




# POVERTY PROFILE OF THE FEDERATED STATES OF MICRONESIA

BASED ON THE 2013-14  
HOUSEHOLD INCOME AND  
EXPENDITURE SURVEY

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HOUSEHOLD INCOME AND  
EXPENDITURE SURVEY

OCTOBER 2017  
TECHNICAL REPORT



**WORLD BANK GROUP**

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# INTRODUCTION

This report presents the poverty profile of the Federated States of Micronesia based on the 2013/14 Household Income and Expenditure Survey (HIES) conducted by the government of the Federated States of Micronesia (FSM) over July, 2013 – July, 2014.

Two key questions are addressed in this report:

- Who are the poor and how are they distributed across the states of FSM?
- What are the general characteristics of people living in poverty in FSM?

# HIES 2013/14

The 2013/14 HIES collected a wide array of information on the living conditions of the FSM population including household consumption expenditures, household demographics, household assets, and education and health status of household members. Technical assistance in the design and implementation of the 2013/14 HIES was provided by the South Pacific Community. Details on survey design can be found in the HIES Report.<sup>1</sup>

## SAMPLE DESIGN

The 2013/14 HIES used the sample frame from the 2010 census and was designed to generate statistically valid estimates at the State level. Each state, except Kosrae, was stratified into three strata based on accessibility to services and facilities, and the sample size for the state

was allocated to these strata in proportion to the population in each stratum. Within each stratum, Primary Sampling Units (PSUs) were chosen based on Probability Proportional to Size (PPS), and 10 households were randomly chosen from each selected PSU. Further details on sampling design are available in the methodological report.<sup>2</sup>

While data was collected from a total of 1,664 households, 16 households had to be removed from this assessment due to the absence of records on food consumption. The sample size used in this assessment is therefore 1,648 households and sampling weights used in generating estimates were adjusted accordingly.

Table 1: FSM HIES 2013/14 sample used for poverty assessment

State	Households	Persons
Yap	353	1,735
Chuuk	572	4,101
Pohnpei	524	3,049
Kosrae	199	1,050
<b>FSM</b>	<b>1,648</b>	<b>9,935</b>

<sup>1</sup> Government of FSM Statistics Division (2014). Household Income and Expenditure Survey 2013/14 Main Analysis Report, FSM government.

<sup>2</sup> Statistics Division (2014). Household Income and Expenditure Survey 2013/14 Methodological Report, FSM government.

## SURVEY INSTRUMENTS

Interviews for the household survey were conducted from July 11, 2013 to July 10, 2014. Data was elicited using two types of survey instruments: diaries self-recorded by households, and recall-based information collected by interviewers.

### Diaries

Over a period of 14 consecutive days, sampled household members directly recorded daily acquisitions of goods and services from the market, foods consumed from home production, and gifts given and received. Households were required to record quantity, unit, and total monetary amount of each transaction. Food

consumption was captured only in the diaries, while non-food purchases and payments for services were also recorded in the recall modules.

The figure below shows the number of transactions recorded in the diaries over the two week period. The number of reported transactions typically fell from the start to the end of each week.

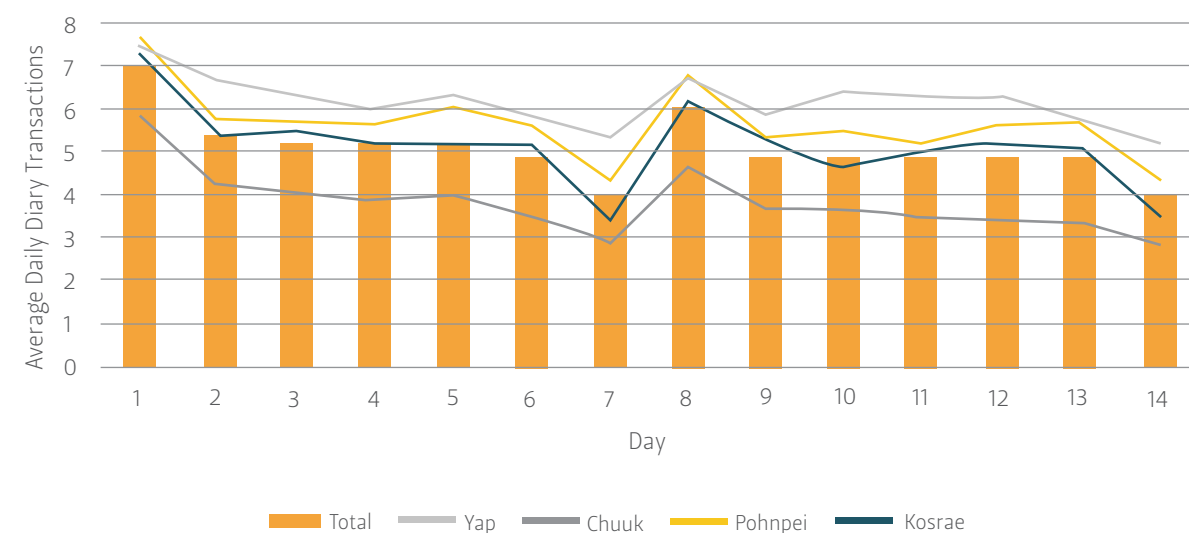
### Recall Modules

The survey contained four recall modules: (i) demography, (ii) household expenditures, (iii) individual expenditures, and (iv) income earnings. A summary of topics included in each module is provided in Table 2.

Table 2: Survey components by module

NO	MODULE	LABEL
1	DEMOGRAPHICS	Age, sex, and relationship profile of household members Labor-force status of household members Educational and health status of household members Information household members who left the household
2	HOUSEHOLD CHARACTERISTICS AND EXPENDITURES	Housing characteristics and rental information Utilities and communication Household assets Vehicles and accessories Travel expenses Household services Contributions to special occasions Provisions of financial support Loans Insurance and taxes
3	INDIVIDUAL EXPENDITURES	Education expenses Health expenses Clothing expenses Communication expenses
4	INCOME	Wages and salaries Non-subsistence business Agricultural and forestry activities Handicraft and home-processed foods Livestock and aquaculture Property income, transfer income and other receipts Remittances and other cash gifts

Figure 1: Average number of transactions per day per household by state



Source: FSM HIES 2013/14 dataset.



# POVERTY MEASUREMENT METHODOLOGY

The principal welfare indicator used for this assessment is total consumption expenditure per adult-equivalent<sup>3</sup>. A household is considered poor if its total consumption expenditure per adult-equivalent is below the poverty line.

Two poverty lines are specified using the Cost of Basic Needs (CBN) methodology. The food poverty line is the minimum expenditure needed to acquire recommended calorie intake using the food basket actually consumed by the poorer groups (bottom 40%) in the FSM. The total poverty line is computed by adding to the food poverty line an allowance for essential non-food expenditures.

Key steps used in determining poverty status are as follows:

## 01

Household consumption is defined as the total annualized value of all food and non-food items consumed, including estimated values of non-purchased items such as those produced by the household or received in kind as gifts.

## 02

The food poverty line is anchored to a daily intake of 2,565 Kcal per adult equivalent.<sup>4</sup>

## 03

To compute the initial food poverty line for each state, the typical food basket of households belonging to the bottom 40% when ranked by nominal per adult-equivalent total expenditures nationally is considered as the reference food basket. The basket is then scaled up to yield 2,565 Kcal a day per adult equivalent and priced out for each state using the state's median unit prices for the various foods included in the food basket.

## 04

A non-food allowance is then added to the food poverty line to obtain the total poverty line. This allowance is equal to the average non-food expenditures of households who have food expenditures equal to or near the food poverty line.

## 05

With the computed poverty lines, three main sets of poverty measures are calculated: (i) poverty headcount index denoting the percentage of population below the poverty lines; (ii) poverty gap index to gauge the depth of poverty; and (iii) squared poverty gap index to measure the severity of poverty.

# ESTIMATES OF POVERTY INCIDENCE

## NATIONAL-LEVEL OUTCOMES

In FSM, meeting essential caloric needs requires an average of \$US1.84 per adult per day; meeting both food and non-food basic needs requires on average \$US4.34 per day.

At the national level, the average daily cost of food needed to obtain recommended calories for an adult is \$US1.84 (Table 3). The national value denotes the weighted average of food poverty lines in the four states.

Likewise, the total poverty line which includes a non-food allowance is \$US4.34 per day at the national level.

Table 3: National poverty line

	Food Poverty Line (Daily per adult equivalent)	Total Poverty line (Daily per adult equivalent)	Ratio of Food to Non-food cost in the Total Poverty Line	Food Poverty Line (Annual per adult equivalent)	Total Poverty Line (Annual per adult equivalent)
National Average	\$1.84	\$4.34	42:58	\$670.6	\$1,583.9

As is shown in Figure 2, FSM's national total poverty line is significantly higher than the World Bank's \$1.9 (2011 PPP) extreme international poverty line, equivalent to about \$2.00 in 2013 prices. While the food poverty line is relatively close to the international extreme poverty line, the national total poverty line is almost 80% higher.<sup>5</sup>

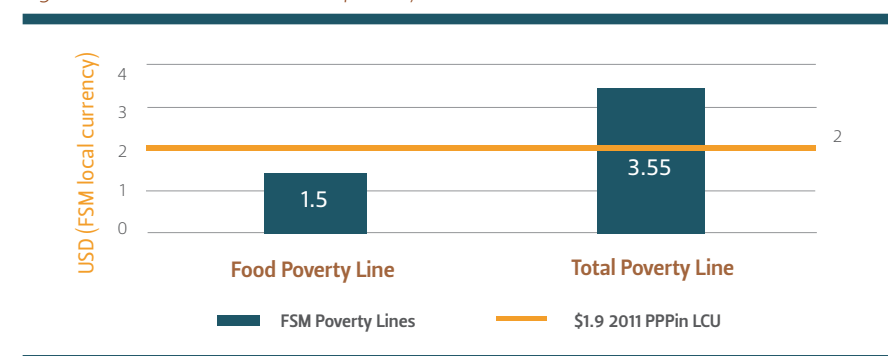
While only one out of 10 people in the FSM lives below the food poverty line, more than 40 people out of 100 live below the total poverty line.

<sup>3</sup> A child below the age of 15 is counted as half (0.5) an adult.

<sup>4</sup> The minimum daily requirement per capita is 2,100Kcal. This was adjusted to per adult equivalent basis. See Annex 1 for more details.

<sup>5</sup> Since the international line is specified on a per capita basis, the adult-equivalent-based FSM poverty lines are adjusted to per capita terms using the ratio between the average number of persons per household and average adult-equivalents per household, both at the national level. Thus poverty line per capita = poverty line per adult equivalent (\$4.34) \* (Average adult-equivalent per household (7.03) ÷ Average number of persons per household (8.58)).

Figure 2: FSM and international poverty lines



At the national level, about 10% of the people in FSM spend below what is needed to secure a minimal health diet. When both food and non-foods are considered, 41.2% of the population live below the total poverty line. The poverty gap index, which indicates the extent to which average adult-equivalent expenditures fall short of the poverty lines, is estimated at 3.6% at the food poverty line and 15.1% at the total poverty line.

Table 4: National poverty measures

	Headcount (Incidence)	Poverty Gap (Depth)	Squared Poverty Gap (Severity)
Food Poverty Line	9.9%	3.6%	2.1%
Total Poverty Line	41.2%	15.1%	7.9%

STATE-WISE POVERTY LINES AND POVERTY INCIDENCE

Food poverty lines are quite similar across Chuuk, Pohnpei, and Kosrae, but higher in Yap. Pohnpei's and Yap's total poverty lines are higher than in other states.

Except for Yap, all FSM states have similar food poverty lines (Table 5), meaning that the expenditure needed to meet the minimum calorie intake is almost the same despite differences in food prices. That is however not the case when the total poverty line is considered, as the cost of meeting non-food goods/services is higher in more urbanized states. The total poverty line is highest in Pohnpei at \$ 5.41

followed by \$5.11 in Yap. Both are substantially higher than in Chuuk (\$3.33).

Poverty incidence is higher and more severe in Pohnpei and Chuuk than in Yap and Kosrae.

Generally, poverty is most severe in Chuuk: With more than 16% living below the food poverty line, Chuuk primarily drives FSM's overall food poverty rate. Further, Chuuk's food poverty gap index (6.8%), and its food poverty severity index (4.1%) are much higher than elsewhere. No Kosrae household lives below the food poverty line, and food poverty in Yap and Pohnpei are 10% and 2.6% respectively. The fact that poverty is relatively higher in Chuuk even when the poverty line is the lowest there implies that incomes are lower in Chuuk than elsewhere.

Figure 3 shows the overall distribution of welfare levels by state. The cumulative density curve is bounded on the top by Chuuk and at the bottom by Kosrae, confirming generally lower levels of consumption in Chuuk and generally higher levels of consumption in Kosrae. In between are Yap and Pohnpei whose density curves overlap substantially.

The 95% confidence bands for the state-level poverty estimates (Figure 4) indicate significant overlaps between Yap, Chuuk and Pohnpei, but not with Kosrae. Poverty rate in Kosrae is significantly lower than the other states ( $p < 0.01$ ).

Table 5: State-wise poverty lines

State	Food Poverty Line (Daily per adult equivalent)	Share of Non-food Cost in Total Poverty Line	Total Poverty Line (Daily per adult equivalent)	Food Poverty Line (Annual per adult equivalent)	Total Poverty Line (Annual per adult equivalent)
Yap	\$2.46	51.95%	\$5.11	\$896.3	\$1,865.3
Chuuk	\$1.72	48.37%	\$3.33	\$628.1	\$1,216.6
Pohnpei	\$1.80	66.81%	\$5.41	\$655.2	\$1,974.0
Kosrae	\$1.80	58.92%	\$4.39	\$657.6	\$1,600.8

Table 6: State-wise poverty measures

INDEX	Food Poverty Line			Total Poverty Line		
	Headcount (Incidence)	Poverty Gap (Depth)	Squared Poverty Gap (Severity)	Headcount (Incidence)	Poverty Gap (Depth)	Squared Poverty Gap (Severity)
Yap	10.0%	2.4%	0.9%	39.4%	14.3%	6.9%
Chuuk	16.6%	6.8%	4.1%	45.5%	17.7%	10.2%
Pohnpei	2.6%	0.5%	0.1%	39.2%	13.4%	6.2%
Kosrae	0.0%	0.0%	0.0%	21.0%	5.2%	1.6%

Figure 3: Cumulative distribution of welfare (deflated to Pohnpei prices)

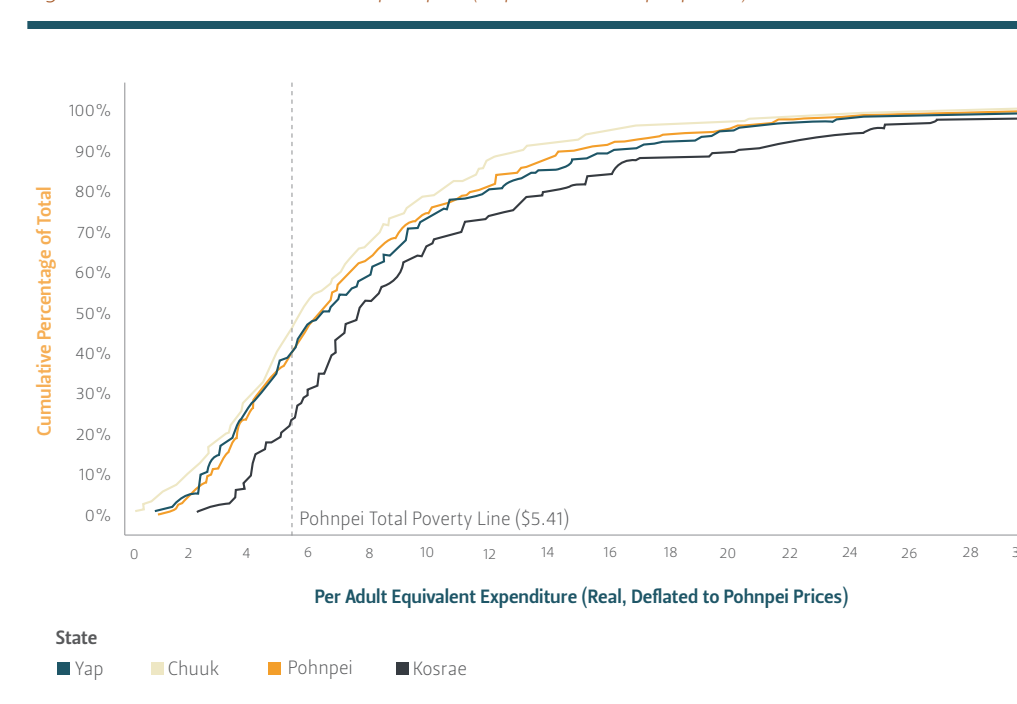
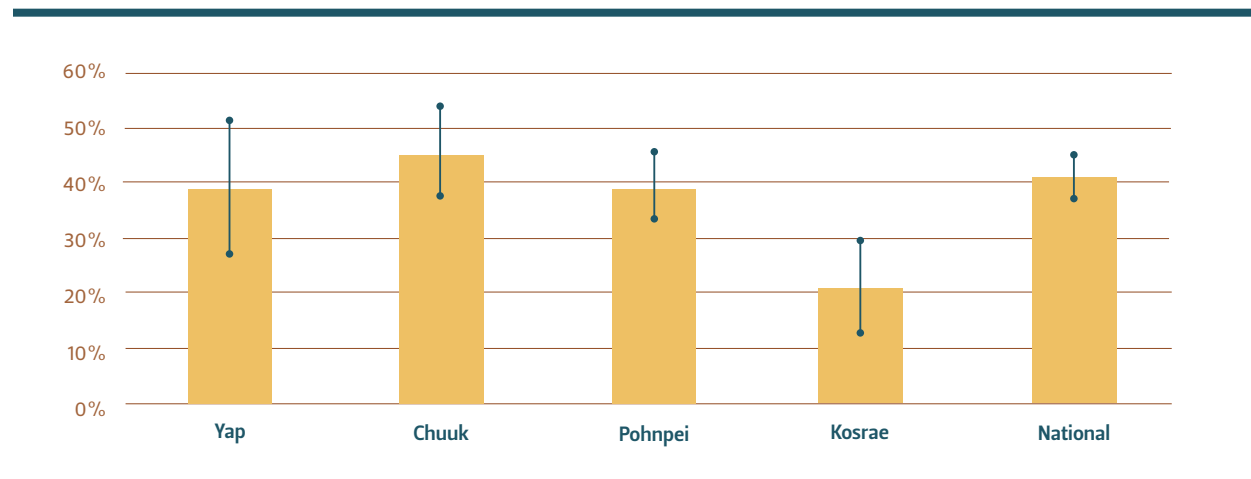


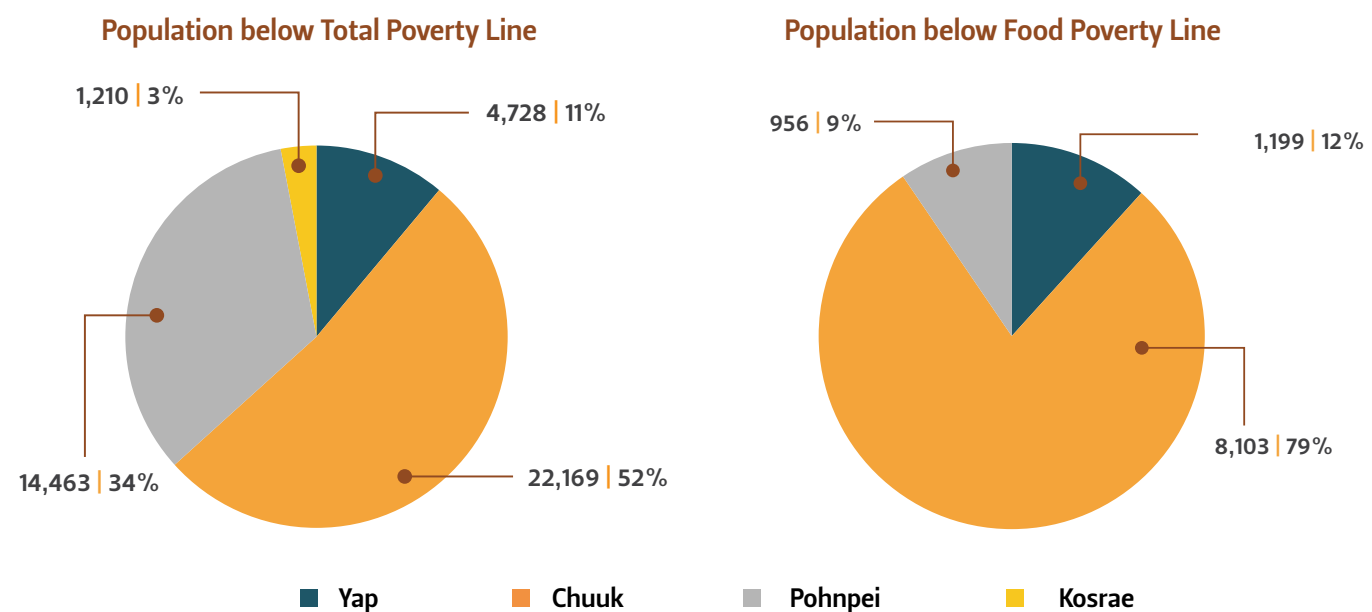
Figure 4: State-wise poverty rates (with 95% confidence interval bands)



In terms of actual numbers, the majority of the poor live in Chuuk and Pohnpei.

The pie charts in Figure 5 illustrate the distribution of the actual number of the poor across states. Chuuk contains nearly half of all the poor in FSM, and the two states of Chuuk and Pohnpei account for around 86% of the total population below the total poverty line. By itself, Chuuk accounts for 79% of the nation's extreme poor that live below the food poverty line. By contrast, only about 3% of the country's poor live in Kosrae.

Figure 5: Distribution of the poor population



The pattern of inequality is quite similar across states.

Table 7 presents estimates of Gini coefficients and other distributional indicators. The Gini coefficient at the national level is 38.6%, and these are similar across states. Also, at the national level, consumption expenditures of the top 10% of the population account for nearly 29% of total consumption expenditure in the country. Shares of both the top 10% and the bottom 40% account are similar across states.

Table 7: Inequality indicators

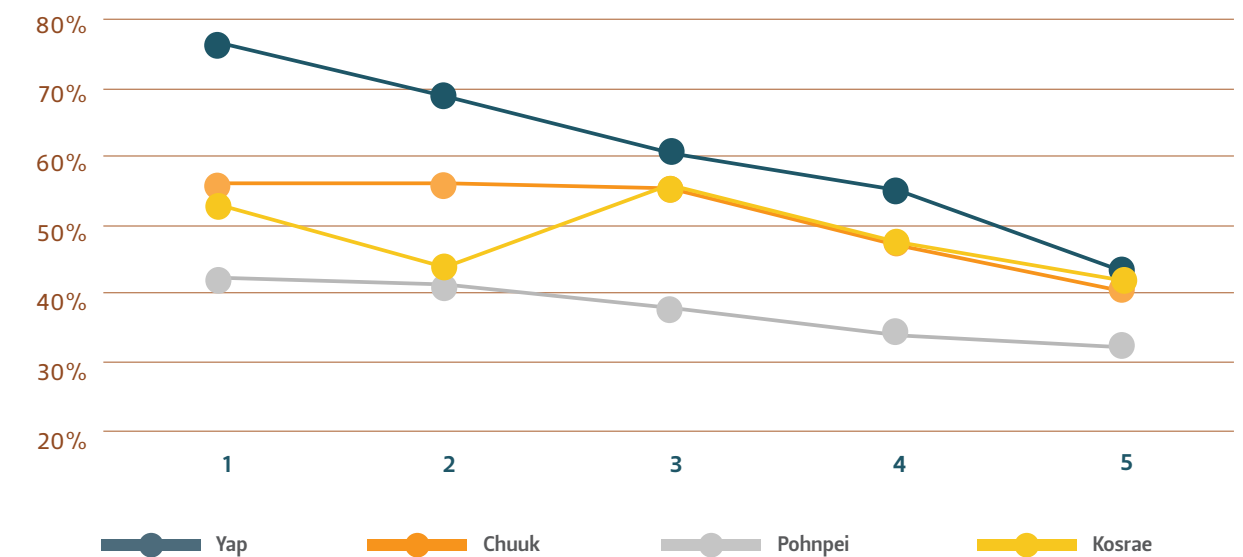
State	Gini Coefficient	Share of top 10% of population in total expenditure	Share of bottom 40% of population in total expenditure
Yap	38.8%	27.6%	16.5%
Chuuk	38.8%	28.0%	16.6%
Pohnpei	37.7%	28.2%	17.4%
Kosrae	37.1%	29.0%	18.9%
FSM	38.6%	28.5%	16.9%

## CHARACTERISTICS OF THE POOR

Low-income households mostly spend their resources on food, especially in Yap and Chuuk. As welfare levels rise, food share falls in all states.

Except in Pohnpei, the poorest group (ranked by expenditure per adult equivalent) allocates more than half of its total expenditures on food. Food share of the poorest is especially high in Yap, in excess of 70% (Figure 6). However, food shares in total expenditures decline steadily with increases in total expenditures, except in Kosrae. In Yap, Kosrae and Chuuk, food share declines to close to 40% for households in the top expenditure quintile. Food share is consistently lower in all quintiles in Pohnpei than elsewhere, most likely because of the higher cost of basic non-food goods.

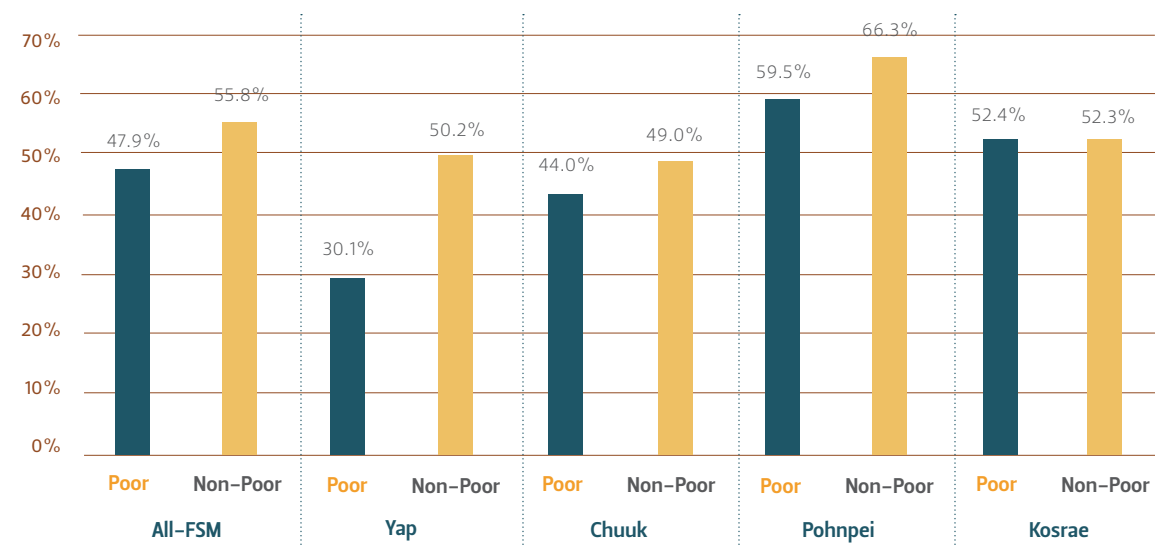
Figure 6: Food share by quintile across States



There are some differences in expenditure patterns across states and welfare level.

Regardless of poverty status, non-food expenditure account for almost 60% of total consumption in Pohnpei, much higher than in other states (Figure 7) which is consistent with higher non-food poverty line. In contrast, share of non-food expenditure among the poor in Yap is very low at around 30%. The most important non-food expenditure item is rent in all states, and its share is the highest in Pohnpei (Figure 8). The second most important item is utility, followed by transportation and cash contribution to other households or school/church/community. Alcohol and tobacco are also important items of expenditures and are higher in Yap and Pohnpei than elsewhere. The non-poor across all states consistently have greater shares for transportation and cash contribution compared to the poor. Education and health expenditures account for very small shares, mainly because they are heavily subsidized.

Figure 7: Non-food share by poverty status



Household size is correlated with poverty.

The distribution of expenditure by household size clearly indicates that richer households have fewer members (Figure 9). Overall, poor households have four more members than non-poor households (Table 8).

Figure 8: Expenditure share by category and welfare level

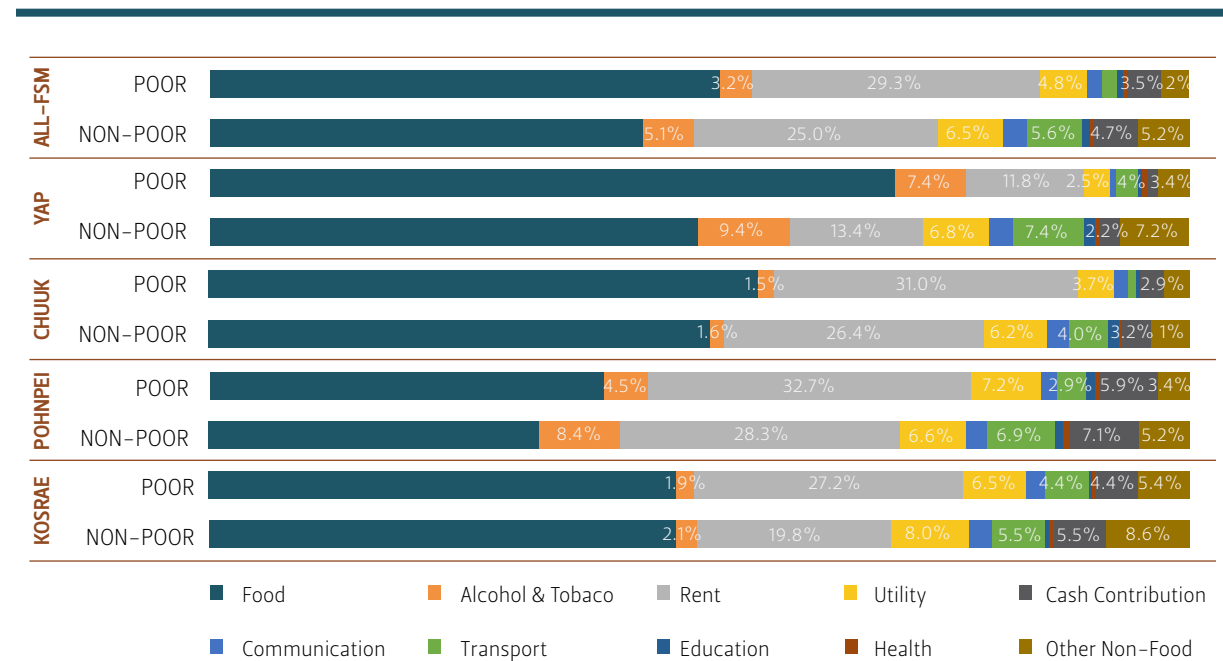


Figure 9: Household size and expenditure levels

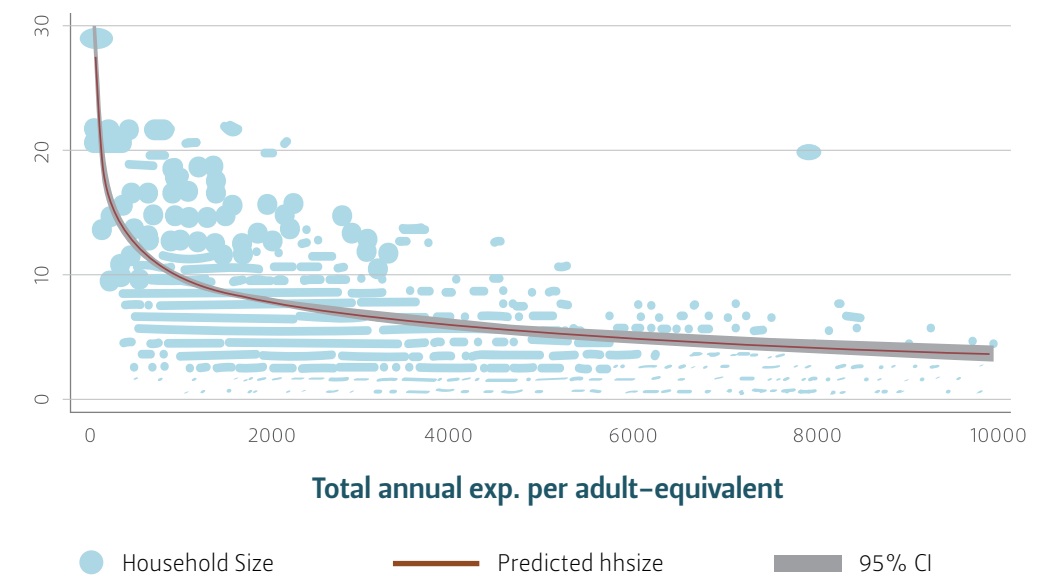


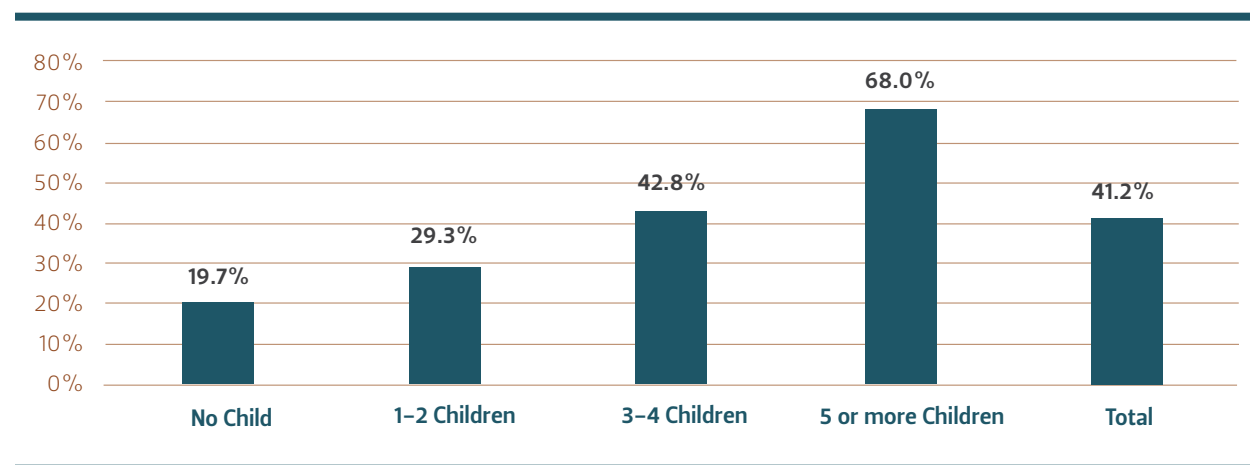
Table 8: Average household size by State and poverty status

Average Household Size	Yap	Chuuk	Pohnpei	Kosrae	FSM
Poor	9.2	12.6	9.6	9.7	11.1
Non-Poor	5.9	7.2	6.7	6.4	6.8
Difference	3.3	5.3	5.3	5.3	4.3

Poverty rates are higher in households with more children.

Average household size in FSM is 8.6 members with about 3.1 members under age 15. While only 19.7% of the population in households with only adults are poor (Figure 10), households with three to four children—a range that includes the national average—have a poverty incidence that is higher than 41%. It is even higher in households that have more children: 68% of the households with five or more children are poor.

Figure 10: Poverty rate by household group with different numbers of children



Female-headed households are poorer than male-headed households in all states.

About one-fifth of the FSM population lives in female-headed households and the incidence of poverty is higher in female-headed households than in male-headed households in all states. Female headed households tend to be both larger and have more children, except in Yap (Table 9).

Table 9: Poverty and gender

	Poverty Incidence (%)					Percent of Population					Percent of Poor				
	Yap	Chuuk	Pohnpei	Kosrae	Total	Yap	Chuuk	Pohnpei	Kosrae	Total	Yap	Chuuk	Pohnpei	Kosrae	Total
Male headed households	37.3	43.3	36.7	18.8	38.9	79.3	82.2	78.7	81.7	80.6	75.1	78.1	73.9	72.9	76.2
Female headed households	47.3	55.9	48.2	31.3	50.5	20.7	17.8	21.3	18.3	19.4	24.9	21.9	26.1	27.1	23.8
All households	39.4	45.5	39.2	21.0	41.2	100	100	100	100	100	100	100	100	100	100

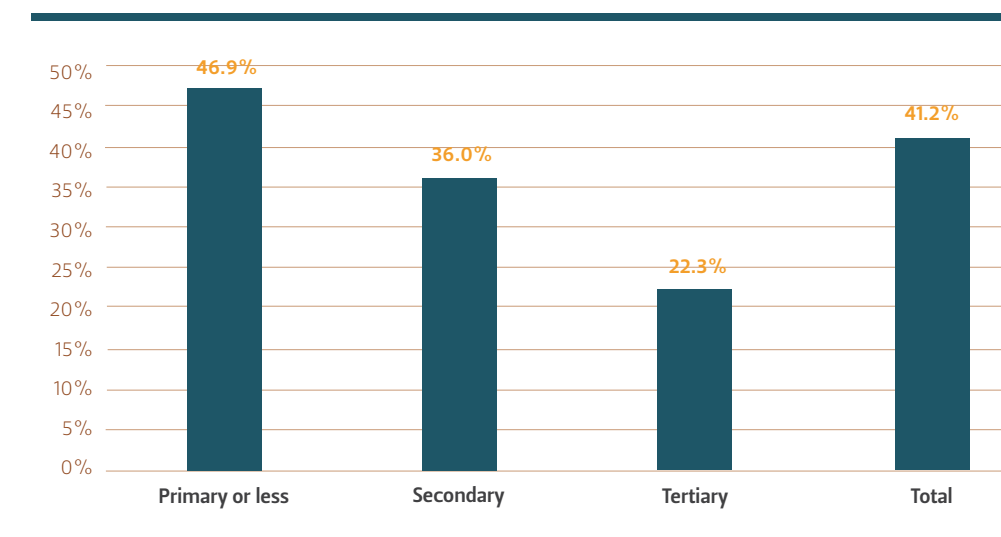
  

	Average Household Size					Average No. of Children under 15					Children in family (%)				
	Yap	Chuuk	Pohnpei	Kosrae	Total	Yap	Chuuk	Pohnpei	Kosrae	Total	Yap	Chuuk	Pohnpei	Kosrae	Total
Male headed households	7.4	9.5	7.7	6.7	8.5	2.6	3.5	2.7	2.7	3.1	35.5	37.0	34.5	40.5	36.2
Female headed households	6.3	10.3	8.5	8.8	9.0	2.1	4.0	2.9	3.3	3.3	33.7	38.8	34.0	37.7	36.5
All households	7.2	9.7	7.9	7.1	8.6	2.5	3.6	2.7	2.8	3.1	35.2	37.3	34.3	39.9	36.3

Poverty is closely related with education levels.

A strong and inverse relationship between the level of education and poverty is observed. Poverty rates are below the national average among those with at least secondary education (Figure 11) while almost half the population with education of just up to the primary level is poor. In the FSM, primary education (8 years) is mandatory and free in public schools, and public secondary schools (4 years), while not mandatory, are still free.

Figure 11: Poverty rates by education level (individual)



Note: Includes only population aged 20 and over.

Poverty rate among workers in the public sector is lower than among workers elsewhere.

As can be seen in Figure 12, poverty rate among workers in the public sector (20.9%) is substantially less than workers in other types of jobs, including in the private sector (30.8%). Poverty incidence is the highest for workers involved in subsistence production (46.6%). This pattern is also quite well linked with education levels: more than 60% of workers in the public sector have tertiary level education compared to only 12.6% among workers producing for their own-consumption. (Figure 13).

Figure 12: Poverty rate by employment type

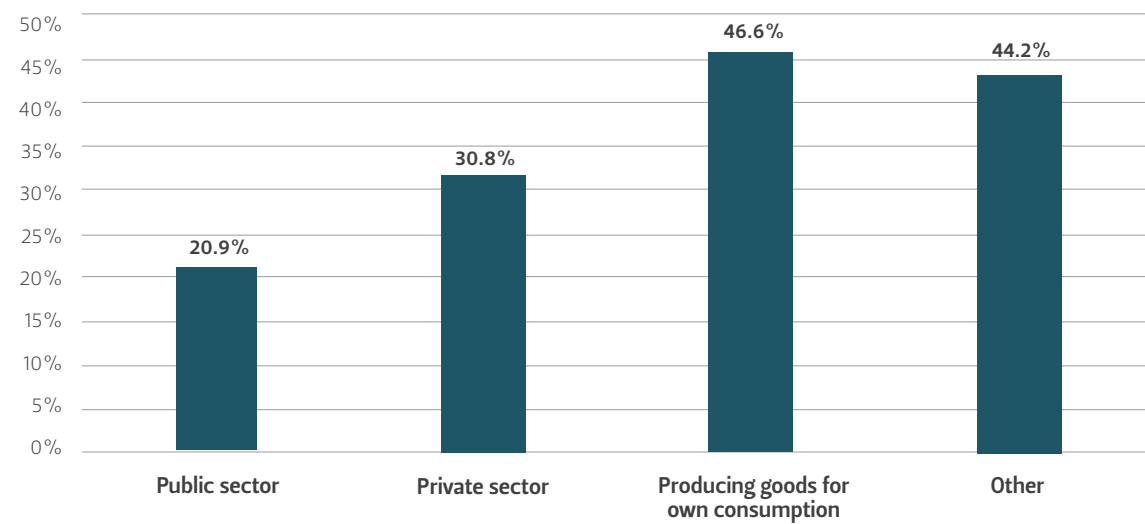


Figure 13: Education level by working sector



Note: Only the population aged between 15 and 65 are considered for Figure 12 and 13.

Related, poverty rates are significantly lower in the tertiary and secondary sectors than in the primary sector where subsistence agriculture is predominant (Figure 14). Education levels are also lower in the primary sector with only 54% of the workers with at least secondary schooling or higher, compared to 80% or more in both the secondary (construction or utilities) and tertiary sectors (services and professionals) (Figure 15).

Figure 14: Poverty rate by industry

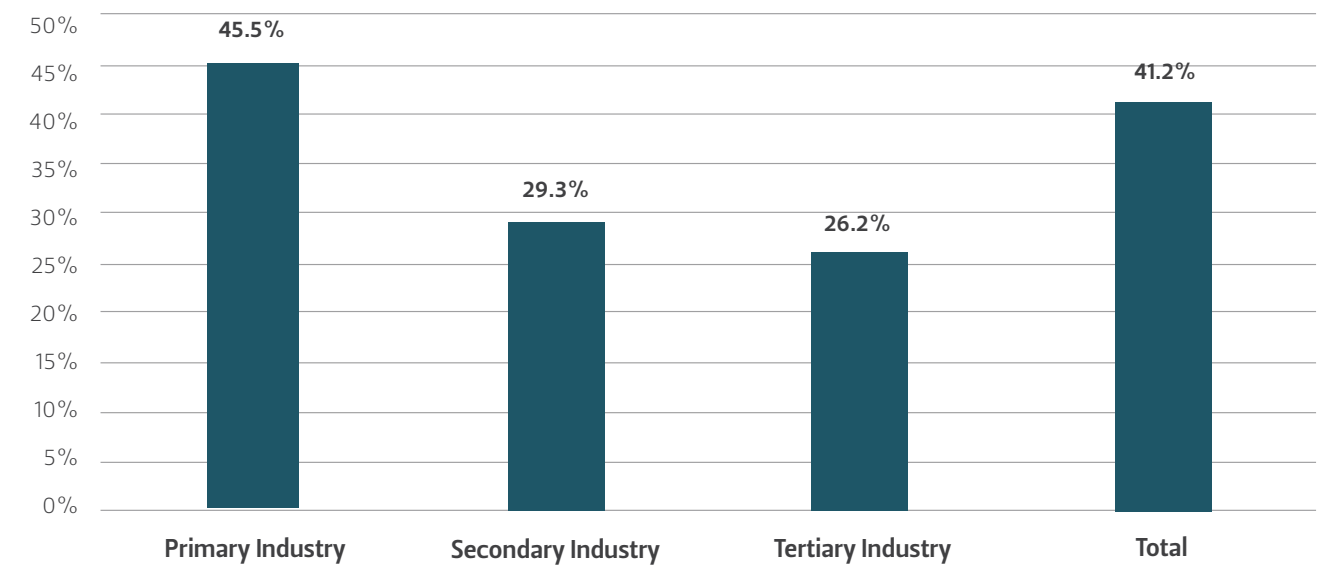
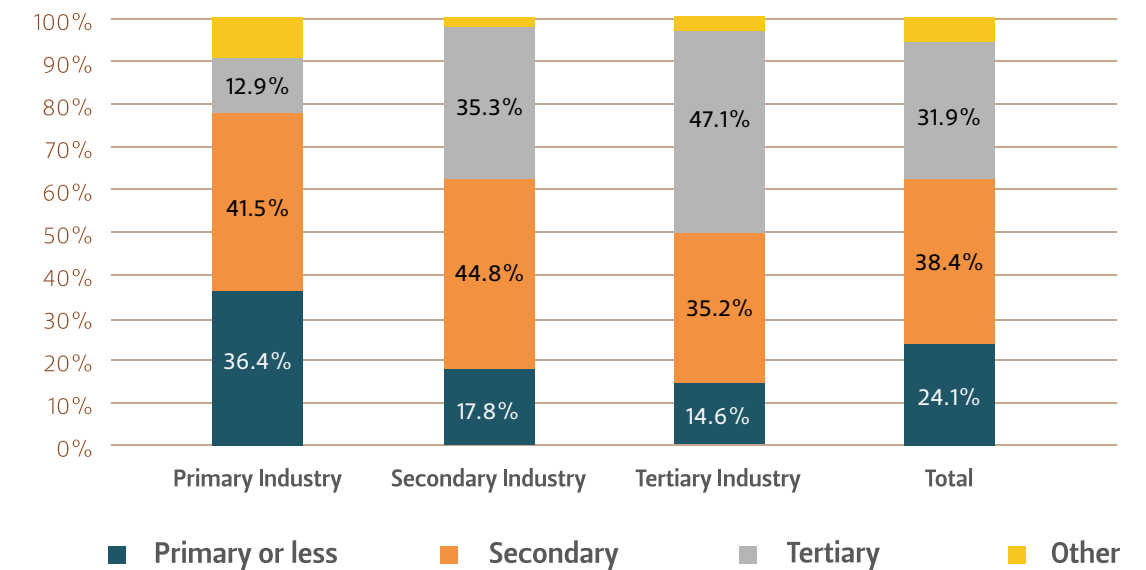


Figure 15: Education level by industry



Note: Only the population aged between 15 and 65 considered for figure 14 and 15.

# MULTIDIMENSIONAL ASPECTS OF POVERTY

The cost of basic needs approach captures a household's living conditions by aggregating different components of consumption using their monetary value. However, dimensions of poverty, like those related to health, education, shelter, and other basic amenities are not adequately captured in this measure, especially when some of the services are provided publicly and therefore are not fully reflected in private consumption expenditure. Hence, directly monitoring these non-monetary indicators offer a dual check on poverty reduction.

Table 10 below presents a number of non-monetary poverty indicators for which there is comparable data in the 2005 HIES such that progress made in certain dimensions of poverty between 2005 and 2013 can be assessed at the national and state levels. Significant achievement is seen in dimensions such as access to electricity, improvement in sanitation, quality of housing, and access to education. Between 2005 and 2013, the proportion of households with no access to electricity fell by 15.5 percentage points, from 31.9% in 2005 to 23.6% in 2013. Likewise, there was considerable reduction in the proportion of households living in dwellings without sanitary facilities: from 45.9% in 2005 to 20.8% in 2013. Another area of significant improvement was in school enrollment of children: the percentage of households with a school-age child not attending school fell from 12.6% to 2.4%.

But there are other areas where improvements are not as significant. Households with no

access to improved water source declined only by 3.5 percentage points, and the proportion of households with few assets remained almost unchanged. Progress also varies across states for some indicators. In Yap, 42.4% of the households lack sanitary facilities in their dwellings, higher even than in Chuuk which has a higher poverty rate. Further, the proportion of households that live in dwellings not made from solid materials is also higher in Yap than in the other states. On the other hand, dwelling quality, including access to electricity, is much better in Kosrae and Pohnpei than elsewhere. While the proportion of households without access to electricity has declined significantly between 2005 and 2013 in Chuuk, more than one-third of households there still lack access to electricity. Enrollment at the primary school stage is generally high in FSM education almost universal except in Chuuk and Pohnpei.

**Definitions:**

- No electricity: Household has no access to electricity (public grid or generators)
- No improved sanitation: Household has no flush toilet
- No improved water sources: Household has no access to the improved water system - piped water, cistern, community water supply
- Poor quality housing: Household lives in dwelling where building materials (roof, walls, floor) are not solid (concrete, metal or wood)
- Poor cooking fuel: Household does not use or have access to electricity, gas, or kerosene for cooking
- Few assets: Household does not have any radio, television, telephone, cell phone or automobile
- No child attending school: Household with at least one child aged 6 to 11 currently not attending school
- No one completed primary education: Household does not have any member that has completed primary or higher education
- No one working: None of the household members are either employed (salary/wage) or self-employed

Table 10: Multidimensional deprivation indicators, HIES 2005 and 2013 (% of population in households with the following deprivations)

FSM	State	(Unit %)									
		% Households with no electricity	% Households with improved sanitation	% Households with no improved water sources	% Households with poor quality housing	% Households with poor cooking fuel	% Households with few assets school	% Households with no child attending school	% Households with no one that has completed primary education	% Households with one working	% Households with no one working
<b>2013</b>	<b>National</b>	23.6	20.8	22.2	7.8	36.5	31.4	2.4	0.3	1.7	
	<b>Yap</b>	18.5	42.4	1.9	26.4	41.5	30.2	1.4	0.4	3.9	
	<b>Chuuk</b>	38.1	29.0	27.9	4.8	41.1	46.6	4.4	0.4	1.6	
	<b>Pohnpei</b>	9.3	5.9	24.4	6.4	33.7	15.2	0.6	0.2	1.0	
	<b>Kosrae</b>	3.6	1.1	1.3	3.3	5.4	8.4	0.0	0.0	3.2	
<b>2005</b>	<b>National</b>	39.1	45.9	25.7	12.2	44.5	32.9	12.6	0.8	2.7	
	<b>Yap</b>	35.0	79.3	18.4	38.6	52.9	35.7	9.0	0.7	1.0	
	<b>Chuuk</b>	64.1	46.2	44.6	6.3	61.4	48.9	12.4	0.9	4.3	
	<b>Pohnpei</b>	14.4	43.8	9.4	8.6	25.5	16.1	14.9	0.8	1.1	
	<b>Kosrae</b>	13.9	0.0	3.4	20.3	20.1	12.5	9.7	0.1	3.3	



# ANNEX I: WELFARE INDICATOR

## TOTAL HOUSEHOLD EXPENDITURE

### Expenditure components

Based on categorization typically used in FSM, household expenditures were first grouped into 13 mutually exclusive categories (Table A1).

Total household expenditure is the sum all consumption expenditures reported in Table A1. Expenditures are annualized, either based on the 2-week diaries for food items, or the length of recall used in recording non-food expenditures. For food items in the diary, the annualized value is obtained by multiplying the diary expenditures by 26. For several non-food items recorded only in the diary (e.g., brooms), annualization factors used were based on consultations with staff from the National Statistics Division.

### Imputation of rent

The rental housing market is vastly underdeveloped in FSM and only 36 households in HIES 2013/14 sample reported actual rental payments while the rest (1,612) provided their own estimates of rent for the dwelling that they owned and lived in. Given the very thin rental market in the country, self-reported imputed rents can be subject to uncertain measurement errors. Hence, the information on estimated rents is not used directly. Instead, when constructing the rental component, actual rents are used whenever available, but predicted imputed rents are used otherwise. These predictions are

obtained from a (hedonic) rental model estimating the relationship between reported rental values and a number of observable dwelling characteristics (Table A2).

The following are not included in aggregate welfare indicator: i) production related expenditures and gifts given to others; ii) highly irregular spending and investments such as expenses for house construction or for major alterations; and iii) spending on jewelry. Finally, as sufficient information was not collected to enable the computation of the annual use value of durable goods, expenditures on durables are not included in the final welfare aggregate. Total adult equivalent expenditures are computed by dividing household expenditures by the adult-equivalent household size.

## TREATMENT OF ERRORS AND OUTLIERS

There were 16 households without diary records and had to be excluded from the sample.

Most of the other errors in the diary were due to confusion in recording quantity units versus actual quantities in appropriate columns of the questionnaire. Identification of errors and their corrections were made on the basis of comparing unit values of the same item within the same state. Removing households without diaries decreased the final sample from 1,664 to 1,648 observations. Sampling weights were accordingly adjusted.

Table A1: Expenditure components for the FSM HIES 2013/14 poverty assessment

Classification	Category	Description
Consumption	Food	Purchased food items and eat-outs
		Food produced and consumed by households
		Food received and consumed by households
	Alcohol & Tobacco	Alcohol/tobacco/narcotics purchased, produced or received
	Rent	Actual rent paid self-estimated rental values
	Household Operation	Household services (gardening, maid services, babysitting, etc.)
		Non-durable/consumable goods
		House maintenance/repair
		Purchase of small tools Recreational goods
	Clothing	Clothing and footwear
Utilities	Electricity/water bills	
	Fuel for cooking/lighting	
	Sewage/garbage disposal	
Communication	Internet, phone cards, phone bills, cable, postal/shipping services	
Transport	Travel, vehicle repair/services, fuel, parts, related fees	
Education	Tuition and education-related expenses	
Health	Treatment, hospitalization, medication, health equipment	
Miscellaneous	Personal care goods/services, legal/administrative services	
Non-Consumption Expenditure	Financial	Insurance, tax, financial fees, fines, loan interest payment
	Cash contribution	Cash contribution for functions Cash contribution to school/community/church

Table A2: Estimated rental regression equation

Indicator	Estimated Coefficient	P value
Floor material is concrete	0.3485	0.000
Roof material is concrete	0.1495	0.001
Number of rooms (increase of one room)	0.1904	0.000
Electricity is accessible	0.2004	0.000
Constant	6.4653	0.000
R-squared	0.5737	

Note: i) In addition to the above variables, municipality dummy variables (not reported) were used to account for municipality-level differences.  
ii) Logged values are used for the regression analysis.

## CALORIE STANDARD

Standard daily per capita calorie intake of 2,100Kcal is used based on recommendation of the Humanitarian Charter and Minimum Standards in Humanitarian Response, collectively authored by a group of NGOs and international organizations.<sup>6</sup> However, the analysis is based on adult-equivalent using the adjustment factor suggested by Deaton and Zaidi (2002):<sup>7</sup>

$$\text{ADJ factor} = \frac{A_0 + C_0}{(A_0 + 0.5C_0)}$$

Where A0 and C0 are the country's average number of adults and children (ages 0–14) respectively. The minimum calorie requirement expressed in per adult equivalent is, thus, set at 2,565Kcal. Food quantities are converted to caloric values using conversion factors from the Pacific Islands Food Composition Tables<sup>8</sup>.

<sup>6</sup> The Sphere Project (2011). *Humanitarian Charter and Minimum Standards in Humanitarian Response*, the Sphere Project, Southampton, United Kingdom.

<sup>7</sup> Deaton, Angus and Salman Zaidi (2002). *Guidelines for Constructing Consumption Aggregates for Welfare Analysis*, the World Bank, LSMS Working Paper 135.

<sup>8</sup> FAO (2004). *Pacific Islands Food Composition Table, Second edition*, Food and Agriculture Organization of the United Nations, Rome.

## ANNEX II: FOOD BASKET

Table A3: Reference national food basket

Item	Item Share of the Total consumption expenditure	Rank based on expenditure share	Kcal per 100g
Rice (short grain)	12.92%	1	358
Reef Fish	11.14%	2	110
Breadfruit	9.30%	3	107
Taro	7.77%	4	97.5
Rice (medium grain)	5.98%	5	362
Chicken	5.44%	6	196
Banana	5.00%	7	103
Tuna	4.58%	8	193
Other Fish	3.91%	9	160
Mackerel	3.29%	10	182
Turkey Tail	2.28%	11	234
Ramen	2.14%	12	525
Coconut	1.94%	13	184
Bread	1.69%	14	242
Sugar	1.47%	15	394
Coffee	0.94%	16	132
Eat-out	0.82%	17	137
Spam	0.72%	18	112
Flour	0.51%	19	349
Corned Beef	0.51%	20	192
Hor Dog	0.46%	21	254
Soy Sauce	0.44%	22	33
Onion	0.28%	23	26
Soda	0.28%	24	43
Oil	0.23%	25	880

## ANNEX III: MEAN CONSUMPTION

Table A4: Mean real annual expenditure per adult-equivalent by category and state (\$US)

	TOTAL POPULATION					POOR POPULATION					
	Yap	Chuuk	Pohnpei	Kosrae	FSM	Yap	Chuuk	Pohnpei	Kosrae	FSM	
<b>Food</b>	1544.7	1344.7	1034.0	1710.2	1277.2	<b>Food</b>	859.7	691.4	521.3	720.7	653.1
<b>Alcohol &amp; Tobacco</b>	287.4	42.5	238.6	100.0	144.2	<b>Alcohol &amp; Tobacco</b>	102.3	19.6	64.6	28.2	44.3
<b>Rent</b>	415.9	694.5	819.1	719.4	708.1	<b>Rent</b>	143.2	338.3	418.6	397.4	345.6
<b>Household Operation</b>	44.3	30.2	36.3	76.0	36.6	<b>Household Operation</b>	10.1	12.2	13.8	27.7	13.0
<b>Clothing</b>	31.8	43.7	38.0	65.8	41.5	<b>Clothing</b>	18.4	13.6	12.7	20.3	14.0
<b>Utilities</b>	204.1	175.2	232.5	297.5	205.9	<b>Utilities</b>	35.5	48.8	90.5	97.1	62.9
<b>Communication</b>	73.9	69.7	66.2	106.5	71.0	<b>Communication</b>	12.0	18.1	21.1	29.1	18.7
<b>Transport</b>	229.1	119.6	210.9	320.8	176.2	<b>Transport</b>	32.6	11.1	42.7	63.6	25.7
<b>Education</b>	26.1	25.0	27.5	9.9	25.2	<b>Education</b>	5.1	5.0	11.8	3.8	7.3
<b>Health</b>	12.6	9.4	17.7	9.7	12.8	<b>Health</b>	5.5	0.3	6.9	4.4	3.2
<b>Miscellaneous</b>	24.0	15.3	20.2	30.2	18.9	<b>Miscellaneous</b>	2.1	5.8	8.1	10.4	6.3
<b>Financial</b>	138.3	29.8	64.7	228.4	65.9	<b>Financial</b>	13.7	6.2	7.9	20.8	8.0
<b>Cash Contribution</b>	78.2	94.2	215.9	246.2	144.3	<b>Cash Contribution</b>	15.8	35.6	79.1	66.9	49.1
<b>Total</b>	3110.5	2694.1	3021.6	3920.6	2927.6	<b>Total</b>	1256.0	1205.9	1299.3	1490.4	1251.3

\* Nominal values are deflated using the weighted average of regional poverty lines to derive real values

