

TE MARAE ORA
COOK ISLANDS Ministry of Health



Cook Islands

National Health Bulletin

2021 - 2023

Ripoti Mataiti O Te Marae Ora

Te Marae Ora Annual Report 2021-2023

COOK ISLANDS NATIONAL HEALTH BULLETIN 2021-2023



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Aim of this report

This report aims to present an overview of health statistics and services in the Cook Islands for the years 2021 to 2023. It is intended to serve as a foundation for users to conduct further investigations and provide an in-depth review of trends and analyses. Additionally, it aims to be a key resource for shaping future health policies and targeted interventions.

Who this report is for

This report is intended for all agencies and individuals interested in health statistics. It serves as a baseline for TMO staff, executives, stakeholders, development partners, government and non-government agencies, and researchers, providing essential data for further investigation and informed decision-making.

What this report contains

Population Health Indicators: Key metrics on the overall health and wellness of the Cook Islands population.

Healthcare Services and Facilities: Information on available healthcare services and infrastructure of the Cook Islands.

Notifiable Diseases: Data on diseases recorded and tested by healthcare professionals in the Cook Islands.



FOREWORD



" Kia Orana kotou katoatoa,
It is my distinct pleasure to present
to you the National Health Bulletin
Report for the years 2021 to 2023, a
comprehensive reflection of our
collective efforts and achievements
in the realm of health in Cook
Islands."

A Message from the Secretary of Health

This report encapsulates invaluable insights and statistics that provide the health landscape of our nation and serve as a beacon guiding our future endeavours. It stands as a testament to our continued commitment to transparency, collaboration, and progress in health. The data is primarily derived from the patient information management system (known commonly as MedTech Evolution) and directorate registers and reports.

The significance of the National Health Bulletin Report extends far beyond our borders. To our esteemed partners in health, both local and international, and NGOs tirelessly working towards the betterment of our community. It provides crucial data and trends that inform evidence-based decision-making and ultimately moving towards data for impact, ensuring that our collective efforts are targeted, efficient, and impactful.

I wish to express my heartfelt gratitude for the Memorandum of Agreement between Te Marae Ora Ministry of Health Cook Islands (TMO) and the Ministry of Agriculture (MoA). Tearoa Iorangi's secondment to assist the Health Information Systems (HIS) team with this report is greatly appreciated. I also extend my gratitude to other government agencies, such as the Ministry of Justice, for providing data to TMO. Lastly, I want to acknowledge all TMO staff who contributed to compiling this, especially to the HIS team under the Policy and Planning for taking the lead on this work. Their unwavering commitment to data gathering, data collection and analysis forms the bedrock upon which this report stands.

As you peruse the pages of the National Health Bulletin Report, may you be inspired by the progress we have made, challenged by the obstacles that lie ahead, and emboldened by the collective resolve to build a healthier, more resilient future for all.

For further clarification of information including those not published in this report, direct enquiries to the HIS team at Te Marae Ora.

Meitaki Ranuinui,

.....

Mr Bob Williams

AKNOWLEDGEMENT

TMO extends heartfelt gratitude to all those who supported the completion of this report. Your contributions were essential to its success.

TMO would like to give appreciation to all the doctors, nurses, allied health professionals and every employee within each directorate who serves as data input team. Your dedication and hardwork are essential for the compilation of this report, and TMO are immensely grateful for your contributions.

Special recognition is due to the Health Information Systems (HIS) team composed of Maina Tairi Mataio, Grace Matenga and Dennise Nanai, whose dedication and passion for learning empowered the development of outcomes highlighted in the National Health Bulletin (NHB).

TMO also expresses appreciation to the Information and Communication Technology (ICT) Department for invaluable support in ensuring the smooth functioning of technical aspects throughout the report's creation process. A commendation is extended to the Policy and Planning Manager, Abegail Tuazon, for the leadership and guidance, which steered the project towards successful completion. Planning and Funding (P&F) Director, Roana Mataitini, deserves commendation for the endless support given to the HIS team, accommodating all the requests and actions necessary for the completion of this report. Special mention also goes to P&F staff for encouraging and showing full support in the completion of the report.

TMO extends sincere gratitude to the Secretary of Health, Bob Williams, for providing a secondment person who assisted the HIS team with the task of completing the report.

Heartfelt appreciation goes to the Head of the Ministry of Agriculture for allowing Tearoa Iorangi to assist HIS team. TMO commend Tearoa Iorangi for sharing expertise and guidance with the team on the preparation, data collection, and collation of this report.

Gratitude is extended to all individuals who provided photographs and supplementary materials, enriching the content and visual appeal of the National Health Bulletin. Among these contributors were: Moana Michaela Tangimetua, Howard Tangimetua, Dr Koko Lwin, Dr Hannah Cummings, Dr Kevin Bisili, Dr Seema Kumar, Dr Danny Areai, Dr Evangelene Daniela-Wong, Ligipati Dowling, Ngatamariki Manea, Frances Akaruru, Monika Mafua, Glassie Matata, Nana Cuthers, Theresa Tatuava, Geoffrey Wuatai, Karen Ngamata, Daniel Thompson, Edwina Tangaroa, Rangi Tairi, Lycee Teiotu, Metua Bates and Rufina Tutai.

Finally, TMO extends Meitaki Ma'ata to all other contributors whose efforts, though not explicitly mentioned, were instrumental in bringing together the comprehensive insights presented in this report. Your collective contributions have been invaluable in shaping the National Health Bulletin and advancing our shared goals in healthcare.

EXECUTIVE SUMMARY

Te Marae Ora Ministry of Health Cook Islands (TMO) National Health Bulletin report provides valuable insights into the areas of greatest need and opportunity for collaboration and resource allocation to achieve its vision of people living a healthier life, enabling individuals in Cook Islands to aspire and meet their life aspirations.

The population health trends indicate a decline in crude birth rates (CBR) to 13.7 in both 2021 and 2023, representing the lowest rates in the past decade. Despite this decline, the total fertility rate remains above 2.0, indicating moderate fertility levels, with the peak fertility group being ages 20-24. Contraceptive prevalence rate (CPR) has increased since 2020, reaching 37.5% in 2023, the highest recorded in the past five years.

Mortality rates have shown concerning trends, with infant and under-five mortality rates steadily increasing from 2021 to 2023, exceeding 10%. Foetal mortality rate experienced fluctuations but rose to 14.4% in 2023. Additionally, Diseases of the Circulatory System were the leading underlying causes of death (37%) from 2021-2023, underscoring the impact of non-communicable diseases (NCDs) on mortality.

NCDs remain a significant health challenge, with over 5,800 cases reported as of 2023, representing around 52% of the resident population aged 15 and above (11,259), indicating a 5.4% increase from the previous report of 5,500 in 2020. The gender gap in NCD prevalence reflects lifestyle choices, healthcare-seeking behaviours, and access to preventive measures. NCD deaths have consistently accounted on average for 80% of all deaths annually for the last five years, with cardiovascular disease (CVD) being the primary cause, followed by diabetes, neoplasms (cancers), and respiratory system disorders.

Injuries, particularly traffic-related, constitute a significant portion (59%) of reported injuries in the Cook Islands. Meanwhile, notifiable diseases such as acute respiratory infections (64%) reported the highest number of cases while sexually transmitted infections had only not more than 2% positive rate out of the 8,600 tests conducted from 2021-2023. A single case of HIV involving an overseas male was reported in 2023 and has since returned back to the home country. Conversely, dengue fever cases have significantly declined over the past three years, with none reported in 2023.

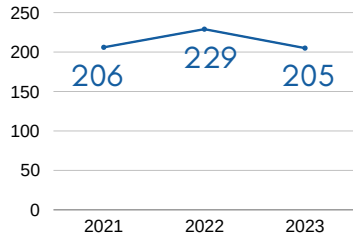
Healthcare services and utilisation showed a consistent pattern where domestic referrals (60%) notably exceed international referrals. For oral health, patients receiving treatment recorded a significant jump to 75% between 2022 and 2023 alone. Consultations and screening experienced the most substantial increase, particularly in 2023. Further investigation is required to provide in depth review of the trends in service utilisation reported for accessing oral health services.

In conclusion, this report provides crucial insights into the health challenges and opportunities facing the Cook Islands. With the launch of Te Marae Ora Ara-Tango Anga-ánga 2023 - 2027 and the adoption of the National Healthcare Reorientation Plan 2024+, TMO is poised to lead transformational efforts in healthcare delivery, focusing on prevention, early intervention, and people-centred care. These initiatives underscore the commitment to addressing non-communicable diseases, improving maternal and child health, enhancing injury prevention strategies, and strengthening healthcare infrastructure. Through collaborative efforts and strategic resource allocation, TMO aims to empower individuals to lead healthier lives and achieve their aspirations, ensuring a brighter and healthier future for all residents of the Cook Islands.

BULLETIN SNAPSHOT

2021-2023

Total Births



Crude Birth Rate (%)

14.2

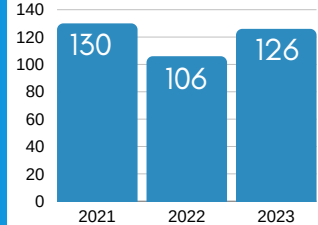
Annual average 2021-2023

Skilled Birth Attendance

100%

0% change over the last 3 years

Total Deaths

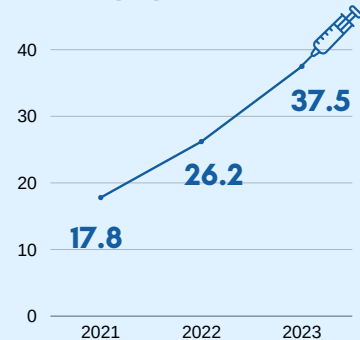


Crude Death Rate (%)

7.6

Annual average 2021-2023

Contraceptive prevalence Rate (%)



Foetal Mortality Rate (%)

7.8

Annual average 2021-2023

Infant Mortality Rate (%)

25.5

Annual average 2021-2023

Under-5 Mortality Rate (%)

24.9

Annual average 2021-2023

Total Fertility Rate *per woman

2.2

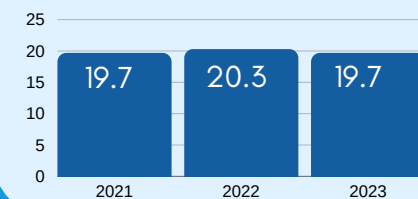
Annual average 2021-2023

Adolescent TFR *per 1,000

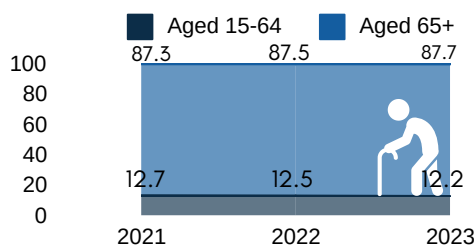
26.9

Annual average 2021-2023

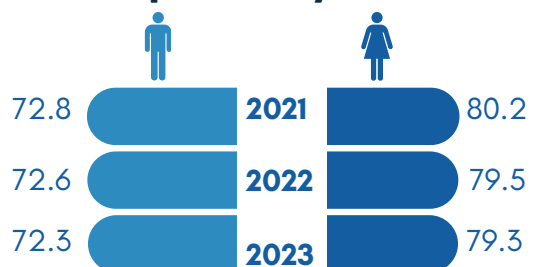
NCD Premature Deaths (%)



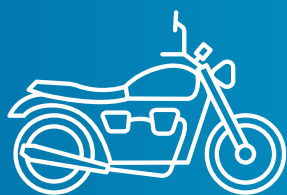
NCD Mortality Rate (%)



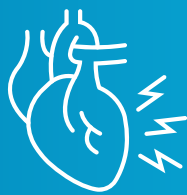
Life Expectancy at Birth



Bulletin Snapshot as of December 2023



50% of Motor-Vehicle Accidents were **alcohol related**



CVD accounts for **52%** of all **NCD mortality**



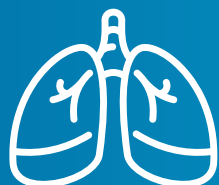
There is **1.2 suicides** out of every **10,000 population**



1.9 doctors, **6.9** nurses, **1.9** oral and **0.7** pharmacy personnel per **1,000 population**



3.9 cancer **incidence rate** to **1.3** cancer **mortality rate** per **1,000 population**



5800 NCDs was reported (15yrs+)



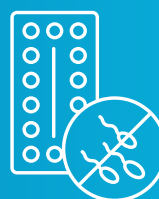
99% **BCG** and **HepB** immunisation **coverage rate**



Domestic referrals accounted for **60%** of **total patient referrals**



9.9% Cook Islands **bed occupancy rate**



38% of contraceptives **demand met** for **eligible female population** (15-49 years)



15,000 oral health services conducted from **2021-2023**



1 HIV and **4 TB** cases were **confirmed**



40 ciguatera cases reported

OUR MINISTRY

The Government, through Te Marae Ora Ministry of Health, serves as the primary healthcare provider in the Cook Islands. TMO bears the responsibility for establishing national health policies and overseeing the daily administration of healthcare services throughout the country. TMO operates through five directorates: Public Health, Oral Health, Primary Health Care, Hospital Health Services, and Planning and Funding. Guided by the Secretary of Health and the Executive team, the Ministry endeavours to fulfil its Vision, Mission, and Core Values.

Our Vision | To Tatou Orama

All people living in the Cook Islands, living healthier and achieving their aspirations.

Our Mission | To Tatou Akakoro'anga

To provide accessible, affordable health care and equitable health services of the highest quality, by and for all, to improve the health status of the people living in the Cook Islands.

Our Values | To Tatou Turanga Tau

E



EQUITY

Treat everyone equally

Q



QUALITY AND INNOVATION

Deliver quality service with innovation

U



UNITY

Work in unity

I



INTEGRITY AND ACCOUNTABILITY

Uphold integrity daily with accountability

P



PEOPLE - CENTERED

Patient/People always central in healthcare

P



PASSIONATE

Work with passion

E



EMPOWERMENT

Empower one another

R



RESPECT

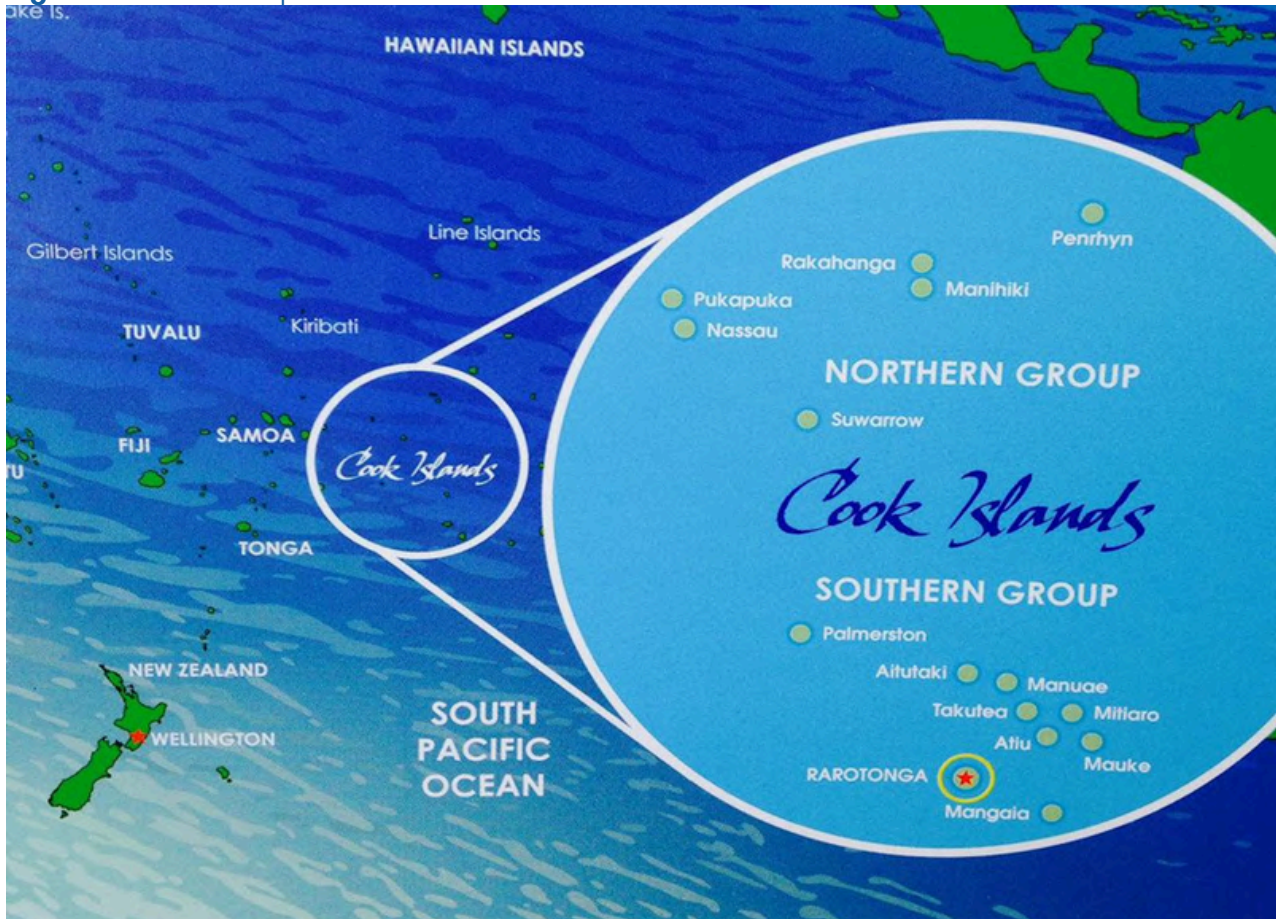
Respect one another

INTRODUCTION

Demographics

The Cook Islands is situated in the south of the Pacific Ocean and consists of 15 islands spreading over 2 million km² of the Pacific Ocean, with 13 of them being regularly inhabited. Geographically, the islands are divided into two groups, commonly referred to as the Northern and Southern Group islands collectively called the Pa Enea. Because the flights to the Northern Group islands are irregular, these islands are more isolated compared to the Southern Group islands which have regular flights. The northern Cook Islands include Manihiki, Rakahanga, Pukapuka, Nassau, Penrhyn and Suvarrow, while Aitutaki, Atiu, Mangaia, Mauke, Mitiaro, Palmerston, Takutea, Manuae and Rarotonga comprise the southern Cook Islands. Rarotonga is the main island with Avarua as its capital. Rarotonga is also the largest, most populous island, and serves the administrative centre.

Figure 1: Location Map of Cook Islands



HEALTH SYSTEM

Through TMO, the Cook Island government is the main provider of healthcare in the country. The government provides free healthcare to all students until the age of 18 years and for all pensioners aged 60 years and over. Health services range from public health (inclusive of primary care) to secondary care. There are also a small number of private health providers on the island. The healthcare delivery services are complemented by a range of Community-Based Organizations (CBOs) and NGOs, including CICWA, CIFWA, Punanga Tauturu, Red Cross Society, Creative Centre, Te Vaerua, Te Kainga, and Te Punanga Ora'anga Matutu.

Under the Planning and Funding Directorate, Health Information System (HIS) was established to serve as the primary unit providing health data resources and reporting, which are circulated within and through TMO for health-related information.

Information Provision

The data is primarily extracted from the patient health information management system known as MedTech 32 (MT32), established in 2003. In October 2022, MedTech 32 was upgraded to MedTech Evolution (Medtech) to enhance functionality, efficiency and security in both clinical and administrative areas. Health workers utilise Medtech database to record patient information and other activities of TMO. Although the Pa Enea health facilities have access to Medtech, they encounter challenges related to connectivity, ICT infrastructure and equipment. Additionally, data reporting incorporates paper based reports from other directorates such as registers, community clinics reports, and MSupply.

Diseases are classified according to the international statistical classification of diseases (ICD10) which code its morbidity, notifiable and mortality data.

Data exclusions in this report:

1. Births and deaths of patients referred overseas.
2. Patients living overseas for chronic conditions

Medtech Evolution Screening Templates

SCREENING	MEDTECH CODE
Primary care triaging & cardiovascular risk assessment, clinics triaging	CVR1
NCD Register	NCDREG
Cancer Register (CanReg)	CANCER
Fish Poisoning	FISH
Dengue-Zika-Chickungunya	DENZIK
Syndrome- for acute fever & rash, diarrhea, prolonged fever and influenza like-illness	SYND, ILI
Admission	ADM
Discharged	DIS
Death	D
Cook Islands Injury Surveillance	CIIS
Road traffic accidents	MVA
Baby birth details	BIRTH
Mother details	BIRTH2
Antenatal clinic	ANC
Postnatal clinic	PNC
Primary health care (Outpatient)	OPD
Triage	TRIAGE
Patient referrals NZ	REFER
Patient referrals OI	REFOI
Specialist Visits	HSV

The primary data sources for this bulletin are screening templates for each respective area, which contain detailed patient information and capture additional data not present in the patient notes. Additional medtech sources include classifications and appointment books.

Key Facts Table

	2021	2022	2023
Cook Islands census population resident numbers	14,987	14,987	14,987
Total number of births	206	229	205
Total number of deaths	130	106	126
Total Fertility Rate (TFR per woman)	2.1	2.4	2.1
Crude Birth Rate (CBR per 1,000)	13.7	15.3	13.7
Crude Death Rate (CDR per 1,000)	7.3	6.8	8.8
Teenage (adolescent, 15-19 years) Fertility Rate	32.6	13.7	34.4
Contraceptive Prevalence Rate	17.8	26.2	37.5
Maternal Mortality Ratio	0	0	0
Skilled Birth Attendance (%)	100	100	100
Life Expectancy at birth			
<i>Both</i>	76.5	76.1	75.8
<i>Males</i>	72.8	72.6	72.3
<i>Females</i>	80.2	79.5	79.3
Life Expectancy at age 40			
<i>Both</i>	39.4	38.9	39.0
<i>Males</i>	36.9	36.8	36.3
<i>Females</i>	41.9	41.0	41.7
Foetal (neonatal) Mortality Rate (per 1,000)	4.8	4.3	14.4
Infant Mortality Rate (IMR per 1,000)	0.0	21.8	29.3
Under 5 Mortality (U5M per 1,000)	9.7	26.2	39.0
Adult Mortality (%)			
<i>Males</i>	14.1	13.3	14.2
<i>Females</i>	9.0	8.8	7.9
NCD Mortality (%)			
<i>Aged 15-64</i>	25.4	21.7	20.0
<i>Aged 65+</i>	59.5	67.0	60.8
NCD Premature Deaths (%) 30-69years			
<i>Both</i>	19.7	20.3	19.7
<i>Males</i>	22.5	23.6	24
<i>Females</i>	16.9	17	15.4

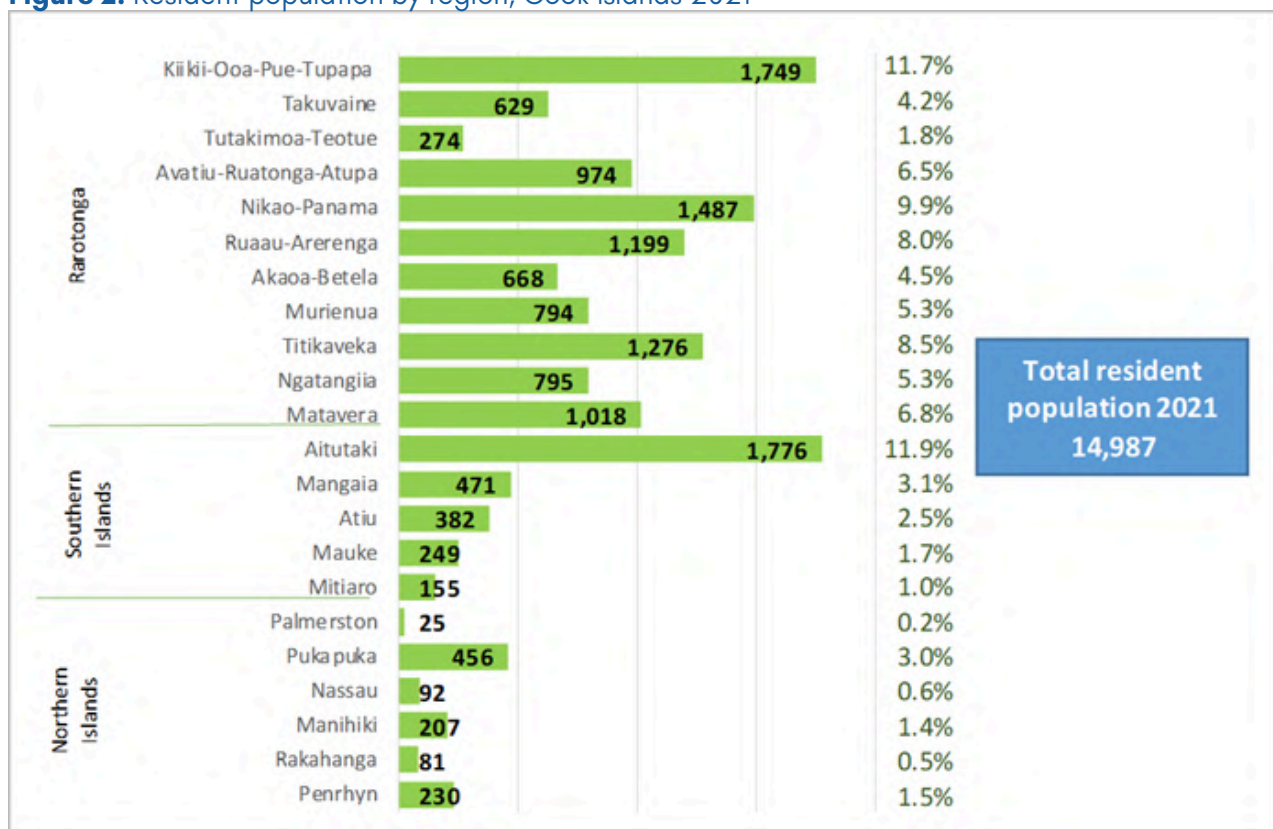
POPULATION HEALTH INDICATORS

Population Characteristics

According to the 2021 Cook Islands Census Report, there was a population decrease of 2,394 from 17,434 in 2016 to 15,040 in 2021. This population comprised 7,392 men and 7,648 women. Of the total population, 14,987 people are considered as resident population, while 53 people are considered as visitor population. The reduction was influenced by the impacts of COVID-19, particularly affecting those working in the tourism industry, as well as by the out migration of the local residents overseas per the Census of Population and Dwellings 2021.

Majority (73%) of people live in Rarotonga, accounting for a total of 10,863 residents, while 20.2% or 3,033 people are living in the Southern Group and only 7.3% or 1,091 of the population are living in the Northern Group (**Figure 2**). Only Kiiiki-Ooa-Pue-Tupapa, Avatiu-Ruatonga-Atupa, Nikao-Panama, Ruaau-Arerenga, Titikaveka, Matavera, Aitutaki, Atiu, Pukapuka and Nassau have a moderate increase in the resident population while Mitiaro, Manihiki and Penhryn maintained the percentage in comparison to 2016.

Figure 2: Resident population by region, Cook Islands 2021



The population pyramids in **Figure 3** highlight changes in the overall age-sex distribution of Cook Islands residents. As shown below, it can be inferred that Cook Islands is heading towards a constrictive population pyramid. A constrictive population often depicts declining birth rates, low fertility rates, high life expectancy, and low mortality rates.

From 2016, there is an observed indent in the 20–24 and 40–44 age groups in 2021. Additionally, an indent in the population is observed on ages 5–9 and under 5 years old for both male and female. However, there's an increase in the proportions of men and women of 35–39 and 55–59 age groups. It's worth noting that older individuals are enjoying longer lifespans, indicating a growing population of healthier elderly individuals.

Figure 3: Age distribution of the resident population by sex, Cook Islands 2016 and 2021



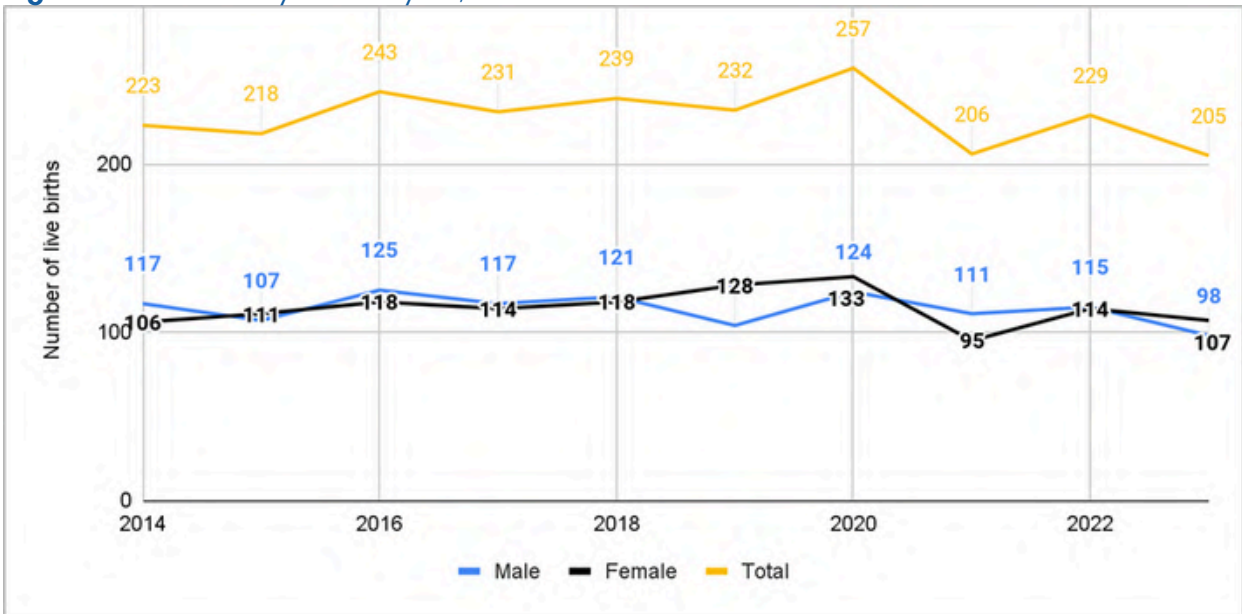
Births and Children

Live Births

The live births data from 2014 to 2023 show steady highs and lows. A total of 2,283 thousand live births were successfully delivered over this time period. Births peaked in 2016 and 2020, with totals of 243 and 257, respectively. The lowest totals were in 2021 and 2023, at 206 and 205.

Figure 4 shows the proportion of male (49.8%) and female (50.1%) births almost equal to each other, with only a 0.2% difference between the sexes. In the last three years, the number of births between males and females has been quite similar, maintaining a sex ratio of approximately one male to one female.

Figure 4: Live births by sex and year, Cook Islands 2014-2023



Crude Birth Rate

The crude birth rate (CBR) represents the number of live births per 1,000 people in a given year. As illustrated in Figure 5 below, there is a declining CBR. Despite an increase to 21.1 in 2016, a downward trend can be observed throughout the years. With CBRs of 13.7 in both 2021 and 2023, these represent the lowest rates in the last 10 years.

Figure 5: Crude live birth rate per 1,000, Cook Islands 2014-2023

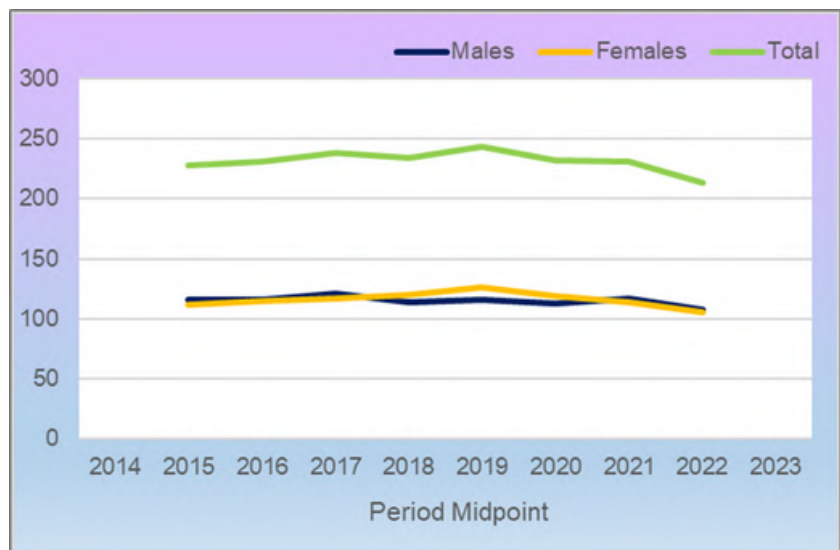


Due to fluctuations in the annual number of births in the Cook Islands, a three-year moving average was applied to smooth these fluctuations, as shown in Figure 6 below. This ensures that any data points that may be unusually high or low do not distort the overall trend. Based on the trends depicted below, it becomes evident that the overall number of births is exhibiting a slight decline.

Figure 6: Three year rolling average number of births , Cook Islands 2014-2023

Table 1: Births by Year

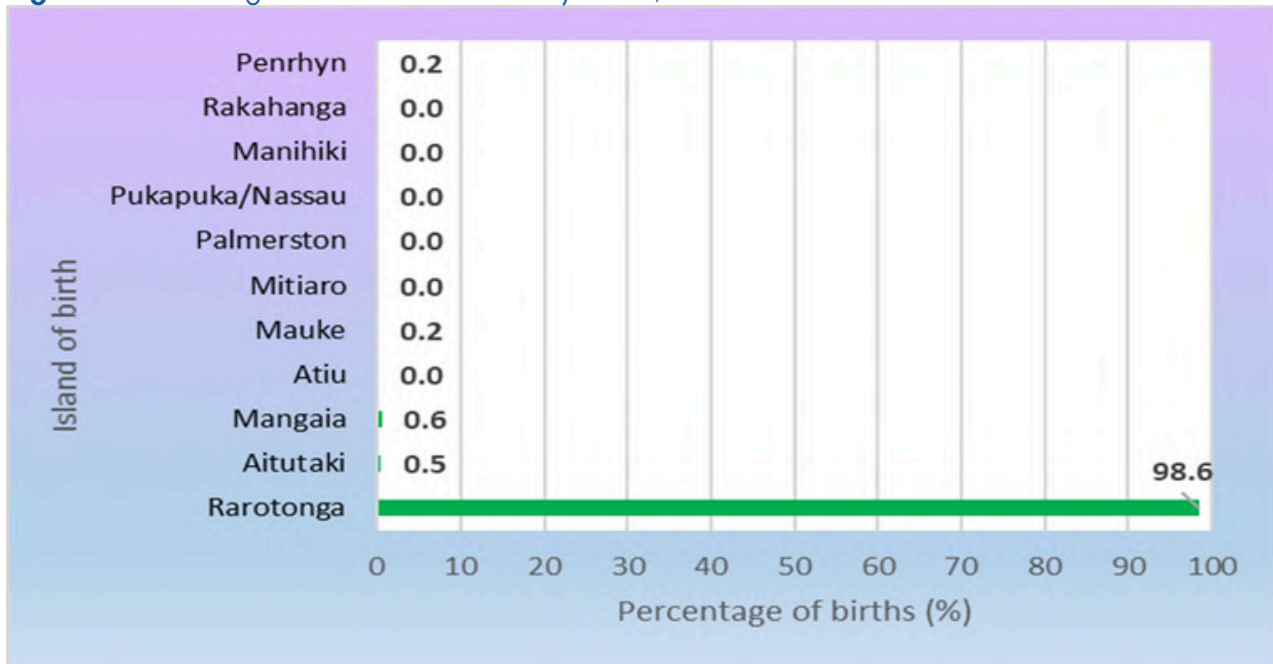
Year	Live Birth	
	Number	3 Year Average
2014	223	
2015	218	228
2016	243	231
2017	231	238
2018	239	234
2019	232	243
2020	257	232
2021	206	231
2022	229	213
2023	205	
Total	2,283	228



Births by Island

For safe delivery, mothers are referred to the Rarotonga hospital. In the chart shown in **Figure 7** below, the percentage distribution of births across different islands is presented. Nearly 99% of births take place on the primary island of Rarotonga, totaling 631 births. Following Rarotonga are Aitutaki with three births, Mangaia with four births, and Mauke with one birth—all situated in the Southern group islands. Penrhyn, representing the Northern group islands, records one birth over this period.

Figure 7: Percentage distribution of births by island, Cook Islands 2021-2023

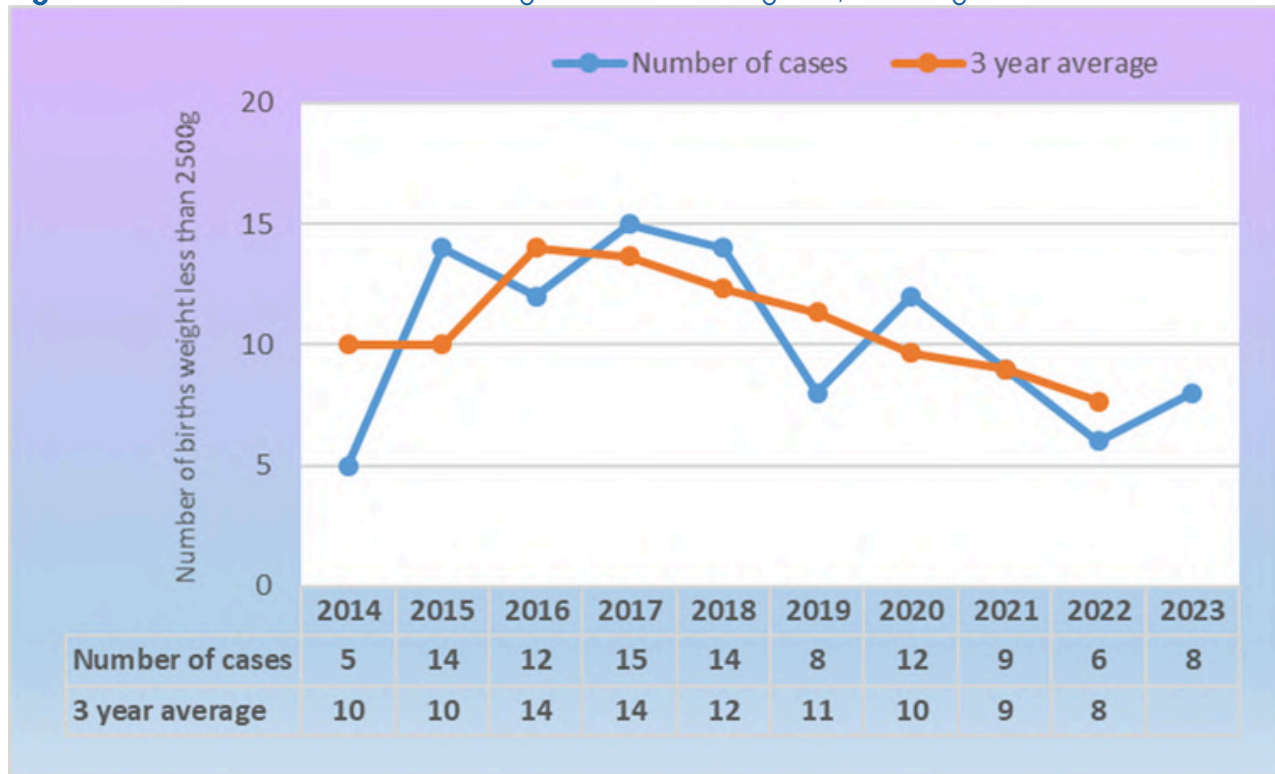


Low Birth Weight

Low birth weight is primarily caused by premature birth and a condition called intrauterine growth restriction, which occurs when a baby does not grow well during pregnancy. A normal birth weight is between 2,500 to 4,200 grams. Infants weighing less than 2500 grams are categorised as having low birth weight.

Figure 8 depicts the incidence of low birth weight in Cook Islands from 2014 to 2023. There is an uptrend and downtrend of cases of low birth rate in the span of 10 years. To alleviate these fluctuations, a three-year average was calculated to evaluate the trend's direction. Therefore, the data suggests a continual decrease in the incidence of low birth weight cases, indicating a declining trend by 2023.

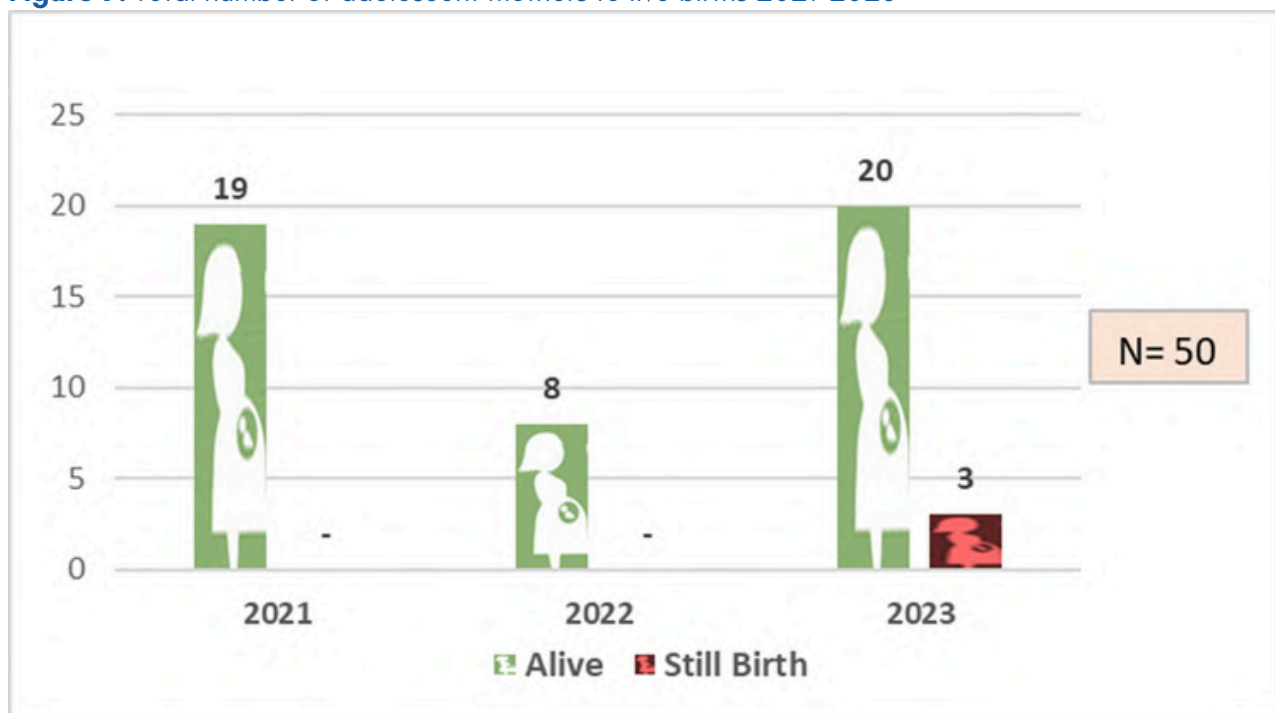
Figure 8: Number of births with birth weight less than 2500 grams, Rarotonga 2014 - 2023



Adolescent Pregnancy

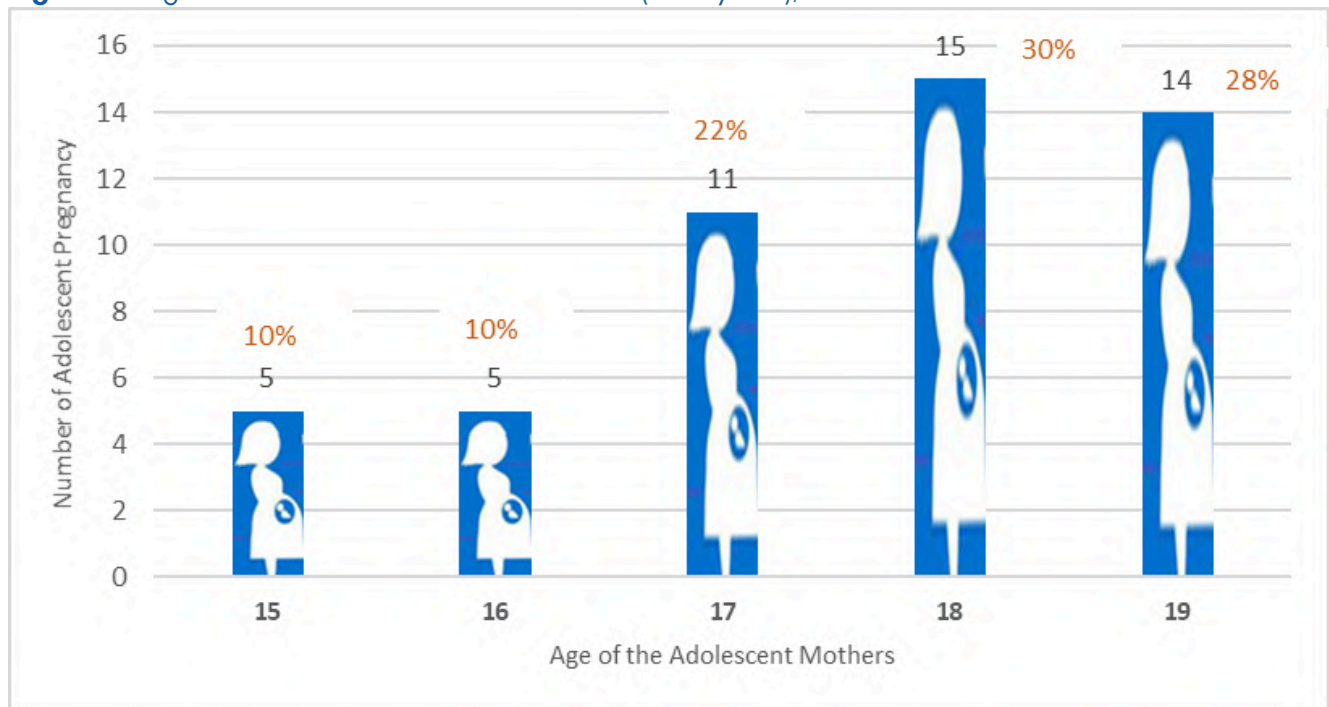
From 2021-2023, a total of 50 adolescent mothers giving births were recorded, 46% of which were recorded in 2023 as shown in **Figure 9** below. Of the total, 94% have successfully given birth, with only 6% of the adolescent mothers experiencing stillbirths. These adolescent pregnancies consisted of females aged 15-19 years. Still birth is defined as a baby born with no signs of life at or after 28 weeks of gestation. This is also referred to as Intrauterine Foetal death (IUFD).

Figure 9: Total number of adolescent mothers to live births 2021-2023



In terms of age-specific distribution of these adolescent mothers, 30% of pregnancies are accounted for by adolescent mothers aged 18, followed by 28% aged 19 years, 22% aged 17 years and 10% for ages 15-16 years, as shown below.

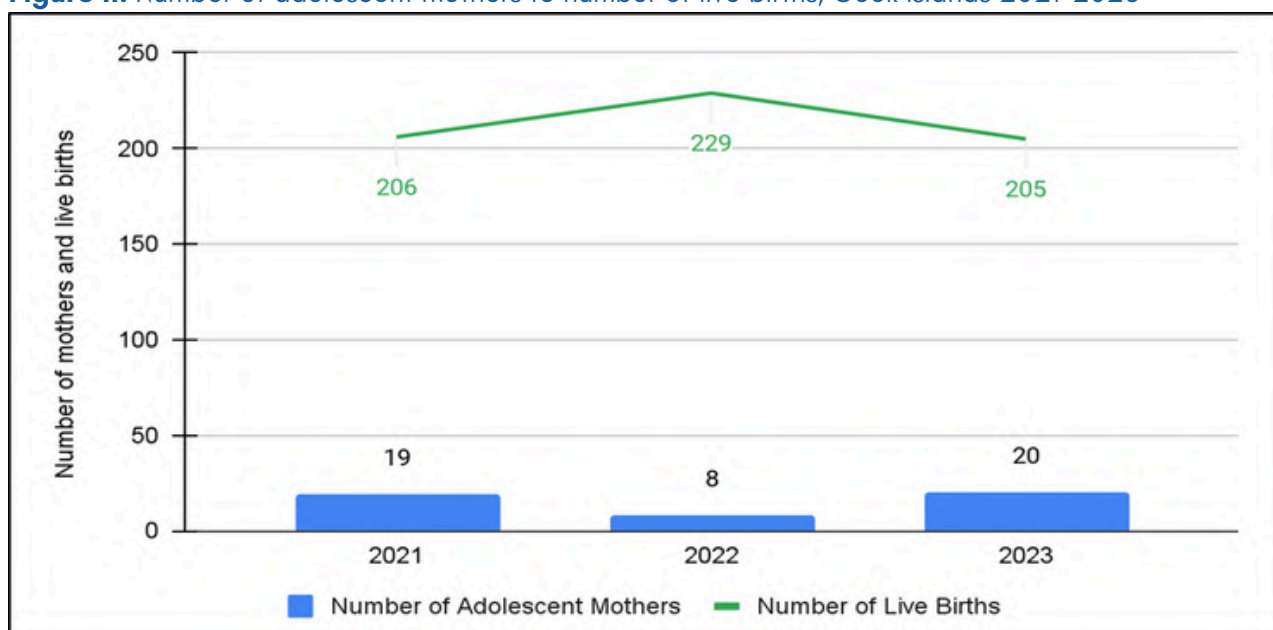
Figure 10: Age distribution of adolescent mothers (15-19 years), Cook Islands: 2021-2023



Adolescent Births

Adolescent births refer to the instances of births to mothers typically aged between 15 and 19 years. Between 2021 and 2023, there has been a fluctuating pattern in the proportion of adolescent mothers to total live births. The peak was observed in 2023, with 20 live births to adolescent mothers, as shown in Figure 11.

Figure 11: Number of adolescent mothers to number of live births, Cook Islands 2021-2023

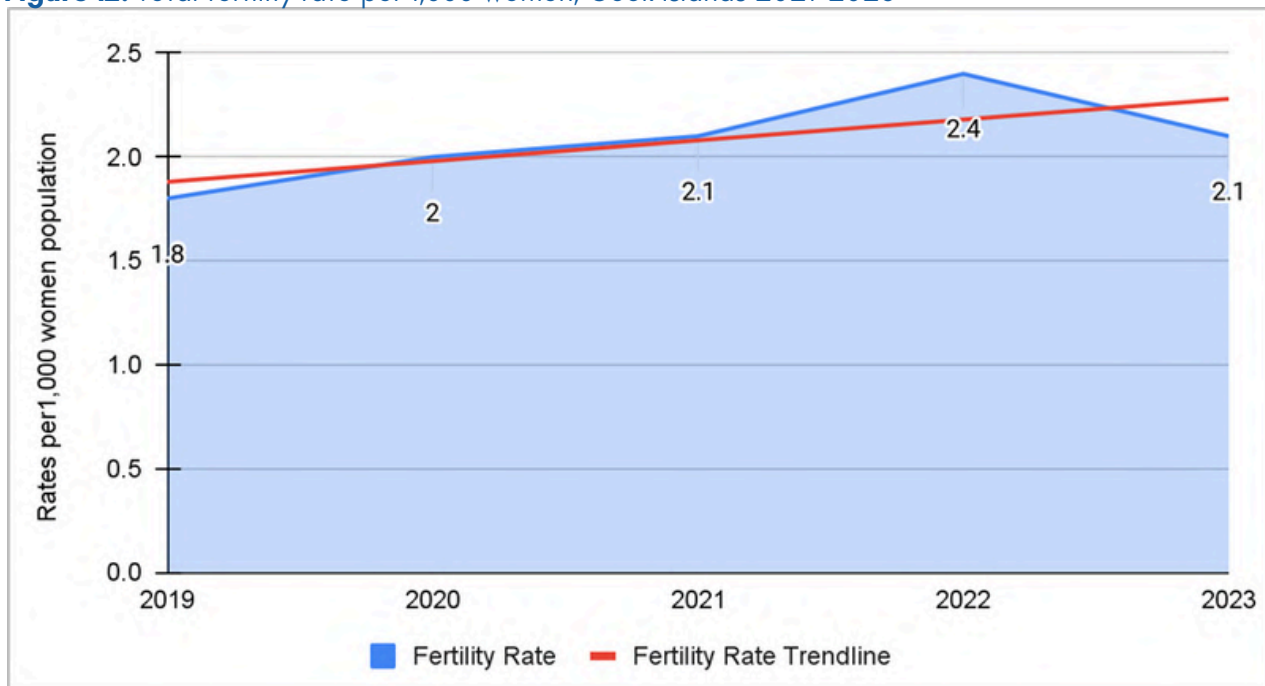


Total Fertility Rate

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

From 2019 to 2023, as shown in **Figure 12**, there is a prominent upward trend in the Total Fertility Rate (TFR). Since 2020, the TFR consistently meets and exceeds 2.0, suggesting moderate fertility levels in the Cook Islands.

Figure 12: Total fertility rate per 1,000 women, Cook Islands 2021-2023



The age-specific rates per mothers giving birth per 1,000 women provides insight into the fertility patterns within the different age groups of the population. **Figure 13** shows an overview of the fertility patterns including the total number of mothers. It can be observed that the peak of the most fertile group are within the age of 20-24. After this age, the number of births starts to decline, with fewer births from mothers aged 40-49 years old.

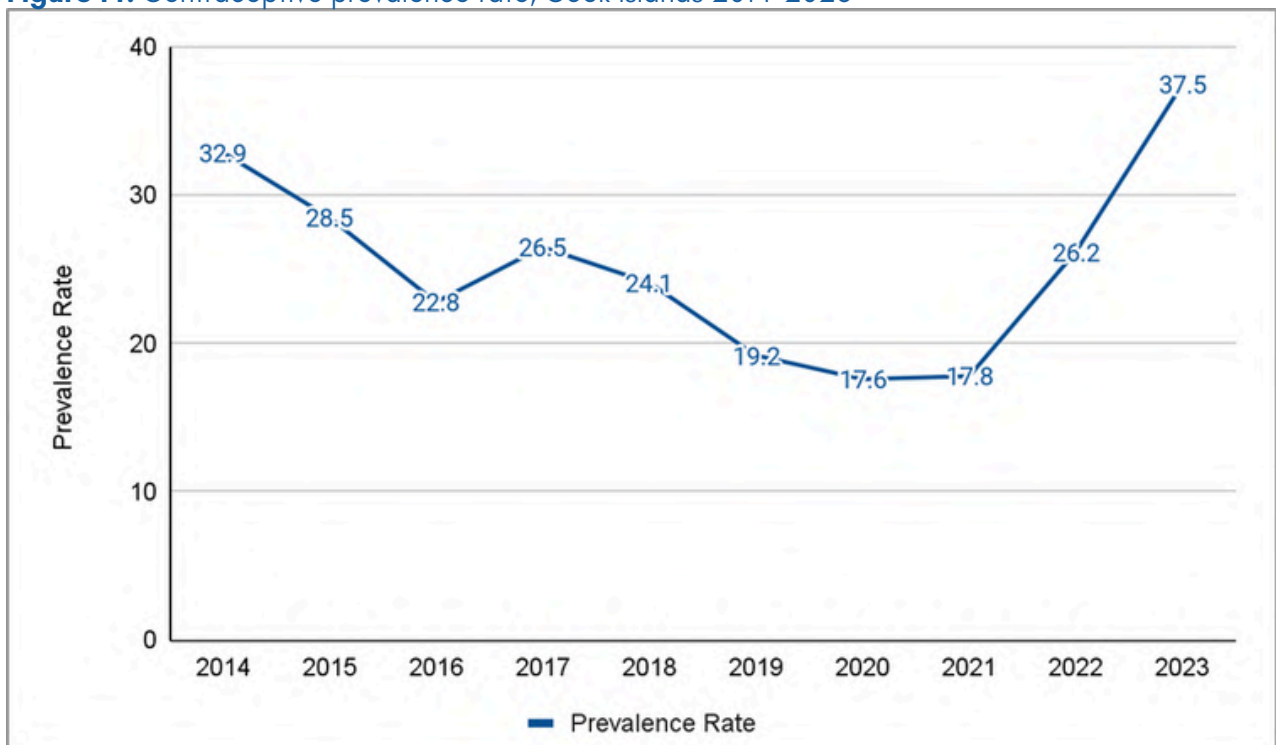
Figure 13: Age specific birth rates, Cook Islands 2021-2023



Contraceptives

Figure 14 below provides the overall contraceptive prevalence rate (CPR) in Cook Islands from 2014-2023. Contraceptive prevalence rate or CPR as defined from WHO is the percentage of women aged 15-49 years, married or in-union, who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used.

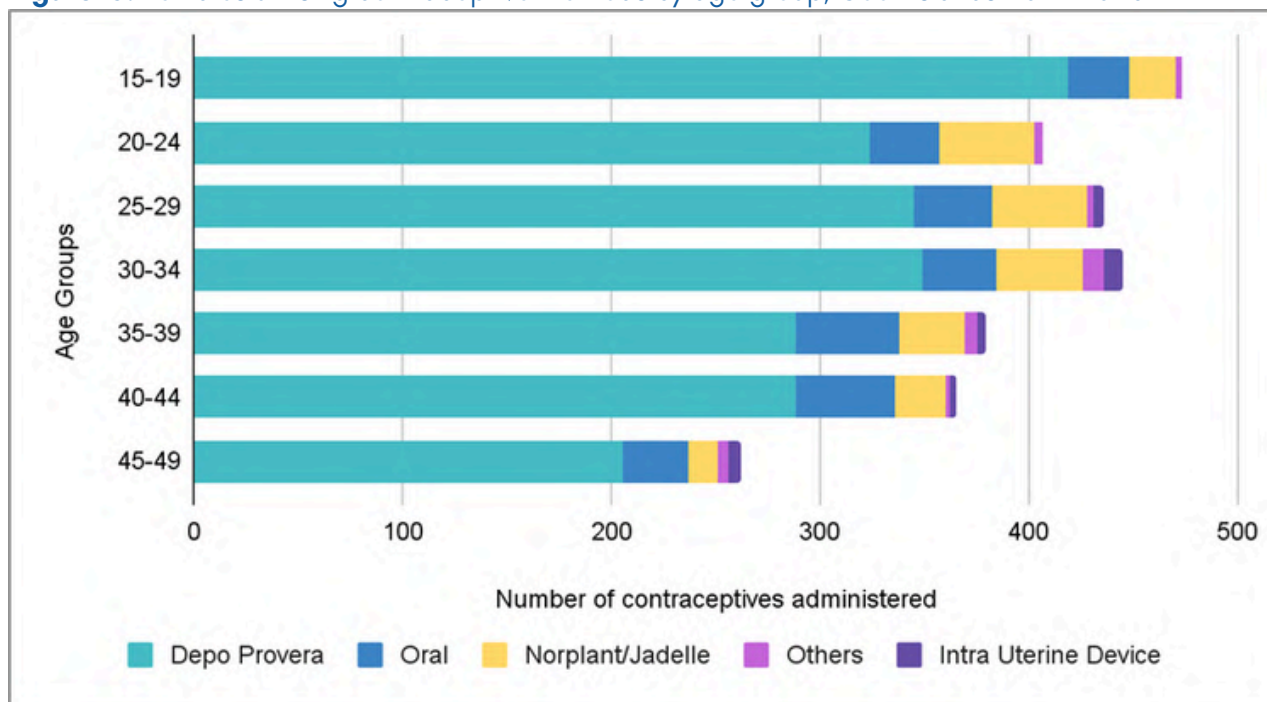
Figure 14: Contraceptive prevalence rate, Cook Islands 2014-2023



As shown above, there was a slight downtrend in CPR from 2019 to 2021. However, an increase was observed starting in 2022. The CPR of 37.5 is the highest recorded CPR in the country for the last 5 years. This marks a significant 53% increase from its lowest recorded CPR of 17.6 in 2020.

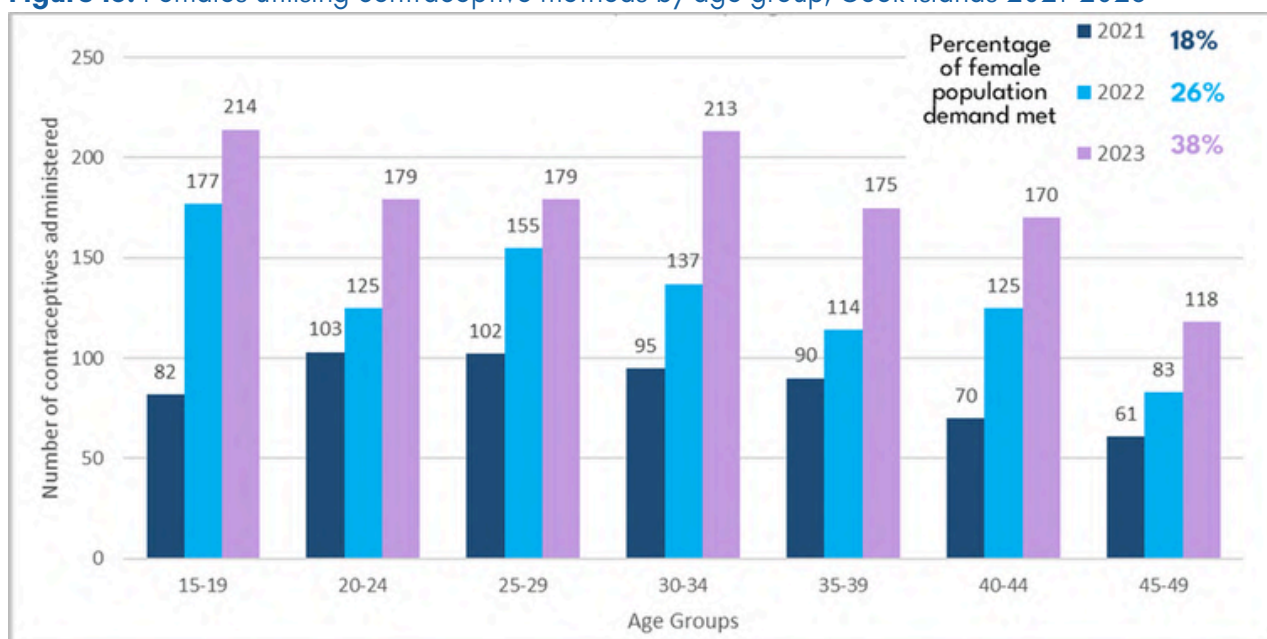
Between 2021 and 2023, the most commonly used contraceptives among females aged 15 to 49 were Depo Provera with a total of 2,219 users, accounting for 80% of the total users of 2,767 (Figure 15). This was followed by oral contraceptives and Norplant/Jadelle with 10% and 8%, respectively. It can be observed that the highest number of users of the contraception belonged to the age group 15-19 years, accounting for 17% of the total users. This was followed by ages 25-29 years and 30-34 years, both accounting for 16%, and 15% for ages 20-24 years.

Figure 15: Females utilising contraceptive methods by age group, Cook Islands 2021-2023



From 2021 to 2023, there has been a rise in contraceptives use among women across all age groups as shown in Figure 16 below. For the past 3 years, there is an increased percentage of the female population meeting the demand.

Figure 16: Females utilising contraceptive methods by age group, Cook Islands 2021-2023



Immunisation

The Cook Islands National Immunisation Register (NIR) is dedicated to recording and monitoring all child vaccinations, ensuring adherence to the routine immunisation schedule. Immunisation coverage rates for babies born and those reaching six weeks over the last three years have consistently remained above 94%, aligning with previous years' reports.

Vaccination rates for children aged three months and older vary due to several factors contributing to lower coverage rates. The Cook Islands' COVID-19 vaccination roll-out utilised all TMO resources, leading to a temporary halt of some services, including the routine immunisation schedule. Once COVID-19 became 'normalised,' these services resumed, and our public health nurses began a 'catch-up' process in the community. Over the past three years, there has been a 10% drop-out rate, significantly impacted by migration due to COVID-19.

Table 2: Immunisation coverage rate by vaccine and year, Cook Islands 2021-2023

n=640	Vaccine	2021	2022	2023
Birth	BCG	99%	97%	99%
	HepB1	99%	97%	99%
6 Weeks	OPV1	96%	94%	95%
	PENT1	94%	94%	95%
	PCV1	N/A	55%	99%
	Rota1	N/A	58%	67%
3 Months	OPV2	90%	87%	85%
	PENT2	91%	89%	84%
	PCV2	N/A	77%	72%
	Rota2	N/A	66%	69%
5 Months	OPV3	86%	85%	62%
	PENT3	88%	85%	55%
	IPV	86%	86%	62%
8 Months	PCV3	N/A	73%	77%
12 Months	MMR1	96%	89%	84%
18 Months	MMR2	86%	65%	77%
4 Years	DPT4	63%	63%	63%
	OPV4	10%	10%	64%

Note: N/A - PCV and ROTA was introduced in April 2022

As of December 2023, 91% of eligible females aged 11 have received one or two doses of the HPV vaccine, a significant increase from the 21% rate in 2021. This improvement is largely due to immunisation programs promoting the benefits of HPV vaccination in preventing cervical cancer later in life. Additionally, over the past three years, tetanus vaccinations have been provided to all children aged 11, with an average of 135 Td vaccines administered annually.

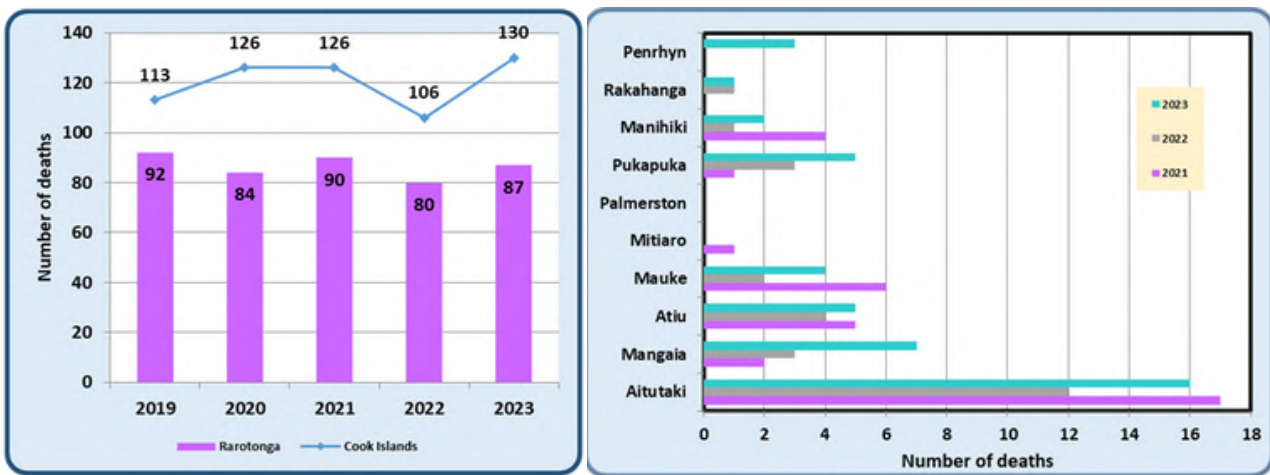
Public health nurses continue to advocate the importance of immunisation and the benefits it provides in preventing vaccine-preventable diseases for children.

Mortality

Mortality refers to all deaths occurring in the Cook Islands. Upon the death of a patient, the doctor issues a Death Notice Certificate, providing a copy to the funeral director and family before burial. If the cause of death is unknown or there is no past medical history, Coroner's involvement is required for further investigation.

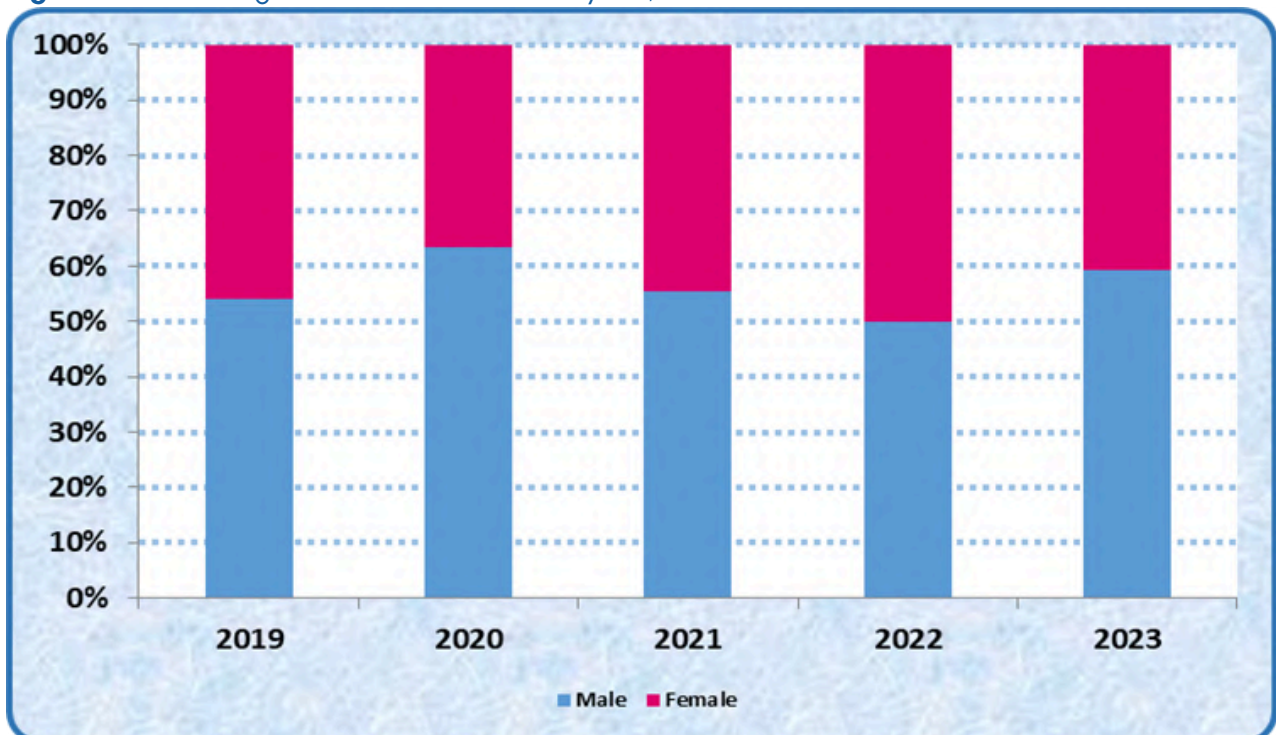
Figure 17 and 18 shows the number of deaths occurring in the Cook Islands both as a total and by Pa Enea during the years from 2019 to 2023. Over the past five years, Rarotonga has accounted for the majority of deaths in the Cook Islands. This trend can likely be attributed to Rarotonga's population density and serious chronic health cases being referred to Rarotonga hospital for treatment and care. Within the Pa Enea, Aitutaki, with the second most populated island, has seen the highest number of deaths, averaging nearly 14 deaths a year over the five-year period.

Figure 17 & 18: Number of deaths by Islands, Cook Islands 2019-2023



For the past few years, the probability of male deaths outweighed females by a 13% higher death count. Mortality in the Cook Islands has always been dominated by males and this is clearly seen in Figure 19 above, reporting to about 56% on average for the last five years (2019-2023).

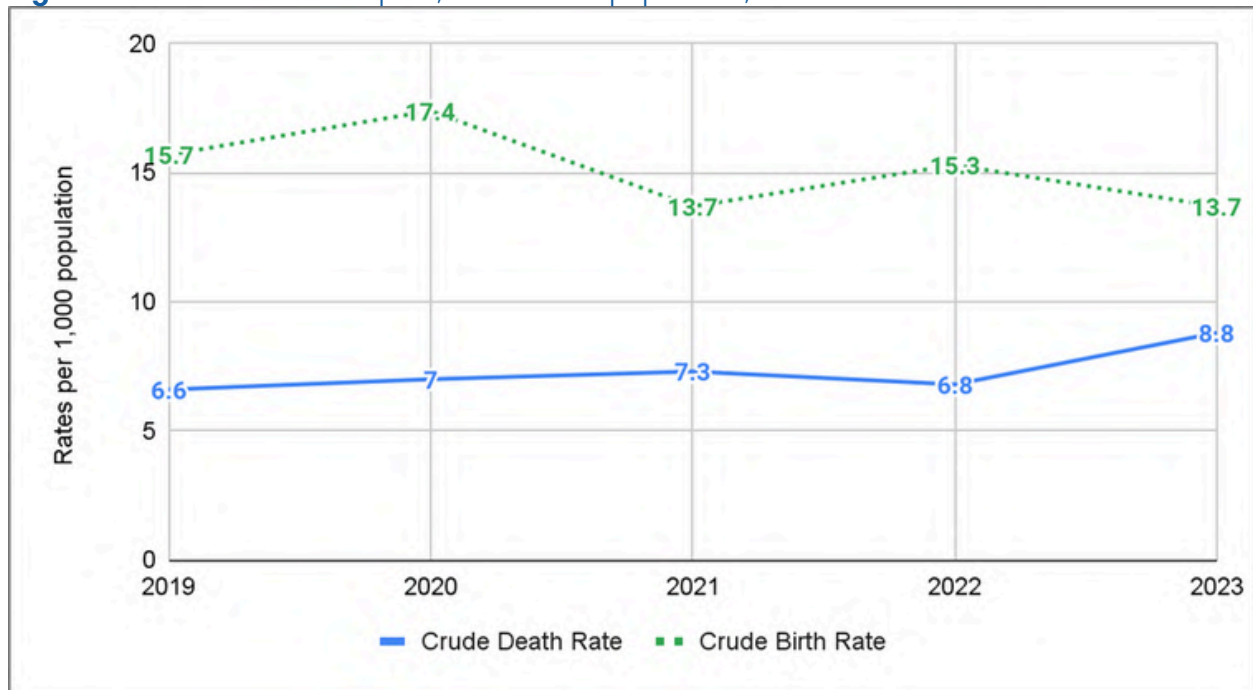
Figure 19: Percentage distribution of deaths by sex, Cook Islands 2019-2023



Crude Death Rate

Figure 20 shows an increase in the crude death rate to 8.8 in 2023 compared to 2021 with 7.3 crude death rate, following a slight decrease in 2022. This is the highest rate in the five-year comparison period. However, it can be observed that the crude death rate still falls below the crude birth rate, as illustrated below.

Figure 20: Crude death rate per 1,000 resident population, Cook Islands: 2019–2023



Maternal Mortality Rate

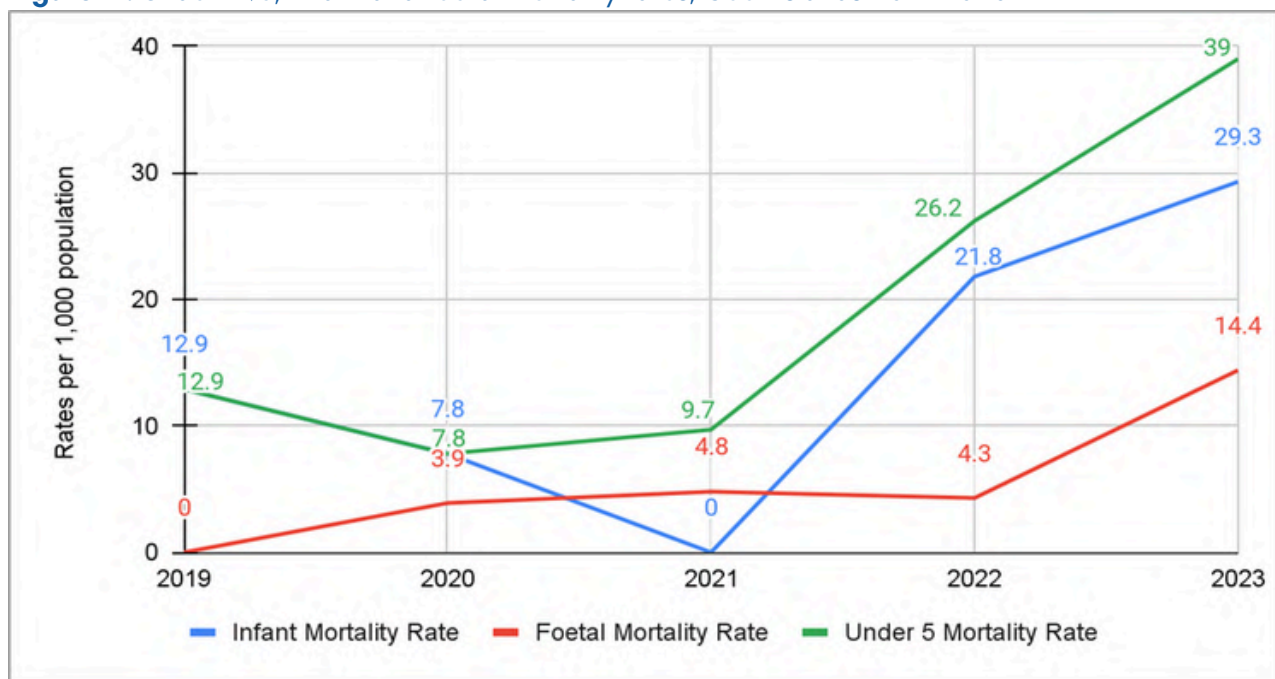
Since 1995, Cook Islands has not recorded maternal deaths. Maternal deaths are the number of female deaths from any cause related to or aggravated by pregnancy or its management during pregnancy and childbirth or within 42 days of termination of pregnancy.

Under-Five Mortality

The Cook Islands have faced difficulties in maintaining a low under-five mortality rate post COVID-19. **Figure 21** indicates, from 2021 onward a steady rise peaking in 2023. These fluctuations could be linked to factors affecting pregnant mothers due to unhealthy lifestyle choices, and not attending antenatal care programs.

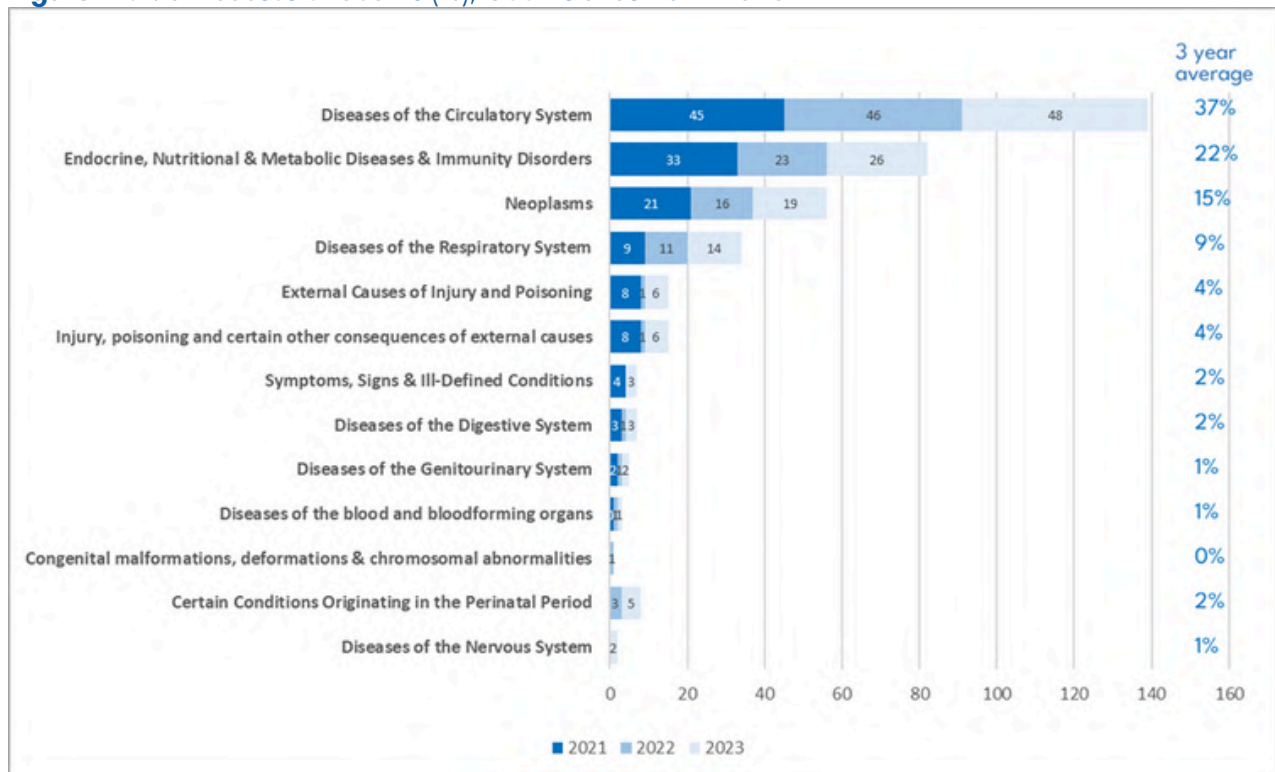
The infant mortality rate and under-five mortality rate showed a steady increase from 2021 to 2023, with both rates rising above 10%, due to various factors affecting mothers' health during her term of pregnancy. Meanwhile, the foetal (stillbirth) mortality rate experienced an annual average of 6.9 deaths for every 1,000 live births. Further investigations on the increasing rates are required to understand the underlying cause.

Figure 21: Under-five, infant and foetal mortality rates, Cook Islands 2019-2023



Causes of Death

Figure 22 reveals that Diseases of the Circulatory System, which consists of smaller diseases groupings (hypertension, ischaemic heart disease, cerebrovascular disease, heart failure and other circulatory diseases in the system) were reported as the main underlying causes of deaths (37% of the total deaths) in the Cook Islands for the last three years from 2021-2023. This signifies its enduring significance as a major contributor to mortality. Following closely behind is diabetes, with an average proportion of 22%.

Figure 22: Main causes of deaths (%), Cook Islands 2021-2023

NCD Deaths

Figure 23 illustrates a concerning rise in NCD deaths from 2019 to 2022, peaking at 82% in 2022. Additionally, deaths from other causes have decreased over the same period, hitting a low of almost 18% in 2022 before rising to 24% in 2023. This shift highlights the pressing need for more targeted interventions to address NCDs and alleviate their growing impact in the Cook Islands. NCDs constitute the primary cause of mortality in the Cook Islands. Data from the past three years (2021-2023) indicates an annual average of almost 80% of all deaths attributed to NCDs, with about 20% of these fatalities occurring prematurely.¹ Note that some deceased NCD cases occurring overseas, are not captured and reported back into the system. Further investigations on this area are required to better understand the proportions of NCD death to total deaths.

¹ Premature deaths to NCDs are defined as 30-69 years, and computed based on the NCD life tables.

Figure 23: NCD deaths (%), Cook Islands 2019-2023

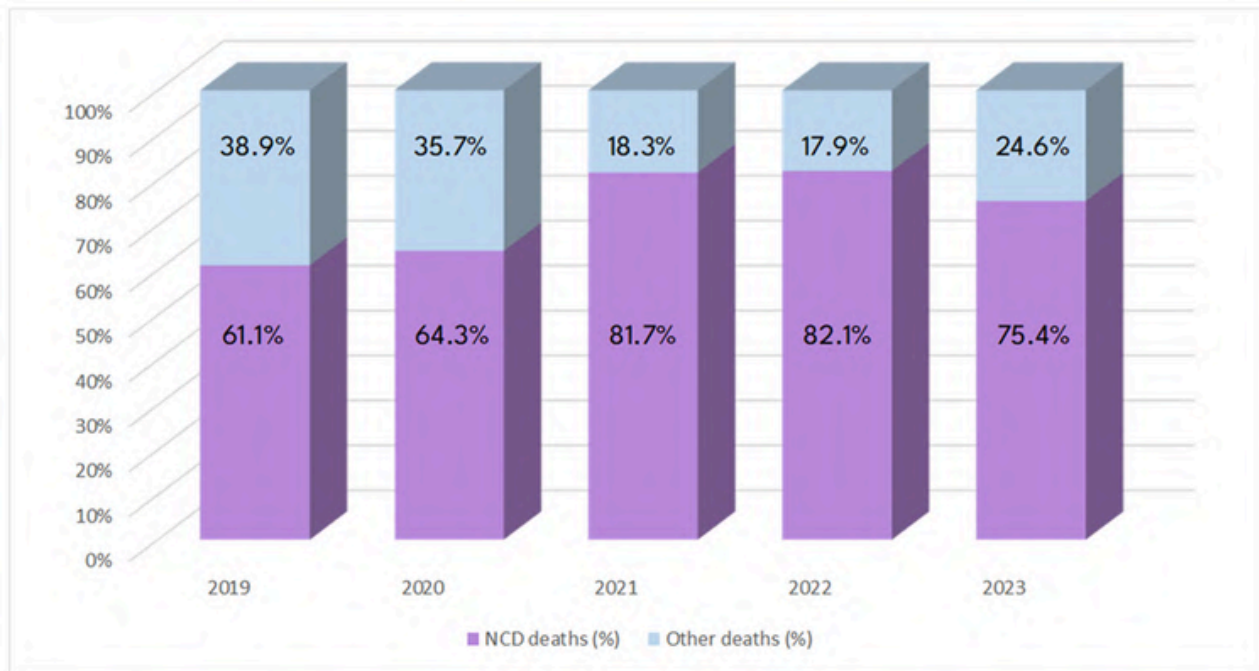
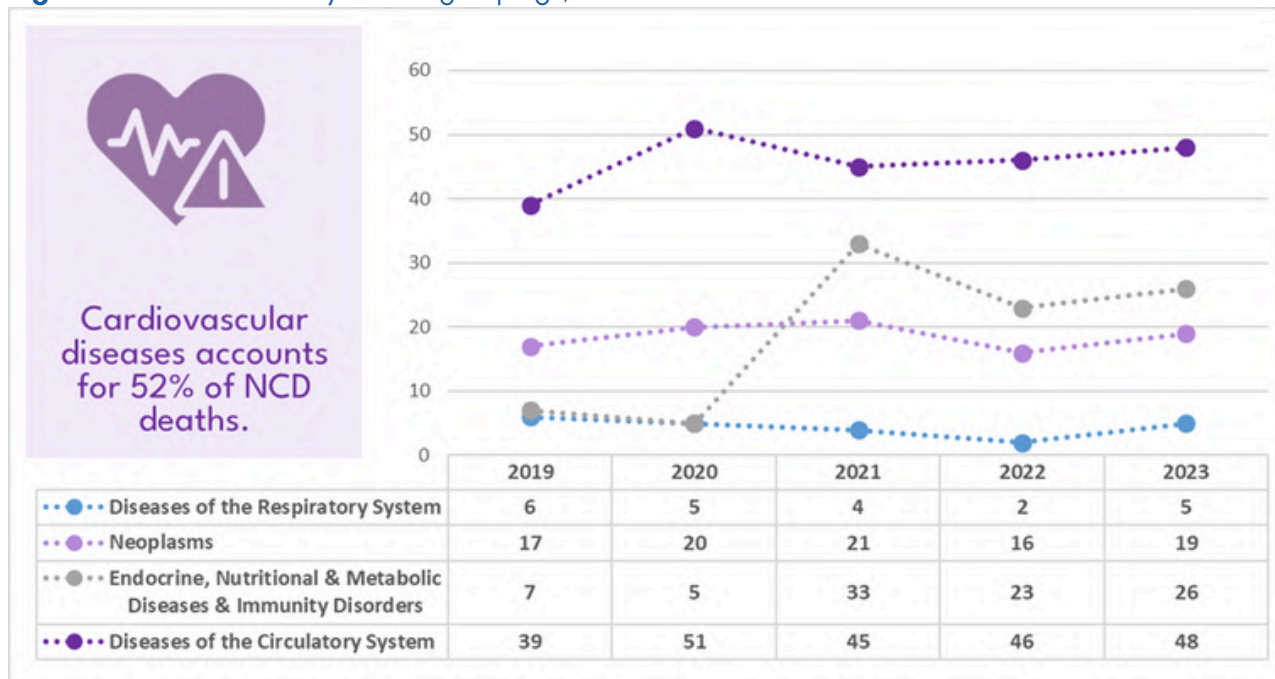


Figure 24 shows the NCD deaths by International Classification of Disease, 10th Revision (ICD-10). The primary cause of NCD deaths, consistently observed from 2019 to 2023, is cardiovascular disease (52%). Following this, endocrine, nutritional & metabolic diseases and immunity disorders (diabetes) has emerged as a significant cause of NCD deaths, particularly in recent years. Deaths attributed to neoplasm (cancers) and respiratory system (asthma, chronic bronchitis, emphysema) disorders exhibit fluctuating patterns throughout the five year period from 2019 to 2023.

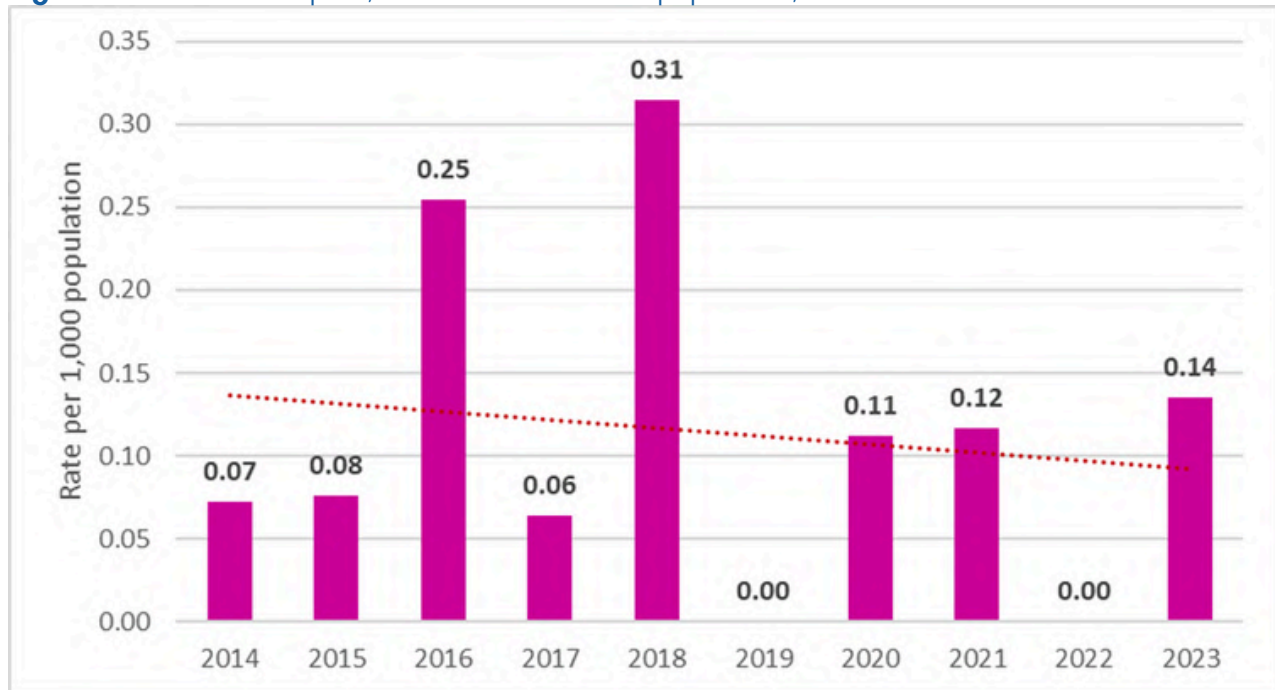
Figure 24: NCD deaths by ICD-10 groupings, Cook Islands: 2019-2023



Suicide Rate

Over the last decade, the Cook Islands have documented a total of 19 deaths resulting from intentional self-harm, with average suicide rates of 1.2 per 10,000 population. Throughout this timeframe, a slight downward trend has been reported. Notably, in the last two years (2022 and 2023) which reported a total of 2 suicide related deaths.

Figure 25: Suicide rate per 1,000 resident estimate population, Cook Islands 2014-2023



Historically, suicides in the Cook Islands have been more common among males (14). However, over the last 5 years, there has been a shift in this pattern, with suicides occurring equally among both sexes. Note that the resident population estimates were used for each years computations.

Table 3: Suicide by Sex, Cook Islands 2014-2023

Year	Male	Female	Both
2014	1	0	1
2015	1	0	1
2016	3	0	3
2017	1	0	1
2018	5	0	5
2019	0	0	0
2020	1	1	2
2021	1	1	2
2022	0	0	0
2023	1	1	2

HEALTHCARE FACILITIES AND SERVICES

Healthcare Facilities

TMO as the main healthcare provider in the Cook Islands provides a wide range of health services which include public health, primary and limited secondary care and tertiary care via hospitals and Health Specialists Visits. The range of general clinical services provided are in the core areas of surgery, medicine, anaesthesia, obstetrics, gynaecology, ophthalmology and paediatrics. These general services are provided at minimum costs including free medication, compared to other Pacific countries where healthcare is inaccessible due to location and resources. Healthcare services are fully subsidized by the government (or free) for those over the age of 60, children aged 16 and under, and students over 16 who are still attending school.

Table 4 reflects the health facilities and service coverage in the Cook Islands including private medical clinics, non-government child welfare clinics and dental private clinics. Note that there are five mobile dental clinics in Rarotonga stationed in schools – Apii Te-Uki Ou, Imanuela Akatemia, Rutaki, Papaaroa Adventist and Blackrock Early Childhood Education (ECE). Key milestones include an increase of bed capacity from 139 hospital beds to 152 hospital beds in 2023 and one single system oxygen plant at Rarotonga Hospital, two negative pressure rooms, one CT scan and RT-PCR laboratory. There is also ongoing installation of an oxygen plant in Aitutaki which is planned to be commissioned in July 2024.

Table 4: Health facilities available by region & island, Cook Islands: As of December 2023

REGION & ISLAND	Hospital Beds	Hospital	Primary Care Centre	Dental Clinics	Health Clinics	Child Welfare Clinics	Private Medical Clinics	Private Dental Clinics
COOK ISLANDS	152	1	1	13	18	30	4	1
RAROTONGA	80	1	1	8	5	14	4	1
SOUTHERN GROUP excl. Rarotonga	45	0	0	3	5	11	0	0
Aitutaki	26	0	0	0	1	6	0	0
Mangaia	5	0	0	1	1	4	0	0
Atiu	6	0	0	1	1	0	0	0
Mauke	6	0	0	1	1	0	0	0
Mitiaro	2	0	0	0	1	1	0	0
NORTHERN GROUP	27	0	0	2	8	5	0	0
Palmerston	0	0	0	0	1	0	0	0
Pukapuka	9	0	0	1	1	3	0	0
Nassau	2	0	0	0	1	0	0	0
Manihiki	8	0	0	1	2	1	0	0
Rakahanga	2	0	0	0	1	0	0	0
Penrhyn	6	0	0	0	2	1	0	0

Health Workforce

The data in this section was provided by Human Resources (HR) and was obtained during a specific period for each year from the Office of the Public Service Commission (OPSC). The healthcare workforce reveals a significant concentration of medical resources in Rarotonga, with 25 out of the total 27 medical doctors and 70 of the 103 nurses predominantly located there. Aitutaki also stands out among the smaller islands, having 10 nurses and 2 medical doctors, suggesting a relatively strong healthcare presence. Similarly, Mangaia and Pukapuka, despite being smaller, maintain several nurses, reflecting the critical role of nursing care in these regions.

Specialised clinical support services are mainly centralised in Rarotonga, which is the only island with a dedicated pharmacy (10) and radiology (2) staff, as well as a significant number of laboratory technicians (13) and Emergency Medical Technicians (8). General support staff and Planning and Funding (PnF) personnel are also heavily concentrated in Rarotonga, with 44 support staff and 39 PnF staff. This centralization underscores the challenges smaller islands face in accessing specialised medical services and reinforces Rarotonga's critical role as the main healthcare provider for the region.

The Pa Enua primarily relies on nurse practitioners and registered nurses for healthcare provision. Aitutaki is the only island with resident doctors and is accountable for 0.7 density (2 doctors) for the whole of the Pa Enua. Patients requiring specialised and critical care are referred to Rarotonga Hospital, and then on to New Zealand. Given the rising prevalence of NCDs (Figure 60) and rising under 5 mortality rates (Figure 21) in the Cook Islands, investing in more skilled health professionals is vital for a functional, efficient, and responsive healthcare system that meets the diverse needs of the community.

Please note that the following tables are based on the classification identified by OPSC and there is ongoing work with TMO HR Department to further refine classifications.

Nurses, general support and public health personnel lead with higher numbers compared to the rest of the health workforce. There is a noticeable decrease of the nursing workforce from 129 nurses in 2021 to 103 nurses in 2023 (-19% decrease) indicating significant challenges and the need to upskill and "grow our own" nursing workforce. With the introduction of the Bachelor of Nursing Pacific program (Neti Tamarua Cohort) with Whitireia Community Polytechnic in 2022, this presents a hopeful future for nursing workforce numbers in the Cook Islands.

Table 5.1: TMO workforce distribution by Island, Cook Islands: As of 2023

ISLAND	Total opulatic		Nurses	Public Health	Dental	CLINICAL SUPPORT							General Support	PNF
	Medical					Pharmacy	Radiology	Laboratory	EMT	Biomedical	Physiotherapy	Other		
Aitutaki	1,782	2	10		2	1			3				10	
Atiu	383		3	2	1				1				2	
Mangaia	471		5	2									1	
Manihiki	215		2	2	1								2	
Mauke	249		2	2									2	
Mitiaro	155		2	1	1									
Nassau	92		2		1									
Palmerston	25		1											
Penrhyn	233		2	1									1	
Pukapuka	456		3	2	1								1	
Rakahanga	81		1	1										
Rarotonga	10,898	25	70	32	22	10	2	13	8	2	1	6	44	39
Total	15,040	27	103	45	29	11	2	13	12	2	1	6	63	39

Note: General Support includes; groundsman/maintenance, food & nutrition officer, infection control, reception and security.

Table 5.2 compares the number of individuals in different roles within the oral health workforce across three years. Notably, there are sex differences in certain roles. In 2023, there was a slight decrease in oral workforce for both sexes compared to 2022, with the majority of individuals being dental therapists, dentists and dental assistants.

Table 5.2: TMO Oral Health workforce, Cook Islands 2021-2023

	ORAL HEALTH WORKFORCE					
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Dental Assistant	5	-	4	-	4	1
Dental Specialist	-	-	1	-	1	-
Dental Technician	-	1	-	1	-	1
Dental Therapist	13	4	13	4	11	4
Dentist*	-	6	-	7	-	7
Total	18	11	18	12	16	13

Note: Dentist includes managers, directors and senior dentists

Table 5.3 compares the workforce across various departments over the years 2021, 2022, and 2023. Notably, the Human Resources (HR) department consistently had the highest workforce numbers, primarily due to the inclusion of health interns and support health workers. In 2022, there was a significant increase in HR personnel, largely driven by the employment of casual workers to support TMO during the COVID-19 pandemic.

Table 5.3: TMO Planning and Funding workforce, Cook Islands 2021-2023

PLANNING AND FUNDING WORKFORCE						
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Office of the Head*	1	1	2	1	2	0
Finance	4	1	6	1	5	0
Human Resource*	15	7	40	22	17	6
ICT	1	3	1	3	1	2
Policy & Planning	3	2	5	1	5	1
Total	24	14	54	28	30	9

Note: Official of the Head includes SoH, EA and director. HR majority includes casual, interns, support workers and security officers.

Table 5.4 illustrates the distribution of different roles within the primary care workforce across three years. It can be observed that in each year, there are more females than males. The majority of the workforce consists of nurses (78%) and health care assistants (14%), while the remaining roles are thinly spread. There was an observed decrease in the workforce in 2023 for both sexes after a slight increase in 2022. Please note that doctors and nurses move between two directorates (primary care and hospital health services) as the need arises.

Table 5.4: TMO Primary Care workforce, Cook Islands 2021-2023

PRIMARY CARE WORKFORCE						
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Director	-	1	-	1	-	1
Nurse*	29	6	33	7	28	5
Health Care Assistant	8	1	4	1	4	2
House Officer	-	-	2	3	1	-
MOSS	-	-	-	1	-	-
Registrar	-	-	1	-	-	-
Total	37	8	40	13	33	8

Note: Nurses includes charge nurse, enrolled nurse, registered nurse and senior RN

Table 5.5 shows that as of 2023, up to 62 employees work in public health across health protection, health promotion and mental health. Since 2021, there has been a -19% decrease in public health personnel, a majority of these being community health workers, and health protection officers, with a noticeable deplete in their numbers as of 2023.

Table 5.5: TMO Public Health workforce, Cook Islands 2021-2023

PUBLIC HEALTH WORKFORCE						
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Health Promotion	6	-	5	1	4	1
Health Protection	9	26	6	26	7	19
Mental Health*	2	0	2	0	2	0
Public Health Office*	2	2	2	1	2	-
Nurse*	19	-	17	-	17	1
Health Intelligence*	-	-	5	-	4	-
MOSS	-	1	1	1	-	1
Health Care Assistant	-	-	1	-	-	-
Community Health Worker	10	-	10	-	4	-
Total	48	29	49	29	40	22

Note: Public Office includes admin officers, Director, QFT coordinator and PH specialist. Mental Health includes counsellor, psychologist and manager. For 2021-2022, position description for manager mental health changed to clinical psychologist. MOSS includes; house officers and medical interns.

Table 5.6 displays that females consistently dominate the workforce, with an annual average of 67% compared to males (33%). The majority work as nurses and in infection control.

Table 5.6: TMO Hospital Health workforce, Cook Islands 2021-2023

HOSPITAL HEALTH SERVICES WORKFORCE						
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Head of Office and Administration Support*	16	2	17	1	16	1
Biomedical	1	1	1	1	-	2
Clinical Support Services*	3	-	3	-	3	-
Food & Nutrition	7	1	8	1	7	-
Groundsmen/Maintenance/Security	-	14	-	15	-	14
Infection Control	23	2	18	2	18	2
Laboratory	7	3	8	3	9	4
Medical Specialist	3	9	2	6	3	5
Nurse*	60	5	57	4	48	5
Pharmacy	3	8	5	8	6	5
Physiotherapy	-	-	-	2	-	1
Radiology	2	1	2	1	1	1
Registrar	3	2	1	3	2	3
Vision and Hearing	1	-	1	-	1	-
EMT/Ambulance	3	10	1	11	-	12
MOSS*	5	5	2	2	5	8
Total	137	63	126	60	119	63

Note: Head of Office and Administrative Support includes the Director, EA, patient referral coordinator, manager general support, and administration officers. Nurses include charge nurse, enrolled nurse, registered nurse and senior RN, nurse practitioner and management nurses. Medical specialists and anaesthetic technicians are grouped together. Clinical support includes; clinical support technician and HCA (Health Care Assistant). MOSS includes house and medical officers, medical interns and primary care practitioners.

TMO's health workforce density as of 2023, calculated 1.9 doctors, 6.9 nurses, 1.9 oral health and 0.7 pharmacists per 1,000 population. The 2006 World health report² identified a minimum health worker density of 2.3 skilled health workers (doctors and nurses/midwives) per 1,000 population, which was considered generally necessary to attain high coverage (80%) of skilled birth attendance; which Cook Islands has noticeably met and exceeded. Please note that the basis in the computation of density for 2020 is different from the rest of the years, as we used the data on total population in 2016 (17,434), while we used the 2021 census for the remaining years (15,040).

² Health Workforce Requirements For Universal Health Coverage And The Sustainable Development Goals Human Resources for Health Observer Series No 17

Mental Health

The number of newly diagnosed mental health cases in the Cook Islands over the last three years shows an incidence rate of almost 5.0 cases per 1,000 population.

Of particular note, 2022 has seen the highest number of diagnoses compared to 2021 and 2023 (**Figure 26**). This is likely due to the high levels of Mental Health consultations during COVID (2022), and the opening of the new Mental Health unit (Te Puna Tiaki Wellness Ward) in 2023 and moving staff from primary and community mental health roles to inpatient health resulting in less community follow up. In 2021, the mental health activities in the HSV programme were put on hold due to the disruption caused by COVID-19, leading to a reduction in diagnoses.

Figure 26: Mental health diagnosis by year, Cook Islands 2021-2023

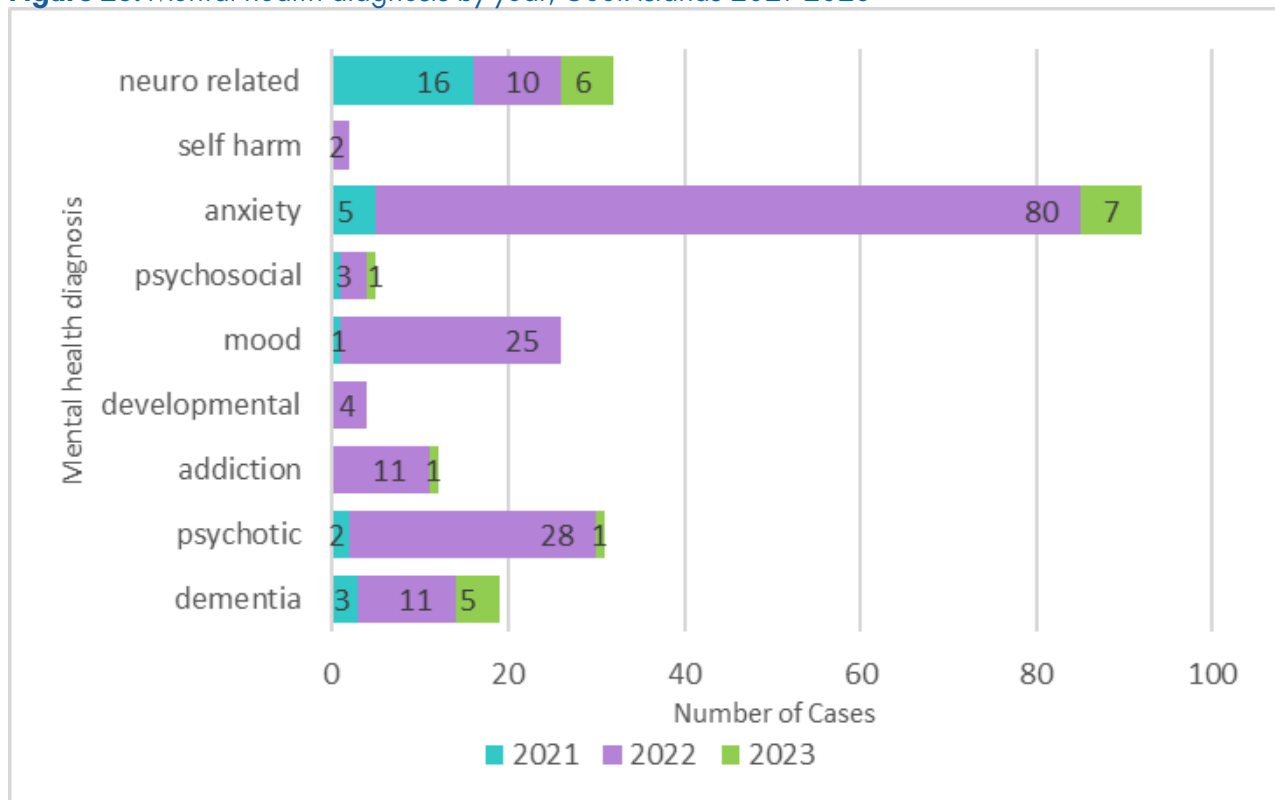


Figure 27 shows that from 2021 to 2023, anxiety is the most prevalent mental health diagnosis (41%), especially in the 25-59 age group, followed by the 60+ age group. Self-harm is rare, mainly affecting the 15-24 age group, while developmental and psychosocial issues are becoming more common among younger individuals.

Figure 27: Mental health diagnosis by age groups, Cook Islands 2021-2023

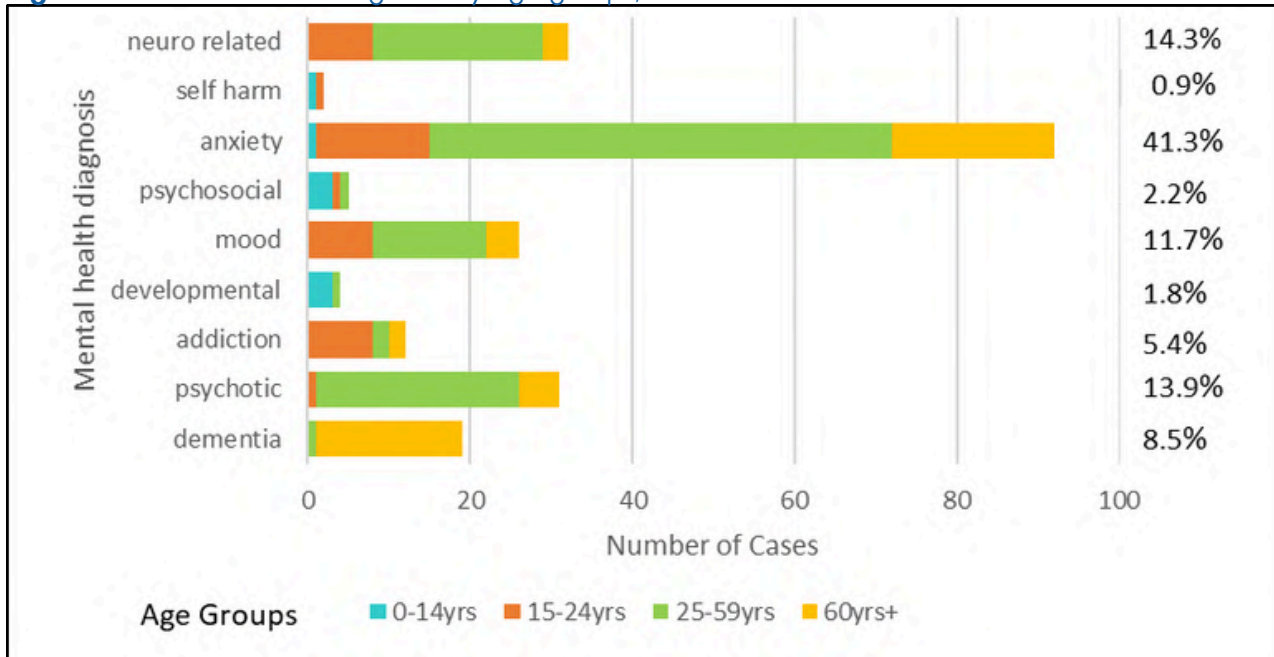
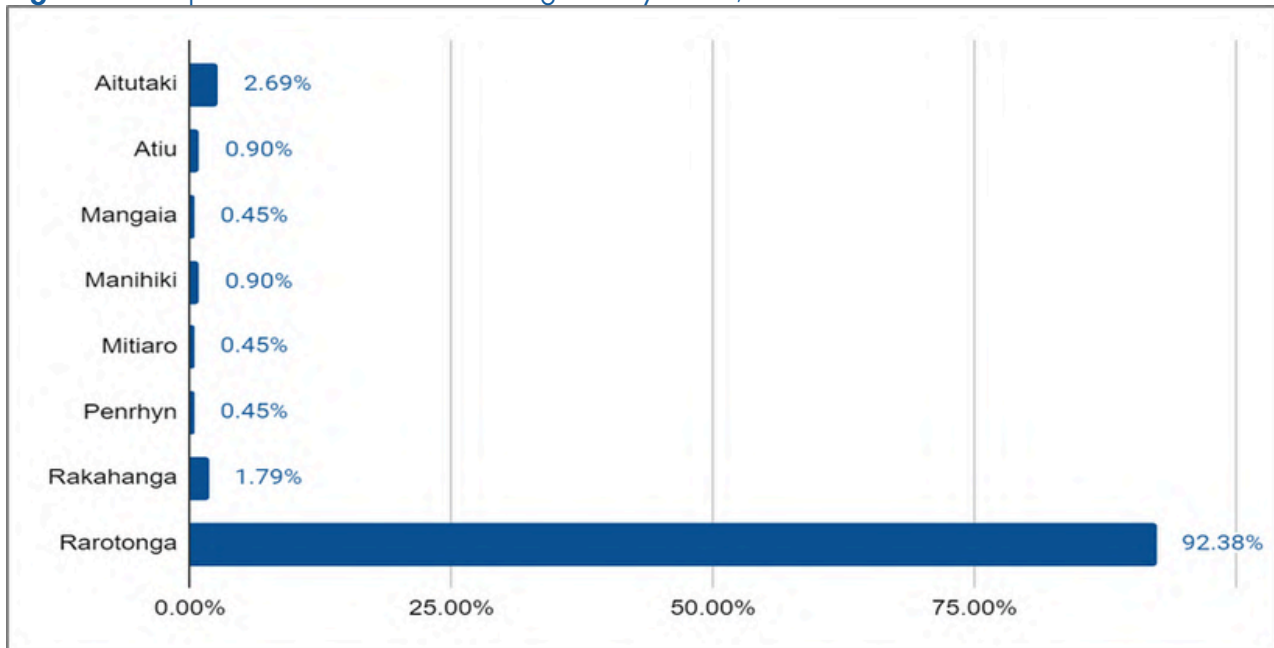


Figure 28 illustrates the distribution of diagnoses across the Cook Islands. Rarotonga accounts for 92.38% of diagnoses, due to its larger population and the location of the mental health unit. In contrast, Aitutaki (2.69%), Atiu (0.90%), Manihiki (0.90%), and Rakahanga (1.79%) show significantly lower percentages.

Figure 28: Proportion of mental health diagnosis by island, Cook Islands 2021-2023



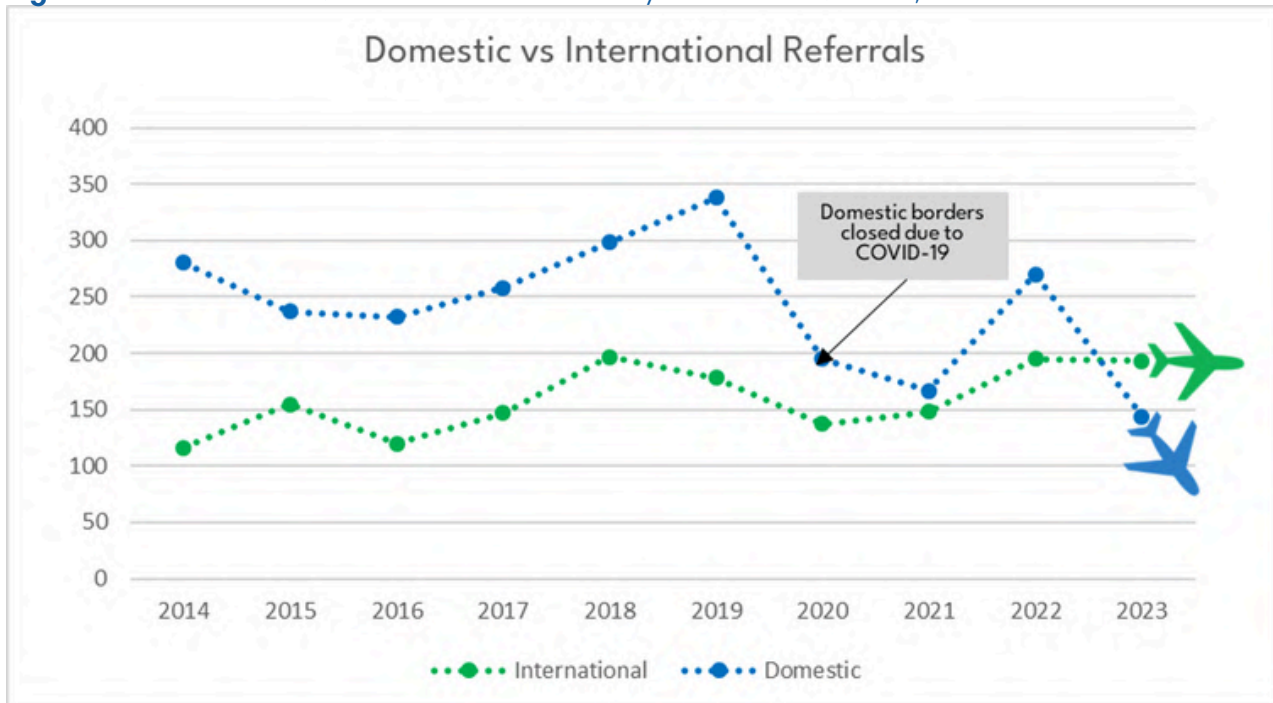
In May 2023, TMO opened Te Puna Tiaki, a specialised 4-bed mental health inpatient unit tailored to meet specific needs. From May to December 2023, Te Puna Tiaki recorded 14 admissions, accounting for an average of 5.2 inpatient days per admission.

Patient Referrals

Of the 15 islands in the Cook Islands, 12 of the inhabited Pa Enea health centres refer patients to the main island of Rarotonga for further secondary level health care and management. Rarotonga itself acts as a referral centre for even more complex and critical situations, with patients then being transferred to New Zealand for specialised care. This tiered system ensures that Cook Islanders have access to appropriate medical attention throughout the country, even in remote locations. Domestic referrals are patients referred from the Pa Enea to Rarotonga, while international referrals are patients referred from Rarotonga to New Zealand for further treatment.

Figure 29 reveals a consistent pattern where domestic referrals notably exceed international referrals. A total of 4,005 patient referrals were recorded, with domestic referrals accounting for nearly 60% and international referrals making up the remaining 40%. This suggests the strong patient healthcare reliance the Pa Enea has on this referral system.

Figure 29: Patients received from the Pa Enea and/or referred overseas, Cook Islands: 2014-2023



Domestic travel restrictions were enforced on the 21st of March 2020³ due to COVID-19, which suggests the downtrend of domestic referrals after 2019. On average, international and domestic referrals accounted for approximately 159 and 242 patients per year.

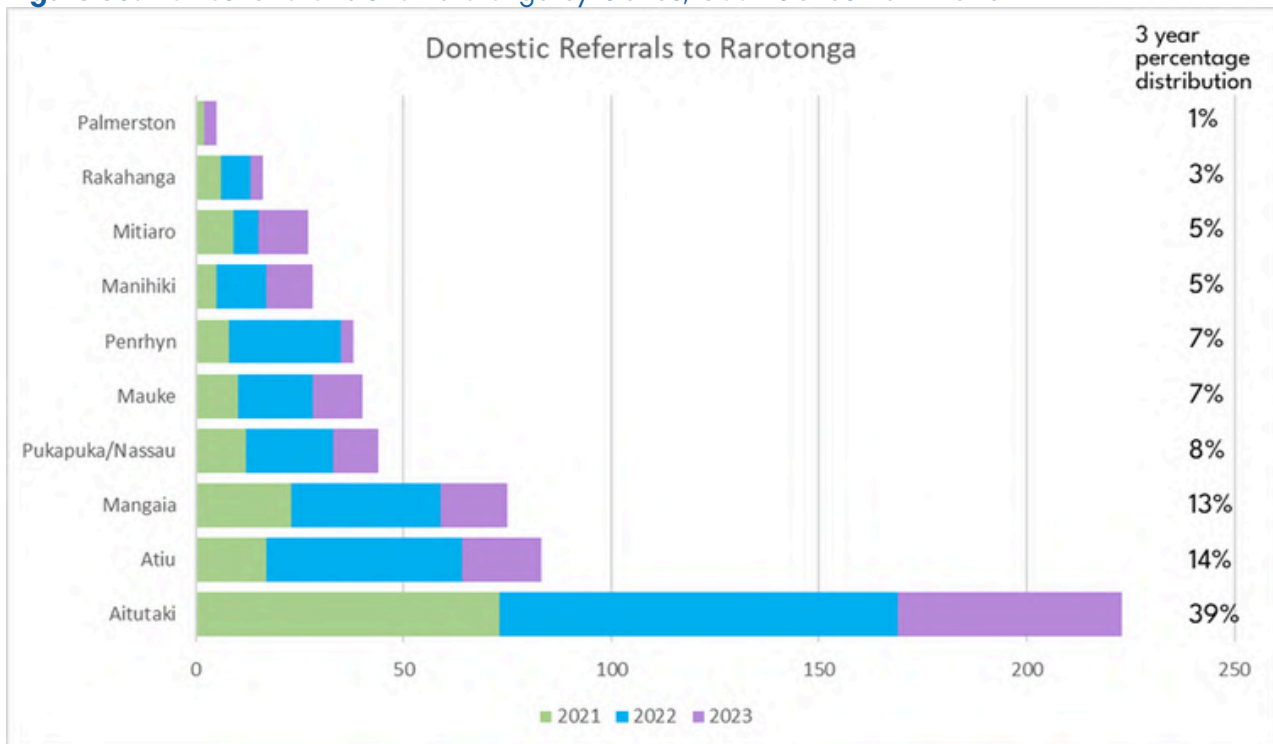
³ Ministry of Health (COVID-19: Domestic Travel Restrictions) Regulations 2020: Executive Council, Order 8

Domestic Referrals

Domestic referrals reached a peak in 2019, with 338 patients, before experiencing a decline in 2021, with only 167 patient referrals. This significant drop can likely be attributed to the closure of Rarotonga's borders with the Pa Enua on March 20th 2021 as a measure to prevent any possible spread of COVID-19. During this period, referrals were limited to only the most critical cases.

Figure 30 below, shows that the majority of referrals to Rarotonga for the last five years (2019-2023) were received from the island of Aitutaki at an average of 91 patients per year. Following closely are Atiu and Mangaia, two Southern Pa Enua, with an average annual referral of 28 and 26 patients, respectively. In the Northern Pa Enua, Pukapuka and Nassau together account for the highest average number of referrals, at 16 patients per year. Manihiki and Penrhyn follow closely, each with an average of 12 patients annually.

Figure 30: Domestic referrals to Rarotonga by islands, Cook Islands 2019-2023



Several factors contributed to the changes in referral numbers between islands. Larger islands may naturally have more referrals due to their larger population bases and moreover, islands with limited access to primary healthcare services may have higher referral rates to Rarotonga or Overseas, even for basic medical needs.

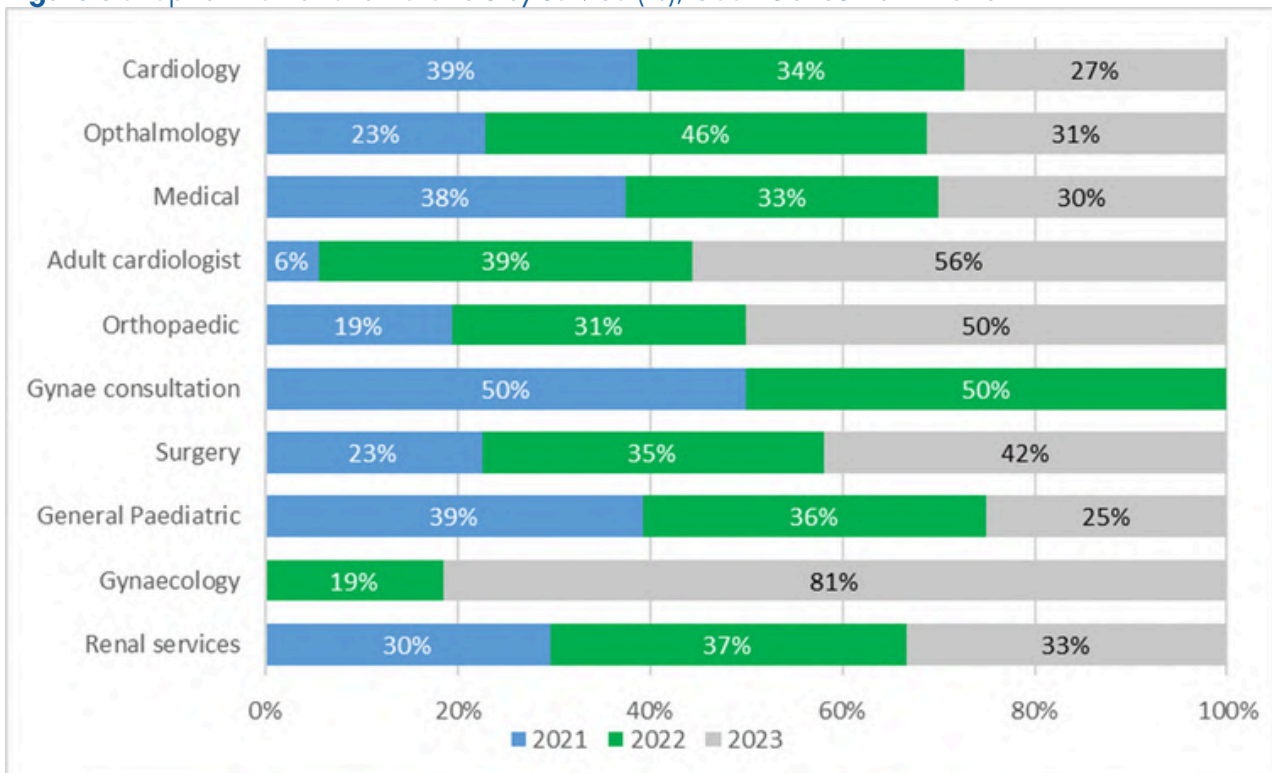
International Referrals

While there is no clear upward or downward trend for international referrals, the numbers do fluctuate over the years as seen in Table 5 below. The highest number of international referrals occurred in 2018, with 197 patients, whereas the lowest count occurred in 2014, with 116 patients. Looking at most recent years, 2022 peaked with 195 patients, indicating a +9% increase since 2017. This rise in referrals suggests a steady increase of diseases in the Cook Islands (especially NCDs), and the rising need for more health specialists and advanced resources and hard infrastructures to properly accommodate the diverse health concerns in the Cook Islands.

Table 6: International vs domestic referrals, Cook Islands 2014-2023

	International	Domestic
2014	116	280
2015	155	237
2016	120	232
2017	147	258
2018	197	298
2019	178	338
2020	137	195
2021	148	167
2022	195	270
2023	193	144

According to **Figure 31**, cardiology and renal services are one of the top health services in New Zealand, where patients are usually referred. Thus, revealing the alarmingly high number of severe cardiovascular disease cases amongst Cook Islanders. Following closely, is general medical conditions and ophthalmology services.

Figure 31: Top 10 international referrals by service (%), Cook Islands 2021-2023

By understanding these referral patterns, healthcare authorities can gain valuable insights to optimise referral practices. It is crucial to identify areas where the Cook Islands healthcare systems may require additional resources or expertise and moving forward, expedite implementation of the National Health Reorientation Plan 2024+.

Health Specialist Visits (HSV)

The HSV programme occurs every year and the calendar for the year is organised six months in advance pending the availability of visiting specialist teams. These visits facilitate essential procedures like much-needed surgeries and screenings for targeted conditions. It's important to note that the HSV programme faced a temporary pause in 2020 and 2021 due to the disruptions caused by the COVID-19 pandemic. However, TMO has utilised this time to enhance capacity across its facilities, refine policies, and strengthen the workforce to better prepare for and respond to the challenges posed by the pandemic.

A total of 20 activities were planned for the period of July to December 2022. All activities were implemented, which included 17 HSV and 3 Continuous Professional Development (CPD) Trainings for Health Staff.

A total of 21 activities were planned for the period of July to December 2023. 16 activities were implemented, which includes 10 HSV, 6 Continuous Professional Development (CPD) Trainings implemented for Health Staff. Five (5) HSV were cancelled due to unavailability of specialists (ie- ENT, Mammography, General Medicine, Emergency Training for doctors and Nurses, and Neurology).

During these periods, efforts were also directed towards enhancing the skills and knowledge of TMO staff through a series of training sessions. These sessions covered a wide range of topics from patient care to emergency procedures, as outlined in **Table 7**. Majority of HSV occurred in Rarotonga from 2022-2023, accounting for an average of 67% patients seen of the total visits, while the remaining 33% were distributed across the following Pa Enea islands: Aitutaki, Atiu, Mangaia, Mauke, and Mitiaro.

Table 7: Total number of Health Specialist Visits planned, number of patients consulted by the specialist, total number of TMO staff trained in the Cook Islands: 2022-2023

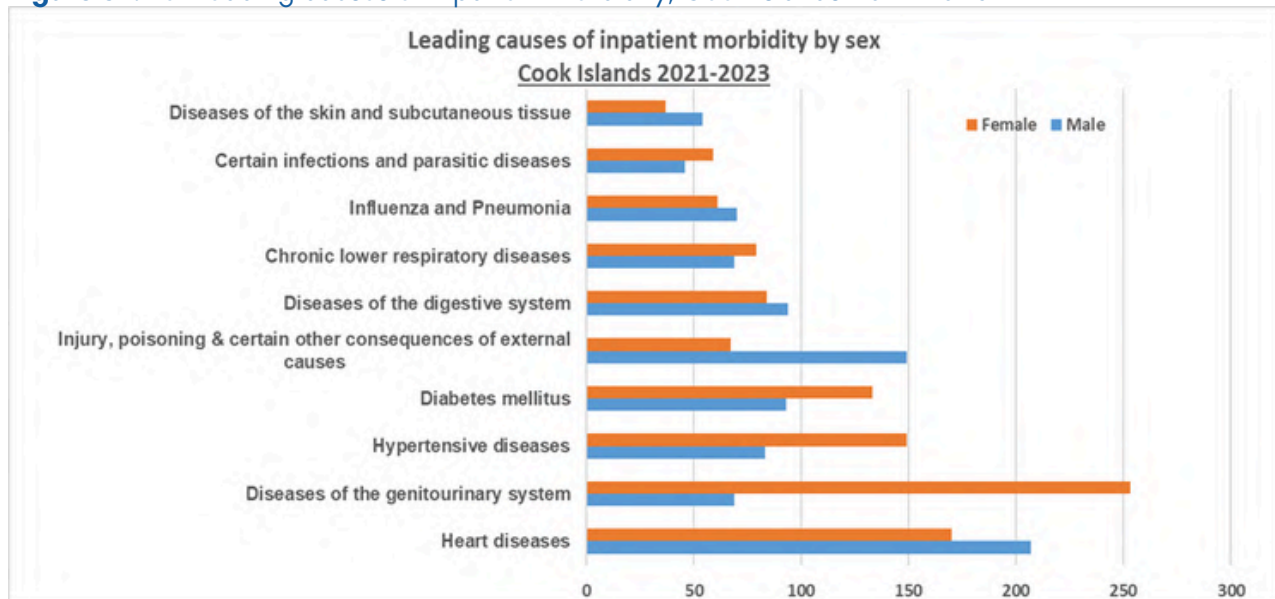
	2022	2023
HSV programs implemented in the Cook Islands	Women's Health OBGYN, Adult Cardiology, Ear Nose & Throat, Paediatric Cardiology, Endoscopy, General Paediatric, Ophthalmology, Orthopedic, Uro-Gynaecology, Mammography, NCD & Diabetes Management, Urology, Plastic Surgery, Mental Health and Neurology	Women's Health OBGYN, Diabetic Management, Ophthalmology, Endoscopy, Adult Cardiology, Uro-Gynaecology, Urology, Ophthalmology, Orthopedic, Paediatric Cardiology
Number of Consultants	Primary Health Care and Radiology	Nil
Number of Continuous Professional Development (CPD)	Breast Feeding, Advanced Core Life Support (ACLS), Primary Trauma Care (PTC),	Advanced Core Life Support (ACLS), Palliative Care and Plan Management, Emergency training, Paediatric Life Support (PLS), Palliative care training, Primary Trauma Care training (PTC),
Total number of health staff trained	93	171
Total Health Specialist visit to Pa Enea	13	12
Total number of people screened in the Pa Enea	597	687
Total number of Patients screened on Rarotonga	2290	817
Number of referrals from Pa Enea	123	52
Number of referrals completed to New Zealand	48	24
Total Surgical Procedures Completed	112	90

Note: All data is derived from HSV screening templates, appointment books, specialist reports and classifications.

Inpatient Admissions

Total morbidity recorded for the last three years reached 3,446 cases, with an annual average of 1,149 inpatient morbidities. **Figure 32** below shows the top ten leading causes of inpatient morbidity by sex, comprising 58% of the total morbidity. Heart disease stands out as the primary cause of inpatient morbidity for both males and females, accounting for 11%, followed by disease of the genitourinary system (9.3%), which are more prevalent in females, and hypertensive disease (6.7%) which is more common among males.

Figure 32: Ten leading causes of inpatient morbidity, Cook Islands 2021-2023



Admission average occupied beds refers to the average number of hospital beds that are occupied by admitted patients over a certain period of time. As per **Figure 33**, over the past five years (2019-2023), an average of 16 out of 152 hospital beds are occupied daily in the Cook Islands. In Rarotonga, out of 80 hospital beds, there has been an average occupancy of 15 beds from 2019 to 2023, with daily admissions ranging from 12 to 18. Meanwhile, in Aitutaki, with 26 hospital beds available, there has been an average occupancy of 2 beds daily over the same five-year period.

The total recorded inpatient admission for the Cook Islands over the last five years (2019-2023) reached 7,739, with an annual average of 1,548 admissions. As expected, the majority of these admissions occurred in Rarotonga (82%), followed by Aitutaki (12%). The remaining admissions are spread among other Pa Enua, with minimal admissions recorded.

Figure 33: Admissions average occupied beds, Cook Islands 2019-2023

The average bed occupancy rate has dropped from 15% to 11% between 2019 and 2023 (Figure 34). Specifically for Rarotonga, bed occupancy also dropped from 25% in 2019 to 16.9% in 2023, indicating a decline in admissions compared to 2019. Similarly, in Aitutaki, there was a decrease from 8.5% in 2019 to 5.4% in 2023, mirroring a similar trend observed in the Pa Enua due to COVID.

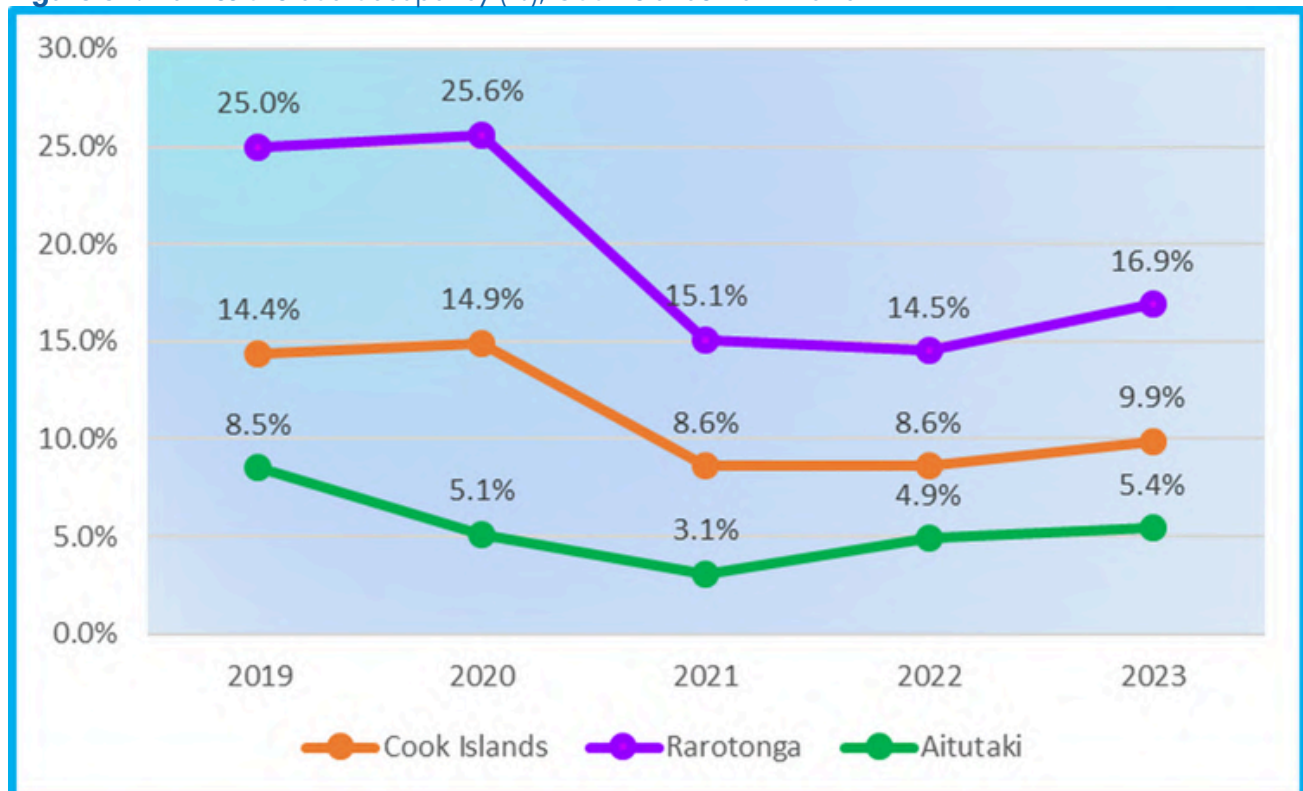
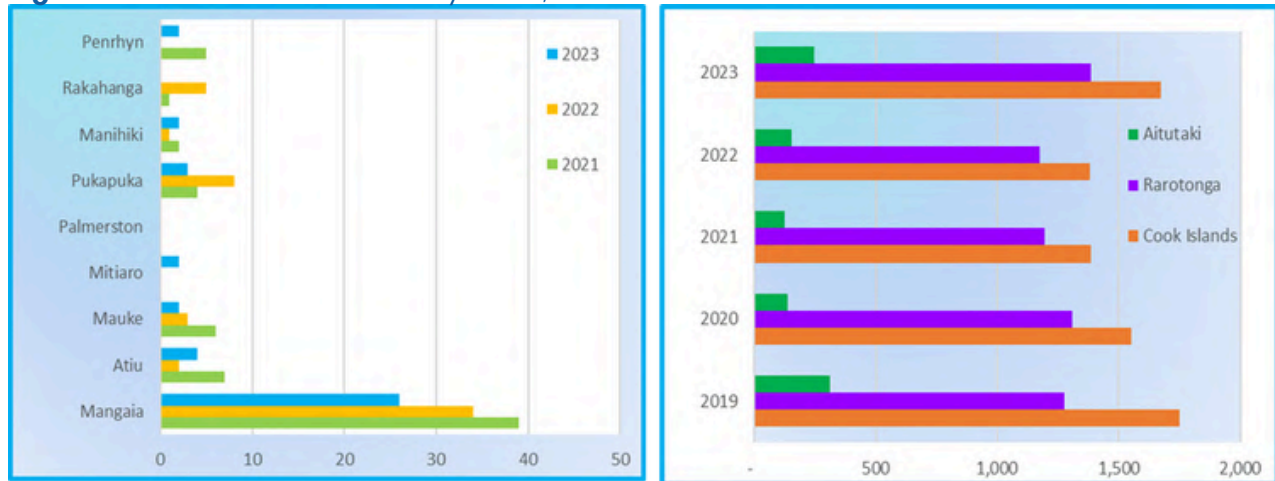
Figure 34: Admissions bed occupancy (%), Cook Islands 2019-2023

Figure 35 presents the admissions data for health clinics in the Pa Enua from 2021 to 2023, alongside data for the main islands of Aitutaki and Rarotonga from 2019 to 2023. The data clearly indicates a notable migration of patients from the Pa Enua centres to the main hospital and/or abroad during this period.

Figure 35: Number of admissions by Island, Cook Islands 2019-2023



Primary Care

TMO reoriented its health services with a more prevention and customer oriented approach ensuring that all people living in the Cook Islands have equitable access to quality health services through Primary Health Care. On Rarotonga, 5 Community (Puna) Health Clinics have been established, Pa Enua healthcare centres resourced with equipment and skilled health professionals. These facilities offer a range of services to all patients, including consultations, dressings, maternal child health, medication refills as well as other services such as specialist clinics and visits by specialists.

The total number of visits decreased by almost half from 2019 to 2020 compared to the visits recorded from 2016 to 2019, possibly influenced by the COVID-19 pandemic, resulting in isolations and restricted public gatherings, as seen in **Figure 36** below. However, visits started to increase again from 2022.

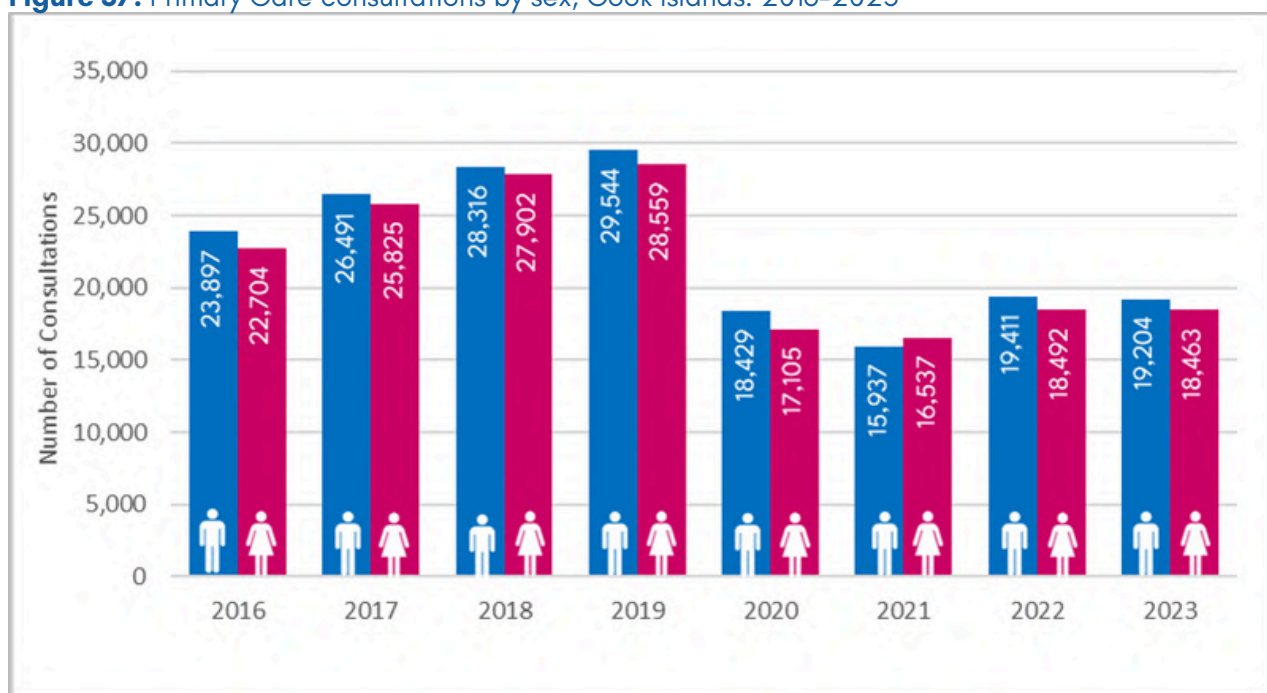
For the last three years (2021-2023), almost 120,000 outpatient services were provided by TMO. As shown above, consultations were the most recorded visits in the community clinics, accounting for 76%, exceeding dressings at 8% and injections at 3%. Consultations include NCD check-up, medication refills, phone consultations and general medical appointments.

Figure 36: Primary Care visits by year, Cook Islands 2016–2023



Primary care consultations by sex, as illustrated in **Figure 37**, between 2016 to 2023, almost 350,000 consultations were recorded, where 108,000 consultations accounted for the last 3 years. Similar attendance rates are observed among both female and male patients at outpatient clinics. Consultation visits by both sexes were higher from 2016 to 2019 compared to the period from 2020 to 2023. However, it can also be observed that since 2020, there has been a steady increase.

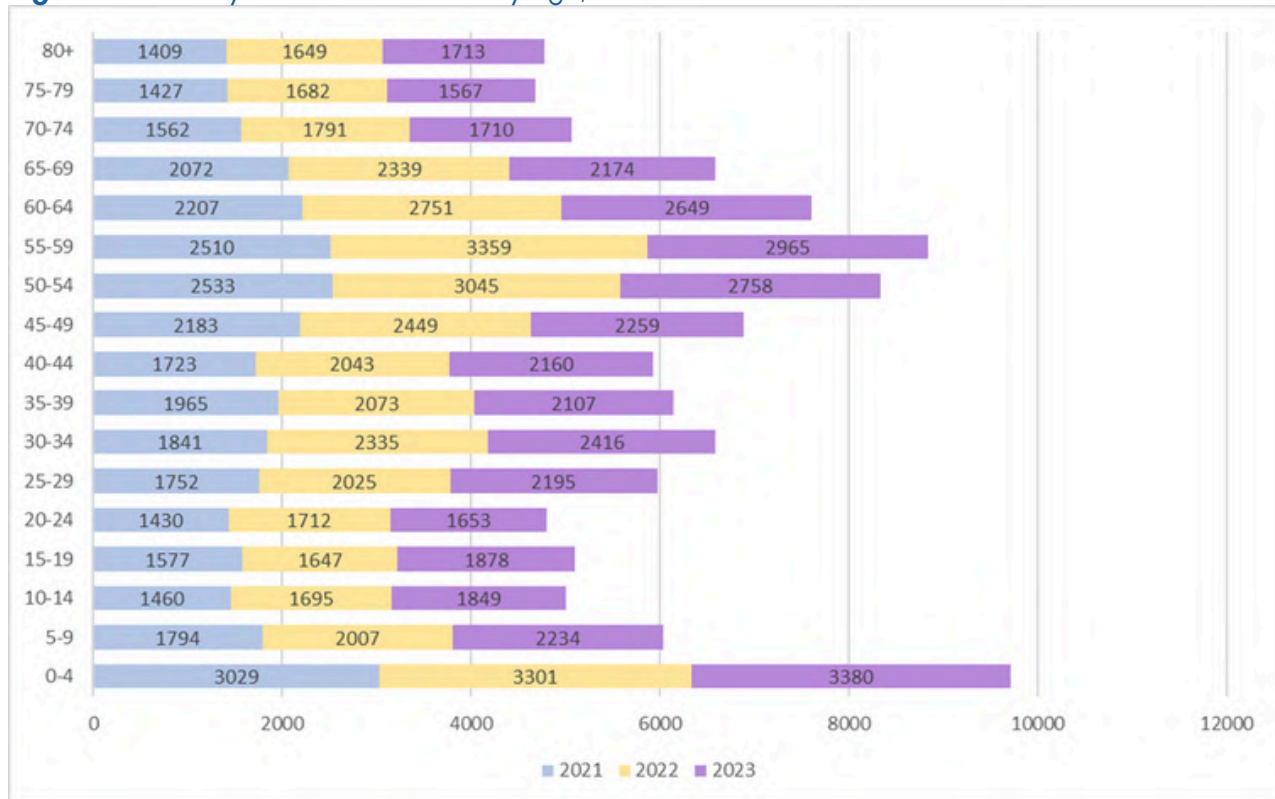
Figure 37: Primary Care consultations by sex, Cook Islands: 2016–2023



Note: Including community clinics

In comparison, consistent fluctuation trends were observed among the age groups ranging 5 years to 80 plus years who attended the Primary Care clinic during this period. The highest record of consultations for children aged 0-4 years old can be attributed to the vulnerability of this age group, necessitating medical check-ups and vaccination to ensure their health development. Additionally, they are more prone to common childhood illnesses such as colds, fever, ear infections and digestive issues. Meanwhile, the age group 50-64 requires more medical attention due to rising health concerns, particularly in NCDs.

Figure 38: Primary Care consultations by age, Cook Islands 2021-2023



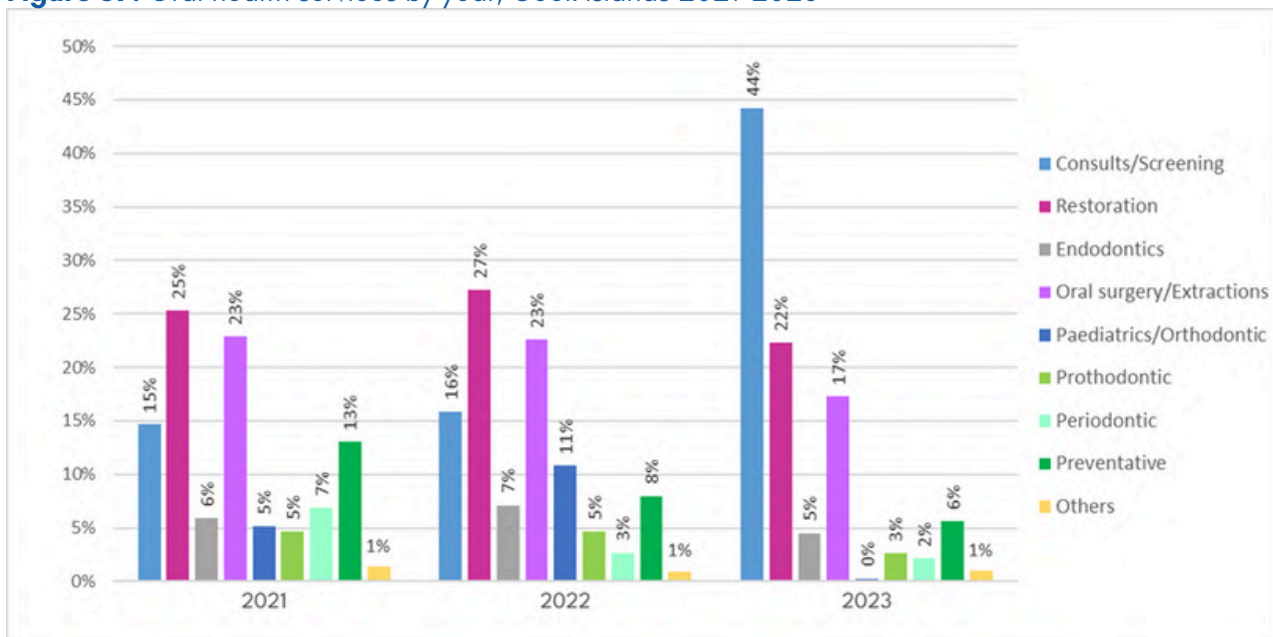
Oral Health

Oral health refers to the conditions of the teeth, gums, mouth, and related structures that enable proper chewing, speaking and smiling. Good oral health involves maintaining proper hygiene practices, such as regular brushing and flossing, as well as seeking professional dental care for preventive check-ups and treatment of any oral health issues.

The "Baby Teeth Matters" initiative has been introduced by the TMO with the aim of enhancing dental health for mothers and young children in the Cook Islands. TMO provides oral health screening for pregnant mothers and children under three years old, and oral health nutrition workshops are integrated into primary healthcare. The "Baby Teeth Matters" campaign aims to enhance Cook Islanders' quality of life and promote lifetime dental health. School dental programs have been restructured into screening, preventive and operative phases for early childhood education and primary and secondary school children. The school dental program focuses on primary prevention with evidence-based treatment modalities. The restructuring allows optimal quality oral health care to school-aged children. It utilises the Health Care Model for the Cook Islands to identify and address risk factors of oral diseases in children and aspire to keep them disease-free as envisioned by the National Health Reorientation Plan 2024+ for the Cook Islands.

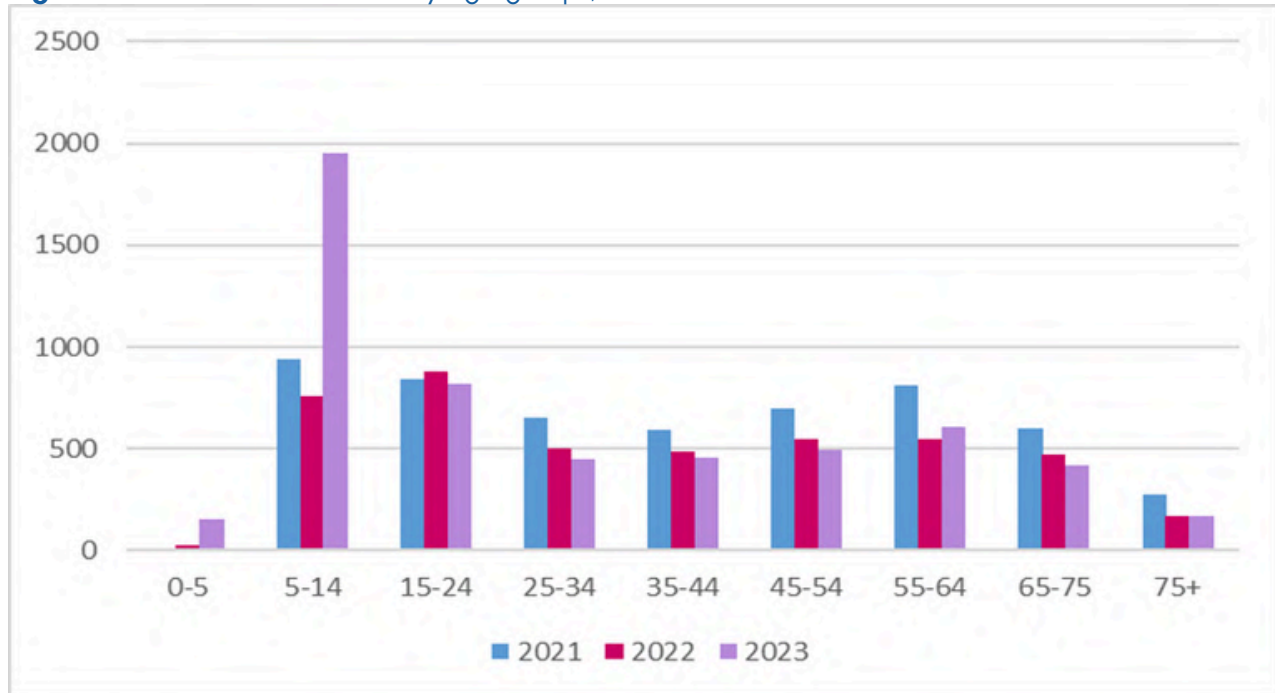
Figure 39 shows that over the past three years, oral health services indicate a notable increase in the total number of patients receiving treatment with a significant jump of 75% between 2022 and 2023 alone. Consultations and screening experienced the most substantial increase, particularly in 2023.

Figure 39: Oral health services by year, Cook Islands 2021-2023



Over the course of three years, nearly 15,000 oral health services have been conducted with an annual average of 5,000 services completed. The distribution of these procedures has a notable prevalence of services rendered to females, comprising 57% of the total; and 43% attributed to males in the Cook Islands. Majority of the procedures were performed on individuals aged 5-14 years old (24%), followed by 15-24 years old (17%). The majority of children under five years underwent oral screening and preventive treatments. Further investigation is required to provide in depth review of the trends in service utilisation reported for accessing oral health services.

Figure 40: Oral health services by age groups, Cook Islands 2021-2023



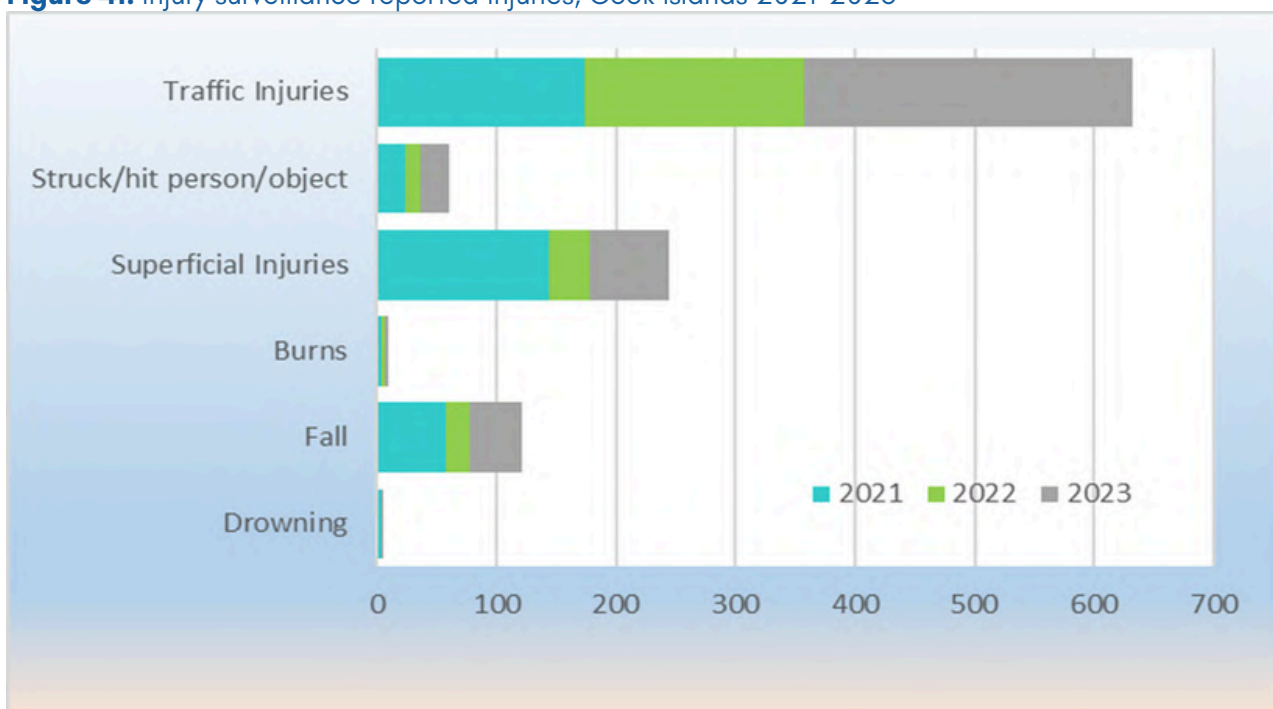
OTHER

Cook Islands Injury Surveillance (CIIS)

Injuries, Motor Vehicle Accidents and Others

Data collection regarding the incidence and contributing factors of injuries in the Cook Islands over the last three years from 2021 to 2023 is shown in **Figure 41**. Data shows that out of 1,073 injuries recorded, 59% are traffic injuries, 23% involve superficial injuries, 11% due to falls and 7% in other types of injuries.

Figure 41: Injury surveillance reported injuries, Cook Islands 2021-2023

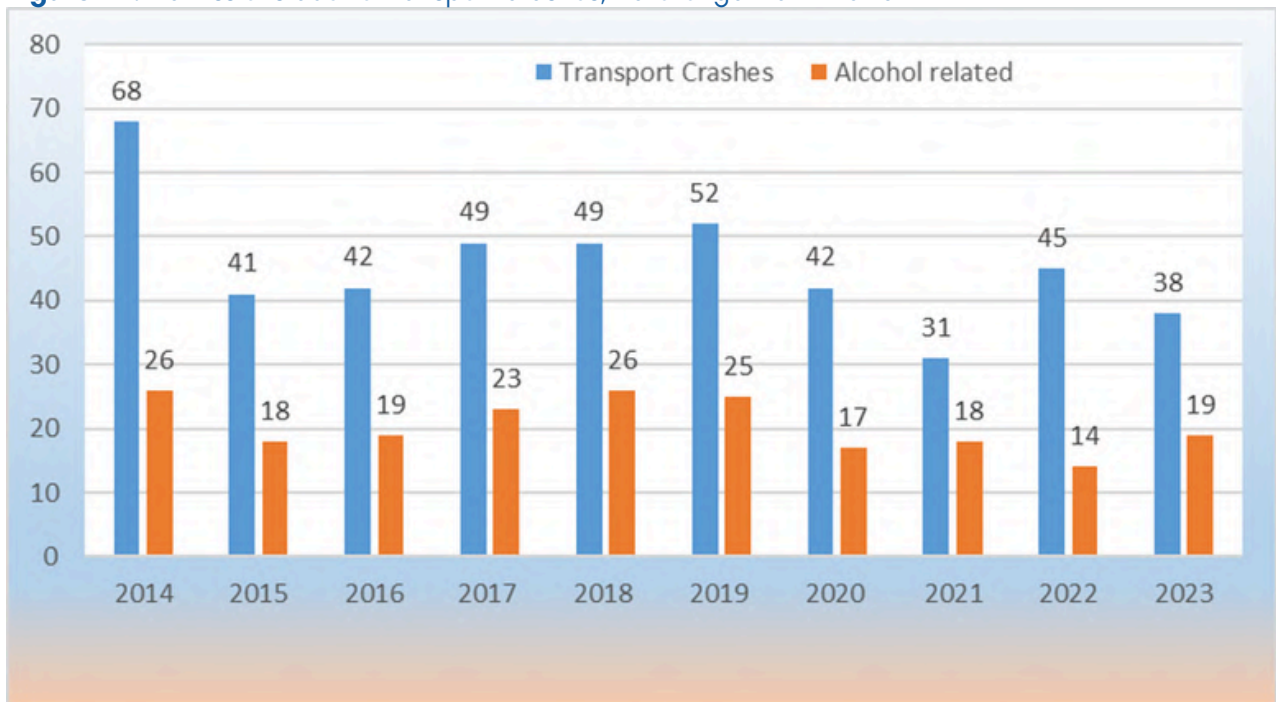


Transport Crashes

There has been a high number of road traffic crashes occurring mainly from driving on motorbikes as a result from speeding, careless driving and driving under the influence of alcohol. Other contributing factors also include road conditions and domestic animals (dogs) wandering on public roads. The reported statistics only include incidents referred to the hospital by the Cook Islands Police, ambulance call-out, and cases attended at the Emergency Department (ED).

Figure 42 shows the number of admissions due to transport crashes at the Rarotonga hospital over the years 2014 to 2023. In this period, the number of crashes ranges between the lowest of 31 in 2021 to 68 the highest in 2014, with an average of over 44 cases per year.

Figure 42: Admissions due to transport crashes, Rarotonga 2014-2023



Alcohol related crashes showed a dramatic decrease in 2022 with 31% cases to an increase of 50% in 2023. However looking at these rates in comparison to the overall number of crashes for the same period (**Figure 43**), these rates remain notably high, averaging at 46% a year.

Figure 43: Percentage alcohol related crashes, Rarotonga 2014-2023

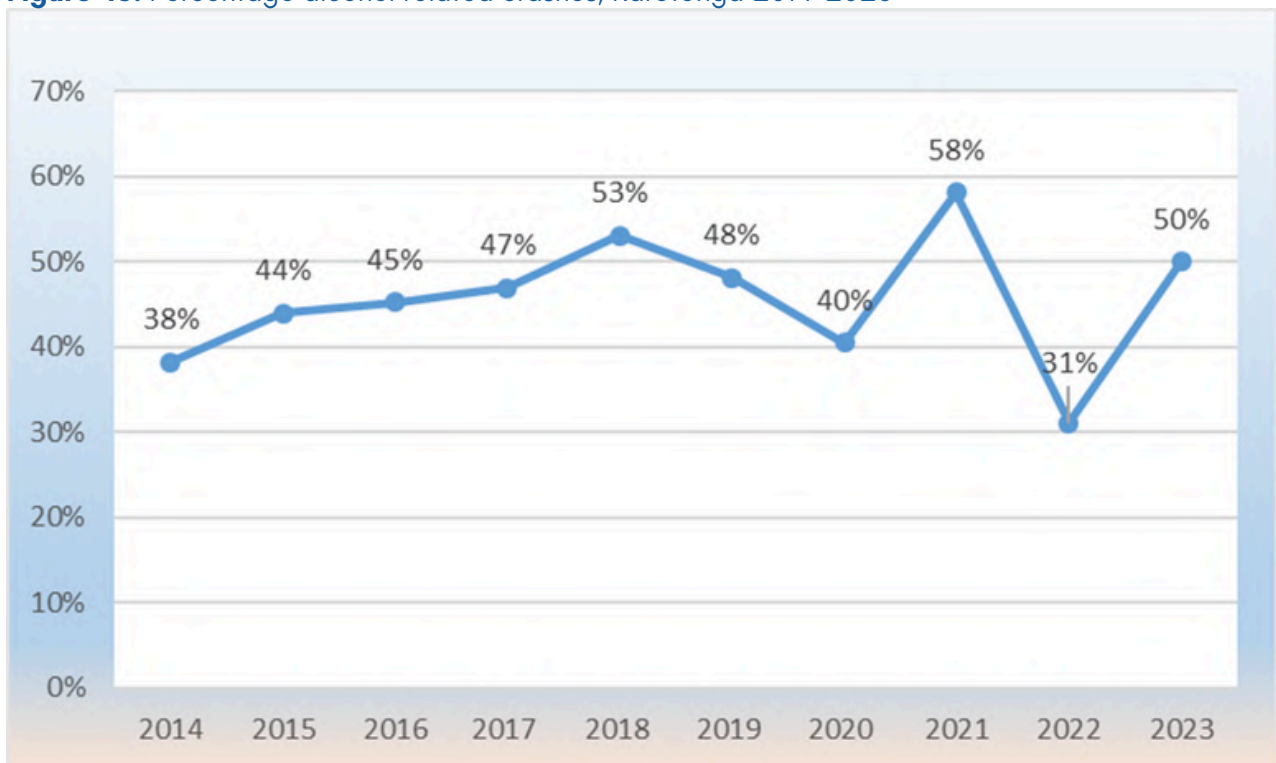


Figure 44 shows that the 15-24 year age group has been predominantly involved in alcohol-related road traffic crashes requiring hospital admissions in the last 10 years (2014-2023), averaging to about 8 cases each year. This is followed by the 25 to 34 year age group, with an average of about 6 cases each year.

Figure 44: Transport crashes by age groupings, Rarotonga: 2014-2023

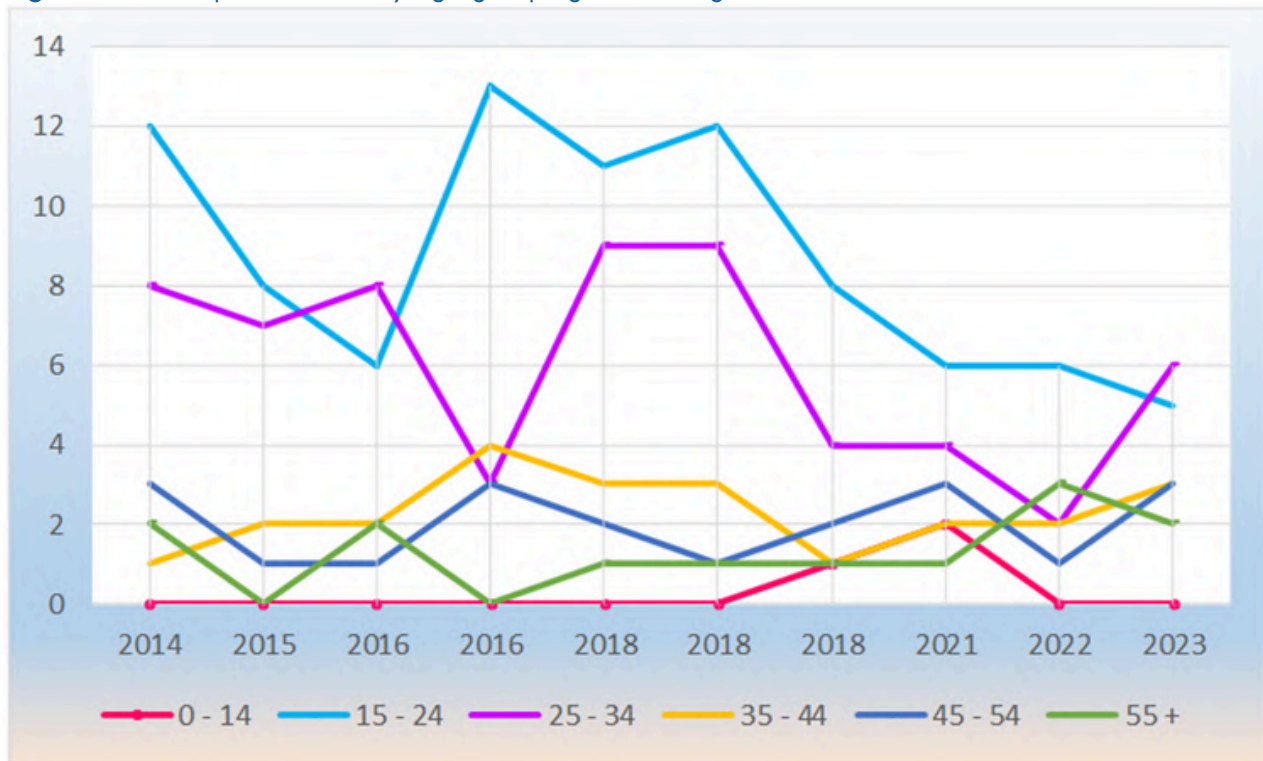


Table 8: Admitted alcohol related transport crashes by age group, Rarotonga 2014-2023

Age group	2014-2023	Average	%
0 - 14	3	0.3	1.5%
15 - 24	87	8.7	42.2%
25 - 34	60	6.0	29.1%
35 - 44	23	2.3	11.2%
45 - 54	20	2.0	9.7%
55 +	13	1.3	6.3%
Total	206	20.6	100%

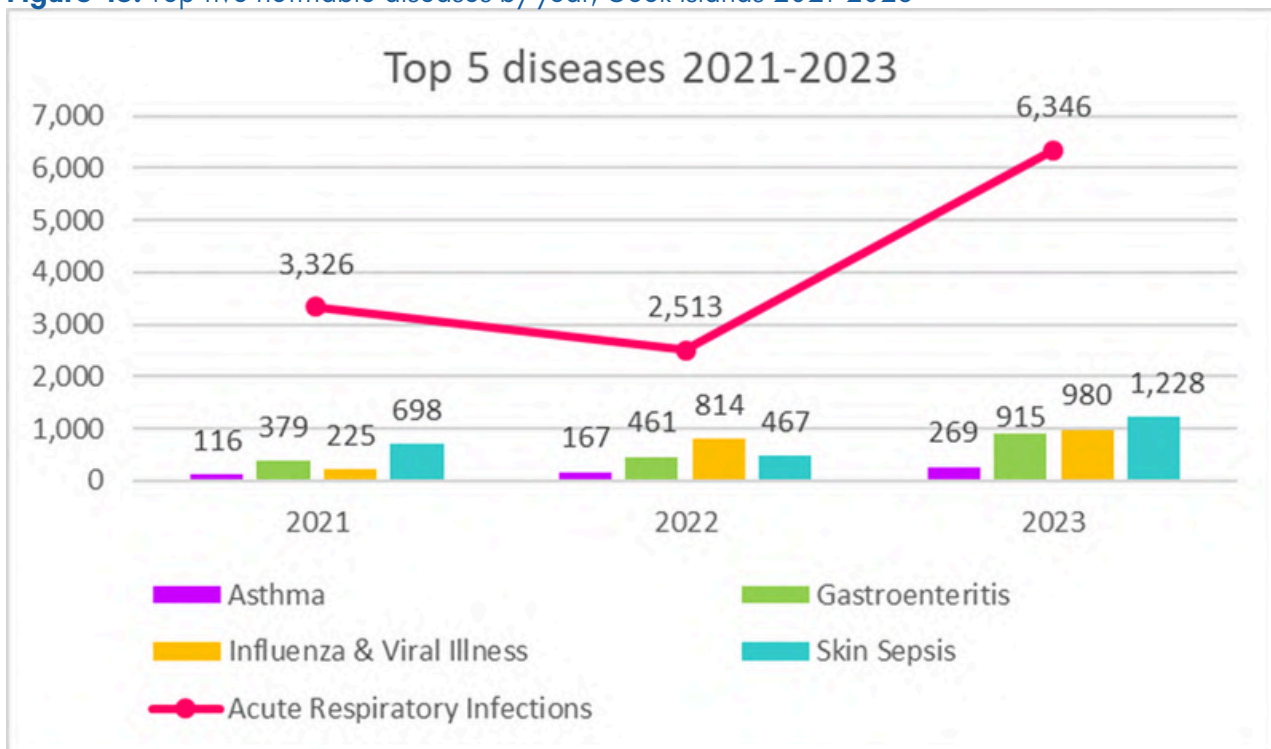
NOTIFIABLE DISEASES

Notifiable Diseases

A notifiable (reportable) disease is any disease that is required by law to be reported to government authorities. These cases are clinically diagnosed and confirmed. Reporting notifiable diseases allows TMO to monitor disease trends, implement control measures, and take appropriate actions to prevent the spread of disease within communities.

The top five notifiable diseases reported in the Cook Islands between 2021 and 2023 are: acute respiratory infections, skin sepsis, gastroenteritis/diarrhoea, influenza & viral illness and asthma. Acute respiratory infections (64%) reported the highest number of cases amongst these five diseases.

Figure 45: Top five notifiable diseases by year, Cook Islands 2021-2023



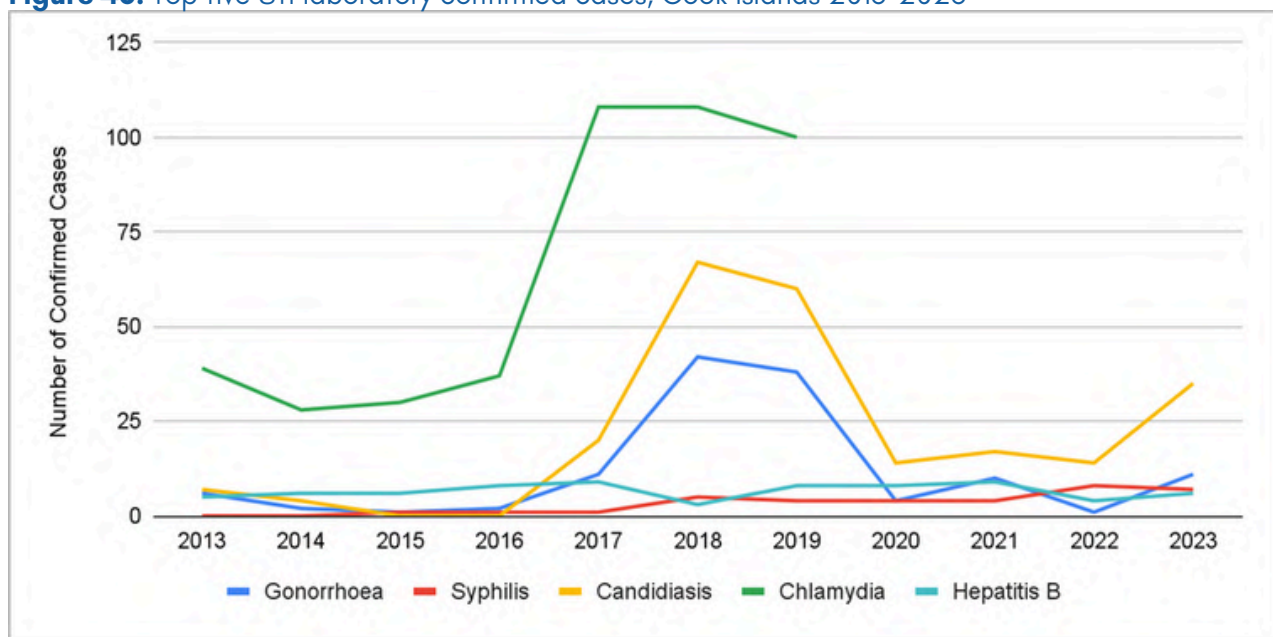
Sexually Transmitted Infections (STIs)

Sexually transmitted infections (STIs) can be transmitted from one person to another through various sexual activities, including vaginal, anal, or oral sex. These infections are typically caused by bacteria, viruses, or parasites and can spread through bodily fluids such as semen, vaginal secretions, blood and breast milk. Examples of STIs include HIV/AIDS, gonorrhoea, chlamydia, syphilis, trichomonas vaginalis, and non-specific urethritis. It is crucial to practise safe sex and undergo regular testing if sexually active to prevent and detect these infections early.

STI Laboratory Confirmed Cases

The top five STI laboratory-confirmed cases are shown below (**Figure 46**). In the span of 10 years, positive cases peaked between 2016 to 2019, and declined in 2020, and then an upward trend thereafter. Chlamydia, candidiasis and gonorrhoea recorded the highest number of cases in Cook Islands during that period. In 2020, chlamydia testing ceased due to resource constraints and re-prioritisation of resources towards preparation and implementation of the Cook Islands Emergency Response Plan for COVID-19. TMO implemented empiric therapy for chlamydia, a common treatment for all patients with symptoms. Consequently, no laboratory-confirmed tests have been recorded for chlamydia since 2020. Despite this, patients continue to receive counselling and ongoing treatment.

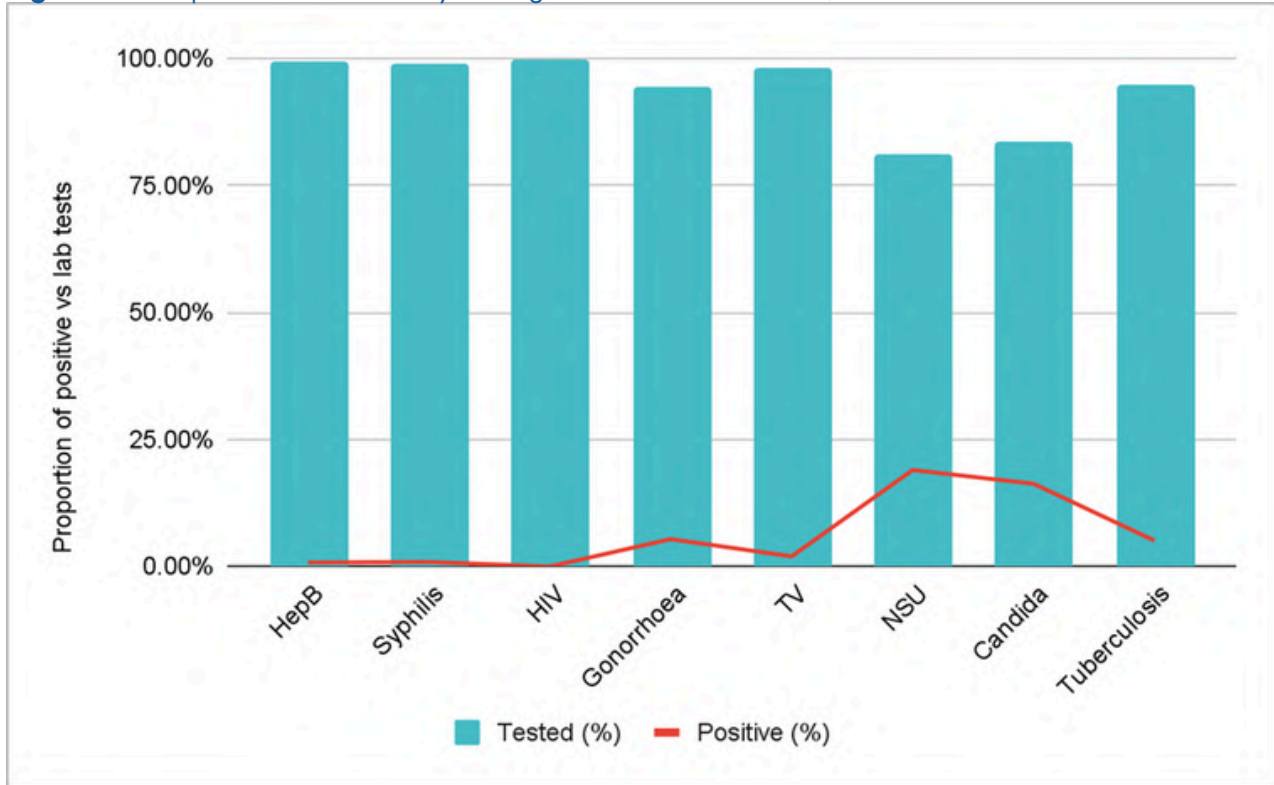
Figure 46: Top five STI laboratory confirmed cases, Cook Islands 2013-2023



Note: Testing of Chlamydia ceased in 2020 due to the high cost of testing.

Figure 47 details the proportion of laboratory testing and confirmed cases from 2021 to 2023. During this period, more than 8,600 tests were conducted which included tests for hepatitis B (hepB), syphilis, human immunodeficiency virus (HIV), gonorrhoea, trichomonas vaginalis (TV), non-specific urethritis (NSU), candida and tuberculosis. Of the total tests, not more than 2% of the test came out positive. Of the less than 2% positive cases, the majority were NSU (19%), candida (16%), gonorrhoea (5%) and tuberculosis (5%).

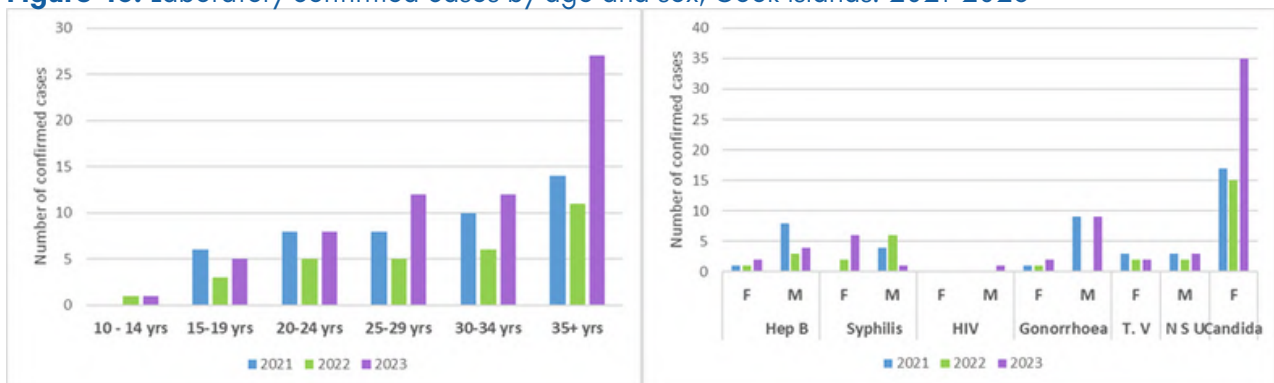
Figure 47: Proportion of laboratory testings and confirmed cases, Cook Islands 2021-2023



Note: NSU (Non Specific Urethritis), TV (Trichomonas Vaginalis), HepB (Hepatitis B)

Figure 48 shows comparison of the less than 2% confirmed cases between males and females across different age groups from 2021 to 2023. There is a clear trend showing an increase in the number of confirmed cases as the age increases. The age group of 35+ years has the highest number of confirmed cases due to age ranges. Regarding sex-specific differences, it was observed that males (74%) had more positive cases than females (26%) for HepB, syphilis, HIV and gonorrhoea. Specific tests for women such as TV and candida, showed increased cases recorded in 2023, particularly for candida. In contrast, the male-specific test of NSU showed relatively minimal differences during the period. Consequently, the need for targeted prevention strategies may vary based on gender-specific trends.

Figure 48: Laboratory confirmed cases by age and sex, Cook Islands: 2021-2023



Human Immunodeficiency Virus (HIV)

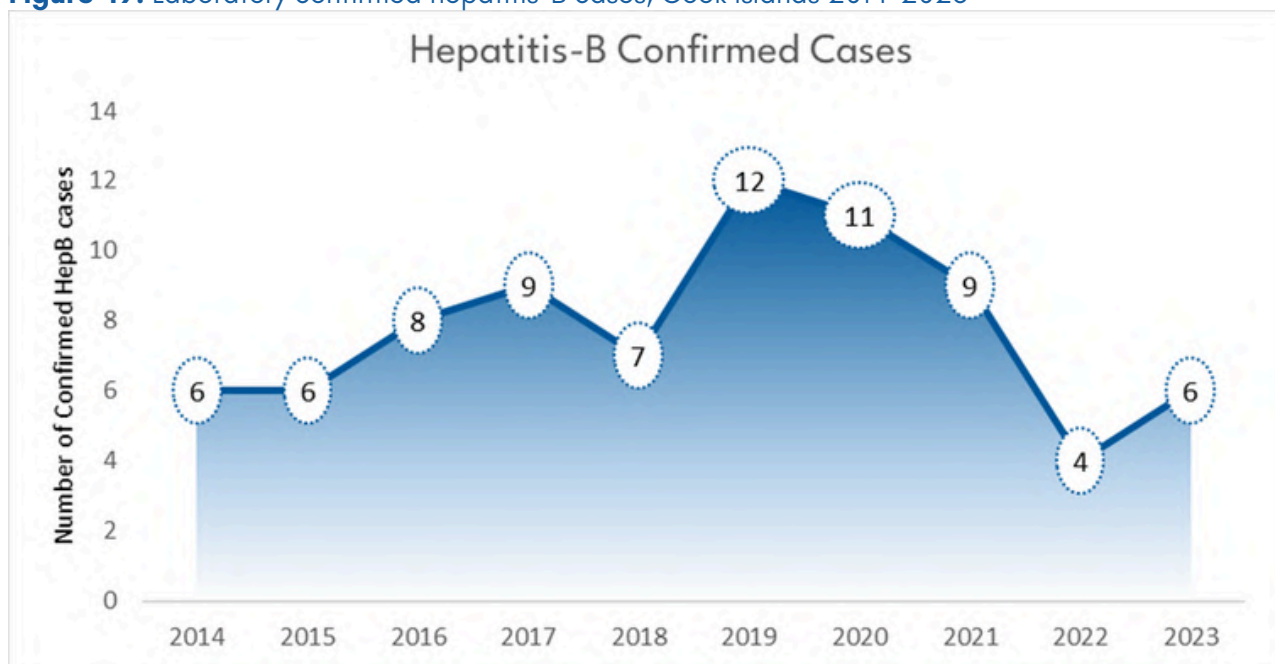
Between 2020 and 2023, a single and imported case of human immunodeficiency virus (HIV) was confirmed in the Cook Islands in 2023.

Antiretroviral therapy (ART) aims to enable individuals with HIV to lead healthy lives while reducing transmission risks. Through the United Nations Population Fund (UNFPA), TMO provides ART to confirmed cases including and monitoring Clusters of differentiation 4 (CD4) count and viral load testing with samples sent to New Zealand.

Hepatitis B

Figure 49 illustrates a trend indicating a general rise in the number of affected individuals each year, particularly in the last two years. An average of seven cases of hepatitis B (hepB) has been identified annually over the past ten years (2014-2023), with the highest number recorded at 12 cases in 2019. Although there was a steady decline in cases from 2020 to 2022, a slight increase was observed in 2023.

Figure 49: Laboratory confirmed hepatitis-B cases, Cook Islands 2014-2023



Tuberculosis (TB)

Tuberculosis (TB) is an infectious disease often affecting the lungs caused by a type of bacteria which spreads through the air when an infected person coughs or sneezes. Symptoms include coughing, chest pain, fatigue, weight loss, fever, and night sweats. Treatment involves antibiotics taken for several months. Prevention includes vaccination, screening, and infection control measures.

It is notable that since 2021, no cases of tuberculosis (TB) have been confirmed until 2023, when four cases were confirmed (**Figure 50**). Of these cases, one has already been cured, and the remaining three are currently undergoing treatment. It is important to mention that one confirmed case involved a female from overseas. To prevent the spread of TB, close contacts of patients are tested, and those with a positive Mantoux test receive preventative medication.

Figure 50: Laboratory confirmed Tuberculosis cases, Cook Islands 2016-2023 [4]



Dengue Fever

Dengue fever, which presents with flu-like symptoms lasting two to seven days, typically manifests after an incubation period of three to fourteen days[5] following the bite of a mosquito. Symptoms usually include fever, body aches, nausea, and rash. Under TMO health protocols, the occurrence of five dengue cases necessitates the declaration of an outbreak. From 2021 to 2023, TMO sustained vector control programs, including targeted awareness campaigns to encourage community engagement in maintaining clean homes to eliminate mosquito breeding sites. Additionally, Tutaka Programme (a house to house environmental risk assessments) was conducted regularly to further reduce the risk.

Following the dengue outbreak declaration on February 2, 2021, the Cabinet directed public servants to participate in Operation Namu 21, an island-wide mass cleanup aimed at eliminating mosquito breeding sites and mitigating further impact. This operation involved clearing debris, stagnant water, and overgrown vegetation, which are potential mosquito habitats. The dengue outbreak was officially declared over on August 16, 2021[6], marking a successful intervention. This experience underscores the critical need for coordinated public health efforts and community participation in managing and preventing dengue fever outbreaks.

[4] Source: National Tuberculosis Data 1999 - 2023 Report

[5] Pacific Outbreak Manual 2016

[6] <https://www.health.gov.ck/dengue-outbreak-over-2/>

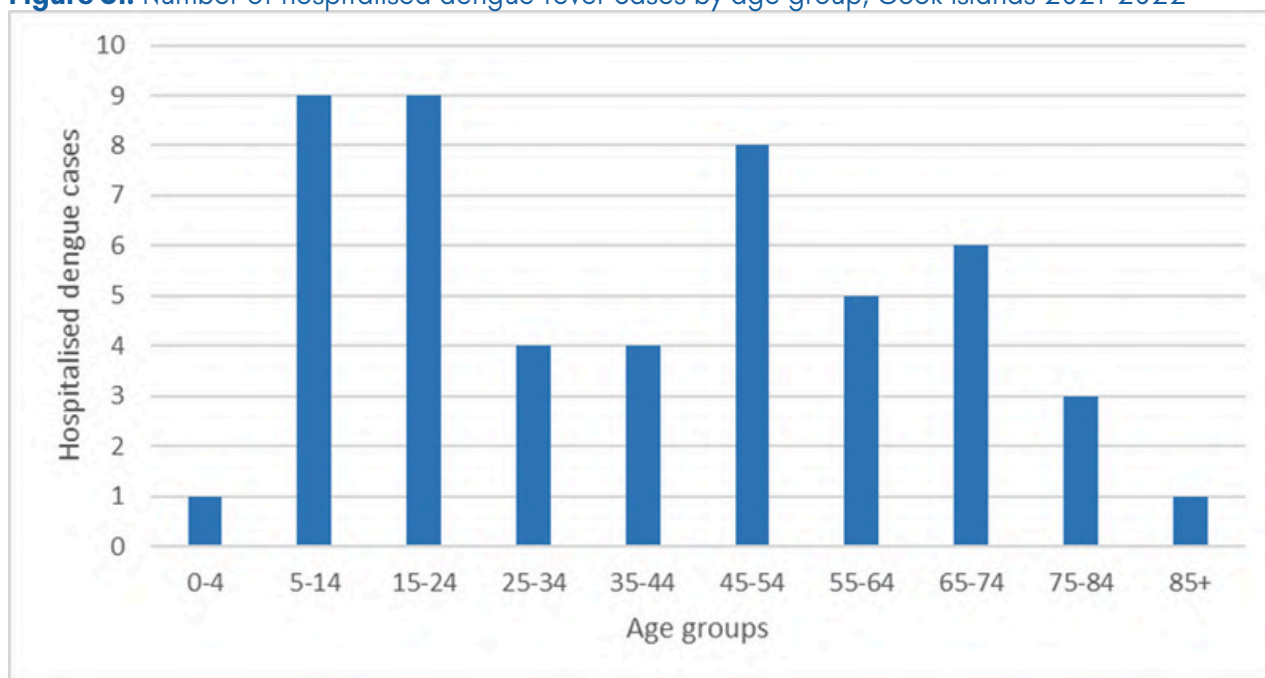
In 2021, there were 193 reported cases of dengue fever, with 25% requiring hospitalisation. In contrast, only seven cases were reported in 2022. The affected individuals ranged from five months to 84 years old, underscoring the broad age range susceptible to dengue fever.

Table 9: Dengue Fever cases by year, Cook Islands 2021-2022

Dengue fever cases 2021-2023			
	Female	Male	Total
2021	91	102	193
2022	5	2	7
2023	0	0	0
Hospitalized	26	24	50

Figure 51 illustrates that across all age groups, at least one or more cases of dengue required hospitalisation. This indicates that dengue fever can significantly impact individuals regardless of age. Severe cases were often admitted due to complications with pre-existing conditions such as COPD, which tends to worsen in the presence of a fever.

Figure 51: Number of hospitalised dengue fever cases by age group, Cook Islands 2021-2022



Ciguatera Poisoning

Ciguatera poisoning (fish poisoning) is a foodborne illness caused by eating fish with ciguatoxins, produced by certain algae. These toxins are commonly found amongst reef fishes. Symptoms include gastrointestinal issues and neurological symptoms.

From 2021 to 2023, occurrences of fish poisoning remained steady from January to December, with an average of 4 cases per year.

Figure 52: Fish poisoning cases by month and year, Cook Islands 2021-2023

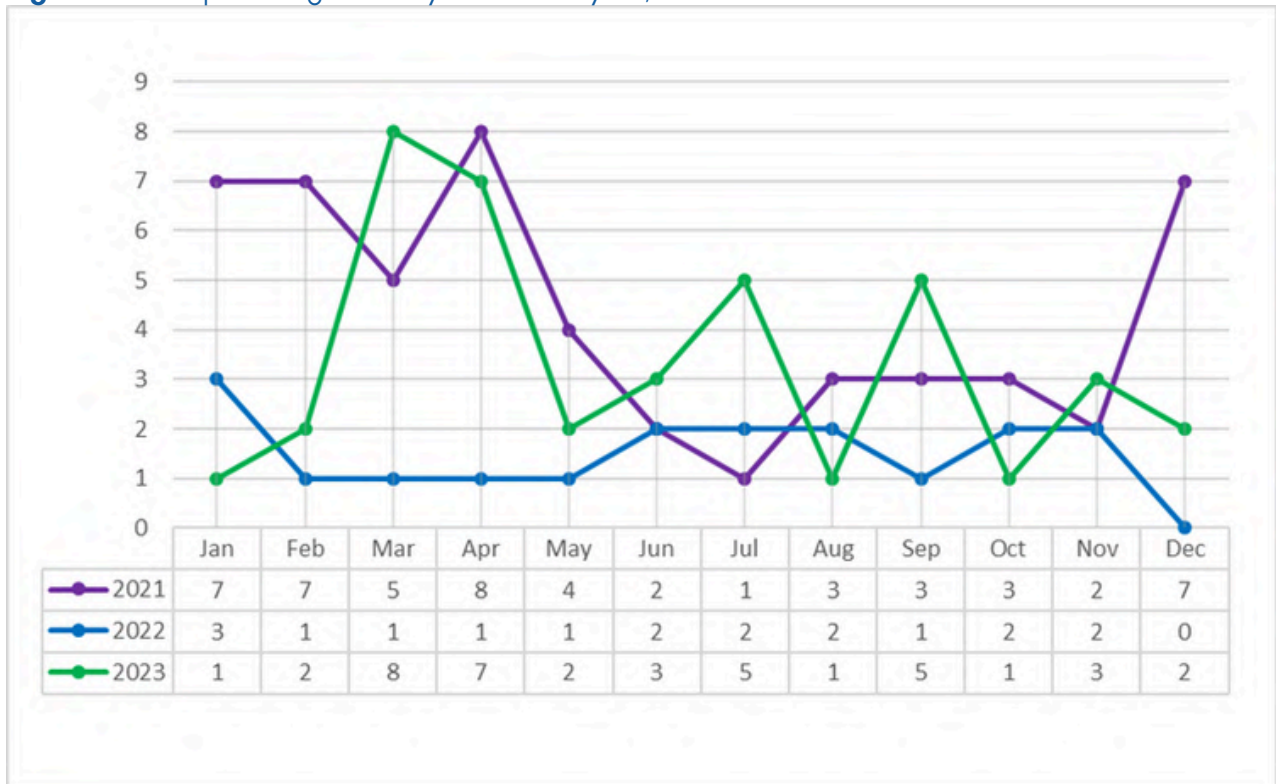
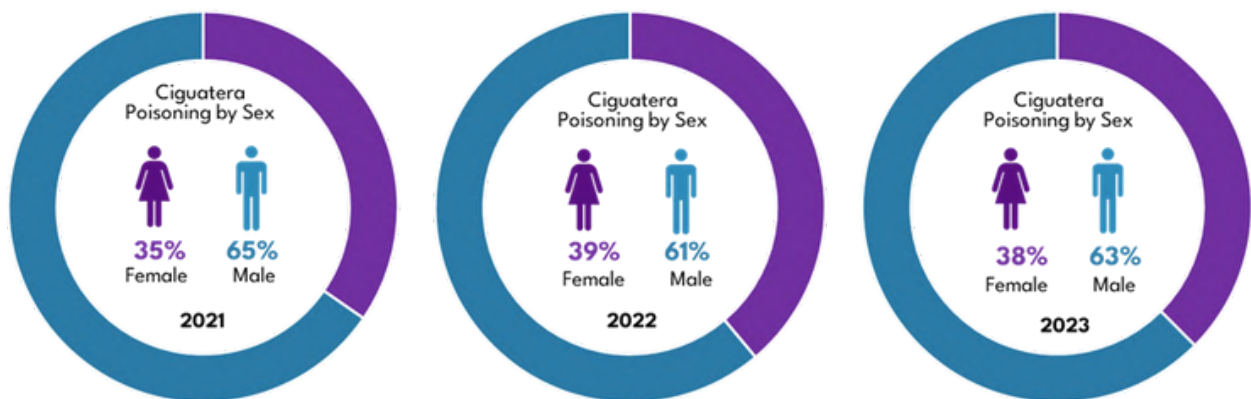


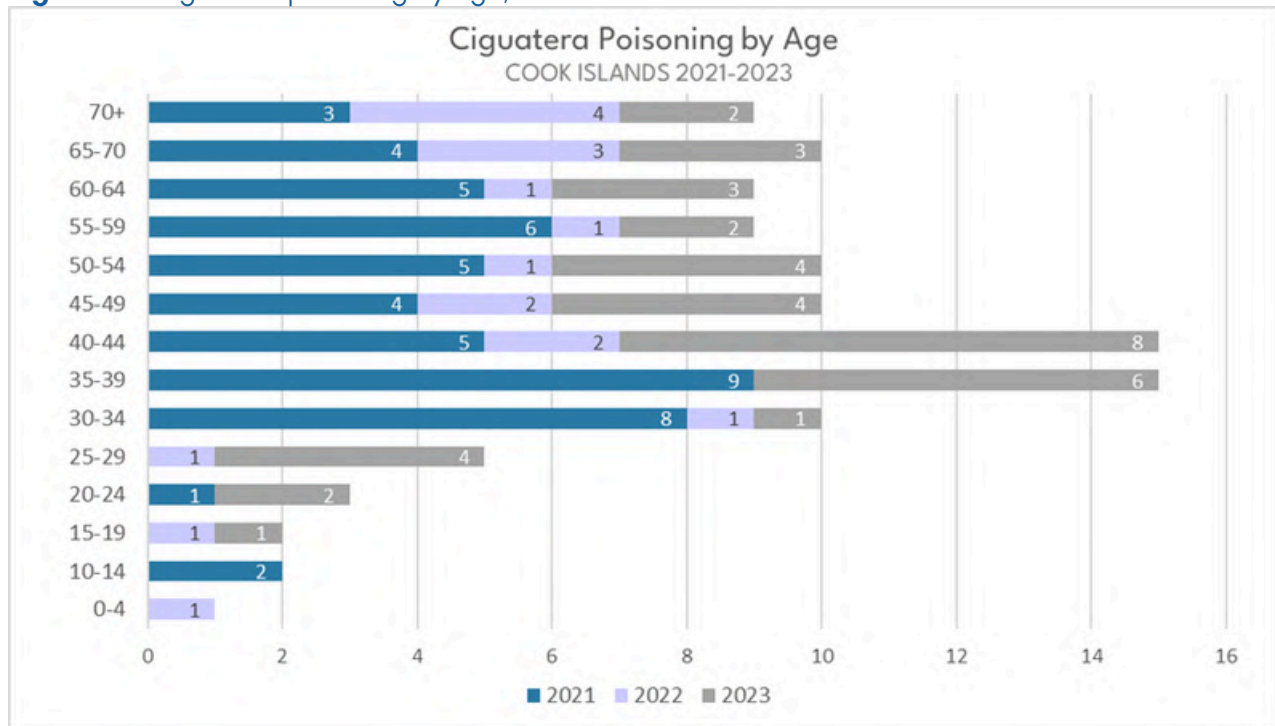
Figure 53 depicts the similar proportional trends of fish poisoning cases by sex, over the past three years (2021-2023). On average, males account for 63% of cases, while females account for the remaining 37%.

Figure 53: Proportion of ciguatera poisoning by sex, Cook Islands 2021-2023



According to the data presented in **Figure 54**, individuals aged 35–44 experienced the highest number of cases from 2021 to 2023. This trend is understandable, as this group often engages in reef fishing for sustenance. Notably, even the 0–4 age group was impacted, with one reported case in 2022, emphasising that young children are also susceptible to ciguatera poisoning.

Figure 54: Ciguatera poisoning by age, Cook Islands 2021-2023



COVID-19

In the past few years, the Cook Islands have faced the global challenge of the COVID-19 pandemic with resilience and effective measures. From early detection and response to the establishment of vaccination programs, quarantine protocols, and preventative measures, the efforts of TMO and government support have been pivotal in safeguarding everyone in the Cook Islands.

In response to the pandemic, the Secretary of Health issued multiple category quarantine orders⁷ for all international arrivals to the Cook Islands. TMO, with government support, established quarantine and isolation practices, utilising few resorts as primary locations for repatriation flights entering the country. On February 13, 2022, Cook Islands recorded its first COVID-19 case. Additionally, On April 23, 2022, the Cook Islands reported its first COVID-19 related death. The death is treated as COVID related death as per the WHO guidelines⁸; any death within twenty eight days of testing positive is to be treated as COVID related death.

On May 5, 2023, the World Health Organization (WHO) declared that the spread of COVID-19 was no longer a global public health emergency⁹.

⁷ [https://www.health.gov.ck/category-quarantine-order-flight-nz946/Section 12 of the COVID-19 ACT 2020](https://www.health.gov.ck/category-quarantine-order-flight-nz946/Section%2012%20of%20the%20COVID-19%20ACT%202020)

⁸ Internations Guidelines for Certification and Classification (Coding) of COVID-19 as Cause of Death - WHO

⁹ Statement on the fifteenth meeting of the IHR (2005) Emergency Committee on the COVID-19 pandemic

COVID-19 Vaccination Rollout

The national roll-out of COVID-19 vaccines commenced on 18 May, 2021, for individuals aged sixteen years and over, receiving both doses of the Pfizer-BioNTech COVID-19 vaccine. On October 8, 2021, vaccination was extended to include children aged 12 to 15 years, offering the Pfizer COVID-19 vaccination. Dose 3 commenced on December 16, 2021 targeting individuals aged 18 years and older. Continuous support by the New Zealand Government, TMO successfully secured ample supply of Pfizer vaccines, ensuring complete coverage for the entire population. TMO, in collaboration with private and public sector agencies and communities undertook the mission to position Cook Islands among the most vaccinated nations worldwide.

Since May 2021, more than 41,300 COVID-19 vaccine doses have been administered in the Cook Islands. About 94% of the Cook Islands eligible population aged 5 years and above had been reported as fully vaccinated, and about 66% had continued to receive a third dose. In addition, 98% of adolescents aged 12 to 15 had received at least two doses of the vaccine, and approximately 71% of children aged 5 to 11 had received two doses. About 116 AEFIs (Adverse Events Following Immunisation) were reported during the roll-out. A number of adverse reactions occurred, and managed.

It can be observed in the graph below (**Figure 55**) that the majority of vaccines were administered in Rarotonga (75%) and Aitutaki (11%), where most of the population resides and the two hospitals are located. In contrast, a small number of vaccines were given to the rest of the Pa Enea.

Figure 55: Vaccination roll-out by islands, Cook Islands 2021-2023

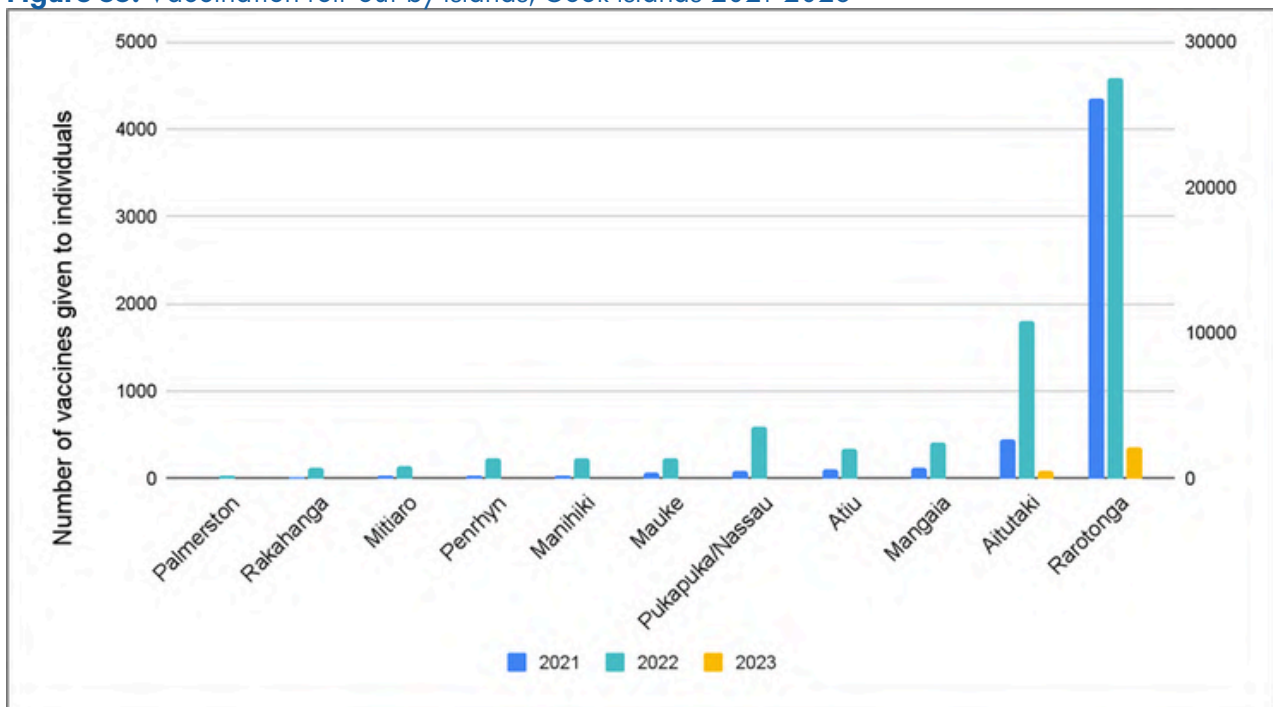


Figure 56 below illustrates the number of vaccine doses administered to people over the past three years. The majority received dose 1 (32%), dose 2 (31%) and dose 3 (25%) of the vaccines, with only a few receiving doses 4 and 5. There is a minimal difference in the doses given to paediatric patients (dose 1: 5% and dose 2: 4%).

Figure 56: Number of Doses, Booster, and Paediatric Vaccines Given, Cook Islands 2021-2023

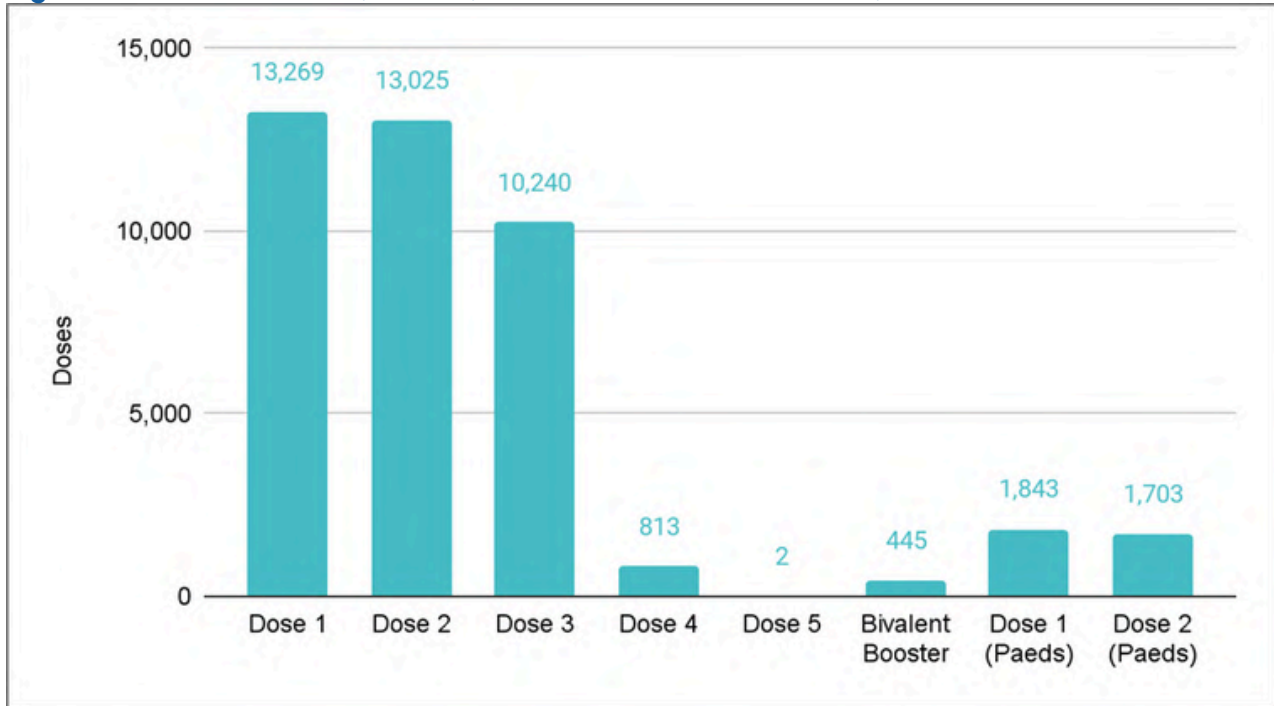
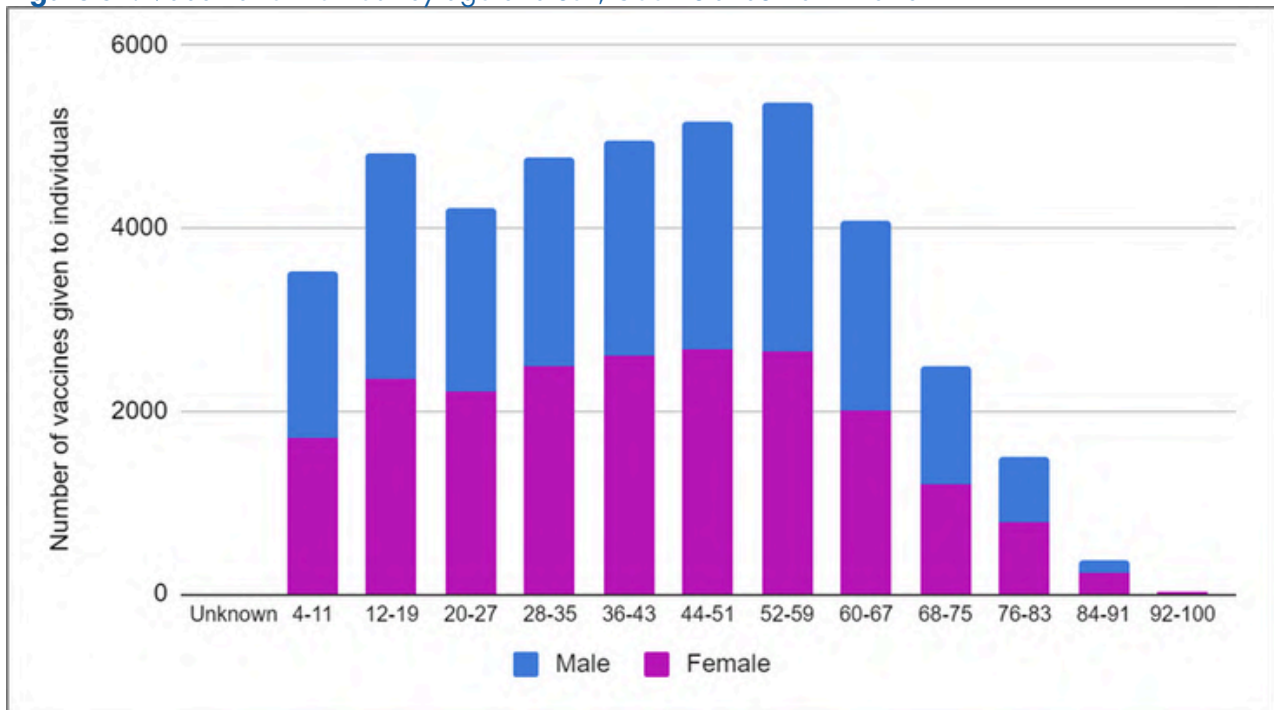


Figure 57 below shows the vaccination data by age for the past three years. It can be observed that the vaccines administered to males and females are relatively balanced across all age groups. The age groups from 12-19 up to 52-59 received the highest number of vaccines (10-12%).

Figure 57: Vaccination roll-out by age and sex, Cook Islands 2021-2023



Note: Two children aged four received the Pfizer vaccine, as they would have turned five within the month of the vaccination rollout.

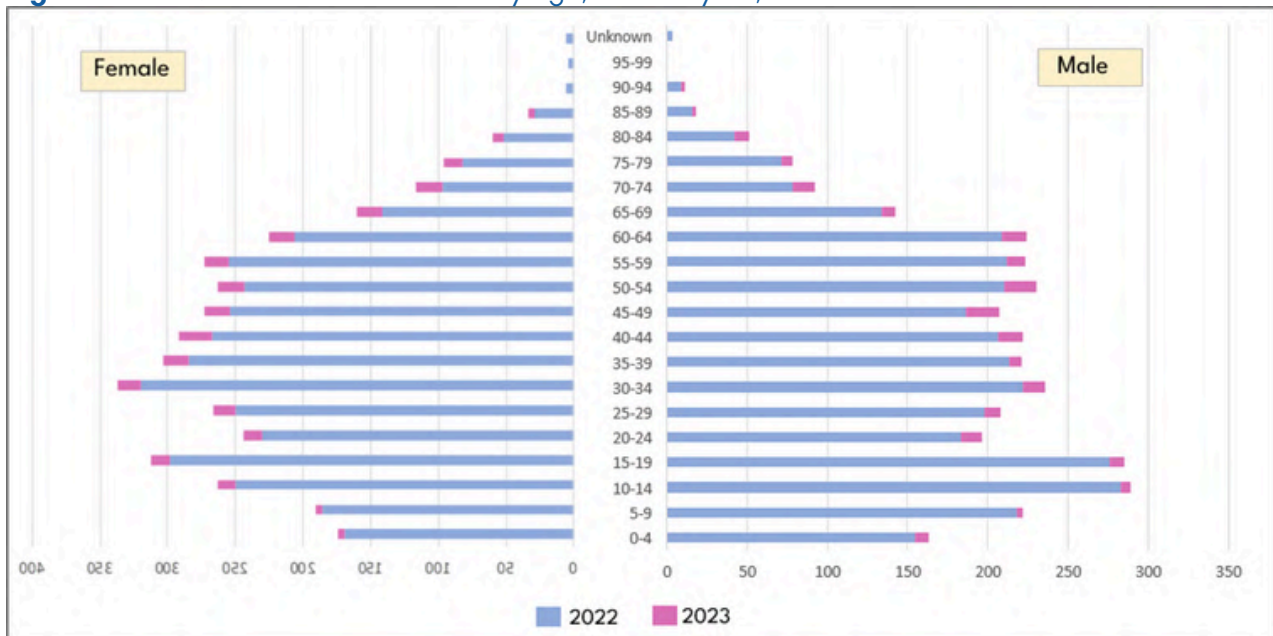
COVID-19 Confirmed Positive Cases

On February 14, 2022, the Cook Islands reported its first COVID-19 case. In response, TMO implemented a Cook Islands COVID-19 Response Plan strategy that included significant adjustments in testing, case investigation, and contact tracing. TMO shifted its focus to using rapid antigen tests (RATs), developed a self-registration portal for positive RATs results, and introduced phased changes to the testing and isolation requirements for cases, household contacts, and close contacts. There was a focus on encouraging the public to get booster vaccines. The period between receiving the second dose and the booster was reduced from 6 months to 4 months, improving vaccine coverage. Preventive measures relating to COVID-19, such as mandatory mask wearing, social distancing, limiting mass gatherings, and handwashing, helped to greatly reduce the opportunities for transmission within the Cook Islands.

RATs are a type of diagnostic test used to detect the presence of specific proteins associated with the COVID-19 virus. Unlike PCR tests, which require laboratory processing and can take several hours to days for results, RATs are designed for quick, on-site testing, typically providing results within 15 to 30 minutes. From 2022 to 2023, over 41,000 thousand RATs were completed in the Cook Islands. Around 82% of these tests have returned negative.

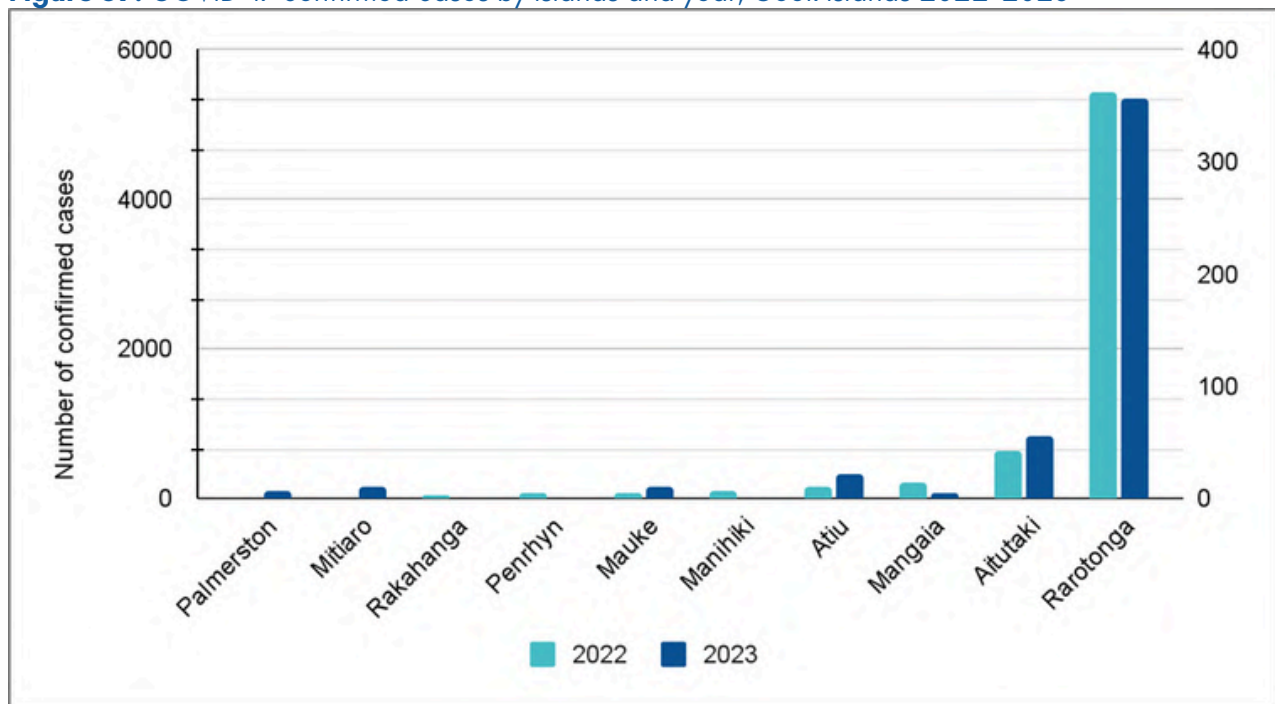
In 2022, the majority of confirmed COVID-19 cases were reported across all age groups. **Figure 58** highlights a significant increase in cases among individuals aged 30 to 64, with a wider base indicating that both the younger population and adults were the most vulnerable to the pandemic. The gender distribution of cases shows minimal differences, with females accounting for a slightly higher proportion (54%) compared to males (46%).

Figure 58: COVID-19 confirmed cases by age, sex and year, Cook Islands 2022-2023



Rarotonga, with its higher population compared to the other islands, reported the most COVID-19 cases, totaling around 5,700, accounting for 80% of the cases. Among the Pa Enea, Aitutaki consistently reported just over 700 cases from 2021 to 2023, representing 10% of the total. This was followed by Mangaia and Atiu, each accounting for 3% of the cases.

Figure 59: COVID-19 confirmed cases by Islands and year, Cook Islands 2022-2023



NON-COMMUNICABLE DISEASES

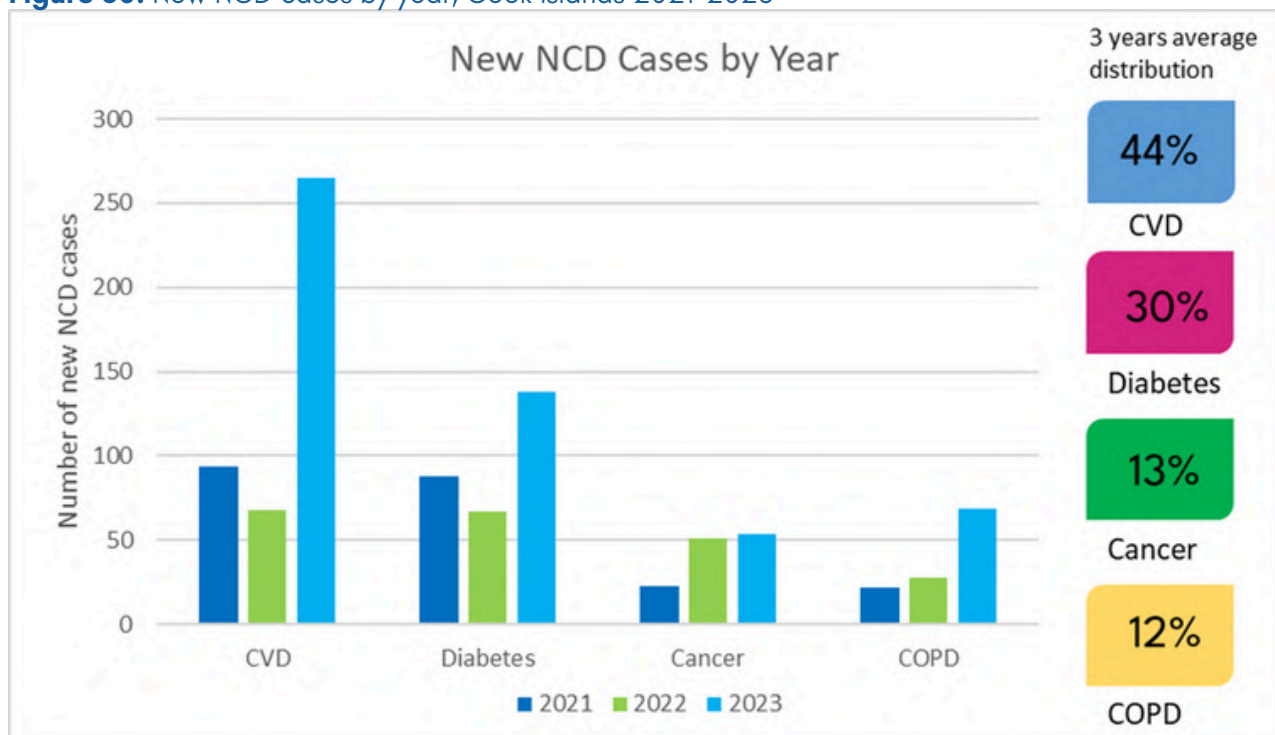
Non-Communicable Diseases (NCDs)

Non-communicable diseases (NCDs), are a range of health conditions not caused by infections, also known as lifestyle disease. NCDs include cardiovascular diseases (CVD) (including hypertension, heart diseases, stroke, and myocardial infarction), diabetes, cancer (reported separately), and chronic obstructive pulmonary diseases (COPD) such as asthma, bronchiectasis, chronic bronchitis and emphysema. It may be chronic long-term and life-threatening or acute and short-term serious episodes from which recovery can be without damage.

As of 2023, there are approximately over 5,800 people (48% males and 52% females) confirmed to have NCDs in the Cook Islands which represents approximately 51.6% percent of the total eligible resident population (15 years and above). Note that these figures exclude all people who are reported deceased, non-residents and visitors at the time of compiling this report. This shows approximately a 5.4% increase from the previous report of 5,500 in 2020. The increase in new cases can be attributed to more people seeking medical care and consultation, as evidenced by the rise in outpatient visits from 2021 to 2023.

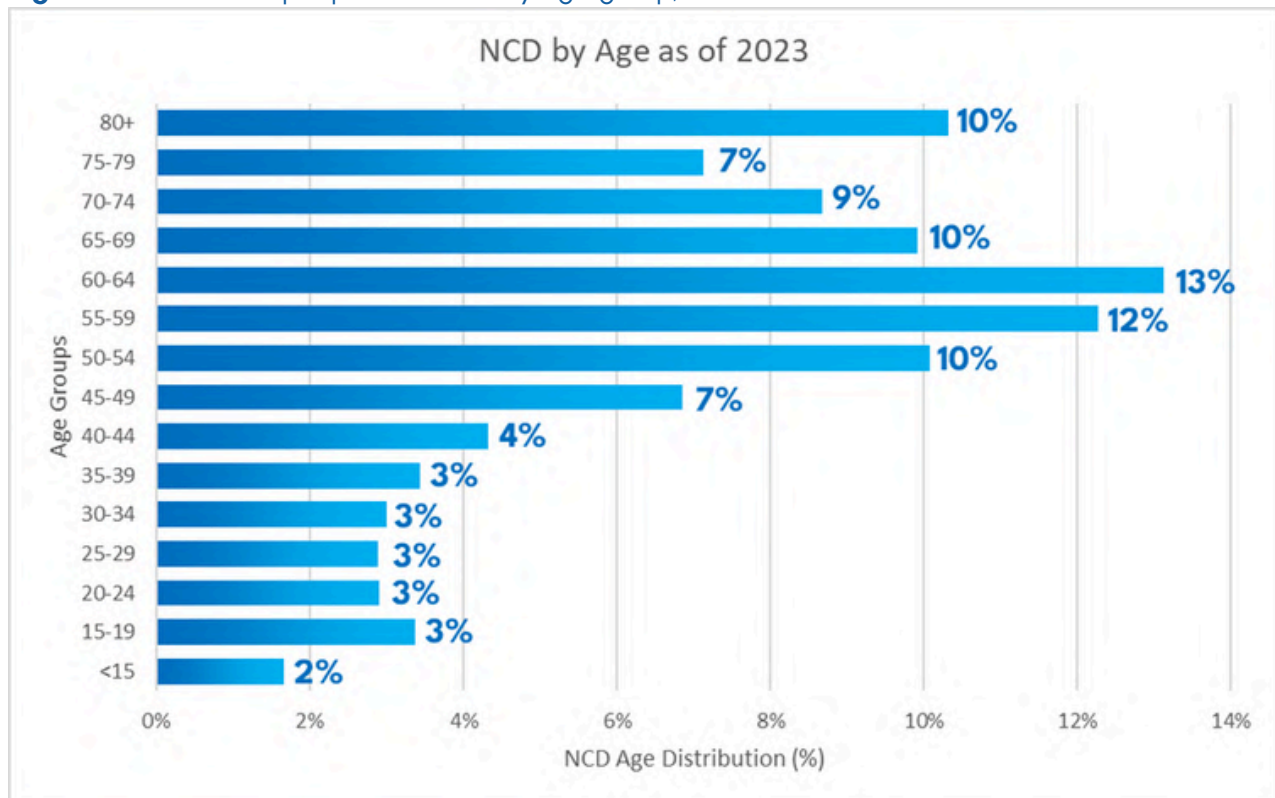
Figure 60 displays the incidence of NCDs from 2021 to 2023 in the Cook Islands. For the last three years, cardiovascular diseases accounted for almost 44% of new NCD cases in the Cook Islands, with the highest recorded cases in 2023 with 265 confirmed cases. Diabetes accounted for 30% of total new NCD cases, and continued to maintain a steady trend, averaging to about 97 confirmed cases annually.

Figure 60: New NCD cases by year, Cook Islands 2021-2023



The data on NCD prevalence by age group reveals a gradual increase in NCD cases with advancing age, with the highest numbers observed among older adults. Specifically, the age groups of 60-64 exhibit the highest NCD prevalence. This trend underscores the correlation between age and NCD prevalence, highlighting that NCDs are becoming more common among all ages. Surprisingly 2% of those living with any form of NCD are below 15 years and 10% for those living with NCDs were above 80 years. This finding suggests the importance of early prevention strategies especially for our younger youth. The targeted interventions across different age groups are crucial to effectively address the burden of NCDs in the Cook Islands.

Figure 61: Number of people with NCD by age group, Cook Islands: As of 2023



Cancer

The Cook Islands Cancer Registry, has recorded 550 cases from 1990 to December 2023. The five most prevalent cancers in the Cook Islands are skin (147), breast (131), corpus uteri(37), bronchus and lung (29), and prostate (36).

Figure 62 reveals that skin cancer is recorded as the most common cancers in Cook Islands and breast cancer remains a significant concern, affecting 131 women. Common risk factors include a positive family history, obesity, increasing age, and tobacco use. From 2021 to 2023, there were 28 new cases, most of which were referred to New Zealand for treatment. Endometrial (Corpus Uteri) cancer is on the rise, largely due to obesity, reflecting the obesogenic environment in the Cook Islands. Most patients are referred to New Zealand for treatment, with many vital statuses unknown. Prevention strategies focus on controlling NCDs by promoting physical activity and healthy diets. Meanwhile, prostate cancer remains one of the top three cancers among men. The prognosis is generally positive, with most patients receiving treatment in New Zealand. Prevention strategies include regular screening during GP visits and annual men's health clinics. Moreover, lung cancer, with 29 cases predominantly among men, is commonly linked to tobacco use and family history. Most cases are diagnosed at late stages and are referred to New Zealand for treatment and care. Efforts are directed towards strengthening tobacco control to reduce the prevalence of lung cancer.

Figure 62: Top 5 cancer cases per 1,000 population, Cook Islands: As of December 2023

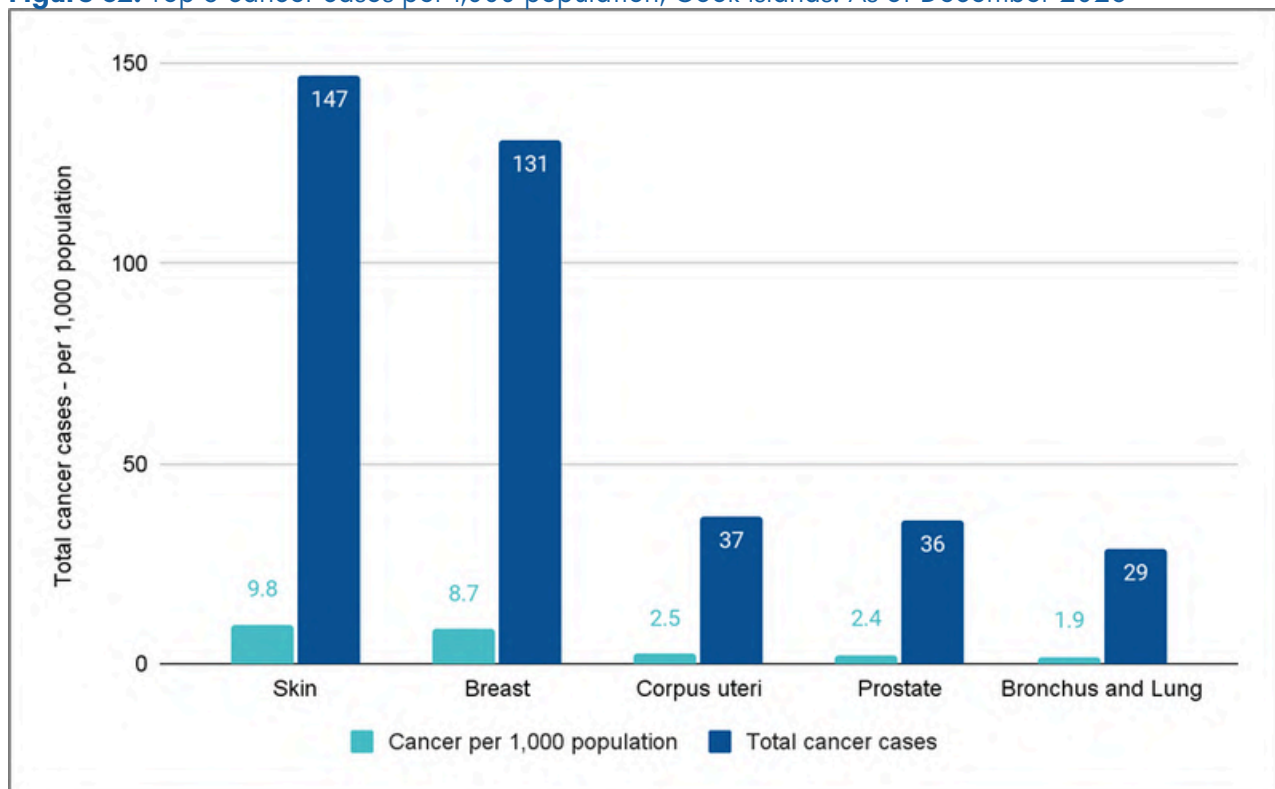
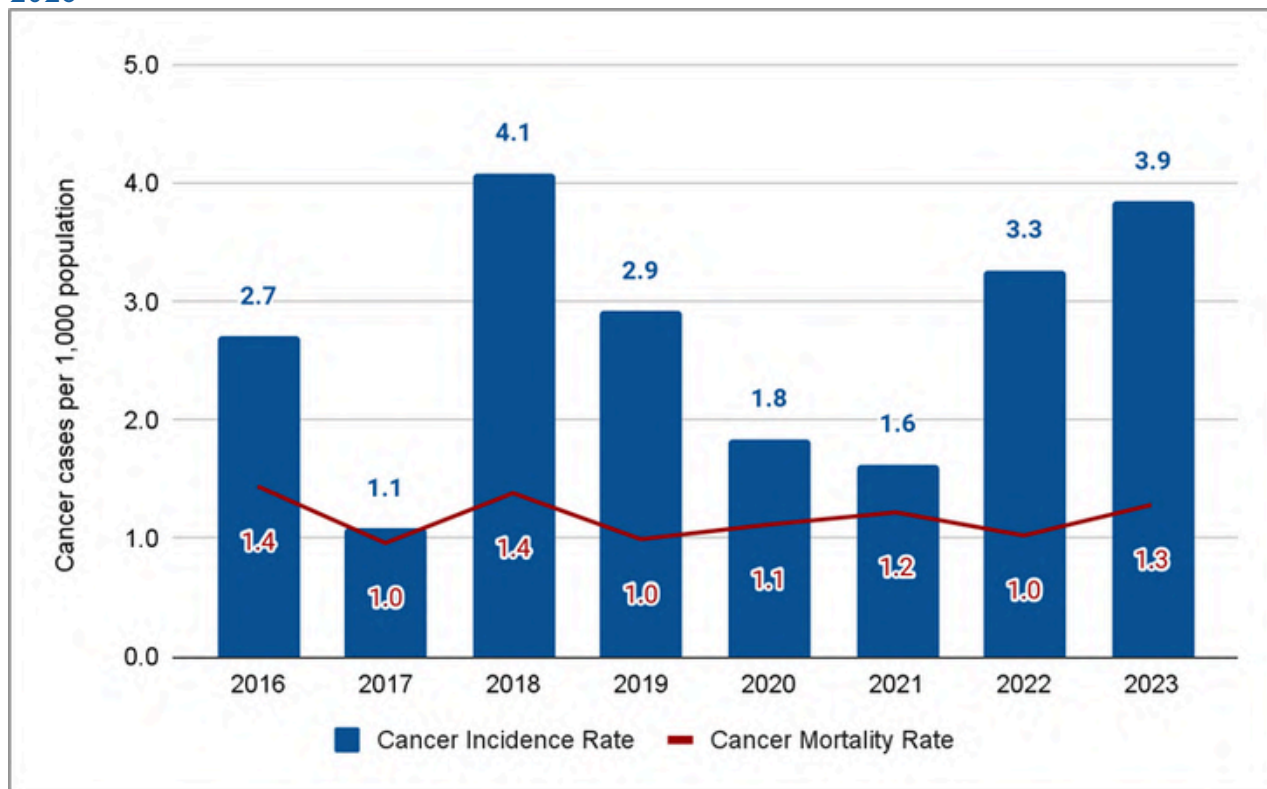


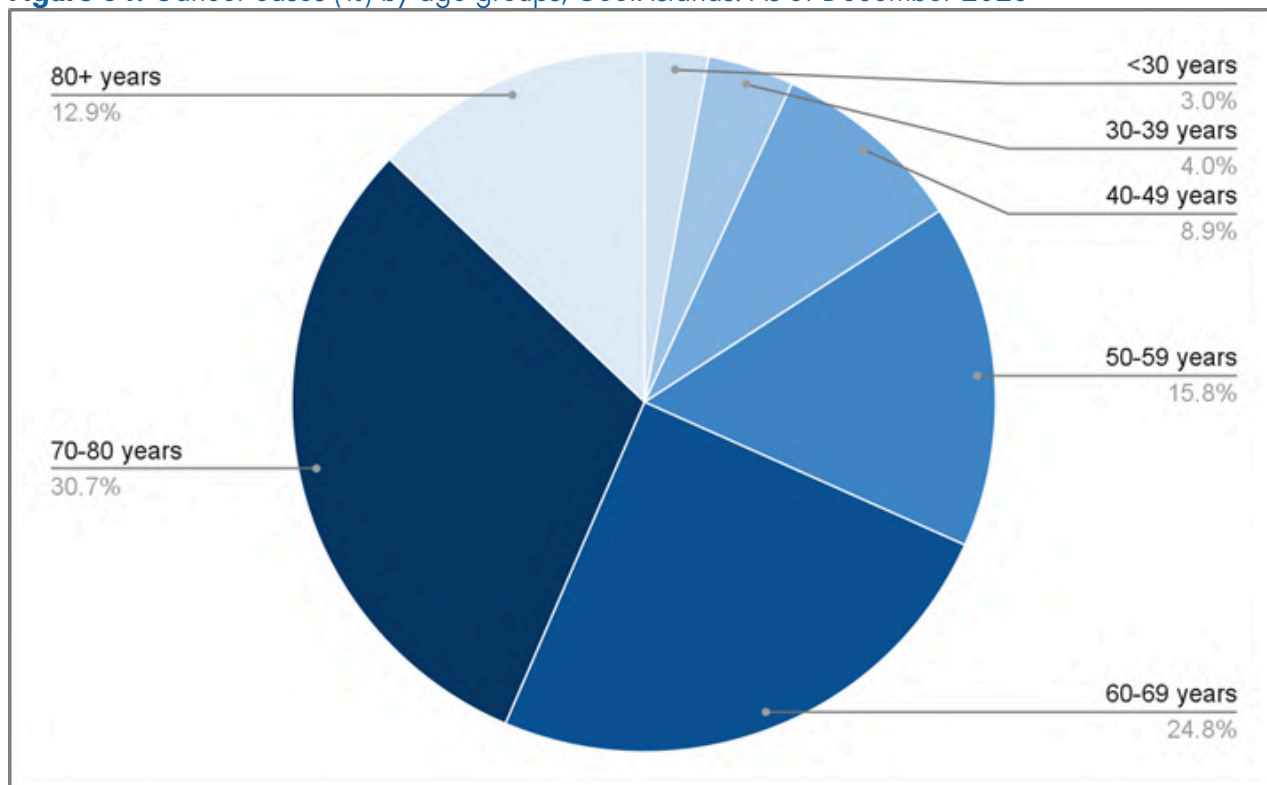
Figure 63 reveals significant variability in incidence rates but more stability in mortality rates. Incidence rates peaked at 4 per 1,000 people in 2018 and dipped to 1 in 2017, reflecting changes in detection or occurrence. Mortality rates ranged from 1.0 to 1.4 per 1,000 with cancer placing third most leading cause of deaths in the Cook Islands.

Figure 63: Cancer incidence rate vs cancer mortality rates per 1,000 population, Cook Islands 2016-2023



According to **Figure 64**, the incidence of cancer significantly rises with age. Ages 50-59 years accounted for 15.8% and 24.8% in the 60-69 age group. The highest incidence is seen in the 70-80 age group, representing 30.7% of cancers.

Figure 64: Cancer cases (%) by age groups, Cook Islands: As of December 2023



APPENDICES

- 1. Definitions**
- 2. Formulas**
- 3. Methodologies**
- 4. System Issues**
- 5. Data Tables**
- 6. Graphs**

1. Population

Definitions:

Population size: The total number of individuals residing in a specific geographic area.

Age Distribution: The proportion of individuals in different age groups within the population.

Methodological/ System Issues:

- Data is sourced from 2021 Census Report, Population and Demographic Characteristics

Table 1.1: Cook Islands population, size, change, distribution and density

Island/ Region	Area (km ²)	Total population			Population change		Population distribution		Density
		2011	2016	2021	(2016-2021)		2021		
					Total	%	%	pp per km ²	
Rarotonga	67.1	13,095	13,007	10,898	-2,109	-16	72	162	
Southern Islands	145.2	3,586	3,326	3,040	-286	-9	20	21	
Aitutaki	18.3	2,038	1,941	1,782	-159	-8	12	97	
Mangaia	51.8	572	499	471	-28	-6	3	9	
Atiu	26.9	480	434	383	-51	-12	3	14	
Mauke	18.4	307	297	249	-48	-16	2	14	
Mitiaro	22.3	189	155	155	0	0	1	7	
Manuae	6.2	-	-	-	-	-	-	-	
Takutea	1.3	-	-	-	-	-	-	-	
Northern Islands	24.4	1,113	1,101	1,102	1	0	7	45	
Palmerston	2.1	60	58	25	-33	-57	0	12	
Pukapuka	1.3	451	444	456	12	3	3	351	
Nassau	1.3	73	78	92	14	18	1	71	
Manihiki	5.4	239	212	215	3	1	1	40	
Rakahanga	4.1	77	83	81	-2	-2	1	20	
Penrhyn	9.8	213	226	233	7	3	2	24	
Suwarrow	0.4	-	-	-	-	-	-	-	
Cook Islands	236.7	17,794	17,434	15,040	-2,394	-14	100	64	

Figure 2: Resident population by region, Cook Islands 2021

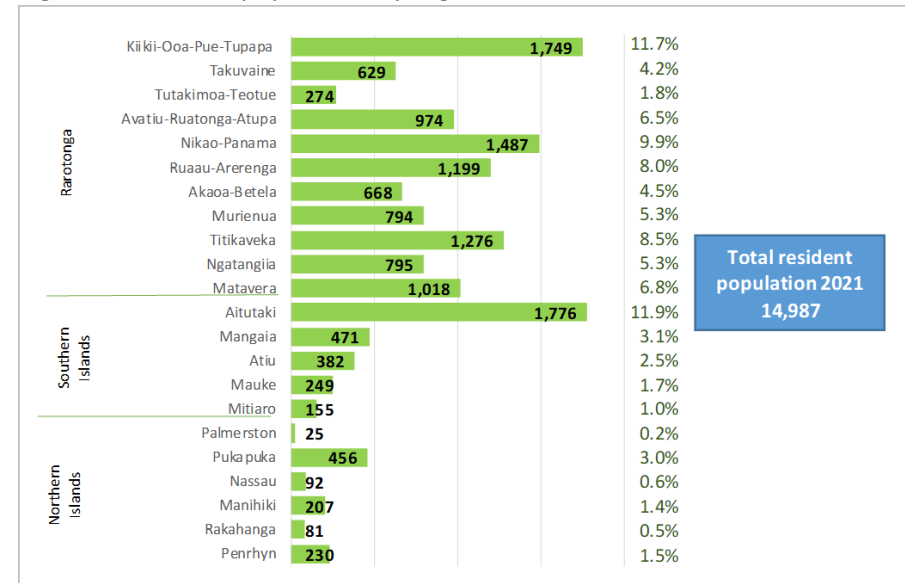
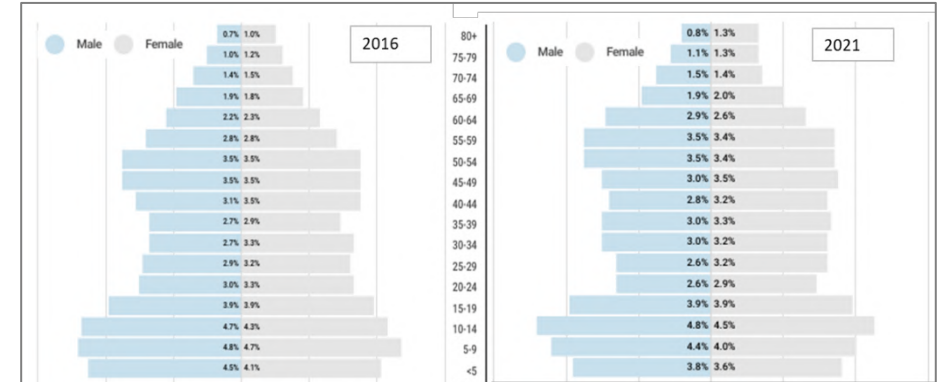


Figure 3: Age distribution of the resident population by sex, Cook Islands 2016 and 2021.



2. Live Births

Definitions:

Live births: The total number of births where the baby shows any sign of life (such as breathing, heartbeat, or voluntary muscle movement) regardless of gestational age.

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth registers.
- Patient names entered into Medtech often include nicknames or preferred names that do not match the official registered names recorded by the Ministry of Justice, presenting challenges when combining data from both sources.

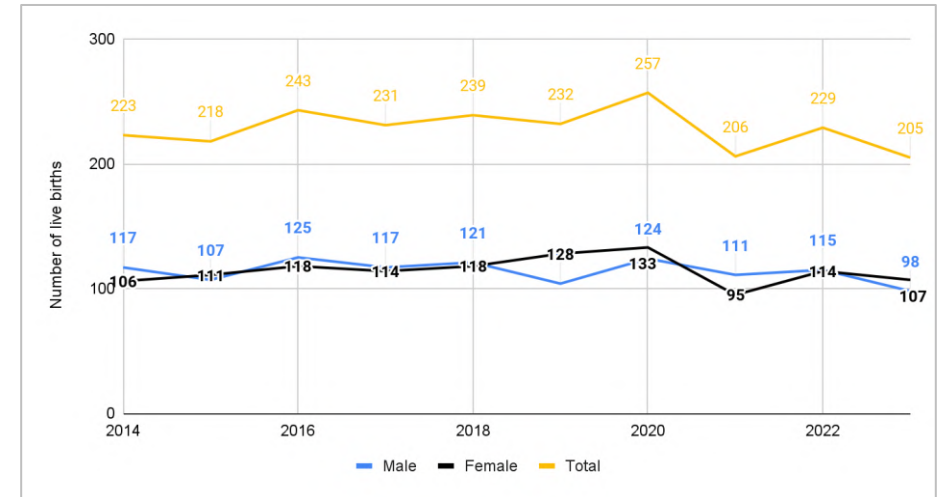
Table 2.1: Live births by sex and year, Cook Islands 2014-2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Male	117	107	125	117	121	104	124	111	115	98
Female	106	111	118	114	118	128	133	95	114	107
Total	223	218	243	231	239	232	257	206	229	205

Table 2.2: Live births to low birth weight cases, Cook Islands 2014-2023

Year	Births	Number of cases	% to live births
2014	223	5	2
2015	218	14	7
2016	243	12	5
2017	231	15	7
2018	239	14	6
2019	232	8	4
2020	257	12	5
2021	206	9	4
2022	229	6	3
2023	205	8	4

Figure 4: Live births by sex and year, Cook Islands: 2014-2023



3. Crude Birth Rate

Definitions:

Crude birth Rate (CBR): The number of live births per 1,000 people in a given population per year

Three year rolling average: A statistical method used to smooth out short-term fluctuations and highlight long-term trends by averaging data points from three consecutive years.

Formulas:

$$CBR = \frac{\text{Number of live births}}{\text{Total resident population}} \times 1,000$$

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth and death registers.
- Source for population data is the mid-year population estimated at June Quarter, Statistics Office
- Crude birth rate and crude death rate are calculated per 1,000 resident population as of 2021
- Deaths of children under one year of age per 1,000 live births
- Total births does not include Stillbirths

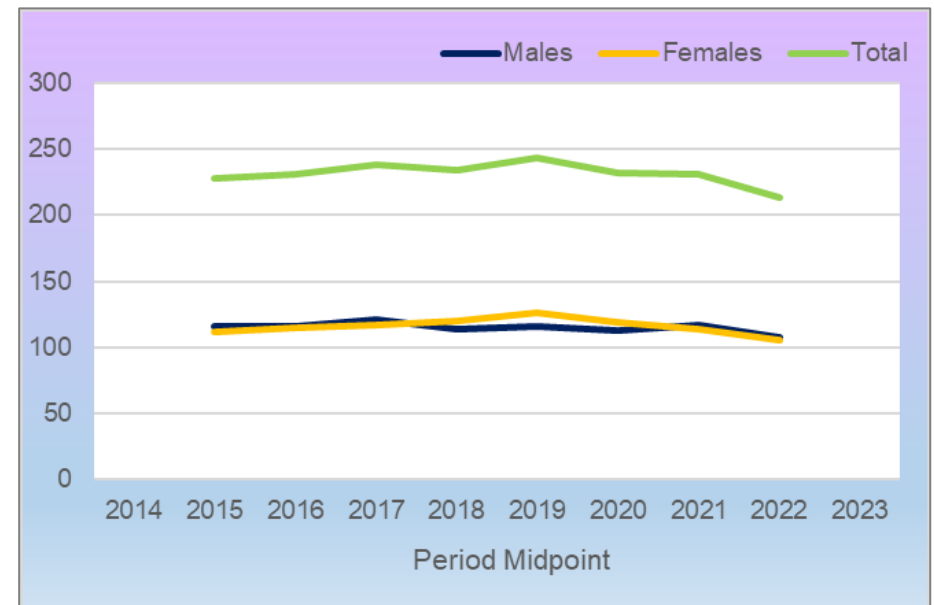
Table 3.1: Number and rate of births, deaths, infant deaths, maternal deaths and foetal deaths, Cook Islands 2013-2023.

YEAR	Live Births		Deaths		Deaths under 1 yr		Maternal Deaths		Fetal Deaths	
	Number	Crude Rate	Number	Crude Rate	Number	Rate	Number	Rate	Number	Rate
2013	261	18.5	112	7.9	0	0.0	0	0	0	0.0
2014	223	16.4	131	9.6	0	0.0	0	0	0	0.0
2015	218	16.8	118	9.1	1	4.6	0	0	1	4.6
2016	243	21.1	101	8.8	2	8.2	0	0	1	4.1
2017	231	20.1	91	7.9	3	13.0	0	0	0	0.0
2018	239	16.1	123	8.3	4	16.7	0	0	0	0.0
2019	232	15.7	113	7.6	3	12.9	0	0	0	0.0
2020	257	17.4	126	8.4	2	7.8	0	0	1	3.9
2021	206	13.7	126	8.4	0	0.0	0	0	1	4.8
2022	229	15.3	106	7.1	5	21.8	0	0	1	4.3
2023	205	13.7	130	8.7	6	29.3	0	0	3	14.4

Figure 5: Crude live birth rate per 1,000 population, Cook Islands 2014-2023



Figure 6: Three year rolling average number of births, Cook Islands 2014-2023



4. Births by Island

Definitions:

Total Births by Island: The total number of live births that occur within each specific island over a given period, typically a year.

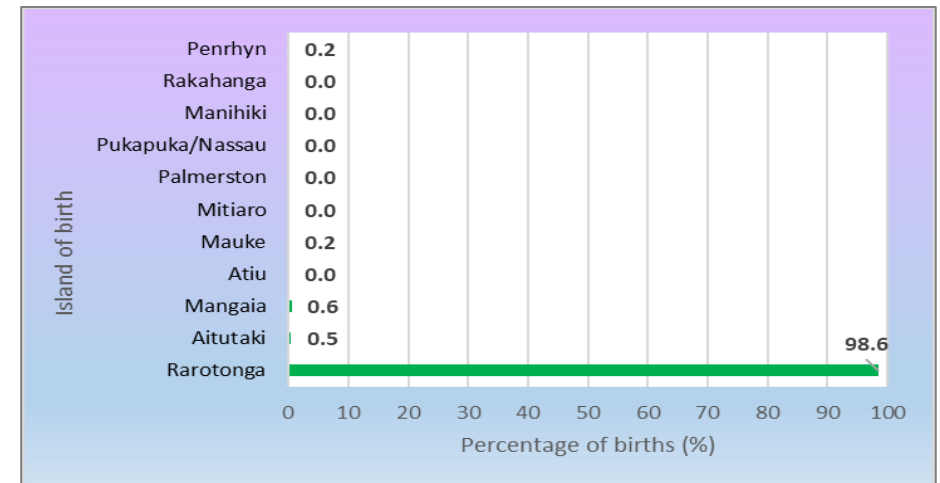
Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth Register.

Table 4.1: Live births by region, island, year and sex, Cook Islands 2021-2023.

REGION & ISLAND	2021			2022			2023		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
COOK ISLANDS	206	111	95	229	115	114	205	98	107
RAROTONGA	206	111	95	223	112	111	202	97	105
SOUTHERN GROUP excluding Rarotonga	0	0	0	5	3	2	3	1	2
Aitutaki	0	0	0	1	1	0	2	0	2
Mangaia	0	0	0	3	1	2	1	1	0
Atiu	0	0	0	0	0	0	0	0	0
Mauke	0	0	0	1	1	0	0	0	0
Mitiaro	0	0	0	0	0	0	0	0	0
NORTHERN GROUP	0	0	0	1	0	1	0	0	0
Palmerston	0	0	0	0	0	0	0	0	0
Pukapuka/Nassau	0	0	0	0	0	0	0	0	0
Manihiki	0	0	0	0	0	0	0	0	0
Rakahanga	0	0	0	0	0	0	0	0	0
Penrhyn	0	0	0	1	0	1	0	0	0

Figure 7: Percentage distribution of births by island, Cook Islands 2021-2023



5. Low Birth Weight

Definitions:

Low Birth Weight (LBW): Infants born weighing less than 2,500 grams (5.5 pounds) regardless of gestational age.

Very Low Birth Weight (VLBW): Infants born weighing less than 1,500 grams (3.3 pounds) regardless of gestational age.

Extremely Low Birth Weight (ELBW): Infants born weighing less than 1,000 grams (2.2 pounds) regardless of gestational age.

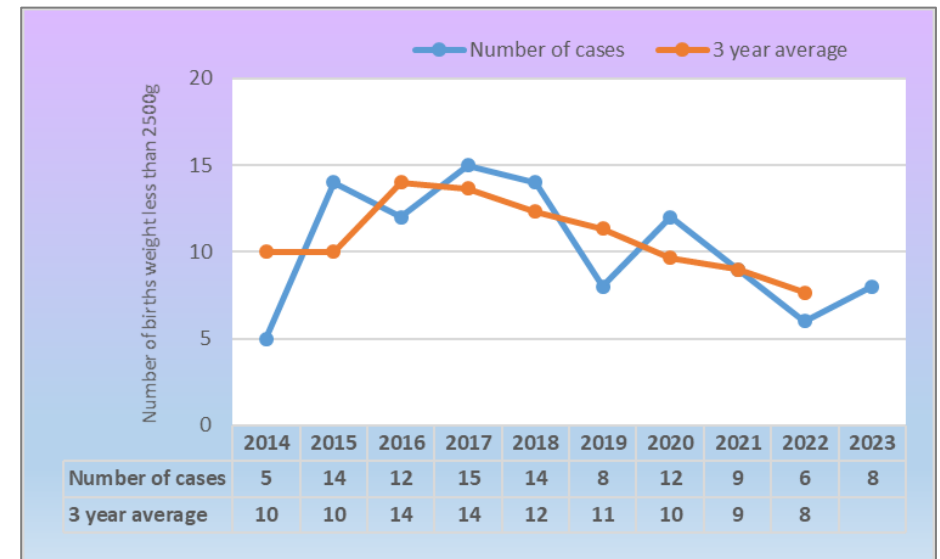
Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth register.

Table 5.1: Live births to low birth weight cases, Cook Islands 2014-2023.

Year	Births	Number of cases	3 year average
2014	223	5	10
2015	218	14	10
2016	243	12	14
2017	231	15	14
2018	239	14	12
2019	232	8	11
2020	257	12	10
2021	206	9	9
2022	229	6	8
2023	205	8	

Figure 8: Number of births with birth weight less than 2500 grams, Cook Islands 2014-2023



6. Adolescent Pregnancy/Births

Definitions:

Adolescent/Teenage Pregnancy: Pregnancy occurring in individuals between the ages of 15 and 19 years.

Adolescent Birth: The occurrence of a live birth to a mother aged 15 and 19 years.

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth register.
- The count of adolescent pregnancies includes women who have experienced miscarriages or given birth.

Table 6.1: Number of adolescent births, Cook Islands 2021-2023

Year	Alive	Still Birth	Total	%
2021	19	-	19	38%
2022	8	-	8	16%
2023	20	3	23	46%
Total	47	3	50	100%

Figure 9: Total number of adolescent mothers to live births, Cook Islands: 2021-2023.

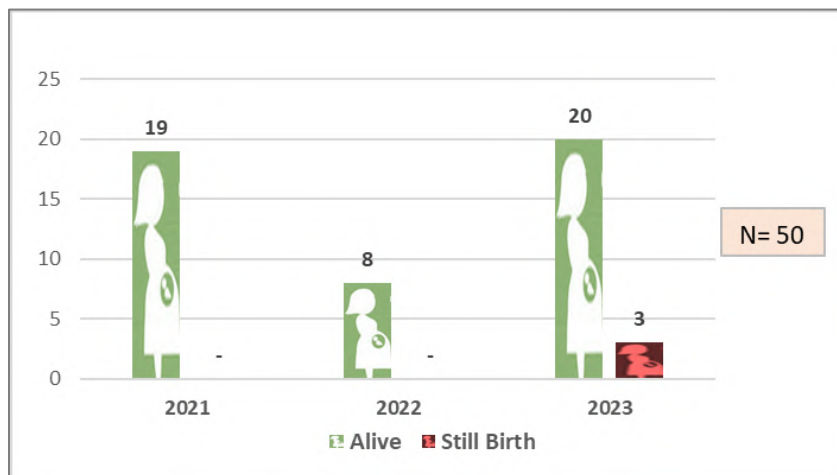


Figure 10: Age distribution of adolescent mothers, Cook Islands 2021-2023

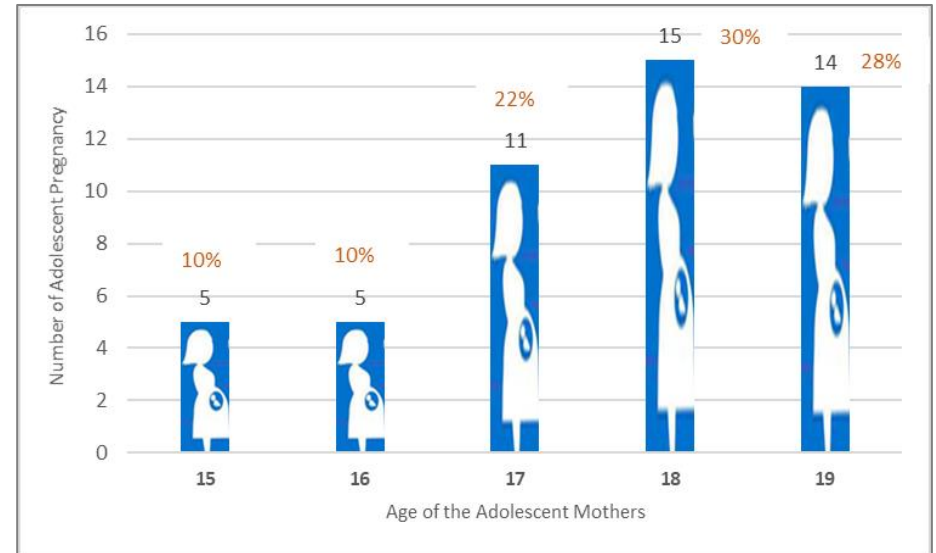
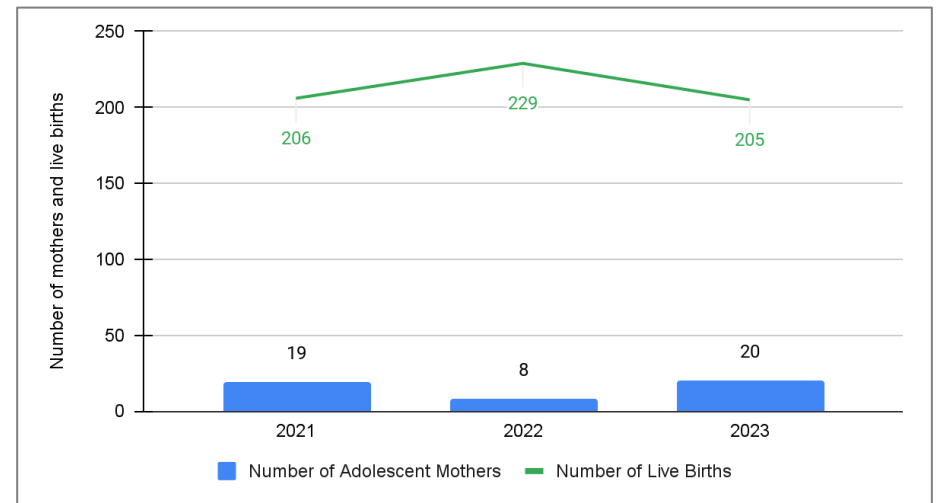


Figure 11: Number of adolescent mothers to number of live births, Cook Islands 2021-2023



7. Fertility Rate

Definitions:

Total Fertility Rate (TFR): The average number of children a woman could give birth to during her reproductive years, assuming current age-specific birth rates remain constant throughout her reproductive lifespan.

Age-specific Fertility Rate (ASFR): The number of live births per 1,000 women in a specific age group in a given year.

Formulas:

$$TFR = \frac{\text{Total number of mothers given birth}}{\text{Total number of female resident population in a year}} \times 1,000$$

$$ASFR = \frac{\text{Age - specific number of mothers given birth}}{\text{Age - specific female population}} \times 1,000$$

$$GFR = \frac{\text{Total number of mothers given birth}}{\text{Total number of female population}} \times 1,000$$

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth register.

Table 7.1: Mothers given birth and fertility rates by age groupings, Cook Islands 2018-2023

Age Group	Female Resident Population						Number of Mothers					
	2001	2006	2011	2016	2021	2018	2019	2020	2021	2022	2023	
15-19	656	630	597	711	582	22	9	18	19	8	20	
20-24	491	545	512	656	433	74	60	73	57	60	47	
25-29	524	473	493	612	487	63	61	60	62	58	52	
30-34	541	554	462	595	482	43	52	44	40	52	52	
35-39	524	551	521	533	493	26	26	33	17	36	26	
40-44	449	540	542	601	484	11	10	11	8	13	6	
45-49	353	457	528	625	518	0	1	1	2	1	0	
Total	3,538	3,750	3,655	4,333	3,479	239	219	240	205	228	203	
Age-Specific Fertility Rate (per 1'000 Women)												
15-19						38	13	25	33	14	34	
20-24						149	91	111	132	139	109	
25-29						134	100	98	127	119	107	
30-34						89	87	74	83	108	108	
35-39						60	49	62	34	73	53	
40-44						21	17	18	17	27	12	
45-49						0	2	2	4	2	0	
General Fertility Rate (per 1'000 Women)						68	51	55	59	66	58	
Total Fertility Rate						2.5	1.8	2.0	2.1	2.4	2.1	

Figure 12: Total fertility rate per 1,000 women, Cook Islands 2021-2023

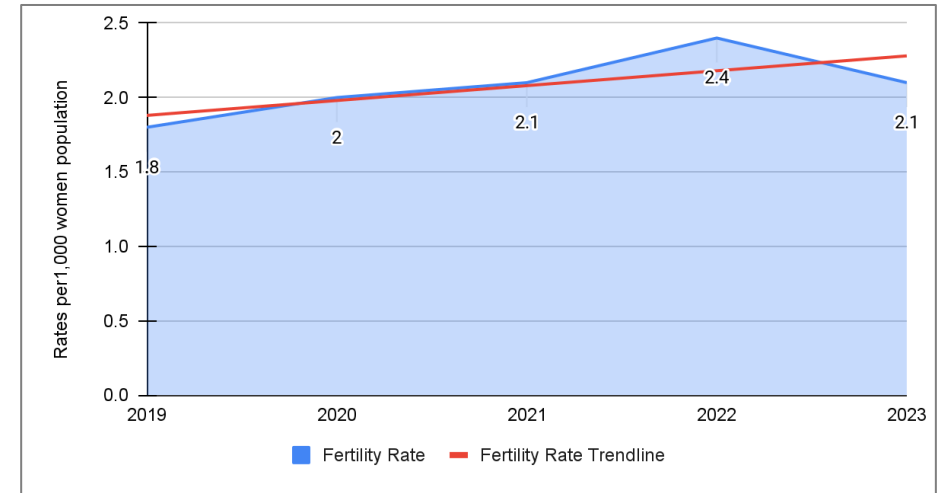
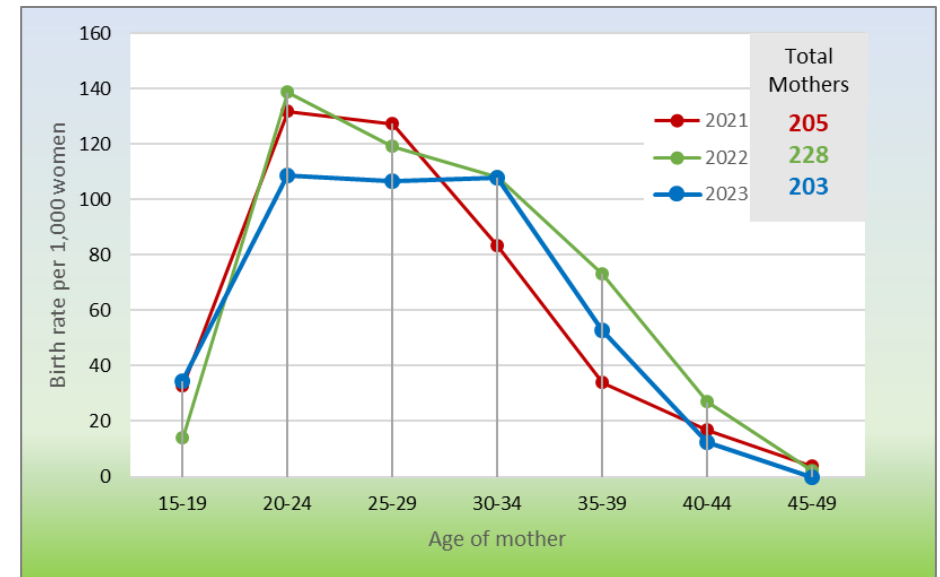


Figure 13: Age specific birth rates, Cook Islands 2021-2023



8. Contraceptives (Family Planning)

Definitions:

Contraception: The deliberate use of artificial methods or techniques to prevent pregnancy.

Contraceptive prevalence rate: The percentage of women aged 15-49 years, married or in-union, who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used.

Contraceptive demand met: Percentage of women of reproductive age (15 to 49 years) having their demand for family planning satisfied with modern methods.

Methodological/ System Issues:

- Data is sourced from Medtech contraceptive classifications

Table 8.1: Current users: Women on family planning contraceptives by year, Cook Islands 2014-2023

Contraceptive Type	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
All Methods	1,201	1,040	990	963	1,044	830	762	623	916	1310
Prevalence Rate (%)	32.9	28.5	22.8	26.5	24.1	19.2	17.6	17.8	26.2	37.5
Oral Contraceptive (Pills)	448	428	393	380	130	65	49	9	29	225
Intra Uterine Device	6	2	7	2	13	6	6	6	9	12
Depo Provera (Injections)	630	515	482	472	772	651	613	508	865	862
Norplant/Jadelle	60	58	81	98	125	100	94	100	6	123
Condom	41	31	22	2	-	-	-	-	-	-
Others	16	6	5	9	4	-	-	0	7	26

Table 8.2: Contraceptives by age groups 2021-2023

Types	Depo Provera	Intra Uterine Device	Oral	Norplant/J adelle	Others	Total Users	Percent
Age group							
15-19	419	0	29	22	3	473	17%
20-24	324	0	33	46	4	407	15%
25-29	345	5	37	46	3	436	16%
30-34	349	9	35	42	10	445	16%
35-39	288	4	50	31	6	379	14%
40-44	288	3	48	24	2	365	13%
45-49	206	6	31	14	5	262	9%
Total	2219	27	263	225	33	2767	100%

Figure 14: Contraceptive by prevalence rate, Cook Islands 2019-2023.

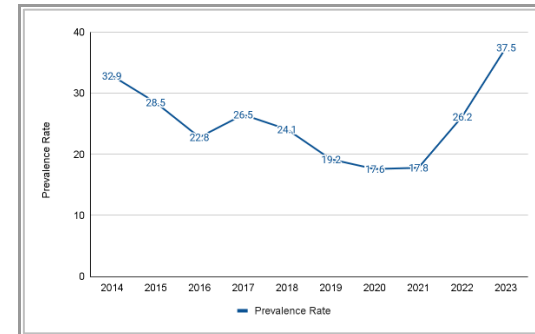


Figure 15: Females utilizing contraceptives methods by age group, Cook Islands 2021-2023.

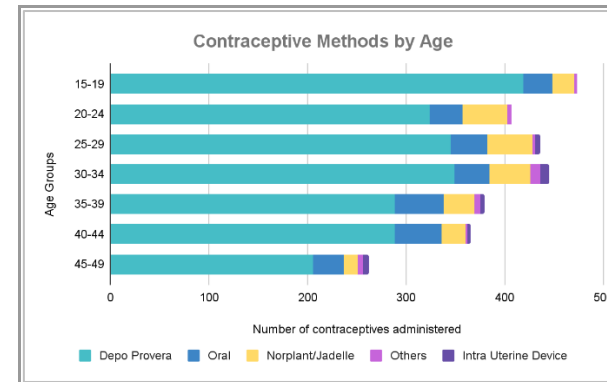
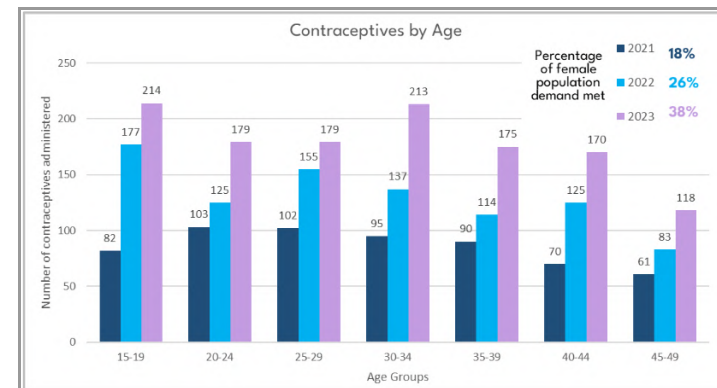


Figure 16: Contraceptive methods and demand met by age group, Cook Islands 2021-2023.



9. Immunisation

Definitions:

Immunisation: a process by which a person becomes protected against a disease through vaccination. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease.

Vaccine: A biological preparation that contains weakened or killed pathogens (or parts of them) to stimulate the immune system to recognize and fight specific infections.

Catch-ups: Refers to children who had missed out on their scheduled immunisation, but given at a later time.

Child Immunisation Schedule:

AGE	YOUR BABY WILL RECEIVE	PROTECTION AGAINST
BIRTH	(BCG, HepB)	1. Severe forms of Tuberculosis 2. Hepatitis B
6 WEEKS	(Penta1, PCV1) (Rota1, OPV1)	1. Diphtheria 2. Tetanus 3. Whooping cough 4. Hepatitis B 5. Hib, pneumonia, meningitis, and sepsis 6. Pneumococcal pneumonia, meningitis, and Sepsis 7. Polio 8. Rotavirus gastroenteritis
3 MONTHS	(Penta2, PCV2) (OPV2)	1. Diphtheria 2. Tetanus 3. Whooping cough 4. Hepatitis B 5. Hib, pneumonia, meningitis, and sepsis 6. Pneumococcal pneumonia, meningitis, and Sepsis 7. Polio
5 MONTHS	(Penta3, IPV) (Rota2, OPV3)	1. Diphtheria 2. Tetanus 3. Whooping cough 4. Hepatitis B 5. Hib, pneumonia, meningitis, and sepsis 6. Polio 7. Rotavirus gastroenteritis
8 MONTHS	(PCV3)	1. Pneumococcal pneumonia, meningitis, and Sepsis
12 MONTHS	(MMR1)	1. Measles 2. Mumps 3. Rubella
18 MONTHS	(MMR2)	1. Measles 2. Mumps 3. Rubella
4 YEARS	(DPT) (OPV4)	1. Diphtheria 2. Tetanus 3. Whooping cough 4. Polio
9 YEARS	(HPV1)	1. Human Papilloma Virus
6 months after dose 1	(HPV2)	1. Human Papilloma Virus
11 YEARS	(Td)	1. Tetanus 2. Diphtheria

Formula:

$$\text{Immunisation coverage rate} = \frac{\text{Number of doses administered through routine services}}{\text{Number in targeted eligible population}} \times 100$$

Methodological/ System Issues:

- Data is sourced from Medtech - National Immunisation Register (NIR)
- The reported percentages include instances of refusals, migrations, and catch-up cases, which contribute to the lower observed percentages. If these factors were excluded from the analysis, the resulting percentages would be higher
- PCV and Rotavirus was introduced in April 2022

Table (2): Immunisation coverage rate by vaccine and year, Cook Islands 2021-2023.

n=640	Vaccine	2021	2022	2023
Birth	BCG	99%	97%	99%
	HepB1	99%	97%	99%
6 Weeks	OPV1	96%	94%	95%
	PENT1	94%	94%	95%
	PCV1	N/A	55%	99%
3 Months	Rota1	N/A	58%	67%
	OPV2	90%	87%	85%
	PENT2	91%	89%	84%
	PCV2	N/A	77%	72%
5 Months	Rota2	N/A	66%	69%
	OPV3	86%	85%	62%
	PENT3	88%	85%	55%
8 Months	IPV	86%	86%	62%
	PCV3	N/A	73%	77%
12 Months	MMR1	96%	89%	84%
18 Months	MMR2	86%	65%	77%
4 Years	DPT4	63%	63%	63%
	OPV4	10%	10%	64%

10.1. Mortality – Total Deaths

Definitions:

Mortality: The state of being subject to death; the number of deaths in a population, typically expressed as a rate per 1,000 or 100,000 individuals per year.

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice death register.
- Deaths occurring overseas are not captured/reported back into the system
- Death screenings are not consistently filled in at the time of occurrence, posing a challenge during the extraction of the register and resulting in some deaths not being captured.
- Excludes all visitors dying in the Cook Islands

Table 9.1: Deaths by region and islands, year and sex, Cook Islands 2021-2023.

REGION & ISLAND	2021			2022			2023		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
COOK ISLANDS	126	70	56	106	53	53	130	77	53
RAROTONGA	90	49	41	80	39	41	87	51	36
SOUTHERN GROUP excluding Rarotonga	31	17	14	21	11	10	32	18	14
Aitutaki	17	7	10	12	5	7	16	7	9
Mangaia	2	2	0	3	1	2	7	5	2
Atiu	5	4	1	4	4	0	5	3	2
Mauke	6	4	2	2	1	1	4	3	1
Mitiaro	1	0	1	0	0	0	0	0	0
NORTHERN GROUP	5	4	1	5	3	2	11	8	3
Palmerston	0	0	0	0	0	0	0	0	0
Pukapuka/Nassau	1	1	0	3	2	1	5	4	1
Manihiki	4	3	1	1	0	1	2	1	1
Rakahanga	0	0	0	1	1	0	1	0	1
Penrhyn	0	0	0	0	0	0	3	3	0

Figure 17: Number of deaths, Cook Islands 2019-2023

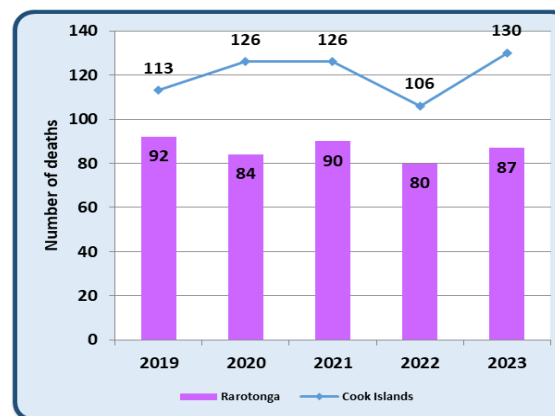


Figure 18: Number of deaths by island, Cook Islands 2021-2023

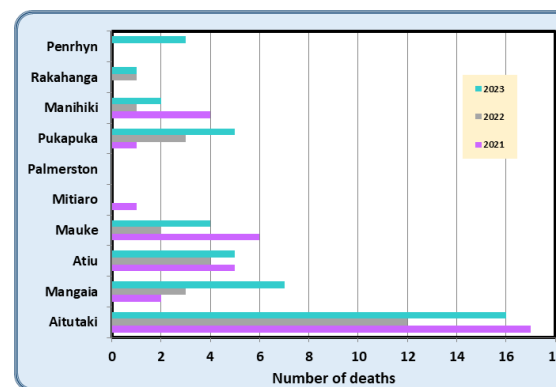
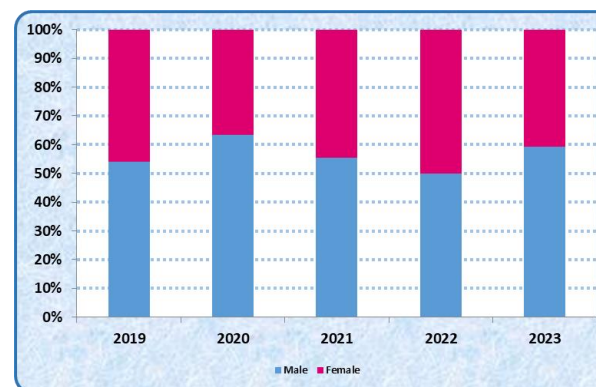


Figure 19: Percentage distribution of deaths by sex, Cook Islands 2019-2023



10.2. Mortality – Crude Death Rate

Definitions:

Crude Death Rate: The total number of deaths in a population during a specified period per 1,000 individuals in that population

Formulas:

$$CDR = \frac{\text{Total number of deaths in a year}}{\text{Total population}} \times 1,000$$

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice death register.
- Source for population data is Statistics Cook Islands Quarterly Vital Statistics and Population estimates
- Deaths occurring overseas are not captured/reported back into the system
- Rates are calculated per 1,000 and 100,000 resident population

Figure 20: Crude death rate per 1,000 resident population, Cook Islands 2019-2023.

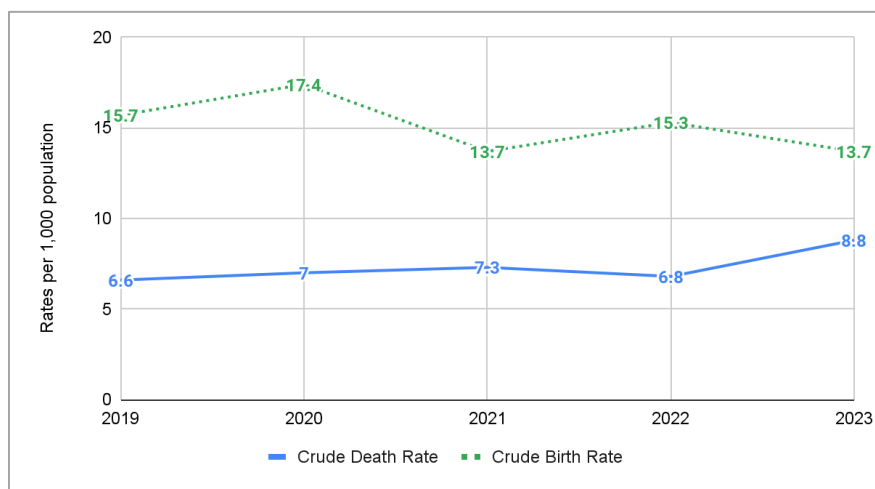


Table 9.2: Selected Causes of Death and rate by year, Cook Islands 2021-2023.

Cause of Death	2021		2022		2023	
	Number of death	Rate per 100,000	Number of death	Rate per 100,000	Number of death	Rate per 100,000
Diseases of the Circulatory System	45	261.6	46	294.9	48	324.3
Hypertension	17	98.8	25	160.3	28	189.2
Ischaemic heart disease	13	75.6	5	32.1	6	40.5
Cerebrovascular Disease	5	29.1	9	57.7	4	27.0
Heart Failure		0.0		0.0		0.0
Other	10	58.1	7	44.9	10	67.6
Neoplasms	21	122.1	16	102.6	19	128.4
Ovary	1	5.8	1	6.4	1	6.8
Trachea, Bronchus & Lungs	6	34.9	4	25.6	6	40.5
Prostate	5	29.1	1	6.4	2	13.5
Female Breast	2	11.6	4	25.6	2	13.5
Other	7	40.7	6	38.5	8	54.1
Diseases of the Respiratory System	9	52.3	11	70.5	14	94.6
Pneumonia	5	29.1	8	51.3	9	60.8
Bronchitis, Emphysema & Asthma	2	11.6	1	6.4	4	27.0
Other	2	11.6	2	12.8	1	6.8
Endocrine, Nutritional & Metabolic Diseases & Immunity Disorders	33	191.9	23	147.4	26	175.7
Diabetes Mellitus	33	191.9	22	141.0	25	168.9
Other	0	0.0	1	6.4	1	6.8
Symptoms, Signs & Ill-Defined Conditions	4	23.3	0	0.0	3	20.3
Injury, poisoning and certain other consequences of external causes	8	46.5	1	6.4	6	40.5
Injuries to the head	5	29.1	0	0.0	4	27.0
Other	3	17.4	1	6.4	2	13.5
Diseases of the blood and bloodforming organs	1	5.8	1	6.4	1	6.8
Diseases of the Nervous System	0	0.0	0	0.0	2	13.5
Diseases of the Digestive System	3	17.4	1	6.4	3	20.3
Ulcer of Stomach and Duodenum		0.0	0	0.0	0	0.0
Chronic Liver disease and Cirrhosis		0.0	0	0.0	0	0.0
Other	3	17.4	1	6.4	3	20.3
Certain Conditions Originating in the Perinatal Period	0	0.0	3	19.2	5	33.8
Congenital malformations, deformations & chromosomal abnormalities	0	0.0	1	6.4	0	0.0
Diseases of the Genitourinary System	2	11.6	1	6.4	2	13.5
EXTERNAL CAUSES OF INJURY AND POISONING	8	46.5	1	6.4	6	40.5
Transport accidents	4	23.3	0	0.0	3	20.3
Intentional self-harm	2	11.6	0	0.0	1	6.8
Falls	2	11.6	0	0.0	1	6.8
Other	0	0.0	1	6.4	1	6.8

11. Under-five Mortality (Infant/Foetal)

Definitions:

Under-5 mortality (U5M): The number of deaths of children under five years of age per 1,000 live births in a given year.

Infant mortality: The number of deaths of infants under one year age per 1,000 live births in a given year

Foetal Mortality: the death of a fetus at any stage of pregnancy, usually before the fetus is capable of living outside the uterus. This includes miscarriages (spontaneous abortions) and stillbirths (intrauterine fetal deaths after 20 weeks of gestation or with a birth weight of 500 grams or more).

Stillbirth: The death of a fetus at 20 weeks of gestation or more, or with a birth weight of 500 grams or more, before complete expulsion or extraction from its mother.

Formulas:

$$U5MR = \frac{\text{Number of deaths of children under 5}}{\text{Number of live births}} \times 1,000$$

$$IMR = \frac{\text{Number of deaths of infants under 1 year}}{\text{Number of live births}} \times 1,000$$

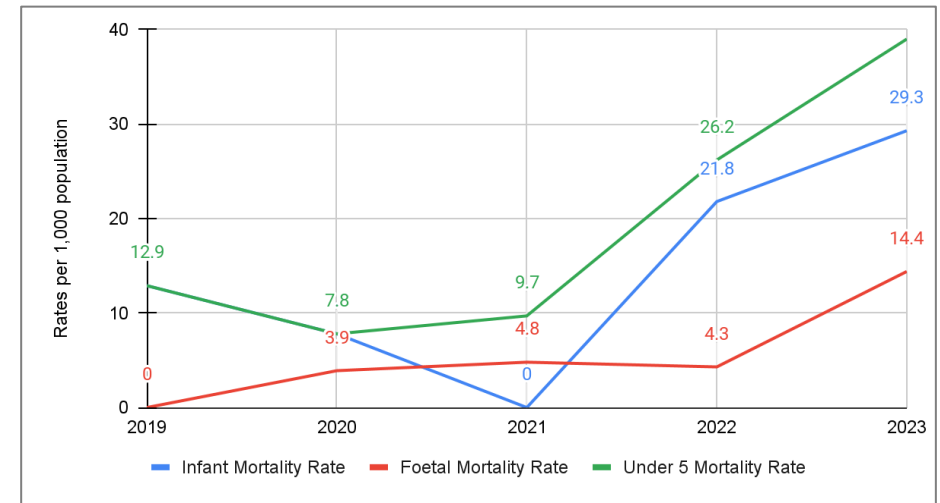
$$FMR = \frac{\text{Number of foetal deaths}}{\text{Number of live births}} \times 1,000$$

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice birth/death register.
- Deaths occurring overseas are not captured/reported in the system

(Refer to **Table 3.1** Number and rate of births, deaths, infant deaths, maternal deaths and foetal deaths, Cook Islands 2013-2023.)

Figure 21: Under-five, infant and foetal mortality rates, Cook Islands 2019-2023



12. Causes of Death

Definitions:

Cause of Death: The disease, condition, or injury that directly leads to a person's death. This can include underlying conditions and contributing factors that result in mortality.

Underlying Cause of Death: The disease or condition that initiated the chain of events leading directly to death. It is the primary condition that started the decline in health resulting in death.

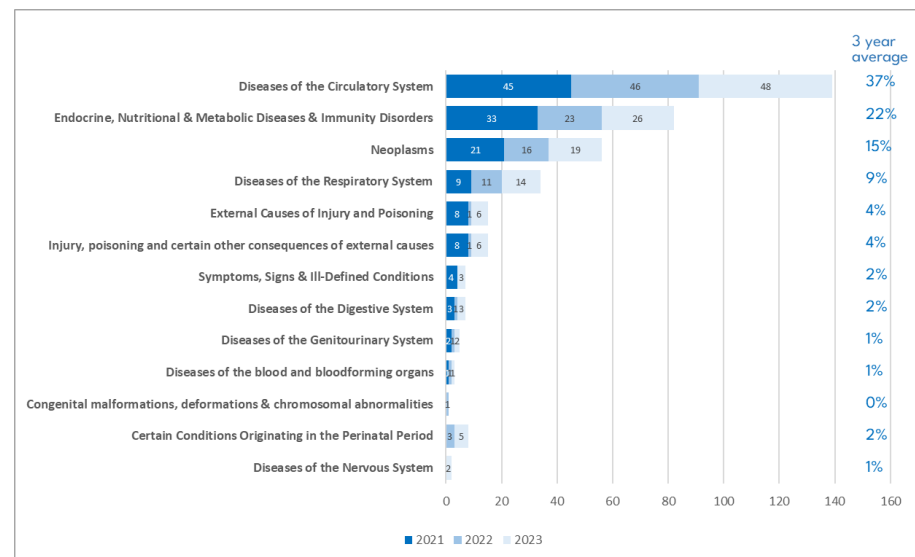
ICD-10: The International Classification of Diseases, 10th Revision (ICD-10) is a medical classification list by the World Health Organization (WHO). It contains codes for diseases, signs and symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or diseases.

Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice death register
- Deaths occurring overseas are not recorded

(Refer to **Table 9.2: Selected Causes of Death and rate by year, Cook Islands 2021-2023.**)

Figure 22: Causes of death by ICD-10 main groups, Cook Islands 2021-2023.



13. NCD Deaths

Definitions:

NCD Deaths: Deaths resulting from non-communicable diseases. These deaths occur due to chronic conditions that are not infectious and include diseases like heart disease, stroke, cancer, chronic respiratory diseases, and diabetes.

Premature NCD Deaths: Deaths that occur before the age of 70 due to non-communicable diseases. Premature NCD deaths are often considered preventable through lifestyle changes, early detection, and effective management.

Methodological/ System Issues:

- Data is sourced from Medtech NCD Register
- Data is sourced from Medtech and Ministry of Justice death register
- All figures are derived from the underlying cause of death attributed to NCDs
- Premature NCD mortality rates are computed based on the NCD lifetables

(Refer to **Table 9.2: Selected Causes of Death and rate by year, Cook Islands 2021-2023.**)

Figure 23: NCD deaths (%), Cook Islands 2019-2023.

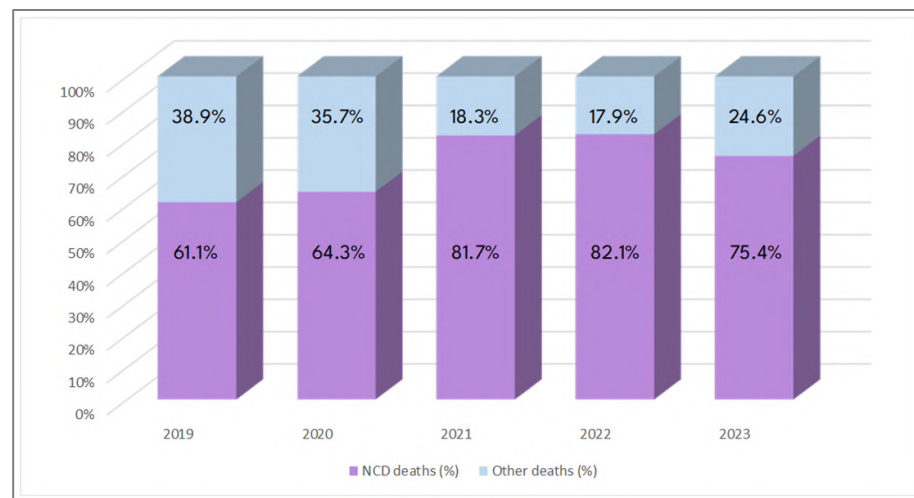
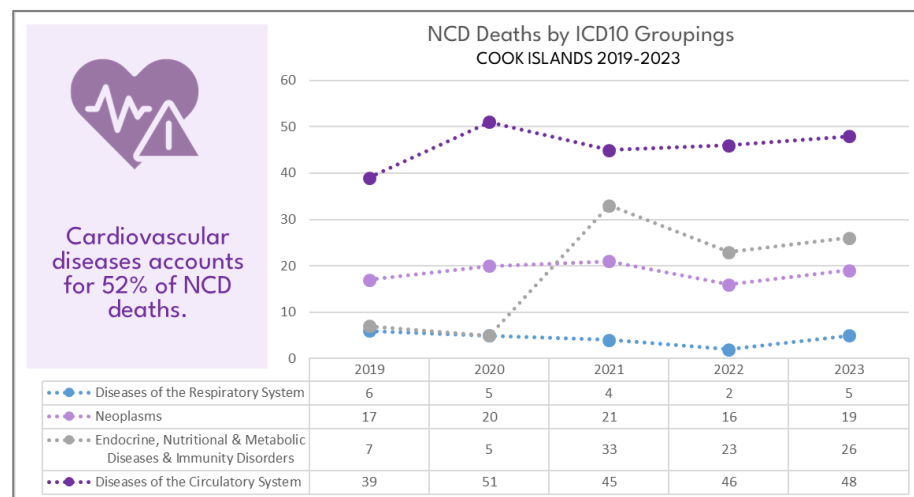


Figure 24: NCD deaths by ICD-10 groupings, Cook Islands 2019-2023.



15. Suicide Rate

Definitions:

Suicide Rate: The number of deaths by suicide per 1,000 or 100,000 population in a given year

Formulas:

$$\text{Suicide Rate} = \frac{\text{Number of suicides}}{\text{Total estimated resident population}} \times 1,000$$

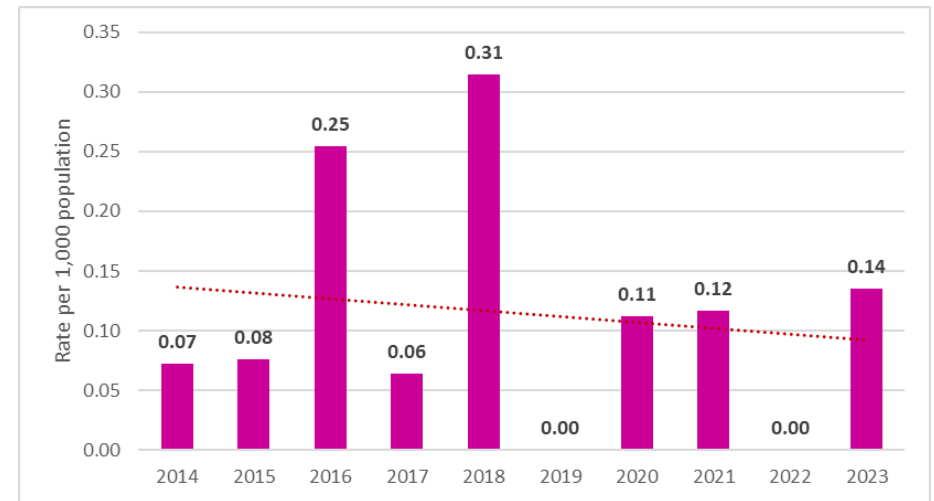
Methodological/ System Issues:

- Data is sourced from Medtech and Ministry of Justice death register.

Table 10.1 (3): Number of suicide cases by year, Cook Islands 2014-2023

Year	Male	Female	Both
2014	1	0	1
2015	1	0	1
2016	3	0	3
2017	1	0	1
2018	5	0	5
2019	0	0	0
2020	1	1	2
2021	1	1	2
2022	0	0	0
2023	1	1	2

Figure 25: Suicide rate per 1,000 resident estimate population, Cook Islands 2014-2023



16. Healthcare Facilities

Definitions:

Healthcare Facility: A place that provides healthcare services. These facilities range from small clinics and doctor's offices to large hospitals and specialized institutions, offering various levels of care to patients.

Hospital: A large healthcare facility providing comprehensive medical services, including emergency care, inpatient care, surgeries, and specialized treatments. Hospitals often have on-site specialists (anesthesia, O&G, internal medicine, pediatrics, accidents and emergency, surgery and ophthalmology) at scheduled times, and on call at all times.

Clinic: A healthcare facility typically focused on outpatient care. Provides basic health services including nursing care, antenatal care, baby checks, child immunization, family planning, wound dressings, medicine refills, home visits, post-natal check-ups for mother and baby, counselling and cervical cancer screening.

Primary Care Center: A healthcare facility that provides primary healthcare services, including routine check-ups, preventive care, treatment of common illnesses, delivery by nurses and doctors and management of chronic conditions. Primary care centers often serve as the foundation of the healthcare system.

Child Welfare Clinics: A community-based facility that provides healthcare services to the mothers and babies in collaboration with a Non-organization called Cook Islands Child Welfare Association (CICWA). For some Pa Enuu, TMO health care centers is utilized for the program with Public health nurses on the island.

Hospital Beds: defined here as beds available for patient admissions only.

Methodological/ System Issues:

- The number of facilities are confirmed by health officers and health partners.

Table (4): Health facilities available by region & island, Cook Islands: As of December 2023.

REGION & ISLAND	Hospital Beds	Hospital	Primary Care Centre	Dental Clinics	Health Clinics	Child Welfare Clinics	Private Medical Clinics	Private Dental Clinics
COOK ISLANDS	152	1	1	13	18	30	4	1
RAROTONGA	80	1	1	8	5	14	4	1
SOUTHERN GROUP excl. Rarotonga	45	0	0	3	5	11	0	0
Aitutaki	26	0	0	0	1	6	0	0
Mangaia	5	0	0	1	1	4	0	0
Atiu	6	0	0	1	1	0	0	0
Mauke	6	0	0	1	1	0	0	0
Mitiaro	2	0	0	0	1	1	0	0
NORTHERN GROUP	27	0	0	2	8	5	0	0
Palmerston	0	0	0	0	1	0	0	0
Pukapuka	9	0	0	1	1	3	0	0
Nassau	2	0	0	0	1	0	0	0
Manihiki	8	0	0	1	2	1	0	0
Rakahanga	2	0	0	0	1	0	0	0
Penrhyn	6	0	0	0	2	1	0	0

17. Health Workforce

Definitions:

Health Workforce: The total number of individuals engaged in the delivery of healthcare services. This includes a wide range of professionals such as doctors, nurses, dentists, allied health professionals, support staff, and administrators.

Formulas:

$$\text{Workforce density} = \frac{\text{Number of health professionals}}{\text{Total population}} \times 1,000$$

Methodological/ System Issues:

- Data is sourced from TMO Human Resources (HR) and Public Service Commission (PSC) employee listing
- Data was collected at specific times each year and does not account for staff who were present or absent at other times.

Table (5.1): TMO health workforce distribution by Island, Cook Islands: As of 2023

ISLAND	Total			CLINICAL SUPPORT										General Support		
	opulatic	Medical	Nurses	Public Health	Dental	Pharmacy	Radiology	Laboratory	EMT	Biomedical	Physiotherapy	Other			PNF	
Aitutaki	1,782	2	10						3						10	
Atiu	383		3	2	1	1									2	
Mangala	471		5	2	1				1						1	
Manihiki	215		2	2											2	
Mauke	249		2	2											2	
Mitiaro	155		2	1	1											
Nassau	92		2		1											
Palmerston	25		1													
Penrhyn	233		2	1											1	
Pukapuka	456		3	2	1										1	
Rakahanga	81		1	1												
Rarotonga	10,898	25	70	32	22	10	2	13	8	2	1	6	44	39		
Total	15,040	27	103	45	29	11	2	13	12	2	1	6	63	39		

Table (5.2): TMO Oral Health workforce, Cook Islands 2021-2023

	ORAL HEALTH WORKFORCE						
	2021		2022		2023		
	Female	Male	Female	Male	Female	Male	
Dental Assistant	5	-	4	-	4	1	
Dental Specialist	-	-	1	-	1	-	
Dental Technician	-	1	-	1	-	1	
Dental Therapist	13	4	13	4	11	4	
Dentist*	-	6	-	7	-	7	
Total	18	11	18	12	16	13	

Table (5.3): TMO Planning and Funding workforce, Cook Islands 2021-2023

	PLANNING AND FUNDING WORKFORCE					
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Office of the Head*	1	1	2	1	2	0
Finance	4	1	6	1	5	0
Human Resource*	15	7	40	22	17	6
ICT	1	3	1	3	1	2
Policy & Planning	3	2	5	1	5	1
Total	24	14	54	28	30	9

Table (5.4): TMO Primary Care workforce, Cook Islands 2021-2023

	PRIMARY CARE WORKFORCE					
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Director	-	1	-	1	-	1
Nurse*	29	6	33	7	28	5
Health Care Assistant	8	1	4	1	4	2
House Officer	-	-	2	3	1	-
MOSS	-	-	-	1	-	-
Registrar	-	-	1	-	-	-
Total	37	8	40	13	33	8

Table (5.5): TMO Public Health workforce, Cook Islands 2021-2023

	PUBLIC HEALTH WORKFORCE					
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Health Promotion	6	-	5	1	4	1
Health Protection	9	26	6	26	7	19
Mental Health*	2	0	2	0	2	0
Public Health Office* Nurse*	2	2	2	1	2	-
Health Intelligence* MOSS	19	-	17	-	17	1
Health Care Assistant	-	1	5	-	4	-
Community Health Worker	-	-	1	1	-	1
	-	-	1	-	-	-
	10	-	10	-	4	-
Total	48	29	49	29	40	22

Table (5.6): TMO Hospital Health workforce, Cook Islands 2021-2023

	HOSPITAL HEALTH SERVICES WORKFORCE					
	2021		2022		2023	
	Female	Male	Female	Male	Female	Male
Head of Office and Administration Support*	16	2	17	1	16	1
Biomedical	1	1	1	1	-	2
Clinical Support Services*	3	-	3	-	3	-
Food & Nutrition	7	1	8	1	7	-
Groundsmen/Maintenance/Security	-	14	-	15	-	14
Infection Control	23	2	18	2	18	2
Laboratory	7	3	8	3	9	4
Medical Specialist	3	9	2	6	3	5
Nurse*	60	5	57	4	48	5
Pharmacy	3	8	5	8	6	5
Physiotherapy	-	-	-	2	-	1
Radiology	2	1	2	1	1	1
Registrar	3	2	1	3	2	3
Vision and Hearing	1	-	1	-	1	-
EMT/Ambulance	3	10	1	11	-	12
MOSS*	5	5	2	2	5	8
Total	137	63	126	60	119	63

18. Mental Health

Definitions:

Mental Disorders: conditions that involve significant disturbances in thinking, emotional regulation, or behavior. These disorders are typically associated with distress or impaired functioning in personal, social, or occupational activities. Mental disorders encompass a wide range of conditions, including depression, anxiety disorders, schizophrenia, and bipolar disorder, among others.

Developmental: a condition where a child's growth in areas like talking, moving, thinking, or behaving is slower or different from other children. Eg: autism affects how a child communicates and interacts with others.

Mental Diagnosis: the process of identifying and labeling a mental health condition based on a person's symptoms, behaviors, and psychological history.

Methodological/ System Issues:

- Data is sourced from Medtech Evolution Mental Health classifications
- No established template for Mental Health diagnosis on Medtech which proves a challenge when collating data for each classification.

Table 11.1: Mental health diagnosis by age groups and sex, Cook Islands 2021-2023

Mental health diagnosis	Age group				Sex	
	0-14	15-24	25-59	60+	Female	Male
dementia	0	0	1	18	11	8
psychotic	0	1	25	5	18	13
addiction	0	8	2	2	0	12
developmental	3	0	1	0	0	4
mood	0	8	14	4	11	15
psychosocial	3	1	1	0	2	3
anxiety	1	14	57	20	73	19
self harm	1	1	0	0	0	2
neuro related	0	8	21	3	21	11

Figure 26: Mental health diagnosis by year, Cook Islands 2021-2023

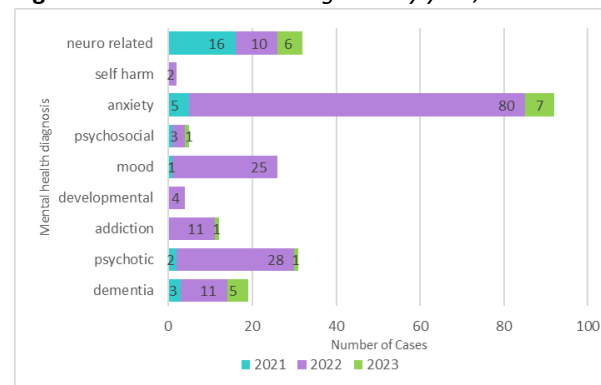


Figure 27: Mental health diagnosis by age groups, Cook Islands 2021-2023

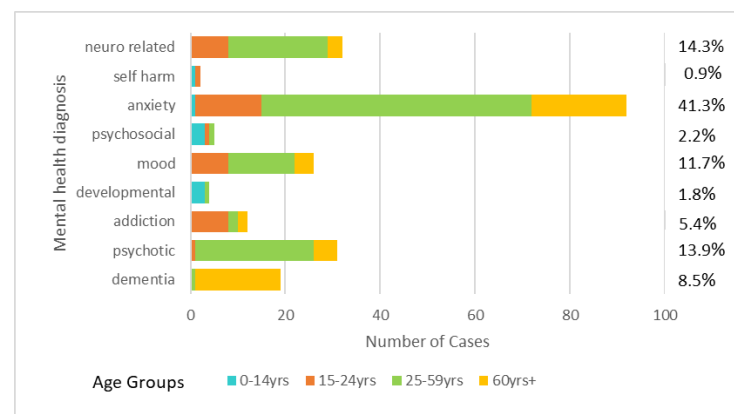
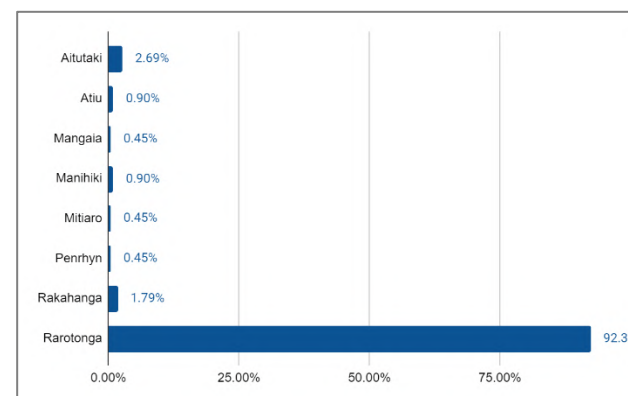


Figure 28: Proportion of Mental health diagnosis by island, Cook Islands 2021-2023



19. Patient Referrals

Definitions:

Patient Referral: The process by which a healthcare provider directs a patient to another healthcare provider or specialist for further examination, treatment, or consultation. This often occurs when a patient's condition requires expertise or services beyond the referring provider's scope of practice.

Methodological/ System Issues:

- Data is sourced from Medtech Patient Referrals (Outer Island and New Zealand) register

Table 12.1: Number of patients referred Overseas and received from the Outer Islands, Cook Islands 2000-2023

PERIOD	Overseas	TOTAL	ISLAND										
			Aitutaki	Mangaia	Atiu	Mauke	Mitiaro	Palmerston	Pukapuka/	Manihiki	Rakahanga	Penrhyn	
2000	102	130	59	3	8	21	10	0	8	7	3	11	
2001	116	178	48	16	33	29	6	1	10	13	3	19	
2002	149	164	50	30	19	15	5	0	14	9	0	22	
2003	165	172	53	24	17	23	1	0	12	10	1	31	
2004	166	176	49	35	23	28	1	0	20	5	0	15	
2005	169	255	85	37	18	43	10	0	29	20	1	12	
2006	154	187	64	27	36	9	6	0	26	15	0	4	
2007	182	180	53	22	25	39	15	3	12	9	0	2	
2008	167	165	57	37	13	5	6	1	21	7	0	18	
2009	137	197	61	30	29	22	11	3	21	11	0	9	
2010	158	289	98	62	27	17	27	8	22	8	4	16	
2011	150	228	70	41	20	18	13	9	17	13	10	17	
2012	172	280	132	37	19	16	20	5	18	15	1	17	
2013	134	273	98	40	30	22	22	5	24	17	7	8	
2014	116	280	117	35	32	26	16	0	13	22	4	15	
2015	155	237	99	25	27	29	15	9	11	8	2	12	
2016	120	232	68	32	26	25	13	3	21	19	4	21	
2017	147	258	99	33	32	23	20	4	27	7	5	8	
2018	197	298	132	43	49	19	9	6	16	9	3	12	
2019	178	338	146	37	43	31	27	5	16	13	9	11	
2020	137	195	86	20	15	8	14	2	19	17	4	10	
2021	148	167	73	23	17	10	9	2	12	5	6	8	
2022	195	270	96	36	47	18	6	0	21	12	7	27	
2023	193	144	54	16	19	12	12	3	11	11	3	3	

Figure 29: Patients received from the Pa Enua and/or referred overseas, Cook Islands 2014-2023.

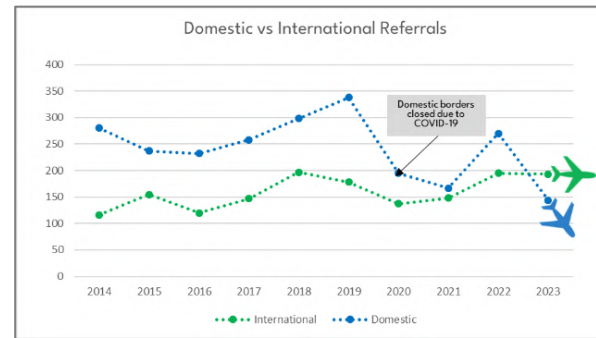


Figure 30: Number of domestic referrals to Rarotonga by islands, Cook Islands 2019-2023

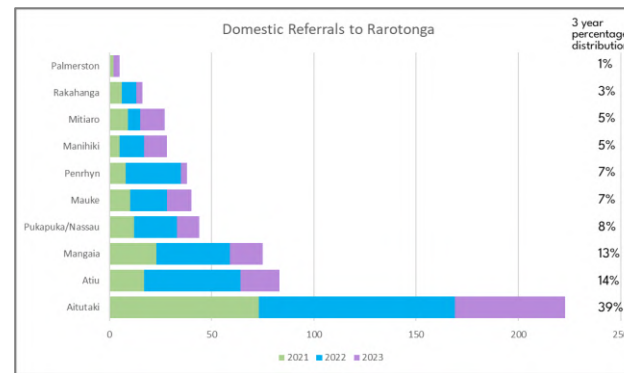
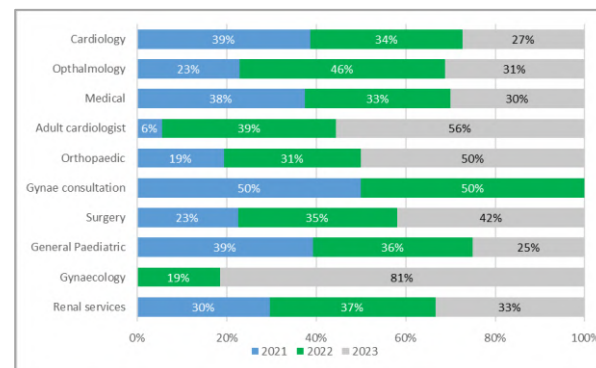


Figure 31: Top 10 International referrals by diagnosis service, Cook Islands 2021-2023



20. Health Specialist Visits (HSV)

Definitions:

Health Specialist Visits: Appointments or consultations with healthcare professionals who specialize in specific fields of medicine or health, such as cardiologists, dermatologists, or neurologists, to address specific health concerns, conditions, or ongoing management of chronic diseases.

Methodological/ System Issues:

- The sources of data lack consistency and are numerous. Data was sourced by reviewing appointment books, screening templates, provider codes, classifications, HSV reports, and notes associated with each program or specialist visit to ascertain the number of patients seen.
- Patient records are frequently untraceable due to other clinicians entering their data into Medtech, making it challenging to determine if a specific patient has been seen by a particular specialist.

Table (7): Total number of Health Specialist Visits planned, number of patients consulted by the specialist, total number of TMO staff trained in the Cook Islands 2022-2023

	2022	2023
HSV programs implemented in the Cook Islands	Women's Health OBGYN, Adult Cardiology, Ear Nose & Throat, Paediatric Cardiology, Endoscopy, General Paediatric, Ophthalmology, Orthopedic, Uro-Gynaecology, Mammography, NCD & Diabetes Management, Urology, Plastic Surgery, Mental Health and Neurology	Women's Health OBGYN, Diabetic Management, Ophthalmology, Endoscopy, Adult Cardiology, Uro-Gynaecology, Urology, Ophthalmology, Orthopedic, Paediatric Cardiology
Number of Consultants	Primary Health Care and Radiology	Nil
Number of Continuous Professional Development (CPD)	Breast Feeding, Advanced Core Life Support (ACLS), Primary Trauma Care (PTC),	Advanced Core Life Support (ACLS), Palliative Care and Plan Management, Emergency training, Paediatric Life Support (PLS), Palliative care training, Primary Trauma Care training (PTC),
Total number of health staff trained	93	171
Total Health Specialist visit to Pa Enea	13	12
Total number of people screened in the Pa Enea	597	687
Total number of Patients screened on Rarotonga	2290	817
Number of referrals from Pa Enea	123	52
Number of referrals completed to New Zealand	48	24
Total Surgical Procedures Completed	112	90

21.1. Inpatient Admissions

Definitions:

Inpatient: Medical treatment or care provided to a patient who has been admitted to a hospital or healthcare facility and stays overnight or for an extended period. Inpatient care typically involves monitoring, treatment, and management of acute or severe medical conditions.

Morbidity: The state of being diseased or unhealthy within a population. Morbidity encompasses the occurrence and prevalence of illnesses, injuries, and other health-related conditions that affect individuals.

Formula:

$$\text{Bed occupancy (\%)} = \frac{\text{Inpatient days of care}}{\text{Bed days available}} \times 100$$

Methodological/ System Issues:

- Data is sourced from Medtech Admissions and Discharge register

Table 13.1: Patients admitted and discharged from hospital by region and island and bed occupancy, Cook Islands 2021

REGION & ISLAND	Number of				Average Occupied Bed	% Bed Occupancy
	Admissions	Discharges	Bed Days Used	Bed Days Available		
COOK ISLANDS	1,384	1,256	4,764	55,480	13.1	8.6
RAROTONGA	1,195	1,140	4,405	29,200	12.1	15.1
SOUTHERN GROUP excluding Rarotonga	177	111	348	16,425	1.0	2.1
Aitutaki	125	86	298	9,490	0.8	3.1
Mangaia	39	19	31	1,825	0.1	1.7
Atiu	7	4	17	2,190	0.0	0.8
Mauke	6	2	2	2,190	0.0	0.1
Mitiaro	0	0	0	730	0.0	0.0
NORTHERN GROUP	12	5	11	9,855	0.0	0.1
Palmerston	0	0	0	0	0.0	0.0
Pukapuka/Nassau	4	1	1	4,015	0.0	0.0
Manihiki	2	0	0	2,920	0.0	0.0
Rakahanga	1	1	4	730	0.0	0.5
Penrhyn	5	3	6	2,190	0.0	0.3

Table 13.2: Patients admitted and discharged from hospital by region and island and bed occupancy, Cook Islands 2022

REGION & ISLAND	Number of				Average Occupied Bed	% Bed Occupancy
	Admissions	Discharges	Bed Days Used	Bed Days Available		
COOK ISLANDS	1,382	1,278	4,769	55,480	13.1	8.6
RAROTONGA	1,175	1,116	4,234	29,200	11.6	14.5
SOUTHERN GROUP excluding Rarotonga	193	157	510	16,425	1.4	3.1
Aitutaki	154	132	469	9,490	1.3	4.9
Mangaia	34	19	36	1,825	0.1	2.0
Atiu	2	4	1	2,190	0.0	0.0
Mauke	3	2	4	2,190	0.0	0.2
Mitiaro	0	0	0	730	0.0	0.0
NORTHERN GROUP	14	5	25	9,855	0.1	0.3
Palmerston	0	0	0	0	0.0	0.0
Pukapuka/Nassau	8	1	4	4,015	0.0	0.1
Manihiki	1	1	2	2,920	0.0	0.1
Rakahanga	5	3	19	730	0.1	2.6
Penrhyn	0	0	0	2,190	0.0	0.0

Table 13.3: Patients admitted and discharged from hospital by region and island and bed occupancy, Cook Islands 2023

REGION & ISLAND	Number of				Average Occupied Bed	% Bed Occupancy
	Admissions	Discharges	Bed Days Used	Bed Days Available		
COOK ISLANDS	1,672	1,586	5,510	55,480	15.1	9.9
RAROTONGA	1,387	1,378	4,941	29,200	13.5	16.9
SOUTHERN GROUP excluding Rarotonga	278	205	555	16,425	1.5	3.4
Aitutaki	244	184	517	9,490	1.4	5.4
Mangaia	26	19	36	1,825	0.1	2.0
Atiu	4	0	0	2,190	0.0	0.0
Mauke	2	0	0	2,190	0.0	0.0
Mitiaro	2	2	2	730	0.0	0.3
NORTHERN GROUP	7	3	14	9,855	0.0	0.1
Palmerston	0	0	0	0	0.0	0.0
Pukapuka/Nassau	3	0	0	4,015	0.0	0.0
Manihiki	2	1	10	2,920	0.0	0.3
Rakahanga	0	0	0	730	0.0	0.0
Penrhyn	2	2	4	2,190	0.0	0.2

21.2. Inpatient Admissions

Figure 32: Ten leading causes of inpatient morbidity, Cook Islands 2021-2023.

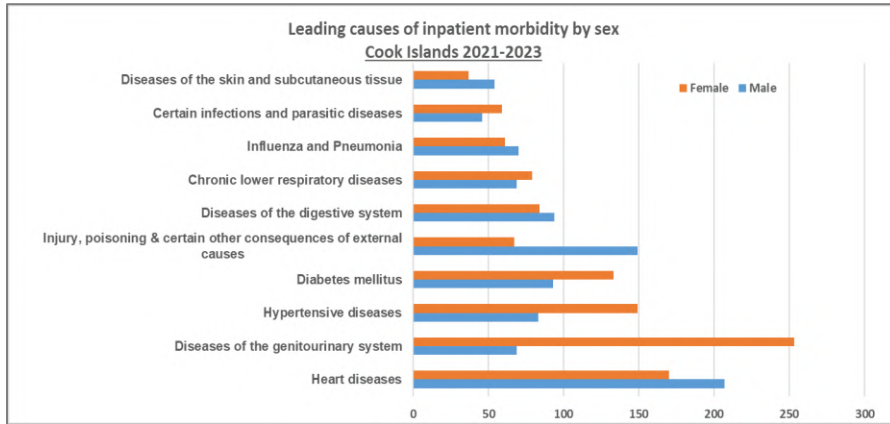


Figure 33: Admissions average occupied beds, Cook Islands 2019-2023.

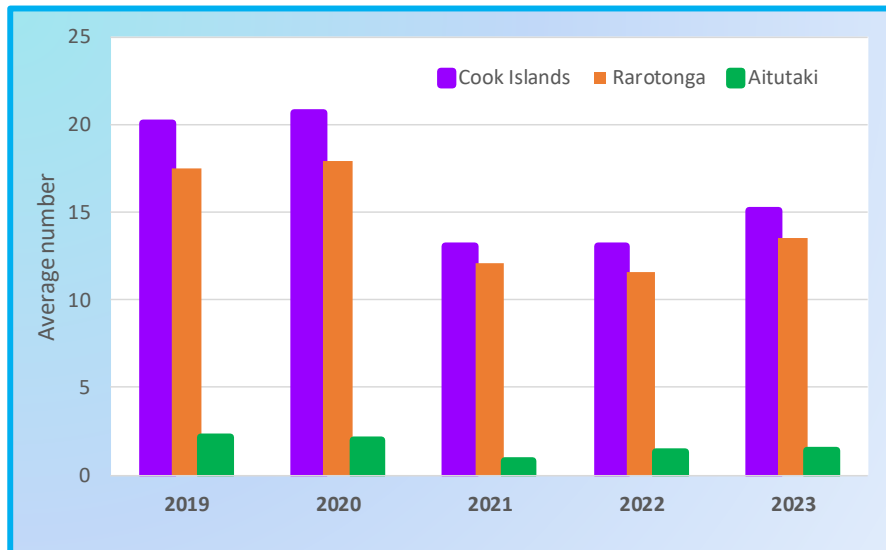


Figure 34: Admissions average occupied beds, Cook Islands 2019-2023.

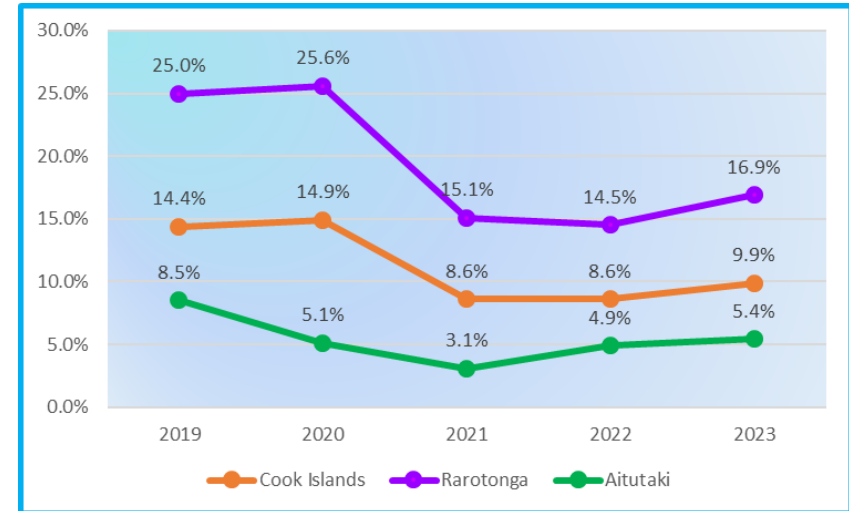
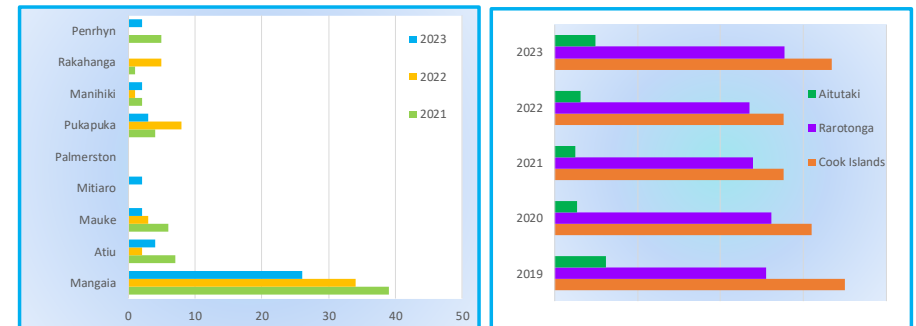


Figure 35: Number of admissions by island, Cook Islands 2019-2023.



22. Primary Care Services

Definitions:

Consultations: Consultations are discussions between healthcare professionals and patients where medical advice, diagnosis, treatment options, or health education are provided, typically in clinical settings.

Methodological/ System Issues:

- Data is sourced from Medtech (Outpatient) Primary Care consultations template
- Medtech experienced issues from the second half of 2014 through May 2015, resulting in the loss of all data from that period.

Table 14.1: Primary Care consultations by year, sex and age groups, Cook Islands

Year	Total	Age Groups																Unknown
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+		
Sex: Both																		
2012	35,836	4,097	4,279	2,232	2,204	2,291	1,752	1,839	1,661	2,018	2,183	2,338	1,735	1,693	1,727	3,763	24	
2013	37,906	5,033	3,573	2,323	2,255	2,202	1,905	1,918	1,675	2,206	2,399	2,658	1,993	1,930	1,806	3,815	15	
2014	19,087	1,597	1,942	1,247	1,160	1,180	1,063	926	1,116	1,299	1,413	1,210	1,033	942	1,949	8	2	
2015	31,401	3,571	2,834	1,757	1,790	1,708	1,519	1,599	1,513	1,704	2,161	2,375	2,007	1,818	1,510	3,433	5	
2016	46,601	5,736	3,134	2,666	2,771	2,695	2,475	2,117	2,188	2,585	3,187	3,599	3,344	2,642	2,406	5,044	12	
2017	52,316	5,239	4,200	2,755	2,975	3,129	3,430	3,068	3,017	3,128	3,704	3,845	3,619	2,725	2,386	5,086	10	
2018	56,218	5,196	4,054	2,964	3,210	3,154	3,511	3,211	3,368	3,481	3,717	4,236	4,436	3,240	2,708	5,732	0	
2019	58,103	5,388	4,035	2,836	3,112	3,556	4,044	3,441	3,626	3,651	3,912	4,411	4,555	3,292	2,557	5,732	0	
2020	35,534	2,995	2,154	1,756	1,674	1,856	2,081	2,074	2,174	2,017	2,591	2,883	2,950	2,247	1,968	4,115	0	
2021	32,474	3,029	1,794	1,460	1,577	1,430	1,752	1,841	1,965	1,723	2,183	2,533	2,510	2,207	2,072	4,394	4	
2022	37,903	3,301	2,007	1,695	1,647	1,712	2,025	2,335	2,073	2,043	2,449	3,045	3,359	2,751	2,339	5,113	9	
2023	37,667	3,380	2,234	1,849	1,878	1,653	2,195	2,416	2,107	2,160	2,259	2,758	2,965	2,649	2,174	4,961	29	
Sex: Male																		
2012	18,243	2,181	2,169	1,181	1,157	1,025	828	812	708	976	1,092	1,337	882	979	944	1,962	10	
2013	19,320	2,640	1,834	1,218	1,221	1,002	829	840	718	1,107	1,228	1,473	1,020	1,083	982	2,116	9	
2014	9,673	891	990	651	592	557	544	449	479	480	709	737	622	517	439	1,012	4	
2015	15,770	2,001	1,442	912	862	777	773	603	678	789	1,126	1,254	962	946	812	1,793	1	
2016	23,897	3,067	1,579	1,411	1,320	1,187	1,166	940	1,087	1,221	1,827	1,857	1,810	1,435	1,332	2,653	5	
2017	26,491	2,720	2,195	1,400	1,340	1,478	1,576	1,442	1,442	1,558	2,003	1,935	1,898	1,482	1,294	2,724	4	
2018	28,316	2,732	2,137	1,476	1,440	1,409	1,617	1,513	1,665	1,830	1,958	2,124	2,268	1,657	1,548	2,942	0	
2019	29,544	2,995	2,093	1,485	1,443	1,574	1,866	1,655	1,689	1,894	2,165	2,221	2,436	1,714	1,427	2,917	0	
2020	18,429	1,479	1,180	967	780	855	1,011	1,036	1,124	972	1,386	1,561	1,700	1,218	1,076	2,104	0	
2021	15,937	1,434	809	674	891	869	963	925	971	866	1,094	1,134	987	996	2,112	2		
2022	19,411	1,556	974	727	970	1,100	1,200	1,285	1,106	1,158	1,282	1,516	1,627	1,279	1,205	2,422	4	
2023	19,204	1,587	1,063	819	1,083	1,061	1,296	1,351	1,154	1,149	1,206	1,282	1,520	1,223	1,050	2,349	11	
Sex: Female																		
2012	17,593	1,916	2,110	1,051	1,047	1,266	924	1,027	953	1,042	1,091	1,001	853	714	783	1,801	14	
2013	18,586	2,393	1,739	1,105	1,234	1,200	1,076	1,078	957	1,099	1,171	1,185	973	847	824	1,699	6	
2014	9,414	706	952	596	568	623	556	614	447	638	590	676	588	516	403	937	4	
2015	15,631	1,570	1,392	845	908	931	846	996	835	915	1,035	1,121	1,025	870	698	1,640	4	
2016	22,704	2,669	1,555	1,255	1,451	1,508	1,309	1,177	1,101	1,364	1,360	1,472	1,534	1,207	1,074	2,391	7	
2017	25,825	2,519	2,005	1,355	1,635	1,651	1,854	1,626	1,575	1,570	1,701	1,910	1,721	1,243	1,092	2,362	6	
2018	27,902	2,464	1,917	1,488	1,770	1,745	1,894	1,698	1,703	1,651	1,759	2,112	2,168	1,583	1,160	2,790	0	
2019	28,559	2,411	1,936	1,350	1,669	1,978	2,178	1,785	1,533	1,757	1,744	2,189	2,118	1,578	1,130	2,803	0	
2020	17,105	1,515	969	758	892	996	1,070	1,038	1,050	1,045	1,225	1,321	1,250	1,029	892	2,023	0	
2021	16,537	1,395	985	786	686	861	789	916	994	827	1,069	1,353	1,376	1,220	1,076	2,282	2	
2022	18,492	1,745	1,033	968	677	612	825	1,050	967	885	1,167	1,529	1,732	1,472	1,134	2,691	5	
2023	18,463	1,793	1,171	1,030	795	592	899	1,065	953	1,011	1,053	1,476	1,445	1,426	1,124	2,612	18	

Note: Medtech problem in second half 2014 up to May 2015, losing all data in that period

Figure 36: Primary Care visits by year, Cook Islands 2016-2023

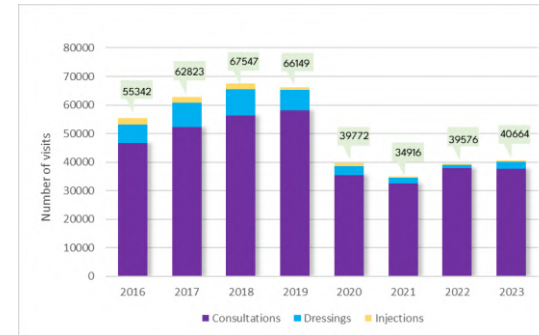


Figure 37: Primary care Consultations by sex, Cook Islands 2016-2023

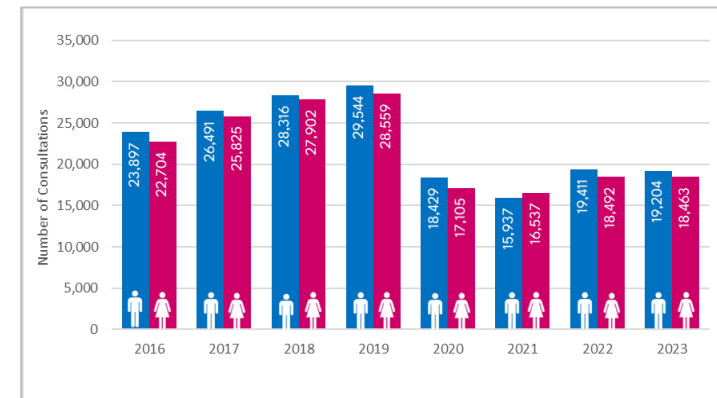
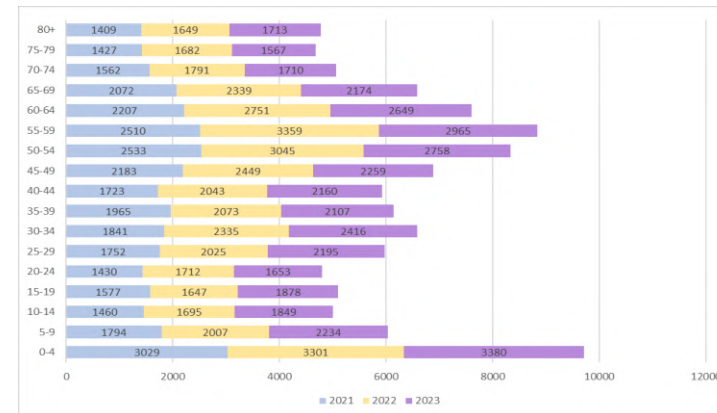


Figure 38: Primary Care consultations by age, Cook Islands 2021-2023



23. Oral Health

Definitions:

Restoration: The process of repairing or replacing a damaged or decayed tooth structure with materials such as amalgam, composite resin, or crowns to restore function and aesthetics.

Endodontics: A branch of dentistry focused on the diagnosis and treatment of dental pulp and tissues inside the tooth, including root canal therapy to save or repair infected or damaged teeth.

Extractions: The removal of a tooth or teeth from the dental socket in the jawbone, often performed due to severe decay, trauma, or to create space for orthodontic treatment.

Orthodontics: A specialty of dentistry concerned with the diagnosis, prevention, and correction of irregularities and misalignments of the teeth and jaws, typically using braces or aligners.

Prosthodontics: The branch of dentistry that deals with the restoration and replacement of missing teeth and oral structures using prosthetic devices such as dentures, bridges, and dental implants.

Periodontics: The branch of dentistry focused on the prevention, diagnosis, and treatment of diseases and conditions affecting the gums and supporting structures of the teeth, including gum disease (gingivitis and periodontitis).

Preventative: Dental care and treatments aimed at maintaining good oral health and preventing dental diseases, including regular dental exams, cleanings, fluoride treatments, and dental sealants.

Methodological/ System Issues:

- Data is sourced from Medtech Oral Health classifications

Table 15.1: Oral Health services by year, Cook Islands 2021-2023

Oral Services	2021	2022	2023
Total patients	2353	1931	3370
Consults/Screening	797	698	2438
Restoration	1372	1194	1231
Endodontics	320	312	249
Oral surgery/Extractions	1241	994	955
Paediatrics/Orthodontic	279	477	14
Prothodontic	252	204	145
Periodontic	371	117	119
Preventative	708	351	309
Others	75	42	55
Total	5415	4389	5515

Table 15.2: Oral Health services by age and sex, Cook Islands 2021-2023

By age and sex	2021		2022		2023		Grand Total	
	Female	Male	Female	Male	Female	Male		
0-5			4	13	9	86	67	179
5-14	475	467	395	365	996	952	3650	3650
15-24	535	304	536	346	441	380	2542	2542
25-34	389	266	330	173	291	154	1603	1603
35-44	356	239	302	183	272	182	1534	1534
45-54	431	265	317	233	302	194	1742	1742
55-64	407	403	276	272	308	302	1968	1968
65-75	337	261	239	230	217	202	1486	1486
75+	130	146	72	98	90	79	615	615
Grand Total	3060	2355	2480	1909	3003	2512	15319	15319

Figure 39: Oral Health services by year, Cook Islands 2021-2023

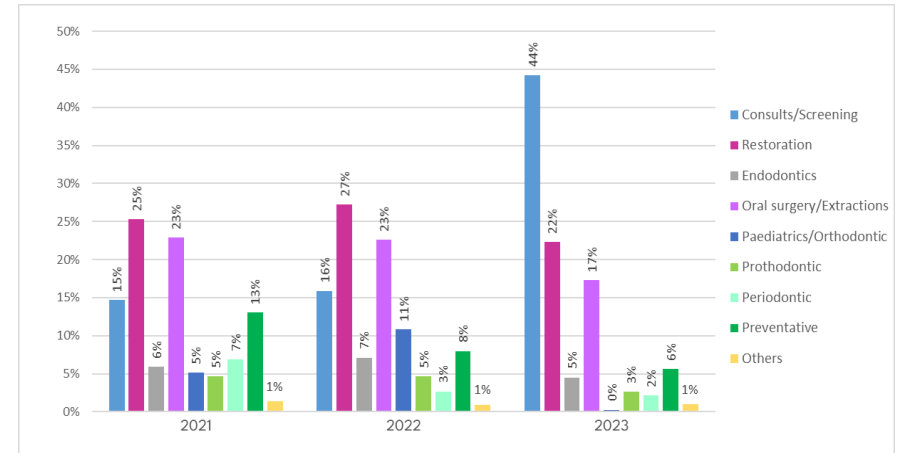
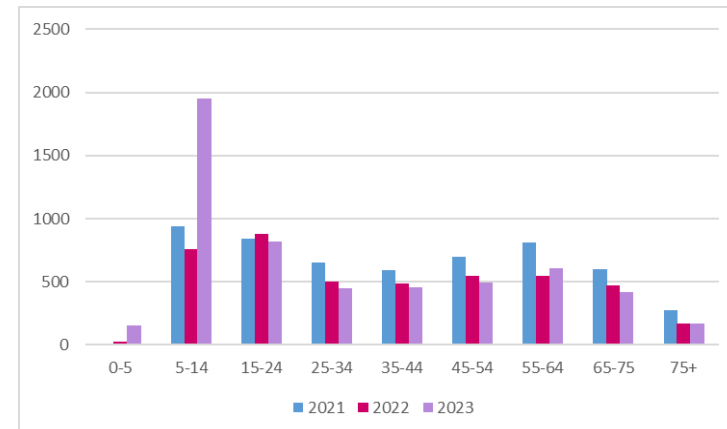


Figure 40: Oral Health services by age groups, Cook Islands 2021-2023



24. Cook Islands Injury Surveillance (CIIS)

Definitions:

Motor vehicle accidents: also known as traffic collisions or car crashes, involve collisions between vehicles or vehicles and pedestrians, resulting in property damage, injuries, or fatalities.

Injury surveillance: is the systematic collection, analysis, and interpretation of data related to injuries, including their causes, severity, and outcomes.

Methodological/ System Issues:

- Data is sourced from Medtech: CIIS, MVA templates and classifications.
- Inconsistencies in data completion
- Multiple templates used for MVA screenings

Table 16.1: Admissions due to road traffic crashes, Rarotonga 2014-2023

Type of Accident	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Transport Crashes	68	41	42	49	49	52	42	31	45	38
Male	42	22	24	31	33	29	27	19	31	22
Female	26	19	18	18	16	23	15	12	14	16
Alcohol Related	26	18	19	23	26	25	17	18	14	19
Percentage Alcohol Related	38%	44%	45%	47%	53%	48%	40%	58%	31%	50%
Alcohol Related Deaths	4	3	1	3	3	4	5	0	0	2
Non Alcohol Related Deaths	1	2	0	0	0	0	0	2	0	1
Transport Crashes - Outer Islands			4	3	0	0	0	4	18	14
Number of Deaths	6	5	1	3	4	6	7	4	0	3
Resident population	13,600	13,000	11,500	11,500	14,802	14,802	14,802	14,987	14,987	14,987
Rate /10 000 pop	4.4	3.8	0.9	2.6	2.7	4.1	4.7	2.7	0.0	2.0

Table (8): Admissions due to alcohol related transport crashes by age groupings year, Rarotonga 2014-2023

Age group	2014-2023	Average	%
0 - 14	3	0.3	1.5%
15 - 24	87	8.7	42.2%
25 - 34	60	6.0	29.1%
35 - 44	23	2.3	11.2%
45 - 54	20	2.0	9.7%
55 +	13	1.3	6.3%
Total	206	20.6	100%

Figure 41: Injury surveillance reported injuries, Cook Islands 2021-2023

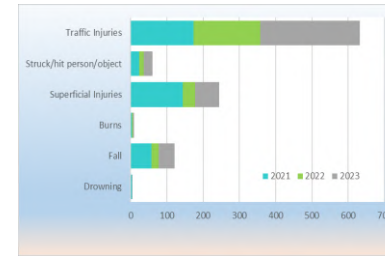


Figure 42: Admissions due to transport crashes, Rarotonga 2014-2023

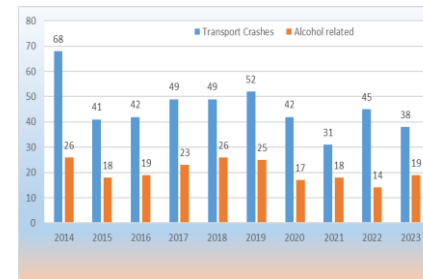


Figure 43: Percentage alcohol related crashes, Rarotonga 2014-2023

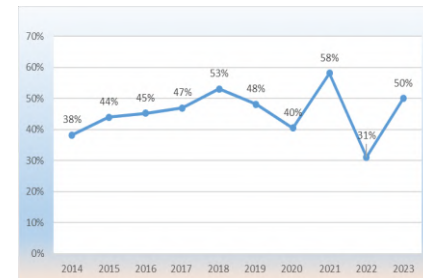
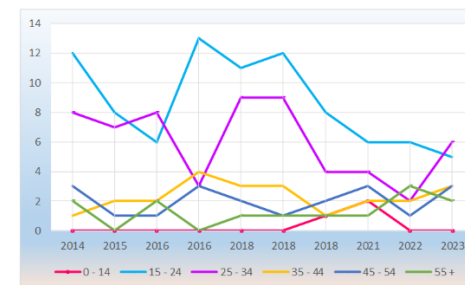


Figure 44: Transport crashes by age groupings, Rarotonga 2014-2023



25. Notifiable Diseases

Definitions:

Notifiable diseases: Are infectious diseases that healthcare providers and laboratories are required by law to report to public health authorities. These diseases are typically of public health concern due to their potential for rapid spread, severity, or impact on the community.

Methodological/ System Issues:

- Data is sourced from Medtech Notifiable disease templates
- The data from June 2014 to May 2015 was lost due to issues with Medtech32, affecting the primary care (outpatient) consultations.

Table 17.1: Suspected cases of notifiable diseases by months, Cook Islands 2021

Disease	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Acute Respiratory Infections	309	425	400	418	257	218	227	287	284	237	135	129	3,326
Asthma	10	9	10	11	10	12	11	13	9	8	4	9	116
Bronchitis	3	2	5	5	2	2	2	13	4	9	1	2	50
Chickenpox	2	0	2	0	0	0	0	0	0	0	0	0	4
Conjunctivitis	7	11	11	6	6	3	5	5	7	5	6	3	75
Dengue Fever	21	54	28	53	21	5	4	1	1	2	2	1	193
Diarrhoea child/adult	0	5	5	3	3	3	2	2	1	4	3	2	33
Diarrhoea infant	1	0	0	1	0	1	0	0	1	0	1	0	5
Fish Poisoning	6	6	5	7	4	2	2	1	2	2	2	7	46
Food Poisoning	1	5	1	0	2	2	4	0	0	0	2	1	18
Gastroenteritis	40	51	36	20	14	22	70	27	15	26	31	27	379
Influenza & Viral Illness	14	31	22	17	32	12	16	13	16	12	24	16	225
Meningitis	0	0	1	0	0	0	0	0	0	0	0	0	1
Otitis Media	13	15	24	8	15	3	5	2	12	3	2	7	109
Pneumonia	2	2	3	7	0	4	3	5	0	2	0	0	28
Rheumatic fever (acute & chronic)	0	1	0	1	0	2	2	0	2	2	0	2	12
Scabies	2	4	8	4	6	1	6	1	3	0	3	5	43
Skin Sepsis	112	106	75	81	59	45	42	38	40	19	46	35	698
Whooping Cough	1	0	0	0	0	0	0	0	0	0	0	0	1

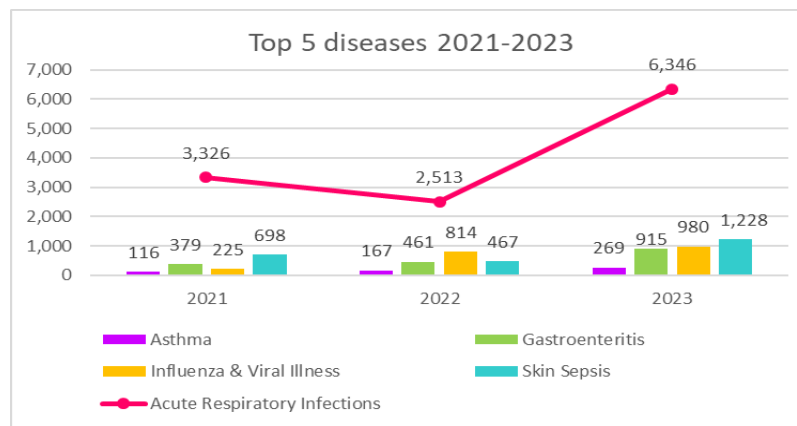
Table 17.2: Suspected cases of notifiable diseases by months, Cook Islands 2022

Disease	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Acute Respiratory Infections	102	101	79	90	100	266	266	266	292	239	334	378	2,513
Asthma	12	14	12	8	16	15	19	21	10	13	14	13	167
Bronchitis	11	13	5	1	12	4	27	7	10	8	4	13	115
Chickenpox	0	1	1	2	1	1	2	1	5	0	0	0	14
Conjunctivitis	3	0	1	0	4	2	0	0	3	14	14	7	48
Covid	0	0	0	0	0	0	0	0	0	1	4	38	43
Dengue Fever	1	0	4	0	1	0	1	0	0	0	0	0	7
Diarrhoea child/adult	2	0	1	1	2	4	2	1	1	6	11	10	41
Diarrhoea infant	0	0	0	0	0	0	0	1	1	1	0	0	3
Fish Poisoning	3	1	1	1	1	2	2	1	1	2	3	0	18
Gastroenteritis	8	17	9	8	9	87	34	27	26	68	89	79	461
Hepatitis	0	0	0	0	0	0	0	0	0	0	1	0	1
Influenza & Viral Illness	20	28	42	21	31	89	96	101	98	93	106	89	814
Meningitis	0	0	0	0	0	0	0	0	0	0	0	1	1
Mumps	0	0	0	0	0	0	0	1	0	0	1	2	4
Otitis Media	4	5	4	5	7	3	5	6	8	2	6	21	76
Pneumonia	1	0	0	0	0	0	0	0	1	1	0	0	3
Rheumatic fever (acute & chronic)	0	0	0	1	0	0	0	0	0	1	0	0	2
Scabies	1	0	2	0	1	3	5	4	8	8	1	16	49
Skin Sepsis	53	32	27	38	34	24	25	31	24	34	57	88	467

Table 17.3: Suspected cases of notifiable diseases by months, Cook Islands 2023

Disease	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Acute Respiratory Infections	348	321	488	422	455	531	728	792	549	549	510	653	6,346
Asthma	16	24	25	18	20	24	19	24	24	21	25	29	269
Bronchitis	2	8	13	9	7	20	30	17	18	16	24	19	183
Chickenpox	1	7	4	1	2	1	2	9	9	19	9	9	73
Conjunctivitis	11	16	10	8	9	10	7	21	16	11	15	17	151
Diarrhoea child/adult	8	6	4	4	5	3	5	5	10	5	7	6	68
Diarrhoea infant	0	0	0	0	0	0	0	0	0	0	0	1	1
Fish Poisoning	2	1	2	11	4	3	4	2	4	2	2	3	40
Food poisoning	0	2	2	3	9	0	0	1	0	0	1	2	20
Gastroenteritis	76	52	67	76	72	84	88	96	73	75	80	76	915
Influenza & Viral Illness	44	46	87	60	88	89	106	145	130	67	44	74	980
Meningitis	0	0	0	1	0	0	0	0	1	0	0	0	2
Otitis Media	20	22	27	15	12	8	17	15	12	9	21	19	197
Pneumonia	0	0	4	0	0	0	1	2	0	3	1	0	11
Rheumatic fever (acute & chronic)	0	2	1	4	0	0	1	3	3	0	1	3	18
Scabies	4	5	10	6	10	5	11	5	4	12	2	9	83
Skin Sepsis	99	89	129	106	101	91	98	123	88	95	111	98	1,228

Figure 45: Top five notifiable diseases by year, Cook Islands 2021-2023



26.1. Sexually Transmitted Infections (STIs)

Definitions:

STIs: are infections transmitted through sexual contact, including vaginal, anal, or oral intercourse. They can be caused by bacteria, viruses, or parasites and may present with symptoms such as genital sores, discharge, or pain, though many infections can be asymptomatic.

Laboratory confirmed positive cases: refer to individuals whose diagnosis of a specific disease or condition has been verified through laboratory testing. This confirmation typically involves the detection of specific pathogens, antigens, antibodies, or genetic material associated with the disease.

Methodological/ System Issues:

- Data is sourced from records maintained by TMO laboratory
- The data reflects what is currently accessible and traceable.

Table 18.1: Laboratory positive new cases by disease and year, Cook Islands 2013-2023

STI	YEAR										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Gonorrhoea	6	2	1	2	11	42	38	4	10	1	11
HIV	0	0	0	0	0	0	0	0	0	0	1
Syphilis	0	0	1	1	1	5	4	4	4	8	7
Candidiasis	7	4	0	0	20	67	60	14	17	14	35
Non Specific Urethritis	6	0	0	0	0	3	3	3	3	2	3
Trichomonas Vaginalis	9	1	0	0	0	6	2	3	3	2	2
Chlamydia	39	28	30	37	108	108	100				
Hepatitis B	5	6	6	8	9	3	8	8	9	4	6
Total	72	41	38	48	149	234	215	36	46	31	65
OTHERS											
Tuberculosis	0	0	0	0	0	0	0	0	0	0	4
Dengue Fever	4	5	0	2	0	0	0	0	193	7	0
Chikungunya	0	0	11	0	0	0	0	0	0	0	0

Figure 46: Top five STI laboratory confirmed cases, Cook Islands 2013-2023

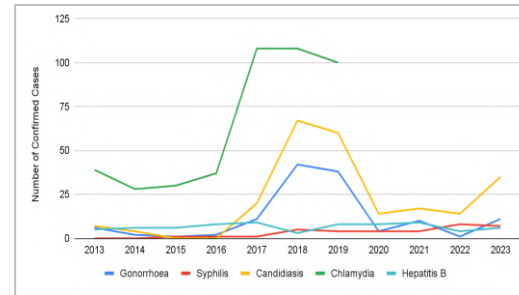


Figure 47: Proportion of laboratory testing and confirmed cases, Cook Islands 2021-2023

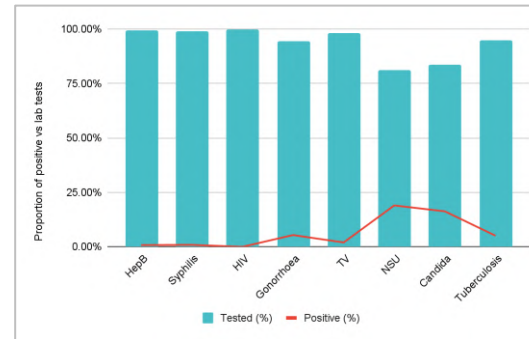
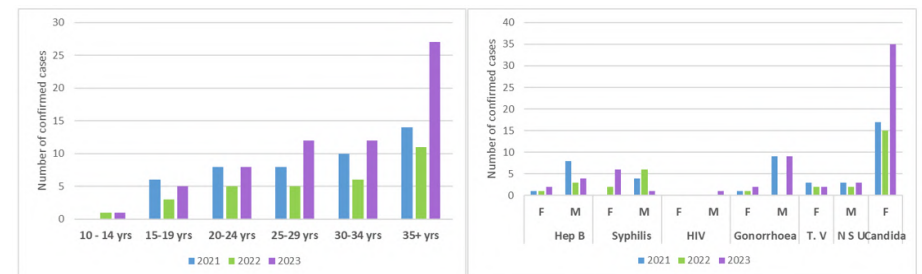


Figure 48: Laboratory confirmed cases by age and sex, Cook Islands 2021-2023



26.2. Sexually Transmitted Infections (STIs)

Definitions:

Gonorrhoea: STI affecting genitals, rectum, and throat; symptoms include painful urination and discharge.

HIV: Virus attacking the immune system, transmitted through bodily fluids; leads to AIDS if untreated.

Syphilis: Bacterial infection transmitted sexually or from mother to child; progresses through stages, causing serious complications.

Candidiasis: Fungal infection (Candida), affecting genitals, mouth, or skin; treatable with antifungal medications.

NSU (Non-Specific Urethritis): Urethral inflammation not caused by gonorrhoea or chlamydia, often due to other bacteria or irritants.

Trichomoniasis (TV): STI caused by *Trichomonas vaginalis*, infecting genital tract; symptoms include discharge and itching.

Chlamydia: Common STI often asymptomatic; affects genitals, rectum, and throat.

Hepatitis B (Hep B): Viral infection (HBV) affecting liver, transmitted through blood or body fluids; can lead to chronic liver damage and cancer.

(Refer to **Table 18.1:** Laboratory positive new cases by disease and year, Cook Islands 2013-2023)

Figure 49: Laboratory confirmed hepatitis-B cases, Cook Islands 2014-2023

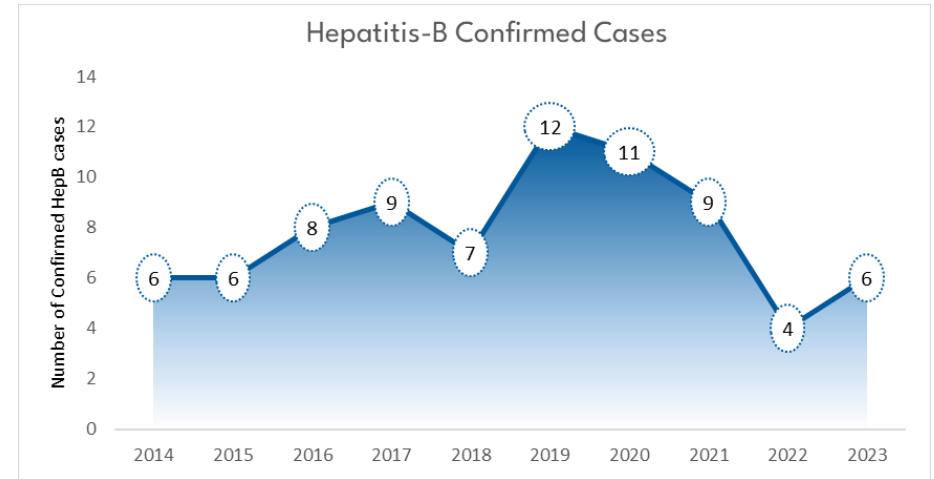
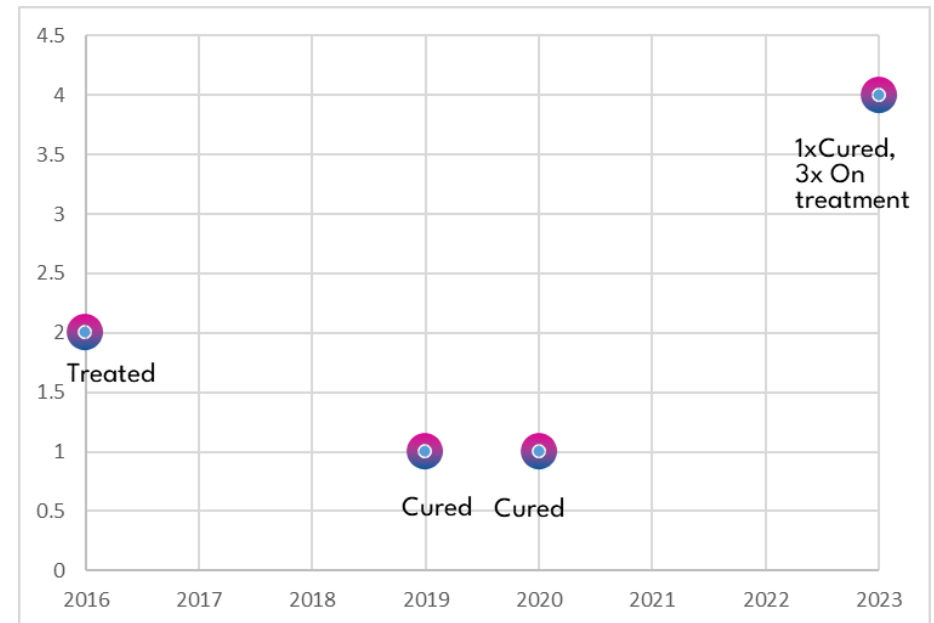


Figure 50: Laboratory confirmed Tuberculosis cases, Cook Islands 2016-2023



27. Dengue

Definitions:

Dengue: A viral infection transmitted by mosquitoes. Symptoms include high fever, severe headache, pain behind the eyes, joint and muscle pain, rash, and mild bleeding. In severe cases, dengue can lead to dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS), which can be life-threatening without proper medical care.

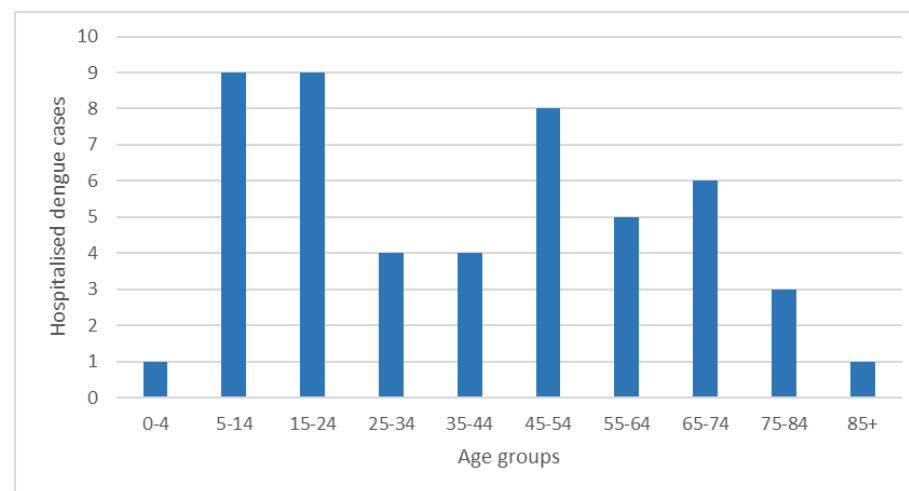
Methodological/ System Issues:

- Data is sourced from Medtech DENZIK register and Inpatient morbidity classifications

Table (9): Dengue Fever cases by year, Cook Islands 2021-2022

Dengue fever cases 2021-2023			
	Female	Male	Total
2021	91	102	193
2022	5	2	7
2023	0	0	0
Hospitalized	26	24	50

Figure 51: Number of hospitalised dengue fever cases by age group, Cook Islands 2021-2022



28. Ciguatera Poisoning (Fish Poisoning)

Definitions:

Ciguatera Poisoning: Foodborne illness caused by eating fish contaminated with ciguatoxins, leading to symptoms like nausea, vomiting, diarrhea, abdominal pain, and neurological issues such as tingling or temperature reversal.

Methodological/ System Issues:

- Data is sourced from Medtech Ciguatera poisoning template and classifications

Table 19.1: Ciguatera (Fish poisoning) cases seen by year and month, Cook Islands 2000-2023

Year	MONTH												TOTAL
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2000	9	14	17	9	14	11	0	5	15	9	24	11	138
2001	13	24	7	8	7	6	7	17	13	15	12	4	133
2002	32	25	18	22	19	7	3	4	9	22	13	9	183
2003	20	20	16	28	12	14	5	9	22	19	33	29	227
2004	65	40	45	44	47	23	26	33	39	22	46	39	469
2005	25	17	49	59	50	41	29	33	26	32	31	29	421
2006	25	16	27	27	20	13	12	15	30	31	24	18	258
2007	24	25	20	27	27	23	18	12	20	24	7	18	245
2008	28	36	15	14	20	13	14	14	17	19	18	15	223
2009	19	13	13	9	11	8	7	8	5	11	16	9	129
2010	5	10	10	7	11	9	11	2	4	1	5	3	78
2011	5	3	9	20	8	4	13	10	6	9	6	9	102
2012	10	13	4	4	6	5	6	6	8	11	12	5	90
2013	11	8	6	13	0	3	6	6	4	8	21	4	90
2014	6	8	5	4	2	1	3	2	12	6	7	9	65
2015	4	5	3	2	1	2	1	3	6	4	5	5	41
2016	5	8	9	2	3	12	6	4	5	3	5	7	69
2017	13	9	12	3	5	10	2	4	5	4	0	2	69
2018	2	1	4	2	0	0	2	4	3	2	3	1	27
2019	0	4	2	3	1	1	1	1	1	1	1	11	24
2020	5	0	2	21	5	3	3	4	3	1	12	0	59
2021	7	7	5	8	4	2	1	3	3	3	2	7	52
2022	3	1	1	1	1	2	2	2	1	2	2	1	18
2023	1	2	8	7	2	3	5	1	5	1	3	2	40

Figure 52: Fish poisoning cases by month and year, Cook Islands 2021-2023

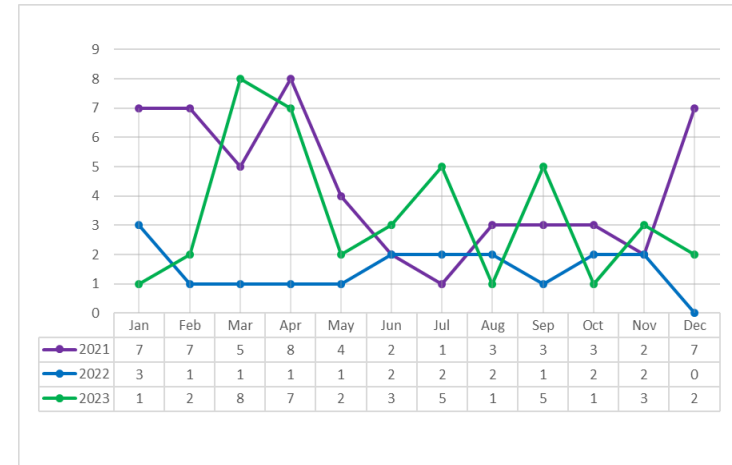


Figure 53: Proportion of ciguatera poisoning by sex, Cook Islands 2021-2023

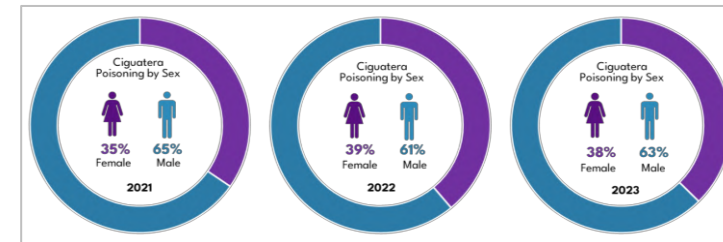
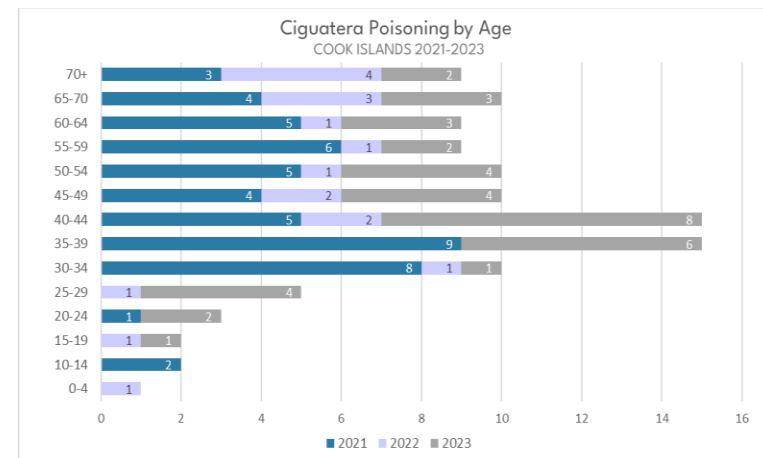


Figure 54: Ciguatera poisoning by age, Cook Islands 2021-2023



29. COVID-19 Vaccination Rollout

Definitions:

COVID-19: COVID-19, short for Coronavirus Disease 2019, is an infectious disease caused by the novel coronavirus SARS-CoV-2. It was first identified in December 2019 in Wuhan, China, and has since led to a global pandemic.

Methodological/ System Issues:

- Data is sourced from Medtech vaccine register

Table 22.1: Pfizer vaccination roll-out by age groupings and islands, Cook Islands 2021

LOCATION	Total	Age Groups												
		4-11	12-19	20-27	28-35	36-43	44-51	52-59	60-67	68-75	76-83	84-91	92-100	Unknown
COOK ISLANDS	32,145	10	3,996	3,697	4,229	4,344	4,483	4,502	3,326	2,005	1,211	312	30	0
RAROTONGA	26,107	4	3,006	3,065	3,608	3,662	3,736	3,586	2,648	1,548	966	250	28	0
SOUTHERN ISLANDS														
Aitutaki	2,743	0	515	248	345	337	317	387	266	185	119	24	0	0
Mangala	751	4	157	60	18	52	92	125	113	82	42	6	0	0
Atu	683	0	110	73	61	59	74	128	86	54	24	14	0	0
Mauke	419	2	55	40	30	48	67	56	55	32	28	6	0	0
Mitiaro	225	0	24	29	22	19	36	37	17	27	6	6	2	0
NORTHERN ISLANDS														
Palmerston	35	0	2	9	2	6	2	4	8	0	0	0	0	0
Pukapuka/Nassau	578	0	70	109	69	68	66	91	54	29	18	4	0	0
Manihiki	251	0	17	20	37	30	31	57	33	26	0	0	0	0
Rakahanga	114	0	10	9	14	19	19	13	17	7	4	2	0	0
Penrhyn	239	0	30	35	23	44	43	20	33	7	4	0	0	0

Table 22.2: Pfizer vaccination roll-out by age groupings and islands, Cook Islands 2022

LOCATION	Total	Age Groups												
		4-11	12-19	20-27	28-35	36-43	44-51	52-59	60-67	68-75	76-83	84-91	92-100	Unknown
COOK ISLANDS	8,748	3,518	821	525	527	577	618	802	648	413	237	53	5	4
RAROTONGA	4,592	2,359	387	248	248	218	228	320	278	180	105	18	2	1
SOUTHERN ISLANDS														
Aitutaki	1,810	471	128	106	167	192	182	221	153	111	66	13	0	0
Mangala	418	105	22	26	10	24	44	65	58	37	22	3	2	0
Atu	333	98	27	23	21	24	28	50	28	18	10	6	0	0
Mauke	234	58	6	23	14	24	36	23	22	15	8	4	1	0
Mitiaro	139	45	5	6	4	12	26	13	15	11	2	0	0	0
NORTHERN ISLANDS														
Palmerston	33	4	7	4	2	3	2	1	3	7	0	0	0	0
Pukapuka/Nassau	593	198	137	54	32	40	30	43	35	11	7	6	0	0
Manihiki	239	79	44	11	17	12	15	31	19	11	0	0	0	0
Rakahanga	118	25	10	8	2	13	16	11	19	6	4	1	0	3
Penrhyn	239	76	53	17	8	23	25	11	20	2	4	0	0	0

Table 22.2: Pfizer vaccination roll-out by age groupings and islands, Cook Islands 2023

LOCATION	Total	Age Groups												
		4-11	12-19	20-27	28-35	36-43	44-51	52-59	60-67	68-75	76-83	84-91	92-100	Unknown
COOK ISLANDS	447	0	6	7	30	35	60	68	101	79	49	11	1	0
Rarotonga	353	0	1	2	26	30	50	54	82	63	33	11	1	0
Aitutaki	94	0	5	5	4	5	10	14	19	16	16	0	0	0

Figure 55: Vaccination roll-out by islands, Cook Islands 2021-2023

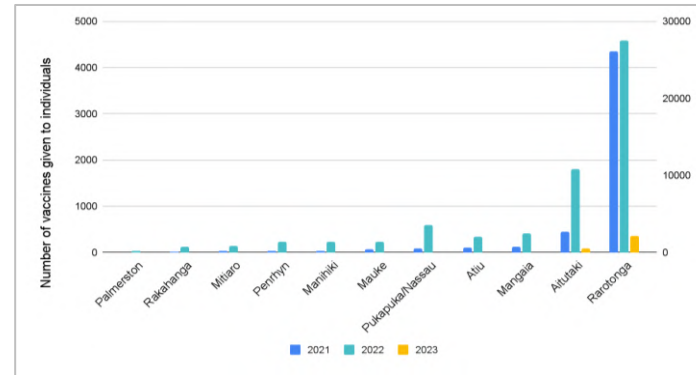


Figure 56: Number of Doses, Booster, and Paediatric Vaccines Given, Cook Islands: 2021-2023

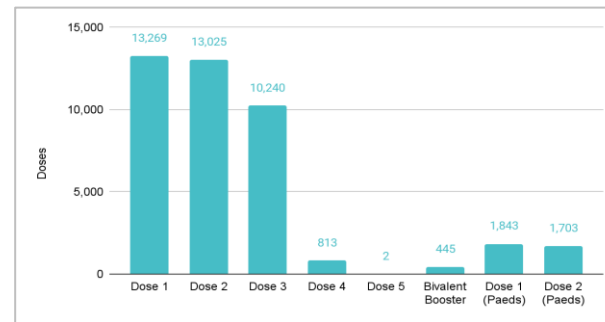
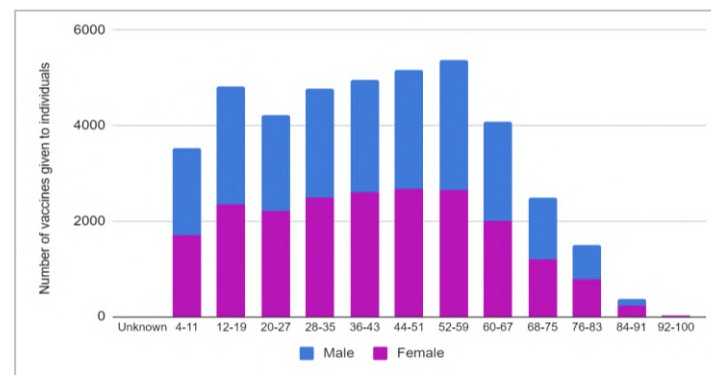


Figure 57: Vaccination roll-out by age and sex, Cook Islands 2021-2023



30. COVID-19 Confirmed Positive Cases

Definitions:

Endemic: A disease is endemic in a place when it is constantly present in that area to some degree.

Epidemic: A widespread occurrence (outbreak) of an infectious disease in a community at a particular time.

Pandemic: when a large number of people are affected at the same time and is world-wide in distribution.

Methodological/ System Issues:

- Data is sourced from Medtech COVID-19 cases reporting.
- The following table is for 2022 to 2023 only as the first positive cases was 13 February 2022

Table 23.1: COVID-19 cases by age grouping and sex, Cook Islands 2022-2023

	Female		Male		Totals
	2022	2023	2022	2023	
0-4	169	5	155	8	337
5-9	186	5	218	4	413
10-14	250	13	283	6	552
15-19	298	14	276	9	597
20-24	230	14	183	13	440
25-29	250	16	198	10	474
30-34	320	17	222	14	573
35-39	284	19	213	8	524
40-44	267	25	206	16	514
45-49	254	19	186	21	480
50-54	243	20	210	20	493
55-59	255	18	212	11	496
60-64	206	19	209	15	449
65-69	141	19	134	8	302
70-74	97	20	78	14	209
75-79	82	14	71	7	174
80-84	52	8	42	9	111
85-89	29	5	16	2	52
90-94	6		9	2	17
95-99	4				4
Unknown	6		3		9
Total	3629	270	3124	197	7220

Figure 58: COVID-19 confirmed cases by age, sex and year, Cook Islands 2022-2023

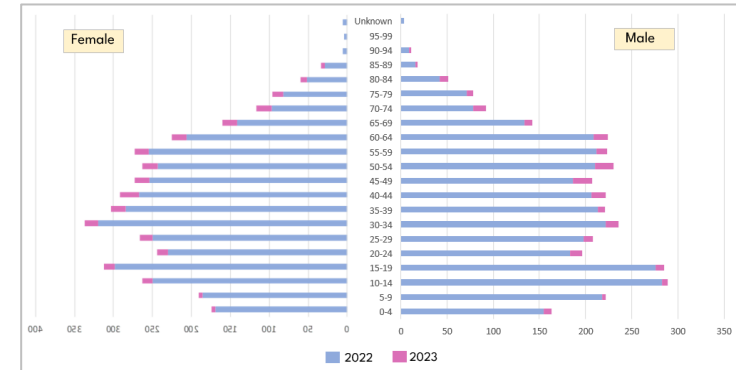
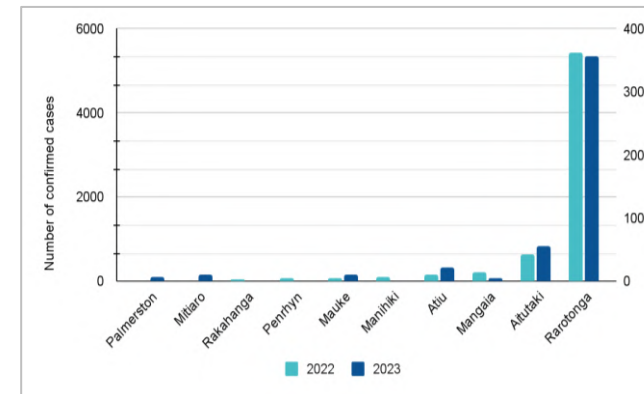


Figure 59: COVID-19 confirmed cases by Islands and year, Cook Islands 2022-2023



31. Non-Communicable Diseases (NCDs)

Definitions:

NCD (Non-Communicable Disease): Diseases that are not transmissible directly from one person to another, often chronic in nature and influenced by lifestyle factors, such as cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases.

Prevalence: The proportion of individuals in a population who have a specific disease or condition at a particular point in time.

Incidence: The number of new cases of a disease or condition that develop in a population over a specified period.

Formulas:

$$\text{Incidence rate (\%)} = \frac{\text{Number of new cases}}{\text{Population at risk}} \times 1,000$$

Methodological/ System Issues:

- Source of population data is the Statistics Office (MFEM)
- Incidence rate calculated per 1,000 population
- Cardiovascular diseases includes hypertension, stroke, renal failure, heart failure, heart diseases, myocardial infarction
- Chronic respiratory diseases includes chronic bronchitis, asthma, emphysema, bronchiectasis

Table 20.1: Incidence and prevalence of NCDs in the Cook Islands 2009-2023

Year	Resident Population Estimate	Total Number with NCD	Incidence	Incidence rate (%)	Prevalence	Cardiovascular diseases (CVD)	Incidence	Incidence rate (%)	Prevalence
before 2009						1,543			
2009	13,300	2,634				1,402			
2010	11,900	2,923	289	24	246	1,571	169	14	132
2011	14,700	3,226	303	21	219	1,730	159	11	118
2012	14,300	3,578	352	25	250	1,944	214	15	136
2013	14,100	3,895	317	22	276	2,140	196	14	152
2014	13,600	4,032	137	10	296	2,310	170	13	170
2015	13,000	4,312	280	22	332	2,475	165	13	190
2016	11,500	4,600	288	25	400	2,646	171	15	230
2017	11,500	4,879	279	24	424	2,743	97	8	239
2018	10,649	5,000	121	11	470	2,953	210	20	277
2019	10,649	5,216	216	20	490	3,305	352	33	310
2020	10,649	5,498	282	26	516	3,803	498	47	357
2021	17,200	5,504	225	13	529	3,897	94	5	362
2022	15,600	5,488	315	20	549	3,965	68	4	367
2023	14,800	5,809	532	36	585	4,230	265	18	385

Diabetes	Incidence	Incidence rate (%)	Prevalence	Cancer	Incidence	Incidence rate (%)	Prevalence	Chronic respiratory diseases (COPD)	Incidence	Incidence rate (%)	Prevalence
681				148				600			
658				145				590			
740	82	7	62	171	26	2	14	640	50	4	54
831	91	6	57	200	29	2	14	709	69	5	48
927	96	7	65	228	28	2	16	767	58	4	54
1,030	103	7	73	245	17	1	17	815	48	3	58
1,140	110	8	84	264	19	1	19	879	64	5	65
1,267	127	10	97	282	18	1	22	925	46	4	71
1,413	146	13	123	313	31	3	27	981	56	5	85
1,473	60	5	128	338	25	2	29	1,000	19	2	87
1,596	123	12	150	361	23	2	34	1,050	50	5	99
1,679	83	8	158	396	35	3	37	1,075	25	2	101
1,711	32	3	161	407	11	1	38	1,091	16	2	102
1,799	88	5	166	434	27	2	40	1,113	22	1	103
1,866	67	4	170	485	51	3	43	1,141	28	2	105
2,004	138	9	180	539	54	4	46	1,210	69	5	110

Figure 60: NCD cases by year, Cook Islands 2021-2023

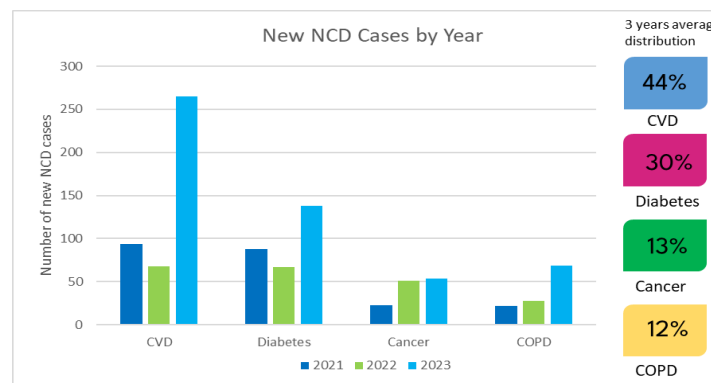
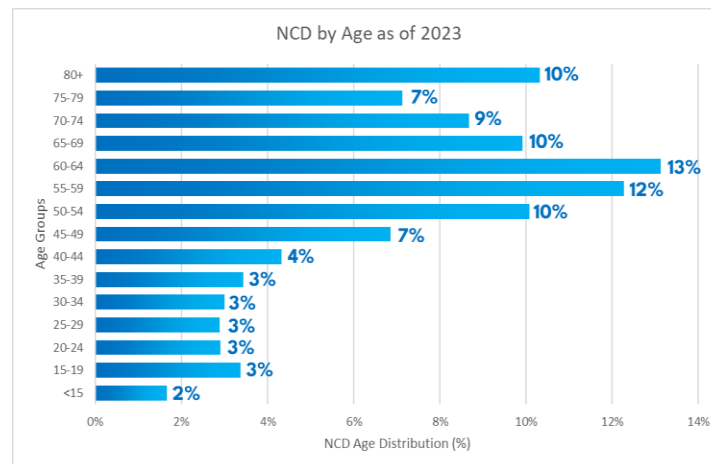


Figure 61: Number of people with NCD by age group, Cook Islands: As of 2023



32. Cancer

Definitions:

Cancer: Cancer refers to a group of diseases characterized by the uncontrolled growth and spread of abnormal cells. These cells can invade and destroy normal tissues and organs, potentially spreading to other parts of the body (metastasis).

Methodological/ System Issues:

- Data is sourced from Cook Islands Cancer Register
- Sites and tumours are also referred as cases for this section

Table 21.1: Incidence of cancer cases by site, sex and age groupings, Cook Islands 2021

ICD 10 CODE	SITE	MALE					Total	% Distribution		
		0-14	15-29	30-44	45-59	60-75			75+	
C00-C80	ALL SITES			1			4	13	100.0%	
C15-C26	Malignant neoplasm of lip, oral cavity, and pharynx						8	1	7.7%	
C44	Other malignant neoplasms of skin					6	4	10	76.9%	
C60-C63	Malignant neoplasms of male genital organs			1			1	2	15.4%	
		FEMALE								
C00-C80	ALL SITES			2		2	6	4	14	100.0%
C44	Other malignant neoplasms of skin					2	2	1	3	21.4%
C50	Malignant neoplasm of breast					1	3	3	7	50.0%
C51-C58	Malignant neoplasms of female genital organs			2		1	1	4	28.6%	

Table 21.2: Incidence of cancer cases by site, sex and age groupings, Cook Islands 2022

ICD 10 CODE	SITE	MALE					Total	% Distribution	
		0-14	15-29	30-44	45-59	60-75			75+
C00-C80	ALL SITES				3	9	5	17	100.0%
C15-C26	Malignant neoplasms of digestive organs						2	2	11.8%
C30-C39	Malignant neoplasms of respiratory and intrathoracic organs					1	1	1	5.9%
C44	Other malignant neoplasms of skin			2	5	3	10	58.8%	
C60-C63	Malignant neoplasms of male genital organs			1	1	2	4	23.5%	
		FEMALE							
C00-C80	ALL SITES			2	10	15	7	34	100.0%
C15-C26	Malignant neoplasms of digestive organs					1	1	1	2.9%
C30-C39	Malignant neoplasms of respiratory and intrathoracic organs				2	1	3	8.8%	
C40-C41	Malignant neoplasms of bone and articular cartilage					1	1	1	2.9%
C44	Other malignant neoplasms of skin			3	1	3	7	20.6%	
C50	Malignant neoplasm of breast				7	9	1	17	50.0%
C51-C58	Malignant neoplasms of female genital organs			2		1	1	4	11.8%
C76-C80	Malignant neoplasms of ill-defined, other secondary, and unspecified sites						1	1	2.9%

Table 21.3: Incidence of cancer cases by site, sex and age groupings, Cook Islands 2023

ICD 10 CODE	SITE	MALE					Total	% Distribution	
		0-14	15-29	30-44	45-59	60-75			75+
C00-C80	ALL SITES				1	17	8	26	100.0%
C00-C14	Malignant neoplasms of lip, oral cavity, and pharynx					2	1	3	11.5%
C15-C26	Malignant neoplasms of digestive organs					1	1	2	7.7%
C30-C39	Malignant neoplasms of respiratory and intrathoracic organs				2	1	3	11.5%	
C42	Malignant neoplasms of blood, bone marrow, and reticuloendothelial system					1	1	2	7.7%
C44	Other malignant neoplasms of skin			1	9	5	15	57.7%	
C60-C63	Malignant neoplasms of male genital organs					1	1	2	7.7%
C73-C75	Malignant neoplasms of thyroid and other endocrine glands					1	1	2	7.7%
C84	Malignant neoplasms of urinary tract					1	1	2	7.7%
		FEMALE							
C00-C80	ALL SITES			5		6	15	31	100.0%
C00-C14	Malignant neoplasms of lip, oral cavity, and pharynx				1		1	2	6.5%
C15-C26	Malignant neoplasms of digestive organs			1		2	1	4	12.9%
C44	Other malignant neoplasms of skin				1		11	12	38.7%
C50	Malignant neoplasm of breast				1	2	1	4	12.9%
C51-C58	Malignant neoplasms of female genital organs			3		3	2	9	29.0%
C76-C80	Malignant neoplasms of ill-defined, other secondary, and unspecified sites						1	1	3.2%

Figure 62: Top 5 cancer cases per 1,000 population, Cook Islands: As of December 2023

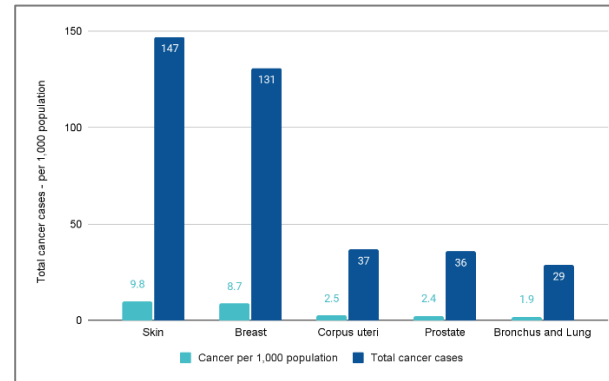


Figure 63: Cancer incidence rate vs cancer mortality rates per 1,000 population, Cook Islands 2016-2023

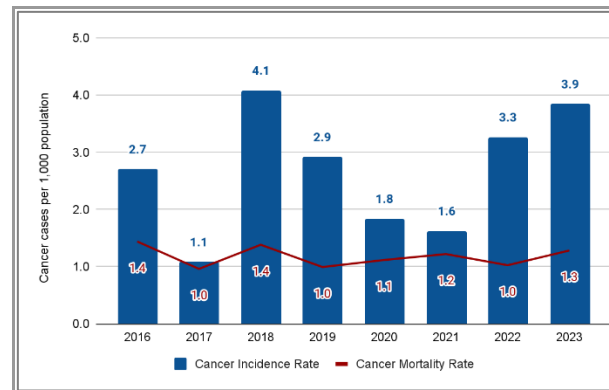
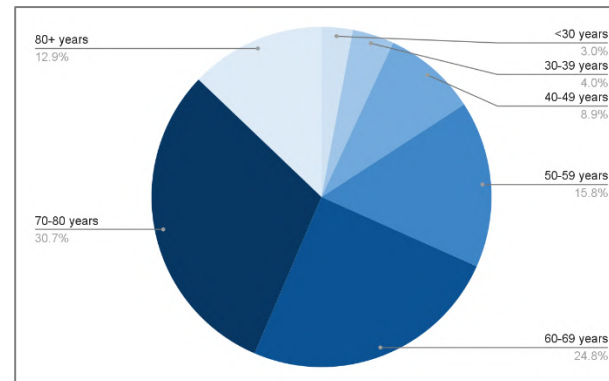


Figure 64: Cancer cases (%) by age groups, Cook Islands: As of December 2023



33. Life Tables

Definitions:

Life tables: A tabular display of life expectancy and the probability of dying at each age for a given population, according to the age-specific death rates prevailing at that time. The life table gives an organized, complete picture of a population's mortality.

Life expectancy: is an estimate of the average number of years a person can expect to live, based on age-specific death rates in a given year.

Life expectancy at birth: is an estimate measure for the average number of years a person may live up to.

Abridge life table: is used for our Cook Islands calculation of the life table due to insufficient data to do an analysis by single year age groups that are based on assumptions that death rates are similar at neighboring ages.

Methodological/ System Issues:

- The population size for the Cook Islands was too small to allow the calculation of complete life tables with accuracy. Instead an abridged life table is used with ages grouped into 5 year age categories.
- The Chiang method was used to measure the confidence intervals for our life expectancy, which is the most appropriate for small populations, which may have some missing information in the life table.
- 5 years mortality data were used for the calculation of these life tables to avoid year to year stochastic variation that is common in small populations.
- Aggregation of data from individual years makes comparison between periods statistically meaningful.
- Resident population from the Census of Population and Dwellings 2021 was used for population data
- Standard methods of calculation were used for indicators reported.
- There is a higher mortality rate among younger individuals compared to older generations, potentially due to illnesses

prevalent in younger age groups or higher incidences of accidental deaths among young people.

- One major factor contributing to an accuracy gap in life expectancy calculations is deaths occurring overseas that are not reported back into the system.

Life table for Females: 2023

Age Group				Reported Resident Population		Mortality Rate	Probability of Dying	Probability of Surviving	Life table Parameters Radix	Deaths	Years Lived		Life Expectancy	Confidence Interval		
Age	x	nx	ax	pop (Nx)	death	mx	qx	px	lx	dx	Lx	Tx	ex	L 95% CI	U 95% CI	
<5		0	5	0.2	541	2.2	0.00407	0.02001	0.97999	100000	2001	491997	7931994	79.32	75.96	82.67
5-9		5	5	0.5	600	0	0.00000	0.00000	1.00000	97999	0	489996	7439997	75.92	73.24	78.60
10-14		10	5	0.5	672	0	0.00000	0.00000	1.00000	97999	0	489996	6950000	70.92	68.24	73.60
15-19		15	5	0.5	582	0.4	0.00069	0.00343	0.99657	97999	336	489156	6460004	65.92	63.24	68.60
20-24		20	5	0.5	433	0	0.00000	0.00000	1.00000	97663	0	488315	5970848	61.14	58.54	63.74
25-29		25	5	0.5	487	0.4	0.00082	0.00410	0.99590	97663	400	487315	5482533	56.14	53.54	58.74
30-34		30	5	0.5	482	0.4	0.00083	0.00414	0.99586	97263	403	485307	4995218	51.36	48.84	53.88
35-39		35	5	0.5	493	0.2	0.00041	0.00203	0.99797	96860	196	483810	4509911	46.56	44.11	49.01
40-44		40	5	0.5	484	1	0.00207	0.01028	0.98972	96664	993	480835	4026101	41.65	39.23	44.07
45-49		45	5	0.5	518	1.2	0.00232	0.01152	0.98848	95670	1102	475597	3545266	37.06	34.74	39.37
50-54		50	5	0.5	514	1.8	0.00350	0.01736	0.98264	94569	1641	468739	3069668	32.46	30.24	34.68
55-59		55	5	0.5	511	3	0.00587	0.02893	0.97107	92927	2688	457915	2600929	27.99	25.86	30.11
60-64		60	5	0.5	396	4.8	0.01212	0.05882	0.94118	90239	5308	437923	2143015	23.75	21.74	25.76
65-69		65	5	0.5	305	3.6	0.01180	0.05732	0.94268	84931	4869	412481	1705091	20.08	18.33	21.82
70-74		70	5	0.5	217	5.6	0.02581	0.12121	0.87879	80062	9704	376049	1292610	16.15	14.68	17.61
75+		75	26	0.5	383	29.4	0.07676	1.00000	0.00000	70357	70357	916562	916562	13.03		

Life table for Males: 2023

Age Group				Reported Resident Population		Mortality Rate	Probability of Dying	Probability of Surviving	Life table Parameters Radix	Deaths	Years Lived		Life Expectancy	Confidence Interval		
Age	x	nx	ax	pop (Nx)	death	mx	qx	px	lx	dx	Lx	Tx	ex	L 95% CI	U 95% CI	
<5		0	5	0.2	572	2.6	0.00455	0.02232	0.97768	100000	2232	491071	7235756	72.36	68.69	76.03
5-9		5	5	0.5	664	0.2	0.00030	0.00150	0.99850	97768	147	488471	6744684	68.99	65.81	72.16
10-14		10	5	0.5	719	0.2	0.00028	0.00139	0.99861	97621	136	487764	6256213	64.09	60.94	67.24
15-19		15	5	0.5	579	0.4	0.00069	0.00345	0.99655	97485	336	486585	5768448	59.17	56.04	62.30
20-24		20	5	0.5	397	1.2	0.00302	0.01500	0.98500	97149	1457	482101	5281864	54.37	51.29	57.45
25-29		25	5	0.5	388	1.4	0.00361	0.01788	0.98212	95692	1711	474181	4799762	50.16	47.37	52.95
30-34		30	5	0.5	449	0.2	0.00045	0.00222	0.99778	93981	209	469381	4325581	46.03	43.59	48.47
35-39		35	5	0.5	451	0.4	0.00089	0.00442	0.99558	93772	415	467821	3856201	41.12	38.72	43.53
40-44		40	5	0.5	427	1.6	0.00375	0.01856	0.98144	93357	1733	462451	3388380	36.29	33.94	38.65
45-49		45	5	0.5	455	2	0.00440	0.02174	0.97826	91624	1992	453140	2925928	31.93	29.75	34.12
50-54		50	5	0.5	525	3	0.00571	0.02817	0.97183	89632	2525	441848	2472789	27.59	25.55	29.62
55-59		55	5	0.5	518	4.2	0.00811	0.03974	0.96026	87107	3461	426883	2030940	23.32	21.39	25.24
60-64		60	5	0.5	430	6.4	0.01488	0.07175	0.92825	83646	6002	403226	1604058	19.18	17.36	20.99
65-69		65	5	0.5	287	8.6	0.02997	0.13938	0.86062	77644	10822	361166	1200831	15.47	13.81	17.13
70-74		70	5	0.5	231	7.8	0.03377	0.15569	0.84431	66822	10403	308102	839665	12.57	11.37	13.76
75+		75	19	0.5	277	29.4	0.10614	1.00000	0.00000	56419	56419	531563	531563	9.42		

Life table for Females: 2022

Age Group				Reported Resident Population		Mortality Rate	Probability of Dying	Probability of Surviving	Life table Parameters Radix	Deaths	Years Lived		Life Expectancy	Confidence Interval	
Age	x	nx	ax	pop (Nx)	death	mx	qx	px	lx	dx	Lx	Tx	ex	L 95% CI	U 95% CI
<5	0	5	0.2	541	1.2	0.00222	0.01099	0.98901	100000	1099	495603	7952872	79.53	76.41	82.65
5-9	5	5	0.5	600	0	0.00000	0.00000	1.00000	98901	0	494503	7457269	75.40	72.67	78.13
10-14	10	5	0.5	672	0.2	0.00030	0.00149	0.99851	98901	147	494136	6962766	70.40	67.67	73.13
15-19	15	5	0.5	582	0.4	0.00069	0.00343	0.99657	98754	339	492921	6468630	65.50	62.80	68.20
20-24	20	5	0.5	433	0	0.00000	0.00000	1.00000	98415	0	492074	5975709	60.72	58.09	63.34
25-29	25	5	0.5	487	0.2	0.00041	0.00205	0.99795	98415	202	491570	5483634	55.72	53.09	58.34
30-34	30	5	0.5	482	0.4	0.00083	0.00414	0.99586	98213	407	490048	4992065	50.83	48.24	53.42
35-39	35	5	0.5	493	0	0.00000	0.00000	1.00000	97806	0	489031	4502017	46.03	43.51	48.55
40-44	40	5	0.5	484	1	0.00207	0.01028	0.98972	97806	1005	486518	4012985	41.03	38.51	43.55
45-49	45	5	0.5	518	1.6	0.00309	0.01533	0.98467	96801	1484	480297	3526467	36.43	34.01	38.85
50-54	50	5	0.5	514	2.4	0.00467	0.02308	0.97692	95318	2200	471089	3046170	31.96	29.64	34.28
55-59	55	5	0.5	511	3.4	0.00665	0.03272	0.96728	93118	3047	457972	2575081	27.65	25.46	29.85
60-64	60	5	0.5	396	5.2	0.01313	0.06357	0.93643	90071	5726	436039	2117110	23.50	21.43	25.58
65-69	65	5	0.5	305	4	0.01311	0.06349	0.93651	84345	5355	408337	1681070	19.93	18.11	21.75
70-74	70	5	0.5	217	6.2	0.02857	0.13333	0.86667	78990	10532	368619	1272734	16.11	14.58	17.65
75+	75	26	0.5	383	29	0.07572	1.00000	0.00000	68458	68458	904115	904115	13.21		

Life table for Males: 2022

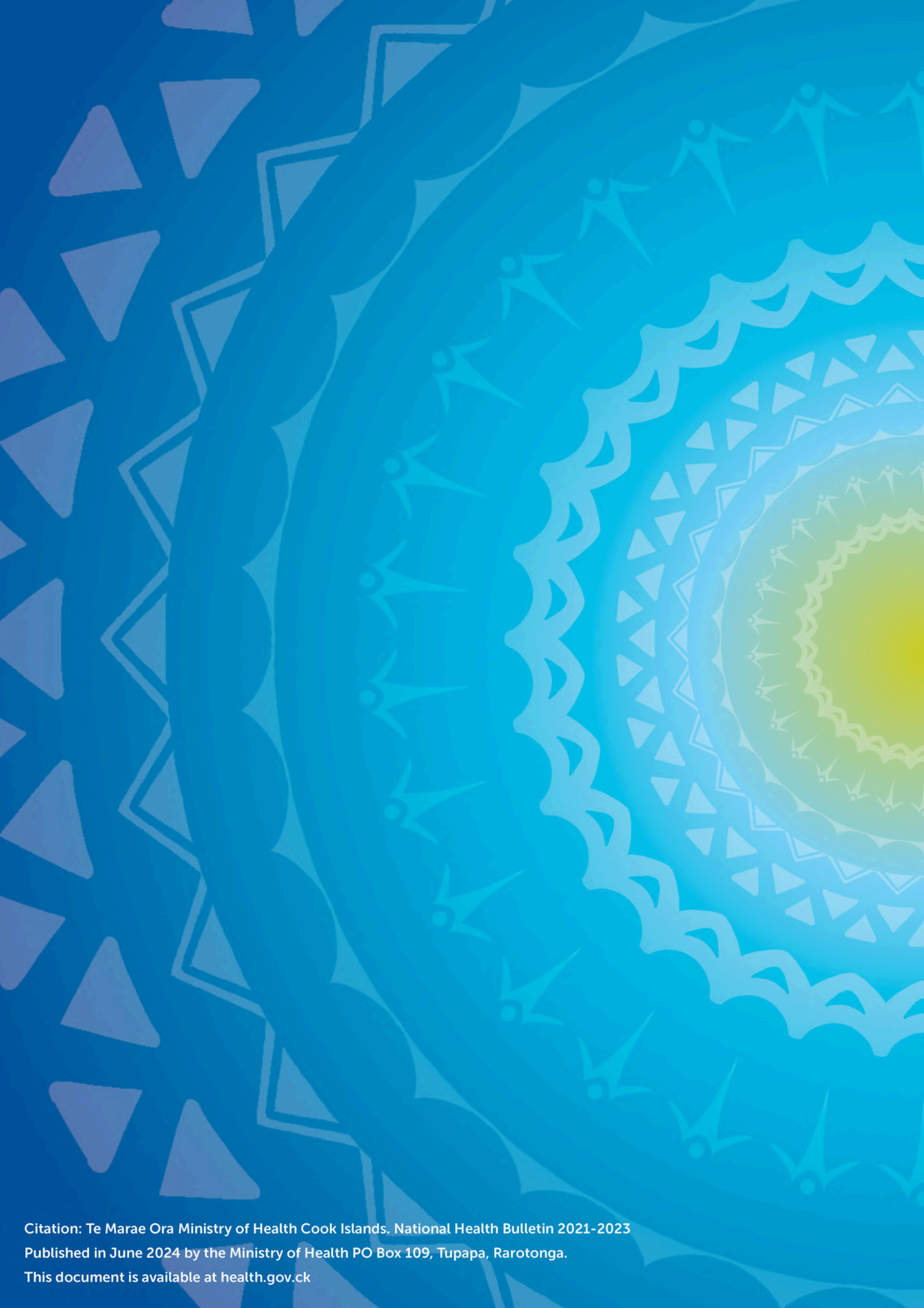
Age Group				Reported Resident Population		Mortality Rate	Probability of Dying	Probability of Surviving	Life table Parameters Radix	Deaths	Years Lived		Life Expectancy	Confidence Interval	
Age	x	nx	ax	pop (Nx)	death	mx	qx	px	lx	dx	Lx	Tx	ex	L 95% CI	U 95% CI
<5	0	5	0.2	572	2.6	0.00455	0.02232	0.97768	100000	2232	491071	7263143	72.63	68.93	76.34
5-9	5	5	0.5	664	0.2	0.00030	0.00150	0.99850	97768	147	488471	6772072	69.27	66.05	72.48
10-14	10	5	0.5	719	0.4	0.00056	0.00278	0.99722	97621	271	487426	6283601	64.37	61.18	67.55
15-19	15	5	0.5	579	0.4	0.00069	0.00345	0.99655	97350	336	485909	5796175	59.54	56.39	62.69
20-24	20	5	0.5	397	1	0.00252	0.01252	0.98748	97014	1214	482034	5310266	54.74	51.64	57.84
25-29	25	5	0.5	388	1.4	0.00361	0.01788	0.98212	95800	1713	474716	4828232	50.40	47.54	53.26
30-34	30	5	0.5	449	0.6	0.00134	0.00666	0.99334	94087	627	468868	4353516	46.27	43.75	48.79
35-39	35	5	0.5	451	0.6	0.00133	0.00663	0.99337	93460	620	465752	3884649	41.56	39.14	43.99
40-44	40	5	0.5	427	1.4	0.00328	0.01626	0.98374	92841	1510	460429	3418897	36.83	34.48	39.17
45-49	45	5	0.5	455	1.8	0.00396	0.01959	0.98041	91331	1789	452183	2958467	32.39	30.20	34.58
50-54	50	5	0.5	525	2.6	0.00495	0.02446	0.97554	89542	2190	442235	2506285	27.99	25.94	30.04
55-59	55	5	0.5	518	3.6	0.00695	0.03416	0.96584	87352	2984	429301	2064049	23.63	21.68	25.58
60-64	60	5	0.5	430	6.2	0.01442	0.06958	0.93042	84368	5871	407165	1634748	19.38	17.52	21.24
65-69	65	5	0.5	287	9.4	0.03275	0.15137	0.84863	78498	11882	362783	1227582	15.64	13.92	17.35
70-74	70	5	0.5	231	7.2	0.03117	0.14458	0.85542	66616	9631	309000	864799	12.98	11.79	14.18
75+	75	20	0.5	277	28.4	0.10253	1.00000	0.00000	56984	56984	555799	555799	9.75		

Life table for Females: 2021

Age Group				Reported Resident Population		Mortality Rate	Probability of Dying	Probability of Surviving	Life table Parameters Radix	Deaths	Years Lived		Life Expectancy	Confidence Interval	
Age	x	nx	ax	pop (Nx)	death	mx	qx	px	lx	dx	Lx	Tx	ex	L 95% CI	U 95% CI
<5	0	5	0.2	541	1.4	0.00259	0.01281	0.98719	100000	1281	494877	8018282	80.2	76.84	83.53
5-9	5	5	0.5	600	0	0.00000	0.00000	1.00000	98719	0	493597	7523404	76.2	73.28	79.14
10-14	10	5	0.5	672	0.2	0.00030	0.00149	0.99851	98719	147	493230	7029807	71.2	68.28	74.14
15-19	15	5	0.5	582	0.4	0.00069	0.00343	0.99657	98573	338	492017	6536578	66.3	63.42	69.21
20-24	20	5	0.5	433	0	0.00000	0.00000	1.00000	98234	0	491172	6044560	61.5	58.71	64.36
25-29	25	5	0.5	487	0.2	0.00041	0.00205	0.99795	98234	202	490668	5553388	56.5	53.71	59.36
30-34	30	5	0.5	482	0.4	0.00083	0.00414	0.99586	98033	406	489150	5062720	51.6	48.86	54.43
35-39	35	5	0.5	493	0.2	0.00041	0.00203	0.99797	97627	198	487640	4573570	46.8	44.12	49.57
40-44	40	5	0.5	484	1.2	0.00248	0.01232	0.98768	97429	1200	484145	4085930	41.9	39.23	44.64
45-49	45	5	0.5	518	1.6	0.00309	0.01533	0.98467	96229	1475	477457	3601785	37.4	34.84	40.02
50-54	50	5	0.5	514	3	0.00584	0.02876	0.97124	94754	2725	466956	3124328	33.0	30.48	35.46
55-59	55	5	0.5	511	3	0.00587	0.02893	0.97107	92029	2662	453487	2657372	28.9	26.53	31.22
60-64	60	5	0.5	396	5.4	0.01364	0.06593	0.93407	89366	5892	432100	2203885	24.7	22.42	26.90
65-69	65	5	0.5	305	3.6	0.01180	0.05732	0.94268	83474	4785	405407	1771784	21.2	19.26	23.20
70-74	70	5	0.5	217	6.4	0.02949	0.13734	0.86266	78689	10807	366426	1366377	17.4	15.66	19.07
75+	75	29	0.5	383	26	0.06789	1.00000	0.00000	67882	67882	999951	999951	14.7		

Life table for Males: 2021

Age Group				Reported Resident Population		Mortality Rate	Probability of Dying	Probability of Surviving	Life table Parameters Radix	Deaths	Years Lived		Life Expectancy	Confidence Interval	
Age	x	nx	ax	pop (Nx)	death	mx	qx	px	lx	dx	Lx	Tx	ex	L 95% CI	U 95% CI
<5	0	5	0.2	572	1.8	0.00315	0.01554	0.98446	100000	1554	493785	7283773	72.84	69.19	76.49
5-9	5	5	0.5	664	0.2	0.00030	0.00150	0.99850	98446	148	491860	6789989	68.97	65.66	72.28
10-14	10	5	0.5	719	0.4	0.00056	0.00278	0.99722	98298	273	490807	6298128	64.07	60.78	67.36
15-19	15	5	0.5	579	0.8	0.00138	0.00688	0.99312	98025	675	488437	5807321	59.24	55.99	62.50
20-24	20	5	0.5	397	1	0.00252	0.01252	0.98748	97350	1218	483704	5318884	54.64	51.48	57.80
25-29	25	5	0.5	388	1.6	0.00412	0.02041	0.97959	96132	1962	475754	4835179	50.30	47.37	53.22
30-34	30	5	0.5	449	0.6	0.00134	0.00666	0.99334	94170	627	469281	4359426	46.29	43.75	48.84
35-39	35	5	0.5	451	0.6	0.00133	0.00663	0.99337	93543	620	466163	3890145	41.59	39.14	44.04
40-44	40	5	0.5	427	1.6	0.00375	0.01856	0.98144	92923	1725	460301	3423982	36.85	34.47	39.22
45-49	45	5	0.5	455	2.2	0.00484	0.02389	0.97611	91198	2178	450543	2963681	32.50	30.30	34.69
50-54	50	5	0.5	525	2.2	0.00419	0.02074	0.97926	89019	1846	440482	2513138	28.23	26.21	30.26
55-59	55	5	0.5	518	3.6	0.00695	0.03416	0.96584	87173	2977	428424	2072656	23.78	21.84	25.71
60-64	60	5	0.5	430	6.4	0.01488	0.07175	0.92825	84196	6041	405878	1644233	19.53	17.69	21.37
65-69	65	5	0.5	287	8.8	0.03066	0.14239	0.85761	78155	11129	362953	1238355	15.84	14.17	17.52
70-74	70	5	0.5	231	6.6	0.02857	0.13333	0.86667	67026	8937	312789	875402	13.06	11.91	14.21
75+	75	19	0.5	277	28.6	0.10325	1.00000	0.00000	58089	58089	562614	562614	9.69		



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