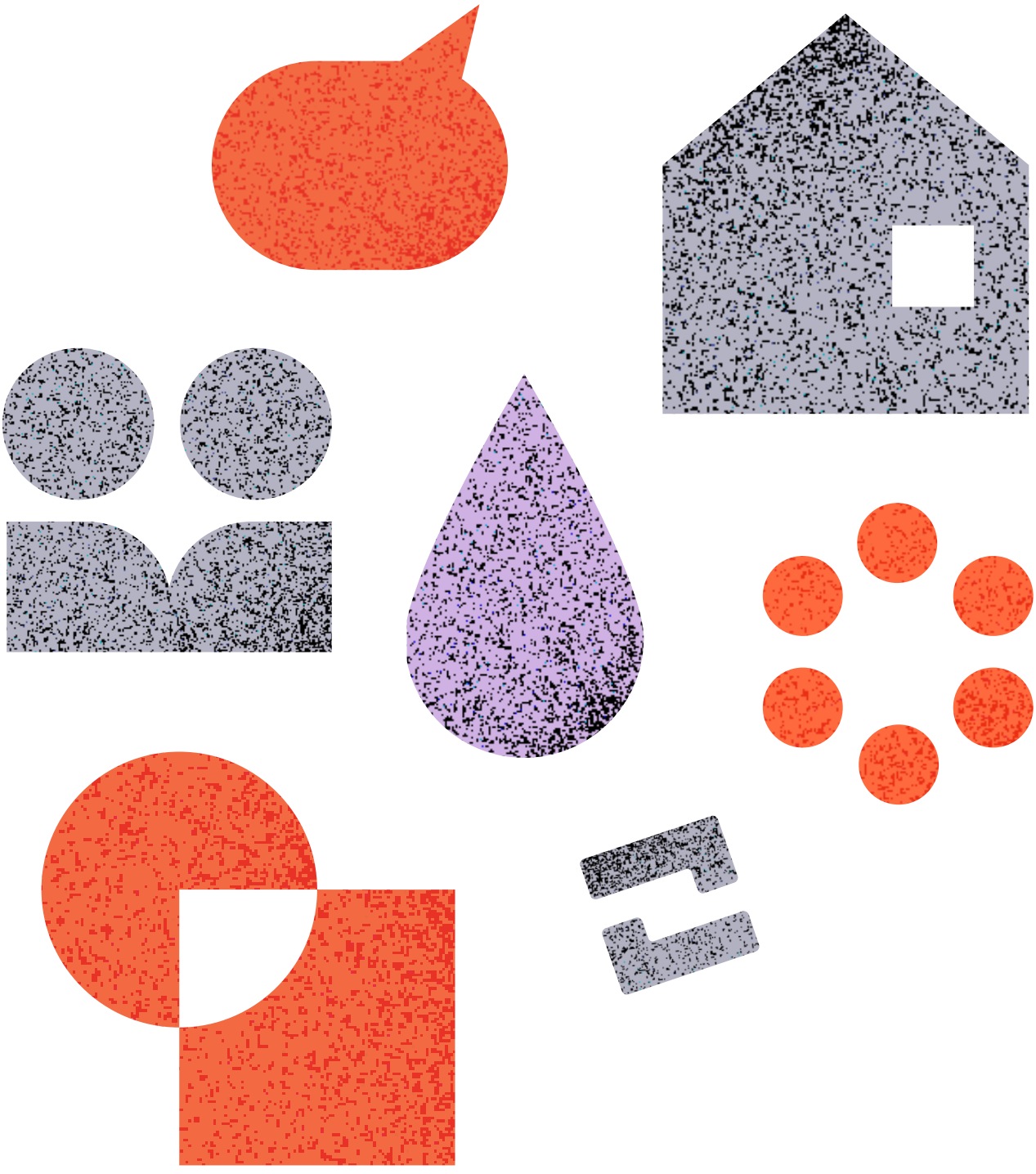
EQUALITY INSIGHTS

Implemented by IWDA INTERNATIONAL WOMEN'S DEVELOPMENT AGENCY

Equality Insights Rapid

REPORT, TONGA SURVEY 2022



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We appreciate the engagement and feedback from stakeholders representing TSD, ministries, civil society organisations, the Pacific Community and the Australian High Commission in Tonga, during validation workshops and review of the penultimate version of this report.

Any errors or limitations in the work are the sole responsibility of the *Equality Insights* program at the International Women's Development Agency (IWDA).

The current *Equality Insights* Program is a partnership between IWDA and the Australian Government through the Department of Foreign Affairs and Trade (DFAT). We extend particular thanks to the Australian High Commission in Tonga, and to the Gender Equality Branch in Canberra.

Equality Insights takes forward earlier work known as the *Individual Deprivation Measure* (IDM). The IDM was a collaborative intellectual endeavour commencing in 2008. For more information on the history and partners involved, see *Equality Insights Rapid: Tool Development Report*.[2]

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PARTNER ROLES AND ENGAGEMENT

The *Equality Insights Rapid* study in Tonga began in August 2021 when the Tonga Statistics Department (TSD), in partnership with the Ministry of Internal Affairs, Women's Affairs and Gender Equality Division (MIA/WAGED), put forward a joint expression of interest in undertaking *Equality Insights Rapid* data collection with the International Women's Development Agency's *Equality Insights* program. The purpose of the survey was to gain new, current, individual-level, gender-sensitive and intersectional data about multidimensional poverty to inform COVID-19 recovery efforts. Tonga is the first country in the Pacific to officially conduct household-level and individual-level assessment of multidimensional poverty.[i]

TSD was the lead in-country partner for the study. TSD led the contextualisation and translation of the survey instrument, training and management of enumerators, and collecting and cleaning data. Data collection took place over seven weeks from early May to June 2022. A total of 6,703 respondents from 2,551 households were included in the study. The 99 percent participation rate achieved by TSD reflects the capacity and commitment of the enumerators and the leadership of Principal Statistician Lupe Moala Tupou.

Equality Insights is a flagship program of IWDA, an Australian-based organisation, resourcing diverse women's rights organisations primarily in Asia and the Pacific, and contributing to global feminist movements to advance our vision of gender equality for all. IWDA has been at the forefront of global efforts to take a gender sensitive approach to poverty measurement since 2008. The *Equality Insights* program is a key part of IWDA's work to address systemic barriers to gender equality, with a particular focus on inclusive poverty measurement which reveals - rather than hides - the scope and scale of global poverty and who experiences it.

The Australian Government through the Department of Foreign Affairs and Trade (DFAT) funded data collection in Tonga as part of their support for the *Equality Insights* program, with a specific focus on improving the gender equality outcomes of COVID-19 recovery and response in the Pacific. This continues DFAT's sustained investment since 2015 to enable gender-sensitive measurement of poverty and generate data to inform gender-transformative action. For DFAT, the production of gender data that enables intersectional insights is a foundation for effective evidence-based. This is particularly important in the Pacific, where gender data is limited and gender inequality is marked.

ABOUT THIS REPORT

This report presents findings at the dimension level from the data collected in Tonga between early May and the end of June 2022. Analysis was conducted by IWDA, led by Megan Carroll, Data and Insights Manager, with support from Gayatri Ramnath, Data Use and Engagement Manager, and Melissa Meinhart, Statistics and Analysis Consultant. The findings were reviewed, discussed and contextualised with stakeholders in Tonga between February and March 2023. The analysis of the *Equality Insights Rapid* data was considered in the context of other national data, analysis and evidence, as well as the broader relevant regional context. Key insights and their meaning and implications in the Tongan context were unpacked with stakeholders and incorporated in this report.

The findings provide new information about the situation of particular groups in relation to 15 key dimensions of life, in the context of disruptions linked to COVID-19 and the events surrounding the January 2022 volcanic eruption. As *Equality Insights Rapid* collects data predominantly at the individual-level, it is possible to see similarities and differences associated with factors such as gender, age, location and disability, to support recovery efforts and inform policy and programmatic priorities.

Individual-level, multidimensional measurement generates a dataset that can be explored in multiple ways. This report presents only a fraction of the information and analysis that is possible. Further analysis of the *Equality Insights Rapid* data is planned by TSD, IWDA and other partners that will take a range of approaches with relevance for various audiences.

REPORT CONTEXT

The volcanic eruption and related tsunami that occurred in Tonga on 15 January 2022 significantly affected most of the Tongan population and disrupted social and economic activity. It is estimated to have caused damage equivalent to 19 percent of Gross Domestic Product (GDP).[3] An event of this scale inevitably influences data collected in the months following, and may overshadow other influences. Differences that might otherwise have been visible

i To our knowledge, the only other country in which both household-level multidimensional poverty assessment and individual-level quantitative measurement of multidimensional poverty has been undertaken is the Philippines. It was the location for the initial proof of concept use of the Individual Deprivation Measure in 2013, and published an initial methodology for household-level measurement of multidimensional poverty in 2018. However, only the latter survey was official.

in data may be masked by the widespread, shared experience of natural disaster. At the same time, these data reflect important considerations for disaster recovery.

The challenges facing Tonga were compounded by the COVID-19 pandemic. Tonga experienced a substantial COVID outbreak in the first half of 2022 and another outbreak in July-August 2022. COVID-related restrictions on tourism and mobility had an important impact on Tonga's economy. In combination, these factors saw GDP fall by 3.2 percentage points in 2021, from growth in real terms of 0.5 percent in 2020 to contraction of 2.7 percent in 2021. Tonga's GDP was expected to contract by a further 1.6 percent in 2022 before returning to growth of 3.3 percent in 2023 and 3.2 percent in 2024.[4]

INTERPRETING FINDINGS IN THIS REPORT

Equality Insights and *Equality Insights Rapid* are intended to capture multidimensional deprivation experienced by adult individuals at a point in time. An individual's circumstances are influenced by a range of social, economic and environmental factors and contexts. Some of the factors that influence an individual's current situation may have occurred recently. As noted above, the timing of the survey in Tonga in relation to the natural disaster and COVID-19 is a consideration in interpreting the findings presented here. In other cases, the factors influencing an individual's current level of deprivation may have occurred many years ago. For example, *Equality Insights Rapid* assesses education by the highest level of education completed and functional literacy. These indicators are intended to assess the education capability of an individual at the time of the survey. For many people, the majority of their formal education occurs when they are children or young adults. For individuals who completed secondary schooling some time ago, their education capability will be influenced by their education access and opportunities in the past, rather than current education policies and programs. In such cases, disaggregation of results by age is important for gaining insight into the extent to which current capabilities are shaped by differences in educational access and opportunities across time.

In other cases, measurement at a point in time may not capture problems that develop over many years if they are not causing difficulties currently. For example, in the case of the Health dimension, *Equality Insights Rapid* assesses the influence of an individual's current health status at the time of the survey. It does this by asking about the frequency of negative impacts from physical ill-health (illness, injury or persistent pain) and mental unwellness (anxiety and depression) in the preceding four weeks. Issues such as obesity, with implications for physical health over the long term, or chronic conditions that are well-managed by medication, will not be picked up unless they are currently causing negative impacts.

Findings in this report should be interpreted within the parameters *Equality Insights Rapid* as a measure of multidimensional poverty that considers a wide range of factors identified by people with lived experience of poverty. *Equality Insights Rapid* is not a survey of health, or education, or environment, for example and does not replace the need for detailed surveys about the dimensions measured. It is a survey of multidimensional poverty that provides a snapshot into people's experiences in key dimensions at a point in time.

More generally, considering findings from a new data source brings some challenges. *Equality Insights* and *Equality Insights Rapid* were developed to address a significant gender data gap: the lack of individual-level, gender-sensitive data about poverty and inequality that helps to reveal the relationship between gender and poverty. Alternative measurement approaches and disaggregated data can provide new information about the situation of particular groups. This can also bring uncertainties about how to interpret information, including where the insights fit in the landscape of existing data. New insights about the circumstances of particular groups can also raise sensitivities by revealing group-based differences not otherwise well captured by existing measurement approaches.[5] Working with knowledgeable stakeholders to interpret the findings, address uncertainties and navigate sensitivities in an open and transparent way is vital to assessing the implications of findings and realising the potential of new measurement approaches and data sources. An inclusive measurement approach combined with disaggregation may provide insights that were not previously visible, enabling policy makers and advocates to address the needs of different population groups. In turn, these insights enable users to understand different circumstances and contexts, and take responsive, evidence-based action.

KEY TERMS

This section provides brief overview of the meanings of certain words used in this report.

Deprivation	'Deprivation' is used to mean poverty, but is defined broadly and inclusively, consistent with how people with lived experience of poverty understand it.[6] The word deprivation also reflects the measure's grounding in human rights and capabilities, and the understanding that there is a minimal floor or threshold, below which lies unacceptable levels of inequality or deprivation in key areas of life. Scoring below this minimally acceptable threshold is considered "deprived" to some extent. Severe deprivation indicates deprivation in relation to multiple indicators assessed by a dimension, or deprivation in one indicator that is considered to constitute severe deprivation because of its normative significance or impact on functioning. Moderate deprivation indicates current deprivation in relation to one indicator assessed by the dimension or where a specific vulnerability means significant deprivation is foreseeable and a likely risk if circumstances deteriorate.
Dimension	A 'dimension' is an aspect of deprivation or poverty measured by *Equality Insights*. Fifteen dimensions (areas of life) are assessed: clothing, education, energy, environment, family planning, food, health, relationships, safety, sanitation, shelter, time use, voice, water, and work.
Multidimensional poverty	Globally, there are two main quantitative approaches to measuring poverty: Money-based approaches such as the World Bank's International Poverty Line[7] and various national poverty lines, which define poverty as a lack of money. They identify the amount of money an individual needs to purchase a minimum level of goods to survive in a particular economy. Multidimensional approaches, such as the Global Multidimensional Poverty Index[8] and *Equality Insights*, which define poverty more broadly, considering multiple aspects of life to provide a more comprehensive picture of an individual's circumstances. Because *Equality Insights* assesses poverty by considering an individual's circumstances in relation to 15 dimensions of life, plus assets, it is an individual-level, multidimensional poverty measure.
Odds ratio	The analysis in this report uses Ordered Logistic regression models (see Appendix) to control for variations in key variables such as gender, age, location and disability status. The coefficients presented in the regression tables are odds ratios. Odds can be defined as the ratio of a probability of an event occurring (experiencing deprivation) to the probability of an event not occurring (not experiencing deprivation) for a particular group. Odds ratios are used to compare the odds between two groups and can be described as the ratios of the odds between two groups. It can be interpreted as how many times greater (or lesser) the odds of deprivation are in one group compared to the other. For example, the coefficient of 2.51 in Table 23 (Food) against 'Rural' can be interpreted as: controlling for factors such as gender, age and disability, people living in rural areas have 2.51 times higher odds of experiencing food deprivation compared to people living in urban areas.

Scalar measurement	*Equality Insights* is a scalar measure. This means it assesses deprivation on a scale to show different degrees of deprivation below a minimum acceptable threshold. The further an individual is below this threshold, the greater their level of deprivation. *Equality Insights Rapid* uses a three-point scale: does not meet the deprivation threshold, moderate deprivation and severe deprivation. Assessing deprivation on a scale provides information about the extent of deprivation and vulnerability to moving further into poverty. This can provide decision makers with information about the needs of particular groups and support a focus on areas of particular need.
Statistical Significance	Significant differences between proportions in the analysis refers to statistical significance and is calculated at a 95% confidence interval (CI).

REPORT STRUCTURE

As *Equality Insights Rapid* is a new survey variant of a measure that is not yet in widespread use, and Tonga is the first country in which *Equality Insights Rapid* has been used for data collection, the report includes brief information about the rationale for each dimension in the context of measuring multidimensional poverty and inequality. It also summarises what is measured, how it is measured and how responses are scored. This information is important for understanding and interpreting the results presented in this report. Conceptually, *Equality Insights* is broad and holistic. It assesses multidimensional deprivation by considering 15 dimensions of life, and financial deprivation using assets as a proxy. Assessing a measure of this conceptual breadth via a concise phone survey brings particular challenges. Only a fraction of what is relevant for understanding a particular dimension is measured by *Equality Insights Rapid* in assessing that dimension *as an aspect of multidimensional poverty*. The following section on the measure provides additional detail.

Following a summary section presenting key findings and an introduction that includes information about the measure, the Tonga survey, methodology and demographics of the sample, findings for each dimension are presented, with dimensions organised in alphabetical order. This is followed by findings on assets, as a proxy for financial circumstances. Finally, the appendix presents the results from regressions controlling for key variables and a statistical supplemental table that presents results by island groups.

Each dimension chapter includes the following information:

- A brief explanation of the rationale for measuring the dimension *as an aspect of multidimensional poverty*, along with brief information about what *Equality Insights Rapid* measures.
- A figure (graph) providing an overall picture of people's situation in this dimension, which shows the percentage of people in each category of deprivation.
- A table describing the specific circumstances that result in an individual being classified into each of the three categories: Does not meet the deprivation threshold, Moderate deprivation and Severe deprivation.
- Brief text describing the information in the overall figure, and text describing the situation of particular groups presented in a series of four figures (graphs) that present the overall results by: a) gender b) age c) disability d) location.
- Discussion on results from regression analyses (Appendix). Discussion of key insights from analysing differences across island groups.

KEY FINDINGS

Clothing

Clothing deprivation was relatively uncommon, with 82 percent of people not meeting the deprivation threshold

Education

For Education, 11 percent of people were severely deprived, and 50 percent were moderately deprived. There was a large amount of variation in education deprivation across age groups

Energy

One in three people met the threshold for experiencing some level of Energy deprivation. A higher proportion of men were severely deprived compared to women. Energy deprivation also varied by location, with rural areas more likely to be deprived

Environment

Environment deprivation was the most common type of deprivation experienced by people surveyed, with 93 percent experiencing some level of deprivation. There were significant differences by location; a significantly higher proportion of people living in Rural Tongatapu and ‘Eua were significantly deprived in the environment dimension

Family Planning

A majority of respondents (57%) met the threshold for severe deprivation in the family planning dimension

Food

While 29 percent met the threshold for moderate deprivation in food, eight percent met the threshold for being severely deprived. Age was a significant factor with people aged 30-59 more likely than other age groups to meet the threshold for deprivation in food

Health

Health was the dimension with the lowest proportion of people meeting the threshold for deprivation. Four percent of respondents experienced moderate deprivation and a further six percent experienced severe deprivation

Relationships

In total, 37 percent of people met the severely deprived scoring criteria and another 40 percent met the moderately deprived scoring criteria

Safety

One in three people (33%) met the threshold for some level of Safety deprivation, with 23 percent experiencing moderate deprivation and 10 percent experiencing severe deprivation. Women were significantly more likely to meet the deprivation threshold than men. Age was also associated, with the proportion of people experiencing moderate and severe deprivation both decreasing with age

Sanitation

Some level of deprivation in relation to Sanitation was experienced by one in four people, with eight percent moderately deprived and 17 percent severely deprived

Shelter

Overall, 24 percent of people met the threshold for Shelter deprivation, with moderate deprivation more common than severe deprivation

Time Use

Around 34 percent of people were moderately deprived, with a further 20 percent experiencing severe deprivation. Men were less likely to meet the threshold for Time Use deprivation. People aged 30-59 were more likely than those in other age groups to meet the threshold for any deprivation

Voice

A majority of respondents (63%) met the threshold for severe deprivation in the Voice dimension, with an additional 25 percent meeting the threshold for moderate deprivation. Young people were significantly more likely to be severely deprived

Water

Just over 1 in 5 people (21%) met the threshold for water deprivation, with almost all of those meeting the threshold for severe deprivation

Work

Overall, 61 percent of people experienced some level of Work deprivation, with 33 percent moderately deprived and 28 percent severely deprived

Introduction

Dimensions

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Next Steps

OVERVIEW OF EQUALITY INSIGHTS

As a flagship program launched in August 2020 by IWDA, *Equality Insights* is a quantitative, individual-level, gender-sensitive measure of multidimensional poverty, underpinned by research collaborations commencing in 2008, and multi-year programs of work. It builds on previous work on the *Individual Deprivation Measure* (IDM), and was developed as an alternative to household-level measurement of poverty, with the objective that routine poverty measurement provides data that can be disaggregated to show how poverty varies for different groups and whether it disproportionately affects people based on gender, sociocultural background, age, disability status or other demographic characteristics.[9] It was designed to provide a measure that could be widely used, across contexts and over time. Grounded in feminist principles, rights and capabilities, and lived experience of poverty, the measure and associated survey has been reviewed[10], audited[11], tested through use in seven countries, and iteratively adapted.[12]

Equality Insights as a measure assesses multidimensional poverty by considering fifteen dimensions of life—clothing, education, energy, environment, family planning, food, health, relationships, safety, sanitation, shelter, time use, voice, water, and work. It also assesses financial circumstances by measuring assets. The dimensions measured by *Equality Insights,* were informed by the views of nearly 3,000 people with lived experience of poverty across six countries regarding how poverty should be defined and measured, and what needed to change for them to no longer experience poverty.[13]

Equality Insights as an individual-level, gender-sensitive measure of multidimensional poverty can be assessed using a longer face-to-face survey, *Equality Insights Plus* or a shorter phone-survey, *Equality Insights Rapid*.

The combination of what is measured and how it is measured resolves a number of recognised limitations associated with household-level measurement and provides new insights into material, social, economic, and environmental factors shaping poverty and inequality. Collecting primary data from individual adults enables disaggregation and analysis by gender, age, disability, rural/urban location, and other demographic characteristics as relevant, as well as the intersections of these. The individual-level measurement makes it possible to see the implications of overlapping barriers facing particular groups, and how patterns of deprivation vary.[14]

Sampling every adult in a household enables analysis of differences in poverty among household members.[15] Analysing differences inside households can also identify the 'invisible poor' – poor individuals who live in wealthier households and so are missed when using household-level measurement to determine poverty status and target poverty reduction interventions.[16] Understanding within-household differences is also important for accuracy and completeness given an estimated one-third of global inequality lives within the household.[17]

By generating data that can be disaggregated by gender, age, disability, location and other characteristics that shape individual circumstances, *Equality Insights* enables analysis that can inform targeted and responsive policies and programs. The insights it reveals are used to address barriers and inequalities, monitor what is changing, for whom, and support countries to realise the global commitment to leave no one behind.

EQUALITY INSIGHTS RAPID

The COVID-19 pandemic led to an unprecedented increase in levels of global poverty.[18,19] Decision makers need data about the circumstances of specific groups—including women and girls, people with disabilities and those living in poverty to understand how economic recovery is translating into outcomes for people, and whether efforts are leading to recovery. Currently, substantial data gaps in the Pacific region limit information about the circumstances of these groups. Such data can support decision makers to focus action where it is most needed and can make the most difference, while also supporting accountability.

However, the COVID-19 context also increased the difficulties and risks of obtaining up-to-date data via traditional face-to-face data collection methods. In response, the *Equality Insights* team developed a new variant of the existing *Equality Insights* survey for phone-based administration. The methodological adaptation work involved extensive engagement with literature and evidence relevant to poverty measurement, survey modalities, gender, and the dimensions of *Equality Insights*. It was supported by a Global Technical Advisory Group, including statistical experts from the Pacific Community, UN Women, the UN Economic and Social Commission for Asia and the Pacific, the International Labour Organisation (ILO), World Food Programme (WFP) and the Australian Bureau of Statistics (ABS), as well as regional and global gender experts and potential users. The

process of developing *Equality Insights Rapid* as a global tool is detailed in *Equality Insights Rapid: Tool Development Report*.[ii]

Equality Insights Rapid retains key conceptual and methodological strengths of the longer *Equality Insights* face-to-face survey such as:

- individual-level data collection from all adult household members aged 18 years and older, to enable insight into differences within households, plus a brief household survey completed by one household member only, to efficiently obtain data about circumstances shared by all household members;
- assessment of 15 dimensions of life that were important to people with lived experience of poverty, plus data about assets (to provide insight into financial deprivation), and demographic information to enable disaggregation by gender, age, disability, location and other characteristics as relevant;
- assessment of poverty on a scale, to recognise different levels of deprivation and severity.

The Pacific presents some unique challenges for non-face-to-face surveying, given geography (multiple small islands), remoteness and more limited internet and mobile phone penetration compared to other regions.[20] The decision to use Computer Assisted Telephone Interviewing (CATI) for *Equality Insights Rapid* required development of a significantly shorter survey than the *Equality Insights* survey used for face-to-face enumeration. Achieving a short survey that covers 15 dimensions of life plus assets and demographic questions inevitably involves loss of detail and nuance. There are also fewer questions across which to separate the circumstances of respondents. For this reason, *Equality Insights Rapid* assesses individual circumstances on a three-point scale rather than the four-point scale used for the face-to-face *Equality Insights* survey. It can be considered a 'red-flagging tool' that identifies moderate to severe deprivation at a specific point in time. This alerts policy makers to areas or particular social groups that may require further attention, and strengthens evidence about the circumstances of individuals to inform a more inclusive recovery.

The first use of this new survey instrument in Tonga is a practical test of the result, in a specific context. The *Equality Insights* team will assess the overall performance of this new survey and publish analysis of learning and measurement implications, consistent with IWDA's ongoing commitment to strengthen individual-level gender-sensitive poverty measurement.

THE INTERNATIONAL, REGIONAL AND NATIONAL POLICY CONTEXT FOR THIS REPORT

The *Equality Insights Rapid* survey undertaken in Tonga is relevant to various international, regional and national priorities. Understanding and addressing the relationship between poverty and gender has been a global priority for some time. The need to improve gender- and age-disaggregated data on poverty, and develop statistical approaches that help to make visible the factors influencing vulnerability to poverty for particular groups has also been specifically acknowledged.[21]

Agenda 2030 and agreement of 17 Sustainable Development Goals (SDGs) has increased the demand for disaggregated data, through specific requirements for such data and the overarching commitment to leave no one behind in achieving the goals. Seeing the circumstances of different groups in data is a foundation for understanding who is benefiting from development, in what ways and to what extent, and who is being left behind. Indicators for SDG 1, on ending poverty, include data disaggregated by gender about poverty "in all its dimensions according to national definitions".[22] At the time the indicators were determined, there was not a globally agreed methodology for individual-level measurement of multidimensional poverty. However, the High-level Political Forum on Sustainable Development, the annual multilateral process for reviewing progress on Agenda 2030, has recognised the link between visibility of specific groups in data and adequacy of measurement: "Investment in data and capacity is also needed for adequate measurement… If the most vulnerable are not visible in statistics, there will not be appropriate policy action".[23] The World Bank, a custodian agency and focal point for SDG indicators and data on poverty, has also recognised the need for more comprehensive data on how poverty affects individuals, including insight into differences between individuals inside households.[24]

Disaggregated data relevant to implementing and tracking progress on the SDGs is also prioritised in regional and national strategies and frameworks, and UN agencies operating in the region have identified enhancing capacity for collecting disaggregated data and analysis as a regional priority.[25] The latest UNESCAP Report on SDG Progress in Asia and the Pacific (2022) noted that:

ii The Tool Development Report captures the thinking that informed Rapid's developments. Some further decisions and adjustments to the survey were made in finalizing the global instrument and contextualizing the survey for Tonga.

The need to reach those who are furthest behind has never been greater... Average progress in the region disproportionately excludes some groups with distinct demographic and socioeconomic characteristics. Those furthest behind, including women, persons with disabilities, rural populations and poorer households, are also facing increased vulnerabilities...A better understanding of development outcomes for distinct population groups and intersecting vulnerabilities is key to a fairer recovery. The SDGs cannot be achieved without protecting the most vulnerable, many of whom have been particularly affected by the pandemic.[26]

The Pacific Roadmap on Gender Statistics outlines regional priorities for strengthening the production, analysis, dissemination and use of quality gender data, to guide country planning. The Roadmap recognises *Equality Insights*, in its earlier iteration as the Individual Deprivation Measure, as a 'specialised survey that addresses gender data gaps', alongside other multi-topic surveys such as the Multiple Indicators Cluster Survey (MICS) and the Demographic Health Survey (DHS).[27] The Tonga Statistics Department (TSD) is implementing a number of gender data and statistics production and dissemination initiatives in line with the Roadmap, with funding and technical support from UN Women (Women Count), UN Statistical Institute for Asia and the Pacific (UNSIAP), IWDA (*Equality Insights Rapid*) and SPC (Pacific Community).

The *Tonga Strategic Development Framework* (2015-2025, TSDF II) integrates the 17 SDGs and the SAMOA Pathway[iii] into seven priority outcome areas. Goal 1 (no poverty) and Goal 10 (reduced inequalities) are integrated in Outcome Area A: More inclusive, sustainable and dynamic, knowledge-based economy. Goal 5 (gender equality) and Goal 10 (reduced inequalities) are integrated in Outcome Area C: More inclusive, sustainable and empowering human development with gender equality. A focus on data and statistics is part of Outcome Area D: More inclusive, sustainable and responsive good governance.

Tonga reported to the global community on SDG progress in 2019, noting that in relation to the overarching commitment to leave no one behind in realising the SDGs, the Kingdom's focus was on four groups: remote communities; the elderly, adolescent and children; people with disability; and people with diverse sexual orientation.

Tonga's 2019 Voluntary National Review (VNR) report noted that the Kingdom "has recognized the importance of alleviating poverty and reducing hardship faced by some disadvantaged sections of the Tongan community."[28] Tonga has developed a robust multidimensional poverty measure, which has been adopted as the national poverty measure "and is the first of its kind in the Pacific."[29] The Report highlighted the importance of a multidimensional approach given "recent research has suggested that income poverty measures can underestimate the true extent of poverty. Therefore, effective poverty reduction policies require measures that go beyond income and appropriately reflect the hardship and life experiences of the poor and disadvantaged groups."[30]

Tonga's measure, developed by TSD, builds on the Consensual Approach developed by Mack and Lansley in 1985.[31] This combines information about income with information about deprivation based on the views of 'ordinary' people about what should be considered the essentials of life. Absence of these essentials constitutes deprivation. There is considerable conceptual overlap between the Consensual Approach used by Tonga and the conceptual foundations of *Equality Insights*. In particular, that poverty measurement should: reflect the multidimensional nature of poverty; assess outcomes or achievements rather than just income; consider the views of ordinary people in defining and measuring poverty; and that both financial status and material and social deprivation are relevant in assessing poverty.

Using Tonga's multidimensional poverty measure, and data collected via the 2015-2016 Household Income and Expenditure Survey, Tonga has estimated that 27 percent of the population were assessed as poor, 14 percent are vulnerable as a result of deprivation, and 22 percent are vulnerable in terms of income.[32] Next steps identified in the VNR included improving data collection, analysis and synchronization of disaggregated data to get a more representative picture of the impact of policy – who is benefiting and who is being left behind.[33] These priorities informed Tonga's interest in undertaking the *Equality Insights Rapid* survey to assess an individual-level approach to poverty measurement. The ability to disaggregate data is one of the features of *Equality Insights* of particular relevance, as Tonga's VNR Report acknowledges that "An ongoing challenge for

iii The SAMOA pathway expanded the mandate of UN Office of the High Representative for the Least Developed Countries and Landlocked Development Groups to include small island developing states (SIDS). It aims to address the unique challenges faced by SIDS, including adverse impacts of climate change, which pose a significant risk to the ability of SIDS to achieve sustainable development.

Tonga is the disaggregation of all data sets."

The *Equality Insights Rapid* survey is also relevant to Tonga's National Women's Empowerment and Gender Equality for Tonga Strategy (WEGET) and associated Policy and Strategic Plan of Action (2019-2025). WEGET provides Tonga's national policy framework for gender equality, with a vision of gender equity by 2025. It articulates Tonga's commitment to gender equality, to gender mainstreaming, to the economic benefit of addressing unequal access to economic opportunities, employment, participation in decision making and political representation. It recognises disability and sources of vulnerability as cross-cutting issues. The Government of Tonga has made meaningful national, regional and international commitments to gender equality. One of the constraints to progressing gender equality and effective mainstreaming across policies and programs identified is the "lack of institutionalised data collection especially disaggregated data by relevant ministries."[34]

METHODOLOGY

Survey instruments, study design, and implementation procedures were informed by global standards for *Equality Insights Rapid* and contextualised based on insights from the Tongan Statistics Department. The information below provides a general overview of the methodology utilised in Tonga.

Survey design and testing

Both household and individual surveys were designed based on the standardised *Equality Insights Rapid* instruments (see *Equality Insights Rapid: Tool Development Report*, published in March 2022). Consultations with in-country stakeholders were conducted to revise the survey, including removing questions that were identified to be not practical or feasible in the Tongan context. Survey modifications were minimal; the most notable change was the removal of demographic questions related to biological sex. Survey response options were also contextualised, especially regarding shelter materials and energy sources. The contextualised survey was translated from English to Tongan and from Tongan to English. The back-translation was then reviewed closely and required slight edits to the Tongan survey. Where possible, standardised Tongan language was used for validated measures (for example the Food Insecurity Experience Scale (FIES)). Training of the survey enumeration team took place over eight days in May with two additional days of internal testing, resulting in slight modifications to the Tongan language version of the survey. An additional three days of in-house practice of the survey at TSD further supported survey and process familiarisation of enumerators.

Sampling

A multi-stage, stratified cluster sampling approach was utilised. Five strata were identified per the Tongan Statistics Department formal census designations and 214 census block enumeration areas (EAs) were randomly selected proportionate to population size per strata. The five strata included Tongatapu urban, Tongatapu rural, Vava'u, Ha'apai, and Eua. The remaining census strata of Niuas was excluded based on remote location, small population size and limited phone connectivity following the volcanic eruption. A total of 12 households were randomly selected per EA. In addition, two households were identified as reserves in each EA.

The final sample consisted of 2,551 households across the five strata. A small percentage of sampled households were included from the reserve sample (12.8%). A total of 6,784 adult household members were eligible from the sampled households, and 6,703 adults were successfully surveyed (see Eligibility criteria below). Consent to participate in the survey was not received by 81 eligible individuals (1.2%).

Eligibility criteria

Household survey eligibility

- Knowledgeable member of the household (including the demographic details of other household members and general household infrastructure and exposures information)
- Member of the household per the 2021 household listing exercise[iv]
- Aged 18 years or older
- Able to communicate independently on a phone
- Speaks Tongan or English
- Willing to provide consent

Individual survey eligibility

- Member of the household per the 2021 household listing exercise
- Sleeps in the same home as the household survey respondent for at least four nights per week, on average

iv Household information for sampling was provided by TSD. This information was derived from a household listing exercise conducted in relation to the Tonga Population and Housing Census 2021.

- Aged 18 years or older
- Able to communicate independently on a phone
- Speaks Tongan or English
- Willing to provide consent

An important consideration for eligibility was that respondents must have been a member of the household per the 2021 household listing exercise (prior to the volcanic eruption) and a member of the same household at the time of data collection (after the volcanic eruption). The vast majority of ineligible respondents were because of mobility to another household, meaning that the perspectives of this group are not available within this dataset. The household roster exercise also identified that 3.1 percent of adult members in the current household were unable to communicate independently on a phone, representing another important group that did not participate in this data collection.

Survey implementation

Field work was conducted through a Tongatapu-based call centre set up by TSD. The call centre staff included one project coordinator, seven supervisors, and 26 enumerators. Data were collected between 17 May and 30 June 2022, whereby enumerators were randomly allocated households to call. Enumerators identified themselves, including their gender, during the introduction and screening process so that respondents could indicate if they preferred to speak to another enumerator. While the standard *Equality Insights* method includes gender matching of respondent and enumerator, this was not required during the Tongan survey, based on the recommendation of the Tongan Statistics Department.[v] When respondents were transferred to a different enumerator, this most often occurred because the enumerator was known to the respondent. Public awareness activities including media engagement prior to survey roll out and liaison with town officers were also undertaken to encourage survey participation.

Household survey

After identifying households, there were two mechanisms for initial contact. If a household provided a phone number during the 2021 household listing exercise, contact was made through calling that number. If a household did not provide a phone number during the 2021 household listing exercise or if the household number provided was not active, the program coordinator (n=140) or town officers (n=69) facilitated contact with the household. Due to access and phone coverage challenges following the volcanic eruption, households from two EAs in Ha'apai were surveyed using face-to-face data collection (n=14). Most household surveys required only one call (71.2%), with 15.8 percent requiring two calls.

Individual survey

Eligible adult household members were identified by the household survey respondent, and were called if the enumerator could confirm that the household member was also listed in the 2021 household listing exercise. Individual respondents were only surveyed face-to-face if the household survey was conducted face-to-face (i.e., only in two Ha'apai EAs). Most individual surveys required only one call (76.5%), with a further 14.1 percent requiring two calls.

Demographics

In total, 6,703 respondents from 2,551 households were surveyed. The number of adults surveyed per household ranged from one to 10, with an average (mean) of 2.7 people surveyed per household and a median of two. Table 1 provides greater detail about the number of adults surveyed per household.

v Further analysis of the survey data confirmed that there were no significant differences in the responses provided to enumerators by their gender.

Table 1. People surveyed per household

Eligible adults surveyed per household	Number of households	Unweighted percentage	Weighted percentage
1	463	18.15	15.27
2	1,004	39.36	40.28
3	529	20.74	21.10
4	300	11.76	12.45
5	152	5.96	6.45
6	59	2.31	2.42
7 or more	44	1.73	2.03

Conducting surveys at the individual level allow for exploration of data along a number of individual characteristics. For the purposes of this report, we consider each dimension against four key variables: gender, age, disability status, and location. Table 2 outlines the proportion of respondents that fell within each category.

The ability to disaggregate data by gender is critically important in understanding the linkage between gender and experiences. Survey respondents were asked whether they identified as a man or woman, with the CATI question framed in a way to allow a numerical response. A little more than half of respondents (56%) identified as a woman[vi]. Respondents ranged in age from 18 to 98, with a median age of 40. For reporting purposes age is presented in three categories: 18 - 29 (28% of respondents), 30 - 59 (56%), and 60 and above (16%).

Disability was measured using the Washington Group short set[35] which measures functional impairment across six key areas. For this report, respondents are classified as having a disability if they reported having a lot of difficulty with, or could not do at all, any of the questions. Using this definition, 3.7 percent of respondents were considered to be living with a disability. As ability to communicate independently by phone was a requirement for inclusion, the survey may underrepresent the experiences of people with disabilities that impact communication.

Households were classified as either urban or rural based on location, with urban households located in urban regions of Tongatapu. Households located in rural Tongatapu or on other islands were defined as rural. A further breakdown of results by island group is available in the Appendix.

Weighting

All analysis in this report is weighted based on the probability of an individual to be selected. Individuals within a household have uniform probability weights, computed by using the percentage of adults in the current household who participated in the survey and the household weight. The household probability weights were computed using the probability of EA selection and the probability of household selection within the selected EA (varied between reserve and non-reserve households). Non-response and auxiliary data calculations were not integrated into final weights

vi Gender categories exclude one respondent who did not identify as either man or woman.

Table 2. Respondent key demographic characteristics

	Number of respondents	Unweighted percentage	Weighted percentage
Overall	6,703	100	100
Gender			
Man	2,902	43.30	43.57
Woman	3,800	56.70	56.43
Age			
18-29	1,893	28.24	28.25
30-44	2,055	30.66	31.37
45-59	1,700	25.36	24.64
60+	1,055	15.74	15.74
Disability			
Without a disability	6,454	96.29	96.47
With a disability	249	3.71	3.53
Location			
Urban	1,507	22.48	23.95
Rural	5,196	77.52	76.05

Introduction

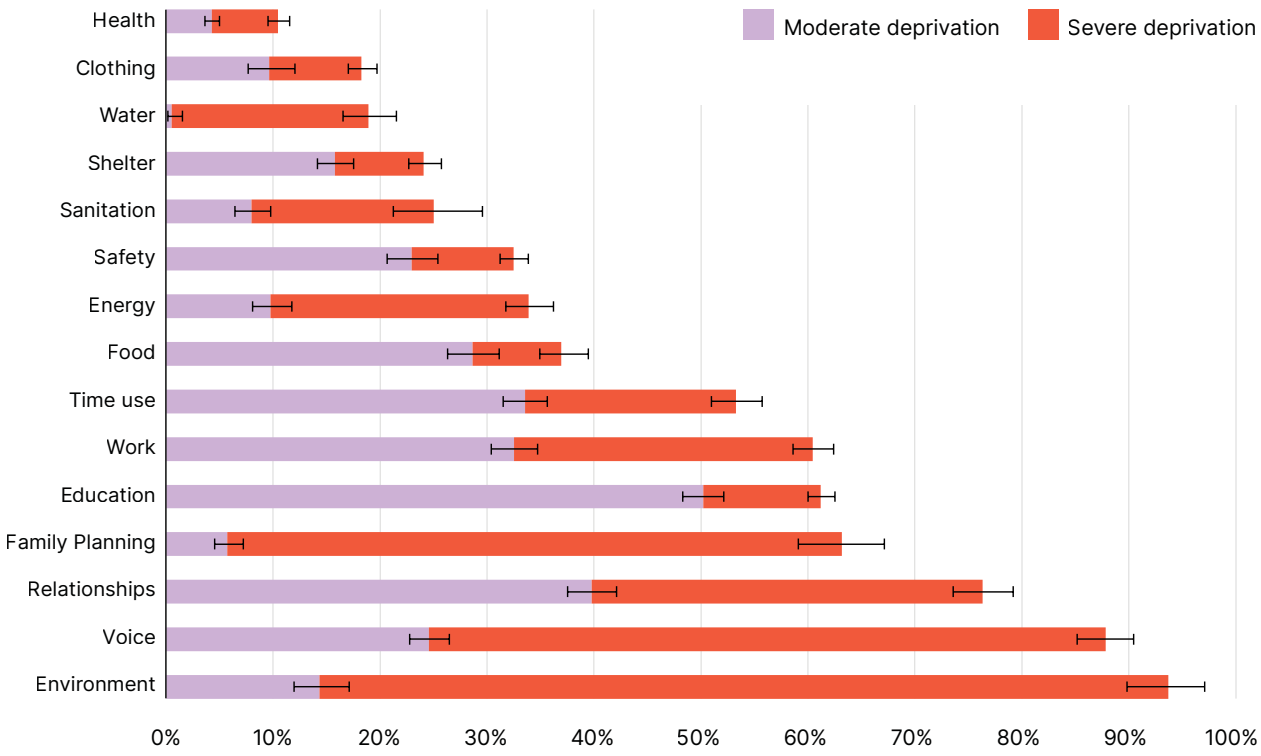
Dimensions

Other Analysis Approaches

Appendix

OVERVIEW OF DIMENSIONS

Figure 1. Percentage of people experiencing deprivation across each dimension, including 95% CIs



Equality Insights Rapid measures deprivation across multiple dimensions of life, and is designed to recognise different levels of deprivation within these dimensions. Figure 1 shows the proportion of individuals who met the threshold for moderate and severe deprivation within each of these dimensions. Caution is advised in interpreting relative frequencies of deprivation across dimensions, as it is important to understand the respective thresholds per dimension (available in subsequent tables describing dimension scoring thresholds).

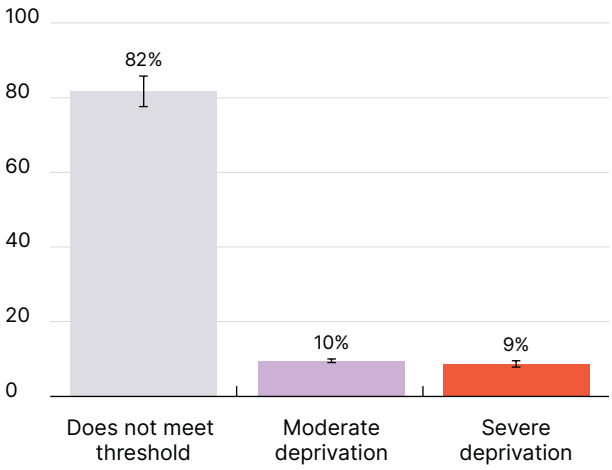
The following section of this report considers each dimension individually in more detail, including disaggregating by gender, age, disability and location to better explore who is experiencing these deprivations. Further information on underlying questions and thresholds for deprivation are also provided in each section. Detailed results of the ordered logistic regression models used to derive odd ratios adjusting for key demographic variables are provided in the appendix, along with results of each dimension by island group.

DIMENSION

Clothing

Adequate clothing is a human right,[36] yet clothing is not explicitly included in many multi-topic surveys of poverty and inequality. Clothing influences both physical and social circumstances. For example, a lack of adequate footwear can lead to injury and a lack of protective clothing can lead to unhealthy sun, wind, or cold exposure. Lack of appropriate clothing can also be a source of shame. These social expectations are highly gendered, and often more complex for women and girls.[37,38,39]

Figure 2. Percentage of people in each category of Clothing deprivation, including 95% CIs



The Clothing dimension in the *Equality Insights* Rapid survey measures two main areas: 1) social appropriateness of the clothing and footwear available and 2) extent to which available clothing/ footwear provides protection from the weather. Severe deprivation in the clothing dimension (Table 3) indicates that a person does not have clothing and footwear that offer protection from the weather, or does not have at least two pairs of footwear that are the right size and appropriate for their needs. Those who do not meet the threshold have appropriate clothing always or most of the time, have at least two pairs of footwear and clothes that provides good protection from the weather.

Table 3. Scoring thresholds for Clothing dimension deprivation

Score	Criteria
Severe deprivation	Not having at least two pairs of footwear **OR** Having clothing and footwear that provides *no protection*
Moderate deprivation	Having appropriate clothing *sometimes or never* **OR** Having clothing and footwear that provides *some protection*
Does not meet deprivation threshold	Having appropriate clothing *most of the time or always* **AND** Having at least two pairs of footwear **AND** Having clothing and footwear that provides *good or excellent protection*

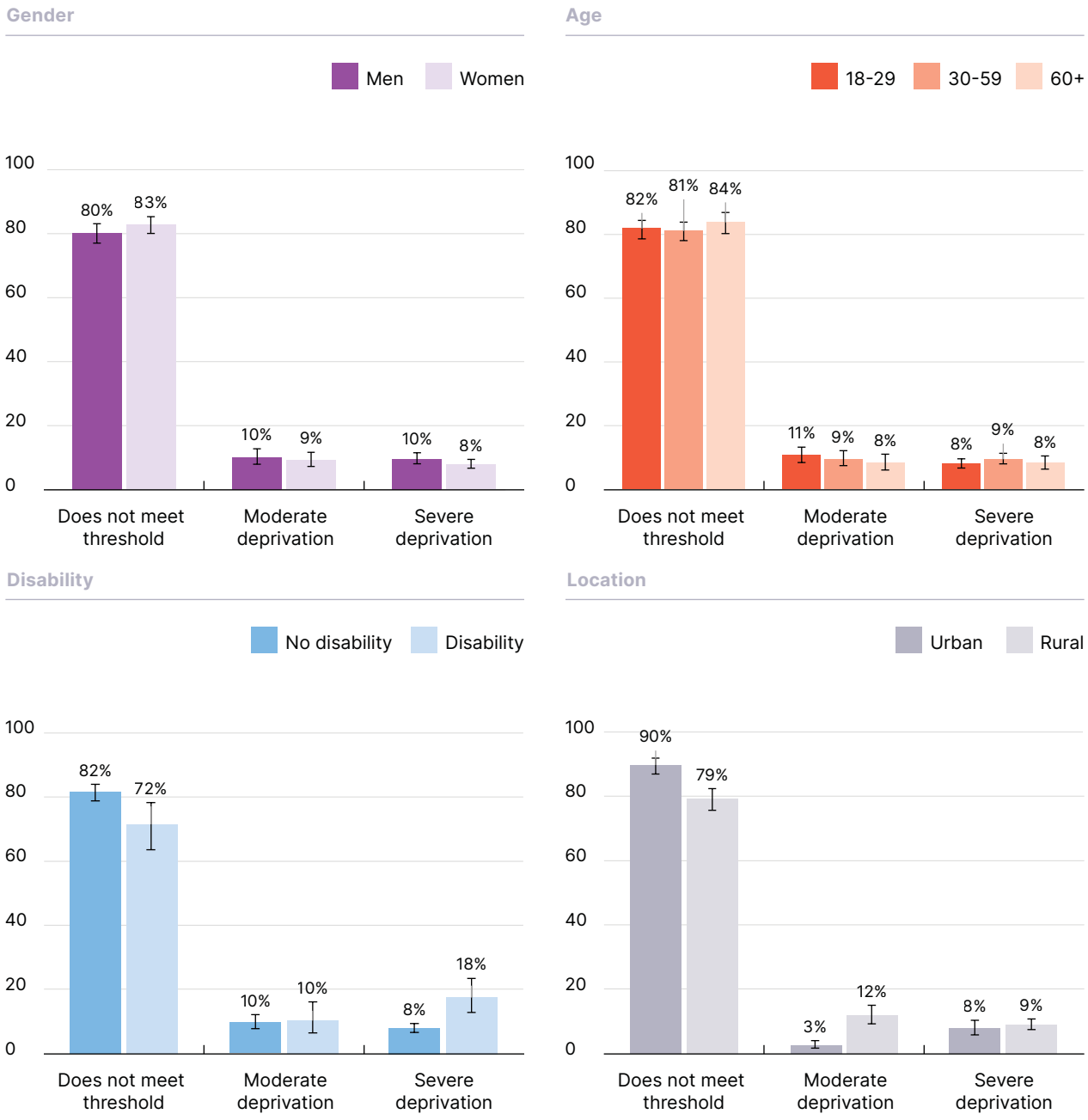
Clothing deprivation was relatively uncommon, with 82 percent of people not meeting the deprivation threshold (Figure 2). There were no differences in clothing deprivation by gender or age (Figure 3). A higher proportion of people with a disability were severely deprived (18% compared to 8% of people without disability). In rural areas there was a higher proportion of people who met the threshold for moderate deprivation (12% compared to 3% in urban areas), but there was no difference between rural and urban areas for severe deprivation.

Adjusting for key variables including age, gender, location and disability shows significant relationships for deprivation in clothing with gender, disability and location (Appendix Table 19). Women had lower odds of clothing deprivation compared to men (0.84), people with disability had higher odds of

experiencing clothing deprivation (2.04), as well as people living in rural areas (2.10).

Analysing deprivation levels across island groups (Appendix Table 34) shows that a significantly higher percentage of people who lived in 'Eua (22.2%) met the threshold for being moderately deprived in the clothing dimension compared to Urban Tongatapu (2.6%) and Ha'apai (3.3%).

Figure 3. Percentage of people in each category of Clothing deprivation by: a) gender b) age c) disability d) location, including 95% CIs

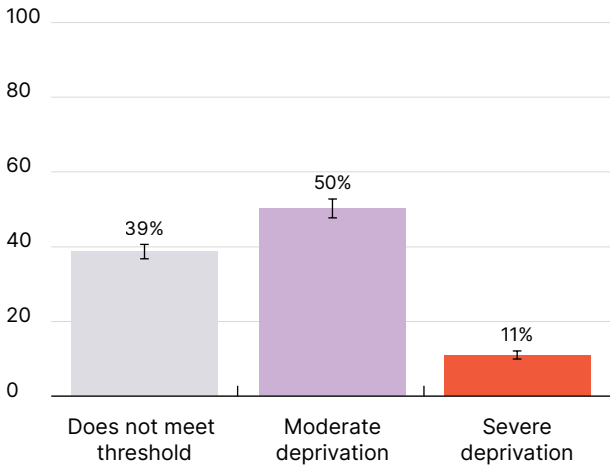


DIMENSION

Education

Globally, quality education is key to escaping poverty, however, poverty can itself is a major barrier to education. According to the 2021 census, literacy levels in Tonga were high, with 96 percent of the population aged five and above able to read and write a simple sentence in Tongan and 89 percent able to read and write a simple sentence in English.

Figure 4. Percentage of people within each category of Education deprivation, including CIs



The Education dimension in the *Equality Insights Rapid* survey measures two themes: 1) education level and 2) functional literacy. Education level measures the highest level of education completed. Functional literacy measures a respondent's self-reported ability to read texts they encounter in regular life such as newspapers, government forms or instructions. Severe deprivation in the Education dimension (Table 4) indicates that a person did not finish primary school, or that the person cannot read or has a lot of difficulty reading texts they encounter in real life.

Table 4. Scoring thresholds for Education dimension deprivation

Score	Criteria
Severe deprivation	*Did not finish* primary school **OR** *a lot of difficulty reading or cannot read at all*
Moderate deprivation	*Did not finish* upper secondary **OR** *some difficulty reading*
Does not meet deprivation threshold	*Completed* upper secondary or higher **AND** *No difficulty reading*

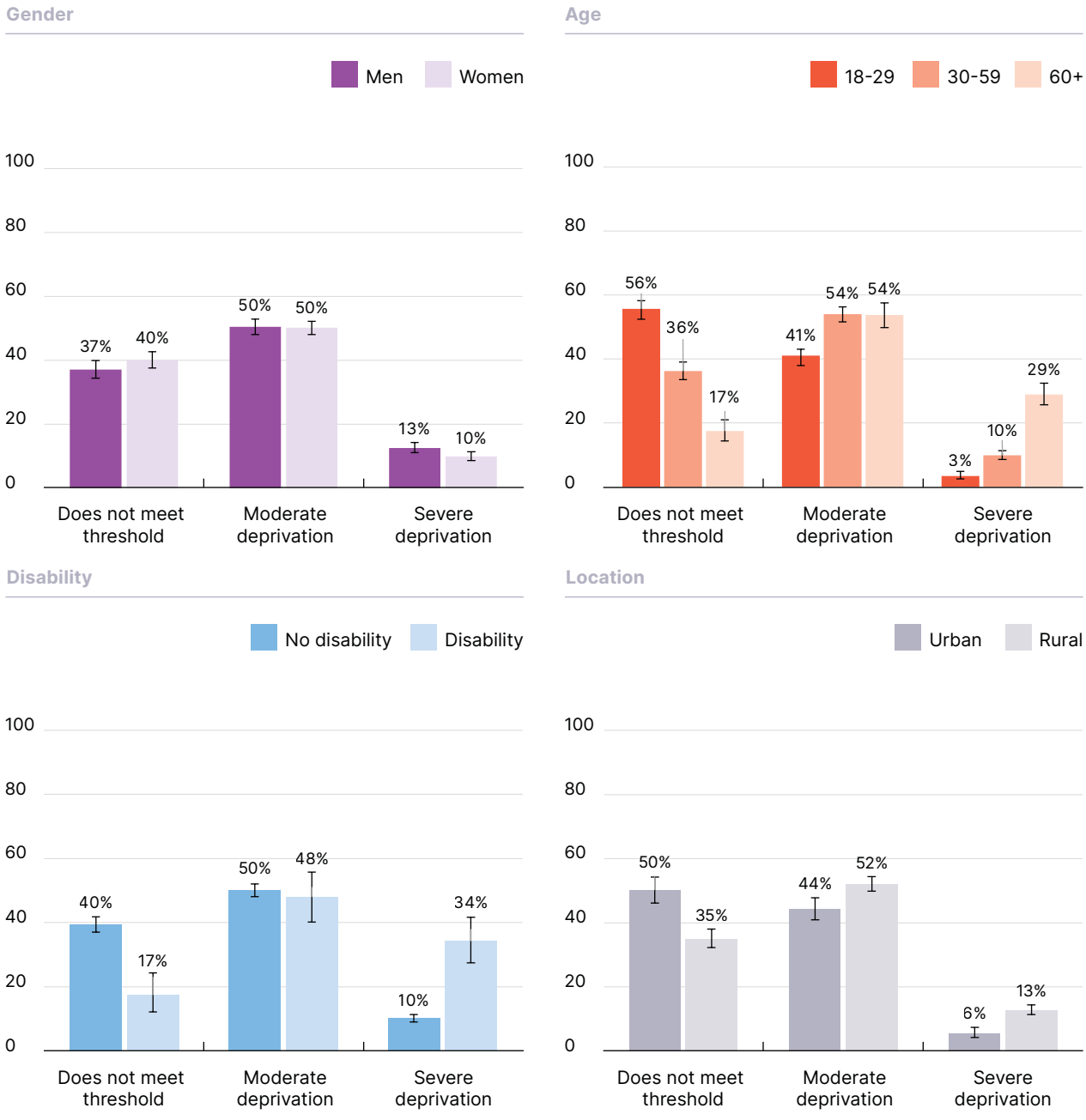
Using the definition of educational level and functional literacy in Table 4, only 11 percent of people were severely deprived whereas 50 percent were moderately deprived (Figure 4). Overall, 39 percent of people did not meet the threshold for any level of deprivation.

There was a large amount of variation in Education deprivation across age groups (Figure 5), reflecting changes in education access and years of schooling over time. In total, 29 percent of people aged 60 and above were scored as severely deprived compared with 10 percent of people aged 30-59 and only three percent of those aged 18-30. Similarly, while 56 percent of people aged 30 and under did not meet the threshold for any deprivation, only 17 percent of those aged 60 and above did not meet the threshold. There were significant differences by disability, with 34 percent of people with disability scoring as severely deprived in education compared to 10 percent of people without disability. There was a small but significant difference by location. Men and women had similar levels of deprivation in education.

Adjusting for key variables (gender, age, disability, and location) showed significant associations between all key variables and Education (Appendix Table 20). Women had lower odds of experiencing Education deprivation than men (0.85). People aged 18-29 had lower odds of experiencing Education deprivation than those aged 30-59 (0.45), while people age 60 and above had higher odds (3.15). There was also a significant interaction between age and gender, with young women less likely to be deprived in education than young men, and older women (aged 60 and above) having higher odds of being deprived than men in the same age group.

Analysing differences by island groups (Appendix Table 34) shows that compared to Urban Tongatapu, a higher proportion of those who lived in other island groups met the threshold for being severely deprived in the education dimension. Conversely, Urban Tongatapu had a significantly higher proportion of people (50.3%) who did not meet the deprivation threshold for Education compared to other island groups.

Figure 5. Percentage of people in each category of Education deprivation by: a) gender b) age c) disability d) location

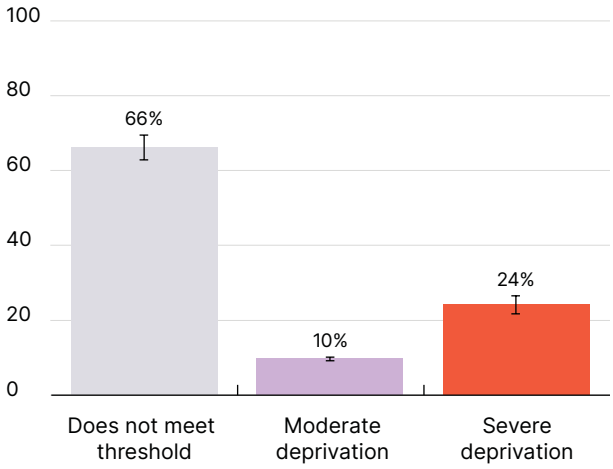


DIMENSION

Energy

The concept of energy or fuel poverty[40,41] is often centred on costs of fuel sources at the household level, but the implications of fuel on poverty extend beyond household level finances. Unaffordable and unclean energy can have harmful consequences for individuals and communities. Globally, poorer households are more likely to use unclean energy sources such as wood and wood chips which require collection and can result in harmful fumes when burned. Gender roles within a household relating to cooking and fuel collection may mean household members are exposed to different levels of harm.[42]

Figure 6. Percentage of people within each category of Energy deprivation, including 95% CIs



The Energy dimension of the *Equality Insights Rapid* survey measures two areas: 1) Quality of fuel sources and 2) sufficiency of energy supply to meet lighting and cooking needs. Quality of fuel sources focuses on measuring exposure to unclean fuel sources and is measured both at the household and individual level by triangulating responses to the source of cooking fuel (clean versus unclean), location of cooking (separate room versus shared space), whether cooking devices include a fan or chimney, and frequency of performing cooking duties. Sufficiency of Energy supply is measured at an individual level to understand deprivation within households. Severe deprivation in Energy (Table 5) indicates exposure to unclean fumes through use of unclean fuel sources for cooking or having inadequate energy supplies for cooking and/or lighting needs in the past 30 days. Those who do not meet the deprivation threshold are not exposed to unclean cooking fumes and have energy supplies to meet lighting or cooking needs most of the time.

One in three people met the threshold for experiencing some level of energy deprivation, with 10 percent moderately deprived and 24 percent severely deprived (Figure 6).

Table 5. Scoring thresholds for Energy dimension deprivation

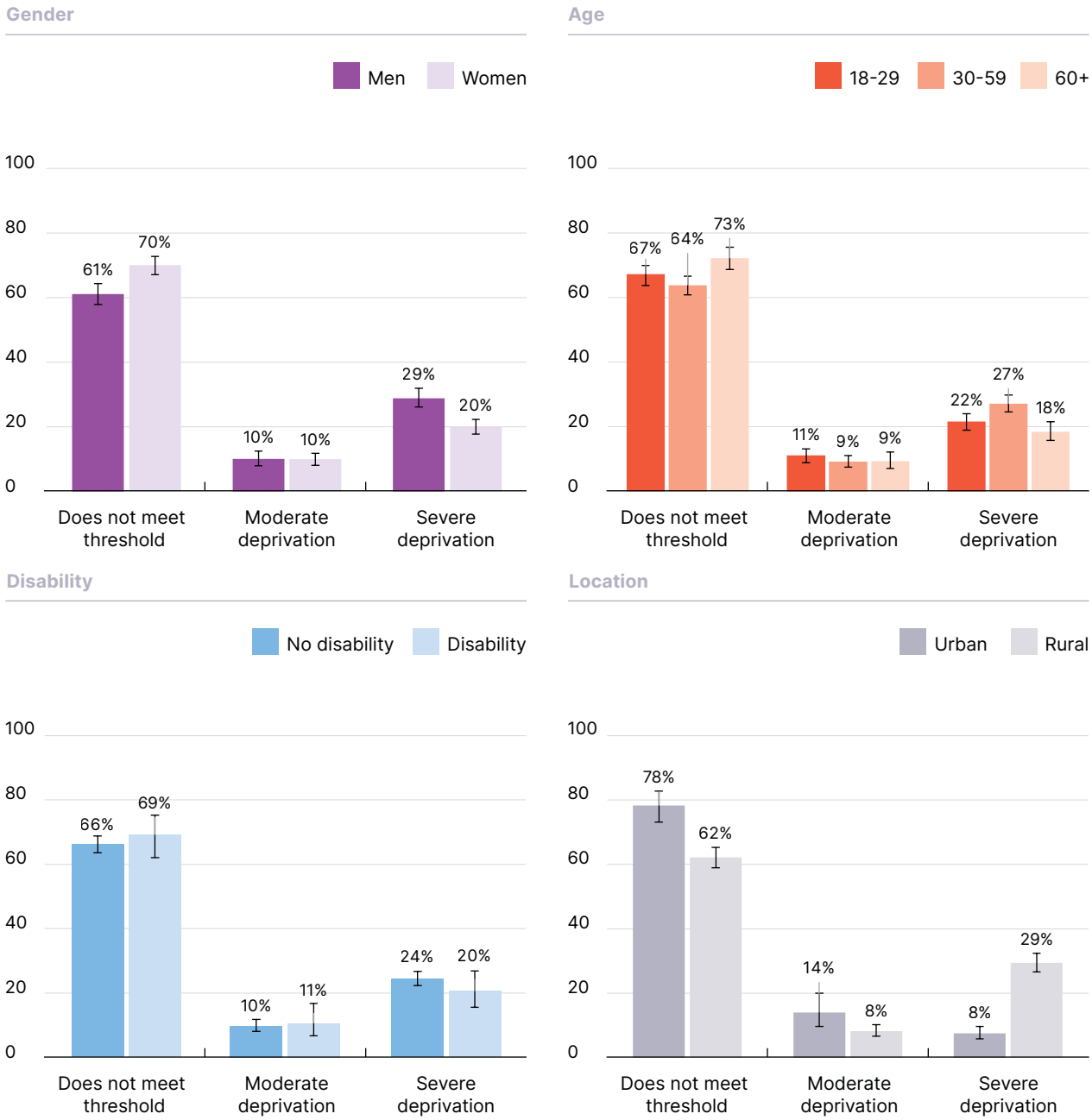
Score	Criteria
Severe deprivation	Unclean cooking source **AND** exposed to unclean cooking fumes **OR** *Never* had enough energy supplies for cooking and/or lighting needs in past 30 days **OR** *Some of the time* had enough energy supplies for cooking **AND** lighting needs in past 30 days
Moderate deprivation	*Some of the time* had enough energy supplies for cooking **OR** lighting needs in past 30 days
Does not meet deprivation threshold	*Not exposed* to unclean cooking fumes **AND** At least *most of the time* had enough energy supplies for cooking **AND** lighting needs in past 30 days

A higher proportion of men (29%) were severely deprived in the Energy dimension compared to women (20%) (Figure 7). Energy deprivation did not vary my much across age groups although a lower proportion of people aged 60 and over were severely deprived than younger age groups. Energy deprivation varied by location with 29 percent of people in rural areas severely deprived compared to eight percent in urban areas. Conversely, a higher proportion of people in urban areas did not meet the threshold for deprivation (78%) compared to people in rural areas (62%). There was no significant difference by disability status.

Adjusting for key variables (gender, age, disability, and location) showed significant associations between energy deprivation and gender, age, and location (Appendix Table 21). Women had significantly lower odds (0.66) of experiencing Energy deprivation than men. People aged between 18 and 29 had lower odds (0.85) than those aged 30-59, as did people aged 60 and above (0.64). The strongest relationship was seen with location, where people in rural locations had much higher odds (2.48) than those in urban locations.

Analysing differences by island groups (Appendix Table 34) shows that a significantly higher proportion of people who lived in Urban Tongatapu and Rural Tongatapu did not meet the thresholds for energy deprivation (78.3% and 68% respectively). Conversely, a significantly lower proportion of people who lived in Urban Tongatapu and Rural Tongatapu were severely deprived in the Energy dimension compared to other island groups (7.7% and 22.4% respectively).

Figure 7. Percentage of people in each category of Energy deprivation by: a) gender b) age c) disability d) location, including 95% CIs



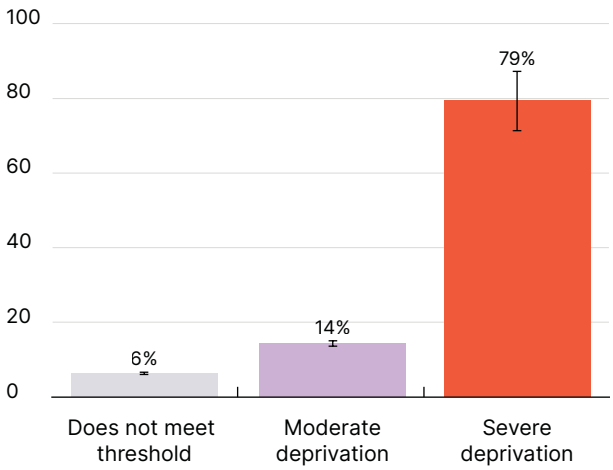
One in three people met the threshold for experiencing some level of energy deprivation, with 10 percent moderately deprived and 24 percent severely deprived.

DIMENSION

Environment

Environment can impact an individual's safe access to, and utilisation of, various resources including transportation, schooling, and employment. Environmental shocks (such as natural hazards including cyclones and droughts) and pollution (such as land, water, air, and soil pollution) can impact safety and health. Those living in poverty are more likely to experience environmental harms, such as pollution or climate change.[43,44]

Figure 8. Percentage of people within each category of Environmental deprivation, including 95% CIs



The environment dimension of the *Equality Insights Rapid* Survey measures respondents' exposure to natural hazards and pollution. These include both household level measures of exposure to natural hazards and pollution as well as severity of exposure for individuals based on their daily activities. Severe deprivation includes those who experience exposure to two or three forms of pollution (air, land, water), or perform daily activities that are severely impacted by natural hazards (Table 6). Those who do not meet the threshold for deprivation experience no pollution or natural hazards that impact their household. Their daily activities are also less than moderately impacted by natural hazards.

Table 6. Scoring thresholds for Environment dimension deprivation

Score	Criteria
Severe deprivation	*Experience* with *two* or *three forms* of pollution (air, land, water) **OR** Daily activities at least *severely* impacted by natural hazards **OR** Natural hazards *affecting the household* location **AND** daily activities at least *moderately* impacted by natural hazards
Moderate deprivation	*Experience* with at least *one form of pollution* (air, land, water) **OR** Natural hazards *affecting* the household location **OR** Daily activities *moderately* impacted by natural hazards
Does not meet deprivation threshold	*No experiences* of air, land, or water pollution **AND** *No natural hazards affecting* the household location **AND** Daily activities less than *moderately* impacted by natural hazards

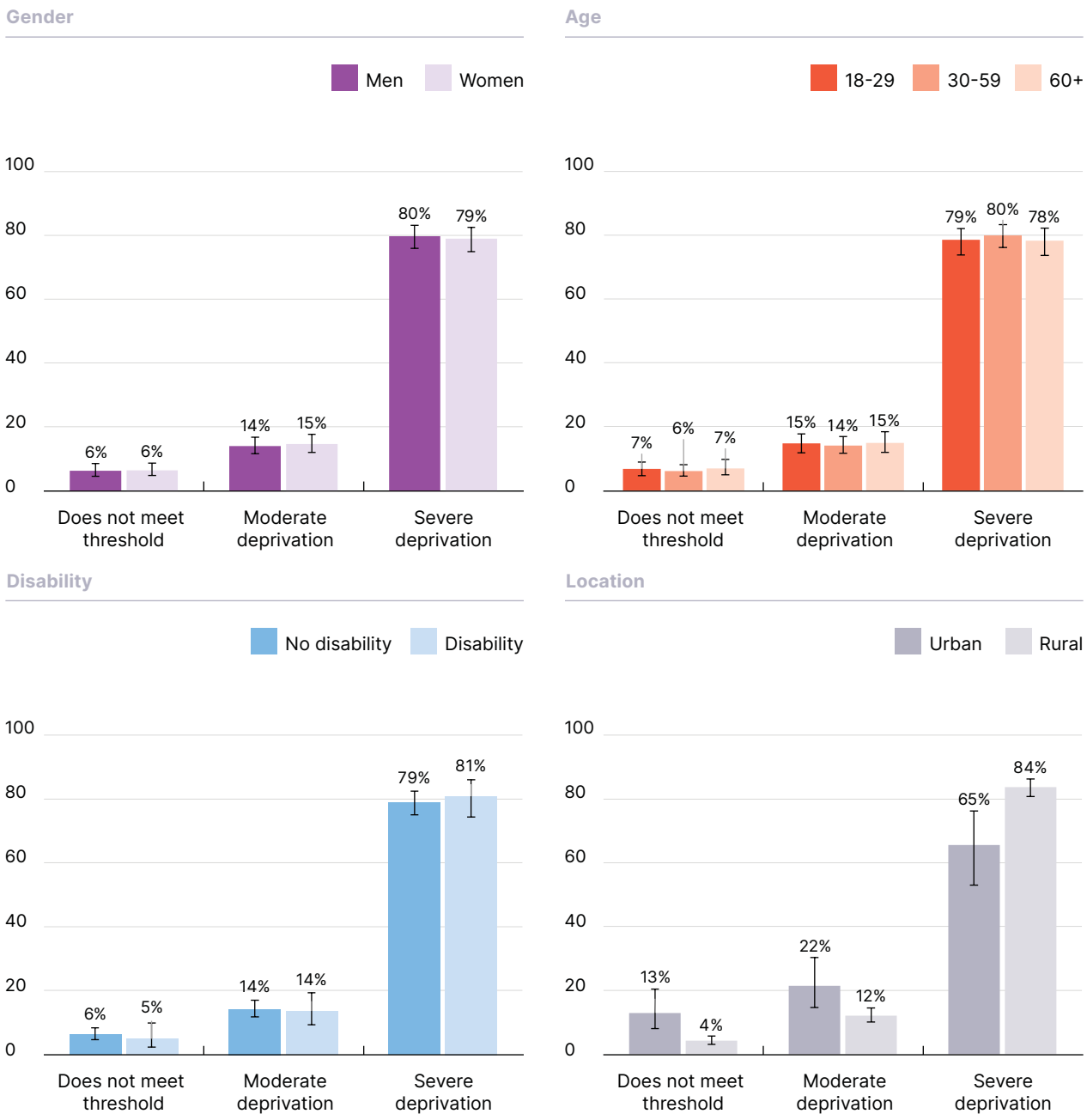
Environment deprivation was the most common type of deprivation experienced by people surveyed, with 93 percent experiencing some level of deprivation, and 79 percent meeting the threshold for severe deprivation. Data collection in Tonga commenced in May 2022, four months after the Hunga-Tonga-Hunga-Ha'apai eruption and tsunami on 15 January. This context is particularly evident in the results in the Environment dimension.

There was little variation in environmental deprivation by gender, age, or disability status (Figure 9). There were significant differences by location; only four percent of people living outside urban Tongatapu did not meet the threshold for some level of Environment deprivation, compared with 13 percent of people in urban areas. Those living in rural areas were significantly more likely to meet the threshold for severe deprivation (84% compared to 66%).

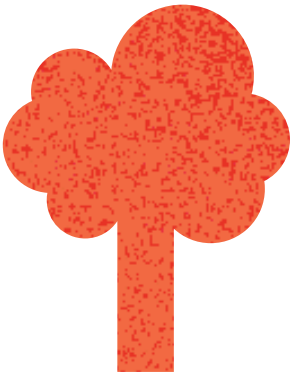
Adjusting for all key variables of interest the association between location and Environment deprivation remained significant (Appendix Table 22). People in rural areas had 2.79 times higher odds of experiencing Environment deprivation than those in urban areas.

Analysing differences by island groups shows that a significantly higher proportion of people living in Rural Tongatapu and 'Eua were significantly deprived in the environment dimension (88.4% and 89.8% respectively) compared to Urban Tongatapu and Vava'u (65.4% and 61.2% respectively) (Appendix Table 34). These findings reflect the impact of the Hunga-Tonga-Hunga-Ha'apai volcanic eruption and related tsunami, which significantly affected large parts of Tonga.

Figure 9. Percentage of people in each category of Environment deprivation by: a) gender b) age c) disability d) location, including 95% CIs



Environment deprivation was the most common type of deprivation experienced by people surveyed, with 93 percent experiencing some level of deprivation, and 79 percent meeting the threshold for severe deprivation.

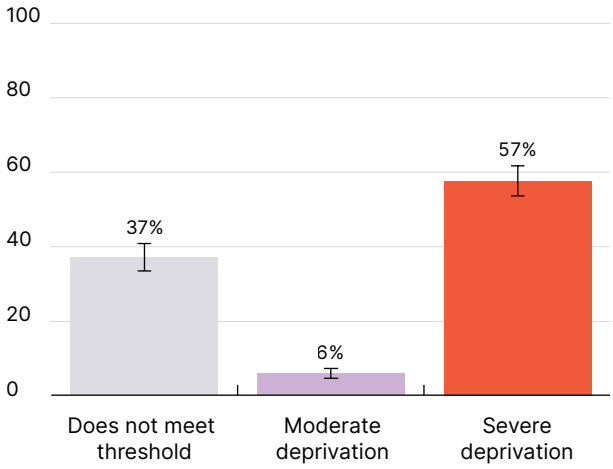


DIMENSION

Family Planning

Reproductive health and rights, including family planning are crucial to achieving gender equality and women's empowerment. They are also a critical factor in reducing poverty. The ability to control fertility influences women's economic circumstances through education and employment opportunities.[45] These outcomes can in turn lead to improvements in their economic security and the overall wellbeing of their households. Yet, globally in 2020, estimates indicated that 172 million women worldwide had an unmet need for family planning (i.e., wanting to avoid or postpone pregnancy but not using any form of contraception).[46]

Figure 10. Percentage of people within each category of Family Planning deprivation, including 95% CIs



The focus of the Family Planning dimension in the *Equality Insights Rapid* survey includes only one area of measurement - unmet need for contraception. The survey includes seven questions related to current need for contraception, and if there is a current need, the type of contraception method used. Participants aged 60 and above, as well as respondents who have indicated that they or their partner are currently pregnant, are excluded from questions related to contraception. A majority of respondents (57%) met the threshold for severe deprivation in the family planning dimension and 37 percent did not meet the deprivation threshold for family planning.

Table 7. Scoring thresholds for Family Planning dimension deprivation

Score	Criteria
Severe deprivation	Using *traditional methods* of contraception with no proven efficacy **OR** Not using any method of contraception **AND** reason for not using contraception is other
Moderate deprivation	Use of lower-efficacy modern methods **OR** Use of traditional methods of some proven efficacy
Does not meet deprivation threshold	*Desire to become pregnant* **OR** respondent or partner *currently pregnant* **OR** *Unable to become pregnant* **OR** *Not sexually active* **OR** Currently *using modern methods*

There was little variation in deprivation by gender, location and disability (Figure 11). However, age had a significant association with deprivation in family planning, with two-thirds (66%) of those aged 18-29 severely deprived, compared with just of half (53%) of those aged 30-59.

Adjusting for key variables (gender, age, disability and location), age was found to be significantly associated with deprivation in family planning with people aged 18-29 having higher odds (1.62) of experiencing deprivation compared to people aged 30-59 (Appendix Table 23).

Analysing differences across island groups shows that a significantly higher proportion of people living in 'Eua (85.8%) met the threshold for severe deprivation in Family Planning compared to all the other island groups (Appendix Table 34). Compared to Urban Tongatapu (57.4%) and Rural Tongatapu (60.3%), a significantly lesser proportion of people living in Vava'u (34.9%) met the threshold for being severely deprived in Family Planning.

Figure 11. Percentage of people in each category of Family Planning deprivation by: a) gender b) age c) disability d) location, including 95% CIs

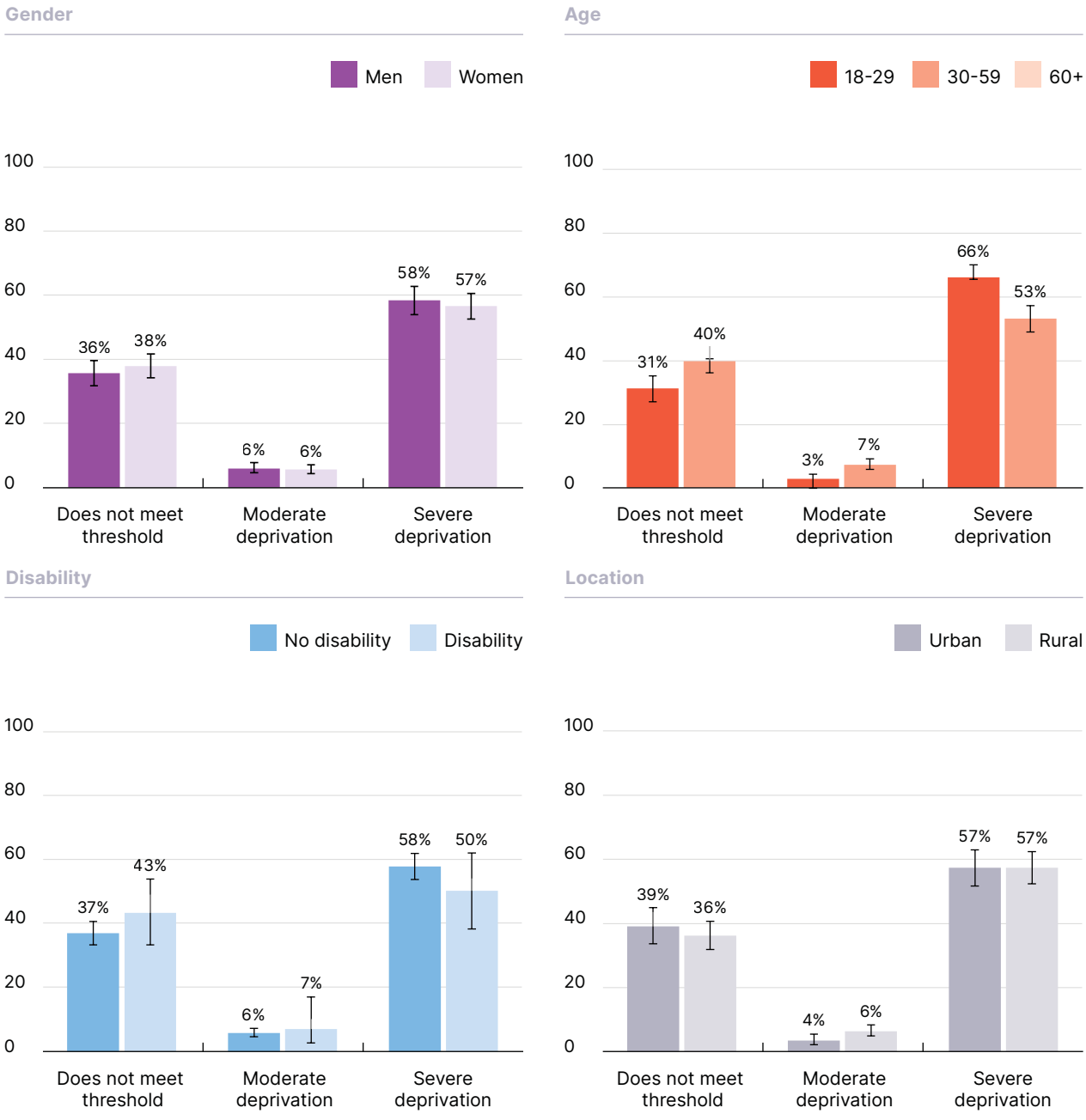
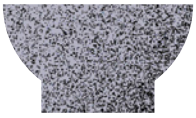


Figure note: A previous version of this report included incorrect colours for age group categories. They have been corrected in this version.

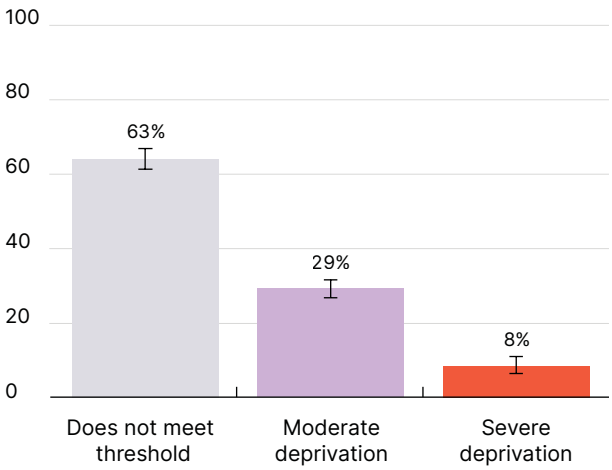
DIMENSION

Food



Food security is a core dimension of living a life free of poverty. The United Nations Food and Agriculture Organisation (FAO) describes food security through four key elements: availability, access, utilisation and stability.[47] Due to the nature of the survey tools and the context of its use, *Equality Insights* uses food access as the sole indicator of food insecurity, assessed by the Food Insecurity Experience Scale (FIES).[48]

Figure 12. Percentage of people within each category of Food deprivation, including CIs



The food dimension of the *Equality Insights Rapid* survey measures severity of food insecurity, using the eight questions that make up the FIES. These eight questions focus on whether a person in the last 12 months was worried about the lack of food, lacked nutritious food, lacked variety of food, had to skip a meal, ate less, went hungry or ran out of food. Thresholds for defining food deprivation were based on the global thresholds. Severe deprivation is indicated when someone answered yes to all eight questions measuring severity of food insecurity. Not meeting the threshold meant a person had responded yes to three or fewer of the questions. As per the design of the measure, where this group indicated they had experienced some of the Food Insecurity markers they tended to be less severe (for example being unable to eat healthy food).

Using these thresholds as a measure of deprivation, a majority of respondents (63%) did not meet the threshold for deprivation in food while 29 percent met the threshold for moderate deprivation in Food and eight percent met the threshold for being severely deprived (Figure 12).

There was little variation in Food deprivation levels by gender or disability status (Figure 13). Age was a significant factor with people aged 30-59 significantly more likely than other age groups to meet the threshold for deprivation in Food. People aged 30-59 were also more likely than other age groups to meet the moderate deprivation threshold. People living in rural areas were more likely (33%) than people living in urban areas to meet the threshold for moderate deprivation in food. There were no significant differences by gender, age, disability status or location for those who met the threshold for severe deprivation in food.

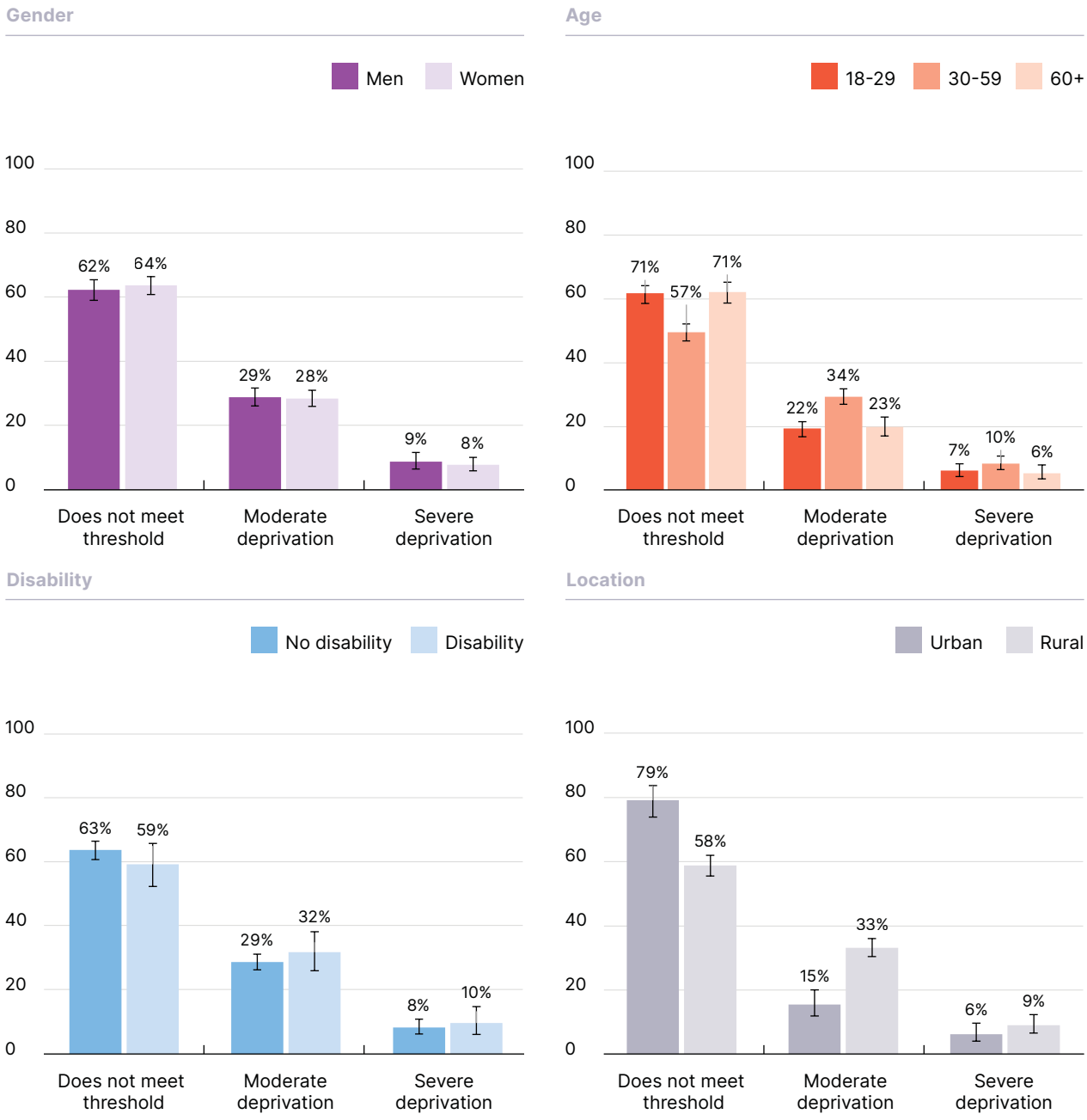
Table 8. Scoring thresholds for Food dimension deprivation

Score	Criteria
Severe deprivation	Met *severe* food insecurity threshold per FAO's global thresholds
Moderate deprivation	Met *moderate* food insecurity threshold per FAO's global thresholds
Does not meet deprivation threshold	Did not meet *moderate* or *severe* food insecurity threshold per FAO's global thresholds

Adjusting for key variables (gender, age, location, disability) showed significant associations for age and location with Food deprivation (Appendix Table 24). People aged 18-29 and people aged over 60 had lower odds (0.56 and 0.52 respectively) compared to people aged 30-59 of experiencing deprivation in Food. People living in rural areas had significantly higher odds (2.51) compared to people living in urban areas of experiencing deprivation in Food.

Analysing differences across island groups shows that a significantly higher proportion of people living in Urban Tongatapu (78.5%) did not meet the threshold for Food deprivation compared to Rural Tongatapu (59.7%), Vava'u (58.0%) and 'Eua (42.6%) (Appendix Table 34). Urban Tongatapu also had significantly lower proportion of people (15.3%) meeting the threshold for moderate deprivation in food compared to the other island groups.

Figure 13. Percentage of people who in each category of Food deprivation by: a) gender b) age c) disability d) location, including 95% CIs

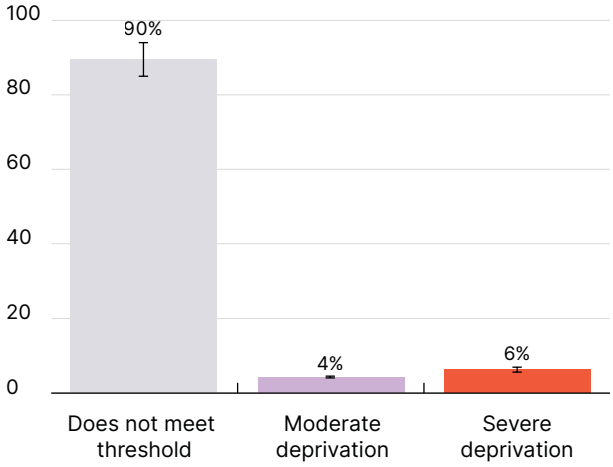


DIMENSION

Health

The World Health Organisation defines health as "[a] state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Globally, people living in poverty are more likely to suffer worse health outcomes[49] and die younger than more affluent populations.[50,51]

Figure 14. Percentage of people within each category of Health deprivation, including 95% CIs



The concept of health is complex and multidimensional in nature and presents significant challenges for measuring briefly as one dimension within a multi-dimensional survey. *Equality Insights Rapid* survey focuses on measures of physical and mental health. The wording of the survey related to physical health measures conditions within a four-week reference period and captures experiences of negative effects from illness, injury, and persistent pain. Mental health questions use the Kessler (K6) screening scale to measure the severity of any psychological distress in the past four weeks through self-reported feelings of nervousness, hopelessness, restlessness, inability to be cheered up, feeling everything is as an effort and feelings of worthlessness. Severe deprivation includes people who have probable mental illness per the K6 thresholds or those who have experienced negative effects on their life from illness, injury or persistent pain in the past four weeks all of the time (Table 9). Those who do not meet the deprivation threshold have no probable mental illness per the K6 threshold and have illness, injury or persistent pain only some of the time or none of the time in the past four weeks.

Since the survey is not designed to provide prevalence or incidence estimates of acute or chronic conditions, it does not explicitly measure rates of non-communicable diseases (NCDs) in Tonga.

Using the K6 threshold for mental health and a four-week reference period for evidence of poor physical health, health was the dimension with the lowest proportion of people meeting the threshold for deprivation. Four percent of the respondents experienced moderate deprivation and a further six percent experienced severe deprivation.

Table 9. Scoring thresholds for Health dimension deprivation

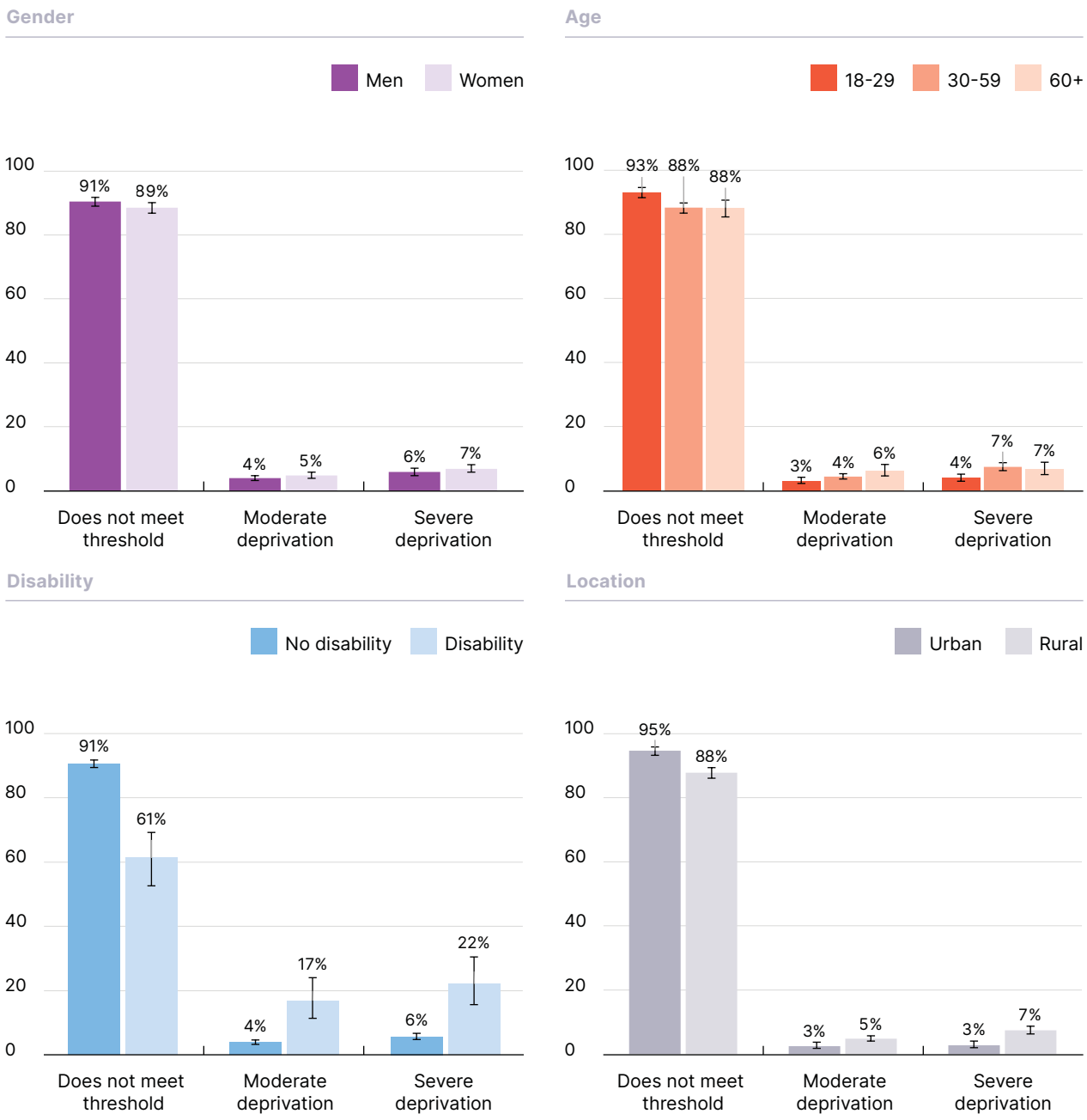
Score	Criteria
Severe deprivation	Probable mental illness per K6 thresholds **OR** Having negative effects from illness/injury/persistent pain for past four-weeks *all of the time*
Moderate deprivation	Having negative effects from illness/injury/persistent pain for past four-weeks *most of the time*
Does not meet deprivation threshold	Not probable mental illness per K6 threshold **AND** Having illness/injury/persistent pain for past four-weeks *some of the time* or *none of the time*

There was no significant difference in health deprivation levels between men and women (Figure 14). There was some difference by age, with a higher proportion of younger people not meeting the threshold for deprivation (93% of those aged 18-29, compared to 88% of those aged 39-29 and 88% of those aged 60 of over). As expected, a much higher proportion of people living with a disability were scored as Health deprived than those without a disability, with 17 percent moderately deprived and a further 22 percent severely deprived. A higher proportion of people living in rural areas also met the threshold for some level of deprivation (12%) than those in urban areas (6%).

Adjusting for all variables of interest showed a significant association between deprivation in health and disability, age and location (Appendix Table 25). People identified as having a disability had higher odds (5.38) than those without a disability to experience deprivation in health. People aged 18-29 had lower odds of experiencing deprivation in health (0.60) than those aged 30-59 and people living in rural areas had higher odds of experiencing deprivation in health (2.40).

Analysing differences by island groups shows (Appendix Table 34) that a significantly higher proportion of people living in Urban Tongatapu (94.7%) did not meet the deprivation threshold in health compared to Rural Tongatapu, Vava'u and 'Eua (87.4%, 89.1% and 87.8% respectively).

Figure 15. Percentage of people in each category of Health deprivation by: a) gender b) age c) disability d) location, including 95% CIs



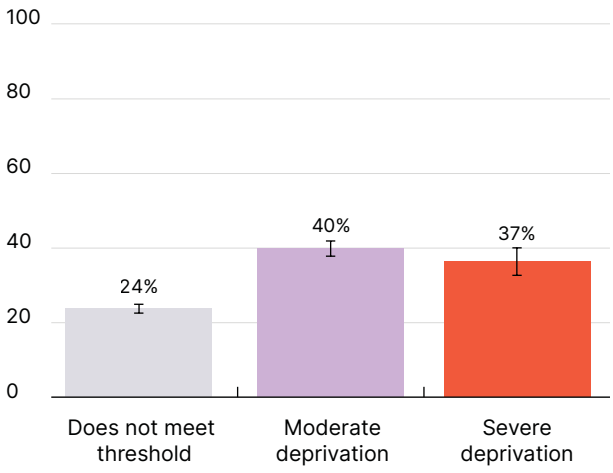
Globally, people living in poverty are more likely to suffer worse health outcomes and die younger than more affluent populations.

DIMENSION

Relationships

In the context of measuring multidimensional poverty, someone with access to relationships of support, that can be drawn on routinely and in emergencies, is likely better off than someone without such support, all other things being equal. Support from family outside the household is important in Tonga, for example according to the 2021 Tonga Census, 38.2 percent of households received remittances from someone not in the household.

Figure 16. Percentage of people within each category of Relationships deprivation, including 95% CIs



The Relationships dimension in the *Equality Insights Rapid* survey measures two main areas: 1) receipt of support for basic needs and 2) receipt of support during times of crises. Support for basic needs measures the frequency of need for support from non-household members to meet basic needs, and the extent to which this need was met.[vii] Support in a crisis measures the perceived degree of support available from non-household members in times of crisis. Severe deprivation includes people who need non-household members to provide basic needs most of the time or always but only receive help some of the time or never (Table 10). It also includes people who can count on very little or no support from non-household members in times of trouble. Those who do not meet the threshold for deprivation include people who can count on a lot of support from non-household members and have basic needs that are often or always met.

vii Discussion of findings during data validation workshops highlighted that these questions may not fully capture the complexity of interhousehold relationships and financial support in Tonga.

Table 10. Scoring thresholds for Relationships dimension deprivation

Score	Criteria
Severe deprivation	Respondent needs non-household members to provide basic needs *most of the time* or *always* **AND** respondent received support from non-household members *some of the time* or *never* **OR** Respondent needs non-household members to provide basic needs *most of the time* or *always* **AND** respondent can count on *very little or no support* from non-household members in times of trouble
Moderate deprivation	Respondent needs non-household members to provide basic needs *some of the time* **AND** respondent received support from non-household members *some of the time* or *never* **OR** Respondent can count on *very little or no support* from non-household members in times of trouble
Does not meet deprivation threshold	Respondent can count on *a lot* or *some support* from non-household members **AND** respondent *never* needs non-household members to provide basic needs **OR** these needs are *often or always* met

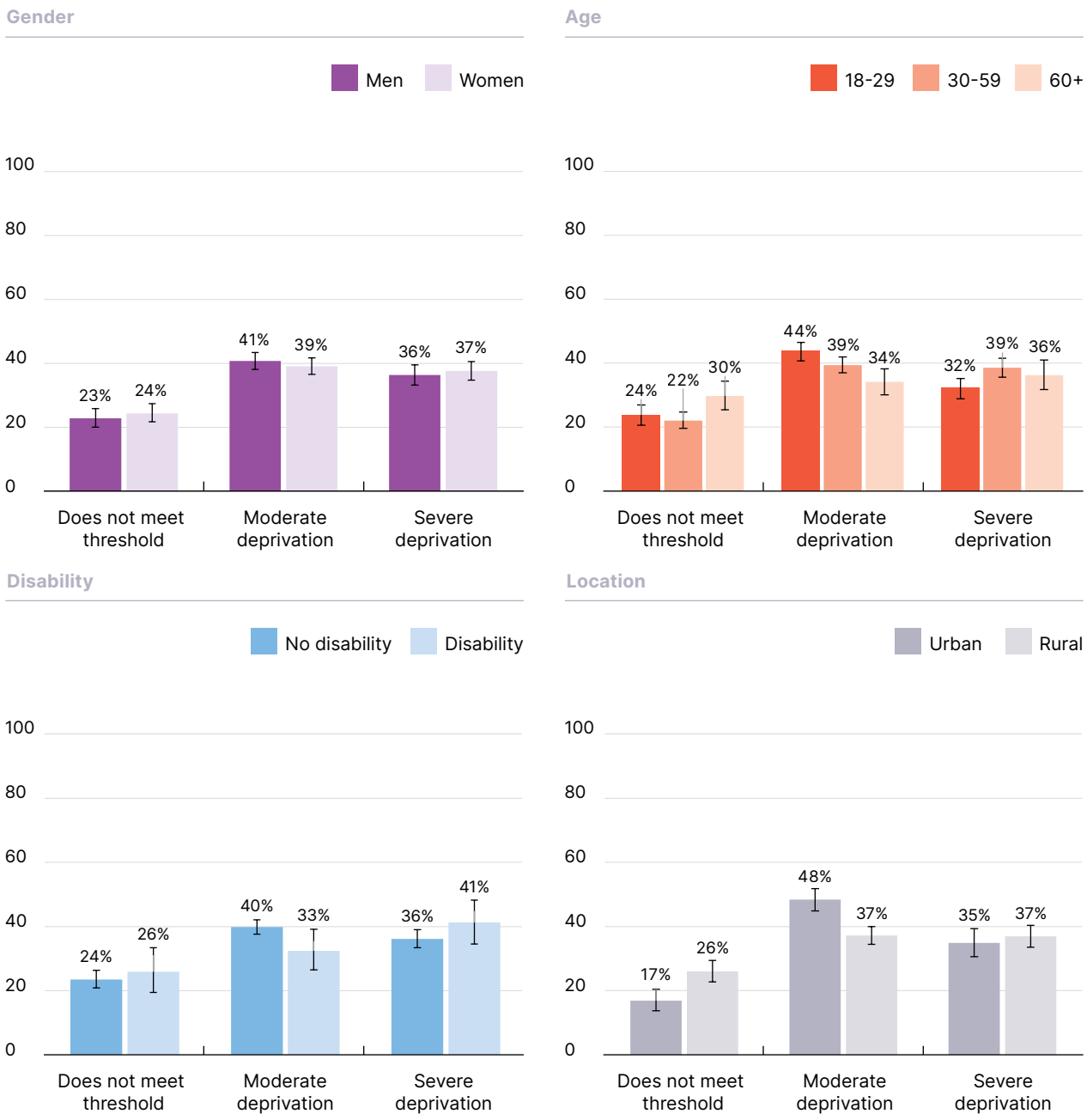
Using these measures, 37 percent of people met the severely deprived scoring criteria and another 40 percent met the moderately deprived scoring criteria (Figure 16). The remaining 24 percent did not meet the threshold for deprivation in the relationship dimension. A large percent of people (nearly 77%) experienced some level of deprivation in Relationships which may be explained by people who reported not having their needs met to the full extent.

There was little difference by gender, with 36 percent of men and 37 percent of women meeting the severely deprived threshold for Relationships (Figure 17). There was some difference in moderate deprivation by location, with urban areas having a higher proportion of people meeting this threshold (48% compared to 37% rural), and fewer not meeting any deprivation threshold (17% urban compared to 26% rural). Urban and rural areas had similar levels of severe deprivation. Similar proportions of people with and without disability did not meet the threshold for deprivation, however, a higher proportion of people with a disability were considered severely deprived (41%) than those without a disability (36%).

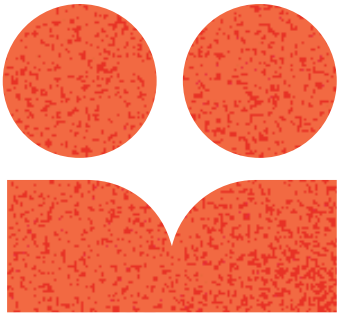
Adjusting for all variables of interest showed a significant association between age and disability (Appendix Table 26). People aged 18-29 had lower odds of experiencing deprivation (0.82) than those aged 30-59. Similarly, people aged 60 or above had lower odds (0.77) than those aged 30-59. Interaction terms show that women with a disability had lower odds of experiencing deprivation in relationships compared to those without disability (0.55).

Analysing differences by island groups (Appendix Table 34) shows that a significantly higher proportion of people living in Rural Tongatapu (30.3%) did not meet the thresholds for deprivation compared to people living in other island groups.

Figure 17. Percentage of people in each category of Relationships deprivation by: a) gender b) age c) disability d) location, including 95% CIs



Someone with access to relationships of support, that can be drawn on routinely and in emergencies, is likely better off than someone without such support, all other things being equal.

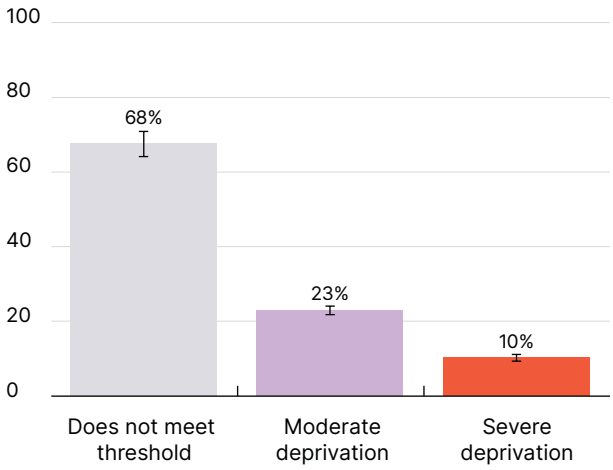


DIMENSION

Safety

Threats to one's safety and physical integrity are a substantial deprivation to an individual. Individual's experiences and perceptions of safety can differ widely, often on the basis of gender. While globally, men face high levels of threats to safety in public spaces, women experience higher levels of threats to safety in both public and domestic spaces.

Figure 18. Percentage of people within each category of Safety deprivation, including 95% CIs



The Safety dimension of the *Equality Insights* Rapid survey measures perceptions of safety and experiences of harassment in public spaces. It is intentionally not designed to assess violence inside the home given that the sampling approach of measuring multiple adults in the household may inadvertently put respondents at risk of violence from perpetrators within the household. This report acknowledges that intimate partner violence is the most prevalent type of violence women experience and that nearly one in five women in Tonga have experienced intimate partner violence at least once in their life time.[52] Severe deprivation includes those who have often or always had unwanted experiences in public spaces or those who feel unsafe participating in at least two after dark activities (Table 11). Those who do not meet the deprivation threshold have never had unwanted experiences in public spaces, or have felt safe to participate in after dark activities.

Table 11. Scoring thresholds for Safety dimension deprivation

Score	Criteria
Severe deprivation	*Often* or *always* had unwanted experiences in public spaces **OR** For at least two after dark activities (walking alone in community, using public transportation, home alone at night, using toilets), felt *unsafe* or *very unsafe* **OR** *did not participate due to safety concerns*
Moderate deprivation	*Sometimes* had unwanted experiences in public spaces **OR** For at least one after dark activity (walking alone in community, using public transportation, home alone at night, using toilets), felt *unsafe* or *very unsafe* **OR** *did not participate due to safety concerns*
Does not meet deprivation threshold	*Never* had unwanted experiences in public spaces **AND** For each after dark activity (walking alone in community, using public transportation, home alone at night, using toilets), felt *safe* or *very safe* **OR** *did not participate for reasons other than safety concerns*

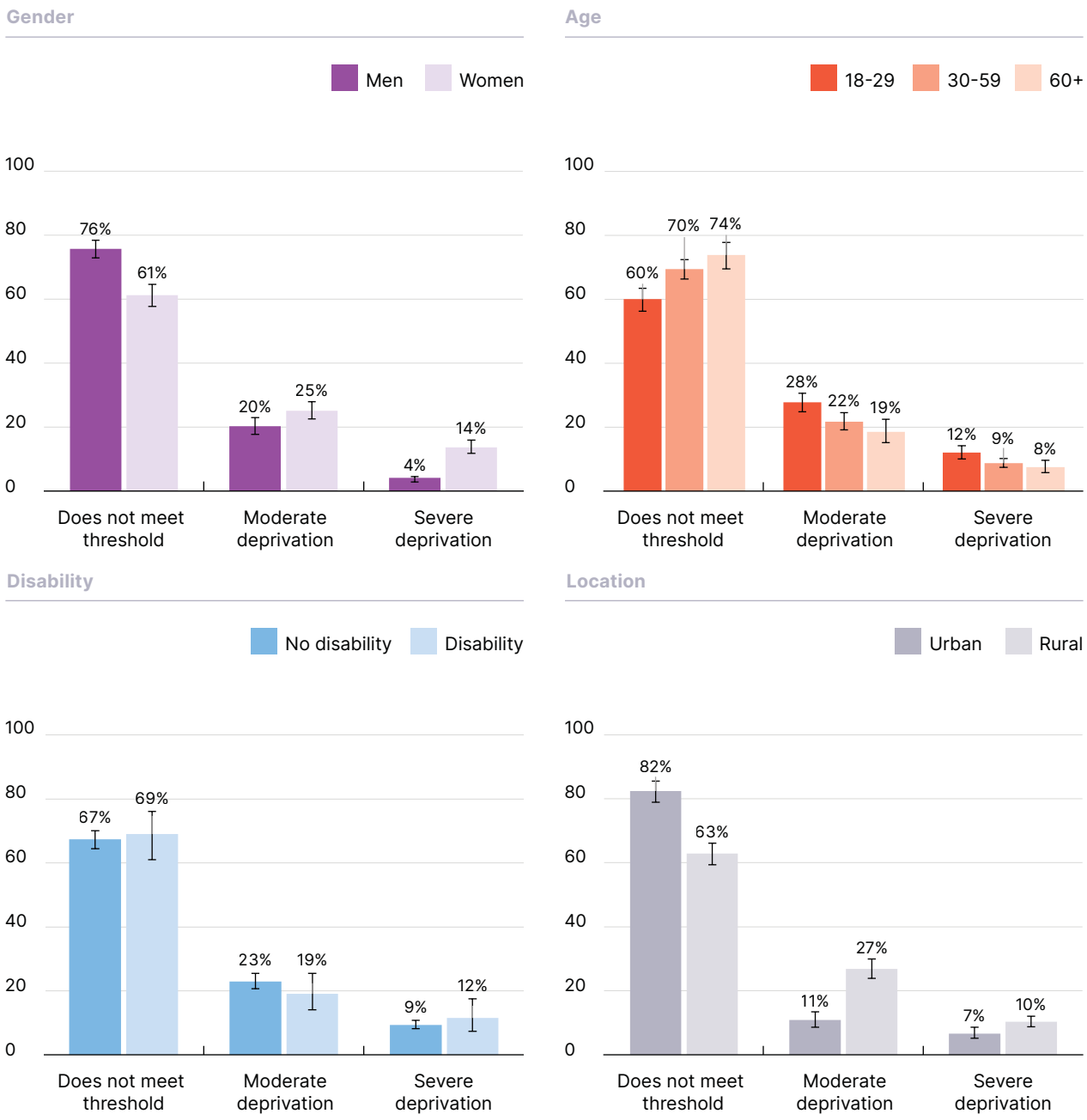
Overall, one in three people (33%) met the threshold for some level of Safety deprivation, with 23 percent experiencing moderate deprivation and 10 percent experiencing severe deprivation (Figure 18).

Women were significantly more likely to meet the Safety deprivation threshold than men, with 25 percent of women experiencing moderate deprivation and 14 percent severe deprivation, compared to 20 percent and four percent of men (Figure 19). Age was also associated with the proportion of people experiencing moderate and severe deprivation both decreasing with age. Some 60 percent of people aged 18-29 did not meet the threshold compared with 70 percent of those aged 30-59, and 74 percent of those aged 60 and above. There were also differences by location, with a higher proportion of people living in rural areas experiencing some level of deprivation compared to those in urban areas (37% and 18% relatively), the largest difference being in the proportion meeting the threshold for moderate deprivation (27% compared to 11%). Stakeholders in Tonga raised other issues that prevented them from safely participating in activities after dark such as inadequate lighting and roads in rural areas.

Adjusting for all key variables, the association between age, location, and gender remained (Appendix Table 27). Women had 2.19 higher odds of experiencing deprivation than men and people in rural areas had 2.80 higher odds than those in urban areas. People aged 18-29 had higher odds of experiencing safety deprivation than those aged 30-59 (1.55), while those aged 60 and above had lower odds than people aged 30-59 (0.82). There was also a significant interaction between age and gender, where young women had higher odds of experiencing safety deprivation than young men or older women.

Analysing differences between island groups (Appendix Table 34) shows that significantly higher proportion of people living in Urban Tongatapu and Ha'apai did not meet the threshold for deprivation in safety (82.5% and 82.6% respectively) compared to other island groups.

Figure 19. Percentage of people who in each category of Safety deprivation by: a) gender b) age c) disability d) location, including 95% CIs



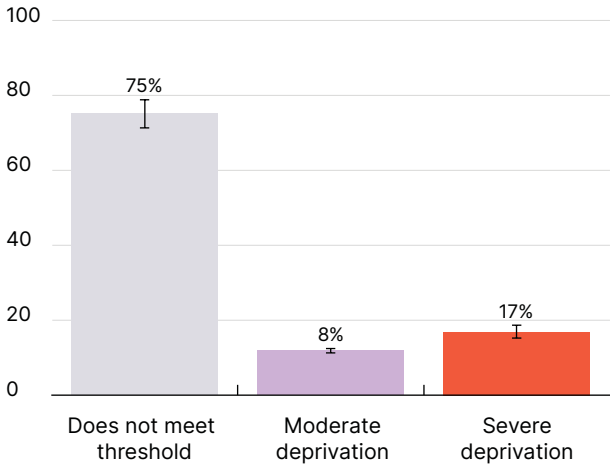
Women were significantly more likely to meet the Safety deprivation threshold than men, with 25 percent of women experiencing moderate deprivation and 14 percent severe deprivation.

DIMENSION

Sanitation

While global unmet sanitation needs remain stark,[53] sanitation is particularly challenging for certain populations. For example, access to safe sanitation facilities, and sufficient and appropriate sanitary products, are critical during menstruation. The lack of access to sanitation facilities or sanitary products can result in shame and hygiene concerns, which may prevent those menstruating from going to school or work, or participating in community activities, potentially deepening deprivation deprivation.[54,55]

Figure 20. Percentage of people within each category of Sanitation deprivation, including 95% CIs



The Sanitation dimension in the *Equality Insights Rapid* survey includes three areas of measurement: 1) quality of main household toilet facility 2) frequency of enough menstrual products and 3) sufficiency of soap for handwashing. Severe deprivation includes those who never have sufficient soap for hand washing, those who never have sufficient sanitation products while menstruating, those who openly defecate or use a toilet facility from an unimproved source (Table 12). They also include those who meet at least two classifications for moderate deprivation. Those who do not meet the threshold for deprivation have sufficient soap for handwashing and often have sufficient sanitation products while menstruating. They also include those who have a toilet facility that is safely managed.

A large majority of respondents (75%) did not meet the threshold for Sanitation deprivation. Some level of deprivation in relation to Sanitation was experienced by one in four people, with eight percent moderately deprived and 17 percent severely deprived. There was little variation in Sanitation deprivation by gender, age, disability or location (Figure 21).

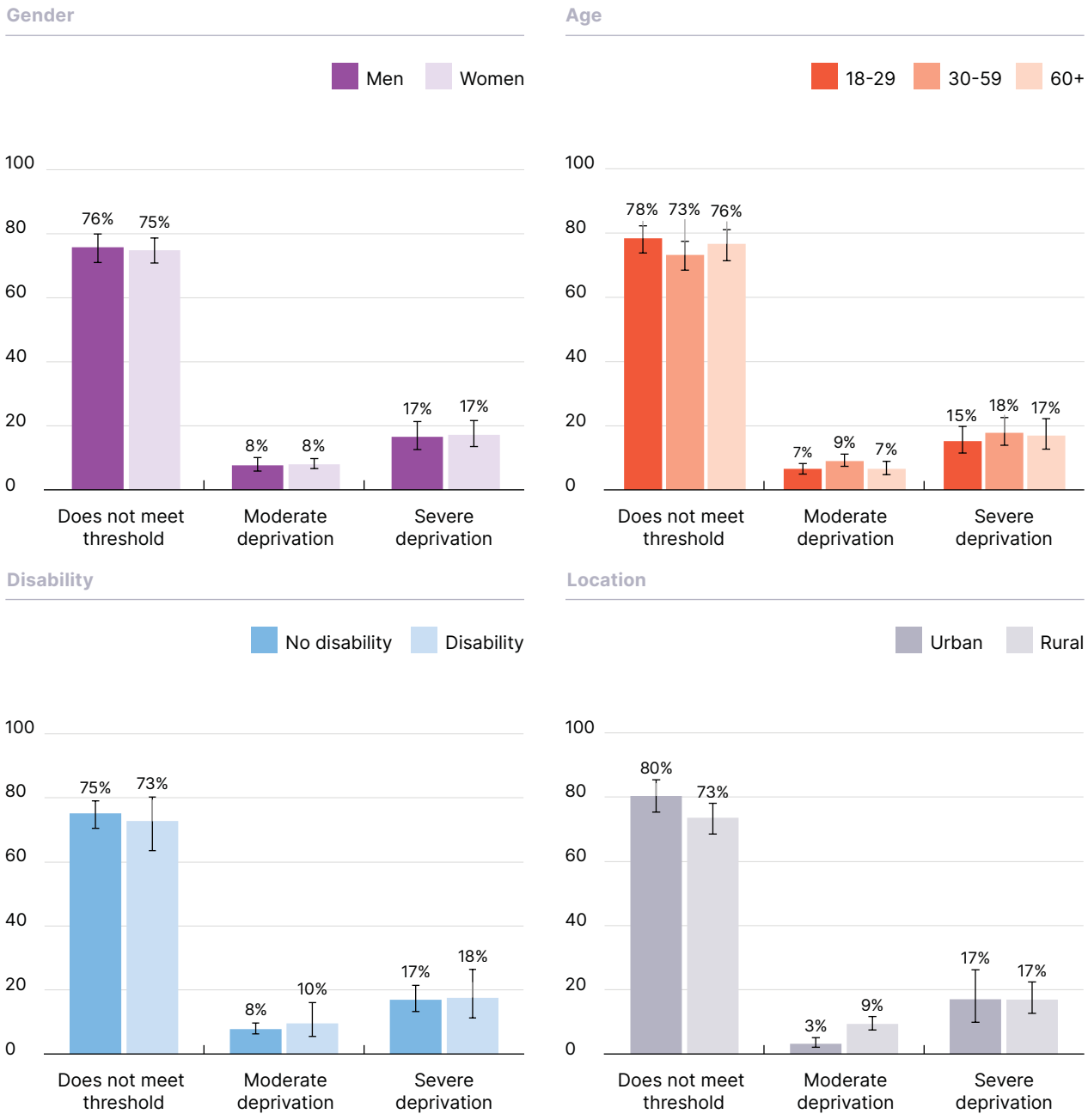
Table 12. Scoring thresholds for Sanitation dimension deprivation

Score	Criteria
Severe deprivation	Never having sufficient soap for handwashing **OR** Never having sufficient sanitation products while menstruating **OR** Toilet facility from an unimproved source or open defecation per JMP classifications **OR** Meeting at least two classifications for moderate deprivation
Moderate deprivation	Having sufficient soap for handwashing *1- 5 months* **OR** *Sometimes* having sufficient sanitation products while menstruating **OR** Toilet facility from a *limited source* per JMP classifications
Does not meet deprivation threshold	Having sufficient soap for handwashing *6-12 months* **AND** At least *often* having sufficient sanitation products while menstruating **OR** menstruating questions not applicable **AND** Toilet facility from a *safety managed* or *basic source* per JMP classifications

After adjusting for key variables of interest (gender, age, location, and disability), age was associated with experiencing Sanitation deprivation, with people aged between 18-29 having lower odds (0.78) (Appendix Table 28).

Analysing differences between island groups (Appendix Table 34) shows that there are not many significant differences with respect to deprivation in Sanitation. A lower proportion of people living in Urban Tongatapu (3.3%) met the threshold for being moderately deprived in sanitation compared to other island groups. Compared to Urban Tongatapu, a lower proportion of people living in Vava'u met the threshold for being severely deprived in the Sanitation dimension.

Figure 21. Percentage of people in each category of Sanitation deprivation by: a) gender b) age c) disability d) location, including 95% CIs

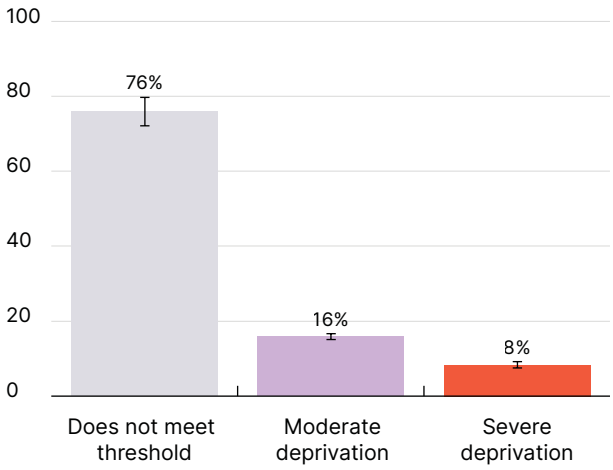


DIMENSION

Shelter

Sufficient housing is a human right.[56] While shelter may be a shared resource for household members, control over that resource is not always shared.[57] Limited housing options can exacerbate violent situations, and forced evictions have a disproportionate impact on women.[58] Thus, it is critical to examine how shelter may vary among individuals of certain groups.

Figure 22. Percentage of people within each category of Shelter deprivation, including 95% CIs



The Shelter dimension in the *Equality Insights Rapid* survey assesses whether a respondent has security of tenure, sufficient household items, sufficient privacy and sufficient protection from the elements. The measures focus on availability of sufficient bedding, frequency of eviction concerns, frequency of access to private spaces to wash and change, and the extent to which the home provides protection from the elements. Severe deprivation includes those who are always worried about eviction, those who never have a private place to wash and change or someone whose home does not protect them from elements (Table 13). It also includes those who meet at least two classifications for moderate deprivation in Table 13. Those who do not meet the threshold for deprivation have enough bedding, never or only sometimes worry about eviction and always have a private place to wash and change. Their home also protects them from elements.

Overall 24 percent of people met the threshold for Shelter deprivation, with moderate deprivation more common than severe deprivation (16% compared to 8%). A large majority of people (76%) did not meet the threshold for Shelter deprivation (Figure 22).

Table 13. Scoring thresholds for Shelter dimension deprivation

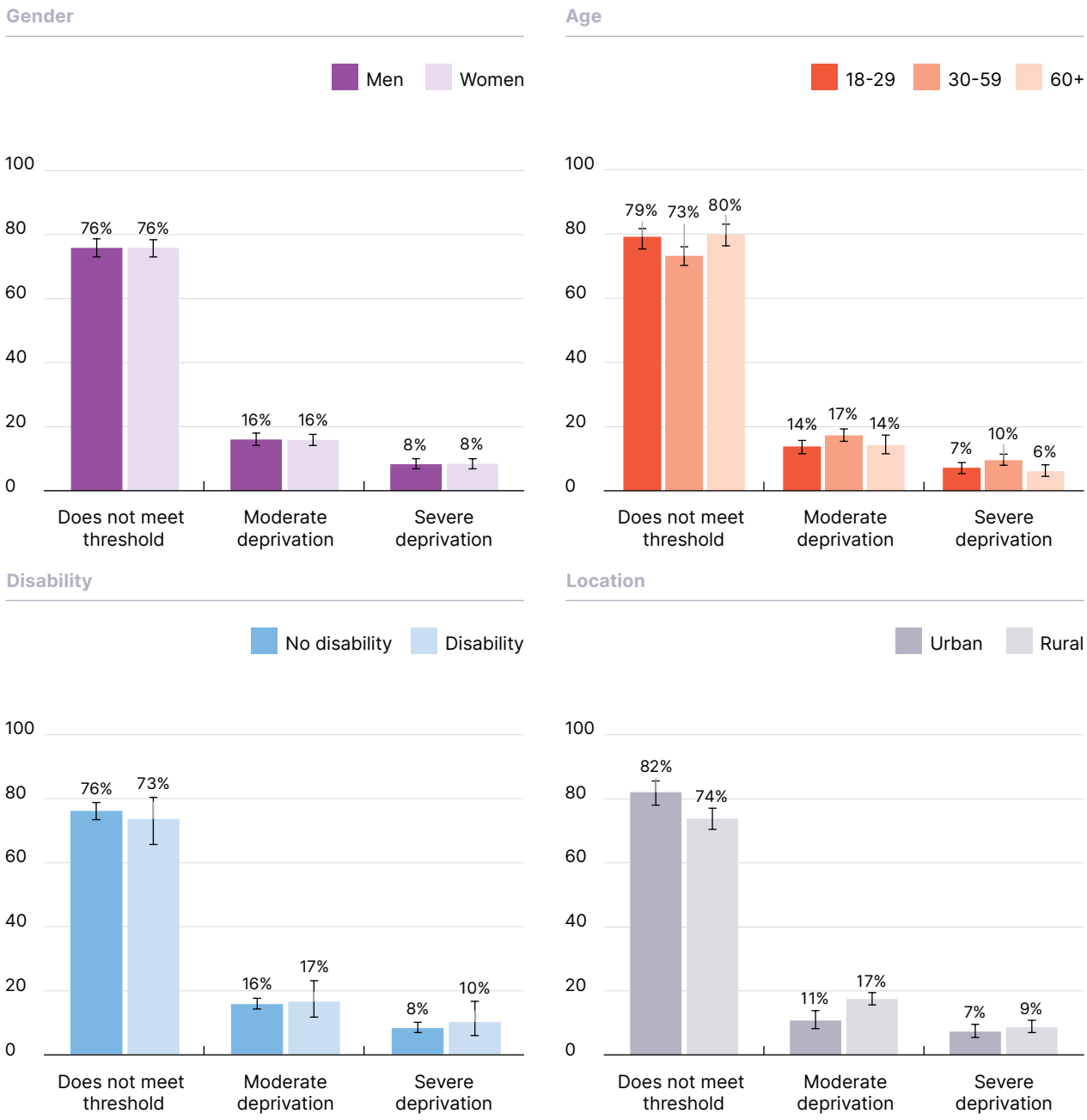
Score	Criteria
Severe deprivation	Meets at least two classifications for moderate deprivation **OR** Always worried about eviction **OR** Never having a private place to wash and change **OR** Home does not protect from elements
Moderate deprivation	Does not have enough bedding **OR** Often worried about eviction **OR** Sometimes having a private place to wash and change **OR** Home minimally protects from elements
Does not meet deprivation threshold	Has enough bedding **AND** Sometimes or never worried about eviction **AND** Often or always having a private place to wash and change **AND** Home at least moderately protects from elements

There were no significant differences in Shelter by gender, age, or disability (Figure 23). Those living in rural areas were more likely to experience moderate deprivation (17%) than those in urban areas (11%). There was no difference in the proportion of people experiencing severe deprivation by location.

After adjusting for all key variables of interest (gender, age, location, and disability), age and location were significantly associated with deprivation in Shelter (Appendix Table 29). People aged between 18 and 29 had significantly lower odds (0.74) of experiencing shelter deprivation than those aged 30-59. People aged 60 and above also had lower odds (0.67) of experiencing shelter deprivation than those aged 30-59. People living in rural areas had higher odds (1.57) of experiencing deprivation than those in urban locations.

Analysing differences across island groups shows no significant differences in levels of deprivation in Shelter (Appendix Table 34).

Figure 23. Percentage of people in each category of Shelter deprivation by: a) gender b) age c) disability d) location, including 95% CIs

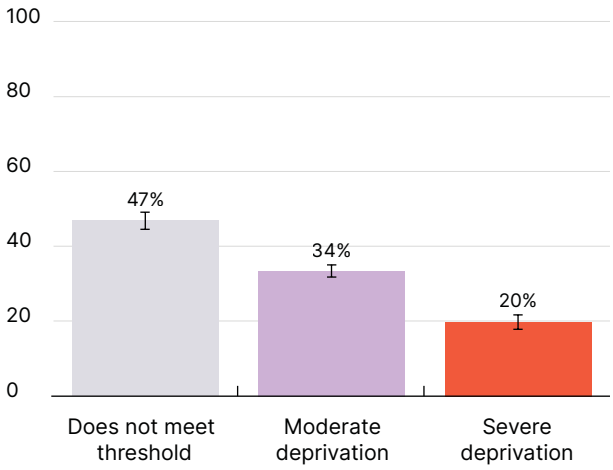


DIMENSION

Time Use

Time is an important and finite resource, and how individuals spend their time is highly gendered.[59,60,61] Time use statistics are useful for a range of policy concerns including analysing the division of labour between people by gender and improving estimates of paid and unpaid work.[62,63,64] They are also necessary for monitoring progress towards the achievement of SDG Target 5.4: Recognise and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.[65]

Figure 24. Percentage of people within each category of Time Use deprivation, including 95% CIs



The Time Use dimension of the *Equality Insights Rapid* survey focuses on assessing the dual burden of caring for dependents while doing paid work and the financial, social and physical consequences of time poverty. Severe deprivation in the time use dimension includes those who meet at least 2 moderate deprivation markers (Table 14). These include those experience dual burden during paid work, those who did not have discretionary time for medical care, those who did not have time to visit friends or family most of the time, and those who lost income because of lack of time.

Time Use deprivation was relatively common among respondents, with over half (54%) of people experiencing some level of deprivation (Figure 24). Around 34 percent of people were moderately deprived, with a further 20 percent experiencing severe deprivation.

Men were less likely to meet the threshold for Time Use deprivation (52% did not meet the threshold compared with 43% of women) (Figure 25). People aged 30-59 were more likely than those in other age groups to meet the threshold for any deprivation (58% experienced any deprivation compared to 47% of those aged 18-29 and 60 and above). There was little difference in Time Use deprivation by disability or location.

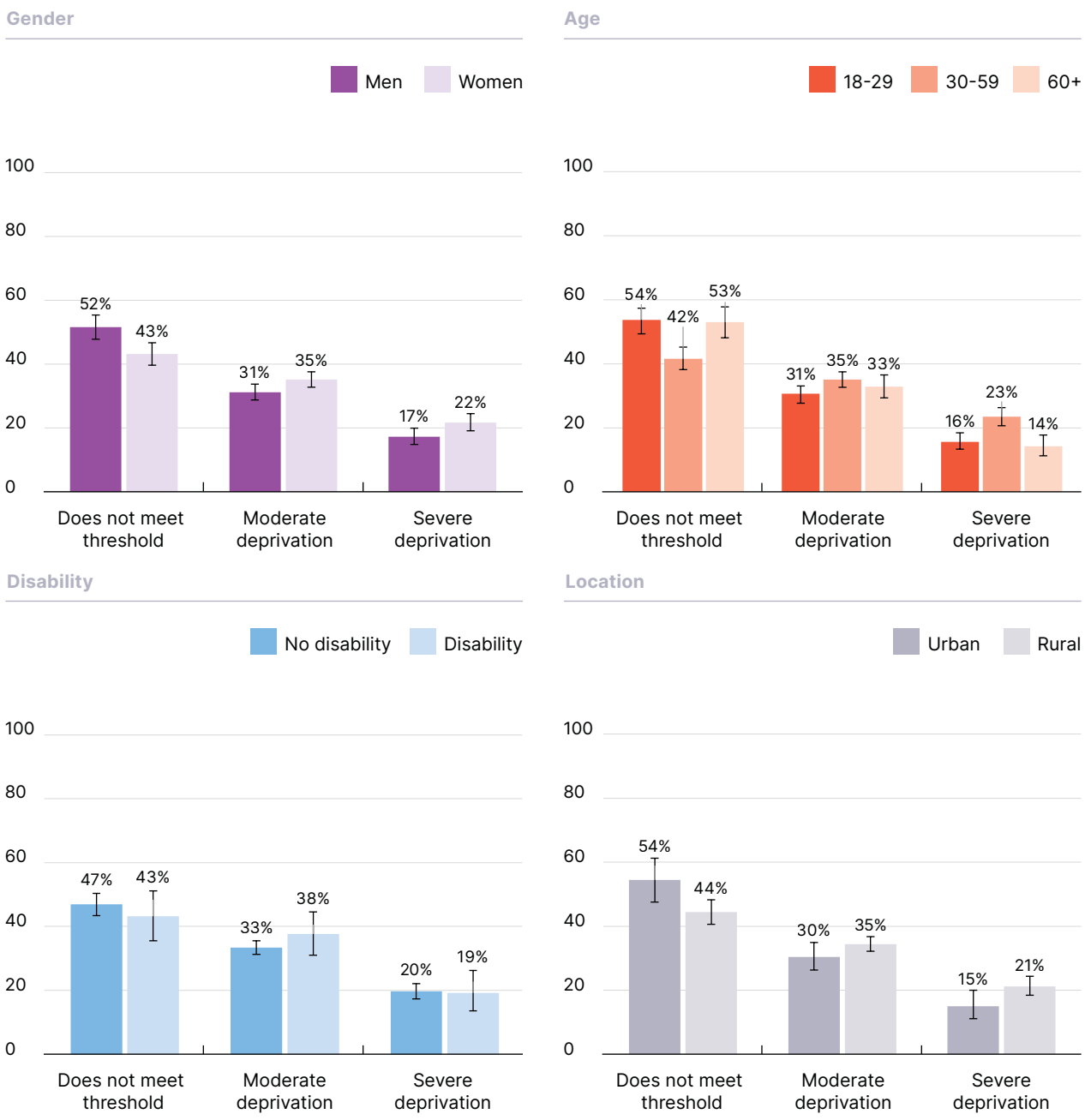
Table 14. Scoring thresholds for Time Use dimension deprivation

Score	Criteria
Severe deprivation	At least two of the Moderate deprivation markers
Moderate deprivation	Dual burden during paid work **OR** Did not have discretionary time for medical care **OR** Most of the time or all of the time did not have discretionary time to visit family or friends **OR** Lost income because of a lack of time
Does not meet deprivation threshold	No dual burden during paid work **AND** Had discretionary time for medical care **AND** Only some of the time or none of the time did not have discretionary time to visit family or friends **AND** Did not lose income because of a lack of time **OR** not engaged in paid work

Adjusting for key variables (gender, age, disability and location) showed significant associations between gender, age and location with Time Use deprivation (Appendix Table 30). By gender, women had higher odds (1.41) than men. People living in rural areas had increased odds (1.50) compared to those in urban locations. People aged below 30 and 60 or above both had reduced odds compared to those aged 30-59 (0.61 for ages 18-30, and 0.60 for ages 60 and above).

Analysing differences by island groups (Appendix Table 34) shows that a significantly higher proportion of people living in 'Eua (45.8%) met the threshold for severe deprivation in Time Use compared to other island groups.

Figure 25. Percentage of people in each category of Time Use deprivation by: a) gender b) age c) disability d) location, including 95% CIs

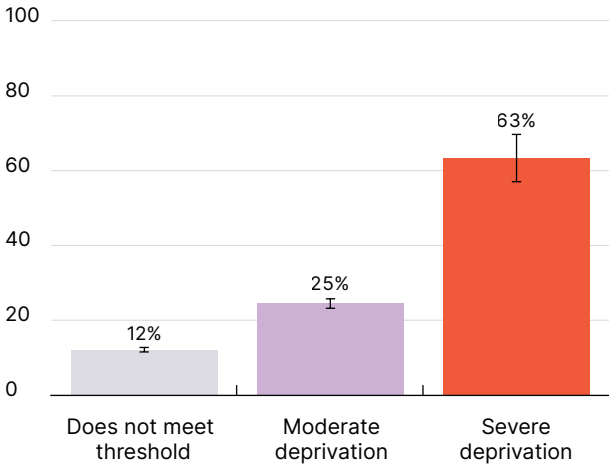


DIMENSION

Voice

For individuals, the capability to influence decisions inside households about resource allocation, access to services, and opportunities to be pursued, shapes current and future circumstances. In particular, earning income does not equate to being able to determine the purposes for which it is used. Having access to, and control over, social and productive assets can in turn expand one's agency and empowerment. Conversely, limitations to one's voice act as a barrier to being able to improve one's circumstances and influence the ability to realise improvements in other areas of life. This makes it a critical component of understanding multidimensional poverty.[66]

Figure 26. Percentage of people within each category of Voice deprivation, including 95% CIs



The Voice dimension of the *Equality Insights Rapid* survey focuses on measuring Voice inside and outside the household through three key areas: likelihood of raising concerns with local leaders, degree of personal control over daily life, and extent of involvement in household decision-making. Severe deprivation includes those who are not at all likely to raise any concerns with local leaders, those who indicate they have no control over daily life as well as those who do not commonly participate in at least one household decision.

Overall, a majority of respondents (63%) met the threshold for severe deprivation in the Voice dimension, with an additional 25 percent meeting the threshold for moderate deprivation (Figure 26). Only 12 percent of people did not meet the threshold for any level of deprivation in Voice.

While deprivation levels were similar for men and women, there were significant differences across age groups, with young people significantly more likely to be severely deprived (75%) than those aged 30-59 (60%) or 60 and above (55%) (Figure 27). Deprivation in Voice did not vary significantly between people with and without disability, or between people who lived in rural and urban areas.

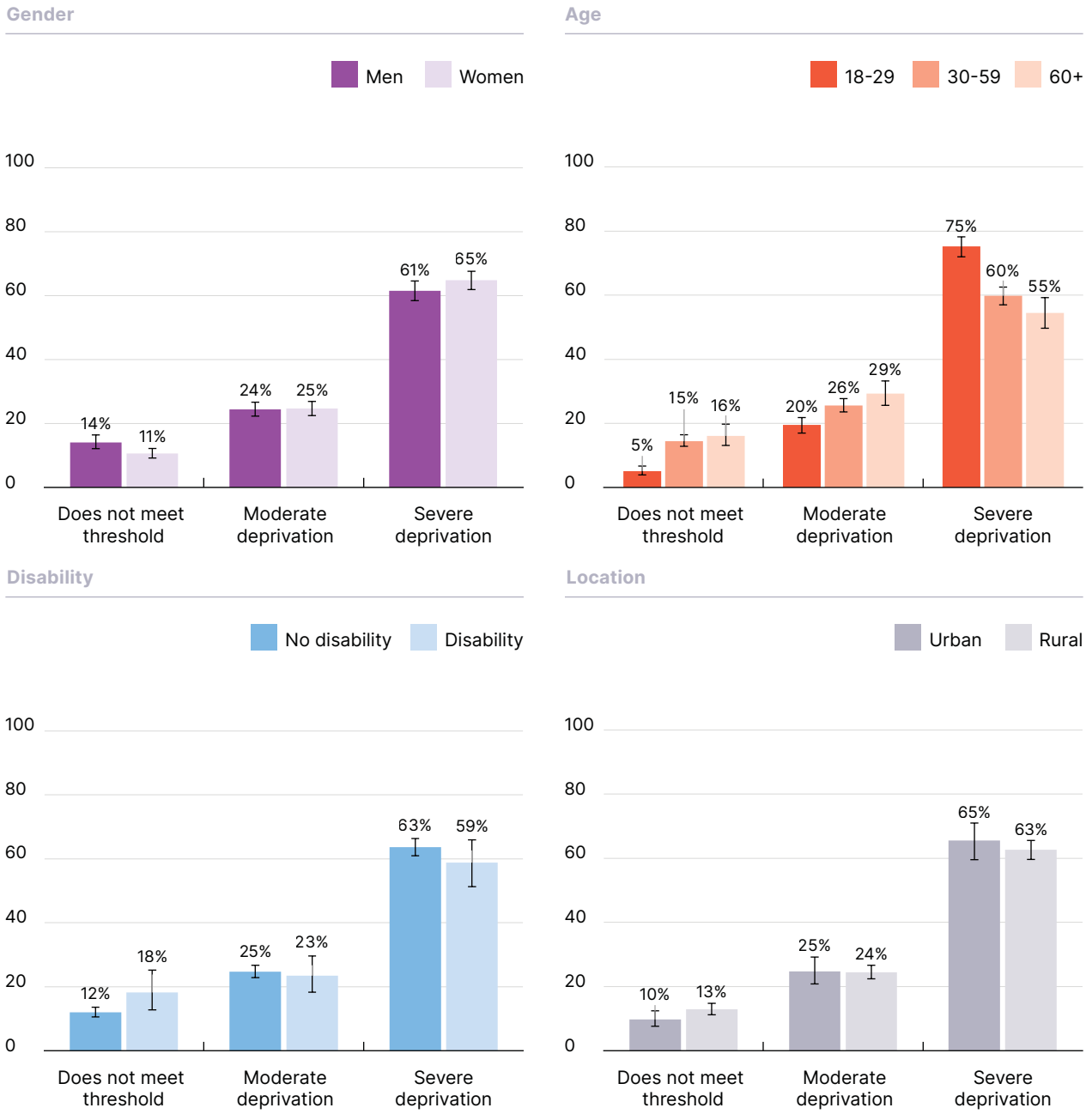
Table 15. Scoring thresholds for Voice dimension deprivation

Score	Criteria
Severe deprivation	*Not at all likely* to raise concerns with local leaders **OR** *Has no control* over daily life **AND** *Does not commonly participate* for at least one inside household decision making questions
Moderate deprivation	*Minimally likely* to raise concerns with local leaders **OR** Has a *little control* over daily life **OR** *Does not commonly participate* for at least one inside household decision making questions
Does not meet deprivation threshold	*Very likely* or *moderately likely* to raise concerns with local leaders **AND** *Commonly participates* in the decision making for all inside household questions **AND** Has at *least some control over daily life*

After adjusting for all key variables of interest (gender, age, location, and disability), age and gender were significantly associated with deprivation in the Voice dimension (Appendix Table 31). Younger people (aged 18-19) had 2.11 higher odds of experiencing deprivation than those aged 30-59. Gender was also significantly associated with deprivation, with women having 1.18 higher odds of meeting the threshold for deprivation, although there was a significant interaction between gender and location. That is, the difference between deprivation for men and women in urban areas is greater than the difference in Voice deprivation by gender in rural areas.

Analysing differences across island groups shows that there were no significant differences in the proportions of people who did not meet the threshold for deprivation in the Voice dimension (Appendix Table 34). However, significantly higher proportion of people living in Vava'u (37.7%) met the threshold for moderate deprivation in the Voice dimension compared to Tongatapu Urban, Rural Tongatapu and Ha'apai (24.9%, 20.2% and 24.9% respectively). In the severely deprived category, there were significantly lower proportion of people in Vava'u (50.2%) compared to Urban Tongatapu (65.3%) and Rural Tongatapu (67.4%).

Figure 27. Percentage of people in each category of Voice deprivation by: a) gender b) age c) disability d) location, including 95% CIs

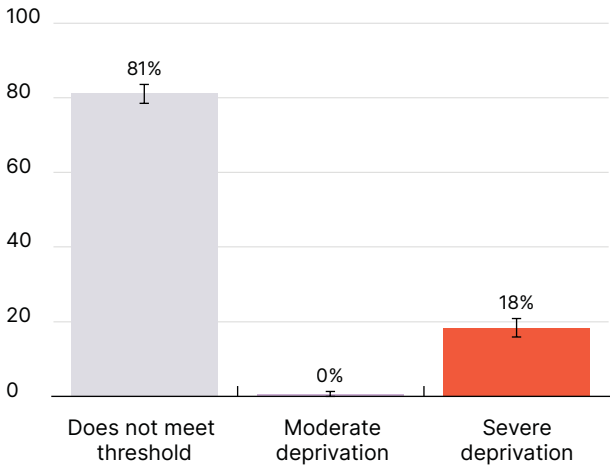


DIMENSION

Water

Insufficient, unaffordable, unsafe, and inaccessible water can have negative health impacts and exacerbate social constraints. [67] It was recognised by the United Nations General Assembly as a human right in 2010.[68] People in poverty tend to travel further to access water sources than people not in poverty, indicating a constraint on time and a potential safety concern. Individuals with mobility challenges may encounter increased barriers to the access and use of safe water.

Figure 28. Percentage of people within each category of Water deprivation, including 95% CIs



The water dimension in the *Equality Insights Rapid* survey is comprised of three measurement areas: quality of main household drinking water source, severity of water insecurity, and frequency of sufficient water to wash during menstruation. They include both household-level and individual-level survey questions. Severity of water insecurity is measured through the Water Insecurity Experiences Scale (WISE) which focuses on how often individuals were worried about water, any changing behaviours or activities due to problems with water situations and lack of sufficient water for hand washing. Quality of drinking water is measured through the Joint Program Monitoring (JPM) service ladder assessing improved/unimproved drinking water sources. Severe deprivation includes those who meet the WISE thresholds for water insecurity, those who never have sufficient water to wash while menstruating, those in households that source drinking water from an unimproved source (Table 16).

A large majority of respondents (71%) did not meet the threshold for deprivation in Water. Just over one in five people (18%) met the threshold for water deprivation, with almost all of those meeting the threshold for severe deprivation (Figure 28). Very few people (less than 1%) were in the moderate deprivation category.

Table 16. Scoring thresholds for Water dimension deprivation

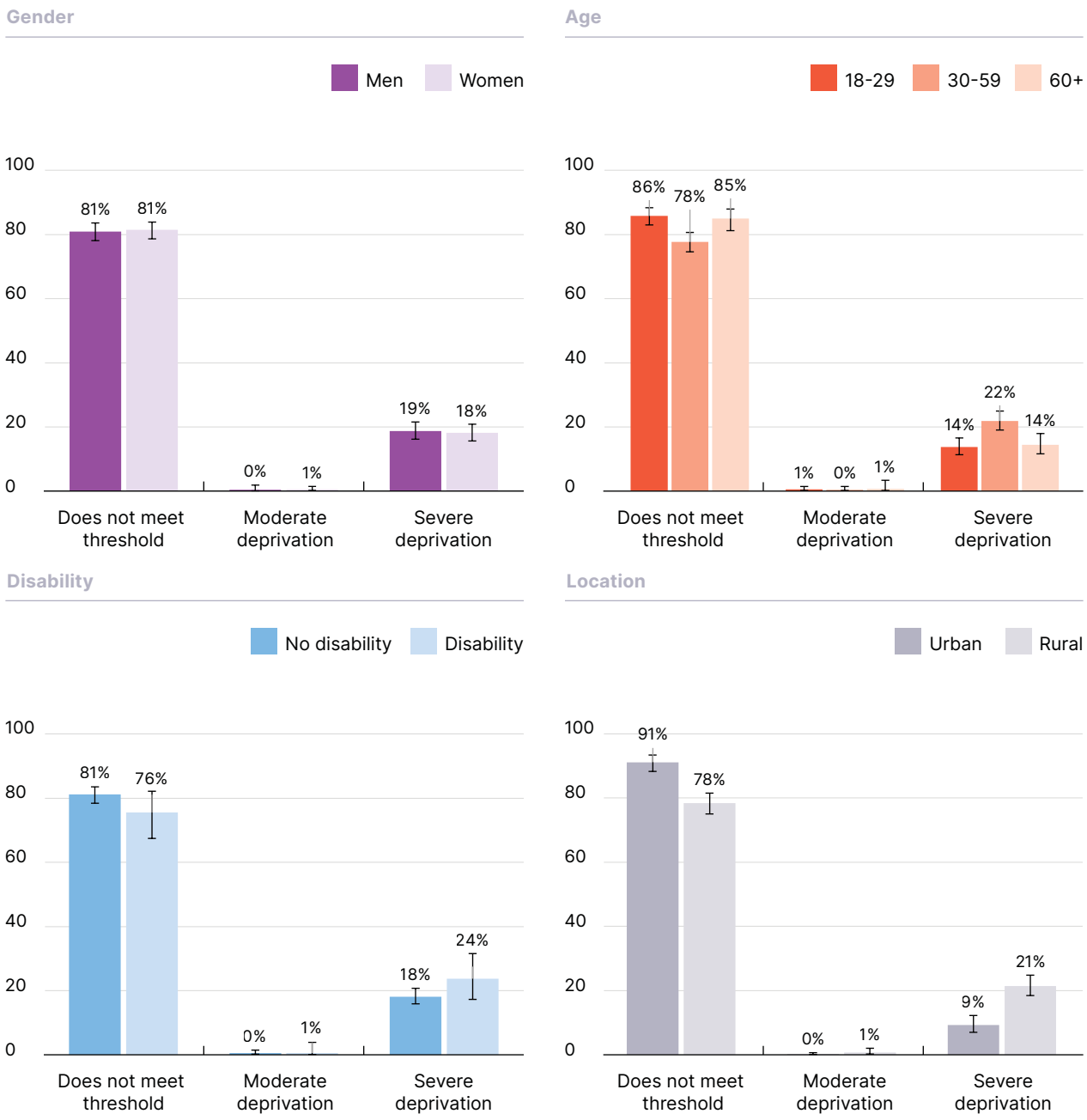
Score	Criteria
Severe deprivation	Met insecurity threshold per WISE thresholds **OR** Never having sufficient water to wash while menstruating **OR** Drinking water from an unimproved source or surface water per JMP classifications **OR** Meeting both classifications for moderate deprivation
Moderate deprivation	Sometimes having sufficient water to wash while menstruating **OR** Drinking water from a limited source per JMP classifications
Does not meet deprivation threshold	Does not meet moderate or severe water insecurity threshold per WISE thresholds **AND** At least often having sufficient water to wash while menstruating **AND** Drinking water from a safely managed or basic source per JMP classifications

People aged between 30 and 59 were more likely than older or younger adults to experience water deprivation, with 22 percent meeting the severe deprivation threshold compared to 14 percent of people aged 18-29, and aged 60 or older. People living in rural areas were more likely to experience water deprivation than those in urban Tongatapu (21% compared to 9%). There were no significant differences in deprivation by gender. While Figure 29 shows some differences by disability status, none of these were statistically significant.

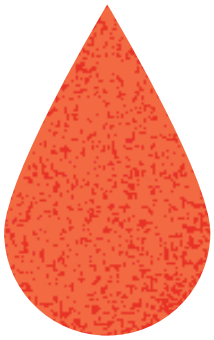
After adjusting for all key variables of interest (gender, age, location, and disability), the associations between water deprivation and age and location remained significant (Appendix Table 32). People aged 18-29 and those aged 60 years or older had lower odds of experiencing deprivation than those aged 30-59 (0.58 and 0.59 respectively). People living in rural areas had 2.73 times higher odds of experiencing Water deprivation than those in urban areas. Additionally, after adjusting for key variables there was no association between Water deprivation and gender overall. However, there was a statistically significant interaction between age and gender, with women aged 18-29 having 1.36 higher odds of experiencing deprivation than men of the same age.

Analysing differences across island groups (Appendix Table 34), a significantly higher proportion of people living in Urban Tongatapu (90.7%) did not meet the threshold for Water deprivation. The highest proportion of severe Water deprivation was seen in ‘Eua (33%) and Ha’api (23%).

Figure 29. Percentage of people in each category of Water deprivation by: a) gender b) age c) disability d) location, including 95% CIs



Insufficient, unaffordable, unsafe, and inaccessible water can have negative health impacts and exacerbate social constraints.

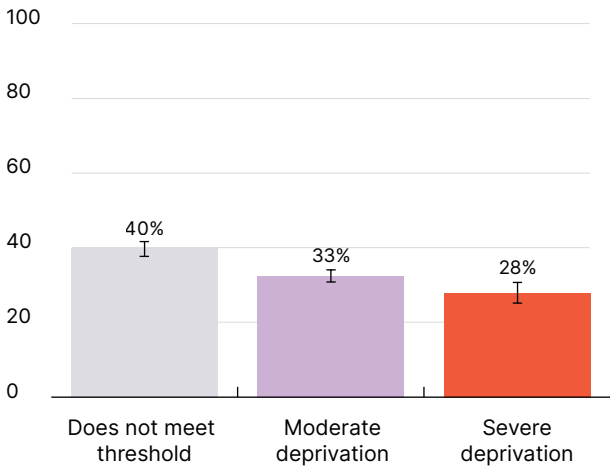


DIMENSION

Work

Both paid and unpaid work are linked with poverty.[69] However, the focus of traditional poverty measures on assessing income and expenditure ignores both the contributions and constraints provided by unpaid work. Without visibility of both forms of work, and understanding that the relationship between paid and unpaid work in specific contexts are gendered,[70] gender inequalities will persist in the division of labour inside the household and in the labour market. This has lifelong implications for women's financial circumstances.

Figure 30. Percentage of people within each category of Work deprivation, including 95% CIs



The work dimension in the *Equality Insights Rapid* survey measures key elements for both paid and unpaid work, including status/availability of work, dignity of work, and any harm experienced at work. Severe deprivation includes those who are unemployed or those who experience at least two of the following; deprivation in dignity and safety in paid or unpaid work, being under employed or deprivation in dignity or safety in paid or unpaid work. Those who do not experience deprivation in the work dimension are fully employed or not in the potential labour market and do not report a lack of dignity or safety in the paid or unpaid work they undertake. For this dimension, employment is considered to be engagement in income generating activity, while unemployment is defined as not being engaged in paid work and wither available or looking for paid employment.[71]

Overall, 61 percent of people experienced some level of Work deprivation, with 33 percent moderately deprived and 28 percent severely deprived (Figure 30). People aged 60 and above were significantly less likely to meet the threshold for deprivation, with a large portion of this population not in the labour market. Rural areas had higher levels of work deprivation, with two-thirds (66%) meeting the threshold for some level of deprivation compared to less than half (45%) of those in urban areas. Men and women experienced Work deprivation at similar levels. A significantly higher proportion of people with disabilities (28%) met the threshold for severe deprivation in work compared to people without disabilities (15%).

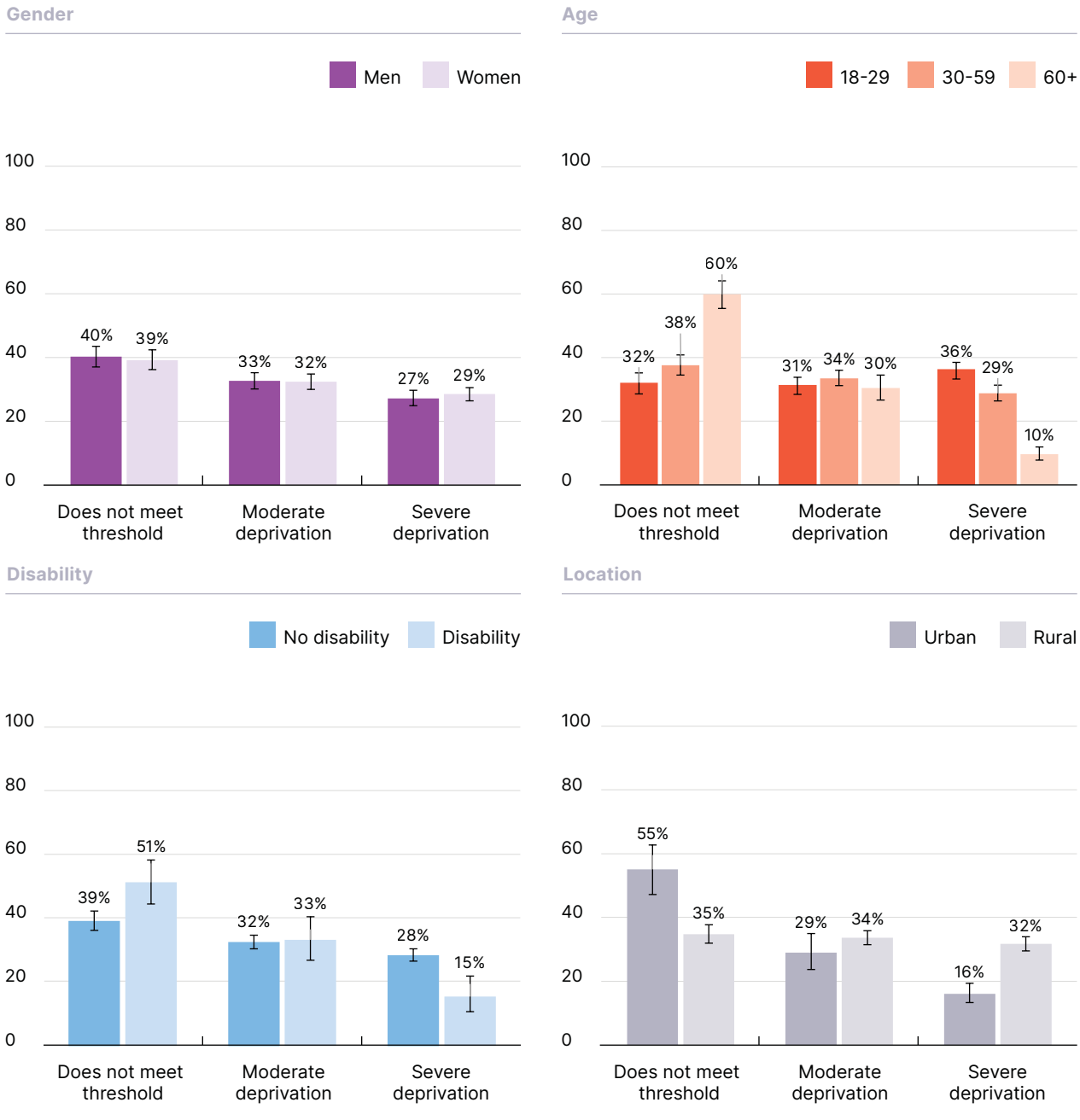
Table 17. Scoring thresholds for Work dimension deprivation

Score	Criteria
Severe deprivation	Unemployed and in the potential labour market **OR** Meets at least two classifications for moderate deprivation
Moderate deprivation	Under employed **OR** Deprived in dignity in un/paid work **OR** Deprived in safety in un/paid work
Does not meet deprivation threshold	Fully employed or not in the potential labour market **AND** No reported dignity or safety deprivations in un/paid work

After adjusting for all key variables of interest (gender, age, location, and disability), this showed that age and location had associations with Work deprivation (Appendix Table 33). People in rural areas had higher odds (2.45) than those living in urban Tongatapu. Younger adults had higher odds (1.40) of experiencing deprivation than those aged 30-59, while people aged 60 and above had significantly lower odds (0.38). A significant interaction between age and gender suggests that younger women have higher odds of experiencing Work deprivation than younger men.

Analysing differences across island groups (Appendix Table 34), a significantly higher proportion of people living in Urban Tongatapu (55.1%) did not meet the threshold for deprivation in work compared to other island groups. Conversely, Tongapatu Urban had the lowest proportion of people (16%) who were severely deprived in the work dimension. Compared to Urban Tongatapu (16%), a significantly higher proportion of people in Rural Tongatapu (30.3%) were severely deprived in the work dimension. A significantly higher proportion of people living in 'Eua (47%) were severely deprived in the work dimension, compared to the other island groups.

Figure 31. Percentage of people in each category of Work deprivation by: a) gender b) age c) disability d) location



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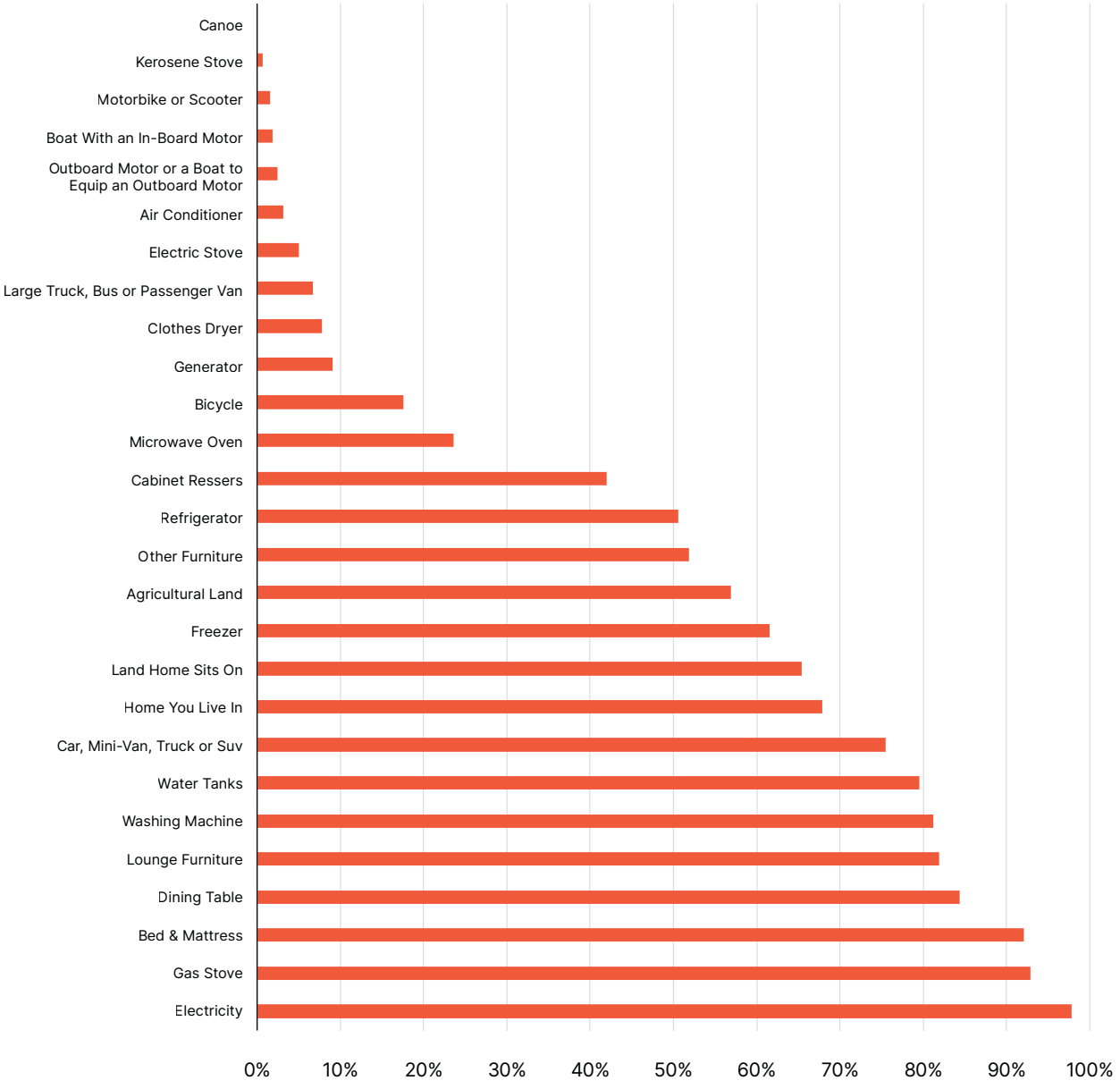
Assets

Equality Insights Rapid aims to assess asset ownership as a proxy for financial status as income and consumption/expenditure are difficult to measure reliably in a short multi-topic survey. Measuring financial status separately from multidimensional deprivation recognises that while monetary deprivation is an important component of poverty, not all aspects of multidimensional deprivation can be addressed by improving an individual's financial circumstances. Measuring financial and multidimensional deprivation separately enables policy makers to monitor how, and under what conditions, multidimensional deprivation is related to monetary poverty.[72] Given the time constraints of a phone survey require concision and the need to maintain the focus on measuring multidimensional poverty, the *Equality Insights Rapid* survey collected data on asset ownership at the household-level.

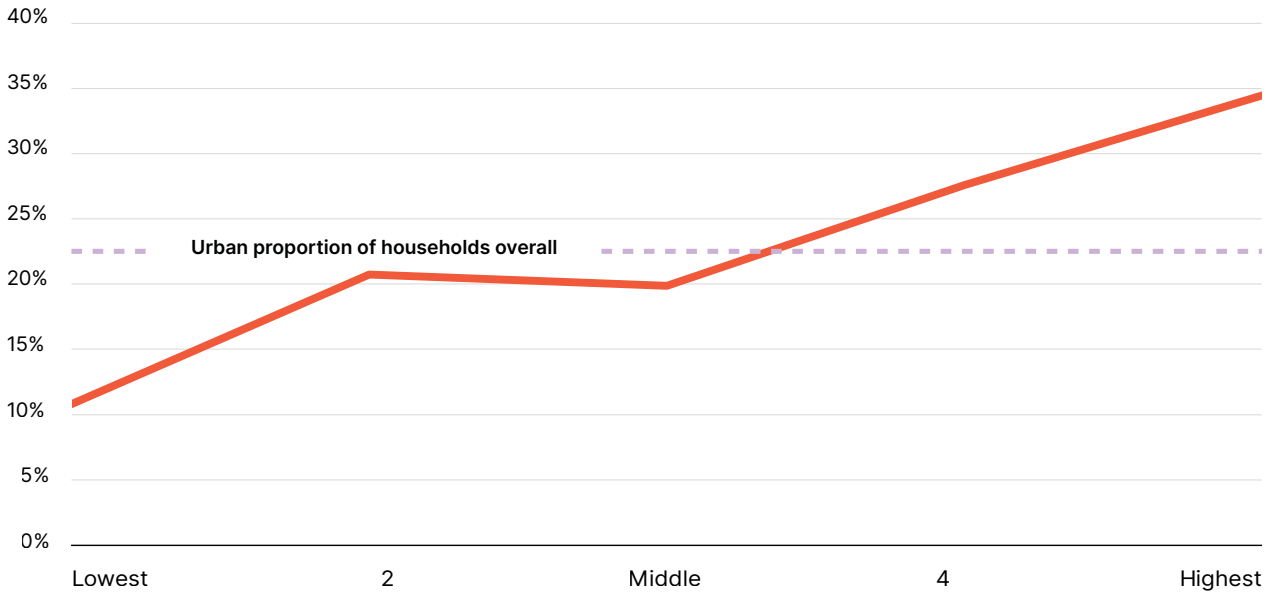
Figure 32. Household asset ownership



Households in urban Tongatapu had slightly higher ownership rates of almost all assets compared to households in rural areas, with the highest differences seen in ownership of refrigerators (66% of urban households compared to 46% of rural households) and microwave ovens (34% compared to 21%). While overall ownership rates of air conditioners were low at only three percent of all households, they were also significantly more common in urban households (6% compared with 2% of rural households). One notable exception to the pattern was the ownership of agricultural land, which was significantly higher for households in rural areas (63% compared with 36% of urban households).

Asset data was utilised to create a household-level wealth index, following the methodology of the Demographic and Health Survey (DHS).[73] This methodology categorises households into five wealth quintiles indicating increasing levels of asset ownership, and therefore by proxy, increasing levels of wealth. In addition to tangible assets, the wealth index considers building materials for the house, and access to water, electricity, and clean fuel.[viii] Consistent with the higher ownership of most assets among urban households, the proportion of households from urban areas increased with each wealth quintile (Figure 33).

Figure 33. Proportion of households in each wealth quintile located in urban areas



A key rationale for measuring financial deprivation and multidimensional deprivation separately is to reveal where they are related and where they are not. By looking at dimensions by household assets we are able to see where there is an apparent relationship between multidimensional deprivation and wealth. Figure 34 shows the proportion of individuals from the lowest, middle, and highest wealth quintiles that were considered severely deprived in each dimension.

While most dimensions show a fairly linear pattern of decreasing deprivation with increasing assets, Environment and Sanitation are relatively consistent across wealth quintiles (Figure 34). In the case of Environment, this may be due to the overall high rates of deprivation in this dimension experienced by the population in relation to recent natural hazards. The proportion of individuals experiencing deprivation in the Voice and Family Planning dimensions increases with household wealth. Notably, for all dimensions there are individuals from households in the highest wealth quintile experiencing severe deprivation, underlining the importance of both individual-level measurement, and separately assessing financial and multidimensional deprivation.

Similar findings were seen for most dimensions when looking at both moderate and severe deprivation by wealth quintiles (data not shown). Time Use, Relationships, and Voice all showed less difference across wealth quintiles when moderate and severe deprivations are combined, compared to just examining severe deprivation, suggesting that relative wealth may mediate the experience of these dimensions to some extent.

viii Some assets and building materials are excluded from the final model due to relatively low frequency. Conversely water access is excluded due to relatively high frequency of access to clean water.

Figure 34. Proportion of individuals rated as severely deprived in each dimension, across three wealth quintiles

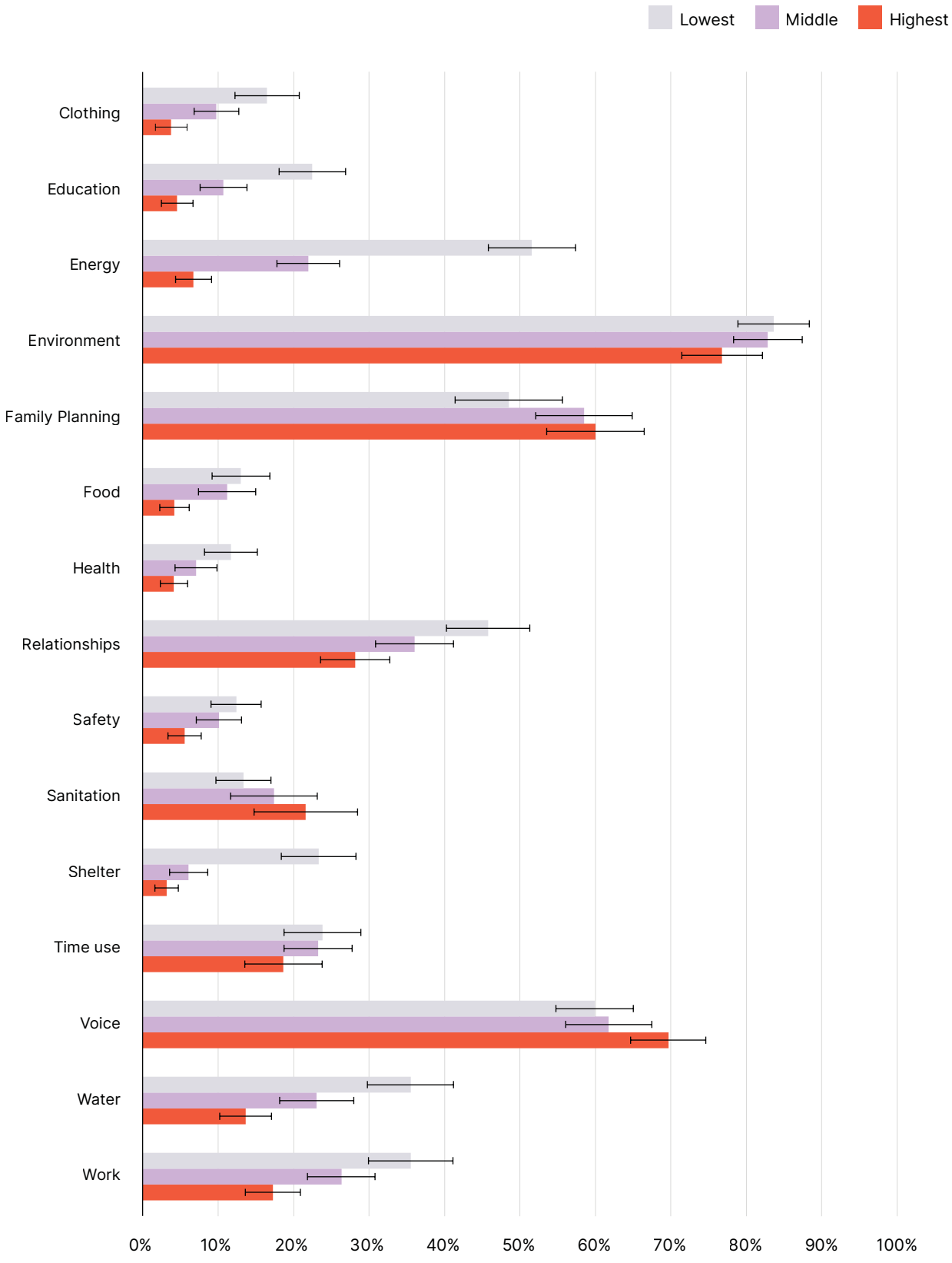


Figure note: Quintiles 2 and 4 not shown for simplicity. Trends seen in these quintiles reflect overall trends shown

DIFFERENCES WITHIN THE HOUSEHOLD

One of the key strengths of *Equality Insights Rapid* is that by surveying every eligible adult in the households it shows the differences in deprivation both across households and within households. One way to look at differences within a household is to consider the Intraclass Correlation Coefficients (ICC), a method for comparing the variation within a household to the variation in the whole population. On a scale of zero to one, a lower ICC means variation within the household is similar to the variation in the population generally, suggesting household members are experiencing deprivation as differently as if they lived in different household. This indicates that household-level measurement, which assumes common experiences among household members, would not accurately capture the situation of individuals living in the household. A higher ICC means less variation within the household.

Table 18. Intraclass correlation coefficients for each dimension

	ICC	95% CI
Clothing	0.28	0.25, 0.31
Education	0.24	0.21, 0.27
Energy	0.45	0.43, 0.48
Environment	0.87	0.86, 0.88
Family planning	0.51	0.48, 0.54
Food	0.48	0.45, 0.50
Health	0.20	0.18, 0.23
Relationships	0.28	0.26, 0.31
Safety	0.21	0.18, 0.24
Sanitation	0.78	0.77, 0.80
Shelter	0.63	0.61, 0.65
Time use	0.34	0.31, 0.37
Voice	0.25	0.22, 0.28
Water	0.43	0.41, 0.46
Work	0.23	0.20, 0.26

In some cases, little variation within a household may be expected, for example the Environment dimension. The high ICC (meaning little variation within the household) seen in this dimension is driven by the structure of the survey, with this dimension informed by many household-level questions, as well as the nature of the topic. As the environment question in the individual survey asks the extent of impact of natural hazards experienced it is reasonable to assume that household members will often experience the same hazards and may be similarly impacted. However, asking this question of individuals recognises that the same hazard may have different impacts depending on individual circumstances, roles and responsibilities.

For other dimensions such as work a high degree of variation may be anticipated within a household as different family members take different roles within the household. Dimensions that saw large differences by age, gender or disability are also more likely to show variation within a household.

OVERLAPPING DEPRIVATION

While this report largely presents each dimension as a separate experience, they are not unrelated to each other, and in practice, deprivations are rarely experienced in isolation. The vast majority of people were assessed as deprived in multiple dimensions, with 92 percent at least moderately deprived in five or more dimensions and 31 percent severely deprived in five or more dimensions. People living in rural locations experienced deprivations in a higher number of dimensions on average than those in urban areas. Similarly, households from lower wealthier quintiles also experienced deprivations across more dimensions, although as noted in the assets section there is a relationship between rural location and fewer household assets. People identified as living with a disability also experienced deprivation in a higher number of dimensions on average than those who do not have a disability.

The interaction between dimensions is evident when considering Food and Relationships deprivation. In total, 15 percent of people who were considered to be severely deprived in the Relationships dimension were also severely deprived in the Food dimension. This is significantly higher than the overall proportion of people who were severely food deprived (8%). The questions that underly the Food and Relationships dimensions provide some insight into their relationship, in which the Relationships dimension includes a question relating to whether people outside the household (for example, family, friends, or community members) can be relied upon to provide basic needs if they are not being met within the household. Where individuals have indicated that there are people outside the household who they can rely upon for this kind of support, they are less likely to be deprived in both Food and Relationships. A similar correlation exists between Relationships and Clothing. Further analysis will explore these cross-dimension interactions further, and how these multiple deprivations are experienced by individuals and households with different characteristics.

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Table 19. Clothing

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.835**	0.884	0.829**	0.903
	[0.74 - 0.95]	[0.76 - 1.03]	[0.73 - 0.94]	[0.6 - 1.36]
Age				
30-59 (ref)	-	-	-	-
18-29	0.98	1.143	0.98	0.98
	[0.84 - 1.14]	[0.92 - 1.42]	[0.84 - 1.14]	[0.84 - 1.14]
60+	0.767*	0.694*	0.765*	0.767*
	[0.62 - 0.95]	[0.94 - 0.51]	[0.62- 0.95]	[0.62 - 0.95]
Disability status				
No disability (ref)	-	-	-	-
Disability	2.037**	2.009**	1.828	2.041**
	[1.35 - 3.07]	[1.34 - 3.02]	[0.98 - 3.4]	[1.35 - 3.08]
Location				
Urban(ref)	-	-	-	-
Rural	2.099***	2.102***	2.097***	2.206***
	[1.49 - 2.96]	[1.49 - 2.97]	[1.49 - 2.96]	[1.48 - 3.28]
Interactions				
Women by age (18-29)	-	0.751	-	-
		[0.56 - 1]		
Women by age (60 and older)	-	1.195	-	-
		[0.83 - 1.73]		
Women by disability	-		1.191	-
			[0.58 - 2.44]	
Women by rural	-	-	-	0.913
				[0.592 – 1.405]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 20. Education

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.847**	0.863*	0.855**	0.844
	[0.77 - 0.93]	[0.77 - 0.97]	[0.77 - 0.94]	[0.69 - 1.03]
Age				
30-59 (ref)	-	-	-	-
18-29	0.447***	0.52***	0.447***	0.447***
	[0.4 - 0.51]	[0.43 - 0.62]	[0.4 - 0.51]	[0.4 - 0.51]
60+	3.152***	2.573***	3.161***	3.152***
	[2.64 - 3.77]	[3.34 - 1.98]	[2.64- 3.78]	[2.64 - 3.77]
Disability status				
No disability (ref)	-	-	-	-
Disability	2.241***	2.199***	2.651***	2.241***
	[1.64 - 3.07]	[1.6 - 3.01]	[1.6 - 4.4]	[1.64 - 3.07]
Location				
Urban(ref)	-	-	-	-
Rural	2.021***	2.029***	2.024***	2.016***
	[1.62 - 2.52]	[1.62 - 2.54]	[1.62 - 2.53]	[1.53 - 2.65]
Interactions				
Women by age (18-29)	-	0.767*	-	-
		[0.62 - 0.96]		
Women by age (60 and older)	-	1.429*	-	-
		[1.06 - 1.93]		
Women by disability	-		0.765	-
			[0.42 - 1.4]	
Women by rural	-	-	-	2.241
				[1.64 - 3.07]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 21. Energy

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.656***	0.654***	0.648***	0.667**
	[0.58 - 0.74]	[0.57 - 0.76]	[0.57 - 0.74]	[0.53 - 0.84]
Age				
30-59 (ref)	-	-	-	-
18-29	0.853*	0.868	0.853*	0.853*
	[0.75 - 0.97]	[0.73 - 1.04]	[0.75 - 0.97]	[0.75 - 0.97]
60+	0.644***	0.616***	0.641***	0.644***
	[0.55 - 0.76]	[0.77 - 0.49]	[0.55- 0.75]	[0.55 - 0.76]
Disability status				
No disability (ref)	-	-	-	-
Disability	0.934	0.929	0.744	0.934
	[0.7 - 1.24]	[0.7 - 1.24]	[0.46 - 1.21]	[0.7 - 1.24]
Location				
Urban(ref)	-	-	-	-
Rural	2.479***	2.48***	2.477***	2.504***
	[1.91 - 3.22]	[1.91 - 3.22]	[1.91 - 3.22]	[1.84 - 3.41]
Interactions				
Women by age (18-29)	-	0.969	-	-
		[0.74 - 1.26]		
Women by age (60 and older)	-	1.089	-	-
		[0.81 - 1.47]		
Women by disability	-		1.454	-
			[0.76 - 2.79]	
Women by rural	-	-	-	0.934
				[0.7 - 1.24]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 22. Environment

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.966	0.875*	0.949	1.069
	[0.88 - 1.07]	[0.77 - 1]	[0.86 - 1.05]	[0.91 - 1.25]
Age				
30-59 (ref)	-	-	-	-
18-29	0.934	0.8	0.932	0.935
	[0.79 - 1.1]	[0.62 - 1.03]	[0.73 - 1.1]	[0.79 - 1.1]
60+	0.904	0.84	0.90	0.904
	[0.74 - 1.11]	[1.12 - 0.63]	[0- 0]	[0.74 - 1.11]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.062	1.054	0.788	1.069
	[0.73 - 1.54]	[0.73 - 1.53]	[0.47 - 1.32]	[0.74 - 1.55]
Location				
Urban(ref)	-	-	-	-
Rural	2.786***	2.786***	2.779***	3.046***
	[1.59 - 4.88]	[1.59 - 4.88]	[1.59 - 4.87]	[1.75 - 5.31]
Interactions				
Women by age (18-29)	-	1.308	-	-
		[1 - 1.72]		
Women by age (60 and older)	-	1.14	-	-
		[0.84 - 1.55]		
Women by disability	-		1.692	-
			[0.84 - 3.39]	
Women by rural	-	-	-	1.069
				[0.74 - 1.55]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 23. Family Planning

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.909	0.942	0.903	0.819*
	[0.82 - 1.01]	[0.87 - 1.09]	[0.81 - 1.00]	[0.69 - 0.98]
Age				
30-59 (ref)	-	-	-	-
18-29	1.618***	1.734***	1.616***	1.620***
	[1.37 - 1.90]	[1.35 - 2.07]	[1.37 - 1.90]	[1.36 - 1.90]
60+	-	-	-	-
	-	-	-	-
Disability status				
No disability (ref)	-	-	-	-
Disability	0.829	0.831	0.707	0.827
	[0.54 - 1.26]	[0.54 - 1.27]	[0.40 - 1.27]	[0.54 - 1.27]
Location				
Urban(ref)	-	-	-	-
Rural	1.070	1.070	1.069	0.990
	[0.78 - 1.46]	[0.79 - 1.46]	[0.78 - 1.46]	[0.71 - 1.37]
Interactions				
Women by age (18-29)	-	0.886	-	-
		[0.69 - 1.14]		
Women by age (60 and older)	-	-	-	-
		-		
Women by disability	-	-	1.320	-
			[0.60 – 2.92]	
Women by rural	-	-	-	1.144
				[0.92 - 1.42]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 24. Food

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.944	0.90	0.953	1.030
	[0.86 – 1.03]	[0.80 – [1.00]	[0.86 – 1.04]	[0.81 – 1.31]
Age				
30-59 (ref)	-	-	-	-
18-29	0.563***	0.512***	0.564***	0.564***
	[0.49 – 0.65]	[0.41 – 0.64]	[0.49 – 0.65]	[0.49 – 0.65]
60+	0.52***	0.506***	0.52***	0.523***
	[0.43 – 0.62]	[0.40 – 0.64]	[0.44 – 0.63]	[0.44 – 0.63]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.269	1.267	1.492	1.272
	[0.95 - 1.69]	[0.95 - 1.69]	[0.94 – 2.37]	
Location				
Urban(ref)	-	-	-	-
Rural	2.506***	2.506***	2.511***	2.661***
	[1.80 – 3.48]	[1.81 – 3.48]	[1.81 – 3.49]	[1.89 – 3.75]
Interactions				
Women by age (18-29)	-	1.179	-	-
		[0.90 – 1.54]		
Women by age (60 and older)	-	1.061	-	-
		[0.81 – 1.39]		
Women by disability	-	-	0.766	-
			[0.42 – 1.38]	
Women by rural	-	-	-	0.90
				[0.69 – 1.16]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 25. Health

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	1.209*	1.075	1.224*	0.94
	[1.03 - 1.42]	[0.89 - 1.3]	[1.04 - 1.44]	[0.6 - 1.47]
Age				
30-59 (ref)	-	-	-	-
18-29	0.596***	0.549**	0.597***	0.596***
	[0.47 - 0.76]	[0.39 - 0.78]	[0.47 - 0.76]	[0.47 - 0.76]
60+	0.81	0.575**	0.812	0.81
	[0.63 - 1.04]	[0.86 - 0.38]	[0.63- 1.04]	[0.63 - 1.04]
Disability status				
No disability (ref)	-	-	-	-
Disability	5.382***	5.273***	5.823***	5.358***
	[3.77 - 7.67]	[3.69 - 7.53]	[3.63 - 9.33]	[3.76 - 7.64]
Location				
Urban(ref)	-	-	-	-
Rural	2.404***	2.402***	2.407***	2.031**
	[1.76 - 3.28]	[1.76 - 3.27]	[1.76 - 3.29]	[1.36 - 3.04]
Interactions				
Women by age (18-29)	-	1.151	-	-
		[0.79 - 1.68]		
Women by age (60 and older)	-	1.723*	-	-
		[1.05 - 2.84]		
Women by disability	-	-	0.882	-
			[0.5 - 1.55]	
Women by rural	-	-	-	1.337
				[0.827 – 2.160]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 26. Relationships

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.971	0.907	0.99	0.906
	[0.89 - 1.06]	[0.81 - 1.01]	[0.9 - 1.08]	[0.75 - 1.09]
Age				
30-59 (ref)	-	-	-	-
18-29	0.82**	0.779**	0.821**	0.819**
	[0.73 - 0.92]	[0.66 - 0.93]	[0.73 - 0.92]	[0.73 - 0.92]
60+	0.777**	0.665**	0.781**	0.777**
	[0.66 - 0.92]	[0.82 - 0.54]	[0.66- 0.92]	[0.66 - 0.92]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.15	1.134	1.671*	1.147
	[0.85 - 1.55]	[0.84 - 1.53]	[1.04 - 2.68]	[0.85 - 1.55]
Location				
Urban(ref)	-	-	-	-
Rural	0.859	0.859	0.86	0.814
	[0.69 - 1.07]	[0.69 - 1.07]	[0.69 - 1.07]	[0.63 - 1.05]
Interactions				
Women by age (18-29)	-	1.095	-	-
		[0.9 - 1.34]		
Women by age (60 and older)	-	1.328	-	-
		[1.01 - 1.74]		
Women by disability	-	-	0.553*	-
			[0.32 - 0.96]	
Women by rural	-	-	-	1.098
				[0.88 - 1.35]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 27. Safety

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	2.193***	2.001***	2.186***	1.702**
	[1.89 - 2.54]	[1.66 - 2.41]	[1.89 - 2.53]	[1.23 - 2.36]
Age				
30-59 (ref)	-	-	-	-
18-29	1.549***	1.244*	1.549***	1.548***
	[1.34 - 1.79]	[1.01 - 1.53]	[1.34 - 1.79]	[1.34 - 1.79]
60+	0.822*	0.886	0.822*	0.822*
	[0.68 - 1]	[1.15 - 0.68]	[0.68- 0.99]	[0.68 - 1]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.016	1.026	0.944	1.013
	[0.7 - 1.48]	[0.71 - 1.49]	[0.49 - 1.83]	[0.69 - 1.48]
Location				
Urban(ref)	-	-	-	-
Rural	2.807***	2.809***	2.807***	2.306***
	[2.11 - 3.73]	[2.11 - 3.73]	[2.11 - 3.73]	[1.65 - 3.21]
Interactions				
Women by age (18-29)	-	1.411**	-	-
		[1.09 - 1.82]		
Women by age (60 and older)	-	0.889	-	-
		[0.63 - 1.24]		
Women by disability	-	-	1.11	-
			[0.52 - 2.36]	
Women by rural	-	-	-	1.013
				[0.69 - 1.48]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 28. Sanitation

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	1.057	1.114	1.079	0.928
	[0.95- 1.179]	[0.99 - 1.25]	[0.96 - 1.21]	[0.69 - 1.25]
Age				
30-59 (ref)	-	-	-	-
18-29	0.778**	0.84	0.779**	0.778**
	[0.675 - 0.897]	[0.66 - 1.07]	[0.67 - 0.90]	[0.67 - 0.90]
60+	0.869	0.933	0.873	0.870
	[0.719 - 1.050]	[.71 - 1.22]	[0.72 - 1.06]	[0.72 - 1.05]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.083	1.089	1.497	1.078
	[0.746 - 1.571]	[0.75 - 1.58]	[0.94 - 2.37]	[0.74 - 1.57]
Location				
Urban(ref)	-	-	-	-
Rural	1.354	1.355	1.358	1.234
	[0.720 - 2.54]	[0.72 - 2.55]	[0.72 - 2.55]	[0.63 - 2.43]
Interactions				
Women by age (18-29)	-	0.876	-	-
		[0.64 - 1.18]		
Women by age (60 and older)	-	0.88	-	-
		[0.65 -1.19]		
Women by disability	-	-	0.578	-
			[0.31 - 1.09]	
Women by rural	-	-	-	1.177
				[0.86 - 1.61]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 29. Shelter

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	1.009	0.994	0.991	1.058
	[0.92 - 1.11]	[0.89 - 1.11]	[0.90 - 1.09]	[0.78 - 1.43]
Age				
30-59 (ref)	-	-	-	-
18-29	0.742***	0.741**	0.740***	0.742***
	[0.63 - 0.87]	[0.59 - 0.59]	[0.63 - 0.87]	[0.63 - 0.87]
60+	0.677***	0.638**	0.673***	0.677***
	[0.56 - 0.82]	[0.47 - 0.86]	[0.55 - 0.82]	[0.56 - 0.82]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.214	1.207	0.863	-
	[0.82 - 1.80]	[0.82 - 1.78]	[0.50 - 1.50]	-
Location				
Urban(ref)	-	-	-	-
Rural	1.577**	1.578**	1.575**	1.630*
	[1.15 - 2.17]	[1.15 - 2.17]	[1.15 - 2.17]	[1.12 - 2.38]
Interactions				
Women by age (18-29)	-	1.002	-	-
		[0.79 - 1.28]		
Women by age (60 and older)	-	1.112	-	-
		[0.79 - 1.56]		
Women by disability	-		1.697	-
			[0.83 - 3.46]	
Women by rural	-	-	-	0.944
				[0.69 - 1.29]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 30. Time

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	1.410***	1.375***	1.425***	1.198
	[1.27 - 1.56]	[1.21 - 1.56]	[1.28 - 1.58]	[0.97 - 1.49]
Age				
30-59 (ref)	-	-	-	-
18-29	0.612***	0.609***	0.612***	0.611***
	[0.54 - 0.69]	[0.51 - 0.73]	[0.54 - 0.69]	[0.54 - 0.69]
60+	0.601***	0.552***	0.602***	0.601***
	[0.50 - 0.72]	[0.44 - 0.70]	[0.51 - 0.72]	[0.50 - 0.72]
Disability status				
No disability (ref)	-	-	-	-
Disability	1.127	1.118	1.370	1.121
	[0.84 - 1.51]	[0.83 - 1.50]	[0.88 - 2.14]	[0.83 - 1.51]
Location				
Urban(ref)	-	-	-	-
Rural	1.496*	1.496*	1.498*	1.323
	[1.07 - 2.08]	[1.07 - 2.08]	[1.08 - 2.08]	[0.92 - 1.91]
Interactions				
Women by age (18-29)	-	1.009	-	-
		[0.80 - 1.27]		
Women by age (60 and older)	-	1.160	-	-
		[0.88 - 1.53]		
Women by disability	-		0.736	-
			[0.46 - 1.17]	
Women by rural	-	-	-	1.234
				[0.97 - 1.57]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 31. Voice

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	1.177**	1.148*	1.179**	1.643***
	[1.05 - 1.32]	[1.00 - 1.32]	[1.05 - 1.33]	[1.38 - 1.96]
Age				
30-59 (ref)	-	-	-	-
18-29	2.114***	2.206***	2.115***	2.121***
	[1.84 - 2.42]	[1.81 - 2.69]	[1.84 - 2.42]	[1.85 - 2.43]
60+	0.821*	0.723**	0.822*	0.821*
	[0.68 - 0.99]	[0.57 - 0.92]	[0.68 - 0.99]	[0.68 - 0.99]
Disability status				
No disability (ref)	-	-	-	-
Disability	0.966	0.952	0.994	-
	[0.69 - 1.35]	[0.68 - 1.33]	[0.59 - 1.67]	-
Location				
Urban(ref)	-	-	-	-
Rural	0.874	0.874	0.874	1.109
	[0.67 - 1.15]	[0.67 - 1.15]	[0.67 - 1.15]	[0.82 - 1.50]
Interactions				
Women by age (18-29)	-	0.929	-	-
		[0.73 - 1.19]		
Women by age (60 and older)	-	1.261	-	-
		[0.96 - 1.66]		
Women by disability	-		0.955	-
			[0.52 - 1.74]	
Women by rural	-	-	-	0.646***
				[0.52 - 0.81]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 32. Water

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	0.980	0.891	0.987	1.328
	[0.88 - 1.09]	[0.78 - 1.02]	[0.87 - 1.11]	[0.95 - 1.86]
Age				
30-59 (ref)	-	-	-	-
18-29	0.584***	0.4988***	0.585***	0.585***
	[0.49 - 0.70]	[0.38 - 0.63]	[0.49 - 0.70]	[0.49 - 0.70]
60+	0.590***	0.530***	0.592***	0.590***
	[0.52 - 0.74]	[0.39 - 0.72]	[0.47 - 0.74]	[0.47 - 0.74]
Disability status		-		
No disability (ref)	-	-	-	-
Disability	1.437	1.425	1.619	1.446
	[0.97- 2.13]	[0.96 – 2.12]	[0.88 - 2.99]	[0.97 – 2.16]
Location				
Urban(ref)	-	-	-	-
Rural	2.727***	2.725***	2.730***	3.354***
	[1.19 – 3.89]	[1.91 – 3.89]	[1.91 – 3.89]	[2.30 – 4.88]
Interactions				
Women by age (18-29)	-	1.361*	-	-
		[1.01 - 1.84]		
Women by age (60 and older)	-	1.213	-	-
		[0.84 - 1.74]		
Women by disability	-		0.823	-
			[0.41 - 1.64]	
Women by rural	-	-	-	0.704
				[0.49 - 1.00]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 33. Work

	Direct associations	Interaction (age*gender)	Interaction (disability*gender)	Interaction (location*gender)
	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)	aOR (95% CIs)
Gender				
Men(ref)	-	-	-	-
Women	1.066	0.985	1.076	1.219
	[0.97 - 1.17]	[0.87 - 1.12]	[0.97 - 1.19]	[0.99 - 1.51]
Age				
30-59 (ref)	-	-	-	-
18-29	1.395***	1.195*	1.396***	1.395***
	[1.23 - 1.59]	[0.99 - 1.44]	[1.23 - 1.59]	[1.23 - 1.59]
60+	0.376***	0.373***	0.376***	0.376***
	[0.32 - 0.45]	[0.29 - 0.48]	[0.32 - 0.45]	[0.32 - 0.45]
Disability status				
No disability (ref)	-	-	-	-
Disability	0.799	0.799	0.964	0.800
	[0.61 - 1.04]	[0.61 - 1.04]	[0.61 - 1.51]	[0.61 - 1.04]
Location				
Urban(ref)	-	-	-	-
Rural	2.438***	2.439***	2.439***	2.691***
	[1.78 - 3.34]	[1.78 - 3.34]	[1.78 - 3.34]	[1.90 - 3.81]
Interactions				
Women by age (18-29)	-	1.312*	-	-
		[1.05 - 1.63]		
Women by age (60 and older)	-	1.012	-	-
		[0.75 - 1.36]		
Women by disability	-		0.740	-
			[0.45 - 1.23]	
Women by rural	-	-	-	0.842
				[0.66 - 1.07]

Note: Each column represents a separate model. P-values are designated by asterisks: p<0.001=***, p<0.01=**, p<0.05=*. 95% CIs = 95% confidence intervals; aOR = adjusted odds ratio.

Table 34. Deprivation Measures by Island Groups - Proportion of population (%) and Confidence Intervals (CI)

Dimension	Island Group	Does not meet threshold			Moderate deprivation			Severe deprivation			Total
		%	CI		%	CI		%	CI		
Clothing	Tongatapu Urban	**89.50%**	86.72%	91.75%	**2.62%**	1.69%	4.02%	**7.88%**	5.88%	10.49%	100%
	Tongatapu Rural	**80.35%**	75.93%	84.13%	**12.58%**	9.51%	16.46%	**7.07%**	5.66%	8.80%	100%
	Vava'u	**84.93%**	78.84%	89.50%	**6.68%**	4.34%	10.16%	**8.38%**	5.47%	12.64%	100%
	Ha'apai	**84.08%**	70.61%	92.07%	**3.27%**	1.11%	9.27%	**12.65%**	6.39%	23.53%	100%
	'Eua	**56.86%**	43.88%	68.96%	**22.17%**	10.11%	41.91%	**20.97%**	12.87%	32.28%	100%
Education	Tongatapu Urban	**50.32%**	46.27%	54.36%	**44.06%**	40.73%	47.44%	**5.62%**	4.20%	7.49%	100%
	Tongatapu Rural	**37.31%**	34.17%	40.57%	**50.47%**	47.94%	53.00%	**12.22%**	10.44%	14.24%	100%
	Vava'u	**32.45%**	25.36%	40.45%	**56.47%**	49.47%	63.22%	**11.08%**	8.72%	13.99%	100%
	Ha'apai	**27.54%**	19.65%	37.13%	**58.38%**	52.36%	64.16%	**14.08%**	8.17%	23.18%	100%
	'Eua	**29.30%**	16.88%	45.82%	**52.50%**	41.14%	63.60%	**18.20%**	13.26%	24.47%	100%
Energy	Tongatapu Urban	**78.27%**	73.21%	82.61%	**14.05%**	9.74%	19.85%	**7.68%**	5.97%	9.82%	100%
	Tongatapu Rural	**68.03%**	64.34%	71.51%	**9.61%**	7.40%	12.40%	**22.35%**	19.44%	25.56%	100%
	Vava'u	**59.99%**	52.48%	67.06%	**4.65%**	2.76%	7.72%	**35.36%**	28.11%	43.35%	100%
	Ha'apai	**36.11%**	24.75%	49.28%	**3.56%**	1.26%	9.62%	**60.33%**	46.89%	72.37%	100%
	'Eua	**41.30%**	28.28%	55.66%	**9.27%**	5.74%	14.65%	**49.43%**	37.66%	61.26%	100%
Environment	Tongatapu Urban	**13.02%**	8.06%	20.37%	**21.60%**	14.72%	30.54%	**65.38%**	52.80%	76.12%	100%
	Tongatapu Rural	**2.41%**	1.48%	3.88%	**9.16%**	6.97%	11.96%	**88.43%**	85.18%	91.04%	100%
	Vava'u	**14.04%**	9.22%	20.81%	**24.78%**	18.81%	31.90%	**61.18%**	51.83%	69.78%	100%
	Ha'apai	**2.72%**	1.07%	6.72%	**17.02%**	10.36%	26.68%	**80.27%**	68.31%	88.47%	100%
	'Eua	**2.26%**	0.86%	5.77%	**7.92%**	2.82%	20.33%	**89.82%**	77.69%	95.72%	100%
Family Planning	Tongatapu Urban	**39.11%**	33.64%	44.87%	**3.50%**	2.19%	5.55%	**57.39%**	51.61%	62.98%	100%
	Tongatapu Rural	**34.75%**	29.41%	40.50%	**4.91%**	3.34%	7.15%	**60.34%**	53.84%	66.49%	100%
	Vava'u	**49.09%**	38.27%	59.99%	**16.00%**	10.88%	22.91%	**34.92%**	25.15%	46.13%	100%
	Ha'apai	**48.28%**	34.73%	62.09%	**7.99%**	3.44%	17.47%	**43.73%**	28.38%	60.38%	100%
	'Eua	**14.20%**	8.59%	22.56%	**0.00%**	-	-	**85.80%**	77.44%	91.41%	100%
Food	Tongatapu Urban	**78.51%**	73.25%	82.98%	**15.34%**	11.72%	19.83%	**6.14%**	3.95%	9.44%	100%
	Tongatapu Rural	**59.67%**	55.51%	63.69%	**28.91%**	25.54%	32.53%	**11.42%**	7.98%	16.07%	100%
	Vava'u	**57.95%**	50.63%	64.94%	**40.12%**	33.05%	47.63%	**1.93%**	1.01%	3.66%	100%
	Ha'apai	**64.30%**	53.81%	73.58%	**33.19%**	24.94%	42.61%	**2.51%**	1.20%	5.18%	100%
	'Eua	**42.58%**	32.92%	52.83%	**50.73%**	42.27%	59.14%	**6.70%**	3.68%	11.88%	100%
Health	Tongatapu Urban	**94.71%**	93.20%	95.90%	**2.52%**	1.74%	3.63%	**2.78%**	1.93%	3.97%	100%
	Tongatapu Rural	**87.38%**	85.02%	89.41%	**4.97%**	4.01%	6.15%	**7.65%**	6.14%	9.48%	100%
	Vava'u	**89.07%**	86.83%	90.97%	**4.70%**	3.39%	6.48%	**6.23%**	4.53%	8.51%	100%
	Ha'apai	**91.16%**	84.66%	95.07%	**2.75%**	0.92%	7.93%	**6.09%**	2.83%	12.62%	100%
	'Eua	**87.81%**	83.18%	91.29%	**5.17%**	3.42%	7.74%	**7.02%**	4.42%	10.98%	100%
Relationships	Tongatapu Urban	**16.55%**	13.43%	20.23%	**48.40%**	44.85%	51.96%	**35.05%**	30.78%	39.57%	100%
	Tongatapu Rural	**30.31%**	25.87%	35.16%	**35.45%**	32.07%	38.99%	**34.23%**	29.95%	38.79%	100%
	Vava'u	**17.31%**	13.58%	21.80%	**38.72%**	33.45%	44.26%	**43.97%**	36.33%	51.91%	100%
	Ha'apai	**15.06%**	10.71%	20.77%	**47.86%**	40.07%	55.77%	**37.08%**	28.91%	46.05%	100%
	'Eua	**15.38%**	10.68%	21.65%	**38.31%**	28.78%	48.84%	**46.31%**	37.58%	55.28%	100%

Dimension	Island Group	Does not meet threshold			Moderate deprivation			Severe deprivation			Total
		%	CI		%	CI		%	CI		
Safety	Tongatapu Urban	**82.49%**	78.88%	85.60%	**10.69%**	8.50%	13.37%	**6.82%**	5.29%	8.75%	100%
	Tongatapu Rural	**62.41%**	57.85%	66.77%	**26.01%**	22.44%	29.94%	**11.57%**	9.57%	13.93%	100%
	Vava'u	**66.94%**	59.28%	73.80%	**27.13%**	21.00%	34.28%	**5.92%**	3.93%	8.84%	100%
	Ha'apai	**82.56%**	79.19%	85.48%	**12.78%**	9.96%	16.24%	**4.66%**	2.80%	7.66%	100%
	'Eua	**43.19%**	33.52%	53.41%	**43.29%**	33.34%	53.82%	**13.52%**	10.13%	17.82%	100%
Sanitation	Tongatapu Urban	**79.97%**	69.79%	87.34%	**3.29%**	2.08%	5.15%	**16.75%**	9.98%	26.73%	100%
	Tongatapu Rural	**71.74%**	64.68%	77.87%	**7.81%**	5.53%	10.91%	**20.45%**	14.61%	27.88%	100%
	Vava'u	**79.16%**	71.53%	85.17%	**15.42%**	10.33%	22.38%	**5.42%**	3.12%	9.27%	100%
	Ha'apai	**82.21%**	71.75%	89.36%	**11.07%**	6.33%	18.64%	**6.73%**	3.68%	11.98%	100%
	'Eua	**70.01%**	57.10%	80.37%	**10.04%**	6.30%	15.64%	**19.95%**	8.86%	38.98%	100%
Shelter	Tongatapu Urban	**82.19%**	78.04%	85.71%	**10.54%**	7.99%	13.79%	**7.27%**	5.46%	9.61%	100%
	Tongatapu Rural	**74.05%**	69.57%	78.07%	**17.02%**	14.70%	19.62%	**8.94%**	6.68%	11.85%	100%
	Vava'u	**76.61%**	70.34%	81.89%	**16.22%**	12.58%	20.66%	**7.18%**	4.90%	10.40%	100%
	Ha'apai	**78.43%**	64.57%	87.89%	**14.86%**	8.86%	23.88%	**6.70%**	2.62%	16.08%	100%
	'Eua	**65.11%**	55.79%	73.40%	**24.45%**	18.07%	32.19%	**10.44%**	6.88%	15.52%	100%
Time	Tongatapu Urban	**54.46%**	47.36%	61.38%	**30.38%**	26.25%	34.85%	**15.16%**	11.28%	20.09%	100%
	Tongatapu Rural	**48.01%**	42.77%	53.29%	**32.81%**	29.80%	35.98%	**19.18%**	15.79%	23.09%	100%
	Vava'u	**47.26%**	40.23%	54.40%	**36.52%**	31.83%	41.49%	**16.22%**	12.03%	21.52%	100%
	Ha'apai	**35.13%**	28.87%	41.95%	**43.61%**	37.44%	49.99%	**21.26%**	17.62%	25.42%	100%
	'Eua	**16.92%**	10.93%	25.26%	**37.30%**	32.19%	42.72%	**45.78%**	35.69%	56.23%	100%
Voice	Tongatapu Urban	**9.83%**	7.60%	12.61%	**24.91%**	20.93%	29.36%	**65.27%**	59.42%	70.69%	100%
	Tongatapu Rural	**12.41%**	10.31%	14.87%	**20.24%**	17.86%	22.86%	**67.35%**	63.35%	71.11%	100%
	Vava'u	**12.60%**	9.25%	16.94%	**37.22%**	33.56%	41.03%	**50.18%**	45.54%	54.82%	100%
	Ha'apai	**14.94%**	11.33%	19.43%	**24.85%**	18.57%	32.40%	**60.22%**	54.22%	65.93%	100%
	'Eua	**16.08%**	10.54%	23.78%	**34.68%**	27.57%	42.54%	**49.24%**	38.66%	59.89%	100%
Water	Tongatapu Urban	**90.73%**	87.83%	92.99%	**0.08%**	0.01%	0.55%	**9.20%**	6.94%	12.10%	100%
	Tongatapu Rural	**78.92%**	74.40%	82.82%	**0.75%**	0.28%	3.03%	**20.33%**	16.55%	24.72%	99%
	Vava'u	**82.00%**	75.93%	86.80%	**0.00%**	-	-	**18.00%**	13.20%	24.07%	100%
	Ha'apai	**76.51%**	65.97%	84.55%	**0.00%**	-	-	**23.49%**	15.45%	34.03%	100%
	'Eua	**65.50%**	52.39%	76.55%	**1.27%**	0.49%	3.00%	**33.23%**	22.66%	45.80%	100%
Work	Tongatapu Urban	**55.06%**	47.15%	62.72%	**28.91%**	23.57%	34.90%	**16.03%**	13.16%	19.40%	100%
	Tongatapu Rural	**37.15%**	33.40%	41.08%	**32.54%**	29.63%	35.58%	**30.31%**	27.48%	33.30%	100%
	Vava'u	**31.59%**	26.37%	37.30%	**36.68%**	33.72%	39.76%	**31.73%**	26.88%	37.01%	100%
	Ha'apai	**39.64%**	31.41%	48.51%	**34.45%**	28.07%	41.44%	**25.91%**	19.10%	34.11%	100%
	'Eua	**16.83%**	12.47%	22.32%	**36.18%**	32.54%	39.99%	**46.99%**	40.90%	53.17%	100%

REFERENCE LIST

1 Meinhart, M & Russell, C. Equality Insights Rapid: Tool Development Report. Melbourne, International Women's Development Agency. 2022. https://equalityinsights.org/resources/equality-insights-rapid-tool-development-report/

2 Meinhart, M & Russell, C. (2022)

3 World Bank. Pacific Economic Update. February 2023, p.14

4 World Bank (2023), p.15

5 Individual Deprivation Measure. Navigating the politics of open data: outcomes document. (2019). Available from: https://equalityinsights.org/resources/navigating-the-politics-of-open-data-outcome-document/

6 Wisor, S. et al. Individual Deprivation Measure: A gender sensitive approach to poverty measurement [Internet]. Canberra: Australian National University. (2014), especially the Preface, pp.iii-iv. Available from: https://equalityinsights.org/resources/idm-research-report-2014/

7 The World Bank FAQs: Global Poverty Line Update [Accessed April 2023] https://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq

8 OPHI Global Multidimensional Poverty Index Oxford Poverty and Human Development Initiative, University of Oxford [Accessed April 2023] https://ophi.org.uk/multidimensional-poverty-index/

9 OPHI https://ophi.org.uk/multidimensional-poverty-index/

10 Hunt, Janet, Bessell, Sharon, Crawford, Joanne, Fisk, Kylie, Nguyen, Hieu, Pham, Trang, Suich, Helen & Yap, Mandy. 2017. The Individual Deprivation Measure: Methodology Update 2017. Australian National University, Canberra and International Women's Development Agency, Melbourne.

11 Caperna, Giulio & Papadimitriou, Eleni. 2020. JRC Statistical Audit of the Individual Deprivation Measure, Joint Research Centre. EUR 30320 EN, Publications Office of the European Union, Luxembourg. https://equalityinsights.org/wp-content/uploads/2021/01/JRC-Statistical-Audit-of-the-Individual-Deprivation-Measure-2020.pdf

12 Meinhart, M. & Russell, C. (2022)

13 Wisor, S. et al (2014)

14 Fisk, K., McInerney, C., Rehill, P., Crawford, J. & Pradela, J. Gender insights in the Solomon Islands: Findings from a two-province study using the Individual Deprivation Measure. Melbourne: International Women's Development Agency. (2020). Available from: https://equalityinsights.org/resources/snapshot-report-gender-insights-in-the-solomon-islands/

15 McInerney, C. & Fisk, K. Measuring gender inequality within the household using the Individual Deprivation Measure in Fiji. UNECE Conference of European Statisticians Work Session on Gender Statistics. Neuchatel, Switzerland. (2019). Available from: https://www.unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.30/2019/mtg1/WP24_Fisk_ENG.pdf

16 World Bank. 2018. Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle. Washington, DC: World Bank, pp.6-7 https://openknowledge.worldbank.org/bitstream/handle/10986/30418/9781464813306.pdf

17 Kanbur, R. Intra-Household Inequality and Overall Inequality. CEPR Discussion Paper No. DP11719. (2016). Available from: https://ssrn.com/abstract=2893072

18 Mahler, D.G, Yonzan, N., Hill, R. Lakner, C., Wu, H., & Yoshida, N. Pandemic, prices, and poverty. World Bank Blogs (April 2022) Available from: https://blogs.worldbank.org/opendata/pandemic-prices-and-poverty,

19 Ramos, F.M. & Lara, J. COVID-19 and poverty vulnerability. Future Development (May 2022). Available from: https://www.brookings.edu/blog/future-development/2022/05/18/covid-19-and-poverty-vulnerability/

20 Rehill, P. Background paper: Remote surveying in the Pacific Islands region Equality Insights. February 2021. Available on request.

21 Crawford, J (2023) Gender and poverty as a feminist foreign policy priority: Opportunities to accelerate action, Australian Feminist Foreign Policy Coalition Issue Paper No. 10. Available from: https://iwda.org.au/assets/files/AFFPC_Issues_Paper_February_2023_Gender-and-Poverty-as-a-Feminist-Foreign-Policy-priority.pdf

22 Inter-Agency and Expert Group on SDG Indicators. Global indicator framework for the Sustainable Development Goals and targets of the 2030 agenda for sustainable development [Internet]. 2017 Available from: http://connect.springerpub.com/lookup/doi/10.1891/9780826190123.0013

23 United Nations Economic and Social Council, High Level Political Forum. 2019. Summary by the President of the Economic and Social Council of the high-level political forum on sustainable development convened under the auspices of the Council at its 2019 session. E/HLPF/2019/8 at page 4 https://documents-dds-ny.un.org/doc/UNDOC/GEN/N19/251/18/PDF/N1925118.pdf?OpenElement

24 Crawford, J (2023) provides a recent summary of World Bank statements regarding the need to get below household-level data.

25 UN ESCAP, UN SDG, UNDP, UNICEF, UN Women, UN OHCHR (2021), Regional Policy Brief: SDG 1: No Poverty: end poverty in all its forms everywhere. Available from: https://www.unescap.org/kp/2021/sdg-1-no-poverty-end-poverty-all-its-forms-everywhere

26 UNESCAP, Asia and the Pacific SDG Progress Report 2022: Widening disparities amid COVID-19. Available from: https://www.unescap.org/kp/2022/asia-and-pacific-sdg-progress-report-2022

27 Pacific Community and UN Women (2020), Pacific Roadmap on Gender Statistics. Available from: https://data.unwomen.org/sites/default/files/documents/Publications/Pacific-Roadmap-Gender-Statistics.pdf

28 Kingdom of Tonga. Voluntary National Review 2019. Available from: https://sustainabledevelopment.un.org/content/documents/23588Kingdom_of_Tonga_Voluntary_National_Review_2019_Report_web.pdf

29 Kingdom of Tonga (2019)

30 Kingdom of Tonga (2019)

31 Konifelenisi, V., Lanau, A., Nájera, H., & Gordon, D. Assessing progress towards the eradication of poverty in the Kingdom of Tonga. Tonga Statistics Department. (2018). Available from: https://tongastats.gov.to/statistics/social-statistics/poverty-in-tonga/

32 Konifelenisi, V., Lanau, A., Nájera, H., & Gordon, D. (2018).

33 Kingdom of Tonga (2019)

34 NATIONAL WOMEN'S EMPOWERMENT AND GENDER EQUALITY TONGA POLICY and STRATEGIC PLAN OF ACTION 2019–2025, prepared by prepared by the Ministry of Internal Affairs, Women's Affairs Division, Government of the Kingdom of Tonga (2019), p.4. Available from: https://www.spc.int/DigitalLibrary/Doc/HDP/Gender/WEDGET_STRATEGIC_PLAN_OF_ACTION_2019_2025_Final.pdf

35 Washington Group on Disability Statistics. WG Short Set on Functioning (WG-SS). Washington Group on Disability Statistics. (2021). Available from: https:// www.washingtongroup-disability.com/question-sets/ wg-short-set-on-functioning-wg-ss/

36 United Nations General Assembly (UNGA). Universal declaration of human rights. New York: United Nations. (1948).

37 Basu, S., Zuo, X., Lou, C., Acharya, R. & Lundgren R. Learning to be gendered: Gender socialization in early adolescence among urban poor in Delhi, India, and Shanghai, China. Journal of Adolescent Health. (2017).

38 Johnson, K., Lennon, S.J. & Rudd, N. Dress, body and self: Research in the social psychology of dress. Fashion and Textiles. 1(20) (2014).

39 Lindemuth, C.J., Thomas, L.A., Mates, H.A. & Casey, J.A. Gender patterns in dress and outward appearance: An individual choice or fulfilment of cultural expectations? Modern Psychological Studies.17(1) (2011). Available from: https://scholar.utc.edu/mps/vol17/iss1/5

40 Bradshaw, J. & Hutton, S. Social policy options and fuel poverty. Journal of Economic Psychology. 3(3):249–66 (1983). Available from: https://www.sciencedirect.com/science/article/pii/0167487083900053

41 Taylor, L. Fuel Poverty: From Cold Homes to Affordable Warmth. Energy Policy. 21(10):1071–2 (1993). Available from: https://www.sciencedirect.com/science/article/pii/S0301421506800133

42 Matinga, M. & Clancy, J. Gender, Firewood and Health: The Potential of Ethnography to Inform Policy and Practice. In: Clancy J, Özerol G, Mohlakoana N, Feenstra M, Sol Cueva L, editors. Engendering the Energy Transition. Cham: Springer International Publishing. 33–57 (2020). Available from: https://doi.org/10.1007/978-3-030-43513-4_3

43 Satterthwaite, D. The Links between Poverty and the Environment in Urban Areas of Africa, Asia, and Latin America. The ANNALS of the American Academy of Political and Social Science. 590(1):73–92 (2003). Available from: http://journals.sagepub.com/doi/10.1177/0002716203257095

44 Hallegatte, S., Fay, M. & Barbier, E.B. Poverty and climate change: introduction. Environment and Development Economics. 23(3):217–33 (2018). Available from: https://www.cambridge.org/core/journals/environment-and-develop¬ment-economics/article/poverty-and-climate-change-introduction/EAE3DA276184ED0DAEE6062E5DB0DB17#

45 Schults, P. & Joshi, S. Family Planning as an Investment in Development: Evaluation of a Program's Consequences in Matlab, Bangladesh. Yale University, Economic Growth Center. 74 (2007). Available from: https://EconPapers.repec.org/RePEc:ags:yaleeg:28506

46 UNDESA. World Family Planning 2020: Highlights: Accelerating Action to Ensure Universal Access to Family Planning. United Nations. (2020). Available from: https://www.un-ilibrary. org/content/books/9789210052009

47 Food and Agriculture Organization (FOA). Implementing the Food Insecurity Experience Scale (FIES) in surveys. (2008). Available from: http://www.fao.org/fileadmin/user_up¬load/voices_of_the_hungry/docs/Implementing_the_ FIES_in_surveys_28218_04.pdf

48 Ballard, T.J., Kepple, A.W. & Cafiero, C. The food insecurity experience scale: developing a global standard for monitoring hunger worldwide. Rome: FAO. (2014). Available from: http://www.fao.org/economic/ess/ ess-fs/voices/en/

49 Shaw, J.W., Horrace, W.C. & Vogel, R.J. The Determinants of Life Expectancy: An Analysis of the OECD Health Data. Southern Economic Journal. 71(4):768–83 (2005). Available from: https://www.jstor. org/stable/20062079

50 Shaw, J.W., Horrace, W.C. & Vogel, R.J. The Determinants of Life Expectancy: An Analysis of the OECD Health Data. Southern Economic Journal. 71(4):768–83 (2005). Available from: https://www.jstor. org/stable/20062079

51 Coates, M.M. & et al. Burden of disease among the world's poorest billion people: An expert-informed secondary analysis of Global Burden of Disease estimates. PLOS ONE. 16(8) (2001). Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0253073

52 SPC. Stat of the week. (2002) Available from: https://www.spc.int/updates/blog/did-you-know/2022/11/stat-of-the-week-in-tonga-19-of-women-15-49-have-suffered

53 World Health Organisation (WHO). Sanitation. World Health Organization Fact Sheets. (2019). Available from: https://www.who.int/news-room/fact-sheets/detail/sanitation

54 Sommer, M., Chandraratna, S., Cavill, S., Mahon, T. & Phillips-Howard, P. Managing menstruation in the workplace: an overlooked issue in low- and middle-income countries. Int J Equity Health. 15:86. (2016) Available from: https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC4895811/

55 United Nations Educational, Scientific and Cultural Organization (UNESCO). Puberty Education & Menstrual Hygiene Management. Vol. Good policy and practice in HIV&AIDS and education. Paris: UNESCO. Booklet, 9. (2014). Available from: https://unesdoc.unesco.org/ark:/48223/pf0000226792

56 UN Commission on Human Rights. International Covenant on Economic, Social and Cultural Rights. (1976). Available from: https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx

57 United Nations Human Rights Office of the High Commission (UNOHCHR). Women and the right to adequate housing. New York: United Nations. (2012). Available from: https://www.ohchr.org/sites/default/files/Documents/publications/WomenHousing_HR.PUB.11.2.pdf

58 United Nations Human Rights Office of the High Commission (UNOHCHR), UN Habitat. The Right to Adequate Housing Human Rights Fact Sheet No. 21. (2014). Available from: https://www.ohchr.org/docu¬ments/publications/fs21_rev_1_housing_en.pdf

59 Bardasi, E. & Wodon, Q. Working Long Hours and Having No Choice: Time Poverty in Guinea. Feminist Economics. 16(3):45–78 (2010). Available from: http://www.tandfonline.com/doi/abs/10.1 080/13545701.2010.508574

60 Floro M.S. & Komatsu, H. Gender and Work in South Africa: What Can Time-Use Data Reveal? Feminist Economics. 17(4):33–66 (2011). Available from: http://www.tandfonline.com/doi/abs/10.1 080/13545701.2011.614954

61 Floro, M.S. & Pichetpongsa, A. Gender, Work Intensity, and Well-Being of Thai Home-Based Workers. Feminist Economics. 16(3):5–44 (2010). Available from: http://www.tandfonline.com/doi/abs/10.1080/13545701.2010.499657

62 Floro, M.S. Time use, work and overlapping activities: evidence from Australia. Cambridge Journal of Economics. 27(6):881–904 (2003). Available from: https://academic.oup. com/cje/article-lookup/doi/10.1093/cje/27.6.881

63 Antonopoulos, R. Unpaid work and the economy: gender, time use and poverty in developing countries. Basingstoke: Palgrave Macmillan. (2010).

64 Merz, J. & Rathjen, T. Time And Income Poverty: An Interdependent Multidimensional Poverty Approach With German Time Use Diary Data. Review of Income and Wealth. 60(3):450–79 (2014). Available from: http://doi.wiley.com/10.1111/roiw.12117

65 Inter-Agency and Expert Group on SDG Indicators. Global indicator framework for the Sustainable Development Goals and targets of the 2030 agenda for sustainable development. (2017). Available from: http://connect.springerpub.com/lookup/doi/10.1891/9780826190123.0013

66 Population Council. Power in Sexual Relationships: An Opening Dialogue Among Reproductive Health Professionals. New York: Population Council. (2001). Available from: http://www.popcouncil.org/pdfs/power.pdf

67 Ebrahimi, A. & et al. Trends in health burden of untreated water and insanitary environments in Iran, 1990-2010: Findings from the global burden of disease study 2010. Med J Islam Repub Iran. 30:424 (2016). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5307626/

68 United Nations Department of Economic and Social Affairs (UNDESA). International Decade for Action "Water for Life" 2005-2015. Focus Areas: The human right to water and sanitation. (2014). Available from: https://www.un.org/waterforlifedecade/ human_right_to_water.shtml

69 United Nations Economic Commission for Europe (UNECE). Women's economic empowerment in the changing world of work. United Nations Economic and Social Council. Report No.: E/ CN.6/2017/3. (2016) Available from: https://www.un.org/ga/search/view_doc.asp?symbol=E/CN.6/2017/3

70 International Labour Organization (ILO). Women at work: trends 2016. Geneva: International Labour Office. (2016). Available from: https://www.ilo.org/wcmsp5/ groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_457317.pdf

71 The 19th International Conference of Labour Statisticians. Resolution concerning statistics of work, employment and labour underutilization [Internet]. The 19th International Conference of Labour Statisticians; 2018. Available from: https://www.ilo.org/wcmsp5/ groups/public/---dgreports/---stat/documents/ normativeinstrument/wcms_230304.pdf

72 Inter-Agency and Expert Group on SDG Indicators. Global indicator framework for the Sustainable Development Goals and targets of the 2030 agenda for sustainable development. (2017). Available from: http://connect.springerpub. com/lookup/doi/10.1891/9780826190123.0013

73 Rutstein S.O. Steps to constructing the new DHS Wealth Index. (n.d.) Available from: https://dhsprogram. com/programming/wealth%20index/Steps_to_constructing_the_new_DHS_Wealth_Index.pdf


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