



THE KILIKILI TEFUA PROJECT

*Utilising birth and death data
to identify gendered registration
and health outcomes in Tonga*



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CONTENTS

Acknowledgements.....	vi	Chapter 2. Death data and all-cause mortality statistics	15
Summary	vii	2.1. Registration and reporting outcomes	15
Key findings.....	viii	2.1.1. Death records by sex	15
1.1. Data quality.....	viii	2.1.2. Death records by source category	15
Data inconsistencies.....	viii	2.1.3. Death records by source category and sex... ..	16
Missing data.....	viii	2.2. Health outcomes.....	16
Reporting and registration outcomes.....	ix	2.2.1. Age-sex distribution of deaths.....	16
Births.....	ix	2.2.2. Neonatal, infant, and child mortality.....	17
Deaths	x	Chapter 3. Cause-specific mortality data and statistics	19
Cause of death data.....	xi	3.1. Registration and reporting outcomes	19
Health outcomes.....	xii	3.1.1. Ill-defined causes of death	19
Births and fertility statistics.....	xii	3.1.2. Ill-defined causes of death by type.....	19
Deaths and mortality statistics.....	xii	3.2. Health outcomes.....	20
Cause of death	xiii	3.2.1. Broad causes of death	20
Looking ahead: Strengthening gendered analyses	xiv	3.2.2. Broad causes of death by age and sex.....	21
Background	1	3.2.3. Leading causes of death	22
Utilising birth and death data to identify gendered registration and health outcomes	1	Chapter 4. Looking ahead: Strengthening gendered analyses.....	24
Gender in the Kingdom of Tonga	2	4.1. Births	24
Methods	4	4.1.1. Births by place of usual residence	24
Data sources.....	4	4.1.2. Births attended by skilled health personnel	24
Data analysis	4	4.1.3. Intersectionality	25
Data quality checks	4	4.2. Deaths	26
Data inconsistencies.....	4	4.2.1. Deaths by source and sex	26
Missing data	5	4.2.2. Deaths by source, age, and sex.....	27
Place of occurrence of birth.....	5	4.2.3. Deaths by place and island of occurrence....	28
Age of the mother	6	4.2.4. Deaths by place of usual residence	29
Age and sex of the decedent.....	6	4.2.5. Deaths by cause and place of usual residence.	29
Age, sex, and cause of death of the decedent.....	7	4.2.6. Intersectionality.....	30
Place of occurrence of death.....	8	Annex 1. Statistical tables.....	32
Chapter 1. Birth data and fertility statistics	10		
1.1. Registration and reporting outcomes	10		
1.1.1. Birth records by sex	10		
1.1.2. Birth records by source category	10		
1.1.3. Birth records by source category and sex.....	11		
1.1.4. Births by place and island of occurrence.....	11		
1.2. Health outcomes.....	12		
1.2.1. Sex ratio at birth.....	12		
1.2.2. Age-specific fertility rates	13		
1.2.3. Adolescent fertility	13		

FIGURES

Figure 1. Population characteristics by sex, 2022, Tonga.....	2	Figure 19. Proportion of death records by source category, Tonga, 2020–2024.....	16
Figure 2. Extract of unit record data showing the two variables “MOH_Born_in_hospital” (born in hospital) and “MOH_Name_of_Hospital” (name of hospital), Tonga.....	5	Figure 20. Proportion of female death records by source category, 2020–2024, Tonga.....	16
Figure 3. Extract of unit record birth data showing missing data for place of occurrence (MOH_Born_in_Hospital) and potential data source (MOJ_POB), Tonga.....	6	Figure 21. Age-sex distribution of deaths, 2020–2024, Tonga.....	17
Figure 4. Proportion of birth records missing age of the mother, 2013–2024, Tonga.....	6	Figure 22. Number of child deaths by broad age group, 2013–2024, Tonga.....	18
Figure 5. Proportion of death records missing age of the decedent, 2013–2024, Tonga.....	6	Figure 23. Age-sex distribution of child (<5 years) deaths by sex, 2013–2024, Tonga.....	18
Figure 6. Death records missing age of the decedent by sex, 2020–2024, Tonga.....	7	Figure 24. Proportion of death records with an ill-defined cause of death by sex, 2013–2024, Tonga.....	19
Figure 7. Proportion of death records with a medically certified underlying cause of death by sex, 2013–2024, Tonga.....	7	Figure 25. Proportion of ill-defined causes of death by age group and sex, 2020–2024, Tonga.....	19
Figure 8. Proportion of death records with usable sex, age, and underlying cause of death data, 2020–2024, Tonga.....	7	Figure 26. Proportion of deaths by broad cause of death group, before and after redistribution, 2020–2024, Tonga.....	21
Figure 9. Proportion of death records missing cause of death by source, 2020–2024, Tonga.....	8	Figure 27. Age-sex distribution of deaths by broad cause of death group (including ill-defined), 2020–2024, Tonga.....	22
Figure 10. Extract of unit record data showing the variable “MOJ_Death_Place” (place of occurrence of death), Tonga.....	8	Figure 28. Extract of unit record data showing the variable “MOH_Usual_Residence” (place of usual residence of the mother), Tonga.....	24
Figure 11. Extract of unit record death data showing data on place of occurrence as recorded by the Ministry of Health (“Place.of.death.island.group” and ‘Place.of.death”) and potential data for cross-validation from the Ministry of Justice (“MOJ_Death_Place”).....	9	Figure 29. Extract of unit record data for the variable “Attendance.at.Birth.Cat” (category of person in attendance at birth), Tonga.....	25
Figure 12. Number of live births by sex of newborn, 2013–2024, Tonga.....	10	Figure 30. Proportion of births among unmarried parents at time of birth registration and place of occurrence, 2020–2024, Tonga.....	25
Figure 13. Proportion of birth records by source category, 2020–2024, Tonga.....	11	Figure 31. Death records by source, 2013–2024, Tonga.....	26
Figure 14. Proportion of female birth records by source category, 2020–2024, Tonga.....	11	Figure 32. Age-sex distribution of female deaths by data source, 2020–2024, Tonga.....	27
Figure 15. Sex ratio at birth, 2013–2024, Tonga.....	12	Figure 33. Age-sex distribution of male deaths by data source, 2020–2024, Tonga.....	28
Figure 16. Age-specific fertility rate (ASFR), 2013–2024, Tonga.....	13	Figure 34. Proportion of deaths by sex, and island and place of occurrence, 2020–2024, Tonga.....	29
Figure 17. Proportion of births among adolescent mothers (red line) and proportion of birth records missing age (blue bars), 2013–2024, Tonga.....	14	Figure 35. Extract of unit record data showing the variable “Residence_Tongan” (place of usual residence of the decedent), Tonga.....	29
Figure 18. Number of death records by sex of decedent, 2013–2024, Tonga.....	15	Figure 36. Ten leading causes of death by place of occurrence (island group), both sexes, 2013–2018, Tonga.....	30
		Figure 37. Age-sex distribution of deaths by place of occurrence of death, 2020–2024, Tonga.....	31

TABLES

Table 1. Recorded maternal deaths, 2013–2024, Tonga	4	Table A1.4 Number of proportion of births by sex and source category, Tonga, 2020–2024	33
Table 2. Number and proportion of non-matched birth records by sex, Tonga, 2020–2024	5	Table A1.5 Number and proportion of deaths by sex and data source, Tonga, 2013–2024	33
Table 3. Number and proportion of non-matched death records by sex, Tonga, 2020–2024	5	Table A1.6 Number and proportion of deaths by source category, Tonga, 2020–2024	34
Table 4. Number of births by place and island of occurrence, 2013–2024, Tonga	12	Table A1.7 Number of proportion of deaths by sex and source category, Tonga, 2020–2024	34
Table 5. Number and proportion of ill-defined causes of death by type, 2020–2024, Tonga	20	Table A1.8 Number of deaths by source	35
Table 6. Number and proportion of ill-defined causes of death by severity, 2020–2024, Tonga	20	Table A1.9 Number of deaths with an ill-defined cause of death by sex, 2013–2024	35
Table 7. Top 10 causes of death, females, before and after redistribution of ill-defined causes, 2020–2024, Tonga	23	Table A1.10 Number and proportion of deaths by broad cause group and sex, 2020–2024	35
Table 8. Top 10 causes of death, males, before and after redistribution of ill-defined causes, 2020–2024, Tonga	23	Table A1.11 Leading causes of death by ICD chapter, all ages, both sexes, 2020–2024	36
Table A1.1 Number and proportion of births by sex of newborn, by data source, Tonga, 2013–2024	32	Table A1.12 Leading causes of death by ICD code, all ages, females, 2020–2024	36
Table A1.2 Number and proportion of deaths by sex and age group, by data source, Tonga, 2013–2024	32	Table A1.13 Leading causes of death by ICD code, all ages, males, 2020–2024	37
Table A1.3 Number and proportion of births by source category, Tonga, 2020–2024	33	Table A1.14 Number of deaths by place and island of occurrence	38
		Table A1.15 Number of deaths by sex, age group, and place of occurrence, 2020–2024	39

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SUMMARY

The Government of the Kingdom of Tonga is committed to ensuring that no one is left behind; however, anecdotal evidence suggests certain inequalities persist between girls and boys, and women and men. Utilising health outcome and civil registration data from the Ministry of Health, Ministry of Justice, and Tonga Statistics Department, this project sought to apply a gendered analysis of birth and death data to:

- highlight any inequalities in the civil registration status and health outcomes between girls and boys, and women and men,
- investigate the potential underlying causes behind these inequalities to judge if they were instances of inequity (inequalities that are unfair), and
- provide recommendations on changes to processes and policies to strengthen the collection, analysis and dissemination of data for gendered analyses.

Overall, the project aims to support gender mainstreaming among the core agencies of Tonga's national civil registration and vital statistics (CRVS) system to ensure inclusivity. The project aligns with existing initiatives in Tonga, particularly those relating to improving the quality of mortality and cause of death data and strengthening the civil registration of births and deaths. By including a gender analysis component, the project aimed to significantly strengthen the impact of these initiatives and the routine operations of key government agencies, contributing to Tonga's development objectives and monitoring progress towards the Sustainable Development Goals.

The project took place between October 2024 and September 2025, utilising financial and technical support provided by Vital Strategies through their Bloomberg Philanthropies Data for Health Initiative [Global Grants Program](#) (GGP). The GGP provides support to government partners, through a competitive process, to implement discrete projects that improve the systems that collect, analyse and use data for public health decision-making. Additional support was provided by the Pacific Community (SPC) and Pacific Health Information Support Hub (PHISH), Australian Institute of Health and Welfare (AIHW).

KEY FINDINGS

1.1. Data quality

Data inconsistencies

Finding	Of the five-years of unit record data analysed (2020–2024), 51 birth records were “non-matched by sex” between the two primary data sources, as were 111 death records.
Data action point	During reconciliation, unit records with conflicting information on characteristics of the birth or death should be flagged for follow-up. The Ministry of Health and Ministry of Justice should develop Standard Operating Procedures that clearly outline the steps to follow as part of reconciliation, including other data sources to review as part of triangulation, how the “correct” value will be decided, and how the records will be updated.
Finding	Several records had the variable “name of hospital” completed, despite the previous variable, “born in hospital”, being marked with “no”.
Data action point	Investigate with health staff what rules and procedures they are following when entering data on place of occurrence (hospital, home, etc.) and name of hospital. Clarify any existing standard operating procedures (or develop new ones) to improve standardisation and data quality.
Finding	While birth records in the Ministry of Health database include the variable, “category of person in attendance at birth”, the values appear to be entered as free-form text, which has led to inconsistencies in data entry.
Data action point	The Ministry of Health should consider standardising categories of personnel in line with WHO recommendations (e.g., doctor, nurse, midwife, student, traditional birth attendant, other) and update database entry to drop-down lists (where possible) to minimise data entry errors.

Missing data

Finding	An average of 6% of records were missing age of the mother over the full 12-year period analysed (2013–2024). However, the proportion of records missing mother’s age has steadily increased from 2020, reaching a high of 11% in 2024.
Data action point	As a large proportion of birth records from 2023 and 2024 from the Ministry of Justice are missing data on the age of the mother, further reconciliation with data from the Ministry of Health should be carried out to improve the statistical completeness of the records before further analyses are conducted. To ensure that adolescent mothers (or mothers of any age group) are not being selectively under-reported, records missing the age of the mother should be followed up as close to the point of collection as possible.
Finding	Records from the Ministry of Justice do not have the variable “born in hospital”, as records from health do, reducing the number of records available for analysis by place of occurrence.
Data action point	The statistical completeness of birth records from the Ministry of Health could be enhanced by cross-validating place of birth data from the Ministry of Justice. However, standardisation of place names will need to occur both within and between the two ministries.
Finding	Overall, out of the 3,389 deaths reported or registered during 2020–2024, only 537 had age of the decedent recorded – representing 16% of all deaths.
Data action point	As all death records between 2020–2024 from the Ministry of Justice are missing data on age of the decedent, further reconciliation with data from the Ministry of Health should be carried out to improve the statistical completeness of the records before further analyses are conducted. If not already, the Ministry of Justice should collect data on the age of the decedent (preferably via collecting date of birth) during registration. This will help enhance data quality across databases held by both civil registration and health, by providing another data triangulation point.

Finding	Of the 3,300 death records from 2020–2024, only 71% had data on the sex, age, and cause of death of the decedent – reducing the number of records available for cause-specific mortality analyses to just over 2,400.
Data action point	Additional work on data reconciliation between the two primary data sources is needed before cause of death data is further analysed.
Emerging policy implications	Given the high proportion of death records missing data on the age, sex, and cause of death of the decedent between 2020–2024, this data is not currently robust enough for generating high-quality vital statistics on mortality.

Finding	In 2024, of the 206 registered deaths sourced from the Ministry of Justice that did not have a cause of death, at least 53 were recorded as occurring at a hospital – indicating that a medically certified cause of death may be available.
Data action point	Death records from the Ministry of Justice that are missing data on cause of death should be investigated to see if records are available from the Ministry of Health, especially for deaths that occurred in a hospital or health facility.

Reporting and registration outcomes

Births

Finding	Between 2013 and 2024, the number of births recorded and/or registered in Tonga declined from 2887 to 1771, an apparent decrease of 39% over the period.
Data action point	The apparent decrease in the number of births over the past 12 years should be further investigated to see if this is a “true” trend, or if this reflects under-reporting by the Ministry of Health and/or under-registration by the Ministry of Justice, or a combination of both.
	Birth data from 2023 and 2024 are likely incomplete, and further reconciliation should be carried out between records maintained by the Ministry of Health and Ministry of Justice prior to any further analysis or generation of official vital statistics.

Findings	There was a decrease in the proportion of records saved in both databases (health and civil registration), from 92% in 2020, to 83% in 2024. There was a corresponding increase in the proportion of records only reported by the Ministry of Justice.
	The proportion of records that are only reported by the Ministry of Health – births that have been reported but not registered – have remained relatively stable over the period, at around 6%.
Data action point	The number of birth records only available in civil registration (Ministry of Justice) increased during the 2020–2024 period analysed. The reasons for this should be investigated, as it indicates a greater number of birth records are missing from the Ministry of Health than what would be expected, based on the high proportion of births occurring in a health facility.
Emerging policy implications	The proportion of birth records reported by the Ministry of Health but not registered by the Ministry of Justice has remained relatively stable over the past five years, at around 6%. Understanding the characteristics of these births (age of the mother, place of usual residence, place of occurrence, etc.) will be an important first step in developing any targeted interventions to improve registration completeness.

Finding	Female births appear less likely to be registered than male births. For example, in 2021, of the births that were registered by the Ministry of Justice but not recorded by the Ministry of Health, 61% of the newborns were male.
Data action point	Given the small sample size of this current analysis (699 births over five-years), this finding should be investigated retrospectively (using previous years’ data) and regularly monitored moving forward.
Emerging policy implications	Activities to understand the challenges and barriers around birth registration, and efforts to improve the registration of female births should be implemented, including at the system and community levels.

Finding	Between 2020–2024, over 99% of births occurred in a hospital or health facility in Tongatapu, Vava’u, and Ha’apai, and almost 98% in ‘Eua.
Emerging policy implications	Understanding the characteristics of births that occur in the community or at home (such as age of the mother, place of usual residence, etc.) will be an important first step in developing any targeted interventions to ensure all mothers have access to appropriate maternity services.

Deaths

Finding	The overall trend in the number of reported and/or registered deaths is one of a decrease, from 740 deaths in 2013, to 659 in 2024.
Data action point	The apparent decrease in the number of births over the past 12 years should be further investigated to see if this is a “true” trend, or if this reflects under reporting by the Ministry of Health and/or under-registration by the Ministry of Justice, or a combination of both. Death data from 2023 and 2024 are likely incomplete, and further reconciliation should be carried out between records maintained by the Ministry of Health and Ministry of Justice prior to any further analysis or generation of official vital statistics

Findings	There has been a noticeable decrease in the annual proportion of death records reported in both the Ministry of Health and Ministry of Justice, from 74% in 2020, to 50% in 2024. In 2023 and 2024, over one-third of death records were only available in the Ministry of Justice database, with no corresponding record in the Ministry of Health. The proportion of records that are only reported by the Ministry of Health – deaths that have been reported but not registered – showed considerable annual variation, ranging from 10–21% over the five-year period analysed (2020–2024).
Data action point	The number of death records available in both databases (health and civil registration) substantially decreased between 2020–2024. The general trend was one of more records in the Ministry of Justice, indicating deaths that had been registered, but with no corresponding record with the Ministry of Health. The reasons for this should be investigated, as it indicates a greater number of death records are missing from the Ministry of Health than what would be expected.
Emerging policy implications	The proportion of death records reported by the Ministry of Health but not registered by the Ministry of Justice ranged from 10–21% between 2020–2024. Understanding the characteristics of these deaths (such as age and sex of the decedent, place of usual residence, place of occurrence, etc.) will be an important first step in developing any targeted interventions to improve death registration completeness.

Findings	Compared with births, which have almost universal coverage of hospital-based deliveries, more than half of all deaths occur away from hospitals and health centres, with 54% of deaths occurring in the community setting or at home, 44% occurring in a hospital or health centre, and 2% occurring at “other” locations during 2020–2024. Females are more likely to die in the community setting or at home than males, and this trend is apparent across all the island groups apart from the ‘Eua’s.
Data action point	Deaths should be tabulated by island and place of occurrence, as with births. Additional metadata on where “other” deaths occur may be useful from a policy perspective.
Emerging policy implications	From the limited unit record data available, there appears to be a relationship between place of death and sex, and this should be regularly monitored. As more females appear to die in the community setting or at home, this may explain (in part) why their registration rates are lower and could provide an opportunity for targeted outreach activities. There appears to be a clear relationship between deaths occurring in “other” locations and sex, with males much more likely to have their death recorded as occurring in “other” locations. While these are likely linked with deaths occurring while at sea (drownings, lost at sea, etc.), additional analyses into this may provide useful insights.

Findings	Data indicates that female deaths are less likely to be registered than male deaths. In 2023, for example, of the deaths that were registered by the Ministry of Justice, but not recorded by the Ministry of Health, 61% of the decedents were male.
	Deaths among female newborns and children under one-year-old appear less-likely to be registered than what would be expected, based on the number of death records held by the Ministry of Health for children this age.
	Between the ages of 25 and 44 years old, male deaths are more likely to appear in the Ministry of Justice database than the Ministry of Health. This may be linked to the type of deaths, particularly accidents, which occur away from health facilities, and as such, are generally not captured in datasets maintained by health.
	Between the ages of 50 and 74, a higher proportion of female deaths are being recorded by the Ministry of Health than registered with the Ministry of Justice, indicating a lower likelihood of female deaths being registered among these age groups.
	From age 85 and above, a higher proportion of deaths are registered with the Ministry of Justice than recorded with the Ministry of Health. This likely reflects the increasing proportion of deaths in the community and at home as women age.
Data action point	Given the small sample size of this current analysis, this finding should be investigated retrospectively (using previous years' data) and regularly monitored moving forward.
Emerging policy implications	Registration data indicates that, while deaths among females are more likely to be recorded by the Ministry of Health, they remain less likely to be registered by the Ministry of Justice. Efforts to improve the registration of female deaths should be implemented, including at the systems and community levels.

Findings	The number of child deaths recorded or registered decreased substantially between 2013 and 2024, from an average of around 45 deaths per year, to less than 10 in the later part of the period.
	Deaths among boys less than five-years-old appear less likely to be registered than what would be expected, when compared with the number of death records held by the Ministry of Health for children this age.
Data action point	The apparent decrease in the number of child deaths over the past five years should be further investigated to see if this is a "true" trend, or if this reflects under reporting by the Ministry of Health and/or under-registration by the Ministry of Justice.
	If not already, the Ministry of Health may wish to consider ways of automatically notifying the Ministry of Justice when a child death occurs, to improve registration completeness of these deaths.
	Given the small sample size of this current analysis, this trend should be investigated retrospectively (using previous years' data) and regularly monitored moving forward.
Emerging policy implications	The registration of child deaths is generally regarded as a significant challenge, and it would appear that Tonga's civil registration system is under-registering child deaths. Targeted interventions may need to be developed to improve registration completeness among this age group.

Cause of death data

Findings	Out of the approximate 2300 deaths with cause of death data recorded between 2020–2024, over 400 records (17%) had an ill-defined cause of death.
	The proportion of death records with an ill-defined cause appears to have increased since 2013, from 6–18% for females, and 5–16% for males. Of interest is the higher proportion of female deaths with an ill-defined cause – a consistent feature over the 12 years of data reviewed.
Data action point	Routine data quality audits on medical certification practices should be implemented, if not already in place.
Emerging policy implications	The proportion of deaths with an ill-defined cause of death appears to have increased since 2013, limiting the potential use of this information for policy and planning.

Finding	A similar proportion of deaths among females and males are assigned an ill-defined cause for the youngest (0–4) and oldest (80+) age groups. Among children aged 5–14 years and adults aged 15–59 years, the proportion of deaths among males that are assigned an ill-defined cause is almost double that of females of the same age.
Data action point	Deaths among males aged 5–14 years and 15–59 years appear to be more likely to have an ill-defined cause of death than females of the same age group. Given the small sample size of this current analysis, this trend should be investigated retrospectively (using previous years' data) and regularly monitored moving forward.
Emerging policy implications	While female deaths appear to be more likely to be assigned an ill-defined cause of death than male deaths overall; deaths among adolescent boys and adult males appear more likely to have an ill-defined cause of death than females of the same age group. The reasons behind this should be further investigated, with targeted interventions developed as needed.
Finding	Approximately 68% of ill-defined causes of death were classified as having a “serious” impact on describing the current cause structure of mortality patterns in the population, distorting potential policy decisions. Specific examples of these causes include “sepsis”, “cardiac arrest”, and “senility” – all of which provide no actionable information on the underlying cause of death.
Data action point	Additional capacity building and resourcing for physicians on the medical certification of cause of death is recommended.
Emerging policy implications	A high proportion of ill-defined causes of death were classified as having a “serious” impact on describing the current cause structure of mortality in the population, limiting the use of cause of death data in informing policy decisions.

Health outcomes

Births and fertility statistics

Finding	Based on the 12-years of available data, the sex ratio at birth for Tonga was 110. This means that, on average, 110 male babies are born for every 100 females.
Emerging policy implications	Evidence suggests that Tonga, as with other Pacific nations, has a sex ratio at birth that is higher than the global average.
Finding	Fertility rates among women aged 25–29 years decreased from 190 to 130 babies per 1000 women (in that age group) between 2020 and 2024, while “peak” fertility shifted from women aged 25–29 years, to women aged 30–34 years.
Emerging policy implications	Data indicate both a decline in overall fertility between 2020 and 2024, along with a shift in “peak” fertility from women aged 25–29 years, to women aged 30–34 years. While birth data from 2023 and 2024 are likely incomplete, this shift in fertility is apparent from as early as 2016.
Finding	The proportion of births among adolescent mothers (aged 15–19 years) ranged from 5.9–8.4% over the 12-years of data analysed.
Emerging policy implications	Based on current data, it is likely that the proportion of adolescent mothers has not substantially changed over the past 12 years, and that recent “decreases” are due to incomplete data.

Deaths and mortality statistics

Finding	The distribution of deaths by age and sex in Tonga follows a mostly typical pattern based on global epidemiological and demographic trends, with a lower proportion of deaths among the youngest age groups, and mortality among the youngest age groups (<5 years) showing no significant difference between girls and boys.
Emerging policy implications	Adolescent males account for a slightly higher proportion of deaths than females of the same age. While this is generally associated with higher risk-taking among males in this age group, further investigation into these deaths may be useful as part of developing targeted interventions.

Finding	Data shows a consistently higher proportion of neonatal and infant deaths among females than males over the past 12 years.
Data action point	Given the small sample size of this current analysis, this finding should be investigated retrospectively (using previous years' data) and regularly monitored moving forward.
Findings	For both females and males, the proportion of deaths occurring in the community or at home increases with age, with a corresponding decrease in the proportion of deaths occurring in health facilities. For women and men, over half of all deaths occur in the community or at home from around age 60.
	Deaths occurring in "other" locations, while mostly affecting males, also generally occur among younger age groups.
Emerging policy implications	The proportion of deaths occurring in the community or at home increases with age, with a corresponding decrease in the proportion of deaths occurring in health facilities. For women and men, over half of all deaths occur in the community or at home from around age 60.
	Deaths occurring in "other" locations, while mostly affecting males, also generally occur among younger age groups.

Cause of death

Finding	Based on the input data, approximately 20% of recorded deaths during 2020–2024 were due to infectious diseases, 60% due to NCDs, and 3% external causes, with the remaining 17% assigned an ill-defined cause. Following redistribution, the actual proportion of deaths due to NCDs in Tonga may be as high as 73%.
Emerging policy implications	As many as 73% of deaths in Tonga may be due to non-communicable diseases, highlighting the substantial health burden on the country.
Findings	Mortality in Tonga generally follows the expected pattern, with a higher proportion of deaths due to infectious diseases among the youngest age groups and an increasing proportion of deaths due to NCDs among older adults.
	For both females and males, accident- and injury-related deaths are more common among younger adults, however the relative share of these deaths is larger for males than for females.
	The proportion of deaths with an ill-defined cause, while an issue across all age groups, is particularly problematic among the oldest age groups, from approximately age 75 for females, and 80 for males.
Emerging policy implications	Accident- and injury-related deaths are more common among younger adults, however the relative share of these deaths is larger for males than for females. The proportion of deaths with an ill-defined cause is particularly problematic among the oldest age groups.
Findings	In looking at the leading causes of death for females, the impact of ill-defined causes is noticeable, with eight of the 10 leading causes due to ill-defined causes, including unspecified septicaemia, senility, and unspecified cardiac arrest.
	For males, seven of the top 10 leading causes of death were due to ill-defined causes, including unspecified septicaemia, unspecified cardiac arrest, and cardiogenic shock.
Emerging policy implications	Based on redistributed data, the most probable leading causes of death for females are ischemic heart disease, stroke, and breast cancer. For males, the most probable leading causes of death are ischemic heart disease, stroke, and lung cancer.

Looking ahead: Strengthening gendered analyses

Finding	Birth records in the Ministry of Health database include information on place of usual residence of the mother, however these appear to be at the village level and need to be aggregated “up” to the district, division, and/or island level, to allow for meaningful, intersectional analyses. The use of free-text data entry should be replaced with drop-down data entry.
Data action point	Standardise data entry for place of usual residence of the mother. This should include deciding on what level the data can be reliably disaggregated “down” to and improving data entry processes by using drop-down lists.
Potential policy implications	Once this data on place of usual residence is available, it will allow the Ministry of Health to identify where high-risk pregnancies are taking place (for example, by analysing adolescent fertility), along with analysing any differences in health and reporting outcomes (for example, by analysing births attended by skilled health personnel, or births by registration status).

Finding	Many of the current tabulations and figures presented in Tonga’s Vital Statistics reports lack a focus on intersectionality – that is, variables (such as mother’s age, or place of usual residence) are analysed separately, rather than together.
Potential policy implications	Cross-tabulating civil registration and health data by sex and other variables, will allow for a deeper understanding of potential gender inequalities in Tonga.

Finding	Death records in the Ministry of Health database include information on place of usual residence of the decedent, however these appear to be at the village level and need to be aggregated “up” to the district, division, and/or island level, to allow for meaningful, intersectional analyses.
Data action point	Standardise data entry for place of usual residence of the decedent. This should include deciding on what level the data can be reliably disaggregated “down” to and improving data entry processes through using drop-down lists.
Emerging policy implications	Once this data on place of usual residence is available, it will allow the Ministry of Health to identify any differences in mortality by where people usually live – useful in investigating any potential inequalities or inequities in exposure to risk and access to health services, and ultimately, required when developing targeted health interventions. Data on place of usual residence can also be analysed to determine if there are any differences in reporting outcomes – for example, if certain villages are more or less likely to have their deaths reported or registered, than others.

Finding	In the 2013–2018 Vital Statistics Report, the number of deaths by leading cause of death group and place of occurrence of death (by island group) was presented. Presenting information by place of usual residence is also of importance from a policy perspective, to allow for monitoring differences in mortality by place of usual residence.
Data action point	Providing data on leading causes of death, by sex (where possible), and by place of usual residence is useful information for policy makers when developing health interventions. Given the relatively small numbers of absolute deaths, the data will likely need to be aggregated over several years to ensure reliability.

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BACKGROUND

For more than 20 years the United Nations (UN) have used the concept of gender mainstreaming to describe the inclusion of a gendered perspective into all aspects of public policy – including planning, processes, mechanisms, governance, budgeting and participants. Although applicable across every sector, gender mainstreaming in health is one of the most important strategies in achieving global improvement in population health and wellbeing. Gender mainstreaming in health promotes gender equity and equality in health care, through the integration of a gender perspective into policies and procedures, and the analysis of healthcare services and health outcomes.

Gender mainstreaming is heavily imbedded in all good intersectional frameworks and is based on the acknowledgement of the differences and disparities in health across varying population groups. Gender mainstreaming acknowledges that although often used interchangeably, sex and gender are not the same concept. In relation to health, both the biological sex of an individual and their gender play a significant role in their access to healthcare essentials and to their long-term health status.

Central to gender mainstreaming is an understanding of the differences between gender equality and gender equity. Gender equality is the notion of being valued equally, regardless of sex; and of taking steps to ensure the same opportunities. Gender equity takes this concept further by recognising that women and men have different needs and that sometimes, different treatment is required to ensure equality of opportunity. In relation to public health, these ideas can be expanded as part of an intersectional approach to the improvement of equity in healthcare for all populations.

Gender-responsive health data are critical for generating evidence on best practices and for advancing and informing health policies, which will improve the health of women and families. The minimum requirement for a gender-based

analysis is the availability of sex disaggregated health data.¹ These data are collected in surveys and some routine health information systems. However, many routine systems do not collect sex disaggregated data, or when they are collected, they are not analysed and reported. Even when these data are available, there is a lack of guidance and tools pertaining to conducting gender-based analysis. These analyses aim to illustrate the effects of gender-related factors on the performance of health programs and resulting effects on health status. Standardised, gender-sensitive health indicators exist in some areas, such as gender-based violence, but are lacking in general. The success of health advocates, policymakers, and other stakeholders attempting to reduce gender-based health inequities depends on ready access to quality gender-related health information.

Utilising birth and death data to identify gendered registration and health outcomes

Tonga currently faces challenges due to a lack of detailed analyses on birth and death data by sex and other intersecting factors, which impedes the identification and prioritisation of critical gender gaps and health needs. This gap affects the ability to develop targeted health policies and interventions.

In response, the *kilikili tefua*² project was established. Supported by Vital Strategies as part of the Bloomberg Philanthropies Data for Health Initiative Global Grants Program (GGP), in partnership with the Pacific Community (SPC) and the Pacific Health Information Support Hub (PHISH), the project builds on existing gender equity and health data initiatives by introducing a comprehensive gender analysis of birth and death data.

¹ Bloom S & Arnoff E. *Gender and health data and statistics: An annotated resource guide*. Chapel Hill, NC: MEASURE Evaluation, US Agency for International Development; 2012.

² *Kilikili tefua* refers to the counting of volcanic rocks as part of early population enumeration efforts established in the country over 400 years ago.

The project aimed to:

1. Assess gendered differences in health outcomes and registration status through a comprehensive analysis of birth and death data.
2. Recommend practical policies to address the identified gender gaps and health needs.
3. Improve policies and procedures for the collection, analysis and reporting of birth and death data to measure health outcomes for girls and boys, and women and men.

Gender in the Kingdom of Tonga

The Kingdom of Tonga is spread over 176 islands, with most residents living on the main island of Tongatapu.³ The population is young and mobile. International migration of skilled workers to New Zealand, Australia and the United States of America is significant. The size of the Tongan diaspora is approximately the same as the local Tongan population. In addition, rural-to-urban migration is increasing.

Tonga's health system includes central hospitals, peripheral health centres and community-based services. Key health challenges include rising rates of non-communicable diseases such as diabetes, obesity, heart disease and cancer. Communicable diseases such as tuberculosis, sexually transmitted infections and vaccine-preventable diseases persist. Tonga is vulnerable to climate change impacts and natural disasters. The small population spread across islands strains health service capacity and workforce.⁴

According to the 2021 Population and Housing Census of Tonga, there were over 18,840 private households in the country, comprising a total population of just under 100,180 individuals.⁵ The population is relatively young, with a median age of 22 years for females and 19 years for males. Overall, 51% of the population is female (**Figure 1**). The bulk of households in Tonga (62%) are made up of two adults and children. An estimated 11% of households are women living alone with children, compared to 2% of households composed of men living alone with children.

Figure 1. Population characteristics by sex, 2022, Tonga



Source: Gender and environment survey 2022 report: Kingdom of Tonga. Bangkok: UN Women, Australian Aid, Tonga Statistics Department; 2023. <https://data.unwomen.org/sites/default/files/documents/Publications/2023/Tonga-gender-env-survey.pdf> (accessed 21 August 2025).

According to previous data,⁶ in 66% of Tongan households, women are responsible for feeding, cleaning and providing physical and medical care for children, while in 43% of households they

provide such care for elders and other adults, often in addition to their caring responsibilities for children. Existing data indicates that women also carry the heaviest domestic work burdens,

³ Human resource for health country profiles: Tonga. Sydney: Human Resources for Health Knowledge Hub, University of New South Wales; 2015. <https://www.who.int/tonga/publications-detail/9789290616412> (accessed 27 May 2025).

⁴ World Health Organization: Our work in Tonga. Manila: WHO Regional Office for the Western Pacific Region; 2025. <https://www.who.int/tonga/our-work> (accessed 27 May 2025).

⁵ 2021 Population and Housing Factsheet. Tongatapu: Tonga Statistics Department, Government of Tonga; 2022. <https://tongastats.gov.to/census-2/population-census-3/census-report-and-factsheet/> (accessed 21 August 2025).

⁶ Gender and environment survey 2022 report: Kingdom of Tonga. Bangkok: UN Women, Australian Aid, Tonga Statistics Department; 2023. <https://data.unwomen.org/sites/default/files/documents/Publications/2023/Tonga-gender-env-survey.pdf> (accessed 21 August 2025).

overseeing cooking in 74% of households, cleaning in 75% and shopping for the family in 62%.

In 2022, Tonga completed its first Gender and Environment Survey, which aimed to provide nationally representative and sex-disaggregated statistics across several thematic areas, including household-level data on housing characteristics and individual-level data for women and men respondents.⁷ Individual-level data spanned various themes such as personal attributes, exposure to and experience of disasters and hazards, the impact of climate change, agriculture and land use, and environment-related livelihoods.

While the survey focused on gender and the environment, several findings highlighted potential gender inequalities and inequities, including:

- Women were more likely to report **barriers in accessing medical care** or hygiene products because of a disaster, than men. Rural women faced the most barriers to care and products.
- More women than men experienced **mental health issues** due to disasters.
- Disasters **worsened unpaid care and domestic work burdens** – these increased burdens were disproportionately shouldered by women.
- Infrastructure damage in housing, roads and the electrical grid may have **reduced the safety of many women**.
- Women were more likely to **sacrifice their nutrition** to cope with climate change. As a result of hazards related to climate change, 14% of women and 11% of men ate less as they lacked food or income to buy food.
- Climate change **worsened the health** of more than one in three people, adding to women’s unpaid care work burdens.
- To cope with the increased healthcare burdens brought about by climate change, an estimated 62% of women and 56% of men spent **more time caring for family members**.
- Climate change may be **exacerbating inequalities and feelings of anxiety and stress**, which are known drivers of crime and violence. When asked if they noticed worsening crime in the area where they live or work, 2% of people reported that crime had increased, and 4% of women and 3% of men had heard that

people are now experiencing more violence because of climate change. Similarly, among those engaging in water collection, 17% of women felt unsafe collecting water at least once, compared to 14% of men.

- Engaging in some environment-related livelihoods can **increase the likelihood of contracting disease**. For instance, an estimated 27% of women and 15% of men engaging in mining and quarrying in Tonga experienced health issues because of mining.



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7 Gender and environment survey 2022 report: Kingdom of Tonga.

METHODS

Data sources

Birth, death, and cause of death data were compiled from three sources:

1. Published aggregate data as reported in the 2013–2018 Vital Statistics Report,
2. Published aggregate data as reported in the 2018–2020 Vital Statistics Report, and
3. Unpublished unit record data (from 2020–2024) as provided by the Tonga Statistics Department, sourced from the Ministry of Health and Ministry of Justice (see **Annex Tables A1.1 & A1.2**).

Population data for 2022–2024 was provided by the Tonga Statistics Department, based on provisional projections from the 2021 Census.

Data analysis

For the unit record data, each birth or death record was assigned to one of three “source categories”:

1. Available in both the Ministry of Health and Ministry of Justice databases (the birth or death was both recorded and registered in the same calendar year),
2. Available only in the Ministry of Health database only (the birth or death was recorded, but NOT registered by the civil registry system in the same calendar year), and
3. Available only in the Ministry of Justice database only (the birth or death was registered, but NOT recorded by the health system in the same calendar year).

The proportion of female and male births and deaths were analysed separately for each source category, to investigate any potential reporting biases by sex. Data were primarily analysed using Microsoft Excel. Unit record data on cause of death were analysed using the ANACoD⁸ and ANACONDA⁹ software tools.

A limited number of fertility and mortality

measures were analysed in detail, following the contents of the previous two Vital Statistics reports. Nine maternal deaths were recorded and/or registered during the 12-years of data reviewed (**Table 1**). Given the low absolute number of deaths, no further analyses were conducted.

Table 1. Recorded maternal deaths, 2013–2024, Tonga

Data source	Reference year	Maternal deaths
2013–2018 Vital Statistics Report	2013	2
	2014	1
	2015	1
	2016	2
	2017	1
	2019	—
Unpublished unit record data	2020–2024	2
All sources	2013–2024	9

Table notes: As stated in the 2018–2020 Vital Statistics Report, data on the number of maternal deaths were not available in time for production of the report.

Data quality checks

Data inconsistencies

Over the five years of unit record data analysed, 51 birth records were “non-matched by sex” between the two primary data sources (**Table 2**) as were 111 death records (**Table 3**). In practice, this means the records were assigned “female” by the Ministry of Health but “male” by the Ministry of Justice, and vice versa. After removing these records, the proportion of female births and deaths were analysed separately for each source category, to investigate any potential reporting biases by sex.

There appears to be significant data quality issues in the 2021 death data, with 90 records non-matched by sex – considerably higher than all other years.

⁸ *Analysing Mortality and Causes of Death (ANACoD3), Version 3.0.* World Health Organization. Available at: <https://www.who.int/standards/classifications/classification-of-diseases/services/analysing-mortality-levels-and-causes-of-death>

⁹ *Analysis of Causes of National Deaths for Action (ANACONDA).* The University of Melbourne.

Table 2. Number and proportion of non-matched birth records by sex, Tonga, 2020–2024

Reference year	Ministry of Health	Ministry of Justice		Total non-matched records (%)
		Female	Male	
2020	Female	916	5	8 (0.4)
	Male	3	1,092	
2021	Female	843	9	12 (0.7)
	Male	3	926	
2022	Female	692	5	9 (0.6)
	Male	4	798	
2023	Female	695	6	12 (0.8)
	Male	6	803	
2024	Female	716	9	10 (0.7)
	Male	1	745	

Table 3. Number and proportion of non-matched death records by sex, Tonga, 2020–2024

Reference year	Ministry of Health	Ministry of Justice		Total non-matched records (%)
		Female	Male	
2020	Female	225	1	3 (0.5)
	Male	2	331	
2021	Female	182	35	90 (14.6)
	Male	52	285	
2022	Female	245	3	7 (0.9)
	Male	4	347	
2023	Female	256	8	6 (0.9)
	Male	0	334	
2024	Female	241	5	5 (0.8)
	Male	0	287	

Data action point

During reconciliation, unit records with conflicting information on characteristics of the birth or death should be flagged for follow-up. The Ministry of Health and Ministry of Justice should develop Standard Operating Procedures that clearly outline the steps to follow as part of reconciliation, including other data sources to review as part of triangulation, how the “correct” value will be decided, and how the records will be updated.

For birth records available in the Ministry of Health database, several records had the variable “MOH_Name_of_Hospital” (name of hospital) completed, despite the previous variable, “MOH_Born_in_Hospital” (born in hospital) being marked with “no” (**Figure 2**). This should be followed up to confirm if the birth did (or did not) occur in a hospital, and if

not, to find out what the information in the “name of hospital” is referring to (for example, the hospital that the mother was later referred to, the district where the actual birth occurred, etc.).

Figure 2. Extract of unit record data showing the two variables “MOH_Born_in_hospital” (born in hospital) and “MOH_Name_of_Hospital” (name of hospital), Tonga

MOH_Born_in_Hospital	MOH_Name_of_Hospital
No	Ha'asini
No	Vaini
No	Ovaka
No	
No	Holeva
No	
No	Holonga

Data action point

Investigate with health staff what rules and procedures they are following when entering data on place of occurrence (hospital or not) and name of hospital. Clarify any existing standard operating procedures (or develop new ones) to improve standardisation and data quality.

Missing data

Place of occurrence of birth

Regarding the statistical completeness¹⁰ of specific variables, for birth records that are only available in the Ministry of Justice database, the variable “MOH_Born_in_Hospital” is missing. This means that analysis by place of occurrence cannot be performed. As an option, it may be viable to use data as entered in the column “MOJ_POB” (place of birth) (see **Figure 3**).

¹⁰ In this report, statistical completeness is used to refer to the completeness of specific variables within a record (such as age, sex, or cause of death) that are critical for statistical analysis.

Figure 3. Extract of unit record birth data showing missing data for place of occurrence (MOH_Born_in_Hospital) and potential data source (MOJ_POB), Tonga

MOH_Born_in_Hospital	MOH_Name_of_Hospital	MOJ_POB
		VAIOLA HOSPITAL TOFOA
		PRINCE UELINGATONI NGU HOSPITAL
		VAIOLA HOSPITAL TOFOA
		VAIOLA HOSPITAL TOFOA
		NIU'EIKI HOSPITAL ANGAHA, 'EUA
		PRINCE UELINGATONI NGU HOSPITAL, NEIAFU
		PRINCE UELINGATONI NGU HOSPITAL, NEIAFU
		PRINCE UELINGATONI NGU HOSPITAL, NEIAFU
		PRINCE UELINGATONI NGU HOSPITAL, NEIAFU
		Vaiola Hospital Tofoa

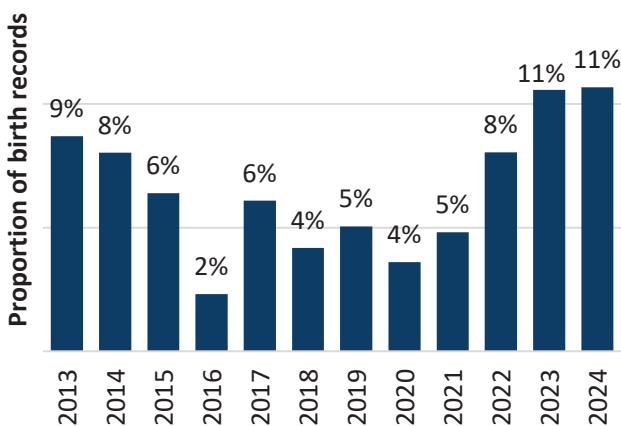
Data action point

The statistical completeness of birth records from the Ministry of Health could be enhanced by cross-validating place of birth data from the Ministry of Justice. However, standardisation of place names will need to occur both within and between the two ministries.

Age of the mother

Data on the number of birth records with and without age of the mother was available from the previous two published Vital Statistics reports, along with the five-years of unit record data analysed. While an average of 6% of records were missing age of the mother over the full 12-year period, as shown in **Figure 4**, the proportion of records missing mother’s age has steadily increased from 2020, reaching a high of 11% in 2024.

Figure 4. Proportion of birth records missing age of the mother, 2013–2024, Tonga



Data action point

As a large proportion of birth records from 2023 and 2024 from the Ministry of Justice are missing data on the age of the mother, further reconciliation with data from the Ministry of Health should be carried out to improve the

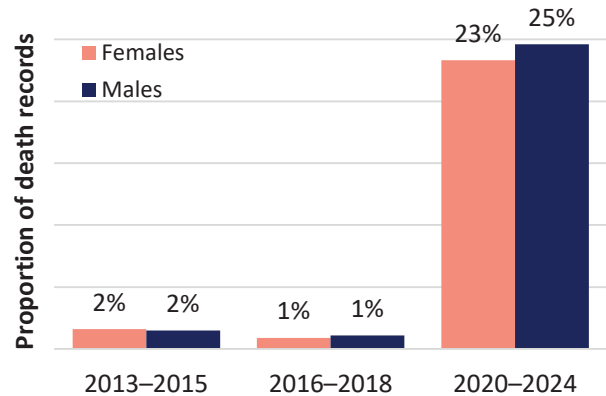
statistical completeness of the records before further analyses are conducted.

To ensure that adolescent mothers (or mothers of any age group) are not being selectively under-reported, records missing the age of the mother should be followed up as close to the point of collection as possible.

Age and sex of the decedent

While aggregate data on the age and sex of decedents was available for 2013–2019 from the previous two vital statistics reports, due to overlapping periods and differing age groups for classification, only deaths from 2020–2024 were analysed in detail. It should be noted that many records from this later period were missing data on the age of the decedent (see **Figure 5**), and as such, interpretation of the results should be done with caution.

Figure 5. Proportion of death records missing age of the decedent, 2013–2024, Tonga

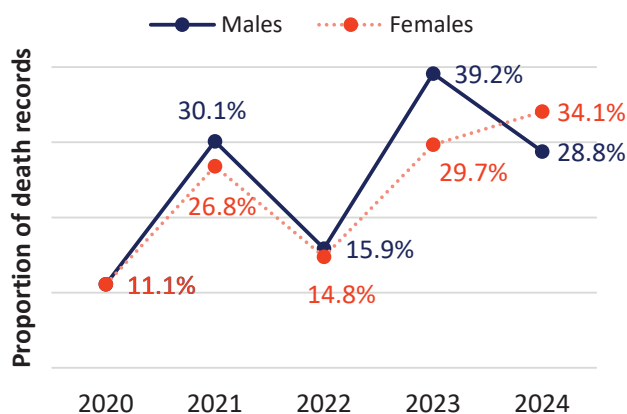


Of the five years of unit record death data analysed, age of the decedent was only available in records provided by the Ministry of Health. This has reduced the number of death records with usable information on age of the decedent – a prerequisite for most mortality analyses. Overall, out of the 3,389 deaths reported or registered during this five-year period, 816 were missing the age of the decedent – representing 24% of all deaths.

As shown in **Figure 6**, between 2020 and 2023, male deaths were slightly more likely to be missing age of the decedent than female deaths, though this appears to have reversed in 2024, with female deaths more likely to be missing the age of the decedent. The proportion of records missing age of the decedent also appears to be increasing over time, from 11–34% for females and 11–29%

for males. While this is considerably higher than in previous periods, more data are needed to confirm any trends.

Figure 6. Death records missing age of the decedent by sex, 2020–2024, Tonga



Recommended data action

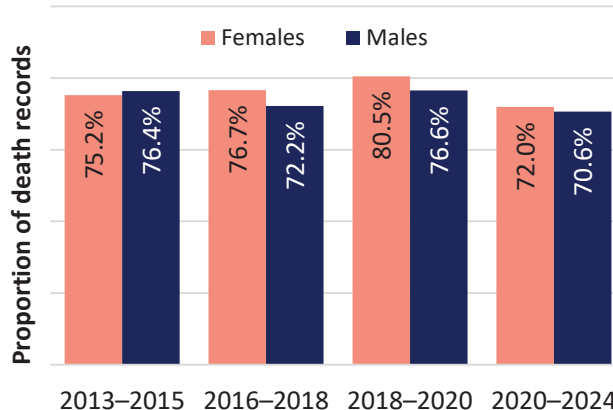
As death records between 2020–2024 from the Ministry of Justice are missing data on age of the decedent, further reconciliation with data from the Ministry of Health should be carried out to improve the statistical completeness of the records before further analyses are conducted.

If not already, the Ministry of Justice should collect data on the age of the decedent (preferably via collecting date of birth) during registration. This will help enhance data quality across databases held by both civil registration and health, by providing another data triangulation point.

Age, sex, and cause of death of the decedent

Over 7,400 deaths were recorded or registered and had a medically certified underlying cause of death (“cause of death”) during the 12-year period reviewed. Given the unequal and overlapping time periods from 2018, trends are difficult to determine. However, the proportion of deaths with a cause of death appears relatively stable over the period, at around 75% of all deaths for females and 74% for males (**Figure 7**).

Figure 7. Proportion of death records with a medically certified underlying cause of death by sex, 2013–2024, Tonga



In looking at unit record data from 2020–2024, only 71% of death records had data on the sex, age, and cause of death of the decedent – reducing the number of records available for cause-specific mortality analyses to just over 2,400. As shown in **Figure 8**, there was minimal difference between females and males in terms of the statistical completeness of the records, which is in line with data from previous years.

Recommended data action

As death records between 2020–2024 from the Ministry of Justice are missing data on the cause of death of the decedent, further reconciliation with data from the Ministry of Health should be carried out to improve the statistical completeness of the records before further analyses are conducted.

Figure 8. Proportion of death records with usable sex, age, and underlying cause of death data, 2020–2024, Tonga

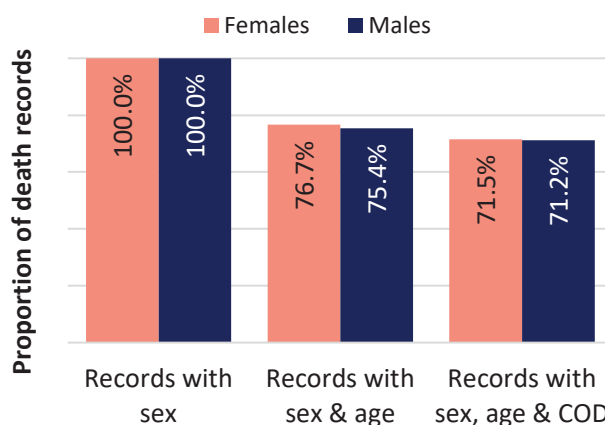


Figure notes: COD = cause of death

Apart from 2022–2023, the highest proportion of death records without a cause of death were those sourced directly from the Ministry of Justice (**Figure 9**). This is unsurprising, given that medical certification is a responsibility of the Ministry of Health and conducted by trained physicians. The relatively higher proportion of deaths that occurred in a health facility, but for which the record does not have a cause of death between 2022–2023 is unusual, however, this seems to have corrected itself in 2024.

Figure 9. Proportion of death records missing cause of death by source, 2020–2024, Tonga

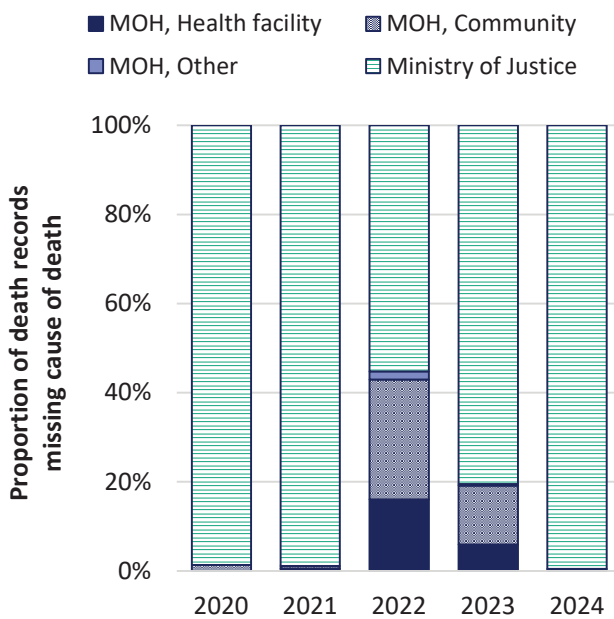


Figure notes: MOH = Ministry of Health; Health facility = Hospitals and health centres; Community = In the community and at home

In looking at unit record data from 2024, of the 206 registered deaths sourced from the Ministry of Justice that did not have a cause of death, at least 53 were recorded as occurring at Vaiola Hospital, another 15 in Prince Wellington Ngu Hospital, and 10 in Princess Fusipala Hospital (**Figure 10**) – indicating that a medically certified cause of death may be available.

Figure 10. Extract of unit record data showing the variable “MOJ_Death_Place” (place of occurrence of death), Tonga

PANGAIMOTU	2
PILI	1
POPUA	2
PRINCE NGU HOSPITAL, NEIAFU	2
PRINCE WEELENGTON NGU HOSPITAL, NEIAFU	1
PRINCE WELLINGTON NGU HOSPITAL, NEIAFU	14
PRINCESS FUSIPALA HOSPITAL, PANGAI	1
PRINCESS FUSIPALA HOSPITAL, PANGAI	7
PRINCESS FUSIPALA, HOSPITAL, PANGAI	1
PRINCESS FUSUIPALA HOSPITAL, PANGAI	1
SOPU	1
TA'ANEA	3
TALASIU	1
TALAU, NEIAFU	3
TATAKAMOTONGA	1
TU'ANUKU	1
'Uiha	3
'UTULANGIVAKA	1
'UTULANGIVAKA,	1
'UTULEI	1
'UTUNGAKE	1
VAINI	6
VAIOLA HOSPITAL TOFOA	40
VAIOLA HOSPITAL, TOFOA	1
VAIOLA HOSPITAL, TOFOA	12
VAIPUA, NEIAFU	1
VAOLOLOA, KOLOMOTU'A	1
VEITONGO	2
Grand Total	206

Data action point

Death records from the Ministry of Justice that are missing data on cause of death should be investigated to see if records are available from the Ministry of Health, especially for deaths that occurred in a hospital or health facility.

Place of occurrence of death

For death records that are only available in the Ministry of Justice database, the Ministry of Health variables used for analysing deaths by place and island of occurrence (“Place.of.death.island.group” and ‘Place.of.death”) are not available. This means that analysis by place of occurrence cannot be performed. As an option, it may be viable to use data as entered in the column “MOJ_Death_Place” (place of death) (see **Figure 11**), however data will need to be standardised, as there is currently a mixture of village and hospital names.

Figure 11. Extract of unit record death data showing data on place of occurrence as recorded by the Ministry of Health (“Place.of.death.island.group” and ‘Place.of.death’) and potential data for cross-validation from the Ministry of Justice (“MOJ_Death_Place”)

UID	Data source	Place.of.death..island.group.	Place.of.death	MOJ_Death_Place
1 Matched		TONGATAPU	Vaiola Hospital	VAIOLA HOSPITAL,TOFOA
2 Matched		TONGATAPU	Village of residence	FATU,U
3 Matched		'EUA	Village of residence	KOLOMAILE
4 Matched		TONGATAPU	Vaiola Hospital	SIONE MALEKAMU
5 Matched		TONGATAPU	Vaiola Hospital	VAIOLA HOSPITAL TOFOA
6 Matched		TONGATAPU	Village of residence	TOMINIKO
7 Matched		TONGATAPU	Village of residence	HALALEVA
8 Matched		TONGATAPU	Village of residence	FAHEFA
9 Matched		TONGATAPU	Vaiola Hospital	VAIOLA HOSPITAL,TOFOA
10 Matched		TONGATAPU	Village of residence	VAINI
11 Matched		TONGATAPU	Village of residence	PILI
12 Matched		TONGATAPU	Village of residence	FAHEFA
13 Matched		'EUA	Village of residence	PANGAI

Data action point

The statistical completeness of death records could be enhanced by cross-validating place of death data from the Ministry of Health with data from the Ministry of Justice.

Place of death data should be standardised within the Ministry of Justice, preferably by providing drop-down boxes for entering village and hospital/facility names.



CHAPTER 1. BIRTH DATA AND FERTILITY STATISTICS

1.1. Registration and reporting outcomes

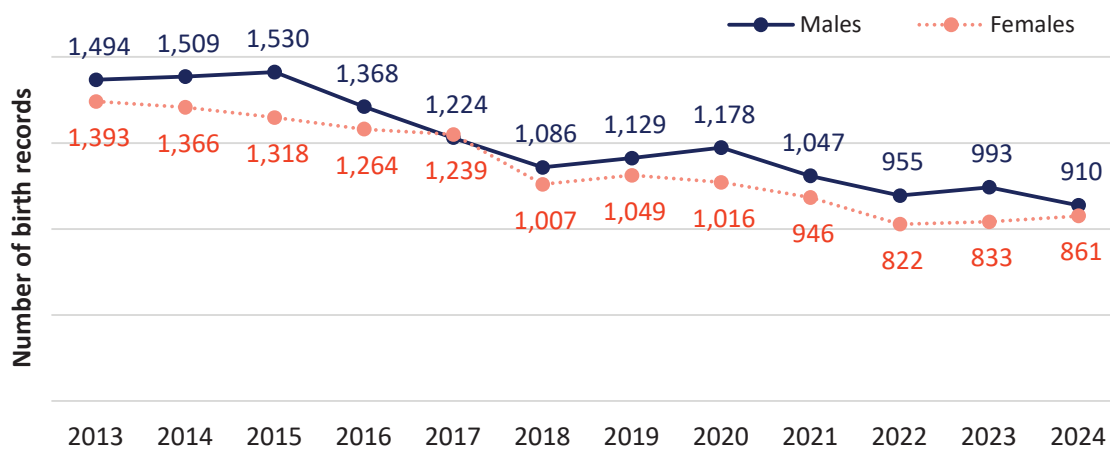
1.1.1. Birth records by sex

Over 27,500 live births were recorded or registered during the 12-year period analysed (see **Figure 12** & **Annex Table A1.1**). The highest number of births took place in 2013, and the lowest in 2024. This highlights an apparent decrease of 39% over the period. However, along with an actual decrease in

the number of births, the apparent decrease may be due to late registration and/or data availability constraints. That is, births towards the end of the period may not have been recorded, registered, or entered into the respective databases at the Ministry of Health or Ministry of Justice.

Of all recorded or registered live births, approximately 52% of the newborns were male, and this ranged from a peak of 54% in 2023, to a low of 50% in 2017.

Figure 12. Number of live births by sex of newborn, 2013–2024, Tonga



Data action point

The apparent decrease in the number of births over the past 12 years should be further investigated to see if this is a “true” trend, or if this reflects under-reporting by the Ministry of Health and/or under-registration by the Ministry of Justice, or a combination of both.

1.1.2. Birth records by source category

As shown in **Figure 13**, along with a decrease in the proportion of birth records reported in both sources, there was a substantial increase in the

proportion of records only reported by the Ministry of Justice during 2020–2024. In practice, this means there was a higher proportion of births that had been registered but did not have a corresponding record in the Ministry of Health’s database for the

period analysed. The reasons for this need to be further investigated, and may include:

- Late registrations, with the corresponding birth record in a previous calendar year of the Ministry of Health’s database.
- Overseas or home births, which had no formal contact with the Ministry of Health, and as such, no record.
- Data availability constraints or system issues – for example, paper-based records that are yet to be entered into the Ministry of Health’s database.

The proportion of records that are only reported by the Ministry of Health – births that have been reported but not registered – have remained relatively stable over the period, at around 6% (see **Annex Table A1.3**).

Figure 13. Proportion of birth records by source category, 2020–2024, Tonga

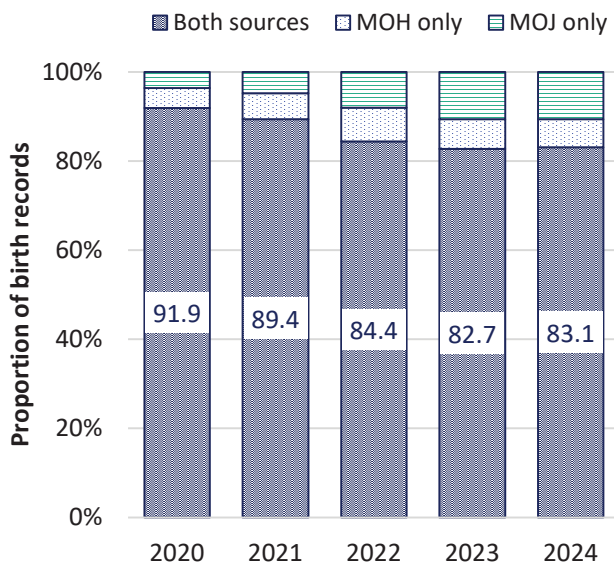


Figure notes: MOH = Ministry of Health; MOJ = Ministry of Justice

Data action point

The number of birth records only available in civil registration (Ministry of Justice) increased during the 2020–2024 period analysed. The reasons for this should be investigated, as it indicates a greater number of birth records are missing from the Ministry of Health database than what would be expected, based on the high proportion of births occurring in a health facility.

Emerging policy implications

The proportion of birth records reported by the Ministry of Health but not registered by the Ministry of Justice has remained relatively stable over the past five years, at around 6%. Understanding the characteristics of these births (age of the mother, place of usual residence, place of occurrence, etc.) will be an important first step in developing any targeted interventions to improve registration completeness.

1.1.3. Birth records by source category and sex

Data indicates that male births are slightly more likely to be registered than female births (see **Figure 14** & **Annex Table A1.4**). For example, of the births that were recorded by the Ministry of Health

but not registered by the Ministry of Justice in 2020, 55% of the newborns were female. Conversely, in 2021, of the births that were registered by the Ministry of Justice, but not recorded by the Ministry of Health, 61% of the newborns were male. While this indicates that female births are less likely to be registered, the situation does appear to be improving towards the end of the period.

Figure 14. Proportion of female birth records by source category, 2020–2024, Tonga

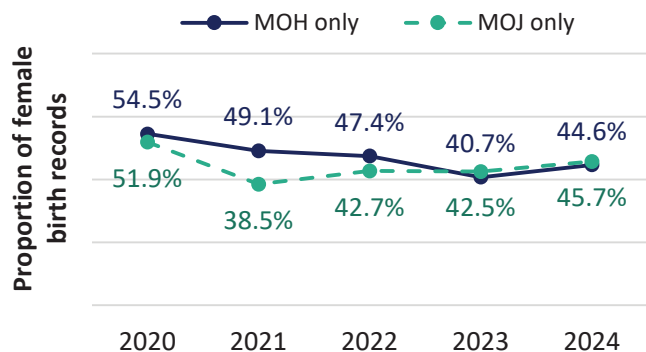


Figure notes: MOH = Ministry of Health; MOJ = Ministry of Justice

Data action point

Female births appear less likely to be registered than male births. Given the small sample size of this current analysis, this trend should be investigated retrospectively (using previous years' data) and regularly monitored moving forward.

Emerging policy implications

Female births appear less likely to be registered than male births. Activities to understand the challenges and barriers around birth registration, and efforts to improve the registration of female births should be implemented, including at the systems and community levels.

1.1.4. Births by place and island of occurrence

Births are currently tabulated by place of occurrence (hospital/health centre or community setting/home) and by island of occurrence. As shown in **Table 4**, Tonga has achieved almost universal coverage of hospital-based deliveries, at over 99% in Tongatapu, Vava'u, and Ha'apai, and almost 98% in 'Eua.¹¹

¹¹ Note that the islands of Ongo Niua are not included in tabulations, as all births are assumed to have occurred in Tongatapu or Vava'u. Three births were reported as occurring in Ongo Niua during 2013 – 2018, however no further births have been reported there since that time.

Table 4. Number of births by place and island of occurrence, 2013–2024, Tonga

Reference period	Island group	Place of occurrence			Proportion of hospital births (%)
		Hospital	Community	Total	
2013–2018	Tongatapu	12,818	102	12,920	99.2
	Vava'u	1,997	49	2,046	97.6
	Ha'apai	503	17	520	96.7
	Eua	343	8	351	97.7
	Ongo Nui	2	1	3	66.7
2018–2020	Tongatapu	4,946	25	4,971	99.5
	Vava'u	764	13	777	98.3
	Ha'apai	193	6	199	97.0
	Eua	121	1	122	99.2
	Ongo Nui	0	0	0	0.0
2020–2024	Tongatapu	7,615	13	7,628	99.8
	Vava'u	973	8	981	99.2
	Ha'apai	112	1	113	99.1
	Eua	136	3	139	97.8
	Ongo Nui	0	0	0	0.0

Table notes: The islands of Ongo Nui are not included in tabulations, as all births are assumed to have occurred in Tongatapu or Vava'u. Three births were reported as occurring in Ongo Nui during 2013–2018, however no further births have been reported there since that time.

Emerging policy implications

Almost 100% of births in Tonga occur in a hospital or health centre. Understanding the characteristics of births that occur in the community or at home (such as age of the mother, place of usual residence, etc.) will be an important first step in developing any targeted interventions to ensure all mothers have access to appropriate maternity services.

1.2. Health outcomes

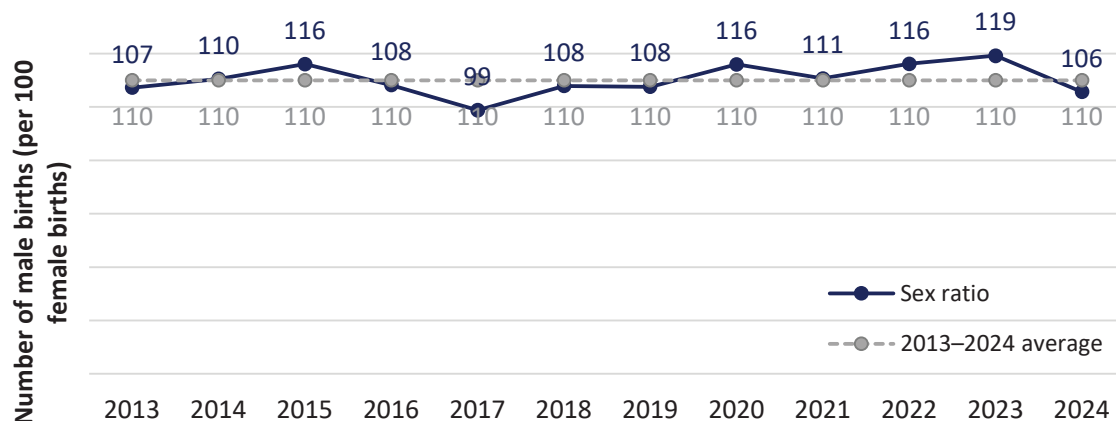
1.2.1. Sex ratio at birth

The sex ratio at birth is the number of male babies born for every female baby born, usually expressed per 100 live births. The global sex ratio is around 105–107 male babies born for every 100 female babies.¹² This indicates that, on average, there are slightly more male babies born than female babies. If the sex ratio at birth deviates significantly from this range, it may indicate potential issues such as sex-selective abortive practices, sex-specific under-reporting of births, and other social, cultural, or environmental influences.

The sex ratio at birth can vary naturally between different countries, cultures, and geographic locations, with evidence from the Pacific highlighting higher-than-expected ratios when compared with the global average. As shown in **Figure 15**, based on the 12-years of available data, the sex ratio at birth for Tonga was 110. This means that, on average, 110 male babies are born for every 100 females.

Emerging policy implications

Evidence suggests that Tonga, as with other Pacific nations, has a sex ratio at birth that is higher than the global average.

Figure 15. Sex ratio at birth, 2013–2024, Tonga

12 Sex ratio at birth. Our World in Data. 2025. Data adapted from the United Nations World Population Prospects. Available at: <https://ourworldindata.org/grapher/sex-ratio-at-birth>, accessed 29 July 2025.

While annual variations are both expected and observed, data from 2017 and 2024 indicate potential reporting issues, with lower-than-expected ratios. As discussed in **Section 1.1**, data from 2024 are likely incomplete, and records from the Ministry of Health and Ministry of Justice should be further reconciled before analyses are conducted by the Tonga Statistics Department.

1.2.2. Age-specific fertility rates

As demonstrated in **Figure 16**, along with a substantial overall decline in fertility, women in

Tonga appear to be giving birth at older ages. Fertility rates among women aged 25–29 years decreased from 190 to 130 babies per 1000 women (in that age group) during the period, while in 2022–2024, “peak” fertility had shifted from women aged 25–29 years, to women aged 30–34 years.

As discussed previously, these results should be interpreted with caution given both the potential for under-reporting and/or -registration of births, along with the increasing proportion of records missing data on age of the mother.

Figure 16. Age-specific fertility rate (ASFR), 2013–2024, Tonga

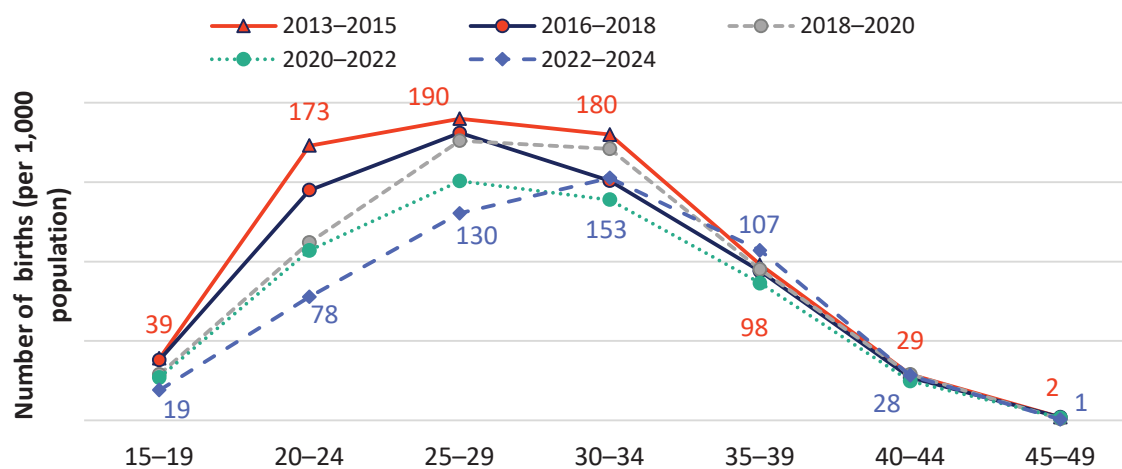


Figure notes: While each period represents 3-years of data, there is overlap, due to using aggregate, published data from Vital Statistics reports for the early periods. Population data for 2022–2024 are provisional projections, as provided by the Tonga Statistics Department.

Data action point

As a large proportion of birth records from 2023 and 2024 from the Ministry of Justice are missing data on the age of the mother, further reconciliation with data from the Ministry of Health should be carried out to improve the statistical completeness of the records before further analyses are conducted.

Emerging policy implications

Data indicate a potential decline in overall fertility (the number of babies being born to each woman), along with a shift in “peak” fertility from women aged 25–29 years, to women aged 30–34 years. While birth data from 2023 and 2024 are likely incomplete, this shift in fertility is apparent from as early as 2016.

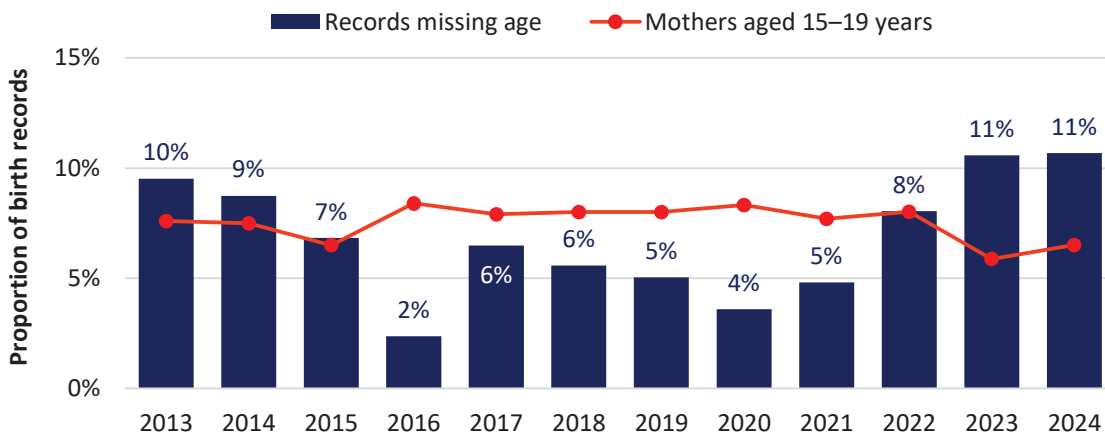
1.2.3. Adolescent fertility

While the adolescent fertility rate appears to have decreased between 2013 and 2024 (see **Section 1.2.2**), given the likely under-registration of births in 2023 and 2024, combined with the increasing proportion of birth records missing age of the mother, this finding should be interpreted with caution. **Figure 17** shows the number of births to adolescent mothers aged 15–19 years, as a proportion of births to mothers of all ages. As with the adolescent fertility rate, this shows an apparent decrease between 2013–2024, from 7.6% to 6.5% of all live births. However, when the proportion of records that are missing the age of the mother are cross-analysed, data from 2023 and 2024, which show the lowest proportion of adolescent mothers, also have the highest proportion of records missing the age of the mother at birth. As such, their

reliability is less certain. In looking at the two years with the highest “statistical completeness”, 2016

and 2020, the proportion of adolescent mothers was recorded as 8.4% and 8.3% respectively.

Figure 17. Proportion of births among adolescent mothers (red line) and proportion of birth records missing age (blue bars), 2013–2024, Tonga



Data action point

As a large proportion of birth records from 2023 and 2024 from the Ministry of Justice are missing data on the age of the mother, further reconciliation with data from the Ministry of Health should be carried out to improve the statistical completeness of the records before further analyses are conducted.

To ensure that adolescent mothers are not being selectively under-reported, records missing the age of the mother should be followed up as close to the point of collection as possible.

Emerging policy implications

Based on current data, it is likely that the proportion of adolescent mothers has not substantially changed over the past 12 years, and that recent “decreases” are due to incomplete data.



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CHAPTER 2. DEATH DATA AND ALL-CAUSE MORTALITY STATISTICS

2.1. Registration and reporting outcomes

2.1.1. Death records by sex

Over 8700 deaths were recorded or registered during the 12-year period analysed (see **Figure 18** & **Annex Table A1.2**). While year-on-year fluctuations are apparent in the data, the overall trend is one

of a decrease, from approximately 740 deaths in 2013, to 659 deaths in 2024. Along with an actual decrease in the number of deaths, the apparent decrease over time may be due to late registration and/or data availability constraints.

Of all recorded or registered deaths, approximately 56% of the decedents were male, and this ranged from a peak of 60% in 2017, to a low of 53% in 2024.

Figure 18. Number of death records by sex of decedent, 2013–2024, Tonga

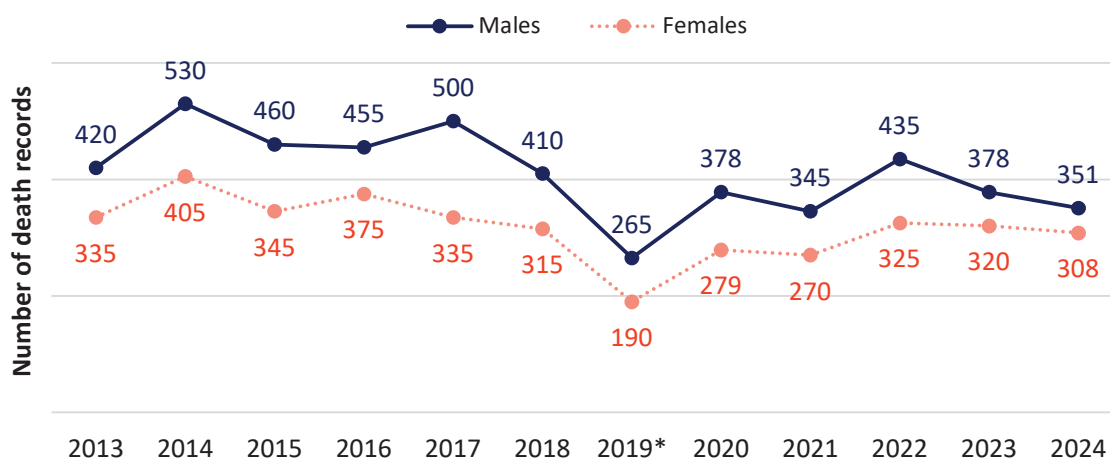


Figure notes: Data from 2013–2019 were approximated from graphs, as no raw data was available on the number of deaths by sex. As stated in the 2018–2020 Vital Statistics Report, data from 2019 are missing deaths that occurred between September and December of the year, and as such, are under-counts.

Data action point

The apparent decrease in the number of deaths over the past 12 years should be further investigated to see if this is a “true” trend, or if this reflects under-reporting by the Ministry of Health and/or under-registration by the Ministry of Justice, or a combination of both.

the Ministry of Health. The reasons for this need to be further investigated, and may include:

- Late registrations, with the corresponding death record in a previous calendar year of the Ministry of Health’s database.
- Overseas or community deaths, which had no formal contact with the Ministry of Health, and as such, no record.
- Data availability constraints or system issues – for example, paper-based records that are yet to be entered into the Ministry of Health’s database.

2.1.2. Death records by source category

As shown in **Figure 19**, there has been a noticeable decrease in the proportion of death records reported in both data sources, from 74% in 2020, to 50% in 2024. In 2023 and 2024, over one-third of death records were only available in the Ministry of Justice database, with no corresponding record in

The proportion of records that are only reported by the Ministry of Health – deaths that have been reported but not registered – showed considerable annual variation, ranging from 10–21% over the five-year period (see **Annex Table A1.5**).

Figure 19. Proportion of death records by source category, Tonga, 2020–2024

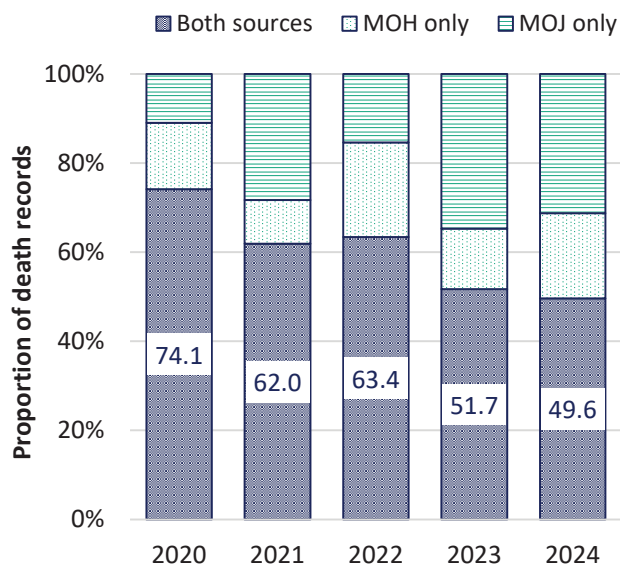


Figure notes: MOH = Ministry of Health; MOJ = Ministry of Justice

Data action point

The number of death records available in both databases (health and civil registration) substantially decreased between 2020–2024. The general trend was one of more records in the Ministry of Justice, indicating deaths that had been registered, but had no corresponding record with the Ministry of Health. The reasons for this should be investigated, as it indicates a greater number of death records are missing from the Ministry of Health than what would be expected based on previous years' data.

Emerging policy implications

The proportion of death records reported by the Ministry of Health but not registered by the Ministry of Justice ranged from 10–21% between 2020–2024. Understanding the characteristics of these deaths (such as age and sex of the decedent, place of usual residence, place of occurrence, etc.) will be an important first step in developing any targeted interventions to improve the registration completeness of deaths.

2.1.3. Death records by source category and sex

Data indicates that male deaths are slightly more likely to be registered than female deaths (see **Figure 20** & **Annex Tables A1.6–A1.7**). In 2020, for example, of the deaths that were recorded by

the Ministry of Health but not registered by the Ministry of Justice, 54% of the decedents were female. Conversely, in 2023, of the deaths that were registered by the Ministry of Justice, but not recorded by the Ministry of Health, 61% of the decedents were male. While this indicates that female deaths are less likely to be registered, the situation does appear to be improving towards the end of the period.

Figure 20. Proportion of female death records by source category, 2020–2024, Tonga

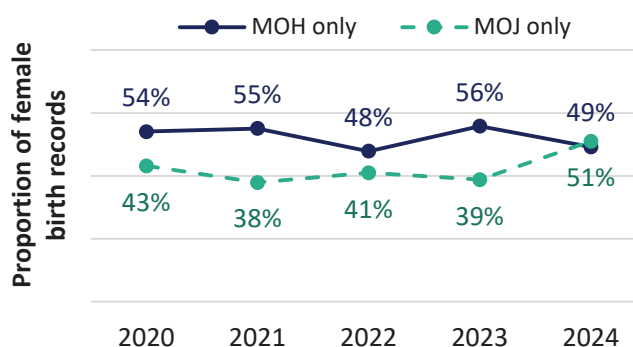


Figure notes: MOH = Ministry of Health; MOJ = Ministry of Justice

Data action point

Female deaths appear slightly less likely to be registered than male deaths. Given the small sample size of this current analysis (699 births over five-years), this trend should be investigated retrospectively (using previous years' data) and regularly monitored moving forward.

Emerging policy implications

Registration data indicates that, while deaths among females are more likely to be recorded by the Ministry of Health, they remain less likely to be registered by the Ministry of Justice. Efforts to improve the registration of female deaths should be implemented, including at the systems and community levels.

2.2. Health outcomes

2.2.1. Age-sex distribution of deaths

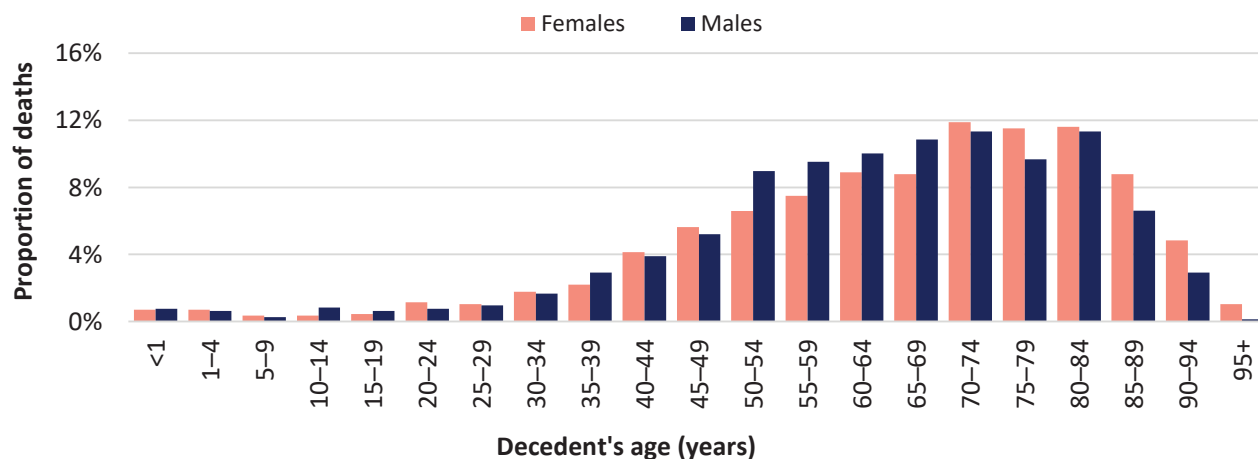
The age and sex distribution of deaths varies considerably depending on the size of the population currently alive at each age group, and the overall level of mortality in a country, which determines the risk of dying at each age.

Irrespective the level of mortality, the number of deaths should gradually increase from around age five-years-old onwards.

As shown in **Figure 21**, the distribution of deaths by age and sex in Tonga follows a mostly typical pattern based on global epidemiological and

demographic trends, with a lower proportion of deaths among the youngest age groups, and mortality among the youngest age groups (<5 years) showing no significant difference between girls and boys.

Figure 21. Age-sex distribution of deaths, 2020–2024, Tonga



Adolescent males account for a slightly higher proportion of deaths than females of the same age, and this is generally linked with increased risk-taking among males. The higher proportion of deaths among females aged 20–24 years (and minimally among those aged 25–29 and 30–34 years) is not expected and likely reflects the biased nature of the data source, with death records (with age) only coming from the Ministry of Health. The apparent higher levels of mortality may in fact reflect the higher number of women coming into contact with the health system during these years, thus increasing their likelihood of being captured in datasets held by health.

The higher proportion of deaths among males from age 50–69 is to be expected, given their higher age-specific mortality rates. From age 70, there is a higher proportion of deaths among females than males, which is to be expected given their comparatively lower age-specific mortality rates and higher life expectancy.

2.2.2. Neonatal, infant, and child mortality

As shown in **Figure 22**, the number of child deaths recorded or registered decreased substantially between 2013 and 2024, from an average of around 45 deaths per year, to less than 10 in the later part of the period. The reasons for this decrease should

be investigated by both the Ministry of Health and Ministry of Justice, as it is unlikely this reflects a “true” decrease in mortality, but rather that these deaths are not being reported by health authorities and/or registered by civil registration.

Data action point

The apparent decrease in the number of child deaths over the past five years should be further investigated to see if this is a “true” trend, or if this reflects under-reporting by the Ministry of Health and/or under-registration by the Ministry of Justice.

Emerging policy implications

The registration of child deaths is generally regarded as a significant challenge, and it would appear that Tonga’s civil registration system is under-registering child deaths. Targeted interventions may need to be developed to improve registration completeness among this age group.

Figure 22. Number of child deaths by broad age group, 2013–2024, Tonga

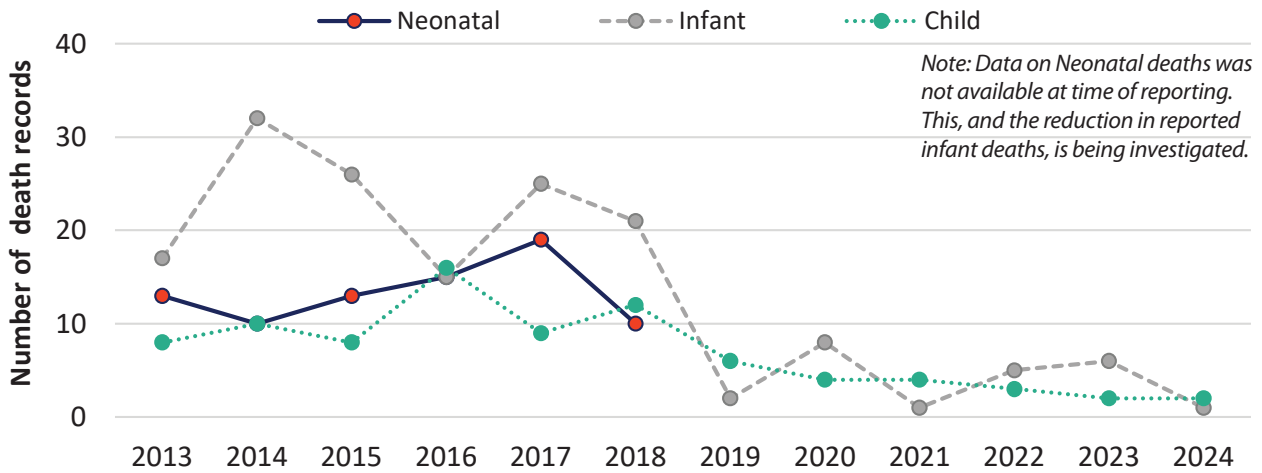


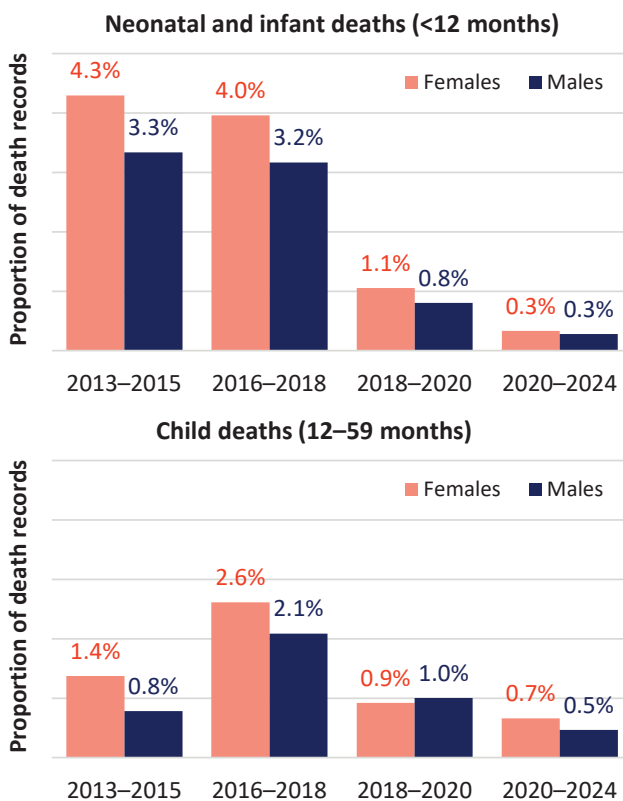
Figure notes: Neonatal (deaths among neonates and newborns aged <28 days); Infant (deaths among infants aged 29 days – 11 months); Child (deaths among children aged 12–59 months); Total (all deaths among children aged 0–5 years). From 2019–2024, neonatal deaths have been included with infant deaths, as data were only provided by age at death in years.

In looking at the distribution of child deaths by broad age group and sex (**Figure 23**), the proportion of neonatal and infant deaths is similar for females and males during the first two reporting periods (2013–2015 and 2016–2018), for which registration completeness is assumed to be comparatively higher. The distribution for the final two periods (2018–2020 and 2020–2024) also follows a similar pattern, while being clearly affected by under-reporting and/or under-registration.

Of interest is the higher proportion of neonatal and infant deaths among females over the past 12 years, which is not expected given Tonga’s high sex ratio at birth (in favour of male babies – see **Section 1.2.1**). While more data is needed to investigate this apparent trend, it may indicate that while deaths among males are more likely to be registered overall, deaths specifically among male newborns and infants may be less likely to be reported and/or registered.

Deaths among children (aged 12–59 months), while contributing a lower proportion of overall deaths when compared with neonatal and infant deaths, also indicate a slightly higher number of female deaths being recorded or registered. The extent of their under-counting (in 2018–2020 and 2020–2024) also appears slightly lower, however given the small numbers and limited time series available, this data should be interpreted with caution.

Figure 23. Age-sex distribution of child (<5 years) deaths by sex, 2013–2024, Tonga



Data action point

To improve registration completeness of child deaths, the Ministry of Health may wish to consider ways of automatically notifying the Ministry of Justice when a child death occurs (if not already in place)

Emerging policy implications

Deaths among male children appear less likely to be recorded or registered than female children. Given the small sample size of this current analysis, this trend should be investigated retrospectively (using previous years’ data) and regularly monitored moving forward.

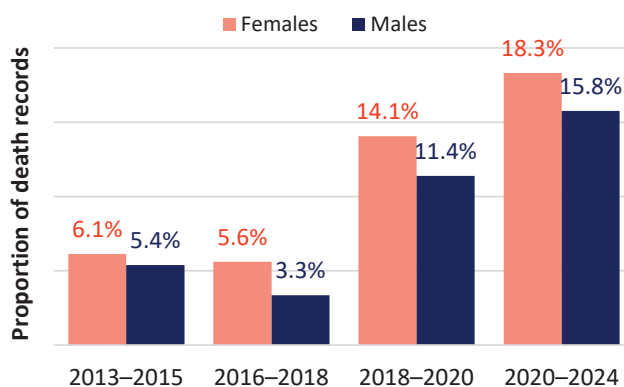
CHAPTER 3. CAUSE-SPECIFIC MORTALITY DATA AND STATISTICS

3.1. Registration and reporting outcomes

3.1.1. Ill-defined causes of death

Overall, out of the approximate 7400 deaths with cause of death data recorded between 2013–2024, over 760 records had an ill-defined cause of death (10%). As shown in **Figure 24**, the proportion of death records with an ill-defined cause appears to have increased in Tonga since 2013, from 6–18% for females, and 5–16% for males. Of interest is the higher proportion of female deaths with an ill-defined cause – a consistent feature over the 12 years of data analysed (see **Annex Table A1.9**).

Figure 24. Proportion of death records with an ill-defined cause of death by sex, 2013–2024, Tonga



Analytical software: ANACoD

Data action point

Routine data quality audits on medical certification practices should be implemented, if not already in place.

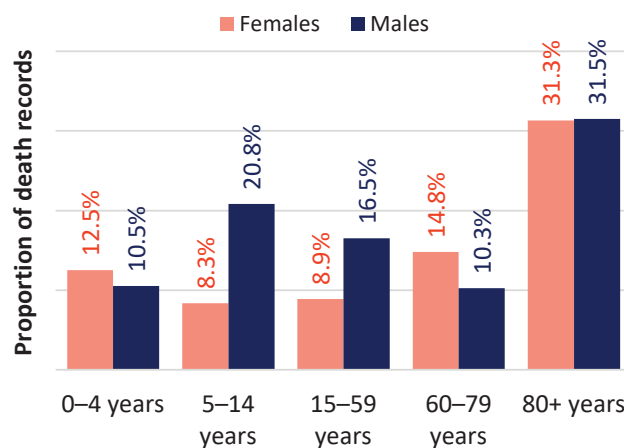
Emerging policy implications

The proportion of deaths with an ill-defined cause of death appears to have increased since 2013, limiting the potential use of this information for policy and planning.

In looking at the distribution of ill-defined causes of death by broad age group and sex, a similar proportion of deaths among females and males are assigned an ill-defined cause for the youngest (0–4) and oldest (80+) age groups (**Figure 25**). Among

children aged 5–14 years and adults aged 15–59 years, the proportion of deaths among males that are assigned an ill-defined cause is almost double that of females of the same age. Note that due to the small absolute number of deaths, these results should be interpreted with caution.

Figure 25. Proportion of ill-defined causes of death by age group and sex, 2020–2024, Tonga



Analytical software: ANACoD

Data action point

Deaths among males aged 5–14 years and 15–59 years appear to be more likely to have an ill-defined cause of death than females of the same age. Given the small sample size of this current analysis, this trend should be investigated retrospectively (using previous years’ data) and regularly monitored moving forward.

Emerging policy implications

While female deaths appear to be more likely to be assigned an ill-defined cause of death than male deaths overall; deaths among adolescent boys and adult males appear more likely to have an ill-defined cause of death than females of the same age group. The reasons behind this should be further investigated, with targeted interventions developed as needed.

3.1.2. Ill-defined causes of death by type

To better identify and understand the most common types of ill-defined causes of death,

ANACONDA classifies ill-defined causes of death into four categories:

1. **Symptoms, signs, and ill-defined conditions.** Mostly drawn from the R codes (R00–R99) in ICD-10.
2. **Impossible as underlying cause of death.** These include conditions such as “essential hypertension”, as well as causes that are the long-term sequelae of various diseases, or impossible as a cause of death (“old age”, “migraine”, etc.).
3. **Intermediate causes of death.** These are the diseases or injuries that have been precipitated by an underlying cause.
4. **Immediate causes of death**, such as “cardiac arrest” or “respiratory failure”, which are the immediate reason or cause leading to death, but not the underlying cause.
5. **Insufficiently specified causes within ICD chapters.** These include causes like “ill-defined site of cancer” and “ill-defined injuries”.

As shown in **Table 5**, most ill-defined causes of death were classified as intermediate causes of death, followed by insufficiently specified causes within ICD-10 chapters.

Table 5. Number and proportion of ill-defined causes of death by type, 2020–2024, Tonga

Category	Relative share of total ill-defined causes (%)
1: Symptoms, signs and ill-defined conditions	9.6
2: Impossible underlying causes of death	18.7
3: Intermediate causes of death	39.7
4: Immediate causes of death	8.6
5: Insufficiently specified causes within ICD-10 Chapters	23.4
TOTAL	100.0

Analytical software: ANACONDA

ANACONDA also groups ill-defined causes according to their potential impact for guiding or misguiding public policy to prevent premature deaths. In this classification, four levels are defined, depending on how serious their impact is for misinforming public policy. Overall, 68% of ill-defined causes of death were classified as having

a “serious” impact on describing the current cause structure of mortality patterns in the population, distorting potential policy decisions (**Table 6**). Specific examples of these causes include “sepsis”, “cardiac arrest”, and “senility” – all of which provide no actionable information on the underlying cause of death.

Table 6. Number and proportion of ill-defined causes of death by severity, 2020–2024, Tonga

Severity – policy impact	Relative share of total ill-defined causes (%)
Very high – serious impact	68.4
High – substantial impact	12.2
Medium – important impact	6.4
Low – limited impact	13.0
TOTAL	100.0

Analytical software: ANACONDA

Data action point

Additional capacity building and resourcing for physicians on the medical certification of cause of death is recommended.

Emerging policy implications

A high proportion of ill-defined causes of death were classified as having a “serious” impact on describing the current cause structure of mortality in the population, limiting the use of cause of death data in informing policy decisions.

3.2. Health outcomes

3.2.1. Broad causes of death

Based on the Global Burden of Disease (GBD) study, causes of death can be grouped into three broad categories:

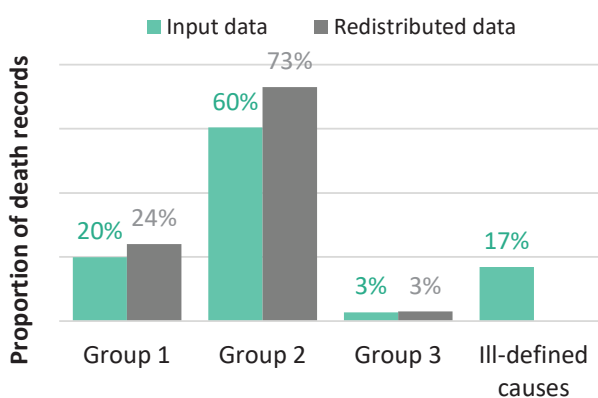
- Group 1: Communicable, maternal, neonatal, and nutritional diseases.
- Group 2: Non-communicable diseases (NCDs), including mental health conditions.
- Group 3: External causes and injuries (e.g. accidents, homicide, suicide, war deaths and natural disasters).¹³

¹³ Murray CJL, Lopez AD (eds.). *The Global Burden of Disease. A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Boston, USA: Harvard School of Public Health on behalf of the World Health Organization and The World Bank; 1996.



Based on the input data, approximately 20% of recorded deaths during 2020–2024 were due to infectious diseases, 60% due to NCDs, and 3% external causes, with the remaining 17% assigned an ill-defined cause (**Figure 26**). Using the redistribution algorithm in ANACoD, which removes ill-defined causes and redistributes them to their “most likely” cause group, the actual proportion of deaths due to NCDs in Tonga may be as high as 73%. There were no major differences between females and males (see **Annex Table A1.10**).

Figure 26. Proportion of deaths by broad cause of death group, before and after redistribution, 2020–2024, Tonga



Analytical software: ANACoD

Emerging policy implications

As many as 73% of deaths in Tonga may be due to non-communicable diseases, highlighting the substantial health burden on the country.

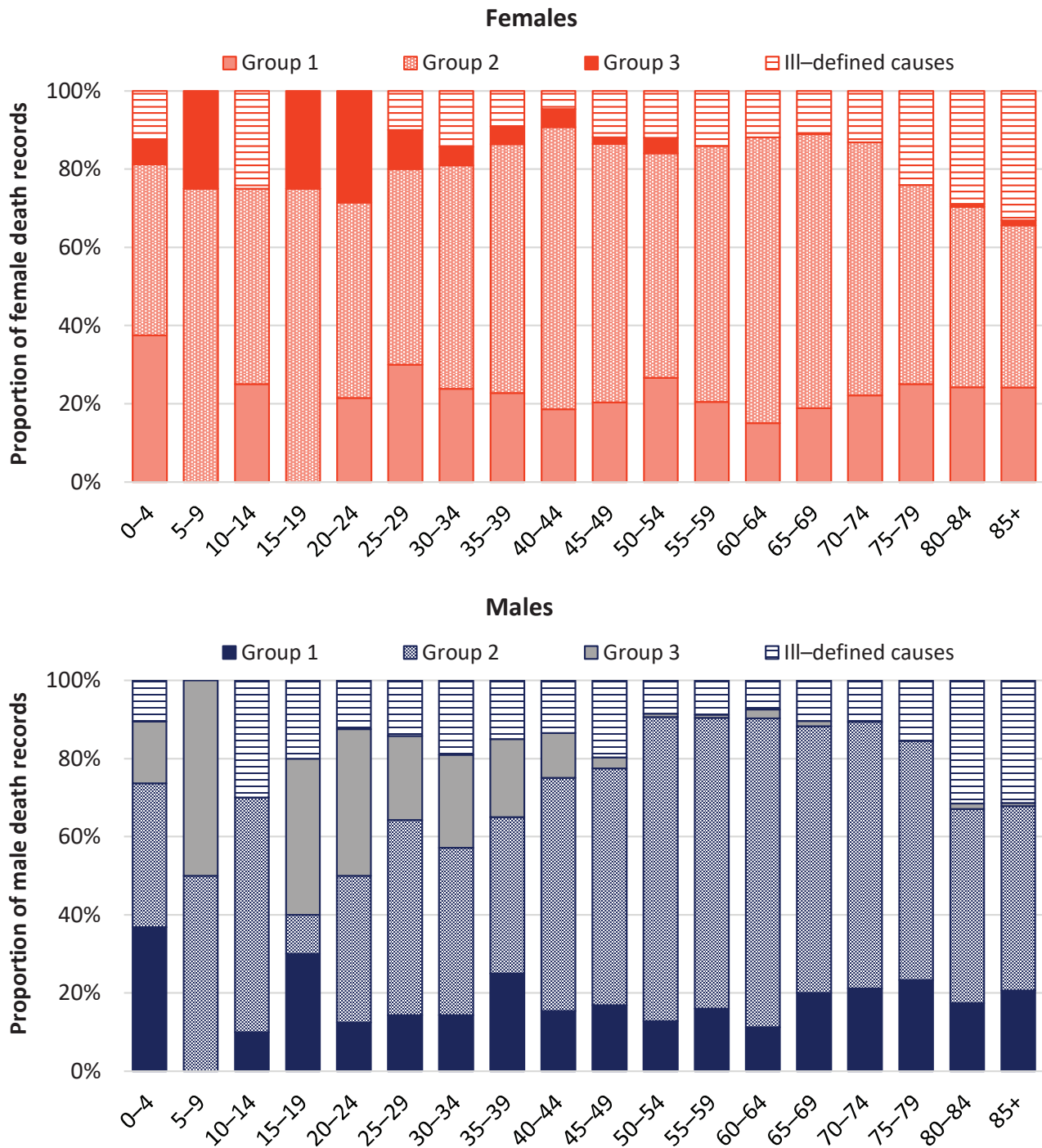
3.2.2. Broad causes of death by age and sex

As shown in **Figure 27**, mortality in Tonga generally follows the expected pattern, with a higher proportion of deaths due to infectious diseases among the youngest age groups and an increasing proportion of deaths due to NCDs among older adults. For both females and males, accident- and injury-related deaths are more common among younger adults; however, the relative share of these deaths is larger for males than for females. The proportion of deaths with an ill-defined cause, while an issue across all age groups, is particularly problematic among the oldest age groups, from approximately age 75 for females, and 80 for males. As with all cause-specific analyses, the relatively small absolute number of deaths means these results should be interpreted with caution.

Emerging policy implications

Accident- and injury-related deaths are more common among younger adults, however the relative share of these deaths is larger for males than for females. The proportion of deaths with an ill-defined cause is particularly problematic among the oldest age groups.

Figure 27. Age-sex distribution of deaths by broad cause of death group (including ill-defined), 2020–2024, Tonga



Analytical software: ANACoD

3.2.3. Leading causes of death

Of the 2384 death records analysed during 2020–2024, 30% of deaths were due to diseases of the circulatory system, followed by certain infectious and parasitic diseases (14%), and deaths due to symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (13%) (see **Annex Table A1.11**).

In looking at the leading causes of death for females (see **Annex Table A1.12**), the impact of ill-defined causes is noticeable, with eight of the 10 leading causes due to ill-defined causes, including unspecified septicaemia, senility, and unspecified cardiac arrest. Following redistribution, only one ill-defined cause remains in the top 10, with the most probable leading causes of death for females being ischemic heart disease, stroke, and breast cancer (**Table 7**).

For males, seven of the top 10 leading causes of death were due to ill-defined causes, including unspecified septicaemia, unspecified cardiac arrest, and cardiogenic shock (see **Annex Table A1.13**). Following redistribution, the most likely leading cause of death in the country is also ischemic heart disease – however, compared with deaths among females, this category takes up a much higher proportion of deaths – as much as 25% of all male deaths (**Table 8**).

Emerging policy implications

Based on redistributed data, the most probable leading causes of death for females are ischemic heart disease, stroke, and breast cancer. For males, the most probable leading causes of death are ischemic heart disease, stroke, and lung cancer.

Table 7. Top 10 causes of death, females, before and after redistribution of ill-defined causes, 2020–2024, Tonga

Before redistribution (input data)				After redistribution	
Rank	ICD code	Cause of death	Proportion of deaths (%)	Cause of death	Proportion of deaths (%)
1	A41.9	Septicaemia, unspecified	15.1	Ischemic heart disease	15.8
2	I21.9	Acute myocardial infarction, unspecified	7.3	Stroke	8.9
3	R54.0	Senility	5.4	Breast cancer	4.8
4	I46.9	Cardiac arrest, unspecified	5.3	Sepsis, unspecified organism	4.6
5	R57.0	Cardiogenic shock	3.2	Chronic kidney disease	2.4
6	C50.9	Breast, unspecified	3.1	Diabetes mellitus	2.4
7	Z51.5	Palliative care	3.1	Cirrhosis and other chronic liver diseases	2.2
8	J18.9	Pneumonia, unspecified	3.0	Cervical cancer	2.0
9	I64.0	Stroke, not specified as haemorrhage or infarction	2.9	Tracheal, bronchus and lung cancer	1.8
10	N19.0	Unspecified renal failure	2.3	Uterine cancer	1.6
Total (top 10 causes)			50.7	Total (top 10 causes)	46.5
All other causes			49.3	All other causes	53.5

Table 8. Top 10 causes of death, males, before and after redistribution of ill-defined causes, 2020–2024, Tonga

Before redistribution (input data)				After redistribution	
Rank	ICD code	Cause of death	Proportion of deaths (%)	Cause of death	Proportion of deaths (%)
1	I21.9	Acute myocardial infarction, unspecified	14.3	Ischemic heart disease	25.2
2	A41.9	Septicaemia, unspecified	9.5	Stroke	9.4
3	I46.9	Cardiac arrest, unspecified	5.0	Tracheal, bronchus and lung cancer	3.5
4	J18.9	Pneumonia, unspecified	4.7	Chronic obstructive pulmonary disease	3.5
5	R57.0	Cardiogenic shock	3.7	Cirrhosis and other chronic liver diseases	2.3
6	R54.0	Senility	3.6	Chronic kidney disease	2.2
7	I50.9	Heart failure, unspecified	3.5	Diabetes mellitus	2.1
8	I64.0	Stroke, not specified as haemorrhage or infarction	2.9	Prostate cancer	2.0
9	Z51.5	Palliative care	2.7	Stomach cancer	1.3
10	N19.0	Unspecified renal failure	2.0	Colon and rectum cancer	1.1
Total (top 10 causes)			51.9	Total (top 10 causes)	52.6
All other causes			48.1	All other causes	47.4

Analytical software: ANACoD

Key Ill-defined causes of death (Severity level 1–3).

CHAPTER 4. LOOKING AHEAD: STRENGTHENING GENDERED ANALYSES

4.1. Births

4.1.1. Births by place of usual residence

Birth records in the Ministry of Health database include information on place of usual residence of the mother (“MOH_Usual_Residence”), however these appear to be at the village level (**Figure 28**) and need to be aggregated “up” to the district, division, and/or island level, to allow for meaningful, intersectional analyses. As with data on skilled health personnel, the use of free-text data entry should be replaced with drop-down data entry.

Once this data on place of usual residence is available, it will allow the Ministry of Health to identify where high-risk pregnancies are taking place (for example, by analysing adolescent fertility), along with analysing any differences in health and reporting outcomes (for example, by analysing births attended by skilled health personnel, or births by registration status).

Figure 28. Extract of unit record data showing the variable “MOH_Usual_Residence” (place of usual residence of the mother), Tonga

MOH_Hospital_District	MOH_Usual_Residence
Tongatapu	Pahu
Tongatapu	Vaini
Tongatapu	Puke
Tongatapu	Nukunuku
Tongatapu	Sia'atoutai
Tongatapu	Pea
Tongatapu	Nakolo
Tongatapu	Ma'ufanga
Tongatapu	Haveluloto
Tongatapu	Tatakamotonga
Vava'u	Leimatu'a
Tongatapu	Ha'ateiho
Tongatapu	Lomaiviti
Tongatapu	Lavengatonga
Tongatapu	Kolomotu'a
Tongatapu	Nukunuku

Data action point

Standardise data entry for place of usual residence of the mother. This should include deciding on what level the data can be reliably disaggregated “down” to and improving data entry processes by using drop-down lists.

4.1.2. Births attended by skilled health personnel

The proportion of births attended by skilled health personnel measures the health system’s ability to provide sufficient care during birth – a period of high risk of morbidity and mortality.¹⁴ It is commonly used as a proxy to measure access to health services and maternal care. While birth records in the Ministry of Health database include the variable “Attendance.at.Birth.Cat.” (category of person in attendance at birth), the values appear to be entered as free-form text, which has led to inconsistencies in data entry (**Figure 29**). This limits their potential usefulness, given the additional time needed to standardise entries at the point of data analysis (rather than during data entry).

Data action point

The Ministry of Health should consider standardising categories of personnel in line with WHO recommendations (e.g., doctor, nurse, midwife, student, traditional birth attendant, other) and update database entry to drop-down lists (where possible) to minimise data entry errors.

¹⁴ Births attended by skilled health personnel. World Health Organization. 2025. Available at: <https://www.who.int/data/nutrition/nlis/info/births-attended-by-skilled-health-personnel>, accessed 11 August 2025.

Figure 29. Extract of unit record data for the variable “Attendance.at.Birth.Cat” (category of person in attendance at birth), Tonga

Row Labels	Count of UID	Row Labels	Count of UID	Row Labels	Count of UID
Herself	2	Health Officer	1	Health Officer	6
Husband	1	Medical Officer	284	Herself	1
Medical Officer	301	Mid-wife	1538	Medical Officer	492
Mid-wife	1247	Other	2	Mid-wife	1149
Mother	1	Public Health Nurse	1	Mother Inlaw	1
Other	1	Staff Nurse	33	Other	1
Other - Defactor Husband	1	Supervised Medical Student	8	Public Health Nurse	2
Public Health Nurse	2	Supervised Student Nurse	29	Staff Nurse	169
Staff Nurse	23	Traditional Birth Attendant	1	Studen Midwife	1
Supervised Medical Student	3	(blank)	96	Student Midwife	77
Supervised Student Nurse	50	Grand Total	1993	Student Nurse	3
Traditional Birth Attendant	2			Supervised Medical Student	70
(blank)	143			Supervised Student Nurse	133
Grand Total	1777			Traditional Birth Attendant	10
				(blank)	79
				Grand Total	2194

4.1.3. Intersectionality

Many of the current tabulations and figures presented in Tonga’s Vital Statistics reports lack a focus on intersectionality – that is, variables (such as mother’s age, or place of usual residence) are analysed separately, rather than together. This limits the depth of gendered analysis possible. In taking the example of mother’s place of usual residence, this could be analysed to see:

- if more high-risk pregnancies (to young or old mothers) are occurring in certain areas,
- if the sex ratio at birth is the same across the country, including trends over time,
- if births are more or less likely to be registered by sex or geographic area, and
- how trends in fertility are changing at the sub-national level, among others.

Other data being collected by the Ministry of Health, including gestation of pregnancies and birth weight, could be analysed by factors such as mother’s age, birth order, and place of usual residence, to monitor potential inequalities and inequities in health outcomes across the country.

Data on the marital status of the parents at the time of birth registration, as collected by the Ministry of Justice, for example, could be used to monitor potential inequalities and inequities in access to care. In looking at the five years of unit record data available, place of occurrence of birth appears

to be linked with marital status of the parents as recorded on the registration record.¹⁵ As shown in **Figure 30**, while the overall proportion of births among unmarried parents was 20% in 2020, in looking at births that occurred in the community, 43% were recorded as being to unmarried parents. This indicates that unmarried women may be more likely to give birth in the community, and away from health facilities, than married women. Given the very small sample sizes and limited data available, these results should be interpreted with caution, but with additional time-series data, may be used to track trends over time.

Figure 30. Proportion of births among unmarried parents at time of birth registration and place of occurrence, 2020–2024, Tonga

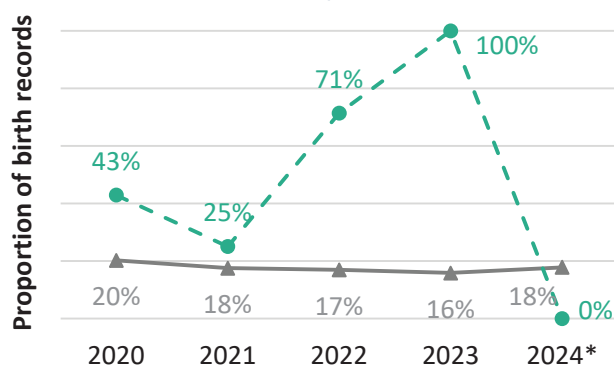


Figure notes: No births were recorded as being born to unmarried parents in 2024.

¹⁵ Marital status in birth registration records is recorded as “legitimate” and “illegitimate”, however for the purpose of this report, the terms “married” and “unmarried” are used.

Data action point

In the absence of other sources of information, data on marital status of the parents could be used for monitoring potential inequalities or inequities in access to health care services. Given the small number of births and limited time series data currently available, data should be interpreted with caution and used for internal monitoring purposes only. Obtaining historical data would also strengthen the analysis.

Emerging policy implications

There appears to be a relationship between the marital status of parents and place of birth of the newborn, with a higher proportion of newborns born to unmarried parents occurring in the community. This may indicate barriers (real or perceived) in accessing healthcare for unmarried parents.

As shown in **Figure 31**, along with a clear anomaly in the data in 2019, there has been an overall downward trend in the number of reconciled deaths each year (as discussed in **Section 2.1.1**). While deaths recorded by the Ministry of Health (via medical certificates of cause of death) were generally higher than the number of deaths registered by the Ministry of Justice (via civil registration) at the start of the period, this trend has reversed following the COVID-19 pandemic, with more deaths being registered by Justice, than recorded by Health. Data on deaths as provided by community nursing reports and hospital discharge summaries are missing from 2018 onwards.

As part of efforts to better integrate gendered analyses into routine practices, moving forward, data on deaths by source could be presented by sex to monitor for potential equity issues in both access to care and access to civil registration services. This type of data could help answer questions such as, “are female deaths more likely to be recorded in community nursing reports”, and “are male deaths more likely to be recorded in civil registration”, among others.

Data action point

Regularly monitoring death records by source and sex may be useful in monitoring for potential equity issues in access to health care and access to civil registration services.

4.2. Deaths

4.2.1. Deaths by source and sex

In the 2013–2018 and 2018–2020 Vital Statistics Reports, data was provided on the number of deaths by:

- Ministry of Justice (civil registration),
- Ministry of Health (medical certificates of cause of death, community nursing reports, and hospital discharge summaries), and
- Reconciled (unique death records across all data sources).

Figure 31. Death records by source, 2013–2024, Tonga

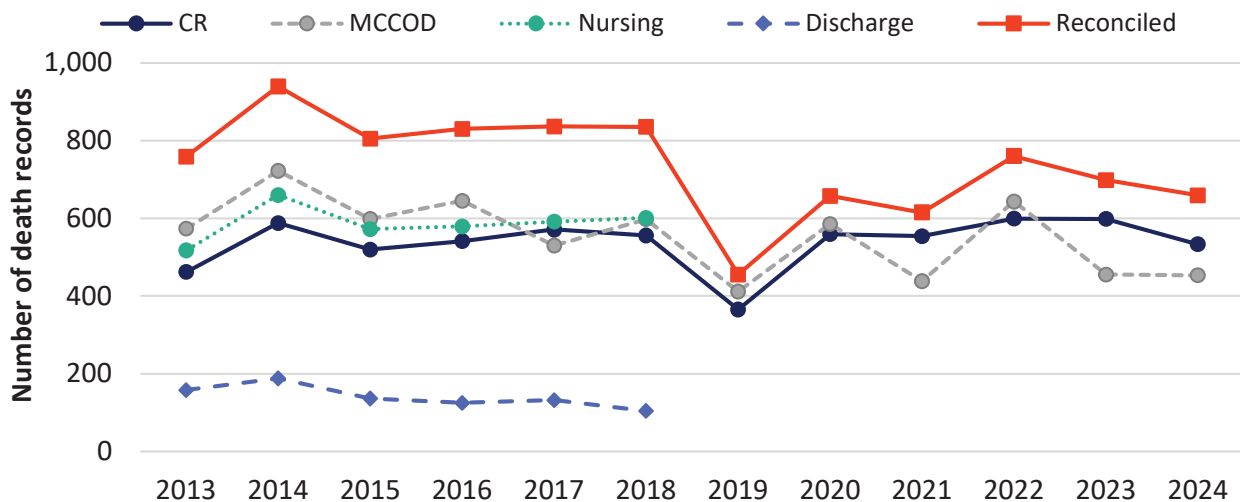


Figure notes: CR = Civil registration; MCCOD = Medical certificate of cause of death; Nursing = Community nursing reports; Discharge = Hospital discharge summaries

4.2.2. Deaths by source, age, and sex

To explore potential inequalities or inequities in health outcomes or registration status by age and sex, comparing the age-sex distribution of death records held by the Ministry of Health with records held by the Ministry of Justice would be useful as part of routine monitoring. In the absence of unit record data on age of the decedent for Ministry of Justice records between 2020–2024, the age-sex distribution of death records available in both the Ministry of Health and Ministry of Justice were used as a proxy for registered deaths, using data on age of the decedent as provided by health. This was compared with the age-sex distribution of death records only available in the Ministry of Health (unregistered deaths).

As shown in **Figure 32**, the age-sex distribution of female deaths is similar between the two primary data sources. The higher proportion of deaths among newborns recorded by the Ministry of Health is expected, given the high number of women giving birth in facilities. However, it also indicates these deaths are less likely to be registered. Between the ages of 50 and 74, a higher proportion of deaths are being recorded by the Ministry of Health than registered with the Ministry of Justice, again indicating the lower likelihood of female deaths being registered.

From age 85 and above, a higher proportion of deaths are registered with the Ministry of Justice than recorded with the Ministry of Health. This likely reflects the increasing proportion of deaths in the community and at home as women age.

Figure 32. Age-sex distribution of female deaths by data source, 2020–2024, Tonga

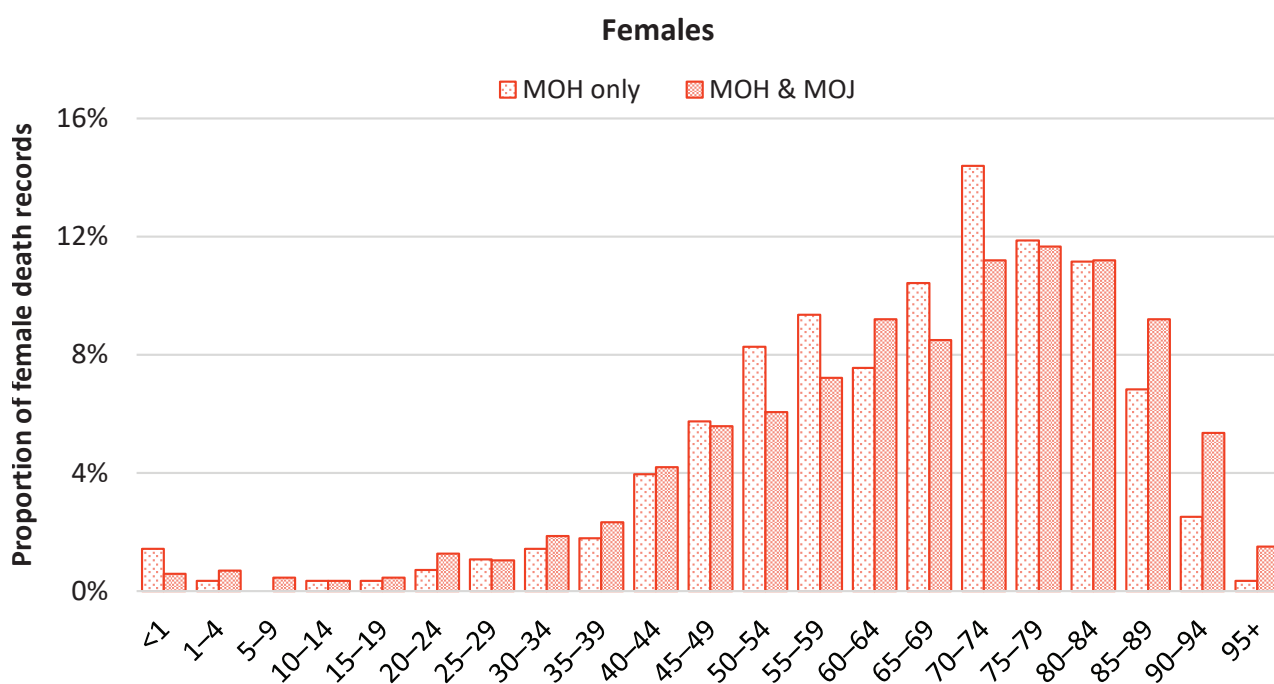


Figure notes: MOH & MOJ = Death records found in both the Ministry of Health and Ministry of Justice’s databases (deaths are recorded and registered); MOH only = Death records only found in the Ministry of Health database (deaths are recorded, not registered).

Emerging policy implications

Deaths among female newborns and children under one-year-old appear less-likely to be registered than what would be expected, based on the number of death records held by the Ministry of Health for children this age.

The age-sex distribution of male deaths follows the same general trend, with a few noticeable

differences (**Figure 33**). From the limited data available, deaths among boys less than five-years-old are less likely to be registered than females of the same age – a potentially important finding that requires further data and investigation. Between the ages of 25 and 44 years old, male deaths are more likely to appear in the Ministry of Justice database than the Ministry of Health. This may be linked to the type of deaths, particularly accidents,

which occur away from health facilities, and as such, are generally not captured in datasets maintained by health.

From age 45 until around 75, the proportion of deaths between each source is relatively similar,

with a higher proportion of deaths registered by the Ministry of Justice than recorded by the Ministry of Health in the oldest age groups, as with females.

Figure 33. Age-sex distribution of male deaths by data source, 2020–2024, Tonga

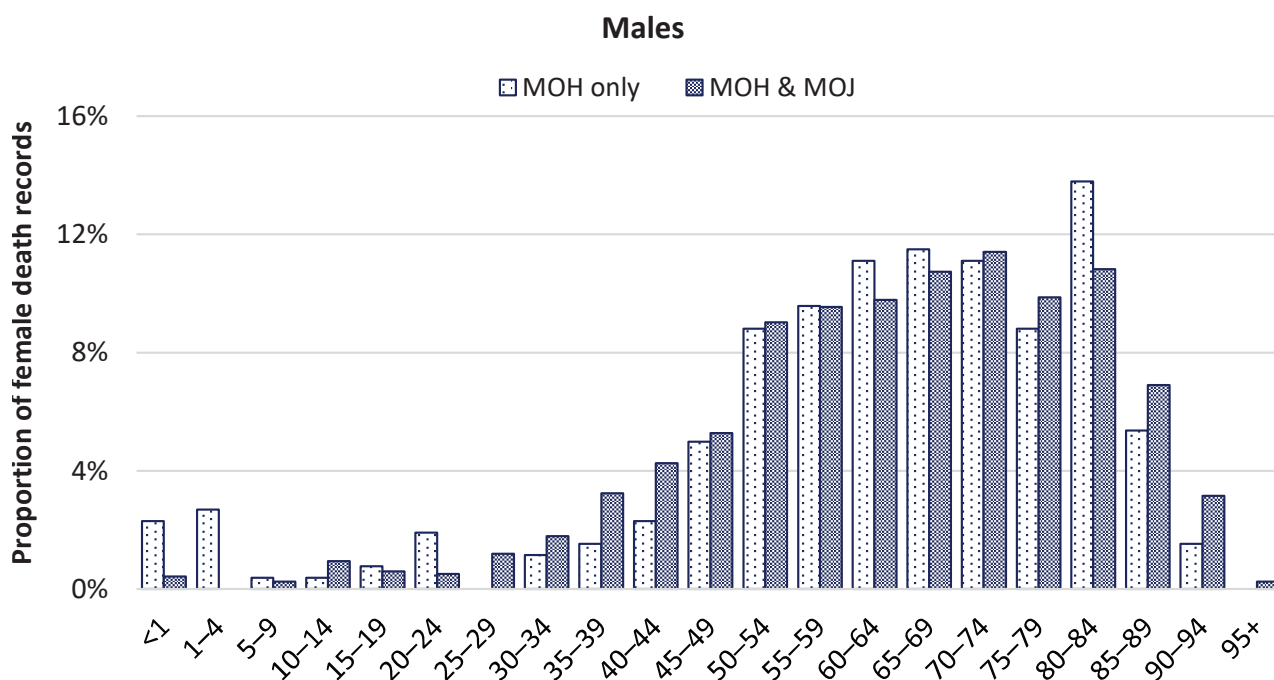


Figure notes: MOH & MOJ = Death records found in both the Ministry of Health and Ministry of Justice's databases (deaths are recorded and registered); MOH only = Death records only found in the Ministry of Health database (deaths are recorded, not registered).

Emerging policy implications

Deaths among boys less than five-years-old appear less likely to be registered than what would be expected, when compared with the number of death records held by the Ministry of Health for children this age.

4.2.3. Deaths by place and island of occurrence

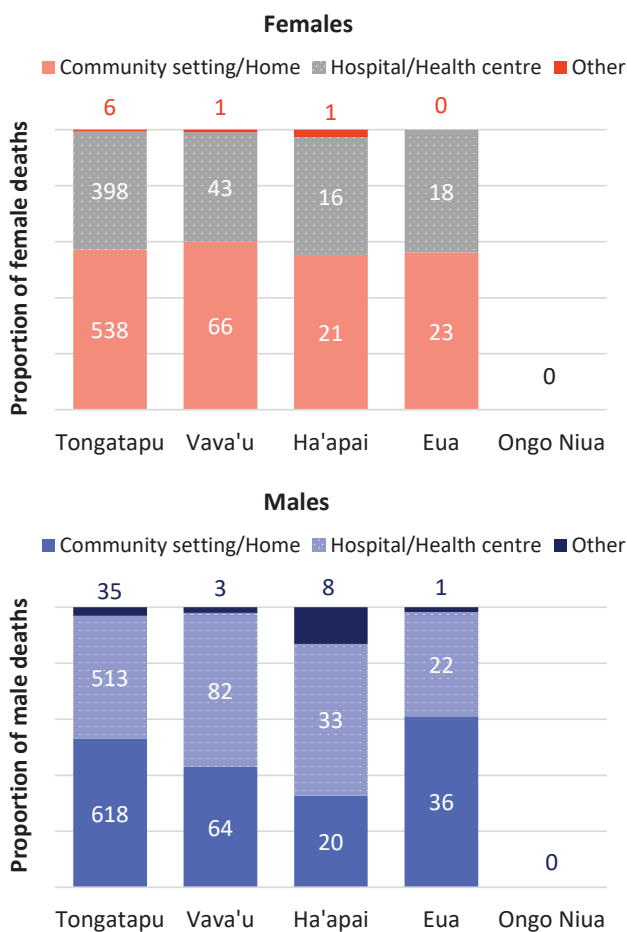
While births are tabulated by place of occurrence (hospital/health centre or community setting/home) and by island of occurrence (see **Section 1.1.4**), there were no similar tabulations for deaths in the previous two vital statistics reports reviewed. Using unit record data provided by the Ministry of Health for 2020–2024, basic tabulations on the number of deaths by place and island of occurrence, and sex, were produced.

Compared with births, which have almost universal coverage of hospital-based deliveries, most deaths

occur away from hospitals and health centres, with 54% of deaths occurring in the community setting or at home, 44% occurring in a hospital or health centre, and 2% occurring at “other” locations during 2020–2024 (see **Annex Table A1.14**). As shown in **Figure 34**, females are more likely to die in the community setting or at home than males, and this trend is apparent across all the island groups apart from the ‘Eua’s. It should be noted that the ‘Eua’s also had the lowest number of death records (101 over the five years analysed), and so data should be interpreted with caution.

Of the 55 deaths that had “other” as the place of death, the vast majority were among males (47 deaths, or 85%).

Figure 34. Proportion of deaths by sex, and island and place of occurrence, 2020–2024, Tonga



Data action point

Deaths should be tabulated by island and place of occurrence, as with births. Additional metadata on where “other” deaths occur may be useful from a policy perspective.

Emerging policy implications

From the limited unit record data available, there appears to be a relationship between sex of the decedent and place of occurrence of death, particularly for males, and this should be regularly monitored.

As more females appear to die in the community setting or at home, this may explain (in part) why their registration rates are lower and could provide an opportunity for targeted outreach activities.

There appears to be a clear relationship between deaths occurring in “other” locations and sex, with males much more likely to have their death recorded as occurring in “other” locations. While these may be linked with deaths occurring while at sea (drownings, lost at sea, etc.), additional analyses into this may provide useful insights.

4.2.4. Deaths by place of usual residence

Death records in the Ministry of Health database include information on place of usual residence of the decedent (“Residence_Tongan”), however these appear to be at the village level (Figure 35) and need to be aggregated “up” to the district, division, and/or island level, to allow for meaningful, intersectional analyses. Where possible, the use of free-text data entry should be replaced with drop-down data entry.

Once this data on place of usual residence is available, it will allow the Ministry of Health to identify any differences in mortality by where people usually live – useful in investigating any potential inequalities or inequities in exposure to risk and access to health services, and ultimately, required when developing targeted health interventions. Data on place of usual residence can also be analysed to determine if there are any differences in reporting outcomes – for example, if certain villages are more or less likely to have their deaths reported or registered, than others.

Figure 35. Extract of unit record data showing the variable “Residence_Tongan” (place of usual residence of the decedent), Tonga

UID	Data source	Residence..Tongan.
355	Health ONLY	Afa
452	Health ONLY	Fatai
439	Health ONLY	Tofoa
415	Health ONLY	Longoteme
366	Health ONLY	Folaha
407	Health ONLY	Ha'akame
426	Health ONLY	'Utulau
330	Health ONLY	Lomaiviti
443	Health ONLY	Halaleva
448	Health ONLY	Fua'amotu
397	Health ONLY	'ALAKI

Data action point

Standardise data entry for place of usual residence of the decedent. This should include deciding on what level the data can be reliably disaggregated “down” to and improving data entry processes through using drop-down lists.

4.2.5. Deaths by cause and place of usual residence

In the 2013–2018 Vital Statistics Report, the number of deaths by leading cause of death group and

place of occurrence of death (island group) was presented (**Figure 36**). As discussed previously, presenting information by place of usual residence is also of importance from a policy perspective, to

allow for monitoring differences in mortality by place of usual residence. Providing this information by sex is also recommended.

Figure 36. Ten leading causes of death by place of occurrence (island group), both sexes, 2013–2018, Tonga

List code ^a	Cause category	Tongatapu	Vava'u	Eua	Ha'apai	Total
064	Circulatory system diseases	734	110	45	44	946
051	Endocrine, nutritional, and metabolic diseases	618	102	39	41	807
026	Neoplasms	459	80	17	20	580
072	Respiratory diseases	250	59	18	27	356
095	External causes	133	27	7	6	175
001	Infectious and parasitic diseases	111	25	5	6	147
078	Digestive system diseases	85	16	4	9	116
084	Genitourinary diseases	84	10	1	6	101
082	Skin diseases	43	14	3	4	64
083	Musculoskeletal diseases	39	8	4	-	53
All other causes		104	18	8	4	135
094	<i>Ill-defined conditions</i>	109	49	11	9	185
Total		2,769	518	162	176	3,665
Total minus ill-defined causes		2,660	469	151	167	3,480

Source: Ministry of Health medical death certificates 2013–2018.

^a ICD-10 General mortality List 1 code (Appendix 4)

Data action point

Providing data on leading causes of death by place of usual residence is useful information for policy makers when developing health interventions. Given the relatively small numbers of absolute deaths, the data will likely need to be aggregated over several years to ensure reliability.

proportion of deaths occurring in health facilities. For women and men, over half of all deaths occur in the community or at home from around age 60. Among people aged 90 and above, the proportion of deaths occurring in the community or at home is over 80%.¹⁶ Deaths occurring in “other” locations, while mostly affecting males, also generally occur among younger age groups.

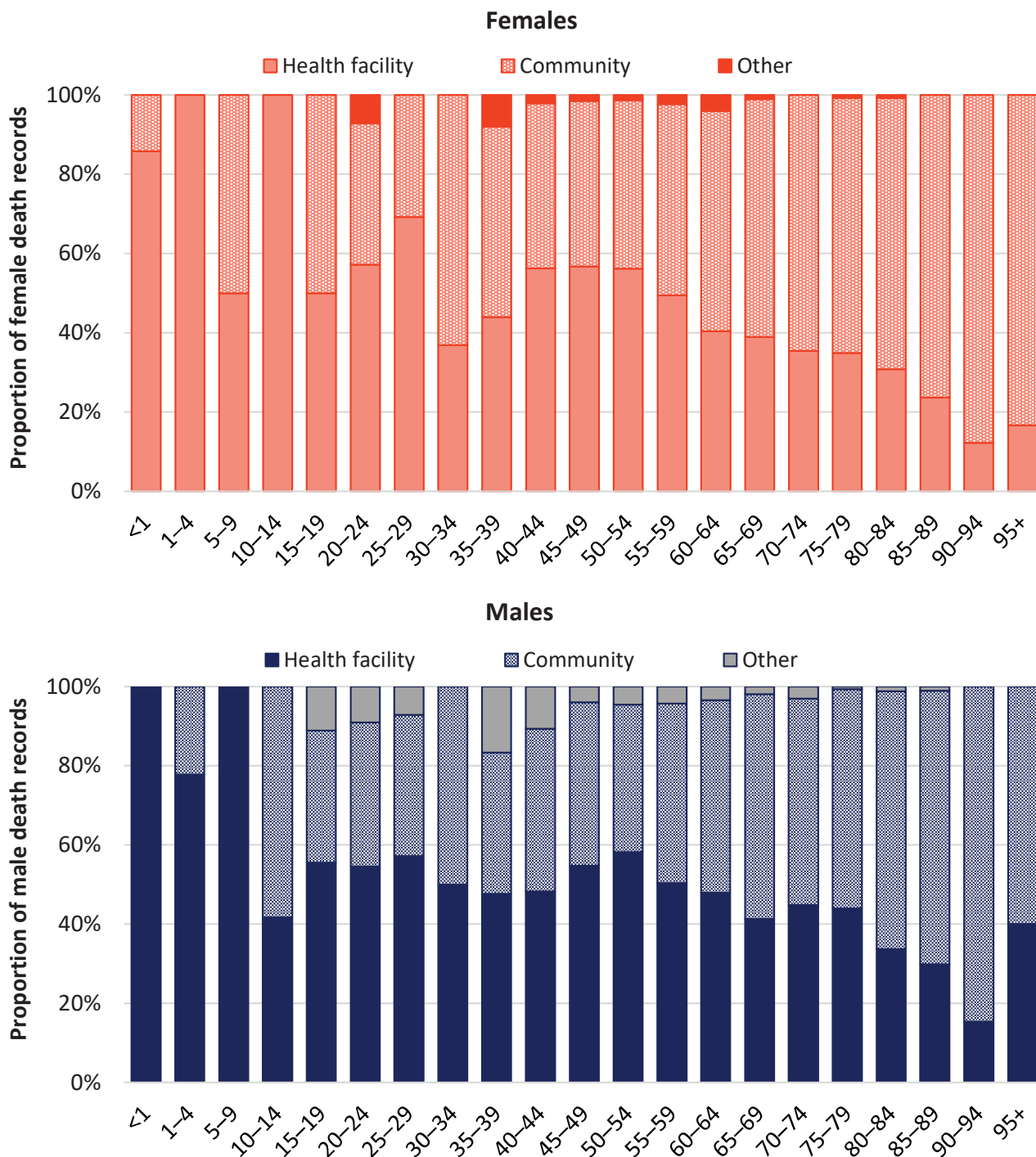
4.2.6. Intersectionality

As with birth data and fertility statistics, many of the current tabulations and figures on death data and mortality statistics lack a focus on intersectionality, which is limiting the depth of gendered analysis possible.

In looking at the age and sex distribution of deaths, for example, adding the additional variable, “place of occurrence of death”, provides interesting insight on where girls and boys, and women and men, and are dying. As demonstrated in **Figure 37**, for both females and males, the proportion of deaths occurring in the community or at home increases with age, with a corresponding decrease in the

¹⁶ Only five deaths among males aged 95+ were recorded over the five years of data analysed, and as such, results for this age group should be interpreted with caution.

Figure 37. Age-sex distribution of deaths by place of occurrence of death, 2020–2024, Tonga



Emerging policy implications

The proportion of deaths occurring in the community or at home increases with age, with a corresponding decrease in the proportion of deaths occurring in health facilities. For women and men, over half of all deaths occur in the community or at home from around age 60. Deaths occurring in “other” locations, while mostly affecting males, also generally occur among younger age groups.

In taking the example of the decedent’s place of usual residence, which isn’t being routinely analysed, this could be analysed to see if certain areas have higher or lower crude death rates, mortality rates, life expectancy at birth, or premature mortality; if deaths are more or less likely to be registered by sex and/or geographic area, and how trends in mortality are changing at the sub-national level, among others.

ANNEX 1. STATISTICAL TABLES

Table A1.1 Number and proportion of births by sex of newborn, by data source, Tonga, 2013–2024

Data source	Reference year	Number of births			Proportion of female births (%)
		Female	Male	Total	
2013–2018 Vital Statistics Report	2013	1,393	1,494	2,887	48.3
	2014	1,366	1,509	2,875	47.5
	2015	1,318	1,530	2,848	46.3
	2016	1,264	1,368	2,632	48.0
	2017	1,239	1,224	2,463	50.0
2018–2020 Vital Statistics Report	2018	1,007	1,086	2,093	48.1
	2019	1,049	1,129	2,178	48.2
Unpublished unit record data	2020	1,016	1,178	2,194	46.3
	2021	946	1,047	1,993	47.5
	2022	822	955	1,777	46.3
	2023	833	993	1,826	45.6
	2024	861	910	1,771	48.6
All sources	2013–2024	13,114	14,423	27,537	47.6

Table A1.2 Number and proportion of deaths by sex and age group, by data source, Tonga, 2013–2024

Age group	2013–2018 Vital Statistics Report			2018–2020 Vital Statistics Report			2020–2024 Unpublished unit record data		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
<28 days	24	56	80	.	.	.	.	.	.
28 days to <1 year	67	69	136	.	.	.	.	.	.
<1 year	.	.	.	8	11	19	8	11	19
1 – 4 years	23	40	63	7	10	17	8	9	17
5 – 9 years	10	18	28	3	1	4	4	4	8
10 – 14 years	13	18	31	5	4	9	4	12	16
15 – 19 years	15	41	56	6	8	14	5	9	14
20 – 24 years	23	49	72	9	11	20	13	11	24
25 – 29 years	20	43	63	9	8	17	12	14	26
30 – 34 years	27	54	81	11	16	27	20	24	44
35 – 39 years	42	59	101	19	32	51	25	42	67
40 – 44 years	69	79	148	28	42	70	47	56	103
45 – 49 years	115	163	278	46	59	105	64	75	139
50 – 54 years	124	194	318	59	101	160	75	129	204
55 – 59 years	171	222	393	65	88	153	85	137	222
60 – 64 years	168	242	410	49	93	142	101	144	245
65 – 69 years	216	253	469	52	86	138	100	156	256
70 – 74 years	210	343	553	85	119	204	135	163	298
75 – 79 years	241	314	555	.	.	.	131	139	270
80 – 84 years	237	251	488	.	.	.	132	163	295
85 – 90 years	.	.	.	.	.	.	100	95	195
90 – 94 years	.	.	.	.	.	.	55	42	97
75+ years	.	.	.	299	309	608	.	.	.
85+ years	363	254	617	.	.	.	.	.	.
95+ years	.	.	.	.	.	.	12	2	14
Unknown age	28	36	64	—	—	—	346	470	816
Total deaths with sex and age	2,178	2,762	4,940	—	—	—	1,136	1,437	2,573
Total deaths	2,206	2,798	5,004	760	998	1,758	1,482	1,907	3,389

Table A1.3 Number and proportion of births by source category, Tonga, 2020–2024

Reference year	Number of births by source category (% of total)			
	Total	Both sources	MOH only	MOJ only
2020	2,194 (100.0)	2,016 (91.9)	99 (4.5)	79 (3.6)
2021	1,993 (100.0)	1,781 (89.4)	116 (5.8)	96 (4.8)
2022	1,777 (100.0)	1,499 (84.4)	135 (7.6)	143 (8.0)
2023	1,826 (100.0)	1,510 (82.7)	123 (6.7)	193 (10.6)
2024	1,771 (100.0)	1,471 (83.1)	112 (6.3)	188 (10.6)

Table A1.4 Number and proportion of births by sex and source category, Tonga, 2020–2024

Reference year	Source category	Number of births			Proportion of female births (%)
		Female	Male	Total	
2020	Both sources	916	1,092	2,008	45.6
	MOH only	54	45	99	54.5
	MOJ only	41	38	79	51.9
	All births	1,011	1,175	2,186	46.2
2021	Both sources	843	926	1,769	47.7
	MOH only	57	59	116	49.1
	MOJ only	37	59	96	38.5
	All births	937	1,044	1,981	47.3
2022	Both sources	692	798	1,490	46.4
	MOH only	64	71	135	47.4
	MOJ only	61	82	143	42.7
	All births	817	951	1,768	46.2
2023	Both sources	695	803	1,498	46.4
	MOH only	50	73	123	40.7
	MOJ only	82	111	193	42.5
	All births	827	987	1,814	45.6
2024	Both sources	716	745	1,461	49.0
	MOH only	50	62	112	44.6
	MOJ only	86	102	188	45.7
	All births	852	909	1,761	48.4

Table A1.5 Number and proportion of deaths by sex and data source, Tonga, 2013–2024

Data source	Reference year	Number of deaths			Proportion of male deaths (%)
		Female	Male	Total	
2013–2018 Vital Statistics Report	2013	335	420	755	56%
	2014	405	530	935	57%
	2015	345	460	805	57%
	2016	375	455	830	55%
	2017	335	500	835	60%
2018–2020 Vital Statistics Report	2018	315	410	725	57%
	2019	190	265	455	58%
Unpublished unit record data	2020	279	378	657	58%
	2021	270	345	615	56%
	2022	325	435	760	57%
	2023	320	378	698	54%
	2024	308	351	659	53%
All sources	2013–2024	3,802	4,927	8,729	56%

Table notes: Data from 2013–2019 were approximated from graphs, as no raw data was available on the number of deaths by sex. As stated in the 2018–2020 Vital Statistics Report, data from 2019 are missing deaths that occurred between September and December of the year, and as such, are under-counts.

Table A1.6 Number and proportion of deaths by source category, Tonga, 2020–2024

Reference year	Number of births by source category (% of total)			
	Total	Both sources	MOH only	MOJ only
2020	657 (100.0)	487 (74.1)	98 (14.9)	72 (11.0)
2021	615 (100.0)	381 (62.0)	60 (9.8)	174 (28.3)
2022	760 (100.0)	482 (63.4)	161 (21.2)	117 (15.4)
2023	698 (100.0)	361 (51.7)	95 (13.6)	242 (34.7)
2024	659 (100.0)	327 (49.6)	126 (19.1)	206 (31.3)
2020–2024	3,389 (100.0)	2,038 (60.1)	540 (15.9)	811 (23.9)

Table A1.7 Number of proportion of deaths by sex and source category, Tonga, 2020–2024

Reference year	Source category	Number of births			Proportion of female births (%)
		Female	Male	Total	
2020	Both sources	195	292	487	40.0
	MOH only	53	45	98	54.1
	MOJ only	31	41	72	43.1
	All births	279	378	657	42.5
2021	Both sources	151	230	381	39.6
	MOH only	33	27	60	55.0
	MOJ only	67	110	177	37.9
	All births	270	345	615	78.3
2022	Both sources	200	282	482	41.5
	MOH only	77	84	161	47.8
	MOJ only	48	68	117	41.0
	All births	325	435	760	42.8
2023	Both sources	173	188	361	47.9
	MOH only	53	42	95	55.8
	MOJ only	94	148	242	38.8
	All births	320	378	698	45.8
2024	Both sources	141	186	327	43.1
	MOH only	62	64	126	49.2
	MOJ only	105	101	206	51.0
	All births	308	351	659	46.7



Table A1.8 Number of deaths by source

Data source	Reference year	Ministry of Justice CR	Ministry of Health			Reconciled
			MCCOD	Nursing	Discharge	
2013–2018 Vital Statistics Report	2013	462	573	517	158	759
	2014	588	722	660	188	939
	2015	519	598	572	136	805
	2016	541	645	579	125	830
	2017	571	530	591	132	836
2018–2020 Vital Statistics Report	2018	556	597	601	104	835
	2019	365	411	—	—	455
Unpublished unit record data	2020	559	585	—	—	657
	2021	554	438	—	—	615
	2022	599	643	—	—	760
	2023	598	455	—	—	698
	2024	533	453	—	—	659
All sources	2013–2024	6,445	6,650	3,520	843	8,848

— no data

Table notes: CR = Civil registration; MCCOD = Medical certificate of cause of death; Nursing = Community nursing reports; Discharge = Hospital discharge summaries

Table A1.9 Number of deaths with an ill-defined cause of death by sex, 2013–2024

Data source	Reference year	Females			Males		
		Defined	Ill-defined	Total	Defined	Ill-defined	Total
2013–2018 Vital Statistics Report	2013–2015	766	50	816	1019	58	1,077
	2016–2018	742	44	786	953	33	986
2018–2020 Vital Statistics Report	2018–2020	526	86	612	677	87	764
Unpublished unit record data	2020–2024	870	195	1065	1111	208	1,319
All deaths	2013–2024	2,904	375	3279	3760	386	4,146

Table A1.10 Number and proportion of deaths by broad cause group and sex, 2020–2024

Broad cause of death group	Females			Males		
	Number of deaths	Proportion of deaths (%)	Redistributed deaths (%)	Number of deaths	Proportion of deaths (%)	Redistributed deaths (%)
Group 1	237	22.3	27.0	239	18.1	22.0
Group 2	614	57.7	70.0	826	62.6	75.0
Group 3	19	1.8	2.0	46	3.5	3.0
Ill-defined	195	18.3	0.0	208	15.8	0.0
All deaths	1,065	100.0	99.0	1,319	100.0	100.0



Table A1.11 Leading causes of death by ICD chapter, all ages, both sexes, 2020–2024

ICD chapter	Description	ICD code range	Total deaths	% of total deaths
1	Chapter I: Certain infectious and parasitic diseases	A00-B99	330	13.7
2	Chapter II: Neoplasms	C00-D48	240	9.9
3	Chapter III: Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50-D89	18	0.7
4	Chapter IV: Endocrine, nutritional and metabolic diseases	E00-E90	84	3.5
5	Chapter V: Mental and behavioural disorders	F00-F99	3	0.1
6	Chapter VI: Diseases of the nervous system	G00-G99	33	1.4
7	Chapter VII: Diseases of the eye and adnexa	H00-H59	0	0.0
8	Chapter VIII: Diseases of the ear and mastoid process	H60-H95	1	0.0
9	Chapter IX: Diseases of the circulatory system	I00-I99	735	30.4
10	Chapter X: Diseases of the respiratory system	J00-J99	239	9.9
11	Chapter XI: Diseases of the digestive system	K00-K93	97	4.0
12	Chapter XII: Diseases of the skin and subcutaneous tissue	L00-L99	14	0.6
13	Chapter XIII: Diseases of the musculoskeletal system and connective tissue	M00-M99	1	0.0
14	Chapter XIV: Diseases of the genitourinary system	N00-N99	119	4.9
15	Chapter XV: Pregnancy, childbirth and the puerperium	O00-O99	2	0.1
16	Chapter XVI: Certain conditions originating in the perinatal period	P00-P96	4	0.2
17	Chapter XVII: Congenital malformations, deformations and chromosomal abnormalities	Q00-Q99	2	0.1
18	Chapter XVIII: Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R99	320	13.3
19	Chapter XIX: Injury, poisoning and certain other consequences of external causes	S00-T98	62	2.6
20	Chapter XX: External causes of morbidity and mortality	V01-Y98	3	0.1
21	Chapter XXI: Factors influencing health status and contact with health services	Z00-Z99	76	3.1
22	Chapter XXII: Codes for special purposes	U00-U85	1	0.0
Total			2,384	98.8

Analytical software: ANACONDA

Table A1.12 Leading causes of death by ICD code, all ages, females, 2020–2024

Input data

ICD Females			
Rank	% of causes	ICD code	Name of category
1	15.1	A41.9	Septicaemia, unspecified
2	7.3	I21.9	Acute myocardial infarction, unspecified
3	5.4	R54.-	Senility
4	5.3	I46.9	Cardiac arrest, unspecified
5	3.2	R57.0	Cardiogenic shock
6	3.1	C50.9	Breast, unspecified
7	3.1	Z51.5	Palliative care
8	3.0	J18.9	Pneumonia, unspecified
9	2.9	I64.-	Stroke, not specified as haemorrhage or infarction
10	2.3	N19.-	Unspecified renal failure
11	1.8	I10.-	Essential (primary) hypertension
12	1.7	E11.9	Non-insulin-dependent diabetes mellitus without complications
13	1.7	I50.9	Heart failure, unspecified
14	1.7	R57.1	Hypovolaemic shock
15	1.6	N18.0	End-stage renal disease
16	1.5	C53.9	Cervix uteri, unspecified
17	1.3	C54.1	Endometrium
18	1.2	K92.2	Gastrointestinal haemorrhage, unspecified
19	0.8	I50.0	Congestive heart failure
20	0.8	R69.-	Unknown and unspecified causes of morbidity

After redistribution

GBD Females - Redistributed Garbage - All ages			
Rank	% of causes	GBD classifica...	Name of category
1	15.8	cvd_ihd	Ischemic heart disease
2	8.9	cvd_stroke	Stroke
3	4.8	neo_breast	Breast cancer
4	2.4	ckd	Chronic kidney disease
5	2.4	diabetes	Diabetes mellitus
6	2.2	cirrhosis	Cirrhosis and other chronic liver diseases
7	2.0	neo_cervical	Cervical cancer
8	1.8	neo_lung	Tracheal, bronchus, and lung cancer
9	1.7	A419	
10	1.6	neo_uterine	Uterine cancer
11	1.6	neo_colorectal	Colon and rectum cancer
12	1.6	resp_copd	Chronic obstructive pulmonary disease
13	1.2	neo_stomach	Stomach cancer
14	1.2	A419	
15	1.1	A419	
16	0.9	endo	Endocrine, metabolic, blood, and immune disorders
17	0.8	Iri	Lower respiratory infections
18	0.7	skin_infect	Bacterial skin diseases
19	0.6	A419	
20	0.5	R54	
21	55.6	Other	Other categories

Table A1.13 Leading causes of death by ICD code, all ages, males, 2020–2024

Input data

ICD Males			
Rank	% of causes	ICD code	Name of category
1	14.3	I21.9	Acute myocardial infarction, unspecified
2	9.5	A41.9	Septicaemia, unspecified
3	5.0	I46.9	Cardiac arrest, unspecified
4	4.7	J18.9	Pneumonia, unspecified
5	3.7	R57.0	Cardiogenic shock
6	3.6	R54.-	Senility
7	3.5	I50.9	Heart failure, unspecified
8	2.9	I64.-	Stroke, not specified as haemorrhage or infarction
9	2.7	Z51.5	Palliative care
10	2.0	N19.-	Unspecified renal failure
11	1.7	C34.9	Bronchus or lung, unspecified
12	1.6	I10.-	Essential (primary) hypertension
13	1.4	K92.2	Gastrointestinal haemorrhage, unspecified
14	1.1	E11.9	Non-insulin-dependent diabetes mellitus without complications
15	1.1	N18.0	End-stage renal disease
16	1.1	R57.1	Hypovolaemic shock
17	1.0	C61.-	Malignant neoplasm of prostate
18	1.0	J44.9	Chronic obstructive pulmonary disease, unspecified
19	0.9	J44.1	Chronic obstructive pulmonary disease with acute exacerbation, unspecified
20	0.8	J69.0	Pneumonitis due to food and vomit

After redistribution

GBD Males - Redistributed Garbage - All ages			
Rank	% of causes	GBD classification	Name of category
1	25.2	cvd_ihd	Ischemic heart disease
2	9.4	cvd_stroke	Stroke
3	3.5	neo_lung	Tracheal, bronchus, and lung cancer
4	3.5	resp_copd	Chronic obstructive pulmonary disease
5	2.3	cirrhosis	Cirrhosis and other chronic liver diseases
6	2.2	ckd	Chronic kidney disease
7	2.1	diabetes	Diabetes mellitus
8	2.0	neo_prostate	Prostate cancer
9	1.3	neo_stomach	Stomach cancer
10	1.1	neo_colorectal	Colon and rectum cancer
11	1.0	A419	
12	1.0	neo_liver	Liver cancer
13	0.9	resp_asthma	Asthma
14	0.8	neo_other_cancer	Other malignant neoplasms
15	0.8	A419	
16	0.7	I509	
17	0.7	neo_esophageal	Esophageal cancer
18	0.7	urinary	Urinary diseases and male infertility
19	0.6	I509	
20	0.6	A419	
21	51.8	Other	Other categories

Table A1.14 Number of deaths by place and island of occurrence

Reference period	Island group	Place of occurrence				Proportion of community deaths (%)
		Hospital	Community	Other	Total	
2020–2024	Tongatapu	908	1156	41	2105	54.9
	Vava'u	125	130	4	259	50.2
	Ha'apai	49	41	9	99	41.4
	Eua	41	59	1	101	58.4
	Ongo Nui	—	—	—	0	0.0
	All deaths	1,123	1,386	55	2564	54.1
	Blanks					.

— no data; . not applicable

Table notes: The islands of Ongo Niu are not included in tabulations, as all deaths are assumed to have occurred in Tongatapu or Vava'u.

Table A1.15 Number of deaths by sex, age group, and place of occurrence, 2020–2024

Age group	Females				Males			
	Health facility	Community	Other	Total	Health facility	Community	Other	Total
<1 year	6	1	0	7	10	0	0	10
1–4 years	8	0	0	8	7	2	0	9
5–9 years	2	2	0	4	4	0	0	4
10–14 years	4	0	0	4	5	7	0	12
15–19 years	2	2	0	4	5	3	1	9
20–24 years	8	5	1	14	6	4	1	11
25–29 years	9	4	0	13	8	5	1	14
30–34 years	7	12	0	19	12	12	0	24
35–39 years	11	12	2	25	20	15	7	42
40–44 years	27	20	1	48	27	23	6	56
45–49 years	38	28	1	67	41	31	3	75
50–54 years	41	31	1	73	75	48	6	129
55–59 years	42	41	2	85	70	63	6	139
60–64 years	40	55	4	99	68	69	5	142
65–69 years	37	57	1	95	64	88	3	155
70–74 years	50	91	0	141	73	85	5	163
75–79 years	45	83	1	129	61	77	1	139
80–84 years	36	80	1	117	55	106	2	163
85–90 years	23	74	0	97	28	65	1	94
90–94 years	6	43	0	49	6	33	0	39
95+ years	2	10	0	12	2	3	0	5
Total deaths	444	651	15	1,110	647	739	48	1,434

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