



MARSHALL ISLANDS POPULATION ATLAS



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MARSHALL ISLANDS

POPULATION ATLAS

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INTRODUCTION

The RMI Population Atlas has been created to meet a demand by the Marshall Islands Government for more readily accessible and understandable socio-demographic information, at both atoll and village/islet levels. Population and housing censuses are usually the main data source for such information in Pacific Island countries, and results from the most recent Marshall Islands census (1999) were the main source of information for this atlas. Some results from the 2006 Community Survey have also been included, to give users a more up-to-date look at key social, demographic and economic features of the Marshall Islands population.

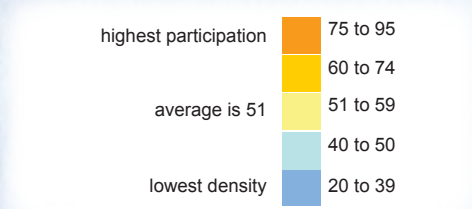
Topics and data sources

The atlas contains five sections. The first four sections draw from the 1999 census results to provide a snapshot of key population and household features; there are also informative education and labour force profiles of the Marshall Islands population. The final section provides a more up-to-date account of important development indicators, such as level of educational attainment, labour force participation, child immunisation coverage, and access to water and sanitation.

Colour schemes

Four colour schemes have been consistently applied in the atlas, to facilitate understanding and make it easy for users to compare different levels of geography (atolls versus villages), or look at different indicators for the same atoll, for example. Whenever data are mapped around a national average, the colour scheme representing different value categories is set up in such a way that warm colours, ranging from yellow to orange to red, describe values higher than the national average, while colder colours, in shades of blue ranging from light to dark, represent values below the national average. This is a powerful way to illustrate sub-national variations regarding specific development indicators.

For example:



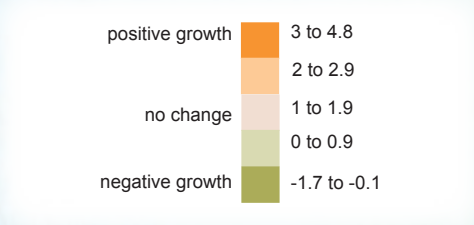
Three other colour schemes are used to provide information on indicators without reference to a national average. In the first two, different shades of maroon or orange are used to represent in-migration, population densities and counts.

For example:



In the third, light greens/oranges are used to describe data such as growth rates and net migration.

For example:



Where data have also been disaggregated by sex, the values are represented in small bar charts corresponding to each of the atolls/islets. Blue represents males, and pink represents females. The larger of the two bars for each chart is labelled with the exact percentage (rounded to a whole number), indicating the proportion of males or females in a particular category.

For example:



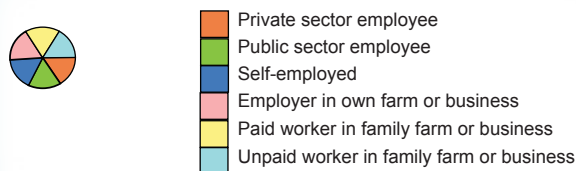
Map 14 contains such information, describing primary school attendance across the Marshall Islands; overall attendance rates for each atoll are reflected in the colour of the atoll, and differences between male and female attendance rates are illustrated in the corresponding bar chart. For example, Jabat and Likiep show the highest primary school attendance rates of all atolls, with no difference emerging between male and female attendance rates.

For example:



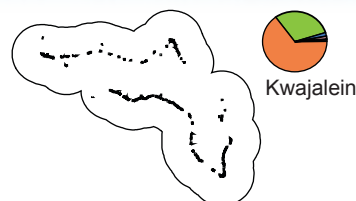
Some of the maps also contain pie charts, which have been used to show data where multiple variables are being mapped. The full pie adds up to 100%, and each segment represents the proportional representation of a particular feature.

For example:



The first map containing such information is Map 24 (Class of worker), which highlights that most workers on Kwajalein and Majuro are private sector employees (orange pie slice), with this employment category of much less importance – and in some cases of no importance – anywhere else.

For example:



Data representation

Mapping a country such as RMI presented one major challenge: how to represent data thematically for each of the atolls and islets/villages when visually they are black lines in an ocean of water. The solution was to create 10-mile buffers around each of the atolls (as shown in the above example). These buffers were then thematically coloured-in according to the data being mapped. At an islet level, buffers of roughly 0.3 miles were used. Only islets/villages with more than 10 households were mapped across the four main atolls of Majuro, Kwajalein, Jaluit and Wotje.

The overview map on page 7 shows the whole of RMI, along with each of the atoll buffers. There are four inset maps showing the atolls at an islet/village level.

The majority of the maps that follow, are displayed as two-page spreads, with atoll-level data on the left and islet/village level-data on the right. The growth rate and migration maps (respectively, Map 2 and Maps 11, 12 and 13) do not follow this layout as they have been created only at an atoll level. In the section on the community survey, only islets/villages have been mapped.

Bikini, Rongelap and Ujelang are three atolls that have not been mapped for the majority of indicators because no data exist. Although Bikini and Rongelap had resettlement activities going on during the 1999 census, there were significant data only on growth rates and migration.

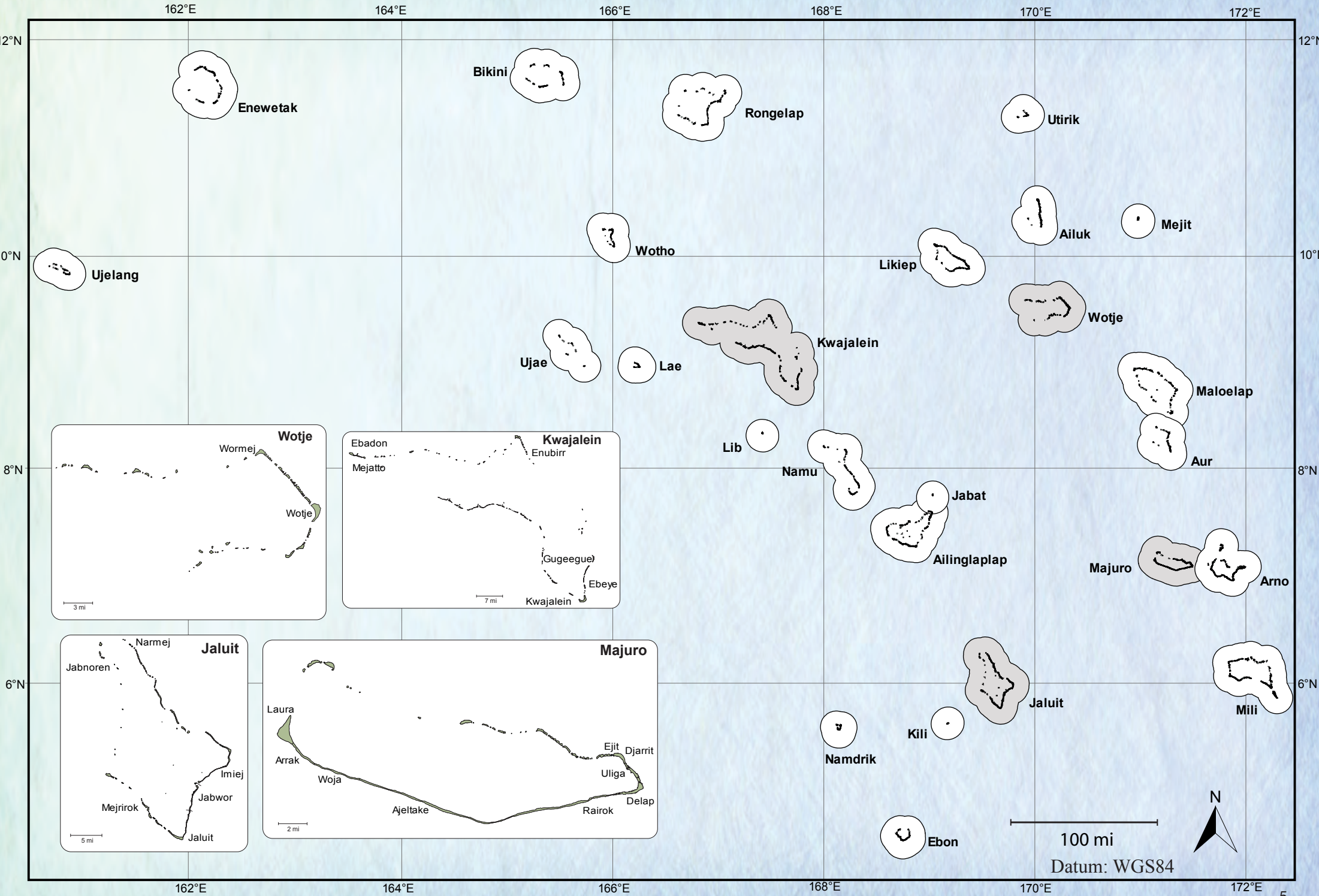


Traditional canoes, Ailuk Atoll. Photo taken by Marshall Islands Journal.



Satellite image of Ebeye, Kwajalein Atoll. DigitalGlobe 2006.

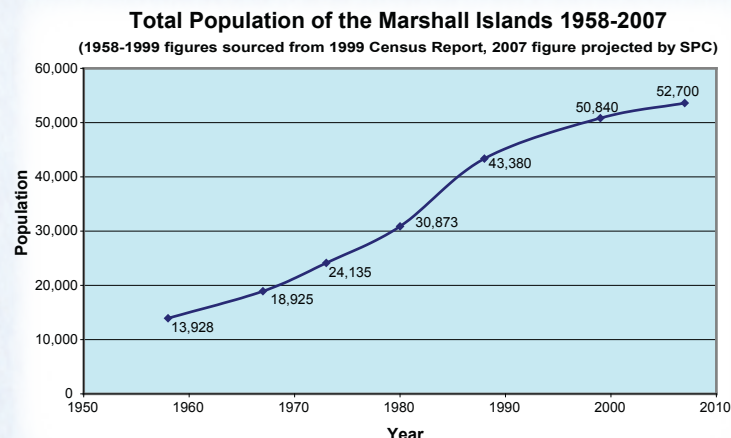
OVERVIEW MAP



Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

I. Population

Since the 1950s, the total population of the Republic of the Marshall Islands (RMI) has been steadily increasing. In large part, this is due to development efforts on Majuro and Kwajalein that have led to increased access to improved health and education services and employment opportunities. On Majuro and Kwajalein, this has led to generally higher living standards, and consequently the inevitable migration of people from the rural outer islands to the urban centres of Majuro and Ebeye.



The highest rate of population growth was seen between 1980 and 1988, with an average annual growth of 4.3%. Of the atolls, Majuro and Kwajalein experienced the highest population growths: 6.3% and 4.2% respectively. For Majuro, this meant a 67% increase in total population within a nine-year period. By comparison, the population growth rates for Majuro and Kwajalein between 1988 and 1999 appeared to stabilise at 1.9% and 1.6% respectively. The slight decrease in total fertility and improvement in mortality rates did not appear to be the main reasons for the slowed population growth. Out-migration, however, increased significantly in the late 1990s (Juumemmej: Republic of the Marshall Islands Social and Economic Report 2005, ADB Pacific Studies Series, 2006) and there was a constant flow of people moving from rural outer islands to Majuro and Kwajalein (the majority to Majuro).

Across RMI, the average population growth rate was 1.4% during the 1999 census period (1988–1999). Population growth rates by atoll varied widely, with 11 atolls experiencing a rate of less than 1% (5% being negative), 13 atolls experiencing a rate of 1–3%, and one atoll (Wotho) experiencing the highest rate of population increase at 4.8%. However, almost all of the outer islands lost a proportion of their populations due to migration to Majuro or Kwajalein.

Population density figures from the 1999 census reveal some of the highest densities in the world. Across RMI, the average population density was roughly 727 people per square mile. Taking uninhabited land out of the equation and looking at where people were actually living, this figure changes significantly. The average population density for the 23 islets mapped in this atlas (those with at least 10 households) was 3600 per square mile. Considering that Hong Kong has a population density of around 2500 people per square mile (UN, World Prospects Report, 2004 revision), RMI's population densities resemble those of high-rise urban environments. Ebeye alone has a population density of 82,000 per square mile, with the two Majuro communities of Rita and Delap having densities of 38,000 and 16,000 respectively.

The average age of people in RMI is very young, with 43% of the population under the age of 15. As would be expected, the national total dependency ratio was a high 82, indicating that a high proportion of the population is dependent upon a much smaller proportion of working-age people (who may or may not be employed). This ratio is defined as the number of people less than 15 years of age or over 65 years of age divided by those in the working ages of 15–64.

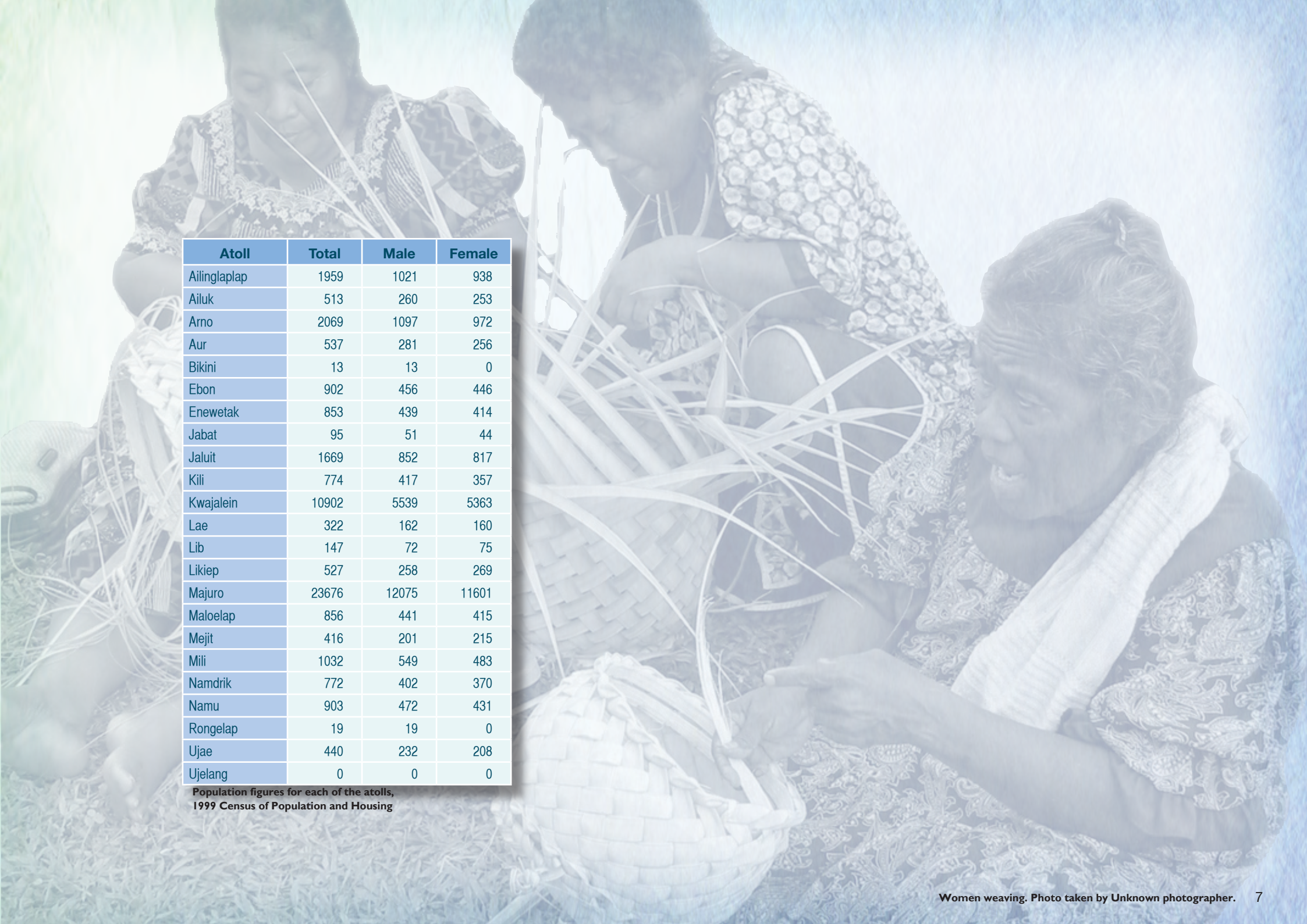
The population profile of RMI raises important issues related to the absorptive capacities of Majuro and Ebeye to sustain future population growth, and the ability of current social services to meet the needs of a rapidly expanding population migrating from the outer islands in search of better access to health and education services and employment opportunities.

In addition, the number of Marshallese leaving RMI may be an indication of the inability of the urban centres to fully provide for the needs of a proportion of the population who are seeking higher standards of living and improved employment opportunities abroad.

The high proportion of people under the age of 15 poses critical social and economic development concerns, particularly in terms of future provision of quality health and education services, employment opportunities and maintenance of standards of living in increasingly crowded conditions. The same concerns apply to those areas experiencing significant depopulation: service provision to these areas is still necessary, but it becomes much more costly when analysed on a decreased per capita basis.

Analysing and understanding the future impacts of RMI's population transformations are critical components of effective development planning, which in turn will determine the overall social and economic well-being of the Marshallese.

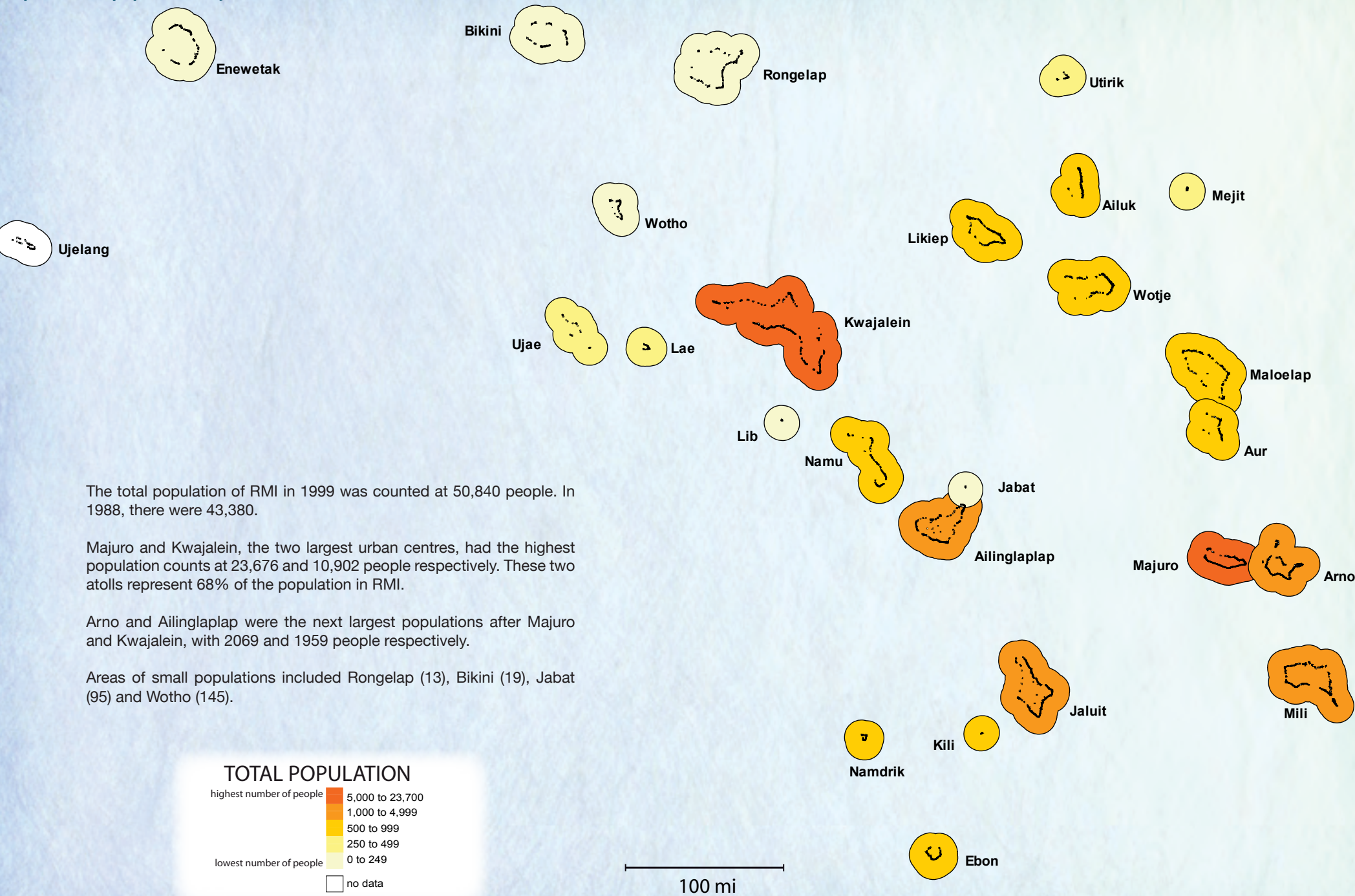
The sections that follow present both standard population indicators and specific measures relating to education, the labour force and households to assist in future developments in RMI.

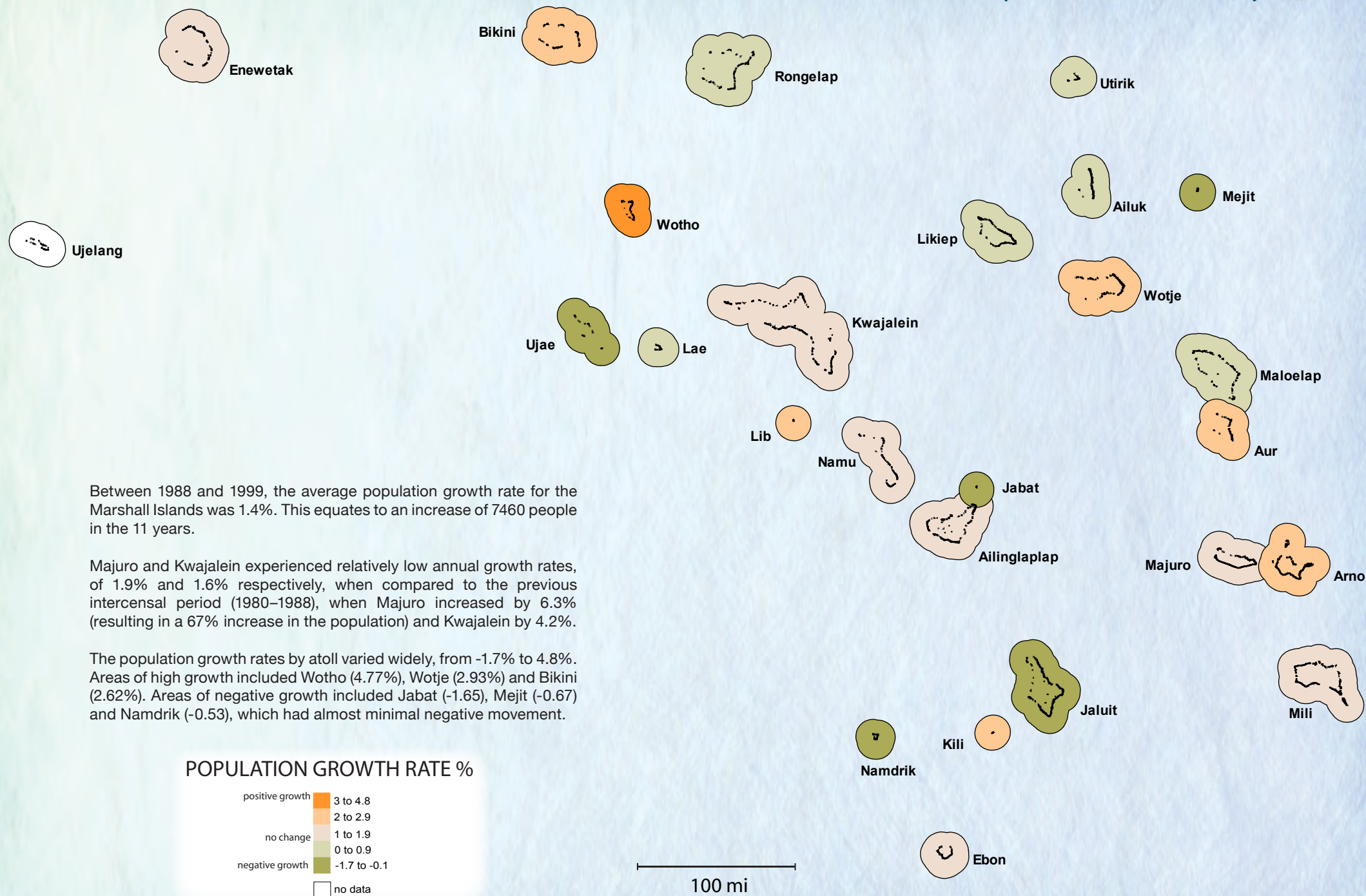


Atoll	Total	Male	Female
Ailinglaplap	1959	1021	938
Ailuk	513	260	253
Arno	2069	1097	972
Aur	537	281	256
Bikini	13	13	0
Ebon	902	456	446
Enewetak	853	439	414
Jabat	95	51	44
Jaluit	1669	852	817
Kili	774	417	357
Kwajalein	10902	5539	5363
Lae	322	162	160
Lib	147	72	75
Likiep	527	258	269
Majuro	23676	12075	11601
Maloelap	856	441	415
Mejit	416	201	215
Mili	1032	549	483
Namdrik	772	402	370
Namu	903	472	431
Rongelap	19	19	0
Ujae	440	232	208
Ujelang	0	0	0

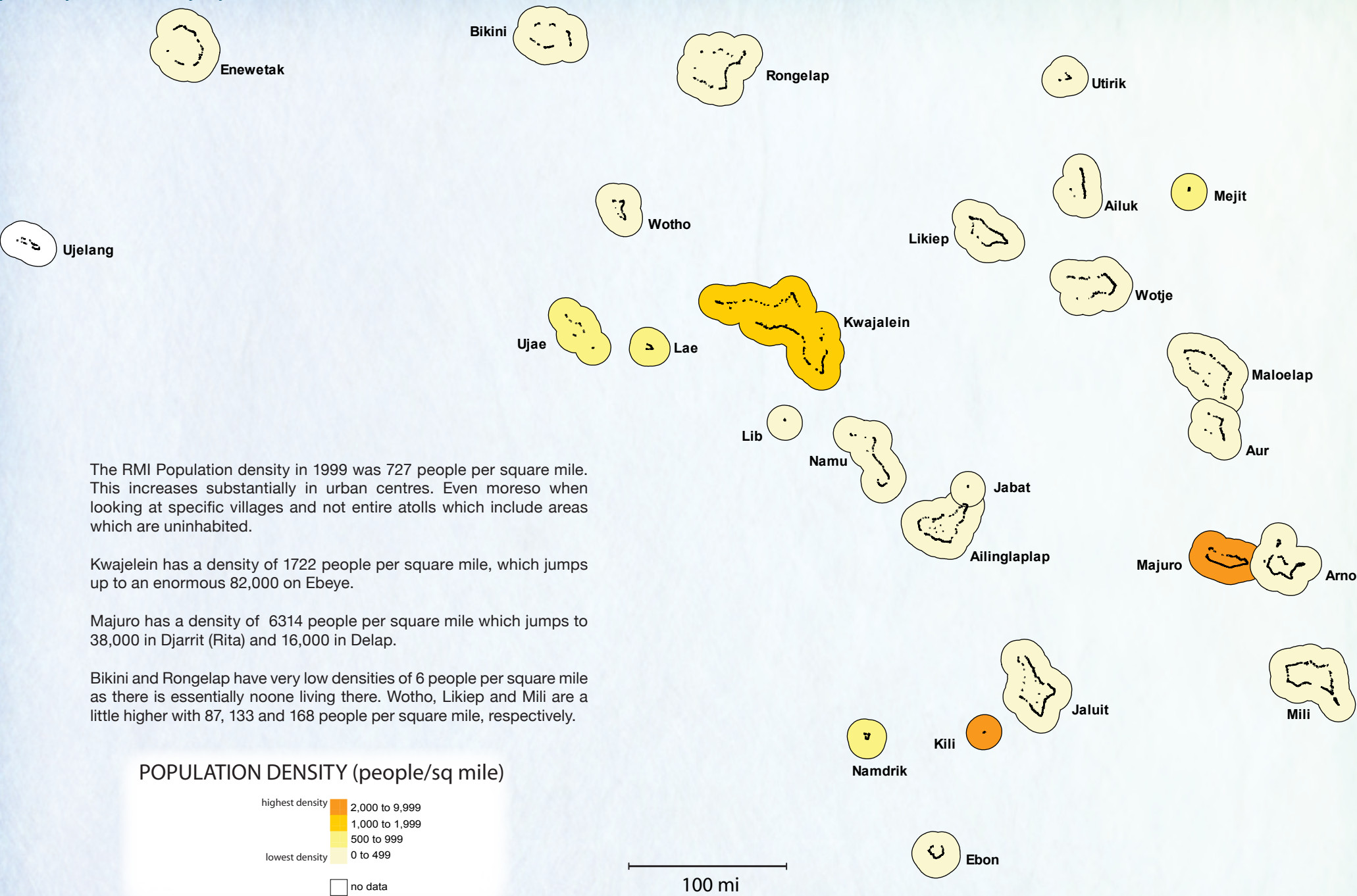
Population figures for each of the atolls,
1999 Census of Population and Housing

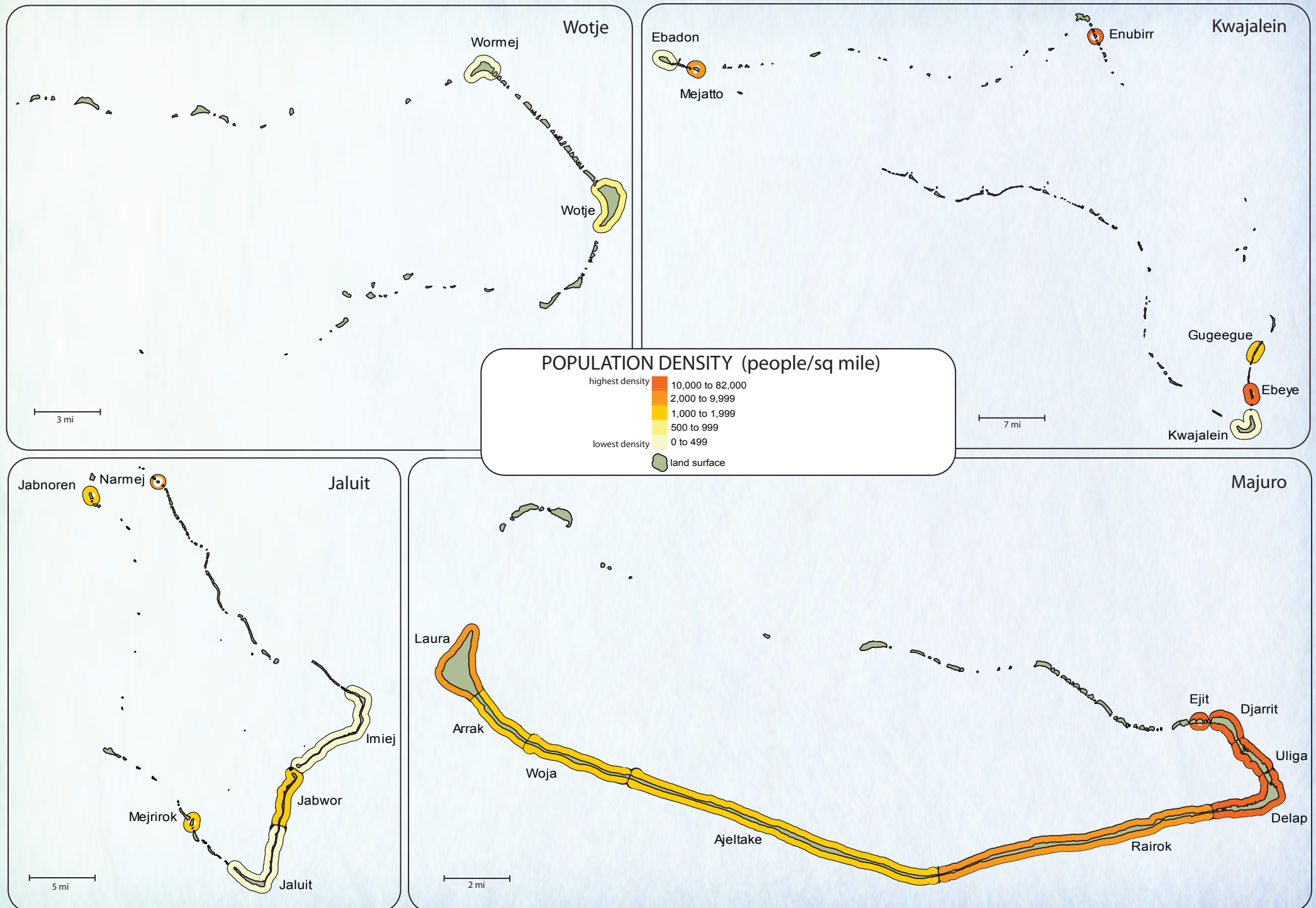
Map 1 – Total population, by atoll, RMI 1999



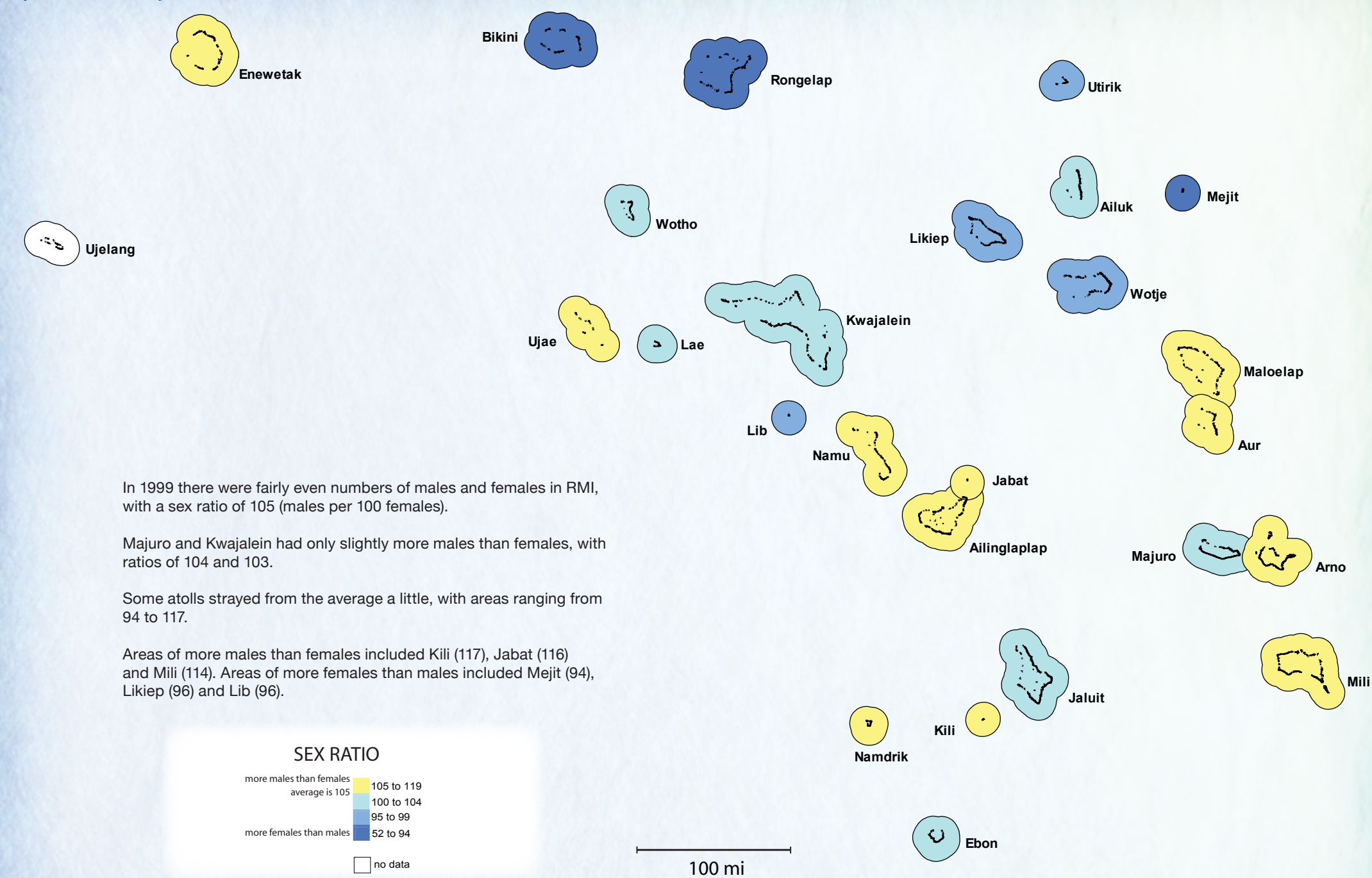


Map 3 – Population density, by atoll, RMI 1999





Map 5 – Sex ratio, by atoll, RMI 1999

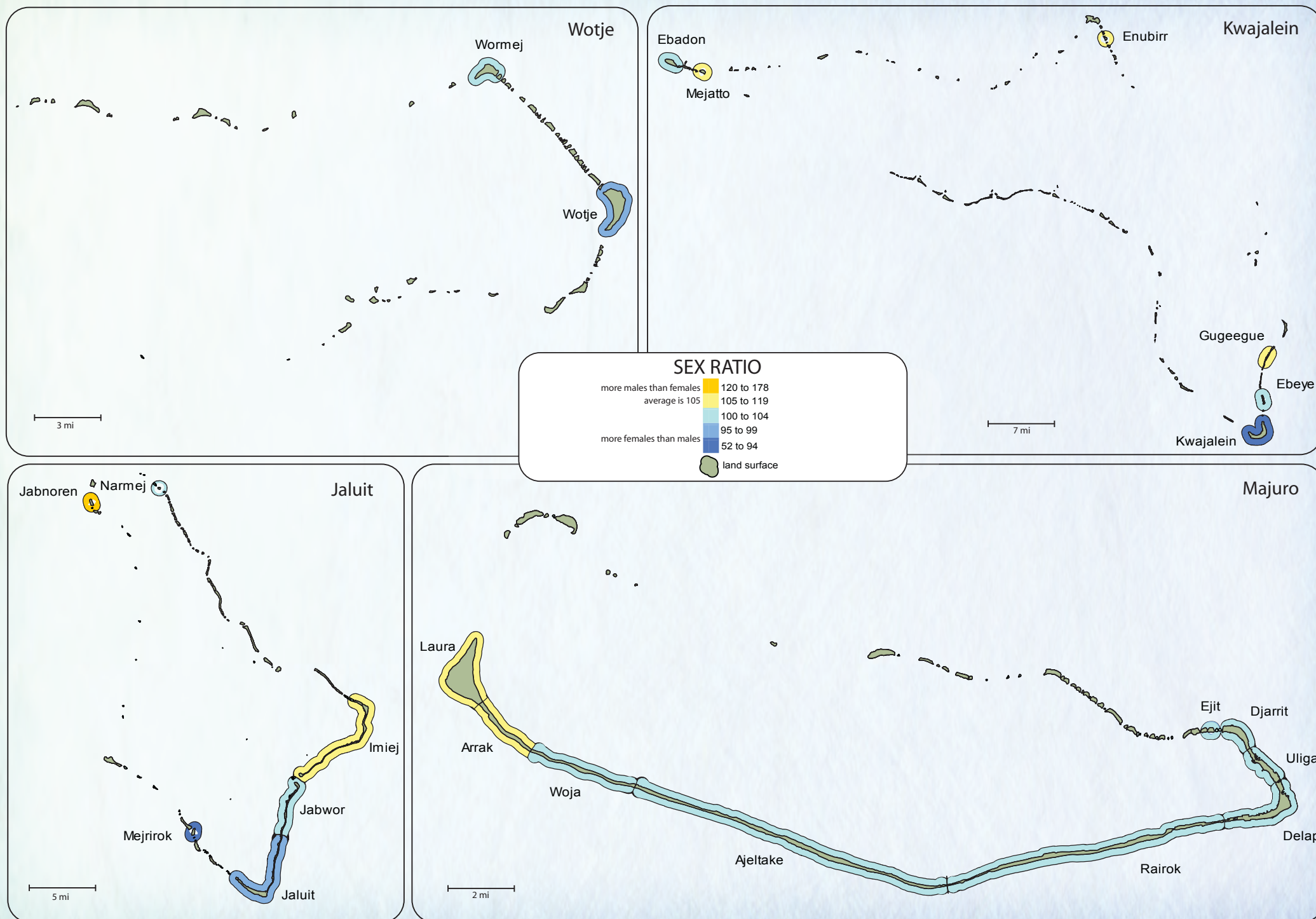


In 1999 there were fairly even numbers of males and females in RMI, with a sex ratio of 105 (males per 100 females).

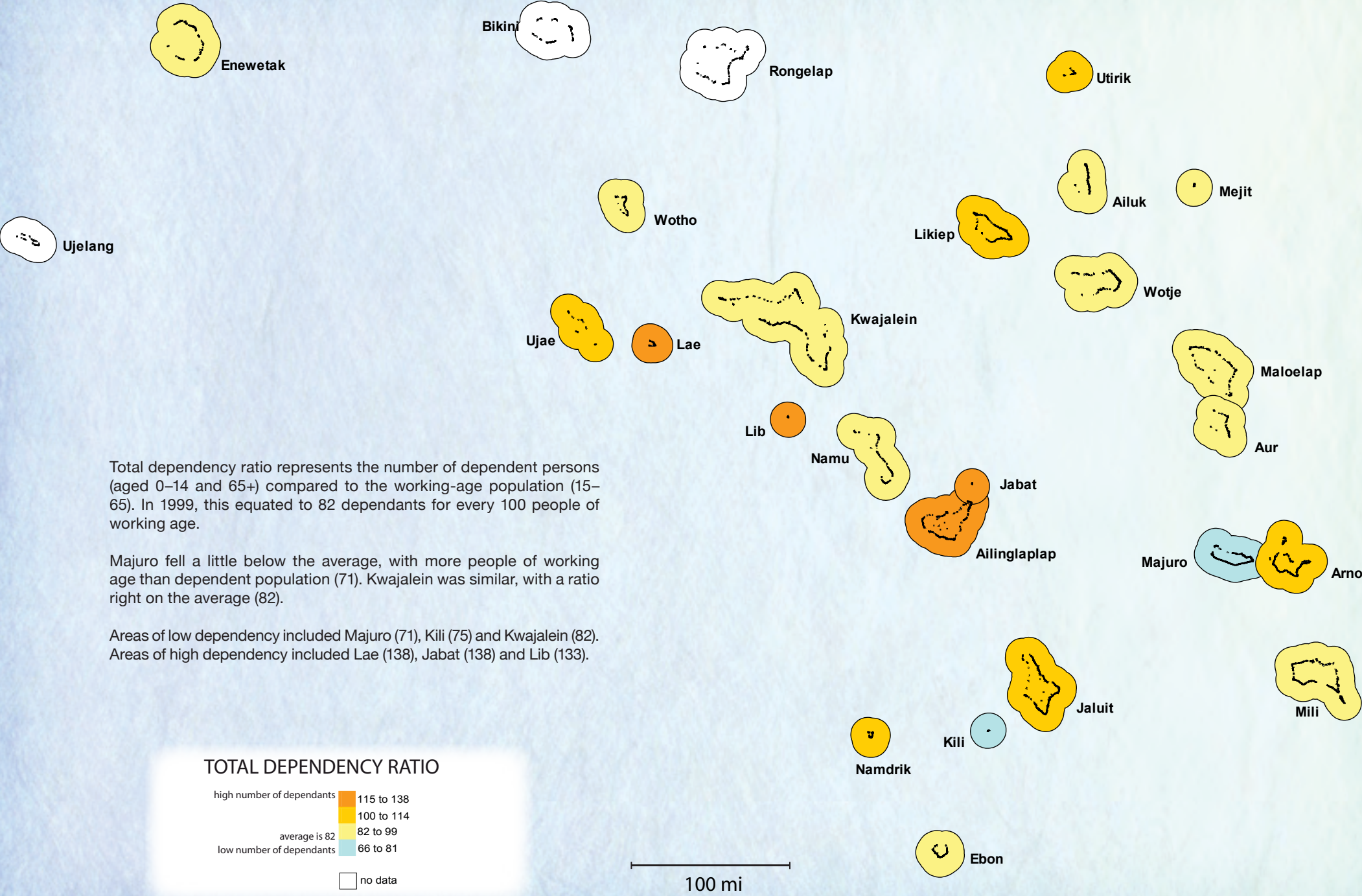
Majuro and Kwajalein had only slightly more males than females, with ratios of 104 and 103.

Some atolls strayed from the average a little, with areas ranging from 94 to 117.

Areas of more males than females included Kili (117), Jabat (116) and Mili (114). Areas of more females than males included Mejit (94), Likiep (96) and Lib (96).



Map 7 – Total dependency ratio, by atoll, RMI 1999

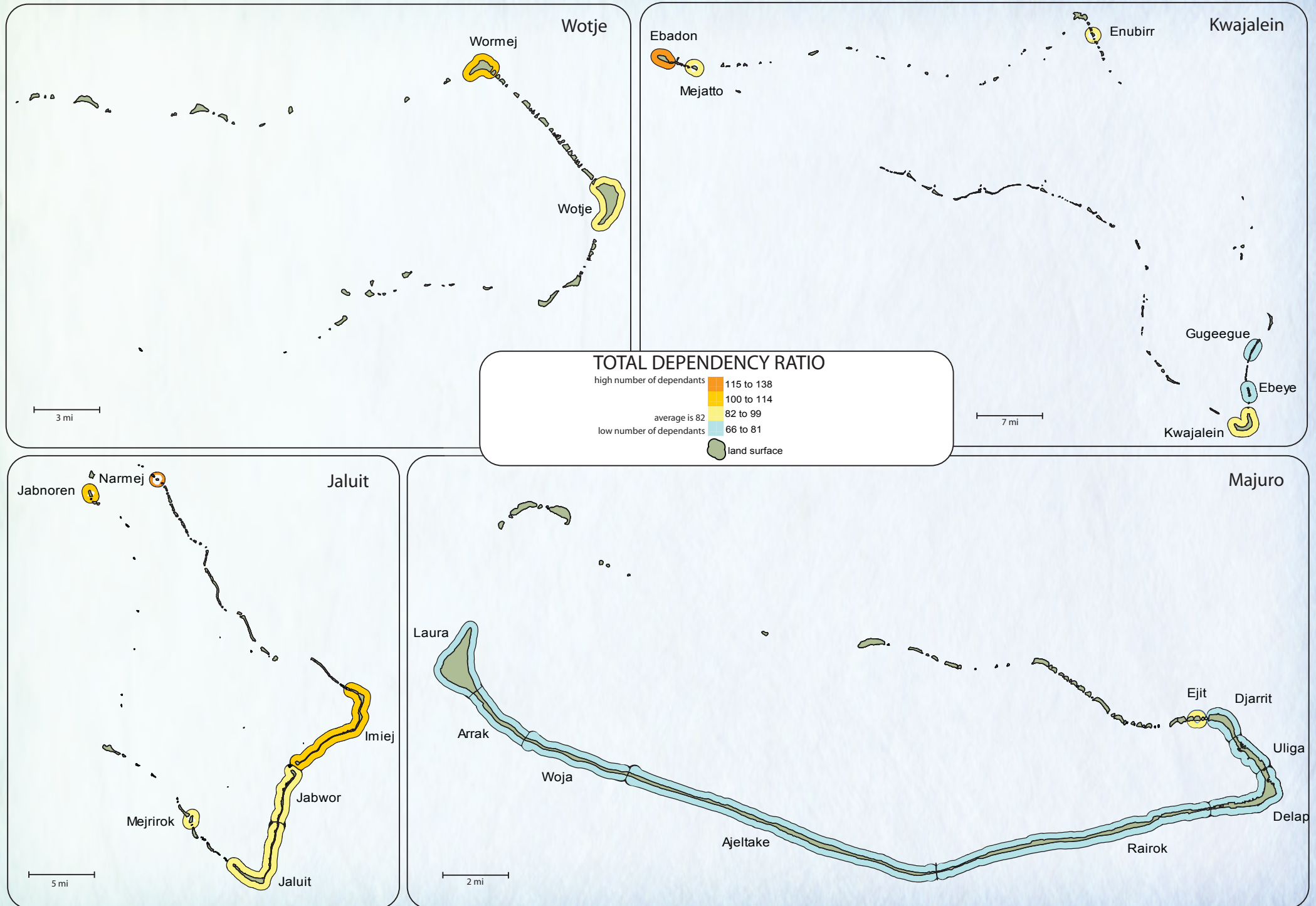


Total dependency ratio represents the number of dependent persons (aged 0–14 and 65+) compared to the working-age population (15–65). In 1999, this equated to 82 dependants for every 100 people of working age.

Majuro fell a little below the average, with more people of working age than dependent population (71). Kwajalein was similar, with a ratio right on the average (82).

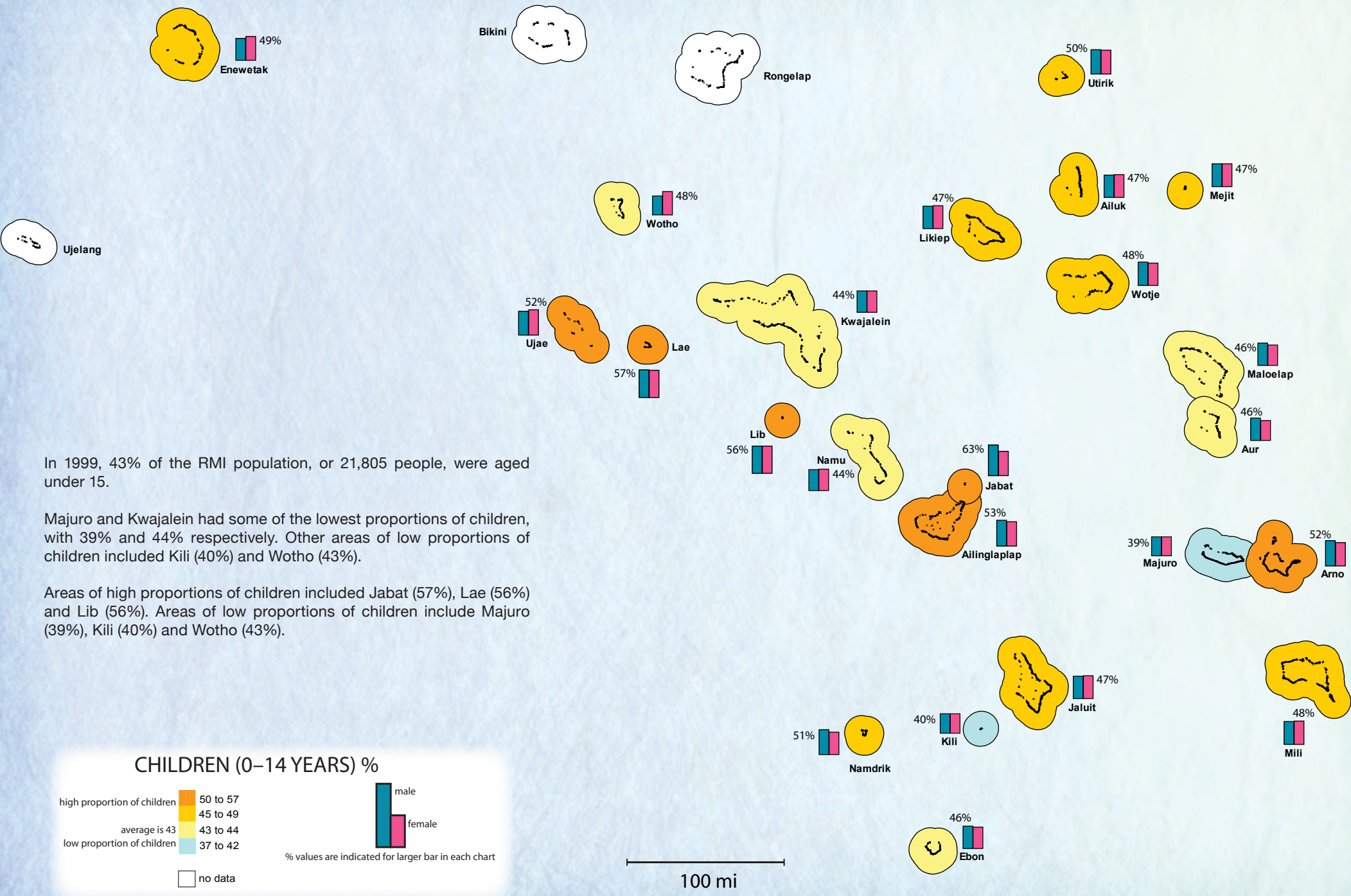
Areas of low dependency included Majuro (71), Kili (75) and Kwajalein (82). Areas of high dependency included Lae (138), Jabat (138) and Lib (133).

Map 8 – Total dependency ratio, by islet, RMI 1999



Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

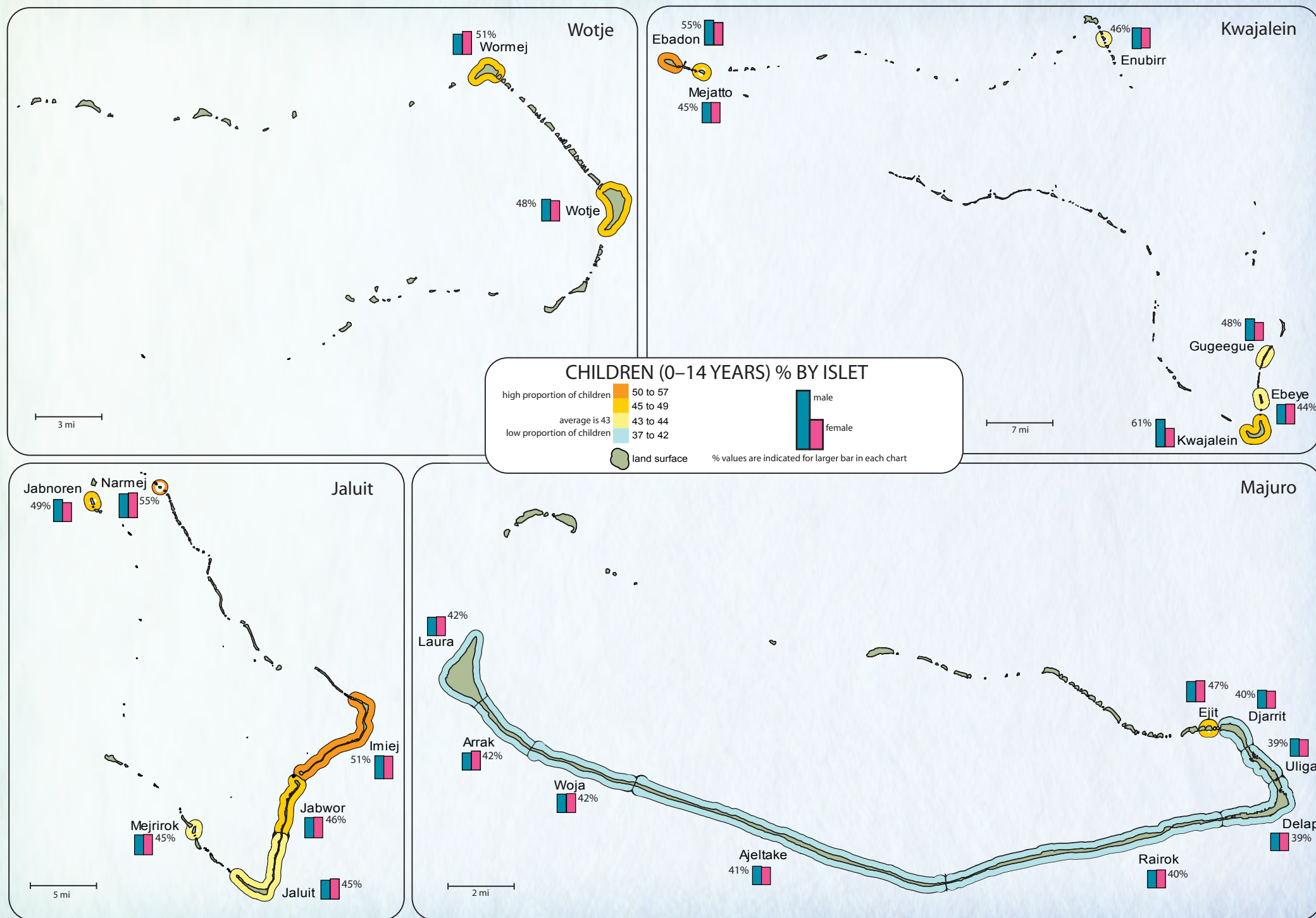
Map 9 – Children 0–14 years, by atoll, RMI 1999



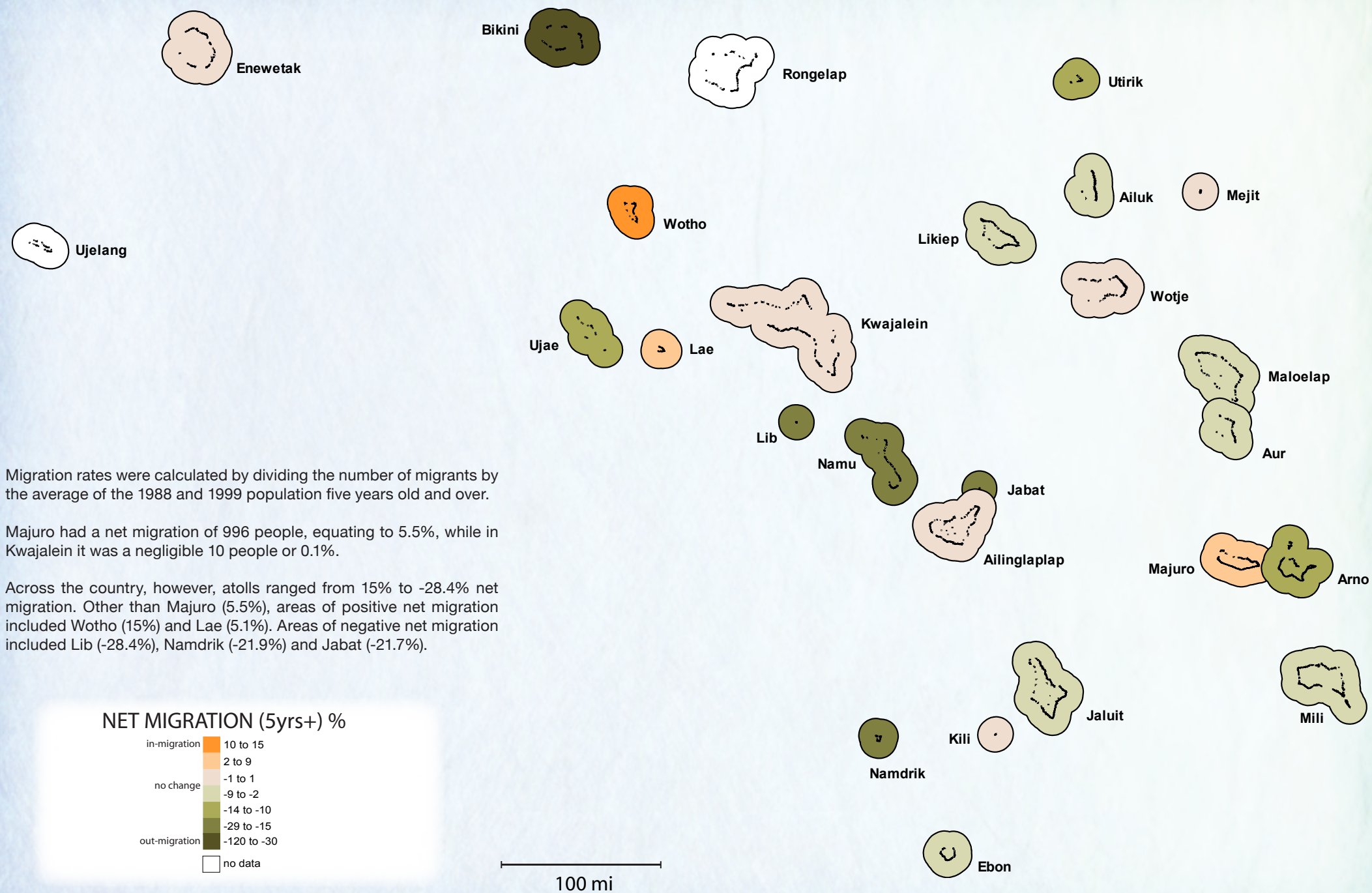
In 1999, 43% of the RMI population, or 21,805 people, were aged under 15.

Majuro and Kwajalein had some of the lowest proportions of children, with 39% and 44% respectively. Other areas of low proportions of children included Kili (40%) and Wotho (43%).

Areas of high proportions of children included Jabat (57%), Lae (56%) and Lib (56%). Areas of low proportions of children include Majuro (39%), Kili (40%) and Wotho (43%).



Map 11 – Net migration (5yrs+), by atoll, RMI 1999



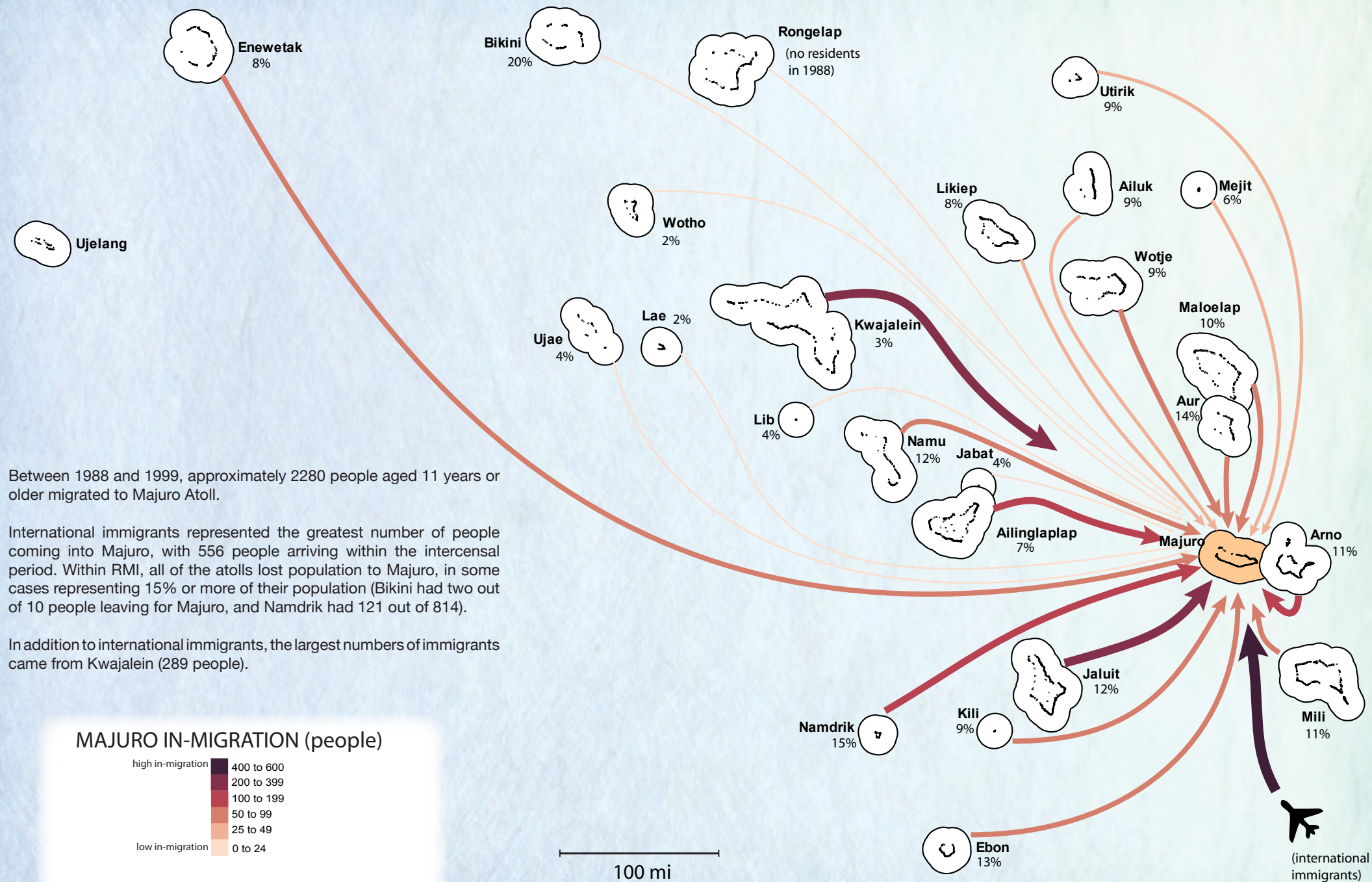
Migration rates were calculated by dividing the number of migrants by the average of the 1988 and 1999 population five years old and over.

Majuro had a net migration of 996 people, equating to 5.5%, while in Kwajalein it was a negligible 10 people or 0.1%.

Across the country, however, atolls ranged from 15% to -28.4% net migration. Other than Majuro (5.5%), areas of positive net migration included Wotho (15%) and Lae (5.1%). Areas of negative net migration included Lib (-28.4%), Namdrik (-21.9%) and Jabat (-21.7%).



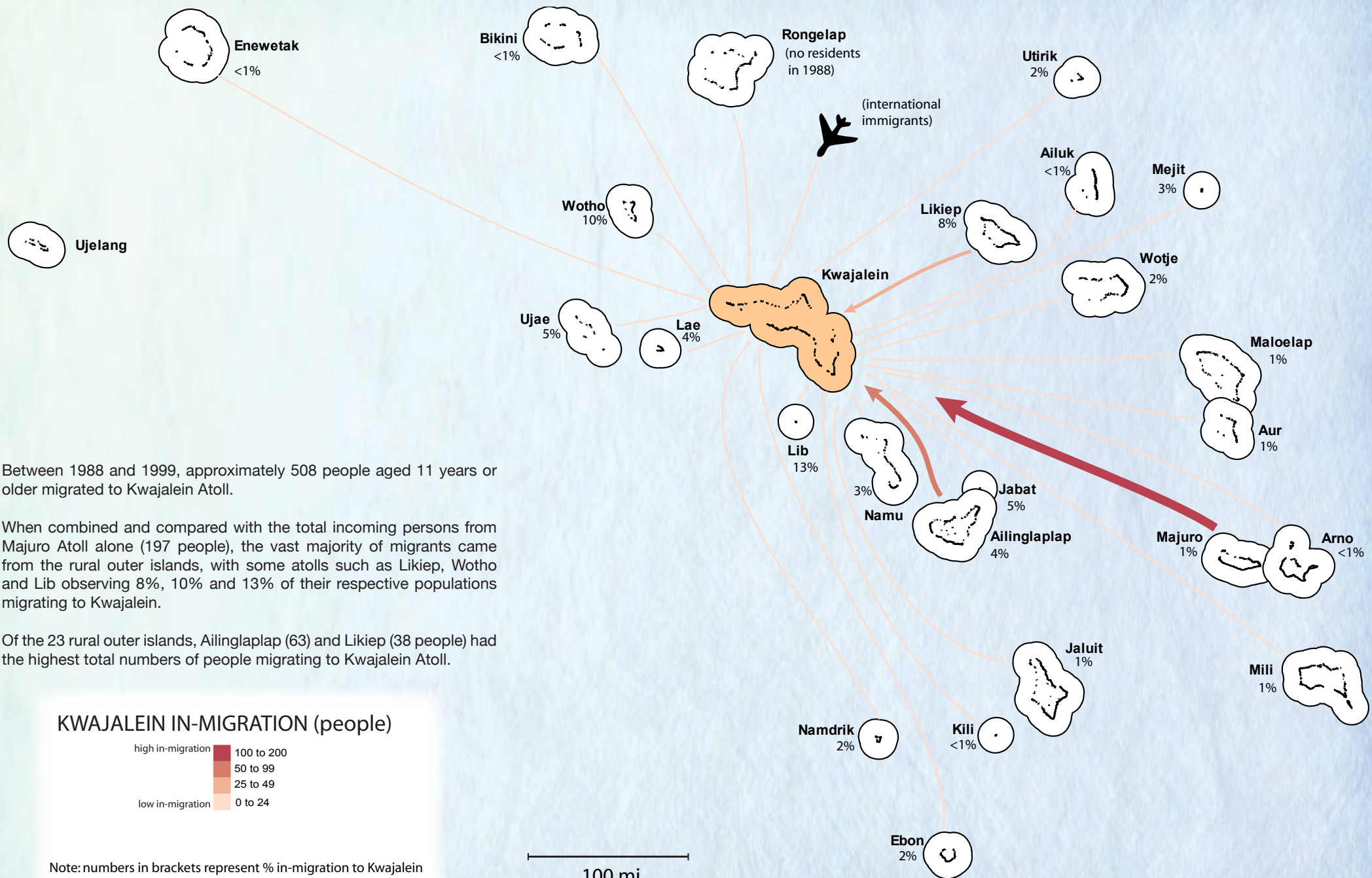
Map 12 – In-migration flow to Majuro (11yrs+), by atoll, RMI 1999



Note: numbers in brackets represent % in-migration to Majuro (1988-1999) as a proportion of respective atolls 1988 population

Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

Map 13 – In-migration flow to Kwajalein (11yrs+), by atoll, RMI 1999



Between 1988 and 1999, approximately 508 people aged 11 years or older migrated to Kwajalein Atoll.

When combined and compared with the total incoming persons from Majuro Atoll alone (197 people), the vast majority of migrants came from the rural outer islands, with some atolls such as Likiep, Wotho and Lib observing 8%, 10% and 13% of their respective populations migrating to Kwajalein.

Of the 23 rural outer islands, Ailinglaplap (63) and Likiep (38 people) had the highest total numbers of people migrating to Kwajalein Atoll.

Note: numbers in brackets represent % in-migration to Kwajalein (1988-1999) as a proportion of respective atolls 1988 population

II. Education

Data and information about education are fundamental to informing policy development and planning across a broad range of sectors, and thus they contribute to improving people's quality of life. Education empowers people to take charge of their lives and make informed choices. It provides a basis for further professional development by enhancing people's employment prospects, and contributes to a better-qualified labour force. It also enhances a person's income potential and thus has the potential to improve that person's and his or her family's quality of life. Experience worldwide shows that better-educated women tend to delay child-bearing, and thus they tend to have fewer and healthier children.

To inform policy development and planning, population and housing censuses ask questions about current school attendance as well as the highest level of educational attainment and professional development achieved. Though censuses provide valuable snapshot information on basic indicators, some care ought to be applied when interpreting census-based education data, as the data contain no information on the quality of the education provided.

During the 1999 census period, primary school attendance varied widely across RMI. The national average was 84%, which was slightly lower than the national average of 90% from the 1988 census. In comparison to many other developing countries, this rate is above average. It can largely be attributed to the existence of at least one public primary school on each atoll, with some of the more populated atolls having more than one public elementary school and some even having one or more church-run private elementary schools. However, the wide range of primary school attendance rates, with rates as high as 100% (Jabat) to as low as 65% (Lib), indicates disparities in education service delivery across RMI.

For a majority of the outer islands whose primary school attendance rates fell below the national average, the distance between the different islets of the atoll was a major problem for children living in the outer islets in terms of the difficulty of accessing the schools located on the main islets. For islands like Lib and Kili, where geographical and transportation issues may not be as significant, the lower attendance rates can be attributed to a combination of insufficient and/or poor school facilities, resources (Lib) and/or teachers (Kili). For Kwajalein and Majuro, whose primary school attendance rates fell below the national average, the main barrier was the lack of sufficient space and teachers in existing schools to accommodate the increasing population of primary school-age children. However, it is clear that there were other atolls and islands that faced similar geographical, transportation and resource constraints but whose attendance rates were higher than the national average. Data from the 1999 census do not provide enough information to fully explain these disparities, but whatever the causes, it is evident that access to education was uneven throughout RMI.

In contrast to the situation with primary school attendance, the national average high school attendance rate was 70%, slightly improved from 65% in the 1988 census. Though improved since 1988, a third (30%) of the secondary school age population

still did not attend high school. The much lower attendance rate at high school than primary school was primarily a function of the fact that in 1999 there were only four public high schools and a small handful of private, church-run high schools on Majuro, Kwajalein, Jaluit and Wotje, which were insufficient to absorb all graduating Grade 8 students. The lack of access to secondary school institutions therefore had a significant effect on the national high school attendance rate.

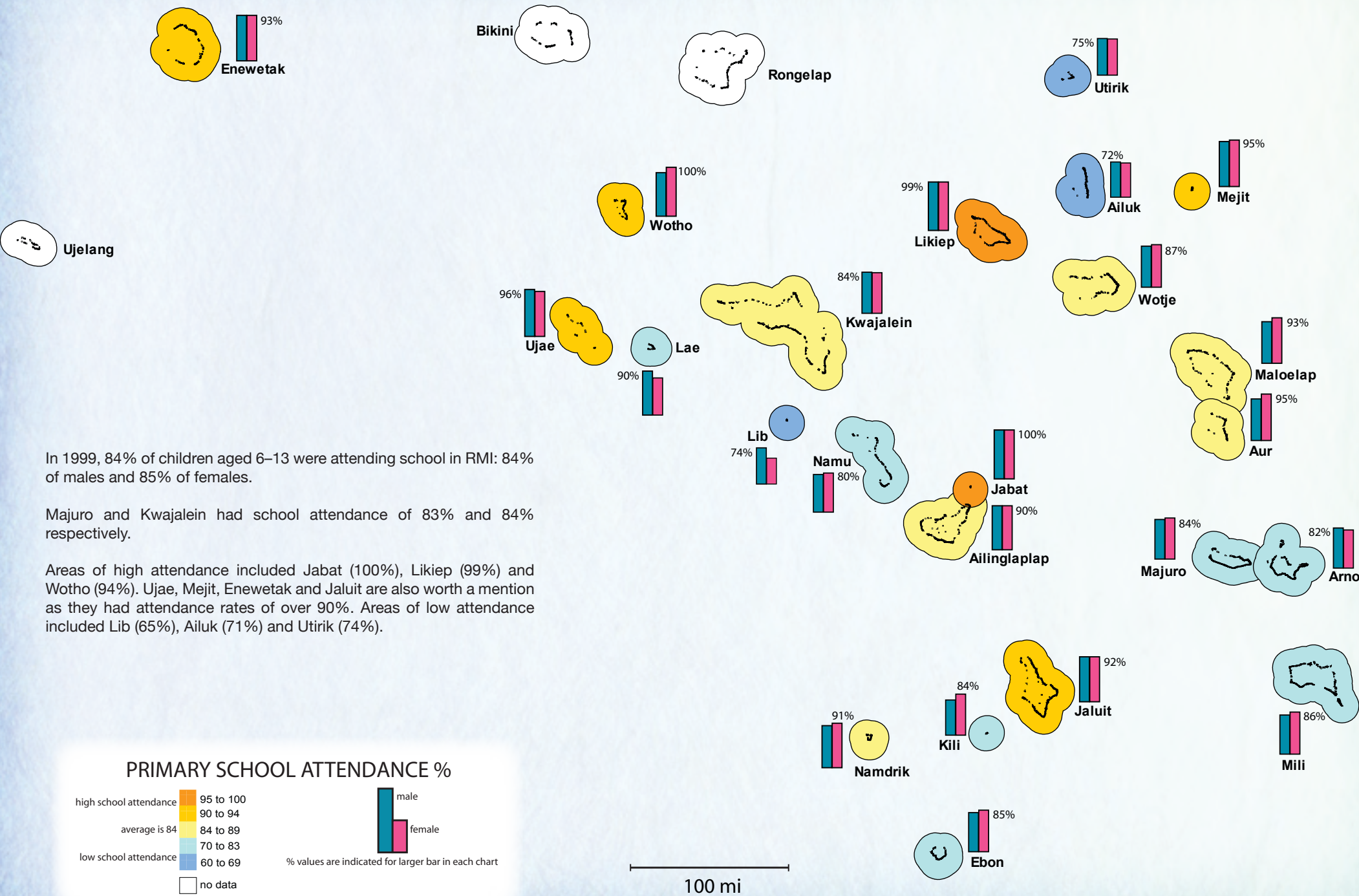
In terms of gender participation, female attendance rates at the primary school level were generally on a par with male attendance rates, with the national female average at 85% and the male average at 84%. At secondary school level, however, there was a marked difference in male and female participation rates, with female participation lagging far behind male participation. According to the 1999 census, the national average female attendance rate was 35%, in contrast to the national average of 69% for males. This difference was largely due to social factors that prevented a large proportion of young women from attending or completing high school. These factors ranged from cultural expectations requiring young women of reproductive age to provide for the needs of households, to the high proportion of births to teenage mothers.

When examining educational attainment in the 1999 census, it was determined that high school completion would be the preferred indicator. Students who attain this level should have a good grasp of language and mathematics and a wide range of other desirable skills. Only 40% of people aged 25 years and older completed high school or higher: 45% of males and 33% of females. The majority of the population did not complete high school. Majuro and Kwajalein had the highest proportion of their populations (25+%) having at least completed high school, at 49% and 44% respectively. For Ailuk, Utirik and Namdrik it was less than 15% of their 25+ population. These figures correspond to historical trends in high school attendance. Given that most of the primary and high schools in RMI were built in the late 1970s and in the 1980s, the low attainment rate across RMI is not surprising, particularly for the majority of rural, outer island communities.

Migration to the urban centres (especially Majuro) continued at an alarming pace. At the same time, a significant proportion of the adult population (aged 25+) had not attained a secondary-school-level education, and nearly 20% of the population did not attend primary school. These figures indicate potential problems related to development and sustainability. When examining labour force in the next section, for example, a growing population coupled with an adult population with low skill levels poses key challenges for social and economic development and the overall welfare of the Marshallese population.



Map 14 – Primary school attendance, by atoll, RMI 1999

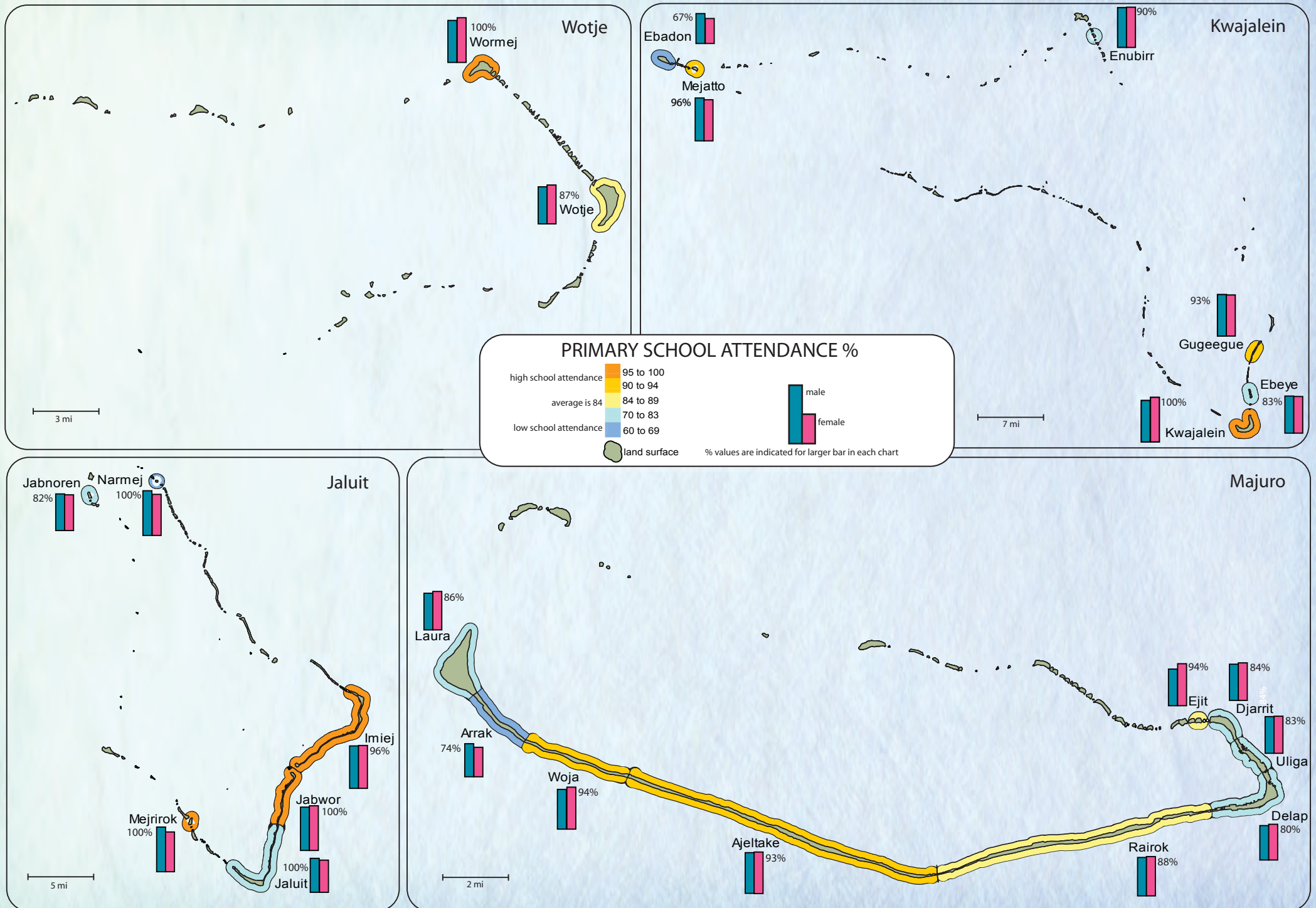


In 1999, 84% of children aged 6–13 were attending school in RMI: 84% of males and 85% of females.

Majuro and Kwajalein had school attendance of 83% and 84% respectively.

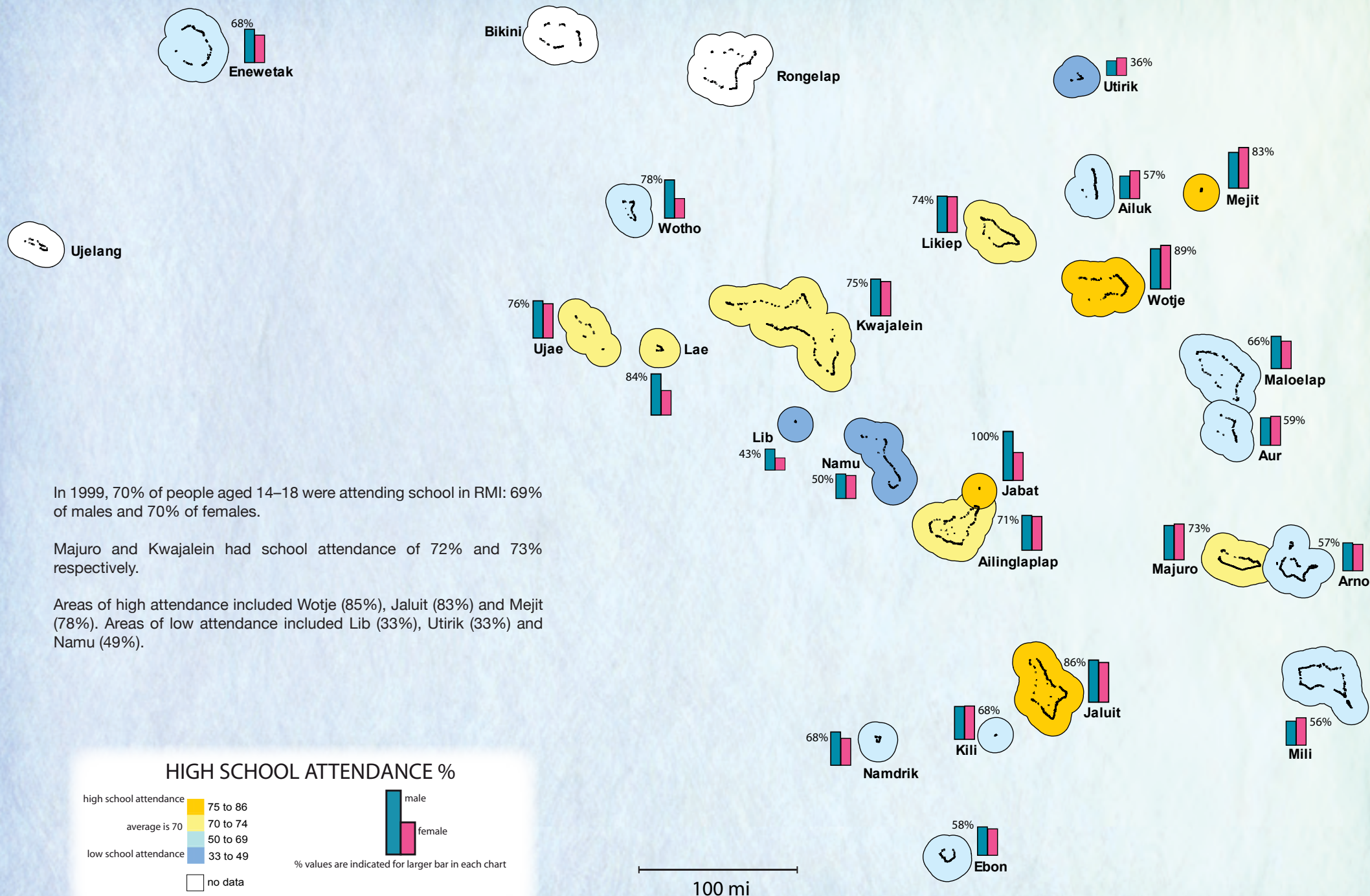
Areas of high attendance included Jabat (100%), Likiep (99%) and Wotho (94%). Ujae, Mejit, Enewetak and Jaluit are also worth a mention as they had attendance rates of over 90%. Areas of low attendance included Lib (65%), Ailuk (71%) and Utirik (74%).

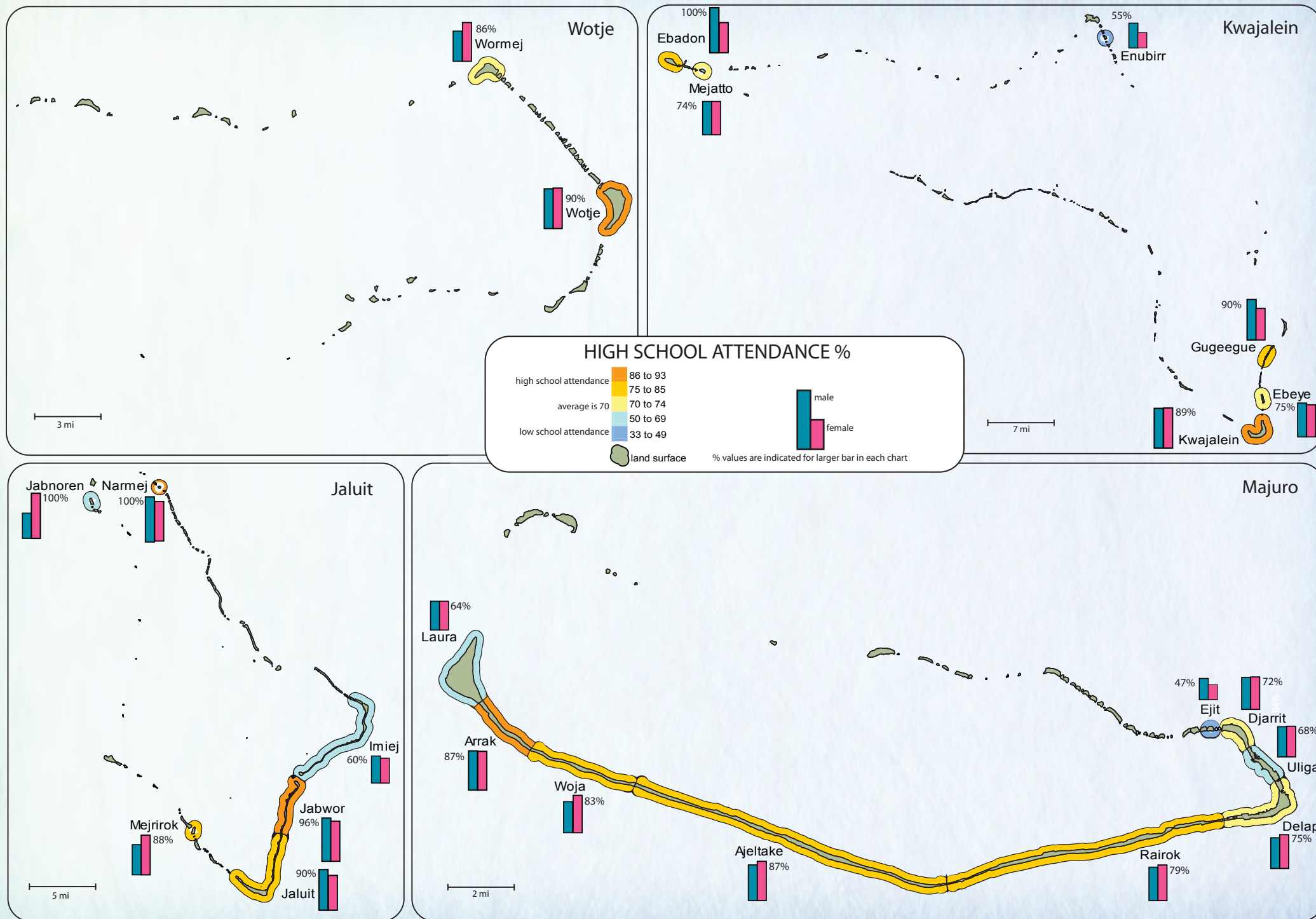
Map 15 – Primary school attendance, by islet, RMI 1999



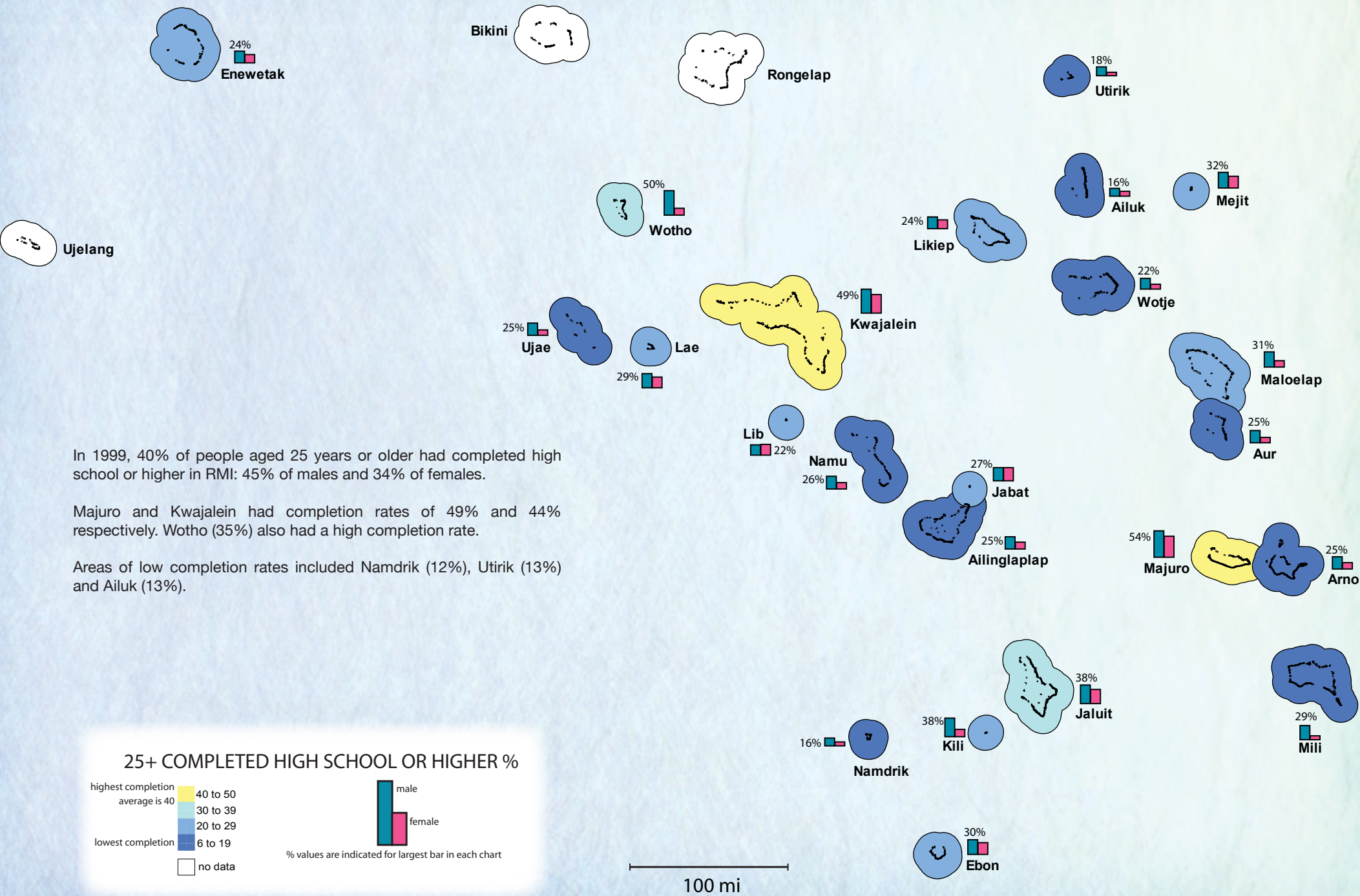
Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

Map 16 – High school attendance, by atoll, RMI 1999





Map 18 – Population 25+ completed high school or higher, by atoll, RMI 1999

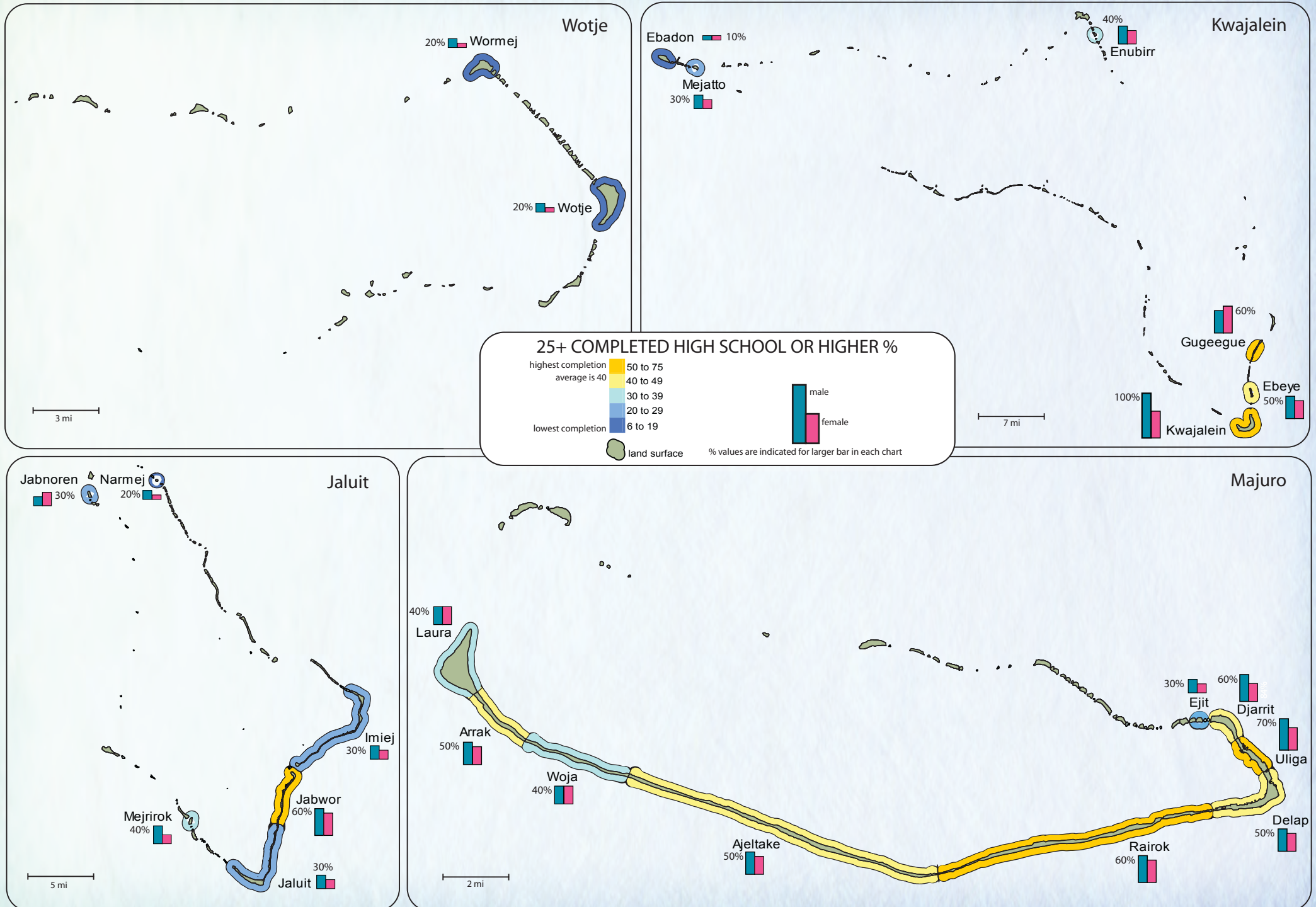


In 1999, 40% of people aged 25 years or older had completed high school or higher in RMI: 45% of males and 34% of females.

Majuro and Kwajalein had completion rates of 49% and 44% respectively. Wotho (35%) also had a high completion rate.

Areas of low completion rates included Namdrik (12%), Utirik (13%) and Ailuk (13%).

Map 19 – Population 25+ completed high school or higher, by islet, RMI 1999



Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

III. Labour Force

Statistics on the economic characteristics of people are needed from population censuses for various reasons. Information on the number and characteristics of a country's labour force (employed and unemployed people) and inactive people are needed in detail at the same reference point of time that other key demographic and social characteristics are measured, so that a comprehensive picture of a country's socio-economic situation becomes available (UN, Principles and Recommendations for Population and Housing Censuses, 2nd revision, 2006).

At the time of the 1999 census, the RMI population of working age – defined as people aged 15 years or over – comprised 28,698; of this group, 14,677 were working or looking for work, which translates into a labour force participation rate of 51%. The remaining group of people, defined as 'not usually active' or 'not in the labour force', usually comprises home-makers (people engaged in household duties in their own home), students attending school or pursuing other kinds of training, pension or capital income recipients, and others not classified as usually economically active, 'who are receiving public aid or private support' (UN, *ibid.*).

Majuro and Kwajalein not surprisingly mirrored the national average, with labour force participation rates of 51% and 47% respectively. Elsewhere in the country this picture varied quite markedly, with Wotho, Lae, Aur, Mejit and Mili featuring labour force participation rates exceeding 75%, and Lib, Ebon and Wotje showing figures below 40%. Much of this variation can be explained by manifest discrepancies in the levels of socio-economic development and access to services and employment opportunities across RMI. With the exception of the nuclear compensation atolls (particularly Enewetak and Kili), low levels of development and access to key services (e.g. transportation) were especially acute in the rural outer islands.

Majuro and Kwajalein's relatively low labour force participation rates are readily explained in terms of migration. Representing the two key centres of relatively high levels of social and economic development, they had attracted and continued to attract migration from less developed outer islands. This resulted in population growth exceeding economic growth, particularly in terms of new employment opportunities. The higher wages paid in these areas may have been a contributing factor to both migration and the relatively low labour force participation rates. This is because urban households with one or two employed persons might well have been (culturally) expected to provide for other members of the extended family, who in turn may not have felt the need to seek employment of any kind.

Apart from the substantial geographic variations, disaggregating the national average by sex, points to substantial variations between males and females. Two in three males (66%) were economically active, compared to just one in three women (35%). While social and cultural factors contributed to this disparity, the contrast also has to be seen in the broader context of education, considering, for example, the significantly lower secondary school attainment levels by females in general. These levels of education make participation in the labour force beyond subsistence-based work, such as copra production or handicrafts, difficult.

Of the RMI labour force comprising 14,677 people, 10,141 were employed in 1999. These people were classified into six types of workers: 1) private sector employees employed by a private company or firm and receiving regular fixed wages or salaries; 2) public sector employees employed by the government or an agency of the government and receiving regular fixed wages or salaries; 3) self-employed people who earned regular or variable income based on products produced or services rendered; 4) people employed in their own farm or business and receiving regular or variable income; 5) paid workers in their own family farm or business receiving regular, fixed or variable wages; and 6) unpaid workers employed in a family farm or business where a regular or varied income was not received, but other in-kind benefits were still derived.

Of the RMI labour force, 41% were employed in the private sector and 31% in the public sector; self-employment amounted to 25%. The remaining 3% of people comprised employers, unpaid workers, and paid workers in family-operated businesses or farms. With the exception of those living in Majuro, Kwajalein, Kili, Wotho and Enewetak, most labour force participants were classified as self-employed. This was essentially a consequence of heavy reliance on copra production as the primary source of income for most rural households, followed by handicrafts and other subsistence-based work. For Majuro and Kwajalein, over half of those identified as employed were employed in the private sector, with the public sector coming a close second. Self-employment, though higher on Majuro than on Kwajalein, was significantly less on these two atolls than on most of the rural outer islands. Kili was the only island where all employed persons were employed either in the private or public sector: 31% and 32% respectively.

As previously noted, despite Majuro and Kwajalein having higher social and economic development levels than the rest of RMI, this did not equate to more job opportunities for the increasing population of job-seekers. Female unemployment rates were much higher than male unemployment rates, with national averages of 37% and 28% respectively. The high unemployment rate in RMI, though largely a consequence of socio-economic development levels, was also a consequence of the lack of access to vocational skills training opportunities provided as part of either the formal education

system or the non-formal education sector. Over time, this lack has resulted in a largely unskilled workforce that has increasingly found it difficult to obtain and/or retain semi-skilled to skilled jobs, and who have been out-competed by skilled labour brought in from abroad. For a number of major employers on Majuro and Kwajalein, the lack of basic numeracy, literacy and general life skills among the Marshallese workforce has motivated them to seek qualified employees outside RMI. In the context of the ongoing high natural population increase, the need to address improved education outcomes is self-evident.

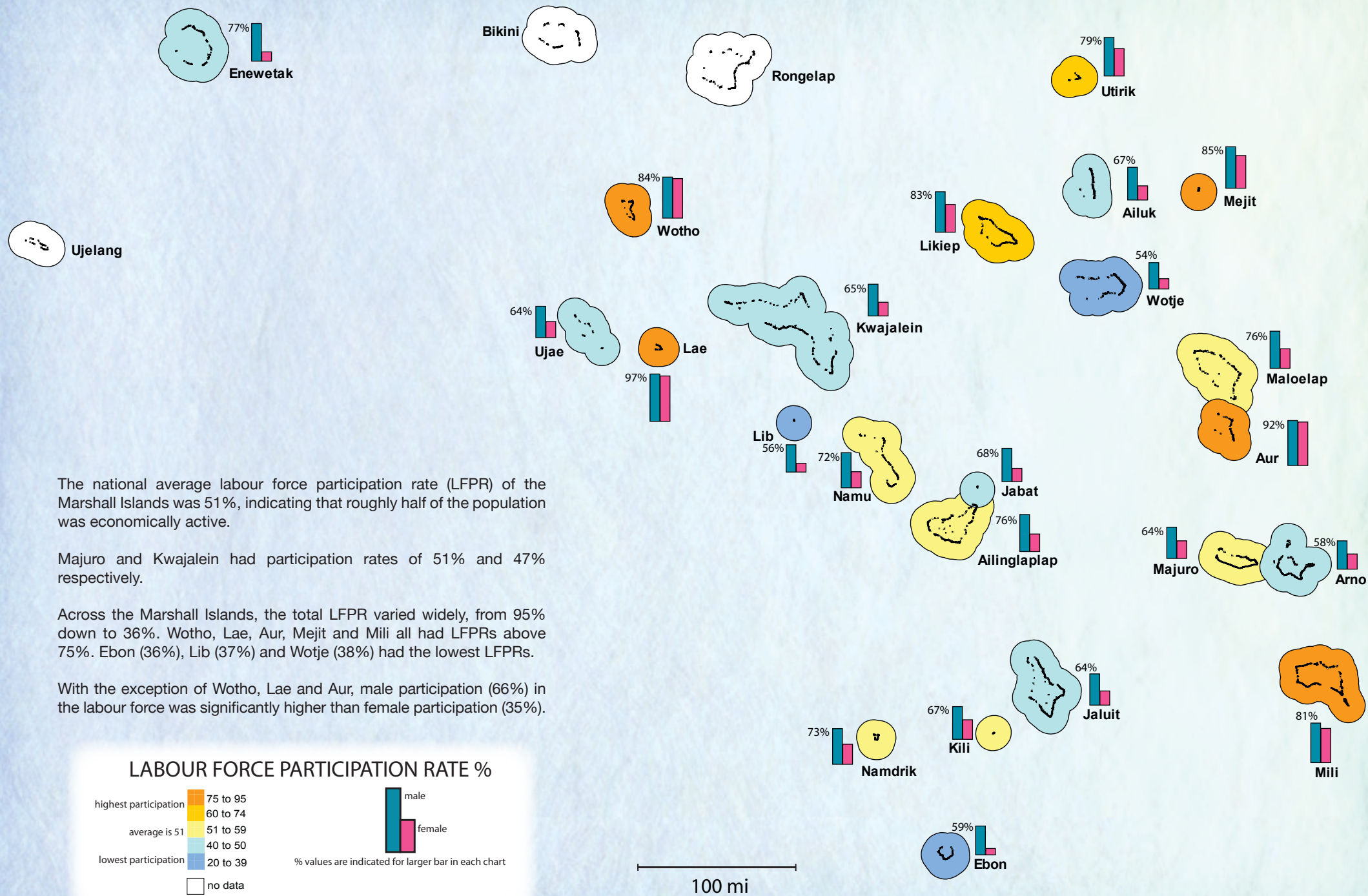
Atoll	Male		Female		Total	
		%		%		%
Labour force	9679	66%	4998	35%	14677	51%
Employed	7008	72%	3133	63%	10141	69%
Unemployed	2671	28%	1865	37%	4536	31%
Not in labour force	4913	34%	9102	65%	14015	49%
Not stated	3	0.02%	3	0.02%	6	0.02%
Working age	14595		14103		28698	

Note: 'Employed' and 'unemployed' are calculated as proportions of people in the 'labour force'. The other variables are out of the total "working age" population.



Working on Bing's Store, Majuro. Photo taken by Marshall Islands Journal.

Map 20 – Labour force participation rate, by atoll, RMI 1999

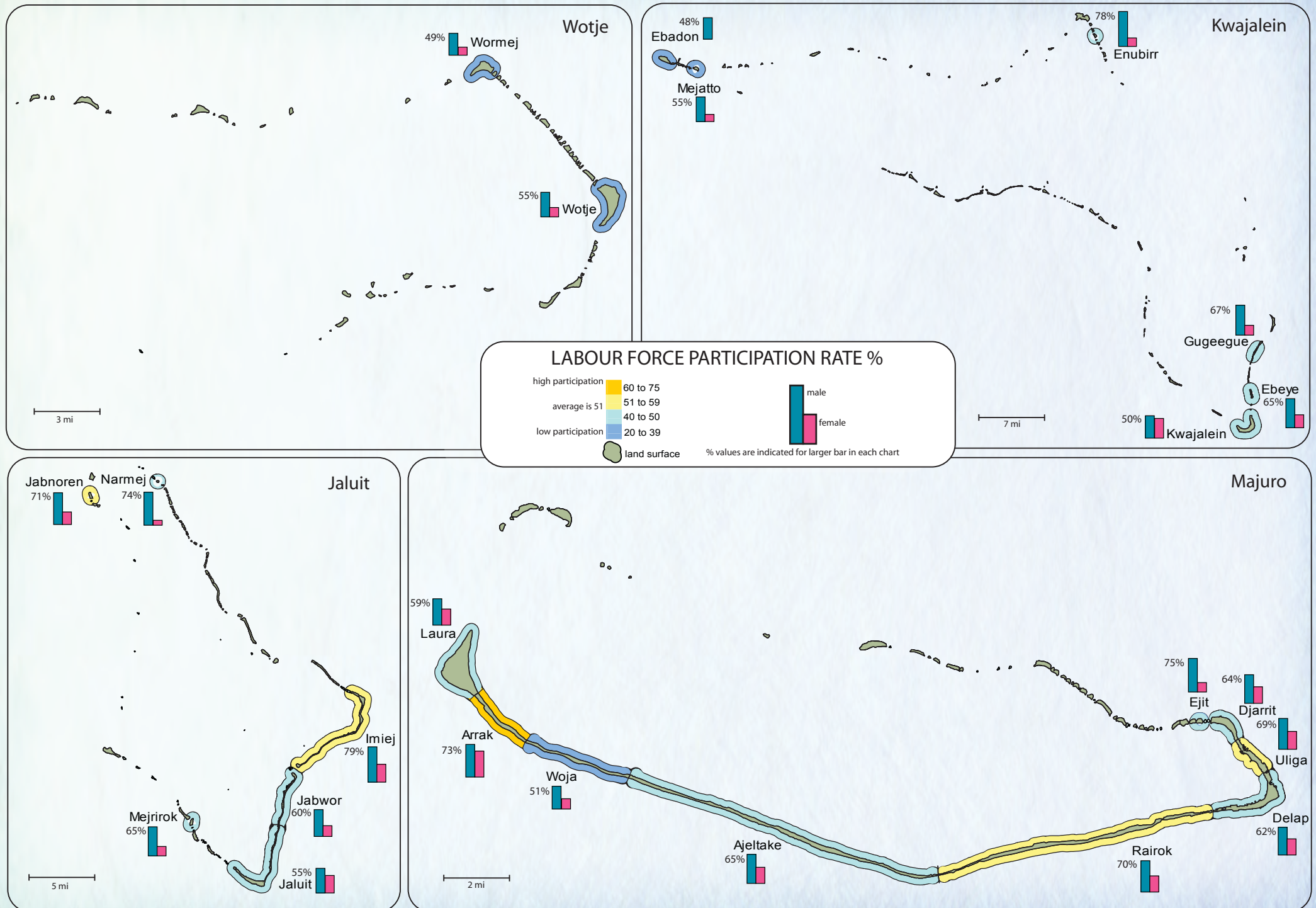


The national average labour force participation rate (LFPR) of the Marshall Islands was 51%, indicating that roughly half of the population was economically active.

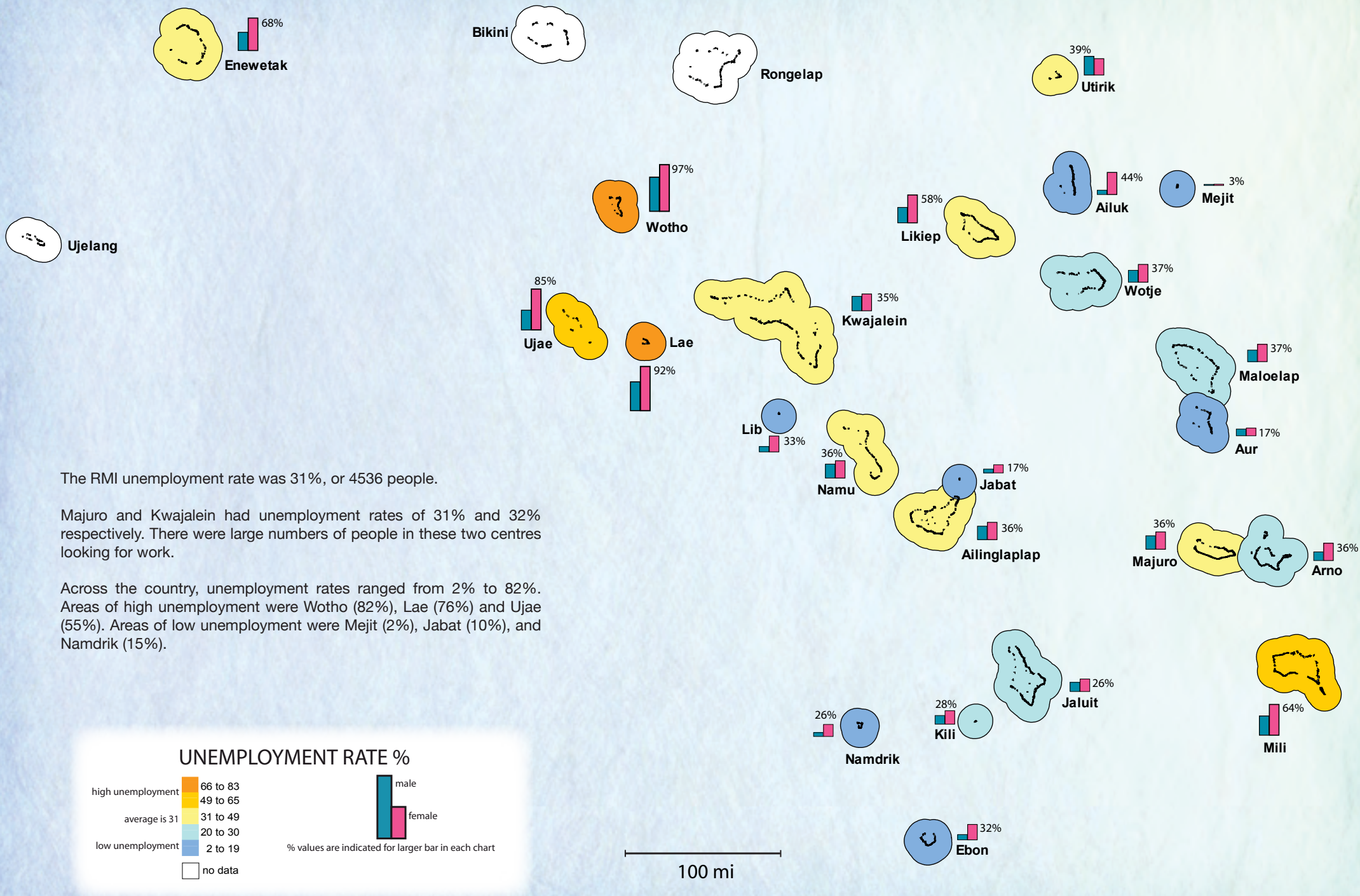
Majuro and Kwajalein had participation rates of 51% and 47% respectively.

Across the Marshall Islands, the total LFPR varied widely, from 95% down to 36%. Wotho, Lae, Aur, Mejit and Mili all had LFPRs above 75%. Ebon (36%), Lib (37%) and Wotje (38%) had the lowest LFPRs.

With the exception of Wotho, Lae and Aur, male participation (66%) in the labour force was significantly higher than female participation (35%).



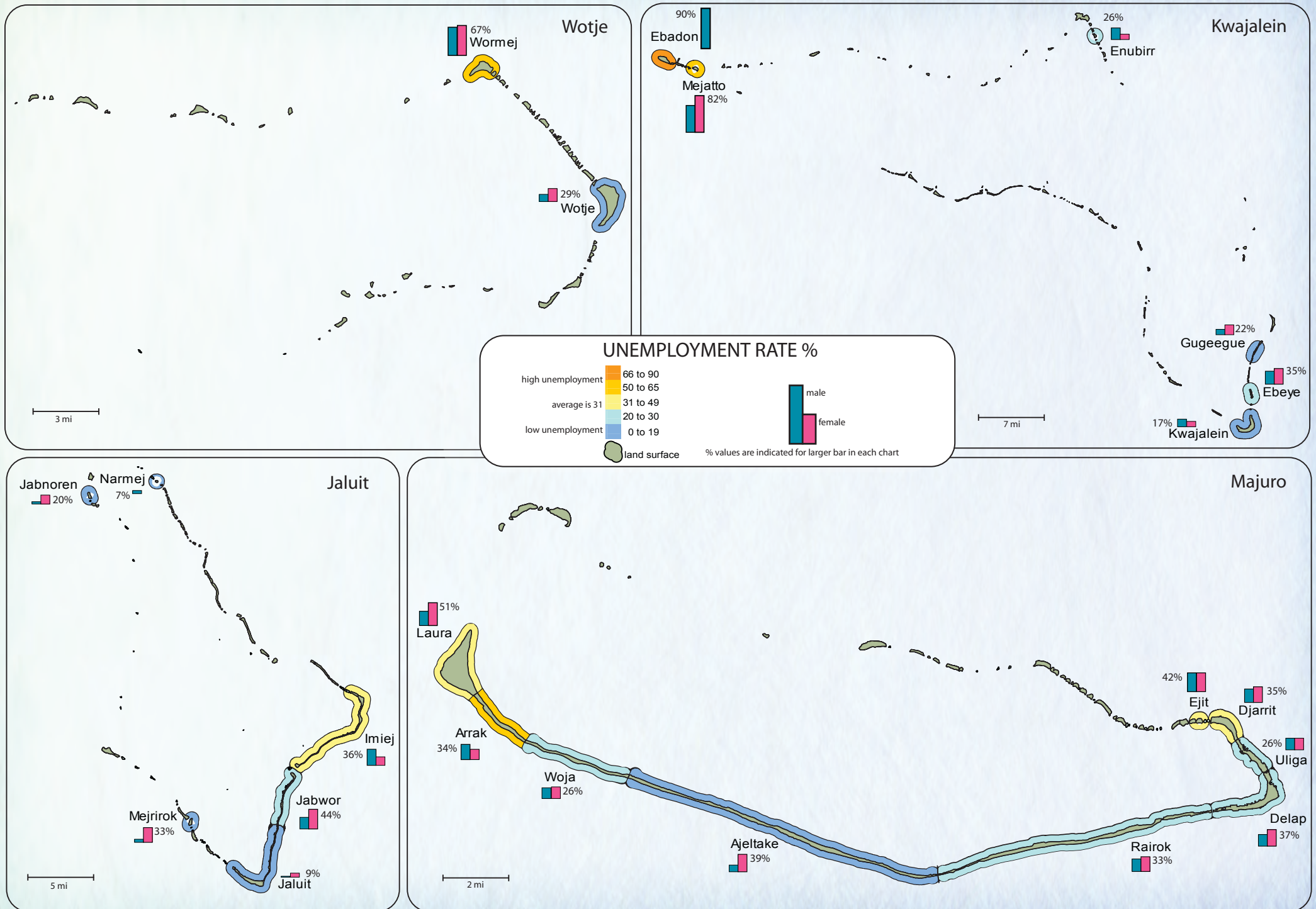
Map 22 – Unemployment rate, by atoll, RMI 1999



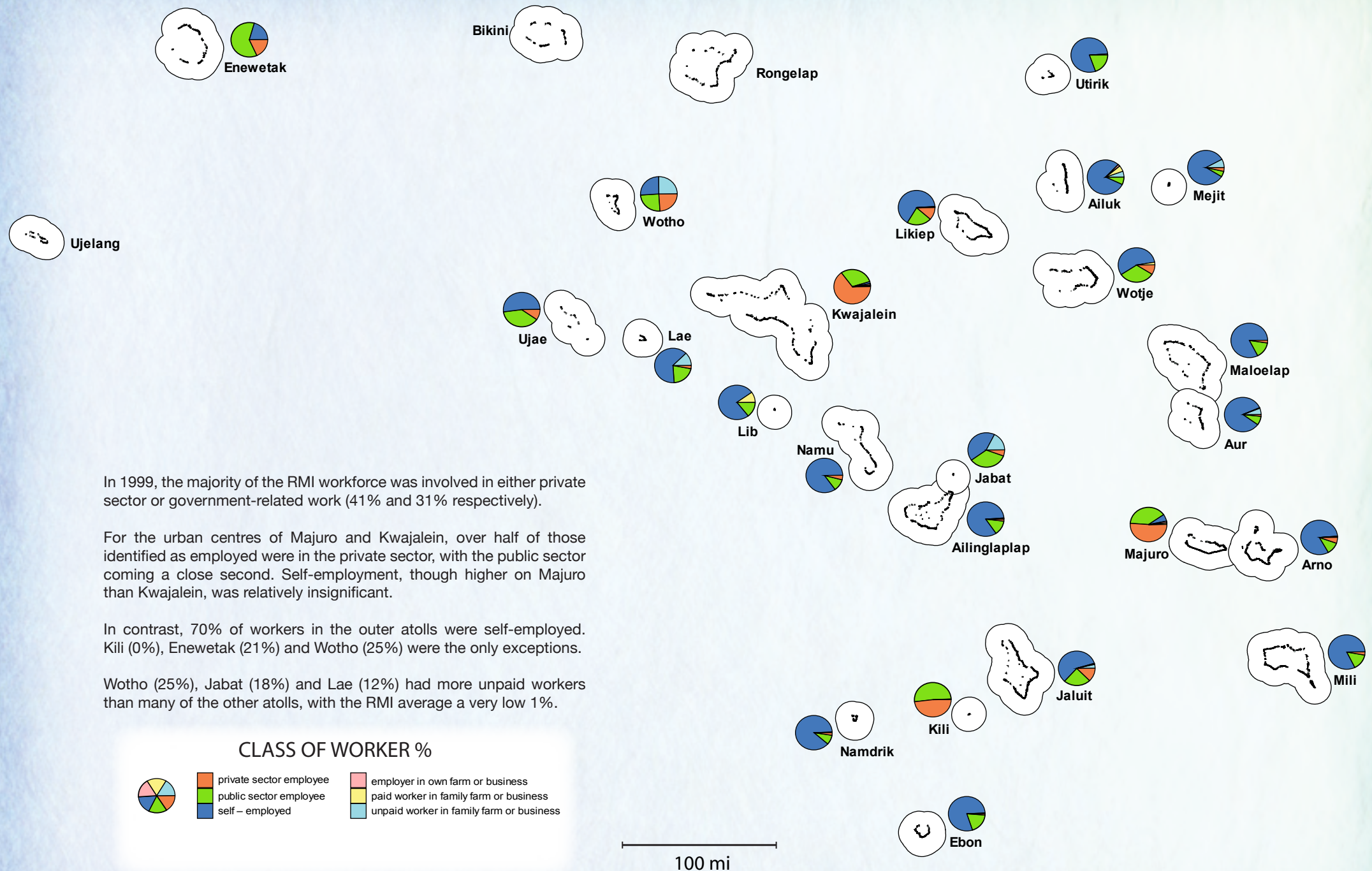
The RMI unemployment rate was 31%, or 4536 people.

Majuro and Kwajalein had unemployment rates of 31% and 32% respectively. There were large numbers of people in these two centres looking for work.

Across the country, unemployment rates ranged from 2% to 82%. Areas of high unemployment were Wotho (82%), Lae (76%) and Ujae (55%). Areas of low unemployment were Mejit (2%), Jabat (10%), and Namdrik (15%).



Map 24 – Class of worker, by atoll, RMI 1999

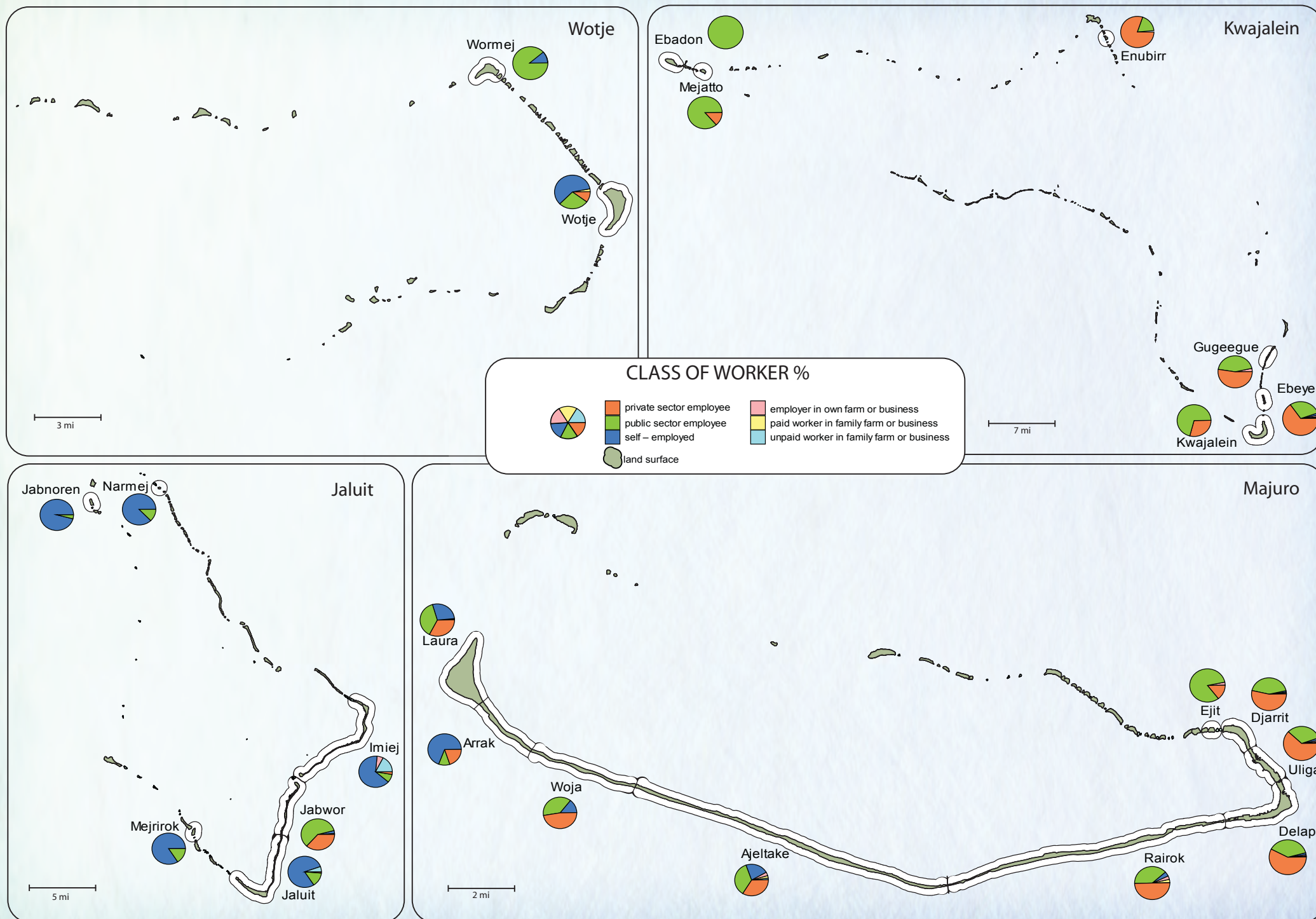


In 1999, the majority of the RMI workforce was involved in either private sector or government-related work (41% and 31% respectively).

For the urban centres of Majuro and Kwajalein, over half of those identified as employed were in the private sector, with the public sector coming a close second. Self-employment, though higher on Majuro than Kwajalein, was relatively insignificant.

In contrast, 70% of workers in the outer atolls were self-employed. Kili (0%), Enewetak (21%) and Wotho (25%) were the only exceptions.

Wotho (25%), Jabat (18%) and Lae (12%) had more unpaid workers than many of the other atolls, with the RMI average a very low 1%.



IV. Household

Household-related questions in a census or survey are primarily designed to get a count of the number of households in the country, then secondly to better understand the make-up of each of these households. In the 1999 RMI census the questions looked at a range of different aspects of households: dwellings (e.g. their construction, age, materials and ownership), facilities (e.g. energy, sanitation and drinking water), conveniences (e.g. appliances, communication, entertainment and transport) and income (e.g. amount and source).

From these data a wealth of information can be drawn. For the purpose of this atlas, those indicators that could be used to determine the well-being of a household were used, giving a relative measure of the so-called 'quality of life' of the people. Seven variables were chosen: household size, household income, means of communication, means of transport, access to improved drinking water, access to improved toilet facilities, and method of kitchen waste disposal.

The average household size in RMI had decreased by one person between the 1988 and 1999 censuses, to eight people. This still represented the largest household size in the Pacific.

While income by itself is not an accurate measure of well-being or poverty, in the absence of other data and information, access to US\$1 per day is a widely used proxy for poverty. With households in the Marshall Islands averaging eight members, an annual household income of US\$3,000 (\$375/person/year) was used as a poverty benchmark for this atlas. The median household income in the Marshall Islands stood at US\$6,840 in 1999, which means that 28% of households, or one in four, had an income of less than US\$3,000. Not surprisingly, urban Majuro and Kwajalein featured the highest median incomes: \$9,030 and \$14,195 respectively.

Means of communication such as telephones and radios allow communities to stay in contact for important day-to-day activities, from getting food supplies and medical help to being able to hear non-essential information such as news and other media. Likewise, means of transport such as cars, vans, motorcycles, motorised boats and canoes allow people to move from place to place for a range of activities. As with communication, transport allows people to go about their essential daily activities, including getting to and from work, education, hospitals and doctors, and non-essential activities, such as visiting family or other countries, and being able to choose where they want to work or go to school. As expected, the urban areas of Majuro and Kwajalein had the highest proportion of households with access to a telephone: more than 40%. Two-way radios were much more widely spread, with 13% of all households having access to them, predominantly those households in the outer atolls.

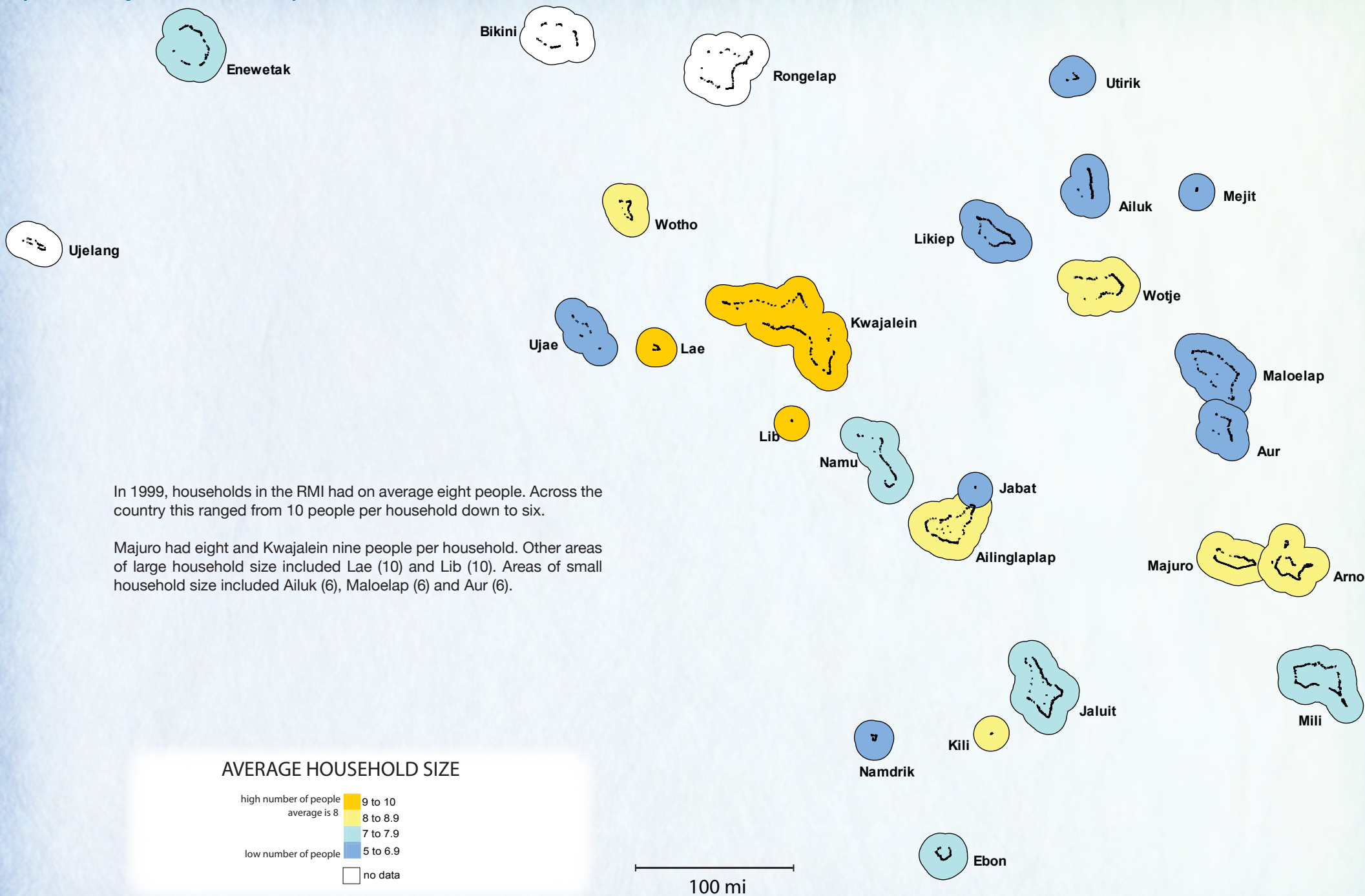
Access to safe drinking water is another key socio-economic development indicator, alongside access to food and shelter. Contaminated water is a contributing factor to a range of health conditions, some serious. Ninety per cent of RMI households had access to piped water, rainwater or bottled water, which are all considered 'safe'.

Improved toilet facilities refer to either flush or water-seal toilets, irrespective of their location inside or outside a dwelling. In this category, 74% of RMI households had toilet facilities. In the main urban centres of Majuro and Kwajalein, roughly 90% of households had improved toilets.

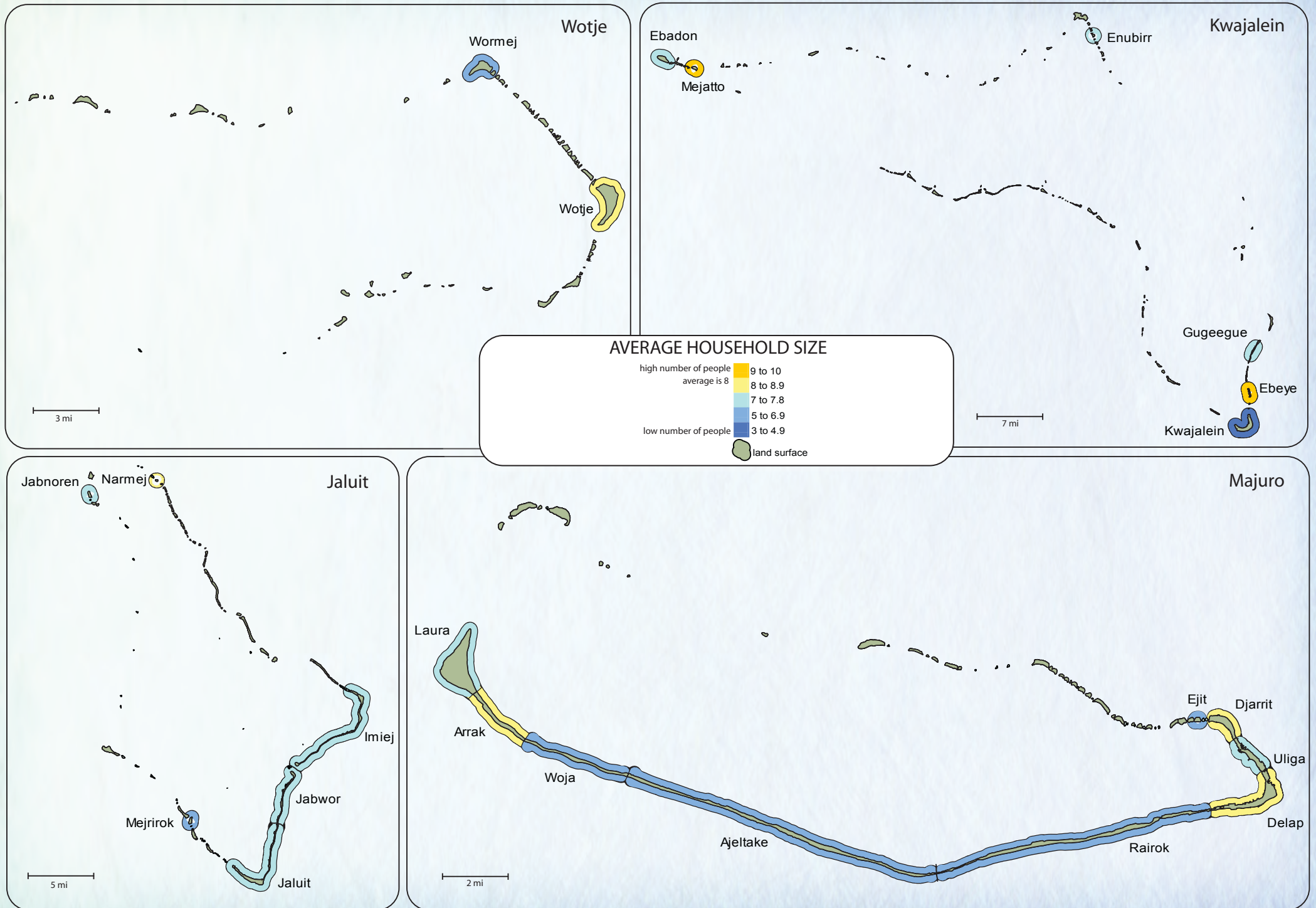
Uncontrolled disposal of household waste, such as kitchen waste, can have severe environmental consequences as many wastes are not biodegradable. Household methods of disposal of kitchen waste in RMI were grouped into five categories: burning, composting, collected by truck (garbage truck or own vehicle), dumped or buried, and all others. The most common method of disposing of kitchen waste was to have it collected by a truck, with 46% of households indicating that their kitchen waste was disposed of in this fashion; however, this figure accounted only for Majuro, Kwajalein and Kili. Other atolls predominantly used one of two methods. Arno, Mili, Namdrik, Ailuk and Ailinglaplap predominantly composted or buried their waste in individual pits, while Utirik, Wothe, Likiep, Wotje and Namu burned much of their kitchen waste. Aur, Ebon and Enewetak had large numbers of households using another, unstated method.



Map 26 – Average household size, by atoll, RMI 1999

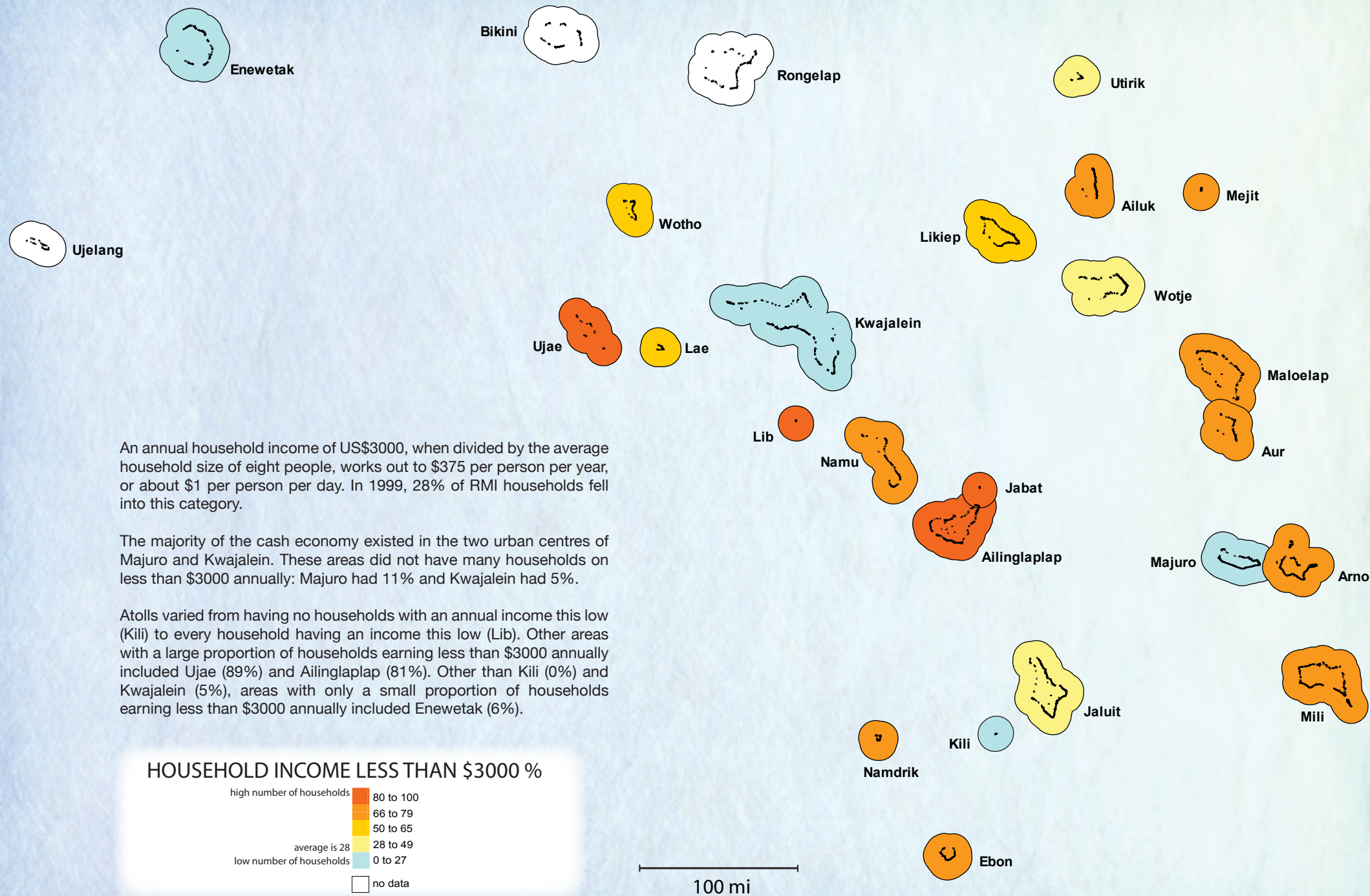


Map 27 – Average household size, by islet, RMI 1999

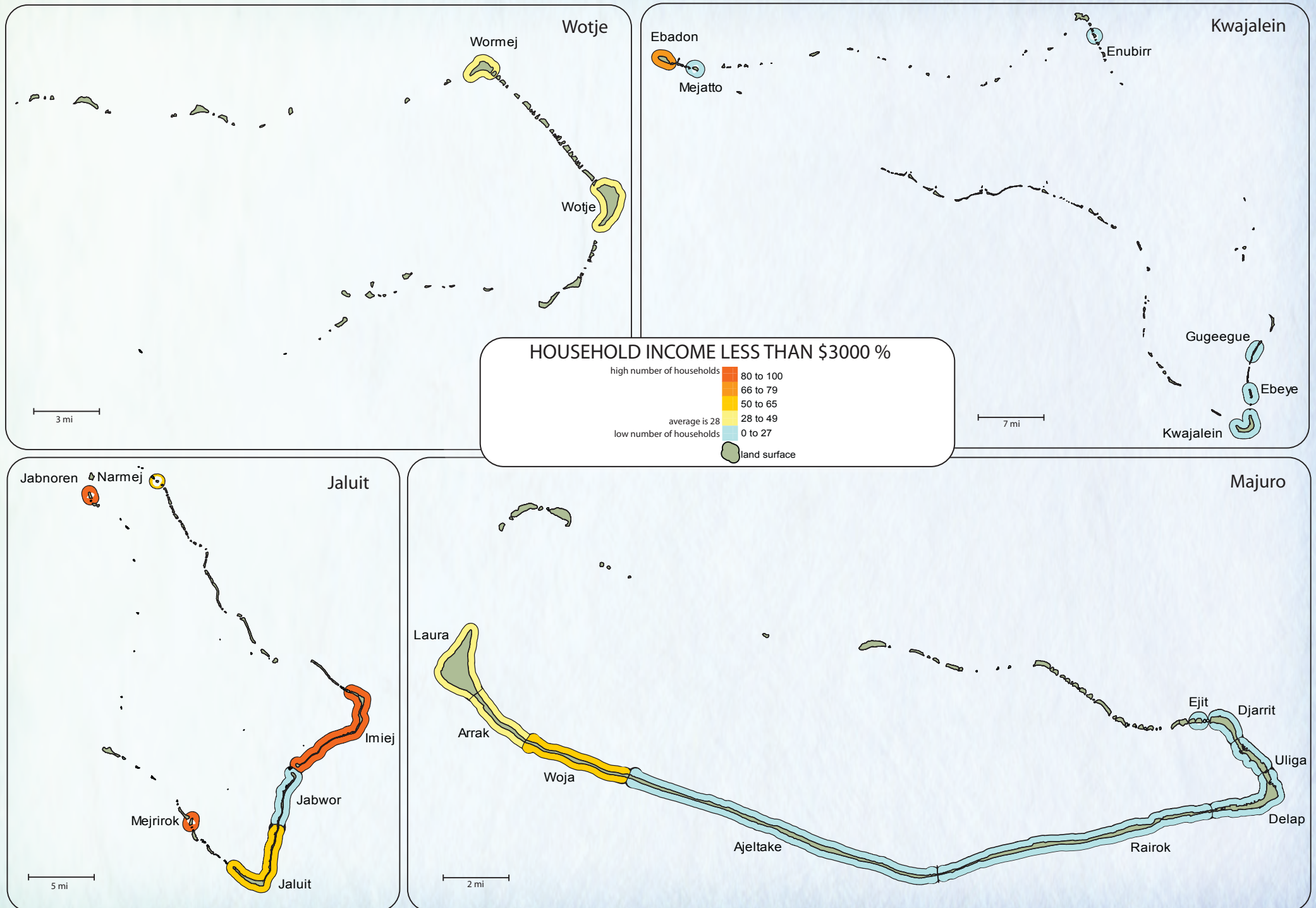


Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

Map 28 – Household income less than \$3000 per annum, by atoll, RMI 1999

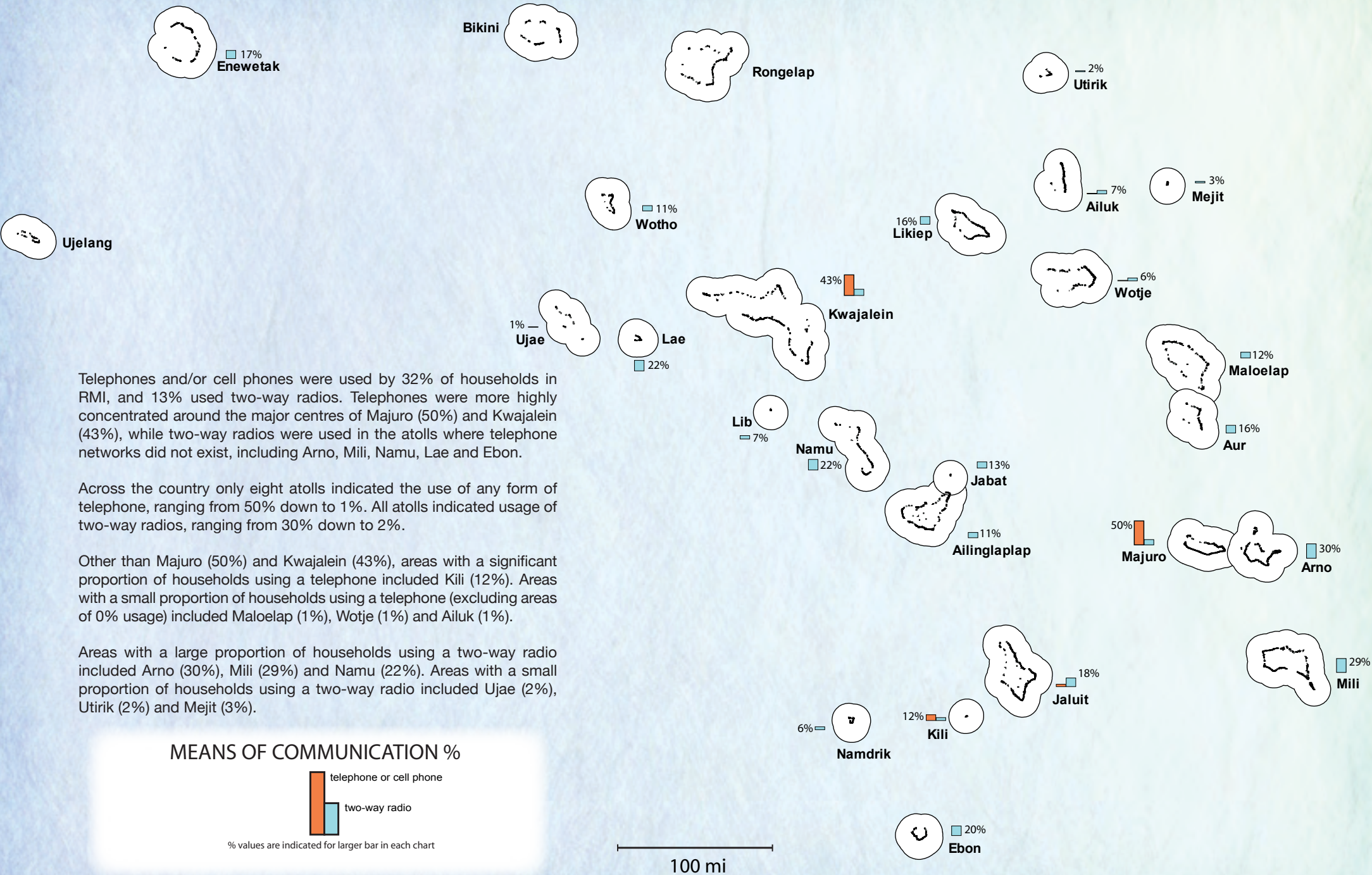


Map 29 – Household income less than \$3000 per annum, by islet, RMI 1999



Disclaimer: Map created with 1999 RMI Population and Housing Census data. Geographic boundaries are not exact legal land/territorial boundaries.

Map 30 – Means of communication, by atoll, RMI 1999

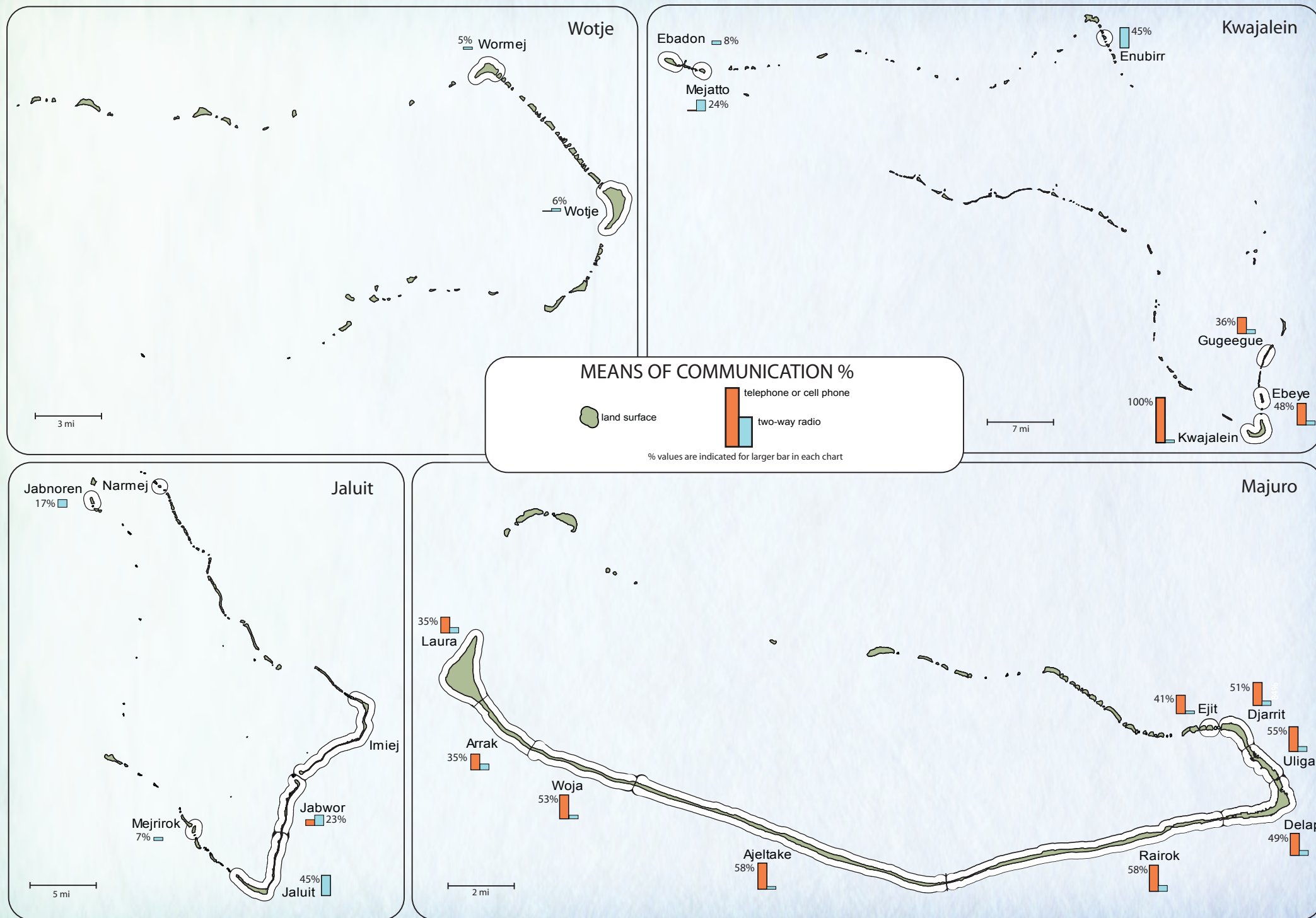


Telephones and/or cell phones were used by 32% of households in RMI, and 13% used two-way radios. Telephones were more highly concentrated around the major centres of Majuro (50%) and Kwajalein (43%), while two-way radios were used in the atolls where telephone networks did not exist, including Arno, Mili, Namu, Lae and Ebon.

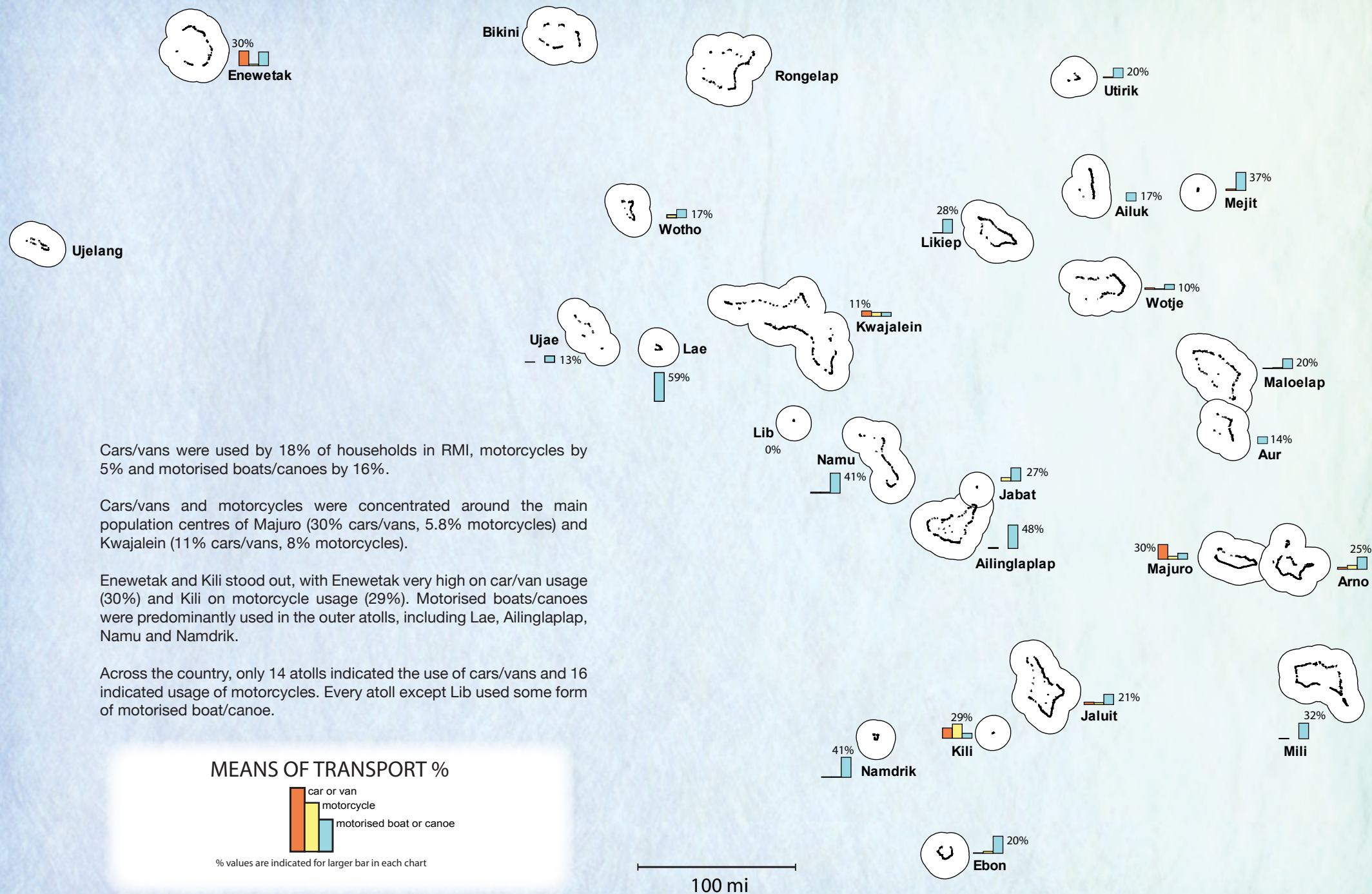
Across the country only eight atolls indicated the use of any form of telephone, ranging from 50% down to 1%. All atolls indicated usage of two-way radios, ranging from 30% down to 2%.

Other than Majuro (50%) and Kwajalein (43%), areas with a significant proportion of households using a telephone included Kili (12%). Areas with a small proportion of households using a telephone (excluding areas of 0% usage) included Maloelap (1%), Wotje (1%) and Ailuk (1%).

Areas with a large proportion of households using a two-way radio included Arno (30%), Mili (29%) and Namu (22%). Areas with a small proportion of households using a two-way radio included Ujae (2%), Utirik (2%) and Mejit (3%).



Map 32 – Means of transport, by atoll, RMI 1999

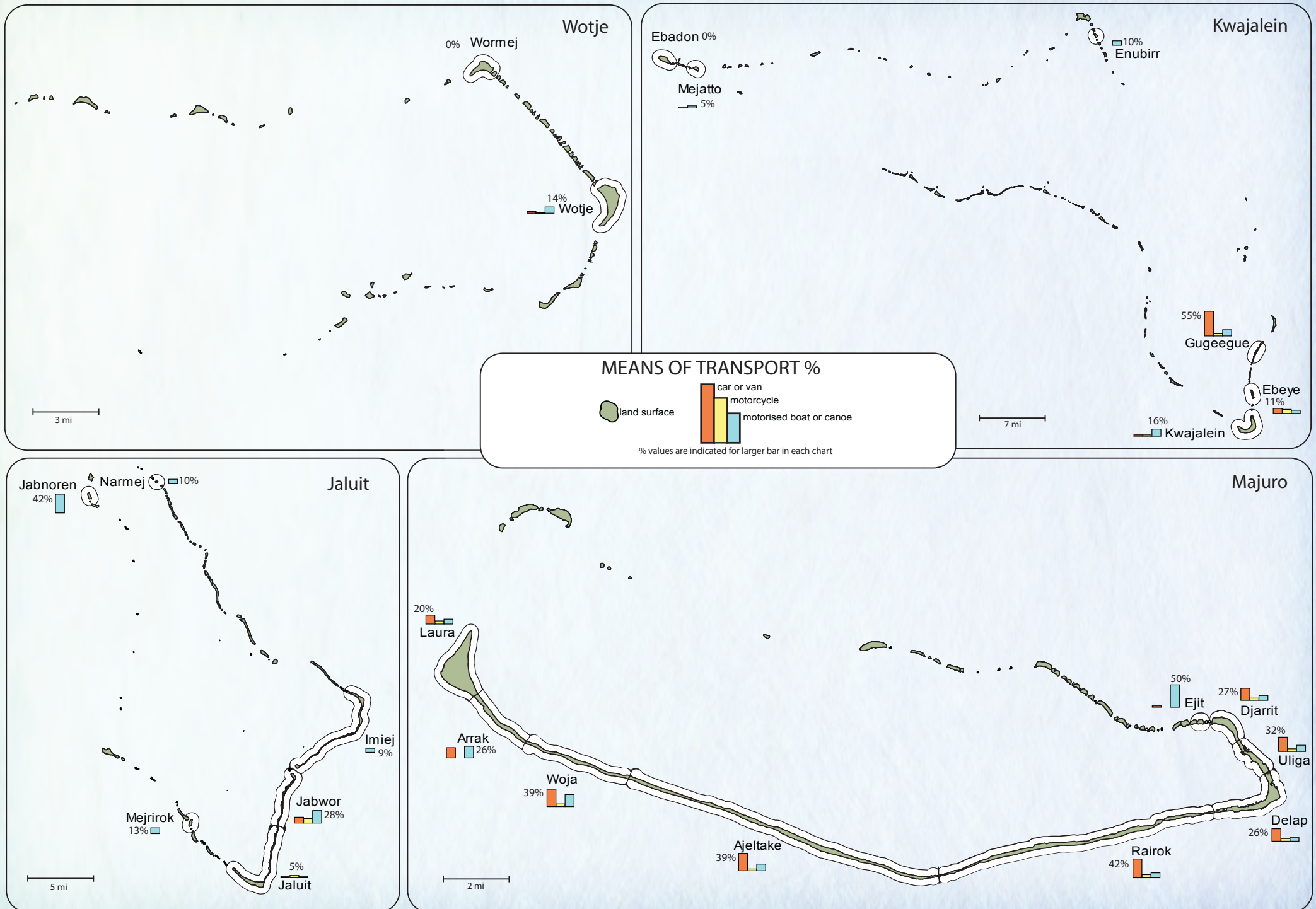


Cars/vans were used by 18% of households in RMI, motorcycles by 5% and motorised boats/canoes by 16%.

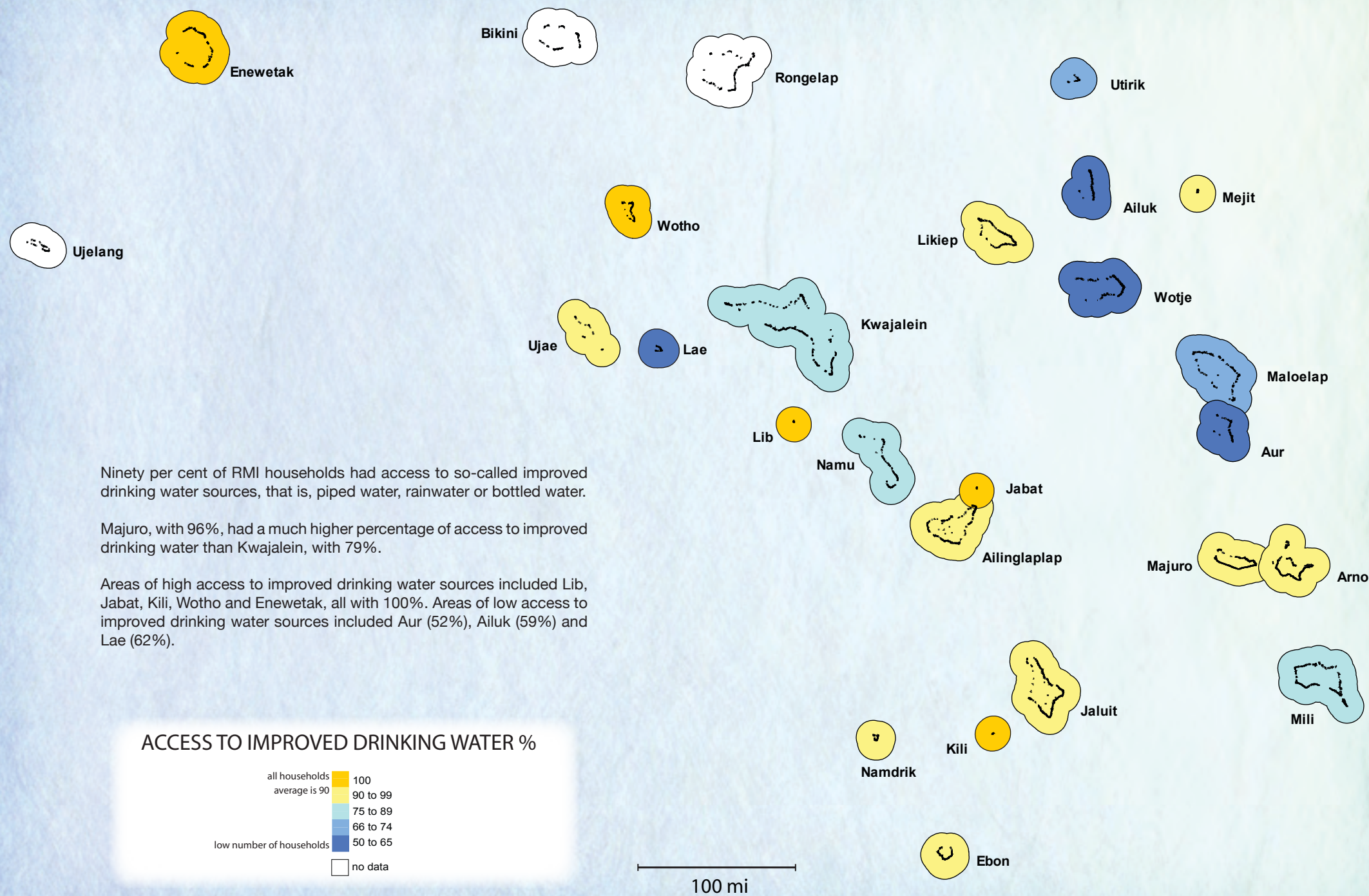
Cars/vans and motorcycles were concentrated around the main population centres of Majuro (30% cars/vans, 5.8% motorcycles) and Kwajalein (11% cars/vans, 8% motorcycles).

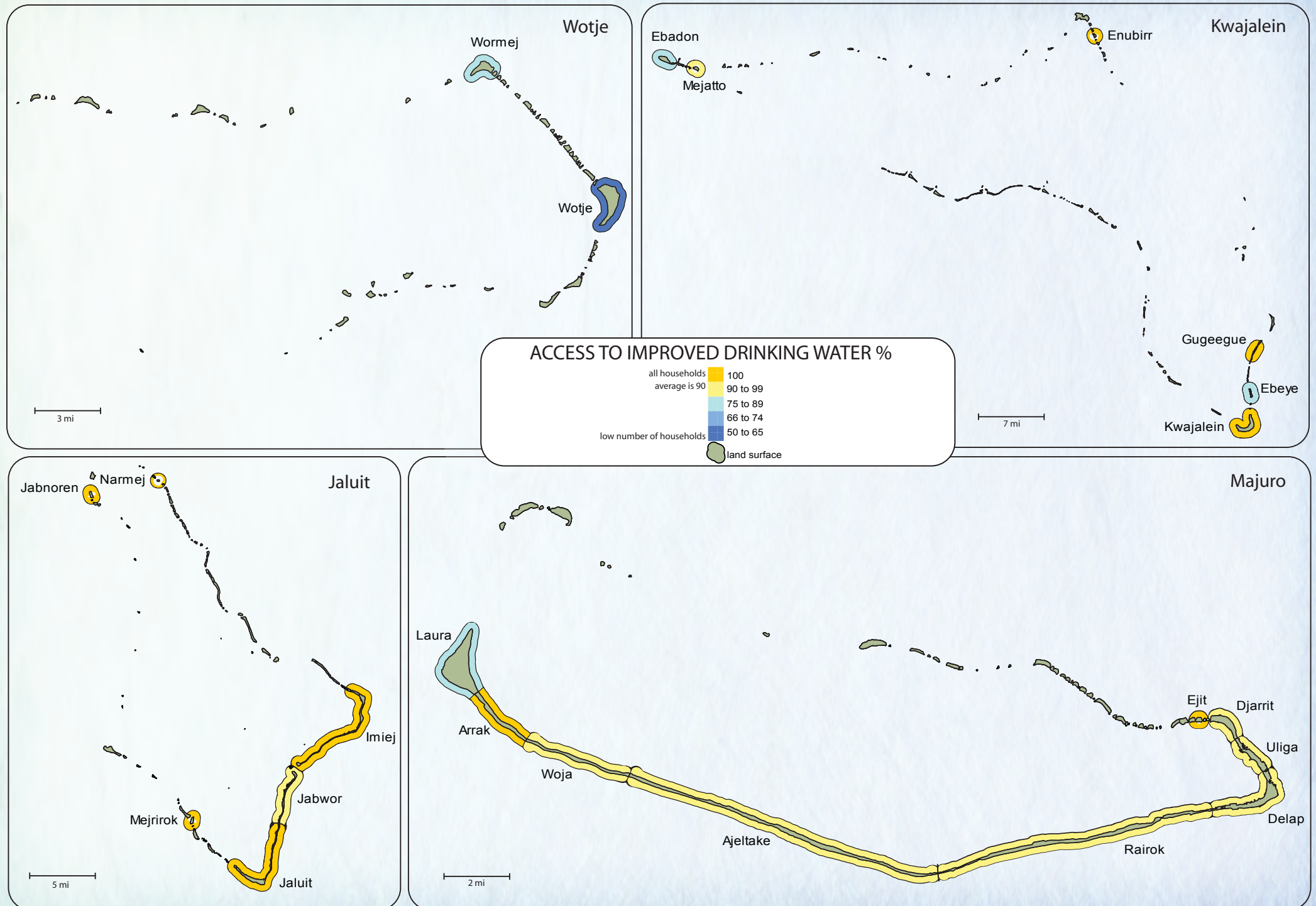
Enewetak and Kili stood out, with Enewetak very high on car/van usage (30%) and Kili on motorcycle usage (29%). Motorised boats/canoes were predominantly used in the outer atolls, including Lae, Ailinglaplap, Namu and Namdrik.

Across the country, only 14 atolls indicated the use of cars/vans and 16 indicated usage of motorcycles. Every atoll except Lib used some form of motorised boat/canoe.

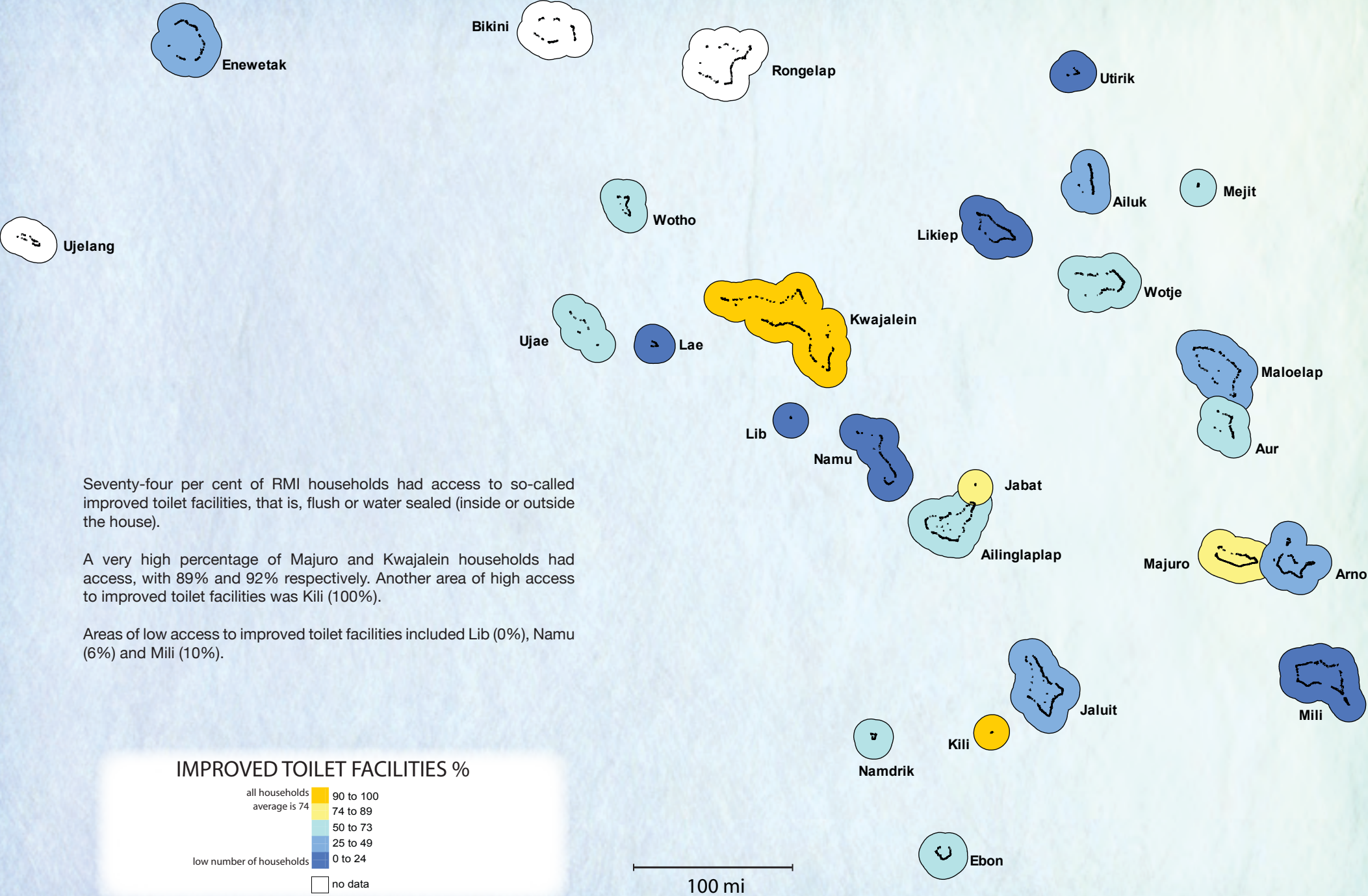


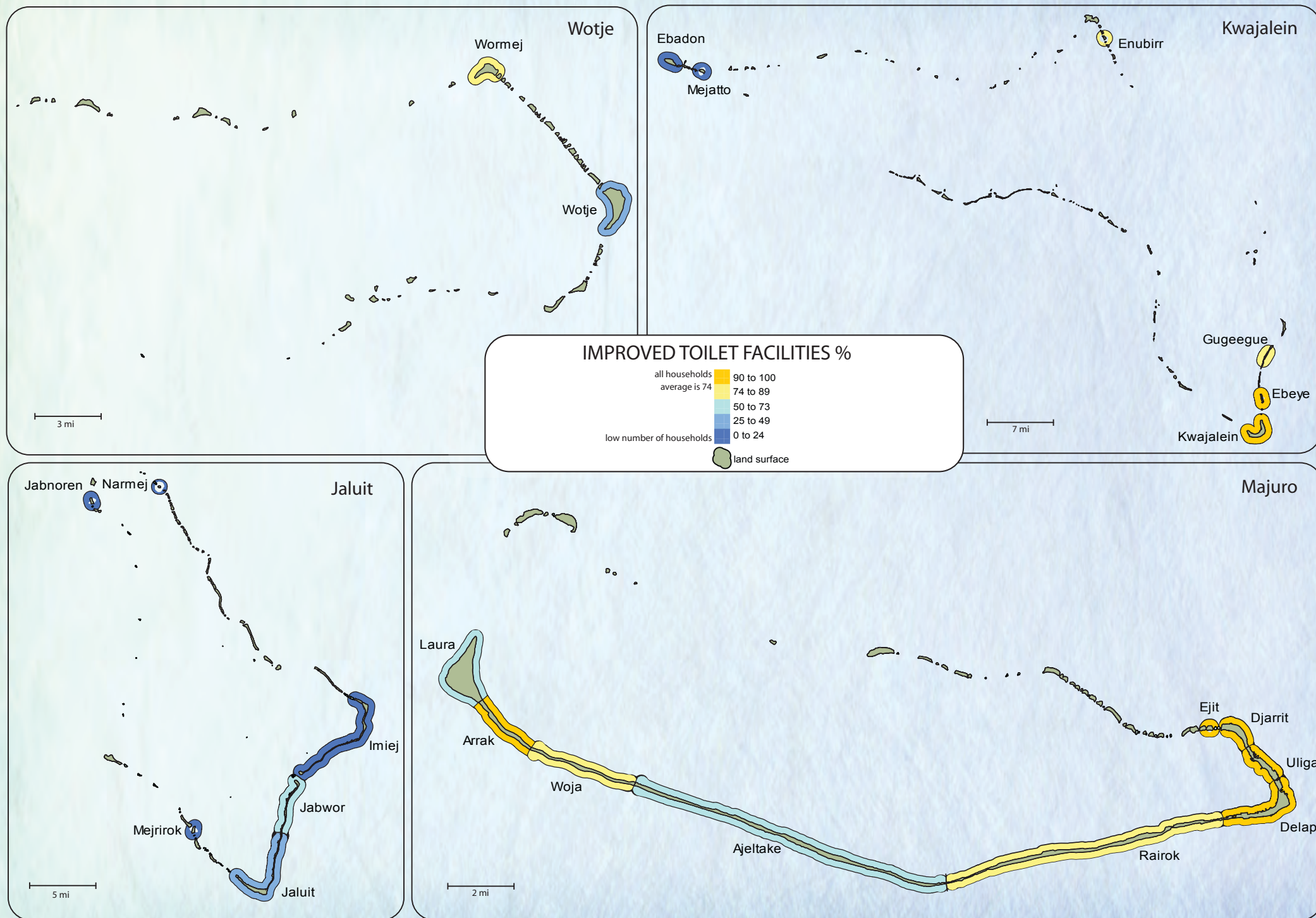
Map 34 – Access to improved drinking water, by atoll, RMI 1999



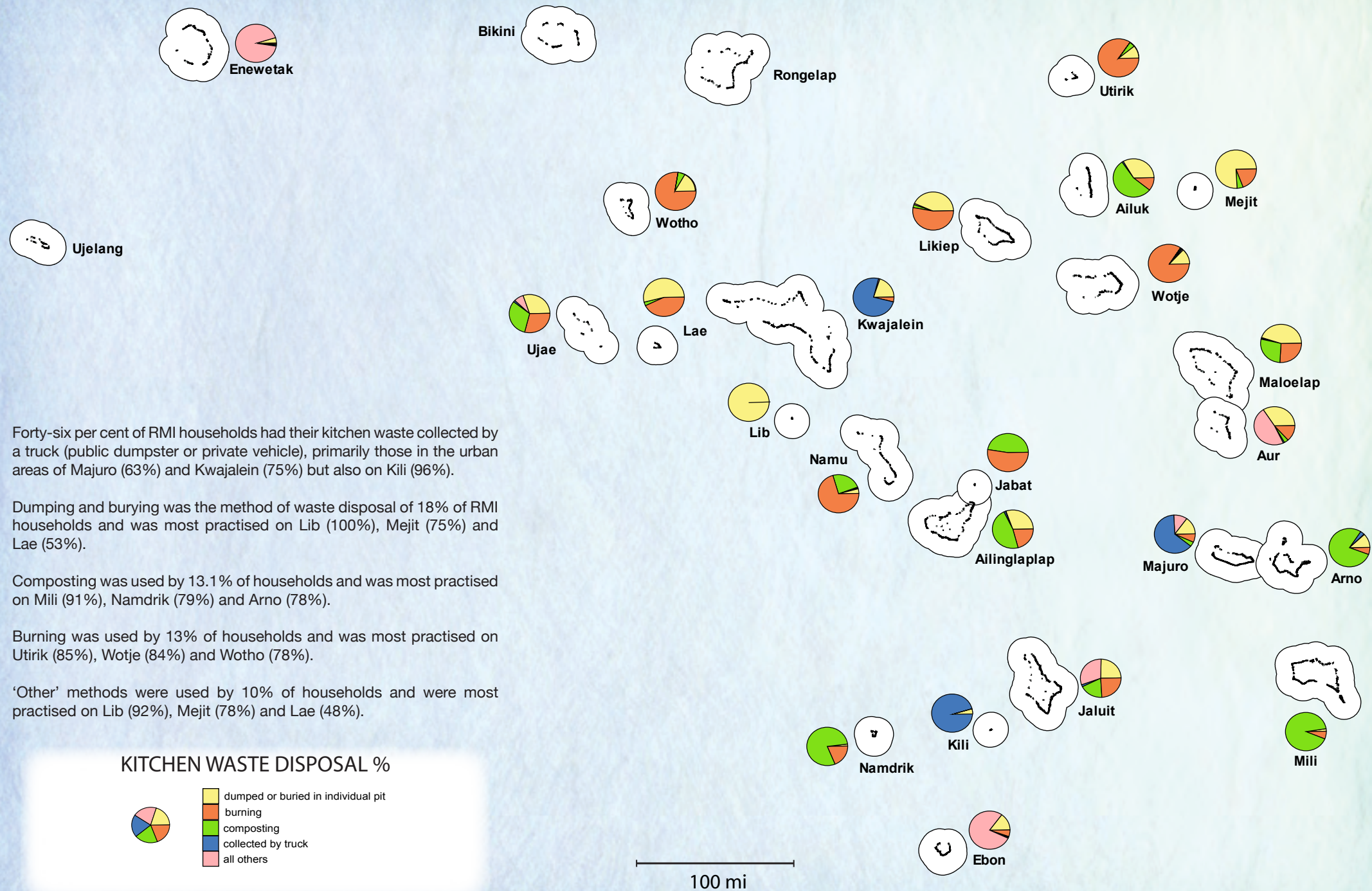


Map 36 – Access to improved toilet facilities, by atoll, RMI 1999





Map 38 – Kitchen waste disposal method, by atoll, RMI 1999



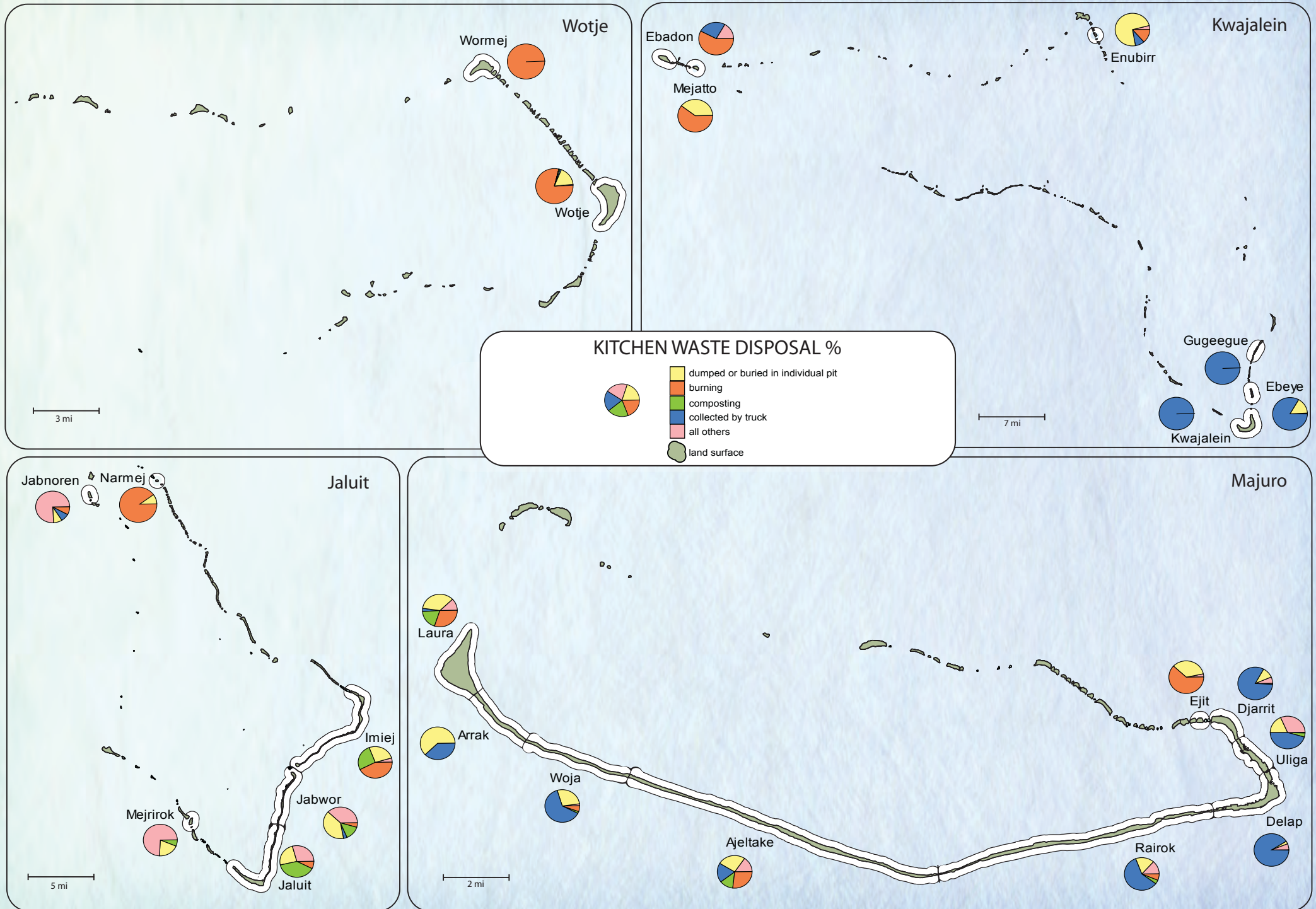
Forty-six per cent of RMI households had their kitchen waste collected by a truck (public dumpster or private vehicle), primarily those in the urban areas of Majuro (63%) and Kwajalein (75%) but also on Kili (96%).

Dumping and burying was the method of waste disposal of 18% of RMI households and was most practised on Lib (100%), Mejit (75%) and Lae (53%).

Composting was used by 13.1% of households and was most practised on Mili (91%), Namdrik (79%) and Arno (78%).

Burning was used by 13% of households and was most practised on Utiirik (85%), Wotje (84%) and Wotho (78%).

‘Other’ methods were used by 10% of households and were most practised on Lib (92%), Mejit (78%) and Lae (48%).



V. Community Survey

The 2006 RMI Community Survey and Socio-economic Analysis (CSSA) was carried out as the first of a series of multi-atoll baseline surveys. The primary objectives were to update and expand population and housing data and to develop detailed, comprehensive socio-economic analyses of different communities around RMI. The initiative was inspired by a pilot community survey conducted in Jenrok Village in Majuro Atoll. The Jenrok survey, funded by the International Waters Project of the South Pacific, exposed a number of startling new findings relating to health, education, poverty, environment, access to basic services, and overall quality-of-life issues. It clearly illustrated that whereas overall social and economic data collection and analysis had improved somewhat in recent years (commensurate with the establishment of RMI's Economic Policy, Planning and Statistics Office (EPPSO) and the strengthening of local data collection and analysis capabilities), more detailed community and household-level data were needed.

The CSSA was a collaborative approach with EPPSO staff, local consultants, and staff from a number of government and non-government entities. RMI had steadily improved its on-island social and economic analysis skills and the CSSA was able to build on this momentum, giving the Marshallese a real-life opportunity to undertake social and economic analysis.

The CSSA was premised on three underlying and guiding beliefs:

1. **Targeting.** Development does not take place uniformly across different communities. Each community faces a vast array of circumstances that uniquely affect its development path. Development planning must therefore be targeted. However, targeted development can only be effective if it is underpinned by targeted data collection and analysis. The CSSA initiative would help improve local knowledge of the unique factors affecting development in different communities in RMI.
2. **Multi-disciplinary analysis.** Because many different factors affect development, a multi-disciplinary approach must be taken. Key to an effective economic development or poverty reduction strategy for any community are sound diagnoses and understanding of the major factors affecting development progress (positively or negatively) in that community. The CSSA would aim to carry out a multi-faceted diagnosis of these different factors in order to help policy-makers better assess ways forward.
3. **Pre-conditions to development.** The CSSA initiative was premised on the belief that RMI had to place as its number one policy priority the provision of the fundamental pre-conditions for development. These pre-conditions include access to basic education and health services, access to safe water and sanitation, adequate private household and public infrastructure, reliable transportation, and good governance. The CSSA would help RMI evaluate these pre-conditions in each of the areas it covered.

Although eight atolls were surveyed, only the four that were mapped in the rest of this atlas were shown as they are the most significant population centres (Majuro, Kwajalein, Wotje and Jaluit). Satellite images from Space Imaging Services (provided by RMI Environment Protection Authority) were used to inventory all structures on the four atolls. For Majuro, a 25% random sample of structures was made in order to meet a minimum residential household sample size of 20% (since some selected structures would be non-residential or vacant). On Ebeye, a 50% random sample was made to meet a 40% target sample, while for Wotje and Jaluit, the samples were 50% and 40% respectively.

A total of 1,205 households and 9,491 persons were covered in these communities (including the four atolls not mapped in this section). Rough sample sizes (using the 1999 census as the reference) ranged from 18% on Majuro to about 77% on Eniburr.

Area	1999 occupied HH	2006 survey	Sample size
Majuro	3029	544	18%
Ebeye	981	357	36%
Eniburr	78	60	77%
Jaluit	229	57	25%
Wotje	108	43	40%
Arno	244	80	33%
Ailuk	88	64	73%

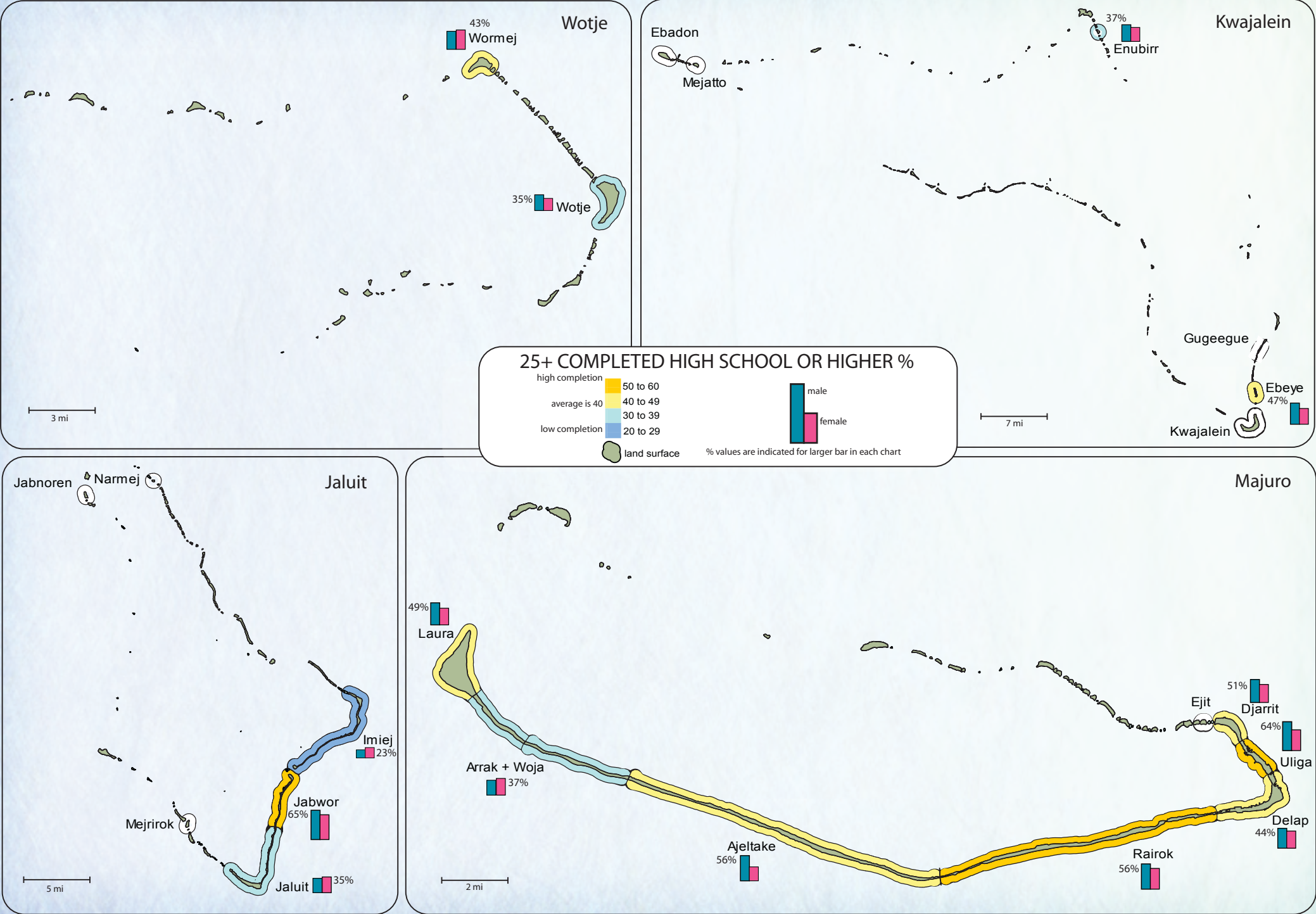
Assuming an estimated total RMI population in 2006 of around 57,000, the survey sample was equivalent to 17% of the population.

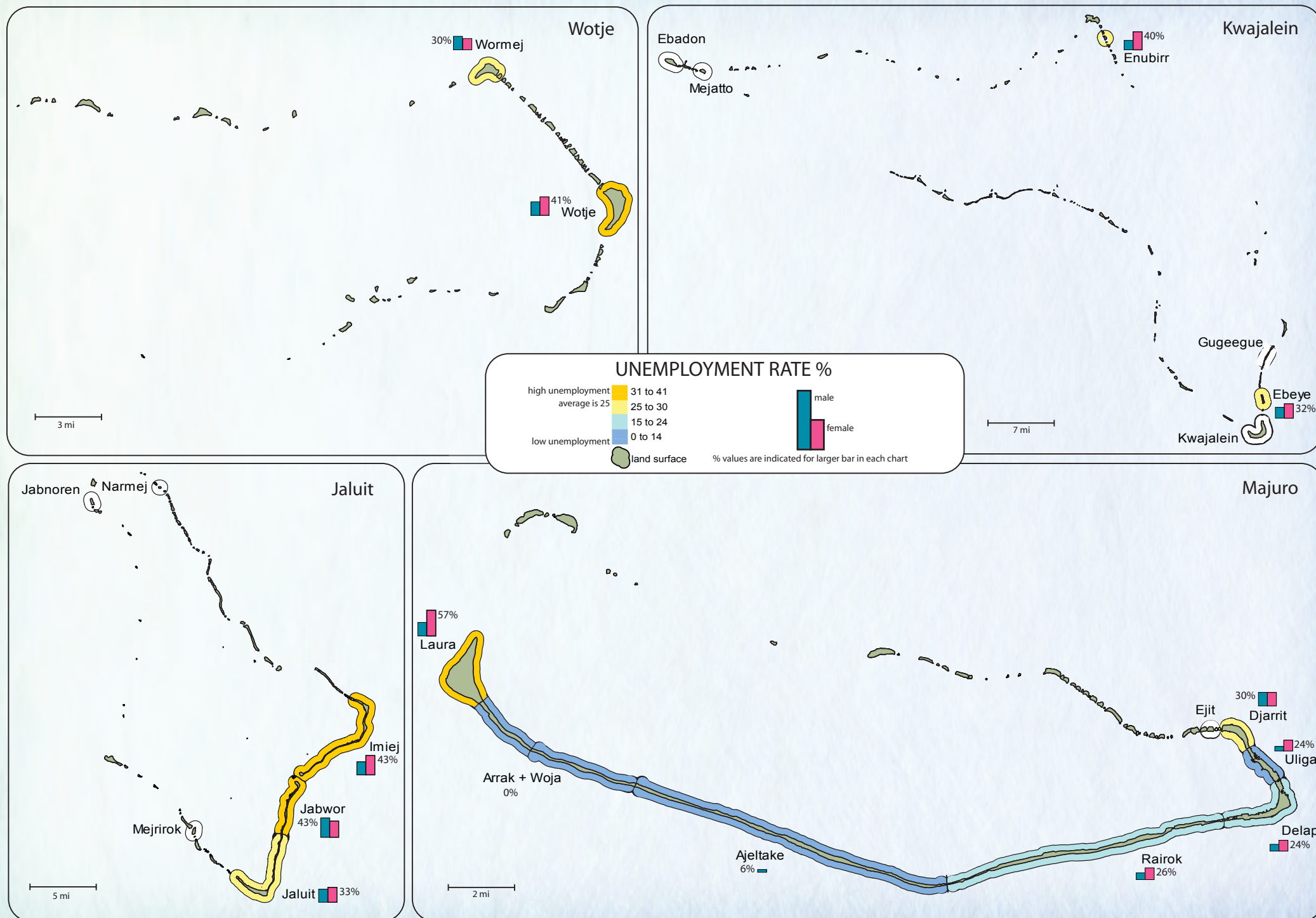
Some simple relative standard errors (RSEs) were calculated to check the reliability of the data. Population and household figures were projected from the 1999 census to the middle of 2006. Data relating to labour force, educational attainment, completed Grade 8 and higher and improved drinking water came up with fairly low errors. Data with smaller figures, such as immunisation and certain variables for kitchen waste disposal, had many more villages with elevated errors. Some of the smaller villages, such as Imiej and Wormej, also had relatively high errors across all mapped variables.

These maps should not be directly compared to those in the 1999 census. They have been included to give an idea of changes that may have occurred more recently in RMI.



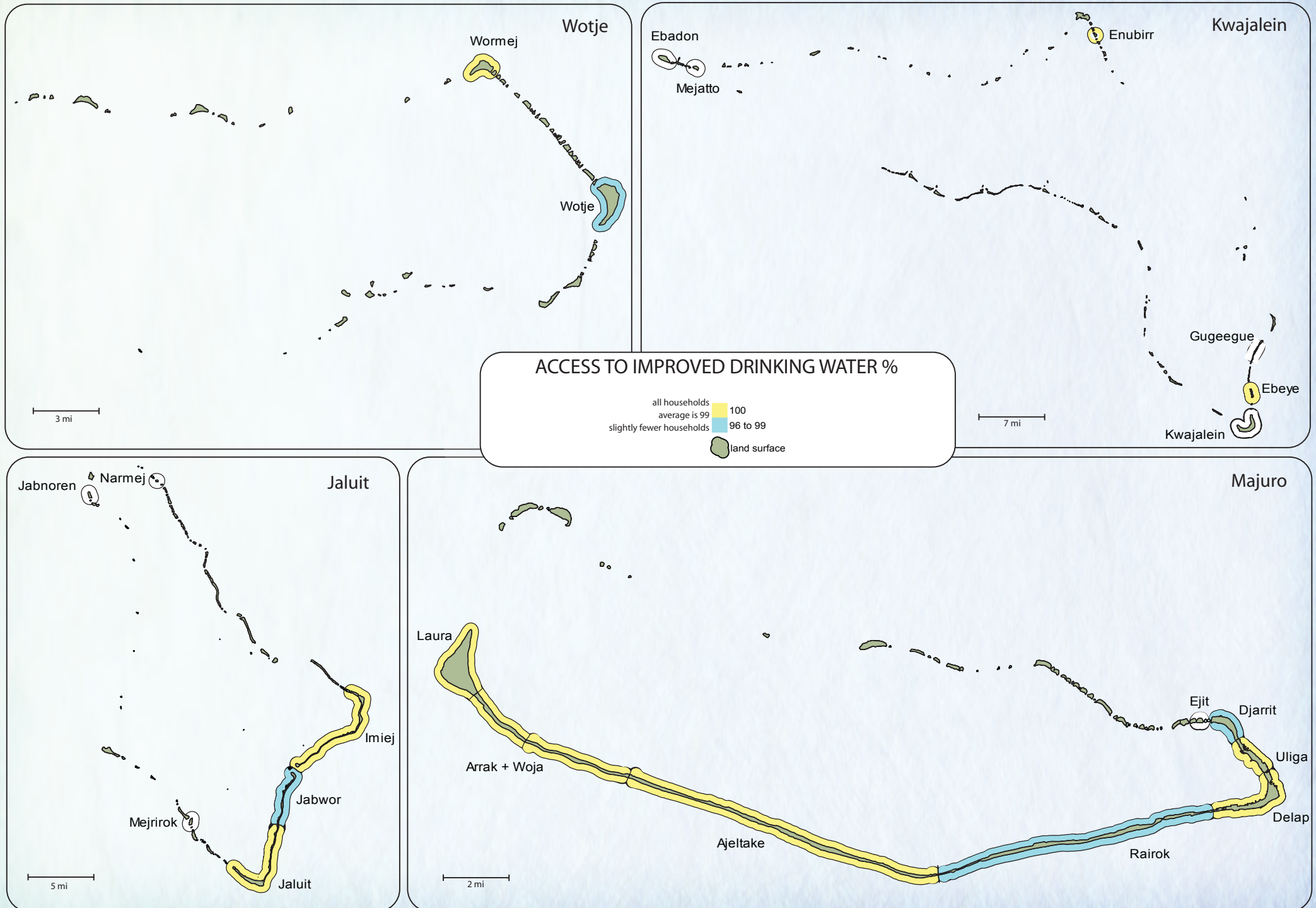
Map 40 – Population 25+ completed high school or higher, by islet, RMI 2006



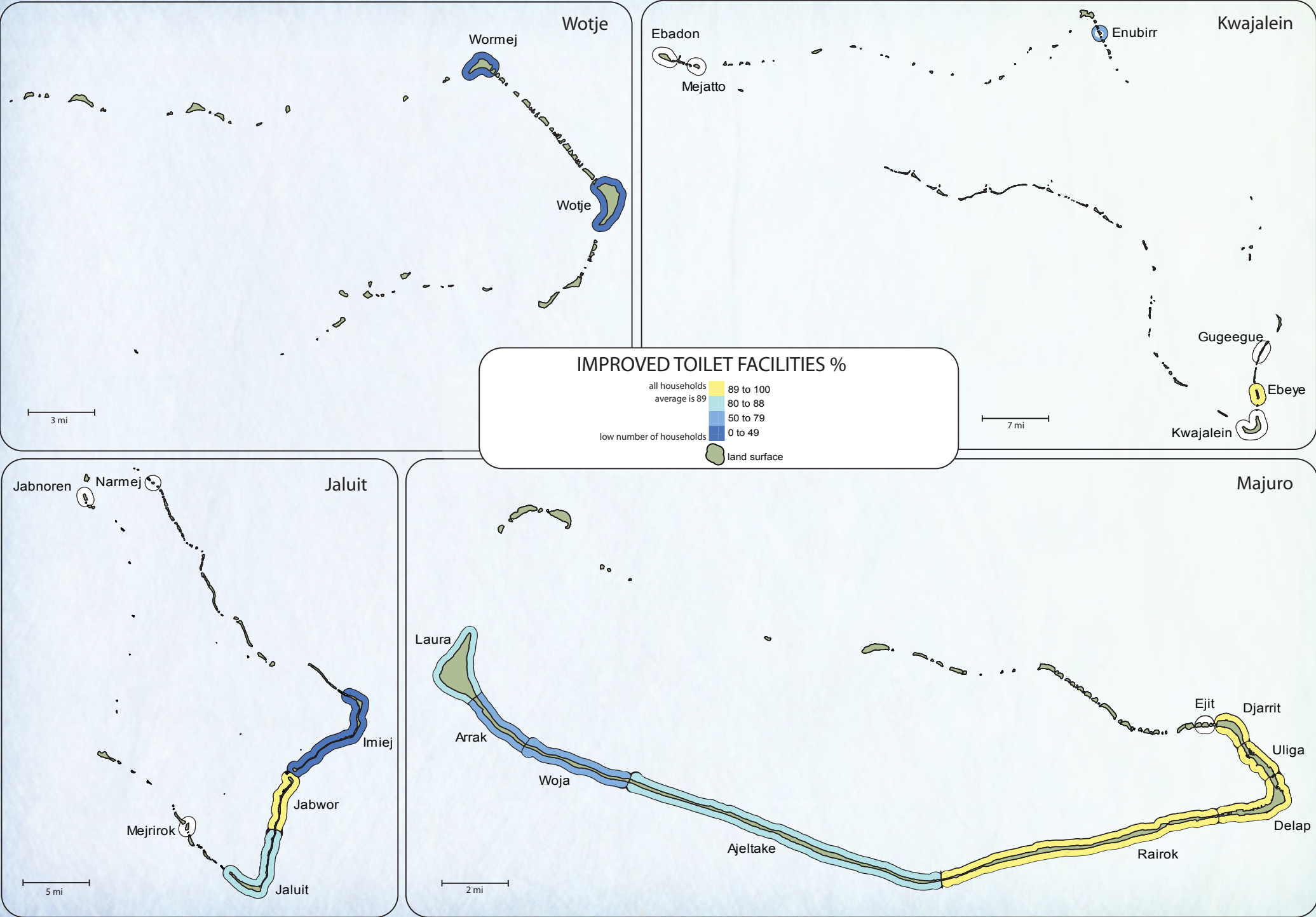


Map 42 – Labour force participation rate, by islet, RMI 2006

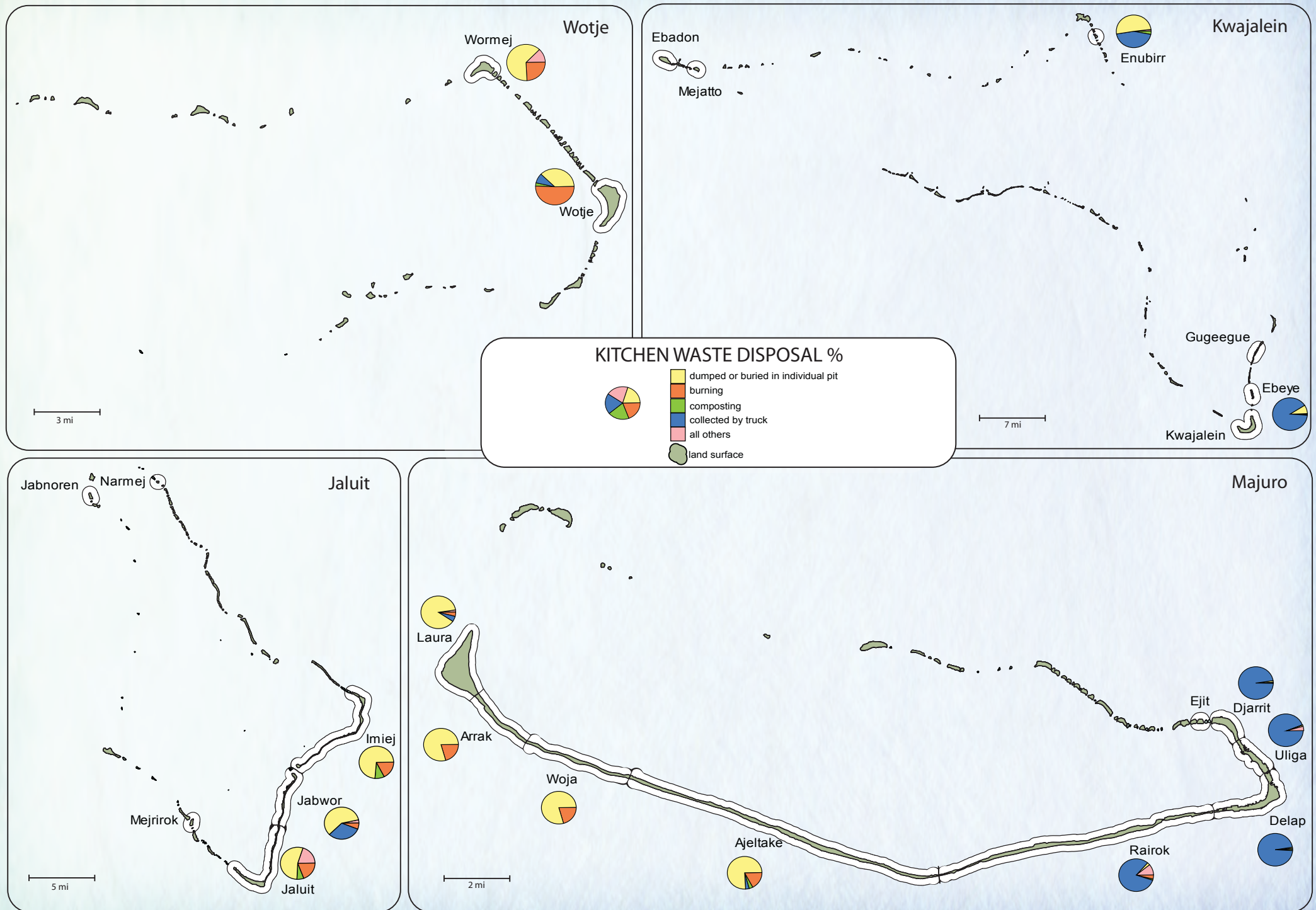




Map 44 – Access to improved toilet facilities, by islet, RMI 2006



Disclaimer: map created with 2006 RMI Community Survey data. Geographic boundaries are not exact legal land/territorial boundaries.



Map 46 – Population 2 years and under immunisation, by islet, RMI 2006

