

# SAMOA MULTIDIMENSIONAL POVERTY INDEX 2022





**Samoa: Multidimensional Poverty Index**

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## PREFACE

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Samoa's Multidimensional Poverty Index Report has been prepared by the Samoa Bureau of Statistics (SBS) in collaboration with the United Nations Development Program (UNDP) with technical assistance and support provided by the Oxford Poverty Human Development Initiative (OPHI).

This is the first report of this nature, providing a detailed description of the various dimensions and indicators to complement existing monetary poverty estimates. The main objective of this report is to identify and monitor key simultaneous disadvantages that affect poor people multidimensionally both at the national and regional levels.

The empirical study and analysis included in this report should be used by policy analysts and policy makers to enable them to accelerate poverty reduction by viewing different indicators disaggregated either at the national or regional level. Additionally, the statistical information and analysis from this report can be used to target poor people and vulnerable groups, resource allocation to have the biggest poverty impact, coordinate multisectoral policies and approaches and to manage interventions and make evidence-based policy adjustments that will accelerate impact.

In this way, Samoa's MPI broaden the scope and understanding of poverty in the country by providing a complementary measure to the monetary measure that has been traditionally used over the years by Samoa.

At the national forefront, the Samoa's MPI was designed to mirror the vision of Samoa's Pathway for the Development of Samoa (PDS) FY 2021/22 – FY 2025/26 of fostering social harmony, safety, and freedom for all by improving social development as one of its key strategic outcomes.

I would like to thank my colleagues at the Samoa Bureau Statistics (SBS) for their commitment and perseverance in the compilation and computation of this first ever MPI report for Samoa. A special thank you goes to the Joint SDG Fund for financing the Social Protection for Resilience joint programme, the UN Resident Coordinator, Dr Simona Marinescu for initiating the project and UNDP Multi-country Office for providing implementation support for developing this first Multidimensional Poverty

Index Report for Samoa. We look forward to the sustained support from UNDP as we envisage to update the MPI initiative using future HIES.

Also indebted to the Oxford Poverty and Human Development Initiative (OPHI) team namely Ricardo Nogales, Monica Pinilla-Roncancio, Agustin Casarini and Aparna John who have been working virtually with the team, for their technical guidance and support in this venture. It is with the hope that this new venture will give Samoa's new journey in the right path to combat and end poverty in all its dimensions.

**Leota Aliielua Salani**

**GOVERNEMENT STATISTICIAN**

## EXECUTIVE SUMMARY

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This report presents Samoa's national Multidimensional Poverty Index (MPI) which is based on the Alkire-Foster method, using the latest survey data from the Household Income and Expenditure Survey (HIES) 2018. The Samoa's MPI comprises three dimensions: health, education and employment and living standards. To tailor the measure to Samoa's context and public policy priorities, 12 indicators were used for this national measure. Three indicators are under the health dimension (access to health care and facilities, food security and main source of drinking water), four indicators are under the education and employment dimension (school attendance, years of schooling, youth NEET and school lag) while five indicators are used within the dimension of living standards (asset ownership, cooking fuel, housing, sanitation and internet connection). Nested weights were used to determine the value of each dimension where each of the three dimensions were given an equal relative importance of 33.3% in the Samoa's MPI, while each indicator was weighted equally within each dimension.

### Multidimensional poverty at-a-glance

Using the 2018 HIES data, it was estimated that 24.9% or a quarter of Samoa's population is multidimensionally poor. The average intensity of deprivation, which reflects the share of deprivations each poor person experiences on average, is 43.9%. In other words, each multidimensionally poor person is on average is deprived in 43.9% of the 12 weighted indicators. This can occur, for instance, if a person is deprived in two indicators in the health dimension, plus two indicators in the education dimension and one in the living standard dimension. The Samoa's MPI, which is the product of the percentage of poor people and the average intensity of poverty, stands at 0.109. This indicates that poor people in Samoa experience 10.9% of the deprivations that would be experienced if all people were deprived in all indicators. Furthermore, urban poverty (made up of the Apia Urban Area (AUA region) is reported to be 11.4% while rural poverty (made up of the North West Upolu (NWU), Rest of Upolu (ROU) and Sav (Savai'i) regions is reported to be 28.1%.

In terms of the percentage contribution of each of the 12 indicators, the largest contribution comes from food security (18.4%) followed by main source of drinking water (16.2%) and internet connection (12.1%). When aggregating the indicators by dimensions, the largest contribution is due to living standard deprivations reporting

41.6%. The health and education dimensions contributed 37.9% and 20.5% respectively, to overall multidimensional poverty.

### **Multidimensional poverty across regions and areas**

There are stark regional disparities in Samoa. The Rest of Upolu region appears to be the poorest of all the regions in Samoa with 34.3% incidence. As expected, the Apia Urban Area region is less multidimensionally poor, with only 11.4% incidence. The region of North West of Upolu (NWU) reported a 22.2% incidence while the remaining region of Savaii reported an incidence of 30.8%. It is very important to consider multidimensionally poverty levels with population as well. By population, the NWU region on the other hand reported the highest population count due to its large population, representing 36.2% of Samoa's total population. The proportion of people identified as multidimensionally poor in the urban area (11.4%) is significantly lower than in the rural area (28.1%).



## RECOMMENDATIONS

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The last section of this report has outlined a detailed set of recommendations including using the Samoa's MPI value of 0.109 to report and monitor SDG indicator 1.2.2; promoting the use of both MPI and income-based poverty measures for resource allocation since both measures complement each other; promoting the decomposition and use of the MPI at the district level in the near future for district level policies and to align with the newly created district councils; MPI variables to be included in the upcoming 2026 census of population and housing to ensure that all districts are included; incentivise the completion of either secondary or tertiary level of education to reduce poverty and to create policy interventions to address rural deprivations, especially the rest of upolu region.

## ACKNOWLEDGEMENTS

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We extend our sincere appreciation to UNDP through the Universal Social Protection Joint program for the direct financial assistance and for procuring OPHI to provide the technical support.

We would like to thank the following groups of people for their invaluable contribution to the formulation of this MPI report for Samoa; the MPI steering committee members (Mataao Edith Fa'aola, Tupa'i Benjamin Kruse, Maposua Sesilia Schwalger, Jonathan Vaai, representatives from the Central Bank of Samoa, representatives from the Ministry of Finance, representatives from the Ministry of Women, Community and Social Development, representative from the Ministry of Commerce, Industry and Labour, and the representative from the Ministry of Communications & Information Technology); the MPI working group (Ministry of Finance - Nelle Laban, Anastasia Overhoff, Ministry of Communication and Information Technology - Corretti Uesiliana, Ministry of Women, Community and Social Development - Leutogi Uesele and Akeripa Misa, Ministry of Health - Muelu Meatoga, Ministry of Education, Sports and Culture - Juan Aiolupotea, Ministry of Commerce, Industry and Labour - Serrah Mulipola, Samoa Bureau of Statistics - Junior Ah Yen, Teutele Banse, Atulia Lavea, Lemalu John Lemisio, Taala Lilianetelani Hennemann, Siata Ulu, Tauvaga Etimani, Alaiula Abute Ioasa, Ken Fa'aofu, Fa'igalotu Ta'amilosaga and Papali'i Benjamin Sila); and our UNDP local counter parts (Muliagatele Dr Potoa'e Roberts Aiafi, Christina Mualia-Lima and Quandolita Reid Enari).

We are also thankful and grateful for the stata and MPI training provided by Ricardo Nogales, Monica Pinilla-Roncancio, Agustin Casarini and Aparna John, and not forgetting to mention the virtual technical assistance and guidance provided for the compilation and computation of this MPI report.

Further credit goes out to OPHI's Monica Pinilla-Roncancio, Ricardo Nogales and Agustin Casarini for editing and finalizing this report.

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## CHAPTER 1: INTRODUCTION

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This chapter serves as an introduction to the report on the Samoa's Multidimensional Poverty Index (MPI), with the following sections:

- 1.1 History of monetary poverty measurement in Samoa
- 1.2 Context of the MPI
- 1.3 Purpose of Samoa's MPI

### 1.1 History of monetary poverty measurement in Samoa

In 2002, Samoa through the Samoa Bureau of Statistics measured poverty in monetary terms by using the data on the Household Income and Expenditure Survey (HIES) 2002. Since then, the Samoa Bureau of Statistics have been conducting the HIES regularly in 2008, 2013/14 and 2018 to estimate and calculate the monetary values of consumption expenditures on various aspects of life including food, education, health, housing, transportation and income.

Poverty lines were estimated based on the Cost of Basic Needs Approach where the minimum calorie intake for human survival was designed and benchmarked at an average of 2,100 kilocalories/ day per adult, which is the FAO/ WHO recommended daily minimum adult calorie intake for estimating food poverty lines (UNDP, 2016). The Food Poverty Line (FPL) was calculated by costing this daily minimum food basket containing 2,100 kilocalories which was calculated based on the prices of these food items collected by the Bureau on a weekly and monthly basis. The FPL contains not only food and food items purchased but also subsistence food grown for own use and food received in the form of gifts either through the village, church or extended family. Those individuals with per capita expenditure below this FPL are considered to be in food poverty since their expenditure is below the minimum food basket value.

On the other hand, the Basic Needs Poverty Line (BNPL) was obtained by adding the FPL with the cost of purchasing non- food basic needs such as transport, communication, education related expenses, health related expenses, utilities, clothing and housing related expenses. Individuals were considered to be poor if the per capita consumption expenditure is less than the BNPL.

As can be seen in Table 1, the official poverty rates have shown a reduction between 2002 and 2013/14 in both households and the population from 19.1% to 13.4% and 22.9% to 18.8%, respectively. In particular, the proportion of people living below the poverty line has reduced in all the four statistical regions but notably in the Savai'i

region with a relative reduction of 35% in this decade, from 19.1% to 12.5%. This strong decline might be associated with a number of factors including the increase in the number of agricultural households engaged in agricultural production, including subsistence purposes, from 19,360 (84%) in 2009 to 26,900 (94%) in 2019 (FAO, SBS, MAF, 2021); government support to revitalize the agriculture sector and to increase food, nutrition and income security to assist in the reduction of consumption-based poverty headcount in Samoa and the increase in female labour force participation rate from 24.4% in 2012 to 31.5% in 2017, specifically in the rural areas from 21.4% in 2012 to 28.9% in 2017 (ILO, SBS, MCIL, 2018).

**Table 1: Poverty rates for Samoa, 2002 - 2013/14**

	Percentage of Households			Percentage of Population		
	2002	2008	2013/14	2002	2008	2013/14
National Average	19.1	20.1	13.4	22.9	26.9	18.8
Apia Urban Area	20.1	17.2	15.4	25.9	24.4	24.0
North West Upolu	23.8	19.4	16.7	29.5	26.8	23.7
Rest of Upolu	13.4	20.5	10.5	15.1	26.6	13.6
Savai'i	17.6	21.9	9.8	19.1	28.8	12.5

Source: Samoa Hardship and Poverty Report, 2016.

In addition to the above, other critical poverty related measures were also calculated to measure poverty namely; the Poverty Gap Index, Squared Poverty Gap Index and the Gini Coefficient.

## 1.2 Context of the MPI

Samoa like other countries has measured poverty only by income or consumption for over a decade. But no single indicator such as income or consumption can capture the multiple aspects of poverty. Samoa's MPI complements the existing monetary poverty measures that Samoa is currently by counting the different types of deprivations/ indicators that individuals experience simultaneously which are also essential to guarantee a dignified life. Samoa's MPI has three dimensions: education and employment, health and living standards.

With the formulation of the new government for Samoa, Samoa's MPI has been developed to aligned to reflect various key strategic outcome depicted in the Pathway for the Development of Samoa (PDS) FY 2021/22 - FY 2025/26, with the vision of fostering social harmony and the theme of empowering communities, building resilience and inspiring growth. These key strategic outcomes include improved social

development, secured environment and climate change and structured public works and infrastructure.

### 1.3 Purpose of Samoa's MPI

In early 2021, there was a discussion between the Samoa Bureau of Statistics and the UNDP office in Samoa for the compilation of Samoa's national MPI, with the technical guidance and assistance provided by OPHI. MPI training was provided by OPHI in July 2021 while the design and computation of Samoa's MPI started in February 2022.

The selection of Samoa's MPI indicators were to provide a clear way of designing programs that deliberately target the poor. These MPI indicators can help in monitoring and evaluating existing plans and programs and perhaps to formulate new plans and programs in targeting the poor.

In preparation for the compilation of the indicators to be used in the MPI, the technical working group considered the various surveys and censuses conducted by the Bureau on a regular basis namely the Demographic and Health Survey/ Multi Indicator Cluster Survey (DHS/ MICS), Labour Force Survey (LFS), Agriculture Survey, Household Income and Expenditure Survey (HIES), Agriculture Census and the Population and Housing Census (PHC). The 2018 HIES was selected as the most appropriate dataset to compile the relevant indicators due to the following reasons; have been consistently collected by the bureau every 5 years since 2003 and will be continued in the future; employment indicator can be compiled and computed; national ownership through the bureau and can be linked to various Key Strategic Outcome of the Pathway for the Development of Samoa (PDS) FY 2021/22 - FY 2025/26.

A universe of indicators was computed from the HIES, and the identified indicators were validated by the technical working group with the technical assistance provided by OPHI while a set of candidates MPI measures were explained and presented to the MPI steering committee. These candidate measures covered different indicators pertaining to education, health, employment, asset ownership and living standards.

Samoa's MPI was designed with the following purposes:

- (1) To compile SDG 1 (*End Poverty in All Its Forms Everywhere*), indicator 1.2.2 (proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions).



- (2) This work is an attempt to provide a baseline that will be a yardstick to measure and monitor the progress indicator 1.2.2. It is envisaged that future work on MPI, with the continuous implementation of HIES after every 5 years, will enable this process.
- (3) Complement existing monetary poverty measurement used by Samoa namely the Food Poverty Line (FPL) and the Basic Needs Poverty Line (BNPL). MPI can be used to measure non-monetary aspects of poverty such as access to health services and facilities, housing materials, education, school lag, employment and so forth.
- (4) Can be used to identify and compare non-monetary aspects of poverty across different statistical regions and political districts of Samoa to support evidence-based policy making. This will allow the government and donor partners to focus services, policies and even programmes accordingly to combat non-monetary poverty and to retrospectively monitor the effectiveness of such policies or programmes over time.



## CHAPTER 2: METHODOLOGY

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Samoa's MPI analysis is based on the Alkire Foster (AF) method. This chapter presents this method, a description of the MPI and its properties, along with the measurement design. It concludes with a section on the data used for the analysis. It has the following three sections:

- 2.1 Alkire Foster method
- 2.2 Measurement design
- 2.3 Data

### 2.1 The Alkire Foster method

The global MPI, which was developed by Alkire and Santos (2010, 2013) in collaboration with the UNDP, and first appeared in the 2010 *Human Development Report*, is one particular empirical example of the adjusted headcount ratio (the MPI value) proposed in Alkire and Foster (2011) and elaborated in Alkire, Foster, Seth, Santos, Roche, and Ballon (2015). This section outlines the methodology and relevant properties that are used in the subsequent sections to understand the change in Samoa's multidimensional poverty.

Sabina Alkire and James Foster created a new method for measuring multidimensional poverty. It identifies who is poor by considering the intensity of deprivations they suffer, and includes an aggregation method. Mathematically, the MPI combines two aspects of poverty:

$$\text{MPI} = H \times A$$

*H*: Headcount - incidence or the percentage of people who are multidimensionally poor

*A*: Intensity of people's poverty - the average percentage of dimensions in which poor people are deprived

*MPI*: Adjusted headcount ratio - the proportion of weighted deprivations suffered by the population relative to the situation in which everyone is multidimensionally poor and deprived in all indicators

### 2.2 Measurement design

Samoa's national MPI includes three dimensions and 12 indicators and the cut-offs to reflect its priorities as expressed in its PDS FY2021/22 - FY 2025/26, to meet the SDG 2030 agenda and can also be compiled and computed using the HIES dataset. This section describes these parameter choices.

### 2.2.1 Unit of identification and analysis

The unit of identification refers to the entity that is identified as poor or non-poor – usually the individual or the household. In the case of the Samoa's MPI, the unit of identification is the household: the household members' information is considered together and all household members receive the same deprivation score. This acknowledges intra-household caring and sharing –for example, educated household members reading for each other, and multiple household members being affected by someone's severe health conditions. In addition, it allows the measure to include indicators that are specific to certain age groups for instance, school attendance or school lag.

The unit of analysis, meaning how the results are reported and analysed, is the individual. This means that, for instance, the headcount ratio is the percentage of people who are identified as poor, rather than the percentage of households that are identified as poor.

### 2.2.2 Dimensions, indicators and deprivation cut-offs

Samoa's MPI has three dimensions and 12 indicators. The indicator choice reflects the country's context and political priorities, as well as the data available in the HIES datasets used in the analysis. In total, 12 indicators are used in this national index. The selection of the final structure was achieved by the technical working group with the technical guidance provided by OPHI as shown in Table 2.

**Table 2: Dimensions, Indicators, Deprivation Cut-offs and Weights of Samoa's national MPI**

Dimension (Weight)	Indicator	Deprivation Cut-off	Weights
Health (1/3)	Access to Health Care and Facilities	A household is deprived if at least 1 household member that required treatment for an illness did not visit a health professional or traditional healer in the last 3 months.	1/9 = 0.111
	Food Security	A household is deprived if at least 1 household member ran out of food or was unable to eat healthy and nutritious food in the last 12 month because of a lack of money or other resources.	1/9 = 0.111
	Main Source of Drinking Water	A household is deprived if the main source of drinking water is either non metered, well, rainwater tank, water truck or others.	1/9 = 0.111
	School Attendance	A household is deprived if at least 1 household member aged 5-14 years is currently not attending school.	1/12 = 0.083

<b>Education &amp; Employment (1/3)</b>	Years of Schooling	A household is deprived if at least 1 household member aged 15 years and over did not complete year 8 in primary level.	1/12 = 0.083
	Youth NEET	A household is deprived if have at least one youth (aged 15 to 24 years) who is not in employment or education or training.	1/12 = 0.083
	School Lag	A household is deprived if any school children aged 7-17 years in the household who is currently attending school, is 2 years behind of the class that he/ she should be according to his/ her age.	1/12 = 0.083
<b>Living Standards (1/3)</b>	Asset Ownership	A household is deprived if it does not own a car and does not own more than one of the following: TV, refrigerator or washing machine.	1/15 = 0.067
	Cooking Fuel	A household is deprived if the usual method of cooking is either kerosene burner, wood stove, open fire or others.	1/15 = 0.067
	Housing	A household is deprived if the main roof material is thatched/ traditional or other OR if the main floor material is gravel or other OR the outer wall materials corrugated iron/ improvised, open/ no walls or other material.	1/15 = 0.067
	Sanitation	A household is deprived if the main sanitation system is poured flush toilet, pit, shared toilet (shared with members of a different household), VIP (ventilated Improved Pit) or no toilet.	1/15 = 0.067
	Internet Connection	A household is deprived if the household is not connected to the internet.	1/15 = 0.067

Source: Based on data from HIES 2018.

It is worth noticing that some very relevant dimensions and indicators were not included in this present version of the measure because of lack of adequate data such as unemployment, environmental indicators, nutrition, among others.

### 2.2.3 Weights

Samoa's MPI uses nested weights<sup>1</sup>, assigning equal weights to each of the three dimensions (33.33%) of health, education and employment and living standards, and equal relative weights to each indicator inside the dimension. Within the health dimension, each of the three indicators are equally weighted with 1/9 or 11.1%. The education and employment dimension were allocated the same weight of 1/12 or 8.3% for all the 4 indicators. The final dimension of living standards was also allocated equal weight of 1/15 or 6.7% to all its 5 indicators.

<sup>1</sup> Gives the same weight to each dimension and weigh each indicator equally within the dimension

### 2.2.4 Poverty cut-off

For Samoa's MPI, the poverty cut-off was set at 34%<sup>2</sup> or just over one-third of the indicators. In other words, a person who is deprived in  $k \geq 34.0\%$  of the weighted indicators or more than one dimension is considered multidimensionally poor for example, a person can be deprived in health access, food security, years of schooling and housing and being multidimensionally poor.

## 2.3 Data

The data used in this report to compute Samoa's MPI is the 2018 Household Income and Expenditure Survey (HIES), which is the latest and fourth in a series of surveys that has been conducted by SBS with national ownership containing relevant variables that can be used to derive various indicators.<sup>3</sup> The HIES was designed to provide income, expenditure, and economic indicators at the regional level. It was initiated in 2003 and has been conducted after every five years, with its latest wave having been conducted in 2018.

The HIES survey is one of the main sources of information to track poverty-related SDG indicators in Samoa, as it includes questions on demographic characteristics, education, income, expenditure, health, employment, household assets, household amenities, household consumption water supply and sanitation, among others.

The focal population of this survey consists of all urban and rural areas of the four regions in Samoa. The sample size of the 2018 HIES is approximately 3,430 households. Additionally, A two-stage stratified sample design was adopted in this survey, where the first stage involved the selection of clusters or primary sampling units using Probability Proportional to Size (PPS) and the second stage where a fixed number of households were selected systematically from the AUA clusters and a fixed number of households were selected from the three rural regions.<sup>4</sup>

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<sup>2</sup> This poverty value cut-off was selected as its corresponding headcount incidence of 24.90% is closer to the unofficial poverty incidence of 22.70% derived from the 2018 HIES data.

<sup>3</sup> Other surveys conducted by the bureau such as DHS-MICS and LFS together with the Census of Population and Housing and Agriculture Census were also considered but were not used due to their limited scope of variables for indicator computation.

<sup>4</sup> See Samoa Household Income and Expenditure Survey 2018; Tabulation Report (Samoa Bureau of Statistics, 2020), section 1 for a more detailed discussion on the two-stage stratified sample design used in the survey

## CHAPTER 3: RESULTS

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This chapter provides a detailed presentation of the results of the Samoa's MPI using the 2018 HIES. First, we identify who is poor, and present the national MPI results, as well as incidence and intensity of multidimensional poverty in the country. We then disaggregate the MPI across Urban and Rural Areas as well as at the regional level. National headcount ratios will be next. Finally, we present disaggregated results by household and individual characteristics. This chapter has the following sections:

3.1 Samoa's National MPI - Incidence, Intensity and MPI

3.2 Samoa's MPI across Urban and Rural Areas

3.3 Samoa's MPI across Regions

3.4 National Censored and Uncensored Headcount Ratios

3.5 Performance across household characteristics

### 3.1 Samoa's National MPI

Table 3 shows Samoa's national MPI for 2022, together with its partial indices: the incidence of poverty (or the proportion of people identified as multidimensionally poor, H) and the intensity of poverty (or the average proportion of weighted indicators in which the poor are deprived in, A). As shown in Table 3, the incidence of multidimensional poverty is 24.9%. Since this estimate is based on a sample, it has a margin of error. Thus, the 95% confidence interval is also presented in the table. The average intensity of poverty, which reflects the share of deprivations each poor person experiences on average, is 43.9%. In other words, on average, multidimensionally poor individuals are deprived in 43.9% of the weighted sum of indicators.

The MPI, which is the product of H and A, is estimated to be 0.109. This means that the multidimensionally poor people in Samoa experience 10.9% of the total deprivations that would be experienced if all people were deprived in all indicators. The MPI is the preferred statistic of poverty used to declare whether poverty has fallen or risen over time, because it considers the progress at two levels – H and A. There are situations in which only one statistic goes down over time and not the other – but both are important. If we used only the incidence of multidimensional poverty for example, it might be that a very poor person had a significant decline in their deprivation score, but this would not be noticed if they were still poor. The MPI would, however, show this decrease by also considering the intensity of poverty.

**Table 3: Incidence, Intensity and Multidimensional Poverty Index (MPI), 2018**

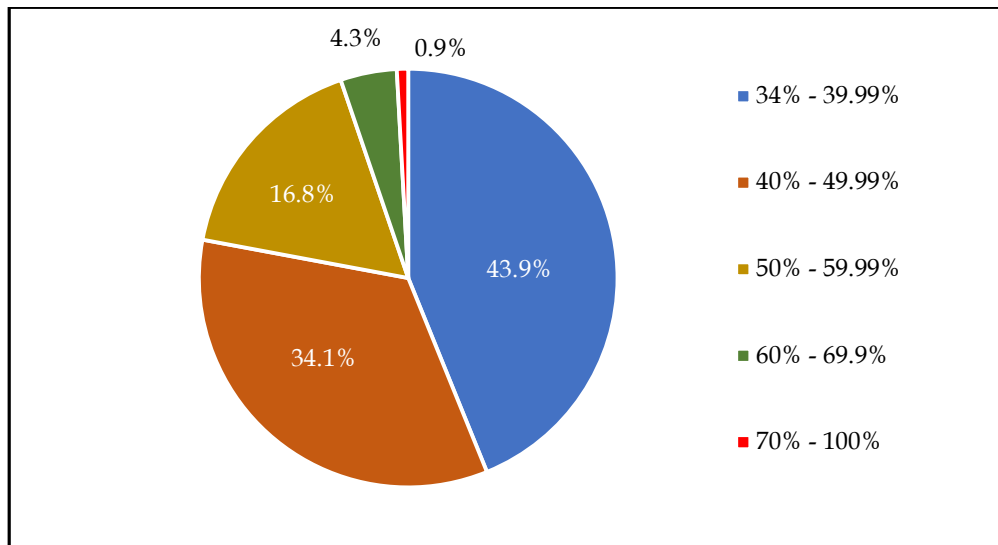
Poverty Cutoff (k)	Index	Value	Confidence Interval (95%)	
k-value=34%	MPI	0.109	0.107	0.112
	Headcount ratio (H, %)	24.9%	24.3%	25.5%
	Intensity (A, %)	43.9%	43.7%	44.2%

Source: Based on data from HIES 2018.

Figure 1 depicts the distribution of the intensity of poverty among the poor. Just over forty percent (43.9%) of all poor people in Samoa experience deprivations in the lowest intensity band, which is between 34.01% and 39.99% of all weighted indicators. About 34% of the poor experience the next higher gradient of intensity and approximately 17% of the poor experience the next intensity gradient of 50.01% to 59.99% of the weighted indicators. On the other end, only a sheer 0.9% of the poor population experience deprivations in the highest intensity band of 70+% of all weighted indicators, implying that very few poor Samoan's are deprived in nearly all indicators.

While it will be easier for poor persons with low intensity to move out of poverty, the greater concern is those deprived in 50% or more of the weighted indicators representing 22.0% of the poor population.

**Figure 1: Intensity Gradient among the Poor, 2018**



Source: Based on data from HIES 2018.

### 3.2 Samoa's MPI across Urban and Rural area

Applying the property of subgroup decomposability, we investigate the levels of poverty by rural and urban areas. Table 4 shows the MPI, incidence and intensity of multidimensional poverty by urban and rural areas. As can be seen in the table, the rural poverty headcount ratio is much higher than that for the urban area – 28.1% and 11.4% respectively. In addition to this, the rural area also has a much higher MPI than the urban area implying that poor people in the rural area experience almost three times more of the total deprivations that would be experienced if all people were deprived in all 12 indicators. It must be noted that just over 80% of Samoa's population live in rural areas.

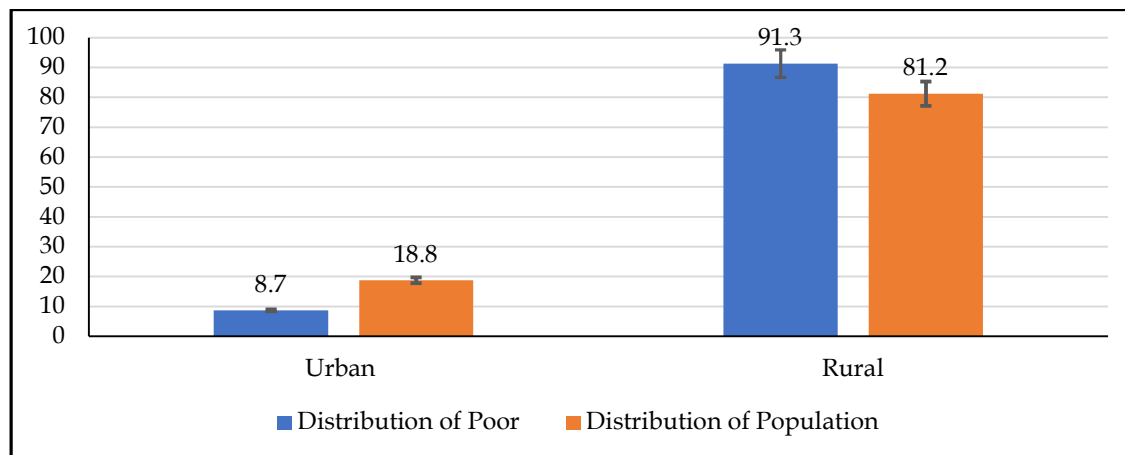
**Table 4: Multidimensional Poverty by Urban/ Rural Areas, 2018**

Index	Urban			Rural		
	Population Share (%)	Value	Confidence Interval (95%)	Population Share (%)	Value	Confidence Interval (95%)
<b>MPI</b>	<b>18.8</b>	0.048	0.044 0.052	<b>81.2</b>	0.124	0.121 0.127
<b>Headcount ratio (H, %)</b>		11.4	10.4 12.4		28.1	27.4 28.8
<b>Intensity (A, %)</b>		42.2	41.5 42.9		44.1	43.8 44.3

Source: Based on data from HIES 2018.

Figure 2 compares the distribution of the poor and general population across urban and rural areas. Even though just over 81% of Samoa's population reside in rural areas, over 91% of the multidimensionally poor live in those areas. On the contrary, approximately 9.0% of Samoa's multidimensionally poor people reside in urban areas which represents about 19% of the total population.

**Figure 2: Distribution of Poor and Population by Rural/Urban Areas, 2018**



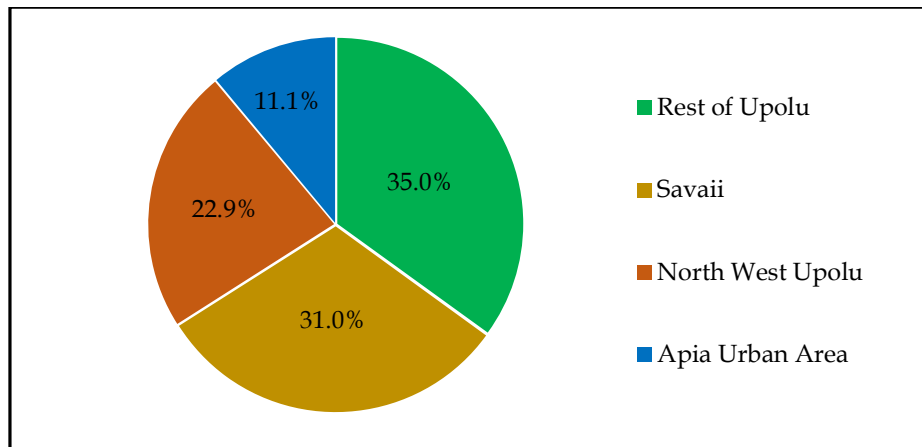
Source: Based on data from HIES 2018.



### 3.3 Samoa's MPI across Regions

Figure 3 graphically shows where the poor people live across the four statistical regions of Samoa. The Rest of Upolu region has the largest percentage of multidimensionally poor (35%) followed by the Savaii region. As expected, the Apia urban area region has the lowest percentage of poor people (11%).

**Figure 3: Distribution of MPI Poor by Region, 2018**



Source: Based on data from HIES 2018.

Table 5 shows the regional estimates for the MPI, the incidence and the intensity of multidimensional poverty. The overall pattern suggests that the Rest of Upolu region has the highest levels of multidimensional poverty and incidence of poverty with an incidence of 34.3%, while the North West Upolu region register the highest levels of intensity of poverty (44.5%) and also housing the largest number of multidimensionally poor (16,030). On the other side of the spectrum, the Apia Urban Area region has the lowest MPI, incidence and intensity and also housing the lowest number of multidimensionally poor people (4,280).

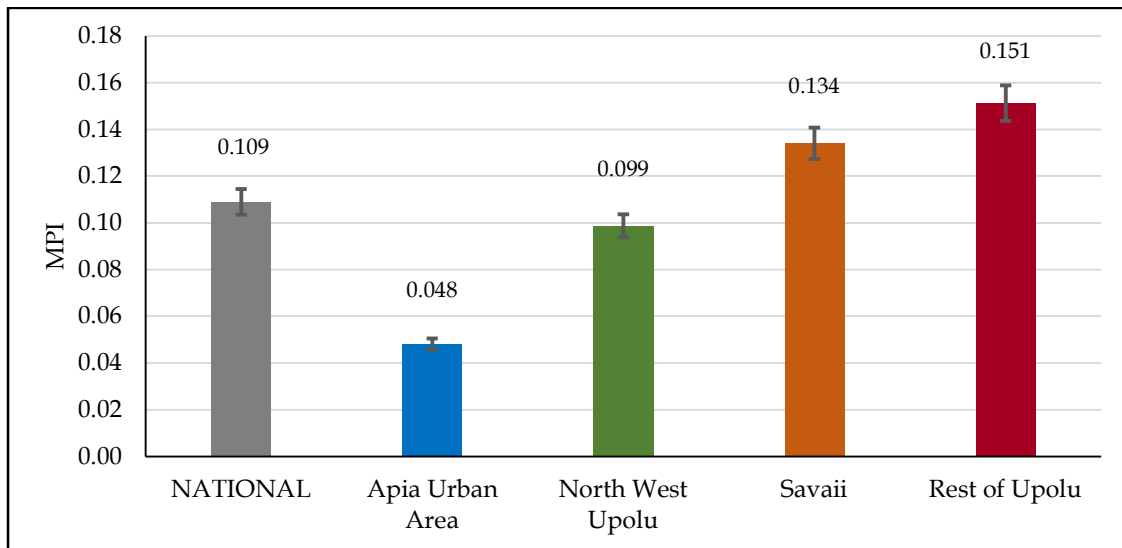
**Table 5: Multidimensional Poverty by Region, 2018**

Region	Population Share (%)	MPI			Headcount ratio (H, %)			Intensity (A, %)			Number of multidimensionally poor people
		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		Value	Confidence Interval (95%)		
Apia Urban Area	18.8	0.048	0.044	0.052	11.4	10.4	12.4	42.2	41.5	42.9	4,280
North West Upolu	36.2	0.099	0.094	0.103	22.2	21.2	23.2	44.5	44.1	44.9	16,030
Rest of Upolu	23.3	0.151	0.145	0.158	34.3	32.9	35.7	44.1	43.7	44.5	15,910
Savaii	21.7	0.134	0.128	0.140	30.8	29.5	32.1	43.6	43.1	44.0	13,320

Source: Based on data from HIES 2018.

Figure 4 provides a graphical illustration of the level of MPI in each region. Since Figure 4 shows that the confidence intervals do not overlap, it is possible to rank all four regions in terms of poverty in that multidimensional poverty in the Rest of Upolu region have the highest levels of poverty while the Apia Urban Area region has the lowest levels of poverty.

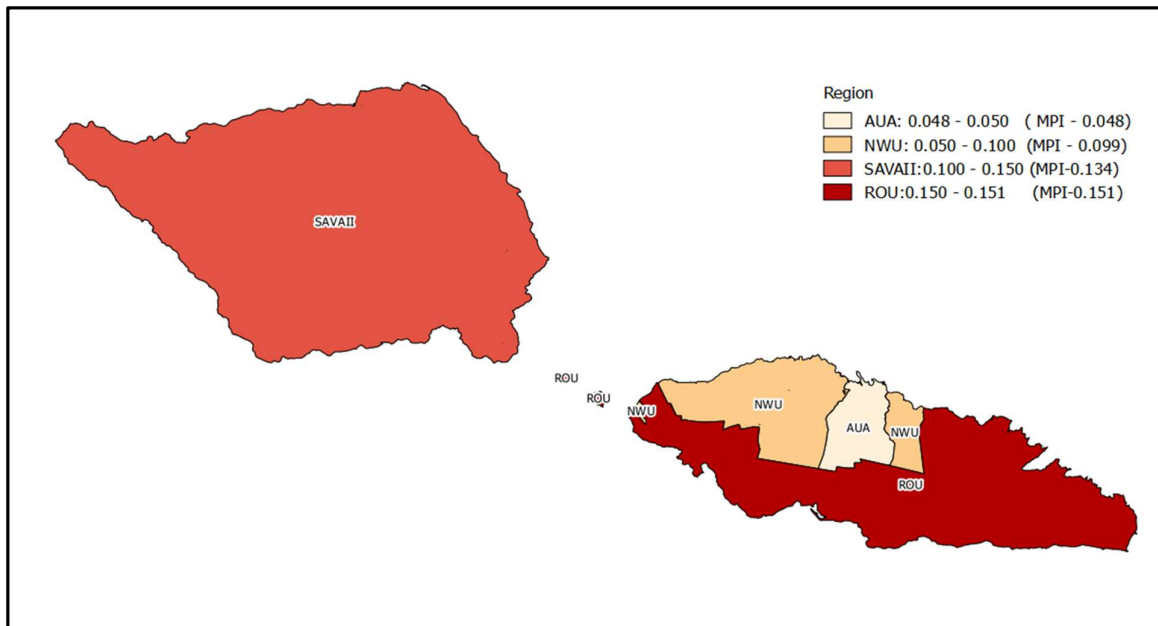
**Figure 4: MPI by Region, 2018**



Source: Based on data from HIES 2018.

Figure 5 shows the disaggregation of the national MPI by region, indicating that MPI varies considerably across regions.

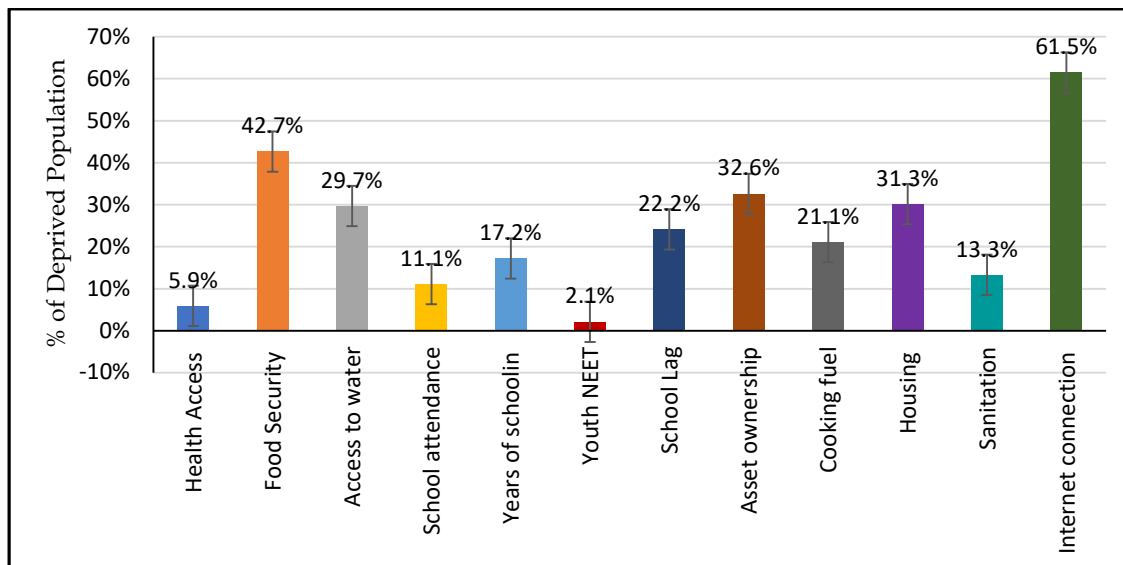
**Figure 5: MPI map by Region, 2018**



### 3.4 National Uncensored and Censored Headcount ratios

The uncensored headcount ratio of each indicator represents the total population of Samoa, who are deprived in that particular indicator, irrespective of their poverty status. Figure 6 presents these rates for 2018, identifying the main areas of deprivation. As depicted in the figure, the highest deprivations are found for internet connection (with 61.5% of the population deprived in this indicator), followed by food security (42.7%), asset ownership (32.6%) and housing (31.3%). On the contrary, some indicators show lower rates of deprivation. In particular, youth NEET with 2.1% of the population in Samoa living in a household where at least one person aged 14 to 24 is not in education or employment and healthcare access with 5.9% of the population deprived in this indicator.

**Figure 6: National Uncensored Headcount Ratios, 2018**



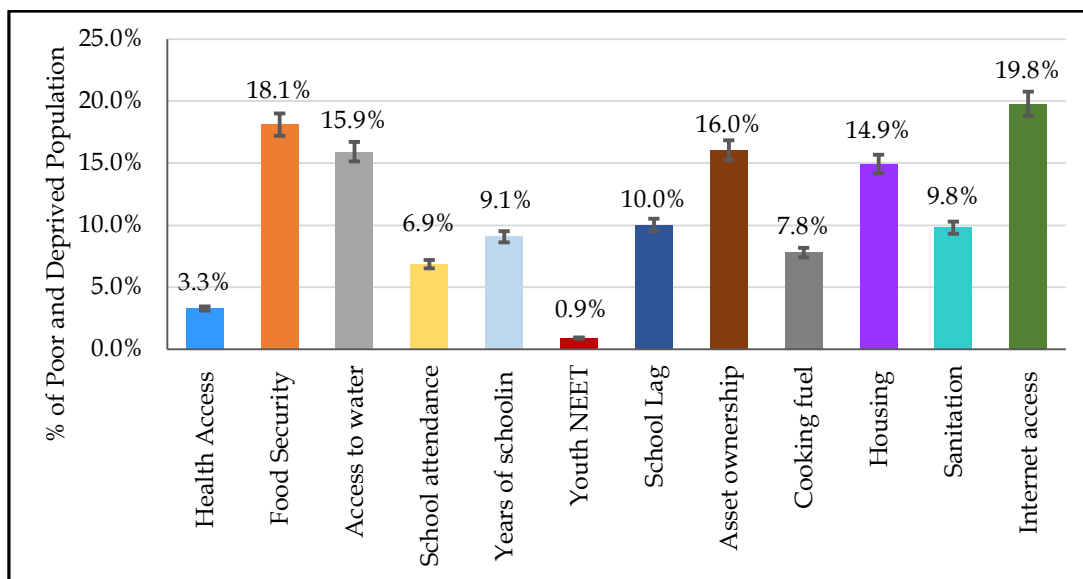
Source: Based on data from HIES 2018.

The censored headcount ratio of an indicator represents the proportion of the population that is multidimensionally poor and also deprived in that indicator. The MPI can also be computed as the sum of the weighted censored headcount ratios. So, reducing any of the censored headcount ratios changes poverty. Figure 7 shows that the largest deprivation is for people living in households with no internet connection. In 2018, 19.8% of the population is multidimensionally poor and deprived in this indicator. Just over 18.0% of people live in households where at least one household member ran out of food or unable to eat healthy and nutritious food in the last 12 month because of a lack of money or other resources (food security indicator) and are also multidimensionally poor. In turn, about 16.0% live in households that are

multidimensionally poor and do not own a car and does not own more than one of the following assets: TV, refrigerator or washing machine (asset ownership indicator).

Figure 7 further shows that the smallest deprivation is for the indicator of youth NEET with only a sheer 0.9% of individuals deprived in this indicator and also multidimensionally poor. Just over 3% live in households that are multidimensionally poor are deprived in healthcare access therefore, at least one household member that required treatment for an illness did not visit a health professional or a traditional healer in the last three months (health access indicator).

**Figure 7: National Censored Headcount Ratios, 2018**

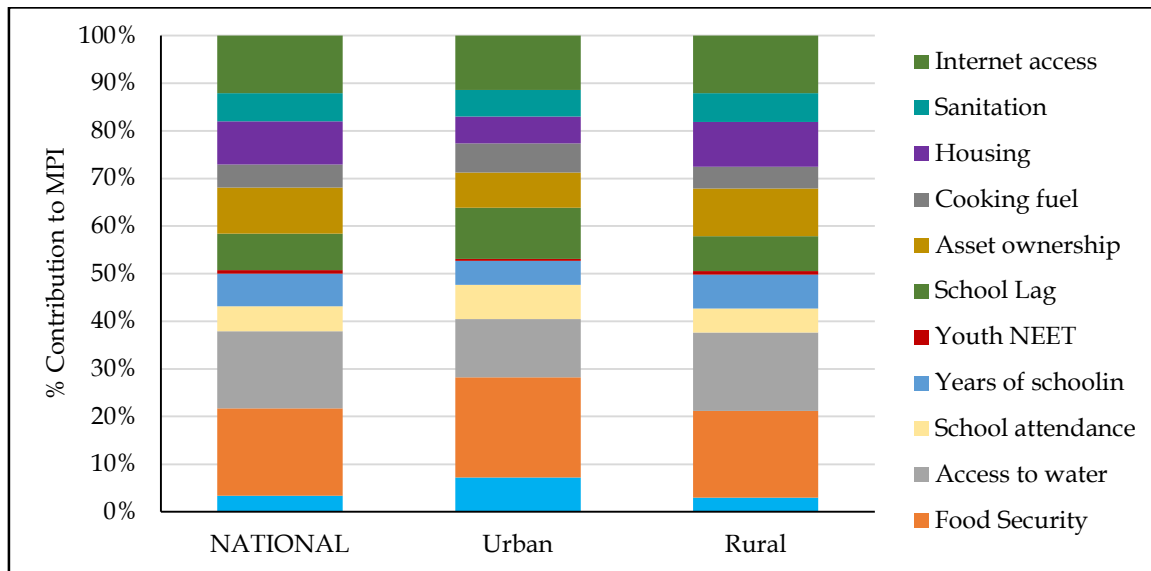


Source: Based on data from HIES 2018.

For a more in-depth view on multidimensional poverty, it is useful to see the percentage contribution of each of the 12 indicators to overall multidimensional poverty in both rural and urban areas of Samoa.

Figure 8 shows the weighted percentage contribution of each indicator, depicting the composition of multidimensional poverty in both rural and urban areas. Recall that the weights for the health and education and employment indicators are higher than those for the living standard indicators, as there were only three indicators for health, four for education and employment while there were five indicators for the living standard dimension. While all dimensions are equally weighted, the indicators carrying higher weights - in health and education and employment - are expected to contribute relatively more to overall poverty.

Figure 8: Percentage Contribution of each Indicator by Urban and Rural MPI, 2018.



Source: Based on data from HIES 2018.

Figure 8 shows that the highest contribution to urban poverty is the deprivation in food security (21.06%), followed by access to drinking water (12.28%) and internet connection (11.42%). In terms of dimensions, health is the largest contributor to multidimensional poverty in the urban area, with a contribution of 40.5%. The dimensions of living standards and education and contribute 36.1% and 23.4% respectively to overall poverty.

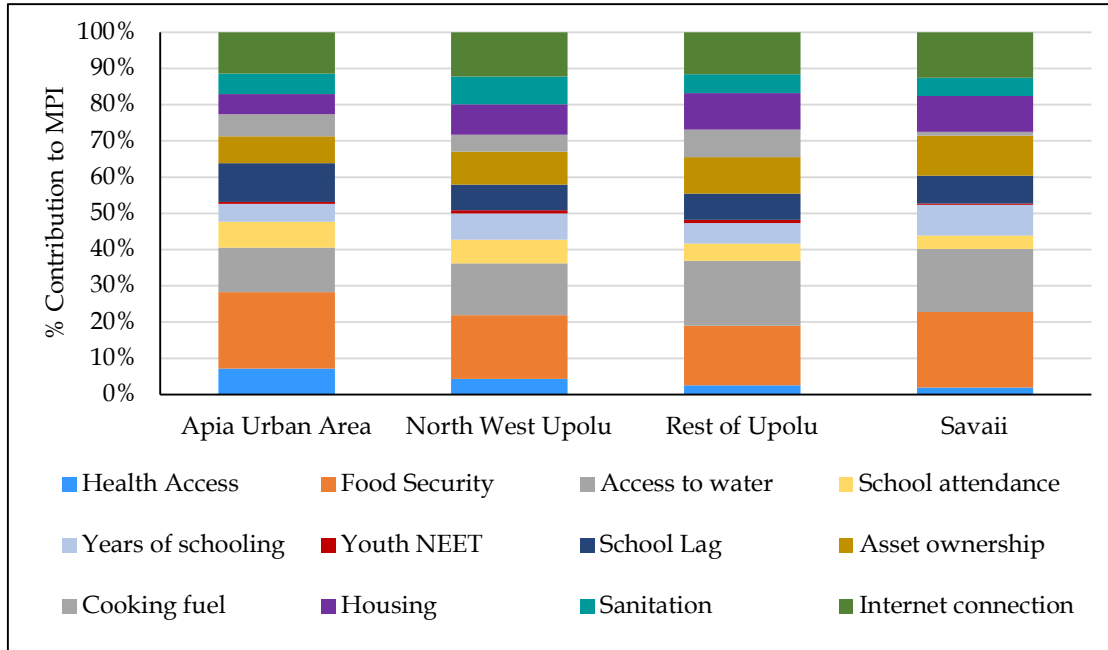
Rural multidimensional is also influenced by the deprivation in food security, contributing 18.15% to the rural MPI. The second and third largest contributors to the rural multidimensional poverty are also access to drinking water (16.53%) and internet connection (12.11%). When aggregating by dimension, living standard contributes the most to rural poverty with a share of 42.15% while health contributes 37.67%. The education dimension contributes the least to rural poverty with 20.18%.

Since the Alkire Foster method allows for sub-group decomposability and dimensional breakdown, we were also able to explore the dimensional composition of the MPI not only at the national and urban/rural level but also at the regional level. As Figure 9 highlights, the decomposition by region is particularly important as multidimensional poverty varies substantially across all the four regions of Samoa.

Figure 9 illustrates the percentage contribution of each indicator to multidimensional poverty for each region. At first glance, the composition of multidimensional poverty varies across all the regions. For instance, the contribution of multidimensionally

poverty to both asset ownership and housing indicators are both larger in Savaii than the other regions. In the health access indicator, the Apia Urban Area has the highest contribution to multidimensional poverty. Both the dimensions of health and living standards each contributed more than 36% to overall poverty in all the regions. In contrast, the Education dimension contributed less than 24% to overall poverty in all regions.

**Figure 9: Percentage Contributions of Each Indicator to Regional MPI, 2018**



Source: Based on data from HIES 2018.

### 3.5 Performance across household characteristics

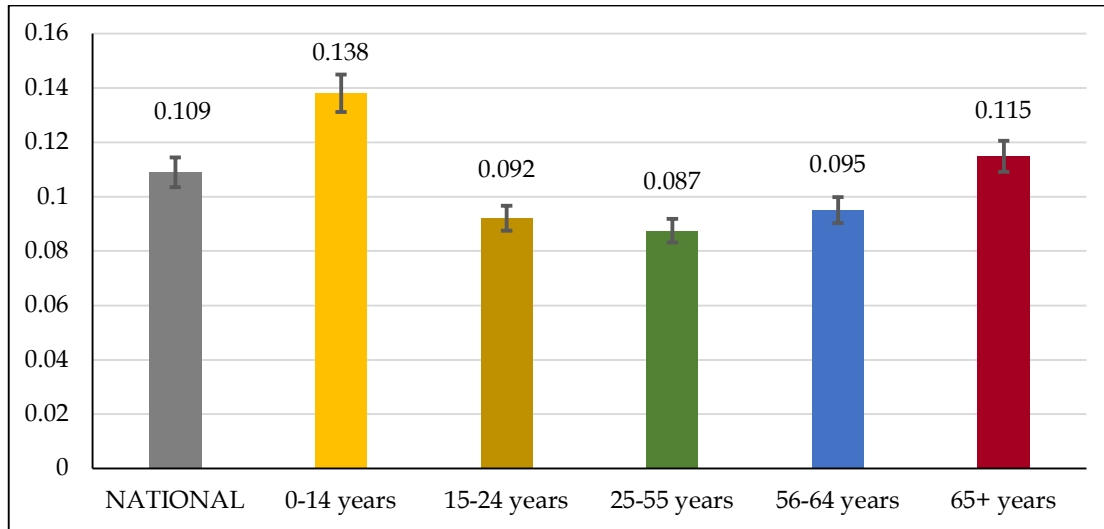
In this section, we examine how multidimensional poverty varies by household characteristics. For that purpose, we decompose the population by age-group, sex and education level of the household.

As shown in Figure 10, children in the age group of 0-14 years represent the poorest age group, with a MPI of 0.138 as reported by the 2018 HIES. There is a decreasing pattern in the MPI after this age group as age increases until age 56 and over where the MPI increases. Conversely, the age group of 25-55 years show the lowest MPI of 0.087. The youth population (age 15-24 years) show the second lowest MPI of 0.092.<sup>5</sup>

<sup>5</sup> Children aged 0-14 years represent 37.8% of the population. The population share of the age groups 15-24, 25-55, 56-64 and 65+ are equal to 17.4%, 33.4%, 6.0% and 5.4% respectively.

The figure further revealed that both the child dependent population (age 0-14 years) and old-age dependent population (age 65 years and over) both have MPI figures higher than the national figure of 0.109.

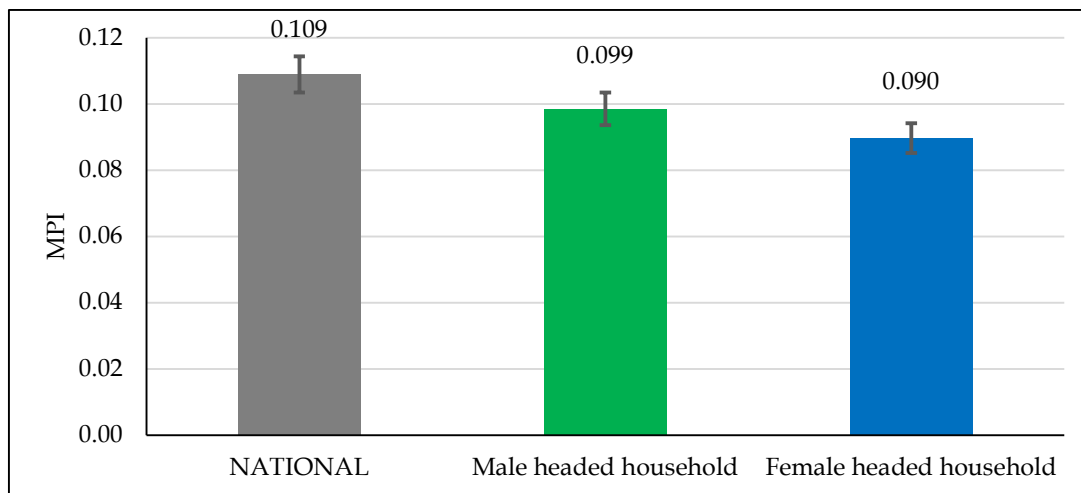
**Figure 10: Multidimensional Poverty by Age Group, 2018**



Source: Based on data from HIES 2018.

Figure 11 highlights differences between female-headed household and male-headed households in terms of the MPI.<sup>6</sup> It shows that female-headed households are less likely to suffer from multidimensional poverty than male-headed households, although the differences are not significant.

**Figure 11: Multidimensional Poverty by Sex of Household Head, 2018**

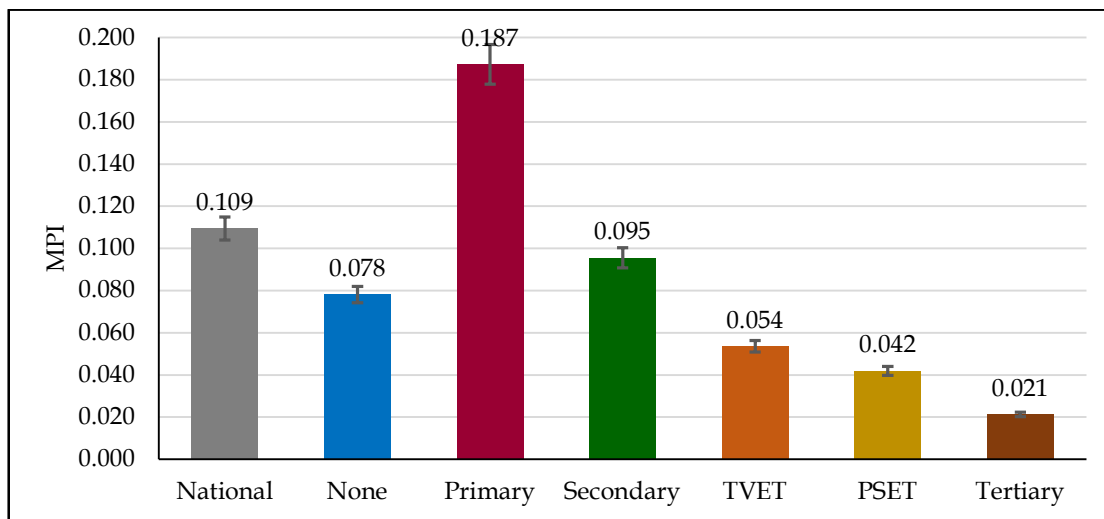


Source: Based on data from HIES 2018.

<sup>6</sup> 51.1% of total households in Samoa are headed by a male while 48.9% are headed by a female

Figure 12 shows multidimensional poverty incidence by highest completed level of education of household head. The figure reveals that higher the level of educational attainment of the household head, the lower the incidence of multidimensional poverty, except for those who have never completed any education level. This implies the inverse relationship between multidimensional poverty and the education level completed of the household head. This is not surprising after all hence, designing policy responses around education still merits consideration in the future.

**Figure 12: Multidimensional Poverty by Highest Education Level Completed by Household Head, 2018**



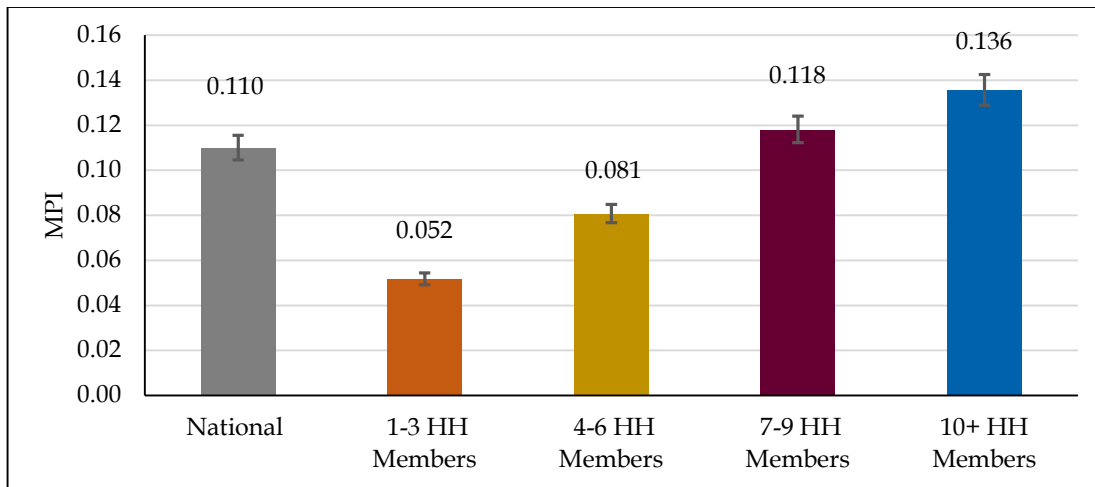
Note: TVET (Technical and Vocational Education and Training) and PSET (Post School Education and Training)

Source: Based on data from HIES 2018.

Disaggregating the MPI further by household size makes for another interesting household characteristic. Figure 13 depicts the disaggregation of the MPI by household size with four groups of household sizes with the lowest group formed by households with 1-3 members and the highest group having more than nine members. It is clear from the figure below that as the household size increase, MPI increase as well. Furthermore, poverty is significantly higher in households having ten or more members than in those with one to three members.<sup>7</sup> Based on the HIES, the average household size for Samoa is seven members.

<sup>7</sup> Out of the total population in Samoa, 6.1% live in household with one to three members. In turn, 26.5% live in households with four to six members, 30.9% with seven to nine members, and 36.4% with more ten or more household members.



**Figure 13: Multidimensional Poverty by Household Size, 2018**

Source: Based on data from HIES 2018.

### 3.6 Robustness Test

The results of the MPI have been found with a precise and coherent structure where each dimension has equal weights of 33.3 percent and the cut-off poverty line is 34 percent. In this section, results for alternative structures are presented and shows that Samoa's MPI structure is proven to be robust.

Three robustness tests were carried out. Both consisted of analyzing the changes in the ordering (ranking) of districts under different alternative structures for the MPI. The first test consists of calculating the Spearman correlation coefficient which is used to measure the strength of certain variables, taking values ranging between -1 and 1. The closer it is to 1, the greater association there is between the district poverty orderings defined by the structures that are being compared. Conversely, the closer it is to -1, the greater the disagreement between district poverty ordering.

The second test consists of calculating the Kendall correlation coefficient which is also used to measure the rank of certain variables. Considering two districts for instance, Samoa's MPI allows determining which district is the poorest on average. If this pairwise ordering is unchanged under an alternative structure (using different poverty thresholds or k value), then the pairwise ordering is said to be concordant; otherwise, it is said to be discordant. This coefficient also ranges between -1 and 1. The closer it is to 1, the greater association there is between the district poverty orderings defined by the structures that are being compared.

The third test consists of performing similar pairwise comparisons taking into account sampling errors in the MPI estimates for each district. A pairwise comparison is said to be robust if, considering sampling errors, the relative poverty ordering remains the same under alternative specifications of the MPI. The results of these comparisons can be summarized as the proportion of pairwise comparisons that are robust among all the possible pairwise comparisons that can be performed. This proportion ranges between 0 and 1, where 1 denotes perfect robustness (i.e. all possible pairwise comparisons are robust), and 0 denotes the complete absence of robustness (i.e. none of the possible pairwise comparisons are robust).

The rank correlation coefficients were calculated to assess the stability of the district poverty orderings as the preferred MPI structures with respect to alternative specifications, one at a time. The results have been arrived at after comparing the preferred structure (poverty cut-off of 34 percent and equal weights for all three dimension) with a set of alternative structures defined by alternative poverty thresholds (dimensional weights remained unchanged). The chosen alternatives represent two potentially poverty cutoffs: 25 percent and 50 percent. Furthermore, when assessing the stability of pairwise poverty orderings for the 4 districts considering sampling errors, it is found that 77.82 percent of the 861 possible pairwise comparisons are robust to changes in the poverty threshold. Hence, it is found that choosing a different poverty threshold does not greatly alter the district poverty orderings. In this sense, the structure of the MPI is effectively robust to changes in the poverty line.



## CHAPTER 4: CONCLUSION AND RECOMMENDATIONS

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This MPI report marks Samoa's endeavours to produce a different approach to measuring poverty in addition to conventional income poverty measures. It is intended to complement existing income poverty measures, namely the food poverty line (FPL) and the basic needs poverty line (BNPL). Both measures provide an important source of information for public policy. Samoa's national MPI, in particular, can help to monitor progress in meeting various sector plans and key priority areas in the Pathway for the Development of Samoa FY 2021/22 – FY 2025/26 with the vision of fostering social harmony, safety and freedom for all. In addition to this, this MPI of .109 will further serve as a baseline for Samoa in trying to meet the Sustainable Development Goal 2030 specifically target 1.2, by halving the proportion of men, women and children of all ages living in poverty in all its dimensions to ensure that no one is left behind.

To be identified as poor a person must be deprived in more than one-third of the weighted indicators – which is between four and twelve indicators, depending on their weights. The MPI of 0.109 indicates that poor people in Samoa experience 10.9% of the deprivations that would be experienced if all people in Samoa were deprived in all indicators. The largest contributions to national poverty are deprivations in food security (18.4%) followed by access to drinking water (16.2%) and internet connection (12.1%). When aggregated by dimensions, the largest contribution to multidimensional poverty is due to living standards (41.7%), while the dimensions of health and education contribute 37.9% and 20.5% respectively.

Finally, this section presents some recommendations based on the outcome of the analysis of this report:

1. **Use the MPI to measure and monitor poverty reductions and the achievements of SDG 1.2.2.** It is recommended to use the MPI (which combines the percentage of poor people (H) with the intensity of poverty (A) as the overarching headline figure of poverty to measure SDG indicator 1.2.2. This measure – which is sensitive to improvements in either intensity or incidence – can be used to determine and declare changes over time. The next HIES will be conducted by the bureau in early 2023 to facilitate this new exercise. Additionally, the MPI provides an authoritative measure to compare regions and it can be broken down by dimension and indicator to show how poverty has changed over time.

2. **Promote the use of MPI alongside income poverty for resource allocation.** Allocation of public sector resources should be informed by MPI as well as existing monetary poverty levels (food poverty and basic needs poverty lines).<sup>8</sup> Although the MPI and consumption poverty measures differ, both should be used as complementary tools to guide policy. In addition, the MPI provide a road map to define which dimensions and indicators should be prioritised, and how those differ by region, area and household characteristics (as presented in this report). Therefore, using this information, can guide policy decisions on which policies, programmes and activities to prioritise in each of the regions and groups, to guarantee the most efficient use of resources.
  
3. **Analyse the MPI by districts.** Given the new initiative of the government to have district councils for all the districts in Samoa, it was impossible to align the analysis of the MPI at the district level using HIES, given that the data was not representative at this level, and the number of observations in some Districts were lower than 25, therefore figures will have a large error. It would be vastly beneficial for all districts in Samoa to have their own respective MPI figure for monitoring multidimensional poverty over time and to formulate district level policies. Would be a possibility for the bureau to have the relevant MPI variables and questions in the next round of census of population and housing in 2026, as it covers the whole country.
  
4. **Include MPI variables in the next census.** If possible, the next population and housing census in 2026 should include all necessary variable to compute the national MPI for Samoa. Therefore, it will be possible to map the levels of multidimensional poverty at the district level, and to create a MPI district level profile to gauge the progress over the years. This will help create evidence-based policies and facilitate policy intervention perhaps at the grassroots level, and will provide a picture of MPI in Samoa at the lowest disaggregation level.
  
5. **Create policy interventions to incentivise the completion of secondary or tertiary education.** Regarding education level cohort, those household head who have completed only primary level of education are the poorest, having an MPI twice as much as the other levels of education as evidently presented in Figure 12 therefore, to implement policies to promote the completion of secondary and tertiary levels will potentially help on poverty reduction.

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<sup>8</sup> See Samoa Hardship and Poverty Report 2016; Analysis of the 2013/14 Household Income and Expenditure Survey, Section D for a more detailed discussion on the poverty lines for Samoa.

6. **Create policy interventions to address rural deprivations.** Evident throughout the report, the rural area, especially the rest of upolu region, showed high incidence of multidimensional poverty. Based on this, policy interventions should be designed to ensure that the necessary resources and assistance should be tailored towards the rural area.



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## APPENDIX 1: ADDITIONAL TABLES

Table A.1: Censored headcount ratios by Urban/ Rural, 2018

	Censored Headcount Ratio	95% Confidence Interval	
NATIONAL	24.9%	24.32	25.49
Urban Area	11.4%	10.39	12.40
Rural Area	28.1%	27.42	28.80

Table A.2: Censored headcount ratios by Region, 2018

	Censored Headcount Ratio	95% Confidence Interval	
NATIONAL	24.9%	24.32	25.49
Apia Urban Area	11.4%	10.39	12.40
North West Upolu	22.2%	21.22	23.16
Rest of Upolu	34.3%	32.8	35.68
Savaii	30.8%	29.50	32.09

Table A.3: Censored headcount ratios by Sex of household head, 2018

	Censored Headcount Ratio	95% Confidence Interval	
NATIONAL	24.9%	24.32	25.49
Male	22.6%	20.88	24.22
Female	20.4%	17.25	23.49

Table A.4: Censored headcount ratios by Highest Education Level of household head, 2018

	Censored Headcount Ratio	95% Confidence Interval	
NATIONAL	24.9%	24.32	25.49
None	16.1%	39.12	44.37
Primary	41.7%	21.26	23.15
Secondary	22.2%	4.18	6.30
TVET	13.0%	9.24	16.85
PSET	9.2%	6.28	12.20
Tertiary	5.2%	-9.32	41.58



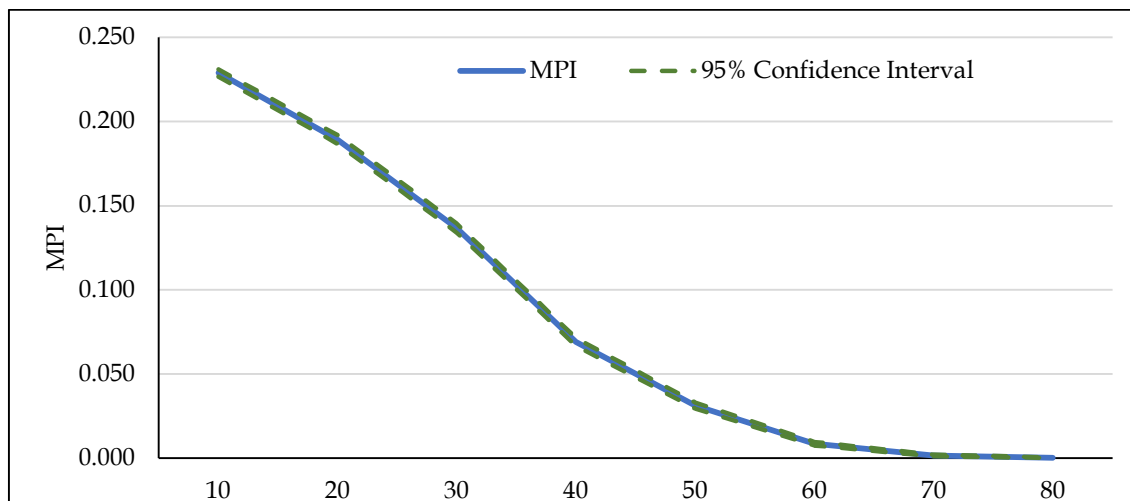
Table A.5: Censored headcount ratios by Age Group, 2018

	Censored Headcount Ratio	95% Confidence Interval	
NATIONAL	24.9%	24.32	25.49
0-14 years	31.1%	30.06	32.11
15-24 years	21.2%	19.92	22.58
25-55 years	20.1%	19.19	21.08
56-64 years	21.7%	19.40	23.98
65+ years	26.3%	23.74	28.90

## APPENDIX 2: ROBUSTNESS ANALYSIS OF SAMOA'S MPI

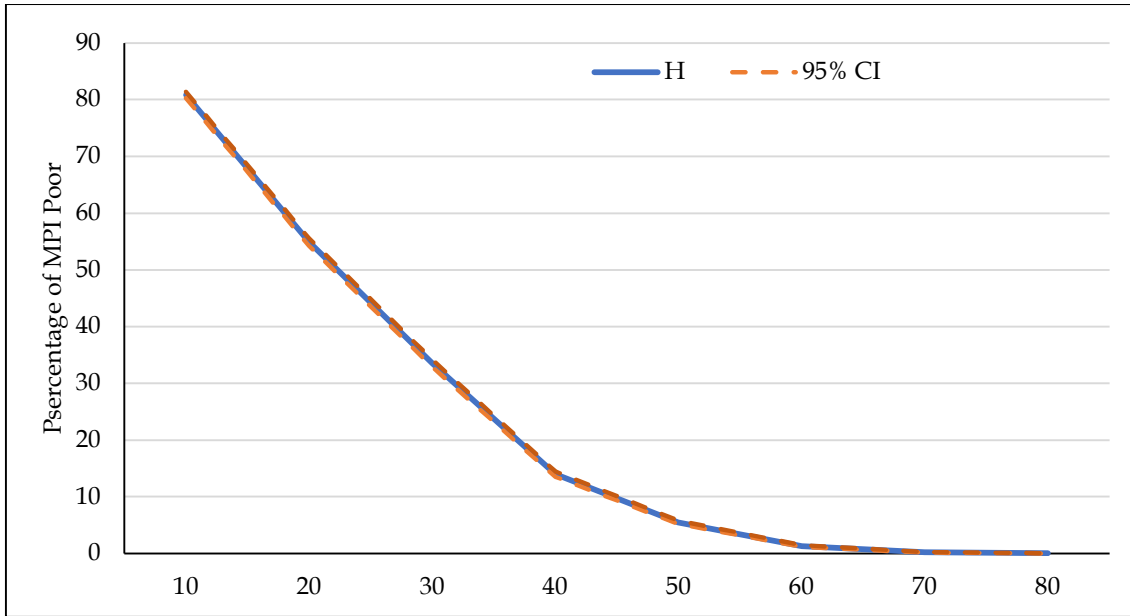
Figures 14, 15 and 16 illustrate the level (MPI), incidence (H) and intensity of multidimensional poverty (A) for various levels of the poverty cut-off  $k$ . They show that when  $k = 10\%$  the MPI is about 0.220; incidence is around 80.0% percent, indicating that the large majority of the population is deprived in at least 10% or at least one of the weighted indicators, while intensity is about 28.0% meaning that these 80% are on average deprived in 28% of the indicators. When  $k$  is larger than 70%, poverty is practically zero and incidence is almost zero, implying that practically no one is deprived in more than 70% of the weighted indicators, while intensity is above 74% meaning that almost no one is deprived in more than 74% of the indicators. Additionally, there are no sharp discontinuities in MPI, H and A around the chosen  $k$ -value of 34%.

**Figure 14: MPI for Different Values of the Poverty Cut-off  $k$**



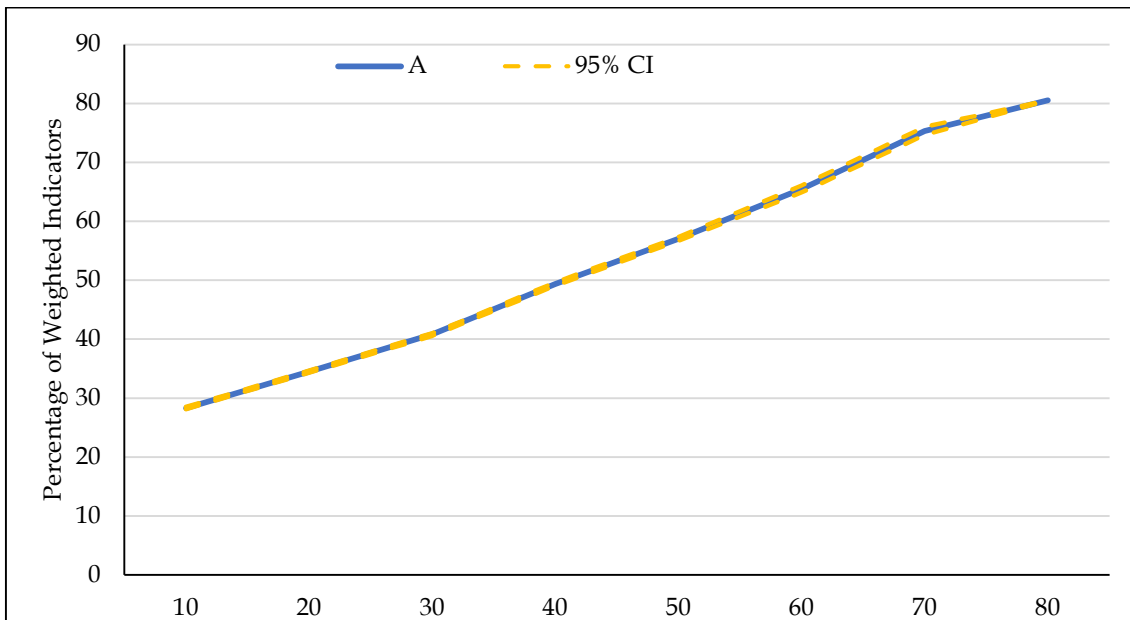
Source: Based on data from HIES 2018.

**Figure 15: Headcount Ratio for Different Values of the Poverty Cut-off  $k$**



Source: Based on data from HIES 2018.

**Figure 16: Intensity of Poverty for Different Values of the Poverty Cut-off  $k$**



Source: Based on data from HIES 2018.

