

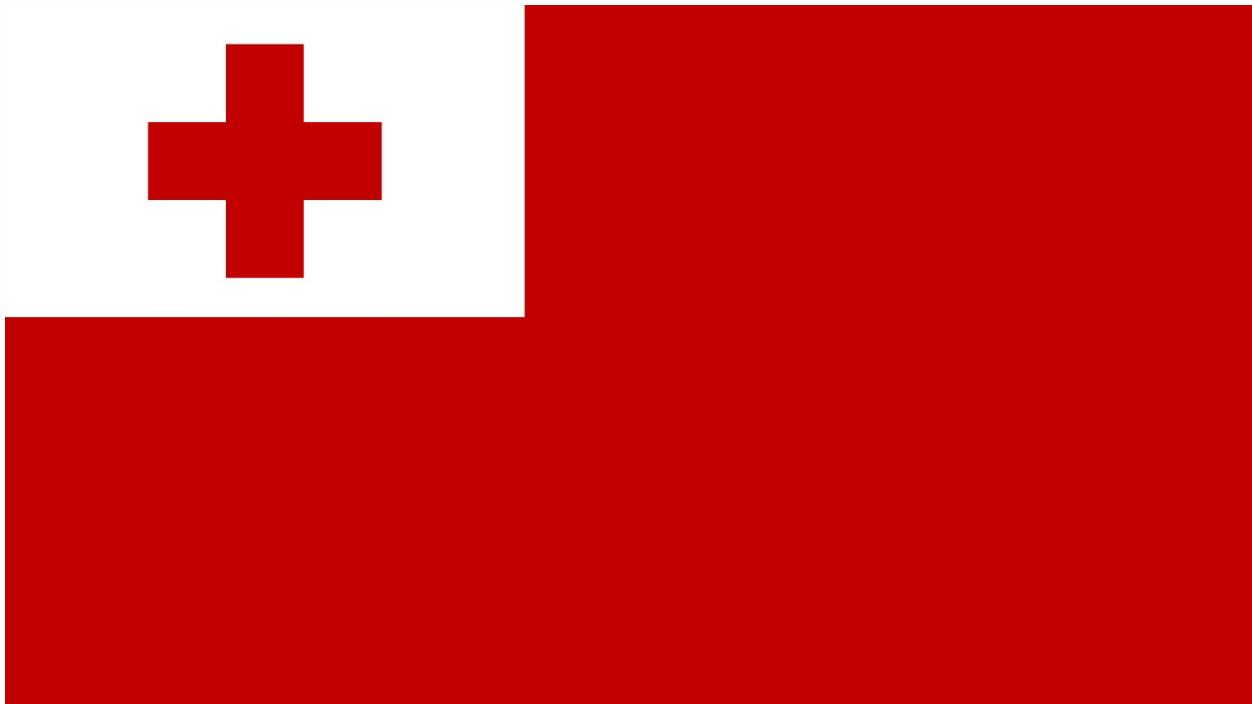


Tonga

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General Country Profile

Geography and Population

The Kingdom of Tonga is a 747 square kilometer archipelago situated in the South Pacific Ocean and is comprised of more than 170 volcanic and coral islands.^{1,2} Tonga experiences a tropical climate that is significantly influenced by the trade winds and the South Pacific Convergence Zone (SPCZ), which drives high-pressure rainfall across the region.¹ The climate demonstrates seasonal variations, with a wet season spanning from November to April, and a dry season that spans between May and October.¹ The wet season is moderate, with variable rainfall, temperatures averaging 25–26°C, and occasional tropical cyclones that pose risks to infrastructure, agriculture, and food security; the dry season experiences temperatures ranging from 21–24°C and precipitation of less than 250 mm per month.¹ Tonga's climate is impacted by the El Niño Southern Oscillation (ENSO), which can exacerbate drought conditions and reduce potable water supplies.¹

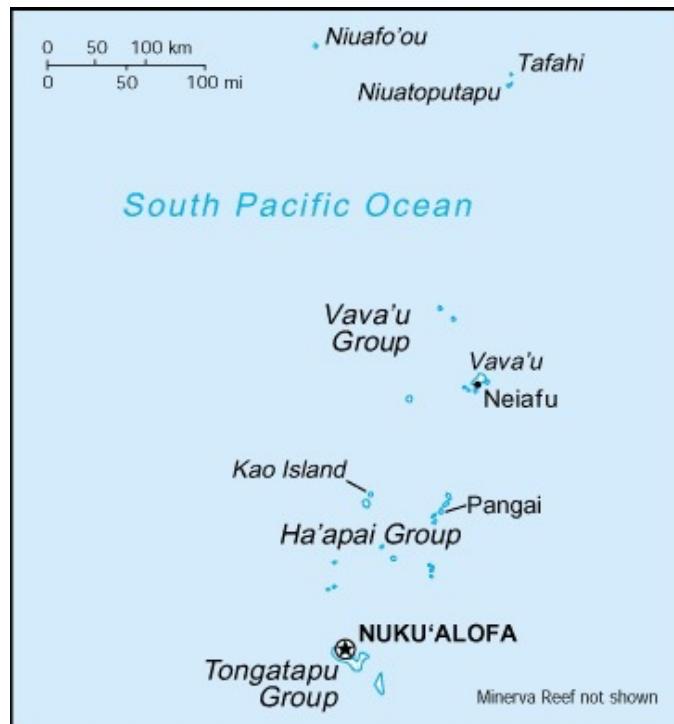


Figure 1. Map of Tonga³

As of 2023, the Kingdom of Tonga has a total population of 104,597, ranking it 191st in the world by population size.^{4,5} The nation is experiencing a slight population decline, with a growth rate ranging between -0.34% and -0.42%.⁵ As of 2023, approximately 77% of Tonga's population resides in rural areas.⁶ Tonga's age distribution reveals a predominantly working-age population,

with 73% of individuals between 15 and 64 years old.⁵ Children aged 0–14 years comprise 18% of the population, while those aged 65 years and above make up 8.4%.⁵

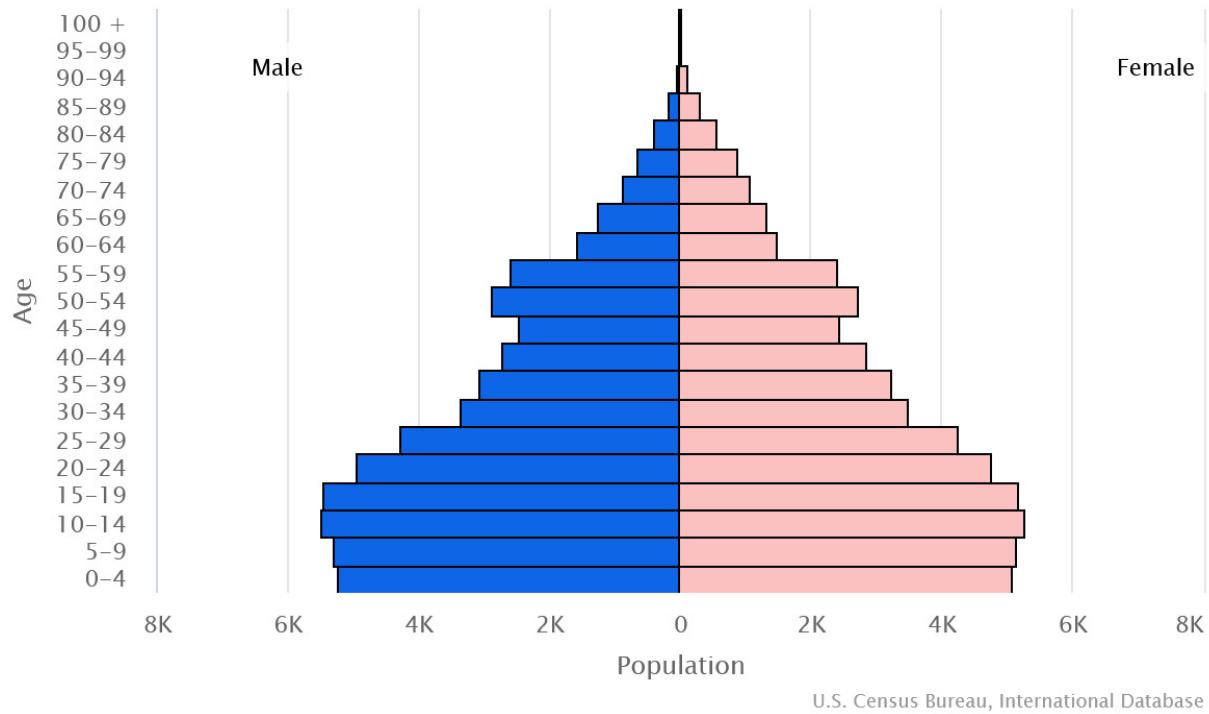


Figure 2. Population of Tonga, as of 2023⁷

The Kingdom of Tonga's economy is supported by diverse sectors, with agriculture contributing 16.3%, industry 15.9%, and services 49.7% to the GDP as of 2021.² Life expectancy in Tonga reflects steady progress in public health, with the overall average at 72.7 years, with 73.5 years for females and 70.2 years for males.⁵ This marks an improvement of 1.77 years since 2000, when life expectancy stood at 71 years.⁵ Education is a significant focus in Tonga, with a total school life expectancy of 16 years, spanning from primary to tertiary levels of education with females typically achieving 17 years of education and males achieving 15 years of education.²

History and Politics

The history of Tonga spans pre-colonial, colonial, and post-colonial eras. Pre-colonially, the first humans arrived in Tonga around 1000 B.C., and by A.D. 950, the islands were politically centralized under the Tu'i Tonga, or Tongan king.² By 1200, the Tu'i Tonga expanded their influence across Polynesia, Melanesia, and Micronesia. However, the empire declined in the 1300s due to internal political tumult, civil wars, and military defeat to Samoa. By the mid-1500s governance shifted as ethnic Samoan Tu'i Tongans delegated day-to-day administration to ethnic Tongans.² During the colonial period (1600s-1770s), Dutch and British explorers arrived, and after periods of conflict and instability, King George TUPOU I unified Tonga, creating a modern monarchy with a constitution that gained international recognition of independence in the late 19th century.² Tonga became a British protectorate in 1900 but retained indigenous governance structures.² Post-colonially, Tonga regained full independence in 1970 and transitioned to a more democratic system in 2010, with the 2010 Legislative Assembly being Tonga's first democratically elected Parliament. King George TUPOU V was succeeded by his brother, the Crown Prince Tupouto'a Lavaka who ruled as George TUPOU VI.² Today, Tonga remains a constitutional monarchy with a modern parliamentary system.²

Tonga is ethnically homogenous, with Tongans making up 96.5% of the population, while the remaining 3.5% includes Europeans, Fijians, Samoans, Indians, Chinese, and other Pacific Islanders.⁴ Religion plays a central role in Tongan culture, with Protestant denominations accounting for 63.9% of the population, including the Free Wesleyan Church as the largest group at 34.2%. Other significant religious affiliations include the Church of Jesus Christ (19.7%) and Roman Catholicism (13.7%).⁴ Linguistically, Tongan is the predominant language, spoken exclusively in 85% of households, while 13.9% use Tongan alongside another language, and a small percentage (1.1%) do not use Tongan at home.⁴

Government and Legal System

Tonga operates as a constitutional monarchy, with a constitution that guarantees fundamental human rights, including "freedom of worship, press, speech, petition, and assembly."⁸ While the monarchy retains a symbolic role, the pro-democracy movement in the early 2000s, led by 'Akilisi Pōhiva, brought significant reforms.² Riots broke out in Nuku'alofa in 2006, highlighting the public demand for change and ultimately leading to King George Tupou V to relinquish most of his powers in 2008.² By 2010, Tonga held its first democratically elected parliamentary session, with subsequent government decisions requiring consultation with the prime minister, except those pertaining to the judiciary.²

The country demonstrates mixed outcomes in governance indicators. While the rule of law scored 0.54 and political stability scored 1.1 in 2023, government effectiveness and regulatory quality showed slight declines, with respective scores of -0.1 and -0.4.⁹⁻¹¹ Reports of corruption persist, although the government has made efforts to prosecute officials involved in human rights abuses or corrupt practices.¹¹

Economy and Employment

Tonga's economy is primarily driven by its natural resources, major industries, and trade relationships. Key exports include fish, processed crustaceans, vegetables, scrap copper, and perfume plants, with major export partners being the United States (31%), Australia (19%), New Zealand (12%), Hong Kong (8%), and Belgium (8%) as of 2022.⁴ Tonga's imports are comprised mainly of refined petroleum, plastic products, poultry, sheep and goat meat, and cars, sourced mainly from Fiji (28%), China (23%), New Zealand (21%), Australia (6%), and the United States (5%).⁴ Natural resources such as arable land and fish play a central role in supporting agriculture and fisheries, which are crucial to the nation's economy.² Tonga is classified as an upper middle-income Pacific island economy, with a real GDP of \$700.437 million and a GDP per capita of \$6,600 in 2022.⁴

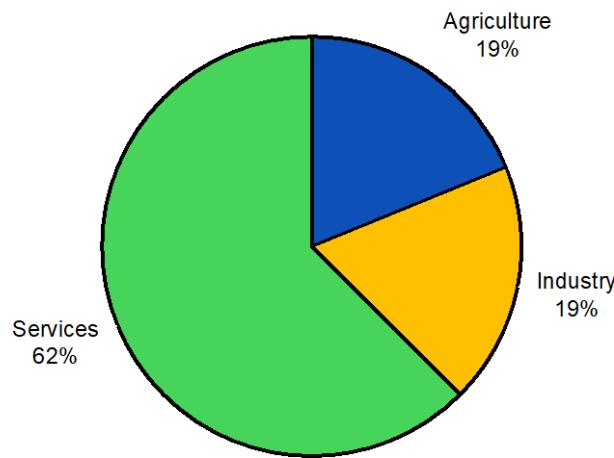


Figure 3. Graph depicting the approximate contributions of each sector to the Tongan economy. Agriculture consists mainly of root vegetables, taro, sweet potatoes, yams, plantains, lemons/limes, pumpkins/squash, and coconuts. Note that figures may not total 100% due to non-allocated consumption not captured in sector-reported data.⁴

International aid has played a vital role in Tonga's resilience and development. The United States has provided significant support, including contributions to the COVAX Facility, which delivered approximately 48,000 doses of COVID-19 vaccines to Tonga.¹² USAID has also allocated \$2.6

million in humanitarian aid for recovery from the 2022 volcanic eruption and tsunami, \$100,000 for Tropical Cyclone Harold response in 2020, and \$1 million to disaster risk reduction activities.¹² These funds aid disaster preparedness, response, and inclusion efforts to support the country's ability to manage and mitigate the impacts of natural calamities.¹²

According to the national definition, which counts those who did not work during the reference week but were available and willing to start work regardless of whether they were actively seeking employment, the unemployment rate in Tonga stood at 11.0%.¹³ Additionally, the 2021 Tonga Population and Housing Census recorded 30,734 employed Tongans, yielding an employment-to-population ratio of 47.1.¹³ In Tonga, multidimensional poverty declined from 27% in 2015 to 24% in 2021, with child poverty experiencing the most significant decrease (from 33% to 28%).¹⁴ In efforts to address unemployment and economic disparities, Tonga is advancing its first-ever National Employment Policy with support from the International Labour Organization, following a two-day workshop in Nuku'alofa that brought together around 40 key stakeholders from government, trade unions, civil society, and academia.¹⁵ The initiative aims to create quality jobs, enhance resilience against future crises, and address current challenges through a robust policy framework and practical action plan.

Tonga has made significant advancements in its telecommunication infrastructure, largely through the Pacific Regional Connectivity Program (PRCP).¹⁶ Prior to the PRCP, internet access was limited to only 2% of the population and relied on expensive satellite links; broadband access was even lower, at 0.9%.¹⁶ PRCP increased broadband access to 50% by 2018 while reducing the average retail cost of broadband internet by 97%.¹⁶ This project also bolstered market competition and improved access to digital infrastructure and services, which enabled better connectivity for business, education, healthcare, and communication with Tonga's diaspora community.¹⁶ The World Bank continues to support Tonga through the Tonga Digital Government Support Project, enhancing the government's capacity to deliver digital services.¹⁶

Electricity generation in Tonga remains heavily dependent on petroleum imports, which pose a significant economic burden due to high fuel prices.¹⁷ Recognizing this challenge, the government set a renewable energy target in 2010 to reduce fossil fuel imports for power generation by 50% by 2020.¹⁷ Infrastructure for transportation, water, and sanitation varies in availability and reliability, but significant disparities remain between urban and rural regions.¹⁷

National Health Care Profile

Health profile

In discussing statistical trends with regard to the population of Tonga, it is important to note the relatively small Tongan population of around 100,000. Therefore, small changes to the population or unlikely events may result in significant fluctuations of annual trends, and the information provided below should be reviewed with the effect in mind.

The life expectancy of Tonga has remained relatively stable from 2000 to 2020, with an overall upward trend. Figure 4 presents a graph of Tonga's life expectancy by year.

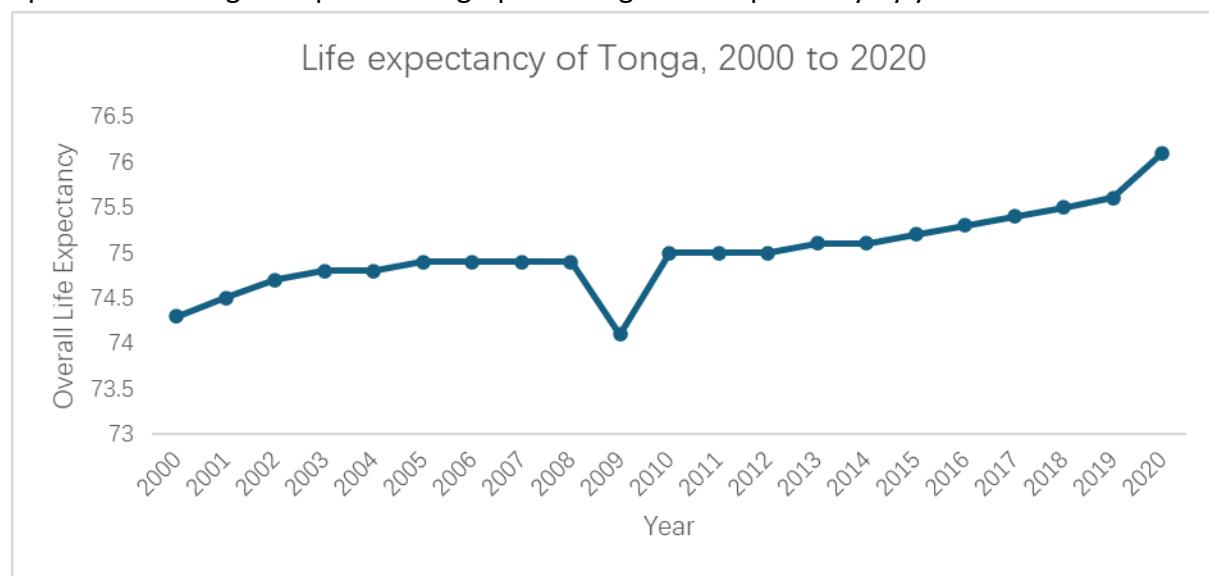


Figure 4. Life expectancy of Tonga plotted against year, from 2000 to 2020⁵

From the graph, it was observed that Tonga displayed a temporary decrease in life expectancy during 2009 that quickly rose back to normal. This change was likely due to the 2009 Samoan-Tonga earthquake disaster which resulted in waves of tsunami that hit the north end of Tonga. The disaster resulted in 9 casualties immediately, but displaced over 1000 households, which may have caused additional deaths over the remaining course of the year, resulting in a temporarily lower life expectancy.¹⁸ On the other hand, since Tonga did not observe its first case of COVID-19 until 2021, the pandemic did not seem to have negatively impacted the country's life expectancy in 2020.¹⁹

Figure 5, 6, and 7 presents the overall mortality rate, the infant mortality rate, and the maternal mortality rate of Tonga from 2000 to 2020, respectively.⁵ It was observed that the overall mortality rate remained relatively stable with a slight increase over the 2 decades, while the infant mortality rate decreased since 2014. This is likely attributed to the implementation of

Tonga's National Integrated Sexual and Reproductive health strategic plan, which ran from 2014 to 2018. Interestingly, though the maternal mortality rate also decreased during this time frame, it demonstrated a rebound increase following the cessation of the plan in 2018, while the infant mortality rate did not display such changes.

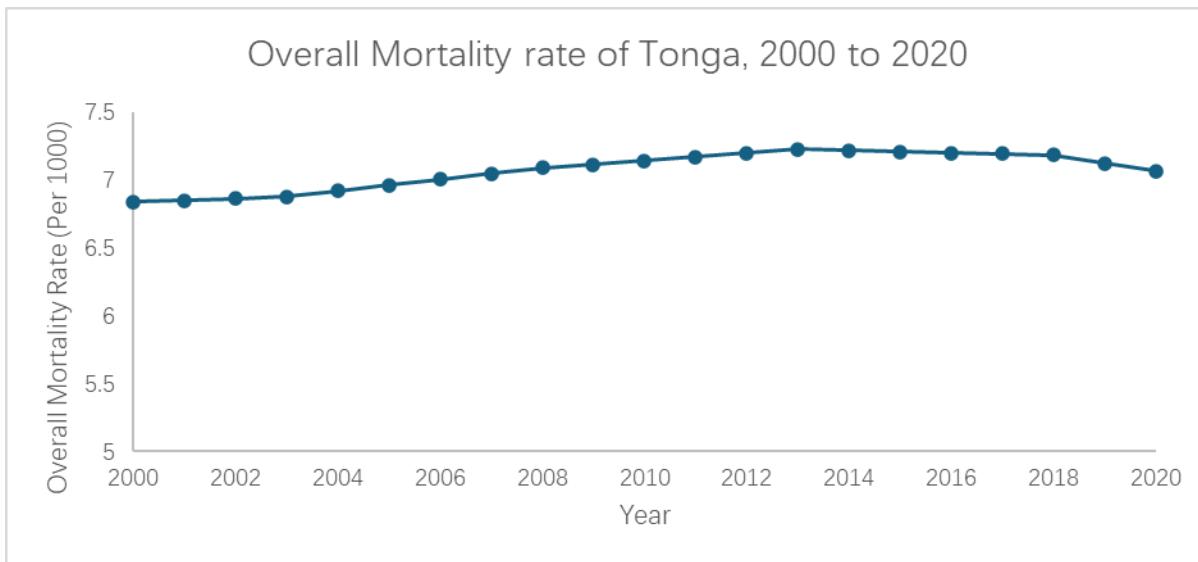


Figure 5. Overall mortality rate of Tonga plotted against year, from 2000 to 2020⁵

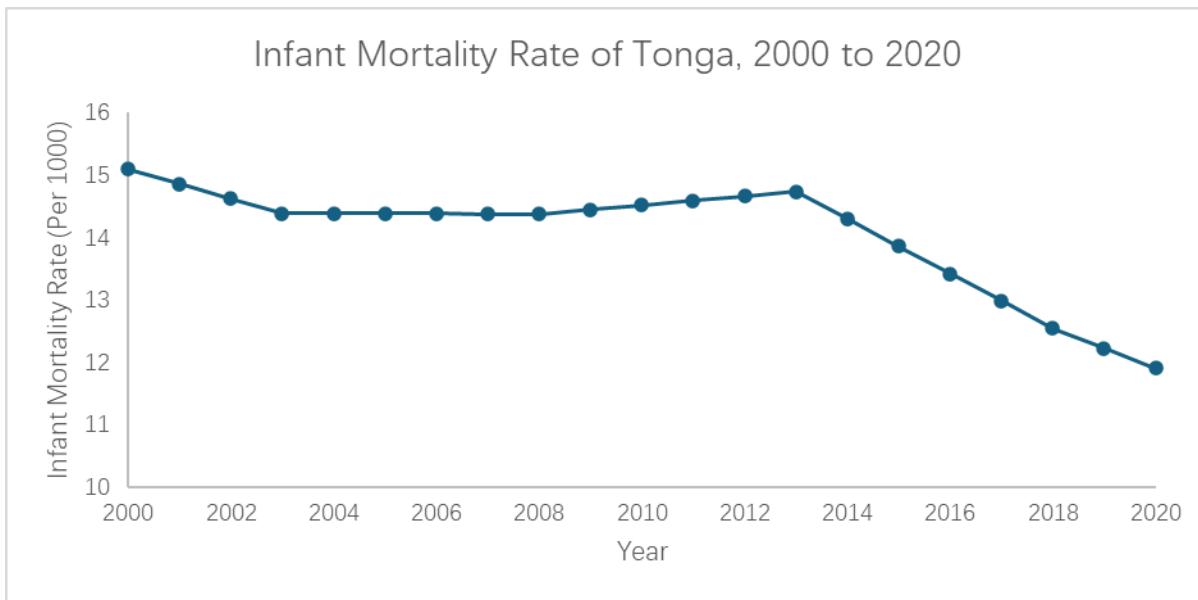


Figure 6. Infant mortality rate of Tonga plotted against year, from 2000 to 2020⁵

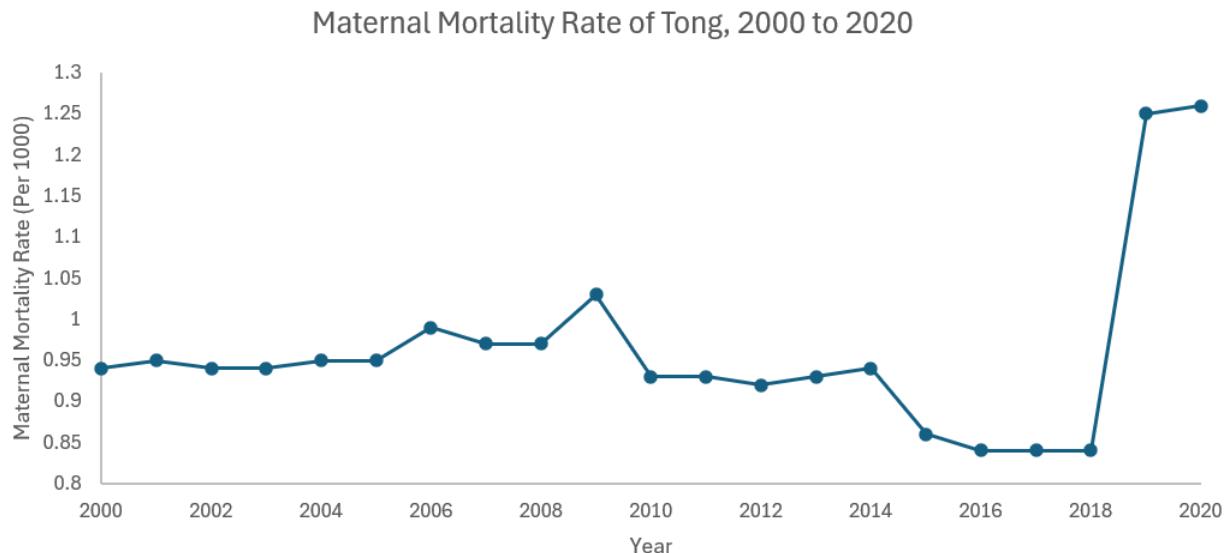


Figure 7. Maternal mortality rate of Tonga plotted against year, from 2000 to 2020⁵

Antenatal and Postnatal Care Coverage

The National Integrated Sexual and Reproductive health strategic plan outlined that each mother should receive at least four antenatal care and two postnatal care per term, and that each primary facility (Health centers and reproductive clinics) should be able to provide these services. However, these goals were only partially met as indicated by the 2019 Health Facility Readiness and Service Availability (HFRSA) Assessment.⁵ While over 95% of mothers were within coverage radius of a facility providing antenatal and postnatal care and all of Tonga's major island had at least one facility providing both types of care, only 45% of primary facilities provided antenatal services and only 81% of primary facilities provided postnatal services. More importantly, only 1 facility provided verifiable antenatal care guidelines, and 2 facilities provided verifiable postnatal care guidelines. With all factors considered, Tonga has no facilities that is antenatal and postnatal service ready, even its largest and major hospital (Vaiola hospital) lacked equipment, calcium gluconate, and antibiotics in the delivery room.

Immunizations

Tonga has a well-established immunization regime. Under the WHO immunization dashboard, nearly all listed vaccines have immunization rates of 99% since the 2000s. Although a few exceptions exist, primarily due to delayed incorporation of new vaccines. Namely, the first dose of inactivated polio vaccine was not introduced until 2015, the pneumococcal conjugated vaccine not until 2021, and the rotavirus vaccine not until 2023. Despite delayed introduction of these vaccines into Tonga's healthcare system, the vaccination rates were nonetheless near perfect at 99% for all of them in 2024. The only exception is the second dose of inactivated polio

vaccines, which has yet to be introduced into Tonga's healthcare system. Overall, the immunization rates of Tonga are near complete with a single exception. While this success is partially due to Tonga's small population size, it is still a sizeable effort and achievement from the government's perspective.

Leading Causes of Death and Risk Factors

Table 1 presents the leading causes of death in Tonga in 2021. Of the leading causes, 9 were noncommunicable diseases, with lower respiratory infection being the only outlier as a communicable disease.

Leading Death Causes of Tonga in 2021 (Per 100000)	
Ischemic heart disease	141.28
Diabetes mellitus	70
Stroke	53.16
COPD	49.51
lower respiratory infections	38.06
Trachea, Bronchus, Lung cancers	35.34
Liver cancer	26.61
Liver cirrhosis	25.19
Breast cancer	22.8
Stomach cancer	17.03

Table 1. *Leading causes of death in Tonga, 2021⁵*

Additionally, it was observed that ischemic heart disease is the leading and most significant cause of death in Tonga, followed by diabetes and stroke, then respiratory diseases and cancers. This distribution is highly consistent with several major risk factors in the Tonga population. For example, Tonga has the highest rate of adult obesity in the world at 71.7% in 2021, which underscores a major risk factor for heart diseases, diabetes, stroke, and fatty liver diseases, which may be the result of increased caloric intake and hypercholesterolemia. Additionally, Tonga has a very high rate of tobacco usage at 31.5%, which is nearly double the world average rate and may explain the high prevalence of respiratory related diseases.

However, despite high obesity rates from increased caloric intake, Tonga nonetheless displays varying degrees of nutritional concerns. 5% of Tonga's population are undernourished and 23.2% experience moderate to severe food insecurity. Additionally, most of their caloric intake comes from starch sources including wheat and manioc cassava, a local root plant rich in starch.

Meanwhile, their fruit and vegetable consumption are significantly lower than the recommended amount, meeting only 240 out of 400 grams per day.²⁰ Given these data, Tonga lacks government-issued nutrition programs that addresses these concerns. The Tongan government initiated a weight loss program from 1995 to 1997, and there exists a few private programs that seeks to address the imbalanced nutrition, such as the Mai e Nima program by the Pacific Farmers Organization. However, these initiatives are usually inadequate to address systematic insufficiencies due to limited funding and resources.²¹

Disability Adjusted Life Year Rate of Tonga

Table 2 presents the estimated disability adjusted life year rate (DALY) of Tonga in 2021. DALY represents the total number of years a population group remains affected by certain disability-causing sources and is aimed to differentiate between factors that result in immediate or quick death from factors that can have long term effect on health and quality of life. It can be inferred from the table that the main contributors of DALY in Tonga highly overlap with its leading causes of death. Additionally, obesity and tobacco use related diseases also present a dominant contribution to the statistics.

Disability Adjusted Life Year Rate of Tonga (2021)	
Ischemic heart disease	3876.34
Diabetes mellitus	2698.63
Stroke	1461.3
Lower respiratory infections	1244.49
COPD	1075.08
Congenital anomalies	1023.71
Liver cirrhosis	970.65
Trachea, bronchus, lung cancers	930.42
Liver cancer	863.23
Road injury	745

Table 2. Leading contributors of disability adjusted life year rate in Tonga, 2021⁵

National Health Care Structure

Structure and Policy

Tonga has a total of 52 healthcare facilities classified into 4 levels. The Vaiola hospital in the country's capital is its one and only tertiary referral hospital. Following, Tonga has 3 community hospitals, 14 health centers, and 34 reproductive and child health clinics scattered amongst its 36 islands. Despite relatively large numbers of health centers and clinics, over 90% of Tonga's health services are provided in its 4 hospitals, with the major types of services provided being primary or emergency care. Patients typically go directly to one of the 4 hospitals (the 199-bed national referral hospital in Vaiola, the 43-bed Prince Ngu's district hospital in Vava'u, the 22-bed Niu'ui district hospital in Ha'apai, and the 17-bed Niu'eki district hospital in 'Eua) and are referred to specialists at the Vaiola hospital if necessary. However, the range of available care at Vaiola remains limited, and patients may need to seek international (New Zealand) care for more complex issues. With 4.1 skilled healthcare workers, 0.67 physicians, and 2.5 hospital beds per 1000 population, Tonga has higher healthcare resource densities compared to other middle-lower income countries in the pacific. However, this is still less than the world average, and Tonga specifically experiences shortage of specialists in anesthesiology and surgery.²²

Healthcare Expenditures

In 2021, the health expenditure of Tonga was 6.27% of its GDP, sitting at an all-time high. However, out of pocket expenditure was at an all-time low of just 270 USD per capita and 4.24% of total health expenditure. The public health system of Tonga is overseen by the Ministry of Health, which devises long term health plans and sets legislations for costs of public health services. The main financer of this system is Tonga's government, providing around 50% of funding. Donors and partnerships account for 40% of funding in the public health sector, while individual out of pocket expenditures only account for 10% of funding.²³

Services and Coverage

The Tongan government reports good healthcare access for most of its citizens, where most can receive essential medications and preliminary diagnostic within 1 hour of walking distance. However, residents of Tonga's most remote islands are excluded from this list and often find difficulties accessing healthcare resources. This is when the private sector comes into account. The role of private sector in Tonga healthcare services is limited, where some traditional doctors and government-employed physicians run after-hour clinics. Although these clinics are often unable to substitute for hospital level primary care, they do provide extended coverage for rural

areas.²⁴ Tonga's healthcare sector includes a network of 1 tertiary referral hospital (Vaiola Hospital), 3 direct hospitals, 13 health centers, and 34 maternal and child health clinics.^{25,26} Tongans heavily depend on hospitals for healthcare service, as 90% of medical services in Tonga are delivered in hospitals.²⁵

Tongans residing in Tonga receive free healthcare via a universal healthcare coverage.⁵ In Tonga, there are reported to be 37,130 interventions (i.e., actions taken to prevent, control, and eliminate) against neglected tropical diseases (NTDs).^{22,23} According to the World Health Organization (WHO), 49.9% of women of reproductive age have adequate access to modern and family planning methods, and 98% of births are attended by skilled health personnel.²⁷ By collaborating with WHO, the Tongan population was expected to have universal health coverage through the National Health Strategic Plan 2015-2020, which means that Tonga will have one of the highest coverage of essential services compared to other countries in the Western Pacific, with relatively low out-of-pocket spending.²² Apart from universal health care coverage that allows Tongans residing in Tonga full access to healthcare services and medication free of charge, there are private insurance companies that also provide coverage for Expats, who do not qualify for free healthcare like Tongans/naturalized Tongans do, such as Pacific Prime Insurance, April International, NOW Health International, AXA, William Russell, and Cigna.²⁵

National Radiology Profile

Radiology Workforce and Training and Professional Representation

Tonga's radiology workforce is small, reflecting the limited availability of specialized medical professionals across Pacific Island nations. Radiology education and training in the region is underdeveloped, as there are only two accredited universities in Tonga—Christ's University in Pacific and the University of the South Pacific Tonga campus.^{28,29} As of 2021, there is only one radiologist in the country, Dr. Ana Akauola, who is also Chair of the Pacific Radiology Society in Tonga, with diagnostic imaging services often relying on external consultations or support from regional healthcare hubs.^{30,31} As of 2023, Tonga, along with Palau, Cook Islands, Fiji, and Vanuatu, collectively had a total of just four radiologists and 3.5 pathologists serving their populations.³⁰

The supporting workforce, including biomedical technicians, radiologic technologists, radiology nurses, physicists, radiation safety officers, and support staff remains similarly limited, with only 7 medical imaging and therapeutic equipment technicians noted as of 2013.^{30,32} There was a radiology technician program taught at Vaiola Hospital's X-ray Department, but the most recent class graduated as of 2012.³² However, regional initiatives like the Postgraduate Certificate in Radiology Fundamentals (which is currently supported by the Pacific Community, DFAT, and international partners) are helping to enhance expertise and build capacity across Pacific Island Countries and Territories.³¹ RAD-AID has also recently partnered with Vaiola Hospital, Tonga's primary medical facility, and in 2025, the organization dispatched mammography volunteers to collaborate with on-site technologists, providing training in mammography techniques, breast health education, and quality control testing.³³

Equipment Inventory, Distribution, and Rules and Regulations

Radiology services in Tonga rely on a limited range of imaging modalities. Referral hospitals in Tonga, Palau, Cook Islands, and Fiji have uninterrupted access to essential resources such as electricity, running water, internet, oxygen, X-ray, and ultrasound equipment.³⁰ Imaging modalities available in Tonga include X-ray and ultrasound, with computed tomography (CT) available in select settings; however, magnetic resonance imaging (MRI) is not available.³⁰ Vaiola Hospital, Tonga's only referral hospital, provides X-ray, ultrasound, CT, and mammography, although ultrasound is also utilized by medical staff at point of care facilities.³⁰ For Tongan residents, X-rays cost \$13 to \$60 USD, while CT scans cost \$150 to \$500 USD. For non-Tongan resident patients, the cost is roughly 2x as expensive. Radiological procedures include barium contrasted gastrointestinal imaging, cholangiogram, and pyelography, with costs ranging from

\$180 to \$240 USD.³⁴ Due to the concentration of Tonga's population on its main islands, access to imaging facilities is generally timely and efficient.³⁰

X-ray and ultrasound are the primary imaging technologies used in Tonga, with X-ray availability often constrained by the limited number of radiographers.³⁰ Ultrasound can be utilized by medical staff at the point of care when needed.³⁰ There are no private sector imaging services or local manufacturers of imaging equipment in Tonga.³⁰ Equipment is sourced externally, though specific details about suppliers and maintenance are unavailable.³⁰ The National Drugs and Medical Supplies Committee regulates medical equipment quality, including imaging devices, to maintain healthcare standards.³⁵ Radiology equipment maintenance and supply in Tonga face significant challenges due to limited local technical expertise and a heavy reliance on imported parts and international service providers, which often leads to delayed repairs and increased operational costs.^{32,36} While the National Drugs and Medical Supplies Committee oversees general medical supplies in Tonga, radiology-specific regulations are managed through additional frameworks. Tonga follows international guidelines—such as those from the International Atomic Energy Agency (IAEA)—to enforce radiation safety laws, establish imaging accreditation standards, and regulate equipment procurement processes, ensuring that diagnostic imaging services meet strict safety and quality criteria.³⁷

Conclusion

Tonga, a small Pacific Island nation with a long history of monarchy and cultural resilience, currently has few radiologists based in the country, with radiology services heavily relying on limited X-ray and ultrasound capabilities. Organizations can assist by expanding access to radiology equipment and providing training opportunities, expanding healthcare access for underserved areas through telemedicine or mobile clinics, and supporting public health campaigns to address non-communicable diseases like obesity and diabetes. Expanding efforts in disaster preparedness, recovery, and funding may also strengthen Tonga's healthcare system and improve access for its population.

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