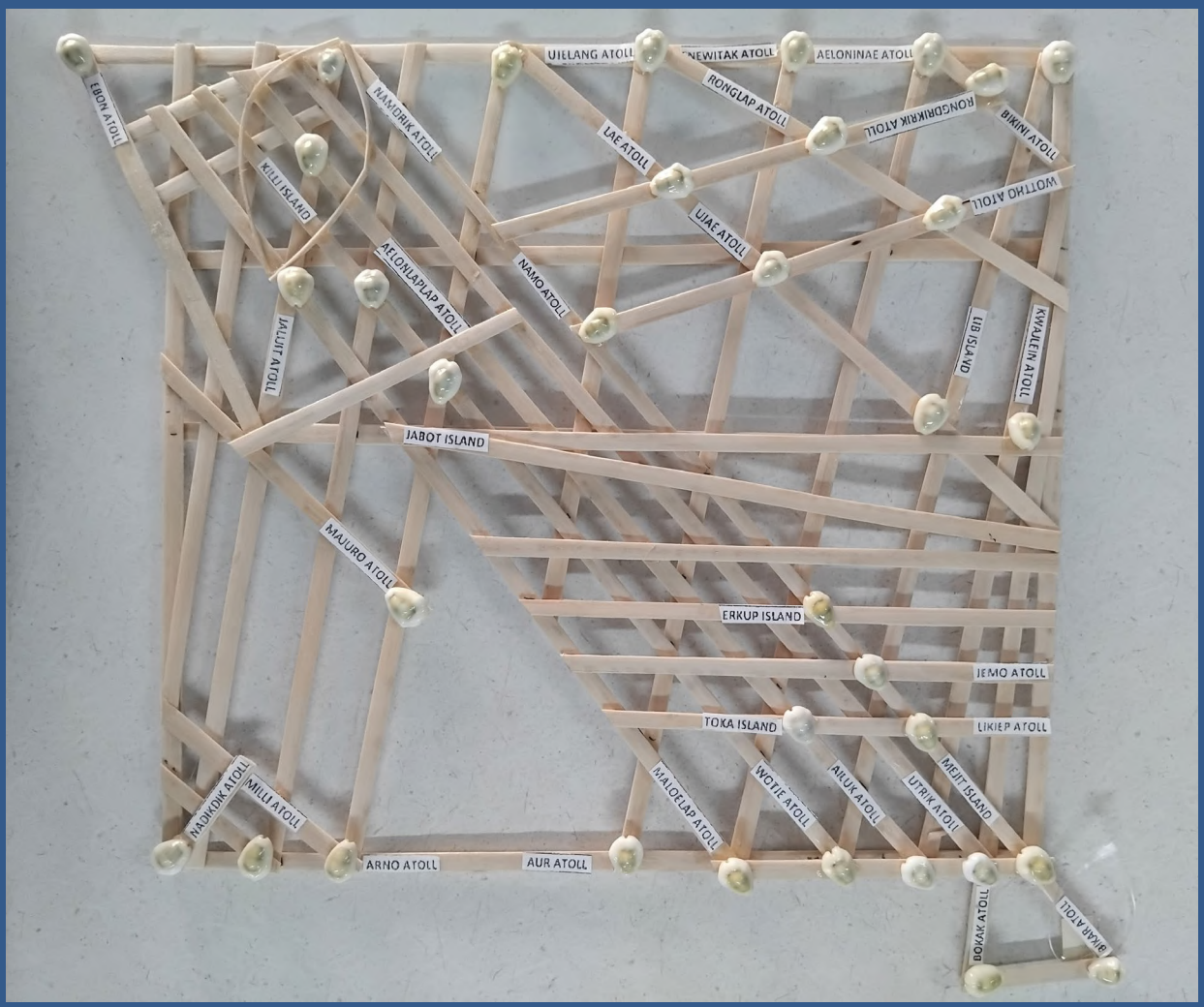
Pacific Community
Communauté du Pacifique

REPUBLIC OF THE MARSHALL ISLANDS 2021 CENSUS ON POPULATION AND HOUSING

ANALYTICAL REPORT



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Pacific Community
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1. Content

ABBREVIATIONS AND ACRONYMS

ASFR	age-specific fertility rate
BTF	Brass method refined by Trussell (1975) and Feeny (1976)
EPPSO	Economic Policy, Planning and Statistics Office of the Republic of the Marshall Islands
FSM	Federated States of Micronesia
ILO	International Labour Organization
RMI	Republic of the Marshall Islands
RTLM	Brass method variant developed by Rajaratnam et al. (2010)
SMAM	Singulate mean age at marriage
TFR	total fertility rate
UN	United Nations
US	United States
USA	United States of America
WG	Washington Group on Disability Statistics

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FOREWORD

On August 24, 2021, the Republic of the Marshall Islands carried out its latest Population and Housing Census (PHC) following the United Nations principles and recommendations for conducting the 2020 round of censuses. Like most other nations, the Republic of the Marshall Islands conducts its national census every ten years. The latest exercise, which followed the 2011 census, is the country's 4th post-independence census and the first fully digital census, creating further a wide range of opportunities for the nation. Specifically, applying digital data collection technologies, near real-time data monitoring systems (through survey solutions) and harnessing the tools from geographic information systems enabled the country to collect and process the data in record time.

As with previous censuses, the 2021 census collected data on various items, including demographic, social and economic statistics, to support development efforts and track key sectoral, national, regional, and global targets, including the 2030 Agenda for Sustainable Development. In addition, for the first time in the country, and among the very few in the region, the 2021 census also collected data on food security and the impacts of natural disasters and climate change and on knowledge and practice about prevention measures. The first report from the Census, containing basic tables and findings from the census, has already been published and made available for the public in 2023. The current volume is an analytical report that investigates the data further and provides key findings and implications for the country.

For example, this report showed that, for the first time in the country's modern history, the total population had declined substantially from those enumerated ten years earlier, representing a decline of 2.3% per annum compared to a much higher growth rate of 1.4% per annum recorded in 2011 census. Immigration has emerged as a significant demographic phenomenon, with those aged between 20–34 being the most affected as they seek educational and employment opportunities elsewhere.

The 2021 census also informs us that household income from all sources has increased in all locations between 2011 and 2021. Most significantly, the average household income in rural areas has quadrupled in ten years, rising from less than USD 5,000 in 2011 to about USD 20,000 in 2021. In 2021, about 2 out of every five households had access to the Internet, and about 89% of households owned at least one mobile phone, while the average household owned more than two mobile phones. The census further revealed that more than one in four households owned laptops.

While wealth and per capita household income have increased substantially in the past decade, many households remain directly affected by natural disasters and are still worried about getting enough to eat. About half of the 4,000 households that reported being food insecure responded that they had all eight insecurities as defined by global indicators. Just over half indicated that natural disasters had limited their income/livelihoods, with the rate slightly higher in rural areas. We also learn from the report that despite planning and mitigation strategies, about one in three Majuro and rural households responded that they had to move because of natural disasters. In addition to the financial cost of moving, there is often an emotional cost, impacting health, cultural assets, and connection to ancestral land. We need to consider these things when planning for resettlement schemes and facilitating voluntary internal migration to address the effects of climate change.

Efforts should also be made to support the vulnerable and address the gender gap within our society. As the analysis in the report suggests, *females* generally have low labour force participation and higher unemployment. When they get the chance to work in paid employment, they do so for shorter hours. As a result, labour under-utilisation was more prominent, and an unmet need for employment was higher for *females* than *males* by about 12 points. The census further revealed that 3.0% of the resident population over age five had a disability of one form or another, and

these are often excluded from the labour market and educational opportunities available in the country. Of these, more than three in four lived in urban areas. Addressing these issues requires a multi-sectoral effort and harnessing available resources with greater efficiency, and only then will we meet our aspirations as a nation and the SDGs to which our nation is a signatory.

With this note, I would like to invite everyone-the public, state officials and policymakers, people in the private sector, and development partners-to consult the report more closely and use the census as much as possible in their respective work to ensure that our efforts are scientifically grounded and based on sound evidence.

Finally, detailed work such as the one presented in the report can only result from the dedicated efforts of various agencies and individual experts. In particular, I commend the National Planning and Statistics Office and its staff for their continued dedication to informing the nation and for delivering a timely report and a successful census.

Director, The Economic Policy, Planning and Statistics Office (EPPSO) of the Marshall Islands

REPUBLIC OF THE MARSHALL ISLANDS
MINISTER IN ASSISTANCE TO THE PRESIDENT & ENVIRONMENT
P.O. Box 2 Majuro, Marshall Islands
Phone No. (692) 625-3445/2233/3213

Iakwe aolep,

The undertaking of any census of population and housing requires a huge and complicated process. Because it is a massive workload, it must adhere to a strict set of protocols - a well-organized network of coordination among the various units of government, not only at the national level but also at the local level. It would not have been possible to conduct the 2021 Census of Population and Housing without the contribution and cooperation of many individuals, government agencies, local governments, Republic of the Marshall Islands residents and donor agencies. I would like to express my gratitude and acknowledge all contributions, especially the following:

- Former President David Kabua and Members of his Cabinet,
- Former Speaker and Vice Speaker and all Members of the Nitijela (Parliament),
- Secretariat of the Pacific Community (SPC) for providing the technical assistance needed to prepare, plan and implement the field work, including data processing, tabulations and census result analysis,
- Pacific Web LLC for analysis,
- Government of the Republic of the Marshall Islands,
- Government of the United States of America,
- Government of the Republic of China, Taiwan,
- Government of Australia,
- The World Bank,
- Asian Development Bank for technical support,
- All members of the National Census Steering Committee (NCSC) for their guidance and support,
- All the Former Mayors and the Local Governments Members for the coordination, administrative and logistical support provided to the census and,
- All the Census Enumerators and the support staff from the Economic Policy Planning and Statistics Office (EPPSO).
- Dr. Levin and his colleagues for their contribution to an earlier draft of the report and other aspects of the census.

Once again, I would like to express my appreciation and thanks to all those involved individuals and organizations for their valuable contributions to the success of this important work – I am confident that with this report it will enhance areas in policymaking, analysis and research.

Kommol tata

4/1-/2024

Hon. Bremity Lakjohn
Minister in Assistance to the President and Environment

1. COUNTRY CONTEXT

1.1. Geography and brief history

The Marshall Islands, formally the Republic of the Marshall Islands (RMI), is located in the western Pacific Ocean. Its 29 atolls and five coral islands are divided into two island chains – the western Ralik (or "sunset") chain and the eastern Ratak (or "sunrise") chain – spreading across 470,000 km^2 between Hawaii and the Australian land mass. About 98% of the country is covered by a body of water (Bryan 1972). The country, lying between 5° and 15°N latitude and between 161° and 173°E longitude, shares maritime boundaries with Wake Island to the north, Kiribati to the southeast, Nauru to the south and the Federated States of Micronesia (FSM) to the west (***Figure 1.1***).

Although colonised by migrants from the New Hebrides area as early as 3000 years ago (Hezel 1983; Dye 1987), the Marshall Islands were unknown outside Oceania until Spanish explorers arrived in the early sixteenth century (Bryan 1972). From then on, Marshallese contact with more technologically advanced societies ranged from periods of complete isolation to periods of active colonisation. Sustained contact with Europeans began in the late nineteenth century, when the Marshall Islands became a German colony. Fifty years of German presence ended in 1914 when Japanese military forces occupied the region (Hezel and Berg 1979; Peattie 1988). The departure of Japanese forces and the extended American presence following the Second World War led to profound demographic, cultural and political changes and shaped the country's recent history (Ahlgren et al. 2014).

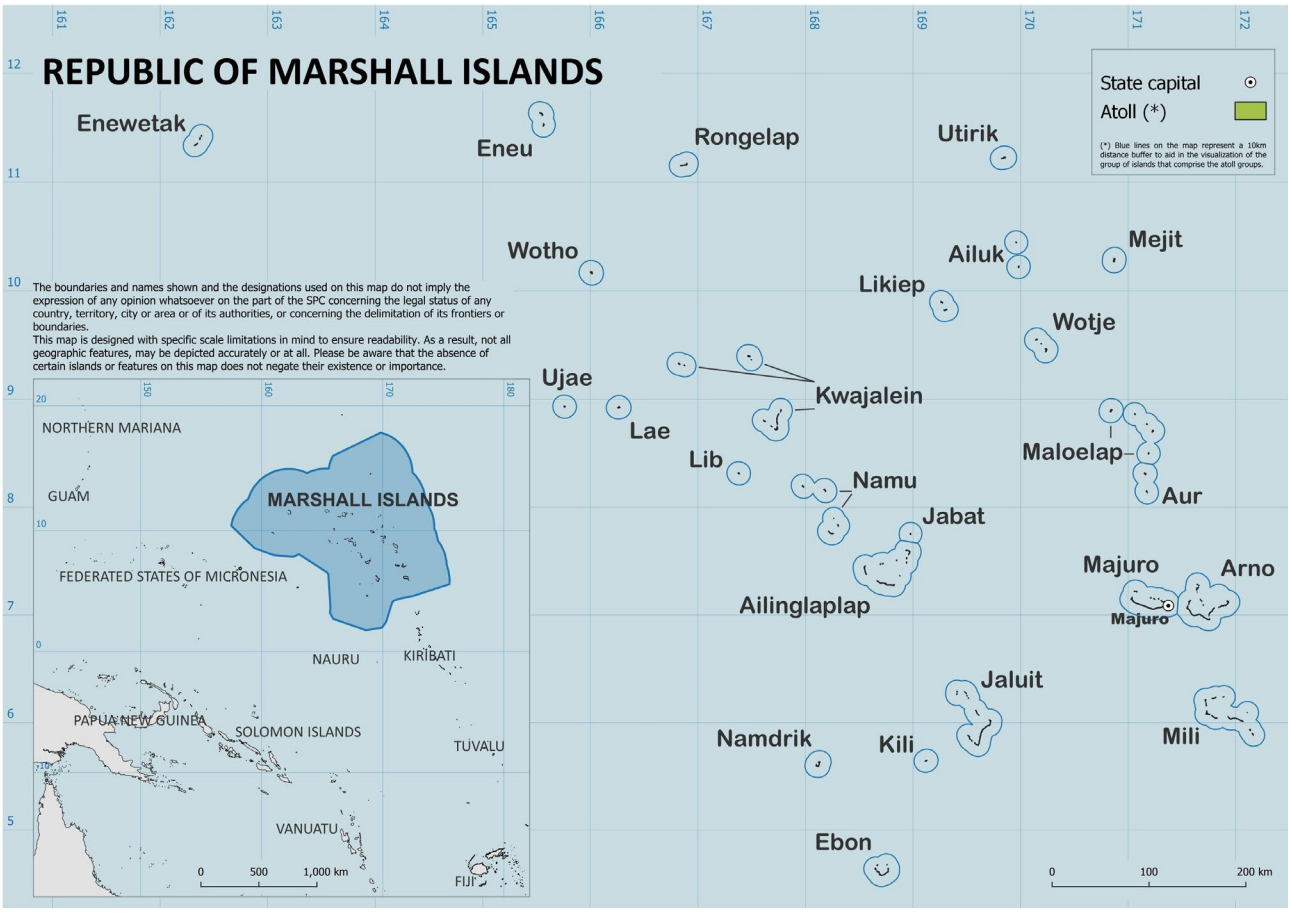


Figure 1.1. *Map of the Pacific region and the Republic of the Marshall Islands (inset)*

Source: SPC

For the first six years after taking over from the Japanese, a military government formed under the US Navy administered the Marshall Islands. In 1947, the islands became part of the strategic Trust Territory of the Pacific Islands established by the United Nations, with the USA named as the administering authority (Ahlgren et al. 2014). On 1 May 1979, the Marshall Islands became a self-governing republic as a first step towards re-establishing independence (Ahlgren et al. 2014). Full sovereignty (self-government) was achieved in a Compact of Free Association signed with the USA in 1986, and trusteeship ended under United Nations Security Council resolution 683 of 22 December 1990.

1.2. History of census-taking and the objectives of the 2021 census

While explorers and missionaries collected population data in the Marshall Islands from as early as 1800, demographic data preceding 1920 comprise estimates compiled at irregular intervals, and only some cover the entire country. ***Table 1.1*** lists the 13 systematic censuses conducted in the Marshall Islands since 1920. Of these, four were conducted by the RMI Government and the remaining nine were led or carried out by previous administrations or colonial institutions. In 1988, RMI conducted its first census since re-establishing self-rule.

As is the case with previous censuses, the population and housing census conducted in 2021 aims to provide policymakers, government planners, administrators, the business sector, foreign private investors and the donor community with data on which to base their social and economic development plans and programmes for RMI.

The specific objectives of the 2021 census include:

(1) collecting comprehensive data on the size, composition and distribution of the population of RMI; and

(2) taking stock of the housing units (dwellings) in the country and obtaining information about their geographical location, structural characteristics and the facilities available in them.

Table 1.1. *Censuses conducted in RMI, 1920–2021*

Census year	Declared census date	Managing authority
1920	Unknown	Japanese South Seas Government (Nan'yo-cho)
1925	Unknown	Japanese South Seas Government (Nan'yo-cho)
1930	Unknown	Japanese South Seas Government (Nan'yo-cho)
1935	Unknown	Japanese South Seas Government (Nan'yo-cho)
1958	Unknown	Trust Territory of the Pacific Islands administration
1967	Unknown	Trust Territory of the Pacific Islands administration
1970	Unknown	United States Bureau of the Census
1973	Unknown	Trust Territory of the Pacific Islands administration
1980	Unknown	United States Bureau of the Census
1988	Unknown	Marshall Islands Office of Planning and Statistics
1999	Unknown	Marshall Islands Office of Planning and Statistics
2011	3 April 2011	RMI Economic Policy, Planning and Statistics Office
2021	24 August 2021	RMI Economic Policy, Planning and Statistics Office

The 2021 census was conducted on 24 August 2021 but was finalised on 15 November 2022 to allow for follow-up data collection in some locations. The National Census Steering Committee designated 24 April 2021 as the census reference date. This means that all persons residing in RMI at midnight on 24 August 2021 were counted. ***Table 1.2*** shows the key data from the census.

Table 1.2. *Key summary population & housing indicators: 2011 and 2021 censuses*

	2021	2011
Total enumerated population	**42,418**	**53,158**
Urban	32,948	39,205
Rural	9,473	13,953
Males	21,728	27,243
Females	20,690	25,915
Population density (people per square mile)	**605**	**759**
Urban	3,268	3,889
Rural	171	252
Population by age group		
15 years or under	34.1	40.0
15–64 years	62.2	58.0
65+	3.7	2.0
Average household size	**5.8**	**6.8**
Urban	6.1	7.1
Rural	5.0	5.8
Female-headed HHs (%)	24.2	25.7
Population with a disability (category 2 – at least with lots of difficulty in at least one functional domain) (%)	3.0	2.1
Population with a disability (category 3 – total disability in at least one functional domain) (%)	0.8	0.5
Population 60+ years with a disability (%)	14.4	16.0
Population aged 15+ years never married (%)	32.1	29.7
Population aged 25+ years high school graduates (%)	**50.7**	**42.9**
Males	52.7	47.2
Females	48.8	38.5
Population that accessed the internet a week before the census (%)	**47.9**	**–**
Urban	58.1	–
Rural	8.4	–
Households owning at least one mobile phone (%)	**88.5**	**–**
Urban	90.4	–
Rural	82.8	–
Households owning at least one laptop (%)	**27.1**	**–**
Urban	32.6	–
Rural	11.0	–
Population with unmet need for employment	**36.9**	**–**
Urban	33.1	–
Rural	52.1	–
Males	32.3	–
Females	44.4	–

Median household income (USD per annum)	**9,600**	**6,950**
Kwajalein	10,400	11,980
Majuro	10,500	9,600
Rural	6,400	2,400
Working-age population participating in a subsistence activity during the week before the census (%)	**28.6**	**–**
Urban	19.1	–
Rural	65.4	–
HHs that have experienced food insecurity (%)	52.7	–
HHs that have experienced at least one natural disaster (%)	19.3	–
Demographic indicators		
Total fertility rate (per woman)	2.8	–
Life expectancy at birth: males (years)	62.1	–
Life expectancy at birth: females (years)	68.6	–
Life expectancy at birth: both sexes (years)	65.0	–
Net migration rate 2011–2021 (% per annum)	-3.9	–
Average intercensal population growth rate (% per annum)	-2.3	–

2. POPULATION SIZE, DISTRIBUTION AND COMPOSITION

2.1. Total population count

As with all previous RMI censuses, the 2021 census used a modified de facto method of enumeration, with persons being enumerated according to their actual physical presence at the time of the census rather than their "usual residence", that is, where they lived and slept most of the time. The census counted 42,418 persons, comprising 21,728 *males* and 20,690 *females*.

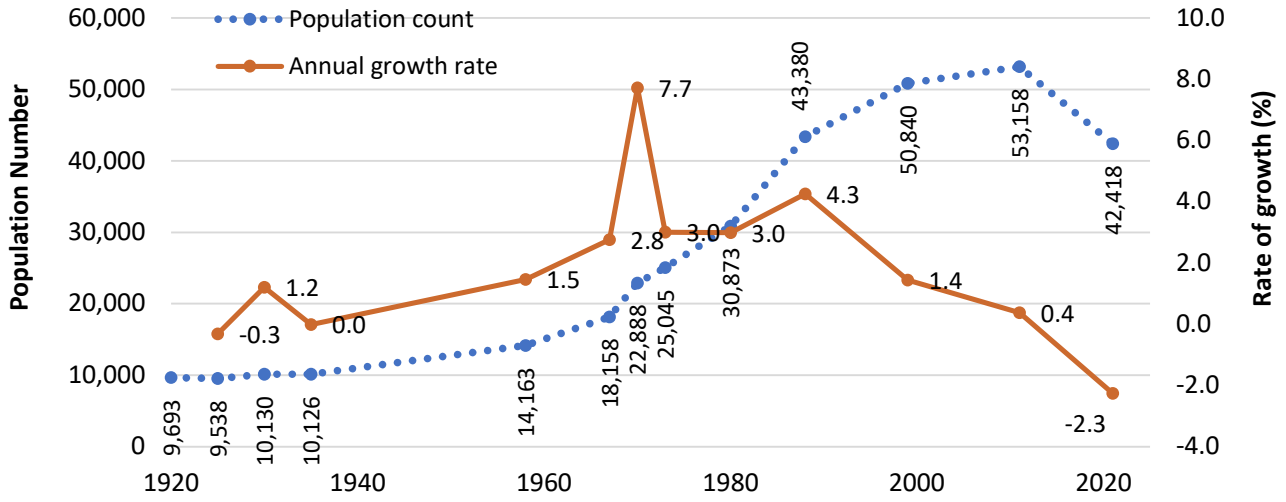


Figure 2.1. *Population of RMI, 1920–2021*

As ***Figure 2.1*** shows, the latest population count represents an increase of over 30,000 inhabitants since the first census conducted a century ago. Specifically, the population increased from about 10,000 before the Second World War to over 40,000 in the 1980s and about 53,000 in 2011 before declining to 42,000 in the most recent census. The population decline observed between 2011 and 2021 – roughly 11,000 persons, or one fifth of the population in 2011 – was the first and the largest ever in absolute and relative terms.

A similar pattern was observed in all locations; all atolls and islands experienced depopulation between 2011 and 2021, except for Lib Island, which gained one person (***Table 2.1***). Some atolls, including Bikini and Rongelap, have lost all their residents, who relocated owing to radiation contamination, while five islands lost 50% of their 2011 population, 11 islands lost 20–40% and six islands lost 5–19% because of population movement.

Barring a few exceptions at particular locations, the population of the country grew at an increasing rate until the late 1980s. It continued to grow between 1988 and 2011, albeit at a decreasing rate, before registering a negative annual growth rate between 2011 and 2021 (***Figure 2.1***).

Table 2.1. *Population change by location, RMI, 2011–2021*

Atoll/island	Intercensal pop. change		Atoll/island	Intercensal pop. change	
	Number	Percentage of the 2011 pop.		Number	Percentage of the 2011 pop.
Lib	1	1	Ebon	-237	-34
Wotje	-43	-5	Mejit	-118	-34
Wotho	-9	-9	Arno	-653	-36
Jabat	-9	-11	Aur	-182	-36
Kwajalein	-1,619	-14	Utirik	-171	-39
Ujae	-54	-15	Namdrik	-209	-41
Majuro	-4,641	-17	Maloelap	-287	-42
Jaluit	-379	-21	Likiep	-173	-43
Kili	-133	-24	Enewetak	-368	-55
Ailuk	-104	-31	Lae	-214	-62
Ailinglaplap	-554	-32	Rongelap	-9	-100
Mili	-241	-33	Bikini	-79	-100
Namu	-255	-33	**Total RMI**	**-10,740**	**-20**

All age groups, except 60 or over, have witnessed a population decline since the first census was conducted. The rate of decline per annum was most significant in the 0–14 age group (3.9% decline), followed by the age groups 15–29 (2.5%), 30–44 (1.2%) and 45–49 (0.5%). This finding suggests that the overall decline was driven in part by a recent fertility decline but also by emigration. In addition, undercoverage and undercounting of the census cannot be ruled out, especially given the extended time taken to complete the 2021 census. Similarly, the high intercensal growth rates between 1,925 and 1,930 and between 1,967 and 1,973 are likely to reflect differences in census coverage and enumeration systems in adjacent census periods rather than actual increases in population size.

2.2. Urbanisation and population distribution

2.2.1. Urban–rural distribution

In 2021, 77.7% of the population lived in areas designated as urban compared with 66.8% in 1980. This trend in RMI population distribution mirrors the global urbanisation process, and the rate of urbanisation in RMI is comparable with most upper-middle income countries in East Asia, Eastern Europe, North Africa, Southern Africa and South America, where the rates vary between 50 and 80% (United Nations 2019).

In RMI, Majuro and Kwajalein are considered to comprise the urban population, while the other atolls and islands comprise the rural population. The share of the population residing in Majuro increased from over 40% in 1988 to about 50% in 2021 (***Figure 2.2***). Similarly, the share of Kwajalein residents, as a proportion of the country's total population, increased from 21.5% in 1988 to over 23% in 2021.

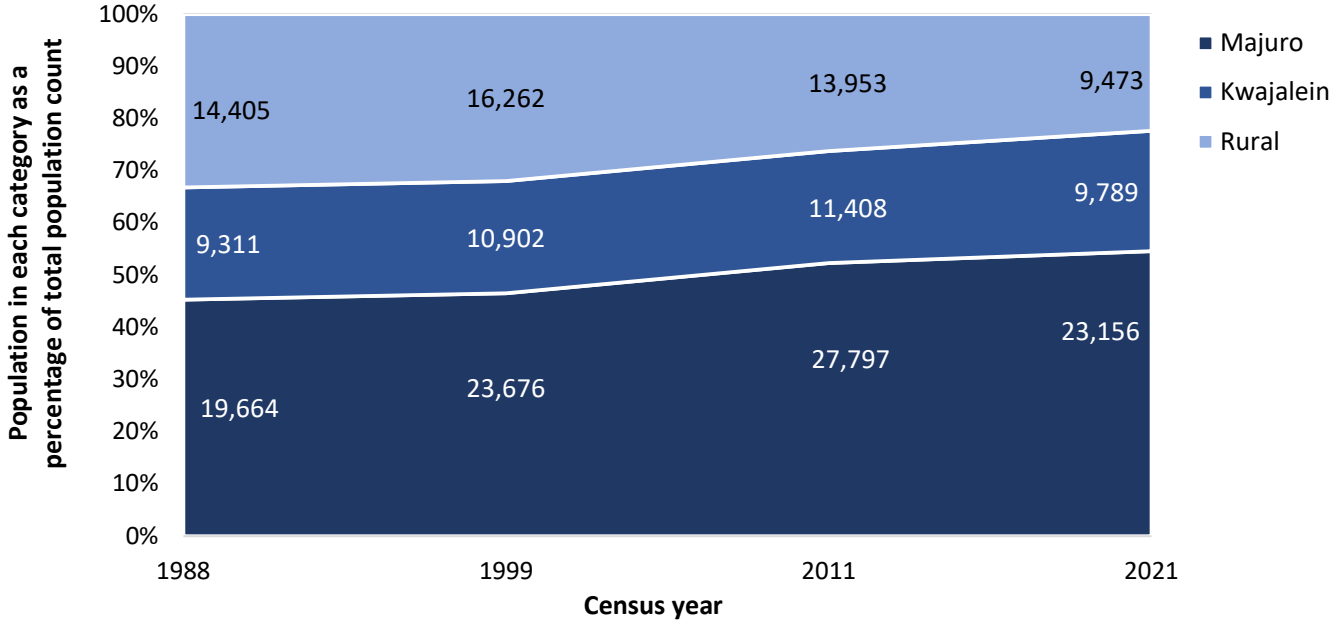


Figure 2.2. *Urban–rural population count and distribution in RMI, 1920–2021*

In absolute terms, the urban population increased from less than 30,000 in 1988 to almost 40,000 in 2011, before decreasing to the 1999 level in 2021. The rural population increased by nearly 2,000 between 1988 and 1999, decreased by about 2000 between 1999 and 2011, and then decreased further, by about 4,500, between 2011 and 2021.

The outflow from rural areas has been strong and is increasing. The rural population was more than 30% of the population of RMI in 1988 and 1999 but decreased to less than 30% in 2011 and to 22% in 2021. This trend suggests that the country continues to urbanise, as is the case globally.

2.2.2. Distribution of the population by atoll or island

Table 2.2. *Population by location, RMI, 2021*

Atoll/island	Number	Percentage of the 2011 pop.	Atoll/ island	Number	Percentage of the 2011 pop.
Lib	156	0.4	Ebon	469	1.1
Wotje	816	1.9	Mejit	230	0.5
Wotho	88	0.2	Arno	1,141	2.7
Jabat	75	0.2	Aur	317	0.7
Kwajalein	9,789	23.1	Utirik	264	0.6
Ujae	310	0.7	Namdrik	299	0.7
Majuro	23,156	54.6	Maloelap	395	0.9
Jaluit	1409	3.3	Likiep	228	0.5
Kili	415	1.0	Enewetak	296	0.7
Ailuk	235	0.6	Lae	133	0.3
Ailinglaplap	1,175	2.8	Rongelap	0	0.0
Mili	497	1.2	Bikini	0	0.0
Namu	525	1.2	**Total RMI**	**42,418**	**100.0**

The RMI population continues to be concentrated in a few locations (***Table 2.2***). In 2021, about 90% of the population lived on just six atolls or islands: Ailinglaplap, Amo, Jaluit, Kwajalein, Majuro, Namu and Wotje. Four of the 25 inhabited atolls or islands had a population of fewer than 100, 14 had a population of 100–500 and three had a population of 1,000–1,500. Kwajalein and Majuro are the most populous atolls in the country, while Bikini and Rongelap atolls registered no residents in 2021 after losing them all in the intercensal period since 2011.

2.3. Population density

Population density is a measure of the concentration of inhabitants across space and is determined by dividing a population by the land area it occupies. RMI is one of the most densely populated countries in the world: it had a population density of about 600 inhabitants per square mile in 2021 while the global average figure is 98 inhabitants per square mile.

Table 2.3. *Population and population density by location, RMI, 2021*

Atoll/ island	Land area (square miles)	Pop.	Density (people/ square mile) 2021	Rank	Atoll/ island	Land area (square miles)	Pop.	Density (people/ square mile 2021	Rank
Total RMI	**70.07**	**42,418**	**605**	**–**	Lae	0.56	133	238	12
Urban	10.08	32,945	3,268	–	Arno	5.00	1,141	228	13
Rural	55.27	9473	171	–	Namu	2.42	525	217	14
Majuro	3.75	23,156	6,175	1	Ebon	2.22	469	211	15
Kwajalein	6.33	9,789	1,546	2	Ailinglaplap	5.67	1,175	207	16
Kili	0.36	415	1,153	3	Aur	2.17	317	146	17
Lib	0.36	156	433	4	Enewetak	2.26	296	131	18
Ujae	0.72	310	431	5	Ailuk	2.07	235	114	19
Jabat	0.22	75	341	6	Maloelap	3.79	395	104	20
Jaluit	4.38	1,409	322	7	Mili	6.15	497	81	21
Mejit	0.72	230	319	8	Likiep	3.97	228	57	22
Utirik	0.94	264	281	9	Wotho	1.67	88	53	23
Namdrik	1.07	299	279	10	Bikini	2.32	0	0	24
Wotje	3.16	816	258	11	Rongelap	3.07	0	0	24

Figure 2.2 shows that the atolls considered as urban were much more densely populated – about 20 times more so – than rural atolls and islands, which is to be expected. A ranking by density indicates that Majuro was the most densely populated atoll in 2021, at about 6,200 persons per square mile, followed by Kwajalein, at 1,500 persons per square mile, while Mili, Likiep and Wotho atolls were the least densely populated, each with less than 100 persons per square mile (***Table 2.3***). Bikini and Rongelap atolls were not inhabited during the 2021 census; their residents have been relocated owing to radiation contamination.

2.4. Age–sex composition

Age–sex data have multiple uses in development planning by the public and private sectors and in demographic analyses. ***Figure 2.3*** shows the reported age–sex distribution for the two latest censuses (2011 and 2021).

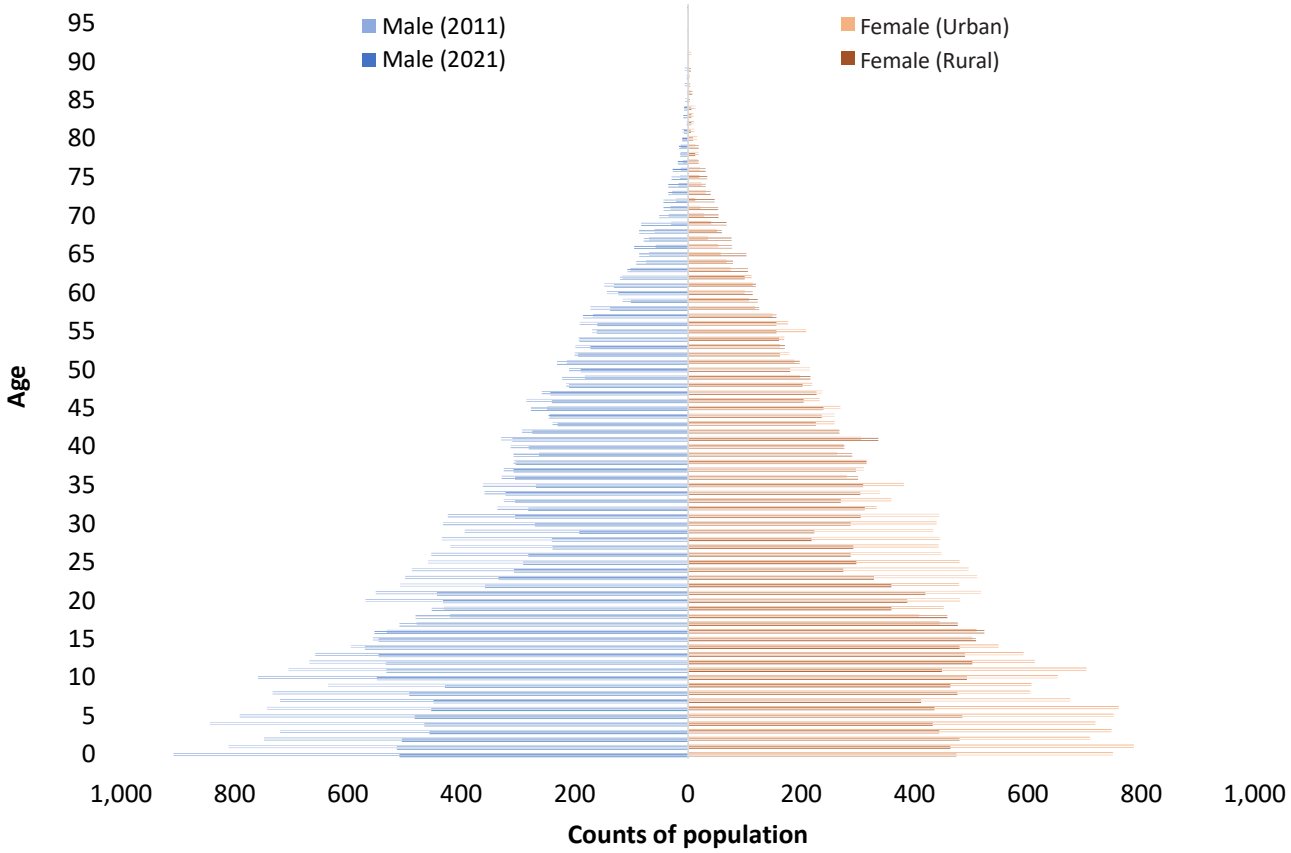


Figure 2.3. *Population by age and sex, RMI, 2011 and 2021*

The graphical representation of age–sex data is called a pyramid because, in pre-transition societies, it displays a broad base at younger ages because of high fertility. The shape becomes narrower with age, like a cone, since people die at different ages, but more die at older ages. As societies proceed over time along the demographic transition continuum, the shape of the graph is expected to change, slowly coming to resemble a beehive or a coffin, a stage that RMI is yet to reach.

Figure 2.3 shows that the RMI population pyramids for 2011 and 2021 both have a broad base but that the cohort size was smaller in 2021 than in 2011, indicating a declining (but still high) fertility regime in the country. The most significant difference between 2011 and 2021 is seen in the younger ages, up to about 15, partly mirroring the ongoing fertility decline in the country. While fertility decreased during the decade between censuses, it is also likely that many families who emigrated from RMI between 2011 and 2021 took their young children with them, further contributing to the differences between the two censuses. The impact of emigration on the population is also evident for people aged 20 to mid-30s; some Marshallese of those ages could have emigrated temporarily for educational purposes and might return to RMI after graduation (or non-graduation). The distribution of the 15–19 age group remained about the same for the two censuses, as did the distribution of people aged 35 years or over.

Figure 2.4 shows the age–sex distribution for urban (Majuro and Kwajalein) and rural areas in 2021. The urban population is larger because Majuro and Kwajalein comprise about three quarters of the total population of RMI. The rural population, therefore, shows a pyramid that is reduced in size, but its shape remains more like a traditional pyramid. Migration from rural to urban areas can be seen in the 20–29 age group. For urban areas, the 25–29 age group shows much fewer people than in adjacent age groups. As alluded to earlier, this is, in part, a reflection of young people leaving RMI for education and employment because opportunities in RMI are limited.

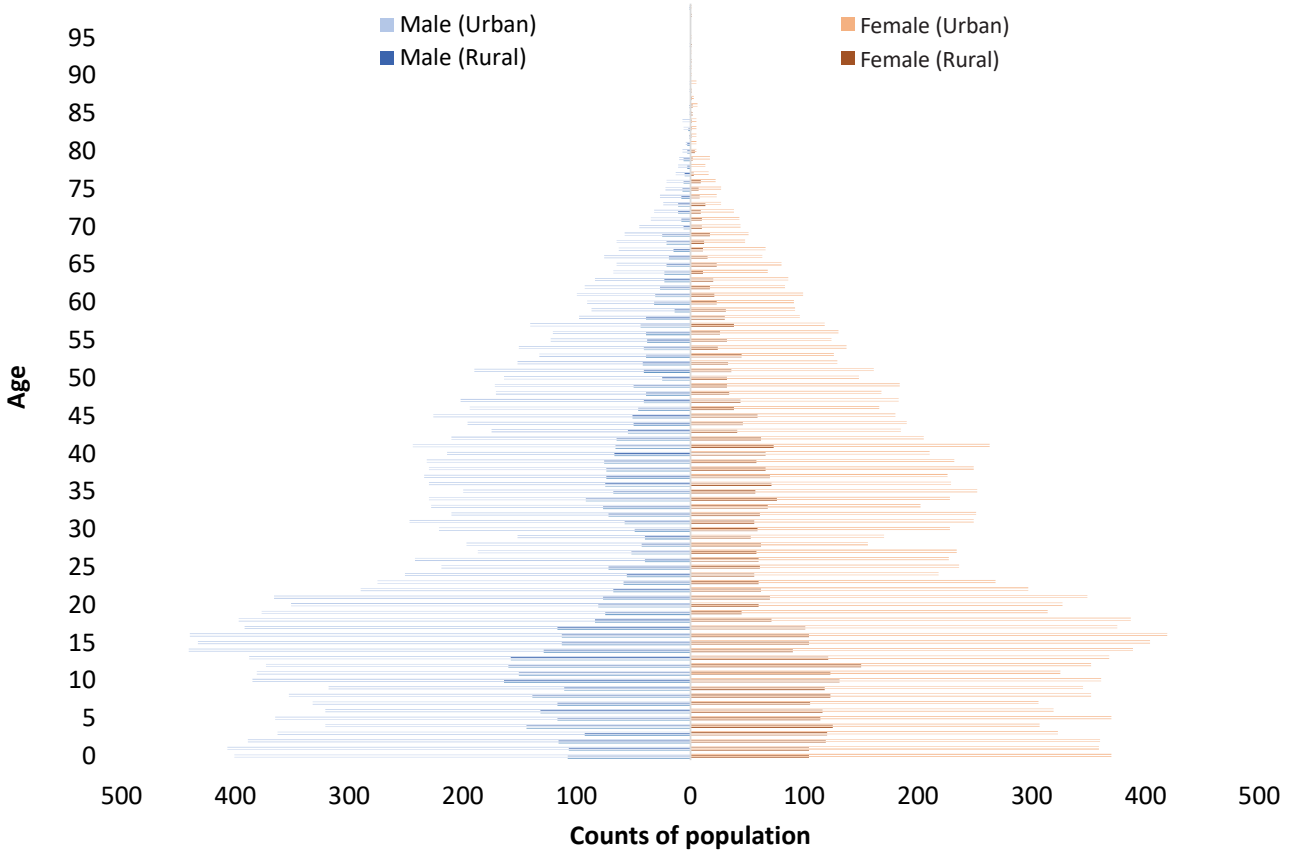


Figure 2.4. *Population by age and sex for rural and urban areas, RMI, 2011 and 2021 combined data*

The median age of the resident population has increased over time, from about 16 years in 1967 to 18 years in 1999 and about 22 years in 2021. This reflects a substantial decline in fertility and an increase in longevity over the decades of census-taking. A median age of 22 for 2021 means that half of the population of RMI is younger than 22 and the other half is older.

As expected, the median age was generally higher for urban areas as they have experienced a much deeper age-structure transition than rural areas. The median age for Majuro, the most urbanised location in RMI, was 23 years, which is about two years older than the median age both for Kwajalein and for rural areas as a whole. However, the highest median ages were recorded for other atolls: Ebon (28 years), Lae and Ujae (26 years), and Aur and Utirik (24 years).

Table 2.4 shows the age–sex distribution of the 2021 census population by age group and location. While Majuro and Jaluit had the smallest percentages of people younger than 15 years, they had the highest percentages of 15–24-year-olds, who come to these atolls to attend high school and the College of the Marshall Islands or to join the labour force. The distribution of the population aged 65 years or over was about the same in urban and rural areas, while rural areas had a higher percentage of children aged under 15.

An alternative way to describe a population's age structure is by the dependency ratio, which is the ratio of economically dependent people in a population (those aged under 15 or aged 65 or over) and people of working age (15–64). The overall dependency ratio for RMI in 2021 was 60.7, meaning that for every 100 persons of working age, there were about 61 persons of dependent age. The dependency ratios for urban and rural areas were all low. The youth dependency ratio for Majuro was 47.8, for Kwajalein was 59.8 and for rural areas was 68.5, meaning that rural areas had 69 children under the age of 15 for every 100 persons aged 15 to 64. The national aged dependency ratio was 5.9 (5.8 for urban areas and 6.8 for rural areas), indicating that in the country as a whole there are about six persons aged 65 or over for every 100 persons aged 15–64.

Table 2.4. *Population by age group, median age, dependency and sex ratio, RMI, 2021*

Atoll/ island	Age group distribution (%)						Total pop.	Dependency ratio			Median age	Sex ratio
	Under 15	15–24	25–34	35–54	55–64	65+		Total	Youth	Aged		
Total RMI	**34.1**	**20.1**	**13.0**	**23.1**	**6.0**	**3.7**	**42,418**	**60.7**	**54.8**	**5.9**	**22**	**105**
Urban	32.6	21.0	13.1	23.5	6.0	3.7	32,945	57.0	51.2	5.8	22	104
Rural	39.2	16.6	12.8	21.9	5.9	3.7	9473	74.9	68.5	6.4	20	110
Ailinglaplap	45.1	9.8	11.9	22.3	6.5	4.4	1175	98.1	89.4	8.8	21	104
Ailuk	43.4	9.4	9.8	26.0	7.7	3.8	235	89.5	82.3	7.3	20	99
Arno	39.4	15.3	14.5	23.2	4.5	3.0	1141	73.7	68.5	5.2	22	119
Aur	42.0	8.5	12.6	26.2	6.0	4.7	317	87.6	78.7	8.9	24	119
Ebon	39.0	8.7	11.9	24.5	7.0	8.7	469	91.4	74.7	16.7	28	124
Enewetak	44.9	8.4	13.2	24.3	5.7	3.4	296	93.5	86.9	6.5	20	116
Jabat	48.0	4.0	13.3	25.3	8.0	1.3	75	97.4	94.7	2.6	20	121
Jaluit	30.0	35.9	9.7	15.3	5.5	3.5	1409	50.5	45.2	5.3	17	105
Kili	42.4	6.7	13.7	28.0	5.3	3.9	415	86.1	78.9	7.2	25	120
Kwajalein	36.3	18.8	12.9	23.1	5.9	2.9	9789	64.6	59.8	4.8	21	109
Lae	33.8	14.3	15.8	27.1	6.8	2.3	133	56.5	52.9	3.5	26	108
Lib	47.4	16.7	17.3	15.4	3.2	0.0	156	90.2	90.2	0.0	29	90
Likiep	43.0	7.9	11.0	21.1	11.8	5.3	228	93.2	83.1	10.2	22	100
Majuro	31.0	22.0	13.2	23.7	6.1	4.0	23,156	54.0	47.8	6.2	23	102
Maloelap	40.5	12.7	16.7	21.3	5.8	3.0	395	77.1	71.7	5.4	22	124
Mejit	41.7	10.9	14.8	21.3	6.5	4.8	230	87.0	78.0	8.9	22	107
Mili	39.8	15.3	14.7	24.3	3.2	2.6	497	73.8	69.2	4.5	21	121
Namdrik	41.8	10.7	13.7	21.4	8.7	3.7	299	83.4	76.7	6.7	23	108
Namu	36.8	11.4	15.0	25.1	8.0	3.6	525	67.7	61.7	6.1	26	118
Ujae	41.9	12.9	16.8	21.0	5.5	1.9	310	78.2	74.7	3.4	22	97
Utirik	41.7	8.7	16.7	23.9	7.2	1.9	264	77.2	73.8	3.4	24	98
Wotho	45.5	15.9	8.0	21.6	4.5	4.5	88	100.0	90.9	9.1	22	100
Wotje	33.6	30.8	8.8	19.4	4.5	2.9	816	57.5	52.9	4.6	17	103

Over the years since the first census was conducted, the sex ratio has fluctuated, but it has been relatively stable since the mid-1960s, remaining between 104 and 106 (***Figure 2.5***). In 1988, the sex ratio stabilised at 105, meaning that overall, for every 100 women, there are 105 men. However, as shown in ***Table 2.4***, there is considerable variation across the atolls and islands, which is partly a reflection of differences in migration rates and may also reflect differences in census coverage between *males* and *females*.

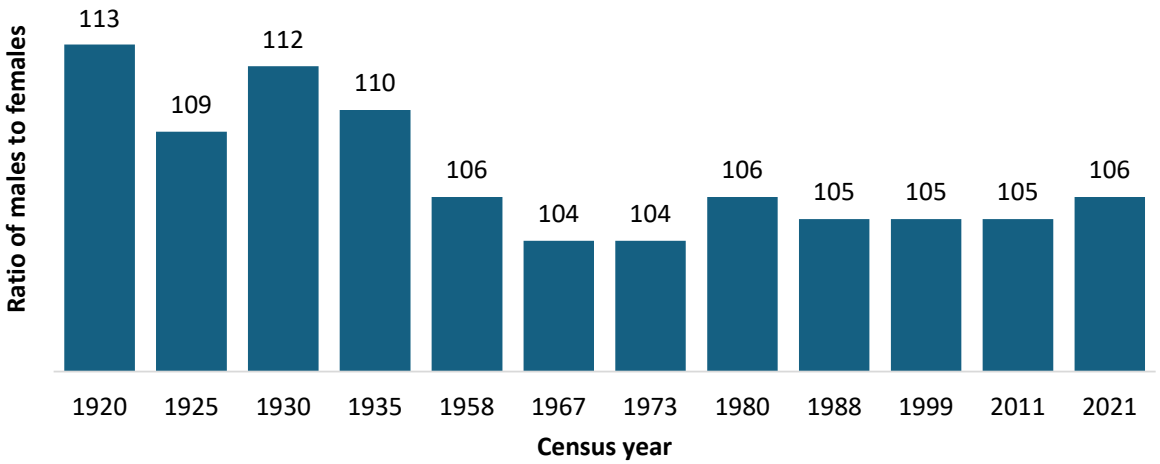


Figure 2.5. *Sex ratio, RMI, 1920–2021*

3. SOCIO-CULTURAL CHARACTERISTICS

3.1. Household structure

Large households feature in all available data sets since the 1967 census (***Figure 3.1***). Average household size was above eight in the 1973 and 1980 censuses and reached its highest value, almost nine persons per household (8.77), in the 1988 census. Average household size then decreased gradually to just under eight in the 1999 census, seven in the 2011 census and six in the 2021 census.

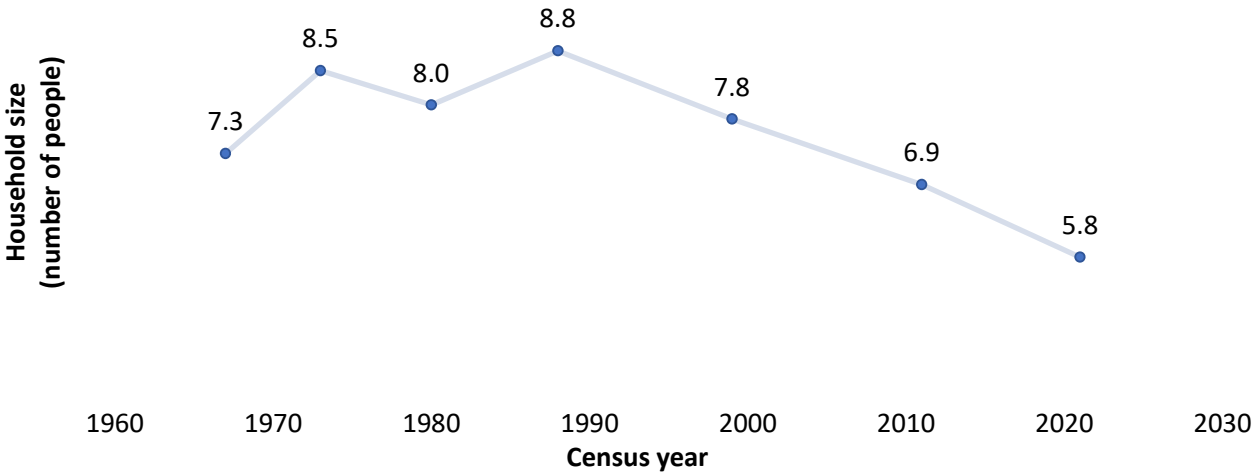


Figure 3.1. *Average household size in occupied private dwellings, RMI, 1967–2021*

Table 3.1. *Average household size in occupied private dwellings by location, RMI, 1999–2021*

Atoll/island	1999	2011	2021	Atoll/island	1999	2011	2021
Ailinglaplap	8.3	6.0	5.2	Majuro	7.6	6.7	5.9
Ailuk	5.8	5.4	4.2	Maloelap	6.2	5.5	4.8
Arno	8.5	6.9	5.3	Mejit	6.9	6.1	4.8
Aur	6.2	5.3	4.8	Mili	7.6	5.2	4.7
Ebon	7.4	5.2	4.5	Namdrik	6.5	5.2	4.3
Enewetak	7.8	6.3	4.6	Namu	7.1	6.0	5.2
Jabat	6.3	4.4	4.2	Ujae	6.6	7.0	6.1
Jaluit	7.2	6.2	5.2	Utirik	6.7	6.3	4.9
Kili	8.0	6.2	5.1	Wotho	8.1	4.4	5.2
Kwajalein	9.0	8.3	6.8	Wotje	8.0	6.4	5.0
Lae	10.1	7.2	3.8	Urban	8.0	7.1	6.1
Lib	9.8	8.6	7.1	Rural	7.3	5.8	5.0
Likiep	6.4	5.4	4.7	**Total RMI**	**7.8**	**6.8**	**5.8**

The 2021 census counted a total of 7,123 households in occupied private dwellings. Average household size ranged from 3.8 persons per household on Lae Atoll to 7.1 on Lib Island (***Table 3.1***). Almost a quarter of the population of RMI lived in dwellings with six or more persons, while only a small proportion, about 8%, of all households contained only one person. Average household size was highest in Lib (7.1), followed by Kwajalein (6.8) and Ujae (6.1).

The size of households in the country has changed drastically over the years, owing, in part, to declining fertility and changes in living arrangements. In Lae, for example, household size decreased from about 10 in 1999 to about seven in 2011 and then to under four in 2021, making it the atoll with the smallest household size in the country. As expected, the changes in average household size observed in recent years mirror the changing composition of households over time.

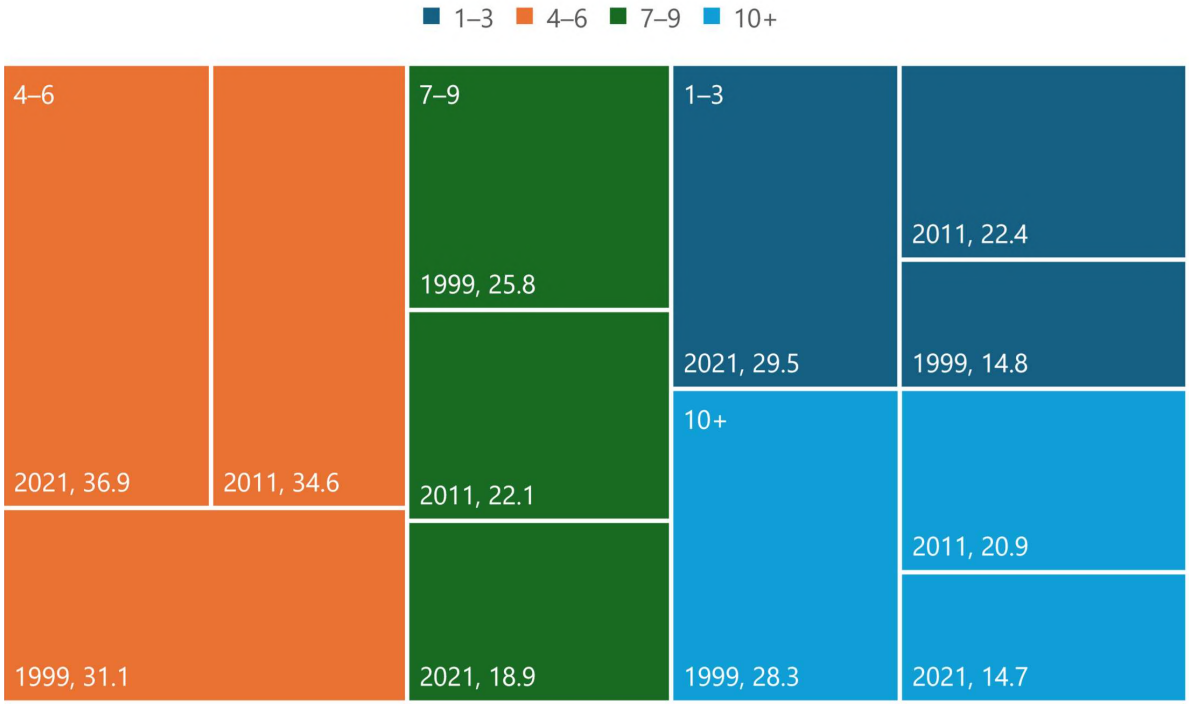


Figure 3.2. *Household size (number of people) distribution (percentage) in occupied private dwellings, RMI, 1991–2021*

Table 3.2. *Household composition in occupied private dwellings by location, RMI, 2021*

Atoll/island	HHs with extended family members (%)	Female-headed HHs (%)
Ailinglaplap	38.1	24.6
Ailuk	19.6	23.2
Arno	36.3	11.0
Aur	32.2	7.6
Ebon	35.0	15.2
Enewetak	39.5	26.6
Jabat	22.7	11.1
Jaluit	52.4	23.0
Kili	36.6	15.9
Kwajalein	48.0	24.8
Lae	33.1	15.6
Lib	36.5	18.2
Likiep	33.3	10.2
Majuro	45.4	27.0
Maloelap	32.7	13.4
Mejit	44.3	16.7
Mili	34.6	20.0
Namdrik	28.1	15.7
Namu	40.8	12.9
Ujae	39.0	13.7
Utirik	37.5	22.2
Wotho	42.0	11.8
Wotje	45.1	21.1
Total RMI 2011	**44.1**	**25.7**
Urban	46.2	26.4
Rural	39.1	17.7
Total RMI 2021	**44.6**	**24.2**

As shown in ***Figure 3.2***, the share of households with one to three members has increased over time (from 14.8% in 1999 to 29.5% in 2021), and the percentages of households with seven to nine and 10 or more members have significantly decreased (from about 25% and 30% for these categories, respectively, in 1999 to about 20% and 15%, respectively, in 2021).

In 2021, rural households had a substantially lower percentage of households with seven or more members and a higher percentage of households with one to three members. Rural households have a greater tendency than their urban counterparts to be composed primarily of nuclear families, partly explaining the smaller average household size. Female-headed households are less common in rural locations. In 2021, the lowest proportion (7.6%) of *female*-headed households was recorded in Aur, while almost a quarter (24.8%) of households in Kwajalein were headed by women (***Table 3.2***). This pattern is, in part, linked to internal migration and changes in family formation patterns in the country.

3.2. Religious affiliation

Figure 3.3 shows the composition of the country's population in terms of religious affiliation according to the 1999 and 2021 censuses. In both censuses, about half of the population identified as members of the Protestant Church, with the Assemblies of God and the Roman Catholic Church having the next largest shares.

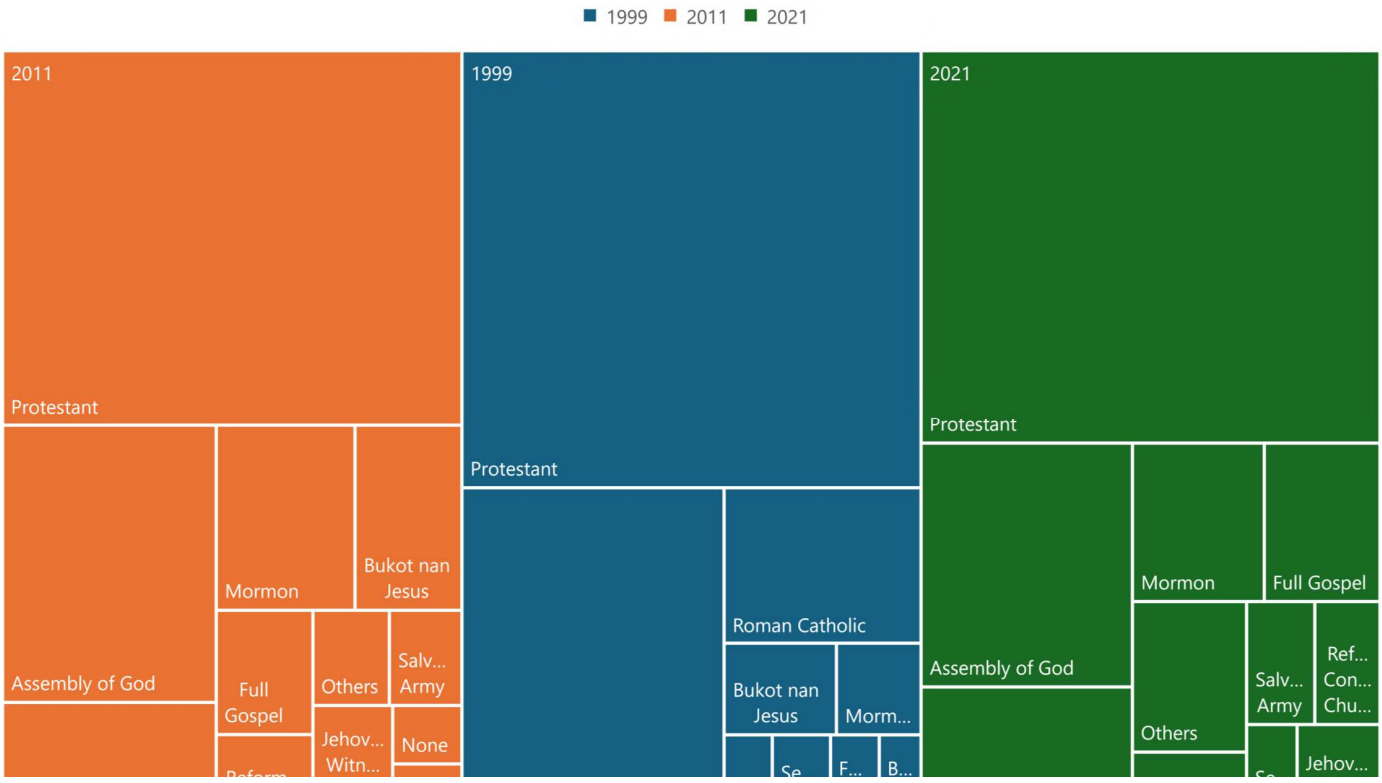


Figure 3.3. *Religious affiliation (percentage) of the population, RMI, 1991–2021*

The religious affiliation of the population has changed over time, with the share of Protestants declining from about 55% in 1999 to about 49% in 2021 and the share of the population belonging to the Assemblies of God falling from over 25% to less than one in seven people (14%) in the same years. In contrast, the share of adherents of the Mormon Church has more than tripled: from 2% in 1999 to 6% in 2021, while affiliation with the Salvation Army or with the Reformed Congregational Churches has increased fivefold, from less than 1% each in 1999 to about 2% each in 2021. The share of members of the Roman Catholic Church grew from 8.4% in 1999 to 9.3% in 2021.

3.3. Language and citizenship status

Table 3.3 shows the distribution of the population speaking Marshallese and other languages by age, sex and location. In 2021, 96% of the population aged five years or over spoke Marshallese. Similarly, 94.7% of people in Majuro spoke Marshallese at the time of the census, as did 97.2% of people in Kwajalein. All residents of all ages in rural areas spoke Marshallese. Looking at the data by sex, 95.1% of *females* and 97% of *males* spoke Marshallese.

Table 3.3. *Languages spoken by age, sex and location, RMI, 2021*

	All ages over 5	Age 5–14	Age 15–29	Age 30–44	Age 45–59	Age 60–74	Age 75+
Total pop. (number)	**36,808**	**9,636**	**10,422**	**8,579**	**5,522**	**2,328**	**321**
Speaks Marshallese (%)	96.0	96.3	97.5	95.6	94.6	93.9	92.2
Speaks other languages (%)	23.9	20.5	24.3	24.7	26.5	26.4	30.1
Urban	**28,992**	**7,125**	**8,745**	**6,641**	**4,406**	**1,828**	**247**
Speaks Marshallese (%)	95.4	95.7	97.3	94.8	93.6	92.8	91.1
Speaks other languages (%)	27.3	24.3	25.7	28.7	29.4	29.2	32.2
Rural	**7,816**	**2,511**	**1,677**	**1,938**	**1,116**	**500**	**74**
Speaks Marshallese (%)	98.3	98.1	98.6	98.5	98.3	97.6	95.9
Speaks other languages (%)	11.5	9.8	13.3	11.9	11.9	11.2	10.8
Majuro	**20,470**	**4,785**	**6,333**	**4,685**	**3,120**	**1,345**	**202**
Speaks Marshallese (%)	94.7	95.4	96.9	93.7	92.4	91.5	89.6
Speaks other languages (%)	28.6	25.9	27.6	30.0	31.1	31.3	39.1
Kwajalein	**8,522**	**2,340**	**2,412**	**1,956**	**1,286**	**483**	**45**
Speaks Marshallese (%)	97.2	96.4	98.3	97.4	96.7	96.5	97.8
Speaks other languages (%)	24.0	21.0	23.5	24.6	28.1	28.4	21.7
Fe*males*	**18,025**	**4,637**	**5,101**	**4,317**	**2,666**	**1,127**	**177**
Speaks Marshallese (%)	95.1	96.2	97.6	95.7	95.2	94.0	93.2
Speaks other languages (%)	23.9	21.1	24.7	24.3	25.9	25.3	21.9
Males	**18,783**	**4,999**	**5,321**	**4,262**	**2,856**	**1,201**	**144**
Speaks Marshallese (%)	97.0	96.4	97.4	95.5	94.0	93.8	91.0
Speaks other languages (%)	24.0	20.0	24.0	25.0	27.1	27.4	40.3

Overall, percentages of *males* and *females* speaking languages other than Marshallese were similar, except in the case of the oldest age group for *females*, which had a relatively small percentage of other language speakers. About one in every five residents under the age of 15 spoke a language other than Marshallese; these shares increased to about 30% for the oldest age group, when the percentages diverged for *males* and *females*, with *males* twice as likely than *females* to speak a language other than Marshallese at home.

As expected, people living in rural areas were the least likely to speak a language other than Marshallese. For the 5–14 age group, the figure was 10%; it increased slightly, to 13.3%, for the 15–29 age group, reflecting the fact that students would be exposed to English in school, and then decreased with age, reflecting that older people in rural areas would not need to speak a language other than Marshallese in their daily lives. In contrast, the more urbanised atolls of Majuro and Kwajalein had a higher percentage of their inhabitants speaking languages other than Marshallese. Residents in Majuro were the most likely to speak a language other than Marshallese, with the

percentage increasing from about one in four for the youngest age group to about two in five for the oldest. About 40% of *males* of the oldest age group spoke languages other than Marshallese.

As shown in ***Table 3.4***, over 93% of the population of RMI was Marshallese at the time of the 2021 census. Differences in citizenship status by gender and age were generally minimal, except for the 15–29 age group, for which the share of citizens in rural locations was lower, about 72%.

Table 3.4. *Citizenship status of the population by age, sex and location, RMI, 2021*

	All ages	Age 0–14	Age 15–24	Age 25–34	Age 35–54	Age 55–64	Age 65+
Total citizens (%)	**93.2**	**95.6**	**89.4**	**94.5**	**92.8**	**91.8**	**92.0**
Rural citizens (%)	93.8	97.8	71.8	99.1	98.5	98.0	99.1
Urban citizens (%)	93.0	94.8	93.4	93.2	91.3	90.1	90.0
Female citizens (%)	93.7	95.4	89.6	94.7	94.0	93.8	94.6
Male citizens (%)	92.7	95.8	89.3	94.3	91.6	90.0	89.5
Total pop. (number)	**42,418**	**14,453**	**8,506**	**5,523**	**9,815**	**2,552**	**1,569**

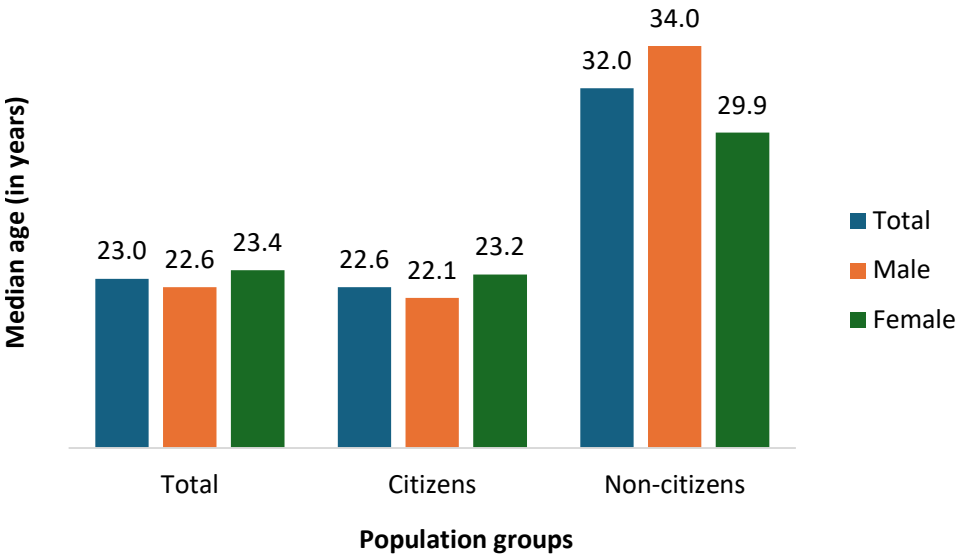


Figure 3.4. *Median age of the population by sex and citizenship status, RMI, 2021*

The median age of RMI residents in 2021 was 23 years, with *females* being about one year older than *males* (***Figure 3.4***). The Marshallese citizen population had roughly the same median ages. The non-citizen population, however, had a significantly higher median age of about 32 years, with *males*, at 34, being about four years older, on average, than *females*.

3.4. Marital status and age at first marriage

The ages at which people marry and the proportion of men and women who remain single (or are in union) at a given period are among the key proximate determinants of fertility. The 2021 census recorded that 61% of women and 59% of men were in union. The percentage of never-married individuals has increased over time, particularly for women, for which the figure rose from 29.7% in 2011 to 32.1% in 2021 (***Table 3.5***).

The 2021 census did not collect information on age at first marriage, but this age can be deduced indirectly using data on the proportion of individuals who were single at ages 15–49. The estimate

derived from such data is the singulate mean age at marriage (SMAM) and represents the average number of years spent in the never-married state by those who marry before age 50.[1]

Table 3.5. *Marital status of the population aged 15 years or over by sex, RMI, 2011 and 2021*

	Females		Males	
	2011	2021	2011	2021
Never married (%)	29.7	32.1	36.1	37.4
Currently in union (%)	63.0	61.4	60.5	58.8
Separated (%)	2.3	1.3	1.8	1.0
Widowed (%)	5.0	4.9	1.5	2.5
Divorced (%)	0.0	0.4	0.0	0.3
Total pop. aged 15+ (number)	**15,700**	**13,394**	**16,205**	**13,801**

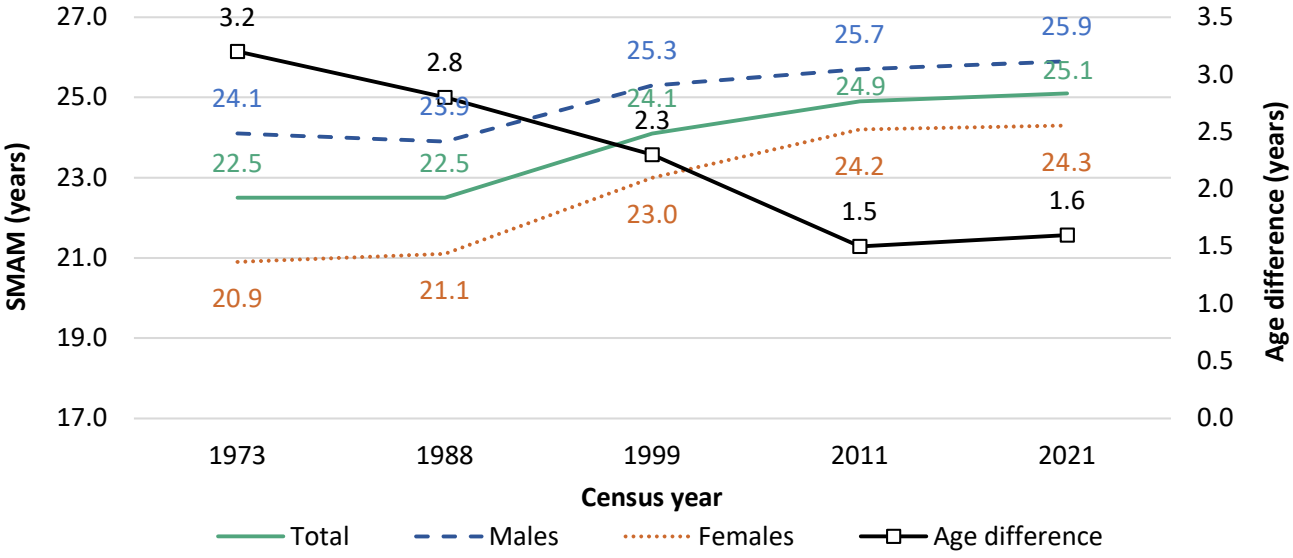


Figure 3.5. *Average age at first marriage and difference in age at first marriage between males and females, RMI, 1973–2021*

Table 3.6. *Average age at first marriage by sex and location, and age difference between the sexes at first marriage, RMI, 2021*

	Total	Males	Females	Age difference in mean age at first marriage between Males and Females (years)
Total	**24.3**	**25.1**	**23.6**	**1.5**
Urban	24.9	25.5	24.4	1.1
Majuro	24.6	25.3	24.0	1.3
Kwajalein	25.7	26.1	25.4	0.7
Rural	21.9	23.5	20.4	3.1

1 Because of the small population size of people aged 50, the average number of years for people aged 45–54 was used to derive the estimate.

Figure 3.5 shows that SMAM increased from 22.5 years in 1973 to 25.1 in 2021, that is, 2.6 years in the five decades between the 1973 and 2021 censuses. The SMAM for *females* increased even more, from about 21 in 1973 and 1988 to 23 in 1999 and 24 in 2011 and 2021. Moreover, it grew from about 24 in 1973 to about 25 in 2021 for *males*. In 1973, grooms were 3.2 years older than their brides. The age difference between brides and grooms subsequently decreased; in the 2021 census, *males* were, on average, only 1.6 years older than *females* at first marriage.

As expected, in rural areas, men and women marry relatively younger than in urban areas and have a significant gap in age at marriage (***Table 3.6***). On average, women in rural areas marry before turning 21, and the age at which they marry is three years younger than men. In contrast, Kwajalein, a more urbanised area, had the highest age at marriage and the smallest difference in age at first marriage for men and women in the country. In Kwajalein, both *males* and *females* marry after 25, and the age difference between them is less than one year.

4. LITERACY, EDUCATION AND TECHNOLOGY

4.1. Literacy

Table 4.1 shows the literacy status of the RMI population five years or over in 2021 by sex and location. About 88% of the population were literate. Majuro had the highest percentage of literate people (90%). Only about 84% of people in rural areas were literate.

Table 4.1. *Literacy by age, sex and location, RMI, 2021*

	Both sexes (%)				Males (%)				Females (%)			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
All ages over 5	88.0	90.7	85.4	83.6	87.5	90.2	84.8	84.0	88.5	91.3	86.1	83.2
Age 5–9	61.2	66.3	55.2	57.1	60.7	64.4	54.7	59.1	61.8	68.2	55.8	55.0
Age 10–14	88.2	90.9	84.6	86.5	87.2	90.5	81.8	86.2	89.4	91.4	87.9	86.8
Age 15–49	92.7	94.6	90.7	89.5	91.8	93.6	89.8	88.8	93.7	95.5	91.5	90.3
Age 50–64	91.9	93.5	92.0	87.4	93.0	94.8	92.6	89.1	90.7	92.3	91.2	85.4
Age 65+	90.2	91.4	92.6	85.0	93.7	94.4	97.0	89.6	86.8	88.6	88.7	80.0

The percentage of literate people in Majuro was higher than that in Kwajalein (another area considered urban) and in rural areas, at least partly because Majuro is the national capital and tends to attract people looking for jobs requiring a higher level of educational attainment and specialised skills. Older people in rural areas tended to have lower literacy rates than their counterparts in urban areas. Literacy rates were about the same for *males* and *females* in urban and rural areas across all age groups.

4.2. Primary, secondary and tertiary education

The population aged six to 18 is considered the school-age population, that is, people expected to attend elementary school (primary education) and high school (secondary education). Children aged six to 13 comprise the elementary school population and those aged 14–18 comprise the high school population.

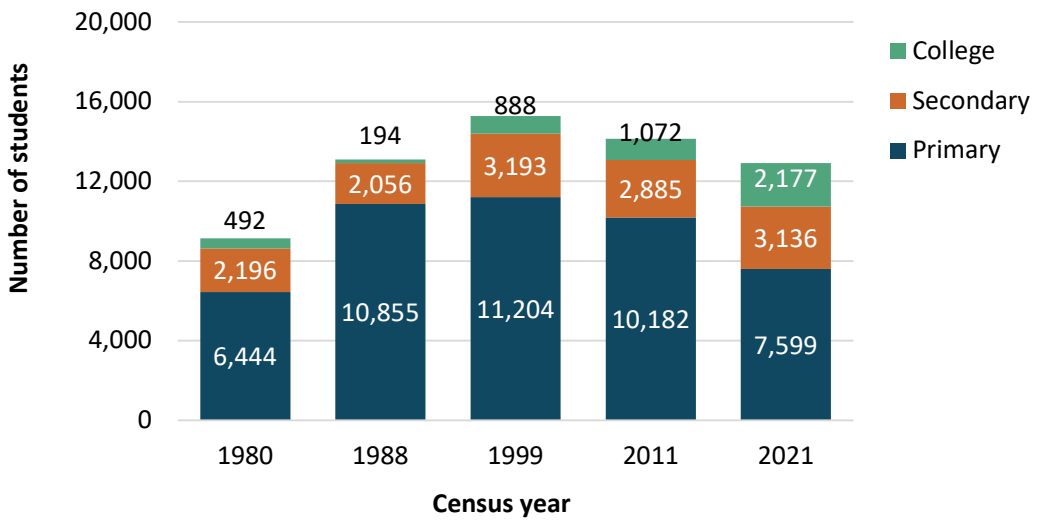


Figure 4.1. *Attendance of an educational institution by level, RMI, 1980–2021*

Figure 4.1 shows the distribution of the population who reported attending school or college in the censuses conducted from 1980 to 2021. About 9,000 students attended school or college in 1980, with approximately 6,400 attending elementary school and 2,200 attending high school. The enrolment figures for tertiary courses were very low in 1980, as shown in the total figure for that year.

By 1988, the educational system had improved, and about 13,000 students were enrolled at an educational institution at any level. However, this improvement largely occurred at the primary level: while almost 11,000 students were enrolled in elementary school – an increase of 4,000 during the eight years since the 1980 census – the number of students in high school remained the same and the number in college decreased considerably. By 1999, total enrolment at all three levels had increased to more than 15,000, with about 11,000 students in elementary school (an increase of about 350 from 1988), more than 3,000 in high school (an increase of about 50%) and almost 900 in college (an increase of about 600%).

By 2011, fertility had decreased and emigration had commenced, so the numbers of children in elementary and high schools decreased by about 1,000 and 300, respectively. However, a much more significant decline was seen in the 2021 census figures. The total number of students enrolled in an educational institution was about 13,000, the same level as in 1988. While only 7,600 students were enrolled in elementary school, a decrease of approximately 2,600 students from 2011, the number of high school students increased back to the 1999 level, and the number of college students more than doubled from the 2011 level to 2,200, the highest number yet.

Table 4.2. *Elementary and high school enrolment rate by age, sex and location, RMI, 2021*

Age	Both sexes (%)			Males (%)			Females (%)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
6	94.6	93.8	96.6	96.2	95.6	97.7	92.9	92.0	95.4
7	94.1	93.7	95.4	95.1	95.2	94.8	93.2	92.1	96.2
8	94.8	94.3	96.0	94.2	94.0	94.8	95.4	94.6	97.5
9	94.0	93.2	96.4	94.0	92.8	97.2	94.0	93.5	95.7
10	93.9	93.7	94.1	92.4	91.5	94.4	95.4	96.0	93.8
11	93.2	92.2	95.9	92.6	92.2	93.8	93.9	92.1	98.4
12	93.2	93.0	93.8	92.3	92.3	92.3	94.3	93.8	95.3
13	92.5	92.8	91.7	91.2	91.1	91.3	93.9	94.5	92.2
14	91.1	90.9	91.9	90.4	90.2	91.0	91.9	91.6	93.4
15	84.8	85.4	80.6	82.0	82.3	80.0	87.9	88.6	81.4
16	79.5	81.8	58.1	75.2	78.0	55.4	84.0	85.5	63.3
17	71.9	75.4	45.8	67.4	70.4	47.3	76.7	80.6	43.9
18	64.5	67.2	44.4	62.7	65.2	46.4	66.3	69.3	41.9
All ages 6–18	88.2	88.0	89.2	87.0	86.6	88.3	89.6	89.4	90.4

About 88% of the population aged six to 18 in 2021 attended school, with *females* having a slightly higher percentage of attendance (89.6%) than *males* (87.0%) (***Table 4.2***). F*emales* had higher attendance rates than *males* in both rural and urban areas. The age pattern of school attendance was similar across locations and by sex; in general, over 90% of children attended school until age 14, after which attendance rates declined faster with age – more so in rural areas.

Urban areas showed fewer extreme changes in attendance by age group than rural areas (see ***Table 4.2***), for which a strong trend appeared: about one in every five (20%) 15-year-olds was not

enrolled in school. This share doubled to about two in five 16-year-olds, increased to more than half for 17-year-olds, and then stayed at that level for 18-year-olds.

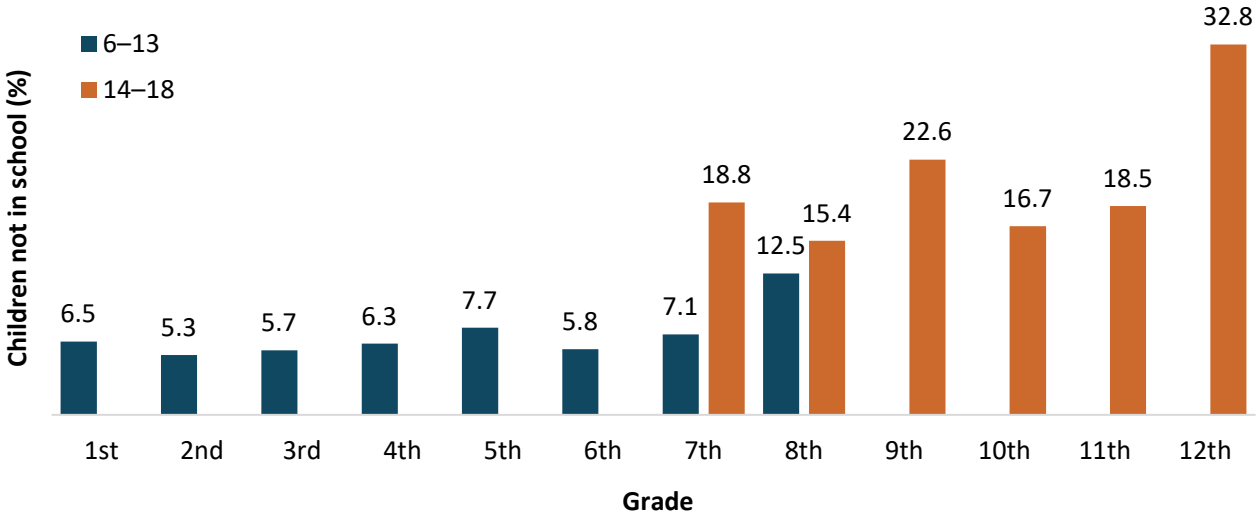


Figure 4.2. *School-age children not in school by age and grade, RMI, 2021*

Figure 4.2 shows that the percentages of school-age children not enrolled in school by grade remained low for the 6–13-year-olds in the first through seventh grades. The highest percentage not enrolled were children in the fifth grade, at about 8%. For the seventh and eighth grades, the 6–13 and 14–18 age groups overlap because students of either of those age groups could be attending high school. About 7% of potential students from the 6–13 age group were not enrolled in the seventh grade, and 18% of the 14–18-year-olds who potentially could be enrolled in the seventh grade were not reported as being enrolled – 18% is almost one in five, which is a rather large number of young people not enrolled in school. For the eighth grade, about 12% of the 6–13-year-olds were not enrolled in school, and 15% of the 14–18-year-olds were not enrolled. The percentage of 14–18-year-olds not enrolled in school varied from 23% for the ninth grade to 33% for the twelfth grade.

4.2.1. Highest level of education completed

Figure 4.3 shows trends in high school completion by sex for the past four censuses. In 1980, only 23% of Marshallese aged 25 years or over were high school graduates. About 31% of *males* but only 14% of *females* of this age had graduated high school, reflecting the trend seen at that time in other parts of Micronesia that *female* students started and left school earlier. The low percentage of graduates of both sexes in RMI in 1980 was mainly due to the education system being slow to establish itself, so high schools started graduating their students later. While FSM and Palau were sending students to Hawaii and the US mainland for secondary and tertiary education during 1977–1981, Marshallese began obtaining high school diplomas and continuing to tertiary education later.

Eight years later, the 1988 census indicated that about 32% of Marshallese aged 25 years or over were high school graduates. By 2011, the percentage of the population who had completed high school increased further: about 43% of people aged 25 years or over – more than two in every five – were high school graduates, including about 47% of men and 39% of women. The percentage continued to rise and in 2021, more than half the people aged 25 years or over were high school graduates, including about 53% of men and 49% of women.

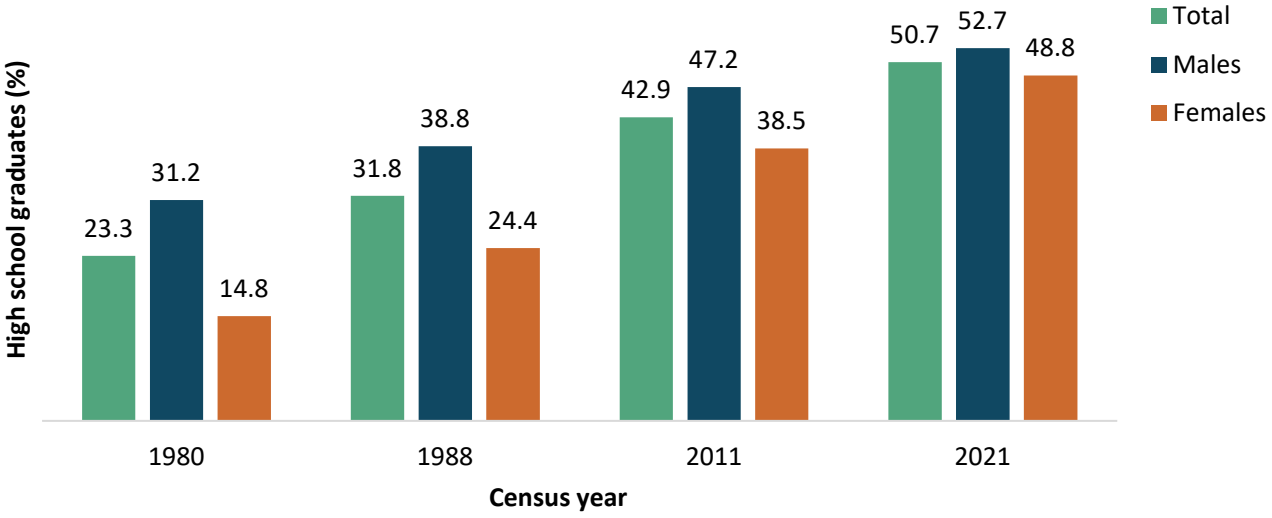


Figure 4.3. *High school graduates aged 25 years or over by sex, RMI, 1980–2021*

While more than half the members of the 25 years or over age group were high school graduates in 2021, the distribution is skewed to urban areas. ***Table 4.3*** shows the educational attainment of the population aged 25 years or over by sex and location. About 55% of the adults living in urban locations (Majuro and Kwajalein) had completed high school, while only 34% of rural residents had. Given that most skilled jobs are in urban areas, it is unsurprising that the more educated Marshallese move to these places to work and live. Regarding tertiary education, about 5% of the adult population were college graduates – 6% of those lived in urban areas and 1% in rural areas.

As shown in ***Figure 4.3***, women had a lower level of educational attainment than men in 2021 (48.8% against 52.7%). A total of about 49% of the adult women in RMI were high school graduates – this comprised only 32% of adult women living in rural areas but 53% of adult women living in urban areas. Men living in urban locations were more likely to have completed high school (58%) than men living in rural atolls and islands (35%); this was the trend for the population taken as a whole.

Table 4.3. *Educational attainment of the population aged 25 years or over by sex and location, RMI, 2021*

Highest level of education completed	Both sexes (number)			Males (number)			Females (number)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Less than ninth grade	4,76	2,808	1,368	2,078	1,356	722	2,098	1,452	646
Ninth to eleventh grade	5,024	3,701	1,323	2,358	1,715	643	2,666	1,986	680
High school graduate	5,988	5,062	926	3,095	2,628	467	2,893	2,434	459
Associate of Arts or Science degree	2607	2,228	379	1,365	1,135	230	1,242	1,093	149
Bachelor of Arts or Science degree	594	556	38	315	290	25	279	266	13
Post-graduate degree	287	271	16	166	153	13	121	118	3
All grades	**18,676**	**14,626**	**4,050**	**9,377**	**7,277**	**2,100**	**9,299**	**7,349**	**1,950**

The number of college graduates remained low in the 2021 census, although it is increasing. As can be seen in ***Table 4.3***, about 5% of *males* and 4% of *females* aged 25 years or over living in RMI were college graduates in 2021. The percentages were higher in urban areas (6% of *males* and 5% of *females*) than in rural areas (2% of *males* and 1% of *females*).

4.3. Access to information and communication technology

One of the most remarkable recent changes in RMI is the increasing use of mobile phones and the internet. Access to information and communication technologies facilitates learning and the flow of ideas between and within communities. It helps expand coverage of social and health services and expedite the population's access to them; supports early warning systems; and creates opportunities in commerce and employment. In 2021, about two in every five households in the country had access to the internet. Three in every five households in Majuro and nearly half the households in Kwajalein had access to the internet. Rural households have yet to fully benefit from the ongoing global telecommunications and technology revolution: in 2021, only 3.9% of rural households reported having access to the internet.

Table 4.4. *Access to the internet by age, sex and location, RMI, 2021*

Age	Urban (%)			Rural (%)			Total (%)		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
10–14	43.2	41.8	44.7	3.9	4.3	3.2	32.9	31.5	34.5
15–24	60.1	58.6	61.7	11.8	11.3	12.4	53.1	51.3	55.1
25–34	64.4	62.9	65.9	10.8	11.1	10.4	52.7	51.6	53.7
35–44	61.7	60.8	62.6	10.8	12.2	9.4	50.2	49.2	51.2
45–54	60.4	59.3	61.6	8.4	8.5	8.3	50.4	49.4	51.4
55–64	57.2	55.8	58.6	6.1	7.8	4.0	46.0	44.4	47.6
65+	51.9	53.4	50.6	1.7	2.7	0.6	40.8	41.5	40.1
All ages	**58.1**	**56.8**	**59.4**	**8.4**	**8.9**	**7.9**	**47.9**	**46.5**	**49.3**

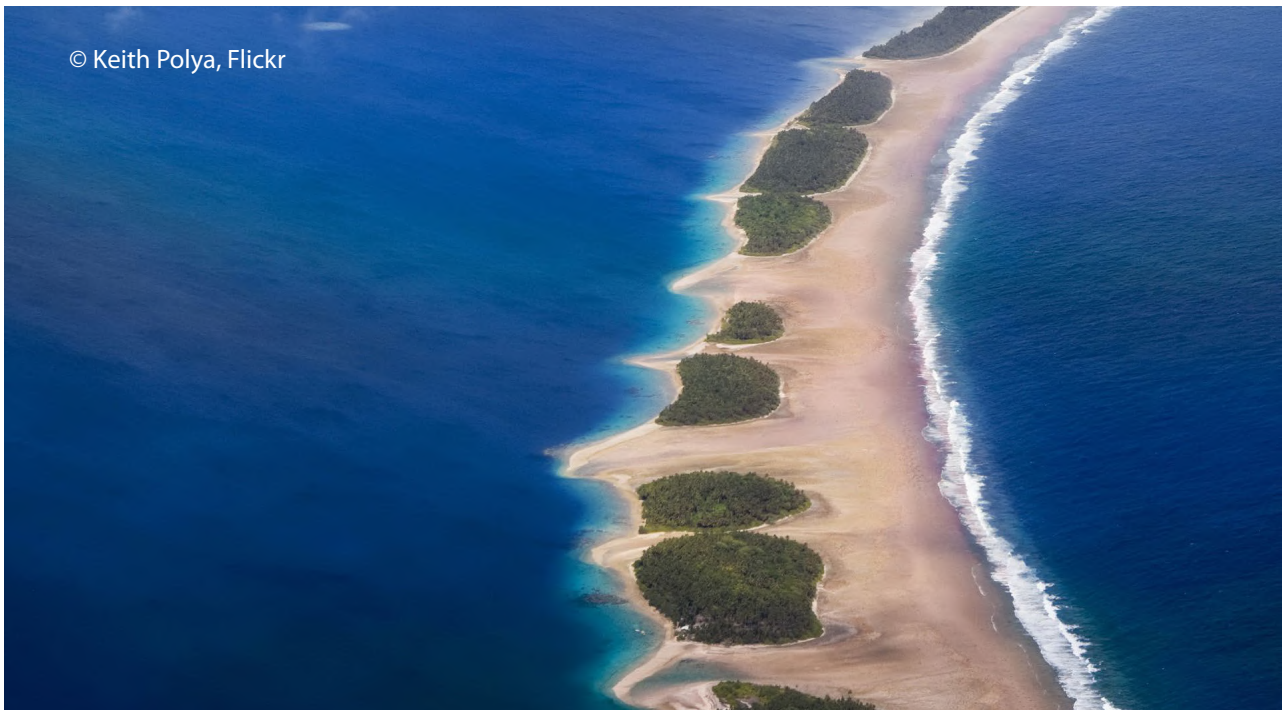
As ***Table 4.4*** shows, about half of the population aged 10 years or over had accessed the internet in the week preceding the 2021 census. Internet access was relatively higher among women aged between 15 and 64 and those residing in more urbanised locations. Less than 10% of the population in rural areas had access to the internet; in these locations, men had slightly better access than women. The rural–urban divide is pervasive and visible across age groups. For example, in the 15–44 age group, while about six in every 10 urban residents had internet access, this share was only about one in every 10 residents in rural areas. Older adult women in rural areas had low internet access: less than 5% of women over age 55 had internet access.

The 2021 census collected information from all private dwellings on mobile phone and laptop ownership, two modern technologies that help individuals, families and communities connect with one another and with the outside world. As shown in ***Table 4.5***, about 89% of households owned at least one mobile phone in 2021, while the average household owned more than two mobile phones. The highest mobile phone ownership was recorded in Kili (95.1%), followed by Jabat (94.4%), and in another four atolls or islands, over 90% of households owned at least one mobile phone. In contrast, about 25% of households in Jaluit did not own a mobile phone, limiting their access to the opportunities that come with the technology.

Table 4.5 also shows that more than one in every four households in the country owned a laptop in 2021. As with mobile phones, there are significant variations in laptop ownership across locations. For example, while well over one in three households in Majuro reported owning a laptop and nearly one in four did so in Kwajalein, this statistic was only 10% or less in 11 atolls or islands. Furthermore, the distribution was highly skewed, as demonstrated by the data from Mejit, Namdrik and Utirik, which had the highest number of laptops per household but the lowest proportion of households owning a laptop. This means the few devices available in those locations were concentrated in fewer households.

Table 4.5. *Ownership of mobile phones and laptops in occupied private dwellings by location, RMI, 2021*

Atoll/island	Mobile phones		Laptops	
	Ownership (%)	Mean number per HH	Ownership (%)	Mean number per HH
Ailinglaplap	89.3	1.8	13.8	1.1
Ailuk	80.4	1.3	7.1	1.0
Arno	83.4	1.7	3.2	1.0
Aur	84.8	1.4	7.6	1.0
Ebon	79.0	1.6	1.0	1.0
Enewetak	89.1	1.5	7.8	1.2
Jabat	94.4	1.4	22.2	1.3
Jaluit	75.1	2.0	18.0	1.1
Kili	95.1	2.1	19.5	1.1
Kwajalein	86.2	2.6	24.5	1.2
Lae	82.9	1.9	8.6	1.0
Lib	90.9	1.5	13.6	1.0
Likiep	87.8	1.8	14.3	1.1
Majuro	92.0	2.8	35.6	1.5
Maloelap	86.7	1.4	13.3	1.1
Mejit	91.7	1.7	10.4	1.2
Mili	87.6	1.4	4.8	1.0
Namdrik	77.1	1.8	8.6	1.5
Namu	57.4	1.4	11.9	1.0
Ujae	88.2	1.4	2.0	1.0
Utirik	88.9	1.7	9.3	1.2
Wotho	94.1	1.7	11.8	1.0
Wotje	77.4	1.7	21.1	1.2
Total	**88.5**	**2.5**	**27.1**	**1.4**



5. EMPLOYMENT AND ECONOMIC WELL-BEING

Knowledge of the size of the working-age population and the skill set and occupational characteristics of the labour force is critical for designing policies geared towards promoting economic development and improving living standards.

The International Labour Organization (ILO) provided a framework for collecting and collating labour force data in censuses and household surveys (ILO 2013). The ILO framework defines work as any productive activity pursued to produce goods and provide services, whether for the household (i.e. own use) or for market or non-market units (i.e. use by others). While the international standard working-age population is designated as 15–64 years, the Marshallese working-age population, as in many Pacific Island countries and territories, refers to all people aged 15 years or over, whether or not they are in the labour force.

The labour force refers to the current labour supply available for producing goods and providing services in exchange for pay or profit, disregarding the degree of formality of the work or employment status at the time of enumeration. Accordingly, it includes both people employed to work for pay or profit and people putting pressure on the labour market, that is, those who are unemployed but actively seeking and available to work. For the employed category, three subcategories are defined: (1) those who work for someone for pay, (2) those owning a business, and (3) those engaging in some other business activity. Paid work can be in the public or the private sector.

ILO distinguishes between the potential labour force and the current labour supply. The potential labour force encompasses a group that is outside the labour force but remains attached to the labour market. It comprises people seeking work but temporarily unavailable and people who are available but not currently seeking work for pay or profit. Additionally, the ILO proposed an additional measure – the unmet need for employment – which combines unemployed people, the potential labour force, and people working less than a specified time-sensitive cut-off point, such as below the population's average weekly working hours or a normative standard. This measure, which captures the degree of underutilisation of the labour force, is discussed in this chapter along with labour force participation, unemployment rate and occupational structure of the RMI population. The chapter also describes income sources and average household income, as indicated by the 2021 census.

5.1. Labour force participation and unemployment

Figure 5.1 summarises the distribution of the working-age population (i.e. aged 15 years or over) according to the work and forms of work framework of ILO (ILO 2013). ***Table 5.1*** presents the same data by sex and location (urban and rural). As of the 2021 census, RMI had about 28,000 working-age residents, of whom 13,368 were employed for pay or profit or actively seeking employment, giving a labour force participation rate of 48.9%. Labour force participation rates were relatively higher in urban than in rural areas and varied widely across atolls or islands. In Aur and Wotho, over 80% of people aged 15 years or over were in the labour force, while in Jaluit and Wotje, this statistic was only about a third or less.

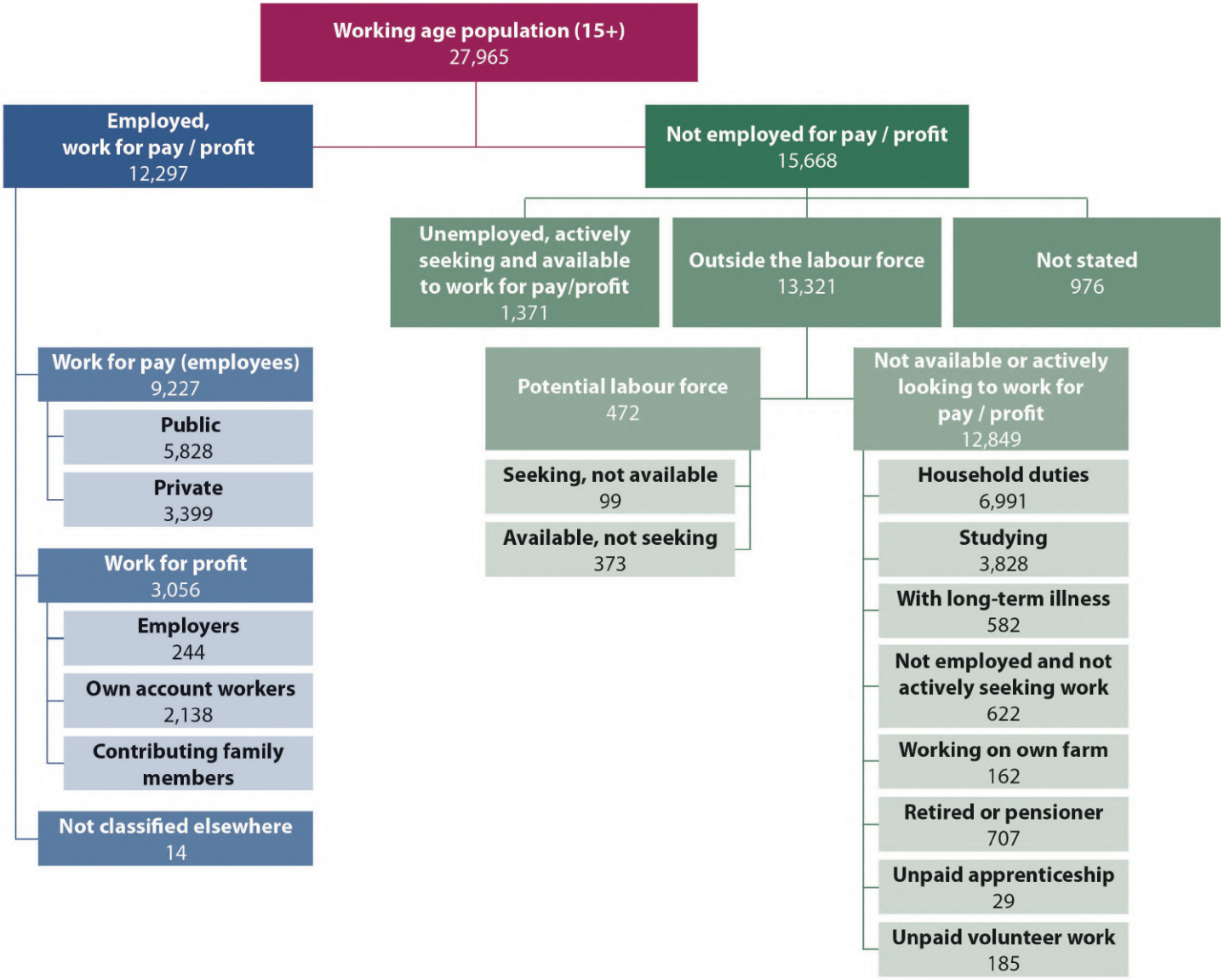


Figure 5.1. *Distribution of the working-age population based on the International Labour Organization framework, RMI, 2021*

Note: See ILO (2013).

Table 5.1. *Working-age population, labour force participation and unemployment rate by sex and location, RMI, 2021*

Atoll/island	Total working-age pop.	Employed for pay or profit	Not employed for pay or profit				Labour force	Labour force participation rate (%)	Unemployment rate (%)
			Unemployed	Potential labour force	Not available or looking for work or do not want employment	Not stated			
Ailinglaplap	645	284	31	0	327	3	315	48.8	9.8
Ailuk	133	90	0	0	43	0	90	67.7	0.0
Arno	691	224	46	8	411	2	270	39.1	17.0
Aur	184	156	1	0	27	0	157	85.3	0.6
Ebon	286	156	1	1	128	0	157	54.9	0.6
Enewetak	163	64	7	12	66	14	71	43.6	9.9
Jabat	39	27	0	0	12	0	27	69.2	0.0
Jaluit	986	280	48	11	321	326	328	33.3	14.6
Kili	239	125	4	4	106	0	129	54.0	3.1
Kwajalein	6,233	2,723	520	146	2,717	127	3,243	52.0	16.0
Lae	88	33	1	1	39	14	34	38.6	2.9
Lib	82	25	5	4	48	0	30	36.6	16.7
Likiep	130	63	1	1	65	0	64	49.2	1.6
Majuro	15,968	7,055	672	225	7,663	353	7,727	48.4	8.7
Maloelap	235	117	0	0	114	4	117	49.8	0.0
Mejit	134	76	2	1	55	0	78	58.2	2.6
Mili	299	180	0	3	116	0	180	60.2	0.0
Namdrik	174	89	0	2	83	0	89	51.1	0.0
Namu	332	172	4	46	110	0	176	53.0	2.3
Ujae	180	106	5	1	68	0	111	61.7	4.5
Utirik	154	51	20	5	77	1	71	46.1	28.2
Wotho	48	40	0	1	7	0	40	83.3	0.0
Wotje	542	161	3	0	246	132	164	30.3	1.8
Total	**27,965**	**12,297**	**1,371**	**472**	**12,849**	**976**	**13,668**	**48.9**	**10.0**
Urban	22,201	9,778	1,192	371	10,380	480	10,970	49.4	10.9
Rural	5,764	2,519	179	101	2,469	496	2,698	46.8	6.6
Males	14,244	7,774	784	225	4,912	549	8,558	60.1	9.2
Females	13,721	4,523	587	247	7,937	427	5,110	37.2	11.5

Overall, for both men and women, labour force participation rates increased with age, reaching their highest point between the ages of 40 and 44 and declining slowly thereafter (***Figure 5.2***). The participation rate for women of all age groups combined was about 37% compared with 60% for men. Men also had a far higher participation rate for each age group than women had. At its peak, the *male* participation rate reached just higher than 80%, while the *female* participation rate was just over 50%. Women's low rate of participation in the labour force partly results from their lower

human capital endowments, their greater involvement in producing goods and services for the household, and the potential conflict between employment and childbearing and child-rearing for women.

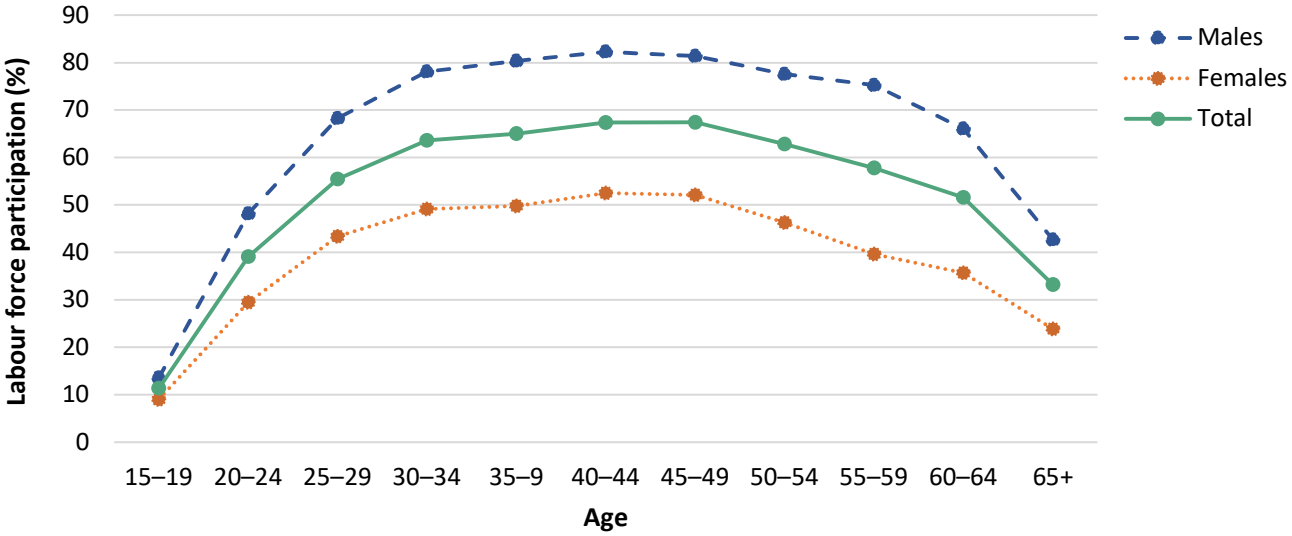


Figure 5.2. *Labour force participation by sex, RMI, 2021*

As can be seen from ***Table 5.1***, most residents classified as being in the labour force were already employed (12,297), and there were more employed men than women. While overall there were more employed persons in urban areas, the unemployment rate was higher in urban locations (about 11%) than in the rest of the country (about 7%). Some atolls and islands, both urbanised and rural, had exceptionally high levels of unemployment: 28.2% in Utirik; 15–17% in Arno, Jaluit, Kwajalein and Lib; and 9–10% in Ailinglaplap, Enewetak and Majuro. The unemployment rate on Kwajalein Atoll was much higher than in most parts of the country partly because workers were attracted to the Atoll to seek work at the adjoining US Army missile base. In all parts of the country, women had a higher unemployment rate than men.

Some 12,849 residents reported that they did not want employment, were unavailable or were not actively looking for work for pay or profit. This group is outside the current labour force, with most of its members engaged in household activities (6,991) or studying full-time (3,828), and the remainder retired (707), with long-term health conditions (582) or being unpaid volunteers or apprentices (214). Some 622 residents reported being unemployed but not seeking employment, 373 residents reported being available to work but not actively seeking employment, and 99 residents reported they were seeking but not available to work at the time of enumeration. While these individuals are outside the labour force or the current labour supply, they are part of what is known as the potential labour force. They are included in determining labour utilisation rates.

5.2. Labour utilisation: Working hours and unmet need for employment

The average employed person in RMI worked 37 hours per week, with men working longer than women and people in urban areas working longer than their rural counterparts. The average employed man worked 38 hours per week, about four hours more than the average employed woman. Employed people in urban areas worked nearly five hours more than those in rural locations. ***Table 5.2*** shows that average weekly working hours exceeded 40 in three locations, were between 35 and 39 in seven locations (including the urban areas of Kwajalein and Majuro), and were fewer than 30 in eight locations. About 40% of people working for pay or profit lived in locations where the average weekly working hours were 37.3 or fewer.

Table 5.2. *Labour utilisation by location, RMI, 2021*

Atoll/island	Total employed, unemployed and potential labour force	Average weekly working hours per employee	Labour utilisation		Unmet need for employment (%)***
			Underutilised*	Fully utilised**	
Ailinglaplap	315	33	176	139	55.9
Ailuk	90	32	60	30	66.7
Arno	278	44	108	170	38.8
Aur	157	36	47	110	29.9
Ebon	158	26	109	49	69.0
Enewetak	83	37	32	51	38.6
Jabat	27	30	14	13	51.9
Jaluit	339	29	189	150	55.8
Kili	133	36	46	87	34.6
Kwajalein	3389	36	1341	2048	39.6
Lae	35	26	26	9	74.3
Lib	34	43	13	21	38.2
Likiep	65	28	38	27	58.5
Majuro	7952	38	2415	5537	30.4
Maloelap	117	25	77	40	65.8
Mejit	79	21	62	17	78.5
Mili	183	32	112	71	61.2
Namdrik	91	42	28	63	30.8
Namu	222	29	149	73	67.1
Ujae	112	31	47	65	42.0
Utirik	76	33	54	22	71.1
Wotho	41	36	21	20	51.2
Wotje	164	39	50	114	30.5
Total	**14,140**	**37**	**5214**	**8926**	**36.9**
Urban	11,341	38	3756	7585	33.1
Rural	2799	33	1458	1341	52.1
Males	8783	38	2837	5946	32.3
Females	5357	34	2377	2980	44.4

** Comprises unemployed people, people in the potential labour force and people who were employed but working under 37.5 hours per week.*

*** Employees who worked for 37.5 hours or more.*

**** Comprises underutilised divided by (employees + unemployed + potential labour force).*

Under the ILO framework, unmet employment needs are determined on the basis of time-related criteria and the degree of attachment to the labour market. Accordingly, in RMI in 2021, about 37% of people in the actual and potential labour force had an unmet need for employment because they worked for fewer hours per week than the population average, were unemployed, or fell under the potential labour force category.

Labour underutilisation was higher in rural areas, where over 50% of the population had unmet employment needs, than in urban areas. The unmet need for employment exceeded 70% in three locations, was 60–69% in five locations and was less than 40% in eight locations (including the urban areas of Kwajalein and Majuro) (***Table 5.2***). About 20% of people in the actual and potential labour force lived in locations where the underutilisation rate was 55% or higher.

The available data collectively suggest that women generally have lower labour force participation and higher unemployment than men. When they do work in paid employment, they do so for fewer hours. As a result, labour underutilisation and the unmet need for employment were higher for women than for men by about 12%.

5.3. Occupational structure

Table 5.3 shows the occupation distribution of the labour force of RMI according to the major group (one-digit level) International Classification of Occupations (ISCO)-08 (ILO 2008), by sex and location, obtained from the 2021 census. Occupation refers to the type of work a person does at their place of work. It includes paid employees in the public (government) sector or private sector and the self-employed.

The 2021 census found that the largest occupational group was services and sales workers (19.3%), followed by craft and related trades workers (14.1%), professionals (13.2%), and technicians and associate professionals (10.5%). Men and women had markedly different occupational profiles, as did workers in urban and rural areas. The highest percentage of workers in Majuro (21.5%) and Kwajalein (20.3%) were employed in services and sales occupations. In contrast, in the rest of the country, the majority (about 39.3%) worked as skilled agricultural, forestry and fishery workers, while less than 15% worked in services and sales occupations. There were also three times as many technicians and associate professionals in Kwajalein and Majuro than in the rest of the country.

For both men and women, services and sales workers was the largest occupational group, accounting for about 26% of *female* and 15% of *male* workers. This group was followed by craft and related trades workers for women (14.6%) and skilled agricultural, forestry and fishery workers for men (14.6%). Interestingly, about 17% of employed women worked as professionals compared with 11% of employed men. About 10% of employed men and 8% of employed women worked as managers.

Table 5.3. *ISCO-08 major group occupation of employed persons by sex and location, RMI, 2021*

ISCO-08 level 1 grouping	Total	Majuro	Kwajalein	Rest of the country
Male				
Armed forces	63	42	14	7
Managers	766	533	115	118
Professionals	862	561	104	197
Technicians and associate professionals	855	589	178	88
Clerical support workers	364	227	117	20
Services and sales workers	1,192	699	267	226
Skilled agricultural, forestry and fishery workers	1,134	189	48	897
Craft and related trades workers	1,068	642	374	52
Plant and machine operators and assemblers	601	385	203	13
Elementary occupations	869	465	324	80
Total	**7,774**	**4,332**	**1,744**	**1,698**
Female				
Armed forces	65	41	18	6
Managers	382	304	47	31
Professionals	758	479	134	145
Technicians and associate professionals	433	316	99	18
Clerical support workers	401	272	119	10
Services and sales workers	1,184	816	286	82
Skilled agricultural, forestry and fishery workers	127	20	13	94
Craft and related trades workers	662	254	40	368
Plant and machine operators and assemblers	38	16	21	1
Elementary occupations	473	205	202	66
Total	**4,523**	**2,723**	**979**	**821**
Total				
Armed forces	128	83	32	13
Managers	1,148	837	162	149
Professionals	1,620	1,040	238	342
Technicians and associate professionals	1,288	905	277	106
Clerical support workers	765	499	236	30
Services and sales workers	2,376	1,515	553	308
Skilled agricultural, forestry and fishery workers	1,261	209	61	991
Craft and related trades workers	1,730	896	414	420
Plant and machine operators and assemblers	639	401	224	14
Elementary occupations	1,342	670	526	146
Total	**12,297**	**7,055**	**2,723**	**2,519**

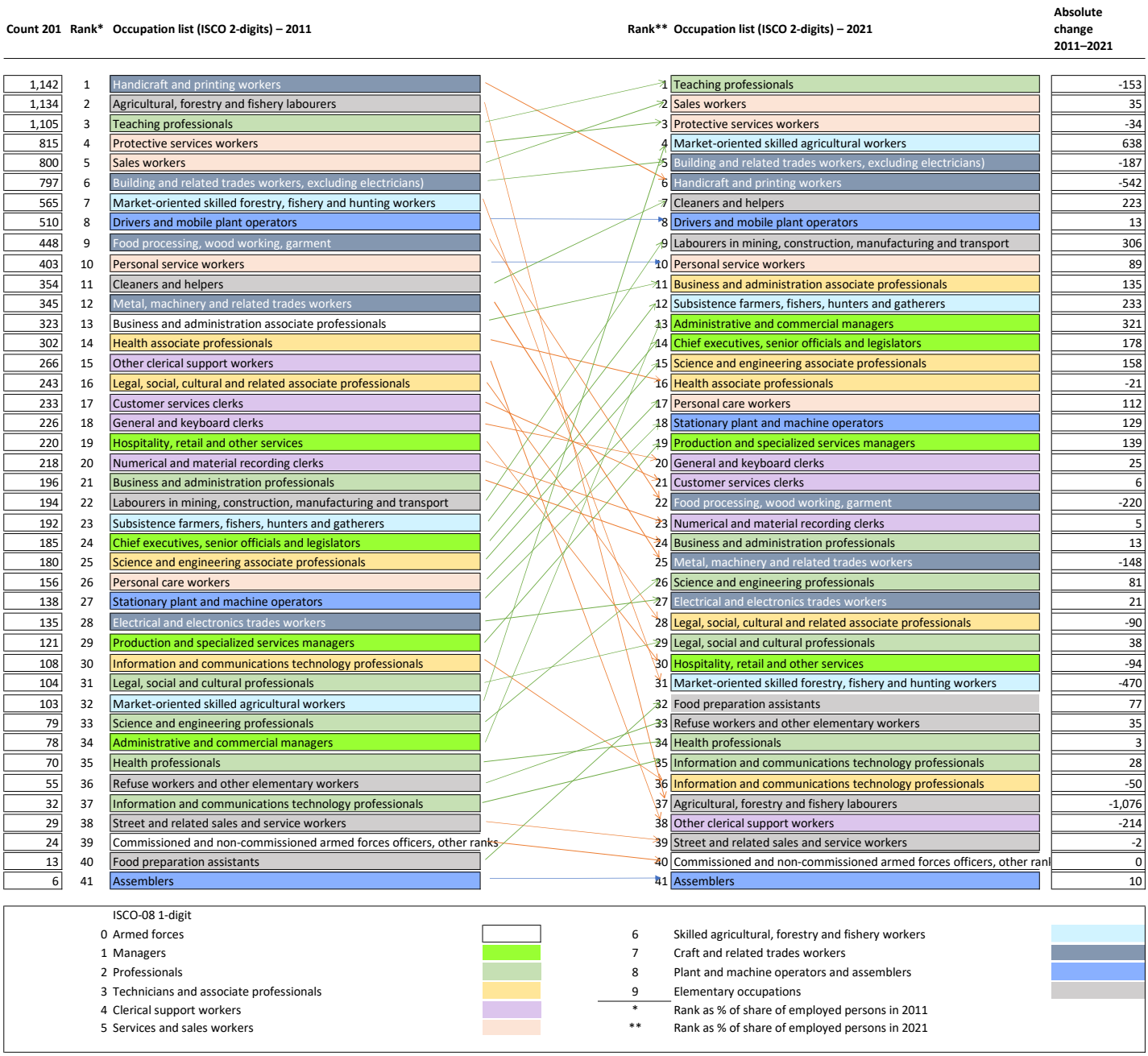


Figure 5.3. *Intercensal changes in ISCO-08 sub-major group occupation of employed persons, RMI, 2011–2021*

Figure 5.3 shows the changes in the ISCO-08 sub-major group (two-digit level) occupational distribution of employed persons between the 2011 and 2021 censuses. The substantial intercensal shifts in occupational structure are summarised as follows.

- A substantial number of occupations (13 of 41 at the two-digit level) experienced a decline in the absolute number of persons employed in those occupations, with the most significant decline being recorded among agricultural, forestry and fishery labourers (1076), followed by handicraft and printing workers (542) and market-oriented skilled forestry, fishery and hunting workers (470).
- The most significant decrease in rank between 2011 and 2021 was recorded for agricultural, forestry and fishery labourers; this group dropped in rank from second to thirty-seventh place. The following four groups dropped 10 or more positions in the ranking: market-oriented skilled forestry, fishery and hunting workers (24 positions), other clerical support workers

(23 positions), legal, social, cultural and related associate professionals (12 positions) and hospitality, retail and other services (11 positions).

- Five occupational groups increased in rank by more than 10 positions, with the most significant increase being for market-oriented skilled agricultural workers, which moved from thirty-second to fourth place. Other increases were seen for administrative and commercial managers (21 positions), labourers in mining, construction, manufacturing and transport (13 positions), subsistence farmers, fishers, hunters and gatherers (11 positions) and production and specialised services managers (10 positions).
- Handicraft and printing workers and agricultural, forestry and fishery labourers were the two largest occupational groups in 2011, but these were replaced by teaching professionals and sales workers in 2021. Teaching professionals and building and related trades workers, excluding electricians, were the only two groups that increased in rank between 2011 and 2021 while experiencing a decline in the absolute number of people employed in those occupations.

5.4. Industry of employment

Figure 5.4 shows the distribution of major industries from the 1980 census through to the 2021 census. While about two in every five workers were in services and administration in 1980 and 1999, that proportion jumped to three in every five in the subsequent censuses. In 1980, finance, insurance and business was the second largest industry, followed by wholesale and retail. In 2021, those two industries had switched, with more workers in wholesale and retail than in finance, insurance and business. Transportation, communication and utilities came in third place in 2021.

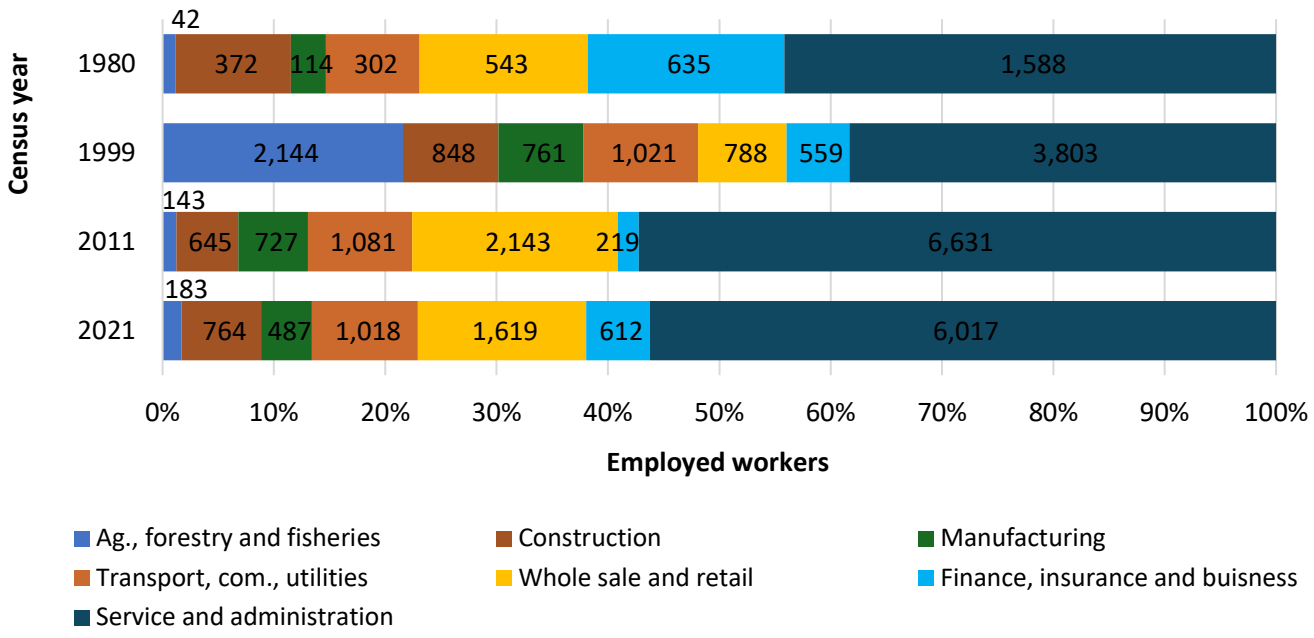


Figure 5.4. *Major industries employing workers, RMI, 1980–2021*

Table 5.4 shows the distribution of major industries from the 2011 and 2021 censuses. The total number of people employed in these industries was about 13,000 in 2011 but this figure decreased to about 11,000 in 2021 as many potential workers emigrated through the visa-free entry scheme to the USA. Male workers in these industries decreased from about 8300 in 2011 to about 7300 in 2021, and *female* workers decreased from about 4,400 to about 3,400 over that decade. Judging from the percentage change and the sex ratios for 2011 and 2021, most industries that witnessed a decline in their share during the intercensal period were *male*-dominated.

Table 5.4. *Participation in major industries by sex, RMI, 2011–2021*

Major industry	2011			2021			Change from 2011–2021 (%)			Sex ratio	
	Total	Males	Females	Total	Males	Females	Total	Males	Females	2011	2021
Agriculture, forestry and fishing	147	132	15	183	171	12	24.5	29.5	-20.0	880.0	1,425.0
Manufacturing	728	504	224	487	363	124	-33.1	-28.0	-44.6	225.0	292.7
Utilities and repair and installation of equipment	395	360	35	312	278	34	-21.0	-22.8	-2.9	1,028.6	817.6
Construction and related activities	645	625	20	764	749	15	18.4	19.8	-25.0	3,125.0	4,993.3
Wholesale and retail trade	1671	942	729	1210	638	572	-27.6	-32.3	-21.5	129.2	111.5
Transportation, storage and courier activities	508	461	47	706	639	67	39.0	38.6	42.6	980.9	953.7
Accommodation and food service activities	472	231	241	409	167	242	-13.3	-27.7	0.4	95.9	69.0
Information and communication	178	120	58	283	184	99	59.0	53.3	70.7	206.9	185.9
Financial, insurance and real estate activities	219	107	112	329	144	185	50.2	34.6	65.2	95.5	77.8
Professional, scientific and technical activities	24	18	6	334	190	144	1,291.7	955.6	2,300.0	300.0	131.9
Administrative and support service activities	277	209	68	992	717	275	258.1	243.1	304.4	307.4	260.7
Public administration	1,951	1,534	417	1,164	901	263	-40.3	-41.3	-36.9	367.9	342.6
Education	1,432	737	695	1,104	509	595	-22.9	-30.9	-14.4	106.0	85.5
Health	557	288	269	456	218	238	-18.1	-24.3	-11.5	107.1	91.6
Arts, entertainment, recreation and other services	353	270	83	409	259	150	15.9	-4.1	80.7	325.3	172.7
Activities of households as employers	2,157	1,177	980	1292	906	386	-40.1	-23.0	-60.6	120.1	234.7
Activities of HHs for own use	775	435	340	227	196	31	-70.7	-54.9	-90.9	127.9	632.3
International organisations and bodies	158	108	50	39	27	12	-75.3	-75.0	-76.0	216.0	225.0
All industries	**12,647**	**8,258**	**4,389**	**10,700**	**7,256**	**3,444**	**-15.4**	**-12.1**	**-21.5**	**188.2**	**210.7**

Table 5.5 shows that almost half of rural atoll and island workers were working as "Households as employers", meaning they were engaged in activities for personal use, which is considered beyond the labour force boundary. Regarding urban areas, only about 3% of people in Majuro and 2% in Kwajalein reported working in this industry (i.e. subsistence activities). The largest percentages of workers in Majuro were in the following industries: 14% in wholesale and retail trade, 11% in public administration and 10% in administrative support. For Kwajalein, the largest percentages of workers were in the following industries: 14% in wholesale and retail trade, 12% in administrative support and 11% each in construction, transportation and storage, and public administration. In contrast, about half the workers in rural areas reported being engaged in subsistence activities, 15% reported being in education and 12% being in public administration.

Table 5.5. *Participation in major industries by location, RMI, 2021*

Major industry	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Agriculture, forestry and fishing	180	136	15	29	1.7	2.2	0.7	1.3
Mining and quarrying	3	3	0	0	0.0	0.0	0.0	0.0
Manufacturing	487	367	75	45	4.6	5.9	3.3	2.1
Utilities	211	87	88	36	2.0	1.4	3.9	1.7
Water supply and use	101	68	30	3	0.9	1.1	1.3	0.1
Construction	764	478	261	25	7.1	7.7	11.5	1.1
Wholesale and retail trade	1,210	847	312	51	11.3	13.6	13.7	2.3
Transportation and storage	706	435	254	17	6.6	7.0	11.2	0.8
Accommodation and food	409	247	148	14	3.8	4.0	6.5	0.6
Information and communication	283	244	34	5	2.6	3.9	1.5	0.2
Financial and insurance activities	318	248	63	7	3.0	4.0	2.8	0.3
Real estate activities	11	9	2	0	0.1	0.1	0.1	0.0
Professional, scientific and technical activities	334	303	25	6	3.1	4.9	1.1	0.3
Administrative and support service activities	992	622	282	88	9.3	10.0	12.4	4.0
Public administration	1,164	654	250	260	10.9	10.5	11.0	11.9
Education	1,104	597	179	328	10.3	9.6	7.9	15.1
Human health and social work activities	456	309	109	38	4.3	4.9	4.8	1.7
Arts, entertainment and recreation	43	25	15	3	0.4	0.4	0.7	0.1
Other service activities	366	273	38	55	3.4	4.4	1.7	2.5
Households as employers	1,292	214	49	1029	12.1	3.4	2.2	47.3
International organisations	39	39	0	0	0.4	0.6	0.0	0.0
Industry unknown	227	42	47	138	2.1	0.7	2.1	6.3
All industries	**10,700**	**6,247**	**2,276**	**2,177**	**100.0**	**100.0**	**100.0**	**100.0**

5.5. Household income and asset ownership

Household income and asset ownership are key indicators of household financial security. Income represents the flow of financial resources over the short term, whereas asset ownership is seen as reflective of accumulated wealth or a long-term measure of household financial well-being. As

seen in ***Table 5.6***, about 80% of households in RMI had more than one source of income in 2021, but there were variations in what these sources were across locations.

Overall, about 59% of households reported wages and salary as a major source of income. Income from the sale of agricultural produce and handicrafts was the second most common source (16%). Some other sources were pension and retirement income (7%), remittances (7%) and income from own business (6%). Despite wages and salary being the most common primary source of income, not even a single household depended on wages and salary alone for its income. Of the households that reported wages and salary as a major source of income, 76% had one other source of income and 20% had two other sources.

Table 5.6. *Number of sources of household income by location and major source, RMI, 2021*

Number of income sources	Location				Income source								
	Total	Rest of the country	Majuro	Kwajalein	Wages and salary	Own buisness	Sale of agricultural produce and handicrafts	Land lease	Housing property rentals	Remittances	Pension and retirement income	Other	Radiation-affected atolls payment
0	2	2	2	3	0	0	0	0	0	0	0	0	0
1	18	41	10	10	0	27	52	10	9	20	30	42	18
2	62	33	72	71	76	14	9	14	12	50	12	11	3
3	15	21	14	13	20	35	30	39	32	22	40	36	66
4	3	3	2	4	4	19	8	26	18	6	15	11	13
5	0	0	0	0	0	3	1	8	15	1	3	0	0
6	0	0	0	0	0	0	0	1	6	0	0	0	0
7	0	0	0	0	0	0	0	1	6	0	0	0	0
8	0	0	0	0	0	0	0	1	3	0	0	0	0
Total (%)	**100**	**100**	**100**	**100**	**59**	**6**	**16**	**2**	**0**	**7**	**7**	**2**	**1**
Number of HHs	7,123	1,805	3,896	1,422	5,552	522	1,521	167	34	694	651	207	101

Note: Households could report more than one source of income. Hence, the sum of the counts for each source of income exceeds the total number of households (7,123).

About two fifths of households in rural areas drew their income from a single source, compared with only one tenth in the two atolls classified as urban. Thirty% of pension-receiving households and 20% of remittance-receiving households depended solely on those payments for their income. Similarly, 52% of households that had income from the sale of agricultural produce and handicrafts and 27% of households that had income from their own business had no other sources of income.

Table 5.7 shows that household income from all sources increased in all locations between 2011 and 2021. In 2011, about one third of all households in the country and over half of those in rural areas earned less than USD 2,800 per annum (the lowest income bracket). These shares declined substantially in 2021, to 19.5% for all households in the country and 22.6% for those in rural areas. The proportion of households in the highest income bracket (USD 22,500 or more) in rural areas increased from 2.1% in 2011 to 12.3% in 2021, while it increased by 4 percentage points in the country as a whole. Mean and median household income both increased substantially in the past decade. The mean household income in rural areas quadrupled in the 10-year intercensal period, increasing from less than USD 5,000 in 2011 to about USD 20,000 in 2021. However, substantial

differences remain between locations. Median household income in the rural atolls was only USD 6,400 in 2021, about two thirds of the total household incomes for Majuro and Kwajalein.

Table 5.7. *Household income distribution by location, RMI, 2011 and 2021*

	2011 (%)				2021 (%)			
	Total	**Majuro**	**Kwajalein**	**Rural**	**Total**	**Majuro**	**Kwajalein**	**Rural**
Less than USD 2800	32.1	23.1	22.7	53.9	19.5	14.8	28.2	22.6
USD 2800–6999	18.1	17.3	12.7	22.7	19.5	18.1	11.4	28.7
USD 7000–11,999	16.0	17.3	14.7	14.4	18.4	20.5	12.8	18.4
USD 12,000–22,499	16.8	20.5	22.5	6.9	21.2	23.4	19.3	18.0
USD 22,500 or more	17.0	21.8	27.4	2.1	21.4	23.2	28.3	12.3
Mean HH income (USD)	12,780	15,676	17,529	4,709	24,591	18,855	46,554	19,633
Median HH income (USD)	6,950	9,600	11,980	2,400	9,600	10,500	10,400	6,400
Number of HHs	**7,738**	**4,092**	**1371**	**2,275**	**7,123**	**3928**	**1431**	**1,842**

Table 5.8 shows ownership of vehicles and household appliances by location for 2021. Generally, ownership of cars, trucks and vans was higher in urban areas than in rural areas, while bicycles, motorbikes and scooters were more common in rural areas. Overall, one in every four households in RMI owned a car, truck or van (or both), and over two in every five rural households owned bicycles.

Table 5.8. *Asset ownership by location, RMI, 2021*

	Total	**Majuro**	**Kwajalein**	**Rest of the country**
Car or truck/van (%)	24.8	39.3	12.9	3.0
Motorbike/scooter (%)	5.1	2.0	2.4	13.7
Bicycle (%)	22.5	8.7	34.9	42.5
Canoe/outrigger (%)	3.8	1.4	0.5	11.4
Fridge/freezer (%)	67.3	79.5	79.9	31.5
Stove (%)	61.7	66.3	59.8	53.5
Washing machine (%)	52.4	50.6	75.9	37.7
Sewing machine (%)	12.2	13.3	12.0	9.9
Generator (%)	8.5	5.2	9.0	15.1
Solar panel/equipment (%)	29.7	12.2	14.0	79.8
Television (%)	45.0	48.7	62.6	23.2
Number of HHs	**7,201**	**3,928**	**1,431**	**1,842**

Regarding household appliances, 75.9% of households in Kwajalein, 50% in Majuro and 37.7% in rural areas owned a washing machine. Fridges and freezers were the most commonly owned appliances in the country, with 67.3% of households in the country as a whole, 79.9% in Kwajalein, 79.5% in Majuro and 31.5% in rural areas owning a fridge or a freezer or both. There were no locational differences in stove ownership.

However, ownership of generators and solar panels/equipment was more common in rural areas, probably because some of these areas are not connected to the national grid and some experience supply shortages. Almost 80% of rural households had a solar panel, and household ownership of generators was three times higher in rural areas than in Majuro. Ownership of canoes was also higher in rural areas than in urban areas, where it was negligible.

6. SUBSISTENCE ACTIVITIES, DISASTER EXPOSURE AND FOOD SECURITY

6.1. Subsistence activities

The 2021 census collected data about subsistence activities apart from paid and other work. As shown in ***Table 6.1***, about two thirds of the working-age population in rural areas and about one fifth in urban areas had engaged in at least one subsistence activity in addition to other economic activities in the week before the census. Most respondents in both urban and rural areas spent time farming, fishing, or hunting or gathering wild food. About one third of the working-age population in rural areas and one tenth in urban areas engaged in fishing. Overall, people who engaged in subsistence activities spent about 14 hours a week doing so. Rural residents spent, on average, about five more hours on subsistence activities than their urban counterparts.

Table 6.1. *Working-age population participation in subsistence activities by type, hours spent and location, RMI, 2021*

Location	Participation in at least one subsistence activity (%)	Type of activity (%)			Average hours spent in subsistence activities per week
		Farming or growing food	Fishing	Hunting or gathering wild food	
RMI total	**28.6**	**10.7**	**14.9**	**5.8**	**14.1**
Rural	65.4	33.2	34.1	19.4	17.2
Urban	19.1	6.0	10.8	3.0	12.0
Kwajalein	17.4	3.3	12.8	3.6	12.3
Majuro	19.7	7.1	10.0	2.7	11.9

The data collected at the household level provide a similar picture. ***Figure 6.1*** shows that a substantial proportion of households in RMI (54.6%) engaged in fishing and 22.7% grew crops for household use. As expected, households in rural atolls and islands were more likely to engage in subsistence agriculture and fishing than those in urban areas (***Figure 6.2***). About half of the rural households grew crops for consumption or distribution, and about two in every five raised livestock (pigs and chickens). Furthermore, 83% of rural households engaged in fishing for their own consumption, to sell or to give away, often in a reciprocity arrangement, that is, they shared the fish they caught with other households, understanding that those households would later reciprocate with fish of their own.

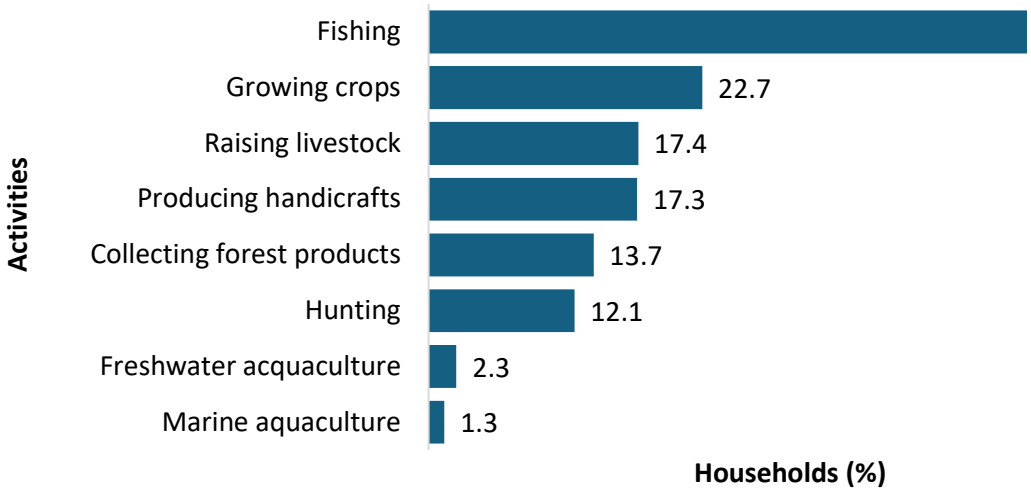


Figure 6.1. *Households engaging in subsistence activities by type, RMI, 2021*

Urban households performed fewer subsistence activities than rural households, particularly those on Kwajalein, which has an extremely limited land area and land as a commodity is, therefore, scarce. Only 6% of Kwajalein households grew subsistence crops and only 7% raised animals. However, almost half of all Kwajalein households participated in fishing activities. In Majuro, more than two in every five households engaged in subsistence fishing, while 15.6% grew subsistence crops and about one in every 10 raised livestock for household consumption or distribution.

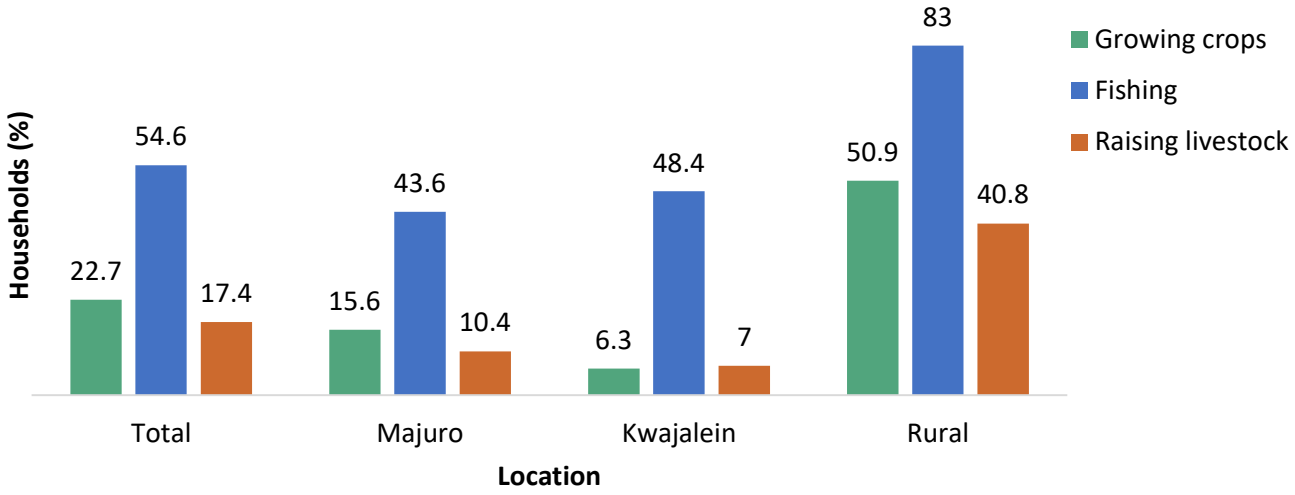


Figure 6.2. *Households engaging in growing crops, fishing or raising livestock, by type and location, RMI, 2021*

6.2. Hunting, collecting forest products and producing handicrafts

The 2021 census also collected information on the subsistence activities of hunting, collecting forest products and producing handicrafts. About 17% of the country's households produced handicrafts, about 14% collected forest products and about 12% did some hunting (***Figure 6.2***).

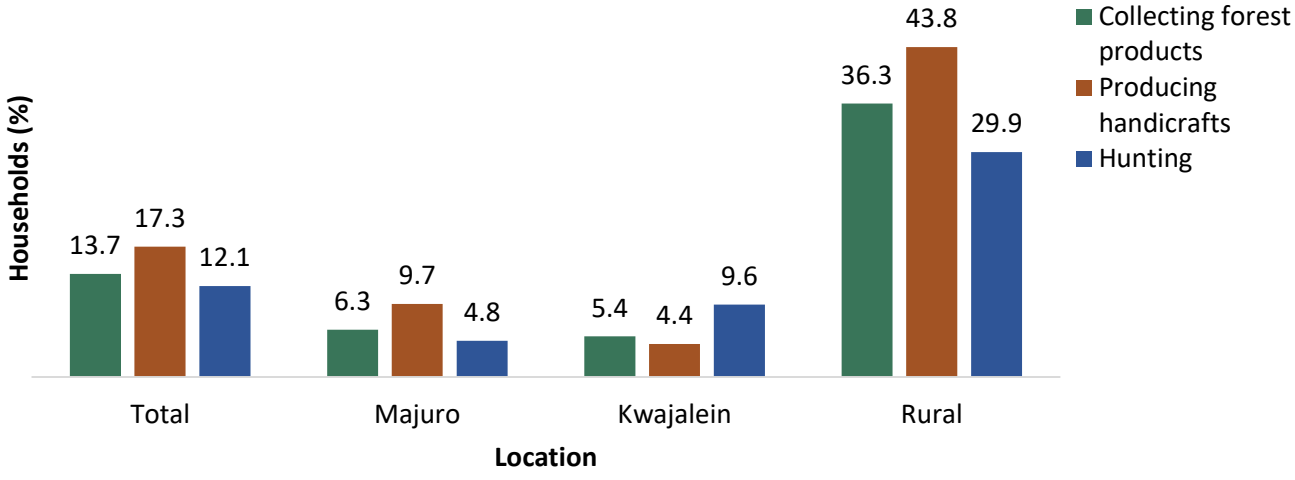


Figure 6.3. *Households engaging in collecting forest products, producing handicrafts or hunting, by location, RMI, 2021*

As with the traditional subsistence activities of growing crops, fishing and raising animals, urban households did much less of these other subsistence activities than rural households (***Figure 6.3***). About 6% of households in both Majuro and Kwajalein collected forest products; about 10% of Majuro households and 4% of Kwajalein households produced handicrafts; and about 5% of

Majuro households and 10% of Kwajalein households engaged in hunting. In contrast, 43.8% of rural households made handicrafts, 36.3% collected forest products and 29.9% hunted. Handicrafts provide a valuable opportunity to use traditional island materials. Mats, carvings, Kili bags and other items are produced for household use, to give as gifts, or to sell at museums, airports or elsewhere, providing additional income for the household.

6.3. Purpose of production

Of the households that grew crops as a subsistence activity, 75.0% grew them exclusively for home use, 5.9% exclusively for sale, 12.9% mainly for home use but some for sale, and 5.5% mainly for sale but some for home use (***Table 6.2***). Similarly, fishing, in which the largest number of households engaged in, was principally undertaken for home use, with about 80% of people reporting that they catch fish exclusively for household consumption.

Over four in every five households were engaged in freshwater aquaculture exclusively for home use, as were about two in every three engaged in raising livestock, about two in every three engaged in marine aquaculture and about two in every three engaged in collecting forest products. In contrast, only about 16% of the handicrafts produced were exclusively for home use – a combined total of about 70% of households produced handicrafts exclusively (52.3%) or mainly (15.3%) for sale.

Table 6.2. *Purpose of engaging in subsistence activities by type, RMI, 2021*

	Growing crops	Fishing	Raising livestock	Aquaculture		Collecting forest products	Producing handicrafts
				Freshwater	Marine		
Exclusively for home use	1,210	3,100	851	143	61	595	195
Exclusively for sale	95	127	48	4	8	207	644
Mainly for home use, but some for sale	209	484	240	15	9	102	192
Mainly for sale, but some for home use	89	164	93	2	10	63	188
Other (e.g. customary)	11	11	8	2	2	9	12
RMI total	**1,614**	**3,886**	**1,240**	**166**	**90**	**976**	**1,231**
Exclusively for home use	75.0	79.8	68.6	86.1	67.8	60.9	15.8
Exclusively for sale	5.9	3.3	3.9	2.4	8.9	21.2	52.3
Mainly for home use, but some for sale	12.9	12.5	19.4	9.1	10.0	10.5	15.6
Mainly for sale, but some for home use	5.5	4.2	7.5	1.2	11.1	6.5	15.3
Other (e.g. customary)	0.7	0.3	0.6	1.2	2.2	0.9	1.0
Total (%)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

6.4. Food security

The 2021 census included eight items concerning views about food security. The items all revolved around money to obtain food in sufficient quantity to maintain a healthy diet.

Many households worried about not getting enough to eat. ***Table 6.3*** shows that the item selected most often (about 47%) was "Not enough food because of lack of money." Even the item selected the least often, "Went the entire day not eating because of lack of money," was reported by about one in every three households. As global warming becomes more prevalent and impacts the well-being of communities, fears will grow, as will the number of people experiencing food insecurity.

Table 6.3. *Food insecurity concerns by location, RMI, 2021*

	Number				Percentage			
	Total	**Majuro**	**Kwajalein**	**Rural**	**Total**	**Majuro**	**Kwajalein**	**Rural**
Not enough food because of lack of money	3,347	1,756	737	854	47.0	45.1	51.8	47.3
Not eating healthily because of lack of money	3,268	1,735	708	825	45.9	44.5	49.8	45.7
Ate only a few foods because of lack of money	3,179	1,636	715	828	44.6	42.0	50.3	45.9
Skipped meals because of lack of money	2,811	1,444	647	720	39.5	37.1	45.5	39.9
Ate less because of lack of money	2,970	1,515	678	777	41.7	38.9	47.7	43.0
Ran out of food because of lack of money	2,900	1,450	667	783	40.7	37.2	46.9	43.4
Went hungry because of lack of money	2,755	1,389	646	720	38.7	35.7	45.4	39.9
Went the entire day not eating because of lack of money	2,418	1,182	594	642	33.9	30.3	41.8	35.6
Total responding HHs	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Households could report more than one source of food insecurity. Hence, the sum of the counts for each response exceeds the total number of households (7,123).

Table 6.4. *Food Insecurity Experience Scale by location, RMI, 2021*

	Number				Percentage			
	Total	**Majuro**	**Kwajalein**	**Rural**	**Total**	**Majuro**	**Kwajalein**	**Rural**
1 insecurity	297	187	55	55	7.6	9.1	6.5	5.6
2 insecurities	245	153	41	51	6.3	7.4	4.9	5.2
3 insecurities	227	120	51	56	5.8	5.8	6.0	5.7
4 insecurities	220	120	33	67	5.7	5.8	3.9	6.8
5 insecurities	209	107	33	69	5.4	5.2	3.9	7.0
6 insecurities	226	125	43	58	5.8	6.1	5.1	5.9
7 insecurities	403	255	63	85	10.4	12.4	7.5	8.6
8 insecurities	2,057	988	524	545	53.0	48.1	62.2	55.3
Total HHs	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**
No insecurities	3,239	1,841	579	819	45.4	47.3	40.7	45.4
Total insecure HHs	**3,884**	**2,055**	**843**	**986**	**54.6**	**52.7**	**59.3**	**54.6**

The responses to the items on food security were used to create a Food Insecurity Experience Scale (FAO 2024), which can be used to assess household vulnerability to food insecurity (***Table 6.4***). About 45% of RMI households did not express any insecurities concerning food. Of the households that did (about 4,000), about half (53.0%) had all eight insecurities. Less than half of the households in Majuro had all eight insecurities, but more than three in every five (62.2%) of those in Kwajalein did.

6.5. Natural disasters

The 2021 census also asked a series of questions about how natural disasters affected households; the results are summarised in ***Table 6.5***. Overall, about 19% of RMI households experienced some form of natural disaster. About one in every 10 were affected by coastal erosion, with the share being higher in rural (about 14%) than in urban (about 7% for Kwajalein) areas. Similarly, water scarcity affected about 11% of rural households, while the figure was slightly lower in urban areas.

Table 6.5. *Households affected by different types of natural disasters by location, RMI, 2021*

	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
HHs experiencing at least one disaster	1,393	631	299	463	19.3	16.1	20.9	25.1
Coastal erosion	715	371	94	250	10.0	9.5	6.6	13.9
Land salination	478	197	118	163	6.7	5.1	8.3	9.0
Water scarcity	558	240	114	204	7.8	6.2	8.0	11.3
Infertile land	392	165	102	125	5.5	4.2	7.2	6.9
Pest infestation	400	156	103	141	5.6	4.0	7.2	7.8
Deforestation	113	54	18	41	1.6	1.4	1.3	2.3
Total number of HHs in RMI	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Figure 6.4 shows the percentage of households affected by different types of natural disasters when at least one was reported as being experienced. As shown, about 54% of households were affected by coastal erosion and 42% by water scarcity.

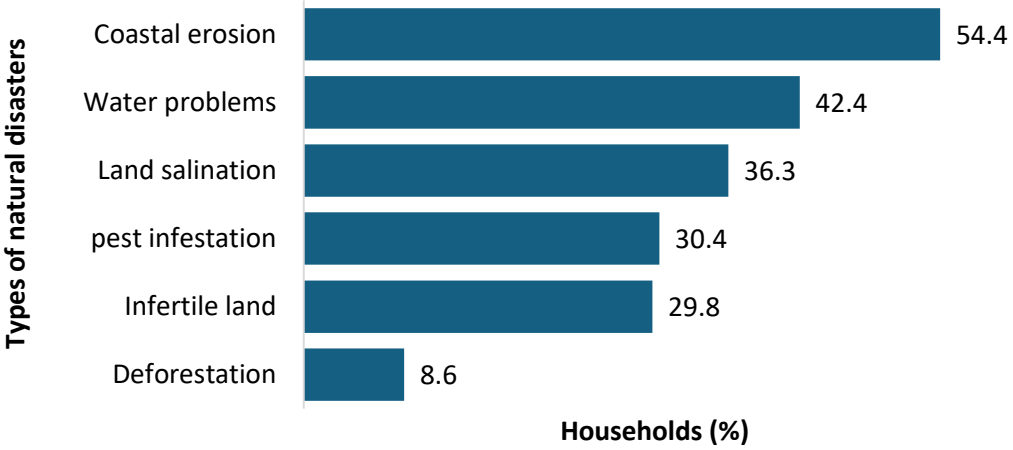


Figure 6.4. *Types of natural disasters affecting households, RMI, 2021*

Table 6.6. *Livelihood impacts on households from natural disasters by location, RMI, 2021*

	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Income limited by disaster	682	321	130	231	51.9	53.6	44.8	54.2
Income not limited by disaster	633	278	160	195	48.1	46.4	55.2	45.8
Total number of HHs affected by natural disaster	**1,315**	**599**	**290**	**426**	**100.0**	**100.0**	**100.0**	**100.0**

Table 6.7. *Household relocation due to natural disasters by location, RMI, 2021*

	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Relocation due to disaster	429	208	72	149	32.6	34.7	24.8	35.0
No relocation due to disaster	886	391	218	277	67.4	65.3	75.2	65.0
Total number of HHs affected by natural disaster	**1,315**	**599**	**290**	**426**	**100.0**	**100.0**	**100.0**	**100.0**

Table 6.8 shows the types of natural disasters affecting households in the 10 years between the 2011 and 2021 censuses. About one in every four households reported drought/irregular rain as having affected them, including one in every three in rural areas and one in every four in Kwajalein (urban). Floods and storm surges each affected about one in every eight households.

Table 6.8. *Natural disasters affecting households in the last 10 years by type and location RMI, 2021*

	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Drought/irregular rain	1,700	731	360	609	23.9	18.8	25.3	33.7
Floods	877	448	162	267	12.3	11.5	11.4	14.8
Typhoons	630	255	136	239	8.8	6.5	9.6	13.2
Storm surges	898	401	219	278	12.6	10.3	15.4	15.4
King tides	688	393	76	219	9.7	10.1	5.3	12.1
Tsunamis	268	148	28	92	3.8	3.8	2.0	5.1
Total enumerated HHs	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Households could report being affected by more than one natural disaster. Hence, the sum of the counts for each response exceeds the total number of households (7,123).

Table 6.9. *Preventative measures taken by households against natural disasters by location, RMI, 2021*

	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Have taken preventative measures	1,732	828	377	527	72.0	73.6	73.1	68.8
Have not taken preventative measures	675	297	139	239	28.0	26.4	26.9	31.2
Total number of HHs that experienced one or more natural disasters	**2,407**	**1,125**	**516**	**766**	**100.0**	**100.0**	**100.0**	**100.0**

The income of some households was limited because of natural disasters. ***Table 6.6*** shows that about half of RMI households indicated that disasters affected their livelihoods. The figures were about 54% and about 46% of households in Majuro and Kwajalein, respectively (urban areas), and about 54% in other parts of the country (rural areas). Natural disasters caused about one in every three households to move (***Table 6.7***). About one in every three Majuro households, one in every four Kwajalein households and one in every three rural households had moved as a result of a natural disaster at the time of the 2021 census.

Table 6.10. *Reasons for households not taking preventive measures against natural disasters by location, RMI, 2021*

	Number				Percentage			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Nothing we could do	322	153	59	110	47.7	51.5	42.4	46.0
Lack of money	218	90	65	63	32.3	30.3	46.8	26.4
Lack of skills/knowledge	95	33	34	28	14.1	11.1	24.5	11.7
Lack of other resources	159	67	37	55	23.6	22.6	26.6	23.0
Having other priorities	42	11	17	14	6.2	3.7	12.2	5.9
Not our task	111	48	27	36	16.4	16.2	19.4	15.1
Do not know what to do	93	43	25	25	13.8	14.5	18.0	10.5
Other reason	26	11	5	10	3.9	3.7	3.6	4.2
Total number of HHs that had not taken preventative measures	**675**	**297**	**139**	**239**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Households could report multiple reasons for not taking preventative measures. Hence, the sum of the counts for each response exceeds the total number of households that have not taken preventative measures.

Of all households in RMI that experienced one or more natural disasters, 72% indicated that they had taken preventative measures against natural disasters (***Table 6.9***). About three in every four urban households had taken measures, compared with seven in every 10 rural households. Of the households that took no preventative action, about half indicated this was because there was nothing they could do and about one third indicated lack of money as the reason. Other reasons for inaction were also reported but with smaller percentages (***Table 6.10***).

7. VULNERABLE GROUPS

According to the Convention on the Rights of Persons with Disabilities, "persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others".[2] Disability is conceptualised as a continuum, from minor functional limitations to severe functional limitations that have a major impact on a person's life. This chapter covers disability in the following six functional domains: vision, hearing, mobility, memory, self-care and communication.

In line with other censuses, the RMI 2021 census collected information from the enumerated population on whether any disabilities prevented them from completing daily activities. The census used the sequence of questions referred to as the Washington Group on Disability Statistics Short Set questions to capture and reflect the disability continuum in the RMI population (WG 2020). These questions are universally recognised as the standard for collecting information on disability within a population. Specifically, data were collected on all persons aged five years or over based on the following questions:

1. Does (name) have difficulty seeing, even if wearing glasses?
2. Does (name) have difficulty in hearing, even if wearing a hearing aid?
3. Does (name) have difficulty in walking or climbing steps?
4. Does (name) have difficulty in remembering or concentrating?
5. Does (name) have difficulty with self-care such as washing all over and dressing?
6. Using customary language, does (name) have difficulty communicating such as understanding or being understood?

The census captured the responses as one of the following: (1) no difficulty; (2) some difficulty; (3) a lot of difficulty; and (4) cannot do at all. The three disability categories created when applying the WG questions are shown in ***Table 7.1***.

Table 7.1. *Disability classification based on the Washington Group on Disability Statistics Short Set questions*

Category number	Category description	Definition
1	Some difficulty	People who responded that they have "Some difficulty", "A lot of difficulty" or "Cannot do at all" for at least one functional domain
2	A lot of difficulty	People who responded that they have "A lot of difficulty" or "Cannot do at all" for at least one functional domain
3	Cannot do at all	People who responded that they "Cannot do at all" for at least one functional domain

7.1. Disability prevalence by location

Table 7.2 presents the number of people aged five years or over in RMI who fell under one of the three categories of the WG disability classification system.

2 The text of the Convention is available at https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-Persons-with-disabilities.html.

Table 7.2. *Disability prevalence in the population over age five by location, RMI, 2021*

Location	Pop.	Category 1: Some difficulty		Category 2: Lots of difficulty		Category 3: Cannot do at all	
		Number	%	Number	%	Number	%
Ailinglaplap	1,017	180	17.7	28	2.8	9	0.9
Ailuk	206	51	24.8	9	4.4	0	0.0
Arno	992	139	14.0	28	2.8	6	0.6
Aur	280	43	15.4	4	1.4	0	0.0
Ebon	421	40	9.5	9	2.1	4	1.0
Enewetak	260	64	24.6	8	3.1	2	0.8
Jabat	61	7	11.5	3	4.9	0	0.0
Jaluit	1,286	193	15.0	43	3.3	11	0.9
Kili	369	69	18.7	21	5.7	3	0.8
Kwajalein	8,577	1,259	14.7	225	2.6	55	0.6
Lae	123	28	22.8	4	3.3	1	0.8
Lib	126	13	10.3	3	2.4	0	0.0
Likiep	194	60	30.9	20	10.3	1	0.5
Majuro	20,768	3,258	15.7	629	3.0	170	0.8
Maloelap	344	74	21.5	30	8.7	3	0.9
Mejit	196	58	29.6	11	5.6	2	1.0
Mili	427	101	23.7	15	3.5	2	0.5
Namdrik	263	49	18.6	8	3.0	2	0.8
Namu	459	91	19.8	16	3.5	1	0.2
Ujae	265	47	17.7	13	4.9	7	2.6
Utirik	235	34	14.5	2	0.9	0	0.0
Wotho	69	6	8.7	1	1.4	1	1.4
Wotje	740	96	13.0	15	2.0	3	0.4
Total 5+ years	**37,678**	**5,960**	**15.8**	**1,145**	**3.0**	**283**	**0.8**
Urban	29,345	4,517	15.4	854	2.9	225	0.8
Rural	8,333	1,443	17.3	291	3.5	58	0.7

Note: The categories are based on the Washington Group on Disability Statistics disability classification.

There were 5,960 people aged five years or over (15.8% of the population aged five years or over) who declared having at least some difficulty in at least one of the six functional domains. As per the WG disability classification, a person was considered as having a disability if they responded "Cannot do at all" or "A lot of difficulty" in at least one functional domain. Hence, based on this criterion, the data suggest that 1145 persons (3.0%) of the RMI population over age five had a disability of one form or another in any of the six domains.

Of people included under category 2, more than three in four (854), lived in urban areas: 629 in Majuro and 225 in Kwajalein. However, the highest prevalence of category 2 disability was observed in Likiep (10.3%), followed by Maloelap (8.7%), Kili (5.7%) and Mejit (5.6%). For category 3, the highest prevalence of disability was found in Ujae (2.6%), followed by Wotho, Mejit and Ebon. People falling under category 3 in the classification system (283 persons or 0.8% of the population aged five years or over) have no capacity in at least one of the six domains.

7.2. Disability prevalence by age and sex

Figure 7.1 and ***Figure 7.2*** show category 2 and category 3 disability prevalence, respectively, by age and sex for RMI in 2021. As expected, the prevalence of both category 2 and 3 disability increases with age. Category 2 disability prevalence for both sexes hovers at about 2% between the ages of 5 and 44 and then increases at an accelerating rate, reaching about 25% in the 75 years or over age group. For this age group, 18.6% of *males* and about 30% of *females* experience category 2 level disabilities. These figures are much higher than the 3% category 2 prevalence reported for the population as a whole (i.e. all persons aged five years or over). A similar age and sex pattern is evident for category 3 disability prevalence, although in this case, prevalence does not start to increase until around 60 years.

Table 7.3 and ***Table 7.4*** show the prevalence of disability by functional domain and age for category 2 and category 3, respectively. ***Table 7.3*** reveals that the high prevalence recorded for older age groups reflects the high prevalence of disability in five of the six functional domains at older ages: mobility, vision, hearing, memory and self-care. For example, at ages 65 or over, about one in every 10 adults cannot walk or have lots of difficulty walking. Similarly, for category 3, mobility, followed by self-care, are the most prevalent functional domains in which older people have severe disability.

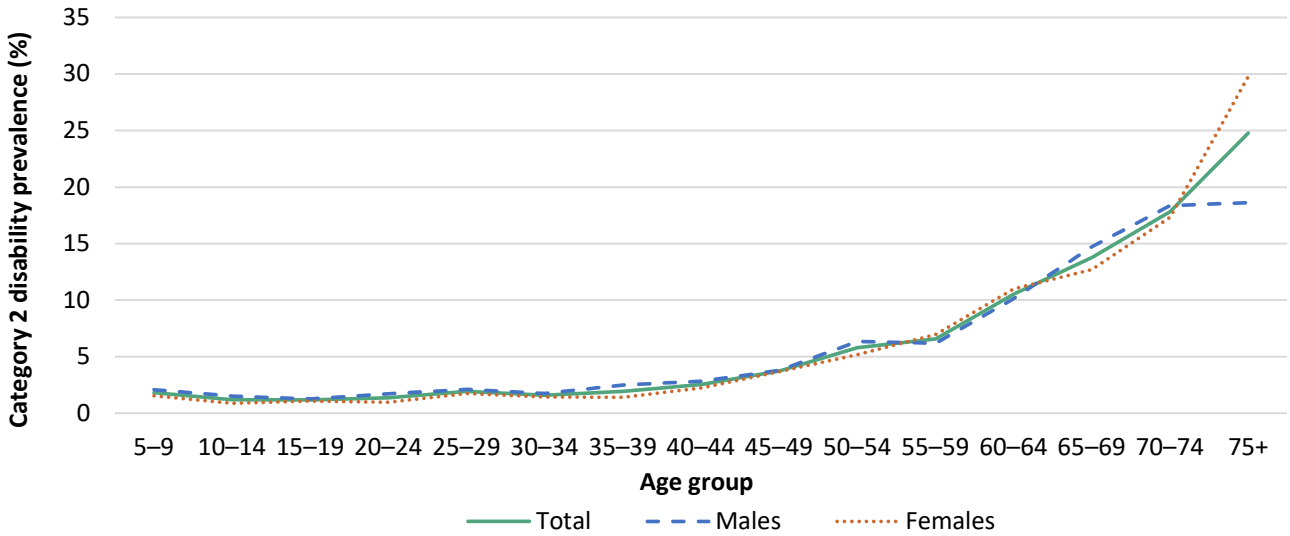


Figure 7.1. *Category 2 disability prevalence by age and sex, RMI, 2021*

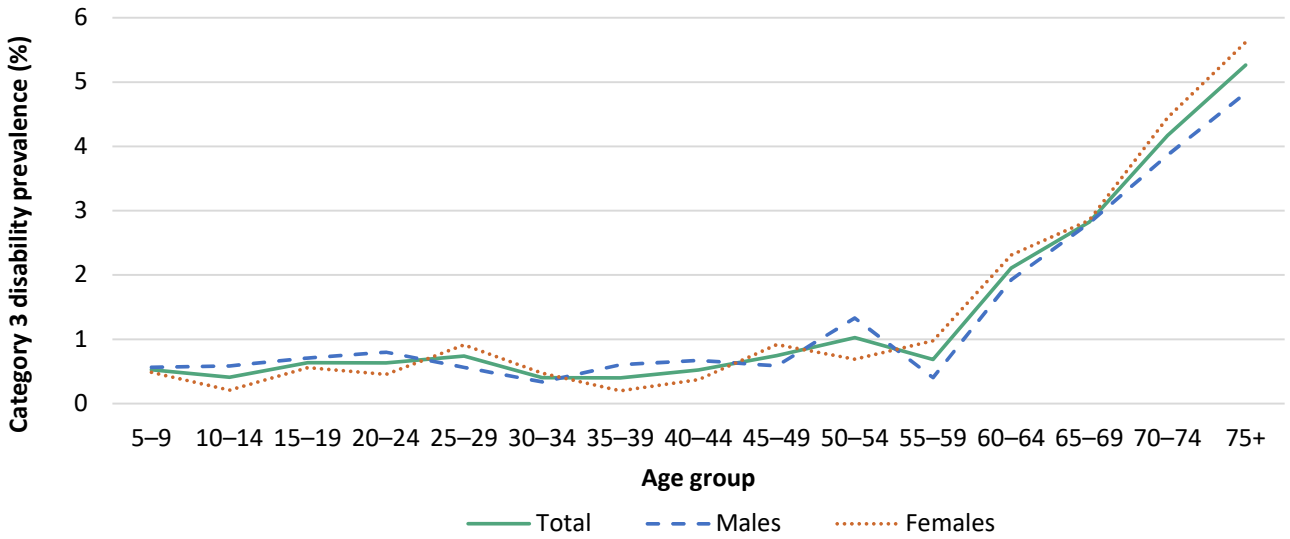


Figure 7.2. *Category 3 disability prevalence by age and sex, RMI, 2021*

Table 7.3. *Population under the category 2 disability classification and prevailing functional domain restrictions, by age group, RMI, 2021*

Age group	Total pop.	Has lots of difficulties in the functional domain					
		Seeing	Hearing	Mobility	Memory	Self-care	Communication
Panel A: Number							
<15	9,713	19	34	15	18	23	81
15–24	8,506	22	37	22	26	17	49
25–34	5,523	20	29	16	27	11	31
35–44	5,686	28	23	27	40	17	29
45–54	4,129	48	27	75	63	26	31
55–64	2,552	57	42	114	55	44	20
65+	1,569	69	73	162	70	69	29
Total	**37,678**	**263**	**265**	**431**	**299**	**207**	**270**
Panel B: %							
<15		0.2	0.4	0.2	0.2	0.2	0.8
15–24		0.3	0.4	0.3	0.3	0.2	0.6
25–34		0.4	0.5	0.3	0.5	0.2	0.6
35–44		0.5	0.4	0.5	0.7	0.3	0.5
45–54		1.2	0.7	1.8	1.5	0.6	0.8
55–64		2.2	1.6	4.5	2.2	1.7	0.8
65+		4.4	4.7	10.3	4.5	4.4	1.8
Total		**0.7**	**0.7**	**1.1**	**0.8**	**0.5**	**0.7**

Table 7.4. *Population under the category 3 disability classification and prevailing functional domain restrictions, by age group, RMI, 2021*

Age group	Total pop.	Cannot do at all in the functional domain					
		Seeing	Hearing	Mobility	Memory	Self-care	Communication
Panel A: Number							
<15	9,713	7	12	8	6	15	23
15–24	8,506	11	22	16	13	14	29
25–34	5,523	3	12	8	10	6	14
35–44	5,686	1	3	10	7	9	13
45–54	4,129	8	7	19	9	9	14
55–64	2,552	7	6	26	9	15	6
65+	1,569	20	16	46	19	28	13
Total	**37,678**	**57**	**78**	**133**	**73**	**96**	**112**
Panel B: %							
<15		7	12	8	6	15	23
15–24		11	22	16	13	14	29
25–34		3	12	8	10	6	14
35–44		1	3	10	7	9	13
45–54		8	7	19	9	9	14
55–64		7	6	26	9	15	6
65+		20	16	46	19	28	13
Total		**57**	**78**	**133**	**73**	**96**	**112**

7.3. Disability, schooling and labour force participation

The 2021 census indicated that, overall, the percentage of the school-age population (i.e. those aged 6–18 years) with a disability attending school (69.8% for both sexes combined) was significantly lower than the corresponding percentage for the population without a disability (85.5%) (***Figure 7.3***). In addition, a much higher percentage of school-age people with a disability never attended school – 19.8% (both sexes combined) compared with 3.1% (both sexes combined) of people without a disability. For both people with a disability and people without a disability, *females* had higher school attendance rates and lower dropout rates compared with their *male* counterparts.

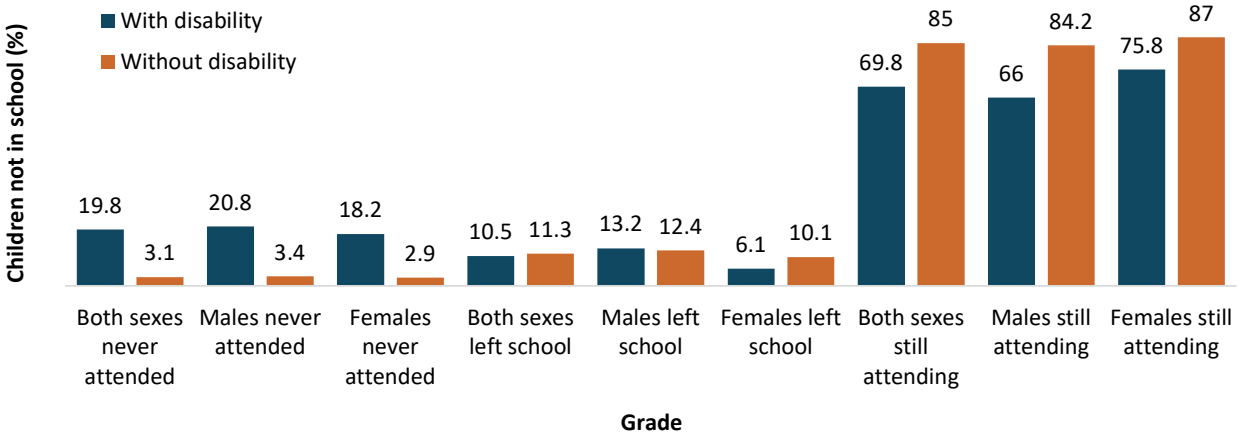


Figure 7.3. *School attendance by disability status, RMI, 2021*

Table 7.5. *Labour force participation by disability status for the population aged 15 years or over, RMI, 2021*

	Without disability		With disability		Total	
	Number	%	Number	%	Number	%
Not in a potential or current labour force	**12,198**	**45.2**	**651**	**65.1**	**12,849**	**45.9**
HH duties	6,484	53.2	226	34.7	6,710	52.2
Studying full time	3,819	31.3	24	3.7	3,843	29.9
Unpaid apprenticeship	26	0.2	3	0.5	29	0.2
Unpaid volunteer work	179	1.5	6	0.9	185	1.4
Working on own farm	155	1.3	8	1.2	163	1.3
Pensioner or retiree	561	4.6	147	22.6	708	5.5
With long-term illness	363	3.0	222	34.1	585	4.6
Not employed and not looking for work	611	5.0	15	2.3	626	4.9
In current or potential labour force	**13,799**	**51.2**	**341**	**34.1**	**14,140**	**50.6**
Employee	9,030	65.4	197	57.8	9,227	65.3
Self employed and/or work for profit	2,953	21.4	103	30.2	3,056	21.6
Unemployed	1,344	9.7	27	7.9	1,371	9.7
Seeking, not available or available not seeking	458	3.3	14	4.1	472	3.3
Not classified elsewhere	14	0.1	0	0.0	14	0.1
Not stated	**968**	**3.6**	**8**	**0.8**	**976**	**3.5**
Total	**26,965**	**100.0**	**1,000**	**100.0**	**27,965**	**100.0**

Similarly, people with a disability were less likely to be in the labour force, either actively or as part

of the potential labour force. When they were in the labour force, they were more likely than people without a disability to be self-employed (30.2% versus 21.4%), to have a higher unemployment rate (7.9% versus 9.7%) and to be potentially available but not actively participating in the labour force (4.1% versus 3.3%). As shown in ***Table 7.5***, only a third (34.1%) of the population with a disability was in the labour force (current or potential member), compared with over half (51.2%) of the population without a disability.

Over half of the people with a disability who were not in the current or potential labour force had a long-term illness (34.1%) or were pensioners or retirees (22.6%). The corresponding share for people without a disability was less than 10%, including those with a long-term illness (3.0%) and pensioners or retirees (4.6%). Moreover, even when they were not in the labour force, people with a disability were less likely to be engaged in household duties (34.7%) compared with people without a disability (53.2%).

7.4. Older population

The older population in this section refers to people aged 60 years or over. This age group is included in the numerator of the dependency ratio discussed in section 2.4 above, as it is assumed that people of this age are no longer earning a fixed income.

As in many settings, the family has traditionally safeguarded older people in RMI. However, the progressive erosion of such institutions resulting from increased rural-to-urban migration, climate change, disease prevalence and economic hardship make older people increasingly vulnerable. Although RMI currently has no explicit comprehensive national policy for older people, assessing the age group's profile could support future initiatives to mitigate the adverse effects of the ongoing above-mentioned factors on older people.

Table 7.6. *Selected characteristics of the population aged 60 years or over, RMI, 2021*

	60+ years	
	Number	**%**
Has disability	**14.4**	**384**
Not potential or current labour force	**57.3**	**1,523**
HH duties	41.2	627
Studying full time	0.2	3
Unpaid apprenticeship	0.1	2
Unpaid volunteer work	1.4	22
Working on own farm	0.9	13
Pensioner or retiree	38.9	593
With long-term illness	15.4	235
Not employed and not looking for work	1.8	28
In current or potential labour force	**41.5**	**1,104**
Employee	48.1	733
Self employed and/or work for profit	21.3	325
Unemployed	1.5	23
Seeking, not available or available not seeking	1.3	20
Not classified elsewhere	0.2	3
Not stated	**1.2**	**33**

At the time of the 2021 census, 6.3% of the RMI population (2,660 persons) was aged 60 or over. Of these people, 78.3% (2,084) lived in urban areas (i.e. Majuro and Kwajalein) while the other 21.7% (576) was scattered across the outer atolls and islands.

Table 7.6 shows that in the 60 years or over age group, there were 384 people (14.4% of the group) with a disability. While well over half were outside the current and potential labour force, a significant portion of the age group (41.5%) were still gainfully employed for pay or profit or actively seeking work. Most older people not in the current or potential labour force reported household duties as their primary activity (41.2%), followed by those who identified as pensioners or retirees (38.9%). Nearly 50% worked for pay as private or public sector employees, and about 20% were self-employed, producing goods and delivering services for sale or for their families.

8. COMPONENTS OF POPULATION CHANGE

There are three demographic causes of population change in any given location at any given point in time. Births add to the population, while deaths subtract from it. The balance of these two demographic components is called natural increase (or sometimes natural decrease when deaths exceed births, which can cause a population to shrink). Migration, the third component of population change, can either add to or subtract from a population depending on the direction of movement.

Also, more generally and over the long term, population numbers and age distribution changes are predominantly a product of past and prevailing fertility levels and patterns of the childbearing process. In some settings, however, mortality and migration play important (or even more critical) roles, but these are often short-term or limited to a specific location.

This chapter reports on the three components of population change in RMI, drawing on information collected in the 2021 census and previous censuses, as appropriate.

8.1. Fertility and entry to motherhood

8.1.1. Age at first birth

Age at first birth is one of the key proximate determinants of fertility, along with marriage and contraceptive use. Section 3.4 above addresses marital status and age patterns at first marriage in RMI. This section addresses age at first birth. Contraceptive use, though one of the proximate determinants of fertility, is not covered in this section or the report as information on contraceptive use is not typically collected in population censuses and thus was not collected in the RMI 2021 census.

Lower age at first birth is associated with overall high fertility, at both the individual and the societal level. Societies that practice early entry into motherhood generally have higher fertility, and their population grows faster. Early entry into motherhood (or lower age at first birth) also has other non-demographic implications for the mother, the baby and society.

Births that are too early or too late have immediate and long-term health risks to mothers and children. In addition, early births may interfere with the mother's education and could put her at a disadvantage, with long-term socio-economic consequences for her, her young family and society at large. The 2021 RMI census is one of the few global censuses that have collected information on age at first birth, providing a unique opportunity to explore patterns of entry into motherhood in RMI.

As ***Figure 8.1*** shows, as age increases, more and more women enter motherhood. The propensity for first birth peaked between the ages of 17 and 23 and declined monotonically thereafter. The mode of the distribution, or the point where most women had their first child, was around age 20. The distribution of entry to motherhood did not vary by location, meaning that rural women had almost identical patterns of entry into motherhood (or of age at first birth) as their urban counterparts.

Further, as ***Table 8.1*** indicates, the average mother in RMI gave birth to her first child when she was 21.6 years of age. Women in rural areas gave birth to their first child a little earlier, when they were about five months younger than their urban counterparts (21.3 years). Kili had the highest average age at first birth, 23.6 years, and the lowest was in Lib, 20.1 years. Also, as evidenced by the median value, about half of the mothers had their first child at or after age 20, while the other half had already done so before they turned 20.

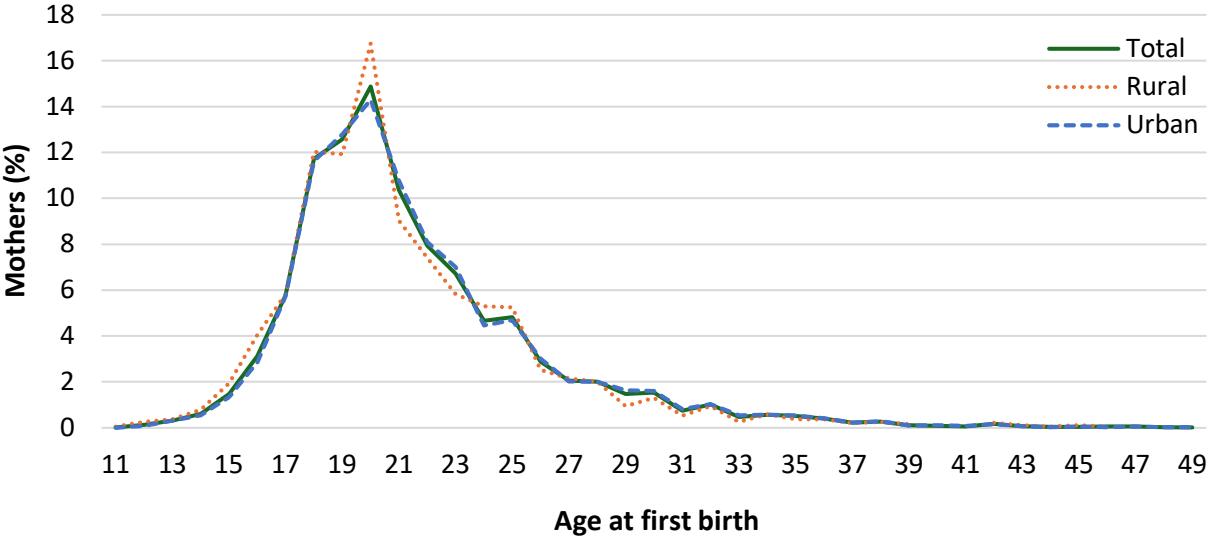


Figure 8.1. *Distribution of age at first birth by location, RMI, 2021*

Table 8.1. *Age at first birth by location, RMI, 2021*

Atoll/island	Mean age at first birth	Median age at first birth	Atoll/island	Mean age at first birth	Median age at first birth
Ailinglaplap	20.5	20.0	Majuro	21.7	21.0
Ailuk	20.7	20.0	Maloelap	21.2	20.0
Arno	21.9	21.0	Mejit	22.7	21.5
Aur	20.9	20.0	Mili	21.4	20.0
Ebon	21.8	20.0	Namdrik	21.4	20.0
Enewetak	21.2	20.0	Namu	21.1	20.0
Jabat	21.2	20.0	Ujae	20.3	20.0
Jaluit	21.1	20.0	Utirik	20.9	21.0
Kili	23.6	23.0	Wotho	20.6	20.0
Kwajalein	21.5	20.0	Wotje	21.5	20.0
Lae	21.4	21.0	**Total**	**21.6**	**20.0**
Lib	20.1	20.0	Rural	21.3	20.0
Likiep	21.6	21.0	Urban	21.7	21.0

It is prudent to note that the underlying data were collected retrospectively from all women who had a live birth on or before the census date, and for the majority, the event might have happened a few years or even decades earlier. Hence, these values might differ from similar data usually found in vital statistics reports collected at the time of a child's birth because of potential memory lapse biases. Similarly, caution should be exercised in comparing the data presented in ***Table 8.1*** with estimates of age at first birth indirectly generated from nulliparous women from censuses or surveys, as those indirect estimates are based on underlying sets of assumptions that may or may not apply to the context at hand.

8.1.2. Mean parity and completed family size

The 2021 census, like all previous censuses in RMI, collected data on children born from women of reproductive age (15–49 years). ***Table 8.2*** presents the average number of children born to women

of reproductive age (by atoll or island and urban or rural location). This measure is known as mean parity, lifetime fertility or achieved fertility because it captures all live births women have had from the time they turned 15 until the census date.

The average woman aged between 15 and 49 years in RMI had 1.7 children in 2021, 1.7 children fewer than this statistic for 2011. Rural and urban areas had comparable levels of lifetime fertility in 2011 (3.6 and 3.3, respectively). However, within a decade, the mean parity in urban areas had declined by half, reaching 1.6 children per woman. The lowest mean parity for 2021 was in Aur (1.4), while the highest was in Jabat (4.0). Jabat was also the only island or atoll where mean parity showed no decline in the past decade. The most significant mean parity decline was observed in Lae (2.2 children per woman), followed by Utirik (2.0), Lib (1.9), and Kwajalein and Majuro (1.8 each).

Table 8.2. *Lifetime fertility and completed family size by location, RMI, 2011–2021*

Location	Mean lifetime fertility (15–49)			Mean completed family size (45–54)		
	2011	2021	Absolute change	2011	2021	Absolute change
Ailinglaplap	3.5	3.0	-0.6	5.8	5.4	-0.4
Ailuk	3.4	3.3	0.0	5.1	4.8	-0.3
Arno	3.8	2.4	-1.4	6.7	4.8	-1.8
Aur	3.0	1.4	-1.6	5.1	3.2	-1.8
Ebon	3.9	2.7	-1.2	5.9	3.5	-2.4
Enewetak	3.8	2.3	-1.5	5.5	4.3	-1.2
Jabat	3.9	4.0	0.1	5.3	4.5	-0.8
Jaluit	3.8	2.1	-1.7	6.1	4.1	-2.0
Kili	3.7	2.7	-1.0	5.7	4.8	-0.9
Kwajalein	3.5	1.8	-1.8	5.6	3.5	-2.1
Lae	4.3	2.1	-2.2	7.8	3.7	-4.0
Lib	4.4	2.5	-1.9	6.0	5.7	-0.3
Likiep	3.2	1.7	-1.5	4.8	2.3	-2.5
Majuro	3.2	1.5	-1.8	5.0	3.3	-1.7
Maloelap	3.5	2.4	-1.1	5.6	4.5	-1.1
Mejit	3.4	1.8	-1.6	4.6	4.6	0.0
Mili	3.7	2.4	-1.3	5.9	4.5	-1.4
Namdrik	3.7	3.1	-0.6	5.7	6.0	0.3
Namu	3.1	2.4	-0.7	5.1	4.3	-0.8
Ujae	3.2	1.6	-1.6	6.9	2.4	-4.5
Utirik	3.8	1.8	-2.0	5.7	2.8	-2.9
Wotho	3.7	2.7	-1.0	4.5	2.0	-2.5
Wotje	3.6	1.9	-1.7	5.7	4.4	-1.3
Total	**3.4**	**1.7**	**-1.7**	**5.3**	**3.5**	**-1.8**
Urban	3.3	1.6	-1.8	5.2	3.3	-1.8
Rural	3.6	2.4	-1.3	5.8	4.4	-1.5

Mean parity for women aged 15–49 represents the fertility experience of women at various stages of their reproductive years, some of whom are at the beginning while others are in the middle or at the end; hence, mean parity is incomplete for some women and does not capture the experience

of a true cohort. This is captured by the mean number of children for women aged 45–54. This measure is also known as completed family size, as the women in this age group are at the end of or have completed their reproductive years and are not expected to have any additional children. Unlike the mean parity for all women aged 15–49, the completed family size also represents the experience of an actual cohort, all of whose members had completed their reproductive years before the census.

The average woman who had completed her reproductive years in 2021 had 3.5 children, about two fewer than this statistic for 2011. The decline in completed family size was pervasive: urban and rural locations and all islands and atolls, except Mejit, experienced a notable decrease in completed family size in the 10-year intercensal period. The decline in both urban and rural areas was large and comparable, between 1.5 and 1.8 children per woman.

The level and pace of decline in completed family size varied widely across atolls and islands. In Ujae, completed family size for women aged 45–54 declined by 4.5 children per woman – from 6.9 in 2011 to 2.4 in 2021. However, completed family size remained high in most locations, and inter-locational differences also persisted. In some places (Ailinglaplap, Lib and Namdrik), women who had completed their reproductive years in 2021 had, on average, five children or more, while in other places (Likiep, Ujae and Wotho), cohort fertility was already at replacement level. Despite a comparable decline in urban and rural areas, there was also still a difference of about one child per woman in cohort completed fertility between these two areas: the completed family size in rural areas in 2021 was 4.4 children per woman, while it was 3.3 in urban areas.

8.1.3. Current fertility

While completed family size is a valuable measure of reproduction and captures the experience of an actual cohort of women who shared a reproductive years, it reflects the past rather than the current fertility rate. However, fertility for a specific period or current fertility is required for several pragmatic and analytical reasons, such as preparing population projections and designing and delivering maternal and newborn care.

Previous RMI censuses collected current fertility data by asking women about births in the 12 months preceding the census. The 2021 census used a question on the date of birth of the last-born child, from which the reported number of births per year or for any specific period can be calculated. The approach of recording exact dates of birth is considered superior to the approach based on births in the 12 months preceding enumeration because it minimises reference period errors commonly observed with the latter data. ***Table 8.3*** presents the age-specific fertility rates (ASFRs) and total fertility rates (TFRs) constructed from data on the date of birth of the last child collected in the 2021 census. Also presented are the same indices obtained from the 2011 census, which were generated using data on births in the 12 months preceding the census.

The ASFR is the ratio of live births during a specified period to women of a specified age or age group to the total number of women of the same age in that period. The summation of ASFRs multiplied by the age interval gives an age-standardised fertility index, referred to as the TFR. It is evident from ***Table 8.3***, which presents the ASFRs and TFRs from the 2011 and 2021 censuses, that the TFR in RMI declined from 4.0 in 2011 to 2.8 in 2021. The TFR of 2.8 means that a woman in RMI will, on average, give birth to less than three children in her lifetime if she survives up to age 49 and bears children at each age according to the ASFRs prevailing in 2021.

Table 8.3. *Age-specific and total fertility rates, RMI, 2011 and 2021*

Age group	2011			2021		
	Number of enumerated women	Births in the 12 months preceeding the census	Age-specific fertility rate	Number of enumerated women	Births in the 12 months preceeding the census	Age-specific fertility rate
15–19	2,314	187	0.081	2,324	30	0.013
20–24	2,480	534	0.215	1,767	181	0.102
25–29	2,245	486	0.216	1,317	148	0.112
30–34	1,913	291	0.152	1,478	161	0.109
35–39	1,549	143	0.092	1,510	118	0.078
40–44	1,366	40	0.029	1,341	98	0.073
45–49	1,155	11	0.010	1,088	68	0.063
TOTAL	**13,022**	**1,692**	**4.0**	**10,825**	**804**	**2.8**

However, the reported number of births during the year before the census (804) is somewhat lower than the number of children younger than one year (978) enumerated in the census. This difference might be due to age misreporting in either of these data sets. It is also probable that the reported numbers of last births from the census are subject to omissions and reference period errors. However, the month and year of birth distribution (not reported here) did not show any pattern suggesting systematic bias in the data, particularly for the last three years preceding the census.

The original Brass P/F ratio method and its refinements, including the hypothetical inter-enumeration cohort method and the relational Gompertz method, are often used to check the internal consistency of census-based fertility data and make necessary corrections (Brass 1964, 1975; Moultrie 2013). In brief, the methods combine information on children ever born and on births in the 12 months preceding the census to derive a correction factor and generate adjusted TFRs and ASFRs.

As innovative and effective as these methods are, they are indirect techniques of fertility estimation and their application relies on some key assumptions. The original Brass P/F ratio method works under the assumption of constant fertility. In addition, migration and mortality are assumed to have no impact on the resulting estimates, which means that women who died or migrated to another location have identical fertility patterns to women who were alive and remained in the same location. While the refinements of the Brass P/F ratio method mentioned above have addressed the constraints of the constant fertility assumption, they all still operate under the same assumption about migration, which is an issue in the present context. For example, while cohort fertility is expected to increase with age, comparing the parity data from 2011 with those from 2021 showed that it did not, which could be attributed to migration and limits the application of even the improved methods. In fact, the hypothetical inter-enumeration cohort method could not be applied in the present case because the sequence of parity increments required for its application was negative for some ages, which is a theoretical impossibility and a pointer to the potential diluting effects of migration in the data. This means the existing evaluation and adjustment methods cannot be applied in the present case.

The own-children method is another approach for the indirect estimation of fertility. This method provides estimates independent of fertility data on children born and surviving because it uses data on relationships among household members. Specifically, the approach uses the household membership data and "reverse survives" the women and children enumerated in the household to obtain TFR and ASFR estimates. As such, the method does not require any assumption on fertility trends and is less affected by mortality trends than the other indirect methods for estimating fertility. ***Figure 8.2*** shows the trends in TFR from 1953 to 2020 derived from seven consecutive censuses (1967, 1973, 1980, 1988, 1999, 2011 and 2021) using the own-children method.

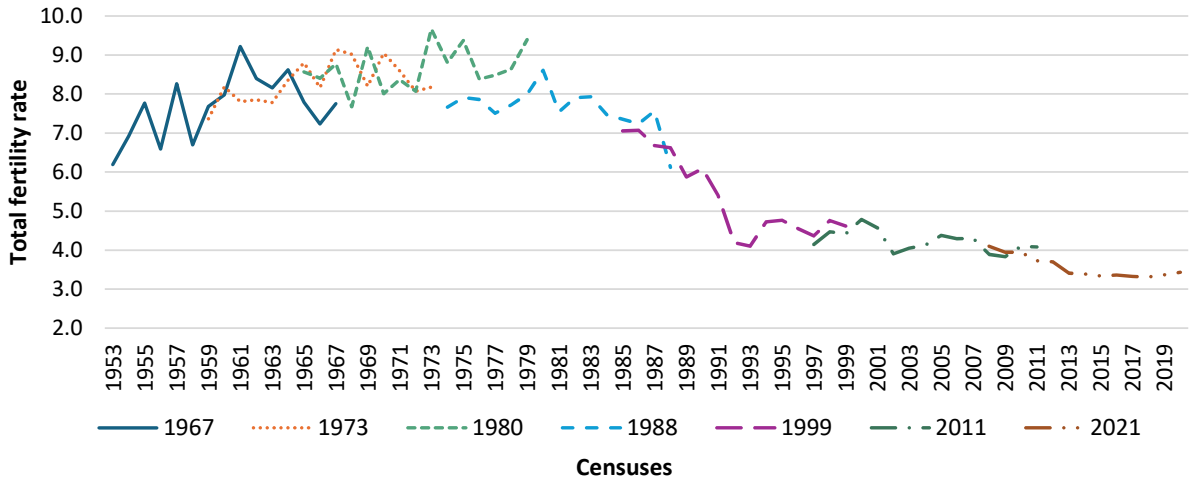


Figure 8.2. *Total fertility rate, derived from the own-children method, RMI, 1953–2020*

The figure shows that RMI traditionally had extremely high total fertility, starting in women's teenage years and often continuing into their 40s. Fertility rates have recently been much lower but remain above replacement level. The total fertility rate of about seven children per woman in the 1950s and 1960s increased to about nine children per woman in the 1970s. Around 1980, total fertility decreased and steeply declined in the 1980s, landing at about four children per woman around 1990. After that, total fertility decreased gradually to just above three children per woman in the 2021 census. While the estimates derived from the own-children method for the most recent period (i.e. 2021 census) are higher than those obtained from the fertility data, they confirm the ongoing fertility decline in the country.

8.2. Premature mortality and life expectancy

The 2021 census collected information on children born and children still alive from women 12–54 years of age, separately for *male* and *female* children. As the census also collected information on age at first birth in addition to the age of the mother at the time of the census, the above information could be usefully exploited to indirectly generate infant and child mortality estimates using one of the variants of what has come to be known as the Brass method.

The principle behind the original Brass method is that, given the age pattern of fertility, it is possible to relate the age of mothers (or their age at first birth) with the distribution in time of the births they have experienced and, assuming a standard mortality pattern, convert the proportions of dead children into estimates of the probability of dying before attaining certain exact childhood ages (Brass 1964, 1975, cited in UN 1983). The original method has since been modified to improve its flexibility and accuracy, as well as the time reference/location of the resulting estimates (Sullivan 1972; Trussell 1975; Feeney 1976; Hill and Figueroa 1999; Rajaratnam et al. 2010). For this report, the most recent variant of the Brass method, which was developed by Rajaratnam et al. (2010) (the RTLM method), and the original method developed by Brass and subsequently refined by Trussell (1975) and Feeny (1976) (the BTF method), were applied.

Figure 8.3 shows the mean number of children ever born and children dead by women's age and location from the 2021 census, the essential inputs for indirectly estimating infant and child mortality rates. However, as is the case with any demographic analysis, estimating these core parameters should begin with formal data evaluation and checking whether the underlying data follow expected patterns to aid meaningful interpretation of the resulting estimates. The figure shows that the mean number of children born increased gradually with age, as expected, but this was not so for the mean reported number of children dead, especially for women aged 25–29, which appears to be an outlier from the rest of the series. The data for this age group were graduated to ensure consistency, as no specific reason to explain the anomaly was identified.

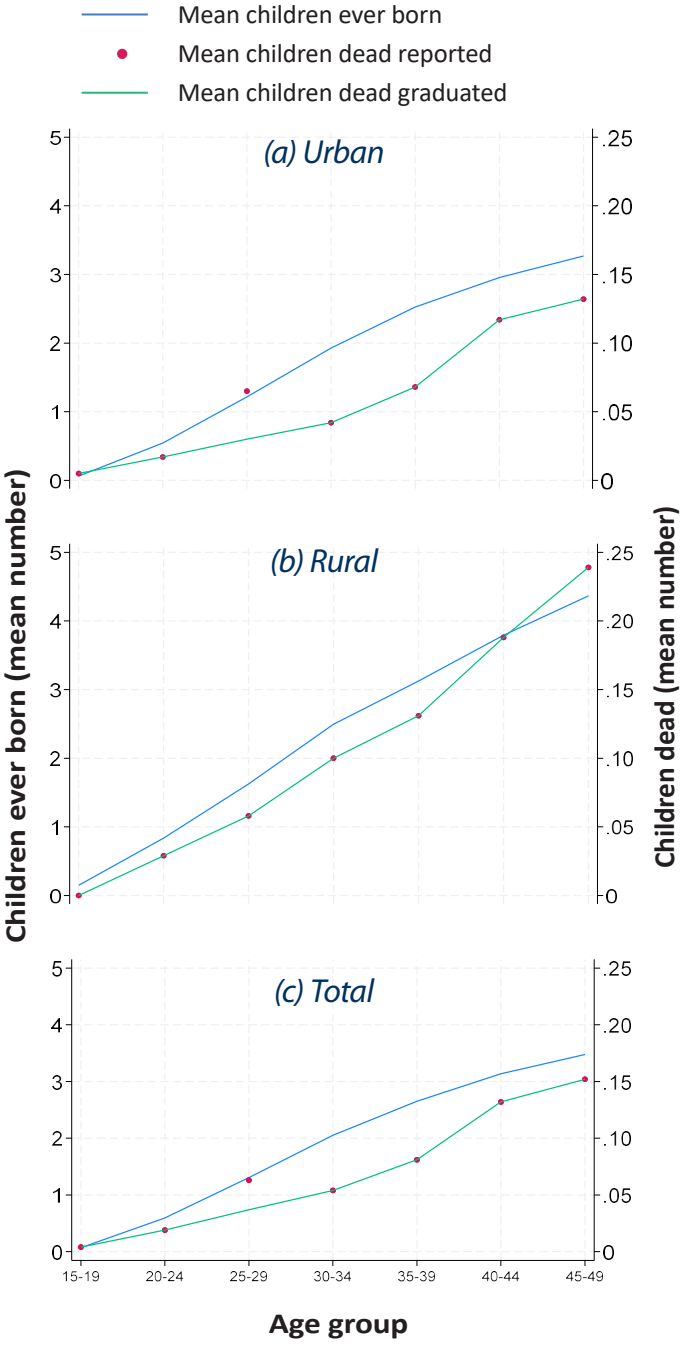


Figure 8.3. *Children ever born and children dead by age of women and by location, RMI, 2021*

Figure 8.4 shows the under-five mortality rate by location estimated using the RTLM and BTF variants of the Brass approach. These methods use different data and estimation equations to develop the model parameters for converting the number of dead children by age into probabilities of dying and their time locations. In addition, the application of the BTF method relies on a model life-table system; this is not required for the RTLM method, as the model has random effect coefficients that aim to capture differences in mortality patterns between countries. However, as the random effect coefficients are not estimated for every country and location, as is the case for RMI, the estimation process needs to assume a zero random effect. This is similar to assuming a mortality pattern that applies to the global average and also similar to the West family of the Coale-Demeny model life tables and the United Nations' general mortality pattern.

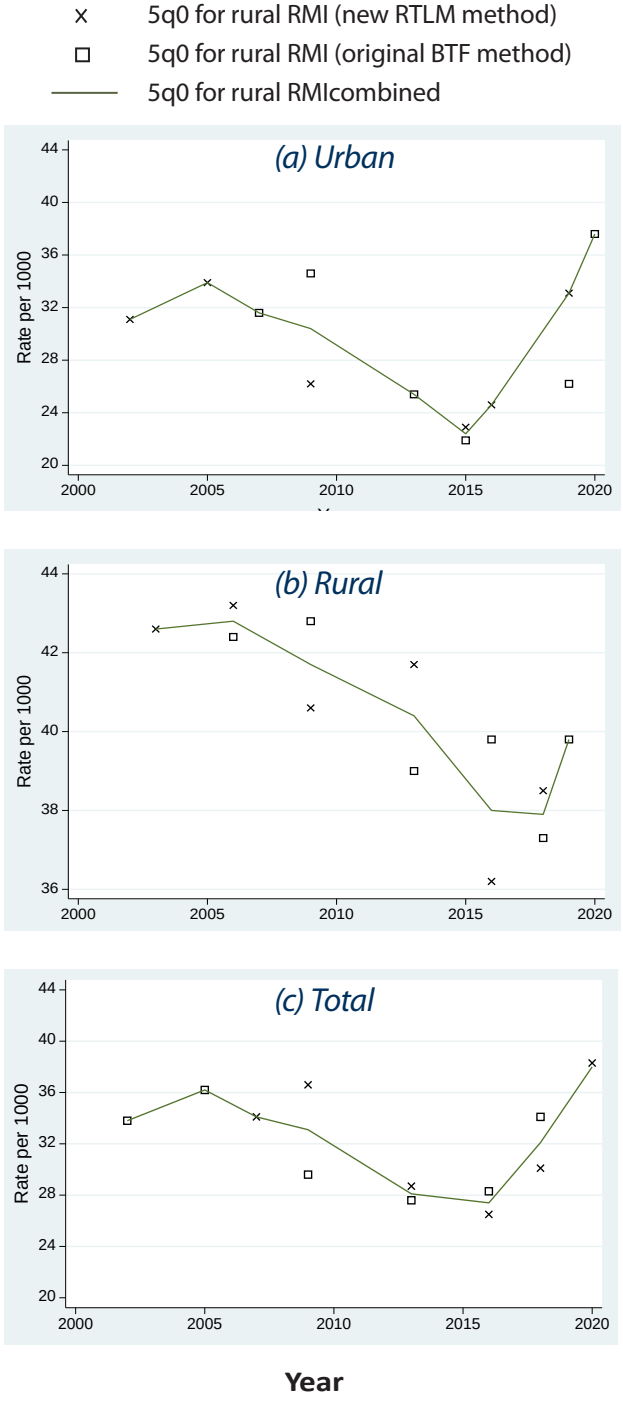


Figure 8.4. *Under-five mortality rate by location, RMI, 2021*

The results from the RTLM and BTF methods are broadly comparable. Collectively, they suggest an under-five mortality rate between 36 and 43 per 1000 live births in rural areas, between 22 and 38 in urban locations, and between 26 and 38 for the country as a whole in the 10 years before the census. There appeared to be a slight increase in under-five mortality since the 2011 census, particularly in urban areas. Determining whether this represents an actual trend or is an artefact of the data requires further investigation. Nonetheless, the estimated under-five mortality rate for 2019–2020 was 39.8 in rural areas, 37.6 in urban areas and 38.0 for the whole country. Assuming the mortality pattern in RMI follows the Coale-Demeny model West family life tables, these estimates translate to a life expectancy at birth of 65.7, 70.3 and 69.9 years for rural areas, urban areas and the whole country, respectively.

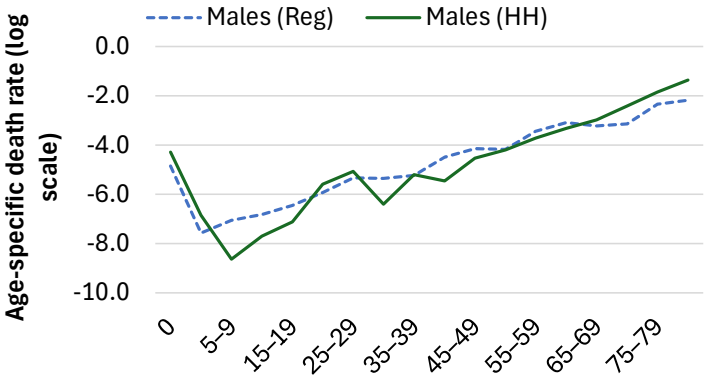
Table 8.4. *Registered deaths and household-reported deaths, RMI, 202*

Age group	Registered deaths in 2021			HH-reported deaths in the three years preceeding the census			Annualised HH-reported deaths in 2021		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
0	8	4	4	28	21	6	9	7	2
1–4	1	1	0	11	6	5	4	2	2
5–9	3	2	1	4	1	3	1	0	1
10–14	3	3	0	6	4	3	2	1	1
15–19	4	4	0	10	6	4	3	2	1
20–24	9	5	4	26	21	5	9	7	2
25–29	9	6	3	31	23	8	10	8	3
30–34	9	7	2	14	7	6	5	2	2
35–39	15	8	7	31	25	6	10	8	2
40–44	22	15	7	35	17	18	12	6	6
45–49	31	19	12	59	38	21	20	13	7
50–54	21	15	6	76	44	31	25	15	10
55–59	37	24	13	98	54	44	33	18	15
60–64	37	26	11	128	62	67	43	21	22
65–69	32	17	15	115	65	49	38	22	16
70–74	26	9	17	97	56	41	32	19	14
75–79	16	10	6	78	49	29	26	16	10
80+	17	6	11	60	41	19	20	14	6
Total	**300**	**181**	**119**	**909**	**542**	**367**	**303**	**181**	**122**

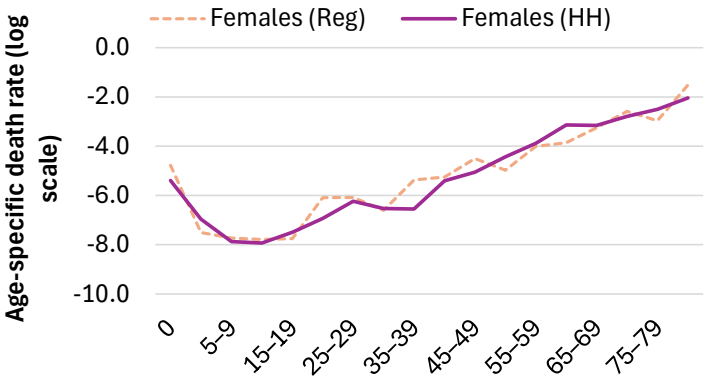
The report also utilised information on household-reported deaths in the three years preceding the enumeration date, August 2021, collected in the census. Furthermore, the RMI Ministry of Health and Human Services provided registered deaths for all of 2021. While in a strict sense the registration data differ from the data on deaths collected through the census, they provided another opportunity to estimate mortality, given that mortality is not expected to decline or improve rapidly in a short period except in catastrophic circumstances, which was not the case in RMI. As shown in ***Table 8.4***, 300 deaths were registered in RMI in 2021 (181 *males* and 119 *females*), which favourably compares with the average number of deaths per year in the three years preceding the census (181 *males* and 122 *females*) reported by households.

The age-specific death rates calculated from both data sets (registered deaths and household-reported deaths) using the census population as a denominator (and expressed in log scale),

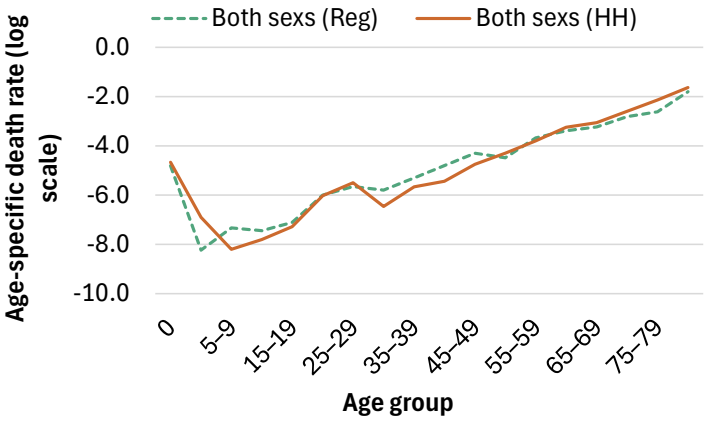
shown in ***Figure 8.5***, are reasonably close to each other and display the expected pattern across age groups. However, in both cases, the age-specific death rates (in log scale) are not as smooth as expected owing to the small number of deaths in the country. Hence, the data were first graduated using a parametric approach (Heligman and Pollard 1980) and subsequently used for generating life tables for the country. ***Table 8.5*** presents the life expectancy at birth and associated mortality indicators from the registration and household data.



(a) Males



(b) Females



(c) Total

Figure 8.5. *Age-specific death rates from registered deaths and household-reported deaths, RMI, 2021*

As stated above, the mortality indices estimated from the two independent data sources (i.e. the registration data and the information collected in the census) are reasonably close, particularly for life expectancy at birth. The life expectancy estimates generated from these data are also comparable with those implied by the under-five mortality estimates and those of the World Bank (nd). However, the under-five mortality estimates are significantly lower than those of the World Bank and those generated from registration data and household-reported deaths. This is not unexpected as childhood deaths are known to be underreported in death registration data and household-reported death census data. Hence, the child mortality estimates from both those sources were benchmarked against estimates derived from indirect techniques and combined with the average adult mortality estimates from the same sources to generate a life table for the country. This was done assuming the Coale-Demeny model West family life tables and using the Brass logit approach.

Table 8.5. *Mortality indices from registered deaths and household-reported deaths, RMI, 2019–2021*

Mortality indices	From death registration data		
	Total	Males	Females
Life expectancy at birth (e_0^0)	67.0	64.7	71.8
Infant mortality rate (per 1000 live births)	11.0	14.4	16.9
Under-five mortality (per 1000 live births)	12.5	17.0	21.7
Adult mortality (45q15) per 1000 adults	272.7	322.5	194.4
	From HH-reported data		
Life expectancy at birth (e00)	66.6	64.5	71.3
Infant mortality rate (per 1000 live births)	9.3	14.9	4.5
Under-five mortality (per 1000 live births)	13.2	19.5	8.2
Adult mortality (45q15) per 1000 adults	253.0	277.1	173.8
	HH and registration data (average)		
Life expectancy at birth (e_0^0)	66.8	64.6	71.5
Infant mortality rate (per 1000 live births)	12.7	14.6	10.7
Under-five mortality (per 1000 live births)	16.6	18.2	14.9
Adult mortality (45q15) per 1000 adults	242.8	299.8	184.1
	World Bank data		
Life expectancy at birth (e_0^0)	65.0	64.0	67.0
Infant mortality rate (per 1000 live births)	25.0	28.0	22.0
Under-five mortality (per 1000 live births)	30.0	33.0	26.0
Adult mortality (45q15) per 1000 adults	NA	290.0	236.0

Table 8.6 presents the final estimated life tables for RMI (abridged). According to these tables, life expectancy at birth was 65 years for the population as a whole (62 years for *males*, 69 years for *females*). The infant mortality rate for the country was 29 deaths per 1000 live births (34 for *males* and 25 for *females*). The corresponding under-five mortality rate for the country was 38 deaths per 1000 live births (42 for *males*, 34 for *females*).

Table 8.6. *Abridged life tables, RMI, 2021*

(a) Total

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.030	0.029	100,000	2,908	97,491	0.9672	6,501,946	65.0
1	0.002	0.009	97,092	892	386,117	0.9896	6,404,455	66.0
5	0.002	0.010	96,200	967	478,582	0.9913	6,018,337	62.6
10	0.001	0.007	95,233	689	474,442	0.9910	5,539,756	58.2
15	0.002	0.011	94,544	1,085	470,172	0.9866	5,065,314	53.6
20	0.003	0.015	93,459	1,419	463,864	0.9836	4,595,142	49.2
25	0.004	0.017	92,040	1,606	456,268	0.9813	4,131,278	44.9
30	0.004	0.020	90,434	1,821	447,716	0.9782	3,675,010	40.6
35	0.005	0.024	88,613	2,089	437,972	0.9742	3,227,294	36.4
40	0.006	0.028	86,524	2,455	426,673	0.9681	2,789,322	32.2
45	0.007	0.036	84,069	3,036	413,072	0.9575	2,362,650	28.1
50	0.010	0.050	81,033	4,055	395,514	0.9409	1,949,578	24.1
55	0.014	0.070	76,978	5,390	372,124	0.9138	1,554,064	20.2
60	0.022	0.106	71,589	7,560	340,057	0.8701	1,181,940	16.5
65	0.034	0.159	64,028	10,193	295,882	0.8016	841,883	13.1
70	0.056	0.246	53,835	13,242	237,178	0.6991	546,001	10.1
75	0.090	0.368	40,593	14,921	165,813	0.5621	308,823	7.6
80	0.144	0.523	25,672	13,439	93,206	0.4077	143,010	5.6
85	0.218	1.000	12,233	12,233	49,803	…	49,803	4.1

(b) Males

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.035	0.034	100,000	3,351	97,114	0.9634	6,205,685	62.1
1	0.002	0.008	96,649	820	384,590	0.9898	6,108,571	63.2
5	0.002	0.010	95,829	945	476,783	0.9909	5,723,981	59.7
10	0.002	0.008	94,884	794	472,434	0.9898	5,247,197	55.3
15	0.003	0.013	94,090	1,209	467,618	0.9843	4,774,763	50.7
20	0.004	0.018	92,881	1,699	460,290	0.9810	4,307,145	46.4
25	0.004	0.019	91,182	1,767	451,545	0.9795	3,846,855	42.2
30	0.004	0.022	89,415	1,962	442,289	0.9758	3,395,310	38.0
35	0.005	0.027	87,453	2,361	431,573	0.9692	2,953,021	33.8
40	0.007	0.035	85,092	3,005	418,264	0.9590	2,521,449	29.6
45	0.010	0.048	82,087	3,909	401,124	0.9432	2,103,184	25.6
50	0.014	0.067	78,178	5,274	378,351	0.9192	1,702,061	21.8
55	0.020	0.096	72,904	7,022	347,795	0.8834	1,323,710	18.2
60	0.030	0.140	65,882	9,255	307,230	0.8312	975,915	14.8
65	0.045	0.202	56,626	11,462	255,367	0.7566	668,685	11.8
70	0.069	0.293	45,164	13,241	193,201	0.6507	413,318	9.2
75	0.106	0.418	31,923	13,341	125,720	0.5153	220,117	6.9
80	0.163	0.568	18,582	10,556	64,783	0.3641	94,397	5.1
85	0.246	1.000	8,025	8,025	29,615	…	29,615	3.7

(c) Females

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)
0	0.025	0.025	100,000	2,452	97,851	0.9712	6,855,193	68.6
1	0.002	0.010	97,548	967	387,761	0.9917	6,757,341	69.3
5	0.001	0.005	96,582	522	481,604	0.9952	6,369,580	66.0
10	0.001	0.004	96,060	398	479,305	0.9948	5,887,976	61.3
15	0.001	0.007	95,662	648	476,798	0.9919	5,408,671	56.5
20	0.002	0.009	95,014	879	472,954	0.9899	4,931,874	51.9
25	0.002	0.011	94,135	1,019	468,190	0.9883	4,458,919	47.4
30	0.003	0.013	93,116	1,187	462,696	0.9859	3,990,730	42.9
35	0.003	0.016	91,929	1,436	456,181	0.9823	3,528,034	38.4
40	0.004	0.020	90,493	1,819	448,118	0.9764	3,071,853	33.9
45	0.006	0.028	88,674	2,451	437,563	0.9668	2,623,735	29.6
50	0.008	0.040	86,223	3,413	423,056	0.9523	2,186,172	25.4
55	0.012	0.057	82,810	4,759	402,856	0.9285	1,763,116	21.3
60	0.018	0.088	78,051	6,902	374,062	0.8887	1,360,261	17.4
65	0.030	0.139	71,149	9,898	332,425	0.8235	986,198	13.9
70	0.050	0.222	61,251	13,582	273,768	0.7242	653,774	10.7
75	0.082	0.342	47,669	16,283	198,260	0.5862	380,006	8.0
80	0.135	0.501	31,387	15,738	116,225	0.4260	181,746	5.8
85	0.210	1.000	15,649	15,649	49,511	…	65,520	4.2

8.3. Migration

Sections 8.1 and 8.2 above looked at fertility and mortality, two components of population change, in RMI. As discussed at the start of this chapter, births by age of women and deaths by age and sex are important in demographic analysis, particularly for generating population projections. Births and deaths are easy to work with because they represent an event with a specific reference point. However, migration is different.

First, migration has two main forms: international migration and internal migration. International migration is further divided into two components: immigration (i.e. people come from another country to the census country) and emigration (people leave the census country for another country). In the case of RMI, emigrants mostly go to the USA; so, from the RMI perspective, leavers are emigrants, and from the US perspective, these same people are immigrants.

Internal migration measures movements within a country. When people leave one atoll for another atoll, they are out-migrants from the atoll where they were living and in-migrants to the atoll where they are going to be living after the move. This section addresses both types of movement.

It is also important to distinguish between migrants – people moving for good – and people practising circular mobility. Circular mobility occurs when a person goes to work in another place – atoll, island or country – or moves to attend cultural events and then comes back frequently. The 2021 census collected data on three items – place of birth, place of enumeration and place of residence five years before the census – but circular migration was not captured, as is the case in many censuses.

8.3.1. Internal migration

Lifetime migration

Table 8.7 shows the distribution of the population by place of birth. A person is considered a lifetime migrant if the place where they were born differs from where they were at the time of the census. Of the 41,575 persons who responded to the question, 18,989 were born in Majuro, 9502 were born in Kwajalein and 10,357 were born on rural atolls. In addition, 2727 were born outside RMI, comprising 1093 born in the USA (including Hawaii), 750 in the Pacific region, 454 in Asia and 430 elsewhere. Hence, as of 2021, 10,539 persons (about 25% of the enumerated population) were lifetime migrants or lived somewhere other than their place of birth.

Table 8.7. *Lifetime migrants by origin and destination, RMI, 2021*

Place of birth	Place of current residence				Life time migrants by source	
	Majuro	Kwajalein	Rural	Total	Number	%
Majuro	16,560	469	1,960	18,989	2,429	12.8
Kwajalein	849	8,167	486	9,502	1,335	14.0
Rural RMI	3,477	571	6,309	10,357	4,048	39.1
Outside RMI	1,987	532	208	2,727	2,727	100.0
USA	773	269	51	1,093	1,093	100.0
Other Pacific	581	130	39	750	750	100.0
Asia	380	63	11	454	454	100.0
Elsewhere	253	70	107	430	430	100.0
Life time migrants by destination	6,313	1,572	2,654	10,539		
%	59.9	14.9	25.2	100.0		
Total (all places of birth)	**22,873**	**9,739**	**8,963**	**41,575**	**10,539**	**25.3**

Note: The boxed highlighted figures represent people still living in their birthplace. The unboxed highlighted percentages at the bottom row represent percentage of lifetime migrants as percentage of the total population at the given location.

About 13% of people born in Majuro live as lifetime migrants within RMI; the share is about the same (14.0%) for people born in Kwajalein. In contrast, about 40% of people born in rural areas live somewhere other than their place of birth, demonstrating the country's high level of rural-to-urban migration. Interestingly, a quarter of lifetime migrants (25.2%) also reside in rural areas, suggesting the movement is not in one direction only. Nonetheless, most lifetime migrants (59.9%) end up in Majuro.

While analyses such as these, as well as place of birth as a population characteristic and key mobility indicators, have significance, they lack information on the timing of movement and the duration that people stayed in a location. As such, the migrant category could include both people who moved only a few days before the census and those who moved 75 years ago. Therefore, data on previous residences are often used to identify short- and long-term movements and better understand current migration patterns, which are critical for planning infrastructure and social services.

Levels and patterns of recent migration

The 2021 census asked questions about residence one year before the census and residence five years before the census. Residence one year before the census provides information on short-term migration, while residence five years before the census provides the migration pattern at the mid-point in the decade before the census. The volume and intensity of recent internal migration obtained from the census data are shown in ***Table 8.8***.

Table 8.8. *Internal migration one and five years before the census, RMI, 2021*

Atoll/island	Place of residence one year ago		Place of residence five years ago		Migration intensity (%)	
	Same place	Elsewhere	Same place	Elsewhere	One year ago	Five years ago
Ailinglaplap	1,081	63	920	94	5.5	9.3
Ailuk	230	1	199	9	0.4	4.3
Arno	1,081	29	943	47	2.6	4.7
Aur	300	8	257	23	2.6	8.2
Ebon	461	3	386	35	0.6	8.3
Enewetak	275	9	245	11	3.2	4.3
Jabat	71	3	53	8	4.1	13.1
Jaluit	968	64	845	89	6.2	9.5
Kili	409	1	367	2	0.2	0.5
Kwajalein	9,322	175	8,211	312	1.8	3.7
Lae	118	11	109	13	8.5	10.7
Lib	142	8	110	16	5.3	12.7
Likiep	210	12	180	14	5.4	7.2
Majuro	21,761	560	18,938	1537	2.5	7.5
Maloelap	375	11	309	35	2.8	10.2
Mejit	201	23	138	58	10.3	29.6
Mili	440	44	367	60	9.1	14.1
Namdrik	274	19	240	23	6.5	8.7
Namu	497	15	435	24	2.9	5.2
Ujae	290	13	256	9	4.3	3.4
Utirik	255	3	229	6	1.2	2.6
Wotho	81	0	67	2	0.0	2.9
Wotje	630	13	556	29	2.0	5.0
Total	**39,472**	**1,088**	**34,360**	**2,456**	**2.7**	**6.7**
Urban	31,083	735	27,149	1,849	2.3	6.4
Rural	8,389	353	7,211	607	4.0	7.8

The crude migration intensity revealed moderate internal mobility among Marshallese – just under 3% and 7% of the population reported a change of residence one year and five years before the census, respectively. Crude migration intensity rates based on data for movements one year ago were highest in Mejit (10.3%), followed by Mili (9.1%), Lae (8.5%) and Namdrik (6.5%). One-year-ago migration rates were higher in rural areas (4.0%) than in urban areas (2.3%), and overall, the same pattern was evident for five-years-ago migration rates, with migration intensity being higher in rural areas (7.8%) than urban areas (6.4%). Comparing the one-year with the five-year data revealed interesting patterns, with some locations (such as Maloelap and Jabat) having lost momentum in terms of migration in recent years.

Like most other demographic phenomena, migration varies by age and by sex and according to time and the geographical location under consideration. The longer a person is exposed to an event, the greater the propensity to experience the event. Likewise, individuals also pass through various life events, such as attending school, joining the labour force, entering a marital union, existing in the labour force and eventually joining family or retirement homes, which also affect

their migration behaviour. ***Figure 8.6*** shows the standardised migration rate for RMI by age from one-year-ago and five-years-ago data.

The universal age pattern of migration first identified by Rogers and Castro (1981) and subsequently observed by other researchers in other populations (Kinfu 2005; Rogers et al. 2005) is a pattern of high migration intensity in infancy, mirroring the pattern of those persons in the reproductive age groups who are most likely to be the parents of infants, followed by a gradual decline until age 15. Between the ages of 15 and 25, migration intensity sharply increases, followed by another gradual decline until the last age group. At older ages another sharp increase is seen in some settings, linked with the retirement age, after which migration intensity gradually declines.

Figure 8.6 shows that for RMI, as is the case observed elsewhere, migration intensity was relatively high in the youngest age group and declined in the 5–9 age group, from which point it then increased and continued to increase until it attained peak intensity between the ages of 20 and 29, reflecting the influence of several life events on people of these ages, including departure from the parental home, the start of post-secondary education, entry into the labour force and establishment of independent living arrangements (Long 1992; Bell 1995; Kinfu 2005). However, the peak intensity shifted towards 25–29, away from its peak of 20–24 five years earlier. Accordingly, the modal age of migration was 26 one year before the census (i.e. 2020), while it was 21 five years before the census.

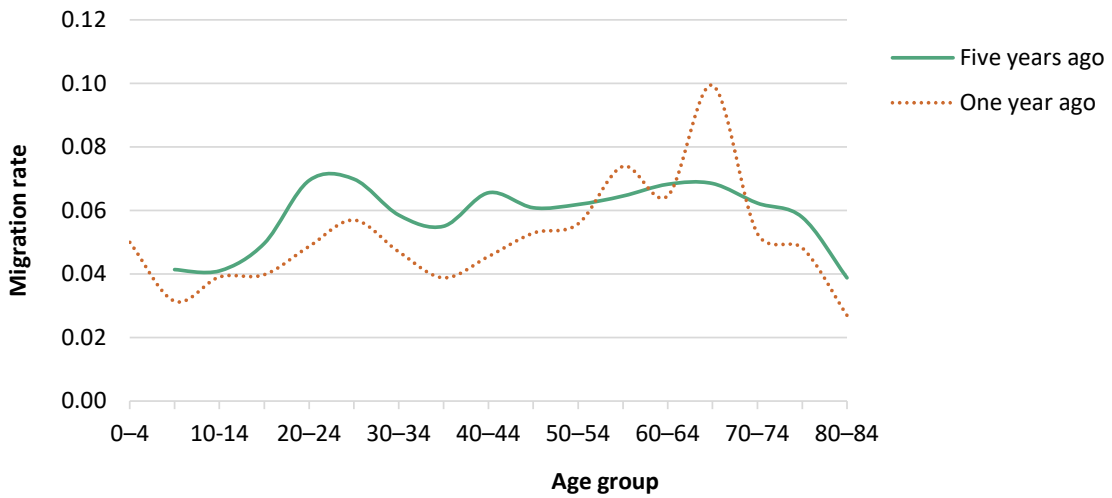


Figure 8.6. *Age pattern of internal migration one year and five years before the census, RMI, 2021*

The migration intensity had two additional peaks, but what was unique about the pattern in RMI was that migration rates continued to increase into middle and older ages and declined only after age 70. The migration of older people appears to have intensified in recent years (i.e. one year before the census) compared with the case five years before the census. The gross migration expectancy computed from the data suggests that the average Marshallese could expect to undertake 6.3 lifetime moves based on the data for five years before the census and 2.7 lifetime moves based on the data for one year before the census. These figures suggest a lower migration intensity in recent years, probably linked to the coronavirus disease 2019 pandemic. The gross migration expectancy, however, overstates the actual intensity of movement because the analysis fails to capture potential losses in movement associated with premature death. The results also assume that individuals will experience throughout their life the annual rates of migration observed during the analysis period, which may or may not be the case (Willekens and Rogers 1978). Nonetheless, it is an assumption common to all period measures, including the TFR described in section 8.1.2 above.

8.3.2. International migration

The population count in 2021 was significantly lower than what was enumerated 10 years prior, that is, in the 2011 census, which suggests several potential scenarios: (1) the 2011 census had a substantial overcount, (2) the 2021 census had an abnormally high undercount or (3) emigration was much stronger than anticipated. Given that intercensal growth for the previous intercensal period (i.e. 1999–2011) was relatively modest, 1.4% per annum, it is unlikely that the 2011 census was over-enumerated. This supposition is supported by an independent census evaluation report prepared for the 2021 census, which showed reasonable correspondence between the 2011 count and projections for the same period (2011) based on the 1999 census (Government of Marshall Islands 2022). The same report used rigorous internal, external and diagonal consistency checks and drew population data from various sources to eliminate an undercount as a potential source of error for the 2021 census, leaving emigration as the only factor responsible for population loss between 2011 and 2021. Thus, once census coverage is ruled out, the intensity of international migration can be determined using a combination of life table and census survival ratios.

This section briefly attempts to establish the magnitude of emigration estimated in this manner and explore selected characteristics of the Marshallese who migrated owing to a lack of jobs and increased problems associated with global warming.

Table 8.9. *Net emigration, RMI, 2011 and 2021*

Census of 2011			Ten-year life-table survival ratios		Age in 2021	Expected survivors		Census of 2021		Net emigration 2011–2021 (pop. 10 + years)		Emigration rate	
	Males	Females	Males	Females		Males	Females	Males	Females	Males	Females	Males	Females
0–9	7,653	7,107	0.98077	0.98851	10–19	7,506	7,025	5,271	4,734	-2,235	-2,291	29.5	32.4
10–19	5,802	5,422	0.96998	0.98436	20–29	5,628	5,337	3,118	3,084	-2,510	-2,253	43.9	41.9
20–29	4,773	4,725	0.95835	0.97634	30–39	4,574	4,613	2,977	2,988	-1,597	-1,625	34.2	34.8
30–39	3,463	3,462	0.93766	0.96387	40–49	3,247	3,337	2,534	2,429	-713	-908	21.3	26.7
40–49	2,608	2,521	0.88621	0.93252	50–59	2,311	2,351	1,722	1,588	-589	-763	24.0	31.3
50–59	1,831	1,675	0.77477	0.85540	60–69	1,419	1,433	1,000	905	-419	-528	25.8	34.0
60–69	867	707	0.56687	0.66813	70–79	491	472	311	341	-180	-131	26.6	22.3
70+	246	296	0.22839	0.25987	80+	56	77	41	62	-15	-15	10.0	8.0
Total	**27,243**	**25,915**				**25,232**	**24,646**	**16,974**	**16,131**	**-8,258**	**-8,515**		

As can be determined from ***Table 8.9***, 16,773 residents aged 10 years or over (8258 *males* and 8515 *females*) left RMI in the past decade for various reasons. The emigration rates in the last two columns show that although all ages have been affected by the emigration wave, outflows were relatively higher for people aged between 20 and 29 years, and *females* generally had a higher propensity for emigration than their *male* counterparts, except in the 20–29 and the 60 years or over age groups.

As most Marshallese migrate to the USA, ***Figure 8.7*** shows a population pyramid of Marshallese in the USA as of the 2010 US census. The United States Census Bureau collects data in two categories: (1) Marshallese alone, meaning that the respondents indicate they are only Marshallese race, and (2) Marshallese and other, meaning that the respondents indicate they are Marshallese but also

of another race. This category applies to the children of the union between a Marshallese and a person from another race (i.e. the children claim more than one ancestry).

The pyramid confirms the high emigration rate among people aged 20–29 observed in the census survival ratios in ***Table 8.9***. These are individuals who moved to the USA for education or work; some of them stayed. Others moved to the USA for economic reasons, that is, they could not find or maintain jobs or careers in RMI and felt they had to leave to provide for themselves and their families.

Table 8.10 shows the age and sex distribution of the Marshallese in the USA who identified themselves as Marshallese alone or Marshallese and other (i.e. the above-mentioned two categories of the United States Census Bureau). The increase in the Marshallese population in the USA from about 16,257 in 2010 to 36,857 in 2021 (data from the US censuses in those years) is consistent with the trend observed in the survival ratios, although the increase is slightly greater in the US census data (about 21,000) than in the figures estimated from survival ratios (about 17,000). However, the difference between these two data sets (about 4000) is understandable given that the survival ratios emigration estimates only captured the population aged 10 years or over. This means that children who were born during the intercensal period (after the 2011 census) and emigrated with their parents were not included in the analysis. If the count in the US census data is restricted to the increase in population aged 10 years or over, the figures become relatively comparable.

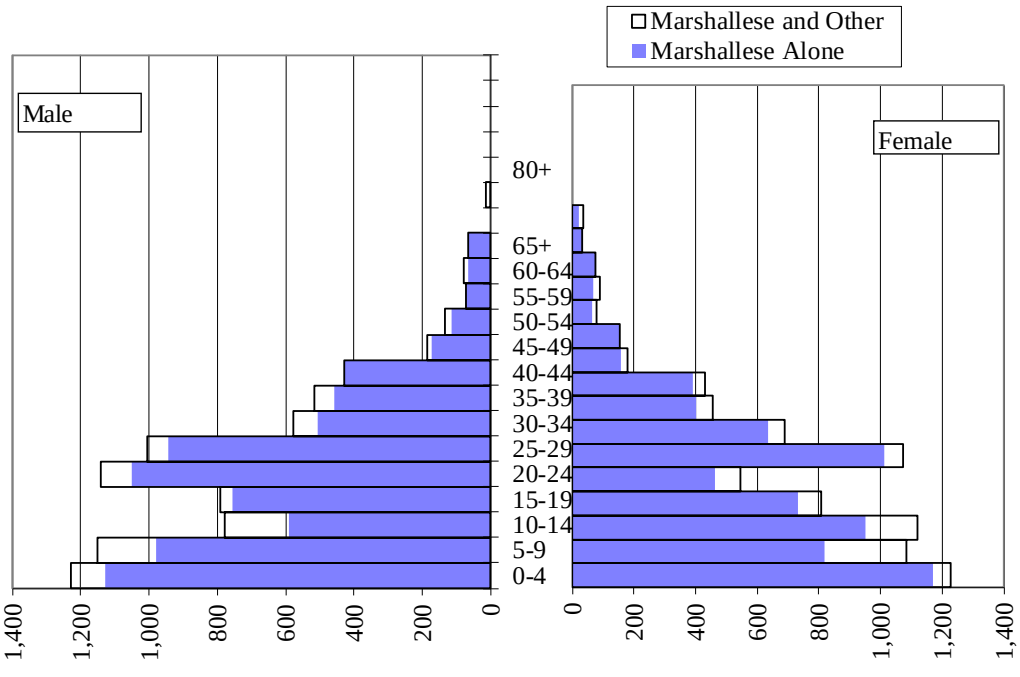


Figure 8.7. *Marshallese in the United States of America, 2010*

Source: United States Census Bureau (2010).

The pyramids in ***Figures 8.7*** and ***8.8*** reflect the continuing stream of young workers moving to the USA for more opportunities. They also reflect the increasing number of children, that is, the offspring of the workers born after the workers settle into their new location, get married and start having families. The children of couples who are both Marshallese appear as Marshallese in the pyramid, and the children of Marshallese married to people of other races appear as "Marshallese and other".

Table 8.10. *Age and sex distribution of Marshallese in the United States of America, 2010–2021*

Age	2010			2015			2021		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
Under 5	2,458	1,230	1,228	4,455	1,905	2,550	4,621	2,382	2,239
5–9	2,233	1,150	1,083	3,984	2,333	1,651	4,514	2,615	1,899
10–14	1,896	777	1,119	2,319	1,528	791	3,610	2,182	1,428
15–19	1,601	792	809	1,473	1,040	433	3,442	2,211	1,231
20–24	1,688	1,143	545	3,232	960	2,272	4,280	1,780	2,500
25–29	2,080	1,006	1,074	2,517	1,396	1,121	3,397	1,408	1,989
30–34	1,269	579	690	2,492	1,314	1,178	3,447	1,629	1,818
35–39	972	517	455	1,411	847	564	3,244	2,129	1,115
40–44	861	429	432	1,114	700	414	1,839	1,072	767
45–49	368	187	181	603	352	251	1,757	1,041	716
50–54	288	134	154	326	147	179	1,009	528	481
55–59	151	71	80	256	143	113	345	329	16
60–64	169	79	90	430	257	173	581	384	197
65–69	140	64	76	348	88	260	446	188	258
70–74	32	-	32	66	12	54	203	87	116
75+	51	15	36	24	14	10	122	119	3
Median age	19.8	20.6	18.8	20.5	18.6	21.3	22.6	21.8	23.2
Total	**16,257**	**8,173**	**8,084**	**25,050**	**13,036**	**12,014**	**36,857**	**20,084**	**16,773**

Source: United States Census Bureau (2010, 2015, 2021).

Note: Marshallese includes both Marshallese alone and Marshallese and other (i.e. children from one Marshallese parent and one other race parent).

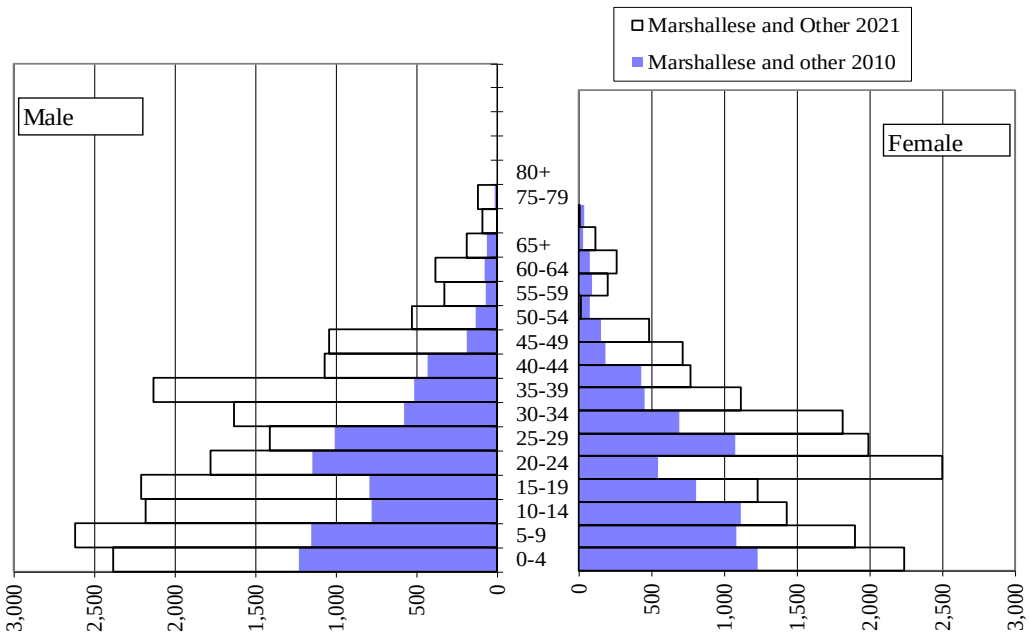


Figure 8.8. *Marshallese in the United States of America, 2010 and 2021*

Source: United States Census Bureau (2010, 2021).

Figure 8.8 shows combined pyramids for the 2010 and 2021 estimates of Marshallese (and Marshallese and other) populations. The highly significant increase in the number of Marshallese

is easily seen as all the age groups have increased over the decade. But the same pattern seen in the 2010 numbers is still prevalent in 2021, reflecting that young workers continued to stream into Hawaii and the US mainland, and many of them had children after they had established themselves (many of them also brought their children from RMI with them).

8.4. Balancing intercensal population change

Having estimated the three components of population change – births, deaths and migration – in sections 8.1, 8.2 and 8.3 above, respectively, it is now possible to examine the components of intercensal population change between 2011 and 2021 in RMI.

Table 8.11. *Components of population change, RMI, 2011–2021*

Population count 2011	Estimated number of demographic events: 2021–2011			Estimated 2021 pop.	Pop. count 2021	Error of closure
	Emigration	Deaths	Births			
53,158	-16,773	-3,280	9,208	42,313	42,418	105

Generally, after accounting for demographic components, the difference between the estimated population and the actual population count should be small, as demonstrated in the case of RMI. As shown in ***Table 8.11***, the error of closure (i.e. the difference between 2011 and 2021 after accounting for births, deaths and emigration during the intercensal period) was negligible. Thus, the changes between 2011 and 2021 are fully accounted for, demonstrating the robustness of the estimated demographic parameters and the completeness of the 2011 and 2021 censuses.

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9. HOUSING

The RMI 2021 census included questions on housing, the environment, food security and household subsistence activities in addition to the core questions on the population and its characteristics. The previous chapters in this report looked at various aspects of the persons and households enumerated in the census. This chapter looks at the dwellings in all areas of the country – including their stock and environmental attributes – in which these people lived.

9.1. Types of dwelling

The 2011 census counted 9,111 structures with living quarters, including 7,742 (85%) occupied and 1,369 vacant buildings. The census enumerated all the occupied housing units in the country except four (in two cases, the occupants refused to participate, and in two cases, occupants could not complete the census interview). Of the enumerated housing units, 52.9% were in Majuro, 17.7% were in Kwajalein and the remainder, 29.4%, were in the rest of the country (i.e. rural areas).

Table 9.1. *Types of dwelling by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
One-family house detached from any other house	5,309	3,019	784	1,506	74.5	77.5	55.1	83.4
One-family house made up of multiple small structures	701	284	190	227	9.8	7.3	13.4	12.6
One-family house attached to one or more houses	591	201	345	45	8.3	5.2	24.3	2.5
Building with two or more apartments	375	312	54	9	5.3	8.0	3.8	0.5
Dwelling attached to a shop or other building not used for housing	92	47	34	11	1.3	1.2	2.4	0.6
Lodging house (e.g. hostel)	25	16	9	0	0.4	0.4	0.6	0.0
Other	26	13	6	7	0.4	0.3	0.4	0.4
Boat	4	4	0	0	0.1	0.1	0.0	0.0
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Most Marshallese households live in detached one-family houses, that is, structures not connected to either other housing units or buildings used for non-residential purposes (such as businesses and medical clinics). As shown in ***Table 9.1***, single houses constituted about three in every four dwellings, and the percentage was even higher in rural areas, at about 83%, and in Majuro (urban area), at about 78%.

In contrast, only about half of the dwellings in Kwajalein were single-family detached houses. At the same time, about one in every four were one-family housing units attached to one or more other units, that is, a row of housing units, such as apartments or townhouses. Also, Kwajalein had the highest percentage of households living in dwellings comprising multiple small structures, such as a compound.

9.2. Age of dwellings

The 2021 census collected information on the year of construction of dwellings throughout RMI; the year of original construction was recorded, even if the household had made later additions to

the structure. ***Table 9.2*** presents the mean and median age of dwellings and construction year by location. The average dwelling in RMI was built about 24 years before the census, meaning it was constructed in the late 1990s. Nearly half (i.e. the median value) of the dwellings were built in or before 2000 (i.e. 22 years or more before the census).

Table 9.2. *Construction year and age of dwellings by location, RMI, 2011*

Atoll/island	Mean age of dwelling units (years)	Mean age of housing units (years)	Median age of dwelling units (years	Median age of housing units (years)
Jabat	14.1	2008	17.0	2005
Wotho	19.2	2003	15.0	2007
Ailinglaplap	21.5	2000	20.0	2002
Mili	21.9	2000	21.0	2001
Majuro	21.9	2000	21.0	2001
Jaluit	22.2	2000	20.0	2002
2Utirik	22.2	2000	21.0	2001
Lae	22.4	1999	17.0	2005
Namu	22.8	1999	24.0	1998
Ebon	23.5	1998	22.0	2000
Ujae	24.0	1998	24.0	1998
Wotje	24.3	1997	24.0	1998
Aur	25.0	1997	28.0	1994
Maloelap	25.0	1997	25.5	1996
Arno	25.2	1997	21.5	2000
Kili	26.0	1996	24.0	1998
Namdrik	26.9	1995	29.5	1992
Mejit	27.2	1995	27.0	1995
Kwajalein	28.8	1993	30.0	1992
Ailuk	29.7	1992	29.0	1993
Lib	30.3	1992	31.0	1991
Likiep	33.1	1989	31.0	1991
Enewetak	35.9	1986	44.0	1978
Total	**23.8**	**1998**	**22.0**	**2000**
Urban	23.6	1998	21.0	2001
Rest of the country	24.6	1997	23.0	1999

The median age of dwellings was the highest in Lib and Likiep (both at 31.0 years). In contrast, it was 15.0 in Wotho, meaning that half of the housing units in Wotho were constructed in or after 2007. Overall, dwellings in rural locations were older than those in rural areas. On average, the structures in Kwajalein (an urban area) were older than those in Majuro (another urban area), as well as those on most rural islands and atolls.

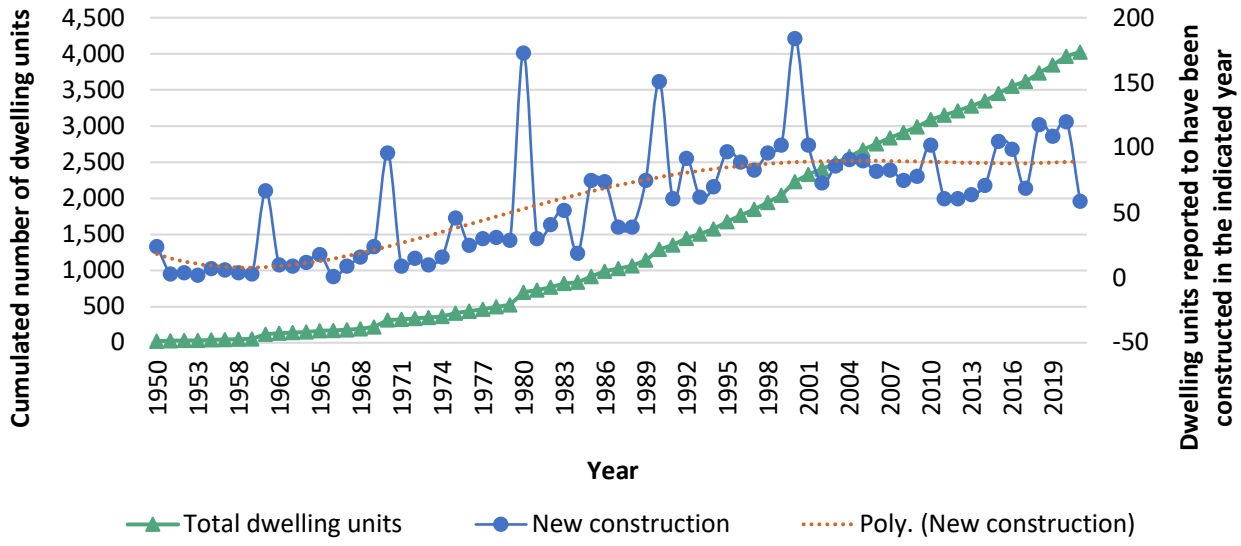

Figure 9.1. *Number of dwellings by year of construction and cumulative number of dwellings, RMI, 1950–2021*

Figure 9.1 shows the construction year of dwellings in single calendar years and cumulative years for 1950–2021. Also shown in the figure is the smoothed overall trend line for dwellings constructed each year, which flattens out the year-to-year fluctuations. The data suggest that construction rapidly increased from 1950 until it peaked between the late 1990s and early 2000s and then stabilised at about 90 new housing units per year in recent years. The spikes observed for 1950, 1960, 1970, 1980, 1990 and 2000 are more likely to result from digit preference (either of respondents or data collectors) than to indicate seasonality/systematic pattern or any structural trend.

9.3. Housing tenure

Figure 9.2 shows the distribution of major housing tenure categories for RMI in the censuses conducted from 1988 to 2021. Housing tenure in RMI differs from that of many other countries because of communal land and the ability of the Marshallese to build a housing unit that needs neither heating nor cooling. Nonetheless, the Western concept of a mortgage is now prevalent, so in 2011 and 2021, the censuses collected information on whether dwellings were owned with a mortgage or were owned "free and clear". Those two categories are combined in ***Figure 9.2*** to allow comparison with the earlier censuses.

Very few housing units are rented, and renters are often foreigners. The category "Occupied without payment" is for households living in a dwelling they do not own but for which they are not required to pay rent. This type of housing is traditional and widespread in Pacific Island countries and territories because it solidifies kinship ties or provides a place needed for the well-being of both parties, that is, those who own the dwelling and those who live in it without rent.

More than half the housing units in 2021 were owned "free and clear", though their owners might have had a mortgage in the past (***Figure 9.3***). About three in every five rural dwellings were in this category. While households rented about one in every 10 Majuro housing units, only 6% of the total housing units in RMI at the time of the 2021 census were rental properties.

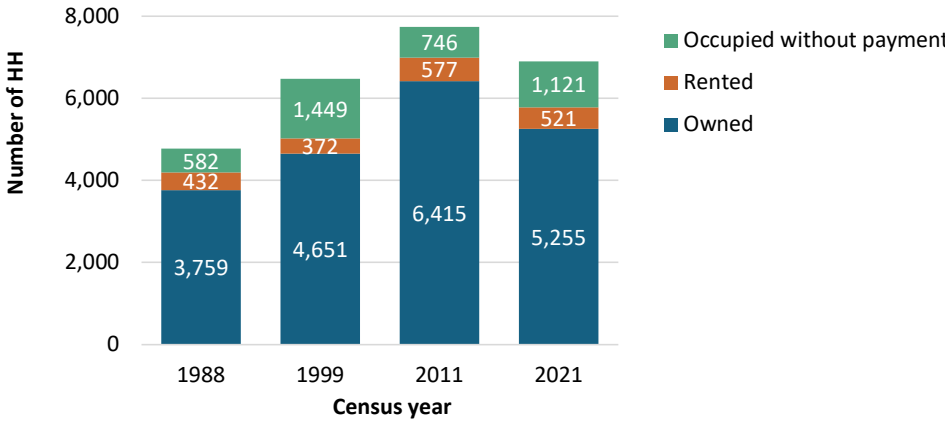

Figure 9.2. *Housing tenure, RMI, 1988–2021*

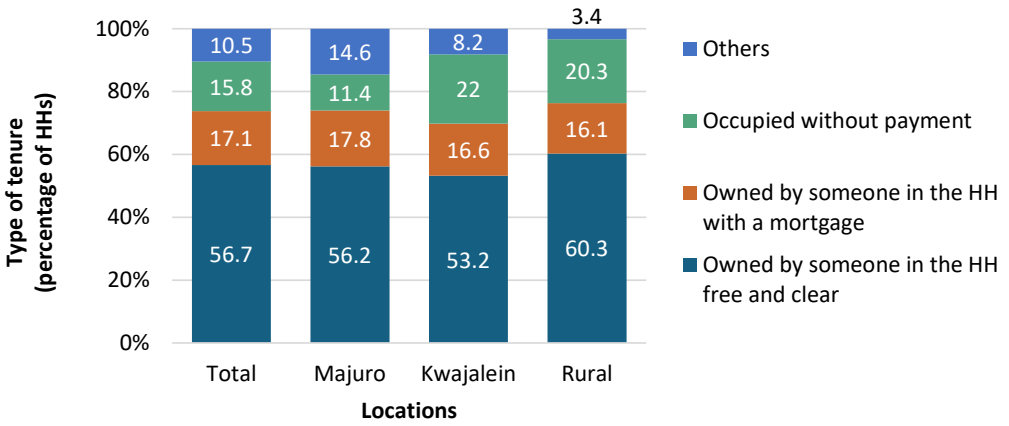

Figure 9.3. *Housing tenure by location, RMI, 2021*

About one in every six of the country's housing units were occupied without payment. The percentage of households living in housing units without payment was smallest in Majuro and largest in Kwajalein. About 22% of households in Kwajalein were living rent-free, as were about 20% of households in rural areas.

9.4. Housing quality

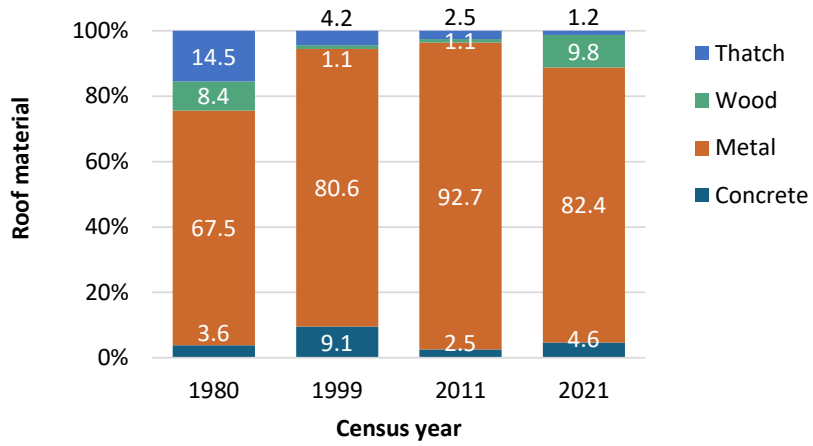

Figure 9.4. *Types of roof on dwellings, RMI, 1980–2021*

Figure 9.4 shows the types of roofs on dwellings reported in the 1980 through 2021 censuses. Throughout this period, most roofs were made of aluminium or another metal. About two in every three roofs were metal in the 1980 census. The share increased in the 1999 census and in 2011,

more than nine in every 10 roofs were metal. The percentage of housing units with concrete roofs was small throughout the period. Moreover, while about one in every five housing units in 1980 had thatch roofs, almost no units in 2021 had roofs made with that material, likely because of its flimsiness.

Table 9.3. *Types of roofs on dwellings by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Wood	716	352	188	176	10.1	9.0	13.2	9.8
Aluminium, iron or other metal	5,853	3,320	1,072	1,461	82.2	85.2	75.4	80.9
Concrete, cement or brick	324	162	79	83	4.5	4.2	5.6	4.6
Traditional materials	55	4	1	50	0.8	0.1	0.1	2.8
Tent	156	48	75	33	2.2	1.2	5.3	1.8
Other	19	10	7	2	0.3	0.3	0.5	0.1
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

In 2021, about four in every five housing units in RMI had metal roofs (***Table 9.3***). Most of the other roofs were made of wood. Less than one in every 20 dwellings had a roof made of concrete, cement or bricks, meaning most roofs in the country were not typhoon-resistant. The distribution of concrete roofs was about the same throughout the country. Roofs on Kwajalein were more likely to be made of wood (about 13% compared with about 10% for the entire country). About 5% of dwellings in Kwajalein were tents.

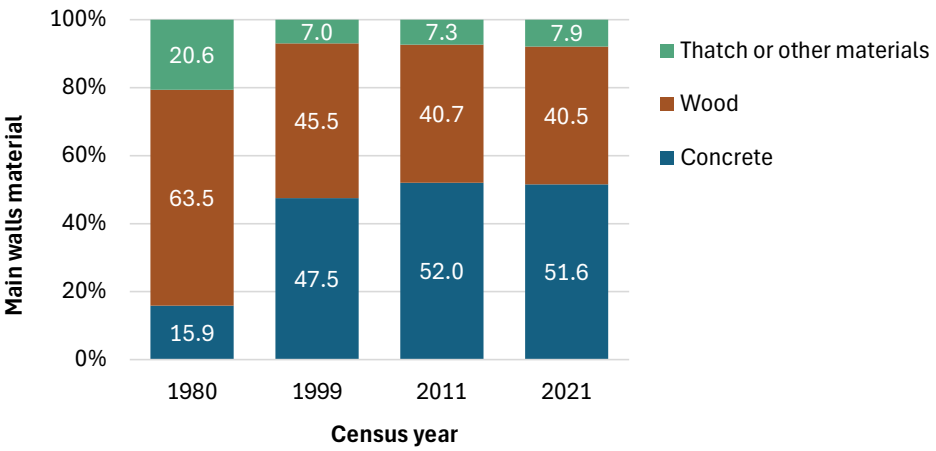

Figure 9.5. *Main material of walls of dwellings, RMI, 1980–2021*

Figure 9.5 shows the main materials used to construct the walls of dwellings in RMI. In 1980, about 16% of walls were made of concrete (i.e. cement or bricks), about 64% were made of wood, and the rest were made of thatch or other materials. By 1999, over 90% of walls in housing units were made of wood or concrete, and the percentage was the same in 2011 and 2021. The proportion of walls made of wood stabilised at two in every five housing units in 2011 and 2021.

In 2021, most dwelling walls were made of concrete, cement or bricks. As shown in ***Table 9.4***, about half of the housing units in RMI in 2021 had walls made of these materials, including about two in every three on Majuro (but only about one in every three on Kwajalein). About two in every five of the country's walls were wood, including two in Kwajalein, but only about one in every four were wood in Majuro. In rural areas, about half the houses were made of wood, and about two fifths were made of concrete, cement or bricks.

Table 9.4. *Main material of walls of dwellings by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Wood	2,889	1,079	892	918	40.6	27.7	62.7	50.9
Masonite	219	132	6	81	3.1	3.4	0.4	4.5
Iron, aluminium or other metal	249	122	53	74	3.5	3.1	3.7	4.1
Concrete, cement or brick	3,677	2531	456	690	51.6	65.0	32.1	38.2
Other	89	32	15	42	1.2	0.8	1.1	2.3
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

In 2021, about four in every five floors in RMI housing units were made of poured concrete, cement or bricks (***Table 9.5***). About one in every 10 were made of wood; the rest were made of tiles or other materials.

Table 9.6 shows the floor area of housing units in RMI in 2021 by location. Slightly over half of units sit on an area of less than 100 square feet (10 feet by 10 feet). Majuro had slightly larger units, and Kwajalein and rural areas had marginally smaller units.

Table 9.5. *Types of floor in dwellings by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Concrete, cement or brick	5,673	3,162	1,042	1,469	79.7	81.2	73.3	81.6
Wood	848	342	285	221	11.9	8.8	20.1	12.3
Tile	232	222	3	7	3.3	5.7	0.2	0.4
Iron, aluminium or other metal	151	77	47	27	2.1	2.0	3.3	1.5
Masonite	140	48	37	55	2.0	1.2	2.6	3.1
Other	70	42	7	21	1.0	1.1	0.5	1.2
Total	**7,114**	**3,893**	**1,421**	**1,800**	**100.0**	**100.0**	**100.0**	**100.0**

Table 9.6. *Area of floor in dwellings by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Less than 100 sq ft	3,633	1,813	819	1,001	51.1	46.6	57.6	55.6
100–299 sq ft	1,542	776	357	409	21.7	19.9	25.1	22.7
300–499 sq ft	989	636	134	219	13.9	16.3	9.4	12.2
500–999 sq ft	625	406	89	130	8.8	10.4	6.3	7.2
1000–1999 sq ft	276	219	19	38	3.9	5.6	1.3	2.1
2000–4999 sq ft	37	32	2	3	0.5	0.8	0.1	0.2
5000 sq ft or greater	12	11	1	0	0.2	0.3	0.1	0.0
Total	**7,114**	**3,893**	**1,421**	**1,800**	**100.0**	**100.0**	**100.0**	**100.0**

9.5. Electricity, lighting and cooking fuels

Although the Japanese put in place some electricity infrastructure during their colonial administration and the Americans did the same, mainly for their own use, the Marshallese benefited little and used minimal electricity for lighting and other purposes during their presence. Most lighting came from fires with coconut husks as fuel and from kerosene lanterns. Only recently has electricity become both expected and required by the Marshallese to achieve a comfortable standard of living.

The percentage of housing units with electricity has increased from census to census, starting in 1970 (***Figure 9.6***). In 1970, about two in every five units were connected to electricity through some means. The percentage increased to about half the units in 1980, three in every five in 1988, two in every three in 1999 and nine in every 10 in 2011. In 2021, as shown in ***Table 9.7***, all housing units had electricity.

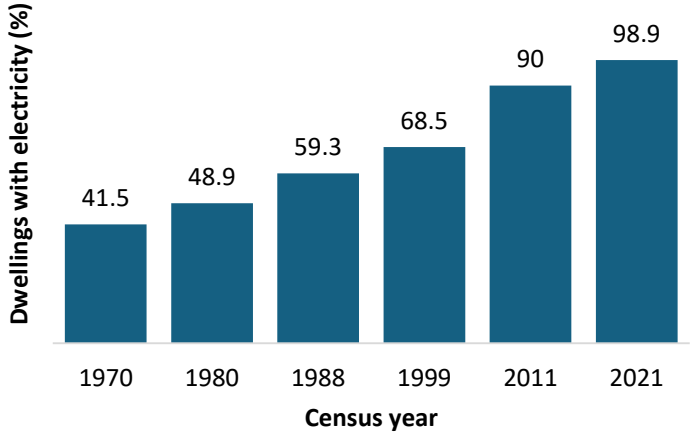

Figure 9.6. *Dwellings with electricity, RMI, 1970–2021*

Table 9.7. *Types of lighting used in dwellings by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Electric lighting	5,349	3,781	1,266	302	75.1	97.0	89.0	16.7
Solar lighting	1,907	222	174	1,511	26.8	5.7	12.2	83.7
Pressure lamps	37	25	4	8	0.5	0.6	0.3	0.4
Kerosene lamps	13	6	1	6	0.2	0.2	0.1	0.3
Candles	6	5	0	1	0.1	0.1	0.0	0.1
Flashlights	9	6	0	3	0.1	0.2	0.0	0.2
No lighting	34	22	4	8	0.5	0.6	0.3	0.4
Total	**7,114**	**3,893**	**1,421**	**1,800**	**100.0**	**100.0**	**100.0**	**100.0**

Figure 9.7 shows the types of fuel used for cooking as indicated by the censuses from 1988 to 2021. In 1988, about two in every 15 dwellings used coconuts or wood as fuel; this share increased to about a third of dwellings in 1999 and 2011 before declining to less than 5% in 2021. Similarly, the percentage of households using kerosene stoves decreased substantially over the period, from about half in 1988 to less than 10% in 2011 and almost none in 2021. Furthermore, while few housing units indicated in the early censuses that they used gas, about two in every five units used gas for cooking in 2011, with the share increasing to more than half in 2021. The percentage of dwellings using electricity for cooking fluctuated from census to census, ending at about two in every five in the 2021 census.

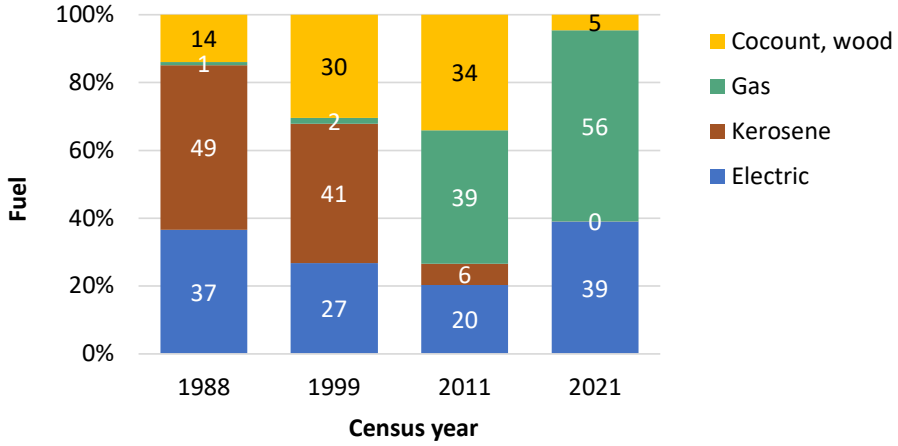

Figure 9.7. *Cooking fuels used in dwellings, RMI, 1988–2021*

Table 9.8. *Cooking fuels used in dwellings by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Electricity	2,664	1,791	723	150	37.4	46.0	50.8	8.3
Propane	5,486	3,143	1,115	1,228	77.0	80.7	78.4	68.0
Wood and coconut	1,867	529	116	1,222	26.2	13.6	8.2	67.7
Solar power	355	44	34	277	5.0	1.1	2.4	15.3
Wood stove	290	101	14	175	4.1	2.6	1.0	9.7
Kerosene	12	6	3	3	0.2	0.2	0.2	0.2
Other	8	3	4	1	0.1	0.1	0.3	0.1
No cooking fuel	7	3	2	2	0.1	0.1	0.1	0.1
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Some households used more than one type of cooking fuel.

Table 9.8 shows the strong use of propane for cooking, especially in urban areas, in 2021. About three in every four housing units used propane, including about four in every five on Majuro and more than three in every four on Kwajalein. About one in every four households in the country used wood or coconut husks for cooking, including about two in every three in rural areas. Approximately half the dwellings on Kwajalein used electricity for cooking, as did slightly less than half the dwellings on Majuro. Only 8% of rural housing units used electricity for cooking. About 15% of the rural units used solar power for cooking and about one in every 10 used a wood stove. Respondents could select more than one type of cooking fuel, which is why the total is more than 100%.

9.6. Water and sanitation

Table 9.9 shows the changes in the main source of drinking water since the 1999 census. Throughout the period covered by the data, most dwellings obtained their drinking water from rain catchments. Between 1999 and 2011, 70–80% of dwellings obtained their drinking water from rain catchments. About 15% of housing units in 1999, 5% in 2011 and 25% in 2021 specified public piped water with a tap inside or outside the unit as their main source of drinking water. The various censuses seem to have used a different definition of water source because the 2011 census shows a low percentage compared with the other years. Purchasing water or bottles from vendors only appeared as an item in the 2011 census and was repeated in the 2021 census. Almost 800 housing units in the 2011 census purchased drinking water from a vendor, which increased to 1790 in 2021 (or about 18% of the housing units).

Table 9.10 shows the sources of drinking water by location for 2021. In rural areas, almost 86% of households obtained their drinking water from an on-site rainwater tank with a tap outside the dwelling. In contrast, only 23% of the drinking water in Kwajalein, an urban area, came from an on-site rainwater tank with a tap outside the housing unit. About half the housing units in Majuro, another urban area, obtained their drinking water from their own rainwater tank with a tap outside the unit.

Table 9.9. *Main sources of drinking water, RMI, 1999–2021*

Number	Census year		
	1999	2011	2021
Public piped inside building	404	242	593
Public piped outside building	520	151	1,153
Rain catchment	4,560	6,122	3,735
Well	223	45	167
Other	771	1,178	1,466
Total occupied dwellings	**6,478**	**7,738**	**7,114**
Percentage			
Public piped inside building	6.2	3.1	8.3
Public piped outside building	8.0	2.0	16.2
Rain catchment	70.4	79.1	52.5
Well	3.4	0.6	2.3
Other	11.9	15.2	20.6
Total	**100.0**	**100.0**	**100.0**

Table 9.10. *Main sources of drinking water by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Public piped inside building	593	297	281	15	8.3	7.6	19.8	0.8
Public piped outside building	589	206	346	37	8.3	5.3	24.3	2.0
Public tap/standpipe	638	139	488	11	9.0	3.6	34.3	0.6
Piped water from a neighbour	172	119	28	25	2.4	3.1	2.0	1.4
Dug well – protected	173	56	10	107	2.4	1.4	0.7	5.9
Dug well – unprotected	18	6	0	12	0.3	0.2	0.0	0.7
Rainwater – own tank – tap inside building	514	210	99	205	7.2	5.4	7.0	11.4
Rainwater – own tank – tap outside building	3,823	1,951	327	1,545	53.7	50.1	23.0	85.6
Communal tank	122	41	52	29	1.7	1.1	3.7	1.6
Communal standpipe	31	19	9	3	0.4	0.5	0.6	0.2
Vendor – bottled water	1,790	1,451	317	22	25.1	37.2	22.3	1.2
Other	134	48	77	9	1.9	1.2	5.4	0.5
Water provided by a neighbour	18	11	0	7	0.3	0.3	0.0	0.4
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Some households used more than one source of drinking water.

Table 9.11. *Main sources of non-drinking water, RMI, 1970–2021*

Occupied dwellings	Number				%			
	1970	1980	2011	2021	1970	1980	2011	2021
Piped water	1,262	1,444	1,831	1,802	27.5	34.7	23.7	25.3
Tanks or drums	2,089	2,123	4,444	4,138	45.5	51.0	57.4	58.2
Individual well	1,230	412	1,138	486	26.8	9.9	14.7	6.8
Public standpipe	4	73	258	313	0.1	1.8	3.3	4.4
Other source	4	111	67	375	0.1	2.7	0.9	5.3
Total	**4,589**	**4,163**	**7,738**	**7,114**	**100.0**	**100.0**	**100.0**	**100.0**

For many households, water purchased from vendors in small or large containers is a significant source of drinking water: in 2021, about 25% of all dwellings in RMI used water purchased from vendors as one of the main drinking water sources. The percentage of households purchasing water from vendors was more than 37% in Majuro, more than 22% in Kwajalein (urban areas) and negligible in rural areas.

Table 9.12. *Sources of non-drinking water by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Public piped inside building	953	426	515	12	13.4	10.9	36.2	0.7
Public piped outside building	885	348	510	27	12.4	8.9	35.9	1.5
Public tap/standpipe	459	94	358	7	6.4	2.4	25.2	0.4
Piped water from a neighbour	167	122	25	20	2.3	3.1	1.8	1.1
Dug well – protected	443	131	15	297	6.2	3.4	1.1	16.5
Dug well – unprotected	80	17	3	60	1.1	0.4	0.2	3.3
Rainwater – own tank – tap inside building	662	370	112	180	9.3	9.5	7.9	10.0
Rainwater – own tank – tap outside building	4,404	2,594	329	14,81	61.8	66.6	23.1	82.0
Communal tank	121	46	41	34	1.7	1.2	2.9	1.9
Communal standpipe	20	11	7	2	0.3	0.3	0.5	0.1
Vendor – bottled water	589	508	70	11	8.3	13.0	4.9	0.6
Other	31	21	6	4	0.4	0.5	0.4	0.2
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Some households used more than one source of water.

RMI censuses also include an item on sources of water for purposes other than drinking. ***Table 9.11*** shows the changing sources of non-drinking water from the 1970 census through to the 2021 census, and ***Table 9.12*** shows the same information by location for the most recent census. The distribution has not changed much over the last half-century (***Table 9.11***).

In 2021, the majority (about three in every five) of the more than 7000 housing units in the country obtained their non-drinking water from rain catchments. For rural areas, the figure was more than four in every five, and for urban areas, one in every four (Kwajalein) or two in every three (Majuro) (***Table 9.12***). Most housing units on Kwajalein had access to non-drinking water from public piped

water – about 36% piped inside the dwelling and another 36% piped outside (although because respondents could pick more than one source, many units are duplicated). About one in every six housing units in rural areas obtained non-drinking water from a protected or unprotected well, and about one in every four housing units in Kwajalein obtained non-drinking water from a public or communal tap or standpipe.

RMI censuses have collected data on the type of toilet facilities available in dwellings since the 1970 census. ***Table 9.13*** shows the changing distribution of toilet facilities between the 1970 and 2021 censuses and ***Table 9.14*** shows their distribution by location for the 2021 census. As shown in the tables and ***Figure 9.8***, the percentage of households using flush toilets has increased continuously since 1980, while the percentages using privies (non-flush toilets; also known as outhouses), other facilities or no dedicated facilities has decreased over the same period.

Table 9.13. *Types of toilet facilities, RMI, 1970–2021*

	Census year					
	1970	**1980**	**1988**	**1999**	**2011**	**2021**
Flush toilet	1,525	1,646	2,150	3,976	5,729	6,248
Privy (non-flush toilet)	2,629	1,315	1,464	1,216	1,275	283
Other	435	1,202	1,267	1,286	734	583
Number	**4,589**	**4,163**	**4,881**	**6,478**	**7,738**	**7,114**
	%					
Flush toilet	33.2	39.5	44.0	61.4	74.0	87.8
Privy (non-flush toilet)	57.3	31.6	30.0	18.8	16.5	4.0
Other	9.5	28.9	26.0	19.9	9.5	8.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

In 1970, over half the housing units in the country had a privy; the percentage decreased to about 30% in 1980 and continued to decline to 4% in 2021. At the same time, the percentage of households using the shore, the ocean, the woods or other natural areas as toilet facilities also decreased, from about 30% in 1980 to about 5% in 2021.

Table 9.14. *Types of toilet facilities by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	**Majuro**	**Kwajalein**	**Rural**	**Total**	**Majuro**	**Kwajalein**	**Rural**
Flush to piped sewer system	3,097	1,904	1,094	99	43.5	48.9	76.9	5.5
Flush to septic tank	2,602	1,552	215	835	36.5	39.8	15.1	46.3
Flush to pit latrine	443	129	32	282	6.2	3.3	2.3	15.6
Flush to somewhere else	107	32	18	57	1.5	0.8	1.3	3.2
Water sealed	225	105	2	118	3.2	2.7	0.1	6.5
Shared toilet	147	83	25	39	2.1	2.1	1.8	2.2
No facility: used beach, bush, etc.	435	73	29	333	6.1	1.9	2.0	18.4
Other	67	18	7	42	0.9	0.5	0.5	2.3
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

As shown in ***Table 9.14***, in 2021, about one in every five rural households did not have a formal toilet facility; those households used the beach, bush or other natural areas as their toilet facilities. Also, only about one in every 20 rural dwellings had a flush toilet connected to a public sewer system.

In contrast, nearly half the dwellings in Majuro and three in every four dwellings in Kwajalein had a flush toilet connected to a public sewer system.

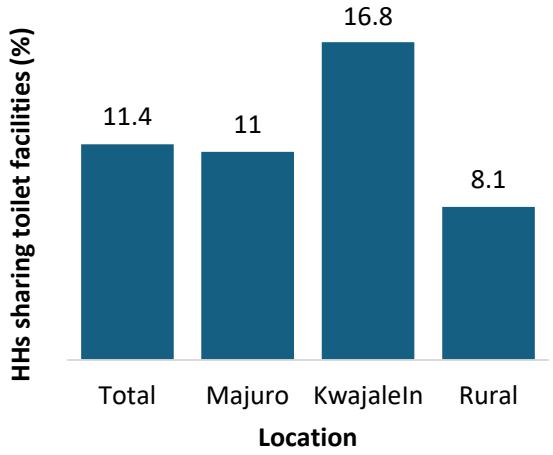

Figure 9.8. *Households sharing toilet facilities by location, RMI, 2021*

In 2021, one in every three housing units in the country had a flush toilet emptying into a septic tank. Septic tank toilets were used in about two of every five dwellings in Majuro and almost half of the dwellings in rural areas. Only 15% of toilet facilities in Kwajalein dwellings were toilets that flush into a septic tank. About one in every 10 RMI households shared toilet facilities with other households (***Figure 9.8***); the figure for Kwajalein, at about 17%, was higher than this average.

9.7. Solid waste disposal

Figure 9.9 shows the main types of solid waste disposal from the 1999 census to the 2021 census, and ***Table 9.15*** shows the distribution by location for the 2021 census. About one in every three housing units in the country in 1999 disposed of solid waste through public collection. This figure increased to over half of the housing units in 2011 and about three in every five housing units in 2021. The percentage of households burning their solid waste increased between the 1999 and 2021 censuses, while the percentage of households using other means of solid waste disposal decreased significantly over the same period.

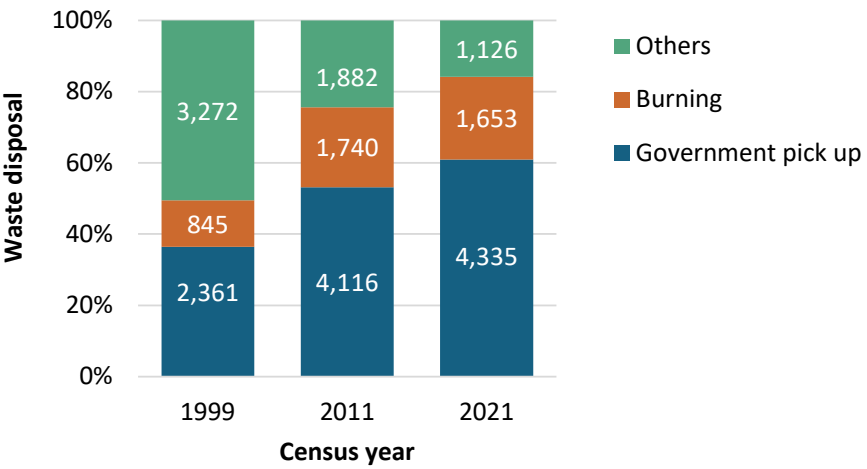

Figure 9.9. *Types of solid waste disposal, RMI, 1999–2021*

Table 9.15. *Types of waste disposal by location, RMI, 2021*

Occupied dwellings	Number				%			
	Total	Majuro	Kwajalein	Rural	Total	Majuro	Kwajalein	Rural
Public collection	4,339	3,027	1,237	75	60.9	77.7	87.0	4.2
Household takes to dump	740	410	147	183	10.4	10.5	10.3	10.1
Burn waste	1,866	511	86	1,269	26.2	13.1	6.0	70.3
Compost	409	190	28	191	5.7	4.9	2.0	10.6
Bury in yard	1,264	378	50	836	17.7	9.7	3.5	46.3
Dispose of in ocean	181	51	11	119	2.5	1.3	0.8	6.6
Other	13	9	1	3	0.2	0.2	0.1	0.2
No waste disposal	3	3	0	0	0.0	0.1	0.0	0.0
Total	**7,123**	**3,896**	**1,422**	**1,805**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Some households used more than one method of waste disposal.

The public collection of solid waste in RMI varied by location: about 78% of Majuro dwellings and 87% of Kwajalein dwellings had access to the public collection of solid waste, while only about 4% of dwellings in rural areas had access. Rural households were thus most likely to burn their solid waste (about seven in every 10 housing units) or to bury waste in their yards (nearly half of the housing units). For comparison, for the country as a whole, about one in every four housing units burned waste and about one in every six buried it. These shares were much lower for the two urban locations.

10. SUMMARY OF KEY FINDINGS AND POLICY IMPLICATIONS

RMI conducted its fourth and most recent census on 24th of August 2021. The outcomes of the current census highlight both development opportunities and challenges requiring attention. This chapter presents the key findings of the census as well as their policy implications, particularly concerning ageing, disability and health services; the labour market, livelihoods and migration; and the environment and climate change.

10.1. Key findings

The 2021 census enumerated 42,418 persons, comprising 21,278 *males* and 20,690 *females*. The population was substantially lower than both the projected estimate for 2021 and the population enumerated 10 years earlier in the 2011 census, representing an intercensal decline in the population of 2.3% per annum. Immigration has emerged as a significant demographic phenomenon. The number of people declared to be from RMI or to have Marshallese ancestry in the USA, for example, increased from 16,257 in 2010 to 25,050 in 2015 and 36,857 in 2021.

The age structure of RMI remains youthful: in 2021, 34.1% of the resident population was younger than 15 and only 3.7% was older than 65. The share of the population aged 15–54 was 61%, giving a dependency ratio of 62.6%, meaning that for every 100 persons of working age there were 63 persons of dependent age.

In 2021, RMI had about 28,000 working-age residents, of whom 13,368 were employed for pay or profit or were actively seeking employment, giving a labour force participation rate of 48.9%. Labour force participation rates were relatively higher for urban areas than for rural areas and varied widely across atolls and islands. Overall, for both *males* and *females*, labour force participation rates increased with age, reaching their highest point between the ages of 40 and 44 and declining slowly thereafter. Labour underutilisation was higher in rural than in urban areas; over 50% of people in rural areas had unmet employment needs.

The data show that women had a lower labour force participation rate and a higher unemployment rate than men, and when they worked in paid employment, they did so for fewer hours. As a result, labour underutilisation was more prominent and the unmet need for employment was higher for women than for men by about 12%.

About 88% of the population aged 6–18 in 2021 attended school, with *females* having a slightly higher rate than *males* – 89% compared with 87%. More than half the population aged 25 years or over were high school graduates in 2021. However, the distribution of graduates was skewed to urban areas: about 55% of the adults living in urban locations (Majuro and Kwajalein) were high school graduates, while only 34% of rural residents were.

In 2021, about two in every five households in the country had access to the internet. About 89% of households owned at least one mobile phone, while the average household owned more than two mobile phones. The census revealed that more than one in every four households in the country owned a laptop. As with mobile phone ownership, there were significant variations in laptop ownership between locations. For example, well over one in three and nearly one in four people over the age of 10 lived in households with a laptop in Majuro and Kwajalein, respectively (urban areas), but laptops were owned by only 10% or less of the population in 11 atolls or islands considered as rural.

About 80% of households in RMI had more than one source of income in 2021. Overall, about 59% of households reported wages and salary as their major source of income, followed by income from the sale of agricultural produce and handicrafts (16%). However, despite wages and salary being

the primary source of income for most households, not even a single household depended on wages and salary alone for its income.

Household income from all sources increased in all locations between the 2011 and 2021 censuses. In 2011, about one third of all households in the country and over half of those in rural areas earned less than USD 2,800 per annum. These shares declined substantially in 2021, to less than 20% for all households in the country and less than 25% for those in rural areas. Average household income in rural areas quadrupled in the 10-year intercensal period, increasing from less than USD 5,000 in 2011 to about USD 20,000 in 2021. However, substantial differences remain between locations. Median household income in the rural atolls was only USD 6,400, about two thirds of the total household incomes for Majuro and Kwajalein.

In 2021, most Marshallese households lived in detached one-family housing units, that is, structures not connected to other buildings used for residential or non-residential purposes. Single houses constituted about three in every four dwellings, but the percentage was higher in rural areas (about 83%) than in urban areas (78% in Majuro and 55% in Kwajalein). The average dwelling in RMI was built about 24 years before the census, that is, it was constructed in the late 1990s. Nearly half (i.e. the median) of dwellings were built in or before 1999 (i.e. 22 or more years before the census).

10.2. Implications for ageing, disability and health services

Almost all societies worldwide attach high value to longer and healthier lives. Reductions in premature mortality and the burden of ill health enhance productivity, improve lifetime earnings, promote social well-being and allow individuals to realise their highest potential. Better health status is also a vital measure of a nation's development status and is enshrined in the United Nations 2030 Agenda for Sustainable Development.

As per the estimated life tables for RMI, a newborn *female* child is expected to live 69 years while a *male* child is expected to live 62 years, and the life expectancy at birth for both sexes is 65 years. The life expectancy for both sexes compares favourably with that of Tuvalu (estimated at 65 years) but is lower than those of Fiji (estimated at 68 years) and Vanuatu (estimated at 70 years) for comparable periods (World Bank). The RMI 2021 census revealed that 1,145 persons (3.0%) of the resident population over age five had a disability of one form or another in any of the six functional domains. Of these, more than three in four (854) lived in urban areas, including 629 in Majuro and 225 in Kwajalein. The highest prevalence of category 2 disability was observed in Likiep (10%), and the highest prevalence of category 3 disability was observed in Ujae (2.6%). Consequently, as in other Pacific Island countries, there is still room for improving health services addressing the population's health needs.

Addressing the country's underlying health challenges requires strategies combining curative, promotive and palliative care services. It also requires strengthening the country's vital registration and cause of death certification system. Without a robust vital registration system and cause of death coding, measuring key mortality indicators and determining disease patterns will remain speculative or based on models from other settings. This limits the government's ability to design evidence-based health strategies and evaluate the effectiveness of its existing health initiatives.

10.3. Implications for the labour market, livelihoods and migration

A relatively low percentage (48.9%) of the RMI population aged 15 years or over was in the labour force in 2021; of this share, one in every 10 individuals was unemployed. The unemployment rate was higher on some atolls or islands: 28% in Utirik and over 16% in Arno and Lib. In addition, in Lae, Mejit and Utirik, the unmet need for employment exceeded 70%. The available data collectively suggest that women generally have lower labour force participation and higher unemployment

than men, which, along with youth unemployment, illustrates the government's challenge in creating economic and employment opportunities for citizens. Failure to ensure jobs for young people on their home islands will encourage international migration, further contributing to the island's depopulation.

According to the census, internet access and mobile phone use have expanded significantly in the last decade. Mobile phone ownership is almost universal, and many Marshallese have access to the internet. However, 17.2% of rural households did not own a mobile phone in 2021, and only 4% of rural households had access to the internet, limiting the opportunity that comes with the technology. Expanding the digital economy can facilitate trade and create new employment opportunities while enhancing social transformation and promoting good governance. The focus ahead should be on inclusiveness and expanding opportunities where they are currently limited.

10.4. Implications for the environment and climate change

The types of solid waste disposal and toilet facilities in use have an impact on the environment and human health. The census found a significant difference between rural and urban areas for both amenities. About 18% of rural households had no dedicated toilet facilities. Public collection was the predominant form of solid waste disposal in urban areas, while in rural areas, higher rates of composting, disposing of rubbish in the ocean and burying rubbish in yards were observed. This highlights the need to target different programmes to different areas.

RMI consists of five individual islands and 29 atolls with a low altitude (the average elevation above sea level is 2.1 metres). This landscape makes the country particularly vulnerable to the impacts of climate change and poses an increased risk in terms of natural disasters, which, in turn, impacts health and livelihoods. The 2021 census, for the first time, asked households questions on climate change and natural disasters – whether they had been affected by them, about their ability to prepare for them, and if they had relocated as a result of them.

While per capita household income has increased substantially in the past decade, 28.6% of the working-age population in RMI participates in subsistence activities such as growing food (10.7%) and fishing (14.9%), with a higher proportion in rural areas. Many households are worried about getting enough to eat and are directly affected by natural disasters. About half of the 4000 households that reported being food insecure indicated that they experienced all eight insecurities. Just over half (51.9%) of households indicated that natural disasters had limited their incomes or livelihoods, with the rate slightly higher in rural areas.

Funding from the RMI Government and development partners to support the Marshallese facing climate change impacts needs to be targeted effectively. The census provided an opportunity to identify areas where natural disasters impact households and better tailor adaptation strategies. In addition to asking households about the types of natural disasters they faced and the impacts on them, the census included an item on preventative measures: 28.0% of households indicated they did not undertake preventive measures against natural disasters. Of these 675 households, 32.3% indicated a lack of money as the reason, 23.6% identified a lack of other resources and information, 14.1% identified a lack of skills and knowledge, and 13.8% identified not knowing what to do. This information offers opportunities to target households with appropriate information and to target financial support for preventative programmes effectively.

Despite disaster risk reduction strategies being in place, about one in every three Majuro and rural households had to relocate because of a natural disaster. In addition to the financial cost of moving, there is often a health and well-being impact, including an emotional cost, associated with the loss of cultural assets and connection to ancestral land. These factors need to be considered in broader planning relating to resettlement and internal migration caused by climate change.

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Pacific Community
B. P. D5 - 98 848 Noumea Cedex, New Caledonia
Telephone: + 687 26 20 00
Email: spc@spc.int
Website: https://www.spc.int