# NAURU
# VITAL STATISTICS REPORT
## 2015–2017

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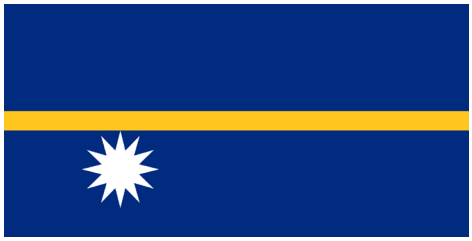

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This report was compiled by Arrora Deiye (Nauru Bureau of Statistics), Marilyn Deireragea (Chief Secretary Department), Fanuma Sioneholo (Statistics Niue) and Asnath Bam (Department of Health) with guidance from Gloria Mathenge (SPC) and Lauren Moran of the Australian Bureau of Statistics (ABS).

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*Cover Picture: Glen Hunt*

Work for this project was supported by the Brisbane Accord Group of agencies under the Pacific Vital Statistics Action Plan and the Ten-Year Pacific Statistics Strategy.

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# ABBREVIATIONS

| | |
|---|---|
| ASDR | Age-standardised death rate |
| ASFR | Age-specific fertility rate |
| ASMR | Age-specific mortality rate |
| CBR | Crude birth rate |
| CDR | Crude death rate |
| ICD | International Statistical Classification of Diseases and Related Health Problems |
| IMR | Infant mortality rate |
| MMR | Maternal mortality ratio |
| MOH | Ministry of Health |
| NCD | Non-communicable diseases |
| RON | Republic of Nauru |
| TFR | Total fertility rate |
| WHO | World Health Organization |

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# ACKNOWLEDGEMENTS

This report was compiled by Arrora Deiye (Nauru Bureau of Statistics), Marilyn Deireragea (Chief Secretary Department), Fanuma Sioneholo (Statistics Niue) and Asnath Bam (Department of Health) with guidance from Gloria Mathenge (SPC) and Lauren Moran of the Australian Bureau of Statistics (ABS).

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# SUMMARY OF MAIN INDICATORS 2015–2017

**2016 POPULATION ESTIMATES**

| | |
|---|---|
| **Total** | **11,014** |
| Males | 5,547 |
| Females | 5,467 |

**REGISTRATION COMPLETENESS 2015–2017**

| | |
|---|---|
| Deaths (%) | 109.5 |
| Births (%) | 92.8 |

**INDICATORS FOR 2015–2017**

**Fertility**

| | |
|---|---|
| Total number of births | 1,022 |
| Males | 544 |
| Females | 478 |
| Average number of births per year | 341 |
| Sex ratio at birth, M:F | 114:100 |
| Crude birth rate (CBR) | 30.9 |
| Total fertility rate (TFR) | 3.9 |
| Adolescent birth rate (per 1000 females aged 15–19) | 92.3 |

**Mortality**

| | |
|---|---|
| Total number of deaths | 284 |
| Males | 149 |
| Females | 135 |
| Average number of deaths per year | 95 |
| Crude death rate (CDR; per 1000 population) | 8.6 |
| Age-standardised CDR (per 1000 population) | 18.1 |
| Under-5 mortality rate (per 1000 live births) | 29.4 |
| Infant mortality rate (per 1000 live births) | 25.4 |
| Neonatal mortality rate | 19.6 |
| Maternal deaths | 0 |
| Maternal mortality ratio | 0 |
| Life expectancy at birth (both sexes) | 59.5 |
| Life expectancy at birth (males) | 57.9 |
| Life expectancy at birth (females) | 61.2 |
| Life expectancy at age 40 (males) | 23.8 |
| Life expectancy at age 40 (females) | 26.3 |
| Adult mortality rate (45q15 male) % | 46.3 |
| Adult mortality rate (45q15 female) % | 33.9 |
| Proportion of ill-defined deaths (total) % | 30.6 |

# EXECUTIVE SUMMARY

The average number of births per year has remained relatively similar over the past years[1] analysed (2008-2010, 2011–2013), with the most recent period of 2015–2017 experiencing an average of 341 births per year. Fertility rates have also remained steady at around 3.9 births per woman and are highest among women aged 25-29. In the past ten-year-period fertility has generally been declining among women in their early 20s and rising among women in their late 20s and 30s. Still of concern are the high birth rates of teen mothers (aged 15–19 years) at 92 births per 1000 women. Although the teenage fertility rate has slightly decreased from the previous period analysed (2011–2013), it remains higher than that of most countries in the Pacific region.

The number of deaths has increased slightly, with an average of 95 deaths per year for the most recent period (2015–2017), compared to the 78 reported in 2011–2013. The infant mortality rate for 2015–2017 is 25 deaths per 1000 live births, while the under-5 mortality rate is at 29 deaths per 1000 live births. The majority of deaths in these early years are occurring within the first 28 days of birth, as the neonatal mortality rate is reported as 19.6 per 1000 live births. The adult mortality rate, which is estimated at 46.3 for the period 2015–2017, is similar to that reported in the previous period, 2011–2013 (46.7). This rate is higher compared to countries such as Australia and New Zealand. Life expectancy at birth is relatively low at 58 for males and 61 for females, with no improvement since the last analysis. There is a steady decline in life expectancy for Nauruan females observed over the last 10 years which requires further investigation.

Close to one third of deaths during this period are classified to conditions considered ill-defined in nature, which are causes attributed to ill-specified medical certification practices. Non-communicable diseases account for a large percentage of deaths among adults aged 15–59 for the 2015–2017 period. Diseases of the circulatory system are the leading cause of death among both adult males and females. Although the leading cause of death for both age groups is diseases of the circulatory system, as reported for the 2011–2013 period, cancer has increased for both age groups, accounting for 7% of deaths for young adults aged 15–34, followed by chronic respiratory diseases at 4%. For the more mature 35–59 age group, 10% of deaths were attributed to cancer, 7% to diseases of the liver and 5% to diabetes.

[1] *Note that data for the year 2014 was not available and is therefore not included in this analysis.*

# CHAPTER 1: INTRODUCTION AND METHODOLOGY

## 1.1. Introduction

This report presents statistics on live births and deaths that occurred in Nauru between the years 2015 and 2017, as recorded by the Civil Registration Office. The report also provides statistics on causes of death recorded over the same period. This is the second vital statistics report produced by Nauru based on administrative records of births and deaths. The first analytical report covered vital events that occurred in the period 2008–2013.

Vital statistics provide crucial information on the population in a country. Accurate data on births, deaths, and causes of death by age group and sex is critical for the monitoring of population health, identifying health priorities and evaluating the impact of health programmes. This data is also important for providing basic population statistics and planning and monitoring for a broad range of social and development programmes, including education, housing, social security and child protection.

The two main administrative sources of vital event data in Nauru are the civil registration office and the Republic of Nauru (RON) Hospital. The Nauru Bureau of Statistics is mandated to routinely reconcile data from the two sources and to publish vital statistics reports on a quarterly or annual basis.

Besides providing the country with an important source of vital statistics, civil registration is recognised for its important functions of establishing legal identity for the population and providing the public with legal documents, which are used to identify individuals and to facilitate the realisation of critical human rights. In this regard, the government of Nauru has made important commitments towards strengthening the civil registration system. These commitments are embedded in various international and regional development commitments, including the 2030 sustainable development agenda.

The objective of this report is:

1. to present statistics on live births and deaths tabulated by selected socio-demographic and geographic characteristics as well as trends in mortality for the years 2015–2017; and
2. to present the causes of death for 2015–2017, based mainly on the underlying causes of death.

This report is a second release of a series of reports that the Nauru Bureau of Statistics will be publishing from administrative records. New information included in this report is the completion rates of registrations of vital events – mainly live births and deaths (Chapter 1) – and the natural and non-natural causes of death (Chapter 4). It should be noted that in both reports, events that occurred in the year 2014 are not included, as data was not available.

## 1.2. Data and methodology

### 1.2.1. Data sources

Birth and death data analysed and presented in this report are sourced from the Government Civil Registration Office. This office has the legal mandate for the registration of all births and deaths that occur within the boundaries of Nauru. According to the Births, Deaths and Marriages Act of 2017, registration of births and deaths is a compulsory requirement. (An outline of the registration process for birth and deaths is provided in Appendix 4.) Cause of death information included in this report are sourced from the Civil Registry Office and coded to the ICD-10. The Civil Registry Office does not store all information recorded on the death certificate by the certifying practitioner. The cause of death information may differ from statistics recorded by the Nauru Health Information Unit. Nauru uses a non-standard format of the medical certificate of cause of death with an additional line labelled as “cause of death” above the standard sequence of Part I & II, as outlined in the International Statistical Classification of Diseases and Related Health Problems (ICD-10v2; World Health Organization [WHO], 2012). The ICD requires that doctors complete the certificate with a plausible sequence of death listed on Part II. Only the underlying cause is analysed.

The denominators for the computation of the indicators in this report were derived from population projection data provided by the Pacific Community (SPC).

### 1.2.2. Coverage and completeness of the data

Coverage refers to the total geographical area covered by the civil registration system. Ideally, the civil registration system should capture vital events occurring in every geographical area and in every population group of the country. In Nauru, vital events occurring outside the country are usually re-registered by the Civil Registration Office upon return to the country. For this analysis, only births that occurred on island during the period of interest (2015–2017) were included in the analysis, while off-island deaths were included in the analysis, noting that these were largely cases where medical referrals had been done for the usual residents of Nauru.

Completeness is an essential measure of how well the civil registration performed in regard to capturing the events that occurred in the country within a particular e period of interest. Universal completeness is achieved when every vital event that occurred to the members of the population of a particular country (or area), within a specified time period, has been registered in the system. Completeness is measured as a percentage of the number of vital events (births and deaths) that were legally registered during the period of interest out of the expected number of events.

### 1.2.3. Birth registration completeness

Vital events should be registered as closest to the time of occurrence as possible. Table 1 provides the distribution of registered births by the year of birth and year of registration. The data shows that a majority of births are registered within the year of occurrence.

*Table 1: Distribution of births by year of birth and year of registration, Number (%) by year, 2015–2017*

| | Year of Registration | | | | |
|---|---|---|---|---|---|
| **Year of birth** | **2015** | **2016** | **2017** | **2018** | **Total** |
| 2015 | 345(95.8) | 14(3.9) | - | 1(0.3) | 360 |
| 2016 | - | 348(97.2) | 10(2.8) | - | 358 |
| 2017 | - | - | 300(98.6) | 4(1.3) | 304 |

*Note: Births for which the year of registration was not provided (181) were proportionally redistributed across the four years*

To compute birth registration completeness, the number of births registered by the Civil Registration Office was compared to birth occurrences recorded at the RON Hospital and expressed as a percentage. This is in recognition that all births irrespective of the place of occurrence are reported to the RON Hospital where they are recorded.

The average completeness rate for the period 2015–2017 is 93%. For all years (2015–2017), the number of registered births is slightly lower than the births recorded at the hospital (see Table 2).

*Table 2: Birth registration completeness (%) by period, 2015–2017*

| | **2015** | **2016** | **2017** | **Total** |
|---|---|---|---|---|
| Registered births (CRO) | 360 | 358 | 304 | 1022 |
| Births[a] recorded by MOH | 374 | 391 | 336 | 1101 |
| Average completeness by year (%) | 96.3 | 91.6 | 90.5 | 92.8 |

*Note: CRO = Civil Registration Office; MOH = Ministry of Health.*

*[a]Registration is used to refer to events documented by civil registration office.*

### 1.2.4. Death registration completeness

Table 3 provides the distribution of deaths included in this analysis by the year of death and year of registration. The data shows that a majority of births are registered within the year of occurrence.

*Table 3: Distribution of deaths by year of death and year of registration, Number (%) by year, 2015–2017*

| | Year of death | | | | | |
|---|---|---|---|---|---|---|
| **Year of registration** | **2014** | **2015** | **2016** | **2017** | **Unknown** | **Total** |
| 2015 | 1 (1.1)* | 89 (98.9) | - | - | | 90 |
| 2016 | | - | 92 (92.0) | - | 8 (8.0) | 100 |
| 2017 | | - | 1(1.1) | 93(98.9) | | 94 |

**This record was included in the 2015 analysis*

Completeness of death registration by year is provided in Table 4. To compute death registration completeness, the number of deaths registered by the Civil Registration Office is compared to those recorded by the Ministry of Health for the same period and expressed as a percentage. This is in recognition that all deaths that occur within the country are reported to the RON Hospital where they are recorded.

The comparison shows that a higher number of deaths were registered as compared to those recorded by the Ministry of Health. This difference is mainly attributed to deaths that occurred off-island which are registered by the civil registration office but not included in the Ministry of Health's records.

Death registration completeness of the period 2015–2017 is estimated at 117.4%. Years 2015 and 2016 also record over 100% completion rate.

*Table 4: Death registration completeness (%) by period, 2015–2017*

| | 2015 | 2016 | 2017 | Total |
|---|---|---|---|---|
| Registered deaths (CRO) | 90 | 100 | 94 | 284 |
| Deaths recorded[a] by MOH | 76 | 77 | 89 | 242 |
| **Completeness by year (%)** | **118.4** | **129.9** | **105.6** | **117.4** |

*Note: CRO = Civil Registration Office; MOH = Ministry of Health.*

*[a]Registration is used to refer to events documented by civil registration office and recorded refers to events documented by the MOH.*

## 1.3. Analysis

In the following two chapters, birth and death data are cross tabulated by selected socio-demographic variables, mainly age, sex, and geography. The second section of each of the chapters presents key demographic indicators such as crude rates, age-specific rates, and probabilities. The section on causes of death ranks the underlying causes of death and provides the proportions of deaths due to specific causes as well as cause-specific mortality rates.

In order to minimise instability in the figures due to the small size of the population and subsequently the risk of misleading interpretation, data is aggregated over a 3-year period for calculation of all rates. Confidence intervals are presented to highlight the uncertainty in the data. Due to the small number of events, confidence intervals are calculated using the Poisson distribution for all rates, except crude birth and death rates where confidence intervals are calculated using the normal distribution of the binomial.

In order to examine changes in mortality trends separately from any changes in the population age structure, age standardisation for mortality is done using the WHO World Standard Population.

Life tables are calculated from empirical data using the Chiang II method (Chiang, 1967). Confidence intervals for life expectancy, based on the variance of the probability of surviving, are also calculated using the Chiang II method.

Cause of death information included in this report are sourced from the Civil Registry Office and coded to the ICD-10 and tabulated to the General Mortality List 1 (104 causes), which is provided in Appendix 2. The Civil Registry Office does not store all information recorded on the death certificate by the certifying practitioner. The cause of death information may differ from statistics recorded by the Nauru Health Information Unit. Rates per 100,000 population are calculated using the crude method, along with 95% confidence intervals.

## 1.4. Limitations of the data

Data quality checks found a number of duplicate and incomplete records. Duplicate records were removed. There were a number of birth and death registrations with missing data items. For these vital events, MOH's records were used to impute for the missing data to the extent possible. There were a few records with unknown age. This was resolved by redistributing these deaths by applying the known age distribution to these data.

The cause-of-death data set had not been coded prior to the course. Coding was done with the assistance of technical experts from the Australian Bureau of Statistics.

# CHAPTER 2: BIRTHS AND FERTILITY

## 2.1. Births by selected variables

### 2.1.1. Number of births

There are 1,022 births registered between the years 2015 to 2017, which is an average of 341 births per year (Table 5). Year 2015 records the highest number of births registered (360), whereas 2017 provides the lowest number of registered births (304). The lower number of births in 2017 is most likely associated with a delay in the reporting of these births to the Civil Registration Office. There are more male births registered compared to females across all the years.

*Table 5: Total number of births by sex per year, 2015–2017*

| Year | Male | Female | Total |
|---|---|---|---|
| 2015 | 199 | 161 | 360 |
| 2016 | 190 | 168 | 358 |
| 2017 | 155 | 149 | 304 |
| **Total** | **544** | **478** | **1,022** |

A distribution of the average number of births by 3-year period is provided in Table 6. There are no significant changes in the annual number of births across the three periods.

*Table 6: Average number of births per year by 3-year period, 2008–2017*

| 3-year period | Average number of births per year |
|---|---|
| 2008–2010 | 336 |
| 2011–2013 | 352 |
| 2015–2017 | 341 |

*Note: Data for 2014 was not available during analysis.*

### 2.1.2. Births by mother's nationality

Table 7 shows the percentage of births by mother's nationality. A majority (97.6%) of women who gave birth in the period 2015–2017 are Nauruan. The distribution of births by mother's nationality has remained relatively unchanged over 10 years.

*Table 7: Percentage of births by mother's nationality by 3-year period, 2015–2017*

| 3-year period | Nauruan | Non-Nauruan | Total |
|---|---|---|---|
| 2008–2010 | 96.7 | 3.3 | 100.0 |
| 2012–2013 | 96.5 | 3.5 | 100.0 |
| 2015–2017 | 97.6 | 2.3 | 100.0 |

*Note: Data for 2011 and 2014 was not available during analysis.*

### 2.1.3. Births by age of mother

Childbearing 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. Births occurring to teenage women (aged < 15 years and 15–19 years) are of particular interest, as childbearing at these young ages poses an increased health risk to mother and child, as well as potential socio-economic disadvantage to the mother.

Table 8 and Figure 1 show the percentage distribution of births by age of mothers. The proportion of births to teenage mothers in the age group 15–19 has increased over the three periods. As noted, teenage pregnancy poses a high risk of maternal complications and increased vulnerability for infant deaths. For the recent 3-year period, 2015–2017, the highest number of births is observed among mothers aged 25–29, accounting for 30.9% of babies born during this period. The figure also shows that women are delaying child bearing to older ages; there is a decline in proportion of women bearing children within the ages of 20–24 years, whereas the age groups of 25–29, 30–34, 35–39, and 40–44 show an increase over the 3-year periods (2008–2010, 2011–2013, 2015–2017). There are no births reported among women aged 45 years+ within the 2015–2017 period.

*Table 8: Percentage distribution of births by age of mother, 2008–2017*

| Age group | 2008–2010 | 2011–2013 | 2015–2017[a] |
|---|---|---|---|
| < 15 | 0.2 | 0.1 | 0.2 |
| 15–19 | 11.4 | 12.6 | 13.4 |
| 20–24 | 32.9 | 34.2 | 26.4 |
| 25–29 | 31 | 28.7 | 30.9 |
| 30–34 | 15.5 | 16.7 | 19.7 |
| 35–39 | 6.9 | 6.6 | 7.1 |
| 40–44 | 1.9 | 1 | 2.3 |
| 45+ | 0.2 | 0.1 | 0 |
| **Total** | **100** | **100** | **100** |

[a]*Births where age was unknown (13) were redistributed.*

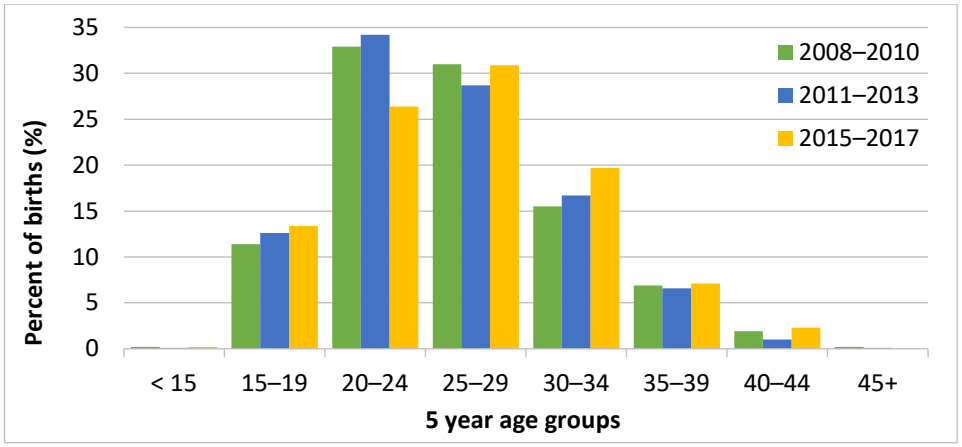


*Figure 1: Percentage distribution of births by age of mother, 2008–2017*

*Note: Data for 2014 was not available during analysis.*

## 2.2. Key fertility indicators

### 2.2.1. Crude birth rate

As indicated in Table 9, the crude birth rate (CBR) for the years 2015–2017 is 30.9 per 1000 population, which is slightly below the estimates provided by the previous vital statistics report for years 2008–2010 (34.4) and 2011–2013 (33.9).

*Table 9: Crude birth rate (CBR) with 95% confidence intervals (CI) by 3-year period, 2008–2017*

| 3-year period | CBR | L 95% CI | U 95% CI |
|---|---|---|---|
| 2008–2010 | 34.4 | 30.8 | 38.0 |
| 2011–2013 | 33.9 | 30.4 | 37.4 |
| 2015–2017 | 30.9 | 27.7 | 34.2 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

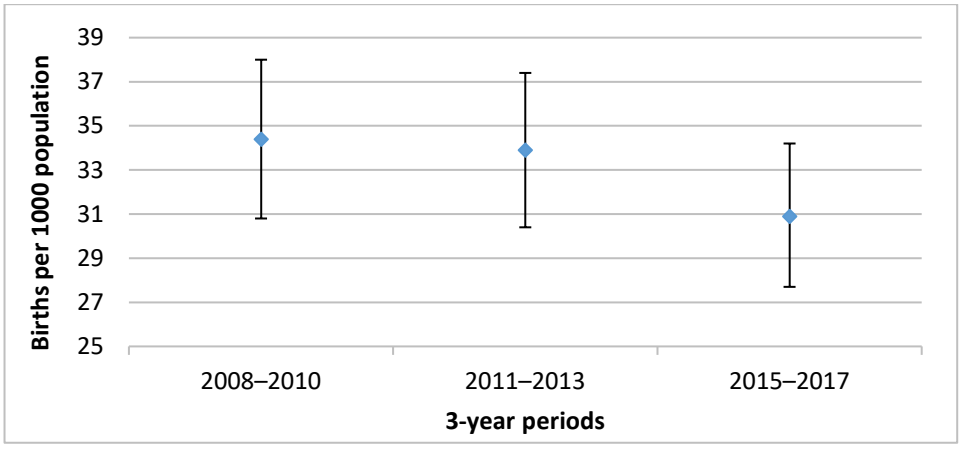


*Figure 2: Crude birth rate by 3-year period with 95% confidence intervals, 2008–2017*

*Note: Data for 2014 was not available during analysis.*

### 2.2.2. Sex ratio at birth

The sex ratio at birth is 113.8; this means that for every 100 live female births, there were approximately 114 live male births over the same period. This is slightly higher than the ratio reported for years 2008–2013 (Thoma & Kepae, 2015) of 111 males per 100 females.

### 2.2.3. Age-specific fertility rates

Fertility rates by age of mothers, or age-specific fertility rates (ASFR), are the number of births occurring to women of a certain age group per 1000 women in that age group in a given period of time.

Table 10 and Figure 3 show that fertility rates are highest for women aged between 20 and 29, peaking at 222.1 per 1000 for women aged 25–29 years.

The teenage fertility rate is at 92.3 (95% CI: 67.3–136.6) per 1000 teenage women during years 2015–2017, which remains high (compared to other countries in the region) and relatively unchanged compared to the previous analysis (Thoma & Kepae, 2015, p. 8) for years 2011–2013 (100) (95% CI: 73–148).

*Table 10: Age-specific fertility rates (ASFR), including 95% confidence intervals (CI), 2015–2017*

| 5-year age group | ASFR | L 95% CI | U 95% CI |
|---|---|---|---|
| < 15 | 1.2 | 0 | 8.7 |
| 15–19 | 92.3 | 67.3 | 136.6 |
| 20–24 | 220.6 | 176.7 | 291.1 |
| 25–29 | 222.1 | 184.4 | 259.7 |
| 30–34 | 145.3 | 111.8 | 200.4 |
| 35–39 | 69.3 | 44.4 | 117.4 |
| 40–44 | 26.9 | 11 | 61.5 |
| 45+ | 0 | 0 | 22.6 |

*Note: L = lower confidence interval; U = upper confidence interval.*

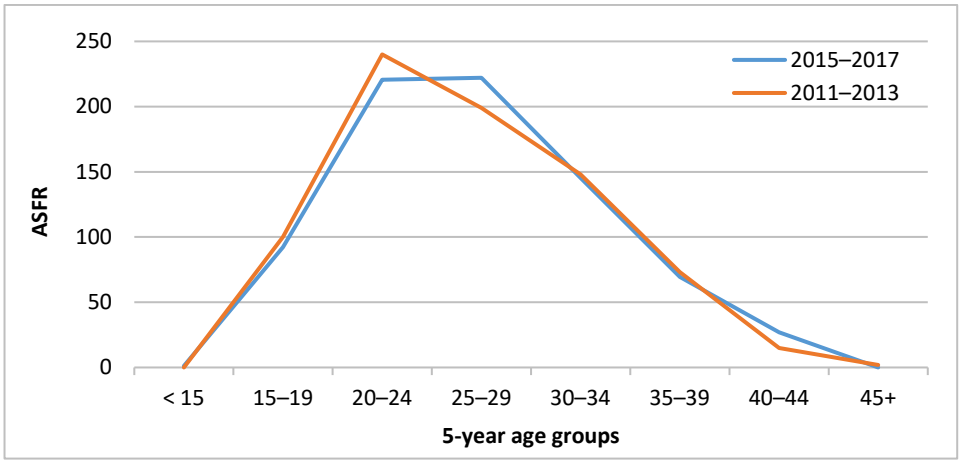


*Figure 3: Age-specific fertility rate (ASFR) by 3-year period with 95% confidence intervals, 2011–2013, 2015–2017*

*Note: Data for 2014 was not available during analysis. There was no analysis available for the age group less than 15 for the period 2011–2013.*

### 2.2.4. Total fertility rates

The total fertility rate (TFR) is 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) experiencing the present-day ASFR.

As indicated in Table 11, over the last 10 years the TFR has remained static at 3.9 births per woman.

*Table 11. Total fertility rates (TFR), including 95% confidence intervals (CI), by 3-year period, 2008–2017*

| 3-year period | TFR | L 95% CI | U 95% CI |
|---|---|---|---|
| 2008–2010 | 3.9 | 3.5 | 4.3 |
| 2011–2013 | 3.9 | 3.4 | 4.3 |
| 2015–2017 | 3.9 | 3.5 | 4.3 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

# CHAPTER 3: MORTALITY

## 3.1. Deaths by selected variables

### 3.1.1. Number of deaths

There are 284 total deaths registered in the years 2015–2017 and an average of 95 deaths per year (see Table 12 and Table 13). The highest numbers of deaths are registered to have occurred in the year 2016 (100), whereas 2015 provides for the lowest number of registered deaths (90).

*Table 12: Total number of deaths by sex by year, 2015–2017*

| Year | Males | Females | Total |
|---|---|---|---|
| 2015 | 54 | 36 | 90 |
| 2016 | 50 | 50 | 100 |
| 2017 | 45 | 49 | 94 |
| **Total** | **149** | **135** | **284** |

*Table 13: Average number of deaths by sex by 3-year period, 2008–2017*

| 3-year period | Males | Females | Total |
|---|---|---|---|
| 2008–2010 | 43 | 27 | 70 |
| 2011–2013 | 46 | 32 | 78 |
| 2015–2017 | 50 | 45 | 95 |

### 3.1.2. Deaths by age of the deceased

Table 14 provides the distribution of deaths by age over the 3-year period. A high number of deaths are observed among children aged below 28 days (20, 7.0%). There are 26 deaths among children aged below one year. The number of deaths declines with increasing age but begins to rise more steadily from ages 15 to 19 up to the older age groups. The highest proportion of registered deaths is observed among persons aged 50–54, 55–59 and 65–69 years.

*Table 14: Deaths by age of the deceased, 2015–2017*

| Age group | Males | Females | Total (%) |
|---|---|---|---|
| < 28 days | 6 | 14 | 20 (7.0) |
| > 28 days to < 1 year | 2 | 4 | 6 (2.1) |
| 1–4 | 2 | 2 | 4 (1.4) |
| 5–9 | 2 | 0 | 2 (0.7) |
| 10–14 | 1 | 1 | 2 (0.7) |
| 15–19 | 6 | 1 | 7 (2.5) |
| 20–24 | 6 | 3 | 9 (3.2) |
| 25–29 | 7 | 2 | 9 (3.2) |
| 30–34 | 8 | 4 | 12 (4.2) |
| 35–39 | 8 | 7 | 15 (5.3) |
| 40–44 | 18 | 6 | 24 (8.5) |
| 45–49 | 9 | 4 | 13 (4.6) |
| 50–54 | 19 | 16 | 35 (12.3) |
| 55–59 | 15 | 19 | 34 (12.0) |
| 60–64 | 13 | 14 | 27 (9.5) |
| 65–69 | 11 | 23 | 34 (12.0) |
| 70–74 | 3 | 5 | 8 (2.8) |
| 75+ | 13 | 10 | 23 (8.1) |
| **Total** | **149** | **135** | **284** |

### 3.1.3. Place of death

The majority of deaths registered in the 2015–2017 period occurred in the hospital (218, 76.8%) (see Table 15), followed by deaths that occurred at home (39, 13.7%). There were 20 deaths (7%) that occurred overseas.

*Table 15: Distribution of deaths by Place of death, 2015–2017*

| Place of death | Number | Percentage (%) |
|---|---|---|
| Hospital | 218 | 76.8 |
| Home (including DOA) | 39 | 13.7 |
| Overseas | 20 | 7.0 |
| Unknown | 7 | 2.5 |
| **Total** | **284** | **100.0** |

*Note: DOA = Death on arrival to hospital.*

## 3.2. Summary measures of mortality

### 3.2.1. Crude death rate and age-standardised death rate

Table 16 presents both the crude death rate (CDR) (deaths per 1000 population) and the age-standardised death rate (ASDR). ASDRs are one country's age-specific death rates applied to a standard age distribution. Age-standardised rates enable the comparison of death rates over time or between two different populations without the age structure of the population influencing the death rates. Data has been age standardised to the most recent period shown using the WHO World Standard Population.

The CDR is 8.6 per 1000 population for the period 2015–2017. The CDRs for the periods 2008–2010 and 2011–2013 are 7.2 deaths per 1000 population and 7.5 deaths per 1000 population respectively.

The ASDR for 2015–2017 is 18.1 per 1000 population, which is higher compared to the rate for the previous period 2011–2013 (14.8 per 1000 population) and that for years 2008–2010 (15.8 per 1000 population).

*Table 16: Crude death rate (CDR) and age-standardised death rate (ASDR) by 3-year period, 2008–2017*

| 3-year period | CDR | L 95% CI | U 95% CI | ASDR | L 95% CI | U 95% CI |
|---|---|---|---|---|---|---|
| 2008–2010 | **7.2** | 5.6 | 9.1 | **15.8** | 11.3 | 21.3 |
| 2011–2013 | **7.5** | 5.9 | 9.4 | **14.8** | 10.7 | 19.6 |
| 2015–2017 | **8.6** | 6.9 | 10.5 | **18.1** | 13.5 | 23.3 |

*Note: Data for 2014 was not available during analysis. CI = confidence interval; L = lower confidence interval; U = upper confidence interval.*

### 3.2.2. Life expectancy at birth

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

As shown in Table 17 Life expectancy at birth remains stable across the three periods at around 60 to 61 years of age. However, when disaggregated by sex, life expectancy for males remains lower than that of females but stable over the three periods (i.e. around 57 to 58 years). Life expectancy for females had a large decrease from the 69.8 years reported for the period 2008–2010 to the recent 61.2 years for 2015–2017. This should be further investigated to understand if this is a true reduction in life expectancy or influenced by administrative data collection processes.

*Table 17: Life expectancy at birth ($LE_0$) by 3-year period, 2008–2017*

| 3-year period | Males | | | Females | | | Both | | |
|---|---|---|---|---|---|---|---|---|---|
| | $LE_0$ | L 95% CI | U 95% CI | $LE_0$ | L 95% CI | U 95% CI | $LE_0$ | L 95% CI | U 95% CI |
| 2008–2010 | **57.1** | 53.0 | 61.2 | **69.8** | 59.8 | 79.8 | **60.9** | 57.1 | 64.7 |
| 2011–2013 | **58.0** | 53.3 | 62.8 | **64.9** | 59.8 | 70.1 | **61.4** | 57.8 | 64.9 |
| 2015–2017 | **57.9** | 53.8 | 62.0 | **61.2** | 57.4 | 65.1 | **59.5** | 56.7 | 62.3 |

*Note: Data for 2014 was not available during analysis. CI = confidence interval; L = lower confidence interval; U = upper confidence interval.*

## 3.3. Child and adult mortality

### 3.3.1. Neonatal mortality

The neonatal mortality rate is the number of deaths among live-born infants during the first 28 days of life per 1000 live births over a specified period. Mortality during the neonatal period (the first 28 days of life) accounts for a large proportion of child deaths and is an important indicator of maternal and newborn neonatal health and care.

The neonatal mortality rate has increased from the reported 12.3 deaths per 1000 live births for the 2011–2013 period to 19.6 deaths per 1000 births (see Table 18).

*Table 18: Neonatal mortality rates (NMR), including 95% confidence intervals (CI), 2011–2013, 2015–2017*

| 3-year period | NMR | L 95% CI | U 95% CI |
|---|---|---|---|
| 2011–2013 | 12.3 | 6.6 | 21.1 |
| 2015–2017 | 19.6 | 12.0 | 30.2 |

*Note: Data for 2014 and for the period 2008–2010 was not available during analysis. L= lower confidence interval; U = upper confidence interval.*

### 3.3.2. Infant mortality

The infant mortality rate (IMR) shows the number of infant deaths (deaths in children aged below one year) per 1000 live births for a given period. Table 19 and Figure 4 show the IMR for the 3-year periods, that is, 2008–2010, 2011–2013, and 2015–2017. There has been a slight increase in the IMR for the recent 3-year period, 2015–2017, with 25.4 infant deaths per 1000 live births compared to the previous IMR reported for years 2011–2013 of 18 infant deaths per 1000 live births. The rate is, however, lower than that reported for 2008–2010 where the IMR was 36.7.

*Table 19: Infant mortality rates (IMR), including 95% confidence intervals (CI), 2008–2017*

| 3-year period | IMR | L 95% CI | U 95% CI |
|---|---|---|---|
| 2008–2010 | 36.7 | 25.8 | 50.5 |
| 2011–2013 | 18.0 | 10.8 | 28.1 |
| 2015–2017 | 25.4 | 16.6 | 37.3 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

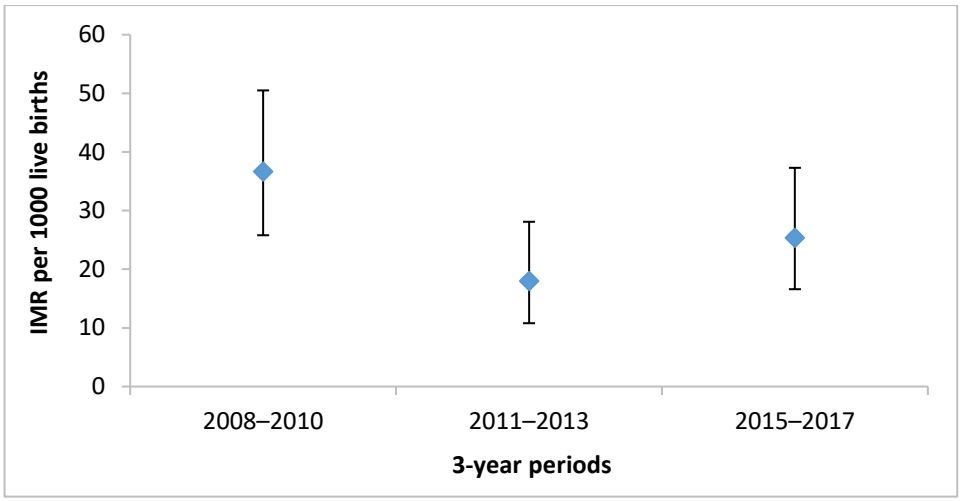


*Figure 4: Infant mortality rates (IMR), with 95% confidence intervals, 2008–2017*

*Note: Data for 2014 was not available during analysis.*

### 3.3.3. Under-5 mortality rate (U5M)

The under-5 mortality rate is measured as the number of deaths in children aged below five years, per 1000 live births in the same period. The U5M rate is estimated at 29.4 per 1000 live births for the period 2015–2017, which is an increase from the rate for the previous period (2011–2013) (see Table 20).

*Table 20: Under-5 mortality rates (U5M) by 3-year period, including 95% confidence intervals (CI), 2008–2017*

| 3-year period | U5M | L 95% CI | U 95% CI |
|---|---|---|---|
| 2008–2010 | 38.7 | 27.5 | 52.8 |
| 2011–2013 | 22.7 | 14.6 | 33.8 |
| 2015–2017 | 29.4 | 19.8 | 41.9 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

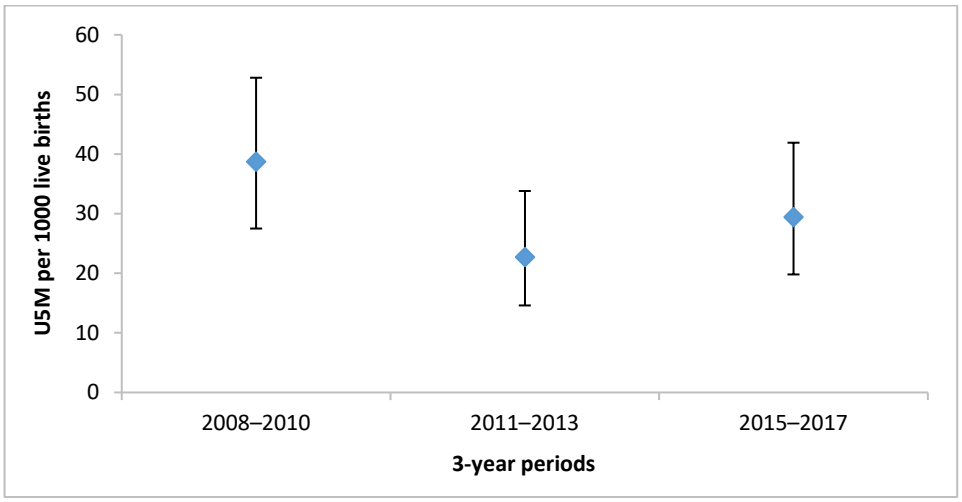


*Figure 5: Under-5 mortality rates (U5M), including 95% confidence intervals, 2008–2017*

*Note: Data for 2014 was not available during analysis.*

### 3.3.4. Age-specific mortality

Age-specific mortality rate (ASMR) is the number of deaths per 1000 people of a given age group in a given time.

Figure 6 provides the ASMRs for the period 2015–2017 disaggregated by sex. Males have a higher rate of death in all ages except the 55–59- and 65–69-year-old age groups. This is consistent with the lower life expectancy experienced by males in Nauru. Both males and females follow the j-curved pattern of mortality, with higher rates of mortality in the 0–4-year age group. As only positive values can be interpreted on a logarithmic scale, the curve patterns for female mortality for age groups 0–4 and 5–9 is interrupted.

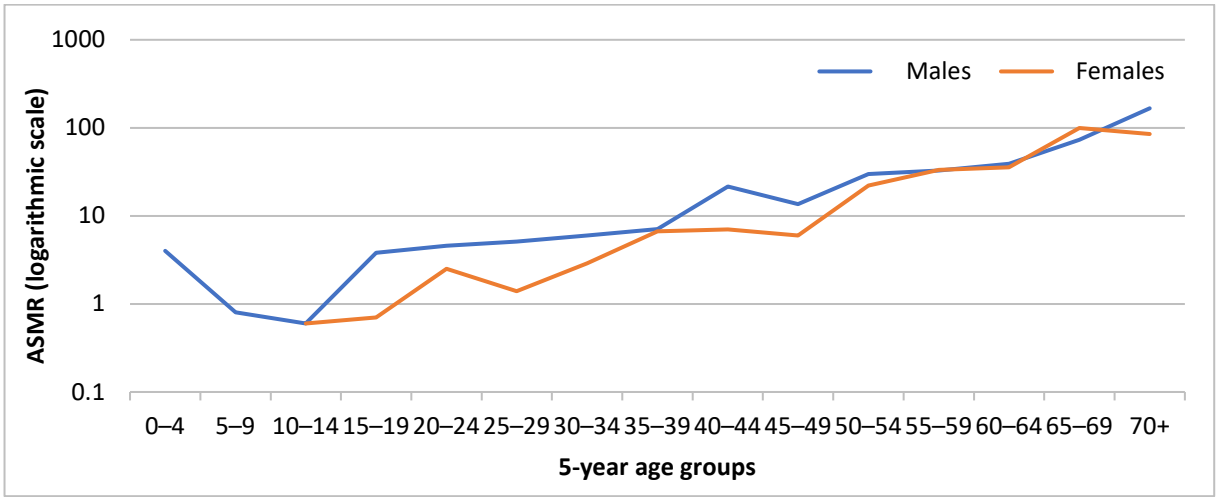


*Figure 6: Age-specific mortality rates (ASMR) by sex, 2015–2017*

*Note: Data for 2014 was not available during analysis. Negative or zero values cannot be plotted correctly on log charts. Only positive values can be interpreted on a logarithmic scale.*

Figure 7 compares ASMRs across periods 2008–2010, 2011–2013, and 2015–2017. For the population of Nauru, mortality remains very high in younger children under the age of five and then falls during years 5–14. Death rates begin to rise steadily from 25 years and as the population grows older. Period 2015–2017 shows an increase in death rates for those aged 15–19 and 20–24, compared to the rates

for periods 2008–2010 and 2011–2013. Table A4 in Appendix 1 provides ASMRs for each of the three periods disaggregated by sex.

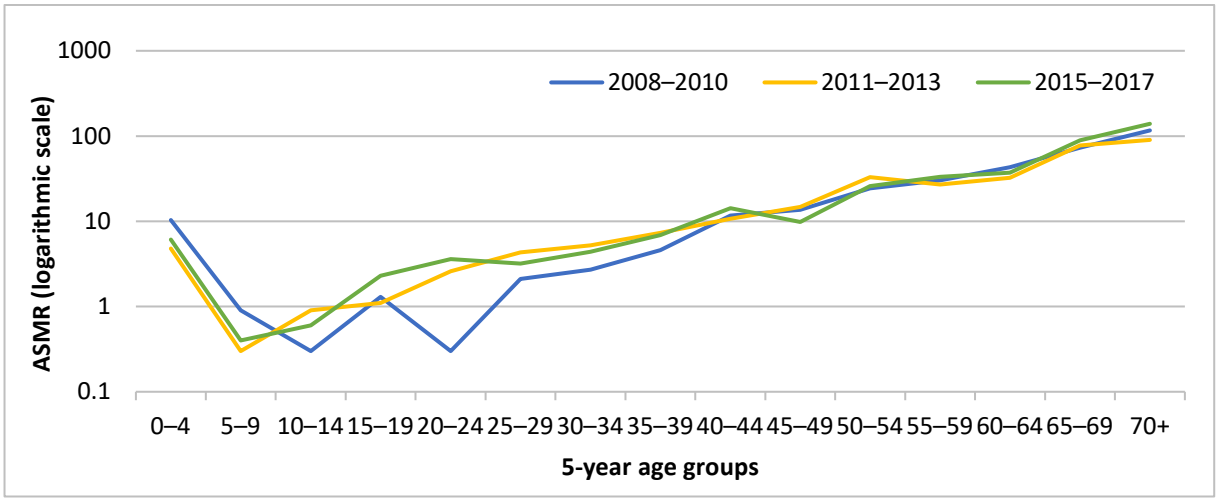


*Figure 7: Age-specific mortality rates (ASMR) by period, 2008–2010, 2011–2013, and 2015–2017*

*Note: Data for 2014 was not available during analysis.*

### 3.3.5. Adult mortality

Adult mortality is the probability of dying between the ages of 15 to 59 inclusive, or the probability of a 15-year-old dying before reaching the age of 60. Table 21 shows adult mortality by period and sex.

In the years 2015–2017, a 15-year-old male had a 46.3% chance of dying before the age of 60 (see Table 22). This is slightly higher compared to females of the same age, who had a 33.9% chance of dying before getting to 60.

*Table 21: Adult mortality (%) by 3-year period and sex, including 95% confidence intervals (CI), 2008–2017*

| 3-year period | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Adult mortality** | L 95% CI | U 95% CI | **Adult mortality** | L 95% CI | U 95% CI | **Adult mortality** | L 95% CI | U 95% CI |
| 2008–2010 | **40.1** | 24.4 | 52.6 | **33.2** | 18.1 | 45.6 | **36.5** | 25.9 | 45.5 |
| 2011–2013 | **46.7** | 32 | 58.2 | **35.8** | 21.7 | 47.3 | **41.4** | 31.5 | 49.8 |
| 2015–2017 | **46.3** | 32.4 | 57.4 | **33.9** | 20.5 | 45 | **40.4** | 30.9 | 48.5 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

### 3.3.6. Life expectancy at 40 ($LE_{40}$)

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 22 shows life expectancy at 40 for the three year periods disaggregated by sex.

For the period 2015–2017, a 40-year-old male would be expected to live to age 64. A 40-year-old female would be expected to live to age 66; which is slightly lower than the previous reported 69 for the period 2011–2013.

*Table 22: Life expectancy at 40 ($LE_{40}$) by 3-year period and sex, including 95% confidence intervals (CI), 2008–2017*

| 3-year period | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | **$LE_{40}$** | L 95% CI | U 95% CI | **$LE_{40}$** | L 95% CI | U 95% CI | **$LE_{40}$** | L 95% CI | U 95% CI |
| 2008–2010 | **22.8** | 19.4 | 26.2 | **34.3** | 24.0 | 44.7 | **26.0** | 22.3 | 29.6 |
| 2011–2013 | **24.0** | 19.5 | 28.5 | **28.7** | 23.7 | 33.7 | **26.4** | 23.0 | 29.8 |
| 2015–2017 | **23.8** | 20.2 | 27.4 | **26.3** | 23.3 | 29.4 | **25.0** | 22.6 | 27.3 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

### 3.3.7. 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. There was no maternal death registered in Nauru during the period 2015–2017; therefore, the MMR is zero (See Table 23).

The medical certificate of cause of death in Nauru does not include a segment indicating whether pregnancy was a factor in death. This means that the reporting of maternal deaths is reliant on the practitioner indicating in the causal sequence that a deceased woman was pregnant. Without this indicator on the death certificate, there is a possibility that maternal deaths are under-reported in Nauru.

*Table 23: Maternal mortality (%) by 3-year period, including 95% confidence intervals (CI), 2008–2017*

| 3-year period | Number of maternal deaths | Maternal mortality rate | L 95% CI | U 95% CI | Maternal mortality ratio | L 95% CI | U 95% CI |
|---|---|---|---|---|---|---|---|
| 2008–2010 | 4.0 | 51.0 | 14.0 | 130.0 | 396.0 | 108.0 | 1015.0 |
| 2011–2013 | 0.0 | 0.0 | 0.0 | 46.1 | 0.0 | 0.0 | 349.0 |
| 2015–2017 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 361.0 |

*Note: Data for 2014 was not available during analysis. L = lower confidence interval; U = upper confidence interval.*

# CHAPTER 4: CAUSES OF DEATH

Cause-of-death data provides vital information on the health of a country. Understanding the common causes of death can inform health policy and preventive services and be a key component in addressing premature mortality.

## 4.1. Natural and non-natural causes of death

According to the ICD-10 codebook, all causes of death from Chapters 1 to 18 of ICD-10 are classified as natural causes and Chapter 20 (V01–Y98) as non-natural causes. Table 24 shows the actual number and percentage of natural and non-natural deaths by year of death for the period 2015–2017. For the 3-year period, 62% of deaths registered are due to natural causes, while 7.4% of deaths are due to non-natural causes. Over the 3-year period, close to one third of deaths were classified to conditions considered ill-defined in nature. These causes are attributed to ill-specified medical certification practices.

*Table 24: Number and percentage of natural and non-natural deaths, 2015–2017*

| Cause of death | Number | | | | Percentage (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | Total | 2015 | 2016 | 2017 | Total |
| **Natural** | 52 | 59 | 67 | 176 | 57.8 | 59.0 | 71.3 | 62.0 |
| **Non-natural** | 7 | 6 | 8 | 21 | 7.8 | 6.0 | 8.5 | 7.4 |
| **Ill-defined** | 31 | 35 | 19 | 87 | 34.4 | 35.0 | 20.2 | 30.6 |
| **Total** | **90** | **100** | **94** | **284** | **100.0** | **100.0** | **100.0** | **100.0** |

## 4.2. Leading underlying causes of death (all ages, both sexes)[2]

Table 25 shows the top 10 leading causes of death presented as a percentage distribution of actual deaths for the period 2015–2017 by specific cause for both sexes combined. A third of all deaths for the period 2015–2017 are classified to ill-defined causes. In order to offset the effect of ill-defined causes, the proportional distribution of mortality by cause excluding ill-defined causes is presented in the tables. The leading cause of death in Nauru in the 2015–2017 period is diseases of the circulatory system, accounting for 30.5% of deaths. This is followed by certain infectious and parasitic diseases at 17.8% and external causes at 10.7% (figures excluding ill-defined deaths – 1-094).

The most common disease of the circulatory system certified at death is acute myocardial infarction (i.e. heart attack), with 27 deaths recorded over the 3-year period. Sepsis without mention of cause is the most common infectious disease certified, accounting for 33 deaths between 2015 and 2017.

*Table 25: Underlying causes of death, all ages and both sexes, 2015–2017*

| ICD chapter codes | Cause of death | Counts | % distribution of deaths | % excluding ill-defined deaths |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 60 | 21.1 | 30.5 |
| 1-001 | Certain infectious and parasitic diseases | 35 | 12.3 | 17.8 |
| 1-095 | External causes of morbidity and mortality | 21 | 7.4 | 10.7 |
| 1-026 | Diseases of the genitourinary system | 12 | 4.2 | 6.1 |
| 1-072 | Diseases of the respiratory system | 12 | 4.2 | 6.1 |
| 1-084 | Neoplasms (cancer) | 12 | 4.2 | 6.1 |
| 1-051 | Certain conditions originating in the perinatal period | 11 | 3.9 | 5.6 |
| 1-078 | Diseases of the digestive system | 11 | 3.9 | 5.6 |
| 1-092 | Endocrine, nutritional and metabolic diseases | 11 | 3.9 | 5.6 |
| | **All other causes** | 12 | 4.2 | 6.1 |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 87 | 30.6 | |
| | **Total** | **284** | | |
| | **Total less ill-defined** | **197** | | |

*Note: Ill-defined causes include all deaths coded to causes in the R00-R99 Chapter 1-094 (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified) and also deaths coded to individual causes I46.9 Cardiac arrest, unspecified, and J96.9 Respiratory failure, unspecified.*

*2 It is important to note that causes of death by all ages may be misleading, as the leading causes of death differ by the ages of the deceased.*

When disaggregated by sex, diseases of the circulatory system, external causes of morbidity and mortality and certain infectious and parasitic diseases are the leading causes of death among males (see Table 26). These causes account for 35.0%, 15.5% and 14.6% of deaths among males respectively.

*Table 26: Underlying causes of death for males, all ages, 2015–2017*

| ICD chapter codes | ICD-10 chapter | Counts | % distribution of deaths | % excluding ill-defined deaths |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 36 | 24.2 | 35.0 |
| 1-095 | External causes of morbidity and mortality | 16 | 10.7 | 15.5 |
| 1-001 | Certain infectious and parasitic diseases | 15 | 10.1 | 14.6 |
| 1-078 | Diseases of the digestive system | 8 | 5.4 | 7.8 |
| 1-072 | Diseases of the respiratory system | 7 | 4.7 | 6.8 |
| | All other causes | 21 | 14.1 | 20.4 |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 46 | 30.9 | |
| | **Total** | **149** | | |
| | **Total less ill-defined** | **103** | | |

For females (refer to Table 27), diseases of the circulatory system are similarly the leading cause of death, with 25.5% of females dying of this cause. Infectious and parasitic diseases account for 21.3% of all female deaths, followed by neoplasms. When investigated further, the majority of cancer deaths among females are due to breast cancer.

*Table 27: Underlying causes of death for females, all ages, 2015–2017*

| Chapter codes | ICD-10 chapter | Counts | % distribution of deaths | % excluding ill-defined deaths |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 24 | 17.8 | 25.5 |
| 1-001 | Certain infectious and parasitic diseases | 20 | 14.8 | 21.3 |
| 1-084 | Neoplasms (cancer) | 10 | 7.4 | 10.6 |
| 1-026 | Diseases of the genitourinary system | 9 | 6.7 | 9.6 |
| 1-051 | Certain conditions originating in the perinatal period | 7 | 5.2 | 7.4 |
| 1-092 | Endocrine, nutritional and metabolic diseases | 7 | 5.2 | 7.4 |
| 1-072 | Diseases of the respiratory system | 5 | 3.7 | 5.3 |
| 1-095 | External causes of morbidity and mortality | 5 | 3.7 | 5.3 |
| | All other causes | 7 | 5.2 | 7.4 |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 41 | 30.4 | |
| | **Total** | **135** | | |
| | **Total less ill-defined** | **94** | | |

All other causes include congenital malformations, deformations and chromosomal abnormalities, diseases of the skin and subcutaneous tissue, diseases of the nervous system, and diseases of the musculoskeletal system and connective tissue.

## 4.3. Underlying causes of death by key age groups

### 4.3.1. Causes of death in children aged 0–14 years

Figure 8 and Figure 9 provide the distribution of leading causes of death among children aged 0–14. Although they are known to die of different causes, deaths among neonates, infants, and children aged below four years and those in the 5–14 age group are aggregated due to the small number of deaths.

The leading cause of death in this age group is certain conditions originating in the perinatal period, which account for 37.0% of all deaths. Deaths from this cause occurred solely among children aged 0–4, with the most common cause being prematurity in infants. Certain infectious and parasitic diseases and diseases of the respiratory system are the second leading causes of death, each accounting for

14.8% of deaths. Diseases of the circulatory system and congenital malformations and deformations are also important causes of death. Most deaths among children in this age group (0–14) occur among children aged 0–4 years.

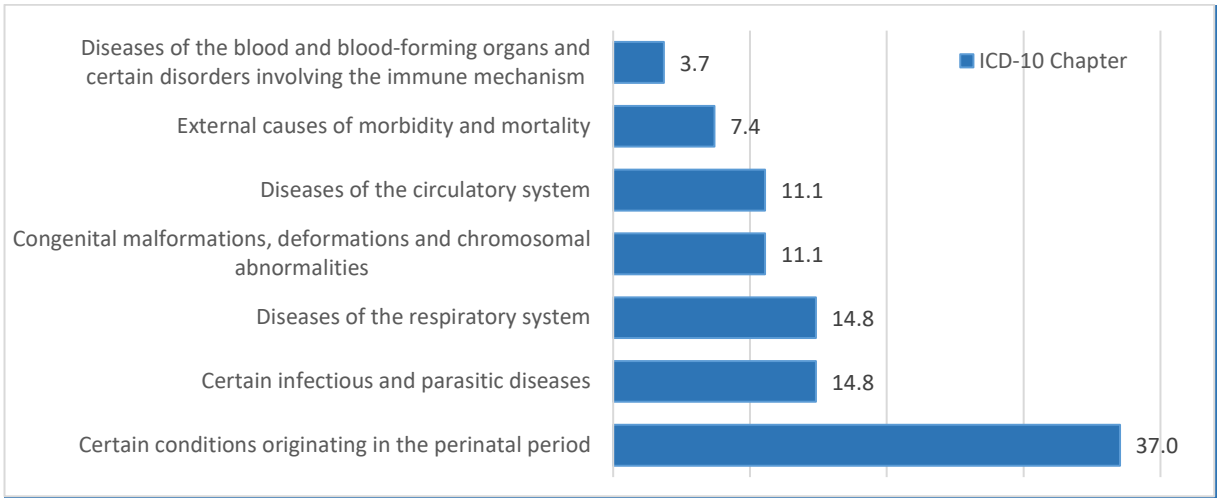


*Figure 8: Underlying causes of death for children aged 0–14, 2015–2017*

*Note: Excludes ill-defined deaths.*

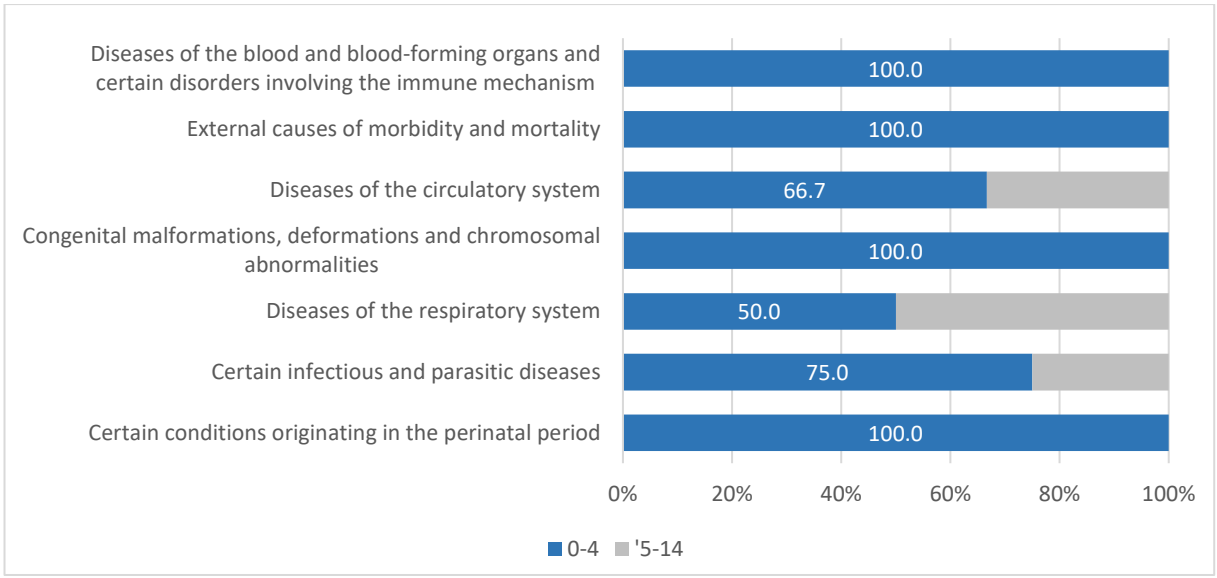


*Figure 9: Underlying causes of death for children aged 0–14, by age group 0–4 and 5–14, 2015–2017*

*Note: Excludes ill-defined deaths.*

### 4.3.2. Causes of death in adults aged 15–59 years

Table 28 shows the leading causes of death among males aged 15-59 and the corresponding cause specific mortality rates. The leading cause of death for males aged 15 to 59 years is diseases of the circulatory system, accounting for a third of all male deaths with a cause-specific mortality rate of 67 per 100,000 population (95% CI: 38.8–94.4). When broken down further, 12 of the 22 deaths of the circulatory system are as a result of ischaemic heart disease, namely acute myocardial infarction.

The second leading cause of death for males aged 15 to 59 is external causes (21.2%), with a cause-specific mortality rate of 42.4 per 100,000 population (95% CI: 20.2–64.6). An extended list of causes of death shows that 11 deaths are from all other external causes. Seven (7) of these 11 deaths were noted to be due to cranial injuries, most commonly caused by accidental motor vehicle crashes.

*Table 28: Cause-specific mortality for adult males aged 15–59 years by ICD (chapter or General Mortality List 1) (deaths per 100,000 population, including 95% confidence intervals), 2015–2017*

| ICD chapter codes | Cause of death | Total | Proportional mortality (%)[a] (95% CI) | Cause-specific mortality rate per 100,000 population (crude method)[b] (95% CI) |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 22 | 33.3 (24.2–42.4) | 66.6 (38.8–94.4) |
| 1-095 | External causes of morbidity and mortality | 14 | 21.2 (13.6–30.3) | 42.4 (20.2–64.6) |
| 1-078 | Diseases of the digestive system | 8 | 12.1 (6.1–19.7) | 24.2 (7.4–41.0) |
| 1-001 | Certain infectious and parasitic diseases | 7 | 10.6 (4.5–16.7) | 21.2 (5.5–36.9) |
| | All other causes | 15 | 22.7 (15.2–31.8) | 45.4 (14.7–105.9) |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 30 | – | – |
| **Total** | | **96** | **–** | **–** |
| **Total less ill-defined** | | **66** | | |

*[a]Ill-defined causes include all deaths coded to causes in the R00-R99 chapter (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified) and also deaths coded to individual causes I46.9 Cardiac arrest, unspecified, and J96.9 Respiratory failure, unspecified.*

*[b]Crude method = [(count/number of years from 2015–2017)/midpoint population] x 100,000.*

Cause-specific death rates for females aged 15–59 are provided in Table 29. Similar to males of the same age group, the leading cause of death for females is diseases of the circulatory system, with a cause-specific mortality rate of 33.3 per 100,000 population (95% CI: 13.6–53.0). When broken down further, the majority of the deaths are from ischaemic heart disease (eight deaths).

*Table 29: Cause-specific mortality for adult females aged 15–59 years by ICD (chapter or General Mortality List 1) (deaths per 100,000 population, including 95% confidence intervals), 2015–2017*

| ICD chapter codes | Cause of death | Total | Proportional mortality (%)[a] (95% CI) | Cause-specific mortality rate per 100,000 population (crude method)[b] (95% CI) |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 11 | 25.0 (13.6–36.4) | 33.3 (13.6–53.0) |
| 1-001 | Certain infectious and parasitic diseases | 8 | 18.2 (9.1–27.3) | 24.2 (7.4–41.0) |
| 1-026 | Neoplasms | 7 | 15.9 (6.8–25.0) | 21.2 (5.5–36.9) |
| 1-084 | Diseases of the genitourinary system | 7 | 15.9 (6.8–25.0) | 21.2 (5.5–36.9) |
| | All other causes | 11 | 25.0 (13.6–36.4) | 33.3 (13.6–53.0) |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 18 | – | – |
| **Total** | | **62** | **–** | **–** |
| **Total less ill-defined** | | **44** | | |

*[a]Ill-defined causes include all deaths coded to causes in the R00-R99 chapter (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified) and also deaths coded to individual causes I46.9 Cardiac arrest, unspecified, and J96.9 Respiratory failure, unspecified.*

*[b]Crude method = [(count/number of years from 2015–2017)/midpoint population] x 100,000.*

### 4.3.3. Causes of death in older adults (aged 60+ years)

Table 30 and Table 31 show the leading causes of deaths among males and females aged 60+ respectively. For the period of 2015–2017, diseases of the circulatory system are the leading cause of death for males and females, accounting for 48.0% and 36.1 of deaths respectively. The cause-specific mortality rates for males and females are close, with 36.3 per 100,000 population (95% CI: 15.8–56.9) each year for males and 39.3 per 100,000 (95% CI: 18.0–60.7) each year for females.

It is apparent that the main causes of deaths for those aged 60 years and over are non-communicable diseases (NCDs).

*Table 30: Cause-specific mortality in adult males aged 60 and older by ICD (chapter or General Mortality List 1) (deaths per 100,000 population, including 95% confidence intervals), 2015–2017*

| ICD chapter codes | Cause of death | Total | Proportional mortality (%)[a] (95% CI) | Cause-specific mortality rate per 100,000 population (crude method)[b] (95% CI) |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 12 | 48.0 (32.0–64.0) | 36.3 (15.8–56.9) |
| 1-001 | Certain infectious and parasitic diseases | 7 | 28.0 (12.0–44.0) | 21.2 (5.5–36.9) |
| | All other causes | 6 | 24.0 (12.0–40.0) | 18.2 (2.2–65.6) |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 15 | – | – |
| **Total** | | **40** | **–** | **–** |
| **Total less ill-defined** | | **25** | **100** | |

[a]*Ill-defined causes include all deaths coded to causes in the R00-R99 chapter (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified) and also deaths coded to individual causes I46.9 Cardiac arrest, unspecified, and J96.9 Respiratory failure, unspecified.*

[b]*Crude method = [(count/number of years from 2015–2017)/midpoint population] x 100,000.*

*Table 31: Cause-specific mortality in adult females aged 60 and older by ICD (chapter or General Mortality List 1) (deaths per 100,000 population, including 95% confidence intervals), 2015–2017*

| ICD chapter codes | Cause of death | Total | Proportional mortality(%)[a] (95% CI) | Cause-specific mortality rate per 100,000 population (crude method)[b] (95% CI) |
|---|---|---|---|---|
| 1-064 | Diseases of the circulatory system | 13 | 36.1 (22.2–50.0) | 39.3 (18.0–60.7) |
| 1-001 | Certain infectious and parasitic diseases | 9 | 25.0 (13.9–36.1) | 27.2 (9.4–45.0) |
| 1-051 | Endocrine, nutritional and metabolic diseases | 5 | 13.9 (5.6–25.0) | 15.1 (1.9–28.4) |
| | All other causes | 9 | 25.0 (13.9–36.1) | 27.2 (5.6–79.6) |
| 1-094 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 16 | – | – |
| **Total** | | **52** | **–** | **–** |
| **Total less ill-defined** | | **36** | **100** | |

[a]*Ill-defined causes include all deaths coded to causes in the R00-R99 chapter (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified) and also deaths coded to individual causes I46.9 Cardiac arrest, unspecified, and J96.9 Respiratory failure, unspecified.*

[b]*Crude method = [(count/number of years from 2015–2017)/midpoint population] x 100,000*

## 4.4. Adult mortality from non-communicable diseases (NCDs)

NCDs are the leading cause of death in the 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 (percentage of deaths due to selected NCDs), cause-specific mortality rates from selected NCDs, and age-standardised mortality from NCDs.

Worldwide, the ICD-10 classification system is the system most commonly used to classify deaths. Selected NCDs for reporting against WHO international targets by ICD General Mortality List 1 are shown in Table 32. The inclusion of deaths from chronic liver and cirrhosis into this report is to facilitate comparison with the level of NCD deaths for the previous period (2008–2013).

*Table 32: Selected 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 |
| 1-080 | Diseases of the liver | K70–K76 |

### 4.4.1. Cause-specific proportional mortality

Cause-specific proportional mortality shows the relative burden from NCDs compared to other causes of death.

Figure 10 shows that the selected NCDs contribute to almost half of the deaths that occurred to those aged 15–59 years during the period 2015–2017. Diseases of the circulatory system account for the most deaths with 30%, followed by neoplasms and liver diseases at 7% each.

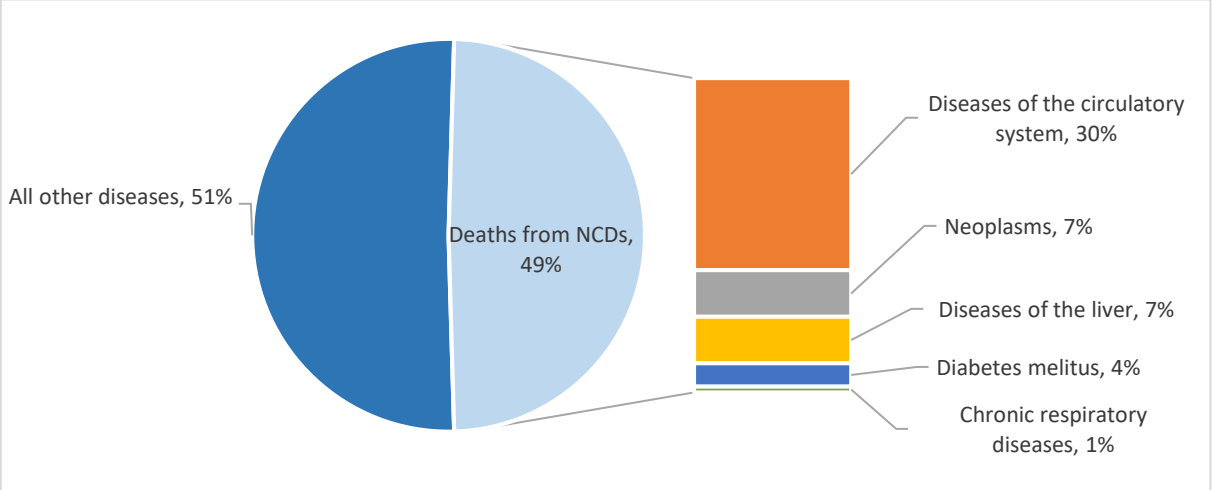


*Figure 10: Mortality in adults aged 15–59 years from selected non-communicable diseases (NCDs) compared to all other causes, 2015–2017*

*Note: Analysis here does not include ill-defined deaths (1-094) for each age group, 15–59, 15–34, and 35–59.*

Figure 11 and Figure 12 show the distribution of mortality from selected NCDs for persons aged 15–34 and 35–59 respectively. Twenty-eight per cent of deaths (28%) among persons of ages 15–34 are attributed to NCDs, of which the majority are due to heart diseases at 17%, followed by cancer at 7%, and chronic respiratory diseases at 4%. There are no deaths attributed to diseases of the liver for those aged 15–34 for the period 2015–2017.

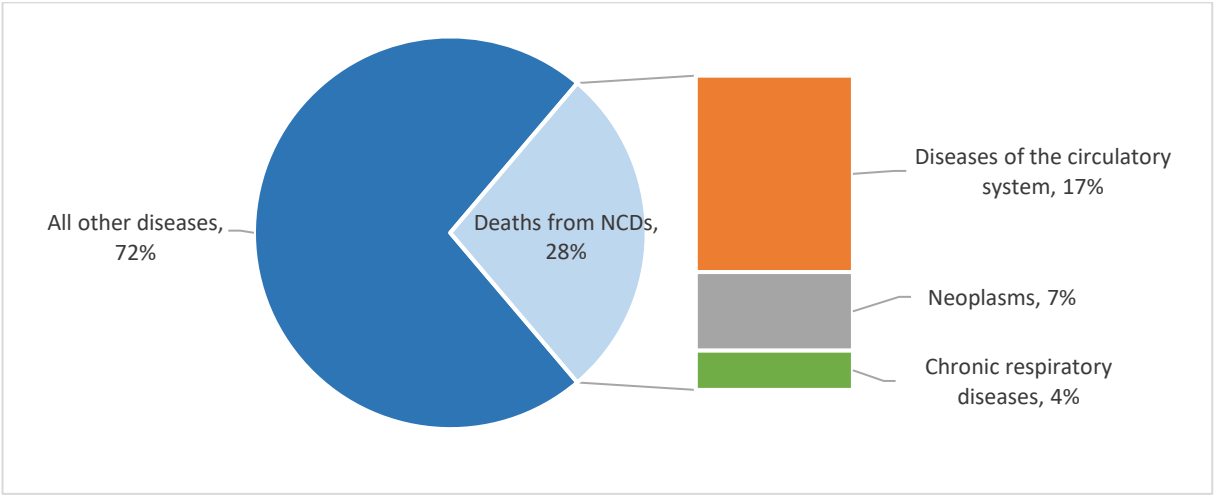


*Figure 11: Mortality in adults aged 15–34 years from selected non-communicable diseases (NCDs) compared to all other causes, 2015–2017*

*Note: Analysis here does not include ill-defined deaths (1-094).*

Of all deaths to those aged 34–59, 57% are attributed to NCDs, of which 35% are due to heart diseases, followed by cancer at 10% and diseases of the liver at 7%.

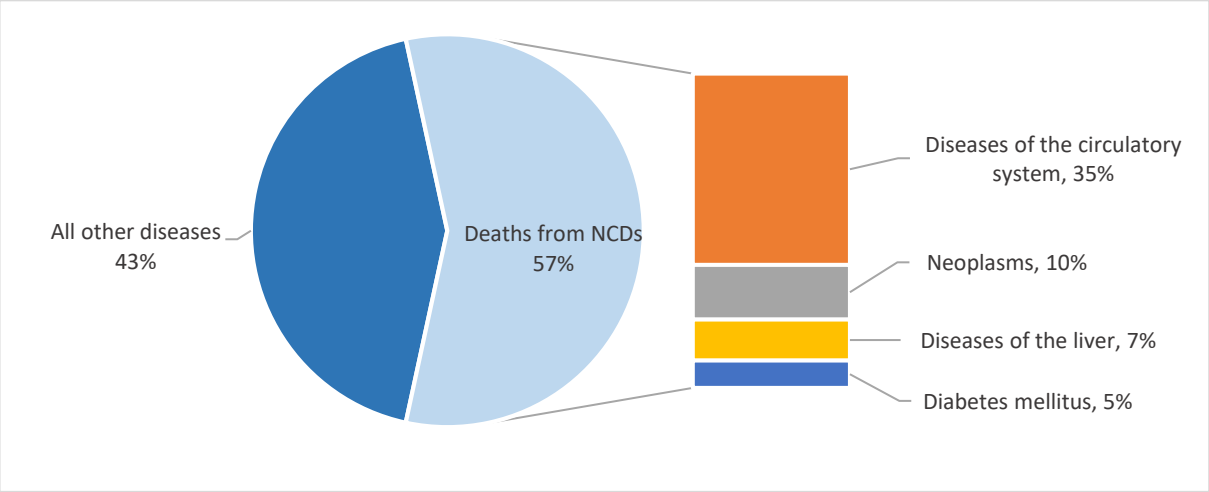


*Figure 12: Mortality in adults aged 35–59 years from selected non-communicable diseases (NCDs) compared to all other causes, 2015–2017*

*Note: Analysis here does not include ill-defined deaths (1-094) for each age group, 15–59, 15–34, and 35–59.*

### 4.4.2. Cause-specific mortality rates from selected NCDs

Cause-specific mortality rates provide a direct measure of the overall impact of NCD-related deaths on the population. Although 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 by key age groups can be useful in providing detailed information for targeting specific NCD-related interventions.

Table 33 provides cause-specific mortality rates for NCDs disaggregated by age group and sex. Mortality from NCDs is minimal in the younger age group (15–34) as compared to the older ages. In this age group (15–34), diseases of the circulatory system are of the greatest impact and account for the highest NCD mortality rate among men (6.1 deaths per 100,000 population each year). Among females in the same age group, neoplasms account for the highest NCD mortality (6.1 deaths per 100,000 population each year).

*Table 33: Cause-specific mortality rates for adults aged 15–59 years for selected non-communicable diseases (NCDs) by sex and broad age group (deaths per 100,000), 2015–2017*

| **Underlying cause of death** | **Males** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **15–34 Rate, 95% CI** | | | **35–59 Rate, 95% CI** | | | **15–59 Rate, 95% CI** | | |
| Neoplasms | **0.0** | 0.0 | 33.5 | **3.0** | * | 33.5 | **3.0** | 8 | 33.5 |
| Diabetes mellitus | **0.0** | 0.0 | 33.5 | **9.1** | 0.2 | 50.6 | **9.1** | 0.2 | 50.6 |
| Diseases of the circulatory system | **12.1** | 0.2 | 50.6 | **54.5** | 20.0 | 118.6 | **66.6** | 25.6 | 130.9 |
| Chronic lower respiratory diseases | **0.0** | 0.0 | 33.5 | **0.0** | 0.0 | 33.5 | **0.0** | 0.0 | 33.5 |
| Diseases of the liver | **0.0** | 0.0 | 33.5 | **21.2** | 2.2 | 65.6 | **21.2** | 2.2 | 65.6 |
| **Underlying cause of death** | **Females** | | | | | | | | |
| | **15–34 Rate, 95% CI** | | | **35–59 Rate, 95% CI** | | | **15–59 Rate, 95% CI** | | |
| Neoplasms | **6.1** | 0.0 | 42.4 | **15.1** | 1.0 | 58.3 | **21.2** | 2.2 | 65.6 |
| Diabetes mellitus | **0.0** | 0.0 | 33.5 | **3.0** | * | 33.5 | **3.0** | * | 33.5 |
| Diseases of the circulatory system | **3.0** | * | 33.5 | **30.3** | 5.6 | 79.6 | **33.3** | 7.7 | 86.4 |
| Chronic lower respiratory diseases | **3.0** | * | 33.5 | **0.0** | 0 | 33.5 | **3.0** | * | 33.5 |
| Diseases of the liver | **0.0** | 0.0 | 33.5 | **3.0** | * | 33.5 | **3.0** | * | 33.5 |

*Note: CI = confidence interval.*

Male adults aged 35–59 experience higher rates of deaths from diseases of the circulatory system (54.5 deaths per 100,000 population each year), diseases of the liver (21.2 deaths per 100,000 population each year), and diabetes (9.1 deaths per 100,000 population each year). Females in the same age group have higher rates of death from diseases of the circulatory system (at 30.3 deaths per 100,000 population), followed by cancer (at 15.1 deaths per 100,000 population).

### 4.4.3. Age-standardised mortality from NCDs

For comparison over time and across countries, age-standardised rates for the selected NCDs should be used. Table 34 shows the ASDRs using the WHO World Standard Population (see Appendix 4). Using this standardisation, for every 100,000 males aged 15–59, 205 die each year due to a selected NCD-related cause of death. There are notable sex differences in distribution in cause-specific NCDs, with males more likely to die from circulatory, metabolic (diabetes) and liver diseases, which is more than double the rate of females. Females have higher rates of mortality from chronic obstructive pulmonary disease (COPD) and neoplasms. For females, the mortality rate from NCDs is lower at 130 women per 100,000 population each year compared with males, who have a rate of 205 per 100,000 deaths.

*Table 34: Age-standardised cause-specific mortality rates for adults aged 15–59 years for selected non-communicable diseases (NCDs) by sex (deaths per 100,000 population), 2015–2017*

| NCDs (15–59 years) | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Rate | L 95% CI | U 95% CI | Rate | L 95% CI | U 95% CI | Rate | L 95% CI | U 95% CI |
| Neoplasms | **5.3** | –3.7 | 47.5 | **43.1** | 0.5 | 128.5 | **48.4** | 3.6 | 138.1 |
| Diabetes mellitus | **21.6** | –5.2 | 101.5 | **7.1** | –4.9 | 63.7 | **28.8** | –2.2 | 120.8 |
| Circulatory diseases | **134.8** | 52.3 | 267.8 | **69.8** | 13.0 | 175.6 | **204.7** | 97.6 | 358.9 |
| COPD | **0.0** | 0.0 | 0.0 | **4.5** | –3.1 | 40.6 | **4.5** | –3.1 | 40.6 |
| Liver diseases | **43.2** | 1.7 | 132.3 | **5.3** | –3.7 | 47.5 | **48.6** | 1.9 | 133.6 |
| All NCD related | **205.0** | 98.3 | 361.2 | **130.0** | 46.1 | 257.7 | **335.0** | 194.6 | 525.1 |

*Note: CI = confidence interval; L = lower confidence interval; U = upper confidence interval.*

### 4.4.4. WHO indicator: Probability of dying among adults aged 30–69 years (inclusive) from designated NCDs

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. As such, estimates of mortality from selected NCDs for this age group are reported here for comparison with international reporting. These are outlined in Table 35. This indicator does not include deaths from diseases of the liver (1-080), which are included in the earlier indicators, as most deaths in these categories will be due to chronic diseases that are occurring in the Pacific region.

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

*Table 35: Probability of dying (%) from selected non-communicable diseases (NCDs) in 30–69-year-olds (inclusive) by sex, 2015–2017*

| ICD codes | Cause of death | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Rate | L 95% CI | U 95% CI | Rate | L 95% CI | U 95% CI | Rate | L 95% CI | U 95% CI |
| 1-026 | Neoplasms | **3.7** | –0.9 | 31.3 | **7.5** | 0.0 | 23.1 | **5.6** | 0.4 | 16.0 |
| 1-052 | Diabetes mellitus | **4.4** | –0.1 | 18.7 | **4.2** | 0.0 | 24.9 | **4.4** | 0.0 | 14.7 |
| 1-064 | Diseases of the circulatory system | **23.5** | 5.2 | 53.5 | **20.9** | 0.0 | 46.8 | **22.2** | 8.0 | 36.4 |
| 1-076 | Chronic lower respiratory diseases | **0.0** | 0.0 | 0.0 | **0.4** | 0.0 | 4.0 | **0.2** | –0.4 | 0.8 |
| Total WHO indicator | | **29.5** | 8.4 | 62.3 | **30.2** | 11.4 | 58.6 | **30.0** | 15.2 | 49.5 |

*Note: WHO = World Health Organization; CI = confidence interval; L = lower confidence interval; U = upper confidence interval.*

Males aged 30 years in Nauru have a 30% chance of dying from one of the four listed causes before reaching the age of 70; this is comparably similar to the probability of dying from the same causes among females. For both males and females, diseases of the circulatory system pose the highest risk of dying before age 70, with a 22.2% chance.

# CONCLUSION, RECOMMENDATIONS AND POLICY IMPLICATIONS

This is the first vital statistics report Nauru has released since 2013. During this time, the government has made significant improvements to the civil registration and vital statistics system. This has led to improved data collection for the 2015–2017 period. Key summary indicators are provided below.

**Births**

The average number of births per year has remained relatively similar over the past years[3] analysed (2008-2010, 2011–2013), with the most recent period of 2015–2017 experiencing an average of 341 births per year. Total fertility rates have remained steady at 3.9 births per woman. ASFRs have decreased for mothers aged 20–24; fertility rates are highest among women aged 25–29 years. Fertility rates among women aged 30–34 have increased compared to the previous period analysed (2011–2013). Of concern is the continuous rise of birth rates among teen mothers aged 15–19 years compared to the previous year. Teenage fertility in Nauru is comparably high to that of other countries in the Pacific region.

**Deaths**

The number of deaths has increased slightly, with an average of 95 deaths per year for the most recent period (2015–2017), compared to the 78 reported in 2011–2013. CDR and age-specific death rates have both increased; however, it is important to note that the small number of deaths is likely to contribute to a high variability in the mortality rates. Analysis of deaths data shows no improvements in adult mortality, probability of dying and life expectancy at age 40. In particular, the decrease in life expectancy over the last 10 years for Nauruan females requires further investigation.

**Causes of death**

The leading cause of death for the period 2015–2017 for the total population is diseases of the circulatory system. However, when analysed by specific age groups, the main cause of death for those aged 0–4 years is due to perinatal-related causes; there are only a few deaths in the 5–14 age group, while the bulk of childhood deaths occur during the first 28 days of life. Diseases of the circulatory system are the leading cause of death in both adult males and females in the 15–59 age group.

Half of deaths for those aged between 15 and 59 are attributed to NCDs, the majority of which were found in the older age group, 35–59 years. There is a 30% probability of dying from NCD-related diseases for those aged 30–69 years. There is an urgent need for awareness with regard to NCD.

The main cause of death for those aged 60 years and over is NCD and related conditions.

**Recommendations**

- Doctors are in need of training for certification of deaths to avoid the high numbers of ill-defined deaths. A third of deaths were noted as ill-defined for the period analysed. However, issues arise as doctors are always on short-term contracts; hence, skills gained during such training are difficult to sustain.
- It is recommended that the following is included in the next vital statistics report: The gestational age of all births, which is a critical indicator of the safety and health of both the mother and child. This information is captured by the hospital but was not available to be analysed for this report.

[3] *Note that data for the year 2014 was not available and is therefore not included in this analysis.*

# ANNEX: REFERENCES


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# APPENDICES

## Appendix 1: Statistical tables

### POPULATION ESTIMATES

*Table A1: Population estimates by sex and specific age groups, 2016 midpoint*

| Age groups | Males | Females | Total |
|---|---|---|---|
| < 1 | 164 | 157 | 321 |
| 1–4 | 675 | 649 | 1,324 |
| 5–9 | 854 | 725 | 1,579 |
| 10–14 | 562 | 579 | 1,142 |
| 15–19 | 525 | 488 | 1,012 |
| 20–24 | 434 | 402 | 836 |
| 25–29 | 461 | 468 | 930 |
| 30–34 | 444 | 457 | 900 |
| 35–39 | 377 | 346 | 723 |
| 40–44 | 277 | 285 | 562 |
| 45–49 | 220 | 223 | 443 |
| 50–54 | 212 | 240 | 452 |
| 55–59 | 152 | 190 | 343 |
| 60–64 | 110 | 131 | 242 |
| 65–69 | 50 | 77 | 127 |
| 70–74 | 15 | 25 | 40 |
| 75+ | 15 | 24 | 39 |
| **Total** | **5,547** | **5,466** | **11,015** |

*Source: SPC SDD.*

### BIRTHS

*Table A2: Total number of births by age of mothers in age groups, 2015–2017*

| Age group | Number | % | Redistributed births[a] | % |
|---|---|---|---|---|
| < 15 | 2 | 0.2 | 2 | 0.2 |
| 15–19 | 135 | 13.2 | 137 | 13.4 |
| 20–24 | 266 | 26.0 | 269 | 26.4 |
| 25–29 | 312 | 30.5 | 316 | 30.9 |
| 30–34 | 199 | 19.5 | 202 | 19.7 |
| 35–39 | 72 | 7.0 | 73 | 7.1 |
| 40–44 | 23 | 2.3 | 23 | 2.3 |
| 45+ | 0 | – | 0 | 0.0 |
| Not stated | 13 | 1.3 | – | – |
| **Total** | **1,022** | **100** | **1,022** | **100** |

*[a]Redistributed births for mothers where ages were "not stated".*

## DEATHS

*Table A3: Total number of deaths by sex and specific age groups, 2015–2017*

| Age groups | Males | Females | Total |
|---|---|---|---|
| *< 28 days* | *6* | *14* | *20* |
| *> 28 days to < 1 year* | *2* | *4* | *6* |
| *1–4* | *2* | *2* | *4* |
| **Total 0–4** | **10** | **20** | **30** |
| 5–9 | 2 | 0 | 2 |
| 10–14 | 1 | 1 | 2 |
| 15–19 | 6 | 1 | 7 |
| 20–24 | 6 | 3 | 9 |
| 25–29 | 7 | 2 | 9 |
| 30–34 | 8 | 4 | 12 |
| 35–39 | 8 | 7 | 15 |
| 40–44 | 18 | 6 | 24 |
| 45–49 | 9 | 4 | 13 |
| 50–54 | 19 | 16 | 35 |
| 55–59 | 15 | 19 | 34 |
| 60–64 | 13 | 14 | 27 |
| 65–69 | 11 | 23 | 34 |
| 70–74 | 3 | 5 | 8 |
| 75–79 | 7 | 5 | 12 |
| 80–84 | 5 | 3 | 8 |
| 85+ | 1 | 2 | 3 |
| **Total** | **149** | **135** | **284** |

*Table A4: Age-specific mortality rate (deaths per 1000 people) by sex and period, 2008–2017*

| 5-year age groups | 2008–2010 | | | 2011–2013 | | | 2015–2017 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Both sexes | Males | Females | Both sexes | Males | Females | Both sexes |
| 0–4 | 13.2 | 7.5 | 10.3 | 5.9 | 3.4 | 4.8 | 4.0 | 8.3 | 6.1 |
| 5–9 | 0.6 | 1.2 | 0.9 | 0.6 | 0.0 | 0.3 | 0.8 | 0.0 | 0.4 |
| 10–14 | 0.6 | 0.0 | 0.3 | 1.2 | 0.6 | 0.9 | 0.6 | 0.6 | 0.6 |
| 15–19 | 1.8 | 0.7 | 1.3 | 1.4 | 0.8 | 1.1 | 3.8 | 0.7 | 2.3 |
| 20–24 | 0.6 | 0.0 | 0.3 | 2.6 | 2.0 | 2.6 | 4.6 | 2.5 | 3.6 |
| 25–29 | 1.4 | 2.8 | 2.1 | 4.7 | 3.9 | 4.3 | 5.1 | 1.4 | 3.2 |
| 30–34 | 3.5 | 1.9 | 2.7 | 7.0 | 3.4 | 5.2 | 6.0 | 2.9 | 4.4 |
| 35–39 | 6.7 | 2.4 | 4.6 | 11.2 | 3.2 | 7.3 | 7.1 | 6.7 | 6.9 |
| 40–44 | 7.4 | 16.3 | 11.7 | 13.3 | 8.1 | 10.7 | 21.6 | 7.0 | 14.2 |
| 45–49 | 19.4 | 8.7 | 13.6 | 18.1 | 11.7 | 14.8 | 13.6 | 6.0 | 9.8 |
| 50–54 | 32.2 | 17.3 | 24.3 | 37.6 | 28.9 | 32.9 | 29.8 | 22.2 | 25.8 |
| 55–59 | 29.5 | 30.6 | 30.1 | 28.6 | 25.5 | 26.9 | 32.8 | 33.3 | 33.1 |
| 60–64 | 74.1 | 11.0 | 43.2 | 52.6 | 16.8 | 32.4 | 39.2 | 35.5 | 37.2 |
| 65–69 | 93.1 | 53.4 | 73.2 | 95.2 | 65.0 | 77.3 | 73.1 | 99.6 | 89.2 |
| 70+ | 173.2 | 68.6 | 116.4 | 93.8 | 87.3 | 90.1 | 166.7 | 84.8 | 139.2 |

*Note: Data for 2014 was not available during analysis.*

*Table A5: Life tables: Total population, 2015–2017*

| Age interval | Lower age interval value (x) | Years in interval | Linearity adjustment | Reported pop/births | Adjusted deaths | Mortality rate | Probability of dying | Probability of surviving | Pop surviving (expected) | Deaths (expected) | Years lived in interval | Cumulative yrs lived in interval | LE: Life expectancy | CIs for life expectancy | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Normal approx binom | |
| (years) | | nx | ax | Nx | d(adj) | mx | qx | px | lx | dx | Lx | Tx | ex | L 95% CI | U 95% CI |
| < 1 | 0 | 1 | 0.1 | 321.0 | 8.7 | 0.02700 | 0.02636 | 0.97364 | 100,000 | 2636 | 97,627.7 | 5,944,457 | 59.4 | 56.6 | 62.3 |
| 1–4 | 1 | 4 | 0.5 | 1324.0 | 1.3 | 0.00101 | 0.00402 | 0.99598 | 97,364 | 391 | 388,673.8 | 5,846,829 | 60.1 | 57.4 | 62.7 |
| 5–9 | 5 | 5 | 0.5 | 1578.7 | 0.7 | 0.00042 | 0.00211 | 0.99789 | 96,973 | 205 | 484,352.4 | 5,458,155 | 56.3 | 53.6 | 59.0 |
| 10–14 | 10 | 5 | 0.5 | 1141.6 | 0.7 | 0.00058 | 0.00292 | 0.99708 | 96,768 | 282 | 483,135.7 | 4,973,803 | 51.4 | 48.7 | 54.1 |
| 15–19 | 15 | 5 | 0.5 | 1012.4 | 2.3 | 0.00230 | 0.01146 | 0.98854 | 96,486 | 1,106 | 479,666.5 | 4,490,667 | 46.5 | 43.9 | 49.2 |
| 20–24 | 20 | 5 | 0.5 | 835.7 | 3.0 | 0.00359 | 0.01779 | 0.98221 | 95,381 | 1,697 | 472,661.1 | 4,011,001 | 42.1 | 39.5 | 44.6 |
| 25–29 | 25 | 5 | 0.5 | 929.7 | 3.0 | 0.00323 | 0.01601 | 0.98399 | 93,684 | 1,499 | 464,670.7 | 3,538,340 | 37.8 | 35.3 | 40.3 |
| 30–34 | 30 | 5 | 0.5 | 900.3 | 4.0 | 0.00444 | 0.02197 | 0.97803 | 92,184 | 2,025 | 455,858.3 | 3,073,669 | 33.3 | 30.9 | 35.8 |
| 35–39 | 35 | 5 | 0.5 | 722.8 | 5.0 | 0.00692 | 0.03400 | 0.96600 | 90,159 | 3,065 | 443,131.3 | 2,617,811 | 29.0 | 26.6 | 31.5 |
| 40–44 | 40 | 5 | 0.5 | 562.3 | 8.0 | 0.01423 | 0.06870 | 0.93130 | 87,094 | 5,983 | 420,510.7 | 2,174,679 | 25.0 | 22.6 | 27.3 |
| 45–49 | 45 | 5 | 0.5 | 443.0 | 4.3 | 0.00978 | 0.04774 | 0.95226 | 81,111 | 3,872 | 395,873.0 | 1,754,169 | 21.6 | 19.4 | 23.9 |
| 50–54 | 50 | 5 | 0.5 | 452.5 | 11.7 | 0.02578 | 0.12111 | 0.87889 | 77,239 | 9,355 | 362,806.1 | 1,358,296 | 17.6 | 15.4 | 19.8 |
| 55–59 | 55 | 5 | 0.5 | 342.6 | 11.3 | 0.03309 | 0.15279 | 0.84721 | 67,884 | 10,372 | 313,490.0 | 995,489.4 | 14.7 | 12.5 | 16.8 |
| 60–64 | 60 | 5 | 0.5 | 241.7 | 9.0 | 0.03724 | 0.17033 | 0.82967 | 57,512 | 9796 | 263,071.0 | 681,999.4 | 11.9 | 9.8 | 13.9 |
| 65–69 | 65 | 5 | 0.5 | 127.1 | 11.3 | 0.08918 | 0.36460 | 0.63540 | 47,716 | 17,397 | 195,088.0 | 418,928.4 | 8.8 | 6.7 | 10.9 |
| 70–74 | 70 | 5 | 0.5 | 40.0 | 2.7 | 0.06665 | 0.28567 | 0.71433 | 30,319 | 8661 | 129,941.3 | 223,840.4 | 7.4 | 5.4 | 9.4 |
| ≥ 75 | 75 | 10 | 0.5 | 39.0 | 7.7 | 0.19679 | 1 | 0 | 21,658 | 21,658 | 93,899.1 | 93,899.11 | 4.3 | | |

*Table A6: Life tables: Male population, 2015–2017*

| Age interval | Lower age interval value (x) | Years in interval | Linearity adjustment | Reported pop/births | Adjusted deaths | Mortality rate | Probability of dying | Probability of surviving | Pop surviving (expected) | Deaths (expected) | Years lived in interval | Cumulative yrs lived in interval | LE: Life expectancy | CIs for life expectancy | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Normal approx binom | |
| (years) | | nx | ax | Nx | d(adj) | mx | qx | px | lx | dx | Lx | Tx | ex | L 95% CI | U 95% CI |
| < 1 | 0 | 1 | 0.1 | 163.7 | 2.7 | 0.01629 | 0.01606 | 0.9839446 | 100,000 | 1606 | 98,555.0 | 5,792,853.00 | 57.9 | 53.8 | 62.0 |
| 1–4 | 1 | 4 | 0.5 | 674.5 | 0.7 | 0.00099 | 0.00395 | 0.9960543 | 98,394 | 388 | 392,801.4 | 5,694,298.00 | 57.9 | 53.9 | 61.9 |
| 5–9 | 5 | 5 | 0.5 | 853.6 | 0.7 | 0.00078 | 0.00390 | 0.9961028 | 98,006 | 382 | 489,076.3 | 5,301,497.00 | 54.1 | 50.1 | 58.1 |
| 10–14 | 10 | 5 | 0.5 | 562.1 | 0.3 | 0.00059 | 0.00296 | 0.9970395 | 97,624 | 289 | 487,398.8 | 4,812,421.00 | 49.3 | 45.3 | 53.3 |
| 15–19 | 15 | 5 | 0.5 | 524.6 | 2.0 | 0.00381 | 0.01888 | 0.9811195 | 97,335 | 1,838 | 482,082.0 | 4,325,022.00 | 44.4 | 40.5 | 48.4 |
| 20–24 | 20 | 5 | 0.5 | 433.9 | 2.0 | 0.0046 | 0.02279 | 0.9772145 | 95,498 | 2,176 | 472,047.7 | 3,842,940.00 | 40.2 | 36.4 | 44.1 |
| 25–29 | 25 | 5 | 0.5 | 461.3 | 2.3 | 0.00506 | 0.02497 | 0.975026 | 93,322 | 2,331 | 460,781.3 | 3,370,892.00 | 36.1 | 32.3 | 39.9 |
| 30–34 | 30 | 5 | 0.5 | 443.6 | 2.7 | 0.00601 | 0.02961 | 0.9703853 | 90,991 | 2,695 | 448,218.1 | 2,910,111.00 | 32.0 | 28.3 | 35.7 |
| 35–39 | 35 | 5 | 0.5 | 376.5 | 2.7 | 0.00708 | 0.03480 | 0.965204 | 88,296 | 3,072 | 433,800.5 | 2,461,893.00 | 27.9 | 24.2 | 31.5 |
| 40–44 | 40 | 5 | 0.5 | 277.4 | 6.0 | 0.02163 | 0.10261 | 0.8973903 | 85,224 | 8,745 | 404,257.6 | 2,028,092.00 | 23.8 | 20.2 | 27.4 |
| 45–49 | 45 | 5 | 0.5 | 220.2 | 3.0 | 0.01362 | 0.06587 | 0.9341275 | 76,479 | 5,038 | 369,800.9 | 1,623,835.00 | 21.2 | 17.8 | 24.7 |
| 50–54 | 50 | 5 | 0.5 | 212.5 | 6.3 | 0.02981 | 0.13872 | 0.8612849 | 71,441 | 9,910 | 332,431.3 | 1,254,034.00 | 17.6 | 14.2 | 20.9 |
| 55–59 | 55 | 5 | 0.5 | 152.2 | 5.0 | 0.03285 | 0.15178 | 0.8482226 | 61,531 | 9,339 | 284,308.7 | 921,602.50 | 15.0 | 11.6 | 18.3 |
| 60–64 | 60 | 5 | 0.5 | 110.4 | 4.3 | 0.03924 | 0.17868 | 0.8213157 | 52,192 | 9,326 | 237,646.2 | 637,293.80 | 12.2 | 8.9 | 15.6 |
| 65–69 | 65 | 5 | 0.5 | 50.2 | 3.7 | 0.07311 | 0.30907 | 0.6909281 | 42,866 | 13,249 | 181,209.5 | 399,647.60 | 9.3 | 5.9 | 12.7 |
| 70–74 | 70 | 5 | 0.5 | 15.0 | 1.0 | 0.06667 | 0.28571 | 0.7142857 | 29,618 | 8462 | 126,932.2 | 218,438.10 | 7.4 | 4.1 | 10.6 |
| ≥ 75 | 75 | 7 | 0.5 | 15.0 | 4.3 | 0.28667 | 1 | 0 | 21,155 | 21,155 | 91,505.9 | 91,505.87 | 4.3 | | |

*Table A7: Life tables: Female population, 2015–2017*

| Age interval | Lower age interval value (x) | Years in interval | Linearity adjustment | Reported pop/births | Adjusted deaths | Mortality rate | Probability of dying | Probability of surviving | Pop surviving (expected) | Deaths (expected) | Years lived in interval | Cumulative yrs lived in interval | LE: Life expectancy | CIs for life expectancy | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Normal approx | binom |
| (years) | | nx | ax | Nx | d(adj) | mx | qx | px | lx | dx | Lx | Tx | ex | L 95% CI | U 95% CI |
| < 1 | 0 | 1 | 0.1 | 156.8 | 6.0 | 0.03827 | 0.03699 | 0.9630074 | 100,000 | 3,699 | 96,670.70 | 6,121,005.00 | 61.2 | 57.4 | 65.1 |
| 1–4 | 1 | 4 | 0.5 | 649.3 | 0.7 | 0.00103 | 0.00410 | 0.9959012 | 96,301 | 395 | 384,413.50 | 6,024,334.00 | 62.6 | 59.0 | 66.1 |
| 5–9 | 5 | 5 | 0.5 | 725.1 | 0.0 | 0.00000 | 0.00000 | 1 | 95,906 | – | 479,530.10 | 5,639,921.00 | 58.8 | 55.3 | 62.3 |
| 10–14 | 10 | 5 | 0.5 | 579.5 | 0.3 | 0.00058 | 0.00287 | 0.997128 | 95,906 | 275 | 478,841.50 | 5,160,391.00 | 53.8 | 50.3 | 57.3 |
| 15–19 | 15 | 5 | 0.5 | 487.7 | 0.3 | 0.00068 | 0.00341 | 0.9965887 | 95,631 | 326 | 477,337.30 | 4,681,549.00 | 49.0 | 45.5 | 52.4 |
| 20–24 | 20 | 5 | 0.5 | 401.9 | 1.0 | 0.00249 | 0.01236 | 0.9876352 | 95,304 | 1,178 | 473,575.80 | 4,204,212.00 | 44.1 | 40.7 | 47.5 |
| 25–29 | 25 | 5 | 0.5 | 468.3 | 0.7 | 0.00142 | 0.00709 | 0.9929078 | 94,126 | 668 | 468,960.80 | 3,730,636.00 | 39.6 | 36.3 | 42.9 |
| 30–34 | 30 | 5 | 0.5 | 456.7 | 1.3 | 0.00292 | 0.01449 | 0.9855081 | 93,458 | 1,354 | 463,906.00 | 3,261,675.00 | 34.9 | 31.6 | 38.2 |
| 35–39 | 35 | 5 | 0.5 | 346.3 | 2.3 | 0.00674 | 0.03313 | 0.966868 | 92,104 | 3,052 | 452,891.00 | 2,797,769.00 | 30.4 | 27.2 | 33.6 |
| 40–44 | 40 | 5 | 0.5 | 284.9 | 2.0 | 0.00702 | 0.03449 | 0.9655067 | 89,052 | 3,072 | 437,582.80 | 2,344,878.00 | 26.3 | 23.3 | 29.4 |
| 45–49 | 45 | 5 | 0.5 | 222.8 | 1.3 | 0.00598 | 0.02948 | 0.9705203 | 85,981 | 2,535 | 423,566.80 | 1,907,295.00 | 22.2 | 19.2 | 25.1 |
| 50–54 | 50 | 5 | 0.5 | 240.0 | 5.3 | 0.02222 | 0.10525 | 0.8947465 | 83,446 | 8,783 | 395,272.60 | 1,483,729.00 | 17.8 | 14.9 | 20.6 |
| 55–59 | 55 | 5 | 0.5 | 190.3 | 6.3 | 0.03327 | 0.15359 | 0.8464053 | 74,663 | 11,468 | 344,645.50 | 1,088,456.00 | 14.6 | 11.8 | 17.3 |
| 60–64 | 60 | 5 | 0.5 | 131.3 | 4.7 | 0.03555 | 0.16323 | 0.8367653 | 63,195 | 10,316 | 290,186.80 | 743,810.40 | 11.8 | 9.1 | 14.5 |
| 65–69 | 65 | 5 | 0.5 | 76.9 | 7.7 | 0.09965 | 0.39888 | 0.6011239 | 52,880 | 21,092 | 211,666.70 | 453,623.60 | 8.6 | 5.9 | 11.2 |
| 70–74 | 70 | 5 | 0.5 | 25.0 | 1.5 | 0.05880 | 0.25632 | 0.7436792 | 31,787 | 8148 | 138,566.50 | 241,956.90 | 7.6 | 5.2 | 10.1 |
| ≥ 75 | 75 | 15 | 0.5 | 24.0 | 3.3 | 0.13750 | 1 | 0 | 23,639 | 23,639 | 103,390.40 | 103,390.40 | 4.4 | | |

# Appendix 2: Standard tabulation of cause of death from the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10, 2010 edition)

## Mortality Tabulation List 1; General Mortality

| 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 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 and 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 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 tubulo-interstitial 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 | Severe acute respiratory syndrome [SARS] | U04 |

## Appendix 3: Key concepts and definitions

**Adult mortality:** The probability of dying between the ages of 15 of 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 (ASFR):** The number of births occurring to mothers of a certain age group per 1000 women in that age group in a given period of time.

**Age-specific mortality rate (ASMR):** The number of deaths per 1000 people of a given age group in a given time period.

**Age-standardised death rates (ASDR):** 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 population.

**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 one per 1000 live births in a given period.

**Life expectancy (LE):** 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 aged less than 28 days per 1000 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 (U5M):** The number of deaths in children under age five per 1000 live births in a given period.

## Appendix 4: WHO World Standard Population Distribution

*Table 4: WHO World Standard Population Distribution (%) based on world average population between 2000 and 2025*

| Age group | World average 2000–2025 |
|---|---|
| 0-4 | 8.86 |
| 5–9 | 8.69 |
| 10–14 | 8.60 |
| 15–19 | 8.47 |
| 20–24 | 8.22 |
| 25–29 | 7.93 |
| 30–34 | 7.61 |
| 35–39 | 7.15 |
| 40–44 | 6.59 |
| 45–49 | 6.04 |
| 50–54 | 5.37 |
| 55–59 | 4.55 |
| 60–64 | 3.72 |
| 65–69 | 2.96 |
| 70–74 | 2.21 |
| 75–79 | 1.52 |
| 80–84 | 0.91 |
| 85–89 | 0.44 |
| 90–94 | 0.15 |
| 95–99 | 0.04 |
| 100+ | 0.005 |
| **Total** | **100.00** |

*From: Age standardization of rates: A new WHO standard, GPE Discussion Paper Series: No. 31, EIP/GPE/EBD, World Health Organization, 2001.*

## Appendix 5: Birth and death registration processes

**Birth registration**

Most births on the island occur in the main hospital, or, on the rare occasions where it takes place outside the hospital, both mother and child are generally taken to the hospital immediately afterwards. Once a baby is born, a birth notice is issued by the hospital to the parent(s) containing the relevant information for registration at the Registry of Births, Deaths and Marriages. The parent(s) are required to present the birth notification to the Civil Registration Office. At the Civil Registration Office, the event is entered into the registry databases (i.e. computer Excel sheet and the register book). There are two separate registrations databases maintained for locals and non-Nauruans.

High-risk pregnancies – those with medical complications that cannot be dealt with on island – may be referred overseas. Additionally, a significant proportion of mothers (those who can afford to) also travel overseas to give birth. These events are not captured through the health system but can be recorded at the Civil Registration Office upon presentation of the overseas birth certificate.

Birth certificates are not issued as a routine part of the initial registration process but upon request. A birth certificate costs AUD 10.

**Death registration**

Once a person is deceased, a death notice is issued by the doctor who attended to the person before they died/upon death. The death notice is shared with the Civil Registration Office. The Civil Registration Office contacts the family (i.e. the person authorised to be an informant for death registration under the Funeral Burial and Cremation Act 2017) to register. The Civil Registration Office enters the event into the registry databases, which is a computer Excel sheet and a register book. There are two separate registrations for locals and non-Nauruans.

**Cause-of-death data**

In general Cause-of-death data is collected through medical certification of death. Nauru uses a non-standard format on the certificate with an additional line labelled as “cause of death” above the standard sequence of Part I and Part II as outlined in the ICD-10v2. The ICD requires that doctors complete the certificate with a plausible sequence of death listed on Part II.

Data on cause of death is collated by the Health Information System officer directly from the medical certificates but is entered into the spreadsheet with Lines C and D of Part I condensed into a single column. The cause of death is currently coded from a combination of the additional “cause-of-death” line and the first line of the certificate depending on how it has been completed.

Cause of death information included in this report are sourced from the Civil Registry Office and coded to the ICD-10. The Civil Registry Office does not store all information recorded on the death certificate by the certifying practitioner. The cause of death information may differ from statistics recorded by the Nauru Health Information Unit.