



REPUBLIC OF NAURU

Nauru

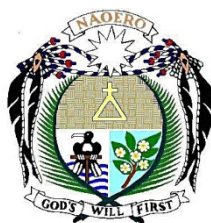
VITAL STATISTICS REPORT 2008-2013



Nauru Bureau of Statistics
Ministry of Finance



**Pacific
Community**
Communauté
du Pacifique



REPUBLIC OF NAURU

Nauru

Vital Statistics Report

2008 – 2013



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SUMMARY OF MAIN INDICATORS FOR 2011-2013

2012 Population Projection

Total	10,376
Males	5,126
Females	5,250

INDICATORS FOR 2011-2013

Fertility

Total number of births	1,056
Average number of births per year	352
Sex ratio at birth, M:F	111:100
Crude Birth Rate (CBR)	33.9
Total Fertility rate	3.9
Adolescent birth rate (per 1,000 females aged 15-19)	100

Mortality

Total number of deaths	234
Average number of deaths per year	78
Crude Death Rate (per 1,000 population)	7.5
Age-standardized crude Death Rate (per 1,000 population)*	14.8
Under 5 mortality rate (per 1,000 live births)	22.7
Infant mortality rate (per 1,000 live births)	18.0
Neonatal mortality rate	12.3
Maternal deaths	0
Maternal mortality ratio (per 100,000 live births)	0
Life expectancy at birth (both sexes)	61.4
Life expectancy at birth (male)	58.0
Life expectancy at birth (female)	64.9
Life expectancy at age 40 (male)	24.0
Life expectancy at age 40 (female)	28.7
Adult mortality rate, (45q15 male) %	46.7
Adult mortality rate, (45q15 female) %	35.8

Executive Summary

The average number of births per year has remained relatively level over the past 6 years, with the most recent period of 2011-2013 experiencing 352 births per year, on average. Fertility rates have also remained steady at around 3.9 births per woman. Fertility rates are highest among women aged 20-29, but remain high for women in their early 30s. Of concern is the high birth rates of teen mothers aged 15 to 19 years at 100 births per 1,000 women aged 15-19. This rate is higher than those reported in the Pacific region.

The number of deaths have been relatively steady over the years 2008-2013, with an average of 78 deaths per year over the most recent period of 2011-2013. The infant mortality rate for 2011-2013 was 18 deaths per 1,000 live births and under 5 mortality was 23 deaths per 1,000 live births. Starting at around age 35, there is noticeably higher adult mortality than would be seen in countries such as Australia or New Zealand, likely due to the impact of non-communicable diseases. Life expectancy at birth is relatively low at 58 for males and 65 for females, and has seen little improvement over the last 6 years.

Non-communicable Diseases (NCD) accounted for a large percentage of deaths among adults aged 15-59 over the last three years. Diseases of the circulatory system were the leading cause of death in both adult males and females. Mortality from NCDs is high both for younger adults aged 15-34 and for adults aged 35-59. While the leading cause of death for both age groups was diseases of the circulatory system, diseases of the liver accounted for 13 percent of deaths among young adults aged 15-34, followed by diabetes, which accounted for 11 percent of deaths. Among adults aged 35-59, diabetes accounted for 16 percent of all deaths, followed by cancer which was responsible for 11 percent of deaths. The impact of NCDs on adult mortality is clearly high.

1. INTRODUCTION

This section provides an overview of the main findings from the period years 2008 to 2013 of vital statistical data.

A Vital Statistics analytical report was published generally during the Censuses and the Demographic Health Survey excluding most of the morbidity information. However the Government Bureau of Statistics' mandate is to publish vital statistics reports on a quarterly or annually basis using administrative data from the two focal partners: the RON Hospital and the Government Registry Office, depending with the completeness of the births cases and deaths cases. Cases must be cross-checked to be confident that the rates and indicators are consistent.

General information on fertility and mortality can be captured in the Census 1992, 2002 report and the Demographic Health Survey in 2007 as the consultation of developing the related chapters was provided by the SPC-Statistics Division of New Caledonia. The vital statistics information is also covered in the recent Census 2011 full report followed by an in-depth monograph development for fertility and mortality on December 2013, consulted by demography assistance from the UNFPA/SPRO of Fiji. The other published materials in relations to vital statistics indicators reported in the Nauru MDG progressive report are derived from such reports as mentioned above.

Vital statistics related information to morbidity and mortality may also be captured in the other published report known as the Mortality Trends and the Epidemiological Transition in Nauru with reference period ending 2007. The author of the report journal generally came from the University of Queensland in Brisbane Australia, University of the New South Wales in Sydney Australia, the Nauru Ministry of Health and the Nauru Bureau of Statistics. This mortality type of report was published during year 1983, 1985 and 2010-11.

In July 2013, improving the reporting of vital statistics was identified as a priority by both the Pacific Ministers of Health in Apia and the Heads of Planning and Statistics in Noumea. The call for additional capacity building in analysing and reporting vital statistics data was a key outcome of the Health Ministers Meeting.

Nauru have a functioning CRVS committee integrating representatives from the relevant key departments, the Department of Health, the Government Registration Office, the Bureau of Statistics, the Planning Aid Division Office and the Information Technology and Communication (ICT). The integrated key members are considered to produce the flow of CRVS results and reports based from the local and overseas sources.

One of our major challenges with Nauru's CRVS currently facing is the redevelopment of building infrastructure and reviving absence of data that may have been destroyed in mid-August 2013, during the fire incidence at the medical records office, Nauru's only main hospital. However backup systems have been able to restore data especially for recent periods. Other major challenge is improving the certification of causes of deaths with the hospital staff and medical doctors, mainly capacity training oriented to the International Classification of Decease (ICD-10) coding.

The Nauru Government has the advantage to complete registration of deaths through incentive financial benefits to provide financial support for the family of the deceased to be able to conduct a decent funeral service and other immediate settlements to determine the landownership rights.

The Nauru Government recently implemented a similar advantage for the registration of births, to improve late registrations of births. Prior to claiming the incentive financial benefit, the mother or guardian of the new born is directed to register with the Government Registration Office.

Nauru has long term national targets and priorities officially published namely the National Sustainable Development Strategies (NSDS) 2009-2025 which also aligned with CRVS development agenda beyond 2015. It is also a guideline aligning the targets and priorities to the CRVS system that is consistent for the Millennium Development Goals (MDGs), the National Minimum Development Indicators (NMDIs) and CRVS framework agenda 2015-2024 for Asia and the Pacific.

Most of the births and deaths data for this report are provided by RON Hospital in unit record format, whereas the population census is provided by Government Bureau of Statistics and population projections by the SPC/SDD. During the development of this report the Government Registry office provided no input due to under reporting of registration mainly the total births which may still require further process for final endorsement. So far there still no final reporting of deaths that occurs overseas and families wishing to transfer the documents of the deceased to Nauru.

The data cleaning for this report was carried out by performing the data quality routine using the unit record raw data, making sure the variable formats are consistent, eliminating duplicate cases and impute the missing cases as much as possible. During the cleaning there were minimum duplicate cases.

The importance of this report is to provide up-to-date information for policy makers, planners, researchers and programme managers, for monitoring of population health, identifying health priorities and evaluating health program impacts. It would also provide a broader range of social development investment, pertaining to education, social security and child protection. This is particularly important in the Pacific due to the need to continue to monitor and report progress against the MDGs and the subsequent post 2015 development agenda; and the need to respond to the impact of non-communicable diseases on the population. To ensure better understanding and use of these data, the results of this report should be widely disseminated at different planning levels.

The implementation of work related to CRVS is undertaken as a collaborative by SPC/SDD with support from the Pacific Health Information Network (PHIN) and the University of Queensland (UQ) School of Population Health.

2. METHODOLOGY

The administrative frame work of compiling the level of vital statistics information is obtained between the RON Hospital under the Ministry of Health, the Government Registration Office and the Bureau of Statistics under the Ministry of Finance.

The data source for births, deaths and causes of deaths for years 2008 to 2013 was originally provided in unit record in excel format also known as raw data. The Medical Coder representative from RON Hospital went through the data cleaning routine mainly to edit the variable formats, duplicates and missing cases to prepare the most complete data set available. The data sources for population projections midpoint 2011-13 was provided by the Statistical Officer representative from the Nauru Bureau of Statistics and midpoint 2008-10 was provided by the facilitators from the Secretariat of Pacific Community-Statistics Development Division. The population data was mostly used for denominator reference to calculate such rates for indicators related to births, deaths and causes of deaths.

The data quality routine found no duplicate cases and the only missing data encountered was mostly information pertaining to the age and the sex variable. The familiarity advantage of the patient's name gives us the confidence to identify the sex and the age. There were only a few missing (unknown) age cases, and these cases were evenly re-distributed within the age groups by applying the known age distribution to these data.

Deriving additional variables in the excel worksheet was carried out to include mainly:

1) Years	2008, 2009... 2013	Births, Deaths, COD
2) Five years age groups	<28 days, <1, 1-4, 5-9, 10-14... 75+	Births, Deaths
3) Broader age groups	<5 years, 5-14 years, 15-59 years...	COD
4) Sex (if necessary)	Male, Female	Births, Deaths, COD
5) ICD Code (main chapter)	A00-B99, C00-D48, D50-D89...	COD
6) List Code-104 (converted)	1-001, 1-002, 1-003...1-103	COD

The purpose of the additional variables in the excel worksheet re-arranged the data analysis by generating the cross tabulation process more conveniently.

The availability of information on vital statistics is an advantage to Nauru with currently one main hospital where most of the population report to medical professionals for health and medical purposes. Local births and death cases are documented according to the services within the health information system.

The information contained in the medical record allows health care providers to determine the patient's medical history and provide informed care. The medical record serves as the central office for planning patient care and documenting communication among patient and health care provider and professionals contributing to the patient's care. An increasing purpose of the medical record is to ensure documentation of compliance with institutional, professional or governmental regulation and then provide further processing, notifying the Registration Office for compulsory registration purposes as well as corresponding with the relative of the client.

The important role of the Government Registration Office is primarily to create legal documents that are used to establish and protect the civil rights of individuals and also to crease a data source for the compilation of vital statistical information. Among the legal documents that are derived from civil registration are birth certificates and death certificates.

3. BIRTHS AND FERTILITY

3.1 Number of Births

All years for total births by sex came from the unit record data from the RON Hospital, except for 2011 which came from summary data previously published from RON Hospital, due to incompleteness of data from the 2011 unit record data.

Table 1: Absolute Total Births by sex and years 2008-2013

Years	Male	Female	Total
2008	166	155	321
2009	190	165	355
2010	180	153	333
2011	190	180	370
2012	193	173	366
2013	167	153	320
Total	1,085	980	2,065

Source: RON Hospital Records 2008-13

Based on the hospital records Table 1 above shows that the total births for each consecutive year shows a very minor changes overtime. The sex characteristics show that male births are higher than females for each consecutive year.

Table 2: Total Births by ethnicity and year, 2008-2013

Year	Nauruan	Non-Nauruan	Total
2008	309	12	321
2009	345	10	355
2010	322	11	333
2011	-	-	370
2012	351	15	366
2013	311	9	320
Total 2008-2013	2008	57	2065

Source: RON Hospital Records 2008-13

Table 3: Average Total Births by sex and 3 years period 2008-2013

Years	Male	Female	Total
2008-10	179	158	336
2011-13	183	169	352

Source: RON Hospital Records 2008-13

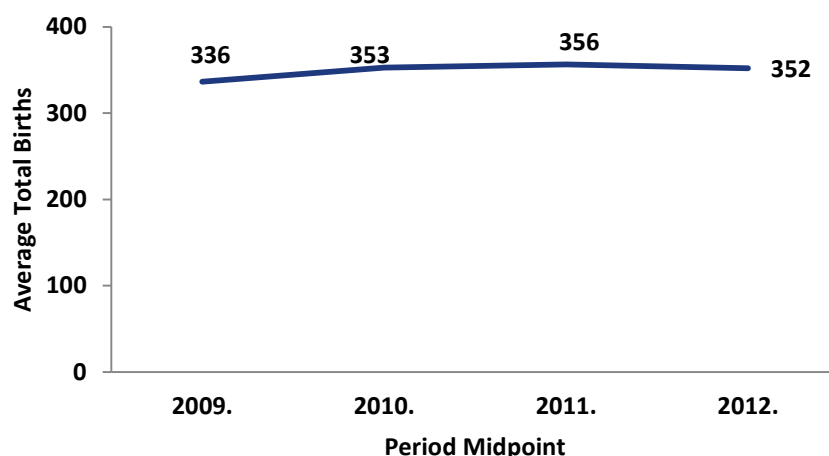
In Table 3 above shows the average total births by sex between the 3 years periods and showing a very minor increase during the 2011-13 periods of 352 total births compared to the 2008-2013 period which shows 336 total births. The total male births continue to outnumber the total female births, as would be expected.

Table 4: Average Nauruan Births by 3 year period, 2008-2013

Period	Average
2008-2010	325
2011-2013	344
Total 2008-2013	335

Source: RON Hospital Records 2008-13

Figure 1: Three (3) Years rolling average for births 2008-2013



In Figure 1 above represents the 3 years rolling average, shows no significant changes with very minor differences showing almost a straight line trend.

Note: Three (3) years rolling average

- The year 2009 midpoint represents the average between year 2008-2010.
- The year 2010 midpoint represents the average between year 2009-2011.
- The year 2011 midpoint represents the average between year 2010-2012.
- The year 2012 midpoint represents the average between year 2011-2013.

3.2 Sex Ratio at Birth

It is reported in a Sex Ratio at Birth, that the male births outnumbered the female births in a sex ratio of 111 males per 100 females during the whole 6 years period between years 2008 to 2013. Note that Nauru Census 2011 reported a sex ratio at birth of 106 males per 100 females.

3.3 Crude Birth Rate

The crude birth rate is the number of births per 1,000 population over a given period of time. Crude birth rates are important because they tell us how much our population is growing or decreasing.

Table 5: Crude Birth Rate with 95% Confidence Interval by 3 years periods 2008-2013

Periods	CBR	CI Lower 95%	CI Upper 95%
2008-10	34.4	30.8	38.0
2011-13	33.9	30.4	37.4

Sources: SPC/SDD Mid year population 2008-10
 NBOS Mid year population 2011-13
 Births from Hospital Records
 Normal distribution (95% CI)

In Table 5 shows there are no significant changes in the crude birth rate during 2011-13 periods compared to 2008-10 periods. The crude birth rate during 2011-13 periods is 33.9 births per 1000 population and 34.4 births per 1000 population during the 2008-10 periods.

Using the Normal distribution method it is reported in Table 5 that both periods 2008-2010 and 2011-2013 are not significantly different, with 95% confidence intervals overlapping.

3.4 Place of Birth

Place of birth for periods between years 2008-2013 was not been compiled from the raw data, as a result such related case is not available.

3.5 Births by Age of Mothers

Child bearing age is generally considered to be from 15 to 49 years of age. Babies born to mothers outside this age range are possible but not common. The teenage women should be a major concern as childbearing at these young ages is subject to an increased health risk to mother and child. The older women also face health risk and fertility decline.

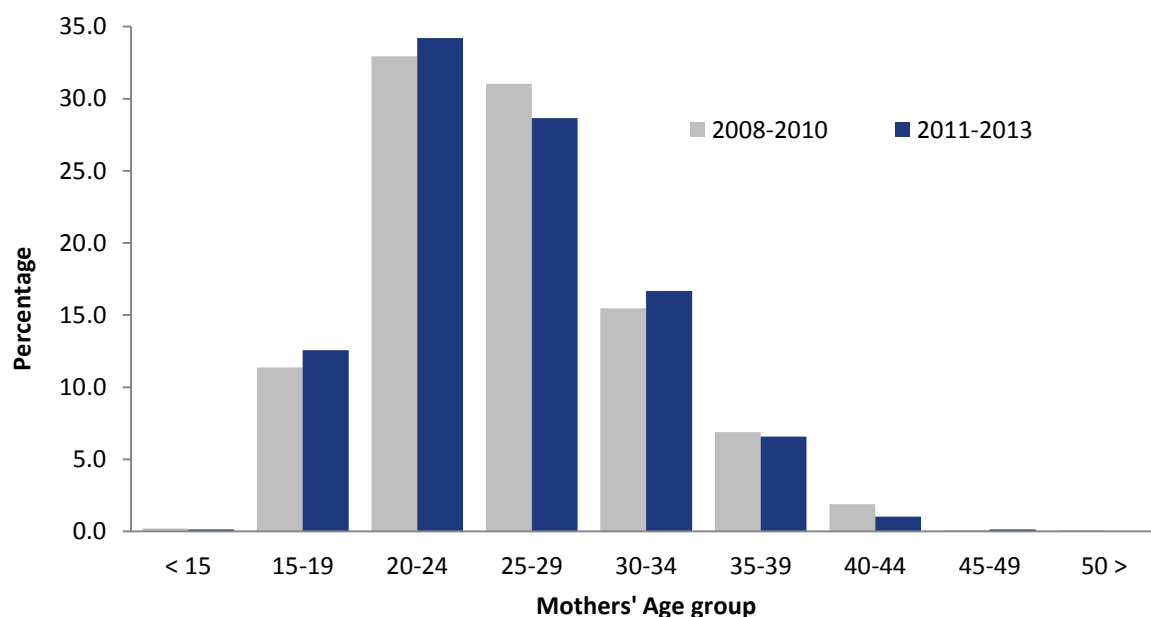
Table 6: Percentage distribution of births by mothers' age group, 2008-2013

Age group	2008-2010	2011-2013
< 15	0.2	0.1
15-19	11.4	12.6
20-24	32.9	34.2
25-29	31.0	28.7
30-34	15.5	16.7
35-39	6.9	6.6
40-44	1.9	1.0
45-49	0.1	0.1
50 >	0.1	0.0
Total	100.0	100.0

Source: Hospital Records

Table 6 and Figure 2 show a percent distribution of total births by mothers' age group including ages under 15 and ages 50 years and above during the 3 years period 2008-13. The largest proportion of births were to mothers aged 20-24, accounting for about 1/3 of all births. This was followed by births to mothers aged 25-29. It's notable that between 11-13% of births were to teenage mothers. There is no significant change in distribution between the two periods.

Figure 2: Percent Distribution of Births by Mothers age group and 3 years periods, 2008-2013



3.6 Age Specific Fertility Rates

Fertility rates by age of mothers, or age-specific fertility rates, are the number of births occurring to mothers of a certain age group per 1,000 women in that age group in a given period of time.

Table 7: Age specific fertility rate by 3 years period 2008-2013 and Census 2011

Age	ASFR - 3 years period		
Age Group	2008-2010	2011-2013	Census 2011
15-19	76	100	75
20-24	214	240	224
25-29	223	199	231
30-34	149	148	183
35-39	84	73	97
40-44	26	15	26
45-49	1	2	0

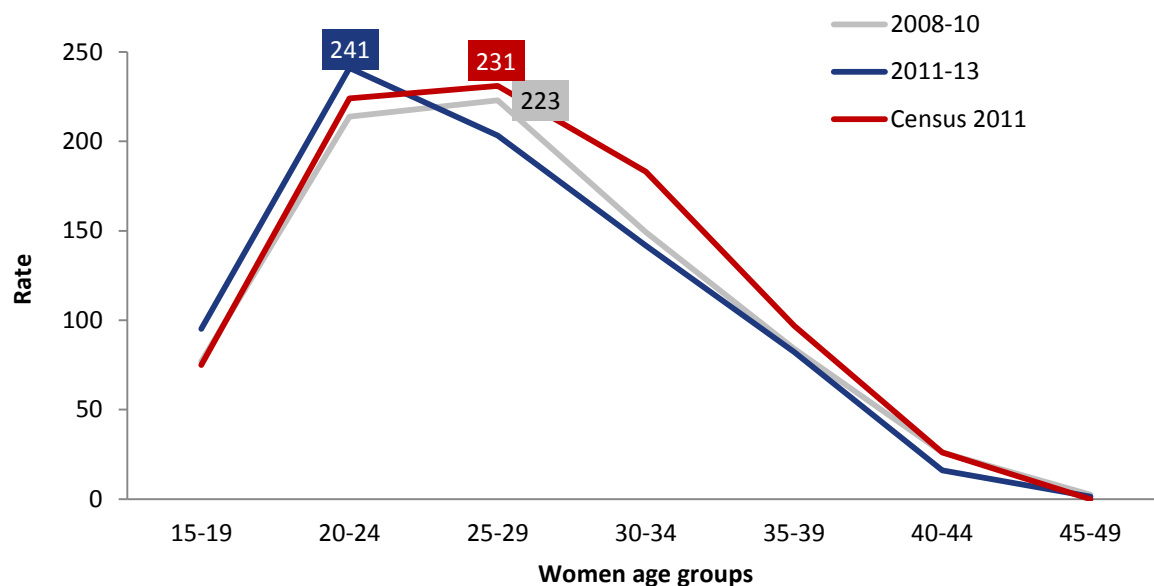
Sources: Period 2008-10, mid-year women population projections from SPC/SDD
 Period 2011-13, mid-year women population projections from NBOS
 Births from RON Hospital
 Census 2011

Table 7 shows that fertility rates appeared to be highest among women aged 25-29 for the period 2009-2010 and in the 2011 census, and among women aged 20-24 during the 2011-2013 period. However, confidence intervals on these numbers are very wide and overlap, so any perceived change in fertility rates between the two periods should be interpreted with caution. It is clear that fertility is high in the teenage years, increases while women are in their 20s, remains relatively high for women aged 30-34, and then starts to fall.

The teenage fertility rate was estimated at 100 (95% CI: 73-148) births per 1000 teenage women population during 2011-2013, and 77 (95% CI: 53-115) births per 1000 teenage women in 2008-10. The

confidence intervals on these numbers are large and overlap, which does not allow for a meaningful trend. However, the Nauru Census 2011 reported 75 births per 1000 teenage women, which agrees with this data that teenage fertility is high.

Figure 3: Age specific fertility Rate - 3 years period 2008-13 and Census 2011



The results shows high fertility rates with no significant change over time. Fertility is highest among women in their 20s, but remains relatively high as women reach their early 30s. Teenage fertility is notably high.

Note: The Nauru Census 2011 reported the teenage fertility rate considered as high level with no sign of decrease which should be seen as a major concern as childbearing at this age is subject to increased health risks to mother and child together with the Marshall Islands by far the highest teenage fertility rate in the Pacific region.

The United Nations Millennium Development Goals number 5 is to “Improve Maternal Mortality”. It consists of the adolescent birth rate which measures the annual number of births to women 15 to 19 years of age per 1,000 women in the respective age group. It represents the risk of childbearing among adolescent women 15 to 19 years of age. It is also referred to as the age-specific fertility rate for women aged 15-19. Nauru does not appear to have made any gains against this goal over the 6 year period shown.

3.7 Total Fertility Rates (TFR)

The total fertility rate (TFR) is a measure of the average number of children a woman would give birth to during her lifetime if she were to pass through her childbearing years (15 – 49 years) experiencing the present day age-specific fertility rates.

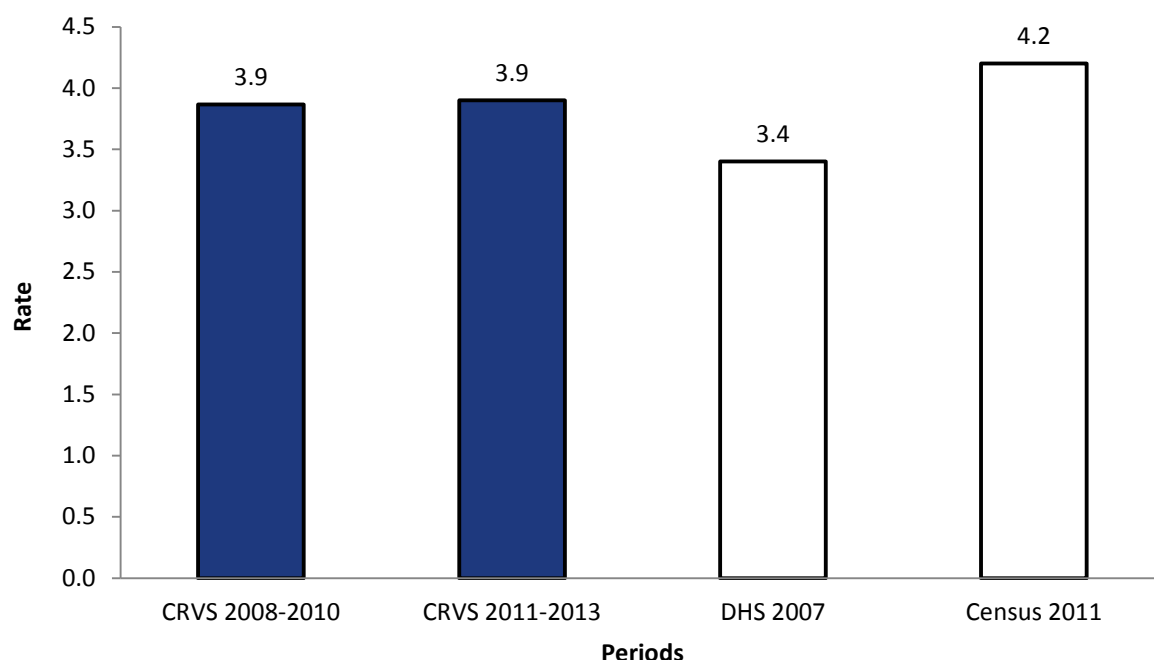
Table 8: Total Fertility Rate by 95% by Confidence Interval by 3 years periods 2008-13

Periods	TFR	L95%CI	U95%CI
TFR 2008-10	3.9	3.4	4.3
TFR 2011-13	3.9	3.5	4.3

Sources: Period 2008-10, mid-year women population projections from SPC/SDD
 Period 2011-13, mid-year women population projections from NBOS
 Births from RON Hospital
 Census 2011

Table 8 shows no significant change over time between the two periods 2008-13. The TFR result means that women were having, on average, 3.9 children during their child bearing ages. These results are close to the estimate from the 2011 census, which produced a TFR of 4.2.

Table 9: Total Fertility Rate from various sources



3.8 Birth Weight

Table 10: Percent Distribution of Birth by Weight 2008-13

Period	Birth weight		Total
	<2500g	2500g or above	
2008-2010	7.0	93.0	100
2011*	*na	*na	*na
2012-2013	7.7	92.3	100

Source: RON Hospital Records

*Data not available for 2011

Table 10 above shows that over 90 percent of babies are born weighing at least 2500 grams, compared to underweight births weighing less than 2500 grams (which is under 10 percent).

Birth weight and size at birth are important indicators of a child's vulnerability to childhood illnesses and their chance of survival. Children with low birth weight (LBW, defined as less than 2.5 kg), or children reported by their mother to be 'very small' or 'smaller than average' are considered to have a higher-than-average risk of early childhood death.¹

¹ 2007 Nauru DHS

4. DEATHS AND MORTALITY

4.1 Number of Deaths

Table 11: Absolute Total Deaths by sex period 2008-2013

Years	Male	Female	Total
2008	46	38	84
2009	37	20	57
2010	46	23	69
2011	39	29	68
2012	41	30	71
2013	57	38	95
Total	266	178	444

Total deaths per year ranged from 57 to 95 over the period 2008-2013. Table 11 above shows there were more male deaths compared to female deaths for each consecutive year 2008-2013.

Table 12: Average Total Deaths by sex and 3 years period 2008-2013

Period	Male	Female	Total
2008-2010	43	27	70
2011-2013	46	32	78

Note: No still births

Table 12 above shows there were 70 deaths per year, on average, over the period 2008-2010 and 78 deaths per year, on average, from 2011-2013. Again, the average total deaths for males outnumbered the females.

Figure 4: Three (3) years rolling average for total deaths by sex 2008-2013

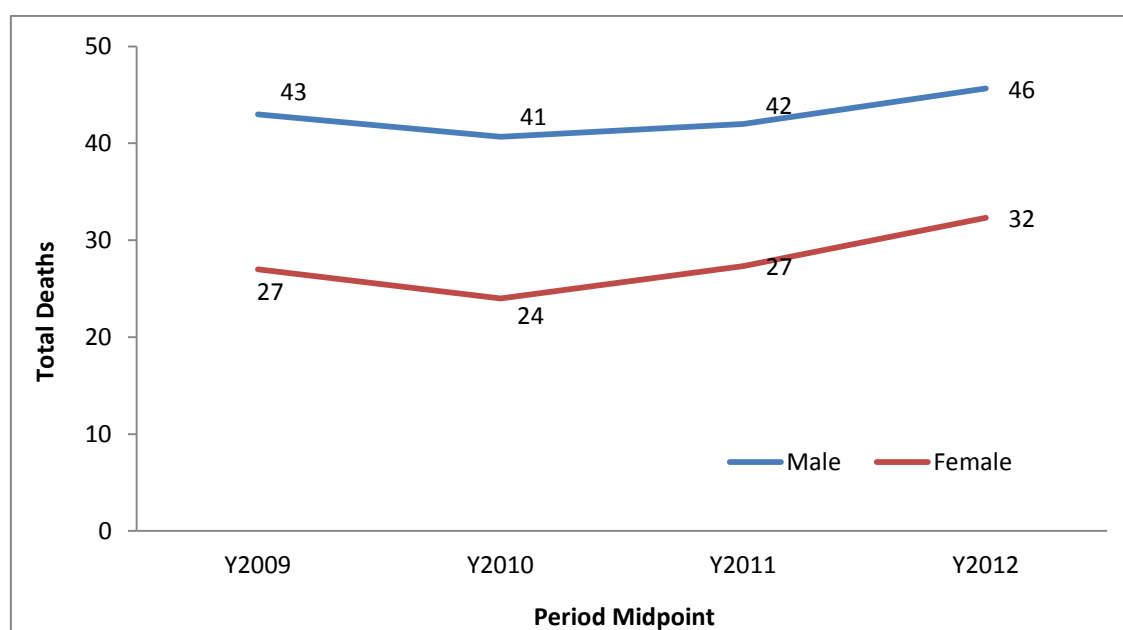


Figure 4 shows no significant changes for average yearly deaths according to the 3 years rolling average. The trend continues to show more male deaths than female deaths.

Note: Three (3) years rolling average

- The year 2009 midpoint represents the average between year 2008-2010.
- The year 2010 midpoint represents the average between year 2009-2011.
- The year 2011 midpoint represents the average between year 2010-2012.
- The year 2012 midpoint represents the average between year 2011-2013.

Table 13: Crude death rate & Age standardised mortality Rate by period 2008-13 with 95% Confidence Intervals

Periods	Crude Death rate per 1000			Aged Standardised mortality rate per 1000		
	CDR	L95%CI	U95%CI	ASMR	L95%CI	U95%CI
2008-10	7.2	5.6	9.1	15.8	11.3	21.3
2011-13	7.5	5.9	9.4	14.8	10.7	19.6

Sources: Deaths from RON Hospital Records
Population projections from Bureau of Statistics and SPC/SDD

Table 13 above shows the 2008-10 period experienced a crude death rate of 7.2 per 1000 population, and 2011-2013 had a similar rate of 7.5 per 1000 population with no significant change between the two periods.

Note: Nauru Census 2011 reported a crude death rate of 7.5 per 1000 population which remained steady and is consistent with this data.

Figure 5: Age Standardised Mortality Rates with 95% Confidence Interval by 3 years period

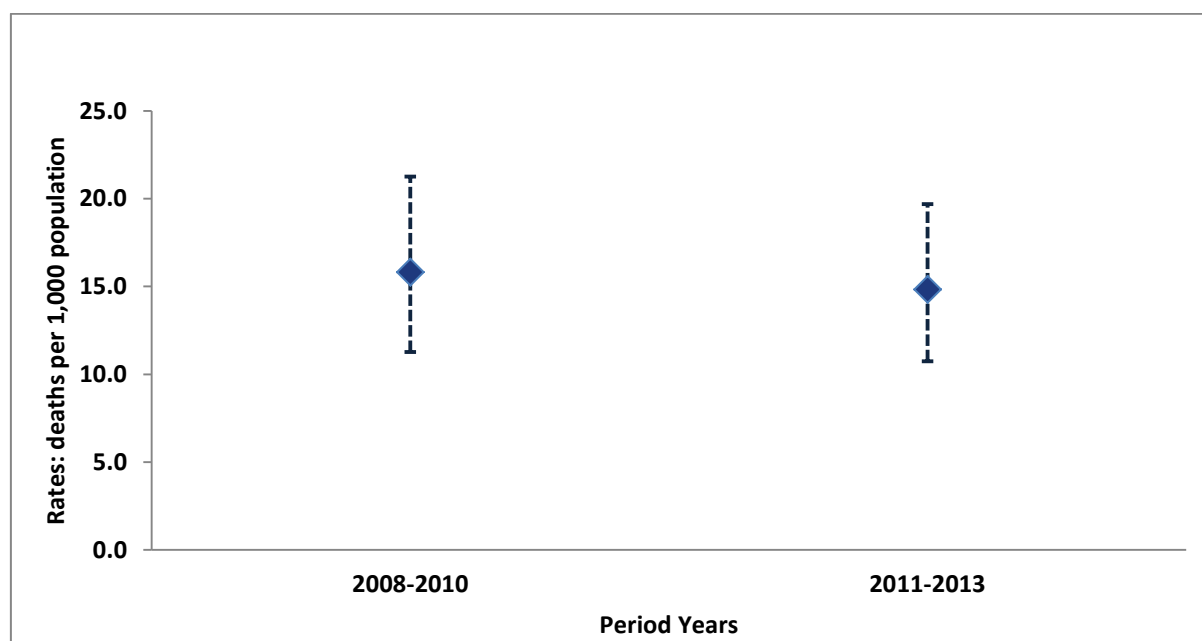


Figure 5 shows no significant change in age-standardised mortality rates as both period are overlapping.

4.2 Life Expectancy At Birth

Life expectancy at birth indicates the average number of years a newborn infant would live if the current patterns of mortality at the time of its birth were to remain the same throughout its life time.

Table 14: Life Expectancy at Birth by sex and 3 Years period (including 95% confidence intervals) 2008-2013

Periods	Male	Female	Both
2008-10	57.1 (53.0-61.2)	69.8 (59.8-79.8)	60.9 (57.1-64.7)
2011-13	58.0 (53.3-62.8)	64.9 (59.8-70.1)	61.4 (57.8-64.9)

Sources: NBOS Average total deaths 2008-2010
 RON Hospital Average total deaths 2011-2013
 SPC/SDD Population midpoint 2008-2010
 NBOS Population midpoint 2011-2013

Table 14 above shows life expectancy remaining stable at around 61 years between 2008-2010 and 2011-2013 periods. Male life expectancy was about 57-58 years over this period, compared to females who ranged from 65-70. The lower female life expectancy in the later period is likely due to stochastic variation and a random increase in deaths during that period. Results should be interpreted with caution as confidence intervals overlap.

Note: The Nauru Census 2011 reported a life expectancy of 60.4 years for both sexes combined, 57.5 for males, and 63.2 for females.

4.3 Age Specific Mortality Rate

An age specific mortality rate is the number of deaths per 1,000 people of a given age group in a given time period.

Figure 6: Age Specific Mortality Rate by 3 years periods 2008-2013

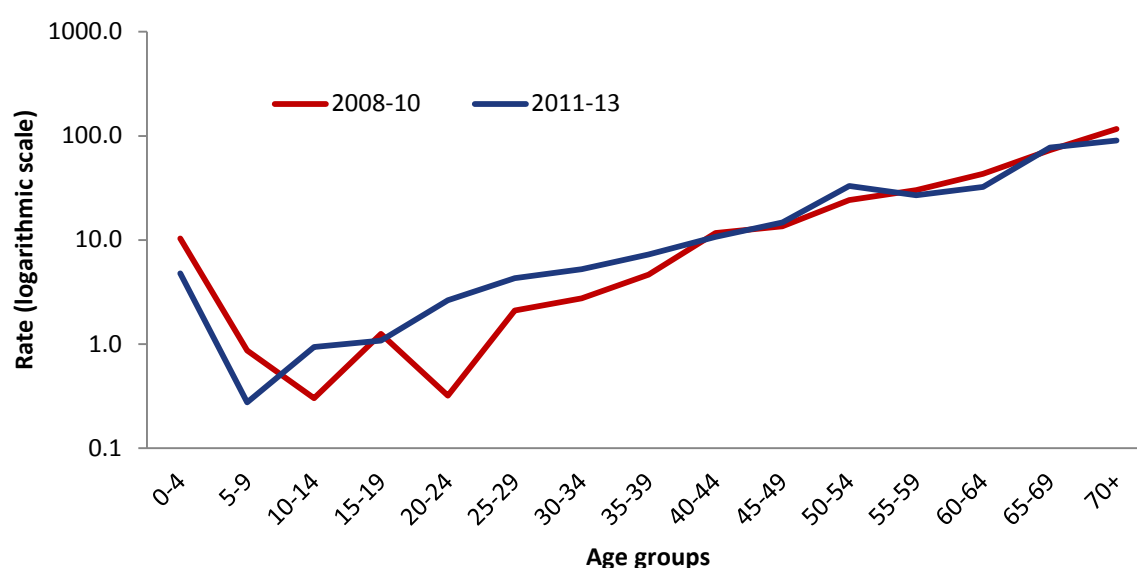


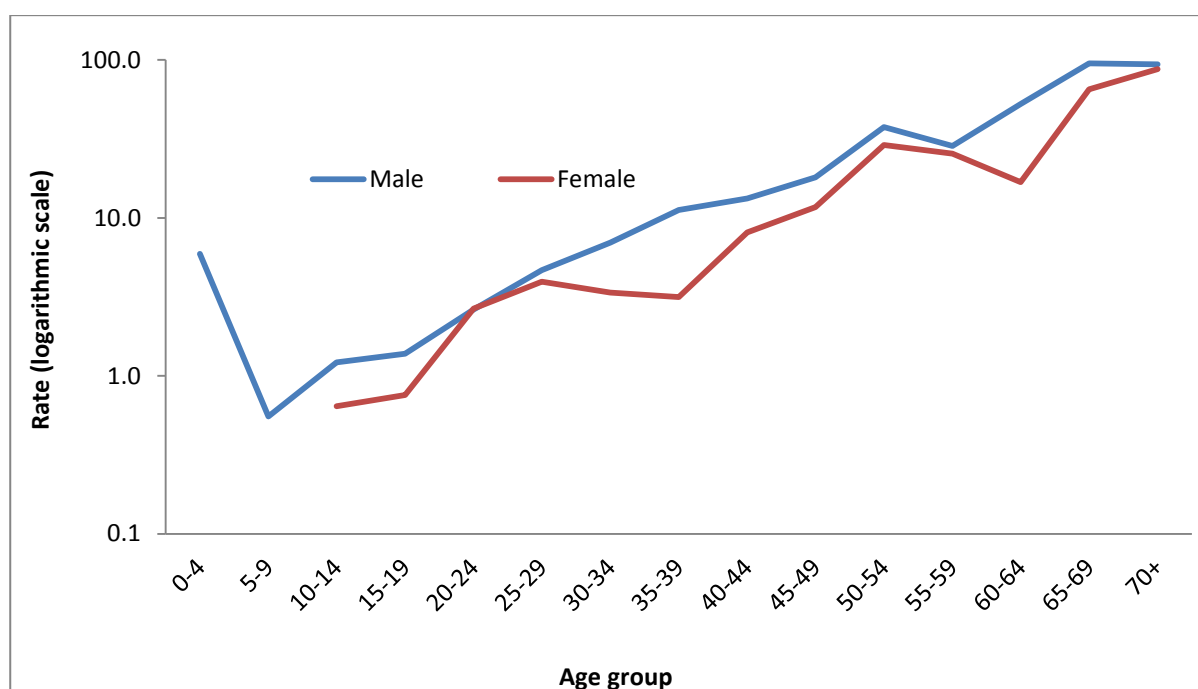
Figure 6 above shows no significant changes in the aged specific trend over time. Mortality is higher in young children under age 5, then falls during late childhood. Mortality gradually increases and deaths begin to rise at 40 years and older as the people in the population grows older and most likely died from Non Communicable Diseases (NCDs).

Table 15: Age Specific Mortality Rate per 1,000 people by Sex and 3 years period, 2008-2013

Age Group	ASMR 2008-2010			ASMR 2011-2013		
	Male	Female	2008-10	Male	Female	2011-13
0-4	13.2	7.5	10.3	5.9	3.4	4.8
5-9	0.6	1.2	0.9	0.6	0.0	0.3
10-14	0.6	0.0	0.3	1.2	0.6	0.9
15-19	1.8	0.7	1.3	1.4	0.8	1.1
20-24	0.6	0.0	0.3	2.6	2.7	2.6
25-29	1.4	2.8	2.1	4.7	3.9	4.3
30-34	3.5	1.9	2.7	7.0	3.4	5.2
35-39	6.7	2.4	4.6	11.2	3.2	7.3
40-44	7.4	16.3	11.7	13.3	8.1	10.7
45-49	19.4	8.7	13.6	18.1	11.7	14.8
50-54	32.2	17.3	24.3	37.6	28.9	32.9
55-59	29.5	30.6	30.1	28.6	25.5	26.9
60-64	74.1	11.0	43.2	52.6	16.8	32.4
65-69	93.1	53.4	73.2	95.2	65.0	77.3
70+	173.2	68.6	116.4	93.8	87.3	90.1
Total	8.7	5.6	7.2	8.7	6.3	7.5

Sources: NBOS Average total deaths 2008-2010
RON Hospital Average total deaths 2011-2013
SPC/SDD Population midpoint 2008-10
NBOS Population midpoint 2011-2013

Figure 7: Age specific mortality rate by sex 2011-13



4.4 Infant And Child Deaths And Mortality

The Infant Mortality Rate shows the number of infant deaths (deaths in children under age 1) a year per 1,000 live births for a given period.

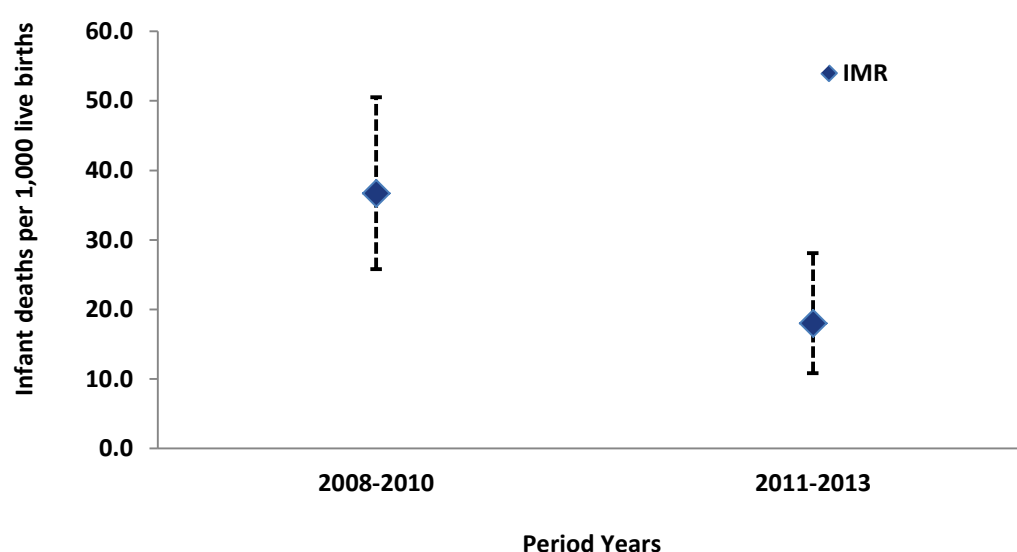
Table 16: Infant Mortality Rate per 1,000 people with 95% Confidence Interval and 3 years period, 2008-2013

Period	IMR/1000	L95%CI	U95%CI
2008-10	36.7	25.8	50.5
2011-13	18.0	10.8	28.1

Source: RON hospital births and deaths

It appears IMR fell from the 2008-2010 period to 2011-2013, but the decrease is not statistically significant. Table 16 and Figure 8 show the Infant mortality rate (IMR) was 18.0 per 1000 live births during the period 2011-2013 with a 95% Confidence Interval of 10.8 to 28.1 infant deaths per 1000 live births. The IMR during the 2008-2010 periods was 36.7 per 1000 live births with a 95% Confidence Interval of 25.8 to 50.5 per 1000 live births.

Figure 8: Infant Mortality Rate (IMR) - including 95% Confidence Interval by 3 year period, 2008-2013



4.5 Neonatal Mortality

The neonatal mortality rate is the number of deaths in live-born infants during the first 28 days of life per 1,000 live births over a specified time period.

Neonatal deaths were only available for the 2011-2013 period. The neonatal mortality rate for this time was 12.3 (95% CI: 6.6-21.1) neonatal deaths per 1,000 live births.

Table 17: Neonatal mortality with 95% Confidence Interval by 3 years period 2008-13

Period	<28DAYS/1000	L95%CI	U95%CI
2011-13	12.3	6.6	21.1

Sources: RON hospital births and deaths
Poisson distribution for 95% CI

4.6 Under 5 Mortality Rate (U5M)

The Under 5 Mortality Rate is measured as the number of deaths in children under age 5 per 1,000 live births in a given period.

As was the case with infant mortality, under five mortality appears to be falling from the 2008-2010 period to 2011-2013, but the decrease is not statistically significant. More data is needed to see if the trend holds.

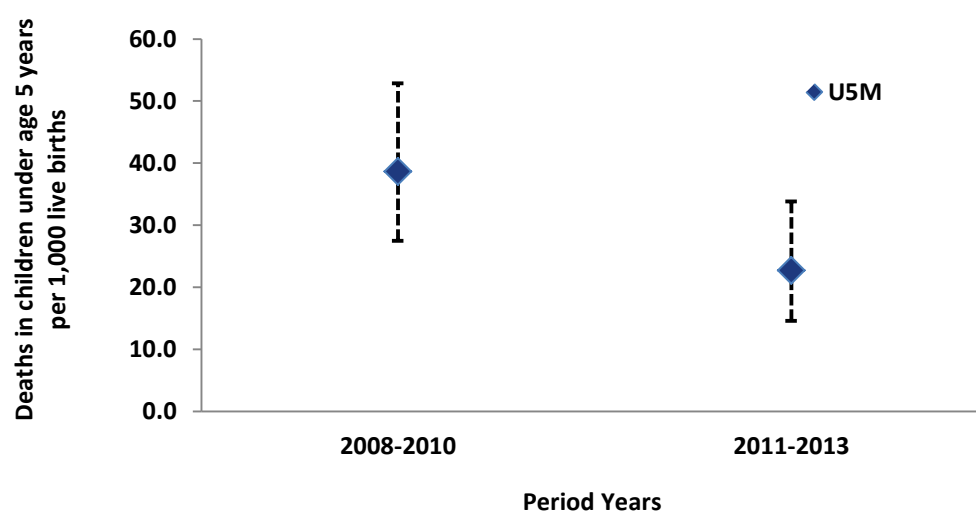
Table 18 and Figure 9 show the Under-5 mortality rate (U5M) is 22.7 per 1000 live births (95% Confidence Interval 14.6-33.8) during 2011-13 period and 38.7 per 1000 live births (95% CI: 27.5-52.8) during the period 2008-2010.

Table 18: U5M rate (<5 yrs) with 95% Confidence Interval by 3 years period 2008-2013

Period	U5M/1000	L95%CI	U95%CI
2008-10	38.7	27.5	52.8
2011-13	22.7	14.6	33.8

Sources: RON hospital births and deaths
Poisson distribution for 95% CI

Figure 9: Under 5 Mortality (<5 yrs) with 95% Confidence Interval



5. SPECIFIC MORTALITY CAUSES AND NCDS

5.1 Number of Deaths by Specific Causes

Table 19: Ten Leading Causes of Deaths (by ICD-10) and by 3 years period 2011-2013

ICD Codes	Disease	Number of deaths	Percent distribution of deaths	Percent distribution of deaths excluding ill-defined causes
I00-I99	Diseases of circulatory system	71	30.3	31.6
E00-E88	Endocrine, nutritional and metabolic diseases	30	12.8	13.3
N00-N99	Diseases of the genitourinary system	28	12.0	12.4
C00-D48	Neoplasms	20	8.5	8.9
P00-P96	Certain conditions originating in the perinatal period	19	8.1	8.4
V01-Y89	External causes of morbidity and mortality	18	7.7	8.0
A00-B99	Certain Infectious and parasitic diseases	17	7.3	7.6
K00-K92	Diseases of digestive system	9	3.8	4.0
J00-J98	Diseases of respiratory system	6	2.6	2.7
R00-R99	Ill-defined causes	9	3.8	
	All other causes	7	3.0	3.1
	TOTAL	234	100	
	TOTAL LESS ILL-DEFINED CAUSES	225		100

Source: RON Hospital deaths 2011-2013

Table 19 above shows the ranking order of actual total number of deaths for the period 2011-2013 by specific causes. The Diseases of circulatory system is the major leading cause of death, accounting for about 30 percent of all deaths.

5.2 Mortality in Children Aged 0-4 years

Table 20 shows causes of mortality for children aged 0-4 years during 2011-2013 periods. The leading cause of death was perinatal conditions, accounting for 79 percent of death to children under age 5. Other causes of death had too few cases to accurately determine percent of deaths or cause-specific mortality rates.

Table 20: Cause specific Mortality by ICD chapter, deaths per 100,000 population, including Source: Population (1666) of 0-4 age groups 2011-2013

ICD Codes	Disease	Number of deaths	Percent distribution of deaths by cause (95% CI)	Cause Specific Mortality Rate per 100,000 population (95% CI)
P00-P96	Certain conditions originating in the perinatal period	19	79 (48 - 100)	333 (201-521)
V01-Y89	External causes of morbidity and mortality	3	-	-
C00-D48	Neoplasms	1	-	-
I00-I99	Diseases of circulatory system	1	-	-
Total		24		

Source: RON Hospital deaths between aged 0-4 years 2011-2013

5.3 Mortality in Children Aged 5-14 years

Table 21 shows causes of death in children aged 5 to 14 years. There were just 4 deaths to children in this age group over the period 2011-2013, making it difficult to accurately determine cause-specific death rates.

Table 21: Cause specific Mortality by ICD chapter, deaths per 100,000 population, including 95% Confidence Intervals, 5-14 year olds (both sexes combined) 2011-2013

Disease	Number of Deaths
Diseases of nervous system	2
External causes of morbidity and mortality	1
Symptoms, and signs and abnormal clinical and laboratory findings	1
Total	4

Source: RON Hospital deaths between aged 5-14 years 2011-2013

5.4 Adult Mortality

Adult mortality is the probability of dying between the ages of 15 to 59 (45q15) inclusive, or the probability of a 15-year-old dying before reaching the age of 60. The table below shows adult mortality by period and sex.

Table 22: Adult Mortality (%) by sex and period 2008-2013

Period	Male _{45q15}	Female _{45q15}	Both sexes _{45q15}
2008-10	40.1 (24.4-52.6)	33.2 (18.1-45.6)	36.5 (25.9-45.5)
2011-13	46.7 (32.0-58.2)	35.8 (21.7-47.3)	41.4 (31.5-49.8)

Source: Deaths 2008-10, Registrar Office

Deaths 2011-2012, RON Hospital

Population projections average 2008-10, NBOS

Population projections average 2011-13, SPC/SDD

Table 22 shows that a 15 year old male in the 2011-2013 period had a close to 50 percent chance (47%) of dying before reaching age 60. Slightly more than one in three 15 year old women (36%) would die before their 60th birthday.

5.5 Life Expectancy at 40 (LE40)

Life expectancy at 40 years of age is also an indicative measure on premature mortality. This is the number of years a person aged 40 would be expected to live, on average, if they continued to experience current mortality rates.

Table 23: Life Expectancy at 40 (LE40) by sex and period 2008-2013

Period	Male			Female			Total		
	LE-40	L95%CI	U95%CI	LE-40	L95%CI	U95%CI	LE-40	L95%CI	U95%CI
2008-10	22.8	19.4	26.2	34.3	24.0	44.7	26.0	22.3	29.6
2011-13	24.0	19.5	28.5	28.7	23.7	33.7	26.4	23.0	29.8

Note: Calc_LifeTabCumRsk_95%CIs_SPC6 2011-13

Source: Deaths 2008-10, Registrar Office

Deaths 2011-2012, RON Hospital

Population projections average 2008-10, NBOS

Population projections average 2011-13, SPC/SDD

Table 23 shows no significant changes in life expectancy in adults aged 40 years. For the 2011-2013 period, a 40 year old male would be expected to live to age 64, and a 40 year old female would be expected to live to age 69.

5.6 Causes of death in Adults Aged 15-59 years

Table 24 shows the leading causes of deaths in males aged 15 to 59 years. Diseases of the circulatory system were the leading cause of death, accounting for 35 percent of deaths with a cause-specific mortality rate of 326 per 100,000 population. Other leading causes of death included diseases of the genitourinary system, endocrine, nutritional and metabolic diseases (mainly diabetes), and external causes.

Diseases of the circulatory system were also the leading cause of death in adult women aged 15-59, accounting for 24 percent of deaths with a cause-specific mortality rate of 164 per 100,000 population (Table 25). Other leading causes of death included endocrine, nutritional and metabolic diseases (mainly diabetes), and cancer.

Table 24: Cause specific Mortality for Male adults aged 15-59 years by ICD chapter (deaths per 100,000 population, including 95% Confidence Intervals); 2011-13

ICD Codes	Disease	Number of deaths	Percent distribution (95% CI)*	Cause Specific Mortality Rate (95% CI)
I00-I99	Diseases of circulatory system	30	35 (24-50)	326 (220-466)
N00-N99	Diseases of the genitourinary system	14	16 (9-28)	152 (83-256)
E00-E88	Endocrine, nutritional and metabolic diseases	11	13 (6-23)	120 (60-214)
V01-Y89	External causes of morbidity and mortality	11	13 (6-23)	120 (60-214)
A00-B99	Certain Infectious and parasitic diseases	7	8 (3-17)	76 (31-157)
K00-K92	Diseases of digestive system	6	7 (3-15)	65 (24-142)
C00-D48	Neoplasms	3	4 (1-10)	-
G00-G98	Diseases of nervous system	2	2 (0-8)	-
J00-J98	Diseases of respiratory system	1	1 (0-7)	-
R00-R99	Symptoms, and signs and abnormal clinical and laboratory findings	4	-	-
TOTAL		89	-	
TOTAL LESS ILL-DEFINED CAUSES		85	100	
*Excluding ill-defined causes				

Source: NBOS Population (3064) midpoint 2011-2013, males, aged 15-59
RON Hospital deaths of 15-59 age groups 2011-2013

Table 25: Cause specific Mortality for Female adults aged 15-59 years by ICD chapter (deaths per 100,000 population, including 95% Confidence Intervals); 2011-13

ICD Codes	Disease	Number of deaths	Percent distribution (95% CI)	Cause Specific Mortality Rate (95% CI)
I00-I99	Diseases of circulatory system	15	24 (13-39)	164 (92-271)
E00-E88	Endocrine, nutritional and metabolic diseases	12	19 (10-33)	131 (68-230)
C00-D48	Neoplasms	11	17 (9-31)	120 (60-216)
N00-N99	Diseases of the genitourinary system	8	13 (5-25)	88 (38-173)
A00-B99	Certain Infectious and parasitic diseases	6	10 (3-21)	66 (24-143)
J00-J98	Diseases of respiratory system	4	6 (2-16)	-
K00-K92	Diseases of digestive system	3	5 (1-14)	-
V01-Y89	External causes of morbidity and mortality	2	3 (0-11)	-
G00-G98	Diseases of nervous system	1	2 (0-9)	-
M00-M99	Diseases of the musculoskeletal system and connective tissue	1	2 (0-9)	-
R00-R99	Symptoms, and signs and abnormal clinical and laboratory findings	1	-	-
TOTAL		64	-	
TOTAL LESS ILL-DEFINED CAUSES		63	100	
*Excluding ill-defined causes				

Source: NBOS Population (3044) midpoint 2011-2013, females, aged 15-59
RON Hospital deaths of 15-59 age groups 2011-2013

5.7: Maternal Mortality

A maternal death is defined by the WHO as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

The maternal mortality ratio (MMR) is the ratio of the number of maternal deaths during a given time period per 100,000 live births during the same time-period. A live birth is defined by the WHO as the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.

Table 26: Maternal Mortality Rate (deaths per live births) and Ratio (deaths per 100,000 population), including 95% Confidence Intervals; 2008-2013

Period	Number of maternal deaths	Maternal Mortality Rate	Maternal Mortality Ratio
2008-2010	4	51 (14-130)	396 (108-1015)
2011-2013	0	0 (0-46.1)	0 (0-349)

Source: Maternal deaths- Ministry of Health- Annual Report 2011
Number of births, RON Hospital

Table 26 above shows there are no cases of maternal deaths during the 2011-2013 periods compared to 2008-2011 periods which show the actual total of 4 cases. While not statistically different, the maternal mortality rate shows an improvement from 369 per 100,000 population during 2008-2010 periods compared to the maternal mortality ratio during 2011-2013 periods which was zero (0).

5.8 Adult Mortality from Non-Communicable Diseases (NCDs)

Non-communicable diseases are the leading cause of death in the world and in Pacific Island countries and territories. A number of NCD-related indicators can be used to measure progress against NCD-related mortality including cause-specific proportional mortality (% of deaths due to selected NCDs), cause-specific mortality rates from selected NCDs, and age-standardized mortality from NCDs.

Worldwide, the ICD-10 classification system is the system most commonly used to classify deaths.² Selected non-communicable diseases for reporting against WHO international targets by ICD General Mortality List 1 include 1-026 – Neoplasms, 1-052 – Diabetes, 1-064 Diseases of the Circulatory System, and 1-076 – Chronic Lower respiratory Disease. It may also be argued that 1-080 – Diseases of the Liver are important in the Pacific Region and should be considered when examining NCDs.

Table 27: Selected Non-Communicable Diseases (NCDs) for Reporting Against International Targets by ICD General Mortality List 1

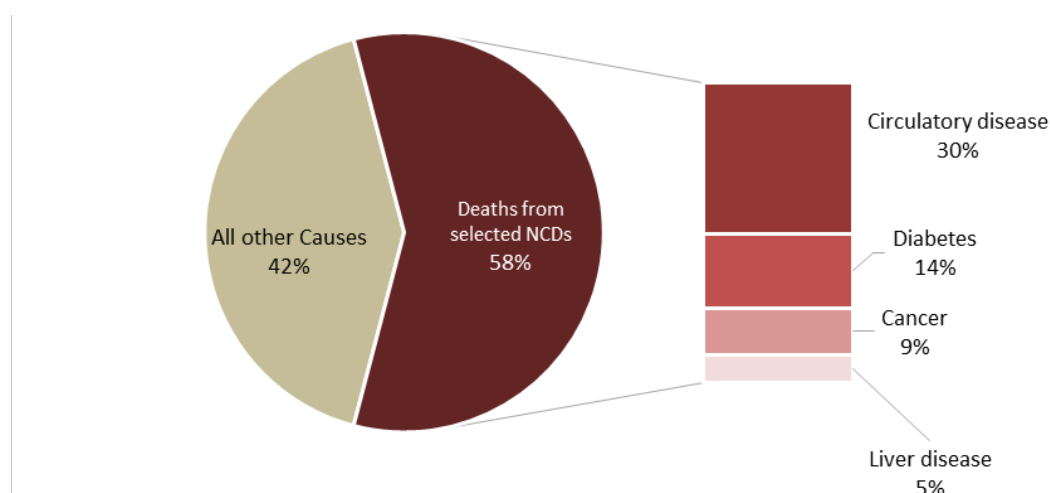
List code	Disease	ICD Codes
1-026	Neoplasms	C00–D48
1-052	Diabetes mellitus	E10–E14
1-064	Diseases of the circulatory system	I00–I99
1-076	Chronic lower respiratory diseases	J40–J47

5.8.1 Cause-specific proportional mortality

Age-specific proportional mortality for adults aged 15-59 years from specific groups of NCDs shows the proportion of deaths due to these diseases. While proportional mortality shows the relative burden from NCDs compared to other causes of death and is easy to measure, it does not provide a measure of the overall impact of NCD related deaths and does not paint a complete picture. Because of its high incidence rate in Nauru particularly among adults aged 15-34, deaths from chronic liver & cirrhosis were included in this analysis.

Figure 10 shows selected non-communicable diseases (NCDs) were the leading cause of death in adults aged 15-59 during the 2011-2013 period, accounting for 58% of all deaths. Diseases of the circulatory system accounted for 30 percent of all deaths among adults aged 15-59, and diabetes was responsible for 14 percent of deaths.

Figure 10: Mortality in adults aged 15-59 years from selected NCDs compared to all other causes, 2011-2013



² WHO. (2012). Classifications, International Classification of Diseases (ICD). Retrieved September 2012, from World Health Organization: <http://www.who.int/classifications/icd>

Figure 11 and Figure 12 show that mortality from selected NCDs is high both within the 15-34 year age group and the 35-59 year age group. While the leading cause of death for both age groups was diseases of the circulatory system, diseases of the liver accounted for 13 percent of deaths among young adults aged 15-34, followed by diabetes, which accounted for 11 percent of deaths in this age group. Among adults aged 35-59, diabetes accounted for 16 percent of all deaths, followed by cancer which was responsible for 11 percent of deaths.

Figure 11: Mortality in adults aged 15-34 years from selected NCDs compared to all other causes, 2011-2013

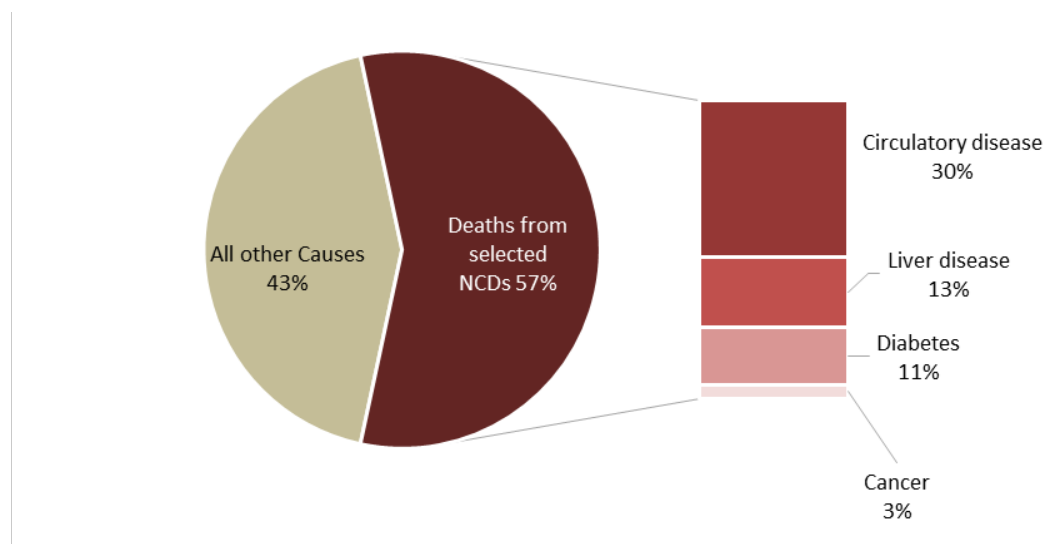
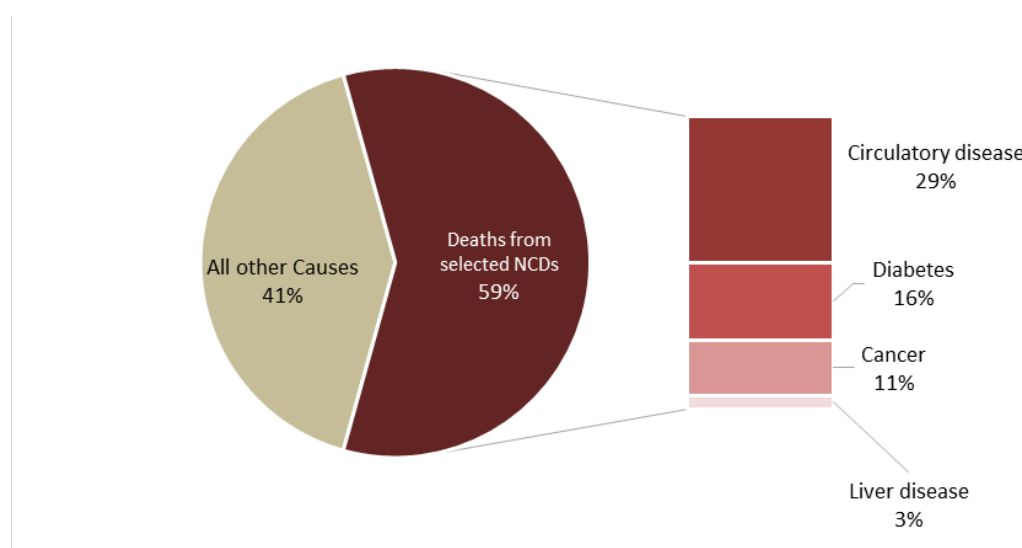


Figure 12: Mortality in adults aged 35-59 years from selected NCDs compared to all other causes, 2011-2013



5.8.2 Cause-Specific Mortality Rates from Selected NCD's

Cause-specific mortality rates provide a direct measure of the overall impact of NCD-related deaths on the population. While these rates cannot be used to provide a comparison either between countries or over time as they will be affected by the age structure of the population, rates for 15-34 year olds and 35-59 year olds can be useful in providing more detailed information for targeting specific NCD-related interventions.

Table 28 shows cause-specific mortality rates for selected NCDs by sex and broad age group. There were too few deaths among young men and women aged 15-34 to display cause-specific rates with certainty for individual causes. Among adults aged 35-59, men experienced higher rates of death compared to women, bearing a heavier burden from NCDs in general.

Table 28: Cause-specific mortality rates for adults aged 15-59 years for selected NCDs by sex and broad age group (deaths per 100,000 population), 2011-2013

ICD10	Selected NCDs	Male			Female		
		15-34	35-59	15-59	15-34	35-59	15-59
C00-D48	Neoplasm	-	-	-	-	279	120
E10-E14	Diabetes mellitus	-	292	109	-	223	131
I00-I99	Diseases of the circulatory system	-	729	326	-	251	164
K70-K77	Diseases of the Liver	-	-	65	-	-	-
All selected NCDs		174	1137	533	199	808	438

Note: ICD10/ J40-J47 related to Chronic lower respiratory diseases for period 2011-2013 is no cases

Source: Population projections midpoint 2011-13, NBOS

RON Hospital - ICD10/ Causes of Deaths

5.8.3 Age-Standardised Mortality Rates from Selected NCD's

For comparison over time and across countries, age standardized rates should be used. Table 29 shows age-standardized death rates using the WHO World Standard Population³ for the selected NCD's. Using this standardization, for every 100,000 males aged 15-59, 667 would die in a given year from the selected NCDs. For every 100,000 women aged 15-59, 500 would die in a given year from the selected NCDs.

Table 29: Age-standardised mortality rate for adults aged 15-59 years for selected NCDs by sex (deaths per 100,000 population), 2011-2013

Males	667 (478-856)
Females	500 (356-682)

5.8.4 The probability of dying among adults aged 30-69 years (inclusive) from designated NCDs – WHO Indicator

The probability of dying among adults aged 30-69 years (inclusive) from specific causes has recently been introduced by WHO as an outcome indicator for the impact of NCDs. This is the probability that a person aged 30 will die from the selected disease before their 70th birthday. Estimates of mortality from selected non-communicable diseases for this age group are reported here for comparison with international reporting. This indicator does not include deaths from Diseases of the Liver (1-080). The probability of dying from these diseases is calculated using life table methods, entering in the number of deaths by 5 year age group from selected NCDs among males and females aged 30-69.

Table 30 shows the actual summary totals of deaths from selected NCDs in 30-69 year olds by sex during the 2011-2013 periods

Table 30: Deaths from selected NCDs in 30-69 year olds (inclusive) by sex, 2011-2013

Causes of Diseases	Male	Female	Total
Neoplasm	4	13	17
Diabetes mellitus	12	13	25
Diseases of the circulatory system	35	17	52
Total selected NCDs	51	43	94

Note: There were no deaths from ICD10/ J40-J47 related to Chronic lower respiratory diseases for period 2011-2013

RON Hospital - ICD10/ Causes of Deaths

³ Ahmad OB, Boschi-Pinto C, Lopez AD, Murray C, Lozano R, Inoue M, 2001, Age Standardization of Rates: A New WHO Standard. Geneva, World Health Organization (GPE Discussion Paper Series no. 31, EIP/GPE/EBD), [available from:] <http://www.who.int/healthinfo/paper31.pdf>

The probability of dying from these diseases is calculated using life table methods, and is noted below. This is the probability that a person aged 30 will die from the selected disease before their 70th birthday.

Table 31: Probability of dying (%) from selected NCDs in 30-69 year olds (inclusive) by sex, 2011-2013

Selected NCDs	Males	Females
Diabetes	12 (4-20)	14 (3-26)
Cancer	8 (0-19)	14 (4-24)
Cardiovascular disease	45 (23-68)	26 (10-41)
All selected NCDs	55 (31-80)	45 (26-64)

Note: There were no deaths from ICD10/ J40-J47 related to Chronic lower respiratory diseases for period 2011-2013

Source: Population projections midpoint 2011-13, NBOS

RON Hospital - ICD10/ Causes of Deaths

Table 31 indicates that males aged 30 have a more than 50% chance (55%) of dying before reaching age 70 from one of these selected NCDs. The probability of dying was slightly less in females, with a 30 year old woman having a 45 percent chance of dying before her 70th birthday from selected NCDs, highlighting the impact of NCDs on adult mortality in Nauru.

5.9 Mortality in Older Adults (Aged 60+ years)

Table 32 and Table 33 display the leading causes of death in males and females aged 60 years and above. Diseases of the circulatory system were the leading cause of death in both sexes, accounting for 43 percent of all deaths in males and 59 percent of deaths in females during 2011-2013. The cause-specific mortality rate explains that for every 100,000 males aged 60 and above, there were about 2927 deaths from diseases of the circulatory system. Similarly, for every 100,000 females aged 60 and above, there were about 2368 deaths from diseases of the circulatory system.

Table 32: Cause specific Mortality for Male adults aged 60+ years by ICD chapter (deaths per 100,000 population, including 95% Confidence Intervals); 2011-13

ICD Codes Disease		Number of deaths	Percent distribution excluding ill-defined causes (95% CI)	Cause Specific Mortality Rate per 100,000 population (95% CI)
I00-I99	Diseases of circulatory system	12	43 (22-75)	2927 (1512-5112)
N00-N99	Diseases of the genitourinary system	5	18 (6-42)	-
E00-E88	Endocrine, nutritional and metabolic diseases	4	14 (4-37)	-
A00-B99	Certain Infectious and parasitic diseases	4	14 (4-37)	-
V01-Y89	External causes of morbidity and mortality	1	4 (0-20)	-
C00-D48	Neoplasms	1	4 (0-20)	-
J00-J98	Diseases of respiratory system	1	4 (0-20)	-
R00-R99	Symptoms, and signs and abnormal clinical and	1	-	-
TOTAL		29	-	
TOTAL LESS ILL-DEFINED CAUSES		28	100	

Table 33: Cause specific Mortality for Female adults aged 60+ years by ICD chapter (deaths per 100,000 population, including 95% Confidence Intervals); 2011-13

ICD Codes	Disease	Number of deaths	Percent distribution excluding ill-defined causes (95% CI)	Cause Specific Mortality Rate per 100,000 population (95% CI)
I00-I99	Diseases of circulatory system	13	59 (31-100)	2368 (1260-4049)
C00-D48	Neoplasms	4	18 (5-47)	-
E00-E88	Endocrine, nutritional and metabolic diseases	3	14 (3-40)	-
N00-N99	Diseases of the genitourinary system	1	5 (0-25)	-
D50-D89	Diseases of blood forming organs	1	5 (0-25)	-
R00-R99	Symptoms, and signs and abnormal clinical and laboratory findings	2	-	-
TOTAL		24	-	
TOTAL LESS ILL-DEFINED CAUSES		22	100	

6. CONCLUSION

The number of births has remained relatively level over the past 6 years, and fertility rates are steady at around 3.9 births per woman. Fertility rates are highest among women aged 20-29, but remain high for women in their early 30s. Of concern is the high birth rates of teen mothers aged 15 to 19 years. This rate is higher than those reported in the Pacific region.

The number of deaths have been relatively steady over the years 2008-2013. Starting at around age 35, there is higher adult mortality than would be seen in countries such as Australia or New Zealand. This is likely due to the impact of NCDs.

Non Communicable Diseases (NCD) accounted for a large percentage of deaths among adults aged 15-59 over the last three years. Diseases of the circulatory system were the leading cause of death in both adult males and females. Mortality from NCDs is high both for younger adults aged 15-34 and for adults aged 35-59. While the leading cause of death for both age groups was diseases of the circulatory system, diseases of the liver accounted for 13 percent of deaths among young adults aged 15-34, followed by diabetes, which accounted for 11 percent of deaths. Among adults aged 35-59, diabetes accounted for 16 percent of all deaths, followed by cancer which was responsible for 11 percent of deaths. The impact of NCDs on adult mortality is clearly high.

Nauru would like to acknowledge the Brisbane Accord Group (BAG) for the collaboration effort towards implementation of the CRVS systems in Nauru and for providing the important technical support and other consultancy activities that have taken place. We are looking forward to continued partnership and implementation of CRVS activities to sustain the development agenda beyond 2015.

APPENDIX 1

Standard Tabulations of Cause of Death from the International Statistics Classification of Diseases and Related Health Problems, 10th Revision (ICD-10, 2010 edition)

General Mortality List 1: 103 Cause List

List code	Disease	ICD Codes
1-001	Certain infectious and parasitic diseases	A00–B99
1-002	Cholera	A00
1-003	Diarrhoea and gastroenteritis of presumed infectious origin	A09
1-004	Other intestinal infectious diseases	A01–A08
1-005	Respiratory tuberculosis	A15–A16
1-006	Other tuberculosis	A17–A19
1-007	Plague	A20
1-008	Tetanus	A33–A35
1-009	Diphtheria	A36
1-010	Whooping cough	A37
1-011	Meningococcal infection	A39
1-012	Septicaemia	A40–A41
1-013	Infections with a predominantly sexual mode of transmission	A50–A64
1-014	Acute poliomyelitis	A80
1-015	Rabies	A82
1-016	Yellow fever	A95
1-017	Other arthropod-borne viral fevers and viral haemorrhagic fevers	A90–A94, A96–A99
1-018	Measles	B05
1-019	Viral hepatitis	B15–B19
1-020	Human immunodeficiency virus [HIV] disease	B20–B24
1-021	Malaria	B50–B54
1-022	Leishmaniasis	B55
1-023	Trypanosomiasis	B56–B57
1-024	Schistosomiasis	B65
1-025	Remainder of certain infectious and parasitic diseases	A21–A32, A38, A42–A49, A65–A79, A81, A83–A89, B00–B04, B06–B09, B25–B49, B58–B64, B66–B94, B99
1-026	Neoplasms	C00–D48
1-027	Malignant neoplasm of lip, oral cavity and pharynx	C00–C14
1-028	Malignant neoplasm of oesophagus	C15
1-029	Malignant neoplasm of stomach	C16
1-030	Malignant neoplasm of colon, rectum and anus	C18–C21
1-031	Malignant neoplasm of liver and intrahepatic bile ducts	C22

1-032	Malignant neoplasm of pancreas	C25
1-033	Malignant neoplasm of larynx	C32
1-034	Malignant neoplasm of trachea, bronchus and lung	C33–C34
1-035	Malignant melanoma of skin	C43
1-036	Malignant neoplasm of breast	C50
1-037	Malignant neoplasm of cervix uteri	C53
1-038	Malignant neoplasm of other and unspecified parts of uterus	C54–C55
1-039	Malignant neoplasm of ovary	C56
1-040	Malignant neoplasm of prostate	C61
1-041	Malignant neoplasm of bladder	C67
1-042	Malignant neoplasm of meninges, brain and other parts of central nervous system	C70–C72
1-043	Non-Hodgkin's lymphoma	C82–C85
1-044	Multiple myeloma and malignant plasma cell neoplasms	C90
1-045	Leukaemia	C91–C95
1-046	Remainder of malignant neoplasms	C17, C23–C24, C26–C31, C37–C41, C44–C49, C51–C52, C57–C60, C62–C66, C68–C69, C73–C81, C88, C96–C97
1-047	Remainder of neoplasms	D00–D48
1-048	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50–D89
1-049	Anaemia	D50–D64
1-050	Remainder of diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D65–D89
1-051	Endocrine, nutritional and metabolic diseases	E00–E88
1-052	Diabetes mellitus	E10–E14
1-053	Malnutrition	E40–E46
1-054	Remainder of endocrine, nutritional and metabolic diseases	E00–E07, E15–E34, E50–E88
1-055	Mental and behavioural disorders	F01–F99
1-056	Mental & behavioural disorders due to psychoactive substance use	F10–F19
1-057	Remainder of mental and behavioural disorders	F01–F09, F20–F99
1-058	Diseases of the nervous system	G00–G98
1-059	Meningitis	G00, G03
1-060	Alzheimer's disease	G30
1-061	Remainder of diseases of the nervous system	G04–G25, G31–G98
1-062	Diseases of the eye and adnexa	H00–H59
1-063	Diseases of the ear and mastoid process	H60–H93
1-064	Diseases of the circulatory system	I00–I99
1-065	Acute rheumatic fever and chronic rheumatic heart diseases	I00–I09
1-066	Hypertensive diseases	I10–I13
1-067	Ischaemic heart diseases	I20–I25

1-068	Other heart diseases	I26–I51
1-069	Cerebrovascular diseases	I60–I69
1-070	Atherosclerosis	I70
1-071	Remainder of diseases of the circulatory system	I71–I99
1-072	Diseases of the respiratory system	J00–J98
1-073	Influenza	J10–J11
1-074	Pneumonia	J12–J18
1-075	Other acute lower respiratory infections	J20–J22
1-076	Chronic lower respiratory diseases	J40–J47
1-077	Remainder of diseases of the respiratory system	J00–J06, J30–J39, J60–J98
1-078	Diseases of the digestive system	K00–K92
1-079	Gastric and duodenal ulcer	K25–K27
1-080	Diseases of the liver	K70–K76
1-081	Remainder of diseases of the digestive system	K00–K22, K28–K66, K80–K92
1-082	Diseases of the skin and subcutaneous tissue	L00–L98
1-083	Diseases of the musculoskeletal system and connective tissue	M00–M99
1-084	Diseases of the genitourinary system	N00–N99
1-085	Glomerular and renal tubulointerstitial diseases	N00–N15
1-086	Remainder of diseases of the genitourinary system	N17–N98
1-087	Pregnancy, childbirth and the puerperium	O00–O99
1-088	Pregnancy with abortive outcome	O00–O07
1-089	Other direct obstetric deaths	O10–O92
1-090	Indirect obstetric deaths	O98–O99
1-091	Remainder of pregnancy, childbirth and the puerperium	O95–O97
1-092	Certain conditions originating in the perinatal period	P00–P96
1-093	Congenital malformations, deformations and chromosomal abnormalities	Q00–Q99
1-094	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00–R99
1-095	External causes of morbidity and mortality	V01–Y89
1-096	Transport accidents	V01–V99
1-097	Falls	W00–W19
1-098	Accidental drowning and submersion	W65–W74
1-099	Exposure to smoke, fire and flames	X00–X09
1-100	Accidental poisoning by and exposure to noxious substances	X40–X49
1-101	Intentional self-harm	X60–X84
1-102	Assault	X85–Y09
1-103	All other external causes	W20–W64, W75–W99, X10–X39, X50–X59, Y10–Y89
1-901	SARS	U04

APPENDIX 2

Key Concepts and Definitions

Adult Mortality: The probability of dying between the ages of 15 – 59 inclusive, that is, the probability of a 15 year old dying before reaching the age of 60, if subject to current age-specific mortality rates between those ages.

Age-specific fertility rates: The number of births occurring to mothers of a certain age group per 1,000 women in that age group in a given period of time.

Age Specific Mortality Rate: The number of deaths per 1,000 people of a given age group in a given time period.

Age Standardised Death Rates: The number of deaths that would occur if subject to the same age structure as the standard population and the age-specific rate; one country's age specific death rates applied to a standard age distribution.

Crude Birth Rate (CBR): The annual number of births occurring per 1000 mid-year populations.

Crude Death Rate (CDR): The annual number of deaths occurring per 1000 mid-year population

Infant Mortality Rate (IMR): The number of deaths in infants under age 1 per 1000 live births in a given period.

Life Expectancy: The average number of additional years a person could expect to live if current mortality trends were to continue for the rest of that person's life.

Live birth: The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.

Maternal death: The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal mortality ratio (MMR): The ratio of the number of maternal deaths during a given time period per 100,000 live births during the same time-period.

Neonatal mortality rate: The number of deaths in live-born infants during the first 28 days of life per 1,000 live births over a specified time period.

Rate of Natural Increase: Rate at which a population grows (increase/decrease) during a given year, as the result of a surplus/deficit of births over deaths; expressed as a percentage of the base population.

Sex Ratio: Number of men per 100 women. Sex ratios over 100 indicate that there are more males than females, and sex ratios under 100 indicate more females than males.

Total Fertility Rate (TFR): The average number of children a woman would give birth to during her lifetime if she were to pass through her childbearing years experiencing the present day age-specific fertility rates.

Under 5 Mortality Rate: The number of deaths in children under age 5 per 1,000 live births in a given period.

Data back-up is essential for national vital statistics

NAURU



- In mid-August 2013, the Nauru National Hospital suffered a fire that burnt through both the medical records office and the adjacent pharmacy.
- As a result, most of the records were lost, and the Health Information System suffered a devastating setback.
- However, Nauru operates a direct registration system, where birth and death records are entered directly into the registration system for later verification by civil registry staff. As a result, data is stored at both locations.
- Nauru has subsequently been able to move ahead with an analysis of their birth, death, and cause of death data despite the hospital record losses.

CRVS in Nauru

Nauru is a small island country of 10,979 people.

Nauru has a national Health Information Committee, which also functions as the national CRVS committee. There is close cooperation between key departments (Statistics, Ministry of Health, and Civil Registry Office) on data sharing and reconciliation.

Nauru has essentially complete registration of births and deaths, in part due to the funeral assistance payments and a child payment at birth which are linked to formal registration.

Improving CRVS in Nauru

- 2011 – National CRVS committee formed and completed a rapid assessment of their CRVS system.
- 2011 – Representatives from Statistics, Health, and Civil Registry attended a sub-regional workshop (for Group 1 countries under the PVSAP): Completed a comprehensive assessment and developed a draft national CRVS improvement plan.
- 2012- Follow up work undertaken to reconcile data between ministries, improve medical records and coding, train doctors in medical certification of death, and address other identified issues.
- 2013 – Key representatives attend the second sub-regional workshop to report on progress and update plans.
- 2014 – Staff from the national Statistics Office and Ministry of Health attend a Data analysis and report writing workshop to analyse civil registration and cause of death indicators. The report is due to be released in late 2014.

Key Challenges

Although a commercial IT system for civil registration is in place and appears to be functional, much of the data is still managed through individual spreadsheets.

The non-Nauruan population fluctuates significantly in Nauru – greatly affecting population based indicators of mortality. While there is a need to ensure vital events in foreigners are registered and reviewed, in order to better understand trends in the resident population, analysis is generally conducted on the Nauruan population only.

Key Indicators for Nauru (2011-2013)

Total Fertility Rate (TFR) = 3.9

(3.5-4.3) births per woman

IMR = 18.0

(10.8-28.1) deaths in children under age 1 per 1,000 live births

Male Life Expectancy= 57.8

Males born today are estimated to live (53.1-62.4) years under age 1 per 1,000 live births

Teenage Fertility Rate = 94

(68-141) births per 1,000 women aged 15-19 years

Under 5 Mortality= 22.7

(14.6-33.8) deaths in children under age 5 per 1,000 live births

Female Life Expectancy = 64.8

Females born today are estimated to live (59.7-70.0) years 5 per 1,000 live births

Off-site back up of data, particularly in small systems, is critical.



Next Steps:

Nauru is currently planning a National Strategy for Development Statistics, and will formally revisit their national CRVS improvement plan as part of this work.

Further work is planned to review the current CR database and how this can be more fully utilised to support good data quality and security in Nauru.

SUPPORTED BY THE BRISBANE ACCORD GROUP (BAG)



