NAMIBIA 2011 CENSUS
MORTALITY REPORT

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Namibia 2011 Census

MORTALITY REPORT

Namibia Statistics Agency

2014

June 2014

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Foreword

Population and housing censuses are the main source for demographic and socio-economic statistics in any country. The Government of Namibia has regularly participated in three internationally supported decennial census programmes since independence in 1990. A provisional report that provided results on population distribution by sex and households at national, urban, rural, regional and constituency levels was released in April 2012. The main report which contains detailed information on the size, distribution, composition and other social and economic characteristics of the population as well as on housing amenities at administrative levels was launched by HE the President of the Republic of Namibia on 27 March 2013. In addition, regional profiles that provide information up to constituency levels were to be launched in April 2014.

The Namibia 2011 Census Mortality Report is one of the series of main reports that are to be produced using the 2011 Population and Housing Census results. Mortality estimates are vital for tracking the health system of any society, developing policies and implementing and monitoring national programmes. This report provides the trends and differentials of mortality and other mortality issues in Namibia. Specific results are given on: reported mortality data; indirect estimation of mortality on age-specific especially for older ages; life expectancy and mortality differentials by socio-economic characteristics. Where possible, comparisons were made of the 2011 census data with results from other sources, including the censuses of 1991 and 2001, the 2000 and 2006/07 Namibia Demographic and Health Survey (NDHS) and the 2006 Namibia Inter-censal Demographic Survey.

I would like to thank the United Nations Population Fund (UNFPA) and the government of the United States of America through USAID for their financial and technical support through the US Census Bureau that provided advice and technical support during the production of the Namibia 2011 Census Mortality Report. Finally, I wish to acknowledge the 2011 census team, in particular the division of Demographic and Vital Statistics and stakeholders for their efforts in analysing the data and producing the 2011 Census Mortality Report on time. On our part, we pledge to ensure easy availability of all information required by all our users.

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Executive Summary

Estimates of mortality are vital for tracking the progress in the health system of any society, and for developing sound policies and programmes to improve quality of life. While vital registration is still to improve in Namibia, the 2011 Population and Housing Census and demographic surveys continue to be the primary sources of data for the estimation of mortality levels and trends. This report summarizes some of the most important indicators regarding the mortality status in Namibia.

The key census questions providing information about mortality asked about deaths within households during the 12 months prior to the census, as well as the age and sex of the deceased. The number of reported deaths was 22,668, more than double the number covered in 2011 by vital registration or health information systems. The reported crude birth rate (deaths divided by the total population) was 10.7 deaths per 1,000 persons. Reported death rates by age and sex are calculated by dividing deaths for each group by the corresponding household population for that group. Deaths were not enumerated for those residing outside of households, e.g. institutions.

Death rates may be biased if either deaths (the numerator) or the underlying population (the denominator) are underreported or not properly recorded. We used a variety of demographic methods, e.g. the comparative and indirect methods to assess the quality and accuracy of reported age-specific mortality. Deaths rates reported at most ages seemed to be complete except for the oldest ages, typically ages 65 and above. For these older ages, we substituted death rates implied by an indirect method – a MORTPAK match of reported life expectancy to the Coale-Demeny North Model Life Table. The exact age at which the substitution was made (e.g., 65, 75, etc.), was determined separately by region for males and females.

Life table measures were prepared for Namibia and regions. The life expectancy at birth in Namibia is 53.3 for males, 60.5 for females, and 56.8 for both sexes combined. Mortality varies widely across the regions and urban and rural areas. Life expectancy in urban areas exceeds that of rural areas by more than 6 years. The gap between the regions with the highest (Erongo) and lowest (Kavango) life expectancies is even greater - over 16 years. The excess in female life expectancy compared to males also varies widely. Although the sex gap is 7.2 years for Namibia, in Omusati it is over 15 years.

There was a five-year improvement in life expectancy since the 2001 census, when overall life expectancy was 52 years. Improvements were not uniform across all age groups. A graph of the risk of mortality by age typically resembles the letter "J" – higher mortality among young children, lower mortality among older children and younger adults, and progressively higher again at the oldest ages. However, as in other countries with a high prevalence of HIV/AIDS, the pattern in Namibia resembles a "W," because of elevated mortality among young and middle age adults. The W shape appears to have been most severe in 2006, when an inter-censal survey (2006 NIDS) was taken. The W-shape was less pronounced in the 2011 census, but was still apparent.

In addition to age, sex, and region, other social characteristics can affect mortality and health of individuals. The report examined infant mortality by social characteristics of mothers. Higher levels of education of mothers are associated with better chances of infant survival, a trend found in other parts of the world. In addition, women who were widowed, divorced, or separated had higher infant mortality. The overall pattern of infant mortality by mothers' age was J-shaped, which suggests higher rates of infant deaths at earlier ages.

The 2011 census included a question about causes of death. Respondents were asked to choose from several broad categories of causes of death. The most common cause reported was "illness", which accounted for over three quarters of all deaths. For males, the next most common cause was accidents. On the other hand, the next most common causes of death for females were maternal-related incidents. The maternal mortality ratio (MMR) – the proportion of maternal deaths per 100,000 live births – was 604, which is somewhat below the range estimated by the World Health Organization for sub-Saharan Africa. The MMR by age showed a striking pattern of increased risk at the oldest childbearing ages. At ages 50 – 54, the MMR was over 7,000 – which implies that over 7 percent of births at this age resulted in a maternal death.

All in all, the results of this report provide a solid foundation for understanding health and mortality levels and trends in Namibia. They also provide a basis for building wise policies to improve the quality of life for people in Namibia. Some highlights for health professionals, planners and decision makers are listed below:

- Deaths reported in the 2011 census provide a baseline for assessing the completeness of death reporting in civil registration and health information systems and signals a need for continued improvements of those systems.
- Age may be over-stated at the oldest age groups. An additional census question on year of birth might help to improve the accuracy of age reporting.
- Although the W shape age pattern of HIV/AIDS mortality became less severe in 2011, continued vigilance might be required to reduce the incidence of HIV/AIDS.
- The health of mothers and children is particularly vulnerable when the mother is at older childbearing ages or experiences widowhood or marital dissolution.
- Among causes of death, the broad category of illness might be divided into two categories: infectious diseases and degenerative diseases. Further attention to causes of death would help policymakers to better target health resources.

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
CBS	Central Bureau of Statistics
CDR	Crude Death Rate
CMR	Child Mortality Rate
HIV	Human Immune Virus
IMR	Infant Mortality Rate
MLT	Model Life Table
MMR	Maternal Mortality Ratio
NSA	Namibia Statistics Agency
MDG	Millennium Development Goal
MoHAI	Ministry of Home Affairs and Immigration
MoHSS	Ministry of Health and Social Services
NDHS	Namibia Demographic and Health Survey
WHO	World Health Organisation

1 - INTRODUCTION AND SCOPE OF REPORT

Health and longevity are among the greatest gifts enjoyed by people in any society. Mortality statistics help policymakers, planners and health professionals to know how well a society is enjoying those gifts. Moreover, details about differentials in mortality can help them decide how to allocate resources for health services. Yet measuring levels, trends, and differentials in mortality can be problematic because mortality statistics can be biased or incomplete. For instance, if deaths or death rates are underreported, the health of a society will appear to be better than it is.

One of the goals of the Namibia 2011 census was to provide information about mortality. A key question asked to respondents was to identify deaths in each household during the 12 months preceding the census. Respondents were also asked to provide the age at death and sex of the deceased, as well as the cause of death. This report describes and analyses the results, with comparisons to findings from prior censuses and other sources of data.

This report is organized as follows: The first chapter gives an introduction to the report and the scope thereof. Chapter 2 provides an overview of data sources on mortality in Namibia. In particular, it compares deaths reported in 2011 by the Ministry of Health and Social Services, the Ministry of Home Affairs, and the recent 2011 census. Such comparisons provide estimates of the completeness of death reporting in these sources. Chapter 3 examines some basic mortality indicators in Namibia as a whole and its regions, as well as across the last three censuses. The age and sex pattern of reported deaths and death rates are also considered.

Chapter 4 develops and adjusts complete life tables – age patterns of mortality and life expectancy for each sex. Comparisons of reported data with historical data and model life tables indicate fairly good completeness, although they also reveal likely underreporting of mortality among older adults. After adjusting for such underreporting, the chapter then estimates a final set of life tables for Namibia and its regions. It also identifies a unique W-shape pattern of death rates by age due to high rates of HIV/AIDS among young and middle adult ages.

Chapter 5 looks at differences in infant mortality by socio-economic characteristics of mothers, for example age, marital status and education of mothers. The report concludes with Chapter 6, which goes beyond the levels and trends of overall mortality to consider broad causes of death. In the 2011 census, the majority of deaths were attributed to illness. The second most commonly reported cause among females is maternal mortality, which shows a striking pattern of rising mortality at childbearing ages. These and other findings throughout this report provide a greater understanding of mortality issues for policymakers, planners, health professionals, and the general public.

Objectives of the report

The 2011 census collected information on deaths at two levels: Women in childbearing ages were asked about their total number of live births, those still surviving as well as the survival status of their last live birth. In addition, all households were requested to report on all deaths of usual members that occurred in the last 12 months prior to the census, that is, from September 2010 to August 2011.

Mortality is one of the three factors that determine changes in population size, distribution and the structure. The others are fertility and migration. Apart from fertility, mortality is the second most important factor in determining such changes. Mortality information is most directly valuable in the health sector and can be used to identify high mortality areas and high-risk groups in the population, so that interventions can be made and health services and facilities can be directed where mostly needed and are likely to have great impact.

Therefore, the main objective of the report is to provide baseline indicators for the monitoring and evaluation of the national development policies in the health sector and to provide estimates for the future population of the country. Specific objectives therefore are to:

- Provide measures of infant, child and adult mortality indicators;
- Provide age and sex patterns of mortality;
- Provide estimates on maternal deaths;
- Provide inputs for the calculation of population projections.

2 - SOURCES AND QUALITY OF MORTALITY DATA

Censuses and surveys provide key sources of demographic data in Namibia. Since the registration of vital events such as births and deaths is still incomplete, Namibia has been relying on the above sources to provide estimates of the major components of demographic change which are fertility, mortality and migration – as well as on population counts. This chapter presents an overview of these key sources of demographic data in Namibia, focusing on the range and quality of data related to mortality.

a) Population and housing census

Prior to Namibia's independence in 1990 two censuses were undertaken, viz. in 1975 and 1985 during the South African colonial administration. Yet in these pre-independence censuses, the native African population was not included, and efforts to measure the native population indirectly, for example by means of aerial sample counts of numbers of enumerated dwellings, were highly questionable. Since independence in 1990, the 2011 Population and Housing Census marks the third time that a census was taken. The first two censuses since independence were conducted in 1991 and 2001. All of these censuses provided a de facto population count based on current residence.

Preparations for the 2011 census started in the year 2007/2008 under the auspices of the then Central Bureau of Statistics (CBS) in the National Planning Commission which was later transformed into the Namibia Statistics Agency (NSA) and which is a semi-autonomous agency of government. The NSA was established under the Statistics Act No. 9 of 2011, with the legal mandate and authority to collect a variety of statistical data, including the conducting of population censuses every 10 years.

In the 2011 census, information on deaths in the last 12 months was collected at household level. The information was recorded only for usual members of the household i.e. household members who were staying in the household for at least 6 months and died while staying in that household. In addition, women in childbearing age were asked about the survival status of their children including the last live birth. This information was used to estimate adult and child mortality indicators.

b) Vital Registration

Vital registration systems provide an ongoing record of demographic events, such as births and deaths. All deaths in the country are required by law to be registered with the Ministry of Home Affairs and Immigration (MoHAI) in the Department of Civil Registration which is mandated to manage the National Population Register. The National Population Register contains records of births, marriages and deaths and of identification cards.

In October 2012 the Department of Civil Registration announced the beginning of a 6-month research and consultation process to prepare a new bill on birth, marriage and death registration. The key objective of the research and consultation process was to ensure that the proposals for law reform are all-inclusive and meet the needs of Namibia and are feasible to implement. This approach was also designed to make sure that the draft bill is consistent with the Namibian Constitution and international standards. The Department of Civil Registration is also confident that the initiative has raised the level of public awareness on the importance of birth, marriage and death registration for all persons in Namibia.

An improved law will also facilitate the creation of a National Population Register which is complete and accurate.

The MoHAI database of deaths is based on reported deaths from public hospitals, private hospitals, police, and households in Namibia. Citizens are also expected to report deaths which took place outside of such facilities to local reporting centres.

c) Health Information Systems

The Ministry of Health and Social Services also collects information on deaths that occurred at public health facilities. Such deaths do not include those which occur at private hospitals, within households, violent and accidental deaths. Efforts are underway to improve the system.

d) Quality of Census Data

Quality is one of the most important aspects of data as it enhances its credibility and increases the validity of any conclusions drawn from such data. A population and housing census is a huge undertaking and if no proper planning and implementation are undertaken, the census data quality can be compromised. Great efforts were made to ensure that the 2011 census data was of high quality. Various quality controls were implemented to ensure relevance, timeliness, accuracy, coherence and proper data interpretation. Such quality controls included the following:

- demarcation of the country into small enumeration areas to ensure comprehensive coverage;
- development of structured census questionnaires after consultation with government ministries, university expertise and international partners;
- preparation of detailed instruction manuals for supervisors and enumerators to guide field staff during enumeration;
- undertaking comprehensive publicity and advocacy programmes to ensure full Government support and cooperation from the general public;
- testing of questionnaires and other procedures; the provision of adequate training and undertaking intensive supervision at different supervisory levels;
- checking and editing of questionnaires in the field;
- establishing proper mechanisms which ensured that all completed questionnaires were properly accounted for and returned to Census headquarters for processing;
- development of good systems for data processing and analysis;
- use of scanning technology for data capture to shorten the time for the data process so as to avail data on time;
- ensuring intensive verification and validation of data and clearing out all inconsistencies;
- involving local and international experts to review the system and data for quality.

Even with these strict quality control measures, a variety of biases may affect the accuracy of reported deaths. Deaths during the last 12 months prior to the census can be improperly recorded due to inability of the respondent to recall the event, or double counting whereby deaths may be reported by more than one household.

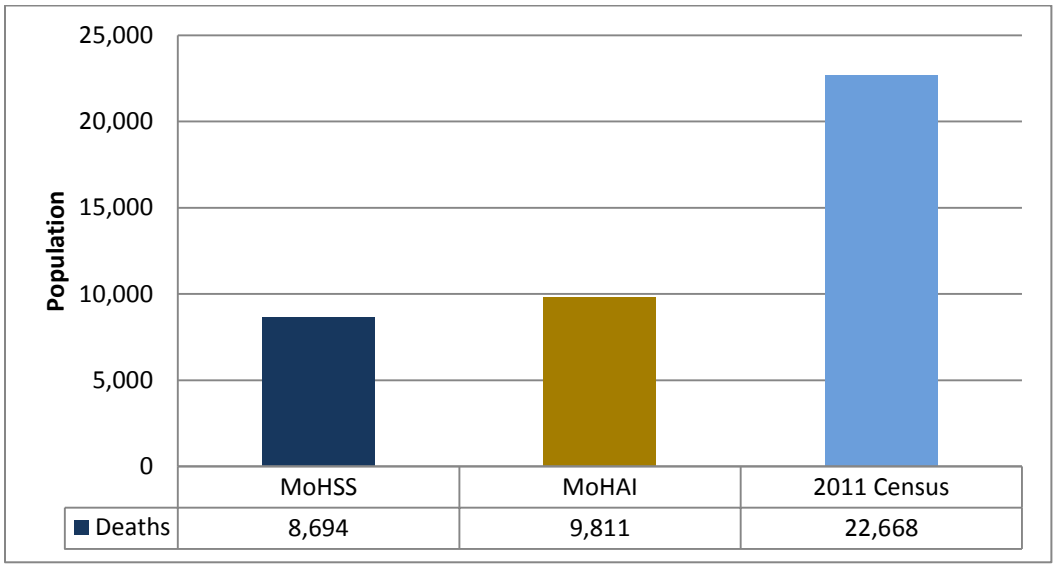
e) Mortality Data by Source

Death reporting in ongoing registration systems may be incomplete for a variety of reasons inter alia poor access to service facilities and lack of information on how and where to register a death. The 2011 census results show that out of 22,668 deaths reported, 11.5 percent were not registered.

Whatever the reason, the 2011 census as well as future censuses and surveys provide important baseline information for national development planning and assessing the completeness of ongoing registration systems.

Figure 2.1 shows mortality data. The 2011 census reported 22,668 deaths in the 12 months prior to the 2011 census date, while MOHAI reported 9,811 and MOHSS reported 8,694 deaths between January – December 2011.

Figure 2.1 Reported Deaths by Source, Namibia 2011



3 - BASIC INDICATORS OF MORTALITY

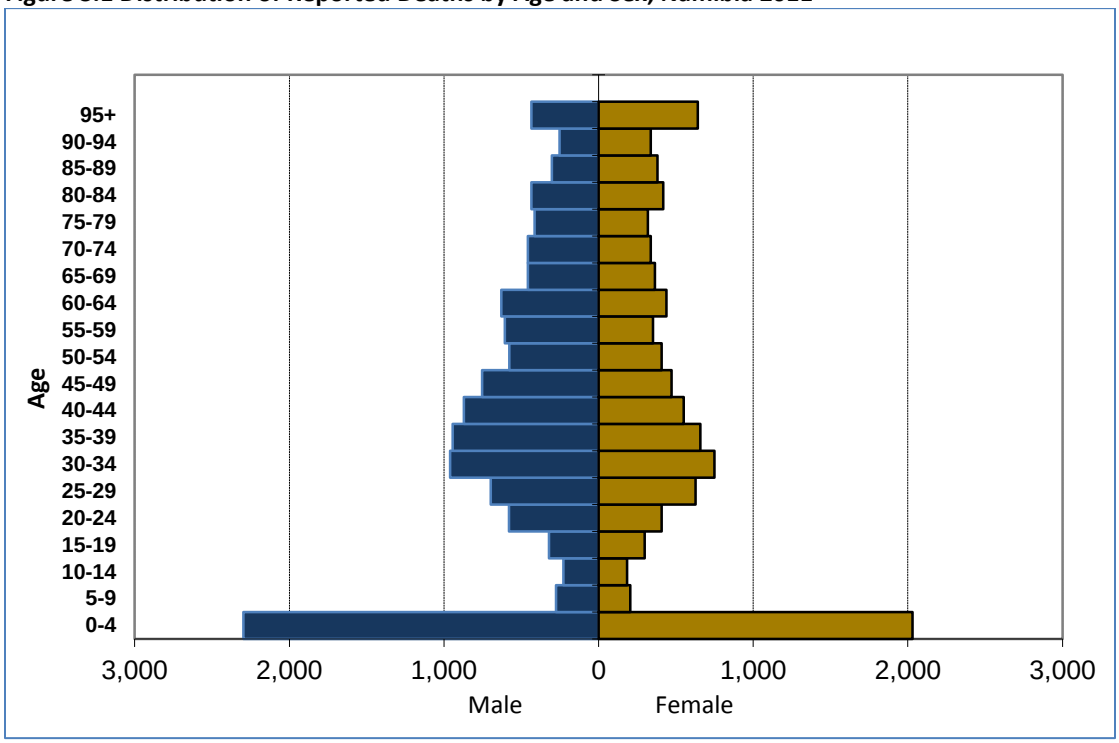
3.1 Reported Death Indicators

Mortality is one of the three factors that determine changes in population size, distribution and the structure. The others are fertility and migration. Apart from fertility, mortality is the second most important factor in determining such changes. Mortality information is most directly valuable in the health sector and can be used to identify high mortality areas and high risk groups in the population, so that health services and relevant interventions can be directed where mostly needed and are likely to have great impact. It should be first noted that mortality measures from the 2011 census were estimated based on household deaths occurring in the 12 months prior to the census date as well as last live births by women in childbearing age.

a) Distribution of Reported Deaths by Age and Sex

Figure 3.1 shows the distribution of deaths by age and sex in the 2011 census. The shape of the "death pyramid" results from both population structure, e.g., the number of people alive in each age group, and the risk of death in each age group. The findings indicate that deaths are concentrated more at younger ages of 0 – 4 years. Deaths are far less among older children, yet more among middle-aged adults where there is a notable hump – especially among males. This is likely due to a high prevalence of HIV/AIDS among the sexually active group. See also Chapter 4.

Figure 3.1 Distribution of Reported Deaths by Age and Sex, Namibia 2011



b) Crude Death Rate (CDR)

The number of deaths in a given year divided by the mid-year population, times 1,000. It is given by the formula:

$$\frac{D}{P}x1000$$

Where **D** is deaths in a year, **P** is the total population or mid-year population.

c) Infant Mortality Rate (IMR)

The number of deaths of children younger than 1 year (12 months) per 1,000 live births in a given population. It is represented by the formula:

$$IMR = \frac{Number\ of\ deaths\ of\ infants\ under\ age\ 1\ in\ a\ given\ year}{Total\ live\ births\ in\ that\ year} x\ 1{,}000$$

The IMR is one of the key indicators that measures the survival status of the population.

d) Child Mortality Rate (CMR)

The number of children dying under the age of 5 per 1,000 live births in a given population.

$$CMR = \frac{Number\ of\ deaths\ of\ children\ age\ 1-4\ in\ a\ given\ year}{Total\ live\ births\ in\ that\ year} x\ 1{,}000$$

Table 3.1 summarizes reported deaths, the Crude Death Rate (CDR), the Infant Mortality Rate (IMR), and the Child Mortality Rate (CMR). The first two of these measures are computed directly from census data, while the latter two are drawn from unadjusted life tables. Life table methodology and adjusted life tables will be discussed in Chapter 4.

CDR for Namibia is 10.7 per 1,000 inhabitants

The reported CDR for Namibia is 10.7 per 1,000 inhabitants, which implies that for every 1,000 inhabitants there were about 11 deaths. The CDR for Rural areas (12.2) is higher than for Urban areas (8.7). At regional level, Kavango had the highest CDR of 14.6 deaths per 1000 inhabitants.

The reported IMR for Namibia is 44 deaths per 1,000 live births, which implies that for every 1,000 live births there were 44 deaths among children aged less than a year. A disparity in IMR can be observed for Urban and Rural areas with 37 and 48 deaths per 1,000 live births respectively. At regional level, it is worth noting that Zambezi and Kavango had the highest IMR of 74 and 70 respectively. The population policy for 1997 targets to reduce IMR from 57 to 30 per 1,000 live births by 2015. The question is whether this target will be realized by 2015?

The reported CMR for Namibia is 69 deaths per 1,000 live births, which implies that for every 1,000 live births there were 69 deaths among children aged below 5 years. A disparity in CMR can be observed for Urban and Rural areas with 61 and 74 child deaths per 1,000 live births respectively. At regional level, it is worth noting that Kavango and Zambezi had the highest CMR of 112 and 110 respectively.

Table 3.1 Mortality Indicators and Deaths, Reported in 2011 Census

Area	Total Reported Deaths	Crude Death Rate (CDR)	Infant Mortality Rate (IMR)	Child Mortality Rate <5 (CMR)
Namibia	22 668	10.7	44	69
Urban	7 858	8.7	37	61
Rural	14 810	12.2	48	74
Zambezi	1 063	11.7	74	110
Erongo	1 069	7.1	32	50
Hardap	1 033	13.0	46	74
//Karas	826	10.7	40	59
Kavango	3 268	14.6	70	112
Khomas	2 361	6.9	30	48
Kunene	1 095	12.6	55	81
Ohangwena	3 059	12.5	41	67
Omaheke	805	11.3	41	65
Omusati	2 797	11.5	39	60
Oshana	1 950	11.0	41	61
Oshikoto	1 863	10.2	36	55
Otjozondjupa	1 486	10.3	38	59

3.2 Mortality Indicators Over Time

This section compares the IMR and CMR from the last three censuses of Namibia. The 2011 statistics in the figures presented below are unadjusted. The statistics from the 1991 and 2001 censuses come from census reports which may have included adjustments to reported data, although the details of any such adjustments are unclear.

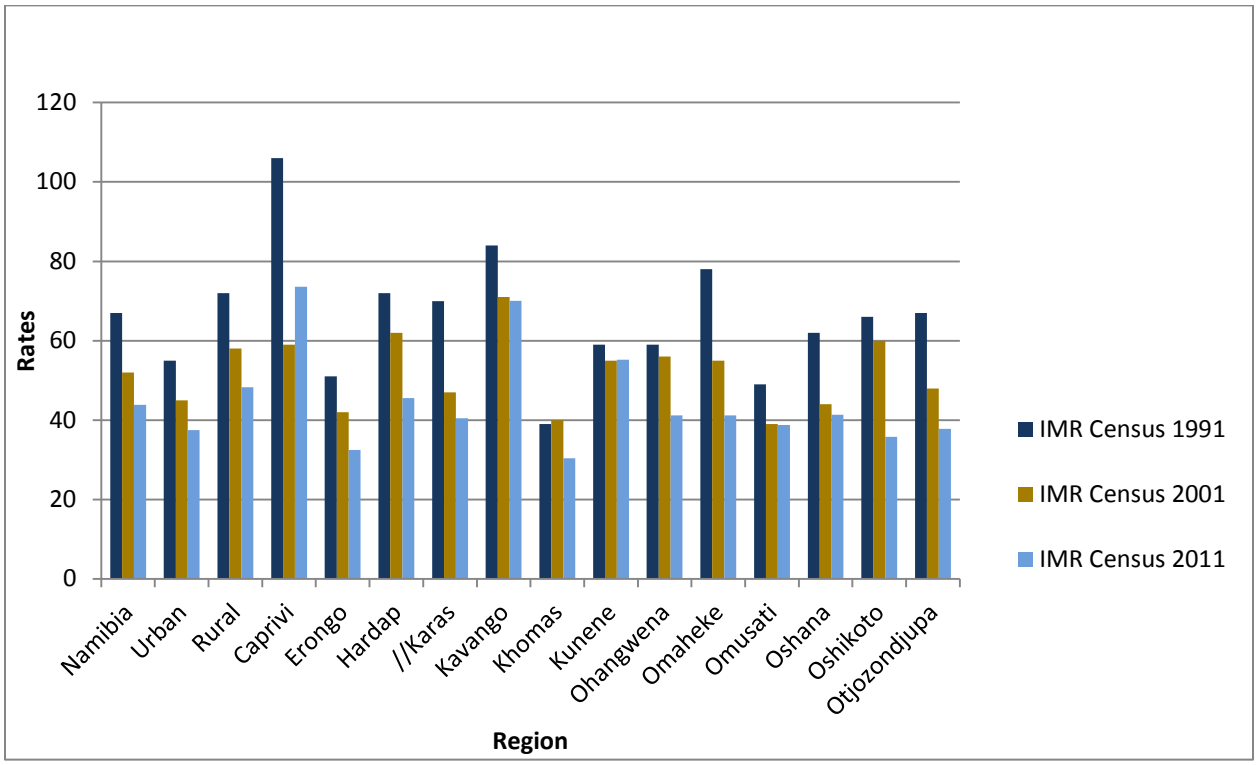
a) Infant Mortality Rate

IMR for Namibia is 44 deaths per 1,000 live births

Figure 3.2 shows IMR by area. The results indicate that Namibia's IMR has been declining steadily for the past two decades, from 67 in 1991 to 52 in 2001 to 44 in 2011. Similar trends are observed in Rural and Urban areas, as well as in most of the regions. It is worth noting that the IMR for some regions, particularly for Zambezi, increased from 59 (2001) to 74 (2011), while the IMR for Kavango declined slightly with one percentage point from 71 (2001) to 70 (2011). The IMR for Kunene remains constant (55) for the two periods (2001 and 2011). In general, these results call for further investigation to identify factors leading to an increase and slow a decline in infant mortality rates in those regions or Namibia as a whole. The Millennium Development Goal (MDG) targets to reduce the infant mortality of 1990 by two-thirds by the year 2015. Given the current IMR of 44 deaths of infant deaths per 1000 live

births, the question is whether we are close to achieving the target by 2015. This may be likely if infant mortality continue to decline in the remaining four years after 2011.

Figure 3.2 Infant Mortality Rates by Region - 1991, 2001 and 2011

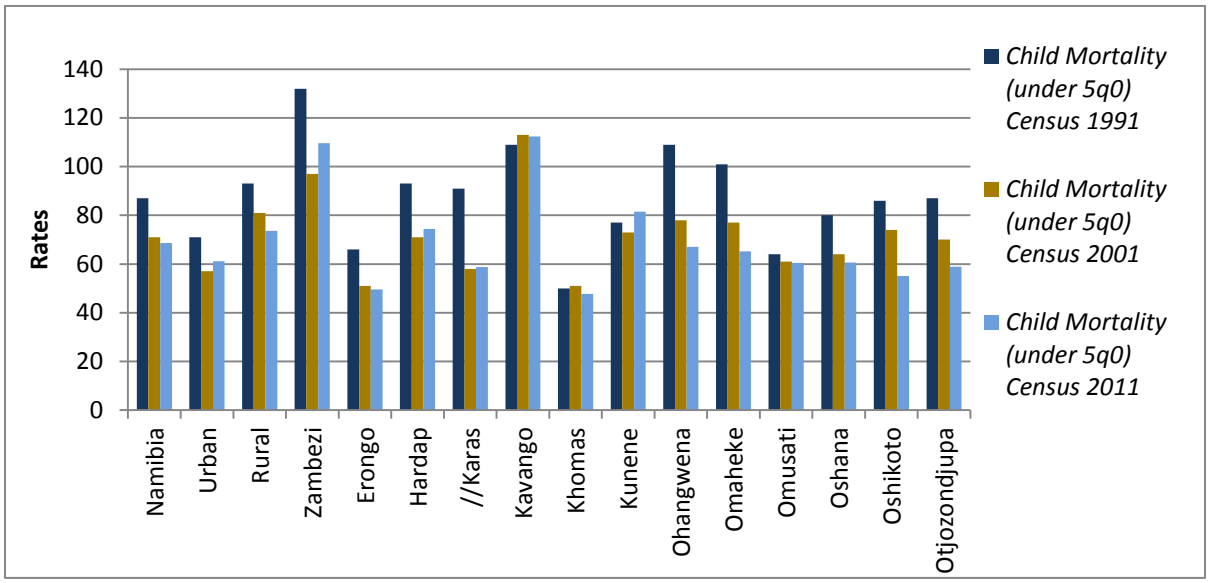


b) Child Mortality Rate

CMR for Namibia is 69 deaths per 1,000 live births

Figure 3.3 shows under-five years child mortality by area. The findings depict that there was a small decline in the CMR from 71 (2001) to 69 (2011). Moreover, since the IMR improvements are included within the CMR, these data suggest that mortality at ages 1-4 may have actually increased between 2001 and 2011. As in the case of infant mortality, there was considerable diversity in CMR trends across the regions. It is worth noting that the CMR for some regions increased, in particular for Zambezi, viz. from 59 (2001) to 74 (2011). Hardap, Karas and Kunene regions also reported an increase in child mortality between 2001 and 2011. CMRs for Kavango and Omusati regions remained unchanged for the two periods 2001 and 2011. The MDG targets to reduce the CMR of 1990 by two-thirds by year 2015. This target is not likely to be achieved.

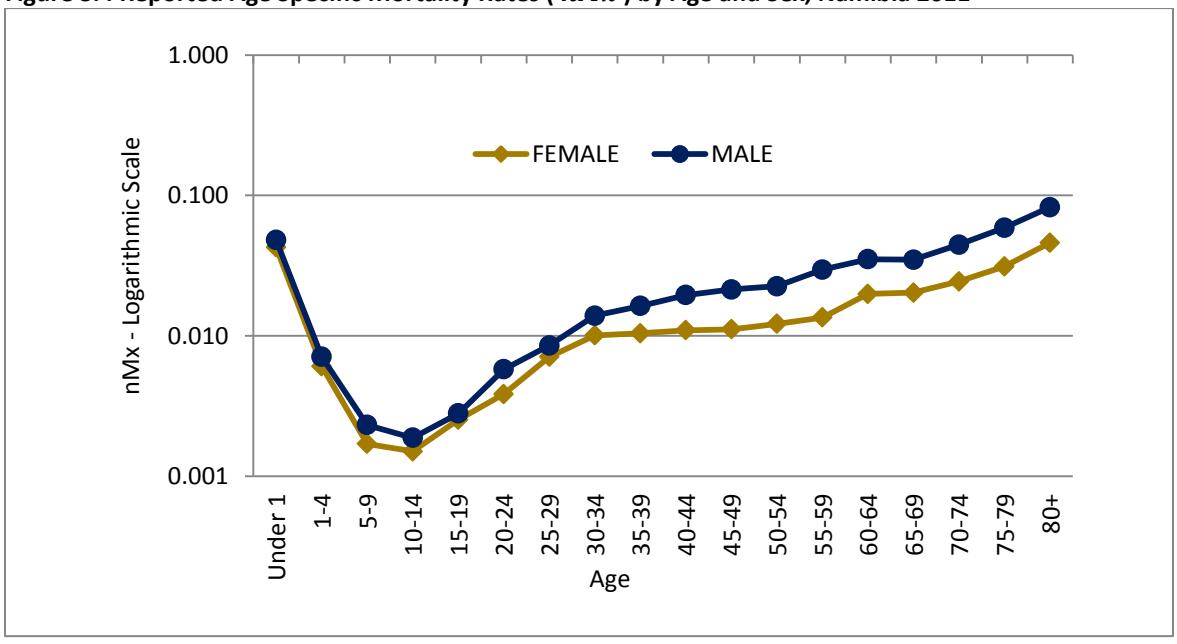
Figure 3.3 Child Mortality (Under 5) by Region - 1991, 2001 and 2011



c) Age Specific Mortality Rates

Figure 3.4 shows reported mortality rates by age and sex in 2011. The y-axis uses a logarithmic scale in order to clearly view age patterns. The age pattern of mortality is typically shaped like the letter "J," but in Namibia the patterns looks more like a "W" shape, (See Figures Appendices I and III). One possible explanation for the W shape could be HIV/AIDS-related deaths at mid-adult ages. Among females, the W shape is likely to be caused by high cases of maternal mortality.

Figure 3.4 Reported Age Specific Mortality Rates (nMx) by Age and Sex, Namibia 2011



4 - MORTALITY BY AGE AND SEX, WITH ADJUSTED LIFE TABLES

4.1 Life Expectancy and Age Specific Mortality Rates

a) Life Expectancy

A life table consists of data on survivorship and the probability of the death of individuals within a given population. It provides an understanding of the underlying changes in mortality. A life table shows persons at each age group, the probability that they die before their next birthdays and number of years they are expected to live before dying. The following are the notations used to develop a life table:

nMx = Age-specific central death rate.
nax = Average person-years lived by those who die between ages x and $x + n$.

nqx = Probability of dying between exact ages x and $x + n$ (age-specific mortality rate).

l_x = Number of survivors at age x.

ndx = Number of deaths occurring between ages x and $x + n$.

nLx = Number of person-years lived between ages x and $x + n$.

T_x = Number of person-years lived after age x.

e_x= Life expectancy at age x.

Life tables by sex were developed for Namibia as a whole and for the regions. As indicated above, reported death rates from the 2011 census at most ages were accepted, while values at older ages were substituted with those from the North Model Life Table. For detailed methodology see appendix I.

Henceforth, these life tables are referred to as adjusted life tables. Table 4.1 summarizes the overall adjusted life expectancies at birth by sex and region. For Namibia as a whole, the adjusted life expectancy at birth was 53.3 for males and 60.5 for females (56.9 for both sexes). At regional level, Erongo had the highest life expectancies for both males (63 years) and females (67 years) followed by Khomas with 61 and 66 years for males and females respectively. On the other hand, Kavango had the lowest life expectancy of 44 and 53 years for males and females respectively. Similarly, life expectancy for urban areas is higher than for rural areas for both males and females.

The table also shows that generally in Namibia, females are expected to live 7 years longer than males. Although a female advantage in life expectancy is common throughout the world, this differential is unusually large compared to other countries in sub-Saharan Africa. The sex differential in life expectancies was higher in rural than in urban areas. At regional level the difference in life expectancy for males and females was much bigger in Omusati (46.6 for males and 62.1 for females), which means a female will live 15.5 years longer than a male counterpart. In contrast, in Omaheke, males actually had

a slight advantage over females (57.3 years for males and 56.9 years for females). That means males will live about 4 months longer than females.

Although these regional findings seem odd and may reflect as yet unspecified reporting anomalies, other evidence suggests they may be genuine. For instance, regions with the highest female life expectancy tended to have the largest female population as per the 2011 Census Reports. That would be expected, since lower survival for males should result in lower proportions of males in the population. Similar patterns for females living longer than males have been observed since the 1991 and 2001 censuses. In addition, the map (Figure 4.1) below shows that females live longer than males across all regions except for Omaheke where the expectation of life is almost equal.

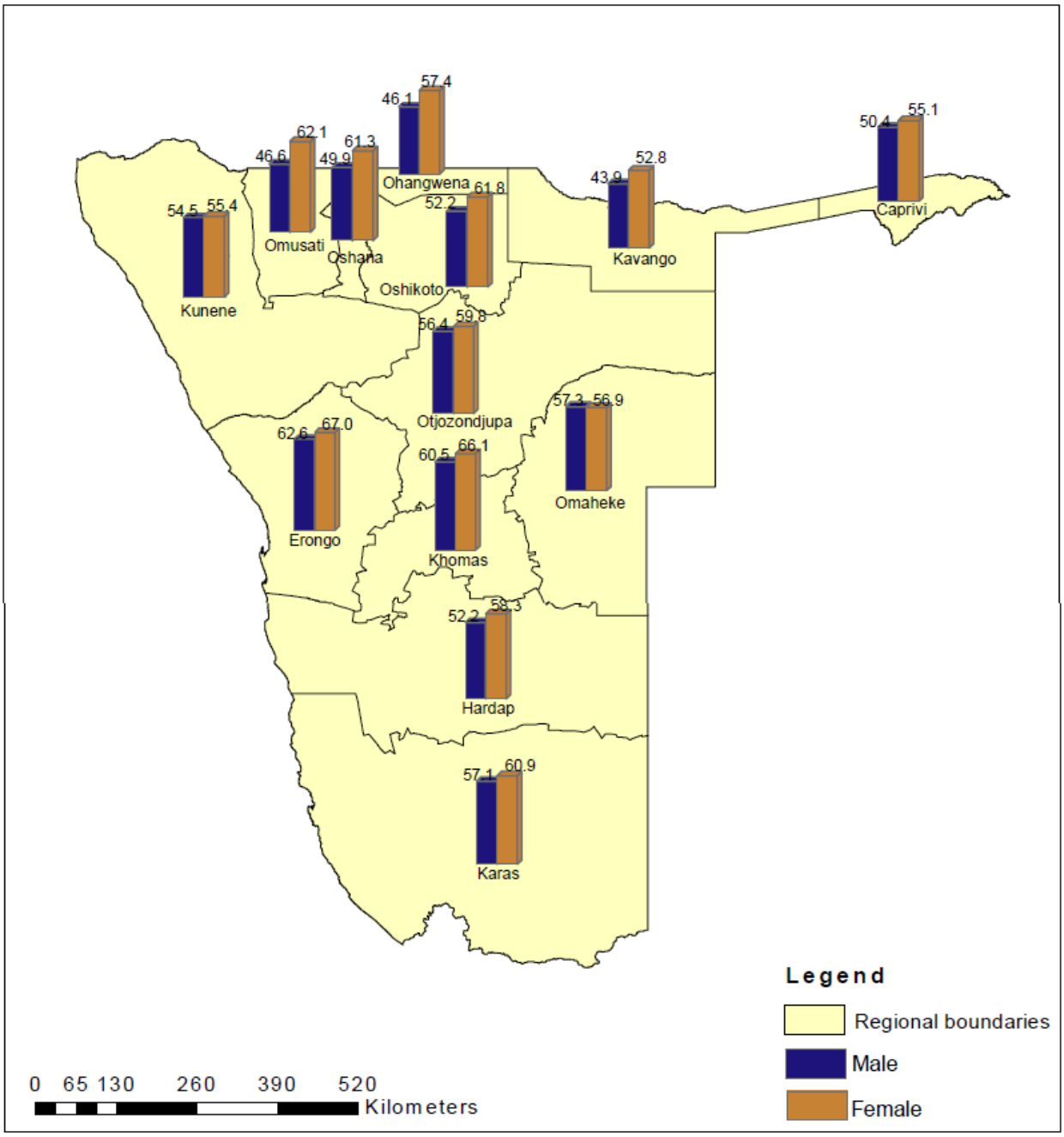
> Life expectancy at birth was 53.3 years for males and 60.5 years for females in 2011

Table 4.1 Life Expectancy (in years) by Area, Sex and Census Years

Area	2011		2001*		1991*	
	Male	Female	Male	Female	Male	Female
Namibia	53.3	60.5	47.6	50.2	59.1	62.8
Urban	57.0	62.6	51.2	52.4	-	-
Rural	49.4	58.0	46.7	49.5	-	-
Zambezi	50.4	55.1	40.7	42.5	51.4	54.5
Erongo	62.6	67.0	53.8	59.4	62.7	66.5
Hardap	52.2	58.3	51.0	52.6	57.9	61.5
//Karas	57.1	60.9	53.9	61.4	58.4	62.0
Kavango	43.9	52.8	41.9	41.5	55.5	59.0
Khomas	60.5	66.1	54.1	56.2	65.5	69.5
Kunene	54.5	55.4	50.0	57.2	60.7	64.5
Ohangwena	46.1	57.4	43.2	44.8	60.9	64.6
Omaheke	57.3	56.9	55.4	60.0	56.7	60.3
Omusati	46.6	62.1	46.4	50.3	63.0	66.9
Oshana	49.9	61.3	46.2	47.7	60.3	64.0
Oshikoto	52.2	61.8	50.0	49.8	59.3	63.0
Otjozondjupa	56.4	59.8	54.9	61.2	59.0	62.6

***Note:** * 2001 Census, National Report*

Figure 4.1 Life Expectancy by Sex and Region, 2011 Census



Tables 4.2 to 4.4 show the life expectancy for specific ages and for both sexes, males and females separately. In Namibia, men and women at birth are expected to live for 57 years on average, whereas those aged 80 and above are expected to live only for 6 more years on average. Life expectancy is given in the last columns of each table.

More abridged life tables by sex and area - death rates (nMx), survival probabilities l_x and life expectancy e_x are presented in appendix II.

Table 4.2 Adjusted Abridged Life Table for Both Sexes, Namibia

Age(x)	*Width(n)*	nMx	nax	nqx	l_x	*ndx*	*nLx*	T_x	e_x
0	1	0.04547	0.18	0.04384	100 000	4 384	96 412	5 694 838	56.9
1	4	0.00658	1.66	0.02592	95 616	2 479	376 668	5 598 427	58.6
5	5	0.00201	2.50	0.00999	93 137	930	463 362	5 221 759	56.1
10	5	0.00169	2.50	0.00841	92 207	775	459 099	4 758 397	51.6
15	5	0.00266	2.50	0.01321	91 432	1 208	454 140	4 299 298	47.0
20	5	0.00478	2.50	0.02363	90 224	2 132	445 790	3 845 158	42.6
25	5	0.00778	2.50	0.03817	88 092	3 363	432 054	3 399 368	38.6
30	5	0.01192	2.50	0.05789	84 730	4 905	411 384	2 967 313	35.0
35	5	0.01324	2.50	0.06407	79 824	5 114	386 335	2 555 929	32.0
40	5	0.01499	2.50	0.07224	74 710	5 397	360 058	2 169 594	29.0
45	5	0.01580	2.50	0.07598	69 313	5 266	333 401	1 809 535	26.1
50	5	0.01666	2.50	0.07998	64 047	5 123	307 428	1 476 135	23.0
55	5	0.02059	2.50	0.09793	58 924	5 770	280 196	1 168 706	19.8
60	5	0.02670	2.50	0.12517	53 154	6 653	249 137	888 510	16.7
65	5	0.03243	2.50	0.14998	46 501	6 974	215 069	639 373	13.7
70	5	0.05198	2.50	0.22999	39 527	9 091	174 906	424 304	10.7
75	5	0.08270	2.50	0.34267	30 436	10 429	126 106	249 398	8.2
80+		0.16227	6.16	1.00000	20 006	20 006	123 292	123 292	6.2

Table 4.3 Abridged Life Table Based on Deaths and Population for Males, Namibia

Age(x)	Width(n)	nMx	nax	nqx	l_x	ndx	nLx	T_x	e_x
0	1	0.04821	0.18	0.04637	100 000	4 637	96 178	5 332 129	53.3
1	4	0.00709	1.72	0.02790	95 363	2661	375 383	5 235 951	54.9
5	5	0.00232	2.50	0.01153	92 702	1069	460 838	4 860 568	52.4
10	5	0.00188	2.50	0.00935	91 633	857	456 023	4 399 730	48.0
15	5	0.00280	2.50	0.01391	90 776	1 262	450 726	3 943 707	43.4
20	5	0.00577	2.50	0.02844	89 514	2 545	441 206	3 492 981	39.0
25	5	0.00853	2.50	0.04176	86 968	3 632	425 763	3 051 775	35.1
30	5	0.01391	2.50	0.06720	83 337	5 600	402 684	2 626 012	31.5
35	5	0.01631	2.50	0.07837	77 737	6 092	373 455	2 223 328	28.6
40	5	0.01952	2.50	0.09307	71 645	6 668	341 555	1 849 873	25.8
45	5	0.02141	2.50	0.10162	64 977	6 603	308 378	1 508 318	23.2
50	5	0.02254	2.50	0.10668	58 374	6 227	276 303	1 199 941	20.6
55	5	0.02958	2.50	0.13773	52 147	7 182	242 780	923 638	17.7
60	5	0.03509	2.50	0.16132	44 965	7 254	206 691	680 857	15.1
65	5	0.03962	2.50	0.18024	37 711	6 797	171 565	474 166	12.6
70	5	0.06170	2.50	0.26726	30 914	8 262	133 916	302 601	9.8
75	5	0.09646	2.50	0.38859	22 652	8 802	91 254	168 685	7.4
80+		0.17886	5.59	1.00000	13850	13850	77 431	77 431	5.6

Table 4.4 Abridged Life Table Based on Deaths and Population for Females, Namibia

Age(x)	Width(n)	nMx	nax	nqx	l_x	ndx	nLx	T_x	e_x
0	1	0.04276	0.17	0.04130	100 000	4 130	96 588	6 053 670	60.5
1	4	0.00607	1.67	0.02396	95 870	2297	378 119	5 957 082	62.1
5	5	0.00170	2.50	0.00846	93 573	791	465 887	5 578 963	59.6
10	5	0.00150	2.50	0.00748	92 782	694	462 174	5 113 076	55.1
15	5	0.00252	2.50	0.01254	92 088	1 155	457 553	4 650 902	50.5
20	5	0.00385	2.50	0.01905	90 933	1 732	450 335	4 193 349	46.1
25	5	0.00709	2.50	0.03485	89 201	3 109	438 234	3 743 014	42.0
30	5	0.01008	2.50	0.04917	86 093	4 233	419 879	3 304 780	38.4
35	5	0.01042	2.50	0.05077	81 859	4 156	398 906	2 884 900	35.2
40	5	0.01096	2.50	0.05334	77 703	4 145	378 154	2 485 994	32.0
45	5	0.01114	2.50	0.05417	73 559	3 985	357 831	2 107 840	28.7
50	5	0.01218	2.50	0.05908	69 574	4 110	337 593	1 750 009	25.2
55	5	0.01350	2.50	0.06530	65 463	4 275	316 631	1 412 416	21.6
60	5	0.01988	2.50	0.09471	61 189	5 795	291 457	1 095 785	17.9
65	5	0.02805	2.50	0.13106	55 394	7 260	258 818	804 329	14.5
70	5	0.04604	2.50	0.20642	48 134	9 936	215 829	545 510	11.3
75	5	0.07487	2.50	0.31534	38 198	12 045	160 876	329 681	8.6
80+		0.15493	6.45	1.00000	26153	26153	168 806	168 806	6.5

b) Age Specific Mortality Rates

In most societies, the age pattern of mortality resembles the letter J. Mortality is high among infants and young children, declines rapidly and stays low for older children, teens, and young adults, then rises progressively at older ages. However, in Namibia, like many other countries in sub-Saharan Africa, the age pattern has a "W" shape. This is most likely due to the high prevalence of HIV/AIDS, which raises mortality primarily among younger and middle-age adults since these are more risk of contracting HIV infections. The W shape is more pronounced in rural areas (Figures 4.2 and 4.3). A possible explanation could due to low quality health services in rural areas compare to urban areas and poverty which is more prevalent in rural areas.

Figure 4.2 Adjusted *Male* Mortality Rates by Age, Namibia, Urban and Rural

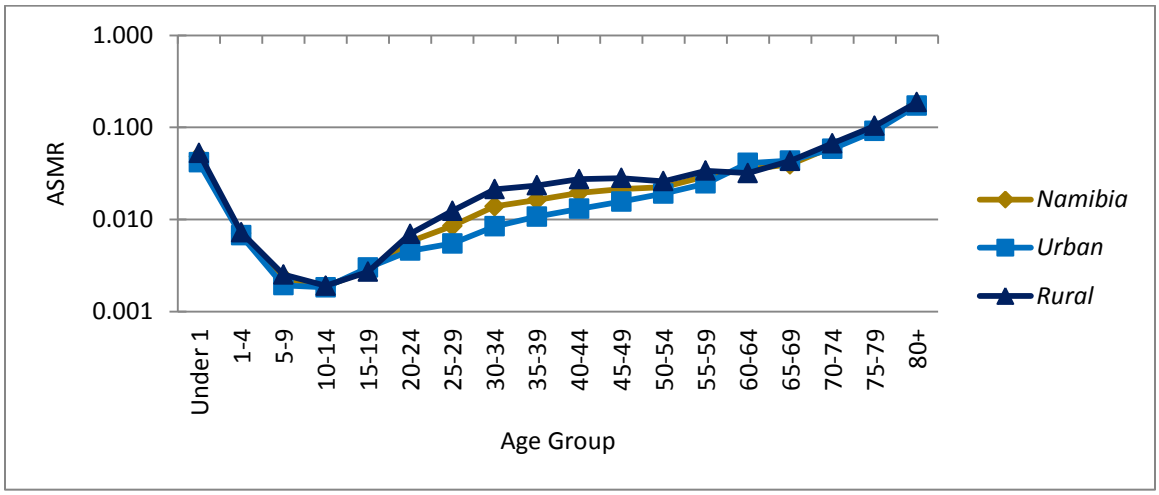
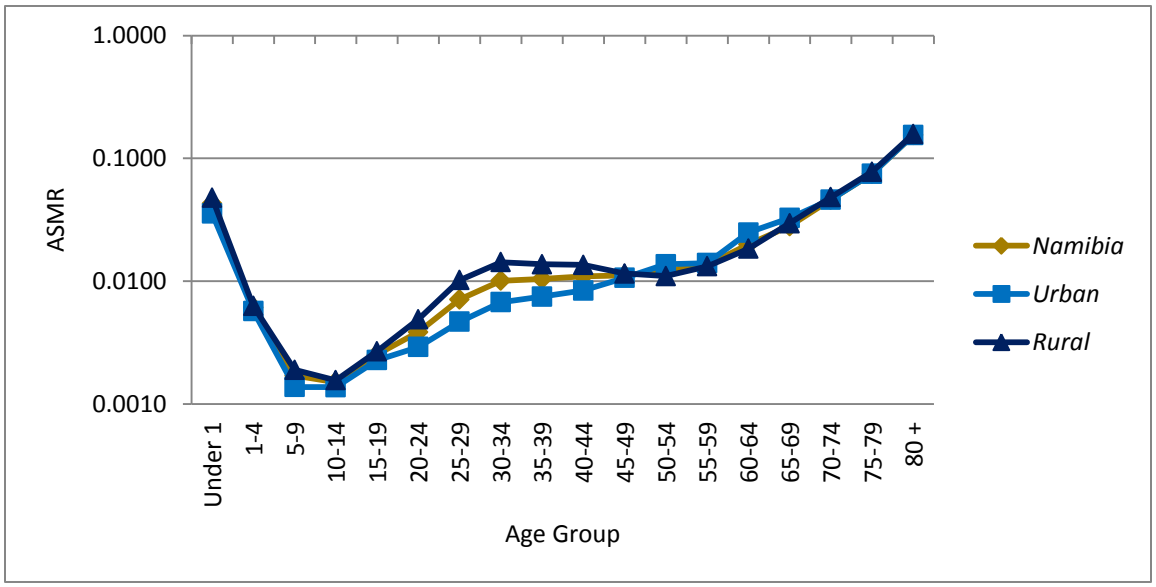


Figure 4.3 Adjusted *Female* Mortality Rates by Age, Namibia, Urban and Rural



Figures 4.4 and 4.5 show that the W-shape has changed over time. The figures show mortality rates by age for males and females in the 2001 and 2011 censuses, as well as the 2006 intercensal demographic

survey (2006 NIDS). The W-shape worsened between 2001 and 2006, although 2006 appears to have been a peak. By 2011, the W-shape was less severe, a likely reflection of the decreasing impact of HIV/AIDS on mortality due to the introduction of health intervention programmes.

Figure 4.4 Age–Specific Death Rates by Age for *Males* 2001 and Adjusted 2011 Census, 2006 NIDS

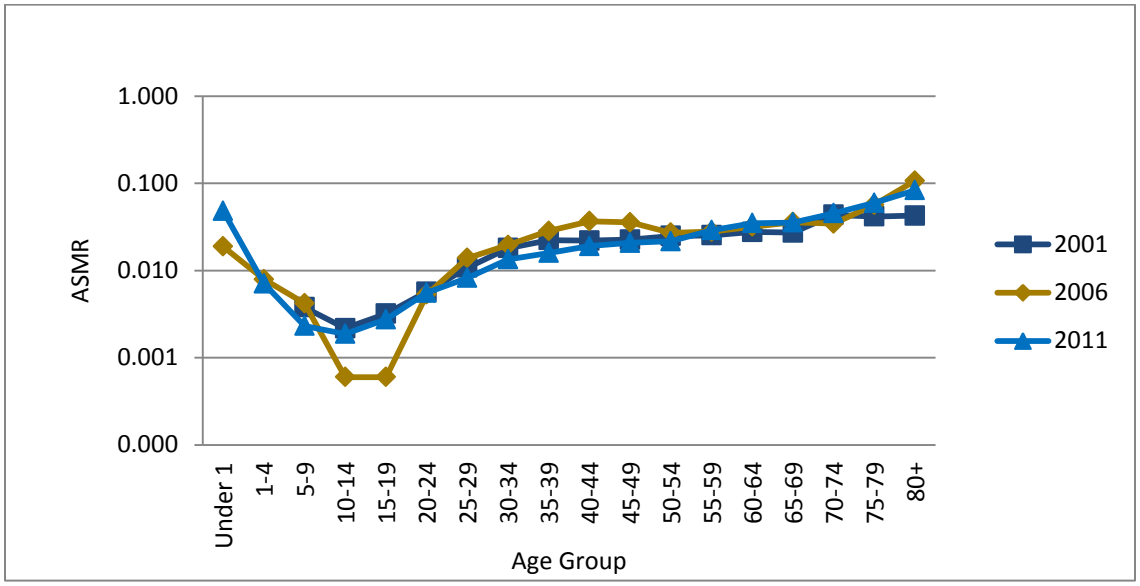
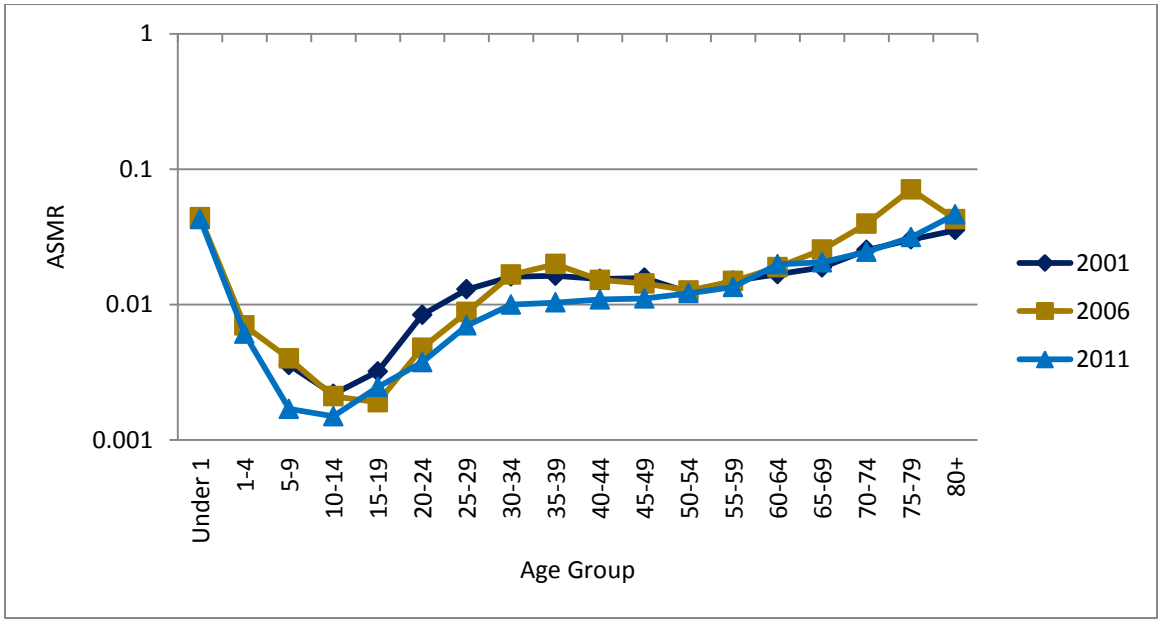


Figure 4.5 Age–Specific Death Rates by Age for *Females* 2001 and Adjusted 2011 Census, 2006 NIDS



5 - INFANT MORTALITY BY SOCIAL CHARACTERISTICS OF MOTHER

This section examines the risk of infant death by mother's social characteristics, including age, marital status, and education. For each such social group, the risk of infant death was calculated by dividing the number of zero-year olds who died during the 12 months prior to the census by the number of live births in the 12 months prior to the census. Women aged 15 – 49 were asked questions regarding the above social characteristics.

About 3.7 percent of infants born to women aged 45 – 49 died in 2011

Figure 5.1 shows the risk of infant death by age of mother. The age pattern indicates that the greatest risk to infants was among younger mothers under age 20 years and older mothers above age 35 years, with the risk of infant deaths rising sharply during the latest childbearing ages. About 3.7 percent of infants born to women in the age group 45–49 died in 2011, almost double that for infants born to women in the age group 20-34. The 2006/07 NDHS confirms that the likelihood of infant mortality was higher among women in older ages. Rising infant mortality at the oldest childbearing ages possibly reflects a variety of factors, such as the large number of children already born and needing care. The percentage of infant deaths for the youngest age group 15–19 is also the highest (2.4 percent) compared to age groups 20-24, 25-29, and 30-34. The higher infant mortality at younger ages may result from physical immaturity or lack of parenting experience among the youngest mothers.

Figure 5.1 Percentage of Deaths Among Births in the Last 12 Months by Age of Mother, Namibia 2011

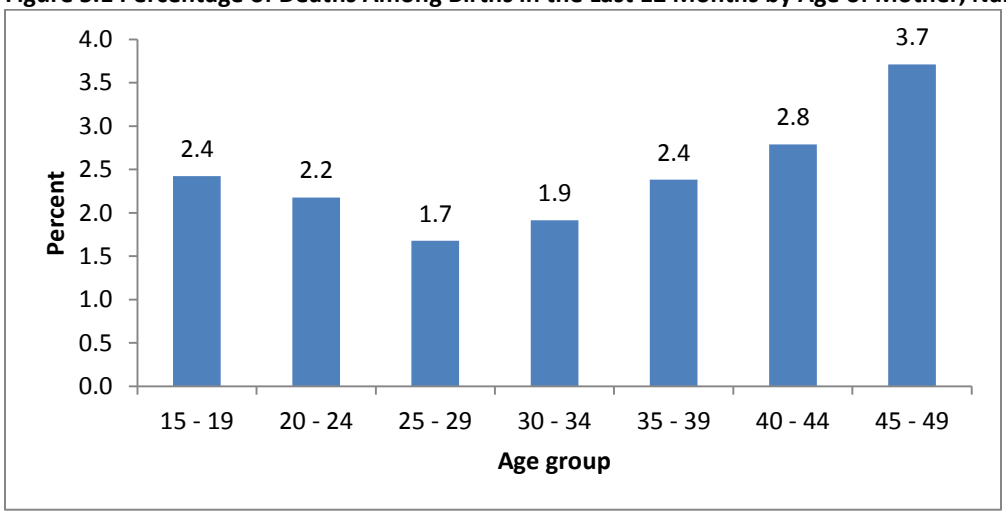


Figure 5.2 shows the percentage of infant deaths by marital status of the mother. The highest percentage of infant deaths was recorded for women who were divorced, followed by women who were separated from their spouses. The lowest percentage of infant deaths was recorded among women who were married (1.9 percent). This means that the likelihood of infant death is higher among women who were widowed or divorced, a phenomenon that requires an investigation to determine the causes of infant deaths in this category.

Figure 5.2 Percentage of Deaths Among Births in the Last 12 Months by Marital Status of Mother, Namibia 2011

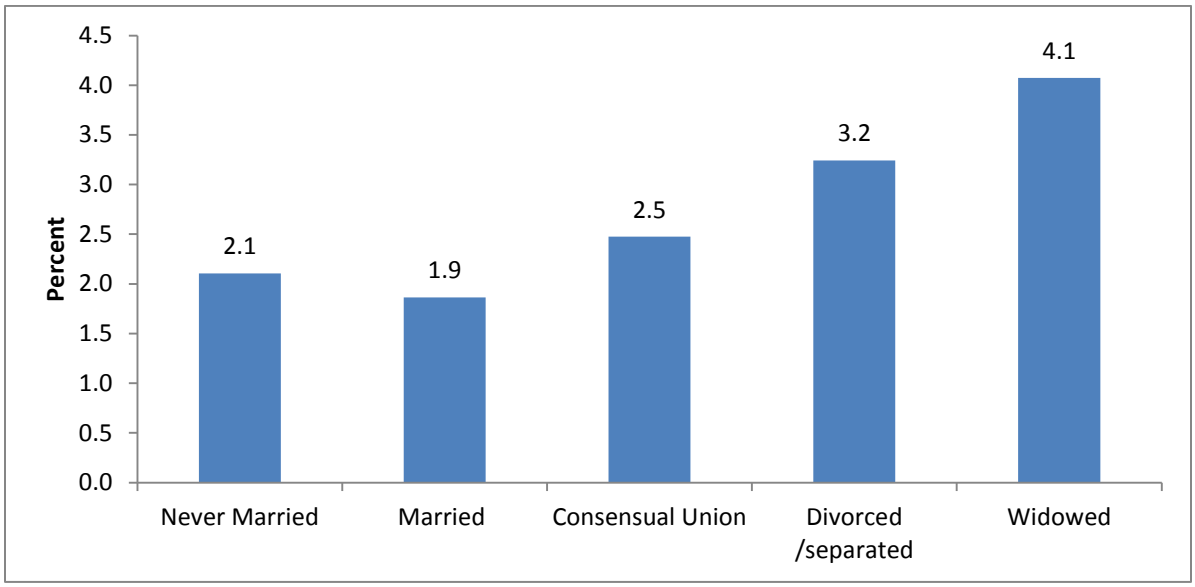
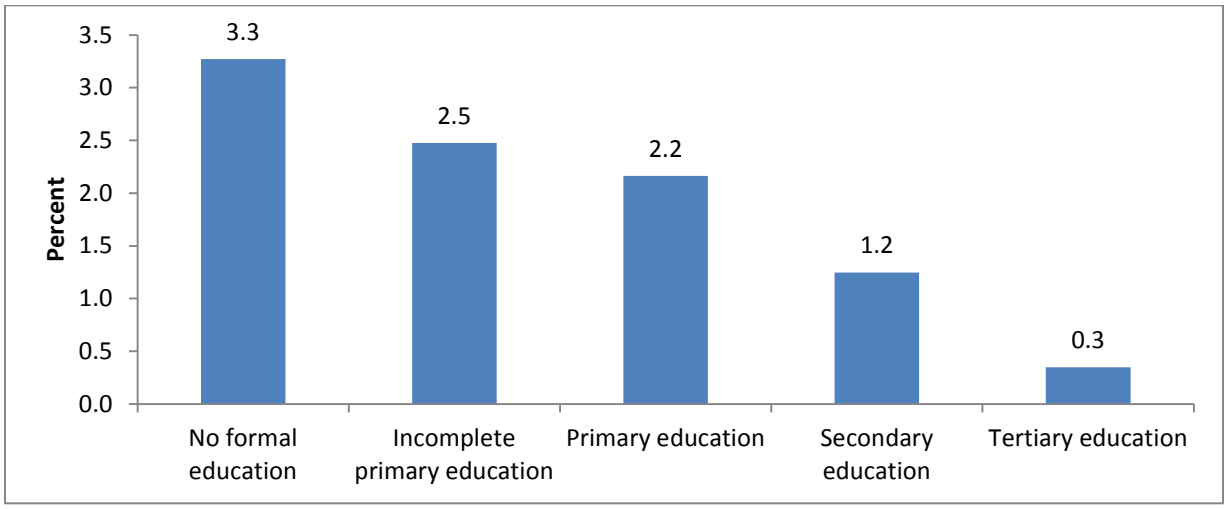


Figure 5.3 shows the percentage of infants not surviving according to mother's education. The pattern shows a decline of risk of infant death with a higher education level of mothers. Mothers with a tertiary and secondary education experience the lowest percentage of infant deaths of 0.3 and 1.2 percent respectively. These are less than half the risk of infant deaths among mothers with incomplete primary or no formal education, viz. 3.3 and 2.5 percent respectively. Furthermore, analysis confirms that these differences according to education were not due to the fact that less educated mothers tend to be older, however, as expected, the likelihood of infant deaths was sharply lower for those with higher education. In addition, the 2006/07 NDHS found that infants born to mothers with no education have a higher probability of dying at age 0 than those born by mothers with completed secondary school.

Infants born to mothers with no education have a higher probability of dying at age 0

Figure 5.3 Percentage of Deaths Among Births in the Last 12 Months by Level of Education of Mother, Namibia2011



In conclusion, the results clearly show that infant deaths are high for young and older mothers, for divorced/separated or widowed mothers and for mothers with little or no education. Therefore, interventions must target these groups of women to achieve the goal of reducing infant deaths.

6 - CAUSES OF DEATH AND MATERNAL MORTALITY

a) Causes of Death

In addition to levels and trends of overall mortality, it is important to consider the causes of death. For all deaths reported in the 2011 census, an additional question asked respondents to identify the causes of death. Five major categories of cause of death were listed in the census questionnaire: illness, fatal accident, murder, suicide, and pregnancy-related death.

Illness was the highest cause of death with over 18,000

Table 6.1 below shows the causes of death by age group. The result shows that illness was the highest cause of death in Namibia and accounted for over 18,000 deaths, followed by accidents (1,613), suicide (642) and murder (472). The age group with the most deaths is 60 years and above and this was mostly due to illness as can observed in the table.

Table 6.1 Causes of Death by Age Group

Age group	Total	Causes of Death						
		Illness	Accident	Murder	Suicide	Pregnancy Related	Other	Don't Know
Total	22 668	18 118	1 613	472	642	375	658	790
0 - 4	4 031	3 003	242	35	0	0	171	580
5 - 14	831	586	175	11	8	4	31	16
15 - 24	1 495	808	266	133	137	85	49	17
25 - 39	4 311	3 128	421	158	272	206	88	38
40 - 59	4 271	3 616	280	64	126	49	86	50
60+	6 163	5 669	146	32	58	0	194	64
Don't know	1 566	1 308	83	39	41	31	39	25

The proportional distribution of such deaths for males and female is shown in Figures 6.1a and 6.1b.
A large majority of reported deaths were due to illness, which accounted for 77 and 83 percent of deaths among males and females respectively. The spectrum of illnesses was too broad and included infectious and degenerative diseases, hence making it difficult to identify which illness contributed more to the higher number of deaths caused by illness. Further investigations are needed to look into the breakdown of deaths due to illness to differentiate, for example, between infectious diseases (AIDS, malaria, etc.) and all degenerative diseases (heart failure, cancer, etc.).

The next most common cause of death for males was accidents, which might be explained by behavioural and occupational factors. Females also recorded accidents as the second highest common cause of death. Pregnancy-related deaths are also notably high.

Figure 6.1a Proportion of Deaths by Cause, *Males*

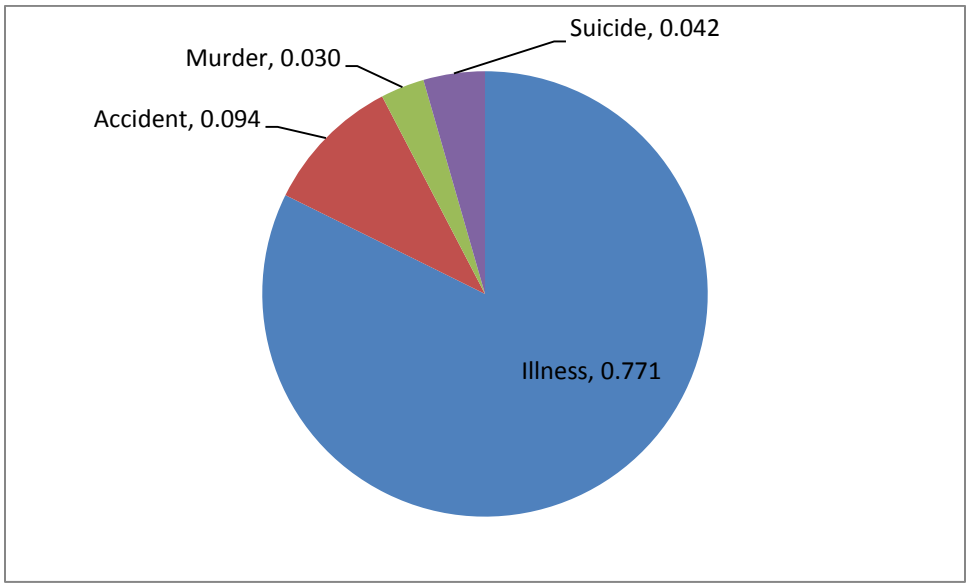
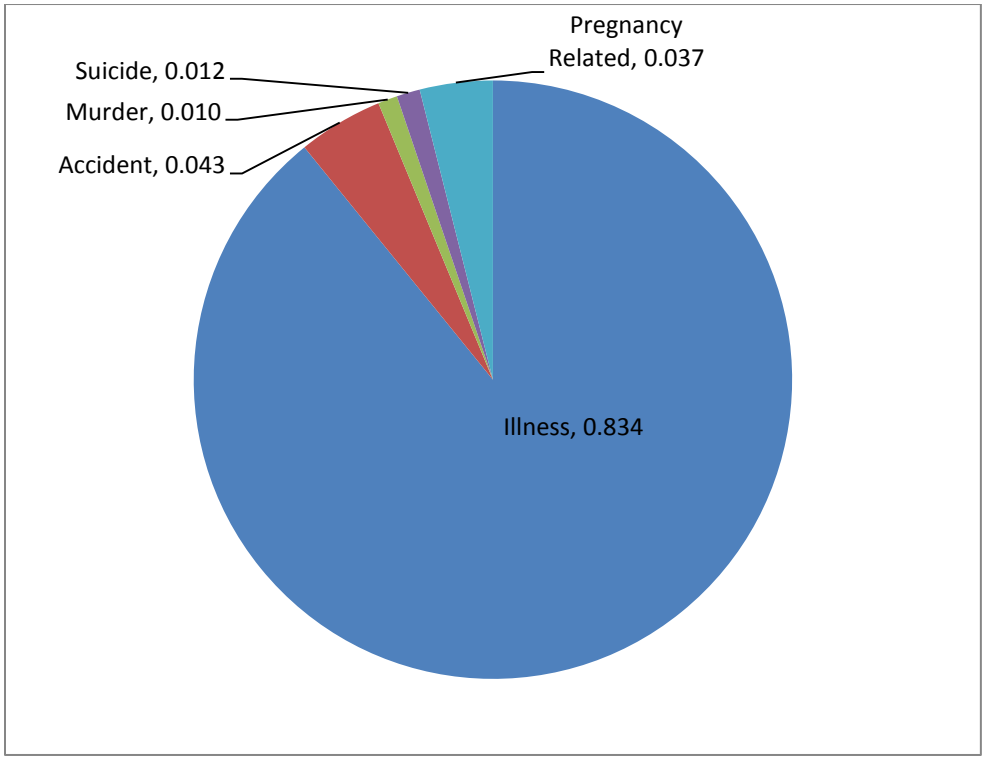


Figure 6.1b Proportion of Deaths by Cause, *Females*



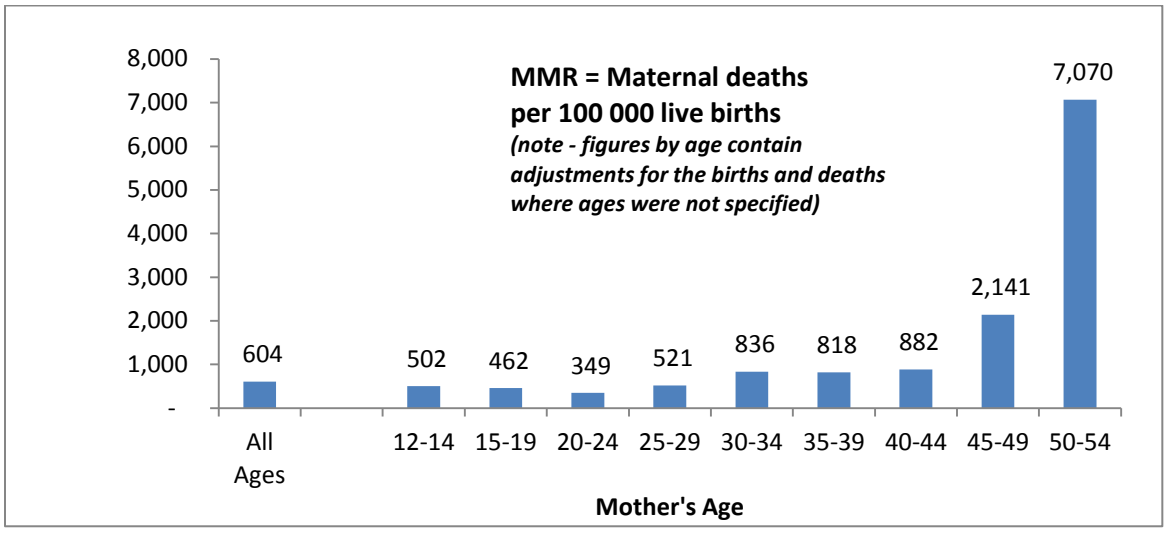
Reported Maternal Mortality Ratio (MMR) was 604 maternal deaths per 100,000 live births

b) Maternal Mortality

Maternal deaths are those which occur while pregnant, during child birth, or within 2 months after child birth and which are caused by complications during pregnancy or maternity. As per guidelines from the World Health Organization (WHO), deaths to women during this interval that are unrelated to maternity (e.g., accidents) should not be included (WHO, 2005). There is a variety of ways to measure maternal mortality. Ideally, one would like to know the percentages of pregnancies that result in maternal deaths.

In the 2011 census, 375 maternal deaths were recorded. A total of 62,046 births were also recorded during the same interval. Thus, the reported Maternal Mortality Ratio (MMR) was 604 maternal deaths per 100,000 live births. The MMR varied widely according to age group (Figure 6.2). The lowest ratio was in age group 15 – 24 (349 – 462). Higher ratios were observed at the very youngest ages (12 – 14) and at progressively older ages. For instance, the MMR was over 800 from age group 30 – 44, over 2000 at age group 45 – 49, and over 7,000 in age group 50 – 54. Thus, although fertility rates drop sharply at older childbearing ages, the risk of maternal mortality also rises sharply at these ages.

Figure 6.2 Reported Maternal Mortality Ratio (MMR) by Mother's Age



Hill et al. (2001) developed a framework for adjusting such estimates for possible biases in the completeness of reporting of women at reproductive ages, as well as of births and maternal deaths. The reported MMR estimates above are accurate to the extent that such biases are minor. Yet even if biases exist, correcting for them can be problematic – some of the indirect methods used to estimate reporting completeness can misfire due to reporting problems in the measures used to calculate them or violations of simplifying assumptions.

Goal 5 of the MDG aims to improve maternal health by reducing maternal mortality ratio by three-fourths and achieve universal access to reproductive health services in sub-Saharan Africa. According to

the United Nations (UN) MDG Report, 2013, poverty and lack of education perpetuate high adolescent birth rates. Inadequate funding for family planning is a major failure in fulfilling commitments to improving women's reproductive health. For Namibia, the 2011 census results show that the maternal mortality ratio is 604 per 100, 000 live births. If this figure is compared to the MDG report for Namibia, 2008, in which the target for 2012 was 337 maternal deaths per 100,000 live births, then Namibia is far off target of reducing maternal deaths (2nd MDG, 2008).

It is evident from the NDHS that maternal mortality in Namibia has been increasing from 225 (1992) to 271 (2000) and 449 (2006/07). The 2011 census results show that the maternal mortality ratio stands at 604 per 100,000 live births. This question was analysed for the first time using census data, hence there no comparison can be made between the censuses. It is noted with concern that there is an increase in maternal mortality, therefore there is a need for further investigation to confirm the causes of high deaths.

7 - DISCUSSION AND CONCLUSION

a) Infant Mortality Rate

The Infant Mortality Rate (IMR) for Namibia has been declining steadily for the past two decades, from 67 (1991) to 52 (2001) to 44 deaths (2011). The current rate is unlikely to meet the target of 30 infant deaths per 1,000 live births by the year 2015 as per the 1997 Population Policy. This is also much higher than the target of 38 deaths per 1,000 live births by the year 2012 as indicated in the MDG report of 2008. An increase in IMR is notable for the Zambezi region, which has risen from 59 (2001) to 74 (2011). Generally, this could be an indication that health intervention programmes have not yet made an impact in this part of the country. Therefore, more efforts need to be made to address this problem, especially among vulnerable categories of women.

b) Child Mortality Rate

The results of the 2011 census show that the Child Mortality Rate (CMR) was reduced by only 2 child deaths per 1,000 live births, which suggests that these results are far from complying with the 2012 MDG target of 45 deaths per 1,000 live births (2nd Namibia MDG report, 2008). Similar trends were also observed at regional level, specifically in the Kavango and Zambezi regions.

c) Life Expectancy

Life expectancy is an indicator of adult mortality. The results of the 2011 census show that there have been increases in life expectancies for both males and females with 5 and 11 years for males and females respectively. This means people are now expected to live longer than it was the case in 2001. This also means that despite the high death rate experienced in the population, the quality of life has improved between 2001 and 2011. This suggests that interventions aimed at improving the quality of life were effective in some parts of the country and among some vulnerable groups.

d) Infant Mortality by Socio-economic Characteristics of the Mother

Adolescent pregnancies are still on the increase and have become a growing concern in Namibia, hence it is very important to identify the causes of teenage pregnancies and devise appropriate interventions to address the situation. Biologically, childbearing at a too young age or too old age is a health risk and is associated with high deaths among young and old mothers. The results of this report show that the age of mother is highly correlated with infant deaths. This affects more births from very young and older mothers. Furthermore, it is evident that the education of mothers is highly associated with infant deaths as shown in the results. The results and other studies found that infants born to mothers with little or no education have a higher probability of dying. This is due to the fact that these mothers are unable to adequately take care of their young ones (2006/07 NDHS & 2nd MDG report, 2008). In some cases mothers may not be able to afford the cost of treatment. Another challenge could be limited access to health facilities in rural areas where most of these mothers are found.

e) Maternal Mortality Rate (MMR)

It is evident from the Namibia Demographic and Health Survey that maternal mortality in Namibia has been increasing from 225 (1992) to 271 (2000) and to 449 (2006/07). The 2011 census results also confirm these phenomena that the MMR stands at 604 deaths per 100,000 live births. If the result is

compared to the 2nd MDG report for Namibia, 2008, of which the target for 2012 was 337 maternal deaths per 100,000 live births, then Namibia is very far from reaching this target of reducing maternal deaths by 2015. The maternal mortality question was analysed for the first time using census data, hence no comparison could be made between censuses. High maternal mortality should be a high priority and therefore appropriate interventions are required to address the situation.

In conclusion, it is worth noting that the quality of life is improving. However, the population is still experiencing high death rates among infants, children and adults. Interventions are required to address the main causes of deaths which are mainly illness, accidents, suicide, murder and pregnancy related causes.

APPENDICES

APPENDIX I: DATA ASSESSMENT

Due to reporting errors on mortality data in censuses, it is recommended that indirect demographic techniques of data adjustment be used to reduce substantial errors inherent in the data. This section begins by assessing the accuracy of these reported death data.

1. Reporting Accuracy

A variety of factors can bias the reporting of deaths. Some biases lead to overreporting, while other biases cause underreporting, thus evaluations of the overall effect of such biases can be tricky. A few of these biases are summarized below:

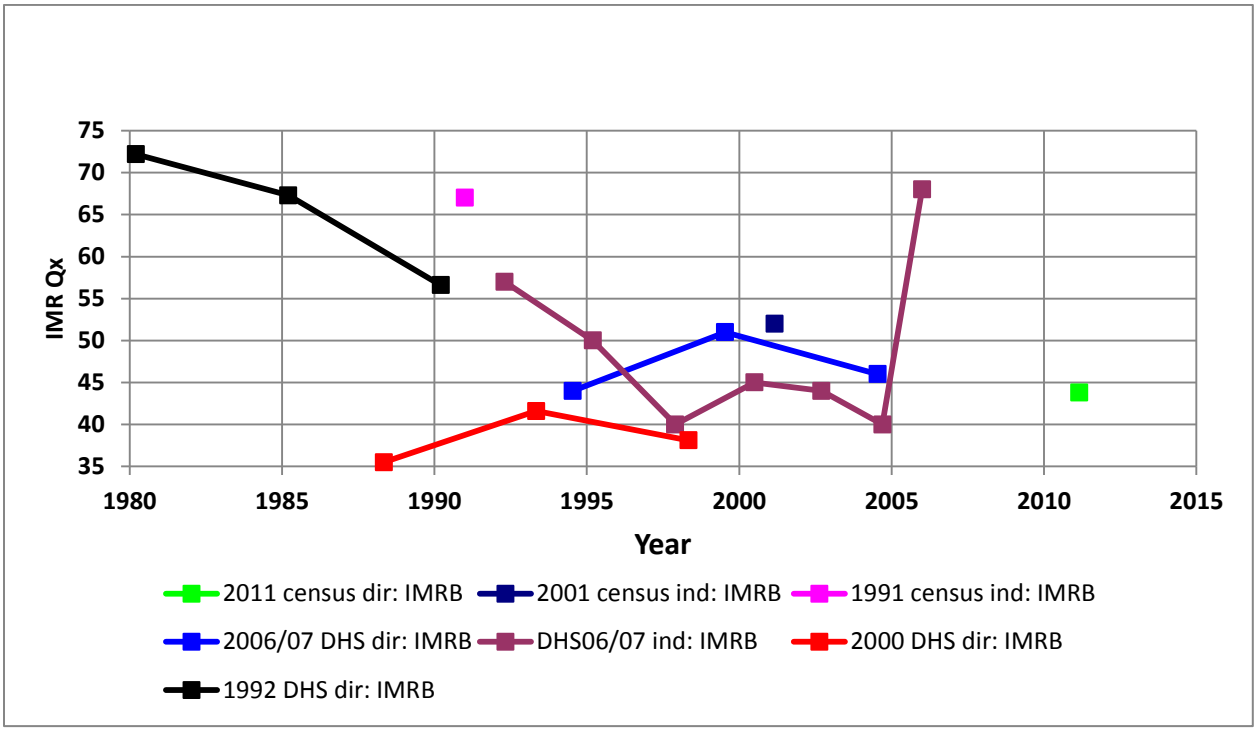
- Factors that may cause *overreporting* of deaths
  - Out-of-frame reporting - respondents report deaths which occurred more than 12 months prior to the census
  - Double counting – more than one household reports the same death
- Factors that may cause *underreporting* of deaths
  - Respondents forget a death, or choose not to report it
  - Respondents do not consider the event to be a death (e.g. infant death shortly after birth)
  - When individuals live alone, their deaths may go unrecorded

Death rates may also be affected by the above biases, since deaths constitute the numerator of such rates. Death rates may also be biased by factors which affect the denominator (population). These biases may include age misreporting in addition to underreporting or overreporting. In the following section we evaluate the quality of reported death by age using comparative and indirect methods.

2. Evaluation of Reported Infant Mortality Compared to Historical Trends

A basic method to assess the quality of mortality data is to consider their consistency with prior trends. Figure 1 compares the level of infant mortality reported in the 2011 census with estimates from prior censuses as well as demographic and health surveys. All in all, these sources imply a downward trend, and the IMR in 2011 (44 per 1,000 live births) seems consistent with that trend (see also Chapter 3). Thus, there seems little justification to adjust the infant mortality reported in the 2011 census.

Figure 1 Infant Mortality Trends in Namibia from Various Sources – 1980 - 2011



3. Evaluation and Adjustment of Death Rates for Older Persons

A variety of indirect methods were also used to evaluate the completeness of death reporting at various age groups (Brass, Hill General Growth Balance, etc.). The results of these methods were puzzlingly inconsistent, which may be due to violations of the simplifying assumptions required by the methods as well as the sensitivity of results to those violations.

A more helpful indirect method relies on model life tables. A life table shows patterns of mortality by age and is typically derived from reported (or adjusted) data from a single source. The life table converts such rates into probabilities which allow one to estimate life expectancy – one of the most useful statistics in a life table. Model life tables (MLTs) are life tables derived by demographers from a blend of historical data from countries with good quality data.

As noted earlier, the age pattern of mortality is typically shaped like the letter "J". Yet, the exact shape of the J can vary. Regional MLT "families" show distinct variations of J-shapes which are preserved whether mortality is high or low. Given that uniform shape, MLTs allow one to leverage a single mortality statistic at a particular age (e.g., infant mortality, survival from age 15 to 20, life expectancy at birth, etc.) to map out an entire age pattern of mortality.

Mortality rates by sex to determine life table measures, including life expectancy at birth were used, and MORTPAK MATCH was used to map the reported life expectancies to various model age patterns of death rates.

After comparing these model age patterns to reported death rates using MORTPAK COMPAR, the Coale-Demeny North Model Life Table (MLT) was chosen, which provided a good fit with reported death rates, particularly under age 10. The Coale-Demeny North MLT death rates are shown on each figure. It can be observed that life expectancy at birth implied by both curves on each figure is exactly the same.

Figure 2 shows the comparison of the Coale-Demeny North MLT with the census age-specific mortality rate for males. The results show that the age pattern of mortality for 2011 census is almost shaped like the letter "J", but there is a hump which implies high mortality rates in young male adults. Reported death rates fall below the Coale-Demeny North MLT after age 60. It seems implausible that adults at older ages should have such low mortality. It is assumed, there was a downward bias in reported death rates at older ages. It can be observed that life expectancy at birth implied by both curves on the figure is exactly the same.

Figure 2 Comparison of Coale-Demeny North and Census Age-specific Mortality Rate for *Males*, Namibia 2011

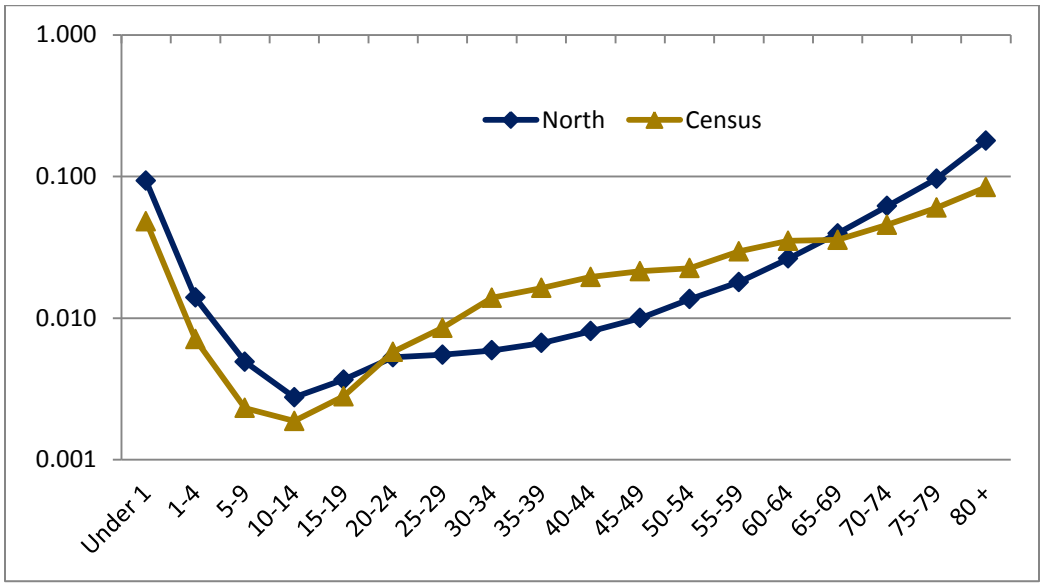
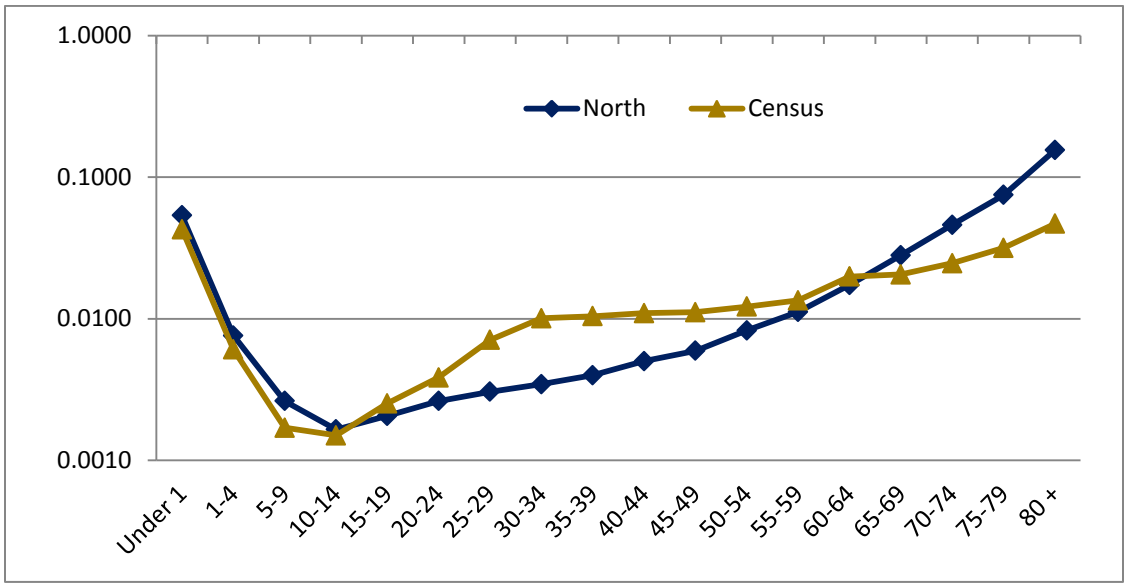


Figure 3 shows the comparison of Coale-Demeny North with the census age-specific mortality rate for females. Similar results of the age pattern of mortality for 2011 census which is almost shaped like the letter "J" as in the male pattern shown above, and also a hump which implies high mortality rates in young female adults. Both Figures 2 and 3 indicate that reported death rates fall below the Coale-Demeny North MLT beginning after age 60. This implies downward bias in reported death rates at older ages. It can be observed that life expectancy at birth implied by both curves on each figure is exactly the same.

At national level, the substitution began at age 60 (Figures 2 and 3), while each region was examined separately to determine the most appropriate age group to begin the substitution based on comparisons with the North MLT implied by regional reported life expectancy (see appendix III).

Figure 3 Comparison of Coale-Demeny North with Census Age-specific Mortality Rate for Females, Namibia 2011



4. Summary of the Life Table Method

Life tables provide essential information about mortality at various age groups, and it is one of the most useful measures of overall mortality – the number of years of life one can expect to live at birth. Because it is derived from mortality rates in each age group, such measures are not influenced by population structure. The main features of a life table, as well as the steps involved in creating it, are summarized below.

A life table is typically derived from a series of age-specific death rates (nMx). These death rates (deaths at each age group divided by population at the same age group) are converted into probabilities of dying (nQ) from one age group to the next based on the mortality of those who died (nAx) during each interval. Put more simply, the probability of dying is equal to the deaths in an age interval divided by those who began the interval (those deaths plus those who survived the interval). By convention, life tables assume 100,000 births occur (l_x) each year. Thereafter, the probabilities of dying at each age group allow one to determine how many of this original group survives. Within each age interval, the life table determines the number of "person years" lived (nLx) – where survivors contribute all years lived in the interval and non-survivors contribute the portion of years they lived before death. The summation of all "person years" lived (T_x) is divided by the original 100,000 births to determine life expectancy at birth. Life tables also indicate remaining life expectancy at each age by dividing remaining person years to be lived by the number who begin at that age group (e_x).

APPENDIX II: ABRIDGED LIFE TABLES

Table 1: Adjusted Abridged Life Table for Males, Urban

Age(x)	nMx	l_x	e_x
0	0.0417	100 000	57
1	0.0067	95 970	58.4
5	0.0019	93 422	56.0
10	0.0018	92 524	51.5
15	0.0030	91 680	46.9
20	0.0046	90 316	42.6
25	0.0055	88 272	38.5
30	0.0084	85 884	34.5
35	0.0107	82 346	30.9
40	0.0131	78 040	27.5
45	0.0157	73 098	24.2
50	0.0192	67 584	21.0
55	0.0246	61 409	17.8
60	0.0410	54 303	14.8
65	0.0436	44 204	12.6
70	0.0585	35 513	10.1
75	0.0912	26 445	7.7
80+	0.1727	16 623	5.8

Table 2: Adjusted Abridged Life Table for Females, Urban

Age(x)	nMx	l_x	e_x
0	0.0357	100 000	62.6
1	0.0057	96 538	63.8
5	0.0014	94 364	61.3
10	0.0014	93 717	56.7
15	0.0023	93 078	52.0
20	0.0029	92 025	47.6
25	0.0047	90 697	43.3
30	0.0067	88 605	39.2
35	0.0075	85 674	35.5
40	0.0084	82 532	31.7
45	0.0106	79 143	28.0
50	0.0137	75 046	24.4
55	0.0140	70 069	20.9
60	0.0248	65 325	17.3
65	0.0326	57 685	14.2
70	0.0461	48 984	11.3
75	0.0749	38 862	8.6
80+	0.1550	26 599	6.5

Table 3: Adjusted Abridged Life Table for Males, Rural

Age(x)	nMx	l_x	e_x
0	0.0528	100 000	49.4
1	0.0073	94 938	51.0
5	0.0025	92 221	48.5
10	0.0019	91 062	44.1
15	0.0027	90 196	39.5
20	0.0070	88 987	35.0
25	0.0124	85 936	31.1
30	0.0213	80 765	28.0
35	0.0234	72 607	25.8
40	0.0274	64 571	23.7
45	0.0282	56 295	21.8
50	0.0260	48 892	19.8
55	0.0339	42 921	17.2
60	0.0319	36 213	14.9
65	0.0432	30 867	12
70	0.0670	24 849	9.4
75	0.1037	17 718	7.1
80+	0.1875	10 420	5.3

Table 4: Adjusted Abridged Life Table for Females, Rural

Age(x)	nMx	l_x	e_x
0	0.0478	100 000	58.0
1	0.0063	95 403	59.8
5	0.0019	93 043	57.3
10	0.0016	92 166	52.8
15	0.0027	91 450	48.2
20	0.0049	90 231	43.8
25	0.0102	88 054	39.8
30	0.0143	83 676	36.8
35	0.0137	77 915	34.3
40	0.0136	72 749	31.6
45	0.0115	67 976	28.6
50	0.0110	64 172	25.2
55	0.0132	60 742	21.5
60	0.0184	56 862	17.8
65	0.0295	51 867	14.2
70	0.0482	44 734	11.1
75	0.0777	35 121	8.5
80+	0.1578	23 698	6.3

Table 5: Adjusted Abridged Life Table for Males, Zambezi

Age(x)	nMx	l_x	e_x
0	0.0758	100 000	50.4
1	0.0111	92 825	53.3
5	0.0044	88 827	51.6
10	0.0030	86 890	47.7
15	0.0039	85 613	43.3
20	0.0093	83 963	39.1
25	0.0076	80 166	35.9
30	0.0200	77 166	32.2
35	0.0188	69 807	30.3
40	0.0195	63 556	28.0
45	0.0208	57 659	25.7
50	0.0112	51 958	23.2
55	0.0160	49 133	19.4
60	0.0227	45 348	15.8
65	0.0408	40 488	12.4
70	0.0635	32 992	9.6
75	0.0989	23 958	7.3
80+	0.1817	14 462	5.5

Table 6: Adjusted Abridged Life Table for Females, Zambezi

Age(x)	nMx	l_x	e_x
0	0.0798	100 000	55.1
1	0.0089	92 453	58.6
5	0.0039	89 245	56.6
10	0.0029	87 543	52.7
15	0.0049	86 301	48.4
20	0.0057	84 233	44.5
25	0.0099	81 883	40.7
30	0.0164	77 930	37.7
35	0.0154	71 803	35.7
40	0.0070	66 493	33.3
45	0.0090	64 210	29.4
50	0.0047	61 383	25.7
55	0.0154	59 958	21.2
60	0.0185	55 527	17.7
65	0.0298	50 612	14.2
70	0.0485	43 605	11.1
75	0.0781	34 183	8.4
80+	0.1582	23 018	6.3

Table 7: Adjusted Abridged Life Table for Males, Erongo

Age(x)	nMx	l_x	e_x
0	0.0391	100 000	62.6
1	0.0053	96 214	64.1
5	0.0005	94 184	61.4
10	0.0021	93 958	56.6
15	0.0026	92 972	52.1
20	0.0032	91 784	47.8
25	0.0038	90 340	43.5
30	0.0031	88 652	39.3
35	0.0050	87 303	34.9
40	0.0080	85 139	30.7
45	0.0112	81 792	26.8
50	0.0144	77 321	23.2
55	0.0159	71 937	19.8
60	0.0344	66 451	16.2
65	0.0349	55 937	13.8
70	0.0494	46 963	11.0
75	0.0797	36 636	8.4
80+	0.1594	24 466	6.3

Table 8: Adjusted Abridged Life Table for Females, Erongo

Age(x)	nMx	l_x	e_x
0	0.0278	100 000	67.0
1	0.0036	97 289	67.9
5	0.0008	95 902	64.9
10	0.0022	95 523	60.1
15	0.0012	94 462	55.8
20	0.0014	93 878	51.1
25	0.0033	93 203	46.4
30	0.0045	91 673	42.2
35	0.0042	89 636	38.1
40	0.0063	87 780	33.8
45	0.0074	85 059	29.8
50	0.0128	81 960	25.9
55	0.0096	76 870	22.4
60	0.0210	73 259	18.4
65	0.0249	65 960	15.2
70	0.0416	58 226	11.8
75	0.0689	47 265	9.0
80+	0.1490	33 368	6.7

Table 9: Adjusted Abridged Life Table for Males, Hardap

Age(x)	nMx	l_x	e_x
0	0.0573	100 000	52.2
1	0.0075	94 518	54.2
5	0.0027	91 718	51.8
10	0.0019	90 512	47.5
15	0.0043	89 662	42.9
20	0.0053	87 750	38.8
25	0.0092	85 469	34.7
30	0.0141	81 611	31.3
35	0.0196	76 038	28.4
40	0.0119	68 954	26.0
45	0.0205	64 984	22.5
50	0.0274	58 662	19.6
55	0.0292	51 137	17.1
60	0.0420	44 189	14.4
65	0.0420	35 798	12.2
70	0.0652	28 997	9.5
75	0.1013	20 869	7.2
80+	0.1845	12 438	5.4

Table 10: Adjusted Abridged Life Table for Females, Hardap

Age(x)	nMx	l_x	e_x
0	0.0375	100 000	58.3
1	0.0078	96 368	59.5
5	0.0017	93 412	57.4
10	0.0007	92 629	52.8
15	0.0022	92 294	48.0
20	0.0044	91 305	43.5
25	0.0040	89 323	39.4
30	0.0098	87 573	35.1
35	0.0136	83 382	31.8
40	0.0104	77 900	28.9
45	0.0194	73 970	25.3
50	0.0181	67 130	22.6
55	0.0153	61 323	19.5
60	0.0325	56 794	15.8
65	0.0423	48 252	13.2
70	0.0521	39 032	10.7
75	0.0830	30 031	8.2
80+	0.1632	19 715	6.1

Table 11: Adjusted Abridged Life Table for Males, //Karas

Age(x)	nMx	l_x	e_x
0	0.0808	100 000	57.1
1	0.0114	92 372	60.8
5	0.0041	88 272	59.5
10	0.0024	86 478	55.7
15	0.0033	85 465	51.3
20	0.0047	84 080	47.1
25	0.0049	82 125	43.2
30	0.0053	80 139	39.2
35	0.0059	78 060	35.2
40	0.0072	75 781	31.2
45	0.0090	73 096	27.2
50	0.0125	69 885	23.4
55	0.0165	65 663	19.7
60	0.0245	60 466	16.2
65	0.0372	53 491	13.0
70	0.0581	44 396	10.1
75	0.0915	33 139	7.7
80+	0.1731	20 799	5.8

Table 12: Adjusted Abridged Life Table for Females, //Karas

Age(x)	nMx	l_x	e_x
0	0.0663	100 000	60.9
1	0.0104	93 685	64.0
5	0.0036	89 900	62.6
10	0.0022	88 318	58.7
15	0.0026	87 376	54.3
20	0.0032	86 259	50.0
25	0.0037	84 887	45.8
30	0.0042	83 322	41.6
35	0.0049	81 575	37.4
40	0.0060	79 603	33.3
45	0.0069	77 267	29.2
50	0.0094	74 642	25.1
55	0.0127	71 220	21.2
60	0.0194	66 849	17.5
65	0.0310	60 671	14.0
70	0.0502	51 954	10.9
75	0.0804	40 373	8.3
80+	0.1605	26 865	6.2

Table 13: Adjusted Abridged Life Table for Males, Kavango

Age(x)	nMx	l_x	e_x
0	0.0806	100 000	43.9
1	0.0127	92 396	46.4
5	0.0044	87 824	44.8
10	0.0032	85 934	40.7
15	0.0043	84 585	36.3
20	0.0091	82 770	32.1
25	0.0161	79 097	28.4
30	0.0286	72 992	25.6
35	0.0320	63 261	24.2
40	0.0267	53 897	22.9
45	0.0289	47 143	20.8
50	0.0292	40 798	18.7
55	0.0346	35 253	16.2
60	0.0387	29 636	13.8
65	0.0490	24 403	11.3
70	0.0756	19 081	8.7
75	0.1155	13 017	6.6
80+	0.2015	7 184	5.0

Table 14: Adjusted Abridged Life Table for Females, Kavango

Age(x)	nMx	l_x	e_x
0	0.0674	100 000	52.8
1	0.0106	93 590	55.4
5	0.0022	89 708	53.7
10	0.0026	88 724	49.3
15	0.0046	87 563	44.9
20	0.0083	85 554	40.9
25	0.0122	82 080	37.5
30	0.0143	77 222	34.7
35	0.0154	71 903	32.1
40	0.0157	66 584	29.5
45	0.0126	61 542	26.7
50	0.0161	57 782	23.3
55	0.0176	53 322	20.0
60	0.0223	48 837	16.6
65	0.0350	43 690	13.3
70	0.0559	36 657	10.3
75	0.0880	27 663	7.9
80+	0.1685	17 689	5.9

Table 15: Adjusted Abridged Life Table for Males, Khomas

Age(x)	nMx	l_x	e_x
0	0.0330	100 000	60.5
1	0.0043	96 787	61.5
5	0.0018	95 137	58.5
10	0.0018	94 302	54.0
15	0.0029	93 462	49.5
20	0.0044	92 139	45.1
25	0.0053	90 141	41.1
30	0.0061	87 798	37.1
35	0.0086	85 171	33.2
40	0.0102	81 600	29.5
45	0.0128	77 546	25.9
50	0.0161	72 744	22.5
55	0.0200	67 108	19.1
60	0.0365	60 727	15.9
65	0.0336	50 563	13.6
70	0.0528	42 730	10.6
75	0.0843	32 764	8.1
80+	0.1647	21 357	6.1

Table 16: Adjusted Abridged Life Table for Females, Khomas

Age(x)	nMx	l_x	e_x
0	0.0293	100 000	66.1
1	0.0048	97 139	67.0
5	0.0011	95 305	64.3
10	0.0008	94 768	59.6
15	0.0014	94 377	54.9
20	0.0017	93 717	50.2
25	0.0036	92 929	45.6
30	0.0050	91 277	41.4
35	0.0057	89 014	37.4
40	0.0066	86 506	33.4
45	0.0063	83 691	29.4
50	0.0122	81 105	25.3
55	0.0137	76 293	21.7
60	0.0183	71 246	18.1
65	0.0332	65 002	14.6
70	0.0419	55 032	11.8
75	0.0694	44 602	9.0
80+	0.1494	31 422	6.7

Table 17: Adjusted Abridged Life Table for Males, Kunene

Age(x)	nMx	l_x	e_x
0	0.0561	100 000	54.5
1	0.0072	94 631	56.5
5	0.0010	91 962	54.1
10	0.0006	91 500	49.4
15	0.0046	91 221	44.5
20	0.0060	89 135	40.5
25	0.0045	86 503	36.7
30	0.0103	84 580	32.5
35	0.0132	80 337	29.0
40	0.0175	75 202	25.9
45	0.0218	68 886	23.0
50	0.0138	61 779	20.4
55	0.0248	57 664	16.6
60	0.0432	50 940	13.5
65	0.0662	41 003	11.2
70	0.0676	29 356	9.6
75	0.0957	20 872	7.5
80+	0.1780	12 811	5.6

Table 18: Adjusted Abridged Life Table for Females, Kunene

Age(x)	nMx	l_x	e_x
0	0.0594	100 000	55.4
1	0.0069	94 323	57.8
5	0.0017	91 747	55.3
10	0.0008	90 969	50.8
15	0.0027	90 602	46.0
20	0.0059	89 385	41.6
25	0.0089	86 786	37.7
30	0.0103	82 992	34.4
35	0.0122	78 837	31.0
40	0.0134	74 167	27.8
45	0.0153	69 353	24.6
50	0.0172	64 256	21.3
55	0.0240	58 962	18.0
60	0.0373	52 279	15.0
65	0.0479	43 369	12.6
70	0.0560	34 087	10.3
75	0.0880	25 718	7.9
80+	0.1685	16 441	5.9

Table 19: Adjusted Abridged Life Table for Males, Ohangwena

Age(x)	nMx	l_x	e_x
0	0.0440	100 000	46.1
1	0.0079	95 755	47.1
5	0.0019	92 774	44.6
10	0.0015	91 877	40.0
15	0.0023	91 172	35.3
20	0.0066	90 140	30.7
25	0.0172	87 222	26.6
30	0.0289	80 035	23.8
35	0.0305	69 260	22.1
40	0.0361	59 442	20.3
45	0.0453	49 600	18.8
50	0.0335	39 510	18
55	0.0434	33 397	15.9
60	0.0384	26 865	14.1
65	0.0467	22 162	11.6
70	0.0722	17 529	9.0
75	0.1109	12 169	6.8
80+	0.1959	6 888	5.1

Table 20: Adjusted Abridged Life Table for Females, Ohangwena

Age(x)	nMx	l_x	e_x
0	0.0414	100 000	57.4
1	0.0057	96 000	58.8
5	0.0023	93 829	56.2
10	0.0017	92 746	51.8
15	0.0027	91 980	47.2
20	0.0036	90 763	42.8
25	0.0106	89 145	38.5
30	0.0156	84 563	35.5
35	0.0155	78 225	33.1
40	0.0167	72 390	30.6
45	0.0141	66 599	28.1
50	0.0115	62 060	24.9
55	0.0151	58 602	21.3
60	0.0185	54 352	17.7
65	0.0298	49 539	14.2
70	0.0485	42 679	11.1
75	0.0781	33 455	8.4
80+	0.1582	22 526	6.3

Table 21: Adjusted Abridged Life Table for Males, Omaheke

Age(x)	nMx	l_x	e_x
0	0.0419	100 000	57.3
1	0.0060	95 956	58.7
5	0.0016	93 703	56.1
10	0.0015	92 958	51.5
15	0.0020	92 277	46.9
20	0.0057	91 349	42.3
25	0.0086	88 794	38.5
30	0.0106	85 063	35.1
35	0.0104	80 655	31.8
40	0.0202	76 552	28.4
45	0.0143	69 185	26.2
50	0.0083	64 417	22.9
55	0.0234	61 809	18.8
60	0.0267	54 969	15.8
65	0.0426	48 090	12.7
70	0.0575	38 826	10.2
75	0.0908	29 063	7.7
80+	0.1722	18 314	5.8

Table 22: Adjusted Abridged Life Table for Females, Omaheke

Age(x)	nMx	l_x	e_x
0	0.0434	100 000	56.9
1	0.0067	95 806	58.4
5	0.0023	93 263	55.9
10	0.0010	92 200	51.6
15	0.0038	91 741	46.8
20	0.0075	90 014	42.7
25	0.0087	86 712	39.2
30	0.0123	83 023	35.8
35	0.0139	78 071	32.9
40	0.0157	72 837	30.1
45	0.0155	67 334	27.4
50	0.0105	62 321	24.4
55	0.0141	59 148	20.6
60	0.0213	55 123	16.9
65	0.0337	49 539	13.5
70	0.0541	41 834	10.5
75	0.0856	31 865	8.0
80+	0.1659	20 635	6.0

Table 23: Adjusted Abridged Life Table for Males, Omusati

Age(x)	nMx	l_x	e_x
0	0.0412	100 000	46.6
1	0.0061	96 023	47.5
5	0.0018	93 708	44.6
10	0.0013	92 877	40.0
15	0.0025	92 266	35.3
20	0.0072	91 126	30.7
25	0.0140	87 893	26.7
30	0.0286	81 948	23.5
35	0.0314	71 007	21.7
40	0.0382	60 686	20.0
45	0.0395	50 110	18.7
50	0.0448	41 103	17.2
55	0.0477	32 820	15.9
60	0.0321	25 823	14.5
65	0.0460	21 981	11.7
70	0.0712	17 444	9.0
75	0.1095	12 172	6.9
80+	0.1943	6 940	5.1

Table 24: Adjusted Abridged Life Table for Females, Omusati

Age(x)	nMx	l_x	e_x
0	0.0390	100 000	62.1
1	0.0053	96 221	63.5
5	0.0012	94 192	60.9
10	0.0010	93 649	56.2
15	0.0008	93 199	51.4
20	0.0032	92 831	46.6
25	0.0098	91 371	42.3
30	0.0111	86 986	39.4
35	0.0132	82 296	36.5
40	0.0118	77 031	33.8
45	0.0086	72 610	30.7
50	0.0103	69 552	26.9
55	0.0090	66 060	23.2
60	0.0143	63 155	19.2
65	0.0238	58 795	15.4
70	0.0399	52 202	12.0
75	0.0668	42 727	9.1
80+	0.1469	30 505	6.8

Table 25: Adjusted Abridged Life Table for Males, Oshana

Age(x)	nMx	l_x	e_x
0	0.0545	100 000	49.9
1	0.0063	94 777	51.6
5	0.0030	92 433	48.9
10	0.0017	91 072	44.6
15	0.0021	90 309	39.9
20	0.0057	89 364	35.3
25	0.0095	86 834	31.3
30	0.0210	82 797	27.7
35	0.0192	74 521	25.5
40	0.0282	67 695	22.8
45	0.0285	58 768	20.9
50	0.0333	50 951	18.7
55	0.0404	43 131	16.6
60	0.0338	35 226	14.8
65	0.0430	29 731	12.1
70	0.0667	23 957	9.4
75	0.1034	17 107	7.1
80+	0.1870	10 082	5.3

Table 26: Adjusted Abridged Life Table for Females, Oshana

Age(x)	nMx	l_x	e_x
0	0.0313	100 000	61.3
1	0.0039	96 951	62.2
5	0.0015	95 436	59.2
10	0.0020	94 723	54.6
15	0.0022	93 789	50.1
20	0.0038	92 755	45.7
25	0.0077	91 021	41.5
30	0.0140	87 599	38.0
35	0.0104	81 684	35.6
40	0.0121	77 542	32.4
45	0.0109	72 975	29.2
50	0.0143	69 098	25.7
55	0.0110	64 346	22.4
60	0.0167	60 911	18.6
65	0.0258	56 030	15.0
70	0.0429	49 229	11.7
75	0.0707	39 694	8.9
80+	0.1508	27 770	6.6

Table 27: Adjusted Abridged Life Table for Males, Oshikoto

Age(x)	nMx	l_x	e_x
0	0.0357	100 000	52.2
1	0.0049	96 532	53
5	0.0029	94 657	50.1
10	0.0022	93 306	45.8
15	0.0018	92 274	41.2
20	0.0057	91 455	36.6
25	0.0096	88 886	32.6
30	0.0166	84 735	29.0
35	0.0222	77 985	26.3
40	0.0321	69 800	24.1
45	0.0247	59 418	22.9
50	0.0259	52 502	20.6
55	0.0283	46 116	18.1
60	0.0297	40 028	15.5
65	0.0396	34 496	12.6
70	0.0617	28 277	9.8
75	0.0965	20 718	7.4
80+	0.1789	12 666	5.6

Table 28: Adjusted Abridged Life Table for Females, Oshikoto

Age(x)	nMx	l_x	e_x
0	0.0380	100 000	61.8
1	0.0053	96 315	63.2
5	0.0011	94 317	60.5
10	0.0009	93 819	55.8
15	0.0018	93 384	51.0
20	0.0035	92 571	46.4
25	0.0063	90 969	42.2
30	0.0120	88 166	38.5
35	0.0118	83 036	35.7
40	0.0109	78 261	32.7
45	0.0107	74 125	29.4
50	0.0101	70 259	25.9
55	0.0136	66 807	22.1
60	0.0171	62 427	18.5
65	0.0261	57 323	14.9
70	0.0433	50 299	11.6
75	0.0712	40 480	8.9
80+	0.1512	28 247	6.6

Table 29: Adjusted Abridged Life Table for Males, Otjozondjupa

Age(x)	nMx	l_x	e_x
0	0.0394	100 000	56.4
1	0.0062	96 189	57.7
5	0.0018	93 824	55.1
10	0.0020	92 974	50.6
15	0.0026	92 048	46.0
20	0.0050	90 868	41.6
25	0.0073	88 619	37.6
30	0.0099	85 436	33.9
35	0.0114	81 305	30.5
40	0.0163	76 814	27.1
45	0.0162	70 793	24.2
50	0.0192	65 293	21.1
55	0.0299	59 301	17.9
60	0.0328	51 043	15.4
65	0.0416	43 304	12.8
70	0.0578	35 151	10.1
75	0.0911	26 275	7.7
80+	0.1726	16 525	5.8

Table 30: Adjusted Abridged Life Table for Females, Otjozondjupa

Age(x)	nMx	l_x	e_x
0	0.0387	100 000	59.8
1	0.0050	96 248	61.1
5	0.0017	94 332	58.3
10	0.0012	93 527	53.8
15	0.0056	92 970	49.1
20	0.0053	90 402	45.4
25	0.0067	88 031	41.6
30	0.0090	85 137	37.9
35	0.0094	81 386	34.5
40	0.0103	77 655	31.1
45	0.0120	73 754	27.6
50	0.0112	69 472	24.1
55	0.0168	65 675	20.4
60	0.0237	60 375	17.0
65	0.0337	53 622	13.8
70	0.0505	45 281	10.9
75	0.0808	35 131	8.3
80+	0.1610	23 327	6.2

APPENDIX III: CENSUS REPORTED MORTALTY RATES BY AGE VS. COALE-DEMENY NORTH MLT

Figure 1. Census Reported Mortality Rates by Age vs Coale-Demeny North MLT with the Same Life Expectancy Urban Males 2011

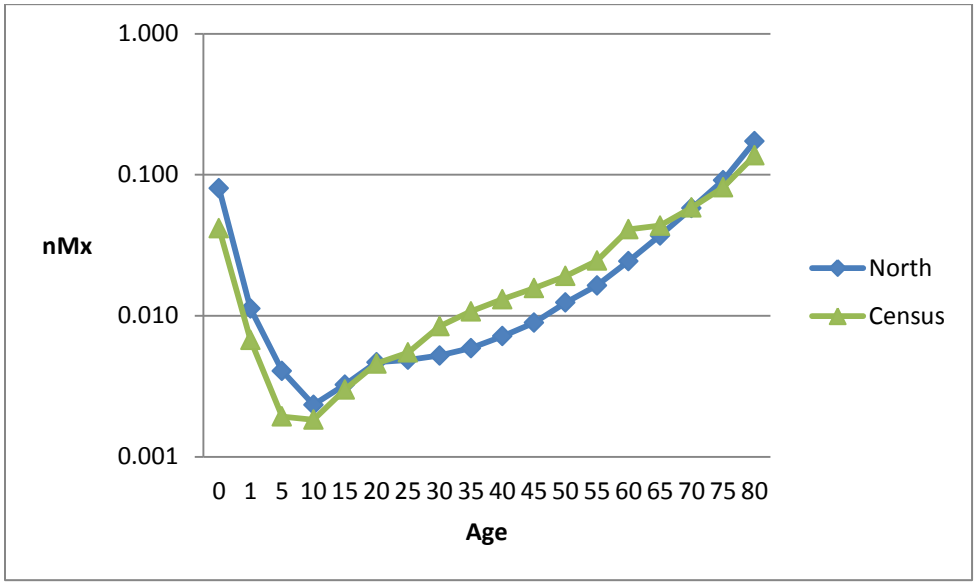


Figure 2 Census Reported Mortality Rates by Age vs Coale-Demeny North MLT with the Same Life Expectancy Namibia Urban Females 2011

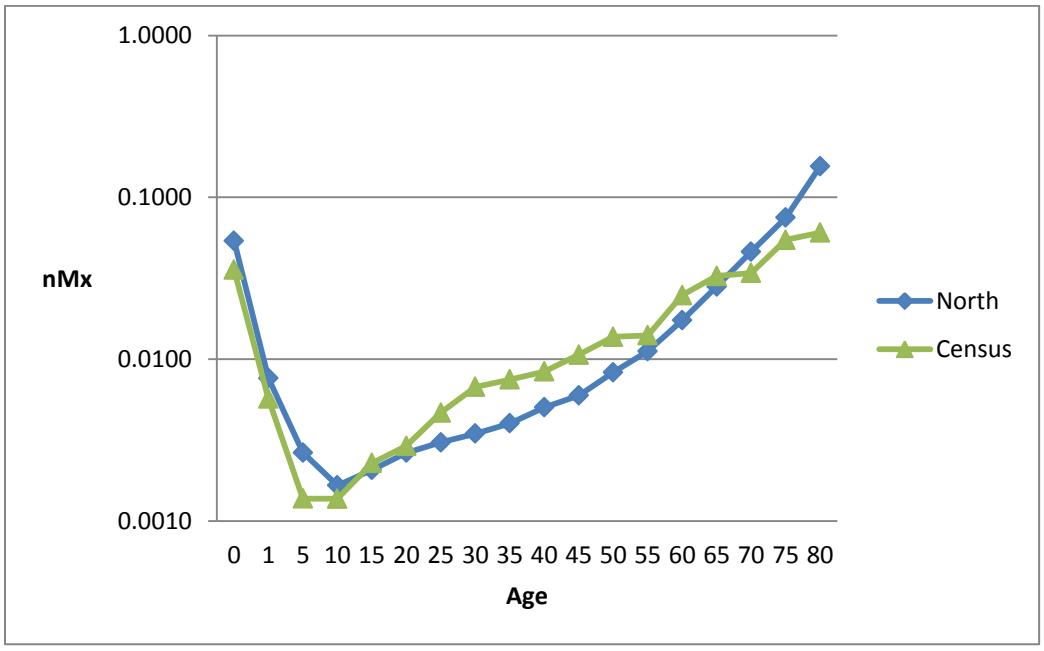


Figure 3 Census Reported Mortality Rates by Age vs Coale-Demeny North MLT with the Same Life Expectancy Rural Males 2011

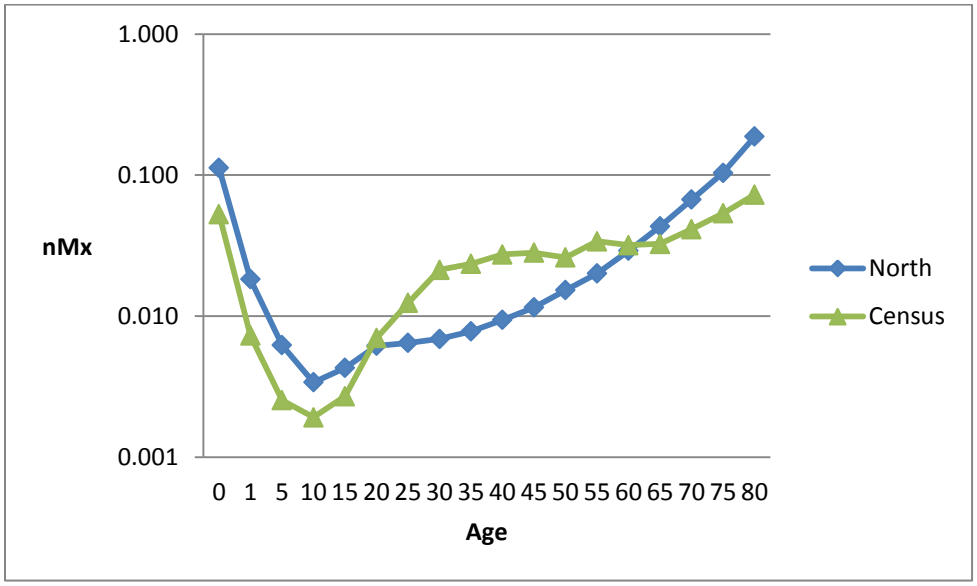
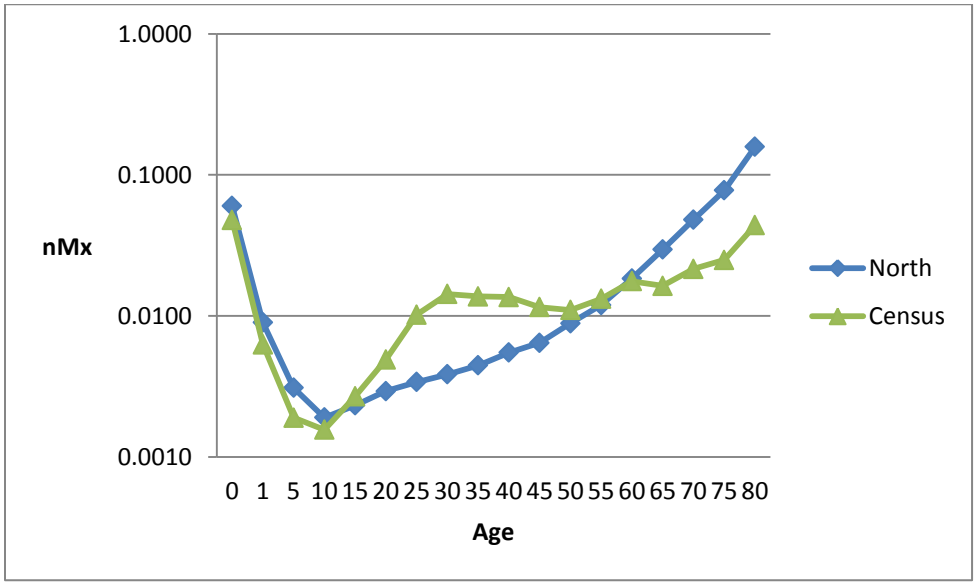


Figure 4 Census Reported Mortality Rates by Age vs Coale-Demeny North MLT with the Same Life Expectancy Rural Females 2011



APPENDIX IV

TEAM MEMBERS OF NAMIBIA 2011 CENSUS MORTALITY REPORT

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