

Chapter VI

6 Fertility, Mortality and Migration

6.1 Fertility

The age-sex composition of the population of the country is impacted greatly by its fertility and mortality, unless migration level is very high.

In 2001 Niue Census, two types of information on fertility were collected: lifetime fertility and current fertility. The number of children ever borne was asked for life time fertility. The date of birth of last child was asked to obtain the current fertility. These questions were asked for all women 15 years and above.

The number of children ever borne to a particular woman is an aggregate measure of her lifetime fertility experience up to the moment the data was collected. From this information, we obtain the average parity of the women by age groups.

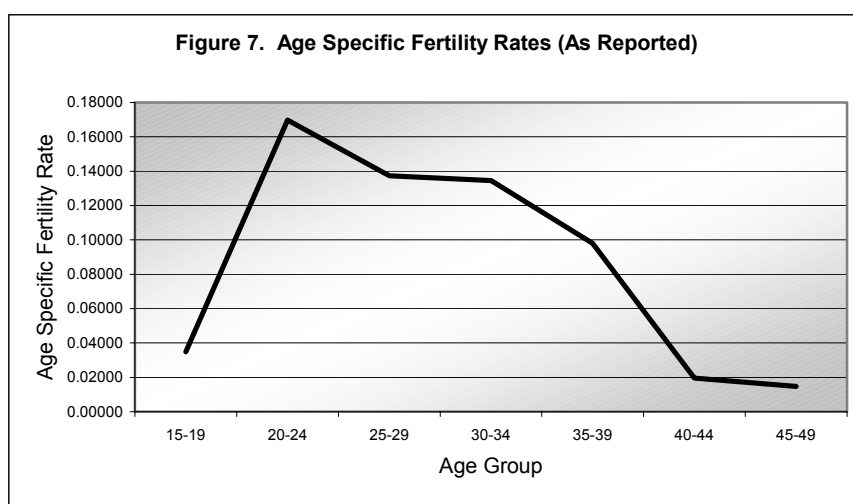
“Date of birth of last child” collected were converted to “births” in the 12 months preceding the census date. This indirect method to get the births was employed because the direct question on it might result in reporting errors from the misperception of the length of the reference period.

From this information, some direct measures of fertility were calculated and presented in Table A36 and illustrated in Figure 7.

Table A36. Estimated Fertility Rates from Lifetime and Current Data by Five Year Age Groups

<i>Age of Women</i>	<i>Lifetime Average Parity per Woman</i>	<i>Reported Current Fertility Rates</i>
15-19	0.0698	0.0349
20-24	0.4906	0.1698
25-29	1.3333	0.1373
30-34	2.1538	0.1346
35-39	3.3529	0.0980
40-44	3.6471	0.0196
45-49	3.7500	0.0147
<i>Total Fertility Rate</i>		<i>3.0446</i>
<i>MAC</i>		<i>31.2</i>

The Total Fertility Rate derived from the current fertility is 3.04. It is computed as the summation of age specific births rates for a reference period of time. As the age specific birth rates are presented in five year age group, their sum is multiplied by 5 on the ground that the rate per each age group represents an average rate for an interval of five years. The total fertility rate is conventionally expressed in the rate per woman. Thus, it shows the total number of children who would be borne to a woman while she passes through 35 years of childbearing age, with a given set of period fertility schedule. This rate is a convenient measure of period fertility by itself, but at the same time an important starting point of approach to the reproduction rate.



The principal measures of fertility which can be derived from the number of children ever borne are given below:

- (a) Gross Fertility Ratio 2.00
(Gross Fertility Ratio is the average number of children ever borne to women of childbearing age and above)
- (b) Completed Fertility Ratio 3.73
(Completed Fertility Ratio is the average number of children ever borne to women who had reached the end of the childbearing period (i.e. 50 years and above)
- (c) Proportion of childless women by the end of their reproductive span 0.29

- | | | |
|-----|---|------|
| (d) | Average number of children ever borne per woman who has already Borne at least one child | 3.38 |
| (e) | Net Fertility Ratio
(Net Fertility Ratio is average number of children surviving to women Of childbearing age and above) | 1.93 |

6.2 Mortality

Mortality indicators can be estimated using the information collected during the census by calculating the proportion of persons by sex and age group, who have survived until a certain age.

In the 2001 census the only question that related to mortality was the question on the number of children ever borne and still alive (Table 50). In general the proportion of children dead increases continuously by age of mother. This is not true in Niue because of very small size of the data.

6.2.1 Infant Mortality

A very small population with a single data set is not sufficient to calculate reliable infant mortality. Infant mortality rate (IMR) is the number of deaths at age less than one year in relation to every 1000 life births. It is calculated from registered births and deaths. There were 4 infant deaths compare to 136 life births which results in an average infant mortality rate IMR of 29.4 ($4/136 \times 1000$). The IMR of 294 and is very high compare to 1997 census with IMR 175 per 1000 life births.

6.2.2 Life Expectancy

Expectation of life at birth is an average number of years that a member of “cohort” of births would be expected to live if the cohort were subject to the mortality conditions express by a particular set of “age-specific mortality rate.” (Manual X, Indirect technique for Demographic Estimation).

Life expectancy at birth for Niue for sexes, males and females are 70.1 years, 69.8 years and 71.2 years respectively. An abridge life table for both sexes, males and females are presented in Table A37.

Life table functions are as follows:

- ${}_n m_x$ recorded age specific death rate
- ${}_n m_x = \frac{{}_n d_x}{P_x}$ where, ${}_n m_x =$ the mean death rate for the age interval x for 5 years
- ${}_n d_x =$ the number of deaths occurred in the age interval x during the year, and
- $P_x =$ the population in the age interval x in the middle of the year
- ${}_n q_x$ probability of dying for the age interval x
- ${}_n q_x = \frac{{}_n^* m_x}{2 + {}_n^* m_x}$ the number of survivors at exact age x originated from the “radix” of 100,000 at the beginning
- ${}_n d_x = l_x * {}_n q_x$
- ${}_n d_x = l_{x+n}$
- ${}_n L_x$ the number of years lived in an age interval
- $L_0 = (0.3 * l_0) + (0.7 * l_1)$, ${}_4 L_1 = (1.9 * l_0) + (2.1 * l_1)$, ${}_5 L_x = 5 * (l_x + l_{x+n}) / 2$
- ${}_{\infty} L_x = l_x / {}_{\infty} m_x$
- T_x the total number of years to be lived after exact age x
- $T_x = \sum {}_n L_x$ for the age interval and all subsequent intervals
- $e_x^0 = T_x / l_x$ expectation of life (or) an average length of life expectancy at exact age x

Table A37 Abridge Life Table

X Age	deaths	${}_n m_x$	${}_n q_x$	${}_n l_x$	${}_n d_x$	${}_n L_x$	T_x	e^0_x
Males								
0	1	0.06667	0.06452	100000	6452	95484	6975822	69.76
1	0	0.00000	0.00000	93548	0	374194	6880338	73.55
5	0	0.00000	0.00000	93548	0	467742	6506144	69.55
10	0	0.00000	0.00000	93548	0	467742	6038402	64.55
15	0	0.00000	0.00000	93548	0	467742	5570660	59.55
20	0	0.00000	0.00000	93548	0	467742	5102919	54.55
25	0	0.00000	0.00000	93548	0	467742	4635177	49.55
30	0	0.00000	0.00000	93548	0	467742	4167435	44.55
35	0	0.00000	0.00000	93548	0	467742	3699693	39.55
40	0	0.00000	0.00000	93548	0	467742	3231951	34.55
45	0	0.00000	0.00000	93548	0	467742	2764209	29.55
50	0	0.00000	0.00000	93548	0	467742	2296467	24.55
55	0	0.00000	0.00000	93548	0	467742	1828725	19.55
60	1	0.02273	0.10753	93548	10059	442595	1360983	14.55
65	0	0.00000	0.00000	83489	0	417447	918389	11.00
70	0	0.00000	0.00000	83489	0	417447	500941	6.00
75	0	0.00000	1.00000	83489	92792	83494	83494	1.00
Females								
0	1	0.04762	0.04651	100000	4651	96744	7122940	71.23
1	0	0.00000	0.00000	95349	0	381395	7026196	73.69
5	0	0.00000	0.00000	95349	0	476744	6644801	69.69
10	0	0.00000	0.00000	95349	0	476744	6168056	64.69
15	0	0.00000	0.00000	95349	0	476744	5691312	59.69
20	0	0.00000	0.00000	95349	0	476744	5214568	54.69
25	0	0.00000	0.00000	95349	0	476744	4737824	49.69
30	0	0.00000	0.00000	95349	0	476744	4261080	44.69
35	0	0.00000	0.00000	95349	0	476744	3784335	39.69
40	0	0.00000	0.00000	95349	0	476744	3307591	34.69
45	0	0.00000	0.00000	95349	0	476744	2830847	29.69
50	0	0.00000	0.00000	95349	0	476744	2354103	24.69
55	0	0.00000	0.00000	95349	0	476744	1877359	19.69
60	1	0.02041	0.09709	95349	9257	453601	1400615	14.69
65	0	0.00000	0.00000	86092	0	430458	947013	11.00
70	0	0.00000	0.00000	86092	0	430458	516555	6.00
75	0	0.00000	1.00000	86092	92792	86097	86097	1.00
Both Sexes								
0	2	0.05556	0.05405	100000	5405	96216	7013926	70.14
1	0	0.00000	0.00000	94595	0	378378	6917709	73.13
5	0	0.00000	0.00000	94595	0	472973	6539331	69.13
10	0	0.00000	0.00000	94595	0	472973	6066358	64.13
15	0	0.00000	0.00000	94595	0	472973	5593385	59.13
20	0	0.00000	0.00000	94595	0	472973	5120412	54.13
25	0	0.00000	0.00000	94595	0	472973	4647439	49.13
30	0	0.00000	0.00000	94595	0	472973	4174466	44.13
35	0	0.00000	0.00000	94595	0	472973	3701493	39.13
40	0	0.00000	0.00000	94595	0	472973	3228520	34.13
45	0	0.00000	0.00000	94595	0	472973	2755547	29.13
50	0	0.00000	0.00000	94595	0	472973	2282574	24.13
55	0	0.00000	0.00000	94595	0	472973	1809601	19.13
60	2	0.02151	0.10204	94595	9653	448842	1336628	14.13
65	1	0.01333	0.06452	84942	5480	411010	887787	10.45
70	0	0.00000	0.00000	79462	0	397310	476777	6.00
75	3	0.05455	1.00000	79462	92792	79467	79467	1.00

6.3. Migration

The crude net migration rate can be obtained by applying the corresponding rates in the inter-censal period to the balancing equation as follows:

$$\text{Population Growth}_{1997-2001} = \text{CBR} - \text{CDR} + \text{Net Migrants}$$

Therefore

$$\begin{aligned} \text{Net Migrants} &= \text{Population Growth}_{1997-2001} - \text{CBR} + \text{CDR} \\ &= -38 - 18.5 + 7.8 \\ &= -48.7 \end{aligned}$$

(Births, deaths, net-migration and overall population change between 1997-2001 ie. Inter-censal period) is presented in Table A38.

Table A38. Births, deaths, net-migrants and overall population change between 1997-2001

	<i>Total Number (inter-censal period 1997-2001)</i>	<i>Average Annual Number (inter-censal period 1997-2001)</i>
<i>Births</i>	116	29.0
<i>Deaths</i>	63	15.8
<i>Net Migration</i>	-353	-88.25
<i>Overall Change</i>	-300	-75

6.3.1 Population Movement during Inter-censal Period

Of the population 15 years and above, 931 persons were estimated not to be moving anywhere in the intercensal period (ie: 1997-2001). Sixty seven (67) persons were found to have moved between villages. Among these 67 persons, about one third of them moved from other villages to Alofi South. Similarly, 206 persons moved into Niue from overseas during intercensal period. And about one third of them were residing in Alofi South. The population distribution by place of residence in 1997, Gender and Place of Enumeration are presented in Table A39. The details of movement between villages and from overseas are shown in Table 43(Part II).

Table A39. Population Distribution by Place of Residence in 1997, Gender and Place of Enumeration

Place of Residence (in 1997)	Place of Enumeration														Total
	Makefu	Tuapa	Nam akulu	Hikuta vake	toi	Mutalau	Lakepa	Liku	Hakupu	Vaiea	Avatele	Tamak autoga	Alofi south	Alofi North	
<i>Total</i>	63	93	12	43	25	96	66	49	138	40	88	91	244	160	1208
<i>This Village</i>	45	81	6	40	22	72	57	43	117	20	68	85	149	126	931
<i>Other Villages</i>	6	2	4	2	1	4	3	0	4	2	7	3	24	5	67
<i>Overseas</i>	11	10	2	1	1	19	5	6	17	18	13	3	71	29	206
<i>Not Stated</i>	1	0	0	0	1	1	1	0	0	0	0	0	0	0	4
<i>Males</i>	35	43	7	18	13	46	34	25	67	27	40	43	124	74	596
<i>This Village</i>	24	36	3	18	12	33	29	20	57	13	31	42	81	60	459
<i>Other Villages</i>	3	1	2	0	0	3	2	0	3	1	3	0	11	1	30
<i>Overseas</i>	7	6	2	0	0	10	3	5	7	13	6	1	32	13	105
<i>Not Stated</i>	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
<i>Females</i>	28	50	5	25	12	50	32	24	71	13	48	48	120	86	612
<i>This Village</i>	21	45	3	22	10	39	28	23	60	7	37	43	68	66	472
<i>Other Villages</i>	3	1	2	2	1	1	1	0	1	1	4	3	13	4	37
<i>Overseas</i>	4	4	0	1	1	9	2	1	10	5	7	2	39	16	101
<i>Not Stated</i>	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2

6.3.2 Preference of Living

Among Population 15 years and above, more than half of them would prefer to live in their own villages in the year 2006. More than one sixth of them prefer to live in Australia, while only 76 persons preferred to live in New Zealand.

Of the male population 15 years and above, more than three fifth preferred to live in their own villages in the year 2006, while nearly one fifth preferred to live in Australia and only 53 males 15 years and above were prefer to live in New Zealand in the year 2006.

Among female population, more than half of them would prefer to live in their own village in the year 2006. More than one sixth preferred to live in Australia in the year 2006 and

only 33 females preferred to live in New Zealand. Population Distribution by Preference of living in the year 2006 is presented in Table A40.

Table A40. Population Distribution by Preference of living in the year 2006

Preference of Living	Total	Male	Female
Total	1208	596	612
<i>This Village</i>	739	362	377
<i>New Zealand</i>	76	43	33
<i>Australia</i>	231	113	118
<i>Fiji</i>	18	12	6
<i>Tonga</i>	3	2	1
<i>Don't Know</i>	125	57	68
<i>Other Pacific</i>	2	1	1
<i>Other North American countries</i>	1	0	1
<i>United Kingdom</i>	1	0	1
<i>Japan</i>	1	0	1
<i>Not Stated</i>	11	6	5