Mortality in Jordan: Maternal and Adult Mortality

And building Life Tables

Analytical study based on Population and Housing Census Data, 2015

Department of Statistics

Introduction

The Department of Statistics is pleased to provide the first report of its kind, "Mortality in Jordan-Maternal and adult mortality and building life tables, based on the Population and Housing Census Data 2015 as well as Population and Family Health Survey data.

The monitoring of mortality in different age groups is essential and relevant to determining the quality and pattern of diseases in any society, including the causes of death in different age groups, the decision makers rely on them to develop policies, distribute resources and develop health plans for prevention and treatment.

The mortality rate is an important measure that affects population trends and their impact on health status. It helps to draw health policies that are appropriate to those standards and allow the assessment of the country's development and progression, as it is a social norm of economic growth, such as nutrition and education.

This report provides statistics on mortality in the Kingdom during 2015 and The Population and Family Health Survey data were used for several past years 1997, 2002, 2007, and 2012 to show trends in mortality, the report also includes age average mortality and child mortality rates, and contains life expectancy at birth and survival indicators.

Child mortality is a large proportion of the total death toll, and in this report child mortality is referred to as deaths from birth to age 5, including deaths of newborns, infants and under five years of age. Mortality rates contribute to the demographic and health assessment of the population, which is an important indicator of the quality of life in the Kingdom. Such rates could also be used to monitor and evaluate population and health programs.

One of the shortcomings of child mortality statistics is the registration of infant mortality. Some cases are not recorded at their normal place of residence, causing a source of error when comparing the registration data with the population data according to the place of residence.

The report contains life tables for males, females and both sexes at the national level, making it a necessary reference for all researchers in the demographic, population, health, social, economic and other fields, and providing life expectancy for males and females at the Kingdom level to use them in preparing population projections at the Kingdom level and the importance of providing life tables for their multiple uses in all fields, especially health and economic fields, where they can be used to identify the prevailing patterns of morality in society and gender differences in life prospects according to life expectancy. The construction of these tables helps to design programs and plans to address the difficulties faced by demographic, population, health, social and economic planners.

Executive Summary

The importance of this report comes in using the recent data from the Population and Housing Census 2015 in the Hashemite Kingdom of Jordan, which was carried out by the Department of Statistics during the latter half of the year 2015, the family and population health status Survey data were used for the past few years as well as data of the Civil Status Department for both Jordanian male and female to provide a circle life expectancy for the males and females in the Kingdom to be used for preparing population projections Which makes it a Reference that could be used by all researchers in the Demographic , Population, Social and Health fields ......ETC,

From the life tables included in the report, it is clear that:

1. There are significant variations in life expectancy value at birth according to gender

2. Life expectancy at birth for females is high at the national level compared to life expectancy for males, with life expectancy at birth for females 74.0 years compared to 72.5 years for males.

3. As for The infant mortality rate, which was estimated according to the results of the population and family health survey, was approximately 0.0184 for males and 0.0158 for females.

4. The results of the under-five mortality rate were 0.0204 boys and 0.0176 girls.

5. The maternal mortality rate was about 25 deaths per 100,000 live births.

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Table of Contents

Chapter 4: Linking between adult and child mortality

Chapter 5: Life Tables

Appendix

References

List of Tables

List of Figures

Chapter One

1.1 General background:

The study and analysis of mortality has received great attention from demographers in previous decades as it contributes to the identification of the prevailing patterns of mortality in society and the gender disparities in the likelihood of survival and mortality according to different ages, It is one of the most important indicators that reflect the economic and social conditions in general and health in particular, It also provides a realistic picture of mortality levels and trends and highlights indicators that monitor mortality, where deaths among family members during the 24 months preceding the census and registration of demographic and social characteristics can be identified based on data provided by the general population and housing census 2015, It also highlighted maternal mortality from pregnancy (childbirth or puerperal); and the distinction between pregnancy-related and childbirth-related causes of maternal mortality and adult mortality, as well as infant and child mortality.

It also addresses the need for information on past population changes that are necessary for future projections of population and other demographic characteristics, the development of housing and education plans, the social security program and other health programs. Mortality is one of the major and fundamental components of past and future population dynamics and is one of the determinants of the age and gender composition of the population.

In Jordan, sustained efforts have been made to reduce morality levels, which can only be achieved with adequate and high-quality data to obtain reliable estimates of mortality. In order to obtain such data, the Department of Statistics has conducted a number of surveys in addition to the censuses conducted so far from 1952 to 2015, through which the necessary demographic measures, including morality measures, can be assessed. These surveys include, for example, the Population and Family Health Survey (JPFHS) in collaboration with the World Fertility Program (WFS) in 1976 and the Fertility and Family Health Survey in 1983, the Population and Family Health Survey (DHS) in 1990, 1997, 2002, 2007 and 2012, In addition to the latest census carried out by the Department of Statistics for 2015.

The importance of registering mortality lies in analyzing the demographic realities of the population, the level of population growth and knowledge and development of health standards and it contributes to knowing how long workers remain in the labor market to develop the necessary policies.

This report also contains the male and female life tables that can be used by all researchers at the national level, making it a reference for the different demographic, social, health, economic and other sectors.

Despite ongoing efforts to analyze mortality in terms of causes of death, sex and age, Jordan's mortality system still lacks a methodology for mortality and its causes, and therefore no statistical indicators are available, since deaths in Jordan are not reported and the crude mortality rate is estimated at 6 per 1,000 population, while civil registries provide only 3 per 1,000 inhabitants, as a result of the population's reluctance to report deaths except in cases involving hospitals or medical centers or with legal benefits. As for the causes of death, the registered mortality (even in medical centers) does not adequately reflect the reality and is not in conformity with international standards, despite persistent attempts by the concerned authorities of the Ministry of Health.

1.2 The importance of Study:

The importance of studying mortality in Jordan in general and maternal mortality in particular arises not only because it is the second component after reproduction (fertility) in the factors of population change, but also because the indicators produced by these studies reflect the level of progress and the standard of living in general. There are many indicators that reflect this, including infant and newborn mortality rates, under-five mortality rates, life expectancy at birth and maternal mortality. All of these indicators adopt specific criteria that can be used to monitor the extent of improvement and change over time periods as well as to compare countries or even between regions within a country. On the other hand, these indicators fall within the system of indicators of sustainable development (SDGs) and are accepted in the Millennium Development Goals (MDGs).

In this context, this study is an addition to the ethics of morality in Jordan, as studies on maternal mortality, adult mortality and life tables depend on recent data, as morality indicators were not identified and updated for a long time.

1.3 The Objective:

This study aims to provide updated data on mortality in Jordan through indicators that respond to international requirements in order to compare with other countries, especially with regard to sustainable development goals and future prospects for Jordan's population. More specifically, this study aims to:

1. Estimating maternal mortality.
2. Studying and estimating the completeness and comparison of reporting of deaths by sex and age from the census and from other sources.
3. Updating mortality data.
4. Building life tables
5. Extracting crude mortality indicators.

The results of this study have been used as inputs for the preparation of population projections in Jordan for the period 2015 to 2050, by age group and for both males and females.

1.4 Methodology and data sources:

The methodology for the study in this research involved the analytical and in-depth methodology of data by analyzing data provided by the general population and housing census 2015 on morality in the Kingdom during the 24 months preceding the census and analyzing them by sex and age at the time of death, including maternal mortality after determining the marital status of maternal mortality and conditions surrounding the state of death, in order to determine their status for maternal mortality. In addition, the data provided by Civil Status And Passport Department as an independent, permanent and vital administrative source to provide data on an annual basis corresponding to the census and to compare the results of its analysis with the results of the analysis of the general population census data, 2015.

To complete the circle, other statistical sources of data from the Population and Family Health Surveys series carried out by the Department of statistics during the past decades have been used to analyze a section on under-five mortality, which includes neonatal deaths in the first month of life, infant mortality, the risk of death before the completion of the first year of life, and under-five mortality.

Using mortality data from the census and vital statistics of the Civil Status And Passport Department for the same reference period of the census, adult mortality rates were derived after 10 years of age for each ,following an analysis of the degree of completion using specialized analysis methods of these data, the most commonly found in scientific research ethics (Kenneth Hill, Coal -Preston, Brass), and then linked to child mortality rates by sex at the national level for both males and females.

1. Determining the appropriate model of morality pattern in Jordan using model life tables/ family east that were the standard pattern of morality in Jordan in 2015.

2. Using this model as a standard reference to use it to determine the pattern of the relationship between infant and adult mortality by using the log it model that is appropriate for non-linear relationships such as the relationship between morality and age.

3. Completing the function values of male and female life tables corresponding to the level specified using model life tables/ family west.

1.5 Definitions used:

- **Mortality Rate:** A measure of the number of deaths (generally or for a specific reason) according to the population census per year. It is usually expressed in terms (per 1000 people per year).

- **Death:** Permanent disappearance of every aspect of life of the individual (e.g. breathing, pulse or involuntary movements) at any time after birth (i.e. must be born alive) according to the short definition of the World Health Organization.

- **The Elderly:** Individuals aged 60 years or over.

- **Crude Death Rate:** The measure of the number of deaths for all causes of the population in a year.

- **Maternal Mortality:** Death that occurs to a woman during pregnancy, during childbirth, or within 42 days after pregnancy regardless of the period or place of pregnancy and of any reason, whether as a result of the pregnancy itself or as a result of an exacerbation of another cause by pregnancy or the development of medical care received by a woman during pregnancy, excluding deaths from accidents or accidental causes.

- **Maternal Mortality Rate:** The percentage of women who died of pregnancy and childbirth-related causes in a given year per 100,000 live births during the same year divided by the number of women of childbearing age into women of reproductive age; the maternal mortality rate reflects maternal mortality percentage, prevailing fertility rates, The maternal mortality rate reflects maternal mortality and prevailing fertility rates and is affected by pregnancy and birth risks; this indicator monitors maternal and birth-related mortality and reflects the ability of health systems to provide effective health care to prevent and treat complications during childbirth.

- **Infant mortality Rate**: the infant mortality rate is the number of children who died before the first year of life during a given year, divided by the total number of live births during the same year for every 1,000 live births.

  Two other indicators are listed below this indicator:
  New Born Mortality: infants who died and are under 28 days old.
  Mortality after New Born: infants who died and are between 28 days and under 12 months of age.
  Age At The Time Of Death: The number of years that the child has lived from birth to death.
  Marital Status: The marital status of the deceased aged 13-54 at the time of death.
  Corrected Detailed Mortality Rate: it is the number of corrected deaths per age group divided by the total population of each age group.

Chapter II

Maternal Mortality

2.1 Importance of Maternal Mortality:

For several decades, maternal mortality has been a subject of great concern to researchers and health professionals. The importance of monitoring and analyzing maternal mortality lies in the fact that it is one of the goals of development and sustainable development that are the focus of attention of all countries. They reflect living, social, health and other realities. The maternal mortality rate is one of the health indicators that reflect the great disparity between rich and poor countries. At the 1987 Safe Motherhood Conference in Nairobi, Kenya, attention was drawn to the fact that maternal mortality rates in developing countries were often 100 times higher than those in developed countries. Subsequently, the World Bank's World Development Report 1993 over the past decade showed that maternal morbidity and mortality was the main cause of the loss of healthy life among women of reproductive age in developing countries. It was proclaimed in a number of international forums that the reduction of maternal mortality is one of its most important objectives, such as the 1990 World Summit for Children, the 1994 International Conference on Population and Development, the 1995 World Conference on Women and the 2000 Millennium Development Summit (K. Hill 2001).

This has greatly increased attention to maternal health, resulting in increased demand for maternal mortality statistics at the national level and international organizations. However, methodologies for the measurement and monitoring of maternal mortality are very late in most developing countries, simply because the available data are insufficient to provide accurate estimates. Although vital registration systems are designed to collect the necessary statistics in the event of maternal death, they remain inadequate in the quality of registration in most developing countries, and even have been found to be problematic in developed countries, Due to deficiencies in vital registration and methodologies adopted for sampling, Census data were found to be more appropriate for calculating estimates of an acceptable level of accuracy at the same time as cost-effective.

Five countries have been identified that have tried to collect data on maternal mortality in their last census. These countries include Benin, Iran, Laos, Madagascar and Zimbabwe. In November 1998, a workshop was approved in Nairobi to assess the use of the census to measure maternal mortality. The workshop was attended by experts who contributed to data collection and those who analyzed demographic data. They included representatives of the census from the five above-mentioned countries as well as from the Kenyan Central Bureau of Statistics, who worked alongside technical advisers from Johns Hopkins University, the London School of Economics-LSE, and the London School of Hygiene and Tropical Medicine. Its objectives are to document and evaluate experiences in measuring maternal mortality through the census, to encourage countries to use the census methodology to collect and analyze maternal mortality data for the purpose of conducting indicators estimates.

Since 1990, Jordan has begun gathering information to calculate the maternal mortality rate through the 1990 Population and Family Health Survey, where the results of the survey sample indicated that the maternal mortality rate was 61 per 100,000 births. According to data from a 1996 study, maternal mortality was 41 per 100,000 live births and a positive dimension was reflected at that time. Jordan was one of the co-sponsors of the Millennium Development Goals (MDGs) held in 2000, during which the international community committed itself to reducing maternal mortality, because Jordan is aware of the importance of the impact of this target on different sectors on the one hand and its impact on the lives of individuals on the other, it has worked to integrate it into national development plans and programs, which has contributed to the achievements of development, particularly reproductive health.

A previous study of maternal mortality in 2007- 2008 -done by the Supreme Population Council in collaboration with a specialized research team to assess maternal mortality- identify mortality direct and indirect causes, determine the extent to which it can be prevented, and assess the completeness of vital records, and it showed that Jordan is on the right track and has exceeded expectations and target for maternal mortality seven years before the deadline of 19 per 100,000 live births compared to 41 deaths per 100,000 live births in 1995_1996, which means that the government and the supporting sectors have made much of their investment in maternity.

The features of improvement and development are evident in the services provided by the government and Royal Medical Services through the geographical coverage of the primary health care services of the mentioned authorities, in addition to the spread of the centers of the Jordanian Family Planning and Protection Association, the Relief and Works Agency and the private medical sector.

2.2 The response of the Population Census 2015 for measuring maternal mortality:

In response of the Department of Statistics for International Benefits on providing significant indicators according to international recommendations and standards in terms of accuracy and comprehensiveness and taking advantage of the opportunities offered by the general population census, had decided for the first time to provide comprehensive data on maternal mortality in the Kingdom. The family mortality monitoring form developed during the 24 months prior to the census and contains the following questions:

- Has a family member died during the 24 months prior to the census?
- Is the death reported?
- The nationality of the deceased (male/female).
- Age at death.

In order to determine maternal mortality, a set of questions has been formulated reflecting the international definition of maternal mortality, which states that:

Maternal mortality: Death occurring for a woman during pregnancy, during childbirth or within 42 days after pregnancy, regardless of the period or place of pregnancy, for any reason whether as a result of the pregnancy itself, or as a result of an exacerbation of another cause of pregnancy, or as a result of medical care received by a woman during pregnancy. This excludes deaths due to accidents or accidental causes other than pregnancy and childbirth.

The main measures of maternal mortality are the maternal mortality rate (MMR). It is defined as the number of maternal deaths due to pregnancy and childbirth, calculated per 100,000 births within a given year.

The questions on female mortality recorded in the census form, which accurately reflect the definition of maternal mortality, have been formulated, It was restricted only to women who died between 13 and 54 years of age at the time of death, in preparation for this set of questions, including:

- Marital status in the event of death, as pregnancy and reproduction in Jordanian society is restricted to married women or former spouses (divorced women, widows and separated). then asked whether the woman is:
- Pregnant at death? Or that:
- Death occurred during birth? Or that:
- Death occurred within 42 days of birth?

In order to comply strictly with the criteria, a question was added to determine the circumstances of death and whether the outcome of pregnancy and childbirth was to exclude cases that occurred for other reasons, such as accidents.

- Was the death due to a traffic accident, a fall, a fire, etc.?

2.3 Results:

The data provided by the population and housing census 2015, formed the basis for calculating maternal mortality. Since this is a highly sensitive number because of the scarcity of cases, the Department of Statistics has considered that an additional step should be taken to achieve accuracy and quality. A specialized technical team has been formed to verify the integrity and accuracy of the individual data collected during the counting phase on the observed maternal deaths, especially since the large number and varying backgrounds of field researchers during the population count may affect the margin of error that should be very narrow. Thus, 164 families, who reported to have maternal deaths in the 24 months prior to the census, were contacted and visited In Amman, Balqa, Zarqa, Madaba, Irbid, Mafraq, Ajloun, Jerash and 22 families in the southern governorates were contacted, the total number of 186 families distributed to 7 families in Aqaba ,11 in Karak and 4 in Maan.

The results of this phase can be summarized for accuracy and quality adjustment as follows:

First: 57 cases were excluded for various reasons, including the existence of some cases outside the time-release period or other diseases that led to death such as cancer, lung damage, etc. and are not related to pregnancy and reproduction.

Second: There were 25 maternal deaths due to an accident.

Third: There were 39 maternal deaths during pregnancy.

Fourth: There were 33 maternal deaths during childbirth.

Fifth: Maternal mortality during 42 days of birth (puerperal) was 32.

The total number of maternal mortality observed and confirmed during the 24-month period prior to the census and for women, aged 13-54, all of them relate to pregnancy and reproduction except in cases that occurred as a result of accidents, 104 cases including Jordanians and non-Jordanians.

2.4 Births:

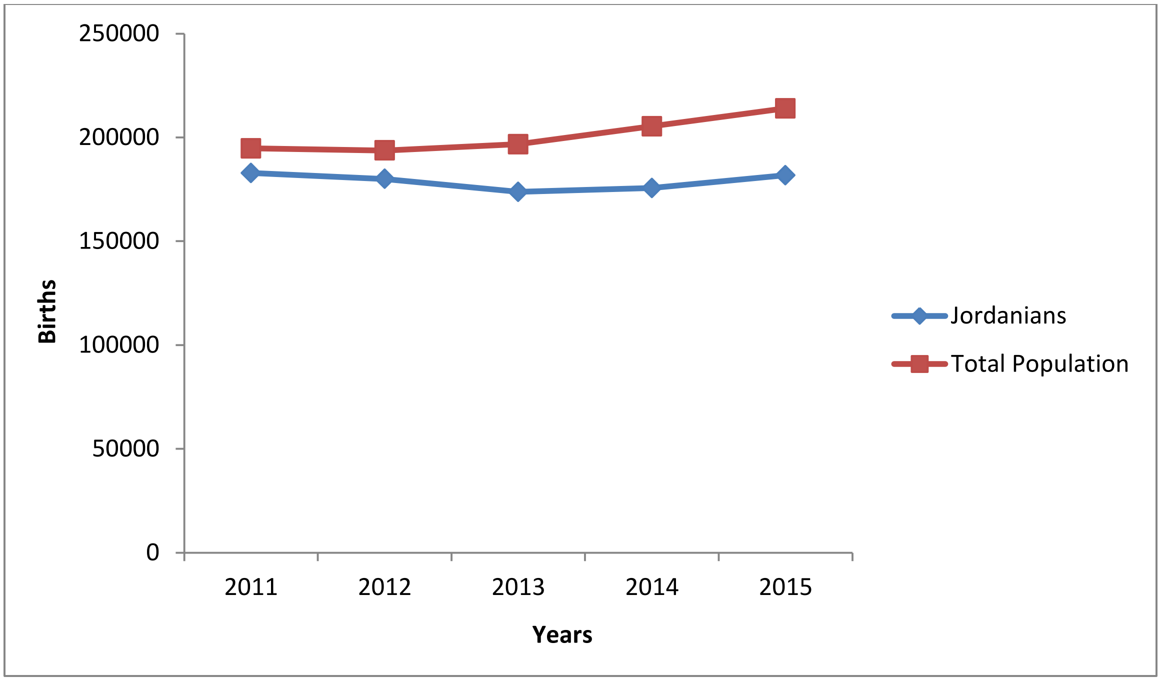
Births are the equivalent used to calculate maternal mortality. Civil Status Department records have been relied on to provide these numbers and individual years since 2011. Table 1 shows the number of male and female infants, both Jordanian and non-Jordanian, by year. The results of the evaluation analysis indicate that the sex rate at birth was about 105, which is consistent with expectations. In other words, there is no shortage of birth registration. Figure 1 shows the pattern of births registered between 2011 and 2015, and it is shown that the number of births is increasing, especially in recent years (2014 and 2015), especially non-Jordanians, mostly due to the presence of Syrians.

Table 1: Births by sex, year of registration of Jordanians and total population

Year	Jordanians			Non-Jordanians			Total Population		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
2011	94072	88778	182850	6080	5805	11885	100152	94583	194735
2012	92178	87826	180004	7084	6645	13729	99262	94471	193733
2013	89103	84646	173749	11818	11139	22957	100921	95785	196706
2014	90043	85548	175591	15313	14405	29718	105356	99953	205309
2015	93435	88290	181725	16535	15738	32273	109970	104028	213998

Source: Civil Status Department

Figure 1: Births by year for Jordanians and the total population



Source: Civil Status Department

2.5 Maternal Mortality Rate (MMR):

The total number of female mortality collected for the 24 months prior to the census was approximately 104 for 2014 and 2015. Thus, the number of births was 205309 for 2014 compared to 213998 for 2015. It may be more appropriate to divide the total maternal mortality rate from 24 months by the total of births for 2014 and 2015 to get the average of two years. Consequently, the maternal mortality rate (MMR) was about 25 deaths per 100,000 live births. This is not far from the previous estimates prepared by the Supreme Population Council for several years.

Chapter 3

The completion of Reporting Adult Mortality

3.1 General background:

Adult mortality is an essential part of the mortality matrix disaggregated by sex and age, which enables the extraction of many important indicators, such as disaggregated mortality rates by sex and age, including deaths of the elderly, population of working age, adolescents, child and infant mortality; this is in addition to building community life tables, as these provide various detailed indicators of mortality used in various areas such as human development benchmarks and indicators, population projections, actuarial studies and others, as these indicators express themselves about the level of well-being and progress in societies.

There are many ways to analyze adult mortality in demography, such as the method of orphan hood, which aims to convert the percentage of people who live with their mother by age group to female survival (conditional probabilities), and also to convert the percentage of people who live by age group to male survival.

The second method in the analysis of adult mortality is widowhood, which aims to transform the rate of non-widowers from the first husband into conditional possibilities for survival for males, and is used to convert the percentage of widowers from the first wife to female conditional surviving probabilities.

Both methods are effective for estimating the level of adult mortality, especially since data collected from the population are simple and easily answered; therefore, the magnitude of the expected error remains within a narrow range. However, it requires special data collection information so that it cannot be used based on available data.

Another method of estimating adult mortality is the method of completion of reporting mortality, which focuses on the use of up-to-date information on deaths occurring within a given time period and can be used both for males and females, their importance lies in their interest in vital registration data with regard to mortality, but there is a lack of (incomplete) reporting of deaths and there is a disparity in the levels of failure in the civil mortality register.

Correction factors are used to estimate the total number of deaths by age group for males and females, as well as data provided by the population and housing census 2015, on the one hand, and civil status, on the other, at the level of the Kingdom.

3.2 Measurement of Adult Mortality:

The population and housing census 2015 provided tables on the age and gender distribution of deaths in the community in 24 months prior to the census. Deaths after 10 years of age have been approved. Deaths before the age of 10 are more prone to deficiency than other categories, and therefore it is difficult to rely mainly on them for this type of in-depth analysis.

The records of the Civil Status and Passport Department also provide information similar to that provided by the census on deaths occurring during each year by age at death and sex. They have therefore been used as an independent source for independent comparative purposes and to ensure the effectiveness of information and analytical methods. However, both sources face difficulties in the level of coverage. For example, census data suffer from a lack of data on deaths that are not reported during the population count for any reason and therefore have a degree of deficiency. On the other hand, the data provided by the Civil Status and Passports Service are limited to the cases that are reported and eventually arrive in the records of vital events, and therefore also suffer from a degree of deficiency. However, the records of the Civil Status and Passport Department are characterized by the general population and housing census in their ability to provide this type of data annually, while the census is provided only once every 10 years at best.

In any case, both the census and the records of the Civil Status Service are separate sources, each of which can be analyzed and the degree of completeness and limitations of each of which can be determined independently. Accordingly, one of the most important outputs of this study is the establishment of the common basis among the two sources, which enables the use of civil status and passport data annually and the issuance of indicators on this subject annually.

There are two standard methods for estimating the completeness of adult mortality reporting: The Brass Growth Balance Technique, and the Preston- Coale technique.

3.2.1 Brass Technique

Brass has developed this method to estimate the completeness of the registration of deaths, the idea of the method is that the population growth rate is the difference between the birth rate and the mortality rate divided by the total population in the middle of the year.

$$r = B - D/P$$

Where:

r: Population growth rate

B: Number of births within a year

D: Number of deaths within a year

P: Total population in mid-year

The birth rate is already defined as the percentage of the population entering a society of 0 or more years of birth and includes society from any age.

Thus, the birth rate of this community is defined as(N(x) / n(x+)) so that:

N(x): Means population in the age of x

n(x+): Total population from age x

The mortality rate can be calculated for the same community by dividing the number of deaths (age x) or more within a year, by the total population for the same age of x or more.

$$r(x+) = N(x) / N(x+) - D(x+) / N(x+)$$

This equation can be applied to each age group, so that the birth rate, mortality and growth rate of all age groups can be calculated.

3.2.2 Preston-Coale Technique:

This method relies on the fact that the population of a particular age will die from this age and later age. For example, the population aged 10 will die in that age or later until the last person in that age group dies at any later age, and the population in the N^(x) age group will be estimated using a cumulative method of mortality from the age group and then compared with the actual number of the population in the same age group, and the population can be estimated to reach an advanced age group. Since the population increases in size at a constant rate of growth, this must be considered when estimating the population at each age, thus obtaining a series of estimated N^(x) that can be compared to actual values and calculating n^(x)/n(x) rate.

The summary of calculations for this method is as follows:

First we divide the population's mortality by (2) for the calculation of deaths for one year.

Then the population is estimated at the beginning age of the last age group (open group) N^(a).Mortality classified in the last age group at +80 years in the first step so the population is estimated at +80 years using the following equation:

$$N\hat{}(a) = D(a+) + \exp(r*z(a))$$

Where:

D (a+): Number of deaths in age (a) or more.

Z (a): A factor specific to society and age that can be calculated using the following equation:

r : Population growth rate.

$$(Z(a)=a(A)+b(A)*r+c(A)*\exp(D(45+)/D(10+)$$

The special transactions for each age group are fixed from the model west[1] table (a(A),b(A),c(A)) ((D(45+)/D(10+): The percentage of those who were aged 45 years or older to those who were aged 10 years or more:

(exp): Means the normal Logitech of the rate.

At the beginning of each five-year age group, the population is estimated at the age of (+80) as an open group.

[1] MANUAL (X) 1993 U.N

$$N^{\wedge}(80)=D(80)*(\exp(z*r))$$

Depending on them, the population at the age of 75 is estimated at N^(75) using the population estimated for the age group (75-79)D years In addition to the stability of the population growth rate according to the following equation:

$$N^{\wedge}(x) = N(x+5)*\exp(5r)+5Dx*\exp(2.5r)$$

$$N^{\wedge}(75) = N(80)*\exp(5r)+5D75*\exp(2.5r)$$

$$N^{\wedge}(70) = N(75)*\exp(5r)+5D75*\exp(2.5r)$$

Thus up to the age of 5:

$$N^{\wedge}(05)=N(10)*\exp(5r)+5D(5)*\exp(2.5r)$$

Because the N^(X) values are calculated for individual years, they are subject to a degree of volatility due to the lack of accuracy in the information among different age groups. In order to minimize the impact, rates for the cumulative age group from age (X) up to age(A) can be calculated by grouping the estimated and actual values separately, then calculating N^(X)/N(X) and then taking the median value of these rates to reflect the overall completeness.

The completeness ratio is the data correction factor calculated by dividing 1 by the median value the have the correction factor and then multiplying the mortality correction factor by one year per year by age, using correction factors, we estimate the total number of deaths by male and female age groups by dividing the number of deaths corrected per age group by the total population of each age group.

Table 2: Summary of the calculation of the degree of completeness of the registration of mortality and the corrected mortality rate

X	Total population census				Jordanian Census				Civil Status			
	Males		Females		Males		Females		Males		Females	
	corrected mortality rate	N^(x)/N(x)	corrected mortality rate	N^(x)/N(x)	corrected mortality rate	N^(x)/N(x)	corrected mortality rate	N^(x)/N(x)	معدل الوفيات المصحح	N^(x)/N(x)	corrected mortality rate	N^(x)/N(x)
5	1.2	0.477	1.25	0.287	1.15	0.595	1.17	0.353	0.625	0.728	0.575	**0.626**
10	0.9	0.436	1.02	0.264	0.88	0.535	0.99	0.318	0.585	0.655	0.443	**0.566**
15	1.4	0.427	1.07	0.263	1.35	0.514	1.06	0.309	0.86	0.63	0.584	**0.551**
20	2	0.388	1.27	0.25	2	0.475	1.27	0.29	1.279	0.584	0.711	**0.519**
25	2	0.367	1.43	0.242	1.97	0.474	1.45	0.29	1.61	0.585	1.01	**0.52**
30	2.5	0.371	1.89	0.239	2.48	0.504	2.01	0.293	2.08	0.623	1.35	**0.527**
35	3	0.365	2.32	0.234	3.33	0.497	2.05	0.279	2.67	0.615	1.51	**0.503**

40	5.1	0.358	4.07	0.234	5.23	0.474	3.83	0.267	3.75	0.589	2.4	**0.484**
45	7.5	0.356	5.76	0.239	7.83	0.454	5.13	0.261	6.51	0.569	3.64	**0.476**
50	13.7	0.378	11.17	0.257	13.45	0.466	9.76	0.274	10.56	0.588	6.02	**0.505**
55	21.1	0.438	15.48	0.291	20.57	0.525	13.93	0.312	17.84	0.673	11.11	**0.587**
60	37.7	0.519	32.89	0.342	35.97	0.606	30.35	0.37	24.64	0.788	21.11	**0.707**
65	46.5	0.555	38.79	0.359	43.15	0.629	35.5	0.389	40.29	0.86	33.33	**0.774**
70	81.8	0.525	77.44	0.355	72.34	0.582	70.72	0.381	66.67	0.818	61.03	**0.776**
75	98.1	0.46	89.71	0.345	86.06	0.494	81.39	0.364	104.7	0.746	98.26	**0.801**
80+	195	0.394	212.56	0.292	166.61	0.413	193.32	0.31	199.3	0.621	234.99	**0.684**
Median		0.41		0.26		0.5		0.31		0.63		**0.56**
correction factor		2.44	3.8		2		3.23		1.6		**1.79**	

Detailed corrected mortality rate = corrected mortality number per age group/total population per age group.

Detailed mortality rates are useful in estimating the number of deaths in society during a given period of time for different age groups, and in order to be used to build life tables, they must be converted into conditional probabilities. The conditional is intended to mean that a person who has reached a certain age may die within a specified period of time thereafter.

3.3 The relationship between rate and probability:

The rate of mortality for an age group is attributed to the population in the age group represented by the number in the middle of the age group.

The probability is that the number of deaths within a period of time to the population is estimated at a certain age.

The rate is similar to the probability of death in the age pattern, both of which are high immediately after birth and begin to decline rapidly until it reaches the lowest level between ages 10 and 25, then it starts with gradual rise and then accelerated after age 50.

For the method of conversion from rates to death probabilities, it is done by using mathematical equations specifically derived for this purpose and are circulating between demographers, and the equation used in the report is as follows:

$${}_nq_x=5*{}_nm_x\ (1+2.5*{}_nm_x)$$

Where:

${}_{n}m_{x}$:Death rate for age x to x+n

${}_{n}q_{x}$: probability of x to x+n age

n: The length of the age group is (5).

Chapter 4

Linking between adult mortality and child mortality

For the purposes of linking infant and under-five mortality to adult mortality, separate data are required for each. We have previously provided corrected adult mortality rates based on the results of the census-provided adult mortality test provided by the Civil Status and Passport Department for the same period and then corrected it. In this chapter, the other complementary part concerning child and infant mortality will be provided from independent sources of health and demographic surveys carried out by The Department of Statistics over the past decades (The Jordan Population and Family Health Survey - JPHFS).

4.1 Child and Infant Mortality:

Infant mortality is the mortality of children before the age of five, infant mortality occurs when a child dies after birth, and before the child reaches the first year of life.

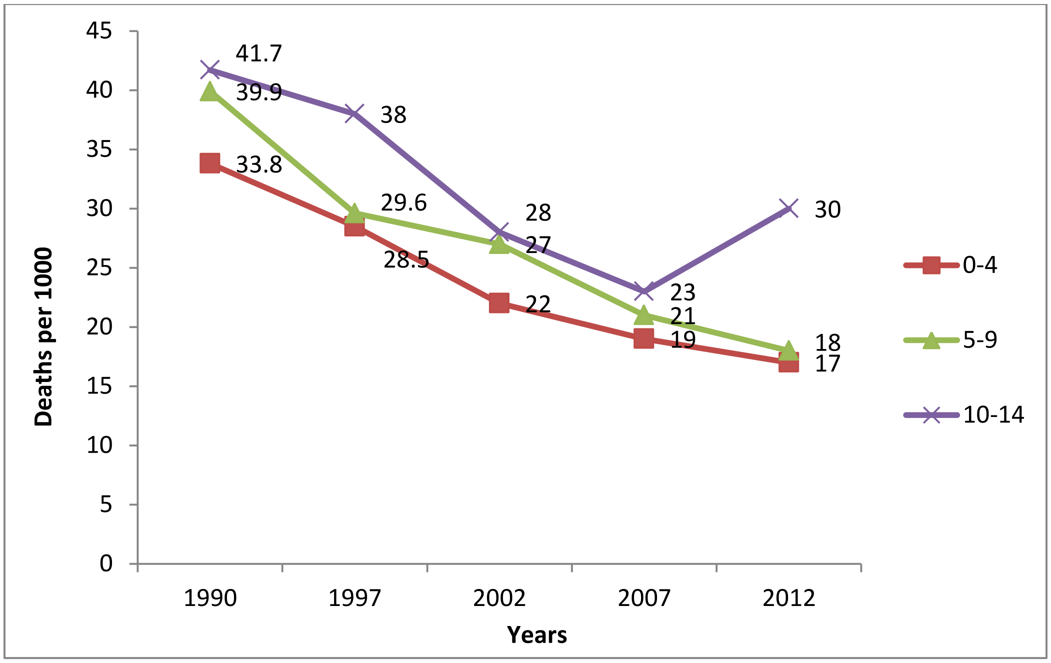
The risks of child mortality are highest in the neonatal period, that is, in the first 28 days of their life, and care during pregnancy and childbirth must be ensured, and effective birth care services should be provided to infants to reduce the percentage of such deaths. Table 3 and Figure 2 show the levels and trends of infant mortality in the Kingdom during the previous periods since the early 1980s, according to population and family health surveys from 1990 to 2012.

Table 3: Infant mortality rates by source and time periods prior to each survey

Period before the survey	Population and family health survey 1990	Population and family health survey 1997	Population and family health survey 2002	Population and family health survey 2007	Population and family health survey 2012
4-0	33.8	28.5	22.0	19.0	**17.0**
9-5	39.9	29.6	27.0	21.0	**18.0**
14-10	41.7	38.0	28.0	23.0	**30.0**

Source: Department of Statistics

Figure 2: Infant mortality rates by source and time periods prior to each survey

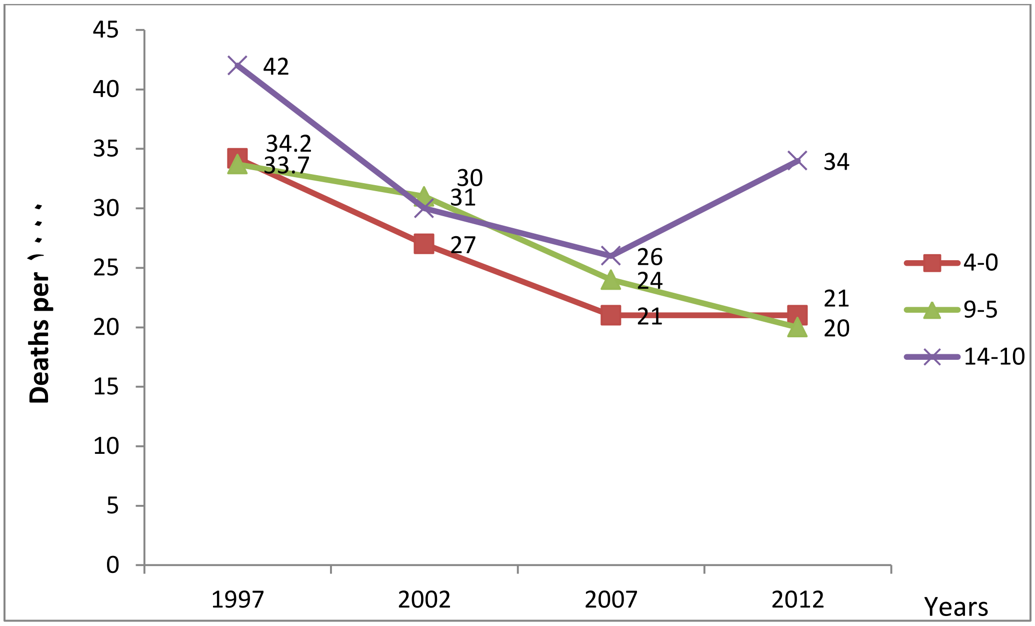


Source: Department of Statistics

Table 4: Under-five mortality rates by source and time periods prior to each survey

time period prior to the survey	1997	2002	2007	2012
4-0	34.2	27	21	21
9-5	33.7	31	24	20
14-10	42	30	26	34

Figure 3: Mortality rates for children under five by source and time periods prior to each survey



Using the linear equation based on information from previous surveys, the infant mortality rate for 2015 is estimated at 18.4 per 1,000 live births for males, compared to 15.8 per 1,000 births for females. Similarly, the under-five mortality rate for males is 20.4 per 1,000 male births, compared to 17.6 per 1,000 female births. Infant mortality rates for both males and females will be relied upon to link with adult mortality.

4.2 Linking the level of child mortality to adult mortality:

This is the process of linking child mortality levels to adult mortality, expressed in the 10-year-old mortality rate from census data, civil status and passports data after being corrected and then converted to the probabilities of conditional mortality in order to link child and infant mortality derived from data provided by the Kingdom's Population and Family Health Surveys over the past decades.

4.2.1 linkage using the Logit model:

The Logit model is used to handle non-linear relationships in order to bring them closer to reliable linear equations in written estimates. The relationship between morality levels (expressed in mortality rates at each age group, or morality probabilities at each age) and age is considered non-linear, beginning high at the early ages after delivery and gradually lowering to the lowest levels during the second decade of life and then gradually decreasing with age until it accelerates after the sixth or seventh decade.

It is used to establish a linear relationship between the level (probabilities/rates) of infant mortality with the level of mortality of adults after 10 years of age and the different age groups with the potential for probability for conditional survival between 10 years of age and each subsequent age. This is done after the infant mortality rate has been converted to the probability of survival to the end of the first year of the child's life, and then into a logit value for this probability using the equation, as is the probability of survival from 10 years to the rest of the life using the same equation:

$$\text{Logit}\ {}_np_x = (\text{Ln}\ ((1-{}_np_x)/\ {}_np_x))/2$$

Where:

${}_np_x$: The probability of survival from age x to x+n.

This applies to infant, child and adult mortality after 10 years of age. For example, infants' probability of survival (P0) and probability of survival from age 10 to $15{}_5P_{10}$, 10 to 20, ${}_{10}P_{10}$, and so on;

For the purposes of the linkage, similar survival probabilities are used from standard life tables that are considered complete for all age groups since birth, besides completing the information gaps from birth to age after 5 years and 10 years, in addition to correcting the gaps that may occur as a result of fluctuations in different age groups.

Then, the probability of mortality is converted to the possibility of survival, and the value of a representative of childhood mortality, which is the probability of survival until 10 years, and the group of possibilities of survival estimated after being linked to a fixed age, and the probability of survival between the ages is the result of a life-sustaining beating between the ages.

Linking is usually used by the logistics system and the possibilities of survival up to the different ages of the model life scales and aims at finding a kind of linear relationship that links the model life tables to life scales in Jordan according to the following equation:

$$Y^{\wedge}_x = \alpha + \beta * Y^s_x$$

Where:

Y^x: The logit value for survival probabilities from birth to age (x) in Jordan.

α: Expresses the general level of mortality.

β: Expresses the strength of the relationship between childhood mortality and adult mortality.

Y^s_x: The logit value of survival probabilities from birth to age x in model life tables.

Attempts to establish the formula for linking child mortality and adult mortality:

The series of attempts to establish a correlation between child mortality and adult mortality based on model life tables (group west).

Table 5: Multiple attempts using life tables (west) total population

Results of multiple attempts to reach an estimate of (Yx) values using model (west) total population census tables (male and female)						
Attempt	Males			Females		
	α	β	l10	α	β	l10
1	-0.078	1	0.976892	0.021	1	0.980458
2	-0.45488	0.802725	0.975326	-0.40339	0.796641	0.979381
3	-0.32309	0.87171	0.972254	-0.24362	0.873201	0.97759
4	-0.23929	0.915574	0.968025	-0.14473	0.920585	0.975024
5	-0.18552	0.943722	0.963872	-0.0829	0.950211	0.971788
6	-0.15082	0.961883	0.959224	-0.04402	0.968844	0.967625
7	-0.12836	0.97364	0.953134	-0.01948	0.980604	0.961814
8	-0.11379	0.981267	0.943788	-0.00396	0.988041	0.953022
9	-0.10433	0.986222	0.927887	0.005873	0.992752	0.938701
10	-0.09817	0.989444	0.901655	0.012104	0.995737	0.916677
11	-0.09417	0.991539	0.858306	0.016055	0.997631	0.882824

Estimation Equation Males:

$$Y^{\wedge}_{(x)} = -0.09817+0.98944^{*}\ Y^{s}_{(x)}$$

Estimation Equation Females:

$$Y^{\wedge}_{(x)} =0.01210 + 0.99574^{*}\ Y^{s}_{(x)}$$

Table 6: Multiple attempts using Life Tables (West) to Jordanian census

Results of multiple attempts to reach an estimate of (Yx) values using model life tables (west) Jordanian census (males and females)						
Attempt	Females			Males		
	α	β	l10	α	β	l10
1	0.021	1	0.980461	-0.078	1	0.976893
2	-0.45148	0.773599	0.979384	-0.47015	0.794735	0.975327
3	-0.27312	0.859064	0.977595	-0.33273	0.866663	0.972256
4	-0.16309	0.911789	0.975031	-0.24546	0.912348	0.968029
5	-0.09442	0.944696	0.971797	-0.18949	0.941645	0.963878
6	-0.05127	0.965369	0.967638	-0.15339	0.96054	0.959232
7	-0.02406	0.978408	0.961833	-0.13003	0.97277	0.953144
8	-0.00686	0.986652	0.953051	-0.11487	0.980702	0.943802
9	0.004036	0.991871	0.938747	-0.10503	0.985855	0.92791
10	0.010939	0.995179	0.916751	-0.09863	0.989205	0.901693
11	0.015316	0.995179	0.882946	-0.09446	0.991384	0.858369

Estimation Equation Males:

$$Y^{\wedge}_{(x)} = -0.09863 + 0.98920 * Y^{s}_{(x)}$$

Estimation Equation Females:

$$Y^{\wedge}_{(x)} = 0.01093 + 0.99517 * Y^{s}_{(x)}$$

Table 7: Multiple attempts using the life tables (west) for Civil Status and Passports

Results of multiple attempts to reach an estimate of (yx) values using model life tables (west) of Civil Status and Passports (males and females)						
Attempt	Females			Males		
	α	**β**	**l_{10}**	**α**	**β**	**l_{10}**
1	0.021	1.0000	0.980469	-0.078	1	0.976903
2	-0.63296	0.686635	0.979396	-0.58866	0.7327	0.975341
3	-0.38328	0.806278	0.977611	-0.40711	0.827732	0.972277
4	-0.23124	0.879131	0.975054	-0.29283	0.887551	0.968061
5	-0.13702	0.92428	0.971831	-0.21992	0.925717	0.963922
6	-0.07806	0.952531	0.967685	-0.17303	0.950258	0.959291
7	-0.04097	0.970307	0.961901	-0.14275	0.96611	0.953224
8	-0.01755	0.981528	0.953154	-0.12313	0.976381	0.943915
9	-0.00274	0.988626	0.938913	-0.11039	0.983047	0.928085
10	0.006647	0.993122	0.917024	-0.10212	0.987379	0.90198
11	0.012594	0.995972	0.883396	-0.09673	0.990196	0.858857

Estimation Equation Males:

$$Y^{\wedge}_{(x)} = -0.10212 + 0.98738 * Y^{s}_{(x)}$$

Estimation Equation Females:

$$Y^{\wedge}_{(x)} = 0.00664 + 0.99312 * Y^{s}_{(x)}$$

Chapter 5

Life Tables

5.1 Background on Life Tables:

Life Table in demography is defined as the table that shows each age what is the probability that a person in this age will die before his or her next birthday "the probability of survival". That is, it represents the probability of survival of a particular population group.

Life Tables are the simplest and most efficient basic tools of scientific analysis used to measure the phenomenon of mortality, and their basic idea is to follow the life of a regiment or a virtual group of births from the beginning of their birth to the death of the last person in them. The simplest definition of the life table is that it is a history of a virtual group of people born at the same time and subject to gradual death due to different causes at each age, there are two basic elements for the formation of life tables:

- The first basis: an actual set of births must be followed from birth to death, life tables of this type are known as Life of a regiment, and there is a clear practical difficulty in establishing them, as this requires a very long time to gather this type of information.

- Base two: It depends on the use of actual death levels for all populations of different age groups over a given period of time in the composition of the tables, known as the life tables of the period, which is the most commonly, used type in practice.

Whether life tables are type one or type two, there are several basic assumptions that are subject to the configuration and use conditions of the tables which are:

1. The virtual population group is a closed society, that is, it is not affected by the migration factor, as there are no influences through migration and the only effect is mortality.

2. The level of mortality at any age or age group is constant and does not change over time.

3. The number of deaths at any age or age group during the year is evenly distributed throughout the year.

Thus, the life table is only a simplified digital image of a virtual society characterized by stillness or interrupted because of the stability of the number of births from year to another, the equal number of annual deaths with the number of annual births, also due to the stability of the death rates for each age in it, that is, we assume in the construction of this table that fertility, mortality and total size are always stable, but the life table is related to a specific period of time, which limits the impact of these assumptions on the accuracy of their use.

The life table is a useful tool in measuring the level and pattern of mortality, analyzing fertility, migration, population pyramid and population projections related to population size, composition and changes, analyzing the different social and economic characteristics of the population, such as marital status, labor force and educational status, and the life tables can be used to monitor any time-related phenomenon, and, on the other hand, creating life tables for society at the national level and for groups of the population, such as males, females, urban, rural and other.

From this standpoint, a number of conclusions can be drawn:

- Probability of surviving at any particular year of age.
- Average life expectancy remaining for the population of different ages.

Life tables are widely used, the period in which each child is born varies from one individual to another, but the life cycle does not differ from one individual to another if it is naturally completed, since it begins with childhood to youth stage, then aging. When a person dies during or before reaching any stage, this is because of accidents and diseases, and death may be without those accidental causes, death is a right on every human being, man has a natural period of life and a certain end of life, and although it is not possible to predict in advance the life of each individual, it can be predicted on average, that he does not exceed a certain limit, Or that the maximum age that a person can reach is one hundred years.

This prediction is not only different from one individual to another, but also different from one community to another, from one country to another, and although life is different from one person to another, it is possible to depict the general situation of a group of people, household or occupation, by building life tables, and we do not mean each person individually, but we mean the general picture of life of each group, as these tables help us to answer some specific questions that aim to infer the length of life at certain ages, like wondering how many of those who reached their first year of age were among a group of specific births or about those who reached the age of 10, 20 or 40... Etc. So, if death takes all these births to the last one, we wonder how many years these births have lived over time until they are all gone, and then finally we get the average length of life or age per person.

5.2 Building life tables:

The importance of life tables lies in many areas, including health and economic areas, and on the other hand, they can be adopted to identify the prevailing patterns of mortality in society and gender disparities in the prospects for survival and mortality by age.

Life tables are an integrated method for analyzing detailed mortality rates and demographic analysis to accurately reflect this relationship, where infant and under-five mortality has been linked to adult mortality through the use of the logit model and the creation of an initial relationship between survival probabilities from birth to age (x) in standard life tables, and survival probabilities in Jordan.

The process of building life tables for both males and females has taken place at the level of the Kingdom based on the results of the linkage process, as we have a basic database to begin building life tables as follows:

1. Determine the appropriate pattern of mortality in Jordan, use the values corresponding to the specified level and convert them into conditional values based on age 10.

2. Finding a detailed mortality rate $({}_nM_x)$ by dividing the corrected number of deaths at a specific age (calculated by other detailed equations), by the number of individuals in that age for both males and females separately. $({}_nM_x)$ = the corrected number of deaths at age(x)/number of individuals at age(x).

Corrected number of deaths = correction factor multiplied by total population mortality resulting in a probability of death completion value given that correction factor is the division of 1/median resulting from $\hat{N}_{(x)}/N_{(x)}$ division.

3. Calculate the probability of death value between two specific years based on the death rate values and using the following equation:-

$${}_nq_x = (n*{}_nM_x)/(1+2.5*{}_nM_x)$$

The base of the calculation is the ${}_nq_x$ column in the life table and this equation is used for all age groups above the first year, while in the open age group the probability of death is 1 because every person who reaches a certain age must die after that age.

4. Convert ${}_nq_x$ death probability to survival probability using the relationship:

$${}_np_x = 1- {}_nq_x$$

And convert it into conditional values at age 10.

5. Find the logit value for survival probabilities by applying the logit equation used for linkage:

$$\text{Logit } {}_np_x =(\text{Ln}((1-{}_np_x)/{}_np_x))/2$$

6. Estimate the Y^s_x values based on the values of the standard l^s_x tables, and also estimate them based on the conditional standard l^s_x values to find the Y^s_{x10} values.

7. Estimate the values of both (α and β) to complete the calculation of the logit value for survival probabilities.

- First assume that the value of β=1, and the value of α equals the difference between the values of ${}_np_x$ Logit and Y^s_x at the age of x=1.

It compensates it to find the initial values of Ý:

$$Ý = \alpha+\beta * Y^s_x$$

- Values (l_{x10}) are then re-estimated using the reversed logit equation and converted to conditional values at age 10.

$$P^\wedge_x = 1/(1+\exp.(2*Ý_{10}))$$

8. Convert conditional survival probabilities to logit values.

9. Calculate β values for different ages, and then find their average by applying the following relationship:

$$\beta = (\text{logit } P^\wedge_x - Ý_x)/(Y^s_{x10} - Y^s_{x1})$$

Thus we have created new values of β by which the value of 2α can be found, and retries until both α and β values are proven.

$$\alpha = \text{logit } P^\wedge_x – \beta 2 * Y^s_x 1$$

Where:

Y^s_x: The logit value of survival probabilities from birth to age (x) in standard life tables.

${}_xÝ$: logit value of survival probabilities from birth to age(x) in Jordan.

α: Expresses the general level of mortality.

β : Express the strength of the relationship between childhood mortality and adult mortality.

The process of repeating the calculation of logit is until both β and α values are stabilized. Depending on the values of both β and α, we create a table to calculate life expectations in the following steps:

1. We take the values of Y^{s}_{x} (Logit Value of Survival Probabilities from Birth to Age (x) estimated from standard tables from the tables calculated based on standard life values in the following equation:

$$Y^{s}_{x} = Ln((1-l_{x})/l_{x})/2$$

2. Then find the value $y^{\wedge}_{x}$ (Logit value for survival Probabilities) using α and β values, which resulted from the stable values after repeated attempts, and Y^{s}_{x} values represented by the following equation:

$$Y^{\wedge}_{x} = \alpha + B * Y^{s}_{x}$$

3. Then we calculate the survival values of ${}_{n}p_{x}$ by the following equation:

$${}_{n}p_{x} = 1/(1+\exp(2 * y^{\wedge}_{x}))$$

The value of the regiment is determined by 100K and expressed by l_{x}, and then we calculate the value of the surviving regiment by multiplying the values of the regiment for each age group by the survival values of each ${}_{n}p_{x}$ age group.

4. We then calculate the number of years the ${}_{n}L_{x}$ has for each age group, so the calculation of the age group's years is represented by the following equation:

$${}_{n}L_{(0)} = 0.3 * l_{(0)} + 0.7 * l_{(1)}$$

Calculation of the years of age 1 in the following equation:

$${}_{n}L_{(1)} = 1.6 * l_{(1)} + 2.4 * l_{(5)}$$

All other age groups are calculated in the same equation:

$${}_{n}L_{(5)} = 2.5 * (l_{(5)} + l_{(10)})$$

All age groups are calculated to the last age group (open value) and are calculated by the division of (l_{80}) by mortality rate ${}_nM_{(80)}$.

5. We then calculate the whole regiment of t_x by the result of adding the values of ${}_nL_{(80)}$ and ${}_nL_{(75)}$ cumulatively from the last age group to the first age group(0).

6. We then calculate or find the life expectation e_x by dividing the regiment years of the total group t_x by the number of survivals of the regiment for each age group.

$$e_x = t_x/l_x$$

The Life Table of the Kingdom (Census/Males):

The infant mortality rate among males was 0.0184 according to the 2015 census survey results and is located in the model life tables (west)at level 23. Life expectancy at birth has been determined using the mathematical completion method to reach 72.5.

Table 8: Brief life table of males (population) in Jordan 2015

x	$\mathbf{Y_x}$	$\mathbf{\hat{Y}_x}$	$\mathbf{l_x}$	$\mathbf{l_x}$	$\mathbf{{}_nL_x}$	$\mathbf{T_x}$	$\mathbf{e_x}$
0				100000	98712	7255240	72.47
1	-1.91041	-1.98842	0.98160	98160	391956	7156528	72.82
5	-1.83611	-1.91492	0.97875	97875	488910	6764572	69.03
10	-1.79284	-1.87213	0.97689	97689	488055	6275662	64.16
15	-1.75890	-1.83856	0.97533	97533	486897	5787606	59.26
20	-1.69801	-1.77833	0.97226	97226	485072	5300710	54.44
25	-1.62412	-1.70525	0.96803	96803	482978	4815637	49.66
30	-1.56024	-1.64207	0.96388	96388	480779	4332660	44.87
35	-1.49664	-1.57916	0.95924	95924	478096	3851880	40.07
40	-1.42308	-1.50640	0.95315	95315	474240	3373784	35.31
45	-1.32621	-1.41059	0.94381	94381	467933	2899545	30.64
50	-1.19175	-1.27759	0.92792	92792	457408	2431612	26.12
55	-1.02048	-1.10819	0.90171	90171	440028	1974204	21.81
60	-0.81103	-0.90103	0.85840	85840	412621	1534176	17.78
65	-0.57620	-0.66876	0.79208	79208	371404	1121555	14.06
70	-0.31291	-0.40834	0.69353	69353	312144	750151	10.71
75	-0.01182	-0.11054	0.55505	55505	234092	438007	7.76
80	0.34458	0.24197	0.38132	38132	203915	203915	5.15

The Life Table of the Kingdom (Census/Females):

The infant mortality rate among females was 0.0158 according to the 2015 census survey results. This value is located in the model life tables (west)at level 23. Life expectancy at birth was determined using the mathematical completion method to reach 74.

Table 9: Brief life table of females (population) in Jordan 2015

x	Y_x	$\hat{Y}_x$	l_x	l_x	${}_nL_x$	T_x	e_x
0				100000	98894	7415039	74.00
1	-2.08691	-2.06591	0.98420	98420	393093	7316145	74.18
5	-2.01337	-1.99272	0.98175	98175	490554	6923052	70.36
10	-1.97827	-1.95779	0.98046	98046	489961	6432498	65.45
15	-1.95078	-1.93043	0.97938	97938	489245	5942537	60.52
20	-1.90803	-1.88789	0.97759	97759	488156	5453292	55.63
25	-1.85228	-1.83240	0.97503	97503	486707	4965136	50.77
30	-1.78943	-1.76984	0.97180	97180	484858	4478430	45.93
35	-1.71815	-1.69891	0.96764	96764	482367	3993572	41.12
40	-1.63224	-1.61341	0.96183	96183	478720	3511205	36.35
45	-1.52358	-1.50527	0.95305	95305	472947	3032485	31.66
50	-1.38237	-1.36472	0.93874	93874	463871	2559538	27.11
55	-1.21630	-1.19945	0.91674	91674	449919	2095667	22.70
60	-1.02620	-1.01025	0.88293	88293	428338	1645747	18.47
65	-0.80922	-0.79431	0.83042	83042	393935	1217409	14.49
70	-0.55059	-0.53690	0.74532	74532	340103	823474	10.86
75	-0.24662	-0.23439	0.61509	61509	263272	483370	7.63
80	0.11413	0.12465	0.43800	43800	220098	220098	4.71

Life Table for Jordanians (Census/Males):

The infant mortality rate among males was 0.0184 according to the 2015 census survey results, and this value is located in the model life tables (west)at level 23. Life expectancy at birth has been determined using the mathematical completion method to reach 72.7

Table 10: Brief life table of males (census) in Jordan for 2015

x	Y_x	$Y^{\wedge}_x$	l_x	l_x	$_nL_x$	T_x	e_x
0				100000	98712	7279944	72.80
1	-1.91041	-1.98842	0.98160	98160	391956	7181232	73.16
5	-1.83611	-1.91491	0.97875	97875	488910	6789276	69.37
10	-1.79284	-1.87212	0.97689	97689	488055	6300366	64.49
15	-1.75890	-1.83854	0.97533	97533	486896	5812311	59.59
20	-1.69801	-1.77831	0.97226	97226	485071	5325415	54.77
25	-1.62412	-1.70522	0.96803	96803	482977	4840344	50.00
30	-1.56024	-1.64203	0.96388	96388	480777	4357367	45.21
35	-1.49664	-1.57912	0.95923	95923	478094	3876590	40.41
40	-1.42308	-1.50635	0.95314	95314	474237	3398496	35.66
45	-1.32621	-1.41052	0.94380	94380	467928	2924259	30.98
50	-1.19175	-1.27751	0.92791	92791	457401	2456331	26.47
55	-1.02048	-1.10809	0.90169	90169	440015	1998930	22.17
60	-0.81103	-0.90091	0.85837	85837	412600	1558915	18.16
65	-0.57620	-0.66861	0.79203	79203	371372	1146314	14.47
70	-0.31291	-0.40816	0.69345	69345	312098	774943	11.18
75	-0.01182	-0.11032	0.55494	55494	234034	462845	8.34
80	0.34458	0.24223	0.38120	38120	228811	228811	6.00

Life Schedule for Jordanians (census/females):

The infant mortality rate among females was 0.0158 according to the 2015 census survey results. This value is located in the model life tables (west)at level 23. Life expectancy at birth has been determined using the mathematical method of completion to reach 74.2

Table 11: Brief life table of females (census) in Jordan for 2015

x	Y_x	$\hat{Y}_x$	l_x	l_x	$_nL_x$	T_x	e_x
0				100000	98894	7421648	74.22
1	-2.08691	-2.06591	0.98420	98420	393093	7322754	74.40
5	-2.01337	-1.99272	0.98175	98175	490554	6929661	70.58
10	-1.97827	-1.95780	0.98046	98046	489961	6439107	65.67
15	-1.95078	-1.93044	0.97938	97938	489245	5949146	60.74
20	-1.90803	-1.88790	0.97759	97759	488156	5459901	55.85
25	-1.85228	-1.83241	0.97503	97503	486707	4971744	50.99
30	-1.78943	-1.76986	0.97180	97180	484859	4485038	46.15
35	-1.71815	-1.69893	0.96764	96764	482368	4000179	41.34
40	-1.63224	-1.61343	0.96183	96183	478721	3517811	36.57
45	-1.52358	-1.50530	0.95305	95305	472949	3039090	31.89
50	-1.38237	-1.36476	0.93875	93875	463874	2566141	27.34
55	-1.21630	-1.19950	0.91675	91675	449924	2102267	22.93
60	-1.02620	-1.01031	0.88295	88295	428347	1652343	18.71
65	-0.80922	-0.79438	0.83044	83044	393949	1223996	14.74
70	-0.55059	-0.53699	0.74535	74535	340125	830047	11.14
75	-0.24662	-0.23449	0.61514	61514	263301	489922	7.96
80	0.11413	0.12452	0.43806	43806	226621	226621	5.17

A life table for Jordanians (civil status/males):

The infant mortality rate among males was 0.0184 according to the 2015 census survey results and is located in the model life tables (west) at level 23. Life expectancy at birth has been determined using the mathematical completion method to reach 72.5.

Table 12: Brief life table of males (civil status) in Jordan for 2015

x	Y_x	$\hat{Y}_x$	l_x	l_x	${}_nL_x$	T_x	e_x
0				100000	98712	7246499	72.46
1	-1.91041	-1.98842	0.98160	98160	391957	7147787	72.82
5	-1.83611	-1.91505	0.97875	97875	488914	6755831	69.02
10	-1.79284	-1.87233	0.97690	97690	488061	6266917	64.15
15	-1.75890	-1.83882	0.97534	97534	486905	5778856	59.25
20	-1.69801	-1.77870	0.97228	97228	485085	5291951	54.43
25	-1.62412	-1.70574	0.96806	96806	482996	4806866	49.65
30	-1.56024	-1.64267	0.96392	96392	480803	4323871	44.86
35	-1.49664	-1.57987	0.95929	95929	478129	3843067	40.06
40	-1.42308	-1.50724	0.95322	95322	474285	3364939	35.30
45	-1.32621	-1.41159	0.94392	94392	468000	2890654	30.62
50	-1.19175	-1.27882	0.92809	92809	457516	2422654	26.10
55	-1.02048	-1.10971	0.90198	90198	440209	1965137	21.79
60	-0.81103	-0.90291	0.85886	85886	412923	1524928	17.76
65	-0.57620	-0.67105	0.79283	79283	371881	1112005	14.03
70	-0.31291	-0.41107	0.69469	69469	312835	740124	10.65
75	-0.01182	-0.11379	0.55665	55665	234948	427289	7.68
80	0.34458	0.23812	0.38314	38314	192341	192341	5.02

A life table for Jordanians (civil status/females):

The infant mortality rate among females was 0.0158 according to the 2015 census survey results and is located in the model life tables (west) at level 23. Life expectancy at birth has been determined using the mathematical completion method to reach 74.0.

Table 13: Brief life table of females (civil status) in Jordan for 2015

x	Y_x	$\hat{Y}_x$	l_x	l_x	${}_nL_x$	T_x	e_x
0				100000	98894	7385488	73.85
1	-2.08691	-2.06591	0.98420	98420	393094	7286594	74.04
5	-2.01337	-1.99287	0.98176	98176	490557	6893499	70.22
10	-1.97827	-1.95802	0.98047	98047	489966	6402942	65.30
15	-1.95078	-1.93072	0.97940	97940	489252	5912976	60.37
20	-1.90803	-1.88826	0.97761	97761	488166	5423724	55.48
25	-1.85228	-1.83289	0.97505	97505	486721	4935558	50.62
30	-1.78943	-1.77047	0.97183	97183	484879	4448837	45.78
35	-1.71815	-1.69969	0.96768	96768	482397	3963958	40.96
40	-1.63224	-1.61437	0.96190	96190	478764	3481561	36.19
45	-1.52358	-1.50646	0.95315	95315	473017	3002797	31.50
50	-1.38237	-1.36621	0.93891	93891	463984	2529781	26.94
55	-1.21630	-1.20129	0.91702	91702	450105	2065796	22.53
60	-1.02620	-1.01250	0.88340	88340	428644	1615691	18.29
65	-0.80922	-0.79701	0.83118	83118	394433	1187047	14.28
70	-0.55059	-0.54015	0.74655	74655	340872	792614.2	10.62
75	-0.24662	-0.23828	0.61693	61693	264306	451742.6	7.32
80	0.11413	0.11999	0.44029	44029	187437	187436.7	4.26

Appendix

Appendix (1) : Death Probability Values

The probability of death values q1 and q5 for males model west

level	e_0	q_1	q_5
1	18	0.41907	0.56995
2	20.4	0.38343	0.52888
3	22.9	0.35132	0.49043
4	25.3	0.32215	0.45429
5	27.7	0.29546	0.42024
6	30.1	0.27089	0.38806
7	32.5	0.24817	0.35758
8	34.9	0.22706	0.32865
9	37.3	0.20737	0.30112
10	39.7	0.18895	0.27489
11	42.1	0.17165	0.24985
12	44.5	0.15537	0.22592
13	47.1	0.13942	0.20039
14	49.6	0.12453	0.17713
15	51.8	0.11136	0.15673
16	54.1	0.09857	0.13707
17	56.5	0.08621	0.11816
18	58.8	0.0743	0.09999
19	61.2	0.06287	0.08256
20	63.6	0.05193	0.06585
21	66	0.04091	0.05011
22	68.6	0.03075	0.03666
23	71.2	0.02144	0.02479
24	73.9	0.01332	0.0149
25	76.6	0.00711	0.00769

The probability of death values q1 and q5 for females /model west

level	e0	q1	q5
1	20	0.36517	0.53117
2	22.5	0.33362	0.49176
3	25	0.30519	0.45494
4	27.5	0.27936	0.42042
5	30	0.25573	0.38795
6	32.5	0.23398	0.3573
7	35	0.21386	0.32831
8	37.5	0.19518	0.30082
9	40	0.17774	0.2747
10	42.5	0.16143	0.24983
11	45	0.14612	0.22611
12	47.5	0.13171	0.20346
13	50	0.11831	0.18152
14	52.5	0.10548	0.15894
15	55	0.09339	0.13873
16	57.5	0.08177	0.11959
17	60	0.07066	0.10146
18	62.5	0.06004	0.08429
19	65	0.04994	0.06799
20	67.5	0.04034	0.05251
21	70	0.03093	0.0384
22	72.5	0.02262	0.02714
23	75	0.01516	0.01752
24	77.5	0.00894	0.00994
25	80	0.00445	0.00478

Appendix (2): Tables to estimate the completion of mortality

the completion estimation of the total male population mortality 2015								
Corrected number of deaths nMx	x	Corrected number of deaths	N^(X)/N(X)	N(X)	N^(A)	total male population mortality	Total males	**Age groups**
0.017	0				63333	1339.5	557331	**0-4**
0.004	1	704	0.47688	115144.2	54910	289	594111	**5-9**
0.00118	5	486	0.43626	111006.9	48428	199.5	515958	**10-14**
0.00094	10	692	0.42665	100231.9	42764	284	486361	**15-19**
0.00142	15	991	0.38791	97086.5	37661	407	484504	**20-24**
0.00205	20	820	0.36658	90072.2	33019	336.5	416218	**25-29**
0.00197	25	900	0.37102	78076.6	28968	369.5	364548	**30-34**
0.00247	30	997	0.36521	69396.7	25345	409.5	329419	**35-39**
0.00303	35	1459	0.35769	61765.5	22093	599	288236	**40-44**
0.00506	40	1849	0.35569	53503.4	19031	759	246798	**45-49**
0.00749	45	2492	0.37764	42801.8	16164	1023	181220	**50-54**
0.01375	50	2629	0.43764	30555.8	13373	1079.5	124338	**55-59**
0.02115	55	3188	0.51902	20892.7	10844	1309	84589	**60-64**
0.03769	60	3099	0.55451	15121.1	8385	1272.5	66622	**65-69**
0.04652	65	4270	0.52497	11883	6238	1753	52208	**70-74**
0.08178	70	3149	0.46049	8429.9	3882	1293	32091	**74-79**
0.09814	75	4736	0.39449	5640.8	2225	1944.5	24317	**80+**
0.19476	80		0.411	median value				
			2.436	Correction factor				

the completion estimation of the total female population mortality 2015								
Corrected number of deaths nMx	x	Corrected number of deaths	N^(X)/N(X)	N(X)	N^(A)	total female population mortality	Total females	**Age groups**
0.017	0				36690	1048	529515	**0-4**
0.004	1	712	0.28750	109755.2	31554	187.5	568037	**5-9**
0.00125	5	496	0.26352	105532.4	27809	130.5	487287	**10-14**
0.00102	10	475	0.26318	93250.4	24542	125	445217	**15-19**
0.00107	15	534	0.25016	86539.3	21649	140.5	420176	**20-24**
0.00127	20	522	0.24248	78640.6	19069	137.5	366230	**25-29**
0.00143	25	634	0.23936	70116.2	16783	167	334932	**30-34**
0.00189	30	685	0.23361	63044.4	14728	180.5	295512	**35-39**
0.00232	35	1037	0.23437	55009.5	12892	273	254583	**40-44**
0.00407	40	1227	0.23908	46751	11177	323	212927	**45-49**
0.00576	45	1802	0.25677	37424.2	9609	474.5	161315	**50-54**
0.01117	50	1800	0.29093	27758.5	8076	474	116270	**55-59**
0.01548	55	2632	0.34217	19628.4	6716	693	80014	**60-64**
0.03289	60	2622	0.35932	14761.3	5304	690.5	67599	**65-69**
0.03879	65	3619	0.35459	11433.1	4054	953	46732	**70-74**
0.07744	70	2829	0.34474	7826.5	2698	745	31533	**74-79**
0.08971	75	5591	0.29243	5783.8	1691	1472.5	26305	**80+**
0.21256	80		0.26	median value				
			3.80	Correction factor				

Estimation of the completion of mortality for Jordanians males 2015								
Corrected number of deaths nMx	**x**	**Corrected number of deaths**	**N^(X)/N(X)**	**N(X)**	**N^(A)**	**Total Jordanian deaths males**	**Total males**	**Age groups**
0.017	0.0				54608	1082.5	382731	**0-4**
0.004	1.0	475	0.59524	79654	47413	237.5	413809	**5-9**
0.00115	5.0	324	0.53455	78250.1	41828	162	368692	**10-14**
0.00088	10.0	475	0.51358	71937.5	36946	237.5	350683	**15-19**
0.00135	15.0	668	0.47493	68523.7	32544	334	334554	**20-24**
0.00200	20.0	527	0.47416	60211.3	28550	263.5	267559	**25-29**
0.00197	25.0	572	0.50352	49795.6	25073	286	230397	**30-34**
0.00248	30.0	706	0.49672	44226.8	21969	353	211871	**35-39**
0.00333	35.0	1007	0.47354	40443.8	19152	503.5	192567	**40-44**
0.00523	40.0	1338	0.45432	36344.5	16512	669	170878	**45-49**
0.00783	45.0	1751	0.46560	30100.8	14015	875.5	130130	**50-54**
0.01345	50.0	1871	0.52500	22105.5	11605	935.5	90925	**55-59**
0.02057	55.0	2314	0.60619	15526.8	9412	1157.5	64343	**60-64**
0.03597	60.0	2201	0.62925	11534	7258	1100.5	50997	**65-69**
0.04315	65.0	3023	0.58204	9278.7	5401	1512	41790	**70-74**
0.07234	70.0	2268	0.49392	6814.8	3366	1134.5	26358	**74-79**
0.08606	75.0	3346	0.41275	4644.2	1917	1673.5	20084	**80+**
0.16661	80.0		**0.50**	Median value				
			2.00	Correction factor				

Estimation of the completion of mortality for Jordanians females 2015								
Corrected number of deaths nMx	**x**	**Corrected number of deaths**	**N^(X)/N(X)**	**N(X)**	**N^(A)**	**Total Jordanian deaths females**	**Total females**	**Age groups**
0.017	0				31140	845	364526	**0-4**
0.004	1	464	0.353	75987.2	26823	143.5	395346	**5-9**
0.00117	5	342	0.318	74295.1	23655	106	347605	**10-14**
0.00099	10	349	0.309	67565.0	20880	108	328045	**15-19**
0.00106	15	391	0.290	63500.2	18417	121	306957	**20-24**
0.00127	20	367	0.290	55979.3	16221	113.5	252836	**25-29**
0.00145	25	472	0.293	48710.8	14279	146	234272	**30-34**
0.00201	30	441	0.279	44960.1	12527	136.5	215329	**35-39**
0.00205	35	750	0.267	41088.4	10982	232	195555	**40-44**
0.00383	40	869	0.261	36496.3	9522	269	169408	**45-49**
0.00513	45	1262	0.274	29872.6	8192	390.5	129318	**50-54**
0.00976	50	1279	0.312	22115.9	6898	396	91841	**55-59**
0.01393	55	1919	0.370	15507.6	5745	594	63235	**60-64**
0.03035	60	1895	0.389	11660.5	4536	586.5	53370	**65-69**
0.03550	65	2667	0.381	9108.0	3470	825.5	37710	**70-74**
0.07072	70	2071	0.364	6315.3	2301	641	25443	**74-79**
0.08139	75	4040	0.310	4634.0	1437	1250.5	20897	**80+**
0.19332	80		**0.310**	Median value				
			3.23	Correction factor				

Estimation of mortality completion of civil status and passport /males 2015								
Corrected number of deaths nMx	**x**	**Corrected number of deaths**	**N^(X)/N(X)**	**N(X)**	**N^(A)**	**Total Civil status deaths/males**	**Total males**	**Age group**
0.017	0				66270	875	382731	**0-4**
0.004	1	259	0.728	79654.0	57952	162	413809	**5-9**
0.000625	5	216	0.655	78250.1	51246	135	368692	**10-14**
0.000585	10	302	0.630	71937.5	45324	189	350683	**15-19**
0.000860	15	428	0.584	68523.7	40021	268	334554	**20-24**
0.001279	20	431	0.585	60211.3	35243	270	267559	**25-29**
0.001611	25	479	0.623	49795.6	31004	300	230397	**30-34**
0.002079	30	565	0.615	44226.8	27215	354	211871	**35-39**
0.002668	35	722	0.589	40443.8	23804	452	192567	**40-44**
0.003748	40	1113	0.569	36344.5	20687	697	170878	**45-49**
0.006512	45	1375	0.588	30100.8	17691	861	130130	**50-54**
0.010564	50	1622	0.673	22105.5	14880	1016	90925	**55-59**
0.017840	55	1585	0.788	15526.8	12240	993	64343	**60-64**
0.024640	60	2055	0.860	11534.0	9921	1287	50997	**65-69**
0.040293	65	2786	0.818	9278.7	7587	1745	41790	**70-74**
0.066668	70	2759	0.746	6814.8	5086	1728	26358	**74-79**
0.104671	75	4003	0.621	4644.2	2883	2507	20084	**80+**
0.199296	80		**0.63**	Median value				
			1.60	Correction factor				
		Estimation of mortality completion of civil status and passport /females 2015						
Corrected number of deaths nMx	**x**	**Corrected number of deaths**	**N^(X)/N(X)**	**N(X)**	**N^(A)**	**Total Civil status deaths/females**	**Total females**	**Age group**
0.017	0				54425	732	364526	**0-4**
0.004	1	227	0.63	75987	47581	127	395346	**5-9**
0.00057	5	154	0.57	74295	42081	86	347605	**10-14**
0.00044	10	192	0.55	67565	37241	107	328045	**15-19**
0.00058	15	218	0.52	63500	32929	122	306957	**20-24**
0.00071	20	254	0.52	55979	29091	142	252836	**25-29**
0.00101	25	317	0.53	48711	25668	177	234272	**30-34**
0.00135	30	326	0.50	44960	22598	182	215329	**35-39**
0.00151	35	469	0.48	41088	19872	262	195555	**40-44**
0.00240	40	617	0.48	36496	17378	345	169408	**45-49**
0.00364	45	779	0.51	29873	15088	435	129318	**50-54**
0.00602	50	1020	0.59	22116	12972	570	91841	**55-59**
0.01111	55	1335	0.71	15508	10968	746	63235	**60-64**
0.02111	60	1779	0.77	11661	9025	994	53370	**65-69**
0.03333	65	2301	0.78	9108	7069	1286	37710	**70-74**
0.06103	70	2500	0.80	6315	5058	1397	25443	**74-79**
0.09826	75	4911	0.68	4634	3171	2744	20897	**80+**
0.23499	80		**0.56**	Median value				
			1.79	Correction factor				

Appendix (3): Detailed tables of attempts to estimate α and β values

Table of attempts to estimate the values of a, β for the total male population

1	2	3	4	5	6	7	8	9	10
X	l_x	$l_{x(10)}$	${}_nQ_x$	${}_np_{10}$	${}_n{}^{P}{}_{10}$ cond.	logit(${}_n{}^{P}{}_{10}$) Y	$Y^s{}_x$	$Y^s{}_{x(10)}$	β
1	0.97856		0.0184	0.98160		-1.9884	-1.91041		
5	0.97521						-1.83611		
10	0.97303	0.97303	0.00470	0.99530	0.97684	-1.87085	-1.7928	-1.79284	1.00000
15	0.97119	0.94500	0.00709	0.99291	0.96991	-1.73657	-1.7589	-1.42190	0.51554
20	0.96758	0.94148	0.01018	0.98982	0.96689	-1.68718	-1.6980	-1.38908	0.57783
25	0.96261	0.93665	0.00980	0.99020	0.96727	-1.69302	-1.6241	-1.34680	0.52413
30	0.95773	0.93190	0.01227	0.98773	0.96485	-1.65620	-1.5602	-1.30812	0.55159
35	0.95227	0.92659	0.01502	0.98498	0.96216	-1.61789	-1.4966	-1.26771	0.57651
40	0.94512	0.91963	0.02499	0.97501	0.95242	-1.49833	-1.4231	-1.21867	0.70848
45	0.93416	0.90897	0.03676	0.96324	0.94092	-1.38401	-1.3262	-1.15054	0.79540
50	0.91556	0.89087	0.06646	0.93354	0.91191	-1.16861	-1.1917	-1.04982	0.95260
55	0.88503	0.86116	0.10042	0.89958	0.87874	-0.99028	-1.0205	-0.91248	1.00021
60	0.83508	0.81256	0.17223	0.82777	0.80860	-0.72047	-0.8110	-0.73336	1.07722
65	0.75995	0.73945	0.20837	0.79163	0.77329	-0.61349	-0.5762	-0.52157	0.98998
70	0.65154	0.63397	0.33950	0.66050	0.64520	-0.29901	-0.3129	-0.27464	1.03279
75	0.50591	0.49227	0.39401	0.60599	0.59195	-0.18602	-0.0118	0.01547	0.93588
80	0.33422	0.32521	1.00000	0.00000	0.00000	#DIV/0!	0.3446	0.36497	
									11.2382
									0.80273
11	12	13	14	15	16	17	18	19	20
Y^(2)	P^(2)	P^(2)	Logit P^(2)	β2	Y^(3)	P^(3)	P^(3)	Logit P^(3)	β3
-1.89404	0.97786	0.977862	-1.89404	0.80273	-1.88593	0.97751	0.97751	-1.88593	0.87171
-1.86679	0.97665	0.955030	-1.52788	0.94273	-1.85634	0.97617	0.95421	-1.51846	0.96202
-1.81792	0.97432	0.952746	-1.50191	0.93321	-1.80326	0.97357	0.95167	-1.49013	0.95580
-1.75860	0.97117	0.949674	-1.46880	0.92195	-1.73886	0.97005	0.94823	-1.45388	0.94841
-1.70733	0.96816	0.946727	-1.43879	0.91257	-1.68317	0.96664	0.94489	-1.42091	0.94224
-1.65627	0.96486	0.943497	-1.40765	0.90363	-1.62773	0.96287	0.94121	-1.38662	0.93635
-1.59722	0.96062	0.939359	-1.37011	0.89383	-1.56361	0.95800	0.93645	-1.34517	0.92989
-1.51946	0.95430	0.933176	-1.31827	0.88192	-1.47916	0.95066	0.92927	-1.28779	0.92202
-1.41153	0.94391	0.923013	-1.24200	0.86732	-1.36195	0.93842	0.91732	-1.20321	0.91240
-1.27404	0.92744	0.906913	-1.13826	0.85192	-1.21265	0.91874	0.89807	-1.08799	0.90229
-1.10592	0.90131	0.881354	-1.00266	0.83748	-1.03008	0.88697	0.86702	-0.93743	0.89289
-0.91741	0.86234	0.843246	-0.84129	0.82596	-0.82537	0.83899	0.82012	-0.75859	0.88551
-0.70606	0.80410	0.786299	-0.65138	0.81737	-0.59586	0.76705	0.74979	-0.54876	0.88011
-0.46437	0.71682	0.700951	-0.42591	0.81132	-0.33340	0.66078	0.64592	-0.30058	0.87640
-0.17828	0.58821	0.575185	-0.15152		-0.02272	0.51136	0.49986	0.000289	

	12.20394		**12.8180**
	0.87171		**0.91557**

21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Y^(4)	P^(4)	P^(4)	Logit P^(4)	β4	Y^(5)	P^(5)	P^(5) cond.	Logit P^(5)	β5
-1.88078	0.97728	0.97728	-1.88078	0.91557	-1.87747	0.97713	0.97713	-1.87747	0.94372
-1.84970	0.97586	0.95369	-1.51246	0.97429	-1.84543	0.97566	0.95335	-1.50862	0.98216
-1.79395	0.97309	0.95098	-1.48263	0.97019	-1.78797	0.97277	0.95053	-1.47781	0.97943
-1.72630	0.96931	0.94729	-1.44436	0.96531	-1.71824	0.96883	0.94667	-1.43824	0.97617
-1.66781	0.96563	0.94369	-1.40948	0.96122	-1.65796	0.96497	0.94290	-1.40212	0.97345
-1.60958	0.96155	0.93970	-1.37314	0.95732	-1.59794	0.96068	0.93871	-1.36445	0.97084
-1.54223	0.95625	0.93452	-1.32916	0.95304	-1.52851	0.95508	0.93324	-1.31882	0.96798
-1.45354	0.94819	0.92665	-1.26818	0.94783	-1.43709	0.94656	0.92491	-1.25551	0.96451
-1.33043	0.93468	0.91344	-1.1782	0.94146	-1.3102	0.93216	0.91085	-1.16201	0.96027
-1.17361	0.91271	0.89198	-1.05555	0.93480	-1.14856	0.90864	0.88786	-1.03454	0.95586
-0.98185	0.87693	0.85701	-0.89534	0.92866	-0.95091	0.87010	0.85020	-0.86809	0.95181
-0.76685	0.82255	0.80386	-0.70529	0.92388	-0.72929	0.81132	0.79276	-0.67084	0.94869
-0.52578	0.74108	0.72424	-0.48279	0.92044	-0.48082	0.72345	0.70691	-0.4402	0.94647
-0.25012	0.62251	0.60837	-0.22023	0.91812	-0.19667	0.59709	0.58344	-0.16845	0.94501
0.07620	0.46198	0.45148	0.097346		0.139668	0.43062	0.42077	0.159807	
				13.2121					**13.46636**
				0.943722					**0.961883**
31	32	33	34	35	36	37	38	39	40
Y^(6)	P^(6)	P^(6) cond.	Logit P^(6)	β6	Y^(7)	P^(7)	P^(7) cond.	Logit P^(7)	β7
-1.87533	0.97704	0.97704	-1.87533	0.96188	-1.87395	0.976975	0.97698	-1.87395	0.97364
-1.84268	0.97553	0.95313	-1.50613	0.98724	-1.8409	0.975441	0.95298	-1.50453	0.990532
-1.78411	0.97257	0.95024	-1.4747	0.98539	-1.78161	0.972434	0.95004	-1.47269	0.989258
-1.71304	0.96851	0.94627	-1.43428	0.98319	-1.70967	0.968304	0.94601	-1.43172	0.987743
-1.65160	0.96454	0.94239	-1.39736	0.98135	-1.64748	0.964255	0.94205	-1.39427	0.986477
-1.59042	0.96011	0.93806	-1.35883	0.97959	-1.58556	0.959733	0.93764	-1.35518	0.985267
-1.51966	0.95432	0.93241	-1.31212	0.97766	-1.51393	0.953817	0.93186	-1.30778	0.983945
-1.42648	0.94547	0.92376	-1.24729	0.97532	-1.41961	0.944759	0.92301	-1.24196	0.982343
-1.29715	0.93049	0.90913	-1.15151	0.97247	-1.2887	0.929392	0.90799	-1.14469	0.980399
-1.13240	0.90592	0.88512	-1.02091	0.96952	-1.12194	0.904121	0.88330	-1.01205	0.978393
-0.93094	0.86552	0.84564	-0.85041	0.96683	-0.91802	0.862479	0.84262	-0.83893	0.97658

-0.70506	0.80379	0.78533	-0.6485	0.96477	-0.68938	0.798791	0.78040	-0.634	0.975213
-0.45180	0.71169	0.69535	-0.41262	0.96333	-0.43302	0.703922	0.68771	-0.39473	0.974272
-0.16219	0.58039	0.56707	-0.13495	0.96240	-0.13987	0.569484	0.55637	-0.11322	0.97368
0.18062	0.41066	0.40123	0.200173		0.207133	0.397889	0.38873	0.226331	
				13.63096					**13.73774**
				0.97364					**0.981267**

41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
Y^(8)	P^(8)	P^(8) cond.	Logit P^(8)	β8	Y^(9)	P^(9)	P^(9) cond.	Logit P^(9)	β9
-1.87305	0.97694	0.97694	-1.87305	0.98127	-1.87247	0.97691	0.97691	-1.87247	0.98622
-1.83974	0.97539	0.95289	-1.50348	0.99267	-1.83899	0.97535	0.95283	-1.50281	0.99405
-1.77999	0.97235	0.94992	-1.47138	0.99177	-1.77894	0.97229	0.94984	-1.47053	0.99340
-1.70749	0.96817	0.94584	-1.43005	0.99070	-1.70607	0.96808	0.94573	-1.42897	0.99262
-1.64481	0.96407	0.94183	-1.39227	0.98980	-1.64307	0.96395	0.94169	-1.39097	0.99197
-1.5824	0.95949	0.93736	-1.35281	0.98895	-1.58035	0.95933	0.93718	-1.35127	0.99135
-1.51022	0.95349	0.93150	-1.30495	0.98803	-1.5078	0.95327	0.93126	-1.30312	0.99068
-1.41516	0.94429	0.92251	-1.23849	0.98691	-1.41226	0.94399	0.92219	-1.23623	0.98987
-1.28321	0.92867	0.90725	-1.14025	0.98555	-1.27965	0.92820	0.90676	-1.13737	0.98890
-1.11515	0.90294	0.88211	-1.00629	0.98416	-1.11074	0.90216	0.88133	-1.00254	0.98792
-0.90963	0.86048	0.84063	-0.83147	0.98292	-0.90419	0.85916	0.83933	-0.82661	0.98705
-0.6792	0.79550	0.77715	-0.62457	0.98200	-0.67259	0.79334	0.77502	-0.61844	0.98641
-0.42084	0.69882	0.68270	-0.3831	0.98138	-0.41292	0.69548	0.67942	-0.37555	0.98600
-0.12539	0.56237	0.54940	-0.09912	0.98100	-0.11598	0.55773	0.54485	-0.08995	0.98576
0.224333	0.38968	0.38069	0.24331		0.235506	0.38438	0.37550	0.254344	
				13.80711					**13.85221**
				0.986222					**0.989444**

51	**52**	**53**	**54**	**55**
Y^(10)	P^(10)	P^(10) cond.	Logit P^(10)	β10
-1.87209	0.97689	0.97689	-1.87209	0.98944
-1.83850	0.97533	0.95279	-1.50237	0.99495
-1.77826	0.97225	0.94979	-1.46998	0.99446
-1.70515	0.96802	0.94566	-1.42827	0.99387
-1.64195	0.96387	0.94160	-1.39012	0.99338

-1.57902	0.95922	0.93706	-1.35027	0.99291
-1.50623	0.95313	0.93111	-1.30192	0.99241
-1.41038	0.94379	0.92198	-1.23477	0.99181
-1.27734	0.92789	0.90645	-1.13549	0.99109
-1.10787	0.90165	0.88082	-1.0001	0.99036
-0.90064	0.85831	0.83847	-0.82345	0.98973
-0.66829	0.79193	0.77363	-0.61445	0.98928
-0.40778	0.69329	0.67727	-0.37063	0.98901
-0.10987	0.55471	0.54190	-0.08399	0.98886
0.24277	0.38094	0.37214	0.26152	
				13.88155
				0.991539

Table of attempts to estimate the values of a, β for the total female population									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
X	**l_x**	**$l_{x(10)}$**	**$_nQ_x$**	**$_np_{10}$**	**$_n{}^p{}_{10}$ cond.**	**logit($_n{}^p{}_{10}$) Y**	**$Y^s{}_x$**	**$Y^s{}_{x(10)}$**	**β**
1	0.98484		0.0158	0.98420		-2.0659	-2.08691		
5	0.98248						-2.01337		
10	0.98123	0.98123	0.00507	0.99493	0.98044	-1.95727	-1.9783	-1.97827	1.00000
15	0.98019	0.96179	0.00532	0.99468	0.9752	-1.83648	-1.9508	-1.61287	0.48399
20	0.97846	0.96009	0.00633	0.99367	0.9742	-1.81633	-1.9080	-1.59026	0.50251
25	0.97598	0.95766	0.00710	0.99290	0.9735	-1.80142	-1.8523	-1.55939	0.50138
30	0.97285	0.95459	0.00942	0.99058	0.9712	-1.75913	-1.7894	-1.52277	0.54380
35	0.96882	0.95064	0.01153	0.98847	0.9691	-1.72341	-1.7182	-1.47895	0.56336
40	0.96319	0.94511	0.02015	0.97985	0.9607	-1.59796	-1.6322	-1.42299	0.70484
45	0.95466	0.93674	0.02839	0.97161	0.9526	-1.50033	-1.5236	-1.34758	0.76500
50	0.94074	0.92308	0.05433	0.94567	0.9272	-1.27203	-1.3824	-1.24249	0.94015
55	0.91928	0.90203	0.07452	0.92548	0.9074	-1.14103	-1.2163	-1.10997	0.94671
60	0.88619	0.86956	0.15195	0.84805	0.8315	-0.79803	-1.0262	-0.94852	1.11375
65	0.83458	0.81891	0.17679	0.82321	0.8071	-0.71565	-0.8092	-0.75451	1.01340
70	0.75048	0.73639	0.32439	0.67561	0.6624	-0.33700	-0.5506	-0.51365	1.09893
75	0.62087	0.60922	0.36639	0.63361	0.6212	-0.24735	-0.2466	-0.22201	0.97515
80	0.44318	0.43486	1.00000	0.00000	0.0000	#DIV/0!	0.1141	0.13102	
									11.1530
									0.796641
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Y^(2)	**P^(2)**	**P^(2)**	**Logit P^(2)**	**β2**	**Y^(3)**	**P^(3)**	**P^(3)**	**Logit P^(3)**	**β3**
-1.97937	0.98127	0.98127	-1.97937	0.79664	-1.97105	0.98096	0.98096	-1.97105	0.87320
-1.95746	0.98045	0.96208	-1.61687	0.94727	-1.94704	0.98004	0.96139	-1.60738	0.96728
-1.92341	0.97910	0.96076	-1.59902	0.94007	-1.90972	0.97853	0.95990	-1.58775	0.96277
-1.87899	0.97720	0.95890	-1.57487	0.93085	-1.86103	0.97639	0.95780	-1.56109	0.95697
-1.82892	0.97486	0.95660	-1.54648	0.92075	-1.80615	0.97372	0.95518	-1.52964	0.95059
-1.77214	0.97192	0.95372	-1.51281	0.90976	-1.74391	0.97034	0.95187	-1.49222	0.94363
-1.70370	0.96794	0.94981	-1.47018	0.89730	-1.66889	0.96570	0.94732	-1.44468	0.93571
-1.61714	0.96210	0.94408	-1.41318	0.88287	-1.57401	0.95883	0.94058	-1.3809	0.92653
-1.50464	0.95299	0.93514	-1.33425	0.86646	-1.45070	0.94792	0.92987	-1.29234	0.91609
-1.37235	0.93961	0.92201	-1.23502	0.85050	-1.30569	0.93159	0.91386	-1.18082	0.90598
-1.22091	0.91996	0.90273	-1.11397	0.83622	-1.13970	0.90716	0.88989	-1.04479	0.89699
-1.04805	0.89052	0.87384	-0.96769	0.82424	-0.95023	0.86994	0.85338	-0.88069	0.88954
-0.84201	0.84344	0.82764	-0.78449	0.81450	-0.72439	0.80981	0.79439	-0.67581	0.88358
-0.59986	0.76848	0.75408	-0.56025	0.80737	-0.45897	0.71462	0.70102	-0.42607	0.87932

-0.31247	0.65134	0.63914	-0.28582		-0.14396	0.57149	0.56061	-0.12181	
				12.22481					**12.88819**

21	22	23	24	25	26	27	28	29	30
Y^(4)	**P^(4)**	**P^(4)**	**Logit P^(4)**	**β4**	**Y^(5)**	**P^(5)**	**P^(5) cond.**	**Logit P^(5)**	**β5**
-1.96590	0.98077	0.98077	-1.96590	0.92058	-1.96268	0.98065	0.98065	-1.96268	0.95021
-1.94059	0.97979	0.96095	-1.60151	0.97967	-1.93656	0.97963	0.96067	-1.59784	0.98742
-1.90124	0.97817	0.95936	-1.58076	0.97684	-1.89594	0.97794	0.95902	-1.57639	0.98564
-1.84991	0.97587	0.95710	-1.55254	0.97318	-1.84296	0.97554	0.95666	-1.54718	0.98334
-1.79205	0.97299	0.95428	-1.51917	0.96915	-1.78324	0.97252	0.95370	-1.51260	0.98080
-1.72644	0.96932	0.95068	-1.47938	0.96475	-1.71551	0.96866	0.94991	-1.47131	0.97802
-1.64735	0.96425	0.94570	-1.42873	0.95973	-1.63388	0.96331	0.94466	-1.41869	0.97485
-1.54732	0.95667	0.93827	-1.36066	0.95391	-1.53063	0.95527	0.93678	-1.34790	0.97116
-1.41732	0.94452	0.92635	-1.26600	0.94729	-1.39644	0.94229	0.92405	-1.24938	0.96698
-1.26444	0.92614	0.90833	-1.14671	0.94089	-1.23865	0.92253	0.90468	-1.12518	0.96293
-1.08944	0.89834	0.88106	-1.00125	0.93523	-1.05801	0.89245	0.87518	-0.97378	0.95937
-0.88969	0.85562	0.83917	-0.82602	0.93057	-0.85183	0.84601	0.82964	-0.79154	0.95644
-0.65159	0.78637	0.77125	-0.60769	0.92688	-0.60608	0.77068	0.75577	-0.56480	0.95414
-0.37177	0.67777	0.66473	-0.34223	0.92427	-0.31725	0.65351	0.64086	-0.28955	0.95252
-0.03966	0.51982	0.50982	-0.01965		0.025546	0.48723	0.47780	0.04443	
				13.30296					**13.56382**
				0.950211					**0.968844**

31	32	33	34	35	36	37	38	39	40
Y^(6)	P^(6)	P^(6) cond.	Logit P^(6)	β6	Y^(7)	P^(7)	P^(7) cond.	Logit P^(7)	β7
-1.96066	0.98057	0.98057	-1.96066	0.96884	-1.95938	0.98052	0.98052	-1.95938	0.98060
-1.93402	0.97953	0.96050	-1.59553	0.99229	-1.93242	0.97946	0.96039	-1.59407	0.99537
-1.89261	0.97780	0.95880	-1.57364	0.99117	-1.89050	0.97771	0.95866	-1.5719	0.99467
-1.83859	0.97533	0.95638	-1.54381	0.98973	-1.83583	0.97520	0.95620	-1.54168	0.99377
-1.77769	0.97222	0.95333	-1.50846	0.98813	-1.77420	0.97203	0.95310	-1.50585	0.99277
-1.70864	0.96824	0.94943	-1.46622	0.98639	-1.70430	0.96797	0.94912	-1.46301	0.99168
-1.62541	0.96270	0.94400	-1.41236	0.98439	-1.62006	0.96232	0.94357	-1.40835	0.99042
-1.52013	0.95436	0.93582	-1.33984	0.98207	-1.51351	0.95378	0.93520	-1.33474	0.98897
-1.38332	0.94085	0.92257	-1.23886	0.97943	-1.37503	0.93992	0.92161	-1.2322	0.98731
-1.22243	0.92018	0.90231	-1.11155	0.97688	-1.21219	0.91867	0.90077	-1.10292	0.98571
-1.03825	0.88860	0.87133	-0.95639	0.97464	-1.02577	0.88610	0.86884	-0.94539	0.98430
-0.82803	0.83971	0.82339	-0.76975	0.97280	-0.81300	0.83562	0.81934	-0.75596	0.98315
-0.57745	0.76041	0.74563	-0.53772	0.97135	-0.55939	0.75376	0.73908	-0.52059	0.98224
-0.28296	0.63782	0.62543	-0.25632	0.97034	-0.26132	0.62776	0.61554	-0.23532	0.98160
0.06656	0.46677	0.45770	0.084801		0.09244	0.45391	0.44507	0.110307	
				13.72845					**13.83258**

	0.980604		**0.988041**

Table of attempts to estimate the values of a,β for male Jordanians

41	42	43	44	45	46	47	48	49	50
Y^(8)	**P^(8)**	**P^(8) cond.**	**Logit P^(8)**	**β8**	**Y^(9)**	**P^(9)**	**P^(9) cond.**	**Logit P^(9)**	**β9**
-1.95857	0.98049	0.98049	-1.95857	0.98804	-1.95806	0.98047	0.98047	-1.95806	0.99275
-1.93141	0.97942	0.96032	-1.59315	0.99731	-1.93077	0.97940	0.96027	-1.59256	0.99854
-1.88917	0.97765	0.95858	-1.57081	0.99688	-1.88833	0.97761	0.95852	-1.57011	0.99828
-1.83408	0.97511	0.95609	-1.54033	0.99632	-1.83298	0.97506	0.95602	-1.53948	0.99794
-1.77198	0.97191	0.95295	-1.50419	0.99570	-1.77058	0.97184	0.95286	-1.50314	0.99756
-1.70156	0.96780	0.94892	-1.46097	0.99503	-1.69982	0.96769	0.94880	-1.45968	0.99715
-1.61668	0.96207	0.94330	-1.40581	0.99425	-1.61454	0.96191	0.94313	-1.4042	0.99667
-1.50932	0.95341	0.93481	-1.33151	0.99334	-1.50667	0.95317	0.93456	-1.32946	0.99612
-1.36979	0.93932	0.92100	-1.22798	0.99231	-1.36647	0.93894	0.92061	-1.22531	0.99548
-1.20571	0.91769	0.89979	-1.09745	0.99131	-1.20161	0.91707	0.89916	-1.09398	0.99487
-1.01789	0.88450	0.86725	-0.93841	0.99043	-1.01289	0.88348	0.86622	-0.93399	0.99432
-0.8035	0.83299	0.81674	-0.74722	0.98971	-0.79748	0.83131	0.81508	-0.74168	0.99387
-0.54796	0.74949	0.73487	-0.50974	0.98914	-0.54072	0.74677	0.73218	-0.50287	0.99351
-0.24763	0.62134	0.60922	-0.22202	0.98873	-0.23896	0.61726	0.60520	-0.21359	0.99325
0.108811	0.44581	0.43711	0.126448		0.11918	0.44069	0.43208	0.136675	
				13.89852					**13.94032**
				0.992752					**0.995737**

51	52	53	54	55
Y^(10)	**P^(10)**	**P^(10) cond.**	**Logit P^(10)**	**β10**
-1.95774	0.98046	0.98046	-1.95774	0.99574
-1.93036	0.97938	0.96024	-1.59219	0.99933
-1.8878	0.97759	0.95849	-1.56967	0.99917
-1.83228	0.97502	0.95597	-1.53894	0.99897
-1.76969	0.97179	0.95280	-1.50248	0.99874
-1.69872	0.96762	0.94872	-1.45886	0.99850
-1.61318	0.96181	0.94302	-1.40318	0.99821
-1.50498	0.95302	0.93440	-1.32816	0.99788
-1.36437	0.93870	0.92036	-1.22361	0.99749
-1.19901	0.91668	0.89876	-1.09178	0.99712

1	2	3	4	5	6	7	8	9	10

-1.00972	0.88282	0.86557	-0.93118	0.99679
-0.79367	0.83024	0.81402	-0.73816	0.99651
-0.53614	0.74503	0.73047	-0.4985	0.99628
-0.23347	0.61466	0.60265	-0.20825	0.99612
0.12575	0.43745	0.42891	0.143159	
				13.96683
				0.997631

X	lx	lx(10)	nQx	np10	np10 cond.	Logit (np10) Y	Ysx	Ysx(10)	β
1	0.97856		0.0184	0.98160		-1.9884	-1.91041		
5	0.97521						-1.83611		
10	0.97303	0.97303	0.00438	0.99562	0.97684	-1.87085	-1.7928	-1.79284	1.00000
15	0.97119	0.94500	0.00675	0.99325	0.97024	-1.74226	-1.7589	-1.42190	0.50390
20	0.96758	0.94148	0.00993	0.99007	0.96713	-1.69095	-1.6980	-1.38908	0.57059
25	0.96261	0.93665	0.00980	0.99020	0.96726	-1.69301	-1.6241	-1.34680	0.52413
30	0.95773	0.93190	0.01233	0.98767	0.96479	-1.65525	-1.5602	-1.30812	0.55316
35	0.95227	0.92659	0.01652	0.98348	0.96070	-1.59820	-1.4966	-1.26771	0.60714
40	0.94512	0.91963	0.02580	0.97420	0.95163	-1.48965	-1.4231	-1.21867	0.72103
45	0.93416	0.90897	0.03839	0.96161	0.93933	-1.36990	-1.3262	-1.15054	0.81397
50	0.91556	0.89087	0.06507	0.93493	0.91327	-1.17711	-1.1917	-1.04982	0.94273
55	0.88503	0.86116	0.09783	0.90217	0.88127	-1.00226	-1.0205	-0.91248	0.98820
60	0.83508	0.81256	0.16501	0.83499	0.81565	-0.74356	-0.8110	-0.73336	1.05760
65	0.75995	0.73945	0.19474	0.80526	0.78661	-0.65230	-0.5762	-0.52157	0.96203
70	0.65154	0.63397	0.30632	0.69368	0.67761	-0.37141	-0.3129	-0.27464	0.98853
75	0.50591	0.49227	0.35412	0.64588	0.63092	-0.26807	-0.0118	0.01547	0.89328
80	0.33422	0.32521	1.00000	0.00000	0.00000	#DIV/0!	0.3446	0.36497	
									11.1263
									0.794735

11	12	13	14	15	16	17	18	19	20
$\hat{Y}(2)$	**$\hat{P}(2)$**	**$\hat{P}(2)$**	**Logit $\hat{P}(2)$**	**β2**	**$\hat{Y}(3)$**	**$\hat{P}(3)$**	**$\hat{P}(3)$**	**Logit $\hat{P}(3)$**	**β3**
-1.89498	0.97790	0.97790	-1.89498	0.79473	-1.88653	0.97753	0.97753	-1.88653	0.86666
-1.86800	0.97671	0.95512	-1.52897	0.94050	-1.85711	0.97621	0.95427	-1.51915	0.96061
-1.81961	0.97440	0.95287	-1.50327	0.93060	-1.80434	0.97363	0.95175	-1.49099	0.95414
-1.76089	0.97130	0.94984	-1.47052	0.91889	-1.74030	0.97013	0.94834	-1.45498	0.94647
-1.71013	0.96833	0.94693	-1.44085	0.90915	-1.68494	0.96675	0.94503	-1.42223	0.94007
-1.65958	0.96508	0.94375	-1.41007	0.89986	-1.62982	0.96302	0.94138	-1.38816	0.93394
-1.60112	0.96092	0.93968	-1.37298	0.88969	-1.56607	0.95820	0.93667	-1.34701	0.92723
-1.52413	0.95471	0.93361	-1.32177	0.87731	-1.48211	0.95093	0.92957	-1.29004	0.91907
-1.41727	0.94451	0.92364	-1.24645	0.86215	-1.36558	0.93884	0.91775	-1.20607	0.90907
-1.28115	0.92840	0.90788	-1.14402	0.84615	-1.21714	0.91940	0.89875	-1.0917	0.89857
-1.11470	0.90286	0.88291	-1.01013	0.83113	-1.03563	0.88808	0.86813	-0.94225	0.88880
-0.92807	0.86485	0.84574	-0.85077	0.81913	-0.83211	0.84080	0.82191	-0.76468	0.88112
-0.71882	0.80809	0.79023	-0.66317	0.81017	-0.60392	0.76992	0.75262	-0.55632	0.87549
-0.47954	0.72294	0.70696	-0.44034	0.80383	-0.34298	0.66507	0.65013	-0.3098	0.87161
-0.19630	0.59691	0.58372	-0.16903		-0.03410	0.51704	0.50543	-0.01085	
				12.13328					**12.77287**

				0.86666					**0.91235**

21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Y^(4)	**P^(4)**	**P^(4)**	**Logit P^(4)**	**β4**	**Y^(5)**	**P^(5)**	**P^(5) cond.**	**Logit P^(5)**	**β5**
-1.88115	0.97730	0.97730	-1.88115	0.91235	-1.87771	0.977144	0.97714	-1.87771	0.94164
-1.85018	0.97588	0.95373	-1.5129	0.97338	-1.84575	0.975672	0.95337	-1.5089	0.98158
-1.79463	0.97312	0.95103	-1.48318	0.96913	-1.78841	0.972796	0.95056	-1.47817	0.97874
-1.72722	0.96936	0.94736	-1.44506	0.96406	-1.71883	0.968861	0.94672	-1.43869	0.97537
-1.66894	0.96571	0.94378	-1.41033	0.95982	-1.65868	0.96502	0.94296	-1.40267	0.97254
-1.61092	0.96165	0.93982	-1.37414	0.95577	-1.59879	0.960743	0.93878	-1.36509	0.96984
-1.54380	0.95638	0.93467	-1.33034	0.95133	-1.52952	0.955172	0.93334	-1.31958	0.96688
-1.45542	0.94838	0.92685	-1.26963	0.94592	-1.43831	0.946678	0.92504	-1.25645	0.96327
-1.33274	0.93496	0.91373	-1.18005	0.93931	-1.31169	0.932351	0.91104	-1.16321	0.95888
-1.17648	0.91317	0.89244	-1.05795	0.93240	-1.15041	0.908945	0.88817	-1.03609	0.95430
-0.98540	0.87770	0.85777	-0.89845	0.92601	-0.95319	0.870613	0.85071	-0.87011	0.95009
-0.77115	0.82380	0.80510	-0.70923	0.92104	-0.73207	0.812164	0.79360	-0.67338	0.94685
-0.53094	0.74305	0.72618	-0.48766	0.91746	-0.48413	0.724775	0.70821	-0.44335	0.94455
-0.25624	0.62539	0.61119	-0.22616	0.91504	-0.20062	0.598985	0.58529	-0.17227	0.94302
0.06892	0.46559	0.45502	0.090195		0.134985	0.432915	0.42302	0.155194	
				13.18303					**13.44756**
				0.941645					**0.96054**
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Y^(6)	**P^(6)**	**P^(6) cond.**	**Logit P^(6)**	**β6**	**Y^(7)**	**P^(7)**	**P^(7) cond.**	**Logit P^(7)**	**β7**
-1.87549	0.97704	0.97704	-1.87549	0.96054	-1.87405	0.97698	0.97698	-1.87405	0.97277
-1.84288	0.97554	0.95314	-1.50632	0.986866	-1.84103	0.97545	0.952992	-1.50465	0.990288
-1.7844	0.97258	0.95026	-1.47493	0.984952	-1.7818	0.97244	0.950059	-1.47284	0.988972
-1.71342	0.96853	0.94630	-1.43457	0.982674	-1.70992	0.96832	0.946028	-1.43191	0.987406
-1.65207	0.96457	0.94243	-1.39771	0.980766	-1.64778	0.96428	0.942079	-1.3945	0.986097
-1.59098	0.96015	0.93811	-1.35924	0.978943	-1.58592	0.95976	0.937667	-1.35545	0.984847
-1.52032	0.95438	0.93247	-1.31262	0.976946	-1.51436	0.95385	0.931897	-1.3081	0.983479
-1.42727	0.94555	0.92385	-1.2479	0.974521	-1.42012	0.94481	0.923063	-1.24235	0.981822
-1.29811	0.93062	0.90926	-1.15229	0.97157	-1.28932	0.92947	0.908078	-1.14519	0.979812
-1.1336	0.90612	0.88532	-1.02192	0.968506	-1.12271	0.90426	0.883439	-1.01271	0.977736
-0.93242	0.86586	0.84598	-0.85172	0.965713	-0.91897	0.86271	0.842846	-0.83978	0.975857
-0.70685	0.80435	0.78589	-0.65015	0.963581	-0.69054	0.79916	0.780767	-0.63507	0.974439

-0.45395	0.71257	0.69621	-0.41466	0.962085	-0.43441	0.70450	0.688284	-0.39605	0.973462
-0.16474	0.58163	0.56828	-0.13742	0.961114	-0.14152	0.57029	0.557165	-0.11483	0.972845
0.177594	0.41213	0.40266	0.197188		0.205171	0.39883	0.389649	0.224394	
				13.61878					**13.72983**
				0.97277					**0.980702**

41	42	43	44	45	46	47	48	49	50
Y^(8)	**P^(8)**	**P^(8) cond.**	**Logit P^(8)**	**β8**	**Y^(9)**	**P^(9)**	**P^(9) cond.**	**Logit P^(9)**	**β9**
-1.87312	0.97694	0.97694	-1.87312	0.98070	-1.87251	0.97691	0.97691	-1.87251	0.98585
-1.83983	0.97539	0.95289	-1.50356	0.99251	-1.83905	0.97535	0.95283	-1.50286	0.99395
-1.78011	0.97235	0.94993	-1.47148	0.99158	-1.77902	0.97229	0.94985	-1.47059	0.99327
-1.70765	0.96818	0.94585	-1.43018	0.99048	-1.70618	0.96809	0.94574	-1.42905	0.99247
-1.64501	0.96408	0.94185	-1.39242	0.98956	-1.6432	0.96396	0.94170	-1.39106	0.99181
-1.58263	0.95951	0.93738	-1.35298	0.98868	-1.5805	0.95934	0.93719	-1.35138	0.99117
-1.51049	0.95351	0.93152	-1.30516	0.98772	-1.50798	0.95329	0.93128	-1.30325	0.99048
-1.41549	0.94433	0.92255	-1.23875	0.98657	-1.41248	0.94401	0.92221	-1.2364	0.98965
-1.28362	0.92872	0.90731	-1.14058	0.98517	-1.27992	0.92823	0.90680	-1.13758	0.98866
-1.11565	0.90303	0.88220	-1.00672	0.98374	-1.11107	0.90222	0.88139	-1.00282	0.98764
-0.91025	0.86063	0.84078	-0.83202	0.98245	-0.90459	0.85926	0.83942	-0.82697	0.98674
-0.67995	0.79574	0.77739	-0.62527	0.98150	-0.67308	0.79350	0.77518	-0.6189	0.98609
-0.42174	0.69920	0.68307	-0.38397	0.98085	-0.41351	0.69572	0.67966	-0.37611	0.98566
-0.12646	0.56290	0.54992	-0.10016	0.98046	-0.11668	0.55808	0.54519	-0.09063	0.98541
0.223059	0.39028	0.38128	0.242052		0.234678	0.38477	0.37588	0.253527	
				13.80197					**13.84887**
				0.985855					**0.989205**

51	52	53	54	55
Y^(10)	**P^(10)**	**P^(10) cond.**	**Logit P^(10)**	**β10**
-1.87212	0.97689	0.97689	-1.87212	0.98920
-1.83854	0.97533	0.95279	-1.5024	0.99489
-1.77831	0.97226	0.94979	-1.47002	0.99438
-1.70522	0.96803	0.94566	-1.42832	0.99377
-1.64203	0.96388	0.94161	-1.39018	0.99327
-1.57912	0.95923	0.93707	-1.35034	0.99280
-1.50635	0.95314	0.93112	-1.30201	0.99228
-1.41052	0.94380	0.92199	-1.23488	0.99166

-1.27751	0.92791	0.90647	-1.13563	0.99092
-1.10809	0.90169	0.88086	-1.00029	0.99018
-0.90091	0.85837	0.83853	-0.82368	0.98953
-0.66861	0.79203	0.77373	-0.61475	0.98907
-0.40816	0.69345	0.67743	-0.37099	0.98878
-0.11032	0.55494	0.54211	-0.08443	0.98863
0.242232	0.38120	0.37239	0.260988	
				13.87938
				0.991384

21	22	23	24	25	26	27	28	29	30

Table of attempts to estimate the values of a, β for Jordanians females									
1	2	3	4	5	6	7	8	9	10
X	l_x	$l_{x(10)}$	${}_nQ_x$	${}_np_{10}$	${}_n^{p}{}_{10}$ cond.	logit(${}_n^{p}{}_{10}$) Y	Y^s_x	$Y^s_{x(10)}$	β
1	0.98484		0.0158	0.9842		-2.06591	-2.08691		
5	0.98248						-2.01337		
10	0.98123	0.98123	0.00491	0.99509	0.98044	-1.95727	-1.97827	-1.97827	1
15	0.98019	0.96179	0.00530	0.99470	0.97524	-1.83674	-1.95078	-1.61287	0.48345
20	0.97846	0.96009	0.00635	0.99365	0.97422	-1.81597	-1.90803	-1.59026	0.50324
25	0.97598	0.95766	0.00722	0.99278	0.97336	-1.79911	-1.85228	-1.55939	0.50576
30	0.97285	0.95459	0.01002	0.98998	0.97062	-1.74882	-1.78943	-1.52277	0.56208
35	0.96882	0.95064	0.01019	0.98981	0.97045	-1.74588	-1.71815	-1.47895	0.52639
40	0.96319	0.94511	0.01898	0.98102	0.96183	-1.6134	-1.63224	-1.42299	0.68158
45	0.95466	0.93674	0.02532	0.97468	0.95561	-1.53469	-1.52358	-1.34758	0.71852
50	0.94074	0.92308	0.04762	0.95238	0.93376	-1.32294	-1.38237	-1.24249	0.87986
55	0.91928	0.90203	0.06730	0.93270	0.91445	-1.18463	-1.2163	-1.10997	0.90208
60	0.88619	0.86956	0.14103	0.85897	0.84217	-0.83722	-1.0262	-0.94852	1.07933
65	0.83458	0.81891	0.16304	0.83696	0.82059	-0.76018	-0.80922	-0.75451	0.97998
70	0.75048	0.73639	0.30047	0.69953	0.68584	-0.39038	-0.55059	-0.51365	1.06501
75	0.62087	0.60922	0.33814	0.66186	0.64891	-0.30712	-0.24662	-0.22201	0.94310
80+	0.44318	0.43486	1	0	0	#DIV/0!	0.114133	0.131022	
									10.8304
									0.77360
11	12	13	14	15	16	17	18	19	20
$Y^\wedge(2)$	$P^\wedge(2)$	$P^\wedge(2)$	Logit $P^\wedge(2)$	β2	$Y^\wedge(3)$	$P^\wedge(3)$	$P^\wedge(3)$	Logit $P^\wedge(3)$	β3
-1.98187	0.98136	0.98136	-1.98187	0.77360	-1.97258	0.98102	0.98102	-1.97258	0.85906
-1.9606	0.98057	0.96229	-1.61972	0.94125	-1.94897	0.98012	0.96152	-1.60914	0.96359
-1.92753	0.97927	0.96102	-1.60241	0.93325	-1.91224	0.97864	0.96006	-1.58983	0.95858
-1.8844	0.97744	0.95922	-1.57901	0.92301	-1.86435	0.97654	0.95800	-1.56364	0.95214
-1.83578	0.97519	0.95702	-1.55153	0.91180	-1.81035	0.97393	0.95545	-1.53276	0.94507
-1.78064	0.97238	0.95426	-1.51897	0.89963	-1.74912	0.97064	0.95221	-1.49603	0.93736
-1.71418	0.96858	0.95053	-1.47779	0.88583	-1.67532	0.96613	0.94779	-1.44941	0.92858
-1.63012	0.96304	0.94509	-1.42279	0.86987	-1.58198	0.95945	0.94124	-1.3869	0.91842
-1.52088	0.95443	0.93664	-1.34670	0.85172	-1.46066	0.94889	0.93088	-1.30014	0.90686
-1.39241	0.94185	0.92430	-1.25110	0.83404	-1.31800	0.93314	0.91543	-1.19092	0.89564
-1.24535	0.92349	0.90627	-1.13449	0.81819	-1.15469	0.90965	0.89239	-1.05767	0.88567
-1.07749	0.89613	0.87943	-0.99353	0.80485	-0.96829	0.87398	0.85739	-0.89688	0.87738
-0.87741	0.85256	0.83667	-0.81683	0.79395	-0.74611	0.81641	0.80092	-0.69601	0.87074

-0.64227	0.78322	0.76862	-0.60027	0.78591	-0.48498	0.72511	0.71135	-0.45097	0.86596
-0.36319	0.67401	0.66145	-0.33487		-0.17507	0.58665	0.57552	-0.1522	
				12.0269					**12.7650**
				0.85906					**0.91179**

Y^(4)	**P^(4)**	**P^(4)**	**Logit P^(4)**	**β4**	**Y^(5)**	**P^(5)**	**P^(5) cond.**	**Logit P^(5)**	**β5**
-1.96686	0.98080	0.98080	-1.96686	0.91179	-1.96328	0.98067	0.98067	-1.96328	0.94470
-1.94179	0.97984	0.96103	-1.6026	0.97737	-1.93731	0.97966	0.960723	-1.59852	0.98598
-1.90281	0.97824	0.95946	-1.58206	0.97422	-1.89693	0.977987	0.959082	-1.5772	0.98400
-1.85197	0.97597	0.95723	-1.55413	0.97017	-1.84425	0.975601	0.956742	-1.54818	0.98144
-1.79467	0.97313	0.95445	-1.52112	0.96570	-1.78488	0.972609	0.953808	-1.51383	0.97863
-1.72968	0.96951	0.95090	-1.48177	0.96082	-1.71755	0.968783	0.950057	-1.47281	0.97554
-1.65135	0.96452	0.94601	-1.4317	0.95526	-1.63639	0.963483	0.944858	-1.42057	0.97203
-1.55227	0.95708	0.93871	-1.36443	0.94881	-1.53374	0.955531	0.93706	-1.35029	0.96794
-1.42351	0.94516	0.92702	-1.27091	0.94147	-1.40033	0.942712	0.924489	-1.25248	0.96330
-1.2721	0.92718	0.90939	-1.15308	0.93438	-1.24345	0.923218	0.905372	-1.1292	0.95882
-1.09877	0.90003	0.88275	-1.00937	0.92810	-1.06386	0.893569	0.876296	-0.97891	0.95486
-0.90093	0.85837	0.84190	-0.83621	0.92292	-0.85888	0.847841	0.831452	-0.79798	0.95161
-0.66511	0.79088	0.77570	-0.62038	0.91882	-0.61455	0.773662	0.758707	-0.5728	0.94906
-0.38795	0.68480	0.67165	-0.35784	0.91591	-0.3274	0.65809	0.645369	-0.29937	0.94726
-0.05902	0.52948	0.51931	-0.03865		0.013406	0.493298	0.483762	0.032487	
				13.2257					**13.5152**
				0.94470					**0.96537**
31	32	33	34	35	36	37	38	39	40
Y^(6)	P^(6)	P^(6) cond.	Logit P^(6)	β6	Y^(7)	P^(7)	P^(7) cond.	Logit P^(7)	β7
-1.96104	0.98058	0.98058	-1.96104	0.96537	-1.95962	0.98053	0.98053	-1.95962	0.97841
-1.93449	0.97955	0.96053	-1.59596	0.99138	-1.93272	0.979476	0.960406	-1.59434	0.99479
-1.89323	0.97783	0.95884	-1.57415	0.99014	-1.8909	0.977726	0.95869	-1.57223	0.99402
-1.8394	0.97537	0.95643	-1.54444	0.98854	-1.83634	0.975221	0.956234	-1.54208	0.99301
-1.77873	0.97228	0.95340	-1.50924	0.98677	-1.77485	0.972069	0.953143	-1.50634	0.99190
-1.70992	0.96832	0.94952	-1.46717	0.98482	-1.70511	0.968023	0.949176	-1.46361	0.99069
-1.62699	0.96282	0.94412	-1.41354	0.98261	-1.62106	0.962389	0.943651	-1.4091	0.98930
-1.52209	0.95453	0.93600	-1.34135	0.98003	-1.51475	0.953889	0.935317	-1.33569	0.98768
-1.38577	0.94112	0.92285	-1.24083	0.97710	-1.37658	0.940091	0.921788	-1.23345	0.98584
-1.22545	0.92063	0.90275	-1.1141	0.97428	-1.2141	0.918953	0.901061	-1.10453	0.98406

-1.04193	0.88933	0.87206	-0.95964	0.97178	-1.0281	0.886573	0.869312	-0.94744	0.98250
-0.83247	0.84090	0.82457	-0.77382	0.96974	-0.81581	0.836391	0.820107	-0.75854	0.98122
-0.58279	0.76235	0.74754	-0.54278	0.96814	-0.56276	0.755011	0.740311	-0.52379	0.98021
-0.28935	0.64077	0.62833	-0.26253	0.96701	-0.26536	0.62965	0.61739	-0.23924	0.97950
0.058909	0.47058	0.46144	0.077267		0.087608	0.456308	0.447424	0.105543	
				13.6977					**13.8131**
				0.97841					**0.98665**

41	42	43	44	45	46	47	48	49	50
Y^(8)	P^(8)	P^(8) cond.	Logit P^(8)	β8	Y^(9)	P^(9)	P^(9) cond.	Logit P^(9)	β9
-1.95872	0.98050	0.98050	-1.95872	0.98665	-1.95816	0.98047	0.98047	-1.95816	0.99187
-1.9316	0.97943	0.96033	-1.59332	0.99695	-1.93089	0.97940	0.96028	-1.59267	0.99831
-1.88942	0.97766	0.95859	-1.57101	0.99647	-1.88849	0.97762	0.95853	-1.57024	0.99802
-1.83441	0.97513	0.95611	-1.54058	0.99585	-1.83319	0.97507	0.95603	-1.53964	0.99764
-1.7724	0.97194	0.95298	-1.5045	0.99516	-1.77084	0.97185	0.95288	-1.50334	0.99722
-1.70207	0.96783	0.94896	-1.46135	0.99440	-1.70015	0.96771	0.94882	-1.45992	0.99675
-1.61731	0.96212	0.94335	-1.40629	0.99353	-1.61494	0.96194	0.94316	-1.40450	0.99622
-1.5101	0.95348	0.93488	-1.33211	0.99253	-1.50716	0.95322	0.93461	-1.32984	0.99560
-1.37077	0.93943	0.92111	-1.22877	0.99138	-1.36709	0.93901	0.92068	-1.22581	0.99489
-1.20692	0.91788	0.89998	-1.09847	0.99027	-1.20238	0.91719	0.89928	-1.09463	0.99420
-1.01936	0.88480	0.86755	-0.93972	0.98929	-1.01382	0.88367	0.86642	-0.93481	0.99359
-0.80528	0.83349	0.81723	-0.74885	0.98848	-0.79861	0.83163	0.81539	-0.74271	0.99309
-0.55009	0.75030	0.73566	-0.51177	0.98785	-0.54208	0.74728	0.73269	-0.50415	0.99269
-0.25019	0.62255	0.61040	-0.22451	0.98740	-0.24058	0.61802	0.60595	-0.21517	0.99241
0.105753	0.44732	0.43860	0.12343		0.11724	0.44165	0.43302	0.13476	
				13.8862					**13.9325**
				0.99187					**0.99518**

51	52	53	54	55
Y^(10)	P^(10)	P^(10) cond.	Logit P^(10)	β10
-1.95780	0.98046	0.98046	-1.95780	0.99518
-1.93044	0.97938	0.96025	-1.59226	0.99918
-1.88790	0.97759	0.95849	-1.56975	0.99900
-1.83241	0.97503	0.95598	-1.53904	0.99878

-1.76986	0.97180	0.95281	-1.50260	0.99852
-1.69893	0.96764	0.94873	-1.45902	0.99824
-1.61343	0.96183	0.94304	-1.40337	0.99792
-1.50530	0.95305	0.93443	-1.32840	0.99755
-1.36476	0.93875	0.92040	-1.22393	0.99712
-1.19950	0.91675	0.89884	-1.09219	0.99670
-1.01031	0.88295	0.86569	-0.93170	0.99632
-0.79438	0.83044	0.81422	-0.73882	0.99601
-0.53699	0.74535	0.73079	-0.49932	0.99576
-0.23449	0.61514	0.60312	-0.20925	0.99558
0.12452	0.43806	0.429500	0.14195	
				13.9619
				0.99728

Table of attempts to estimate the values of (a, β) civil status and passports/males

1	2	3	4	5	6	7	8	9	10
X	lx	lx(10)	nQx	np10	np10 cond.	logit(np10) Y	Ysx	Ysx(10)	β
1	0.97856		0.0184	0.98160		-1.9884	-1.91041		
5	0.97521						-1.83611		
10	0.97303	0.97303	0.00292	0.99708	0.97684	-1.87085	-1.7928	-1.79284	1.00000
15	0.97119	0.94500	0.00429	0.99571	0.9726	-1.78550	-1.7589	-1.42190	0.41537
20	0.96758	0.94148	0.00637	0.99363	0.9706	-1.74861	-1.6980	-1.38908	0.45999
25	0.96261	0.93665	0.00802	0.99198	0.9690	-1.72110	-1.6241	-1.34680	0.47429
30	0.95773	0.93190	0.01034	0.98966	0.9667	-1.68470	-1.5602	-1.30812	0.50428
35	0.95227	0.92659	0.01325	0.98675	0.9639	-1.64224	-1.4966	-1.26771	0.53862
40	0.94512	0.91963	0.01856	0.98144	0.9587	-1.57238	-1.4231	-1.21867	0.60143
45	0.93416	0.90897	0.03204	0.96796	0.9455	-1.42712	-1.3262	-1.15054	0.73867
50	0.91556	0.89087	0.05146	0.94854	0.9266	-1.26756	-1.1917	-1.04982	0.83762
55	0.88503	0.86116	0.08539	0.91461	0.8934	-1.06308	-1.0205	-0.91248	0.92726
60	0.83508	0.81256	0.11605	0.88395	0.8635	-0.92222	-0.8110	-0.73336	0.90582
65	0.75995	0.73945	0.18303	0.81697	0.7980	-0.68707	-0.5762	-0.52157	0.93700
70	0.65154	0.63397	0.28572	0.71428	0.6977	-0.41827	-0.3129	-0.27464	0.95988
75	0.50591	0.49227	0.41481	0.58519	0.5716	-0.14426	-0.0118	0.01547	0.95756
80	0.33422	0.32521	1.00000	0.00000	0.0000	#DIV/0!	0.3446	0.36497	
									10.2578
									0.73270

11	12	13	14	15	16	17	18	19	20
Y^(2)	P^(2)	P^(2)	Logit P^(2)	β2	Y^(3)	P^(3)	P^(3)	Logit P^(3)	β3
-1.90228	0.97822	0.978216	-1.90228	0.73270	-1.89110	0.97773	0.97773	-1.8911	0.82773
-1.87740	0.97713	0.955844	-1.53744	0.92316	-1.86301	0.97648	0.95474	-1.52446	0.94972
-1.83279	0.97505	0.953809	-1.51384	0.91033	-1.81261	0.97405	0.95236	-1.49764	0.94139
-1.77865	0.97228	0.951095	-1.48387	0.89522	-1.75145	0.97077	0.94916	-1.4634	0.93153
-1.73185	0.96964	0.948514	-1.45680	0.88267	-1.69857	0.96762	0.94607	-1.43232	0.92330
-1.68525	0.96677	0.945710	-1.42879	0.87073	-1.64593	0.96415	0.94268	-1.40005	0.91545
-1.63135	0.96313	0.942146	-1.39512	0.85768	-1.58504	0.95969	0.93832	-1.36111	0.90685
-1.56037	0.95774	0.936877	-1.34873	0.84183	-1.50485	0.95301	0.93179	-1.30727	0.89639
-1.46185	0.94901	0.928333	-1.28068	0.82238	-1.39355	0.94198	0.92100	-1.22802	0.88357
-1.33636	0.93540	0.915021	-1.18827	0.80181	-1.25179	0.92439	0.90381	-1.12015	0.87007
-1.18290	0.91418	0.894268	-1.06755	0.78235	-1.07843	0.89631	0.87635	-0.97916	0.85744
-1.01084	0.88305	0.863818	-0.92369	0.76663	-0.88405	0.85422	0.83520	-0.81147	0.84743
-0.81793	0.83697	0.818737	-0.75391	0.75470	-0.66611	0.79121	0.77359	-0.61435	0.84001

-0.59732	0.76757	0.750849	-0.55157	0.74607	-0.41689	0.69715	0.68163	-0.38064	0.83483
-0.33618	0.66203	0.647612	-0.30428		-0.12189	0.56064	0.54816	-0.09662	
				11.58825					**12.42572**
				0.82773					**0.88755**

21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Y^(4)	P^(4)	P^(4)	Logit P^(4)	β4	Y^(5)	P^(5)	P^(5) cond.	Logit P^(5)	β5
-1.88407	0.97743	0.97743	-1.88407	0.88755	-1.87958	0.97723	0.97723	-1.87958	0.92572
-1.85394	0.97606	0.95402	-1.51629	0.96645	-1.84816	0.97579	0.95357	-1.51108	0.97712
-1.79990	0.97340	0.95142	-1.48742	0.96099	-1.79179	0.97297	0.95082	-1.48089	0.97351
-1.73432	0.96978	0.94789	-1.45045	0.95451	-1.72339	0.96914	0.94707	-1.44216	0.96922
-1.67762	0.96628	0.94446	-1.41679	0.94909	-1.66426	0.96539	0.94341	-1.40683	0.96562
-1.62118	0.96240	0.94067	-1.38176	0.94391	-1.60538	0.96124	0.93935	-1.37001	0.96218
-1.55589	0.95738	0.93576	-1.3394	0.93823	-1.53729	0.95583	0.93406	-1.32544	0.95841
-1.46991	0.94978	0.92834	-1.28073	0.93132	-1.44761	0.94761	0.92603	-1.26363	0.95383
-1.35056	0.93709	0.91594	-1.19421	0.92286	-1.32314	0.93378	0.91252	-1.17238	0.94823
-1.19855	0.91661	0.89592	-1.07632	0.91399	-1.16459	0.91126	0.89051	-1.04799	0.94237
-1.01266	0.88343	0.86349	-0.92228	0.90576	-0.9707	0.87451	0.85459	-0.88554	0.93698
-0.80424	0.83320	0.81439	-0.7394	0.89932	-0.75332	0.81856	0.79992	-0.6929	0.93280
-0.57055	0.75788	0.74077	-0.525	0.89464	-0.50958	0.73481	0.71808	-0.46747	0.92980
-0.30332	0.64717	0.63256	-0.27162	0.89144	-0.23086	0.61342	0.59945	-0.20159	0.92780
0.01300	0.49350	0.48236	0.035299		0.099068	0.45063	0.44037	0.11984	
				12.96004					**13.30361**
				0.925717					**0.950258**
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Y^(6)	P^(6)	P^(6) cond.	Logit P^(6)	β6	Y^(7)	P^(7)	P^(7) cond.	Logit P^(7)	β7
-1.8767	0.97710	0.97710	-1.8767	0.95026	-1.87483	0.97702	0.97702	-1.87483	0.96611
-1.84444	0.97561	0.95327	-1.50772	0.98399	-1.84204	0.97550	0.95307	-1.50556	0.988425
-1.78658	0.97270	0.95042	-1.47669	0.98157	-1.78321	0.97252	0.95017	-1.47398	0.986783
-1.71637	0.96871	0.94653	-1.43681	0.97870	-1.71183	0.96844	0.94618	-1.43336	0.984829
-1.65567	0.96482	0.94272	-1.40041	0.97629	-1.65012	0.96444	0.94227	-1.39625	0.983193
-1.59523	0.96047	0.93848	-1.36243	0.97399	-1.58867	0.95997	0.93791	-1.35752	0.981631
-1.52533	0.95481	0.93294	-1.31641	0.97146	-1.5176	0.95414	0.93221	-1.31056	0.97992
-1.43327	0.94617	0.92450	-1.25256	0.96840	-1.42401	0.94522	0.92349	-1.24538	0.977844
-1.3055	0.93157	0.91023	-1.15824	0.96466	-1.29411	0.93010	0.90872	-1.14906	0.975321
-1.14275	0.90767	0.88688	-1.02964	0.96077	-1.12864	0.90528	0.88447	-1.01772	0.972706

-0.94372	0.86846	0.84858	-0.86174	0.95720	-0.9263	0.86443	0.84456	-0.84629	0.97033
-0.72057	0.80863	0.79011	-0.66281	0.95447	-0.69942	0.80200	0.78357	-0.64329	0.968523
-0.47038	0.71925	0.70278	-0.43029	0.95254	-0.44505	0.70891	0.69262	-0.40619	0.967264
-0.18427	0.59110	0.57757	-0.1564	0.95126	-0.15417	0.57648	0.56323	-0.12714	0.966455
0.154406	0.42340	0.41371	0.174329		0.190155	0.40605	0.39672	0.209577	
				13.52555					**13.66934**
				0.96611					**0.976381**

41	42	43	44	45	46	47	48	49	50
Y^(8)	P^(8)	P^(8) cond.	Logit P^(8)	β8	Y^(9)	P^(9)	P^(9) cond.	Logit P^(9)	β9
-1.87363	0.97696	0.97696	-1.87363	0.97638	-1.87284	0.97693	0.97693	-1.87284	0.98305
-1.84048	0.97542	0.95295	-1.50415	0.99130	-1.83947	0.97537	0.95287	-1.50324	0.99316
-1.78103	0.97240	0.95000	-1.47222	0.99016	-1.77962	0.97233	0.94989	-1.47107	0.99235
-1.70889	0.96826	0.94595	-1.43112	0.98880	-1.70698	0.96814	0.94580	-1.42966	0.99139
-1.64652	0.96419	0.94198	-1.39355	0.98767	-1.64419	0.96403	0.94178	-1.3918	0.99058
-1.58442	0.95964	0.93754	-1.35433	0.98659	-1.58166	0.95943	0.93729	-1.35226	0.98982
-1.5126	0.95370	0.93173	-1.30676	0.98541	-1.50935	0.95341	0.93141	-1.30429	0.98898
-1.41801	0.94459	0.92283	-1.24071	0.98398	-1.41412	0.94418	0.92240	-1.23768	0.98797
-1.28673	0.92913	0.90773	-1.14310	0.98225	-1.28194	0.92850	0.90708	-1.13922	0.98676
-1.1195	0.90370	0.88288	-1.00998	0.98047	-1.11357	0.90266	0.88183	-1.00494	0.98551
-0.915	0.86176	0.84191	-0.83625	0.97886	-0.90768	0.86001	0.84016	-0.82972	0.98440
-0.68572	0.79761	0.77924	-0.63061	0.97765	-0.67683	0.79473	0.77639	-0.62237	0.98358
-0.42864	0.70209	0.68592	-0.39055	0.97683	-0.41799	0.69762	0.68152	-0.38039	0.98304
-0.13467	0.56693	0.55387	-0.10816	0.97631	-0.12201	0.56070	0.54777	-0.09583	0.98271
0.213315	0.39493	0.38583	0.232432		0.228347	0.38777	0.37882	0.247274	
				13.76266					**13.82331**
				0.983047					**0.987379**

51	52	53	54	55
Y^(10)	P^(10)	P^(10) cond.	Logit P^(10)	β10
-1.87233	0.97690	0.97690	-1.87233	0.98738
-1.83882	0.97534	0.95281	-1.50265	0.99438
-1.7787	0.97228	0.94982	-1.47033	0.99378
-1.70574	0.96806	0.94570	-1.42872	0.99307
-1.64267	0.96392	0.94166	-1.39066	0.99247
-1.57987	0.95929	0.93713	-1.35091	0.99191

-1.50724	0.95322	0.93121	-1.30269	0.99130
-1.41159	0.94392	0.92211	-1.23571	0.99057
-1.27882	0.92809	0.90665	-1.13669	0.98969
-1.10971	0.90198	0.88115	-1.00167	0.98880
-0.90291	0.85886	0.83902	-0.82547	0.98801
-0.67105	0.79283	0.77452	-0.61701	0.98744
-0.41107	0.69469	0.67865	-0.37378	0.98708
-0.11379	0.55665	0.54379	-0.08781	0.98688
0.238116	0.38314	0.37429	0.256922	
				13.86275
				0.990196

Table of attempts to estimate the values of (a, β) civil status and passports/females

1	2	3	4	5	6	7	8	9	10
X	lx	lx(10)	nQx	np10	np10 cond.	logit(np10) Y	Ysx	Ysx(10)	β
1	0.98484		0.0158	0.9842		-2.06591	-2.08691		
5	0.98248						-2.01337		
10	0.98123	0.98123	0.00221	0.99779	0.98044	-1.95727	-1.97827	-1.97827	1
15	0.98019	0.96179	0.00291	0.99709	0.97758	-1.88764	-1.95078	-1.61287	0.37607
20	0.97846	0.96009	0.00355	0.99645	0.97696	-1.87361	-1.90803	-1.59026	0.38719
25	0.97598	0.95766	0.00501	0.99499	0.97553	-1.84268	-1.85228	-1.55939	0.42317
30	0.97285	0.95459	0.00674	0.99326	0.97383	-1.80841	-1.78943	-1.52277	0.45645
35	0.96882	0.95064	0.00753	0.99247	0.97305	-1.7933	-1.71815	-1.47895	0.44841
40	0.96319	0.94511	0.01192	0.98808	0.96876	-1.71711	-1.63224	-1.42299	0.52537
45	0.95466	0.93674	0.01806	0.98194	0.96274	-1.62588	-1.52358	-1.34758	0.59518
50	0.94074	0.92308	0.02965	0.97035	0.95137	-1.48681	-1.38237	-1.24249	0.68579
55	0.91928	0.90203	0.05403	0.94597	0.92746	-1.27419	-1.2163	-1.10997	0.81040
60	0.88619	0.86956	0.10027	0.89973	0.88213	-1.0064	-1.0262	-0.94852	0.93071
65	0.83458	0.81891	0.15383	0.84617	0.82962	-0.79146	-0.80922	-0.75451	0.95650
70	0.75048	0.73639	0.26475	0.73525	0.72087	-0.47439	-0.55059	-0.51365	1.01161
75	0.62087	0.60922	0.39441	0.60559	0.59375	-0.18974	-0.24662	-0.22201	1.00605
80	0.44318	0.43486	1	0	0	#DIV/0!	0.114133	0.131022	
									9.612893
									0.686635

11	12	13	14	15	16	17	18	19	20
Y^(2)	P^(2)	P^(2)	Logit P^(2)	β2	Y^(3)	P^(3)	P^(3)	Logit P^(3)	β3
-1.99132	0.98170	0.98170	-1.99132	0.68664	-1.97832	0.98123	0.98123	-1.97832	0.80628
-1.97244	0.98101	0.96307	-1.63049	0.91854	-1.95615	0.98040	0.96200	-1.61567	0.94979
-1.94309	0.97989	0.96196	-1.61519	0.90752	-1.92169	0.97903	0.96065	-1.5976	0.94293
-1.9048	0.97832	0.96042	-1.59458	0.89348	-1.87673	0.97710	0.95876	-1.57314	0.93413
-1.86165	0.97642	0.95855	-1.57048	0.87820	-1.82606	0.97472	0.95643	-1.54437	0.92450
-1.81271	0.97405	0.95623	-1.54205	0.86166	-1.76859	0.97173	0.95349	-1.51023	0.91401
-1.75372	0.97090	0.95314	-1.50625	0.84297	-1.69932	0.96766	0.94950	-1.46699	0.90211
-1.67911	0.96637	0.94869	-1.45863	0.82140	-1.61171	0.96171	0.94366	-1.40915	0.88832
-1.58215	0.95947	0.94191	-1.393	0.79690	-1.49785	0.95238	0.93451	-1.32902	0.87266
-1.46812	0.94961	0.93224	-1.31077	0.77296	-1.36396	0.93865	0.92104	-1.22826	0.85742
-1.33759	0.93555	0.91843	-1.2106	0.75133	-1.21068	0.91844	0.90120	-1.10534	0.84380
-1.1886	0.91507	0.89833	-1.08941	0.73289	-1.03574	0.88810	0.87143	-0.95684	0.83239

-1.01102	0.88309	0.86693	-0.93706	0.71752	-0.82721	0.83949	0.82373	-0.77092	0.82313
-0.8023	0.83266	0.81743	-0.74951	0.70588	-0.58213	0.76210	0.74780	-0.54346	0.81637
-0.5546	0.75198	0.73822	-0.51837		-0.29126	0.64165	0.62960	-0.26526	
				11.28789					**12.30783**
				0.806278					**0.879131**

21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
$\hat{Y}(4)$	$\hat{P}(4)$	$\hat{P}(4)$	Logit $\hat{P}(4)$	β4	$\hat{Y}(5)$	$\hat{P}(5)$	$\hat{P}(5)$ cond.	Logit $\hat{P}(5)$	β5
-1.9704	0.98094	0.98094	-1.9704	0.87913	-1.9655	0.98075	0.98075	-1.96550	0.92428
-1.94623	0.98001	0.96133	-1.60665	0.96883	-1.94009	0.97977	0.96091	-1.60105	0.980637
-1.90865	0.97849	0.95983	-1.58687	0.96453	-1.90058	0.97814	0.95932	-1.58022	0.977934
-1.85964	0.97632	0.95771	-1.56002	0.95900	-1.84904	0.97583	0.95705	-1.55187	0.974448
-1.80438	0.97363	0.95507	-1.52834	0.95291	-1.79095	0.97293	0.95421	-1.51835	0.970606
-1.74172	0.97021	0.95172	-1.49061	0.94627	-1.72507	0.96924	0.95058	-1.47837	0.966404
-1.6662	0.96552	0.94712	-1.44269	0.93871	-1.64567	0.96413	0.94557	-1.42748	0.961615
-1.57067	0.95857	0.94029	-1.37838	0.92994	-1.54524	0.95650	0.93809	-1.35907	0.956056
-1.44652	0.94750	0.92944	-1.28906	0.91998	-1.41471	0.94425	0.92607	-1.26393	0.94974
-1.30053	0.93093	0.91318	-1.17658	0.91032	-1.26122	0.92570	0.90788	-1.14404	0.94363
-1.13341	0.90609	0.88882	-1.03937	0.90175	-1.08552	0.89762	0.88034	-0.99784	0.938231
-0.94265	0.86822	0.85167	-0.87388	0.89465	-0.88497	0.85445	0.83800	-0.82173	0.933789
-0.71528	0.80699	0.79161	-0.66732	0.88898	-0.64592	0.78446	0.76936	-0.60235	0.930275
-0.44806	0.71015	0.69661	-0.41561	0.88493	-0.36497	0.67479	0.66180	-0.33567	0.927792
-0.13091	0.56508	0.55431	-0.10905		-0.03153	0.51576	0.50583	-0.01167	
				12.93993					**13.33544**
				0.92428					**0.952531**
31	32	33	34	35	36	37	38	39	40
$\hat{Y}(6)$	$\hat{P}(6)$	$\hat{P}(6)$ cond.	Logit $\hat{P}(6)$	β6	$\hat{Y}(7)$	$\hat{P}(7)$	$\hat{P}(7)$ cond.	Logit $\hat{P}(7)$	β7
-1.96243	0.98064	0.98064	-1.96243	0.95253	-1.96050	0.98056	0.98056	-1.9605	0.97031
-1.93624	0.97962	0.96065	-1.59755	0.98802	-1.93382	0.97952	0.96048	-1.59535	0.99267
-1.89553	0.97793	0.95899	-1.57605	0.98633	-1.89235	0.97779	0.95878	-1.57342	0.99161
-1.84242	0.97551	0.95662	-1.54676	0.98413	-1.83824	0.97531	0.95636	-1.54354	0.99023
-1.78255	0.97248	0.95365	-1.51209	0.98171	-1.77726	0.97220	0.95330	-1.50814	0.98871
-1.71466	0.96861	0.94985	-1.47068	0.97906	-1.70810	0.96821	0.94939	-1.46582	0.98704
-1.63282	0.96323	0.94458	-1.41791	0.97603	-1.62474	0.96265	0.94394	-1.41186	0.98514
-1.52932	0.95515	0.93666	-1.3469	0.97252	-1.51931	0.95429	0.93574	-1.33921	0.98292

-1.39481	0.94211	0.92387	-1.24807	0.96853	-1.38229	0.94073	0.92245	-1.23803	0.98041
-1.23663	0.92225	0.90439	-1.12348	0.96467	-1.22115	0.92000	0.90212	-1.11048	0.97798
-1.05555	0.89198	0.87471	-0.97162	0.96127	-1.03670	0.88829	0.87103	-0.95503	0.97584
-0.84887	0.84524	0.82887	-0.78883	0.95848	-0.82616	0.83920	0.82289	-0.76804	0.97408
-0.60251	0.76942	0.75452	-0.56143	0.95628	-0.57521	0.75959	0.74482	-0.53559	0.97271
-0.31298	0.65157	0.63896	-0.28542	0.95474	-0.28027	0.63658	0.62420	-0.25371	0.97174
0.030652	0.48468	0.47529	0.049452		0.06978	0.46517	0.45613	0.087972	
				13.58429					**13.74139**
				0.970307					**0.981528**

41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
Y^(8)	P^(8)	P^(8) cond.	Logit P^(8)	β8	Y^(9)	P^(9)	P^(9) cond.	Logit P^(9)	β9
-1.95928	0.98052	0.98052	-1.95928	0.98153	-1.95851	0.98049	0.98049	-1.95851	0.98863
-1.93229	0.97946	0.96038	-1.59396	0.99561	-1.93133	0.97942	0.96031	-1.59308	0.99747
-1.89034	0.97770	0.95865	-1.57177	0.99494	-1.88907	0.97765	0.95857	-1.57072	0.99706
-1.83561	0.97519	0.95619	-1.54151	0.99409	-1.83395	0.97511	0.95608	-1.54022	0.99652
-1.77392	0.97202	0.95308	-1.50564	0.99313	-1.77181	0.97190	0.95294	-1.50406	0.99594
-1.70396	0.96795	0.94909	-1.46275	0.99209	-1.70135	0.96779	0.94890	-1.46081	0.99529
-1.61964	0.96229	0.94354	-1.40804	0.99090	-1.61641	0.96205	0.94328	-1.40561	0.99455
-1.51299	0.95373	0.93515	-1.33434	0.98951	-1.50899	0.95338	0.93478	-1.33125	0.99369
-1.37438	0.93984	0.92153	-1.23168	0.98794	-1.36938	0.93928	0.92095	-1.22765	0.99271
-1.21138	0.91855	0.90065	-1.10224	0.98641	-1.2052	0.91762	0.89971	-1.09702	0.99176
-1.02479	0.88591	0.86865	-0.94452	0.98507	-1.01726	0.88438	0.86712	-0.93786	0.99092
-0.81182	0.83530	0.81902	-0.75487	0.98396	-0.80275	0.83279	0.81654	-0.74653	0.99023
-0.55797	0.75323	0.73856	-0.51924	0.98310	-0.54706	0.74916	0.73454	-0.50889	0.98968
-0.25962	0.62697	0.61475	-0.23367	0.98249	-0.24655	0.62084	0.60872	-0.22098	0.98929
0.094475	0.45290	0.44408	0.112312		0.110099	0.44517	0.43649	0.127719	
				13.84077					**13.90371**
				0.988626					**0.993122**

51	52	53	54	**55**
Y^(10)	P^(10)	P^(10) cond.	Logit P^(10)	β10
-1.95802	0.98047	0.98047	-1.95802	0.99312
-1.93072	0.97940	0.96027	-1.59252	0.99864
-1.88826	0.97761	0.95852	-1.57006	0.99839
-1.83289	0.97505	0.95601	-1.53941	0.99807
-1.77047	0.97183	0.95285	-1.50306	0.99771
-1.69969	0.96768	0.94879	-1.45958	0.99732
-1.61437	0.96190	0.94311	-1.40408	0.99686
-1.50646	0.95315	0.93454	-1.32929	0.99634
-1.36621	0.93891	0.92058	-1.22509	0.99573
-1.20129	0.91702	0.89911	-1.09371	0.99515
-1.0125	0.88340	0.86614	-0.93364	0.99463
-0.79701	0.83118	0.81495	-0.74124	0.99420
-0.54015	0.74655	0.73197	-0.50232	0.99385
-0.23828	0.61693	0.60489	-0.21293	0.99361
0.119995	0.44029	0.4316897	0.13748	

	13.94361
	0.995972

Table 7: Mortality by age group, sex and nationality for 2015							
Age group	Jordanian			Non-Jordanian			Total
	Males	females	total	Males	Female	total	
0	1049	812	1861	263	188	451	2312
1	639	500	1139	152	118	270	1409
2	194	183	377	39	38	77	454
3	158	120	278	40	36	76	354
4	125	75	200	20	26	46	246
5-9	475	287	762	103	88	191	953
10-14	324	212	536	75	49	124	660
15-19	475	216	691	93	34	127	818
20-24	668	242	910	146	39	185	1095
25-29	527	227	754	146	48	194	948
30-34	572	292	864	167	42	209	1073
35-39	706	273	979	113	88	201	1180
40-44	1007	464	1471	191	82	273	1744
45-49	1338	538	1876	180	108	288	2164
50-54	1751	781	2532	295	168	463	2995
55-59	1871	792	2663	288	156	444	3107
60-64	2315	1188	3503	303	198	501	4004
65-69	2201	1173	3374	344	208	552	3926
70-74	3024	1651	4675	482	255	737	5412
75-79	2269	1282	3551	317	208	525	4076
80-84	1662	1148	2810	253	192	445	3255
85+	1685	1353	3038	289	252	541	3579
Total	**25035**	**13809**	**38844**	**4299**	**2621**	**6920**	**45764**

Life Tables Functions:

X: Age

n: The length of the group

${}_nM_x$: The number of corrected deaths at age(x)

nl_x : The number of years the regiment lives between age x, x+n.

Lx : The number of survivors at age (x).

Tx: The total number of years the regiment lives after age (x).

ex: Life expectancy at age x.

$Y^s{}_x$: The logit value of survival from birth to age (x) in model life tables.

${}_x\acute{Y}$:The logit value of the probability of survival from birth to age (x) in Jordan.

α: The general level of death.

β: The strength of the relationship between childhood mortality and adult mortality

TABLE 270. MALE FIVE-YEAR SURVIVORSHIP PROBABILITIES, ${}_5S_{x,\,x+4}$. WEST MODEL

Age x	Survivorship probability, ${}_5S_{x,\,x+4}$, for mortality level:							
	1	2	3	4	5	6	7	8
0	0.78598	0.80839	0.82791	0.84514	0.86050	0.87431	0.88685	0.89827
5	0.94170	0.94685	0.95148	0.95568	0.95953	0.96306	0.96633	0.96937
10	0.94345	0.94829	0.95266	0.95662	0.96024	0.96359	0.96667	0.96956
15	0.92179	0.92836	0.93432	0.93971	0.94466	0.94921	0.95343	0.95735
20	0.90238	0.91067	0.91815	0.92495	0.93117	0.93690	0.94220	0.94712
25	0.88887	0.89838	0.90695	0.91475	0.92187	0.92844	0.93452	0.94017
30	0.87123	0.88219	0.89209	0.90108	0.90932	0.91690	0.92391	0.93044
35	0.84849	0.86118	0.87261	0.88302	0.89255	0.90132	0.90944	0.91699
40	0.82417	0.83840	0.85122	0.86287	0.87355	0.88336	0.89246	0.90090
45	0.79284	0.80869	0.82297	0.83595	0.84784	0.85880	0.86894	0.87838
50	0.75188	0.76954	0.78552	0.80001	0.81329	0.82552	0.83684	0.84736
55	0.69526	0.71503	0.73291	0.74918	0.76410	0.77785	0.79061	0.80246
60	0.61357	0.63658	0.65732	0.67622	0.69354	0.70951	0.72431	0.73809
65	0.51773	0.54303	0.56594	0.58676	0.60585	0.62347	0.63983	0.65504
70	0.39621	0.42347	0.44803	0.47062	0.49123	0.51025	0.52797	0.54445
75+[a]	0.25310	0.26885	0.28214	0.29420	0.30500	0.31498	0.32449	0.33364
	9	10	11	12	13	14	15	16
0	0.90877	0.91845	0.92741	0.93573	0.94494	0.95280	0.95942	0.96561
5	0.97219	0.97484	0.97732	0.97966	0.98222	0.98435	0.98620	0.98799
10	0.97223	0.97474	0.97710	0.97932	0.98161	0.98360	0.98535	0.98706
15	0.96100	0.96442	0.96765	0.97067	0.97353	0.97626	0.97869	0.98107
20	0.95172	0.95602	0.96006	0.96386	0.96740	0.97083	0.97392	0.97692
25	0.94544	0.95038	0.95501	0.95938	0.96343	0.96738	0.97094	0.97438
30	0.93652	0.94222	0.94758	0.95261	0.95730	0.96183	0.96591	0.96987
35	0.92403	0.93064	0.93684	0.94267	0.94815	0.95328	0.95793	0.96246
40	0.90878	0.91616	0.92309	0.92962	0.93584	0.94140	0.94643	0.95141
45	0.88719	0.89544	0.90319	0.91048	0.91761	0.92358	0.92903	0.93452
50	0.85718	0.86638	0.87500	0.88313	0.89119	0.89760	0.90354	0.90956
55	0.81355	0.82394	0.83370	0.84289	0.85193	0.85904	0.86569	0.87248
60	0.75097	0.76301	0.77434	0.78501	0.79540	0.80353	0.81117	0.81902
65	0.66924	0.68256	0.69510	0.70691	0.71827	0.72714	0.73552	0.74417
70	0.55983	0.57427	0.58786	0.60069	0.61291	0.62244	0.63147	0.64085
75+[a]	0.34255	0.35131	0.36002	0.36872	0.37769	0.38544	0.39303	0.40117
	17	18	19	20	21	22	23	24
0	0.97174	0.97737	0.98257	0.98738	0.99139	0.99433	0.99665	0.99831
5	0.98969	0.99132	0.99289	0.99437	0.99570	0.99688	0.99794	0.99880
10	0.98872	0.99031	0.99184	0.99331	0.99467	0.99598	0.99720	0.99825
15	0.98338	0.98561	0.98775	0.98982	0.99181	0.99375	0.99557	0.99720
20	0.97982	0.98262	0.98531	0.98787	0.99033	0.99269	0.99490	0.99682
25	0.97770	0.98089	0.98395	0.98687	0.98958	0.99220	0.99462	0.99670
30	0.97370	0.97739	0.98093	0.98432	0.98743	0.99053	0.99340	0.99590
35	0.96688	0.97117	0.97531	0.97929	0.98292	0.98677	0.99046	0.99379
40	0.95632	0.96114	0.96582	0.97038	0.97458	0.97941	0.98427	0.98896
45	0.93998	0.94541	0.95075	0.95599	0.96090	0.96700	0.97344	0.98004
50	0.91563	0.92170	0.92774	0.93371	0.93948	0.94703	0.95530	0.96425
55	0.87938	0.88634	0.89332	0.90025	0.90724	0.91664	0.92728	0.93927
60	0.82702	0.83514	0.84333	0.85150	0.85990	0.87150	0.88493	0.90051
65	0.75305	0.76211	0.77127	0.78047	0.79012	0.80383	0.82002	0.83932
70	0.65050	0.66039	0.67044	0.68059	0.69132	0.70703	0.72585	0.74882
75+[a]	0.40982	0.41897	0.42857	0.43857	0.44915	0.46356	0.48056	0.50071

[a] Value listed for age 75+ is $T(80)/T(75)$.

TABLE 274. FEMALE 10-YEAR SURVIVORSHIP PROBABILITIES, ${}_{10}S_{x,x+4}$, WEST MODEL

Age x	Survivorship probability, ${}_{10}S_{x,x+4}$, for mortality level: 1	2	3	4	5	6	7	8
0	0.73701	0.76223	0.78468	0.80487	0.82317	0.83989	0.85524	0.86943
5	0.87354	0.88458	0.89459	0.90373	0.91213	0.91989	0.92710	0.93383
10	0.85757	0.86974	0.88079	0.89087	0.90016	0.90875	0.91674	0.92419
15	0.82858	0.84293	0.85598	0.86792	0.87892	0.88911	0.89860	0.90745
20	0.80498	0.82108	0.83574	0.84918	0.86158	0.87307	0.88377	0.89377
25	0.78413	0.80173	0.81775	0.83247	0.84606	0.85865	0.87039	0.88138
30	0.76600	0.78472	0.80177	0.81744	0.83189	0.84530	0.85782	0.86953
35	0.75174	0.77092	0.78842	0.80448	0.81930	0.83306	0.84590	0.85792
40	0.72673	0.74670	0.76493	0.78172	0.79723	0.81166	0.82511	0.83772
45	0.67504	0.69729	0.71769	0.73648	0.75392	0.77016	0.78534	0.79959
50	0.59196	0.61775	0.64152	0.66351	0.68401	0.70317	0.72117	0.73811
55	0.48197	0.51126	0.53842	0.56375	0.58747	0.60977	0.63082	0.65071
60	0.36171	0.39190	0.42025	0.44691	0.47209	0.49591	0.51854	0.54002
65	0.23628	0.26411	0.29072	0.31598	0.34011	0.36313	0.38517	0.40621
70+[a]	0.10087	0.11236	0.12302	0.13299	0.14246	0.15156	0.16046	0.16919
	9	10	11	12	13	14	15	16
0	0.88258	0.89483	0.90628	0.91701	0.92732	0.93824	0.94783	0.95677
5	0.94012	0.94603	0.95159	0.95684	0.96180	0.96683	0.97147	0.97581
10	0.93117	0.93773	0.94392	0.94976	0.95523	0.96016	0.96550	0.97050
15	0.91575	0.92355	0.93091	0.93787	0.94436	0.94969	0.95618	0.96229
20	0.90314	0.91197	0.92029	0.92817	0.93552	0.94148	0.94875	0.95564
25	0.89169	0.90140	0.91056	0.91923	0.92731	0.93410	0.94188	0.94929
30	0.88054	0.89090	0.90066	0.90992	0.91857	0.92604	0.93403	0.94174
35	0.86920	0.87984	0.88988	0.89938	0.90826	0.91600	0.92386	0.93158
40	0.84957	0.86074	0.87130	0.88128	0.89064	0.89873	0.90671	0.91466
45	0.81301	0.82567	0.83766	0.84902	0.85966	0.86882	0.87767	0.88662
50	0.75410	0.76924	0.78360	0.79727	0.81007	0.82102	0.83154	0.84224
55	0.66955	0.68747	0.70451	0.72077	0.73606	0.74893	0.76137	0.77411
60	0.56051	0.58004	0.59871	0.61658	0.63345	0.64728	0.66090	0.67498
65	0.42644	0.44579	0.46439	0.48228	0.49922	0.51295	0.52649	0.54065
70+[a]	0.17790	0.18656	0.19528	0.20406	0.21281	0.22061	0.22861	0.23717
	17	18	19	20	21	22	23	24
0	0.96490	0.97232	0.97911	0.98539	0.99055	0.99406	0.99671	0.99848
5	0.97985	0.98362	0.98716	0.99047	0.99342	0.99565	0.99742	0.99871
10	0.97518	0.97955	0.98366	0.98749	0.99119	0.99412	0.99644	0.99816
15	0.96802	0.97338	0.97842	0.98314	0.98783	0.99188	0.99499	0.99734
20	0.96213	0.96825	0.97400	0.97943	0.98483	0.98966	0.99347	0.99643
25	0.95635	0.96206	0.96941	0.97544	0.98145	0.98682	0.99137	0.99507
30	0.94917	0.95630	0.96313	0.96965	0.97615	0.98220	0.98773	0.99248
35	0.93912	0.94645	0.95357	0.96043	0.96725	0.97425	0.98105	0.98732
40	0.92255	0.93032	0.93796	0.94539	0.95285	0.96125	0.96985	0.97832
45	0.89557	0.90449	0.91333	0.92201	0.93082	0.94136	0.95255	0.96413
50	0.85305	0.86391	0.87474	0.88547	0.89642	0.91015	0.92514	0.94119
55	0.78709	0.80023	0.81343	0.82660	0.84018	0.85797	0.87792	0.90007
60	0.68943	0.70420	0.71917	0.73423	0.75006	0.77185	0.79694	0.82600
65	0.55531	0.57042	0.58589	0.60160	0.61835	0.64264	0.67130	0.70591
70+[a]	0.24628	0.25591	0.26603	0.27657	0.28790	0.30322	0.32100	0.34195

[a] Value listed for age 70+ is $T(80)/T(70)$.

TABLE 279. LOGIT TRANSFORMATION OF THE COMPLEMENT OF THE PROBABILITY OF SURVIVING, $1 - l(x)$, NORTH MODEL

Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$
1	-1.2556	34	-0.6434	67	-0.0533
2	-1.1332	35	-0.6312	68	-0.0184
3	-1.0655	36	-0.6189	69	0.0187
4	-1.0177	37	-0.6065	70	0.0582
5	-0.9826	38	-0.5939	71	0.1003
6	-0.9601	39	-0.5812	72	0.1450
7	-0.9406	40	-0.5684	73	0.1927
8	-0.9237	41	-0.5554	74	0.2436
9	-0.9093	42	-0.5423	75	0.2979
10	-0.8968	43	-0.5291	76	0.3559
11	-0.8859	44	-0.5157	77	0.4180
12	-0.8763	45	-0.5023	78	0.4845
13	-0.8677	46	-0.4886	79	0.5558
14	-0.8596	47	-0.4746	80	0.6325
15	-0.8517	48	-0.4605	81	0.7152
16	-0.8424	49	-0.4459	82	0.8044
17	-0.8329	50	-0.4310	83	0.9011
18	-0.8233	51	-0.4157	84	1.0060
19	-0.8134	52	-0.3999	85	1.1202
20	-0.8033	53	-0.3836	86	1.2451
21	-0.7928	54	-0.3666	87	1.3819
22	-0.7821	55	-0.3490	88	1.5324
23	-0.7712	56	-0.3306	89	1.6984
24	-0.7601	57	-0.3114	90	1.8821
25	-0.7489	58	-0.2913	91	2.0859
26	-0.7376	59	-0.2703	92	2.3125
27	-0.7262	60	-0.2481	93	2.5650
28	-0.7146	61	-0.2247	94	2.8469
29	-0.7030	62	-0.2000	95	3.1619
30	-0.6912	63	-0.1740	96	3.5143
31	-0.6794	64	-0.1464	97	3.9087
32	-0.6676	65	-0.1172	98	4.3503
33	-0.6556	66	-0.0862	99	4.8450

TABLE 280. LOGIT TRANSFORMATION OF THE COMPLEMENT OF THE PROBABILITY OF SURVIVING, $1 - l(x)$, SOUTH MODEL

Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$
1	-1.0807	34	-0.6252	67	-0.1163
2	-0.9376	35	-0.6165	68	-0.0806
3	-0.8807	36	-0.6077	69	-0.0423
4	-0.8524	37	-0.5988	70	-0.0013
5	-0.8369	38	-0.5898	71	0.0427
6	-0.8265	39	-0.5807	72	0.0898
7	-0.8176	40	-0.5715	73	0.1404
8	-0.8100	41	-0.5621	74	0.1946
9	-0.8034	42	-0.5526	75	0.2527
10	-0.7976	43	-0.5429	76	0.3153
11	-0.7925	44	-0.5331	77	0.3824
12	-0.7879	45	-0.5229	78	0.4547
13	-0.7833	46	-0.5126	79	0.5327
14	-0.7789	47	-0.5018	80	0.6169
15	-0.7743	48	-0.4908	81	0.7081
16	-0.7685	49	-0.4793	82	0.8071
17	-0.7623	50	-0.4674	83	0.9150
18	-0.7558	51	-0.4549	84	1.0329
19	-0.7489	52	-0.4419	85	1.1623
20	-0.7418	53	-0.4282	86	1.3047
21	-0.7342	54	-0.4138	87	1.4622
22	-0.7264	55	-0.3986	88	1.6369
23	-0.7183	56	-0.3825	89	1.8315
24	-0.7101	57	-0.3654	90	2.0489
25	-0.7017	58	-0.3473	91	2.2926
26	-0.6933	59	-0.3279	92	2.5662
27	-0.6849	60	-0.3073	93	2.8742
28	-0.6764	61	-0.2853	94	3.2213
29	-0.6678	62	-0.2617	95	3.6128
30	-0.6592	63	-0.2365	96	4.0547
31	-0.6508	64	-0.2095	97	4.5537
32	-0.6423	65	-0.1806	98	5.1174
33	-0.6337	66	-0.1495	99	5.7541

TABLE 281. LOGIT TRANSFORMATION OF THE COMPLEMENT OF THE PROBABILITY OF SURVIVING, $1 - l(x)$, EAST MODEL

ge x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$
1	-1.0827	34	-0.6757	67	-0.0603
2	-0.9899	35	-0.6651	68	-0.0199
3	-0.9540	36	-0.6543	69	0.0230
4	-0.9315	37	-0.6434	70	0.0686
5	-0.9163	38	-0.6322	71	0.1171
6	-0.9049	39	-0.6210	72	0.1686
7	-0.8950	40	-0.6096	73	0.2235
8	-0.8864	41	-0.5983	74	0.2819
9	-0.8790	42	-0.5868	75	0.3442
0	-0.8725	43	-0.5750	76	0.4107
1	-0.8668	44	-0.5629	77	0.4818
2	-0.8615	45	-0.5505	78	0.5579
3	-0.8564	46	-0.5377	79	0.6396
4	-0.8515	47	-0.5244	80	0.7276
5	-0.8463	48	-0.5107	81	0.8224
6	-0.8399	49	-0.4964	82	0.9250
7	-0.8331	50	-0.4815	83	1.0363
8	-0.8259	51	-0.4659	84	1.1575
9	-0.8138	52	-0.4496	85	1.2900
0	-0.8104	53	-0.4326	86	1.4352
1	-0.8020	54	-0.4146	87	1.5949
2	-0.7932	55	-0.3957	88	1.7711
3	-0.7842	56	-0.3758	89	1.9661
4	-0.7749	57	-0.3547	90	2.1825
5	-0.7655	58	-0.3324	91	2.4232
6	-0.7560	59	-0.3088	92	2.6914
7	-0.7463	60	-0.2838	93	2.9906
8	-0.7366	61	-0.2573	94	3.3249
9	-0.7267	62	-0.2292	95	3.6986
0	-0.7166	63	-0.1994	96	4.1165
1	-0.7066	64	-0.1677	97	4.5841
2	-0.6964	65	-0.1340	98	5.1073
3	-0.6861	66	-0.0983	99	5.6929

TABLE 282. LOGIT TRANSFORMATION OF THE COMPLEMENT OF THE PROBABILITY OF SURVIVING, $1 - l(x)$, WEST MODEL

Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$	Age x	Logit of $1-l(x)$
1	-1.2093	34	-0.6793	67	-0.0225
2	-1.0951	35	-0.6661	68	0.0154
3	-1.0488	36	-0.6527	69	0.0552
4	-1.0198	37	-0.6393	70	0.0973
5	-0.9982	38	-0.6258	71	0.1416
6	-0.9850	39	-0.6122	72	0.1884
7	-0.9733	40	-0.5985	73	0.2378
8	-0.9628	41	-0.5850	74	0.2901
9	-0.9535	42	-0.5712	75	0.3454
10	-0.9449	43	-0.5573	76	0.4039
11	-0.9370	44	-0.5430	77	0.4660
12	-0.9294	45	-0.5285	78	0.5320
13	-0.9220	46	-0.5136	79	0.6022
14	-0.9146	47	-0.4983	80	0.6770
15	-0.9068	48	-0.4825	81	0.7570
16	-0.8975	49	-0.4663	82	0.8426
17	-0.8878	50	-0.4495	83	0.9344
18	-0.8775	51	-0.4321	84	1.0332
19	-0.8669	52	-0.4141	85	1.1398
20	-0.8558	53	-0.3954	86	1.2551
21	-0.8441	54	-0.3760	87	1.3801
22	-0.8321	55	-0.3557	88	1.5161
23	-0.8198	56	-0.3346	89	1.6644
24	-0.8073	57	-0.3125	90	1.8265
25	-0.7947	58	-0.2894	91	2.0040
26	-0.7822	59	-0.2652	92	2.1989
27	-0.7696	60	-0.2398	93	2.4133
28	-0.7596	61	-0.2132	94	2.6494
29	-0.7442	62	-0.1852	95	2.9097
30	-0.7313	63	-0.1559	96	3.1971
31	-0.7184	64	-0.1250	97	3.5144
32	-0.7055	65	-0.0926	98	3.8651
33	-0.6924	66	-0.0584	99	4.2528

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