Economic Wellbeing of the population in Papua New Guinea



For the United Nations Population Fund and the National Statistical Office of Papua New Guinea

Prepared by
Bart de Bruijn



Population Projections 2021 to 2025
ISBN: 978-9980-941-14-5

Published date: 16th July, 2025

Foreword

It is my pleasure to release the 2022 Papua New Guinea Socio-Demographic and Economic Survey's (SDES) thematic report on Economic Wellbeing of the population in Papua New Guinea. The release of this report is another milestone achievement for the National Statistical Office (NSO) in its endeavour to provide comprehensive and quality statistics to the many users of the statistical information.

The 2022 SDES has given NSO the opportunity to introduce and experience improved statistical methodologies and standards supported by new technological innovations.

Apart from the Economic Wellbeing Report, the NSO is also in the process of releasing various thematic reports on Fertility and Mortality, Education, Migration, Youth, and Gender. Other than the mentioned reports there is also a combined thematic report based on in-depth analysis of demographic dividend. The Economic Wellbeing report is a combined thematic report based on in-depth analysis of the economic conditions of individuals and households in Papua New Guinea focused on extracting valuable indicators on economic wellbeing.

In this report, the data obtained from the 2022 SDES was analysed in conjunction with data from the 2011 Census. The analysis of SDES on Economic Wellbeing will support all phases of development planning such as existing labour and employment, health and other related programs and projects that can be incorporated in several national and sectoral policies and plans that are currently being reviewed and formulated, such as the National Population Policy (NPP) 2025-2034, and the assessment of the Medium-Term Development Plan (MTDP) IV 2023-2027.

Moreover, the findings in this report will be used for future monitoring and evaluation of the objectives and strategies of other existing national and sectoral policies and plans as well as those associated with the global agenda from the Sustainable Development Goals (SDG) and the Plan of Action of the International Conference on Population and Development (ICPD).

The conduct of the 2022 SDES would not have been possible without the financial support from the Australian Government through the "PNG Australia Partnership Program" in collaboration with the United Nations Population Fund (UNFPA), which provided the technical support for an in-depth analysis and production of the Economic Wellbeing of the Population Report.

Furthermore, I acknowledge the support from the South Pacific Community (SPC) for technical assistance in using modern technology in collecting data from the field, which is the first for NSO in its endeavour to improve on its statistical methodologies.

Gratitude is also extended to all the field staff who worked hard to successfully implement the data collection phase of the survey. Further gratitude is due to the survey respondents who relentlessly continue to provide the information on which this report is based including the support from the Provincial and Local Level Governments during the data collection.

The Office of the National Statistician is also indebted to the NSO project Management Team for their tireless efforts in managing the technical and administrative aspects of this exercise for a successful conduct of the 2022 SDES.

I take this opportunity to urge all stakeholders and statistics producing agencies to foster and promote collaborative efforts which will contribute to making the PNG Statistical System effective. NSO as the central and mandated statistical agency has the legitimacy backed by the Statistical Services Act (1980) that ensures the confidentiality of raw data providers and assurance of integrity and accessibility for users.

Finally, with improved data sources, sound statistical methodologies and standards, new technologies and strengthen statistical system, these will enable the Government to formulate better policies and make evidence-based decisions for the betterment of PNG and its people.

Mr. John Aseavu Igitoi
National Statistician

Executive Summary

In the absence of the Population and Housing Census that was originally planned for 2020/2021, the Socio-Demographic and Economic Survey (SDES 2022) was conducted to provide demographic and socio-economic information required for the efficient delivery of basic services and the development of evidence-based plans and programmes. In this context, the survey also provided the opportunity for a series of in-depth thematic reports and associated training of National Statistical Office (NSO) staff, covering such topics as education, migration, gender, youth, demographic dividend and population projections. The present report aims at the analysis of the economic wellbeing of the population in Papua New Guinea.

A sample survey such as the SDES 2022 cannot entirely fill the data gap of a census. The SDES 2022 was designed to produce representative information at the national level and the relatively small sample size puts limits on the extent to which sub-group analysis can produce statistically significant results. Also, for 'rare events', such as disability and unemployment, disaggregation by background characteristics produces results with high levels of uncertainty. For this reason, the analysis results in this report are consistently accompanied by information about their statistical significance.

For a full analysis of economic wellbeing, information about income, consumption and wealth is required. The data of the SDES2022 adequately cover only the wealth component by constructing an assets-based wealth index. Although this index does not provide information about absolute wealth and poverty, it does produce information about relative wealth of the households and persons included in the survey. The survey data on employment and occupation are used as proxy information for the income component of economic well-being. It should be noted that the labour module of the SDES2022 was based on the latest international definitions of employment (excluding subsistence work) and unemployment, which makes comparison with earlier surveys and censuses a hazardous undertaking.

The SDES 2022 estimated a total labour force – the sum of the number of persons employed and the number unemployed – of 4.0 million persons, of whom 2.1 million men and 1.9 million women. The overall labour force participation rate (LFPR) indicates that just over half (51.8 percent) of the working-age population of 15 years or over generates an income through employment or is looking for income employment. The percentage of men that is active in the labour market (53.1 percent) is only slightly higher than that of women (50.6 percent). The urban-rural difference in LFPR is slightly larger, with 55.4 percent of the urban working-age population being active in the labour market and 51.1 percent of the rural counterparts. These participation rates are low in international perspective.

This also applies to the employment-to-population ratio, the number of employed persons as a percentage of the total working-age population. This is an important indicator of the ability of a country's economy to generate employment and, thereby, also the opportunities of the working-age population to generate income through pay or profit. The overall employment-to-population ratio of 50.6 percent indicates that there is scope for an increase in employment for pay or profit, and hence income and wealth accumulation. The gender difference for this indicator is small, with levels of 51.6 percent for men and 49.5 percent for women. Overall, the SDES 2022 indicates that 47.9 percent of the employed population consist of women and girls.

Generally, literacy and education level seem to be positively associated with employment, which implies that investment in education better prepares people for employment work. There is also a marked difference in employment levels by migration status. Whereas non-migrants have an employment-to-population ratio of 47.6 percent, lifetime[1] internal migrants have a ratio of 58.1 percent, and the small group of life-time immigrants have a ratio of 78.9 percent.

The overall unemployment rate at 2.4 percent, is very low, which is contrary to what seems the general notion by people and policymakers alike. However, such a low level is not uncommon in developing countries with a large agricultural sector, widespread informal employment, and limited or absent social security schemes and social safety nets. In such contexts, relatively few people can survive long spells of unemployment, and many workers must engage in some form of employment, however insignificant or inadequate. In these situations, a strict employment-unemployment dichotomy is rather irrelevant to understanding the performance of the labour market and people's opportunities to earn adequate incomes from work. Instead of unemployment, underemployment is the key indicator for such assessments, which requires additional information about working hours, job productivity and the compliance between education and acquired skills on the one hand, and job level on the other.

Men have a higher unemployment rate than women (2.8 percent and 2.0 percent, respectively), but the difference is not statistically significant. Unemployment seems to decrease with age. The youth unemployment rate calculated from the SDES 2022 stands at 3.6 percent, which is 1.6 times as high as the adult unemployment rate in total, unemployed youth make up more than a quarter (25.6 percent) of all unemployed. This is in line with findings worldwide that indicate that young people are among the most vulnerable groups in the labour market. Youth unemployment – and underemployment – is a main cause of civic unrest if it is widespread in society, and can pose a threat to social, political and economic stability. The survey also suggests that literate persons and persons with relatively higher education have higher unemployment rates than illiterate persons and those with low or no educational attainment. Several reasons may account for this finding. It may indicate an educational system that is insufficiently tailored to the needs of the labour market. It could also indicate a lack of work opportunities for this education segment of the labour force. In addition, it could be that better-educated persons tend to be part of more affluent households and can afford to remain without an income for more extended periods.

[1] Life-time migrants are those who have ever moved to another district since birth.

The overall distribution of household wealth scores appeared to be very concentrated and skewed to the lower end of the wealth score range. This implies that the large majority of Papua New Guineans are very similar in terms of wealth status at a relatively low level, and that the population in the highest wealth quintile represent a very wide range of wealth statuses. The Gini index – measuring the extent to which the distribution of wealth among individuals deviates from a perfectly equal distribution – that is associated with this wealth distribution of 0.24. This is low in comparative perspective, indicating a relatively even wealth distribution.

Disaggregating the wealth status of the population by characteristics of the household and the head of the household showed that wealth is positively associated with education in terms of both the education of the household head and the mean level of education of the adult household members.

The positive association between household wealth and the mean education level of adult household members is observed in rural and urban areas, but the effect in urban areas is much stronger. Additional education in urban areas is associated with ten times more added wealth than in rural areas. To the extent that causality between the variables is from education to wealth, it implies that investments in education have significantly higher returns in urban settings than in rural settings.

Wealth is also positively associated with the age of the head of household, suggesting that wealth tends to accumulate over the family life cycle. A negative association was found with the percentage of children under 15 years of age and the percentage of persons living with a disability in the household. No evident association was found between household wealth and being in employment. As employment is defined as work for pay or profit, a positive association could be assumed. However, neither the household head being employed, nor a large proportion of household members being employed is associated with significantly higher household wealth. In the labour market of Papua New Guinea, it is likely that more employed persons in the household does not necessarily mean higher income and wealth but could also indicate the need for more income earners if the jobs of the household members provide little income.

A linear regression analysis combined a selection of the background variables into a model to identify the relative contribution of each of these variables to the wealth status of the household members, while controlling for the other variables in the model. The main conclusion relates to the overriding importance of the place of residence: compared to persons in the National Capital District, those in the other provinces are, on average, consistently poorer by close to 20 percentage points. Independent of province, residence in urban areas adds on average, another 13 percentage points compared to rural residence. The regression analysis also showed considerably higher wealth for persons living in households with a head employed in a high-skilled occupation, as well as and positive associations with the age of the household head and the mean level of education of adult household members, irrespective of all other variables.

A general recommendation related to the assessment of the economic wellbeing of the population in Papua New Guinea is the need to conduct a targeted survey with a larger sample size, such as a Living Standards Measurement Survey (LSMS) or a Household Income and Expenditure Survey (HIES).

Table of contents

Foreword 1
Executive Summary 3
List of tables 8
List of figures 8
List of text boxes 9
Abbreviations 10

1. Introduction
1.1 Background, aim and structure of the report 11
1.2 Conceptualisation and measurement of economic wellbeing 11
1.2.1 Wellbeing and economic wellbeing 11
1.2.2 Measuring economic wellbeing and SDES 2022 13
1.3 The policy context of economic wellbeing in PNG 14

2. Economic wellbeing and employment 17
2.1 Labour force status 17
2.2 Labour force analysis 18
2.3 Labour force participation 19
2.4 Employment 20
2.4.1 Analysis of employment 20
2.4.2 Interpretation of employment and employment-to-population ratio.... 24
2.5 Unemployment 25
2.5.1 Interpretation of unemployment and unemployment rate 25
2.5.2 Analysis of unemployment 26

3. Economic wellbeing and wealth 29
3.1 Overall and geographic distribution of wealth 29
3.2 Wealth and household characteristics 33
3.3 Wealth and characteristics of the household head 37
3.4 Regression analysis on household wealth status 41

4. Conclusions and recommendations 45

Annex I – Sampling quality indicators 47
References 51

List of tables

Table 1.1: Labour force status categories and indicators, by sex and residence 14
Table 2.1: Labour force status categories and indicators, by sex and residence 19
Table 2.2: Employed population, by skill level of occupation, and by urban-rural residence, sex (in thousands and percentages) 25

Figures

Figure 1.1: Development pillars of PNG Vision 2050.....15
Figure 2.1: Labour force status classification.....18
Figure 2.2: Employment-to-population ratio, by country or region (2022) 21
Figure 2.3: Employment-to-population ratio, by age, and by sex.....22
Figure 2.4: Employment-to-population ratio of the population 25 years of age and over, by the highest level of completed education 23
Figure 2.5: Unemployment rate of population 25 years of age and over, by highest level of completed education 27
Figure 2.6: Unemployment rate, by age, and by sex.....27
Figure 2.7: Unemployment rate, by broad age group.....28
Figure 3.1: Population, by household wealth score.....29
Figure 3.2: Mean household wealth score, by wealth status.....30
Figure 3.3: Cumulative wealth distribution.....31
Figure 3.4: Population, by wealth status, and by urban-rural residence (in percentages) 32
Figure 3.5: Percentage of population in the highest wealth status category, by province.....32
Figure 3.6: Household wealth score, by the proportion of household members under age 15 (in percentages).....33
Figure 3.7: Household wealth score, by mean completed years of education of adult household members.....34
Figure 3.8: Household wealth score, by proportion of household members employed (in percentages)[a].....35
Figure 3.9: Employed population, by occupation category[a], and, by wealth status (in percentages).....36
Figure 3.10: Household wealth score, by proportion of household members living with a disability (in percentages) 37
Figure 3.11: Household wealth score, by age group of the head of household 38
Figure 3.12: Household wealth score, by years of completed education by the head of household.....38
Figure 3.13: Household wealth score, by the employment status of the head of household.....40
Figure 3.14: Household wealth score, by migration status of the head of household.....41
Figure 3.15: Coefficients of linear regression analysis on standardised household wealth scores – continuous variables..... 43
Figure 3.16: Coefficients of linear regression analysis on standardised household wealth scores – categorical variables..... 44

LIST OF TEXTBOXES

Note on occupation dat..... 24
Gini index..... 30
Disability questions..... 36
Multiple regression..... 42

ABBREVIATIONS

DHS	-	Demographic and Health Survey
GDP	-	Gross Domestic Product
GNI	-	Gross National Income
HDI	-	Human Development Index
HIES	-	Household Income and Expenditure Survey
ILO	-	International Labour Organization
ISCED	-	International Standard Classification of Education
LFPR	-	Labour Force Participation Rate
LSMS	-	Living Standards Measurement Survey
NSO	-	National Statistical Office
OECD	-	Organisation for Economic Co-operation and Development
PACSCO	-	Pacific Standard Classification of Occupations
PHC	-	Population and Housing Census
PNG	-	Papua New Guinea
SDES	-	Socio-Demographic and Economic Survey
UN	-	United Nations
UNFPA	-	United Nations Fund for Population Activities

1. INTRODUCTION

1.1 Background, aim and structure of the report

The National Statistical Office (NSO) of Papua New Guinea (PNG) conducted the Socio-Demographic and Economic Survey (SDES) in 2022. The survey intended to fill the gap in up-to-date information on population and socio-economic development indicators that are required for the efficient delivery of basic services and the development of evidence-based plans and programmes, as well as for monitoring the progress of the country in terms of targets set in the Sustainable Development Goals, Medium Term Development Plans, and PNG Vision 2050, among others. The information gap was a result of the cancellation of the Population and Housing Census that was planned to be conducted during the period of the COVID-19 pandemic. The survey was realised with technical support by UNFPA and funding by the Australian Government.

The SDES 2022 also provided the opportunity for a series of in-depth thematic reports and associated training of NSO staff. The topics of these studies included education, migration, gender, youth, demographic dividend and population projections. The present report on the economic wellbeing of the population in Papua New Guinea is one of this series of thematic reports. Its aim is to mine the rich SDES dataset with reference to economic wellbeing of persons and households in PNG and to produce the economic indicators that can be derived from the SDES 2022.

The subsequent sections of this chapter sets the stage for the analysis of economic wellbeing. Section 1.2 discusses the conceptualisation and measurement of economic wellbeing and Section 1.3 provides information of the policy context for the analysis. The main analysis lines are presented in chapters 2 and 3. Chapter 2 focuses on labour market analysis and specifically on the extent to which employment is a factor for economic wellbeing in PNG. Chapter 3 analyses the distribution of wealth – as one of the components of economic wellbeing – across the population of PNG and identifies the factors that contribute to wealth. Chapter 4 provides a brief set of conclusions and recommendations.



1.2 Conceptualisation and measurement of economic wellbeing

1.2.1 Wellbeing and economic wellbeing

Measuring economic wellbeing is crucial to understanding the living standards of individuals and households, identifying areas of deprivation and informing policy interventions to address poverty and inequality. Economic wellbeing can be conceived of as one component within the overall concept of wellbeing. Although there is no single definition of wellbeing, there is a general agreement that it requires meeting various human needs, as well as the ability to pursue one's goals, to thrive and feel satisfied with their life.

The GDP per capita is a useful indicator of a country's economic performance, and it is the most commonly used measure of wellbeing. However, the indicator has severe limitations, as it measures only the economic or material component of wellbeing and it does not account for the degree of inequality in society. In a list of 193 countries for which the GPD per capita is available, Papua New Guinea ranked 157, with a value of USD 3,766. To try to account for additional components of wellbeing, the United Nations computes a Human Development Index (HDI) (UNDP, 2023). The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The HDI is the geometric mean of normalised indices for each of the three dimensions.[1] Of the 191 countries for which the HDI was available in 2021, Papua New Guinea ranked 159. For the economic component of the gross national income (GNI) per capita (USD 4,009), the country ranked 152.

Table 1.1 presents the latest available values of the GPP per capita, GNI per capita and HDI for selected countries in the region, together with the associated country rankings. The countries include Australia as a high-income country – with a per-capita GNI of USD 13,846 or more – according to the World Bank country classification. Relative to its ranking in economic terms, the country performs well in the more comprehensive HDI. Indonesia represents the group of upper-middle income countries, with a per-capita GNI between USD 4,466 and USD 13,845. Papua New Guinea, Solomon Islands and Timor-Leste are classified as lower-middle income countries, with a per-capita GNI between USD 1,136 and USD $4,465. The table shows that the Solomon Islands with a considerably lower per-capita GNI and GDP than Papua New Guinea, it achieves a similar score on the HDI.

[2]The health dimension of the HDI is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years or more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income (GNI) per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using the geometric mean (UNDP, 2023).

Table 1.1: Labour force status categories and indicators, by sex and residence

Country	Gross domestic product per capita		Gross national income per capita		Human Development Index	
	Value (2017 PPP USD)	Country rank	Value (2017 PPP USD)	Country rank	Value	Country rank
Solomon Islands	2,248	174	2,482	168	0.564	155
Papua New Guinea	3,766	157	4,009	152	0.558	157
Timor-Leste	4,089	154	4,461	147	0.607	141
Indonesia	12,410	107	11,466	103	0.705	114
Australia	50,998	21	49,238	23	0.951	5

The OECD's Better Life Initiative (OECD, 2011) identifies three pillars for understanding and measuring people's wellbeing:

- *Material living conditions* (or economic wellbeing), which determine people's consumption possibilities and their command over resources.
- *Quality of life*, which is defined as the set of non-monetary attributes of individuals that shapes their opportunities and life chances, and has intrinsic value under different cultures and contexts. This pillar of wellbeing includes – among others – people's health status, education and skills, social connections, environmental quality, personal security, and subjective wellbeing.
- The *sustainability* of the socio-economic and natural systems where people live and work, which is important for wellbeing to last over time. Sustainability depends on how current human activities impact on the stocks of different types of capital (natural, economic, human and social) that underpin wellbeing.

Economic wellbeing itself is a multi-dimensional concept that encompasses various aspects of an individual's or household's economic situation, including income, wealth and consumption. Economic wellbeing is derived from income and wealth. Income refers to the flow of economic resources that an individual or household receives over time. It includes wages and salaries, money earned through self-employment, as well as resources received from other sources such as property, pensions and social transfers. Income can be used to support current consumption – e.g. on food, clothing, housing or education – or can be saved for future consumption or be invested to increase wealth. In contrast, wealth is a "stock" concept: it refers to the value of accumulated assets at a given point in time. It includes the value of property, pensions and financial assets, along with physical assets such as vehicles and household goods, minus debt and other liabilities. Wealth makes it possible to sustain consumption levels above current income by converting some of the acquired wealth into income. In the end, it is the consumption of goods and services that ultimately satisfies people's needs. Because of this, consumption is a more direct measure of economic wellbeing than income or wealth. Consumption depends on income and wealth, but also lifestyle, cost of living and background characteristics, such as household size and number of dependents in the household.

1.2.2 Measuring economic wellbeing and SDES 2022

When looking at economic wellbeing it is generally more appropriate to do so at a household level. While income is usually received by individuals, it is often pooled within households. In particular, parents share their income with their dependent children and in multi-generational family households, older people often depend on the working-age household members. Moreover, when people share a dwelling, they enjoy economies of scale in the provision of housing services, which is often the largest single cost of living incurred by households.

Targeted surveys, such as Living Standards Measurement Surveys or Household Income and Expenditure Surveys, are designed to measure the income-, wealth and consumption dimensions of economic wellbeing. It is generally found that data on expenditure are more accurate than those on income, as the latter tend to be underreported (Brewer & O'Dea, 2012). The SDES 2022 did not collect any data on income or expenditure, nor data on the value of assets owned by the household. However, it did include a module on labour force status and employment. The data from this module provide information about whether or not any household members generated any income from work, however without providing the amount or level of income that is generated from the work. However, to a – very – limited extent, the occupation of the employed household members can indicate the level of income. In addition, the SDES 2022 labour force module also provided information about unemployment, which indicates household members who are looking for income through work.

The SDES 2022 also collected data on household assets. In the absence of information about the value of these assets, no assessment can be made on the absolute wealth of households. However, it does allow constructing a ranking in terms of household wealth. As a side-product of the Demographic and Health Survey programme, a method has been developed to produce a measure of the relative wealth of households in a survey population (Rutstein & Johnson, 2004). Since the development of the procedure, the type of questions to produce a wealth index has been included in many surveys and censuses in low- and middle-income countries around the world. The SDES 2022 dataset also includes data that allow the construction of such a wealth index. This index is based on a set of household assets – such as housing quality, ownership of durable goods – and access to basic services – such as drinking water supply and sanitation. For each household, a relative wealth score is calculated using principal component analysis (Filmer & Pritchett, 2001; Rutstein & Johnson, 2004; Rutstein, 2008).

The wealth index has some limitations. Apart from the fact that it only captures the dimension of wealth of economic wellbeing and does not include the dimensions of income or expenditure, the index is based on a set of pre-selected assets and may not capture all relevant dimensions of economic wellbeing. Secondly, the index does not consider the value of the households' assets and services and cost of living, which makes it impossible to determine economic wellbeing in absolute terms. However, the wealth index has several advantages over traditional income-based measures of poverty and economic wellbeing. For one thing, it is less sensitive to short-term fluctuations in income and provides a more stable measure of household economic wellbeing over time. Secondly, it captures a broader range of economic wellbeing dimensions than income-based measures, such as access to basic services and housing quality, which are essential determinants of health and overall standard of living. The index is also relatively easy to calculate and interpret, making it a valuable tool for policymakers and program managers. It divides the population into five equal-size categories of relative wealth, without determining the poverty line that defines the minimum income or expenditure required to purchase a basic basket of goods and services. The first of these five quintiles represents the fifth of the population with the lowest wealth status, the fifth quintile represents the fifth of the population with the highest wealth status and the other three quintiles rank the remaining categories in between.

1.3 The policy context of economic wellbeing in PNG

The Papua New Guinea Vision 2050 (National Strategic Plan Taskforce, 2011) identifies wealth creation as one of the seven strategic focus areas or development pillars (Figure 1.1) for the long-term strategy that in 2020 were supposed to map out the future development direction for the country. Together with Institutional development and service delivery, and Human capital development, the pillar of Wealth creation is highlighted as one of the three core programme areas for the core of the Vision 2050 plan. This wealth creation was envisioned to be achieved by a variety of activities to strengthen the agriculture, forestry, fisheries, tourism and manufacturing sectors. The 2050 aim for these economic sectors was to increase their contribution to the national gross domestic product (GDP) to around 70 percent of GDP. The envisaged 20-percent contribution to GDP in 2050 by manufacturing industries – up from around 3 percent at the time of the development of Vision 2050 – also underscored the aim of shifting away from primary economic activities.

Figure 1.1: Development pillars of PNG Vision 2050



The Papua New Guinea Vision 2050 also aims to address the underutilisation of women by increasing their engagement in economic activities. Similarly, it mentioned the need to address socioeconomic inequalities by reducing disparities in employment, income and wealth of persons and households, and in provincial and district development. Among others, it sets out strategies to empower citizens through the development of entrepreneurial skills and ensuring that the nation's wealth is fairly distributed. Among the six key indicators for tracking the progress of citizens empowerment and increasing wealth is the increase of productivity in all economic sectors of PNG's economy.

The Medium-term Development Plan 2018-2022 (Department of National Planning and Monitoring, 2018a) (Department of National Planning and Monitoring, 2018b) built on the Papua New Guinea Vision 2050 by formulating more specific activities and targets, for instance those related to strengthening the sectors of agriculture, forestry, fisheries, tourism and manufacturing. Among others, it emphasises the importance of labour productivity and the need to formalise the economy. It states that economic growth helps to increase formal employment, but to reduce poverty, "... job creation has to be focused on quality over quantity. It means the increased demand for labour has to be combined with the increased productivity of the workforce." (Department of National Planning and Monitoring, 2018b).

In this respect, the Medium-term Development Plan zooms in on the need to create more employment and economic opportunities for the growing number of youth and build their capacity of productive workforce. It mentions that 60 percent of urban youth is unemployed[3] and only 7 percent is in formal employment (ibid, p. 25). The Plan also reiterates the importance of empowering women in economic activities, stating that women's economic empowerment is necessary for reducing poverty, achieving inclusive economic growth and sustainable human development, and that it is particularly important that women have access to employment, markets, resources and fair regulatory environment for businesses (ibid, p. 26).

[3]This is likely using the term 'unemployed' not in line with the standard definition of the concept, being (a) not employed for pay or profit in a specific reference period; (b) looking for a job or try starting a new business in a specific reference week; and (c) being available to start work for pay or profit, or start a business within a specific reference period (see Section 2.1). The figure of 60 percent likely refers to youth outside the labour force.

2. ECONOMIC WELLBEING AND EMPLOYMENT

2.1 Labour force status

The SDES 2022 included a limited set of questions (F19 to F28) to determine the labour force status of the population ten years of age and over. This allows the identification of persons and households that derive an income from employment and those that are looking for income from employment.[4] The labour force questions in the survey are aligned with the latest recommendations for the definition of employment by the 19th ICLS (International Labour Organization, 2013) and the UN principles and recommendations for the 2020 round of censuses (United Nations, Department of Economic and Social Affairs, 2017).

Figure 2.1 presents the classification of labour force status that is used in the analysis of the SDES 2022. It defines the working-age population with a lower age limit of 15 and no upper age limit. The reference period for determining employment was the moving period of the last seven days before the interview. In the labour force status classification, the working-age population is allocated to three mutually exclusive and collectively exhaustive categories – the employed, unemployed and outside the labour force.

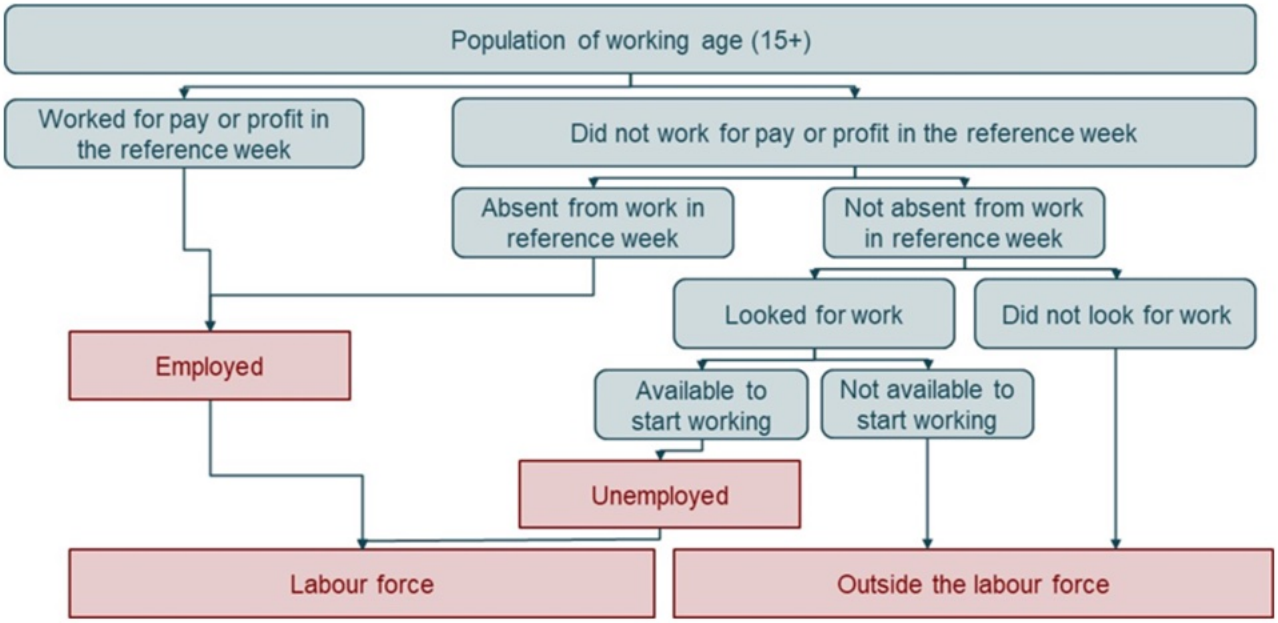
- The *employed* include all persons of working age who, in the reference week, were engaged in any activity to produce goods or services in exchange for pay or profit, even if only for one hour, including those who had a paid job or business activity but were temporarily absent in the reference week.

- The *unemployed* include all persons of working age who were
  - not employed in the reference week
  - looking for a job or try starting a new business in the 30 days before the interview
  - available to start work for pay or start a business within two weeks from the interview.
- *Outside the labour force* are all persons not classified as employed or unemployed.

The employed and the unemployed together make up the *labour* force, i.e. the working-age population that is actively engaged in the labour market, either by working or by looking for work.

[4]The SDES 2022 labour force questions are aligned with the latest recommendations for the definition of employment by the 19th ICLS (International Labour Organization, 2013) and the UN principles and recommendations for the 2020 round of censuses (United Nations, Department of Economic and Social Affairs, 2017).

Figure 2.1: Labour force status classification



2.2 Labour force analysis

Information about labour force status is an important element in understanding the economic wellbeing of individuals and households. For most people, employment represents the main strategy for obtaining an income and related economic wellbeing. Policymakers use the various indicators associated with labour force status to develop policies aiming at improving the economic situation of the population and the economy in general. However, these indicators need to be interpreted with caution, as there are often intermediate factors that obscure a direct relation between employment and economic wellbeing. This is especially the case in economies that are characterised by high levels of informal and agricultural employment.

Table 2.1 presents the sex-specific distribution of the working-age population across the labour force categories of the employed, unemployed and outside the labour force (panel a), as well as the main labour force indicators associated with this distribution. The subsequent report sections elaborate on this information in more detail.

Figure 2.1: Labour force status categories and indicators, by sex and residence

a. Categories (in thousands)

Labour force status	Total	Male	Female	Urban	Rural
Working-age population (15+)	7,908.8	4,039.4	3,869.4	1,401.2	6,507.7
Labour force, of whom	4,099.7	2,143.3	1,956.4	776.2	3,323.5
employed	4,001.1	2,084.2	1,917.0	735.9	3,265.2
unemployed	98.6	59.1	39.4	40.3	58.3
Outside the labour force	3,809.2	1,896.1	1,913.0	625.0	3,184.2

b. Indicators (in percentages)

Indicator	Total	Male	Female	Urban	Rural
Labour force participation rate	51.8	53.1	50.6	55.4	51.1
Employment-to-population ratio	50.6	51.6	49.5	52.5	50.2
Unemployment rate	2.4	2.8	2.0	5.2	1.8

2.3 Labour force participation

The SDES 2022 estimated a total labour force – the sum of the number of persons employed and the number unemployed – of 4.0 million persons, of whom 2.1 million men and 1.9 million women. The labour force participation rate (LFPR) is calculated as the number of persons in the labour force as a percentage of the working-age population. It indicates the relative size of the country's supply of labour available for the production of goods and services. It also indicates the proportion of the population that generates an income through employment or is looking for income employment.

The overall LFPR indicates that just over half of the working-age population (51.8 percent)[5] generates an income through employment or is looking for income employment. The percentage of men that is active in the labour market (53.1 percent) is slightly higher than that of women (50.6 percent). The difference can to a large extent be explained by a higher level of responsibility for family and housework among women: 35.0 percent of women mentioned this as the main reason for not being active in the labour market, against 15.1 percent of men. The observed 2.5 percentage point difference in male and female labour force participation is not statistically significant at 95-percent and 90-percent confidence levels, but similar-size gender differences in the LFPR were also observed in the 2000 and 2011 population and housing censuses (National Statistical Office, 2013).

The urban-rural difference in LFPR is slightly larger, with 55.4 percent of the urban working-age population being active in the labour market and 51.1 percent of the rural counterparts (a difference statistically significant at a 90-percent confidence level). Being engaged in gardening or fishing for their own consumption is an important reason (13.0 percent) for the rural population for not being active in the labour market, a reason hardly mentioned by the urban population (0.5 percent).

The age-specific LFPRs show the typical inverted U-shape, with lower participation in the younger (below 30) and older (65+) age groups and the highest participation in the mid-adult age group (35-59). In the absence of high unemployment (section 2.5), the age profile of the employment-to-population ratio (Figure 2.3) is very similar to that of the LFPR and is only presented in section 2.4.

The SDES 2022 figures for the LFPR are considerably lower than those reported in the Population and Housing Census 2011 (with an overall LFPR of 61.4 percent). However, the definitions of employment and the working-age population are different, which makes comparisons a hazardous affair. Thus, contrary to SDES 2022, the PHC 2011 includes persons working subsistence farming and fishing in the category of employed. The SDES 2022 figure is closer to the ILO-modelled 2022 estimate (47.1 percent), which is based on the same methodology.

[5] With a 95-percent confidence interval of [49.6, 54.1].

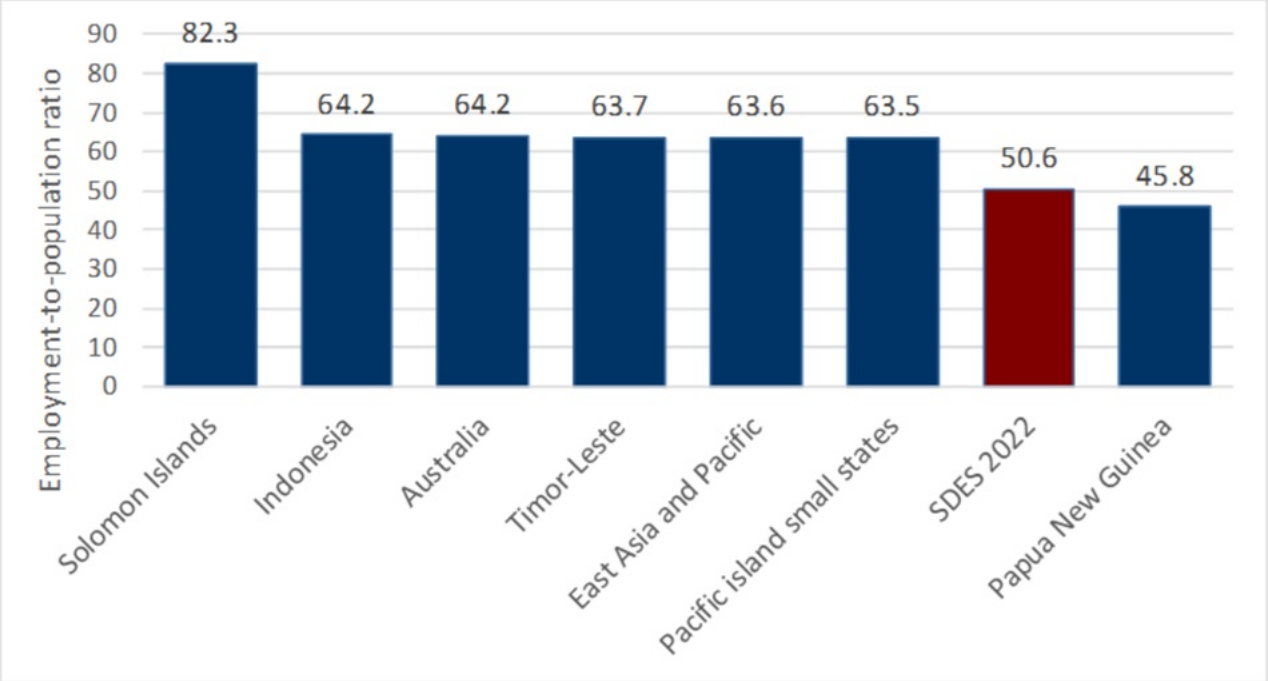
2.4 Employment

2.4.1 Analysis of employment

A key in the analysis of employment is the employment-to-population ratio: the number of employed persons as a percentage of the total working-age population. In the absence of high unemployment, the employment-to-population ratio in PNG is close to the LFPR, with an overall ratio of 50.6 percent.[6] This is well below the ILO 2022 estimates for neighbouring countries and regions, which – except the Solomon Islands – are surprisingly similar at ratios of around 64 percent, even as they represent countries with economies as different as Australia and Timor-Leste(Figure 2.2). However, the ILO 2022 estimate for PNG (45.8 percent) is even below the SDES 2022 estimate.

Relatively small differences by sex (51.6 percent for men and 49.5 percent for women) and urban-rural residence (respectively, 52.5 percent and 50.2 percent) are observed (Table 2.1).[7] The lower female ratio can largely be attributed to family responsibilities and housework that compete with labour-market participation, whereas in rural areas a considerable part of the working-age population engages in subsistence work instead of employment work. Overall, the SDES 2022 indicates that 47.9 percent of the employed population consist of women and girls, which is much higher than the figure of 30 percent mentioned in the Vision 2050 document (National Strategic Plan Taskforce, 2011).

Figure 2.2: Employment-to-population ratio, by country or region (2022)a

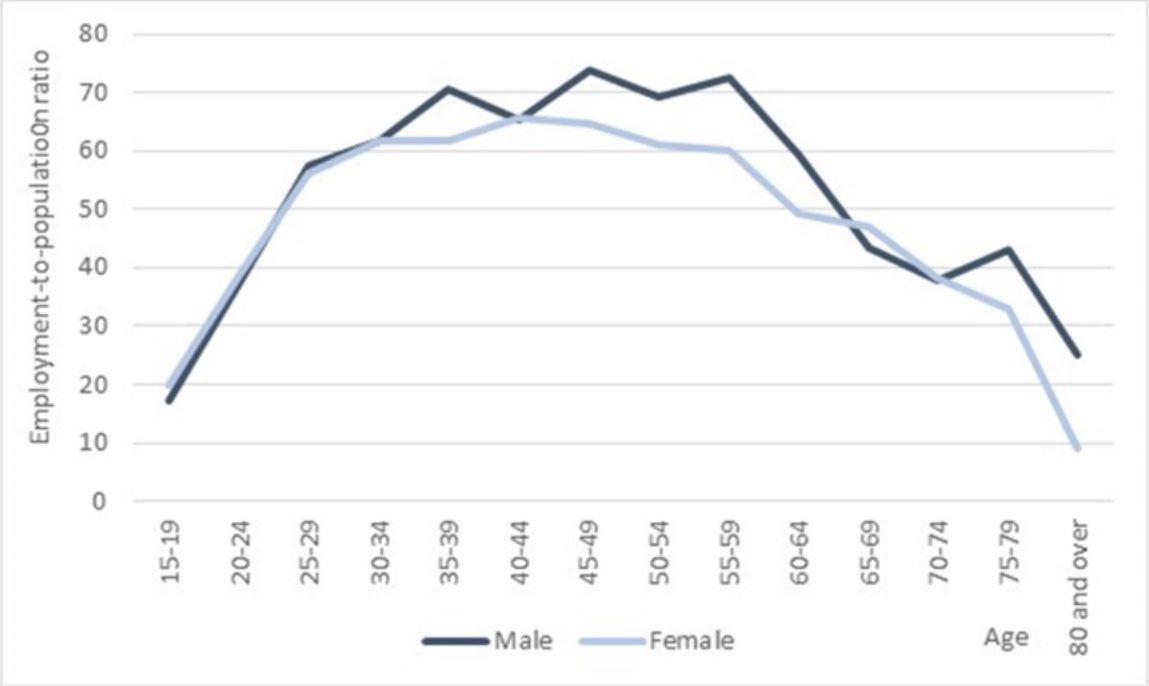


[a] All data, except SDES 2022, are based on ILO model estimates (World Bank, 2023)

[6] With a 95-percent confidence interval of [48.4, 52.8].
[7] The sex- and urban-rural differences are not statistically significant at 95-percent and 90-percent confidence levels.

Contrary to sex- and residence differentiation, large – and statistically significant[8] – differences in employment-to-population ratio are observed by age (Figure 2.2). Low ratios are found for the younger age groups 15-19 and 20-24 (with 59.9 percent reporting not being active on the labour market because of school or training) and the older population of 65 and over (58.6 percent because of being retired or too old) Figure 2.3 also suggests that the relatively small gender differences in employment are concentrated in the mid-adult range of 35 to 64 years of age.

Figure 2.3: Employment-to-population ratio, by age, and by sex

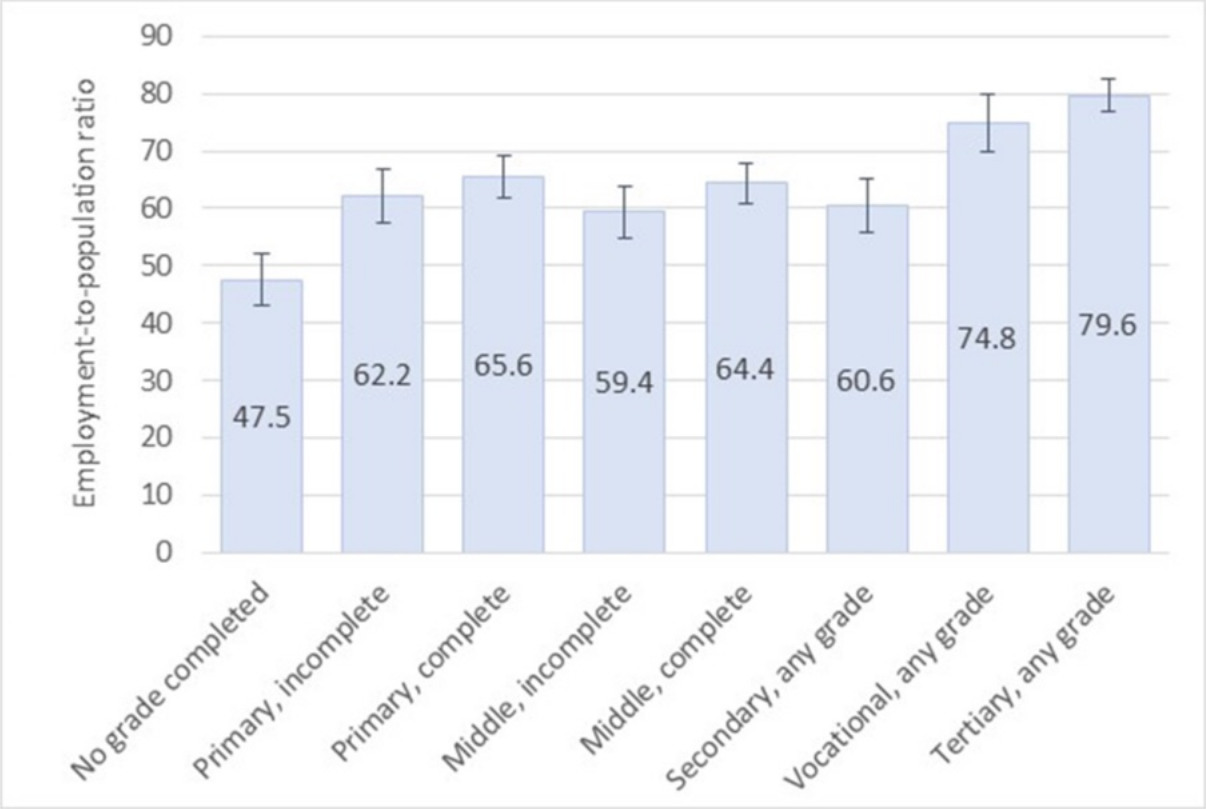


People who are literate in any language as reported in the SDES 2022 tend to be more often in employment than illiterate people, with an employment-to-population ratio of 51.6 and 44.6 respectively. However, the difference is not statistically significant. On the other hand, statistically significant differences are found for the level of completed education (Figure 2.4). People aged 25 and over[9] with any completed grade in primary, middle and secondary education are significantly more often employed than those with no education grade completed. The employment-to-population ratio of persons with any grade completed in primary to secondary education varies between 59.4 percent (persons with incomplete middle education) to 65.6 percent (persons with complete primary education), but the differences are not statistically significant. However, it is noticeable that those with a completed primary or middle school level show a higher ratio than those who did not complete the level.

It is evident that higher education better prepares people for employment work. Persons with any grade of vocational or tertiary (college or university) education are significantly more often in employment, with employment-to-population ratios well over 70 percent.

[8] At 95-percent confidence level.
[9] The analysis is limited to the population 25 years of age and over, as many in the 15-24 age group are still in education.

Figure 2.4: Employment-to-population ratio of the population 25 years of age and over, by the highest level of completed education[a]



[a] 95-percent confidence intervals

Persons with different migration statuses have different positions in the labour market. Whereas the majority of non-migrants (72.0 percent of the population) have an employment-to-population ratio of 47.6 percent, life-time[10] internal migrants (27.7 percent of the population) have a ratio of 58.1 percent, and the small group of life-time immigrants (0.3 percent of the population) have a ratio of 78.9 percent. Although the main reason for migration is often employment-related, the direction of causality between migration and employment is not always straightforward. Thus, persons who have moved as part of a family may find themselves cut off from means of subsistence and are driven toward employment work to support the household.

To the extent that employment represents an adequate income, the SDES 2022 data suggest that compared to other countries in the region, fewer people are engaged in income-earning work that can ensure an adequate level of economic wellbeing. Migrants are significantly more often in employment than non-migrants, as are persons with any level of education, particularly those with higher education. Within PNG, the survey finds evidence that younger and older people are disadvantaged in terms of economic wellbeing, compared to the mid-adult population. There is no statistical evidence that sex and urban-rural residence differentiate. However, at a 90-percent confidence level, rural women are significantly less often in income employment than urban men, with respective employment-to-population ratios of 49.3 and 54.5 percent.

Whereas these employment incomes are generated at the level of the individual, the observed sex- and age differences in income are usually dampened, as economic resources

[10] Life-time migrants are those who have ever moved to another district since birth.

tend to be pooled within the household. However, the command over the resources often remains at the authority of the income earner.

2.4.2 Interpretation of employment and employment-to-population ratio

The number of employed persons as a percentage of the total working-age population is an important indicator of the ability of a country's economy to generate employment. This employment-to-population ratio, thereby, also indicates the percentage of the working-age population that generates income through pay or profit.

Although a high overall ratio is typically considered positive, the indicator may obscure the extent to which the employment generates a level of income that is sufficient for economic wellbeing. In fact, the ratio could be high for reasons that are not necessarily positive – for example in the event that young people did not have the opportunity to continue their full-time education and were forced to take up employment instead (International Labour Organization, 2008). Jones and McGavin (2015) estimated that only 16 percent of the employed were in formal wage employment and the vast majority worked in informal jobs, which are often characterised by low productivity and low remuneration (International Labour Organization, 2016). The use of the 'one-hour' criterion for measuring employment also implies the inclusion of short-time work, casual labour, stand-by work, and other forms of irregular employment. However, being employed for at least one hour in a reference period is not necessarily indicative of gainful employment. While such workers are not faced with a total lack of work, many of them are underemployed.

A rough indication of the job quality and the extent to which it may provide an adequate income, is the skill level of the occupation, as reported in the survey. Elementary occupations require a minimum level of education[11] and skills. In the context of PNG, such unskilled jobs are likely to provide low and inadequate income.

Figure 2.1 shows that 30.0 percent of the employed population work in such unskilled occupations.[12] Notably, the urban employed are significantly more often engaged in unskilled jobs (38.7 percent) than their rural counterparts (28.0 percent). This may be an indicator of economic hardship and difficulty of finding remunerative employment in urban areas. On the other hand, there can be considerable doubt whether persons reported in skilled agricultural, forestry and fishery occupations (37.3 percent in rural areas, compared to 5.7 percent in urban areas) would be better off in terms of income than persons in unskilled occupations.

Figure 2.1 also shows a large gender difference in terms of the percentage of persons engaged in unskilled occupations: the percentage of women performing unskilled employment is double that of men. Whereas little gender difference is found in the employment-to-population ratio, women are significantly more often

Note on occupation data

Surveys and censuses usually suffer from insufficiently detailed and specific information captured during data collection. This results in considerable problems in coding of occupation and industry categories. An assessment of the SDES 2022 data also showed levels of discrepancy and implausibility that indicate such problems. For that reason, analysis of occupation and industry, including skill level, should be understood as subject to considerable margins of error.

[11] Not more than primary education according to ISCED levels of education (International Labour Organization, 2012).
[12] Unskilled occupations include all elementary occupations (such as cleaners and labourers in agriculture, construction, manufacturing, transport and mining), as well as street- and market salespersons, according to PACSCO-2016.

engaged in employment work that is likely to provide low – and likely inadequate – income

Table 2.2: Employed population, by skill level of occupation, and by urban-rural residence, sex (in thousands and percentages)[a]

a. In thousands

Skill level	Urban			Rural			Total		
of occupation	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total	**390.0**	**345.9**	**735.9**	**1,693.8**	**1,571.0**	**3,264.8**	**2,083.8**	**1,917.0**	**4,000.7**
Unskilled	93.3	191.3	284.6	331.0	582.8	913.8	424.3	774.1	1,198.4
Skilled - agricultural	20.5	21.3	41.8	739.1	712.8	1,451.9	759.6	734.1	1,493.7
Skilled - non-agricultural	178.6	68.2	246.8	355.7	114.5	470.2	534.3	182.8	717.1
High-skilled	97.6	65.1	162.7	268.0	160.9	428.9	365.6	225.9	591.5

b. In percentages

Skill level	Urban			Rural			Total		
of occupation	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Unskilled	23.9	55.3	38.7	19.5	37.1	28.0	20.4	40.4	30.0
Skilled - agricultural	5.2	6.2	5.7	43.6	45.4	44.5	36.5	38.3	37.3
Skilled - non-agricultural	45.8	19.7	33.5	21.0	7.3	14.4	25.6	9.5	17.9
High-skilled	25.0	18.8	22.1	15.8	10.2	13.1	17.5	11.8	14.8

[a] Including elementary occupations and street- and market salespersons.

2.5 Unemployment

2.5.1 Interpretation of unemployment and unemployment rate

The unemployment rate is probably the most used of all labour statistics. It indicates the percentage of unemployed persons in the labour force: those who are currently not employed but are looking for employment and are available to start working. It provides a measure of the efficiency and effectiveness of an economy to absorb its labour force and of the performance of the labour market, by indicating the volume of unutilised labour supply. Despite the popularity of the unemployment rate for policy purposes, the interpretation of the indicator warrants considerable caution, especially in developing countries like PNG.

In developed countries where social security systems exist, those who are unemployed can typically survive for a period of unemployment benefits and take the time to find more desirable jobs. On the other hand, in developing countries where social security schemes and social safety nets are absent or limited, relatively few people can survive long spells of unemployment. The majority of the workers must engage in some form of employment, however insignificant or inadequate. This is often in the informal sector in casual work and for a few hours per week. This results in the paradoxical situation that high unemployment rates can occur in countries with significant economic development and low incidence of poverty, whereas low unemployment rates in developing countries might be associated with high poverty incidence, as people are forced to engage in low-productivity and low-wage employment. In many developing countries it is not so much employment, but rather the lack of decent and productive work, which results in various forms of labour underutilization:

underemployment, low income and low productivity (International Labour Organization, 2016). To give a fuller picture of the employment situation in such contexts, it is necessary to supplement the unemployment rate with other measures of labour underutilisation, such as time-related underemployment and hours of work. In the SDES 2022, this additional information is not available.

2.5.2 Analysis of unemployment

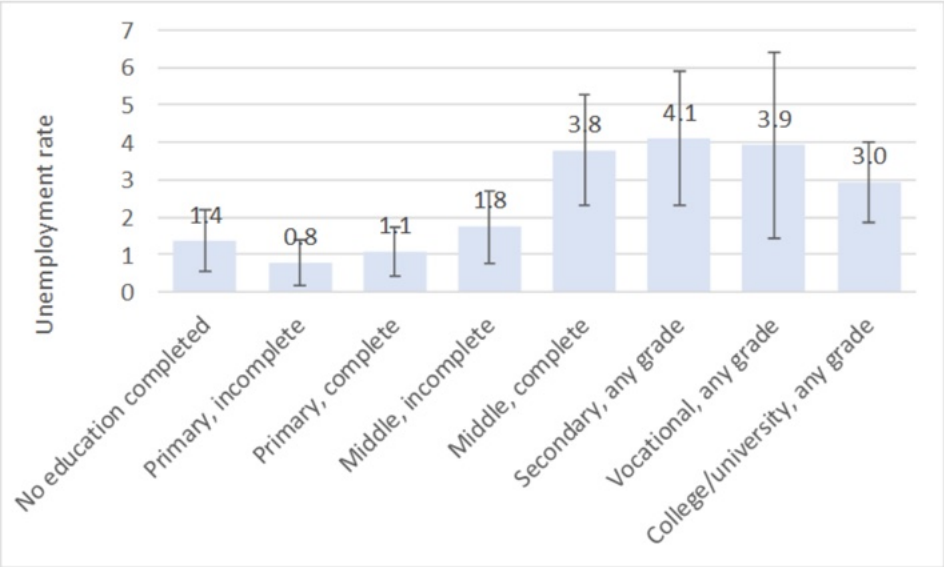
As in the population and housing censuses of 2000 and 2011 (National Statistical Office, 2013), the SDES 2022 recorded low unemployment rates. As described above, likely, this should not be interpreted as a good performance of the economy and labour market in providing adequate employment, but rather the opposite. Nevertheless, the unemployed in PNG are probably a category that needs income to sustain their economic wellbeing.

The overall unemployment rate in the survey was 2.4 percent.[13] Due to the small volume of unemployment in the SDES 2022 sample, profiling of the unemployed produces few statistically significant differences across sub-populations. However, the gap between urban and rural unemployment – 5.2 and 1.8 percent respectively – is statistically significant. The likely explanations for the difference are that urban dwellers have less opportunity to fall back on subsistence agriculture than their rural counterparts and that rural-urban migration is often done to find employment. Internal migrants are indeed found to have higher unemployment levels than non-migrants (3.3 against 2.0 percent; not statistically significant).[14]

The unemployment rate by educational attainment shows a marked increase in unemployment with attaining completed middle school or higher (Figure 2.5).[15] The positive association between educational attainment and unemployment is supported by a similar positive – and statistically significant – association between literacy and unemployment: 1.4 percent of the literate labour force is unemployed, compared to only 0.3 percent of the illiterate labour force. The higher share of unemployment among persons with relatively higher education may indicate an educational system that is insufficiently tailored to the needs of the labour market. It could also indicate a lack of work opportunities for this education segment of the labour force. In many countries, qualified jobseekers are being forced to accept employment below their skill level and high level of skills-related underemployment is inevitable.

[13] With a 95-percent confidence interval [1.9, 2,9]
[14] No unemployed immigrants were observed in the SDES 2022.
[15] The differences between groups with incomplete middle school or less on the one hand and complete middle school or higher at the other are statistically significant at 90 percent confidence level, or almost so.

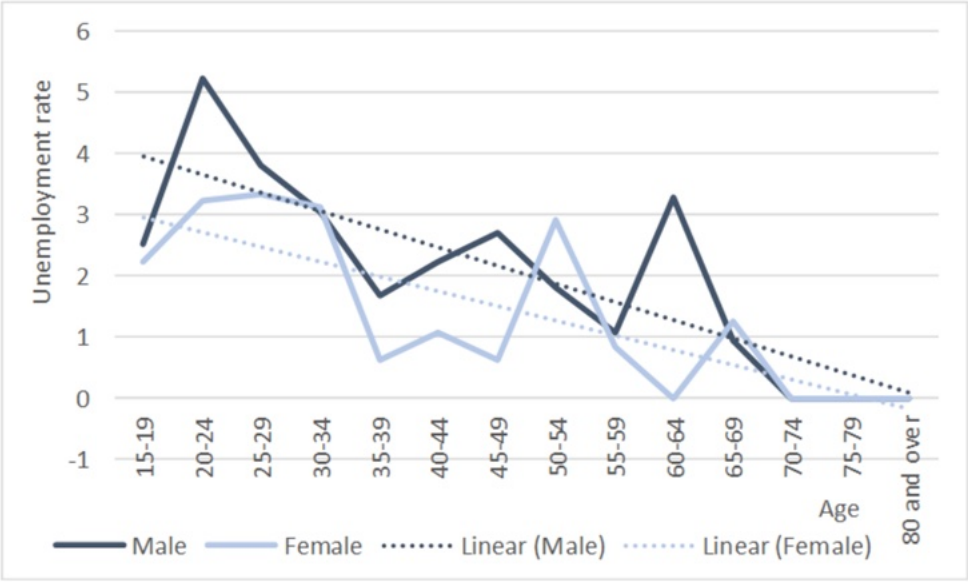
Figure 2.5: Unemployment rate of population 25 years of age and over, by highest level of completed education[a]



[a]95-percent confidence intervals

Figure 2.6 shows the unemployment rate by age and sex. Due to the small number of observations in the sample survey, the patterns are quite volatile. However, the general trends suggest that unemployment decreases with age. Starters in the labour market and young adults have the most difficulty finding employment.

Figure 2.6: Unemployment rate, by age, and by sex

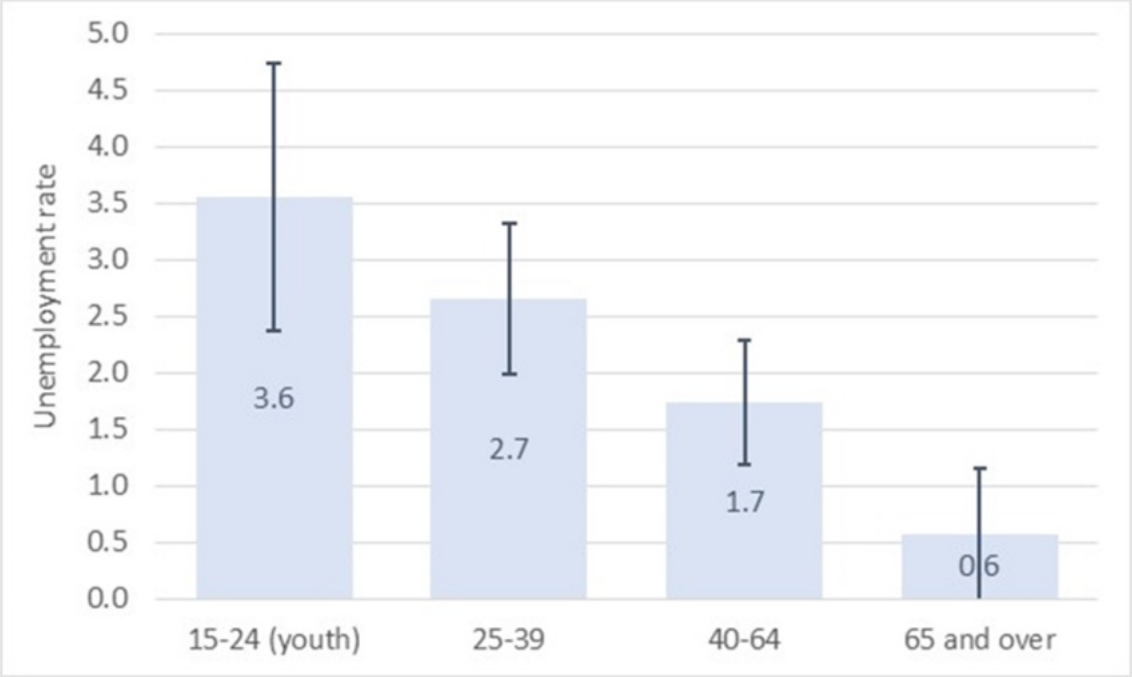


Worldwide, youth unemployment has been placed increasingly higher on the development agenda due to the acknowledgement that young people are among the most vulnerable groups in the labour market. Unemployment at the start of one's career, particularly if for a sustained duration, can negatively impact future job prospects and the ability to embark on an independent and fulfilling life (International Labour Organization, 2015). It also contributes to disillusionment and feelings of hopelessness and frustration, which is a main cause of civic

unrest if it is widespread in society. Furthermore, literature suggests that youth unemployment and underemployment pose a threat to social, political and economic stability and stirs civil unrest and conflict within a nation (Azeng & Yogo, 2013).

International comparative analysis shows that the youth unemployment rate – the unemployment rate of the population in the age group 15-24 – is invariably higher than the adult unemployment rate (in unemployment statistics the unemployment rate of the population 25 years and over). Typically, it is at least twice as high as the adult rate and is sometimes much higher. In the SDES 2022, the youth unemployment rate is 3.6 percent, which is 1.6 times as high as the adult unemployment rate and more than double that of the population aged 40-64 (statistically significant) (Figure 2.7). In total, unemployed youth make up more than a quarter (25.6 percent) of all unemployed.

Figure 2.7: Unemployment rate, by broad age group[a]



[a] 95-percent confidence intervals

Apart from the oldest age group of 65 or over, the estimates for the female unemployment rates are consistently lower than the male unemployment rates. Although even at the level of the total unemployment rate the gender difference is not statistically significant, this consistency suggests that there are genuine gender differences up to retirement age. The estimates for male and female youth are 4.3 percent and 2.9 percent, respectively.

3. Economic wellbeing and wealth

3.1 Overall and geographic distribution of wealth

The wealth index that was created from the SDES 2022 data divides the population into five equal-size categories – quintiles – of relative wealth, ranking from the population with the lowest wealth status to those with the highest wealth status (section 1.2.2). Whereas the populations of the successive quintiles each record a higher wealth status, the wealth difference between the categories may not be similar. Figure 3.1 shows that the distribution of the asset-based wealth scores for households (section 1.2.2) is far from a normal distribution but is strongly concentrated and heavily skewed to the left, at the lower end of the wealth scores. The relative wealth scores with an average of around 0 range from -1.41 to 4.81. However, the wealth score of half of the population is concentrated in the narrow span of -0.47 to -0.25. This specific distribution implies that the level of wealth of the four lower wealth quintiles is relatively similar, whereas the highest quintile is distinctly wealthier (Figure 3.2).

Figure 3.1: Population, by household wealth score

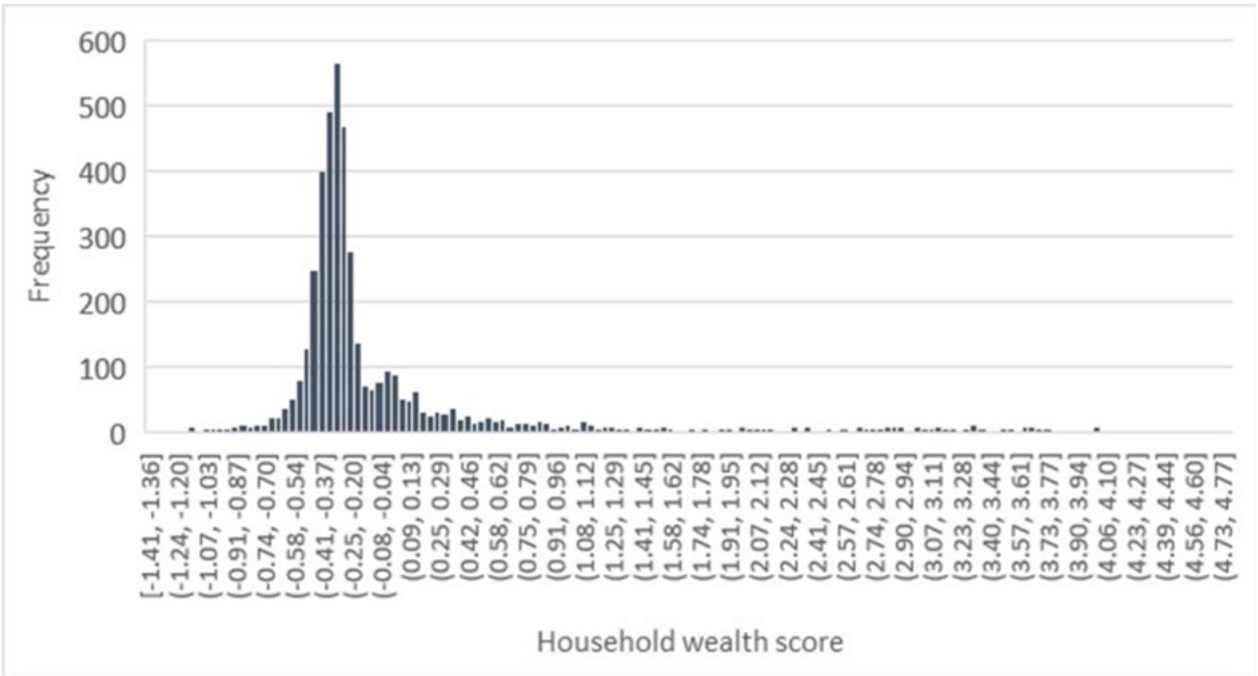


Figure 3.2: Mean household wealth score, by wealth status

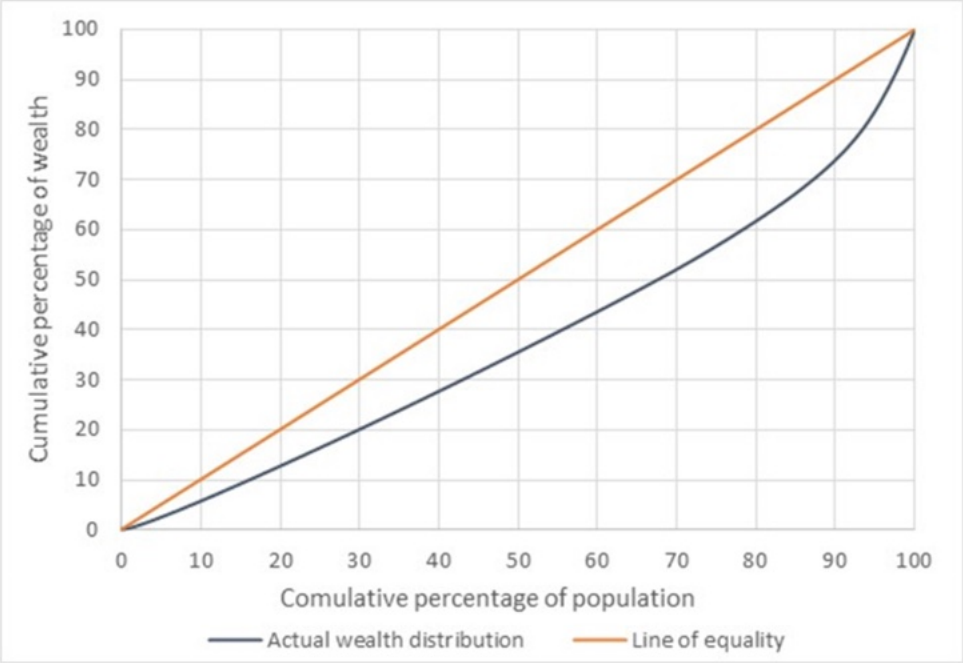


The relative equal wealth of the four lowest wealth categories is confirmed by the Lorenz curve in Figure 3.3, which plots the actual cumulative wealth according to the household wealth scores of the wealth index. For the largest trajectory, the curve rises relatively close to the line that describes the situation of perfect equality. For instance, the 30 percent least wealthy population possesses 20 percent of the total wealth, and the 80 percent least wealthy population possesses 62 percent of the total wealth. A proportion of 24 percent of the total wealth is concentrated in the 10 percent wealthiest population. The Gini index (see Text box on the Gini index) that is associated with the Lorenz curve of Figure 3.3 is 0.24, which indicates a relatively even wealth distribution in international comparative perspective.

Gini index

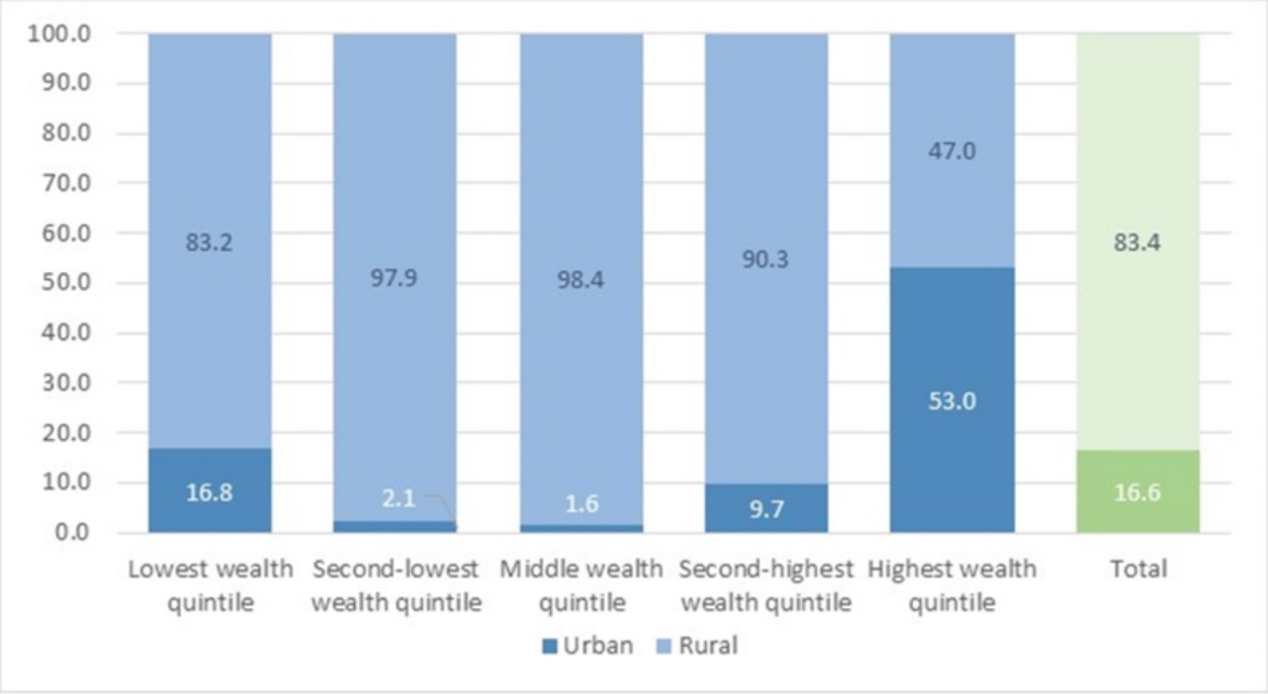
The Gini index measures the extent to which the distribution of income consumption or wealth among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income, consumption or wealth against the cumulative number of persons or households, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the equality line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

Figure 3.3: Cumulative wealth distribution



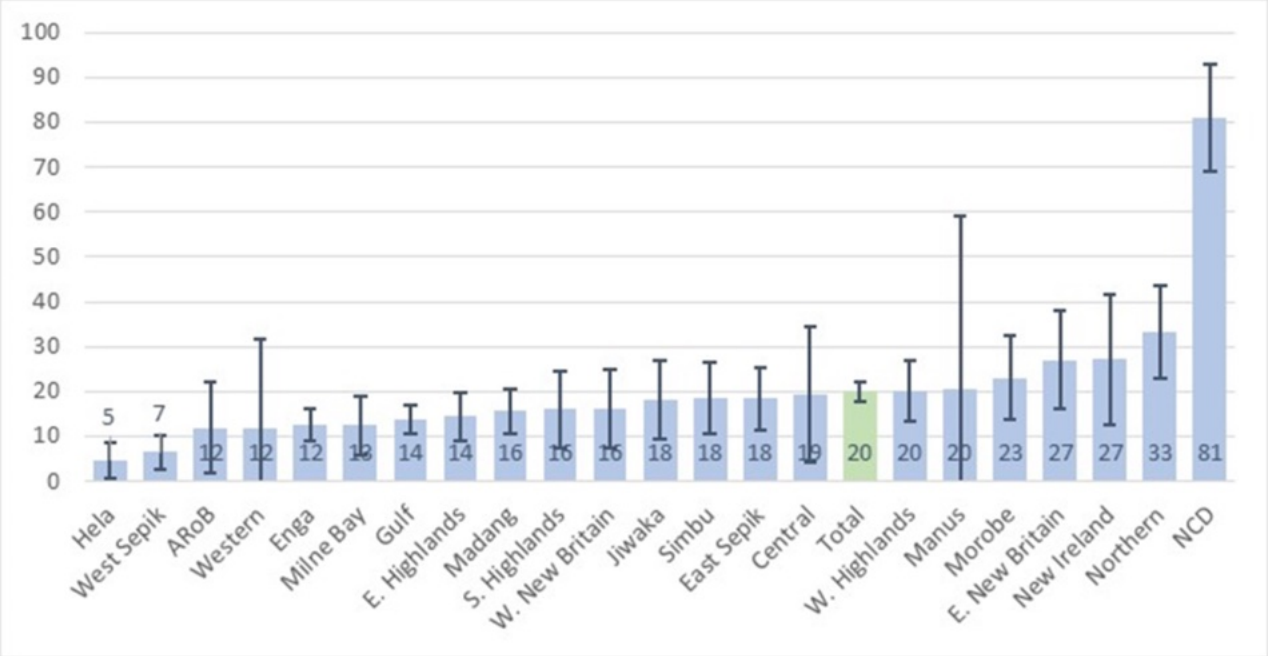
The concentrated and skewed pattern as shown in Figure 3.1 is largely due to the wealth distribution in rural areas. The urban distribution is also left-skewed, but considerably more evenly spread. The SDES 2022 data also show that belonging to the 20 percent wealthiest category is largely an urban phenomenon. Whereas the urban population makes up only one-sixth (16.6 percent) of the total population of PNG, more than half (53.0 percent) of the persons in the wealthiest quintile are urban dwellers (Figure 3.4). However, the category with the lowest wealth status also has a sizable proportion of urban residents (16.8 percent), which is an almost exact representation of the total urban population. The urban-rural wealth divide is also clearly illustrated by the wealth distribution within the urban and rural populations. Whereas the rural population is relatively evenly distributed over the five wealth categories – except for the highest category with only 11.3 of the rural population – almost two-thirds of the urban population belongs to the highest wealth status (data not shown).

Figure 3.4: Population, by wealth status, and by urban-rural residence (in percentages)



Although the SDES 2022 was not designed to produce representative results at the provincial level, a distinct wealth status can be established for some provinces. As could be expected, given the concentration of well-paid jobs in Port Moresby, the National Capital District stands out as the area with – by far – the highest proportion of the population in the wealthiest quintile: 81 percent (Figure 3.5). Statistically, also Northern province recorded a proportion of the population in the wealthiest quintile that is significantly higher than the national average. Similarly, the data give sufficient evidence that in Hela, West Sepik, Enga and Gulf provinces, the proportion of the population in the wealthiest quintile is lower than the national average.

Figure 3.5: Percentage of population in the highest wealth status category, by province[a]



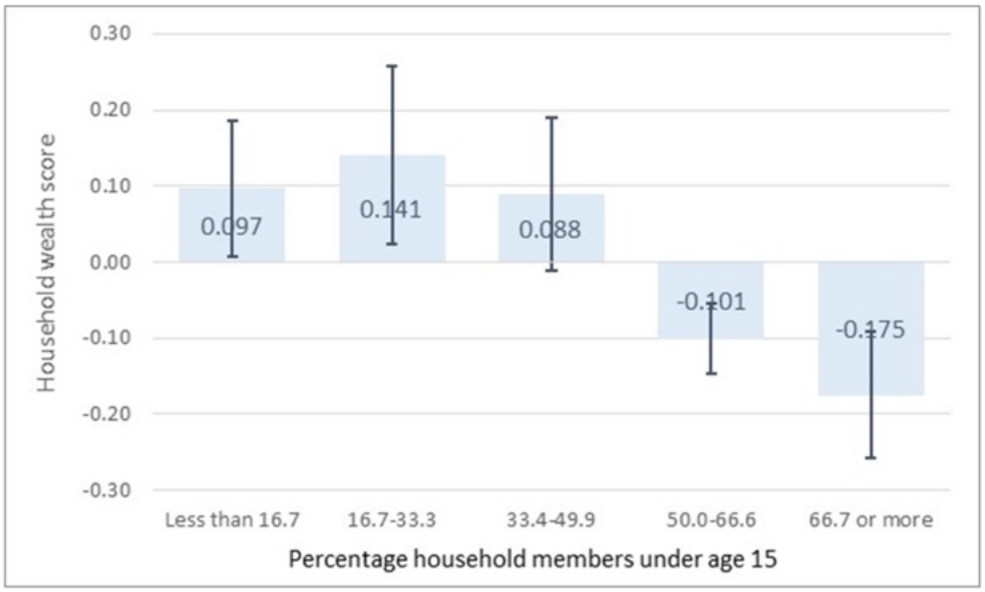
[a] 95-percent confidence intervals

3.2 Wealth and household characteristics

In addition to the contextual background, as defined in urban and rural areas and the specific provinces, household characteristics can have a decisive impact on the wealth status of the household. Simple bivariate analysis with a series of household-level variables suggests that several have an effect in the expected direction. In other cases, the relation seems more difficult to interpret or lacks sufficient statistical significance for conclusive results. One reason for a lack of evident effects and statistical significance seems to be the small difference in the wealth level of the four lowest wealth categories (section 3.1, specifically Figure 3.2). A recurrent finding in the below analyses is that no significant differences between the lowest wealth categories are found, but that the highest wealth category stands out.

Socio-demographic research often reveals a negative association between household wealth and fertility indicators, mainly influenced by the level of education that has a reducing effect on fertility (Caldwell, 1980; Cleland & Wilson, 1987; Dyson & Moore, 1983; Lutz, Butz, & Samir, 2010; Bongaarts, 2001). However, the cause-effect relation also works the other way around, as fewer dependent children in the household frees income resources for investment in wealth. For the SDES 2022 analysis, the percentage of children under age 15 is used to investigate the association (Figure 3.6). The figure shows that there is not much difference in the household wealth scores of the three categories in which the proportion of children under age 15 is less than 50 percent: all three categories have scores slightly above the national average wealth score. However, the two categories of households in which children under age 15 make up 50 percent or more are both below the average wealth score and have statistically significantly lower scores than the first three categories.

Figure 3.6: Household wealth score, by the proportion of household members under age 15 (in percentages)[a]



[a] 95-percent confidence intervals

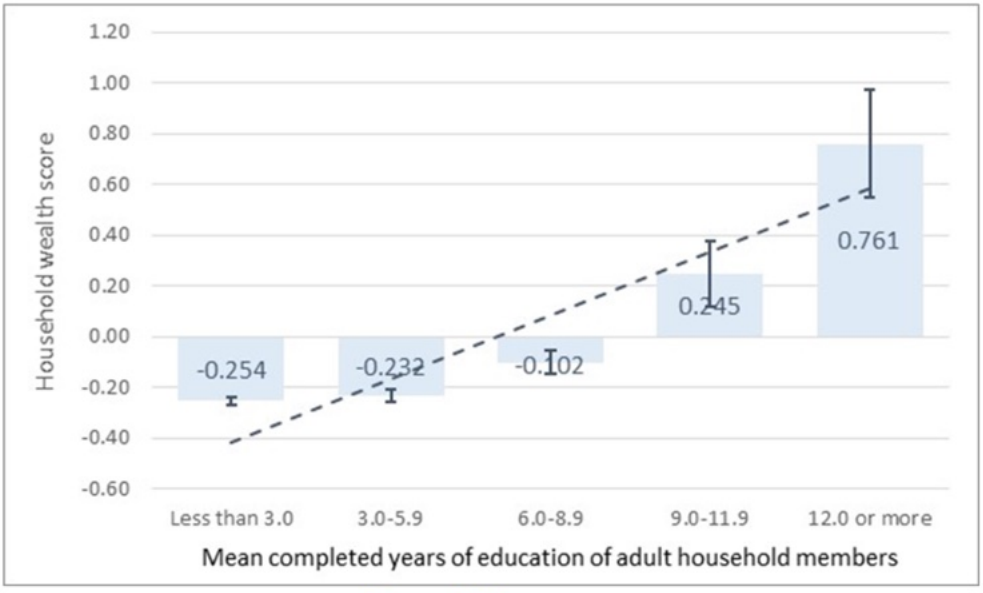
Differentiation by urban-rural residence shows that the negative association between wealth and proportion of children under age 15 in the household is not observed in rural areas, but solely in urban areas (data not shown). This difference could partly be explained by the

possibility that in rural areas children represent more often an economic asset to the households by adding to agricultural production activities. At the same time, they may represent relatively lower costs to households, especially if households are engaged in subsistence agriculture. On the other hand, urban children may less often contribute to household income and represent higher costs of living, for instance in terms of expenses for food, housing, education and health care.

A very similar picture emerges if the analysis is extended by adding the household members aged 65 or over as a 'dependent' age group to the children under age 15: a negative association between the household wealth score and the proportion of household members in the dependent age groups (under-15 and 65 or over), and again entirely due to the situation in urban areas.

A positive association between wealth and education can be expected, as higher-educated persons tend to have better-paid and more stable jobs. This pattern is confirmed by the information of Figure 3.7. The figure shows the mean household wealth score for the population in households in which the adult members (those 18 years of age or more) have successively higher mean numbers of completed years of education. Each next higher education group reveals a higher mean wealth score, and except for the two education groups with less than a mean of six years of education for the adult household member, the mean wealth scores are statistically different from one another. Households in which the adult household members have less than a mean of 9 years of completed education have, on average, a wealth score that is below the national average wealth score.

Figure 3.7: Household wealth score, by mean completed years of education of adult household members.



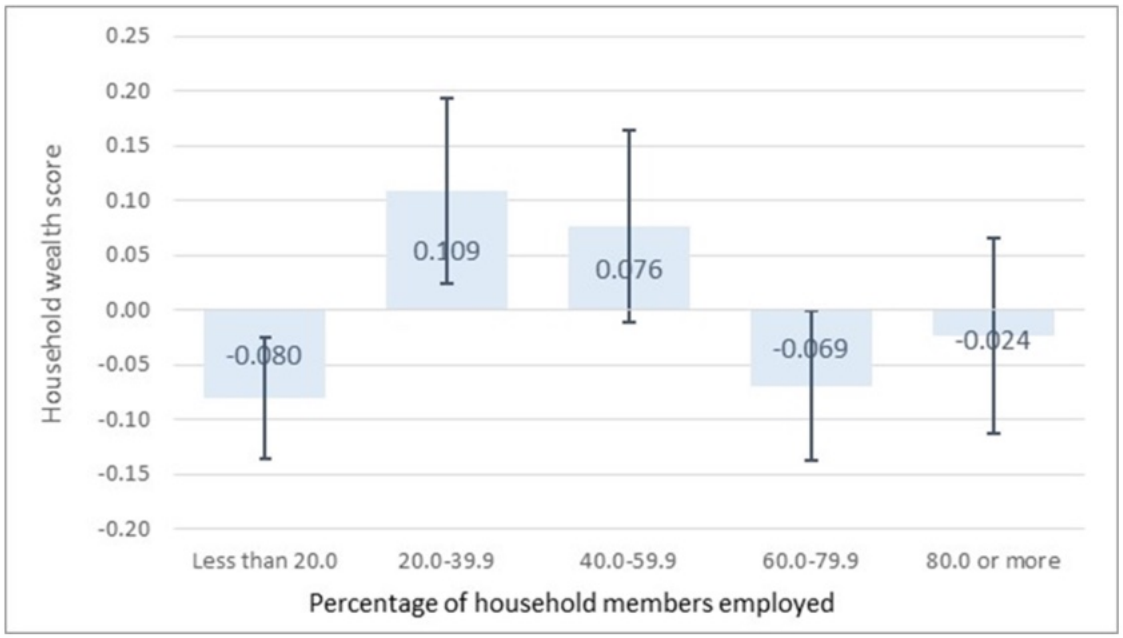
[a] Aged 18 or over
[b] 95-percent confidence intervals

It is interesting to note that the positive association between household wealth and the mean education level of adult household members is observed in rural and urban areas, but the effect in urban areas is much stronger. A linear regression of the household wealth score on the mean education level of adult household members suggests that additional education in

urban areas is associated with 10 times more added wealth than in rural areas. To the extent that causality between the variables is from education to wealth, it implies that investments in education have significantly higher returns in urban than in rural settings. This is a plausible assessment, as opportunities for better-paid jobs that require higher skill and education levels tend to be found much more in urban areas.

As employment work generates income for households, it can be hypothesised that the more household members are employed, the more wealth can be generated. The SDES 2022 does not support this hypothesis, as the erratic household wealth scores in Figure 3.8 indicate. The figure does not show a consistent association between the household wealth score and the proportion of household members that are in employment. The wealth scores for all employment groups are close to the national average and differences are generally not statistically significant.

Figure 3.8: Household wealth score, by proportion of household members employed (in percentages)[a]



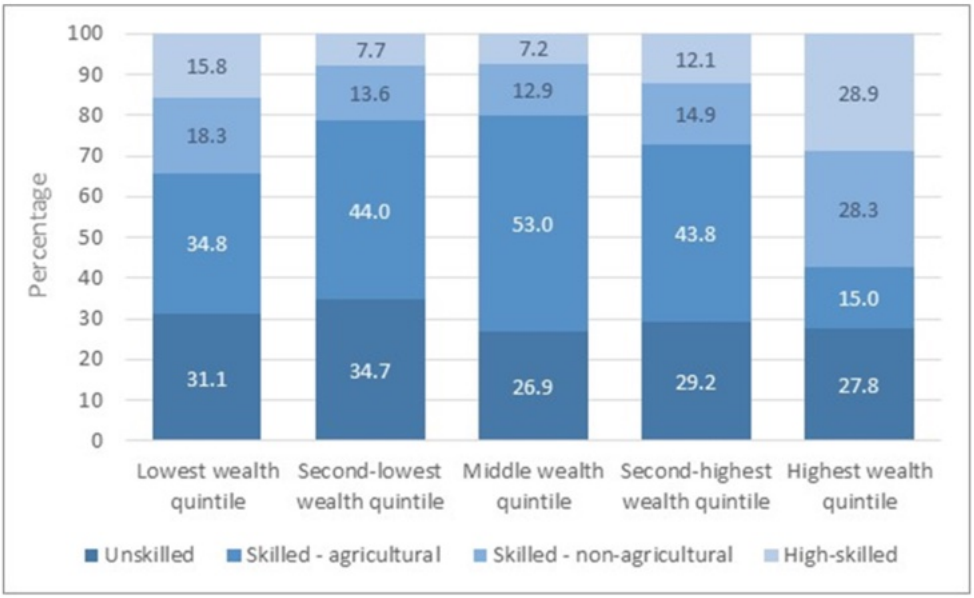
[a] 95-percent confidence intervals

It is likely that other characteristics of employment partly counteract a positive association between the proportion of employed household members and the household's wealth status. This may relate to the above discussion on the importance of underemployment and the distinction between quantity and quality of employment (section 2.5.1). it is possible that households with members who work in more well-paid jobs need fewer employed persons to sustain their livelihood than households in which members have low-paid job and/or work only few hours a week. This line of thinking is supported by the fact that in the lower four wealth status quintiles a significantly higher proportion of children aged 10 to 17 is employed (13.1 percent) than in the highest wealth status quintile (8.2 percent).

The importance of job quality for wealth accumulation is especially underlined by the distribution of occupation skill levels across wealth status quintiles. Whereas less than 42 percent of the employed population in the four lowest wealth status quintiles is employed in

high-skilled and non-agricultural skilled occupations, more than 57 percent of the employed population in the highest categories does so (Figure 3.9).

Figure 3.9: Employed population, by occupation category[a], and, by wealth status (in percentages)



[a]Including elementary occupations and street- and market salespersons (see section 2.4.2)

Persons living with a disability may have additional problems with access to the labour market and finding adequate employment. It can be expected that this has an effect on the income of their households and consequently on the ability to build up household wealth. The SDES 2022 questionnaire included a module on disability that is in line with the recommendations of the Washington Group on Disability Statistics (Washington Group, 2010) and the Principles and Recommendations for the 2020 round of censuses (United Nations, Department of Economic and Social Affairs, 2017). For the present analysis, the percentage of household members living with a disability is used. Disability is defined as having a moderate or severe functional limitation in one or more of the six disability domains that are covered in the questionnaire (seeing, hearing, walking or climbing stairs, remembering or concentrating, self-care, and communicating) (United Nations, 2012).

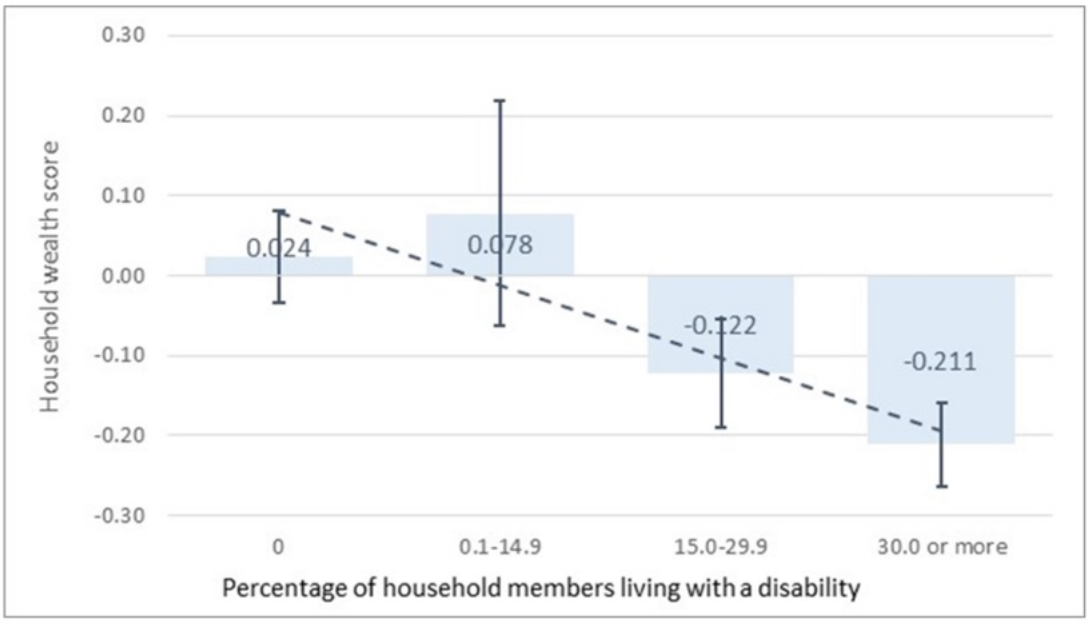
Disability questions

The SDES 2022 included the questions recommended by the Washington Group to capture self-reported difficulties caused by a health problem in performing basic activities in six domains: seeing, hearing, walking or climbing stairs, remembering or concentrating, self-care, and communicating. For each of the six questions, a standardised set of response options is provided to measure the degree of difficulty: 'No – no difficulty'; 'Yes – some difficulty'; 'Yes – a lot of difficulty'; and 'Cannot do at all'. The last two response options correspond to 'moderate' and 'severe' functional limitations.

The overall disability rate according to the SDES 2022 is 3.6 percent. Just over 83 percent of the population are part of a household with no persons living with a disability. Of the remaining 17 percent, around 7 percent are part of a household with less than 15 percent or between 15 and 30 percent household members living with a disability, respectively. Less than 3 percent of the population are part of a household with 30 percent or more household members living with

a disability. Due to these small proportions, the SDES finds few statistically significant differentiations across disability categories. Nevertheless, (Figure 3.10) depicts a very plausible pattern of a negative association between the household wealth status and the proportion of household members living with a disability. The wealth score of the population in households with a proportion of disabled household members of 15 percent or more is significantly lower than that of the national average wealth score.

Figure 3.10: Household wealth score, by proportion of household members living with a disability (in percentages) [a]



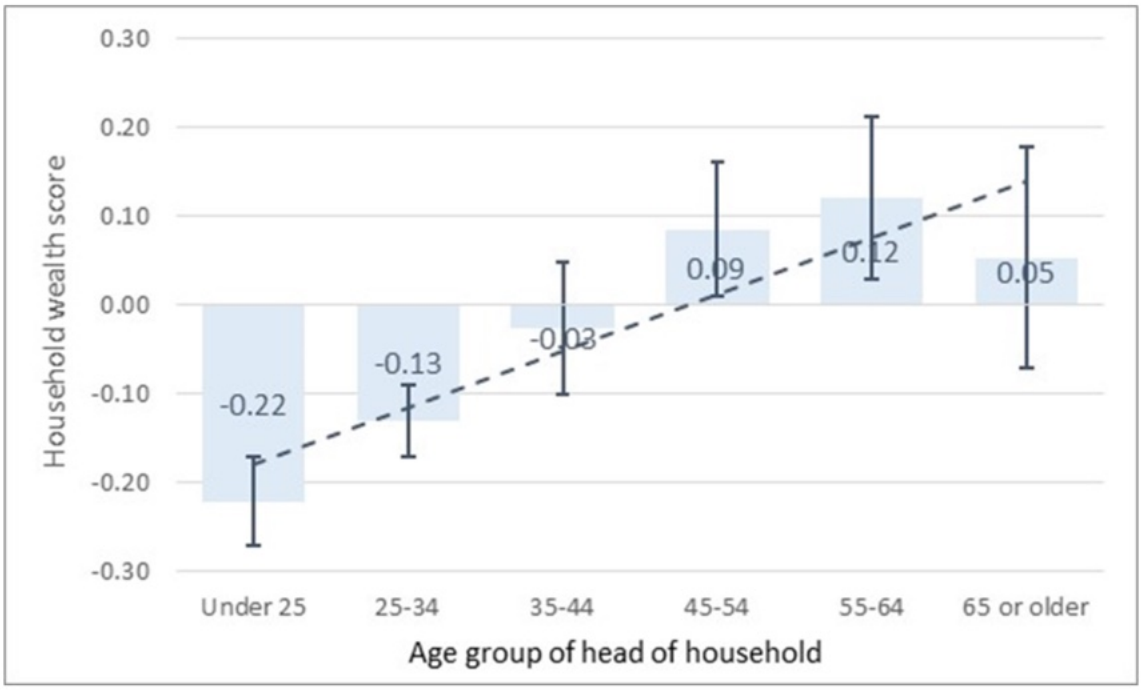
[a] 95-percent confidence intervals

3.3 Wealth and characteristics of the household head

Besides overall household features, the characteristics of the head of the household can provide understanding of family dynamics and household socio-economic conditions. The household head often plays a key role in determining the household's socioeconomic status. In many situations, the head is the main income earner and typically holds a significant role in decision-making processes within the household.

There is no statistical evidence that female-headed households are worse off than male-headed households. If anything, the wealth scores of the SDES suggest that the former (0.14 [0.03-0.25]) are slightly wealthier than the latter (-0.1 [-0.06-0.04]), but the difference is not statistically significant. On the other hand, the household head's age seems to have a slight impact. There are no statistically significant differences for the head's age across the four lowest wealth quintiles (averaging 45.8 years), but for the highest wealth quintile a higher age (48.3) is recorded (data not shown). Plotting the household wealth score by age groups of the household head (Figure 3.11) shows an evident pattern of households accumulating wealth over the life course of the head. Only the households with a head in the oldest age group deviate from the pattern.

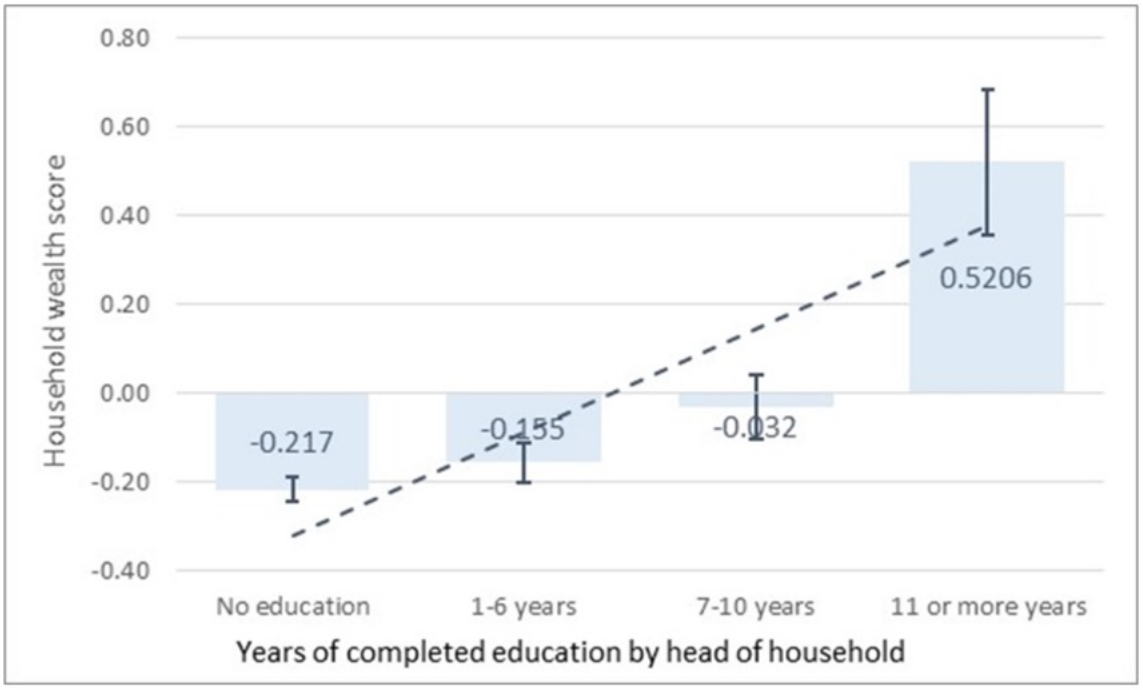
Figure 3.11: Household wealth score, by age group of the head of household[a]



[a] 95-percent confidence intervals

Figure 3.12 suggests a strong effect of the educational attainment of the household head on the wealth status of the household. The wealth scores of the household in which the head has no education or completed any level of up to six years of education do not differ statistically. However, the scores are significantly higher for any subsequent educational attainment category. Households with a head who has completed seven to ten years of education are around the average wealth score. Those with a head who has completed 11 or more years of education have on average a considerably higher wealth score, with a score of 0.52 at the 88th percentile of the range of wealth scores.

Figure 3.12: Household wealth score, by years of completed education by the head of household[a]



[a] 95-percent confidence intervals

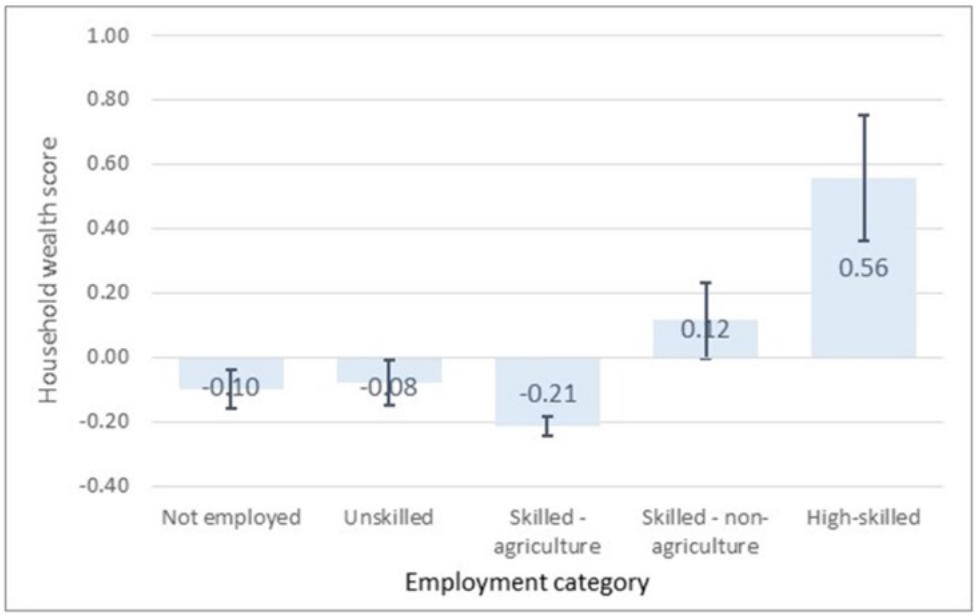
The association between the education level of the household head and the household wealth status is similar to that between the mean education level of the adult household members and the household wealth status (Section 3.2, Figure 3.7), with a marked positive effect in urban areas and hardly any effect in rural areas.

In many households, the head is the main income earner, and as such the head's labour force status can be an important factor for the household's wealth status. However, the SDES 2022 data do not reveal large differences in the average wealth scores of households with heads who are employed, unemployed or outside the labour force, respectively. The household head being unemployed does not show a statistically significant difference in household wealth status with the other two labour force statuses. The difference between households with an employed head and those with a head outside the labour force is statistically significant, but the average wealth scores of the two types of households are very close, with the former just above the average of the average national wealth score and the latter just below it. The lack of a clear-cut pattern is probably again related to the lack of a clear dichotomy between employment and unemployment and the large proportion of underemployment and low-paid jobs in the PNG job market (see sections 2.4.2 and 2.5.1).

The association between household wealth status and occupation categories according to skill level provides a more straightforward picture. Figure 3.13 distinguishes households with not-employed and employed household heads, and for the latter the skill level of their occupation. Statistically significant results include that households with heads employed as skilled workers in agriculture[16] (representing 23.0 percent of the population) are, on average, the poorest households, followed by households with not-employed heads and heads working in unskilled occupations[17] (respectively 33.1 percent and 13.3 percent of the population). All these households have, on average, a wealth score below, but close to, the national average. The households with a head working in skilled non-agricultural employment[18] (representing 15.0 percent of the population) also have, on average, a wealth score close to the national average, but just above it. Households with a head working in high-skilled employment[19] (15.6 percent of the population) are with a distant, on average, the highest wealth status. Especially urban households with a head working in high-skilled employment have a relatively high wealth status, with an average wealth score of 2.17 (data not shown). The differences in wealth scores between other urban groups are not statistically significant.

[16] Including fishery and forestry workers.
[17] Including elementary occupations, street and market salespersons, agricultural, forestry and fishery labourers, and non-food street vendors.
[18] Including clerical support workers, other services and sales workers, craft and related trade workers, and plant and machine operators and assemblers.
[19] Including managers, professionals, and technicians and associated professionals.

Figure 3.13: Household wealth score, by the employment status of the head of household[a]



[a] 95-percent confidence intervals

The life-time migration status of the head of household shows a marked association with the household wealth status. Three categories of life-time migration status are distinguished:

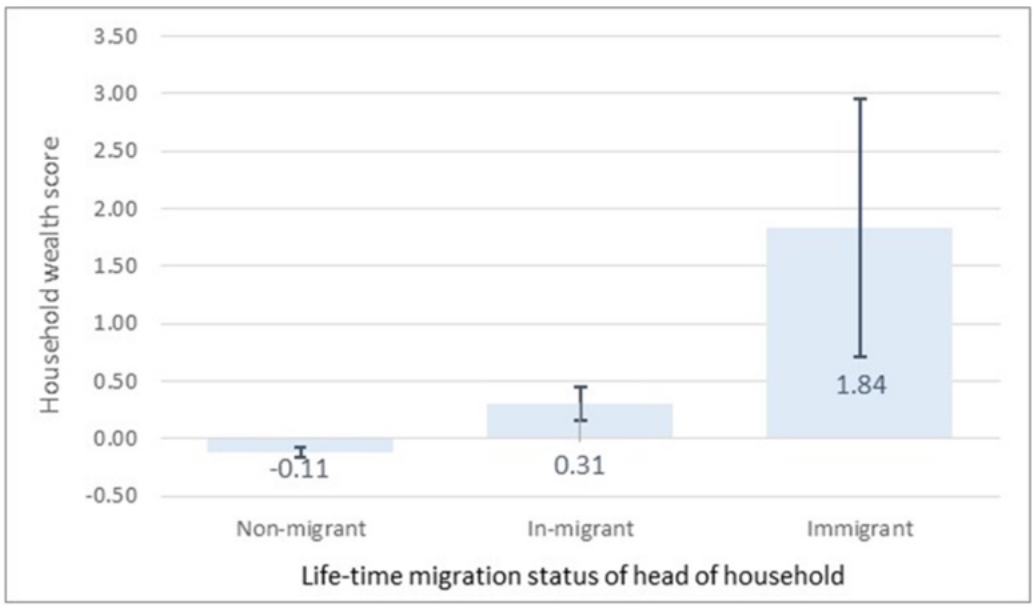
- *Non-migrant*. The person's district of birth is the same as the district of usual residence at the time of the SDES 2022.
- *In-migrant*. The person's district of birth is different from the district of usual residence at the time of the SDES 2022 but is located within PNG.
- *Immigrant*. The person is born outside PNG.

More than two-thirds (70.7 percent) of the population lives in a household of which the head is born in the same district as where the household resides (life-time non-migrant). Some 29.0 percent of the population lives in a household of which the head is born in another district in PNG (life-time in-migrant) and a small proportion (0.2 percent) of the population has a household head who is born abroad (life-time immigrant). The households of life-time in-migrant heads have on average, a higher wealth status than households of life-time non-migrant heads, and those with a life-time immigrant head have a considerably higher wealth status again (Figure 3.14).

As the population of life-time non-migrant household heads is overrepresented in rural areas (90.5 percent, compared to a total rural population of 83.4 percent) and the population of life-time in-migrant household heads is overrepresented in urban areas (33.7 percent, compared to a total urban population of 16.6 percent), the difference in wealth status can to a large extent be explained by the place of residence in an urban or rural setting. However, the education and skill-training level of migrants may also be a background factor that incites migration to places where better-paid jobs can be found. Thus, 28.0 percent of life-time non-migrant household heads have no year of education completed, compared to only 10.3 percent of life-time in-migrants. On the other hand, only 15.0 percent of life-time non-migrant household heads have 11 or more years of education completed, compared to 40.4 percent of

life-time in-migrants. Life-time immigrant household heads are even almost entirely concentrated in the highest education category of 11 or more years of education completed (data not shown).

Figure 3.14: Household wealth score, by migration status of the head of household[a]



[a] 95-percent confidence intervals

3.4 Regression analysis on household wealth status

The investigation of the association between two variables, as done in the previous sections, may lead to spurious. This is the case when an extraneous variable is related to both the two variables being investigated and these relations interfere with the direct relation between the study variables. In many situations, it is important to control for the influence of other variables to isolate the true relationship between variables of interest. Multiple regression is a statistical technique that allows for the examination of the simultaneous impact of multiple variables on an outcome variable. Outcomes for any specific variable included in the regression model represent the net effect of that variable, while controlling for the effects of the other variables in the model.

For the analysis of the wealth status of individuals, a linear regression model was applied, with the household wealth score as the dependent variable and a selection of the variables reported in sections 3.1 to 3.3 as independent – or explanatory – variables. To allow for an easier interpretation of the results, the household wealth scores – ranging from -1.406 to 4.8-8 – were converted to positive values and then standardised to values ranging from 0 to 100. A few variables were excluded from the regression model either on theoretical grounds or on technical grounds, such as to high correlations. The final model included contextual variables (urban or rural residence and province), general household characteristics (the percentage of household members under age 15, the percentage of household members living with a disability, and the percentage of household members employed), and characteristics of the head of household (sex, age, and classification of employment: not in employment and for those employed, the occupation skill level).

Multiple regression

A multiple regression is used to predict a continuous dependent variable based on multiple independent variables. The analysis allows to determine how much variance in the dependent variable can be explained (the overall fit of the model) and the relative contribution of each of the independent variables to the total variance explained, i.e. their effect on the dependent variable.

The ANOVA test performed for the regression model presented here indicated that the model leads to a statistically significant result ($p < .0005$). The multiple correlation coefficient R of the model is 0.686, which indicates a moderate to strong level of association. This R is the Pearson correlation coefficient between the scores predicted by the regression model and the actual values of the dependent variable (i.e. the standardised wealth score). As such, R is a measure of the strength of the linear association between these two variables and can give an indication as to the goodness of the model fit with a value that can range from 0 to 1, with higher values indicating a stronger linear association.

The coefficient of determination R^2 – or the overall fit – is 0.471, which is considered to be a moderate to strong effect of the model. The R^2 is a measure of the proportion of variance in the dependent variable (the standardised wealth score) that is explained by the independent variables. The value of 0.471 means that the independent variables included in the regression model explain 47.1 percent of the variability of the dependent variable.

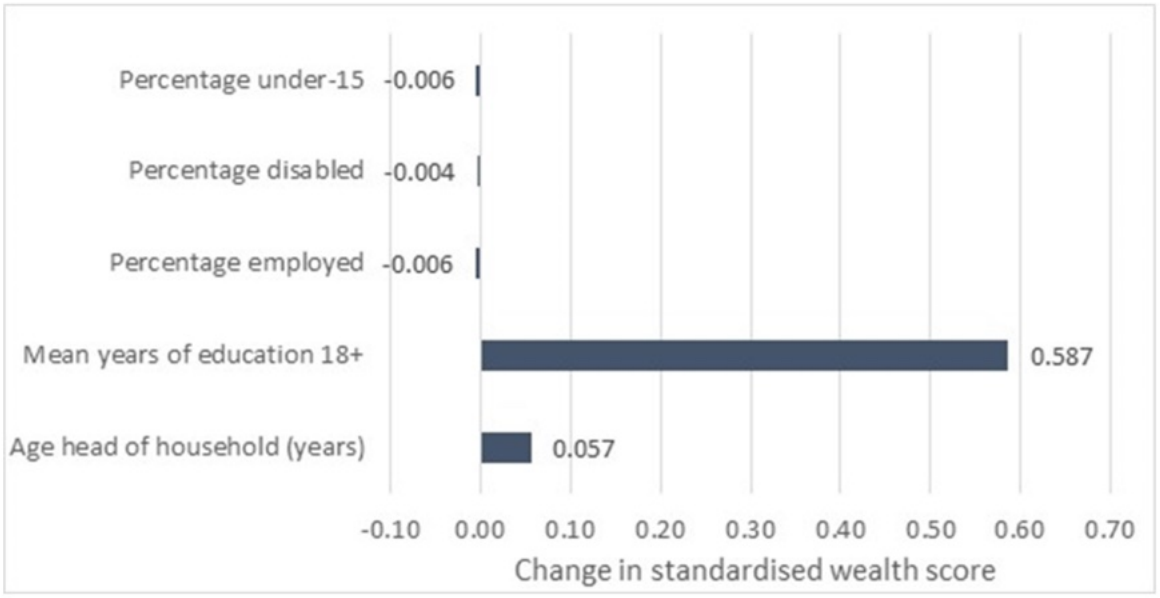
The effect of the independent variables on the dependent variable (i.e. the standardised wealth score) is reported in terms of regression coefficients of the independent variables. The interpretation of these coefficients depends on whether the independent variable is continuous or categorical. Regression results for continuous or categorical variables were included in one single model, but for this reason presented in separate figures, respectively Figure 3.15 and Figure 3.16.

For the continuous variables (Figure 3.15), the coefficients represent the change in the dependent variable for one unit change in the independent variable. For instance, a change of 1 percent in the percentage household members under-15 is associated with a change of 0.006 in the standardised wealth score. As the coefficient for this variable is negative it means that a 1 percent increase in the percentage of under-15 household members is associated with a decrease of 0.006 in the standardised wealth score. Thus, the multiple regression equation predicts that the larger the proportion of children in the household, the lower the household wealth status. It is important to note that the reported coefficients indicate the net effect of the specific variable, controlling for the effect of all other independent variables in the model.

The coefficients of the variables of the percentage of children under 15 in the household and the percentage of persons living with a disability in the household are in the expected direction: when the proportions of these household members increase, the wealth status of the household decreases. However, although statistically significant, the effects are small when controlled for the effects of other variables included in the model. The effect of the percentage of employed household members is also small, which is more in line with the picture sketched in Figure 3.8. It is likely that more employed persons in the household does not necessarily mean higher income and wealth but could also indicate the need for more income earners if the jobs of the household members provide little income.

The coefficients for the mean years of education completed by adult household members and the age of the head of household confirm the findings presented in Figure 3.7 and Figure 3.11, respectively. Both are positively associated with household wealth. For instance, the increase of one year in the mean years of completed education of the adult household members results in almost 0.6 points in the standardised wealth score.

Figure 3.15: Coefficients of linear regression analysis on standardised household wealth scores – continuous variables[a]

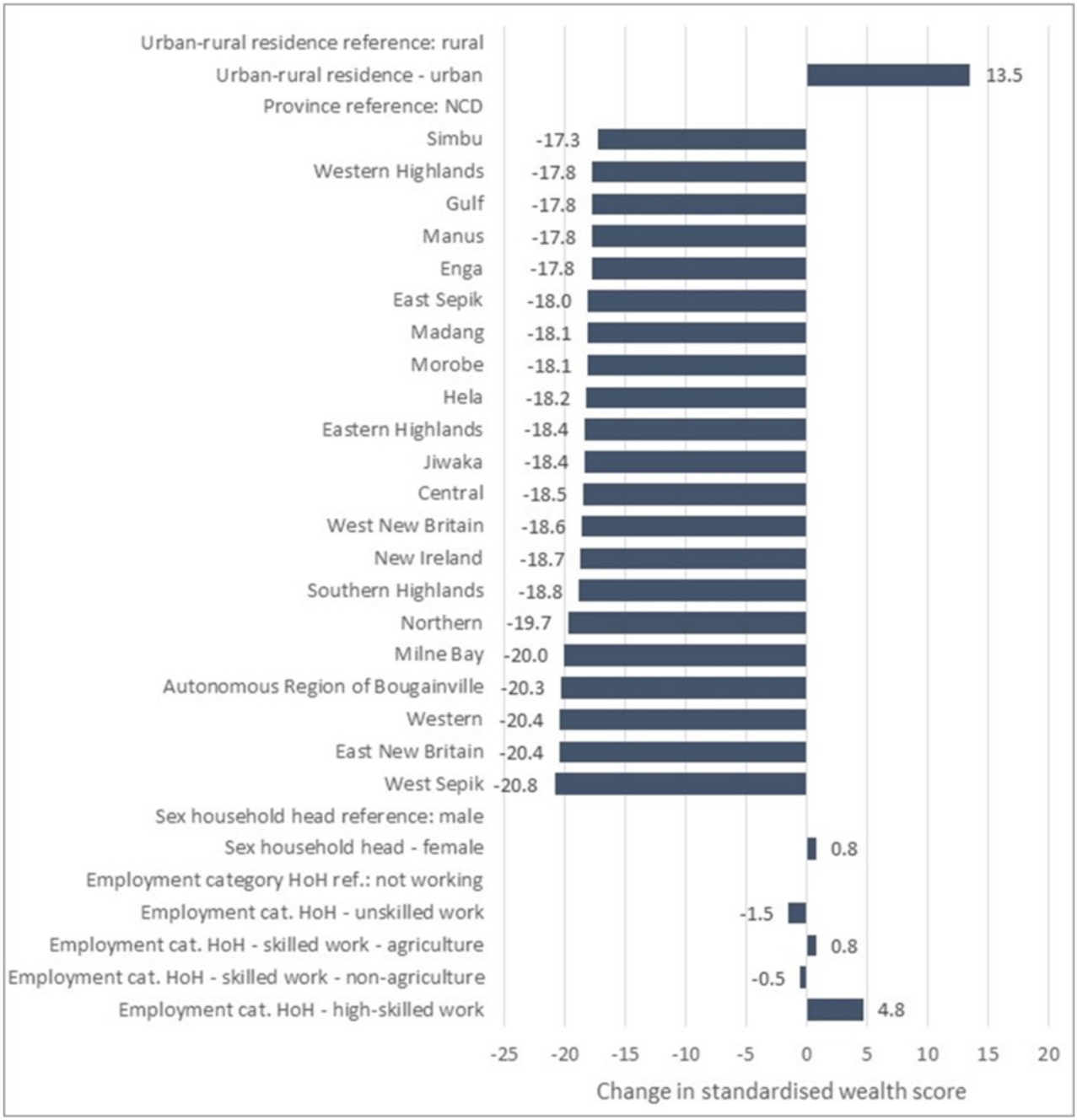


[a] All coefficients are statistically significantly different from 0

A categorical independent variable has a different interpretation than that of continuous independent variables. Each categorical variable included in the model, such as the sex of the head of household, was transformed into one or more dummy variables, each of which represent one of the categories of the categorical variable. In the case of sex of the head of household, the dummy variables are 'Male household head' and 'Female household head'. For the regression model, one of the dummy variables is used as a reference category and the other dummy variables are included in the model. The value of the coefficient for an included dummy variable represents the difference in the dependent variable – the standardised wealth score – between the included dummy variable and the reference variable. Thus, the standardised wealth score of persons living in a female-headed household is 0.8 higher than those living in a male-headed household. For each categorical variable, the reference category is specified in Figure 3.16.

When controlling for other variables, the characteristics of the head of household seem to have relatively little effect on the household wealth status. Compared to male-headed households, female-headed households have a standardised wealth score that is 0.8 higher. The variables on the categories of employment of the head of household confirm the findings in Figure 3.13. Persons in households of which the head is engaged in high-skilled employment have a wealth score that is almost 5 points higher than persons of the reference category, those with a household head who is not working.

Figure 3.16: Coefficients of linear regression analysis on standardised household wealth scores – categorical variablesa



[a] All coefficients are statistically significantly different from 0

The by far largest effects on the household wealth status are found for the contextual variables. When controlling for the other variables in the model, persons in urban areas have on average, a 13.5 higher wealth score than their counterparts in rural areas. The effect of province is even larger. Compared to persons living in the National Capital District, the wealth scores for persons in all other provinces are considerably lower, ranging from minus 21 points in Simbu province to minus 21 points in West Sepik province.

4. Conclusions and recommendations

The SDES 2022 has provided valuable information about the demographic and socio-economic situation of the population of Papua New Guinea. At least at the national level, the survey could compensate for the absence of the Population and Housing Census that was originally planned for 2020/2021. Nevertheless, the possibility to conduct small-area analysis and analysis for small target groups is not possible on the basis of the SDES 2022. Even reliable information at province level can hardly be extracted from the survey. Furthermore, the relatively small sample size puts limits on the extent to which sub-group analysis can produce statistically significant results Also for 'rare events', such as disability and unemployment, disaggregation by background characteristics produces results with high levels of uncertainty.

The SDES 2022 also provided the opportunity for a series of in-depth thematic reports and associated training of NSO staff. The topics of these studies included education, migration, gender, youth, demographic dividend and population projections. The present report on the economic wellbeing of the population in Papua New Guinea is one of this series of thematic reports.

The labour module of the SDES 2022 allowed the production of the standard key labour force indicators of labour force participation, employment-to-population ratio and unemployment rate, as well as distributions of occupation and industry. In addition, a battery of household assets and other housing and household characteristics made it possible to create a household wealth index. This information provided the basis for the analysis of the economic wellbeing of the population in Papua New Guinea. Whereas for a full economic wellbeing analysis, information about income, consumption and wealth is required, only the wealth component could be adequately covered by the survey. Although the wealth index does not provide information about absolute wealth and poverty, it did produce information about relative wealth of the households and persons included in the survey. The information about employment and – to some extent – occupation was used as proxy information for the income component of economic well-being.

The analysis showed, from an international perspective, relatively low levels of labour force participation (51.8 percent) and employment-to-population ratio (50.6 percent). This indicates that there is scope for an increase in employment for pay or profit, and hence income and wealth accumulation. From a gender perspective, it can be noted that the indicators are very similar for men and women. The unemployment rate, according to international definitions at 2.4 percent, is very low, which is contrary to what seems the general notion by people and policymakers alike. However, this is not uncommon in developing countries with a large agricultural sector, widespread informal employment, and limited or absent social security schemes and social safety nets. In such contexts, a strict employment-unemployment dichotomy is rather irrelevant to understanding the performance of the labour market and people's opportunities to earn adequate incomes from work. For this reason, surveys that aim for an assessment of labour force analysis should incorporate questions that not only measure employment and unemployment, but importantly also underemployment. In addition, given the latest definition of employment – covering only work for pay or profit – and the fact that subsistence agriculture is the livelihood of an important part of the population in Papua New Guinea, labour questions should be extended to also cover the subsistence sector of the economy.

The development and application of the wealth index and its underlying household wealth scores showed to be effective for that assessment of accumulated wealth in the household. Valuable insights were deduced for the overall distribution of wealth scores, which appeared to be very concentrated and skewed to the lower end of the wealth score range. This implies that the large majority of Papua New Guineans are very similar in terms of wealth status at a relatively low level, and that the population in the highest wealth quintile represent a very wide range of wealth statuses. The Gini index that is associated with this wealth distribution of 0.24 is low in comparative perspective, indicating a relatively even wealth distribution. Urban residence, and especially residence in the National Capital District, seemed to be important factors for the concentration of wealth in the country.

Disaggregating the wealth status of the population by characteristics of the household and the head of the household yielded various interesting insights. It showed that wealth is positively associated with education – in terms of both the education of the household head and the mean level of education of the adult household members – and the age of the head of household, the latter suggesting that wealth tends to accumulate over the family life cycle. A negative association was found with the percentage of children under 15 years of age and the percentage of persons living with a disability in the household. No evident association was found between household wealth and being in employment. As employment is defined as work for pay or profit, a positive association could be assumed. However, neither the household head being employed, nor a large proportion of household members being employed is associated with significantly higher household wealth. In the labour market of PNG, it is likely that more employed persons in the household does not necessarily mean higher income and wealth but could also indicate the need for more income earners if the jobs of the household members provide little income.

A linear regression analysis combined a selection of the background variables into a model to identify the relative contribution of each of these variables to the wealth status of the household members, while controlling for the other variables in the model. The main conclusion relates to the overriding importance of the place of residence: compared to persons in the National Capital District, those in the other provinces are, on average, consistently poorer by close to 20 percentage points. Independent of province, residence in urban areas adds on average, another 13 percentage points compared to rural residence. The regression analysis also showed considerably higher wealth for persons living in households with a head employed in a high-skilled occupation, as well as positive associations with the age of the household head and the mean level of education of adult household members, irrespective of all other variables.

The procedure of constructing the wealth scores and index revealed that the battery of household assets underlying the construction can be improved. This can be achieved by excluding several less-relevant questions and incorporating more less-expensive assets and more assets that represent typically rural wealth.

A general recommendation related to the assessment of the economic wellbeing of the population in Papua New Guinea is the need to conduct a targeted survey with a larger sample size, such as a Living Standards Measurement Survey (LSMS) or a Household Income and Expenditure Survey (HIES). Such surveys should include questions that allow coverage of subsistence work in such a way that it allows mapping of employment and unemployment indicators according to the latest international definitions on those produced in the 2011 Population and Housing Census and other surveys using older definitions.

Annex I – Sampling quality indicators

Indicator	Base population	Value	Standard error	Confidence li Lower
Labour force participation rate	**Population 15+**	**51.8**	**1.1**	**49.6**
Labour force participation rate, urban	Population 15+, urban	55.4	1.0	53.3
Labour force participation rate, rural	Population 15+, rural	51.1	1.4	48.4
Labour force participation rate, male	Population 15+, male	53.1	1.2	50.7
Labour force participation rate, female	Population 15+, female	50.6	1.3	48.1
Labour force participation rate, not disabled	Population 15+, not disabled	52.1	1.2	49.9
Labour force participation rate, disabled	Population 15+, disabled	46.4	2.8	40.8
Labour force participation rate, 15-24	Population, 15-24	28.6	1.2	26.3
Labour force participation rate, 25-39	Population, 25-39	62.9	1.4	60.0
Labour force participation rate, 40-64	Population, 40-64	66.6	1.4	63.7
Labour force participation rate, 65+	Population, 65+	38.4	2.0	34.5
Labour force participation rate, non-migrants	Population, 15+, non-migrants	48.6	1.4	45.9
Labour force participation rate, in-migrants	Population, 15+, in-migrants	60.1	1.3	57.5
Labour force participation rate, immigrants	Population, 15+, immigrants	78.9	5.5	68.2
Labour force participation rate, literate	Population, 15+, literate	53.0	1.1	50.9
Labour force participation rate, illiterate	Population, 15+, illiterate	44.9	2.6	39.8
Employment-to-population ratio	**Population 15+**	**50.6**	**1.1**	**48.4**
Employment-to-population ratio, urban	Population 15+, urban	52.5	0.9	50.7
Employment-to-population ratio, rural	Population 15+, rural	50.2	1.4	47.5
Employment-to-population ratio, male	Population 15+, male	51.6	1.2	49.3
Employment-to-population ratio, female	Population 15+, female	49.5	1.3	47.1
Employment-to-population ratio, urban, male	Population 15+, urban, male	54.5	1.3	51.9
Employment-to-population ratio, rural, female	Population 15+, rural, female	49.3	1.5	46.4
Employment-to-population ratio, not disabled	Population 15+, not disabled	50.8	1.1	48.6
Employment-to-population ratio, disabled	Population 15+, disabled	46.3	2.8	40.8
Employment-to-population ratio, 15-24	Population, 15-24	27.6	1.2	25.3
Employment-to-population ratio, 25-39	Population, 25-39	61.2	1.4	58.4	64.0
Employment-to-population ratio, 40-64	Population, 40-64	65.4	1.4	62.6	68.2
Employment-to-population ratio, 65+	Population, 65+	38.2	2.0	34.2	42.2
Employment-to-population ratio, non-migrants	Population 15+, non-migrants	47.6	1.3	44.9	50.2
Employment-to-population ratio, in-migrants	Population 15+, in-migrants	58.1	1.3	55.6	60.6
Employment-to-population ratio, immigrants	Population 15+, immigrants	78.9	5.5	68.2	89.6
Employment-to-population ratio, literate	Population 15+, literate	51.6	1.0	49.5	53.6
Employment-to-population ratio, illiterate	Population 15+, illiterate	44.6	2.6	39.4	49.8
Employment-to-population ratio, no grade completed	Population 25+, no grade completed	47.5	2.3	43.0	52.1
Employment-to-population ratio, primary, incomplete	Population 25+, primary, incomplete	62.2	2.3	57.6	66.8
Employment-to-population ratio, primary, complete	Population 25+, primary, complete	65.6	1.9	61.9	69.3
Employment-to-population ratio, middle, incomplete	Population 25+, middle, incomplete	59.4	2.3	54.9	63.9
Employment-to-population ratio, middle, complete	Population 25+, middle, complete	64.4	1.8	60.9	67.9
Employment-to-population ratio, secondary, any grade	Population 25+, secondary, any grade	60.6	2.4	55.9	65.2
Employment-to-population ratio, vocational, any grade	Population 25+, vocational, any grade	74.8	2.5	69.9	79.8
Employment-to-population ratio, tertiary, any grade	Population 25+, tertiary, any grade	79.6	1.5	76.7	82.5
Percentage unskilled employment	**Employed population, 15+**	**13.3**	**0.9**	**7.0**	**11.4**
Percentage unskilled employment, urban	Employed population, 15+, urban	16.2	1.4	8.7	13.5
Percentage unskilled employment, rural	Employed population, 15+, rural	12.6	1.1	8.7	10.5
Percentage unskilled male employment	Employed population, 15+, male	11.4	1.0	9.1	9.3
Percentage unskilled female employment	Employed population, 15+, female	15.4	1.1	6.9	13.3
Unemployment rate	**Labour force 15+**	**2.4**	**0.2**	**1.9**	**2.9**
Unemployment rate, urban	Labour force 15+, urban	5.2	0.7	3.9	6.5
Unemployment rate, rural	Labour force 15+, rural	1.8	0.2	1.3	2.2
Unemployment rate, male	Labour force 15+, male	2.8	0.3	2.2	3.4
Unemployment rate, female	Labour force 15+, female	2.0	0.3	1.5	2.6
Unemployment rate, not disabled	Labour force 15+, not disabled	2.5	0.3	2.0	3.0
Unemployment rate, disabled	Labour force 15+, disabled	0.3	0.2	-0.2	0.7
Youth unemployment rate	Labour force, 15-24 (youth)	3.6	0.6	2.4	4.7

Unemployment rate, 25-39	Labour force, 25-39	2.7	0.3	2.0	3.3
Unemployment rate, 40-64	Labour force, 40-64	1.7	0.3	1.19	2.3
Unemployment rate, 65+	Labour force, 65+	0.6	0.3	0.0	1.16
Youth unemployment rate, male	Labour force, 15-24, male	4.3	0.8	2.6	5.9
Youth unemployment rate, female	Labour force, 15-24, female	2.9	0.7	1.5	4.2
Unemployment rate, literate	Labour force, 15+, literate	1.4	0.1	1.1	1.7
Unemployment rate, illiterate	Labour force, 15+, illiterate	0.3	0.1	0.1	0.6
Unemployment rate, non-migrants	Labour force, 15+, non-migrants	2.0	0.3	1.5	2.5
Unemployment rate, internal migrants	Labour force, 15+, internal migrants	3.3	0.4	2.4	4.2
Unemployment rate, immigrants	Labour force, 15+, immigrants	0.0	0.0	0.0	0.0
Unemployment rate, no education completed	Labour force 25+	1.4	0.4	0.5	2.2
Unemployment rate, primary, incomplete	Labour force 25+	0.8	0.3	0.2	1.4
Unemployment rate, primary, complete	Labour force 25+	1.1	0.3	0.4	1.7
Unemployment rate, middle, incomplete	Labour force 25+	1.8	0.5	0.8	2.7
Unemployment rate, middle, complete	Labour force 25+	3.8	0.8	2.3	5.3
Unemployment rate, secondary, any grade	Labour force 25+	4.1	0.9	2.3	5.9
Unemployment rate, vocational, any grade	Labour force 25+	3.9	1.3	1.5	6.4
Unemployment rate, college/university, any grade	Labour force 25+	3.0	0.5	1.9	4.0
Literacy rate, 10+	**Population 10+**	**86.0**	**0.8**	**0.9**	**84.5**
Literacy rate, 10+, urban	Population, 10+, urban	95.1	0.8	0.9	93.5
Literacy rate, 10+, rural	Population, 10+, rural	84.1	0.9	1.1	82.3
Literacy rate, 10+, male	Population, 10+, male	88.5	0.8	0.9	87.0
Literacy rate, 10+, female	Population, 10+, female	83.3	0.9	1.1	81.6
Literacy rate, 10-14	Population, 10-14	83.9	1.2	1.5	81.4
Literacy rate, 15-24 - Youth	Population, 15-24	91.9	0.8	0.9	90.3
Literacy rate, 25-39	Population, 25-39	87.6	0.9	1.0	85.8
Literacy rate, 40-64	Population, 40-64	82.2	1.1	1.3	80.1
Literacy rate, 65+	Population, 65+	67.5	2.2	3.3	63.1
Literacy rate, 10+, not disabled	Population, 10+, not disabled	86.7	0.8	0.9	85.2
Literacy rate, 10+, disabled	Population, 10+, disabled	69.3	2.3	3.3	64.8

References

Azeng, T., & Yogo, T. (2013). *Youth unemployment and political instability in selected developing countries. Working Paper Series N° 171.* Tunis: African Development Bank.

Bongaarts, J. (2001). Fertility and reproductive preferences in post-transitional societies. *Population and Development Review, 27(2)*, 260-281.

Brewer, M., & O'Dea, C. (2012). Measuring living standards with income and consumption: evidence from the UK. *IFS Working Paper W12/12.*

Caldwell, J. (1980). Mass Education as a Determinant of the Timing of Fertility Decline. *Population and Development Review, 6(2), 225-255.*

Cleland, J., & Wilson, C. (1987). Demand theories of the fertility transition: An iconoclastic view. *Population Studies, 41(1), 5-30.*

Department of National Planning and Monitoring. (2018a). *Papua New Guinea Medium Term Development Plan III, 2018-2022. Volume 1: Development planning framework and strategic priorities.* Port Moresby: Department of National Planning and Monitoring.

Department of National Planning and Monitoring. (2018b). *Papua New Guinea Medium Term Development Plan III, 2018-2022. Volume 2: Implementation framework and investment plan.* Port Moresby: Department of National Planning and Monitoring.

Dyson, T., & Moore, M. (1983). On kinship structure, female autonomy, and demographic behavior in India. *Population and Development Review, 9(1), 35-60.*

Filmer, D., & Pritchett, L. (2001). Estimating wealth effects without expenditure data-or tears: an application to educational enrollments in states of India. *Demography, 38(1)*, 115-132.

International Labour Organization. (2008). *Decent work indicators for Asia and the Pacific: a guidebook for policy-makers and researchers.* Bangkok: International Labour Office.

International Labour Organization. (2012). *International Standard Classification of Occupations (ISCO-08).* Geneva: International Labour Office.

International Labour Organization. (2013). *Report II. Statistics of work, employment and labour underutilization: Report for discussion at the 19th International Conference of Labour Statisticians.* Geneva: ILO.

International Labour Organization. (2015). *Global Employment Trends for Youth 2015. Scaling up investments in decent jobs for youth.* Geneva: International Labour Organization.

International Labour Organization. (2016). *Key Indicators of the Labour Market, Ninth edition.* Geneva: International Labour Office.

Jones, L., & McGavin, P. (2015). *Grappling afresh with labour resource challenges in Papua New Guinea – A Framework for Moving Forward*. Port Moresby: Institute of National Affairs.

Lutz, W., Butz, W., & Samir, K. (2010). *World population and human capital in the twenty-first century*. Oxford: Oxford University Press.

National Statistical Office. (2013). *Papua New Guinea 2011 National Report*. Port Moresby: National Statistical Office.

National Strategic Plan Taskforce. (2011). *Papua New Guinea Vision 2050*.

OECD. (2011). *How's Life?: Measuring well-being. http://dx.doi.org/10.1787/9789264121164-en*. OECD Publishing.

Ravallion, M. (2016). *The economics of poverty: history, measurement, and policy*. Oxford University Press.

Rutstein, S. (2008). *The DHS Wealth Index: Approaches for Rural and Urban Areas*. Calverton, Maryland: Macro International Inc.

Rutstein, S., & Johnson, K. (2004). *The DHS Wealth Index. DHS Comparative Reports No. 6*. Calverton, Maryland: ORC Macro.

UNDP. (2023, September 30). *Human Development Index (HDI)*. Retrieved from https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

United Nations. (2012). *Incheon Strategy to 'Make the Right Real' for Persons with Disabilities in Asia and the Pacific*. ST/ESCAP/2648. Bangkok: United Nations.

United Nations. (2019). *International migrant stock 2019. The 2019 revision*. New York: UNDESA.

United Nations, Department of Economic and Social Affairs. (2017). *Principles and Recommendations for Population and Housing Censuses. Rev. 3*. New York: United Nations.

Washington Group. (2010). *The Measurement of Disability: Recommendations for the 2010 Round of Censuses*. Washington Group on Disability Statistics.

World Bank. (2023, September 12). *World Development Indicators*. Retrieved from https://datatopics.worldbank.org/world-development-indicators/



PNGAus Partnership

UNFPA

A partnership between the National Government of Australia, UNFPA and the National Statistical Office