REPUBLIC OF NAURU

NATIONAL REPORT

ON

POPULATION AND HOUSING

Contents

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SUMMARY OF MAIN INDICATORS

Indicator	Total	Males	Females
Total population	**10,084**	5,105	4,979
Average annual population increase, 2006-2011 (in numbers)	**170**	79	91
Average annual population growth rate, 2006-2011 (%)	**1.8**	1.6	1.9
Population density (number of people per sqkm)	**478**		
Population structure			
Number of children (<15 years)	**3,813**	1,984	1,829
Youth population (15-24 years)	**1,948**	993	955
Population aged 25-59 years	**4,035**	2,005	2,030
Older population (60 years and older)	**287**	122	165
Median age (in years)	**21.5**	20.9	22.1
Dependency ratio (15-59)	**69**		
Sex ratio	**103**		
Households			
Number of private households - headed by males/females	**1,647**	1,083	564
Number of people in private households	**9,945**	5,031	4,914
Average household size (number of people per household)	**6.0**	3.1	3.0
Number of institutions - males/females in institutions	**5**	74	65
with wages/salaries as a main source of household income (%)	**85**		
receiving remittances (%)	**1**		
with improved drinking water sources (%)	**97**		
with improved sanitation facilities (%)	**98**		
connected to electricity grid (%)	**99**		
with radio (%)	**39**		
with (mobile) phone (%)	**89**		
with Internet connection (%)	**28**		

SUMMARY OF MAIN INDICATORS (continued)

Indicator	Total	Males	Females
Marriage			
Mean age at first marriage (SMAM)		24.4	22.6
Proportion married at age 15-19 years (%)		3.6	13.4
Labour force (population 15 years and older)	**3,954**	2,425	1,529
Employed population	**2,883**	1,790	1,093
Subsistence workers	**99**	82	17
Unpaid workers	**64**	35	29
Unemployed	**908**	518	390
Labour force participation rate (%)	**64.0**	78.9	49.3
Employment–population ratio (%)	**46.7**	58.2	35.2
Unemployment rate (%)	**23.0**	21.4	25.5
Number of people with a severe disability	**78**	44	34
Education			
School enrolment rates of 7–12 year-olds (%)	**97.3**	96.9	97.7
School enrolment rates of 13–18 year-olds (%)	**68.1**	64.9	71.8
Proportion of population aged 15 years and older with (%):			
primary education	**4.0**	4.8	3.1
secondary education	**91.2**	89.7	92.6
tertiary education	**4.9**	5.5	4.3
Adult literacy rate, population 15 years and older (%)	**96.5**	95.7	97.2
Youth literacy rate, population aged 15-24 years (%)	**95.6**	94.4	96.8
Language ability, population 5 years and older (%)			
Nauruan	**95.3**	94.6	96.1
English	**66.0**	65.1	66.8
Other language	**11.9**	12.1	11.7

SUMMARY OF MAIN INDICATORS (continued)

Indicator	Total	Males	Females
Fertility			
Total Fertility Rate (TFR), 2009-2011	**4.3**	2.2	2.1
Teenage Fertility Rate (per 1000), 2009-2011			81
Children Ever Born, CEB (45-49)	**4.0**	2.0	2.0
General Fertility Rate (GFR)			105
Child-Woman Ratio (CWR)			611
Mean age at childbearing (in years)		29.6	27.8
Average annual number of births, 2007-2011	**351**	181	170
Crude Birth Rate (CBR), 2007-2011	**36.3**	36.8	35.9
Sex ratio at birth	**106**		
Mortality			
Proportion of live-born children still alive (%)	**95.5**	94.5	96.5
Proportion of population 60 years and older widowed (%)	**37.1**	21.7	48.7
Proportion of population orphaned (%)			
Father dead	**65.2**		
Mother dead	**75.3**		
Infant mortality rate (IMR), (per 1000)			
Average for period 2002-2006	**43**	51	34
Average for period 2007-2011	**33**	39	27
Child mortality (per 1000)			
Average for period 2002-2006	**5**	2	8
Average for period 2007-2011	**4**	4	3
Under-five mortality (per 1000)			
Average for period 2002-2006	**48**	53	42
Average for period 2007-2011	**37**	44	30
Life expectancy at birth (e0), in years, 2007-2011	**60.4**	57.5	63.2
Average annual number of deaths, 2007-2011	**72**	42	30
Crude death rate (CDR), 2007-2011	**7.5**	8.6	6.3
Natural growth			
Average annual number	**279**	138	141
Natural growth rate (%)	**2.9**	2.8	3.0
International migration			
Period 2002-2006			
Total number of migrants	**-1,389**	-707	-682
Average annual number of migrants	**-339**	-172	-166
Migration rate (%)	**-3.5**	-3.5	-3.5
Period 2006-2011			
Total number of migrants	**-543**	-296	-246
Average annual number of migrants	**-109**	-59	-49
Migration rate (%)	**-1.1**	-1.2	-1.0

EXECUTIVE SUMMARY

The aim of this section is to provide an overview of the main findings of the 2011 Nauru census data and to show trends where possible.

A young and fast growing population

Based on the 2011 census, the total population at the time of the census was **10,084** (5,105 males and 4,979 females). This compares with 9,233 people in 2006 – an increase of 9% or 851 people. This population increase represents an average annual growth rate of 1.8% which is equivalent to 170 people per year for the period 2006-2011.

However, currently the population growth is much higher than 1.8% as Nauru's fertility is increasing, and should be around 2.9% which translates into an annual increase of about 300 people per year. With this current high level of growth, the population will double its current size, and will reach 20,000 people in the year 2038.

Fertility increasing due to recovery of economic life

The total fertility rate (TFR) increased from 3.4 births per woman in 2004 to **4.3 in 2010;** TFR is defined as the estimated number of births a woman will experience over the course of her reproductive life.

Following the relatively low fertility levels during the economic crisis for the period 2002-2004, when the TFR was only 3.4, it increased sharply thereafter coinciding with the recovering of Nauru's economy.

There were on average 350 births per year during the period 2007-2011. This accounts for a **crude birth rate (CBR) of 36** births per 1000 population — CBR is the estimated number of births divided by the total population.

Teenage fertility rates very high

Unfortunately the teenage fertility levels – the number of births to women aged 15-19 years remains very high, and these young women had 81 children per 1000 women on average. This should be a major concern as childbearing at these young ages is subject to an increased health risk to mother and child.

The **age at marriage** is an important proximate determinant of fertility. Women who marry at an early age often have more children than those marrying later. Women marry at a younger age than men. The average age at marriage was **24.4 and 22.6 years for males and females**, respectively. At age 15-19 years, 13% of females were already married compared to only 4% of males.

Child mortality is improving but still high

Based on the estimated number of births, and reported infant deaths as recorded at Nauru's Civil Registration Office, the **infant mortality rate (IMR)** was **33**; 39 for males and 27 for females during the period 2007-2011. This estimate is lower than for the period 2002-2006 when the IMR was 51 and 34 for males and females – and is thus an improvement in infant mortality rates.

The estimated IMR for Nauru compares to 17 in Fiji, 58 in PNG, and about 5 in Australia and New Zealand.

Male life expectancy is stalling

Based on Nauru's vital statistics, in particular the number of registered deaths by age and sex, **life expectancies at birth for the period 2007-2011** was estimated to be **57.5** and **63.2** years for males and females respectively. This compares to 57.5 years for males and 58.2 years for females for the period 2002-2006. Note that these estimates should be regarded as a high estimate as it is possible that the number of deaths that the calculations are based on could be under reported.

The estimated mortality indicators show more positive mortality indicators for females than for males, with females expected to live on average about 6 years longer than males.

A possible cause for the stagnating male mortality rates could be a **continued high prevalence of life style diseases** caused by unhealthy eating habits, smoking and excessive alcohol consumption, and/or a lack of regular physical exercise etc.

Life expectancies for males and females in the Nauru compare with 78.8 and 82.7 years for males and females in New Zealand, and in Australia it is 79.3 and 83.9 years. Therefore an average person in New Zealand or Australia lives about 20 years longer than a Nauruan.

Crowded households

The census counted 1,647 private households with 9,945 household members, which means that there was an average of **6 people per household**; one-third of all people lived in households with 10 people or more, and **10% lived in households with 15 people or more**.

Proportion of Non-Nauruan population decreasing

While in 2002, one quarter of Nauru's total population were non-Nauruan nationals, it was only 6% in 2011. This development can be attributed to the repatriation of more than 1,000 I-Kiribati and Tuvaluan former phosphate mine workers back to their home countries in 2006.

Disability

Data on disabilities indicate that about **5% of the total population** reported a **disability**, regardless of the severity of the disability. Note that a disability was self reported and the severity of a disability was not measured. The proportion of the population with a disability

increased with age, and the proportion of males (5.5%) with a disability was slightly higher than that of females (4.7%). While only about 2% of people younger than 20 years of age had a disability, it was about 5% for people aged 25-34 years. From age 40, the proportion of the population with a disability increased continuously. About one-quarter of the population aged 60-69 years reported a disability, and almost half of the population 75 years and older.

Of those who reported a severe disabilities, 33 people were recorded as lame, and another 30 people were mute, 24 people were blind, 19 mentally disabled, 15 could not grasp, and 13 were deaf.

Females outlearn males

School enrolment data show that **97%** of children in the age group 7–12 years were enrolled in schools with female school enrollment rates (98%) slightly higher than male enrollment rates (97%). Secondary school enrollment rates show an even more favorable picture for females since 72% of females aged 13-18 years were enrolled in school compared to only 65% of males.

Since 2002 school enrolment rates have increased very significantly in Nauru when primary school enrollment rates of the population 7-12 years were only 76% and secondary school enrollment rates of the population 13-18 only 44%.

Enrolment numbers high but qualifications low

Although school enrolment numbers are high, data on **educational qualifications attained were extremely low.** In 2011, about 73% of the male population 15 years and older had left school without any educational qualification; this was 69% females. Only 21% of males left school with a secondary leaver's certificate, this was 25% of females, and only 5% of males and females had a tertiary qualification.

Regarding **languages spoken, Nauruan** was spoken by 95% of the population 5 years and older, although only 19% of males and 33% of females were able to read and write in Nauruan fluently. **English** was spoken by 66%, and **other languages** by 12% of the population.

Literacy levels high

In terms of **literacy**, measured in terms of people who had attended at least grade 5 of primary school or were currently attending a school, 96% of males and 97% of females were literate.

Unemployment very high

Although a high percentage (64%) of Nauru's population aged 15 and older was **economically active (in the labor force)**, only a relatively small proportion of 47% or 2,883 people received a regular **paid income**; this was 58% of males and 35% of females.

About 908 people were categorized as being unemployed, resulting in a total **unemployment rate of 23%**; 21% for males and 26% for females. The **youth unemployment rate** of the population aged 15-19 years was 70% and for people aged 20-24 years is was 36%**.**

Wages and salary was main household income

The **main source of household income** was with 85% of all households **wages and/or salary,** 7% of households main income came from own business activities, 4% relied mainly on rent of land, and 2% on the sale of fish, crops or handicrafts.

Fisheries activities more widespread than growing crops

In 2011, only 217 (13%) of households maintained a **kitchen garden** and were involved **in growing crops.**

Just over half (51%) of all households in Nauru were engaged in **fishing activities** such as fishing or collecting seafood on the ocean flat, the reef flat, the ocean (deep sea), on the reef, net fishing, or were involved in aquaculture.

Fourteen percent of households were involved in **noddy bird catching**.

Most households owned their living quarters

Eight-two percent of all households in Nauru owned the living quarters they were living in, and a sizeable proportion (6%) of households rented their living quarters from a private landlord. Interestingly 3% of households lived in their dwellings as **squatters**. This was particularly common in Location (12%).

Buildings are very old and in need of repair

More than half of all living quarters in Nauru were **built more than 50 years ago**, and 27% were built 21-50 years ago. Only 1% of dwellings were recently constructed – during the last 2 years before the 2011 census.

More than half (59%) of all roofs, were **in need of repair or replacement**. This was also the case for almost half of all guttering, and a sizeable proportion of downpipes.

Most households rely on a desalination plant for drinking water

More than two-third (68%) of households received their drinking water from a **water dispatcher and/or desalination plant**. An additional 29% used a rain catchment, 2% used bottled water, and another 2% obtained their drinking water from a well.

Almost one-third (30%) of households in Nauru had a **water storage tank** with a capacity of between 3,000-5,000 gallons, one quarter had a capacity of 5,000-10,000 gallons, 16% had a capacity of less than 3,000 gallons, and 14% had a storage of 10,000 gallons or more. **Fifteen percent of all Nauruan households did not have a water storage tank.**

More than 80% of households reported that their **water supply dries up** at least sometimes or even frequently. During **periods of water scarcity**, 72% of households rely on Government seawater supply as source of their water, and 24% used ground water. Overall, 69% of all households used **underground water** for washing, bathing, kitchen use, or for gardening or other outdoor use.

Almost all households in Nauru use improved sanitation facilities

Forty-six percent of all households in Nauru used a private pour flush toilet inside their dwelling as their main toilet facility, and another 33% used a private tank flush toilet inside their dwelling. Fifty households (3%) did not have any **toilet facility**. Overall, 6% of households used a toilet facility outside of their dwelling, and 11% shared a toilet facility with other households. However, more than a quarter (29%) of households in Ijuw had no toilet facility available.

Communication relies on mobile phones

Just over one-quarter of all households was connected to the **Internet**, and only 39% Nauruan households had a **radio** available. Radios are crucial in disaster management for transmitting important information to affected communities

About three-quarter of households owned a **TV**. While 9% of all households in Nauru had a **desktop computer** available, the percentage owning a **laptop** was with 37% considerably higher than that. **Telephones and mobile phones** were widely available in Nauru with 89% of all households owning one or the other.

Transportation based on motor bikes

In total 573 motor cars were counted during the census, 1,066 motor bikes, 98 trucks, vans or mini buses, and 763 bicycles. Twenty-nine percent of households owned at least one **motor car**; but **motor bikes** were much more common than cars, and 46% of households had at least one motor bike available. As can be expected, the percentage of households owning a **truck, van or mini bus** is with 5% very low. Just over one-quarter of all households in Nauru owned at least one **bicycle**.

Nauru's population is expected to increase

According to the medium variant **population projections** prepared for this report, Nauru's population will increase to between 13-15 thousand people in 2030 and will increase to about 15-21 thousand people in 2050, depending on the level of migration. However, should the population continue to grow at its current level without any significant levels of emigration, the population will be **27 thousand people in 2050.**

The population will age, with a decreasing proportion of young people aged 15 and younger, and an increase in people aged 60 and older.

The **working age population** (aged 15–59) will be about 7-9 thousand people in 2030, and could be more than 10 thousand in 2050. This compares to a current size of 6 thousand people.

The **school age population aged 7-18** years will increase from its current level of about 2,450 pupils to almost 4,000 in 2025.

1. INTRODUCTION

1.1 Report: purpose and structure

This report is based on data collected during the population census enumeration: 30 October 2011 was the census day. The main purposes of this report are to:

- provide a general overview of the 2011 census enumerations;
- generate interest, curiosity, and a desire for more detailed information that can be used for specific analysis and the generation of topical census monographs;
- advocate for the use of census data as a key source of statistical information for evidence based policy making; and
- enhance the decision-making process of policy-makers.

This volume focuses on making the enormous wealth of information incorporated in the Basic Tables accessible to user. This is done by providing summaries, figures and commonly used indicators (see Summary of main Indicators), and by making population projections and analyzing trends, especially trends with policy implications.

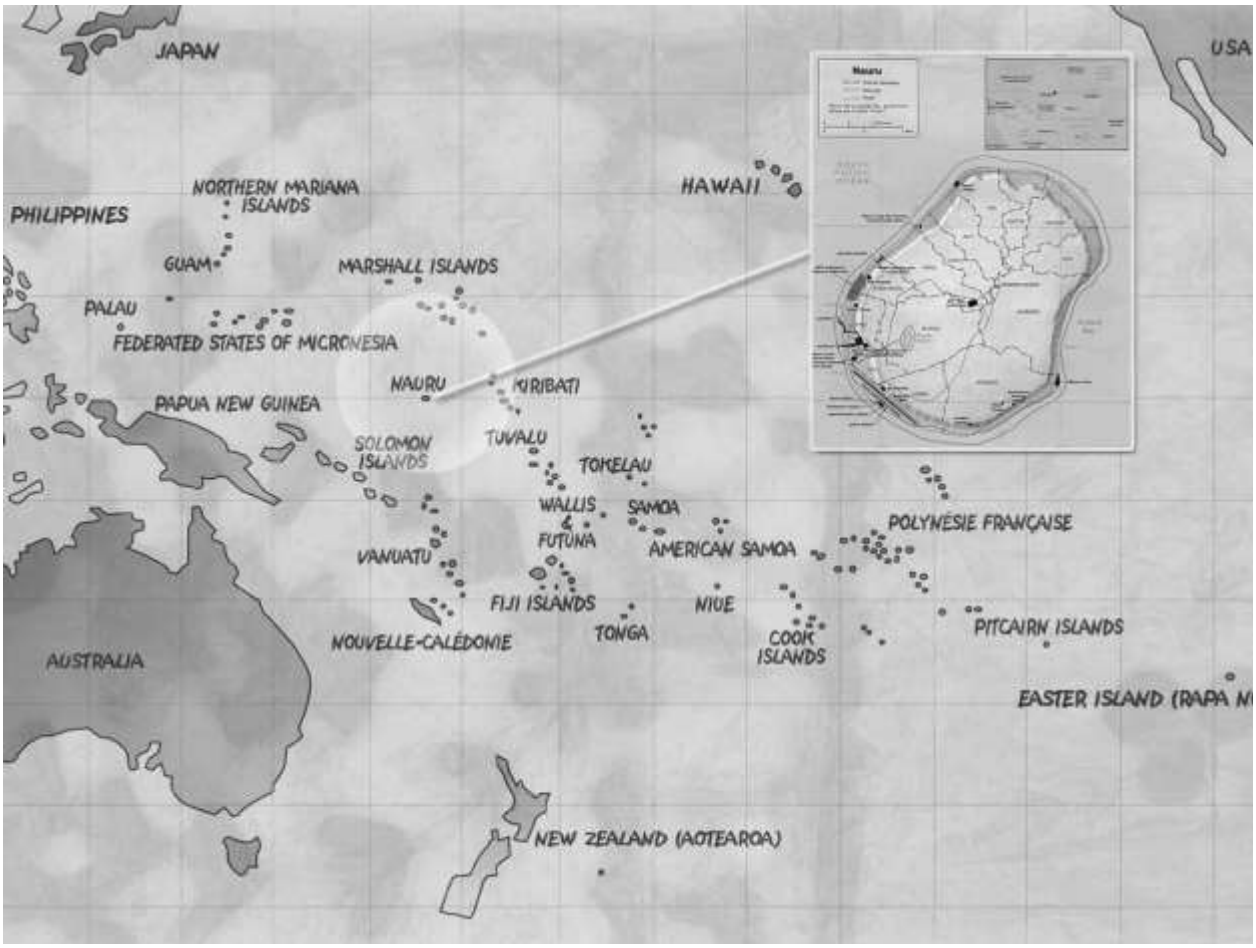
For further information please contact the Nauru Statistics Office.

1.2 Country profile

Nauru is a coral island located in the central Pacific, 60 km south of the equator. It belongs to the region of Micronesia and its nearest neighbour is Banaba (Ocean Island) in the Republic of Kiribati, 330 km to the east. Nauru is bordered to the south-west by the Solomon Islands and to the north and north-west by the Marshall Islands and the Federated States of Micronesia. Its total land area is 21.1 square km. Nauru is 6 km in length (from the north-east to the south-west) and 4 km in width (from the north-west to the south-east), and its circumference measures 19 km.

Nauru's population and environment are largely, if not entirely, affected by its phosphate deposits. The country consists of one main island, divided into 14 small districts of various sizes and varying numbers of inhabitants. Due to phosphate mining, at least three-quarters of the island is deemed uninhabitable and unsuitable for any kind of livelihood. In general, the distribution of the population is linked to the location of businesses and commerce. As such, most people are distributed along the southern part of the island because of its accessibility to shopping centres and employment bodies. The two main employers are situated in the southern parts of Nauru: the Nauru Phosphate Corporation and the public service sector. The Nauru Phosphate Corporation's main office is based in the district of Aiwo, which explains the Location settlement being located in Denigomodu, the neighbouring district of Aiwo.

Map 1: Nauru


JAPAN
USA
PHILIPPINES
NORTHERN MARIANA ISLANDS
HAWAII
GUAM
MARSHALL ISLANDS
PALAU
FEDERATED STATES OF MICRONESIA
NAURU
KIRIBATI
PAPUA NEW GUINEA
SOLOMON ISLANDS
TUVALU
TOKELAU
WALLIS & FUTUNA
SAMOA
POLYNESIE FRANÇAISE
VANUATU
AMERICAN SAMOA
FIJI ISLANDS
NIUE
PITCAIRN ISLANDS
NOUVELLE-CALÉDONIE
TONGA
COOK ISLANDS
AUSTRALIA
EASTER ISLAND (RAPA N
NEW ZEALAND (AOTEAROA)

2. POPULATION PROFILE AND CHANGE

2.1 Introduction

This chapter discusses the basic demographic characteristics of Nauru's population as reported in the 2011 census, and addresses its change over time. In doing so, it focuses on the situation in October 2011 and on the 2002-2006 and 2006-2011 intercensal periods, but extends its time frame when possible.

The present chapter starts with a brief description of the historical demographic development of Nauru as a general background to the present situation. In addition, the chapter focuses on the series of population counts and censuses that recorded population change over time, and describes the general population distribution across the country's districts.

Apart from absolute numbers of people and their geographic distribution, information on age and sex is the most important result of a census. Such information constitutes a basic input element for successful development planning, that often targets specific groups as needs vary with sex or age. Planning in the areas of education, health services, housing, employment or food supply, all depend on reliable details on the age and sex composition of the population. For fertility and mortality analysis, programme impact assessment and population projections, such information is also essential.

2.2 Historical background

Little is known of Nauru prior to European discovery, although tradition teaches that its early history was one of inter-tribal warfare.

Nauru was first sighted in 1789 by Europeans and reported by Captain John Fearn of the whaling ship the Hunter. There was little contact after Fearn's visit until the 1830s when Nauru became an important source for food and water for the ships frequenting the area. Commander T. Beckford Simpson, Master of the Giraffe wrote in his diary in 1843 that 'this island and many others in the Pacific, are infested by Europeans who are either runaway convicts, expirees, or deserters from whalers, and for the most part men of the very worst description…' With them, these early Europeans brought diseases, and the taste for alcohol and firearms. The combination of these factors brought about and fueled the resulting warfare also known as the Ten Years Wars (1878–1888) (Taylor and Thoma 1983).

After this period, Nauru was administered by numerous countries. The Anglo-German Convention divided the western Pacific into spheres of influence; however, in 1888, Germans gunboat Eber landed at Nauru and proclaimed the island a German Territory. During the German annexation, alcohol and firearms were banned and evangelism began.

In 1900, phosphate was discovered and mining began in 1906 under the auspices of the Pacific Phosphate Company. Nauruans, however, played a very small role in mining because workers were imported from China and Nauru's neighboring islands. Later, under the treaty of Versailles in 1914, Nauru's sovereignty

was vested in the British Crown and was afterwards jointly administered by Australia, New Zealand and Great Britain.

In 1920, modernisation of Nauru began in earnest and the subsequent availability of purchasable commodities increased demands on monetary wealth, which was closely linked with phosphate royalties. From the 1920s to 1930s, phosphate mining continued and royalties on mined land slowly increased although expatriates continued to form the core of the labour force.

During the Japanese occupation during World War II, 1,201 Nauruans were sent to Truk (now Chuuk in the Federated States of Micronesia) where they suffered hardship, with over 40 percent dying. It was reported that at the beginning of the war, the Nauruan population was 1,848, but by the end, it was 1,278, which equals a reduction of approximately 30 percent.

In 1947, an agreement was signed by Australia, New Zealand and the United Kingdom under the United Nations trusteeship system. Under the trusteeship, mining and export resumed, continuing for over 20 years until independence in 1968.

Nauru became an independent sovereign nation in 1968, with a President elected by members of parliament. Since independence, the phenomenal profits gained from phosphate mining resulted in a boom period in the economy. The profits were used to run national and local governments, provide social services, and purchase overseas investments in various enterprises, and were invested in the Nauru Phosphate Royalties Trust (NPRT). Profits were also designed to sustain the flow of income after the exhaustion of phosphate. Royalty interests from the sale of phosphate were duly distributed to shareholders on a financial year basis until the late 1990s when the economy collapsed. Although much emphasis was placed on individual incomes from phosphate, in reality, the wealth was not uniformly distributed. Distribution was determined according to ownership and proportions of land. A legacy of the phosphate mining and subsequent abundance of money resulted in a heavy reliance on imported goods. Consumables of any nature were imported, including food, drinks, cigarettes, vehicles and entertainment systems. Unfortunately, this trend continues, despite the economic collapse and gloomy economic and financial forecasts.

The composition of Nauru's population is largely the result of the mining industry. Workers almost a century ago were imported from various parts of the world to work the mines. Early accounts reveal that in 1939, the foreign population was equal to the indigenous population of Nauruans. In 1977, the proportions were 60 percent foreigners and 40 percent indigenous Nauruans. These proportions increased in 1992 to 70 percent foreigners, 30 percent indigenous Nauruans. In 2006, the proportion of foreigners dwindled to only 6 percent as a result of a mass outflow of migrant workers and their families due to the collapse of the phosphate mining industry. The phosphate industry continues to drive Nauru's economy, trade and foreign relations, and will likely continue to have a clear and direct impact on the country's population in the future (SPC 2002).

Historical Calendar

1878 Captain John Fearn of British Whaler "Hunter" discovers Nauru while sailing from New Zealand to China Seas. He did not land but noted it was extremely populous with many houses and named it Pleasant Island.

1881 Anglo-German convention allocates Nauru to German sphere of influence.

1888 Arrival of first German Administrator. Banning of alcohol and confiscation of arms puts an end to inter-tribal warfare.

1899 Arrival of first missionaries and introduction of Christianity and Western style of education.

1900 Albert Ellis discovered Phosphate mineral

1914 November – Australian Expeditionary Forces accepts surrender of German Administration.

1919 Germany renounces claim to Nauru League of Nations Mandate that was granted to Australia, New Zealand and Great Britain and under tri-partite agreement Australia administers Nauru. British Phosphate Commissioners established to run phosphate industry.

1940 Bombardment by German Naval Forces. Japanese subsequently occupy Island and establish garrison.

1942 1,200 Nauruans deported to Truk in Caroline group fewer than 600 Nauruans remaining on Nauru.

1946 700 survivors return from Truk.

1947 December – First elections to advisory Nauru Local Government Council. Start of discussions about economic and political future.

1966 Legislative and Executive Councils established giving large measure of internal self-government.

1967 June – British Phosphate Commissioners agree to sell assets of Phosphate Industry to Nauru at cost of about A$20 million over three year term.

1968 January 31st Trusteeship Agreement terminated and Nauru becomes an Independence Republic.

1970 July 1st - Nauru Phosphate Corporation takes over Phosphate industry.

1977 January 22nd – First Census after Independence.

1982 October - Visit by Her Majesty Queen Elizabeth II

1983 May - Second Census .

1986 The University of South Pacific established an Extension Centre in Nauru.

1988 Government Officers burnt down.

1989 President Bernard Dowiyogo elected to office.

1990 First Gold Medal at the Commonwealth Games by Marcus Stephen.

1991 Nauru Television (NTV) commissioned.

1992 April – Third Census

2001 1st 'Pacific solution'

2002 September – Fourth Census

2006 October - Census Listing Head Count and Household Income and Expenditure Survey

2007 Demographic and Health Survey (DHS)

2011 October – Fifth Census

2012 2nd 'Pacific solution', and Household Income and Expenditure Survey (HIES)

2.3 Population size and trend

In 2011, the total enumerated population of Nauru stood at 10,084. This is an increase of 851 persons compared to the 2006 population (mini) census. Figure 1 shows the population trend from 1921-2011.

The population has continuously increased from 1921 to 1992 and it is now about five times the size it was in 1921.

During the period 2002-2006 the population growth rate was negative with -2.1 percent; the population decreased in size. During this period many I-Kiribati and Tuvaluan nationals who used to work for the phosphate industry left Nauru and returned to their home countries. During the period 2006-2011 the average annual growth rate turned positive and was 1.8% due to Nauru's natural growth (Table 1 and Fig.2).

While the population decreased annually by 203 people during the period 2002-2006, it increased by 170 people every year on average during the period 2006-2011 (Fig.3).

Figure 1: Total population size, Nauru: 1921–2011

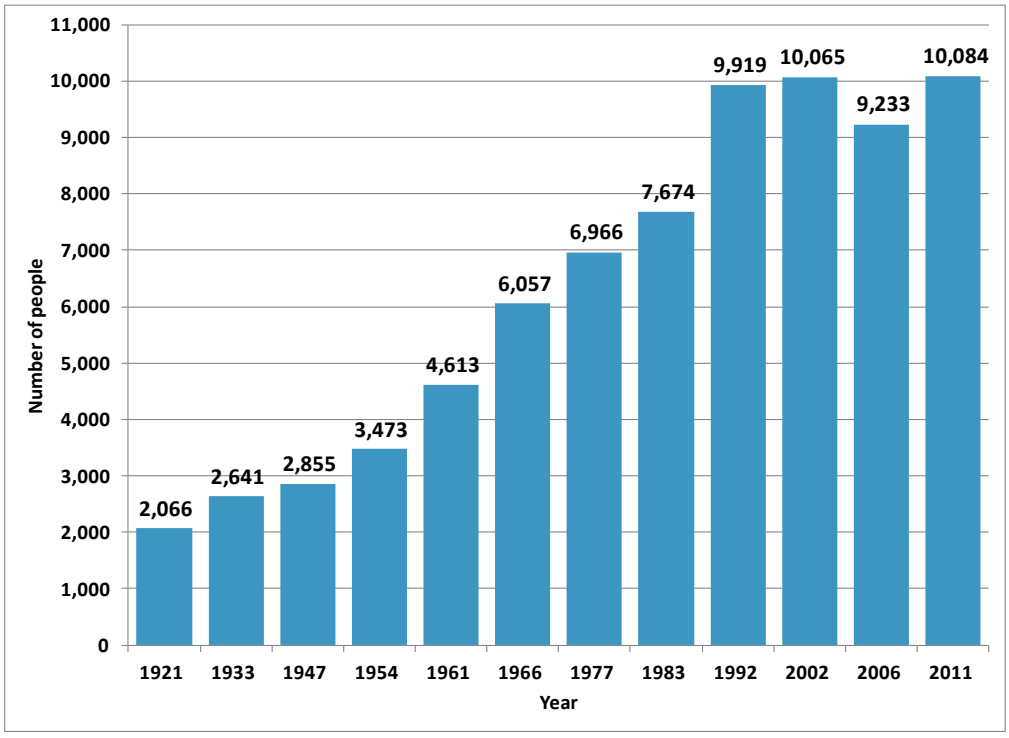


Table 1: Population size and growth rate by district, Nauru: 1992, 2002 and 2011

District	Total population size			Population change					
				(in numbers)		(in %)		Average annual growth rate	
	1992	2002	2011*	1992-2002	2002-2011	1992-2002	2002-2011	1992-2002	2002-2011
Yaren	672	632	747	-40	115	-6.0	18.2	-0.6	1.8
Boe	750	731	851	-19	120	-2.5	16.4	-0.2	1.7
Aiwo	874	1,051	1,220	177	169	20.3	16.1	1.8	1.6
Buada	661	673	739	12	66	1.8	9.8	0.2	1.0
Denigomodu	325	292	307	-33	15	-10.2	5.1	-1.0	0.6
Nibok	577	479	484	-98	5	-17.0	1.0	-1.8	0.1
Uaboe	447	386	318	-61	-68	-13.6	-17.6	-1.4	-2.1
Baitsi	450	443	513	-7	70	-1.6	15.8	-0.2	1.6
Ewa	355	397	446	42	49	11.8	12.3	1.1	1.3
Anetan	427	498	587	71	89	16.6	17.9	1.5	1.8
Anabar	320	378	452	58	74	18.1	19.6	1.6	2.0
Ijuw	206	169	178	-37	9	-18.0	5.3	-1.9	0.6
Anibare	165	232	226	67	-6	40.6	-2.6	3.3	-0.3
Meneng	1,389	1,323	1,380	-66	57	-4.8	4.3	-0.5	0.5
Location	2,301	2,381	1,497	80	-884	3.5	-37.1	0.3	-5.1
Total	**9,919**	**10,065**	**9,945**	**146**	**-120**	**1.5**	**-1.2**	**0.1**	**-0.1**

*excludes population in institutions

Figure 2: Average annual population growth rate (%), Nauru: 1921–2011

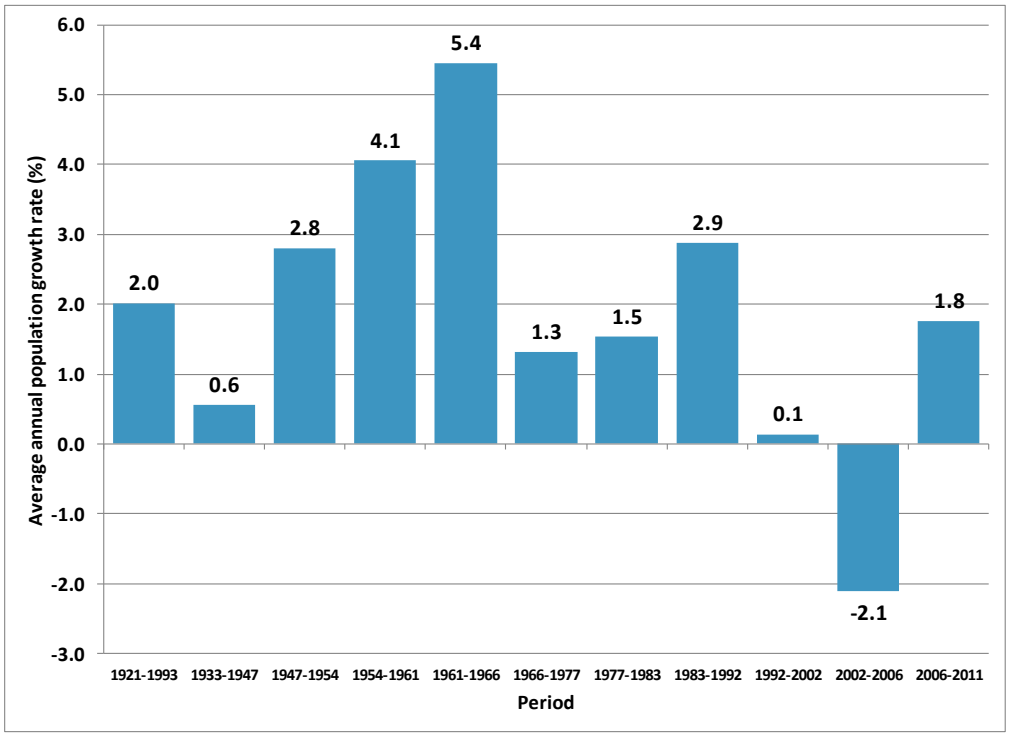
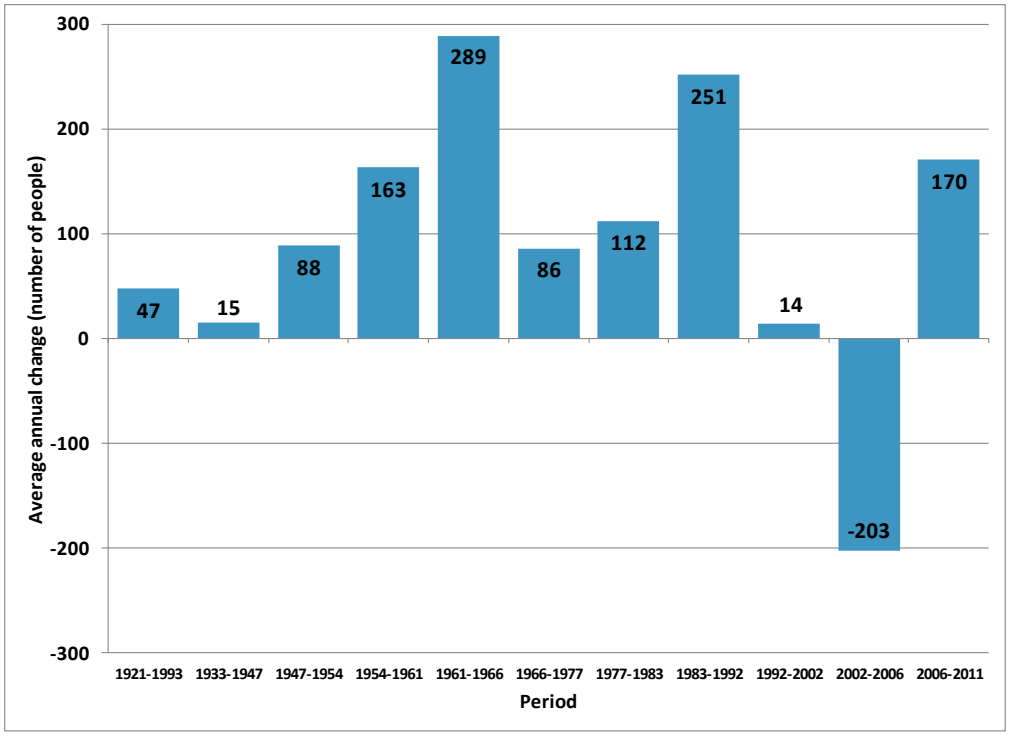


Figure 3: Population change, average annual increase in numbers, Nauru: 1921–2011



2.4 Population distribution

The population size of the different districts ranked by population size is displayed in Figure 4.

Location had the largest population size of 1,497 people which includes 15% of the total Nauru population. It was followed by Meneng (1,380), and Aiwo (1,220). The districts of Ijuw and Anibare were the smallest districts with only 178 and 226 people, representing only 2% of the total population each (Fig.5).

While the ranking of districts changed little during the last 19 years, the district of Location lost a lot of people because of the repatriation back home of the I-Kiribati and Tuvaluan workers who used to live there. The districts with the strongest growth were the district of Aiwo and Anabar; both grew in population size by 40% since 1992 (Fig.6).

Figure 4: Population size by district, Nauru: 2011

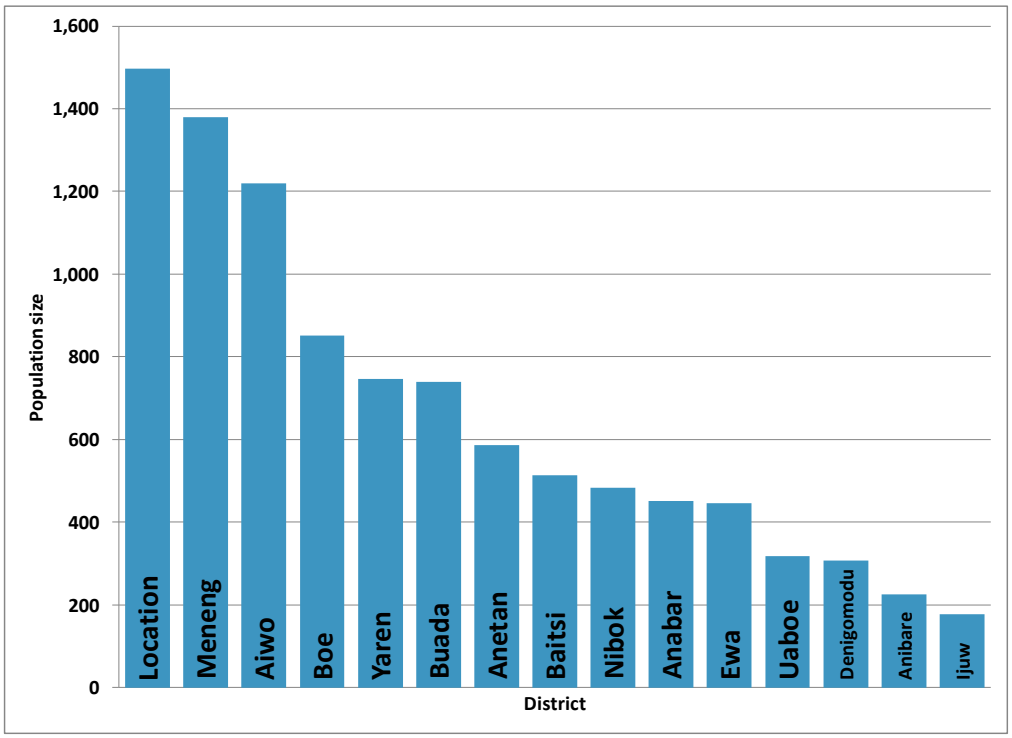


Figure 5: Population distribution by district (%), Nauru: 2011

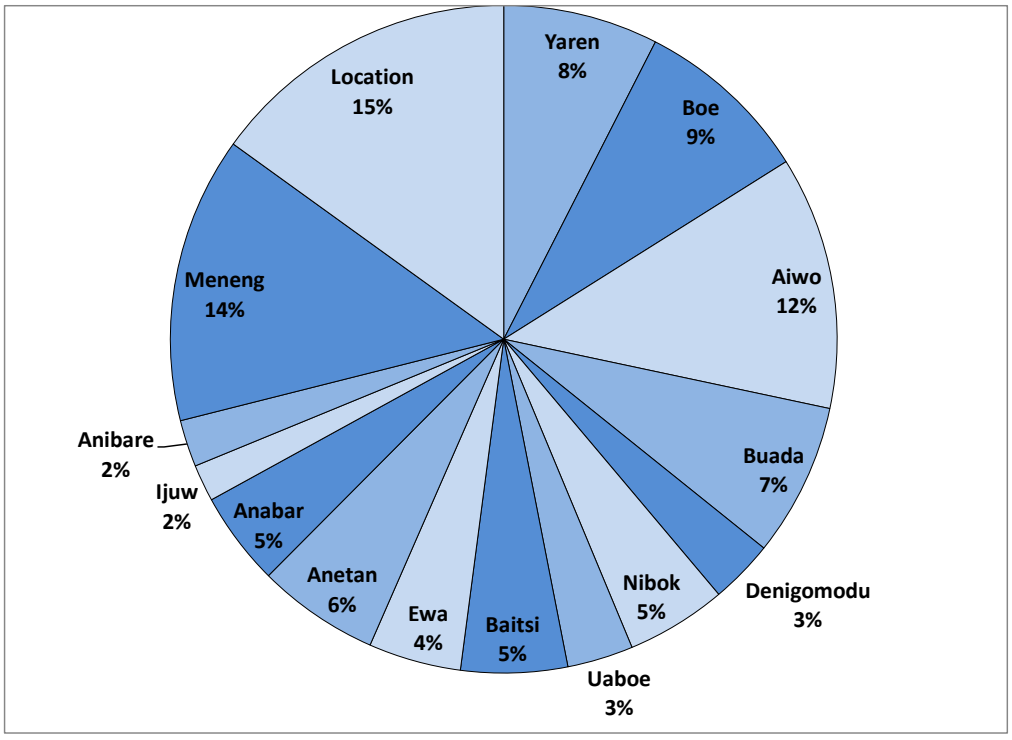
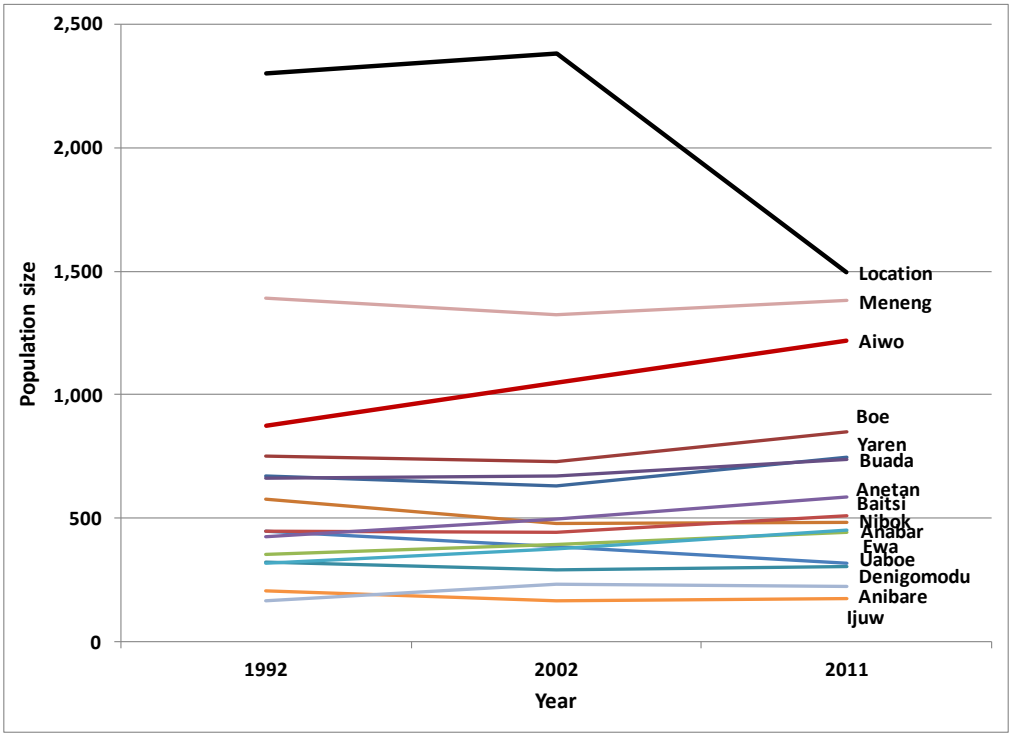


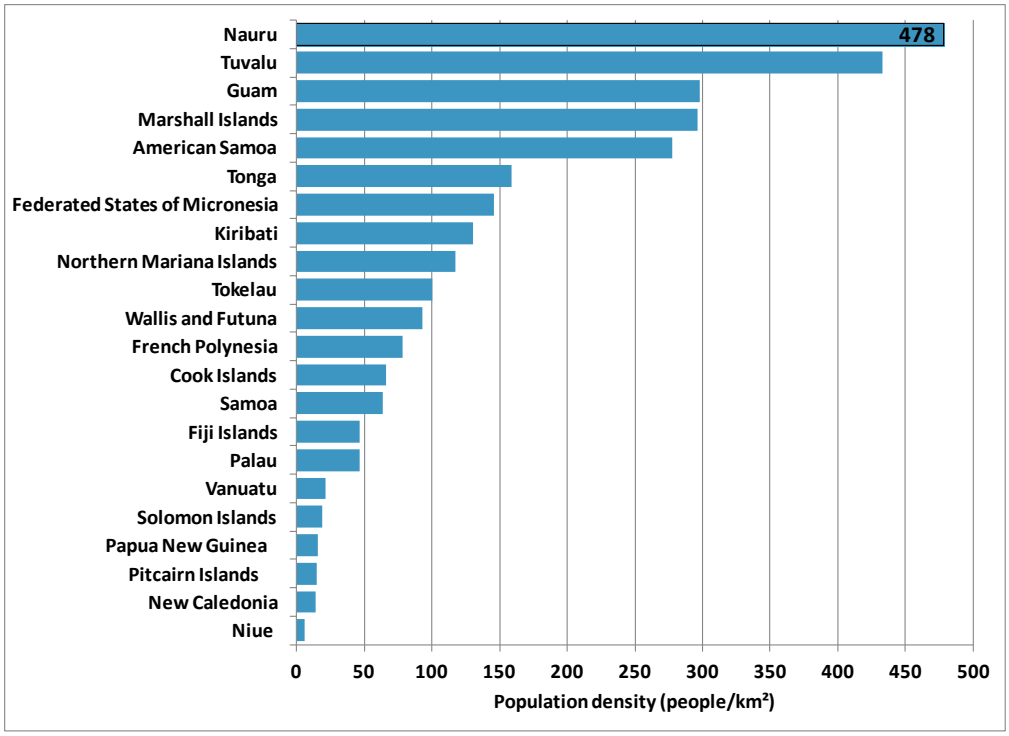
Figure 6: Population trend of districts, Nauru: 1992–2011



2.5 Population density

With a total land area of 21.1 km^2, Nauru's average population density according to the 2011 census was 478 people/km^2 – the same as 9 years ago during the 2002 census when there were 477 people/km^2. This is a very high population density compared to most other countries in the Pacific region or even worldwide (Fig.7).

Figure 7: Population density (number of people/km^2) by PICT, 2012 estimates



2.6 Population structure

The enumerated 2011 resident population consisted of 5,105 males and 4,979 females. Males out-numbered females by 126 resulting in a **sex ratio** of 103, which means that there were 103 males per 100 females. However, the sex ratio declined continuously since 1992 when there were 105 males per 100 females (Table 2, Fig.8, and App.1).

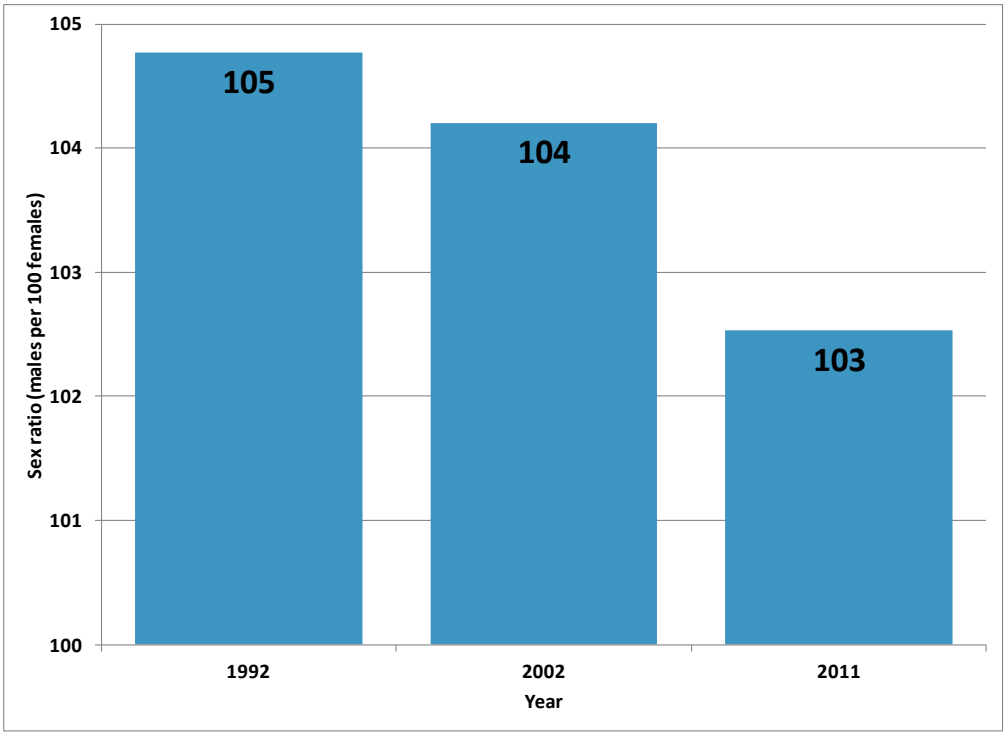
Table 2: Population distribution by broad age group, dependency ratio, median age, and sex ratio, Nauru: 1992, 2002 and 2011*

Year	Proportion of population by broad age group (in %)				Age dependency ratio (15–59)	Median age (years)	Sex ratio (males per 100 females)
	0–14	15–24	25–59	60+			
1992	43	17	38	3	83	19.4	105
2002	39	20	39	3	70	20.7	104
2011	38	19	40	3	69	21.5	103

* see Glossary for definitions of indicators

A sex ratio of 100 means that there are equal numbers of males and females while a sex ratio lower than 100 means there are more females than males and a sex ratio higher than 100 meaning more males than females.

Figure 8: Sex ratio, Nauru: 1992, 2002 and 2011



Sex ratio at birth

The sex ratio of birth is the number of male births per 100 female births. Available data from Nauru's vital statistics records on the number of male and female births for the period 2002-2011 point to a sex ratio at birth of **106**.

Population age pyramid

A population's age structure may be considered as a map of its demographic history. Persons of the same age constitute a cohort of people who were born during the same year (or period); they have been exposed to similar historical events and conditions. The age structure of the whole population at a given moment may be viewed as an aggregation of cohorts born in different years. A graphic representation of the age structure of the population such as an **age pyramid** shows the different surviving cohorts of people of each sex in Nauru.

A population pyramid shows the number of males and females in single years (Fig.9) or five-year age groups (Figs.10) starting with the youngest age group at the bottom, and increasing with age towards the top of the pyramid. The number of males is depicted to the left and the number of females to the right of the pyramid's center.

The shaded area in Figure 10 shows the population count of the 2002 census, while the thickly outlined area shows the population count of the 2011 census.

Nauru's population pyramid (Fig.9) has the distinct features of a classical pyramid: it has a wide base, meaning that a large percentage of people are in the younger age groups, with increasingly narrow bars towards the top of the pyramid, representing decreasing age groups at older ages.

However, there is a distinct *dent* at ages 15-22 which points to the fact that people of these age groups were overseas during the time of the census to attend further education or training, or in search of employment opportunities.

The very wide base at the bottom of the pyramid - the number of children recently born - point to an increase in the number of births during the last several years before the 2011 census.

Figure 9: Population pyramid by single years, Nauru: 2011

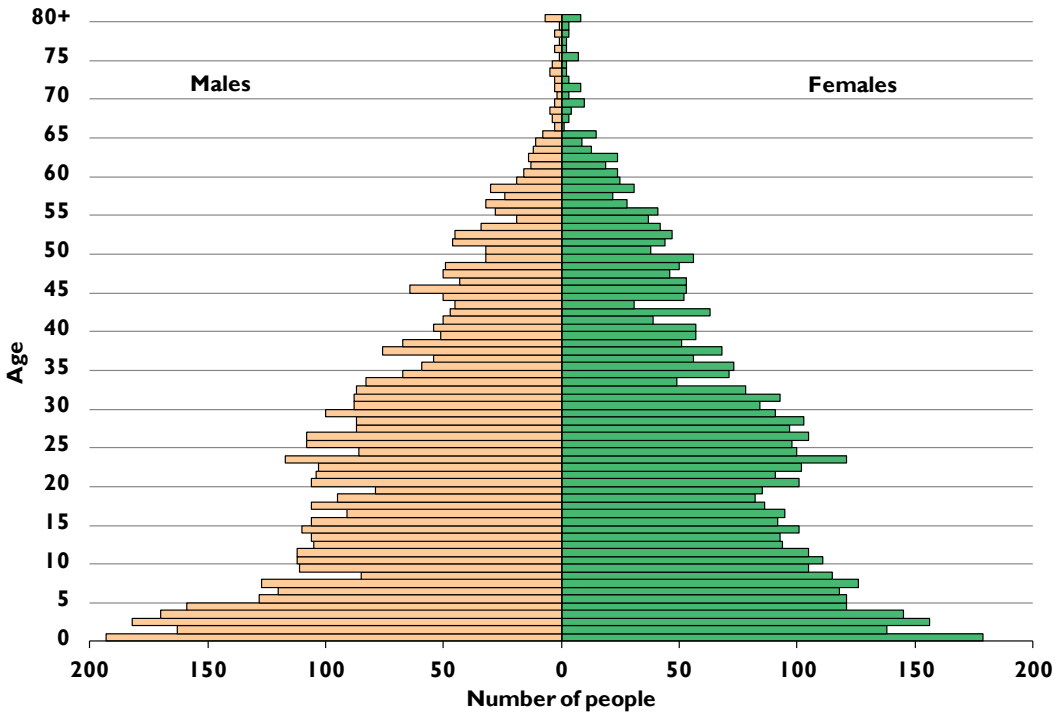
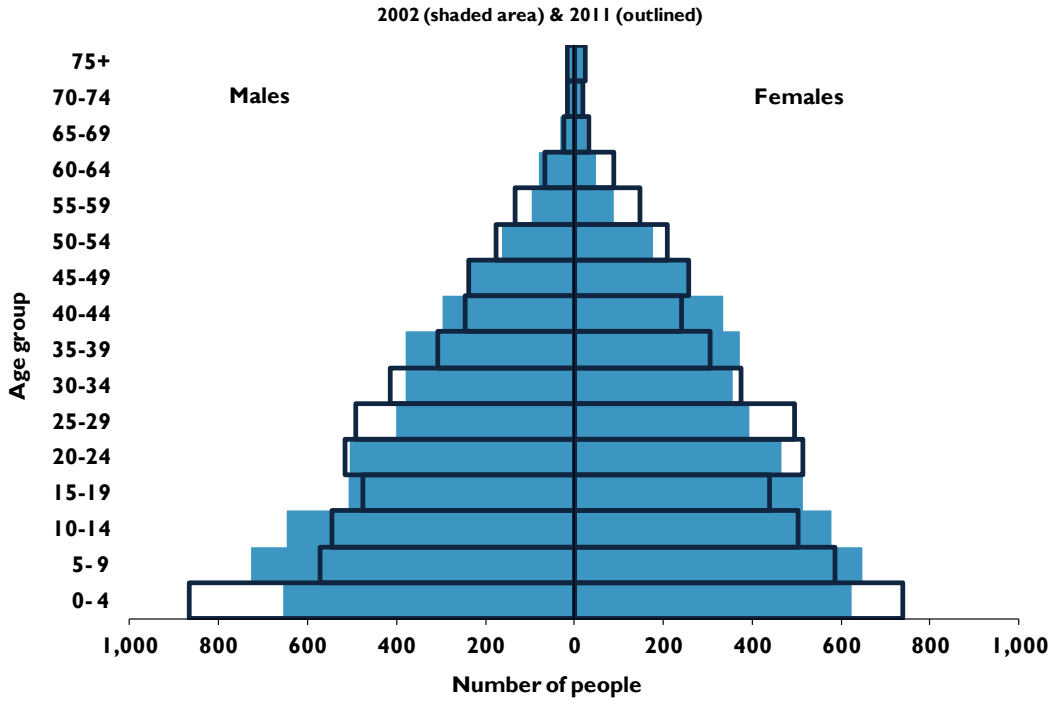


Figure 10: Population pyramid by 5-year age groups, Nauru: 2002 and 2011



In accordance with the overall population structure, as illustrated by the population pyramids, several indicators can be calculated such as the *median age* and the *age dependency ratio* (Table 2).

Nauru's population has a relatively young age structure, with 38% of the population younger than 15 years of age; 59% are in the so called working age groups 15-59, and only 3% were older than 60 years.

The age structure is also illustrated by the **median age** of 21.5 years, meaning that half of Nauru's population was younger and the other half older than 21.5 years. The median age in 1992 and 2002 were only 19.4 and 20.7 years respectively, indicating that the population structure was older in 2011 compared to earlier censuses (Fig.11).

A common way to describe a population's age structure is via the **age dependency ratio**, which compares the dependent component of a country's population with its economically productive component. This is conventionally expressed as the ratio of young people (0–14 years) plus the old (60+ years), to the working age population (15–59 years) as shown in Figure 12.

In 2011, Nauru had a dependency ratio of 69, meaning that for every 100 people of working age, 69 people were in the age dependent category. The higher the dependency ratio, the higher the number of people that needs to be cared for by the working age population. The dependency ratio has decreased since the 1992 and 2002 censuses when it was 83 and 70 respectively.

Figure 11: Median age, Nauru: 1992, 2002 and 2011

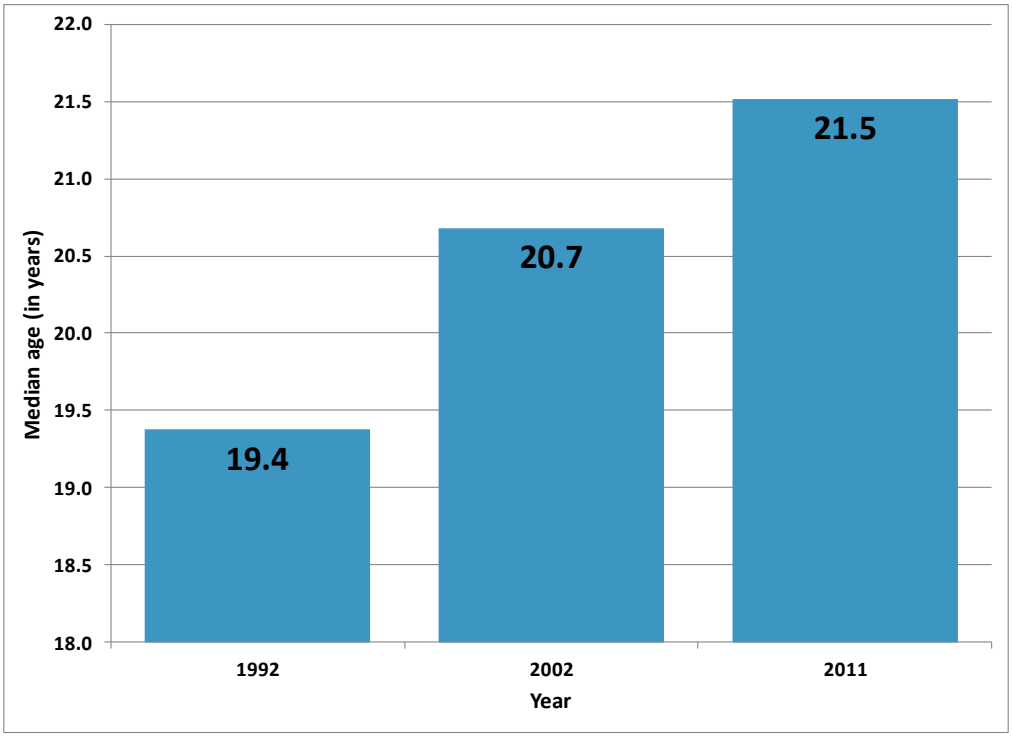
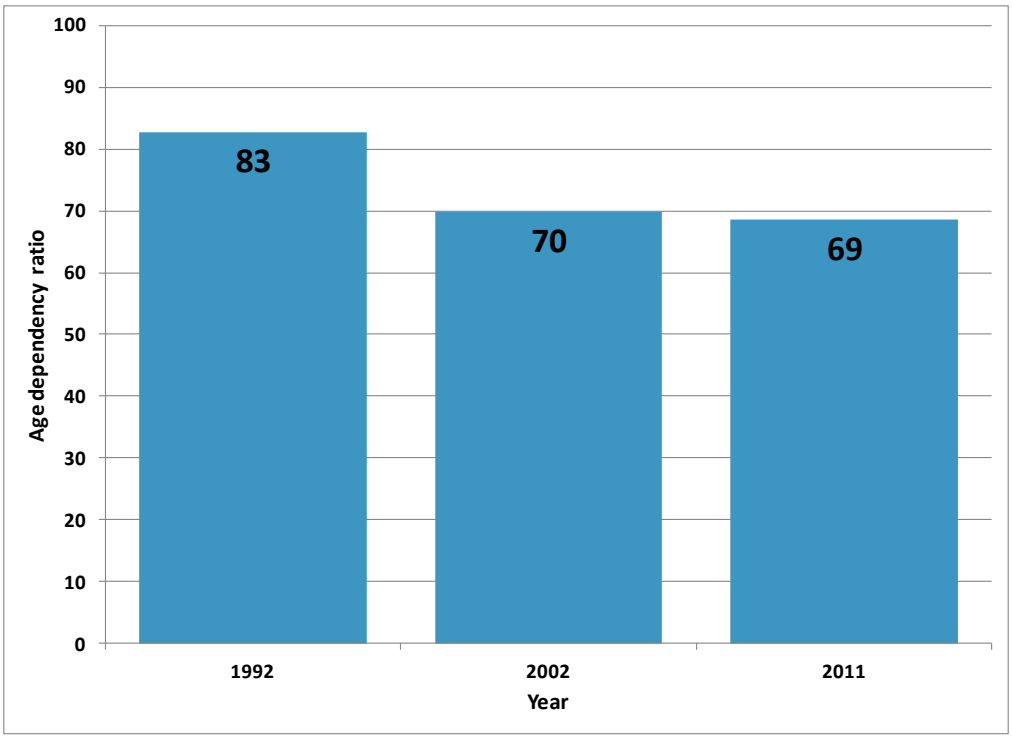


Figure 12: Age dependency ratio, Nauru: 1992, 2002 and 2011



3. DEMOGRAPHIC COMPONENTS

3.1 Fertility

3.1.1 Census data

In order to determine the level and pattern of fertility in Nauru, women 15 years of age and older were asked the following questions:

- Whether a woman has ever given birth
- How many children they had born alive[1]
- When was their last child born.

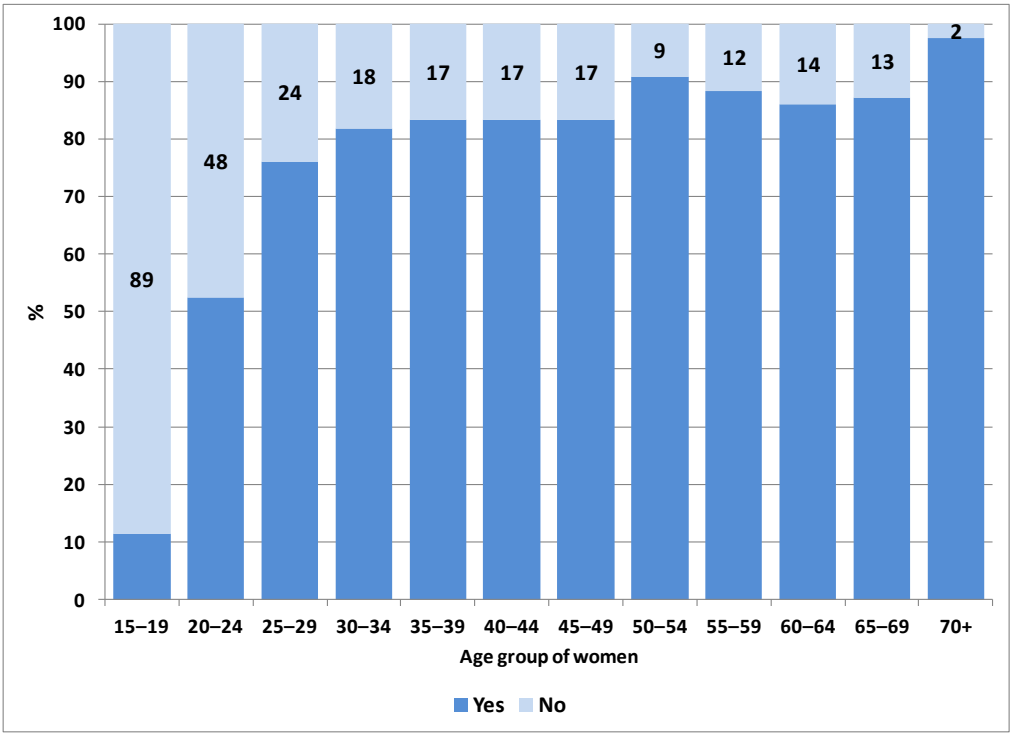
Based on the question whether a woman has ever given birth, it was found that out of 3,102 women aged 15 years and older, 2,101 had given birth at least once, and 1,001 women had not (yet) given birth (Table 3 and Figure 13). The percentage of women given birth increased with age. While 89% of adolescent women aged 15-19 year had not yet given birth, it was 17% of women aged 35-49 years. Approximately 10% of women remained childless at the end of their reproductive years (women aged 50 years and older).

Table 3: Female population aged 15 and older and whether ever given birth, and proportion childless, Nauru: 2011

Age of women	Total	Yes	No	% childness
15–19	439	50	389	89
20–24	513	269	244	48
25–29	490	373	117	24
30–34	367	300	67	18
35–39	300	250	50	17
40–44	234	195	39	17
45–49	251	209	42	17
50–54	205	186	19	9
55–59	145	128	17	12
60–64	86	74	12	14
65–69	31	27	4	13
70+	41	40	1	2
Total	**3,102**	**2,101**	**1,001**	**32**

[1] A live birth is defined by the World Health Organization to be the complete expulsion or extraction from the mother of a baby, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of the voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.

Figure 13: Female population by age and whether given birth, Nauru: 2011



The total number of live-births to 3,102 women aged 15 and older was 7,940; 4,143 males and 3,797 females (Table 4). The average number of live-births to all women was 2.6 children per woman (average parity).

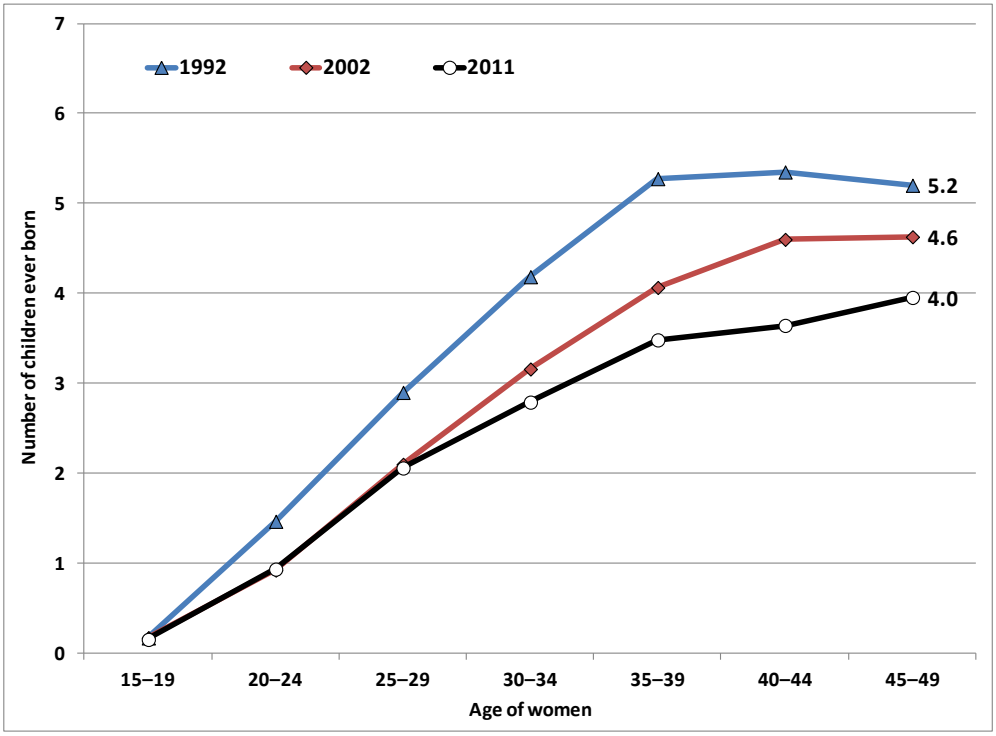
Table 4: Female population aged 15 and older by number of live-births, Nauru: 2011

Age of women	Number of women	Number of live-births			Average number of live-births		
		Males	Females	Total	Males	Females	Total
15–19	439	34	31	65	0.1	0.1	0.1
20–24	513	262	215	477	0.5	0.4	0.9
25–29	490	505	502	1,007	1.0	1.0	2.1
30–34	367	531	492	1,023	1.4	1.3	2.8
35–39	300	558	486	1,044	1.9	1.6	3.5
40–44	234	440	412	852	1.9	1.8	3.6
45–49	251	507	485	992	2.0	1.9	4.0
50–54	205	510	438	948	2.5	2.1	4.6
55–59	145	338	340	678	2.3	2.3	4.7
60–64	86	219	200	419	2.5	2.3	4.9
65–69	31	89	78	167	2.9	2.5	5.4
70+	41	150	118	268	3.7	2.9	6.5
Total	**3,102**	**4,143**	**3,797**	**7,940**	1.3	1.2	**2.6**

Average parity increases with the age of women. While women aged 15–19 had only very few children, women aged 45–49 had on average 4 children, and women older than 70 years had on average 6.5 children. The average parity of women over 49 years of age is also called the *completed fertility rate*, a cohort measure demonstrating how many children a certain cohort of women who have completed their childbearing actually produced during those years.

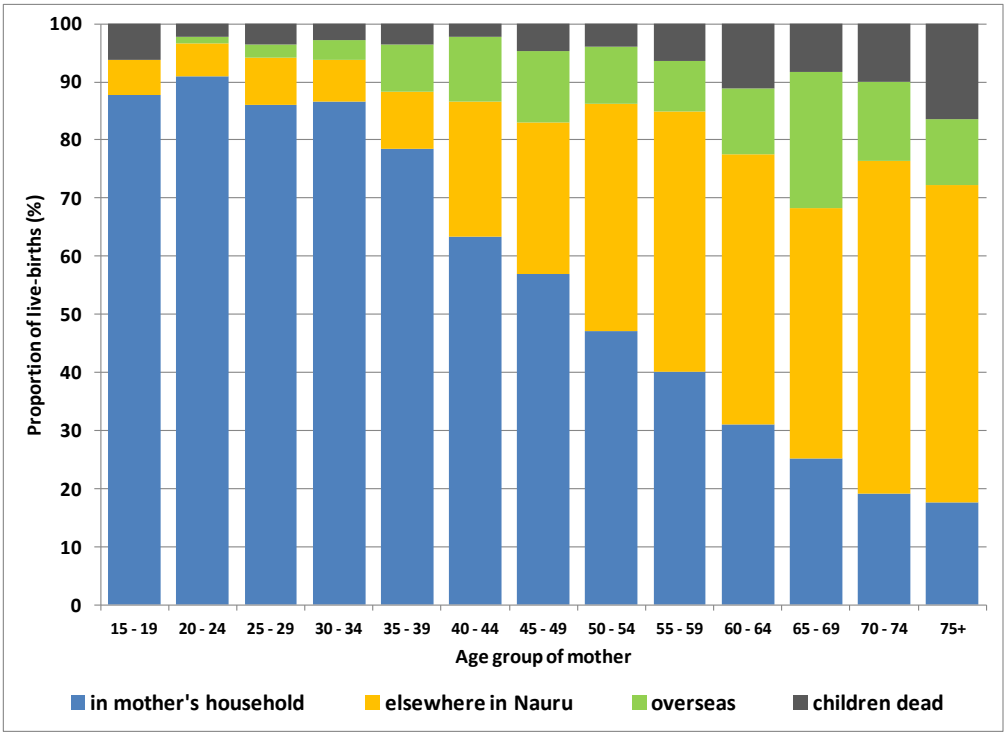
Figure 14 shows a comparison of the reported average number of live-births of the last three censuses. A fertility decline is apparent as the average number of live-births per woman, especially for women aged 30 years and older, declined from one census to the next. While the average number of live-births per women aged 45-49 years was 5.2 in 1992, it declined to 4.6 and 4.0 in 2002 and 2011.

Figure 14: Female population aged 15-49 by average number of live-births, Nauru: 1992, 2002, and 2011



The census also included questions on whether mother's children lived in her household, elsewhere in Nauru, overseas, or whether they have died. The proportion of children living in their mother's household decreased with the age of the mother, because as children grow older they leave their parents' home and form their own household (Fig.15).

Figure 15: Proportion of live-births by age of mother and whether living in the same household as their mother, Nauru: 2011



From the question on date of birth of the last born child, the number of births per year or period can be calculated (Table 5). Responses from women aged 15-49 years during the 2011 census indicated that 363 children were born during the one-year period prior to the census - between 31 October 2010 and 30 October 2011.

Table 5: Reported number of births during the one-year period before the census (31 October 2010 – 30 October 2011) by age group of women, Nauru: 2011

Age group of women	Number of women	Number of children	ASFR*
15–19	439	33	0.075
20–24	513	115	0.224
25–29	490	113	0.231
30–34	367	67	0.183
35–39	300	29	0.097
40–44	234	6	0.026
45–49	251	0	0.000
Total	**2,594**	**363**	**TFR = 4.2**

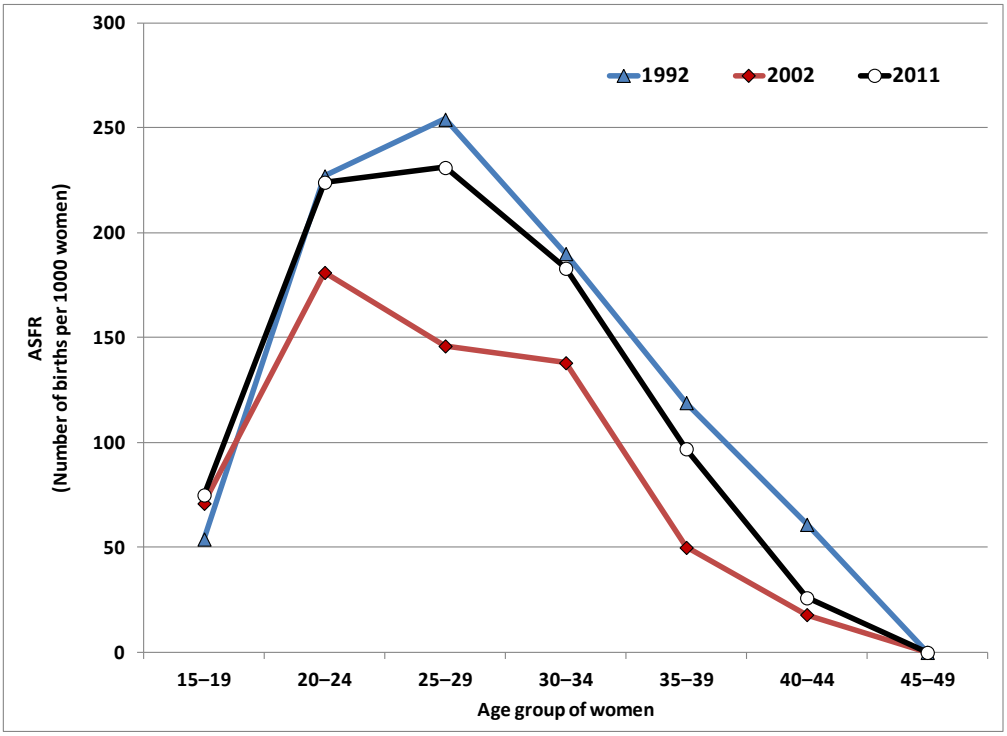
ASFR = Age-Specific Fertility Rate
TFR = Total Fertility Rate

Unfortunately, data on sex of child was not collected and the number of male and female children born during a certain time period cannot be determined.

The reported number of births during the year before the census (363) compares very well with the number of enumerated children younger than 1 year of age (371), and it is very similar to the number of registered births from the Nauru Civil Registration System for the period 31 October 2010 to 30 October 2011 of 373 births.

Figure 16 shows a comparison of data on children born during the 1-year period before the last 3 censuses. It shows that the fertility level of women aged 25-49 years declined since 1992. However, it shows a significant increase compared to the 2002 census. Another interesting trend is the continued increase in the level of the adolescent fertility rate. It increased from 54 births per 1000 women age 15-19 years in 1992, to 71 in 2002 and further to 75 in 2011.

Figure 16: Reported age-specific-fertility-rates (ASFR), Nauru: 1992, 2002 and 2011



3.1.2 Fertility estimates based on vital statistics

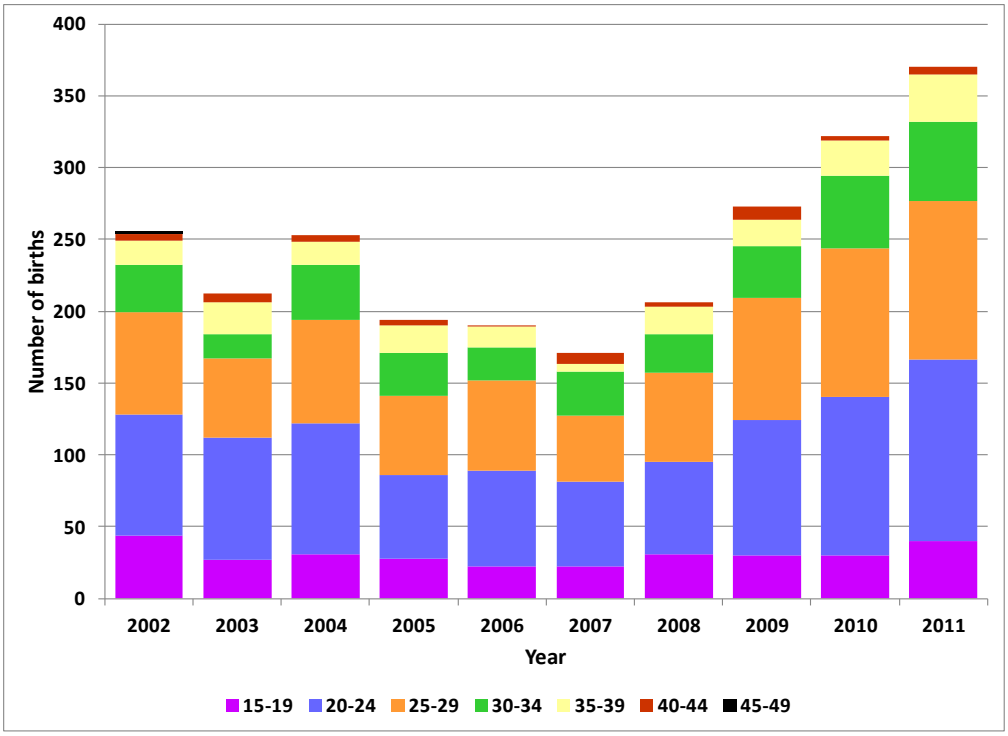
In order to estimate Nauru' fertility level, the following analysis uses data obtained from Nauru's civil registration system, particularly the number of registered male and female births by age of mother and year of birth (Table 6, Figure 17, and App.2).

Table 6: Registered number of births by age of mother, Nauru: 2002-2011

Age of mother	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
15-19	44	27	31	28	22	22	31	30	30	40
20-24	84	85	91	58	67	59	64	94	110	126
25-29	71	55	72	55	63	46	62	85	104	111
30-34	33	17	38	30	23	31	27	36	50	55
35-39	17	22	16	19	14	5	19	19	25	33
40-44	5	6	5	4	1	8	3	9	3	5
45-49	1	0	0	0	0	0	0	0	0	0
Total	**255**	**212**	**253**	**194**	**190**	**171**	**206**	**273**	**322**	**370**

Source: Nauru Civil Registration Office

Figure 17: Registered number of births by age of mother, Nauru: 2002 - 2011



The female population aged 15-49 years by 5-year age group for each year of the period 2002-2011 was calculated by means of interpolation between the same age groups of the female populations as recorded in the 2002, 2006 and 2011 censuses. Results are displayed in Table 7.

Table 7: Estimated number of females aged 15-49 by 5-year age groups, Nauru: 2002-2011

Age group	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
15-19	513	513	512	512	512	512	494	475	457	439
20-24	466	479	492	506	519	519	517	516	514	513
25-29	393	392	391	390	389	389	414	439	465	490
30-34	357	347	337	327	317	317	330	342	355	367
35-39	373	340	307	274	242	242	256	271	285	300
40-44	334	321	307	293	279	279	268	257	245	234
45-49	259	256	254	251	249	249	249	250	250	251
Total	**2,694**	**2,647**	**2,600**	**2,553**	**2,507**	**2,507**	**2,528**	**2,550**	**2,572**	**2,594**

Subsequently, the number of births by age of mother is divided by the estimated female population of the same age groups, in order to calculate the **age-specific fertility rates (ASFR)** for each year of the period 2002-2011. The sum of the ASFR multiplied by 5 (to account for the number of years per age group) gives the **total fertility rates (TFR)** for each year (Table 8 and Figure 18). This measure is an indication of the average number of children a woman gives birth to during her reproductive life (from ages 15–49 years).

Table 8: Estimated age-specific fertility rates (ASFR) and total fertility rates (TFR), Nauru: 2002-2011

Age of women	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
15-19	0.086	0.053	0.060	0.055	0.043	0.043	0.063	0.063	0.066	0.091
20-24	0.180	0.177	0.185	0.115	0.129	0.114	0.124	0.182	0.214	0.246
25-29	0.181	0.140	0.184	0.141	0.162	0.118	0.150	0.193	0.224	0.227
30-34	0.093	0.049	0.113	0.092	0.072	0.098	0.082	0.105	0.141	0.150
35-39	0.046	0.065	0.052	0.069	0.058	0.021	0.074	0.070	0.088	0.110
40-44	0.015	0.019	0.016	0.014	0.004	0.029	0.011	0.035	0.012	0.021
45-49	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TFR	**3.0**	**2.5**	**3.1**	**2.4**	**2.3**	**2.1**	**2.5**	**3.2**	**3.7**	**4.2**

The data of the calculated TFR shows a decline from 3.0 to 2.1 during the period 2002 to 2007, only to increase quite steeply again thereafter to a level of 4.2 in 2011.

The fertility level by age group of mother – the age specific fertility rates – of the 3-year period 2009-2011 is shown in Figure 19. The reason why a 3-year period is used is to derive at a more robust indicator as annual numbers for small populations like Nauru tend to fluctuate widely from year to year.

Women aged 20-29 produced the most children with 214-215 children per 1000 women. This was followed by women aged 30-34 years with 132 children per 1000 women.

However, as will be discussed below, there seems to be a significant underreporting of births for the period 2005-2009, and fertility estimates based on vital statistics do not yield reliable estimates – in fact levels of fertility particularly for the period 2005-2009 would be too low.

Figure 18: TFR based on vital statistics (registered number of births), Nauru: 2002–2011

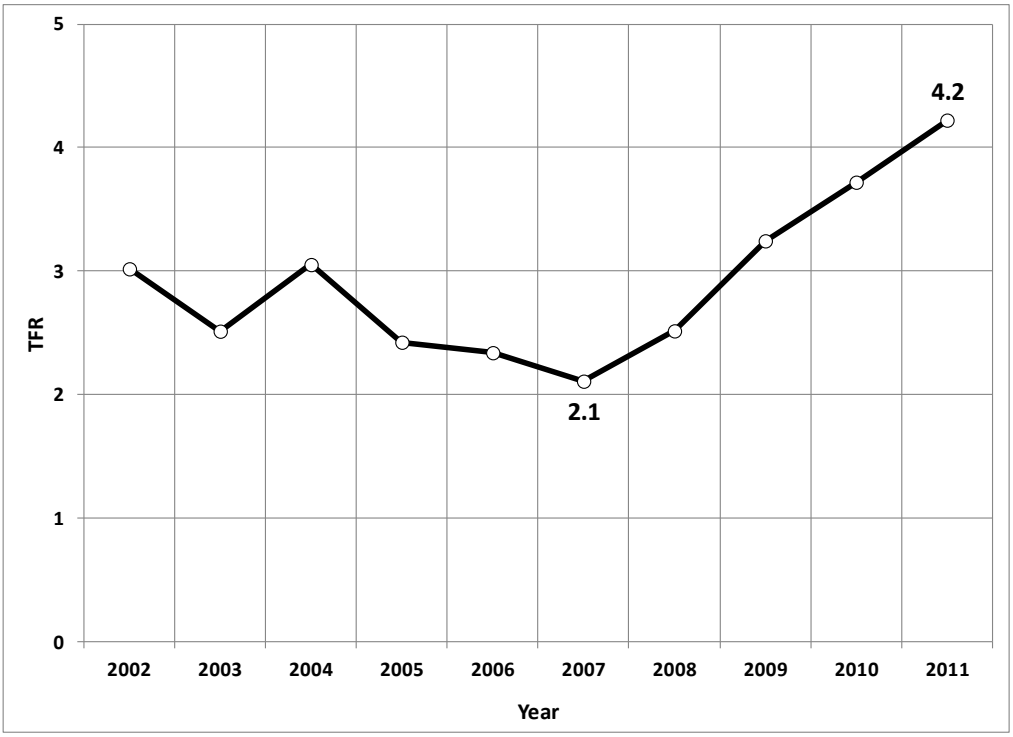
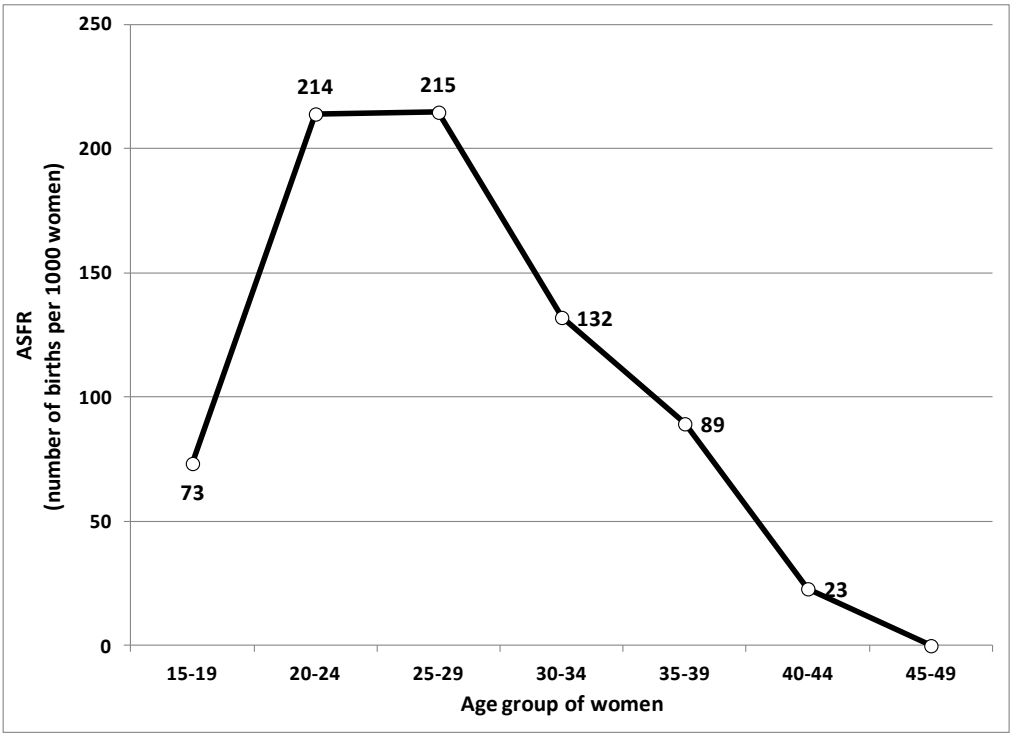


Figure 19: Age specific fertility rate (ASFR) based on registered births, Nauru: 2009–2011

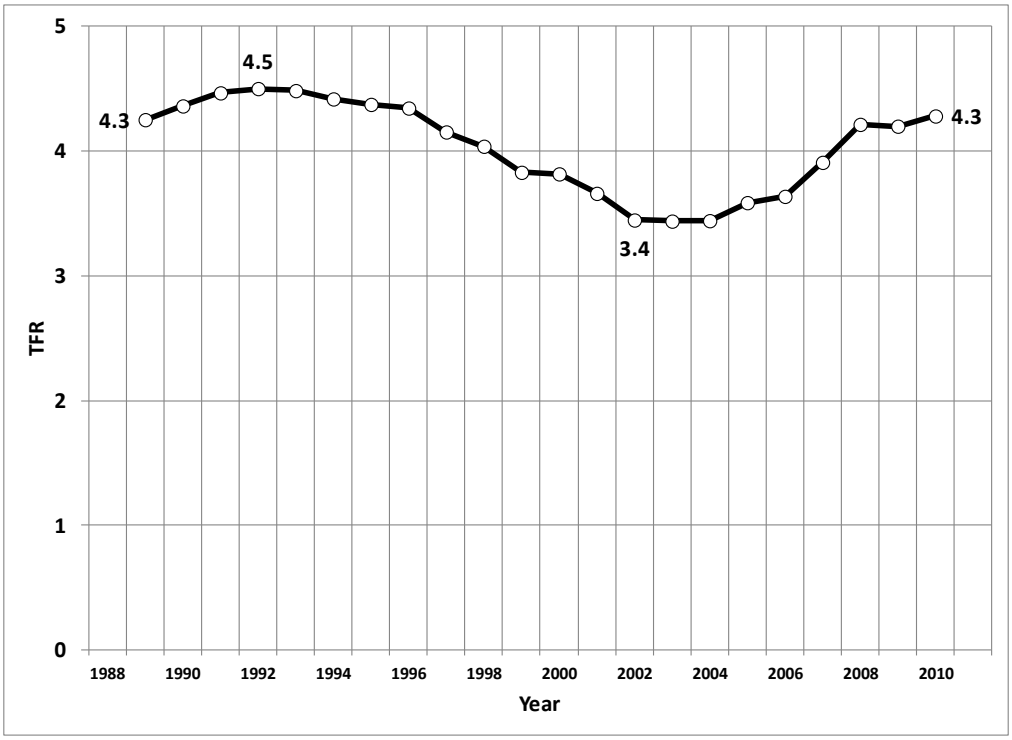


3.1.3 The Own-children method

The *own-children method* is a procedure deriving ASFRs for a 10- or 15-year period from a special census tabulation of children classified by age, and age of mother, both ages being given in single years at the time of the census. Age of mother can be determined only for those children who are enumerated in the same household as their mother (i.e. who are "own children" of a woman present in some enumerated household, hence the name of the method). The results of the own-children method were kindly prepared and provided by Mr. Michael Levin of the Harvard University Center for Population and Development Studies.

Fertility estimates derived using the own-children method based on the 2002 and 2011 censuses show that fertility levels have more or less steadily declined from 1992 to 2002 when the TFR reached its lowest point of 3.4. From then onwards it increased quite rapidly to 4.2 in 2008 and to 4.3 in 2010 (Fig.20).

Figure 20: Estimates of TFR based on "own-children method" (3-year moving average), Nauru: 1988–2011



Source: Michael Levin, Harvard University Center for Population and Development Studies

The dip of the TFR during the period 2002-2004 coincides with Nauru's recent economic depression of its phosphate driven economy. Couples/women might have found it difficult to opt for children during this period, and eventually postponed childbearing.

Since then Nauru's economy recovered, and people have more money to spend, and children became *affordable* again. The renewed increase in fertility levels, and the number of children per woman, can be

seen as a compensation for the hardship suffered, and the recent return to economic normality might have rekindled a new desire to have children.

Women aged 20-24 produced the most children with about 243 children per 1000 women in that age group, closely followed by women aged 25-29 years with 237 children (Fig.21). The so-called **teenage fertility rate**, the number of children of women aged 15-19 years, was 81, which means that 81 children were born per 1000 women aged 15-19. The overall trend of the teenage fertility rate during the period 1997-2011 shows a continued high level with no sign of a decrease which should be seen as a major concern as childbearing at this age is subject to increased health risks to mother and child (Fig.22). Nauru has together with the Marshall Islands by far the highest teenage fertility rate in the Pacific region (Fig.23)

Figure 21: Age-specific fertility rates (ASFRs), Nauru: 2009-2011

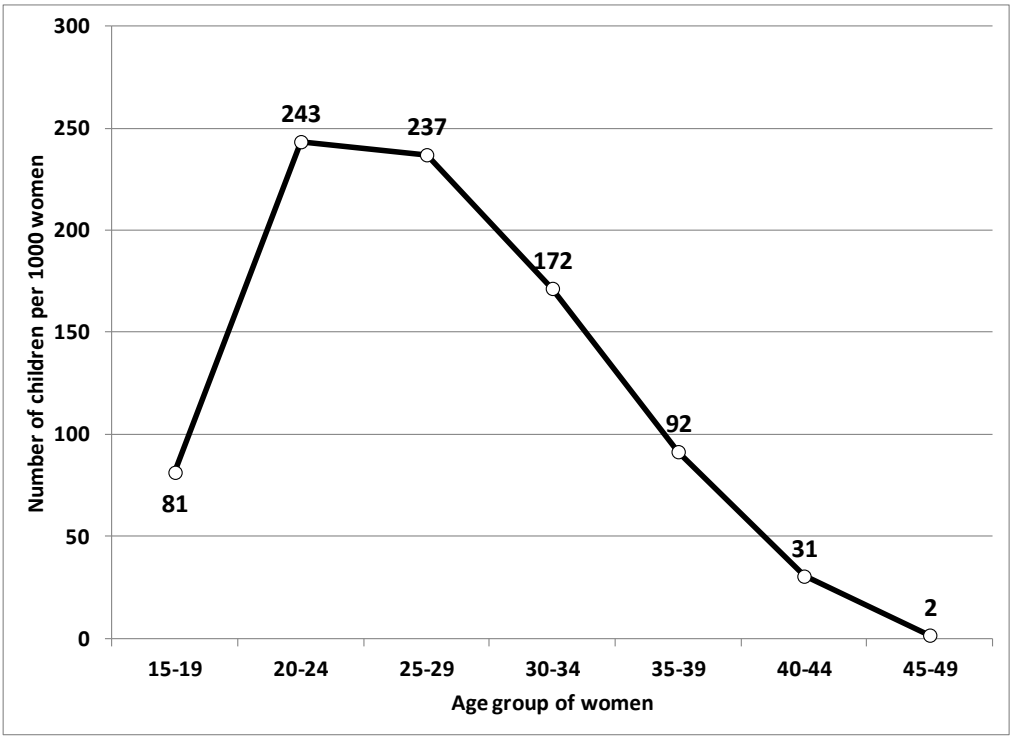


Figure 22: Teenage fertility rate, Nauru: 1997-2011

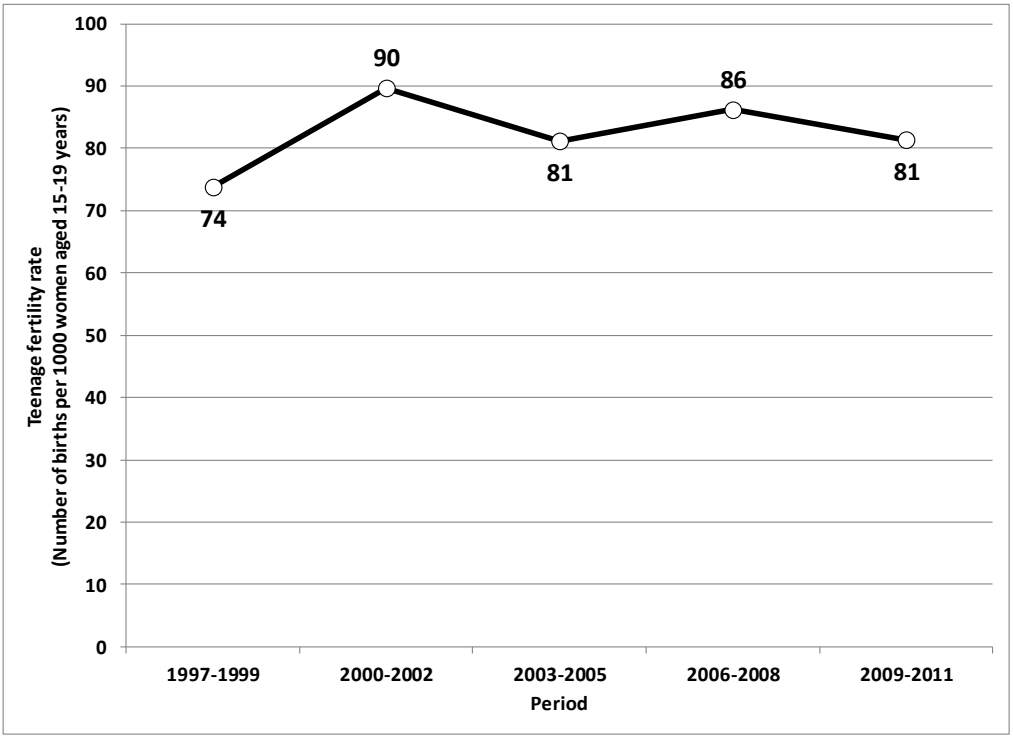
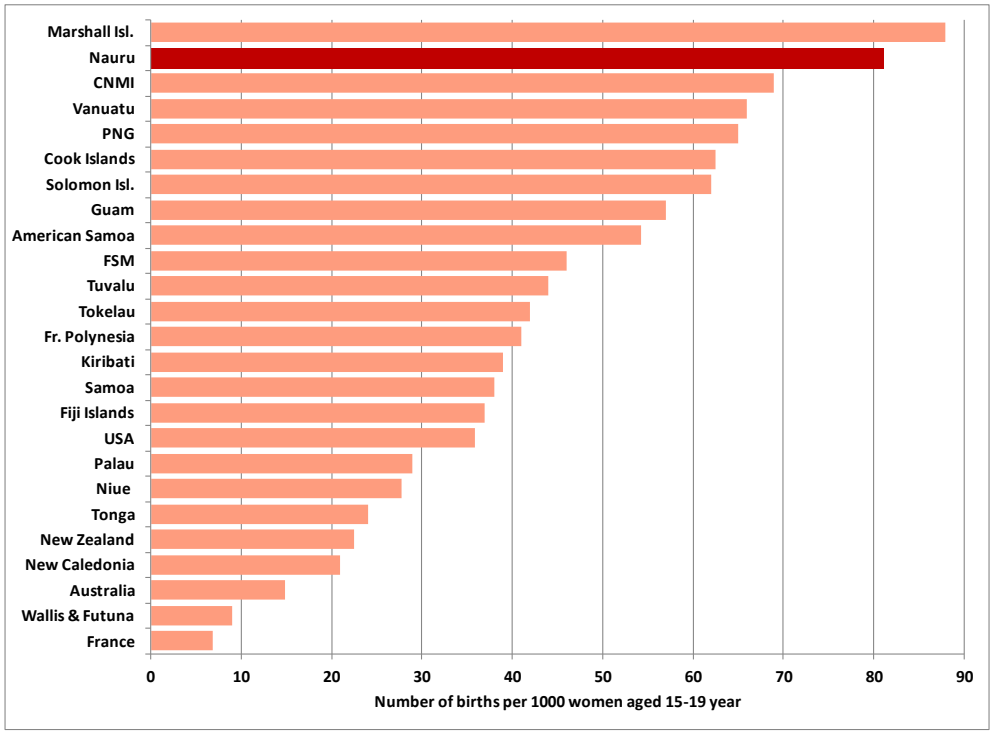


Figure 23: Teenage fertility rate, PICT: latest available year



3.1.4 Conclusion and recommendation

Based on the population pyramid (Fig.9), there has been a significant increase in the number of children in recent years as is evident from the increasingly widening base towards the young ages (age 4 to 0).

In addition, estimates based on vital statistics as well as the own-children method show an increase in TFR since 2004. However, the TFRs based on the own-children method are higher than those based on vital statistics (Fig.24).

As was mentioned before, the registered number of births for the period 2005-2009 were significantly lower than the enumerated population aged 2-6 years, which points to an under reporting of births during these years (Fig.25).

While probably all births occurring in Nauru are registered in Nauru's hospital where almost all births occur, the information collected on the birth certificates do not all make it into the electronic system 'PROMADIS' (www.promadis.com/). It seems that the electronic system is not fully utilized perhaps because hospital staff is not properly trained in its use and therefore reluctant to use it.

In view of the apparent under reporting of births, fertility results produced by the own-children method should be used as the final estimates for Nauru. Results of other methods are summarized in Appendix 3.

Figure 24: Estimated TFR according to registered births, and application of the own-children method (OCM), Nauru: 2002-2011

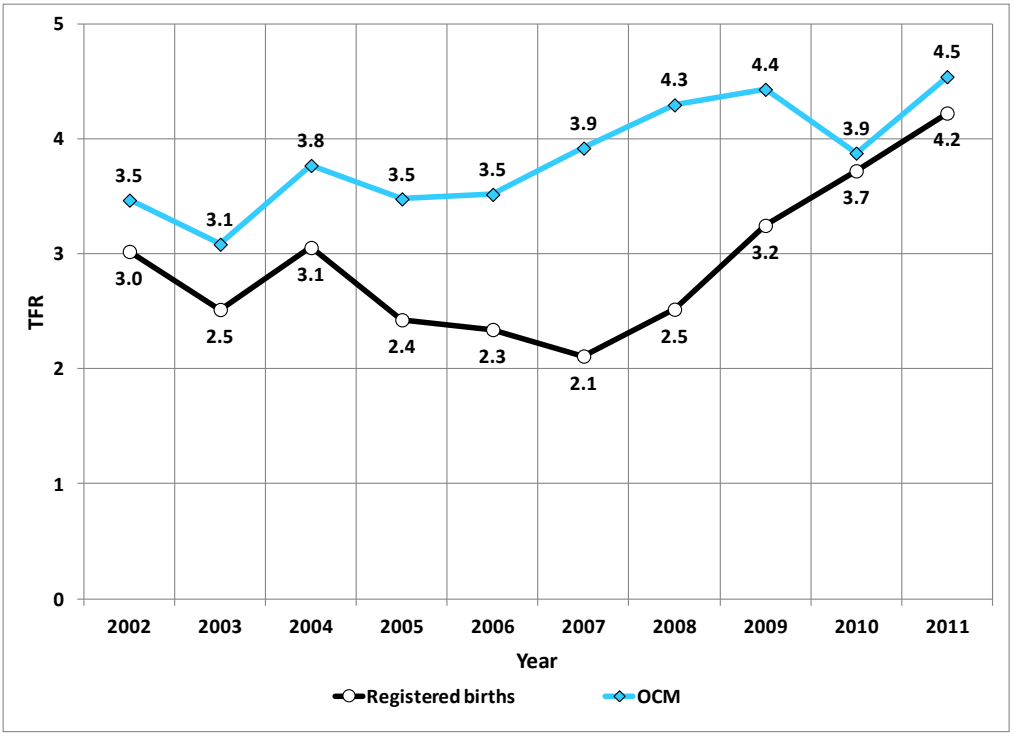
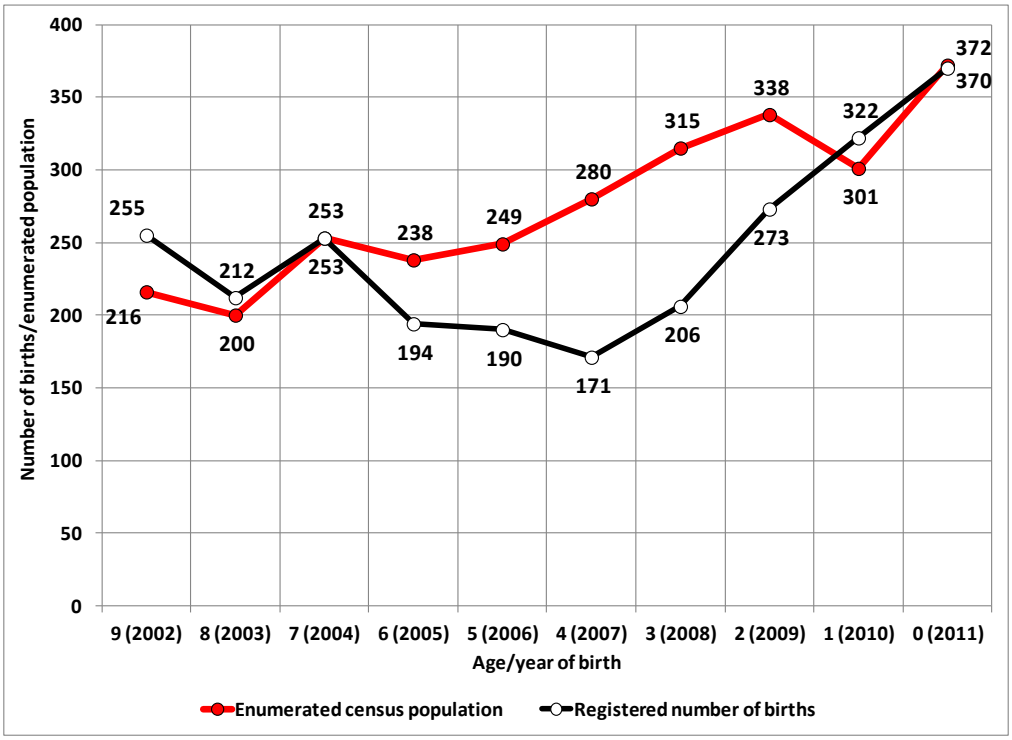


Figure 25: Comparison of registered number of births with enumerated 2011 census population aged 0-9 years, Nauru: 2002-2011



3.2 Mortality

The questions relating to mortality in the 2011 census were:

- How many live births a woman has ever had, and how many of those born were still alive and/or had died;
- Whether a respondent's mother and father was still alive (orphanhood);
- Whether a respondent's marital status was "widowed" (widowhood);
- Whether any residents of the household died during the last 3 years prior to the census.

3.2.1 Household deaths

Based on the reported number of deaths by age and sex derived from the household question on number of deaths of household residents who died during the last 3 years before the census, 164 deaths were recorded; 92 males, and 72 females. During the last 12 months before the census, 65 deaths were recorded; 37 males, and 28 females (Table 9).

Comparing the reported number of household deaths from the census with the number of registered deaths by age and sex from Nauru's Civil Registration Office (Table 10), points to an underreporting of deaths from the census, particularly for the 3-year period before the census. The reporting of household deaths from the census of the 12-month period before the census is similar but still lower than the registered deaths. However, the number of infant deaths matches the registered number of infant deaths (although the numbers of male and female deaths do not match).

Table 9: Number of deaths of household residents by age and sex during the 3 years before the census, and 12 months preceding the census, Nauru: 2011

Age group	during last 3 years			during last 12 months		
	Total	Males	Females	Total	Males	Females
0	20	10	10	10	3	7
1 - 4	2	2	0	1	1	0
5 - 9	4	2	2	1	0	1
10 - 14	5	4	1	2	2	0
15 - 19	2	1	1	0	0	0
20 - 24	1	1	0	1	1	0
25 - 29	7	4	3	4	2	2
30 - 34	2	2	0	1	1	0
35 - 39	5	3	2	4	2	2
40 - 44	7	3	4	1	1	0
45 - 49	15	9	6	3	2	1
50 - 54	28	13	15	12	7	5
55 - 59	19	8	11	4	3	1
60 - 64	11	8	3	5	4	1
65 - 69	13	9	4	7	3	4
70 - 74	7	3	4	0	0	0
75 +	10	7	3	6	3	3
NS	6	3	3	3	2	1
Total	**164**	**92**	**72**	**65**	**37**	**28**

Table 10: Number of registered deaths by age and sex, Nauru: 2009-2011

Age group	2009-2011			2011		
	Total	Males	Females	Total	Males	Females
0	38	25	13	10	5	5
1 - 4	1	1	0	1	1	0
5 - 9	2	1	1	0	0	0
10 - 14	2	2	0	1	1	0
15 - 19	2	1	1	0	0	0
20 - 24	2	2	0	2	2	0
25 - 29	10	3	7	5	1	4
30 - 34	6	3	3	4	1	3
35 - 39	7	4	3	2	1	1
40 - 44	12	7	5	2	2	0
45 - 49	18	11	7	6	3	3
50 - 54	34	19	15	15	7	8
55 - 59	24	13	11	9	7	2
60 - 64	18	13	5	6	2	4
65 - 69	10	8	2	4	2	2
70 +	15	11	4	8	6	2
Total	**201**	**124**	**77**	**75**	**41**	**34**

Source: Nauru Civil Registration Office

3.2.2 Model life table

The data on reported household deaths by age and sex was used to determine which of the different Coale-Demeny and/or United Nations model life tables compares best to the empirical Nauru mortality pattern using MORTPAK's procedure COMPAR. The assumption was made that possible under-registration of deaths is not age specific and therefore does not affect the overall pattern of mortality.

It was found that the **Far-Eastern** pattern of the United Nations model life tables resembles most closely the empirical mortality pattern of the male and female Nauru population (Apps.4-7).

3.2.3 Census data on child mortality

Infant and child survivorship can be estimated indirectly by examining answers of women aged between 15 and 50 years regarding numbers of live-births and numbers of deceased children[i].

From all children that were born to women aged 15 years and older (7,940), 95.5% (7,580) were still alive and 360 children had died (Table 11).

The proportion of surviving females was higher than that of males (Table 12). While 96.5% of all female live-births were still alive, only 94.5% of all male children had survived.

The proportion of surviving children normally decreases with the age of mothers (Fig.26). While 97.7% of all live-births of women now aged 20–24 were still alive, only 95.4% of children born to women now aged 45–49 were still alive, and less than 90% of children born to women now aged 70 years and older remained alive.

This general trend is explained by the fact that as the age of mothers increases, so does the age of her children; the proportion of birth cohorts that have died rises with an increase in the age of mothers.

A comparison of data on number of live-births and proportion of children still alive from the 2002 and 2011 censuses show an improvement in the survival of children of women of all age groups with the exception of the 15-19 year old women. Especially the proportion of children of older women have increased, which points to a general improvement in the (child) mortality levels in Nauru during the last 9 years (Fig.27).

Table 11: Female population aged 15 and older by number of live-births, number of children dead, and number of children still alive, Nauru: 2011

Age of women	Total number of women	Total number of live-births			Total number of children dead			Total number of children still alive		
		Total	Males	Females	Total	Males	Females	Total	Males	Females
15 - 19	439	65	34	31	4	1	3	61	33	28
20 - 24	513	477	262	215	11	9	2	466	253	213
25 - 29	490	1,007	505	502	36	23	13	971	482	489
30 - 34	367	1,023	531	492	28	19	9	995	512	483
35 - 39	300	1,044	558	486	37	22	15	1,007	536	471
40 - 44	234	852	440	412	19	10	9	833	430	403
45 - 49	251	992	507	485	46	27	19	946	480	466
50 - 54	205	948	510	438	38	26	12	910	484	426
55 - 59	145	678	338	340	43	25	18	635	313	322
60 - 64	86	419	219	200	47	32	15	372	187	185
65 - 69	31	167	89	78	14	8	6	153	81	72
70 - 74	18	110	68	42	11	9	2	99	59	40
75 +	23	158	82	76	26	17	9	132	65	67
Total	**3,102**	**7,940**	**4,143**	**3,797**	**360**	**228**	**132**	**7,580**	**3,915**	**3,665**

Table 12: Female population aged 15 and older by proportion of live-births still alive, and proportion now dead, Nauru: 2011

Age of women	Total number of women	Proportion of live-births still alive (%)			Proportion of live-births now dead (%)		
		Total	Males	Females	Total	Males	Females
15 - 19	439	93.8	97.1	90.3	6.2	2.9	9.7
20 - 24	513	97.7	96.6	99.1	2.3	3.4	0.9
25 - 29	490	96.4	95.4	97.4	3.6	4.6	2.6
30 - 34	367	97.3	96.4	98.2	2.7	3.6	1.8
35 - 39	300	96.5	96.1	96.9	3.5	3.9	3.1
40 - 44	234	97.8	97.7	97.8	2.2	2.3	2.2
45 - 49	251	95.4	94.7	96.1	4.6	5.3	3.9
50 - 54	205	96.0	94.9	97.3	4.0	5.1	2.7
55 - 59	145	93.7	92.6	94.7	6.3	7.4	5.3
60 - 64	86	88.8	85.4	92.5	11.2	14.6	7.5
65 - 69	31	91.6	91.0	92.3	8.4	9.0	7.7
70 - 74	18	90.0	86.8	95.2	10.0	13.2	4.8
75 +	23	83.5	79.3	88.2	16.5	20.7	11.8
Total	**3,102**	**95.5**	**94.5**	**96.5**	**4.5**	**5.5**	**3.5**

Figure 26: Proportion of children ever born and still alive by sex and by age of mother, Nauru: 2011

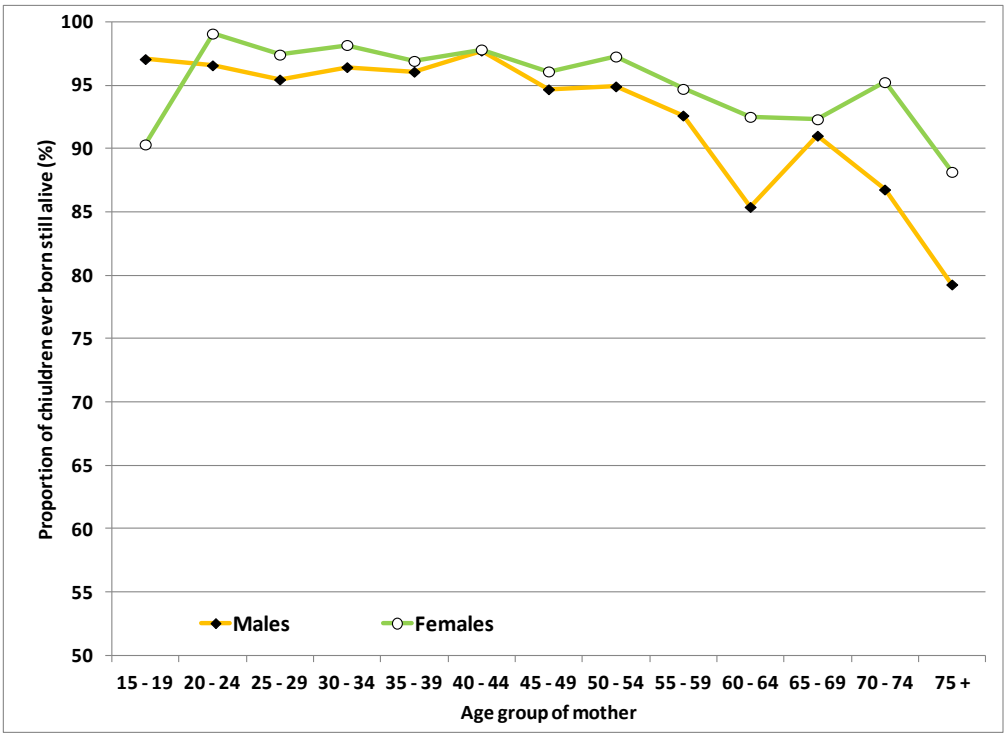
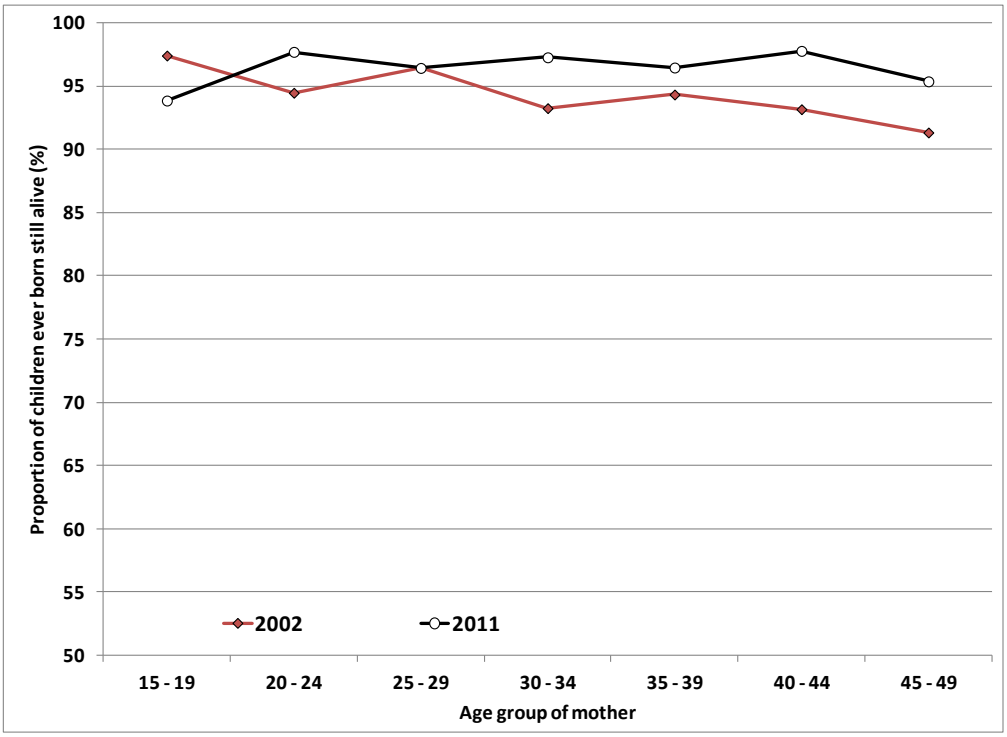


Figure 27: Proportion of children ever born and still alive by age of mother, Nauru: 2002 and 2011



Using the above census data on number of live-births and proportions of children still living (by age group of mother), the following mortality indices have been obtained using the United Nations software package MORTPAK4.1, procedures CEBCS, and the assumption that the United Nations **Far-Eastern** model life tables resembles most closely the empirical mortality pattern of Nauru's population (section 3.2.2). The calculated infant mortality rate (IMR)[2] for the age group 20-25 of 32 for males and less than 15 for females seems implausible, especially when comparing it to the IMR of 38 for the total Nauru population derived from the 2007 Nauru Demographic and Health Survey. Values based on age groups 25-30 result in an IMR of 38 for males and 23 for females, which still seems low (Apps.8 and 9).

Therefore it has to be concluded that the census data on children ever born and surviving do not provide a realistic picture of child mortality levels in Nauru.

[2] reference period is June/July 2009

3.2.4 Census data on adult mortality

Adult mortality levels can be estimated from responses to the question

- whether a respondent's mother or father was still alive (orphanhood), and
- whether a respondent's marital status was "widowed" (widowhood).

Orphanhood

The census questionnaire included questions on whether respondents' mothers and fathers were still alive. The answers of persons in the age range 15-54 years to these questions can yield indirect estimates of adult mortality[ii].

From the total population of 9,945, 65.2% responded that their father was still alive (6,347 people). This compares to 7,468 people or 75.3% who responded that their mother was still alive (Table 13 and Figure 28).

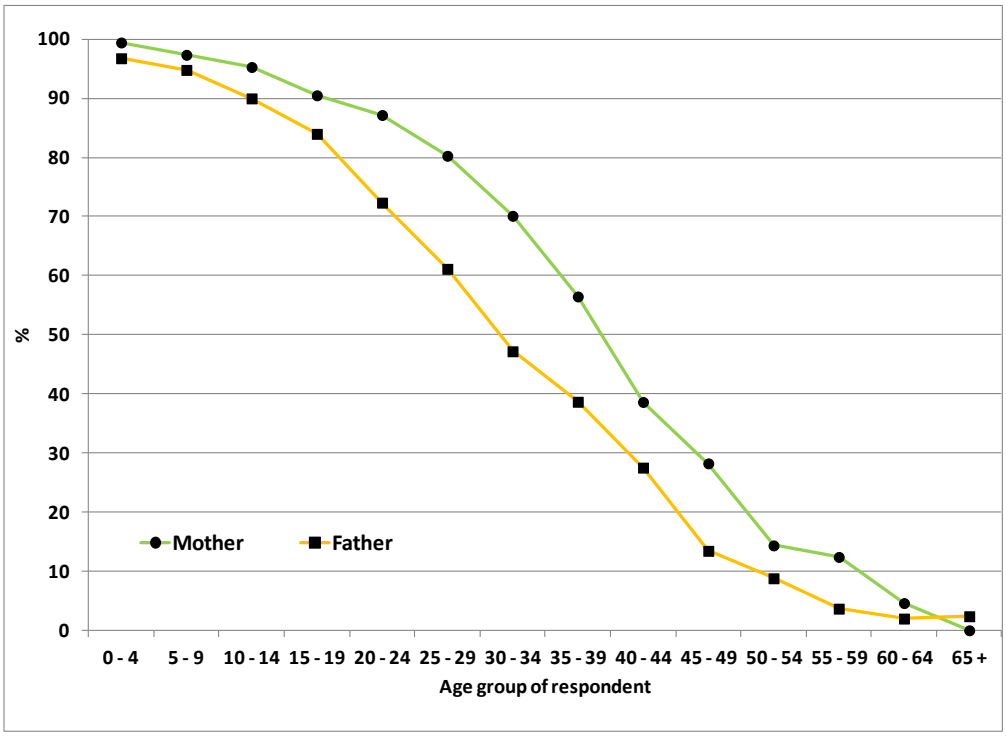
The number and proportion of respondent's mother still alive is higher than that of fathers at any age of respondent. There are 2 explanations for this:

1. Females (mothers) usually live longer lives than males (fathers), and
2. Fathers are usually older than mothers, because of their age difference at marriage. In section 4.1 it was calculated that the average age at marriage (SMAM) was 24.4 and 22.6 years for males and females respectively; an age difference of almost 2 years between spouses.

Table 13: Population by 5 year age group and whether biological father or mother is still alive, Nauru: 2011

Age group	Number of respondents	Father still alive			Mother still alive		
		Yes	No	NS	Yes	No	NS
0 - 4	1,596	1,498	50	48	1,586	9	1
5 - 9	1,133	1,057	58	18	1,102	30	1
10 - 14	1,041	916	102	23	991	49	1
15 - 19	916	755	144	17	829	87	0
20 - 24	1,024	722	276	26	890	131	3
25 - 29	971	576	366	29	777	191	3
30 - 34	774	354	396	24	542	231	1
35 - 39	597	225	357	15	336	259	2
40 - 44	480	131	345	4	185	294	1
45 - 49	483	64	412	7	135	343	5
50 - 54	378	33	342	3	54	322	2
55 - 59	274	10	263	1	34	240	0
60 - 64	152	3	148	1	7	145	0
65 - 69	53	1	52	0	0	53	0
70 - 74	35	1	34	0	0	35	0
75 +	38	1	37	0	0	37	1
Total	**9,945**	**6,347**	**3,382**	**216**	**7,468**	**2,456**	**21**

Figure 28: Proportion of respondent's father or mother still alive, Nauru: 2011



The data on orphanhood were used to calculate adult mortality rates, specifically the life expectancy at age 20 (Table 14). The software package MORTPAK, procedure ORPHAN, was used to calculate the adult mortality rates. Please note that the *mean age at childbearing (MAC)*, a required data input for this method, was calculated based on the number of registered births for the years 2009-2011. The MAC-value for males was adjusted by the age difference of the calculated average age at marriage for males and females (*SMAM)* which was calculated at 24.4 years and 22.6 for males and females, an age difference of 1.8 years.

Life expectancy at age 20 - the number of years a 20-year old person can on average expect to live – was 39.8 years for males and 49.3 years for females. The calculated higher female life expectancy corresponds to the higher proportion of respondent's mothers still alive than their fathers (Apps.10 and 11).

Table 14: Life expectancy at age 20 (in years), based on the orphanhood method, MORTPAK's procedure ORPHAN, Nauru: 2011*

Census year	Males	Females	Total
2011	39.8	49.3	44.5

*note that the indicator for males refer to September 1997, and for females to May 2000

Widowhood

The number and proportion of females widowed is higher than that of males (Table 15 and Figure 29). There are 2 explanations for it:

1. Females usually live longer lives than males (her spouse), and
2. Males are usually older than females, because of their age difference at marriage (section 4.1).

An attempt was made to use the data on widowhood to calculate adult mortality rates, specifically the life expectancy at age 20, by applying the software package MORTPAK, procedure WIDOW. Unfortunately, the data do not allow the calculation of female values, because the proportion of male widowers is too small to calculate any reasonable indicators.

There are 2 explanations for this:

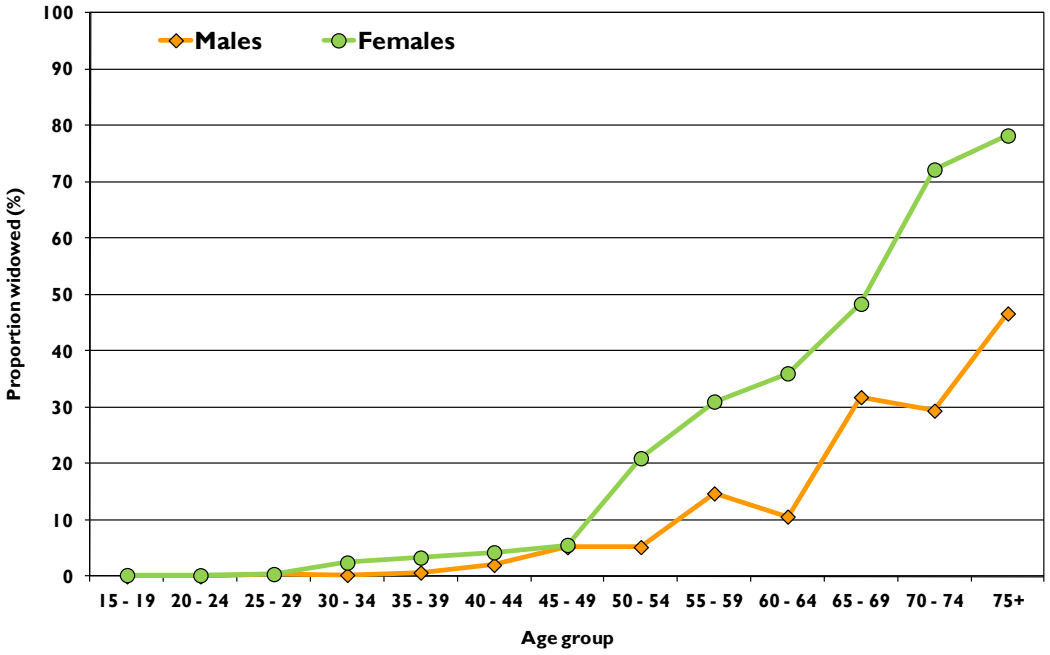
1. Males did incorrectly state their marital status;
2. A high proportion of males who lost their spouse remarried, and although widowed once, is tabulated as 'married'.

Nevertheless, the data on marital status (widowhood) provides interesting and valuable insights into mortality differentials between males and females, as the large difference in widowed males and females points to lower mortality rates (higher life expectancies) for females than males.

Table 15: Population 15 years and older by sex and widowed, Nauru: 2011

Age group	Total population			Widowed population		
	Total	Males	Females	Total	Males	Females
15 - 19	916	477	439	1	0	1
20 - 24	1,024	511	513	1	0	1
25 - 29	971	481	490	4	2	2
30 - 34	774	407	367	10	1	9
35 - 39	597	297	300	12	2	10
40 - 44	480	246	234	15	5	10
45 - 49	483	232	251	26	12	14
50 - 54	378	173	205	52	9	43
55 - 59	274	129	145	64	19	45
60 - 64	152	66	86	38	7	31
65 - 69	53	22	31	22	7	15
70+	73	32	41	43	12	31
Total	**6,175**	**3,073**	**3,102**	**288**	**76**	**212**

Figure 29: Proportion of population 15 years and older by sex and widowed, Nauru: 2011



3.2.5 Mortality levels based on vital statistics

3.2.5.1 Infant mortality

The infant mortality rate can be directly calculated from the registered numbers of births and infant deaths whereas the number of infant deaths is divided by the number of births by sex and year. The calculated indicator represents the number of infant deaths per 1,000 births (Table 16 and Figure 30).

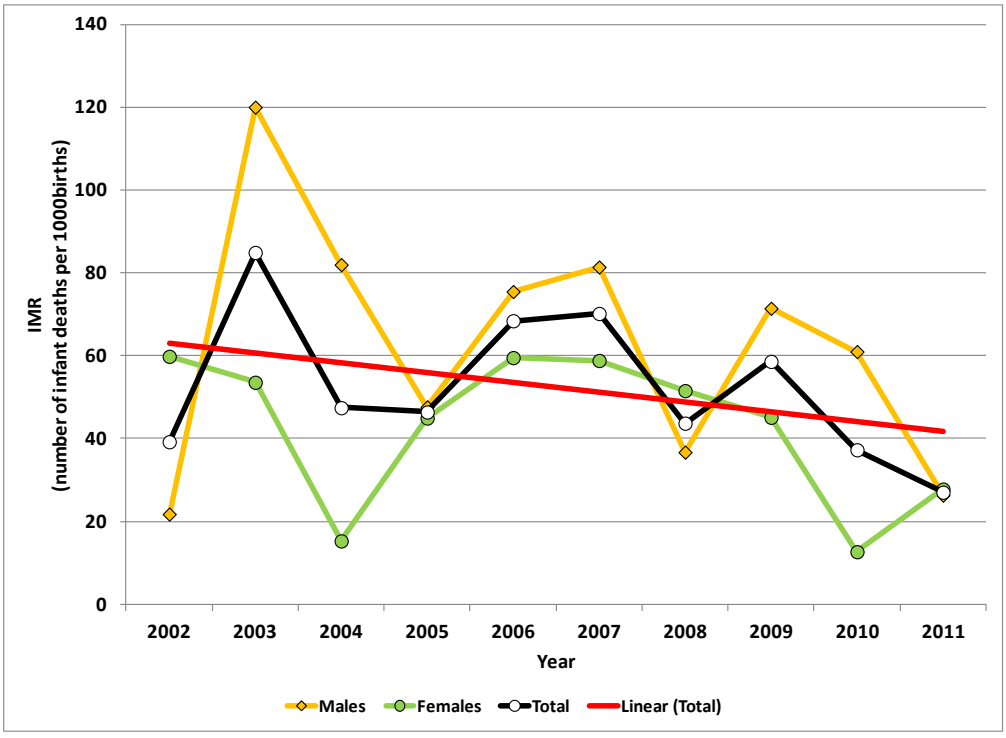
The calculated infant mortality rates for males and females for the period 2002-2006 was 67 and 45 respectively, and for the period 2007-2011 is was 52 and 35 for males and females. Fortunately this points to an improvement in infant mortality, which is also represented by the red trend line in Figure 30.

Table 16: Registered numbers of births and infant deaths, and infant mortality rate (IMR), Nauru: 2002-2011

Year	Number of births			Number of infan deaths			IMR (‰)		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
2002	138	117	255	3	7	10	22	60	39
2003	100	112	212	12	6	18	120	54	85
2004	122	131	253	10	2	12	82	15	47
2005	105	89	194	5	4	9	48	45	46
2006	106	84	190	8	5	13	75	60	68
2007	86	85	171	7	5	12	81	59	70
2008	109	97	206	4	5	9	37	52	44
2009	140	133	273	10	6	16	71	45	59
2010	164	158	322	10	2	12	61	13	37
2011	190	180	370	5	5	10	26	28	27
2002-2006	**571**	**533**	**1,104**	**38**	**24**	**62**	**67**	**45**	**56**
2007-2011	**689**	**653**	**1,342**	**36**	**23**	**59**	**52**	**35**	**44**

Source: Nauru Civil Registration Office

Figure 30: Infant mortality rate, Nauru: 2002-2011



Source: Nauru Civil Registration Office

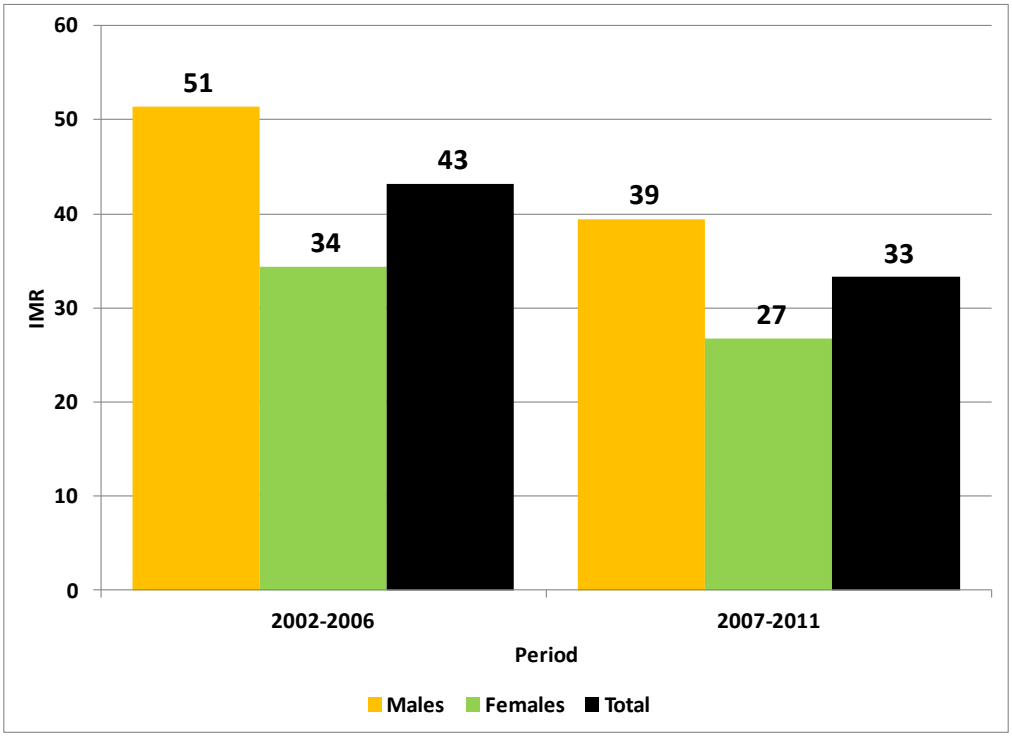
However, as has been shown in section 3.1, the number of registered births had been most likely underreported which results in the calculation of inflated IMRs (providing that the reporting of infant deaths is correct). The adjusted IMR are 43 for the period 2002-2006; 51 for males and 34 for females,

and 33 for the period 2007-2011; 39 for males and 27 for females (Table 17 and Figure 31). These estimates are comparable to results produced by the 2007 DHS of 38 for the total population (reference period is 2003-2007). Still, there is a likelihood that there is (1) also an underreporting of the number of (infant) deaths that would result in two low estimates of the IMR, and (2) there is the likelihood that the data on infant deaths includes stillbirths, which would inflate the calculated IMRs. Without being certain about the reliability of Nauru's vital statistics system it is impossible to provide an accurate estimate of the current child mortality levels in Nauru.

Table 17: IMR based on adjusted number of births, Nauru: 2002-2011

Year	Adjusted number of births			Number of infan deaths			IMR (‰)		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
2002	150	141	291	3	7	10	20	50	34
2003	133	126	259	12	6	18	90	48	69
2004	162	153	315	10	2	12	62	13	38
2005	147	138	285	5	4	9	34	29	32
2006	147	139	287	8	5	13	54	36	45
2007	164	155	319	7	5	12	43	32	38
2008	181	171	352	4	5	9	22	29	26
2009	193	182	375	10	6	16	52	33	43
2010	170	161	331	10	2	12	59	12	36
2011	204	192	396	5	5	10	25	26	25
2002-2006	**739**	**697**	**1,436**	**38**	**24**	**62**	**51**	**34**	**43**
2007-2011	**913**	**861**	**1,774**	**36**	**23**	**59**	**39**	**27**	**33**

Figure 31: IMR based on adjusted number of births, Nauru: 2002-2006 and 2007-2011



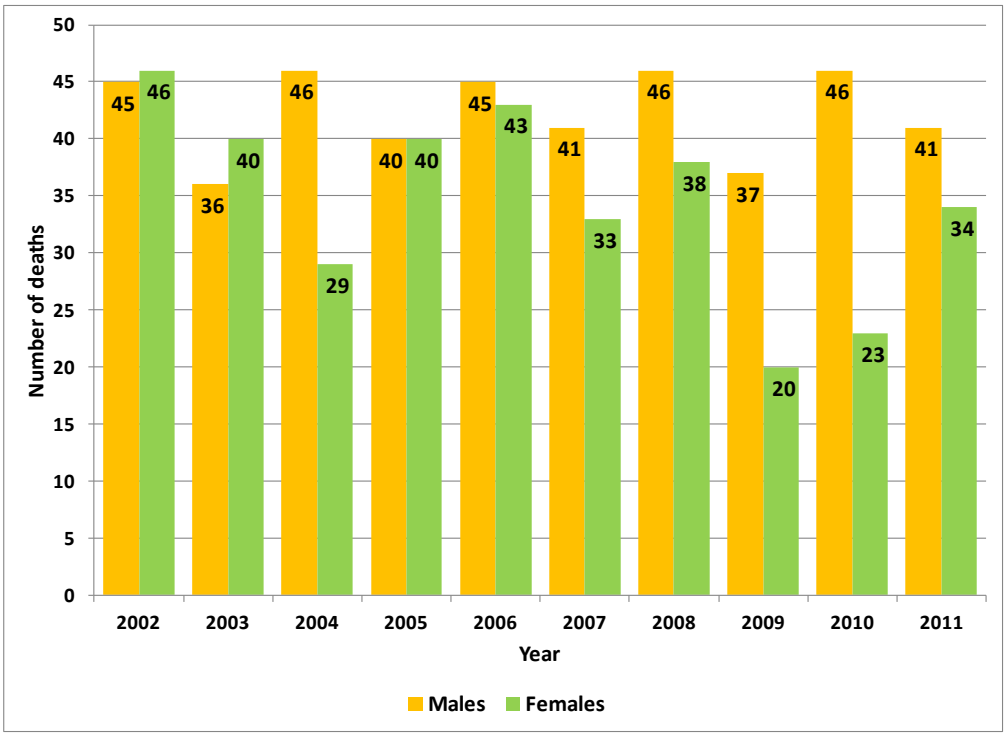
3.2.5.2 Deaths by age and sex

The following estimates of Nauru's mortality levels are based on the registered number of deaths by age and sex for the years 2002-2011 (Figure 32 and App.12). It should be seen as a positive sign that there doesn't appear a dip in the number of registered deaths during the period 2005-2009 as was the case with births (Figs.17 and 24), and it is hoped that the registration of deaths is more complete than that of births.

As a first step the average number of deaths of the period 2002-2006, and 2007-2011 have been calculated. Secondly the estimated mid-period population by age and sex for the two periods was calculated by averaging the population size by age and sex of the respective 2 census populations that cover each period (Table 18).

Age specific death rates (ASDR) were derived by dividing the number of deaths by age and sex of the periods 2002-2006, and 2007-2011 by the respective population by age and sex (Table 19 and Figure 33).

Figure 32: Registered numbers of deaths by sex, Nauru: 2011



Source: Nauru Civil Registration Office

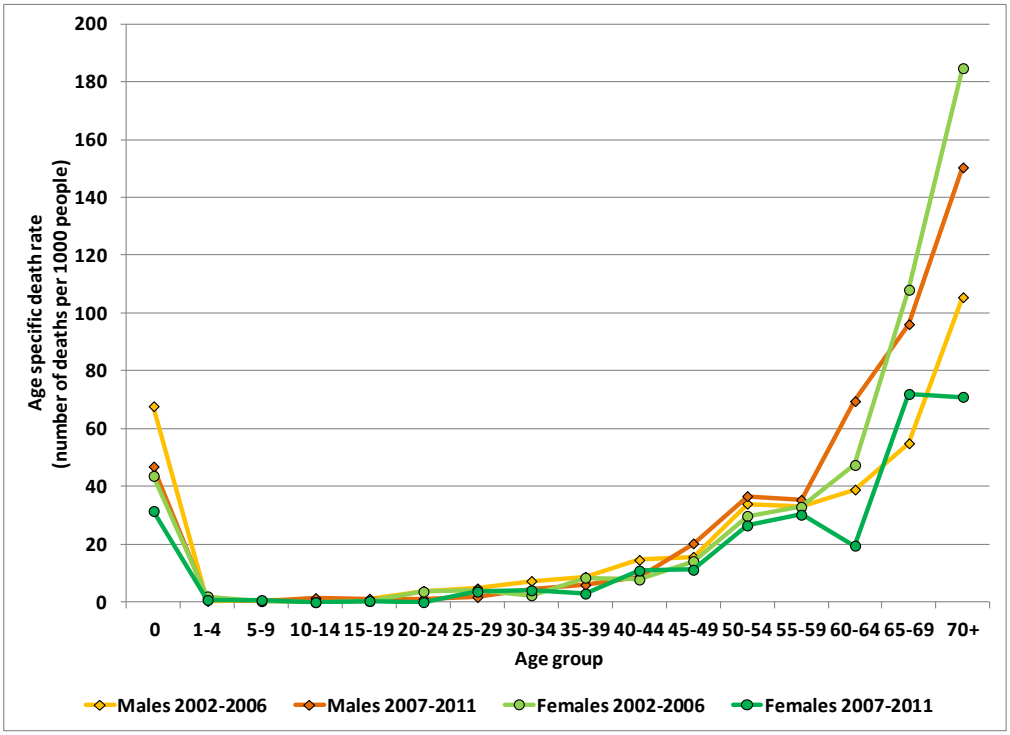
Table 18: Estimated mid-period population by age and sex, and average number of deaths by age and sex, Nauru: 2002-2006 and 2007-2011

Age	Pop 2002-2006			Pop 2007-2011			Deaths 2002-2006			Deaths 2007-2011		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
0	112	110	222	153	146	299	8	5	12	7	5	12
1-4	506	504	1,010	566	525	1,091	0	1	1	1	0	1
5-9	656	592	1,249	573	555	1,128	0	0	1	0	0	1
10-14	613	545	1,158	560	506	1,065	0	0	0	1	0	1
15-19	523	512	1,036	508	475	983	1	0	1	1	0	1
20-24	512	492	1,004	515	516	1,031	2	2	4	1	0	1
25-29	420	391	811	459	439	899	2	2	4	1	2	2
30-34	355	337	692	369	342	711	3	1	3	2	1	3
35-39	341	307	649	300	271	571	3	3	6	2	1	3
40-44	274	307	581	249	257	506	4	2	6	2	3	5
45-49	230	254	483	226	250	476	4	4	7	5	3	7
50-54	165	174	339	169	188	358	6	5	11	6	5	11
55-59	97	91	188	113	119	232	3	3	6	4	4	8
60-64	62	42	104	55	61	116	2	2	4	4	1	5
65-69	25	26	51	21	28	49	1	3	4	2	2	4
70+	32	41	73	35	39	74	3	8	11	5	3	8
Total	**4,923**	**4,726**	**9,649**	**4,870**	**4,719**	**9,589**	**42**	**40**	**82**	**42**	**30**	**72**

Table 19: Age-specific death rates (number of deaths by age and sex per 1000 population), Nauru: 2002-2006 and 2007-2011

Age	Number of deaths per 1000					
	2002-2006			2007-2011		
	Males	Females	Total	Males	Females	Total
0	68	44	56	47	32	39
1-4	0	2	1	1	1	1
5-9	1	0	0	0	1	1
10-14	1	0	0	1	0	1
15-19	1	0	1	1	0	1
20-24	4	4	4	1	0	1
25-29	5	4	4	2	4	3
30-34	7	2	5	4	4	4
35-39	9	8	9	6	3	5
40-44	15	8	11	9	11	10
45-49	16	14	15	20	11	16
50-54	34	30	32	37	27	31
55-59	33	33	33	35	30	33
60-64	39	47	42	69	20	43
65-69	55	108	82	96	72	82
70+	105	185	150	150	71	108
Total	**8.6**	**8.4**	**8.5**	**8.7**	**6.3**	**7.5**

Figure 33: Age-specific death rates (number of deaths by age and sex per 1000 population), Nauru: 2002-2006 and 2007-2011



The curves of the ASDRs show a typical pattern with relatively high levels at age 0, the infant deaths, and very low levels for the population aged 1-4 to about age 19 when levels slowly increase. From age 55 mortality levels rapidly increase as the probability of dying increases with age.

One interesting observation of the data in Table 19 is the decrease of the age-specific death rates of the population aged 0 (zero), which is an approximation of the infant mortality rate, and confirms the decreasing trend as shown in Figure 31.

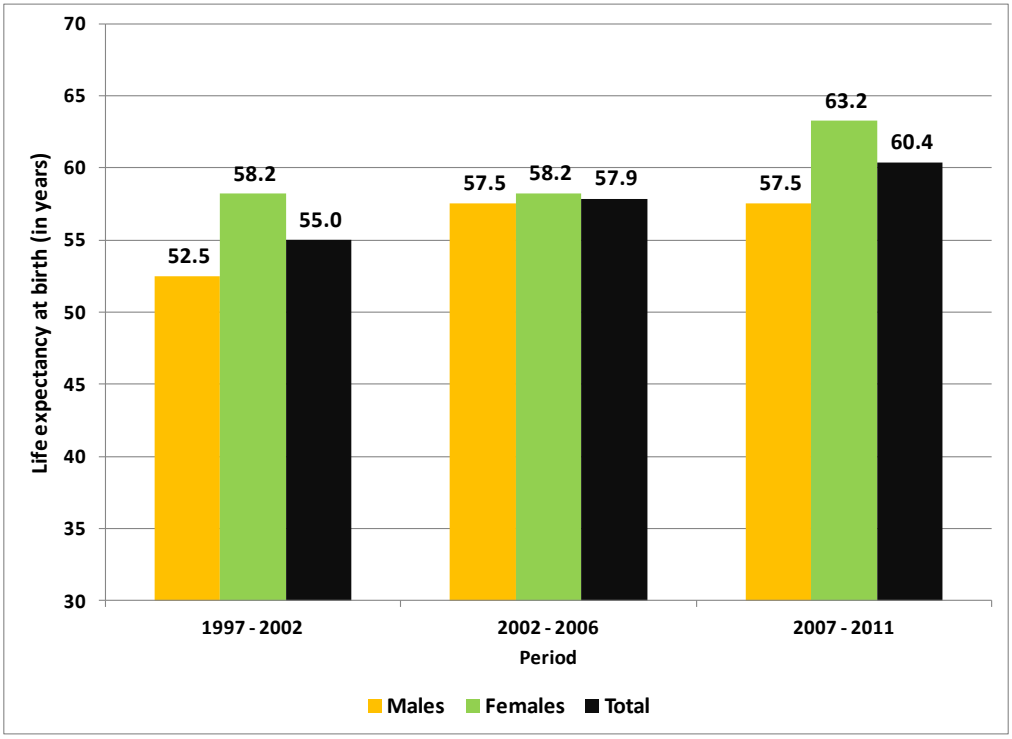
3.2.5.3 Life expectancy at birth

The registered number of deaths by age and sex and the calculated mid-period populations (Table 18), as well as the derived infant mortality rates (Table 17) were used to compute life tables for males and females for the two periods 2002-2006 and 2007-2011 (Fig.34 and App.13-16). See also Appendix 17 for a brief explanation of a life table.

The overall **trend in life expectancy at birth** for the total Nauru population **was positive** as life expectancy increased from 55 years for the period 1997-2002 to 57.9 years for the period 2002-2006, and further to 60.4 years for the period 2007-2011. However, **male life expectancy at birth** stagnated at a level of 57.5 years. In contrast, **life expectancy at birth for females** showed a significant increase from 58.2 years for 2002-2006 to **63.2 years** for 2007-2011. Note that these estimates should be regarded as a

high estimate as it is possible that the number of deaths that the calculations are based on could be under reported.

Figure 34: Life expectancy at birth by sex, Nauru: 1997-2002, 2002-2006 and 2007-2011



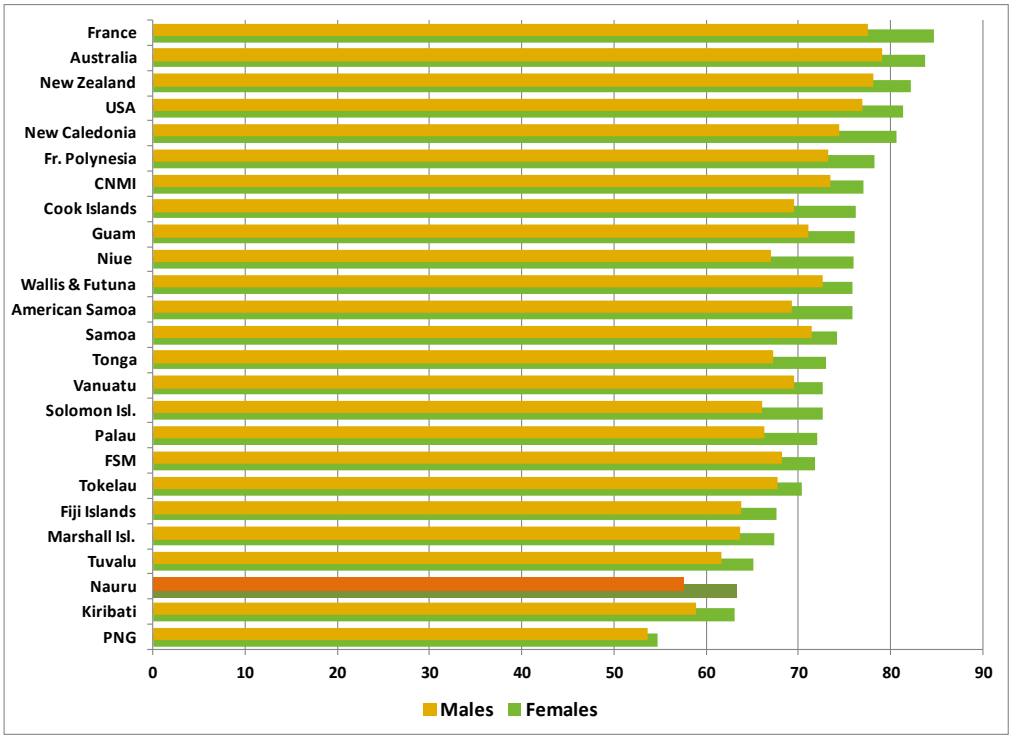
The above mortality indicators clearly show more positive mortality indicators for females than for males, with females living longer, on average almost six years longer than males. The findings are supported by the following data:

- the proportion of surviving female children was higher than males (Table 12 and Fig.26)
- more mothers than fathers survive to older ages (Table 13 and Fig.28)
- the proportion of widowed females was considerably higher than that of widowed males (Table 15 and Fig.29), indicating earlier death of male spouses.

Life expectancies for males and females in the Nauru compare with 78.8 and 82.7 years for males and females in New Zealand, and in Australia it is 79.3 and 83.9 years. Therefore an average person in New Zealand or Australia lives about 20 years longer than a Nauruan (Fig.35).

Nauru's life expectancy is one of the lowest of all Pacific Island Countries and Territories (PICT).

Figure 35: Life expectancy at birth by sex, PICT: latest available year



3.3 International migration

3.3.1 Introduction

International migration refers to people who cross national boundaries to move to another country. In addition to this spatial consideration, time also plays a major role in the analysis of migration. People are usually regarded as migrants only after spending a minimum period of time in their country of destination. Usually the minimum time required to qualify as migrant is half a year in-country, and sometimes even a full year. Someone coming for a short visit is not a migrant — he or she is a visitor or tourist.

Intent is also of crucial importance, as migration usually involves a change of a person's permanent residential address in pursuit of employment, business or educational opportunities.

The need to consider time and intent highlights one of the key problems concerning migration. Whether or not a particular person qualifies as a migrant can only be established after a certain period of time, usual at least six months, in order to establish whether the arriving and departing person qualifies as a visitor or migrant.

3.3.2 Administrative data

The net impact of migration flows (net migration) is measured as the difference between the number of arrivals (immigrants) and departures (emigrants) during a certain period of time.

Net migration = Arrivals (immigrants) minus **Departures (emigrants)**

Therefore if net migration was positive it means that the number of arrivals (immigrants) was higher than the number of departures (emigrants); if net migration was negative, the number of departures (emigrants) was higher than the number of arrivals.

Unfortunately, data on arrivals and departures from passenger's **arrivals and departure cards** collected by the Customs and Immigration office is not available, at least not in an electronic form. It is therefore currently not possible to obtain an accurate picture of the magnitude of migration flows to and from Nauru based on immigration statistics.

3.3.3 Census data

The 2011 census included four questions that provide an indication of the level of immigration. It asked questions about a respondent's:

1. Place of birth
2. Nationality
3. Citizenship
4. Time spend in Nauru.

Regarding **place of birth**, 9% (914 people) of respondents answered that they were born overseas (Table 25 and Figure 44); 362 of these people were Nauruan nationals.

Regarding **nationality**, 6% (632 people) of the population answered that they are nationals other than Nauruan (Table 26 and Figure 45).

Regarding **citizenship**, 5% (527 people) of the population answered that they are citizens other than Nauruan (Table 27 and Figure 46).

Regarding **time spend in Nauru**, 4% (396 people) of the population answered that they spent less than one year in Nauru, and 27 people had spent less than one month in Nauru; 322 of the 396 people who spent less than one year in Nauru were Nauruan nationals, and the remaining 74 people were non-Nauruan nationals.

However, questions 1–4 above only give an indication of long-term immigration. Information on emigration is not available from a de facto census as people that left the country cannot be enumerated and/or interviewed.

3.3.4 Balancing equation

The only reliable method to derive at a crude indication of the level of net migration in Nauru is by applying the balancing equation to the intercensal 2002–2006 and 2006-2011 population growth:

Balancing equation:

Population growth = Births minus **Deaths** plus **Net migration**

Net migration can be estimated as

Net migration = Population growth minus **Births** plus **Deaths**

From the total population count of the 2002 census (10,065), the 2006 (mini) census (9,233), and the 2011 census (10,084) the overall **population growth** of the intercensal periods can be calculated (Table 20).

In addition Table 20 lists the registered total **number of births and deaths**, and annual number of births and deaths. The difference between births and deaths is the **natural increase**, and the difference between population growth and natural increase is the **number of net migrants**.

During the period 2002-2006, which covers exactly 4.1 years, the total number of net migrants was -1,679 people, meaning that 1,679 more people had left the country than had arrived; this was -859 males and -819 females.

This estimate is consistent with the fact that shortly before the 2006 (mini) census was undertaken, more than 1,200 people were repatriated to their home countries (mainly Kiribati and Tuvalu) following the deterioration of Nauru's phosphate driven economy.

However, this all changed during the period 2006-2011 that covers exactly 5 years, when only a net total of 543 migrants left Nauru, and the overall population growth turned positive.

Table 20: Population change, number of registered births and deaths, and number of net migrants by sex, Nauru: 2002-2006 and 2006-2011

Period	Sex	length of period (in years)	Population growth		Number of births		Number of deaths		Natural increase		Number of net migrants	
			total	annually	total	annually	total	annually	total	annually	total	annually
2002-2006	**Total**	**4.1**	**-832**	**-203**	**1,176**	**287**	**329**	**80**	**847**	**206**	**-1,679**	**-409**
	Males		-426	-104	605	147	172	42	433	106	-859	-210
	Females		-406	-99	571	139	157	38	413	101	-819	-200
2006-2011	**Total**	**5.0**	**851**	**170**	**1,755**	**351**	**361**	**72**	**1,394**	**279**	**-543**	**-109**
	Males		395	79	903	181	212	42	691	138	-296	-59
	Females		456	91	852	170	150	30	702	141	-246	-49

Finally the crude birth rates (CBR), crude deaths rates (CDR) and migration rates can be calculated - again using the *balancing equation* (Table 21):

Population growth rate = **CBR** minus **CDR** plus **Net migration rate**

Net migration rate = **Population growth rate** minus **CBR** plus **CDR**

Table 21: Population growth rate, crude birth rate (CBR), crude death rate (CDR), and net migration rate by sex, Nauru: 2002-2006 and 2006-2011

Period	Sex	Mid-period population size	Population growth rate (%)	Crude birth rate (CBR) (‰)	Crude death rate (CDR) (‰)	Natural growth rate (‰)	Net migration rate (%)
2002-2006	**Total**	**9,649**	**-2.1**	**29.7**	**8.3**	**21.4**	**-4.2**
	Males	4,923	-2.1	30.0	8.5	21.5	-4.3
	Females	4,726	-2.1	29.4	8.1	21.3	-4.2
2006-2011	**Total**	**9,659**	**1.8**	**36.3**	**7.5**	**28.9**	**-1.1**
	Males	4,908	1.6	36.8	8.6	28.2	-1.2
	Females	4,751	1.9	35.9	6.3	29.6	-1.0

The population growth rate of the period 2002-2006 was -2.1% as the population decreased from 10,065 people in 2002 to 9,233 people. The CBR and CDR were 30 and 8 per 1000 population, and according to the *balancing equation* the **net migration rate was -4.2%** as there were more departures than arrivals.

This however changed completely for the period 2006-2011. The population showed a positive growth rate of 1.8% as the population increased from 9,233 people in 2006 to 10,084 people in 2011.
The CBR and CDR were 36 and 7 per 1000 population, and the **net migration rate was only very slightly negative: -1.1%**.

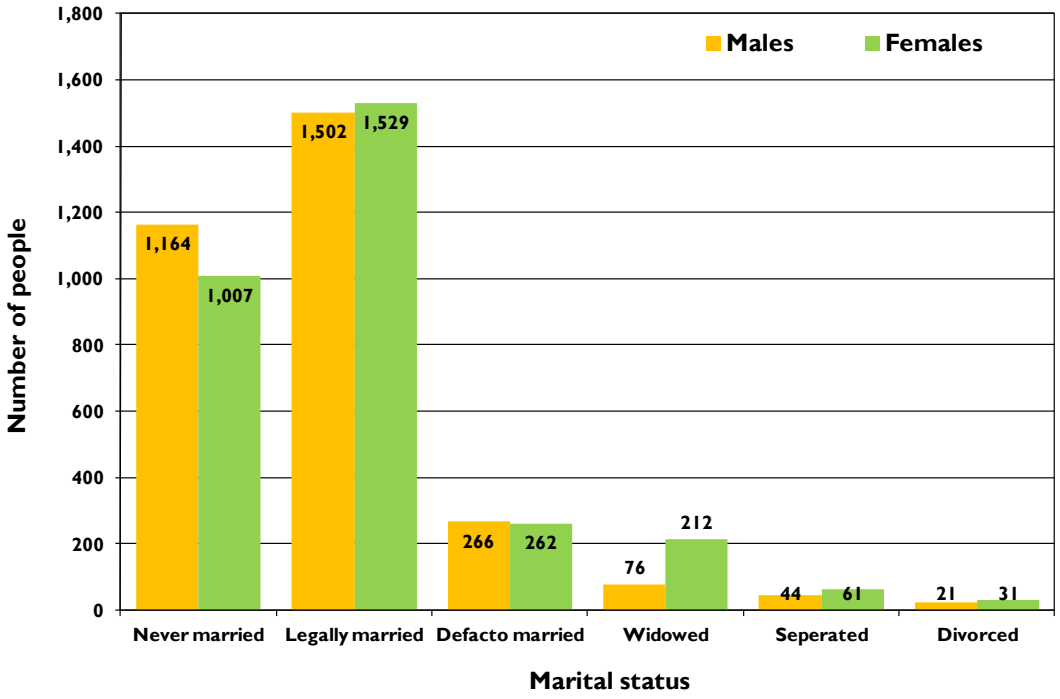
4. SOCIAL CHARACTERISTICS

4.1 Marital status

During the 2011 census, 49% of males (1,502) and females (1,529) aged 15 years and older were legally married and another 9% were living in a de facto relationship (Fig.36). The proportion never married (single), were 38% of males (1,164) and 32% of females (1,007).

A higher proportion of females (7%) were widowed than males (2%).

Figure 36: Population aged 15 and older by marital status, Nauru: 2011



The age at marriage is an important proximate determinant of fertility. Women who marry at an early age often have more children than those marrying later.

The higher proportion of young married women compared with men of the same age indicates that women generally marry at younger ages than men (Table 22 and Fig.37). The average age at marriage (Singulate mean age at marriage, SMAM) was 24.4 and 22.6 years for males and females, respectively, and was calculated based on the proportion of those never married/single by age.

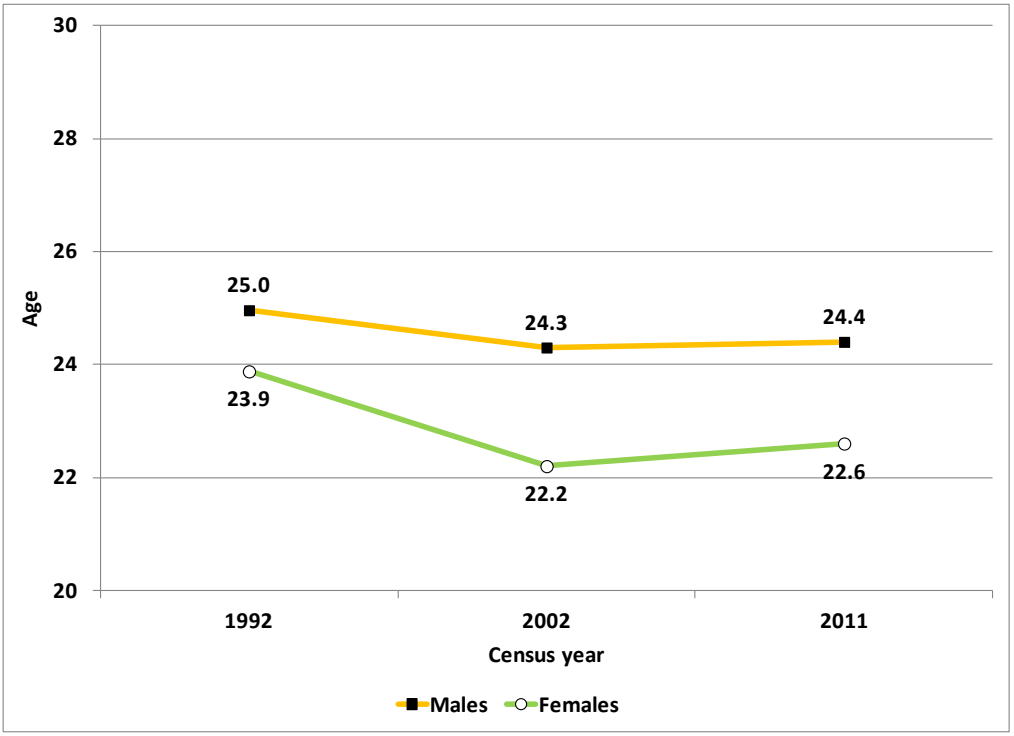
While only 4% of males were married at ages 15-19, it was about 13% of females (Fig.38). At age 20-24 almost half of all women were already married compared with 37% of males. Compared to earlier censuses, the percentage of males and females married at young ages has declined, while the average age

at marriage decreased especially for females from 1992 to 2002, but remained fairly constant since then (Table 22 and Figs.37).

Table 22: Singulate mean age at marriage (SMAM[3]) and percentage married at young ages by sex, Nauru: 1992, 2002, and 2011

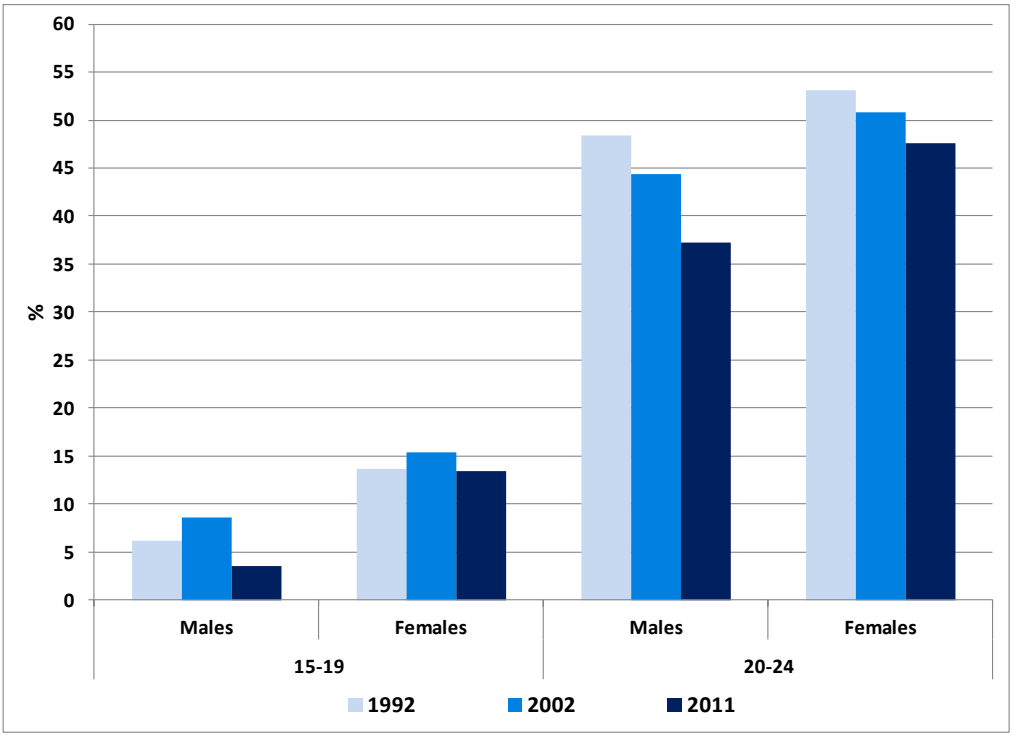
Year	Average age at first marriage			Percentage ever married by age group (%)			
	SMAM*		Difference	15-19		20-24	
	Males	Females	(Men - Women)	Males	Females	Males	Females
1992	25.0	23.9	1.1	6.2	13.7	48.4	53.1
2002	24.3	22.2	2.1	8.6	15.4	44.4	50.8
2011	24.4	22.6	1.8	3.6	13.4	37.2	47.6

Figure 37: Singulate mean age at marriage (SMAM) by sex, Nauru: 1992, 2002 and 2011



[3] 1983. United Nations. Manual X, indirect techniques for demographic estimation. New York: United Nations. 304 p.

Figure 38: Population married at young ages by sex (%), Nauru: 1992, 2002, and 2011



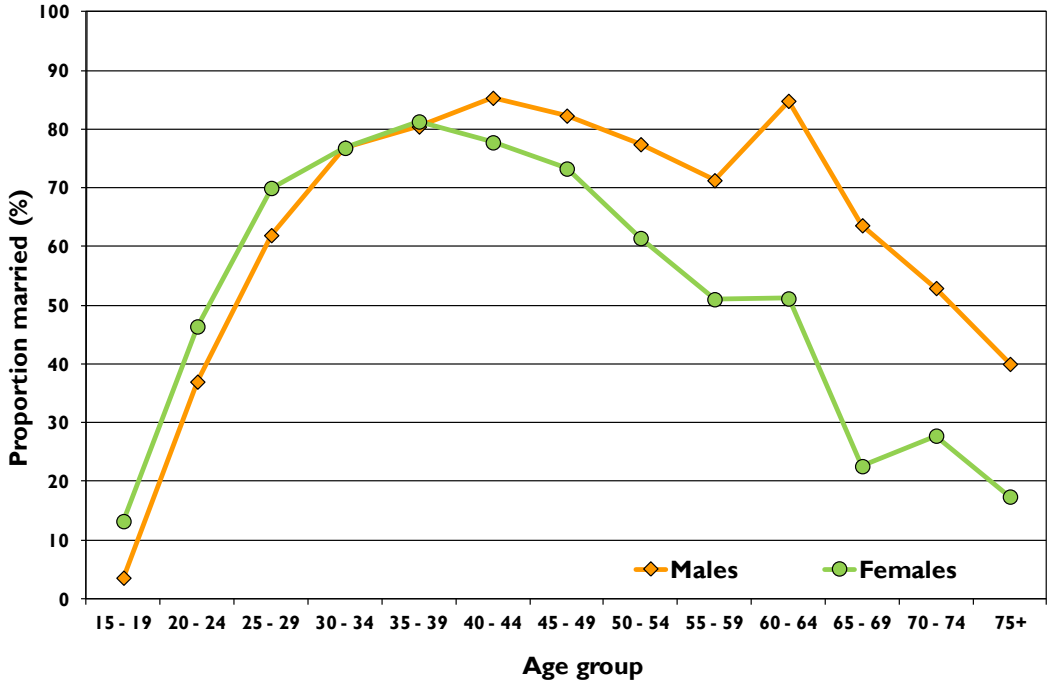
Figures 39 and 40 display the proportion of males and females married/never married by age. Clearly these two figures complement each other. When the proportion of the population married at a certain age is low, it is high for the proportion of the population never married at the same age, and vice versa.

Furthermore, the proportion of females of married status is higher than that of males until age 29. From age 40 the proportion of married females steadily declines because an increasing number of females become widows (Fig.41). The discrepancy between the proportion of widowed males and widowed females, at ages 50 and older increased continuously. At ages 40–45, only 2% of males were widowed, compared with 4% of females. At age 50-54, only 5% of males were widowed, compared with 21% of females, and at age 70 years and older 38% and 76% of males and females were widowed.

The higher proportion of widowed females is explained by:

- lower female mortality rates, and therefore longer life expectancies of female spouses - male spouses usually die before their female partners,
- older age at marriage of males compared with their female partners as expressed in the average age at marriage (SMAM) above.

Figure 39: Population aged 15 and older by sex and proportion married, Nauru: 2011



Note: 'married' include legally married and de facto relationships

Figure 40: Population aged 15 and older by sex and proportion never married, Nauru: 2011

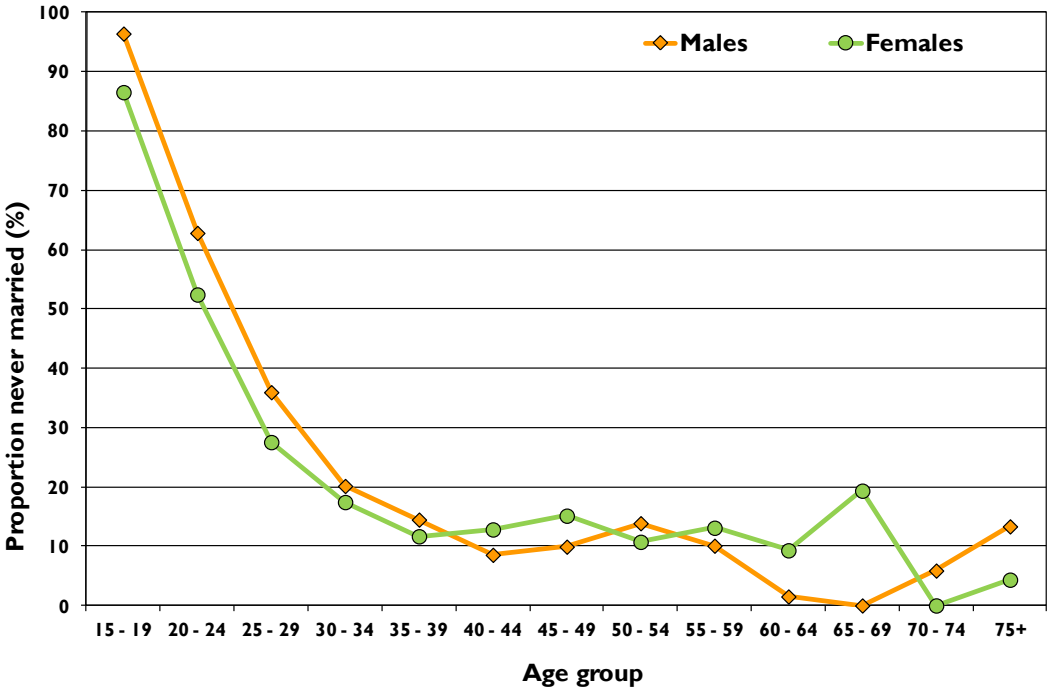
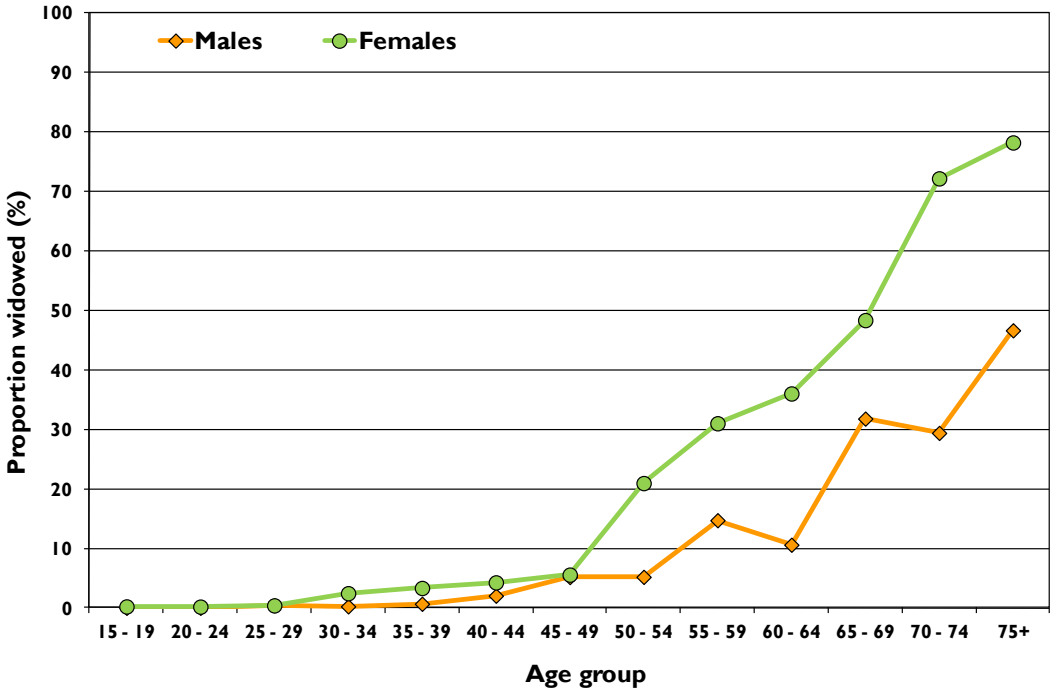


Figure 41: Population aged 15 and older by sex and proportion widowed, Nauru: 2011



4.2 Religion

The Nauruan Congregational Church continues to be the dominant religious denomination in Nauru, with a share of 36% (3,552) of all persons affiliated with this church in 2011 (Table 23 and Fig.42).

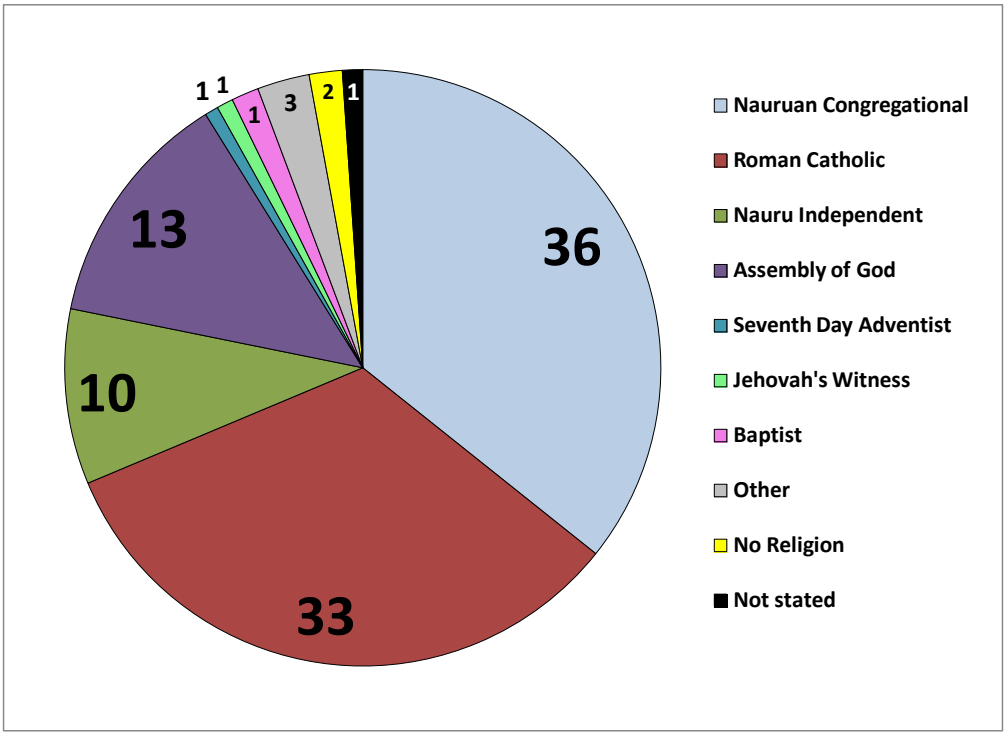
Table 23: Population by religious affiliation, Nauru: 2002 and 2011

Religious denomination	2002	2011	change 2002-2011
Nauruan Congregational	3,563	3,552	-11
Roman Catholic	3,342	3,278	-64
Nauru Independent	1,049	945	-104
Assembly of God		1,291	1,291
Seventh Day Adventist		73	73
Jehovah's Witness		89	89
Baptist		148	148
Other	1,417	282	-1,135
No Religion	456	178	-278
Not stated	238	109	-129
Total	**10,065**	**9,945**	**-120**

The next largest group was the Roman Catholic Church with 3,278 members, and a share of 33% of all denominations, followed by the Assembly of God (13%), and the Nauru Independent Church (10%). All other denominations had 1% or less of the population as members.

Persons with no religion comprised of 2% of the Nauru population, and 109 people did not state their religion.

Figure 42: Population by religious affiliation (%), Nauru: 2011



4.3 Ancestry

The 2011 census included a question where respondents were asked to identify their mother's tribe (Table 24 and Figure 43).

In general all tribes increased in members since 2002, with the exception of the small Irutsi tribe with 4 people.

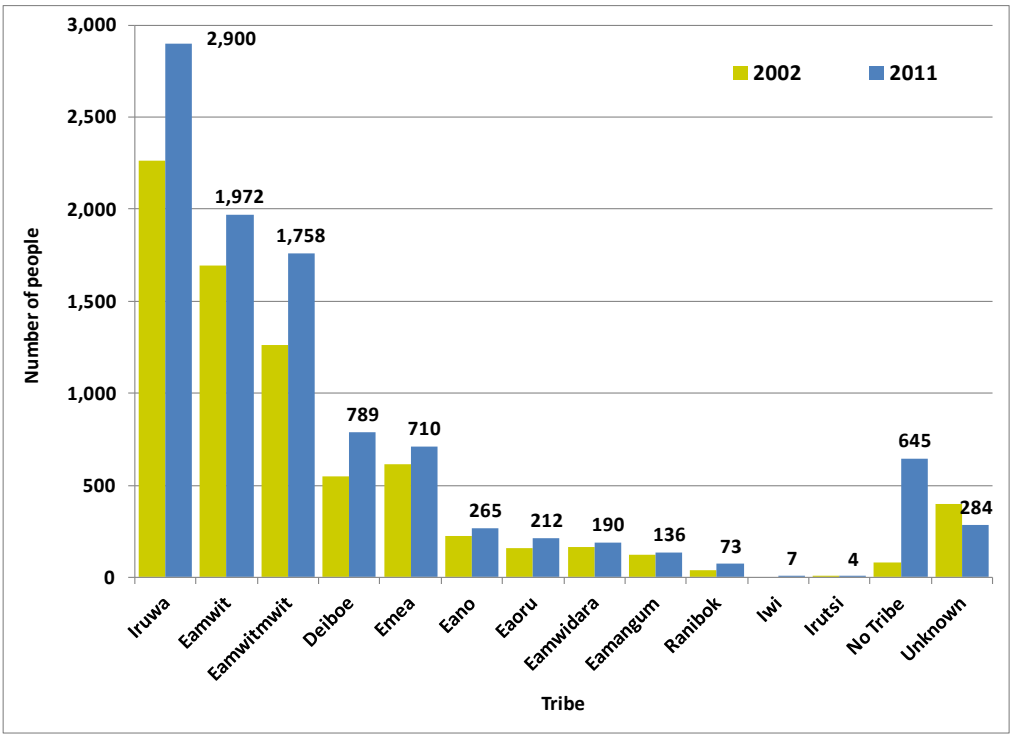
The Iruwa tribe remained the largest group in Nauru. It increased from 2,262 people in 2002 to 2,900 people in 2011. It was followed by the Eamwit tribe (1,972) and the Eamwitmwit tribe (1,758). It is perhaps worth noting that the Iwi tribe had 7 members in 2011while there were none in 2002. The number and proportion of people without a tribe increased from 1% to 6% of the population between 2002 and 2011.

Table 24: Population by sex and mother's tribe, Nauru: 2002 and 2011

Tribe	2002			2011		
	Total	Males	Females	Total	Males	Females
Iruwa	2,262	1,135	1,127	2,900	1,470	1,430
Eamwit	1,696	840	856	1,972	1,013	959
Eamwitmwit	1,259	643	616	1,758	871	887
Deiboe	548	271	277	789	364	425
Emea	616	290	326	710	337	373
Eano	224	99	125	265	123	142
Eaoru	159	81	78	212	107	105
Eamwidara	162	79	83	190	90	100
Eamangum	121	62	59	136	71	65
Ranibok	41	19	22	73	32	41
Iwi	0	0	0	7	4	3
Irutsi	5	3	2	4	1	3
No Tribe	79	35	44	645	357	288
Unknown	400	250	150	284	191	93
Total	**7,572**	**3,807**	**3,765**	**9,945**	**5,031**	**4,914**

Note: the 2002 data only include the Nauruan population

Figure 43: Population by mother's tribe, Nauru: 2002 and 2011



4.4 Country of origin

The 2011 census included three questions to determine a person's place of origin; where a person was born, and what a person's nationality and citizenship was.

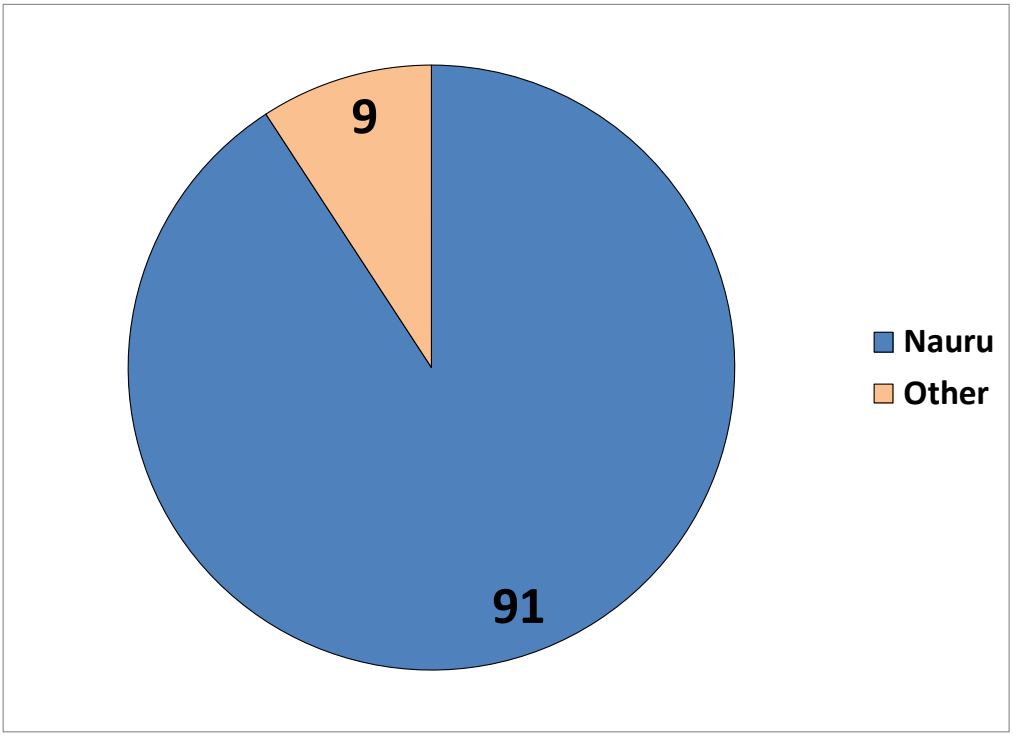
4.4.1 Place of birth

Based on information on the number of people by place of birth, 91% or 9,031 persons were born in Nauru (Table 25 and Fig.44). Less than 900 people were born overseas, most notably in Kiribati (194), Fiji (169) and Australia (147). The proportion of overseas born people declined significantly since 2002 when almost a quarter of all people living in Nauru at the time were born overseas. In particular, the number of people born in Kiribati and China decreased since 2002 when almost 1,000 people born in Kiribati lived in Nauru, and more than 400 were born in China.

Table 25: Population by place of birth, Nauru: 2011

Country	Census year			
	2002		2011	
	number	%	number	%
Nauru	7,777	77	9,031	91
Kiribati	961	10	194	2
Tuvalu	245	2	45	0
Australia	155	2	147	1
New Zealand	25	0	14	0
Fiji	177	2	169	2
Solomon Islands	30	0	42	0
Philippines	83	1	45	0
PR China	413	4	51	1
Republic of China	16	0	88	1
Hongkong	6	0	12	0
India	18	0	8	0
Other	122	1	99	1
Not Stated	37	0	0	0
Total	**10,065**	**100**	**9,945**	**100**

Figure 44: Population by place of birth (%), Nauru: 2011



4.4.2 Nationality

Based on information on the number of people by nationality, the vast majority (94%) of all people were Nauruan nationals (Table 26 and Figure 45). Only 6% of the population had a different nationality than Nauruan, mostly from Kiribati (178) and the PR China (145). The reason why there were more Nauruan nationals counted than Nauruans born in Nauru is because about 4% of Nauruan nationals were born overseas, mainly in Australia (128) and Fiji (102).

Compared to 2002, when one-quarter of the population had a foreign nationality – mainly Kiribati – the number of people with a different nationality than Nauruan declined significantly.

Twenty-six percent (169) of foreign nationals were married to a Nauruan. These were mainly nationals from Kiribati (75), Tuvalu (27) and Fiji (15).

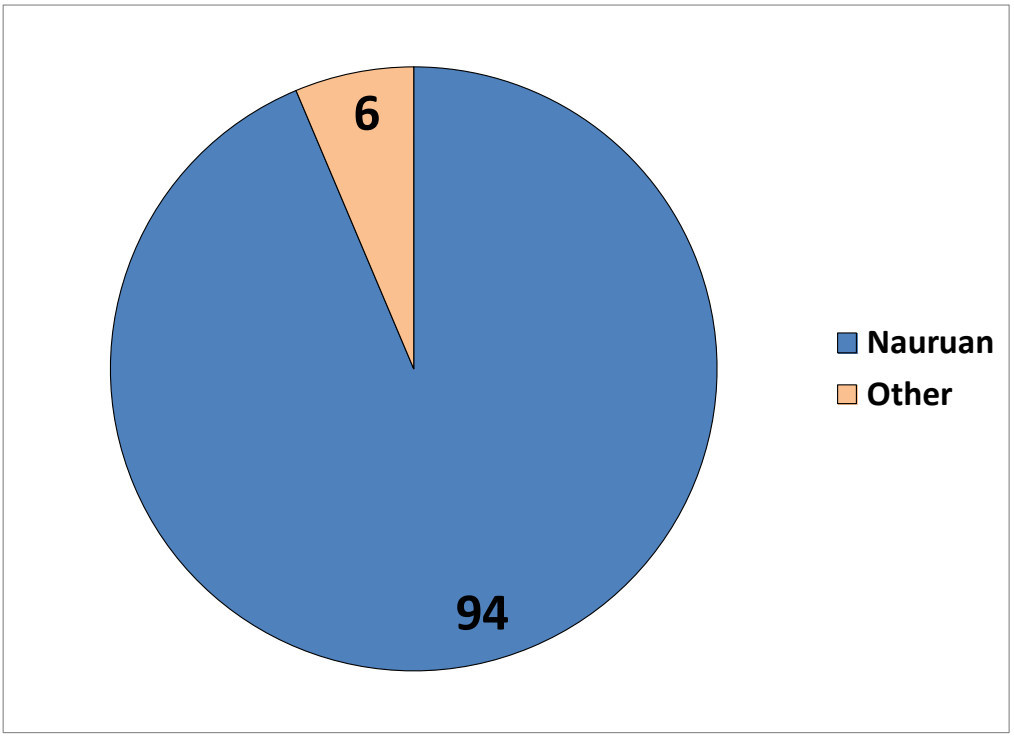
The vast majority (88%) of people with a foreign nationality lived in Nauru for at least 1 year, 11% less than 1 year but at least 1 month, and only 1% lived in Nauru less than 1 month.

Overall 38% of foreign nationals aged 5 years and older spoke Nauruan, mainly nationals from Kiribati and Tuvalu.

Table 26: Population by nationality, Nauru: 2011

Country	Census year			
	2002		2011	
	number	%	number	%
Nauru	7,572	75	9,313	94
Kiribati	1,259	13	178	2
Tuvalu	423	4	42	0
Australia	19	0	26	0
New Zealand	7	0	2	0
Fiji	102	1	64	1
Solomon Islands	39	0	52	1
Philippines	90	1	42	0
PR China	463	5	145	1
Republic of China	0	0	7	0
Hongkong	28	0	0	0
India	58	1	4	0
Other	3	0	70	1
Not Stated	2	0	0	0
Total	**10,065**	**100**	**9,945**	**100**

Figure 45: Population by nationality (%), Nauru: 2011



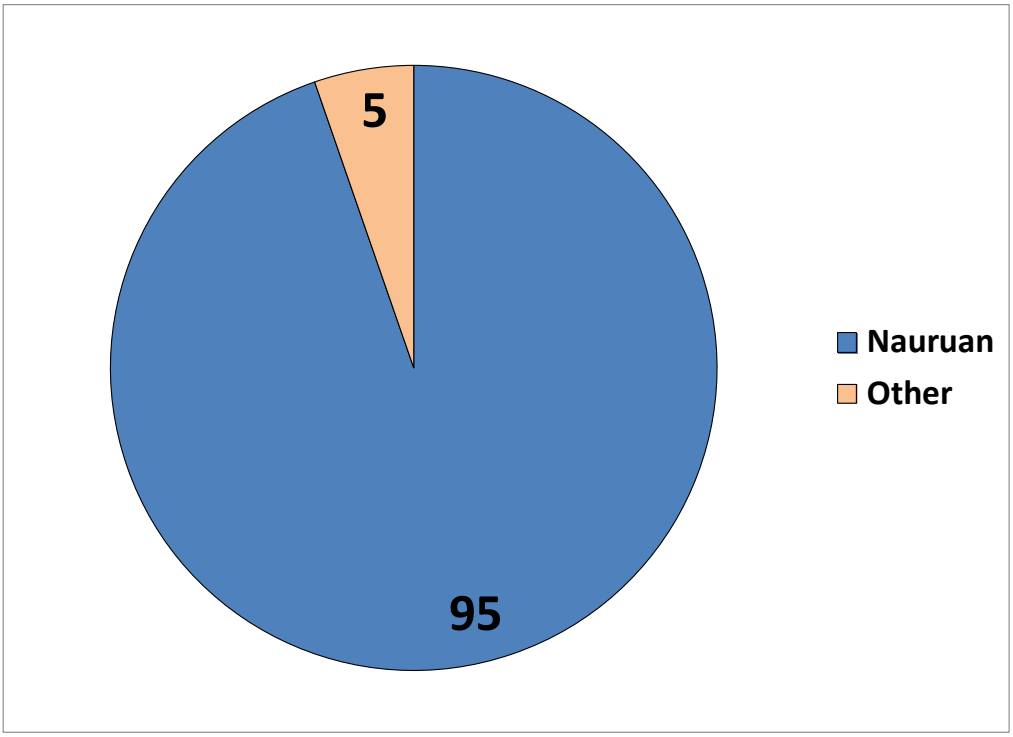
4.4.3 Citizenship

Based on information on the number of people by citizenship, 95% were Nauruan citizens (Table 27 and Figure 46). Only 5% of the population was different citizens than Nauruan, mostly from Kiribati (132) and the PR China (125).

Table 27: Population by citizenship, Nauru: 2011

Country	Census year			
	2002		2011	
	number	%	number	%
Nauru	7,572	75	9,418	95
Kiribati	1,238	12	132	1
Tuvalu	387	4	21	0
Australia	33	0	24	0
New Zealand	17	0	2	0
Fiji	112	1	58	1
Solomon Islands	29	0	41	0
Philippines	93	1	36	0
PR China	411	4	125	1
Republic of China	24	0	17	0
Hongkong	27	0	29	0
India	22	0	2	0
Other	42	0	40	0
Not Stated	58	1	0	0
Total	**10,065**	**100**	**9,945**	**100**

Figure 46: Population by citizenship (%), Nauru: 2011



4.5 Disability

Nauru is a signatory to a United Nations convention to uphold the rights of people with disabilities; and is therefore obliged to:

"Promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities and to promote respect for their inherent dignity."

For the 2011 Census the Nauru Statistics Office was requested by the Government and stakeholders to collect information on disabilities in Nauru.

The question on disabilities included in the 2011 Census was whether a person had any difficulties or health problems in mobility/movement, speaking, recognition, learning, hearing, and/or grasping – regardless of the severity of the difficulties experienced (Table 28). It also asked whether a person cannot move, speak, see, learn, hear, or grasp at all – in other words, whether a person is lame, mute, blind, deaf, paralyzed, or mentally or intellectually disabled (Table 29).

Overall 510 people, about 5% of the total population reported a disability regardless of the severity of the difficulties experienced. The proportion of males (5.5%) with a disability was slightly higher than that of females (4.7%). The disability that was most commonly mentioned were difficulties with recognition (198 people), followed by difficulties with mobility/movement (192/187), hearing (137), learning (84), speaking fluently (82), and grasping (79 people).

Please note that the census questionnaire did not provide the means to measure the degree of difficulties experienced, unless the disability was severe, and a person was unable to perform a certain task at all. This included 78 people, and of those 33 people were recorded as lame, and another 30 people were mute, 24 people were blind, 19 mentally disabled, 15 could not grasp, and 13 were deaf (please note that a person can have more than one disability).

Nine people with a severe disability – 7 males and 2 females - were enrolled in school, and another 8 (7 males and 1 female) were employed for wages or salary.

Table 28: Population reporting a difficulty regardless of the severity of the difficulty, Nauru: 2011

Difficulty	Number of people			% of total number of people		
	Total	Males	Females	Total	Males	Females
Mobility	192	94	98	1.9	1.9	2.0
Movements	187	90	97	1.9	1.8	2.0
Speak fluently	82	41	41	0.8	0.8	0.8
Recognition	198	92	106	2.0	1.8	2.2
Learning	84	49	35	0.8	1.0	0.7
Hearing	137	73	64	1.4	1.5	1.3
Grasping	79	48	31	0.8	1.0	0.6

Table 29: Population reporting a severe difficulty/disability, Nauru: 2011

Difficulty	Number of people			% of total number of people		
	Total	Males	Females	Total	Males	Females
Mobility	33	15	18	0.3	0.3	0.4
Movements	21	15	6	0.2	0.3	0.1
Speak fluently	30	17	13	0.3	0.3	0.3
Recognition	24	15	9	0.2	0.3	0.2
Learning	19	13	6	0.2	0.3	0.1
Hearing	13	10	3	0.1	0.2	0.1
Grasping	15	10	5	0.2	0.2	0.1

As can be expected, the proportion of the population with a disability increased with age (Figs.47 and 48).

While only about 2% of people younger than 20 years of age had a disability, it was about 5% for people aged 25-34 years. From age 40, the proportion of the population with a disability increased continuously. About one-quarter of the population aged 60-69 years reported a disability, and almost half of the population 75 years and older. The difficulty that was most commonly mentioned by the older population was movement/mobility and vision or hearing.

Figure 47: Proportion of the population by age and sex reporting any disability regardless of the severity of the disability, Nauru: 2011

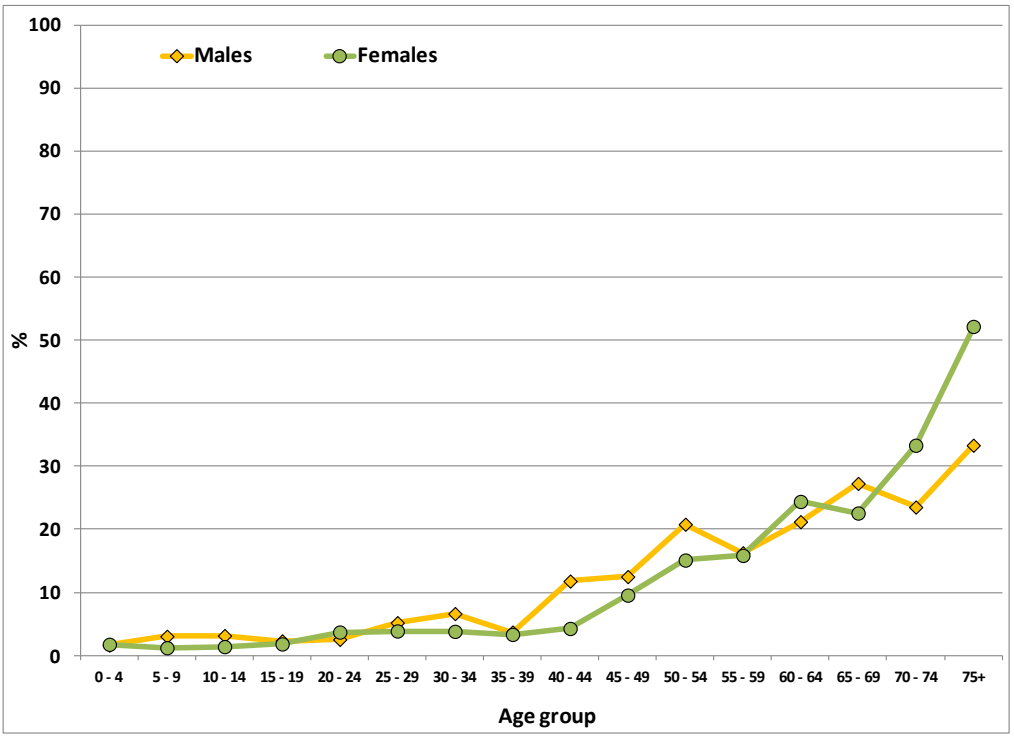
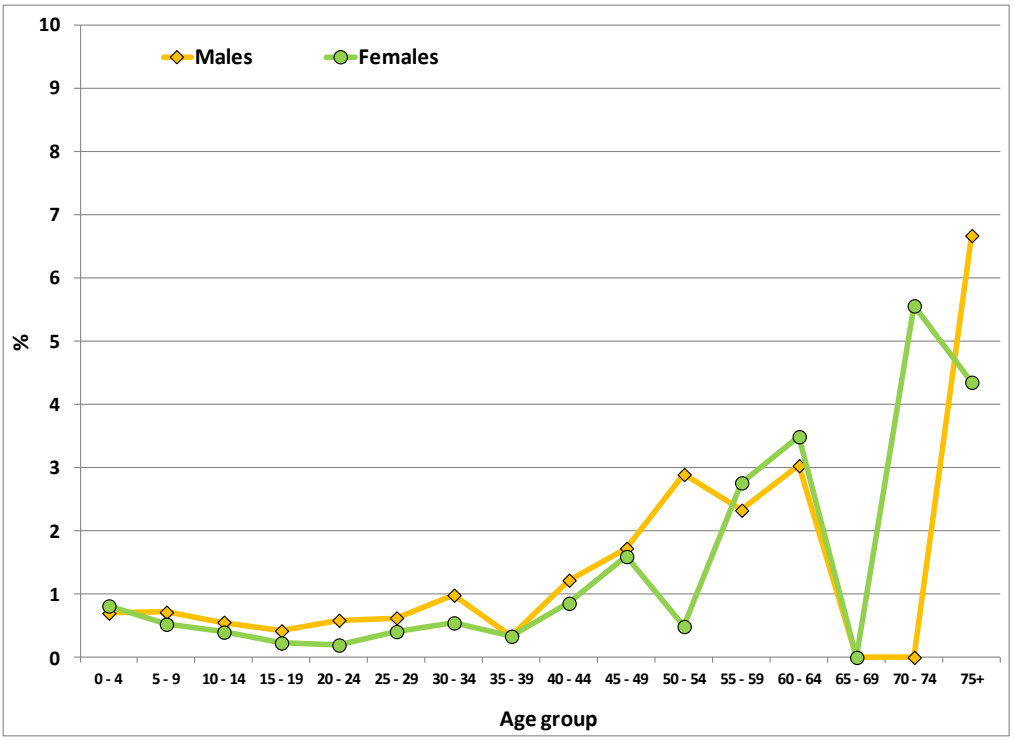


Figure 48: Proportion of the population by age and sex reporting a severe disability, Nauru: 2011



4.6 Educational characteristics

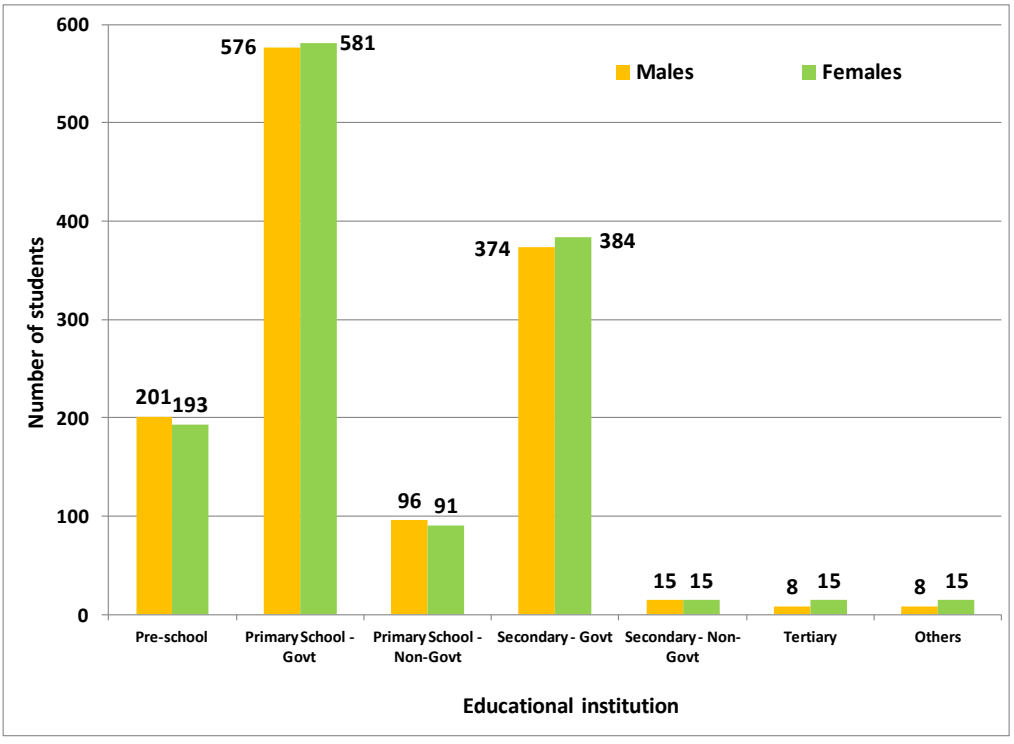
Each parent of a school-age child must ensure the child is enrolled at school until the child completes the school year during which the child attains the age of 18 years"[4].

Primary schooling includes grade 1-6 which corresponds to students aged 7-12 years, and Secondary schooling includes form 1-6, corresponding to students aged 13-18 years.

4.6.1 School enrollment

At the time of the census, 2,572 people of the population 5 years and older were enrolled in schools; 1,278 males and 1,294 females. Of these, 2,514 people were enrolled full time and 58 were part time enrolled in an educational institution. The distribution of those attending a school by type of school is shown in Figure 49.

Figure 49: Population 5 years and older enrolled in school by sex and by type of school attending, Nauru: 2011



Just over half of all students (1,344) were enrolled in primary schools, 31% in secondary schools (788) and 15% in Preschools (394). Only 1% (23) of all students attended a tertiary institution, and another 23 students (1%) attended other institution. 'Other' institutions include apprenticeships, specialized trades schools, etc.

[4] Education Act 2011

Between ages 6 and 10 almost everyone was enrolled in school, whereas from age 11 enrollment rates gradually decline. While at age 11 still 96% of all people were at school, it was only 88% at age 14, and declined further to just over half of the population aged 17 years (Fig.50).

There were insignificant differences between male and female enrollment rates for students aged 5-12. From the age of 13, school enrollment rates for females were noticeably higher than males'.

As shown above, nearly everyone aged 6-10 was enrolled in a school, which is reflected in the very low percentages of school leavers at these age groups (Fig.51). From age 11 the percentage of school leavers increases to about 8% of the 14 year olds, and the proportion of school leavers rapidly increases thereafter. At age 15 about 20% had already left school, and more than 40% of the 17 year olds had left school.

Of the total population 5 years and older, 199 people (2.4%) had never been to school; 119 males and 80 females (Fig.52). This was 2.6% of the population aged 7-16 years, and was with 3.5% higher for males than for females (1.7%).

With respect to the primary gross enrollment rates of the population aged 7-12 years, 97.3% were enrolled in school, 96.9% of males and 97.7% of females. Regarding secondary gross enrollment rates of the population aged 13-18 years, 68.1% were enrolled in school, 64.9% of males and 71.8% of females (Fig.53).

Figure 50: Proportion of the population 5 years and older by age and sex enrolled in school (%), Nauru: 2011

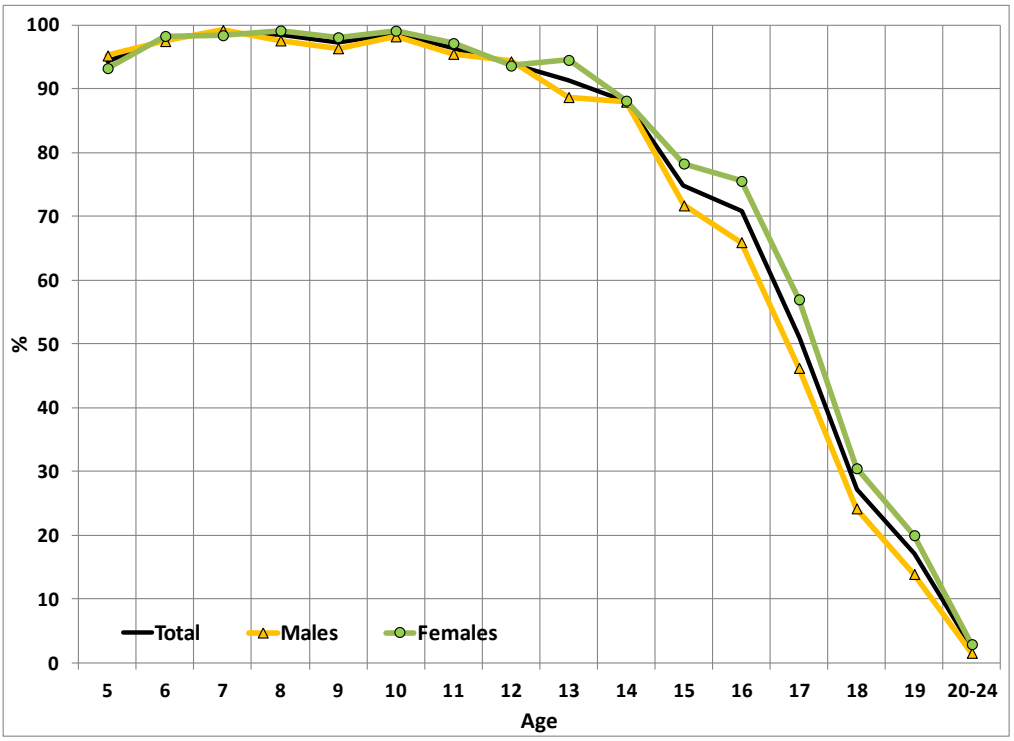


Figure 51: Proportion of the population aged 5-24 years by age and sex who left school (%), Nauru: 2011

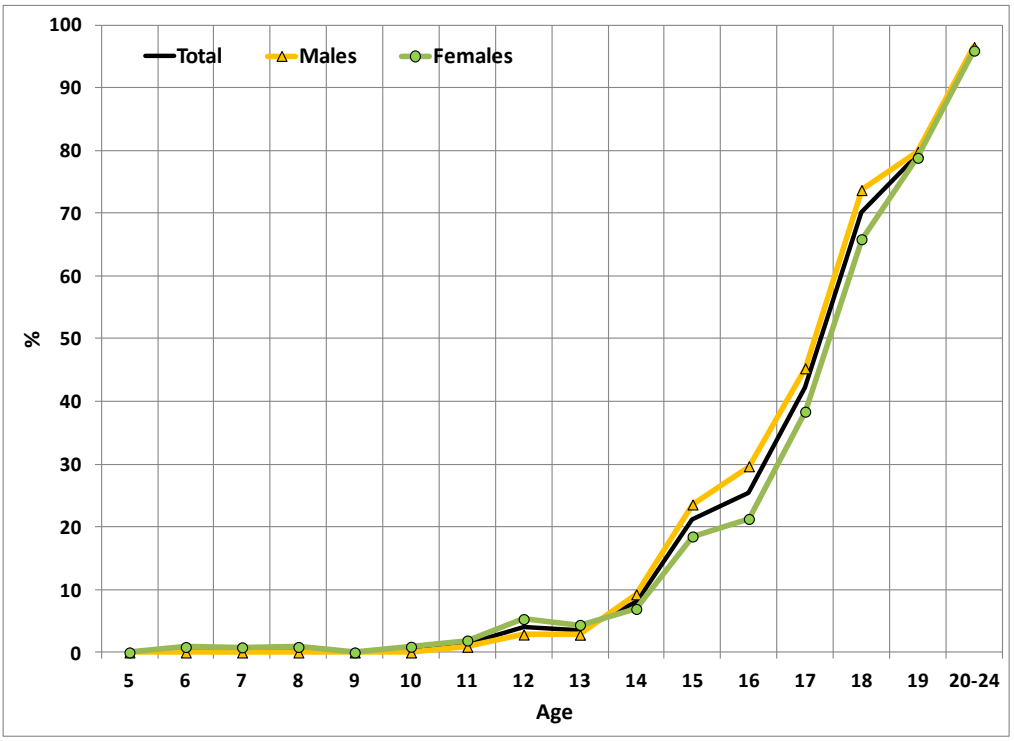


Figure 52: Proportion of the population aged 5-24 years by age and sex who have never been to school (%), Nauru: 2011

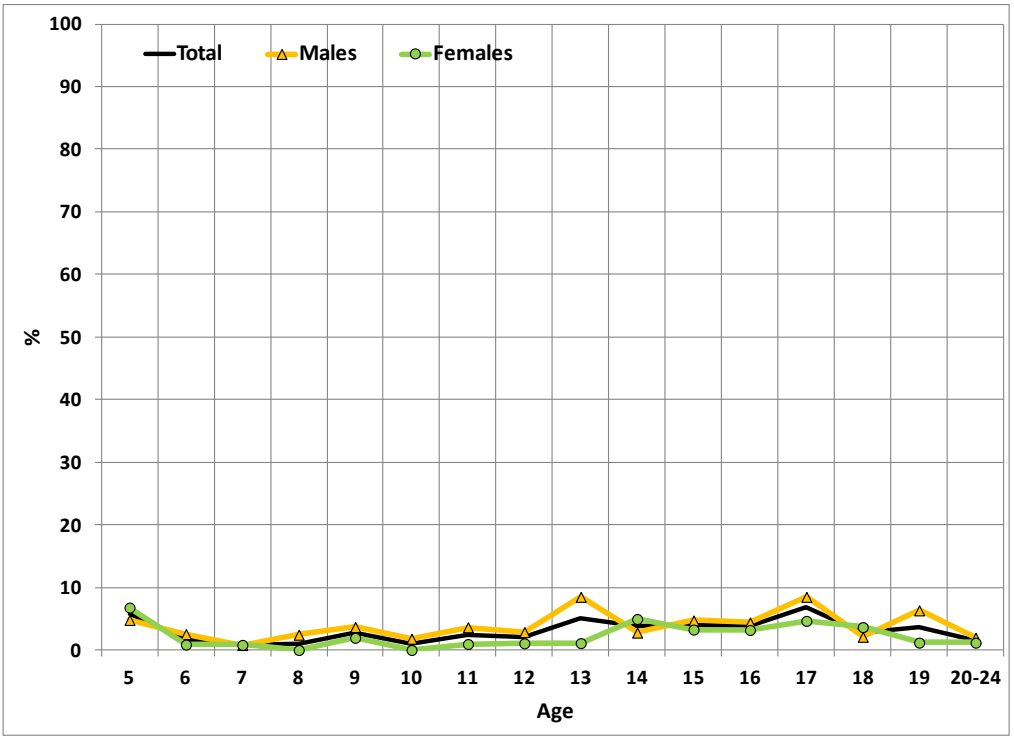
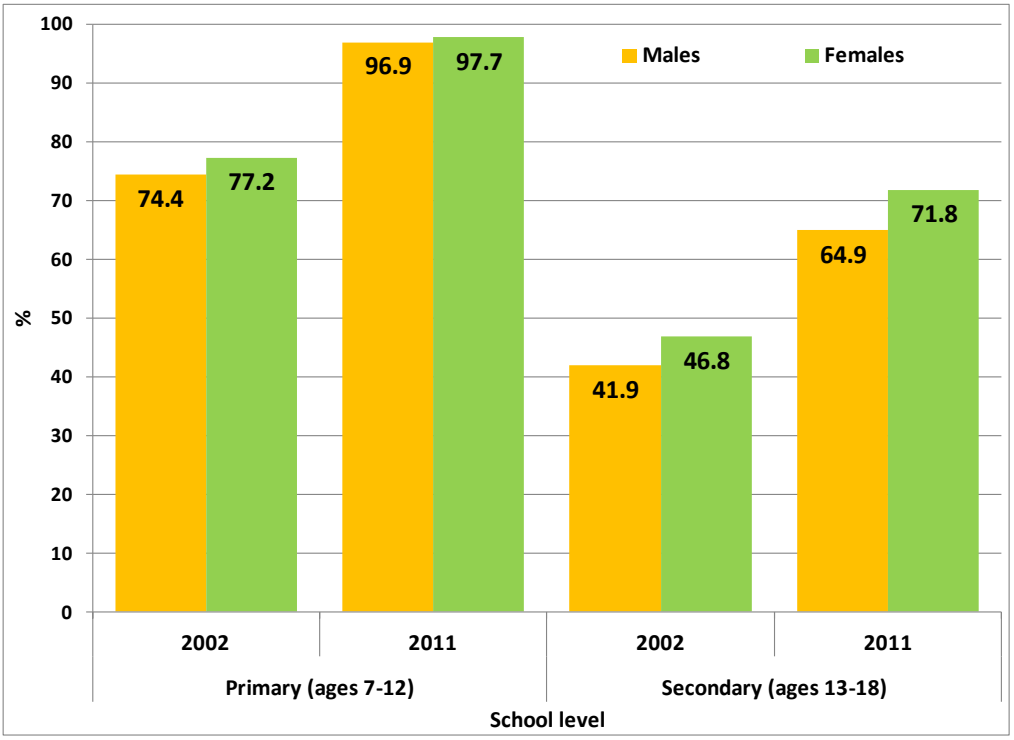


Figure 53: Primary and secondary school enrollment rates by sex, Nauru: 2002 and 2011

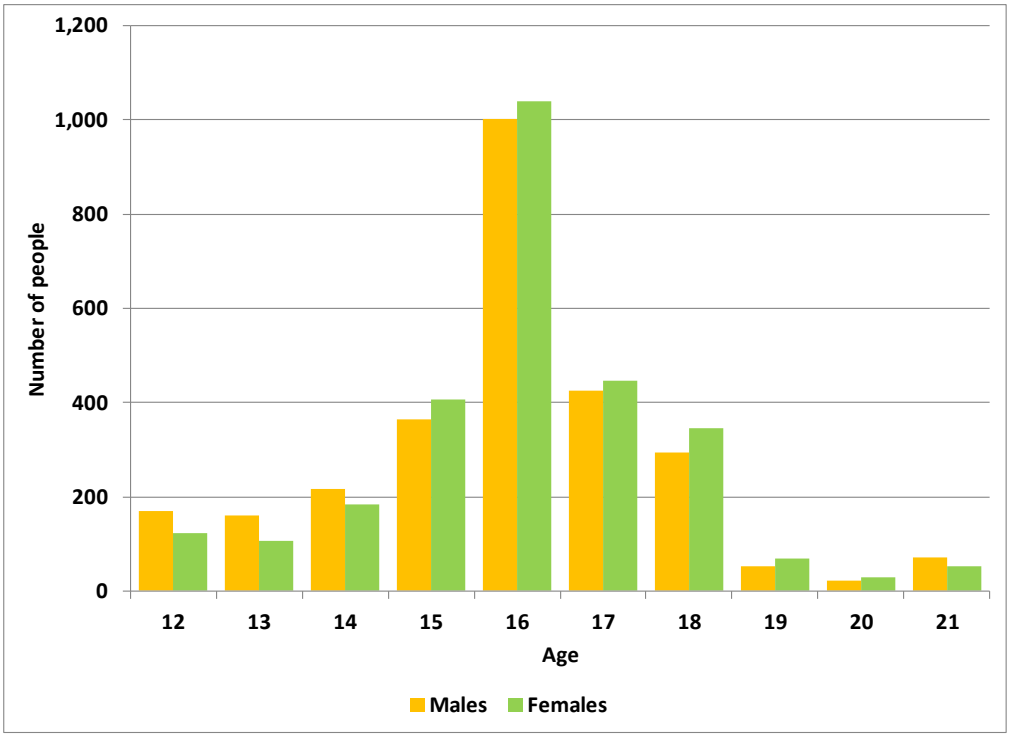


Since 2002 school enrolment rates have increased very significantly in Nauru (Fig.53). Primary school enrollment rates of the population 7-12 years increased from 76% in 2002 to about 97% in 2011, and secondary school enrollment rates of the population 13-18 years increased from about 44% to almost 70%.

Furthermore, the gap between male and female school enrollment rates that existed in favor of females in the previous census has further widened, and female enrolment rates are now noticeably higher than males.

The average age when male and female school leavers left school was 15.9 years of age for males and 16.1 years for females. More than one-third of all school leavers left school at age 16, about 20% left school at age 14 or younger, and about 16% left school at age 18 years or older (Fig.54).

Figure 54: Number of people who left school by age at leaving school, Nauru: 2011



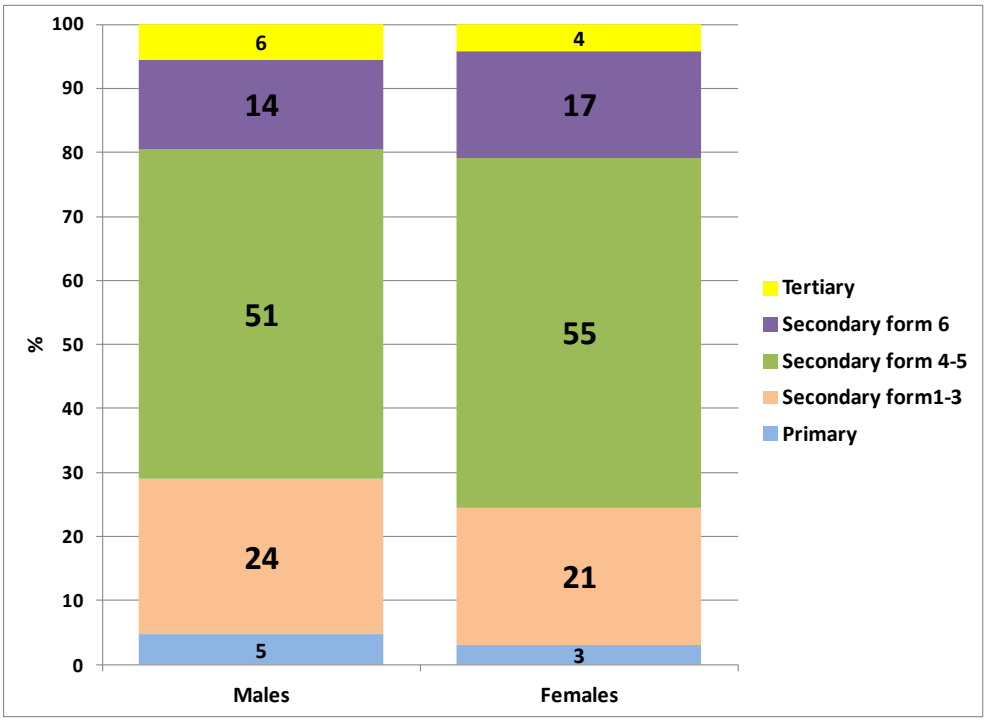
4.6.2 Educational attainment

Based on data on the highest level of education reached, of all those people 15 years and older that had left school 51% of males and 55% of females responded that they had attended secondary education (Form 4-5), 14% of males and 17% of females reached form 6, and 6% of males and 4% of females attended tertiary education (Fig.55).

However, based on data on the highest level of education completed, 72.5% of males and 69.1% of females 15 years and older did not have any educational qualification, and only 20.7% and 24.7% of males and females had a secondary leavers certificate (Fig.56).

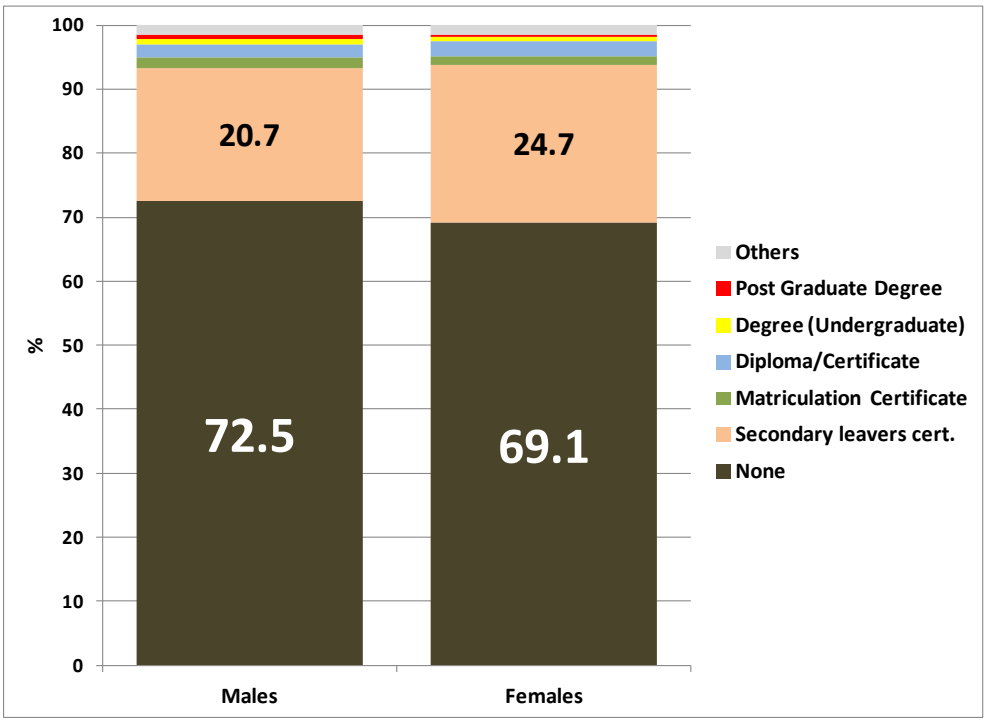
About 5% of males and females had a tertiary qualification such as a matriculation certificate, other certificates, diploma, or an undergraduate or post graduate degree. This includes a total of 145 males and 130 females.

Figure 55: Number of people 15 years and older by sex and highest level of education reached, Nauru: 2011*



*refers to population that had left school

Figure 56: Population 15 years and older by sex and highest level of education completed (%), Nauru: 2011*



*refers to population that had left school

4.6.3 Literacy and language ability

4.6.3.1 Literacy

The literacy rate in a population is one of the most important indicators of development. Literacy, defined as the ability to read and write, refers to the skill that enables people to access, understand and communicate information in today's society. This skill contributes to a better understanding of one's environment, and other people, leading to improved health, knowledge and employment. Society at large, equally benefits from high literacy rates, as it is linked to better health, efficiency, and productivity.

It is possible to distinguish between levels of literacy, for instance in terms of the degree to which people are able to read or write, or whether people can read but not write. These distinctions require elaborate testing, that a census cannot undertake as it is a time-consuming survey method. However, the 2011 census did include a question in order to get a general indication of the literacy situation in the country. The question reads: "*If Nauruan is spoken at home can you (1) read fluently in Nauruan, or (2) write fluently in Nauruan, or (3) read and write fluently in Nauruan, or (4) neither read or write fluently in Nauruan?*". The way the question was phrased unfortunately captures only skills of the population who speak Nauruan at home, which refers to about 93% of the total population. A further disadvantage of a question like this is that the obtained measure refers to self-reported literacy, which is likely to be biased as many illiterate people may be embarrassed to admit that they cannot read and/or write.

Based on the responses to the above question, and considering those that can read and write fluently as being literate, only 26% of the population 5 years and older who speak Nauruan at home would be classified as being literate; 19% of males and 33% of females (Fig.57).

The Nauruan language ability in terms of being able to read and write fluently in Nauruan increases with age, and female's ability was much higher than males at almost any age (Fig.58). While less than 15% of the population aged 15-19 years where literate in Nauruan, it was 38% of the 40-44 year olds and more than half the population 50 years and older were literate in Nauruan.

Figure 57: Literacy of the population 5 years and older who speak Nauruan at home (%), Nauru: 2011

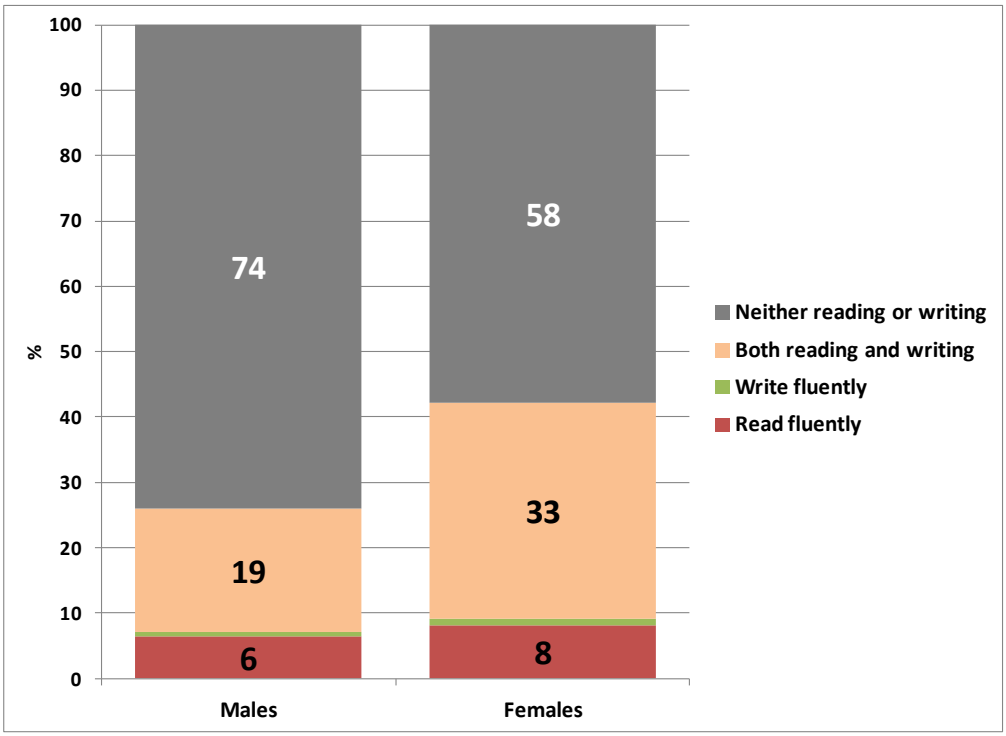
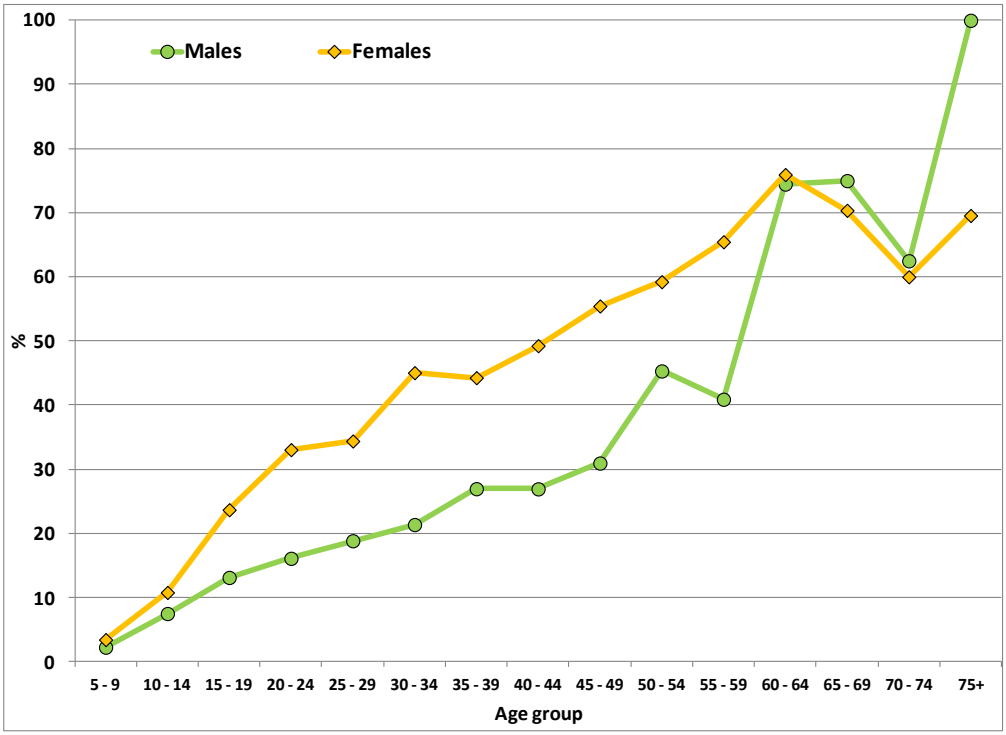


Figure 58: Proportion of the population 5 years and older by age and sex who speak Nauruan at home and who can read and write fluently in Nauruan (%), Nauru: 2011



In order to derive at a **literacy rate** that can be applied to the total population and not only to the Nauruan speakers, it was decided to measure literacy defined as people who are currently enrolled in school and/or have reached at lease grade 5 of primary education[5].

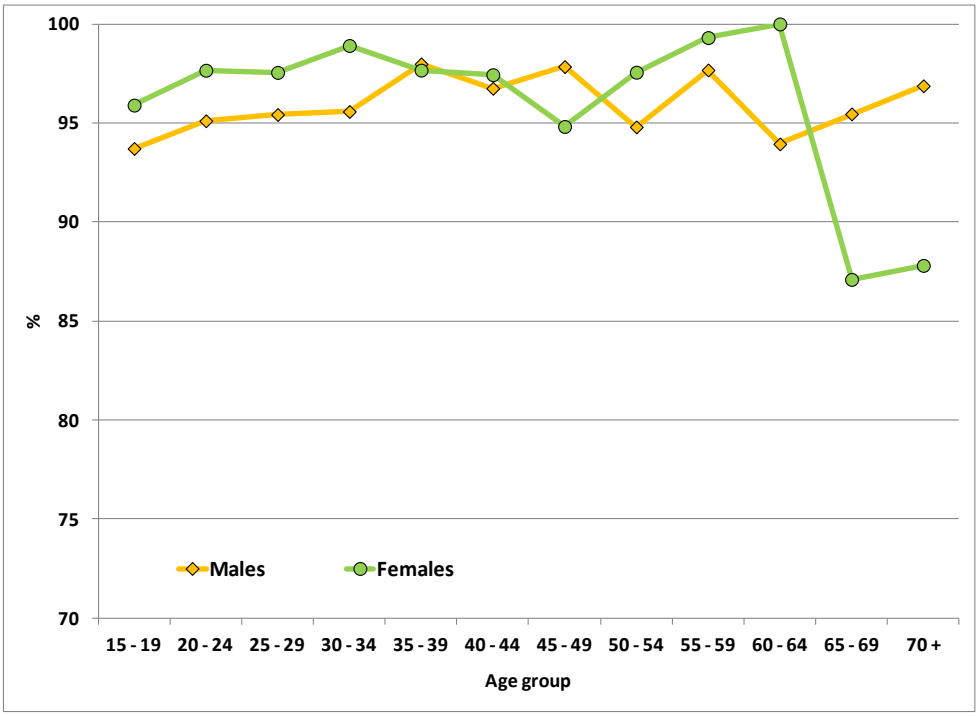
Results show that the level of literacy is very high in Nauru as can be expected since school enrollment rates are very high, and have been high in the past.

In general, female literacy rates are higher than males, except for the population 65 years and older (Fig.59).

The **adult literacy rate** for the population 15 years and older was calculated at 95.7% for males and 97.2% for females (Fig.60).

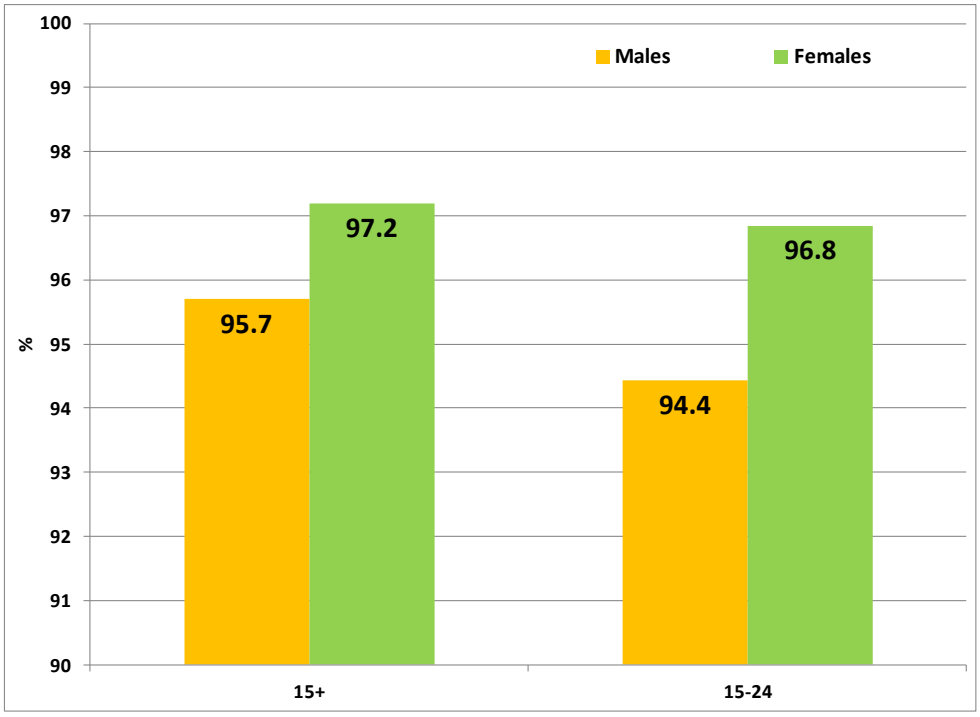
The **youth literacy rate** for the population aged 15-25 years was 94.4% for males and 96.8% for females.

Figure 59: Proportion of the population 15 years and older by age and sex who reached at least grade 5 of primary education or are currently enrolled in an educational institution (%), Nauru: 2011



[5] Handbook of Indicators for Monitoring the Millennium Development Goals, Definitions, Rationale, Concepts and Sources, United Nations, 2003

Figure 60: Adult and youth literacy rate by sex (%), Nauru: 2011*



* Adult literacy rate = population 15 years and older
Youth literacy rate = population aged 15-24 years

4.6.3.2 Language ability

Language ability in terms of whether a person can speak a certain language is shown in Table 30 and Figure 61. Please note that a respondent could record speaking more than one language if applicable.

Nauruan was most widely spoken by 95% of the population 5 years and older; it was followed by English with 66%, and other languages (12%) which include mainly I-Kiribati (6%) and Chinese (2%).

The census also included a question on what language was mainly spoken in a respondent's household. According to these data, 93% of all people responded that the main language spoken in their household was Nauruan, 2% spoke English, and 5% another language, mainly I-Kiribati or Chinese (Table 31 and Fig.62).

Table 30: Language ability by type of language, Nauru: 2011

Language	Number of people			% of population		
	Total	Males	Females	Total	Males	Females
Nauruan	7,941	3,936	4,005	95	95	96
English	5,494	2,709	2,785	66	65	67
Other	991	502	489	12	12	12
"Other" languages include:						
I-Kiribati	501	235	266	6	6	6
Tuvaluan	71	33	38	1	1	1
Fijian	61	42	19	1	1	0
Solomons	31	21	10	0	1	0
Filipino	59	37	22	1	1	1
Chinese	138	74	64	2	2	2
Indian	14	7	7	0	0	0
Other Pacific Island countries	81	35	46	1	1	1
Other European countries	6	2	4	0	0	0
Other Asian countries	7	6	1	0	0	0
Other	22	10	12	0	0	0

Figure 61: Language ability of the population 5 years and older by age (%), Nauru: 2011

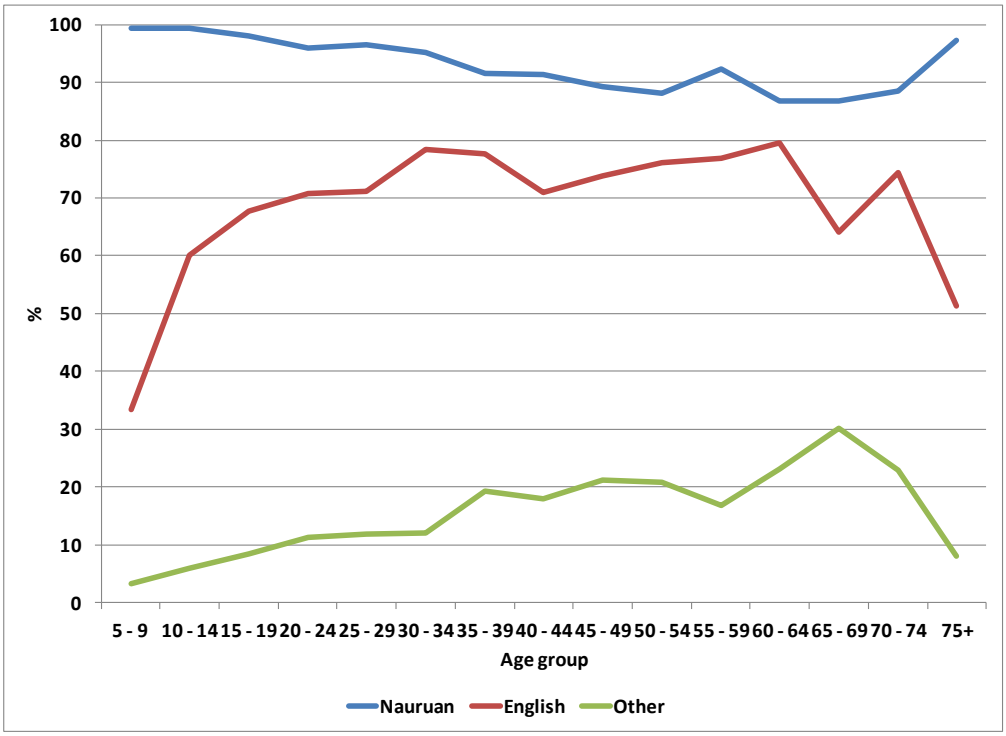
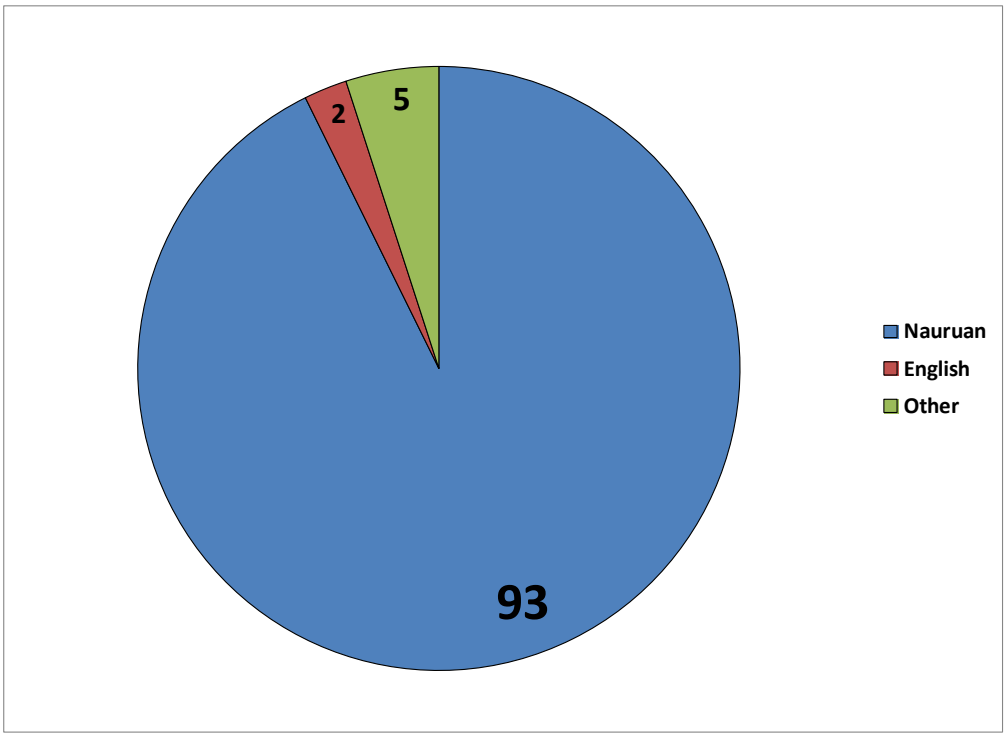


Table 31: Main language spoken in household by type of language, Nauru: 2011

Language	Number of people			% of population		
	Total	Males	Females	Total	Males	Females
Nauruan	7,721	3,831	3,890	93	92	93
English	193	116	77	2	3	2
Other	416	215	201	5	5	5
"Other" languages include:						
I-Kiribati	171	84	87	2	2	2
Tuvaluan	22	12	10	0	0	0
Fijian	13	8	5	0	0	0
Solomons	8	5	3	0	0	0
Filipino	16	10	6	0	0	0
Chinese	138	74	64	2	2	2
Indian	19	11	8	0	0	0
Other Pacific Island countries	9	3	6	0	0	0
Other European countries	2	0	2	0	0	0
Other Asian countries	3	0	3	0	0	0
Other	15	8	7	0	0	0

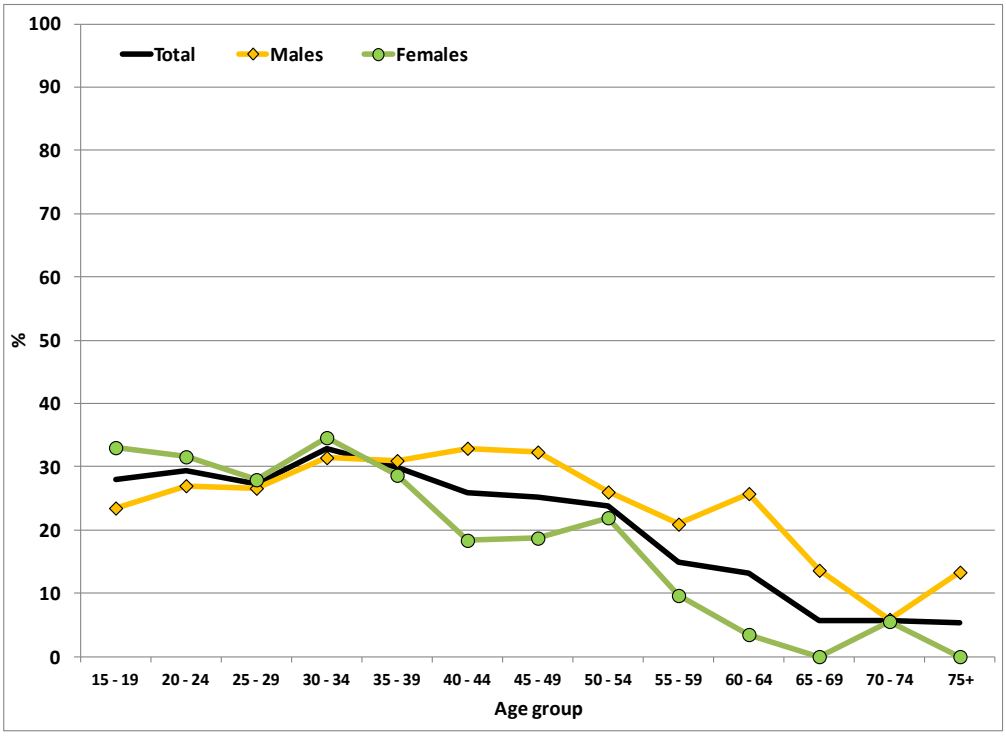
Figure 62: Population 5 years and older and main language spoken at home (%), Nauru: 2011



4.7 Internet use

The 2011 census included a question on whether a person used the internet at least once during the week before the census. Results show that 28% of males and 26% of females used the Internet during the given timeframe. Data by age show that it is mainly the young population aged 15-39 who use the Internet. While Internet use of males aged 40-49 remains relatively high, female Internet use declines from age 40 years (Fig.63)

Figure 63: Population 15 years and older by age and sex and whether using the Internet (%), Nauru: 2011



4.8 Labour market activity

4.8.1 Introduction

In Nauru, the 2011 census included several questions on labour market activity. Enumerators were instructed to ask each respondent aged 15 and over whether they worked during the last week before the census. Work was defined as any activity concerned with providing for the necessities of life. It did not matter whether or not the person had a job or was paid for what they did.

A person who "*works for pay*" is someone who worked for wages, salary, commission, or had a contract, or was operating a business. The person was either a government or private employee, an employer, or was self-employed, including persons who "produced goods or services for sale".

A person who did "*work to support the household by producing goods mainly for own consumption*", performed a variety of tasks such as farming, gardening, fishing or producing handicrafts for their own consumption and are subsequently described as *subsistence workers*.

A person who did "*voluntary work*" or "*unpaid family work*" is someone who worked but did not receive a wage, salary, commission, and did not have a contract.

The UN publication "Principles and Recommendations for Population and Housing Censuses, Revision 2", recommends that "persons engaged in economic activities in the form of own-account production of goods for own final use within the same household should be considered to be self-employed." Certainly, those selling their products should also be classified as employed. According to this definition, all people classified as subsistence workers are considered to be employed.

Based on the above, data collected have been assigned to the three categories of:

- **employed** (those who "work for pay" or "produced goods mainly for sale" or "produced goods mainly for own consumption", and those doing "voluntary work", or "unpaid family work");
- **unemployed** (those who (1) did not work in the week prior to the census (other than those who had a job but were not at work during the reference week), but (2) spent some time looking for work, and (3) were available to work if a job was offered to them);
- **not in the labour force** (those not employed or unemployed).

If the person did not work and did not spend some time looking, or looked for work but was not available for work, they were then classified as economically inactive (not in the labor force).

4.8.2 Economic activity

The total labor force of 3,954 people is defined as those being employers (25) or self employed (158), employees (2,669), those who did unpaid work (64), subsistence work (99), the unemployed (908), and 31 people who were otherwise in paid employment (Table 32 and Fig.64 and 65).

The paid employed people are defined as those who "work for pay" and "work to support the household by producing goods or services mainly for sale". The total number of paid employed people consisted of 2,883 people, 1,790 (62%) males and 1,093 (38%) females.

The non-labor force of 2,221 people is defined as those being full time students (517), those engaged in home duties (1,073), the retired (143), the disabled (84), and all those who did not work and were not unemployed (did not look for and were not available for work) for various reasons (404).

A general pattern is the fact that there were more males than females in the labor force categories, while there were almost 7-times more females engaged in home duties than males.

Table 32: Population aged 15 and older by sex and labour market activity, Nauru: 2011

Activity		Total	Males	Females
Labour Force	Employer	25	18	7
	Self employed	158	87	71
	Employee for wage/salary	2,669	1,675	994
	Other paid employed	31	10	21
	Unpaid worker	64	35	29
	Subsistence work	99	82	17
	Unemployed	908	518	390
	Total	**3,954**	**2,425**	**1,529**
Non Labour Force	Full time student	517	248	269
	Home duties	1,073	135	938
	Retired/Old age	143	59	84
	Disabled	84	44	40
	Other	404	162	242
	Total	**2,221**	**648**	**1,573**
Total		**6,175**	**3,073**	**3,102**

Figure 64: Population aged 15 and older by labour market activity and sex, Nauru: 2011

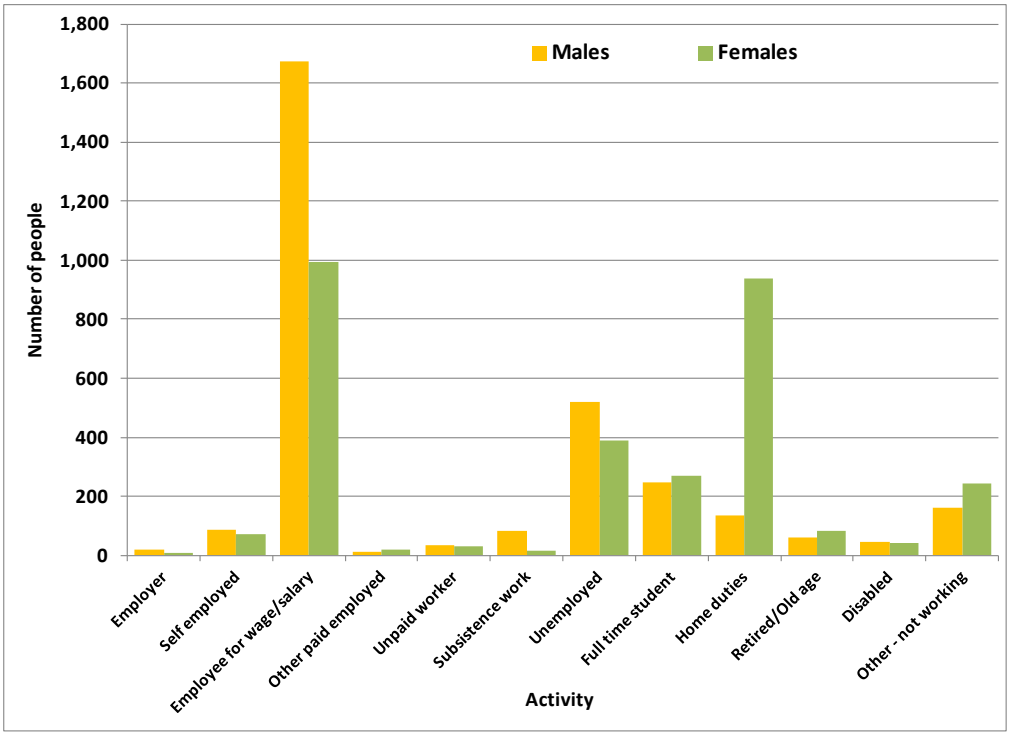
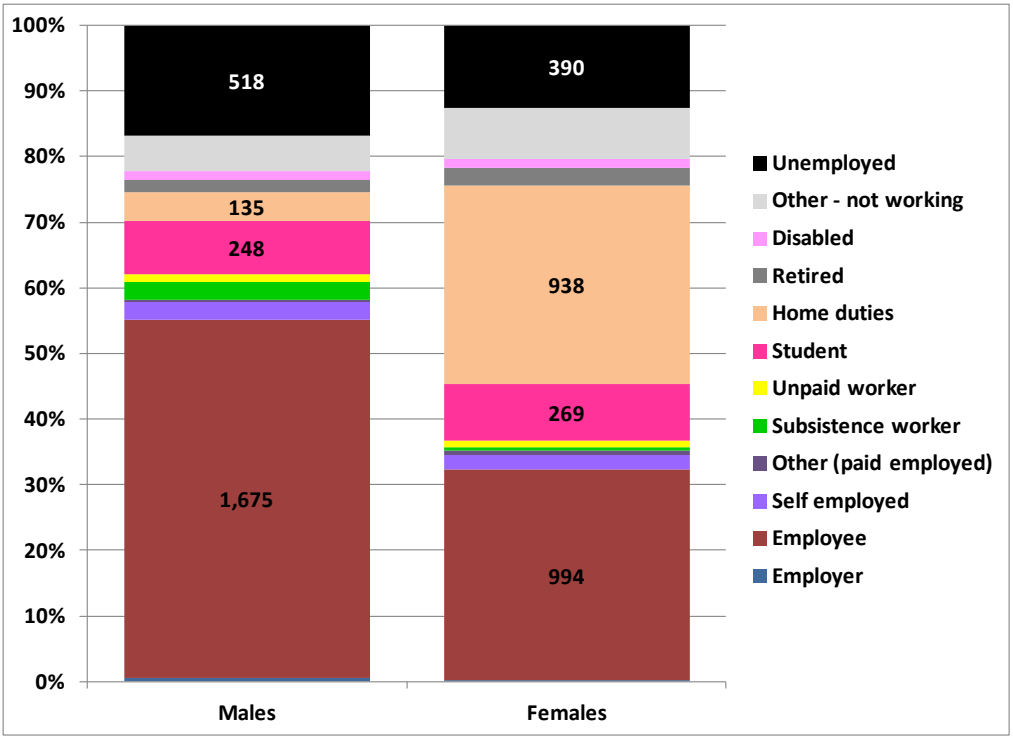


Figure 65: Population aged 15 and older by sex and labour market activity, Nauru: 2011



4.8.3 Labour force participation rate, employment–population ratio, and unemployment rate

The **labour force participation rate (LFPR)** is the number of people in the labour force by a given age and sex and/or place of rural–urban residence, divided by the corresponding total population with the same characteristics, multiplied by 100.

The **employment–population ratio (EPR)** is the number of people employed in cash work by a given age and sex and/or place of rural–urban residence, divided by the corresponding total population with the same characteristics, multiplied by 100.

The **unemployment rate** is the number of people unemployed by a given age and sex and/or place of rural–urban residence, divided by the population in the labor force with the same characteristics, multiplied by 100.

The **LFPR** is calculated at 64% in Nauru in 2011. At the same time the **EPR** was only 46.7%, and the **unemployment rate** for Nauru was 23% (Table 33).

The **LFPR**s were higher for males (78.9%) than for females (49.3%), so was the **employment-population** ratio with 58.2% and 35.2% for males and females respectively.

The **unemployment rate** was higher for females (25.5%) than males (21.4%).

Table 33: Population aged 15 and older by sex, place of residence, labour force participation rate, employment–population ratio, and unemployment rate, Nauru: 2011

Indicator	Total	Males	Females
LFPR	64.0	78.9	49.3
EPR	46.7	58.2	35.2
Unemployment rate	23.0	21.4	25.5

The LFPR, EPR and unemployment rates by age and sex are presented in Figures 66-68. The general pattern is low participation rates for the population 15-19 years when many of the teenagers are still attending school, or struggling to enter the labor market, before the rates sharply increase. They reach a plateau at ages 30-49, after which the rates gradually decrease.

It is interesting to see that a large proportion of the population aged 60 years and older was still in the labour force indicating that many older people keep providing economically for themselves and their household/families.

Not surprisingly, the labour force participation rate and the employment–population ratio were higher for males than for females at all ages.

The labour force participation rate for females did not exceed 62% at any age, while that of males was higher than 90% at ages 25–44.

In terms of the employment–population ratio, almost 80% of all males at aged 30–39 were employed as paid workers. In contrast, the age groups with the highest percentage of females in paid employment did not exceed 55%.

The unemployment rates show a very different pattern than the LFPR and EPR with the highest unemployment rate for the young job seekers aged 15-19 years (70%). Unemployment rates rapidly decrease with increasing age, although they hover around 13-15% for the age groups 30-59 years. The unemployment rates are generally higher for females than for males at most ages.

Figure 66: Population aged 15 and older by age, sex and labour force participation rate (LFPR), Nauru: 2011

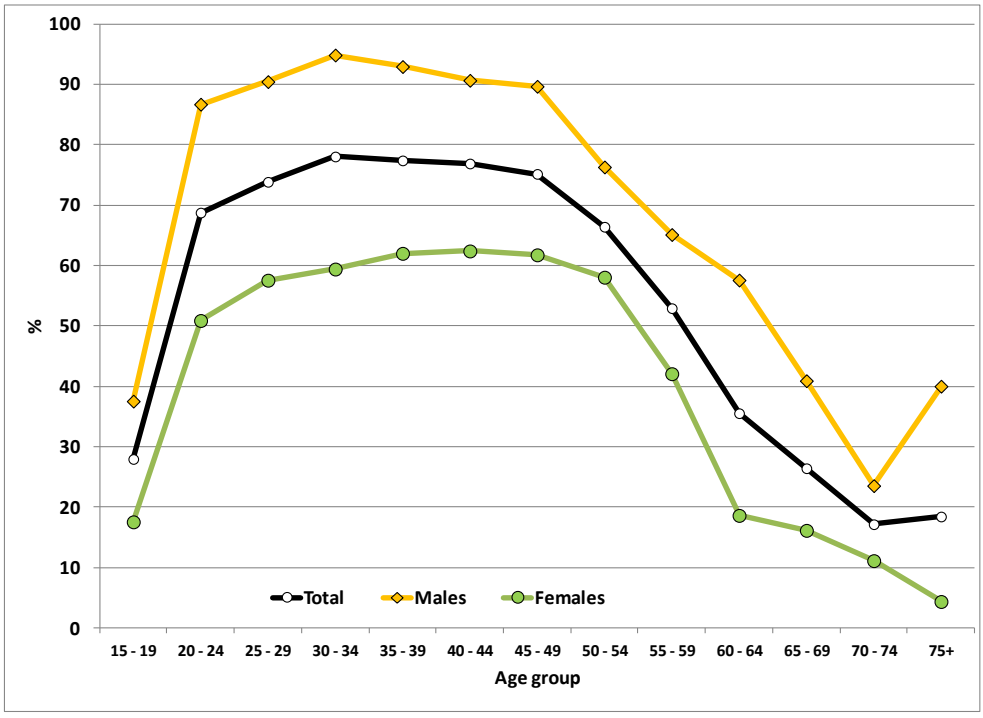


Figure 67: Population aged 15 and older by age, sex and employment–population ratio (EPR), Nauru: 2011

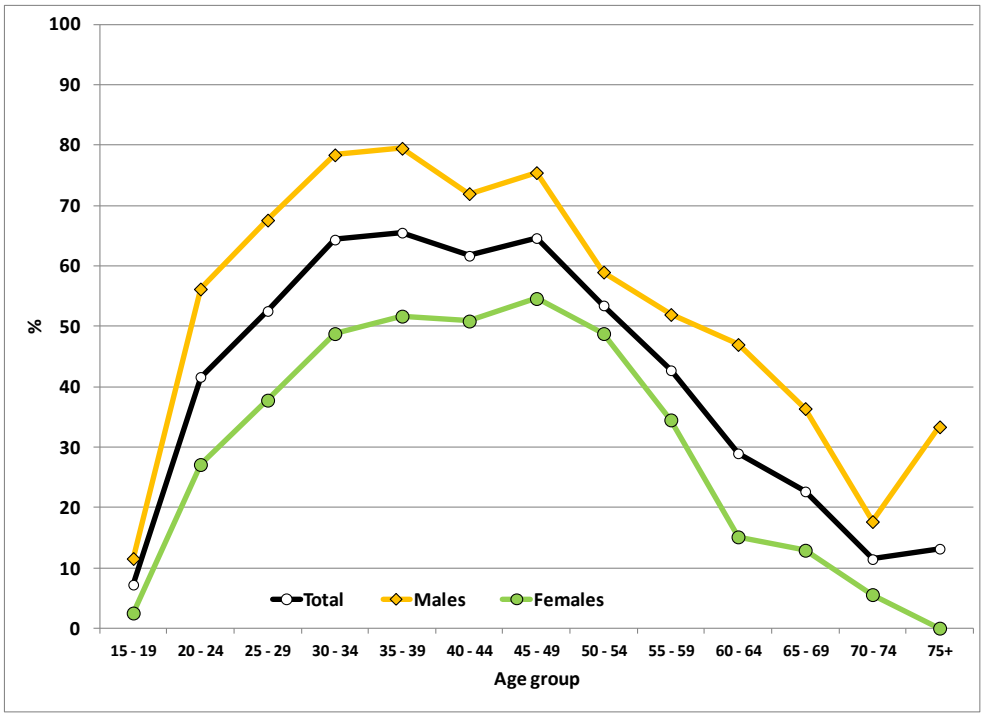
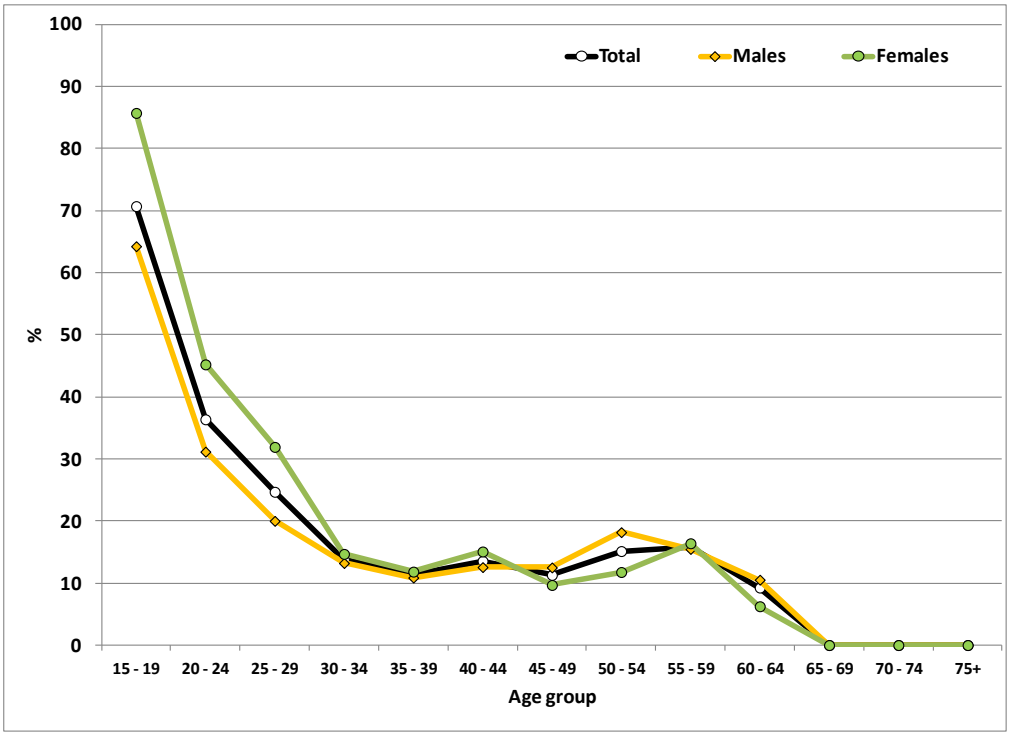


Figure 68: Population aged 15 and older by age, sex and unemployment rate (%), Nauru: 2011



4.8.4 Employment status

Out of a total of 2,883 people in paid employment, about 93% (2,669) were employees either with a private enterprise or as government workers. Only about 5% were self employed (158), and a total of 25 people were employers. The proportion of males and females in the different employment categories were very similar (Fig.69).

More than two-third of the population in paid employment worked 36 hours per week or more, and about 20% worked 20 hours or less. The average number of hours worked per week was about 32.5 hours, and there was no significant difference in hours worked between males and females (Fig.70).

Figure 69: Population in paid employment by employment status, Nauru: 2011

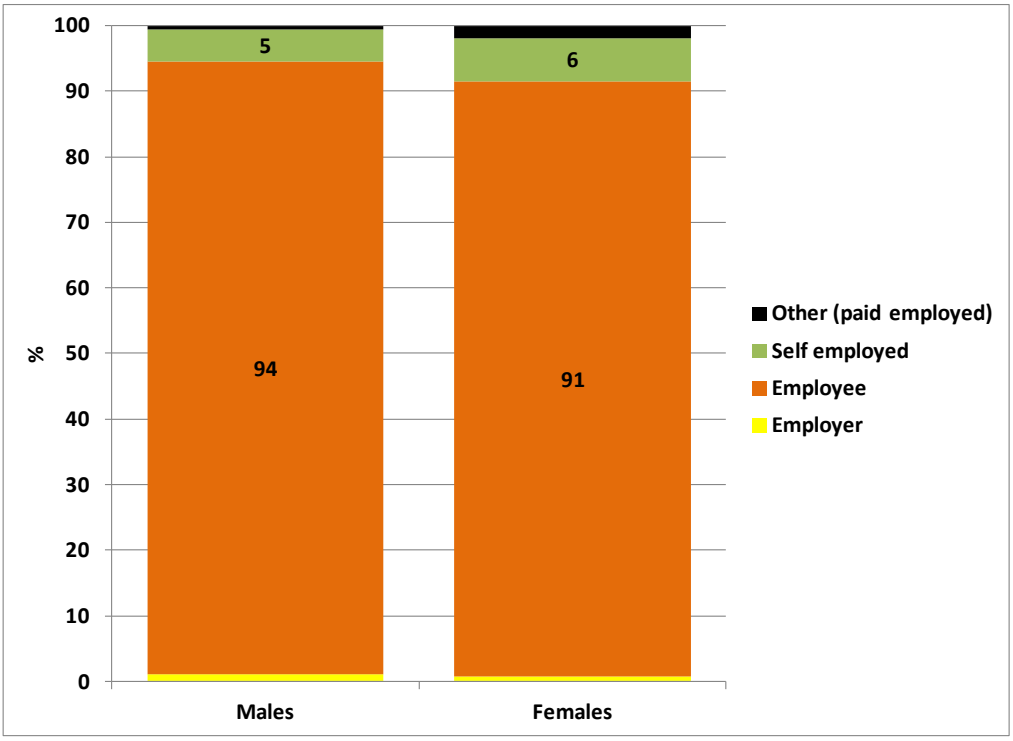
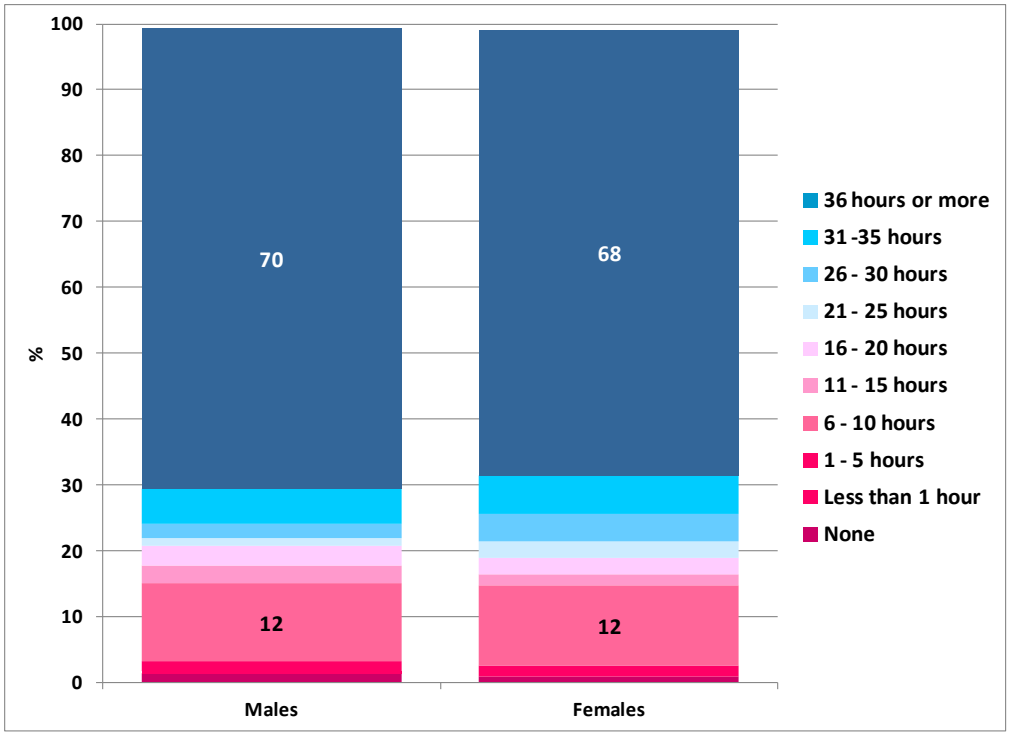


Figure 70: Population in paid employment by weekly hours worked, Nauru: 2011



4.8.5 Employed population by industry group

The largest numbers of employed workers were in the category of *Administrative and support service activities* with 643 people or 21% of all employed people (Fig.71). The second largest occupational group were with 13% *Manufacturing* (383), followed with 12% *Private household employers* (365) and 10% were employed in *Agriculture forestry fishing and mining* (292).

While the *Education, Health sport and art, Accommodation and food services activities, Information and communication,* and *Financial and insurance activities* were dominated by females, all other categories were dominated by males. This was especially so for *Manufacturing, Agriculture, forestry, fishing and mining*, as well as *Construction*.

While the largest proportion of males (20%) and females (23%) were employed in *Administrative and support service activities*, the second largest occupational group for males was *Manufacturing* (16%), but it was *Education* for females (15%). An additional considerable proportion of males was employed in *Agriculture, forestry, fishing and mining* and *Private household employers* (12% each). Also 12% of females were working in *Private household employers*, and 11% in *Health, sport and art* (Fig.72).

Figure 71: Employed population by sex and industry, Nauru: 2011

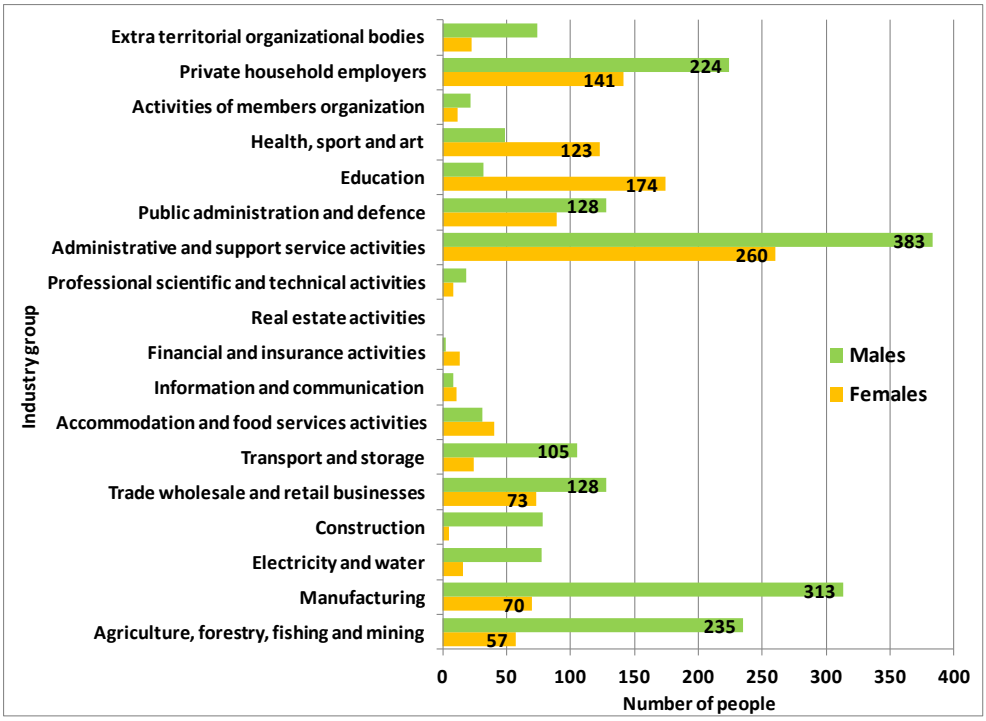
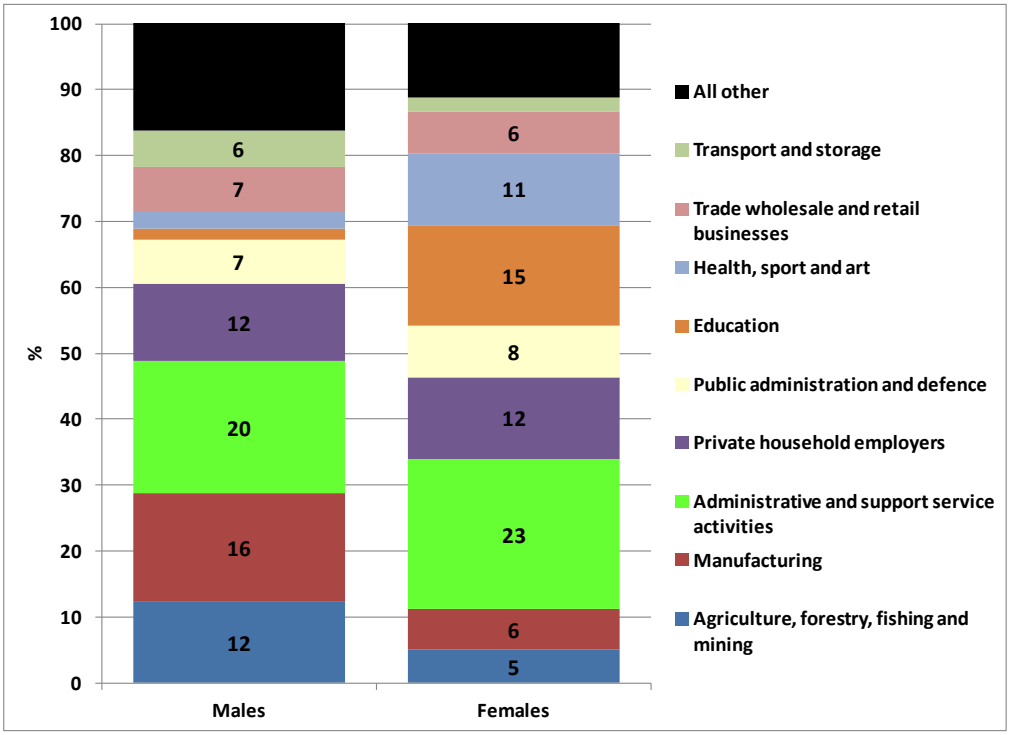


Figure 72: Employed population by industry and sex (%), Nauru: 2011



4.8.6 Employed population by occupational group

The largest numbers of employed workers were in the category of S*ervice and sales workers* with 857 people or 28% of all employed people (Fig.73). The second largest occupational group were with 18% *Elementary occupations* (554), followed with 11% each by *Craft and related trades workers* (323) and *Clerical support workers* (322).

While the *Clerical support workers and Professionals* were dominated by females, all other categories were dominated by males. This was especially so for *Plant and machine operators and assemblers*, the *Craft and related trades workers*, as well as *Skilled agricultural forestry and fishery workers*. There were about twice as many male *Managers* than females'.

While the largest proportion of males (30%) and females (25%) were employed as S*ervice and sales workers*, the second largest occupational group for males was *Elementary occupation* (19%), but it was *Clerical support workers* for females (23%). Whereas an additional considerable proportion of males was employed as *Craft and related trades workers* (16%), it was *Professionals (16%)* and *Elementary occupations* (16%) for females (Fig.74).

Figure 73: Employed population by sex and occupation, Nauru: 2011

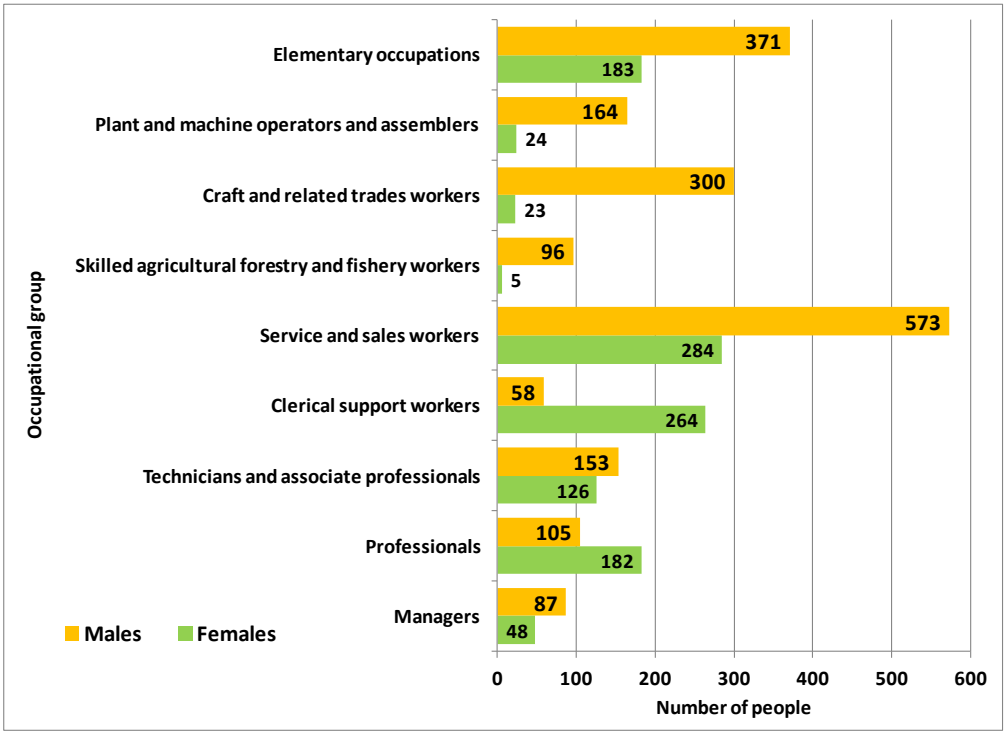
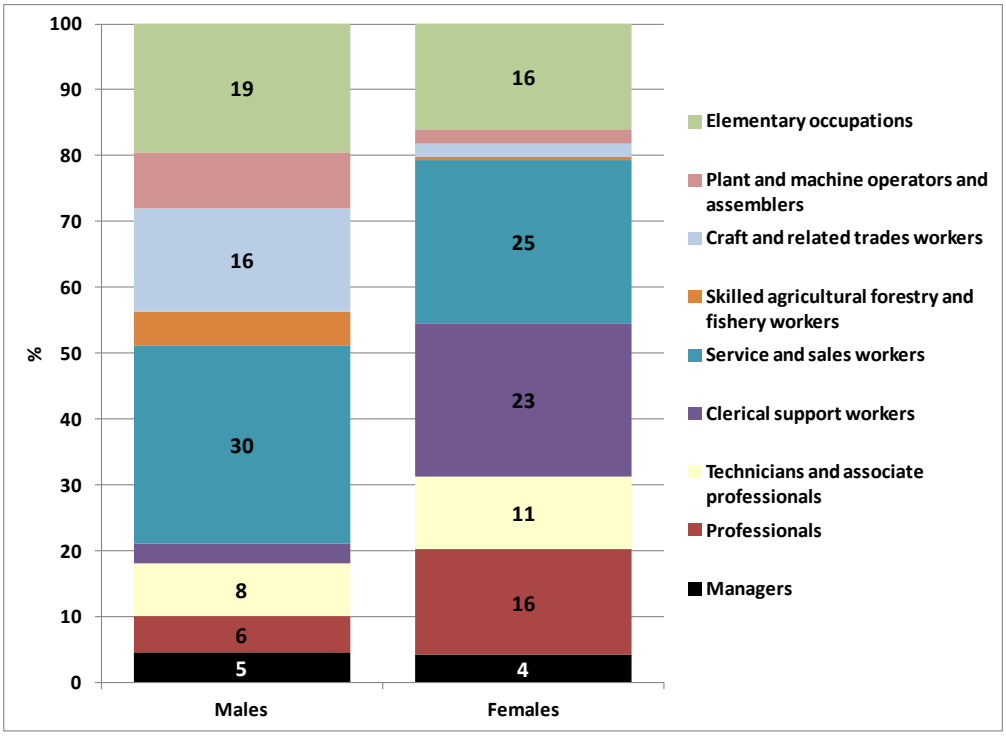


Figure 74: Employed population by occupation and sex (%), Nauru: 2011



5. HOUSEHOLD AND HOUSING

5.1 Introduction

The household is the smallest organizational entity in the census and provided the unit of enumeration for individuals. The household has also important social significance in terms of production and reproduction, gender relations and group identification within communities. Although there is a large overlap with families, households are conceptually different, as they are defined by agreement on collaboration, not necessarily on kinship or consanguinity (blood ties). A distinction in this respect is made between private and collective household types (institutions).

This section addresses the average household size, and also household structure. In all households, one person was designated as head of that household. In principle, the household itself did this, but where necessary, the enumerator had to identify a head. All other household members were identified by their relationship to this head.

Household: definition and types

In the census a household is defined as a group of people who share a common eating arrangement: members of a household normally eat food prepared in the same kitchen or they share in the cost, collection and preparation of that food. Although the identification of a household was based on a usual common eating arrangement of a group of people, enumeration coverage rules prescribed the inclusion of all and only those people who slept in the household on census night.

The census distinguished between two types of households:

A *private household:* a group of related people (for example a family) with or without additional persons who live together and share a common eating arrangement. A private household can also consist of one or more unrelated persons who have a common eating arrangement.

A *collective household* (institution) consists of unrelated persons staying together for special reasons, like education, medical treatment, boarding, travel or imprisonment.

5.2 Number and size of households

In 2011, a total of 1,652 households were counted; 1,647 private households and 5 non-private dwellings (institutions). The number of private households slightly decreased from 1,652 in 2002, but increased by 109 households compared to 2006 (Tables 34).

The overall average household size, the number of people per household, remained constant at a level of 6 people per household between 2002 and 2011. However, there was some significant variation in household size by district (Fig.75).

The highest average household size was recorded in Uaboe with more than 8 people per household on average, followed by Baitsi (7.5) and Yaren (7.4). The lowest household sizes were found in Location (4.6), and Buada and Denigomodu with 5.6 people per household.

In 2011, the most common household size was 4 people per household (208), accounting for 12.6 % of all private households and 11.6% of the total population (1,158) lived in households of 6 people (Table 35 and Fig.76).

There were 105 single-person households accounting for 6.4% of all households which represents a slight decrease compared to the 2002 census when there were 116 single-person households with a share of 7% of all households. However, almost 10% of the population lived in households with 15 persons or more.

On the other hand in 2011 there were 259 households with 10 persons or more (16%), which is also a slight decrease compared to 2002 when there were 269 households with 10 occupants or more.

Table 34: Population in private households, number of private households and average household size, by district, Nauru: 2002, 2006 and 2011

Place of residence	Number of private household			Number of people in private households			Average household size		
	2002	2006	2011	2002	2006	2011	2002	2006	2011
NAURU	**1,652**	**1,538**	**1,647**	**9,872**	**9,086**	**9,945**	**6.0**	**5.9**	**6.0**
Yaren	82	202	101	630	1,165	747	7.7	5.8	7.4
Boe	116	64	131	694	408	851	6.0	6.4	6.5
Aiwo	174	74	208	1,038	500	1,220	6.0	6.8	5.9
Buada	90	23	132	631	157	739	7.0	6.8	5.6
Denigomodu	53	63	55	291	508	307	5.5	8.1	5.6
Nibok	69	107	70	478	761	484	6.9	7.1	6.9
Uaboe	51	103	39	385	704	318	7.5	6.8	8.2
Baitsi	48	76	68	435	473	513	9.1	6.2	7.5
Ewa	65	57	61	385	371	446	5.9	6.5	7.3
Anetan	61	34	90	497	235	587	8.1	6.9	6.5
Anabar	43	276	63	377	1,059	452	8.8	3.8	7.2
Ijuw	23	251	28	162	1,355	178	7.0	5.4	6.4
Anibare	31	63	34	223	378	226	7.2	6.0	6.6
Meneng	199	45	241	1,307	328	1,380	6.6	7.3	5.7
Location	547	100	326	2,339	684	1,497	4.3	6.8	4.6

Table 35: Number of private households by household size and people per household (%), Nauru: 2011

Household size	Private Households		People per household size	
	Number	%	Number	%
1	105	6.4	105	1.1
2	151	9.2	302	3.0
3	193	11.7	579	5.8
4	208	12.6	832	8.4
5	202	12.3	1,010	10.2
6	193	11.7	1,158	11.6
7	126	7.7	882	8.9
8	119	7.2	952	9.6
9	91	5.5	819	8.2
10	60	3.6	600	6.0
11	53	3.2	583	5.9
12	37	2.2	444	4.5
13	34	2.1	442	4.4
14	20	1.2	280	2.8
15+	55	3.3	957	9.6
Total	**1,647**	**100.0**	**9,945**	**100.0**

Figure 75: Average household size (number of people per household) by district, Nauru: 2011

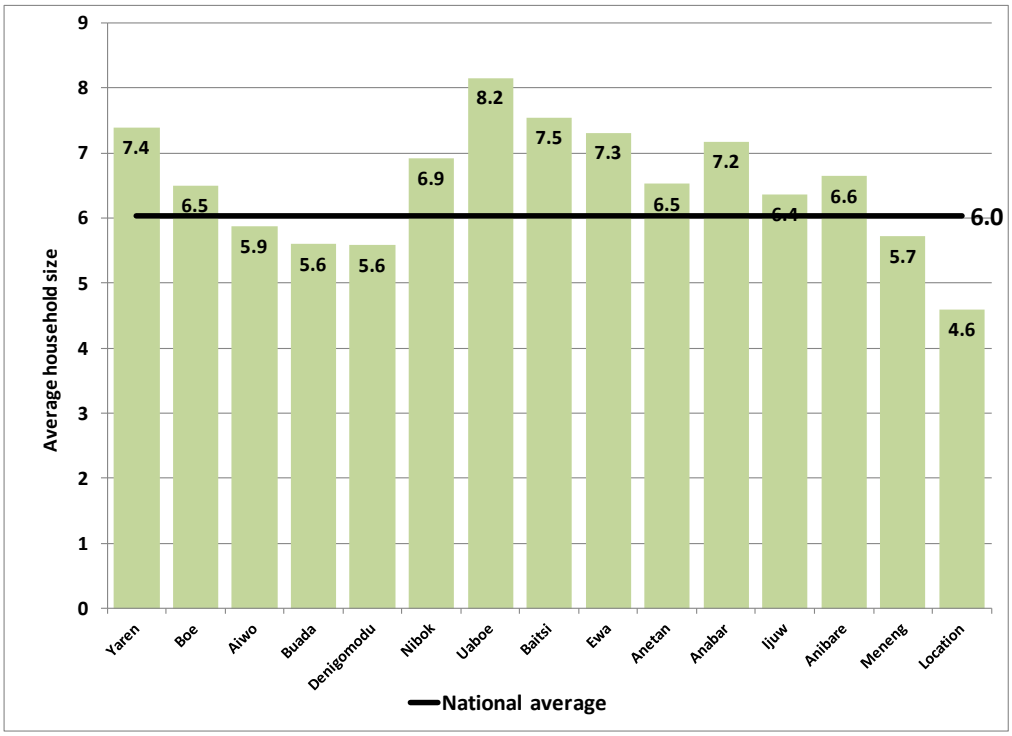
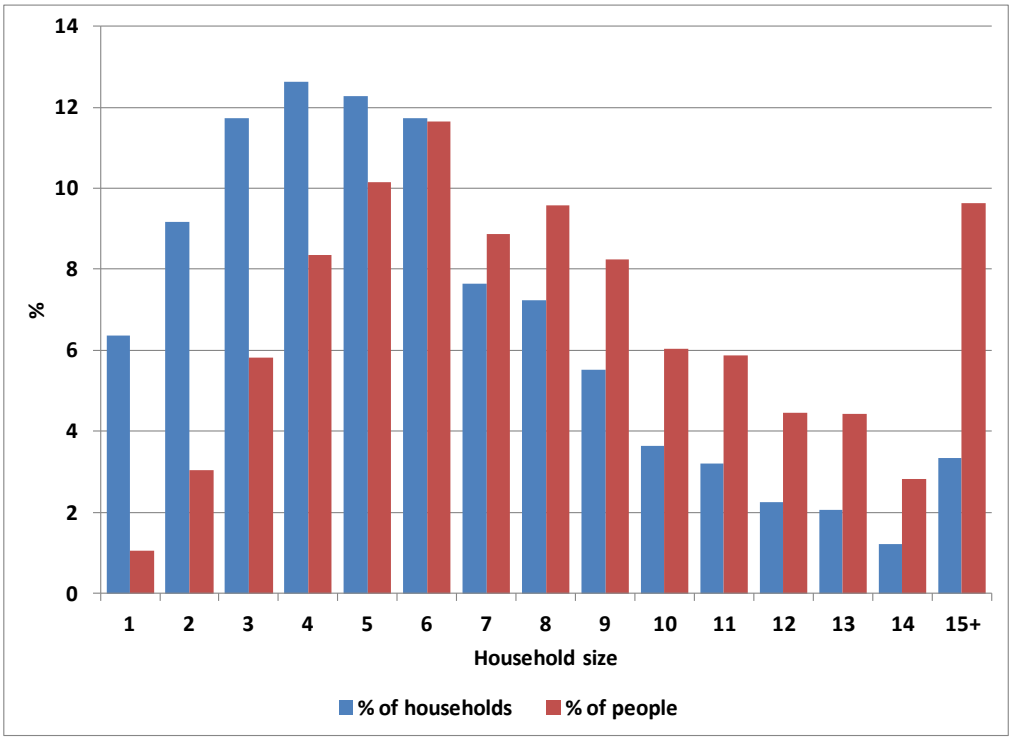


Figure 76: Distribution of households and people living in private households by household size (%), Nauru: 2011



5.3 Household composition

Data on household composition were established by identifying a head of household who served as a reference person to whom all other people in the household, in terms of family membership, are related (Table 36).

Approximately 2 out of 3 heads of household (66%) in Nauru were men (1,083) with one-third (564 or 34%) of households headed by women. The number of female headed households has risen considerably since the 2002 census when only 27% of households were headed by a woman.

In most cases women headed the household when her spouse was not present (temporarily absent), or when the women were widowed; her husband had died. This is evident from the low number of male spouses (221).

Not surprisingly the majority of household members (57%) were children such as the sons and daughters of the household head, adopted children, children of in-laws, or grandchildren.

Only 1% (52) of all household members was parents or parents-in-laws, which is an indication that the oldest (male) person in the households is usually regarded as the head of household.

Two per cent of all household members were not related to the head of household.

Table 36: Population by household composition (relationship to head of household), Nauru: 2011

Relationship	In numbers			In percentage		
	Total	Male	Female	Total	Male	Female
Head of household	1,647	1,083	564	17	22	11
Spouse of head	1,079	221	858	11	4	17
Son/Daughter	3,577	1,814	1,763	36	36	36
Adopted son/daughter	220	104	116	2	2	2
Son in law/daughter in law	404	251	153	4	5	3
Grandchild	1,437	733	704	14	15	14
Parent/Parents in law of head	52	10	42	1	0	1
Brother/Sister (including in laws)	451	223	228	5	4	5
Other relatives	888	471	417	9	9	8
Not related/friend	190	121	69	2	2	1
Total	**9,945**	**5,031**	**4,914**	**100**	**100**	**100**

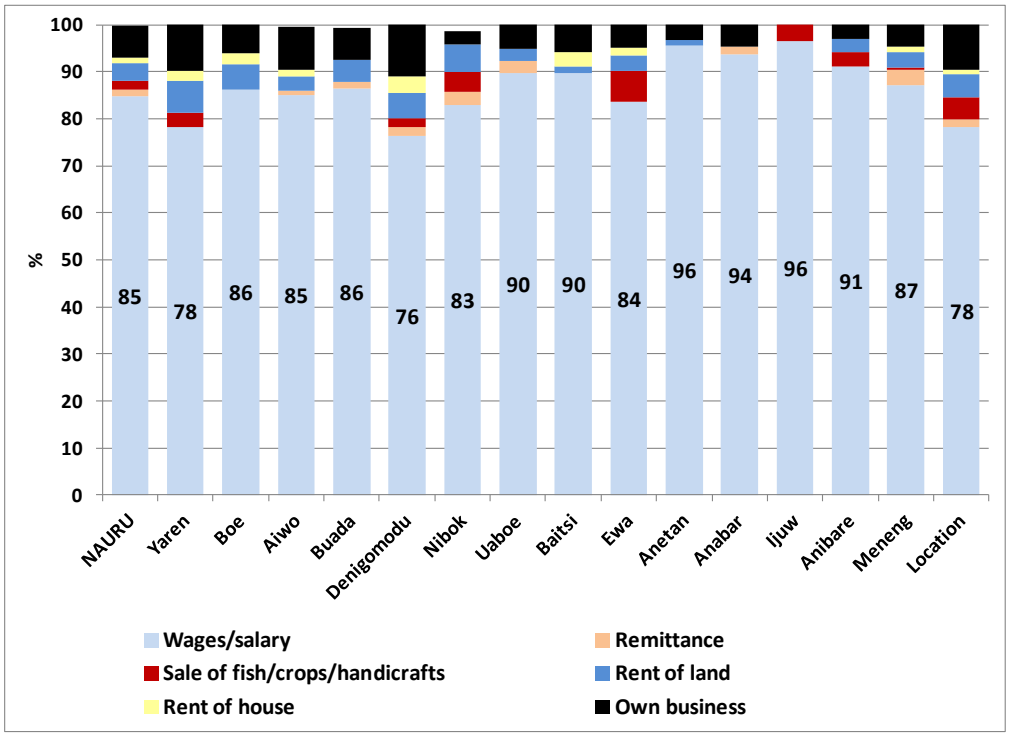
5.4 Household income sources

5.4.1 Main household income

During the last 3 months before the 2011 census, 85% of households recorded wages or salary as their main source of household income, 7% of households main income came from own business activities, 4% relied on rent of land, and 2% on the sale of fish, crops or handicrafts. Another 1% of households reported that income from remittances or from renting a house was their main source of income (Fig.77).

There was a slight variation in the importance of the different household income sources by district, and the proportion of households with wages or salary as the main source of income was lowest in Denigomodu (76%), Yaren (78%), and Location (85%). Here income from own businesses was relatively more important than in the other districts.

Figure 77: Proportion of households by main source of household income and by district (%), Nauru: 2011



5.4.2 Agricultural cash crops, livestock, fisheries and hunting activities

The 2011 census included several questions on whether households were engaged in agricultural, fisheries and hunting activities such as:

- Whether a household is involved in growing food, and whether it is for sale or subsistence;
- Which cash crops are grown, such as pumpkin, mangoes, pawpaw bread fruit, cabbage, other tropical crop, other foreign crop, or other crops;
- Whether a household raises live stock such as pigs, chicken, ducks, or other livestock;
- Whether a household is involved in fishing, and whether it is for sale or subsistence;
- Whether a household is involved in noddy bird catching.

5.4.2.1 Agricultural activities

In 2011, only 217 (13%) of households maintained a kitchen garden and were involved in growing crops (Fig.78). However, this proportion was much higher in the districts of Denigomodu (27%), Baitsi (22%), and Buada (20%). On the other hand it was very low in Uaboe (5%), Nibok (6%), Anibare (6%), and Ijuw (7%).

Of those households that grew crops, most grew pawpaw which was 10% or 165 of all households. The second most popular crop was breadfruit grown by 6% of all households, followed by pumpkin (4%) and cabbage (3%). However, 9% of households grew a variety of *other* not further identified crops, and 4% grew ‘other tropical crops’. All agricultural activities was almost exclusively for the purpose of own consumption (Table 37 and Figs.79-86).

Table 37: Proportion of households by district and agricultural activity (%), Nauru: 2011

District	Pumpkin	Mangoes	Pawpaw	Bread fruit	Cabbage	Other tropical crops	Other foreign crops	Other crops
NAURU	**4**	**2**	**10**	**6**	**3**	**4**	**2**	**9**
Yaren	4	3	13	16	3	8	1	12
Boe	8	1	24	15	5	13	3	21
Aiwo	5	1	11	4	1	3	2	6
Buada	2	5	15	13	5	2	0	6
Denigomodu	11	5	20	7	4	18	9	15
Nibok	3	0	0	3	3	1	3	3
Uaboe	5	3	5	3	5	3	3	8
Baitsi	6	4	15	13	7	7	1	10
Ewa	5	2	10	13	5	11	0	7
Anetan	3	1	11	9	3	0	6	20
Anabar	8	0	6	2	8	5	0	5
Ijuw	4	0	14	0	4	0	4	4
Anibare	9	6	15	6	3	9	3	12
Meneng	2	0	7	1	1	2	1	7
Location	1	0	2	1	2	2	0	4

Figure 78: Proportion of households by district and whether maintaining a kitchen garden - growing crops (%), Nauru: 2011

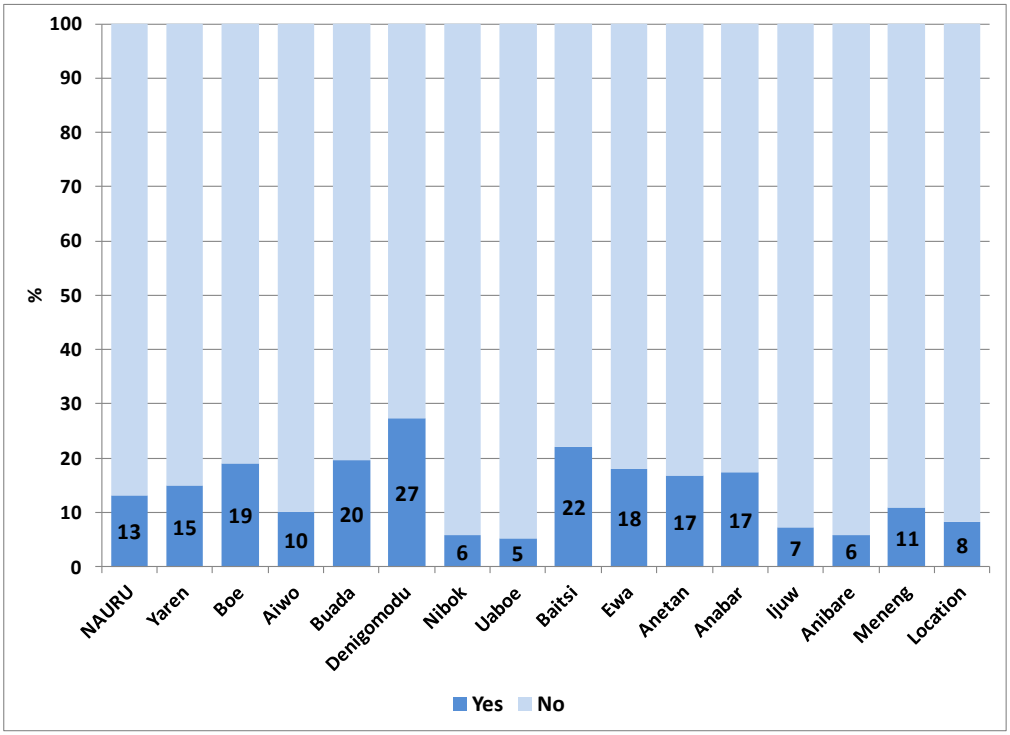


Figure 79: Proportion of households by district and growing pumpkin (%), Nauru: 2011

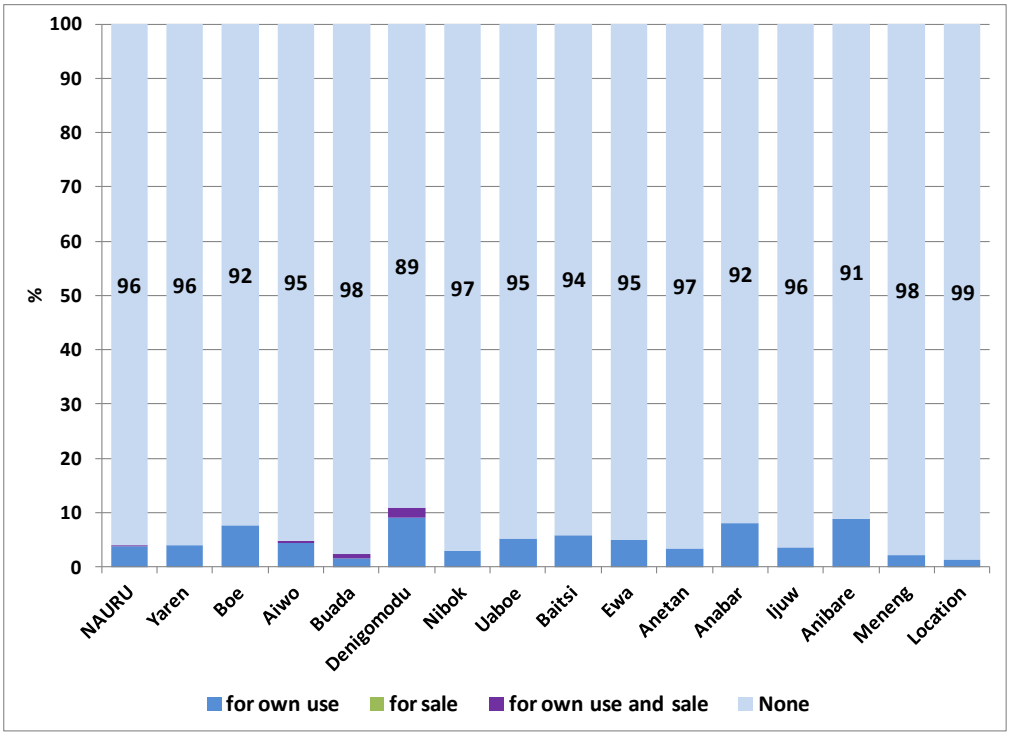


Figure 80: Proportion of households by district and growing mango (%), Nauru: 2011

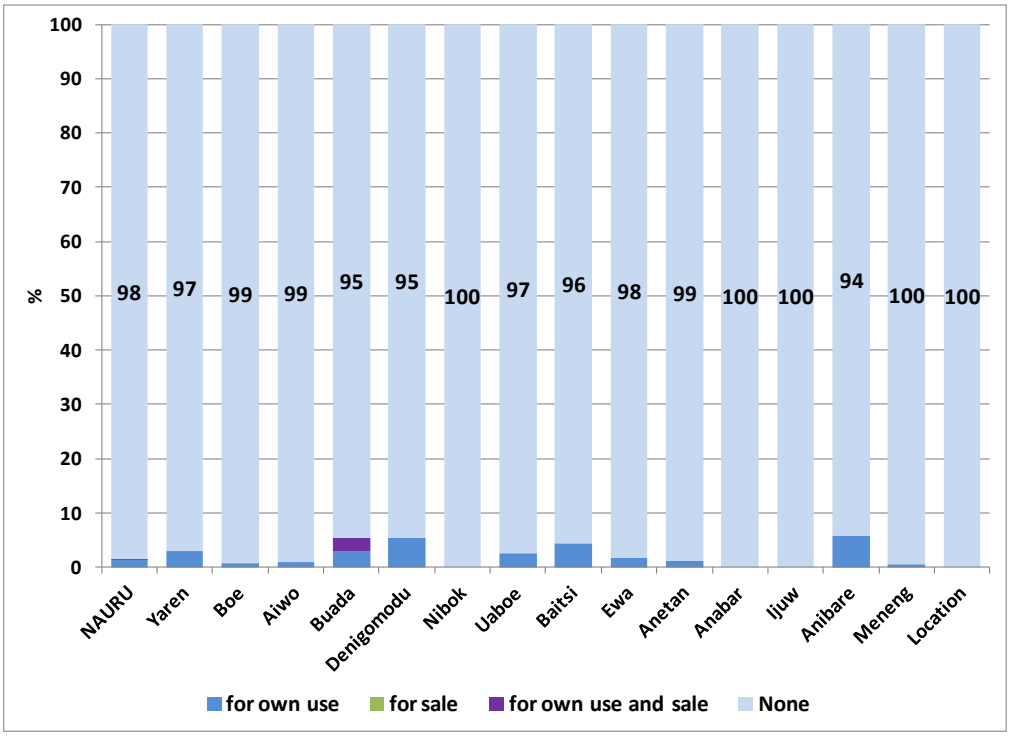


Figure 81: Proportion of households by district and growing pawpaw (%), Nauru: 2011

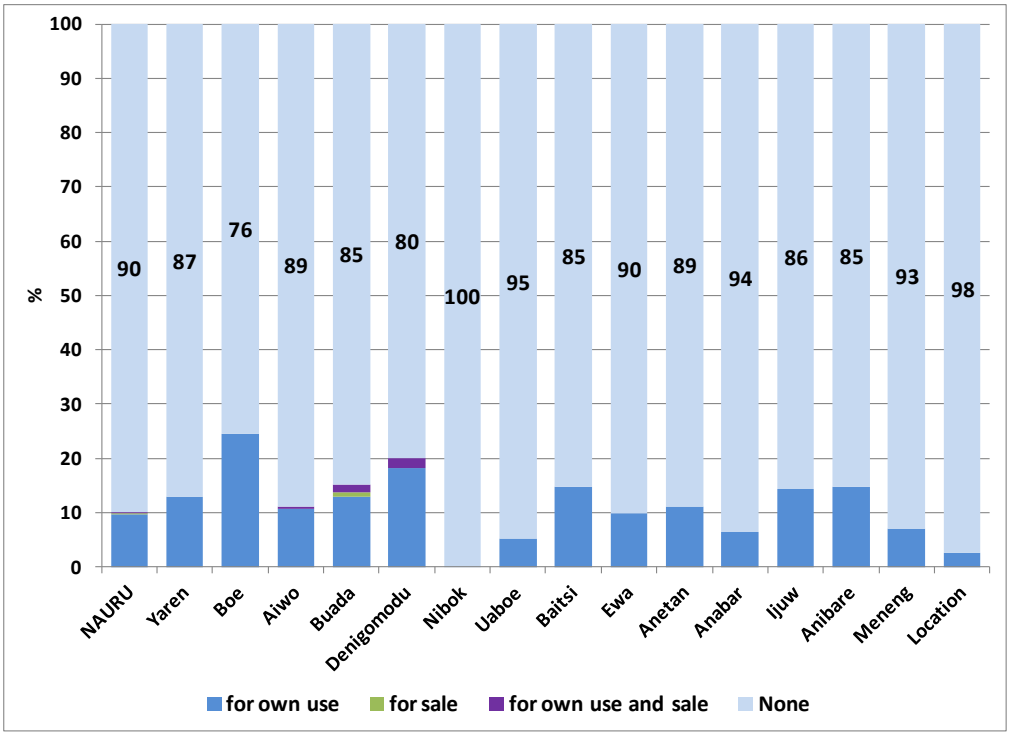


Figure 82: Proportion of households by district and growing bread fruit (%), Nauru: 2011

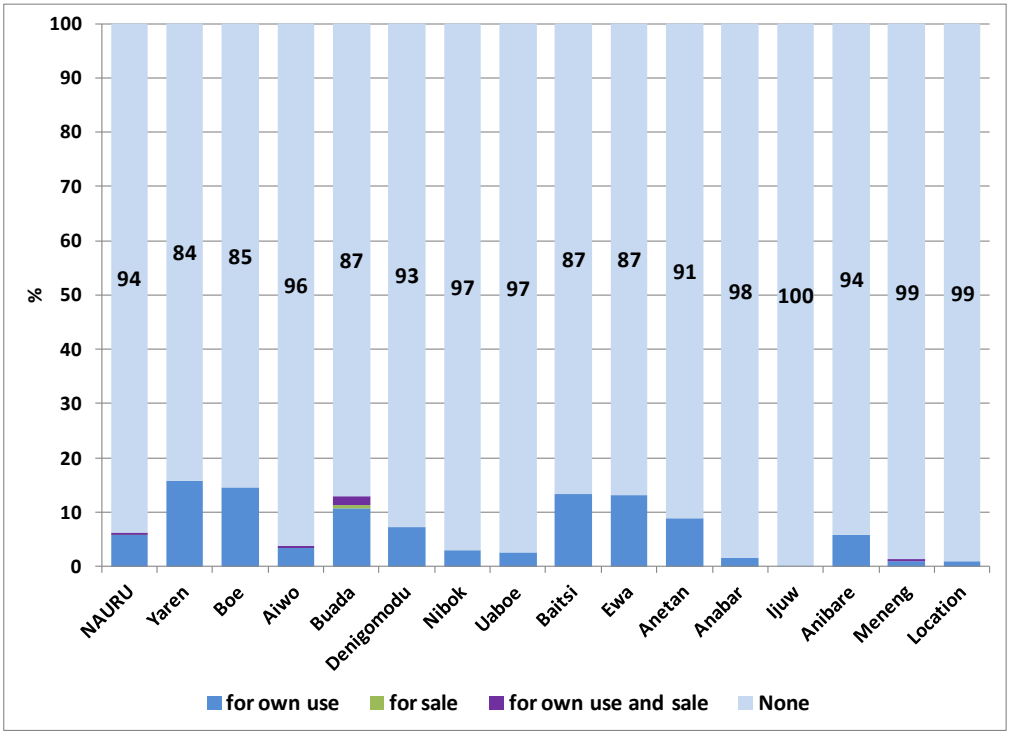


Figure 83: Proportion of households by district and growing cabbage (%), Nauru: 2011

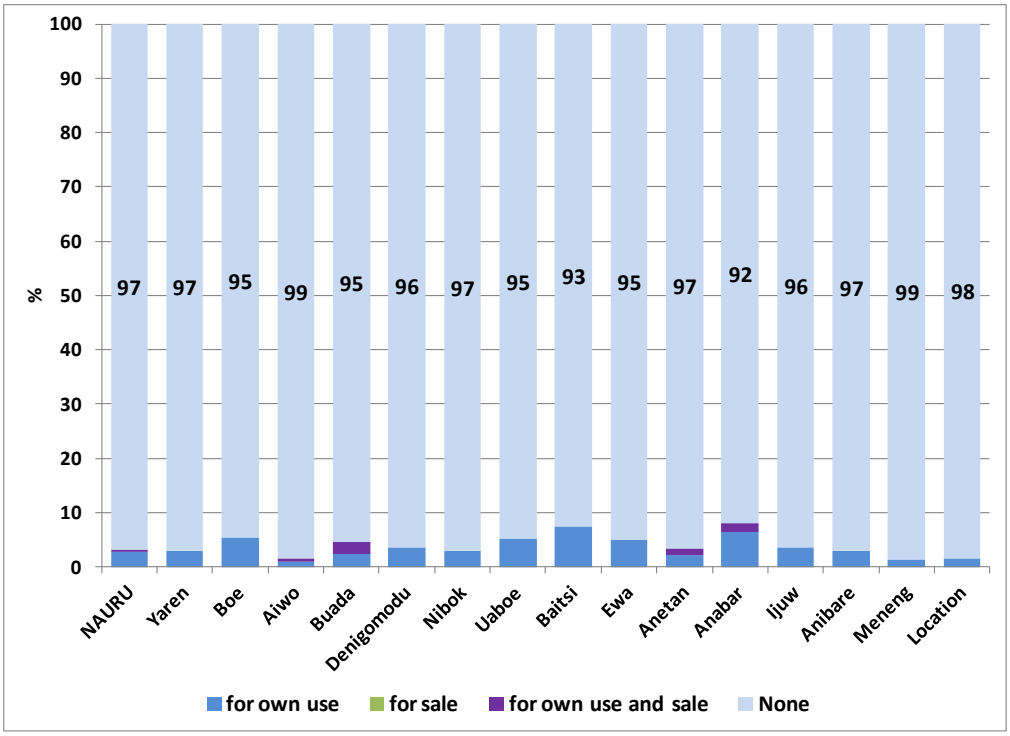


Figure 84: Proportion of households by district and growing other tropical crops (%), Nauru: 2011

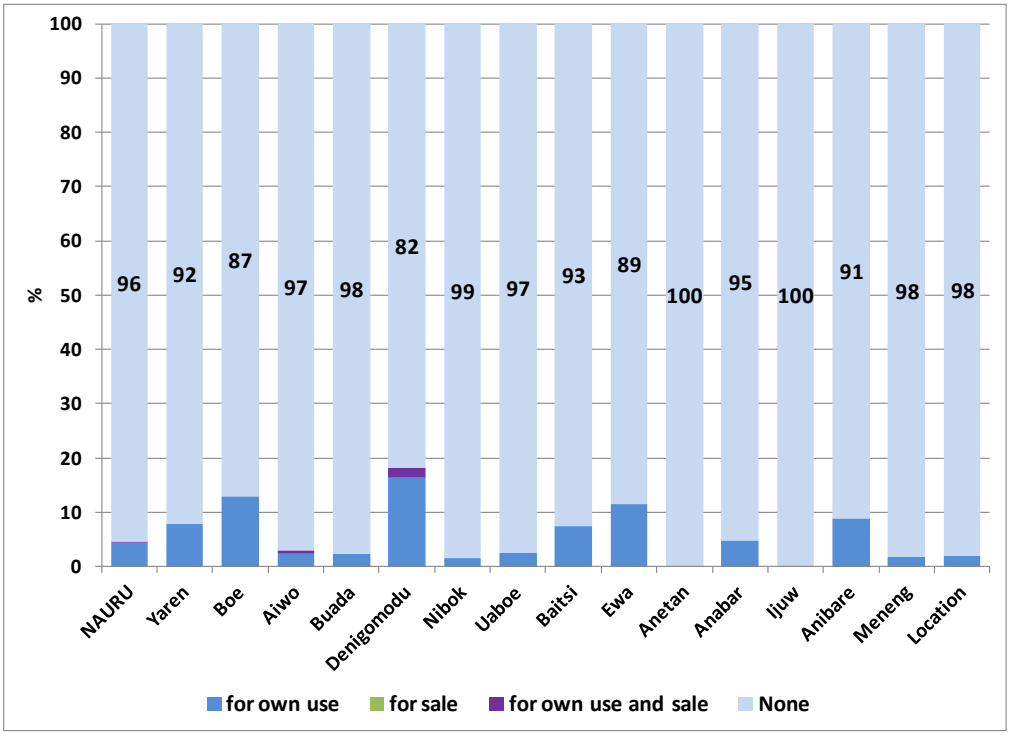


Figure 85: Proportion of households by district and growing other foreign crops (%), Nauru: 2011

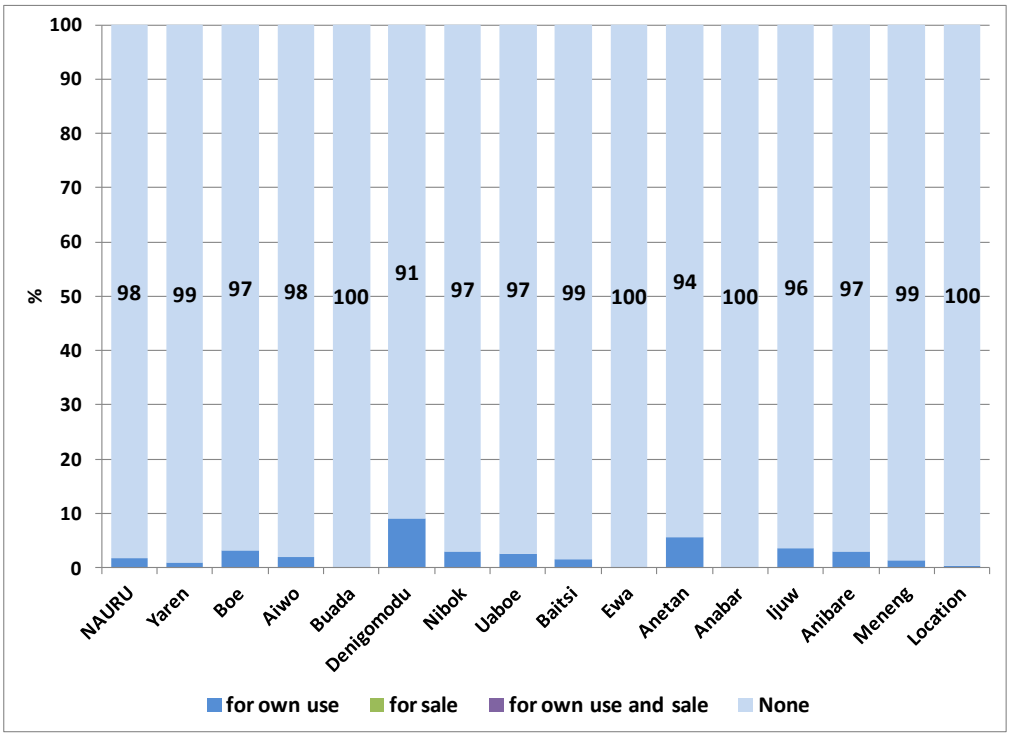
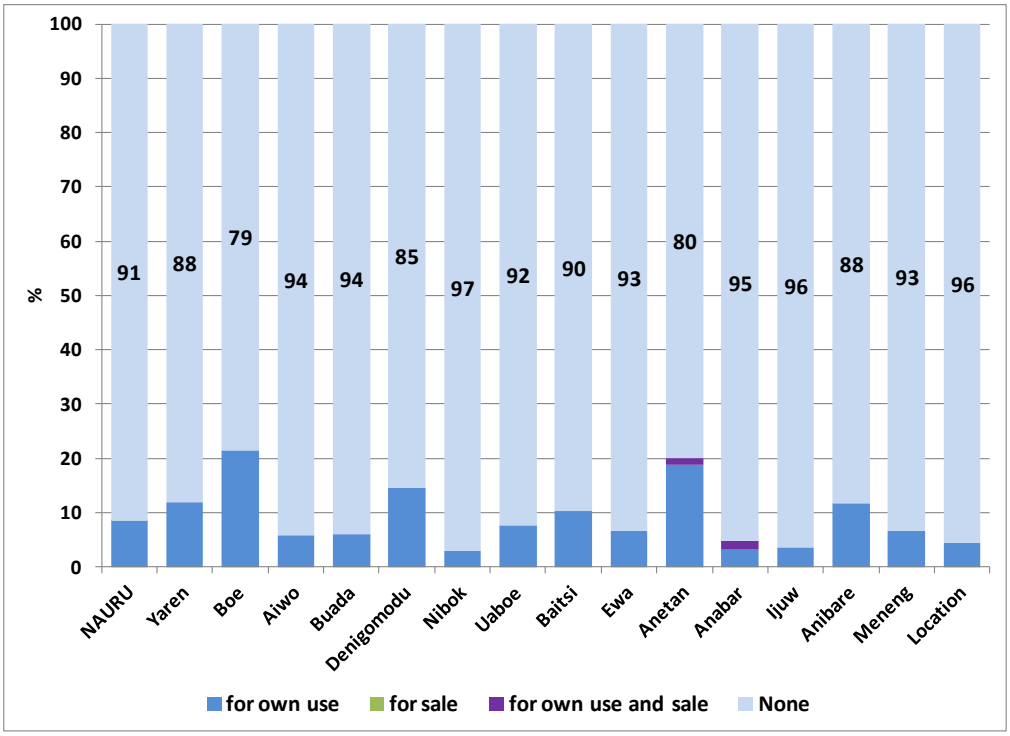


Figure 86: Proportion of households by district and growing other crops (%), Nauru: 2011



5.4.2.2 Raising livestock

The following section provides an overview on the number of livestock counted. The respective question asked in the census was "*What livestock does this household produce/have?*", and answer boxes were provided for the number of pigs, chicken, ducks, and other, and whether they were penned or not (Table 38).

In terms of numbers, throughout the country 1,306 pigs were counted, 4,683 chicken, 167 ducks, and 18 other not further identified livestock. Most pigs were counted in Buada (233), and Meneng (172); the most chicken in Meneng (957) and Aiwo (771); and the most ducks were raised in Aiwo (34) and Anetan (21). In addition, households in the district of Boe raised 11 other livestock.

Table 38: Number of livestock, Nauru: 2011

District	Livestock penned				Livestock not penned				Total livestock			
	Pigs	Chicken	Ducks	Other	Pigs	Chicken	Ducks	Other	Pigs	Chicken	Ducks	Other
NAURU	**1,272**	**2,117**	**140**	**13**	**34**	**2,566**	**27**	**5**	**1,306**	**4,683**	**167**	**18**
Yaren	77	140	20	0	0	238	0	1	77	378	20	1
Boe	124	168	13	11	0	286	0	0	124	454	13	11
Aiwo	137	312	34	1	4	459	0	0	141	771	34	1
Buada	222	97	2	0	11	300	18	0	233	397	20	0
Denigomodu	30	158	17	0	1	0	0	0	31	158	17	0
Nibok	61	90	7	0	11	51	0	0	72	141	7	0
Uaboe	60	10	0	0	0	0	0	0	60	10	0	0
Baitsi	82	261	3	0	0	7	0	0	82	268	3	0
Ewa	57	102	3	0	0	178	0	0	57	280	3	0
Anetan	58	112	21	0	0	48	0	0	58	160	21	0
Anabar	58	159	11	0	0	70	5	0	58	229	16	0
Ijuw	25	2	0	0	2	84	0	0	27	86	0	0
Anibare	40	127	0	0	1	121	0	0	41	248	0	0
Meneng	168	253	8	1	4	704	0	4	172	957	8	5
Location	73	126	1	0	0	20	4	0	73	146	5	0

5.4.2.3 Fishing activities

The following section provides a summary on the number/proportion of households involved in fishing activities, and whether it was mainly for own consumption (subsistence), for sale, or both.

The census questionnaire included 6 questions regarding the type and purpose of the fishing activities:

1. Whether collecting seafood on the ocean flat;
2. Whether collecting seafood on the reef flat;
3. Whether fishing in the ocean (deep sea);
4. Whether fishing on the reef;
5. Whether net fishing;
6. Whether involved in aquaculture.

It was then specified whether the purpose of these activities were mainly for own consumption (subsistence), for sale, or for both.

The data show that just over half (51%) of all households in Nauru were engaged in fishing activities, regardless of the type and purpose of fishing. Almost all households (96%) in Ijuw were involved in fishing, 85% in Anibare, and 73% in Anabar. The districts with the lowest proportion of households involved in fishing were Nibok (21%), Baitsi (38%), and Buada (39%) (Fig.87).

Fishing on the **ocean flat** was undertaken by 17% of all households in Nauru; 14% did this for own consumption only, and an additional 3% did this for own consumption and for sale. Ocean-flat fishing was mainly undertaken by households in Ijuw and Anabar (Fig.88).

Fishing on the **reef flat** was undertaken by 27% of all households in Nauru; 25% did this for own consumption only, and an additional 2% did this for own consumption and for sale. Reef-flat fishing was mainly undertaken by households in Ijuw, Anibare and Anabar (Fig.89).

Fishing in the **ocean (deep sea)** was undertaken by 23% of all households in Nauru; 20% did this for own consumption only, and an additional 3% did this for own consumption and for sale. Ocean fishing was mainly undertaken by households in Ijuw, Anibare and Anabar (Fig.90).

Fishing on the **reef** was undertaken by 29% of all households in Nauru; 27% did this for own consumption only, and an additional 2% did this for own consumption and for sale. Reef fishing was mainly undertaken by households in Ijuw, Anibare and Anabar (Fig.91).

Net fishing was undertaken by 28% of all households in Nauru; 26% did this for own consumption only, and an additional 2% did this for own consumption and for sale. Net fishing was mainly undertaken by households in Anabar and Uaboe (Fig.92).

Aquaculture was undertaken by only 2% of all households in Nauru, and this was for own consumption only. Aquaculture was mainly undertaken by households in Ewa (Fig.93).

Figure 87: Proportion of households by district and whether involved in any fishing activities (%), Nauru: 2011

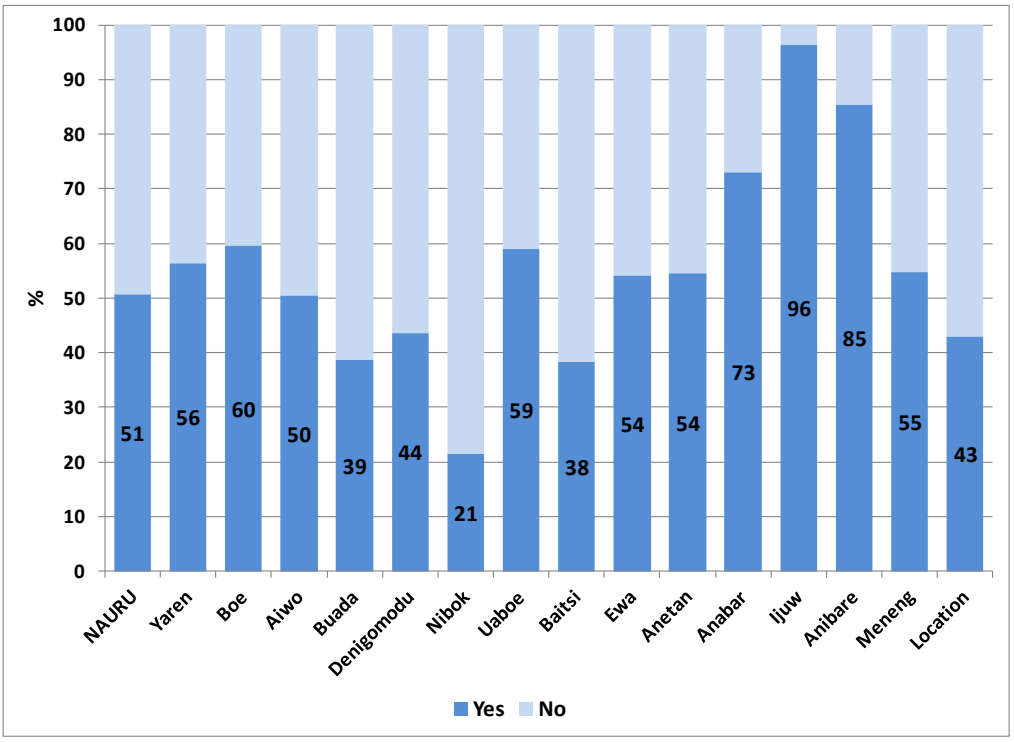


Figure 88: Proportion of households by district and collecting seafood on ocean flat (%), Nauru: 2011

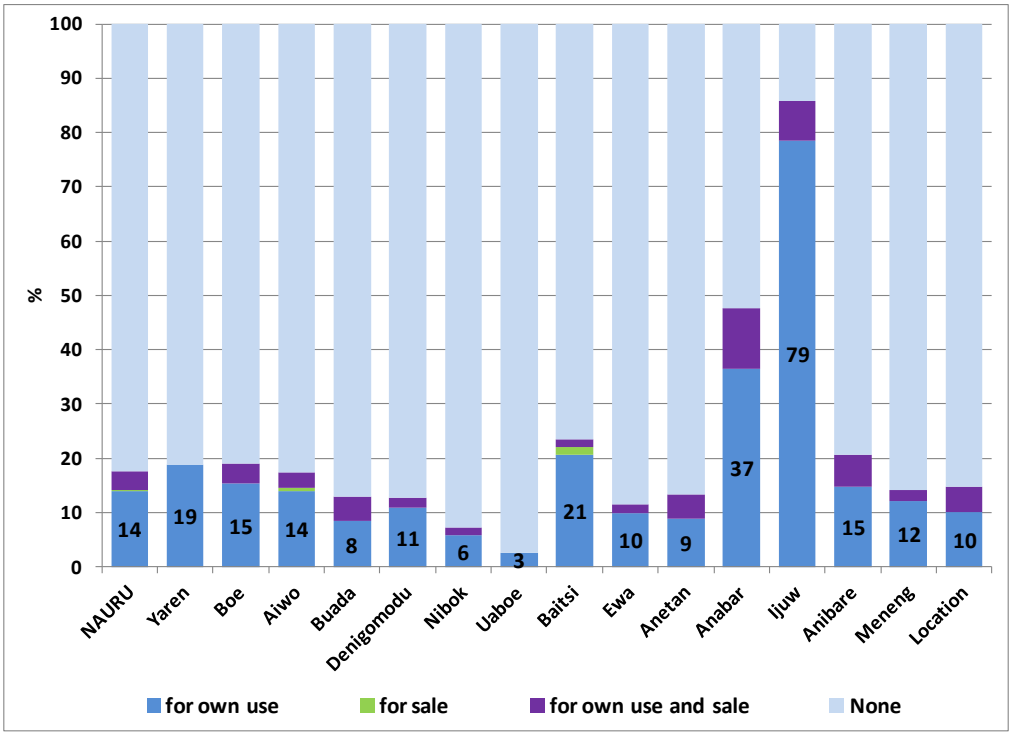


Figure 89: Proportion of households by district and collecting seafood on reef flat (%), Nauru: 2011

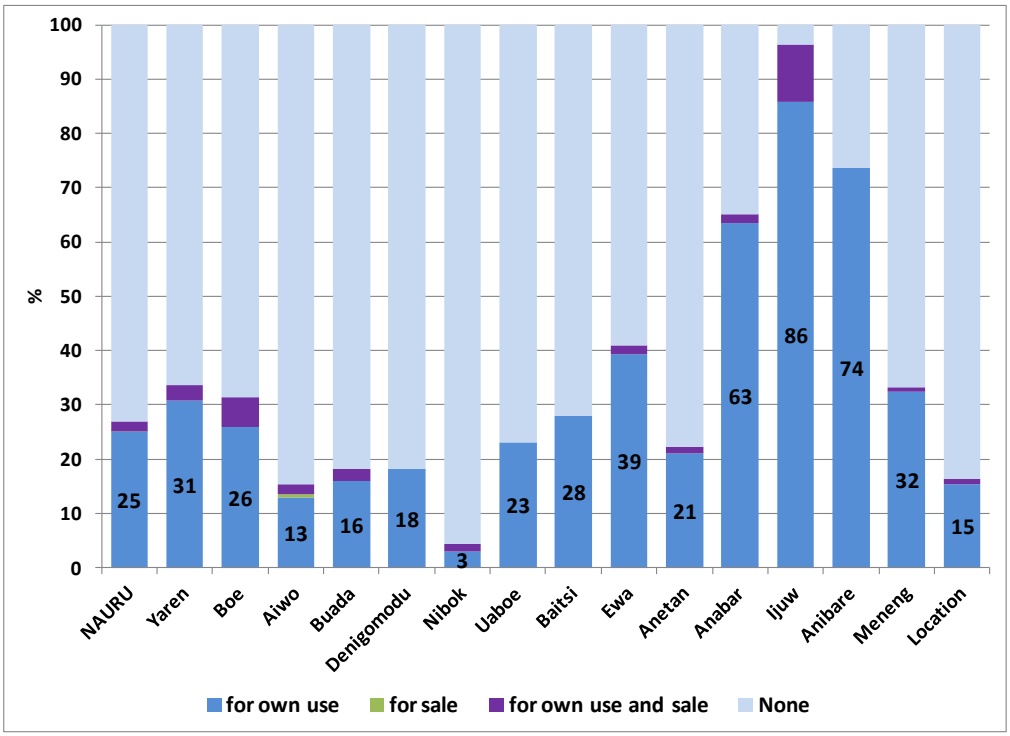


Figure 90: Proportion of households by district involved in ocean fishing (%), Nauru: 2011

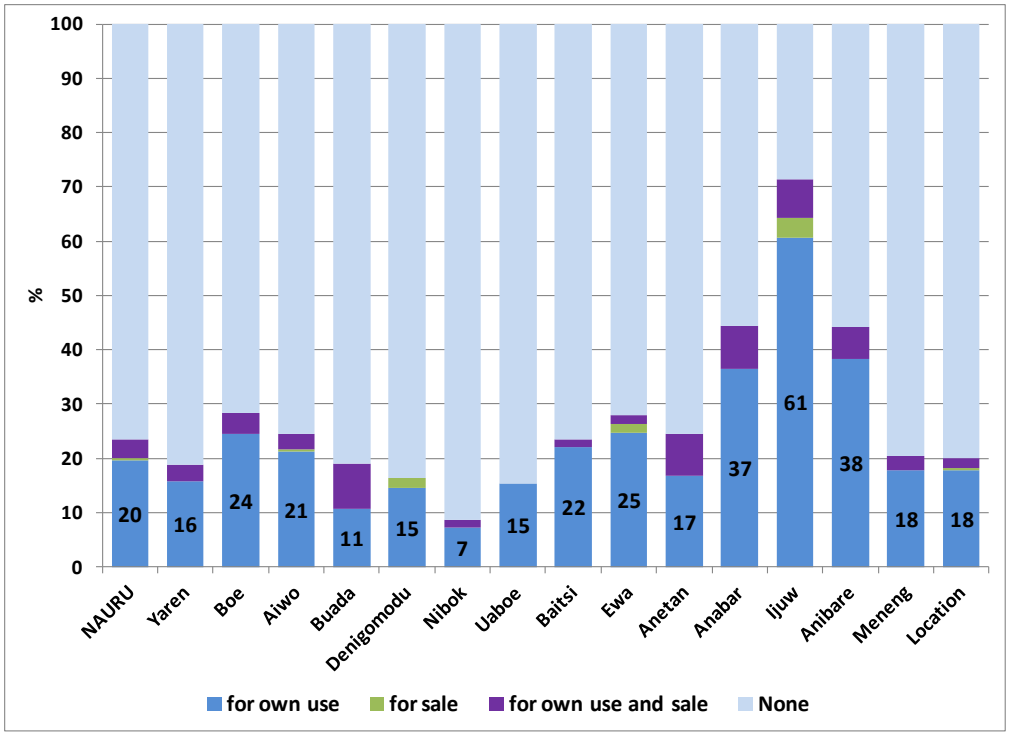


Figure 91: Proportion of households by district involved in reef fishing (%), Nauru: 2011

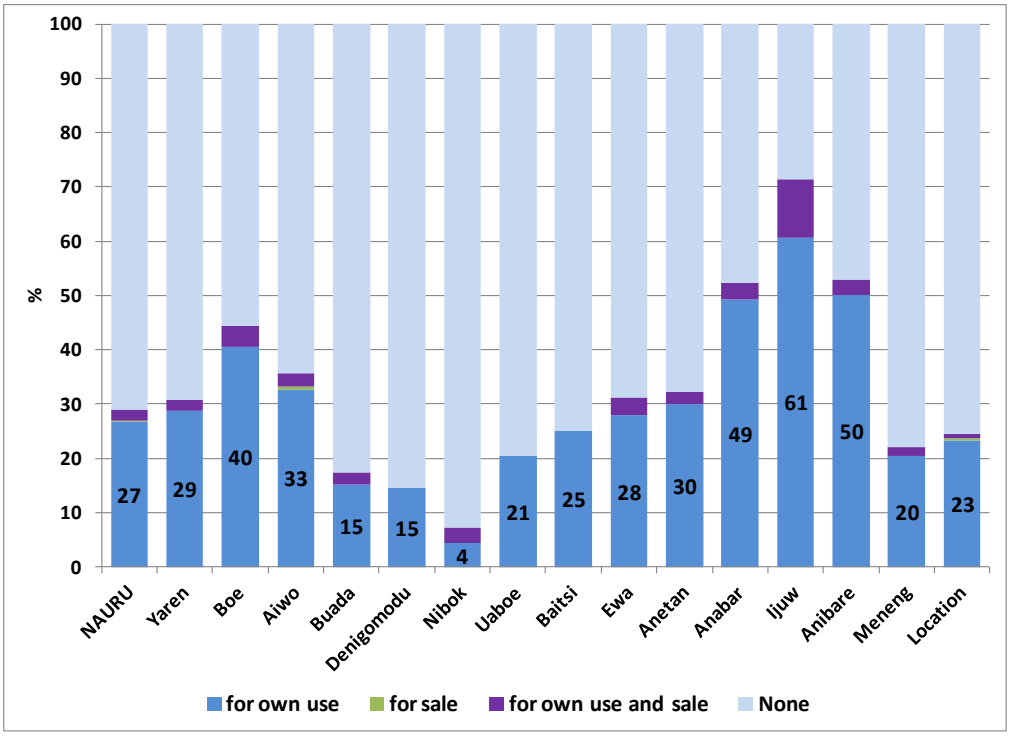


Figure 92: Proportion of households by district involved in net fishing (%), Nauru: 2011

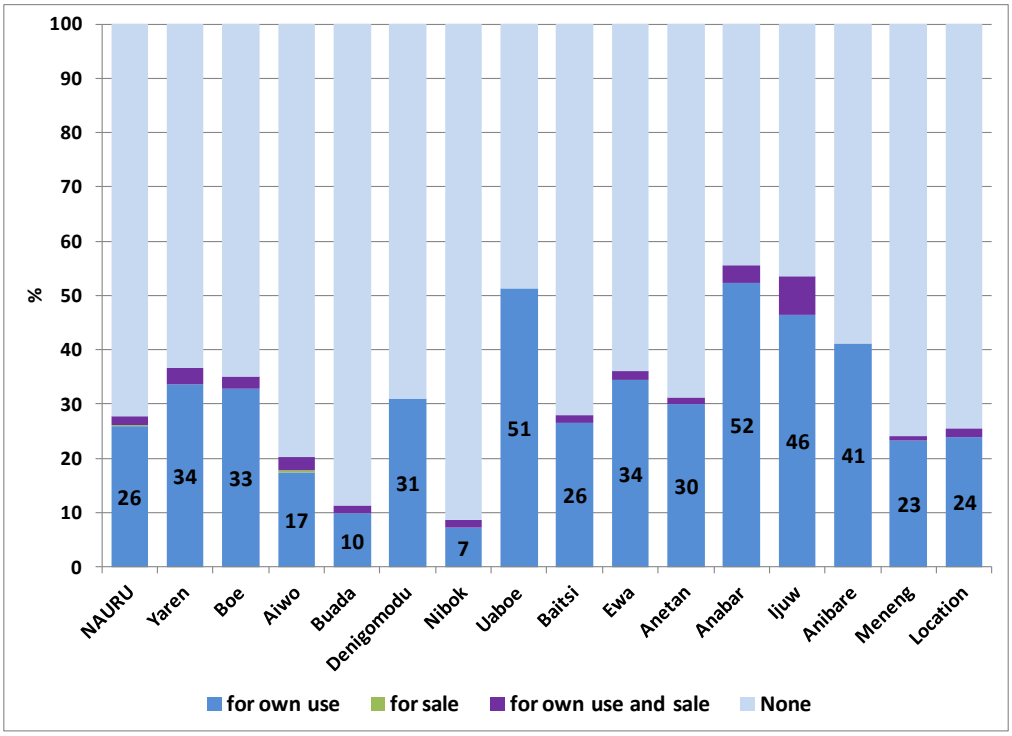
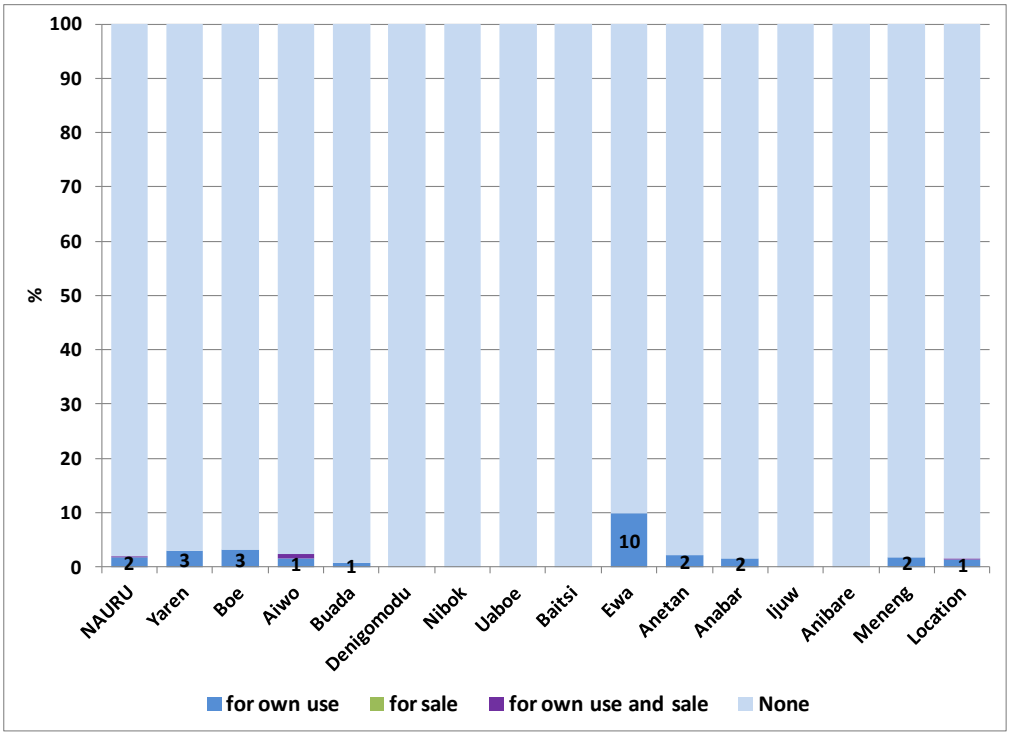


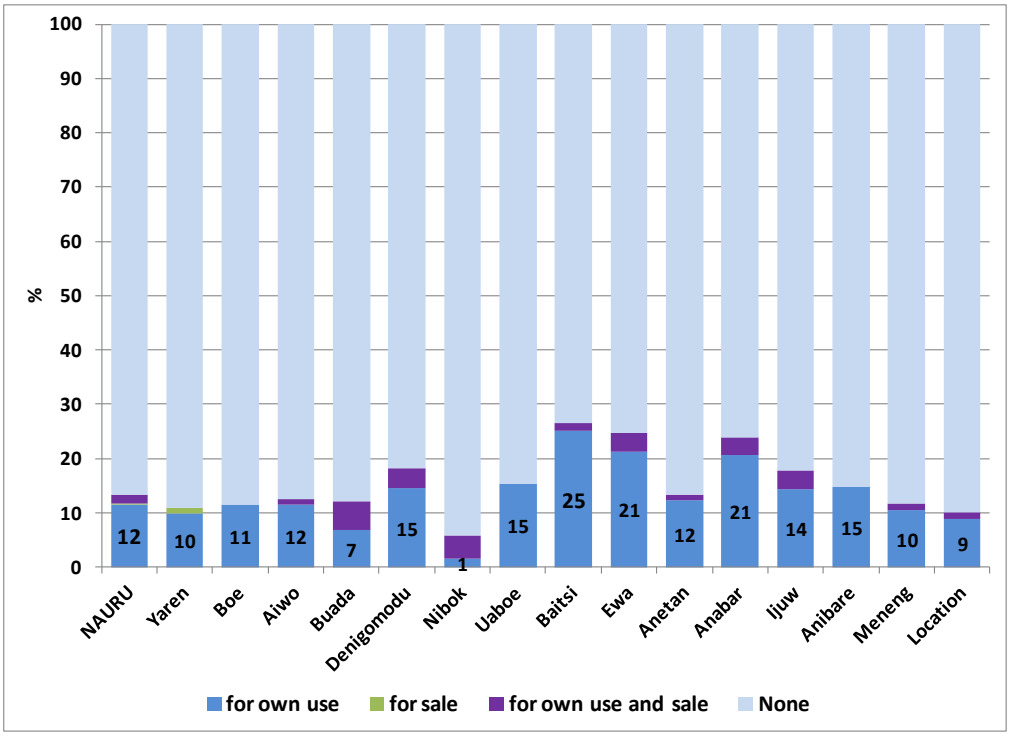
Figure 93: Proportion of households by district involved in aquaculture (%), Nauru: 2011



5.4.2.4 Noddy bird catching

Noddy bird catching was undertaken by 14% of all households (219) in Nauru; 12% did this for own consumption only, and an additional 2% did this for own consumption and for sale. Noddy bird catching was mainly undertaken by households in Baitsi, Ewa and Anabar (Fig.94).

Figure 94: Proportion of households by district and catching noddy birds (%), Nauru: 2011



5.5 Housing

5.5.1 Introduction

While it fulfils a variety of social roles, housing primarily provides shelter and security for the family and individuals, and provides a relative measure of social status and an expression of lifestyle choices and comfort. As an important social institution, housing provides owners with a sense of worth and belonging in any community.

The challenge for the country and any government of the day is to provide sustainable livelihoods, safe and secure living environments and a better quality of life for the poor and other vulnerable groups, while maintaining a reasonable standard of the existing housing stock.

The Universal Declaration of Human Rights adopted in 1948 recognised the right to shelter as a component of the right to an adequate standard of living (UNCHS 1997).

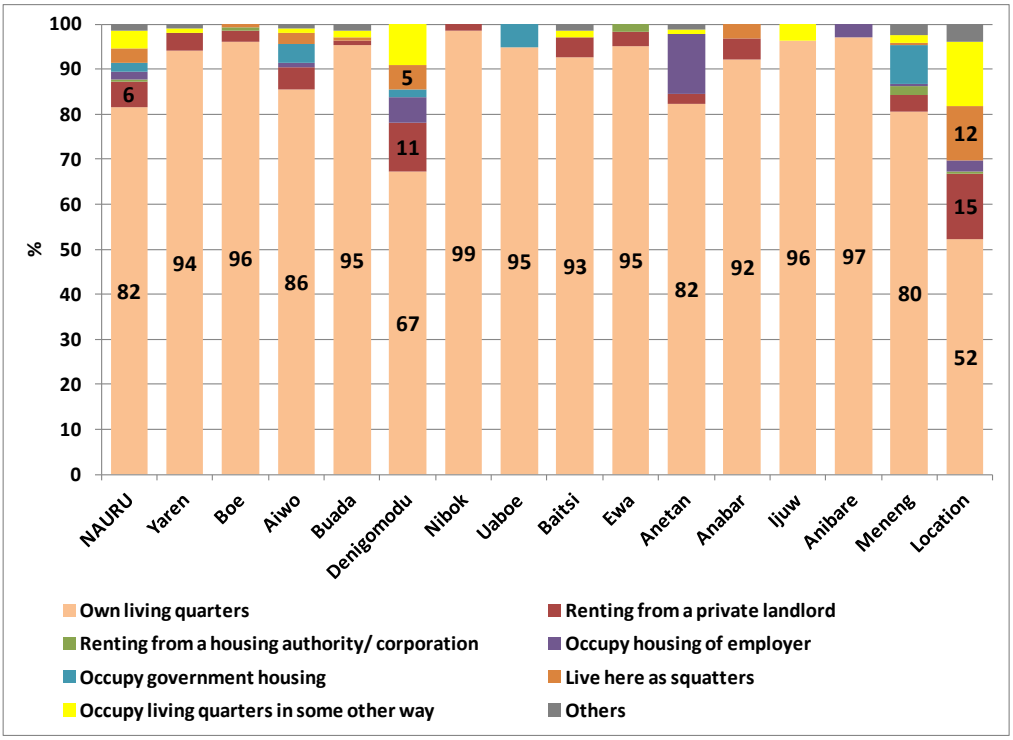
5.5.2 Tenure

Eighty-two percent of all households in Nauru owned the living quarters they were living in (Fig.95). The highest proportion of households owning their living quarters were in Nibok (99%), Anibare (97%), Boe (96%), and Ijuw (96%).

A sizeable proportion (6%) of households rented their living quarters from a private landlord. This was relatively common in Location (15%), and Denigomodu (11%).

Interestingly 3% of households lived in their dwellings as squatters. This was particularly common in Location (12%), and Denigomodu (5%).

Figure 95: Proportion of households by district and housing tenure (%), Nauru: 2011



5.5.3 Type of living quarters, and year/period of construction

The 2011 census provides information on the type of building that each household lived in. Seven building categories were distinguished:

- Permanent – single housing unit;
- Permanent – multiple housing unit;
- Building with 2 or more apartments;
- Dwelling attached to a shop or other non-residential building;
- Lodging house;
- Traditional;
- Improvised;
- Other (any other type of building that cannot be classified as one of the above types).

The majority, 61% of Nauru's households lived in a permanent single housing unit, 22% lived in a building with 2 or more apartments, 8% occupied a permanent multiple housing unit, 3% lived in a dwelling attached to a shop or other non-residential building, and 5% lived in other types of living quarters such as a lodging house, a traditional house, or an improvised structure (Fig.96).

While the overall pattern of types of housing were similar among the different districts, it is worth noting that 91% of households in Location lived in buildings with 2 or more apartments, that 15% of households

in Denigomodu lived in dwellings attached to a shop or other non-residential building, and that half of all households lived in living quarters other than permanent single housing units.

More than half of all living quarters in Nauru were built more than 50 years ago, and 27% were built 21-50 years ago. Only 1% of dwellings were recently constructed – during the last 2 years before the October 2011 census. Almost all buildings in Location are more than 50 years old, which is also the case for more than 60% of dwellings in Aiwo, Uaboe, Denigomodu, and Nibok (Fig.97).

On the other hand, the highest proportion of newly built buildings constructed during the 2 years before the census were located in Anibare (9%) and Ijuw (4%).

Figure 96: Proportion of households by district and type of living quarters (%), Nauru: 2011

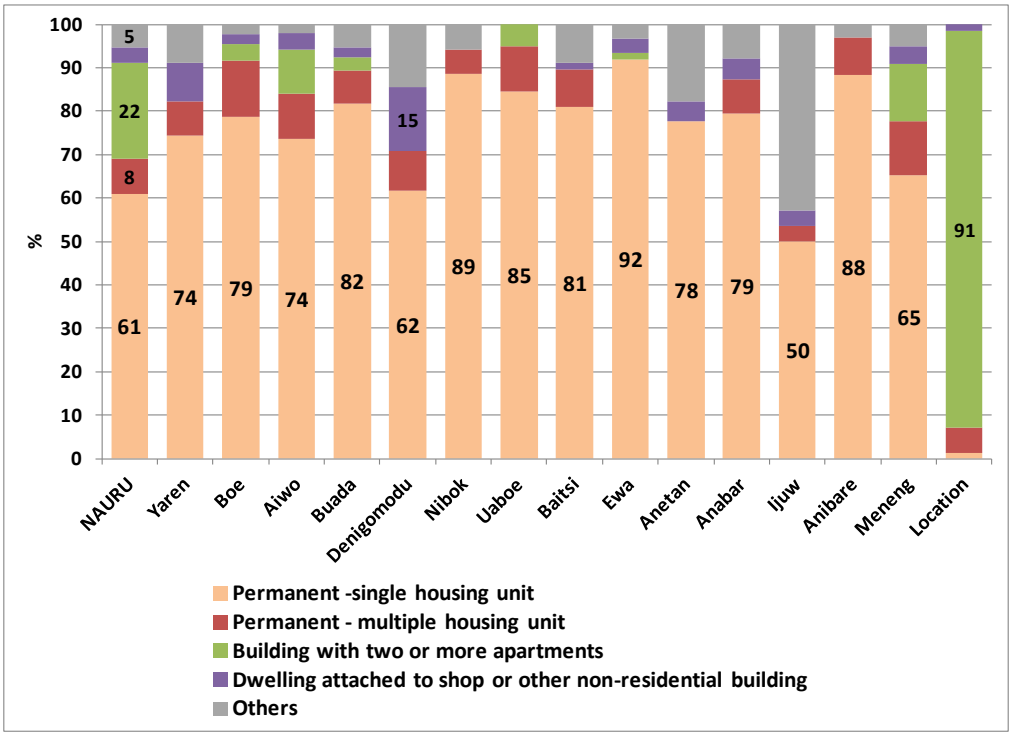
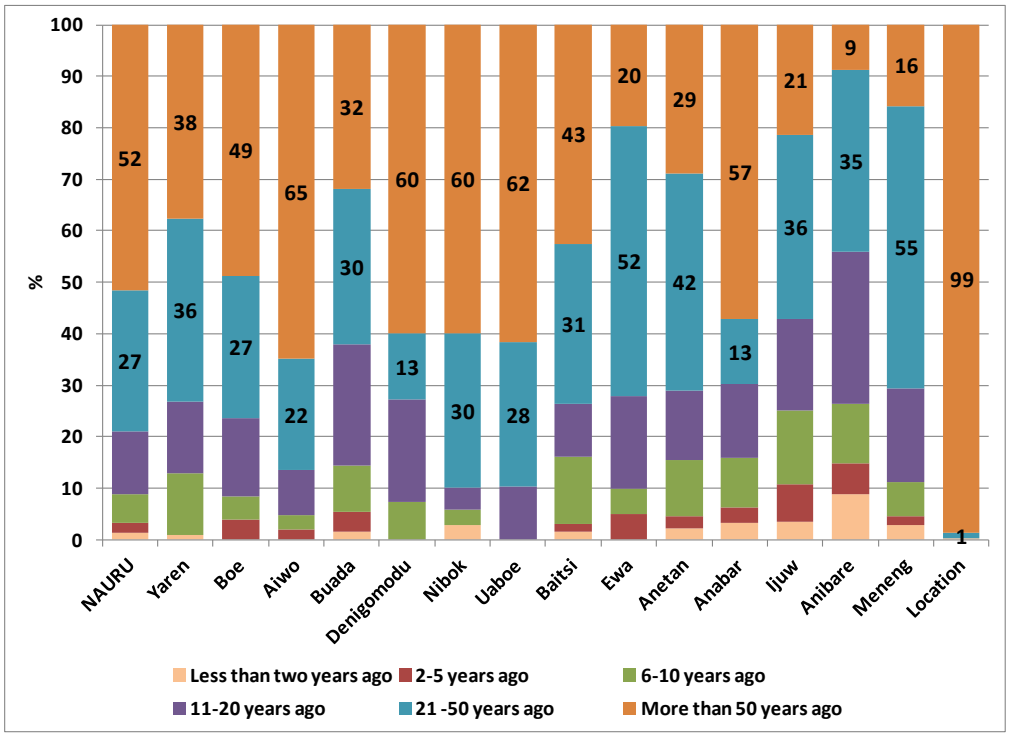


Figure 97: Proportion of households by district and period when building (dwelling) constructed (%), Nauru: 2011



5.5.4 Number of rooms

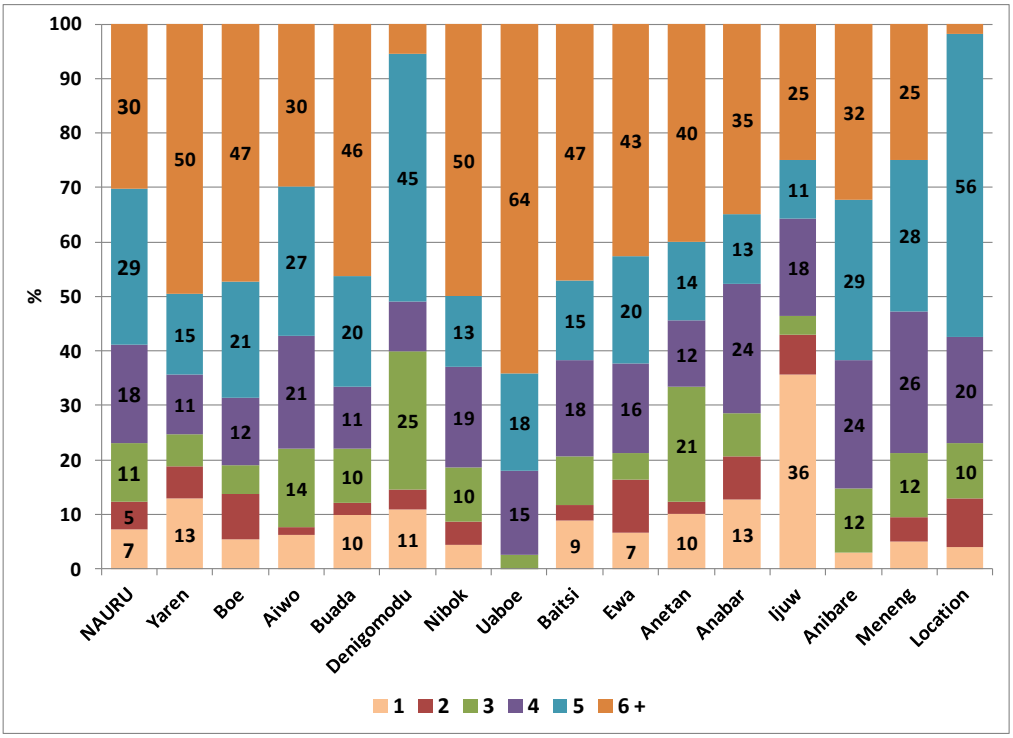
The distribution of dwellings by number of rooms is displayed in Figure 98. It shows that the majority (60%) of all dwellings in Nauru had at least 5 rooms, and another 18% had 4 rooms; 11% had 3 rooms, 5% had 2 rooms, and 7% had only 1 room.

There were on average 4.8 rooms per dwelling (Table 39). The districts with the highest average number of rooms per dwelling were Uaboe (6.1), and households in Nibok and Boe had 5.3 rooms on average. The districts with the lowest number of rooms were Anibare (3.6), and Denigomodu with 4 rooms on average.

Table 39: Average number of rooms per dwelling by district, Nauru: 2011

NAURU	Yaren	Boe	Aiwo	Buada	Denigomodu	Nibok	Uaboe	Baitsi	Ewa	Anetan	Anabar	Ijuw	Anibare	Meneng	Location
4.8	5.1	5.3	4.8	5.2	4.0	5.3	6.1	5.1	5.0	4.8	4.6	3.6	5.1	4.7	4.2

Figure 98: Proportion of households by district and number of rooms (%), Nauru: 2011



The census also collected information on the number of bedrooms, dining rooms, kitchens, and/or whether a household shared a kitchen unit or bathroom/shower unit with other households.

More than 60% of all households had 3 or more bedrooms. Households in Uaboe had the highest number of bedrooms, with 79% of households having 4 or more bedrooms (Fig.99).

While the vast majority of households 78% had a dining room, a sizeable minority (21%) of households did not have a dining room. This was particularly so among households in Anabar and Ijuw (Fig.100).

Eighty-eight percent of households in Nauru had a kitchen unit, whereas 11% had none (Fig.101). The proportion of households without a kitchen unit was highest in Ijuw (36%), and Baitsi (21%).

More than one-third (35%) of households in Nauru shared the bathroom/shower unit with other households (Fig.102). This was particularly so in Nibik (69%) and in Yaren (68%).

Almost one-third (32%) of households in Nauru shared the kitchen unit with other households (Fig.103). This was particularly so in Nibik (70%) and in Yaren (65%).

Figure 99: Proportion of households by district and number of bedrooms (%), Nauru: 2011

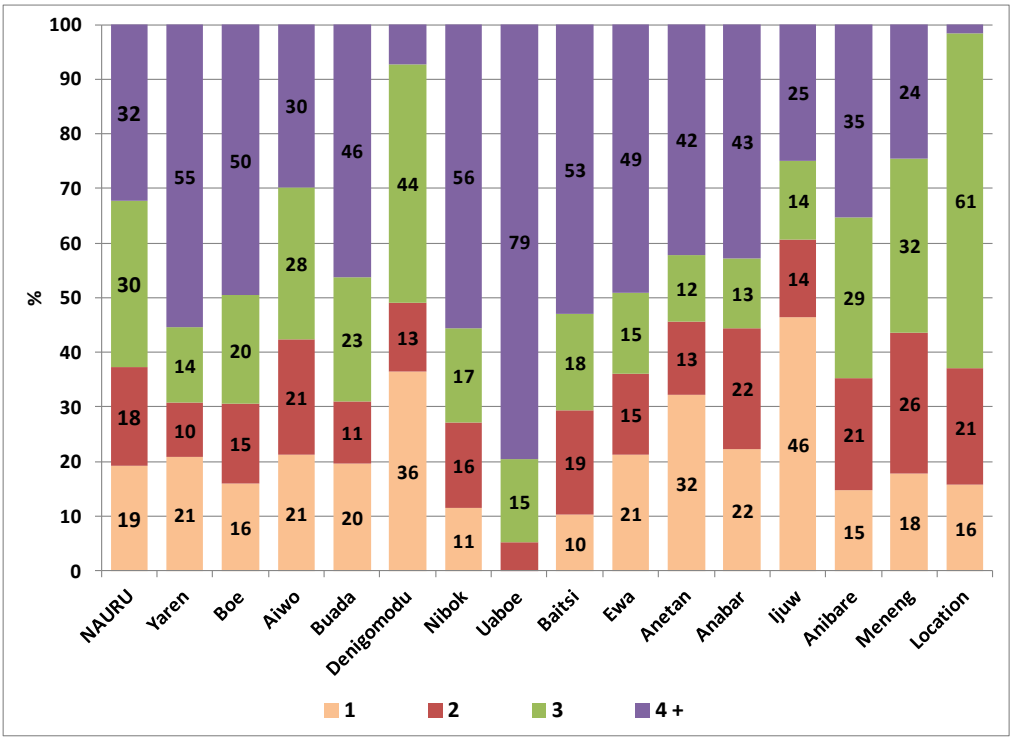


Figure 100: Proportion of households by district and number of dining rooms (%), Nauru: 2011

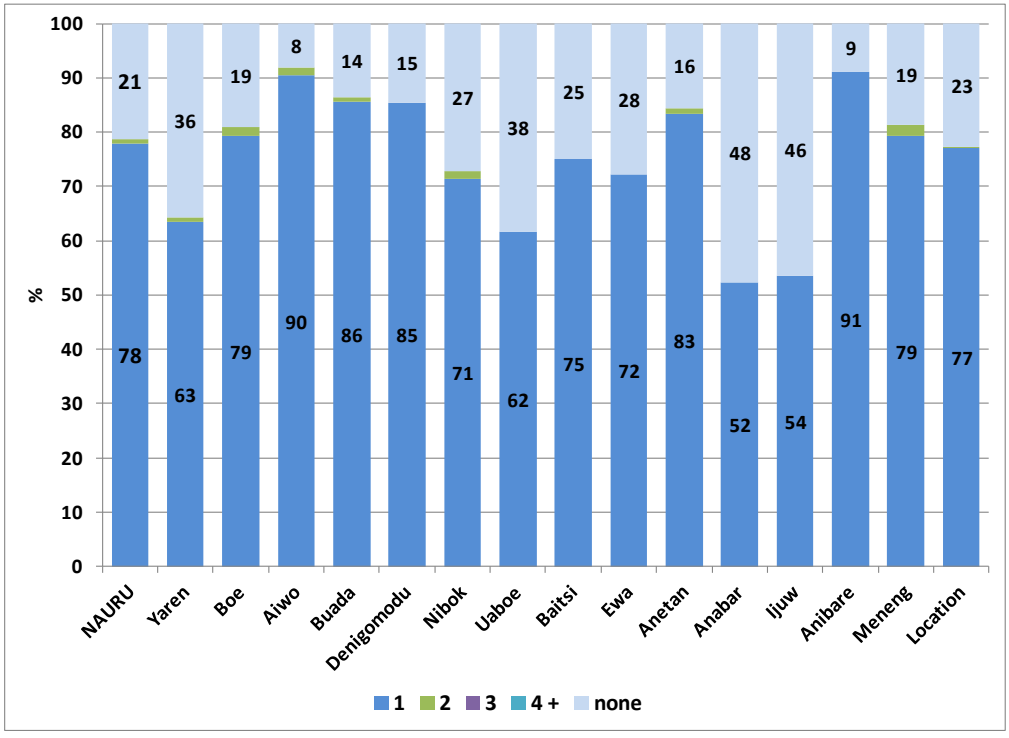


Figure 101: Proportion of households by district and number of kitchen units (%), Nauru: 2011

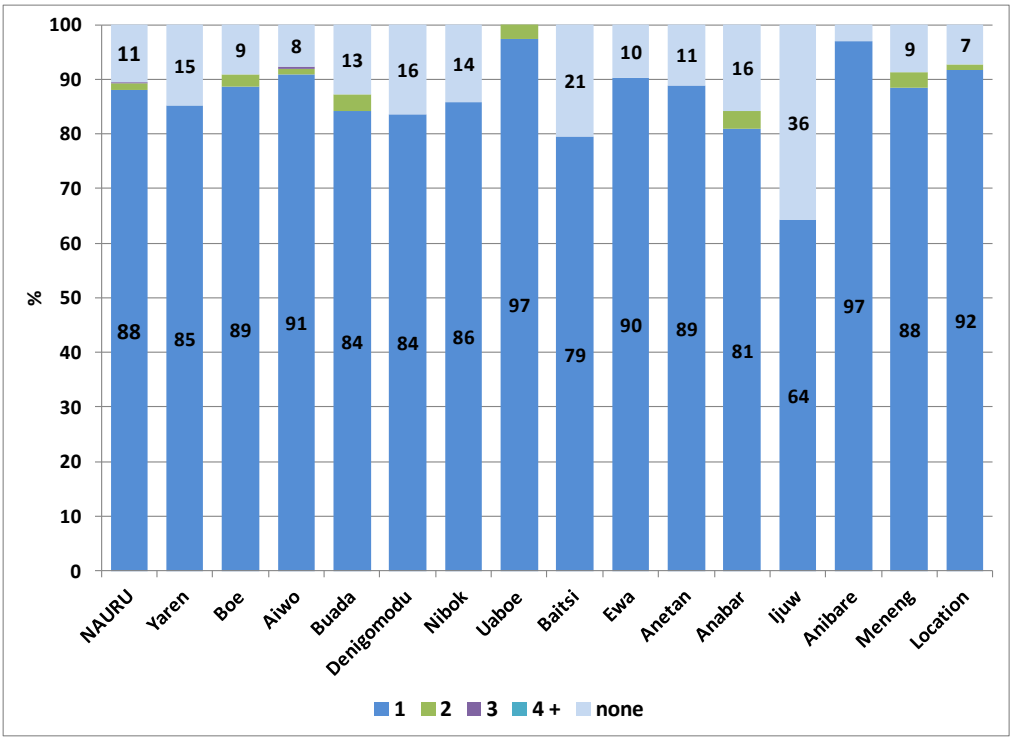


Figure 102: Proportion of households by district and whether sharing bathroom/shower with other households (%), Nauru: 2011

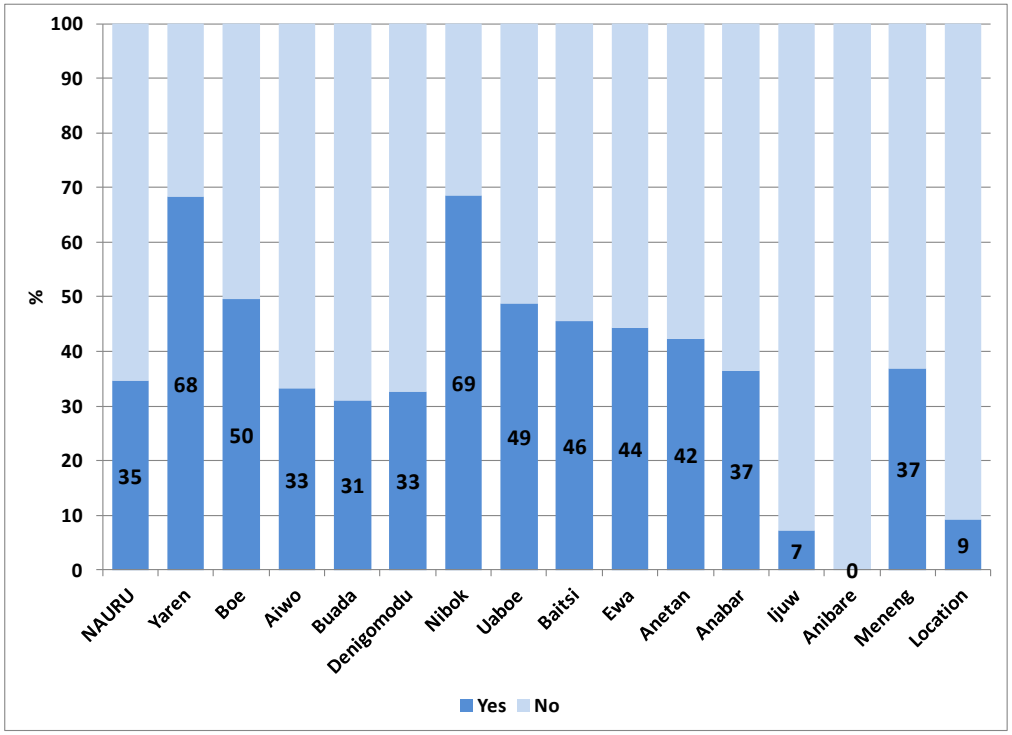
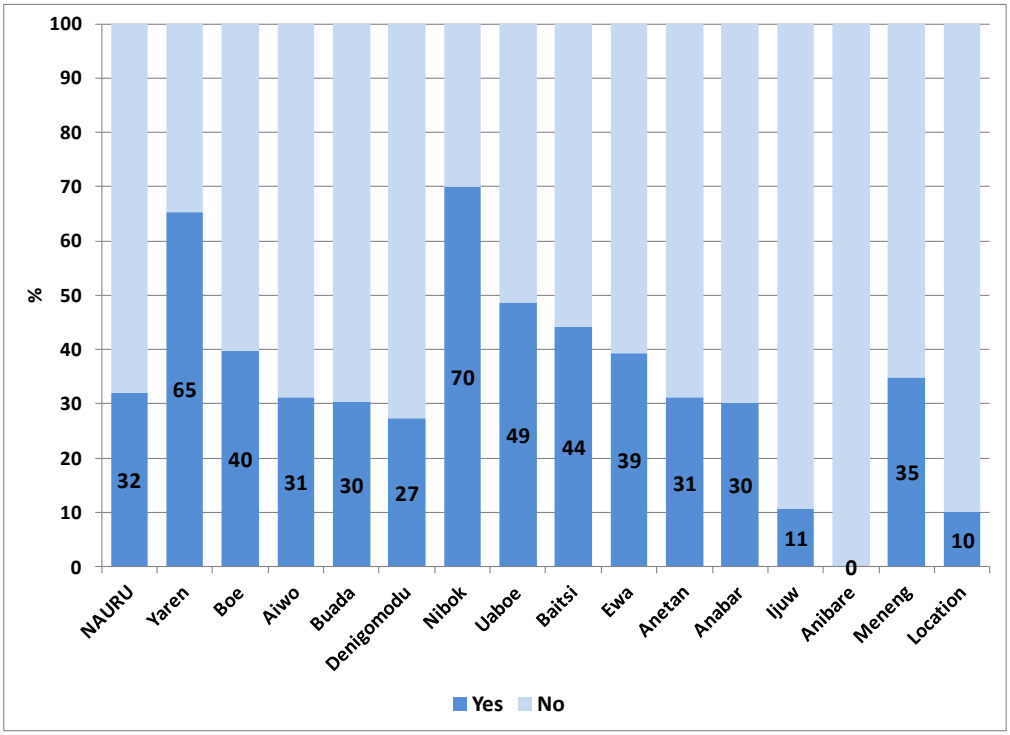


Figure 103: Proportion of households by district and whether sharing kitchen unit with other households (%), Nauru: 2011



5.5.5 Condition and material used for dwellings

Outer walls

Fifty percent of the material used for the outer walls of dwellings was concrete, 22% was wood, 6% of walls were made of tin, corrugated iron, or other improvised materials, and 21% was made of other not further specified materials (Fig.104).

All outer walls of dwellings in Location were made of concrete, while more than half of outer walls in Denigomodu were made of wood, and 45% of outer walls in Buada were made of tin, corrugated iron, or other improvised materials.

Roofs

More than two-third of roofs in Nauru were made of tin or aluminum, and 28% of roofs was made of asbestos (Fig.105). The proportion of roofs made of asbestos was particularly high in Denigomodu (51%) and Nibok (49%).

More than one-quarter of roofs in Nauru need replacing, and an additional 34% are in need of repair. The proportion of roofs that needs replacing or repair is specifically high in Ijuw, Anabar, Ewa, and Yaren (Fig.106).

Guttering

More than half of all guttering was made of tin or aluminum, 12% of asbestos, and 7% of plastic. Almost one-third of dwellings did not have guttering (Fig.107).

The proportion of dwellings without guttering was particularly high in Ijuw (61%) and Meneng (50%). Asbestos was the material used for guttering in 29% of cases in Boe, 26% in Yaren, and 25% in Baiti.

Twelve percent of all dwelling's guttering needed replacing, and 19% needed repair, The proportion of guttering that needed replacing or repair was particularly high in Ewa, Buada and Yaren (Fig.108).

Downpipes

One-third of dwellings in Nauru did not have downpipes, while 45% of downpipes was made of plastic, and 19% of tin or aluminum (Fig.109). The proportion of dwellings without downpipes was particularly high in Ijuw (68%), Aiwo (51%), and Meneng (50%).

While 47% of downpipes were fully working, 13% needed repair and an additional 6% needed replacing (Fig.110). The proportion of downpipes that needed repair or replacing was particularly high in
in Baitsi, Uaboe, and Anabar.

The vast majority of dwellings that had downpipes were connected to a water storage tank. This was the case in 60% of dwellings, while 7% of dwellings had a downpipe not connecting to a water storage tank (Fig.111).

Figure 104: Proportion of households by district and main type of material used for the outer walls of dwellings (%), Nauru: 2011

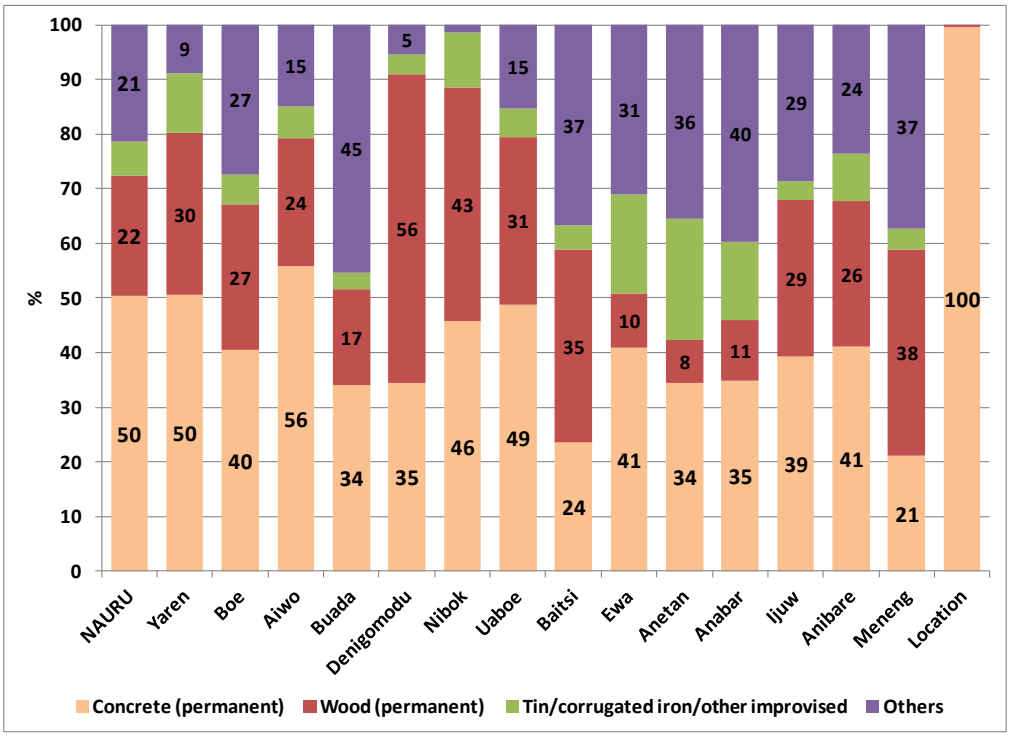


Figure 105: Proportion of households by district and material used for the roof of dwellings (%), Nauru: 2011

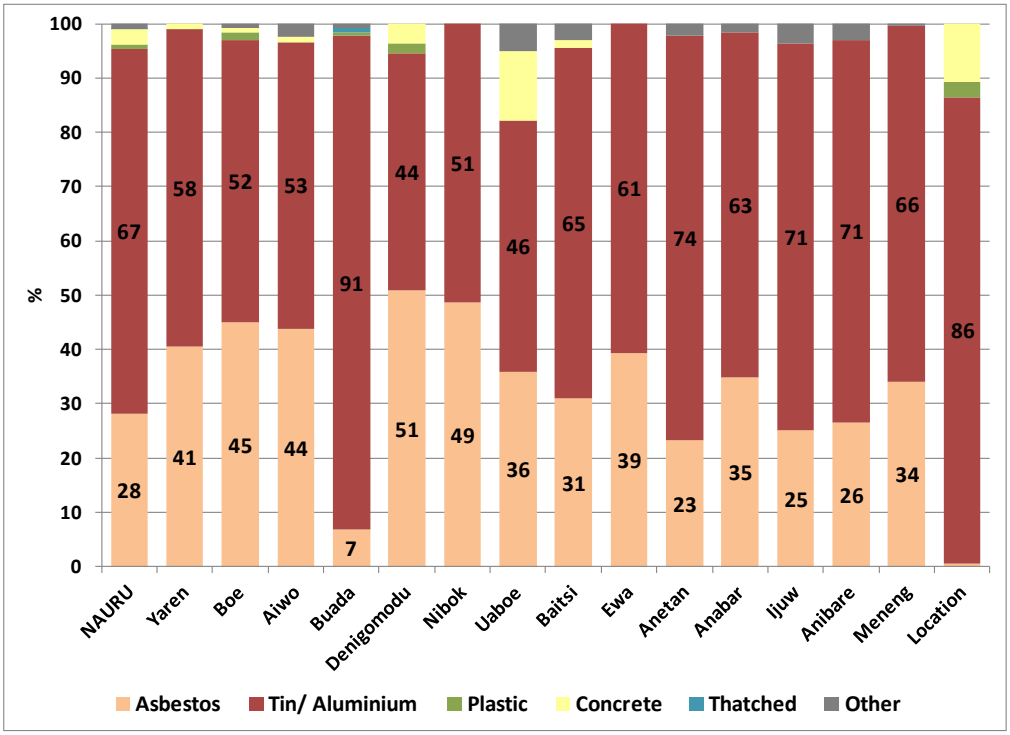


Figure 106: Proportion of households by district and condition of roof of dwellings (%), Nauru: 2011

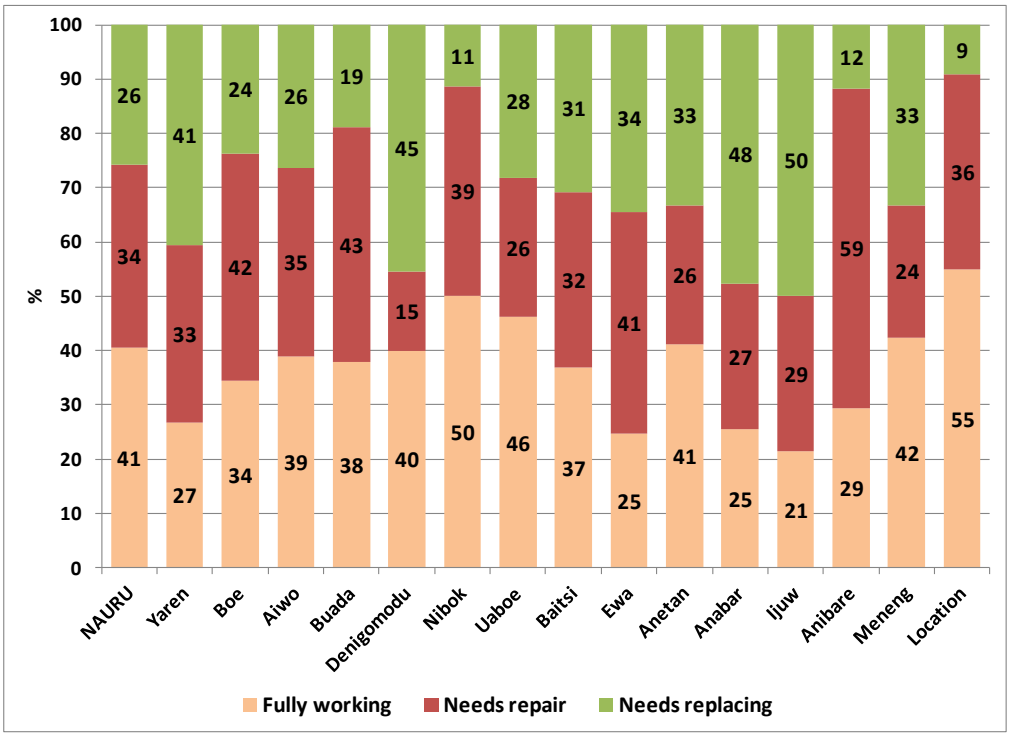


Figure 107: Proportion of households by district and material used for guttering of dwellings (%), Nauru: 2011

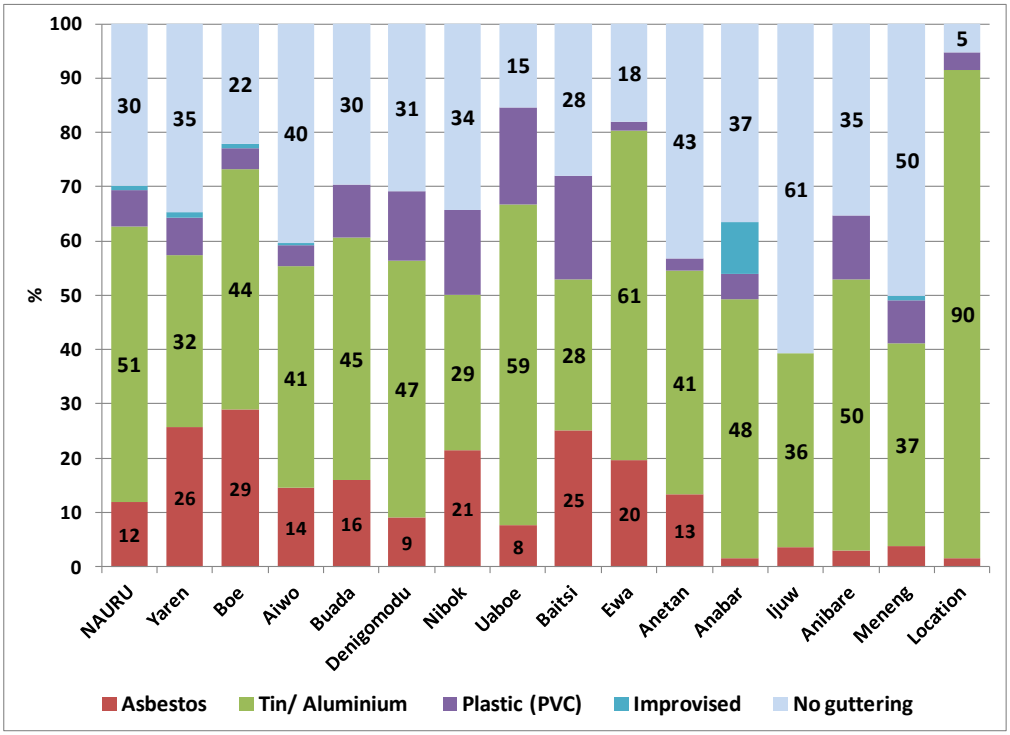


Figure 108: Proportion of households by district and condition of guttering of dwellings (%), Nauru: 2011

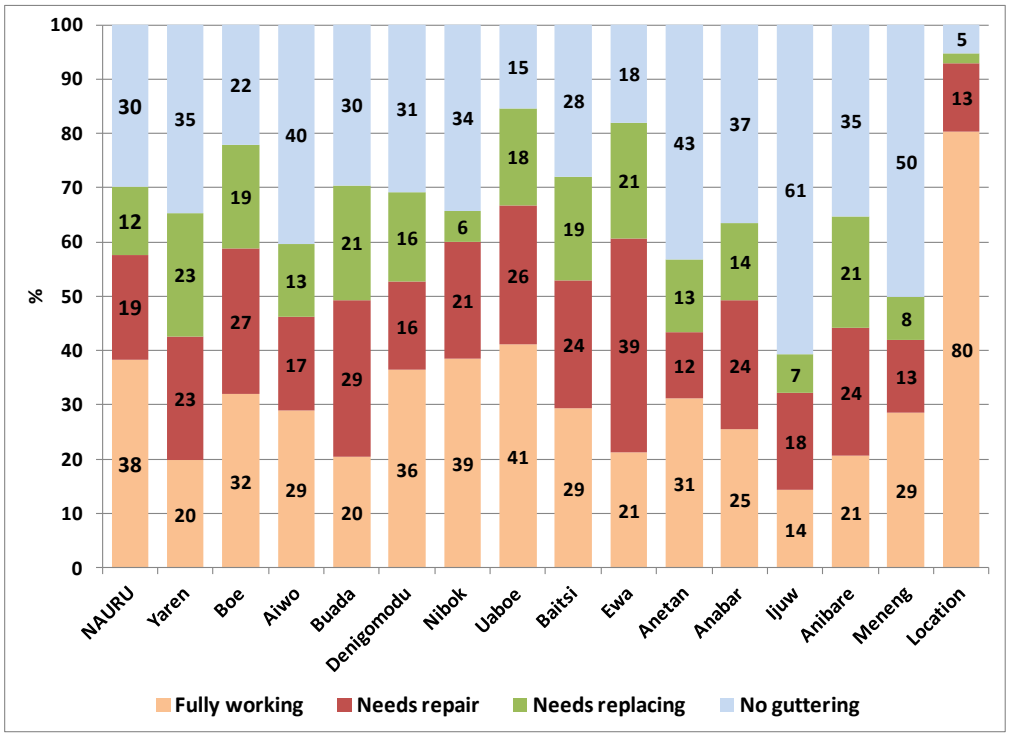


Figure 109: Proportion of households by district and material used for downpipes of dwellings (%), Nauru: 2011

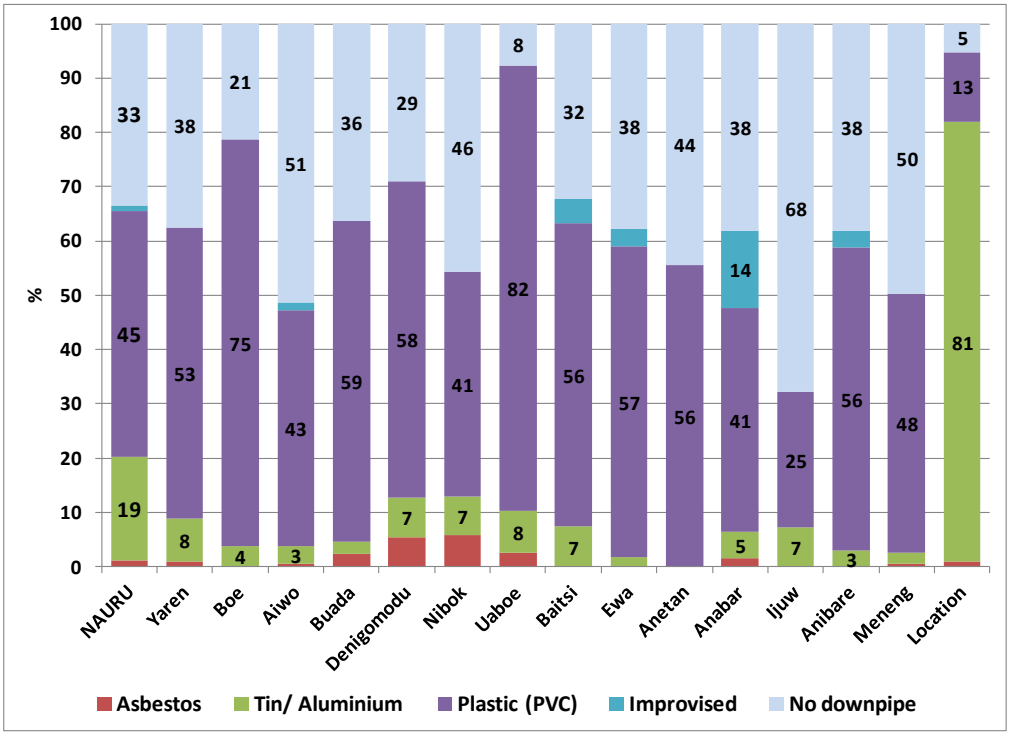


Figure 110: Proportion of households by district and condition of downpipes of dwellings (%), Nauru: 2011

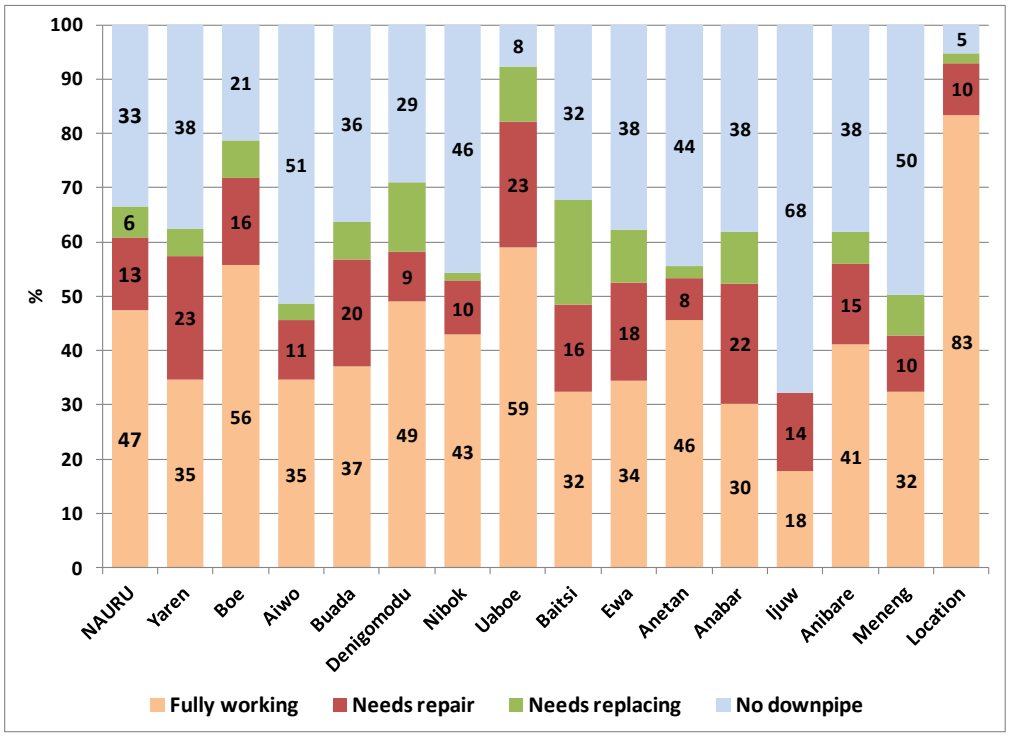
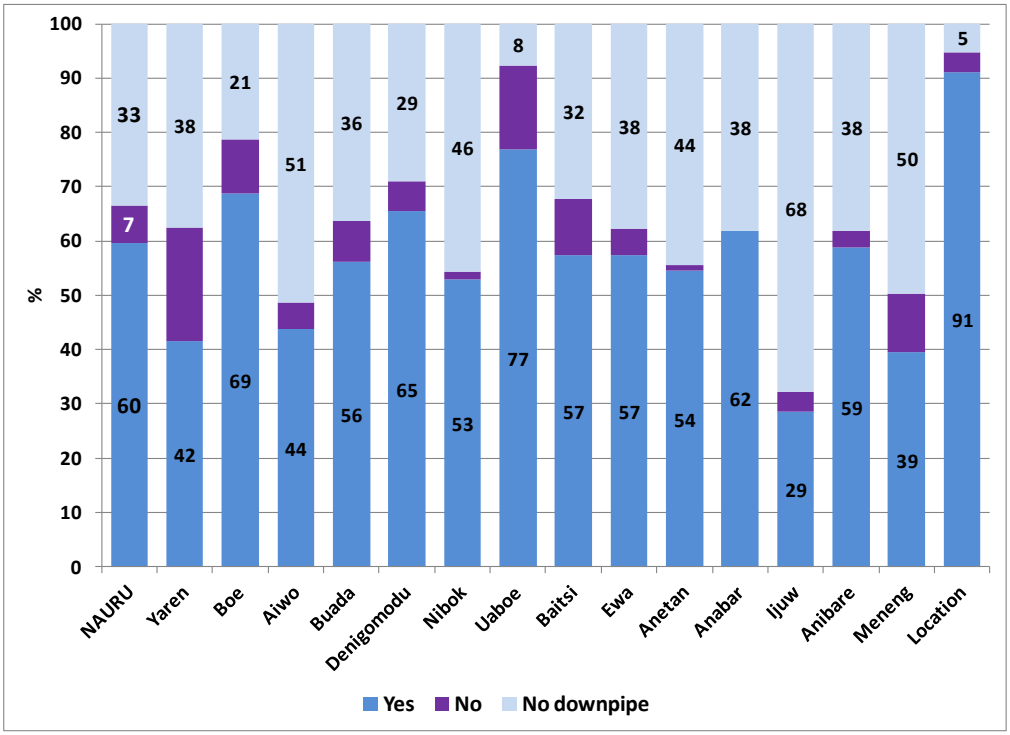


Figure 111: Proportion of households by district and whether downpipes connected to water storage tank (%), Nauru: 2011



5.5.6 Water sources

The general access of the population to water, sanitation, electricity and other basic amenities is an important measure of the country's development. Improving the quality and sustainability of electricity and water supply and of sanitation are very essential for social and economic growth, and employment creation.

The distribution of Nauru's households by main source of drinking water is displayed in Figure 112. It shows that 68% of households in the country received their drinking water from a water dispatcher and/or desalination plant. An additional 29% used a rain catchment, 2% used bottled water, and another 2% obtained their drinking water from a well.

The proportion of households relying on a rain catchment for their drinking water was particularly high in Boe (61%) and Ewa (41%).

The distribution of dwellings by main source of washing water is displayed in Figure 113. It shows the great variation by main source of washing water among the districts. As was the case with source of drinking water, the majority of households (57%) obtained their water from water dispatcher and/or desalination plant, 22% from a rain catchment, and 19% from a well.

The proportion of households relying on a rain catchment for their washing water was particularly high in Location (44%) and Boe (37%). Half of all households in Anibare and Anabar obtained their washing water from a well.

Almost one-third (30%) of households in Nauru had a water storage tank with a capacity of between 3,000-5,000 gallons, one quarter of all households had a capacity of 5,000-10,000 gallons, 16% had a capacity of less than 3,000 gallons, and 14% had a storage of 10,000 gallons or more. Fifteen percent of all Nauruan households did not have a water storage tank (Fig.114).

The district with highest proportion of households with high capacity water storages was Denigomodu, Anetan and Aiwo. The highest proportions of households without a storage tank were to be found in Ijuw (29%) and Nibok (29%), Meneng 25%), and Yaren (24%).

Thirty percent of households in Nauru had a water storage tank made of plastic, 28% of households had a tank made of concrete, and 26% was made of aluminum or galvanized iron. The vast majority of households (89%) in Location had a water tank made of concrete, whereas in Ijuw, Nibok and Yaren there were only very few tanks made of concrete (Fig.115).

More than 80% of households reported that their water supply dried up sometimes or frequently (Fig.116). The households with the most unreliable water supply were located in Ijuw where 96% of households' water supply dried up, followed by households in Location (95%), Anabar (94%), and Aiwo (92%).

Almost half (48%) of Nauru's households share their main water supply with other households (Fig.117). The proportion of sharing households was highest in Nibok (73%), Boe (63%), Anetan (59%), and Yaren (58%).

During periods of drought, 72% of households rely on Government seawater supply as source of their water, and 24% use ground water (Fig.118). The proportion of households relying on Governmet seawater supply was highest in Aiwo (96%) and Location (94%). The highest proportion of households relying on ground water for their water supply during periods of water scarcity was in Uaboe (85%), Anabar (68%), Yaren (62%), and Ewa (61%).

Overall, 69% of all households used underground water; 22% used it for washing, 19% for personal bathing, 15% for kitchen use, and 7% for gardening or other outdoor use (Fig.119). The highest proportion of households using underground water can be found in Yaren (94%) an Nibok (93%).

Seventy percent of households that utilize underground water use a pressure pump for abstraction, and the remaining 30% use a bail bucket (Fig.120). The highest proportions of households using a pressure pump were located in Aiwo (87%) and Buada (87%), Baitsi (85%), and Anetan (82%). The highest proportions of households using a bail bucket were located in Ijuw (85%) and Location (74%).

Figure 112: Proportion of households by district and main source of drinking water (%), Nauru: 2011

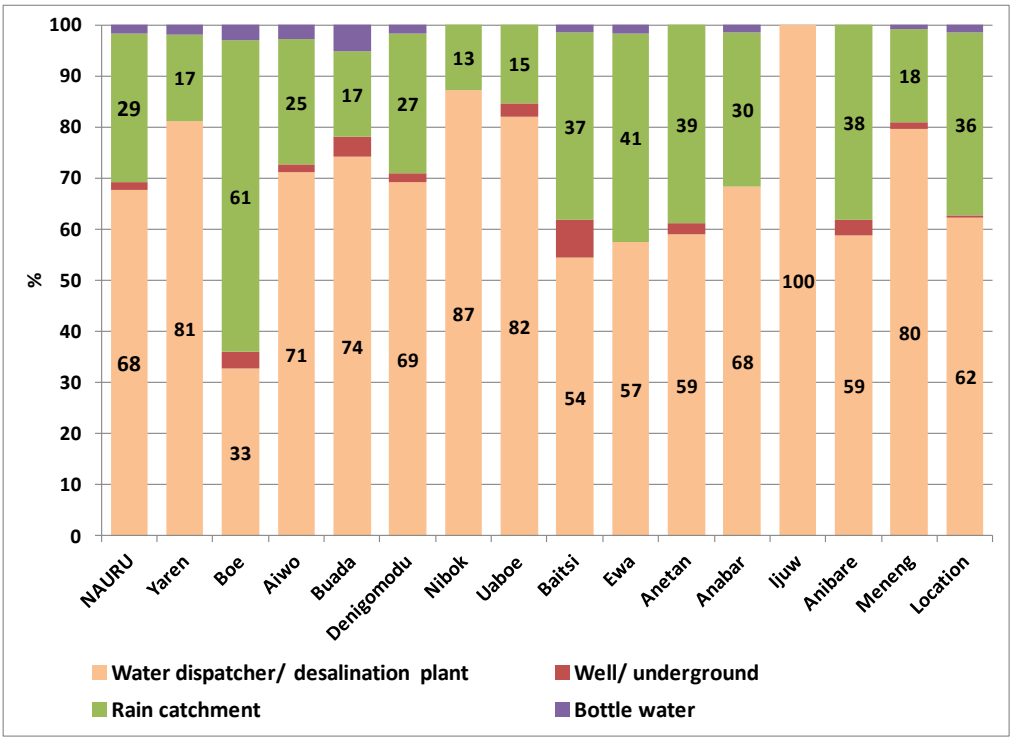


Figure 113: Proportion of households by district and main source of water in general (%), Nauru: 2011

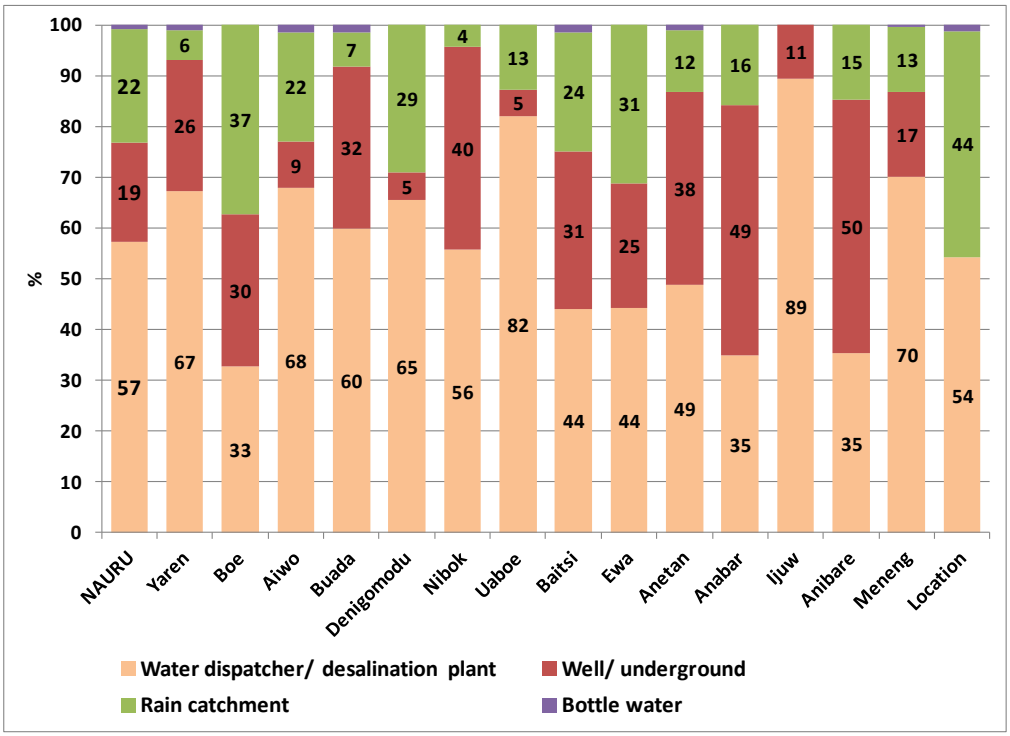


Figure 114: Proportion of households by district and capacity of water storage tank (%), Nauru: 2011

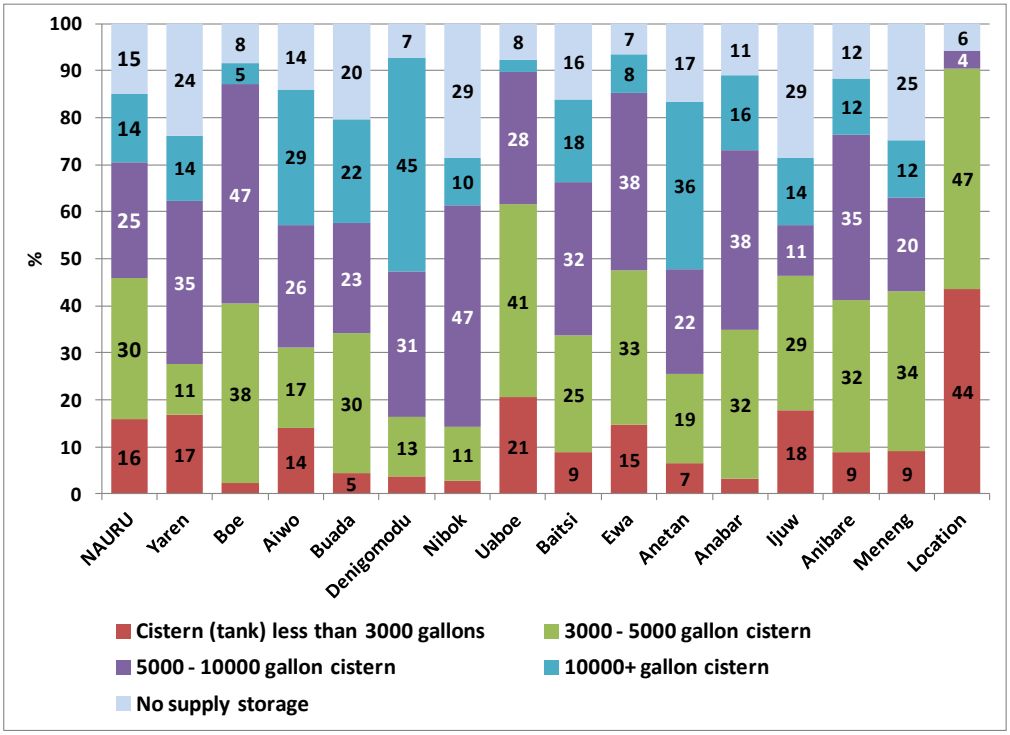


Figure 115: Proportion of households by district and material used for water storage tank (%), Nauru: 2011

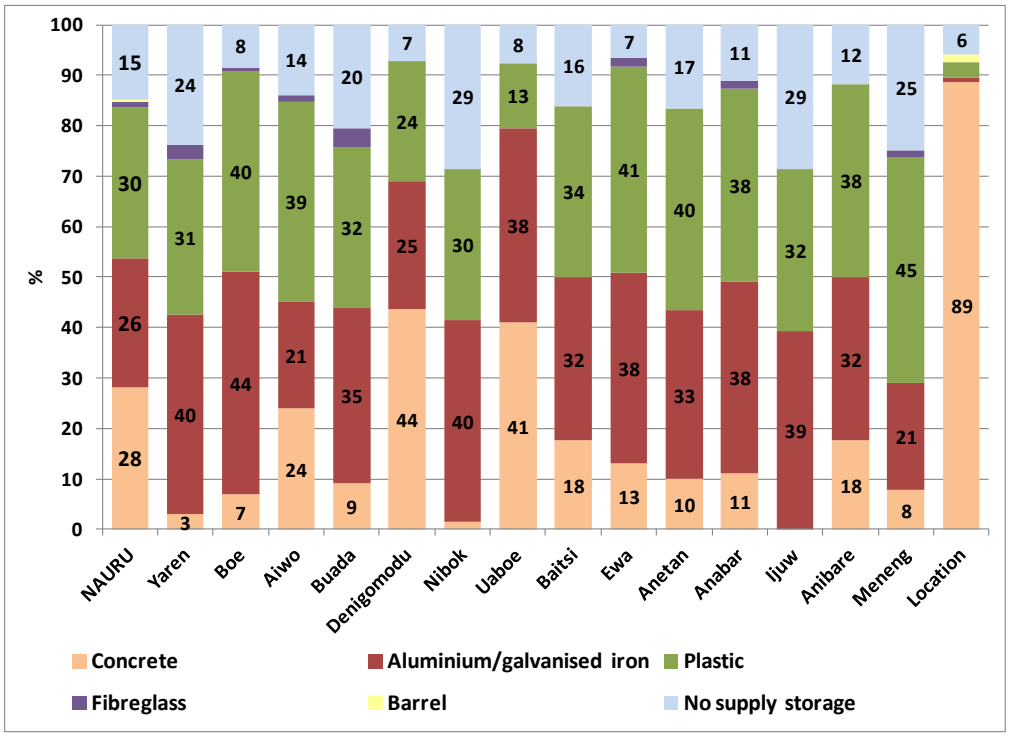


Figure 116: Proportion of households by district and whether water supply dries up (%), Nauru: 2011

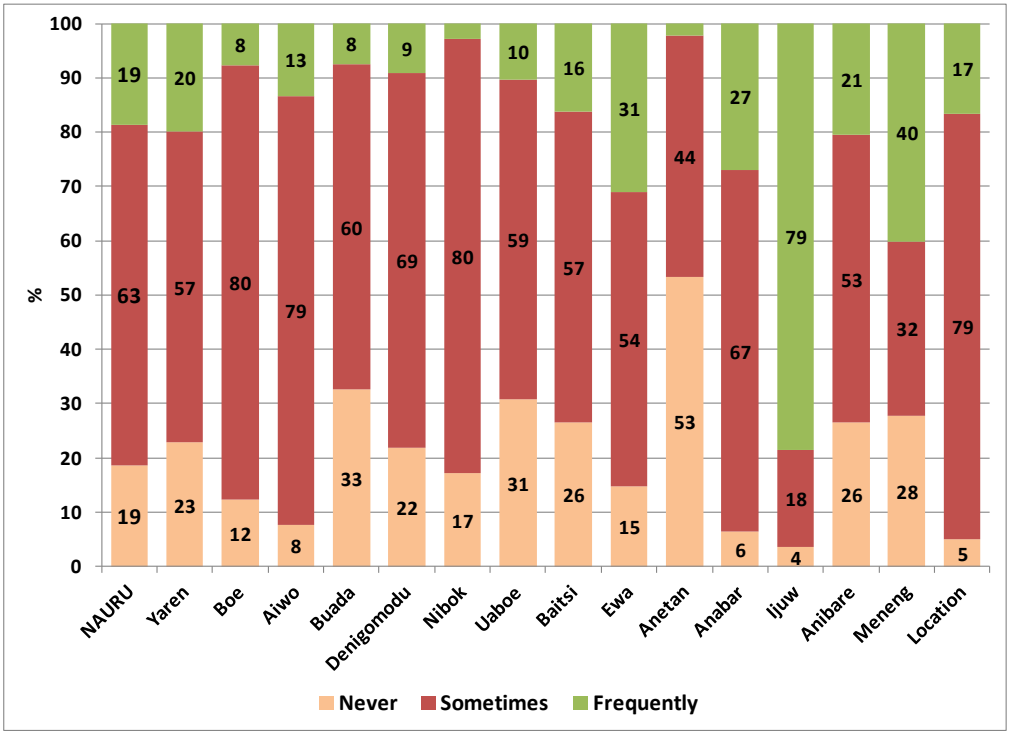


Figure 117: Proportion of households by district and whether sharing water supply with other households (%), Nauru: 2011

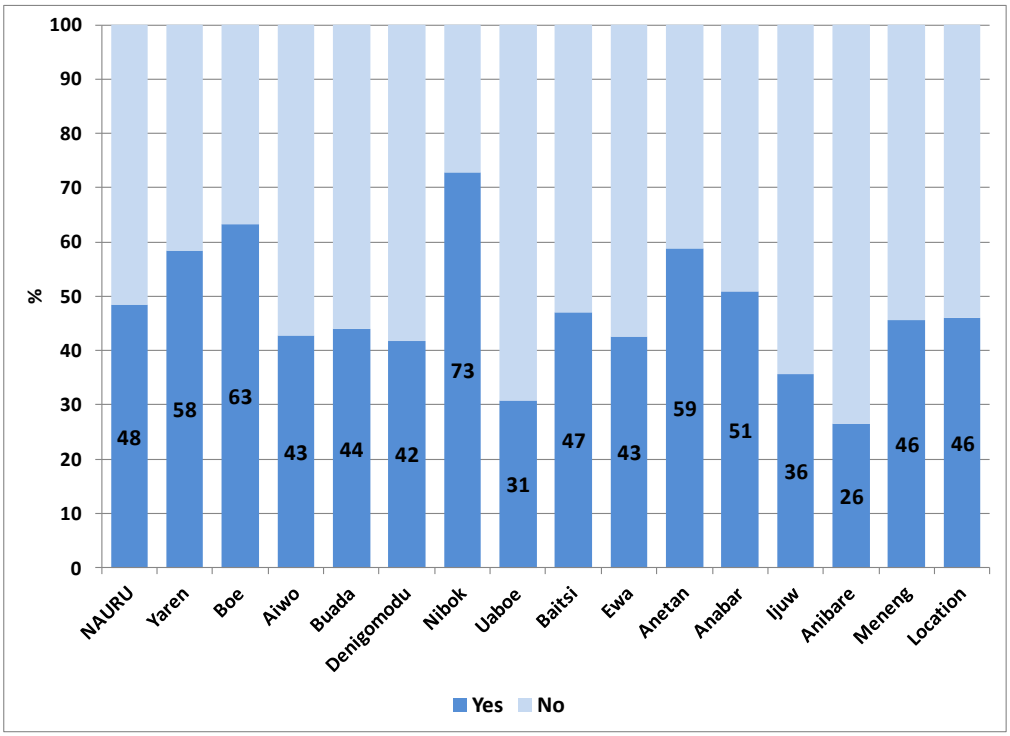


Figure 118: Proportion of households by district and source of water during periods of drought (%), Nauru: 2011

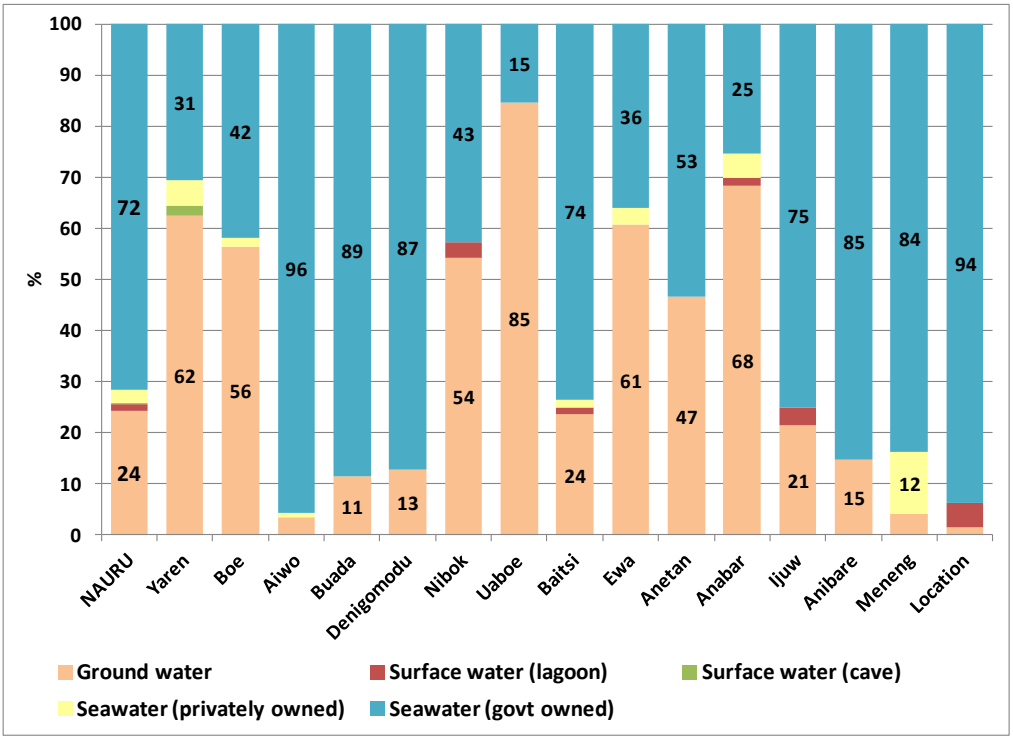


Figure 119: Proportion of households by district and use of underground water (%), Nauru: 2011

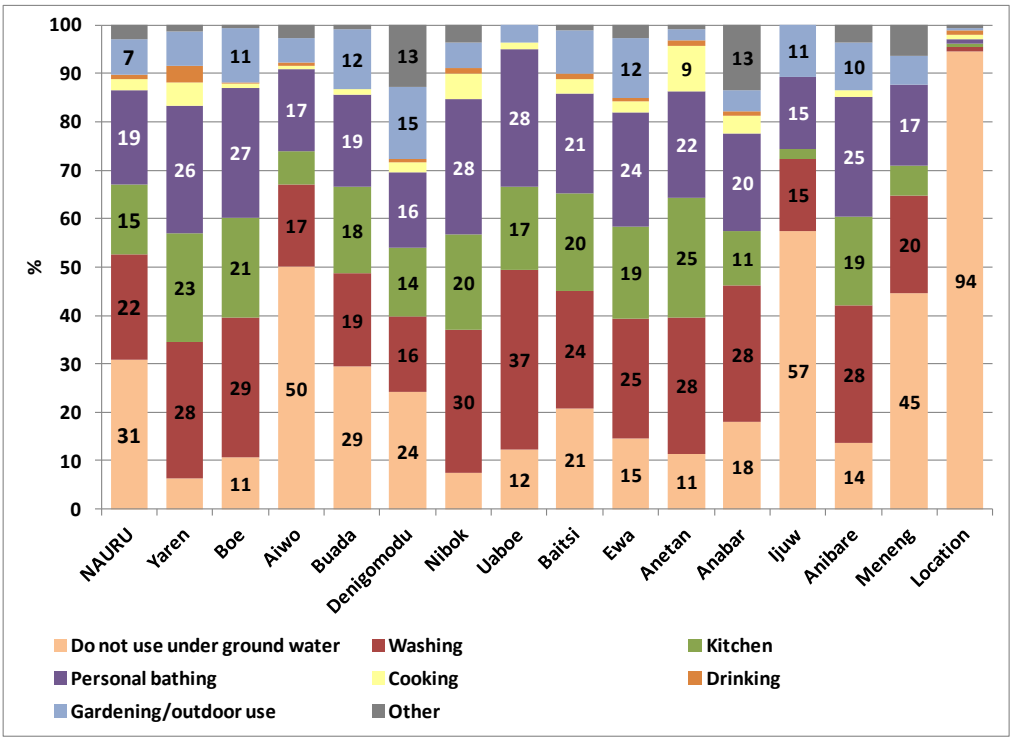
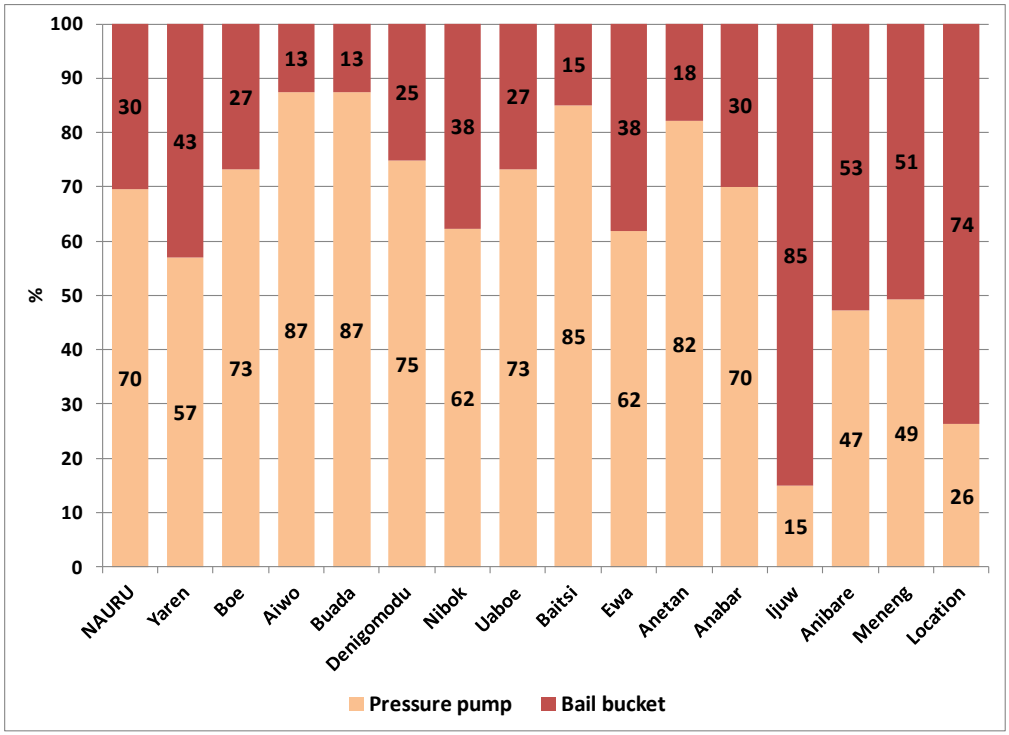


Figure 120: Proportion of households who use underground water by district and means of abstracting underground water (%), Nauru: 2011



5.5.7 Main energy source for lighting and cooking

The main and almost exclusive source of energy for lighting in Nauru was electricity, apart from very few households in Uaboe, Baitsi, and Location that used kerosene or gas as the main source of lighting (Fig.121).

The main source of energy for cooking was electricity for 60% of all households in Nauru, followed by gas (31%) and wood or open fire (6%). More than three-quarter of households in Location and Uaboe relied on electricity as energy for cooking, while half of all households in Ijuw used wood or open fire for cooking (Fig.122).

Almost all households in Nauru relied on the Government for supplying electricity (99%). A very small minority of households in Ijuw and Denigomodu used their own generator as the main source of electricity (Fig.123).

Figure 121: Proportion of households by district and main source of lighting (%), Nauru: 2011

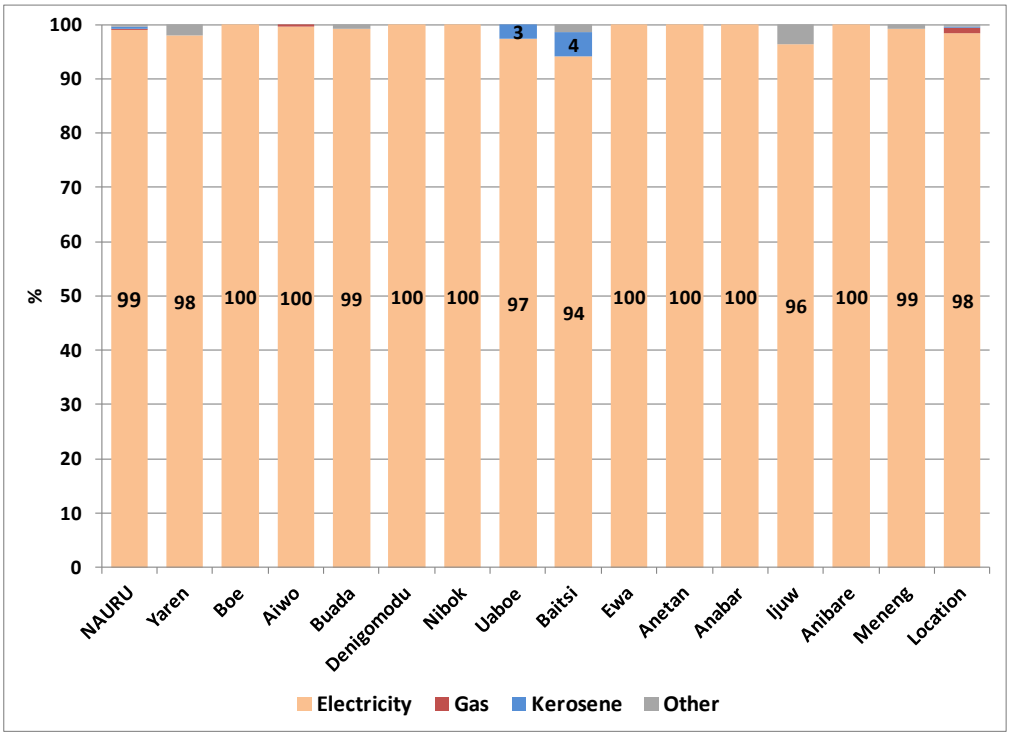


Figure 122: Proportion of households by district and main source for cooking (%), Nauru: 2011

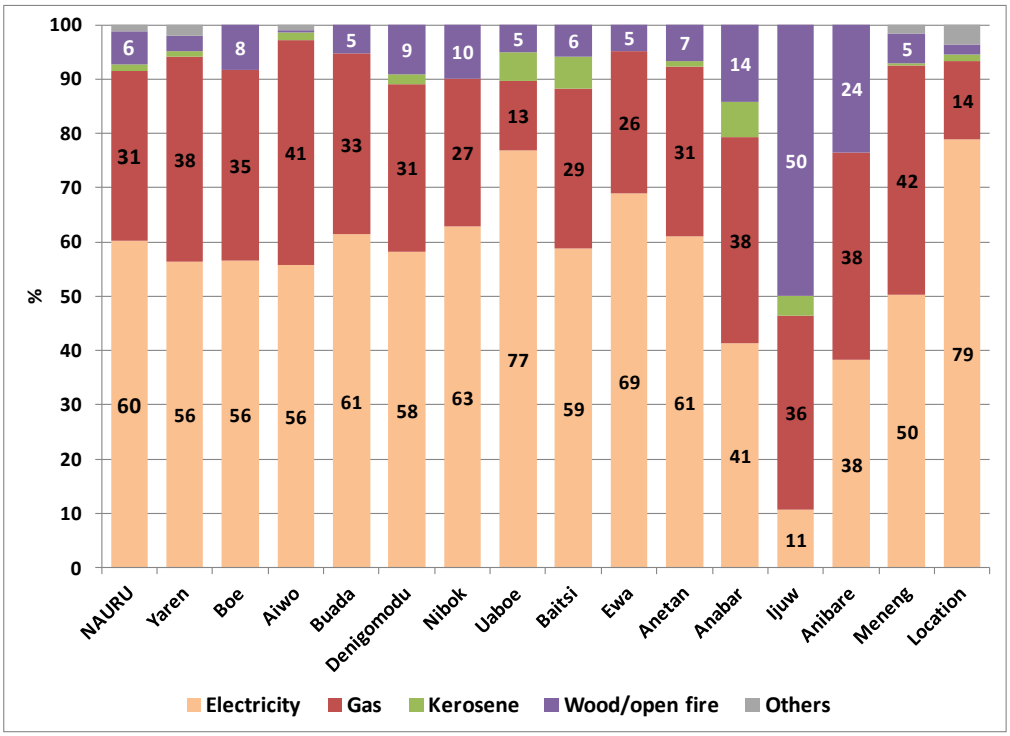
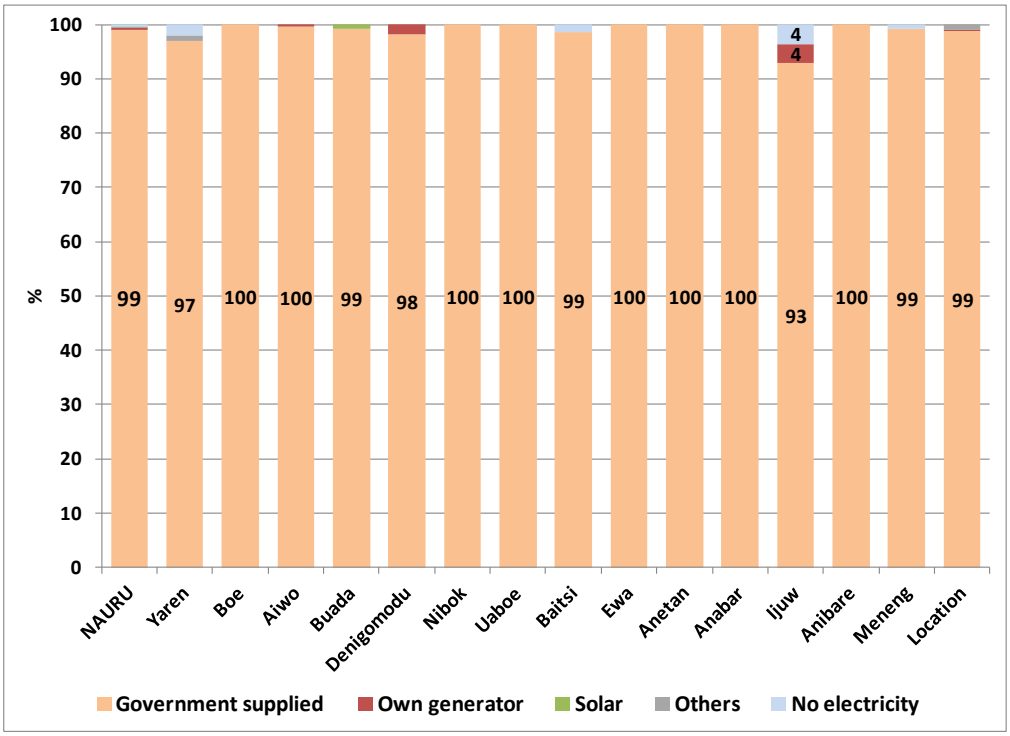


Figure 123: Proportion of households by district and main source of electricity (%), Nauru: 2011



5.5.8 Main toilet facility

Modern toilet facilities refer to installations constructed to dispose of human excreta. Therefore, they exclude toilet facilities in the sense of bush, rivers, beaches or sea. In the census, the following types of (modern) toilets are distinguished:

- Tank Flush - private/inside dwelling
- Tank Flush - private/outside dwelling
- Tank Flush - share with others
- Pour Flush - Private/inside dwelling
- Pour Flush - Private/outside dwelling
- Pour Flush - share with others
- Compost - private/inside dwelling
- Compost - private/outside dwelling
- Compost - share with others
- None

Forty-six percent of all households in Nauru used a private pour flush toilet inside their dwelling as their main toilet facility, and another 33% used a private tank flush toilet inside their dwelling. Fifty households (3%) did not have any toilet facility. Overall, 6% of households used a toilet facility outside of their dwelling, and 11% shared a toilet facility with other households (Fig.124).

More than a quarter (29%) of households in Ijuw had no toilet facility available.

With respect to the source of flushing the toilet, 42% used an underground well as source, 37% a water dispatcher or desalination plant, and 14% a rain catchment (Fig.125).

Regarding sewerage facilities used, 50% of toilets flushed into a cesspit or soak away, 23% into a septic tank, and 22% into a sewage system. A cesspit or soak away was of particular importance in Uaboe and Buada, while a septic tank was the main facility in Anetan, Anibare and Boe.

Almost all households in Location were connected to the sewage system (Fig.126).

Figure 124: Proportion of households by district and main type of toilet facility (%), Nauru: 2011

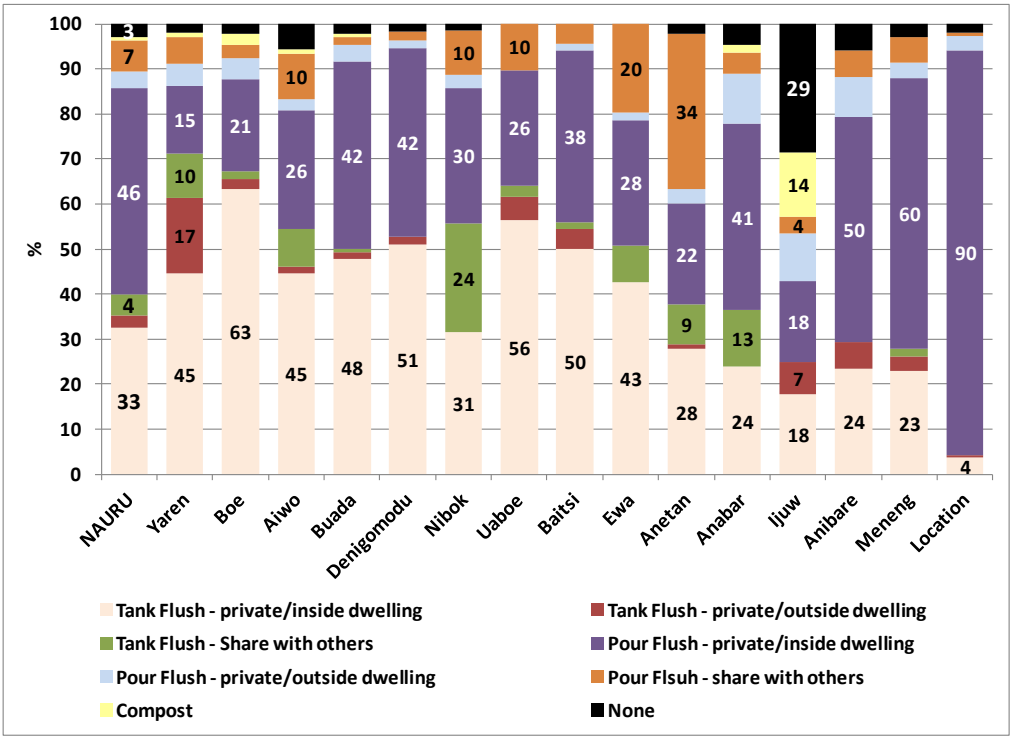


Figure 125: Proportion of households by district and water source for toilet flush (%), Nauru: 2011

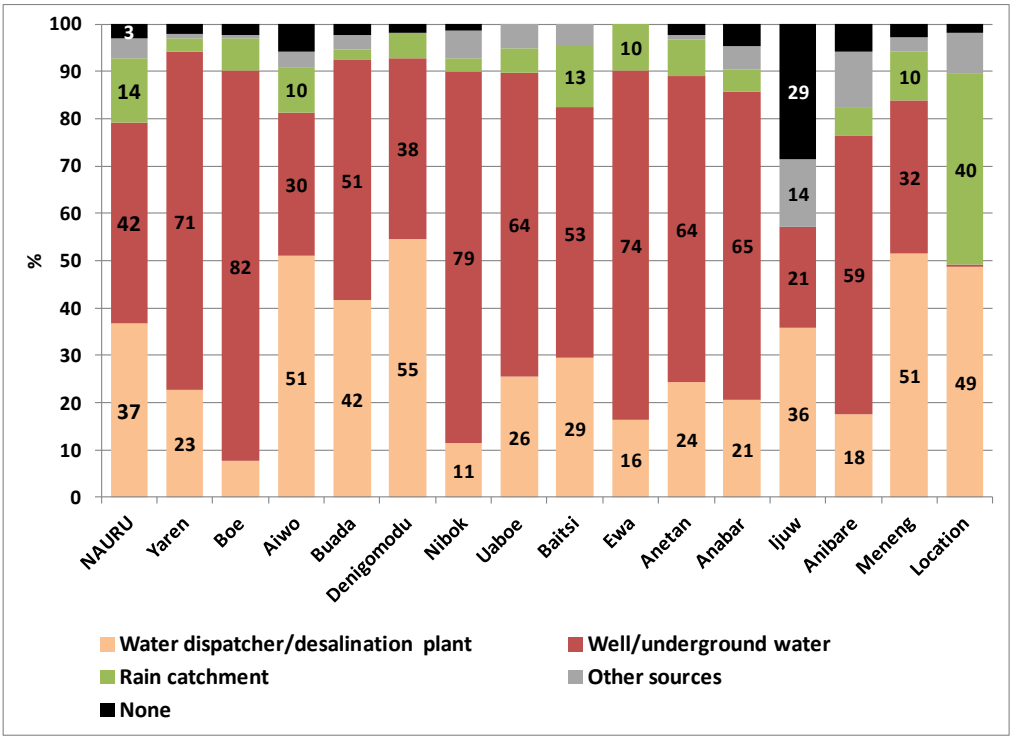
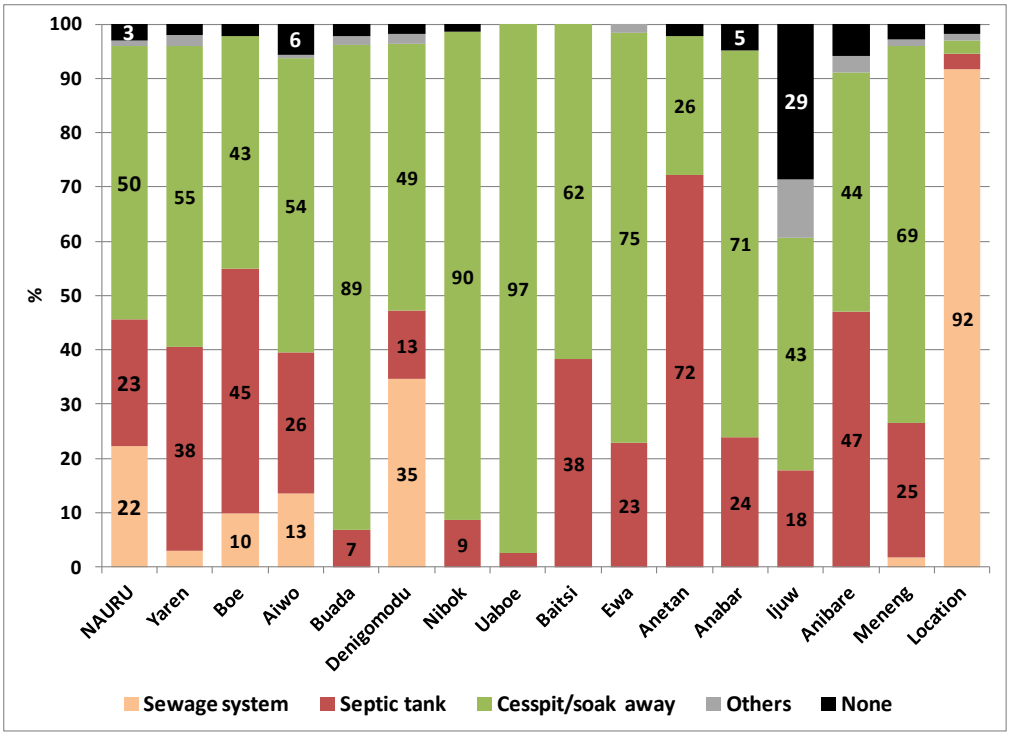


Figure 126: Proportion of households by district and type of sewerage facility (%), Nauru: 2011



5.6 Amenities and capital goods

This section briefly summarizes the availability of a variety of household items and appliances. The different sections include a summary table presenting the total number of items by district.

Subsequently graphs are added that show the proportion of households by district with at least one item that is in working order. It excludes any items that were broken, borrowed or rented. The graphs therefore are simply divided into two categories: 'yes' if the household owns the item or 'no' if it does not own the item.

5.6.1 Means of communication

In total 175 desktops were counted during the census, 840 laptops, 520 Internet connections, 4,242 telephones/mobile phones, 287 SkyTV/Free TV connections, and 985 radios (Table 40).

Only 9% of all households in Nauru had a **desktop computer** available (Fig.127), while the percentage owning a **laptop** was with 37% considerably higher than that (Fig128.).

Just over one-quarter of all households were connected to the Internet. **Internet connections** were particularly low in Uaboe, Nibok and Location (Fig.129).

Telephones and mobile phones were widely available in Nauru with 89% of all households owning one or the other (Fig.130).

Sixteen percent of households had **Sky TV or Free TV** available (Fig.131). This percentage was higher than average in the districts Buada (31%), Baitsi (26%), Uaboe (23%) and Boe (23%).

Radios are crucial in disaster management for transmitting important information to affected communities (Fig.132). Nonetheless only 39% Nauruan households had a radio available, and this percentage was particularly low in Anibare (18%), Anabar (21%), and Ewa (21%).

Table 40: Number of items of entertainment/communications appliances by district, Nauru: 2011

District	Desktop computer	Laptop	Internet connection	Telephone/ Mobile phone	SkyTV/ Free TV	Radio
Yaren	11	60	37	358	21	99
Boe	14	110	60	437	31	118
Aiwo	33	129	81	567	43	190
Buada	17	79	52	366	46	108
Denigomodu	9	34	24	129	14	32
Nibok	7	29	13	190	10	41
Uaboe	3	17	7	94	9	27
Baitsi	13	41	29	191	18	25
Ewa	4	33	18	140	3	13
Anetan	15	43	22	251	11	59
Anabar	1	45	27	196	9	13
Ijuw	3	12	4	69	1	8
Anibare	3	17	14	85	1	6
Meneng	23	119	75	650	26	71
Location	19	72	57	519	44	175
NAURU	**175**	**840**	**520**	**4,242**	**287**	**985**

Figure 127: Proportion of households by district and availability of a desktop computer (%), Nauru: 2011

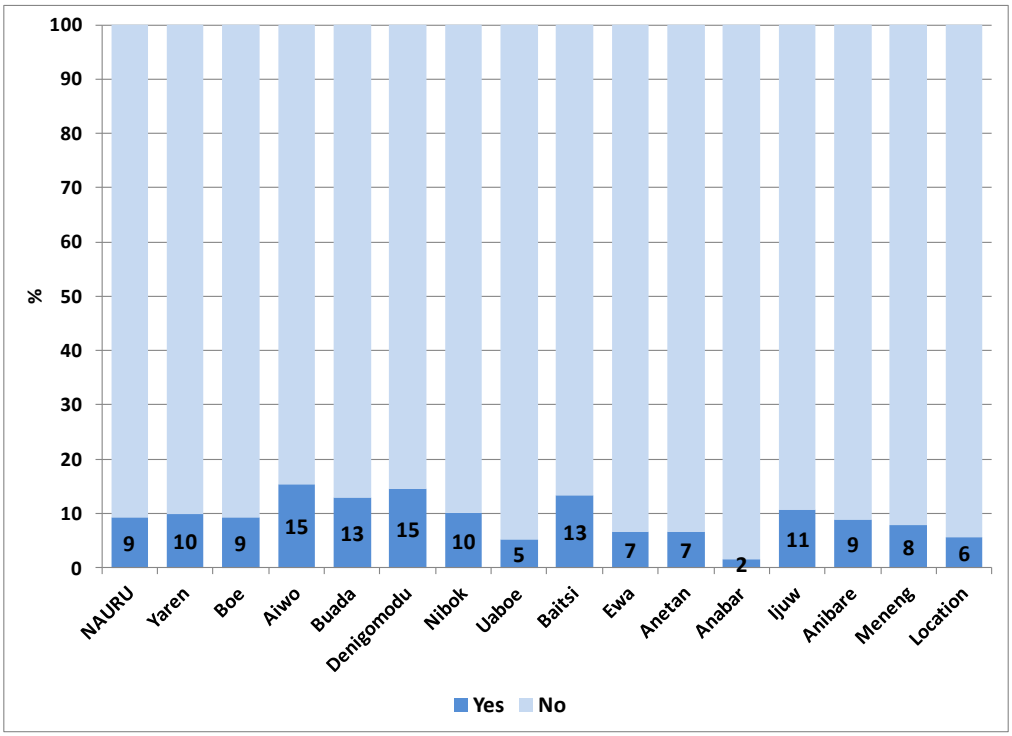


Figure 128: Proportion of households by district and availability of a laptop (%), Nauru: 2011

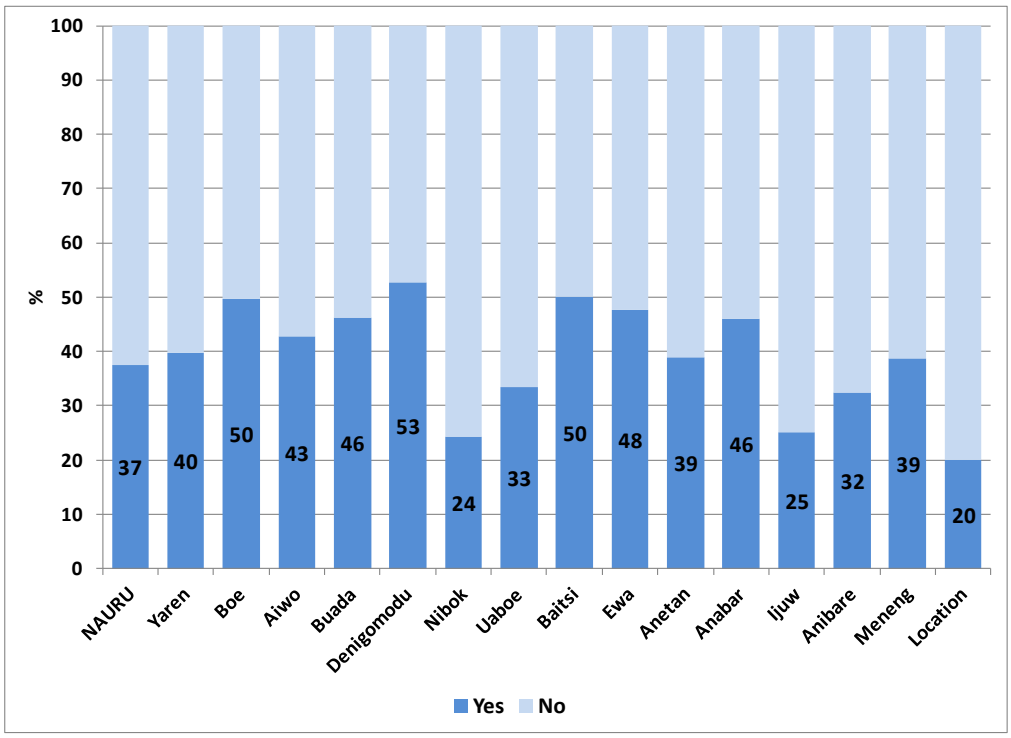


Figure 129: Proportion of households by district and availability of an Internet connection (%), Nauru: 2011

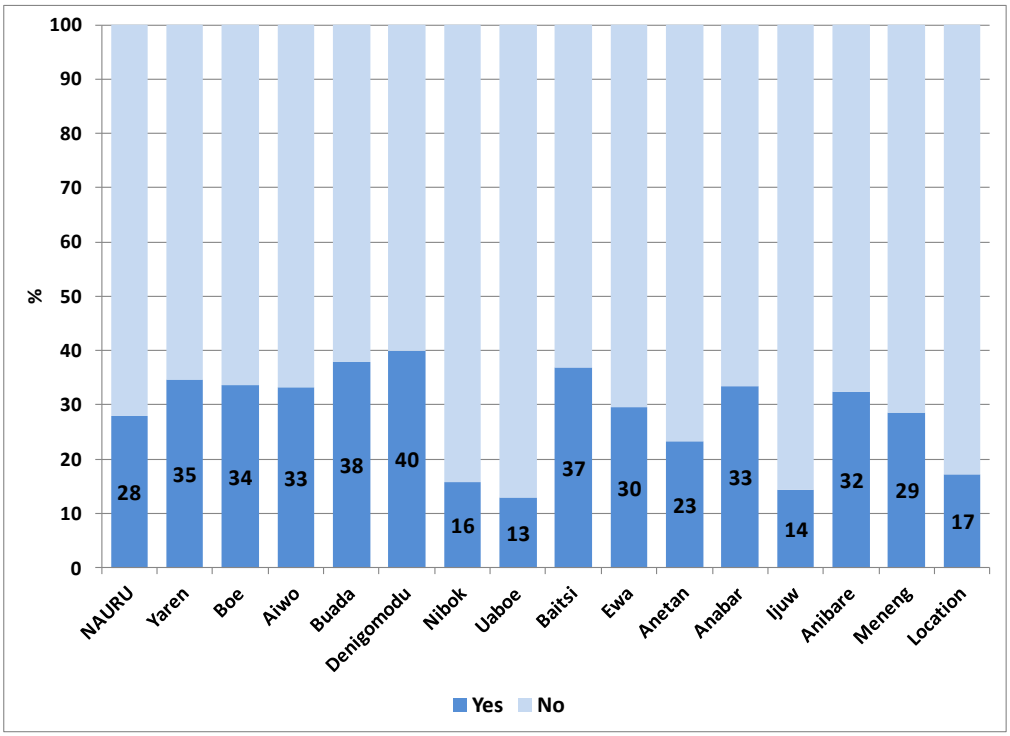


Figure 130: Proportion of households by district and availability of a telephone or mobile phone (%), Nauru: 2011

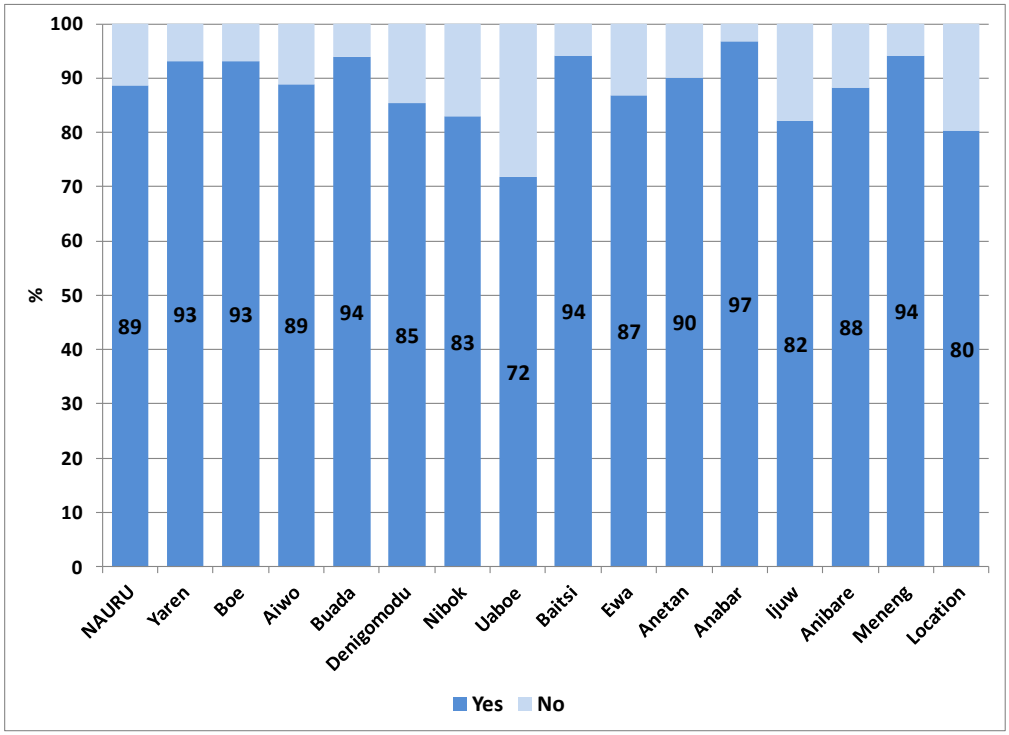


Figure 131: Proportion of households by district and availability of Sky TV or Free TV (%), Nauru: 2011

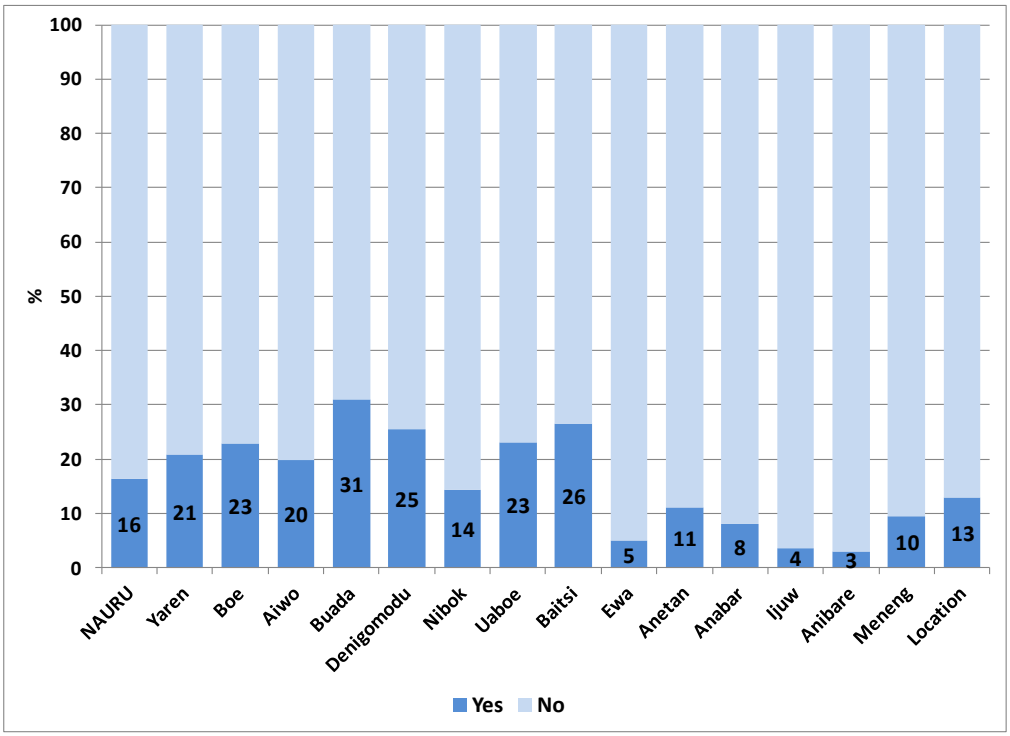
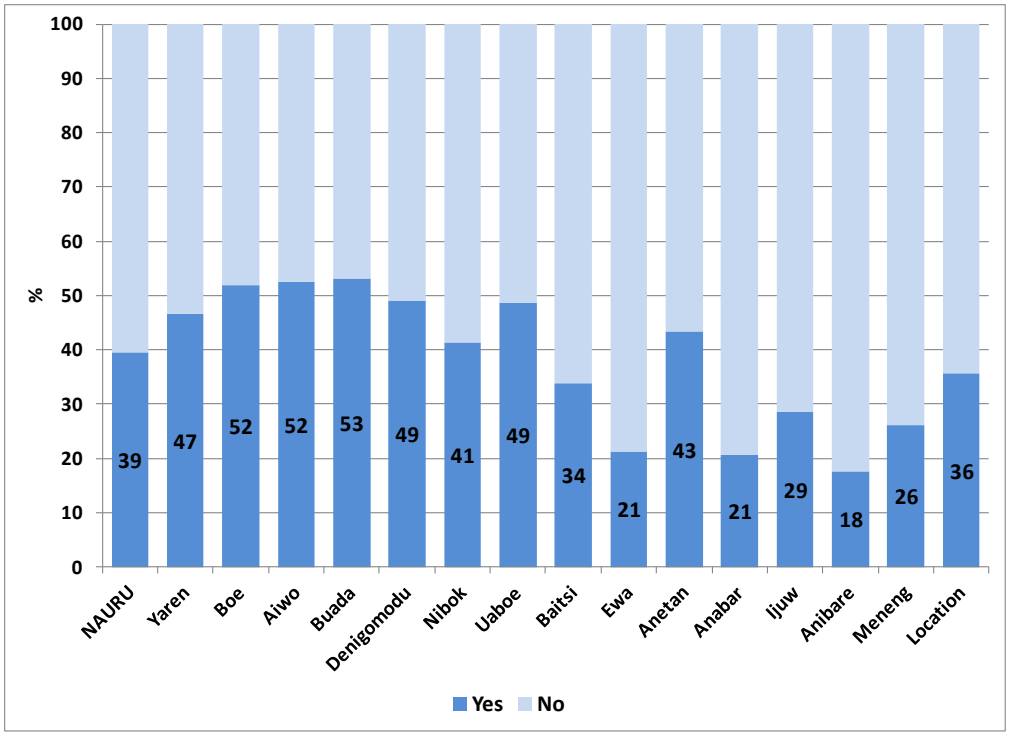


Figure 132: Proportion of households by district and availability of a radio (%), Nauru: 2011



5.6.2 Household appliances

In total 1,019 refrigerators were counted during the census, 832 deep freezers, 823 microwave ovens, 1,609 TVs, 1,512 DVD players, 685 air conditioners, 4,492 ceiling or standing fans, and 1,452 garbage bins (Table 41).

Overall, 57% of all households in Nauru had a **refrigerator** available, although this percentage was less than half of all households in Location, Ijuw, and Anetan (Fig.133).

Just under half (48%) of households owned a working **deep freezer** (Fig.134). The proportion of households with a deep freezer was particularly high in Uaboe (67%), Boe (62%), and Anibare (62%), and it was low in Ewa (31%), and Location (36%).

A **microwave or oven** was available to 46% of households in Nauru, although this percentage was much lower in Ijuw where only 11% owned a microwave or oven (Fig.135).

About three-quarter of households had a **TV** available. Again, in Ijuw this percentage was with only 39% of all households much lower than the national average (Fig.136).

The percentage distribution of the availability of a **DVD player** is very similar to that of owning a TV, although it is with 70% of all households slightly lower (Fig.137).

Twenty-nine percent of households owned an **air conditioner**. This percentage was with 46% and 44% noticeably higher in Uaboe and Aiwo. On the other hand it was with 14% much lower in Anetan and Ijuw (Fig.138).

Not surprisingly, almost all households (93%) in Nauru had a **ceiling or standing fan** available (Fig.139).

A **garbage bin** (wheelie bin) was available to almost two-third of all households, although it was significantly lower in Location (25%) and Ijuw (43%) (Fig.140).

Table 41: Number of items of household appliances by district, Nauru: 2011

District	Refrigerator	Deep freezer	Microwave/ Oven	TV	DVD player	Air conditioning	Ceiling/ standing fans	Garbage bin
Yaren	63	56	69	126	122	45	356	111
Boe	95	87	97	178	152	49	476	157
Aiwo	161	106	131	242	224	156	652	216
Buada	78	74	64	136	123	70	418	152
Denigomodu	35	35	34	48	42	37	142	44
Nibok	46	37	38	77	71	29	232	98
Uaboe	21	26	21	56	56	23	139	42
Baitsi	42	34	18	77	67	26	227	76
Ewa	46	20	18	49	47	18	170	57
Anetan	46	50	33	70	79	25	223	81
Anabar	37	38	24	48	51	12	155	57
Ijuw	14	12	3	16	12	4	46	13
Anibare	24	21	27	26	25	8	77	46
Meneng	157	111	100	236	215	87	605	217
Location	154	125	146	224	226	96	574	85
NAURU	**1,019**	**832**	**823**	**1,609**	**1,512**	**685**	**4,492**	**1,452**

Figure 133: Proportion of households by district and availability of a refrigerator (%), Nauru: 2011

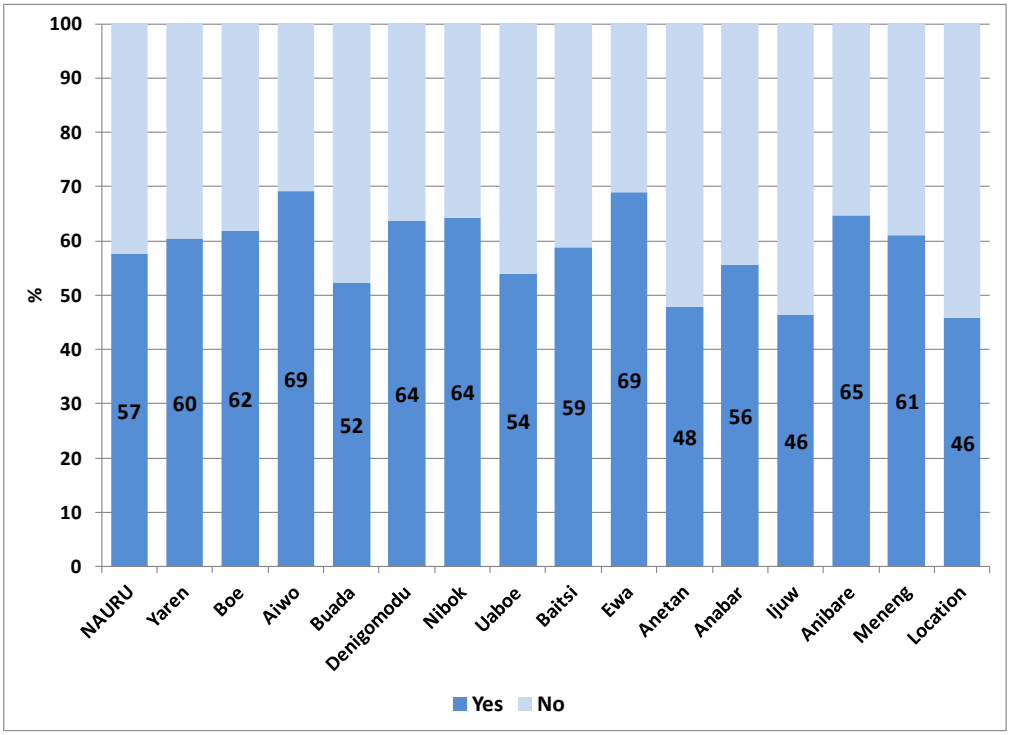


Figure 134: Proportion of households by district and availability of a deep freezer (%), Nauru: 2011

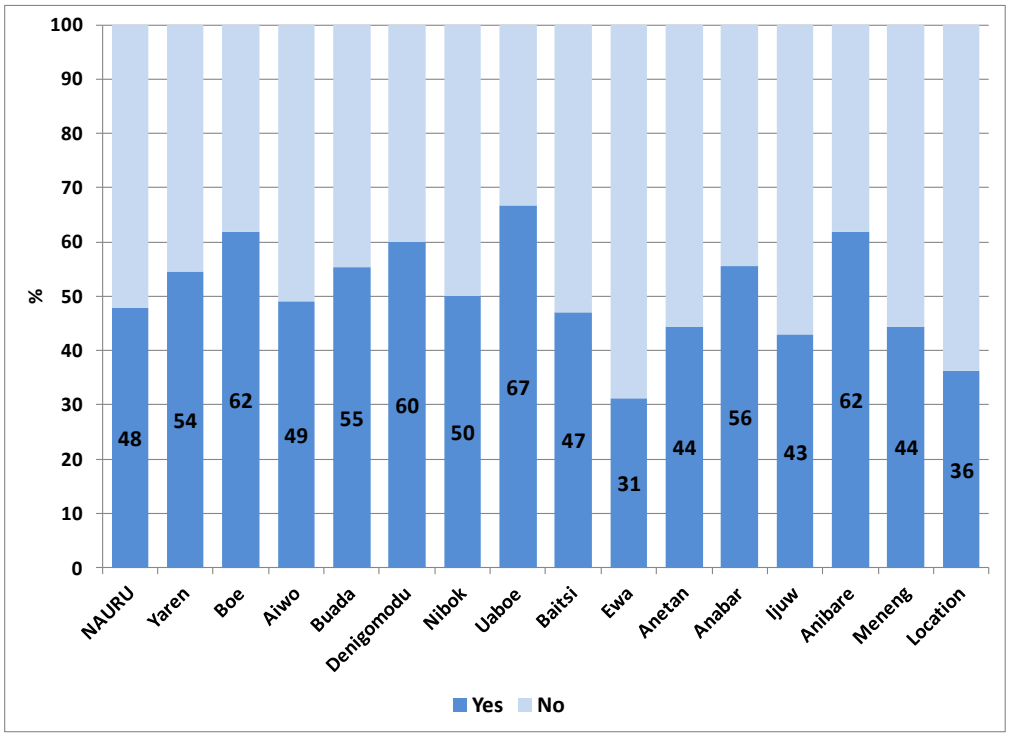


Figure 135: Proportion of households by district and availability of a microwave or oven (%), Nauru: 2011

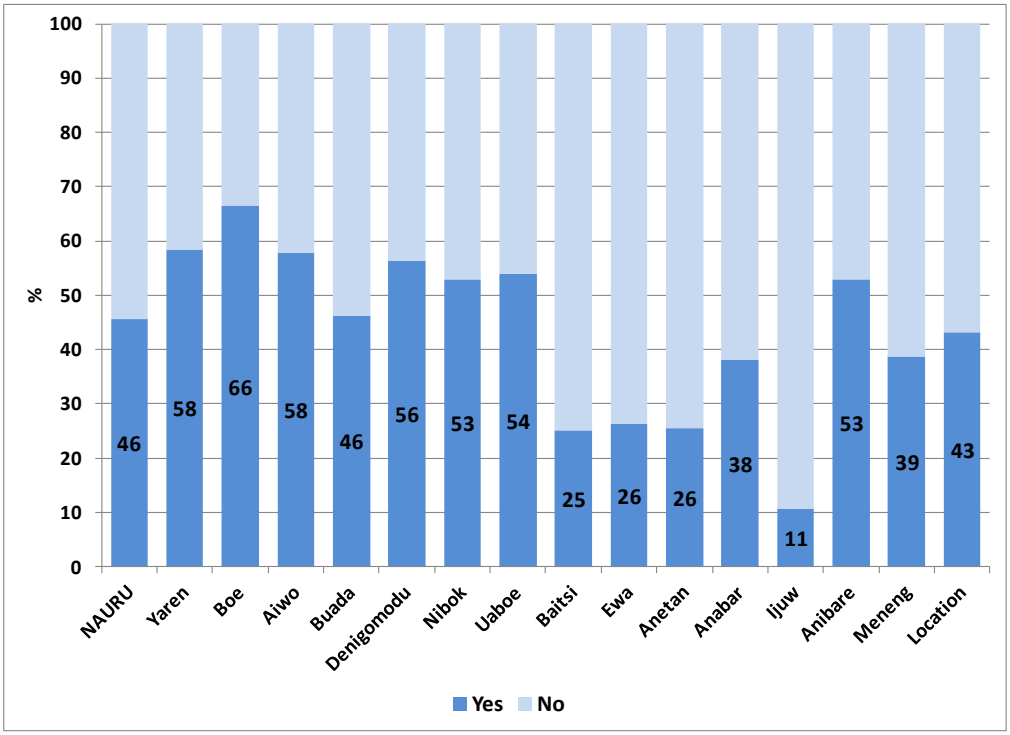


Figure 136: Proportion of households by district and availability of a TV (%), Nauru: 2011

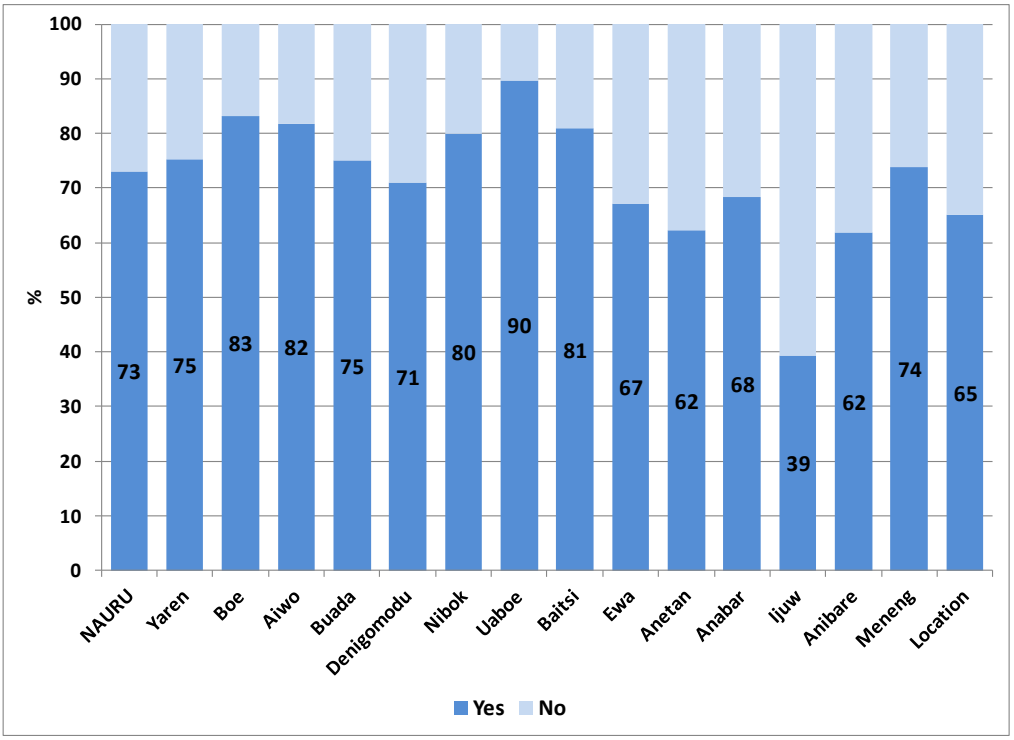


Figure 137: Proportion of households by district and availability of a DVD player (%), Nauru: 2011

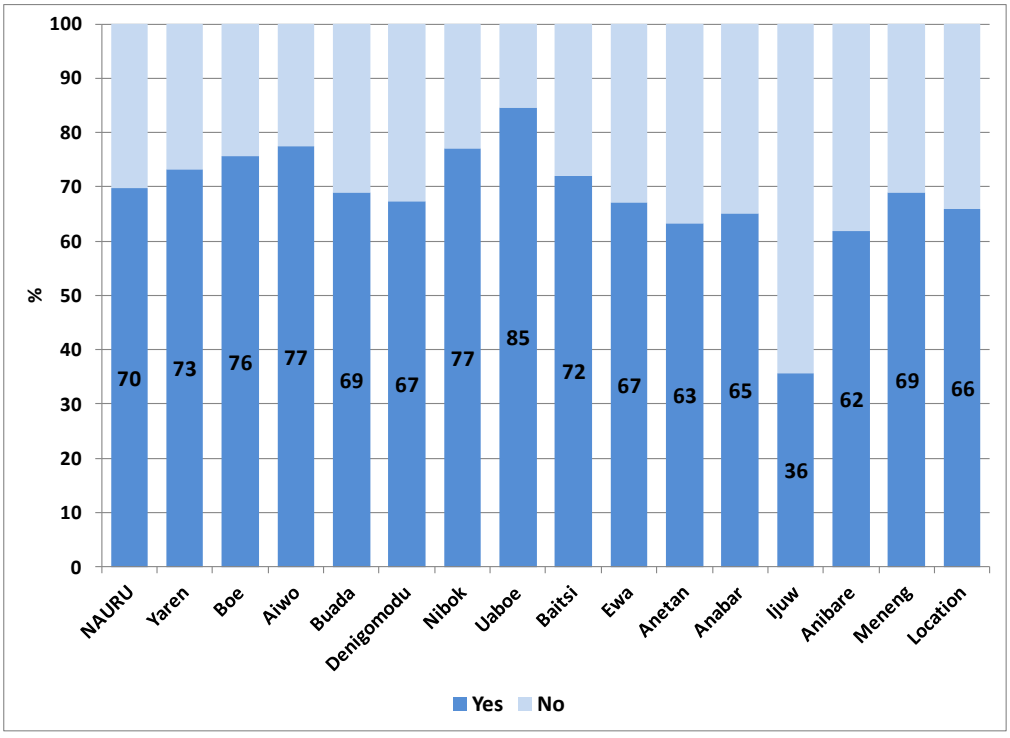


Figure 138: Proportion of households by district and availability of an air conditioner (%), Nauru: 2011

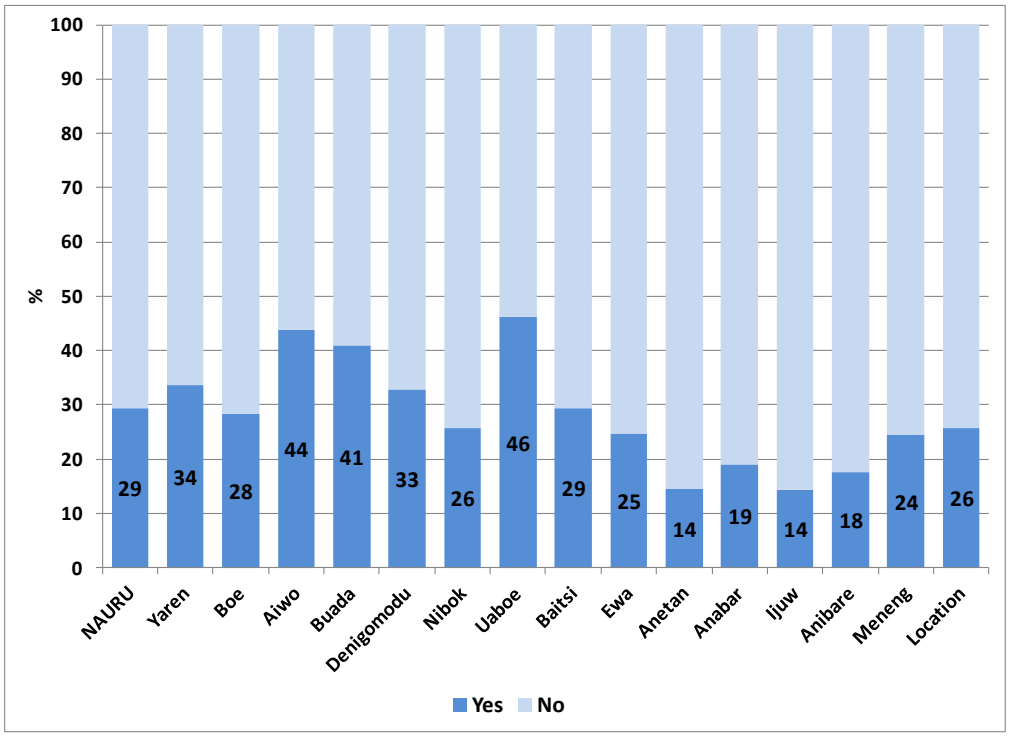


Figure 139: Proportion of households by district and availability of a ceiling or standing fan (%), Nauru: 2011

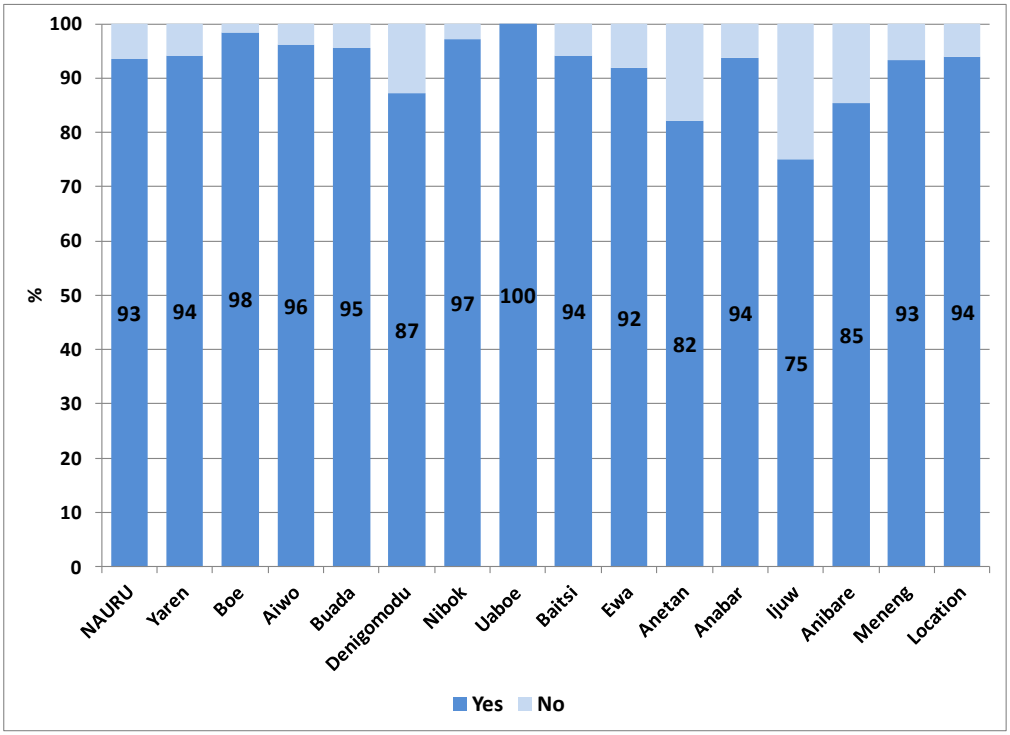
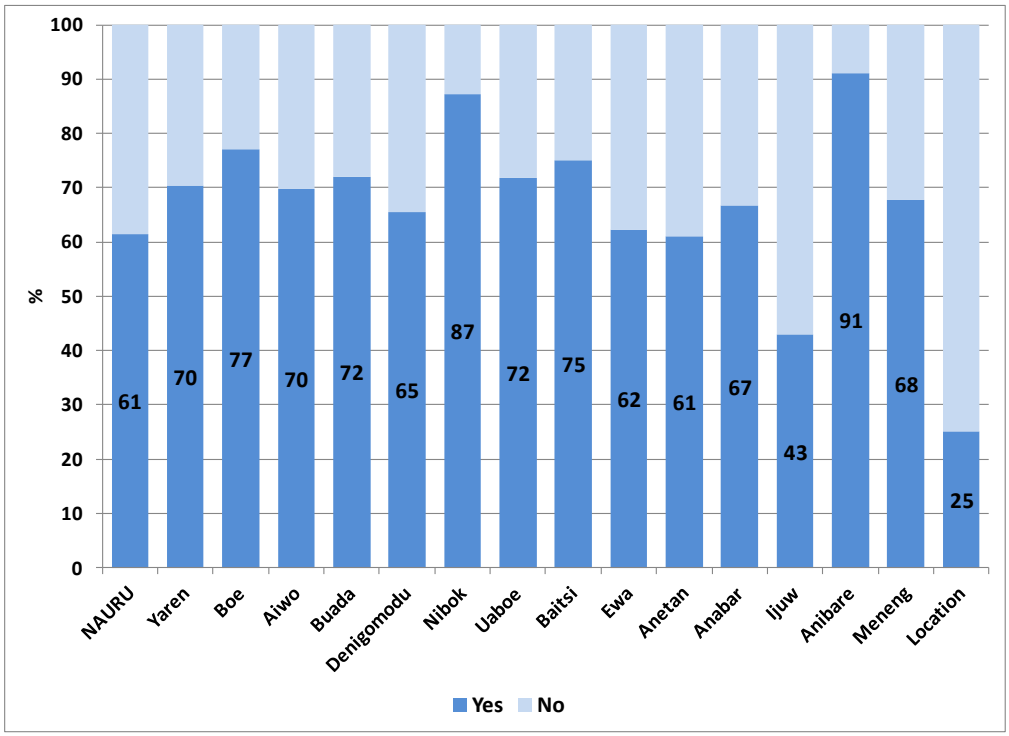


Figure 140: Proportion of households by district and availability of a garbage bin (%), Nauru: 2011



5.6.3 Means of transportation

In total 573 motor cars were counted during the census, 1,066 motor bikes, 98 trucks, vans or mini buses, and 763 bicycles (Table 42).

Twenty-nine percent of households owned at least one **motor car**; this percentage was with 49% very high in Anabar (Fig.141).

Motor bikes were much more common than cars, and 46% of households had at least one motor bike available (Fig.142). The percentage of households owning a motor bike was highest in Uaboe (69%) and Yaren (61%). On the other hand it was lowest in Location (24%) and Denigoodu (29%).

As can be expected, the percentage of households owning a **truck, van or mini bus** is with 5% very low, although 11% of households in Aiwo, and 10% of households in Baitsi had one (or more) available (Fig.143).

Just over one-quarter of all households in Nauru owned at least one **bicycle**, which were particularly popular in Yaren (44%) and Uaboe (41%) (Fig.144).

Table 42: Number of transport items by district, Nauru: 2011

District	Motor car	Motor bike	Truck/ Van/ Mini-bus	Bicycle
Yaren	54	90	7	86
Boe	50	85	10	88
Aiwo	100	152	30	129
Buada	53	110	5	72
Denigomodu	25	28	2	35
Nibok	30	40	4	32
Uaboe	14	43	2	31
Baitsi	24	51	8	31
Ewa	17	37	2	35
Anetan	21	54	5	44
Anabar	38	55	2	26
Ijuw	7	12	1	3
Anibare	10	27	2	11
Meneng	82	192	4	77
Location	48	90	14	63
NAURU	**573**	**1,066**	**98**	**763**

Figure 141: Proportion of households by district and availability of a motor car (%), Nauru: 2011

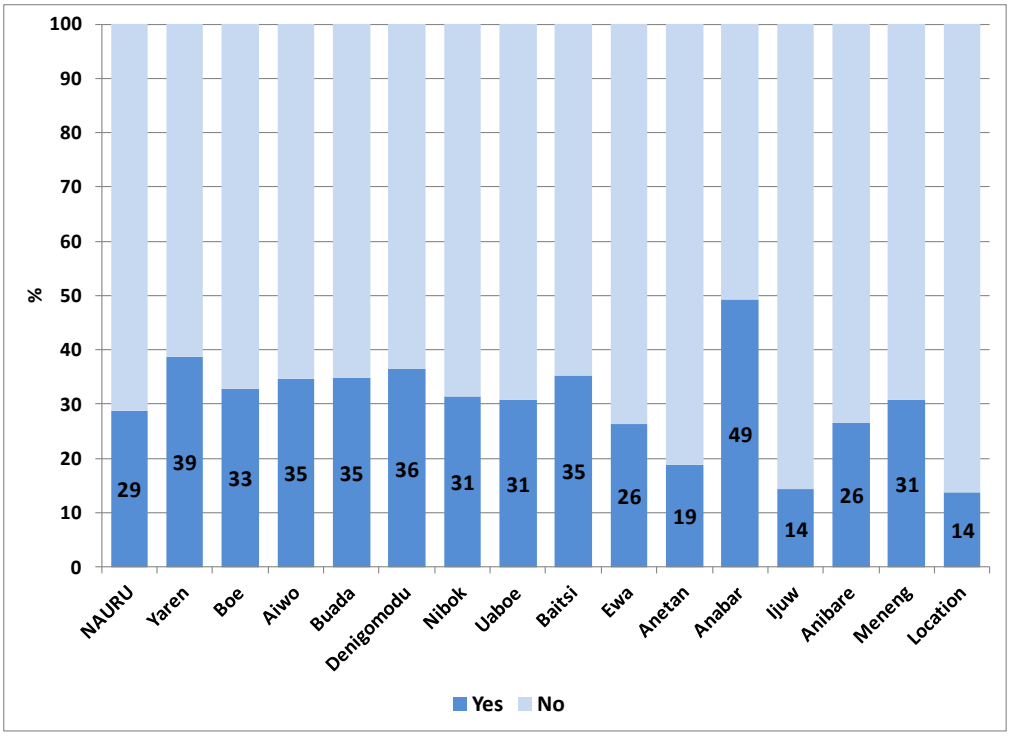


Figure 142: Proportion of households by district and availability of a motor bike (%), Nauru: 2011

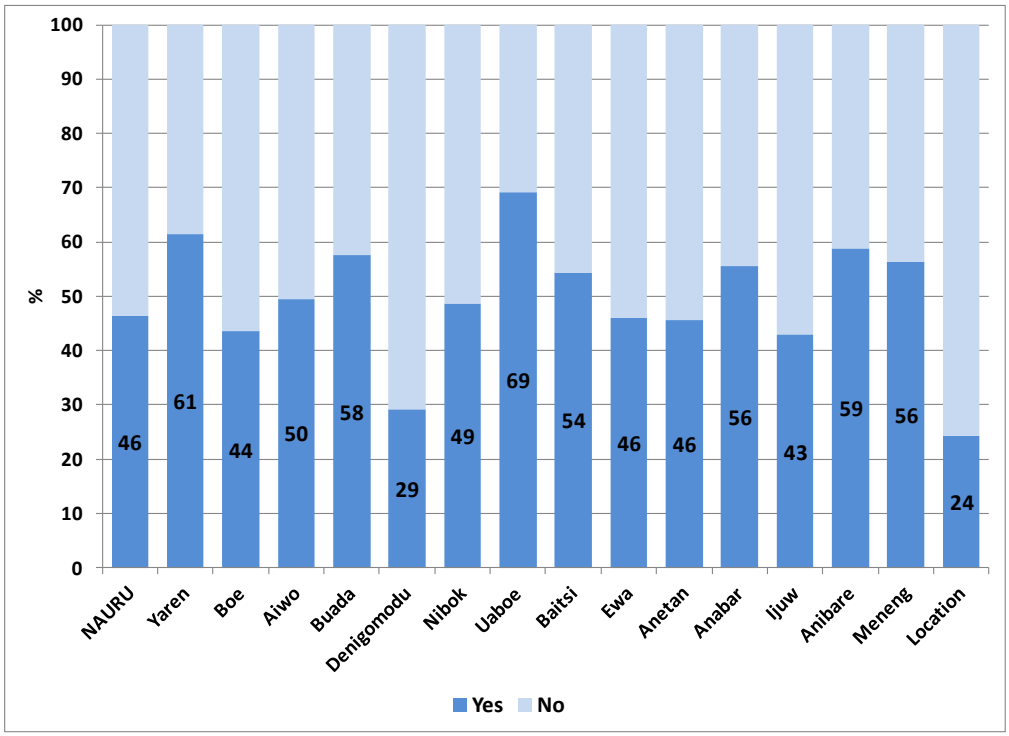


Figure 143: Proportion of households by district and availability of a truck, van or mini bus (%), Nauru: 2011

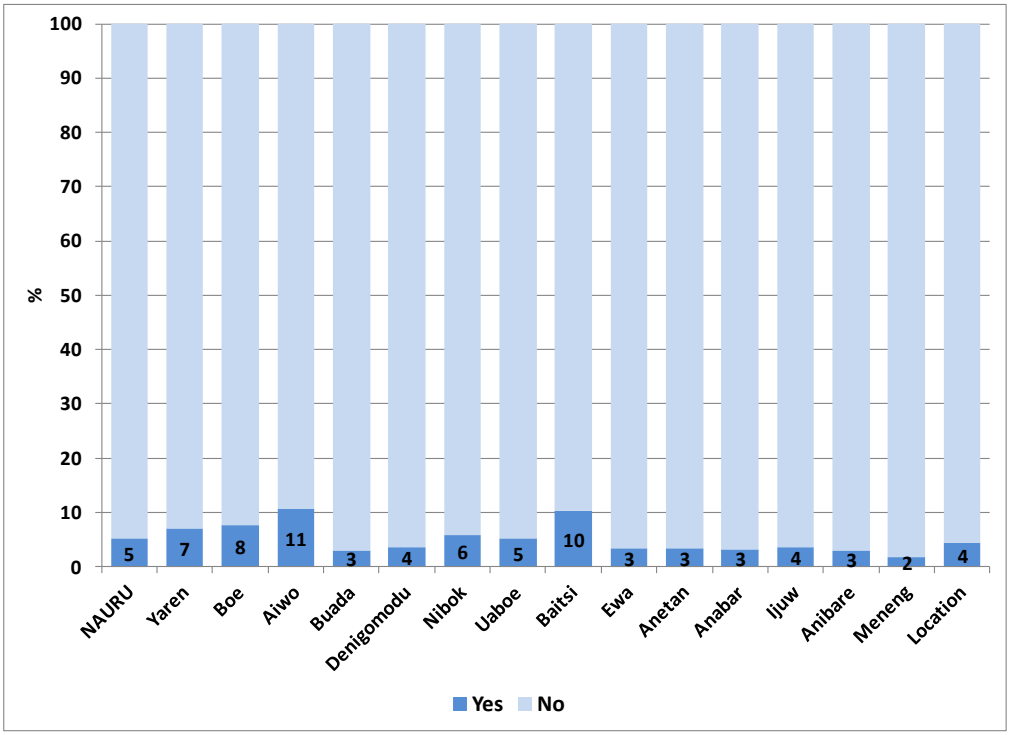
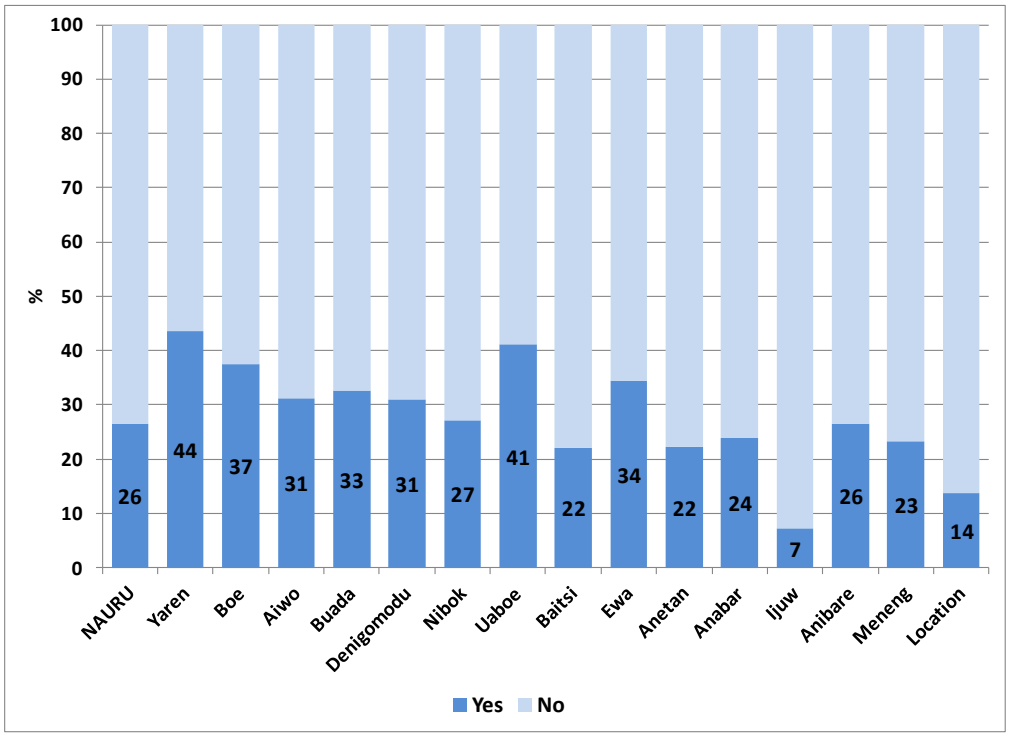


Figure 144: Proportion of households by district and availability of a bicycle (%), Nauru: 2011



5.6.4 Marine equipment

In total 130 boats made of aluminum were counted during the census, 24 boats made of fiberglass, and 4 wooden boats. Furthermore 79 traditional canoes were counted and 33 outboard motors (Table 43).

Only 6% of all households in Nauru owned a **boat** in working order. Note that this includes all boats regardless of construction material such as aluminum, fiberglass, or wood (Fig.145).

The highest proportions of households with a boat were located in Anibare (15%) and Ewa (13%).

Four percent of all households owned a **traditional canoe**, although this percentage was higher in Baitsi (12%) and Denigomodu (10%) (Fig.146).

Only 28 households (2%) of all households owned an **outboard motor** in working order. Yaren had with 10% of all households the highest percentage of households with (at least one) outboard motor (Fig.147).

Table 43: Number of marine equipment by district, Nauru: 2011

District	Motor boat - aluminium	Motor boat - fibreglass	Motor boat - wood	Traditional canoe	Outboard motor
Yaren	14	1	0	2	11
Boe	20	0	0	5	0
Aiwo	13	3	0	12	0
Buada	4	2	4	0	1
Denigomodu	7	1	0	6	0
Nibok	7	0	0	3	4
Uaboe	6	1	0	0	3
Baitsi	5	1	0	9	0
Ewa	7	2	0	2	5
Anetan	10	0	0	0	0
Anabar	9	2	0	5	3
Ijuw	1	0	0	0	1
Anibare	5	11	0	0	1
Meneng	17	0	0	6	4
Location	5	0	0	29	0
NAURU	**130**	**24**	**4**	**79**	**33**

Figure 145: Proportion of households by district and availability of a boat (%), Nauru: 2011

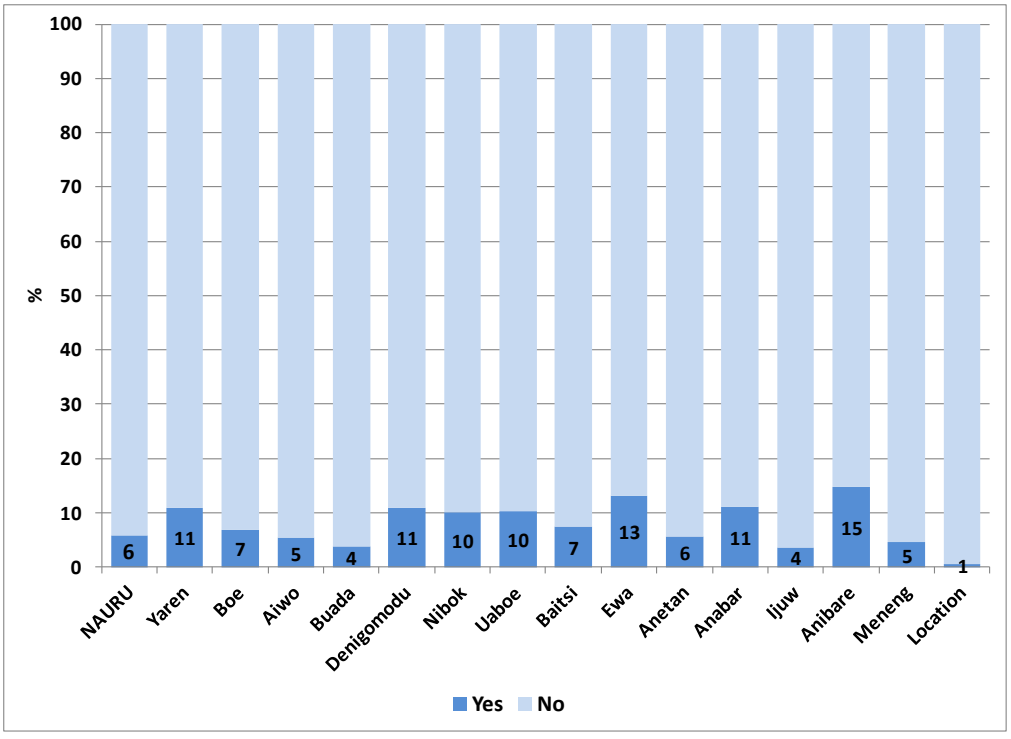


Figure 146: Proportion of households by district and availability of a traditional canoe (%), Nauru: 2011

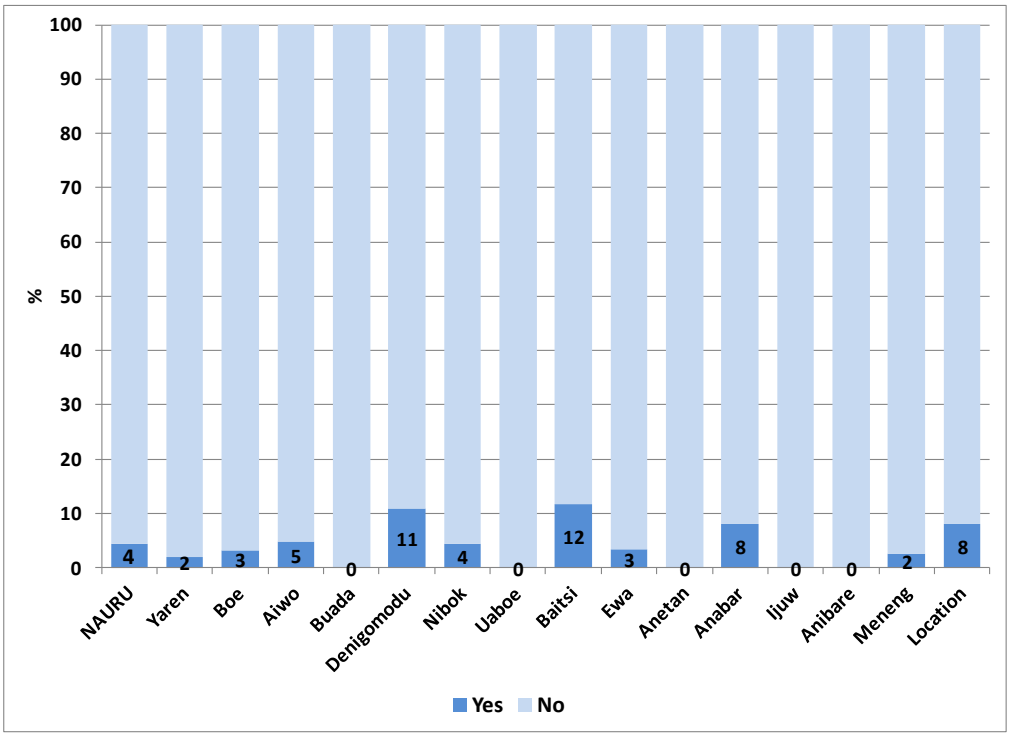
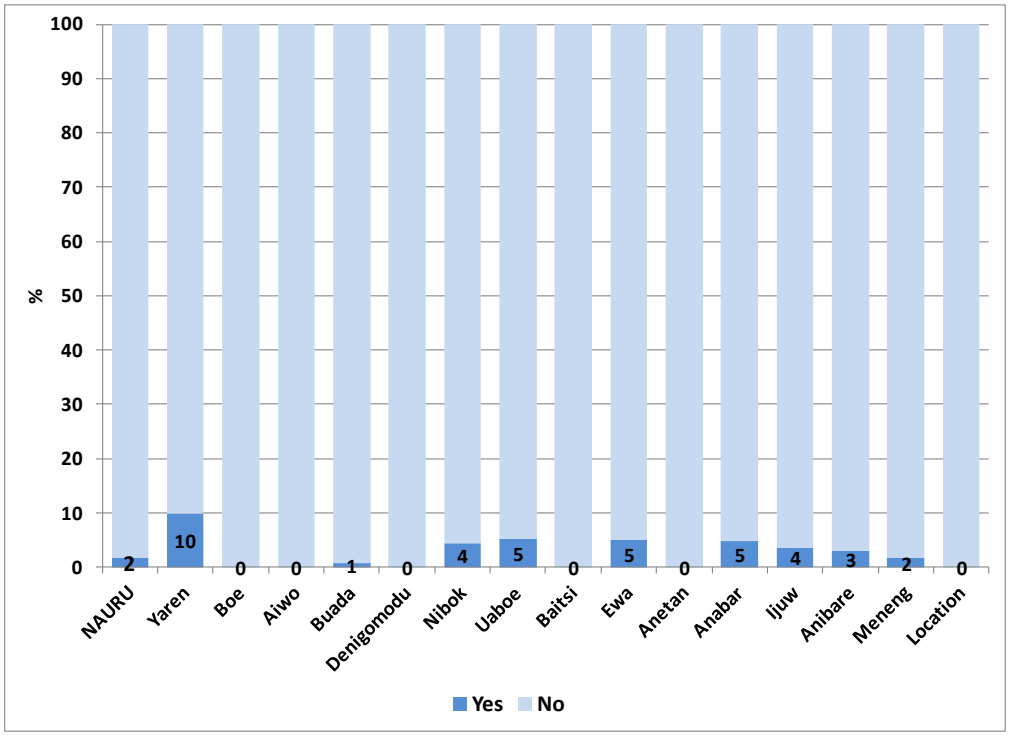


Figure 147: Proportion of households by district and availability of an outboard motor (%), Nauru: 2011



6. POPULATION PROJECTIONS

6.1 Introduction

Timely and accurate information about population trends is in high demand for anyone making decisions in business, research, government and the community. Knowledge about the current size and structure of a country's population is needed for the formulation and implementation of policies and programmes in almost all areas of public life. As policies are aimed at resolving current issues through the achievement of goals in the future, knowledge about future population trends is required. Activities in areas as diverse as health, environment, poverty reduction, social progress, and economic growth rely on comprehensive and consistent demographic information.

The appropriate method to produce population trends is to prepare estimates and projections of population size and structure by age and sex.

The starting point for any projection is a reliable and current age–sex distribution of a population. Furthermore, information on recent levels and patterns of fertility, mortality, and migration is needed.

The cohort-component method was used to compute the population projections presented in this report. This procedure simulates population changes as a result of changes in the components of growth: fertility, mortality and migration. Based on past information and current levels, assumptions are made about future trends in these components of change. The assumed rates are applied to the age and sex structure of the population in a simulation that takes into account:

- the age at which people die is related to their sex and age,
- women have children, and
- some people change their place of residence.

The cohort-component method of projecting a population follows each cohort of people of the same age and sex throughout their lifetime, according to their exposure to fertility, mortality and migration[6]. The software package used for the projections was MORTPAK[7], application PROJCT.

The key to making meaningful projections lies in the choice of assumptions about future population developments. These assumptions concern possible future birth, death and migration rates.

[6] 1994. Arriaga E.E. Population analysis with microcomputers, volume I, Presentation of techniques, p. 309–310. US Census Bureau, Department of Commerce, USA.
[7] MORTPAK for Windows (version 4.1) was developed by the Population Division, Department of Economic and Social Affairs of the United Nations Secretariat.

6.2 Projections assumptions

As a general guideline, when preparing multiple assumptions about future levels of fertility, mortality and migration, it is advisable to arrive at outcomes that are symmetrical. This means that the level of low and high, or fast and slow, growth assumptions should be equally positioned with respect to the medium level assumption (i.e. above and below).

The following demographic inputs were developed for the projections.

Projection period

The population projections cover the 39-year period of 2011–2050.

Base population

Projections are based on the 2011 Nauru census age and sex distribution, adjusted to mid-year 2011 using the PAS procedure MOVEPOP (Table 44).

Table 44: Base population for projections, Nauru: 1 July 2011

Age group	Males	Females	Total
0-4	861	733	1,594
5-9	567	580	1,147
10-14	541	501	1,042
15-19	473	436	909
20-24	512	511	1,023
25-29	487	490	977
30-34	410	373	783
35-39	305	302	607
40-44	244	241	485
45-49	236	256	492
50-54	175	206	381
55-59	132	146	278
60-64	66	88	154
65-69	23	33	56
70-74	17	18	35
75-79	16	25	41
Total	**5,065**	**4,939**	**10,004**

Fertility

The trend of the estimated TFRs for the period 2002-2011 was used as a guideline for preparing future fertility trends, and the average ASFR of the years 2009-2011, as described in Section 3.1 was used as a starting point, with four different assumptions made about future fertility developments (Fig.148).

The future TFR level of the medium fertility assumption is assumed to reach 2.0, which is the average level of TFR of populations in present-day Australia, France, New Zealand and the United States (App.18). This level will be reached (by means of extrapolation) with a pace of fertility decline that is based on Nauru' past fertility trend. According to this pace, Nauru will reach a TFR of 2.0 in the year 2067, and will reach a level of 2.4 at the end of the projection period in 2050.

The reason for choosing the fertility level of countries such as Australia, France, New Zealand and the United States as the future level for Nauru is twofold:

1) These countries have completed the "demographic transition" (see explanatory note in App.20). Appendix 17 shows that the TFR of these four countries has remained at an almost constant level of 2.0 over the last 35 years (1975–2010).

2) They are regarded as the metropolitan focal points of Pacific Island countries.

Therefore the medium fertility assumption is set as follows.

Assumption 1 — Medium Fertility: Fertility decreases to 2.4 in the year 2050 (as described above).

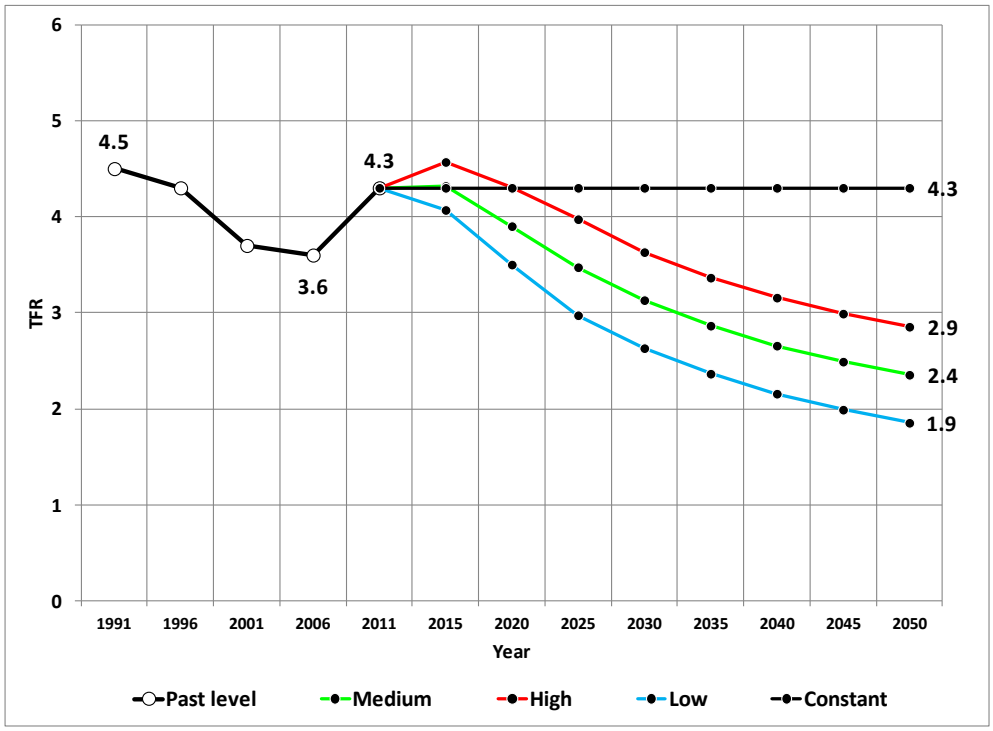
The high and low fertility assumptions were built symmetrically around the medium fertility assumption.

Assumption 2 — High Fertility: The high fertility assumption assumes a TFR of 0.5 higher than the medium fertility level. Therefore, the level of TFR in 2050 is 2.9.

Assumption 3 — Low Fertility: The low fertility assumption assumes a TFR of 0.5 lower than the medium fertility level. Therefore, the level of TFR in 2050 is 1.9.

Assumption 4 — Constant Fertility: This is a purely academic assumption, with the purpose to demonstrate what would happen to Nauru in terms of population size if the current TFR of 4.3 remains constant at this level for the entire projection period.

Figure 148: Estimated past levels of fertility, and future fertility assumptions for projections, Nauru: 1991–2051



Sex ratio at birth

The sex ratio of birth is the number of male births per 100 female births. Available data from Nauru's vital statistics records on the number of male and female births for the period 2002-2011 point to a sex ratio at birth of **106**.

Mortality

It is thought that under normal circumstances (meaning in the absence of catastrophes such as wars, epidemics and major natural disasters), Nauru's health situation and mortality levels will continuously improve throughout the projection period.

The estimated life expectancies at birth [E(0)] — 57.5 years and 63.2 years for males and females, respectively — are used as the starting point for projections in 2011. These estimates are based on the estimates as outlined in section 3.2.

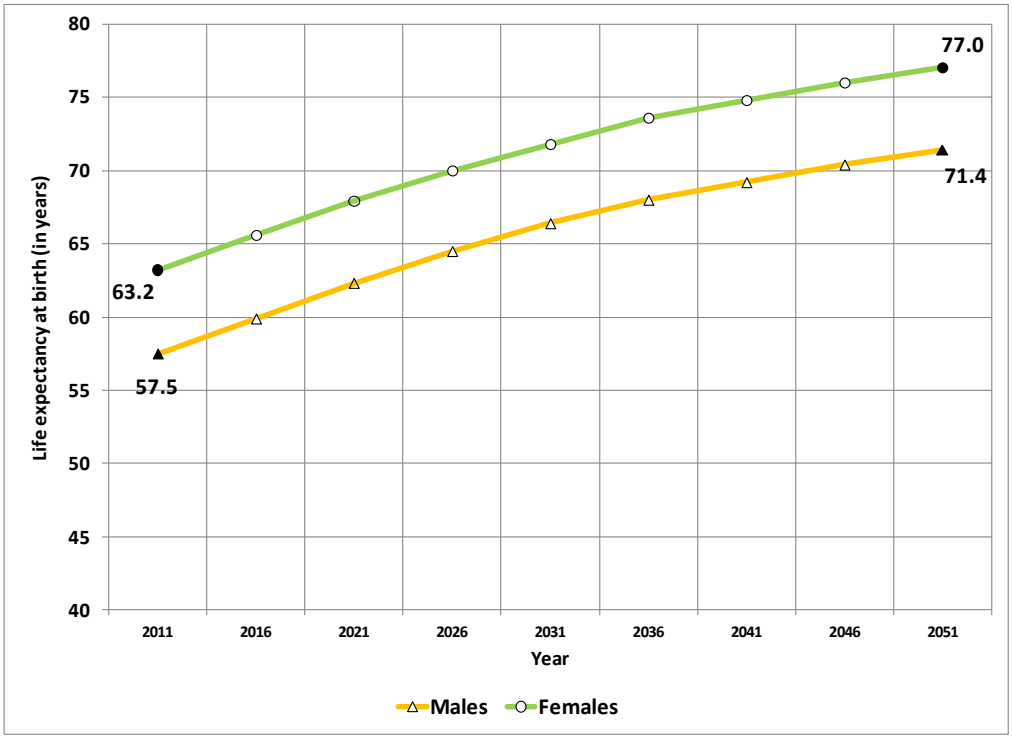
Assumption: The population projections presented here assumes a rising trend in life expectancy for males and females according to the UN working models of mortality improvement, as described in "World Population Prospects, p. 144[8] (App.19). According to this model, current estimated life expectancies gradually increase and reach 71.4 and 77.0 years in 2050 for males and females, respectively (Fig.149).

[8] 1995. United Nations. World Population Prospects. New York: United Nations. 886 p.

Only one assumption regarding mortality is made. The reason for this is that variations in mortality levels (multiple assumptions) usually have only a minor impact on final projection results; they also would require the production of too many different variants that ultimately would only complicate the presentation of results.

The derived mortality pattern (age-specific death rates) was compared with the different Coale-Demeny and United Nations model life tables using MORTPAK4.1, procedure COMPAR. The assumption was made that possible under-registration of deaths is not age specific and therefore does not affect the overall pattern of mortality. It was found that the **United Nations Far-Eastern model** resembles most closely the empirical mortality pattern for Nauru (see section 3.2).

Figure 149: Estimated current level of mortality, and future mortality assumptions for projections, Nauru: 2011–2051



Migration

Making meaningful assumptions about future migration developments provides the single greatest difficulty for undertaking population projections, because many of the social and economic parameters shaping migration patterns depend largely on countries' overall social, economic and political developments, as well as environmental factors (e.g. possible sea level rise, frequency and strength of cyclones). All of these factors fluctuate widely and are hard to predict. Migration projections also depend on economic and political developments overseas.

Apart from these global considerations, making assumptions about migration is difficult because socio-economic and demographic indicators usually fluctuate extensively for small populations such as Nauru.

Nauru's recent past has shown that migration levels have been heavily dependent on the state of the country's phosphate-driven economy. It is difficult to predict when phosphate will run out, and whether its depletion will have a serious impact on Nauru's economic life as alternative sources of income may be found.

As was shown in section 3.3, at present Nauruans are not known for migrating permanently overseas at any significant measure, while Nauru itself is not an immigration country either, although during the 10-year period between 1992 and 2002[9], and again between 2006-2011 net migration was estimated at about -100 people annually. It is therefore decided to use 2 migration assumptions:

Assumption 1: Migration is assumed to be zero for the entire projection period 2011-2050;

Assumption 2: Migration is assumed to be -100 people annually for the entire projection period 2011-2050. With regard to the age and sex structure of migrants, it is assumed that there will be equal numbers of males (-50) and females (-50), and the age structure resembles that of a family type migration pattern, which means that it is primarily young couples aged 20-29 who migrate, sometimes with their young children aged 0-4 years (App.21).

6.3 Projection results

The four different fertility assumptions and two different migrations assumptions results in seven different projections (Table 45 and Fig.150). These different projections highlight the impact of different levels of fertility and the impact of migration on the population size and structure of Nauru: The higher the fertility level assumed, the higher the population outcome, and of course the population will be smaller if migration is negative (-100).

Table 45: Population size according to seven projection variants, Nauru: 2011–2050

	Projection variant	Year								
		2011	2015	2020	2025	2030	2035	2040	2045	2050
No migration	Constant fert.	10,000	11,205	12,751	14,378	16,202	18,371	20,948	23,911	27,259
	High fert.	10,000	11,233	12,862	14,455	16,048	17,728	19,560	21,525	23,552
	Medium fert.	10,000	11,205	12,708	14,103	15,431	16,792	18,229	19,706	21,145
	Low fert.	10,000	11,181	12,570	13,771	14,842	15,900	16,966	17,995	18,914
Migration (-100)	High fert.	10,000	10,786	11,732	12,553	13,331	14,167	15,107	16,109	17,092
	Medium fert.	10,000	10,759	11,592	12,243	12,798	13,372	13,992	14,607	15,136
	Low fert.	10,000	10,736	11,467	11,954	12,299	12,626	12,949	13,214	13,349

[9] Demographic Profile of the Republic of Nauru, 1992-2002, SPC (2006)

The seven population projection variants are described in detail below:

1) **Constant fertility-no migration variant.** This projection outcome is determined by assuming that the current **high level of fertility** remains constant during the entire projection period, and that there will be **zero net migration**. This variant results in a population size of 16.2 thousand people in the year 2030, and 27.3 thousand people in the year 2050.

2) **High fertility-no migration variant.** This projection outcome is determined by applying the **high fertility assumption** (slow fertility decline), and that there will be **zero net migration**. This variant results in a population size of 16.0 thousand in the year 2030, and 23.6 thousand people in the year 2050.

3) **Medium fertility-no migration variant.** This projection outcome is determined by applying the **medium fertility assumption** (moderate fertility decline), and that there will be **zero net migration**. This variant results in a population size of 15.4 thousand in the year 2030, and 21.1 thousand people in 2050.

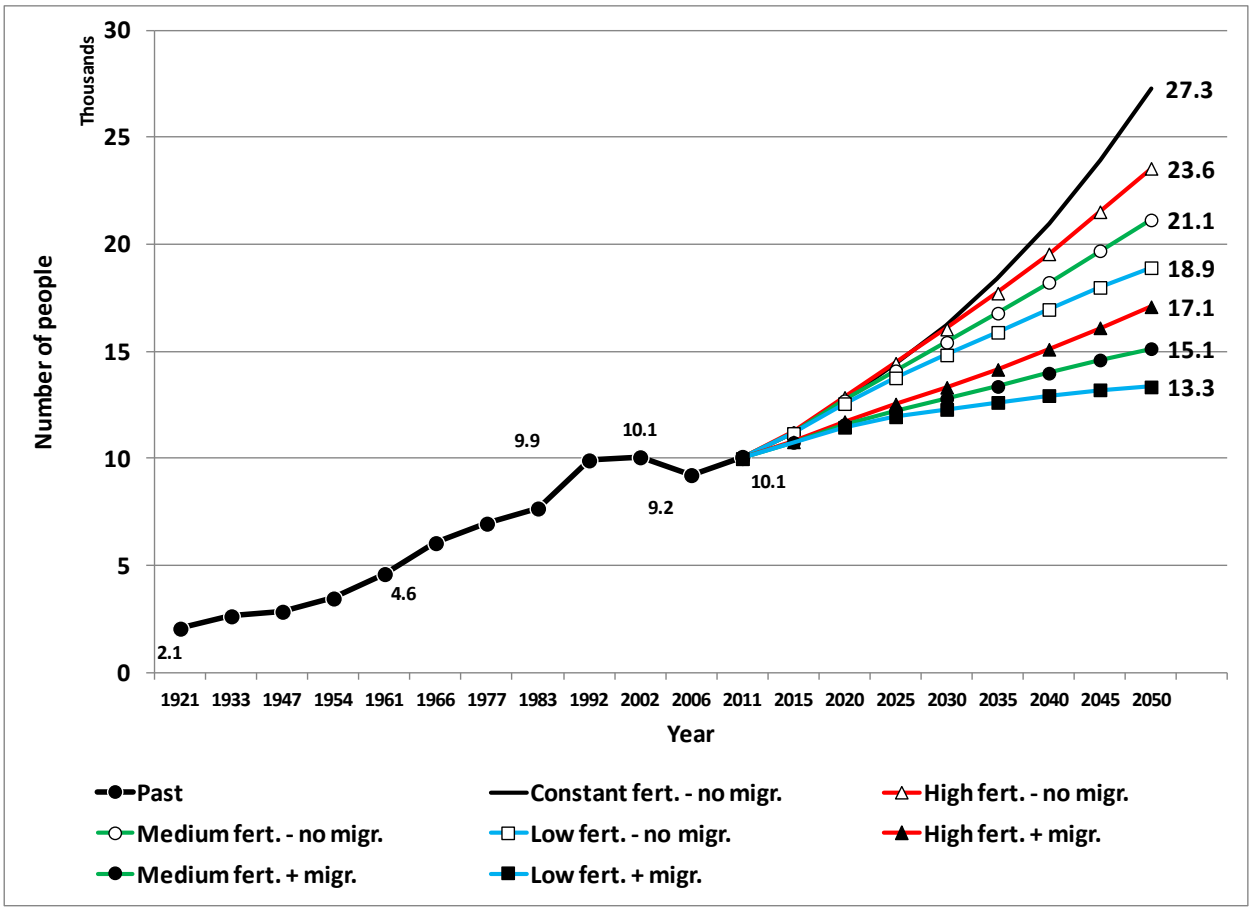
4) **Low fertility-no migration variant.** This projection outcome is determined by applying the **low fertility assumption** (fast fertility decline), and that there will be **zero net migration**. This variant results in a population size of 14.8 thousand in the year 2030, and almost 19 thousand people in the year 2050.

5) **High fertility-plus migration variant.** This projection outcome is determined by applying the **high fertility assumption** (slow fertility decline), and that there will be **net migration of -100 people annually**. This variant results in a population size of 13.3 thousand in the year 2030, and 17.1 thousand people in the year 2050.

6) **Medium fertility-plus migration variant.** This projection outcome is determined by applying the **medium fertility assumption** (moderate fertility decline), and that there will be **net migration of -100 people annually**. This variant results in a population size of 12.8 thousand in the year 2030, and 15.1 thousand people in 2050.

7) **Low fertility-plus migration variant.** This projection outcome is determined by applying the **low fertility assumption** (fast fertility decline), and that there will be **net migration of -100 people annually**. This variant results in a population size of 12.3 thousand in the year 2030, and almost 13.3 thousand people in the year 2050.

Figure 150: Past and future population trends according to 7 projection variants, Nauru: 1921–2050



In general the projection results show that the population will increase regardless of which projection variant is used.

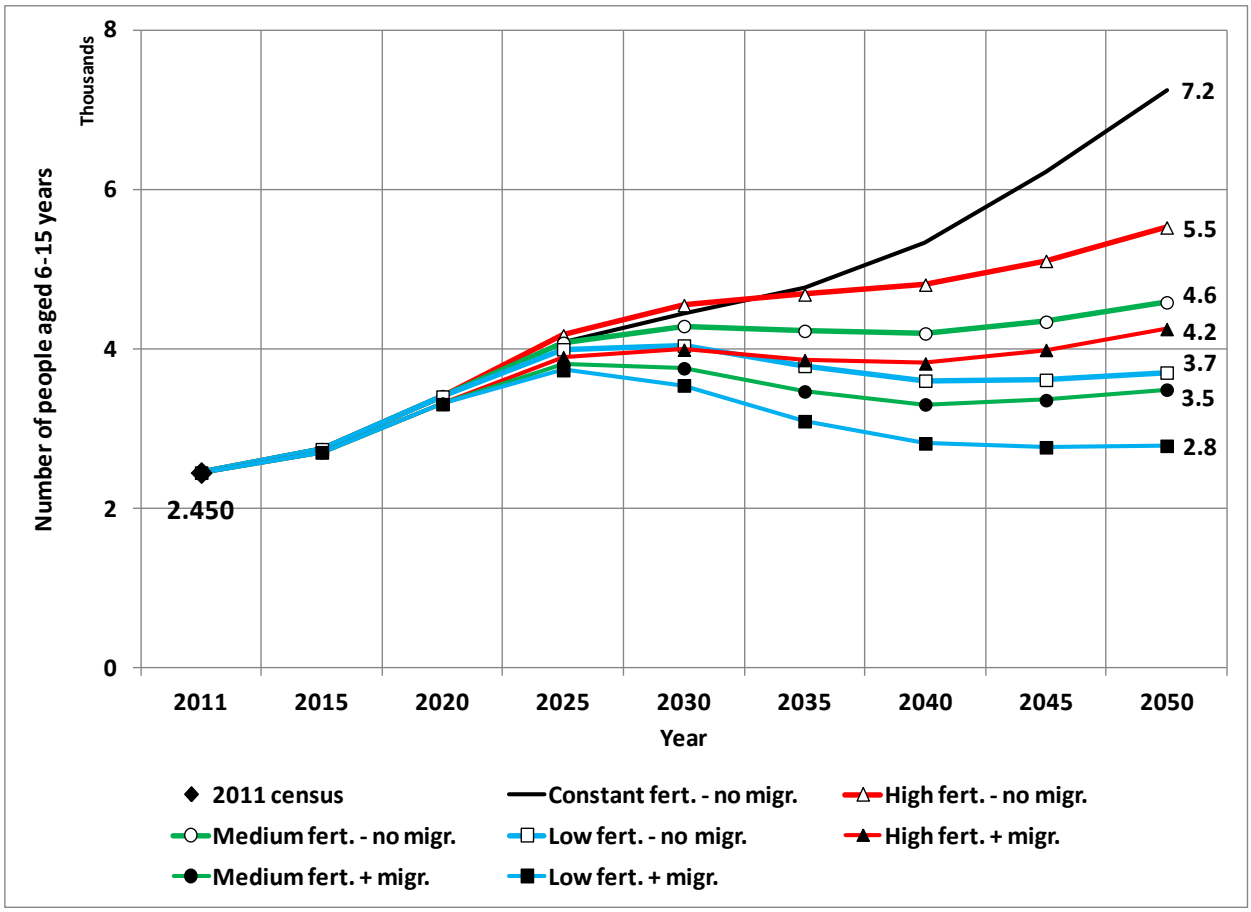
The impact of the different projections on the population size until the year 2020 is relatively minor. Significant population differences based on the different projection assumptions can only be expected thereafter.

Figures 151 to 158 provide the comparative results of the various projections, and highlight the differential impact on population size, growth and structure.

The school age population aged 7–18 years can be expected to increase from its current size of about 2,450 pupils regardless of the projection variant used (Fig.151) and will only levelling off after the year 2025 according to the *low fertility-plus migration* assumptions; all other variants cause the school age population to significantly increase in future.

According to the *constant fertility* and the *high fertility-no migration* variant the school age population would more than double until 2050.

Figure 151: School age population aged 7–18 years according to 7 different projection variants, Nauru: 2011-2050



The general impact on the future population structure by broad age groups can be seen in Table 46 and Figures 152 to 161.

According to all projection variant used, the size of the working age population (aged 15–59) will be considerably larger than in 2011, as well as the 'elderly' population 60 years and older. Therefore the population will grow older regardless of which projection is used, as is expressed in the median age, which will increase from 21.5 years in 2011 to over 30 years according to the *low fertility* variants.

The population aged younger than 15 years will also increase regardless of which projection variant is used until at least 2015. It will only be smaller than in 2011 according to the *low fertility* variants is used. The proportion of the young population aged 0–14 (as part of the total population) will decrease regardless of the type of projection variant used.

The three different projection variants will produce very different population growth rates: it ranges from 2.6% in 2050 according to the *constant fertility-no migration* variant to just 0.1% according to the *low fertility-plus migration* variant.

Finally, the different projections result in very different age-dependency ratios: the lower the level of future fertility, the lower the age-dependency ratio.

Table 46: Population structure and indicators according to seven projection variants, Nauru: 2011, 2030 and 2050

Indicator	2011	No migration								Migration (-100)					
		Constant fert.		High fert.		Medium fert.		Low fert.		High fert.		Medium fert.		Low fert.	
		2030	2050	2030	2050	2030	2050	2030	2050	2030	2050	2030	2050	2030	2050
Broad age groups (%)															
0 - 14 years	38	38	38	37	32	34	28	32	24	37	33	35	29	32	25
15 - 59 years	59	56	53	57	59	59	61	61	63	56	57	58	59	61	62
60 years and older	3	6	8	6	10	7	11	7	12	7	10	7	11	7	13
Dependency ratio	69	78	89	76	70	69	64	63	57	78	75	71	69	65	62
Median age	21.5	20.9	21.2	21.1	25.6	22.2	28.2	23.2	31.0	20.3	24.5	21.3	27.2	22.3	30.4
Average annual growth rate (%)	1.8	2.4	2.6	2.0	1.7	1.7	1.3	1.4	0.9	1.2	1.1	0.9	0.6	0.5	0.1

Figure 152: Population projections by broad age groups according to seven projection variants, Nauru: 2015

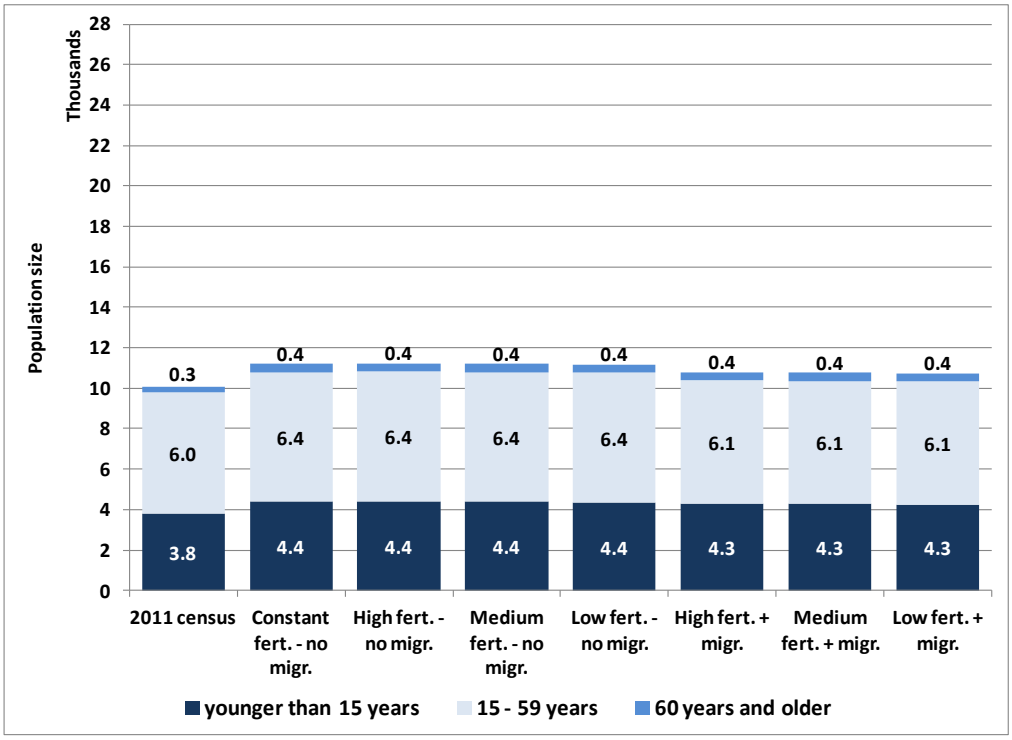


Figure 153: Population projections by broad age groups according to seven projection variants, Nauru: 2030

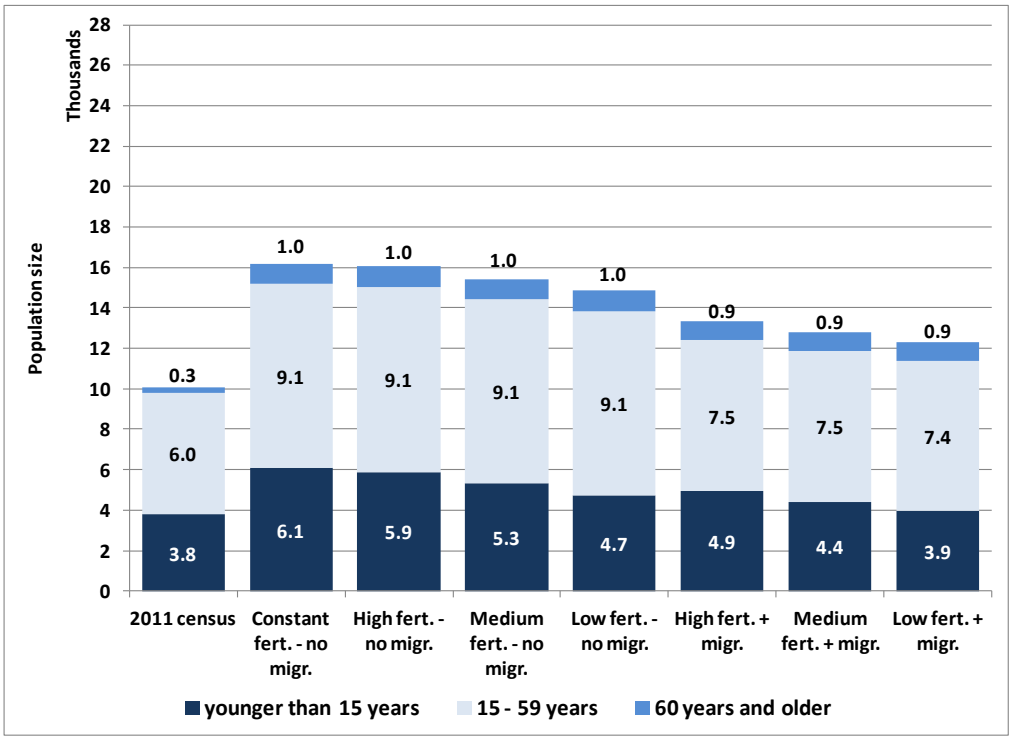
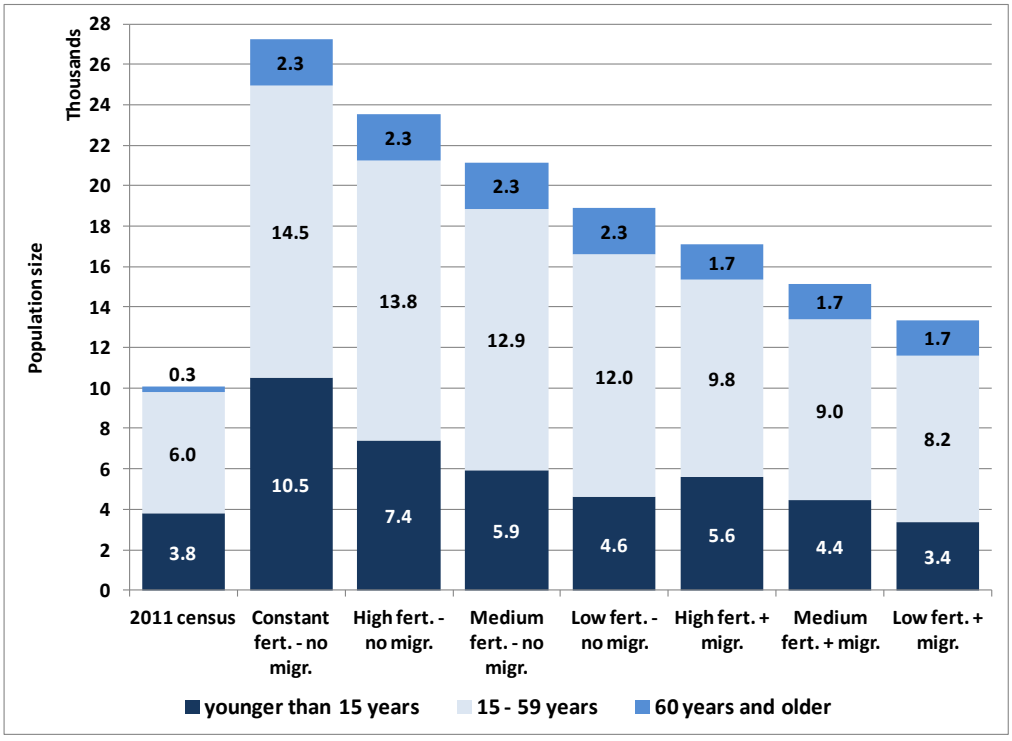


Figure 154: Population projections by broad age groups according to seven projection variants, Nauru: 2050



The different impacts on the population size and structure are furthermore illustrated as population pyramids (Figs. 155 to 161). The shaded area represents the 2011 population size by sex and age group, and the outlined area represents the estimated (projected) population size in 2050, according to the seven different projection variants.

Figure 155 illustrates the impact on the future population if a constant high level of the current fertility (TFR=4.3) prevails throughout the projection period. The population would then be 27.3 thousand people (Fig.150).

The different shaped pyramids of the four different projection variants clearly illustrate the assumed fertility level on future population size and structure: the lower the assumed future fertility level, the smaller the size of the population in general and the smaller the population aged 39 years and younger in particular.

In addition, the assumed migration variants have also a very significant impact on size and structure of the population: in the year 2050 there will be approximately 6 thousand people less in Nauru if there would be a constant net migration of -100 people annually, regardless of which fertility variant is used.

Figure 155: Population pyramid, 'Constant fertility-no migration' variant, Nauru: 2011 and 2050

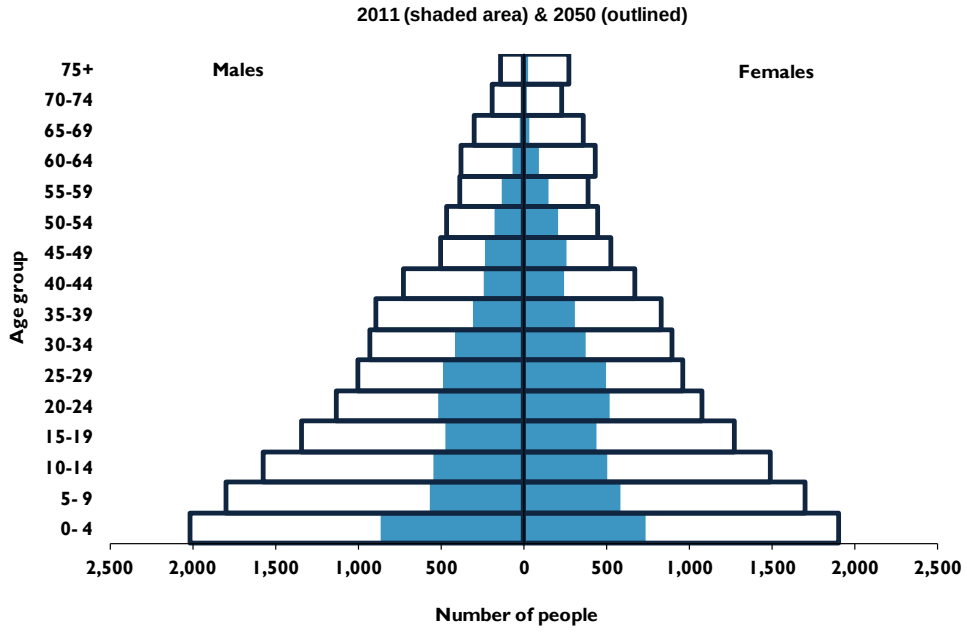


Figure 156: Population pyramid, 'High fertility-no migration' variant, Nauru: 2011 and 2050

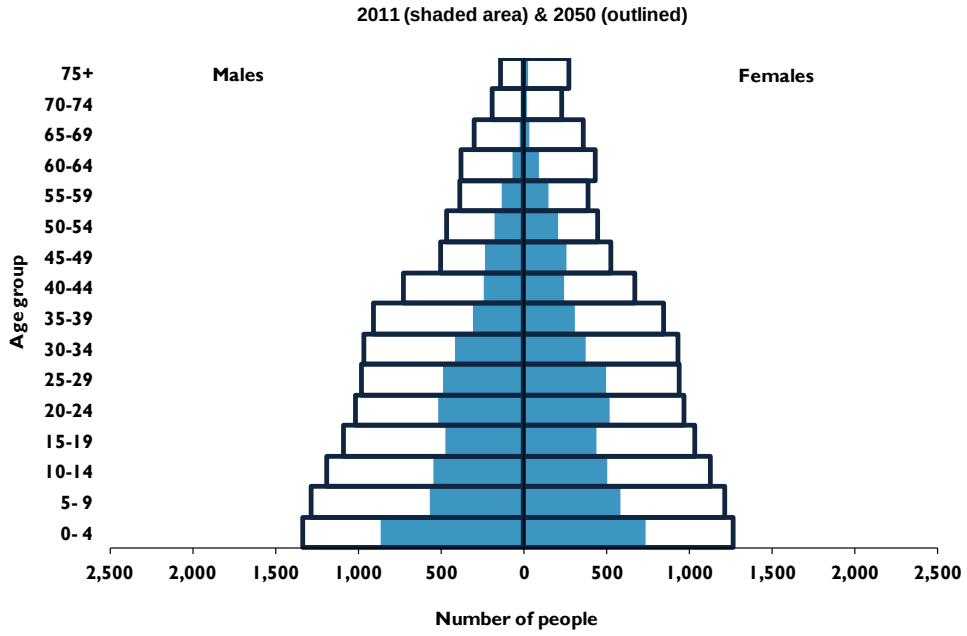


Figure 157: Population pyramid, 'Medium fertility-no migration' variant, Nauru: 2011 and 2050

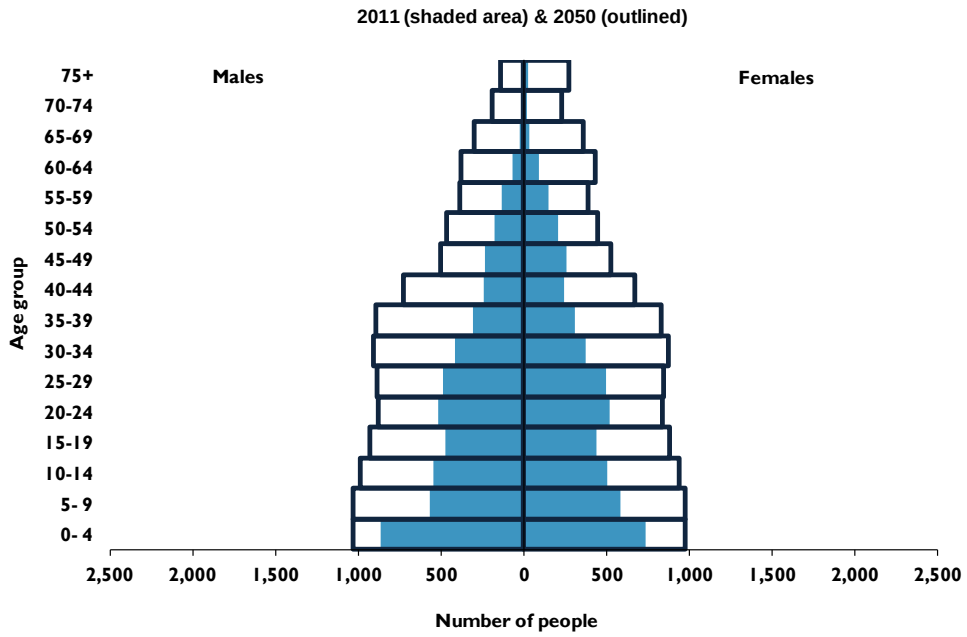


Figure 158: Population pyramid, 'Low fertility-no migration' variant, Nauru: 2011 and 2050

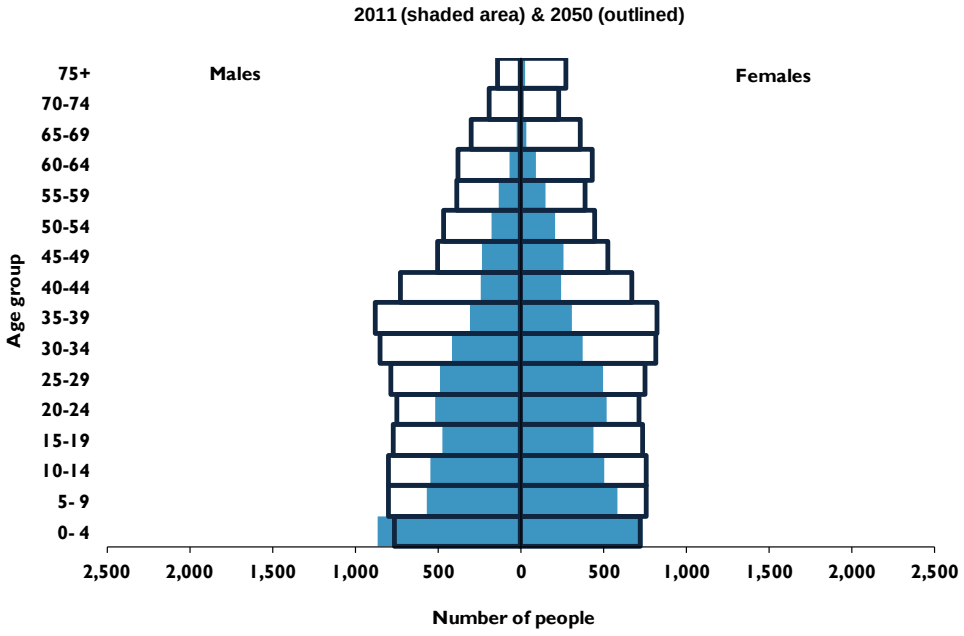


Figure 159: Population pyramid, 'High fertility-plus migration' variant, Nauru: 2011 and 2050

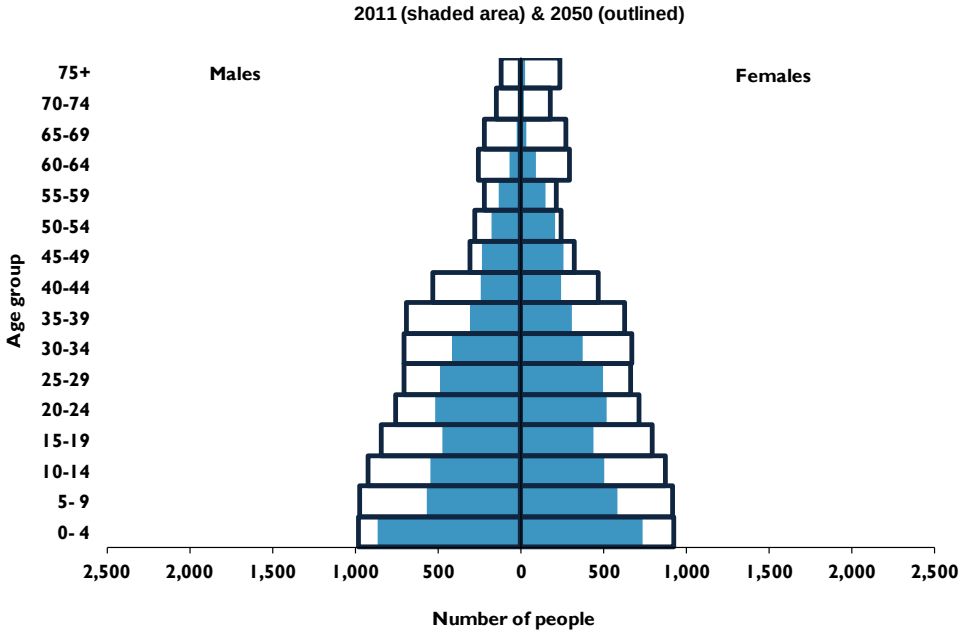


Figure 160: Population pyramid, 'Medium fertility-plus migration' variant, Nauru: 2011 and 2050

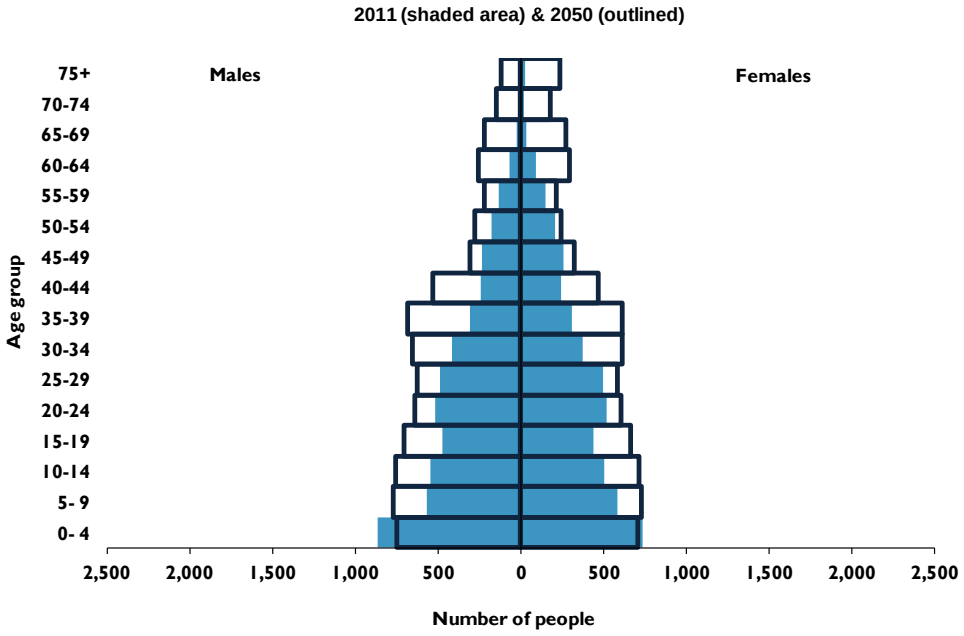
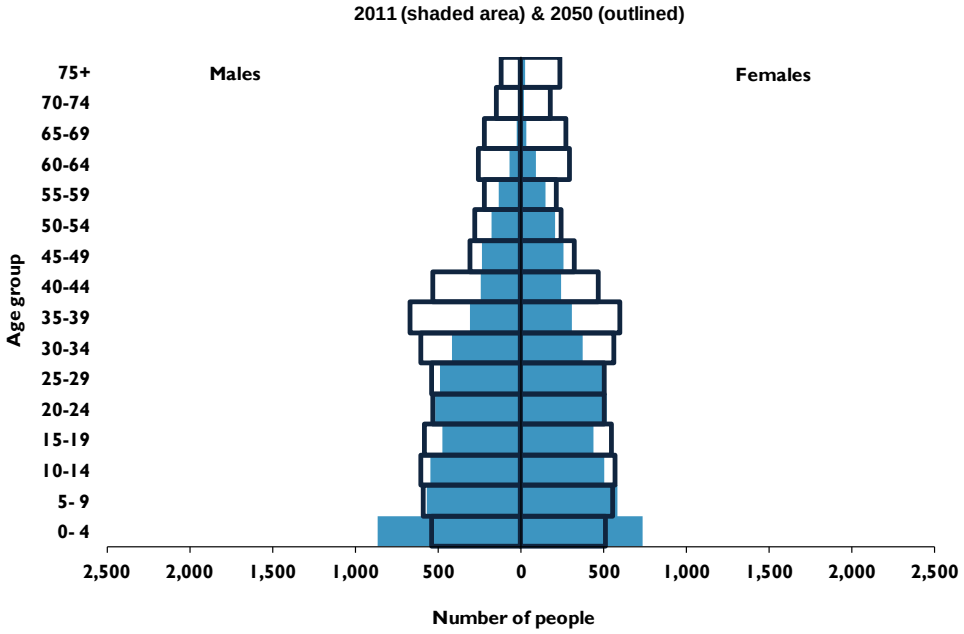


Figure 161: Population pyramid, 'Low fertility-plus migration' variant, Nauru: 2011 and 2050



Most likely outcome

Predicting the likelihood of a certain future population size and structure is difficult for any country, and the further into the future the projection, the more uncertain the outcome.

Therefore, several projection variants need to be produced to allow users to choose from an outcome that seems most probable according to their own views and opinions.

Most data users, however, prefer to use a recommended projection variant that depicts a "most likely outcome". Such a variant is usually called the *medium* projection variant using the medium assumptions made.

Population changes close to those presented in the **medium-variants** appear to be the most likely outcome, regardless of whether or not to assume migration, because:

- Although there has been a fertility increase during the last several years in Nauru (section 3.1), based on historical worldwide observations of countries with a similar high level of fertility the current fertility level can be expected to decline (see also the “theory of demographic transition”, App.20). Therefore, the high fertility assumption with its very slow fertility decline seems to be a more unlikely outcome, and a constant high level of the current TFR of 4.3 is surely an unrealistic outcome.

- Regarding the low fertility assumption, fertility levels (TFR) have already declined to well below 2 in many parts of the world, and it is therefore a realistic assumption to make. Nevertheless, such rapid fertility decline does not seem likely to occur in view of Nauru’s recent (increasing) fertility trend.

7. POLICY MPLICATIONS OF FINDINGS

7.1. Population dynamics

7.1.1 Growth rate

Nauru's annual population growth rate during the period 2007-2011 was 1.8%; a complete turnaround since 2002-2006 when Nauru's growth rate was negative (-2.1%) as the population declined.

However, currently the population growth is much higher than 1.8% as Nauru's fertility is increasing, and should be around 2.9% which translates into an annual increase of about 300 people per year. With this current high level of growth the population will double its current size, and will reach 20,000 people in the year 2038.

Nauru' population density of 478 people per sq. km is the highest in the region, and should the population indeed double in size, there will be close to 1,000 people per sq. km in future.

7.1.2 Fertility

In the absence of any significant international migration, Nauru's population growth is determined by its (high) natural growth rate.

During the period 2004-2011, the average number of children per woman (TFR) increased steadily from 3.4 to 4.3, and during the period 2007-2011, 350 children were born annually on average.

According to the overall fertility trend, the teenage fertility rate (the number of births to adolescent women aged 15-19 years) was very high with 81 births per 1000 women aged 15-19 years, and is one of the highest rates in the Pacific region. This should be seen as a major concern as childbearing to teenage women poses an increased health risk to mother and child.

The estimated TFR for Nauru is similar to that of Vanuatu (4.1) and the Solomon Islands (4.1), lower compared to PNG (4.4), but much higher than Fiji's TFR of about 2.6.

The government needs to do more if it wants to influence the fertility levels and ensure the well-being of mothers and her children. Such a move should be directed at policies and programmes that are geared towards the expansion and improving of family-planning services and reproductive health.

Any government initiatives should include, but not be restricted to, the following. Firstly the inclusion of life education in the curriculum of young people providing basic information and support is needed before childbearing age. Secondly, making family planning services for women (and their partners) of all ages available and accessible thus empowering them to make conscious decisions about the number and

spacing of their children. Additionally, the provision of such services will help to reduce the number of unwanted pregnancies as well as safeguard partners from risks of being infected by sexually transmitted infections and HIV/AIDS.

Early age marriages should be discouraged so that child bearing for women is delayed to older ages.

A teenage pregnancy is not only a social issue but especially a health risk to mothers and child. The most affected are the uneducated and unemployed teens. Most often, children of teenage mothers have lower educational levels, higher rates of poverty, and other poorer "life outcomes". Since teenage pregnancy usually occurs outside of marriage it often carries a social stigma. Therefore, social protection for the solo parents and young mothers which should include the provision of child support and maintenance needs to be provided.

Many stakeholders (government and non-government organizations) are involved in the teenage reproductive health strategies. They work at various levels in the community to reduce teenage pregnancy by increasing the knowledge and practice of family planning, promoting peer education, providing sex education advisory services including contraceptives, involving young people in service design, educating parents of teenagers on effective communication, providing better support for teenage mothers (such as help returning to education, advice and support), working with young fathers, giving better childcare, and increasing the availability of supported housing. This group must be supported and if possible, provided with financial assistance. All this should align with the country's policy directions.

7.1.3 Mortality

Improved mortality rates mean that healthier people live longer lives.

Based on data provided by Nauru's Civil Registration office on the number of births and deaths, the infant mortality rate (IMR) was estimated at 37; 44 for males and 30 for females. This estimate is lower than what it was during the period 2002-2006 when the IMR was 53 and 42 for males and females – and is thus an improvement in infant mortality rates..

The estimated IMR of 37compares to an IMR of 21 in Vanuatu, 17 in Fiji, 58 in PNG, and about 5 in Australia and New Zealand. Consequently, there is much room for improvement in infant and child care in Nauru.

Estimates of mortality level presented in this report suggest that females live longer than males, and live on average about 6 years longer than males. Life expectancy at birth is estimated at 57.5 and 63.2 years for males and females, respectively. While life expectancy increased for females (from 58.2 years for the period 2002-2006) it unfortunately stagnated for males at 57.5 years. Possible reasons for this trend could be continued high levels of life style diseases (diabetes, hypertension, etc) caused by unhealthy eating habits, smoking and excessive alcohol consumption, and/or a lack of regular physical exercise etc.

Life expectancies for males and females in the Nauru compare with 78.8 and 82.7 years for males and females in New Zealand and in Australia it is 79.3 and 83.9 years. Therefore an average person in New

Zealand or Australia lives about 20 years longer than a Nauruan. Life expectancies at birth for Fiji are estimated at 63.8 and 67.7 and for Vanuatu's it is 69.6 years and 72.7 years for males and females.

7.1.4 International migration

Data on arrivals and departures remain incomplete for detailed migration analysis. As such the net migration level can only be crudely estimated by comparing intercensal population growth with estimated rates of natural increase for the same time period. While this method provides a reasonably robust indication of net migration, planners and policy-makers require more detailed and timelier information on the demographic makeup of opposing migration streams in order to make and implement realistic policy decisions. Hence, further improvements are needed to collect and process information on age, sex and nationality of all arriving and departing passengers in Nauru.

If improvements are proved to be impossible, an alternative would be to apply the proper demographic methodologies, by comparing the two nearest censuses, to calculate the desired population data. The disadvantage of this option is that this can only be done after the analysis of the latest census is completed. This exercise could prove more time consuming and costly than an efficient registration system that would provide regular and timely migration information.

Based on census data and vital statistics, the annual number of migrants for the period 2002-2006 was estimated at about -1,700 people (1,700 more people departed than arrived in Nauru). This is consistent with the fact that more than a thousand I-Kiribati and Tuvaluan nationals repatriated back to their home countries due to the crisis of the phosphate industry during this period.

International net migration during the period 2006-2011 was estimated at about -500 people during this 5-year period, but most of the movement probably took place during the beginning of the period when the economic crisis was still ongoing.

7.1.5 Population projections

Knowledge about the current size and structure of a country's population is needed for the formulation and implementation of policies and programmes in almost all areas of public life. Because policies are aimed at achieving goals in the future, knowledge about future population trends is required.

The population projection scenarios presented in this report point to a continuously growing population for Nauru during the next 40 years. According to the medium variant population projections prepared for this report, Nauru' population will increase to between 13-15 thousand people in 2030 and will increase to about 15-21 thousand people in 2050 depending on the level of migration. However, should the population continue to grow at its current level without any significant levels of emigration, the population will be 27 thousand people in 2050.

The population will age, with a decreasing proportion of young people aged 15 and younger, and an increase in people aged 60 and older.

The working age population (aged 15–59) will be about 7-9 thousand people in 2030, and could be more than 10 thousand in 2050. This compares to a current size of 6 thousand people.

The school age population aged 7-18 years will increase from its current level of about 2,450 pupils to about 4,000 in 2025.

The needs of this larger population size and its different population subgroups should be considered in development plans in areas as diverse as health, education, employment, social welfare, people with special needs, environment, economic growth, climate change and disaster management to fulfill the aspirations of Nauru's communities.

7.2 Crosscutting issues

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7.2.1 The environment

Careful use of terrestrial and marine resources forms the basis of a sustainable and healthy life for all Nauruan. As such, maintaining a healthy and sustainable living environment should be a top priority for the government and its people. Apart from providing a pleasant living environment for the local people, conservation of the environment could foster a tourism industry in future.

The size and density of the population has a direct impact on water and energy consumption, sewage and waste production, general infrastructure such as roads, health and education facilities, the use of land, and the development of agriculture and marine resources.

High population densities put considerable stress on the environment. Consequently, there is an increasing demand for environmental health services, such as public garbage collection, a well-functioning sewage system, availability of hygienic toilets, and protection of secure and clean water sources.

In view of the devastation caused by the phosphate mining to large parts of Nauru's island, mainly its interior, it is of utmost importance to continue with rehabilitating Nauru's interior landscape, so that it can be used for activities such as accommodation, recreation or agriculture.

7.2.2 Renewable energy

The Government of Nauru is aiming for 50% of its energy supply to be met by renewable energy sources by 2015. According to the Pacific Islands Forum Secretariat, US$4million is being invested to install a solar power generation system and sea water desalination plant. The project is anticipated to save Nauru 60 tonnes of diesel per year, and to provide for 1.3% of the current energy demand of the country. PIFS says the project will also provide significant additional freshwater to Nauru households, which are heavily reliant on desalinated water for potable water. As a result of the project, the delivery frequency of water to

households is expected to increase from every four weeks, to every three weeks (PIFS Press release, 2012).

7.2.3 Households

Population growth not only contributes to an increased demand in water and energy supply, waste disposal, sewage connections and general infrastructure, but also to an increase in the number of households due to changes in average household size. Even if the population size remained stable, the number of households would still increase when households and/or family structures break up into smaller units, often described as the transition from extended family type households to nuclear family type living arrangements.

Households and families that are economically incapable of sustaining an acceptable and healthy lifestyle might need extra assistance from the government, since unhealthy living environments affect everyone in the long term. In particular, access to clean water, public electricity, an adequate public sewage system and waste disposal facilities should all be the minimum housing standard for Nauru's population. Specific areas of assistance include:

- *Dwellings*: More than half of all living quarters in Nauru were built more than 50 years ago, and 27% were built 21-50 years ago. Only 1% of dwellings were recently constructed – during the last 2 years before the 2011 census. More than half of all roofs, were in need of repair or replacement. This was also the case for almost half of all guttering, and a sizeable proportion of downpipes.

- *Water supply*: More than 80% of households reported that their water supply dries up at least sometimes or even frequently. During periods of water scarcity, 72% of households rely on Government seawater supply as source of their water, and 24% used ground water.

  More than two-third of households received their drinking water from a water dispatcher and/or desalination plant. An additional 29% used a rain catchment, 2% used bottled water, and a few households obtained their drinking water from a well. Almost one-third of households in Nauru had a water storage tank with a capacity of between 3,000-5,000 gallons, a quarter had of all households had a capacity of 5,000-10,000 gallons, and the rest had a capacity of less than 3,000 gallons. Fifteen percent of all Nauruan households did not have a water storage tank. Overall, 69% of all households used underground water for washing, bathing, kitchen use, or for gardening or other outdoor use.

7.2.4 Health services and well-being

The health status of each individual and his/her family members is probably one of the most important concerns people have. Therefore, the availability, accessibility, use and affordability of quality health care

and medical services are major issues of concern. Government and health officials need to address the challenges of health services and the health care system.

The small population size, and remoteness and isolation of Nauru inhibit the operation of state-of-the-art health services that require the employment of specialist personnel and the purchase and maintenance of specialized equipment. However resident medical staff needs to be sufficiently qualified to provide basic health care. An efficient referral service to the nearest health facility, together with regular visits by medical specialists is needed to ensure that peoples' health demands are met.

The population projections show that the population aged 60 and older will increase substantially in future. This requires strengthening of special services for the growing number of elderly people, including a pension scheme with retirement benefits, and specialized health care.

In working towards a healthier population, the following efforts should be made:

- ✓ Improve infant, child and maternal health by improving primary health care programmes;
- ✓ Improve emergency obstetric care to decrease neo natal mortality;
- ✓ Expand immunization programmes;
- ✓ Prevent HIV and AIDS, and other STIs by:

    - Increasing awareness and knowledge of safer sexual behaviours and practices by using appropriate language;
    - Targeting priority groups (youth, women and men, particularly aged 10–24);
    - Enhancing education programmes to encourage open discussions (between partners and their children) on issues of sexual behaviours;
    - Promoting and disseminating information outlining the advantages and proper use of condoms by men and women, with an emphasis on targeting male organizations;
    - Reviewing, developing, implementing and evaluating the effectiveness of appropriate policies;
    - Delaying young peoples' initial sexual activity;
    - Developing a well-planned media campaign throughout the year based on health promotion with regards to HIV and AIDS;
    - Ensuring protection of the rights of people living with HIV and AIDS;
    - Ensuring that people living with HIV and AIDS have free and unrestricted access to medical treatment, facilities and support services;
    - Ensuring that a reliable HIV and AIDS testing system is in place;
    - Establishing a voluntary, confidential system of HIV and AIDS testing with informed consent that includes pre and post test counseling;

- ✓ Address the increasing occurrence of Non Communicable Diseases (NCDs);
- ✓ Combat the prevalence of diabetes and heart disease;
- ✓ Promote healthy eating habits and food nutrition programmes;
- ✓ Advocate a general healthy life style including regular physical exercise;

- ✓ Discourage smoking and excessive alcohol consumption;
- ✓ Provide a hygienic and safe living environment;
- ✓ Improve the quality of drinking water;
- ✓ Distribute and promote the use of insecticide treated bednets as a way of combating malaria.

7.2.5 Disabilities

Nauru is a signatory to a United Nations convention to uphold the rights of people with disabilities; and is therefore obliged to:

"*Promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities and to promote respect for their inherent dignity.*"

While only 78 people reported a severe disability in Nauru, they constitute a vulnerable and disadvantaged group, and they are a target group in need of specialized medical assistance.

The government and community groups should do everything they can to meet their obligation as stated above. Further special facilities and resources in schools and work places are required to cater for the special needs of people with disabilities, and specialized education facilities are needed in the different provinces.

7.2.6 Education

Educational level is a key indicator of development and quality of life in a country. Education plays an important role in development through its links with demographic, as well as economic and social factors. In general, there is a close and complex relationship between education, fertility, morbidity, mortality and mobility: when couples are better educated, they tend to have fewer children, their children's health status improves, and their survival rates tend to increase. Higher levels of educational attainment also contribute to a better qualified workforce, higher wages, and better economic performance than for people who have little or no formal education and training.

The goal of an Educational system is to provide universal access to quality basic education for all children and improved access to relevant and demand oriented community, technical, vocational, and tertiary education and training. To achieve this, the cooperation of everyone in the community is paramount.

According to the 2011 Education Act, it is now compulsory for every person aged between 7-18 years of age to be in an educational institution in order to

- Provide full enrolment opportunity to all children of the age of 7-18 years on equitable basis;
- Achieve 100% enrolment rate for primary education.

School attendance has greatly improved compared to earlier censuses, and almost everyone older than 15 year of age is literate in Nauru. In general, females are doing better education-wise than males, which is a trend that can be observed in many countries in recent years.

However, while the vast majority (95%) of the population spoke Nauruan, only 19% of males and 33% of females were able to read and write in Nauruan fluently. In order to preserve the indigenous and very rare **Nauruan language**, much more needs to be done to teach reading and writing of the Nauruan language.

7.2.7 Economic activity and labour market

Economic activity and employment are shaped by the size of the working age population, the educational skill level of the labour force, and the economic resources available to a country.

Although a high percentage (64%) of Nauru's population aged 15 and older was economically active (in the labor force), only a relatively small proportion of (47%) received a regular paid income; this was 58% of males and 35% of females.

About 908 people were categorized as being unemployed, resulting in a total unemployment rate of 23%; 21% for males and 26% for females. The youth unemployment rate of the population aged 15-19 years was 70% and for people aged 20-24 years is was 36%.

Obviously every effort should be undertaken by the Government and the private sector to get the unemployed people back into work through schemes such as apprenticeships or voluntary work (*Clean & Green activities*).

According to projection results presented in this report, the working age population will increase substantially during the next years. The private and public sector needs to absorb an increasing number of job seekers in future and are encouraged to collaborate in developing innovative strategies that will promote economic diversification and growth.

7.2.8 Income substitution/generation

Additional household income can be generated through agricultural and fisheries activities.
Unfortunately only 13% of households maintained a kitchen garden and were involved in growing crops. Just over half of all households in Nauru were engaged in fishing activities such as fishing or collecting seafood on the ocean flat, the reef flat, the ocean (deep sea), on the reef, net fishing, or were involved in aquaculture. Fourteen percent of households were involved in noddy bird catching.

The involvement in agricultural and fisheries activities can be enhanced through offering training courses in maintaining gardens and growing crops, as well as teaching the use of fisheries techniques.

7.2.9 Communication and internet use

Existing research in telecommunications suggests that access can increase economic growth, attract foreign investment, improve market efficiencies, increase accessibility to health and education and empower women and others. The telecommunication sector is presumed to provide new opportunities and frontiers across businesses, social, economic and the political arena. An improvement in the infrastructure and facilities of telecommunications will have a direct effect on the well being of individuals in the country.

Examples where assistance is needed include:

- *Internet access*: although Internet is a significant mode of communication in modern day society and business operations, only just over one-quarter (28%) of all households were connected to the Internet. The main reason is the costs it involves: paying for the very expensive Internet is one, being able to afford a computer another. The government must encourage competition by inviting different internet providers to provide Internet access at affordable prices. A well functioning Internet system

    - offers online educational/learning opportunities (through for example the "one laptop per child programme");
    - makes medical advice available to medical staff in remote areas;
    - provides information, news and entertainment to the general public;
    - facilitates tourism operators and businesses.

- *Radio availability*: Only 39% of all households have a radio. The reason for this relatively low percentage of radio owners does not seem to be problems with reception rather than affordability and/or how radios and radio programmes are valued by the communities. One way to improve the usage of radio is to devoting air time not only to music but topics such as culture, sport, education, and health awareness programmes. Radios are crucial in disaster management for transmitting important information to affected communities.

7.2.10 Good governance

Good governance and effective policy-making should provide the framework for sustainable development within which the interrelationship of population, environment, and all possible socioeconomic aspects of a country can prosper cohesively.

In this regard it is important that policy-makers, planners, politicians and community leaders are aware of the needs and aspirations of their country's people in order to effectively provide for the specific needs of the population, and the different population sub-groups in the country. The government needs to know about its country's population structure, population processes and socioeconomic characteristics in order to plan for an adequate standard of living, and for a proper provision and distribution of goods and services.

GLOSSARY

Indicator	Definition
Age–dependency ratio	Number of people in the "dependent" age category (population younger than 15 years plus population 60 years and older) per 100 in the "economically productive ages" 15–59 years
Average age at (first) marriage (SMAM)	Approximation of average age at marriage, based on proportion of population never married (single)
Balance equation	Population growth = births – deaths + net migration
Child-woman ratio (CWR)	Number of children under age 5 per 1,000 women aged 15-49
Child mortality rate (1q5)	The probability of dying between age 1 and age 5
Crude birth rate (CBR)	Number of births per 1,000 population
Crude death rate (CDR)	Number of deaths per 1,000 population
Crude net migration rate	Rate of growth minus rate of natural increase
Employment–population ratio	Proportion of employed people in cash work (by a given age and sex), as part of the corresponding total number of people of the same age and sex
General fertility rate	Annual number of births per 1,000 women of childbearing age (15-49)
Infant mortality rate (IMR)	Number of infant deaths (children younger than 1 year) per 1,000 births
Institutions	Boarding schools, prisons, hospitals, hotels/hostels/guesthouses
Intercensal period	Time period between two censuses
Labour force	People employed (cash work plus subsistence work) and unemployed (excludes those not seeking employment)
Labour force participation rate	Proportion of people in the labour force (by a given age and sex), as part of the corresponding total number of people of the same age and sex

Language ability	see Literacy rate
Life expectancy at birth	Number of years a newborn baby can expect to live on average
Life expectancy at age 20	Number of additional years a 20 year old can expect to live on average
Adult literacy rate	Proportion of the population aged 15 years and older who are able to read and write a simple sentence in any language
Youth literacy rate	Proportion of the population aged 15-24 years who are able to read and write a simple sentence in any language
Mean age at childbearing	Average age of women when giving birth
Median age	The age at which exactly half the population is older and half is younger
Parity (average)	Average number of children per woman
Rate of growth (%)	Average annual population growth rate
Rate of natural increase	Crude birth rate (CBR) minus crude death rate (CDR)
Sex ratio	Number of males per 100 females
Sex ratio at birth	Number of male births per 100 female births
Teenage fertility rate	Number of births by women aged 15–19 per 1,000
Total fertility rate (TFR)	Average number of children per woman
Under 5 mortality (q5)	The probability of dying between birth and age 5

APPENDICES

Appendix 1: Population by 5-year age groups and sex, Nauru: 1992, 2002, 2006 and 2011

Age	1992			2002			2006			2011		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
0-4	846	755	1,601	656	624	1,280	580	604	1,184	868	739	1,607
5-9	742	748	1,491	726	647	1,374	586	537	1,124	572	585	1,157
10-14	579	545	1,124	647	579	1,226	579	511	1,090	545	504	1,049
15-19	414	436	850	508	513	1,021	539	512	1,051	477	440	917
20-24	410	403	813	506	466	971	518	519	1,037	516	515	1,031
25-29	427	426	853	402	393	795	438	389	827	491	494	985
30-34	377	393	770	379	357	736	330	317	648	413	375	789
35-39	360	378	738	379	373	752	304	242	545	308	305	613
40-44	299	275	574	295	334	630	252	279	531	246	242	488
45-49	185	156	341	239	259	497	221	249	470	238	258	497
50-54	180	107	287	164	177	341	165	172	337	176	208	384
55-59	121	81	202	96	89	185	97	93	190	133	147	280
60-64	80	55	135	80	47	127	43	37	80	66	89	155
65-69	29	44	73	31	27	59	20	25	44	23	33	56
70-74	13	26	40	18	19	37	22	21	43	17	18	35
75+	11	15	26	9	25	34	15	16	32	16	25	41
Total	5,075	4,844	**9,919**	5,136	4,929	**10,065**	4,710	4,523	**9,233**	5,105	4,979	**10,084**

Appendix 2: Number of registered births by sex and age of mother, Nauru: 2002 - 2011

Age of mother	2002			2003			2004			2005			2006		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
15-19	24	20	44	15	12	27	13	18	31	17	11	28	13	9	22
20-24	45	39	84	42	43	85	42	49	91	30	28	58	33	34	67
25-29	40	31	71	19	36	55	37	35	72	32	23	55	35	28	63
30-34	20	13	33	9	8	17	18	20	38	14	16	30	16	7	23
35-39	7	10	17	10	12	22	9	7	16	11	8	19	8	6	14
40-44	2	3	5	5	1	6	3	2	5	1	3	4	1	0	1
45-49	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Total	**138**	**117**	**255**	**100**	**112**	**212**	**122**	**131**	**253**	**105**	**89**	**194**	**106**	**84**	**190**

Age of mother	2007			2008			2009			2010			2011		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
15-19	11	11	22	15	16	31	14	16	30	19	11	30	22	18	40
20-24	22	37	59	35	29	64	49	45	94	58	52	110	69	57	126
25-29	27	19	46	33	29	62	36	49	85	50	54	104	57	54	111
30-34	17	14	31	11	16	27	25	11	36	28	22	50	22	33	55
35-39	5	0	5	14	5	19	10	9	19	8	17	25	17	16	33
40-44	4	4	8	1	2	3	6	3	9	1	2	3	3	2	5
45-49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**86**	**85**	**171**	**109**	**97**	**206**	**140**	**133**	**273**	**164**	**158**	**322**	**190**	**180**	**370**

Source: Nauru Civil Registration Office

Appendix 3: Comparison of TFR estimates derived by various methods, Nauru: 1992, 2002 and 2011

Year	Reported number of births during 1 year before census	Vital statistics	Own-children method	Arriaga Method, using 1 point in time	Arriaga Method, using 2 points in time	Trussell P/F Ratio Technique	Relational Gompertz method	2007 DHS
1992	4.5	4.3	4.3	5.7	4.6	5.9	5.6	4.4
2002	3.0	3.5	3.4	3.6	3.6	3.4	3.9	4.1
2011	4.2	4.2	4.3	3.8	3.8	3.9	3.8	3.4

2007 DHS: value 3.4 refers to 3-year period before 2007 survey; value 4.1 to the 5-9 year period before the survey, and value 4.4 to the 10-14 year period before the survey

Appendix 4: Comparison of empirical mortality rates to those from model life tables for males of the period 2002-2006

Age Group	Empirical m(x,n)	Implied Life Expectancy at Birth: United Nations Models					Coale-Demeny Models			
		Latin Am.	Chilean	So. Asian	Far East	General	West	North	East	South
0 - 1	0.0678	63.7	64.4	65.4	55.8	61.8	61.1	60.0	63.2	66.6
1 - 5	0.0004	e(0) > 80.0	76.6	e(0) > 80.0	74.2	78.4	74.1	77.1	72.9	77.9
5 - 10	0.0006	72.2	65.6	71.7	66.0	69.8	69.6	73.0	67.4	68.0
10 - 15	0.0007	67.1	62.8	63.6	64.3	65.8	67.0	70.3	65.3	65.3
15 - 20	0.0011	66.7	64.4	60.6	64.8	65.8	68.3	72.8	67.4	64.5
20 - 25	0.0039	55.0	53.3	41.0	55.0	54.2	56.8	61.0	54.3	53.9
25 - 30	0.0048	53.9	53.7	40.5	54.1	52.9	54.4	57.5	50.1	50.5
30 - 35	0.0073	48.4	50.8	35.8	50.7	48.6	49.0	49.3	42.2	43.8
35 - 40	0.0088	48.3	51.3	37.6	52.1	49.1	48.9	47.5	42.7	41.9
40 - 45	0.0146	40.2	45.8	31.8	49.0	43.2	41.9	38.6	34.7	33.1
45 - 50	0.0157	44.0	49.7	38.7	53.9	47.9	45.3	41.8	39.8	36.4
50 - 55	0.0340	23.2	33.2	22.6	44.0	31.4	30.4	25.3	20.9	< 20.0
55 - 60	0.0331	33.9	43.7	35.7	53.5	42.9	39.2	34.4	33.0	30.4
60 - 65	0.0389	39.7	50.2	46.6	61.1	50.4	46.4	39.7	41.8	39.3
65 - 70	0.0549	41.1	51.0	48.1	62.6	52.1	47.1	40.8	45.8	41.9
70 - 75										
75 - 80										
Average absolute deviation from the median										
Ages 0 to 10		5.4	4.1	4.9	6.1	5.5	4.4	5.7	3.2	3.8
Ages 10 and over		9.8	5.3	8.2	4.9	6.5	7.8	11.5	9.4	9.9
Ages 0 and over		12.6	7.8	12.9	**6.1**	9.0	10.1	13.6	12.4	13.6
Medn(0-10)-Medn(10+)		26.0	14.8	32.1	12.0	20.0	21.7	28.3	24.9	26.1

Software: MORTPAK for Windows (version 4.1), application COMPAR, Population Division, United Nations Secretariat

Appendix 5: Comparison of empirical mortality rates to those from model life tables for females of the period 2002-2006

Age Group	Empirical m(x,n)	Implied Life Expectancy at Birth: United Nations Models					Coale-Demeny Models			
		Latin Am.	Chilean	So. Asian	Far East	General	West	North	East	South
0 - 1	0.0437	71.5	74.2	73.4	66.3	70.0	67.2	67.1	69.7	74.6
1 - 5	0.0020	76.9	71.8	76.5	70.0	74.2	70.0	72.5	69.8	74.8
5 - 10	0.0003	78.5	73.8	76.9	73.2	76.7	74.4	76.3	73.6	74.2
10 - 15	0.0000	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	> 80.0
15 - 20	0.0004	74.4	73.5	71.6	74.0	74.2	74.6	77.5	73.7	73.3
20 - 25	0.0037	55.3	55.4	49.0	58.2	56.6	58.6	58.3	54.4	54.7
25 - 30	0.0041	56.7	56.6	48.7	59.7	57.5	59.2	59.2	55.5	54.9
30 - 35	0.0024	66.2	65.7	59.6	67.2	66.2	67.8	69.1	65.3	63.6
35 - 40	0.0085	49.9	50.5	39.6	54.5	50.7	50.0	49.2	45.1	42.9
40 - 45	0.0078	54.2	55.4	45.3	59.4	55.4	55.1	54.8	50.0	47.0
45 - 50	0.0142	42.7	46.3	34.3	53.2	45.9	42.6	40.4	36.0	32.3
50 - 55	0.0298	23.1	29.2	20.6	40.5	29.4	28.1	23.6	20.6	< 20.0
55 - 60	0.0330	29.8	36.1	31.0	47.4	36.8	33.0	30.2	30.0	24.8
60 - 65	0.0474	27.1	33.5	32.3	45.3	34.7	33.9	30.2	32.1	29.1
65 - 70	0.1080	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	< 20.0
70 - 75										
75 - 80										
Average absolute deviation from the median										
Ages 0 to 10		2.3	0.8	1.2	2.3	2.2	2.4	3.1	1.3	0.2
Ages 10 and over		16.2	14.2	14.7	11.5	14.3	15.6	17.1	16.3	17.0
Ages 0 and over		17.2	15.0	17.6	**11.4**	15.0	15.4	16.9	16.9	18.6
Medn(0-10)-Medn(10+)		24.8	20.8	34.0	13.7	21.1	17.4	20.4	22.2	29.6

Software: MORTPAK for Windows (version 4.1), application COMPAR, Population Division, United Nations Secretariat

Appendix 6: Comparison of empirical mortality rates to those from model life tables for males of the period 2007-2011

Age Group	Empirical m(x,n)	Implied Life Expectancy at Birth: United Nations Models					Coale-Demeny Models			
		Latin Am.	Chilean	So. Asian	Far East	General	West	North	East	South
0 - 1	0.0469	68.9	68.9	70.0	61.1	66.8	65.4	65.2	66.6	71.4
1 - 5	0.0011	76.6	71.1	77.3	69.1	73.8	70.3	73.0	69.0	74.1
5 - 10	0.0003	76.5	71.1	76.0	70.5	74.2	73.4	76.4	71.1	72.1
10 - 15	0.0014	58.6	54.0	54.2	57.4	57.9	59.9	64.1	56.4	56.9
15 - 20	0.0012	65.7	63.4	59.4	64.0	64.9	67.5	72.0	66.5	63.7
20 - 25	0.0012	70.1	67.9	61.8	67.3	68.5	70.3	75.3	69.8	66.9
25 - 30	0.0017	68.4	67.1	59.9	65.8	66.7	67.5	72.4	66.8	64.4
30 - 35	0.0043	58.0	59.0	47.5	58.1	57.4	58.3	61.2	54.7	54.7
35 - 40	0.0060	56.0	57.8	46.7	57.7	56.1	56.2	56.8	52.1	50.8
40 - 45	0.0088	52.8	56.2	45.6	57.7	54.4	53.8	52.5	49.3	47.5
45 - 50	0.0203	35.8	43.0	30.3	48.4	40.7	38.1	34.4	31.2	28.2
50 - 55	0.0367	20.4	30.5	e(0) < 20.0	41.7	28.5	28.1	23.1	e(0) < 20.0	< 20.0
55 - 60	0.0354	30.6	40.9	32.4	51.4	39.9	36.7	32.2	29.9	27.9
60 - 65	0.0695	e(0) < 20.0	21.9	e(0) < 20.0	40.1	20.8	24.3	21.0	e(0) < 20.0	< 20.0
65 - 70	0.0961	e(0) < 20.0	e(0) < 20.0	e(0) < 20.0	39.9	e(0) < 20.0	23.3	21.9	e(0) < 20.0	20.9
70 - 75										
75 - 80										
Average absolute deviation from the median										
Ages 0 to 10		2.6	0.7	2.4	3.1	2.5	2.7	3.7	1.5	0.9
Ages 10 and over		16.4	13.4	13.4	7.6	13.9	14.6	18.1	16.3	16.1
Ages 0 and over		16.6	13.5	16.2	**7.9**	14.2	14.3	17.1	16.3	16.9
Medn(0-10)-Medn(10+)		22.2	16.0	29.9	11.6	18.5	15.3	18.4	18.3	22.9

Software: MORTPAK for Windows (version 4.1), application COMPAR, Population Division, United Nations Secretariat

Appendix 7: Comparison of empirical mortality rates to those from model life tables for females of the period 2007-2011

Age Group	Empirical m(x,n)	Implied Life Expectancy at Birth: United Nations Models					Coale-Demeny Models			
		Latin Am.	Chilean	So. Asian	Far East	General	West	North	East	South
0 - 1	0.0315	75.7	77.7	76.9	70.8	74.1	70.2	70.8	72.5	77.8
1 - 5	0.0008	e(0) > 80.0	77.9	e(0) > 80.0	76.0	79.3	74.1	76.2	74.2	78.9
5 - 10	0.0007	73.1	66.9	71.4	66.9	71.2	69.9	72.5	68.8	69.1
10 - 15	0.0000	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	> 80.0
15 - 20	0.0004	74.4	73.5	71.6	74.0	74.2	74.6	77.5	73.7	73.3
20 - 25	0.0000	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	e(0) > 80.0	> 80.0
25 - 30	0.0036	58.4	58.3	50.7	61.1	59.1	61.1	61.5	57.6	56.9
30 - 35	0.0041	59.4	59.3	51.5	61.7	59.9	61.3	61.5	57.7	56.0
35 - 40	0.0030	66.8	66.2	59.6	68.0	66.5	67.7	68.2	65.2	62.7
40 - 45	0.0109	46.2	48.3	36.4	53.3	47.9	46.6	45.5	40.4	37.7
45 - 50	0.0112	49.8	52.5	41.9	58.3	52.4	49.7	47.4	43.7	39.6
50 - 55	0.0265	27.4	33.4	24.8	44.3	33.7	31.7	27.1	24.4	21.6
55 - 60	0.0302	33.8	39.7	34.9	50.4	40.6	36.1	33.1	33.2	27.7
60 - 65	0.0195	62.9	64.7	64.9	69.7	65.9	65.4	60.8	63.7	57.5
65 - 70	0.0720	22.8	30.1	28.2	40.1	30.0	30.4	30.1	32.9	30.1
70 - 75										
75 - 80										
Average absolute deviation from the median										
Ages 0 to 10		2.3	3.7	2.9	3.0	2.7	1.4	1.8	1.8	3.3
Ages 10 and over		15.4	13.4	15.9	10.5	13.6	14.5	15.4	15.7	16.5
Ages 0 and over		15.5	13.4	17.1	**9.9**	13.4	13.3	14.7	15.0	16.8
Medn(0-10)-Medn(10+)		16.7	19.0	25.8	9.4	14.6	9.0	11.4	14.8	21.3

Software: MORTPAK for Windows (version 4.1), application COMPAR, Population Division, United Nations Secretariat

Appendix 8: Indirect estimation of infant and childhood mortality from data on children ever born children surviving – Males: 2011

Age Group of Woman	Corresponding Mortality Indices: United Nations Models (Palloni-Heligman Equations) Reference Date	Latin Am	Chilean	So. Asian	**Far East**	General	Coale-Demeny Model (Trussell Equations) Reference Date	West	North	East	South
Infant mortality rate											
15 - 20	Sep 2010	0.03	0.033	< .032	0.03	0.03	Nov 2010	0.032	0.031	0.032	< .036
20 - 25	Jul 2009	0.032	0.035	0.032	**0.032**	0.032	Jun 2009	0.032	0.03	0.034	< .036
25 - 30	Oct 2007	0.037	0.043	0.038	0.038	0.038	Jun 2007	0.038	0.034	0.041	0.041
30 - 35	Jun 2005	0.029	0.033	< .032	0.029	0.029	Dec 2004	0.029	0.027	0.031	< .036
35 - 40	Oct 2002	0.03	0.035	< .032	0.031	0.031	Apr 2002	0.03	0.027	0.033	< .036
40 - 45	Oct 1999	< .028	< .031	< .032	0.018	< .024	Jun 1999	0.017	< .017	0.019	< .036
45 - 50	Apr 1996	0.036	0.043	0.038	0.035	0.036	Jul 1996	0.033	0.029	0.038	0.042
Probability of dying between ages 1 and 5											
15 - 20	Sep 2010	0.009	0.004	< .008	0.007	0.007	Nov 2010	0.008	0.012	0.004	< .005
20 - 25	Jul 2009	0.009	0.004	0.009	0.008	0.008	Jun 2009	0.008	0.011	0.005	< .005
25 - 30	Oct 2007	0.012	0.006	0.011	0.011	0.011	Jun 2007	0.011	0.014	0.007	0.006
30 - 35	Jun 2005	0.008	0.004	< .008	0.007	0.007	Dec 2004	0.007	0.008	0.004	< .005
35 - 40	Oct 2002	0.009	0.004	< .008	0.007	0.008	Apr 2002	0.007	0.009	0.005	< .005
40 - 45	Oct 1999	< .008	< .004	< .008	0.003	< .005	Jun 1999	0.002	< .004	0.002	< .005

Software: MORTPAK for Windows (version 4.1), application CEBCS, Population Division, United Nations Secretariat

Appendix 9: Indirect estimation of infant and childhood mortality from data on children ever born children surviving – Females: 2011

Age Group of Woman	Corresponding Mortality Indices: United Nations Models (Palloni-Heligman Equations) Reference Date	Latin Am	Chilean	So. Asian	**Far East**	General	Coale-Demeny Model (Trussell Equations) Reference Date	West	North	East	South
Infant mortality rate											
15 - 20	Aug 2010	0.093	0.103	0.092	0.094	0.094	Jul 2010	0.096	0.093	0.098	0.09
20 - 25	Jun 2009	< .028	< .031	< .032	**< .015**	< .024	Jun 2009	< .013	< .017	< .016	< .036
25 - 30	Jan 2008	< .028	< .031	< .032	0.023	< .024	Oct 2007	0.024	0.022	0.025	< .036
30 - 35	Apr 2006	< .028	< .031	< .032	0.016	< .024	Dec 2005	0.017	< .017	0.017	< .036
35 - 40	Apr 2004	< .028	< .031	< .032	0.025	0.025	Oct 2003	0.025	0.024	0.028	< .036
40 - 45	Oct 2001	< .028	< .031	< .032	0.017	< .024	May 2001	0.017	< .017	0.019	< .036
45 - 50	Jul 1998	< .028	0.032	< .032	0.027	0.028	Jun 1998	0.026	0.024	0.03	< .036
Probability of dying between ages 1 and 5											
15 - 20	Aug 2010	0.057	0.026	0.05	0.049	0.05	Jul 2010	0.047	0.065	0.032	0.041
20 - 25	Jun 2009	< .008	< .004	< .008	< .002	< .005	Jun 2009	< .002	< .004	< .002	< .005
25 - 30	Jan 2008	< .008	< .004	< .008	0.005	< .005	Oct 2007	0.005	0.006	0.003	< .005
30 - 35	Apr 2006	< .008	< .004	< .008	0.003	< .005	Dec 2005	0.002	< .004	0.001	< .005
35 - 40	Apr 2004	< .008	< .004	< .008	0.005	0.005	Oct 2003	0.005	0.007	0.004	< .005
40 - 45	Oct 2001	< .008	< .004	< .008	0.003	< .005	May 2001	0.003	< .004	0.002	< .005

Software: MORTPAK for Windows (version 4.1), application CEBCS, Population Division, United Nations Secretariat

Appendix 10: Indirect estimation of male adult mortality from orphanhood data, Nauru: 2011

Age Group of Respondent	Reference Date	United Nations Models						Coale-Demeny Models		
		Latin Am	Chilean	So. Asian	**Far East**	General	West	North	East	South
Life Expectancy at Age Twenty										
15- 20	Sep 2000	43.6	43.3	41.9	42.9	42.9	43.3	43.9	42.5	42.8
20- 25	Sep 1997	39.7	39.7	38.7	**39.8**	39.3	39.7	40.0	38.8	38.6
25- 30	Oct 1995	37.9	38.2	37.4	38.7	38.0	38.1	38.1	37.2	36.7
30- 35	Jun 1995	35.6	36.1	35.9	37.0	36.0	36.0	35.9	35.5	34.5
35- 40	Dec 1994	36.7	37.2	38.0	38.2	37.3	37.2	36.9	37.1	36.2
40- 45	Nov 1995	36.5	37.2	38.4	38.0	37.2	37.0	37.1	37.8	36.9
45- 50	XXXX	33.2	34.1	36.0	35.0	34.2	34.4	35.0	36.2	35.8

Software: MORTPAK for Windows (version 4.1), application ORPHAN, Population Division, United Nations Secretariat

Appendix 11: Indirect estimation of female adult mortality from orphanhood data, Nauru: 2011

Age Group of Respondent	Reference Date	United Nations Models						Coale-Demeny Models		
		Latin Am	Chilean	So. Asian	**Far East**	General	West	North	East	South
Life Expectancy at Age Twenty										
15- 20	Apr 2002	49.1	48.6	47.0	48.0	48.1	48.3	49.3	47.5	48.1
20- 25	May 2000	49.6	49.5	48.0	**49.3**	48.9	48.8	49.6	48.0	48.4
25- 30	May 1998	48.4	48.4	47.1	48.5	48.1	47.7	48.2	46.9	46.9
30- 35	Apr 1997	46.4	46.6	46.0	47.1	46.4	46.1	46.2	45.4	44.9
35- 40	Sep 1995	44.3	44.5	44.8	45.0	44.5	44.2	43.9	43.8	43.1
40- 45	Apr 1995	40.7	41.3	42.1	41.8	41.3	40.9	40.8	41.4	40.6
45- 50	XXXX	41.2	41.8	43.2	42.3	41.9	41.5	41.5	42.7	42.2

Software: MORTPAK for Windows (version 4.1), application ORPHAN, Population Division, United Nations Secretariat

Appendix 12: Registered number of deaths by age and sex, Nauru: 2002-2011

Age Group	2002			2003			2004			2005			2006			2007			2008			2009			2010			2011		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
0	3	7	10	12	6	18	10	2	12	5	4	9	8	5	13	7	5	12	4	5	9	10	6	16	10	2	12	5	5	10
1-4	-	2	2	-	2	2	1	-	1	-	-	-	-	1	1	1	1	2	1	1	2	-	-	-	-	-	-	1	-	1
5-9	1	-	1	1	-	1	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	-	-	-	1	1	2	-	-	-
10-14	1	-	1	-	-	-	1	-	1	-	-	-	-	-	-	2	-	2	-	-	-	1	-	1	-	-	-	1	-	1
15-19	-	1	1	-	-	-	1	-	1	2	-	2	-	-	-	-	-	-	2	-	2	1	1	2	-	-	-	-	-	-
20-24	3	-	3	2	2	4	2	2	4	1	4	5	2	1	3	-	-	-	1	-	1	-	-	-	-	-	-	2	-	2
25-29	1	1	2	2	-	2	2	1	3	1	4	5	4	2	6	1	-	1	-	1	1	-	1	1	2	2	4	1	4	5
30-34	4	3	7	3	1	4	3	-	3	1	-	1	2	-	2	3	2	5	2	2	4	1	-	1	1	-	1	1	3	4
35-39	5	4	9	1	3	4	3	1	4	5	1	6	1	4	5	2	1	3	3	-	3	2	2	4	1	-	1	1	1	2
40-44	4	1	5	3	3	6	8	2	10	2	4	6	3	2	5	3	2	5	1	7	8	2	2	4	3	3	6	2	-	2
45-49	7	4	11	5	2	7	1	-	1	2	7	9	3	5	8	7	4	11	5	3	8	4	1	5	4	3	7	3	3	6
50-54	5	4	9	2	4	6	5	4	9	11	7	18	5	7	12	6	6	12	6	4	10	5	3	8	7	4	11	7	8	15
55-59	4	1	5	1	2	3	2	4	6	4	2	6	5	6	11	2	4	6	5	3	8	2	3	5	4	6	10	7	2	9
60-64	2	2	4	3	2	5	2	3	5	1	2	3	4	1	5	3	-	3	3	1	4	3	-	3	8	1	9	2	4	6
65-69	2	4	6	-	3	3	1	3	4	1	1	2	3	3	6	1	4	5	1	4	5	4	-	4	2	-	2	2	2	4
70+	3	12	15	1	10	11	4	7	11	4	4	8	5	5	10	3	4	7	12	6	18	2	1	3	3	1	4	6	2	8
Total	**45**	**46**	**91**	**36**	**40**	**76**	**46**	**29**	**75**	**40**	**40**	**80**	**45**	**43**	**88**	**41**	**33**	**74**	**46**	**38**	**84**	**37**	**20**	**57**	**46**	**23**	**69**	**41**	**34**	**75**

Source: Nauru Civil Registration Office

Appendix 13: Abridged life table for males, Nauru: 2002-2006

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.0536	0.0514	100,000	5,140	95,838	0.9498	5,752,121	**57.5**
1	0.0004	0.0016	94,860	150	379,065	0.9956	5,656,283	59.6
5	0.0006	0.0030	94,710	288	472,830	0.9969	5,277,218	55.7
10	0.0007	0.0033	94,422	307	471,341	0.9947	4,804,388	50.9
15	0.0015	0.0073	94,115	686	468,857	0.9893	4,333,047	46.0
20	0.0028	0.0141	93,428	1,317	463,848	0.9800	3,864,189	41.4
25	0.0053	0.0260	92,111	2,396	454,566	0.9701	3,400,341	36.9
30	0.0069	0.0339	89,715	3,045	440,963	0.9587	2,945,775	32.8
35	0.0100	0.0489	86,670	4,242	422,746	0.9444	2,504,812	28.9
40	0.0129	0.0626	82,428	5,160	399,240	0.9209	2,082,066	25.3
45	0.0203	0.0966	77,268	7,464	367,680	0.8899	1,682,826	21.8
50	0.0267	0.1250	69,804	8,725	327,206	0.8560	1,315,146	18.8
55	0.0361	0.1657	61,079	10,118	280,097	0.8226	987,940	16.2
60	0.0424	0.1916	50,960	9,762	230,396	0.7861	707,843	13.9
65	0.0549	0.2415	41,198	9,948	181,119	0.6207	477,447	11.6
70	0.1055	1.0000	31,250	31,250	296,328		296,328	9.5

Appendix 14: Abridged life table for females, Nauru: 2002-2006

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.0354	0.0344	100,000	3,440	97,087	0.9628	5,822,417	**58.2**
1	0.0020	0.0079	96,560	762	384,310	0.9942	5,725,330	59.3
5	0.0003	0.0017	95,798	162	478,584	0.9992	5,341,020	55.8
10	0.0000	0.0000	95,636	0	478,180	0.9999	4,862,436	50.8
15	0.0000	0.0002	95,636	15	478,143	0.9952	4,384,256	45.8
20	0.0019	0.0095	95,621	908	475,835	0.9866	3,906,113	40.8
25	0.0035	0.0173	94,713	1,635	469,478	0.9800	3,430,278	36.2
30	0.0046	0.0228	93,078	2,120	460,091	0.9746	2,960,800	31.8
35	0.0057	0.0282	90,958	2,564	448,382	0.9608	2,500,709	27.5
40	0.0104	0.0506	88,395	4,470	430,798	0.9371	2,052,327	23.2
45	0.0158	0.0759	83,925	6,374	403,689	0.9030	1,621,528	19.3
50	0.0255	0.1199	77,551	9,296	364,514	0.8548	1,217,839	15.7
55	0.0381	0.1741	68,255	11,881	311,572	0.7891	853,325	12.5
60	0.0586	0.2554	56,374	14,399	245,873	0.6721	541,754	9.6
65	0.1080	0.4253	41,975	17,852	165,246	0.4415	295,880	7.0
70	0.1847	1.0000	24,123	24,123	130,634		130,634	5.4

Appendix 15: Abridged life table for males, Nauru: 2007-2011

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.0408	0.0394	100,000	3,940	96,674	0.9598	5,752,300	**57.5**
1	0.0011	0.0042	96,060	407	383,237	0.9957	5,655,626	58.9
5	0.0003	0.0017	95,653	167	477,850	0.9956	5,272,388	55.1
10	0.0014	0.0071	95,487	680	475,733	0.9933	4,794,538	50.2
15	0.0013	0.0064	94,807	604	472,524	0.9934	4,318,805	45.6
20	0.0014	0.0068	94,203	640	469,414	0.9914	3,846,281	40.8
25	0.0021	0.0105	93,563	980	465,363	0.9858	3,376,868	36.1
30	0.0036	0.0180	92,583	1,667	458,747	0.9757	2,911,504	31.4
35	0.0062	0.0307	90,916	2,795	447,593	0.9593	2,452,757	27.0
40	0.0104	0.0509	88,121	4,485	429,394	0.9295	2,005,165	22.8
45	0.0191	0.0912	83,636	7,624	399,123	0.8851	1,575,770	18.8
50	0.0303	0.1410	76,013	10,716	353,274	0.8294	1,176,647	15.5
55	0.0457	0.2051	65,297	13,392	293,004	0.7652	823,373	12.6
60	0.0630	0.2722	51,905	14,130	224,199	0.6792	530,369	10.2
65	0.0961	0.3875	37,775	14,637	152,283	0.5026	306,170	8.1
70	0.1504	1.0000	23,138	23,138	153,887		153,887	6.7

Appendix 16: Abridged life table for females, Nauru: 2007-2011

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.0265	0.0259	100000	2590	97741	0.9732	6323469	**63.2**
1	0.0008	0.0032	97410	311	388856	0.9960	6225728	63.9
5	0.0007	0.0035	97099	339	484646	0.9980	5836872	60.1
10	0.0001	0.0005	96760	48	483677	0.9988	5352226	55.3
15	0.0004	0.0020	96711	193	483073	0.9988	4868550	50.3
20	0.0001	0.0005	96518	48	482491	0.9935	4385477	45.4
25	0.0036	0.0179	96470	1726	479356	0.9780	3902986	40.5
30	0.0041	0.0203	94744	1922	468825	0.9831	3423629	36.1
35	0.0030	0.0149	92822	1383	460925	0.9682	2954804	31.8
40	0.0109	0.0532	91439	4864	446259	0.9453	2493879	27.3
45	0.0112	0.0546	86575	4724	421827	0.9133	2047620	23.7
50	0.0265	0.1247	81850	10210	385274	0.8614	1625793	19.9
55	0.0302	0.1399	71641	10023	331875	0.8875	1240519	17.3
60	0.0195	0.0932	61618	5743	294537	0.8097	908644	14.7
65	0.0720	0.3073	55874	17171	238491	0.6116	614106	11.0
70	0.1030	...	38703	38703	375615	...	375615	9.7

Appendix 17: Brief explanation of a life table

A life table is used to simulate the lifetime mortality experience of a population. It does so by taking that population's age-specific death rates and applying them to a hypothetical population of 100,000 people born at the same time. For each year on the life table, death inevitably thins the hypothetical population's ranks until, in the bottom row of statistics, even the oldest people die.

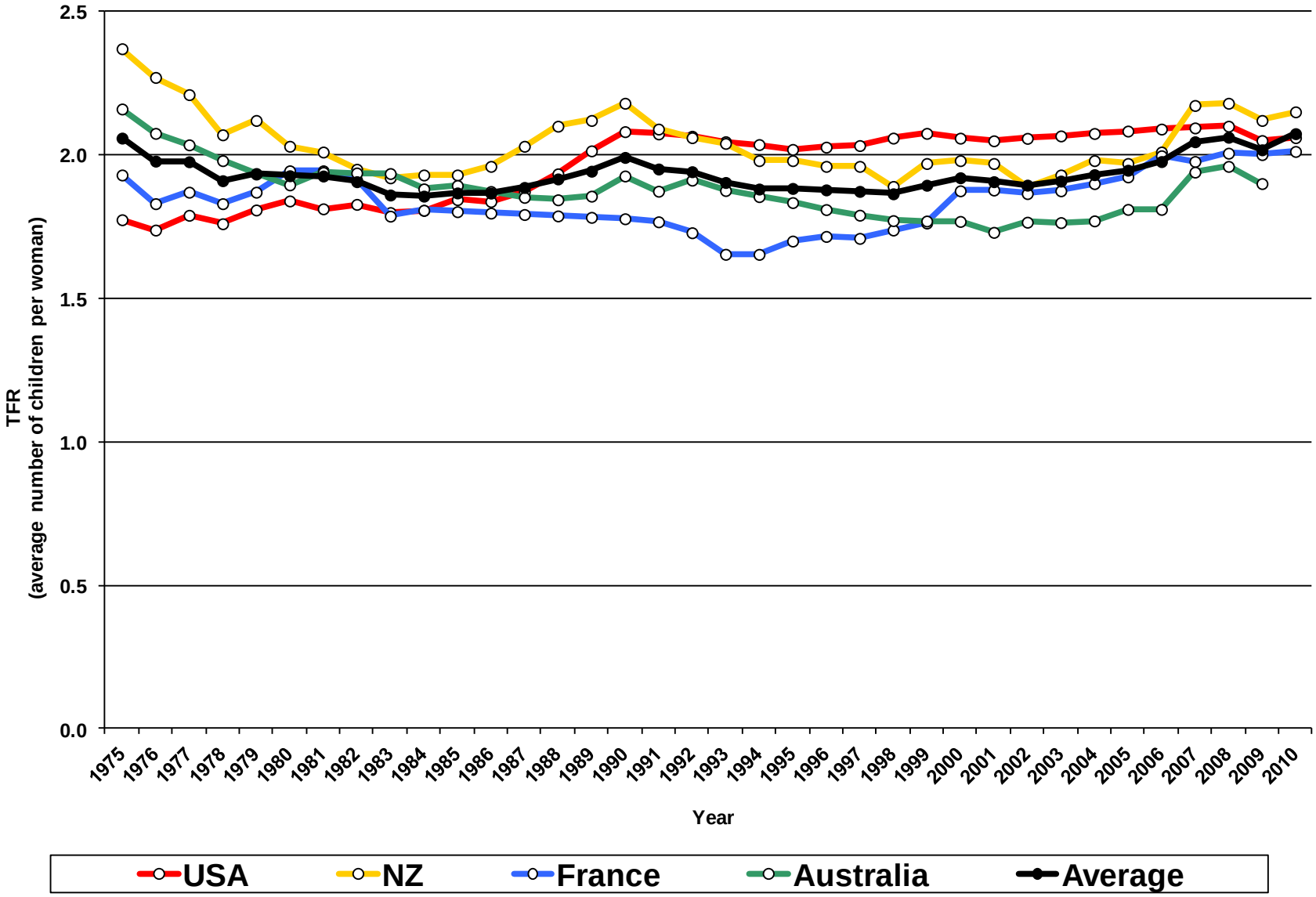
Column "m(x,n)" shows the proportion of each age group dying in each age interval. These data are based on the observed mortality experience of a population. Column "l(x)" shows the number of people alive at the beginning of each age interval, starting with 100,000 at birth. Column "d(x,n)" shows the number who would die within each age interval. Column "L(x,n)" shows the total number of person-years that would be lived within each age interval. Column "T(x)" shows the total number of years of life to be shared by the population in the age interval and in all subsequent intervals. This measure takes into account the frequency of deaths that will occur in this and all subsequent intervals. As age increases and the population shrinks, the total person-years that the survivors have to live necessarily diminish.

Life expectancy is shown in Column "e(x)" — the average number of years remaining for a person at a given age interval.

The first value in column "**e(x)"** represents **life expectancy at birth**.
The first value in column "**q(x,n)"** is an approximation of the **infant mortality rate (IMR)**.
The second value in column "**q(x,n)"** is an approximation of the **child mortality rate**.

m(x,n) = age-specific death rate
q(x,n) = the probability of dying between two exact ages
l(x) = the number of survivors at exact age x
d(x,n) = the number of deaths between two exact ages, x and x+n
L(x,n) = the number of person-years that would be lived within the indicated age interval (x and x+n) by the cohort of 100,000 births assumed.
S(x,n) = probability of surviving between two exact ages, x and x+n
T(x) = total number of person-years that would be lived after the beginning of the indicated age interval by the cohort of 100,000 births assumed.
e(x) = expectation of life from age x

Appendix 18: Level of TFR of Australia, France, New Zealand, and the USA since 1975



Appendix 19: Models for mortality improvement. Quinquennial gains in life expectancy at birth according to initial level of life expectancy

Initial life expectancy level (years)	pace of mortality improvement									
	Very fast		Fast		Medium		Slow		Very slow	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
40.0 - 42.5	2.5	2.6	2.1	2.3	1.9	2.0	1.3	1.4	1.1	1.1
42.5 - 45.0	2.8	3.0	2.4	2.5	2.0	2.1	1.4	1.5	1.1	1.2
45.0 - 47.5	3.0	3.1	2.5	2.6	2.1	2.2	1.8	1.9	1.2	1.3
47.5 - 50.0	3.0	3.2	2.6	2.7	2.2	2.3	1.8	1.9	1.3	1.4
50.0 - 52.5	3.2	3.4	2.7	2.9	2.3	2.4	1.9	2.0	1.4	1.5
52.5 - 55.0	3.6	3.7	2.7	3.0	2.4	2.6	2.0	2.0	1.5	1.7
55.0 - 57.5	3.7	3.7	2.6	3.0	2.4	2.6	2.0	2.0	1.5	1.8
57.5 - 60.0	3.8	4.0	2.6	3.0	2.4	2.6	2.0	2.0	1.5	1.8
60.0 - 62.5	3.4	3.8	2.5	3.0	2.2	2.6	1.7	2.0	1.0	1.7
62.5 - 65.0	3.2	3.6	2.3	2.8	1.9	2.4	1.5	2.0	0.9	1.5
65.0 -67.5	3.2	3.5	2.0	2.6	1.6	2.3	1.0	1.8	0.7	1.0
67.5 - 70.0	2.0	3.3	1.5	2.6	1.2	2.1	1.0	1.5	0.6	1.0
70.0 - 72.5	1.5	3.0	1.2	2.0	1.0	1.8	0.8	1.2	0.5	0.8
72.5 - 75.0	1.3	2.0	1.0	1.5	0.9	1.2	0.8	0.9	0.5	0.8
75.0 - 77.5	1.1	1.8	0.8	1.2	0.6	1.0	0.5	0.8	0.5	0.7
77.5 - 80.0	1.0	1.6	0.5	1.0	0.5	0.9	0.4	0.7	0.4	0.5
80.0 - 82.5	0.9	1.4	0.5	0.8	0.5	0.6	0.4	0.5	0.4	0.5
82.5 - 85.0	0.8	1.3	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.4
85.0 - 87.5	0.7	1.3	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2
87.5 - 90.0	0.6	1.2	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2
90.0 - 92.5	0.6	0.8	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2

Source: *Table Vi.6. Models for mortality improvement: Quinquennial gains in Life Expectancy at Birth according to initial level of Life Expectancy* (1995. United Nations. World Population Prospects. NewYork: United Nations. 886 p

Appendix 20: The demographic transition

According to the theory of demographic transition, over time all countries will undergo change from high rates of births and deaths to low rates of births and deaths. This transition process is usually closely associated with economic, social and scientific developments. This is assumed to happen in four distinct stages:

Stage 1: High birth rate, high death rate → little or no population growth
Stage 2: High birth rate, falling death rate → high growth
Stage 3: Declining birth rate, relatively low death rate → slowed growth
Stage 4: Low birth rate, low death rate → very low growth

Historically, high levels of births and deaths kept most populations from growing rapidly through time. In fact, many populations not only failed to grow but also completely died out when birth rates did not compensate for high death rates (**stage 1**). There are few populations/communities left today at stage 1.

Death rates eventually fell as living conditions, nutrition and public health improved. The decline in mortality usually preceded the decline in fertility, resulting in population growth during the transition period (**stage 2**). In Europe and other industrialised countries, death rates fell slowly. With the added benefit of medical advances, death rates fell more rapidly in the countries that began the transition in the 20th century. These are/were primarily developing countries. Their death rates often fell much faster than in European countries because they benefited from Western inventions and innovations.

In general, fertility rates fell neither as quickly nor as dramatically as death rates, and thus populations grew rapidly.

Stage 3 is characterized by falling birth rates, which occur for many reasons and vary from country to country and population to population. A decrease in birth rates may result from: a transition from a non-monetary to a monetary economy, urbanization, a change in values from a community emphasis to individualism, increasing emphasis on consumerism, improved education, availability of (modern) family planning methods (i.e. contraceptives), greater involvement of women in the workplace, rising cost of living, rising cost of raising children, and preferences in how people want to spend their time.

The demographic transition is regarded as completed when both birth and death rates have reached a low and stable level (**stage 4**). As a result, population growth is very low.

Originally, the theory of demographic transition included only the four stages described above. There is now another stage, the **post-transition period** (although it is uncertain whether all countries will reach this stage).

Post-transition period: Very low birth rate, low death rate → negative growth

When fertility falls to very low levels and stays there for a protracted period, a slow rate of population growth can turn into a negative one, resulting in a population decrease. Many countries in Europe and some in Asia now have TFRs well below two children per woman. The TFRs of the Republic of Korea, Ukraine, Czech Republic, Slovakia, Slovenia, Republic of Moldova, Bulgaria, and Belarus — all about 1.2 — are among the world's lowest, and those of several other countries were not far behind. The TFRs of Macao and Hong Kong were even less than 1 child per woman on average. Many of the factors that lowered fertility in the first place — greater involvement of women in the workplace, rising cost of living, and preferences in how people want to spend their time — appear to be keeping fertility rates very low.

While the theory of demographic transition describes the population history of western Europe quite well, for many reasons developing countries do not always exhibit the same patterns of change. In some cases early contact with outside societies resulted in local epidemics, as groups succumbed to diseases against which they had no natural immunity, resulting in increased death rates. When health conditions improved as a result of the application of new and efficient disease control technologies, death rates declined, while birth rates sometimes increased. This combination of factors produced population growth rates in today's developing countries that are much higher than ever experienced in pre-industrial western Europe.

Stylised graph of the European demographic transition

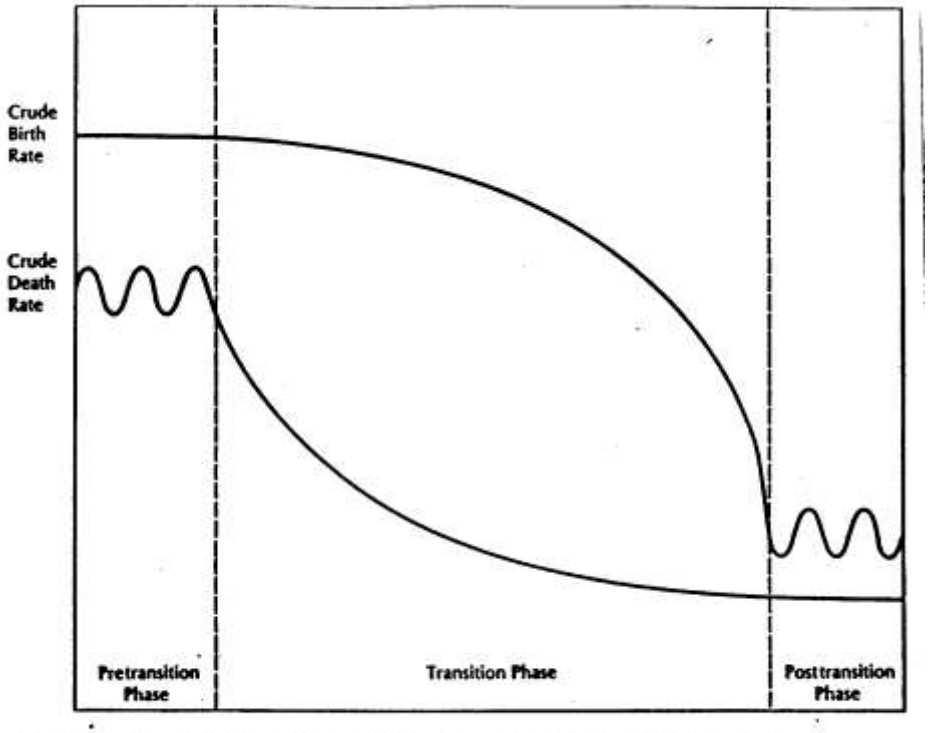
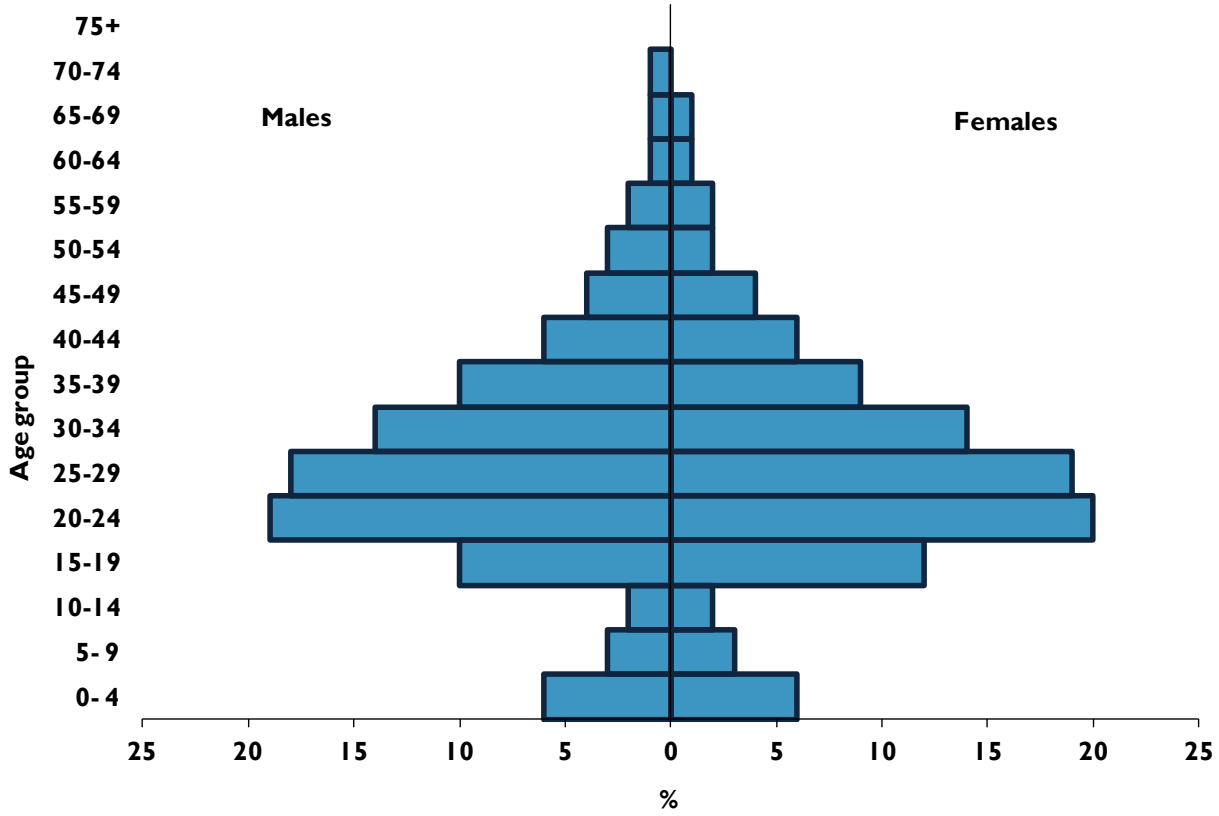


Figure 3–2 A SIMPLIFIED DIAGRAM OF THE EUROPEAN DEMOGRAPHIC TRANSITION
Source: Ansley J. Coale, 1974, p. 49.

Appendix 21: UN migration model: Family migration



Source: UN Population Division, New York, USA

ENDNOTES

[i] Estimating child mortality from information on children ever born and children surviving:
Brass (1964, United Nations 1983) developed a procedure to convert proportions of dead children experienced by women in age groups 15-19, 20-24, et cetera into estimates of the probability of a child dying ($_xq_0$) before attaining certain exact age (i.e. before ages 1, 2, 3, 5, 10, 15 and 20). He found that the reported proportions of dead children are primarily a function of the age pattern of fertility of women, and more specifically of the mean age at childbearing. Depending on the mean age at childbearing in the population, a set of multipliers was derived to facilitate conversion of observed proportions of dead children in each age group of women into life table probabilities of dying. Later, Coale and Trussell (1974) derived new sets of multipliers using a wider range of empirical evidence to underpin the values that multipliers take on. The assumption of the Brass method of constant fertility and mortality can be relaxed if the rate of mortality decline is known and more or less constant over time. If so, the different probabilities of dying that are estimated can be exactly located in historical time so that a series of estimates of the IMR and, by extrapolation, e(0) can be deduced. It has been found that the probabilities of dying $_2q_0$, $_3q_0$ and $_5q_0$ are most reliable and these values are generally taken to estimate the mortality in early childhood, notably the IMR.

[ii] Estimating adult mortality from orphanhood data:
Brass (1974, United Nations 1983) developed a method whereby the reported proportions of respondents in two contiguous five-year age groups reporting that their mother was still alive at the time of the interview are converted into conditional probabilities of surviving from age 25 to age 35, 40, 45,…, et cetera. Similarly, but with a different age range because of the different age range of the reproductive life of men, conditional probabilities of survival of fathers are estimated from age 32.5 to 42.5, 47.5, 52.5,…, et cetera or from age 37.5 to 47.5, 52.5, 57.5,…, et cetera depending on the local situation.

For each five-year age group the reported proportions of respondents with a surviving mother or father is multiplied by a particular factor. Factors are based on outcomes of simulation studies using particular model mortality and fertility schedules. Hill and Trussell (1977) and Timaeus (1992) refined Brass' original method. The method assumes that men and women who do not have children have the same mortality characteristics as those who do. In situations where mortality levels change and the extent of change is known, the probabilities of survival provided can be computed as referring to a particular time in the past. Manual X of the United Nations (1983) discusses other assumptions of the method.