

**THE 1987/88 NATIONAL NUTRITION SURVEY OF THE
FEDERATED STATES OF MICRONESIA**

**TECHNICAL REPORT PREPARED FOR THE GOVERNMENT
AND OF THE DEPARTMENT OF HUMAN RESOURCES
FEDERATED STATES OF MICRONESIA**

SPC Library



34303

Bibliothèque CPS

March 1989

LIBRARY
SECRETARIAT OF THE
PACIFIC COMMUNITY

Loan no. 26832(B)

23 JUN 1998

SPC 611.112 966
ELY
1989
COPY B

**THE 1987/88 NATIONAL NUTRITION SURVEY OF THE
FEDERATED STATES OF MICRONESIA**

**TECHNICAL REPORT PREPARED FOR THE GOVERNMENT AND DEPARTMENT OF
HUMAN RESOURCES OF THE
FEDERATED STATES OF MICRONESIA**

Jane Elymore
Amato Elymore

Jacqui Badcock
Francois Bach
Steve Terrell-Perica

Office of Health Services,
Department of Human Resources,
Federated States of Micronesia

South Pacific
Commission
Noumea,
New Caledonia

South Pacific Commission
Noumea New Caledonia

March 1989

LIBRARY

SECRETARIAT OF
SOUTH PACIFIC COMMUN

26832 (B)

C. Copyright Government of the Federated States of Micronesia, 1988.

All rights reserved. No part of this publication may be reproduced or transmitted in any form by any means, including photocopying and recording without the written permission of The Federated States of Micronesia Department of Human Resources, application for which should be addressed to the Director. Such written permission must also be obtained before any part of this publication is stored in a retrieval system of any nature.

South Pacific Commission Cataloguing-in-publication data.

The 1987/88 National Nutrition Survey of the Federated States of Micronesia: Technical report prepared for the Government and Department of Human Resources of the Federated States of Micronesia/ Jane Elymore ... [et al.]

1. Nutrition survey - Federated States of Micronesia

I. Elymore, Jane II. Federated States of Micronesia.
Department of Human Resources III. South Pacific Commission

614.42966 ISBN

AACR2

Prepared for publication at Federated States of Micronesia Department of Human Resources, Kolonia, Pohnpei and South Pacific Commission, Noumea, New Caledonia, and printed at Good News press, Federated States of Micronesia, Kolonia, Pohnpei, 1989.

TABLE OF CONTENTS

	<u>Page</u>
<u>LIST OF FIGURES</u>	iv
<u>LIST OF TABLES</u>	vii-xviii
<u>ACKNOWLEDGEMENTS</u>	xix - xx
<u>SUMMARY</u>	xxi - xxii
1. <u>INTRODUCTION</u>	1 - 16
1.1 Background to the survey	3 - 4
1.2 Objectives and aims of the survey	4
1.3 Country information	4 - 8
1.4 Review of studies on nutrition and diet pattern in the Pacific Islands	8 - 10
1.5 Review of studies on nutrition and diet pattern in the Federated States of Micronesia	10 - 13
1.6 Food production and food supply in the Federated States of Micronesia	13 - 15
2. <u>METHODS</u>	17 - 34
2.1 Overall survey design and method	19 - 20
2.2 Statistical selection of survey sample	20 - 24
2.3 Questionnaire design and coding	24 - 27
2.4 Survey fieldwork	27 - 30
2.4.1 Selection and training of survey and team enumerators	27
2.4.2 Contact with participating villages	27
2.4.3 Procedures at survey site	28 - 29
2.4.4 Logistics	29 - 30
2.4.4.1 Pohnpei - Main island	
2.4.4.2 Pohnpei - Outer islands	

(iv)

		Page
	2.4.4.3	Kosrae
	2.4.4.4	Truk - main and lagoon islands
	2.4.4.5	Yap - main island
	2.4.4.6	Truk and Yap - outer islands
2.5	Data entry and data analysis	30 - 31
2.6	Classifications and definitions used	31 - 33
3.	<u>RESULTS</u>	35 - 58
3.1	Sample description	37 - 38
3.2	Females 15 - 49 years	38 - 47
	3.2.1	Adult female nutritional status 38 - 40
	3.2.2	Maternal health and incidence of anaemia 40 - 43
	3.2.3	Adult female dietary patterns 44 - 47
	3.2.4	Interrelationships between adult female nutritional status and dietary patterns 47
3.3	Children 0 - 59 months	48 - 58
	3.3.1	Infant nutritional status 48 - 51
	3.3.2	Infant feeding patterns 51 - 53
	3.3.3	Maternal and child health care 53 - 54
	3.3.4	Infant dietary patterns 54 - 56
	3.3.5	Interrelationship between infants nutritional status, feeding and dietary patterns 56 - 57
4.	<u>DISCUSSION</u>	59 - 78
4.1	Women's nutritional status and dietary patterns	61 - 68

4.2	Maternal health and incidence of anemia	68 - 71
4.3	Infant's nutritional status and feeding and dietary patterns	71 - 78
<u>CONCLUSIONS</u>		79 - 82
<u>RECOMMENDATIONS</u>		83 - 86
<u>BIBLIOGRAPHY</u>		87 - 94
<u>ANNEXES</u>		95
1.	Survey forms	95 - 104
2.	Anthropometric equipment and methods used	105 - 110
3.	Classification of foods for dietary recall	111 - 114
4.	General notes and observations during fieldwork	115 - 122
<u>FIGURES</u>		123 - 136
<u>TABLES</u>		137 - 227
<u>SUPPLEMENTARY TABLES</u>		231 - 249

<u>LIST OF FIGURES</u>		<u>Page</u>
Figure 1.	Map of the Pacific - Area covered by the South Pacific Commission	125
Figure 2.	Map of the Federated States of Micronesia.	126
Figure 3.	Map of Pohnpei State-main island	127
Figure 4.	Map of Pohnpei State-outer islands	128
Figure 5.	Map of Kosrae State	129
Figure 6.	Map of Truk State	130
Figure 7.	Map of Yap State-main islands	131
Figure 8.	Map of Yap State-outer islands	132
Figure 9.	Mean weight for age of children 0-59 months (both sexes) plotted on the WHO growth chart	133
Figure 10.	Mean and standard deviations for weight for age for children 0-59 months (both sexes) plotted on the WHO growth charts	134
Figure 11.	Mean and standard deviations for height for age for children 0-59 months (both sexes) plotted against WHO/NCHS standards.	135

<u>LIST OF TABLES</u>	<u>Page</u>
Table 1.1 : Estimated population (1987) by state and zone for age groups and sexes in FSM.	139
Table 1.2 F: Estimated population by state and zone, for women 15 - 49 years old.	140
Table 1.2 C: Census population by state and zone, for children 15 - 59 months old.	141
Table 1.3 : Sample response rates for survey target groups.	142
Table 1.4 F: Age distribution by state, sample population for women 15 - 49 years old.	143
Table 1.4 C: Age distribution by state, sample population for children 0 - 59 months old.	143
Table 1.5 F: Age distribution by zone, sample population for women 15 - 49 years old.	144
Table 1.5 C: Age distribution by zone, sample population for children 0 - 59 months old.	145
Table 1.6 F: Distribution of the type of environment by state, sample population for women 15 - 49 years old.	146
Table 1.6 C: Distribution of the type of environment by state, sample population for children 0 - 59 months old.	146
Table 1.7 F: Day of interview by state, for sample population of women 15 - 49 years old.	146
Table 1.7 C: Day of interview by state, for sample population of children 0 - 59 months old.	147
Table 1.8 F: Day of interview by zone, sample population for women 15 - 49 years old.	147
Table 1.8 C: Day of interview by zone, sample population for children 0 - 59 months old.	147

	Page
Table 1.9 F: Time of interview by state, sample population for women 15 - 49 years old.	148
Table 1.9 C: Time of interview by state, sample population for children 0 - 59 months old.	148
Table 1.10 F: Occupation for women 15 - 49 years old, by state and age group.	148
Table 2.1 : Mean weight (in kg) by age group by state in women 15 - 49 years old.	149
Table 2.2 : Mean weight (in kg) by age group by zone in women 15 - 49 years old.	149
Table 2.3 : Mean weight (in kg) by state and zone in 15-49 years old.	150
Table 2.4 : Mean height (in cm) by age group by state in women 15 - 49 years old.	150
Table 2.5 : Mean height (in cm) by age group by zone in women 15 - 49 years old.	151
Table 2.6 : Mean height (in cm) by state and zone in women 15 - 49 years old.	151
Table 2.7 : Mean body mass index by age group by state in women 15 - 49 years old.	152
Table 2.8 : Mean body mass index by age group by zone in women 15 - 49 years old.	152
Table 2.9 : Mean body mass index by state and zone in women 15 - 49 years old.	153
Table 3.1 : Prevalence of obesity (in %) defined by body mass index by state and age groups in women 15 - 49 years old.	154
Table 3.2 : Prevalence of obesity (in %) defined by body mass index by zone and age groups in women 15 - 49 years old.	155
Table 3.3 : Prevalence of obesity (in %) defined by body mass index by state and zone in women 15 - 49 years old.	156
Table 3.4 : Prevalence of obesity (in%) defined by body mass index by occupation and age group in women 15 - 49 years old.	157

Table 4.1	: Mean hemoglobin (GM/DL) for females 15 - 49 years old by reproductive status and age group by state.	158
Table 4.2	: Mean hemoglobin (GM/DL) for females 15 - 49 years old by reproductive status and age group by zone.	159
Table 4.3	: Mean hemoglobin (GM/DL) for females 15 - 49 years old by reproductive status and state by zone.	160
Table 4.4	: Mean hemoglobin (GM/DL) for females 15 - 49 years old by reproductive status and age group by occupation.	161
Table 5.1	: Prevalence of anemia in women 15 - 49 years old by reproductive status (2) and age group.	162
Table 5.2	: Prevalence of anemia in women 15 - 49 years old by reproductive status and state.	163
Table 5.3	: Prevalence of anemia in women 15 - 49 years old by reproductive status and zone.	164
Table 5.4	: Prevalence of anemia in pregnant females attending antenatal clinic and taking iron tablets.	165
Table 5.5	: Prevalence of anemia in women avoiding foods or not in pregnancy.	165
Table 5.6	: Prevalence of anemia in women avoiding foods or not in lactating.	165
Table 5.7	: Prevalence of anemia in women 15-49 years old by total number of pregnancies.	166
Table 5.8	: Prevalence of anemia in women aged 15-49 years old and who ate greens and protein foods.	167
Table 5.9	: Prevalence of anemia in women 15-49 years old by age group and whether they have been pregnant or not.	167

Table 6.1	:	Percentage of women 15 - 49 years old, avoiding foods during pregnancy and lactation by age group.	168
Table 6.2	:	Percentage of women 15 - 49 years old, avoiding foods during pregnancy and lactation by state.	168
Table 6.3	:	Percentage of women 15 - 49 years old avoiding foods during pregnancy and lactation by zone.	168
Table 7.1	:	Total pregnancies of adult females 15 - 49 years old by age group and state.	169
Table 7.2	:	Total pregnancies of adult females 15 - 49 years old by age group and zone.	170
Table 7.3	:	Total pregnancies of adult females 15 - 49 years old by age group and occupation.	171
Table 7.4	:	Pre-natal clinic visits by children's mothers and health clinic attendance for children 0-4 years by state.	172
Table 7.5	:	Prenatal clinic visits by children's mothers and health clinic attendance for children 0 - 4 years by zone.	173
Table 8.1.1	:	Percentage of adult females 15-49 years old who ate each kind of food in the morning by age group.	174
Table 8.1.2	:	Percentage of adult females 15-49 years old who ate each kind of food in the afternoon by age group.	174
Table 8.1.3	:	Percentage of adult females 15-49 years old who ate each kind of food in the evening by age group.	175
Table 8.2.1	:	Percentage of adult females 15-49 years old who ate each kind of food in the morning by state.	176
Table 8.2.2	:	Percentage of adult females 15-49 years old who ate each kind of food in the afternoon by state.	176

Table 8.2.3 :	Percentage of adult females 15-49 years old who ate each kind of food in the evening by state.	177
Table 8.3.1 :	Percentage of adult females 15-49 years old who ate each kind of food in the morning by zone.	178
Table 8.3.2 :	Percentage of adult females 15-49 years old who ate each kind of food in the afternoon by zone.	178
Table 8.3.3 :	Percentage of adult females 15-49 years old who ate each kind of food in the evening by zone.	179
Table 8.4.1 :	Percentage of adult females 15-49 years old who ate each kind of food in the morning by occupation.	180
Table 8.4.2 :	Percentage of adult females 15-49 years old who ate each kind of food in the afternoon by occupation.	180
Table 8.4.3 :	Percentage of adult females 15-49 years old who ate each kind of food in the evening by occupation.	181
Table 9.1 :	Frequency distribution of females 15-49 years old who ate various food types by age group.	182
Table 9.2 :	Frequency distribution of females 15-49 years old who ate various food types by state.	183
Table 9.3 :	Frequency distribution of females 15-49 years old who ate various food types by zone.	184
Table 9.4 :	Frequency distribution of females 15-49 years old who ate various food types by occupation.	185
Table 10.1 :	Percentage of adult females 15 - 49 years old who ate balanced meals by age group.	186
Table 10.2 :	Percentage of adult females 15 - 49 years old who ate balanced meals by state.	186

Table 10.3	:	Percentage of adult females 15 - 49 years old who ate balanced meals by zone.	187
Table 10.4	:	Percentage of adult females 15 - 49 years old who ate balanced meals by occupation.	187
Table 11.1	:	Patterns of food consumption of adult females 15 - 49 years old by age group.	188
Table 11.2	:	Patterns of food consumption of adult females 15 - 49 years old by state.	188
Table 11.3	:	Patterns of food consumption of adult females 15 - 49 years old by zone.	188
Table 11.4	:	Patterns of food consumption of adult females 15 - 49 years old by occupation.	188
Table 12.1	:	Mean weight (in kg) by age group by state, sample population for children 0 - 59 months.	189
Table 12.2	:	Mean weight (in kg) by age group by zone, sample population for children aged 0 - 59 months.	189
Table 12.3	:	Mean weight (in kg) by zone and state, sample population for children aged 0 - 59 months.	190
Table 12.4	:	Mean height (in cm) by age group by state, sample population for children aged 0 - 59 months.	190
Table 12.5	:	Mean height (in cm) by age group by zone, sample population for children aged 0 - 59 months.	191
Table 12.6	:	Mean height (in cm) by zone and state, sample population for children aged 0 - 59 months.	192
Table 12.7	:	Mean weight for height by age group by state, sample population for children 0 - 59 months.	192
Table 12.8	:	Mean weight for height by age group by zone, sample population for children 0 - 59 months.	193

Table 12.9	: Mean weight for height by zone by state, sample population for children 0 - 59 months.	194
Table 12.10	: Mean and standard deviation for weight, height and weight for height for children (both sexes) 0 - 59 months by monthly age group.	195
Table 13.1	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for weight for age (%med) by state and age group.	196
Table 13.2	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for wieght for age (%med) by zone and age group.	197
Table 13.3	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for weight for age (%med) by state and zone.	198
Table 13.4	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for height for age (%med) by state and age group.	199
Table 13.5	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for height for age (%med) by zone and age group.	200
Table 13.6	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for height for age (%med) by state and zone.	201
Table 13.7	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for weight for height (%med) by state and age group.	202
Table 13.8	: Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for weight for height (%med) by state and zone.	203

	Page
Table 13.9 : Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for weight for height (%med) by state and zone.	204
Table 13.10 : Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standard for Waterlow index (%med) by state and age group.	205
Table 13.11 : Prevalence of malnutrition (in%) in children 0 - 59 months by WHO/NCHS standards for Waterlow index (S.Dex) by zone and age group.	206
Table 13.12 : Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for waterlow index (%med) by state and zone.	207
Table 14.1 : Patterns of infant feeding for children 0 - 4 years old by age group.	208
Table 15.1 : Time mother first gave breast after birth by state.	209
Table 15.2 : Time mother first gave breast after birth by zone.	209
Table 16.1.1: Types of nourishment other than milk given in a bottle for children 0 - 4 years old compared by age group.	210
Table 16.1.2: Types of nourishment other than milk given in a bottle for children 0 - 4 years old compared by age group.	210
Table 16.2 : Types of nourishment other than milk given in a bottle for children 0 - 4 years old by state.	211
Table 16.3 : Reasons for mother bottlefeeding children 0 - 4 years old by state.	212
Table 16.4 : Reasons for mother bottlefeeding children 0 - 4 years old by zone.	212
Table 16.5 : Types of milk bottlefed to children 0 - 4 years old by age group.	213

	<u>Page</u>
Table 16.6 : Types of milk bottlefed to children 0 - 4 years old by state.	213
Table 16.7 : Types of formula bottlefed to children 0 - 4 years old by state.	214
Table 16.8 : Types of formula bottlefed to children 0 - 4 years old by zone.	214
Table 17.1 : Age of introduction to solid foods for children 0 - 59 months old by state.	215
Table 17.2 : Age of introduction to solid foods for children 0 - 59 months old by zone.	216
Table 17.3 : Types of food first introduced to children 0 - 59 months old by state.	217
Table 17.4 : Types of food first introduced to children 0 - 59 months old by zone.	218
Table 18.1.1: Percentage of children 12 - 59 months old who ate each kind of food in the morning by age group.	219
Table 18.1.2: Percentage of children 12 - 59 months old who ate each kind of food in the afternoon by age group.	219
Table 18.1.3: Percentage of children 12 - 59 months old who ate each kind of food in the evening by age group.	219
Table 18.2.1: Percentage of children 12 - 59 months old who ate each kind of food in the morning by state.	220
Table 18.2.2: Percentage of children 12 - 59 months old who ate each kind of food in the afternoon by state.	220
Table 18.2.3: Percentage of children 12 - 59 months old who ate each kind of food in the evening by state.	220
Table 18.3.1: Percentage of children 12 - 59 months old who ate each kind of food in the morning by zone.	221
Table 18.3.2: Percentage of children 12 - 59 months old who ate each kind of food in the afternoon by zone.	221

	<u>Page</u>
Table 18.3.3: Percentage of children 12 - 59 months old who ate each kind of food in the evening by zone.	221
Table 19.1 : Frequency distribution of children 12 - 59 months old who ate various food types by age group.	222
Table 19.2 : Frequency distribution of children 12 - 59 months old who ate various food types by states.	223
Table 19.3 : Frequency distribution of children 12 - 59 months old who ate various food types by zone.	224
Table 20.1 : Percentage of children 12 - 59 months old who ate balanced meals by age group.	225
Table 20.2 : Percentage of children 12-59 months old who ate balanced meals by state.	225
Table 20.3 : Percentage of children 12-59 months old who ate balanced meals by zone.	226
Table 20.4 : Patterns of food consumption of children 12 - 59 months old by age group.	227

<u>LIST OF SUPPLEMENTARY TABLES</u>	<u>Page</u>
Add. 1.1 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for age (s.dev) by state and age group.	231.
Add. 1.2 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for age (s.dev) by zone and age group.	232
Add. 1.3 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for age (s.dev) by state and zone.	233
Add. 2.1 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for height for age (s.dev) by state and age group.	234
Add. 2.2 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for height for age (s.dev) by zone and age group.	235
Add. 2.3 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for height for age (s.dev) by state and zone.	236
Add. 3.1 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for height for age (s.dev) by state and age group.	237
Add. 3.2 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for height for age (s.dev) by zone and age group.	238
Add. 3.3 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for height for age (s.dev) by state and zone.	239
Add. 4.1 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for Waterlow index (s.dev) by state and age group.	240

	<u>Page</u>
Add. 4.2 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for Waterlow index (s.dev.) by zone and age group.	241
Add. 4.3 : Prevalence of malnutrition (in %) in children 0 - 59 months by WHO/NCHS standards for Waterlow index (s.dev) by state and zone.	242
Add. 5.1 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for age by age group in percentiles.	243
Add. 5.2 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for height for age by age group in percentiles.	244
Add. 5.3 : Prevalence of malnutrition (in %) in children 0 - 4 years by WHO/NCHS standards for weight for height by age group in percentiles.	245
Add. 6.1 : Pregnancy history of adult females 15 - 49 years old by age group and state.	246 - 249

ACKNOWLEDGEMENTS

The survey coordinator wishes to express her gratitude to the FSM Nutrition Survey Committee in the office of Health, Department of Human Resources whose members consistently supported and contributed advice throughout the project. In addition, Dr. Eliuel K. Pretrick, Secretary of Human Resources and Mr. Isamu Abraham, Special Assistant to the Secretary on Health Programs who played an invaluable role in providing administrative assistance and support to make the project possible.

Sincere gratitude is due to State Directors and Chiefs of Public Health from each State for their general support and assistance in the selection of survey team members.

Gratitude is also due to the dedicated work of four teams of enumerators, without whom the entire field work would have not been successful. Many other people were also responsible for the success of the fieldwork. Special thanks go to doctors, nurses, health assistants, FSM and States' Departments of Transportation, town officers and chiefs in each village and island the team visited, without whose cooperation and assistance the teams could not have functioned as efficiently.

The South Pacific Commission provided technical assistance in all stages of the survey and funded costs for a series of visits by the Nutritionist, Dr Jacqui Badcock. Visits by the SPC Epidemiologist, Dr Francois Bach and Health Survey's Epidemiologist Mr Steve Terrell-Perica during the data analysis phase were also funded by the South Pacific Commission. This continuous technical support was essential for the completion of the project and enabled most of the phases to be carried out in country. The South Pacific Commission also provided computer and typing facilities for final stages of analysis and report preparation and hosted a visit by the survey co-ordinator to their headquarters in Noumea for this. Costs for typing and report preparation were also partially funded by the South Pacific Commission for these final stages.

Technical assistance was provided by the Australian Bureau of Statistics in the statistical design of the survey through a consultancy visit (funded by SPC) by statistician Mr John Pollard.

The project would not have been possible without the generous financial support of the United Nation's Children's Fund (UNICEF). UNICEF funded fieldwork costs for the project (which included sea and air travel and stipend costs for the enumerators), anthropometric and blood measurement equipment, report preparation and printing costs. The salaries for the project co-ordinator and health statistician were funded by the FSM government, who also provided funds for incidental office and

(xx)

support costs and for the visit to SPC headquarters by the project co-ordinator.

For their patience and understanding while typing this report, special thanks go to Ramona Reyes (FSM) Rekenson Gallen (FSM) and Ms Ruth Falau (SPC).

Jane Elymore
Nutrition Survey Co-ordinator

SUMMARY

1. The National Nutrition Survey for the Federated States of Micronesia was carried out from January 1987 - April 1988 and was co-ordinated by the FSM Division of Health Services. The survey was designed to form a basis for future nutrition programme and policy formulation at national and state level. It was initiated in response to concern at the observed changing food supply and dietary pattern, and the increasing incidence of clinical malnutrition in children and adults reported at hospitals and clinics in FSM.

2. The project was funded by the United Nations Children's Fund (UNICEF) and the Government of the Federated States of Micronesia. The South Pacific Commission provided technical assistance throughout the project.

3. Data was obtained on women 15 - 49 years and children 0 - 4 years on a randomly selected sample which covered 28% of each of the target population groups. Information collected included dietary habits, infant feeding patterns, maternal and child health care practices and anthropometric indicators including weight, height/length and also hemoglobin readings for females. The survey sample was designed to provide information on a national basis, by state and also according to zones designated by their geographic location and food supply situation i.e. urban, rural, outer island, good and poor resources etc. The information was collected by four teams of trained enumerators (one team per state) led by a national nutrition survey co-ordinator from the FSM Division of Health Services and assisted by a survey planning committee also from the Division of Health.

4. All results were compared to standards derived from internationally recognised sources.

The results indicated:

- a) high prevalence of overweight and obesity among adult women;
- b) high prevalence of malnutrition especially 'stunting' among infants 0-59 months of age;
- c) high prevalence of mild and moderate anemia in women especially among pregnant women;
- d) differences in nutritional status by state and by zone in both adult women and infants;
- e) differences in dietary patterns in each state and zone attributable to availability of foods and other factors.

5. The interrelationships of diet and nutritional status in adults and children are discussed and proposals for future nutrition programs in the Federated States of Micronesia are made.

I N T R O D U C T I O N
=====

1. INTRODUCTION

1.1 Background to the Survey

This report presents the results of the National Nutrition Survey conducted in the Federated States of Micronesia from January 1987 to April 1988.

In recent years, health status data for the Federated States of Micronesia has shown an increase in nutritionally related morbidity and mortality, especially among children. Hospital outpatient and inpatient data has shown an increase in the number of children diagnosed as suffering from malnutrition (particularly underweight, protein-energy malnutrition and Vitamin A deficiency). Complications and infections arising from poor nutritional status have also been reported. There has also been concern expressed at the high rate of anemia among women of child-bearing years and also an increasing incidence of overweight in adults, especially women, leading to other chronic conditions such as diabetes and hypertension.

The increasing incidence of nutritionally related deaths and disease conditions has been identified and discussed in many workshops and conferences in the Federated States of Micronesia. However, the magnitude of these problems has not been substantiated through reliable investigation. Adequate and objective data on the current food and nutrition situation in the Federated States of Micronesia is needed for adequate nutrition program planning, implementation and evaluation.

In February, 1984, two consultants from the United Nations Children's Fund (Mrs Margaret Nakikus) and the South Pacific Commission (Dr Jacqui Badcock) visited the Federated States of Micronesia at the request of the National Division of Health Services, to assess the need and requirements for a national nutrition survey. Discussions were held with government officials at both National and State levels and also with appropriate non-government organizations, and a plan of action and budget were drawn up. The United Nations Children's Fund provided funding support for the survey fieldwork which finally began in early 1986 following delays caused by some technical and operational difficulties. The full-time survey coordinator assigned to the project was Ms Jane Elymore, FSM National Nutritionist. Mr Amato Elymore, FSM Health Statistician coordinated the data entry and analysis phase of the project. Technical assistance for the project was provided by the South Pacific Commission nutritionist Dr Jacqui Badcock through all phases of the survey (planning fieldwork and analysis) and epidemiologists Dr Francois Bach, and Mr Steve Terrell-Perica through the data analysis phase. Statistical advice and sampling design was provided by the South Pacific Commission through a consultant from the Australian Bureau of Statistics, Mr John

Pollard. Logistical and technical planning and advice were provided throughout the survey by a nutrition survey planning committee comprised of members of the FSM National Health Services Division.

1.2 Objectives and aims of the Survey

The overall objective of the National Nutrition Survey was:

- to determine the nutritional status and dietary patterns of the population of the Federated States of Micronesia.

The more specific aims of the survey were:

- to produce reliable estimates of the nutritional status of children nationwide and for each state;
- to produce reliable estimates of the nutritional status of adults nationwide and for each state;
- to begin to identify groups which are most affected by malnutrition according to geographic location and agricultural environment;
- to begin to identify the nature of and causes of nutritional problems in the Federated States of Micronesia.

1.3 Country Information

Figures 1 and 2 show maps of the Pacific area and of Micronesia indicating the geographical location of the Federated States of Micronesia.

The Federated States of Micronesia is an island nation of the Western Pacific consisting of four states: Kosrae, Pohnpei, Truk and Yap. The islands are part of the Caroline Island chain and are located between one degree south and 13.5 degrees north of the equator and 135 to 166 degrees east longitude. The Federated States of Micronesia comprise more than six hundred islands and atolls of which approximately 65 are inhabited. They span over one million square miles of the Pacific ocean but contain only a little over 270 square miles of land area. Land areas for the four states are: Kosrae, 42.8 square miles; Pohnpei, 133.4 square miles; Truk, 49.18 square miles and Yap, 45.92 square miles. The distance from the Eastern State of Kosrae to the State of Yap in the West is over 1500 miles, and due to infrequency of flights, it takes at least two days to travel between by air.

The islands range from tiny low-lying coral atolls of a few acres to larger high volcanic islands such as Pohnpei main island which is 135 square miles in area and has peaks more than two thousand feet high. The majority of the population lives on the larger main islands of each state with the remainder scattered among smaller outer islands. Accessibility to services, even on the main islands, is limited by transportation problems. Communications, travel and logistical coordination within and between the states is by small boat or infrequent field trip ships travelling through the outer islands from their main island base. Transportation between the state administrative center is provided by one international air carrier or, in the case of Kosrae, by a local missionary airline. The cost of round trip air travel between the states is in excess of one thousand dollars.

Climatically the islands are tropical with average temperatures of 70 - 90 degrees Fahrenheit, 80% humidity and an abundant rainfall on most of the islands. Rainfall is particularly heavy in Pohnpei and Kosrae, but Truk and Yap do have more pronounced dry spells.

The Federated States of Micronesia is located in a typhoon area and outer islands are frequently devastated by typhoons and tidal waves. Typhoon season is October to May.

Agricultural and forestry resources are abundant, particularly on the high islands, but there has been little development of these resources other than for subsistence purposes. There is a rich marine fauna in the open sea, reefs, lagoons and shore areas.

There are at least eight major languages spoken by various ethnic groups found in the Federated States of Micronesia and the people come from a number of diverse cultural backgrounds. Censuses in each of the States have only recently been completed or are about to take place and so population estimates often tend to be based on projection estimates from the 1973 National Census. The population estimate for 1988 calculated by the Office of Planning and Statistics was 101,155, and the current growth rate is in excess of three percent. A breakdown of the estimated 1987 population by state and age group is as follows:

FSM Population, 1987 Projection (estimated by
State and age group (based on 1973 National Census Data)

Age	Kosrae	Pohnpei	Truk	Yap	FSM Total
0 - 4	1,181	5,419	8,952	2,094	17,646
5 - 19	2,394	10,906	18,522	4,193	36,015
20 - 39	1,872	8,575	13,967	3,302	27,716
40 - 59	635	2,888	5,107	1,276	9,906
60 +	6,352	29,598	49,366	11,714	97,030

More than forty percent of the present population is under the age of 15 years; 25% are women of child-bearing age (age 15-49 years) and about 5% are women aged 15-19 years. Average population densities per square mile for each state are 970 for Truk, 247 for Yap, 216 for Pohnpei and 158 for Kosrae. The national average population density is 349 per square mile.

Most people live on the coastal areas of the high islands or on small outer islands, with the mountainous interior of the high islands largely uninhabited. Only 29 percent of the population live in the urbanized areas (administrative centers).

From 1947 until 1986, the islands which comprise the Federated States of Micronesia were part of the United Nations Trust Territory of the Pacific Islands under the administration of the United States of America. In 1979, the constitutional government of the Federated States of Micronesia was formed with its capital located in Pohnpei. A compact of free association between the Federated States of Micronesia and the United States, which forms the basis for termination of the Trusteeship, was approved by the U.S. Government in January 1986.

The Federated States of Micronesia is a constitutional democracy. Levels of government are national, state and local. As well as a national constitution each of the states has its own constitution or charter which provides the legal framework for each state government. There is a central government framework through a national legislature headed by the President and each state has its own legislature headed by a Governor.

State of Pohnpei (see Figures 3 and 4)

The State of Pohnpei is made up of one big, main island and eight outlying atolls, six of which are permanently inhabited. Of the state's 135 square miles, Pohnpei main island accounts for approximately 120 square miles. The interior of the main island is mountainous with peaks rising to 2,000 feet. The vegetation is lush and tropical due to a high daily rainfall. Much of the

island is skirted by tidal flats and mangrove swamps. The administrative center, which is also the National Capital, is the town of Kolonia, where groups of immigrants from outer islands such as Pingelap, Mokil and Kapingamarangi have settled and formed separate communities.

There is an unpaved road circling the island and connecting most villages with the urban center. There are several inland settlements accessible only on foot, each with its own language.

The outer islands of Pohnpei State comprise several atolls. Of those that are inhabited, Mokil and Pingelap to the East of Pohnpei are heavily populated and have regular mission air services. The remaining islands of Ngatik, Kapingamarangi, Nukuoro, and Oroluk are accessible by sea only. The people of Kapingamarangi and Nukuoro are of Polynesian origin. Each of the inhabited outer islands is about one-half to one square mile in land area and all have lagoons of varying sizes.

State of Kosrae (see Figure 5)

The State of Kosrae is a single 42.8 square mile island State, approximately 310 miles South East of Pohnpei. The administrative center is Tofol. The interior of Kosrae is mountainous rising to 2064 feet and covered by lush tropical vegetation. It is surrounded by sandy beaches and mangroves. All of the villages are located on the coast and are all accessible by road except one (Walung) which can be reached by small boat.

State of Truk (see Figure 6)

The State of Truk is located 621 miles kilometers South East of Guam and consists of 11 high volcanic islands located in the main Truk lagoon and a series of outlying low islands or coral atolls. Total land area is 49.18 square miles. The lagoon islands are mountainous and covered with lush tropical vegetation, whereas the States' six outer-island groups (the Halls, Namonwito, Pattiw and Upper and Mid and Lower Mortlocks) are small low-lying sandy atolls. The state administrative center is located on the densely populated lagoon island of Moen. Most villages on Moen are located on the coast and are accessible by road. The other islands in the Truk lagoon are accessible by small boats to and from Moen. One of these lagoon islands, Fefan, is particularly fertile and is renowned for its market garden produce which is transported regularly to Moen. The outer islands are accessible only by boat. Two field trip ships based out of Moen visit each island group once a month. In addition, small government fishing boats go out of Moen to the outer islands each week.

State of Yap (see Figure 7 and 8)

The State of Yap consists of the four large adjoining islands - Gagil, Tomil, Map and Rumung, plus a number of outer islands spread out over 620 miles to the East. Three of the four big islands are linked by bridges, while Rumung, the fourth is accessible by boat. The main islands are less mountainous than the other states with open pandanus and scrub meadows on the upland areas. About two thirds of the population lives on the main islands including a colony of outer islanders at Madrich located across a lagoon from the state administrative center of Colonia.

The outer islands of Yap are among the most traditional in the Pacific and include the world's fourth largest atoll, Ulithi, and a raised coral atoll, Fais. They are serviced by ship plus a Pacific Missionary Aviation plane to Ulithi.

1.4 Review of studies on nutrition and diet patterns in the Pacific.

Nutritional and dietary studies have been conducted in many countries within the Pacific over the past few decades. Many of these studies are well documented and referenced in the South Pacific Commission monograph on the Effects of Urbanization and Western Diet on the Health of Pacific Island populations (Coyne, Badcock, and Taylor, 1984). When the first explorers came to this area they commented on the plentiful supplies of food available and the good health and strength of the people. Today, in many Pacific island countries there is growing concern over the increase in malnutrition - both over-nutrition (especially in adults) and under-nutrition (especially in children). High prevalence rates of obesity have been reported in urban centers in Kiribati (Zimmet et al, 1981), Nauru (Ringrose and Zimmet, 1979), Cook Islands (Taylor et al., 1983) and Tonga (Maclean et al., 1987) and problems are often more severe among females than males and with increasing age. Mean body weight and mean body mass index have been closely associated with prevalence rates of diabetes and a similar but less strong association with hypertension has also been reported (Coyne et al., 1984).

Clinical malnutrition conditions such as kwashiorkor and marasmus, were rarely reported in early surveys of infant and child nutrition in the Pacific (Holmes, 1951, 1952, 1953 and 1954; Malcolm, 1951, 1952, 1953, 1954, 1955 and 1958). Recent surveys have shown an increase in the severity of malnutrition and that malnutrition is occurring more frequently in urban areas and towns than in rural areas. Surveys conducted in the 1970's and 1980's in the Trust territory of the Pacific Islands (Kincaid, 1973), in Kiribati (Crawford and Wilmott, 1971), in

Fiji (Goodall, et al., 1973; Lambert and Yee, 1981), in Vanuatu (Niiraren, 1975; Jabre et al., 1976 and Man Ming Hung, 1983), in the Solomon Islands (Tekieru and Huialamo, 1981) and in Western Samoa (Brazill, 1979) all show an increase in the severity of malnutrition compared to earlier studies in the same countries.

Factors which have been attributed to the increase in nutrition problems include a decrease in the production and use of local foods, or increase in the availability and use of imported store foods, inadequate nutritional knowledge in the community and an increase in the bottlefeeding of infants.

Some of the reasons underlying these factors include an increasing migration of families from rural to urban areas and increasing influences from the cash economy on rural life. Town life is not traditional in the Pacific, and families transplanted to urban areas are cut off from traditional lands and often become totally reliant on the cash economy. This often means that families no longer grow their own foods. Combined with the high status accorded to imported foods, this means town families do not eat their traditional foods even if they are available in the local markets. Often they are not available or are more expensive than store foods. Most store foods are nutritionally inferior to local foods but they are often easier to prepare and can be stored more easily than local foods which is another attraction. Many families are unaware of the practicalities of budgeting and selecting good nutritious foods to feed themselves. The migration of men or whole families to town or overseas has also led to a decrease in agricultural production in many rural areas. The past lack of emphasis on subsistence agriculture in community education programs has also contributed to the decrease in the production and use of local foods. Programs which provide food aid in the form of imported foods in times of disaster and programs which provide regular meals for sectors of the population e.g. school lunch programs, have also been cited as causing changes in food tastes and patterns and increasing the reliance on imported foods.

In many countries, breast milk is being replaced by bottle milk, an expensive, inferior substitute for a perfect, natural food that costs nothing. The trend away from breast to bottle feeding is listed by many investigators in Pacific Island communities as the major cause of the increase in protein-energy malnutrition being found among infants. This is usually due to the high risk of infection from dirty bottles and mixing of milk with dirty water and the inadequate supply and dilution of milk. The increasing trend has generally been attributed to the high status accorded to bottle feeding and an increase in the number of young and working mothers. Young mothers, especially if they are unmarried, frequently give their children to the grandparents to feed and raise and consequently they have to bottlefeed the infants. Many women are now entering the work force especially

in the urban areas and there is often inadequate provision of maternity leave or time off for breastfeeding so that many mothers switch to bottlefeeding.

1.5 Review of studies on Nutrition and diet patterns in the Federated States of Micronesia

A health survey carried out in the Trust Territory in 1948-1950, (TTPI Medical statistics division, 1951) reported an average height for males ranging from 5'2" to 5'6" (158 - 168 centimetres) and for females ranging from 4'11" to 5'1" (150 - 155 centimetres). The average weight for males was 133 to 145 lbs (60 - 66 kilograms) and for females from 112 to 135 lbs (51 - 52 kilograms). The prevalence of intestinal parasites was very high. Vitamin and malnutrition conditions had a rate of 8.8 per thousand and anemia had a rate of 8.4 per thousand.

In 1953, extensive investigations into infant feeding practices and infant nutritional status were conducted on a sample of 936 children in the former Trust Territory of the Pacific Islands (Malcolm, 1955). Although birth weights were a little low, infants grew rapidly during their first 6 to 8 months. Growth rates were generally slow or faltering between 8 and 14 months and were subsequently adequate. Malcolm noted that approximately 30% of the children were mildly to moderately malnourished according to anthropometric and other clinical data. There was little evidence of clinical malnutrition and so kwashiorkor and marasmus were not seen. Breastfeeding was commonly practiced and in Yap, Truk and Pohnpei, breastfeeding was continued until about one year of age. The mothers carried their babies with them during the daytime and usually slept with them so that they were breastfed frequently on demand.

Weaning was usually started around 8 months and completed by about 1 year. Bottlefeeding was almost never observed in Pohnpei, Truk and Yap. Little other milk was available after weaning and in many places little other protein food was available to the weaning or weaned child. Supplementary foods during the first year of life were often green coconut water and flesh, coconut milk, tuba (coconut toddy), green leaves and fruit juices and then progressed to mashed root vegetables. By one year of age, some fish, shellfish, meat and eggs were fed to the child and its diet was similar to the family's. Malcolm felt that the quantity and variety of supplementary foods during the first year of life was limited and that those weaned at about 8 months may not have been receiving adequate nourishment for optimal growth. However, Malcolm did comment on the difficulty of assessing quantitative food intake in this age group.

Murai (1954) studied the nutrient intake of 1 to 3 year old children in the Marshall Islands and in Truk. The Trukese children had adequate intakes of energy and protein but low iron, Vitamin A and Vitamin C intakes. Murai also commented on the difficulties of quantitating dietary information in this age group.

In the 1970's, deaths from kwashiorkor and marasmus began to appear in health statistics (Sugansuma, 1986). A nutrition survey similar to that of Malcolm's was carried out in 1973 by Kincaid on a total of 424 children 0 - 4 years of age in the Mariana Islands, Marshall Islands, Palau, Pohnpei, Trup and Yap (Kincaid, 1973). Information on weight and growth of children was taken from public health records. The growth pattern observed was similar to the earlier survey. From birth to 6 months, infant's weights for age were close to Caucasian (U.S.) standards, but after one year, the percentage of children below the standard increased. Clinical malnutrition was not mentioned. Kincaid concluded that a nutritionally adequate diet was available in each of the territories but that it was not being consumed. She suggested that this was due to 'economic and social changes brought about by Western education and development'.

Protein intakes for children were reportedly adequate, but energy and iron intakes were low. Kincaid also reported a decline in the incidence of breastfeeding. Only 55% of infants from birth to 6 months were being breastfed in 1973 compared to 71% in 1953 (Malcolm, 1955). By 1 year, only 19% of infants were continuing to be breastfed compared to 56% in 1953. In both studies, breastfeeding rates were higher in Pohnpei and Truk compared to the overall Trust Territory data (birth to 6 months: 90% and 97% in 1953 and 83% and 71% in 1973 in Truk and Pohnpei respectively; 12 - 15 months: 76% and 80% in 1953 and 38% and 29% in 1973 in Truk and Pohnpei respectively).

Small studies conducted in Pohnpei and Truk during the 1970's underlined the increasing problems of child malnutrition and decline in breastfeeding. (Gilbert, 1975; Demory, 1976; Thomas, 1978; Rody, 1977, 1978a, 1978b, 1982, 1983; Fritz, 1982). In addition, Marshall and Marshall (1979 and 1980) documented declining breastfeeding rates in Truk from the second World War to the mid 1970's. In a more recent survey in a small village 5 miles from the administrative center of Truk, they found only 9 children of 49 included in the survey were breastfed exclusively in the first year of life. A relationship between bottlefeeding and high rates of hospitalization among Trukese infants was also found. (Marshall and Marshall, 1979 and 1980).

Few formal studies of infant feeding have been conducted in the Federated States of Micronesia in the past 10-15 years. However, public health records, general observations of health workers and

visiting consultants remarks suggest that breastfeeding incidence and duration have continued to decline and that infant malnutrition is now a serious problem. For example, in 1981, Bolte in a health manpower development and training review commented that in his opinion, "malnutrition is by far Micronesia's most serious pediatric problem" and that "in the administrative centers where traditional patterns of breastfeeding and daily fish consumption have been disrupted, up to 50% of children may have "borderline malnutrition".

The small isolated studies that have been conducted support this observation. For example in a small dietary survey in 1983 in Pingelap (Pohnpei), Hargreaves (1984) reported diets for seventy-seven children aged 0 - 4 years. In the three days before the survey, a third had eaten only rice, less than half (42%) had eaten any protein food and only twelve children had eaten any fruit or vegetables. Demory's study in Pohnpei in 1975 also expressed concern at the absence of vegetables and fruit (other than bananas) from children's diets. The 1979 Agricultural census for Micronesia also suggested that general consumption patterns of fresh, local fruit and vegetables was low throughout the states, especially in Pohnpei and Truk, although the survey was oriented towards meals not "snacks" which is how and when fruit would generally be consumed. Recent work in Truk state 1987 - 1988 by Pryor and Pryor (personal communication) has resulted in a major public health effort to reduce the incidence of sub-clinical and clinical vitamin A deficiency. From August 1986 to March 1987 over 90 children were diagnosed with severe clinical vitamin A deficiency. Approximately 10% of these children required hospitalization in the same time frame and there was one death associated with keratomalacia and severe protein energy malnutrition. Vitamin A deficiency was also observed in some outer islands communities and among Head Start (pre-school) children. Two studies in Truk state in 1988 by Mahony (personal communication) reported 23% of 664, 0 - 4 years old children to have clinical signs of vitamin A deficiency.

In Kosrae, in 1984, a survey of 2 - 4 year old children found 7.2% were severely malnourished and 30.6% were mild to moderately malnourished. (Sigrah and Meyer, 1984).

A survey of school children in 1985 carried out by Food Service officials throughout the states suggested problems of undernutrition among this age group. In Pohnpei, 9.8% of children were undernourished, in Truk, 8% were undernourished, while in Yap, 9.3% were undernourished (10.5% on Yap proper and 8.1% in the outer islands). In Kosrae, 9.4% of school children were found to be underweight. (Underweight in this study was defined as <75% of NCHS standard weight for height). Between 3.1% and 6.9% of school children were considered overweight (defined as > 125% of the NCHS standard weight for height) (unpublished data, FSM Food Services Division, Pohnpei). There

is a Food Service program providing school lunch to many of these school children which has in the past included a heavy use of imported and canned foods. The use of local fresh food supplies is now being actively and increasingly encouraged and a recent evaluation of FSM's school lunch program further emphasises the need for this for both economic and nutritional reasons. (Elsy and Singleton, 1988)

Very little is known about maternal nutritional status in the Federated States of Micronesia. It is generally felt that obesity and anemia are major problems associated with poor dietary patterns. There is a moderate incidence (10% of live births) of low birth weight (less than 2,500 gram).

General subjective observations have usually recorded that populations of infants and mothers at greatest risk of nutritional problems are:

- populations on main islands which have migrated from outer islands e.g. Pohnrakiet village in Pohnpei (Kapingamarangese) and Madrich village in Yap (all Yap outer islanders) are recognized risk areas.
- Outer island populations who have received external food aid (usually USDA canned and processed foods) following natural disasters. Many Truk outer islands fall into this category as well as Kapingamarangi and Pingelap in Pohnpei State.

Chronic diet-related diseases such as obesity, diabetes, hypertension and heart disease among adults have been reported as a problem as early as 1964 in Guam (Yen, 1964) and in other Micronesian countries such as Marshall Islands and Palau in various later studies (Hankin et al., 1970; Reed et al., 1970; Reed et al. 1973; Conrad, 1975; Kuberski and Bennett, 1979). There have been no similar studies in the Federated States of Micronesia but hospital records do indicate an increasing incidence of these diseases among adult males and females.

1.6 Food production and food supply in the Federated States of Micronesia

Land resources of the Federated States of Micronesia are abundant but are generally under utilized. There are also some areas of poor agricultural potential (e.g. some coral atolls, particularly where there has been salt water intrusion such as in Nukuoro and Ngatik (Pohnpei State) and some outer islands where there are frequent typhoons such as in Nukuoro and Kapingamrangi (Pohnpei State), Moch and Kuttu (Truk State) and Ulithi (Yap State). A recent soil survey (USDA Soil Conservation Service, 1982) found that in Pohnpei, there are 23,300 hectares of productive land,

equivalent to two-thirds of a hectare of good quality land for every man, woman and child in the state not taking into account marginal land and outer island lands. The College of Micronesia estimates that each two-thirds of a hectare has the potential to produce ten tons of root crops (equivalent to 27 kilo per day per capita). Instead of a massive food surplus though, Pohnpei imports US\$5 million of food, beverages and tobacco. The situation in Kosrae is similar to that of Pohnpei.

The production potential of Truk is less favorable than that of Pohnpei and Kosrae. The USDA soils survey assessed the capacity of soils for increased food production to be fair. Truk has a population density four times greater than of Pohnpei. In addition, land rights are complicated and plots tend to be fragmented. Nevertheless, there is potential for Truk to feed itself given appropriate inputs and development stimuli.

The capacity of soils for increased food production in Yap has been assessed as good (USDA Soil Conservation Service, 1982), although the agricultural potential remains low in the outer islands which are largely coral and sand. Like the other states there is a heavy reliance on imported foods rather than subsistence food products.

There is virtually no data on agricultural and fishing practices and no analysis of how people make decisions on what to produce or to consume. This makes it difficult to assess why the high agricultural potential is not fulfilled.

In October 1986, a consultant economist reviewed the current food supply and food production situation in the Federated States of Micronesia (Cameron, 1986). Food and beverage imports were US\$4.3 million worth of soft drinks, alcoholic beverages and tobacco. Food and beverage imports generally account for more than forty percent of total imports. Food imports are currently valued at approximately US\$200 per capital per annum which has increased from US\$130 in 1977 (Division of Statistics, Federated States of Micronesia, Pohnpei; Cameron 1986). Cameron in his review states that most of these food imports "cannot be considered essential or without local substitutes in nutritional terms. Some may actually be nutritionally harmful". Locally produced foods and beverages have the potential to provide a nutritionally adequate and balanced diet but there is so much under-utilized potential in agriculture (USDA, 1982) and fishing beyond the reef, that it is difficult not to argue against current food import levels. The exception to this is perhaps rice which has become so firmly established as a staple, that local staples such as cooking bananas, breadfruit and root crops would be unable to completely replace it (Cameron, 1986). Other food items such as sugar, although non-essential in nutritional terms have also become firmly entrenched in the diet.

The availability of and variety of imported foods is much greater in the urban centers but rural areas of the state's main islands generally have reasonable access to the town stores or small village stores and cash can be derived from employment in the towns. Outer islands have poorer supplies of imported foods which are generally limited to dry (rice, flour, sugar) and canned (meat, fish, vegetable, fruit and beverages) products. Each urban or administrative center has a food and/or fish market, but supplies of fresh produce are limited, periodic and seasonal. Efforts are currently being made by state agriculture departments to increase the amount of commercial farming and to improve current subsistence farming. Subsistence food production is still the dominant form of agricultural production and is based on a system of shifting cultivation scattered around the homestead. On the inhabited low islands and atolls also, there are usually sizeable community taro patches.

Subsistence crops produced include wetland and dryland taro varieties, sweet potatoes, bananas, cassava and breadfruit. Yams are also grown on Pohnpei main island, Kosrae, Yap main island and Fais island. Vegetables include cucumbers, eggplants, head cabbage, chinese cabbage, bell peppers, green onions and tomatoes. Fruits include papayas, mangoes, pandanus, pineapples and citrus fruits. Small quantities of sugarcane are grown at household level. Coconuts are grown and used extensively. Traditionaaly, pigs have been kept for ceremonial purposes rather than for sale. Goats have been introduced into some of the states. Poultry, mainly chickens, are kept by many housholds and eggs are produced commercially in almost all the states.

There is a rich marine fauna in the open sea, reefs, lagoons and shore areas, which is largely untapped apart from irregular fishing and gathering for subsistence purposes only.

M E T H O D
=====

2. METHODS

2.1 Overall Survey Design and Method

The survey was conducted in three phases:

<u>Phase_I</u>	October 1986 - May 1987	Planning
<u>Phase_II</u>	May 1987 - May 1988	Fieldwork & Data Entry
<u>Phase_III</u>	May 1988 - October 1988	Analysis

In line with the specific aims of the survey, together with known nutritional problems in the country, it was decided that the target population for the survey should be:

Children	0 -4 years
Females	15- 49 years

These two groups were chosen as being the most sensitive indicators (i.e. the most "at risk" groups) of the nutritional status of the overall population. A random sample of approximately 20% of the above target groups was selected. This sample was directed at providing statistically valid information on each target group and on groups living in different environmental and agricultural zones.

A questionnaire was designed to collect information on nutritional status and dietary patterns for each target group with careful provision for easy completion by interviewers, simple coding and fast data entry. Data was collected by carefully trained teams of enumerators familiar with local languages and customs. Fieldwork was coordinated and supervised by a full-time survey coordinator who also coded all data ready for data entry. All coding was double checked. Data was entered onto computers using specially developed software programs based on D- base III software.

All data was entered twice and cross-checked for accuracy.

Analysis was carried out using SPSS software packages.

For State and National planning and for nutritional purposes, five zones were defined for the survey.

1. Main island - urban
2. Main island - rural, coastal
3. Main island - rural, inland
4. Outer island- good food supply, good soil

5. Outer island- poor food supply, poor soil prone to natural disasters (e.g. typhoons, tidal waves).

These zones were developed based on geographic location, expected food supply and therefore food consumption pattern, since these factors would be expected to impact on nutritional status.

2.2 Statistical Selection of Survey Sample

The survey sample was designed by a visiting consultant statistician. The survey was based on a systematic, random design using the village (or village like unit) as the selection unit. Within the selection units, all of the target populations were included ie. women living in the village 15- 49 years and children aged 0- 4 years (0- 59 months).

Using appropriate statistical formula (Kalton, 1987) and preliminary output tables, standard error requirements and FSM population characteristics, a sample take of approximately 350 to 400 of each of the target populations per state and zone was chosen.

At the time of the survey sample design, accurate, current census village populations were not available for compiling the sample frames. However, village lists were available from various sources in each state (e.g. health department and departments responsible for elections, etc.) which, when used in conjunction with local knowledge of each of the states, were used to list the villages in order of size for each state and zone. Census population data and data from various other sources was then used to give an approximate estimate of total target population for each state and zone. Information on total village population was prepared and a rough estimate of women 15- 49 years and children 0- 4 years was calculated. Based on 1973 census data, women 15- 49 years comprise 25% total population and children 20% of total population.

Sample frames were compiled for:

- Kosrae - using census enumeration districts and person lists as the population identifies with only four village units; population estimates were derived from the 1987 census.
- Pohnpei - using village units except for Kolonia urban area, where mayoral political divisions (comprising groups of village units) were used; population estimates were derived from the 1985 census which in some cases were felt to be over-estimates and so municipal and hospital records were also used.

- Truk - using village units population estimates were derived from a variety of sources, including hospital and data from the SPRANS project for lagoon islands and electoral roll data from Public Affairs Department. Village chiefs provided data for outer islands.
- Yap - using village units, population estimates were derived from the 1987 census.

A sample take of 350 - 400 resulted in sample fractions from around 1 in 10 village units to complete censuses in smaller outer island areas.

Since state statistics are an important output of the survey, the sample was stratified by state at the first level. The sample was also stratified by nutritional zone to give data at the national level. The frame was therefore split into zones (see Section 2.1 above) and within each zone each village was listed for each state. Not every state contained each zone e.g. Kosrae has no outer islands or inland main island villages and so it did not contain Zone 1, 3, 4 and 5. In Truk, lagoon islands and Moen were considered to be "main island" and villages were zoned accordingly.

Villages were listed in population size order from the smallest to the largest village. Then the number of required villages which was dependent on the required sample take needed and hence the implied sample fraction, were randomly selected. This systematic random sample method was chosen because it gives some control over the final sample take.

Once a village was selected, one hundred percent of the target populations had to be covered. Village residents were defined as all Micronesians and mixed- Micronesians who usually stay and sleep in that village. Women and children absent on the survey day were followed up later and included.

The survey coordinator verified that full coverage was achieved using initial population estimates and when these were found to be inaccurate (and this frequently occurred, especially in Pohnpei and despite a recent census) by checking with village leaders, hospital and clinic records, etc. Village and areas selected for each state and zone were as follows (see Section 2.1 for key to zones):

KOSRAE STATE

ZONE	VILLAGE/SECTION	MUNICIPALITY
2	ED10	Utwe
2	ED09	Utwe
2	ED13	Tafunsak
2	ED08	Malem

POHNPEI STATE

1	Pohnrakiet (Sec. 5)	Kolonia
1	Omihne (Sec. 3)	Kolonia
2	Poatoapoat	Kitti
2	Ohwa	Madolenihmw
2	Nankepra	Madolenihmw
2	Elielui	Madolenihmw
2	Kepin Awak	U
2	Lukop	Madolenihmw
2	Sadawan	Sokehs
2	Paliais	Nett
3	Nanpohnmali	Madolenihmw
3	Sapwtakai	Kitti
3	Metpw en Awak	U
3	Dolokap	Nett
3	Paies	Kitti
3	Salapwuk	Kitti
3	Nanmal	Sokehs
3	Mwakot	Kitti
3	Kahmar	Nett
3	Mand	Madolenihmw
4	Mokil	Outer Island
4	Ngatik	Outer island
4	Pingelap	Outer Island
5	Nukuoro	Outer Island
5	Kapingamarangi	Outer Island

Truk State

1	Peniesenne	Moen
1	Sapuk	Moen
2	Fonomo	Udot
2	Tunnuk	Udot
2	Mochon	Uman
2	Nechocho	Tol
2	Minami	Uman
3	Etiemar	Patta
3	Pokouchou	Patta
3	Foup	Tol
4	Pulusuk	Western Island
4	Ulul	Western Island
4	Oneop	Lower Mortlock
4	Satawan	Lower Mortlock
5	Magur	Western Island
5	Ruo	Hall
5	Pulap	Western Island
5	Moch	Mid Mortlock

Yap State

1	Mabuu	Weloy
1	Luwech	Rull
1	Mulroo'	Weloy
1	Dachngar	Rull
1	Yinuf	Rull
1	Dugor	Weloy
1	Gitam	Rull
1	Ngolog	Rull
1	Balabat	Rull
1	Keng	Weloy
1	Worowo	Rull
1	Nimar	Weloy
2	Magaf	D-binau
2	Thabeth	Gilman
2	Aringel	D-binau
2	Fal	Rumung
2	Plaw	Map
2	Leng	Gagil
2	Mala'ay	Kanifay
2	Gargey	Tomil
2	Maa	Tomil
2	Talguw	Rull
2	Ayrech	Fanif
2	Mer	Rull
2	Towoway	Gilman
2	Buluol	Rumung
2	Benik	Rull
2	Tabinfiy	Rull

2	Dilag	Tomil
2	Mey	Gagil
2	Meyub	Gagil
2	Fedor	D-binau
2	Wocholab	Map
2	Gal	Kanifay
2	Dololab	D-binau
2	Yiin	Fanif
2	Adubuwe	Weloy
3	Wugem	Rull
3	Darikan	Rull
3	Malon	Map
3	Binaw	Gagil
3	Kaday	Weloy
4	Fais	Outer Is.
4	Satawal	Outer Is.
5	Sorol	Outer Is.
5	Elato	Outer Is.
5	Faraulep	Outer Is.
5	Ifalik	Outer Is.
5	Ulithi	Outer Is.

2.3 Questionnaire Design and Coding

The design of the questionnaires was finalized after discussion with health and other departmental personnel with an interest in nutrition at both state and national levels. It was agreed that while it might be interesting to try to obtain information on a wide variety of nutritional factors (such as quantitative dietary intakes, income and expenditure, domestic food supply and housing, water and sanitation conditions), it would be unrealistic to do so if good quality data was to be obtained. The questionnaires were kept as short and simple as possible.

A set of specimen table outlines were prepared to determine the survey output expectations and to assist in clarifying the objective of each question. The survey questionnaires were then finalized. At this stage, it was also decided that it would be necessary to have two separate survey forms- one each for the two target population groups (children 0- 59 months and females 15- 49 years). Examples of these forms are contained in Annex 1. Questions were carefully phrased to ensure a minimum of bias was introduced by the interviewer. The forms were printed in English as there are eight major languages plus local dialects throughout the Federated States of Micronesia. The form for females was printed in red ink, and the form for children was printed in blue ink to distinguish the two forms easily.

The questionnaires were designed for easy completion by the enumerators. The enumerator completed the left hand side of the questionnaires only. The right hand side of the form consisted of coding boxes for efficient data entry. Coding was completed by the survey coordinator and checked by the health statistician. A special coding manual was developed for transferring the information collected in the field to the coded format. Codes for each variable such as occupational group, food categories and ethnicity, etc. were preassigned with the exception of food taboo information which was coded at the end of the survey. Each questionnaire was designed in three sections. The first section recorded background and birth and family history information, followed by a section on anthropometric data which was followed by other feeding and dietary information and a section on dietary recall intakes. Each form had a unique identification number incorporating state, zone, village and individual person number details. The two questionnaires were not designed to link data of individual women and children at the analysis stage i.e. data for both target groups was handled separately. Each section of the questionnaire varied slightly for females and children.

Section 1

Information was collected on date and time of interviews since dietary patterns can vary with day of the week and recalls are generally more accurate when carried out in the mornings. Information on ethnic group, date of birth and age (in case date of birth information was not available and as a double check for those whose was) and in the case of children, sex was recorded next. Additional information on pregnancy history was collected for women to assist in the evaluation of hemoglobin data. Questions on whether a woman was currently pregnant or breastfeeding were included for adjustments to be made to weight data and selection of hemoglobin standards. For pregnant women, information on number of months pregnant, clinic attendance, and iron and vitamin tablet intake was included. Information on women's work was also collected to observe any effect on nutritional status and dietary pattern. Additional information on children included at this stage was related to maternal care information and clinic attendance.

Section 2

Weight and height or length (for children 0- 23 months) was collected. Tricep skinfold thickness measurements were taken for adult females only. Three consecutive readings were recorded and the mean reading entered at the coding stage. Hemoglobin levels were recorded for women only. It was felt it was logistically too difficult to collect data on infant hemoglobin levels. Details of all anthropometric procedures used are given in Annex 2.

Section 3

Information on dietary patterns was collected using a twenty-four hour recall method. Qualitative information (what kinds of food eaten) only was recorded. Adult females and mother or caretaker for the children were asked to list all foods eaten by the child during previous the day. Rather than formalize eating patterns according to mealtimes, periods during the day were assigned (rising to midday, midday to 5 p.m and 5 p.m to retiring) and the respondents were asked to list all foods eaten and drinks taken, including snacks, during the time frames. Coding was divided into "yes" or "no" a food type was eaten for the eighteen variables according to the time frame in which the food was eaten. Classification of the foods to be included under each of the eighteen variables is listed in Annex 3.

Information on alcohol and sakau (kava) consumption was included because of their effect on eating habits and energy contribution (for alcohol).

Additional dietary information was included on the women's questionnaires with respect to food taboos (foods avoided and the reason for doing so) when pregnant or lactating with a view to determining any significant impact on nutritional status, particularly hemoglobin status. Additional information on current patterns of infant feeding (breast, bottle, solids or any combination) were added to the children's questionnaires to obtain a cross- sectional picture of current infant feeding practices. Questions on time of commencement of breastfeeding and general use of bottles for feeding were included for all children. There was a special section for bottlefed children only, on the type of milk and reasons for bottlefeeding. If children were already on solids there was also a separate section. This included the twenty four- hour dietary recall and questions on time and type of first solids given.

In addition to the regulated information collected through the questionnaires, the survey coordinator kept a daily fieldwork diary and recorded subjective notes and information on villages visited for the survey. Information recorded generally pertained to obvious problems with water, sanitation and other environmental conditions, high pregnancy rates, overcrowding and outbreaks of

infectious diseases at the time of the survey. There was no particular format to this information which was purely anecdotal and is recorded in Annex 4.

2.4 Survey Fieldwork

2.4.1 Selection and Training of Survey Team Enumerators

It was necessary to have four survey teams of enumerators- one per state. This was because of language differences between the states, logistical difficulties and expense of transporting one team throughout all the state. Also, the duration of the entire survey fieldwork would have restricted the use of government workers released from their normal duties. The cooperation of various division was obtained in each state (health, agriculture, community action agencies, food services, headstart, aging programs etc) for the release of staff to be trained and to carry out the fieldwork. An intensive five day training program was given to each team in each state immediately prior to commencement of fieldwork in that state. A training manual was prepared as a guideline for all fieldwork. Teams generally consisted of six members - three interviewers, two measurers and one recorder. The survey fieldwork and survey teams were supervised throughout by the survey coordinator or health statistician who had also been specially trained prior to the survey fieldwork.

2.4.2 Contact with Participating Villages

After the sample villages were selected for each state, village leaders were notified by letter of the purpose, methodological approach and approximate arrival date of the survey team. This was followed up nearer to the survey fieldwork scheduled date by a personal visit from the survey coordinator or a survey team member whenever this was possible (this was impossible for outer islands and remote inland areas).

Radio messages were then broadcast everyday for one week prior to the survey team's arrival to forewarn villages and request attendance by all females 15- 49 years and children 0- 59 months at the survey site on the appropriate day.

2.4.3 Procedures at Survey Site

The survey team members in each State were assigned specific tasks for the duration of the survey. When survey participants arrived one team member registered them and assigned them an appropriate form. For each village the survey coordinator completed the identification number for state, zone, and assigned person I.D. numbers for the anticipated number of survey participants. Each survey participant was assigned a personal form and therefore an I.D. number, by consecutive number order in order of arrival at the survey site. The enumerator also completed all other background questions in Section 1 of the questionnaires.

The survey participants then proceeded to the area of the survey site where measurements were taken. One enumerator took weight, height, length and skinfold measurements according to the requirements on the questionnaires and a second enumerator took the blood measurements. A third enumerator assisted with measurements and recorded the data on the forms. Details of all anthropometric procedures are given in Annex 2.

The survey participants then proceeded to one of the remaining enumerators (2 or 3) who asked all questions in Section 3 of the questionnaire (i.e. on feeding and dietary patterns). This section of the questionnaire took the longest and it was time efficient to have more than one enumerator working on this. By working on one section of the form only, enumerators and measurers became familiar and skilled in their own area.

Some of the survey work was done by setting up in a central location within a village and having survey participants come to the survey site over a period of time ranging from half a day to six days depending on the size of the village unit. Survey sites included dispensaries, municipal buildings, schools or church buildings. In some areas because of poor data on population characteristics, the survey team moved from house to house to ensure complete coverage.

The survey coordinator supervised all survey fieldwork, checked forms were correctly completed before the survey participant left the site and checked the sample coverage for both target groups was 100% in each village. Where preliminary population data proved to be inaccurate, double checks were made by discussion with village leaders and/ or by house to house census. Refusals to attend the survey were also noted.

Interviews and measurements took an average 20 minutes per participant. It should be noted that children did not participate in answering the questions put forward by the enumerators. The respondent was usually the child's mother, a member of the family or in some cases a baby-sitter. Care was

taken in interpreting some of the questions answered by the latter as they may not have been wholly familiar with the child's regular feeding regime.

2.4.4 Logistics

Fieldwork took a total of 15 months because of travelling time involved and transportation difficulties. Bad weather further hindered operations. A total of four teams had to be trained separately for fieldwork in each state. Fieldwork conditions were extremely hard with many places only accessible by foot and by sea. All equipment, survey questionnaires and paperwork was well waterproofed and each survey team member took responsibility for the carrying and transportation of his/her equipment or paperwork.

2.4.1.1 Pohnpei Main Island (January - April 1987)

One team, based out of Kolonia, travelled daily by four wheel drive truck to each survey village located on the road. A few inland villages could only be reached on foot from the road. The team traveled to these villages and stayed overnight in order to complete the survey fieldwork.

2.4.1.2 Pohnpei Outer Islands (April 1987)

The same team that covered Pohnpei main island also travelled to the outer islands of Pohnpei. This was via the regular field trip ship between each outer island group and by small motor boat from ship to shore at each outer island group; The main part of the survey was carried out on the outward trip and follow-up of initial non-respondents was carried out on the return trip.

2.4.1.3 Kosrae (January 1988)

One team reached all Kosrae survey villages by truck.

2.4.1.4 Truk - Moen and lagoon islands (July - August 1987)

One team reached survey villages located on the road by four-wheel drive truck. Many villages stretched from the coast to inland highland areas and so the team walked through the village and set up survey sites in appropriate locations. One inland village could only be reached by foot.

The same team also travelled daily from Moen to the lagoon islands by small motor boat except for the island of Tol where they remained three nights, walking daily to survey villages.

2.4.1.5 Yap - Main Island (November - December, 1987)

One team based out of Colonia reached all survey villages daily by bus and on foot. Villages on the island of Rumung were reached by motor boat and on foot.

2.4.1.6 Truk and Yap Outer Islands (April, 1988)

There were a number of delays and difficulties reaching the outer islands of Yap and Truk because of bad weather (typhoons and a tidal wave) and lack of regular shipping transport. Finally, FSM transportation services loaned a ship that was enroute from Japan to Pohnpei. The ship diverted to Yap main island to pick up a specially compiled team from the teams that had covered Truk and Yap main island and travelled through all the Yap outer islands included in the survey, then to Truk's Western Hall Island groups to Moen, Mortlock islands and on to Pohnpei. The survey sites were reached by transfer from ship to shore by small motorboat.

The survey coordinator was unable to accompany the team on this sector and so the Health Statistician and Leprosy/TB Coordinator were especially trained to accompany and supervise the team.

2.5 Data Entry and Data Analysis

All forms were coded either in the field or at the FSM statistics office by the survey coordinator and all coding was checked by the health statistician and leprosy coordinator. Data entry commenced after fieldwork and coding for one state had been completed and then continued concurrently with fieldwork.

Data entry was carried out using one IBM XT with a 20MB hard disk and two IBM AT-compatible computers with hard disks. Since a minimum of computer expertise was available in-country, the data entry procedures were simply designed and were totally menu driven. This involved extensive program design written in dBASE. Five key punchers and one supervisor were trained to complete the data entry.

All data was punched twice in order to verify data entered. When a record was entered a second time, all values were automatically checked against the initial entry. Mismatching values were flagged on the screen and the operator was allowed to correct them if required. Out of range values and inconsistency checks were also performed at the early analysis stage.

The supervisor (health statistician) performed daily checks to ensure that all records on the daily schedule were entered and verified. A pre-established report by village was printed on request.

Analysis was carried out using the SPSS-PC Statistical Package.

2.6. Classification and definition used

a) Women-nutritional status

Expressed as prevalence of normal weight, overweight and obesity using international classifications of Body Mass Index (BMI).

BMI is calculated as : $\text{weight (kg)}/\text{height}^2 (\text{m}^2)$

In women :

BMI of <25 is considered normal or 'desirable' weight
 BMI of ≥ 25 and <30 is considered moderately overweight
 BMI of ≥ 30 is considered obese

Relative 'desirable' weight is derived from Caucasian standards (Metropolitan Life Insurance Co. N.Y., 1960).

b) Anemia

Anemia was characterised by the level of blood hemoglobin (Hb) using WHO definitions.

● For non-pregnant and non-lactating and lactating women:

Normal : Hb = ≥ 12.0 g/dl
 Mild anemia : Hb = 10.0 - 11.9 g/dl
 Moderate anemia : Hb = 8.0 - 9.9 g/dl
 Severe anemia : Hb = <8.0 g/dl

● For pregnant women:

Normal anemia : Hb = ≥ 11 g/dl
 Moderate anemia : Hb = 9.0 - 10.9 g/dl
 Severe anemia : Hb = < 9.0 g/dl

c) Children - nutritional status

Expressed as prevalence of malnutrition according to weight for age, height for age and weight for height after comparison with commonly used international standard i.e. WHO/NCHS standards using a computerized data base (Jordan, M.D. Anthropometric software package; Center for Disease Control, U.S.A.). Results have been tabulated as percent of median and standard deviation of reference standard and as percentiles, but only results expressed as percent of median are discussed.

- Weight for age:

normal weight = $\geq 80\%$ (normal but high weight = 120%)
 moderately malnourished (underweight) = 60 - 79%
 severely malnourished = $<60\%$

- Height or length for age:

(Height for children 0-23 months was measured as length and was compared to WHO/NCHS standards for length)

normal height = $\geq 90\%$
 moderately stunted = 85-89%
 severely stunted = $< 85\%$

- Weight for height or length:

normal and well-nourished = $\geq 90\%$
 mildly wasted = 80-89%
 moderately wasted = 70-79%
 severely wasted = $< 70\%$

- Waterlow's Classification:

This classification is used to distinguish between acute and chronic malnutrition. Where malnutrition is very prevalent it is important to make this distinction, since a child with acute malnutrition is in more urgent need of treatment.

This classification combines two of the other anthropometric indicators - weight for height to indicate wasting and height for age to indicate stunting.

		<u>Weight for Height (Wasting)</u>	
		80% of reference median or 2SD below median	
<u>Height for Age (Stunting)</u>		Above	Below
		Above	Below
90% of reference median or 2SD below median	Above	Normal	Acute or recent malnutrition
	Below	Nutritional dwarfism	Severe chronic malnutrition

d) Dietary recall

Dietary recall patterns were categorised into foods eaten at given time periods throughout the day which were:

- from rising until mid-day = morning
- from mid-day until 5 p.m. = afternoon
- from 5 p.m. until retiring = evening

'FSM' as a prefix refers to local produce. 'Imported' as a prefix refers to all imported foods including those processed locally from imported raw materials (e.g. bread from flour). Detailed classification of foods for the dietary recall are given in Annex 3. Data for dietary recall was qualitative information only and is expressed as the percentage of women or children who were eating a particular type of food at one of the given time periods in the last 24 hours.

R E S U L T S -
=====

3. RESULTS

3.1 Sample description

Sample population

Identification with number codes, grouped variables such as age, sex, state, and nutritional zone, for both population target groups, and occupation for women 15 - 49 years.

Tables 1.4 to 1.6 describe the nutrition survey population by state and zone for women 15 - 49 years old and children 0 - 59 months old. Tables 1.4 - 1.7 describe the age distribution by zone and state and zone distribution by state of the sample populations for women 15 - 49 years old and children 0 - 59 months old.

Age groups were defined using 10 year groupings for adult females and 6 - 12 months age groups for infants. These populations were compared to available census information on the same population groups. Estimated total populations by state and zone are given in tables 1.1 to 1.3 for women 15 - 49 years old and children 0 - 59 months old. Accurate census data by state, zone and by each age group analysed in this survey were not readily available. This has made it difficult to determine a) if the nutrition survey population is typical of the characteristics of the national population with respect to age and sex breakdown b) whether survey sample coverage was adequate.

The lack of reliable estimates of age and sex characteristics by state and zone has made it impossible to calculate National Estimates of the prevalence of malnutrition and other nutritional parameters and to make any other adjustments (weighting) for age distribution or for the size of sample take for each zone within each state.

Response rates

Tables 1.3 shows the response rates for children and females target groups expressed as the percentage of achieved compared to the estimated eligible population. The estimated eligible population was derived from data available before the survey started. This has since been shown to be an overestimate in many cases following more recent censuses and discussions with the National Planning and Statistics Office. This meant that the sample take was higher (28%) than planned (20%) and that the sample response rate is probably higher than it actually was.

Using the pre-survey population estimates, sample response was 68.9% overall (66.1% for women 72.5% for children). After adjusting for overestimation of population, sample take was approximately 78% overall.

Date and time of interview

Tables 1.8 to 1.11 describe the day and time of interview by state and zone for the two sample populations. Most of the interviews were carried out on weekdays. There were 15.8% and 15.6% of the sample population for women and children respectively interviewed on a Monday which would describe a Sunday food intake (24 hour recall method). As Sunday food patterns in F.S.M. are often different to other days of the week, it is important to ensure there is no bias by over or under-interviewing on Mondays. Sunday constitutes 14.3% of weeks dietary intake and so there was no bias introduced over all of FSM, although there were some minor biases introduced at state and zone levels.

Most of the interviews (70.5% for women, 70.8% of children) were conducted in the mornings when recall is at its maximum.

Occupation

Table 1.12 F describes the occupation groups for women 15 - 49 years old by state and age group. The majority of women in all age groups were housewives. Most of the working women were from the urban zone.

3.2 Females 15 - 49 Years

3.2.1 Adult female's nutritional status

Adult female's nutritional status was determined by using the international classification for Body Mass Index for determining prevalence rates of normal weight, overweight and obese individuals in the population.

Problems were encountered in interpreting data from triceps skinfold measurements and in determining appropriate cut-off points and characteristics for defining overweight and obesity. Observations in the field suggested some difficulty in taking this measurement despite the extensive training given to the measurers. This was especially so in women from outer islands where good muscle development made it difficult to measure skinfold accurately. Data from skinfold measurements was therefore excluded from the analysis and nutritional status for women was determined by Body Mass Index.

The mean and median weight, height and body mass index for females ages 15 - 49 years at the time of the survey, by state, zone and age group are shown in Tables 2.1 - 2.9. The prevalence of overweight and obesity using body mass index data, by state, zone, age group and ethnicity are given in Tables 3.1 - 3.4.

Mean weights of females increased markedly with age in all the states and all the zones (Tables 2.1 - 2.3). Females aged 30 - 49 years had the highest mean weights. Mean weight values were highest in Truk and lowest in Yap states. The outer island poor resource zones in all states except Yap had the highest mean weight and main island inland areas had the lowest mean weights, again with the exception of Yap. In Yap the main island coastal areas had the highest and outer islands with good food resources had the lowest mean weights. None of these differences were significant except for the age group differences.

There were few age group, state or zone differences for mean height of females (Table 2.4 - 2.6) although Trukese females and females from outer islands with poor resources tended to be slightly taller than other females. None of these differences were significant.

Mean body mass index and values had a similar pattern to the mean weight values for females (Tables 2.7 - 2.9). The most significant differences were between age groups. Body mass index increased markedly with age in all states and zones. There were no differences in mean body mass index values between states or zones in any age group.

Tables 3.1 - 3.9 describe the prevalence of overweight and obesity by body mass index for adult females by state, zone and age group.

The prevalence of obesity ($BMI \geq 30$) in all states increases with age as women increase their body weight. In addition, approximately one-third of women in any age group are moderately overweight (BMI 25 - 29). This means that there are generally fewer women who can be considered to have a normal BMI (<25) as age increases. The prevalence of obesity was especially high in Kosrae particularly in older age groups. There were generally less females with obesity and more with normal BMI's in Yap. Prevalence rates of obesity were 54.5% in Pohnpei; 52.4% in Truk; 33.7% in Yap and 77.3% in Kosrae in females aged 40-49 years and 51.7% in Pohnpei; 48.7% in Truk, 43.6% in Yap and 54.4% in Kosrae in females aged 30 - 39 years. In comparison, females aged 15 - 19 years had prevalence rates of only 11.6% in Pohnpei, 6.1% in Truk, 6.5% in Yap and 6.1% in Kosrae.

Between zones, all main island zones (urban, rural coastal and rural inland), tended to have a slightly lesser prevalence of moderate overweight and obesity than the two outer island zones. The net result was that there was a higher prevalence of females with a normal body mass index on the main islands than on the outer islands. The increasing prevalence of obesity with increasing age, the consistent prevalence of moderate overweight in all age groups and therefore the decreasing prevalence of normal body mass index was generally consistent in all zones.

The prevalence of obesity and overweight by zone was different between states. Kosrae only consisted of one zone and so all obesity and overweight was found in this zone (main island, rural coastal). In Pohnpei and Truk the prevalence of obesity and overweight was high in all zones but particularly high in the outer island poor resources zones and lower in the rural inland areas. Urban area obesity levels were high but not excessively higher than other zones. In Yap the prevalence of obesity was comparatively low in main island areas relative to the other states, but was high in the outer islands especially in the good food supply zones.

Looking at all age groups combined, roughly one third of females 15 - 49 years had a normal body mass index, one third were considered moderately overweight and one third were considered obese in all states and in all zones.

3.2.2 Maternal Health and Anemia

Tables 4.1 - 4.4 and 5.1 - 5.6 present data on mean hemoglobin (g/dl) and prevalence of anemia in women 15 - 49 years by age group, zone and occupation, clinic attendance, food taboos and reproductive status.

Hemoglobin measurements were taken using an AO/Spencer Hemoglobinometer. It is recognised that this is not as accurate as a cyanohemoglobin method but it has proved a valuable field method. Consistency of readings within and between survey enumerators responsible for hemoglobin assessment was continuously monitored to avoid any bias. It was not possible to standardize the AO/Spencer method with a cyanohemoglobin method. However, Zerda et al (1982) have suggested that the AO/Spencer method is more likely to err on the higher recording of hemoglobin level i.e. an underestimation of anemia, and it is felt that results obtained in the survey are clearly indicative of the extent and pattern of anemia prevalence among Micronesian women 15 - 49 years old.

a) Non-pregnant, non-lactating women

Mean hemoglobin levels for non-pregnant, non-lactating women ranged between 12.0 and 13.2g/dl with mean values being highest in Pohnpei and lowest in Kosrae. There were no differences in mean hemoglobin levels between age groups, states, zones and occupation.

There was very little moderate or severe anemia among non-pregnant, non-lactating women in all age groups, states and zones. However, there was a high prevalence of mild anemia in all states but particularly in Kosrae and Truk (29.4%, 10.8%,

22.9% and 16.6% of non-pregnant, non-lactating women had mild anemia in Kosrae, Pohnpei, Truk and Yap respectively.) There were no significant age group differences. There was a high prevalence of mild anemia among non-pregnant, non-lactating women in the main island rural coastal areas compared to other zones. However this was not significant and was probably a reflection of the high prevalence in Kosrae which consists entirely of this zone.

b) Pregnant women

Mean hemoglobin levels for pregnant women ranged between 9.5 and 12.6 g/dl with no significant differences between age groups, states, zones and occupation.

Population numbers were fairly low for pregnant women which makes it harder to compare data between states and zones etc. particularly for prevalence of anemia. There was an apparently high prevalence of moderate anemia and some severe anemia in pregnant women. Rates were particularly high in Kosrae and Truk (25.0%, 17.4%, 39.1% and 26.7% of pregnant women had moderate anemia in Kosrae, Pohnpei, Truk and Yap respectively; 10% of 40 pregnant women in Kosrae had severe anemia).

c) Lactating women

Mean hemoglobin levels for lactating women ranged between 11.5 and 13.0g/dl with mean values being highest in Pohnpei and lowest in Kosrae. There were no differences in mean hemoglobin levels between age groups, zones and occupations. There was very little moderate or severe anemia among lactating women in all age groups, states and zones. However, there was a high prevalence of mild anemia in all states but particularly in Kosrae (37.6%, 18.6%, 25.1% and 26.9% of lactating women had mild anemia in Kosrae, Pohnpei, Truk and Yap respectively). There were no significant age group differences. The main island, rural coastal area had a slightly higher prevalence of mild anemia than other zones but as with non-pregnant and non-lactating women this was probably a reflection of the high prevalence in Kosrae.

d) Prevalence of anemia by occupational grouping

There were no differences in mean hemoglobin levels and the prevalence of anemia between the 3 occupations groups.

e) Avoiding foods during pregnancy and lactation

Tables 6.1 - 6.3 show the percentage of women who said they would avoid certain foods during pregnancy or lactating by age group, state and zone.

The kinds of food most commonly avoided by women during pregnancy were fish (fresh, reef, ocean or sashimi), other seafoods (sea urchin, turtle, crab, octopus, clam, sea cucumber, lobster or shellfish), meat (canned, chicken or dog), spicy or preserved food, fruits (lemon, pineapple or banana) coffee and coca cola. The main reasons given for avoiding these foods were for cultural beliefs. Other reasons given included causing vomiting, swelling of the body, gastric problems, eye damage to the fetus and difficult labor.

The kinds of food most commonly avoided by women during lactation were the same range as those avoided during pregnancy, plus coconut, sugarcane, hard yams and taro, chestnuts, pumpkin and fatty foods. The main reasons given for avoiding these foods were cultural beliefs and causing skin rash in the baby. Other reasons given included causing fever in the baby, stopping breast milk, causing infection in the umbilical cord, causing baby to cry at night, have a bad stool color, have addominal pain or to vomit and have diarrhoea, and the mother to have swollen lips.

Very few women were avoiding foods in pregnancy related to any food taboos or beliefs (right or wrong) about a mother and child's health, in relation to foods eaten. Foods were generally avoided for practical reasons (e.g. morning sickness, dislike). There were no combinations of foods or lists of foods that would give rise to concern that certain nutrients would be lacking in the diet, although some women were avoiding fish and seafood, which may have been their major protein source. Similarly, no women was avoiding all sources of iron so that anemia might be expected, and the prevalence of anemia was shown to be the same for women who did and did not avoid foods in pregnancy.

Most foods avoided in lactation were for reasons affecting the baby's health, such as causing rash or diarrhea. So few foods were avoided by each person that none would be likely to affect the health of mother or child.

f) Pregnancy history of females 15 - 49 years

Data collected on pregnancy history of adult females aged 15 - 49 years included information on number of children alive, number of children that have died, number of miscarriages and number of still- births. This information was collected to give an accurate picture of total pregnancies for each women for correlation with the data on anemia. The more pregnancies a woman has, the more likely she is to become anemic. Data on live and dead children, and still births is provided in the supplementary tables section (Add. 6.1 - 6.3) by age group, state, zone and occupation and but is not reported or discussed since it is not directly relevant to the discussions on nutritional status as presented in this report. However, it is valuable information and should be further analysed to provide

information on fertility rates etc. This report will focus on total pregnancy patterns by age groups, state, zone and occupation. This information is summarised in tables 7.1 - 7.3.

As can be expected, total number of pregnancies increases with age. There is a high proportion of teenage girls having one or two babies particularly in Pohnpei and Yap (10.4% in Kosrae, 19.3% in Pohnpei, 9.2% in Truk and 17.2% in Yap), and among working women 31.6% among clerical women compared with 13.5% among housewives. However, there were only a few working women in this age group and the trend may be slightly exaggerated. There were no differences in rate of teenage pregnancies between zones, although the inland main island areas had a slightly higher rate.

There was a high percentage of women with more than 3 children in every state and zone. Many young women 20 - 29 years had 3 or more children. There were also many women with 6 or more children in all states and zones. One woman in Pohnpei had had 22 pregnancies with 16 children still living.

g) Relationships between the incidence of anemia, dietary patterns and pregnancy history

The potential causal relationship of factors such as diet, prenatal clinic attendance, vitamin and iron tablet intake and pregnancy history with prevalence of anemia were investigated (Tables 5.4-5.9). The prevalence of anemia in pregnant women was the same whether or not the woman was attending prenatal clinic, or whether or not she was taking iron tablets (Table 5.4). Anemia prevalence was not apparently affected by the number of pregnancies (full-term plus miscarriages) in all women, although numbers were too small for women of high parity, for reasonable analysis to be carried out. Teenage women who had no children had a higher prevalence of mild and moderate anemia than older women with or without several children. This means today's teenage women may have an increased risk of becoming severely anemic in years to come.

There was no significant correlation between types of food eaten and the incidence of anemia for all groups of women. Dietary data presented in Section 3.2.3, shows that women had a low rate of consumption of greens and vegetables, which would be among their best iron sources. There was probably a moderate intake of iron from the high rate of staples and moderate rate of protein foods consumed. There was no difference in the rate of consumption of these iron sources between states to account for the high incidence of anemia in Kosrae. There were no significant differences in the number of women consuming each kind of food between mildly anemic, moderately or severely anemic, and non-anemic women, for all women, whether they were pregnant or lactating, or not.

3.2.3. Adult female dietary patterns

Tables 8.1- 8.4 describe the percentage of adult females age 15-49 years old who ate various kinds of food in the morning, afternoon and evening and by age group, food supply zone and state. Most women ate some food through the day with no differences between state and food supply zones.

Imported staples were more commonly eaten in the morning (64.3%) than in the afternoon (55.2%) or evening (55.2%). The level of imported staple consumption decreased with age for each meal. The consumption of imported staples for each meal was highest in Kosrae and Pohnpei (e.g. 70.7% and 67.8% respectively in the evening). This compared with Truk (50.3% in the evening) and an even lower level of consumption in Yap (37.9% in the evening). Outer island zones had a lower level of consumption of imported staples than all main island zones for each meal. For all age groups states and zones the consumption of local staples was much lower than imported staples especially in the mornings. Local staple consumption was higher in the evening for all age groups, states and zones. However, younger age groups ate less local staple than older age groups at every meal. Women in Kosrae and Pohnpei generally consumed local staples less often than in Truk and Yap. Also, the consumption level of local staple was lower in the urban area than in all other zones for each meal. Consumption levels of imported and local fats were very moderate throughout the day. Younger age groups tended to eat more imported fat than older age groups and older age groups ate more local fats. This pattern was consistent for every meal, but overall, more local fat was consumed in the evenings. In Kosrae and Pohnpei the pattern of consumption of fat was similar to the national trend (16.4%, 16.9%, 22.0% ate FSM Fats and 11.8%, 13.6% and 15.8% ate imported fats in the morning, afternoon and evening respectively), although more imported fat was consumed in Kosrae particularly in the afternoons and evenings (26.1% and 32.8% respectively). In Truk, women ate much more local fat than imported fat at every meal and imported fat consumption was very low. On the other hand, women in Yap ate more imported fats than local fats, but intakes were moderate at all meals. By zones, the main island urban and coastal areas tend to use much more imported fat than local fat compared to the main island inland and the two outer island zones. Consumption of imported fat was very low in the outer island areas, particularly those with poor resources. These trends were consistent for every meal.

Intakes of protein were moderately good at every meal, with more protein being consumed in the evenings. Most of the protein eaten came from local sources at each meal (42.0%, 47.7% and 58.7% ate FSM protein and 18.2%, 22.4% and 21.1% ate imported protein in the mornings, afternoons and evenings respectively).

There were few age differences although younger people ate slightly more imported protein and less local protein than older age groups especially in the evening. Consumption patterns for protein in all states were similar to national trends at all meals with a few exceptions. Protein consumption was much higher in Yap than all other states in the mornings, and the rate of consumption of imported protein was much lower at every meal. Also, consumption of protein was low in the mornings in Kosrae for both local and imported protein foods. The two outer island zones ate more local protein foods than all main island zones at every meal. The main island zones tended to rely more on imported protein sources than the outer islands. The main island inland area ate less local protein than main island urban and rural coastal areas.

The number of women who consumed greens and all vegetables - both imported and local was extremely low. These foods were almost non-existent in the diet. For example only 0.6%, 0.6% and 1.3% of women ate greens in the mornings, afternoons and evenings. This pattern was consistent across all age groups, states, and zones. Women in Yap and Kosrae ate a little more greens and vegetables than women in Pohnpei and Truk as did women in the urban areas but with such low consumption rates these differences are not significant. The number of women consuming fruit and fruit juice was also very low at every meal. Most fruit consumed was local fruit and most of the imported fruits that were eaten, were consumed by women on the main islands. There were few difference in consumption pattern of fruit between age groups and states. Women in Yap ate slightly more fruit than other states and women in Pohnpei ate fruit the least often.

The consumption of sugar was moderate at each meal period. Sugar consumption was highest in the mornings (37.6%, 15.7% and 16.5% of women ate sugar in the mornings, afternoons and evenings respectively). There were no significant age differences. More women in Kosrae ate sugar than in other states, at every meal period (77.1%, 47.2% and 46.4% of women in Kosrae ate sugar in the mornings, afternoons and evenings respectively). Sugar consumption was much higher in the urban and main island coastal areas than the main island inland and outer island zones especially in the mornings. The number of women consuming sugar and other snacks was very low in all groups, states and zones and at all meal periods.

The number of women consuming alcohol was also low and in Kosrae alcohol was not consumed by women at all. Only women in Pohnpei drank sakau (kava) and only in the evenings (3.2% of women in Pohnpei drank sakau in the evenings).

Tables 8.4 describe the percentage of females 15- 49 years old who ate each kind of food during the day, by occupation. There were few differences in consumption patterns for imported versus

Local staples, fats and protein, although there was a tendency for clerical workers to consume more imported foods than the other two occupation groups (professional and housework). Professional women ate much more sugar than women with other occupations, especially in the mornings (60.6% of professional women compared to 47.7% of clerical workers and 36.4% of housewives ate sugar in the mornings). There were no differences between occupation groups for rates of consumption of greens, vegetables, fruits, snacks, alcohol and sakau.

Tables 9.1 - 9.4 describe the frequency distribution of females aged 15 - 49 years old who ate various food types by state, zone, age group and occupation. Most women aged 15 - 49 years old in FSM ate some kind of food at least twice a day and the majority ate three or more times a day. They ate mostly staples and protein foods with some sugar, fats and a few fruits and vegetables. Most women ate some kind of staple (FSM or imported) at least 2 or 3 times a day and there were no significant differences between age groups, states and zones.

Between 37.8% and 46.6% of women in all age groups ate no kind of fat during the day and there were no significant differences between age groups. Women in Kosrae ate some kind of fat more often than women in other states. There were 71.5% of women in Kosrae who ate fat at least one a day compared to 62.8%, 57.7% and 44.9% in Pohnpei, Truk and Yap respectively. Fat consumption was slightly lower in outer island poor food resource areas than all other zones.

Protein consumption was moderate in all age groups, states and zones with no significant differences between each variable. Most women ate protein foods at least once a day and commonly ate them two or more times a day.

The consumption levels of greens and vegetables were very very low in all age groups, states and zones. Between 97.8% and 98.6% of women in all age groups ate no greens and between 90.2% and 93.5% ate no vegetables at all during the day. There was a marginally greater consumption of greens in Yap and of vegetables in Yap and Kosrae. Greens consumption was low in all zones and so was vegetable consumption although main island urban and inland areas consumed vegetables slightly more often than other coastal and outer island areas.

Fruit consumption was only moderate in all age groups. Only between 37.1% and 41.6% of women among all age groups ate any kind of fruit at least once a day. There were no significant differences between states and zones although consumption levels were particularly low in main island urban and inland areas where only 30.1% and 37.1% of women ate any fruit at all during the day.

Sugar and snack food consumption was moderate with between 44.7% and 53.1% of women in all age groups not consuming sugar or snack foods at all. There were very significant differences in sugar and snack food consumption between states. In Kosrae 90.4% of women in Kosrae were eating these foods at least once a day compared to 53.4%, 45.8% and 38.5% in Pohnpei, Truk and Yap respectively. Consumption levels of these foods was also much higher in main island urban and rural coastal areas (70.4% and 64.3% respectively ate some sugar and snack foods at least once a day) compared to main island, inland and the outer island good and poor resource zones (where only 40%, 30.8% and 32.6% respectively ate some sugar and snack foods in a day).

The frequency distribution of females 15 - 49 years old who ate various food types by occupation is presented in Table 9.4. There were few differences in frequency of consumption rates between the various occupations. Professional women consumed more sugars and snack foods (80.9% ate some at least one a day) compared with clerical (68.8%) and housework (49%) groups.

Tables 10.1 - 10.4 describe the percentage of adult females who ate balanced meals by age group, state, zone and occupation. Only 13.4% of women ate 3 balanced meals a day and 27.1% of women ate no balanced meals at all in a day. Breakfast was frequently not a balanced meal (64.6% of women). There were 57.6% and 50.4% of women not eating a balanced lunch or dinner respectively. There were no significant difference between age groups, states, zones and occupation.

Tables 11.1 - 11.4 describe the patterns of food consumption of adult females 15 - 49 years old. There were 76.5% of women eating during the 3 time periods and if a meal was missed, it was more commonly the midday meal. This was particularly true of women in Kosrae and women in the urban zone.

3.2.4 Interrelationships between adult female's body index and dietary patterns

Overall for women 15-49 years old, there were no significant correlations between food consumption patterns and body mass index. With increasing body mass index, women tended to eat sugar, local staples, fat and protein more often but this was not significant.

3.3 Children 0 - 59 months

3.3.1 Infants Nutritional Status

The mean and standard deviations for weight for age, height for age weight for height by age group, state and food group zone are presented in tables 12.1 to 12.10. Tables 13.1 - 13.12 show the prevalence of malnutrition in children 0 - 59 months as percent of the median from the WHO/NCHS reference standards for weight for age, height for age, weight for height and Waterlow's classification, by age group, state and zone. Tables Add. 1 - 6 in the supplementary tables section present data on the prevalence of malnutrition expressed as percentiles and as standard deviation from the WHO/NCHS reference standards.

Data on malnutrition have been tabulated and are presented in 3 ways for purposes of reference and international comparisons. For purposes of discussion the data expressed as percent of the median will be highlighted in this report. This is in order to avoid confusion in the slightly different prevalences that occur when different criteria and cut-offs are used. Percent of median has been selected because a) it is the most widely known means of expressing prevalence of malnutrition throughout FSM especially amongst health workers, b) it provides a more comprehensive analysis of degree of severity of malnutrition than other methods and c) percentages are generally easier to understand and evaluate by readers than standard deviation and percentile terminologies.

For each age group there were no significant differences in mean weight for age, height for age or weight for height between zones and states although children in the main island inland areas tended to be marginally shorter and gain weight at a lower rate than other zones. Figures 9 and 10 show the mean weight for age and mean and standard deviations for weight for age plotted on the WHO growth chart. Weights for age of FSM children follow the WHO growth standard for the first 6-7 months but then gradually fall off so that there is a slowing of growth until 19-21 months. Growth then continues steadily so that the FSM children's growth curve parallels the WHO standard. There is no 'catch up growth' and the children's mean weight does not reach the WHO standard even by 59 months. Figure 11 plots mean heights for age for both sexes combined compared with WHO/NCHS standards for boys. There is an increase in height over the first 6 months of age and mean lengths of children at birth are the same as the reference standards. Height growth begins to fall off steadily with respect to the reference standard as age increases and is well below the standard by 59 months of age.

In summary, for prevalence of malnutrition data, there were no cases of severe underweight (less than 60 weight for age) severe stunting and only a few cases severe or moderate wasting (less

than 70% and 70 - 79% weight for height respectively). Waterlow's classification which combines two indicators - weight for height (for wasting) and height for age (for stunting), and gives a reference of the onset and duration of malnutrition showed very little wasting i.e. little acute malnutrition, but a high incidence of stunting or chronic malnutrition. There was a high prevalence rate of moderate malnutrition - both under and overnutrition.

Tables 13.1 - 13.3 refer to weight for age expressed as percent of median of WHO/NCHS standards by age group, state and food supply zones. For all age groups there were 13.3% of children who were moderately underweight (<80% of standard). Only 5.5% of children had very high weights ($\geq 120\%$ standard). Underweight increased with age and the number of high weight cases decreased with age. Very high weights for age were particularly common (26.8%) in the first six months of life.

There were few differences between states in overall prevalence of underweight and high weight children, but the age groups with most problems did vary between states. Underweight increased with age and peaked at 24.5% in the 24-35 month age group in Kosrae state and then declined slightly in 36-59 month old children. The prevalence of underweight increased steadily with age in Pohnpei and Truk state peaking in older children at 48-59 months (21.2% and 18.3% respectively). In Yap, the prevalence of underweight in younger children was much higher than other states 12.1% and 11.9% for 0 - 5 months and 6 - 11 months children respectively compared with 2.8% and 5.5% for total FSM values. Older children also had high rates of underweight peaking at 18-23 months (24.2%). There was a lower prevalence of high weight for age in Yapese children than in other states and more high weight for age children in Pohnpei.

The prevalence of underweight also increased with age when analysed by zone with the highest prevalence of underweight occurring in older children 24 - 59 months, in all zones. There was a higher rate of underweight in young infants 0 - 5 months in main island urban areas (9.7%) compared to other zones. There was no underweight in this age group in inland areas of main islands. However there was a much higher prevalence of underweight in 24 - 59 month children in inland areas than in all other zones. High weight for age decreased with age in all zones and there was slightly more high weight for age children in the urban area than all the rural and outer island areas.

There was considerable variation in the incidence of underweight and high weight for age in the different zones for each state. In Yap, most of the underweight was occurring in main island areas (18.9% and 23.5% in urban and coastal zones respectively compared to good and poor resource outer islands (12.4% and 12.6% respectively). In Truk and Pohnpei the rural inland and the outer

island zones had more underweight than the main island areas. Prevalence rates for main island inland areas for Truk and Pohnpei respectively were 18.1% and 15.9%; 11.6% and 18.6% for outer island good resources and 14.2% and 8.1% for outer island poor resources. This compares with 10.2% and 7.6% and 10.0% and 8.3% in main island urban and rural coastal areas of Truk and Pohnpei respectively. Kosrae only comprised one zone and so all underweight occurred in this zone (main island rural coastal). There was no consistent pattern for high weight for age by state and zone although the prevalence was particularly high in Pohnpei outer island poor resource areas.

Tables 13.4 - 13.6 refer to height for age expressed as percent of median of WHO/NCHS standards by age group, state and food supply zones. Overall, 9.9% of children surveyed were moderately short or stunted for their age. The prevalence of stunting increased steadily with age in all states. There was more stunting in Kosrae and Pohnpei children between ages 12 - 59 months than in Trukese and Yapese children. Most stunting occurred in outer island good resource areas where 23.5% of children aged 48 - 59 months were less than 90% of the standard for their height for age. This high rate of stunting in the outer island good resource zone occurred mostly in Pohnpei state and was not evident in this zone in Yap and Truk states.

Tables 13.7 - 13.9 refer to weight for height expressed as percent of median of WHO/NCHS standards by age group, state and food supply zones. Overall, 1.3% of children in FSM had a weight for height of less than 80% of standard or severe wasting and 9.2% had moderate wasting (80 - 89% standard). Only 4.4% of children had a weight for height above what is considered the normal range, according to WHO/NCHS standards. Patterns of malnutrition by zone and state as defined by weight for height were similar to the patterns for weight for age. Low weight for height or wasting increased with age although to a lesser extent than low weight for age and low height for age had increased. In other words a shorter height for age can be expected to give a lower weight and so weight for height appears more normal. Under-nutrition defined by low weight for height or wasting peaked between the ages 12 - 35 months in most states. there was a high prevalence of moderate wasting (80 - 89% of standard) and severe wasting (below 80% of standard) in Yap state compared to other states.

This peaking of prevalence rates between ages 12 - 35 months was also evident in analysis between zones. The highest rates of low weight for height occurred in the main island inland areas, urban areas and outer island poor resources areas. In Yap state the highest rates of severe and moderate wasting occurred in the urban and outer island good resources areas. In Pohnpei most of the children with low weights for height were in the outer island

good resources and main island inland areas. In Truk, the main island rural inland area had the highest rate of severe and moderate stunting.

Tables 13.10 - 13.12 pull together all the variables in determining malnutrition prevalence rates in Waterlow's classification (see section 2.6 for definitions). Clearly, there is very little acute malnutrition or wasting in any state, zone or age group with a prevalence of 1.3 % in the whole of FSM. There is slightly more wasting in Yap particularly between ages 12 - 17 and 18 - 23 months when 5.3% and 5.2% of children were classed as wasted. The prevalence of wasting in Truk occurred mostly in the rural inland areas whereas in Yap it occurred in all zones surveyed (except inland areas, but only 5 children were surveyed). However there is considerable stunting or chronic malnutrition in all states which increases with age. Overall 10.1% of children in FSM are stunted or short for their age. The prevalence of stunting increases with age and is more severe in Pohnpei and Kosrae states. Stunting was more prevalent in outer island good resource areas of Pohnpei than in other zones. The prevalence of stunting was also high in the outer island good resource area of Yap but was greatest in the rural coastal area of the main island. The prevalence of stunting in Truk was consistent for each zone.

3.3.2 Infant feeding patterns

Infant feeding patterns with respect to method of feeding, time of giving breastmilk, bottlefeeding practices and the introduction of solid food etc. are given in tables 14 - 17.

Table 14.1 shows how infants were being fed at the time of the survey according to age. In the first 3 months of age 95.2% of infants were being breastfed. Of these 14.6% were receiving bottlemilk as well as breastmilk. The remaining 4.9% of infants were being fed by bottle or bottle plus solids. No children were on solids only, but 3.5% of children were already receiving some solids with milk.

By 3 - 5 months there was still a high percentage of women breastfeeding (88.8%) but many children were receiving solids in addition to breastmilk. By this age 38.5% of children were on solids with milk and no child was on solids only. Bottlefeeding had increased to 18.4% of children but this was generally in combination with breast milk and/or solids. Only 3.5% of 0 - 2 months children and 5.0% of 3 - 5 months old children were being totally bottlefed.

By 6 - 8 months of age 83.7% of children were receiving solids and 7.1% of these children were on solids only i.e. were receiving no milk from the breast or bottle. By now, 2.4% of children were being given bottlemilk but 81.2% were still receiving some breast milk.

There were 11.2% of children still being totally breastfed, 2.0% of children still being totally bottlefed and 3.1% being breast and bottlefed i.e. solids had not been introduced to 16.3% of children aged 6 - 11 months.

By 9 - 11 months, 4.9% of children were still not receiving solids, and 17.5% had been totally weaned from breast or bottlemilk. Breastfeeding had declined to 68.0%. By 12 - 17 months most children had been introduced to solid foods and breastfeeding had declined to 49.2%. Many children (43.5%) were now on solids only. Breastfeeding continued until 2 - 4 years of age for a few children, but most children had been weaned from the breast by 18 - 23 months. Many children were weaned as early as 6 - 12 months.

The time mothers first gave the breast after birth by state and zone and age group of mothers is presented in tables 15.1 - 15.2. Almost 49% of mothers were giving the breast immediately after birth, 34.6% were giving the breast sometime in the first day, 8.1% of infants were not receiving breastmilk until sometime in the second day, and 3.8% were not receiving breastmilk until after the second day. There were 63 children (1.8%) who were never breastfed. There were fewer women in Kosrae giving the breast immediately after birth than in other states so there were 22.9% of babies not receiving breastmilk until the second day or later. Older women were more likely to give the breast after the first day than younger women. All the teenage mothers gave the breast immediately after birth or in the first day.

Tables 16.1 - 16.2 show the prevalence of giving nourishment other than milk in a bottle to infants and the types of nourishment given. Overall approximately 50% of mothers were giving some kind of nourishment in a bottle. Using a bottle was particularly common in Pohnpei and Truk states. Water, juice, tea and coconut water were commonly given in a bottle and in Truk sugar water was frequently given. Soft food was given in a bottle by some mothers.

The reasons for a mother choosing to bottle-feed and the types of milk fed to bottle-fed children 0 - 59 months of age are given in tables 16.3 - 16.9. Most bottle-fed babies were from the main island - urban and rural coastal zones. The main reason for bottlefeeding were "not enough breast milk" and "mother working". There were no differences between states and zones for the reasons given for bottlefeeding "mother's choice and adopted babies" were other common reasons for bottlefeeding.

Most bottle-fed children were given infant formula milk with only 7 isolated cases in Kosrae and Pohnpei of using low fat milk powder or evaporated milk. Morinaga was the most commonly used infant formula, particularly in Kosrae and Yap.

Enfamil was also used widely. Pohnpei had the greatest variety of formulas used which is probably a reflection of availability.

The introduction of solids was early for some children with 4.4% of children having been offered solids in the first two months, rising to 29.1% by the age of 3 months (Tables 17.1 and 17.2). By four months of age 48.4% of children had been introduced to solid foods. There were few differences between states and zones for age of introduction of solids, although introduction was slightly more delayed in outer island poor resource areas and main island rural inland areas. There was a total of 84.8% of children who had been given solids by the age of 6 months. Of the remaining 15.2% of children who had solids introduced late, some children did not receive them until 12 months of age. This was particularly common in Pohnpei and Truk.

Data on infant feeding patterns presented in table 17.1 which was obtained from a retrospective question for all children, and in table 14.1 which was obtained from a question on current infant feeding pattern, show similar results and patterns of introduction of solid foods to children.

Local staples were the most commonly given first food (Tables 17.3 and 17.4) with 66.0% of infants being offered them. This was particularly common in Pohnpei and Truk. Fruit and fruit juice was also a common first solid food, particularly in Kosrae and Yap. Some children were given imported staples and local protein foods. (mainly as rice and fish.) There were 14.2% of children who were given commercial baby food from the store as a first food, particularly in Kosrae and Pohnpei and in the urban rural main island zones. Fat was rarely offered as a first food, nor were green or other vegetables, imported fruit, sugar and other snacks.

3.3.3 Maternal and child health care

Tables 7.4 and 7.5 describe ante-natal clinic visits by children's mothers, whether or not pregnant women take the iron and vitamin tablets they are given in clinic and whether or not children are taken to public health clinics or not.

Attendance at pre-natal clinic was good with 80% of mothers attending clinic at least once. However many mothers (48.3%) did not go until they were 4 - 6 months pregnant or even 7 - 9 months pregnant (23.8%). There were no differences in patterns of attendance between states and age of the mothers although

attendance was marginally better in Yap than other states. Only 41.9% of the women attending clinic were taking their iron and vitamin tablets regularly. Attendance of children at well-baby clinic at least once was good in all states. Yap and Kosrae had particularly good records with 94.6% and 93.4% of children respectively attending clinic at least once. Only 82.0% and 77.2% of children attended clinic in Pohnpei and Truk respectively.

3.3.4 Infant Dietary Patterns

Tables 18.1 - 18.3, 19.1 - 19.3 and 20.1 to 20.4 give data on the dietary patterns of children who are eating solid foods. Although there was a large proportion of children who ate solids before the age of six to twelve months, it could be expected that many of them would not be eating regular balanced meals much before this time. Therefore, only data for infants 12 - 59 months will be the main focus of discussion for this section.

Tables 18.1 - 18.3 describe the percentage of children aged 12 - 59 months old who ate each kind of food during the day by state, zone and age group. Results are expressed as percentage of children who ate a particular food type, during the previous 24 hours. Most children ate some food, some time in the morning, afternoons and evening. (97.7%, 96.4% and 96.8% respectively.)

Food consumption patterns were similar for each of the three time periods in the day. Imported staples and FSM protein were the most common food items consumed in the morning (78.4% and 40.0% respectively). Sugar, imported protein and fruit or fruit juice were also commonly consumed.

Imported staples were also more commonly consumed than FSM staples in the afternoons and evenings for children of all age groups. FSM protein was commonly eaten at these times in preference to imported protein and fat consumption (imported and local) was moderately low at all times. Fruit consumption was also moderately low (21.6% in the afternoons and 18.4% in the evening) but was mostly local fresh fruit when it was eaten. Fresh greens and vegetables were almost non-existent in the diet at each meal period. Sugar consumption was lower in the afternoons and evenings than in the mornings and sugar snack consumption for all age groups of children was low. However sugar and sugar snack consumption increased significantly with age at all meal times but especially in the mornings. There were no other significant differences in foods eaten at each meal between age groups.

Yapese children ate considerably more local staple foods and less imported staples than children from other states for each time period. Fruit and fruit juice consumption was also much greater

in Yap state at each time period. Sugar consumption was significantly higher in Kosrae than all other states at every time period and especially in the morning. Sugar consumption was low among children in Yap (67.3% of children ate sugar in the morning in Kosrae compared with 11.5% of children in Yap.) Fat consumption, from local and imported sources, was higher in Kosrae than other states at all times but especially in the evenings.

Between zones, consumption of local staples was much higher in the more remote areas i.e. outer islands and main island inland areas, compared to main island urban and coastal areas. (e.g. 30.9% in outer island poor resources areas compared with 15.3% in urban areas in the morning.) However, the consumption of imported staples was high in all zones at all meal periods. Sugar and sugar snack consumption was highest in the main island urban and coastal zones at all meal periods. In contrast fruit and fruit juice consumption was much lower in the remote zones (outer islands and main island inland).

Tables 19.1 - 19.3 describe the frequency distribution of children 12 - 59 months old who ate various food types by age group, zone and state. Most children age 12 - 59 months ate three meals or more a day. Most children ate some kind of staple (FSM or imported) three or more times a day in all age groups and zones but fewer children ate staples three times a day in Yap (83.0%) than in the other states (97.6%, 94.3% and 96.3% in Kosrae, Pohnpei and Truk respectively). Fat consumption was moderate in all age groups although it increased slightly with age. Among the different age groups a range of 44.0% - 57.2% of children did not eat any fat in the day. Fat consumption was much higher in Kosrae and Pohnpei than Truk and Yap. In Kosrae and Pohnpei 22.6% and 36.4% respectively of children did not eat fat compared to 57.8% and 59.8% in Truk and Yap respectively. Children in the outer island poor food resources zone ate the least fat and the outer island poor resources zone ate the most of any supply zone.

Protein consumption increased with age so that by 24 - 35 months, 48.1% of children were eating protein three or more times a day. Younger children, especially those in the 12 - 17 month age group ate protein foods less often (17.9% of 12 - 17 month age group children ate no protein food in a day). Protein consumption was fairly consistent between states although more children in Yap and Truk (11.7% and 11.3%) respectively ate no protein in a day compared to Kosrae and Pohnpei (1.6% and 5.1% respectively). Protein consumption was slightly lower in main island inland and both outer island zones than in main island urban and coastal areas.

The consumption of greens and vegetables was very low in all age groups, zones and states. Between 96.7% and 98.7% of children ate no greens and between 93.0% and 95.0% of children ate no

vegetables of any kind at all in the day. The consumption of green was marginally higher in Yap than other states and of vegetables was marginally higher in Pohnpei and Yap but both were still low. There were no differences between zones. Fruit consumption was also low in all age groups. Between 61.5% and 66.4% of children in all age groups ate no fruit. Fruit consumption was much higher in Yap (51.9% ate some in the day) and to some extent Kosrae (41.7% ate some in the day, compared to Pohnpei and Truk where only 31.4% and 32.6% respectively ate any fruit during the day. Children in all main island zones ate less fruit than children on the outer islands.

Sugar and snack consumption increased steadily with age rising from 26.5% eating some in the day between 12 - 17 months of age to 41.8% eating some in the day by 48 - 59 months of age. Sugar and snack consumption was especially high in Kosrae and Pohnpei, where 80.2% and 46.9% respectively of children ate some sugar or snacks at least once a day compared with only 27.3% and 22.8% in Truk and Yap respectively. Main island urban and rural coastal children ate more sugar and snacks (52.7% and 48.8% at least once a day respectively) than other zones (30.0%, 26.6% and 17.7% in main island inland and outer island good and poor resources respectively).

Consumption levels of store baby food was very low in all age groups states and zones. No store baby food was eaten on the outer islands. Store baby food was shown to be a common first solid food to be introduced to children (Table 17.3), but consumption levels were low thereafter.

Tables 20.1 to 20.4 describe the percentage of 12 - 59 months old children who ate balanced meals and their daily meal patterns. A large proportion of children at all age groups were not eating a balanced meal in the day at all (34.7%) and many were only eating one balanced meal a day (26.3%).

There were no differences between age groups as to whether breakfast, lunch or dinner was a balanced meal or not. Between states, children in Kosrae were more likely to eat at least one balanced meal in the day (85.7%) except in the mornings and they were least likely to in Truk (58.1%). There were no differences between zones. Nearly all children ate at least three times a day (97.1%).

3.3.5 Interrelationships between infants nutritional status, feeding and dietary patterns

Variables that might be expected to correlate with childhood malnutrition such as breast versus bottlefeeding, late introduction of solids etc. were correlated with the prevalence of malnutrition for all states combined.

Nutritional status was not directly related to infant feeding pattern. There was no significant correlation between age of introduction of solids and nutritional status for children of all ages in all states and zones. The nutritional status of bottle fed children and breast fed children was the same and there were not many totally bottlefed children anyway. Malnutrition was not any higher in children who were given a bottle with food and drink other than milk, than those who were never given a bottle.

Children who were weaned off breast and bottlemilk early were more likely to have malnutrition (low weight for age) but there were no significant differences in the prevalence of malnutrition between those who were and were not weaned early.

Malnutrition prevalence was not affected by whether or not a mother stayed at home all day or went to work and left her child in the care of a relative or baby-sitter. Teenage mothers were no more likely to have malnourished children than older mothers.

The types of solid food eaten and the frequency of eating different types of food did not have a direct effect on nutritional status with respect to growth. The data collected in this study was not quantitative, and while type of food did not have a direct effect on nutritional status, the quantity of the type of food may have been having an effect. Also, indirectly the combination of high consumption of imported staples, low consumption of local staples, fat, greens and vegetables was most likely contributing to the high prevalence of Vitamin A currently reported in FSM.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific procedures for recording transactions. It details the steps involved in the accounting cycle, from identifying the transaction to posting it to the appropriate ledger account. It also discusses the importance of reconciling accounts and preparing financial statements.

3. The third part of the document discusses the role of internal controls in ensuring the accuracy and reliability of financial information. It describes various control measures, such as segregation of duties, authorization requirements, and independent verification, and explains how they help to minimize the risk of errors and fraud.

D I S C U S S I O N

=====

4. DISCUSSION

The FSM is heavily dependent on imported foods despite abundant fertile soils and a surplus of labour. It is well documented in the Pacific, (Coyne, Badcock and Taylor), that diets based on imported foods means an increased consumption of refined sugar, salt, animal fats, energy (calories) and decreased dietary fiber. Traditionally Pacific diets tended to be at best, only marginally adequate in protective foods (fruits and vegetables) and reliance on imported foods tends to exacerbate this leading to vitamin and mineral deficiency. The end result of these dietary changes for adults is obesity, hypertension, gout and renal disorders, cardiovascular diseases and general poor health. For children, the result can be protein - energy malnutrition and general increased illnesses associated with vitamin and mineral deficiencies. It is evident from this survey that many of these dietary problems are prevalent in the Federated States of Micronesia.

4.1 Women's Nutritional Status and Dietary Patterns

There was strong evidence from the body mass index data that overweight and obesity were major nutritional problems in the Federated States of Micronesia, among women of child bearing age (15- 49 years). The problems became more critical as the women became older, and by middle age the majority of women were overweight and obese. Patterns of obesity were different between states and food supply zones. Some of these patterns and differences were accountable by differences in food consumption patterns, energy expenditures and lifestyle factors.

Dietary pattern trends were as expected in that outer island women and to some extent main island rural women, tended to consume more local produce and the consumption of imported foods was highest among urban and coastal main island women who had easy access to shops and trade stores. None-the-less consumption of imported foods was quite significant in some of the less accessible areas (inland and outer island areas). A number of other Pacific studies have shown that people consuming more imported foods (which are often more energy dense than local fresh foods) and leading a sedentary lifestyle, tend to have more obesity than people consuming predominantly local produce and leading more active lifestyles (Coyne, Badcock, Taylor, 1984). It was interesting to note therefore, that in the Federated States of Micronesia, outer island women tended to be heavier and slightly more overweight and obese than main island women. The reasons for this probably vary from state to state and are discussed in relation to dietary patterns and other lifestyle factors applicable to each state and zone.

There was more obesity among women of child-bearing age in Kosrae than in any other state. Food patterns are slightly different in Kosrae compared with other states. More fried food is eaten e.g. pancakes and fried bananas for breakfast instead of plain (no butter) bread; there is more baking of cookies and cakes and sugar consumption was two to three times higher among women from Kosrae than other states. Women from Kosrae are not generally involved in much gardening activity. Most villages have easy access to the road and to public or private transport, and so people do not walk very much. Kosraen women are engaged in a lot of church and social gathering activities and in making handicrafts all of which are low energy level activities.

In Pohnpei the level of obesity was high in all areas but particularly high in the outer island poor resources zones and lower in the rural inland areas. The outer island poor resources, comprised the Polynesian island groups of Kapingamarangi and Nukuoro. Although this is not apparent from the method of data analysis used to provide the results, women in Kapingamarangi are visibly much larger than women in Nukuoro with respect to body build and weight. Polynesians are commonly reputed to be of larger build and frame than many other races including other Pacific Islanders from Micronesia and Melanesia (except Fiji) and discussion as to the validity of using Caucasian standards for overweight and obesity is common place. The report from the Nutrition Survey in the Kingdom of Tonga in 1986 (Maclean, Badcock and Bach, 1987) has suggested that Polynesians classed as moderately overweight by Caucasian standards may in fact be a normal or healthy weight for their body build. The large body build of the Kapingamarangi women may therefore account for the apparent high prevalence rate of overweight and obesity in this poor resource outer island zone of Pohnpei. Certainly with respect to diet, this group are consuming mainly local produce particularly fresh fish and taro and imported food supplies are limited and irregular because of infrequent shipping services. Consumption of fat particularly from coconut cream was moderate but higher than in main island areas. At the same time, women in both islands of this zones are fairly active. They are responsible for taro patches which are time consuming and hard work and they walk a lot. It is interesting to note at this point that Kapinga women living in Pohnrakiet on Pohnpei main island (urban zone) are also large and overweight. Whether they are more active than their outer island counterparts was not analysed as part of this report.

The reason why rural inland women in Pohnpei were less overweight may be due to activity levels since they have to do more walking up and down mountains to reach their villages from the road or their gardens. They ate more local staples than women in other main island zones but ate more canned meat and fish which contain a lot of fat, because of poor access to seafoods and fish.

It was of interest that there was no particularly high level of obesity in the urban area as might have been expected from the fact that more people are consuming imported food. However, there are more younger women, who were shown to have less obesity than older women, living in the urban area and this may be biasing the data slightly. Activity levels may also account for the lower than expected incidence of obesity in the urban area, where extra-curricular energy consuming activities such as jogging, walking and sports and associated training as well as disco dancing are increasingly common place. These activities may be helping to compensate for the changing, more energy dense diets. A greater awareness of the need for a healthier lifestyle, particularly among young people in the urban areas, may also be a factor.

In Truk, the patterns of obesity across the zones are very similar to those seen in Pohnpei. Again urban area obesity levels were high but not excessively higher than other zones as might have been expected and inland areas had lower prevalence rates of obesity and overweight. The outer island poor resource areas have the highest prevalence of obesity, but the reasons for this are less easily explained than for Pohnpei.

It is important to perhaps raise the question again at this point, as to whether obesity and overweight (as defined by excess body weight for height) carry the same health risks under different environmental and lifestyle situations. A similar question was raised in the National Nutrition Survey of the Kingdom of Tonga, where obesity was also shown to be prevalent in more remote rural areas and was often in excess of the obesity seen in urban areas. The hypothesis is that activity levels are also very important to general health status and that given a very active lifestyle, obesity or overweight may carry less of a health risk for developing diabetes, heart disease etc. than obesity or overweight associated with a sedentary or other health risk lifestyle such as for smokers and high alcohol consumers.

The occurrence of diseases such as diabetes, high blood pressure and heart disease is certainly much lower in the more remote areas of Federated States of Micronesia, particularly the outer islands as seen from hospital and other health statistics. This supports the hypothesis that overweight and obese outer islanders may be protected from getting diseases such as diabetes, by their high activity levels and possibly because of the kinds of foods they eat i.e, high fiber and low sugar and refined starches such as flour and rice. This compares with groups having a more sedentary lifestyle particularly in the main island urban areas where these non - communicable diseases like diabetes and heart disease are increasingly prevalent.

The prevalence of obesity in Yap was comparatively low in main island areas relative to the other states but was high in the outer islands especially in the good food supply areas. The main island Yapese women are visibly slimmer than outer island Yapese women and this is most probably related to activity levels as well as dietary patterns. Main island women are involved with taro patch production and other gardening activities whereas women on outer islands do less gardening. There is also a significant availability of USDA foods in the outer islands because of disaster relief programs. Food and cooking patterns are also different on the outer islands and the consumption of fat, particularly as coconut cream is much higher in outer islands than the main islands. It is harder to account for the difference in obesity and overweight prevalence between good and poor resource outer islands other than knowing that there is a lower level of food production in the poor resource areas and that less fat (a high energy food) is eaten in poor resource zones than in good resource zones.

One other factor for discussion with respect to Yap is the knowledge that people from the main islands chew more betel nut, than people from all the outer islands mostly because of availability. Some researchers have postulated that betel nut suppresses appetite although this has never been proven. It is thus possible that main island women in Yap consume less food in total than outer island women, which helps them maintain a lower body weight. Nicotine which is chewed in the form of tobacco with betel nut is also known to reduce appetite and there may also be some overall satisfaction to appetite by the continuous chewing of betel nut.

So far we have discussed patterns of obesity by state and zone. The fact there are major problems of overweight and obesity is further evident from the data presented by age group. It is of concern that adult women, even at a younger age tend to be somewhat overweight i.e., there is some moderate overweight even if there is not much obesity. The prevalence of obesity tends to increase with age worldwide and because many FSM women start adulthood with a high weight there is already an increased risk of them becoming obese overtime. Many younger people were eating more imported food than older people. We have already speculated that diet may not be the only major contributory factor in obesity, since in some instances outer island people consuming mostly FSM foods are more obese than urban people consuming imported foods. However, in light of evidence from other studies in the Pacific that an increase in imported food consumption often leads to an increase in obesity, if young people continue to consume more imported foods they may carry an increased risk of becoming obese as they grow older. Urban leanness may be being maintained by positive lifestyle factors as discussed previously, however, these need to be maintained. They also need to be extended to rural areas to prevent obesity.

There will be a danger of a further increase in obesity or a switch from "healthy" obesity to "unhealthy" obesity associated with high risk of non-communicable disease, in outer island communities if these positive lifestyle factors are not maintained and if the consumption of imported food increases.

It might be tempting to conclude from this study that provided high activity levels are maintained a switch from traditional diet to a more convenient diet based on imported foods, need not have an adverse effect on body weight. However, it should be stressed that there are other disadvantages associated with such a switch. A diet based on local foods tends to be more nutritious with respect to a higher fiber, vitamin, mineral content and should therefore be encouraged in preference to imported foods. This is particularly relevant with respect to traditional staple foods like taro and breadfruit, etc., compared with imported staples like rice and flour. On the one hand of course many people really like rice and flour and prefer to eat it. They are readily available and easily stored and require little preparation and cooking time. It is therefore not necessarily appropriate to stop people choosing to eat these foods. What is more appropriate and absolutely necessary however, is encouraging people to eat more vegetables and fruits to go with these imported staples. The reasons for this are, that local fresh staples contain vitamins and minerals - albeit at very low levels - but they can provide marginally adequate amounts even if people consume no fruit and vegetables because of the large quantity that would be eaten. Imported staples contain no vitamins and minerals unless specially enriched and this is not the case in FSM. So, unless dietary patterns are changed to accommodate this loss of source of vitamins and minerals by adding fruits and vegetables, serious mineral and vitamin deficiency problems can occur. These can result in anemia, skin problems and increased risk of other illnesses. Also, the traditional FSM dietary pattern of eating large quantities of local staples, although causing some obesity because of high energy intakes did help ensure enough vitamins and minerals were provided in the diet. This is not the case for imported staples which contain few vitamins and minerals plus they contain much more energy (calories) than local staples. There is therefore no justification for consuming large volumes of imported staple. Of course, this study only looked quantitatively not qualitatively at dietary patterns and so it is only possible to comment subjectively on the importance of the quantity of food eaten from a nutritional perspective.

While questions related to dietary recall asked only quantitative information, and no quantitative data was collected, results do indicate patterns evolving for particular foods in each time period throughout the day in each state and in each zone.

Staples either local or imported were commonly consumed in all areas because all islands would have access to bread - either purchased from the store or home - made. Outer island and rural areas also tended to eat left- over staples from the night before. In Yap, women have to leave the house early to get to their taro patches and so often prepare ramen for breakfast. Ramen was also a common breakfast food in other states and on the main islands. In Kosrae pancakes and fried bananas are common breakfast foods. If bread is eaten it is usually served alone with no butter or margarine and with coffee or tea containing milk or sugar. The frying of bananas and pancakes in Kosrae probably contributed to the high fat and sugar content of the diet. Kosraens also drink a lot of lime juice with added sugar (throughout the day as well as at breakfast). Tea and coffee also always have added sugar and usually milk powder.

Lunch would usually comprise rice or ramen with chicken or fish from local sources, or tinned meat or fish from stores. Turkey tails are also frequently included but these are classified in this study as imported fat, not protein because they are mostly fat. Town people especially workers eat "fast foods" or "take-aways" like hamburgers and fried chicken and fish for lunch and it is probably these foods plus the turkey tails that contribute to the higher imported fat consumption seen on the main islands in the afternoon and evening periods. Outer island diets for lunch and dinner would mainly consist of fish, and staple cooked in coconut cream (coconut cream was the main fat source for outer islanders). Some coconut cream was eaten on the main islands but it is not as readily available as on the outer islands. Similarly fresh fish and seafoods were much less available on the main islands so that more canned fish and meat were consumed. This was particularly true for the inland areas where there is very limited access to the sea.

Canned meat and fish are perfectly adequate substitutes for fresh fish and meat with respect to protein content but do contain a lot of fat and salt which makes them less nutritionally desirable. Turkey tails which are often eaten as a meat or fish substitute are little more than fat and skin.

Overall however, fat consumption seemed fairly low to moderate this was surprising considering fats contain a lot of energy and are normally a major contributing factor to obesity. However, fat consumption is probably much higher than is at first apparent particularly in main island areas because of the high canned meat and canned fish consumption which was not counted in the fat intake assessment of this study. Peanut butter, another high protein but also high fat content food is also often eaten on bread for breakfast on the main islands. In Kosrae it is common to add coconut cream to a soup to eat with the meal especially on Sundays which may again be a causal factor in high obesity levels in Kosrae.

Evening meal patterns are generally similar to lunch patterns although more local staples are eaten because there is more time to prepare and cook them. However, there is a general trend that rice and ramen would always be served as well, whether there was local staple or not. Many people were therefore consuming two or more kinds of staples in one meal which could be another contributing factor towards obesity.

Imported foods generally were more commonly consumed in main island areas where they had easy access to stores, than they were in rural area. However imported foods were also reasonably available on outer islands especially in poor resource areas because of the supply of USDA disaster relief foods. Consumption of sugar and sugar snack foods were moderately high, particularly in Kosrae and in the main island areas. A lot of this represented sugar in coffee and tea but also included sugar snack foods, such as soft drinks, ice cream and candies. In the light of high obesity prevalence and the known relationship with dental caries, education on the importance of reducing sugar intake is required.

Greens and vegetables were rarely consumed in any meal in any area despite a reasonable availability in some areas. Supplies on the whole though are generally poor, particularly in the town areas and on poor resource outer islands. As already discussed this low consumption may not have been significant in the past when local staples together with fruit supplied sufficient intakes of vitamins and fish and meat would have provided some iron (- although it is not known if this would have been adequate or not). Today, the low consumption of greens and vegetables is critical in the changing dietary pattern and needs to be increased dramatically.

Fruit consumption was also fairly low in this study and fruits were generally eaten as snacks and not included as part of meal. Education aimed at an increase in the consumption of fresh fruit and vegetables needs to be emphasised. This could be from a twofold aspect in that fruits and vegetables are low in energy value and are good for weight control and also that fruit and vegetables should comprise part of a normal healthy balanced diet in order to provide essential vitamins and minerals and prevent infections. More emphasis is required on the promotion of simple gardening to grow vegetables at home or in a market garden situation to supply town markets and on education on how to very simply include vegetables in the diet-particularly the "modern" rice and ramen and bread based diet.

Morning meals in every area and state tended to be the least balanced of all meals throughout the day. However, overall, meals were not well balanced and appropriate education is needed

on the importance of eating a variety of foods throughout the day. This could be easily coupled with education on weight control.

Actual prevalence rates for obesity have not been previously reported for comparison with this survey. The problem is probably not a new one. However, it is likely that many more people are very obese and heavier than has previously been noted. That obesity has perhaps always existed can also be linked with the fact that this study shows a high incidence even in outer island areas where lifestyle and food consumption patterns are more "traditional". The study in 1948-50 in the whole of TTPI carried out by the Medical Statistics Division, reported an average weight for females ranging from 51-52 kilograms. Mean weight of women in 1987/88 in FSM are 67.9 kgs which represents a considerable increase. Average height has remained the same and so the net result has been an increase in BMI and overweight.

The increasing incidence of non-communicable diseases in FSM also suggests the problem of obesity is more serious and widespread from a health viewpoint than previously reported. Non-communicable diseases are closely linked with dietary changes such as increased sugar, salt and animal fat consumption and with lack of exercise as well as obesity itself. The current trends in dietary patterns among adult women in FSM, in particular in the main island areas and the outer island poor resource areas, towards a higher imported and animal fat, high sugar and salt and low fibre diet gives cause for concern. From observing health trends elsewhere in the Pacific, there are compelling health reasons for obese Micronesian women to reduce their weight.

This study did not include men in the survey sample for time and cost reasons but it is important to note here that subjective observation and hospital data on the prevalence of non-communicable diseases among men, does suggest that overweight and obesity is probably as serious a problem among Micronesian men as among women. Dietary patterns are probably similar to those of women although more alcohol and thus more energy would be consumed by men.

4.2 Maternal health and incidence of anemia

There are several types of the condition called anemia - or weak blood - but the most common type, and the one investigated here is anemia caused by iron deficiency. Iron is a mineral, found in many foods, which is needed to make a special substance in blood called hemoglobin. Hemoglobin is needed to carry oxygen around the body to keep it healthy. Without an adequate supply of hemoglobin a person can become weak, pale and get sick very easily. Iron deficiency anemia can be caused a) by not eating

sufficient iron from food (or tablets given as supplements) b) blood loss from injury, child birth, menstruation and gut parasites like hookworm, c) a combination of a) and b). Women are especially 'at risk' of becoming anemic because of the blood loss associated with childbirth and menstruation and the need to make extra blood for a growing baby during pregnancy. An anemic woman who is pregnant is 'at risk' of giving birth to a low birth weight anemic baby. An anemic woman who is breastfeeding will not have enough iron and may be too weak to adequately feed her child. Anemia is a serious public health problem.

The results from the national nutrition survey indicated that anemia is a common problem in the Federated States of Micronesia. While there was little severe anemia, moderate and mild anemia were very common especially in Kosrae and especially among pregnant women in all states and zones. The field method to assess blood hemoglobin levels tends to err towards under-estimation of the problem (see Section 3.2.2 of the technical report) and so the problem may be even more serious than is reported here.

It was not possible to find any direct causal relationship between the prevalence of anemia and diet and other factors associated with maternal health such as parity, age and health clinic attendance. However, although sample numbers were low, it is quite likely that women with many children, especially those with more than 5 or 6 children, are at greater risk of becoming anemic.

Age of a woman at the time of the survey did not apparently affect their hemoglobin status. However, under normal circumstances, it could be expected that young women are less likely to be anemic because they have had fewer or no children, compared to older women, and young women would not have been menstruating for very long. However, in the Federated States of Micronesia, young women and teenagers have the same high prevalence of mild and moderate anemia as older women. This could be interpreted to indicate that the prevalence of anemia is on the increase and that today's young women are at very high risk of becoming severely anemic in the future especially when they start having children.

Iron in the diet is mainly found in protein foods especially dark red meat and fish and in foods like green leafy vegetables. Iron is most readily absorbed into the body if eaten with some vitamin C containing foods like fresh fruits and vegetables. Protein intakes of women in the Federated States of Micronesia were moderately good and would mainly be fish, but intakes of greens were negligible. Fruit and other vegetable intakes were also low. It is very likely that poor diet is a major causative factor in the anemia seen in women in the Federated States of Micronesia.

It is also very likely that the low intake of greens from an early age of infancy is also causing anemia in children (which would continue into adulthood) but this was not investigated.

There were not many women avoiding particular foods during pregnancy and lactation anywhere in the Federated States of Micronesia. Cultural reasons were generally given to explain why certain foods (fresh fish and other seafoods were most common) were avoided but these practices are clearly dying out. Since most women who did have food taboos were only avoiding one or two foods, it is unlikely that any health or dietary risk was being imposed and they were therefore not at any more risk of becoming anemic than women who had no food taboos.

Attendance at pre-natal clinic at least once during pregnancy was very good although there was a proportion of women who did not attend clinic until after the third month or sometimes even later. Iron and vitamin tablets are routinely given to women at pre-natal clinic to help prevent iron deficiency and other anemias. Less than half the women attending clinic said they were taking them, and of those who did take them there was not an apparent reduction of risk of becoming anemic. This may have been because they were not taking them regularly enough, or it is possible to speculate that the anemia problem among pregnant women may have been even more severe if some women were not taking these tablets. While more cost effective preventative measures such as encouraging a good diet high in iron is preferable to giving iron in tablet form, distribution should be continued until the hemoglobin status of women is improved. Every effort should be made to ensure women take these tablets regularly during pregnancy and lactation.

The greater prevalence of anemia in pregnant women is explained by the high prevalence of anemia even in non-pregnant women. It is likely many non-pregnant women had only marginally normal hemoglobin levels and low iron stores. Pregnancy imposes an extra stress on iron and blood stores and so a woman is more likely to become anemic. If she starts pregnancy with a low iron store then she will most certainly become anemic if her diet is low in iron.

While clearly a rigorous campaign to improve the diets of women so that they contain more iron and vitamin C rich foods such as meat, fish, eggs, greens and fruits would greatly improve their hemoglobin status, diet is not the only factor involved. Anecdotal information, hospital data and previous studies have suggested there is a high incidence of hookworm and other worms in the Federated States of Micronesia. This is very likely a major cause of the anemia seen in women today. Young children are often infected with hookworm and the blood loss associated with the worm attaching itself to the stomach lining, combined with the food the worms themselves eat denying them to the

infected person, can contribute to anemia. If young children slowly lose their iron stores they may enter adulthood mildly anemic. For women this means they start their child-bearing years with anemia already and this may partly account for the high prevalence in teenagers and young women.

Neither diet or hookworm infection apparently explain why there is more anemia in Kosrae than in other states. Hospital information does not indicate that hookworm infestation is any higher in Kosrae but this may need further investigation. Other factors such as parity and clinic attendance etc. did not explain this difference either. It is possible that soils and therefore fresh food, in Kosrae contain less iron than other states, but as fresh food consumption was low anyway, plus the renowned good vegetable growth seen in Kosrae indicative of good quality soil, this unlikely.

The problem of anemia needs further investigation and a routine monitoring program for anemia should be established especially in Kosrae.

4.3 Infant's nutritional status and dietary patterns

In order to interpret and discuss the results for nutritional status of children, it is first of all important to understand some of the anthropometric measurements and terms used. In nutritional status assessments, it is important to be able to distinguish between deficits in weight-for-height and in height for age. The term 'wasting' is commonly used to describe children with low weight-for-height and the term 'stunting' to describe a low height for age. 'Wasting' indicates a deficit in tissue and fat mass with the amount expected in a child of the same height or length, and may result either from failure to gain weight or from actual weight loss. 'Wasting' can be caused by many factors including a precipitation by an infection, limited family food supply or low food intake of children. One important feature of wasting is that it can develop very rapidly and under the right conditions can be corrected rapidly. 'Stunting' on the other hand, indicates a slowing in skeletal growth i.e. slowness in growing taller. Growth rate may be reduced from birth, and then if this continues, the effects of this retarded growth slowly accumulate. This means that stunting is a much longer term effect of malnutrition and the effects of the accumulated retarded growth may not be evident for several years. There are some notable differences between stunting and wasting. Firstly, one can fail to gain height, but one cannot lose it, whereas one can gain or lose weight fairly rapidly. Secondly, growth in height is a slower process than growth in body mass i.e. putting on weight. A child should treble its weight in the first year, but only double its height; this means that any significant

amount of stunting takes longer to be established. Thirdly, although catch-up in height can occur, it takes a long time compared to catch-up in weight. (WHO, 1987)

In a given population, wasting and stunting can be expected to show different patterns at different ages. The prevalence of wasting is commonly greatest between 12 and 24 months when dietary deficiencies are common and diarrhoeal diseases more frequent, and tends to decrease later on. By contrast, the prevalence of stunting increases over time up to the age of 24 or 36 months and then often shows a tendency to level off. It is also important to recognise that when the prevalence of stunting in a population of children is greater at 4 years than at 2 years, this is simply because the process of retardation has been going on for a longer time and does not mean that more 4 year-old children are malnourished. (WHO, 1986)

Children who are malnourished are at a greater risk of becoming sick and they will develop much more slowly. Mental as well as physical growth and development is affected by malnutrition. Children who are malnourished at an early age will not do so well at school and may never realize their fullest potential of achievement.

There was strong evidence from weight for age, height for age and weight for height data that there are nutritional problems existing among infants 0-59 months in FSM. Despite current hospital records and reports which showed that clinical malnutrition i.e. very serious malnutrition is being seen, the survey did not reveal any significant cases in the severe category. However, a high prevalence of moderate malnutrition was demonstrated in the survey which would preclude that episodes of severe malnutrition can be expected to occur periodically. What this means in real terms is that there is a high percentage of children in the community with border-line severe malnutrition. It is a well known fact that if children become sick, they do not eat well and they will tend to lose weight. If a child is of a healthy weight and well-nourished, then one short period of not eating really does not matter because they have enough body weight reserved to allow this weight loss. However if a child already has a marginal low weight, the moment he/she becomes ill and stops eating he/she will lose weight and cross the point of being classified as severely malnourished. It will then only take a few days for clinical signs of malnutrition to appear.

It is of particular concern that the malnutrition that exists in FSM appears to be of a long term or chronic type. This is evident from the fact that while many children are moderately underweight many of them are also short for their age i.e. are stunted. This degree of being short for age increases with age which is indicative of a long term or 'chronic' problem. Weight

does steadily increase to keep up with some of the increasing length, but there is obviously a continuous imbalance or lack of food intake so that an adequate gain in children's length or height is continuously being blocked i.e. children do grow to some extent but do not reach their full potential of growth because there is a constant marginally inadequate dietary intake.

Further evidence of the chronic nature of the malnutrition is shown by the fact that there is little underweight or stunting (shortness) in the younger age groups. In fact many infant in the first six months of life have exceptionally higher weights than would normally be expected and lengths are normal. This suggests that average national birth weights and lengths are good and are similar to Caucasian standards. However it is important to be aware of the fact that there are increasing numbers of low birth weight babies being reported among certain 'at risk' groups, particularly among teenage mothers. If this trend continues to accelerate the nutritional profile of 0-5 months old children could well deteriorate.

The degree of malnutrition varied by state and by zone for each state. In Yap, most of the underweight and wasting (low weight for height) was occurring in main island areas and the prevalence of underweight and wasting was higher than in other states, particularly among younger children. In Truk and Pohnpei most of the underweight and wasting was occurring in the rural inland areas and on the outer islands. There was more stunting in Kosraen and Pohnpean children, particularly children from the outer island good resources areas of Pohnpei, than among Trukese and Yapese children. Overall, the prevalence of underweight and wasted children was highest between ages 12 - 35 months.

Infant feeding and dietary patterns partly explain the patterns of malnutrition seen as a whole and within each state. Early infant feeding patterns were very good and the rate of breastfeeding was much higher than expected. Previous reports have suggested fewer women, especially younger women were breastfeeding, and that bottlefeeding was dangerously on the increase. Bottlefeeding can precipitate infections and especially diarrhoea if the bottles and water used in preparation of the milk are not kept very clean. It is also possible to mix the milk up too weak so that a baby is not getting enough food. The current study suggests that the downward breastfeeding trends have been reversed and that bottlefeeding is not a major cause of malnutrition today. The education campaigns and efforts by public health nurses to promote breastfeeding at least in early infancy have obviously been successful. However, these efforts will need to be continued to ensure this positive trend continues. Also, mixed feeding, i.e. breast and bottle is still commonplace particularly after 4-6 months or even earlier for mothers returning to work and efforts to ensure bottlefeeding is

correctly and hygienically carried out need to be made. Ideally, promotion of continued breastfeeding with no introduction of the bottle should be encouraged. Many mothers are using bottles to give food and drink other than milk and this carries the same risk of infection from dirty bottles and teats. Any food and drink in addition to milk can easily be given with a cup and spoon which are much easier to keep clean.

The good growth of children up to the age of six months is probably due to the high rate of breastfeeding but the slowing of growth seen in both weight and height for age data at 6 months may be partly due to the high use of bottles for giving milk or other foods and drinks because a higher risk of getting an infection is introduced. The importance of infections in causing malnutrition will be discussed below.

The age of introduction of solids was on the whole good. Some mothers gave them too early and some too late (4-6 months is the recommended time for introduction of solids to babies) and continued education through public health clinics is needed to encourage 4-6 months as an ideal time. Early introduction is unnecessary as breastmilk is sufficient up to 6 months and solid food can be another potential source of infection if not kept very clean. Late introduction should be discouraged because breastmilk is no longer adequate after 6 months - a child then needs breast milk plus food.

The good early infant feeding patterns linked with the nutritional status pattern where growth falters at 6 months suggests the main nutritional problems lie in feeding patterns after 6 months ie. when a child is on solid food. Weaning from the breast or bottlemilk is very early. The majority of children are on solids alone with no milk supplement by 12 months and many are weaned even earlier - as early as 7-9 months. Milk is an essential protein and energy supplement to solid food. Plenty of protein and energy is required by very young children because they grow so fast. If insufficient solid food is given so that the contribution of milk is not replaced, children's growth may slow. Similarly, even if a child is on milk as well as solids, if not enough or the wrong kinds of foods are given growth will slow. Most children were eating some protein food in the day and some energy food so it is suprising that growth falters, particularly as there was no apparent relationship between nutritional status and whether a child was eating food from local or imported sources. It is likely therefore that the amount of food from whichever source is an important factor rather than the type of food and this needs further clarification. It is possible too that the low to moderate intake of fat by children means their energy intake is low. Children who are growing need to eat a lot of energy food such as staples and fats. Childrens' stomachs are only small and they need to eat both fat and staples to get enough energy for their

growth needs. Fat has twice as much energy as staple foods and children can eat more energy with less feeling of being full-up when they eat same fat.

This study did not investigate how much food a child eats. This is difficult to do, but quantitative food intake may require extra investigation and discussion to help determine its effect on nutritional status.

As well as dietary and feeding patterns, another important influence on malnutrition is the rate of infection and infestation with worms. Recent morbidity data from hospital in-patient and out-patient records indicate that diarrhoea, acute respiratory infections and parasites are common among young children. When children are sick they lose their appetites and stop eating and if they have diarrhoea they are losing important fluids and food from their bodies. If a child is well-nourished and he only gets sick very occasionally, nutritional status and growth pattern are not likely to be affected. However, if a child gets repeated infections and especially with diarrhoea and worms, he/she may not be eating enough food and growth will falter. This starts a vicious cycle. A child who is not growing well is more likely to get another infection and a child who is not eating well and who then gets sick is in danger of becoming malnourished.

Infections in children are common at 6 months when solids are introduced if the food and food utensils are not clean, and are also common in bottle-fed children. Growth in children in FSM does falter at 6 months, and repeated infections coupled with a poor diet would explain the low weight for height or acute malnutrition which develops with increasing age and peaks at 18-23 months. Repeated infections would also explain the stunting found in young children after 6 months of age and which continues because of a constantly marginal intake of food which does not allow 'catch up' growth in length and in fact exacerbates the problem. With a slowing of growth in height, body weight does have a chance to catch up relative to height and so weights for height do appear to improve with age of the child. Growth in height and weight then continues at a reasonable rate but the maximum height potential of the child is never attained.

This study did not investigate the effects of infections on malnutrition but it is likely that poor sanitation and hygiene practices leading to infections which are reported in many areas of FSM (and observed by the survey teams) are a major causative factor in malnutrition.

It is interesting to note that the average height of adults in FSM is less than the average height found in other Pacific Island populations and in Caucasians (mean weights of adult women in FSM in 1987/88 were 154.6 - 155.6 cm and in Tonga in 1986 were 164.2

- 165.0 cm). It is possible to argue that this is genetic but it is also likely it is a reflection of a long-term malnutrition problem in FSM such that today's adults were only marginally nourished as children and they too never attained their maximum growth potential. Previous studies as far back as the early fifties have certainly indicated that malnutrition has always existed. It is important to note however, that the severity of the problem has undoubtedly increased, prevalence rates are higher and clinical malnutrition is much more commonly seen today than it was in previous studies. The pattern of malnutrition has changed but so too have infant feeding patterns with an improvement in breastfeeding pattern such that it is now the poor dietary pattern of children 6 months and over and early weaning off the breast that is contributing to the malnutrition problem. The high rates of undernutrition noted in the 1985 school survey further indicate that malnutrition has been an ongoing problem for some while. Today's malnourished infants could become tomorrow's malnourished school children if an effort to break the trend is not made.

Immunisation levels tend to be low in the least accessible areas particularly in the outer islands and inland villages. Immunisation rates are also low in Truk state. With the exception of Yap, these low rates of immunisation which help protect against infection, co-incide with areas where malnutrition was most common and this may be an important causal factor. Sanitation and water supply is also generally poorer in these areas. Food patterns of children were not apparently greatly affected by food supply and availability factors but children on outer islands were consuming more local foods. It is likely therefore that children on outer islands become malnourished because of infection first and possibly because of low quantitative food intakes and that children in urban and main island areas were becoming malnourished because of the switch to less nutritious imported foodstuffs coupled with low quantitative intakes and some infections. Children in urban and main island coastal areas would have better access to health care, water supply and sanitation so that while infections remain a problem, they contributed less to the malnutrition problem than in the outer islands.

The reason for high prevalence of malnutrition in the inland areas of Pohnpei and Truk may be due to poor accessibility to health care and also to regular protein (ie. fish and seafoods) and local fats (ie. coconut cream) than other zones. The high prevalence of malnutrition in the outer island good resource area of Pohnpei co-incides with the findings by Hargreaves (1984) that children's diets were nutritionally inadequate and undernutrition was common on the island of Pingelap. Outer island good resources zone corresponded to island with regular boat or air access from the main islands and/or good soil and therefore agricultural potential. Many of the outer islands of Pohnpei grouped in the good food supply zone including Pingelap have

regular air and shipping access so that imported foods are readily available and despite good agricultural potential these are often eaten in preference to local foods. There is also a high availability of imported foods through USDA food programs on outer islands and this switch to include these nutritionally poor foods in the diet may be contributing to the malnutrition seen. This does not of course explain why malnutrition is seen in both poor and good supply areas and it maybe that so many factors play a part in these remote areas that the good and poor differentiation is irrelevant and it is sufficient to say malnutrition is a problem in all outer islands.

That malnutrition is particularly prevalent in Yap main island urban and coastal areas is suprising considering their excellent primary health care programs, immunization coverage and clinic attendance records. The urban sample data is possibly a reflection of the Madrich area where overcrowding, poor sanitation, hygiene and water supply plus low income and no access to land and therefore food gardens leads to a high rate of infection in children and poor food supply. The reasons for a high prevalence of malnutrition in the main island coastal area of Yap is unclear. Most of the malnutrition on Yap was of the 'acute' kind ie low weight for age which suggests problems of repeated infections and early or abrupt weaning from the breast. Stunting or poor growth in height was less of a problem in Yapese main island children than other states suggesting their diets may have been better. Certainly more local food is consumed in Yap than all other states.

So far, the discussion has focused on protein and energy intakes for children but another important factor is the extraordinarily low intake of greens and vegetables and only moderate intake of fruits. Fresh fruits and vegetables help protect children from infections and so their absence from the diet will contribute to a high infection rate. In addition, green and yellow fruits and vegetables are vital for supplying vitamin A in the diet especially if protein and fatty food consumption is low to moderate and also if imported staples are eaten in preference to fresh, local staples. Local staples contain some vitamins but imported staples contain no Vitamin A or at all. A diet of rice or ramen alone or rice and small quantities of fish will not provide sufficient Vitamin A or Vitamin C for a growing child's needs. Vitamin deficiency diseases and increased infections will result and there is ample evidence today of clinical Vitamin A deficiency (nightblindness and xerophthalmia) and skin sores and infections caused by low Vitamin C intakes. Severe Vitamin A deficiency causes blindness and it is vital that this problem be urgently and seriously addressed. Simple inclusion in the diet of greens cooked in coconut cream (fat helps increase absorption of Vitamin A) will resolve this problem. The coconut cream would also increase the energy intakes of children so that there may be a secondary effect on growth patterns.

C O N C L U S I O N S

=====

CONCLUSIONS

1. The prevalence of obesity and overweight in adult women was very high especially in older age groups. Obesity is a primary casual factor in other diseases such as diabetes, hypertension and heart disease and its treatment and prevention should be accorded priority for future public health action programmes.
2. The prevalence of obesity was to overweight particularly high in Kosrae State. There were some differences in prevalence of obesity by food supply zone for each state, providing some evidence that prevalence of obesity was related to the type of food consumed. However, this was not conclusive since overweight and obesity was common in both traditional living outer island communities and in more urbanized communities or groups with easy access to urban centers and imported foods. Other causes of obesity were postulated as being related to quantities of food, exercise and activity levels and other related lifestyle factors. These require further study to successfully detail and address the obesity problem.
3. Food and dietary patterns for men are likely to be similar to those of women and it is probable that overweight and obesity is also a major public health problem among Micronesian men.
4. Prevalence of mild to moderate anemia was high in all states for non-pregnant, non lactating and lactating women but especially in Kosrae. Anemia was also a serious problem among pregnant women and the prevalence of severe anemia was again particularly high in Kosrae. Parity, food taboos and dietary patterns were not apparently causal factors to explain the extra problems for Kosrae. Low intakes of greens and moderate intake of protein foods may be general causal factors but again do not explain why Kosrae has a higher prevalence of anemia than other states. A possible causes of anemia which was not investigated is the high infestation of worms especially hookworms frequently found in FSM. This nutritional deficiency disease requires further investigation and aggressive education programs to the reverse problem especially as many young women and teenagers have anemia even before they have any children.
5. The nutritional status of many infants and young children in the Federated States of Micronesia was poor. There was no evidence of severe or clinical protein-energy malnutrition in the survey but hospital admissions for clinical conditions such as kwashiorkor and marasmus are frequently reported. The prevalence of sub - clinical malnutrition among infants is moderately high. There is a serious problem of 'stunting' i.e. poor growth with respect to height caused by a long term inadequate diet. There is also a high prevalence of 'wasting' or poor weight gain among children 12 -36 months of age which it is postulated is likely due to high rates of infections, parasite and worm infestations

associated with poor hygiene, water supply and sanitation conditions as well as poor nutritional quality diets. Bottlefeeding was not common and was not an obvious direct or isolated cause of malnutrition in infants in FSM as has been previously speculated. The current prevalence of malnutrition in young children is higher than reported in previous studies and needs rigorous and carefully planned food and nutrition policies and programs to be established to reverse the current trends.

6. Breastfeeding rates were high for the first few months of an infants life. However, duration of breastfeeding was not adequate. Many children were weaned after 6-9 months and an even greater number by 12-15 months. Age of introduction of solids was good and was between 3-6 months on average. However, there were some children who had solids introduced as early as 1 month and some children who had a delayed introduction up to 12 months.

7. Women and children on the main islands of each state were consuming more imported foods more often than outer island women. This is probably due to a combination of factors such as more availability, taste preferences or inconsistent supply of local foods, convenience with respect to preparation and cooking time and lower costs of imported foods with respect to staples and some protein foods. Imported foods were available in the outer islands, often through USDA food programs or through stores.

8. Greens and vegetables consumption was so low as to be almost non-existent. Some but inadequate amounts of fruit were consumed as snacks. There is a potential for vitamin and mineral deficiencies to occur among groups replacing local fresh foods with processed imported foods, especially staples. Clinical signs of vitamin A deficiency are already being reported in children in some communities especially in Truk and Pohnpei. Vitamin A deficiency leads to blindness and its prevention should be given priority in public health programming.

9. No assessment was made of dental health but consumption of sugar and sugar snacks was high, particularly for older children, and in women and children in Kosrae which could be detrimental to dental health.

10. Maternal and child clinic attendance was fairly good and probably contributes to the high rate of breastfeeding observed. Maternal and child care clinics are potentially a good mode for education to improve the prevention of obesity and anemia among women and malnutrition in young children. Food taboos were not significant and were not affecting the health and nutritional status of pregnant and lactating women.

R E C O M M E N D A T I O N S
=====

RECOMMENDATIONS

1. To formulate State Food and Nutrition Policies to be submitted to the Governor of each state, and if there is an expressed need to have one at the National level to be submitted to the FSM President. The Policies should aim to improve nutritional status.

Targets will need to be set such as:

a) Improving the current nutritional status of infants and young children and infant feeding practices. Goals need to be set e.g. reducing the prevalence of underweight by 10% in 5 years.

b) Improving adult nutritional status by minimizing the number of adults in the obese classification.

c) Increasing consumption of local foods, particularly local staples, fruits and vegetables and ensuring there is at least no further increase in the consumption of soft drinks, sugar, store baby foods, snacks foods and turkey tails.

To achieve these targets:

- Programs should be aimed at increasing production and marketing of fresh produce with particular emphasis on improving availability in all areas;
- Controls on the importation of unnecessary foods and/or non-food items affecting poor health in FSM could be developed;
- Nutrition education programs should give priority to improve child and adult nutritional status through nutrition education programs. Guidelines for nutrition education programs need to be developed based on information provided from this survey and to be directed at specific target groups. This may be readily achievable by developing a series of dietary and health guidelines such as:

- control weight;
- use less sugar;
- use less fat, particularly turkey tails, and animal fats;
- eat a variety of fresh foods;
- eat at least one serving of greens, vegetables or fruit each day;
- limit alcohol intake;
- increase exercise;
- promote breast feeding;
- promote family planning;
- promote immunization and good sanitation and hygiene;

- promote deworming programs.

Key target groups for education would include all age groups and sexes but in particular:

- a) adults (both sexes on weight control)
- b) school children (with a view to preventing obesity and dental caries in adults of the next generation).
- c) women of child - bearing years (with particular emphasis in the first instance in Kosrae), on the prevention of anemia and also all women on the importance of prolonged breast feeding and enough good food for growing children to prevent malnutrition.
- d) Total population (on need to balance imported food consumption, especially of staples such as rice and ramen, with adequate consumption of greens, vegetables and fruits to prevent Vitamin A deficiency).

- Particular attention should be paid to establishing an appropriate data base and a nutritional monitoring program in the future. This includes ongoing monitoring of adult nutritional status and prevalence of diet-related diseases and growth monitoring of children, as well as monitoring of availability of food in urban, main island and outer island areas. Food imports should also be monitored particularly imports of poor nutritional value.
- To encourage state and national governments to have an inter-departmental food and nutrition council which will co-ordinate nutrition education programs and activities and be the implementing body for food and nutrition policy initiatives.

2. Carry out a small quantitative diet survey to further describe the causes of obesity and malnutrition which were found to be prevalent in FSM.

3. There should be further discussion and investigation on establishing ideal weights and heights for Micronesian adults.

4. Birth weight data currently in Maternal and Child Health records should be reviewed and an average FSM birth weight and possible length be established. This should be followed by discussion and appraisal of the appropriateness of current weight for age charts used within the Federated States of Micronesia. Meanwhile current WHO/NCHS weight for age charts are considered very appropriate.

B I B L I O G R A P H Y

A N D

R E F E R E N C E S

=====

BIBLIOGRAPHY AND REFERENCES

Bennett, P. (1979). Standardization of methods and reporting of tests in epidemiologic studies. Diabetes Care. 2:98-104

Bolte, R. (1981). Trust Territory Health and Manpower development and training program. Report of Pediatric training session site visits.

Brazill, H (1979). Socio-economic factors contributing to malnutrition in Western Samoa. Apia: Department of Health.

Cameron, J. (1986). A report on economic policies for achieving greater food self-sufficiency and improved nutrition in the Federated States of Micronesia at National level and in the States of Pohnpei and Truk. FAO/UNDP report.

Conrad, R.A. (1975). A twenty year review of medical findings in a Marshallese population accidentally exposed to radioactive fall out. Upton: Brookhaven National laboratory, U.S.A.

Coyne, T., Badcock, J. and Taylor, R. (1984). The effects of urbanization and western diet on the health of Pacific island populations. Technical paper 186. South Pacific Commission, Noumea, New Caledonia.

Crawford, J. and Wilmott, J.U. (1971). Nutritional status of young Gilbertese children in a transitional economy. Tropical Geographic Medicine, 23:250.

Demory, B.G.H (1975). An illusion of surplus: The effect of status rivalry upon family consumption in Pohnpei, Ph.D. thesis, University of California, U.S.A.

Elsy, R. and Singleton, N. (1988). Evaluation of FSM's Food Service Program, FAO/UNDP Pacific Food and Nutrition Planning Project - Consultancy report.

Federated States of Micronesia Office of Planning and Statistics (1985). First National development plan, 1985 - 89, Pohnpei, FSM.

Fritz, V.S. (1982). Impact of Changing Roles of Women on Infant Nutritional levels in Micronesia: primarily in Truk. Unpublished paper - University of Hawaii, School of Public Health, Honolulu.

Gilbert, D.; Moses, E. (1975). Truk nutrition survey, summer 1974; report prepared for the International Health Program. Honolulu: University of Hawaii School of Public Health.

- Goodall, D.; Jansen, A.A. and Kurusaqila, A. (1973). Protein calorie malnutrition in Fiji: *Journal of Tropical Pediatrics*, 19:378.
- Hargreaves, L. (1984). Nutritional study on Pingelap Island, Pohnpei, mimeo, Pacific Mission, Pohnpei, FSM.
- Hankin, J., Reed, D., Labarthe, D., Nichaman, M and Stallones, R. (1970). Dietary and disease patterns among Micronesians. *American Journal of Clinical Nutrition* 23:346-357
- Holmes, S. (1951). Report on a qualitative nutrition study in Western Samoa. Suva: South Pacific Health Services.
- Holmes, S. (1952). A survey of nutrition in the British Solomon Islands Protectorate. Suva: South Pacific Health Services.
- Holmes, S. (1953). Nutrition survey in the Gilbert Islands. Suva: South Pacific Health Services.
- Holmes, S. (1954). A report of a nutrition survey in three villages of the Cook Islands. Suva: South Pacific Health Services.
- Jabre, B., Raoult, A., Richard, C. and Speake, J. (1976). Study of the suburban district of Tagabe (Vila, New Hebrides). South Pacific Commission, Noumea, New Caledonia.
- Kalton, G. (1987). Introduction to Survey Sampling, Fourth Edition. Sage Publications Inc. California, U.S.A.
- Kincaid, P.J. (1973). Trust Territory of the Pacific Islands, Nutrition Survey, TTPI, Saipan, Norther Marianas.
- Kuberski, T. and O'bennett, P.H. (1979). The status of diabetes mellitus in the Territory of Guam. south Pacific Commission Information Document 47:1+.
- Lambert, J. and Yee, V. (1981). Fiji National Nutrition Survey. Report to National Food and Nutrition Committee and Food and Agricultural Organisation. Suva, Fiji.
- Maclean, E., Badcock, J. and Bach, F. (1987). Report of 1986 National Nutrition Survey in the Kingdom of Tonga. South Pacific Commission, Noumea, New Caledonia.
- Malcolm, S. (1951). Nutritional Investigations in the South Pacific. South Pacific Commission Technical Paper, 18:1+.
- Malcolm, S. (1952). Nutritional Investigations in the New Hebrides. South Pacific Commission Technical Paper, 23:1+.

Malcolm, S. (1953). Nutritional Investigations in New Caledonia. South Pacific Commission Technical Paper, 50:1+.

Malcolm, S. (1955). Diet and Nutrition in the Trust Territory of the Pacific Islands. Technical paper 83, South Pacific Commission, Noumea, New Caledonia.

Malcolm, S. (1958). Diet and nutrition in American Samoa. South Pacific Commission Technical Paper, 53:1+.

Malcolm, S. (1958). The diet of mothers and children on the island of Guam. South Pacific Commission Technical Paper, 113:1+.

Man Ming Hung. (1983). National Nutrition Survey Report. Department of Health, Republic of Vanuatu.

Marshall, L.B. and Marshall, M. (1979). Breast, bottle and babies: Historical changes in infant feeding practices in a Micronesian village. Ecology of Food and Nutrition. Vol. 8. 241-249.

Marshall, L.B. and Marshall, M. (1980). Infant feeding and infant illness in a Micronesian village. Soc. Sci. Med. 14B. 33-38.

Medical Statistics Division, Bureau of Medicine and Surgery, Department of the Navy (1951). U.S. Armed Forces Medical Journal. Volume 10. No. 10.

Murai, M. (1954). Nutrition study in Micronesia, Atoll Research bulletin, 27:1+.

Niiranen. (1975). Growth study of pre-school children in Wala-Rano, Malekula. Noumea: South Pacific Commission.

Reed, D., Labarthe, D.R. and Stallones, R. (1970). Health effects of westernisation and migration among Chamorro. American Journal of Epidemiology, 92:94-112.

Reed, D., Labarthe, D., Stallones, R. and Brody, J. (1973). Epidemiological studies of serum glucose levels among Micronisians. Diabetes 22: 129-136.

Ringrose, H. and Zimmet, P.Z. (1979). Nutrient intake in an urbanised Micronesian population with a high diabetes prevalence. American Journal of Clinical Nutrition, 32: 1334-1339.

Rody, N. (1977). "Food for Tomorrow's Children", Micronesian reporter The Journal of Micronesia, Vol. 25, No. 2, pp. 13-19, Second Quarter, 1977.

Rody, N. (1978). "Consumerism in Micronesia", South Pacific Bulletin, pp. 9-14, First Quarter 1978.

Rody, N. (1978a). "Things go better with Coconuts-Program Strategies in Micronesia", Journal of Nutrition Education, Vol. 10, No. 1, pp. 19-22, January-March 1978.

Rody, N. (1978b). "Cosumerism in Micronesia". South Pacific Buleltin, 28: 0-14.

Rody, N. (1982). "Food for all in Micronesia", Pacific Magazine, pp. 27-30, September-October 1982.

Rody, N. (1983). "Toward an ecological systems analysis of food and nutrition issues in the American territories of Micronesia", Dr. PH Qualifying Examination Paper, Honolulu, December 1983.

Sigrah, K. and Meyer, J. (1984). Malnutrition in a land of plenty. Mimeo, EFNEP Program. Kosrae, FSM.

Sugansuma, E. (1986). Infant feeding in the U.S. Related Pacific Island, Mimeo, University of Hawaii, School of Public Health.

Taylor, R., Koteka, G., Dumbrell, S. and Mokoputu, K. (1983). Prevention and control of non-communicable disease: Present activities in the Pacific Part 1. South Pacific Commission Information Document 50.

Tekieru, E. and Luialamo, M. (1981). Maternal and infant nutrition: Solomon Islands. Paper presented at Maternal and infant nutrition Seminar. Suva: Foundation for the peoples of the South Pacific.

Thomas, M.D. (1978). Transmitting culture to children on Namonuito Atoll, Caroline Islands. Ph.D. Dissertation in anthropology, University of Hawaii.

U.S. Department of agriculture, soil conservaiton service (1982). Soil Survey of Island of Pohnpei, Federated States of Micronesia, Hawaii, U.S.A.

World Health Organisation (1986). Global nutrition status-anthropometric indicators. Bulletin of the World Health Organisation 64(6):929 - 941.

Yen, S.S. (1964). Abnormal carbohydrate metabolism and pregnancy (Guam). American Journal of Obstetric Gynecology, 90: 468-473.

Zerda, L.M. (1982). An evaluation of a simple method of hemoglobin estimation. Philippine Journal of Nutrition, 35, 68 - 73.

Zimmet, P.Z., Beriki, T. and Taylor, R.J. (1981). Diabetes and cardiovascular disease survey, Kiribati: preliminary report. Melbourne: Royal Southern Memorial Hospital.

A N N E X 1
=====

SURVEY FORMS 1. WOMEN 15 - 49 YEARS
2. CHILDREN 0 - 59 MONTHS

F.S.M. National Nutrition SurveyForm 1: Women 15-49 years

1. Name of village:

2. Date of interview: 3. Day of week: M ☐ T ☐ W ☐ Th ☐ F ☐ Sat ☐ Sun ☐4. Time of day: Morn ☐ Aft ☐ Eve ☐

5. Woman's name:

6. Ethnic group: 7. Date of birth: 8. Age in years: SECTION 9 - TOTAL PREGNANCIESa. How many children have you had
(given birth to), who are now living? b. How many children have you had that died? c. How many stillbirths have you had? d. How many miscarriages have you had? e. What is the total number of pregnancies
that you have had?

(ADD "a" THRU "d" ; RESOLVE DISCREPANCIES WITH "e")

f. How many adopted children do you have? ..
(WHETHER LEGAL ADOPTIONS OR NOT)SECTION 10 - PREGNANCY STATUSAre you pregnant now? Yes ☐ No ☐ Don't know ☐

IF "YES":

Months Don't know ☐a) How many months pregnant are you? b) Have you attended prenatal clinic
during this pregnancy? Yes ☐ No ☐c) Are you regularly taking
vitamin or iron tablets? Yes ☐ No ☐ Don't know ☐11. Are you breastfeeding now? Yes ☐ No ☐12. Are you working outside the home
on a regular basis? Yes ☐ No ☐

IF "YES":

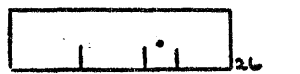
What work do you do?

.....

Woman/Child State Zone Village ID #

SECTION 13 - ANTHROPOMETRIC MEASUREMENTSWeight: KilogramsHeight: Centimeters

Skinfold:

1 mm2 mm3 mmHemoglobin: gm/100mlSECTION 14 - FOOD TABOOS1. Are there any foods you would avoid in pregnancy?Yes ☐No ☐

IF "YES":

a) Which foods?

.....

b) Why would you avoid them?

.....

.....

2. Are there any foods you would avoid in breastfeeding?Yes ☐No ☐

IF "YES":

a) Which foods?

.....

b) Why would you avoid them?

.....

.....



SECTION 15 - 24-HOUR FOOD RECALL

I would now like you to tell me everything you ate and drank yesterday.

What did you eat and drink
from rising to mid-day?

.....
.....
.....
.....
.....
.....
.....

Mid-day to 5 pm?

.....
.....
.....
.....
.....
.....

5 pm to retiring?

.....
.....
.....
.....
.....
.....
.....

(Do not forget to ask about snack
foods and drinks, alcohol, sakau)

	am	aft	eve
Food eaten	<input type="checkbox"/> 58	<input type="checkbox"/> 59	<input type="checkbox"/> 60
FSM staples	<input type="checkbox"/> 61	<input type="checkbox"/> 62	<input type="checkbox"/> 63
Imported staples	<input type="checkbox"/> 64	<input type="checkbox"/> 65	<input type="checkbox"/> 66
FSM fat	<input type="checkbox"/> 67	<input type="checkbox"/> 68	<input type="checkbox"/> 69
Imported fat	<input type="checkbox"/> 70	<input type="checkbox"/> 71	<input type="checkbox"/> 72
FSM protein	<input type="checkbox"/> 73	<input type="checkbox"/> 74	<input type="checkbox"/> 75
Imported protein	<input type="checkbox"/> 76	<input type="checkbox"/> 77	<input type="checkbox"/> 78
Greens	<input type="checkbox"/> 79	<input type="checkbox"/> 80	<input type="checkbox"/> 81
Other vegetables	<input type="checkbox"/> 82	<input type="checkbox"/> 83	<input type="checkbox"/> 84
Imported vege.	<input type="checkbox"/> 85	<input type="checkbox"/> 86	<input type="checkbox"/> 87
Fresh fruit/ fruit juice	<input type="checkbox"/> 88	<input type="checkbox"/> 89	<input type="checkbox"/> 90
Imported fruit	<input type="checkbox"/> 91	<input type="checkbox"/> 92	<input type="checkbox"/> 93
Sugar	<input type="checkbox"/> 94	<input type="checkbox"/> 95	<input type="checkbox"/> 96
Sugar snacks	<input type="checkbox"/> 97	<input type="checkbox"/> 98	<input type="checkbox"/> 99
Other snacks	<input type="checkbox"/> 100	<input type="checkbox"/> 101	<input type="checkbox"/> 102
Store baby food	<input type="checkbox"/> 103	<input type="checkbox"/> 104	<input type="checkbox"/> 105
Alcohol	<input type="checkbox"/> 106	<input type="checkbox"/> 107	<input type="checkbox"/> 108
Sakau	<input type="checkbox"/> 109	<input type="checkbox"/> 110	<input type="checkbox"/> 111
Other	<input type="checkbox"/> 112	<input type="checkbox"/> 113	<input type="checkbox"/> 114

F.S.M. National Nutrition SurveyForm 2: Children 0-59 months

1. Name of village:
2. Date of interview:
3. Day of week: M ☐ T ☐ W ☐ Th ☐ F ☐ Sat ☐ Sun ☐
4. Time of day: Morn ☐ Aft ☐ Eve ☐

5. Child's name:
6. Ethnic group:
7. Date of birth: 8. Age in months:
9. Sex: M ☐ F ☐

SECTION 10 - MATERNAL INFORMATION

Are you the natural mother of this child? Yes ☐ No ☐

- IF "YES": a. What is your age? years Yes ☐ No ☐
- b. Are you working outside the home on a regular basis? ☐ ☐

- IF "NO": a. What relationship are you to the child?
- 1 ☐ Grandmother
- 2 ☐ Sister
- 3 ☐ Other relative
- 4 ☐ Adopted mother
- 5 ☐ Caretaker/babysitter
- 6 ☐ Other:

- b. Is the natural mother living at home with the child? Yes ☐ No ☐ Don't know ☐
- c. What is the age of the natural mother? years Don't know ☐
- d. Is the mother who usually cares for the child working outside the home on a regular basis? Yes ☐ No ☐ Don't know ☐

SECTION 11 - CHILD HEALTH CARE

1. Did (the natural mother) go to prenatal clinic during pregnancy with this child? Yes ☐ No ☐ Don't know ☐

IF YES: When did (the natural mother) first attend prenatal clinic during this child's pregnancy?

- 1 ☐ 1-3 months
- 2 ☐ 4-6 months
- 3 ☐ 7-9 months
- 9 ☐ Don't know

Woman/Child 2

State 2

Zone 3

Village 4

ID # 5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

P.T.O.

11.	2. Has this child been taken to the well-baby clinic?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	<input type="checkbox"/> 21
12.	How many children were born to (natural mother) before this child?	<input type="text"/>			Don't know <input type="checkbox"/>

SECTION 13 - ANTHROPOMETRIC MEASUREMENTS

Weight: KilogramsLength/
Height: CentimetersObservations:
.....

SECTION 14 - CHILD FEEDING

1. How is the child currently fed? (check one only)

- 1 ☐ Breastfed only
 2 ☐ Bottledfed only
 3 ☐ Breast and bottledfed
 4 ☐ Breast and solids
 5 ☐ Bottledfed and solids
 6 ☐ Breast, bottle and solids
 7 ☐ Solids only
 9 ☐ Don't know (Don't fill in rest of form)

2. After birth, when did mother first give the breast?

- 1 ☐ Immediately
 2 ☐ Later in first day
 3 ☐ In second day
 4 ☐ After second day
 5 ☐ Did not breast feed
 9 ☐ Don't know

3. Is anything other than milk ever given in a bottle? Yes No Don't know

IF "YES": What? (check all that apply)

- 1 ☐ Water
 2 ☐ Sugar water
 3 ☐ Fruit juices
 4 ☐ Soft drink/fruit drink
 5 ☐ Tea
 6 ☐ Soft food
 7 ☐ Coconut juice
 8 ☐ Other (specify):

☐ 21 22 23 24☐ 25☐ 26☐ 27☐ 28☐ 29☐ 30☐ 31☐ 32☐ 33☐ 34☐ 35

SECTION 15 -

FOR CURRENTLY BOTTLEFED (completely or partly) CHILDREN ONLY:

1. What milk is usually given in bottlefeedings at present?
(check one box only)

- 1 ☐ Infant formula
 2 ☐ Low fat powdered milk
 3 ☐ Evaporated milk
 4 ☐ Fresh milk/UNT milk
 5 ☐ Condensed milk
 6 ☐ Other (specify):
 9 ☐ Don't know

☐ 36

FOR CHILDREN ON INFANT FORMULA (completely or partly) ONLY:

What kind of infant formula do you usually give
this child? (check one only)

- 1 ☐ Enfamil
 2 ☐ Similac
 3 ☐ Morinaga
 4 ☐ Meiji
 5 ☐ Snow
 6 ☐ Other (specify):
 9 ☐ Don't know

☐ 37

2. Why is the child being bottlefed with milk?

.....

☐ 38☐ 39

SECTION 16 -

FOR CHILDREN ON SOLIDS (completely or partly) ONLY:

1. At what age were solid foods
introduced to the child?

Months

Don't
know☐

40

What foods were first offered?

.....

Don't know/ don't remember ☐

P.T.O.

☐ 41

Imported fruit

☐

52

Sugar

☐

53

Sugar snacks

☐

54

Other snacks

☐

55

Store baby food

☐

56

Other

☐

57

FSM staples

☐

42

Imported staples

☐

43

FSM fat

☐

44

Imported fat

☐

45

FSM protein

☐

46

Imported protein

☐

47

Greens

☐

48

Other vegetables

☐

49

Imported vege.

☐

50

Fresh fruit/
fruit juice☐

51

SECTION 16 - 24-HOUR FOOD RECALL - FOR CHILDREN ON SOLIDS (completely or partly) ONLY:

2. I would now like you to tell me everything the child ate and drank yesterday

What did the child eat and drink
from rising to mid-day?

.....

.....

.....

.....

.....

.....

.....

Mid-day to 5 pm?

.....

.....

.....

.....

.....

.....

5 pm to retiring?

.....

.....

.....

.....

.....

.....

.....

(Do not forget to ask about snack
foods and drinks)

	am	aft	eve
Food eaten	<input type="text"/> 58	<input type="text"/> 77	<input type="text"/> 96
FSM staples	<input type="text"/> 59	<input type="text"/> 78	<input type="text"/> 97
Imported staples	<input type="text"/> 60	<input type="text"/> 79	<input type="text"/> 98
FSM fat	<input type="text"/> 61	<input type="text"/> 80	<input type="text"/> 99
Imported fat	<input type="text"/> 62	<input type="text"/> 81	<input type="text"/> 100
FSM protein	<input type="text"/> 63	<input type="text"/> 82	<input type="text"/> 101
Imported protein	<input type="text"/> 64	<input type="text"/> 83	<input type="text"/> 102
Greens	<input type="text"/> 65	<input type="text"/> 84	<input type="text"/> 103
Other vegetables	<input type="text"/> 66	<input type="text"/> 85	<input type="text"/> 104
Imported vege.	<input type="text"/> 67	<input type="text"/> 86	<input type="text"/> 105
Fresh fruit/ fruit juice	<input type="text"/> 68	<input type="text"/> 87	<input type="text"/> 106
Imported fruit	<input type="text"/> 69	<input type="text"/> 88	<input type="text"/> 107
Sugar	<input type="text"/> 70	<input type="text"/> 89	<input type="text"/> 108
Sugar snacks	<input type="text"/> 71	<input type="text"/> 90	<input type="text"/> 109
Other snacks	<input type="text"/> 72	<input type="text"/> 91	<input type="text"/> 110
Store baby food	<input type="text"/> 73	<input type="text"/> 92	<input type="text"/> 111
Alcohol	<input type="text"/> 74	<input type="text"/> 93	<input type="text"/> 112
Sakau	<input type="text"/> 75	<input type="text"/> 94	<input type="text"/> 113
Other	<input type="text"/> 76	<input type="text"/> 95	<input type="text"/> 114

A N N E X 2
=====

ANTHROPOMETRIC EQUIPMENT AND METHODS USED

ANTHROPOMETRIC EQUIPMENT AND METHODS USED**Height:**

The procedure used for measuring the height of adult females and children 24 - 59 months old was the same.

Equipment used: Measuring stick (locally made; wooden)

Procedure:

- * The measuring stick was placed on a level piece of ground, with the headboard at the top of the measuring stick.
- * The woman or the child stepped onto the footboard with no shoes on and placed his/her back against the measuring stick, with the back of his/her head resting flatly against the measuring stick. His/her heels, back and head were placed flatly up against the measuring stick.
- * The headboard was brought down lightly but firmly to the top of the person's head. The recorder recorded the height in centimeters, at the point where the headboard came to.

Length:

This procedure was used for measuring the children from 0 - 23 months only.

Equipment used: Length measuring board (locally made; wooden).

Procedure:

- * The lengthboard was laid horizontally on the ground or a low bench.
- * With the help of the recorder, the infant was placed undressed and barefoot on the board with his/her head right against the fixed end of the board.
- * The mother was asked to gently hold the infants head at the fixed end of the board with the infants eyes looking straight up. The infants knees were held together and the legs extended out straight, with the feet flexed at right angles and placed flatly up against the footboard. Both heels were brought into contact with the footboard.
- * The measurer removed the childs' feet from contact with the footboard with one hand to prevent the child from kicking and moving the footboard, while holding the footboard securely in place with the other hand.

* The length was then read to the nearest 0.1cm. The measurement was repeated until 2 readings agreed to within 0.5cm. The second agreeing measurement was the one recorded.

Children 0 - 4 years (0 - 59 months):

Equipment used : Hanging infant weighing scales (salter type) with weighing baskets.

Procedure:

- * The scales were regularly checked and calibrated for accuracy.
- * The scale was suspended from a firm point e.g. beam of a roof, branch of a tree. When no such point was available, the recorder stood on a raised object and held the scale up whilst the measurement was taken. The scale was suspended so that it hung with the dial at eye level for the measurer to read easily and accurately.
- * Infants were completely undressed and nappies removed. Older children were normally undressed as well.
- * When the child was hanging freely in the basket the weight was read to the nearest 0.1kg, reading up to the next higher 0.1kg when the pointer tip was at or beyond the midway point of 0.1kg graduation.

Females 15 - 49 years:

Equipment used: "Seca" portable weighing spring scales.

Procedure:

- * The scales were regularly checked and calibrated for accuracy.
- * The scales were placed on firm, level ground and zeroed. The scales were zeroed before each adult stood on the scales.
- * Adults wore only light clothing.
- * The adults stood with their feet completely on the black pad of the scales facing towards the dial. They stood upright and did not lean over or look at the dial while the measurement was taken. The measurer told them their weight after recording was complete.
- * To take the measurement, the measurer leaned down so that he/she was looking directly over the dial from the side or front of the scales and read the measurement to the nearest half kilogram. The dial was divided into one kilogram markings.

Triceps skinfold thickness:

This measurment was only for the adult females.

Equipment used: Harpender skinfold calipers.

Procedure:

* The person usually stood upright in front of the measurer. The person's left upper arm was bared.

* The person's arm was bent and the length measured of the upper arm and the mid-point marked on the back of the arm. (The mid-point was found by placing the beginning of the tape measure on the bony projection at the top of the arm on the shoulder blade (acromion process) and extending the tape measure down to the furthest tip of the bent elbow (olecranon process). The length between these two bones was noted, halved, and a mark was placed on the arm at the halfway point).

* The nurse stood behind the subject and asked her to un-bend her arm and then picked up the skinfold with the thumb and forefinger of the left hand at a point about 1 cm vertically above the mark on the arm. The jaws of the caliper were applied at this point and the reading taken after counting to two after the handles were released. The process was repeated until two consecutive measurements were the same or similar measurements and then a final series of reading was called out and recorded on the survey form.

* Readings were taken to 0.1 mm. The dial was divided into 0.2 mm marks. If the dial fell in between a mark then this was 0.1 mm of measurement.

Hemoglobin measurement:

This measurement was only for adult females.

Equipment used : AO/Spencer hemoglobinometer, lancets, alcohol, sponge, tissues, cotton balls.

Procedure:

1. The equipment was set up on a table or area neatly with all the equipment laid out off the ground.
2. The finger was swabbed, dried and blood drawn with a lancet. A small drop of blood was placed directly onto the open chamber of the hemoglobinometer.

3. The blood was hemolysed by agitating gently with a hemolysis applicator until the blood changed to a clear red solution (about 45 seconds).
4. The slide chamber containing the hemolyzed blood was covered with a glass cover and inserted into the hemoglobinometer.
5. By pressing the thumb button and observing through the eyepiece, a reading was taken by moving the sliding scale until both green fields matched in intensity.

A N N E X 3

CLASSIFICATION OF FOODS FOR DIETARY RECALL

CLASSIFICATION OF FOODS FOR DIETARY RECALL**FSM STAPLES (STARCH)**

Yam
Taro (Hard & soft & sweet)
Breadfruit
Tapioca (cassava)
Sweet potatoes
Cooked pandanus
Cooking bananas
Chestnuts

FSM PROTEIN

Fish (reef and ocean)
Sea shells/clams
Water eels (fresh water & sea)
Octopus
Crabs
Eggs
Pork
Chicken
Dog meat
Deer meat

FSM GREENS

Taro leaves
Tapioca leaves
Kang Kong
Fern tips
Pumpkin tips
Sweet potato tops
Pepper leaves
Okra

OTHER LOCAL VEGETABLES

Corn
Pumpkin
Cucumber
Squash
Chinese cabbage
Lettuce
Eggplant
Avocado
Banana blossoms
Green papaya
Tomato

IMPORTED STARCH

Bread (any kind)
Rice
Noodles
Cereals
Ramen
Potato (white)
Biscuit (tin/packed)
Crackers
Oatmeals

IMPORTED PROTEIN

Canned fish
Canned pork
Canned meat
Canned beef
Milk
Cheese
Hot dogs
Peanut butter
Ham
Sausages
Dry beans

IMPORTED VEGETABLES

Corns
Carrots
Canned corn
Canned beans
Canned peas
Canned mixed vegetables
Tomato (canned)

IMPORTED FRUIT

Apple
Pear
Oranges
Canned (pears, peaches, fruit cocktail, pineapple)

FSM FRUITS AND FRUIT JUICE

Ripe papaya
 Mango
 Guava
 Orange
 Tangerine
 Watermelon
 Sugarcane
 Coconut Embryo
 Pandanus
 Ripe bananas
 Mountain apple
 Soursop
 Pineapple
 Coconut
 Tuba (toddy)

SUGAR SNACKS

Lollipops
 Ice cream
 Soft drinks
 Fruit drinks
 Cookies
 Biscuits
 Chewing gum
 Pudding

ALCOHOL

Beer
 Wine
 Spirits

FSM FATS

Coconut cream
 Coconut oil
 Fats from local pigs and cows

NOTE:

1. For mixed dishes separate ingredients were coded.
2. Coffee, tea, cocoa, milk in tea or water were not coded.

IMPORTED FRUIT JUICE

Pineapple juice
 Orange juice
 Grape fruit juice
 Guava juice

OTHER SNACKS

Peanuts
 Chips
 Nuts
 Cheeseballs

SAKAU

Sakau en Pohnpei

IMPORTED FATS

Crisco (liquid & hard)
 Turkey tail
 Mayonnaise
 Butter/margarine

A N N E X 4

GENERAL NOTES AND OBSERVATIONS DURING FIELDWORK

GENERAL NOTES AND OBSERVATIONS DURING FIELDWORK -
BY SURVEY CO-ORDINATOR JANE ELYMORE

Pohnpei State - January - April 1987

Six people were trained to do the nutrition survey in Pohnpei State. They were from the Health Department, Agriculture, Aging Program, FSM Health Service, and Pohnpei Community Action Agency.

The small nutrition team in Pohnpei could on average cover 50 people a day (both women and children).

Pohnrakiet Village had a mixed population containing people from Kapingamarangi, Nukuoro, Ngatik and Pohnpei. Kapinga women were tall and big. A lot of skin diseases were observed among children and women. People from this village are considered the best fishermen on the island. These people appeared to consume a lot of canned meat, turkey tails, bread, rice and coffee with sugar in big coffee jars. Population estimates were accurate for this village.

For Omihne village, population data had been over estimated. The teams did a house to house survey because it was so difficult to find people to survey. The team covered 100% of the houses in this village.

The survey team started to realize that they would face a lot of problems finding people in Pohnpei State. I would like to mention here that we started with the problem of over-counted population from the beginning of the survey until the end. The reasons we can suggest are that the census population was overcounted because for example, a person could be staying in Kolonia all their life and could be counted from Kolonia but at the same time be counted from Kittu because he was originally from Kittu and voted in Kittu.

Several children with distended tummy were found in two villages in Nett - Dolokap and Paliais. Problems of scabies were observed among children and women in these villages.

Metipw-in-Awak and Kepin Awak are two villages from Uh. Children ate a lot of mountain apples. Uh municipality is known for its plentiful and rich supply of local foods. Among the Pohnpei School Survey, the school from Uh had reported only a small problem with malnutrition. These two villages were mixed up from the sample selection. Metipw-in-Awak was switched from zone 3 to zone 2. Kepin-Awak was switched from zone 2, to zone 3. Children from Uh looked healthy.

Nanpohnmal, Satawan and Namal were three villages from Sokehs Municipality. We had a problem finding people to survey at Nanpohnmal. The reason was different people have been told differently by one of the councilman from this village where the village boundaries lie. We ran into a problem where people stay inside the boundary but did not want to be included in the survey because they said they were from Nett not from Sokehs. There were four houses left out because of this problem. Three days were spent doing follow up to get more people to participate in the survey. Satawan village is an easy village to access from the main road but we were told those people had moved to Ant. Ant is a small island outside Pohnpei reef. A second day follow-up was carried out the next day at Satawan.

Mwakot, Paies, Poatoapoat, Sapwtakai and Salapwuk were the villages selected from Kittu. Poatoapoat is a village in the rural coastal zone which has only one house and a dispensary building with a family. Sapwtakai has only one family. This family is from Sokehs. Two older women, one old man and a grandson were found. This is a high inland village. Paies is a big village. Some of the houses were scattered in the jungle with little access to the road. We did a lot of hiking and walking at Salapwuk. Most of the people staying in this village are staying at the lower villages of, Nanman and Pehleng. People in Salapwuk ate a lot of local starches and not too much meat or fish presumably because it is too difficult to go fishing. Scabies was also observed in this village. Mwakot is another inland village from Kittu. There were four families who refused to participate in the survey. A lot of children with distended tummies and small bodies were observed. We also noticed several very young mothers with more than one child. This village had a lot of local foods. We found a lot of the children from this village had not been immunized. The Public Health Department in Pohnpei confirmed that this was a problem. People in Kittu had plenty of fruit because mango and mountain apples were in season. We spent one day in each village in Kittu except Mwakot, where we spent three days to maximise cooperation from the people.

Mand, Nankepra, Elielui, Nanpohnmali and Ohwa were the villages selected. They are in Madoleneheim municipality. Most of these villages were small except Mand. People from Mand are from Pinglap. Most of the people are actually living in Kolonia. There were a lot of small children in this village with a lot of skin diseases and other health problems. A lot of teenage mothers in this village were seen. Nanpohnmali is a village for Kapinga people, where we found only two families. The census had indicated 177 people but we found only three women and a small boy. This village had a lot of local foods.

There were two field trips, one to the southern islands (Ngatik, Nukuoro and Kapingamarangi), the other one to the eastern islands (Mokil and Pingelap). Kapinga women and children looked

healthier than women and children from Pohnrakiet (Kapingese) in Kolonia. Women and children in Kapinga Islands are tall and big with apparently few problems with anemia. Child spacing was good. Nukuoro is considered a disaster island because of the salt water seepage into the taro patches damaging their staple foods. Children and women looked healthy. They ate a lot of pandanus, and sea foods. Ngatik (Sapwafwik) and Pinglap had a lot of apparently underweight children. Children with signs and symptoms of marasmus and kwashiorkor were also observed. Skin problems were noted on these two islands. There were a lot of teenage mothers on both islands, often with more than one child. There was a lot of taro, fish and pandanus in Ngatik. Pinglap also had a lot of fish, taro, pandanus and bananas. In Mokil, people ate a lot of local meat, taro and a lot of sugary foods. Mokilese children and women had many teeth problems. Mokil and Pinglap had access to imported foods because of the air connection these two islands once or twice a week.

Truk State: July to October 1987 and April 1988.

There were 14 survey participants and they were from the Health Department, TOCA, Aging Program, and EFNEP. There was a one week training workshop.

In most villages visited, our population estimates were too high. The arrangements of our trips to the villages was similar to the set up in Pohnpei. We again found that the survey members had a difficult time to gather people to one survey site so a house to house survey was started. The survey started at Penniesene Village. We found several children with Vitamin A problems which were easily observed by Bitot spots. Additional questions on Vitamin A problems, signs and symptoms for every child were carried out by Dr. Pryor from the hospital. We observed a lot of health problems among people in this village. There were several children with distended tummy and skin problems. There were a lot of children not immunized. Poor sanitation or environment was also observed in this village. People from the upper part and lower part of this village shared one stream, doing the washing, showering, swimming and cooking with the same water. This water was very polluted. Children from this village ate a lot of ice kaki (ice blocks) and ate a lot of sugary snacks.

Sapuk Village is also another village from Moen. Most people in this village looked healthy. Preparation for liberation day celebrations were taking place during the survey month. The boys and girls were practicing track and field events and volley ball. The people from this village offered us a lot of coconuts to drink but at the same time we found children drinking tea and coffee with sugar. We observed several children with tea and coffee stains on their teeth. Most people in both villages, Peniesenne and Sapuk were not eating greens. They mostly ate pounded breadfruit, salted octopus, turkey tails, and tea or

coffee with sugar. Both Penniesene and Sapuk seemed to have problems with low hemoglobin among pregnant women and teenage girls. We covered 100% of the houses, but still did not attain our population estimates.

Lagoon islands covered included Minami and Mochon from Uman, Fonomo and Tunnuk from Udot. They ate a lot of pounded breadfruit, fish and octopus. Several children from Minami had Vitamin A problems. The population was again over-estimated in Minami despite covering 100% of houses. We got more people from Mochon than expected. We found some of the children had already developed Bitot spots. Many of the children had problems with nightblindness. This was reported by their mothers. These children were referred to the hospital. A month later a group of doctors conducted an otitis media workshop in Truk and also selected the villages in Uman to screen both otitis and ophthalmic problems. They screened 200 children ages 0 - 6 years from two different villages and found 40 children confirmed with Vitamin A problems.

In Tunnuk on Udot we found very few people lived in this village. The structure of this village is split into two sections by a huge taro patch and swampy area. No one can walk from one section to another. We had to take the boat to go around the island. There were 29 houses in this village, four houses were empty and only used for weekends or holidays. People who owned these houses resided in Moen.

Poukochou and Etiemar are two of three inland villages on Patta. The road to these two villages was very bad. Etiemar had 8 houses with less than 100 population total. Most of these people resided in Epin and Nukaf and other villages in Patta. In Poukochou village we covered 100% of the houses and found fewer people than expected. People in these two village are somewhat related to each other. These people ate a lot of local starches, and it is well known through all Truk State that they mostly depend on octopus and clams.

Foup on Tol is another inland village, the highest village in Truk State. This village had a lot of foods such as bananas, tapioca, sweet potatoes, watermelon, pineapple and many others. The people from this village are known as good farmers. This village also had a lot health problems among children and adults. Leprosy lesions were found among lots of young girls, especially on the backs of arms which made it difficult to do the skinfold. Signs and symptoms of kwashiorkor were also observed among several children. Chicken-pox and scabies were found among many children. There were a lot of older males and females. The people from this village farmed and sold their crops to the school lunch programs.

Outer Islands of Truk. (April, 1988)

The fieldwork took place in April with Yap Outer Islands. Yap and Truk Outer island people ate a lot of copra and coconut cream. There were a lot of fat people.

Yap State - Yap Proper Islands surveyed from November to December 1987. Outer Islands surveyed in April 1988

Six Yapese were trained for one week. Four team members were from Yap Proper and two from the Outer islands - Satawal and Woleai. Four of these participants were self employed, one was from the Health Services and the other one from Yap Head Start Program.

The survey started from the southern villages, going up to the north village; Gilman, Kanifay, Kalipebinaw, Rull, Fanif, Gagil, Tomil and Map. We had to return to Rumung village, because it required a boat to get to this island.

On the first two days of the survey we could not find any young women to survey, and only a few children lived with older women, over 50 years of age. As we came closer to town, then we found a lot of young women. Most families in Yap move around a lot. They do not stay steady in one village for long. These people have farm houses elsewhere on land they own that they move around to.

In Yap compared to other FSM States we observed a lot of small backyard gardening outside homes. These gardens had a variety of vegetables, cucumber, pumpkin, squash and others vegetables, plus a lot of flower plants. Women were busy taking care of the house and children and were at the same time responsible for providing taro and preparing meals for the family. They spent most of their time at the taro patches, and each woman could have one or two or more taro patches from different villages, depending on the number of family lands. Men were supposed to provide fish to go with the taro but we found most of the time men did not go fishing. The family ended up eating meat from the store or not having meat at all. Many times the woman did not have enough time for herself and the family, so she often prepared very light meals which were often ramen soup. This entails just boiling the water and cooking the ramen. Ramen was served for breakfast and lunch and taro for dinner. I was also told that the eating pattern in Yap is changed completely because of too many new things to attract the young mother not to stay home to take good care of her children. Grandmothers end up taking care of children and at the same time shift from taro to rice and ramen. Although every home has a garden full of vegetables they still seemed to eat of junk foods and not balanced meals. Older women

in Yap told me that the infant started very early drinking coconut cream. It was their belief that the child will grow up well and healthy from coconut cream.

The customs and beliefs in Yap made us not able to gather in one place and call people to do the survey and so we did a house to house survey. The survey first started at Towoway where we surveyed two ladies and two children. There were many working women from this village and these were covered in the follow up survey done on working women both in government and private sectors. When we were at Mala'ay, Wugem and Thabeith, we found most houses were empty.

Over the next few days as we moved from village to village we found very few people in the villages and some reluctance of people to participate in the survey. As we came closer to town, we found a lot of young girls going around in town but not willing to participate with the survey.

One section in Worowoo, Rull next to Mobil is called Madrids. This section is reserved for Yap Outer Islanders. Most of the people staying in this section are not working in Yap Proper. Most of them are visitors from the outer islands. This section is associated with all kinds of health problems such as unsanitary conditions and overcrowding with clustering of children and adults in a small place. Problems with high alcohol and cigarette consumption were observed among men and women. People in this section ate turkey tails, rice and coffee with sugar three or four times a day. We also found a lot of skin problems along with signs and symptoms of malnutrition among children, and obesity among adults.

Kosrae State (January, 1988)

Nine staff members from Public Health, Aging and Sanitation Offices were trained for one week. The survey was started in Tafunsak, then Malem and Utwe last. We spent three days in Tafunsak. The houses were just beside the road. Three days were spent in Malem and one week in Utwe. Kosrae State is known as the vegetation state. This story today is reversed because their diets contained a lot of imported starch and sugary foods. The diets were similar everywhere, and we observed very few people or almost none ate any greens. The children did eat a lot of fruit snacks such as tangerines, oranges, pandanus, sugarcane and etc. There are a lot of citrus fruits in Kosrae. We observed a lot of children with white spots on their teeth, especially their molars. This problem may be from eating too much citrus acids.

Kosraen women loved to prepare foods with sugar. Sugar seems to go with everything. We felt both children and adult ate and drank a lot of sugar two or three times a day.

F I G U R E S
=====

Figure_1 :

Map of the Pacific - area covered by the South Pacific Commission.

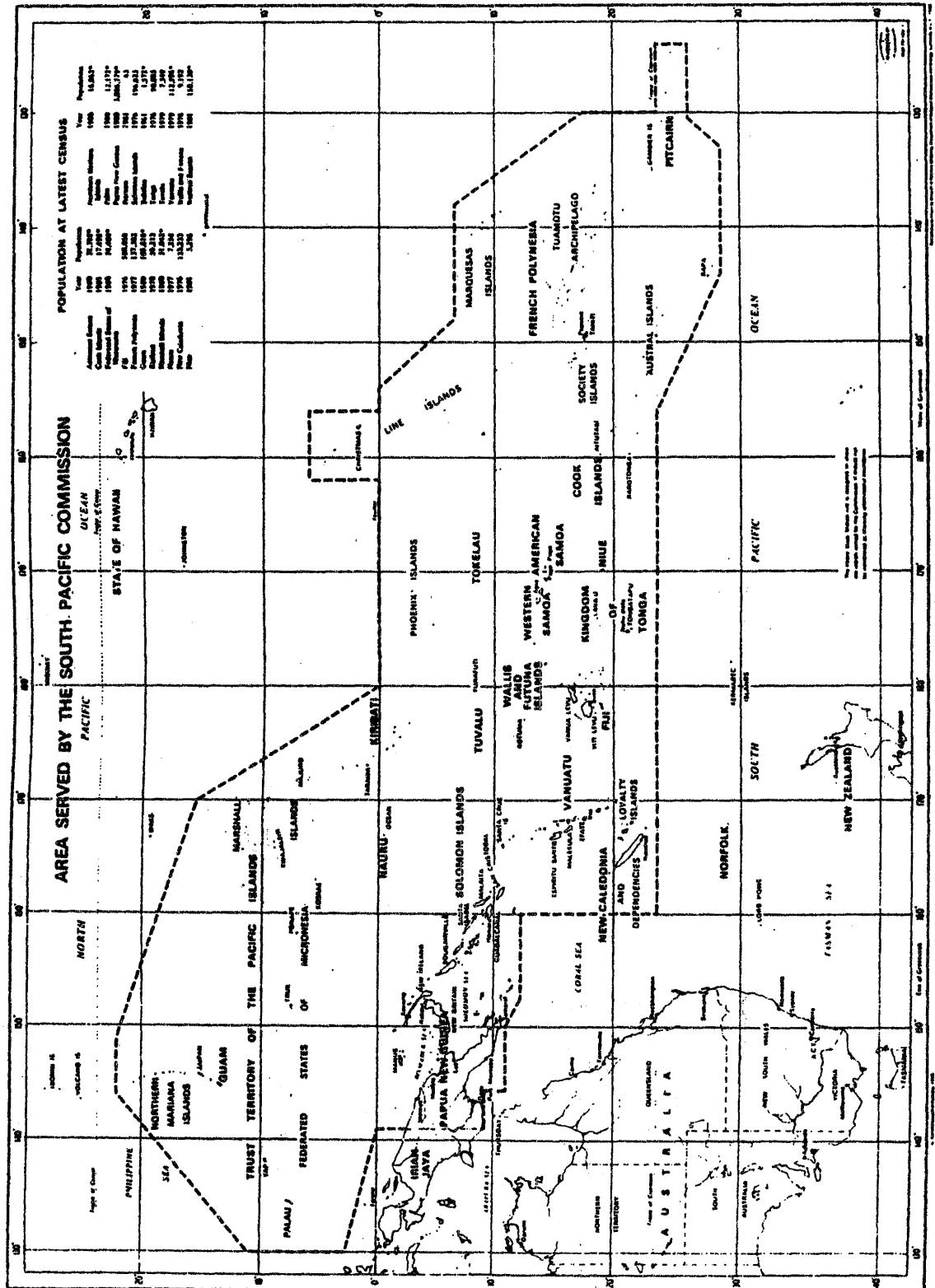


Figure 2 :

Map of the Federated States of Micronesia.

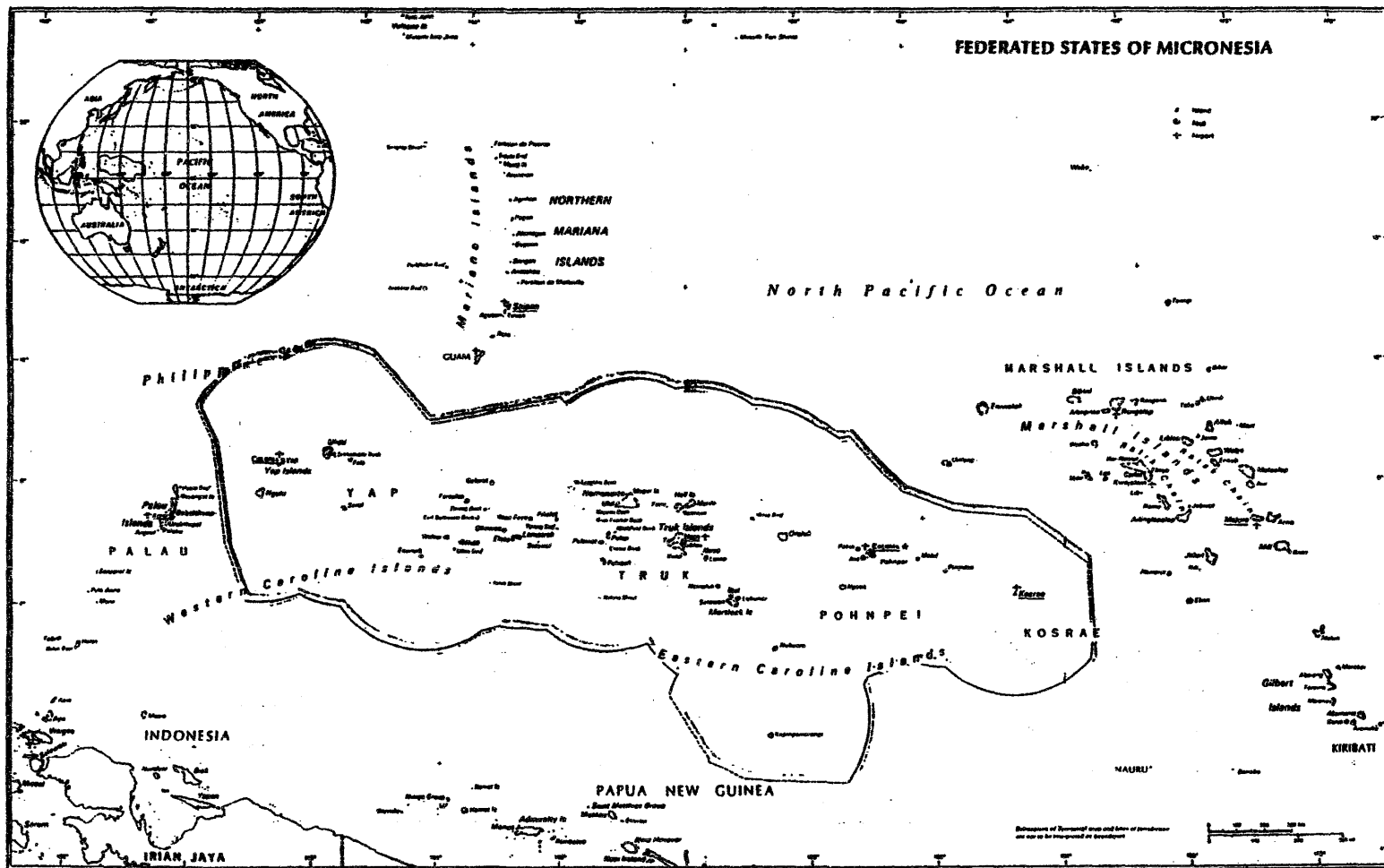


Figure 3 :

Map of Pohnpei State-Main island.

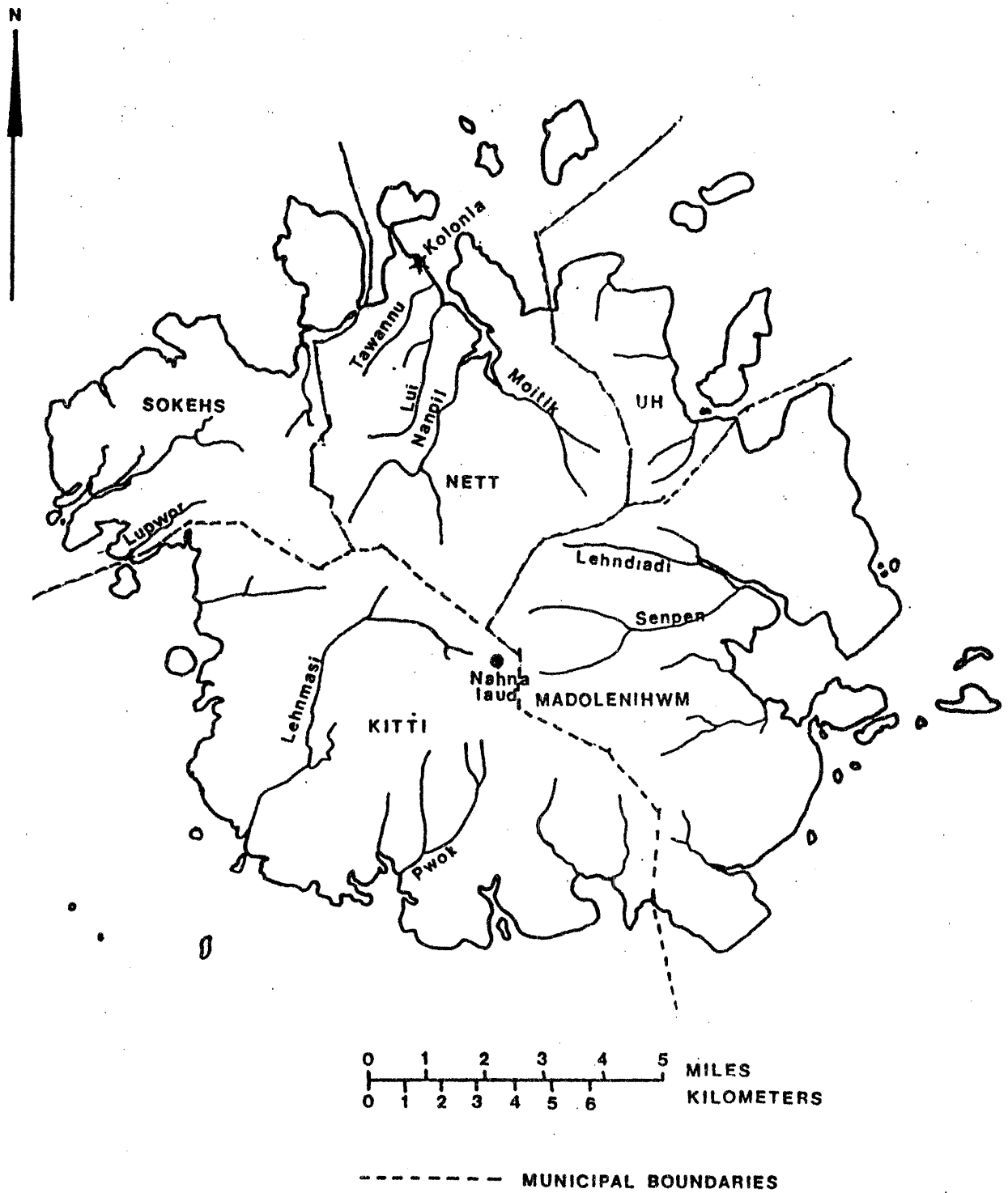


Figure 4 :

Map of Pohnpei Stater-Outer island.

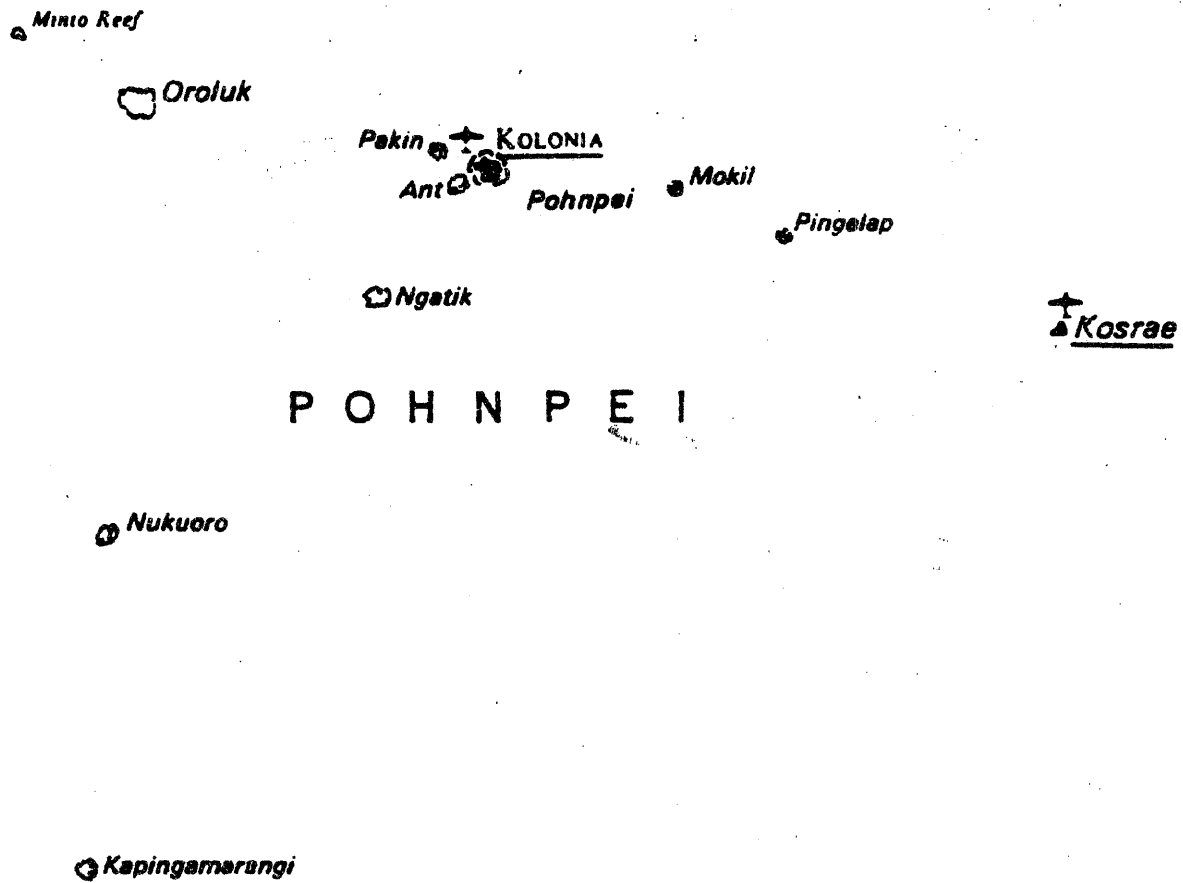


Figure 5 :

Map of Kosrae State.

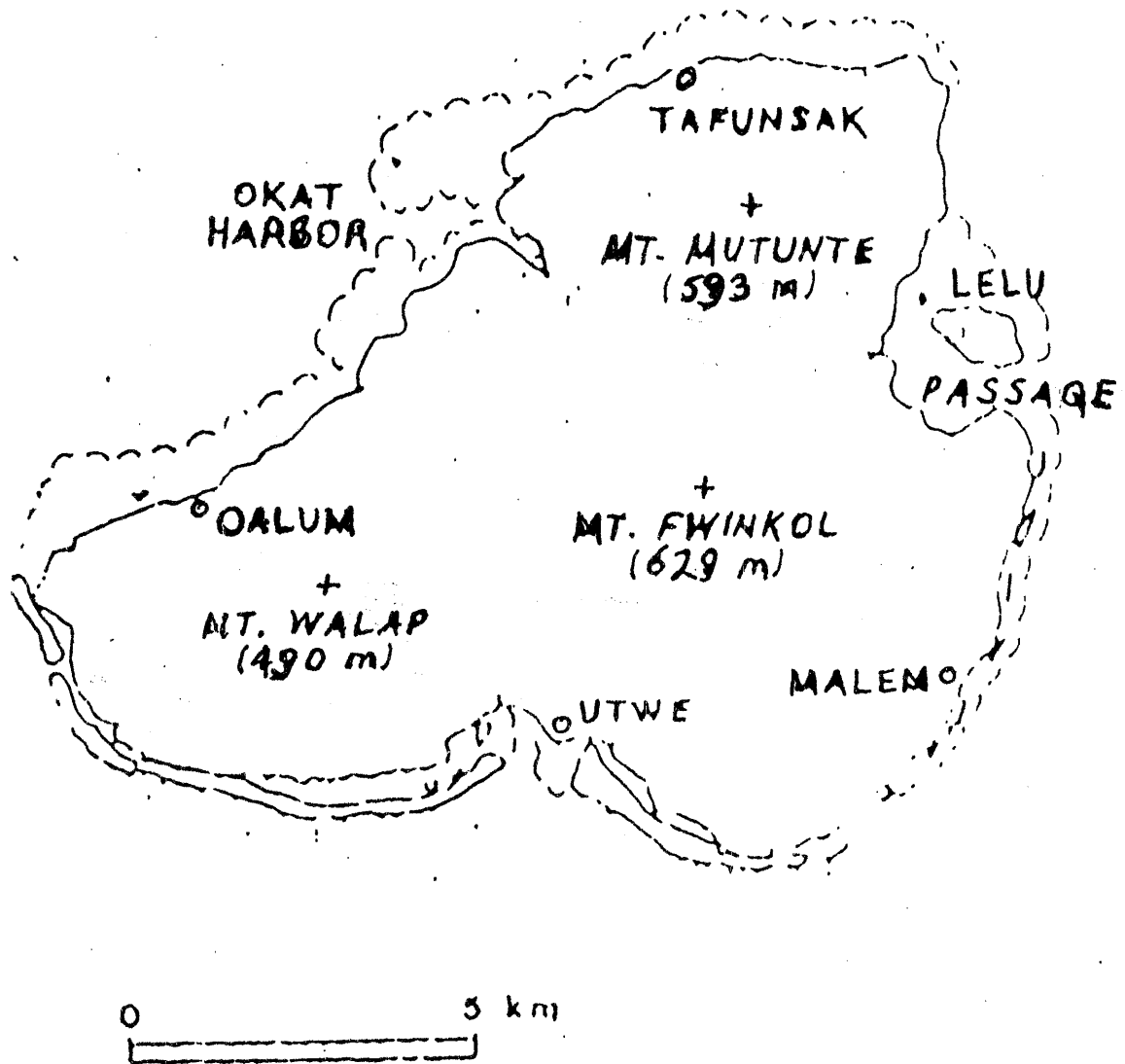


Figure 7 : Map of Yap State-Main islands.

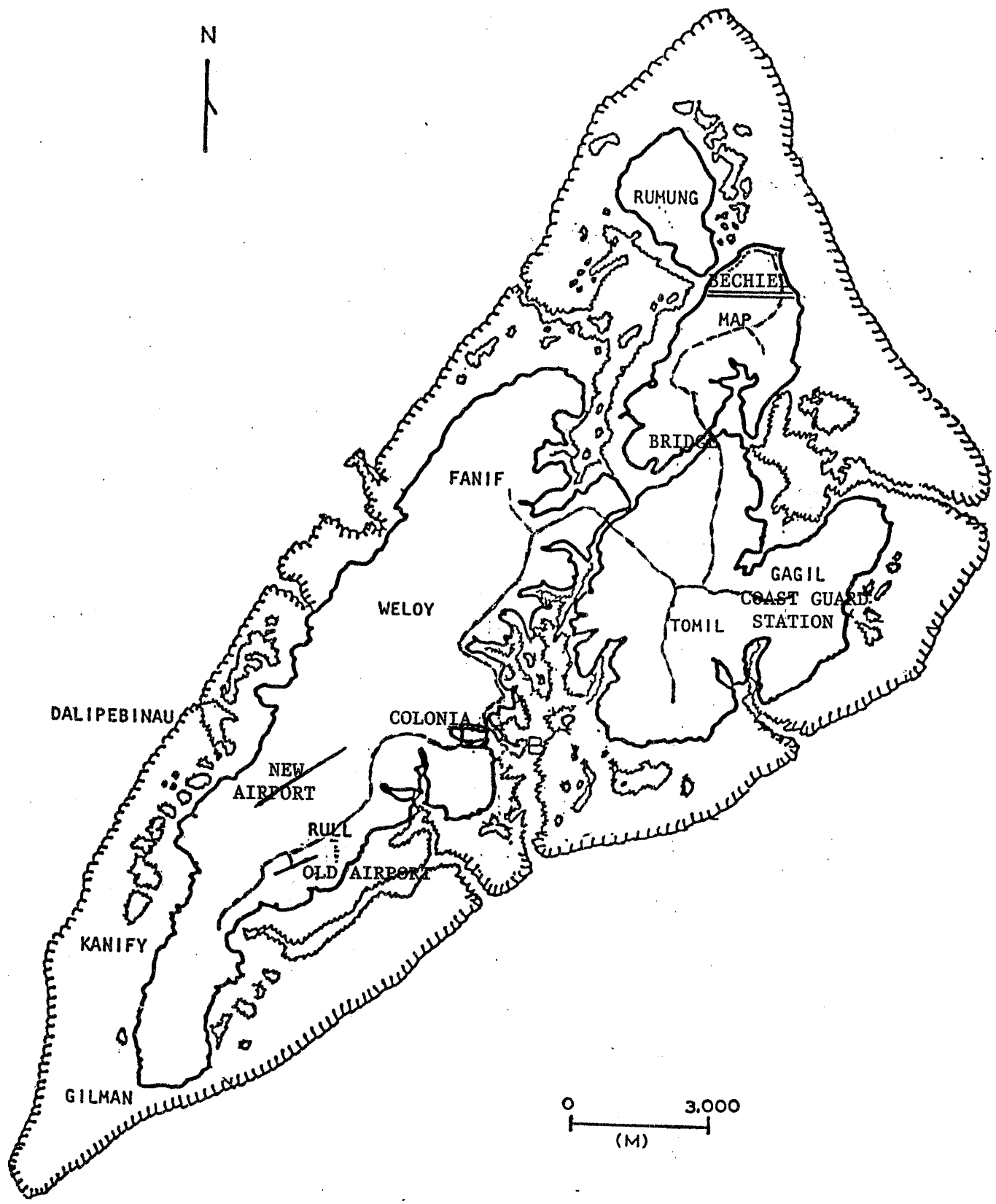


Figure 8 : Map of Yap State-Outer islands.

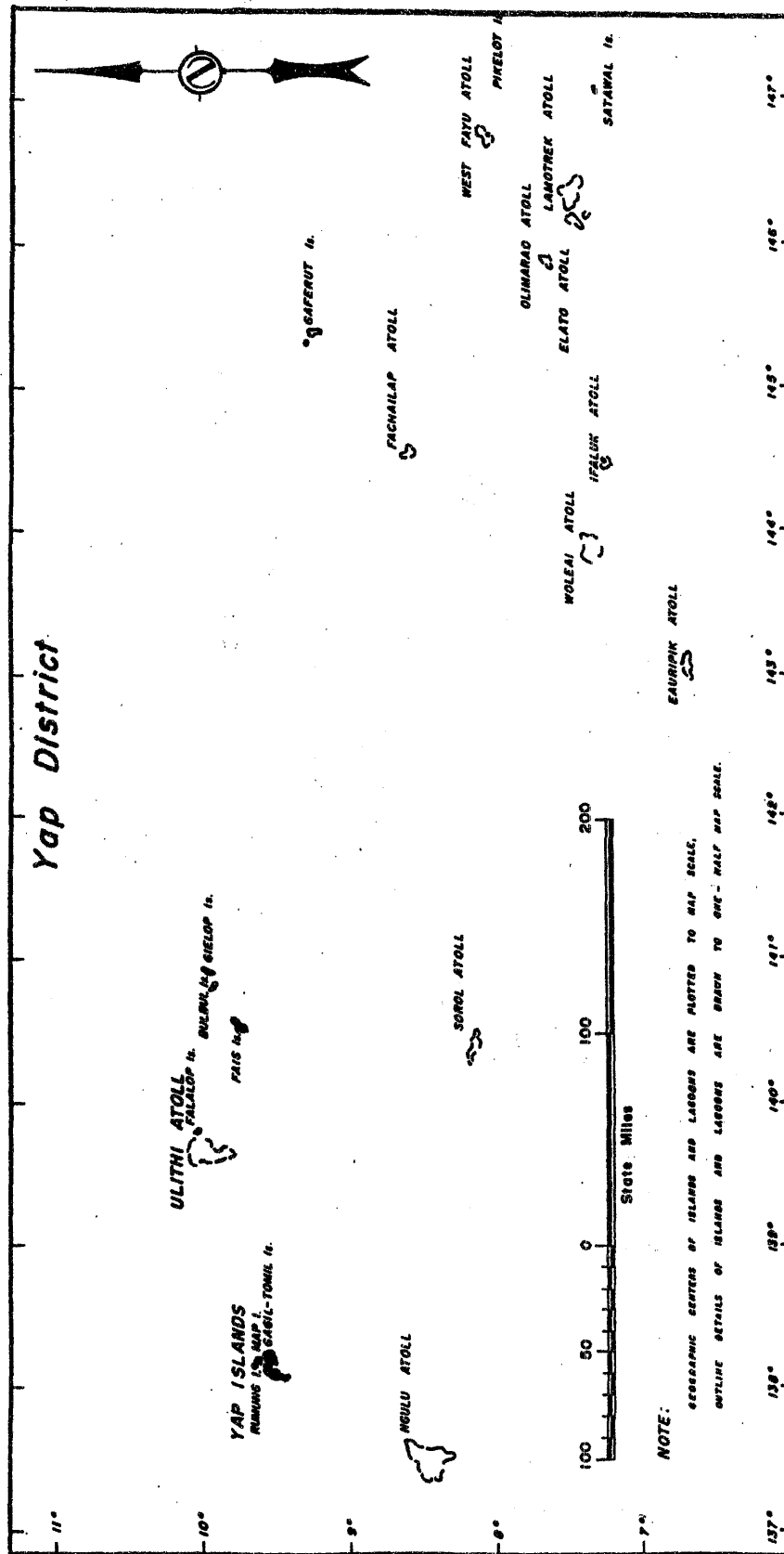


Figure 9 : Mean weight for age of children 0-59 months (both sexes) plotted on the WHO growth chart.

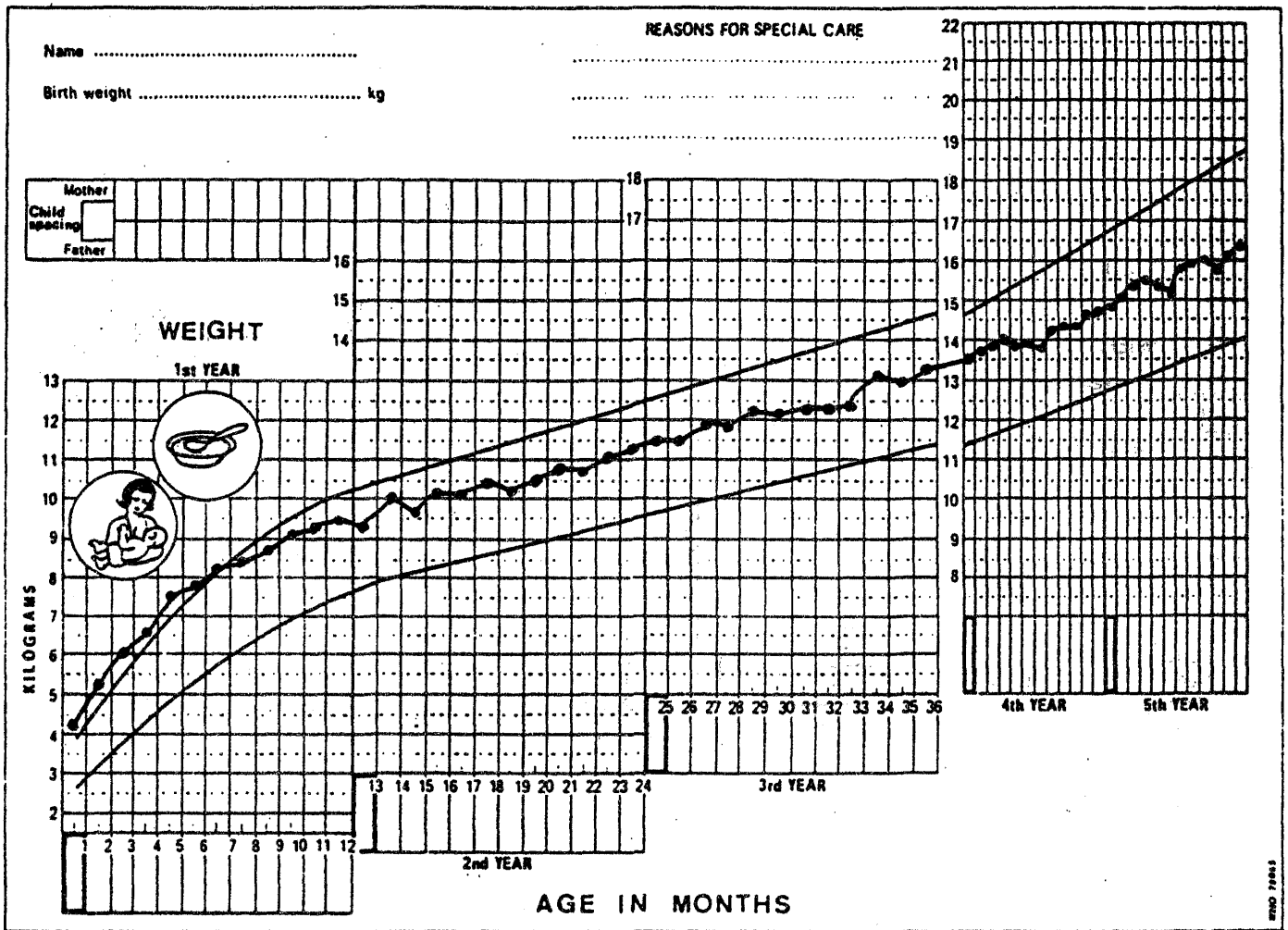
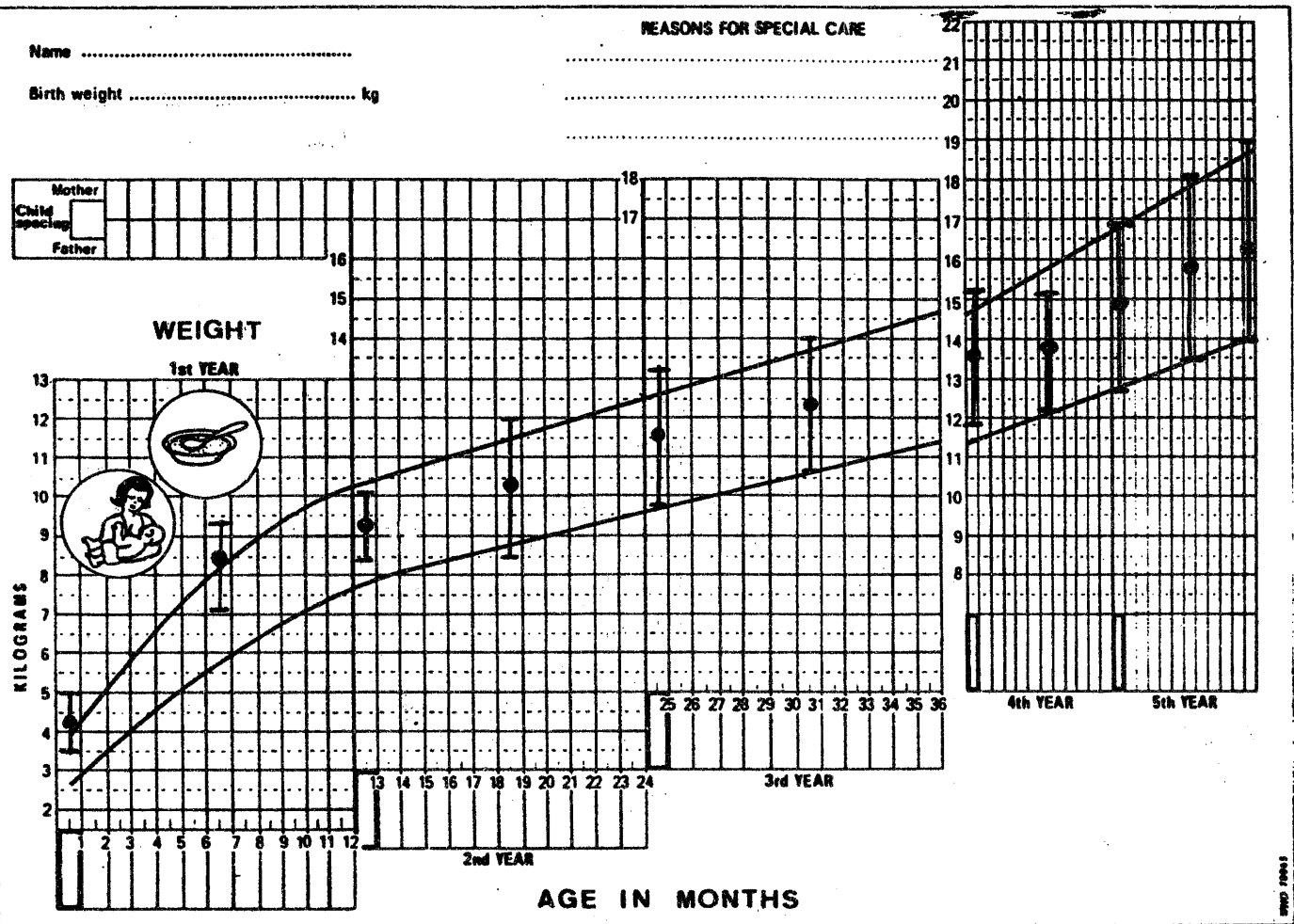


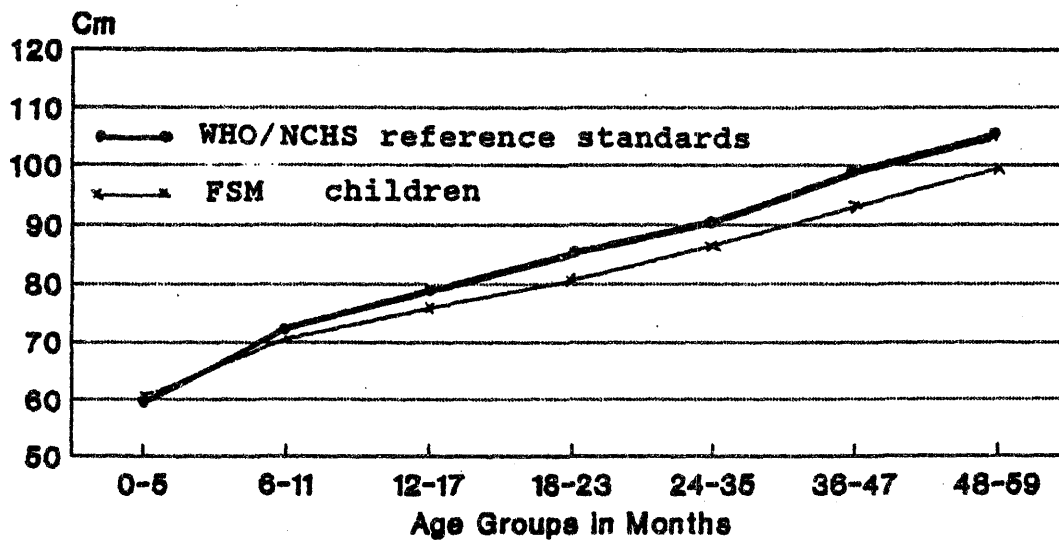
Figure 10 :

Mean and standard deviations for weight for age for children 0-59 months (both sexes) plotted on the WHO growth chart.



Figure_11 : Mean and standard deviations for height for age for children 0-59 months (both sexes) plotted against WHO/NCHS standards for boys growth.

**MEAN HEIGHT (in cm) BY AGE GROUP
FOR CHILDREN AGED 0-59 MONTHS
FSM NATIONAL NUTRITION SURVEY 1987-8**



T A B L E S
=====

Table 1.1 : Estimated Population (1987) (1) by state and zone for all age groups and sexes in FSM.

Zone	KOSRAE		POHNPEI		TRUK		YAP	
		%		%		%		%
Main Island Urban	0		6,147	21.3	9,272	21.2	2,599	26.7
Main Island Rural Coastal	6,481	100	15,576	54.0	24,883	57.0	3,625	37.2
Main Island Rural Inland	0		4,626	16.1	446	1.2	112	1.2
Outer Islands Good resources	0		1,572	5.4	3,403	7.8	708	7.3
Outer Islands Poor resources	0		902	3.1	5,658	13.0	2,705	27.8
TOTAL	6,481 =====		28,823 =====		43,662 =====		9,749 =====	

(1) Estimates only. Based on 1985 - 87 censuses in Pohnpei, Kosrae and Yap and FEMA report (1987) in Truk and adjusted according to hospital records, nutrition survey and other recent population estimates.

Table 1.2.F : Estimated Population (1987) (1) by state and zone, for women 15 - 49 years old.

	KOSRAE	POHNPEI	TRUK	YAP
Zone				
Main Island Urban	-	1,537	2,318	650
Main Island Rural Coastal	1,620	3,894	6,221	906
Main Island Rural Inland	-	1,157	112	28
Outer Islands Good resources	-	393	851	177
Outer Islands Poor resources	-	225	1,415	676
TOTAL	1,620 =====	7,206 =====	10,916 =====	2,437 =====

(1) Estimates only. Based on population estimates outlined in Table 1.1 and calculated assuming women of child-bearing years (15 - 49 years) comprises 25% of the total population in each zone and state.

Table 1.2.C : Estimated Population (1987) (1) by state and zone, for children 0 - 59 months old.

	KOSRAE	POHNPEI	TRUK	YAP
Zone				
Main Island Urban	-	1,229	1,854	520
Main Island Rural Coastal	1,296	3,115	4,967	725
Main Island Rural Inland	-	925	89	22
Outer Islands Good resources	-	314	681	142
Outer Islands Poor resources	-	180	1,132	541
TOTAL	1,296 =====	5,765 =====	8,732 =====	1,950 =====

(1) Estimates only. Based on population estimates outlined in Table 1.1 and calculated assuming children 0 - 59 months comprise 20% of the total population in each zone and state.

Table 1.3 : Sample response rates for survey target groups,
National Nutrition Survey, FSM 1987 - 88.

	* Estimated Population	Sample covered	Estimated Sample response %
<u>Women 15 - 49 years.</u>			
Kosrae	525	377	71.8
Pohnpei	1,908	1,310	68.7
Truk	2,463	1,471	59.7
Yap	1,262	910	72.1
TOTAL	6,158 =====	4,068 =====	66.1
<u>Children 0 - 4 years.</u>			
Kosrae	420	338	80.5
Pohnpei	1,522	1,093	71.8
Truk	1,964	1,471	74.9
Yap	1,005	662	65.9
TOTAL	4,911 =====	3,564 =====	72.5
<u>Overall coverage:</u>	11,069	7,632	68.9

* Estimates are over-estimates (approximately 12%) due to incomplete census information. i.e. sample response is probably higher (approximately 78%).

TABLE 1.4.F : AGE DISTRIBUTION BY STATE, SAMPLE POPULATION
FOR WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
AGE GROUPS:										
15-19.....	86	22.9	249	19.1	303	21.0	210	24.1	848	21.2
20-29.....	123	32.8	466	35.8	532	36.9	328	37.6	1449	36.3
30-39.....	113	30.1	400	30.7	412	28.6	239	27.4	1164	29.1
40-49.....	53	14.1	188	14.4	196	13.6	96	11.0	533	13.3
TOTAL F.S.M.....	375	100.0	1303	100.0	1443	100.0	873	100.0	3994	100.0

TABLE 1.4.C : AGE DISTRIBUTION BY STATE AND BY SEX
SAMPLE POPULATION OF CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
BOYS										
AGEGP										
0-5 months.....	15	8.8	52	9.0	71	9.2	34	10.0	172	9.3
6-11 months.....	20	11.7	60	10.4	101	13.1	33	9.7	214	11.5
12-17 months.....	15	8.8	60	10.4	70	9.1	36	10.6	181	9.7
18-23 months.....	19	11.1	65	11.3	85	11.1	41	12.0	210	11.3
24-35 months.....	33	19.3	117	20.3	160	20.8	69	20.2	379	20.4
36-47 months.....	37	21.6	115	20.0	131	17.0	62	18.2	345	18.6
48-59 months.....	32	18.7	107	18.6	151	19.6	66	19.4	356	19.2
TOTAL AGES.....	171	100.0	578	100.0	789	100.0	341	100.0	1857	100.0
GIRLS										
AGEGP										
0-5 months.....	14	8.4	57	11.4	62	9.1	30	9.6	163	9.8
6-11 months.....	25	15.1	52	10.4	71	10.5	40	12.8	188	11.4
12-17 months.....	21	12.7	58	11.6	63	9.3	30	9.6	172	10.4
18-23 months.....	20	12.0	48	9.8	83	12.2	40	12.9	191	11.5
24-35 months.....	23	13.9	99	19.8	147	21.7	66	21.2	335	20.2
36-47 months.....	25	15.1	95	19.0	136	20.1	63	20.3	319	19.3
48-59 months.....	38	22.9	92	18.4	118	17.1	42	13.5	288	17.4
TOTAL AGES.....	168	100.0	501	100.0	678	100.0	311	100.0	1656	100.0
TOTAL F.S.M.										
AGEGP										
0-5 months.....	29	8.8	111	10.3	133	9.2	64	9.8	337	9.6
6-11 months.....	45	13.4	112	10.4	172	11.9	73	11.2	402	11.4
12-17 months.....	36	10.7	118	10.9	133	9.2	66	10.1	353	10.0
18-23 months.....	39	11.6	113	10.5	168	11.8	81	12.4	401	11.4
24-35 months.....	56	16.8	216	20.0	307	21.2	135	20.7	714	20.3
36-47 months.....	62	18.4	210	19.5	287	18.5	125	19.2	664	18.9
48-59 months.....	70	20.8	199	18.4	267	18.5	108	16.8	644	18.3
TOTAL AGES.....	337	100.0	1079	100.0	1447	100.0	652	100.0	3515	100.0

TABLE 1.5.F : AGE DISTRIBUTION BY ZONE, SAMPLE POPULATION
FOR WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%	n	%
AGE GROUPS:												
15-19.....	213	21.4	250	23.7	110	24.8	152	18.4	123	18.3	848	21.2
20-29.....	354	35.6	372	35.2	162	36.5	305	36.9	256	38.2	1449	36.3
30-39.....	301	30.3	306	28.9	110	24.8	260	31.4	187	27.9	1164	29.1
40-49.....	127	12.8	129	12.2	62	14.0	110	13.3	105	15.6	533	13.3
TOTAL F.S.M.....	995	100.0	1057	100.0	444	100.0	827	100.0	671	100.0	3994	100.0

TABLE 1.5.C : AGE DISTRIBUTION BY ZONE AND SEX
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	ENVIRONMENT TYPE:										TOTAL F.S.M:	
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		n	%
	n	%	n	%	n	%	n	%	n	%		
BOYS												
AGEGP												
0-5 months.....	41	9.8	53	10.0	24	9.9	30	7.7	24	8.7	172	9.3
6-11 months.....	53	12.7	72	13.5	22	9.1	42	10.7	25	9.1	214	11.5
12-17 months.....	37	8.9	43	8.1	23	9.5	48	12.3	30	10.9	181	9.7
18-23 months.....	50	12.0	58	10.9	38	15.7	34	8.7	30	10.9	210	11.3
24-35 months.....	86	20.6	105	19.7	49	20.2	77	19.7	62	22.5	379	20.4
36-47 months.....	73	17.5	100	18.8	35	14.5	89	22.8	48	17.5	345	18.6
48-59 months.....	77	18.5	101	19.0	51	21.1	71	18.2	56	20.4	356	19.2
ALL AGES.....	417	100.0	532	100.0	242	100.0	391	100.0	275	100.0	1857	100.0
GIRLS												
AGEGP												
0-5 months.....	39	10.9	49	10.2	20	9.7	26	7.5	29	10.9	163	9.8
6-11 months.....	43	12.0	52	10.8	25	12.1	38	11.0	30	11.3	188	11.4
12-17 months.....	33	9.2	42	8.8	26	12.6	46	13.3	25	9.4	172	10.4
18-23 months.....	46	12.8	59	12.3	25	12.1	34	9.9	27	10.2	191	11.5
24-35 months.....	79	22.0	93	19.4	38	18.4	68	19.7	57	21.4	335	20.2
36-47 months.....	69	19.2	92	19.2	37	18.0	72	20.9	49	18.4	319	19.3
48-59 months.....	50	13.9	93	19.4	35	17.0	61	17.7	49	18.4	288	17.4
ALL AGES.....	359	100.0	480	100.0	206	100.0	345	100.0	268	100.0	1658	100.0
TOTAL F.S.M												
AGEGP												
0-5 months.....	80	10.3	102	10.1	45	10.0	57	7.7	53	9.8	337	9.6
6-11 months.....	96	12.4	124	12.3	47	10.5	80	10.9	55	10.2	402	11.4
12-17 months.....	70	9.0	85	8.4	49	10.9	94	12.8	55	10.2	353	10.0
18-23 months.....	96	12.4	117	11.6	63	14.0	68	9.2	57	10.5	401	11.4
24-35 months.....	165	21.3	198	19.6	87	19.4	145	19.7	119	22.0	714	20.3
36-47 months.....	142	18.3	192	19.0	72	16.0	161	21.8	97	17.9	664	18.9
48-59 months.....	127	16.4	194	19.2	86	19.2	132	17.9	105	19.4	644	18.3
ALL AGES.....	776	100.0	1012	100.0	449	100.0	737	100.0	541	100.0	3515	100.0

TABLE 1.6.F : DISTRIBUTION OF THE TYPE OF ENVIRONMENT BY STATE,
SAMPLE POPULATION FOR WOMEN 15 TO 49 YEARS OLD,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
ENVIRONMENT TYPE:										
MAIN ISLAND URBAN.....	0	.0	405	31.1	288	19.8	304	34.8	995	24.9
MAIN ISL RURAL COASTAL....	375	100.0	180	12.3	384	26.6	138	15.8	1057	26.5
MAIN ISL RURAL INLAND....	0	.0	270	20.7	158	10.9	16	1.8	444	11.1
OUTER ISL GOOD RESOURCES.	0	.0	327	25.1	377	26.1	123	14.1	827	20.7
OUTER ISL POOR RESOURCES.	0	.0	141	10.8	238	16.5	292	33.4	671	16.8
TOTAL F.S.M.....	375	100.0	1303	100.0	1443	100.0	873	100.0	3994	100.0

TABLE 1.6.C : DISTRIBUTION OF THE TYPE OF ENVIRONMENT BY STATE
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
ENVIRONMENT TYPE:										
MAIN ISLAND URBAN.....	0	.0	312	28.8	245	16.9	222	33.9	779	22.1
MAIN ISL RURAL COASTAL....	337	100.0	138	12.7	419	29.0	119	18.2	1013	28.8
MAIN ISL RURAL INLAND....	0	.0	258	23.8	188	12.9	6	.9	450	12.8
OUTER ISL GOOD RESOURCES.	0	.0	274	25.3	336	23.2	127	19.4	737	20.9
OUTER ISL POOR RESOURCES.	0	.0	101	9.3	281	18.0	180	27.5	542	15.4
TOTAL F.S.M.....	337	100.0	1083	100.0	1447	100.0	654	100.0	3521	100.0

TABLE 1.7.F : DAY OF INTERVIEW BY STATE, FOR SAMPLE POPULATION
OF WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
DAY OF INTERVIEW:										
MONDAY.....	69	18.4	332	25.5	163	11.3	65	7.4	629	15.8
TUESDAY.....	118	31.5	321	24.8	240	16.6	98	11.2	777	19.5
WEDNESDAY.....	87	23.2	186	14.3	237	16.4	220	25.2	730	18.3
THURSDAY.....	64	17.1	209	16.0	368	25.5	94	10.8	735	18.4
FRIDAY.....	37	9.9	169	13.0	276	19.1	181	20.7	663	16.6
SATURDAY.....	0	.0	31	2.4	82	5.7	152	17.4	265	6.6
SUNDAY.....	0	.0	55	4.2	76	5.3	63	7.2	194	4.9
TOTAL F.S.M.....	375	100.0	1303	100.0	1442	100.0	873	100.0	3993	100.0

TABLE 1.7.C : DAY OF INTERVIEW BY STATE
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE		POINPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
DAY OF INTERVIEW:										
MONDAY.....	10	3.0	300	27.7	178	12.2	65	9.9	551	15.6
TUESDAY.....	156	46.3	209	19.3	282	19.5	89	13.6	736	20.9
WEDNESDAY.....	99	29.4	181	14.9	260	18.0	145	22.2	665	18.9
THURSDAY.....	49	14.5	174	16.1	338	23.4	91	13.9	652	18.5
FRIDAY.....	23	6.8	128	11.8	256	17.7	130	19.9	537	15.3
SATURDAY.....	0	.0	38	3.3	65	4.5	69	10.6	170	4.8
SUNDAY.....	0	.0	75	6.9	70	4.8	65	9.9	210	6.0
TOTAL F.S.M.....	337	100.0	1083	100.0	1447	100.0	654	100.0	3521	100.0

TABLE 1.8.F : DAY OF INTERVIEW BY ZONE SAMPLE POPULATION
FOR WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%	n	%
DAY OF INTERVIEW:												
MONDAY.....	210	21.1	174	16.5	26	5.9	197	23.8	22	3.3	629	15.8
TUESDAY.....	137	13.8	242	22.9	151	34.0	109	13.2	138	20.6	777	19.5
WEDNESDAY.....	198	19.7	275	26.0	154	34.7	1	.1	104	15.5	730	18.3
THURSDAY.....	169	17.0	275	26.0	50	11.3	59	7.1	162	27.1	735	18.4
FRIDAY.....	243	24.4	91	8.6	63	14.2	251	30.4	15	2.2	663	16.6
SATURDAY.....	40	4.0	0	.0	0	.0	113	13.7	112	16.7	265	6.6
SUNDAY.....	0	.0	0	.0	0	.0	96	11.6	98	14.6	194	4.9
TOTAL F.S.M.....	995	100.0	1057	100.0	444	100.0	826	100.0	671	100.0	3993	100.0

TABLE 1.8.C : DAY OF INTERVIEW BY ZONE
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1988

	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%	n	%
DAY OF INTERVIEW:												
MONDAY.....	177	22.7	118	11.6	35	7.8	193	26.2	28	5.2	551	15.8
TUESDAY.....	118	15.1	276	27.2	169	37.6	43	5.8	130	24.0	736	20.9
WEDNESDAY.....	157	20.2	277	27.3	153	34.0	0	.0	78	14.4	665	18.9
THURSDAY.....	144	18.5	275	27.1	52	11.6	21	2.8	160	29.5	652	18.5
FRIDAY.....	154	19.8	67	6.6	41	9.1	262	35.5	13	2.4	537	15.3
SATURDAY.....	29	3.7	0	.0	0	.0	101	13.7	40	7.4	170	4.8
SUNDAY.....	0	.0	0	.0	0	.0	117	15.9	93	17.2	210	6.0
TOTAL F.S.M.....	779	100.0	1013	100.0	450	100.0	737	100.0	542	100.0	3521	100.0

TABLE 1.9.F: TIME OF INTERVIEW BY STATE, SAMPLE POPULATION
FOR WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
TIME OF INTERVIEW:										
MORNING.....	207	55.2	1057	81.1	994	69.0	557	63.8	2815	70.5
AFTERNOON.....	168	44.8	202	15.5	323	22.4	252	28.9	945	23.7
EVENING.....	0	.0	44	3.4	124	8.6	64	7.3	232	5.8
TOTAL F.S.M.....	375	100.0	1303	100.0	1441	100.0	873	100.0	3992	100.0

TABLE 1.9.C: TIME OF INTERVIEW BY STATE
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL F.S.M.	
	n	%	n	%	n	%	n	%	n	%
TIME OF INTERVIEW:										
MORNING.....	135	40.2	911	84.1	1037	71.7	408	62.5	2491	70.8
AFTERNOON.....	201	59.8	138	12.7	293	20.2	183	28.0	815	23.2
EVENING.....	0	.0	34	3.1	117	8.1	62	9.5	213	6.1
TOTAL F.S.M.....	336	100.0	1083	100.0	1447	100.0	653	100.0	3519	100.0

TABLE 1.10.F: OCCUPATION FOR WOMEN 15 TO 49 YEARS OLD,
BY STATE AND AGE GROUP, NATIONAL NUTRITION SURVEY,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	OCCUPATION					
	PROFESSIONAL		CLERICAL		HOUSEWORK	
	n	%	n	%	n	%
KOSRAE						
AGE GROUPS:						
15-19.....	0	.0	3	3.5	83	96.5
20-29.....	5	4.1	8	6.5	110	89.4
30-39.....	8	7.1	2	1.8	103	91.2
40-49.....	1	1.9	0	.0	52	98.1
POHNPEI						
AGE GROUPS:						
15-19.....	0	.0	5	2.0	243	98.0
20-29.....	0	.0	52	11.2	413	88.8
30-39.....	5	1.3	46	11.5	348	87.2
40-49.....	2	1.1	18	9.6	168	89.4
TRUK						
AGE GROUPS:						
15-19.....	0	.0	6	2.0	297	98.0
20-29.....	12	2.3	16	3.0	504	94.7
30-39.....	25	6.1	17	4.1	369	89.8
40-49.....	10	5.1	5	2.8	181	92.3
YAP						
AGE GROUPS:						
15-19.....	0	.0	5	2.4	205	97.6
20-29.....	7	2.1	22	6.7	299	91.2
30-39.....	16	6.7	11	4.6	212	88.7
40-49.....	3	3.2	8	6.3	86	90.5

TABLE 2.1: MEAN WEIGHT (1) (in kg) BY AGE GROUP BY STATE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP			F.S.M		
	pop	mean	sd	pop	mean	sd	pop	mean	sd	pop	mean	sd	pop	mean	sd
AGE GROUP:															
15 to 19 yrs...	86	57.1	8.8	248	59.3	10.3	302	61.1	9.8	207	58.7	10.8	843	59.6	10.2
20 to 29 yrs...	123	63.7	10.6	465	64.2	13.1	530	69.1	13.3	327	64.6	14.3	1445	66.1	13.5
30 to 39 yrs...	113	72.1	14.3	399	73.0	17.5	410	76.0	16.6	237	72.2	15.8	1159	73.8	16.6
40 to 49 yrs...	49	76.6	15.2	188	75.3	17.5	195	74.8	18.3	96	66.5	12.1	528	73.8	17.0
TOTAL.....	371	66.4	13.9	1300	67.6	16.0	1437	70.1	15.5	867	65.5	14.6	3975	67.9	15.4

149

TABLE 2.2: MEAN WEIGHT (1) (in kg) BY AGE GROUP BY ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RES.			OUTER ISL POOR RES.		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
15 to 19 yrs.....	211	60.1	11.2	249	57.5	9.2	110	59.5	10.8	152	61.1	10.7	121	61.1	8.0
20 to 29 yrs.....	352	65.0	14.5	371	64.7	12.0	162	63.7	12.7	304	67.6	14.1	256	69.2	13.1
30 to 39 yrs.....	299	75.1	17.3	305	72.5	16.5	110	70.5	14.6	259	72.8	15.3	186	77.3	18.1
40 to 49 yrs.....	127	74.3	17.2	125	73.7	18.7	62	71.3	16.8	109	72.3	14.4	105	75.3	17.6
ALL AGES.....	989	68.2	16.3	1050	66.3	15.1	444	65.4	14.1	824	68.7	14.6	668	70.9	15.8

(1) Excludes pregnant women

TABLE 2.3: MEAN WEIGHT (1) (in kg) BY STATE AND ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
MAIN ISLAND URBAN.....	0	.	.	404	69.2	16.8	284	69.7	16.1	301	65.4	15.4
MAIN ISL RURAL COASTAL	371	66.4	13.9	160	66.8	15.7	382	69.2	15.9	137	57.2	11.5
MAIN ISL RURAL INLAND.	0	.	.	270	63.6	13.3	158	68.8	15.2	16	61.4	10.9
OUTER ISL GOOD RES....	0	.	.	326	65.6	14.5	375	70.5	14.0	123	71.2	15.1
OUTER ISL POOR RES....	0	.	.	140	76.1	17.9	238	72.4	16.3	290	67.2	13.2
TOTAL.....	371	66.4	13.9	1300	67.6	16.0	1437	70.1	15.5	867	65.5	14.6

(1) Excludes pregnant women

150

TABLE 2.4: MEAN HEIGHT (in cm) BY AGE GROUP BY STATE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP			F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUP:															
15 to 19 yrs...	86	151.6	4.5	248	153.2	5.6	301	157.0	5.6	208	154.4	5.1	843	154.7	5.7
20 to 29 yrs...	123	153.0	4.5	464	153.9	5.9	530	157.7	4.9	325	155.1	4.7	1442	155.5	5.5
30 to 39 yrs...	112	152.4	4.5	399	154.4	6.5	407	157.8	5.5	238	155.6	5.1	1156	155.7	6.0
40 to 49 yrs...	49	151.6	4.8	188	154.2	5.9	195	155.8	5.7	96	154.4	5.7	528	154.6	5.8
TOTAL.....	370	152.3	4.6	1299	154.0	6.0	1433	157.3	5.4	867	155.0	5.1	3969	155.3	5.7

TABLE 2.5: MEAN HEIGHT (in cm) BY AGE GROUP BY ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RES.			OUTER ISL POOR RES.		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
15 to 19 yrs.....	210	154.7	5.1	249	153.3	5.2	109	153.7	6.5	152	156.6	6.3	123	156.1	5.2
20 to 29 yrs.....	352	155.5	5.3	370	154.6	5.4	182	153.6	6.0	302	155.9	5.7	256	157.4	4.4
30 to 39 yrs.....	299	156.7	6.1	303	154.4	5.4	109	153.6	6.2	259	155.5	6.3	186	157.3	5.3
40 to 49 yrs.....	127	155.1	6.1	125	153.6	5.6	62	152.1	4.8	109	154.8	5.4	105	156.3	5.9
ALL AGES.....	988	155.6	5.6	1047	154.1	5.4	442	153.4	6.0	822	155.8	6.0	670	157.0	5.1

151

TABLE 2.6: MEAN HEIGHT (in cm) BY STATE AND ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
MAIN ISLAND URBAN.....	0	.	.	405	155.4	6.0	282	157.3	5.4	301	154.5	5.0
MAIN ISL RURAL COASTAL	370	152.3	4.6	180	153.8	5.8	381	156.4	5.2	136	153.1	5.2
MAIN ISL RURAL INLAND.	0	.	.	269	152.0	6.0	157	156.0	5.3	16	151.9	5.2
OUTER ISL GOOD RES....	0	.	.	325	151.7	4.6	375	159.1	5.2	122	156.5	4.7
OUTER ISL POOR RES....	0	.	.	140	159.3	5.0	238	156.9	5.1	292	155.9	4.8
TOTAL.....	370	152.3	4.6	1299	154.0	6.0	1433	157.3	5.4	867	155.0	5.1

TABLE 2.7: MEAN BODY MASS INDEX (*) (1) BY AGE GROUP BY STATE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUP:															
15 to 19 yrs...	82	24.8	3.5	233	25.1	4.1	295	24.7	3.6	200	24.4	4.0	810	24.8	3.8
20 to 29 yrs...	105	27.0	4.4	389	27.2	5.2	442	27.7	5.0	292	26.5	4.9	1228	27.2	5.0
30 to 39 yrs...	99	31.1	6.1	373	30.5	6.2	347	30.3	6.0	218	29.8	6.0	1037	30.3	6.1
40 to 49 yrs...	44	33.5	6.4	187	31.5	6.3	187	30.4	6.6	95	27.9	4.9	513	30.6	6.4
TOTAL.....	330	28.6	5.9	1182	28.5	6.0	1271	28.1	5.7	805	27.0	5.4	3588	28.0	5.8

(*) See section 2.6 for definition of Body Mass Index

(1) Excludes pregnant women

152

TABLE 2.8: MEAN BODY MASS INDEX (*) (1) BY AGE GROUP BY ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RES.			OUTER ISL POOR RES.		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
15 to 19 yrs.....	201	25.0	4.4	241	24.4	3.5	102	25.2	4.4	149	24.8	3.8	117	24.9	2.8
20 to 29 yrs.....	302	26.7	5.3	317	26.9	4.7	129	26.9	5.4	280	27.7	4.8	220	27.8	4.8
30 to 39 yrs.....	273	30.5	6.2	265	30.2	6.4	99	29.9	5.5	231	30.0	5.8	169	30.9	6.0
40 to 49 yrs.....	123	30.8	6.0	117	31.1	7.4	80	30.2	6.0	108	30.1	5.7	105	30.7	6.4
ALL AGES.....	899	28.0	6.0	940	27.7	5.9	390	27.7	5.6	748	28.2	5.4	611	28.6	5.7

(*) See section 2.6 for definition of Body Mass Index.

(1) Excludes pregnant women

TABLE 2.9: MEAN BODY MASS INDEX (*) (1) BY STATE AND ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
MAIN ISLAND URBAN.....	0	.	.	368	28.6	6.1	256	28.2	5.9	275	27.1	5.9
MAIN ISL RURAL COASTAL	330	28.6	5.9	146	28.2	6.2	336	28.0	5.9	128	24.3	4.6
MAIN ISL RURAL INLAND.	0	.	.	248	27.7	5.7	127	27.9	5.7	15	26.9	5.2
OUTER ISL GOOD RES....	0	.	.	296	28.5	6.0	339	27.7	5.1	113	28.7	4.7
OUTER ISL POOR RES....	0	.	.	124	29.9	6.0	213	29.2	6.1	274	27.6	5.0
TOTAL.....	330	28.6	5.9	1182	28.5	6.0	1271	28.1	5.7	805	27.0	5.4

(*) See section 2.6 for definition of Body Mass Index.

(1) Excludes pregnant women

TABLE 3.1: PREVALENCE OF OBESITY (in %) DEFINED BY
BODY MASS INDEX (*) (1) BY STATE AND AGE GROUPS
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE				POHNPEI				TRUK			
	POP.	NORMAL <25	25-29	OBESE ≥30	POP.	NORMAL <25	25-29	OBESE ≥30	POP.	NORMAL <25	25-29	OBESE ≥30
15 TO 19 YEARS.....	82	63.4	30.5	6.1	233	55.4	33.0	11.6	295	58.3	35.6	6.1
20 TO 29 YEARS.....	105	38.1	41.0	21.0	389	39.8	36.8	23.4	442	33.0	38.2	28.7
30 TO 39 YEARS.....	99	18.2	27.3	54.5	373	19.6	28.7	51.7	347	19.6	31.7	48.7
40 TO 49 YEARS.....	44	9.1	13.6	77.3	187	13.4	32.1	54.5	187	21.9	25.7	52.4
ALL AGES.....	330	34.5	30.6	34.8	1182	32.3	32.7	34.9	1271	33.6	34.0	32.4

	YAP				TOTAL F.S.M			
	POP.	NORMAL <25	25-29	OBESE ≥30	POP.	NORMAL <25	25-29	OBESE ≥30
15 TO 19 YEARS.....	200	61.5	32.0	6.5	810	58.8	33.5	7.8
20 TO 29 YEARS.....	292	44.2	33.2	22.6	1228	38.3	36.8	24.9
30 TO 39 YEARS.....	218	21.6	34.9	43.6	1037	19.9	30.9	49.3
40 TO 49 YEARS.....	95	31.6	34.7	33.7	513	19.5	28.7	51.9
ALL AGES.....	805	40.9	33.5	25.6	3588	34.9	33.2	31.9

(*) See section 2.8 for definition of Body Mass Index.
(1) Excludes pregnant women

TABLE 3.2: PREVALENCE OF OBESITY (in %) DEFINED BY
BODY MASS INDEX (*) (1) BY ZONE AND AGE GROUPS
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND			
	POP	NORMAL <25	25-29	OBESE ≥30	POP	NORMAL <25	25-29	OBESE ≥30	POP	NORMAL <25	25-29	OBESE ≥30
15 TO 19 YEARS.....	201	57.7	31.8	10.4	241	62.7	31.1	6.2	102	62.7	25.5	11.8
20 TO 29 YEARS.....	302	47.0	30.1	22.8	317	38.5	38.2	23.3	129	47.3	29.5	23.3
30 TO 39 YEARS.....	273	18.3	31.1	50.5	265	21.5	31.3	47.2	99	20.2	33.3	46.5
40 TO 49 YEARS.....	123	17.1	26.0	56.9	117	21.4	24.8	53.8	60	23.3	23.3	53.3
ALL AGES.....	123	17.1	26.0	56.9	117	21.4	24.8	53.8	60	23.3	23.3	53.3

	OUTER ISL GOOD RES.				OUTER ISL POOR RES.			
	POP	NORMAL <25	25-29	OBESE ≥30	POP	NORMAL <25	25-29	OBESE ≥30
15 TO 19 YEARS.....	149	56.4	35.6	8.1	117	52.1	45.3	2.6
20 TO 29 YEARS.....	260	30.4	42.3	27.3	220	30.0	41.8	28.2
30 TO 39 YEARS.....	231	22.5	29.4	48.1	169	16.0	30.2	53.8
40 TO 49 YEARS.....	108	20.4	33.3	46.3	105	17.1	34.3	48.6
ALL AGES.....	108	20.4	33.3	46.3	105	17.1	34.3	48.6

(*) See section 2.6 for definition of Body Mass Index.
(1) Excludes pregnant women

TABLE 3.3: PREVALENCE OF OBESITY (in %) DEFINED BY
BODY MASS INDEX (*) (1) BY STATE AND ZONE
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND			
	POP	NORMAL <25	25-29	OBESE >=30	POP	NORMAL <25	25-29	OBESE >=30	POP	NORMAL <25	25-29	OBESE >=30
KOSRAE.....	0	.0	.0	.0	330	34.5	30.6	34.8	0	.0	.0	.0
POHNPEI.....	368	31.8	30.7	37.5	146	32.2	37.7	30.1	248	39.9	29.4	30.6
TRUK.....	256	35.2	31.3	33.6	336	33.6	35.7	30.7	127	42.5	25.2	32.3
YAP.....	275	44.4	28.7	26.9	128	63.3	25.0	11.7	15	40.0	40.0	20.0

156

	OUTER ISL GOOD RES.				OUTER ISL POOR RES.				TOTAL F.S.M			
	POP	NORMAL <25	25-29	OBESE >=30	POP	NORMAL <25	25-29	OBESE >=30	POP	NORMAL <25	25-29	OBESE >=30
KOSRAE.....	0	.0	.0	.0	0	.0	.0	.0	330	34.5	30.6	34.8
POHNPEI.....	296	31.8	32.4	35.8	124	20.2	40.3	39.5	1182	32.3	32.7	34.9
TRUK.....	339	35.1	34.5	30.4	213	23.9	39.0	37.1	1271	33.6	34.0	32.4
YAP.....	113	21.2	47.8	31.0	274	35.0	36.1	28.8	805	40.9	33.5	25.6

(*) See section 2.6 for definition of Body Mass Index.

(1) Excludes pregnant women

TABLE 3.4: PREVALENCE OF OBESITY (in %) DEFINED BY
BODY MASS INDEX (*) (1) BY OCCUPATION AND AGE GROUP
IN WOMEN 15 TO 49 YEARS OLD, NATIONAL NUTRITION SURVEY
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	AGE GROUPS:											
	15 to 19 yrs				20 to 29 yrs				30 to 39 yrs			
	POP	NORMAL <25	25-29	OBESE >=30	POP	NORMAL <25	25-29	OBESE >=30	POP	NORMAL <25	25-29	OBESE >=30
PROFESSIONAL.....	0	.0	.0	.0	22	22.7	36.4	40.9	46	23.9	21.7	54.3
CLERICAL.....	18	72.2	22.2	5.6	83	50.6	31.3	18.1	73	19.2	31.5	49.3
HOUSEWORK.....	791	58.5	33.6	7.8	1122	37.6	37.3	25.1	917	19.6	31.3	49.1

	AGE GROUPS:				TOTAL F.S.M			
	40 to 49 yrs				POP	NORMAL <25	25-29	OBESE >=30
	POP	NORMAL <25	25-29	OBESE >=30				
PROFESSIONAL.....	16	18.8	31.3	50.0	84	22.6	27.4	50.0
CLERICAL.....	29	17.2	31.0	51.7	203	36.5	30.5	33.0
HOUSEWORK.....	467	19.7	28.3	52.0	3297	35.1	33.5	31.5

(*) See section 2.6 for definition of Body Mass Index.
(1) Excludes pregnant women

TABLE 4.1: MEAN HEMOGLOBIN (GM/DL) FOR FEMALES 15-49 YEARS OLD
BY REPRODUCTIVE STATUS AND AGE GROUP BY STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	KOSRAE			POHNPEI			TRUK			YAP		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
PREGNANT												
15-19.....	4	11.9	.9	14	11.6	1.1	6	10.5	1.2	8	12.5	1.8
20-29.....	18	10.8	2.1	76	12.1	1.3	89	11.0	1.2	33	11.2	1.6
30-39.....	13	11.4	1.6	25	11.2	1.0	60	11.2	1.2	19	11.1	1.5
40-49.....	5	10.7	2.0	1	10.5	.0	8	12.2	2.4	1	9.5	.0
TOTAL.....	40	11.1	1.8	116	11.8	1.3	163	11.1	1.3	61	11.3	1.6
NON-PREGNANT NON-LACTATING												
15-19.....	77	12.0	1.6	209	13.0	1.2	278	12.5	1.2	186	12.7	1.4
20-29.....	69	12.1	1.3	263	13.1	1.4	246	12.6	1.3	201	12.6	1.4
30-39.....	66	12.0	1.3	281	13.2	1.3	191	12.6	1.3	154	12.9	1.3
40-49.....	45	12.0	1.3	179	12.9	1.4	160	12.5	1.5	81	12.8	1.3
TOTAL.....	257	12.0	1.4	932	13.1	1.3	875	12.6	1.3	622	12.7	1.4
LACTATING												
15-19.....	4	11.9	1.8	25	12.1	2.0	18	11.6	1.5	16	13.0	1.2
20-29.....	40	11.7	1.3	129	12.5	1.5	213	12.0	1.5	98	12.4	1.5
30-39.....	38	11.7	1.5	97	12.9	1.2	166	12.2	1.3	66	12.1	1.7
40-49.....	3	11.5	1.3	8	12.4	1.1	29	12.0	1.5	14	12.8	1.1
TOTAL.....	85	11.7	1.4	259	12.6	1.4	426	12.0	1.4	194	12.4	1.6

TABLE 4.2: MEAN HEMOGLOBIN (GM/DL) FOR FEMALES 15-49 YEARS OLD
BY REPRODUCTIVE STATUS AND AGE GROUP BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
PREGNANT															
15-19.....	10	12.0	1.5	8	11.1	1.0	7	11.4	1.4	3	12.0	2.6	4	12.0	1.8
20-29.....	50	12.1	1.1	54	11.3	1.6	33	11.0	1.4	43	11.2	1.6	36	11.1	1.6
30-39.....	25	11.0	1.2	38	11.3	1.4	10	11.3	1.3	28	10.9	1.1	16	11.9	1.1
40-49.....	4	11.0	3.1	8	11.4	2.1	2	12.5	2.1	1	10.5	.0	0	.	.
TOTAL.....	89	11.7	1.4	108	11.3	1.5	52	11.1	1.4	75	11.1	1.4	56	11.4	1.5
NON-PREGNANT NON-LACTATING															
15-19.....	192	12.7	1.3	226	12.3	1.3	87	12.9	1.1	136	12.8	1.4	109	12.7	1.5
20-29.....	212	12.8	1.4	185	12.3	1.3	80	12.8	1.2	168	12.9	1.5	134	13.0	1.4
30-39.....	202	13.1	1.4	166	12.5	1.4	55	12.9	1.2	163	12.8	1.3	106	13.0	1.3
40-49.....	115	12.9	1.4	107	12.3	1.4	52	12.7	1.3	95	12.5	1.5	96	12.8	1.5
TOTAL.....	721	12.9	1.4	684	12.4	1.3	274	12.8	1.2	562	12.8	1.4	445	12.9	1.4
LACTATING															
15-19.....	9	12.2	1.9	16	11.8	1.6	15	12.3	1.5	13	12.1	2.1	10	12.7	1.6
20-29.....	96	12.6	1.4	143	11.9	1.4	54	11.9	1.5	95	12.3	1.5	92	12.2	1.8
30-39.....	73	12.3	1.5	109	12.1	1.4	47	12.3	1.2	73	12.2	1.5	65	12.6	1.4
40-49.....	8	11.9	1.5	14	12.1	1.7	9	12.7	1.3	14	12.1	1.2	9	12.5	1.3
TOTAL.....	186	12.4	1.5	282	12.0	1.4	125	12.1	1.4	195	12.2	1.5	176	12.4	1.6

TABLE 4.3: MEAN HEMOGLOBIN (GM/DL) FOR FEMALES 15-49 YEARS OLD
BY REPRODUCTIVE STATUS AND STATE BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
PREGNANT															
KOSRAE.....	0	.	.	40	11.1	1.8	0	.	.	0	.	.	0	.	.
POHNPEI.....	36	12.2	1.2	14	12.2	1.3	21	11.5	1.1	30	11.3	1.5	15	12.0	.9
TRUK.....	26	11.5	1.4	46	11.3	1.2	30	10.9	1.5	36	10.8	1.1	25	11.1	1.1
YAP.....	27	11.2	1.4	8	11.2	.8	1	10.0	.0	9	12.1	2.0	16	11.3	2.1
TOTAL.....	89	11.7	1.4	108	11.3	1.5	52	11.1	1.4	75	11.1	1.4	56	11.4	1.5
NON-PREGNANT NON-LACTATING															
KOSRAE.....	0	.	.	257	12.0	1.4	0	.	.	0	.	.	0	.	.
POHNPEI.....	297	13.2	1.4	117	13.1	1.3	183	13.1	1.2	230	12.9	1.3	105	13.2	1.4
TRUK.....	195	12.9	1.3	213	12.4	1.1	78	12.2	1.1	253	12.6	1.5	136	12.5	1.2
YAP.....	229	12.4	1.2	97	12.4	1.3	13	13.1	.7	79	13.2	1.4	204	13.0	1.5
TOTAL.....	721	12.9	1.4	684	12.4	1.3	274	12.8	1.2	562	12.8	1.4	445	12.9	1.4
LACTATING															
KOSRAE.....	0	.	.	85	11.7	1.4	0	.	.	0	.	.	0	.	.
POHNPEI.....	70	12.9	1.6	30	13.0	1.2	69	12.6	1.1	69	12.1	1.6	21	13.0	.9
TRUK.....	67	12.4	1.3	134	12.0	1.3	54	11.5	1.5	90	12.3	1.4	81	11.8	1.5
YAP.....	49	11.7	1.2	33	11.9	1.7	2	13.8	1.1	36	12.3	1.5	74	12.9	1.6
TOTAL.....	186	12.4	1.5	282	12.0	1.4	125	12.1	1.4	195	12.2	1.5	176	12.4	1.6

TABLE 4.4: MEAN HEMOGLOBIN (GM/DL) FOR FEMALES 15-49 YEARS OLD
BY REPRODUCTIVE STATUS AND AGE GROUP BY OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	PROFESSIONAL			CLERICAL			HOUSEWORK		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
PREGNANT									
15-19.....	0	.	.	0	.	.	32	11.6	1.4
20-29.....	2	12.3	1.1	14	11.7	1.9	200	11.4	1.5
30-39.....	8	11.1	1.2	3	10.7	1.3	106	11.2	1.3
40-49.....	0	.	.	0	.	.	15	11.4	2.2
TOTAL.....	10	11.4	1.2	17	11.5	1.8	353	11.4	1.4
NON-PREGNANT NON-LACTATING									
15-19.....	0	.	.	17	12.4	2.0	732	12.6	1.3
20-29.....	14	13.5	1.1	73	12.9	1.1	691	12.7	1.4
30-39.....	41	12.9	1.7	58	12.9	1.5	592	12.8	1.3
40-49.....	13	12.3	1.1	27	12.7	1.3	424	12.7	1.5
TOTAL.....	68	12.9	1.5	175	12.8	1.4	2439	12.7	1.4
LACTATING									
15-19.....	0	.	.	2	13.0	2.1	61	12.2	1.7
20-29.....	8	12.6	1.4	14	12.4	1.2	458	12.2	1.5
30-39.....	5	12.4	1.2	13	13.1	1.1	349	12.2	1.4
40-49.....	3	12.5	1.7	2	12.5	.7	49	12.2	1.4
TOTAL.....	16	12.5	1.3	31	12.7	1.2	917	12.2	1.5

TABLE 5.1: PREVALENCE OF ANEMIA(1) IN WOMEN 15-49 YEARS OLD
BY REPRODUCTIVE STATUS(2) AND AGE GROUP.
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

AGE GROUP	15-19		20-29		30-39		40-49	
	N	%	N	%	N	%	N	%
PREGNANT								
NORMAL.....	21	67.7	155	72.4	74	63.8	6	40.0
MODERATE.....	10	32.3	51	23.8	40	34.5	8	53.3
SEVERE.....	0	.0	8	3.7	2	1.7	1	6.7
NON-PREGNANT NON-LACTATING								
NORMAL.....	632	78.4	906	74.5	806	78.3	394	77.6
MILD.....	147	18.2	270	22.2	195	19.0	98	19.3
MODERATE.....	22	2.7	33	2.7	25	2.4	11	2.2
SEVERE.....	5	.6	7	.6	3	.3	5	1.0
LACTATING								
NORMAL.....	39	62.9	318	66.4	263	71.7	36	66.7
MILD.....	16	25.8	125	26.1	83	22.6	15	27.8
MODERATE.....	7	11.3	30	6.3	20	5.4	2	3.7
SEVERE.....	0	.0	6	1.3	1	.3	1	1.9

(1) See Section 2.6 for definitions of anemia
(2) No mild anemia definition for pregnant women

TABLE 5.2: PREVALENCE OF ANEMIA(1) IN WOMEN 15-49 YEARS OLD
BY REPRODUCTIVE STATUS(2) AND STATE.
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	KOSRAE		POHNPEI		TRUK		YAP	
	N	%	N	%	N	%	N	%
PREGNANT								
NORMAL.....	26	65.0	94	81.7	95	59.0	41	68.3
MODERATE.....	10	25.0	20	17.4	63	39.1	16	26.7
SEVERE.....	4	10.0	1	.9	3	1.9	3	5.0
NON-PREGNANT NON-LACTATING								
NORMAL.....	205	62.1	1002	85.7	910	72.3	621	77.5
MILD.....	107	32.4	147	12.6	302	24.0	154	19.2
MODERATE.....	12	3.6	18	1.5	40	3.2	21	2.6
SEVERE.....	6	1.8	2	.2	7	.6	5	.6
LACTATING								
NORMAL.....	47	55.3	199	77.1	280	65.7	130	67.4
MILD.....	32	37.6	48	18.6	107	25.1	52	26.9
MODERATE.....	5	5.9	11	4.3	34	8.0	9	4.7
SEVERE.....	1	1.2	0	.0	5	1.2	2	1.0

(1) See Section 2.6 for definitions of anemia
(2) No mild anemia definition for pregnant women

TABLE S.3: PREVALENCE OF ANEMIA(1) IN WOMEN 15-49 YEARS OLD
BY REPRODUCTIVE STATUS(2) AND ZONE.
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES	
	N	%	N	%	N	%	N	%	N	%
PREGNANT										
NORMAL.....	69	78.4	70	65.4	35	67.3	40	54.8	42	75.0
MODERATE.....	17	19.3	32	29.8	16	30.8	32	43.8	12	21.4
SEVERE.....	2	2.3	5	4.7	1	1.9	1	1.4	2	3.6
NON-PREGNANT NON-LACTATING										
NORMAL.....	711	80.7	659	70.5	311	79.9	572	76.8	485	79.6
MILD.....	151	17.1	235	25.1	75	19.3	148	19.9	101	16.6
MODERATE.....	18	2.0	32	3.4	2	.5	21	2.8	18	3.0
SEVERE.....	1	.1	9	1.0	1	.3	4	.5	5	.8
LACTATING										
NORMAL.....	133	71.9	175	62.1	90	72.6	129	66.2	129	73.3
MILD.....	42	22.7	83	29.4	27	21.8	53	27.2	34	19.3
MODERATE.....	9	4.9	22	7.8	5	4.0	13	6.7	10	5.7
SEVERE.....	1	.5	2	.7	2	1.6	0	.0	3	1.7

(1) See Section 2.6 for definitions of anemia
(2) No mild anemia definition for pregnant women

TABLE 5.4: PREVALENCE OF ANEMIA(1) IN PREGNANT WOMEN(2) ATTENDING
ANTENATAL CLINIC OR TAKING VITAMIN AND IRON TABLETS,
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	ANTENATAL CLINIC				VIT. TABLETS IN PREG.			
	YES		NO		YES		NO	
	N	%	N	%	N	%	N	%
PREGNANT								
ANEMIA STATUS								
NORMAL.....	107	66.0	140	69.0	96	69.6	151	66.8
MODERATE.....	49	30.2	58	28.6	37	26.8	69	30.5
SEVERE.....	6	3.7	5	2.5	5	3.6	6	2.7

(1) See Section 2.6 for definitions of anemia
(2) No mild anemia definition for pregnant women

TABLE 5.5: PREVALENCE OF ANEMIA(1) IN WOMEN AVOIDING
FOODS OR NOT IN PREGNANCY(2).
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	TOTAL WOMEN	NORMAL	MODERATE	SEVERE
	N	%	%	%
PREGNANT				
AVOIDING FOODS DURING PREGNANCY				
YES.....	18	83.3	11.1	5.6
NO.....	358	67.3	29.9	2.8

(1) See Section 2.6 for definitions of anemia
(2) No mild anemia definition for pregnant women

TABLE 5.6: PREVALENCE OF ANEMIA(1) IN WOMEN AVOIDING
FOODS OR NOT IN LACTATION.
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	TOTAL WOMEN	NORMAL	MILD	MODERATE	SEVERE
	N	%	%	%	%
LACTATING					
AVOIDING FOODS DURING LACTATION					
YES.....	86	69.8	25.6	4.7	.0
NO.....	874	68.1	24.7	6.3	.9

(1) See Section 2.6 for definitions of anemia

TABLE 5.7: PREVALENCE OF ANEMIA(1) IN WOMEN 15-49 YEARS OLD
BY TOTAL NUMBER OF PREGNANCIES
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	TOTAL PREGNANCIES															
	0		1		2		3		4		5		6		7	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
NORMAL.....	933	79.7	332	77.8	303	75.9	241	74.4	229	74.1	212	77.1	188	75.2	152	72.0
MILD.....	199	17.0	75	17.6	61	15.3	61	18.8	57	18.4	46	16.7	42	16.8	50	23.7
MODERATE.....	34	2.9	17	4.0	30	7.5	20	6.2	21	6.8	12	4.4	18	7.2	7	3.3
SEVERE.....	5	.4	3	.7	5	1.3	2	.6	2	.6	5	1.8	2	.8	2	.9

STATUS	TOTAL PREGNANCIES															
	8		9		10		11		12		13		14		15	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
NORMAL.....	114	66.7	77	68.1	80	78.4	66	83.5	44	75.9	14	53.8	10	71.4	6	50.0
MILD.....	41	24.0	27	23.9	18	17.6	9	11.4	11	19.0	8	30.8	3	21.4	4	33.3
MODERATE.....	15	8.8	7	6.2	3	2.9	4	5.1	3	5.2	4	15.4	1	7.1	2	16.7
SEVERE.....	1	.6	2	1.8	1	1.0	0	.0	0	.0	0	.0	0	.0	0	.0

STATUS	TOTAL PREGNANCIES											
	16		17		18		19		21		22	
	N	%	N	%	N	%	N	%	N	%	N	%
NORMAL.....	3	37.5	3	100.0	1	33.3	0	.0	1	100.0	1	100.0
MILD.....	2	25.0	0	.0	2	66.7	0	.0	0	.0	0	.0
MODERATE.....	3	37.5	0	.0	0	.0	0	.0	0	.0	0	.0
SEVERE.....	0	.0	0	.0	0	.0	1	100.0	0	.0	0	.0

(1) See Section 2.6 for definitions of anemia
(2) No mild anemia definition for pregnant women

TABLE 5.8: PREVALENCE OF ANEMIA(1) IN WOMEN 15-49 YEARS OLD
AND WHO ATE GREENS AND WHO ATE PROTEIN FOOD.
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

STATUS	GREENS				PROTEIN			
	NOT EATEN		EATEN AT LEAST ONCE		NOT EATEN		EATEN AT LEAST ONCE	
	N	%	N	%	N	%	N	%
NORMAL.....	2960	76.2	44	66.7	147	76.6	2858	76.1
MILD.....	695	17.9	18	27.3	29	15.1	684	18.2
MODERATE.....	197	5.1	4	6.1	12	6.3	189	5.0
SEVERE.....	31	.8	0	.0	4	2.1	27	.7

(1) See Section 2.6 for definitions of anemia

167

TABLE 5.9: PREVALENCE OF ANEMIA(1) IN WOMEN 15-49 YEARS OLD
BY AGE GROUP AND WHETHER THEY HAVE BEEN PREGNANT (2) OR NOT
NATIONAL NUTRITION SURVEY, F.S.M., 1987-88.

PREGNANT:	AGE OF MOTHER															
	15-19				20-29				30-39				40-49			
	NO		YES		NO		YES		NO		YES		NO		YES	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ANEMIA STATUS																
NORMAL.....	569	48.6	87	3.1	279	23.8	790	28.3	67	5.7	817	29.3	18	1.5	383	13.7
MILD.....	121	10.3	26	.9	62	5.3	210	7.5	12	1.0	187	6.7	4	.3	94	3.4
MODERATE.....	21	1.8	11	.4	10	.9	75	2.7	2	.2	63	2.3	1	.1	18	.6
SEVERE.....	4	.3	1	.0	1	.1	14	.5	0	.0	5	.2	0	.0	6	.2

(1) See Section 2.6 for definitions of anemia

(2) No mild anemia definition for pregnant women

**TABLE 6.1: PREVALENCE OF FEMALES AVOIDING FOODS
IN PREGNANCY AND IN LACTATION BY AGE GROUP.
FSM NATIONAL NUTRITION SURVEY 1987-88.**

	15-19		20-29		30-39		40-49	
	N	%	N	%	N	%	N	%
AVOIDING FOODS DURING PREGNANCY	13	10.7	42	34.7	46	38.0	20	16.5
AVOIDING FOODS DURING LACTATION	9	4.5	75	37.5	80	40.0	36	18.0

**TABLE 6.2: PREVALENCE OF FEMALES AVOIDING FOODS
IN PREGNANCY AND IN LACTATION BY STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.**

	KOSRAE		POHNPEI		TRUK		YAP	
	N	%	N	%	N	%	N	%
AVOIDING FOODS DURING PREGNANCY	17	14.0	21	17.4	63	52.1	20	16.5
AVOIDING FOODS DURING LACTATION	70	35.0	72	36.0	36	18.0	22	11.0

**TABLE 6.3: PREVALENCE OF FEMALES AVOIDING FOODS
IN PREGNANCY AND IN LACTATION BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.**

	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES	
	N	%	N	%	N	%	N	%	N	%
AVOIDING FOODS DURING PREGNANCY	18	14.9	50	41.3	11	9.1	30	24.8	12	9.9
AVOIDING FOODS DURING LACTATION	45	22.5	86	43.0	21	10.5	33	16.5	15	7.5

TABLE 7.1: TOTAL PREGNANCIES OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	TOTAL PREGNANCIES													
	0		1		2		3		4		5		>=6	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
KOSRAE														
15-19...	77	89.5	7	8.1	2	2.3	0	.0	0	.0	0	.0	0	.0
20-29...	43	35.0	25	20.3	21	17.1	15	12.2	11	8.9	5	4.1	3	2.4
30-39...	11	9.7	5	4.4	7	6.2	10	8.8	10	8.8	9	8.0	61	54.0
40-49...	1	1.9	4	7.5	0	.0	2	3.8	2	3.8	3	5.7	41	77.4
POHNPEI														
15-19...	195	78.3	38	15.3	10	4.0	5	2.0	0	.0	0	.0	1	.4
20-29...	83	17.8	80	17.2	111	23.8	85	18.2	49	10.5	30	6.4	28	6.0
30-39...	22	5.5	17	4.3	29	7.3	37	9.3	52	13.0	71	17.8	172	43.0
40-49...	7	3.7	6	3.2	10	5.3	10	5.3	8	4.3	11	5.9	136	72.3
TRUK														
15-19...	276	91.4	17	5.6	8	2.6	1	.3	0	.0	0	.0	0	.0
20-29...	149	28.0	90	16.9	73	13.7	61	11.5	62	11.7	47	8.8	50	9.4
30-39...	29	7.0	14	3.4	27	6.6	29	7.0	36	8.7	42	10.2	235	57.0
40-49...	9	4.6	7	3.6	3	1.5	8	4.1	10	5.1	9	4.6	150	76.5
YAP														
15-19...	173	82.4	30	14.3	6	2.9	0	.0	1	.5	0	.0	0	.0
20-29...	80	24.4	75	22.9	73	22.3	35	10.7	27	8.2	21	6.4	17	5.2
30-39...	20	8.4	13	5.4	17	7.1	23	9.6	41	17.2	21	8.8	104	43.5
40-49...	6	6.3	3	3.1	4	4.2	3	3.1	6	6.3	9	9.4	65	67.7

TABLE 7.2: TOTAL PREGNANCIES OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	TOTAL PREGNANCIES													
	0		1		2		3		4		5		>=6	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
MAIN ISLAND URBAN														
15-19.....	189	88.7	18	8.5	6	2.8	0	.0	0	.0	0	.0	0	.0
20-29.....	89	25.1	68	19.2	74	20.9	42	11.9	38	10.7	27	7.6	16	4.5
30-39.....	18	6.0	12	4.0	20	6.6	25	8.3	45	15.0	45	15.0	136	45.2
40-49.....	6	4.7	4	3.1	4	3.1	7	5.5	6	4.7	8	6.3	92	72.4
MAIN ISL RURAL COASTAL														
15-19.....	216	86.4	24	9.6	7	2.8	2	.8	1	.4	0	.0	0	.0
20-29.....	95	25.5	67	18.0	68	18.3	52	14.0	37	9.9	23	6.2	30	8.1
30-39.....	21	6.9	12	3.9	20	6.5	24	7.8	33	10.8	32	10.5	164	53.6
40-49.....	3	2.3	6	4.7	0	.0	4	3.1	7	5.4	8	6.2	101	78.3
MAIN ISL RURAL INLAND														
15-19.....	82	74.5	21	19.1	2	1.8	4	3.6	0	.0	0	.0	1	.9
20-29.....	33	20.4	25	15.4	33	20.4	23	14.2	19	11.7	12	7.4	17	10.5
30-39.....	8	7.3	2	1.8	6	5.5	10	9.1	13	11.8	8	7.3	63	57.3
40-49.....	2	3.2	0	.0	2	3.2	2	3.2	3	4.8	4	6.5	49	79.0
OUTER ISL GOOD RESOURCES														
15-19.....	126	83.4	20	13.2	5	3.3	0	.0	0	.0	0	.0	0	.0
20-29.....	69	22.6	53	17.4	58	19.0	51	16.7	26	8.5	26	8.5	22	7.2
30-39.....	19	7.3	16	6.2	17	6.5	21	8.1	29	11.2	33	12.7	125	48.1
40-49.....	4	3.6	3	2.7	4	3.6	7	6.4	2	1.8	7	6.4	83	75.5
OUTER ISL POOR RESOURCES														
15-19.....	108	87.8	9	7.3	6	4.9	0	.0	0	.0	0	.0	0	.0
20-29.....	69	27.0	57	22.3	45	17.6	28	10.9	29	11.3	15	5.9	13	5.1
30-39.....	16	8.6	7	3.7	17	9.1	19	10.2	19	10.2	25	13.4	84	44.9
40-49.....	8	7.6	7	6.7	7	6.7	3	2.9	8	7.6	5	4.8	67	63.8

TABLE 7.3: TOTAL PREGNANCIES OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	TOTAL PREGNANCIES													
	0		1		2		3		4		5		>=6	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
OCCUPATION														
PROFESSIONAL														
20-29.....	8	33.3	7	29.2	2	8.3	4	16.7	1	4.2	1	4.2	1	4.2
30-39.....	3	5.6	6	11.1	6	11.1	3	5.6	10	18.5	9	16.7	17	31.5
40-49.....	1	6.3	1	6.3	0	.0	1	6.3	2	12.5	2	12.5	9	56.3
CLERICAL														
15-19.....	13	68.4	5	26.3	1	5.3	0	.0	0	.0	0	.0	0	.0
20-29.....	36	36.7	14	14.3	21	21.4	12	12.2	10	10.2	2	2.0	3	3.1
30-39.....	4	5.3	4	5.3	4	5.3	14	18.4	11	14.5	15	19.7	24	31.6
40-49.....	1	3.4	0	.0	2	6.9	2	6.9	0	.0	5	17.2	19	65.5
HOUSEWORK														
15-19.....	707	85.5	87	10.5	25	3.0	6	.7	1	.1	0	.0	1	.1
20-29.....	311	23.5	249	18.8	255	19.2	179	13.5	138	10.4	100	7.5	94	7.1
30-39.....	74	7.2	39	3.8	70	6.8	82	7.9	118	11.4	119	11.5	530	51.4
40-49.....	21	4.3	19	3.9	15	3.1	20	4.1	24	4.9	24	4.9	364	74.7

TABLE 7.4: PRENATAL CLINIC VISITS BY MOTHER OF CHILD AND HEALTH
CLINIC ATTENDANCE FOR CHILDREN 0-4 YEARS OLD BY STATE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

INDICATOR	F.S.M. State							
	KOSRAE		POHNPEI		TRUK		YAP	
	N	%	N	%	N	%	N	%
WENT TO PRENATAL CLINIC								
YES.....	294	87.5	804	74.4	1033	71.4	613	93.7
NO.....	23	6.8	234	21.6	352	24.3	24	3.7
DONT KNOW.....	19	5.7	43	4.0	62	4.3	17	2.6
FIRST PRENATAL VISIT								
1-3 MONTHS.....	62	20.9	167	20.2	138	13.3	166	27.0
4-6 MONTHS.....	163	55.1	307	37.2	494	47.6	271	44.1
7-9 MONTHS.....	46	15.5	187	22.7	278	26.8	96	15.6
DONT KNOW.....	25	8.4	164	19.9	128	12.3	81	13.2
CHILD ATTEND WELL-BABY CLINIC								
YES.....	313	93.4	888	82.0	1117	77.2	619	94.6
NO.....	16	4.8	170	15.7	310	21.4	16	2.4
DONT KNOW.....	6	1.8	25	2.3	19	1.3	19	2.9

2744
3578
172

TABLE 7.5: PRENATAL CLINIC VISITS BY MOTHER OF CHILD AND HEALTH
CLINIC ATTENDANCE FOR CHILDREN 0-4 YEARS OLD BY ZONE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

INDICATOR	Survey Zone									
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES	
	N	%	N	%	N	%	N	%	N	%
WENT TO PRENATAL CLINIC										
YES.....	629	80.7	779	77.0	314	69.8	569	77.2	453	83.9
NO.....	105	13.5	198	19.6	107	23.8	149	20.2	74	13.7
DONT KNOW.....	45	5.8	35	3.5	29	6.4	19	2.6	13	2.4
FIRST PRENATAL VISIT										
1-3 MONTHS.....	157	24.4	183	23.4	46	14.6	81	14.1	66	14.4
4-6 MONTHS.....	248	38.6	373	47.7	134	42.4	276	48.2	204	44.4
7-9 MONTHS.....	95	14.8	123	15.7	77	24.4	177	30.9	135	29.4
DONT KNOW.....	143	22.2	103	13.2	59	18.7	39	6.8	54	11.8
CHILD ATTEND WELL-BABY CLINIC										
YES.....	631	81.0	850	84.2	347	77.1	638	86.6	471	86.9
NO.....	115	14.8	149	14.8	95	21.1	83	11.3	70	12.9
DONT KNOW.....	33	4.2	11	1.1	8	1.8	16	2.2	1	.2

TABLE 8.1.1: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE MORNING BY AGE GROUP.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	AGE GROUP IN YEARS									
	15 to 19		20 to 29		30 to 39		40 to 49		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	757	89.3	1351	93.2	1088	93.3	495	92.9	3689	92.4
FSM Staples.....	173	20.4	488	33.7	388	33.3	198	37.1	1247	31.2
Imported Staples.....	611	72.1	920	63.5	728	62.5	308	57.8	2587	64.3
FSM Fat.....	92	10.8	250	17.3	207	17.8	108	20.3	657	16.4
Imported Fat.....	114	13.4	172	11.9	141	12.1	45	8.4	472	11.8
FSM Protein.....	305	36.0	878	46.8	476	40.9	217	40.7	1676	42.0
Imported Protein.....	160	18.9	259	17.9	226	19.4	83	15.6	728	18.2
Greens.....	5	.6	8	.6	8	.7	2	.4	23	.6
Other Vegetables.....	10	1.2	28	1.9	19	1.6	5	.9	62	1.6
Imported Vegetables....	3	.4	1	.1	9	.8	0	.0	13	.3
Fruit and Fruit Juice..	84	9.9	231	15.9	189	16.2	83	15.6	587	14.7
Imported Fruit.....	42	5.0	13	.9	20	1.7	8	1.5	83	2.1
Sugars.....	275	32.4	503	34.7	486	41.8	239	44.8	1503	37.6
Sugar Snacks.....	30	3.5	52	3.6	41	3.5	17	3.2	140	3.5
Other Snacks.....	1	.1	1	.1	0	.0	0	.0	2	.1
Alcohol.....	0	.0	0	.0	4	.3	0	.0	4	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	0	.0	0	.0	2	.4	2	.1

TABLE 8.1.2: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE AFTERNOON BY AGE GROUP.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	AGE GROUP IN YEARS									
	15 to 19		20 to 29		30 to 39		40 to 49		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	737	86.9	1248	86.1	1031	88.8	458	85.9	3474	87.0
FSM Staples.....	208	24.5	538	37.1	485	41.7	240	45.0	1471	36.8
Imported Staples.....	556	65.6	792	54.7	622	53.4	235	44.1	2205	55.2
FSM Fat.....	88	10.4	241	16.6	224	19.2	122	22.9	675	16.9
Imported Fat.....	112	13.2	205	14.1	187	14.3	61	11.4	545	13.6
FSM Protein.....	398	46.9	679	46.9	558	47.9	270	50.7	1905	47.7
Imported Protein.....	213	25.1	319	22.0	268	23.0	95	17.8	695	22.4
Greens.....	5	.6	6	.4	9	.8	2	.4	22	.6
Other Vegetables.....	27	3.2	32	2.2	32	2.7	18	3.4	109	2.7
Imported Vegetables....	22	2.6	13	.9	21	1.8	4	.8	60	1.5
Fruit and Fruit Juice..	142	16.7	286	19.4	257	22.1	119	22.3	784	19.6
Imported Fruit.....	48	5.7	16	1.1	21	1.8	9	1.7	94	2.4
Sugars.....	119	14.0	221	15.3	208	17.9	81	15.2	629	15.7
Sugar Snacks.....	74	8.7	62	5.7	54	4.6	20	3.8	230	5.8
Other Snacks.....	0	.0	0	.0	0	.0	0	.0	0	.0
Alcohol.....	1	.1	0	.0	2	.2	0	.0	3	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0	0	.0
Other Foods.....	1	.1	0	.0	0	.0	1	.2	2	.1

TABLE 8.1.3: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE EVENING BY AGE GROUP.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	AGE GROUP IN YEARS									
	15 to 19		20 to 29		30 to 39		40 to 49		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	787	92.8	1370	94.5	1118	96.0	506	94.9	3781	94.7
FSM Staples.....	309	36.4	719	49.6	639	54.9	321	60.2	1988	49.8
Imported Staples.....	548	64.6	802	55.3	606	52.1	250	46.9	2206	55.2
FSM Fat.....	142	16.7	305	21.0	277	23.8	154	28.9	878	22.0
Imported Fat.....	146	17.2	195	13.5	199	17.1	92	17.3	632	15.8
FSM Protein.....	444	52.4	849	58.6	717	61.6	334	62.7	2344	58.7
Imported Protein.....	217	25.6	285	19.7	246	21.1	94	17.6	842	21.1
Greens.....	8	.9	15	1.0	19	1.6	9	1.7	51	1.3
Other Vegetables.....	19	2.2	33	2.3	47	4.0	18	3.0	115	2.9
Imported Vegetables....	9	1.1	11	.8	16	1.4	3	.6	39	1.0
Fruit and Fruit Juice..	129	15.2	288	19.9	261	22.4	105	19.7	783	19.6
Imported Fruit.....	5	.6	8	.6	9	.8	6	1.1	28	.7
Sugars.....	107	12.6	232	16.0	223	19.2	96	18.0	658	16.5
Sugar Snacks.....	47	5.5	85	5.9	46	4.0	23	4.3	201	5.0
Other Snacks.....	0	.0	2	.1	3	.3	0	.0	5	.1
Alcohol.....	6	.7	4	.3	8	.7	1	.2	19	.5
Sakau.....	2	.2	17	1.2	12	1.0	11	2.1	42	1.1
Other Foods.....	2	.2	1	.1	0	.0	2	.4	5	.1

TABLE 8.2.1: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE MORNING BY F.S.M. STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	352	93.9	1198	91.8	1358	94.1	783	89.7	3689	92.4
FSM Staples.....	87	23.2	221	17.0	551	38.2	388	44.4	1247	31.2
Imported Staples.....	278	74.1	989	75.9	957	66.3	343	38.3	2567	64.3
FSM Fat.....	58	15.5	220	16.9	291	20.2	88	10.1	657	16.4
Imported Fat.....	52	13.9	193	14.8	104	7.2	123	14.1	472	11.8
FSM Protein.....	86	22.9	516	39.6	622	43.1	452	51.8	1676	42.0
Imported Protein.....	45	12.0	248	19.0	311	21.6	124	14.2	728	18.2
Greens.....	0	.0	0	.0	4	.3	19	2.2	23	.6
Other Vegetables.....	5	1.3	11	.8	12	.8	34	3.9	62	1.6
Imported Vegetables....	3	.8	2	.2	5	.3	3	.3	13	.3
Fruit and Fruit Juice..	43	11.5	140	10.7	221	15.3	183	21.0	587	14.7
Imported Fruit.....	5	1.3	31	2.4	43	3.0	4	.5	83	2.1
Sugars.....	289	77.1	466	35.8	536	37.1	212	24.3	1503	37.6
Sugar Snacks.....	26	6.9	55	4.2	22	1.5	37	4.2	140	3.5
Other Snacks.....	0	.0	1	.1	0	.0	1	.1	2	.1
Alcohol.....	0	.0	0	.0	0	.0	4	.5	4	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	2	.2	0	.0	0	.0	2	.1

TABLE 8.2.2: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE AFTERNOON BY F.S.M. STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. STATE									
	STATE								TOTAL	
	KOSRAE		POHNPEI		TRUK		YAP		N	%
	N	%	N	%	N	%	N	%		
Any Food Eaten.....	361	96.3	1165	89.4	1271	88.1	677	77.5	3474	87.0
FSM Staples.....	113	30.1	375	28.8	669	46.4	314	36.0	1471	36.8
Imported Staples.....	286	76.3	835	64.1	777	53.8	307	35.2	2205	55.2
FSM Fat.....	63	16.8	225	17.3	308	21.3	79	9.0	675	16.9
Imported Fat.....	98	26.1	221	17.0	127	8.8	99	11.3	545	13.6
FSM Protein.....	191	50.9	651	50.0	654	45.3	409	46.8	1905	47.7
Imported Protein.....	110	29.3	309	23.7	356	24.7	120	13.7	895	22.4
Greens.....	1	.3	4	.3	3	.2	14	1.6	22	.6
Other Vegetables.....	9	2.4	38	2.9	23	1.6	39	4.5	109	2.7
Imported Vegetables....	15	4.0	20	1.5	10	.7	15	1.7	60	1.5
Fruit and Fruit Juice..	78	20.8	200	15.3	293	20.3	213	24.4	784	19.6
Imported Fruit.....	25	6.7	28	2.1	33	2.3	8	.9	94	2.4
Sugars.....	177	47.2	146	11.2	175	12.1	131	15.0	629	15.7
Sugar Snacks.....	28	7.5	89	6.8	40	2.8	73	8.4	230	5.8
Other Snacks.....	0	.0	0	.0	0	.0	0	.0	0	.0
Alcohol.....	0	.0	0	.0	0	.0	3	.3	3	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	2	.2	0	.0	0	.0	2	.1

TABLE 8.2.3: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE EVENING BY F.S.M. STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	366	97.6	1238	95.0	1371	95.0	806	92.3	3781	94.7
FSM Staples.....	166	44.3	444	34.1	910	63.1	468	53.6	1988	49.8
Imported Staples.....	265	70.7	884	67.8	726	50.3	331	37.9	2206	55.2
FSM Fat.....	61	16.3	286	21.9	424	29.4	107	12.3	878	22.0
Imported Fat.....	123	32.8	238	18.3	133	9.2	138	15.8	632	15.8
FSM Protein.....	235	62.7	727	55.8	883	59.8	519	59.5	2344	58.7
Imported Protein.....	76	20.3	288	22.1	315	21.8	163	18.7	842	21.1
Greens.....	0	.0	11	.8	4	.3	36	4.1	51	1.3
Other Vegetables.....	20	5.3	31	2.4	14	1.0	50	5.7	115	2.9
Imported Vegetables....	7	1.9	15	1.2	5	.3	12	1.4	39	1.0
Fruit and Fruit Juice..	74	19.7	214	16.4	246	17.0	249	28.5	783	19.6
Imported Fruit.....	3	.8	19	1.5	4	.3	2	.2	28	.7
Sugars.....	174	46.4	153	11.7	196	13.6	135	15.5	658	16.5
Sugar Snacks.....	22	5.9	114	8.7	25	1.7	40	4.6	201	5.0
Other Snacks.....	0	.0	2	.2	3	.2	0	.0	5	.1
Alcohol.....	0	.0	13	1.0	0	.0	6	.7	19	.5
Sakau.....	0	.0	42	3.2	0	.0	0	.0	42	1.1
Other Foods.....	0	.0	5	.4	0	.0	0	.0	5	.1

TABLE 8.3.1: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE MORNING BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	924	92.9	982	92.9	399	89.9	789	93.0	615	91.7	3689	92.4
FSM Staples.....	206	20.7	376	35.8	143	32.2	295	35.7	227	33.8	1247	31.2
Imported Staples.....	686	68.9	670	63.4	281	63.3	537	64.9	393	58.6	2567	64.3
FSM Fat.....	78	7.8	157	14.9	68	15.3	248	30.0	106	15.8	657	16.4
Imported Fat.....	160	16.1	141	13.3	40	9.0	92	9.9	49	7.3	472	11.8
FSM Protein.....	306	30.8	380	36.0	163	36.7	435	52.6	392	58.4	1676	42.0
Imported Protein.....	251	25.2	198	18.7	125	28.2	108	12.8	48	7.2	728	18.2
Greens.....	8	.8	13	1.2	1	.2	1	.1	0	.0	23	.6
Other Vegetables.....	28	2.8	15	1.4	10	2.3	6	.7	3	.4	62	1.6
Imported Vegetables....	4	.4	4	.4	3	.7	1	.1	1	.1	13	.3
Fruit and Fruit Juice..	80	8.0	156	14.8	55	12.4	171	20.7	125	18.6	587	14.7
Imported Fruit.....	18	1.6	12	1.1	7	1.6	45	5.4	3	.4	83	2.1
Sugars.....	534	53.7	548	51.8	106	23.9	162	19.6	153	22.8	1503	37.6
Sugar Snacks.....	54	5.4	45	4.3	11	2.5	23	2.8	7	1.0	140	3.5
Other Snacks.....	1	.1	0	.0	0	.0	1	.1	0	.0	2	.1
Alcohol.....	2	.2	2	.2	0	.0	0	.0	0	.0	4	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	1	.1	1	.2	0	.0	0	.0	2	.1

TABLE 8.3.2: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE AFTERNOON BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	844	84.8	961	90.9	401	90.3	724	87.5	544	81.1	3474	87.0
FSM Staples.....	278	27.9	415	39.3	179	40.3	358	43.3	241	35.9	1471	36.8
Imported Staples.....	592	59.5	635	60.1	260	58.6	413	49.9	305	45.5	2205	55.2
FSM Fat.....	105	10.6	164	15.5	61	13.7	228	27.6	117	17.4	875	16.9
Imported Fat.....	198	20.0	180	17.0	49	11.0	84	10.2	33	4.9	545	13.6
FSM Protein.....	406	40.8	506	47.9	148	33.3	475	57.4	370	55.1	1905	47.7
Imported Protein.....	309	31.1	263	24.8	168	37.8	104	12.6	51	7.6	895	22.4
Greens.....	7	.7	13	1.2	1	.2	1	.1	0	.0	22	.6
Other Vegetables.....	37	3.7	27	2.6	30	6.8	11	1.3	4	.6	109	2.7
Imported Vegetables....	19	1.8	20	1.9	8	1.8	3	.4	11	1.6	60	1.5
Fruit and Fruit Juice..	123	12.4	232	21.9	76	17.1	202	24.4	151	22.5	784	19.6
Imported Fruit.....	18	1.8	31	2.9	19	4.3	23	2.8	3	.4	94	2.4
Sugars.....	155	15.6	279	26.4	45	10.1	68	8.2	82	12.2	629	15.7
Sugar Snacks.....	105	10.6	79	7.5	23	5.2	18	2.2	5	.7	230	5.8
Other Snacks.....	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0
Alcohol.....	3	.3	0	.0	0	.0	0	.0	0	.0	3	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	1	.1	1	.2	0	.0	0	.0	2	.1

TABLE 8.3.3: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE EVENING BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	951	95.6	1016	96.1	422	95.0	781	94.4	611	91.1	3781	94.7
FSM Staples.....	395	39.7	590	55.8	240	54.1	455	55.0	308	45.9	1988	49.8
Imported Staples.....	656	65.9	582	55.1	238	53.6	418	50.5	312	46.5	2206	55.2
FSM Fat.....	144	14.5	192	18.2	85	19.1	294	35.8	183	24.3	878	22.0
Imported Fat.....	233	23.4	212	20.1	58	13.1	85	10.3	44	6.6	632	15.8
FSM Protein.....	510	51.3	645	61.0	217	48.9	547	66.1	425	63.3	2344	58.7
Imported Protein.....	323	32.5	229	21.7	136	30.6	109	13.2	45	6.7	842	21.1
Greens.....	20	2.0	21	2.0	5	1.1	3	.4	2	.3	51	1.3
Other Vegetables.....	55	5.5	32	3.0	13	2.9	8	1.0	7	1.0	115	2.9
Imported Vegetables....	20	2.0	8	.8	2	.5	3	.4	6	.9	39	1.0
Fruit and Fruit Juice..	143	14.4	205	19.4	72	16.2	189	22.9	174	25.9	783	19.6
Imported Fruit.....	9	.9	6	.6	2	.5	11	1.3	0	.0	28	.7
Sugars.....	190	19.1	266	25.2	46	10.4	65	7.9	91	13.6	658	16.5
Sugar Snacks.....	94	9.4	49	4.6	32	7.2	21	2.5	5	.7	201	5.0
Other Snacks.....	4	.4	1	.1	0	.0	0	.0	0	.0	5	.1
Alcohol.....	10	1.0	7	.7	2	.5	0	.0	0	.0	19	.5
Sakeu.....	11	1.1	14	1.3	17	3.8	0	.0	0	.0	42	1.1
Other Foods.....	2	.2	1	.1	2	.5	0	.0	0	.0	5	.1

TABLE 8.4.1: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE MORNING BY OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	OCCUPATION OF FEMALE							
	PROFESSIONAL		CLERICAL		HOUSEWORK		TOTAL	
	N	%	N	%	N	%	N	%
Any Food Eaten.....	83	88.3	192	86.5	3410	92.8	3685	92.4
FSM Staples.....	27	28.7	34	15.3	1195	32.3	1246	31.2
Imported Staples.....	53	56.4	139	62.8	2372	64.8	2564	64.3
FSM Fat.....	14	14.9	17	7.7	626	17.0	657	16.5
Imported Fat.....	6	6.4	40	18.0	426	11.6	472	11.8
FSM Protein.....	33	35.1	68	30.6	1573	42.8	1674	42.0
Imported Protein.....	19	20.2	40	18.0	688	18.2	727	18.2
Greens.....	1	1.1	2	.9	20	.5	23	.6
Other Vegetables.....	1	1.1	7	3.2	54	1.5	62	1.6
Imported Vegetables....	1	1.1	1	.5	11	.3	13	.3
Fruit and Fruit Juice..	7	7.4	21	9.5	558	15.2	586	14.7
Imported Fruit.....	2	2.1	8	3.6	73	2.0	83	2.1
Sugars.....	57	60.8	106	47.7	1338	36.4	1501	37.6
Sugar Snacks.....	6	6.4	17	7.7	117	3.2	140	3.5
Other Snacks.....	0	.0	1	.5	1	.0	2	.1
Alcohol.....	0	.0	0	.0	4	.1	4	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	0	.0	2	.1	2	.1

TABLE 8.4.2: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE AFTERNOON BY OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	OCCUPATION OF FEMALE							
	PROFESSIONAL		CLERICAL		HOUSEWORK		TOTAL	
	N	%	N	%	N	%	N	%
Any Food Eaten.....	81	86.2	202	91.0	3187	86.8	3470	87.0
FSM Staples.....	31	33.0	51	23.0	1386	37.7	1468	36.8
Imported Staples.....	55	58.5	160	72.1	1989	54.2	2204	55.3
FSM Fat.....	9	9.6	23	10.4	643	17.5	675	16.9
Imported Fat.....	18	19.1	44	19.8	483	13.2	545	13.7
FSM Protein.....	43	45.7	124	55.9	1736	47.3	1903	47.7
Imported Protein.....	28	29.8	60	27.0	806	21.9	894	22.4
Greens.....	0	.0	3	1.4	19	.5	22	.6
Other Vegetables.....	6	6.4	19	8.6	84	2.3	109	2.7
Imported Vegetables....	4	4.3	10	4.5	46	1.3	60	1.5
Fruit and Fruit Juice..	22	23.4	49	22.1	712	19.4	783	19.6
Imported Fruit.....	5	5.3	10	4.5	79	2.2	94	2.4
Sugars.....	28	29.8	32	14.4	568	15.5	628	15.7
Sugar Snacks.....	12	12.8	44	19.8	173	4.7	229	5.7
Other Snacks.....	0	.0	0	.0	0	.0	0	.0
Alcohol.....	0	.0	0	.0	3	.1	3	.1
Sakau.....	0	.0	0	.0	0	.0	0	.0
Other Foods.....	0	.0	0	.0	2	.1	2	.1

TABLE 8.4.3: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
EACH KIND OF FOOD IN THE EVENING BY OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	OCCUPATION OF FEMALE							
	PROFESSIONAL		CLERICAL		HOUSEWORK		TOTAL	
	N	%	N	%	N	%	N	%
Any Food Eaten.....	90	95.7	211	95.0	3476	94.6	3777	94.7
FSM Staples.....	60	63.8	89	40.1	1838	50.0	1987	49.8
Imported Staples.....	48	51.1	143	64.4	2012	54.8	2203	55.2
FSM Fat.....	19	20.2	30	13.5	828	22.5	877	22.0
Imported Fat.....	20	21.3	57	25.7	555	15.1	632	15.8
FSM Protein.....	62	66.0	132	59.5	2150	58.5	2344	58.8
Imported Protein.....	27	28.7	57	25.7	755	20.8	839	21.0
Greens.....	2	2.1	5	2.3	44	1.2	51	1.3
Other Vegetables.....	8	8.5	11	5.0	96	2.6	115	2.9
Imported Vegetables....	4	4.3	8	3.6	27	.7	39	1.0
Fruit and Fruit Juice..	23	24.5	44	19.8	716	19.5	783	19.6
Imported Fruit.....	0	.0	5	2.3	23	.6	28	.7
Sugars.....	27	28.7	42	18.9	588	16.0	657	16.5
Sugar Snacks.....	11	11.7	28	12.6	161	4.4	200	5.0
Other Snacks.....	2	2.1	1	.5	2	.1	5	.1
Alcohol.....	1	1.1	2	.9	16	.4	19	.5
Sakau.....	0	.0	4	1.8	38	1.0	42	1.1
Other Foods.....	0	.0	1	.5	4	.1	5	.1

TABLE 9.1: FREQUENCY DISTRIBUTION OF FEMALES 15-49 YEARS OLD WHO
ATE VARIOUS FOOD TYPES BY AGE GROUP.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM (in percent)	FEMALE AGE GROUP IN YEARS															
	15 to 19				20 to 29				30 to 39				40 to 49			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD.....	.4	2.5	24.6	72.5	.1	2.1	21.4	76.4	.2	1.3	18.6	79.9	.0	1.9	22.4	75.8
STAPLES.....	.8	3.9	25.2	70.1	.6	4.7	21.6	73.1	.6	4.8	21.4	73.2	.4	4.1	23.7	71.8
FATS.....	46.6	31.0	16.7	5.7	44.2	27.5	18.7	9.6	38.2	31.4	19.3	11.1	37.8	28.4	22.4	11.5
PROTEIN.....	5.8	18.2	43.7	32.3	5.0	18.1	39.3	37.6	4.6	18.9	38.2	38.2	3.4	21.6	44.2	30.8
GREENS.....	98.5	.9	.6	.0	98.6	1.0	.1	.3	97.8	1.4	.9	.0	98.1	1.3	.6	.0
VEGETABLES.....	91.5	6.5	2.0	.0	93.5	5.0	1.2	.2	90.2	7.7	1.8	.3	93.2	5.3	1.1	.4
FRUIT.....	81.7	26.3	9.3	2.7	62.9	22.5	9.6	5.0	58.4	23.6	12.8	5.2	59.6	24.2	10.9	5.3
SUGARS/SNACKS..	53.1	26.2	13.0	7.7	51.7	25.4	14.7	8.2	44.7	31.2	14.4	9.7	45.3	31.6	13.5	9.6
ALCOHOL.....	99.3	.6	.1	.0	99.7	.3	.0	.0	99.1	.6	.2	.1	99.8	.2	.0	.0
SAKAU.....	99.8	.2	.0	.0	98.8	1.2	.0	.0	99.0	1.0	.0	.0	97.9	2.1	.0	.0

TABLE 9.2: FREQUENCY DISTRIBUTION OF FEMALES 15-48 YEARS OLD WHO
ATE VARIOUS FOOD TYPES BY F.S.M. STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEMS (in percent)	F.S.M. STATE															
	KOSRAE				POHNPEI				TRUK				YAP			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD.....	.3	.3	10.9	88.5	.1	2.3	19.0	78.7	.1	1.2	19.4	79.3	.3	3.2	32.8	63.6
STAPLES.....	.3	1.9	15.5	82.4	.5	3.8	21.2	74.4	.2	2.4	16.7	80.8	1.5	10.1	37.4	51.0
FATS.....	28.5	33.1	29.1	9.3	37.2	31.3	21.1	10.4	42.3	30.3	17.2	10.3	55.1	23.9	14.2	6.8
PROTEIN.....	4.5	19.2	51.5	24.8	5.8	17.8	40.4	36.1	4.2	18.6	37.7	39.5	4.7	20.6	40.9	33.7
GREENS.....	99.7	.3	.0	.0	99.1	.7	.2	.0	99.4	.3	.2	.0	94.5	3.8	1.5	.5
VEGETABLES.....	96.4	11.7	1.6	.3	92.3	6.5	1.0	.2	96.2	2.9	.7	.1	87.3	8.5	3.8	.5
FRUIT.....	54.7	32.5	10.4	2.4	65.6	23.3	8.2	2.8	62.1	22.2	10.9	4.7	54.4	23.7	14.0	7.9
SUGARS/SNACKS..	9.6	28.8	28.5	33.1	46.6	33.8	14.8	4.8	54.2	28.8	11.2	5.9	61.5	17.9	11.7	8.9
ALCOHOL.....	100.0	.0	.0	.0	99.0	1.0	.0	.0	100.0	.0	.0	.0	99.1	.5	.3	.1
SAKAU.....	100.0	.0	.0	.0	98.8	3.2	.0	.0	100.0	.0	.0	.0	100.0	.0	.0	.0

TABLE 9.3: FREQUENCY DISTRIBUTION OF FEMALES 15-49 YEARS OLD WHO
ATE VARIOUS FOOD TYPES BY SURVEY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEMS (in percent)	F.S.M. SURVEY ZONE															
	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD.....	.4	2.1	21.1	76.4	.1	1.2	17.2	81.4	.0	2.0	20.4	77.6	.2	1.2	21.4	77.2
STAPLES.....	1.3	5.3	26.5	66.8	.2	3.4	19.2	77.2	.2	3.8	18.1	77.8	.4	3.0	18.6	78.0
FATS.....	41.3	33.4	17.5	7.8	38.4	32.3	22.3	7.1	48.9	30.1	12.9	8.1	34.5	26.7	21.5	17.4
PROTEIN.....	4.5	18.7	42.9	33.9	4.7	17.4	42.9	34.9	5.0	18.8	36.0	40.3	5.2	17.0	37.3	40.5
GREENS.....	97.4	1.8	.7	.1	97.1	1.7	.9	.3	98.6	1.1	.2	.0	99.5	.4	.1	.0
VEGETABLES.....	87.7	8.7	3.3	.3	91.4	7.3	1.2	.1	88.5	9.3	1.4	.9	96.6	2.9	.5	.0
FRUIT.....	69.9	22.5	6.0	1.5	58.3	27.0	10.5	4.2	62.9	24.7	10.2	2.3	55.8	20.6	13.8	9.7
SUGARS/SNACKS..	29.6	40.1	20.3	10.0	35.7	28.9	18.5	17.0	60.0	24.9	11.8	3.4	69.2	20.9	7.4	2.5
ALCOHOL.....	98.9	.8	.2	.1	99.2	.7	.1	.0	99.5	.5	.0	.0	100.0	.0	.0	.0
SAKAU.....	96.9	1.1	.0	.0	98.7	1.3	.0	.0	96.2	3.8	.0	.0	100.0	.0	.0	.0

FOOD ITEMS (in percent)	F.S.M. SURVEY ZONE			
	OUTER ISL POOR RESOURCES			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD.....	.0	3.4	29.0	67.5
STAPLES.....	.7	7.2	29.9	62.1
FATS.....	54.3	22.2	16.6	6.9
PROTEIN.....	4.9	23.7	40.6	30.8
GREENS.....	99.7	.3	.0	.0
VEGETABLES.....	96.4	2.5	.9	.1
FRUIT.....	56.3	24.4	14.2	5.1
SUGARS/SNACKS..	67.4	19.8	7.8	5.1
ALCOHOL.....	100.0	.0	.0	.0
SAKAU.....	100.0	.0	.0	.0

TABLE 9.4: FREQUENCY DISTRIBUTION OF FEMALES 15-49 YEARS OLD WHO
ATE VARIOUS FOOD TYPES BY OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEMS (in percent)	FEMALE OCCUPATION											
	PROFESSIONAL				CLERICAL				HOUSEWORK			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD.....	.0	1.1	27.7	71.3	.5	.5	24.9	74.2	.2	2.0	21.0	76.8
STAPLES.....	.0	5.3	27.7	67.0	1.4	4.5	30.5	63.6	.6	4.5	22.0	72.9
FATS.....	35.1	44.7	14.9	5.3	39.4	34.4	19.0	7.2	42.4	28.8	19.1	9.7
PROTEIN.....	.0	13.8	52.1	34.0	1.8	21.3	42.5	34.4	5.2	18.9	40.1	35.9
GREENS.....	96.8	3.2	.0	.0	96.8	1.8	1.4	.0	98.4	1.1	.4	.1
VEGETABLES.....	76.6	22.3	.0	1.1	80.5	14.0	5.4	.0	93.2	5.3	1.4	.2
FRUIT.....	56.4	27.7	12.8	3.2	56.6	28.0	11.8	2.7	61.2	23.5	10.5	4.7
SUGARS/SNACKS..	19.1	36.2	25.5	19.1	31.2	31.2	24.9	12.7	51.0	27.7	13.2	8.2
ALCOHOL.....	98.9	1.1	.0	.0	99.1	.9	.0	.0	99.5	.4	.1	.0
SAKAU.....	100.0	.0	.0	.0	98.2	1.8	.0	.0	99.0	1.0	.0	.0

TABLE 10.1: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
BALANCED MEALS BY AGE GROUP
FSM NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	AGE GROUP IN YEARS									
	15 to 19		20 to 29		30 to 39		40 to 49		TOTAL	
	N	%	N	%	N	%	N	%	N	%
BREAKFAST										
NOT BALANCED	593	70.3	904	62.5	722	62.3	353	66.4	2572	64.6
YES ATE 3 GROUPS	251	29.7	542	37.5	437	37.7	179	33.6	1409	35.4
LUNCH										
NOT BALANCED	520	61.3	849	58.6	634	54.5	294	55.3	2297	57.6
YES ATE 3 GROUPS	328	38.7	599	41.4	529	45.5	238	44.7	1694	42.4
DINNER										
NOT BALANCED	486	57.4	764	52.7	522	44.9	241	45.2	2013	50.4
YES ATE 3 GROUPS	361	42.6	685	47.3	641	55.1	292	54.8	1979	49.6
BALANCED MEALS PER 24 HRS.										
No Balanced Meals	268	31.8	409	28.3	267	23.0	133	25.0	1077	27.1
1 Balanced Meal	284	33.7	444	30.7	378	32.6	159	29.9	1265	31.8
2 Balanced Meals	220	26.1	397	27.5	318	27.4	169	31.8	1104	27.8
3 Balanced Meals	71	8.4	195	13.5	196	16.9	70	13.2	532	13.4

TABLE 10.2: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
BALANCED MEALS BY STATE
FSM NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	F.S.M. STATE								TOTAL	
	KOSRAE		POHNPEI		TRUK		YAP		N	%
	N	%	N	%	N	%	N	%		
BREAKFAST										
NOT BALANCED.....	274	73.1	856	65.9	884	61.5	558	64.1	2572	64.6
YES ATE 3 GROUPS..	101	26.9	442	34.1	553	38.5	313	35.9	1409	35.4
LUNCH										
NOT BALANCED.....	179	47.7	738	56.6	819	56.9	581	64.3	2297	57.6
YES ATE 3 GROUPS..	196	52.3	565	43.4	621	43.1	312	35.7	1694	42.4
DINNER										
NOT BALANCED.....	148	39.5	893	53.2	719	49.9	453	51.9	2013	50.4
YES ATE 3 GROUPS..	227	60.5	610	46.8	722	50.1	420	48.1	1979	49.6
BALANCED MEALS PER 24 HRS.										
No Balanced Meals	64	17.1	386	29.7	359	25.0	268	30.8	1077	27.1
1 Balanced Meal..	143	38.1	389	30.0	458	31.9	275	31.6	1265	31.8
2 Balanced Meals.	123	32.8	346	26.7	420	29.3	215	24.7	1104	27.8
3 Balanced Meals.	45	12.0	177	13.8	197	13.7	113	13.0	532	13.4

TABLE 10.3: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
BALANCED MEALS BY ZONE
FSM NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	F.S.M. SURVEY ZONE										TOTAL	
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		N	%
	N	%	N	%	N	%	N	%	N	%		
BREAKFAST												
NOT BALANCED.....	708	71.6	684	64.8	294	66.5	429	51.9	457	68.4	2572	64.6
YES ATE 3 GROUPS..	281	28.4	372	35.2	148	33.5	397	48.1	211	31.6	1409	35.4
LUNCH												
NOT BALANCED.....	602	60.5	566	53.5	258	57.7	429	52.0	444	66.3	2297	57.6
YES ATE 3 GROUPS..	393	39.5	491	46.5	188	42.3	396	48.0	226	33.7	1694	42.4
DINNER												
NOT BALANCED.....	503	50.8	494	46.7	246	55.4	376	45.6	394	58.7	2013	50.4
YES ATE 3 GROUPS..	492	49.4	563	53.3	198	44.6	449	54.4	277	41.3	1979	49.6
BALANCED MEALS PER 24 HRS.												
No Balanced Meals	293	28.6	237	22.4	133	30.1	185	22.5	239	35.8	1077	27.1
1 Balanced Meal..	352	35.8	346	32.8	143	32.4	211	25.6	213	31.9	1265	31.8
2 Balanced Meals.	254	25.7	340	32.2	110	24.9	254	30.8	146	21.9	1104	27.8
3 Balanced Meals.	100	10.1	133	12.6	56	12.7	174	21.1	69	10.3	532	13.4

TABLE 10.4: PERCENTAGE OF ADULT FEMALES 15-49 YEARS OLD WHO ATE
BALANCED MEALS BY OCCUPATION
FSM NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	FEMALE OCCUPATION						TOTAL	
	PROFESSIONAL		CLERICAL		HOUSEWORK		N	%
	N	%	N	%	N	%		
BREAKFAST								
NOT BALANCED.....	64	68.1	155	70.5	2350	64.2	2569	64.6
YES ATE 3 GROUPS..	30	31.9	65	29.5	1313	35.8	1408	35.4
LUNCH								
NOT BALANCED.....	48	51.1	97	43.7	2149	58.5	2294	57.5
YES ATE 3 GROUPS..	46	48.9	125	56.3	1522	41.5	1693	42.5
DINNER								
NOT BALANCED.....	31	33.0	99	44.6	1879	51.2	2009	50.4
YES ATE 3 GROUPS..	63	67.0	123	55.4	1793	48.8	1979	49.6
BALANCED MEALS PER 24 HRS.								
No Balanced Meals	11	11.7	43	19.5	1020	27.9	1074	27.0
1 Balanced Meal..	39	41.5	76	34.5	1150	31.4	1265	31.8
2 Balanced Meals.	32	34.0	69	31.4	1002	27.4	1103	27.8
3 Balanced Meals.	12	12.8	32	14.5	488	13.3	532	13.4

TABLE 11.1: PATTERNS OF FOOD CONSUMPTION OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP.
FSM NATIONAL NUTRITION SURVEY 1987-88.

CONSUMPTION PATTERN	15 to 19		20 to 29		30 to 39		40 to 49		TOTAL	
	N	%	N	%	N	%	N	%	N	%
MORNING, MID-DAY, & EVENING.....	613	72.5	1105	76.4	928	79.9	403	75.8	3049	76.5
MORNING & MID-DAY.....	47	5.6	57	3.9	32	2.8	24	4.5	160	4.0
MORNING & EVENING.....	93	11.0	176	12.2	121	10.4	64	12.0	454	11.4
MID-DAY & EVENING.....	68	8.0	78	5.3	63	5.4	31	5.8	238	6.0
MORNING ONLY.....	3	.4	12	.8	5	.4	3	.6	23	.6
MIDDAY ONLY.....	7	.8	8	.6	6	.5	0	.0	21	.5
EVENING ONLY.....	11	1.3	10	.7	4	.3	7	1.3	32	.8
NO FOOD.....	3	.4	2	.1	2	.2	0	.0	7	.2

TABLE 11.2: PATTERNS OF FOOD CONSUMPTION OF ADULT FEMALES
15-49 YEARS OLD BY STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

CONSUMPTION PATTERN	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
MORNING, MID-DAY, & EVENING.....	332	88.5	1025	78.7	1137	79.3	555	63.8	3049	76.5
MORNING & MID-DAY.....	7	1.9	50	3.8	56	3.9	47	5.4	160	4.0
MORNING & EVENING.....	12	3.2	114	8.7	157	10.9	171	19.8	454	11.4
MID-DAY & EVENING.....	22	5.9	83	6.4	65	4.5	68	7.8	238	6.0
MORNING ONLY.....	1	.3	7	.5	5	.3	10	1.1	23	.6
MIDDAY ONLY.....	0	.0	7	.5	7	.5	7	.8	21	.5
EVENING ONLY.....	0	.0	16	1.2	5	.3	11	1.3	32	.8
NO FOOD.....	1	.3	1	.1	2	.1	3	.3	7	.2

TABLE 11.3: PATTERNS OF FOOD CONSUMPTION OF ADULT FEMALES
15-49 YEARS OLD BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

CONSUMPTION PATTERN	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
MORNING, MID-DAY, & EVENING.....	759	76.4	860	81.4	343	77.6	636	77.2	451	67.5	3049	76.5
MORNING & MID-DAY.....	29	2.9	32	3.0	17	3.8	36	4.4	46	6.9	160	4.0
MORNING & EVENING.....	129	13.0	96	8.1	37	8.4	92	11.2	110	16.5	454	11.4
MID-DAY & EVENING.....	52	5.2	64	6.1	36	8.1	48	5.8	38	5.7	238	6.0
MORNING ONLY.....	7	.7	4	.4	2	.5	3	.4	7	1.0	23	.6
MIDDAY ONLY.....	4	.4	4	.4	3	.7	3	.4	7	1.0	21	.5
EVENING ONLY.....	10	1.0	5	.5	4	.9	4	.5	9	1.3	32	.8
NO FOOD.....	4	.4	1	.1	0	.0	2	.2	0	.0	7	.2

TABLE 11.4: PATTERNS OF FOOD CONSUMPTION OF ADULT FEMALES
15-49 YEARS OLD BY OCCUPATION.
FSM NATIONAL NUTRITION SURVEY 1987-88.

CONSUMPTION PATTERN	FEMALE OCCUPATION						TOTAL	
	PROFESSIONAL		CLERICAL		HOUSEWORK		N	%
	N	%	N	%	N	%		
MORNING, MID-DAY, & EVENING.....	67	71.3	164	74.2	2814	76.8	3045	76.5
MORNING & MID-DAY.....	4	4.3	9	4.1	147	4.0	160	4.0
MORNING & EVENING.....	12	12.8	19	8.6	423	11.5	454	11.4
MID-DAY & EVENING.....	10	10.6	27	12.2	201	5.5	238	6.0
MORNING ONLY.....	0	.0	0	.0	23	.6	23	.6
MIDDAY ONLY.....	0	.0	1	.5	20	.5	21	.5
EVENING ONLY.....	1	1.1	0	.0	31	.8	32	.8
NO FOOD.....	0	.0	1	.5	6	.2	7	.2

TABLE 12.1 : MEAN WEIGHT (in kg) BY AGE GROUP BY STATE
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
0-5 months.....	22	6.4	1.2	89	6.5	1.6	118	6.7	1.5	58	6.0	1.3	287	6.5	1.5
6-11 months.....	45	8.5	1.1	105	9.2	1.3	163	8.9	1.2	67	8.6	1.7	380	8.9	1.3
12-17 months.....	31	9.7	1.5	110	10.0	1.4	116	9.9	1.2	58	9.9	1.4	315	9.9	1.4
18-23 months.....	29	10.3	1.2	97	11.0	1.7	135	10.9	1.6	66	10.5	1.6	327	10.8	1.6
24-35 months.....	49	11.8	1.7	176	12.2	1.8	258	12.6	1.8	114	12.3	1.6	597	12.3	1.7
36-47 months.....	45	13.7	1.5	190	14.2	1.9	247	14.0	1.7	108	14.0	1.9	590	14.1	1.8
48-59 months.....	60	15.5	2.2	184	15.5	2.0	251	15.6	2.1	86	15.2	2.4	581	15.5	2.1
ALL AGES.....	281	11.6	3.3	951	12.0	3.3	1288	12.0	3.2	557	11.5	3.3	3077	11.9	3.3

189

TABLE 12.2 : MEAN WEIGHT (in kg) BY AGE GROUP BY ZONE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
0-5 months.....	72	6.1	1.5	86	6.6	1.4	36	6.1	1.6	45	6.8	1.5	48	6.7	1.5
6-11 months.....	88	9.0	1.5	119	8.6	1.2	45	8.9	1.3	76	9.1	1.3	52	8.9	1.4
12-17 months.....	62	10.0	1.4	72	9.8	1.2	43	9.9	1.4	87	9.8	1.3	51	10.3	1.6
18-23 months.....	71	11.1	1.9	86	10.6	1.7	55	11.0	1.3	63	10.6	1.5	52	10.7	1.6
24-35 months.....	130	12.5	1.8	162	12.4	1.7	73	12.1	2.1	127	12.2	1.6	105	12.4	1.7
36-47 months.....	122	14.5	1.8	160	14.1	1.6	64	13.9	1.9	150	13.7	1.8	94	14.3	2.0
48-59 months.....	111	15.8	2.1	166	15.7	2.1	80	15.0	2.0	127	15.3	2.1	97	15.6	2.1

TABLE 12.3 : MEAN WEIGHT (in kg) BY ZONE BY STATE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
MAIN ISLAND URBAN.....	0	.	.	278	12.2	3.5	205	12.0	3.3	175	11.1	3.6	658	11.9	3.5
MAIN ISL RURAL COASTAL..	281	11.6	3.3	121	12.6	3.3	351	11.9	3.3	98	11.5	3.6	851	11.8	3.4
MAIN ISL RURAL INLAND...	0	.	.	226	11.7	3.2	166	11.7	3.2	5	10.1	3.2	397	11.7	3.2
OUTER ISL GOOD RESOURCES	0	.	.	242	11.4	2.9	320	12.4	3.0	113	11.7	3.0	675	11.9	3.0
OUTER ISL POOR RESOURCES	0	.	.	86	13.0	3.4	246	11.9	3.3	167	11.9	3.1	499	12.1	3.3

TABLE 12.4 : MEAN HEIGHT (in cm) BY AGE GROUP BY STATE
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

190

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
0-5 months.....	24	61.0	4.3	88	60.6	5.1	118	61.1	5.2	55	60.0	3.8	285	60.7	4.9
6-11 months.....	42	69.3	3.2	105	71.2	4.5	161	70.7	3.5	66	69.6	4.4	374	70.5	4.0
12-17 months.....	30	74.4	4.6	108	75.9	4.0	121	76.4	3.3	58	76.3	3.7	317	76.0	3.8
18-23 months.....	26	78.8	2.6	98	80.5	4.7	128	80.5	4.3	61	81.8	5.0	313	80.6	4.5
24-35 months.....	46	84.6	4.0	176	86.0	5.3	243	86.8	4.7	108	87.3	5.7	573	86.5	5.1
36-47 months.....	42	90.9	3.7	184	92.3	5.3	240	93.4	4.7	103	93.7	5.4	569	92.9	5.0
48-59 months.....	60	98.5	4.6	174	98.6	4.8	241	99.8	4.7	78	100.3	5.1	553	99.4	4.8

TABLE 12.5: MEAN HEIGHT (in cm) BY AGE GROUP BY ZONE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND	
	pop.	mean	sd	pop.	mean	sd	pop.	mean
AGE GROUPS:								
0-5 months	69	60.5	4.9	84	60.8	4.5	38	59.5
6-11 months	86	71.2	4.4	117	69.9	3.7	43	70.4
12-17 months	65	76.5	3.8	72	75.1	3.8	43	75.7
18-23 months	69	81.8	5.0	81	80.0	4.3	56	80.9
24-35 months	129	86.9	5.2	154	86.8	5.1	73	85.7
36-47 months	121	93.8	4.8	156	92.0	4.4	62	92.6
48-59 months	104	99.6	5.0	163	99.3	4.9	77	98.1

	MAIN ISL RURAL INLAND	OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:							
0-5 months	5.6	46	61.3	4.6	48	61.5	5.2
6-11 months	4.4	75	70.9	4.0	53	69.9	3.4
12-17 months	3.0	86	75.7	3.3	51	77.5	4.6
18-23 months	4.8	59	79.8	3.7	48	80.4	4.5
24-35 months	5.2	122	86.2	4.8	95	86.3	4.9
36-47 months	4.5	140	92.3	5.1	90	94.3	6.0
48-59 months	4.0	119	99.7	5.1	90	99.9	4.6

TABLE 12.6 : MEAN HEIGHT (in cm) BY ZONE BY STATE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
MAIN ISLAND URBAN.....	0	.	.	278	84.6	12.7	204	84.1	12.7	163	81.9	13.8	645	83.8	13.0
MAIN ISL RURAL COASTAL..	270	82.5	12.7	116	86.0	13.1	343	83.1	12.8	98	84.8	14.6	827	83.5	13.1
MAIN ISL RURAL INLAND...	0	.	.	224	82.6	12.3	164	84.3	12.9	5	77.5	12.4	393	83.2	12.6
OUTER ISL GOOD RESOURCES	0	.	.	235	82.0	11.5	308	86.4	12.2	104	84.4	12.7	647	84.5	12.2
OUTER ISL POOR RESOURCES	0	.	.	82	86.1	13.5	233	84.1	13.6	160	84.2	12.3	475	84.5	13.1

192

TABLE 12.7 : MEAN WEIGHT FOR HEIGHT BY AGE GROUP BY STATE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:															
0-5 months.....	21	10.4	1.4	83	10.4	1.7	108	10.7	1.7	54	10.0	1.6	266	10.4	1.7
6-11 months.....	42	12.2	1.2	98	12.8	1.2	158	12.5	1.3	63	12.0	1.5	361	12.5	1.3
12-17 months.....	28	12.8	1.3	107	13.2	1.5	112	13.0	1.2	57	12.9	1.4	304	13.0	1.3
18-23 months.....	24	13.2	1.4	92	13.5	1.4	122	13.4	1.4	58	12.9	1.3	296	13.3	1.4
24-35 months.....	46	14.1	1.5	165	14.2	1.5	235	14.4	1.6	104	13.9	1.2	550	14.2	1.5
36-47 months.....	42	15.2	1.4	178	15.4	1.6	229	15.1	1.4	100	15.0	1.4	549	15.2	1.5
48-59 months.....	56	15.9	1.6	172	15.8	1.5	228	15.8	1.5	74	15.5	1.6	530	15.8	1.5

TABLE 12.8 : MEAN WEIGHT FOR HEIGHT BY AGE GROUP BY ZONE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND	
	pop.	mean	sd	pop.	mean	sd	pop.	mean
AGE GROUPS:								
0-5 months	67	9.9	1.7	75	10.5	1.5	34	10.3
6-11 months	82	12.4	1.4	114	12.4	1.2	42	12.5
12-17 months	61	13.1	1.3	68	12.9	1.2	41	13.0
18-23 months	66	13.5	1.6	74	13.2	1.4	53	13.6
24-35 months	122	14.3	1.5	151	14.3	1.5	70	14.1
36-47 months	115	15.5	1.5	150	15.3	1.4	58	15.1
48-59 months	103	16.0	1.5	150	15.9	1.6	73	15.5

	MAIN ISL RURAL INLAND	OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	sd	pop.	mean	sd	pop.	mean	sd
AGE GROUPS:							
0-5 months	1.7	44	10.9	1.7	46	10.7	1.7
6-11 months	1.4	73	12.8	1.4	50	12.5	1.4
12-17 months	1.6	85	12.9	1.3	49	13.3	1.5
18-23 months	1.3	57	13.2	1.2	46	13.0	1.5
24-35 months	1.8	117	14.1	1.4	90	14.2	1.3
36-47 months	1.8	137	14.8	1.3	89	15.1	1.5
48-59 months	1.5	117	15.5	1.5	87	15.8	1.5

TABLE 12.9 : MEAN WEIGHT FOR HEIGHT BY ZONE BY STATE,
SAMPLE POPULATION FOR CHILDREN AGED 0 TO 59 MONTHS
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	KOSRAE			POHNPEI			TRUK			YAP			TOTAL F.S.M		
	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd	pop.	mean	sd
MAIN ISLAND URBAN.....	0	.	.	266	14.2	2.4	191	14.0	2.2	161	13.2	2.4	618	13.9	2.3
MAIN ISL RURAL COASTAL..	259	13.8	2.2	109	14.3	2.2	320	14.1	2.1	94	13.3	2.5	782	13.9	2.2
MAIN ISL RURAL INLAND....	0	.	.	212	13.9	2.2	155	13.7	2.2	5	12.8	1.9	372	13.8	2.2
OUTER ISL GOOD RESOURCES	0	.	.	233	13.7	1.9	298	14.2	1.8	99	13.6	1.7	630	13.9	1.9
OUTER ISL POOR RESOURCES	0	.	.	77	14.9	2.1	228	13.7	2.1	152	13.8	2.0	457	13.9	2.1
TOTAL F.S.M.....	259	13.8	2.2	897	14.1	2.2	1192	14.0	2.1	511	13.5	2.2	2859	13.9	2.1

TABLE 12.10: MEAN AND STANDARD DEVIATION FOR WEIGHT, HEIGHT, AND WEIGHT
FOR HEIGHT FOR CHILDREN (BOTH SEXES) 0 TO 59 MONTHS BY MONTHLY AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	mean	sd	mean	sd	mean	sd
AGEMO						
.00.....	53.4	3.0	4.1	.6	7.8	.9
1.00.....	56.4	2.5	5.2	.6	9.3	.9
2.00.....	59.9	2.5	6.0	1.1	10.1	1.5
3.00.....	61.0	2.5	6.6	.7	10.8	1.1
4.00.....	64.1	3.2	7.6	1.0	11.4	1.0
5.00.....	65.6	2.6	7.8	1.0	11.7	1.3
6.00.....	67.4	3.7	8.2	1.2	12.3	1.3
7.00.....	68.8	3.8	8.4	1.2	12.2	1.3
8.00.....	69.7	2.9	8.7	.9	12.4	1.0
9.00.....	71.6	3.3	9.1	1.3	12.6	1.3
10.00.....	72.0	3.4	9.2	1.3	12.8	1.5
11.00.....	73.0	3.7	9.4	1.6	12.6	1.3
12.00.....	73.7	2.7	9.2	.9	12.5	1.0
13.00.....	75.6	3.4	10.0	1.4	13.2	1.5
14.00.....	75.5	2.9	9.6	1.2	12.7	1.3
15.00.....	76.2	3.8	10.1	1.3	13.1	1.4
16.00.....	76.8	3.6	10.1	1.4	13.3	1.3
17.00.....	78.2	4.4	10.5	1.5	13.3	1.3
18.00.....	77.8	3.4	10.2	1.7	13.0	1.5
19.00.....	78.9	3.4	10.5	1.3	13.3	1.2
20.00.....	80.9	3.5	10.8	1.5	13.2	1.3
21.00.....	80.5	4.0	10.7	1.6	13.3	1.4
22.00.....	81.4	4.5	11.0	1.4	13.5	1.5
23.00.....	83.0	5.0	11.3	1.8	13.5	1.4
24.00.....	82.7	4.1	11.5	1.7	13.8	1.5
25.00.....	83.7	3.1	11.5	1.5	13.9	1.4
26.00.....	83.8	3.9	11.9	1.7	14.3	1.6
27.00.....	84.8	4.9	11.8	1.5	13.9	1.3
28.00.....	85.1	5.1	12.2	1.8	14.1	1.5
29.00.....	86.2	4.2	12.2	1.4	14.0	1.2
30.00.....	86.4	3.8	12.3	1.7	14.2	1.7
31.00.....	86.6	4.1	12.3	1.9	14.1	1.9
32.00.....	86.9	4.2	12.4	1.6	14.3	1.2
33.00.....	88.3	4.7	13.1	1.9	14.6	1.4
34.00.....	89.8	5.0	13.0	1.8	14.5	1.6
35.00.....	90.8	4.9	13.3	1.5	14.7	1.3
36.00.....	90.3	5.2	13.5	1.7	15.2	1.3
37.00.....	90.1	5.2	13.6	1.8	15.0	1.7
38.00.....	91.3	5.4	13.8	1.4	15.0	1.0
39.00.....	92.3	4.9	14.0	1.9	15.2	1.6
40.00.....	91.8	4.4	13.8	1.6	15.1	1.3
41.00.....	92.5	6.2	13.9	1.9	14.9	1.6
42.00.....	93.1	3.8	13.7	1.6	14.9	1.4
43.00.....	94.8	4.0	14.3	1.9	15.1	1.3
44.00.....	94.5	4.6	14.4	2.2	15.4	1.9
45.00.....	94.2	3.6	14.4	1.6	15.3	1.3
46.00.....	94.5	4.9	14.6	1.8	15.4	1.4
47.00.....	96.3	3.6	14.7	2.0	15.3	1.8
48.00.....	97.7	4.6	14.8	2.1	15.5	1.5
49.00.....	97.0	4.7	15.0	1.9	15.4	1.4
50.00.....	97.7	4.1	15.4	1.9	15.8	1.5
51.00.....	98.4	5.4	15.5	2.4	16.0	1.7
52.00.....	99.0	4.2	15.4	1.8	15.6	1.5
53.00.....	98.7	3.6	15.2	1.5	15.5	1.2
54.00.....	100.3	4.2	15.8	2.4	15.9	1.8
55.00.....	100.8	4.7	15.9	2.0	15.9	1.3
56.00.....	101.2	4.1	16.0	1.8	15.8	1.4
57.00.....	101.2	4.6	15.7	2.0	15.7	1.4
58.00.....	101.3	4.7	16.1	2.2	15.9	1.7
59.00.....	101.8	5.3	16.4	2.6	16.3	1.7

TABLE 13.1: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE (%med) BY STATE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE				POHNPEI				TRUK			
	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above
0-5 months.....	22	.0	77.3	22.7	89	1.1	65.2	33.7	118	.0	73.7	26.3
6-11 months.....	45	2.2	95.6	2.2	105	1.0	86.7	12.4	163	6.7	85.9	7.4
12-17 months.....	31	16.1	74.2	9.7	110	11.8	83.6	4.5	116	6.9	90.5	2.6
18-23 months.....	29	17.2	82.8	.0	97	11.3	84.5	4.1	135	14.1	80.7	5.2
24-35 months.....	49	24.5	73.5	2.0	176	16.5	80.7	2.8	258	14.3	82.2	3.5
36-47 months.....	45	13.3	86.7	.0	190	13.2	84.2	2.6	247	15.0	84.2	.8
48-59 months.....	60	20.0	78.3	1.7	184	21.2	77.2	1.6	251	18.3	81.3	.4
ALL AGES.....	281	14.6	81.5	3.9	953	12.5	80.6	6.9	1288	12.3	82.7	5.0

	YAP				TOTAL F.S.M			
	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above
0-5 months.....	58	12.1	69.0	19.0	287	2.8	70.4	26.8
6-11 months.....	67	11.9	80.6	7.5	380	5.5	86.3	8.2
12-17 months.....	58	13.8	82.8	3.4	315	10.8	85.1	4.1
18-23 months.....	66	24.2	72.7	3.0	327	15.6	80.4	4.0
24-35 months.....	114	9.6	88.6	1.8	597	14.9	82.2	2.8
36-47 months.....	108	16.7	81.5	1.9	590	14.6	83.9	1.5
48-59 months.....	86	26.7	72.1	1.2	581	20.7	78.3	1.0
ALL AGES.....	558	16.3	79.0	4.7	3080	13.3	81.3	5.5

TABLE 13.2: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE (%med) BY ZONE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND			
	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above
0-5 months.....	72	9.7	62.5	27.8	86	.0	73.3	26.7	36	.0	75.0	25.0
6-11 months.....	88	6.8	84.1	9.1	119	5.0	92.4	2.5	45	4.4	84.4	11.1
2-17 months.....	62	6.5	87.1	6.5	72	11.1	84.7	4.2	43	14.0	81.4	4.7
8-23 months.....	71	15.5	76.1	8.5	86	17.4	77.9	4.7	55	12.7	85.5	1.8
4-35 months.....	130	12.3	83.8	3.8	162	14.8	84.6	.6	73	21.9	74.0	4.1
6-47 months.....	122	9.8	88.5	1.6	160	13.1	85.6	1.3	64	20.3	78.1	1.6
8-59 months.....	111	17.1	81.1	1.8	166	21.1	77.7	1.2	80	27.5	72.5	.0
LL AGES.....	658	11.4	81.2	7.4	851	12.8	82.7	4.5	397	16.6	78.1	5.3

	OUTER ISL GOOD RESOURCES				OUTER ISL POOR RESOURCES			
	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above
0-5 months.....	45	.0	66.7	33.3	48	2.1	77.1	20.8
6-11 months.....	76	3.9	85.5	10.5	52	7.7	78.8	13.5
2-17 months.....	87	12.6	86.2	1.1	51	9.8	84.3	5.9
8-23 months.....	63	14.3	84.1	1.6	52	17.3	80.8	1.9
4-35 months.....	127	15.0	81.9	3.1	105	13.3	82.9	3.8
6-47 months.....	150	18.7	80.7	.7	94	12.8	84.0	3.2
8-59 months.....	127	20.5	78.7	.8	97	18.6	80.4	1.0
LL AGES.....	675	14.2	81.2	4.6	499	12.6	81.6	5.8

**TABLE 13.3: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE (%med) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.**

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND		
	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%
KOSRAE.....	0	.0	.0	.0	281	14.6	81.5	3.9	0	.0	.0
POHNPEI.....	278	7.6	83.8	8.6	121	8.3	84.3	7.4	226	15.9	77.9
TRUK.....	205	10.2	84.9	4.9	351	10.0	85.2	4.8	166	18.1	77.7
YAP.....	175	18.9	72.6	8.6	98	23.5	75.5	1.0	5	.0	100.0
TOTAL FSM.....	658	11.4	81.2	7.4	851	12.8	82.7	4.5	397	16.6	78.1

	MAIN ISL RURAL INLAND	OUTER ISL GOOD RESOURCES				OUTER ISL POOR RESOURCES			
	120% and above	pop	Less than 80%	80 to 119%	120% and above	pop	Less than 80%	80 to 119%	120% and above
KOSRAE.....	.0	0	.0	.0	.0	0	.0	.0	.0
POHNPEI.....	6.2	242	18.6	78.9	2.5	86	8.1	76.7	15.1
TRUK.....	4.2	320	11.6	82.2	6.3	246	14.2	81.3	4.5
YAP.....	.0	113	12.4	83.2	4.4	167	12.6	84.4	3.0
TOTAL FSM.....	5.3	675	14.2	81.2	4.6	499	12.6	81.6	5.8

TABLE 13.4: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE (%med) BY STATE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE			POHNPEI			TRUK			YAP		
	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above
0-5 months.....	24	.0	100.0	88	1.1	98.9	118	.0	100.0	55	1.8	98.2
6-11 months.....	42	2.4	97.6	105	2.9	97.1	161	1.2	98.8	66	.0	100.0
12-17 months.....	30	13.3	86.7	108	2.8	97.2	121	.8	99.2	58	3.4	96.6
18-23 months.....	26	7.7	92.3	98	14.3	85.7	128	7.0	93.0	61	8.2	91.8
24-35 months.....	46	15.2	84.8	176	11.4	88.6	243	7.4	92.6	108	3.7	96.3
36-47 months.....	42	19.0	81.0	184	22.8	77.2	240	13.8	86.3	103	13.6	86.4
48-59 months.....	60	23.3	76.7	174	24.7	75.3	241	14.5	85.5	78	12.8	87.2
ALL AGES.....	270	13.3	86.7	935	13.5	86.5	1252	7.8	92.2	530	6.8	93.2

	TOTAL F.S.M		
	pop	Less than 90%	90% and above
0-5 months.....	285	.7	99.3
6-11 months.....	374	1.6	98.4
12-17 months.....	317	3.2	96.8
18-23 months.....	313	9.6	90.4
24-35 months.....	573	8.6	91.4
36-47 months.....	569	17.0	83.0
48-59 months.....	553	18.4	81.6
ALL AGES.....	2987	9.9	90.1

TABLE 13.5: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE (%med) BY ZONE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above
0-5 months.....	69	1.4	98.6	84	.0	100.0	38	.0	100.0	46	.0	100.0	48	2.1	97.9
6-11 months.....	86	.0	100.0	117	.9	99.1	43	2.3	97.7	75	4.0	96.0	53	1.9	98.1
12-17 months.....	65	3.1	96.9	72	8.3	91.7	43	.0	100.0	86	2.3	97.7	51	.0	100.0
18-23 months.....	69	7.2	92.8	81	7.4	92.6	56	16.1	83.9	59	10.2	89.8	48	8.3	91.7
24-35 months.....	129	5.4	94.6	154	10.4	89.6	73	9.6	90.4	122	9.8	90.2	95	7.4	92.6
36-47 months.....	121	13.2	86.8	156	16.7	83.3	62	16.1	83.9	140	22.9	77.1	90	14.4	85.6
48-59 months.....	104	15.4	84.6	163	20.2	79.8	77	16.9	83.1	119	23.5	76.5	90	13.3	86.7
ALL AGES.....	645	7.3	92.7	827	10.6	89.4	393	10.2	89.8	647	12.8	87.2	475	8.0	92.0

	TOTAL F.S.M		
	pop	Less than 90%	90% and above
0-5 months.....	285	.7	99.3
6-11 months.....	374	1.6	98.4
12-17 months.....	317	3.2	96.8
18-23 months.....	313	9.6	90.4
24-35 months.....	573	8.6	91.4
36-47 months.....	569	17.0	83.0
48-59 months.....	553	18.4	81.6
ALL AGES.....	2987	9.9	90.1

TABLE 13.6: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE (%med) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN			MAIN ISL RURAL COASTAL			MAIN ISL RURAL INLAND			OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES		
	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above	pop	Less than 90%	90% and above
KOSRAE.....	0	.0	.0	270	13.3	86.7	0	.0	.0	0	.0	.0	0	.0	.0
POHNPEI.....	278	8.3	91.7	116	11.2	88.8	224	12.1	87.9	235	24.7	75.3	82	6.1	93.9
TRUK.....	204	7.4	92.6	343	8.5	91.5	164	7.9	92.1	308	6.8	93.2	233	8.6	91.4
YAP.....	163	5.5	94.5	98	10.2	89.8	5	.0	100.0	104	3.8	96.2	160	8.1	91.9
TOTAL FSM.....	645	7.3	92.7	827	10.6	89.4	393	10.2	89.8	647	12.8	87.2	475	8.0	92.0

	TOTAL F.S.M		
	pop	Less than 90%	90% and above
KOSRAE.....	270	13.3	86.7
POHNPEI.....	935	13.5	86.5
TRUK.....	1252	7.8	92.2
YAP.....	530	6.8	93.2
TOTAL FSM.....	2987	9.9	90.1

TABLE 13.7: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT (%med) BY STATE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE					POHNPEI					TRUK		
	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%
0-5 months.....	21	.0	.0	90.5	9.5	83	1.2	2.4	78.3	18.1	108	.0	1.9
6-11 months.....	42	.0	2.4	92.9	4.8	98	.0	4.1	88.8	7.1	158	1.3	3.8
12-17 months.....	28	.0	10.7	85.7	3.6	107	.0	15.9	80.4	3.7	112	1.8	10.7
18-23 months.....	24	4.2	12.5	75.0	8.3	92	1.1	7.6	88.0	3.3	122	.8	16.4
24-35 months.....	46	2.2	10.9	84.8	2.2	165	1.8	12.7	82.4	3.0	235	1.3	11.9
36-47 months.....	42	2.4	.0	92.9	4.8	178	.0	7.3	86.0	6.7	229	1.7	5.2
48-59 months.....	56	.0	8.9	87.5	3.6	172	1.2	8.7	88.4	1.7	228	.9	7.5
ALL AGES.....	259	1.2	6.6	87.6	4.6	897	.8	8.8	84.9	5.5	1192	1.2	8.1

	TRUK		YAP					TOTAL F.S.M				
	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above
0-5 months.....	77.8	20.4	54	1.9	3.7	81.5	13.0	266	.8	2.3	79.7	17.3
6-11 months.....	89.2	5.7	63	3.2	11.1	82.5	3.2	361	1.1	5.0	88.4	5.5
12-17 months.....	87.5	.0	57	5.3	14.0	80.7	.0	304	1.6	13.2	83.6	1.6
18-23 months.....	79.5	3.3	58	5.2	22.4	72.4	.0	296	2.0	14.5	80.4	3.0
24-35 months.....	83.8	3.0	104	.0	19.2	80.8	.0	550	1.3	13.5	82.9	2.4
36-47 months.....	92.1	.9	100	3.0	8.0	87.0	2.0	549	1.5	6.0	89.3	3.3
48-59 months.....	87.7	3.9	74	1.4	14.9	81.1	2.7	530	.9	9.1	87.0	3.0
ALL AGES.....	86.2	4.4	511	2.5	13.5	81.4	2.5	2859	1.3	9.2	85.1	4.4

TABLE 13.8: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT (%med) BY ZONE AND AGEGROUP,
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN					MAIN ISL RURAL COASTAL					MAIN ISL RURAL INLAND				
	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above
0-5 months.....	67	1.5	4.5	86.6	7.5	75	.0	1.3	81.3	17.3	34	.0	.0	73.5	26.5
6-11 months.....	82	2.4	6.1	86.6	4.9	114	.0	3.5	93.9	2.6	42	4.8	4.8	83.3	7.1
12-17 months.....	61	.0	19.7	80.3	.0	68	.0	11.8	86.8	1.5	41	2.4	17.1	73.2	7.3
18-23 months.....	66	1.5	16.7	78.8	3.0	74	2.7	12.2	81.1	4.1	53	3.8	5.7	86.8	3.8
24-35 months.....	122	.8	13.9	82.8	2.5	151	2.0	12.6	83.4	2.0	70	2.9	14.3	77.1	5.7
36-47 months.....	115	1.7	5.2	89.6	3.5	150	2.0	2.0	92.7	3.3	58	3.4	10.3	81.0	5.2
48-59 months.....	103	1.0	3.9	90.3	4.9	150	.7	9.3	85.3	4.7	73	1.4	9.6	87.7	1.4
TOTAL FSM.....	618	1.3	9.4	85.6	3.7	782	1.2	7.4	87.0	4.5	372	2.7	9.4	81.2	6.7

	OUTER ISL GOOD RESOURCES					OUTER ISL POOR RESOURCES					TOTAL F.S.M				
	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above
0-5 months.....	44	.0	2.3	72.7	25.0	46	2.2	2.2	78.3	17.4	266	.8	2.3	79.7	17.3
6-11 months.....	73	.0	5.5	83.6	11.0	50	.0	6.0	90.0	4.0	361	1.1	5.0	88.4	5.5
12-17 months.....	85	1.2	11.8	85.9	1.2	49	6.1	6.1	87.8	.0	304	1.6	13.2	83.6	1.6
18-23 months.....	57	.0	15.8	84.2	.0	46	2.2	23.9	69.6	4.3	296	2.0	14.5	80.4	3.0
24-35 months.....	117	.9	14.5	82.1	2.6	90	.0	12.2	87.8	.0	550	1.3	13.5	82.9	2.4
36-47 months.....	137	.0	8.8	89.1	2.2	89	1.1	6.7	88.8	3.4	549	1.5	6.0	89.3	3.3
48-59 months.....	117	1.7	13.7	82.9	1.7	87	.0	8.0	90.8	1.1	530	.9	9.1	87.0	3.0
TOTAL FSM.....	630	.6	11.0	84.0	4.4	457	1.3	9.2	86.0	3.5	2859	1.3	9.2	85.1	4.4

TABLE 13.9: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT (%med) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN					MAIN ISL RURAL COASTAL					MAIN ISL RURAL INLAND				
	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above
KOSRAE.....	0	.0	.0	.0	.0	259	1.2	6.6	87.6	4.6	0	.0	.0	.0	.0
POHNPEI.....	266	.8	7.5	87.6	4.1	109	.9	6.4	88.1	4.6	212	.9	9.0	82.1	8.0
TRUK.....	191	.5	8.4	86.4	4.7	320	.9	5.0	89.1	5.0	155	5.2	9.7	80.0	5.2
YAP.....	161	3.1	13.7	81.4	1.9	94	2.1	19.1	76.6	2.1	5	.0	20.0	80.0	.0
TOTAL FSM.....	618	1.3	9.4	85.6	3.7	782	1.2	7.4	87.0	4.5	372	2.7	9.4	81.2	6.7

204

	OUTER ISL GOOD RESOURCES					OUTER ISL POOR RESOURCES					TOTAL F.S.M				
	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above	pop	Below 80%	80 to 89%	90 to 109%	110% and above
KOSRAE.....	0	.0	.0	.0	.0	0	.0	.0	.0	.0	259	1.2	6.6	87.6	4.6
POHNPEI.....	233	.9	12.0	83.3	3.9	77	.0	6.5	84.4	9.1	897	.8	8.8	84.9	5.5
TRUK.....	298	.3	9.1	86.2	4.4	228	.4	10.1	86.4	3.1	1192	1.2	8.1	86.2	4.4
YAP.....	99	1.0	14.1	78.8	6.1	152	3.3	9.2	86.2	1.3	511	2.5	13.5	81.4	2.5
TOTAL FSM.....	630	.6	11.0	84.0	4.4	457	1.3	9.2	86.0	3.5	2859	1.3	9.2	85.1	4.4

TABLE 13.10: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (% MEDIAN) BY STATE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE				POHNPEI				TRUK				YAP			
	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.
0-5 months...	21	100.0	.0	.0	83	97.6	1.2	1.2	108	100.0	.0	.0	54	96.3	1.9	1.9
6-11 months...	42	97.6	.0	2.4	98	98.0	.0	2.0	158	97.5	1.3	1.3	63	96.8	3.2	.0
12-17 months...	28	85.7	.0	14.3	107	97.2	.0	2.8	112	97.3	1.8	.9	57	91.2	5.3	3.5
18-23 months...	24	87.5	4.2	8.3	92	84.8	1.1	14.1	122	91.8	.8	7.4	58	86.2	5.2	8.6
24-35 months...	46	82.6	2.2	15.2	165	86.1	1.8	12.1	235	91.1	1.3	7.7	104	96.2	.0	3.8
36-47 months...	42	78.6	2.4	19.0	178	77.5	.0	22.5	229	83.8	1.7	14.4	100	83.0	3.0	14.0
48-59 months...	56	75.0	.0	25.0	172	73.8	1.2	25.0	228	84.6	.9	14.5	74	85.1	1.4	13.5
ALL AGES.....	259	84.9	1.2	13.9	897	85.6	.8	13.6	1192	90.8	1.2	8.1	511	90.4	2.5	7.0

	TOTAL F.S.M			
	pop	1.00	2.00	STUNT.
0-5 months...	266	98.5	.8	.8
6-11 months...	361	97.5	1.1	1.4
12-17 months...	304	95.1	1.6	3.3
18-23 months...	296	88.2	2.0	9.8
24-35 months...	550	89.8	1.3	8.9
36-47 months...	549	81.2	1.5	17.3
48-59 months...	530	80.2	.9	18.9
ALL AGES.....	2859	88.6	1.3	10.1

(*) See section 2.6 for definition of Waterlow index

TABLE 13.11: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (% median) BY ZONE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.
0-5 months...	67	97.0	1.5	1.5	75	100.0	.0	.0	34	100.0	.0	.0	44	100.0	.0	.0
6-11 months...	82	97.6	2.4	.0	114	99.1	.0	.9	42	95.2	4.8	.0	73	95.9	.0	4.1
12-17 months...	61	96.7	.0	3.3	68	91.2	.0	8.8	41	97.6	2.4	.0	85	96.5	1.2	2.4
18-23 months...	66	90.9	1.5	7.6	74	90.5	2.7	6.8	53	79.2	3.8	17.0	57	89.5	.0	10.5
24-35 months...	122	93.4	.8	5.7	151	87.4	2.0	10.6	70	87.1	2.9	10.0	117	88.9	.9	10.3
36-47 months...	115	85.2	1.7	13.0	150	80.7	2.0	17.3	58	81.0	3.4	15.5	137	76.6	.0	23.4
48-59 months...	103	83.5	1.0	15.5	150	78.0	.7	21.3	73	80.8	1.4	17.8	117	74.4	1.7	23.9
ALL AGES.....	618	91.3	1.3	7.4	782	87.9	1.2	11.0	372	87.1	2.7	10.2	630	86.2	.6	13.2

	OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.
0-5 months...	46	95.7	2.2	2.2	266	98.5	.8	.8
6-11 months...	50	98.0	.0	2.0	361	97.5	1.1	1.4
12-17 months...	49	93.9	6.1	.0	304	95.1	1.6	3.3
18-23 months...	46	89.1	2.2	8.7	296	88.2	2.0	9.8
24-35 months...	90	92.2	.0	7.8	550	89.8	1.3	8.9
36-47 months...	89	84.3	1.1	14.6	549	81.2	1.5	17.3
48-59 months...	87	87.4	.0	12.6	530	80.2	.9	18.9
ALL AGES.....	457	90.6	1.3	8.1	2859	88.6	1.3	10.1

(*) See section 2.6 for definition of Waterlow index (% median)

TABLE 13.12: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (% MEDIAN) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.
KOSRAE.....	0	.0	.0	.0	259	84.9	1.2	13.9	0	.0	.0	.0	0	.0	.0	.0
POHNPEI.....	266	91.0	.8	8.3	109	88.1	.9	11.0	212	87.3	.9	11.8	233	74.2	.9	24.9
TRUK.....	191	91.6	.5	7.9	320	90.3	.9	8.8	155	86.5	5.2	8.4	298	92.6	.3	7.0
YAP.....	161	91.3	3.1	5.6	94	87.2	2.1	10.6	5	100.0	.0	.0	99	94.9	1.0	4.0
TOTAL F.S.M....	618	91.3	1.3	7.4	782	87.9	1.2	11.0	372	87.1	2.7	10.2	630	86.2	.6	13.2

	OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	1.00	2.00	STUNT.	pop	1.00	2.00	STUNT.
KOSRAE.....	0	.0	.0	.0	259	84.9	1.2	13.9
POHNPEI.....	77	93.5	.0	6.5	897	85.6	.8	13.6
TRUK.....	228	91.2	.4	8.3	1192	90.8	1.2	8.1
YAP.....	152	88.2	3.3	8.6	511	90.4	2.5	7.0
TOTAL F.S.M....	457	90.6	1.3	8.1	2859	88.6	1.3	10.1

(*) See section 2.6 for definition of Waterlow index

TABLE 14.1: PATTERNS OF INFANT FEEDING FOR CHILDREN 0-4 YEARS OLD
BY AGE GROUP, F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF FEEDING	AGE GROUP OF CHILDREN													
	0-2 months		3-5 months		6-8 months		9-11 months		12-17 months		18-23 months		24-35 months	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
BREAST ONLY.....	113	78.5	91	50.8	22	11.2	6	2.9	0	.0	0	.0	0	.0
BOTTLE ONLY.....	5	3.5	9	5.0	4	2.0	1	.5	0	.0	0	.0	0	.0
BREAST AND BOTTLE.....	21	14.6	10	5.6	6	3.1	3	1.5	2	.6	2	.5	2	.3
BREAST AND SOLIDS.....	3	2.1	55	30.7	113	57.7	126	61.2	164	47.5	89	22.3	62	8.7
BOTTLE AND SOLIDS.....	2	1.4	11	6.1	19	9.7	29	14.1	23	6.7	16	4.0	9	1.3
BREAST BOTTLE AND SOLIDS.....	0	.0	3	1.7	18	9.2	5	2.4	6	1.7	2	.5	2	.3
SOLIDS ONLY.....	0	.0	0	.0	14	7.1	36	17.5	150	43.5	288	72.2	632	89.1
DONT KNOW.....	0	.0	0	.0	0	.0	0	.0	0	.0	2	.5	2	.3

TYPE OF FEEDING	AGE GROUP OF CHILDREN				TOTAL	
	36-47 months		48-59 months		N	%
	N	%	N	%		
BREAST ONLY.....	0	.0	0	.0	232	6.7
BOTTLE ONLY.....	0	.0	0	.0	19	.5
BREAST AND BOTTLE.....	1	.2	0	.0	47	1.4
BREAST AND SOLIDS.....	11	1.7	4	.6	627	18.0
BOTTLE AND SOLIDS.....	2	.3	2	.3	113	3.2
BREAST BOTTLE AND SOLIDS.....	0	.0	1	.2	37	1.1
SOLIDS ONLY.....	645	97.7	630	98.6	2395	68.9
DONT KNOW.....	1	.2	2	.3	7	.2

TABLE 15.1: TIME MOTHER FIRST GAVE BREAST AFTER BIRTH BY STATE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TIMING OF BREAST FEEDING	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
WHEN MOTHER GAVE BREAST IMMEDIATELY.....	98	29.2	563	52.0	620	42.9	428	65.4	1709	48.6
LATER IN FIRST DAY.....	136	40.5	337	31.1	579	40.0	164	25.1	1216	34.8
IN SECOND DAY.....	64	19.0	95	8.8	105	7.3	21	3.2	285	8.1
AFTER SECOND DAY.....	13	3.9	12	1.1	102	7.1	7	1.1	134	3.8
DID NOT BREASTFEED.....	10	3.0	26	2.4	15	1.0	12	1.8	63	1.8
DONT KNOW.....	15	4.5	49	4.5	25	1.7	22	3.4	111	3.2

TABLE 15.2: TIME MOTHER FIRST GAVE BREAST AFTER BIRTH BY ZONE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TIMING OF BREAST FEEDING	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
WHEN MOTHER GAVE BREAST IMMEDIATELY.....	446	57.3	504	49.8	258	57.5	293	39.8	208	38.4	1709	48.6
LATER IN FIRST DAY.....	242	31.1	358	35.4	124	27.6	287	38.9	205	37.9	1216	34.6
IN SECOND DAY.....	21	2.7	84	8.3	34	7.6	100	13.6	46	8.5	285	8.1
AFTER SECOND DAY.....	6	.8	18	1.8	12	2.7	32	4.3	66	12.2	134	3.8
DID NOT BREASTFEED.....	25	3.2	21	2.1	11	2.4	4	.5	2	.4	63	1.8
DONT KNOW.....	39	5.0	27	2.7	10	2.2	21	2.8	14	2.6	111	3.2

TABLE 16.1.1: TYPES OF NOURISHMENT OTHER THAN MILK GIVEN
IN A BOTTLE FOR CHILDREN 0-4 YEARS OLD (1) BY AGE GROUP.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

	0-2 months		3-5 months		12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ELSE THAN MILK IN BOTTLE																
YES.....	82	5.3	91	5.9	184	11.8	195	12.6	366	23.6	321	20.7	314	20.2	1553	100.0
NO.....	66	4.4	96	6.4	164	11.0	197	13.2	331	22.1	326	21.8	315	21.1	1495	100.0
DONT KNOW..	0	.0	1	1.6	3	4.9	9	14.8	17	27.9	17	27.9	14	23.0	61	100.0

TABLE 16.1.2: TYPES OF NOURISHMENT OTHER THAN MILK GIVEN
IN A BOTTLE FOR CHILDREN 0-4 YEARS OLD (1) BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
ELSE THAN MILK IN BOTTLE										
YES.....	157	10.1	733	47.2	500	32.2	163	10.5	1553	100.0
NO.....	126	8.4	207	13.8	758	50.7	404	27.0	1495	100.0
DONT KNOW..	6	9.8	27	44.3	16	26.2	12	19.7	61	100.0

**TABLE 16.2: TYPES OF NOURISHMENT OTHER THAN MILK GIVEN IN A BOTTLE
FOR CHILDREN 0-4 YEARS OLD BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.**

NOURISHMENT	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
WATER.....	139	10.8	691	53.8	302	23.5	153	11.9	1285	100.0
SUGAR WATER	0	.0	28	28.3	69	69.7	2	2.0	99	100.0
JUICE.....	31	9.5	195	59.8	88	27.0	12	3.7	326	100.0
CORDIAL....	5	14.3	19	54.3	10	28.6	1	2.9	35	100.0
TEA.....	25	18.0	61	43.9	50	36.0	3	2.2	139	100.0
SOFT FOOD..	3	9.4	17	53.1	8	25.0	4	12.5	32	100.0
COCO WATER.	117	11.3	470	45.3	391	37.7	60	5.8	1038	100.0
OTHER.....	0	.0	5	29.4	5	29.4	7	41.2	17	100.0

TABLE 16.3: REASONS FOR MOTHER BOTTLEFEEDING (1)
CHILDREN 0-4 YEARS OLD BY STATE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

REASONS FOR BOTTLE FEEDING	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
ADOPTED.....	1	10.0	6	14.3	2	6.5	0	.0	9	8.7
NOT ENOUGH B. MILK.....	4	40.0	17	40.5	15	48.4	10	47.6	46	44.2
MOTHER WORKS AWAY.....	0	.0	9	21.4	2	6.5	5	23.8	16	15.4
MOTHER IS STUDENT.....	0	.0	2	4.8	0	.0	0	.0	2	1.9
MOTHER IS SICK.....	0	.0	2	4.8	0	.0	1	4.8	3	2.9
INFECTED NIPPLES.....	0	.0	3	7.1	1	3.2	0	.0	4	3.8
MOTHER CHOICE.....	2	20.0	1	2.4	7	22.6	2	9.5	12	11.5
MOTHER IS PREGNANT.....	1	10.0	1	2.4	0	.0	2	9.5	4	3.8
DONT KNOW.....	0	.0	1	2.4	0	.0	0	.0	1	1.0
MOTHERLESS CHILD.....	0	.0	0	.0	4	12.9	0	.0	4	3.8
PREMATURE BABY.....	1	10.0	0	.0	0	.0	1	4.8	2	1.9
CHILD DONT LIKE B. MILK	1	10.0	0	.0	0	.0	0	.0	1	1.0

TABLE 16.4: REASONS FOR MOTHER BOTTLEFEEDING (1)
CHILDREN 0-4 YEARS OLD BY ZONE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

REASONS FOR BOTTLE FEEDING	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
ADOPTED.....	4	8.3	4	13.8	0	.0	1	14.3	0	.0	9	8.7
NOT ENOUGH B. MILK.....	19	39.6	15	51.7	6	50.0	3	42.9	3	37.5	46	44.2
MOTHER WORKS AWAY.....	10	20.8	1	3.4	3	25.0	1	14.3	1	12.5	16	15.4
MOTHER IS STUDENT.....	2	4.2	0	.0	0	.0	0	.0	0	.0	2	1.9
MOTHER IS SICK.....	3	6.3	0	.0	0	.0	0	.0	0	.0	3	2.9
INFECTED NIPPLES.....	2	4.2	0	.0	2	16.7	0	.0	0	.0	4	3.8
MOTHER CHOICE.....	2	4.2	5	17.2	1	8.3	0	.0	4	50.0	12	11.5
MOTHER IS PREGNANT.....	2	4.2	1	3.4	0	.0	1	14.3	0	.0	4	3.8
DONT KNOW.....	0	.0	0	.0	0	.0	1	14.3	0	.0	1	1.0
MOTHERLESS CHILD.....	3	6.3	1	3.4	0	.0	0	.0	0	.0	4	3.8
PREMATURE BABY.....	1	2.1	1	3.4	0	.0	0	.0	0	.0	2	1.9
CHILD DONT LIKE B. MILK	0	.0	1	3.4	0	.0	0	.0	0	.0	1	1.0

(1) BOTTLEFED CHILDREN ONLY

TABLE 16.5: TYPES OF MILK BOTTLEFED TO CHILDREN 0-4 YEARS OLD (1)
BY AGE GROUP.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF MILK	AGE GROUP															
	0-2 months		3-5 months		12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
FORMULA.....	23	100.0	28	90.3	22	84.6	13	92.9	11	100.0	4	100.0	2	100.0	103	92.8
LOW FAT POWDER.	0	.0	2	6.5	1	3.8	0	.0	0	.0	0	.0	0	.0	3	2.7
EVAPORATED MILK	0	.0	1	3.2	2	7.7	1	7.1	0	.0	0	.0	0	.0	4	3.6
OTHER.....	0	.0	0	.0	1	3.8	0	.0	0	.0	0	.0	0	.0	1	.9

TABLE 16.6: TYPES OF MILK BOTTLEFED TO CHILDREN 0-4 YEARS OLD (1)
BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF MILK	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
FORMULA.....	9	90.0	42	89.4	33	100.0	19	90.5	103	92.8
LOW FAT POWDER.	0	.0	3	6.4	0	.0	0	.0	3	2.7
EVAPORATED MILK	1	10.0	1	2.1	0	.0	2	9.5	4	3.6
OTHER.....	0	.0	1	2.1	0	.0	0	.0	1	.9

(1) BOTTLEFED CHILDREN ONLY

TABLE 16.7: TYPES OF FORMULA BOTTLEFED TO CHILDREN 0-4 YEARS OLD (1)
BY STATE, F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF FORMULA	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
ENFAMIL.....	0	.0	6	13.3	4	12.1	4	21.1	14	13.2
SIMILAC.....	0	.0	1	2.2	0	.0	0	.0	1	.9
MORINAGA.....	9	100.0	10	22.2	14	42.4	15	78.9	48	45.3
MEIJI.....	0	.0	16	35.6	1	3.0	0	.0	17	16.0
SNOW.....	0	.0	4	8.9	0	.0	0	.0	4	3.8
OTHER.....	0	.0	7	15.6	14	42.4	0	.0	21	19.8
DONT KNOW.....	0	.0	1	2.2	0	.0	0	.0	1	.9

TABLE 16.8: TYPES OF FORMULA BOTTLEFED TO CHILDREN 0-4 YEARS OLD (1)
BY ZONE, F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF FORMULA	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
ENFAMIL.....	8	17.0	2	6.7	2	13.3	1	16.7	1	12.5	14	13.2
SIMILAC.....	1	2.1	0	.0	0	.0	0	.0	0	.0	1	.9
MORINAGA.....	16	34.0	22	73.3	4	26.7	3	50.0	3	37.5	48	45.3
MEIJI.....	9	19.1	3	10.0	2	13.3	1	16.7	2	25.0	17	16.0
SNOW.....	2	4.3	0	.0	2	13.3	0	.0	0	.0	4	3.8
OTHER.....	11	23.4	3	10.0	4	26.7	1	16.7	2	25.0	21	19.8
DONT KNOW.....	0	.0	0	.0	1	6.7	0	.0	0	.0	1	.9

(1) BOTTLEFED CHILDREN ONLY

TABLE 17.1: AGE OF INTRODUCTION TO SOLID FOODS FOR
CHILDREN 0-4 YEARS OLD (1) BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

AGE IN MONTHS	F.S.M. STATE							
	KOSRAE		POHNPEI		TRUK		YAP	
	N	%	N	%	N	%	N	%
1.....	1	.4	12	1.5	2	.2	11	2.3
2.....	6	2.5	39	4.8	13	1.2	30	6.2
3.....	77	32.2	226	28.1	206	19.7	125	26.0
4.....	42	17.6	162	20.1	189	18.1	102	21.2
5.....	40	16.7	113	14.0	148	14.2	64	13.3
6.....	44	18.4	135	16.8	274	26.2	117	24.3
7.....	17	7.1	33	4.1	102	9.8	13	2.7
8.....	9	3.8	43	5.3	44	4.2	16	3.3
9.....	0	.0	12	1.5	14	1.3	0	.0
10.....	2	.8	3	.4	10	1.0	0	.0
11.....	0	.0	3	.4	2	.2	1	.2
12.....	1	.4	22	2.7	40	3.8	2	.4
13.....	0	.0	1	.1	0	.0	0	.0
14.....	0	.0	1	.1	0	.0	0	.0

(1) CHILDREN ON SOLIDS ONLY

TABLE 17.2: AGE OF INTRODUCTION TO SOLID FOODS FOR
CHILDREN 0-4 YEARS OLD (1) BY ZONE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

AGE IN MONTHS	F.S.M. SURVEY ZONE									
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES	
	N	%	N	%	N	%	N	%	N	%
1.....	10	1.9	2	.3	8	2.5	3	.5	3	.7
2.....	28	5.2	24	3.3	10	3.1	17	2.9	9	2.2
3.....	159	29.7	224	30.6	58	18.0	140	24.3	53	13.2
4.....	111	20.7	130	17.8	46	14.2	148	25.6	60	14.9
5.....	86	16.1	117	16.0	32	9.9	78	13.5	52	12.9
6.....	92	17.2	135	18.5	92	28.5	125	21.7	126	31.3
7.....	12	2.2	44	6.0	31	9.6	29	5.0	49	12.2
8.....	19	3.6	22	3.0	28	8.7	18	3.1	25	6.2
9.....	4	.7	5	.7	3	.9	7	1.2	7	1.7
10.....	1	.2	6	.8	2	.6	1	.2	5	1.2
11.....	1	.2	1	.1	1	.3	1	.2	2	.5
12.....	11	2.1	21	2.9	11	3.4	10	1.7	12	3.0
13.....	0	.0	0	.0	1	.3	0	.0	0	.0
14.....	1	.2	0	.0	0	.0	0	.0	0	.0

(1) CHILDREN ON SOLIDS ONLY

TABLE 17.3: TYPES OF FOOD FIRST INTRODUCED TO CHILDREN
0-4 YEARS OLD (1) BY STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF FOOD	KOSRAE		POHNPEI		TRUK		YAP		F.S.M. TOTAL	
	N	%	N	%	N	%	N	%	N	%
FSM Staples.....	119	35.3	549	50.7	1208	83.5	255	39.0	2131	60.5
Imported Staples.....	36	10.7	372	34.3	103	7.1	21	3.2	532	15.1
FSM Fat.....	3	.9	8	.7	5	.3	21	3.2	37	1.1
Imported Fat.....	0	.0	3	.3	0	.0	1	.2	4	.1
FSM Protein.....	16	4.7	182	16.8	18	1.2	13	2.0	229	6.5
Imported Protein.....	2	.6	22	2.0	3	.2	0	.0	27	.8
Greens.....	0	.0	0	.0	2	.1	10	1.5	12	.3
Other Vegetables.....	0	.0	4	.4	12	.8	132	20.2	148	4.2
Imported Vegetables....	1	.3	1	.1	0	.0	3	.5	5	.1
Fruit and Fruit Juice..	222	65.9	310	28.6	83	5.7	452	69.1	1067	30.3
Imported Fruit.....	1	.3	0	.0	1	.1	4	.6	6	.2
Sugars.....	1	.3	2	.2	1	.1	0	.0	4	.1
Sugar Snacks.....	0	.0	10	.9	0	.0	0	.0	10	.3
Other Snacks.....	0	.0	0	.0	0	.0	0	.0	0	.0
Store Baby Food.....	60	17.8	244	22.5	93	6.4	82	12.5	479	13.6
Other Foods.....	0	.0	0	.0	0	.0	0	.0	0	.0

(1) CHILDREN ON SOLIDS ONLY

TABLE 17.4: TYPES OF FOOD FIRST INTRODUCED TO CHILDREN
0-4 YEARS OLD (1) BY ZONE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

TYPE OF FOOD	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		F.S.M. TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
FSM Staples.....	360	46.2	586	57.8	278	61.8	538	73.0	369	68.1	2131	60.5
Imported Staples.....	145	18.6	126	12.4	94	20.9	120	16.3	47	8.7	532	15.1
FSM Fat.....	9	1.2	12	1.2	1	.2	4	.5	11	2.0	37	1.1
Imported Fat.....	3	.4	0	.0	1	.2	0	.0	0	.0	4	.1
FSM Protein.....	57	7.3	46	4.5	21	4.7	86	11.7	19	3.5	229	6.5
Imported Protein.....	13	1.7	5	.5	6	1.3	2	.3	1	.2	27	.8
Greens.....	1	.1	0	.0	0	.0	7	.9	4	.7	12	.3
Other Vegetables.....	41	5.3	26	2.6	3	.7	53	7.2	25	4.6	148	4.2
Imported Vegetables....	2	.3	1	.1	0	.0	0	.0	2	.4	5	.1
Fruit and Fruit Juice..	180	23.1	346	34.2	60	13.3	279	37.9	202	37.3	1067	30.3
Imported Fruit.....	5	.6	1	.1	0	.0	0	.0	0	.0	6	.2
Sugars.....	1	.1	2	.2	0	.0	1	.1	0	.0	4	.1
Sugar Snacks.....	2	.3	1	.1	3	.7	1	.1	3	.6	10	.3
Other Snacks.....	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0
Store Baby Food.....	243	31.2	114	11.3	57	12.7	51	6.9	14	2.6	479	13.6
Other Foods.....	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0

(1) CHILDREN ON SOLIDS ONLY

TABLE 18.1.1: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE MORNING BY AGE GROUP.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	344	97.5	388	96.8	701	97.9	650	97.9	632	98.1	2715	97.7
FSM Staples.....	101	28.6	83	20.7	174	24.3	174	26.2	152	23.6	684	24.6
Imported Staples	253	71.7	315	78.6	527	73.9	530	79.8	507	78.7	2177	78.4
FSM Fat.....	50	14.2	54	13.5	137	19.1	122	18.4	107	16.6	470	16.9
Imported Fat.....	29	8.2	39	9.7	77	10.8	68	10.2	69	10.7	282	10.2
FSM Protein.....	119	33.7	145	36.2	303	42.3	286	43.1	258	40.1	1111	40.0
Imported Protein	71	20.1	105	26.2	177	24.7	168	25.3	147	22.8	668	24.0
Greens.....	1	.3	2	.5	7	1.0	3	.5	5	.8	18	.6
Other Vegetables	6	1.7	7	1.7	13	1.8	12	1.8	14	2.2	52	1.9
Imported Veg.....	0	.0	3	.7	1	.1	3	.5	0	.0	7	.3
Fruit/Juice.....	78	22.1	82	20.4	125	17.5	118	17.8	103	16.0	506	18.2
Imported Fruit..	5	1.4	2	.5	6	.8	9	1.4	13	2.0	35	1.3
Sugars.....	62	17.6	89	22.2	197	27.5	170	25.6	193	30.0	711	25.6
Sugar Snacks....	10	2.8	18	4.5	28	3.9	16	2.4	25	3.9	97	3.5
Other Snacks....	0	.0	0	.0	1	.1	0	.0	0	.0	1	.0
Store Baby Food.	4	1.1	4	1.0	0	.0	0	.0	0	.0	8	.3
Other Foods.....	2	.6	0	.0	0	.0	1	.2	0	.0	3	.1

TABLE 18.1.2: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE AFTERNOON BY AGE GROUP.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	341	96.6	384	95.8	690	96.4	646	97.3	617	95.8	2678	96.4
FSM Staples.....	108	30.6	112	27.9	260	36.3	218	32.8	217	33.7	915	32.9
Imported Staples	244	69.1	295	73.6	497	69.4	465	70.0	447	69.4	1948	70.1
FSM Fat.....	57	16.1	56	14.0	146	20.4	118	17.8	133	20.7	510	18.4
Imported Fat.....	33	9.3	43	10.7	93	13.0	81	12.2	85	13.2	335	12.1
FSM Protein.....	145	41.1	172	42.9	330	46.1	314	47.3	319	49.5	1280	46.1
Imported Protein	82	23.2	112	27.9	186	26.0	177	26.7	169	26.2	726	26.1
Greens.....	2	.6	3	.7	4	.6	5	.8	6	.9	20	.7
Other Vegetables	6	1.7	10	2.5	17	2.4	11	1.7	20	3.1	64	2.3
Imported Veg.....	3	.8	3	.7	4	.6	5	.8	6	.9	21	.8
Fruit/Juice.....	80	22.7	76	19.0	179	25.0	135	20.3	131	20.3	601	21.6
Imported Fruit..	7	2.0	6	1.5	6	.8	13	2.0	6	.9	38	1.4
Sugars.....	36	10.2	50	12.5	89	12.4	87	13.1	80	12.4	342	12.3
Sugar Snacks....	10	2.8	15	3.7	34	4.7	33	5.0	41	6.4	133	4.8
Other Snacks....	0	.0	1	.2	0	.0	0	.0	0	.0	1	.0
Store Baby Food.	2	.6	3	.7	0	.0	0	.0	0	.0	5	.2
Other Foods.....	2	.6	0	.0	1	.1	0	.0	0	.0	3	.1

TABLE 18.1.3: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE EVENING BY AGE GROUP.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	342	96.9	384	95.8	691	96.5	643	96.8	628	97.5	2688	96.8
FSM Staples.....	124	35.1	126	31.4	293	40.9	269	40.5	254	39.4	1066	38.4
Imported Staples	230	65.2	285	71.1	458	64.0	430	64.8	428	66.5	1831	65.9
FSM Fat.....	58	16.4	59	14.7	154	21.5	140	21.1	151	23.4	562	20.2
Imported Fat.....	40	11.3	45	11.2	95	13.3	75	11.3	74	11.5	329	11.8
FSM Protein.....	166	47.0	212	52.9	404	56.4	397	59.8	379	58.9	1558	56.1
Imported Protein	78	22.1	90	22.4	167	23.3	141	21.2	145	22.5	621	22.4
Greens.....	5	1.4	3	.7	6	.8	7	1.1	17	2.6	38	1.4
Other Vegetables	12	3.4	9	2.2	14	2.0	11	1.7	16	2.5	62	2.2
Imported Veg.....	2	.6	2	.5	2	.3	6	.9	1	.2	13	.5
Fruit/Juice.....	65	18.4	65	16.2	143	20.0	121	18.2	118	18.3	512	18.4
Imported Fruit..	7	2.0	2	.5	2	.3	9	1.4	4	.6	24	.9
Sugars.....	26	7.4	39	9.7	76	10.6	83	12.5	72	11.2	296	10.7
Sugar Snacks....	8	2.3	13	3.2	35	4.9	43	6.5	38	5.9	137	4.9
Other Snacks....	0	.0	0	.0	1	.1	0	.0	3	.5	4	.1
Store Baby Food.	1	.3	2	.5	0	.0	0	.0	0	.0	3	.1
Other Foods.....	2	.6	0	.0	1	.1	0	.0	0	.0	3	.1

(1) CHILDREN ON SOLIDS ONLY

TABLE 18.2.1: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE MORNING BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	253	96.2	839	98.0	1124	98.4	499	96.9	2715	97.8
FSM Staples.....	48	18.3	169	19.7	252	22.1	215	41.7	684	24.6
Imported Staples	224	85.2	713	83.3	953	83.5	287	55.7	2177	78.4
FSM Fat.....	46	17.5	176	20.6	170	14.9	78	15.1	470	16.9
Imported Fat.....	40	15.2	121	14.1	68	6.0	53	10.3	282	10.2
FSM Protein.....	64	24.3	381	44.5	431	37.7	235	45.6	1111	40.0
Imported Protein	43	16.3	204	23.8	296	25.9	125	24.3	668	24.1
Greens.....	0	.0	1	.1	3	.3	14	2.7	18	.6
Other Vegetables	5	1.9	4	.5	9	.8	34	6.6	52	1.9
Imported Veg.....	5	1.9	0	.0	0	.0	2	.4	7	.3
Fruit/Juice.....	33	12.5	110	12.9	203	17.8	160	31.1	506	18.2
Imported Fruit..	3	1.1	17	2.0	11	1.0	4	.8	35	1.3
Sugars.....	177	67.3	225	26.3	250	21.9	59	11.5	711	25.6
Sugar Snacks....	19	7.2	40	4.7	8	.7	30	5.8	97	3.5
Other Snacks....	0	.0	1	.1	0	.0	0	.0	1	.0
Store Baby Food.	1	.4	1	.1	0	.0	6	1.2	8	.3
Other Foods.....	0	.0	3	.4	0	.0	0	.0	3	.1

TABLE 18.2.2: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE AFTERNOON BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	250	95.1	840	98.1	1105	96.8	483	93.8	2678	96.5
FSM Staples.....	65	24.7	262	30.6	346	30.3	242	47.0	915	33.0
Imported Staples	216	82.1	643	75.1	861	75.4	228	44.3	1948	70.2
FSM Fat.....	49	18.6	209	24.4	171	15.0	81	15.7	510	18.4
Imported Fat.....	71	27.0	132	15.4	86	7.5	46	8.9	335	12.1
FSM Protein.....	147	55.9	452	52.8	437	38.3	244	47.4	1280	46.1
Imported Protein	77	29.3	205	23.9	339	29.7	105	20.4	726	26.2
Greens.....	1	.4	6	.7	4	.4	9	1.7	20	.7
Other Vegetables	6	2.3	9	1.1	14	1.2	35	6.8	64	2.3
Imported Veg.....	5	1.9	5	.6	7	.6	4	.8	21	.8
Fruit/Juice.....	59	22.4	129	15.1	232	20.3	181	35.1	601	21.6
Imported Fruit..	10	3.8	19	2.2	7	.6	2	.4	38	1.4
Sugars.....	108	41.1	88	10.3	96	8.4	50	9.7	342	12.3
Sugar Snacks....	14	5.3	78	9.1	10	.9	31	6.0	133	4.8
Other Snacks....	0	.0	1	.1	0	.0	0	.0	1	.0
Store Baby Food.	1	.4	1	.1	0	.0	3	.6	5	.2
Other Foods.....	0	.0	3	.4	0	.0	0	.0	3	.1

TABLE 18.2.3: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE EVENING BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. STATE									
	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	253	96.2	833	97.3	1109	97.1	493	95.7	2688	96.8
FSM Staples.....	98	37.3	293	34.2	410	35.9	265	51.5	1066	38.4
Imported Staples	204	77.6	590	68.9	809	70.8	228	44.3	1831	66.0
FSM Fat.....	33	12.5	214	25.0	237	20.8	78	15.1	562	20.2
Imported Fat.....	92	35.0	132	15.4	60	5.3	45	8.7	329	11.9
FSM Protein.....	156	59.3	470	54.9	632	55.3	300	58.3	1558	56.1
Imported Protein	69	26.2	211	24.6	241	21.1	100	19.4	621	22.4
Greens.....	1	.4	7	.8	5	.4	25	4.9	38	1.4
Other Vegetables	14	5.3	9	1.1	14	1.2	25	4.9	62	2.2
Imported Veg.....	6	2.3	6	.7	1	.1	0	.0	13	.5
Fruit/Juice.....	42	16.0	114	13.3	204	17.9	152	29.5	512	18.4
Imported Fruit..	2	.8	17	2.0	5	.4	0	.0	24	.9
Sugars.....	98	37.3	58	6.8	101	8.8	39	7.6	296	10.7
Sugar Snacks....	6	2.3	104	12.1	11	1.0	16	3.1	137	4.9
Other Snacks....	2	.8	1	.1	0	.0	1	.2	4	.1
Store Baby Food.	1	.4	1	.1	0	.0	1	.2	3	.1
Other Foods.....	0	.0	3	.4	0	.0	0	.0	3	.1

TABLE 18.3.1: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE MORNING BY ZONE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

221

FOOD ITEM	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	588	98.0	764	97.2	351	98.3	582	97.0	430	99.3	2715	97.8
FSM Staples.....	92	15.3	163	20.7	110	30.8	185	30.8	134	30.9	684	24.6
Imported Staples	521	86.8	650	82.7	267	74.8	434	72.3	305	70.4	2177	78.4
FSM Fat.....	50	8.3	114	14.5	60	16.8	176	29.3	70	16.2	470	16.9
Imported Fat....	85	14.2	88	11.2	29	8.1	59	9.8	21	4.8	282	10.2
FSM Protein.....	182	30.3	259	33.0	122	34.2	322	53.7	226	52.2	1111	40.0
Imported Protein	248	41.3	197	25.1	100	28.0	78	13.0	45	10.4	668	24.1
Greens.....	8	1.3	6	.8	2	.6	0	.0	2	.5	18	.6
Other Vegetables	15	2.5	16	2.0	4	1.1	6	1.0	11	2.5	52	1.9
Imported Veg....	1	.2	5	.6	0	.0	0	.0	1	.2	7	.3
Fruit/Juice.....	68	11.5	127	16.2	48	13.4	158	26.3	104	24.0	506	18.2
Imported Fruit..	13	2.2	6	.8	2	.6	13	2.2	1	.2	35	1.3
Sugars.....	208	34.7	293	37.3	67	18.8	97	16.2	46	10.6	711	25.6
Sugar Snacks....	38	6.3	33	4.2	6	1.7	18	3.0	2	.5	97	3.5
Other Snacks....	1	.2	0	.0	0	.0	0	.0	0	.0	1	.0
Store Baby Food.	5	.8	2	.3	1	.3	0	.0	0	.0	8	.3
Other Foods.....	2	.3	1	.1	0	.0	0	.0	0	.0	3	.1

TABLE 18.3.2: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE AFTERNOON BY ZONE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten..	572	95.3	755	96.1	348	97.5	577	96.2	426	98.4	2678	96.5
FSM Staples.....	122	20.3	237	30.2	159	44.5	248	41.3	149	34.4	915	33.0
Imported Staples	478	79.7	596	75.8	234	65.5	357	59.5	283	65.4	1948	70.2
FSM Fat.....	56	9.3	124	15.8	69	19.3	183	30.5	78	18.0	510	18.4
Imported Fat....	106	17.7	120	15.3	29	8.1	60	10.0	20	4.6	335	12.1
FSM Protein.....	240	40.0	355	45.2	105	29.4	350	58.3	230	53.1	1280	46.1
Imported Protein	237	39.5	251	31.9	136	38.1	56	9.3	46	10.6	726	26.2
Greens.....	6	1.0	10	1.3	3	.8	1	.2	0	.0	20	.7
Other Vegetables	21	3.5	20	2.5	7	2.0	8	1.3	8	1.8	64	2.3
Imported Veg....	7	1.2	6	.8	5	1.4	0	.0	3	.7	21	.8
Fruit/Juice.....	91	15.2	177	22.5	54	15.1	169	28.2	110	25.4	601	21.6
Imported Fruit..	9	1.5	14	1.8	4	1.1	11	1.8	0	.0	38	1.4
Sugars.....	65	10.8	156	19.8	34	9.5	50	8.3	37	8.5	342	12.3
Sugar Snacks....	65	10.8	35	4.5	11	3.1	15	2.5	7	1.6	133	4.8
Other Snacks....	0	.0	1	.1	0	.0	0	.0	0	.0	1	.0
Store Baby Food.	1	.2	3	.4	1	.3	0	.0	0	.0	5	.2
Other Foods.....	3	.5	0	.0	0	.0	0	.0	0	.0	3	.1

TABLE 18.3.3: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD WHO (1)
ATE EACH KIND OF FOOD IN THE EVENING BY ZONE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM	F.S.M. SURVEY ZONE											
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Food Eaten.....	584	97.3	758	96.4	344	96.4	578	96.3	424	97.9	2688	96.8
FSM Staples.....	154	25.7	279	35.5	164	45.9	286	47.7	183	42.3	1066	38.4
Imported Staples	476	79.3	562	71.5	214	59.9	328	54.7	251	58.0	1831	66.0
FSM Fat.....	75	12.5	124	15.8	66	18.5	189	31.5	108	24.9	562	20.2
Imported Fat.....	112	18.7	117	14.9	31	8.7	51	8.5	18	4.2	329	11.9
FSM Protein.....	302	50.3	443	56.4	151	42.3	389	64.8	273	63.0	1558	56.1
Imported Protein	224	37.3	200	25.4	118	33.1	49	8.2	30	6.9	621	22.4
Greens.....	18	3.0	14	1.8	4	1.1	0	.0	2	.5	38	1.4
Other Vegetables	14	2.3	21	2.7	11	3.1	6	1.0	10	2.3	62	2.2
Imported Veg.....	2	.3	6	.8	2	.6	3	.5	0	.0	13	.5
Fruit/Juice.....	82	13.7	129	16.4	46	12.9	136	22.7	119	27.5	512	18.4
Imported Fruit.....	7	1.2	4	.5	2	.6	11	1.8	0	.0	24	.9
Sugars.....	58	9.7	136	17.3	26	7.3	50	8.3	26	6.0	296	10.7
Sugar Snacks.....	71	11.8	22	2.8	21	5.9	21	3.5	2	.5	137	4.9
Other Snacks.....	2	.3	2	.3	0	.0	0	.0	0	.0	4	.1
Store Baby Food.....	0	.0	2	.3	1	.3	0	.0	0	.0	3	.1
Other Foods.....	2	.3	1	.1	0	.0	0	.0	0	.0	3	.1

TABLE 19.1: FREQUENCY DISTRIBUTION OF CHILDREN 12-59 MONTHS OLD (1)
WHO ATE VARIOUS FOOD TYPES BY AGE GROUP.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEM EATEN (in percent)	AGE GROUP OF CHILDREN															
	12-17 months				18-23 months				24-35 months				36-47 months			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD EATEN.	.3	.3	2.9	96.5	.3	.0	1.3	98.4	.0	.3	3.3	96.4	.3	.0	2.2	97.5
STAPLES.....	1.4	1.4	8.1	89.0	1.3	1.3	4.4	93.0	.1	.4	4.9	94.6	.6	.2	4.9	94.3
FAT.....	57.2	19.4	14.2	9.2	54.7	24.2	12.8	8.3	44.3	25.2	17.5	13.0	47.8	24.2	17.1	10.9
PROTEIN.....	17.9	13.9	32.1	36.1	10.9	14.3	29.7	45.1	8.3	12.9	30.8	48.1	5.8	13.2	33.8	47.1
GREENS.....	98.6	.9	.6	.0	98.7	.5	.8	.0	98.1	1.4	.3	.1	98.2	1.4	.5	.0
VEGETABLES.....	94.2	3.5	2.3	.0	94.0	3.9	1.6	.5	95.0	3.3	1.3	.4	94.5	3.8	1.5	.2
FRUIT.....	62.4	17.9	7.5	12.1	66.4	15.9	8.9	8.9	61.5	19.9	10.0	8.6	63.4	19.4	9.7	7.5
SUGARS/SNACKS..	73.4	15.0	7.2	4.3	68.2	16.7	6.5	6.6	60.2	21.8	11.2	6.9	60.2	22.2	10.6	7.1
STORE BABY FOOD	98.8	.6	.3	.3	98.7	.8	.0	.5	100.0	.0	.0	.0	100.0	.0	.0	.0

FOOD ITEM EATEN (in percent)	AGE GROUP OF CHILDREN			
	48-59 months			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD EATEN.	.0	.2	3.0	96.8
STAPLES.....	.0	.3	5.9	93.8
FAT.....	44.0	26.6	17.8	11.6
PROTEIN.....	4.9	14.6	34.9	45.6
GREENS.....	96.7	2.7	.3	.3
VEGETABLES.....	93.0	5.4	1.3	.3
FRUIT.....	64.4	18.9	10.2	6.5
SUGARS/SNACKS..	58.1	23.3	9.8	8.7
STORE BABY FOOD	100.0	.0	.0	.0

(1) CHILDREN ON SOLID FOOD ONLY

TABLE 19.2: FREQUENCY DISTRIBUTION OF CHILDREN 12-59 MONTHS OLD (1)
WHO ATE VARIOUS FOOD TYPES BY STATE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEMS (in percent)	F.S.M. STATE															
	KOSRAE				POMNPEI				TRUK				YAP			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD EATEN:	.0	.0	.0	99.2	.1	.0	2.7	97.2	.3	.1	2.4	97.2	.0	.6	3.8	95.5
STAPLES.....	.8	.4	1.2	97.6	.6	.4	4.7	94.3	.2	.1	3.4	96.3	1.2	2.2	13.6	83.0
FAT.....	22.6	36.5	29.8	11.1	36.4	27.8	20.7	15.1	57.8	22.4	12.0	7.8	59.8	16.8	12.0	11.4
PROTEIN.....	1.6	15.1	50.0	33.3	5.1	12.3	36.1	46.6	11.3	14.6	29.4	44.8	11.7	13.4	24.5	50.4
GREENS.....	99.2	.8	.0	.0	98.9	.5	.6	.0	99.2	.5	.3	.0	92.7	5.9	.8	.6
VEGETABLES.....	86.9	10.7	2.0	.4	96.9	2.2	.8	.0	97.0	2.3	.4	.3	86.6	7.5	5.1	.8
FRUIT.....	58.3	29.0	8.7	4.0	68.6	19.3	7.8	4.3	67.4	15.6	8.1	9.0	48.1	19.7	16.0	16.2
SUGARS/SNACKS..	19.8	27.4	23.4	29.4	53.1	28.4	14.2	4.4	72.7	17.5	5.1	4.7	77.5	11.1	4.7	6.7
STORE BABY FOOD	99.6	.0	.0	.4	99.9	.0	.0	.1	100.0	.0	.0	.0	98.6	1.0	.2	.2

(1) CHILDREN ON SOLID FOOD ONLY

TABLE 19.3: FREQUENCY DISTRIBUTION OF CHILDREN 12-59 MONTHS OLD (1)
WHO ATE VARIOUS FOOD TYPES BY ZONE.
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

FOOD ITEMS (in percent)	F.S.M. SURVEY ZONE															
	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD EATEN.	.0	.2	3.6	96.2	.1	.1	1.7	98.0	.0	.0	3.4	96.6	.5	.3	2.6	96.6
STAPLES.....	.2	.9	6.7	92.3	.7	.4	3.2	95.8	.6	.3	4.6	94.6	.9	.3	5.8	93.0
FAT.....	47.9	30.3	13.5	8.2	46.6	26.7	18.1	8.6	52.3	26.3	11.1	10.3	40.3	19.3	21.0	19.5
PROTEIN.....	4.6	8.4	35.1	51.9	5.1	14.4	37.5	43.0	12.0	15.1	29.7	43.1	11.8	13.7	28.2	46.4
GREENS.....	95.7	3.3	1.0	.0	97.4	1.8	.4	.4	98.3	.9	.9	.0	99.8	.2	.0	.0
VEGETABLES.....	93.2	4.1	2.6	.2	92.6	5.4	1.7	.3	94.0	4.3	1.1	.6	96.8	2.7	.3	.2
FRUIT.....	69.0	19.5	7.9	3.6	63.4	21.2	8.0	7.4	72.0	16.0	7.7	4.3	58.1	15.0	11.8	15.0
SUGARS/SNACKS..	47.3	30.5	14.4	7.9	51.2	24.5	11.2	13.1	70.0	17.1	8.6	4.3	73.4	15.4	6.8	4.4
STORE BABY FOOD	99.1	.7	.2	.0	99.6	.1	.0	.3	99.7	.0	.0	.3	100.0	.0	.0	.0

FOOD ITEMS (in percent)	F.S.M. SURVEY ZONE			
	OUTER ISL POOR RESOURCES			
	NOT EATEN	EATEN ONCE	EATEN TWICE	EATEN 3X OR MORE
ANY FOOD EATEN.	.0	.0	2.3	97.7
STAPLES.....	.5	1.2	8.1	90.2
FAT.....	59.0	17.5	15.2	8.4
PROTEIN.....	12.6	18.6	28.1	40.7
GREENS.....	99.1	.9	.0	.0
VEGETABLES.....	94.9	3.0	1.6	.5
FRUIT.	56.2	20.5	12.6	10.7
SUGARS/SNACKS..	82.3	10.5	4.7	2.6
STORE BABY FOOD	100.0	.0	.0	.0

(1) CHILDREN ON SOLID FOOD ONLY

TABLE 20.1: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD (1) WHO ATE
BALANCED MEALS BY AGE GROUP
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
BREAKFAST												
Not Balanced.....	244	70.1	259	66.4	441	62.6	417	63.7	420	66.5	1781	65.3
Yes, Ate 3 Groups.	104	29.9	131	33.6	263	37.4	239	36.3	212	33.5	948	34.7
LUNCH												
Not Balanced.....	223	64.5	244	63.0	373	53.1	389	59.8	331	52.5	1560	57.4
Yes, Ate 3 Groups.	123	35.5	143	37.0	329	46.9	262	40.2	299	47.5	1156	42.6
DINNER												
Not Balanced.....	225	64.7	235	60.7	379	54.0	373	57.1	333	52.7	1545	56.8
Yes, Ate 3 Groups.	123	35.3	152	39.3	323	46.0	280	42.9	299	47.3	1177	43.2
BALANCED MEALS PER 24 HRS.												
No Balanced Meals	158	45.7	151	39.3	216	30.9	223	34.3	190	30.3	938	34.7
1 Balanced Meal..	74	21.4	101	26.3	189	27.1	177	27.2	171	27.2	712	26.3
2 Balanced Meals.	69	19.9	77	20.1	159	22.8	150	23.1	168	26.8	623	23.0
3 Balanced Meals.	46	13.0	55	14.3	134	19.2	100	15.4	99	15.8	433	16.0

(1) CHILDREN ON SOLID FOOD ONLY

TABLE 20.2: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD (1) WHO ATE
BALANCED MEALS BY STATE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	KOSRAE		POHNPEI		TRUK		YAP		TOTAL	
	N	%	N	%	N	%	N	%	N	%
BREAKFAST										
Not Balanced.....	177	70.0	510	60.4	790	69.9	304	60.7	1781	65.3
Yes, Ate 3 Groups.	76	30.0	335	39.6	340	30.1	197	39.3	948	34.7
LUNCH										
Not Balanced.....	96	38.1	452	53.5	728	64.9	284	57.1	1560	57.4
Yes, Ate 3 Groups.	156	61.9	393	46.5	394	35.1	213	42.9	1156	42.6
DINNER										
Not Balanced.....	92	36.4	474	56.1	694	61.7	285	57.0	1545	56.8
Yes, Ate 3 Groups.	161	63.6	371	43.9	430	38.3	215	43.0	1177	43.2
BALANCED MEALS PER 24 HRS.										
No Balanced Meals	36	14.3	253	29.9	468	41.9	181	36.8	938	34.7
1 Balanced Meal..	77	30.6	232	27.5	291	26.1	112	22.8	712	26.3
2 Balanced Meals.	103	40.9	213	25.2	209	18.7	98	19.9	623	23.0
3 Balanced Meals.	36	14.3	147	17.4	149	13.3	101	20.5	433	16.0

(1) CHILDREN ON SOLID FOOD ONLY

TABLE 20.3: PERCENTAGE OF CHILDREN 12-59 MONTHS OLD (1) WHO ATE
BALANCED MEALS BY ZONE
F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

BALANCED MEALS	ENVIRONMENT TYPE:										TOTAL	
	MAIN ISLAND URBAN		MAIN ISL RURAL COASTAL		MAIN ISL RURAL INLAND		OUTER ISL GOOD RESOURCES		OUTER ISL POOR RESOURCES		N	%
	N	%	N	%	N	%	N	%	N	%		
BREAKFAST												
Not Balanced.....	405	68.4	515	67.1	252	71.4	311	52.9	298	69.6	1781	65.3
Yes, Ate 3 Groups.	187	31.6	253	32.9	101	28.6	277	47.1	130	30.4	948	34.7
LUNCH												
Not Balanced.....	357	60.8	401	52.6	219	62.2	296	50.6	287	66.7	1560	57.4
Yes, Ate 3 Groups.	230	39.2	361	47.4	133	37.8	289	49.4	143	33.3	1156	42.6
DINNER												
Not Balanced.....	325	55.3	426	55.7	225	64.3	320	54.3	249	57.9	1545	56.8
Yes, Ate 3 Groups.	263	44.7	339	44.3	125	35.7	269	45.7	181	42.1	1177	43.2
BALANCED MEALS PER 24 HRS.												
No Balanced Meals	198	33.9	232	30.6	142	40.6	184	31.5	182	42.5	938	34.7
1 Balanced Meal..	167	28.6	224	29.5	102	29.1	117	20.0	102	23.8	712	26.3
2 Balanced Meals.	152	26.0	186	24.5	62	17.7	140	23.9	83	19.4	623	23.0
3 Balanced Meals.	67	11.5	117	15.4	44	12.6	144	24.6	61	14.3	433	16.0

(1) CHILDREN ON SOLID FOOD ONLY

TABLE 20.4: PATTERNS OF FOOD CONSUMPTION OF CHILDREN 12-59 MONTHS
BY AGE GROUP, F.S.M., NATIONAL NUTRITION SURVEY 1987-88.

CONSUMPTION PATTERN	12-17 months		18-23 months		24-35 months		36-47 months		48-59 months		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
MORNING, MID-DAY, & EVENING.....	334	96.5	378	98.4	674	96.4	634	97.5	610	96.8	2630	97.1
MORNING & MID-DAY.....	4	1.2	2	.5	9	1.3	8	1.2	4	.6	27	1.0
MORNING & EVENING.....	4	1.2	2	.5	10	1.4	3	.5	13	2.1	32	1.2
MID-DAY & EVENING.....	2	.6	1	.3	4	.6	3	.5	2	.3	12	.4
MORNING ONLY.....	0	.0	0	.0	2	.3	0	.0	1	.2	3	.1
MIDDAY ONLY.....	1	.3	0	.0	0	.0	0	.0	0	.0	1	.0
NO FOOD.....	1	.3	1	.3	0	.0	2	.3	0	.0	4	.1

CHILDREN ON SOLIDS ONLY

S U P L E M E N T A R Y
T A B L E S

=====

TABLE ADD.1.1: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE (s.dev) BY STATE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE				POHNPEI				TRUK				YAP			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months...	22	.0	90.9	9.1	89	.0	79.8	20.2	118	.0	88.1	11.9	58	6.9	87.9	5.2
6-11 months...	45	2.2	95.6	2.2	105	.0	90.5	9.5	163	5.5	89.6	4.9	67	6.0	88.1	6.0
12-17 months...	31	9.7	83.9	6.5	110	10.0	86.4	3.6	116	5.2	92.2	2.6	58	12.1	84.5	3.4
18-23 months...	29	17.2	82.8	.0	97	9.3	88.7	2.1	135	12.6	82.2	5.2	66	21.2	75.8	3.0
24-35 months...	49	26.5	73.5	.0	176	14.8	84.1	1.1	258	12.8	86.0	1.2	114	8.8	90.4	.9
36-47 months...	45	6.7	93.3	.0	190	9.5	90.0	.5	247	11.3	88.3	.4	108	10.2	88.9	.9
48-59 months...	60	13.3	86.7	.0	184	14.7	85.3	.0	251	13.5	86.5	.0	86	19.8	80.2	.0
ALL AGES.....	281	11.7	86.5	1.8	953	9.5	86.5	4.0	1288	9.9	87.3	2.8	558	12.0	85.7	2.3

	TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months...	287	1.4	85.7	12.9
6-11 months...	380	3.7	90.3	6.1
12-17 months...	315	8.6	87.9	3.5
18-23 months...	327	13.8	82.9	3.4
24-35 months...	597	13.7	85.3	1.0
36-47 months...	590	10.2	89.3	.5
48-59 months...	581	14.8	85.2	.0
ALL AGES.....	3080	10.3	86.7	3.0

TABLE ADD 1.2: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE (s.d.e.v) BY ZONE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	72	4.2	84.7	11.1	86	.0	86.0	14.0	36	.0	83.3	16.7
6-11 months.....	88	3.4	88.6	8.0	119	4.2	94.1	1.7	45	2.2	91.1	6.7
12-17 months.....	62	4.8	90.3	4.8	72	8.3	88.9	2.8	43	9.3	86.0	4.7
18-23 months.....	71	12.7	78.9	8.5	86	16.3	80.2	3.5	55	10.9	89.1	.0
24-35 months.....	130	11.5	86.9	1.5	162	15.4	84.6	.0	73	19.2	79.5	1.4
36-47 months.....	122	7.4	92.6	.0	180	8.8	91.3	.0	64	15.6	84.4	.0
48-59 months.....	111	11.7	88.3	.0	166	15.7	84.3	.0	80	17.5	82.5	.0
ALL AGES.....	658	8.4	87.5	4.1	851	10.6	87.2	2.2	397	12.3	84.6	3.0

	OUTER ISL GOOD RESOURCES				OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	45	.0	88.9	11.1	48	2.1	85.4	12.5	287	1.4	85.7	12.9
6-11 months.....	76	2.8	88.2	9.2	52	5.8	86.5	7.7	380	3.7	90.3	6.1
12-17 months.....	87	11.5	87.4	1.1	51	7.8	86.3	5.9	315	8.6	87.9	3.5
18-23 months.....	63	11.1	87.3	1.6	52	17.3	80.8	1.9	327	13.8	82.9	3.4
24-35 months.....	127	12.6	86.6	.8	105	11.4	86.7	1.9	597	13.7	85.3	1.0
36-47 months.....	150	14.0	85.3	.7	94	6.4	91.5	2.1	590	10.2	89.3	.5
48-59 months.....	127	15.0	85.0	.0	97	14.4	85.6	.0	581	14.8	85.2	.0
ALL AGES.....	675	11.1	86.5	2.4	499	9.8	86.6	3.6	3080	10.3	86.7	3.0

ADD 1.3 : PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE (%wofa) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURC ES
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop
RAE.....	0	.0	.0	.0	281	11.7	88.5	1.8	0	.0	.0	.0	0
HNPEI.....	278	5.8	90.3	4.0	121	5.0	90.9	4.1	226	11.9	83.6	4.4	242
UK.....	205	8.8	87.8	3.4	351	8.5	88.9	2.6	166	13.3	85.5	1.2	320
.....	175	12.0	82.9	5.1	98	21.4	78.6	.0	5	.0	100.0	.0	113
TAL F.S.M.....	658	8.4	87.5	4.1	851	10.6	87.2	2.2	397	12.3	84.6	3.0	675

	OUTER ISL GOOD RESOURCES			OUTER ISL POOR RESOURCES			
	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
SRAE.....	.0	.0	.0	0	.0	.0	.0
HNPEI.....	15.3	83.5	1.2	86	5.8	83.7	10.5
UK.....	8.4	88.1	3.4	246	12.2	85.0	2.8
P.....	9.7	88.5	1.8	167	8.4	90.4	1.2
TAL F.S.M.....	11.1	86.5	2.4	499	9.8	86.6	3.6

TABLE ADD 2.1: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE (s.dev) BY STATE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE				POHNPEI				TRUK			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	24	.0	100.0	.0	88	3.4	88.6	8.0	118	.8	94.1	5.1
6-11 months.....	42	11.9	88.1	.0	105	3.8	88.6	7.6	161	5.6	90.1	4.3
12-17 months.....	30	33.3	63.3	3.3	108	20.4	75.9	3.7	121	8.3	90.9	.8
18-23 months.....	26	38.5	61.5	.0	98	28.6	68.4	3.1	128	28.9	68.8	2.3
24-35 months.....	46	43.5	56.5	.0	176	23.3	74.4	2.3	243	15.6	82.3	2.1
36-47 months.....	42	38.1	61.9	.0	184	38.0	60.3	1.6	240	26.7	72.1	1.3
48-59 months.....	60	35.0	65.0	.0	174	42.0	57.5	.6	241	23.7	76.3	.0
ALL AGES.....	270	30.4	69.3	.4	935	25.8	70.9	3.3	1252	17.3	80.8	2.0

	YAP				TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	55	1.8	98.4	1.8	285	1.8	93.3	4.9
6-11 months.....	66	7.6	87.9	4.5	374	6.1	89.0	4.8
12-17 months.....	58	22.4	75.9	1.7	317	17.4	80.4	2.2
18-23 months.....	61	24.6	72.1	3.3	313	28.8	68.7	2.6
24-35 months.....	108	13.0	81.5	5.6	573	19.7	77.7	2.6
36-47 months.....	103	27.2	67.0	5.8	569	31.3	66.6	2.1
48-59 months.....	78	20.5	79.5	.0	553	30.2	69.6	.2
ALL AGES.....	530	17.4	78.9	3.8	2987	21.1	76.3	2.6

TABLE ADD 2.2: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE (s.d.e.v) BY ZONE AND AGE GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	69	2.9	89.9	7.2	84	.0	97.6	2.4	38	.0	92.1	7.9	46	4.3	93.5	2.2
6-11 months.....	86	4.7	89.5	5.8	117	7.7	88.9	3.4	43	4.7	88.4	7.0	75	5.3	89.3	5.3
12-17 months.....	65	15.4	81.5	3.1	72	27.8	70.8	1.4	43	11.6	86.0	2.3	86	16.3	83.7	.0
18-23 months.....	69	20.3	75.4	4.3	81	34.6	63.0	2.5	58	30.4	67.9	1.8	59	32.2	67.8	.0
24-35 months.....	129	17.1	79.8	3.1	154	24.7	72.1	3.2	73	19.2	80.8	.0	122	19.7	78.7	1.6
36-47 months.....	121	22.3	76.0	1.7	156	34.0	64.7	1.3	62	27.4	71.0	1.6	140	39.3	59.3	1.4
48-59 months.....	104	25.0	75.0	.0	163	29.4	69.9	.6	77	39.0	61.0	.0	119	33.6	66.4	.0
ALL AGES.....	645	16.3	80.2	3.6	827	23.7	74.2	2.1	393	21.6	76.1	2.3	647	24.4	74.2	1.4

	OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	48	2.1	91.7	6.3	285	1.8	93.3	4.9
6-11 months.....	53	7.5	88.7	3.8	374	6.1	89.0	4.8
12-17 months.....	51	11.8	82.4	5.9	317	17.4	80.4	2.2
18-23 months.....	48	25.0	70.8	4.2	313	28.8	68.7	2.6
24-35 months.....	95	15.8	80.0	4.2	573	19.7	77.7	2.6
36-47 months.....	90	28.9	65.6	5.6	569	31.3	66.6	2.1
48-59 months.....	90	25.6	74.4	.0	553	30.2	69.6	.2
ALL AGES.....	475	18.3	77.7	4.0	2987	21.1	76.3	2.6

TABLE ADD 2.3: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE (s.dev) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
KOSRAE.....	0	.0	.0	.0	270	30.4	69.3	.4	0	.0	.0	.0	0	.0	.0	.0
POHNPEI.....	278	19.1	76.6	4.3	116	21.6	73.3	5.2	224	23.7	73.7	2.7	235	43.0	56.2	.9
TRUK.....	204	12.7	85.8	1.5	343	19.5	78.7	1.7	164	18.9	79.3	1.8	308	14.6	83.4	1.9
YAP.....	163	16.0	79.1	4.9	98	22.4	73.5	4.1	5	20.0	80.0	.0	104	11.5	87.5	1.0
TOTAL F.S.M.	645	16.3	80.2	3.6	827	23.7	74.2	2.1	393	21.6	76.1	2.3	647	24.4	74.2	1.4

	OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
KOSRAE.....	0	.0	.0	.0	270	30.4	69.3	.4
POHNPEI.....	82	11.0	82.9	6.1	935	25.8	70.9	3.3
TRUK.....	233	20.2	76.8	3.0	1252	17.3	80.8	2.0
YAP.....	160	19.4	76.3	4.4	530	17.4	78.9	3.8
TOTAL F.S.M.	475	18.3	77.7	4.0	2987	21.1	76.3	2.6

TABLE ADD 3.1: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT FOR AGE (s.dev) BY STATE AND
AGE GROUP, NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE				POHNPEI				TRUK				YAP
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop
0-5 months.....	21	.0	100.0	.0	83	1.2	86.7	12.0	108	.0	86.1	13.9	54
6-11 months.....	42	.0	92.9	7.1	98	.0	92.9	7.1	158	3.2	91.1	5.7	63
12-17 months.....	28	.0	96.4	3.6	107	2.8	90.7	6.5	112	2.7	97.3	.0	57
18-23 months.....	24	8.3	83.3	8.3	92	2.2	91.3	6.5	122	4.9	90.2	4.9	58
24-35 months.....	46	6.5	91.3	2.2	165	3.6	94.5	1.8	235	1.7	96.6	1.7	104
36-47 months.....	42	2.4	95.2	2.4	178	2.2	92.1	5.6	229	2.2	96.9	.9	100
48-59 months.....	56	.0	96.4	3.6	172	1.7	97.1	1.2	228	1.8	95.2	3.1	74
ALL AGES.....	259	2.3	93.8	3.9	897	2.1	92.8	5.1	1192	2.3	94.1	3.6	511

	YAP			TOTAL F.S.M			
	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	.0	92.6	7.4	266	.4	88.7	10.9
6-11 months.....	4.8	90.5	4.8	361	2.2	91.7	6.1
12-17 months.....	7.0	91.2	1.8	304	3.3	93.8	3.0
18-23 months.....	8.6	91.4	.0	296	5.1	90.2	4.7
24-35 months.....	2.9	97.1	.0	550	2.9	95.6	1.5
36-47 months.....	4.0	95.0	1.0	549	2.6	94.9	2.6
48-59 months.....	2.7	94.6	2.7	530	1.7	95.8	2.5
ALL AGES.....	4.1	93.7	2.2	2859	2.6	93.6	3.8

TABLE ADD 3.2: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT FOR AGE (s.dev) BY ZONE AND
AGE GROUP. NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	67	1.5	92.5	6.0	75	.0	90.7	9.3	34	.0	88.2	11.8	44	.0	86.4	13.6
6-11 months.....	82	3.7	90.2	6.1	114	.9	95.6	3.5	42	4.8	88.1	7.1	73	1.4	87.7	11.0
12-17 months.....	61	1.6	96.7	1.6	68	.0	98.5	1.5	41	7.3	82.9	9.8	85	3.5	94.1	2.4
18-23 months.....	66	3.0	90.9	6.1	74	8.1	87.8	4.1	53	3.8	90.6	5.7	57	1.8	94.7	3.5
24-35 months.....	122	1.6	96.7	1.6	151	4.6	94.0	1.3	70	5.7	90.0	4.3	117	1.7	97.4	.9
36-47 months.....	115	2.6	94.8	2.6	150	2.7	95.3	2.0	58	3.4	91.4	5.2	137	1.5	96.4	2.2
48-59 months.....	103	1.0	96.1	2.9	150	.7	94.7	4.7	73	2.7	97.3	.0	117	2.6	95.7	1.7
ALL AGES.....	618	2.1	94.2	3.7	782	2.4	94.1	3.5	372	4.0	90.6	5.4	630	1.9	94.3	3.8

	OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
0-5 months.....	46	.0	82.6	17.4	266	.4	88.7	10.9
6-11 months.....	50	2.0	94.0	4.0	361	2.2	91.7	6.1
12-17 months.....	49	6.1	91.8	2.0	304	3.3	93.8	3.0
18-23 months.....	46	8.7	87.0	4.3	296	5.1	90.2	4.7
24-35 months.....	90	1.1	98.9	.0	550	2.9	95.6	1.5
36-47 months.....	89	3.4	94.4	2.2	549	2.6	94.9	2.6
48-59 months.....	87	2.3	96.6	1.1	530	1.7	95.8	2.5
ALL AGES.....	457	3.1	93.4	3.5	2859	2.6	93.6	3.8

TABLE ADD 3.3: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT FOR AGE (s.dev) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN				MAIN ISL RURAL COASTAL				MAIN ISL RURAL INLAND				OUTER ISL GOOD RESOURCES			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
KOSRAE.....	0	.0	.0	.0	259	2.3	93.8	3.9	0	.0	.0	.0	0	.0	.0	.0
POHNPEI.....	266	1.1	95.1	3.8	109	1.8	94.5	3.7	212	2.8	90.6	6.6	233	2.1	93.6	4.3
TRUK.....	191	1.6	94.2	4.2	320	1.3	95.0	3.8	155	5.8	90.3	3.9	298	2.0	94.6	3.4
YAP.....	161	4.3	92.5	3.1	94	7.4	91.5	1.1	5	.0	100.0	.0	99	1.0	94.9	4.0
TOTAL F.S.M.	618	2.1	94.2	3.7	782	2.4	94.1	3.5	372	4.0	90.6	5.4	630	1.9	94.3	3.8

	OUTER ISL POOR RESOURCES				TOTAL F.S.M			
	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE	pop	-2 OR LESS	-1.9 TO +1.9	+2 AND ABOVE
KOSRAE.....	0	.0	.0	.0	259	2.3	93.8	3.9
POHNPEI.....	77	3.9	85.7	10.4	897	2.1	92.8	5.1
TRUK.....	228	2.2	94.7	3.1	1192	2.3	94.1	3.6
YAP.....	152	3.9	95.4	.7	511	4.1	93.7	2.2
TOTAL F.S.M.	457	3.1	93.4	3.5	2859	2.8	93.6	3.8

TABLE ADD 4.1: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (S.DEV.) BY STATE AND AGE/GROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	KOSRAE					POHNPEI					TRUK				
	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED
0-5 months.....	21	100.0	.0	.0	.0	83	95.2	1.2	3.6	.0	108	99.1	.0	.9	.0
6-11 months.....	42	88.1	.0	11.9	.0	98	96.9	.0	3.1	.0	158	91.8	2.5	5.1	.6
12-17 months.....	28	64.3	.0	35.7	.0	107	76.6	2.8	20.6	.0	112	88.4	2.7	8.9	.0
18-23 months.....	24	58.3	4.2	33.3	4.2	92	68.5	2.2	29.3	.0	122	65.6	4.1	29.5	.8
24-35 months.....	46	52.2	4.3	41.3	2.2	165	71.5	3.6	24.8	.0	235	82.1	1.7	16.2	.0
36-47 months.....	42	59.5	2.4	38.1	.0	178	60.7	1.7	37.1	.6	229	71.2	1.7	26.6	.4
48-59 months.....	56	64.3	.0	35.7	.0	172	57.0	1.7	41.3	.0	228	74.6	1.3	23.7	.4
ALL AGES.....	259	67.6	1.5	30.1	.8	897	71.9	2.0	26.0	.1	1192	80.3	1.9	17.4	.3

	YAP					TOTAL F.S.M				
	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED
0-5 months.....	54	98.1	.0	1.9	.0	266	97.7	.4	1.9	.0
6-11 months.....	63	88.9	3.2	6.3	1.6	361	92.2	1.7	5.5	.6
12-17 months.....	57	70.2	7.0	22.8	.0	304	78.6	3.3	18.1	.0
18-23 months.....	58	69.0	5.2	22.4	3.4	296	66.6	3.7	28.4	1.4
24-35 months.....	104	83.7	2.9	13.5	.0	550	76.7	2.7	20.4	.2
36-47 months.....	100	68.0	4.0	28.0	.0	549	66.3	2.2	31.1	.4
48-59 months.....	74	75.7	2.7	21.6	.0	530	67.9	1.5	30.4	.2
ALL AGES.....	511	78.5	3.5	17.4	.6	2859	76.2	2.2	21.3	.3

(*) See section 2.6 for definition of Waterlow index

TABLE ADD 4.2:PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (S.DEV.) BY ZONE AND AGEGROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN					MAIN ISL RURAL COASTAL					MAIN ISL RURAL INLAND				
	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED
0-5 months.....	67	95.5	1.5	3.0	.0	75	100.0	.0	.0	.0	34	100.0	.0	.0	.0
6-11 months.....	82	92.7	2.4	3.7	1.2	114	91.2	.9	7.9	.0	42	92.9	4.8	2.4	.0
12-17 months.....	61	82.0	1.6	16.4	.0	68	70.6	.0	29.4	.0	41	80.5	7.3	12.2	.0
18-23 months.....	66	75.8	3.0	21.2	.0	74	59.5	5.4	32.4	2.7	53	64.2	3.8	32.1	.0
24-35 months.....	122	80.3	1.6	18.0	.0	151	70.9	4.0	24.5	.7	70	74.3	5.7	20.0	.0
36-47 months.....	115	75.7	2.6	21.7	.0	150	63.3	2.7	34.0	.0	58	69.0	3.4	27.6	.0
48-59 months.....	103	73.8	1.0	25.2	.0	150	69.3	.7	30.0	.0	73	58.9	1.4	38.4	1.4
ALL AGES.....	618	81.4	1.9	16.5	.2	782	73.8	2.0	23.8	.4	372	74.2	3.8	21.8	.3

TABLE ADD 4.2:PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (S.DEV.) BY ZONE AND AGEGROUP
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	OUTER ISL GOOD RESOURCES					OUTER ISL POOR RESOURCES					TOTAL F.S.M				
	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED
0-5 months.....	44	95.5	.0	4.5	.0	46	97.8	.0	2.2	.0	266	97.7	.4	1.9	.0
6-11 months.....	73	93.2	1.4	5.5	.0	50	92.0	.0	6.0	2.0	361	92.2	1.7	5.5	.6
12-17 months.....	85	80.0	3.5	16.5	.0	49	81.6	6.1	12.2	.0	304	78.6	3.3	18.1	.0
18-23 months.....	57	66.7	.0	31.6	1.8	46	67.4	6.5	23.9	2.2	296	66.6	3.7	28.4	1.4
24-35 months.....	117	77.8	1.7	20.5	.0	90	82.2	1.1	16.7	.0	550	76.7	2.7	20.4	.2
36-47 months.....	137	59.1	.7	39.4	.7	89	68.5	2.2	28.1	1.1	549	66.3	2.2	31.1	.4
48-59 months.....	117	53.2	2.6	34.2	.0	87	72.4	2.3	25.3	.0	530	67.9	1.5	30.4	.2
ALL AGES.....	630	73.3	1.6	24.8	.3	457	78.8	2.4	18.2	.7	2859	76.2	2.2	21.3	.3

(*) See section 2.6 for definition of Waterlow index .

TABLE ADD 4.3: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WATERLOW INDEX (*) (S.DEV.) BY STATE AND ZONE
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	MAIN ISLAND URBAN					MAIN ISL RURAL COASTAL					MAIN ISL RURAL INLAND				
	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED
KOSRAE.....	0	.0	.0	.0	.0	259	67.6	1.5	30.1	.8	0	.0	.0	.0	.0
POHNPEI.....	266	79.7	1.1	19.2	.0	109	77.1	1.8	21.1	.0	212	73.6	2.8	23.6	.0
TRUK.....	191	84.8	1.6	13.6	.0	320	78.8	1.3	20.0	.0	155	74.8	5.2	19.4	.6
YAP.....	161	80.1	3.7	15.5	.6	94	70.2	6.4	22.3	1.1	5	80.0	.0	20.0	.0
TOTAL F.S.M.....	618	81.4	1.9	16.5	.2	782	73.8	2.0	23.8	.4	372	74.2	3.8	21.8	.3

	OUTER ISL GOOD RESOURCES					OUTER ISL POOR RESOURCES					TOTAL F.S.M				
	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED	pop	NORMAL	WASTED -ACUTE	STUNTE D	STUNTE D+WAST ED
KOSRAE.....	0	.0	.0	.0	.0	0	.0	.0	.0	.0	259	67.6	1.5	30.1	.8
POHNPEI.....	233	54.9	1.7	42.9	.4	77	84.4	3.9	11.7	.0	897	71.9	2.0	26.0	.1
TRUK.....	298	83.2	1.7	14.8	.3	228	78.5	1.3	19.3	.9	1192	80.3	1.9	17.4	.3
YAP.....	99	86.9	1.0	12.1	.0	152	76.3	3.3	19.7	.7	511	78.5	3.5	17.4	.6
TOTAL F.S.M.....	630	73.3	1.6	24.8	.3	457	78.8	2.4	18.2	.7	2859	76.2	2.2	21.3	.3

(*) See section 2.6 for definition of Waterlow index

TABLE ADD 5.1: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
 BY WHO/NCHS STANDARDS FOR WEIGHT FOR AGE BY AGEGROUP IN PERCENTILES
 NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	pop	0 to 9th	10 to 19th	20 to 29th	30 to 39th	40 to 49th	50 to 59th	60 to 69th	70 to 79th	80 to 89th	90 to 100th
0-5 months...	287	2.8	2.8	3.5	4.2	10.5	7.3	8.7	10.8	15.4	33.1
6-11 months...	380	13.2	10.5	10.0	12.9	7.4	7.1	6.3	10.3	7.6	14.7
12-17 months...	315	26.7	14.3	15.2	10.5	6.7	5.7	5.4	2.5	6.0	6.0
18-23 months...	327	39.4	15.6	8.9	8.9	5.2	3.4	3.1	2.1	6.7	6.7
24-35 months...	597	32.2	16.8	11.2	9.5	7.2	6.5	4.5	3.7	3.9	4.5
36-47 months...	590	33.4	16.8	11.5	10.0	6.9	6.9	5.3	2.9	3.6	2.7
48-59 months...	581	36.0	16.7	11.9	8.3	7.2	7.2	4.6	4.5	2.2	1.4
ALL AGES.....	3080	28.2	14.3	10.8	9.3	7.2	6.5	5.2	4.9	5.6	8.0

TABLE ADD 5.2: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR HEIGHT FOR AGE BY AGEGROUP IN PERCENTILES
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	pop	0 to 9th	10 to 19th	20 to 29th	30 to 39th	40 to 49th	50 to 59th	60 to 69th	70 to 79th	80 to 89th	90 to 100th
0-5 months...	285	10.5	8.1	7.7	10.5	11.2	10.2	10.5	10.9	8.8	11.6
6-11 months...	374	21.7	14.2	13.1	10.2	7.5	8.6	4.8	4.8	5.9	9.4
12-17 months...	317	37.5	16.1	10.4	9.1	8.2	5.0	5.7	1.6	1.6	4.7
18-23 months...	313	55.9	13.4	7.0	6.1	3.5	2.2	2.6	3.2	1.9	4.2
24-35 months...	573	46.4	15.4	10.6	7.5	3.3	4.0	1.9	2.8	2.8	5.2
36-47 months...	569	52.1	13.0	9.0	4.8	3.7	2.5	1.2	2.3	1.4	3.0
48-59 months...	553	55.5	15.7	8.1	6.3	5.1	4.5	1.4	1.8	.9	.5
ALL AGES.....	2987	44.0	14.0	9.5	7.4	5.5	4.9	3.3	3.4	2.9	5.0

TABLE ADD 5.3: PREVALENCE OF MALNUTRITION (in %) IN CHILDREN 0-4 YEARS
BY WHO/NCHS STANDARDS FOR WEIGHT FOR HEIGHT BY AGEGROUP IN PERCENTILES
NATIONAL NUTRITION SURVEY, FEDERATED STATES OF MICRONESIA, 1987-88.

	pop	0 to 9th	10 to 19th	20 to 29th	30 to 39th	40 to 49th	50 to 59th	60 to 69th	70 to 79th	80 to 89th	90 to 100th
0-5 months...	266	1.9	3.4	2.3	6.8	6.0	9.4	12.8	14.3	14.7	26.6
6-11 months...	361	4.4	5.0	7.8	10.5	7.8	10.8	13.3	9.1	13.3	18.0
12-17 months...	304	13.2	7.2	7.2	11.2	12.5	5.2	12.5	8.2	7.9	10.9
18-23 months...	296	16.6	8.1	14.5	10.1	10.5	7.8	7.8	6.1	7.4	11.1
24-35 months...	550	11.5	9.1	10.4	8.9	11.8	14.5	11.1	9.1	7.5	6.2
36-47 months...	549	6.7	6.9	8.2	10.9	8.4	11.1	14.0	13.8	9.8	10.0
48-59 months...	530	8.9	7.4	6.8	10.4	12.1	10.6	13.2	13.0	9.2	8.5
ALL AGES.....	2859	9.0	7.0	8.3	9.9	10.1	10.9	12.3	10.8	9.7	12.0

TABLE ADD 6.1: PREGNANCY HISTORY OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND STATE:
FSH NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	CHILDREN ALIVE												CHILDREN DIED				
	0		1		2		3		4		≥5		0		1		≥2
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
KOSRAE																	
15-19...	77	89.5	9	10.5	0	.0	0	.0	0	.0	0	.0	86	100.0	0	.0	0
20-29...	48	39.0	22	17.9	26	22.8	13	10.6	8	6.5	4	3.3	116	94.3	7	5.7	0
30-39...	12	10.6	7	6.2	10	8.8	9	8.0	13	11.5	62	54.9	96	85.0	13	11.5	4
40-49...	3	5.7	3	5.7	1	1.9	1	1.9	2	3.8	43	81.1	39	73.6	13	24.5	1
POHNPEI																	
15-19...	199	79.9	38	15.3	8	3.2	3	1.2	0	.0	1	.4	242	97.2	6	2.4	1
20-29...	95	20.4	99	21.2	109	23.4	82	17.6	46	9.9	35	7.5	416	89.3	42	9.0	8
30-39...	25	6.3	16	4.5	42	10.5	55	13.8	66	16.5	194	48.5	284	71.0	94	23.5	22
40-49...	9	4.8	10	5.3	12	6.4	12	6.4	14	7.4	131	69.7	110	58.5	54	28.7	24
TRUK																	
15-19...	277	91.4	19	6.3	5	1.7	1	.3	0	.0	1	.3	299	98.7	4	1.3	0
20-29...	161	30.3	98	18.4	82	15.4	63	11.8	57	10.7	71	13.3	455	85.5	66	12.4	11
30-39...	31	7.5	17	4.1	35	8.5	37	9.0	53	12.9	239	58.0	267	64.8	105	25.5	40
40-49...	14	7.1	8	4.1	2	1.0	12	6.1	12	6.1	148	75.5	104	53.1	58	29.6	34
YAP																	
15-19...	176	83.8	29	13.8	4	1.9	0	.0	1	.5	0	.0	208	99.0	2	1.0	0
20-29...	89	27.1	84	25.6	66	20.1	40	12.2	28	8.5	21	6.4	302	92.1	22	6.7	4
30-39...	22	9.2	16	6.7	25	10.5	34	14.2	37	15.5	105	43.9	185	77.4	40	16.7	14
40-49...	6	6.3	4	4.2	5	5.2	5	5.2	8	6.3	70	72.9	65	67.7	20	20.8	11

TABLE ADD 6.1: PREGNANCY HISTORY OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	CHILDREN DIED	STILLBIRTH								MISCARRIAGES								
		≥2	0		1		2		≥3		0		1		2		≥3	
			%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
LOSRAE																		
15-19...	.0	86	100.0	0	.0	0	.0	0	.0	84	97.7	2	2.3	0	.0	0	.0	
20-29...	.0	120	97.6	3	2.4	0	.0	0	.0	109	88.6	10	8.1	3	2.4	1	.8	
30-39...	3.5	106	93.8	5	4.4	1	.9	1	.9	77	68.1	21	18.6	8	7.1	7	6.2	
40-49...	1.9	50	94.3	3	5.7	0	.0	0	.0	30	56.6	17	32.1	5	9.4	1	1.9	
FOHNPEI																		
15-19...	.4	249	100.0	0	.0	0	.0	0	.0	248	99.6	1	.4	0	.0	0	.0	
20-29...	1.7	443	95.1	20	4.3	3	.6	0	.0	416	89.3	41	8.8	6	1.3	3	.6	
30-39...	5.5	372	93.0	22	5.5	3	.8	3	.8	328	82.0	47	11.8	19	4.8	5	1.3	
40-49...	12.8	166	88.3	17	9.0	4	2.1	1	.5	145	77.1	24	12.8	11	5.9	7	3.7	
TRUK																		
15-19...	.0	303	100.0	0	.0	0	.0	0	.0	303	100.0	0	.0	0	.0	0	.0	
20-29...	2.1	506	95.1	22	4.1	4	.8	0	.0	493	92.7	32	6.0	4	.8	2	.4	
30-39...	9.7	371	90.0	30	7.3	7	1.7	4	1.0	322	78.2	57	13.8	18	4.4	15	3.6	
40-49...	17.3	168	85.7	14	7.1	7	3.6	7	3.6	128	65.3	34	17.3	15	7.7	18	9.2	
YAP																		
15-19...	.0	210	100.0	0	.0	0	.0	0	.0	207	98.6	3	1.4	0	.0	0	.0	
20-29...	1.2	320	97.6	8	2.4	0	.0	0	.0	292	89.0	26	7.9	8	2.4	2	.6	
30-39...	5.9	226	94.6	11	4.6	1	.4	1	.4	188	78.7	35	14.6	9	3.8	7	2.9	
40-49...	11.5	91	94.8	5	5.2	0	.0	0	.0	64	66.7	18	18.8	4	4.2	10	10.4	

TABLE ADD 6.1: PREGNANCY HISTORY OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND STATE.
FSH NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	MISCARRIAGES						TOTAL PREGNANCIES										
	7		8		10		0		1		2		3		4		5
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
KOSRAE																	
15-19...	0	.0	0	.0	0	.0	77	89.5	7	8.1	2	2.3	0	.0	0	.0	0
20-29...	0	.0	0	.0	0	.0	43	35.0	25	20.3	21	17.1	15	12.2	11	8.9	5
30-39...	0	.0	0	.0	0	.0	11	9.7	5	4.4	7	6.2	10	8.8	10	8.8	9
40-49...	0	.0	0	.0	0	.0	1	1.9	4	7.5	0	.0	2	3.8	2	3.8	3
POHNPEI																	
15-19...	0	.0	0	.0	0	.0	195	78.3	38	15.3	10	4.0	5	2.0	0	.0	0
20-29...	0	.0	0	.0	0	.0	83	17.8	80	17.2	111	23.8	85	18.2	49	10.5	30
30-39...	1	.3	0	.0	0	.0	22	5.5	17	4.3	29	7.3	37	9.3	52	13.0	71
40-49...	0	.0	1	.5	0	.0	7	3.7	6	3.2	10	5.3	10	5.3	8	4.3	11
TRUK																	
15-19...	0	.0	0	.0	0	.0	276	91.1	17	5.6	8	2.6	1	.3	0	.0	0
20-29...	0	.0	1	.2	0	.0	149	28.0	90	16.9	73	13.7	61	11.5	62	11.7	47
30-39...	0	.0	0	.0	0	.0	29	7.0	14	3.4	27	6.6	29	7.0	36	8.7	42
40-49...	0	.0	0	.0	1	.5	9	4.6	7	3.6	3	1.5	8	4.1	10	5.1	9
YAP																	
15-19...	0	.0	0	.0	0	.0	173	82.4	30	14.3	6	2.9	0	.0	1	.5	0
20-29...	0	.0	0	.0	0	.0	80	24.4	75	22.9	73	22.3	35	10.7	27	8.2	21
30-39...	0	.0	0	.0	0	.0	20	8.4	13	5.4	17	7.1	23	9.6	41	17.2	21
40-49...	0	.0	0	.0	0	.0	6	6.3	3	3.1	4	4.2	3	3.1	6	6.3	9

TABLE ADD 6.1: PREGNANCY HISTORY OF ADULT FEMALES
15-49 YEARS OLD BY AGE GROUP AND STATE.
FSM NATIONAL NUTRITION SURVEY 1987-88.

AGE GROUP	TOTAL PREGNANCIES		
	5	>=6	
	%	N	%
KOSRAE			
15-19...	.0	0	.0
20-29...	4.1	3	2.4
30-39...	8.0	61	54.0
40-49...	5.7	41	77.4
POHNPEI			
15-19...	.0	1	.4
20-29...	6.4	28	6.0
30-39...	17.8	172	43.0
40-49...	5.9	136	72.3
TRUK			
15-19...	.0	1	.3
20-29...	8.8	50	9.4
30-39...	10.2	235	57.0
40-49...	4.6	150	76.5
YAP			
15-19...	.0	0	.0
20-29...	6.4	17	5.2
30-39...	8.8	104	43.5
40-49...	9.4	65	67.7

