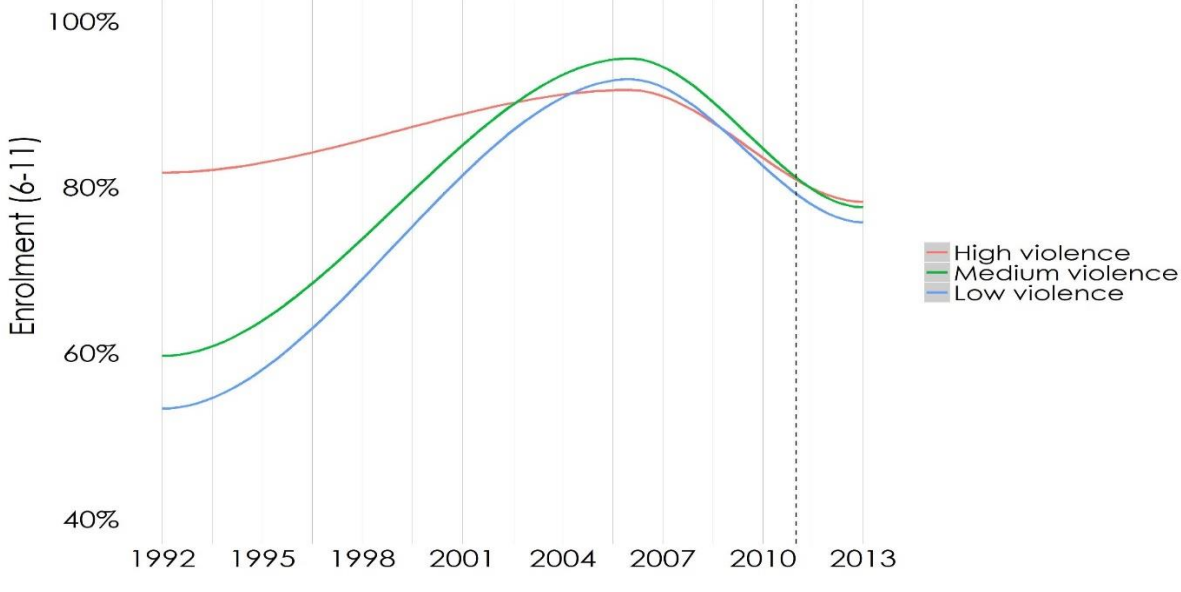
Figure A.10 Education (6-11), Iraq



Source: ESCWA calculations based on data from Iraq MICS 1996, 2000, 2006, 2011 and 2018.

Note: Data on enrolment for 1996 were collected from the MICS report as they were not accessible.

Figure A.11 Education (6-11), Yemen



Source: ESCWA calculations based on data from MICS 1992, 2006, and DHS 2013 for Yemen.

Table A.8 Enrolment rates by background characteristics, Iraq (percentage)

	2000		2006		2007		2011		2012	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
Gender										
Male	86	67	97	72	88	68	98	78%	90%	77%
Female	82	49	95	55	83	48	96	64%	86%	56%
Mother does not live in the hh	81	72	94	22	86	16	96	21%	81%	19%
Mother is dead	90	74	96	45	86	45	97	54%	87%	47%
Mother's education										
No education	-	-	91	53	85	57	94	59%	87%	62%
Primary	-	-	96	63	90	59	97	70%	91%	74%
Secondary	-	-	98	82	93	85	98	84%	94%	88%
Post-secondary	-	-	100	98	96	97	99	97%	94%	95%
Father does not live in the hh	86	59	97	28	87	28	95	30%	84%	33%
Father is dead	86	73	93	53	83	50	96	65%	88%	61%
Father's education										
No education	-	-	93	50	81	51	92	45%	84%	59%
Primary	-	-	94	58	84	55	96	66%	89%	67%
Secondary	-	-	97	70	91	69	98	76%	91%	77%
Post-secondary	-	-	98	87	95	88	99	90%	94%	89%
Overcrowded bedrooms	-	-	96	62	83	56	97	70%	86%	63%
Improved water sources	85	61	96	66	89	61	97	72%	90%	70%
Improved sanitation facilities	85	59	96	66	-	-	97	72%	89%	68%
Wealth quintiles										
Poorest	79	37	-	-	77	45	95	60%	80%	51%
Second	84	54	-	-	85	46	97	65%	88%	62%
Middle	87	64	-	-	89	62	97	71%	90%	69%
Fourth	-	-	-	-	91	68	98	75%	93%	77%
Richest	88	84	-	-	94	75	99	85%	94%	82%
Region										
Urban	86	64	97	70	90	63	98	75%	90%	72%
Rural	81	42	94	52	78	47	96	63%	84%	55%

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012.

Note: The figures show the average enrolment rates according to background characteristics. "hh" stands for "household".

We estimate the following regression:

$$Y_{gt} = a_g + b_t + \delta_M D_{gt} + \delta_H D_{gt} + \varepsilon_{gt}$$

Where $Y_{gt} = 1$ if the child aged 6-17 is enrolled in school, and zero otherwise. Likewise, we estimate a similar regression for the probability of being enrolled in primary (6-11) and secondary (12-17).

We estimated a linear probability model for school attendance. As regressors, the model included the structure of the DID methodology described above. Exposure to conflict was defined according to the two thresholds described above. In addition, we included a full list of background characteristics of the children and their households, to allow for other factors that could affect the enrolment rate and, in that way, isolate the impact of conflict. That included child, mother, father and household characteristics. Governorate and year-fixed effects were also included in the model.

We first estimated a general regression of school enrolment for all children, followed by separate regressions by educational levels (primary and secondary) and sex of the child. A summary of the estimation results for Iraq and Yemen is presented in tables A.9, A.10 and A.11. Table A.9 includes the overall results for all children. Table A.10 shows results for primary education and separate regressions for girls and boys. Table A.11 shows results for secondary education and separate effects for boys and girls. When considering the exposure to conflict, there appeared to be an additional significant effect that pushed enrolment even further down for Iraq, but not for Yemen.

For Iraq, the variables δ_M and δ_H, were negative and statistically significant. Conflict decreased school enrolment in low and high-violence governorates in Iraq. In contrast to Iraq, exposure to conflict δ_M and δ_H, showed no statistically significant effect for Yemen.

That effect in Iraq can be explained by a significant decline in attendance at primary school level for both girls and boys. Although the overall result for Yemen was not significant, there was a significant, negative effect of conflict on enrolment for boys at primary level and girls at secondary level

Table A.9 Enrolment rates by background characteristics, Yemen (percentage)

	HBS 2006		MICS 2006		DHS 2013	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
Gender						
Male	99	83	94	82	81	79
Female	97	70	93	68	72	58
Mother does not live in the hh	94	66	92	60	77	47
Mother is dead	95	61	95	68	74	57
Mother's education						
No education	-	-	94	83	72	64
Primary	99	86	95	88	85	85
Secondary	99	95	95	94	87	92
Post-secondary	100	99	96	97	93	98
Father does not live in the hh	97	76	93	71	78	59
Father is dead	98	75	98	74	74	66
Father's education						
No education	-	-	91	73	66	56
Primary	98	81	95	80	74	71
Secondary	99	82	95	84	83	83
Post-secondary	100	96	98	92	90	92
Overcrowded bedrooms	97	73	92	72	69	62
Improved water sources	99	80	94	75	74	66
Improved sanitation facilities	99	81	95	80	84	78
Wealth quintiles						
Poorest	-	-	88	65	56	46
Second	-	-	92	70	76	62
Middle	-	-	93	72	82	70
Fourth	-	-	97	80	83	77
Richest	-	-	96	86	90	88
Region						
Urban	99	82	96	84	85	83
Rural	98	76	92	71	73	63

Source: ESCWA calculations based on data from Yemen HBS 2006, MICS 2006 and DHS 2013.

Note: The figures show the average enrolment rates according to background characteristics. "hh" stands for "household".

Table A.10 Estimated coefficients for the enrolment rates models, all children, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	(-0.0302)**	(-0.0273)*	(-0.0304)**	0.0028	(-0.0062)	0.0213
	(-0.0125)	(-0.0152)	(-0.0133)	(-0.0118)	(-0.0078)	(-0.0179)
δ_H	(-0.0093)	(-0.0133)	(-0.0023)	(-0.0091)	0.0042	(-0.0305)***
	(-0.0119)	(-0.017)	(-0.0085)	(-0.0053)	(-0.0036)	(-0.0107)
Observations	215,250	112,478	102,772	73,133	38,947	34,186
R-squared	0.2553	0.1858	0.3165	0.1959	0.1769	0.2409
Child characteristics	▫	▫	▫	▫	▫	▫
Parents characteristics	▫	▫	▫	▫	▫	▫
Household characteristics	▫	▫	▫	▫	▫	▫

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012, and data from Yemen HBS 2006 and DHS 2013.

Notes: Linear probability model of enrolment rates for Iraq and Yemen with a DID structure. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

Table A.11 Estimated coefficients for the primary enrolment rates model by gender, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	(-0.0426)***	(-0.0424)***	(-0.0416)***	(-0.0394)**	(-0.0610)***	(-0.013)
	(-0.0096)	(-0.0144)	(-0.0105)	(-0.0152)	(-0.0114)	(-0.0213)
δ_H	(-0.0220)*	(-0.0347)*	(-0.0087)	0.0022	(-0.0008)	0.0041
	(-0.0121)	(-0.0179)	(-0.0087)	(-0.0028)	(-0.0026)	(-0.0049)
Observations	113,218	59,472	53,746	36,742	19,387	17,355
R-squared	0.1401	0.1377	0.1635	0.0558	0.06	0.0698
Child characteristics	▫	▫	▫	▫	▫	▫
Parents characteristics	▫	▫	▫	▫	▫	▫
Household characteristics	▫	▫	▫	▫	▫	▫

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012 and data from Yemen HBS 2006 and DHS 2013.

Notes: Linear probability model of primary enrolment rates for Iraq and Yemen with a DID structure. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

Table A.12 Estimated coefficients for the secondary enrolment rates model by gender, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	(-0.0135)	(-0.0135)	(-0.0093)	0.0296**	0.0352***	0.0312
	(-0.0234)	(-0.0241)	(-0.0232)	(-0.0126)	(-0.0078)	(-0.0229)
δ_H	0.0081	0.0031	0.0162	(-0.0158)*	0.0233***	(-0.0759)***
	(-0.0155)	(-0.0207)	(-0.012)	(-0.0091)	(-0.0064)	(-0.0235)
Observations	102,032	53,006	49,026	36,391	19,560	16,831
R-squared	0.2869	0.2049	0.339	0.1532	0.1437	0.1804
Child characteristics	▫	▫	▫	▫	▫	▫
Parents characteristics	▫	▫	▫	▫	▫	▫
Household characteristics	▫	▫	▫	▫	▫	▫

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012 and data from Yemen HBS 2006 and DHS 2013.

Notes: Linear probability model of secondary enrolment rates for Iraq and Yemen with a DID structure. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

(d) Years of schooling

Another way to assess educational performance is the number of years of schooling that children have attained up to a certain age. However, that variable differs from enrolment and other flow indicators because it is a stock, or a cumulative measure of educational attainment. For that reason, a regression that combines children of different ages could confound the cohort effect, because differences in average years of schooling could be explained by demographic changes in addition to the regressors included in the model. That variable can be calculated for all available surveys for Iraq and Yemen.

Tables A.12 and A.13 show the years of schooling for Iraq and Yemen according to certain background characteristics for Iraq and Yemen, respectively. For the reason stated above, that variable can only be averaged for children of the same age. For the tables and the regressions below, we chose ages 8 and 15 because they represent the midpoint of primary and secondary education, respectively, and could potentially indicate an overview of the impact of conflict at each educational level. Both countries showed similar results. As expected, years of schooling were higher for boys than for girls at both ages. Also, more educated parents had children with higher years of schooling, while richer households and those in urban communities displayed higher educational attainment. Finally, the figures show that, in general, years of schooling increased throughout the years studied.

We estimate the following regression:

$$Y_{gt} = a_g + b_t + \delta_M D_{gt} + \delta_H D_{gt} + \varepsilon_{gt}$$

Where $Y_{gt} = years\ of\ schooling\ at\ age\ 8\ or\ 15$.

Linear probability models of years of schooling were estimated for both Iraq and Yemen. The regression was calculated first for a general model for all children at each of the two selected ages, and then separate regressions for girls and boys. As before, the model followed a DID approach, with the two levels of exposure to conflict, as described above.[114] As for the controls, both regressions include the usual child, family and household characteristics that were available in the surveys. Governorate and year-fixed effects were also included in the model.

The results from the regressions are summarized in tables A.14 and A.15. Table A.14 shows the regression results for children at the middle of the age group of primary education (8 years of age), including for all children and then for the regressions disaggregated by girls and boys. Neither in Iraq nor in Yemen did we observe any significant effect of the conflict on the school attainment of girls or boys in the primary age group during the years studied. Table A.18 shows the regression results for children at the midpoint of the age group of secondary education (15 years of age). That age is relevant because it marks the start of the working age, according to standards of the International Labour Organization (ILO), and therefore presents an assessment of school attainment during the transition from education to the labour market. Contrary to the results from the previous age group, we observed a significant deterioration in school attainment as a consequence of conflict. For Iraq, we observed a small impact on boys, while for girls the effect was much larger.

Table A.13 Years of schooling by background characteristics, Iraq

	2000		2006		2007		2011		2012	
	At age 8	At age 15	At age 8	At age 15	At age 8	At age 15	At age 8	At age 15	At age 8	At age 15
Gender										
Male	0.80	5.05	1.43	6.85	2.08	7.20	1.41	6.12	1.96	7.84
Female	0.70	4.51	1.35	5.89	1.98	6.15	1.39	5.77	1.85	7.10
Mother does not live in the hh	0.56	-	1.12	5.31	2.07	4.63	1.33	4.45	1.82	5.62
Mother is dead	0.76	-	1.29	5.13	2.20	5.45	0.97	5.59	1.83	7.31
Mother's education	-	-								
No education	-	-	1.12	5.45	1.95	6.59	1.32	4.51	1.87	7.14
Primary	-	-	1.38	6.82	2.18	7.26	1.33	5.85	1.99	8.15
Secondary	-	-	1.69	8.02	2.19	8.56	1.63	7.15	2.13	8.56
Post-secondary	-	-	1.81	7.90	2.34	9.09	1.71	8.34	2.23	9.06
Father does not live in the hh	0.88	-	1.51	5.08	2.23	5.41	1.30	4.57	1.81	6.34
Father is dead	0.62	-	1.45	6.16	1.74	6.68	1.25	5.67	1.79	7.51
Father's education										
No education	-	-	0.95	2.77	1.86	5.55	1.18	4.63	1.76	7.05
Primary	-	-	1.27	6.13	1.92	6.27	1.26	5.39	1.94	7.34
Secondary	-	-	1.53	7.42	2.23	7.84	1.48	6.40	1.93	8.08
Post-secondary	-	-	1.69	7.98	2.25	8.54	1.69	7.74	2.25	8.59
Overcrowded bedrooms	-	-	1.34	5.71	1.90	6.03	1.31	5.28	1.82	6.93
Improved water sources	0.83	5.14	1.46	6.66	2.11	7.09	1.43	6.11	1.96	7.85
Improved sanitation facilities	0.80	5.01	1.45	6.63	-	-	1.42	6.04	1.94	7.71
Wealth quintiles										
Poorest	0.46	3.07	-	-	1.61	5.21	1.07	4.16	1.67	5.97
Second	0.74	4.65	-	-	2.11	5.99	1.36	5.37	1.89	7.11
Middle	0.86	5.57	-	-	2.08	6.93	1.46	5.98	1.95	7.62
Fourth			-	-	2.18	7.89	1.55	6.67	2.05	8.25
Richest	1.23	6.38	-	-	2.39	7.98	1.71	7.56	2.17	8.58
Region										
Urban	0.87	5.35	1.53	7.05	2.14	7.23	1.50	6.42	1.97	8.03
Rural	0.54	3.68	1.21	5.20	1.80	5.35	1.19	5.02	1.80	6.38

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012.

Note: The figures show the average years of schooling at age 8 and 15 according to background characteristics. "hh" stands for "household".

Table A.14 Years of schooling by background characteristics, Yemen

	HBS 2006		MICS 2006		DHS 2013	
	At age 11	At age 17	At age 11	At age 17	At age 11	At age 17
Gender						
Male	0.90	6.20	1.21	6.54	1.14	6.42
Female	0.72	3.85	1.00	4.07	0.99	5.32
Mother does not live in the hh	0.93	4.19	1.30	3.57	1.01	5.72
Mother is dead	0.70	3.63	0.91	5.04	1.32	6.07
Mother's education						
No education	-	-	1.63	6.63	0.90	5.55
Primary	1.17	6.78	1.18	6.99	1.35	6.85
Secondary	1.11	7.82	1.78	7.18	1.42	7.87
Post-secondary	1.84	8.44	2.54	9.16	1.84	8.28
Father does not live in the hh	0.83	4.87	0.91	5.19	1.25	6.29
Father is dead	0.73	4.79	1.16	4.42	0.97	5.94
Father's education						
No education	-	-	0.65	4.92	0.83	5.01
Primary	0.85	5.81	1.07	5.75	0.94	5.99
Secondary	1.07	6.51	1.36	6.57	1.19	6.87
Post-secondary	1.22	7.70	1.64	7.81	1.55	7.68
Overcrowded bedrooms	0.61	4.09	0.85	4.52	0.84	4.96
Improved water sources	0.93	5.71	1.13	5.33	1.00	5.66
Improved sanitation facilities	1.00	5.98	1.32	6.34	1.30	6.74
Wealth quintiles						
Poorest	-	-	0.67	3.03	0.64	4.04
Second	-	-	0.93	4.23	0.94	5.18
Middle	-	-	1.07	5.74	1.11	6.15
Fourth	-	-	1.31	6.28	1.29	6.68
Richest	-	-	1.65	7.49	1.55	7.61
Region						
Urban	1.13	6.56	1.51	7.18	1.39	7.03
Rural	0.72	4.48	0.95	4.50	0.95	5.46

Source: ESCWA calculations based on data from Yemen HBS 2006, MICS 2006 and DHS 2013.

Note: The figures show the average years of schooling at age 11 and 17 according to background characteristics. "hh" stands for "household".

Table A.15 Estimated coefficients for models of years of schooling at age 8 by gender, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	(-0.0636)	(-0.0765)	(-0.0699)	(-0.0421)	(-0.1830)***	0.1168**
	(-0.0815)	(-0.1042)	(-0.0787)	(-0.0461)	(-0.0555)	(-0.0508)
δ_H	(-0.0136)	(-0.0204)	(-0.0075)	0.0167	(-0.1349)***	0.0374
	(-0.0894)	(-0.1184)	(-0.0983)	(-0.031)	(-0.0386)	(-0.0782)
Observations	20,535	10,558	9,977	7,843	4,022	3,821
R-squared	0.1291	0.1081	0.1671	0.1258	0.1195	0.1806
Child characteristics	◘	◘	◘	◘	◘	◘
Parents characteristics	◘	◘	◘	◘	◘	◘
Household characteristics	◘	◘	◘	◘	◘	◘

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012, and data from Yemen HBS 2006 and DHS 2013.

Notes: Linear probability model, with a DID structure, for years of schooling of children aged 8 years old in Iraq and Yemen. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

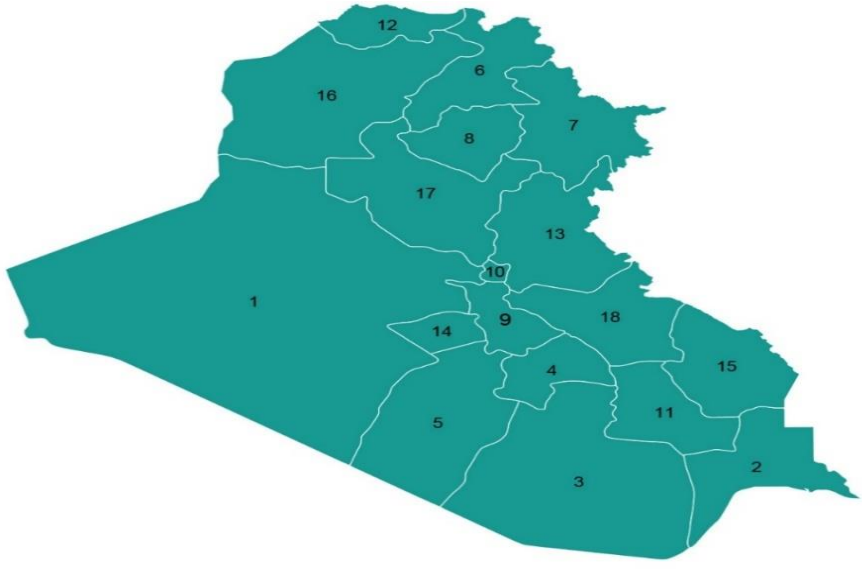
Table A.16 Estimated coefficients for models of years of schooling at age 15 by gender, Iraq and Yemen

	Iraq			Yemen		
	All	Boys	Girls	All	Boys	Girls
δ_M	(-0.3517)*	(-0.4274)*	(-0.1819)	(-0.2394)	0.3238	(-1.2304)***
	(-0.1692)	(-0.2357)	(-0.3233)	(-0.2324)	(-0.2002)	(-0.3654)
δ_H	(-0.1316)	(-0.3757)	0.2092	(-0.5187)***	0.8745***	(-1.5501)***
	(-0.1904)	(-0.2434)	(-0.3586)	(-0.1479)	(-0.1019)	(-0.2808)
Observations	16,517	8,605	7,912	6,626	3,366	3,260
R-squared	0.3136	0.2182	0.4187	0.3262	0.188	0.351
Child characteristics	◘	◘	◘	◘	◘	◘
Parents characteristics	◘	◘	◘	◘	◘	◘
Household characteristics	◘	◘	◘	◘	◘	◘

Source: ESCWA calculations based on data from Iraq MICS 2000, 2006, 2011 and LSMS 2007, 2012, and data from Yemen HBS 2006 and DHS 2013.

Notes: Linear probability model, with a DID structure, for years of schooling of children aged 15 years old in Iraq and Yemen. Robust standard errors are in parentheses. The symbols ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively.

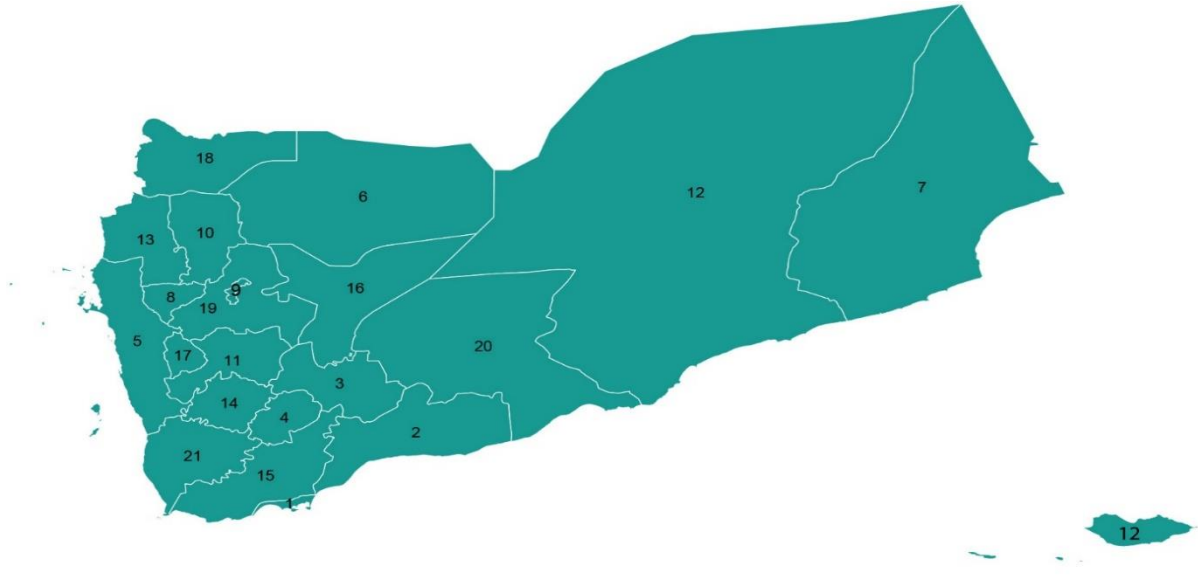
Figure A.7 Reference map of governorates, Iraq



Al-Anbar	1	Baghdad	10
Al-Basrah	2	Dhi-Qar	11
Al-Muthannia	3	Dihok	12
Al-Qadisiyah	4	Diyala	13
An-Najaf	5	'Karbala	14
Arbil	6	Maysan	15
As-Sulaymaniyah	7	Ninawa	16
At-Ta'mim	8	Sala ad-Din	17
Babil	9	Wasit	18

Source: ESCWA.

Figure A.8 Reference map of governorates, Yemen



Adan`	1	Dhamar	11
Abyan	2	Hadramawt	12
'Al Bayda	3	Hajjah	13
'Al Dali	4	Ibb	14
Al Hudaydah	5	Lahij	15
Al Jawf	6	Ma'rib	16
Al Mahrah	7	Raymah	17
Al Mahwit	8	Sa`dah	18
Amanat Al Asimah	9	'San`a	19
Amran	10	Shabwah	20
		Ta`izz	21

Source: ESCWA.

Bibliography

Acemoglu, Daron, David H. Autor, and David Lyle (2004). Women, War and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury. *Journal of Political Economy*, vol. 112, No. 3, pp. 497-551.

Agüero, Jorge, and Muhammad Farhan Majid (2014). War and the destruction of human capital. HiCN Working Papers, No. 163. The Sussex: Institute of Development Studies, University of Sussex.

Akbulut-Yuksel, Mevlude (2014). Children of War: The Long-Run Effects of Large-Scale Physical Destruction and Warfare on Children. *Journal of Human Resources*, vol. 49, No. 3 (Summer), pp. 634-62.

Akresh, Richard, Sonia Bhalotra, Marinella Leone, and Una Okonkwo Osili (2012). War and Stature: Growing Up during the Nigerian Civil War. *The American Economic Review*, vol. 102, No. 3 (May), pp. 273-77.

Akresh, Richard, and Damien De Walque (2008). *Armed Conflict and Schooling: Evidence from the 1994 Rwandan Genocide*. Policy Research Working Papers. The World Bank. Available at http://elibrary.worldbank.org.ezproxy.aub.edu.lb/doi/abs/10.1596/1813-9450-4606.

Akresh, Richard, Leonardo Lucchetti, and Harsha Thirumurthy (2012). Wars and Child Health: Evidence from the Eritrean–Ethiopian Conflict. *Journal of Development Economics*, vol. 99, No. 2 (November), pp. 330-40.

Akresh, Richard, Philip Verwimp, and Tom Bundervoet (forthcoming). Civil War, Crop Failure and Child Stunting in Rwanda. *Economic Development and Cultural Change*.

Alderman, Harold, John Hoddinott, and Bill Kinsey (2006). Long-Term Consequences of Early Childhood Malnutrition. *Oxford Economic Papers,* vol. 58, No. 3, pp. 450-74.

Ali, H. E. (2014). Conflict Types and Child and Infant Mortality Rates: Evidence from Panel Data. *SSRN*. Available at https://ssrn.com/abstract=2742367.

Almond, Douglas, and Janet Currie (2011). Killing Me Softly: The Fetal Origins Hypothesis. *The Journal of Economic Perspectives*, vol.25, No. 3 (Summer), pp. 153-72.

Almond, D., J. Currie, and V. Duque (2016). Childhood Circumstances and Adult Outcomes: Act II, R & R. *Journal of Economic Literature*.

Alnasrawi, Abbas (2000). Iraq: Economic Embargo and Predatory Rule. In *War, Hunger, and Displacement: Volume 2*, E. Wayne Nafziger, Frances Stewart, and Raimi Väyrynen, eds., Oxford University Press, pp. 889-118. Available at http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780198297406.001.0001/acprof-9780198297406-chapter-4.

Amendola, N., S. Razzaz, M. Sorrentino, and G. Vecchi (2010). *The Impact of the Public Distribution System on Living Standards: Some Microsimulations*. World Bank. Available at https://art.torvergata.it/handle/2108/22172#.WQnESi19670.

Angrist, J. D. (1990). Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records. *The American Economic Review*, vol. 80, No.3, pp. 313-336.

_____ (1998). Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants. *Econometrica*, vol. 66, No.2, pp. 249-288.

Angrist, J. D., and A. B. Krueger (1994). Why Do World War II Veterans Earn More than Nonveterans? *Journal of Labor Economics*, vol. 12, No.1, pp. 74-97.

Annan, Jeannie, C. Blattman, D. Mazurama, and K. Carlson (2009). Women and Girls at War: Wives, Mothers, and Fighters in the Lord's Resistance Army. HiCN Working Paper 63.

Autor, David H., Lawrence F. Katz, and Melissa S. Kearney (2006). The Polarization of the U.S. Labor Market. *The American Economic Review*, vol. 96, No. 2 (May), pp. 189-94.

Barker, D. J. P. (1992). The fetal and infant origins of adult disease. *British Medical Journal*, vol. 301.

Barrera, Felipe, and Ana María Ibáñez (2004). Does Violence Reduce Investment in Education? A Theoretical And Empirical Approach. Documentos CEDE. Universidad de Los Andes-CEDE. Available at https://ideas.repec.org/p/col/000089/002382.html.

Bassem, Wassim (2016). Decline in education threatens future Iraqi generations, 17 April. Available at http://www.al-monitor.com/pulse/originals/2016/04/iraq-schools-need-corruption-education-overcrowded-classroom.html.

Becker, Gary S. (2007). Health as Human Capital: Synthesis and Extensions. *Oxford Economic Papers*, vol. 59, No. 3, pp. 379-410.

Blattman, Christopher, and Jeannie Annan (2010). The Consequences of Child Soldiering. *Review of Economics and Statistics*, vol. 92, No 4, pp. 882-98.

Borghans, Lex, Angela Lee Duckworth, James J. Heckman, and Bas ter Weel (2008). The Economics and Psychology of Personality Traits. *Journal of Human Resources*, vol. 43, No. 4.

Borghans, Lex, Huub Meijers, and Bas Ter Weel (2008). The Role of Noncognitive Skills in Explaining Cognitive Test Scores. *Economic* Inquiry, vol. 46, No. 1 (January), pp. 2-12.

Bowles, Samuel, Herbert Gintis, and Melissa Osborne (2001). The Determinants of Earnings: A Behavioral Approach. *Journal of Economic Literature*, vol. 39, No.4, pp. 1137-1176.

Brown, R. (2014), The Mexican drug war and early-life health: the impact of violent crime on birth outcomes. Working paper.

Brück, T., M. Di Maio, and S.H. Miaari (2014). Learning the Hard Way: The Effect of Violent Conflict on Student Academic Achievement. IZA Discussion Paper 8543, Institute for The Study of Labor.

Bundervoet, Tom, Philip Verwimp, and Richard Akresh (2009). Health and Civil War in Rural Burundi, vol. 44, No. 2, pp. 536-63.

Calderón-Mejía, Valentina (2010). Civil War, Forced Migration and Educational Attainment in Destination Areas: Evidence from Colombia, unpublished paper, University of Chicago Dissertation.

Calderón-Mejía V., Margarita Gáfaro, and Ana María Ibáñez (2011). Forced migration, female labor force participation, and intra-household bargaining: does conflict empower women? Documentos CEDE. Universidad de Los Andes-CEDE.

Calderón-Mejía V., and Ana María Ibáñez (2016). Labour market effects of migration-related supply shocks: evidence from internal refugees in Colombia. *Journal of Economic Geography*, vol. 16, No. 3, pp. 695-713.

Camacho, Adriana (2008). Stress and Birth Weight: Evidence from Terrorist Attacks. *The American Economic Review*, vol.98, No. 2, pp. 511-15.

Case, Anne, and Christina Paxson (2010). Causes and Consequences of Early Life Health. NBER Working Paper Series.

Chamarbagwala, Rubiana, and Hilcías E. Morán (2011). The human capital consequences of civil war: evidence from Guatemala. *Journal of Development Economics*, vol. 94, No. 1 (January).

Chen, Siyan, Norman V. Loayza, and Marta Reynal-Querol (2008). The aftermath of civil war. *World Bank Economic Review*, vol. 22, No. 1 (January).

Croicu, Mihai, and Ralph Sundberg (2016). UCDP GED Codebook Version 5.0. Department of Peace and Conflict Research, Uppsala University.

Coghlan, Benjamin, and others (2006). Mortality in the Democratic Republic of Congo: a Nationwide Survey. *The Lancet*, vol. 367, No. 9504.

Conti, Gabriella, and James J. Heckman (2014). Understanding conscientiousness across the life course: an economic perspective. *Developmental Psychology*, *Conscientiousness and Healthy Aging*, vol. 50, No. 5 (May).

Cunha, Flavio, and James Heckman (2007). The technology of skill formation. IZA Discussion Paper, No. 2550. Bonn: The Institute for the Study of Labor.

Cunha, Flavio, and others (2006). Interpreting the evidence on life cycle skill formation. In *Handbook of the Economics of Education*, vol. 1, Eric Hanushek and Finis Welch, eds. Amsterdam: North-Holland Publications.

Cunha, Flavio, James J. Heckman, and Susanne M. Schennach (2010). Estimating the technology of cognitive and noncognitive skill formation. *Econometrica*, vol. 78, No. 3.

Currie, Janet, and Douglas Almond (2011). Human capital development before age five. *Handbook of Labor Economics*, vol. 4 (part B).

Currie, Janet, and Maya Rossin-Slater (2015). Early-life origins of life-cycle well-being: research and policy implications. *J Policy Anal Manage*, vol. 34, No. 1.

Currie, Janet, and Tom Vogl (2013). Early-life health and adult circumstance in developing countries. *Annual Review of Economics*, vol. 5. Available at http://dx.doi.org/10.1146/annurev-Economics-081412-103704.

Dabalen, Andrew L., and Saumik Paul (2012). Estimating the causal effects of conflict on education in Côte d'Ivoire. Policy Research Working Paper, No. 6077. Washington, D.C.: World Bank.

Dagnelie, Olivier, Giacomo De Luca, and Jean-François Maystadt (2014). Do girls pay the price of civil war? violence and infant mortality in Congo. IFPRI Discussion Paper, No. 1374. Washington, D.C.: International Food Policy Research Institute. Available at https://ideas.repec.org/p/fpr/ifprid/1374.html.

De Walque, Damien (2005). Selective mortality during the Khmer Rouge period in Cambodia. *Population and Development Review*, vol. 31, No. 2 (June).

De Walque, Damien, and Richard Akresh (2008). Armed conflict and schooling: evidence from the 1994 Rwandan Genocide. HiCN Working Paper, No. 47. Sussex: University of Sussex, The Institute of Development Studies.

Dueñas, L., and F. Sanchéz (2007). Does armed conflict affect the poorest? the case of school dropout in Eastern Colombia. Working Paper. Bogotá: Universidad de los Andes.

Duque, Valentina (2017). Early-life conditions and child development: evidence from a violent conflict. *SSM - Population Health*, No. 3 (December).

Duque, Valentina, Maria Rosales-Rueda, and Fabio Sánchez (2016). Integrating early-life shocks and human capital investments on children´s education. CAF Working Paper, No. 2016/06. Colombia: Development Bank of Latin America.

El-Kogali, Safaa, and Caroline Krafft (2015). *Expanding Opportunities for the Next Generation: Early Childhood Development in the Middle East and North Africa*. Washington, D.C.: World Bank. Available at http://documents.worldbank.org/curated/en/876341468282254381/pdf/937130PUB0978100Box385381B00PUBLIC0.pdf.

Famine Early Warning Systems Network (n.d.). Integrated Phase Classification. Accessed on 3 May 2017. Available at http://www.fews.net/IPC.

FHI 360 Education Policy and Data Center (2016). *Violent Conflict and Educational Inequality: Literature Review*. New York: United Nations Children's Fund; FHI 360. Available at http://www.epdc.org/sites/default/files/documents/Conflict%20and%20Inequality%20Literature%20Review%20FINAL.pdf.

Food and Agriculture Organization of the United Nations (2018). GIEWS Global Information and Early Warning System: Country Brief on Iraq. Available at http://www.fao.org/giews/countrybrief/country.jsp?code=IRQ.

Galdo, Jose (2013). The long-run labor-market consequences of civil war: evidence from the shining path in Peru. *Economic Development and Cultural Change*, vol. 61, No. 4.

Gates, Scott, Håvard Hegre, Håvard Mokleiv Nygård, and Håvard Strand (2012). Development consequences of armed conflict. *World Development*, vol. 40, No. 9.

Glewwe, Paul William, and Edward Andrew Miguel (2008). The impact of child health and nutrition on education in less developed countries. In *Handbook of Development Economics*, vol. 4. Elsevier.

Grantham-McGregor, Sally, and others. (2007). Child development in developing countries 1: developmental potential in the first 5 years for children in developing countries. *The Lancet*, vol. 369, No. 9555 (January).

Grimard, F., and S. Laszlo (2014). Long-term effects of civil conflict on women's health outcomes in Peru. *World Development*, vol. 54 (February), pp. 139-55.

Guerrero Serdan, Gabriela (2009). The effects of the war in Iraq on nutrition and health: an analysis using anthropometric outcomes of children (March). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1359161.

Guha-Sapir, Debarati, and Olivia D'Aoust (2010). Demographic and health consequences of civil conflict. *World Development Report 2011,* Background Paper, Washington, D.C.: World Bank.

Guha-Sapir, Debarati, and W. G. van Panhuis (2004). Conflict-related mortality: an analysis of 37 datasets. *Disasters*, vol. 28, No. 4, pp. 418-428.

Hanushek, Eric A., and Ludger Woessmann (2012). Do better schools lead to more growth? cognitive skills, economic outcomes, and causation. *Journal of Economic Growth*, vo. 17, No. 4 (December).

The Heckman Curve (2014). *The Heckman Equation.* Available at https://heckmanequation.org/resource/the-heckman-curve/.

Heckman, James (1995). Lessons from the bell curve. *Journal of Political Economy,* vol. 103, No. 5.

_____ (2000). Causal parameters and policy analysis in economics: a twentieth century retrospective. *The Quarterly Journal of Economics*, vol. 115, No. 1.

_____ (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, vol. 30, No. 312 (June).

_____ (2007). The economics, technology and neuroscience of human capability formation. *Proceedings of the National Academy of Sciences*, vol. 104, No. 3 (August).

_____ (2008). Schools, skills and synapses. *Economic Inquiry* (July), vol. 46, No. 3, pp. 289-324.

Heckman, James, and Dimitriy V. Masterov (2007). The productivity argument for investing in young children. *Review of Agricultural Economics*, vol. 29, No. 3.

Heckman, James, Jora Stixrud, and Sergio Urzúa (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics*, vol. 24, No. 3, pp. 411-82.

Heckman, James, and Pedro Carneiro (2003). Human capital policy. NBER Working Paper, No. 9495. Cambridge: National Bureau of Economic Research, Inc. Available at https://ideas.repec.org/p/nbr/nberwo/9495.html.

Heckman, James, and Yona Rubinstein (2001). The importance of noncognitive skills: Lessons from the GED testing program. *American Economic Review* (May), vol.91, No.2.

Huang, Wei, and others (2013). Health, height, height shrinkage, and SES at older ages: evidence from China. *American Economic Journal of Applied Economics*, vol. 5, No. 2 (April).

Hussain, Anwar, and Marion Herens (1997). Child nutrition and food security during armed conflicts, 1 January. Available at http://reliefweb.int/report/world/child-nutrition-and-food-security-during-armed-conflicts.

Justino, Patricia (2010a). *Education and Conflict Recovery: The Case of Timor Leste*. Brighton, UK: University of Sussex, Institute of Development Studies.

_____ (2010b). *How Does Violent Conflict Impact on Individual Educational Outcomes*? The Evidence So Far. Background paper prepared for the Education for All Global Monitoring Report 2011 UNESCO, *The Hidden Crisis: Armed Conflict and Education*. Brighton, UK: University of Sussex, Institute of Development Studies.

_____ (2011). Violent conflict and human capital accumulation. IDS Working Paper, vol. 2011, No. 379. Available at https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.2040-0209.2011.00379_2.x.

_____ (2016). Supply and demand restrictions to education in conflict-affected countries: new research and future agendas. *International Journal of Educational Development*, vol. 47 (March).

Justino, Patricia, Marinella Leone, and Paola Salardi (2014). Short- and long-term impact of violence on education: the case of Timor Leste. *World Bank Economic Review*, vol. 28, No. 2 (May).

Khawaja, Nigar, and others (2008). Difficulties and coping strategies of Sudanese refugees: a qualitative approach. *Transcultural Psychiatry*, vol. 45.

Kherallah, Mazen, and others (2012). Health Care in Syria before and during the Crisis. *Avicenna Journal of Medicine,* vol. 2, No. 3.

Kiros, Gebre-Egziabher, and Dennis Hogan (2001). War, famine and excess child mortality in Africa: the role of parental education. *International Journal of Epidemiology*, vol. 30, pp. 447-455.

Kondylis, Florence (2010). Conflict displacement and labor market outcomes in post-war Bosnia and Herzegovina. *Journal of Development Economics*, Elsevier, vol. 93, No. 2.

Kudo, Yuya (2016). Malaria infection and fetal growth during the war: evidence from Liberia. IDE Discussion Paper, No. 556 (February).

Lai, Brian, and Clayton Thyne (2007). The effect of civil war on education, 1980-97. *Journal of Peace Research*, vol., 44, No. 3, pp. 277-92.

León, Gianmarco (2012). Civil conflict and human capital accumulation. *Journal of Human Resources,* vol. 47, No. 4 (Fall).

Lindskog, Elina Elveborg (2016). The effect of war on infant mortality in the Democratic Republic of Congo. BMC Public Health, No. 16. Stockholm: Stockholm University.

Lundborg, Petter, Paul Nystedt, and Dan-Olof Rooth (2014). Height and earnings: the role of cognitive and noncognitive skills. *Journal of Human Resources* vol. 49, No. 1 (Winter).

Mansour, Hani, and Daniel I. Rees (2012). Armed conflict and birth weight: evidence from the Al-Aqsa Intifada. *Journal of Development Economics*, vol. 99, No. 1 (September).

Masset, Edoardo (2016). SYNCMRATES: Stata module to compute child mortality rates using synthetic cohort probabilities. Statistical Software Components S458149, Boston College Department of Economics.

Maurer, Jürgen (2010). Height, education and later-life cognition in Latin America and the Caribbean. *Economics and Human Biology*, vol. 8, No. 2 (July).

Melander, Erik, Therése Pettersson, and Lotta Themnér (2016). Organized Violence, 1989–2015. *Journal of Peace Research*, vol. 53, No. 5 (September).

Menon, Nidhiya, and Yana van der Meulen Rodgers (2011). War and women's work: evidence from the conflict in Nepal. World Bank Policy Research Working Paper, No. 5745. Available at SSRN: https://ssrn.com/abstract=1903504.

Merrouche, Ouarda (2006). The human capital cost of landmine contamination in Cambodia. HiCN Working Paper, No. 25 (December). Available at http://econpapers.repec.org/paper/hicwpaper/25.htm.

Miguel, Edward, and Gérard Roland (2011). The Long-run impact of bombing Vietnam. *Journal of Development Economics*, vol. 96, No, 1 (September).

Minoiu, Camelia, and Olga N. Shemyakina (2014). Armed Conflict, Household Victimization, and Child Health in Côte d'Ivoire. *Journal of Development Economics*, vol. 108 (May).

Mirkin, Barry (2010). *Population Levels, Trends and Policies in the Arab Region. Challenges and Opportunities*. Arab Human Development Report Research Paper Series. New York: United Nations Development Programme. Available at http://www.undp.org/content/dam/rbas/report/Population%20Levels,Trends.pdf.

Murnane, Richard J., John B. Willett, and Frank Levy (1995). The growing importance of cognitive skills in wage determination. *The Review of Economics and Statistics*, vol. 77, No. 2 (May).

Moheyddeen, Khalid (2016). Education in Yemen struggles after more than a year of conflict, 7 October. Available at http://blogs.worldbank.org/arabvoices/education-yemen-struggles-conflict.

Ohannessian, Shogher G (2016). Conflict in Yemen and child malnutrition. Master's Thesis, American University of Beirut.

O'Hare, Bernadette, and David P. Southall (2007). First do no harm: the impact of recent armed conflict on maternal and child health in Sub-Saharan Africa. *Journal of the Royal Society of Medicine*, vol. 100, No. 12.

O'Malley, Brendan (2010). *Education under Attack 2010*. Paris: United Nations Educational, Scientific and Cultural Organization.

OXFAM Yemen Humanitarian Response (2017). Oxfam Yemen Situation Report, No. 37 (February). Available at http://reliefweb.int/report/yemen/oxfam-yemen-situation-report-37-15-february-2017.

Perry, Guillermo E., and others (2007). *Informality: Exit and Exclusion*. Washington, D.C.: World Bank.

Pritchett, Lant (2004). Towards a new consensus for addressing the global challenge of the lack of education. Working Papers, No. 43 (June).

Raleigh, Clionadh, and others (2010). Introducing ACLED: an armed conflict location and event dataset: special data feature. *Journal of Peace Research*, vol. 47, No. 5 (September).

Robalino, David A., Helena Ribe, and Ian Walker (2010). *Achieving Effective Social Protection for All in Latin America and the Caribbean: from Right to Reality*. Washington, D.C.: World Bank.

Rodríguez, Catherine, and Fabio Sánchez-Torres (2010). *Books and Guns: The Quality of Schools in Conflict Zones*. Documentos CEDE. Bogotá.

_____ (2012). Armed conflict exposure, human capital investments, and child labor: evidence from Colombia. *Defence and Peace Economics*, vol. 23, No. 2 (April).

Rosales-Rueda, Maria Fernanda (2014). Three essays on families, children and human capital formation. PhD Dissertation, University of Chicago. Available at http://search.proquest.com.ezproxy.aub.edu.lb/docview/1559351280/abstract/EB957DCF43124D5APQ/1.

Salehyan, Idean, and others (2012). Social conflict in Africa: a new database. *International Interactions*, vol. 38, No. 4 (September).

Save the Children (2015a). *The Cost of War: Calculating the impact of the collapse of Syria's Education System on the Country's Future*. London. Available at https://static.guim.co.uk/ni/1427711553264/Save-the-Children-Cost-of-W.pdf.

_____ (2015b). *Education under Attack in Syria*. Damascus. Available at http://reliefweb.int/report/syrian-arab-republic/education-under-attack-syria.

Schick, Andreas, and Richard H. Steckel (2010). Height as a Proxy for Cognitive and Social-emotional Ability. Working Paper. National Bureau of Economic Research (December). Available at http://www.nber.org/papers/w16570.

Shemyakina, Olga (2007). Armed Conflict, Education and the Marriage Market: Evidence from Tajikistan. Ph.D. Dissertation. University of Southern California.

_____ (2011a). The effect of armed conflict on accumulation of schooling: results from Tajikistan. *Journal of Development Economics*, vol. 95, No. 2 (July).

_____ (2011b). The labor market, education and armed conflict in Tajikistan. Policy Research Working Paper, No. WPS 5738. Washington, D.C.: World Bank. Available at https://openknowledge.worldbank.org/handle/10986/3500 License: CC BY 3.0 IGO.

Shields, Robin, and Julia Paulson (2015). Development in reverse'? A longitudinal analysis of armed conflict, fragility and school enrolment. *Comparative Education*, vol. 51, No, 2.

Singh, Kavita, and others (2005). Forced migration and under-five mortality: a comparison of refugees and hosts in North-Western Uganda and Southern Sudan. *European Journal of Population*, vol. 21, No. 2-3.

Stepanova, Ekaterina (2010). Armed conflict, crime and criminal violence. In *SIPRI Yearbook 2010: Armaments, Disarmament and International Security*. Sweden: Stockholm International Peace Research Institute.

Stewart, Frances, Cindy Huang, and Michael Wang (2001). Internal Wars in Developing Countries: An Empirical Overview of Economic and Social Consequences. In *War and Underdevelopment, vol. 1: The Economic and Social Consequences of Conflict*, Frances Stewart and Valpy Fitzgerald, eds. Oxford University Press.

Sundberg, Ralph, and Erik Melander (2013). Introducing the UCDP Georeferenced Event Dataset. *Journal of Peace Research*, vol. 50, No. 4, pp. 523-32.

Swee, Eik Leong (2009). On war and schooling attainment: the case of Bosnia and Herzegovina. HiCN Households in Conflict Network Working Paper, No. 57. Brighton: University of Sussex. Available at http://www.hicn.org/wordpress/wp-content/uploads/2012/06/wp57.pdf.

Toole, M., S. Galson, and W. Brady (1993). Are war and public health compatible? *The Lancet*, vol. 341, No. 8854, pp. 1193-1196.

United Nations (2013). How environmental damage causes food insecurity in Iraq. Factsheet, June 2013. Available at http://reliefweb.int/report/iraq/how-environmental-damage-causes-food-insecurity-iraq-enar.

_____ (2015). Transforming our world: the 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. Seventieth session. A/RES/70/1.

United Nations Children's Fund (n.d.). A quality education in Iraq. Available at https://www.unicef.org/infobycountry/files/UNICEF_Iraq_in_Action_Education.pdf.

_____ (1990). Strategy for improved nutrition of children and women in developing countries. UNICEF Policy Review. New York.

_____ (2013). *A Lost Generation? A Strategy for Children Affected by the Syria Crisis*. New York.

_____ (2015). *Education Under Fire: How conflict in the Middle East is Depriving Children of their Schooling*. New York. Available at https://reliefweb.int/sites/reliefweb.int/files/resources/EDUCATION_FINAL_English.pdf. .

United Nations Children's Fund, and the American University of Beirut (2011). *A Generation on the Move: Insights into the Conditions, Aspirations and Activism of Arab Youth*. Beirut: Issam Fares Institute for Public Policy & International Affairs.

United Nations Economic and Social Commission for Western Asia (2014). *Development Policy Implications of Age–Structural Transitions in Arab countries*. Population and Development Report, No. 6. E/ESCWA/SDD/2013/2. Beirut.

_____ (2015). *Protracted Conflict and Development in the Arab Region*. Trends and Impacts, Issue No. 4. E/ESCWA/ECRI/2015/2.

Urdinola, Piedad (2004). Could political violence affect infant mortality? the Colombian case. *Coyuntura Social*, vol. 31 (December), pp. 63-79.

Urquiola, Miguel, and Valentina Calderón (2006). Apples and oranges: educational enrolment and attainment across countries in Latin America and the Caribbean. *International Journal of Educational Development*, vol. 26, No. 6 (November), pp. 572-90.

Urzúa, Sergio (2016). Do skills/abilities matter? The life cycle approach. Keynote address at the Conference on the Socio-economic Ramifications of Conflict: A Life Cycle Approach, organized by the Economic and Social Commission for Western Asia and American University of Beirut.

Valente, Christine (2011). Children of the revolution: fetal and child health amidst violent civil conflict. Health, Econometrics and Data Group (HEDG) Working Papers, No. 11/12. Heslington: University of York.

Verwimp, Philip (2012). Undernutrition, subsequent risk of mortality and civil war in Burundi. *Economics and Human Biology*, vol. 10, No. 3 (July).

_____ (2015). Foreign fighters in Syria and Iraq and the socio-economic environment they faced at home: a comparison of European countries. HiCN Working Papers, No. 201. Brighton: University of Sussex.

Verwimp, Philip, and Jan Van Bavel (2005). Child survival and fertility of refugees in Rwanda. *European Journal of Population*, vol. 21, Issue No. 2-3, pp. 271-290.

Vogl, Tom S. (2014). Height, skills, and labor market outcomes in Mexico. *Journal of Development Economics*, vol. 107 (March), pp. 84-96.

Walker, Susan P., and others (2011). Inequality in early childhood: risk and protective factors for early child development. *The Lancet*, vol. 378, No. 9799 (October).

Wing, Coady; Simon, Kosali; and Ricardo A. Bello-Gomez (2018). Designing difference in difference studies: best practices for public health policy research. Annual Review of Public Health, vol. 39.

World Health Organization (2010). Regional strategy on nutrition 2010–2019. Technical paper. EMRO Regional Committee for the Eastern Mediterranean, Fifty-seventh Session. EM/RC57/4.

World Bank (2011). *World Development Report 2011: Conflict, Security, and Development*. Washington, D.C.

World Economic Forum (2014). Global agenda council on employment: matching skills and labour market needs building social partnerships for better skills and better jobs. Davos-Klosters, Switzerland 22-25 January 2014. Available at http://www3.weforum.org/docs/GAC/2014/WEF_GAC_Employment_MatchingSkillsLabourMarket_Report_2014.pdf.

World Food Programme (2012a). *Comprehensive Food Security Survey*. Sanaa': World Food Programme Country office. Available at https://www.wfp.org/content/yemen-comprehensive-food-security-survey-2012.

_____ (2012b). *The State of Food Security and Nutrition in Yemen: Summary and Overview*. Sanaa': World Food Programme Country office. Available at http://documents.wfp.org/stellent/groups/public/documents/ena/wfp247833.pdf.

_____ (2017). Libya. Available at http://www1.wfp.org/countries/libya. Accessed on 3 May 2017.

World Health Organization (2011). Libya Crisis - August 2011 Update. Available at http://reliefweb.int/report/libya/libya-crisis-august-2011-update.

Yemen (2017). IPC analysis summary of findings: Part 1 - acute food insecurity current situation overview (March to July). Available at http://reliefweb.int/report/yemen/yemen-ipc-analysis-summary-findings-acute-food-insecurity-current-situation-overview-0.

Yi, Junjian, and others (2015). Early health shocks, intra-household resource allocation and child outcomes. *Economic Journal*, vol. 125, No. 588 (November).

Endnotes

1. United Nations, 2015.
2. Ibid, para. 42.
3. This figure is based on the internationally recognized definition of armed conflict by the Uppsala Conflict Data Program (UCDP) and Peace Research Institute Oslo (PRIO), namely as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a calendar year". See Melander, Pettersson and Themnér, 2016.
4. Heckman, 2000; and Carneiro and Heckman, 2003.
5. Cunha and others, 2006; and Cunha and Heckman, 2007.
6. We use "skills" and "abilities" interchangeably throughout the present report.
7. Heckman, 1995; and Murnane, Willett and Levy, 1995.
8. Bowles, Gintis and Osborne, 2001; Borghans and others, 2008; Heckman, Stixrud and Urzúa, 2006; and Cunha and Heckman, 2007, p. 32.
9. Cunha and Heckman, 2007, p. 4.
10. Cunha and others, 2006.
11. Ibid., p. 702.
12. See https://heckmanequation.org/assets/2017/01/dp5495.pdf, p. 1.
13. The skill-formation model is a general theoretical tool that allows us to understand human development over the life cycle. The tool can be applied to any country in order to understand the effects of shocks on individuals of all ages.
14. Heckman, 2006, p. 1.
15. Currie and Rossin-Slater, 2015; and Almond, Currie and Duque, 2016.
16. Yi and others, 2015; Grimard and Laszlo, 2014; and Alderman, Hoddinott and Kinsey, 2006.
17. Cunha and Heckman, 2007; and Cunha, Heckman and Schennach, 2010.
18. Currie and Vogl, 2013.
19. Dagnelie, De Luca and Maystadt, 2014; and Verwimp, 2012.
20. Duque, 2017; Minoiu and Shemyakina, 2014; Akresh and others, 2012; Mansour and Rees, 2012; Valente, 2011; Guerrero-Serdán, 2009; and Camacho, 2008.
21. Rodriguez and Sánchez-Torres, 2012; Chamarbagwala and Morán, 2011; and León, 2012.
22. Kondylis, 2010; Galdo, 2013; and Menon and van der Meulen Rodgers, 2011.
23. Currie and Vogl, 2013; and Heckman and Masterov, 2007.
24. Heckman and Masterov, 2007, p. 3.
25. ESCWA, 2014.
26. Heckman and Masterov, 2007.
27. UNICEF, 1990.
28. Extended social safety networks have been ruptured, thus affecting family coping strategies.
29. Hussain and Herens, 1997.
30. Khawaja and others, 2008.

31. Camacho, 2008; Guerrero-Serdán, 2009; Almond and Currie, 2011; Akresh, Lucchetti and Thirumurthy, 2012; Mansour and Rees, 2012; Minoiu and Shemyakina, 2014; Dagnelie, De Luca and Maystadt, 2014; and Duque, 2017.
32. See http://www.un.org/millenniumgoals/childhealth.shtml.
33. Mirkin, 2010.
34. All estimates and details of the estimating methodology are presented in the annex.
35. All estimates and details of the estimating methodology are presented in the annex.
36. Cunha, Heckman and Schennach, 2010.
37. Duque, 2017; and Almond, Currie and Duque 2016.
38. Barker, 1992; Cunha and Heckman, 2007; and Almond and Currie, 2011.
39. See http://www.fao.org/docrep/005/w2357e/W2357E00.htm.
40. Ibid.
41. Almond, Currie and Duque, 2016; and Duque, 2017.
42. Camacho, 2008; Bundervoet, Verwimp and Akresh, 2009; Chamarbagwala and Morán, 2011; Mansour and Rees, 2012; Valente, 2011; Akresh, Lucchetti and Thirumurthy, 2012; Leon, 2012; Galdo, 2013; Minoiu and Shemyakina, 2014; Brown, 2014; and Duque, 2017.
43. Case and Paxson, 2010.
44. Currie and Vogl, 2013.
45. Duque, 2017; Rosales-Rueda, 2014; Huang and others, 2013; Vogl, 2014; and Maurer, 2010.
46 Lundborg, Nystedt and Rooth, 2014; and Schick and Steckel, 2010.
47. See http://www.who.int/nutgrowthdb/about/introduction/en/index5.html.
48. See http://www.who.int/nutgrowthdb/about/introduction/en/index2.html.
49. Glewwe and Miguel, 2008; Grantham-McGregor and others, 2007; and Walker and others, 2011.
50. WHO, 2010.
51. Ibid.
52. Ibid., p. 2.
53. El-Kogali and Krafft, 2015.
54. Ibid.
55. FAO, 2018.
56. Ibid.
57. All estimates and details of the estimating methodology are presented in the annex.
58 All estimates and details of the estimating methodology are presented in the annex.
59. This figure is based on the internationally recognized definition of armed conflict by UCDP and PRIO, namely as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a calendar year". See Melander, Pettersson and Themnér, 2016.
60. Emergency is defined as one step from famine on the five-point integrated food security phase classification (IPC), a standard international measure. Crisis is defined as two steps from famine on the same measure.
61. World Food Programme, 2012b.
62. All estimates and details of the estimating methodology are presented in the annex.
63. All estimates and details of the estimating methodology are presented in the annex.
64. Unfortunately, the information available for Libya does not allow an econometric analysis of the impact of conflict on the likelihood of stunting in children.
65. El-Kogali and Krafft, 2015.

66. Only microlevel data for the period before the conflict in the Syrian Arab Republic is available. Therefore, an analysis of the impact of conflict on the likelihood of stunting, as done for Iraq and Yemen, was not possible.
67. Lai and Thyne, 2007; Shields and Paulson, 2015; and Stewart, Huang and Wang, 2001.
68. Swee, 2009.
69. Shemyakina, 2011a and 2011b.
70. Agüero and Majid, 2014; and Akresh and De Walque, 2008.
71. Dabalen and Paul, 2012.
72. Rodriguez and Sánchez-Torres, 2012; and Calderón-Mejía, 2010.
73. Calderón-Mejía, 2010.
74. Gates and others, 2012; and Brück, Di Majo and Miaari, 2014.
75. Swee, 2009.
76. Rodriguez and Sánchez-Torres, 2012.
77. Leon, 2012.
78. Akbulut-Yuksel, 2014.
79. Save the Children, 2015a.
80. Miguel and Roland, 2011; and Chen, Loayza, and Reynal-Querol, 2008.
81. Barrera and Ibáñez, 2004; Shemyakina, 2007; Dueñas and Sanchéz, 2007; Akresh and De Walque, 2008; Akbulut-Yuksel, 20014; Rodriguez and Sánchez-Torres, 2012; and Calderón-Mejía, 2010, chap. 2.
82. Akresh and De Walque, 2008; Chamarbagwala and Morán, 2011; Merrouche, 2006; and Justino, 2010b.
83. Akresh and De Walque, 2008; Alderman, Hoddinott and Kinsey, 2006; Justino, Leone and Salardi, 2014; and Shemyakina, 2011a and 2011b.
84. Lai and Thyne, 2007; O'Malley, 2010; and FHI 360 Education Policy and Data Center, 2016, p. 4.
85. Cunha and Heckman, 2007; and Justino, Leone and Salardi, 2014.
86. FHI 360 Education Policy and Data Center, 2016, p. 4.
87. UNICEF, n.d., p. 1.
88 Urquiola and Calderón-Mejía, 2006.
89. All estimates and details of the estimating methodology are presented in the annex.
90. All estimates and details of the estimating methodology are presented in the annex.
91. If all children of a given age were enrolled in school, and all children were successfully progressing in school as they aged, then average years in school and average years of schooling would be equal to the 45-degree line.
92. All estimates and details of the estimating methodology are presented in the annex.
93. All estimates and details of the estimating methodology are presented in the annex.
94. UNICEF, 2015.
95. Author's estimates based on PAPFAM 2009, Syrian Arab Republic.
96. UNICEF, 2013.
97. Heckman, 2007; Heckman and Masterov, 2007; Borghans and others, 2008; and Cunha and Heckman, 2007.
98. World Bank, 2011, p. 80.
99. Justino, 2016.
100. Ibid.
101. ESCWA, 2015.
102. Stepanova, 2010.
103. ESCWA, 2015.

104. See, for example, the previous issue in the present report's series, ESCWA, 2015, and its references.
105. The series of National Surveys on Family Health for Libya (1997, 2003 and 2007) recently added a new survey for the year 2014. As soon as the data quality of the most recent survey is verified, it would be possible to undertake an assessment of the impact of the recent wave of violence on the health status of the population (and other variables, as enabled by the surveys).
106. Sundberg and Melander, 2013. Data and related documents are available at http://ucdp.uu.se/downloads.
107. Croicu and Sundberg, 2016, p. 9.
108. The GED currently excludes the Syrian Arab Republic because of consistency and clarity issues. However, that did not affect the present study, since only Iraq and Yemen are included in the econometric analysis.
109. Daesh first occupied the cities of Fallujah and Hit, both located in the governorate of Al Anbar, followed by Mosul in the governorate of Nineveh.
110. Subnational population as reported in official sources. For more details on sources, see figure A.2.
111. For further details on the methodology refer to Wing, Simon and Bello-Gomez, 2018, p. 456.
112. Ibid., p. 457.
113. Some of the background characteristics, such as the mother's level of education or housing characteristics, correspond to the period when the data were collected and not when the child was born. Although it would clearly be preferable to include the characteristics at the time of birth, those are not available. However, the present characteristics were correlated and were used as proxies in the estimations.
114. Because that is a stock variable that summarizes the experiences of children during their formative years, another possibility was to measure exposure to conflict during the school age of each child up to the survey. However, that would have restricted the sample because such information could not be calculated for all surveys. To maintain consistency between the models, we kept the definition of exposure to conflict defined above and left the alternative specification for the technical material cited in Section A.4 on robustness checks.

While the economic and political costs of conflicts are well understood, the human development repercussions have not been adequately discussed. Conflict is a particularly intense type of shock that unambiguously affects individuals in all aspects of life. Conflict causes disruption and destruction of many sorts, affecting people at all stages of life. The present study puts the individual at the centre of the analysis to understand how the recent conflicts of the Arab region have affected human development. By concentrating on the effects of conflict on several critical periods of life, we provide evidence of the effects of conflict exposure in infancy, early childhood, childhood, and the transitions into adulthood.

Since the foundations of later-life success are for the most part built in the early years, children exposed to conflict will most likely carry the effects of conflict throughout their lives. Food insecurity, deterioration of family resources, and reduction of family investments in children will have devastating long-term consequences on children in conflict-ridden countries across the region. In the absence of critical interventions designed to enhance opportunities of children affected directly and indirectly by conflict, inequalities will be reinforced.

Fundamentally, human development is economic development. Therefore, understanding the main channels through which conflict harms individuals during the different stages of life, from early childhood and the formative periods to youth and economically active life, is essential to support the economic recovery efforts and economic development for the Arab region. The results of the study show complex ways in which armed conflict affects human development, and the challenges that those countries will face to meet the 2030 Agenda for Sustainable Development. For the Arab region, framing the complex situations of conflict around the Sustainable Development Agenda represents an opportunity to carry out interventions to promote human development.

17-00715