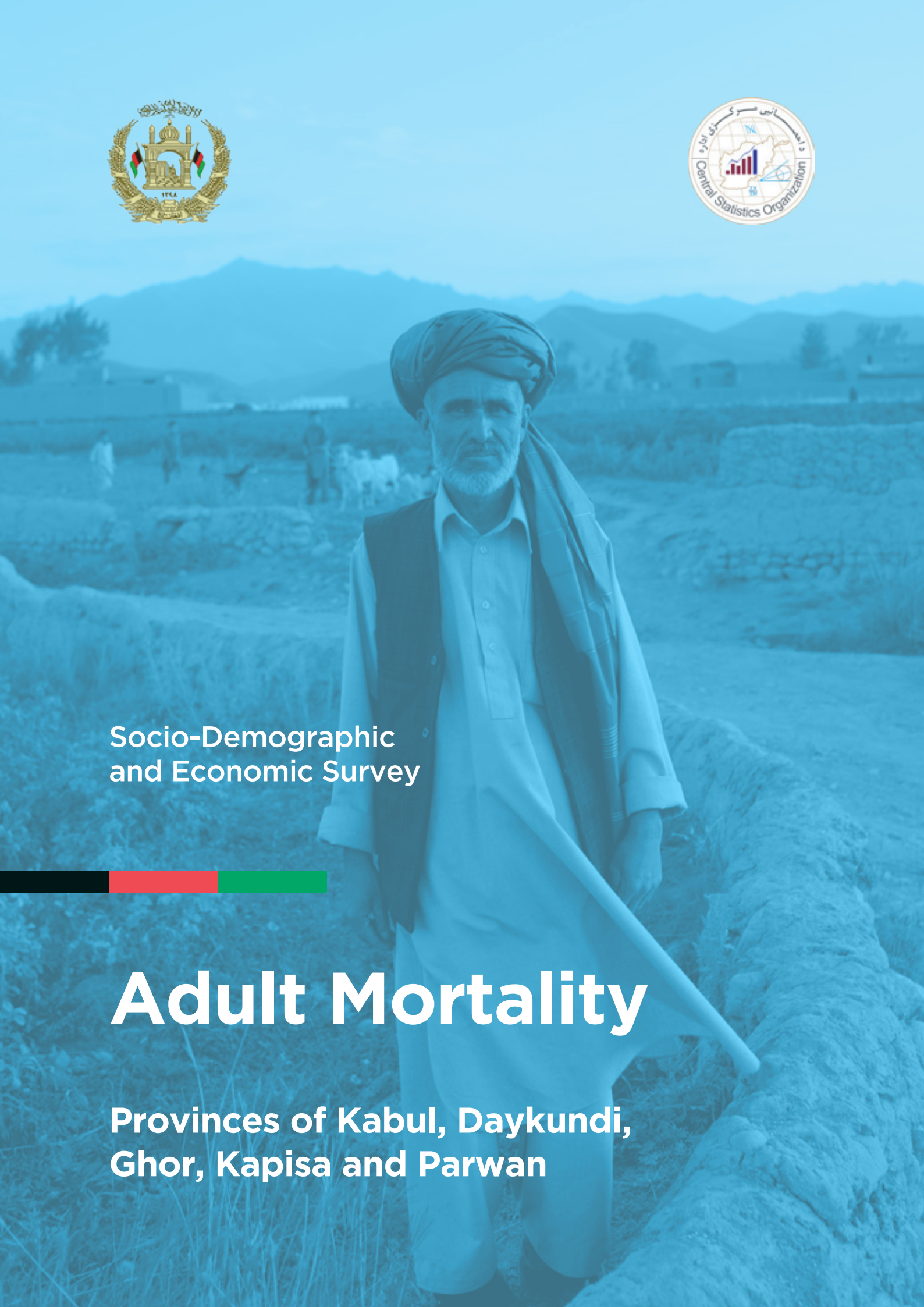

Socio-Demographic
and Economic Survey

Adult Mortality

Provinces of Kabul, Daykundi, Ghor, Kapisa and Parwan

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The Central Statistics Organization (CSO) of Afghanistan would like to thank all the organizations and individuals involved in conducting, supporting and facilitating the Socio-Demographic and Economic Survey (SDES). CSO extends its gratitude to the Government of Japan for supporting the survey in five provinces and making the preparation of the reports possible and to the United Nations Population Fund for technical support.

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Credits

Editor: Fatima Raja

Design: Julie Pudlowski

Cover photo: Tugnoli Lorenzo

Foreword

We are pleased to present the Thematic Report on Adult Mortality, based on a study of the data that has emerged from a ground-breaking survey: the Socio-Demographic and Economic Survey (SDES) in Afghanistan. As the SDES is being rolled out in the provinces, starting from Bamiyan in 2011 and with several more completed or in process, we are getting an unprecedented view of the situation of the country's people today.

Led by the Central Statistics Organization (CSO) with technical support from the United Nations Population Fund (UNFPA) and financial assistance from development partners, the SDES collects vital data on households down to the village level, providing much-needed evidence to underpin high quality policy and planning.

The Thematic Report on Adult Mortality analyses the data from five of the first six provinces in which the SDES was completed: Daykundi, Ghor, Kabul, Kapisa and Parwan, and creates life tables for men and women in each province individually, and for all five collectively. Using the orphanhood method, it shows that mortality has declined rapidly in these provinces, especially in Kabul, Parwan and Kapisa.

Based on its analysis, the report finds that in the five provinces, the life expectancy at five years of age is about 65 years for both sexes, with levels of adult mortality, especially for women, higher than in many comparable countries. In Ghor, women's life expectancy is only 56.9 years. Generally, the study finds, the age pattern of mortality differs from that in developed countries: for men, mortality rates are higher at young adult ages, but the gap narrows in middle age. For women, a disadvantage in mortality emerges at ages older than 15 in Ghor and around age 40 in the remaining provinces.

These findings are important guides for policymakers and development partners in Afghanistan, and the contributions of many underpin this achievement. We would like to thank the donors who supported the SDES, the media, the provincial governments who, led by their respective governors, provided vital support, and the field staff who conducted and monitored the surveys and worked tirelessly under difficult conditions. Special thanks is also due to the Afghan households who agreed to participate in the SDES.

Engr. Shir Mohammad Jamizada
President General, CSO

Dr. Bannet Ndyanabangi
Country Representative, UNFPA

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Acronyms

BGB Brass Growth Balance

AMS Afghanistan Mortality Survey

SDES Socio-Demographic and Economic Survey

WHO World Health Organization

Executive Summary

Adult mortality in Afghanistan

Improvements in Afghanistan's life expectancy at birth have been documented in various sources. From 27.59 years among men and 27.84 years among women in 1950 (United Nations 2013), life expectancy reached 61.5–64.2 years for women and 59.6–63.6 years for men in 2010 (AMS 2010, United Nations 2013). The probability of dying between 35 and 50 years of age, an important indicator of adult mortality, also declined more than threefold from 481 deaths (per 1,000) in 1950–1955 to 153 in 2010–2015. This decline has been attributed to efforts to improve the health sector, which underwent reform beginning in the 1980s. Despite recent initiatives to improve public services, however, progress towards better access to health care has been slower than is needed to offset adverse conditions.

In a context of slow socioeconomic and health improvement, there is significant regional heterogeneity. Provinces perform differently on different development indicators. This is extremely important to understanding mortality patterns, as the pathways linking socioeconomic dimensions to health and mortality are complex and difficult to analyse in Afghanistan's complex context. Moreover, literature on adult mortality in the country is limited, particularly at the province level. It is thus a challenge to account for the particularities of each province and how these contribute to mortality outcomes given limitation of data and quality. Historical, ethnic, political and socioeconomic backgrounds also differ among provinces, and can relate to adult mortality in manifold and complex ways.

The objective of this report is to present estimates of adult mortality – the probability of dying between ages 15 and 60 (45q15) and life expectancy at age 5 (e5) – based on data from the Socio-Demographic and Economic Survey (SDES) conducted in five provinces in Afghanistan (Daykundi, Ghor, Kabul, Kapisa and Parwan) using direct and indirect methodological approaches to estimate adult mortality in each province. This study thus makes an important contribution to better understanding adult mortality at the provincial level in Afghanistan.

SDES data and methods

Two methodological approaches were used to estimate adult mortality based on the SDES data of the five provinces: an indirect method using data on the survival of parents (orphanhood method) and a direct method using reported household deaths for ages five and above. Household deaths may be underreported by respondents. To adjust for the completeness of information, the Brass Growth Balance method was used before estimating adult mortality indicators. Since each source of mortality information usually suffers from different limitations and for lack of earlier estimates of province-level adult mortality estimates for comparison, we compared our provincial mortality estimates with results from three other sources: World Health Organization (WHO 2015), United Nations (United Nations 2013) and the Afghanistan Mortality Survey (AMS 2010). An aggregate measure based on the consolidation of the data from the five provinces was also computed. Although the aggregate measure is not offered as a national adult mortality level for Afghanistan, it is more robust than provincial level indirect adult mortality estimates.

Key findings

In all provinces, estimates derived from the orphanhood method indicate that mortality has reduced rapidly, particularly in Kapisa, Parwan and Kabul, where the probability of dying (45q15) is around 0.05 in the most recent years. Consistent with the differences in the proportion of orphans by age, the mortality levels are higher in Daykundi and Ghor than in the other three provinces. One intriguing result is better mortality among men than women in Ghor. We believe our results suffer from the limitations of the orphanhood method and the low accuracy of household reports on parents' survival.

Our second set of mortality estimates is based on deaths reported by household respondents. The underreporting of household deaths is systematically lower among women than men. Among women, the estimated percentage of completeness is lower in Ghor, followed by Kapisa, Kabul and

Parwan. For men, completeness is lower in Ghor, followed by Kabul and Kapisa. For the aggregate five provinces, the estimated completeness is 67 percent among women and 81 percent among men. When we compare estimates of adult mortality (45q15) based on adjusted deaths in the household with estimates from the orphanhood method we get very different results. The measures based on the orphanhood method are systematically lower, confirming our suspicion that the estimated levels with the orphanhood method are too low, particularly in the most recent years.

We estimated life tables by sex and province; starting from age five. Our calculations from adjusted household deaths show life expectancy at age 5 to be about 65 years for each sex when data is aggregated for the five provinces. This is very similar to the results from AMS (2010), but are somewhat overstated when compared to estimates from the United Nations and the WHO. Nevertheless, the general levels of adult mortality are still high compared to those for other developing countries, particularly among women, suggesting there is room for significant improvement in the decades to come. Not surprisingly, we also find that mortality levels vary by province. Among women, life expectancy at age 5 is higher in Kabul, Kapisa and Parwan, varying from 63.2 to 66.2 years. Female survival levels are low in Daykundi and especially in Ghor, where the estimated life expectancy is just 56.9 years. Among men, in all provinces life expectancy at age 5 is higher than 60 years. There seems to be an inverse association between adult mortality and socioeconomic conditions across provinces.

Gender differences in mortality are important and become even clearer when we estimate the male to female ratio of death rates by age. Overall, we obtain an age pattern that is different from that found in Western countries. Mortality rates for men are higher at young adult ages, but the excess of male mortality becomes close to zero or negative in middle age. The female disadvantage in mortality shows up at ages older than 15 in Ghor, and around 40 for the other provinces. The larger variation in mortality levels among women than men, as well as the mortality disadvantage for women in every province compared to international standards, and especially in Daykundi and Ghor, leads us to conclude that gender differences in survival is a critical issue which needs further investigation.

1

Introduction

According to the United Nations, in 1950, life expectancy at birth in Afghanistan was 27.59 years among men and 27.84 years among women (United Nations 2013). In the last 60 years, the country has witnessed improvements in health and mortality. Different sources (e.g. AMS 2010 and United Nations 2013) suggest that around 2010 life expectancy for women reached 61.5–64.2 years and 59.59–63.6 years for men. Further, the probability of dying between 35 and 50 years of age, an important indicator of adult mortality, has fallen by more than threefold from 481 deaths (per 1,000) in 1950–1955 to 153 in 2010–2015. This decline has been attributed to the efforts in improving the health sector, which underwent a reform that began in the 1980s. Political, social and economic turmoil slowed down the implementation of health programmes during periods of conflict, preventing an even faster decline in mortality. The consequences of war exacerbated poor health, with food insecurity, poor sanitation and water supplies, as well as unsafe drug use. In the 2000s, the Ministry of Public Health, with the help of the European Commission and the World Bank, developed a series of initiatives to improve the national health care system, including the National Health Strategy and the National Health Policy.

Despite recent initiatives to improve public services, progress towards better access to health care has been slower than is required to offset the adverse conditions. For example, the availability of suitable drinking water increased from 63 percent in 2007 to 73 percent in 2014, while the availability of clinics and hospitals decline from 56 percent to 52 percent during the same period. According to the latest surveys, Afghan people are moderately satisfied with the government's performance and have been aware of the main health issues (The Asia Foundation 2014).

In a context of slow socioeconomic and health improvement, significant regional heterogeneity remains. Provinces perform differently on different development indicators. For example, while in Kapisa, the adult literacy rate was 48.2 percent in 2012, the proportion of households with access to improved sanitation facilities was almost zero. In Parwan, the adult literacy rate was lower (38.1 percent) than in Kapisa but 14 percent of households had improved sanitation facilities (National Risk and Vulnerability Assessment 2011–2012 and 2007–2008). This is extremely important to understanding mortality patterns, since the pathways linking socioeconomic dimensions to health and mortality are intricate and difficult to analyse in a complex context, such as that in Afghanistan. Our ability to measure, analyse and discuss past and future mortality levels becomes even more challenging in a country that lacks good quality data.

The objective of this report is to estimate adult mortality in five of the provinces covered by the SDES: Daykundi, Ghor, Kabul, Kapisa and Parwan. We apply two different methodological approaches to estimate adult mortality in each province. First, we rely on indirect estimates based on the survival of parents. Next, we use reported household deaths for ages five and above. Acknowledging important data quality issues and the limitations of the methods, we present adult mortality levels in each province and aggregate data for all five.

Methods

THE SOCIO-DEMOGRAPHIC AND ECONOMIC SURVEY

The SDES is designed to provide information on the composition of the population, education, employment status and household and housing unit characteristics, which are vital in determining the needs of different segments of the population. This is a joint project by the Central Statistics Organization (CSO) and the United Nations Population Fund (UNFPA). The survey involved a listing of every household in each village. Half of these listed households (i.e. every other household) were taken as samples for the survey and were asked questions on education, literacy, employment, migration, functional difficulty, fertility, mortality, parents' living status, birth registration, and household and housing characteristics.

The survey was first conducted in Bamiyan (2011) province, followed by Ghor and Daykundi (2012). The SDES in Kabul was launched in 2013 and lastly in Parwan and Kapisa (2014). A total of 16 nahias, and around 843 villages in 14 districts in Kabul province were canvassed, divided into 3,068 enumeration areas. Around 2,000 villages and urban areas in Daykundi province were canvassed, with 543 enumeration areas. In Ghor around 2,300 villages and urban areas were canvassed, with 764 enumeration areas, and in Bamiyan around 1,800 villages and urban areas were canvassed, with 425 enumeration areas. In Parwan 10 districts and 567 enumeration areas were canvassed, and lastly in Kapisa five districts and around 274 enumeration areas were canvassed, with the exception of Tagab and Alasay districts that were not covered during the listing and enumeration due to security problems in those areas.

MORTALITY METHODS

Demographers have used indirect methods extensively over the last decades to estimate mortality in a context of poor or non-existent registration systems (Moultrie et al. 2013). In this report, we use different strategies to estimate adult mortality by taking advantage of the existence of two types of SDES data: information on parents' survival and on deaths in the household. Since each source of mortality information suffers from different limitations, and we cannot assume, ex-ante, which is the most reliable in the case of SDES, it is desirable to compare mortality estimates calculated from both. The latest version of the SDES dataset allows us to estimate adult mortality based on orphanhood data and deaths in the household for every province, except Bamiyan, which does not have data available on orphanhood. In the following sections, we describe the methods and the potential problems inherent in applying each one to SDES data.

INDIRECT ORPHANHOOD METHOD

The SDES collected information on mothers' and fathers' survival. Therefore, we apply the orphanhood method developed by Henry, and improved upon by Brass and Hill (1973), Hill and Trussell (1977), and Timæus (1991, 1992) to estimate adult mortality.

Mortality calculation requires prior estimates of deaths, age and time of exposure. The logic of the orphanhood method is very straightforward: deaths come from the proportion of orphans, time of exposure is given by the respondent's age, and age can be estimated from the age distribution of mothers at the birth of their children. Therefore, the method allows us to estimate what would be the female (mothers) and male (fathers) probability of surviving from the child's birth until the date when she or he answers the survey question.

The mean age of mothers at childbirth varies in different populations and thus the proportion of non–orphans corresponds to different probabilities of surviving, even when the time of exposure is the same (given by the respondents' age). To solve this, the original method and its variants establish a unique set of correspondences between the age of children and the age of mothers by proposing adjustment factors for different age distributions of mothers at birth. Earlier studies have calculated adjustment factors in different ways, but the overall design is the same: to simulate various combinations of fertility and mortality schedules to obtain adjustment factors that apply to any population. Whereas adult mortality estimates based on any variant of the orphanhood method should provide comparable adjustment factors, we present the results from the application of these three variants – Brass and Hill, Hill and Trussell and Timaeus – in order to verify if our estimates are similar regardless of methodological variations.

On the basis of the information on the proportion of mothers alive by respondents' age, the mean age at childbirth and adjustment factors, we can estimate a set of probabilities of surviving at adult ages, l45/l25, l50/l25, l55/l25, l60/l25, which are always conditional to a standard age, 25, at childbirth (Preston et al. 2001). From that set of estimates, one can easily find out the female adult mortality levels with the help of a life table model. Of course, the results are sensitive to the choice of the life table model used. We use the West life table model from Coale and Demeny (1966), because it gives a

more general pattern of mortality and its use is recommended when one has no information to select a specific model (Preston et al. 2001). Finally, since the surviving measures are based on retrospective information for different cohorts, we will date the measures by using indirect methods of time location. For more detail see Brass and Bagboye (1981) and Timaeus (2013).

Whenever information on father's survival is available, as it is in the SDES, one can also apply the orphanhood method to estimate the probabilities of surviving for men. Although the literature suggests that the use of male orphanhood should be avoided due to the much weaker relationship between children and fathers, we estimate both female and male adult mortality because of the low number of children born out of wedlock in Afghanistan.

Several factors may affect the accuracy of the orphanhood estimates (Preston et al.2001; United Nations 1983; Moultrie et al 2013). First, to the extent that only surviving children can report the survival status of their parents, a positive correlation between children and parents survival may bias mortality estimates downwards. On the other hand, if fertility is positively correlated with mortality, there can be several reports of survival for parents with higher mortality. Other issues that may reduce the quality of estimates include age misreporting which can bias time exposure to death, and the adoption effect which arises from household members providing information about the survival of social parents instead of biological parents. As Preston et al. (2001) points out, the adoption effect is particularly important among children younger than age 15, who usually do not report for themselves.

DEATHS IN THE HOUSEHOLD

The SDES includes questions on deaths in the household. The respondents were first asked whether anyone in the household had died during the reference period. For each death reported, the survey collected additional data, including name, sex, and marital status of the deceased, age at the time of death, month and year of death, and whether the cause was related to pregnancy.

We can estimate deaths and person years lived by age, sex and calendar year, based on population counts and the information on deaths in the household. Of course, the quality of our mortality measures depend on the number of deaths reported in each province. The lower the number of deaths, the least robust are the results. According to SDES data, the number of deaths at ages 5 and above vary from 1,303 in Kapisa to 13,393 in Kabul. For Parwan, Ghor and Daykundi the number of deaths is comparable, being equal, respectively, to 3,182, 3,522, and 3,448.

Further, before estimating the mortality rates, we need to assess the quality of the data (coverage and content errors), for both the deceased and the population. With respect to the content errors, the tendency to round ages or prefer certain digits (age heaping) is common in developing countries (Preston et al. 2001) and has been detected in the SDES data in a preliminary analysis. Therefore, to mitigate some of the potential bias from age misreporting in our estimates, we aggregate the data into five-year age groups.

Regarding coverage errors, the underreporting of deaths is the most common source of error. There are also concerns in the literature regarding household dissolution after the death of household members, and sample selection against households with only few members because of high mortality rates (IFHSSG 2008; Sawyer and Castilla, 1989). Corrections include weighing measures (Bendavid et al. 2011) and the application of indirect techniques. Since we have data for just one point in time, we apply an indirect method – the Brass Growth Balance method (BGB) – that is part of a set of techniques that demographers call one-census-indirect-methods. The BGB method estimates what would be the average level of completeness in the death reports that solves a growth balance equation using birth rates (calculated from population counts), death rates (calculated from both reported deaths and population counts) and an estimated stable rate of growth. The quality of our results relies particularly on the assumption of a stable population scenario. Since this assumption may not hold for some Afghan provinces, we estimate the balance equation using only information from the central ages (35–50). These ages correspond to cohorts that might have been less affected by recent mortality and

fertility changes in Afghanistan and that, at the same time, are less susceptible to age misreporting than the older age groups.

Since we do not have a benchmark against which to compare our estimates of completeness, we prepare three scenarios for adult mortality based on household deaths: unadjusted deaths; deaths adjusted for omission according to completeness in each province; deaths adjusted according to the average levels of omission estimated from the data for the five provinces together. We then fit a two-parameter relational logit model to ages 15–60, using the West Life Table Model as the standard. Next, we estimate life tables by sex and province, starting from age five. We do not provide life expectancy at birth in this report. In a separate report, our research team offers estimates of child mortality based on indirect information on child survivorship, as well as life table measures for all ages combined.

OTHER DATA SOURCES

We compare our mortality estimates with results from three different data sources: the World Health Organization (WHO 2015), United Nations (UN 2013) and the Afghanistan Mortality Survey (AMS 2010). The first two provide time series of mortality estimates calculated from the combination of different data sources and methods. The AMS figures are based on a nationwide household survey, conducted in 2010, which collected similar mortality data to SDES data. We compare mortality estimates for each province with these data sources to validate our results. We also use in our comparisons, SDES aggregate measures based on the consolidation of the data for the five provinces together. Our aggregate measures do not offer a national mortality level for Afghanistan, but are still useful to improve the robustness of our indirect mortality estimates.

2

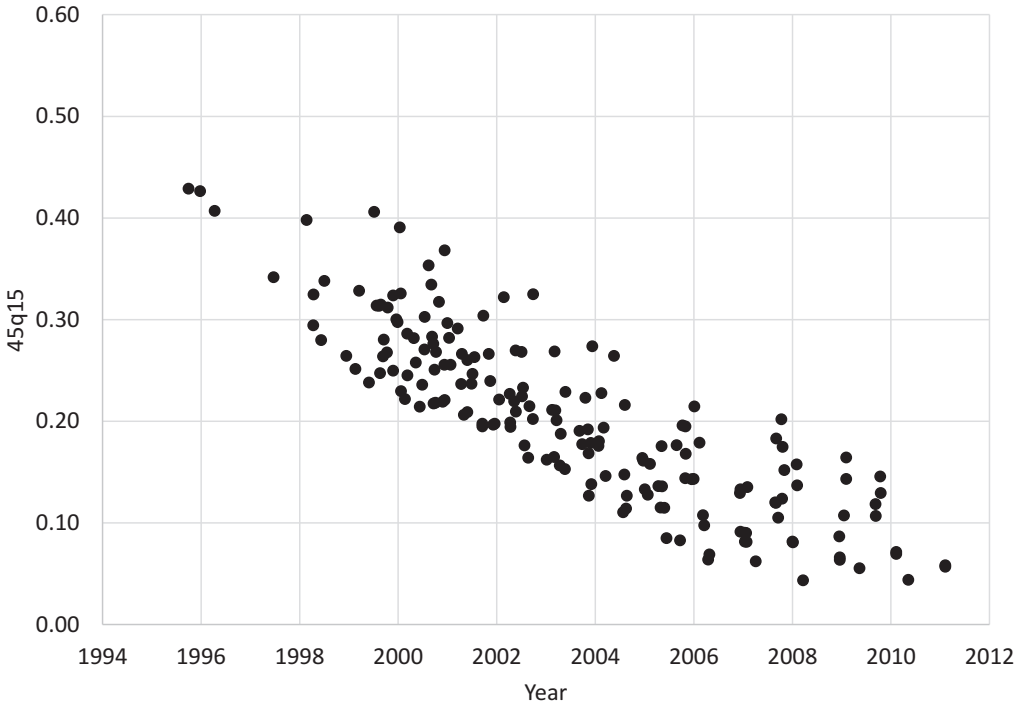
Results

Indirect adult mortality estimates

In Figure 1, we plot the probabilities of dying between ages 15 and 60 by year for the five provinces for which we have survey data, regardless of sex and the three variants of the method. The most striking result is the rapid decline in adult mortality over a short period of time: the probability of dying has reduced by about fourfold in just 15 years. While some of these trends might be true, they differ significantly from the expected patterns, and from the figures for other neighbouring countries.

FIGURE 1

Male and female probabilities of dying (45q15) from information on orphanhood, by year (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)

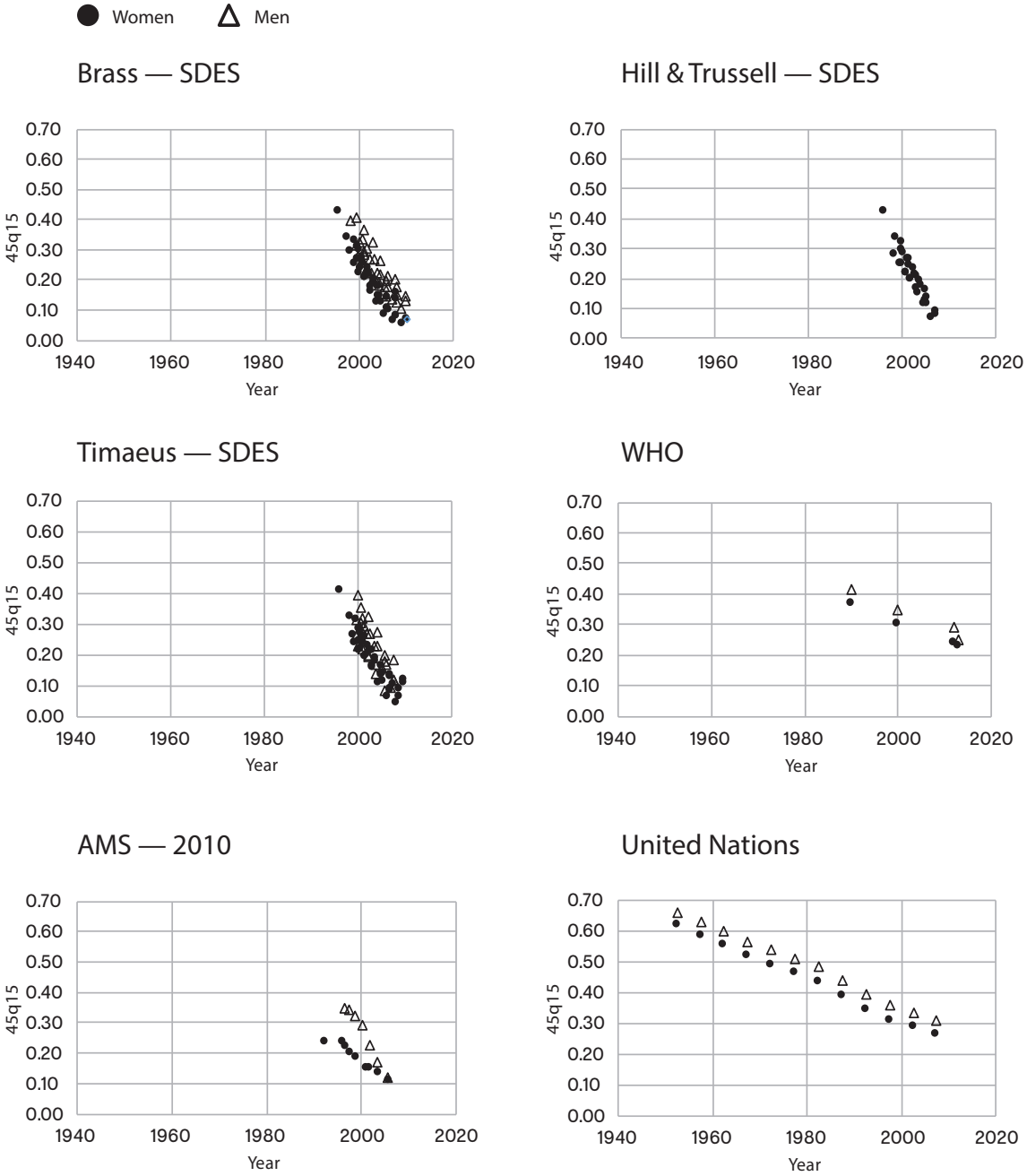


Source: CSO Afghanistan, SDES 2011-2014.

To cast more light on this question, we compare our results based on the three different variants of the orphanhood method with estimates from the three studies: UN (2013), AMS (2010) and WHO (2012). In Figure 2, we plot the results for both men and women. Note that mortality estimates are consistent regardless of the methodological variant used. In addition, although mortality declines rapidly for both sexes, the probabilities of dying remain roughly higher among men than women. While a similar pattern of rapid mortality change is found in the AMS (2010), the United Nations and WHO estimates show a much slower pace of decline. For example, according to the United Nations estimates, the probability of dying is never lower than .2 during the period of analysis, whereas they can get as low as 0.044 with the SDES data. These differences may be due to the type of data and methods used in each study. Since the estimates from the AMS (2010) also rely on orphanhood data, although based on a nationally representative sample, it is not surprising that they are similar to our figures.

FIGURE 2

Probabilities of dying (45q15) from information on orphanhood, different methodological variants (Brass, Hill & Trussell and Timaeus), and probabilities of dying (45q15) from alternative sources (UN, WHO, AMS 2010)



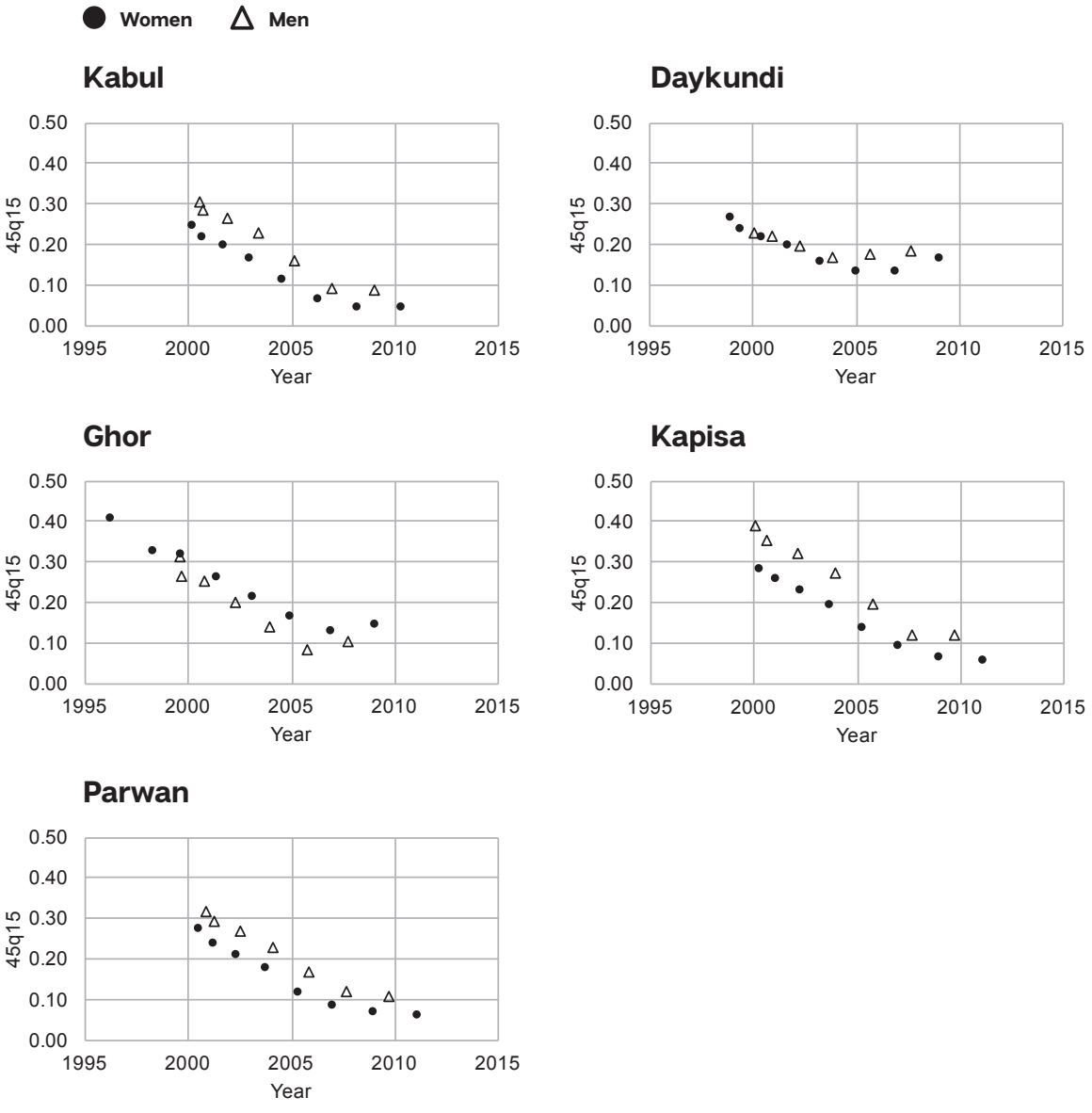
Sources: CSO Afghanistan, SDES 2011–2014; Afghanistan Mortality Survey (2010); UN (2013); WHO (2015).

Notes: SDES estimates are based on information on survival of parents (Kabul, Daykundi, Ghor, Kapisa and Parwan).

A central question is whether these trends are similar across the Afghan provinces. In Figure 3, we compare the probabilities of dying for men and women by province, according to the Timeaus (1992) variant of the method. Overall, in all provinces, mortality fell rapidly according to the orphanhood data, although the time trends are more marked in Kapisa, Parwan and Kabul, where the probability of dying reached around 0.05 in the most recent years. Also, consistent with the differences in the proportion of orphans by age, shown in Tables A1 to A5 in the Annex, the mortality levels reached in 2010 are higher in Daykundi and Ghor than in the other three provinces. One intriguing result is the better mortality among men than women in Ghor. We will return to this point in the next section, when looking at mortality estimates based on household deaths.

FIGURE 3

Probabilities of dying (45q15) from information on orphanhood, Timaeus variant, by sex, year and province (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)

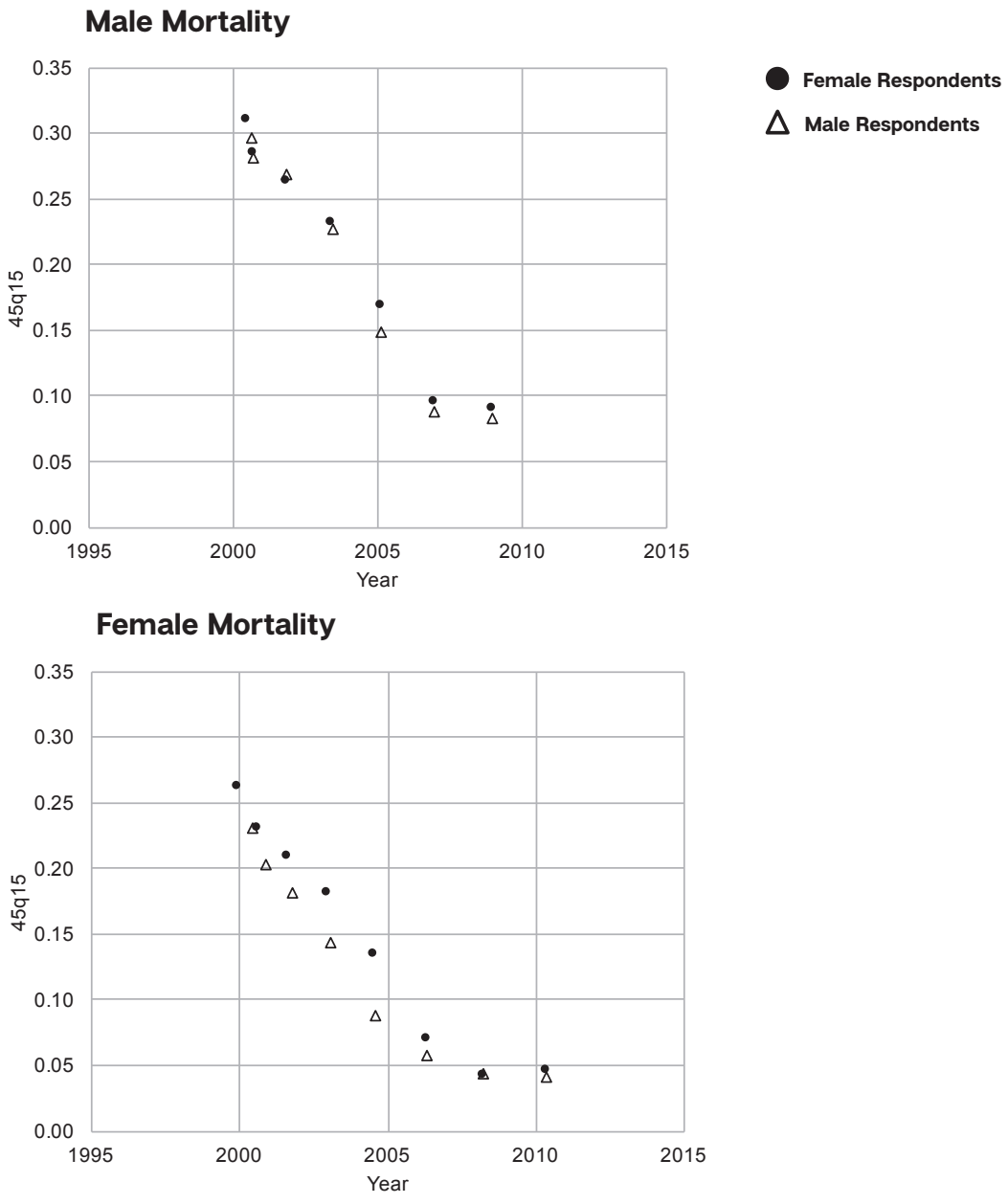


Source: CSO Afghanistan, SDES 2011–2014.

As discussed in the methodological section, several issues can affect the quality of mortality estimates based on the orphanhood method. In Figure 4, we present indirect evidence of problems in the accuracy of the SDES data. The graph compares mortality estimates calculated according to respondent's gender. Mortality levels based on the information provided by daughters are higher than the levels estimated from sons' reports, reinforcing the hypotheses of age misreporting or other gender related reporting issues (Preston et al. 2001).

FIGURE 4

Probabilities of dying (45q15) from information on orphanhood, Timaeus variant, by sex and year, according to respondents' sex (Kabul 2011–2014)



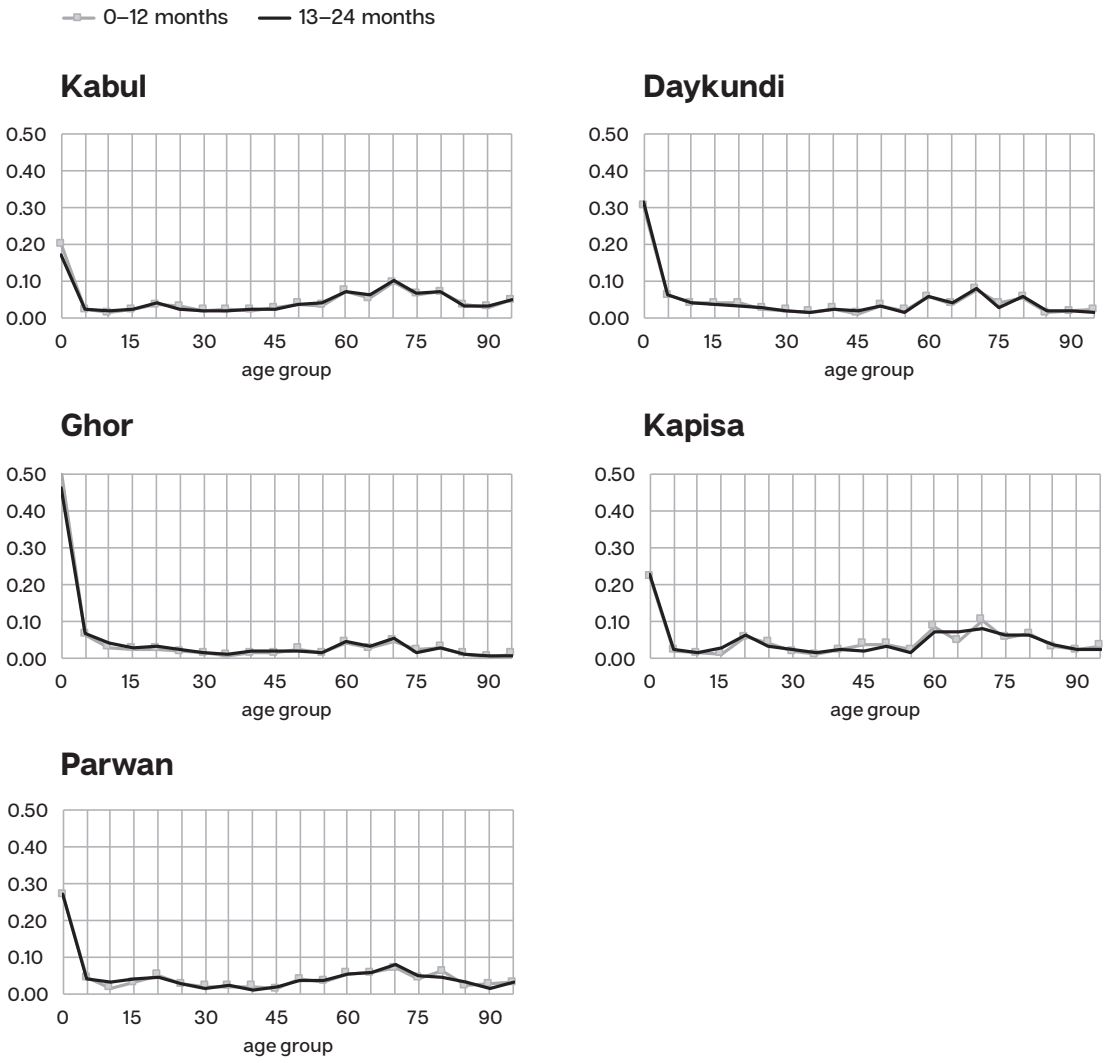
Source: CSO Afghanistan, SDES 2011–2014.

Direct adult mortality estimates

Our second set of mortality estimates is based on deaths reported by household respondents. Before presenting the mortality measures, we look at the distribution of household deaths by age group, sex, province and the number of months preceding the survey. We present the results in two categories: deaths that occurred up to the 12th month preceding the survey and deaths that occurred from the 13th to the 24th month prior to the survey date. Except in specific cases (due to war, for example), reliable reported household deaths should show similar patterns over close time periods. According to Figures 5 and 6, there is little difference in the proportional distribution of deaths by age, province and sex, when the two time periods are compared. Moreover the absolute number of deaths over time is also comparable, except for Kabul where the number of deaths declined in the most recent period (0–12 months). In the other provinces, there was a small increase in the number of deaths up to the 12th month preceding the survey compared to the 13th–24th months.

FIGURE 5

Proportional distribution of household male deaths by province, number of months preceding the survey, and age (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)

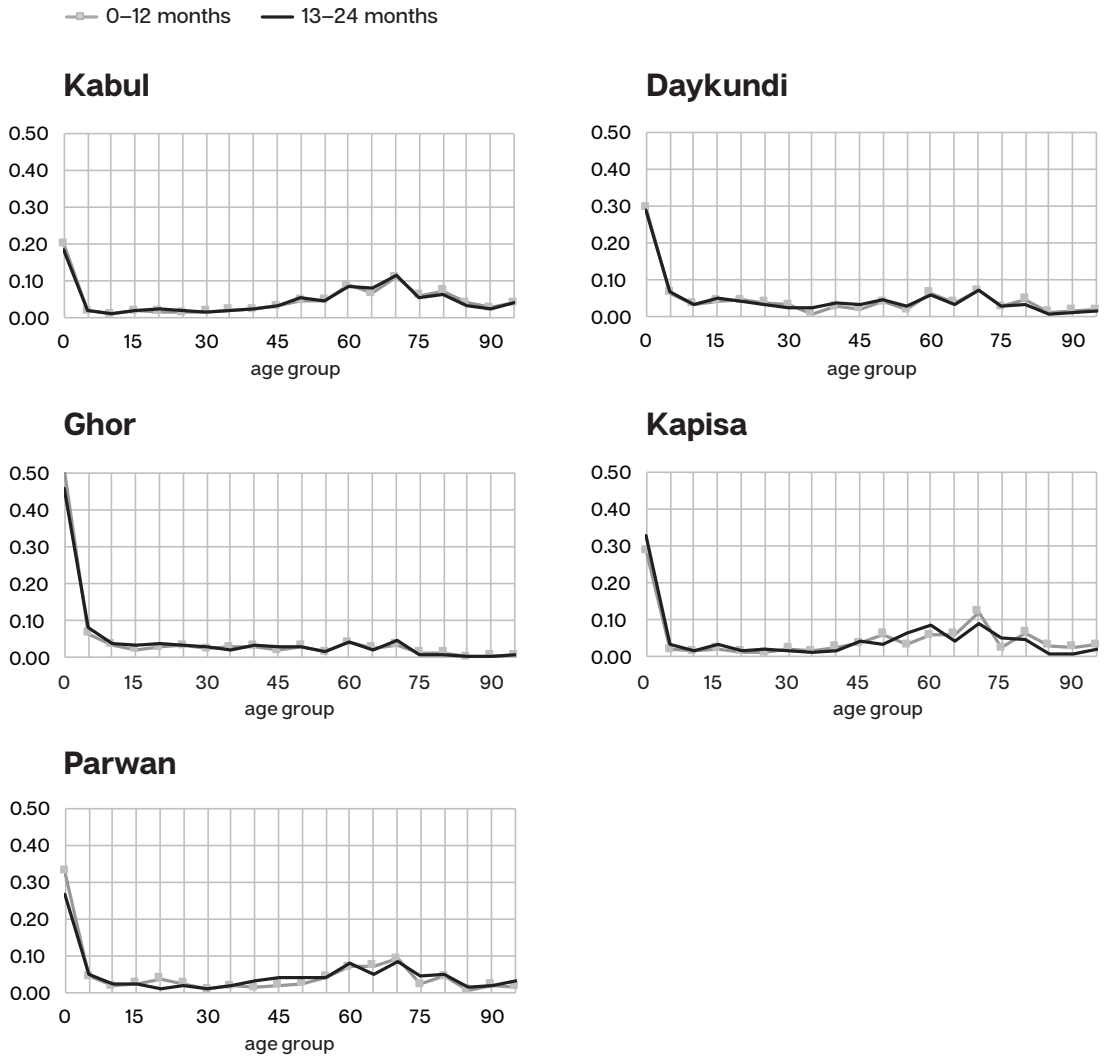


Source: CSO Afghanistan, SDES 2011–2014.

Whereas the distribution patterns by time period are similar, they are, as expected, distinct by age, sex and province. Deaths are more concentrated in the first five years of age in Ghor than in the other provinces. The variations found are not only a product of the differences in the age-specific mortality rates but also in the age structure of the populations. Yet, even accounting for the younger age structure of the populations in Ghor, the prevalence of childhood deaths is still higher in this province, which is consistent with the higher general level of mortality there, as suggested by the orphanhood estimates.

FIGURE 6

Proportional distribution of household female deaths by province, number of months preceding the survey, and age. (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



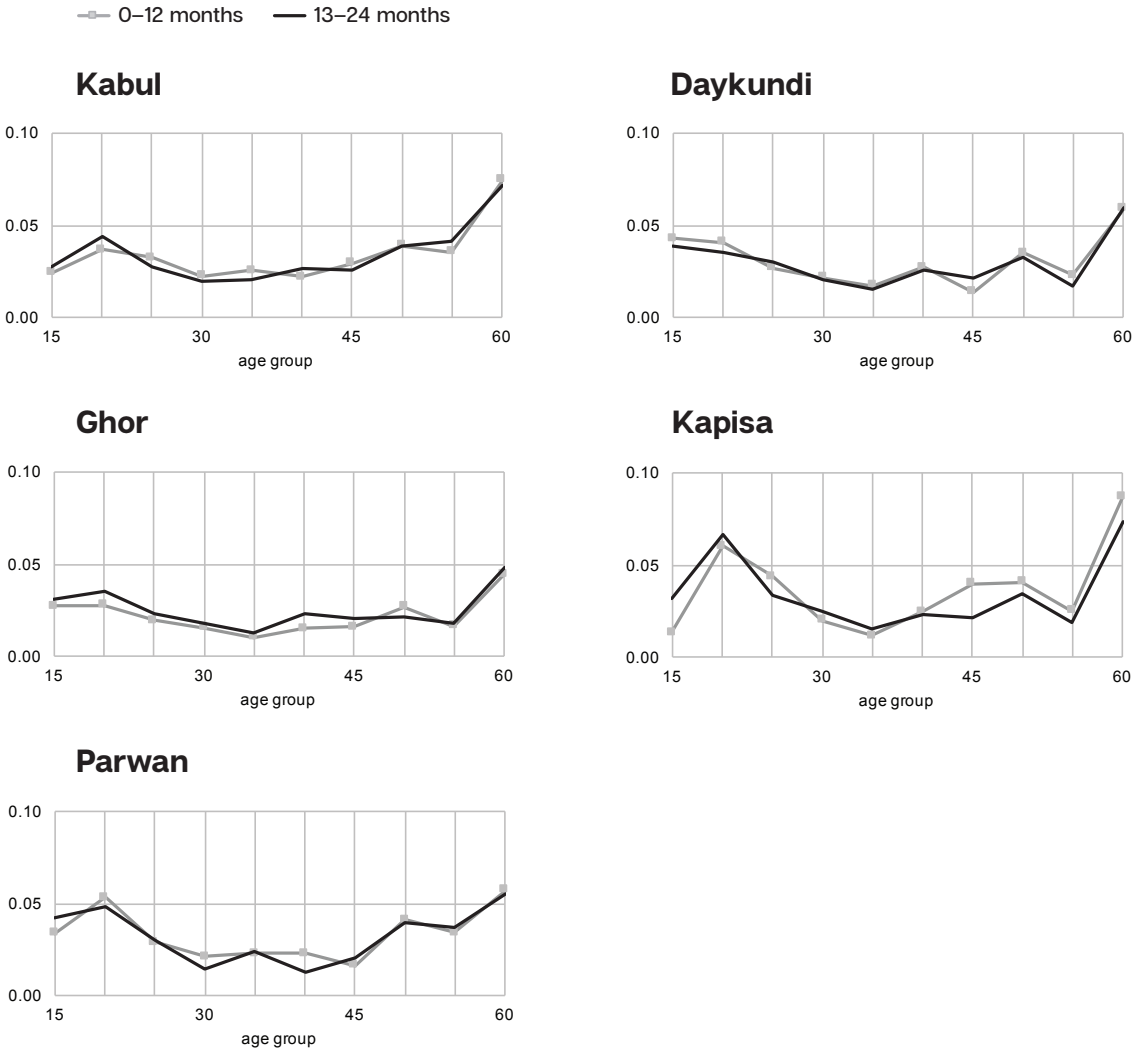
Source: CSO Afghanistan, SDES 2011–2014.

A closer look at the distribution of deaths, focusing on adult ages (15–60), points to some intriguing differences among the provinces. For example, there is a larger concentration of male deaths at age 20 in Kapisa and Parwan (Figure 7) than in the other provinces, but not among women (Figure 8). There is also a proportionally larger concentration of deaths at older ages among women, despite the

surprisingly low female population counts at these ages, suggesting high female mortality levels in most of provinces. Although there are some differences in the distribution of deaths between the two periods, the variations are not substantial, particularly considering the low number of deaths in some age groups and provinces.

FIGURE 7

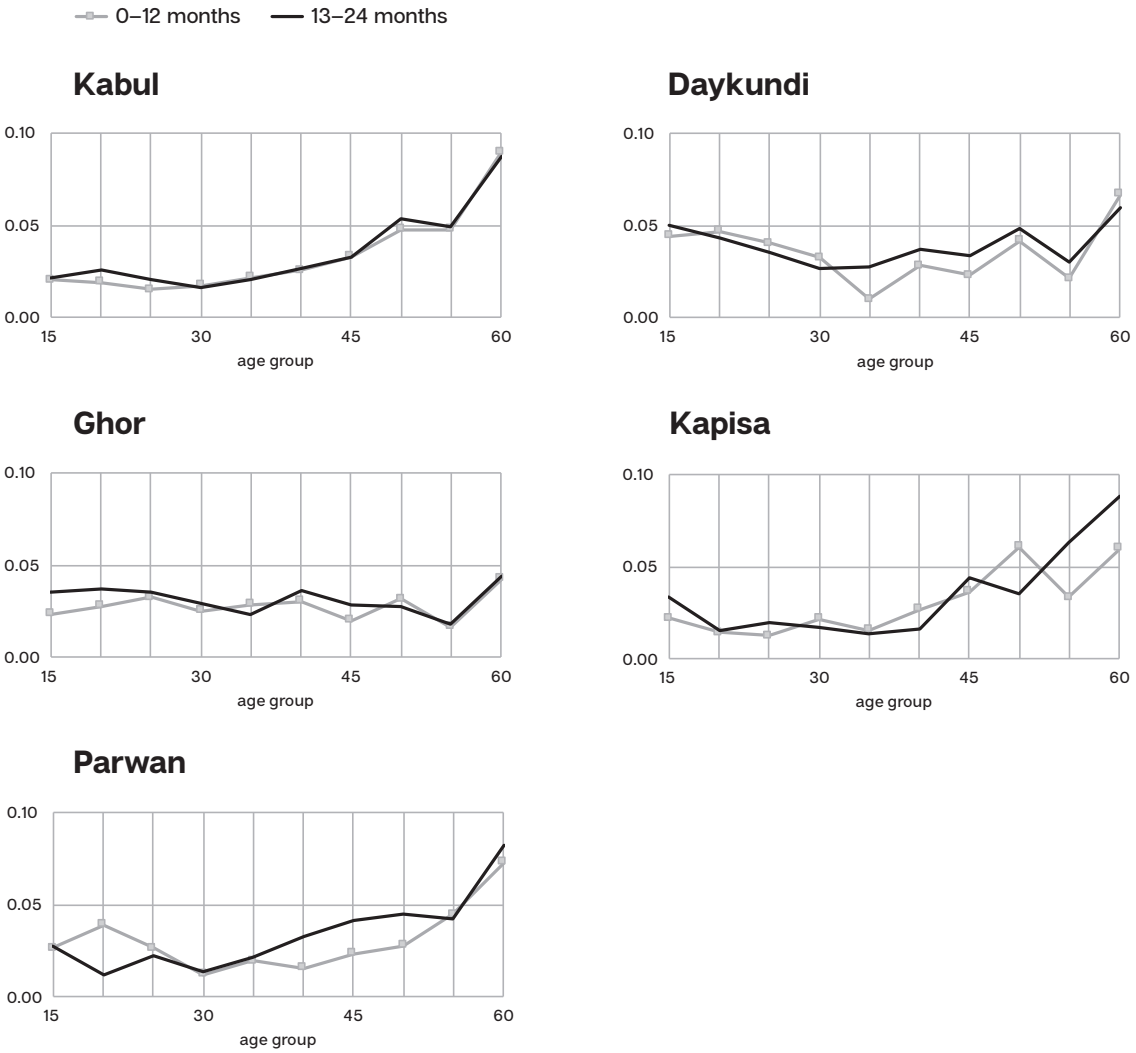
Proportional distribution of household male deaths by province, number of months preceding the survey, and age (15–60 years old) (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



Source: CSO Afghanistan, SDES 2011–2014.

FIGURE 8

Proportional distribution of household female deaths by province, number of months preceding the survey, and age (15–60 years old) (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



Source: CSO Afghanistan, SDES 2011–2014.

As mentioned in the methodological section, retrospective information such as household deaths may be underreported by respondents. Therefore, before estimating adult mortality indicators based on household deaths, we attempted to measure and adjust for the completeness of information in each of the five provinces and in the aggregate data. We use the BGB method, but recognize the difficulties in applying it, particularly because of its strong assumption of stable population age structures. The results are shown in Table 1, and are based on the accumulated number of deaths in the first 12 months preceding the survey.

TABLE 1

Estimated percentage of completeness of reported household deaths for ages 5 and above in the 12 months preceding the survey by sex (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)

	Kabul	Daykundi	Ghor	Kapisa	Parwan	Aggregate provinces
Male	72	97	67	79	119	81
Female	65	81	58	62	66	67

Source: CSO Afghanistan, SDES 2011–2014.

Completeness is systematically lower among women than men. Among women, the estimated percentage of completeness is lowest in Ghor, followed by Kapisa, Kabul and Parwan. For men, completeness is lowest also in Ghor, followed by Kabul and Kapisa. For the aggregate five provinces, the estimated completeness is 67 percent among women and 81 percent among men. Surprisingly, the omission of deaths appears low in Daykundi, despite its worse socioeconomic conditions compared to Kabul, Kapisa and Parwan. The fact that we find more than 100 percent completeness among men in Daykundi indicates that the estimated levels of omission might not be robust, despite the effort to mitigate the violation of the assumption of non-stable population age structures. Since we do not have a benchmark to compare against the SDES estimates of completeness, we prepared three scenarios for adult mortality, by using (1) unadjusted deaths; (2) deaths adjusted for omission according to completeness in each province; and (3) deaths adjusted according to the average levels of omission estimated from the data for the five provinces together.

When we compare estimates of adult mortality (45q15) based on adjusted deaths in the household with the estimates from the orphanhood method (Timeaus Variant) we get very different results (Figure 9). The measures based on the orphanhood method are systematically lower, confirming our suspicion that the estimated levels were too low, mainly in the most recent years. The estimates are particularly different among women in Ghor, where lack of good quality data may be more critical. Therefore, we decide to compare estimates of life expectancy based only on adjusted household deaths.

We estimated life tables by sex and province using the three scenarios starting from age five (see also Tables A6 to A11 in the annex). The estimates for life expectancy at age 5 are shown in Figures 10 (males) and 11 (females) and are compared against other sources of mortality estimates for Afghanistan.

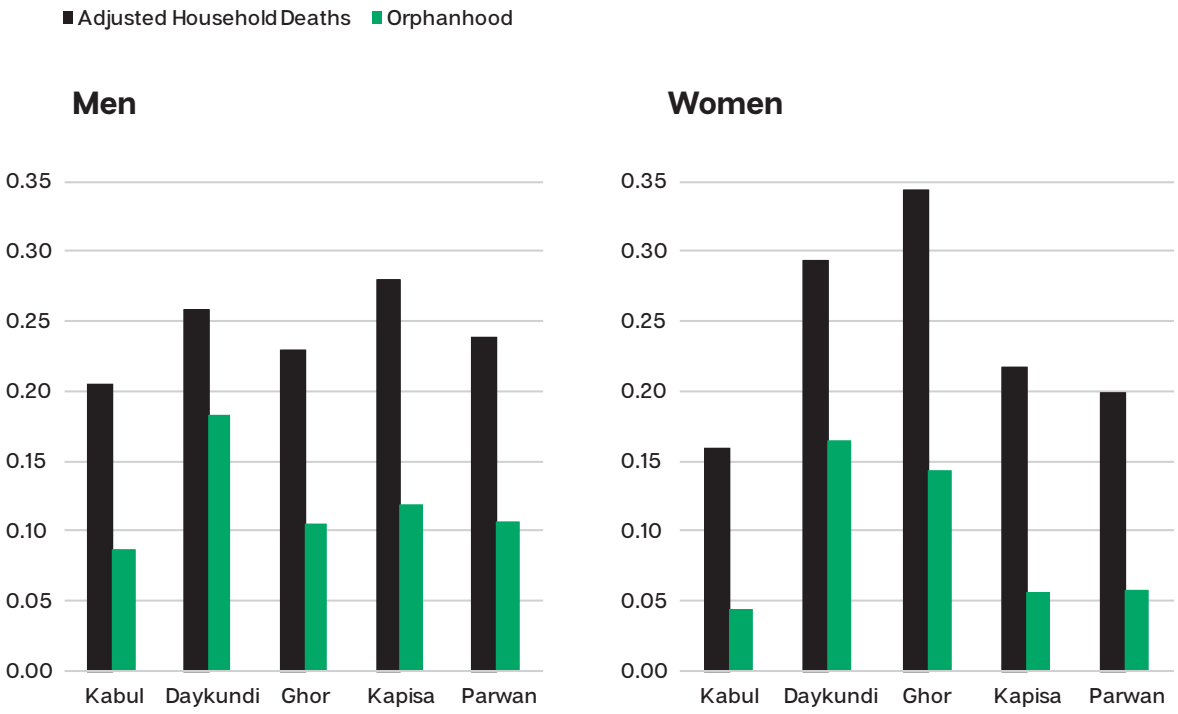
Variation in unadjusted mortality levels by province are not trivial: e5 varies between 62.9 in Daykundi and 68.9 in Ghor for men, and between 62.5 in Daykundi and 69.6 in Parwan for women. When adjusting for omission using the completeness levels presented in Table 1, the variation reduces among men, but increases among women, particularly because of the much lower estimated female life expectancy in Ghor. Using average levels of completeness to correct for omission in household deaths do not seem to reduce variability.

Nevertheless, some of the results look consistent. First, for men in Kapisa and Parwan, the larger concentration of deaths among young men (particularly in Kapisa) translates into lower life expectancy at age 5 than in Kabul, as well as mortality levels comparable to those in Daykundi. Among women, life expectancy at age 5 is higher in Kabul, Parwan and Kapisa, provinces with better living conditions. For both sexes, the estimates for the five provinces together are very similar to those from AMS (2010), although two (women) and four (men) years higher than the estimates from the United Nations and WHO respectively. We should emphasize that our aggregate measure is not a national level estimate.

When comparing the results by sex, we find a small but positive advantage for women relative to men in Kabul (1.89 years), Kapisa (2.68 years) and Parwan (2.32 years). In Daykundi, on the other hand, the advantage is for men (2.27 years), which may be a real consequence of the worse living conditions that women experience, or simply reflect the difficulty of estimating accurate measures of completeness in household deaths by sex in that province (see Table 1). In Ghor, the estimates look particularly distinct from the other provinces, even after correcting for omission. Men at age five can expect to live about seven years longer than women the same age. Indeed, male life expectancy is surprisingly high in Ghor, being comparable to the level estimated for Kabul; a result that needs further investigation.

FIGURE 9

Probabilities of dying (45q15) from information on orphanhood and deaths in the household, by sex and province (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



Source: CSO Afghanistan, SDES 2011–2014.

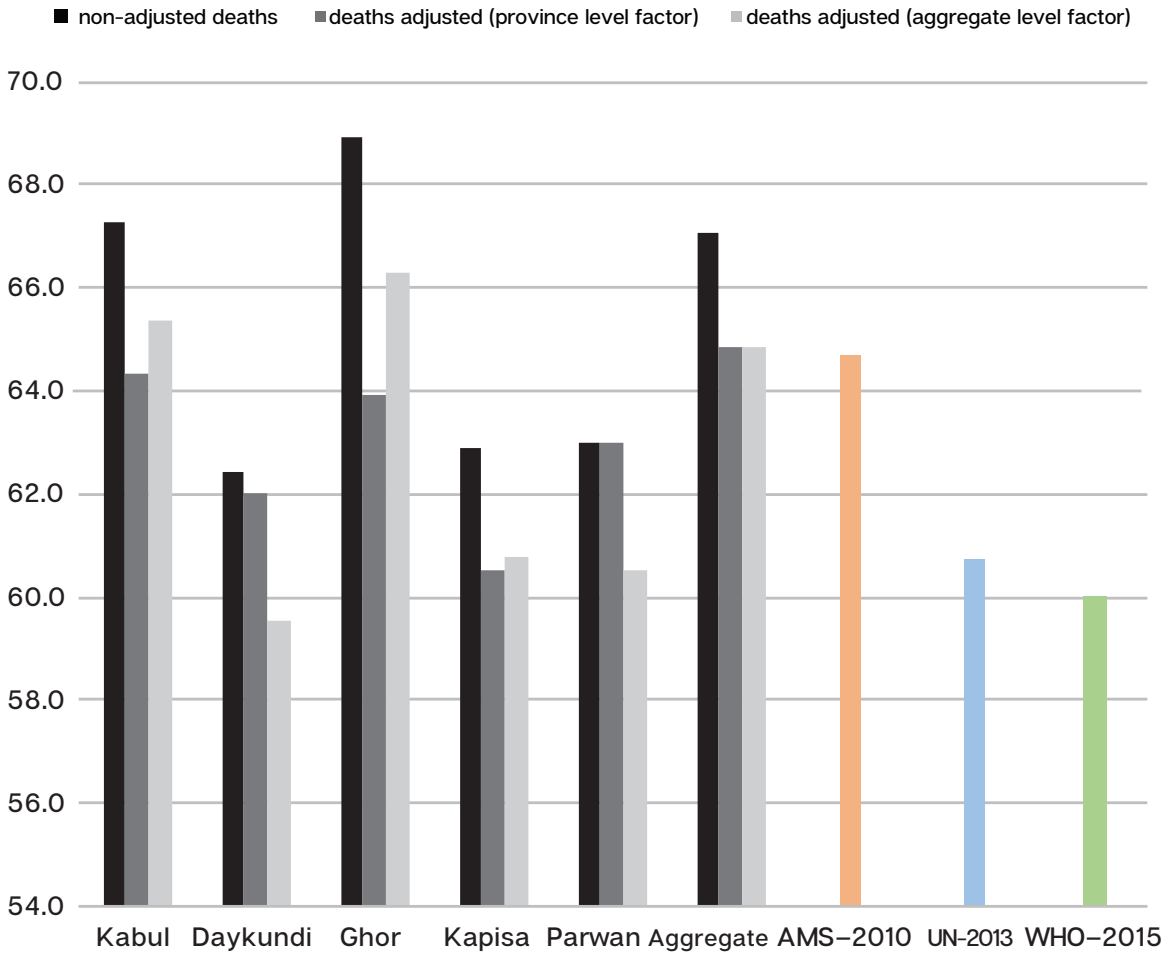
The differences in adult mortality levels across the Afghan provinces may reflect disparities in socioeconomic conditions, particularly those that affect survival at adult ages. In Table 2, we present the probabilities of dying between ages 15 and 60 for males and females in each province, sorting them from the lowest (1) to the highest (5) mortality levels. Moreover, we add values and ranking for the proportion of workers who are literate, the proportion of women who had access to skilled antenatal care during pregnancy, the prevalence of literate women ages 15 and older, the unemployment rate, and the prevalence of disability, based on World Bank (2011) and SDES data. We selected these indicators because they are more likely to be correlated with adult mortality and with survival differences by gender.

It is not by chance that Kabul has the lowest levels of adult mortality among the five provinces and its gender gap in mortality resembles bears greater resemblance to that found in Western countries. In Kabul, 55.4 percent of the labour force is literate, and access to antenatal care and female literacy are

both high by Afghan standards. Parwan and Kapisa rank just below Kabul in education and women's health. Accordingly, mortality levels there are second and third lowest, except for male mortality in Kapisa, which reflects a relatively large concentration of male deaths at young ages, as discussed above. The large provincial disparities in female mortality, as well as women's absolute and relative survival disadvantage to men, seems to be associated with women's living conditions in each province.

FIGURE 10

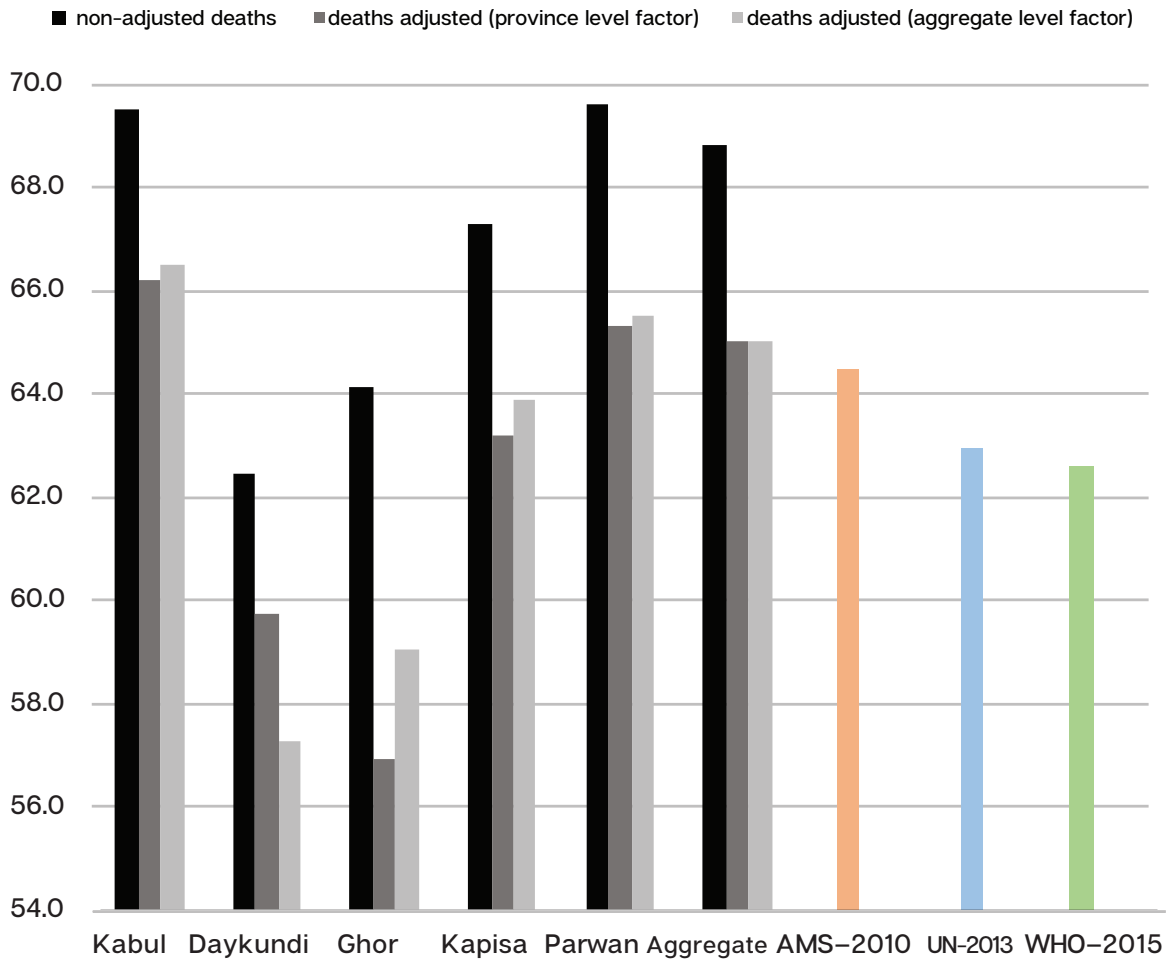
Male life expectancy at age 5, according to different scenarios, and life expectancy at age 5 for Afghanistan (UN, WHO, AMS) (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



Source: CSO Afghanistan, SDES 2011–2014.; Afghanistan Mortality Survey (2010); UN (2013); WHO (2015).

FIGURE 11

Female life expectancy at age 5, according to different scenarios, and life expectancy at age 5 for Afghanistan (UN, WHO, AMS 2010; Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



Source: CSO Afghanistan, SDES 2011-2014; Afghanistan Mortality Survey (2010); UN (2013); WHO (2015).

TABLE 2

Adult mortality estimates based on household deaths by sex and selected socioeconomic indicators by province (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)

	45q15 male		45q15 female		Literate Labor Force (%)*		Access to skilled antenatal care during pregnancy (%)*		Female literacy rate – ages 15 and older (%)**		Unemployment (%)***		Prevalence of disability among individuals over 4 Years old by age (%)****	
	Value	Ranking	Value	Ranking	Value	Ranking	Value	Ranking	Value	Ranking	Value	Ranking	Value	Ranking
Kabul	0.205	1	0.159	1	55.4	1	71.1	1	37.7	1	7.5	1	0.6	1
Daykundi	0.258	4	0.293	4	17.5	4	29.7	4	22.4	3	20.7	5	1.6	4
Ghor	0.229	2	0.344	5	26.0	5	7.1	5	8.1	5	16.9	4	2.4	5
Kapisa	0.280	5	0.217	3	32.5	3	34.6	3	26.2	2	12.7	3	0.8	3
Parwan	0.238	3	0.198	2	33.3	2	48.2	2	18.6	4	6.0	2	0.7	2

Source: CSO Afghanistan, SDES 2011-2014; World Bank (2011).

Notes: Mortality estimates are based household deaths adjusted for completeness in each province.

***** Estimates from the World Bank (2011), calculated with data for the years 2007/2008

****** Estimates from the SDES Report on Education.

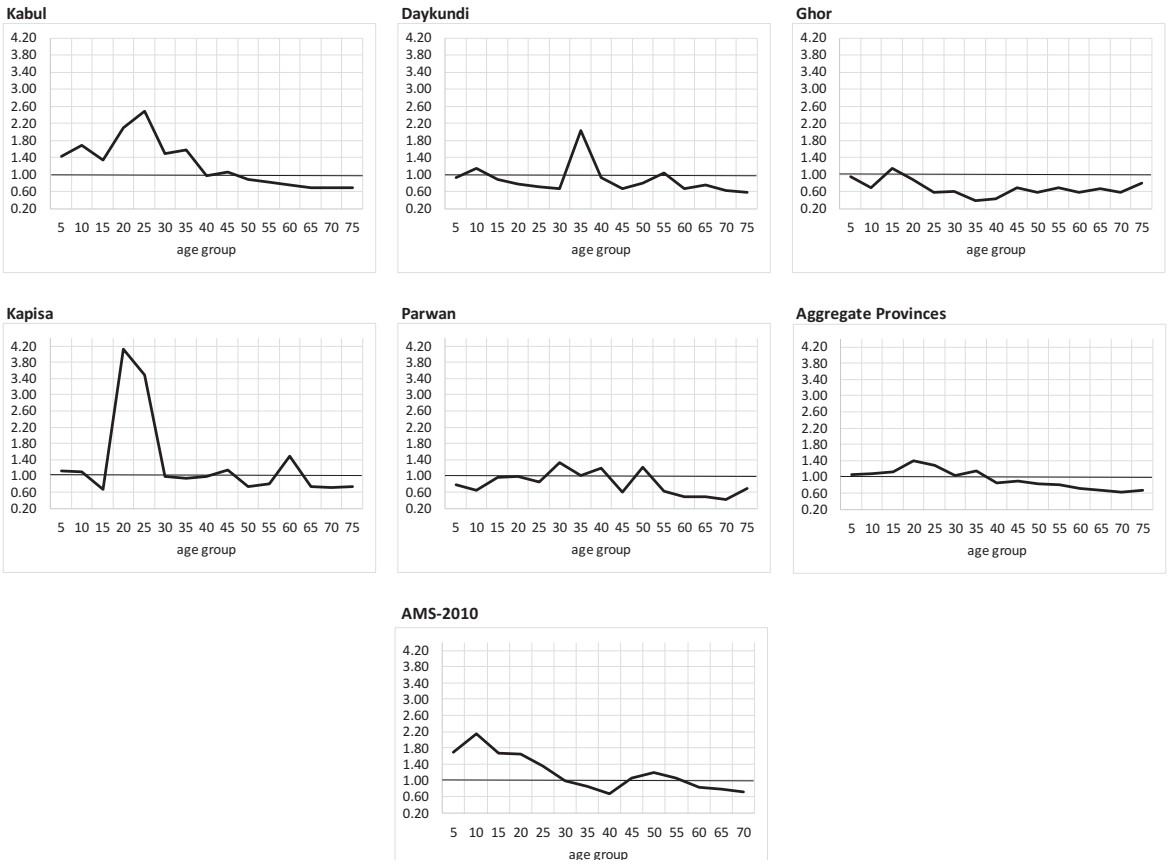
******* Estimates from the SDES Report on Labor Force. The concept of unemployment used was the % population aged 15 and over who did not work or worked less than 6 months and actively seeking work or were available for work.

******** Estimates from the SDES Report on Disability.

Gender differences in mortality become even clearer when we estimate the male to female ratio of death rates by age. Overall, we obtain an age pattern that is not commonly found in Western countries (Figure 12). Mortality rates for men are higher at young adult ages, but the excess of male mortality becomes close to zero or negative in middle age. The female disadvantage in mortality shows up at ages older than 15 in Ghor, and around 40 for the other provinces and in the aggregate. The estimates from AMS (2010) show a similar age pattern, although excess of male mortality at ages below 40 appears to be somewhat higher there than in our aggregate measures. One explanation is that in AMS (2010) deaths were not adjusted for omission, and as we show in Table 1, omission is higher among women. Alternative sources (United Nations 2013) also suggest a much smaller survival advantage among women in Afghanistan than in Western countries, but the sex mortality ratios tend to be higher, not lower, at older ages. One possible reason is that our estimates rely more heavily on survey data compared to United Nations and WHO estimates which are based on life table models.

FIGURE 12

Mortality sex ratio (male/female) by age based on household deaths, adjusted for the completeness of death information, by provinces, and mortality sex ratios (AMS 2010; Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)



Source: CSO Afghanistan, SDES 2011-2014; Afghanistan Mortality Survey, 2010.

Notes: SDES estimates are based on aggregate information for five provinces (Kabul, Daykundi, Ghor, Kapisa and Parwan).

The SDES estimates based on adjusted household deaths and aggregated for the five provinces indicate levels of adult mortality comparable to those in other countries (UN 2013). Particularly among men, life expectancy at age 5 and the probability of dying between the ages of 15 and 60 correspond to an intermediary level when compared to Pakistan, Iran, Iraq and Tajikistan (Table 2). The differences are more pronounced among women. The higher mortality levels among Afghan women than in the other four countries may reflect worse living conditions in Afghanistan or data quality issues in our study.

TABLE 3

Adult mortality estimates based on household deaths from selected countries (2010–2015); (Kabul, Daykundi, Ghor, Kapisa and Parwan 2011–2014)

	Aggregate Provinces	Pakistan	Iran	Iraq	Tajikistan
45q15					
Male	0.207	0.189	0.153	0.230	0.213
Female	0.197	0.155	0.082	0.112	0.129
e5					
Male	64.8	65.7	68.8	63.3	64.1
Female	65.0	67.4	72.4	70.4	70.6

Source: CSO Afghanistan, SDES 2011-2014; Other countries; UN (2013).

Notes: SDES estimates are based on aggregate information for five provinces (Kabul, Daykundi, Ghor, Kapisa and Parwan).

3

Summary

In this report, we estimate adult mortality for five provinces in Afghanistan using two different sources of information from SDES: orphanhood data and reported deaths in the household. We contribute to the existing literature by providing new adult mortality estimates based on household information at the provincial level. However, our estimates suffer from two main limitations. First, we present only deterministic estimates based on classical indirect demographic methods. Given the low number of deaths in some provinces, confidence intervals might be large for calculated mortality levels. Second, whereas it was not possible to measure data quality issues in depth, the lack of vital statistics, the history of conflicts and the adverse socioeconomic conditions in Afghanistan preclude the collection of reliable mortality data. Despite the efforts of the SDES research team, the low proportion of orphans in a high mortality setting and the high levels of omission of household deaths, especially among women, suggest our estimates, regardless of the method applied, are beset with a variety of problems. We are particularly sceptical about the quality of the orphanhood data because of the very low levels of mortality measured by 45q15. They can be as low as 0.05 depending on sex, province and calendar year, while other sources, including our own estimates from household deaths, suggest levels of at least 0.20.

Our calculations from adjusted household deaths show life expectancies at age 5 of about 65 years for each sex when data are aggregated for the five provinces. These figures are very similar to the results from AMS (2010), but are somewhat overstated when compared to estimates from the United Nations and WHO. Nevertheless, the general levels of adult mortality are still high compared to those for other developing countries, particularly among women, suggesting there is still room for significant improvements in mortality in the decades to come.

Not surprisingly, we find that mortality levels vary by province. Among women, life expectancy at age 5 is higher in Kabul, Kapisa and Parwan, varying from 63.2 to 66.2 years. Female survival levels are low in Daykundi and especially in Ghor, where the estimated life expectancy is just 56.9 years. Among men, in all provinces, life expectancy at age 5 is higher than 60 years. The larger variation in mortality levels for women than for men, as well as the mortality disadvantage for women in every province when compared to international standards, and especially in Daykundi and Ghor, leads us to conclude that gender differences in survival is a critical issue that needs further investigation. These patterns may be simply due to data artefacts, but even this suggests a gender bias in data reporting that policymakers should pay attention to. One clue is that the living conditions for women are much worse, and probably correlate with female mortality levels across the provinces.

Bibliography

Central Statistics Organization. (2014). *Ghor Socio-Demographic and Economic Survey: Highlights of the Results.*

Afghan Public Health Institute, Ministry of Public Health (APHI/MoPH) [Afghanistan], Central Statistics Organization (CSO) [Afghanistan], ICF Macro, (IIHMR) [India], (WHO/EMRO) [Egypt]. (2011).

Afghanistan Mortality Survey, 2010. Calverton, Maryland, USA: APHI/MoPH, CSO, ICF Macro, IIHMR and WHO/EMRO.

Brass, W. (1975). *Methods for estimating fertility and mortality from limited and defective data*. Chapel Hill, NC: International program of laboratories for population statistics.

Brass, W; Hill, K. (1973). Estimating adult mortality from orphanhood, in *International Population Conference*, Liège, 1973. Vol. 3 Liège: International Union for the Scientific Study of Population, pp. 111-123.

Brass, W. (1985). The derivation of life tables from retrospective estimates of child and adult mortality. CPS, *Advances in methods for estimating fertility and mortality form limited and defective data.* An occasional publication. London, CPS, London School of Hygiene and Tropical Medicine.

Bendavid, E; Seligman, B.; Kubos, J. (2011). Comparative analysis of old-age mortality estimates in Africa. *PloS One*. 6(10).

Camarda, C; Eilers, P.; Gampe, J. (2008). Modelling general patterns of digit preference. *Journal of Statistical Modelling*. 8(4), 385-401

Heitjan D; Rubin D. (1990). Inference from coarse data via multiple imputation with application to age heaping. *Journal of the American Statistical Association*. 85: 304–314.

Hill, K.; Trussell, J. (1977). Further developments in indirect mortality estimation. *Population Studies*, 31(20; 313-34.

Iraq Family Health Survey Study Group. (2008). Violence-Related Mortality in Iraq from 2002 to 2006. *The New England Journal of Medicine*.

Moultrie, T.; Dorrington, R.; Hill, A.; Hill, K.; Timaeus, I; Zaba, B. (2011). *Toll for Demographic Estimation*. IUSSP.

Preston, S.H.; Heuveline, P. ; Guillot, M. (2001). Demography. *Measuring and modeling population processes*. Blackwell Publishers.

Rogers, R.G. and Crimmins, E.M. (2011). *International Handbook of Adult Mortality*, International Handbooks of Population 2.

Sawyer, D.; Castilla, F.M. (1989). *Dados, medidas e técnicas indiretas de estimação de mortalidade*. Rebep. 6(2).

The Asia Foundation. (2014). *A Survey of the Afghan People*. AINA Afghan Media and Culture Center, Kabul.

The World Bank. (2011). *World Development Indicators*. International Bank for Reconstruction and Development, Washington, USA, April.

Timæus I.M. (1991). Estimation of mortality from orphanhood in adulthood. *Demography* 28(2):213-227.

Timæus I.M. (1992). *Estimation of adult mortality from paternal orphanhood: a reassessment and a new approach*. Population Bulletin of The United Nations 33:47-63.

World Health Organization. Available in: http://apps.who.int/gho/data/?theme=home. Acessed in July 2015.

United Nations, Department of Economic and Social Affairs, Population Division (2013). *World Population Prospects: The 2012 Revision*.

Annex

TABLE A1

INDIRECT MORTALITY ESTIMATES (ORPHANHOOD DATA) (KABUL 2013)

Female

Mother				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	617,618	3,105	0.9950	0.0440	0.0383	2010.35	0.0553	0.0481	2009.36
10-14	580,237	5,489	0.9906	0.0434	0.0377	2008.22	0.0622	0.0540	2007.26
15-19	524,021	11,786	0.9780	0.0638	0.0555	2006.29	0.0851	0.0740	2005.45
20-24	399,629	23,457	0.9446	0.1105	0.0960	2004.56	0.1268	0.1102	2003.87
25-29	272,325	36,525	0.8817	0.1622	0.1409	2003.01	0.1763	0.1532	2002.56
30-34	167,480	42,524	0.7975	0.1950	0.1694	2001.71	0.2089	0.1815	2001.40
35-39	149,056	67,987	0.6868	0.2174	0.1889	2000.72	0.2359	0.2050	2000.49
40-44	92,117	78,482	0.5400	0.2451	0.2130	2000.19	0.2678	0.2327	1999.77
45-49	60,704	83,557	0.4208						

Male

Father				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	611,836	8,887	0.9857	0.0867	0.0754	2008.95	0.1074	0.0933	2009.05
10-14	566,824	18,902	0.9677	0.0914	0.0794	2006.95	0.1353	0.1176	2007.09
15-19	497,059	38,748	0.9277	0.1582	0.1374	2005.11	0.1756	0.1526	2005.35
20-24	363,181	59,905	0.8584	0.2290	0.1990	2003.40	0.2231	0.1938	2003.80
25-29	230,656	78,194	0.7468	0.2662	0.2313	2001.84	0.2697	0.2344	2002.38
30-34	130,534	79,470	0.6216	0.2833	0.2462	2000.69	0.2966	0.2577	2001.00
35-39	106,968	110,075	0.4928	0.3027	0.2630	2000.54	0.3258	0.2831	2000.05
40-44	60,528	110,071	0.3548						

Source: CSO Afghanistan, Kabul SDES 2013.

Notes: Information from population aged 45-49 was not considered for males. The older the individual the less the reliability on father survival.

TABLE A2

INDIRECT MORTALITY ESTIMATES (ORPHANHOOD DATA) (DAYKUNDI 2012)

Female

Mother				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	106,841	1,899	0.9825	0.1643	0.1463	2009.09	0.1576	0.1369	2008.09
10-14	93,614	2,626	0.9727	0.1331	0.1184	2006.95	0.1433	0.1245	2006.00
15-19	73,832	3,540	0.9543	0.1331	0.1185	2005.01	0.1463	0.1271	2004.21
20-24	44,562	4,009	0.9175	0.1566	0.1394	2003.28	0.1640	0.1425	2002.64
25-29	32,086	5,788	0.8472	0.1975	0.1758	2001.71	0.2064	0.1794	2001.33
30-34	20,476	6,418	0.7614	0.2144	0.1908	2000.44	0.2218	0.1928	2000.14
35-39	17,691	10,118	0.6362	0.2382	0.2120	1999.41	0.2514	0.2185	1999.13
40-44	10,245	11,047	0.4812	0.2642	0.2352	1998.94	0.2945	0.2559	1998.28
45-49	6,872	11,811	0.3678						

Male

Father				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	104,798	3,942	0.9637	0.1831	0.1630	2007.67	0.2020	0.1755	2007.78
10-14	90,368	5,871	0.9390	0.1764	0.1570	2005.65	0.1949	0.1693	2005.83
15-19	69,803	7,569	0.9022	0.1684	0.1499	2003.87	0.1938	0.1684	2004.17
20-24	41,538	7,033	0.8552	0.1944	0.1730	2002.28	0.2023	0.1758	2002.74
25-29	28,637	9,237	0.7561	0.2191	0.1951	2000.90	0.2368	0.2058	2001.49
30-34	17,202	9,692	0.6396	0.2296	0.2043	2000.06	0.2578	0.2240	2000.36
35-39	14,300	13,509	0.5142	0.2455	0.2185	na	0.2804	0.2437	1999.71
40-44	7,970	13,321	0.3743						

Source: CSO Afghanistan, Daykundi SDES 2012.

Notes: Information from population aged 45-49 was not considered for males. The older the individual the less the reliability on father survival.

TABLE A3

INDIRECT MORTALITY ESTIMATES (ORPHANHOOD DATA) (GHOR 2012)

Female

Mother				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	144,700	2,047	0.9860	0.1433	0.1275	2009.09	0.1370	0.1190	2008.09
10-14	112,472	2,766	0.9760	0.1294	0.1152	2006.94	0.1430	0.1242	2005.96
15-19	91,616	4,899	0.9492	0.1638	0.1458	2004.95	0.1758	0.1527	2004.07
20-24	70,005	7,905	0.8985	0.2112	0.1880	2003.13	0.2197	0.1909	2002.35
25-29	52,276	11,878	0.8149	0.2601	0.2315	2001.40	0.2681	0.2330	2000.77
30-34	32,474	14,801	0.6869	0.3149	0.2802	1999.65	0.3284	0.2853	1999.21
35-39	24,236	18,426	0.5681	0.3248	0.2891	1998.28	0.3418	0.2970	1997.47
40-44	13,477	22,840	0.3711	0.4071	0.3623	1996.27	0.4289	0.3726	1995.75
45-49	7,237	18,228	0.2842						

Male

Father				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	144,004	2,743	0.9813	0.1050	0.0935	2007.71	0.1238	0.1076	2007.79
10-14	111,172	4,067	0.9647	0.0828	0.0737	2005.72	0.1439	0.1251	2005.83
15-19	89,273	7,243	0.9250	0.1382	0.1230	2003.92	0.1803	0.1567	2004.08
20-24	66,833	11,077	0.8578	0.1989	0.1770	2002.28	0.2245	0.1951	2002.51
25-29	48,044	16,110	0.7489	0.2507	0.2231	2000.74	0.2821	0.2451	2001.03
30-34	28,428	18,847	0.6013	0.2639	0.2349	1999.69	0.3139	0.2727	1999.56
35-39	20,366	22,295	0.4774	0.3136	0.2791	1999.61	0.3979	0.3457	1998.14
40-44	10,857	25,459	0.2990						

Source: CSO Afghanistan, Ghor SDES 2012.

Notes: Information from population aged 45-49 was not considered for males. The older the individual the less the reliability on father survival.

TABLE A4

INDIRECT MORTALITY ESTIMATES (ORPHANHOOD DATA) (KAPISA 2014)

Female

Mother				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	49,045	297	0.9940	0.0568	0.0506	2011.10	0.0694	0.0603	2010.11
10-14	45,646	592	0.9872	0.0637	0.0567	2008.96	0.0817	0.0710	2008.00
15-19	40,388	1,234	0.9704	0.0904	0.0805	2007.03	0.1075	0.0934	2006.18
20-24	31,154	2,255	0.9325	0.1361	0.1212	2005.28	0.1476	0.1283	2004.59
25-29	19,720	3,198	0.8604	0.1905	0.1696	2003.68	0.2010	0.1746	2003.21
30-34	11,215	3,499	0.7622	0.2270	0.2020	2002.27	0.2396	0.2082	2001.87
35-39	9,547	5,511	0.6340	0.2555	0.2274	2001.06	0.2761	0.2399	2000.71
40-44	5,950	6,386	0.4823	0.2819	0.2509	2000.32	0.3118	0.2709	1999.79
45-49	3,815	6,507	0.3696						

Male

Father				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	48,299	1,043	0.9789	0.1186	0.1055	2009.69	0.1458	0.1267	2009.78
10-14	44,194	2,045	0.9558	0.1203	0.1070	2007.65	0.1748	0.1519	2007.80
15-19	37,677	3,945	0.9052	0.1959	0.1743	2005.77	0.2145	0.1864	2006.01
20-24	27,732	5,677	0.8301	0.2738	0.2437	2003.94	0.2643	0.2296	2004.38
25-29	15,965	6,953	0.6966	0.3220	0.2866	2002.15	0.3250	0.2824	2002.74
30-34	8,152	6,562	0.5540	0.3534	0.3146	2000.62	0.3681	0.3199	2000.94
35-39	6,196	8,862	0.4115	0.3907	0.3478	2000.03	0.4061	0.3529	1999.51
40-44	3,491	8,846	0.2830						

Source: CSO Afghanistan, Kapisa SDES 2014.

Notes: Information from population aged 45-49 was not considered for males. The older the individual the less the reliability on father survival.

TABLE A5

INDIRECT MORTALITY ESTIMATES (ORPHANHOOD DATA) (PARWAN 2014)

Female

Mother				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	105,406	665	0.9937	5-9	105,406	665	0.0714	0.0621	2010.11
10-14	97,045	1,322	0.9866	10-14	97,045	1,322	0.0810	0.0704	2008.01
15-19	82,365	2,333	0.9725	15-19	82,365	2,333	0.0977	0.0849	2006.21
20-24	63,529	3,969	0.9412	20-24	63,529	3,969	0.1266	0.1100	2004.64
25-29	42,839	6,506	0.8682	25-29	42,839	6,506	0.1877	0.1631	2003.30
30-34	25,542	7,356	0.7764	30-34	25,542	7,356	0.2214	0.1923	2002.05
35-39	21,433	11,433	0.6521	35-39	21,433	11,433	0.2556	0.2221	2000.94
40-44	13,014	13,449	0.4918	40-44	13,014	13,449	0.3003	0.2610	1999.96
45-49	8,472	14,254	0.3728	45-49	8,472	14,254			

Male

Father				**Timaues (1992)**			**Brass and Hill (1973)**		
Age Group	Alive	Dead	Proportion Alive	Probability of dying		Date of estimates	Probability of dying		Date of estimates
				45q15	30q30		45q15	30q30	
5-9	104,107	1,965	0.9815	0.1068	0.0951	2009.69	0.1295	0.1125	2009.80
10-14	94,482	3,885	0.9605	0.1198	0.1066	2007.67	0.1520	0.1321	2007.84
15-19	77,864	6,834	0.9193	0.1680	0.1495	2005.84	0.1789	0.1554	2006.12
20-24	58,128	9,369	0.8612	0.2276	0.2026	2004.12	0.2160	0.1877	2004.60
25-29	36,744	12,600	0.7447	0.2682	0.2387	2002.50	0.2688	0.2335	2003.18
30-34	20,175	12,723	0.6132	0.2912	0.2592	2001.21	0.3038	0.2640	2001.73
35-39	15,621	17,244	0.4753	0.3174	0.2825	2000.83	0.3343	0.2905	2000.68
40-44	8,979	17,484	0.3393						

Source: CSO Afghanistan, Parwan SDES 2014.

Notes: Information from population aged 45-49 was not considered for males. The older the individual the less the reliability on father survival.

TABLE A6

ABRIDGED FEMALE AND MALE LIFE TABLES FOR THE 12 MONTH PERIOD PRIOR TO THE SURVEY (KABUL 2013)

Female

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	299122	218	0.0007	1	66.22	66.22
10-14	277895	126	0.0005	0.998	61.23	61.38
15-19	251317	224	0.0009	0.995	56.25	56.53
20-24	197371	212	0.0011	0.991	51.29	51.77
25-29	149676	171	0.0011	0.984	46.35	47.10
30-34	100466	192	0.0019	0.976	41.45	42.48
35-39	111179	237	0.0021	0.966	36.60	37.90
40-44	79582	281	0.0035	0.953	31.80	33.37
45-49	70079	365	0.0052	0.937	27.08	28.91
50-54	49811	523	0.0105	0.915	22.45	24.53
55-59	33236	523	0.0157	0.883	17.95	20.32
60-64	28280	986	0.0349	0.837	13.65	16.31
65-69	15450	747	0.0484	0.763	9.65	12.66
70-74	12390	1222	0.0986	0.649	6.12	9.44
75-79	11156	2718	0.2436	0.482	3.30	6.84
80-84				0.281	1.39	4.94
85-89				0.111	0.41	3.69
90-94				0.024	0.07	2.95
95-99				0.002	0.01	2.60

Male

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	311790	325	0.0010	1	64.33	64.33
10-14	298587	228	0.0008	0.995	59.35	59.65
15-19	276043	329	0.0012	0.991	54.38	54.89
20-24	219048	493	0.0023	0.984	49.45	50.26
25-29	154290	437	0.0028	0.974	44.55	45.75
30-34	106221	302	0.0028	0.963	39.71	41.22
35-39	102412	343	0.0033	0.951	34.92	36.72
40-44	88329	300	0.0034	0.936	30.20	32.27
45-49	71900	397	0.0055	0.916	25.58	27.93
50-54	56995	524	0.0092	0.887	21.07	23.74
55-59	36845	475	0.0129	0.847	16.73	19.76
60-64	37379	996	0.0266	0.788	12.65	16.06
65-69	22337	744	0.0333	0.702	8.92	12.70
70-74	19365	1305	0.0674	0.585	5.70	9.74
75-79	20944	3474	0.1659	0.434	3.15	7.27
80-84				0.263	1.41	5.36
85-89				0.116	0.46	4.00
90-94				0.031	0.10	3.14
95-99				0.004	0.01	2.69

Source: CSO Afghanistan, Kabul SDES 2013.
Notes: *Deaths adjusted according to the application of the Brass Growth Balance Method
** Survival function fitted to the West Life Table Model using a two-parameter logit model for ages 15-60

TABLE A7

ABRIDGED FEMALE AND MALE LIFE TABLES FOR THE 12 MONTH PERIOD PRIOR TO THE SURVEY (DAYKUNDI 2012)

Female

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	52329	182	0.0035	1	59.74	59.74
10-14	45498	96	0.0021	0.983	54.78	55.75
15-19	36315	123	0.0034	0.970	49.90	51.42
20-24	22621	130	0.0057	0.954	45.09	47.28
25-29	19250	113	0.0059	0.933	40.37	43.29
30-34	13094	90	0.0069	0.910	35.77	39.31
35-39	14927	29	0.0019	0.885	31.28	35.33
40-44	10238	79	0.0077	0.858	26.92	31.38
45-49	9558	64	0.0067	0.827	22.71	27.45
50-54	7354	117	0.0158	0.791	18.66	23.59
55-59	4382	60	0.0137	0.745	14.82	19.90
60-64	4370	186	0.0426	0.686	11.24	16.40
65-69	2353	112	0.0474	0.607	8.01	13.21
70-74	2145	198	0.0925	0.506	5.23	10.34
75-79	1607	371	0.2307	0.381	3.02	7.92
80-84				0.244	1.45	5.95
85-89				0.122	0.54	4.43
90-94				0.040	0.14	3.38
95-99				0.007	0.02	2.78

Male

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	55037	178	0.0032	1	62.01	62.01
10-14	49528	119	0.0024	0.981	57.06	58.14
15-19	40081	120	0.0030	0.971	52.18	53.73
20-24	25338	114	0.0045	0.956	47.36	49.52
25-29	18142	75	0.0042	0.938	42.62	45.46
30-34	13460	61	0.0045	0.920	37.98	41.28
35-39	12526	49	0.0039	0.902	33.43	37.08
40-44	10784	77	0.0071	0.880	28.97	32.91
45-49	8887	39	0.0044	0.854	24.63	28.84
50-54	7787	98	0.0126	0.821	20.45	24.90
55-59	4593	64	0.0140	0.778	16.45	21.16
60-64	5672	164	0.0289	0.721	12.70	17.63
65-69	3037	109	0.0358	0.646	9.29	14.37
70-74	3750	218	0.0582	0.552	6.29	11.39
75-79	3397	449	0.1322	0.436	3.82	8.76
80-84				0.302	1.98	6.56
85-89				0.167	0.81	4.83
90-94				0.063	0.23	3.62
95-99				0.013	0.04	2.91

Source: CSO Afghanistan, Daykundi SDES 2012.
Notes: *Deaths adjusted according to the application of the Brass Growth Balance Method
** Survival function fitted to the West Life Table Model using a two-parameter logit model for ages 15-60

TABLE A8

ABRIDGED FEMALE AND MALE LIFE TABLES FOR THE 12 MONTH PERIOD PRIOR TO THE SURVEY (GHOR 2012)

Female

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	71159	379	0.0053	1	56.92	56.92
10-14	51295	212	0.0041	0.976	51.98	53.23
15-19	47413	137	0.0029	0.961	47.13	49.07
20-24	36660	164	0.0045	0.939	42.38	45.13
25-29	31233	191	0.0061	0.913	37.75	41.36
30-34	22921	147	0.0064	0.885	33.26	37.59
35-39	21428	167	0.0078	0.855	28.91	33.82
40-44	16796	177	0.0105	0.823	24.72	30.05
45-49	11680	116	0.0100	0.787	20.69	26.30
50-54	9350	186	0.0199	0.746	16.86	22.62
55-59	4438	96	0.0217	0.694	13.26	19.11
60-64	4999	248	0.0497	0.630	9.95	15.79
65-69	2062	153	0.0741	0.548	7.01	12.78
70-74	1970	207	0.1052	0.448	4.51	10.08
75-79	1364	260	0.1910	0.330	2.57	7.80
80-84				0.207	1.23	5.93
85-89				0.102	0.46	4.46
90-94				0.034	0.12	3.41
95-99				0.006	0.02	2.80

Male

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	73001	371	0.0051	1	63.91	63.91
10-14	61937	179	0.0029	0.974	58.98	60.57
15-19	47397	157	0.0033	0.962	54.14	56.30
20-24	39883	158	0.0040	0.946	49.37	52.19
25-29	31788	112	0.0035	0.927	44.69	48.19
30-34	23520	90	0.0038	0.911	40.09	44.03
35-39	20478	61	0.0030	0.894	35.58	39.82
40-44	18885	87	0.0046	0.875	31.16	35.63
45-49	13339	91	0.0068	0.852	26.85	31.51
50-54	13147	155	0.0118	0.824	22.66	27.49
55-59	6454	95	0.0148	0.788	18.63	23.63
60-64	8805	256	0.0291	0.742	14.80	19.95
65-69	3429	168	0.0491	0.682	11.24	16.47
70-74	4526	280	0.0619	0.606	8.02	13.22
75-79	3435	521	0.1518	0.509	5.23	10.26
80-84				0.388	2.98	7.69
85-89				0.249	1.39	5.59
90-94				0.117	0.48	4.06
95-99				0.033	0.10	3.11

Source: CSO Afghanistan, Ghor SDES 2012.
Notes: *Deaths adjusted according to the application of the Brass Growth Balance Method
** Survival function fitted to the West Life Table Model using a two-parameter logit model for ages 15-60

TABLE A9

ABRIDGED FEMALE AND MALE LIFE TABLES FOR THE 12 MONTH PERIOD PRIOR TO THE SURVEY (KAPISA 2014)

Female

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	24114	24	0.0010	1	63.22	63.22
10-14	22568	19	0.0008	0.996	58.23	58.43
15-19	20803	26	0.0013	0.993	53.25	53.65
20-24	15716	17	0.0011	0.986	48.31	48.98
25-29	10932	15	0.0014	0.977	43.40	44.42
30-34	7251	26	0.0036	0.965	38.54	39.93
35-39	7938	19	0.0023	0.951	33.75	35.51
40-44	6119	32	0.0053	0.933	29.05	31.15
45-49	5041	44	0.0086	0.910	24.44	26.86
50-54	3949	72	0.0183	0.880	19.96	22.67
55-59	2697	40	0.0147	0.838	15.67	18.69
60-64	2699	71	0.0264	0.778	11.63	14.95
65-69	1582	73	0.0461	0.687	7.97	11.60
70-74	1414	146	0.1031	0.557	4.86	8.72
75-79	1186	218	0.1835	0.387	2.50	6.44
80-84				0.210	1.00	4.78
85-89				0.078	0.28	3.65
90-94				0.016	0.05	2.94
95-99				0.001	0.00	2.60

Male

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	24667	28	0.0011	1	60.54	60.54
10-14	23145	21	0.0009	0.994	55.55	55.87
15-19	20344	18	0.0009	0.989	50.60	51.15
20-24	17316	78	0.0045	0.980	45.67	46.58
25-29	11727	56	0.0048	0.967	40.80	42.18
30-34	7296	26	0.0036	0.953	36.00	37.78
35-39	6948	15	0.0022	0.936	31.28	33.40
40-44	6077	32	0.0052	0.915	26.65	29.11
45-49	5163	51	0.0099	0.887	22.14	24.96
50-54	3865	52	0.0135	0.848	17.80	21.00
55-59	2728	32	0.0118	0.792	13.70	17.31
60-64	2869	112	0.0390	0.712	9.94	13.96
65-69	1815	61	0.0337	0.604	6.65	11.01
70-74	1807	133	0.0738	0.468	3.97	8.49
75-79	2041	277	0.1359	0.313	2.02	6.45
80-84				0.167	0.82	4.90
85-89				0.064	0.24	3.77
90-94				0.015	0.04	3.03
95-99				0.002	0.00	2.65

Source: CSO Afghanistan, Kapisa SDES 2014.
Notes: *Deaths adjusted according to the application of the Brass Growth Balance Method
** Survival function fitted to the West Life Table Model using a two-parameter logit model for ages 15-60

TABLE A10

ABRIDGED FEMALE AND MALE LIFE TABLES FOR THE 12 MONTH PERIOD PRIOR TO THE SURVEY (PARWAN 2014)

Female

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	51507	131	0.0025	1	65.32	65.32
10-14	47160	59	0.0013	0.989	60.34	61.00
15-19	40615	75	0.0018	0.982	55.41	56.44
20-24	31378	109	0.0035	0.971	50.53	52.02
25-29	23801	74	0.0031	0.958	45.71	47.69
30-34	15855	35	0.0022	0.944	40.95	43.38
35-39	16736	55	0.0033	0.928	36.27	39.08
40-44	13091	44	0.0034	0.910	31.68	34.80
45-49	11417	66	0.0057	0.890	27.18	30.55
50-54	8596	78	0.0090	0.865	22.79	26.36
55-59	5997	124	0.0208	0.831	18.55	22.32
60-64	5172	203	0.0393	0.787	14.51	18.43
65-69	2922	206	0.0705	0.724	10.73	14.82
70-74	2279	261	0.1146	0.636	7.33	11.52
75-79	1975	348	0.1760	0.513	4.45	8.67
80-84				0.358	2.27	6.34
85-89				0.194	0.89	4.59
90-94				0.068	0.23	3.43
95-99				0.012	0.03	2.79

Male

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	52994	125	0.0024	1	63.00	63.00
10-14	49751	47	0.0010	0.989	58.02	58.64
15-19	42829	91	0.0021	0.982	53.09	54.05
20-24	35120	144	0.0041	0.971	48.21	49.62
25-29	24813	79	0.0032	0.957	43.39	45.34
30-34	16556	58	0.0035	0.942	38.64	41.00
35-39	15644	63	0.0040	0.927	33.97	36.66
40-44	12981	62	0.0047	0.908	29.38	32.37
45-49	10973	45	0.0041	0.884	24.90	28.18
50-54	8590	111	0.0130	0.852	20.56	24.14
55-59	6134	93	0.0152	0.808	16.41	20.31
60-64	6648	154	0.0232	0.748	12.52	16.73
65-69	3848	161	0.0418	0.668	8.98	13.46
70-74	3513	197	0.0562	0.562	5.91	10.51
75-79	3574	524	0.1465	0.430	3.43	7.98
80-84				0.279	1.66	5.93
85-89				0.139	0.61	4.39
90-94				0.045	0.15	3.36
95-99				0.007	0.02	2.79

Source: CSO Afghanistan, Parwan SDES 2014.
Notes: *Deaths adjusted according to the application of the Brass Growth Balance Method
** Survival function fitted to the West Life Table Model using a two-parameter logit model for ages 15-60

TABLE A11
ABRIDGED FEMALE AND MALE LIFE TABLES FOR THE 12 MONTH PERIOD PRIOR TO THE SURVEY (KABUL, DAYKUNDI, GHOR, KAPISA AND PARWAN 2011-2014)

Female

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	498128	907	0.0018	1	65.03	65.03
10-14	444284	495	0.0011	0.993	60.05	60.48
15-19	396365	580	0.0015	0.987	55.10	55.82
20-24	303689	625	0.0021	0.979	50.19	51.28
25-29	234858	552	0.0023	0.967	45.32	46.85
30-34	159570	479	0.0030	0.954	40.52	42.45
35-39	172177	480	0.0028	0.939	35.78	38.09
40-44	125806	592	0.0047	0.922	31.13	33.76
45-49	107748	635	0.0059	0.902	26.57	29.47
50-54	79039	949	0.0120	0.876	22.13	25.26
55-59	50732	820	0.0162	0.841	17.83	21.21
60-64	45504	1657	0.0364	0.793	13.75	17.34
65-69	24356	1258	0.0517	0.723	9.96	13.77
70-74	20188	1991	0.0986	0.624	6.59	10.57
75-79	17280	3844	0.2224	0.485	3.82	7.87
80-84				0.316	1.82	5.75
85-89				0.153	0.64	4.21
90-94				0.046	0.15	3.22
95-99				0.006	0.02	2.71

Male

Age Group	Person years lived	Adjusted Deaths*	Death Rates	Fitted** lx	Tx	Life Expectancy
5-9	517323	999	0.0019	1	64.83	64.83
10-14	482792	577	0.0012	0.991	59.86	60.42
15-19	426563	701	0.0016	0.984	54.92	55.79
20-24	336619	965	0.0029	0.975	50.02	51.29
25-29	240703	728	0.0030	0.963	45.17	46.93
30-34	167015	517	0.0031	0.950	40.39	42.51
35-39	157970	509	0.0032	0.937	35.68	38.09
40-44	137024	541	0.0040	0.920	31.03	33.72
45-49	110234	585	0.0053	0.900	26.48	29.44
50-54	90363	906	0.0100	0.872	22.05	25.29
55-59	56738	729	0.0129	0.834	17.79	21.33
60-64	61356	1603	0.0261	0.781	13.75	17.60
65-69	34455	1197	0.0347	0.708	10.03	14.16
70-74	32950	2040	0.0619	0.610	6.73	11.05
75-79	33378	5006	0.1500	0.481	4.01	8.34
80-84				0.325	1.99	6.14
85-89				0.169	0.76	4.49
90-94				0.057	0.19	3.40
95-99				0.010	0.03	2.80

Source: CSO Afghanistan, SDES 2011-2014.
Notes: *Deaths adjusted according to the application of the Brass Growth Balance Method
** Survival function fitted to the West Life Table Model using a two-parameter logit model for ages 15-60

TABLE A12

LIFE EXPECTANCY AT AGE 5 BASED ON HOUSEHOLD DEATHS BY SEX (KABUL, DAYKUNDI, GHOR, KAPISA AND PARWAN 2011-2014)

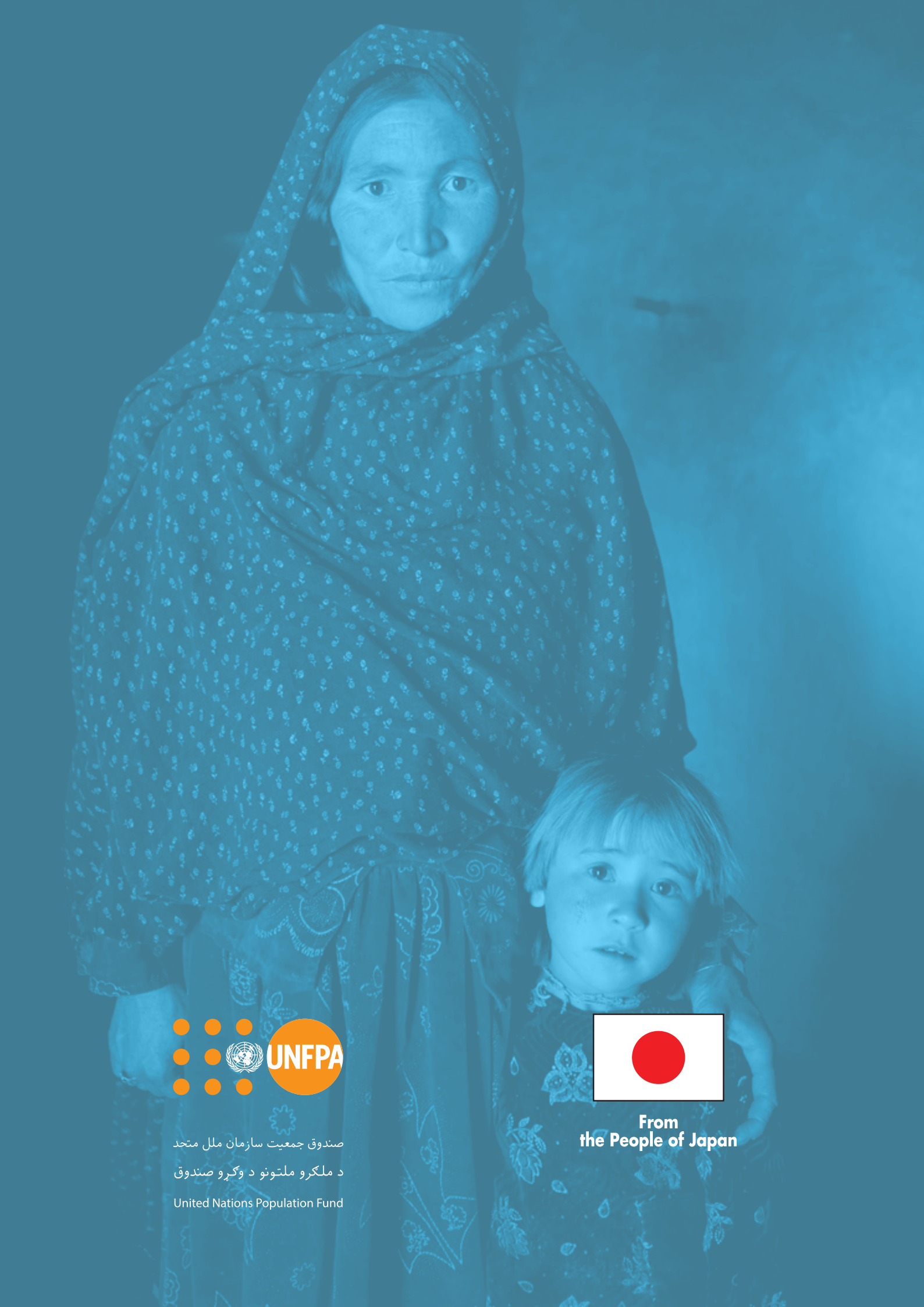
	Kabul	Daykundi	Ghor	Kapisa	Parwan	Provinces
Non-adjusted deaths						
Male	67.26	62.40	68.92	62.88	63.00	67.05
Female	69.51	62.47	64.14	67.31	69.63	68.83
Adjusted deaths (based on omission rates by province)						
Male	64.3	62.0	63.9	60.5	63.0	64.8
Female	66.2	59.7	56.9	63.2	65.3	65.0
Adjusted deaths (based on average omission rates)						
Male	65.4	59.6	66.3	60.8	60.5	64.8
Female	66.5	57.3	59.0	63.9	65.6	65.0

Source: CSO Afghanistan, SDES 2011-2014.

TABLE A13

LIFE EXPECTANCY AT AGE 5 FROM VARIOUS SOURCES (UN 2010-2015, WHO 2012, AMS 2010)

	AMS 2010	U.N. 2010-2015	WHO 2012
Male	64.70	60.71	60.00
Female	64.50	62.97	62.60



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د ملګرو ملتونو د وګړو صندوق

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