THE INEQUALITY DIAGNOSTIC REPORT: INDONESIA

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LPEM FEB UI Institute for Economic and Social Research

Table of Contents

List of Figures

List of Tables

List of Abbreviations

AC	:	Air Conditioners
ACEIR	:	African Centre of Excellence for Inequality Research
AFD	:	Agence Française de Développement
Bapedda	:	Regional Development Planning
Bappenas	:	The Ministry of National Development Planning
BOS	:	School Operational Assistance
BPS	:	Central Bureau of Statistics
DTKS	:	National Database for Social Welfare Programs
GDP	:	Gross Domestic Product
GE	:	General Entropy
ICLS	:	The International Conference of Labor Statisticians
ILO	:	International Labor Organization
ISCO	:	International Standard Classification of Occupations
JHT	:	Pension Plan
JKK	:	Worker Accident Insurance
UHC	:	Universal Health Coverage
JKN	:	National Health Insurance
Kanwil Agama	:	The Ministry of Religious Affairs
LFPR	:	Labor Force Participation Rate
LPEM FEB UI	:	Research Institute in Universitas Indonesia
LPG	:	Liquified Petroleum Gas
MA	:	Madrasah Aliyah
MCK	:	Communal bath wash and toilet
MI	:	Madrasah Ibthidaiyah
MoSA	:	Ministry of Social Affairs
MTs	:	Madrasah Tsanawiyah
OECD	:	The Organisation for Economic Co-operation and Development
PIP	:	Smart Indonesia Program
PKH	:	Family Hope Program
PKS	:	Prosperous Family Program
PLN	:	State-Owned Electricity Companies
PODES	:	Village Potential Data
p.p.	:	Percentage Point
RKP	:	Government Work Plan
RPJPM	:	National Medium Term Development Plan
RPJPN	:	National Long Term Development Plan
SAKERNAS	:	National Labor Force Survey
SD	:	Elementary School
SDGs	:	Sustainable Development Goals
SJSN	:	National Social Security System

SMA	:	Senior High School
SMK	:	Vocational School
SMP	:	Junior High School
SUSENAS	:	National Socioeconomic Survey
UC PCA	:	Uncentered Principal Component Analysis
WASH	:	Water, Sanitation, and Hygiene
WHO	:	World Health Organization
WWTP	:	Wastewater Treatment Plant

Preface

The Inequality Diagnostic Report for Indonesia provides a deep and comprehensive overview of the inequality situation in Indonesia, in line with development progress. The findings complement the information on inequality provided by the government. The information in this report can also serve as a further examination of the well-being of society and its environment, with relevant comparisons.

Various parties undoubtedly appreciate the Institute for Economic and Social Research, Faculty of Economics and Business, University of Indonesia (LPEM FEB UI) and the Agence Française de Développement (AFD) for offering a broader perspective on inequality. Consequently, the Indonesian government and the international community will also pay attention to the diagnostic results of inequality in Indonesia. In the future, this will impact more equitable development planning for the Indonesian people.

The diagnostic approach in this report considers various perspectives, not only looking at expenditure distribution but also various dimensions of inequality holistically. This approach, which takes into account diverse dimensions, helps provide a comprehensive profile of inequality in Indonesia and can be used as a basis for policy design to address horizontal (between subpopulations) and vertical (between individuals or communities) inequalities. The analysis in this report provides a deeper understanding of inequality in Indonesia.

Discussions related to labor market inequality, spatial inequality, gender-related issues, and other dimensions are well-elaborated in this report. Therefore, achievements and planning targets to be reached can be identified. The report indicates that Indonesia has made progress in reducing inequality in education and improving equal access to economic resources. Additionally, it addresses various challenges or issues related to inequality such as labor market inequality, spatial inequality, and gender-related issues.

This report utilizes data from surveys and censuses as the primary data source, including data from the Central Bureau of Statistics (BPS-Statistics Indonesia). Survey and census data from BPS during the period from 2010 to 2021 form the basis for conducting representative and statistically precise inequality analysis. Household and individual data used come from the National Socioeconomic Survey (SUSENAS) and the National Labor Force Survey (SAKERNAS). Furthermore, the report also utilizes Village Potential Data (PODES), which provides infrastructure data describing the accessibility of basic services in the lowest administrative areas of villages/urban wards.

In conclusion, The Inequality Diagnostic Report for Indonesia can be utilized as a crucial resource for policymakers and stakeholders. It can serve as support for evidence-based policy formulation and interventions. Moreover, policy targets related to inequality have become a government priority in the Government Work Plan (RKP), National Medium-Term Development Plan (RPJMN), and Sustainable Development Goals (SDGs), where all these targets need to be supported by empirical evidence. Therefore, the analyses in this report are highly significant in enriching the literature review to support comprehensive policy development. As input, it is hoped that this report can be thematically organized to enrich and refine the analysis of inequality issues in Indonesia, in line with the evolving issues of inequality and statistical methodologies.

Director of Social Resilience Statistics

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Acknowledgement

The Inequality Diagnostic Report for Indonesia was developed through a joint effort between the Central Bureau of Statistics (BPS-Statistics Indonesia), the Institute for Economic and Social Research, Faculty of Economics and Business, University of Indonesia (LPEM FEB UI), and the Agence Française de Développement (AFD). The framework used in our inequality measurement analysis draws from the Handbook on Inequality Measurement for Country Studies offered by the African Centre of Excellence for Inequality Research (ACEIR). The handbook provided essential technical and methodological guidance on computing inequality indicators and measures, aiming to empower other countries to undertake similar analysis endeavors.

Within BPS-Statistics Indonesia, special thanks are extended to the Social Resilience Statistics directorate for their invaluable support and guidance concerning the report sections that utilized data from SUSENAS, SAKERNAS, and PODES to examine inequalities in various aspects detailed in this report. Law Number 16 of the Year 1997 on Statistics mandates BPS-Statistics Indonesia to furnish statistical data and information on a national and regional scale, as well as to coordinate, integrate, synchronize, and standardize statistical activities. This law underscores the significant role of statistics in the planning, implementation, monitoring, and evaluation of diverse activities across societal, national, and state contexts within the framework of national development, reflecting the ideals of Pancasila. In pursuit of these goals, cooperation and coordination in statistics among institutions, agencies/departments, international organizations, foreign countries, and the general public are imperative to achieve integrated national statistical coordination. The partnership with AFD and LPEM FEB UI signifies BPS-Statistics Indonesia's strong commitment to leading statistical development coordination in Indonesia.

Extra appreciation goes to Emmanuel Fourmann and the rest of the AFD team. As a public institution implementing France’s development and international solidarity policies, AFD prioritizes development as one of France’s core pillars for external action, alongside diplomacy and defense. AFD's mission centers on contributing to the economic, social, and environmental progress of low and middle-income countries. Their initiatives aim to fund, support, and expedite transitions toward a fairer and more sustainable world, aligning with global frameworks such as the Sustainable Development Goals (SDGs). Since 2017, AFD has actively implemented the Research Facility for Inequalities, a fund entrusted to them by the European Commission’s Directorate for International Partnerships (INTPA).

We would like to extend our gratitude for the African Centre of Excellence for Inequality Research (ACEIR) for their assistance in providing technical assistance and training on multidimentional inequality measurements for LPEM team. Their assistanace allow us to provide a sharp and meaningful analysis on multidimentional inequality using Indonesia data.

LPEM FEB UI, a research institute within the Faculty of Economics and Business at the University of Indonesia, stands as the largest community of academic researchers in the university. With a history spanning over 60 years, LPEM FEB UI has emerged as one of Indonesia’s leading educational institutions. It actively contributes ideas through research, consulting, and education, driven by a robust research culture that involves applying theories to analyze, understand, and offer policy

recommendations. LPEM FEB UI focuses on policy-oriented research projects that provide crucial inputs to policymakers, spanning national, provincial, and regency/city level development planning, as well as operational policy formulation across various sectors.

The LPEM FEB UI team, under the leadership of Muhammad Hanri (Head of Social Protection and Labor Research Group), was responsible for the production of this report. The team included Andhika Putra Pratama, Calista Endrina Dewi, Utomo Noor Rachmanto, Muhammad Amin Rizky, and Lili Yunita. A heartfelt gratitude is extended to Faizal Rahmanto Moeis, Firli Wulansari Wahyuputri and Yoshua Caesar Justinus from LPEM FEB UI for their time and assistance during the completion of this report.

The photographs featured in this report were sourced from Unsplash (https://unsplash.com).

Executive Summary

Indonesia, as an archipelagic country with the world's fourth-largest population (more than 270 million inhabitants), has been experiencing a declining trend in inequality over the past decade. However, its inequality levels remain among the highest in comparison to neighboring nations. To ensure sustained economic growth, it is crucial to persistently address both individual-level (vertical) and sub-population-level (horizontal) inequality. Research has shown that persistent income disparities can adversely affect a country's future economic performance (Stiglitz, 2016).

Recognizing that inequality is a multidimensional issue impacting many facets of life, the Inequality Diagnostic Report for Indonesia goes beyond income distribution and delves into various dimensions of inequality, including the labor market, physical assets, social infrastructure (education and health), and physical infrastructure (connectivity, water, sanitation, and electricity). By examining these diverse aspects, we aim to gain a comprehensive understanding of the current state of inequality in Indonesia, which will provide valuable insights for policymakers to design targeted policy interventions and fostering a more inclusive society and sustainable economic growth.

In conducting the analysis, the report relies on official data from the BPS-Statistics, using datasets such as the National Socio-Economic Survey (SUSENAS), the National Labor Force Survey (SAKERNAS), and the Village Potential Data (PODES). Additionally, this report also uses other official data from other institutions, such as ministries and other ministerial-level agencies. Our analysis spanned household and individual levels from 2012 to 2021, with calculations conducted every three years (2012, 2015, 2018, and 2021).

Examining economic inequality, we observed that wealth inequality in Indonesia has been on a declining trend in the past decade. The Gini coefficient is down to 0,38 in 2020 after reaching a peak at 0,41 in 2013. It is consistent throughout various measurements, althogh remains higher than the surrounding countries (India, Thailand, Vietnam). We found that the inequality in Java is relatively wealthier than non-Java, it experiences higher levels of inequality. Similarly, by region status, inequality within the urban population is higher than within the rural population. It may indicate the presence of high-skilled urban incomes that coexisted in town with very low incomes from informal sector or rural-aligned standards.

Regarding labor market inequality, the unemployment rate experienced a temporary dip during the pandemic but is gradually returning to its pre-pandemic trend to around 6%. Notably, Java has a higher unemployment rate (7,5%) compared to non-Java (5.,2%), and urban areas show higher unemployment rates (8,3%) than rural areas (4,2%). Vocational graduates faced a higher rate of unemployment compared to other educational backgrounds, in a time when many government policies aimed at vocational education. Moreover, people in lower income quantiles have lower access to social insurance compared to those in higher income quantiles, with less than 30% of the population covered in the lowest 3 quintiles compared to 35% in the fourth and 72% in highest income quintile.

The report also delves into gender inequality, revealing nuanced patterns. Female household heads have higher mean and median expenditures, likely due to supporting more household members (high dependency). However, there is higher inequality within female-led households. Additionally, the

female labor force participation rate (LFPR) is lower, with only half of the women in the labour force compared to 80% for male, and women are predominantly engaged in informal sectors,with 64% of the women in the informal sector compared to 57% of the male. It indicates a lower job security and economic vulnerabilities for women.

In terms of physical assets inequality, Indonesia has witnessed declining inequality over time. However, in contrast to economic inequality findings, higher inequality in physical asset ownership is observed in non-Java and rural areas, reflecting disparities in access to tangible resources.

In the social assets aspect, education inequality in Indonesia shows both positive and negative trends. Enrollment rates for primary, secondary, and tertiary education have increased, while early childhood education enrollment has declined. Notably, the higher quintile has better access to preschool than the lower quintile. Health inequality analysis highlights a disparity in health insurance access, with higher quintiles having better access than lower quintiles. Additionally, it was noted that quintile 2 of the population (near-poor/vulnerable population) exhibits high smoking behavior, indicating potential health challenges within this group.

This report also examines the current state of physical infrastructure inequality in Indonesia. It points out improvement in digital access showed by a convergence in access by income deciles, although the rural-urban gap remains an issue in digital infrastructure services. In regards to the Water, Sanitation, and Hygiene (WASH) issues, the number of households with access to decent sanitation and drinking water has been improving, However, the geographical disparity remains with many remote areas lacking decent sanitation and drinking water. Access to electricity has improved and covers most regions in Indonesia. Only small, underdeveloped areas have lower access to electricity.

Spatial inequality is also a significant concern found in the report, with Java enjoying better wealth and infrastructure access compared to non-Java regions. Notably, the eastern part of Indonesia relatively lags behind in terms of infrastructure access, warranting targeted efforts for regional development.

This study recommends several policies to improve inequality in Indonesia, including: (1) Expanding basic services for households in lower quintiles through social assistance programs, which includes expanding existing programs and improving the effectiveness of the programs; (2) Facilitating formalization of economic activities, considering the share of the informal sector in Indonesia remains high, causing high vulnerability for workers, in particular, women, who largely work in informal sectors. The formalization will also help social programs penetration into informal sectors; (3) Fostering industrial development is crucial, as Indonesia has witnessed a process of deindustrialization, contributing to relatively stagnant economic growth. It may accelerate economic growth and absorb the demographic bonus of Indonesia.

Chapter 1

Introduction

1.1. General Background

Indonesia is a large developing country with the fourth-largest population in the world. It is where more than 270 million people reside as of the latest population census 2020 (BPS-Statistics Indonesia, 2023). Located near the equator in Southeast Asia, it features a large archipelago consisting of five main islands (Java, Sumatera, Kalimantan/Borneo, Sulawesi, and Papua) with more than 16,000 smaller islands. Its geographical features have distinguished Indonesia from other large developing countries like China, India, and Brazil, which predominantly have large, wide continents.

The unique characteristics of Indonesia provide many challenges in developing its economy. The high cost of transportation between islands and low logistic performance has hampered the growth of the Indonesian economy. On the other hand, Indonesia is considered a resource-rich economy in both agricultural land and mineral resources. It has, however, yet to lead to significant growth in the economy or its living standard. It caused a debate on the existence of 'Dutch Diseases' and the possible 'resource course' occurring in Indonesia (Pelzl & Poelhekke, 2021) which may have hindered the development of the Indonesian economy in the past.

Over the years, Indonesia's economic growth has benefitted mostly from high consumption in Java and several natural resource spots throughout the country (see Figure 1). The areas with high Regional GDP per capita are primarily urban areas in Java, Riau, and East Kalimantan, with their oil and gas production, and several spots in Sulawesi and Papua for their mineral resources. The GDP per capita, however, has been widely criticized as insufficient in measuring the standard of living (Stiglitz, Fitoussi, & Durand, 2018; Jones & Klenow, 2016) or even understanding the distribution of wealth.

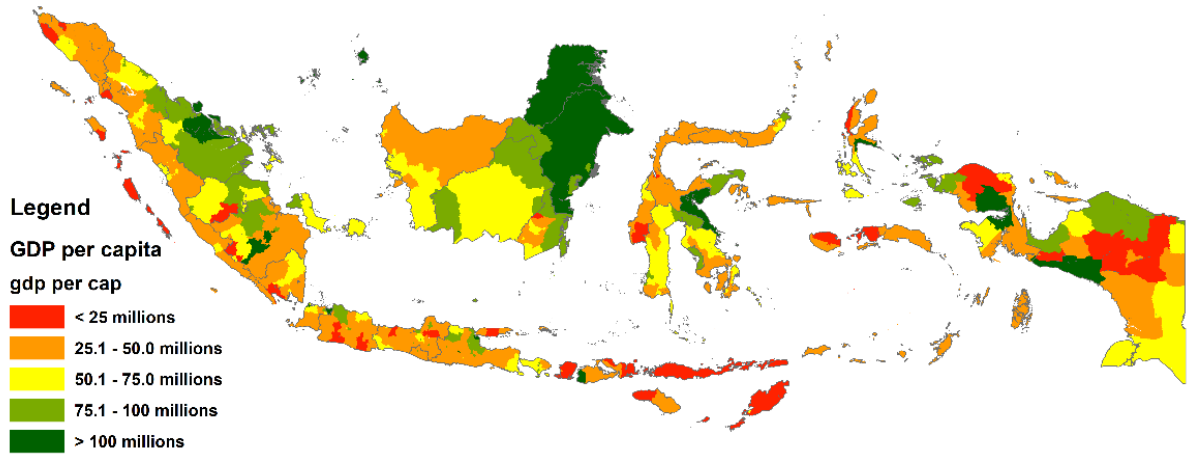


Figure 1. Nominal Per Capita Regional GDP by Regency/City, 2022 (Million IDR)
Source: BPS-Statistics Indonesia, author's calculation (2023)

Many studies have pointed out how inequality may slow Indonesia's economic growth and living standards (World Bank, 2015; Hill, 2021). Using historical Gini index data, Indonesia has been a low-inequality country since the pre-2000s. However, it increased from 0.295 in 2000 to 0.408 in 2013. In the last decade, the Gini index has improved slowly, although post-pandemic, the general trend has stagnated (see Figure 2). This study aims to provide a comprehensive profile of the state of inequality in Indonesia.

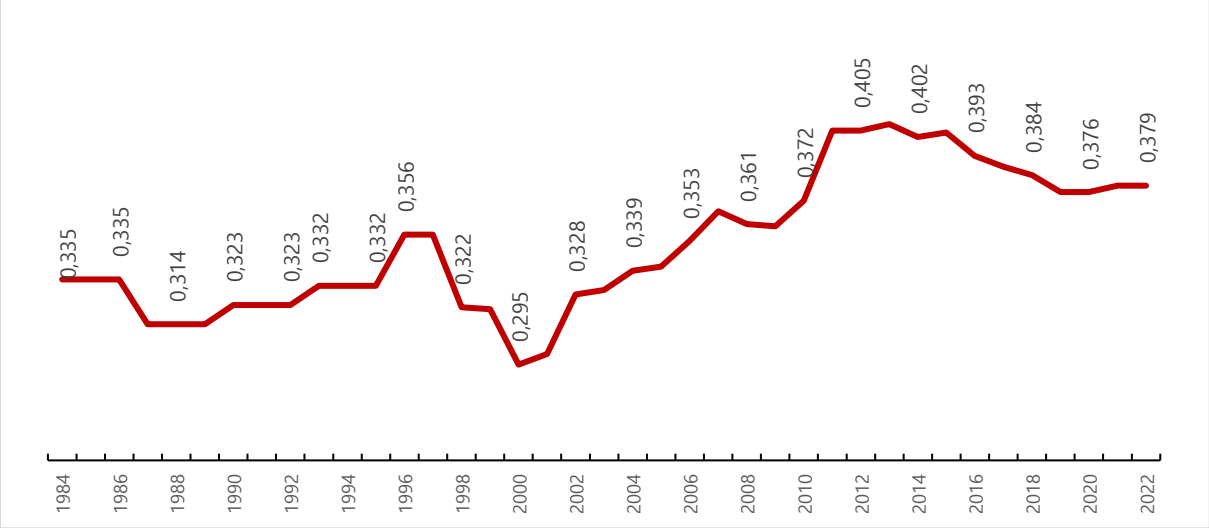


Figure 2. Historical Gini Index in Indonesia, 1984–2022

Source: World Bank (2023)

Similar trajctory of the Gini index not only occurred in Indonesia but also other developing countries with similar geographical and economic characteristics, like Vietnam, Thailand, India, and the Philippines. Among those countries, Indonesia's Gini index is worse than India's (0.345), Thailand's (0.351), and Vietnam's (0.368) and only better compared to the Philippines (0.407) (see Figure 3). This condition magnifies the importance of a more comprehensive analysis of inequality and its surrounding aspects related to the wealth and welfare of Indonesia's population.

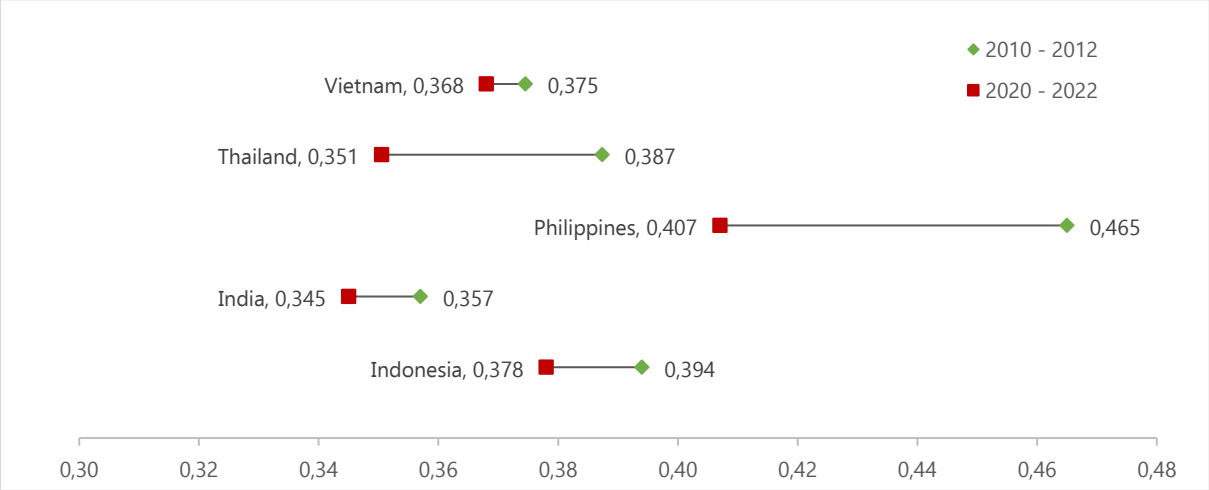


Figure 3. Gini Index by Selected Countries[1]

Source: World Bank (2023)

This study aims to provide a comprehensive analysis of inequality, starting from the historical development of inequality and several relevant policies to add more context to the evolution of inequality in Indonesia. Furthermore, this study presents the current state of inequality in Indonesia, not only from an economic aspect (expenditure and wage) but also from other multidimensional aspects

[1] We use average Gini index in 2010–2012 and 2020–2022 since many countries have different period of missing data of gini index throughout the years.

such as the labor market, physical assets, social infrastructure (education and health), physical infrastructure (connectivity, water, sanitation, and electricity), gender, and spatial aspects of inequality.

1.2. Literature Review

Inequality is one of the major issue that has become a collective target worldwide. The target of reducing inequalities, both within and among countries, is a part of the Sustainable Development Goals (SDGs) agenda for 2030 (SDG number 10). Indonesia has set a target of a Gini ratio from 0.384 in 2019 to 0.36 by 2024 in the national medium-term development planning (RPJMN) 2020–2024. This target shows a high commitment from the Indonesian government to improve Indonesians' welfare distribution. Lowering a nation's inequality is not only the desirable outcome for the government but also a necessary condition to achieve sustainable growth in the future.

Many studies have documented the potential adverse effect of high inequality on economic growth in developing countries (Mdingi & Ho, 2021; Barro, 2000) . There are several channels through which a high level of inequality may affect a nation's economy. For instance, it reduces social cohesion in society, which may lead to people engaging in strikes, criminalities, and various unproductive activities that hamper economic growth (Mdingi & Ho, 2021). In an unequal society, the rich group may affect political decisions within the government institutions to create policies that are biased towards the group. It could potentially lead to poor policies and political instability that affects economic growth (Sonin, 2003; Hoff & Stiglitz, 2004).

Other studies have mentioned how inequality may affect economic growth, whether in the form of a lack of access to financial institutions, lower saving, and investment (Seo, HansSung, & Young, 2020 ; Madsen, Islam, & Doucouliagos, 2018). Higher inequality may also limit access to social capital investment and may result in lower number of educated people, higher fertility rates, and lower productivity in the economy that subsequently hampers economic growth (Berg, Ostry, Tsangarides, & Yakhshilikov, 2018; Gründler & Scheuermeyer, 2015).

In Indonesia, a study by the World Bank (2015) has identified four main root causes of income inequality. First, the inequality of opportunity, in particular for poorer children who have little to no access to basic necessities due to factors outside their control. For example, children in poorer households have a higher chance of stunting or a lower chance of enrolling in school. Second, unequal access to jobs where lower income households tend to be trapped in low-productivity, informal, and low-wage jobs. Other reasons include high wealth concentration in high-income households and low resiliency to shocks for poorer households.

Inequality in Indonesia is also a result of government policies or the absence of policies (Hill, 2021; World Bank, 2015). A highly regulated labor market in the formal sector and unregulated informal sectors has caused disparity in wages between two markets that lead to inequality. Government interventions also, in some cases, have sometimes not been well-targeted, for instance, the petroleum and electricity subsidies that favor upper-middle incomes rather than poorer households.

A persistent gap in income distribution will affect the country's economic performance in the future (Stiglitz, 2016). As such, the effort to reduce inequality both among individuals (vertical inequality) and between sub-populations (horizontal inequality) should be maintained to give incentive for the economy to grow continually. The first step to overcoming the high inequality rate is to comprehensively examine the state of inequality, including the multidimensional aspect of inequality, beyond income distribution. Our study takes this approach and thus offers more insights and a comprehensive analysis of inequality that may inspire more inclusive policies for the government of Indonesia.

Studies on inequality in Indonesia have mainly focused on economic inequality. These studies centered around understanding the main drivers of economic inequality (World Bank, 2015), decomposing income inequality (Wicaksono, Amir, & Nugroho, 2017), and exploring how the dynamics of inequality in the past shaped the current condition of inequality (Hill, 2021; Leigh & van der Eng, 2009). Other studies are considered to be more thematical, examining inequality and various socio-economic outcomes, including economic growth and unemployment (Yunma, Rakhmadi, Hidayat, Gultom, & Suryahadi, 2015), human capital (Thye, Law, & Trinugroho, 2022), digital infrastructure (Sujarwoto & Tampubolon, 2016), land-use change (Dinb, Alamsyah, & Qaim, 2018), and even environmental condition (Kusumawardani & Dewi, 2020).

Studies capturing the multidimensional aspect of welfare in Indonesia have mostly focused on poverty (Hanandita & Tampubolon, 2016; Prakarsa, 2015; Puspa Artha & Dartanto, 2018; Sumarto & De Silva, 2014). It enhances the importance of this Inequality Diagnostic Research position among academicians and policymakers. Through this report, inequality is assessed not only in the aspect of economics but also in other aspects, from labor market, physical assets, social infrastructure (education and health), physical infrastructure (connectivity, water, sanitation, and electricity), gender, and spatial aspects of inequality, in the hope that there will be a general conclusion of how the dynamics between them in the last decade and how to improve such condition in the future.

1.3. Profile of Indonesian Economy

Before examining the state of inequality, this section provides a general context for understanding Indonesia as a nation and its current state of economy. This section presents three main backgrounds of the Indonesian economy, including the general size and growth of the economy, demographic, and geographical context of Indonesia.

1.3.1. Macroeconomic Indicators

In the last two decades, Indonesia has put a steady economic growth of 5-6% per year aside from the COVID- impacted years. Similarly, real GDP per capita has grown positively by approximately 3.5% per year (see Figure 4). During this period, the economy passed two economic shocks, including the US-led financial crisis 2008 and the COVID-19 pandemic in 2020-2021. During the 2008 financial crisis, the impact on the Indonesian economy was relatively small, slowing economic growth from 6%

to 4.6% per year. The pandemic year, however, has corrected the economy up to -2.1% in a year before slowly crawling back to 3.7 and 5.3% in 2021 and 2022.

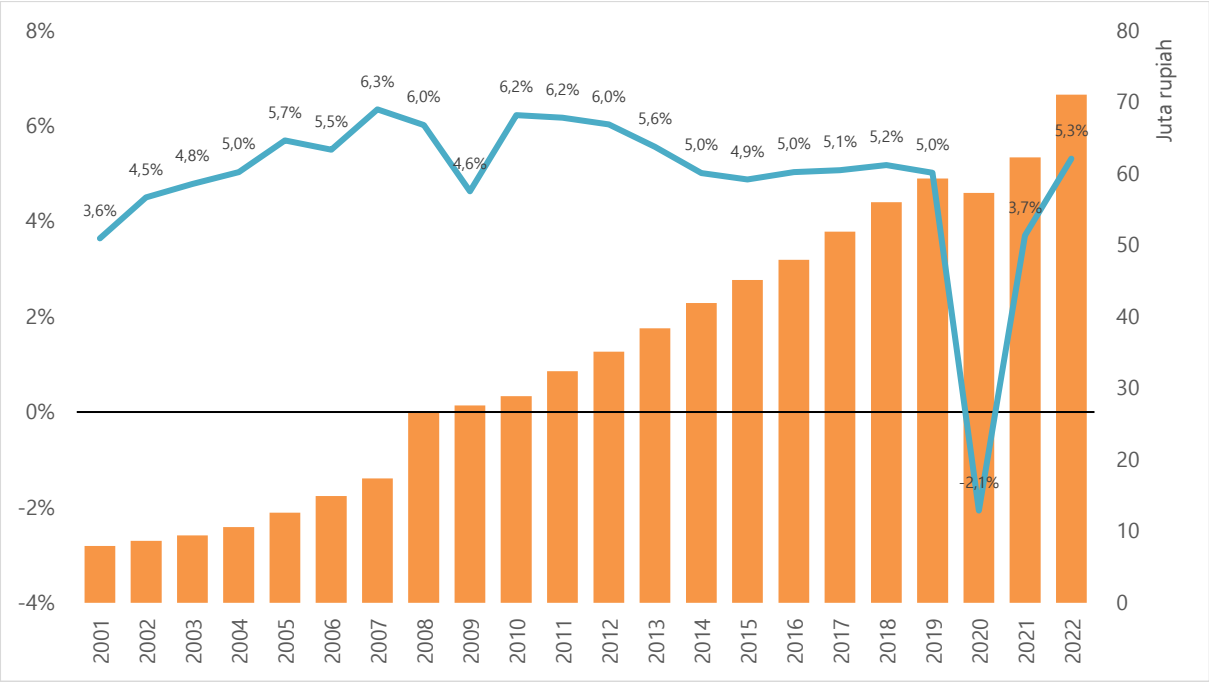


Figure 4. GDP per Capita and GDP Growth Indonesia, 2001–2022

Source: BPS-Statistics Indonesia (2023)

As an emerging market, Indonesia has been boosted by consumption from its large population. It has helped maintain economic growth of around 5% in the last two decades. However, compared to other countries in Southeast and South Asia, Indonesia's economic growth has not been as strong as the others, especially in the last decade. Indonesia's economic growth, excluding the pandemic year, is considered slower compared to the likes of India and Vietnam, although faster than Thailand (see Figure 5).

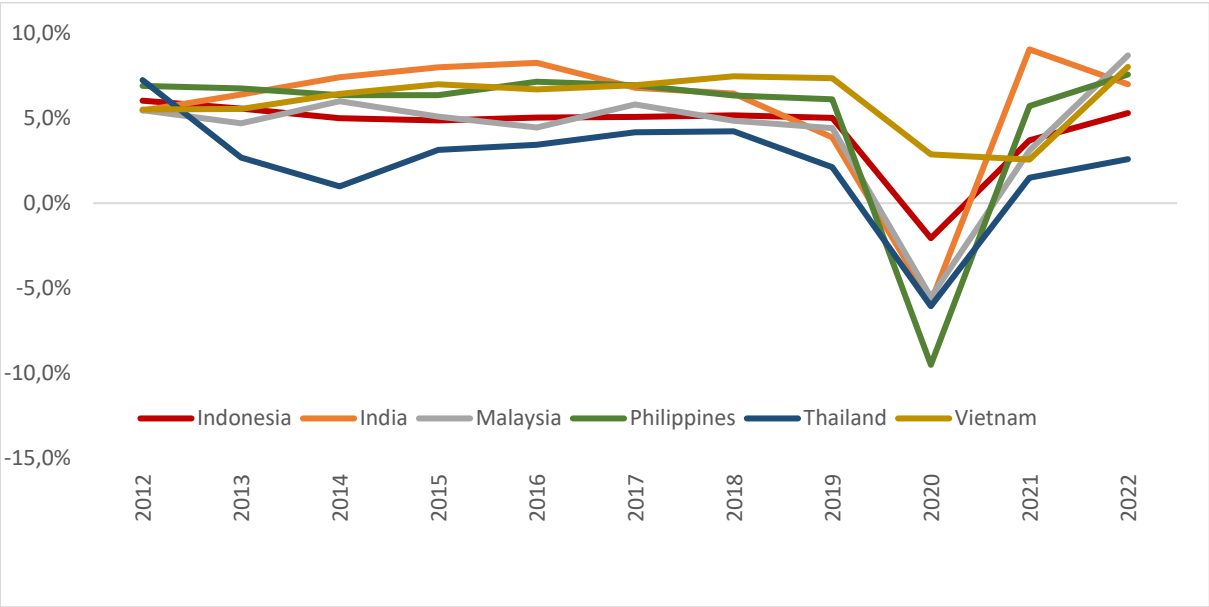


Figure 5. GDP Growth Compared to Countries with Similar Characteristics

Source: World Bank (2023)

The manufacturing sector has the highest share of GDP in the Indonesian economy. In 2022, this sector contributes to 19.2% of the total economy. The manufacturing sector is more specifically driven by the oil and gas manufacturing products. It is followed by four other sectors, of which each held around 13% of the share in the economy, such as non-financial services (13.8%), trade (13.4%), agriculture (13%), and mining and quarrying (12.8%).

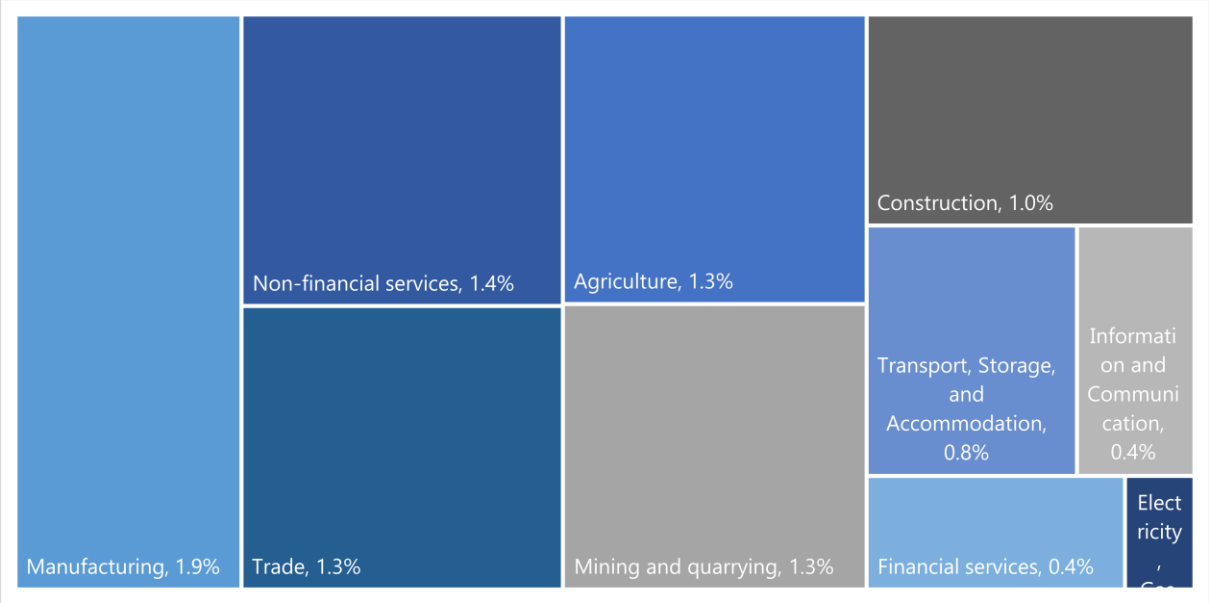


Figure 6. Indonesia's Sectoral GDP 2022
Source: BPS-Statistics Indonesia (2023)

The share manufacturing sector, however, has shrunk in the last decade. In 2012, the share of the manufacturing sector was around 21.9% before it fell to 19.2% in 2022. A similar condition occurred in the agriculture sector, which fell 0.7% in the last ten years. The economy's structure is shifted towards the services sector, including the transport, storage, and accommodation, the information and communication sector, and the financial services, all of which experienced an increase in share from 0.5 to 1.1%. Indonesia's economy is also more heavily reliant on mining and quarrying, whose growth increased by 0.9% in the last ten years (see Figure 7).

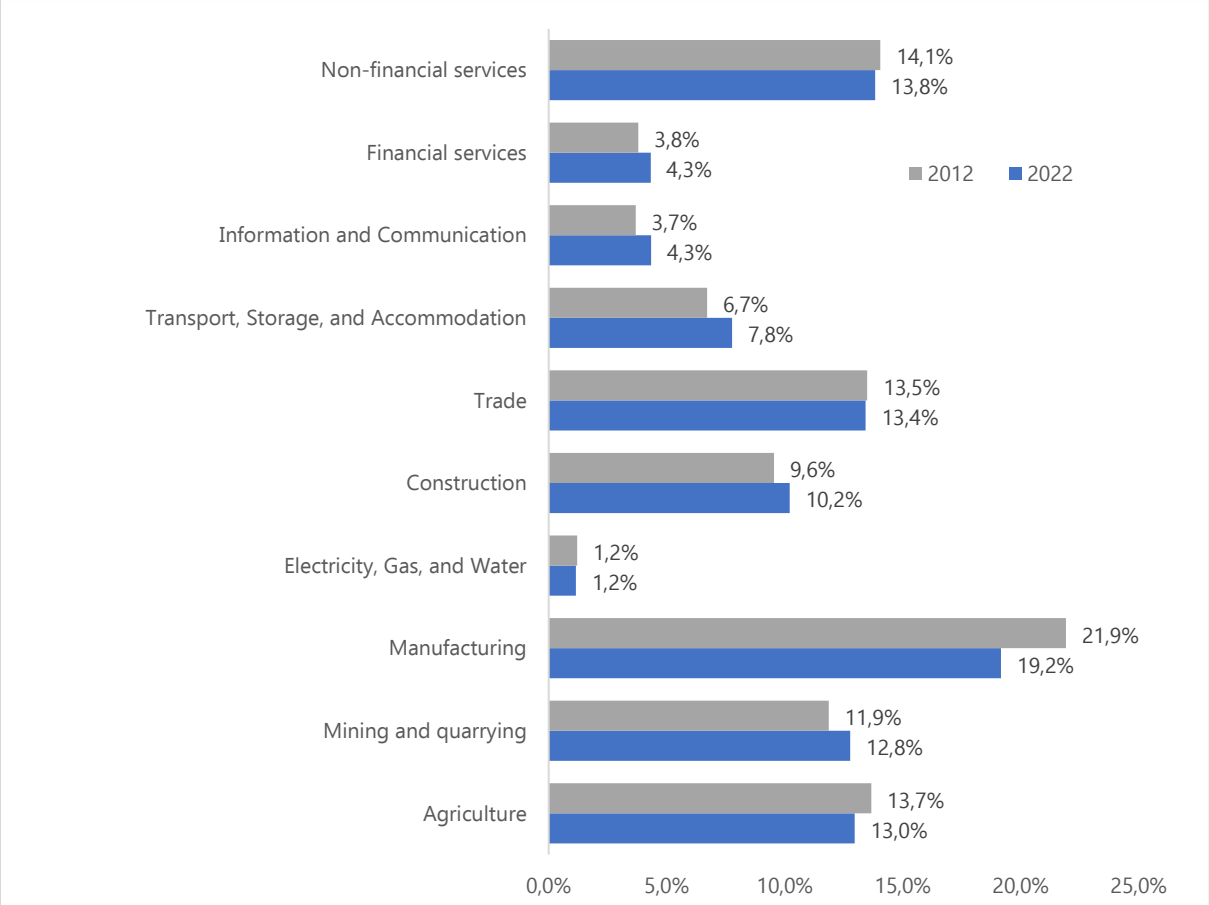


Figure 7. Indonesia's Economic Structure
Source: BPS-Statistics Indonesia (2023)

1.3.2. Demographic Indicators

In a demographic context, Indonesia is the fourth most populous country in the world, below India, China, and the United States. Indonesia's population is recorded at 275.5 million people as of 2022, with more than 145 million of them living on Java Island, causing it to be the most populated island in the world.

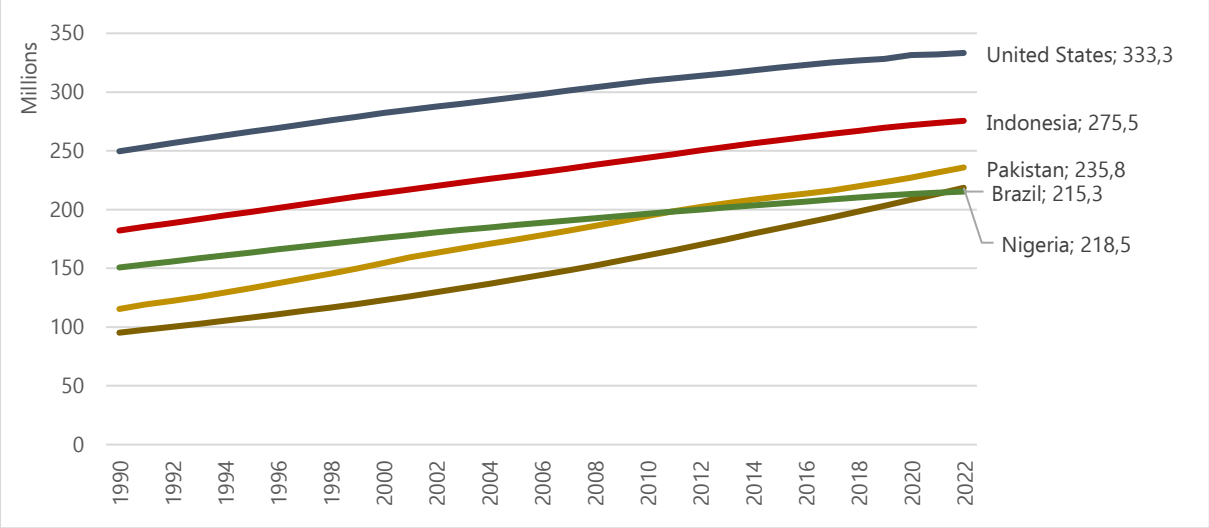


Figure 8. Population by Countries, 1990–2019

Source: World Bank (2023)

The 2010 Indonesian population pyramid displays a large population in the young age band due to the many individuals aged 0–14 years, indicating an expansive population pyramid. In contrast, the 2020 Indonesian population pyramid reveals an increasing middle and upper part of the pyramid, while the lower part of the pyramid has noticeably contracted, indicating a more constrictive population pyramid. This situation signifies a crucial demographic trend: Indonesia is witnessing a growing working-age population (individuals aged 15 and above). This demographic shift lays the foundation for our exploration of labor market inequality.

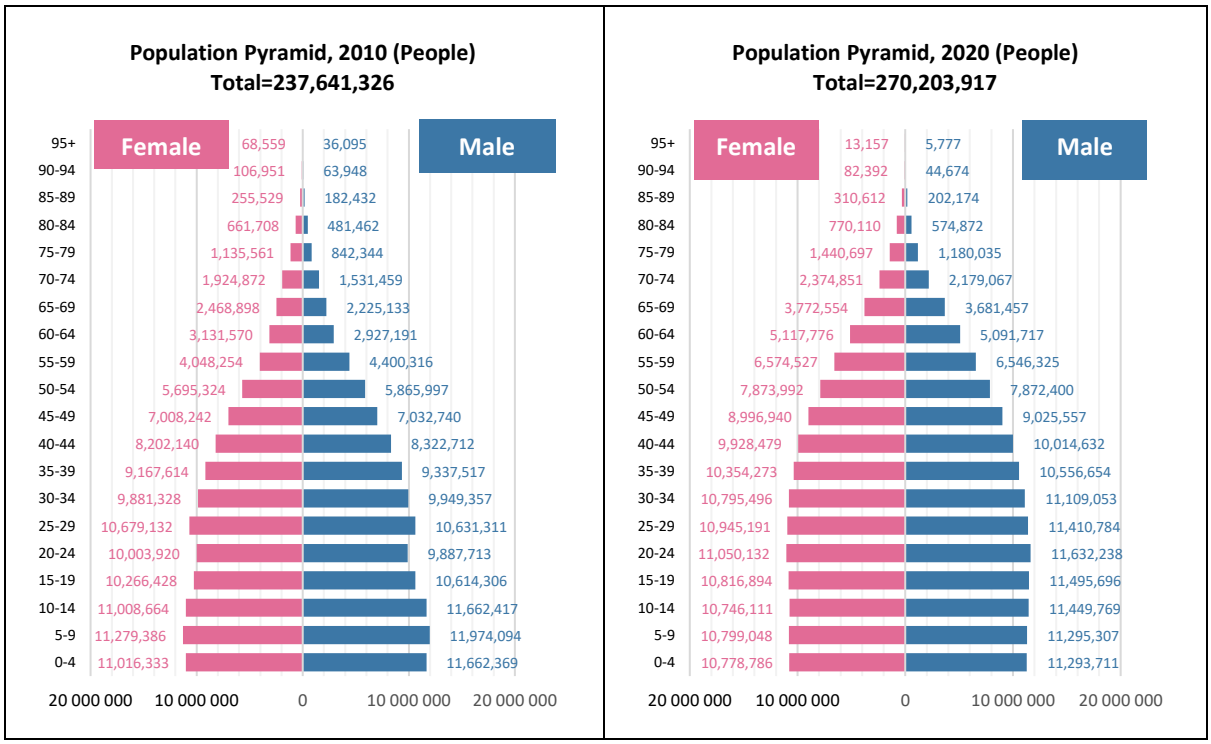


Figure 9. Population Pyramid, 2010-2020 (People)

Source: Indonesian Census (2023)

In the last decade, Indonesia has been making progress in reducing poverty. The headcount poverty index declined from 12.36% in 2011 to as low as 9.22% in 2019 before increasing during the COVID-19 pandemic as most economic activities were hampered by mobility restrictions (see Figure 10). As economies recover, the percentage of poor people also starts to decline again to 9.57% in 2022. The number of poor people in absolute number will also be smaller in 2022 compared to in 2011. In 2011, the number of poor people was around 29.89 million people, while in 2022, the number of poor people is 26.36 million people.

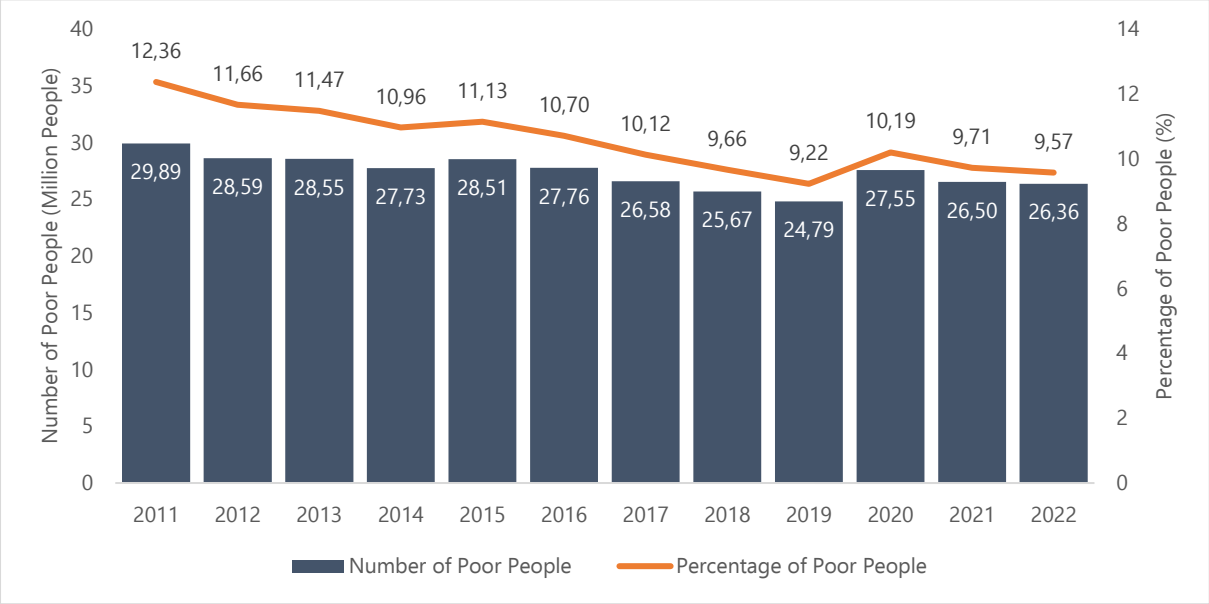


Figure 10. Historical Poverty in Indonesia, 2011-2022
Source: BPS-Statistics Indonesia (2023)

1.3.3. Geographical Context

The geographical location is also important in understanding the development of Indonesia as a country. As an archipelagic country, Indonesia is comprised of five main islands, with thousands of smaller islands between them. The population of Indonesia is scattered mostly in the coastal area of islands where most urban area is located (see Figure 11). The red highlighted area shows how urban areas in Indonesia are located within the archipelago. The largest metropolitan area, Jakarta, is located in the northern part of the western side of Java islands. It is the largest business city in Indonesia and also one of the megacities in the world.

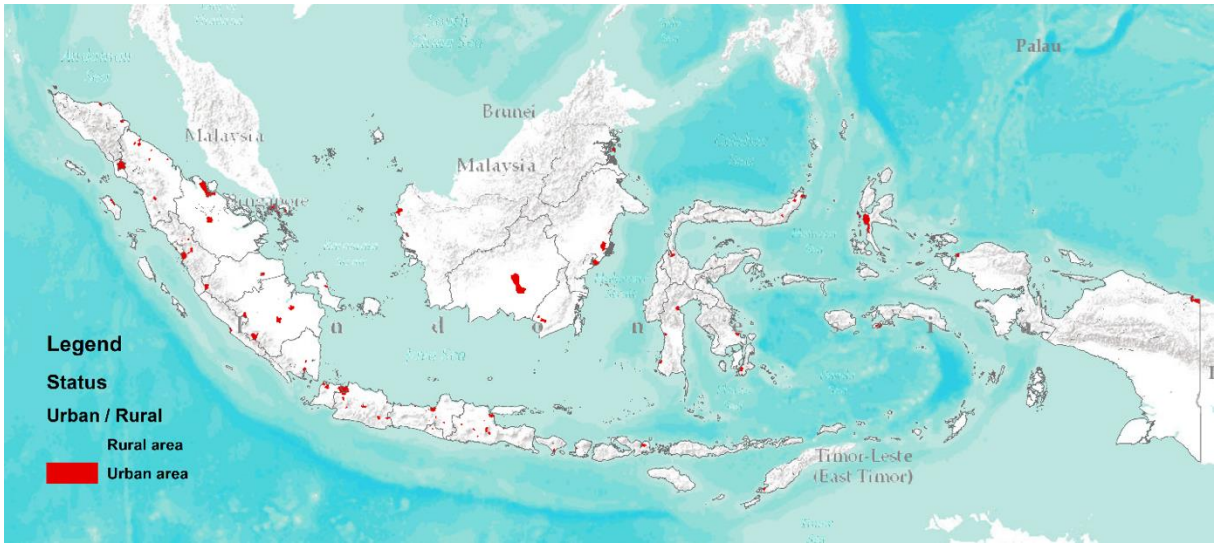


Figure 11. Geographical Context of Indonesia.
Source: BPS-Statistics Indonesia (2023) and ESRI (2023)

1.4. Structure of The Report

This report consists of five chapters. Chapter 1 provides the motivation for the report and its structure. Chapter 2 reviews several policies by the Indonesian government that were implemented in order to reduce inequality. We list several programs, from the 12-Year Compulsory Education to Non-Cash Food Assistance and provide an overview of how they were implemented over the years. Chapter 3 presents the data and metadata used in the report, including the details on the computation of various indicators of inequality. Our main findings and analysis are compiled in Chapter 4, where we break down the inequality figures in Indonesia, including income distribution, the labor market, physical assets, social infrastructure (education and health), physical infrastructure (connectivity, water, sanitation, and electricity), and gender. Chapter 5 will summarize the results, policy recommendations, and way forward.

Chapter 2

Policy Review

In Indonesia, the system makes sure that the development planning at the central and local levels is integrated through a set of planning documents, i.e., long-term development planning (RPJPN), medium-term planning (RPJMN), and short-term development planning (RKP). The process itself is a combination of top-down and bottom-up planning conducted by National Development Planning (Bappenas) at the national level, and Regional Development Planning (Bappeda) at the regional level.

The development trajectory presented in the long-term national planning document 2005-2025 *(RPJPN) 2005-2025*, was set in eight visions of development. The most related to economic development is in the fifth vision for equality in development and equitable and just development. An equal and fair development is directed toward local development, narrowing the social gap, embracing minority groups, less developed regions, and drastically reducing poverty and unemployment rates, equal access to social facilities and economic infrastructures, and eliminating all kinds of discrimination.

The Indonesia Vision 2045 in the development of human resources highlights demographic governance, poverty elimination, social protection, health, education, and the quality of children, youth, and women in the strategy for basic services and social protection. The human resources development indicators in 2024 are ownership of administrative identification by all populations, i.e. identity card number, birth certificate, divorce registration, mortality registration, and the causes, 98% of the population coverage of social protection, mother mortality by 183 of 100,000 live birth, 9.18 years of average school period for the population above 15 years, ownership of productive assets by 40% of population below and near the poverty line (poor and vulnerable), Children Protection Index by 73.49, and Youth Development Index by 57.67.

This section aims to identify several policies conducted by the Government of Indonesia (GoI) to improve the state of inequality in the last few years. These policies include a specific policy to improve distributional wealth and policies aimed at providing basic services, such as educational and health programs, to induce upward mobility in society.

2.1. The 12-Year Compulsory Education Program

This program is mandated by Law No.20 the Year 2013 about the National Education System. The Law regulates the education system by classifying education as formal, non-formal, and informal education. While formal education is provided in school as a structural education and tiered as three levels of basic, middle, and higher, non-formal education is provided in institutions other than the formal institution without compulsory structure and level. Moreover, informal education is education obtained in the family and community. Basic education in Indonesia is education provided for children aged 7–15 years so that it reaches the first middle school (*Sekolah Dasar (SD)/Madrasah Ibthidaiyah* (MI)– *Sekolah Menengah Pertama (SMP) /Madrasah Tsanawiyah (MTs)* or other equal level. Middle education level is defined as the continuation of basic education consisting of general secondary middle school/SMA/Madrasah Aliyah (MA), or vocational school/SMK/vocational Madrasah Aliyah/. Since the Law enacted *Wajib Belajar* to start at 6 years old, the twelve-year compulsory education is the requirement to meet basic education and the first level of middle education. *Wajib Belajar* is further regulated in Government Regulation No.47 Year 2008 About Compulsory Education.

By Law No.23 Year 2014 about Local Governance, education is the authority of local government. This compulsory basic education is the responsibility of central and local government. While the provincial government is responsible for the second level of middle education, i.e., SMA and SMK, the regency/city government is responsible for the basic education SD/MI and SMP/MTs. The Ministry of Religious Affairs is responsible for basic and middle education through its Regional Offices *(Kanwil Agama)*.

2.2. Program Indonesia Pintar (PIP)/Smart Indonesia Program

Program Indonesia Pintar (PIP) or Smart Indonesia Program is an education program targeting the population at the age of 6 to 21 years, i.e., the school up to college age, by providing cash, education access, and education opportunities for the poor population group or vulnerably poor group. The program is designed to avoid and reduce the school drop-out rate of middle school, i.e., senior high school, vocational high school, A to C education package, or special education.

The PIP as a flagship education program started in 2015. Throughout the implementation, the government has modified the types of targeted beneficiaries. However, similar criteria used for the program is that the beneficiaries are (i) student from a member of the family in *Program Keluarga Harapan (PKH)*, (ii) students from a member of *Program Keluarga Sejahtera (PKS)*, (iii) orphan students, (iv) students affected by natural disasters, (v) drop out students expected to continue school. The program beneficiaries should be enlisted in the educational institution.

Elementary students from poor families receive as much as IDR450.000 per year allocated to be spent on school necessities. The number is higher for junior-high elementary students (IDR500.000/year) and senior-high students (IDR1.000.000/year). As a comparison, the 2023 national poverty line is IDR550,458/capita/month. In several regions, they added additional cash or non-cash transfer on top of the PIP allocation, although it is not obligatory for every province. The total budget for the PIP program in 2022 is IDR9.6 trillion (EUR570 million)

2.3. Bantuan Operasional Sekolah (BOS)/School Operational Assistance

Bantuan Operasional Sekolah (BOS) or School Operational Assistance is a program providing supporting operational funds for schools. The government started this program in 2005 with the goal of providing assistance for schools by eliminating school fees while maintaining the quality of education quality for the public. In 2006, the program explicitly added poor students as a target population with the aim to meet the quality of education and graduate with nine-year compulsory education. In 2013, the government expanded the target of BOS beneficiaries to secondary schools to meet the twelve-year compulsory education.

The study by the World Bank (2015) on a decade of implementation of BOS shows a positive impact of BOS in improving education outcomes by reducing the burden of education costs faced by households in primary education (elementary and first junior high school), improving participation of

education, and supporting school-based management. These results are encouraging for continued support of the program. The report recommends BOS improvement by linking the program with the education standards such as student unit cost, providing an eligible menu for fund use, carrying out a periodic adjustment of operating cost standards to cover price differences and inflation at the regional level, grabbing information from schools out of pocket expenses and closely coordinating with the local government to get information about local school grants and strengthening the school committee.

Due to variations in geographical conditions, availability of human resources, and supply of goods across Indonesia, the government has developed an index that calculates the standardized BOS at the regency/city level based on different costs of construction in each regency/city. The total budget allocated for BOS in 2022 is IDR53 trillion (EUR3.1 billion)

2.4. Jaminan Kesehatan Nasional (JKN)/Universal Health Coverage

The Jaminan Kesehatan National (JKN) Program was started in January 2014 as the implementation of Sistem Jaminan Sosial National (SJSN)/National Social Insurance System as mandated by Law No. 40 Year 2004 about SJSN for the government providing health insurance for the people and Law No. 36 Year 2009 about Health for the equal access and services to health. It is delivered by Badan Penyelenggara Jaminan Kesehatan (BPJS Kesehatan) a public institution that carries out health program insurance.

JKN Program is aimed to provide universal health coverage for people. JKN is mandatory, meaning every citizen of Indonesia has to be enrolled in the program. The participants are classified into two groups: (i) *Penerima Bantuan Iuran* (PBI) participants consist of poor and vulnerable households in which the Government will pay for their health insurance premium, and (ii) non-PBI participants, in which they will pay for their own health insurance premium. For the latter, the premium varies from IDR35,000 to IDR150,000 /month. As a comparison, the 2023 national poverty line is IDR550,458/capita/month. The total expenditure of JKN programs in 2022 is more than IDR113.5 trillion (EUR6.7 billion).

Similar to other social programs for poor and vulnerable households, the PBI recipient is also selected through the National Database for Social Welfare Programs (DTKS), which consists of families that are entitled to all social programs. The data is updated twice a year coordinated by the Ministry of Social Affairs (MoSA). JKN Program provides a comprehensive medical service through leveling in health facilities and by procedures. In the first/basic health facilities, the benefit covers non-specialistic health services such as medical check-ups, consultations, medication and blood transfusions, laboratory diagnostics, and in-patient health services. To use the advanced health facilities, a patient needs a reference from the first/basic health facilities.

2.5. Energy Subsidy Programs for LPG and Electricity

The energy subsidy Program has been long provided by the GoI as it is the obligation of the government regulated by Law No. 30 Year 2007 about Energy. According to the Law, it is mandatory for central and local governments to allocate subsidy funds for families with a household capacity below 450 VA. This type of consumer pays electricity below the normal price, and the government pays the margins directly to the State-Owned Electricity Companies (PLN) as a cash-flow subsidy.

In 2004, the government started to subsidize electricity prices for which the operational price is lower than the consumer price. This has caused an expansion in the number of beneficiaries and increased the subsidy. Starting with 2014, the government has modified the policy subsidy by targeting the group with tariff increases or decreases and subsidy removal. During 2017-2020, the subsidy left was only for household customers of 900VA listed as poor in DTKS and 450VA. From 2021 to the present, the subsidy has been for the 450VA household customers.

The subsidy for 3 kg LPG used by households has started in 2008 when the government converted the use of kerosene into LPG to reduce the large kerosene subsidy. However, within more than a decade, the amount of subsidy has increased largely due to the expansion of conversion regions, growth of consumption, and the fixed LPG price. Therefore, in the last three years, the government started to reform the 3 kg LPG subsidy by changing the distribution channel, the purchasing mechanism by households, and setting the ceiling price. At the end of 2022, the government put on trial for buying LPG needs to show an ID Card to be matched with the database at the supplier level. The digitalization of buyers and DTKS continues to 2023 as preparation for the subsidized LPG sold to households listed in DTKS in 2024.

2.6. Program Keluarga Harapan (PKH)/Family Hope Programs

The Family Hope Program (Program Keluarga Harapan/PKH) is a conditional social assistance program dedicated to poor households as beneficiaries. The program gives cash assistance to underprivileged families conditional to their utilization of basic social services, such as health and education. For example, in health services, pregnant women and families with children need to check their pregnancy and children at the nearest health facilities to get the conditional benefit assigned to them. Similarly, children have to enroll and go to school in order for their families to receive the assistance benefit assigned to education output.

The amount of benefit is different for each designated output for PKH beneficiaries. Students were able to receive IDR900.000 to IDR2.000.000 annually if they completed the conditions related to educational output. Pregnant women may receive up to IDR3.000.000 per year, while elderly people and disable person may receive IDR2.400.000 per year. As a comparison, the 2023 national poverty line is IDR550,458/capita/month. The total budget of PKH program in 2023 is IDR28.7 trillion.

2.7. Bantuan Pangan Non-Tunai (BPNT)/Non-Cash Food Assistance

The non-cash food assistance is the evolution of RASKIN/RASTRA programs. The RASKIN program was first introduced in 1998 after the Asian financial crisis, at a time when food prices escalated during the crisis. The program is set in the form of giving free rice (beras) to underprivileged families. In 2017, the RASKIN/RASTRA programs evolved to BPNT with various modifications, particularly in delivering the programs. In the current scheme, families receive e-card that they are able to use to buy food from certain merchants in cooperation with the central government. In 2023, the budget for BPNT reached as many as IDR45.1 trillion for around 18.8 million households.

Chapter 3

Data and Methodology

This report uses the official data from Central Bureau of Statistics (BPS-Statistics Indonesia) to measure various inequality indicators. In measuring expenditure distribution and socio-economic indicators, we use National Socio-Economic Survey (SUSENAS) from 2012 to 2021, the latest available data published by BPS-Statistics Indonesia. Similarly, this report uses the National Labor Force Survey (SAKERNAS) to obtain indicators related to labor market outcomes. Datasets from both SUSENAS and SAKERNAS are collected on household and individual levels. Our default analysis produces the calculation every three years (2012, 2015, 2018, and 2021). When indicators were only collected in the last few years, this report will adjust the presented figures into annual or bi-annual figures depending on the context for each indicator.

In addition, this report also utilizes the Village Potential Data (PODES), which provides infrastructure data on the village level. This data is collected three times every ten years. We employ this data to measure several infrastructure indicators related to education, health, and connectivity infrastructure. This report also uses other official data from other institutions, such as ministries and other ministerial-level agencies.

3.1. The National Socio-Economic Survey (SUSENAS)

The National Socio-Economic Survey is designed to collect socio-economic data from a large population sample in Indonesia. The survey started in 1963 as an annual survey to measure the consumption level and demographic characteristics of the population in Indonesia. The survey is then evolving into twice a year survey produced every March and September. The datasets collected in March are available up to the province level with a sample of more than 75.000 households. The September issue samples more than 320.000 households and can be estimated up to the regency/city level. The September issue samples more than 320.000 households and can be estimated up to the regency/city level. Table 1 contains information about the evolution of SUSENAS data over the years.

In general, SUSENAS has two main questionnaire modules, the core, and the consumption module. The core module provides basic social and demographic characteristics of individuals, including, gender, age, marital status, education level, health status, housing, water and sanitation status, internet usage, etc. The consumption module provides a thorough breakdown of household expenditure on food and non-food consumption. Since 2011, the consumption module has been collected annually along with the core module.

In addition to core and consumption modules, SUSENAS has additional modules that alternate every three years. This additional module produces a more detailed question on certain topics. For instance, the social, culture, and education module is available in 2012, 2015, 2018, and 2021, while the social resilience module is available in 2014, 2017, and 2020, and the health and housing module is available in 2019. The nature of SUSENAS data is not longitudinal, meaning it surveys different households in different editions. The latest panel data in SUSENAS are collected from 2011 up to 2013, where households interviewed on those editions are the same over the years. Due to the lack of recent panel data, we will not be using the panel dimension of SUSENAS.

Table 1. The Evolution of SUSENAS data

Year	Frequency	Power of Estimate	Total Sample	Data Collected	Other Modules
1963	Yearly	Java	± 16,000 HH	Demographics and Consumption	-
1964-1992	Yearly	Province	± 65,000 HH	Core & Non-Module	-
1993-2010	Yearly	Regency/City	200,000–300,000 HH	Core and Module	-
2011-2014	Quarterly (March, June, September, December)	Regency/City (Cumulative Four Quarters) & Province (Every Quarter)	300,000 HH	Core and Consumption Module	Alternate every 3 years: Social, Culture and Education Module & Housing and Health Module
2015-2021	Semester (March and September)	Regency/City (March) and Province (September)	75,000–320,000 HH	Core and Consumption Module	Alternate every 3 years: Social, Culture and Education Module, Housing and Health Module, and Social Resilience Module

Source: BPS-Statistics Indonesia (2022)

3.2. The National Labor Force Survey (SAKERNAS)

The National Labor Force Survey (SAKERNAS) is designed to collect the general condition of employment in Indonesia. The structure of the question is prepared to several core employment characteristics, including, the number of working populations, unemployment rate, and other various employment indicators. The survey started in 1976 with a sample of 71.550 households and can be estimated up to the provincial level.

SAKERNAS uses the Standard Labor Force Concept initiated by the International Conference of Labor Statisticians (ICLS) and endorsed by the International Labor Organization (ILO), Over the years, BPS-Statistics Indonesia has modified the structure of its questionnaires to accommodate changes and additional information to be collected according to the latest ICLS. The latest edition of SAKERNAS adopts the labor force concept from ICLS 20.

Table 2. The Evolution of SAKERNAS

Year	Frequency	Power of Estimate	Total Sample
1976-1978, 1982 (not periodic)	1976 (September-December) 1977-1978 and 1982 (Quarterly)	Province (Excluding East Timor)	71,550–95,400 HH
1986-1993	Quarterly	Province	65,440 HH
1994-2001	Yearly (August)	Province	65,664 HH
2002-2004	Quarterly and yearly	Province	68.608 HH
2005-2010	Semester (February and August)	Province	69.824 HH

2011-2014	Quarterly (February, May, August, and November)	Regency/City	50,000–300,000 HH
2015-2022	Semester (February and August)	Regency/City (August) and Province (February)	75,000–300,000 HH

Source: BPS-Statistics Indonesia (2022)

3.3. The Village Potential (PODES)

The PODES data is carried out as a part of the BPS-Statistics Indonesia's ten-year cycle of census activities. The main objectives of this dataset are to provide data on the existence, availability, and development of villages' potential by measuring the number of regional facilities, infrastructures, and economic, social, and cultural aspects of the community at the village level. The survey was started in 1980 and conducted three times every ten years. The latest PODES data has more than 80.000 administrative data at the village level. The respondent of the surveys is selected informants who have knowledge, authority, and responsibility for the target area, such as Village Head, Head of Transmigration Unit, or sub-regency/city apparatus.

Table 3. PODES Characteristics

Characteristic	Description
Frequency	Began in 1980 and was completed three times over a ten-year period. ▪ In the year ending in '1', PODES is conducted to support the Agricultural Census. ▪ In the year ending in '4', PODES is conducted to support the Economic Census. ▪ In the year ending in '8', PODES is conducted to support the Population Census.
Power of Estimate	Regency/City (PODES-KAB/KOTA), Sub-Regency/City (PODES-KEC), and Villages (PODES-DESA)
Total Sample	± 80,000 administrative areas at the village level, ± 7,000 sub-regency/city, and ± 500 regencies/cities
Coverage of Respondents	Selected informants are a group of people who have knowledge, authority, and responsibility for the target area of enumeration (i.e., All Village Heads; Head of the Transmigration Settlement Unit (UPT); Sub-Regency/City Apparatus; Regency/City Apparatus, and so on).

Source: BPS-Statistics Indonesia (2022)

3.4. Methodology

This report produces inequality measurement using several income indicators, such as Gini coefficient, Theil's index, and General Entropy (GE), the Atkinson Index, and the Palma ratio. We refer to Handbook on Inequality Measurement for Country Studies produced by AFD–ACEIR (2020). Table 4 summarizes the inequality indices that are used in this report.

Table 4. Inequality Measurement

Inequality Indices	Definition
Gini coefficient	The Gini coefficient has consistently served as a prevalent metric for assessing inequality in Indonesia. Ranging from 0 to 1, the Gini coefficient represents the degree of inequality within a population. A value of 0 signifies absolute equality (all individuals possess identical income), while a value of 1 reflects complete inequality (with one individual retaining all the income while others possess none). Consequently, a higher Gini coefficient corresponds to greater inequality within the population, whereas a lower Gini coefficient indicates a higher level of equality.

Theil's index and General Entropy (GE)	The Theil's indices are categorized within the family of generalized entropy inequality measures (GE($\boldsymbol{\alpha}$)). In this framework, the parameter $\boldsymbol{\alpha}$ determines the weighting assigned to disparities between income or expenditure at various segments of the distribution. This parameter $\boldsymbol{\alpha}$ can assume any real value, although commonly utilized values include 0, 1, and 2. Specifically, when $\boldsymbol{\alpha}$ equals 0, the GE(0) index corresponds to Theil's L index; when $\boldsymbol{\alpha}$ is 1, the GE(1) index corresponds to Theil's T index; and when $\boldsymbol{\alpha}$ is 2, the GE(2) index corresponds to the Coefficient of Variation (CV) (Tregenna & Tsela, 2012). Higher positive values of $\boldsymbol{\alpha}$ render the GE index more sensitive to alterations at the upper end of the income or expenditure distribution, while $\boldsymbol{\alpha}$ values approaching zero enhance the GE index's sensitivity to variations at the lower end of the distribution.
Atkinson index	The Atkinson index quantifies the proportion of total income that a specific population would need to relinquish to attain a more equitable distribution of income among its members. Introduced by Atkinson (1970) from a normative standpoint, this index belongs to the Atkinson's class of inequality measures (A(ε)). The parameter (ε) signifies the degree of 'aversion to inequality' and ranges between zero and infinity. A larger (ε) value indicates a stronger aversion to inequality within a society. Consequently, the Atkinson index places greater emphasis on the lower end of the income or expenditure distribution (Wittenberg, 2017). A higher (ε) parameter implies that social welfare is more sensitive to changes in the income of individuals with lower incomes, as compared to the same shifts affecting individuals with higher incomes.
Palma Ratio	The Palma ratio is defined as the ratio of national income or expenditure shares of the top 10 percent of the population relative to the bottom 40 percent.

Source: AFD-ACEIR (2020)

Chapter 4

Profile of Inequality

4.1. Economic Inequality

This section aims to assess economic inequality by utilizing expenditure per capita as a measure, given the unavailability of income data in reliable open-source dataset. The SUSENAS dataset for the years 2012, 2015, 2018, and 2021 in Indonesia is employed for this analysis. It should be noted that data analysis is not conducted annually due to the relatively stable nature of inequality over a three-year span. Various measurement methods are utilized to gauge inequality, including the Gini coefficient, Lorenz curve, Theil's indices, Atkinson indices, and Palma ratio. Each method is applied to specific subgroups such as household head gender composition, educational attainment of the household head, employment status, urban-rural distinction, and others.

SUSENAS includes inquiries regarding household income, which comprise four distinct categories: 1) wages and salaries, 2) surplus from household businesses, 3) income from ownership (excluding household business income), and 4) transfers. However, the results of income-related questions in the SUSENAS dataset are not publicly disclosed due to bias stated income. Consequently, this research employs expenditure as a surrogate for income to estimate inequality. Additionally, this study conducts an income analysis exclusively for workers whose data is sourced from SAKERNAS.

4.1.1. Real Annual Mean and Median Expenditure by Subgroups

Table 5 provides estimates of the mean and median expenditure per capita for different population groups, categorized by household gender composition, educational attainment of the household head, household size, employment status, urban or rural, Java or non-Java region, and six islands in Indonesia. We use Inequality Trends in South Africa (2019) and Inequality Diagnostic for Ghana (2020) as a benchmark for this category, while making additional adjustments to account for the situation in Indonesia. Over the specified period, there has been a substantial increase in the real mean and median expenditure per capita at the national level in Indonesia. Specifically, the real mean expenditure per capita has nearly doubled, rising from IDR 651,403 in 2012 to IDR 1,174,613 in 2021.

Regarding the education level of the household head, the results indicate a positive correlation between higher education levels and greater real mean and median expenditure per capita. In fact, household heads with tertiary education exhibit a mean and median expenditure per capita that is twice as high as the national average. In comparison, household heads with no schooling and elementary education, as well as those with some junior education, spend approximately one-third and half as much, respectively, compared to household heads with tertiary education. This indicates a potential association between higher education levels and greater financial resources. The sole exception to these patterns is the slightly lower mean expenditure per capita in 2018 for household heads with primary education, which is lower than that of household heads who did not attend school. Overall, the expenditure per capita generally shows an upward trend across all education levels from 2012 to 2021, indicating an overall increase in spending capacity over time.

The mean and median expenditure per capita tend to decrease as the number of members in the household increases. This suggests that larger households have a lower overall expenditure and potentially lower financial resources. Furthermore, households with formal job status have a higher

mean and median expenditure per capita compared to households with informal job status. This indicates that formal employment is associated with higher spending capacity. Overall, the expenditure per capita generally shows an upward trend for both employment status from 2012 to 2021, indicating an overall increase in spending per capita over time.

Urban areas exhibit higher mean and median expenditure per capita compared to rural areas. Furthermore, the disparity in average expenditure per capita between urban and rural areas is progressively widening over time, growing from IDR 358,454 in 2012 to IDR 479,179 in 2021.

In general, the average and typical expenditure per person in both Java and non-Java regions have consistently risen from 2012 to 2021. Java exhibits slightly higher levels of expenditure per capita compared to non-Java. However, there is a difference in the results between the mean and median expenditure per capita for 2012 and 2021. In both years, the median expenditure per capita in Java was lower than in non-Java. In this scenario, the median emerges as the more suitable statistical measure for representing the central tendency of a group, as the mean expenditure can be influenced by biases. This is primarily due to a significant disparity within Java, with DKI Jakarta standing out from the other regions and contributing to the higher mean expenditure per capita in Java.

Among the non-Java islands, Kalimantan consistently shows the highest mean and median expenditure per capita from 2012 to 2021. This indicates that Kalimantan contributes the most to the expenditure per capita in the non-Java regions. Other islands such as Sumatera, Bali & Nusa Tenggara, Sulawesi, and Maluku & Papua also exhibit significant expenditure levels but generally lower than Kalimantan.

Table 5. Distribution of Real Monthly Mean and Median Expenditure (IDR)

Variable	Subgroup	Mean				Median			
		2012	2015	2018	2021	2012	2015	2018	2021
Total		**651,403**	**706,403**	**1,021,708**	**1,174,613**	**453,095**	**499,427**	**757,081**	**875,928**
Education level of the household head	No school	448,469	524,883	790,119	852,737	352,005	425,568	610,137	697,970
	Primary school	481,411	565,071	766,037	884,751	380,133	455,693	624,665	729,202
	Middle school	593,104	669,922	904,298	1,039,617	460,033	527,267	733,327	839,638
	High school	852,059	983,085	1,234,530	1,343,675	638,178	749,498	985,182	1,056,398
	Tertiary education	1,489,551	1,796,111	2,159,501	2,325,910	1,087,320	1,265,702	1,690,467	1,754,246
Number of members in household	1	1,248,113	1,231,746	1,862,903	2,154,333	861,986	824,047	1,423,753	1,638,115
	2	861,344	918,639	1,367,991	1,558,262	607,202	637,865	1,050,715	1,203,336
	3	721,275	782,585	1,161,936	1,326,947	536,688	581,818	919,605	1,042,851
	4	660,802	709,371	1,025,994	1,157,417	474,586	513,844	780,316	883,642
	>4	565,581	614,218	860,018	956,755	385,679	434,593	633,777	721,121
Job status	Formal	905,001	958,163	1,312,788	1,494,870	622,003	669,048	979,013	1,094,272
	Informal	536,757	589,139	895,305	1,038,960	401,798	449,685	694,790	818,817
Urban/Rural	Urban	830,528	873,756	1,226,834	1,381,506	570,123	607,207	892,137	1,001,756
	Rural	472,074	536,163	774,062	902,326	373,286	428,810	635,865	751,017
Java/Non-Java	Java	653,564	736,290	1,063,987	1,217,235	437,366	499,866	761,621	864,558
	Non-Java	648,529	667,090	966,811	1,119,981	473,448	498,682	750,306	887,737
Island	Sumatra	653,837	677,611	960,281	1,110,878	487,048	508,420	763,369	893,485
	Java	653,564	736,290	1,063,987	1,217,235	437,366	499,866	761,621	864,558
	Bali & Nusa Tenggara	595,110	593,808	882,509	1,064,857	400,389	422,068	641,408	803,708
	Kalimantan	774,428	774,918	1,134,088	1,299,758	582,716	614,132	879,777	1,042,552
	Sulawesi	574,164	597,403	904,798	1,014,897	399,959	428,967	672,820	775,723
	Maluku & Papua	643,715	682,907	982,406	1,186,239	452,405	506,014	773,911	914,048

Source: SUSENAS, author's calculation (2023)

4.1.2. Expenditure Shares and Lorenz Curve

In an equitable society, household expenditure would be distributed evenly among the 10 deciles. However, Figure 12 reveals that more than one-third of total household expenditure concentrated in the wealthiest 10% of the population, averaging 31.85% between 2012 and 2021. The middle 50% of the population accounts for half of all household expenditure during the same period, while the bottom 40% of the population contributes approximately 17% on average. Despite this inequality, there have been marginal improvements, as the average expenditure share for the bottom 40% of the population has experienced slight growth over the years. Conversely, the top 10% of the population witnessed a significant decline in their share, dropping from 33.3% in 2015 to 30.3% in 2018, along with an unexpected slight decrease in the income of the lowest 10% of the population from 2012 to 2018, although the overall trend has fluctuated over time. Furthermore, it appears that the income gradient between decile groups is increasing from decile 2 to decile 6, paralleling a decline from decile 7 to decile 10. Examination of the Lorenz curves for the distribution from 2012 to 2021 supports these findings.

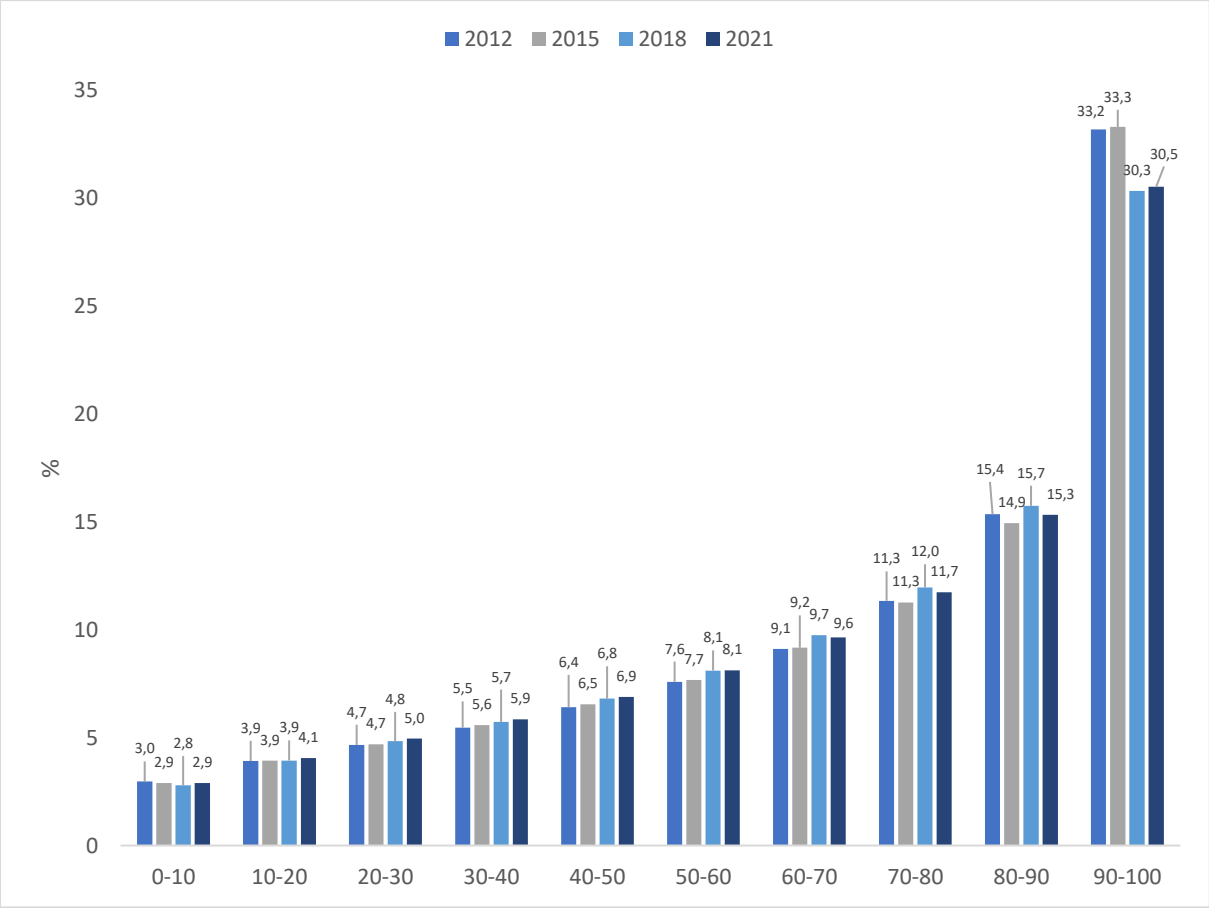


Figure 12. The Distribution of Expenditure Shares by Decile, 2012-2021

Source: SUSENAS, author's calculation (2023)

The Lorenz curve serves as a tool to assess income (or expenditure) distribution within a population. In an ideally equal distribution, where each individual receives an equal share of income (1/n), the Lorenz curve assumes a linear 45° graph. However, real-world scenarios reveal disparities, as the poor receive

less than their equitable share and the wealthy possess more. Consequently, the Lorenz curve takes the form of a convex curve. The proximity of the Lorenz curve to the 45° line indicates the level of inequality, with closer alignment indicating lower inequality.

To evaluate variations in expenditure distributions, the concept of Lorenz dominance is utilized. By examining subgroups, such as regional area, the Lorenz curve can be measured and compared (see Figure 13). The findings have revealed that during the assessment of per capita expenditure distributions across each of the islands, there is no definitive "Lorenz dominance" that emerges, as the curves intersect at specific points within these distributions. However, findings also indicate that regions outside of Java exhibit comparatively lower levels of inequality, as evidenced by the closer proximity of their curves to the line of equality. Upon closer examination within a more specific island, it becomes evident that Kalimantan and Sumatra dominantly surpass Java in terms of expenditure per capita distribution. While it's possible that inequality might be affected by the movement of poor people between regions, the data shows that the percentage of poor individuals who moved from non-Java to Java, compared to the total Java population, decreased from 0.037% in 2018 to 0.015% in 2021 (based on SUSENAS 2018 & 2021). However, it's important to note that the Gini index, a measure of inequality, remained the same at 0.408 in both 2018 and 2021 for Java (Table 6). Therefore, it seems that migration has had a limited impact on changes in inequality in Indonesia.

Drawing insights from Figure 13, a direct comparison between the 2021 distribution and the 2018 distribution is not feasible due to the intersecting curves at various points within the distributions. However, it is evident that the Lorenz curve representing the 2021 distribution dominantly surpasses the 2012 distribution, suggesting an improvement in inequality over the past decade. Nevertheless, given the absence of clear Lorenz dominance throughout the distributions, it remains inconclusive to definitively determine which distribution exhibits greater equality. In such instances, employing a Generalized Lorenz curve allows for a comprehensive assessment of inequality levels among per capita expenditure.

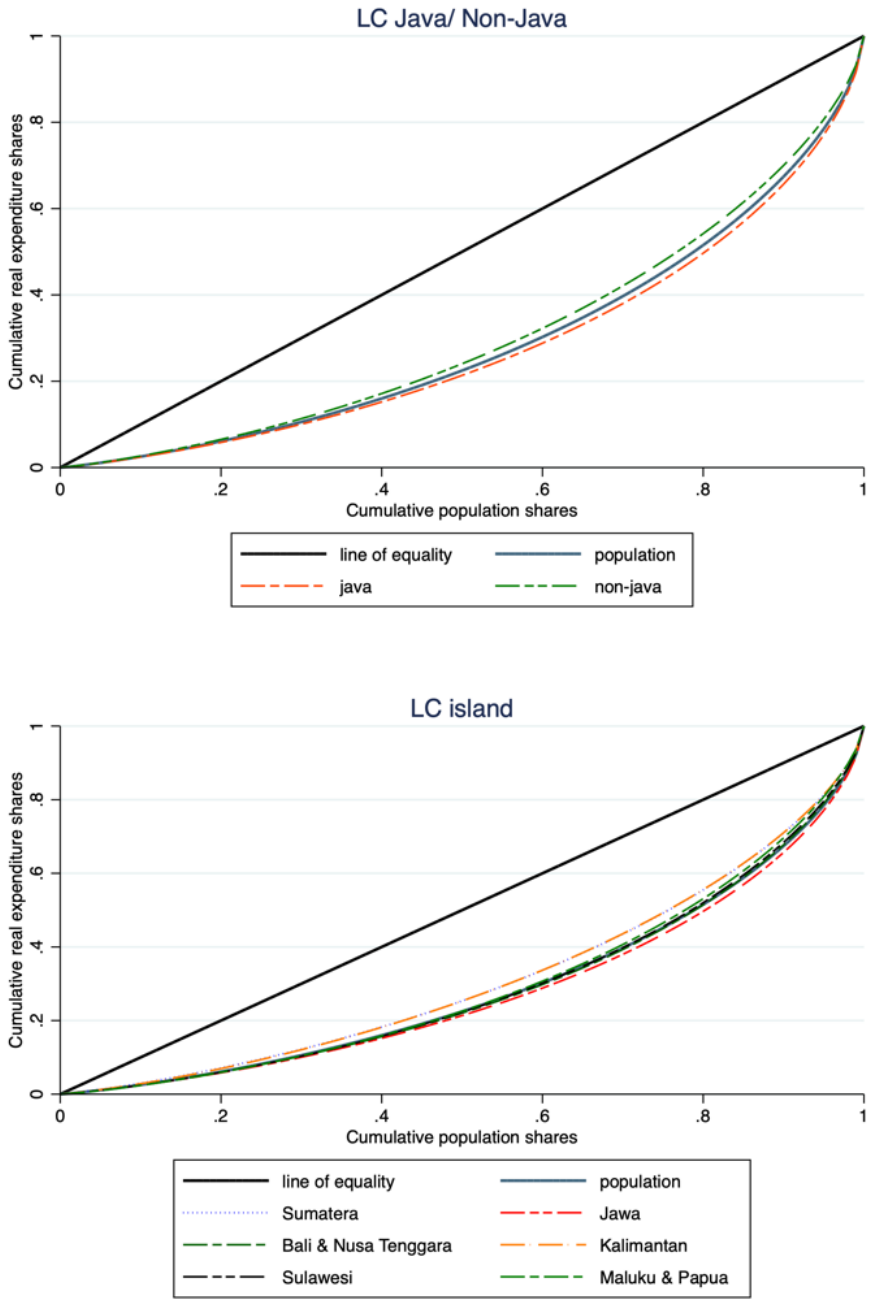


Figure 13. Lorenz Curve Based on Java/Non-Java and Island, 2012-2021

Source: SUSENAS, author's calculation (2023)

Note: Legend "population" refer to whole country population sorted by their expenditure

A Generalized Lorenz curve can be derived by multiplying the y-coordinates of a Lorenz curve by the mean population expenditure. In simpler terms, to create a Generalized Lorenz curve, you can take a regular Lorenz curve and multiply the numbers on the vertical axis (y-coordinates) by the average income of the population. This means including the average income to make comparisons based on people's well-being. Consequently, expenditure distributions characterized by higher mean expenditure exhibit greater social welfare, regardless of the level of inequality. Evaluating the Generalized Lorenz curves (see Figure 14), the highest mean expenditure is observed in 2021, followed by 2018, 2015, and

2012, indicating that the highest welfare is associated with the 2021 population. However, when Generalized Lorenz curves intersect, it becomes inappropriate to rank income distributions based solely on these curves. Therefore, alternative approaches such as the Gini coefficient, Theil's indices, and Atkinson indices are employed to assess and compare income distributions.

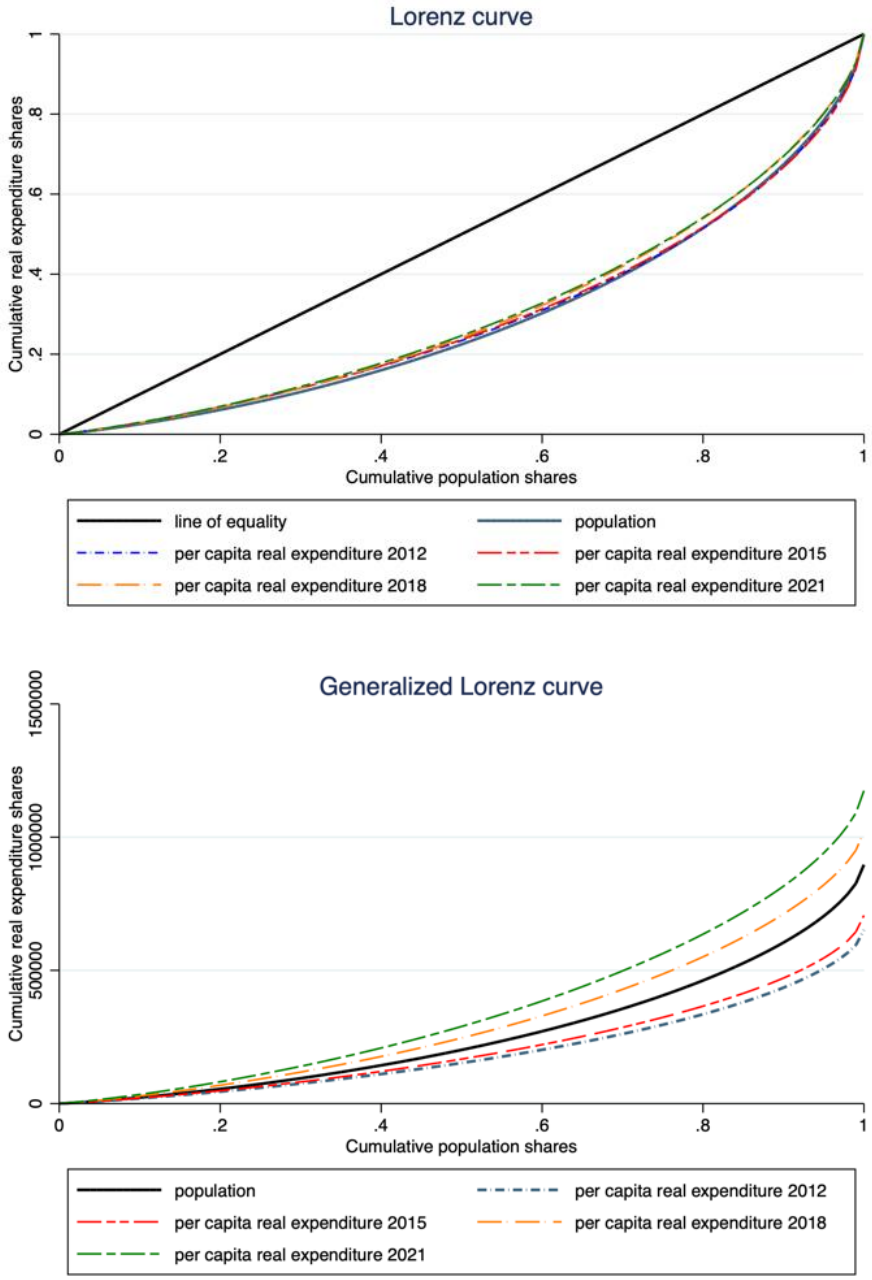


Figure 14. Lorenz Curve and Generalized Lorenz Curve Based on per Capita Expenditure, 2012-2021
Source: SUSENAS, author's calculation (2023)
Note: Legend "population" refer to whole country population sorted by their expenditure

4.1.3. Inequality Measurements

Table 6 provides a comprehensive overview of per capita expenditure-based inequality trends in Indonesia spanning the period from 2012 to 2021. The table encompasses multiple inequality measures, such as the Gini coefficient, Theil's indices, Atkinson indices, and the Palma ratio. Together, these

metrics offer valuable insights into the distribution of income or expenditure across the country. Notably, the Gini coefficient will receive greater attention in discussions, given its inclusion as a fundamental objective in Indonesia's National Development Plan to reduce inequality. Further details and precise definitions of these indices are available in Table 4. It's crucial to note that each of these indicators offers a distinct and supplementary perspective on inequality, as they emphasize various aspects. The Gini indicator places greater emphasis on the middle class's position, whereas the Palma ratio places more significance on events occurring at the extremes of expenditure distribution.

Based on the information presented in Table 6, the national Gini coefficient experienced a marginal decrease from 0.409 in 2012 to 0.408 in 2015, followed by a more substantial decline to 0.389 in 2018 and further to 0.384 in 2021. The analysis of both Theil's indices and Atkinson indices reveals a consistent reduction in inequality across the four observed data points. Similarly, the Palma ratio calculated based on per capita expenditure indicates a decline in inequality over the years. Overall, all the indices demonstrate a similar pattern, with a modest decrease from 2012 to 2015, a significant drop in 2018, and a slight decline from 2018 to 2021.

In general, the findings derived from the inequality indices associated with the education levels of household heads indicate a positive relationship between the education level of the household head and the magnitude of inequality. However, in the years 2018 and 2021, all the inequality indices pertaining to household heads who did not receive any formal education displayed a non-linear trend in comparison to other education levels. During these years, the indices exhibited a significant increase, surpassing the inequality indices of individuals with a junior education level (in 2018) and those with an elementary education level (in 2021). For instance, in 2018, the Gini coefficient for household heads without any schooling stood at 0.355, which significantly exceeded the coefficient for those with a junior education level (0.331) during the same year. Similarly, in 2021, the Gini coefficient for household heads without any education reached 0.320, surpassing the coefficient for those with an elementary education level (0.314).

Table 6. Inequality Measures based on per Capita Expenditure by Subgroup, 2012-2021

Variable	Subgroup	Year	Gini Coefficient	Theil's Indices		Atkinson Indices		Palma Ratio
				GE(0)	GE(1)	A(1)	A(2)	
Total Population		**2012**	**0.409**	**0.273**	**0.339**	**0.239**	**0.371**	**1.953**
		2015	**0.408**	**0.272**	**0.333**	**0.238**	**0.372**	**1.948**
		2018	**0.389**	**0.249**	**0.280**	**0.220**	**0.362**	**1.755**
		2021	**0.384**	**0.242**	**0.279**	**0.215**	**0.350**	**1.720**
Education of household head	No school	2012	0.324	0.170	0.208	0.157	0.257	1.272
		2015	0.325	0.173	0.201	0.159	0.266	1.282
		2018	0.355	0.205	0.234	0.185	0.309	1.472
		2021	0.320	0.167	0.186	0.154	0.265	1.232
	Primary school	2012	0.325	0.171	0.204	0.157	0.259	1.281
		2015	0.331	0.179	0.218	0.164	0.271	1.320
		2018	0.320	0.166	0.183	0.153	0.267	1.219
		2021	0.314	0.160	0.176	0.148	0.258	1.186
	Middle school	2012	0.345	0.192	0.224	0.175	0.289	1.409
		2015	0.344	0.194	0.226	0.176	0.294	1.408
		2018	0.331	0.179	0.192	0.164	0.285	1.296
		2021	0.332	0.181	0.208	0.166	0.281	1.317
	High school	2012	0.382	0.241	0.294	0.214	0.347	1.696
		2015	0.386	0.247	0.275	0.219	0.364	1.744
		2018	0.355	0.208	0.225	0.188	0.325	1.457
		2021	0.359	0.212	0.234	0.191	0.325	1.502
	Tertiary education	2012	0.408	0.280	0.320	0.244	0.400	1.938
		2015	0.426	0.304	0.334	0.263	0.428	2.135
		2018	0.378	0.243	0.256	0.216	0.379	1.659
		2021	0.397	0.267	0.285	0.234	0.400	1.824
Job satus	Formal	2012	0.428	0.302	0.363	0.261	0.408	2.147
		2015	0.425	0.298	0.352	0.258	0.405	2.130
		2018	0.397	0.261	0.290	0.230	0.381	1.826
		2021	0.399	0.263	0.298	0.231	0.377	1.849
	Informal	2012	0.361	0.212	0.261	0.191	0.306	1.536
		2015	0.362	0.215	0.266	0.194	0.311	1.551
		2018	0.360	0.212	0.237	0.191	0.320	1.508
		2021	0.351	0.201	0.228	0.182	0.306	1.448
Geographic area	Urban	2012	0.422	0.292	0.351	0.254	0.397	2.077
		2015	0.428	0.302	0.356	0.260	0.408	2.160
		2018	0.401	0.265	0.291	0.233	0.384	1.852
		2021	0.401	0.264	0.299	0.232	0.377	1.860
	Rural	2012	0.329	0.176	0.212	0.161	0.266	1.299
		2015	0.334	0.183	0.219	0.167	0.277	1.342
		2018	0.324	0.173	0.188	0.158	0.277	1.243
		2021	0.315	0.162	0.176	0.150	0.264	1.190
Regional group	Java	2012	0.423	0.292	0.367	0.253	0.384	2.095
		2015	0.429	0.302	0.373	0.261	0.398	2.175
		2018	0.408	0.273	0.310	0.239	0.386	1.936
		2021	0.408	0.272	0.315	0.238	0.380	1.937
	Non-Java	2012	0.390	0.249	0.302	0.220	0.353	1.766
		2015	0.375	0.231	0.273	0.206	0.334	1.649
		2018	0.361	0.214	0.236	0.193	0.327	1.514
		2021	0.350	0.201	0.226	0.182	0.308	1.441
Island	Sumatera	2012	0.368	0.220	0.268	0.197	0.317	1.585
		2015	0.363	0.214	0.261	0.193	0.308	1.563
		2018	0.339	0.187	0.209	0.171	0.289	1.360
		2021	0.330	0.178	0.208	0.163	0.274	1.312
	Java	2012	0.423	0.292	0.367	0.253	0.384	2.095

Variable	Subgroup	Year	Gini Coefficient	Theil's Indices		Atkinson Indices		Palma Ratio
				GE(0)	GE(1)	A(1)	A(2)	
		2015	0.429	0.302	0.373	0.261	0.398	2.175
		2018	0.408	0.273	0.310	0.239	0.386	1.936
		2021	0.408	0.272	0.315	0.238	0.380	1.937
	Bali & Nusa Tenggara	2012	0.419	0.289	0.384	0.251	0.386	2.034
		2015	0.393	0.251	0.301	0.222	0.352	1.789
		2018	0.395	0.255	0.281	0.225	0.370	1.791
		2021	0.387	0.246	0.269	0.218	0.363	1.742
	Kalimantan	2012	0.378	0.235	0.283	0.209	0.340	1.677
		2015	0.343	0.192	0.222	0.175	0.294	1.391
		2018	0.350	0.200	0.228	0.181	0.303	1.436
		2021	0.332	0.179	0.204	0.164	0.277	1.327
	Sulawesi	2012	0.412	0.278	0.331	0.243	0.384	1.981
		2015	0.404	0.267	0.318	0.234	0.371	1.908
		2018	0.392	0.254	0.274	0.225	0.375	1.773
		2021	0.373	0.229	0.255	0.204	0.342	1.611
	Maluku & Papua	2012	0.416	0.284	0.331	0.247	0.392	2.028
		2015	0.386	0.248	0.283	0.220	0.367	1.715
		2018	0.372	0.230	0.239	0.205	0.354	1.593
		2021	0.368	0.220	0.236	0.198	0.335	1.561

Source: SUSENAS, author's calculation (2023)

4.1.4. Wage Inequality

This section includes a discussion of wage inequality. Having read through economic inequality analyses, one may wonder about the similarity between the two. This section employs the 2012, 2015, 2018, and 2021 SAKERNAS datasets to calculate the inequality using wage as a measure. This analysis fills the gap of the unavailability of income data in the reliable open-source dataset, thus complementing economic inequality analysis that utilizes per capita expenditure from the SUSENAS dataset as a measure.

This subsection encompasses three principal indicators: real wage in mean and median, wage shares and Lorenz curve, and inequality indices. We conduct our analyses in that order.

Through the lens of real wages, we aim to compare the actual wages that workers receive relative to each other based on several categories, thus giving us a hint of inequality across sex, region, age, job category, and so forth. Concurrently, wage shares and the Lorenz curves help provide us with graphical illustrations of the inequality across income levels. Later, we back these two findings with statistical indicators: the Gini coefficient, Theil and Atkinson Indices, and the Palma Ratio.

4.1.4.1. Real Monthly Mean and Median Wage

Male workers receive higher salaries than female workers do. Over the years, their wage growth consistently outpaced the females. Such a trend is observed regarding geographic area, as urban workers are paid more handsomely than their rural counterparts.

Regarding the island of residence, we observe two timeframes that describe a reversing trend between Java and non-Java workers: 2012-2015 and 2018-2021, in which Java workers earn less than non-Java workers in the former period and more in the latter.

On the educational level, it is apparent that earning a higher degree boosts one's wage in real terms. Those without educational credentials earn significantly less than those holding tertiary degrees, as low as one-fourth of what people on the high end do. Even those with high school diplomas still earn some way below, around ½ and 2/3, than tertiary graduates typically receive. In age groups, earnings increase until 50 before slowing down afterwards.

Formal workers earn significantly more than those engaging in the informal sector. Those engaging in the informal sector include self-employed individuals, enterprises supported by temporary or unpaid labour, casual workers in agricultural workers (peasant workers), casual workers in non-agricultural sectors, and family/unpaid workers (BPS-Statistics Indonesia, 2021). In addition, we notice a widening gap between these two types of work. Such a trend was more apparent in 2015, after which the gap picked up.

By looking at the occupational sector, we take note of interesting dynamics between the three main economic sectors. Indonesian manufacturing workers have seen their wages grow faster in the past ten years, even more so than service workers. This notion holds for both mean and median wages. Furthermore, manufacturing and service wages are close to each other. There were cases in our data in

which they overlapped each other. The pandemic has seen the mean difference between the two levels and the manufacturing median surpassing services.

As expected, white-collar workers generally get paid more than blue-collar workers. However, the within-variance in white-collar wages is remarkably higher than that in blue-collar wages. Interestingly, low-skilled blue-collar workers consistently get paid more than their high-skilled peers.

Although Java houses most of the Indonesian population, it sometimes translates into higher wages than other main islands. Typically, workers in Maluku-Papua and Kalimantan receive 10-14% more than workers in Java. Meanwhile, the real wage in Bali-Nusa Tenggara lags far behind other regions, suggesting more extreme underdevelopment. In particular, we heed the more significant difference between mean and median wages in eastern Indonesia, suggesting significant underdevelopment resulting in broader inequality.

Table 7. Real Monthly Mean and Median Wage by Subgroups (IDR), 2012-2021

Subgroups		Mean				Median			
		2012	2015	2018	2021	2012	2015	2018	2021
Total		**1,344,777**	**1,426,986**	**2,138,263**	**2,012,074**	**975,000**	**1,008,212**	**1,635,143**	**1,486,169**
Sex	Male	1,457,693	1,525,925	2,335,092	2,198,030	1,075,000	1,138,304	1,816,825	1,857,711
	Female	1,116,058	1,228,674	1,770,603	1,673,447	750,000	772,421	1,226,357	1,114,627
Geographic Area	Urban	1,557,319	1,662,017	2,493,929	2,294,091	1,150,000	1,219,611	1,889,498	1,857,711
	Rural	1,042,218	1,046,187	1,564,563	1,549,220	800,000	796,813	1,362,619	1,226,089
Regional Group	Java	1,280,482	1,409,788	2,222,302	2,064,787	910,000	975,689	1,653,311	1,579,055
	Non-Java	1,450,085	1,454,250	2,011,364	1,934,684	1,075,000	1,056,997	1,589,722	1,393,283
Education Level	No school	751,255	793,430	1,174,089	1,090,140	600,000	609,806	908,413	835,970
	Primary school	908,803	932,083	1,488,100	1,369,025	750,000	739,898	1,362,619	1,114,627
	Middle school	1,080,357	1,104,470	1,709,751	1,612,765	925,000	935,035	1,453,460	1,393,283
	High school	1,531,001	1,508,402	2,313,901	2,119,851	1,225,000	1,219,611	1,907,667	1,857,711
	Vocational high school	1,525,324	1,552,378	2,348,049	2,235,414	1,250,000	1,268,396	2,089,349	1,857,711
	Tertiary education	2,892,123	2,955,345	3,898,277	3,536,992	2,425,000	2,276,608	3,179,445	2,786,567
Age Groups	20 and under	844,133	893,744	1,454,889	1,434,617	750,000	731,767	1,362,619	1,207,512
	21-30	1,190,166	1,252,089	1,990,135	1,966,119	975,000	975,689	1,716,900	1,671,940
	31-40	1,422,462	1,509,790	2,272,464	2,150,542	1,090,000	1,138,304	1,816,825	1,783,403
	41-50	1,606,024	1,657,023	2,398,340	2,193,451	1,075,000	1,138,304	1,816,825	1,671,940
	51-60	1,547,742	1,644,277	2,345,121	2,144,264	900,000	975,689	1,498,881	1,393,283
	61 and over	806,926	925,824	1,329,329	1,212,387	500,000	536,629	908,413	835,970
Job Status	Formal	1,630,193	1,682,499	2,570,018	2,541,779	1,200,000	1,219,611	2,043,929	2,034,194
	Informal	961,228	1,072,906	1,544,558	1,373,413	750,000	813,074	1,271,778	1,114,627
Sectors	Agriculture	952,562	948,814	1,427,217	1,376,483	660,000	650,459	1,090,095	928,856
	Industry	1,291,679	1,398,000	2,152,858	2,122,616	1,100,000	1,138,304	1,816,825	1,857,711
	Services	1,529,395	1,614,036	2,371,379	2,184,570	1,040,000	1,138,304	1,816,825	1,671,940
Employees Categories	High skilled white collar	[redacted]	2,728,854	3,734,973	3,348,839	[redacted]	2,032,686	2,832,431	2,786,567
	Low skilled white collar	[redacted]	1,536,990	2,206,439	2,037,355	[redacted]	1,219,611	1,816,825	1,625,497
	High skilled blue collar	[redacted]	999,057	1,549,895	1,492,564	[redacted]	813,074	1,362,619	1,253,955
	Low skilled blue collar	[redacted]	1,109,271	1,732,247	1,703,391	[redacted]	935,035	1,471,629	1,393,283
Island	Sumatera	1,434,283	1,406,296	1,919,607	1,885,027	1,100,000	1,300,000	1,680,000	1,500,000
	Java	1,280,482	1,409,788	2,222,302	2,064,787	910,000	1,200,000	1,820,000	1,700,000
	Bali & Nusa Tenggara	1,219,439	1,251,703	1,813,117	1,548,528	850,000	1,050,000	1,500,000	1,200,000
	Kalimantan	1,694,223	1,727,502	2,343,909	2,233,588	1,250,000	1,500,000	2,000,000	2,000,000
	Sulawesi	1,381,221	1,403,190	1,980,651	1,947,719	925,000	1,200,000	1,500,000	1,500,000
	Maluku & Papua	1,742,811	1,783,846	2,515,049	2,390,751	1,225,000	1,600,000	2,200,000	2,000,000

Source: SAKERNAS, author's calculation (2023)

4.1.4.2. Wage Shares and Lorenz Curve

As is the case with household expenditure, an equitable society would have its wage distribution even across wage deciles. Therefore, any deviation from that basis will render society unequal. The graph below makes the case for inequality by displaying the contribution to total wages by workers' income level. Evidently, the graph follows an exponential function. We observe that the top 10% of workers in Indonesia make up almost a third of total wages in circulation. When we extend our analysis to include workers from the 9th decile, the figure becomes more striking. The top 20% contribute to almost half of the total wages in the country. Nonetheless, it is also essential to note that such inequality has narrowed in recent years.

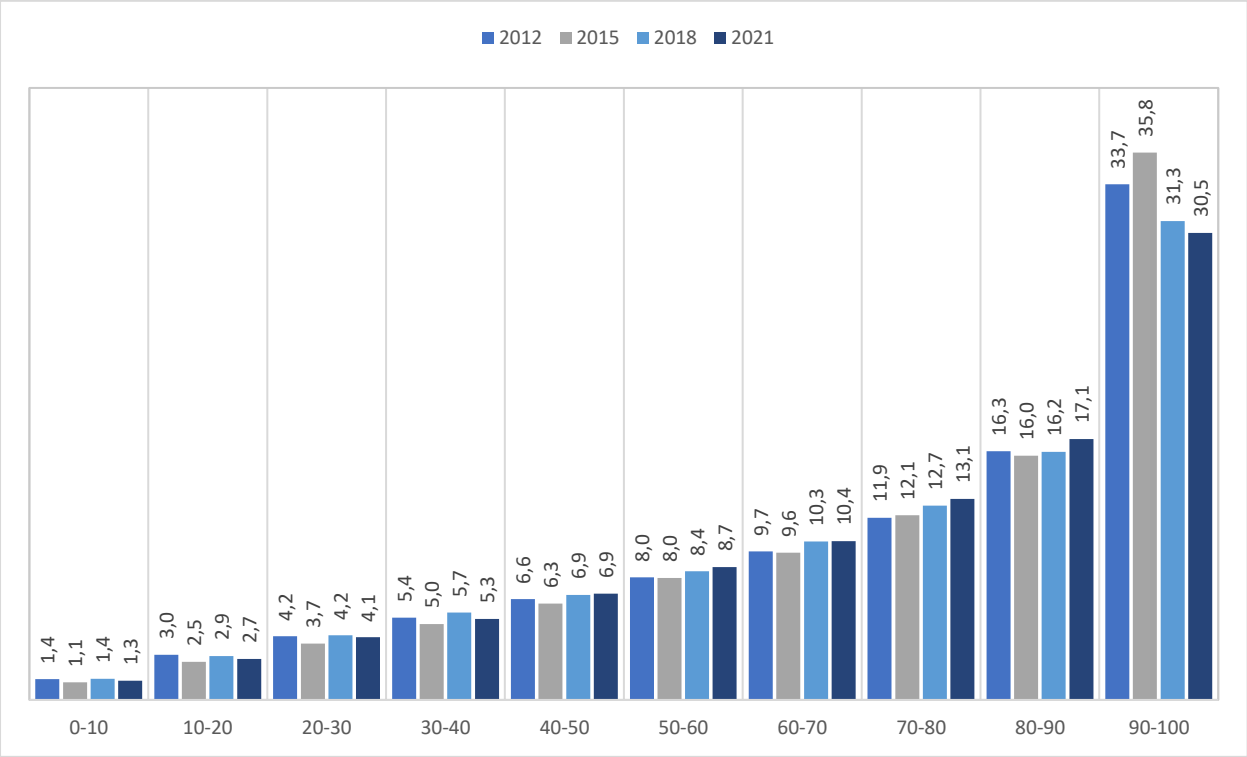


Figure 15. Wage Shares (%) by Decile, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Up next, we are presented with two typical Lorenz curves that attempt to establish inequality distinction by regional and main islands categorization. Again, the concept of Lorenz dominance is utilized. However, unlike on economic inequality discussion, there is no apparent visual dominance by regionality, as both curves intersect at different points. On a similar note, we also cannot firmly establish any dominance among main islands.

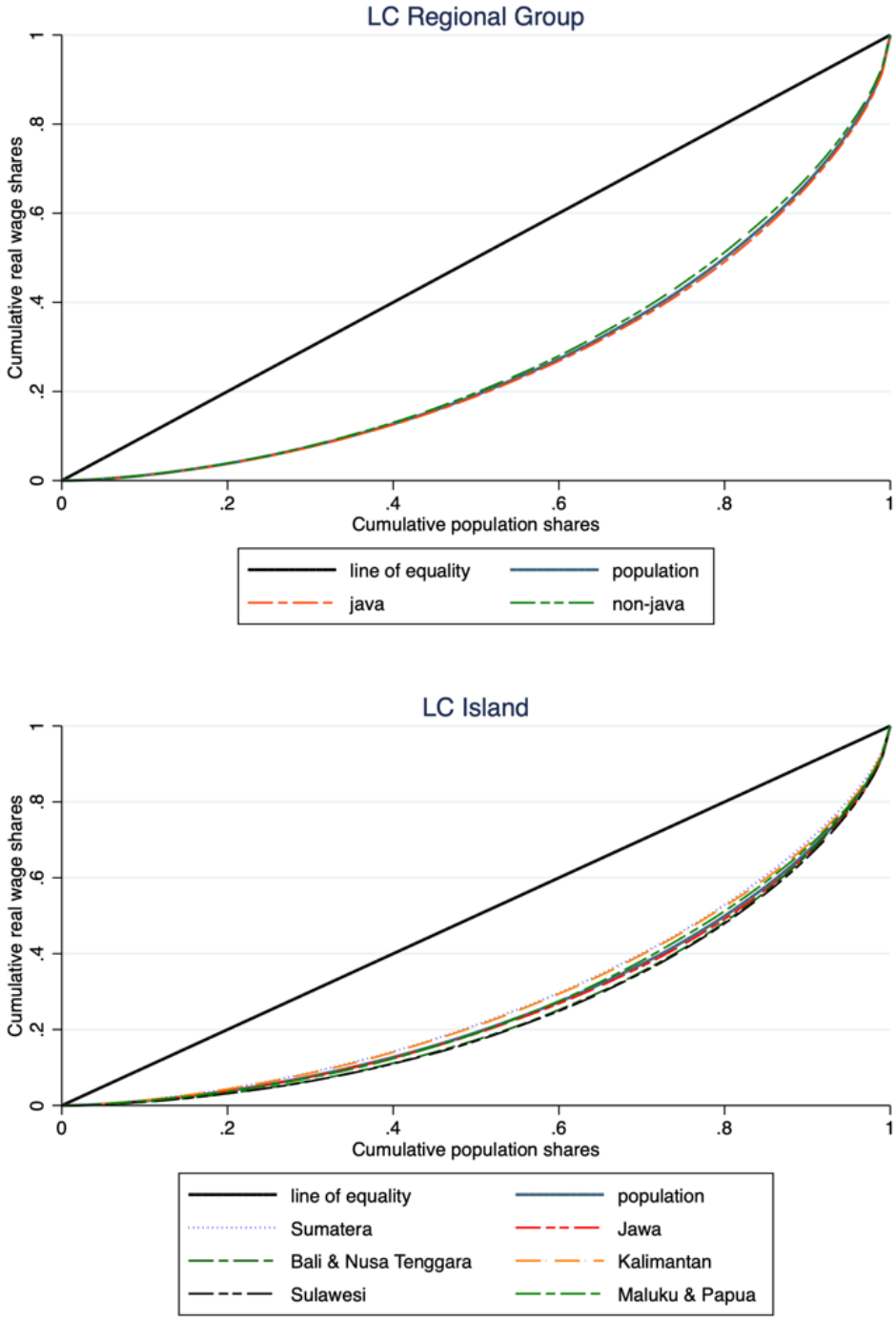


Figure 16. Lorenz Curve by Regional Group and Island, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Further down the road, we measure inequality by year through standard Lorenz curve and Generalized Lorenz curve. On the standard curve on the left-hand side, the distinction does not really elucidate an unyielding conclusion, although we observe more clearly that the 2021 population exhibits less equal wage distribution than in 2015. Meanwhile, after multiplying the y-axis of the standard curve by the

mean population expenditure, we find the highest mean wage in 2018, followed by 2021, 2015, and 2012, indicating that the highest welfare is associated with the 2018 population.

Nevertheless, we still consider alternatives approaches such as the Gini coefficient, Theil's indices, and Atkinson indices to further assess and compare income distributions.

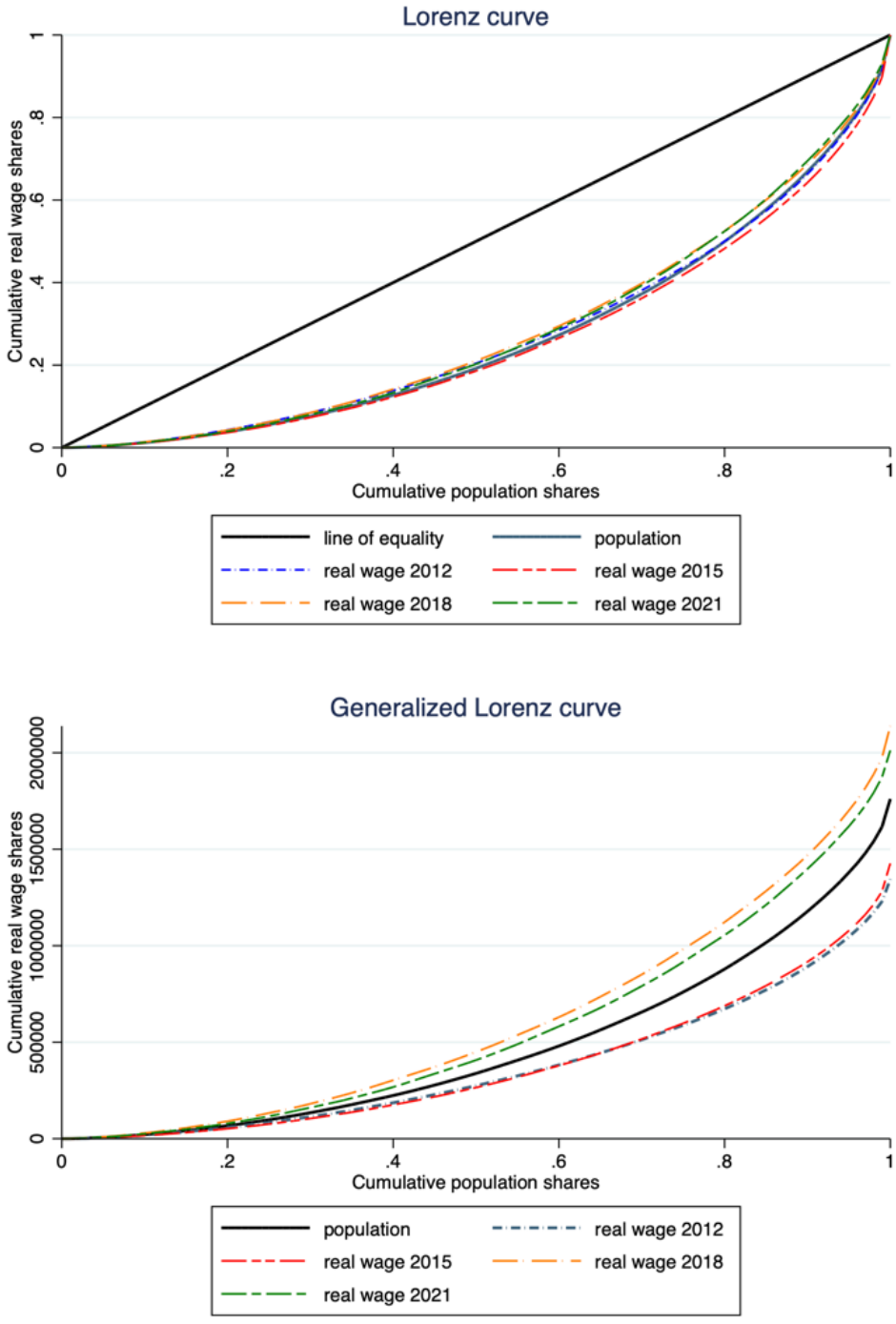


Figure 17. Lorenz Curve and Generalized Lorenz Curve based on Wage, 2012-2021
Source: SAKERNAS, author's calculation (2023)

4.1.4.3. Wage Inequality Measurements

Based on the information in Table 8, the national Gini coefficient slid between 2012 and 2015 before undergoing an improvement in subsequent years, thus putting the figure at 0.434 in 2021. Meanwhile, slight differences exist concerning Theil's and Atkinson's indices, with a deteriorating inequality across four data points. However, the Palma ratio indicates a decline in inequality over the years, although it should be noted that the 2021 figure was factually worse than the 2018 one.

Urban inequality has narrowed down over the years, while rural inequality has slightly widened. However, the configuration differs when we extend the analysis through Atkinson indices, where the figures have skyrocketed. Urban and rural Palma ratios saw an improvement in balance, but the pandemic has proved to be a devastating force, especially on the rural population.

On regional differences, we heed the narrowing inequality in both Java and non-Java, with faster improvement noted for Java. Nonetheless, the gap within the Java population was still noticeably more significant than outside Java at the end of the observation. Upon closer inspection, there has been a divide between western and eastern Indonesia, wherein the latter suffers from more widespread inequality and records higher disparity than the national estimate.

Furthermore, our calculation suggests that vocational graduates come across less inequality than people from any other educational background, followed by middle school graduates. Meanwhile, those in the upper echelon factually suffer from wider inequality, even harsher than any other background.

Concerning occupational status, we take stock of the difference between those working in formal and informal sectors. Interestingly, those engaged in the formal economy have seen an advancement over the years, reiterating the formal economy's pivotal role in enhancing welfare and equitability. Moreover, such furtherance occurred due to deteriorating inequality in the informal economy.

In addition to being welfare-improving, industrial occupations provide more equitable wage distribution among their workers, propped up by a higher share of formality therein. Such a notion, however, only translates into some sectors, including services. The high share of informality could explain this within these two sectors.

On employee categories, we are aware of the improving inequality among white-collar workers, where such progress has occurred rapidly, particularly for highly skilled workers. While blue-collar workers have also seen an advancement, the pace at which the improvement occurred has been relatively low, even lower for highly skilled labourers.

Table 8. Wage Inequality Measurements by Subgroups, 2012-2021

Subgroups		Year	Gini Coefficient	Theil's indices		Atkinson indices		Palma Ratio
				GE(0)	GE(1)	A(1)	A(2)	
Total Population		**2012**	**0.443**	**0.356**	**0.378**	**0.299**	**0.525**	**2.434**
		2015	**0.474**	**0.419**	**0.443**	**0.343**	**0.586**	**2.911**
		2018	**0.429**	**0.351**	**0.342**	**0.296**	**0.618**	**2.208**
		2021	**0.434**	**0.362**	**0.336**	**0.304**	**0.909**	**2.293**
Sex	Male	2012	0.420	0.314	0.349	0.269	0.473	2.138
		2015	0.456	0.385	0.425	0.320	0.553	2.623
		2018	0.399	0.295	0.305	0.256	0.526	1.874
		2021	0.403	0.306	0.298	0.263	0.544	1.903
	Female	2012	0.480	0.418	0.429	0.341	0.573	2.990
		2015	0.503	0.473	0.468	0.377	0.622	3.440
		2018	0.477	0.430	0.404	0.349	0.691	2.889
		2021	0.481	0.441	0.401	0.357	0.956	2.967
Geographic area	Urban	2012	0.442	0.353	0.380	0.298	0.523	2.348
		2015	0.472	0.418	0.440	0.342	0.589	2.845
		2018	0.420	0.331	0.332	0.282	0.614	2.102
		2021	0.424	0.344	0.324	0.291	0.799	2.130
	Rural	2012	0.418	0.316	0.321	0.271	0.491	2.185
		2015	0.441	0.361	0.370	0.303	0.539	2.452
		2018	0.406	0.319	0.283	0.273	0.583	1.979
		2021	0.423	0.346	0.310	0.292	0.941	2.174
Regional group	Java	2012	0.444	0.355	0.392	0.299	0.518	2.457
		2015	0.485	0.439	0.469	0.355	0.597	3.103
		2018	0.431	0.351	0.352	0.296	0.642	2.219
		2021	0.434	0.363	0.339	0.304	0.576	2.269
	Non-Java	2012	0.437	0.351	0.354	0.296	0.533	2.349
		2015	0.456	0.389	0.401	0.322	0.567	2.628
		2018	0.425	0.347	0.321	0.293	0.577	2.191
		2021	0.433	0.359	0.331	0.302	0.956	2.312
Education level	No school	2012	0.392	0.281	0.279	0.245	0.465	1.918
		2015	0.426	0.334	0.359	0.284	0.508	2.243
		2018	0.406	0.317	0.287	0.272	0.541	1.954
		2021	0.419	0.335	0.302	0.285	0.573	2.119
	Primary school	2012	0.362	0.240	0.244	0.214	0.414	1.573
		2015	0.395	0.293	0.303	0.254	0.478	1.861
		2018	0.364	0.257	0.229	0.227	0.664	1.521
		2021	0.379	0.277	0.241	0.242	0.959	1.645
	Middle school	2012	0.346	0.221	0.220	0.198	0.393	1.429
		2015	0.386	0.283	0.288	0.246	0.472	1.760
		2018	0.345	0.230	0.202	0.206	0.446	1.359
		2021	0.366	0.264	0.231	0.232	0.807	1.551
	High School	2012	0.389	0.281	0.278	0.245	0.468	1.771
		2015	0.409	0.325	0.314	0.277	0.531	1.998
		2018	0.376	0.274	0.257	0.240	0.497	1.641
		2021	0.387	0.296	0.257	0.256	0.823	1.721
	Vocational High School	2012	0.363	0.239	0.247	0.213	0.410	1.544
		2015	0.389	0.293	0.303	0.254	0.496	1.798
		2018	0.340	0.221	0.200	0.198	0.425	1.339
		2021	0.358	0.251	0.219	0.222	0.536	1.444
	Tertiary Education	2012	0.419	0.367	0.354	0.307	0.598	2.118
		2015	0.465	0.461	0.419	0.369	0.683	2.773
		2018	0.440	0.398	0.362	0.328	0.628	2.370
		2021	0.427	0.373	0.332	0.311	0.598	2.257
Job status	Formal	2012	0.430	0.333	0.355	0.283	0.499	2.162
		2015	0.479	0.442	0.446	0.357	0.615	2.974
		2018	0.407	0.309	0.309	0.266	0.501	1.947
		2021	0.397	0.301	0.283	0.260	0.504	1.824

Subgroups		Year	Gini Coefficient	Theil's indices		Atkinson indices		Palma Ratio
				GE(0)	GE(1)	A(1)	A(2)	
	Informal	2012	0.416	0.316	0.339	0.271	0.492	2.197
		2015	0.425	0.334	0.368	0.284	0.512	2.262
		2018	0.419	0.338	0.323	0.287	0.649	2.133
		2021	0.421	0.338	0.318	0.287	0.935	2.138
Sectors	Agriculture	2012	0.454	0.369	0.420	0.309	0.521	2.802
		2015	0.468	0.395	0.463	0.326	0.539	2.943
		2018	0.442	0.366	0.378	0.307	0.585	2.441
		2021	0.447	0.373	0.367	0.312	0.961	2.509
	Industry	2012	0.359	0.244	0.272	0.217	0.426	1.531
		2015	0.409	0.326	0.345	0.278	0.526	1.989
		2018	0.368	0.270	0.258	0.236	0.652	1.566
		2021	0.374	0.286	0.254	0.249	0.535	1.608
	Services	2012	0.459	0.381	0.392	0.317	0.546	2.561
		2015	0.486	0.444	0.455	0.359	0.609	3.063
		2018	0.436	0.357	0.349	0.300	0.586	2.270
		2021	0.441	0.368	0.346	0.308	0.844	2.335
Employee Category	High Skilled White Collar	2012						
		2015	0.513	0.577	0.501	0.438	0.746	3.968
		2018	0.474	0.474	0.424	0.378	0.685	2.977
		2021	0.462	0.451	0.389	0.363	0.968	2.867
	Low Skilled White Collar	2012						
		2015	0.440	0.362	0.363	0.304	0.547	2.379
		2018	0.393	0.288	0.269	0.250	0.493	1.782
		2021	0.408	0.318	0.289	0.273	0.892	1.915
	High Skilled Blue Collar	2012						
		2015	0.410	0.323	0.326	0.276	0.521	2.134
		2018	0.394	0.312	0.266	0.268	0.704	1.873
		2021	0.410	0.334	0.285	0.284	0.936	2.046
	Low Skilled Blue Collar	2012						
		2015	0.395	0.296	0.307	0.256	0.481	1.817
		2018	0.355	0.244	0.216	0.216	0.463	1.432
		2021	0.371	0.265	0.229	0.233	0.486	1.582
Island	Sumatera	2012	0.411	0.309	0.321	0.266	0.487	2.028
		2015	0.435	0.347	0.363	0.293	0.523	2.320
		2018	0.407	0.313	0.291	0.269	0.556	1.957
		2021	0.408	0.316	0.291	0.271	0.913	1.986
	Jawa	2012	0.444	0.355	0.392	0.299	0.518	2.457
		2015	0.485	0.439	0.469	0.355	0.597	3.103
		2018	0.431	0.351	0.352	0.296	0.642	2.219
		2021	0.434	0.363	0.339	0.304	0.576	2.269
	Bali & Nusa Tenggara	2012	0.464	0.398	0.386	0.328	0.578	2.895
		2015	0.492	0.466	0.441	0.372	0.638	3.377
		2018	0.454	0.406	0.357	0.334	0.618	2.654
		2021	0.467	0.418	0.378	0.342	0.982	2.861
	Kalimantan	2012	0.421	0.324	0.328	0.277	0.505	2.096
		2015	0.450	0.373	0.410	0.312	0.541	2.492
		2018	0.408	0.315	0.298	0.270	0.533	1.964
		2021	0.413	0.330	0.303	0.281	0.693	2.063
	Sulawesi	2012	0.484	0.438	0.428	0.355	0.598	3.165
		2015	0.485	0.450	0.457	0.362	0.615	3.217
		2018	0.462	0.414	0.385	0.339	0.618	2.791
		2021	0.476	0.437	0.411	0.354	0.625	3.021
	Maluku & Papua	2012	0.463	0.398	0.391	0.328	0.564	2.748
		2015	0.450	0.382	0.397	0.318	0.560	2.549
		2018	0.425	0.353	0.328	0.297	0.570	2.206
		2021	0.443	0.385	0.357	0.320	0.994	2.442

Source: SAKERNAS, author's calculation (2023)

4.2. *Labor Market Inequality*

This section investigated labor market inequality to further support the findings of the economic inequality analysis reported in the previous section. Before delving into this analysis, we found it pertinent to offer a concise overview of the changes in Indonesia's total population over the past decade, as gleaned from the 2010 and 2020 Census data. In general, Indonesia's total population experienced a notable growth of 13.7% between 2010 and 2020. However, upon scrutinizing the population pyramid, meticulously constructed from these census datasets, we found significant shifts in the age structure of the Indonesian population.

4.2.1. Labor Market Trend

In this section, we discussed the trends in the labor force participation rate (LFPR), employment-to-population ratio, and unemployment rate. LFPR measured the total number of working-age individuals who were actively participating in the labor force. The employment-to-population ratio indicated the percentage of the total labor force that was employed, while the unemployment rate showed the percentage of the total labor force that was unemployed and actively looking for a job. Peasant workers, defined as casual workers in the agricultural sector (BPS, 2021), were captured in the employed labor force population.

In our analysis, we restricted our sample to individuals aged 15 and above in the 2012, 2015, 2018, and 2021 SAKERNAS datasets. Moreover, we did not consider the BPS-Statistics Indonesia back casting process because the information regarding this process was not available to the public. However, the difference between the two calculations was not significant in affecting the magnitude and trend analysis over time.

The results at national level are displayed in Table 9. During the period observed, there appeared to be a discernible pattern in the job market in Indonesia. After holding steady from 2012 to 2018, the working population rate dipped to 63.4% in 2021, owing to the COVID-19 pandemic. Concurrently, the unemployment rate also stayed relatively steady between 5.3% and 6.1% from 2012-2018 but spiked to 6.5% in 2021. The LFPR also saw fluctuations over the period analyzed, showing a similar pattern to the working population rate.

Table 9. Labor Market Trend at National Level, 2012-2021

Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
	Labor force			People outside the labor force	Total working age population			
	Employed	Unemployed	Total					
	(in million people)					*(in %)*		
2012	110.8	7.2	118.1	55.9	173.9	63.7	67.9	6.1
2015	114.8	7.6	122.4	63.7	186.1	61.7	65.8	6.2
2018	124.0	7.0	131.0	63.8	194.8	63.7	67.3	5.3
2021	131.1	9.1	140.2	66.6	206.7	63.4	67.8	6.5

Source: SAKERNAS, author's calculation (2023)

Table 10 shows the labor market trends by regional group between 2012 and 2021. According to regional group, we found the well-known statistical pattern of Java and non-Java's labor market outcomes. Unemployment rate in Java was invariably higher than that in non-Java areas within our research timeframe, as contrasted with lower LFPR rates in Java than in non-Java. Specifically, both groups displayed different unemployment trends. The unemployment rate in Java had continued to drop during the 2012-2018 period and significantly rose in 2021—by dint of the COVID-19 pandemic—while the unemployment rate in non-Java exhibited a fluctuating trend during the observed period. The LFPR, in contrast, showed the similar fluctuated trend in Java and non-Java between 2012 and 2018, but diverged in 2021.

Table 10. Labor Market Trend by Regional Group, 2012-2021

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in million people)					*(in %)*		
Java	2012	64.8	4.7	69.6	32.7	102.2	63.4	68.1	6.8
	2015	66.0	4.5	70.6	38.1	108.6	60.8	65.0	6.4
	2018	70.7	4.4	75.1	38.0	113.1	62.5	66.4	5.9
	2021	73.9	5.9	79.8	38.7	118.5	62.3	67.3	7.5
Non-Java	2012	46.0	2.5	48.5	23.2	71.7	64.1	67.6	5.2
	2015	48.8	3.0	51.8	25.7	77.5	63.0	66.9	5.9
	2018	53.4	2.6	56.0	25.8	81.7	65.3	68.5	4.7
	2021	57.2	3.2	60.4	27.9	88.2	64.8	68.4	5.2

Source: SAKERNAS, author's calculation (2023)

Table 11 depicts the labor market trends by geographic area in 2012, 2015, 2018, and 2021. Throughout the duration of the study, the unemployment rate in urban areas exhibited a significantly higher level when compared to rural areas. In fact, urban unemployment rate in 2021 was recorded to be nearly double that in rural areas. In part, such occurrence was a result of the then-pandemic that left many urban workers—who typically operate in formal economy—out of work. However, this phenomenon also stemmed from continuing urbanization, resulting in a supply-demand mismatch in the urban labor market. At the same time, more rural labors were participating in the market than their urban equivalents, as elucidated by the working population and LFPR figures.

Table 11. Labor Market Trend by Geographic Area, 2012-2021

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in million people)					*(in %)*		
Urban	2012	52.6	4.4	57.0	30.3	87.3	60.3	65.3	7.7

	2015	59.3	4.7	64.0	36.2	100.2	59.2	63.9	7.3
	2018	66.3	4.6	70.8	37.8	108.6	61.0	65.2	6.5
	2021	71.9	6.5	78.4	40.2	118.6	60.6	66.1	8.3
Rural	2012	58.2	2.9	61.0	25.5	86.6	67.2	70.5	4.7
	2015	55.5	2.9	58.4	27.5	85.9	64.6	68.0	4.9
	2018	57.7	2.4	60.2	26.0	86.2	67.0	69.8	4.0
	2021	59.1	2.6	61.7	26.4	88.1	67.1	70.0	4.2

Source: SAKERNAS, author's calculation (2023)

Table 12 shows the trends of unemployment rate and LFPR by education level in our study period. Overall, vocational high school graduates contributed the most to the unemployment rate during the observed period, followed by residents of high and middle school graduates. Despite observing fluctuations over the years, there was a general upward trend in the unemployment rate among graduates of vocational high schools. The similar trend was noted in other educational levels.

As for the tertiary graduates—those with Diploma I-IV, bachelor's, master's, and doctorate degree—the unemployment rate increased from 6.0% in 2012 to 6.7% in 2015, before cooling to 6.0% in 2021. Unemployment rate of lower education graduates and residents with no degree were to be reported lower than that of their higher educated compeers. One possible explanation is people from such categories tended to be more willing to accept job of any kind. These figures show that higher education graduates (high school, vocational high school, tertiary education graduates) were having a hard time finding jobs in Indonesia. This is contrary to the common assumption of parallelism between educational level and prospect of landing a job.

Table 12. Labor Market Trend by Education Level, 2012-2021

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in thousand people)					*(in %)*		
No school	2012	21.5	0.6	22.1	11.7	33.8	63.5	65.3	2.7
	2015	19.3	0.4	19.8	12.0	31.8	60.9	62.2	2.2
	2018	19.2	0.4	19.6	10.9	30.5	62.9	64.1	1.8
	2021	16.5	0.5	17.0	10.1	27.1	60.9	62.6	2.7
Primary school	2012	32.4	1.4	33.9	14.5	48.3	67.1	70.1	4.3
	2015	31.5	1.0	32.5	15.9	48.3	65.1	67.2	3.1
	2018	31.3	0.9	32.2	14.0	46.2	67.7	69.6	2.8
	2021	32.9	1.4	34.3	14.9	49.2	66.9	69.7	4.1
Middle school	2012	20.2	1.7	21.9	16.7	38.6	52.4	56.8	7.8
	2015	20.7	1.4	22.1	18.8	40.9	50.6	54.0	6.2
	2018	22.4	1.1	23.6	19.0	42.6	52.6	55.3	4.8

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in thousand people)					*(in %)*		
	2021	23.3	1.6	24.9	18.5	43.4	53.7	57.4	6.4
High school	2012	17.3	1.8	19.1	8.6	27.7	62.4	69.0	9.6
	2015	19.8	2.3	22.1	10.9	33.0	60.0	66.9	10.3
	2018	22.3	1.9	24.3	11.3	35.6	62.7	68.1	8.0
	2021	24.7	2.5	27.2	13.4	40.6	61.0	67.0	9.1
Vocational high school	2012	9.5	1.0	10.5	3.0	13.5	70.2	77.9	9.9
	2015	10.8	1.6	12.4	3.8	16.2	66.7	76.4	12.7
	2018	13.7	1.7	15.4	4.8	20.3	67.5	76.1	11.2
	2021	16.9	2.1	19.0	5.9	24.9	67.7	76.2	11.1
Tertiary education	2012	10.0	0.6	10.6	1.5	12.0	82.6	87.9	6.0
	2015	12.6	0.9	13.5	2.3	15.8	79.9	85.7	6.7
	2018	15.1	1.0	16.1	3.6	19.6	77.0	81.8	5.9
	2021	16.8	1.1	17.9	3.7	21.6	77.7	82.7	6.0

Source: SAKERNAS, author's calculation (2023)

Table 13 shows the trends of unemployment rate and LFPR by age groups in 2012, 2015, 2018, and 2021. In Indonesia, people aged 15-20 years exhibited the highest unemployment rate. During the observed period, unemployment rate in that age group rose from 24.9% in 2012 to almost 29.0% in 2015, before dropping respectively to 25.3% and 23.1% in 2018 and 2021. Possible contributing factors to the high youth unemployment rate include the perceived lack of necessary experience and skill mismatch (ILO, 2013; World Bank, 2010; World Bank, 2011; Wirdana, 2017). Based on this supposition, young workers were presented with two options: take a job for any pay or stay out of the workforce entirely.

Subsequently, the LFPR for the youngest age group was no better. The official record from the observed period signified the conviction, in which roughly one for every three youth got absorbed into the labor market. Within the age group itself, there seemed to be a downward trend at play. More youth were out of employment relative to their population.

Table 13. Labor Market Trend by Age Group, 2012-2021

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in thousand people)					*(in %)*		
20 and under	2012	8.0	2.7	10.7	16.9	27.5	29.1	38.8	24.9
	2015	6.5	2.6	9.1	18.0	27.1	24.0	33.6	28.7
	2018	6.7	2.3	8.9	17.8	26.7	24.9	33.3	25.3
	2021	6.9	2.1	9.0	17.9	27.0	25.8	33.5	23.1
21-30	2012	26.5	2.7	29.2	10.5	39.7	66.8	73.6	9.2

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in thousand people)					*(in %)*		
	2015	26.3	3.4	29.7	12.0	41.7	63.2	71.3	11.3
	2018	27.6	3.1	30.7	11.5	42.2	65.4	72.7	10.0
	2021	27.5	3.7	31.2	11.6	42.9	64.2	72.9	11.8
31-40	2012	30.1	1.0	31.1	8.5	39.6	76.0	78.5	3.2
	2015	29.8	0.9	30.6	9.7	40.4	73.8	75.9	2.8
	2018	30.7	0.9	31.6	9.1	40.7	75.4	77.6	2.8
	2021	31.7	1.5	33.1	9.0	42.1	75.2	78.7	4.4
41-50	2012	24.2	0.5	24.7	5.7	30.4	79.5	81.3	2.2
	2015	26.5	0.4	26.9	7.1	34.0	77.9	79.2	1.6
	2018	28.5	0.5	29.0	6.9	36.0	79.4	80.7	1.7
	2021	29.8	1.0	30.8	6.8	37.7	79.2	81.8	3.2
51-60	2012	14.6	0.3	14.9	4.9	19.8	73.7	75.3	2.1
	2015	17.0	0.3	17.3	6.2	23.5	72.4	73.5	1.5
	2018	19.5	0.2	19.7	6.7	26.5	73.7	74.6	1.3
	2021	21.7	0.5	22.1	7.1	29.2	74.1	75.7	2.1
60 and above	2012	7.4	0.0	7.5	9.4	16.9	44.0	44.2	0.4
	2015	8.7	0.0	8.7	10.7	19.5	44.6	44.9	0.5
	2018	11.0	0.1	11.0	11.7	22.7	48.4	48.7	0.6
	2021	13.4	0.4	13.8	14.1	27.9	48.1	49.5	2.8

Source: SAKERNAS, author's calculation (2023)

4.2.2. Average Job Seeking Period

After considering key indicators of the primary labor market, our focus shifted towards the duration individuals endured while seeking employment before successfully obtaining a job. Overall, we observed a decreasing trend in job-seeking duration over the years[2] (Figure 18). In 2018, job seekers typically waited for a month less compared to their counterparts in 2012. However, this trend appeared to reverse in the subsequent three years, as the duration of job search in 2021 returned to approximately the level seen in 2015.

[2] Only workers in job status 1,4,5,6 is included in calculation.

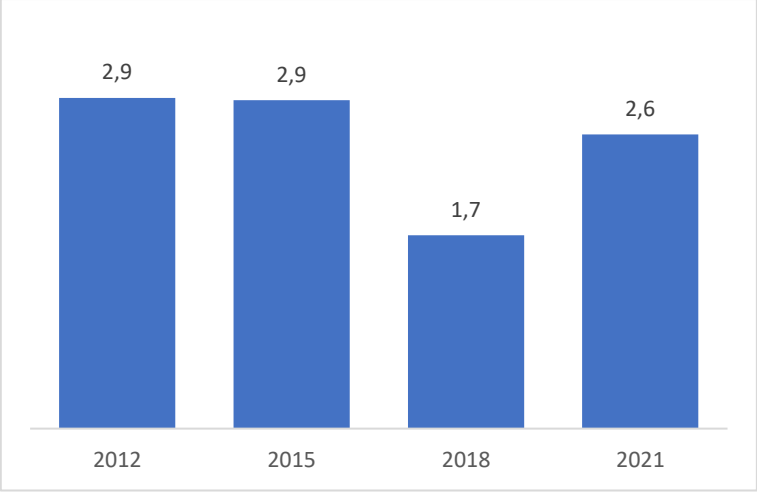


Figure 18. Average Job Seeking Period (Months), 2012-2021
Source: SAKERNAS, author's calculation (2023)

Figure 19 exemplified common features of Indonesian labor market. Individuals residing in Java generally required a longer duration to secure employment, with only one exception observed in 2015. It is important to note that the discrepancy in waiting times was not excessively wide. Urban workers experienced lengthier waiting periods before finding employment, and this trend remained relatively consistent over time. Conversely, rural laborers experienced a comparatively shorter waiting time.

Meanwhile, those involved in the formal sector typically encountered lengthier waiting periods compared to their counterparts in the informal sector. The waiting time for individuals in formal employment remained relatively consistent, while those engaged in informal work experienced a reduction in the waiting period. One possible explanation for this difference was that formal jobs often involve multiple steps in the hiring process, leading to an extended duration before employment was secured. Such circumstances were exacerbated during the pandemic, during which economic growth stagnated and job openings were suppressed as a result.

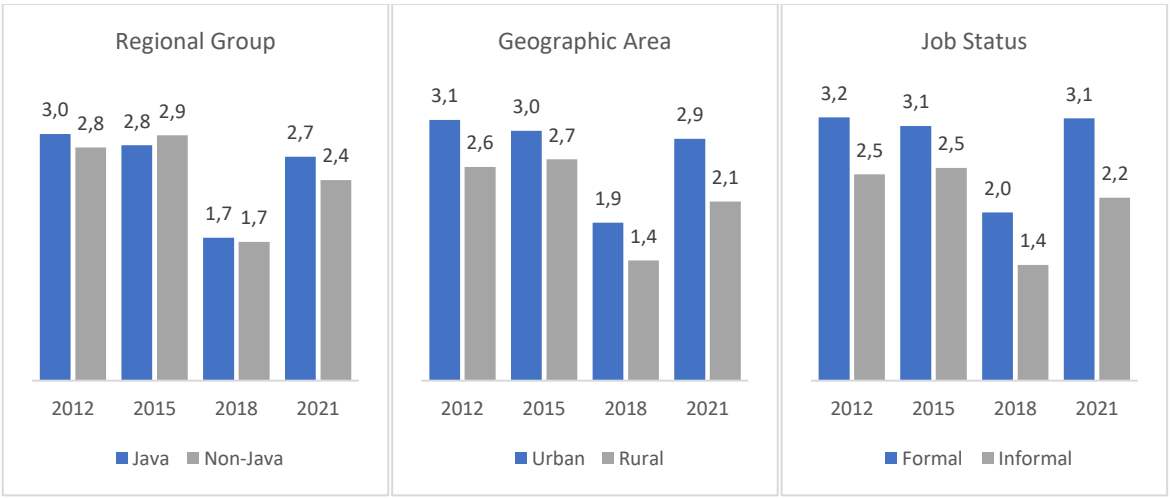


Figure 19. Average Job Seeking Period (Months) by Regional Group, Geographic Area, and Job Status, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Tertiary graduates experienced longer waiting periods before finding employment compared to workers from other educational backgrounds. Despite a slight decrease in waiting times in 2021 compared to 2012, they still surpassed other educational backgrounds by a small margin. One possible explanation for this trend was the selective approach adopted by individuals with tertiary education when entering the labor market. These individuals may have had higher expectations and preferences for certain types of jobs, which could contribute to longer waiting periods as they searched for opportunities that aligned with their qualifications and aspirations.

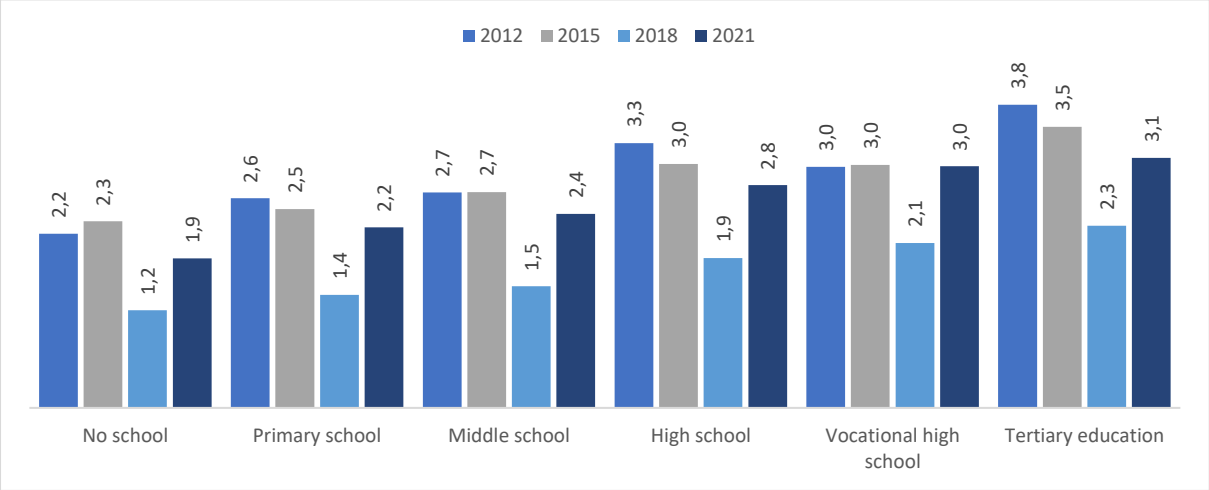


Figure 20. Average Job Seeking Period (Months) by Education Level, 2012-2021
Source: SAKERNAS, author's calculation (2023)

4.2.3. Percentage of Informal Workers by Subgroups

Turning our attention to the matter of informality within the working population, we adopted the definition provided by BPS-Statistics Indonesia (2021) as the basis for our calculations regarding the percentage of informal workers. According to BPS-Statistics Indonesia, informal workers included self-employed individuals, enterprises supported by temporary or unpaid labor, casual workers in agricultural workers (peasant workers), casual workers in non-agricultural sectors, and family/unpaid workers. Through visual inspection, we discerned a striking pattern on informality. Between 2012 and 2018, the share of informal workers in the total labor shrank by 3.3 p.p. The trend, however, reversed following the pandemic, which left many workers out of work and forced them to start anew—often by engaging in informal occupations with rather limited resources.

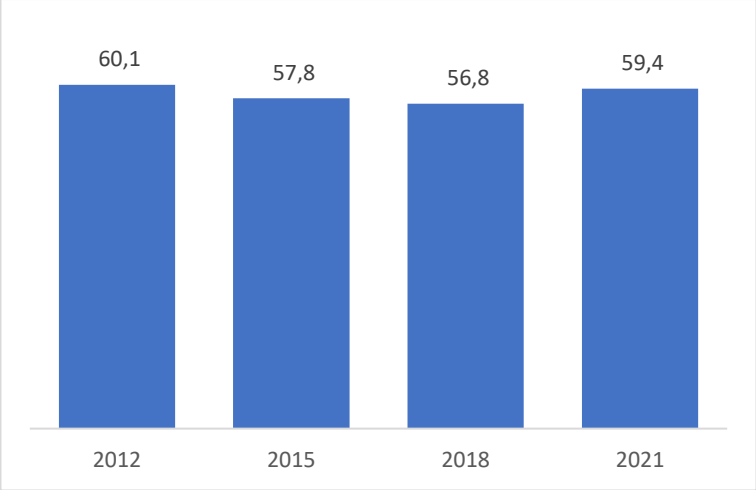


Figure 21. Percentage of Informal Workers (%), 2012-2021
Source: SAKERNAS, author's calculation (2023)

Taking into consideration the regional inequality between Java and regions outside Java, as well as the slower growth experienced in rural areas, we observed a pattern in Figure 22 that aligned with findings from existing literature in Indonesia. However, it is worth noting that the geographical factor appeared to have a more significant influence on determining the likelihood of working as an informal worker, given the notable differences between these areas.

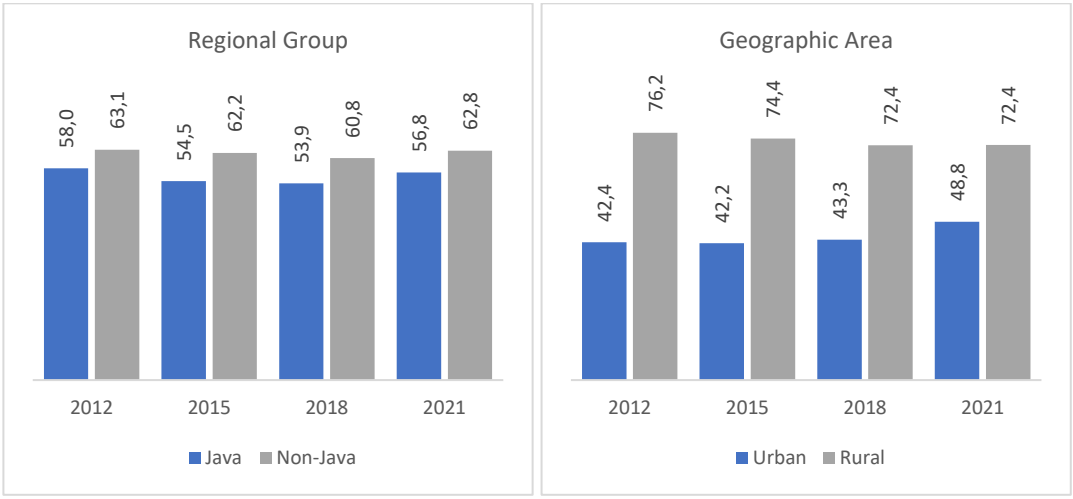


Figure 22. Percentage of Informal Workers (%) by Regional Group and Geographic Area, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Upon juxtaposition on sectoral and categorical difference, we showed in Figure 23 an undisputedly high informality within agriculture, as opposed to industry and service. Interestingly, highly skilled blue-collar workers engaged most extensively in the informal sector within Indonesia's economy. One reasonable elucidation behind such phenomenon was due to technicality in defining informal workers, e.g., self-employed and casual workers—common arrangement in blue-collar jobs. As was the case in

the previous sub-section, the incompatibility between Indonesia's 2012 SAKERNAS and International Standard Classification of Occupations (ISCO)-99 rendered comparison for that year impractical.

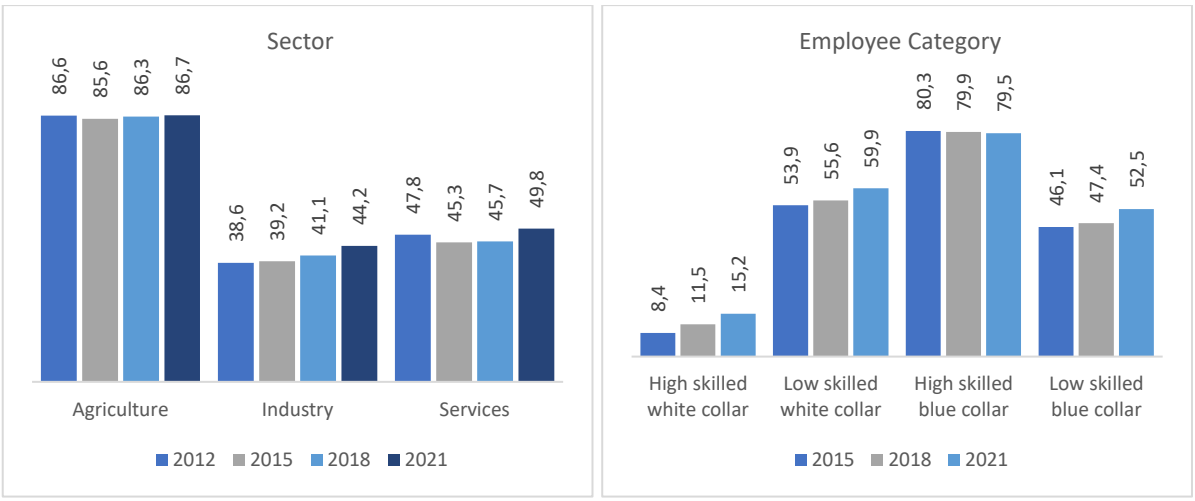


Figure 23. Percentage of Informal Workers (%) by Sector and Employee Category, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Unsurprisingly, higher educational attainment correlated with a lower share of informal workers, as elucidated in Figure 24. The figures for vocational workers, however, were somewhat excessively high when we considered the fundamental objective of the vocational system.

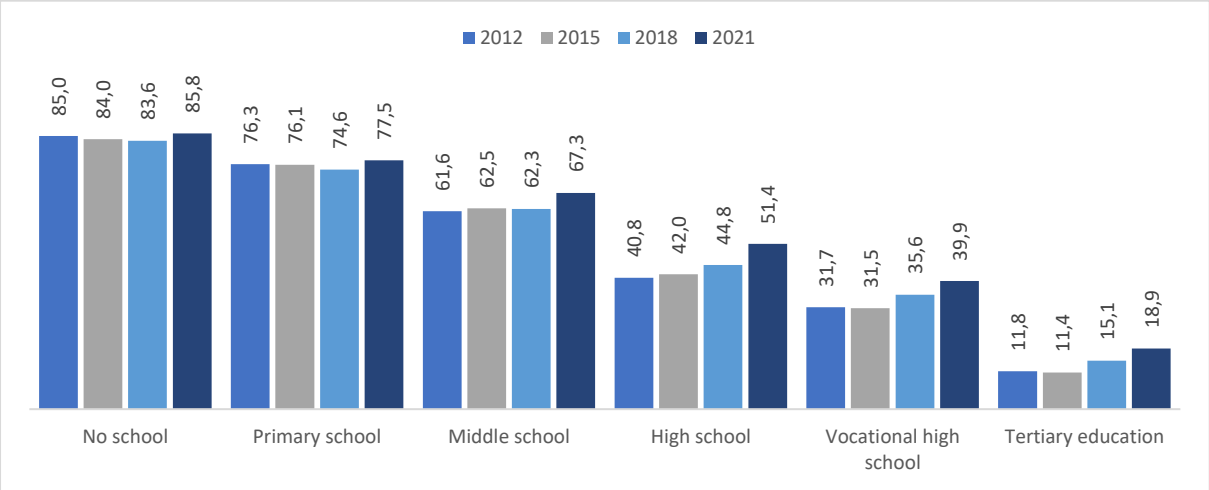


Figure 24. Percentage of Informal Workers (%) by Education Level, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Figure 25 displays an interesting graphical representation. Labors in the age group 21-30 were least likely to engage as informal workers. As one got progressively older, the likelihood of finding oneself as an informal labor became more sizeable. Presumably, job openings were centered around the age at which people were deemed most productive. As a result, it got increasingly difficult for senior labors to find formal jobs.

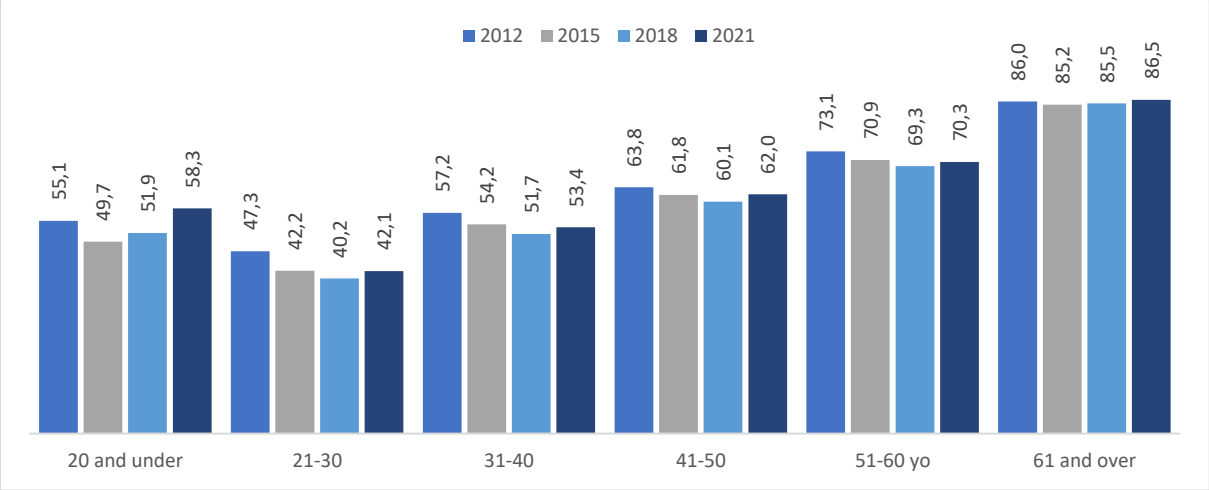


Figure 25. Percentage of Informal Workers (%) by Age Group, 2012-2021
Source: SAKERNAS, author's calculation (2023)

The analysis revealed a downward trend in the informal share of employment among relatively wealthier individuals. The lowest 20% income group often found themselves in less stable, informal job settings. In contrast, the top 20% were more likely to be employed in stable, formal work environments. Similar to the income quintile analysis discussed earlier, this assessment included only self-employed individuals, employees, and casual workers in both agricultural and non-agricultural sectors.

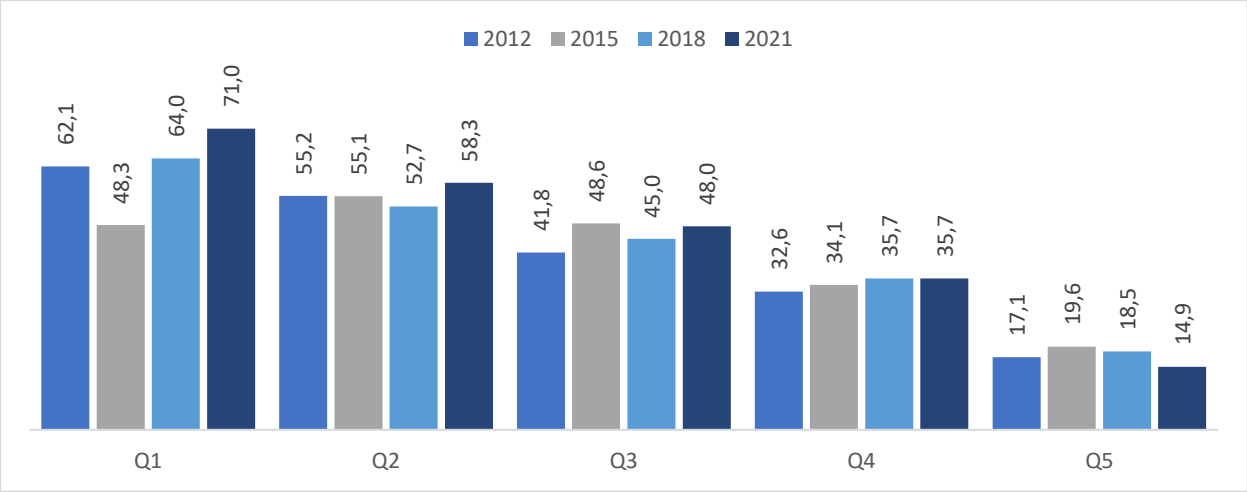


Figure 26. Percentage of Informal Workers (%) by Income Quintile, 2012-2021
Source: SAKERNAS, author's calculation (2023)

4.2.4. Social Insurance Coverage[3]

4.2.4.1. Working Accident Insurance (Jaminan Kecelakaan Kerja/JKK)

Regarding accident insurance, we noticed a trend similar to that observed in health insurance. There had been efforts to enhance accident insurance coverage, especially for female workers, workers outside Java, and rural workers. The improvement was particularly notable among female workers, as indicated by their higher coverage rates compared to male workers. Workers in regions outside Java and those in rural areas also showed progress in closing the coverage gap with their counterparts in Java and urban areas, respectively.

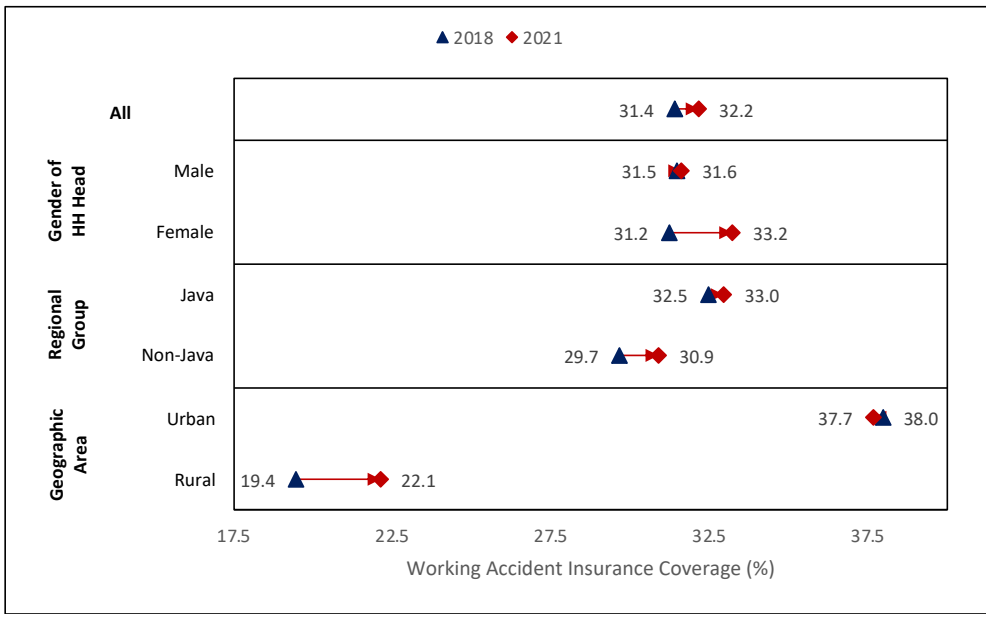


Figure 27. Working Accident Insurance Coverage (%) by Gender of Household Head, Geographic Area, and Regional Group, 2018 and 2021

Source: SAKERNAS, author's calculation (2023).

However, the income quintile analysis revealed minimal improvement in coverage; higher income groups tended to have better accident insurance coverage, while the opposite was true for lower income groups.

[3] We only calculated figures for 2018 and 2021, as SAKERNAS 2012 and 2015 do not contain information on social insurance coverage.

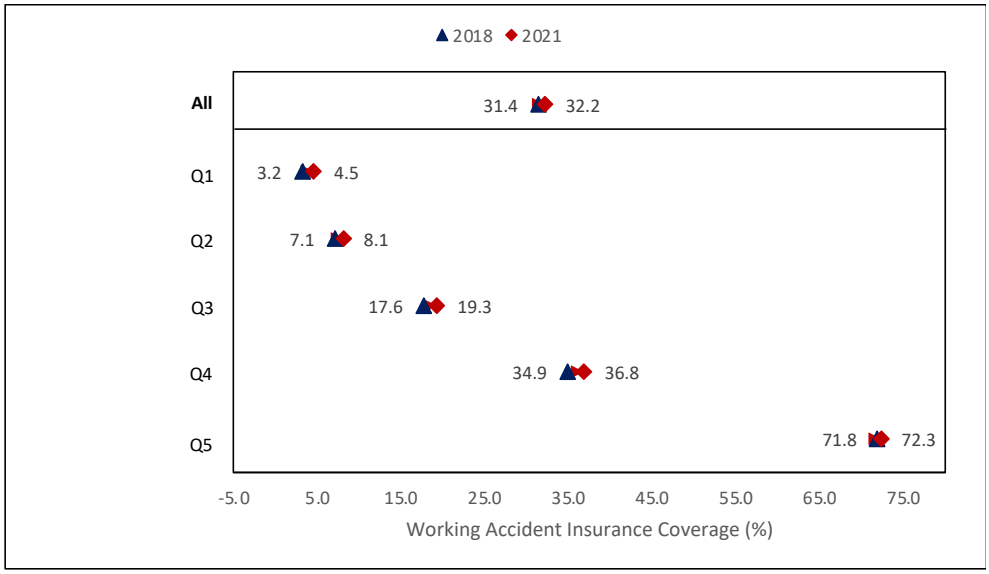


Figure 28. Working Accident Insurance Coverage (%) by Income Quintile, 2018 and 2021

Source: SAKERNAS, author's calculation (2023).

4.2.4.2. Workers' Life Insurance (Jaminan Kematian/JKM)

Figure 29 compared worker's life insurance across various demographics: gender of the household head, regional group, and geographic area. Overall, there was a slight decrease in coverage, with some categories showing improvement. Male household heads, workers in Java, and urban workers had seen a decline in coverage. Conversely, female household heads, workers in non-Java regions, and rural workers exhibited a slight increase in coverage. The differences were generally small, except for the geographic area, where the coverage gap between rural and urban workers decreased from 14 p.p in 2018 to 10.8% in 2021.

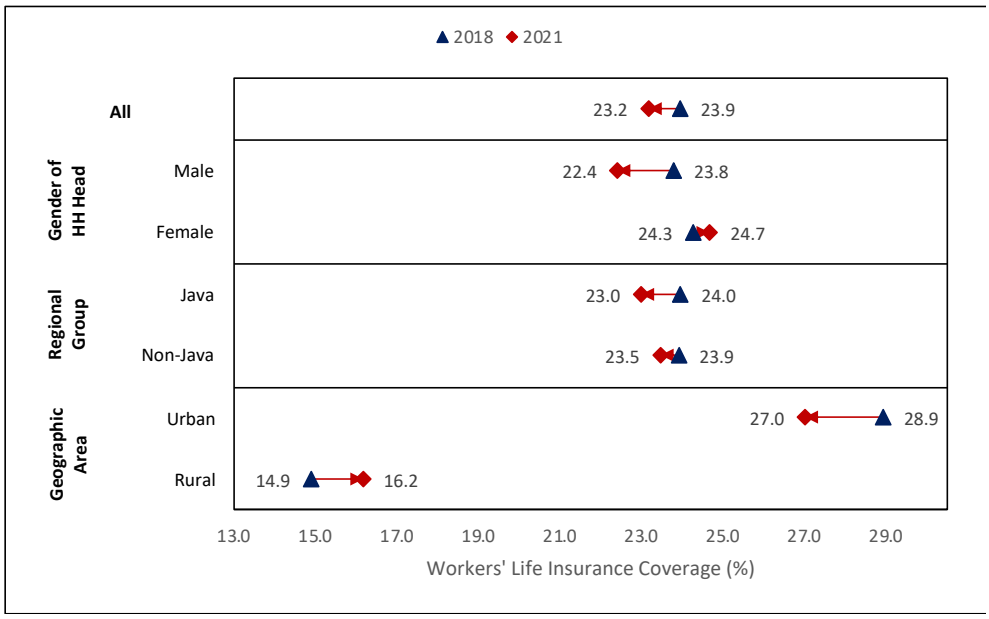


Figure 29. Workers' Life Insurance Coverage (%) by Gender of Household Head, Geographic Area, and Regional Group, 2018 and 2021

Source: SAKERNAS, author's calculation (2023).

The analysis of life insurance coverage by income quintile revealed a clear pattern: higher income groups had higher coverage. The most significant difference was between the fourth and fifth quintiles, exceeding 30 p.p.. Most quintiles showed minor changes in coverage, leading to an overall decline between 2018 and 2021.

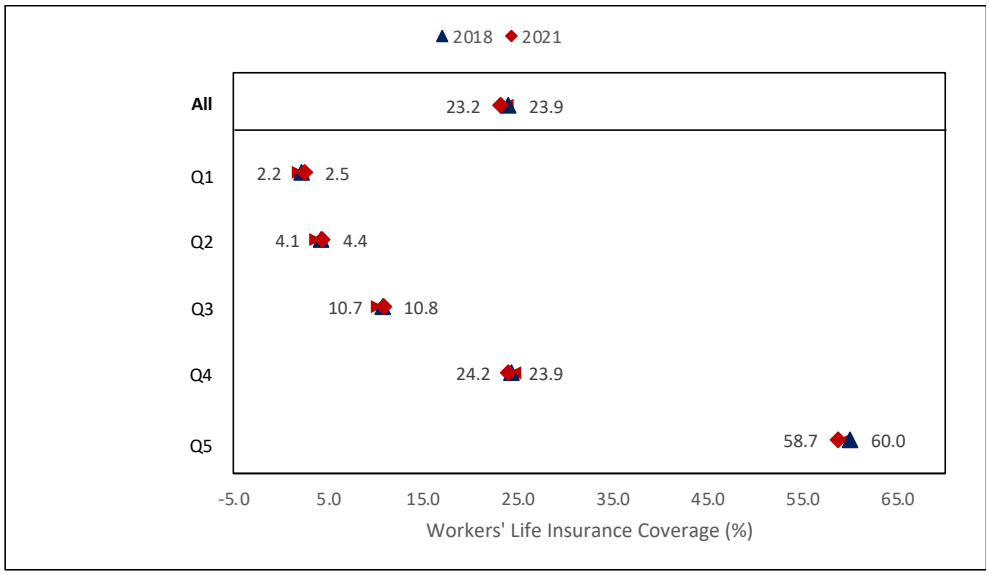


Figure 30. Workers' Life Insurance Coverage (%) by Income Quintile, 2018 and 2021
Source: SAKERNAS, author's calculation (2023).

4.2.4.3. Workers' Old Age Insurance (Jaminan Hari Tua/JHT)

Figure 31 illustrated worker's old-age insurance based on the gender of the household head, regional group, and geographic area. The general trend was a decrease in coverage, except for a slight increase among rural workers. Nonetheless, rural workers still had significantly lower old-age insurance coverage compared to urban workers. The differences in coverage among household head genders and regional groups were relatively small.

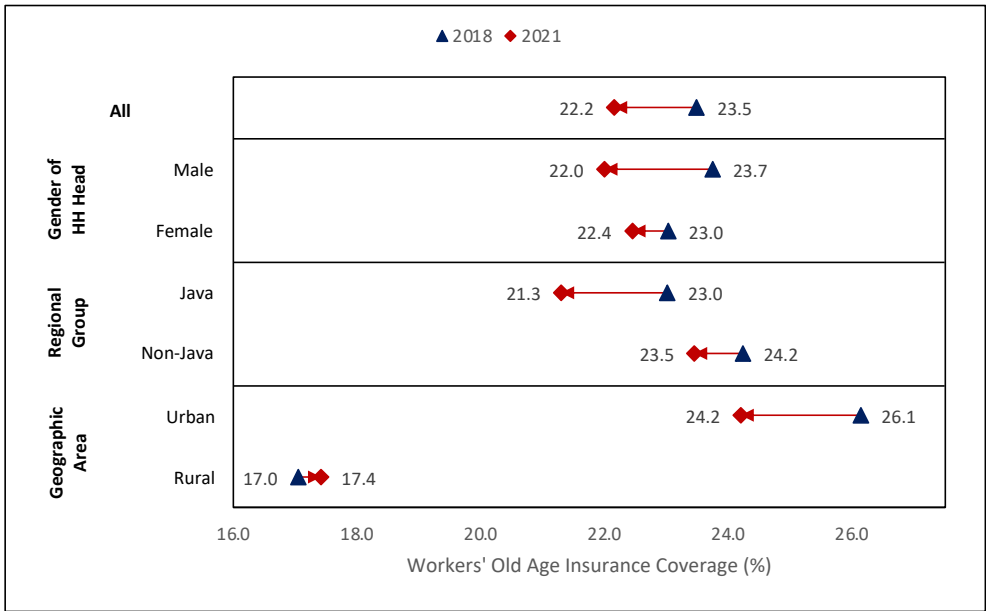


Figure 31. Workers' Old Age Insurance Coverage (%) by Gender of Household Head, Geographic Area, and Regional Group, 2018 and 2021

Source: SAKERNAS, author's calculation (2023).

Concerning income quintiles, there was an increase in old-age insurance coverage with higher income groups. The difference between the fourth and fifth quintiles was nearly 35 p.p. Overall, there had been an increase in coverage between 2018 and 2021.

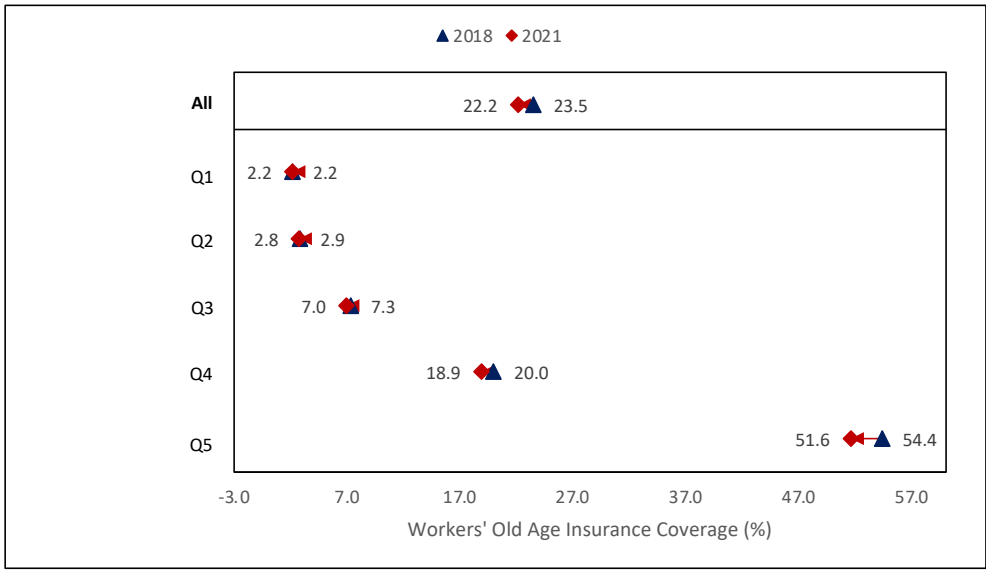


Figure 32. Workers' Old Age Insurance Coverage (%) by Income Quintile, 2018 and 2021

Source: SAKERNAS, author's calculation (2023).

4.3. Physical Asset Inequality

This section utilizes data sourced from SUSENAS for the years 2012, 2015, 2018, and 2020 to establish an asset index, which is employed to examine disparities in asset distribution. The methodology employed in this endeavor employs the Uncentered Principal Component Analysis (UC PCA) method to generate asset indices for the evaluation of physical asset inequality, encompassing the computation of the Gini coefficient. The rationale underpinning the selection of this approach is rooted in its capacity to facilitate the estimation of Lorenz curves, Gini coefficients, and other pertinent metrics used for assessing asset inequality. This capacity arises from the consistent positivity of the weights derived through this method. Notably, this method draws upon the framework originally proposed by Banerjee (2010) and adopted by Shifa, M., & Ranchhod, V. (2019).

Traditionally, measures of inequality in a multidimensional context have encompassed both ownership of household assets (such as televisions, refrigerators, and cars) and access to basic services (like access to clean water, sanitation, and electricity). However, in this particular analysis, we focus solely on household assets. This decision stems from the fact that indicators related to basic services have already been examined in other sections of this report.

The construction of the asset index occurs at the household level, employing dummy variables to signify asset ownership. Nevertheless, due to disparities in asset variables across different years, our analysis centers on a consistent set of variables within the specified timeframe, consisting of nine indicators. It is crucial to emphasize that there exists no standardized method for computing per-capita asset index values, resulting in all individuals within a household being assigned the same asset index value determined at the household level. This section investigates the allocation of assets among households and scrutinizes trends in asset inequality, employing tools such as the Lorenz curve, average asset index scores, and the Gini coefficient based on household asset indices.

According to Shifa and Ranchhod (2019), when comparing asset inequality across different time periods, it is essential to employ a consistent set of assets. Two approaches can be applied to derive the necessary weights: one involves creating an asset index by pooling data from various time points, while the other entails calculating weights using data from a single time period and then applying those identical weights to another time period. In this particular study, the first approach was utilized, involving data pooling across time to create an asset index. Additionally, household-level data were utilized, with individual-level weights obtained by multiplying the household weight by the household size.

4.3.1. Household Asset Ownership

Figure 33 depicts trends of household asset ownership in 2012-2021[4]. Out of the nine selected assets, there was an increase in ownership observed for six assets, including smartphone, motorcycles, Liquified Petroleum Gas (LPG), refrigerators, cars, and Air Conditioners (AC) throughout the period. Ownership levels for the remaining assets fluctuated. Furthermore, there are 3 assets that dominates throughout the years of 2012-2021, and those assets are smartphone, motorcycle, and LPG. Conversely,

[4] The inquiry about assets is focused on the household level. However, due to the utilization of individual weights, when a household possesses an asset, it implies that every member within the household is considered to possess that asset.

motorboat, boat, and air conditioner (AC) are three of the least owned assets throughout the years of 2012-2021.

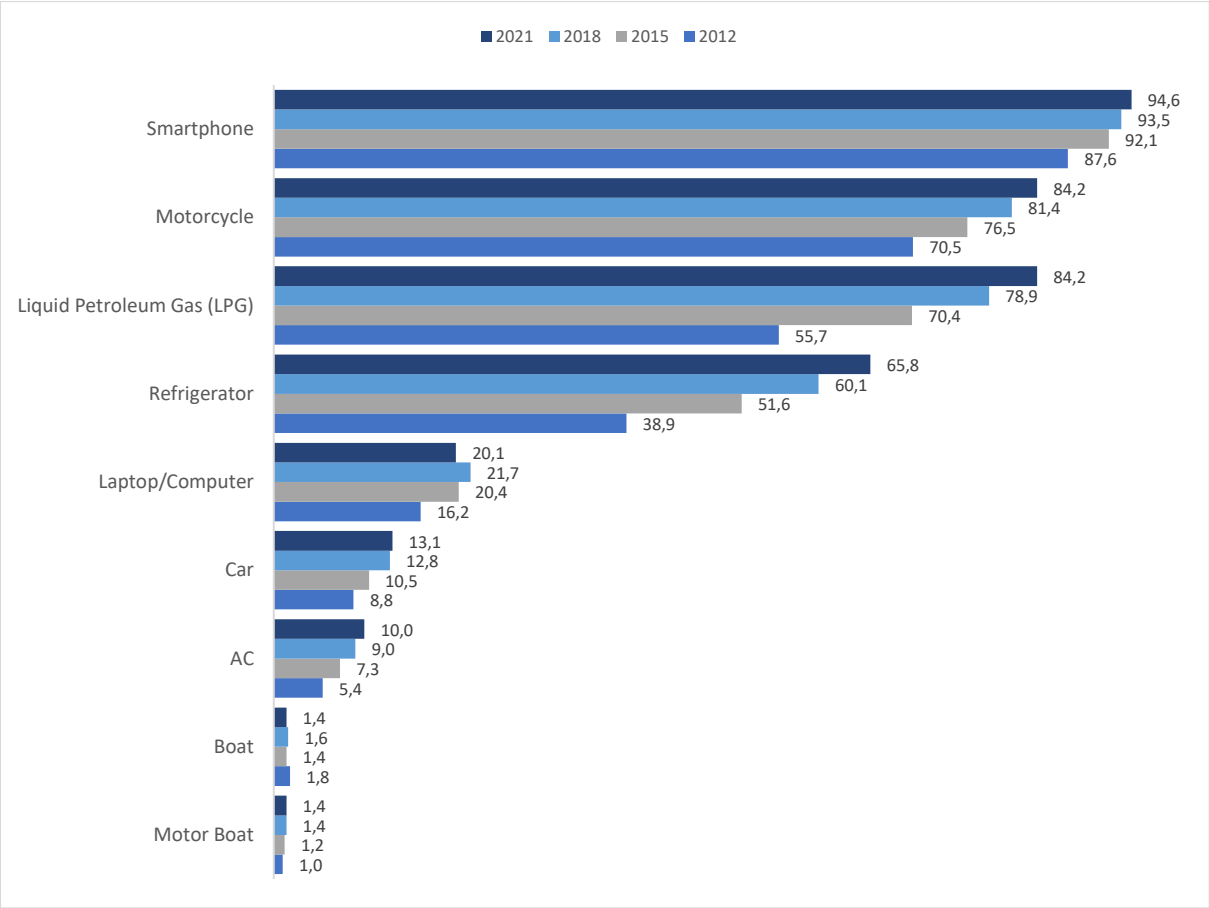


Figure 33. Trends of Individual Asset Ownership (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Moreover, when analyzing this trend with respect to regional categorizations, it becomes apparent that the boats and motorboats exhibit a more pronounced upward trajectory in the non-Java group in contrast to Java. The average disparity between these two groups for boats and motorboats over the period spanning from 2012 to 2021 amounts to 2.65% and 1.98%, respectively. On the other hand, various other asset types consistently demonstrate higher values in the Java region when compared to non-Java, with the most significant average difference being observed in the case of LPG assets, which stands at 17.65% throughout that period.

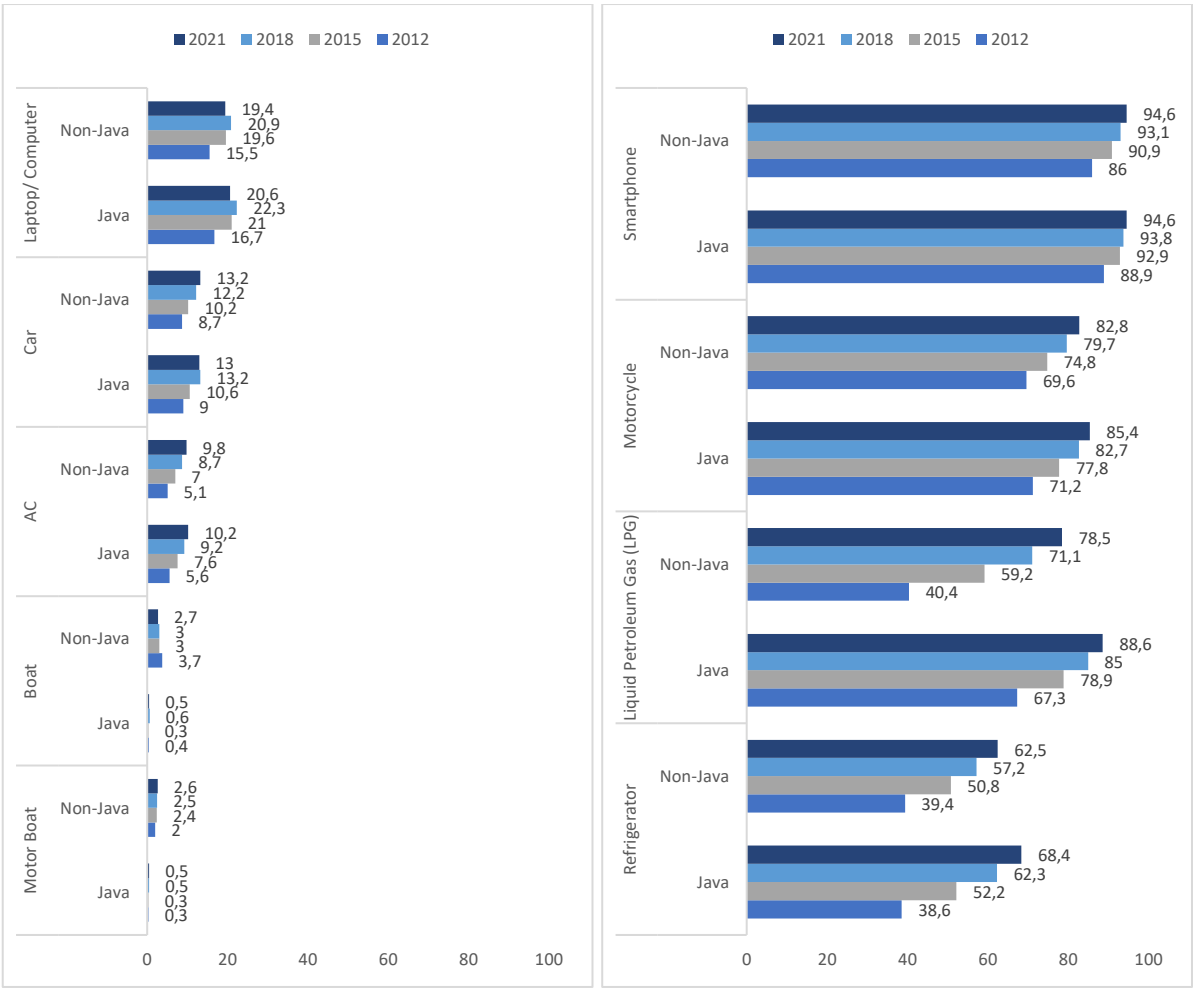


Figure 34. Trends of Individual Asset Ownership by Regional Group (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Drawing insights from Figure 35, a direct comparison between the 2021 distribution and the 2018 distribution is not feasible due to the intersecting curves at various points within the distributions. However, it is evident that the Lorenz curve representing the 2021 distribution dominantly surpasses the 2012 distribution, suggesting an improvement in inequality of asset ownership over the past decade. Nevertheless, given the absence of clear Lorenz dominance throughout the distributions, it remains inconclusive to definitively determine which distribution exhibits greater equality. Evaluating the Generalized Lorenz curves, the highest mean asset index is observed in 2021, followed by 2018, 2015, and 2012, indicating that the highest welfare is associated with the 2021 population.

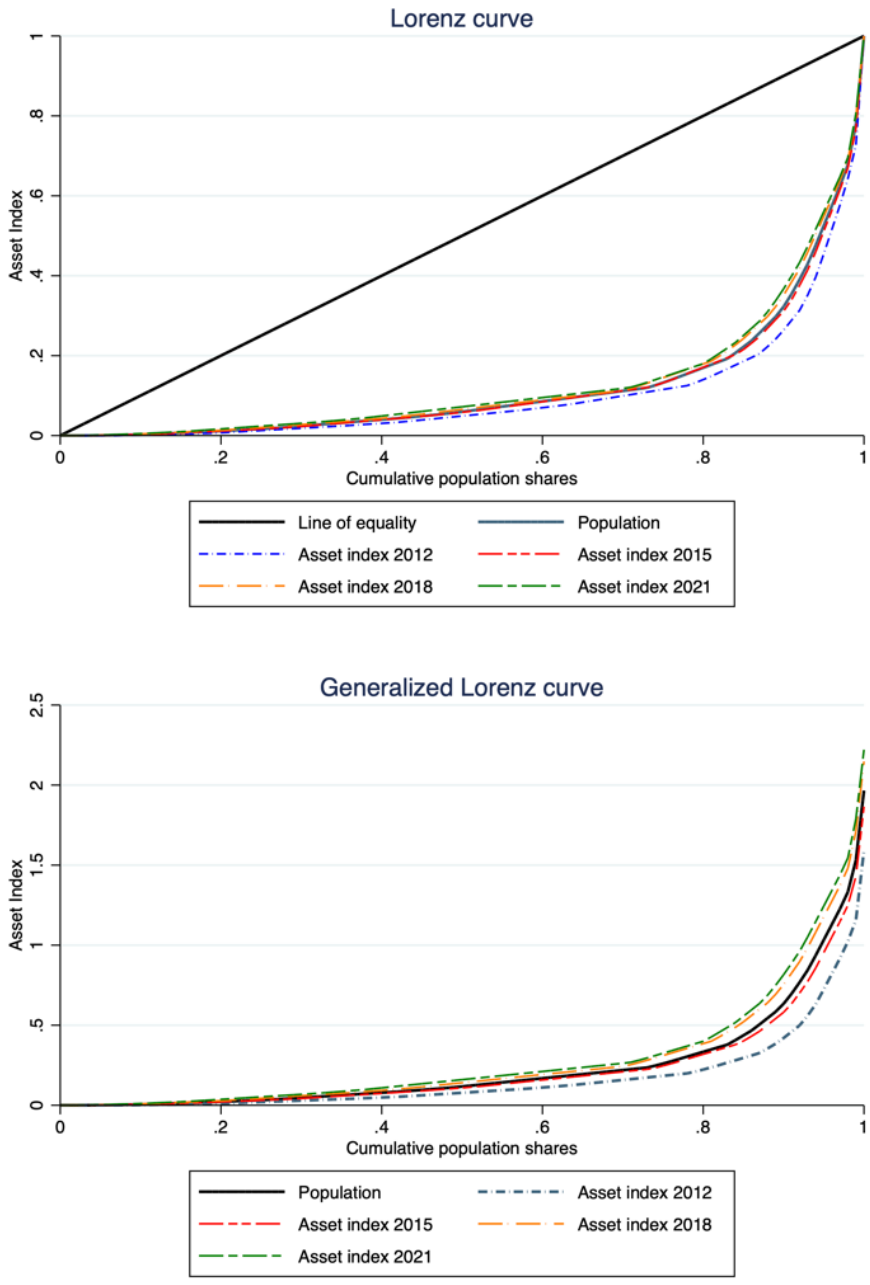


Figure 35. Lorenz Curves and Generalized Lorenz Curves based on Asset Index, 2012-2021

Source: SUSENAS, author's calculation (2023)

Note: Legend "population" refer to whole country population sorted by their expenditure

Figure 36 illustrate the average asset scores and asset Gini Coefficients spanning from 2012 to 2021. The Gini coefficient for the asset index exhibited a declining pattern, decreasing from 0.796 in 2012 to 0.738 in 2021. Conversely, the average asset score displayed an upward trajectory, rising from 1.592 in 2012 to 2.221 in 2021. This trend indicates a continuous improvement in asset ownership equality over time.

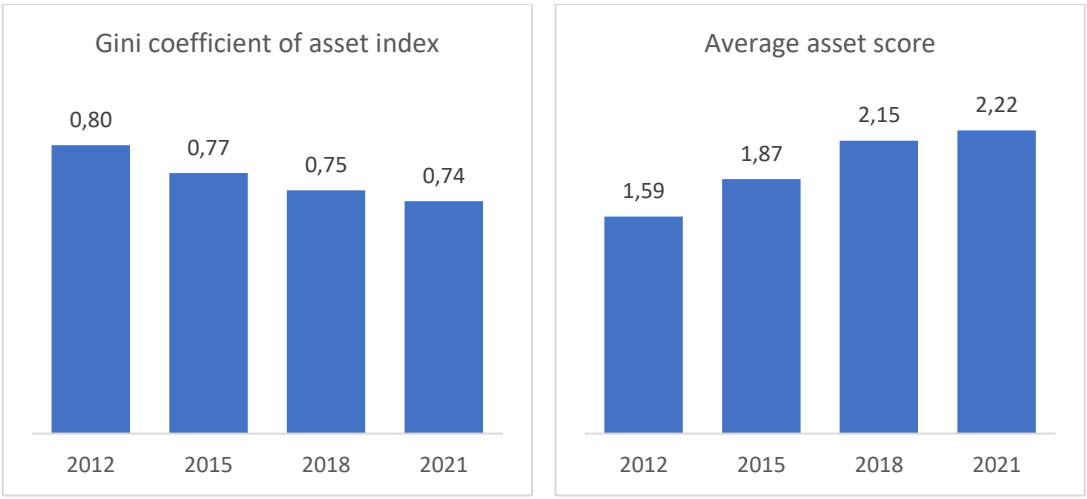


Figure 36. Average Asset Scores and Asset Gini Coefficients, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 37 exhibits the average asset scores and asset Gini coefficients by geographic area, 2012-2021. Overall, the Gini coefficients for both urban and rural areas exhibited a declining pattern. Notably, there was a conspicuous disparity between these two areas during the years 2012-2021, highlighting the inequalities between urban and rural regions for that period. Encouragingly, the gap became less pronounced in 2021, indicating progress in reducing inequality between these two areas.

Furthermore, the average asset scores reveal distinct trends in both regions. Each year, both urban and rural areas display a consistent upward trend, with a notable gap between them. Urban areas consistently maintain a higher average asset score compared to rural areas. Unlike the Gini index value, the disparity between these two regions has not demonstrated a decrease over the past decade.

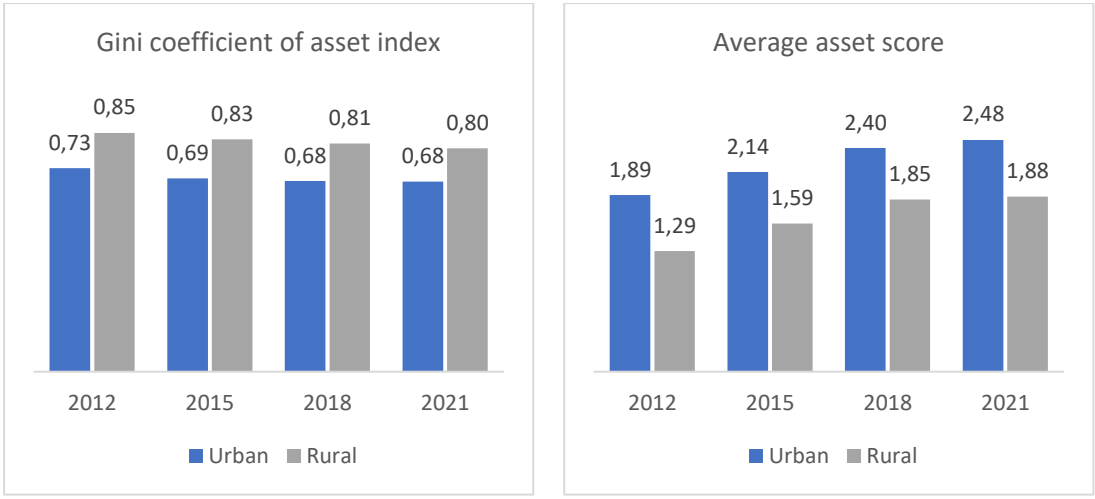


Figure 37. Average Asset Scores and Asset Gini Coefficients by Geographic Area, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 38 depicts average asset score and asset Gini coefficients by regional group. Over the decade, a conspicuous disparity in asset ownership index inequality between Java and non-Java regions in Indonesia was observed, with consistently higher asset Gini coefficients in non-Java, indicating greater

wealth inequality in the non-Java areas. However, by 2021, this inequality gap had notably diminished as both regions experienced substantial reductions in their asset Gini coefficients, suggesting progress in reducing wealth inequality, possibly due to policies and economic developments aimed at narrowing the urban-rural wealth divide. In summary, the data from 2012 to 2021 reveals a consistent decline in asset ownership index inequality in both Java and non-Java regions, with the most significant reduction occurring by 2021, signifying positive steps in addressing regional wealth disparities.

In addition to Gini coefficients, the analysis of average asset scores offers distinct observations for these regional groups. Each year, both Java and non-Java regions saw consistent upward trends in average asset scores, suggesting an overall improvement in asset ownership over time. Nevertheless, a substantial gap persisted between the two regions, with non-Java consistently maintaining higher average asset scores compared to Java. Unlike the Gini index, the disparity in average asset scores between Java and non-Java regions has not shown substantial reduction over the past decade.

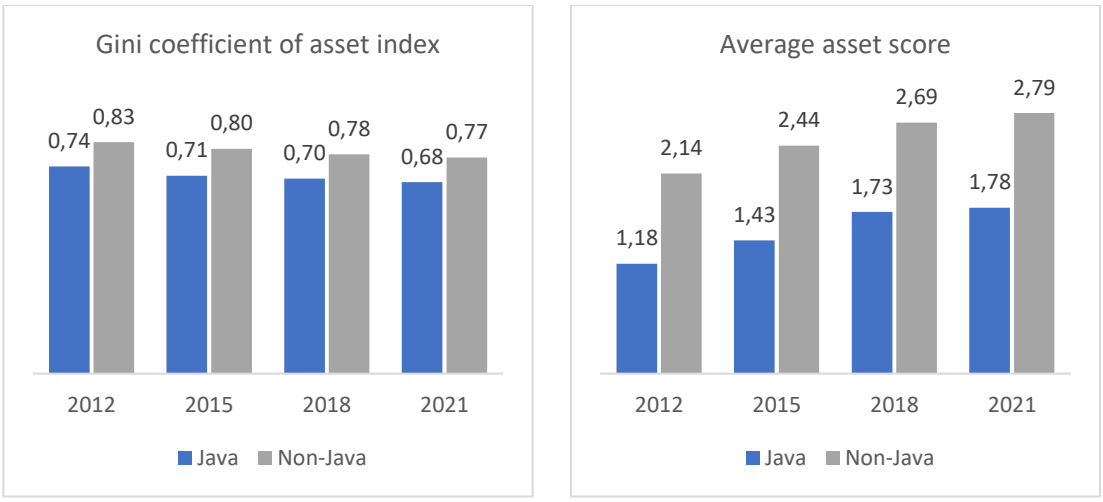
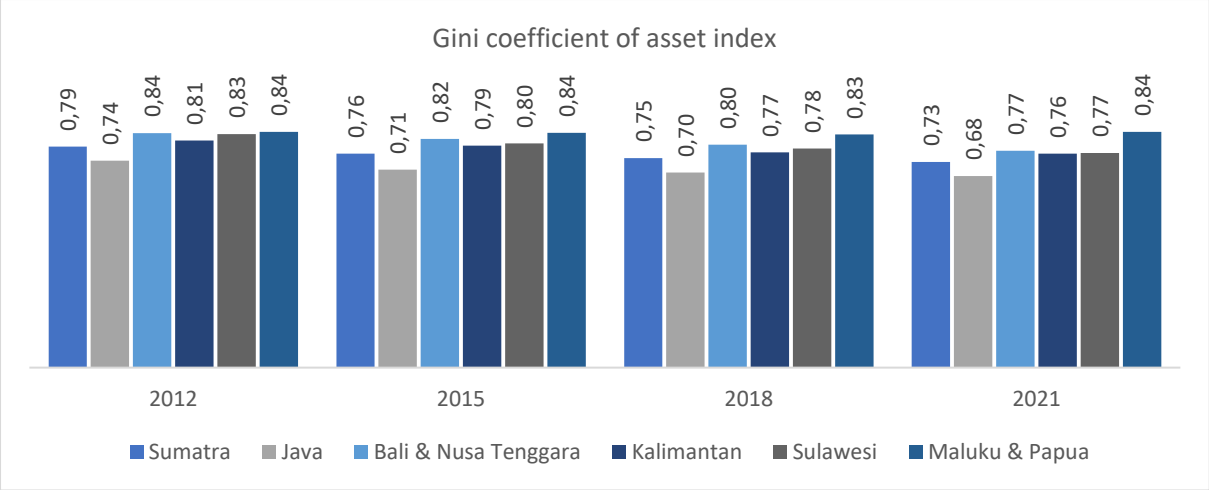


Figure 38. Average Asset Scores and Asset Gini Coefficients by Regional Group, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 39 presents data on average asset scores and asset Gini coefficients across various islands from 2012 to 2021. In general, all the islands witnessed a consistent downward trend in their asset Gini coefficients, reaching their lowest points in 2021. The exception to this trend was observed in Maluku & Papua, where the Gini coefficient fluctuated. Notably, Maluku & Papua played a significant role in contributing to the high level of asset index inequality within the non-Java Region.

In the case of average asset score, all islands exhibited to have an increasing pattern over the years of 2012-2021. Additionally, in the period of 2012-2021, Kalimantan has a significantly higher average asset score, followed by Maluku and Papua. Conversely, Bali & Nusa Tenggara observed to have the lowest average asset score through all the periods, except of 2021, further depicting inequality between the islands.



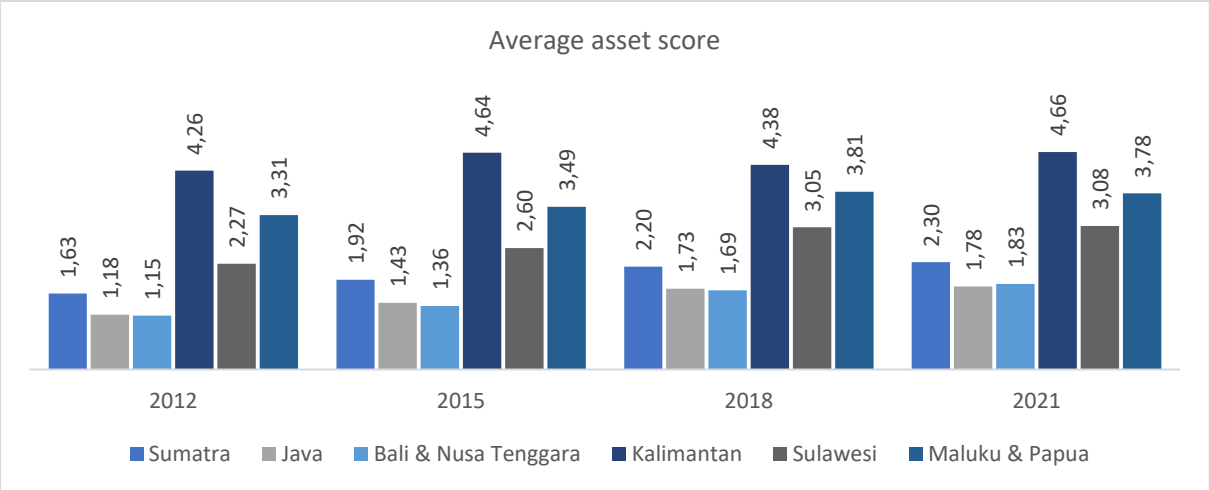


Figure 39. Average Asset Scores and Asset Gini Coefficients by Island, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 40 exhibits the average asset scores and asset Gini coefficients expenditure decile in the periods of 2012-2021. Among the various deciles, the top three deciles exhibit the lowest Gini coefficient for the asset index through all the years of 2012-2021. On top of that, there is a positive correlation between the expenditure decile and the average asset score, indicating that higher expenditure deciles correspond to higher average asset scores.

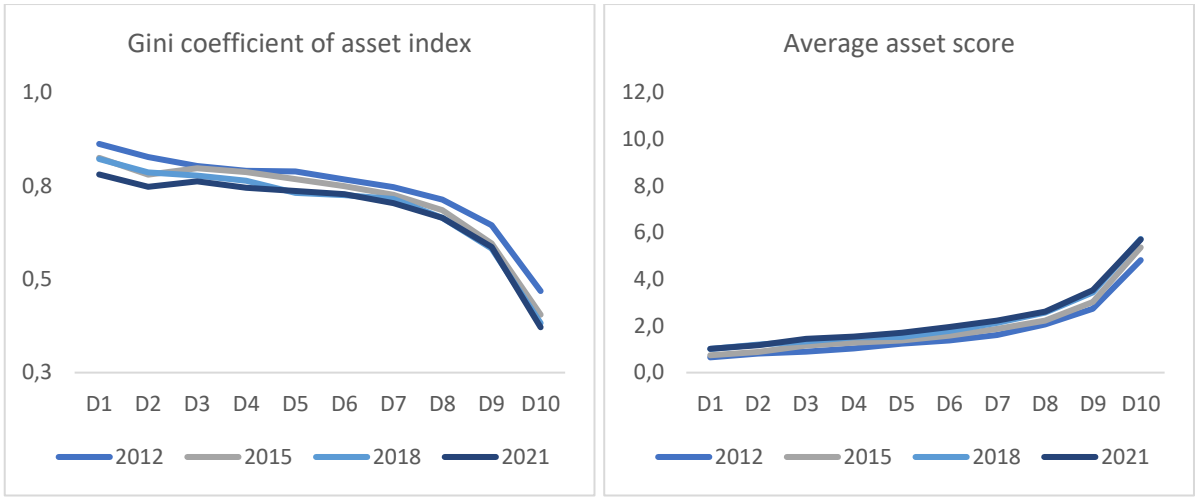


Figure 40. Average Asset Scores and Asset Gini Coefficients by Decile, 2012-2021
Source: SUSENAS, author's calculation (2023)

4.3.2. Access to Transport Infrastructures

Transport infrastructure plays an important role in the economy. It provides access for distribution, allowing producers and consumers interact and contribute to economic growth. In relation to inequality, several studies have documented the impact of road access to income inequality (Chatterjee & Turnovsky, 2012; Haddad & Barufi, 2017; Lu, et al., 2022; Marein, 2022). Examining the disparity in access is important to analyse the state of infrastructure development and how it affect inequality in Indonesia.

Generally, from 2012 to 2021, there has been a declining trend in roads in good condition, while conversely, the number of roads in moderate condition has increased. On the other hand, the condition of damaged and severely damaged roads has remained stagnant.

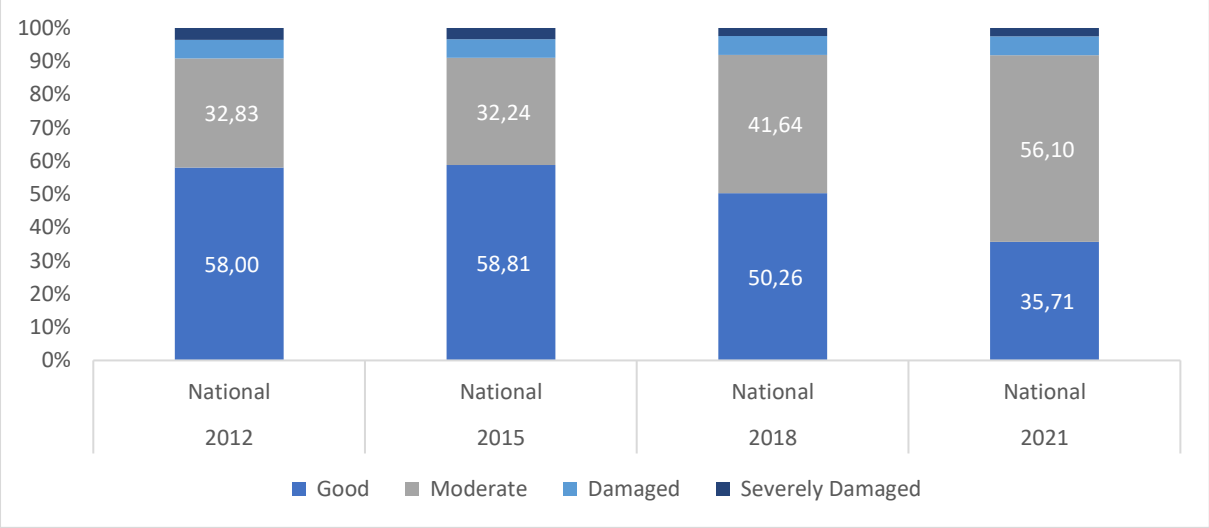


Figure 41. Condition of National Roads: General, 2012-2021
Source: CEIC, author's calculation (2023)

The condition of national roads outside Java is better than that in Java. In Java, in 2012, only 40% of the roads were in good condition, while outside Java, it was around 60%. That suggests the central government has directed more road development efforts outside Java. However, in Java and outside Java, there is a trend of a decline in road conditions from good to moderate, resulting in an increasing proportion of roads in moderate condition.

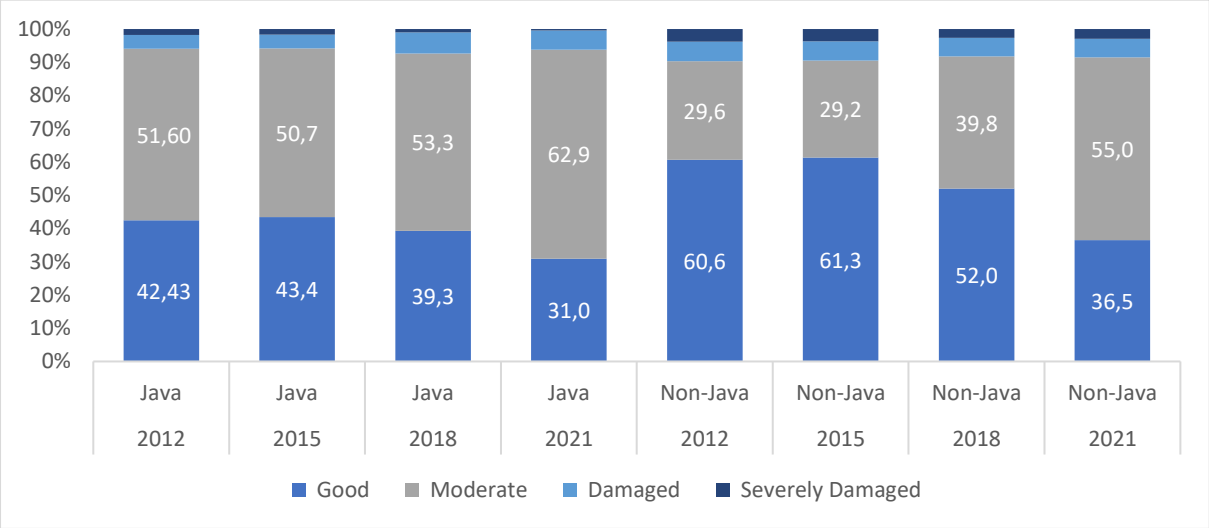


Figure 42. Condition of National Roads by Regional Group, 2012-2021
Source: CEIC, author's calculation (2023)

4.4. Social Asset Inequality: Education

4.4.1. Pre-School Net Enrollment Rate

Figure 43 depicts the pre-school net enrollment rate (NER) in 2012-2021. Generally, the data displays an upward trend from 2015 to 2021. It started at 34.61% in 2015, then dipped to its lowest at 33.45% in 2017. Subsequently, there was a notable increase from 2018 to early 2020. Despite the fluctuations, the general trend from 2015 to 2020 was ascending, potentially attributable to a lag in policy implementation. However, a decline was observed again in 2021, likely due to the repercussions of the COVID-19 pandemic.

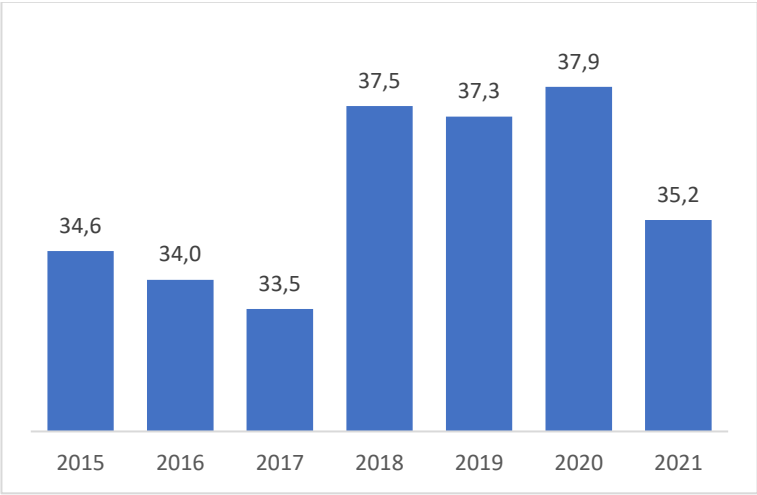


Figure 43. Pre-School Net Enrollment Rate (3-6 Years Old), 2015-2021
Source: SUSENAS, author's calculation (2023)

Figure 44 exhibits the pre-school NER by geographic area and regional group in 2012-2021. For both categories, we can see a fluctuating trend throughout 2012-2021, where both rose to their peak from 2012 to 2015, and then continuously decreased and sank to their lowest point in 2021. The lowest point in 2021 might be due to the escalation of COVID-19 cases in that period.

The figure also reveals the condition of inequality that occurs in both categories. In the case of geographic area, the gap in pre-school NER between urban and rural areas reached its utmost point in 2012, where the difference reached 9.7 p.p. Fortunately, the gap in pre-school NER between urban and rural areas perpetually shrank down throughout the years 2012-2021, where the gap came down to only 0.56 p.p. This indicates that the inequality between rural and urban areas in terms of pre-school NER has gotten better since 2012 and is barely showing any sign of inequality in 2021.

Furthermore, in terms of regional groups, the gap in pre-school NER between Java and non-Java groups reached its widest gap in 2012. Thankfully, the gap has been consistently decreasing up to 2021, where the difference in pre-school NER between Java and non-Java reached its lowest at 12.35 p.p. But, as we all would like this to be good news, it unfortunately still illustrates the very clear case of inequality between the Java and non-Java groups, and therefore, the non-Java group deserves more attention in this category.

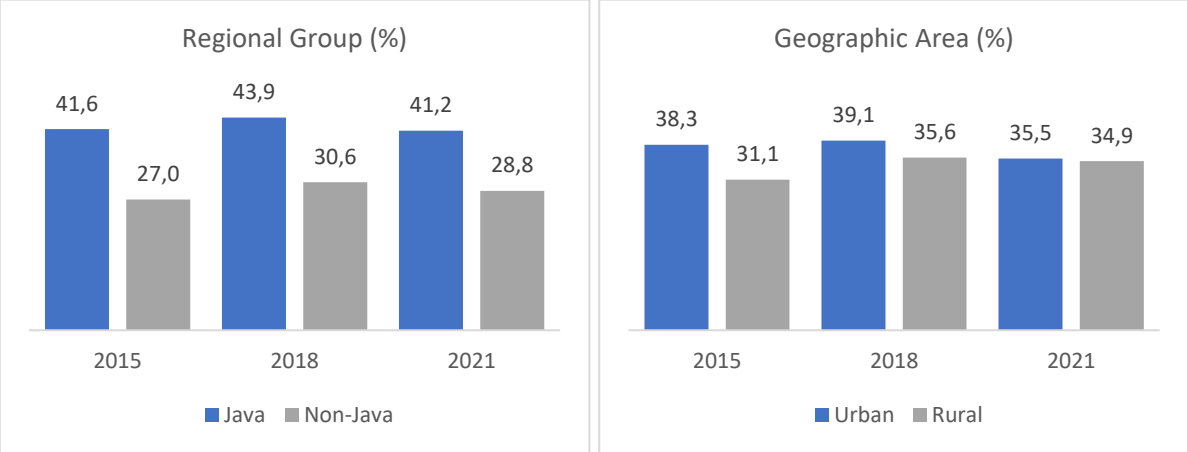


Figure 44. Pre-School Net Enrollment Rate by Geographic Area and Regional Group, 2015-2021
Source: SUSENAS, author's calculation (2023)

Figure 45 illustrates the pre-school NER by expenditure quintile in 2012-2021. All the income quintiles experience a similar pattern, where the net enrollment rate peaked in 2015 and then consistently decreased until 2021. It is sad to say that the sign of inequality is still apparent in this figure, where it favors the higher quintile. The gap peaked in 2012 but then continuously decreased until 2021. But, despite the continuous decrease of the gap, the sign of inequality is still very much apparent up to 2021, where the higher quantiles have a higher net enrollment rate relative to the lower quantiles.

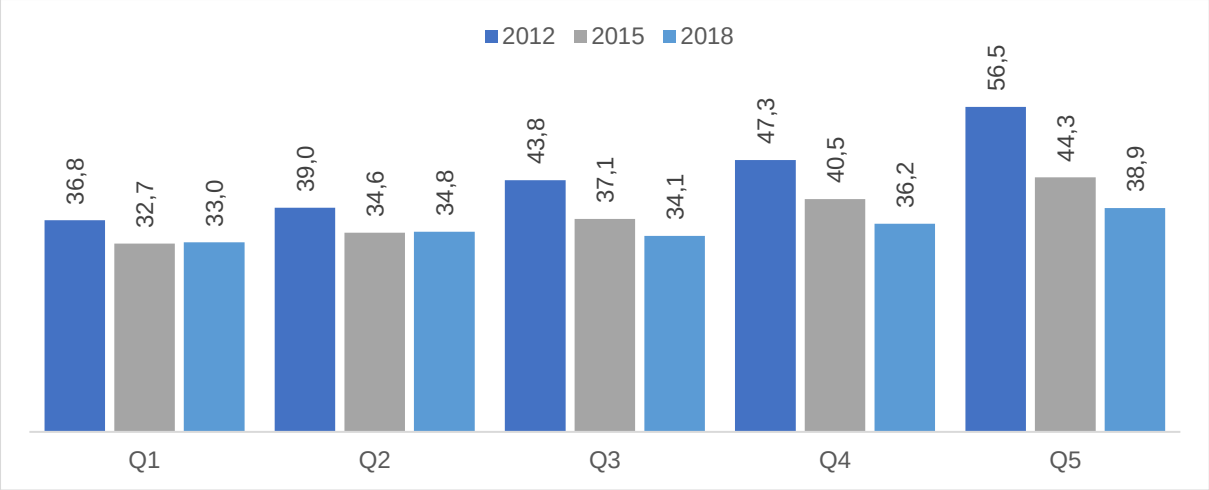


Figure 45. Pre-School Net Enrollment Rate by Expenditure Quintile, 2015-2021
Source: SUSENAS, author's calculation (2023)

4.4.2. Primary School Net Enrollment Rate

Figure 46 exhibits the primary school net enrollment rate (NER) in 2012-2021. This figure portrays a positive trend, showing a continuous increase in the primary school net enrollment rate throughout 2012-2021. The primary school NER was at its lowest in 2012, amounting to 92.49%. The primary school NER then proceeded to increase consistently, reaching 96.7% in 2015, then 97,58% in 2018, which then proceeded to reach its peak in 2021, with a rate of 97.8%.

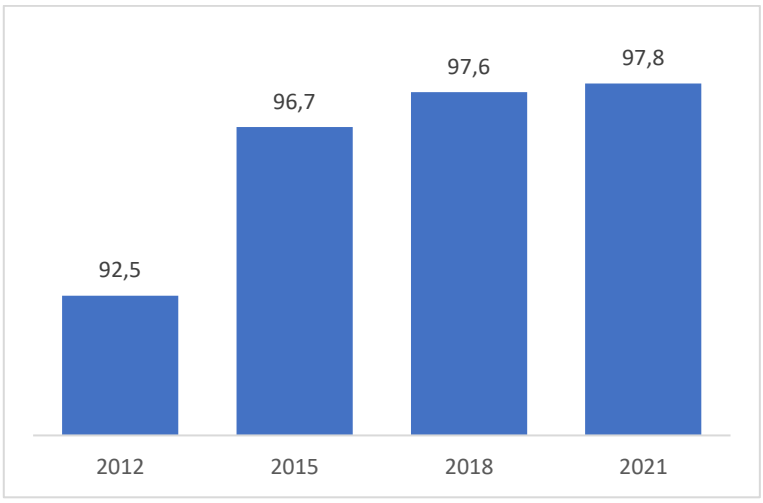


Figure 46. Primary School Net Enrollment Rate, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 47 portrays the primary school NER by geographic area and regional group in 2012-2021. In the case of geographic area, it's good news that we observe less apparent inequality in this category, where the difference in primary school NER was only as much as 0.81 p.p. in 2021. However, in terms of regional groups, the gap has been much more apparent throughout the years between the Java and non-Java groups, where the difference in primary school NER was as much as 1.21 p.p. in 2015. Fortunately,

the gap has gotten so much narrower in 2021, where the difference was only 0.89 p.p. between the Java and non-Java groups.

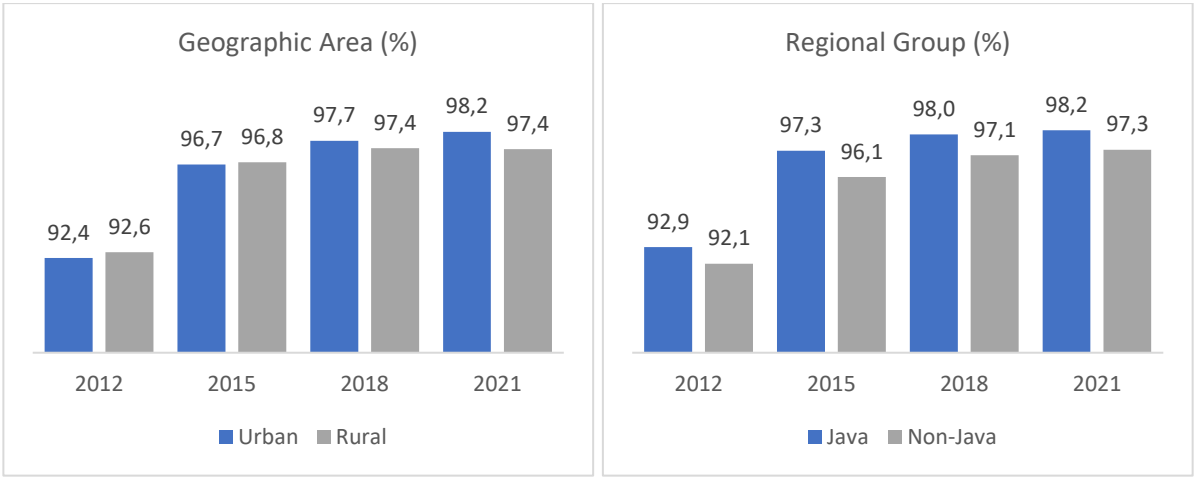


Figure 47. Primary School Net Enrollment Rate by Geographic Area and Regional Group, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 48 illustrates the primary school NER by expenditure quintile in 2012-2021. For all quintiles, we can exhibit an increasing trend, where the primary school NER was at its lowest in 2012, then proceeded to increase significantly in 2015, which then continued to be at its roughly steady level in 2021. Fortunately, the figure portrays little to no signs of inequality, where we can see that the primary school NER was almost always similar for all the quantiles throughout the years.

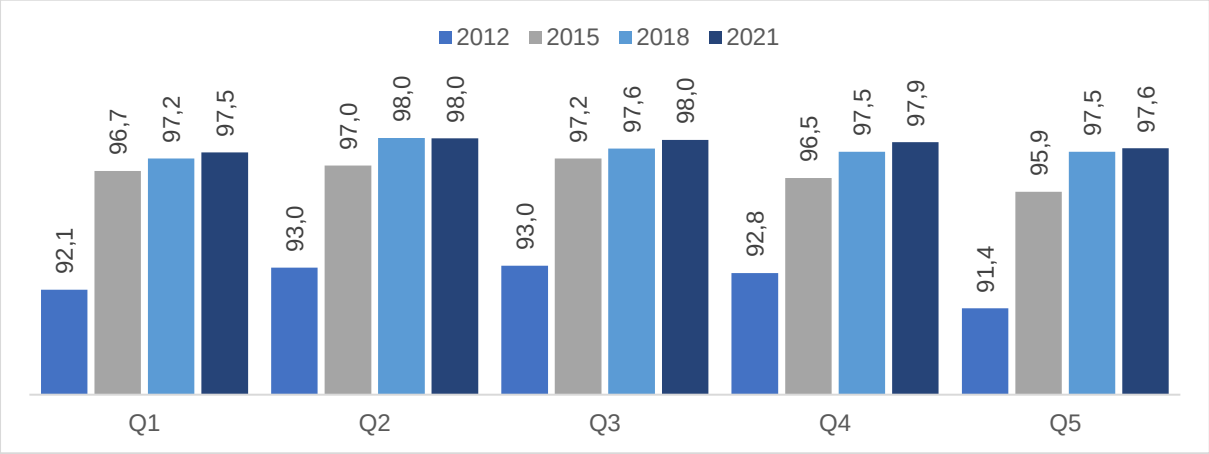


Figure 48. Primary School Net Enrollment Rate by Expenditure Quintile, 2012-2021
Source: SUSENAS, author's calculation (2023)

4.4.3. Primary School Teacher-Student Ratio

The teacher-student ratio is calculated by dividing the number of teachers relative to the number of students. This ratio is crucial for assessing the adequacy of teachers per student in each school. According to the Organisation for Economic Co-operation and Development (OECD), the recommended teacher-student ratio is 10 or below. To interpret, a ratio of 10 means that each teacher is

responsible for 10 students. The analysis in this section will round off the numbers to integers for simplicity.

Figure 49 illustrates the primary school teacher-student ratio from 2016 to 2022. The overall trend of the ratio fluctuated, with an increase and peak in 2018, followed by a decline through 2020 and 2022. In 2016, the national teacher-student ratio was 15, rising to 16 in 2018, then decreasing to 15 in 2020 and 14 in 2022. Compared to the OECD's recommended ratio of 10 or below, these numbers were still not ideal and indicate a need for improvement.

Figure 49 also depicts the primary school teacher-student ratio by regional group during the 2016-2022 period. Although the average trend showed a slight decrease for both regions, which is positive for the teacher-student ratio, it is evident that the ratio in Java regions did not meet the OECD's ideal standard, with the ratio ranging from 17 to 19. Meanwhile, the primary school teacher-student ratio was lower in non-Java regions, ranging between 13 and 15. This discrepancy might be attributed to Java's high population density and a shortage of teachers, resulting in one primary school teacher handling more students in Java regions. Nevertheless, the teacher-student ratio in both regions falls short of the OECD's recommendation, which stipulates a ratio lower than 10.

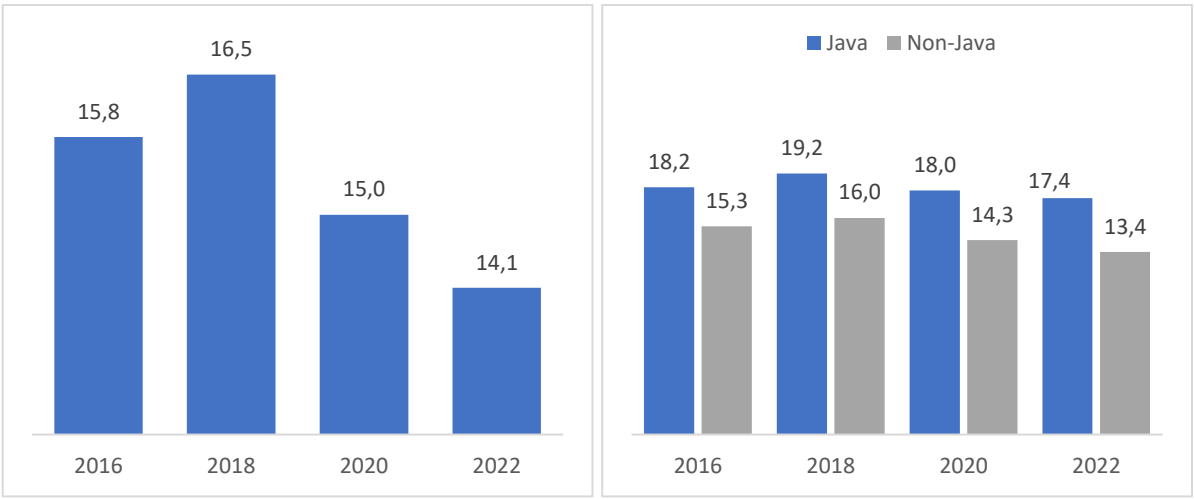


Figure 49. Primary School Teacher-Student Ratio at the National Level and by Regional Group, 2016-2022
Source: Ministry of Education, author's calculation (2023)

4.4.4. Years of Schooling

Figure 50 depicts the years of schooling for the age group of 15 years old and above in the period 2012-2021. Over this timeframe, Indonesia witnessed a consistent upward trend in the average years of schooling. In 2012, the duration of schooling was 8.14 years, which progressed to 8.32 years in 2015, 8.60 years in 2018, and culminated in its peak at 8.98 years in 2021.

Furthermore, the figure provides a breakdown of years of schooling by sex from 2012 to 2021. Generally, both males and females exhibited an increasing trend over this period. Despite the overall upward trajectory, the figure reveals disparities between males and females, with males consistently experiencing a higher number of years of schooling by one year for most of the periods. Males

consistently recorded a longer duration of schooling, ranging between 8 and 9 years. In contrast, females underwent shorter periods of schooling, ranging between 7 and 8 years throughout the observed periods.

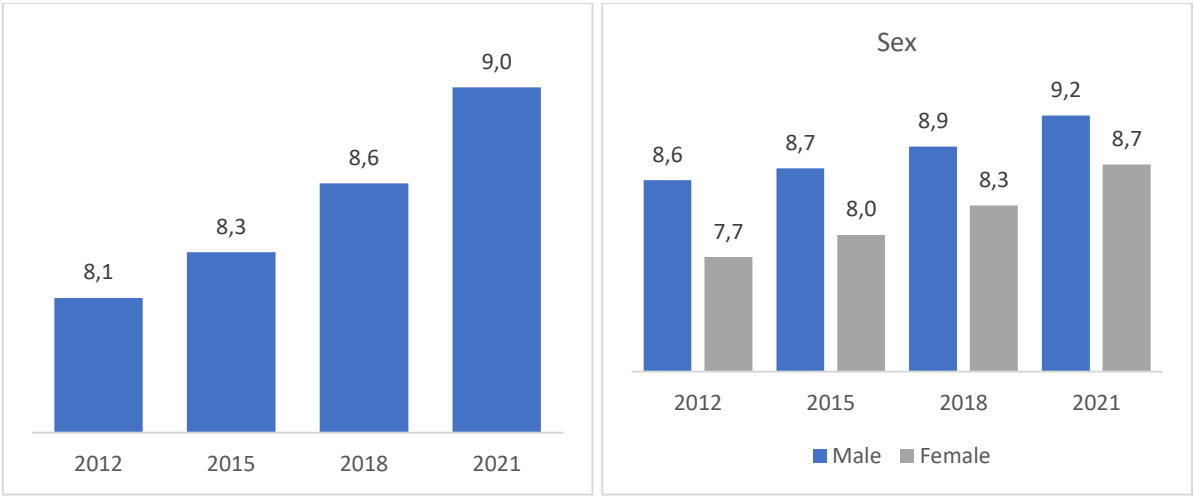


Figure 50. Years of Schooling at National Level and by Sex, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 51 illustrates the years of schooling by geographic area from 2012 to 2021. Generally, both urban and rural areas displayed a consistent but slightly increasing pattern over this period. In 2012, urban areas had 9.45 years of schooling, which gradually increased to a peak of 9.95 years in 2021. Conversely, rural areas started with 6.77 years of schooling in 2012 and experienced a gradual increase, reaching a peak in 2021. These numbers highlight a noticeable disparity between urban and rural areas, suggesting that urban areas have a longer duration of schooling than their rural counterparts.

Additionally, the figure provides a breakdown of the years of schooling by regional group over the 2012-2021 period. There is an overall upward trend for both regional groups, with Java consistently having higher years of schooling compared to non-Java regions. This disparity further emphasizes the educational inequality between the two regional groups.

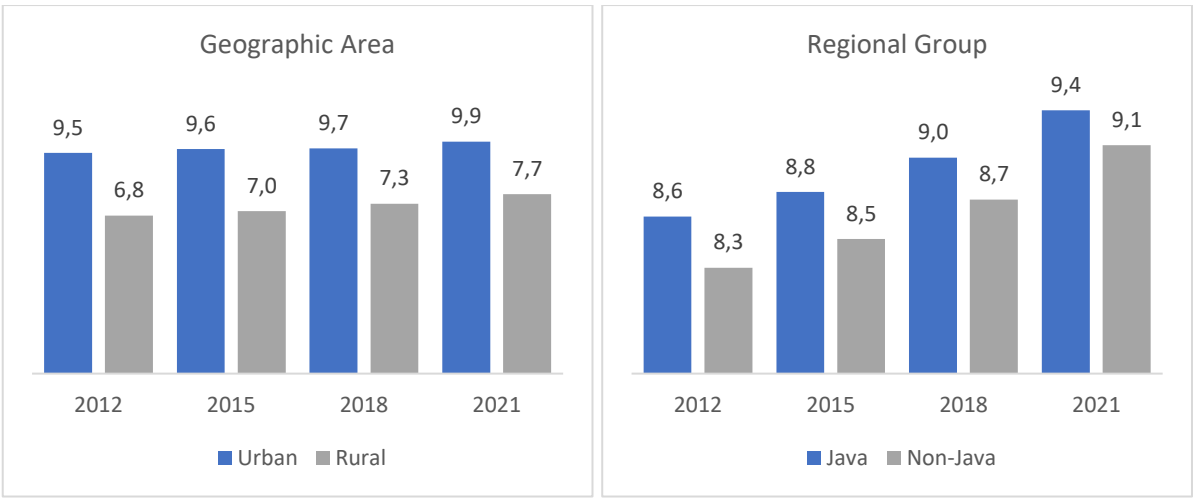


Figure 51. Years of Schooling by Geographic Area and Regional Group, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 52 depicts the years of schooling across expenditure quintile from 2012 to 2021. Overall, there is a general decreasing trend observed across most expenditure quintiles over the years. Furthermore, higher expenditure quintiles consistently exhibit longer years of schooling, with Q1 ranges from 5.9 to 7.1 years, Q2 ranges from 6.9 to 7.9 years, Q3 ranges from 7.7 to 8.5 years, Q4 ranges from 8.8 to 9.2 years, Q5 ranges from 10.9 to 11.2 years throughout the entire period.

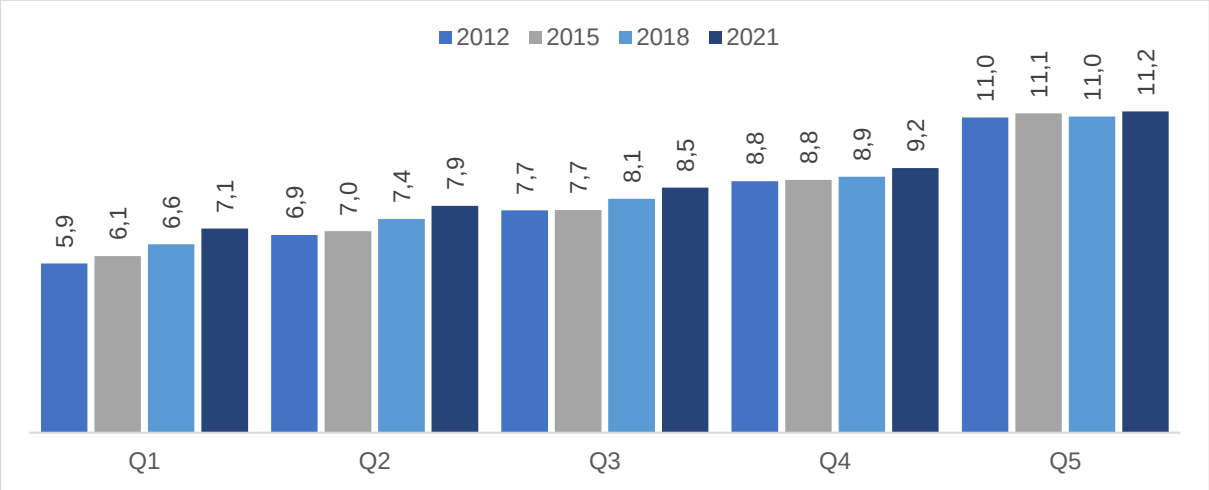


Figure 52. Years of Schooling by Expenditure Quintile, 2012-2021
Source: SUSENAS, author's calculation (2023)

4.5. Social Asset Inequality: Health

4.5.1. Use of Care[5]

Overall, Figure 53 suggests a consistent increase in the prevalence of self-medication or use of care in Indonesia from 2012 to 2021. In the year 2012, an estimated 67.7% of individuals residing in Indonesia indicated their involvement in self-treatment within a span of one month. Subsequently, this percentage rose to 70.7% in 2018 and further increased to 84.2% in 2021. These findings demonstrate a notable prevalence of self-medication practices within the population.

[5] We only calculated figures for 2012, 2018, and 2021, as SUSENAS 2015 do not contain information on the use of care within the past month.

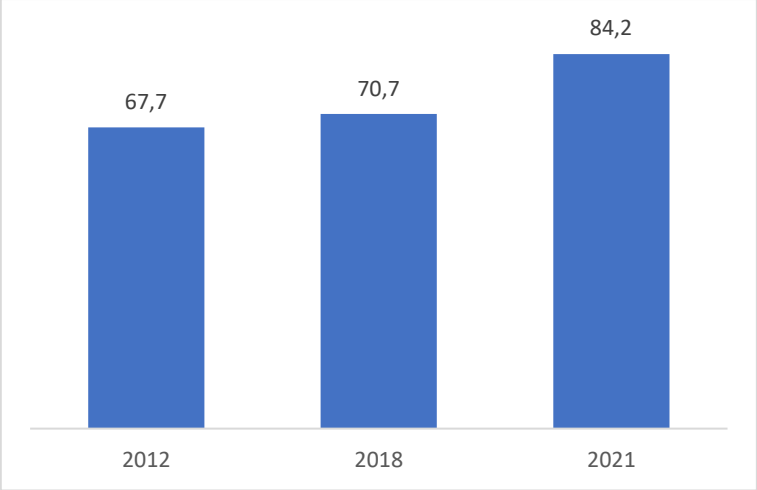


Figure 53. Use of Care within the Past Month (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

When considering the regional group breakdown, Java consistently exhibited a slightly higher prevalence of self-medication compared to non-Java areas throughout the years (Figure 54). In 2012, around 67.2% of individuals in non-Java areas reported self-treatment. This percentage increased to 69.5% in 2018 and further rose to 81.9% in 2021. Similar to Java, non-Java areas also experienced an increasing trend in the prevalence of self-medication over time. However, the overall rates in non-Java areas were slightly lower compared to Java.

The same pattern can be found when considering different geographical areas. For urban areas, 68.7% of individuals reported self-medication in 2012, moving to 70.6% in 2018, then jumping to 86.1% in 2021. However, less Individuals living in the rural areas are doing so, except in 2018. Starting from 66.7% in 2012, the rate of self-medication is increasing to 70.9% in 2018 and further rose to 81.2% in 2021.

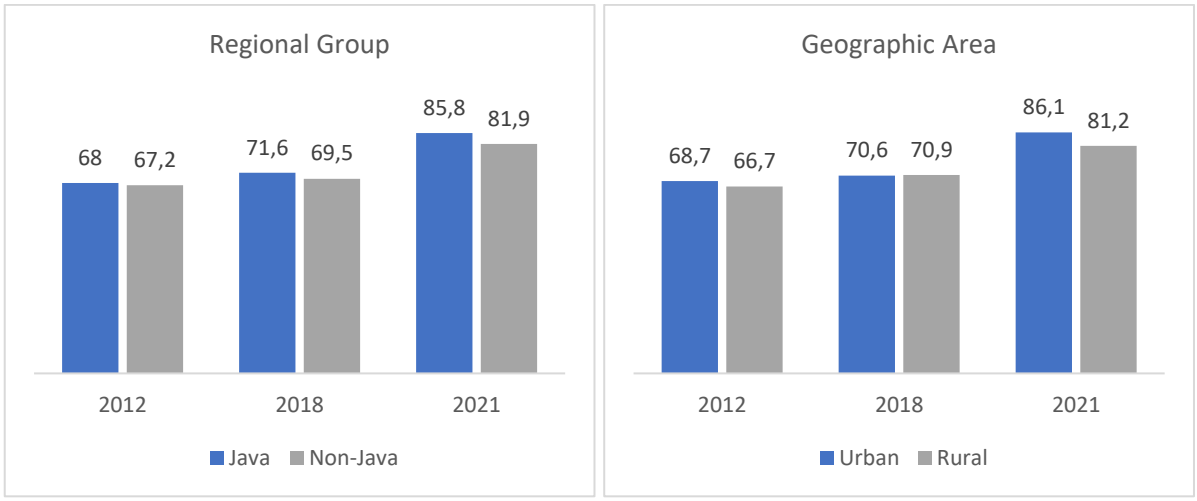


Figure 54. Use of Care Within the Past Month by Regional Group and Geographic Area (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Reports of self-medication are more diverse with the population divided into quintiles of expenditure in Figure 55. Overall, the percentage of healthcare utilization has consistently risen across all expenditure quintiles over time. In 2012, an inverse u-shaped pattern can be found across the quintiles, with the fifth quintile as the subgroup having lowest prevalence of self-medication. All subgroups experience mild increase of self-medication in 2018 continuing the inverted u-shaped pattern. The third and fourth quintiles report the highest prevalence of self-medication of 84.6% and 84.7% in 2021, although they are not very much different from the rest of other quintiles. While the second (Q2) and third (Q3) quintiles show slightly higher percentages compared to the other quintiles, there are no significant differences observed among the expenditure quintiles.

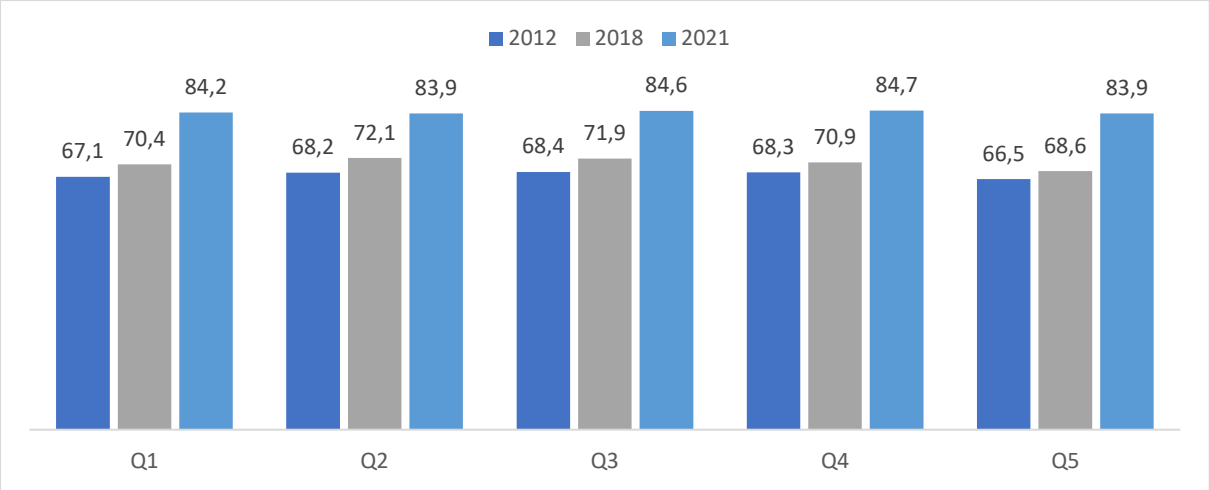


Figure 55. Use of Care within the Past Month by Expenditure Quintile (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

4.5.2. Access and Utilization of Health Insurance

Figure 56 shows the national data for individuals reporting usage of health insurance in the last month. Starting at 37.1% individuals in 2012, the number is growing to 49.5% in 2015. The use of health insurance grew at almost the same rate in 2018, and it continues to grow albeit at a slower rate, reaching 68.4% of individuals in 2021.

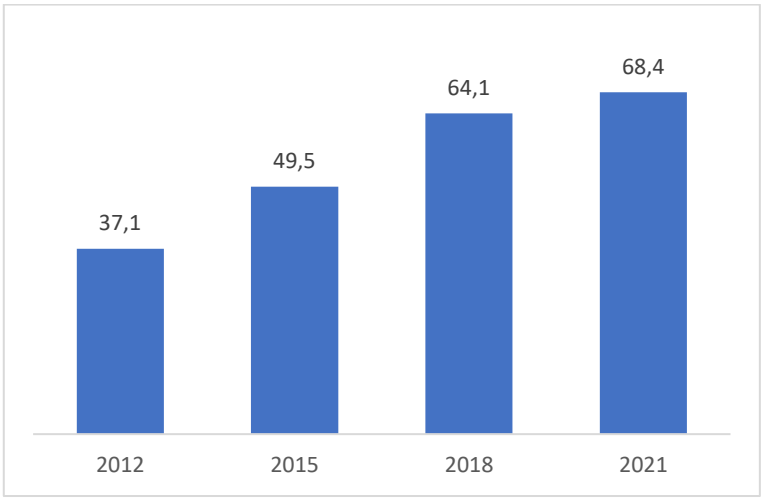


Figure 56. Access to Health Insurance (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Comparison of different regional groups showed an interesting pattern. Figure 57 showed that from 2012 - 2021, the percentages of individuals accessing health insurance are higher for non-Java. The contrast is higher in 2012 and 2015, where 41.8% and 55% of non-Java individuals accessed health insurance, while the rate in Java stood at only 33.5% and 45.2%. The gap was closed in 2018 with both regions recording 64.1% usage and growth in 2021 restored a minor gap.

The figure also shows a smaller prevalence of individuals in the rural areas that are using health insurance. Around 36.5% rural individuals use health insurance while the figure for urban individuals is 37.7% in 2012. This minor gap started to widen in 2015 and continues afterward. The urban has reached 68.2% and 72.8% of insurance usage in 2018 and 2021, with wider gap, keeping the access for rural at only 59.2% and 62.5% in those two years.

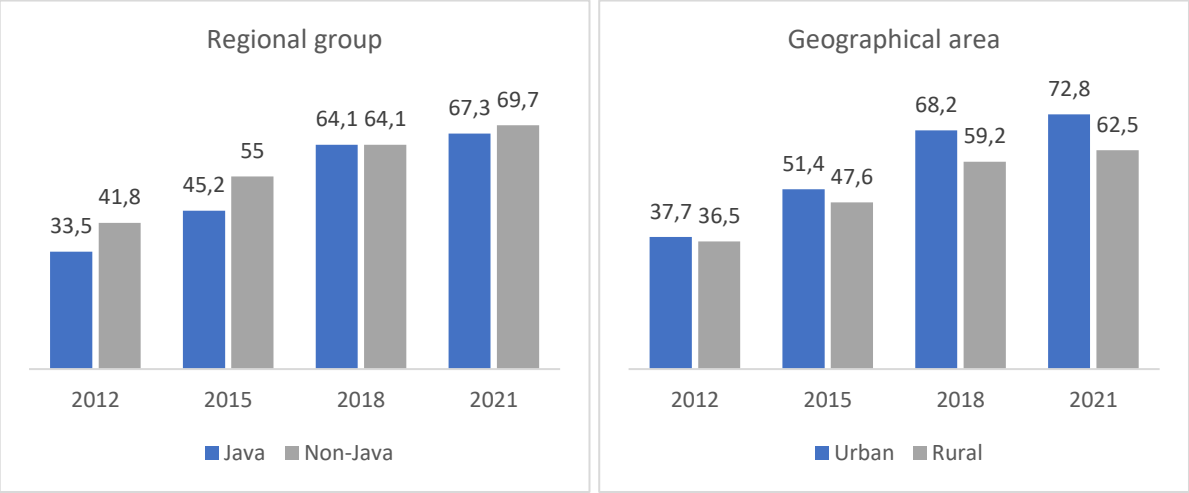


Figure 57. Access to Health Insurance by Regional Groups and Geographical Areas (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Population subgroups with higher expenditure are having higher access to health insurance over the period of analysis (Figure 58). Only in 2012 did the lowest expenditure quintile beat the other cohort with 39.8% individuals accessing health insurance, except the fifth quintile at 44.9%. Strong growth of access to health insurance are occurring across quintiles in 2015 and 2018, while the inequality landscape did not change that much from earlier years.

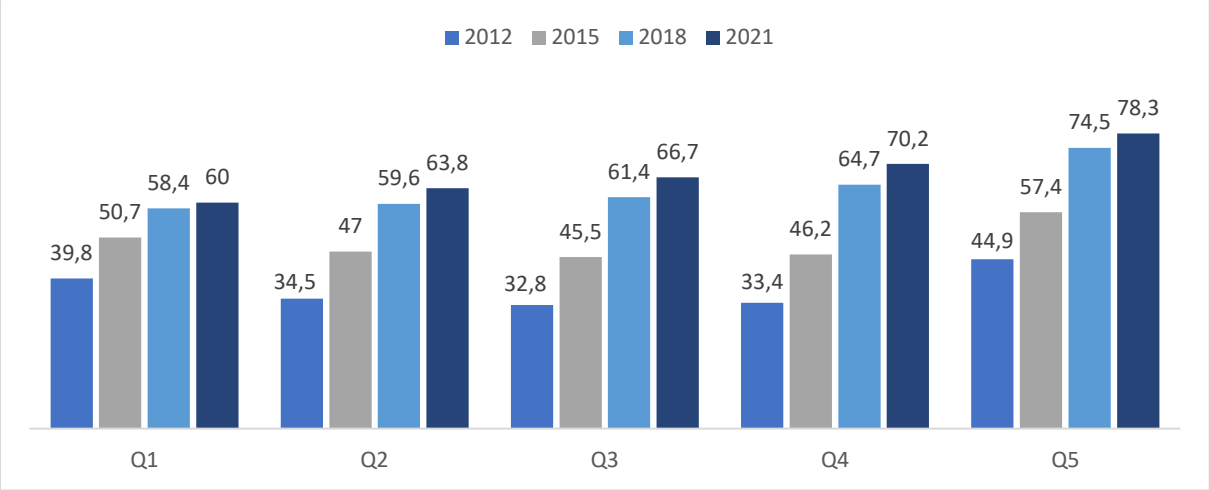


Figure 58. Access to Health Insurance by Expenditure Quintile (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Moving on to the use of health insurance utilization for outpatient care, there has been a steady growth from 2012 to 2021. The numbers are substantially lower than individuals reporting to self-medication, but as the Figure 59 shows, more than half of the population already utilized insurance for outpatient care, starting from 56.5% (2012) to 69.8% (2021).

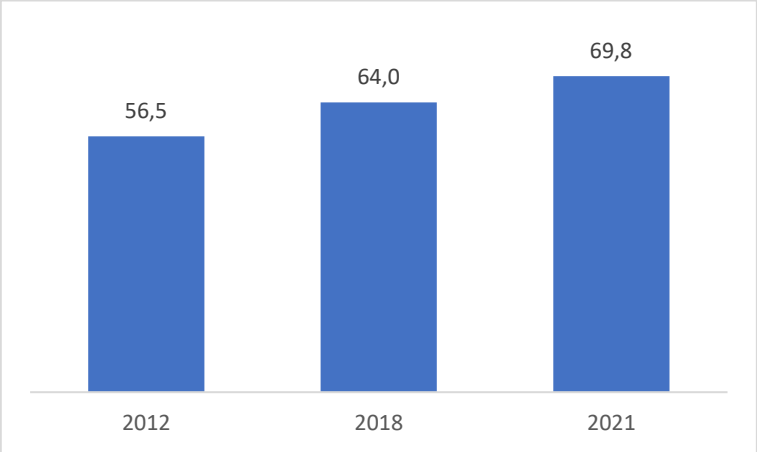


Figure 59. Utilization of Health Insurance for Outpatient[6] (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Among the overall population, the utilization of insurance for outpatients is higher in non-Java or the urban areas. Figure 60 demonstrates that Java is having a lower portion of the population accessing outpatient care with their health insurance, starting at 51.9% in 2012 and growing to 67.2% in 2021. Another interesting feature is narrowing regional inequality, from 11.8 p.p. in 2012 to 9.6 p.p in 2018 and 6.3 p.p in 2021.

[6] We only calculated figures for 2012, 2018, and 2021, as SUSENAS 2015 do not contain information on the utilization of health insurance for outpatient.

The same story goes for the inequality among geographical areas. Urban individuals are more likely to utilize health insurance for outpatient care compared to the rural ones. While the gap has narrowed, it happens at a much slower pace than that of Java and non-Java. The number for urban starts at 60% in 2012, growing fast until 73.4% in 2021, whereas the rural started at 52% and ended up at 64% in the same period.

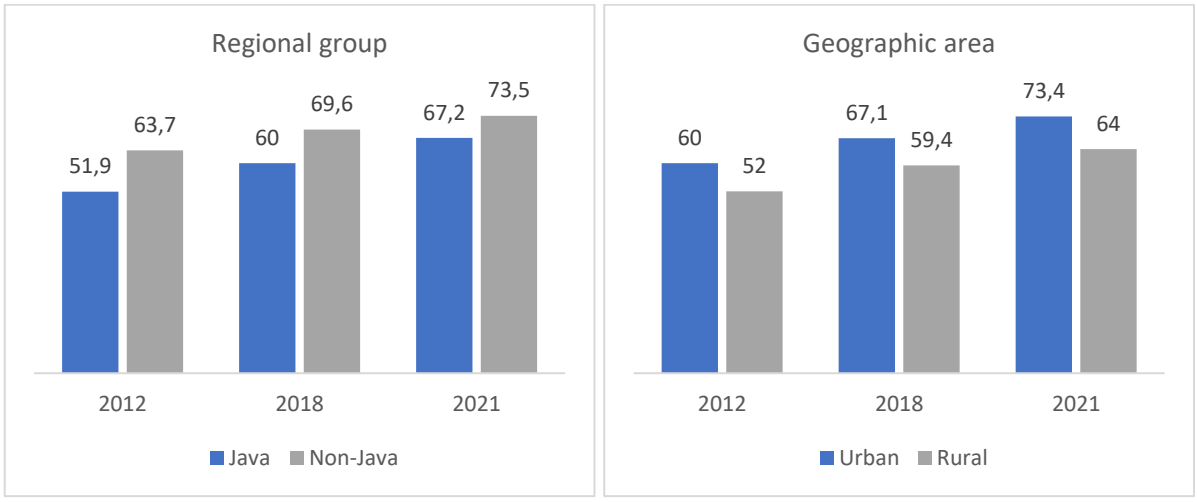


Figure 60. Utilization of Health Insurance for Outpatient by Regional Group and Geographic Area (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Growth of health insurance utilization for outpatient care is happening across expenditure quintiles, but the speed varies (Figure 61). The highest quintile has the highest rate of health insurance utilization across the year, except in 2012, while the fourth quintile has experienced the fastest growth over the year. Unlike those two, the first quintile experienced the slowest growth, from 60% individuals in 2012 to only 65.2% in 2021 and becoming the group with lowest utilization.

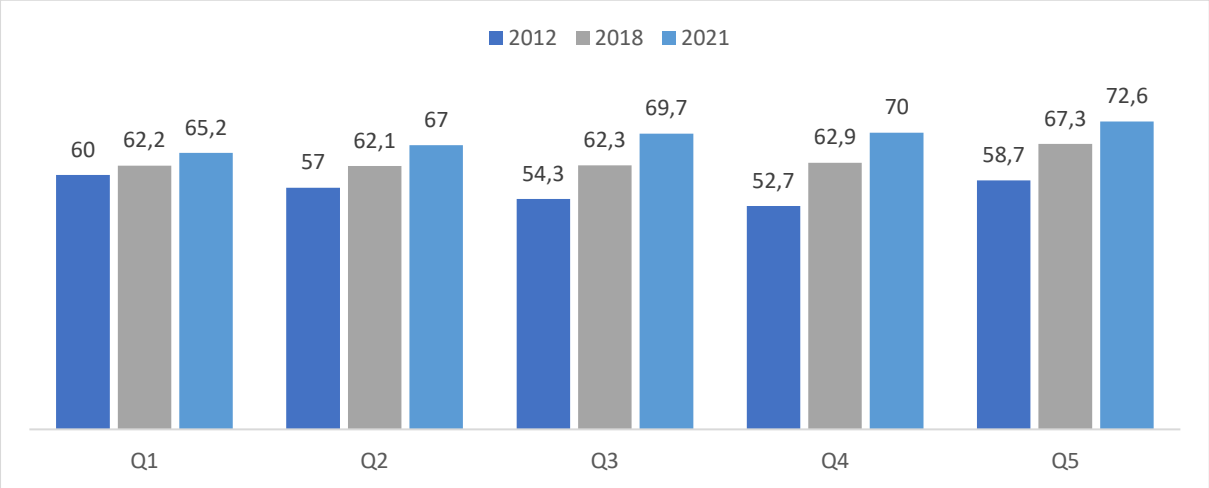


Figure 61. Utilization of Health Insurance for Outpatient by Expenditure Quintile (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 62 shows health insurance utilization for inpatient care. In general, the numbers are lower than outpatient care. Starting at 30.1% in 2012, insurance utilization is also experiencing slowing growth before reaching 47.2% in 2021.

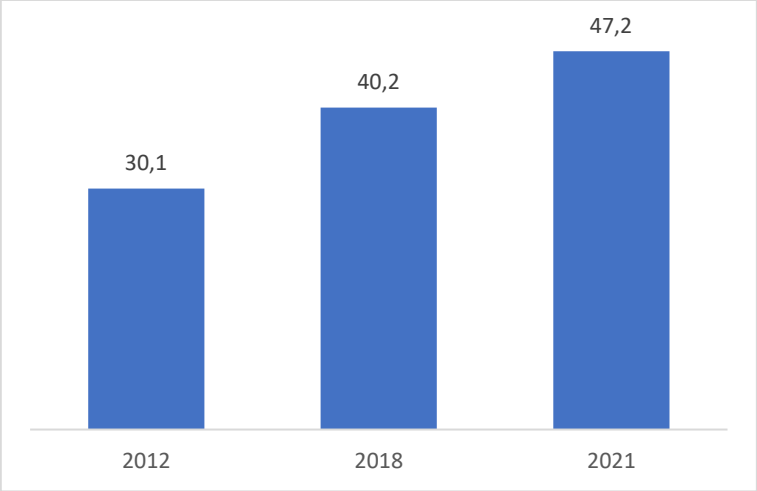


Figure 62. Utilization of Health Insurance for Inpatient[7] (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Looking at the regional breakdowns, non-Java stood up with substantially higher utilization. In 2012, 36.1% of the population utilized health insurance for inpatient care, growing to 44.6% in 2018. For Java, the numbers are 26.4% and 37.5% respectively. There is again a trend for narrowing the gap between Java and non-Java as Figure 63 shows. However, the comparison between geographical areas shows divergence between the rural and urban areas. The urban utilization rate is 35% in 2012 and the rural one is 25%, reaching 55.3% and 31.7% respectively in 2021.

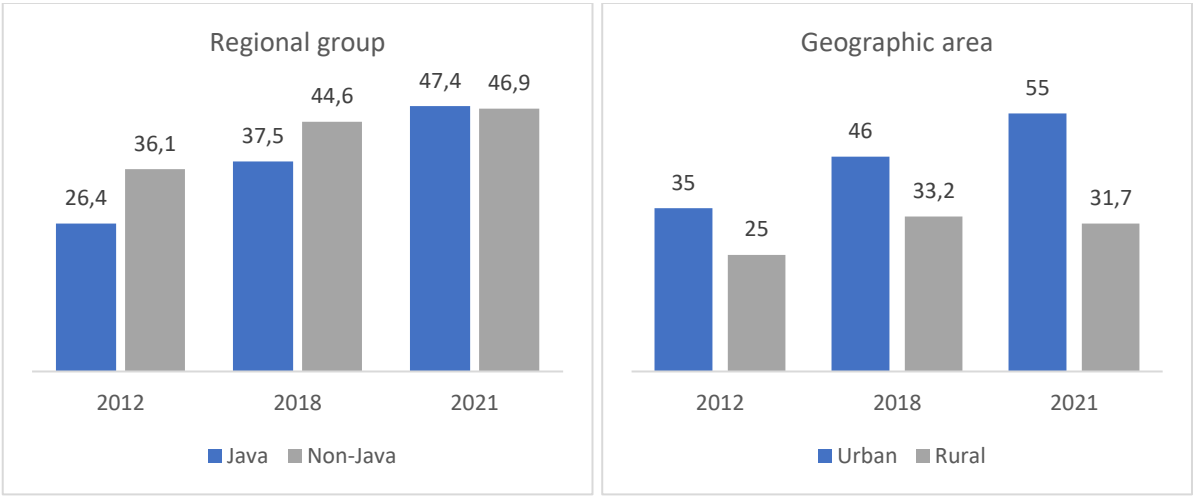


Figure 63. Utilization of Health Insurance for Inpatient by Regional Group and Geographic Area (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

[7] We only calculated figures for 2012, 2018, and 2021, as SUSENAS 2015 do not contain information on the utilization of health insurance for inpatient.

There is a uniform pattern when comparing the insurance utilization across different quintiles of expenditure. Steady growth is observed from 2012 to 2021, with higher quintiles experiencing faster growth. The first quantile starts out with 28.9% individuals utilizing their insurance for inpatient care in 2012, later growing to 39.7% in 2021; with a minor difference with the second and third quintiles. For the highest quintile, they started with 36.4% and reached 57.2%, the only quintile surpassing more than half of utilization.

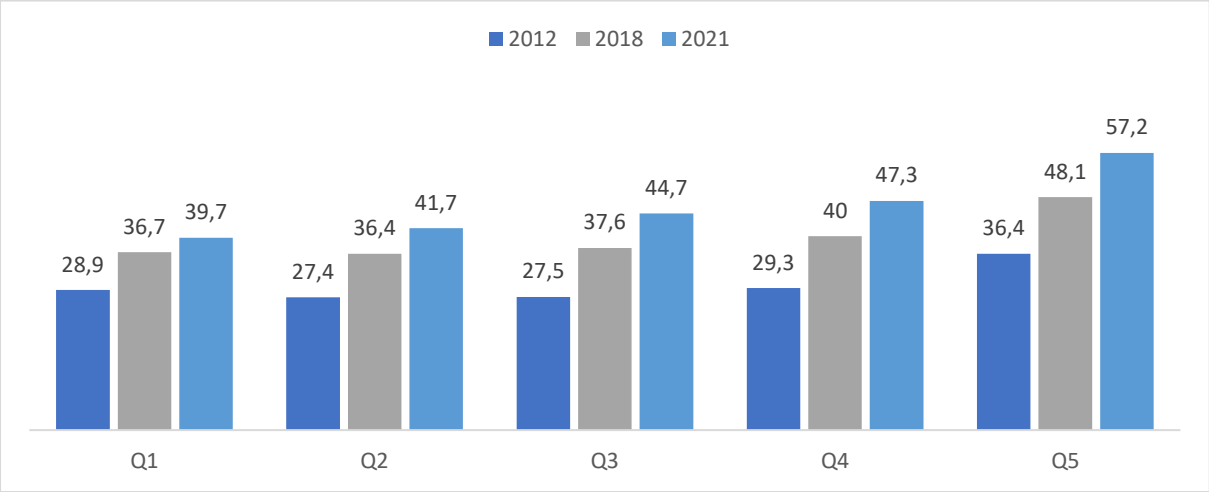


Figure 64. Utilization of Health Insurance for Inpatient by Expenditure Quintile (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

4.5.3. Smoking Behavior[8]

The last health indicator that is considered is smoking behavior. From 2015 to 2021, the estimate did not show any change in the national percentage of the smoking population. Only when broken down into subgroups does variation exist. First, with respect to regional groups, there is a minor increase in the prevalence of smokers from 24.7% to 24.9% in Java, while a minor decrease from 22.9% to 22.7% in non-Java regions. Not only that, the difference between Java and non-Java is also minor, at around 2%.

If we look at the prevalence of people who smoke in the last one month, the rural population has around 3% higher rate than that of the urban population (Figure 65). Both the subgroups experience a minor growth, where the rural starting with 25.2% in 2015, growing to 25.4% in 2021 while the urban starting with 22.7% and reaching 22.8% in 2021.

[8] We only calculated figures for 2015 and 2021, as SUSENAS 2012 and 2018 do not contain information on the smoking behavior in the last one month.

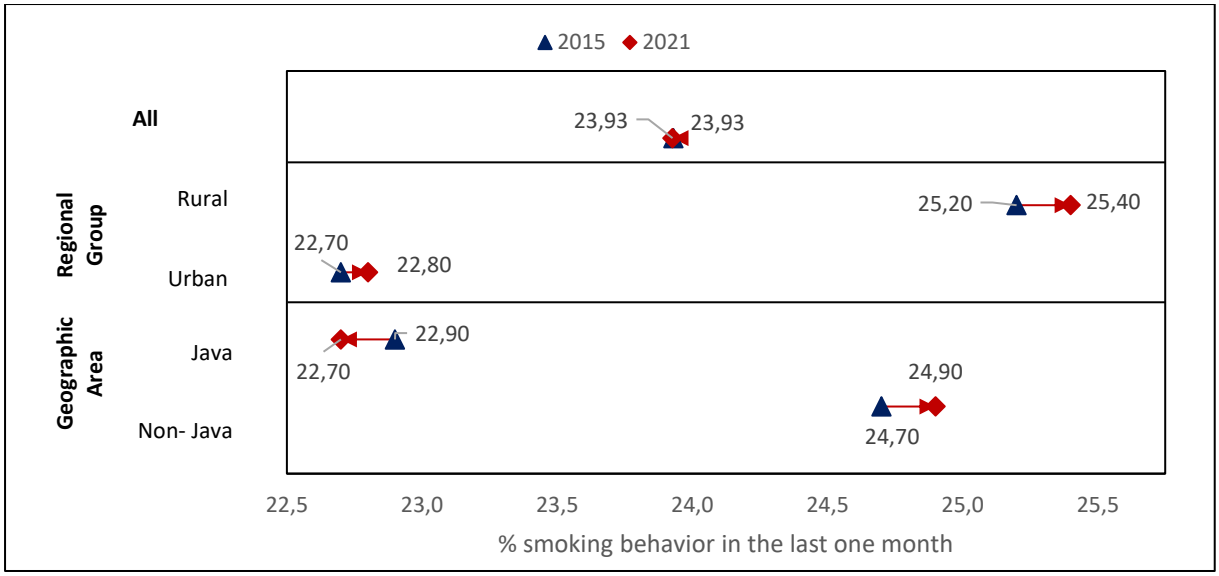


Figure 65. Smoking Behavior in the Last One Month by Regional Group and Geographic Area (%), 2015 & 2021
Source: SUSENAS, author's calculation (2023)

Examining smoking behavior among different groups, Figure 66 illustrates a lack of correlation between expenditure and smoking expenditure. Nevertheless, individuals in the middle expenditure quantile exhibit a higher propensity for smoking compared to those in the top and bottom quintiles. However, in 2021, the top and bottom quintiles demonstrate a percentage increase in smoking behavior, whereas the middle three quintiles display a percentage decrease.

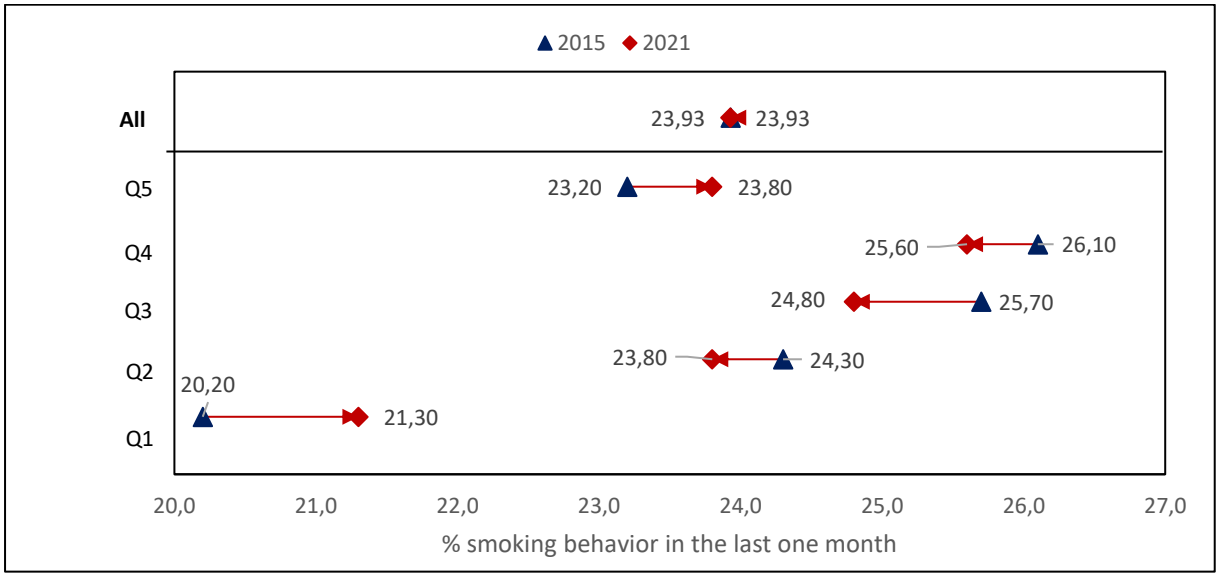


Figure 66. Smoking Behavior in the Last One Month by re Expenditure Quintile (%), 2015 & 2021
Source: SUSENAS, author's calculation (2023)

The smoking behavior within different age groups demonstrates a consistent trend, with a slight decrease in percentage in 2021 across all age groups except for those under 18 years old, where the percentage remains constant (Figure 67). In both years, the highest prevalence of smoking is observed

in the 30-44 age group, followed by the 45-64 age group, the 18-29 age group, individuals over 64 years old, and those below 18 years old.

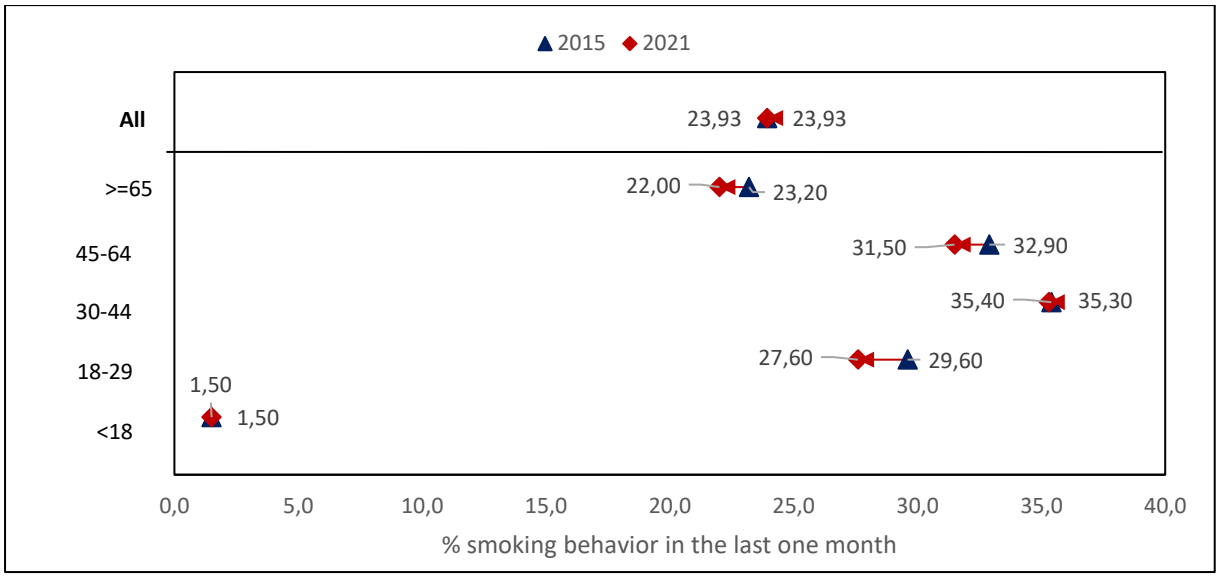


Figure 67. Smoking Behavior in the Last One Month by Age Group (%), 2015 & 2021
Source: SUSENAS, author's calculation (2023)

When examining subgroups based on educational attainment, it can be asserted that there is an inverse relationship between the level of education and the smoking rate (Figure 68). However, a slight anomaly is observed in 2015 for individuals who did not attend school, as their smoking rate surpasses that of individuals with junior education. Nevertheless, in 2021, the smoking rate for those without formal education increased, becoming the highest among other education levels. This was followed by increases in smoking rates for individuals with elementary and junior education, while rates decreased for individuals with senior and tertiary education.

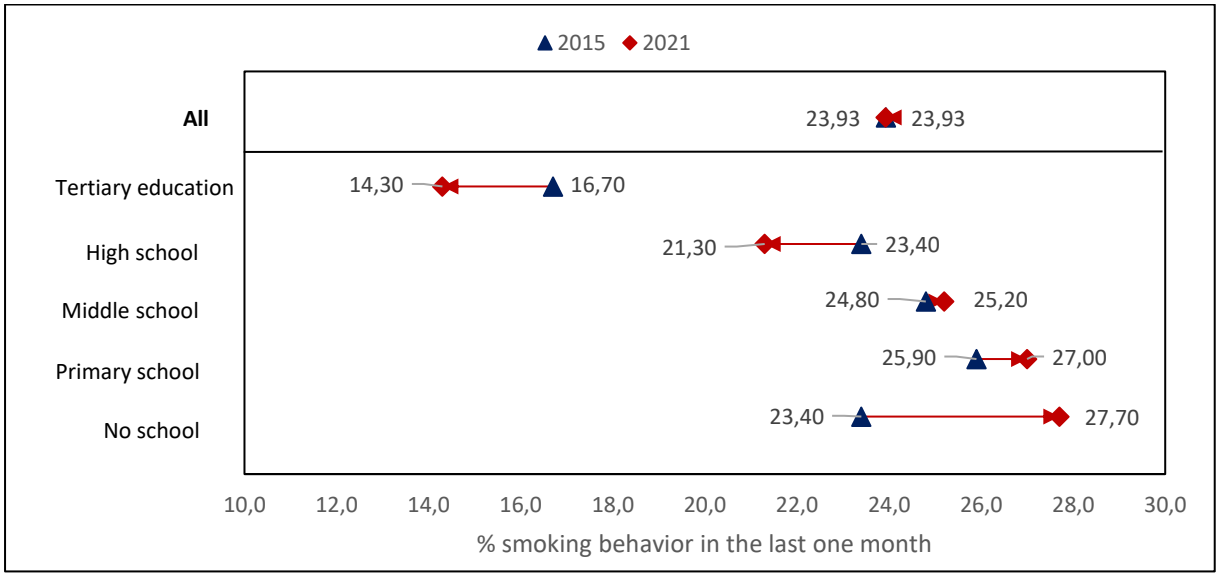


Figure 68. Smoking Behavior in the Last One Month by Education Level (%), 2015 & 2021
Source: SUSENAS, author's calculation (2023)

Lastly, in terms of marital status, it is evident that married individuals exhibit a higher smoking rate compared to those who have never been married or are divorced/widowed (Figure 69). However, the smoking rates among married individuals demonstrate a downward trend, declining from 33.6% in 2015 to 32.3% in 2021. Conversely, individuals who have never been married or are divorced/widowed experience a slight increase in smoking rates in 2021.

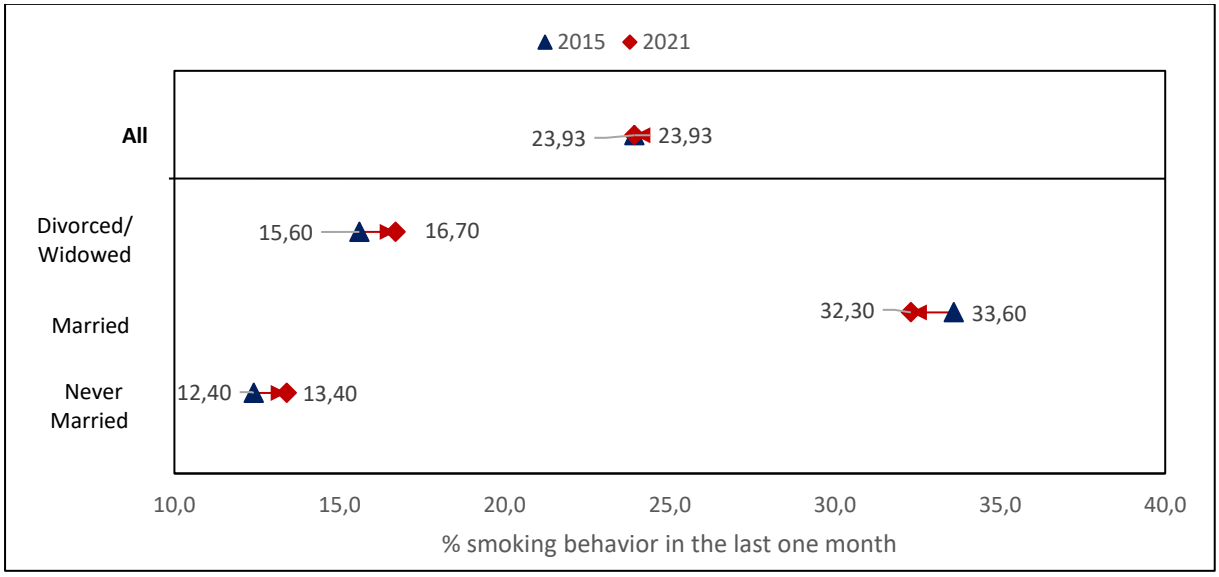


Figure 69. Smoking Behavior in the Last One Month by Marital Status (%), 2015 & 2021
Source: SUSENAS, author's calculation (2023)

4.6. Social Asset Inequality: Clean Water

Water, the source of life and one of the most critical natural resources, is vital for health, well-being, and safety. This section discusses household access to and distance from adequate drinking water, highlighting inequalities across different demographic and geographic segments. The analysis was conducted at the household level using SUSENAS data from 2012, 2015, 2018, and 2021.

4.6.1. Household Access to Decent Drinking Water

A household was considered to have access to decent drinking water if its source was a piped or drilled well/pump, a protected well or fountain, or rainwater (BPS, 2022). Households using branded bottled water and/or water refill were also classified as having access if they used these sources for bathing and washing (BPS, 2022). Based on this definition, we observed that most households in Indonesia already have access to decent water drinking. Figure 70 indicated a steady rise in this access, with a significant increase to 87.8% in 2018 and further to 90.8% in 2021, despite the COVID-19 pandemic.

However, the smaller increase that occurred between 2018 and 2021 was inevitable due to several factors. Firstly, the percentage of households with access to decent drinking water was already high in 2018. Secondly, the COVID-19 pandemic may have also contributed to the limited increase during this

period. Nonetheless, the modest rise in household access to decent drinking water during these years was still a significant and positive development.

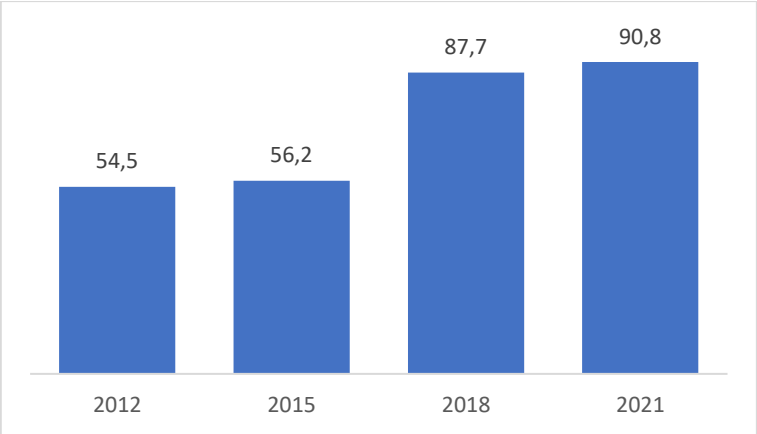


Figure 70. Household Access to Decent Drinking Water (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Geographically, urban households generally had higher access than rural ones, as shown in Figure 71. The gap between urban and rural access decreased from 27.8 p.p. in 2012 to 12.1 in 2021. Regionally, households in Java areas had higher access than those in non-Java areas, with the gap widening from 4.2 p.p. in 2012 to 8.6 in 2021, as depicted in Figure 71. Despite significant improvements, inequalities persisted both geographically and regionally.

Based on regional grouping, the percentage of households with access to decent drinking water was higher in Java areas compared to their non-Java counterparts, as depicted in Figure 71. Overall, households in non-Java areas were more deprived than those in Java, highlighting the inequality between regional groups. However, both groups exhibited the same increasing trend in access to decent drinking water. The access in Java areas rose from 56.2% in 2012 to 94.4% in 2021, while in non-Java areas it increased from 52.0% in 2012 to 85.8% in 2021. Examining the disparity, it was observed that the gap in access to decent drinking water between households in Java and non-Java areas widened from 4.2 p.p. in 2012 to 8.6 p.p. in 2021. Despite the significant increase, inequalities persisted in both geographic areas and regional groups over the years. The gap, however, has reduced in more recent years.

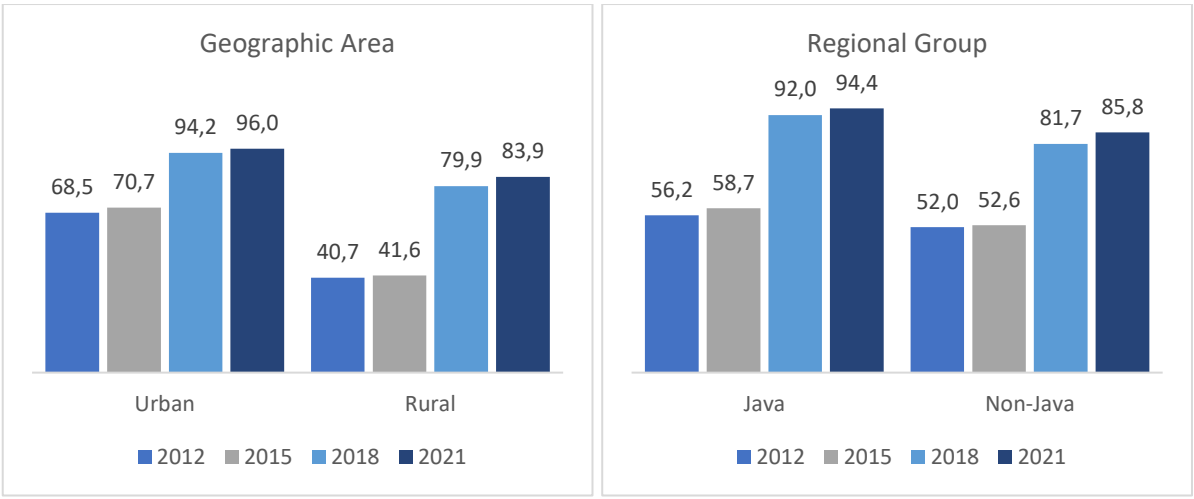


Figure 71. Household Access to Decent Drinking Water (%) by Geographic Area and Regional Group, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 72 shows the percentage of households with access to decent drinking water by household expenditure quintile between 2012 and 2021. During this period, households in higher expenditure quintiles had greater access to decent drinking water, emphasizing the inequality among different income levels. Yet, all groups followed the same upward trend in access. Households in Quintile 1 started at 38.3% in 2012 and increased to 86.5% in 2021. In contrast, the top quintile's access grew from 74.3% in 2012 to 95.3% in 2021. The disparity between the quintiles narrowed significantly, decreasing from 36 p.p. in 2012 to 8.8 p.p. in 2021.

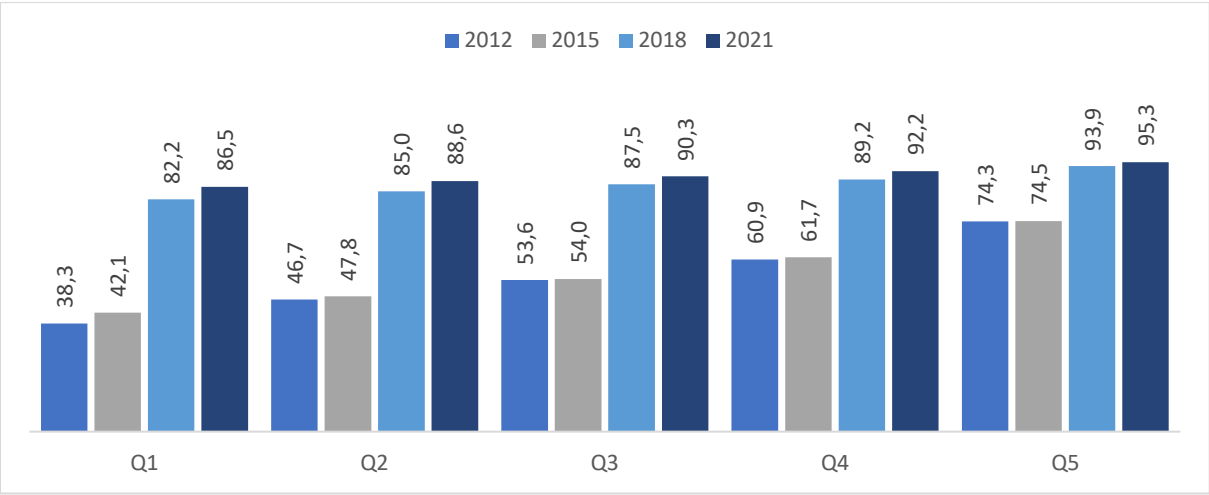


Figure 72. Household Access to Decent Drinking Water (%) by Expenditure Quintile, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 73 depicts the percentage of households with access to decent drinking water by island. While most islands showed an increasing trend, with many surpassing 80% access, Maluku and Papua remained below this threshold, further highlighting the inequality in these regions. Kalimantan, despite

high accessibility percentages in 2012 and 2015, did not break the 80% mark by 2021. This indicates that Kalimantan may have deprioritized drinking water accessibility, despite its initial lead.

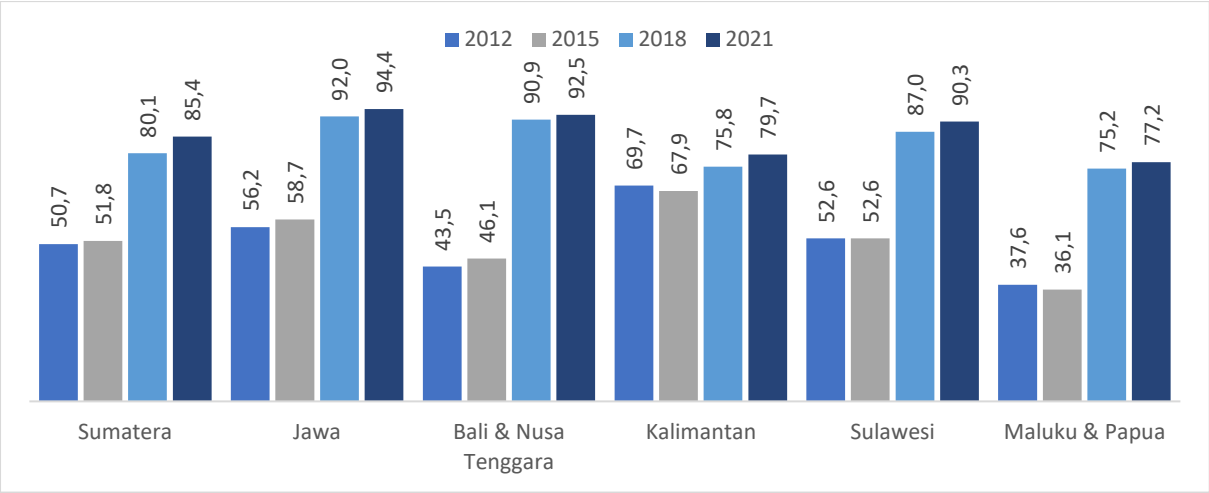


Figure 73. Household Access to Decent Drinking Water (%) by Island, 2012-2021
Source: SUSENAS, author's calculation (2023)

4.6.2. Average Travel Time to Nearby Water Sources[9]

Figure 74 represents the average time spent traveling to nearby water sources, categorized by gender of the household head, geographic area, and regional group, for 2018 and 2021. No significant difference was found between families headed by fathers or mothers, suggesting that travel time to water sources was not influenced by the gender of the household head. However, disparities were evident in travel times by regional group. In 2018, a notable gap of almost 3 minutes existed between Java and non-Java areas. This gap significantly reduced to just 1 minute in 2021, indicating remarkable development of water sources in non-Java regions.

Inequalities were also apparent in the geographic area category. In 2018, the difference in travel time to water resources between urban and rural areas was 1.3 minutes. This difference lessened to 0.7 minutes in 2021, marking significant progress.

[9] We only calculated figures for 2018 and 2021, as SUSENAS 2015 and 2018 do not contain information on the average time spent getting to nearby water sources.

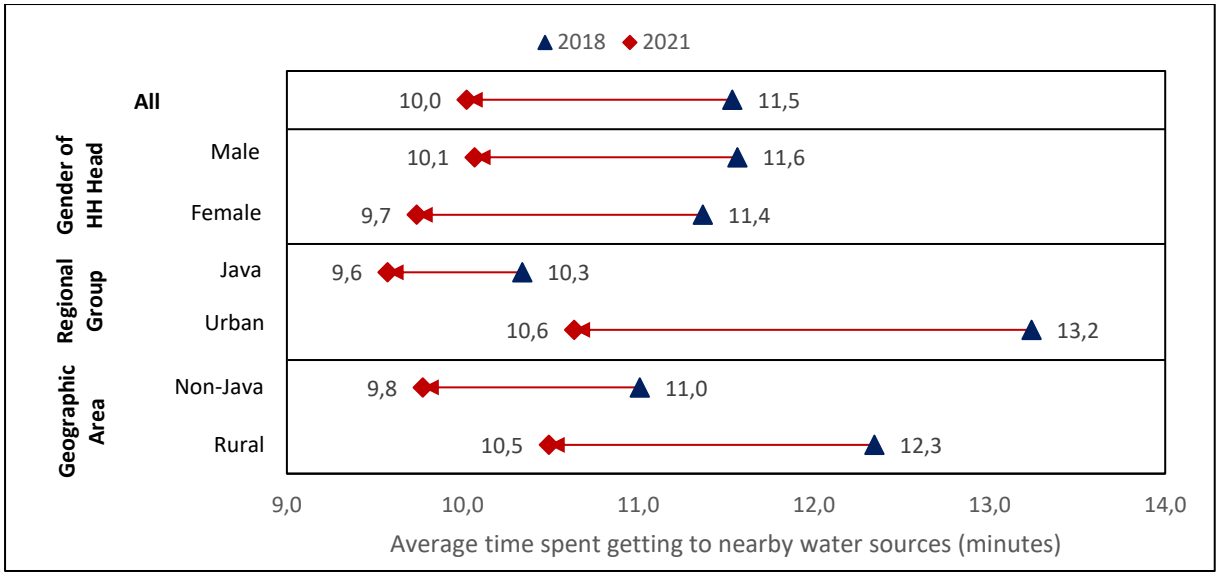


Figure 74. Average Time Spent Getting to Nearby Water Sources (Minutes) by Gender of Household Head, Geographic Area, and Regional Group, 2018 and 2021

Source: SUSENAS, author's calculation (2023)

Figure 75 portrays average travel times to nearby water sources by expenditure quintile for 2018 and 2021. All quintiles showed a positive trend, with the average time decreasing by 1 to 2.3 minutes. In 2018, a general pattern indicated that higher quintiles had shorter travel times to water sources, although Quintile 4 had a shorter time than Quintile 5. By 2021, this pattern had become less distinct, indicating reduced inequality. Quintile 2 experienced the most improvement, with a decrease of 2.3 minutes, followed by Quintiles 3 and 1, with decreases of 1.6 and 1.5 minutes, respectively. The higher quintiles, 4 and 5, saw the least reduction in travel time, with decreases of only up to 1 minute.

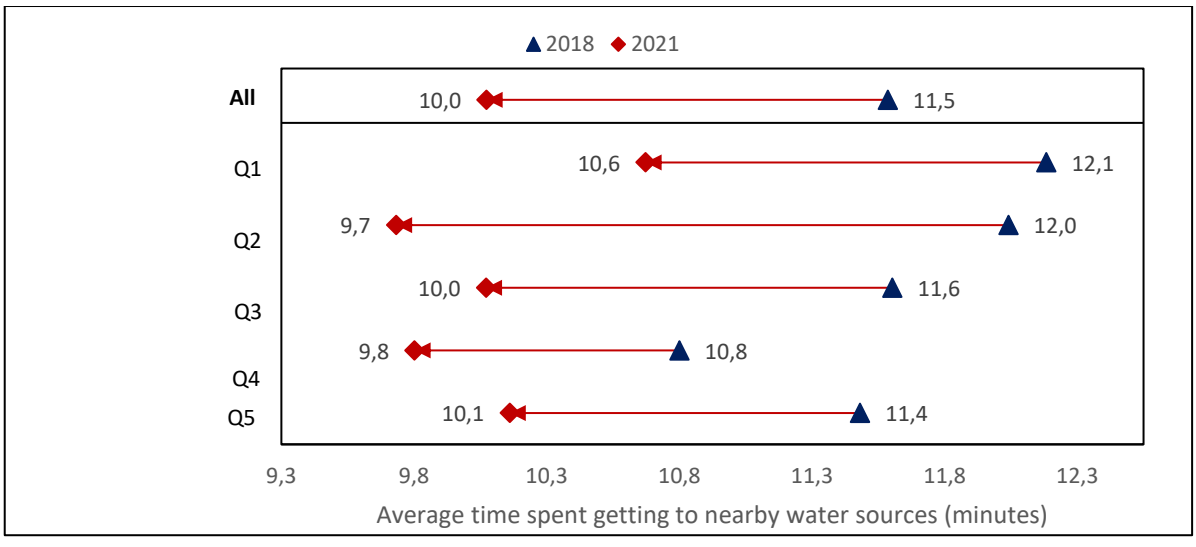


Figure 75. Average Time Spent Getting to Nearby Water Sources (Minutes) by Expenditure Quintile, 2018 and 2021.

Source: SUSENAS, author's calculation (2023)

Figure 76 depicts the average travel time to nearby water sources by island for 2018 and 2021. While all islands showed decreasing trends, Maluku, Papua, Bali, and Nusa Tenggara required more attention

due to their slower progress compared to other islands, with travel times of 13.4 minutes for Maluku & Papua and 12.6 minutes for Bali & Nusa Tenggara in 2021. This highlights the persistent inequality on these islands. However, Kalimantan deserves commendation for its improvement; it moved from having the third-longest travel time in 2018 to the shortest in 2021, with only 9.5 minutes required to reach nearby water resources.

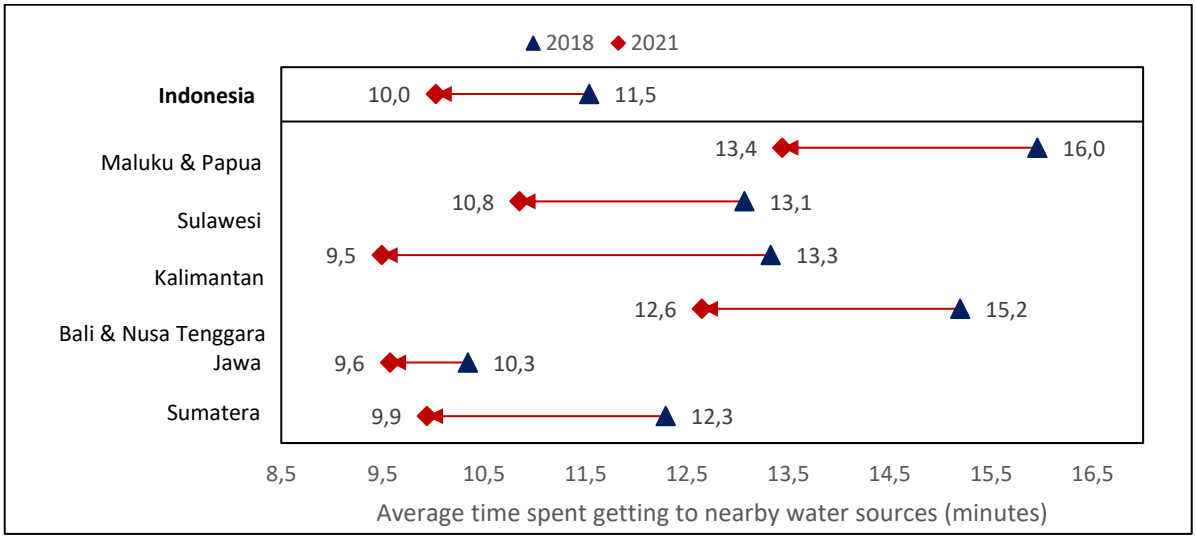


Figure 76. Average Time Spent Getting to Nearby Water Sources (Minutes) by Island, 2018 and 2021
Source: SUSENAS, author's calculation (2023)

4.7. Social Asset Inequality: Sanitation

The World Health Organization (WHO) defines 'improved sanitation' as facilities that hygienically separate human excreta from human contact. These include flush toilets connected to a public sewerage system, flush toilets connected to sceptic tank or conservancy tank, pit latrine toilets with ventilation, and pour-to-flush toilets connected to a sceptic tank. Households with such facilities are considered to have 'improved sanitation'. This section discusses household access to decent sanitation across various demographic and geographic segments, using 2012, 2015, 2018, and 2021 SUSENAS data.

4.7.1. Household Access to Decent Sanitation

Households were considered to have access to decent sanitation if (1) their defecation facility was used exclusively by residents of a rental unit or by certain residents of the nearest households, or for communal baths, washes, and toilets (MCK); (2) their type of toilet was a gooseneck toilet; and (3) their final disposal sites were a septic tank or a Wastewater Treatment Plant (WWTP) (BPS, 2022). Based on this definition, it was observed that most households in Indonesia had access to decent sanitation. Figure 77 showed that the percentage of households with access to sanitation continued to rise during the observed period. In 2012, 63.0% of households had access to decent sanitation, increasing significantly to 80.3% in 2021 despite the COVID-19 pandemic.

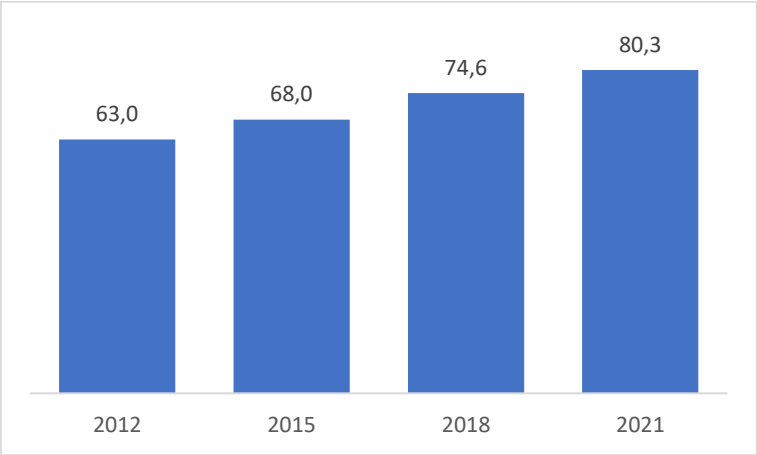


Figure 77. Household Access to Decent Sanitation (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Geographically, urban households generally had higher access to decent sanitation than rural households, as shown in Figure 78. Overall, rural households found it more difficult to access decent sanitation, highlighting the inequality between geographic areas. Nonetheless, both urban and rural areas showed an increasing trend in access over the years. In urban areas, access to decent sanitation rose from 75.3% in 2012 to 83.6% in 2021. In rural areas, it increased significantly from 50.9% in 2012 to 76.0% in 2021. The gap in access between urban and rural households was notably reduced from 24.4 p.p. in 2012 to 7.6 p.p. in 2021.

Regionally, while the percentage of households with access to decent sanitation in Java was higher in 2012, 2015, and 2018, the percentage in non-Java areas had risen by 2021 to surpass Java, as depicted in Figure 78. However, both regions showed the same upward trend in access over the years. In Java, access to decent sanitation increased from 65.0% in 2012 to 80.0% in 2021, while in non-Java areas, it rose from 60.1% in 2012 to 80.7% in 2021. The gap between Java and non-Java areas was significantly reduced, eventually reversing from 4.9 p.p. in 2012 to -0.7 in 2021.

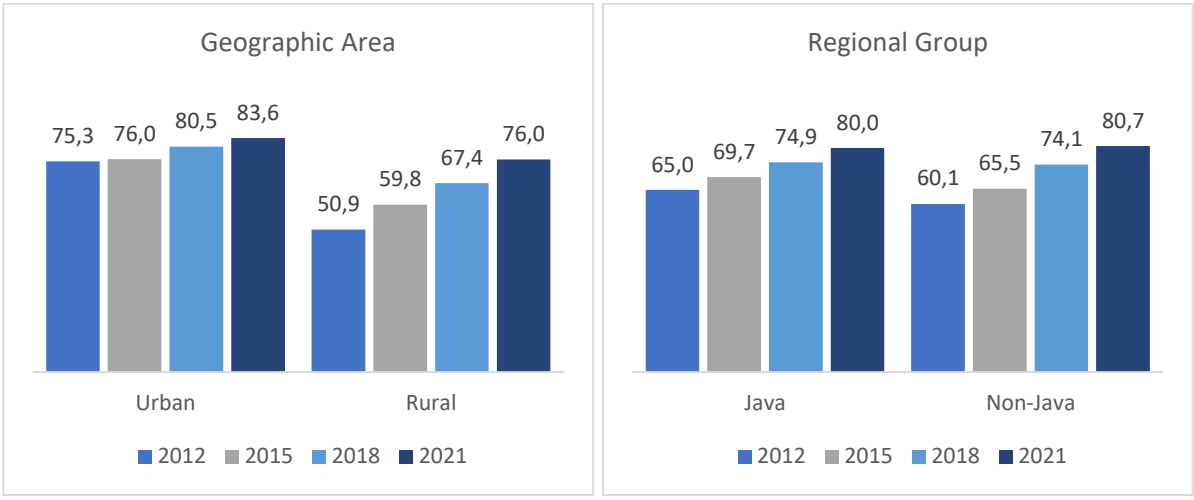


Figure 78. Household Access to Decent Sanitation (%) by Geographic Area and Regional Group, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 79 illustrates the percentage of households with access to decent sanitation by household expenditure quintile between 2012 and 2021. The higher the expenditure quintile, the greater the access to decent sanitation, emphasizing the inequality among different income levels. All quintiles displayed an increasing trend in access over the years. Access in Quintile 1 started at 40.1% in 2012 and rose to 68.3% in 2021. In the top quintile, access increased from 84.3% in 2012 to 89.8% in 2021. The gap between the quintiles narrowed considerably, reducing from 44.2 p.p. in 2012 to 21.5 in 2021.

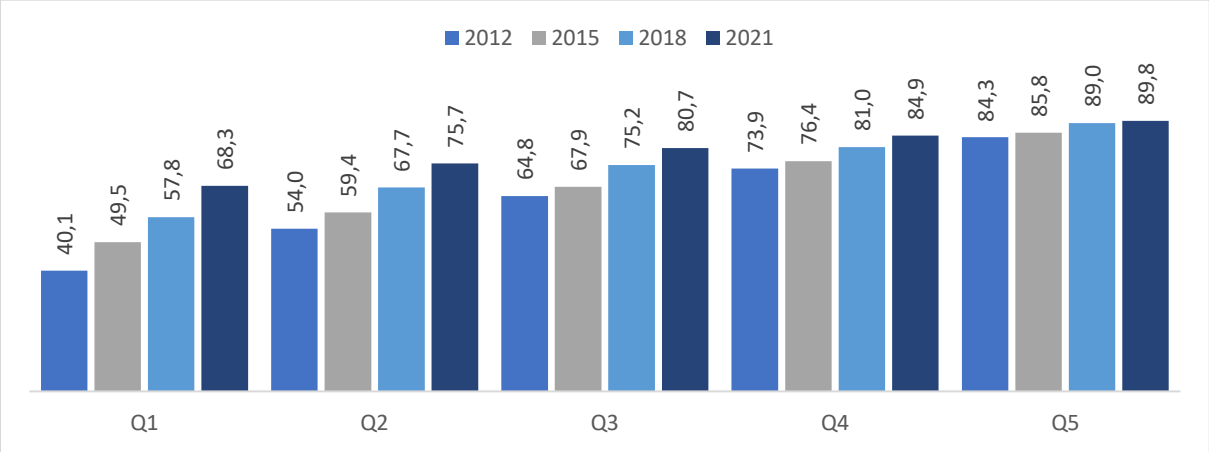


Figure 79. Household Access to Decent Sanitation (%) by Expenditure Quintile, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 80 depicts household access to decent sanitation by island from 2012 to 2021. All islands experienced an increasing trend. However, a clear sign of inequality was seen in the figures for Maluku and Papua, which were significantly lower than other islands throughout the period. Even in their highest year, 2021, at 59.5%, their access was still lower than the average of other islands in 2012. This is a concerning issue, and Maluku and Papua deserve increased attention regarding access to decent sanitation.

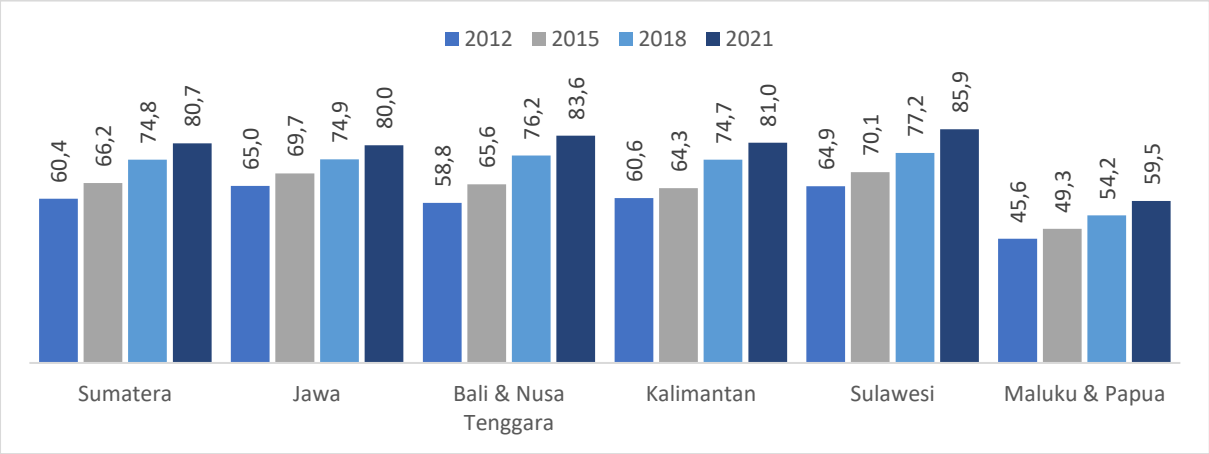


Figure 80. Household Access to Decent Sanitation (%) by Island, 2012-2021
Source: SUSENAS, author's calculation (2023)

4.7.2. Household Access to Handwashing Facilities[10]

Figure 81 depicted household access to handwashing facilities by gender of the household head, geographic area, and regional group, in 2018 and 2021. Regarding the gender of the household head, there was an increase in the percentage of households with handwashing facilities in households headed by fathers. Meanwhile, households headed by mothers experienced a slight decrease between 2018 and 2021. The figure also highlighted an apparent gap between male and female-headed households, with a difference of 1 p.p. in 2018, which then worsened to a 2.2 p.p. difference in the subsequent period. It should also be noted that the female group saw little to no change in access to handwashing facilities over the years.

In terms of regional groups, there was a significant increase in the percentage of households with handwashing facilities in the Java area by 2.1 p.p. Conversely, regions in the non-Java area experienced a decrease of 0.9 p.p. between 2018 and 2021. The gap between Java and non-Java areas was noticeable, starting at 0.8 p.p. and widening to 3.8 p.p. in the next period. This trend illustrated a clear sign of inequality between these regions. Moreover, in geographic terms, urban areas showed an increasing trend, with the percentage of households with handwashing facilities rising by 0.9 p.p. Similarly, rural areas also showed a positive trend, increasing by 0.4 p.p. from 2018 to 2021. However, a noticeable gap of 7.9 p.p. existed between urban and rural areas in 2021.

[10] We only calculated figures for 2018 and 2021, as SUSENAS 2015 and 2018 do not contain information on the household access to handwashing facilities.

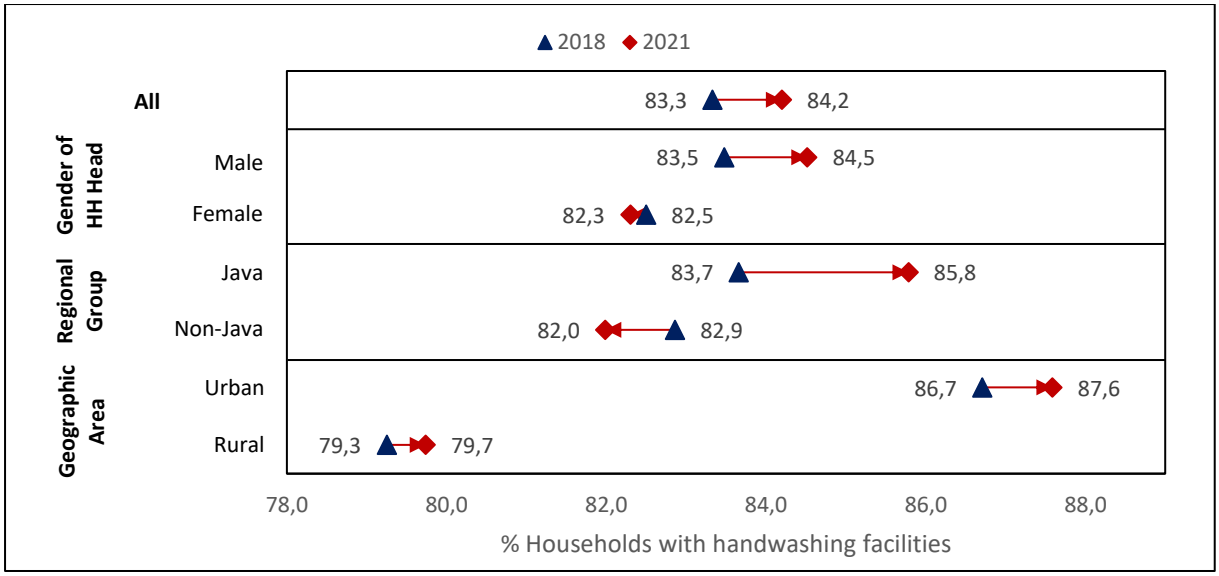


Figure 81. Household Access to Handwashing Facilities (%) by Gender of Household Head, Geographic Area, and Regional Group, 2018 and 2021

Source: SUSENAS, author's calculation (2023)

Figure 82 depicts Household access to handwashing facilities by expenditure quintile, 2018 and 2021. A clear pattern emerged in 2018, where higher expenditure quintiles correlated with a greater proportion of households having handwashing facilities. This pattern persisted into 2021. In terms of differences, Quintile 4 experienced the most significant increase through 2018-2021, with a 1.4 p.p. increase, followed by Quintile 2 with a 1 p.p. increase, and then Quintile 1 with a 0.9 p.p. increase. Unfortunately, Quintiles 3 and 5 saw little to no change during this period, with an increase of only 0.4 p.p. for both. These findings indicated a clear gap in inequality between the quintiles, with higher quintiles having a higher percentage of households with handwashing facilities.

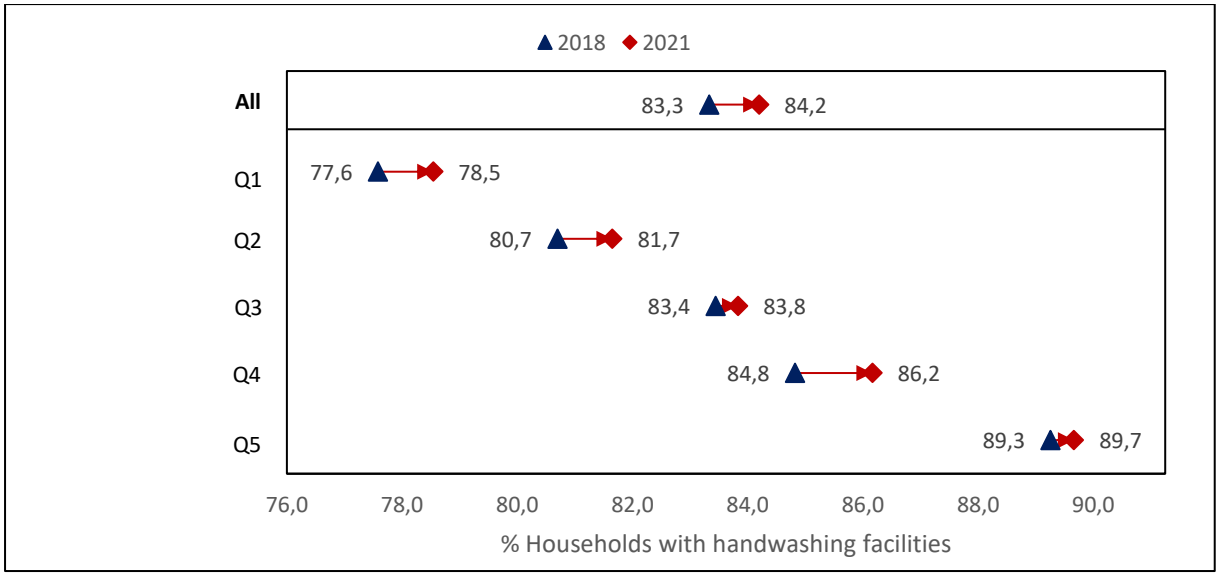


Figure 82. Household Access to Handwashing Facilities (%) by Expenditure Quintile, 2018 and 2021

Source: SUSENAS, author's calculation (2023)

Figure 83 depicts household access to handwashing facilities by island, 2018 and 2021. In 2018, Sulawesi had the highest percentage of households with handwashing facilities among all the islands, at 90.3%. This was followed by Bali and Nusa Tenggara at 87.2%, Kalimantan at 84.1%, Java at 83.7%, and Sumatra at 80.6%. Unfortunately, Maluku and Papua had the lowest percentage, with only 68.5% in 2018. In 2021, a similar pattern was observed, with Sulawesi maintaining the highest percentage at 90.3%. However, Maluku and Papua remained with the lowest percentage, declining further to 65%. These figures indicated a clear inequality in Maluku and Papua, underscoring the need for increased attention in this area.

Furthermore, regarding changes between the periods, the islands generally experienced varying degrees of change from 2018 to 2021. Bali and Nusa Tenggara experienced the most significant decrease, from 87.2% to 80.8%. Following them were Maluku and Papua, with a decrease from 68.5% to 65%. Sumatra and Sulawesi saw little to no change over the years. However, some islands, such as Kalimantan, experienced improvements, with the percentage of households with access to handwashing facilities rising from 84.1% to 86.4%.

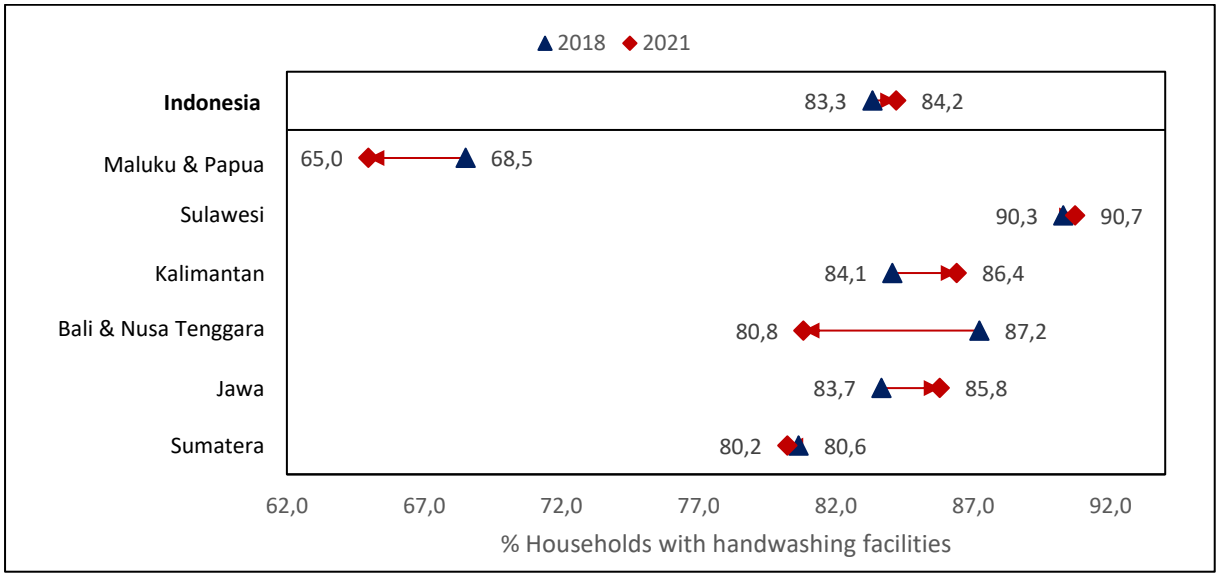


Figure 83. Household Access to Handwashing Facilities (%) by Island, 2018 and 2021

Source: SUSENAS, author's calculation (2023)

4.8. *Access to Electricity*

Electricity is one of the basic services that Indonesian households depend on for their daily lives and wellbeing. This section provides a discussion on household access to electricity and electricity expenditure across various demographic and geographic disaggregation to show the relative inequalities in access to this service. The analysis is done at the household level using 2012, 2015, 2018, and 2021 SUSENAS data.

4.8.1. Household Access to Electricity

Figure 84 shows the trend in access to electricity connection at national level. Over the years, it was observed that most households in Indonesia already had access to electricity. The percentage of households with access to electricity during the observed period continued to rise from 95.8% in 2012 to 99.2% in 2021, despite the COVID-19 pandemic, which translated into a 3.4 percentage point increase.

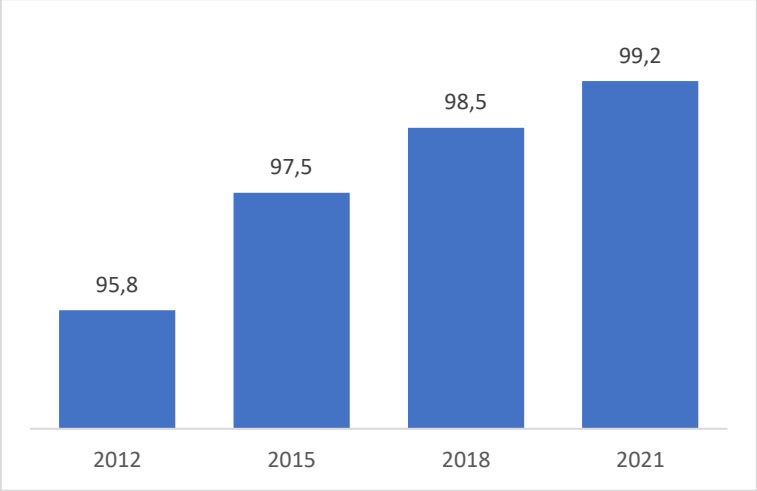


Figure 84. Household Access to Electricity (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Based on regional group, the percentage of households with access to electricity was higher in Java areas than in their non-Java counterparts, as depicted in Figure 85, highlighting the inequality that existed between regional groups. However, both groups showed the same increasing trend in access to electricity. Access in Java areas increased from 99.6% in 2012 to 99.9% in 2021. Meanwhile, access in non-Java areas increased from 90.2% in 2012 to 98.2% in 2021. Looking exclusively at the gap in this figure, it was observed that the gap in access to electricity between households living in Java and non-Java areas continued to decrease substantially from 2012 to 2021, decreasing from 9.4 p.p. in 2012 to 1.7 p.p. in 2021.

Based on regional group, the percentage of households with access to electricity was higher in Java areas than their non-Java counterparts as depicted in Figure 85, highlighting the inequality that exists between regional groups. However, both groups have the same increasing trend of access to electricity.

Households access to electricity in Java areas increased from 99.6% in 2012 to 99.9% in 2021. Meanwhile, household access to electricity in non-Java areas increased from 90.2% in 2012 to 98.2% in 2021. Looking exclusively at the gap of this figure, we observed that the gap of access to electricity between households living in Java and non-Java areas continued to decrease substantially from 2012 to 2021, with the gap decreased from 9.4 p.p. in 2012 to 1.7 p.p. in 2021.

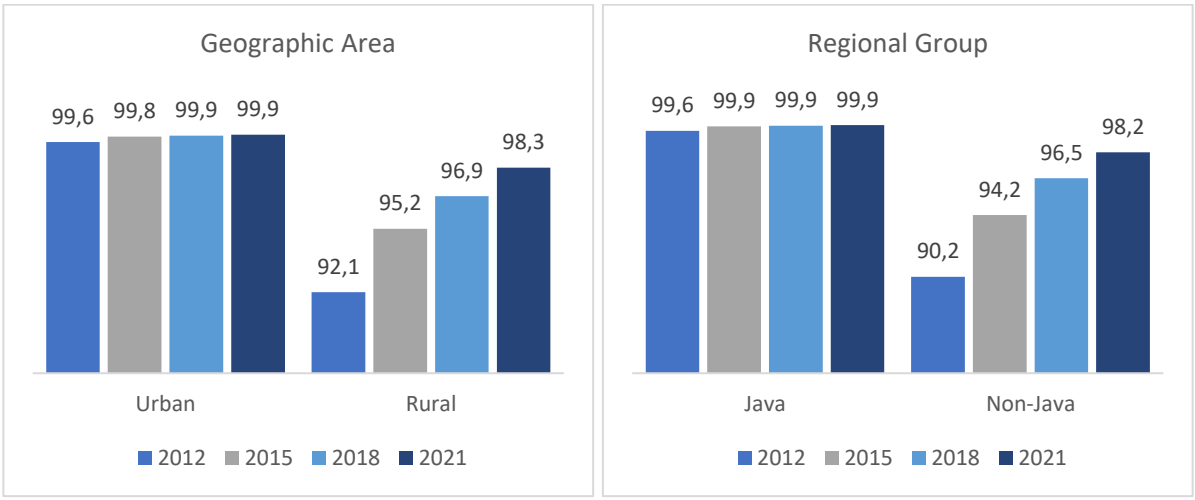


Figure 85. Household Access to Electricity (%) by Geographic Area and Regional Group, 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 86 shows the percentage of households with access to electricity by household expenditure quintile between 2012 and 2021. Over this time period, the higher the expenditure quintile, the higher the access to electricity, highlighting the inequality that existed between expenditure quintiles. However, all groups showed the same increasing trend of access to decent sanitation, indicating improvement over the years. Households in Quintile 1 started at 91.1% in 2012, increasing to 98.4% in 2021. Meanwhile, access for households in the top quintile increased from 99.0% in 2012 to 99.6% in 2021. Examining exclusively the gap in this figure, it was observed that the gap in access to electricity between households' expenditure quintiles continued to drop significantly from 2012 to 2021, with the gap between Quintile 1 and Quintile 5 decreasing significantly from 7.9 p.p. in 2012 to 1.2 p.p. in 2021.

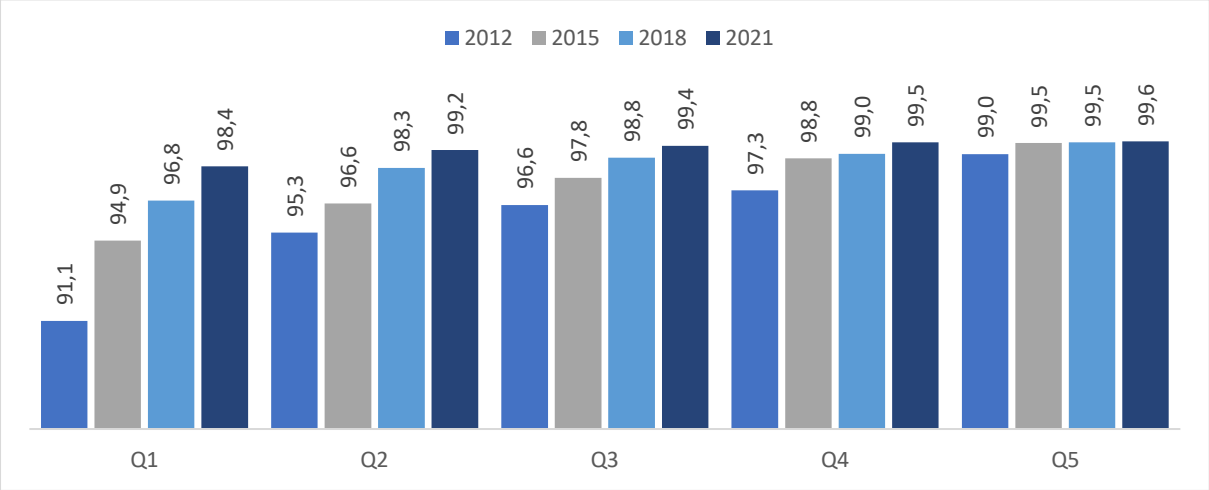


Figure 86. Household Access to Electricity (%) by Expenditure Quintile, 2012-2021
Source: SUSENAS, author's calculation (2023)

4.8.2. Real Household Electricity Expenditures

Figure 87 shows the trend of monthly real household expenditures on electricity in average and share to total household expenditure terms for the years of 2012, 2015, 2018, and 2021. During this period, the average monthly household expenditures on electricity rocketed from IDR41.1 thousand in 2012 to IDR123.5 thousand, with the slowest growth occurring in 2021 as a result of the COVID-19 pandemic. Simultaneously, the share of monthly household electricity expenditures to total monthly household expenditures also rose from 1.6% in 2012 to 2.9% in 2021, with no significant change from 2018 to 2021.

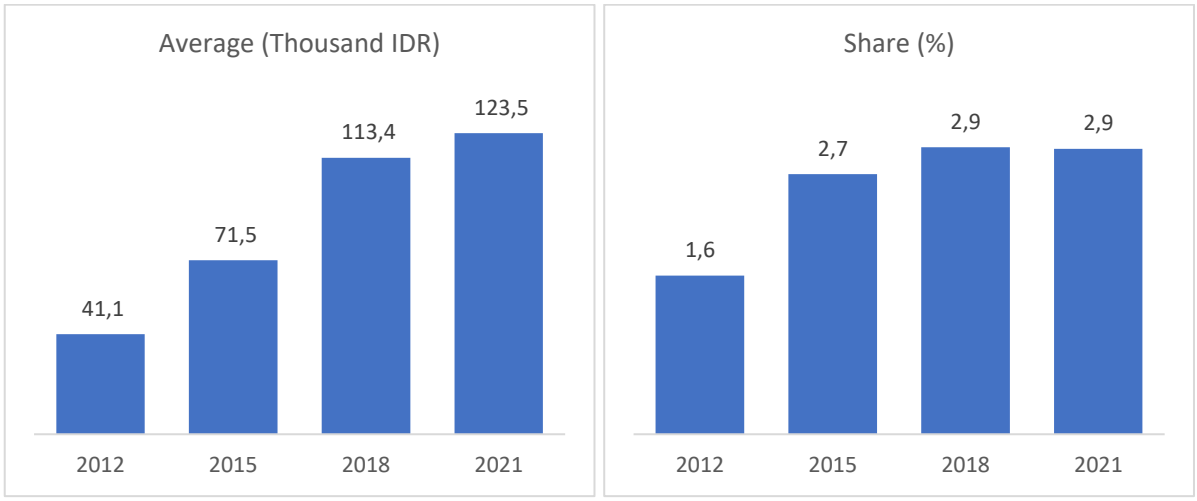


Figure 87. Average and Share of Real Household Electricity Expenditures (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Based on geographic area, it was found that urban households generally had higher average monthly expenditures on electricity than rural households, as shown in Figure 88, highlighting the inequality that existed between geographic areas. Both groups also exhibited different trends in the monthly average expenditure on electricity, with rural households seeming to receive a higher impact from the COVID-19 pandemic. The average monthly household expenditure on electricity in urban areas increased continuously from IDR 43.1 thousand in 2012 to IDR168.0 thousand in 2021. Meanwhile, the average in rural areas staggered throughout the years, with incremental changes between 2012 and 2015 before jumping to IDR63.2 thousand in 2018 and plodding to IDR65.0 thousand in 2021. Looking exclusively at the gap in this figure, it was observed that the gap in average monthly household expenditure on electricity between urban and rural households continued to increase significantly, rising from IDR3.9 thousand in 2012 to IDR103.0 thousand in 2021.

In percentage terms, while the share of monthly household electricity expenditures to total monthly household expenditures in 2012 had been higher in rural households, the share in urban households surpassed that of rural households in subsequent years, as depicted in Figure 88. The gap in the share

of monthly household electricity expenditures between urban and rural households was observed to widen during the 2015-2021 period, rising from 1.1 p.p. in 2015 to 1.4 p.p. in 2021.

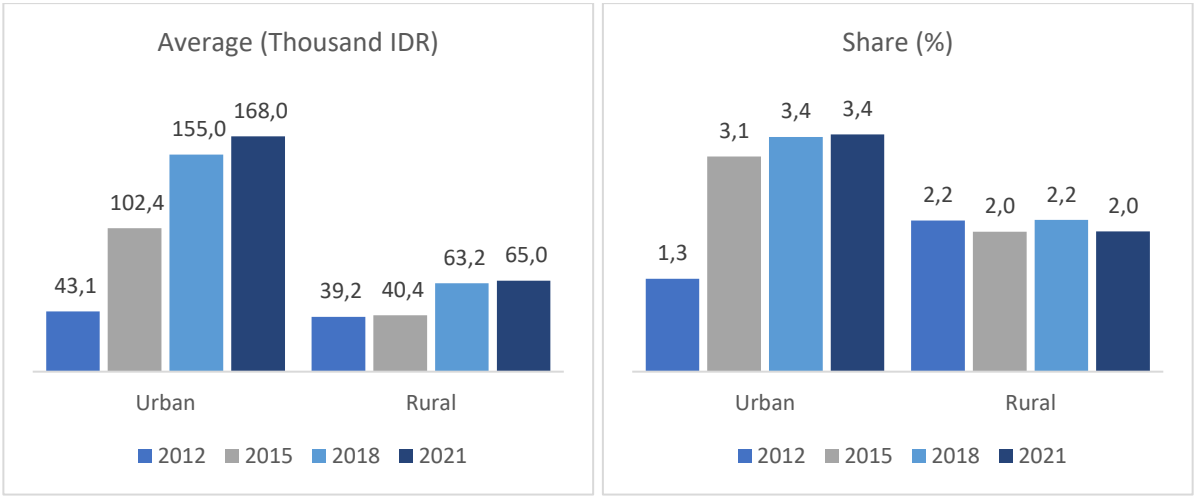


Figure 88. Average and Share of Real Household Electricity Expenditures by Geographic Area (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

By regional group, the inequality or gap that existed between geographic areas had an uncommon trend over the observed period; households residing in Java areas had higher average monthly expenditures on electricity in 2015 and 2021, while those in non-Java also had higher averages in 2012 and 2018, as shown in Figure 89. However, both groups exhibited the same trends in monthly average expenditure on electricity. The average in Java areas increased continuously from IDR51.6 thousand in 2012 to IDR134.8 thousand in 2021. Meanwhile, the average in non-Java areas also rose from IDR61.4 thousand in 2012 to IDR133.7 thousand in 2018 before falling to IDR71.5 thousand in 2021.

In percentage terms, households in Java areas consistently had a higher share of monthly household electricity expenditures during the observed years, as depicted in Figure 89. Looking exclusively at the gap in this figure, it was observed that the gap in the share of monthly household electricity expenditures between regional groups continued to increase from none in 2012 to 0.1 p.p. in 2021.

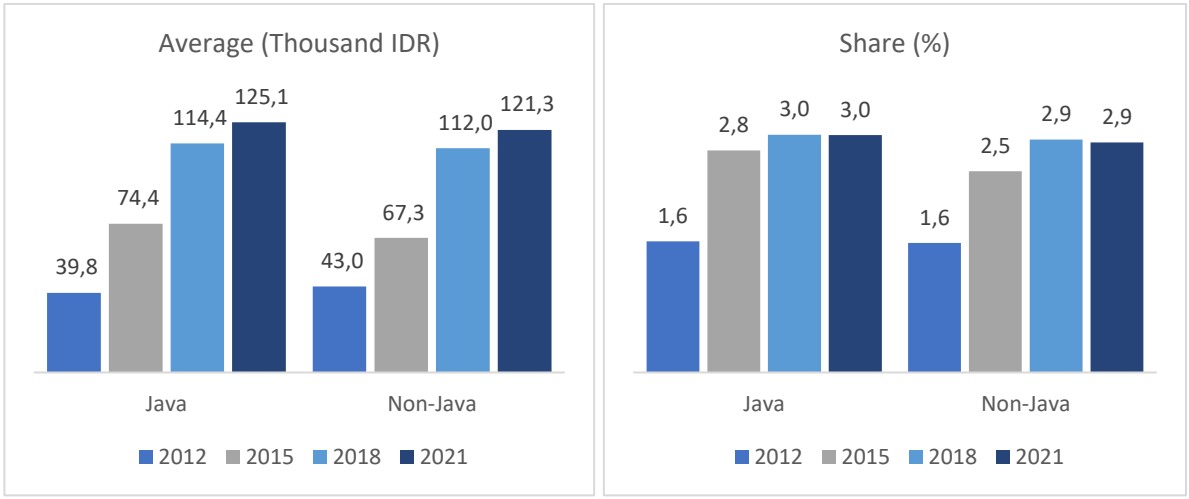
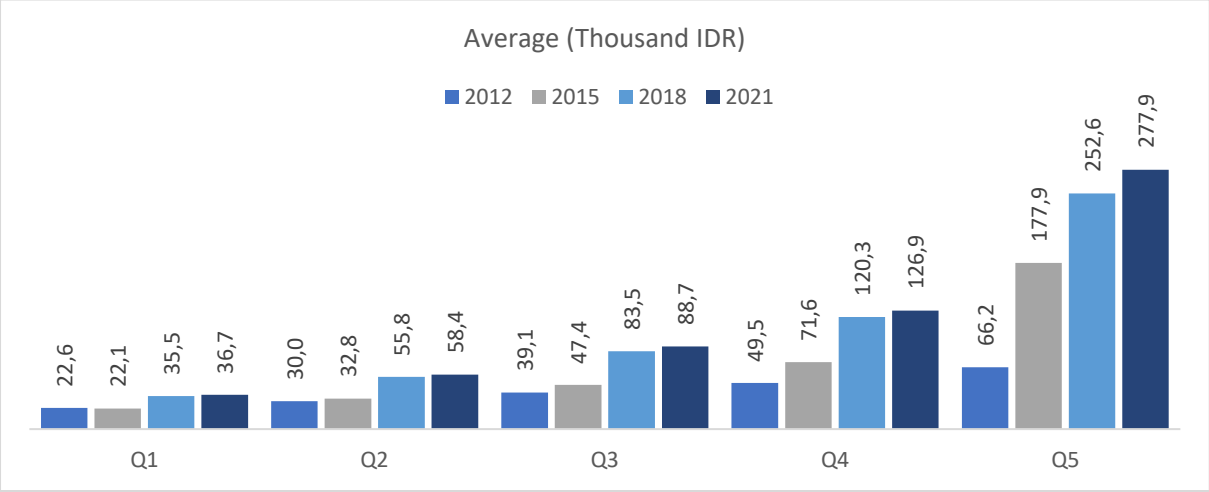


Figure 89. Average and Share of Real Household Electricity Expenditures by Regional Group (%), 2012-2021

Source: SUSENAS, author's calculation (2023)

Figure 90 shows the monthly real household expenditures on electricity in average and share to total household expenditure terms for the years of 2012, 2015, 2018, and 2021 by household expenditure quintile between 2012 and 2021. Over this time, the higher the expenditure quintile, the higher the average monthly household expenditures on electricity, underscoring the inequality that existed between expenditure quintiles. However, all groups exhibited the same increasing trend of access to decent sanitation, showing an improvement in willingness and ability to pay for electricity over the years. Households in Quintile 1 started at IDR22.6 thousand in 2012, increasing to IDR36.7 thousand in 2021. Meanwhile, the average monthly household expenditures on electricity in the top quintile rose from IDR66.2 thousand in 2012 to IDR277.9 thousand in 2021. Examining exclusively the gap in this figure, it was observed that the gap in the average monthly household expenditures on electricity between households' expenditure quintiles continued to diverge significantly from 2012 to 2021, with the gap between Quintile 1 and Quintile 5 rising significantly from IDR43.6 thousand in 2012 to IDR241.2 thousand in 2021.

In percentage terms, while the share of monthly household electricity expenditures to total monthly household expenditures in 2012 were higher in households in Quintiles 1, 2, 3, and 4, the share in households in Quintile 5 had risen to surpass the lower expenditure quintile groups in 2015, 2018, and 2021, as depicted in Figure 90. A similar trend was observed for the gap in the share of monthly household electricity expenditures between the highest and lowest quintile during the 2015-2021 period, where the gap continued to rise from 1 p.p. in 2015 to 1.3 p.p. in 2021.



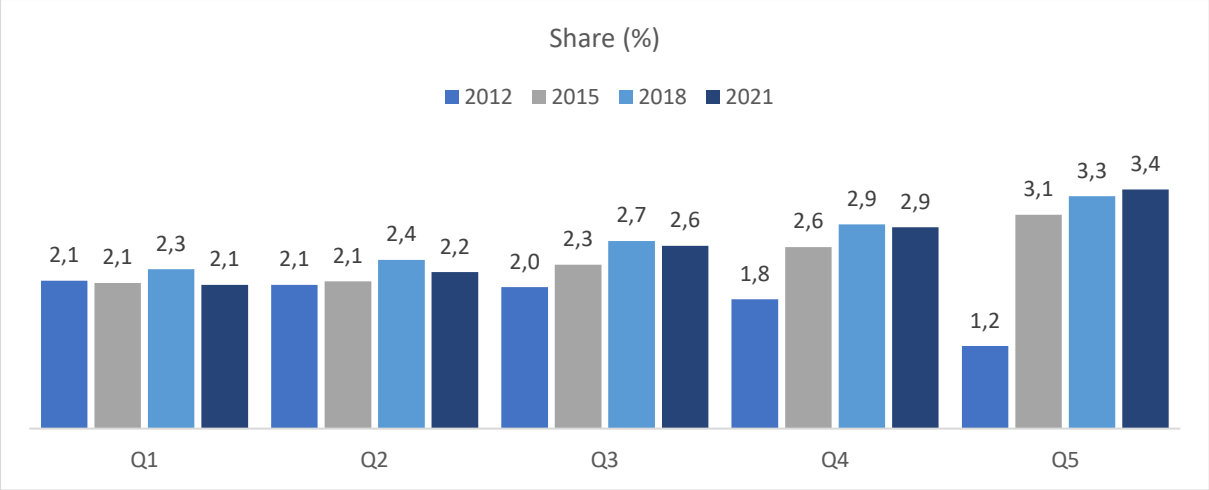


Figure 90. Average and Share of Real Household Electricity Expenditures by Quintile (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

4.9. Spatial Inequality

This section will discuss the economic inequality across provinces and the physical and social assets inequality across regencies/cities in Indonesia.

4.9.1. Economic Inequality by Province

In this section, we concerned with measuring inequality between regencies/cities of a province. Thus, the unit of analysis is a regency/city and all individuals in each regency/city are assigned the same level of per capita expenditure and wage. According to Shifa, M., & Ranchhod, V (2019) that followed Williamson's (1965) work, the standard approach used to measure spatial/regional inequality is to use the coefficient of variation (CV). Therefore, this chapter will further use CV as the basis of measuring the economic inequality.

4.9.1.1. Per Capita Expenditure Inequality by Province

Per capita expenditure inequality refers to the unequal distribution of financial resources among individuals within a population. It signifies the disparities in income, wealth, and consumption patterns, highlighting varying levels of economic well-being. This form of inequality measures the differences in spending power and underscores the unequal access to basic needs, education, healthcare, and other essential services. Per capita expenditure inequality can be influenced by factors such as income disparities, social mobility, government policies, and structural barriers. Addressing this type of inequality requires comprehensive approaches that focus on income redistribution, social safety nets, and inclusive economic growth promotion to ensure a more equitable distribution of resources and opportunities for all individuals.

Figure 91 displays the per capita expenditure inequality by provinces. The figure illustrates that the highest per capita expenditure inequality occurred in the Eastern part of Indonesia, with a range of 5.5%-9.5% CV level. However, provinces with the highest per capita expenditure inequality were observed to be on the island of Java. Three provinces with the highest CV levels were Yogyakarta (15,33%), Banten (13,20%), and Bali (11,13%). On the other hand, three provinces with the lowest CV level were North Sumatra (3.8%), South Sumatra (4.02%), and Central Java (4.08%). Upon closer inspection, the difference between the province with the highest CV level in per capita expenditure inequality (Yogyakarta) and that with lowest CV level in per capita expenditure inequality (North Sumatra) was 7.3 p.p. Furthermore, it is also noteworthy that all three provinces with the highest per capita expenditure inequality are in Java Island, while two of the provinces with the lowest per capita expenditure inequality are in Sumatera Island.

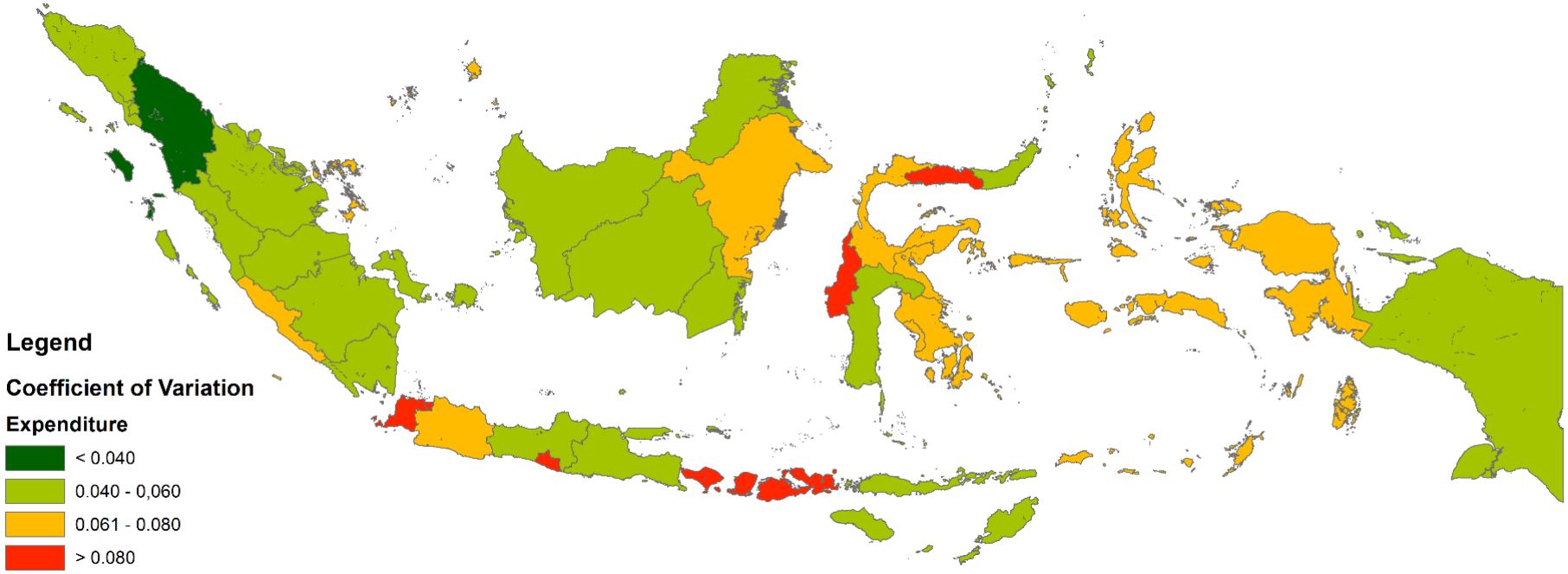


Figure 91. Per Capita Expenditure Inequality by Province, 2021

Source: SUSENAS, author's calculation (2023)

4.9.1.2. Wage Inequality by Province

Wage inequality, a persistent and complex issue in modern society, refers to the inequal distribution of wage among individuals in paid employment. It highlights the stark disparities in earning potential and the widening gap between the highest and lowest wage earners. Wage inequality can be influenced by various factors such as education, occupation, gender, and socioeconomic status. This disparity not only impacts individuals' quality of life but also has far-reaching consequences for social mobility, economic stability, and overall societal well-being. Addressing wage inequality requires a comprehensive understanding of its root causes and the implementation of effective policies to promote fairness and equal opportunities for all.

Figure 92 displays the wage inequality by provinces in 2021. Overall, the map illustrates that the central region of Indonesia exhibited the highest level of wage inequality, with disparities ranging from 4% to 10%. However, the highest level of wage inequality was found on the island of Java, precisely in Banten Province. Furthermore, the provinces with the highest CV level are Banten (13.6%), Riau Islands Province with (9.52%), and North Kalimantan with (9.32%). Meanwhile, three provinces with the lowest CV level are Central Java (2.49%), North Sumatera (2.58%), and Central Kalimantan (2.68%). To delve further, the difference between the province with the highest CV level in wage inequality (Banten) and that with the lowest CV level in wage inequality (Central Java) was 11.1 p.p.

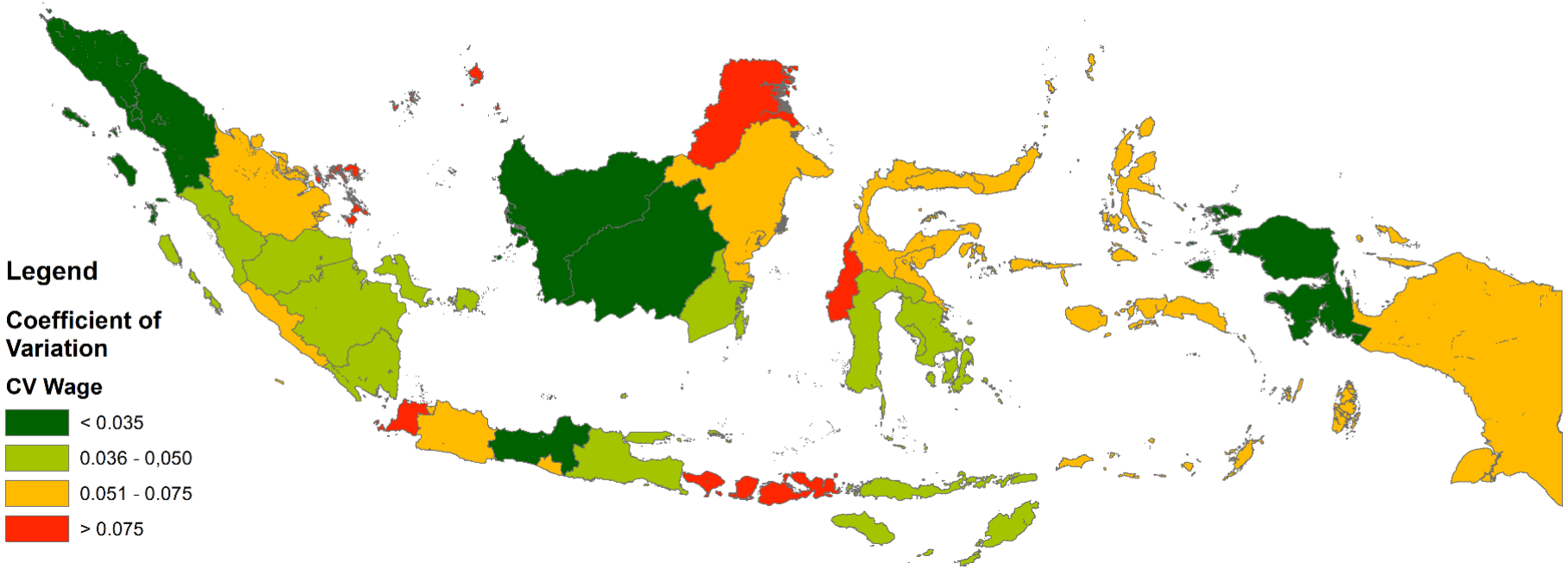


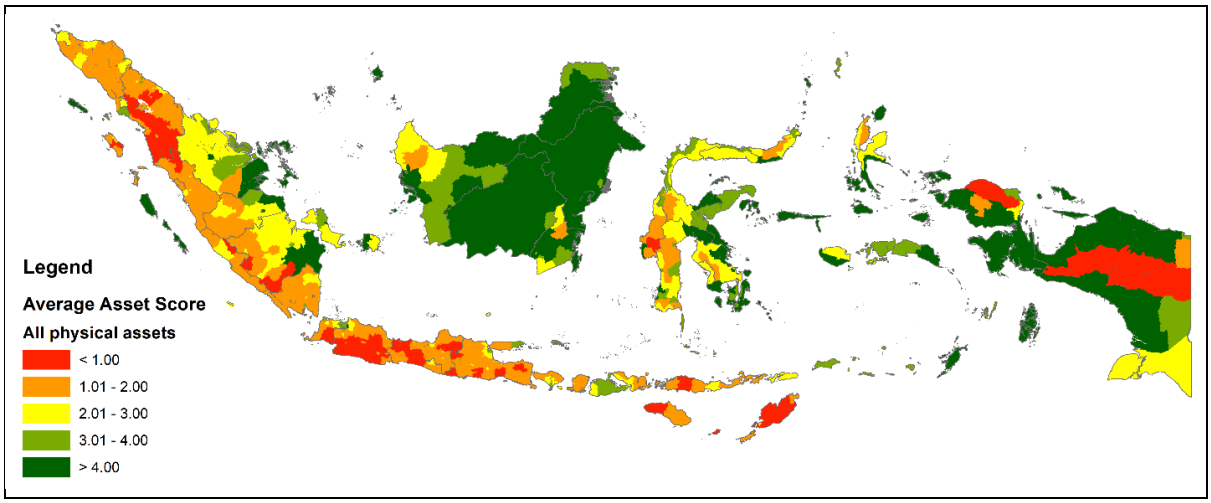
Figure 92. Wage Inequality by Province, 2021
Source: SAKERNAS, author's calculation (2023)

4.9.3. Physical and Social Asset Inequality by Regency/City

Physical and social asset indexes serve as crucial indicators of spatial inequality. The physical asset index evaluates the availability and quality of infrastructure, encompassing transportation, utilities, housing, and public amenities. Disparities in the distribution of these assets can result in unequal access to basic services and opportunities for residents. Meanwhile, the social asset index gauges factors such as education, healthcare, social services, and community resources. Disparities in social assets can constrain individuals' ability to thrive and realize their full potential. Addressing spatial inequality necessitates targeted interventions to enhance physical and social infrastructure in underserved areas, ensuring equitable access to essential resources and promoting inclusive development for all residents.

While examining inequality at the provincial level provides a general depiction of each province, a more nuanced understanding emerges from delving into the analysis of regencies/cities. This section will guide you through the physical and social asset indices by regency and city, focusing on five specific indicators: Average Asset Score, Household Access to Decent Drinking Water, Household Access to Decent Sanitation, Household Access to Electricity, and Percentage of Individuals Using the Internet.

Figure 93 displays a spatial map of the average asset score by regency/city in 2021. The top five regencies/cities with the highest average asset scores in 2021 were Batu City (17.93), Malang City (9.59), Tanimbar Islands Regency (8.56), Salatiga City (7.96), and Makassar City (6.29). Conversely, the bottom five regencies/cities with the lowest average asset scores were Deiyai Regency (0.00), Lanny Jaya Regency (0.01), Intan Jaya Regency (0.01), Tolikara Regency (0.01), and Central Mamberamo Regency (0.01). Notably, there is a substantial gap between the regency/city with the highest average asset score (Batu City) and that with the lowest average asset score (Deiyai Regency), reaching as much as 17.93 p.p.



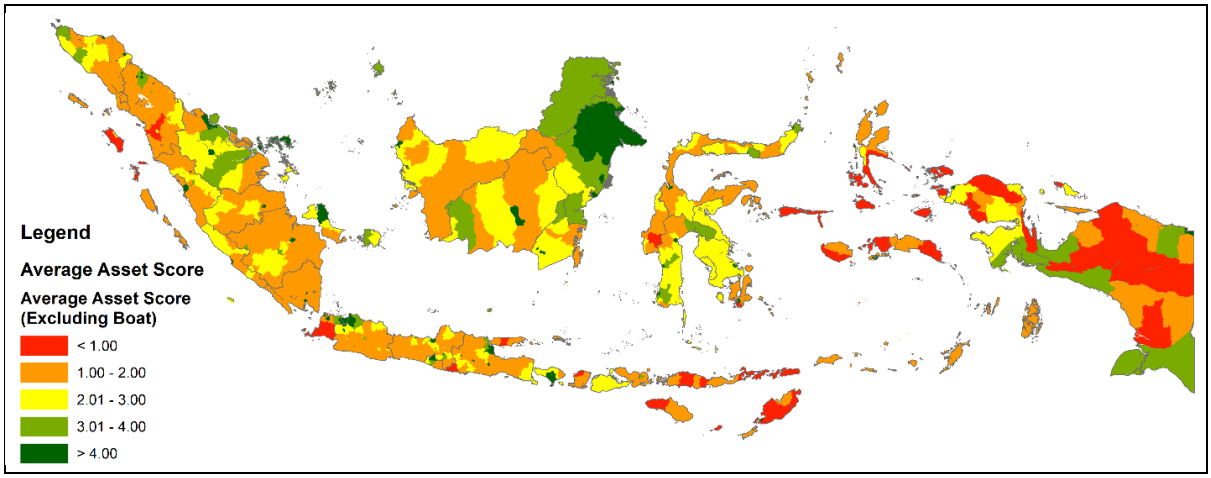


Figure 93. Average Asset Score by Regency/City, 2021

Source: SUSENAS, author's calculation (2023)

Figure 94 illustrates a spatial map of the household access to decent drinking water by regency/city in 2021. Generally, the top five regencies/cities with the highest percentage of households having access to clean drinking water were Batu City, North Jakarta City, Magelang City, West Jakarta City, and Bekasi City, all boasting a 100% accessibility rate. In contrast, the five regencies/cities with the lowest percentage of households having access to clean drinking water were Central Mamberamo Regency (0.00%), Lanny Jaya Regencies (0.87%), Tolikara Regency (6.60%), Nduga Regency (13.35%), and Wondama Bay Regency (19.83%). The staggering gap between the highest and lowest rates amounted to 100 p.p. It is noteworthy that the highest rates were all found in cities on Java Island, while the lowest rates were in regencies on Papua Island, underscoring a significant inequality between the two regions. Moreover, the eastern region of Indonesia emerges as the primary area with a higher concentration of regencies/cities experiencing a low percentage of household access to decent drinking water compared to other regions in Indonesia, as observed in the map.

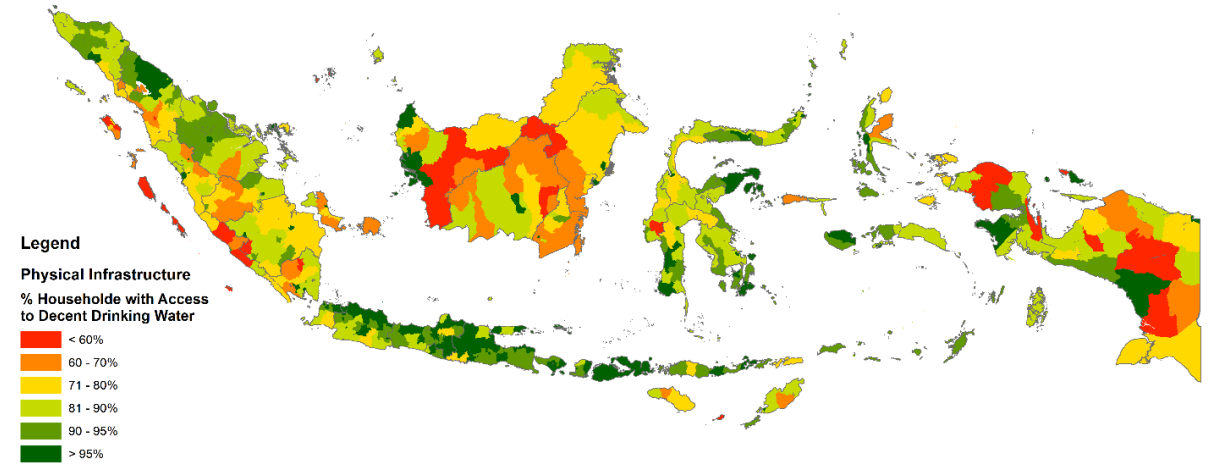


Figure 94. Household Access to Decent Drinking Water by Regency/City, 2021

Source: SUSENAS, author's calculation (2023)

Figure 95 shows a spatial map of the household access to decent sanitation by regency/city in 2021. The five regencies/cities with the highest household access to decent sanitation were Denpasar City (99.97%), Banda Aceh City (99.97%), Badung Regency (99.59%), Ternate City (99.23%), and South Tangerang City (98.84%). Conversely, the five regencies/cities with the lowest household access to decent sanitation were Deiyai Regency (0%), Paniai Regency (0.26%), Intan Jaya Regency (0.36%), Yalimo Regency (0.36%), and Lanny Jaya Regency (2.51%). These numbers allow us to quantify the substantial gap between regencies/cities with the highest and lowest household access to decent sanitation, amounting to 99.97 p.p. Notably, the eastern region of Indonesia stands out as the primary area with a higher concentration of regencies/cities experiencing a low percentage of household access to decent sanitation compared to other regions in Indonesia, as observed in the map.

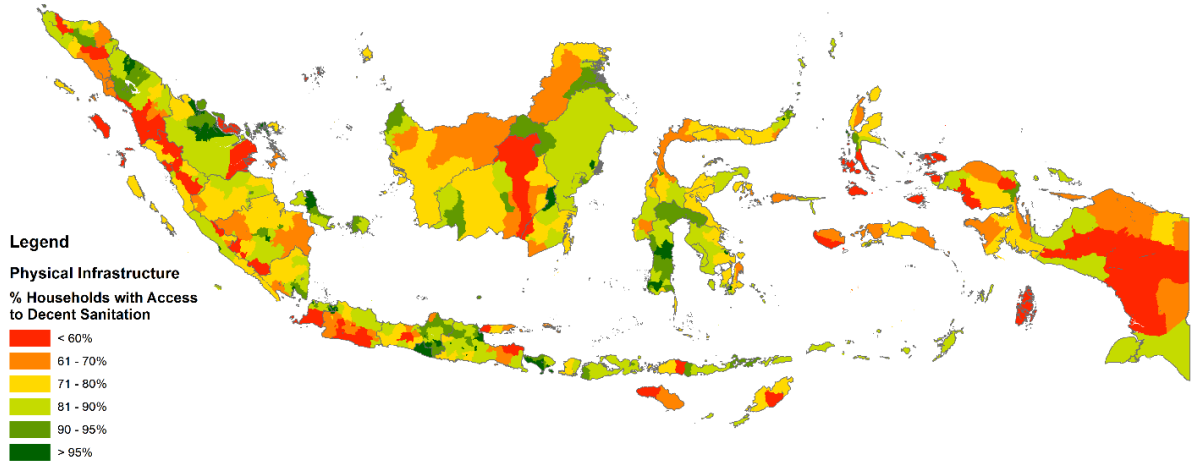


Figure 95. Household Access to Decent Sanitation by Regency/City, 2021

Source: SUSENAS, author's calculation (2023)

Figure 96 shows a spatial map of the household access to electricity by regency/city in 2021. The five regencies/cities with the highest household access to electricity were Denpasar City, Banda Aceh City, Badung Regency, Ternate City, and South Tangerang City, where 100% of the household having access to electricity. On the other hand, the five regencies/cities with the lowest household access to electricity were Nduga Regency (59.16%), Bintang Mountains Regency (47.05%), Asmat Regency (42.51%), Dogiyai Regency (25.18%), and Puncak Jaya (3.24%). These numbers portray a massive gap between regencies/cities with the highest and lowest household access to electricity, amounting to a 96.7 p.p. Notably, the eastern region of Indonesia exhibits the most pronounced inequality, with regencies/cities on Papua Island having the lowest household access percentages, while those with adequate access are predominantly located in western and central region of Indonesia.

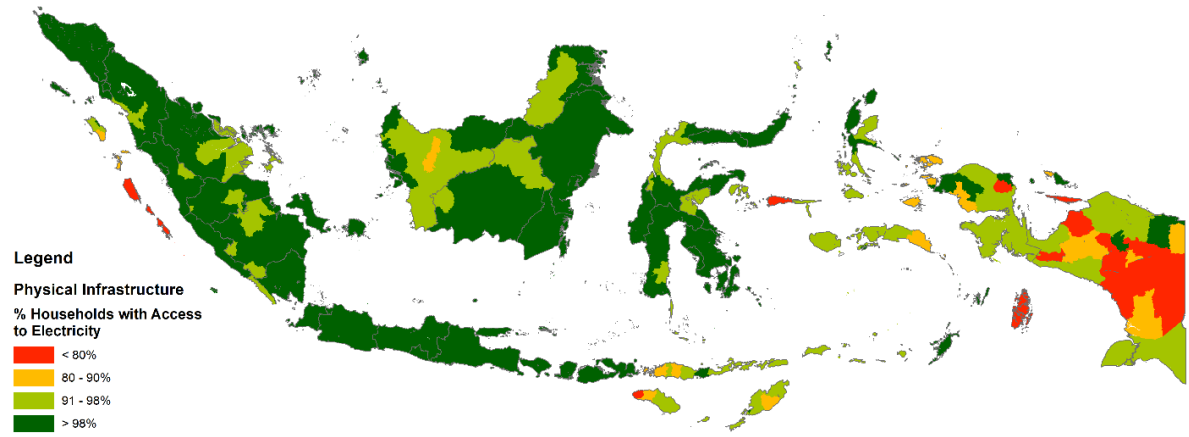


Figure 96. Household Access to Electricity by Regency/City, 2021
Source: SUSENAS, author's calculation (2023)

Figure 97 depicts a spatial map of the individual internet uses by regency/city in 2021. The five regencies/cities with the highest internet usage were Jakarta Selatan City (85,92%), Bandung City (83.53%), Depok City (83.27%), Bontang City (82.99%), and Bekasi City (82.85). Meanwhile, regencies/cities with the lowest internet usage were Central Deiyai Regency (0.02%), Mamberamo (0.04%), Puncak Jaya Regency (0.33%), Intan Jaya Regency (0.40%), and Paniai Regency (0.41%). Unfortunately, the figure highlights the significant gap between the regencies/cities that has the highest internet usage (Jakarta Selatan City) and the regencies/cities that has lowest internet usage (Central Deiyai Regency), reaching as much as 85.27 p.p. In addition, the inequality is most pronounced in the eastern region of Indonesia, as indicated by the map, where the percentage of individual internet usage is notably lower compared to other regions.

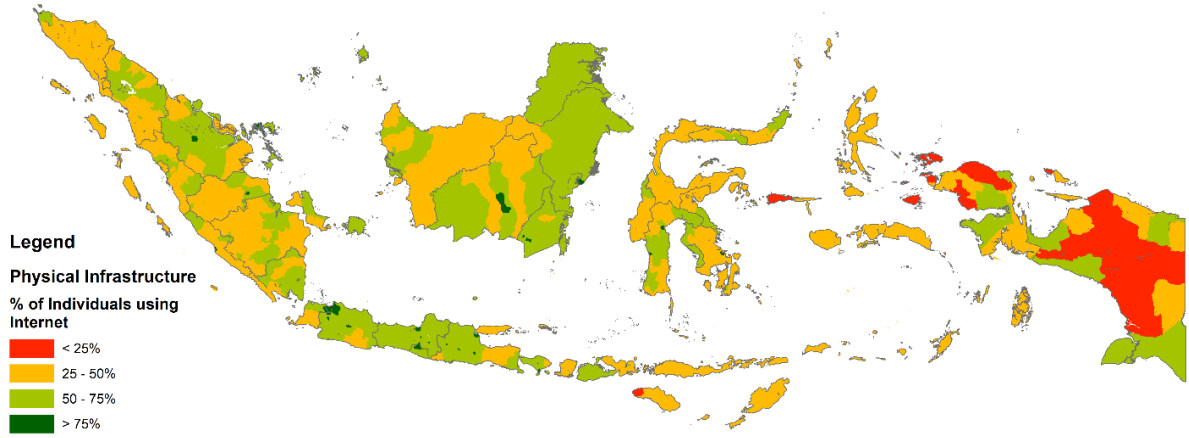


Figure 97. Individual Internet Uses by Regency/City, 2021.
Source: SUSENAS, author's calculation (2023)

4.10. Gender Inequality

Inequality constitutes a multifaceted predicament that reverberates across all strata of society. Gender inequality, in particular, entails the unjust discrimination based on an individual's sex or gender, leading to one sex or gender being consistently favored or prioritized over the other. The imperative of gender parity, being an intrinsic human entitlement, is breached when acts of gender-driven bias transpire. This section delves into gender inequality as explored in preceding sub-chapters encompassing various dimensions, such as economics, labor, sanitation, water, and electricity.

Table 14 provides estimates of the mean and median expenditure per capita by gender of household head. Both the real mean and median expenditure per capita for female household heads surpass those of male household heads. Moreover, the disparity in mean expenditure between the two genders has widened over time. Nevertheless, this discrepancy is likely attributed to male household heads having a higher average number of household members compared to female household heads. This is a common theme in the context of Indonesia. In 2021, more than half of male-headed households comprise 4 or more members, as opposed to 22% of female-headed households falling into such categories. This stands in contrast to the fact that one-third of female-headed households are single-person households, whereas merely 0.04% of male-headed ones being in the same category.

Lockley, Tobias & Bah (2013) lists potential causes for such dynamics. The first one is underestimation for female-headed household figures as a result of traditional conventions regarding gender roles in households, which further reinforced by the Indonesian Marriage Law Number 1 of 1974. Second, Indonesian women are less likely to remarry than the men should they ever be widowed. Third, Indonesian female-headed households are of older age profile compared to their male-headed peers. On top of that, Indonesian female typically possess longer life expectancy.

Table 14. Distribution of Real Monthly Mean and Median Expenditure by Gender of Household Head

Subgroup	Year	Male Household Head	Female Household Head	Total
Mean	2012	649,149	670,766	651,403
	2015	763,455	793,481	706,403
	2018	1,016,695	1,061,386	1,021,708
	2021	1,164,850	1,262,992	1,174,613
Median	2012	452,433	458,918	453,095
	2015	530,851	538,395	499,427
	2018	756,591	761,441	757,081
	2021	870,706	920,343	875,928

Source: SUSENAS, author's calculation (2023)

Table 15 provides a comprehensive overview of per capita expenditure-based inequality trends in Indonesia spanning the period from 2012 to 2021. Observing the disparities within subgroups over the course of several years, it appears that individuals residing in male-headed households exhibit a relatively higher level of equality compared to those in female-headed households. The Gini coefficient for both groups exhibited a slight increase in 2015, with female-headed households experiencing a more substantial rise. Subsequently, the Gini coefficient for individuals in male-headed households underwent a considerable decline, decreasing from 0.415 in 2015 to 0.386 in 2018, and slightly further

to 0.382 in 2021. Meanwhile, the Gini coefficient for individuals in female-headed households also experienced a decline from 2015 to 2021, but with a more pronounced reduction compared to the male-headed households, falling from 0.434 to 0.411 and eventually to 0.403, respectively. Over the years, the trends depicted by the Theil's index, Atkinson index, and Palma ratio align closely with the observed patterns in the Gini coefficient for both groups. However, it is important to note that these findings do not necessarily indicate that individuals in male-headed households possess a larger share of total expenditure in comparison to individuals in female-headed households (refer to Table 14).

Table 15. Inequality Measures based on per Capita Expenditure by Gender of Household Head

Subgroup	Year	Gini Coefficient	Theil's Indices		Atkinson Indices		Palma Ratio
			GE(0)	GE(1)	A(1)	A(2)	
Male Household Head	**2012**	0.408	0.272	0.337	0.238	0.369	1.939
	2015	0.415	0.282	0.344	0.246	0.383	2.016
	2018	0.386	0.245	0.276	0.217	0.358	1.73
	2021	0.382	0.238	0.275	0.212	0.346	1.698
Female Household Head	**2012**	0.421	0.289	0.35	0.251	0.39	2.067
	2015	0.434	0.31	0.362	0.266	0.415	2.22
	2018	0.411	0.278	0.312	0.243	0.393	1.961
	2021	0.403	0.268	0.307	0.235	0.382	1.896
Total Population	**2012**	0.409	0.273	0.339	0.239	0.371	1.953
	2015	0.408	0.272	0.333	0.238	0.372	1.948
	2018	0.389	0.249	0.28	0.22	0.362	1.755
	2021	0.384	0.242	0.279	0.215	0.35	1.72

Source: SUSENAS, author's calculation (2023)

Tables 16 further breaks down the statistics of unemployment and LFPR by gender. With regard to gender, we observed a significant gap in the unemployment and LFPR rates. Males had a lower unemployment rate than females from 2012 to 2018, which coincided with the latter group's lower LFPR rate. However, while females continued to have a lower LFPR rate in 2021, males' unemployment rate had risen to surpass that of females. Looking exclusively at the LFPR rate, we found that only around half of females of working age are participating in the labor force in any observed year, while their male counterparts' statistic never fell below 80%.

Table 16. Labor Market Trend by Gender, 2012-2021

	Year	Working age population (People aged 15 and over)					Employment-to-Population ratio	LFPR	Unemployment rate
		Labor force			People outside the labor force	Total working age population			
		Employed	Unemployed	Total					
		(in million people)					*(in %)*		
Male	2012	69.1	4.2	73.3	13.5	86.8	79.6	84.4	5.8
	2015	72.2	4.7	76.8	16.1	92.9	77.7	82.7	6.1
	2018	76.1	4.3	80.4	16.8	97.2	78.2	82.7	5.4
	2021	79.3	5.7	85.0	18.3	103.3	76.7	82.3	6.7
Female	2012	41.7	3.0	44.8	42.4	87.1	47.9	51.4	6.8
	2015	42.7	2.9	45.6	47.7	93.2	45.8	48.9	6.4
	2018	47.9	2.7	50.6	46.9	97.6	49.1	51.9	5.3
	2021	51.8	3.4	55.2	48.2	103.4	50.1	53.3	6.1

Source: SAKERNAS, author's calculation (2023)

Figure 98 containing the duration individuals endure while seeking employment before successfully obtaining a job by gender. An intriguing pattern emerges when examining gender differences, wherein males, for the most part, took longer to find employment compared to females. It is noteworthy that the gap between male and female job seekers has generally narrowed over time, and in 2018, it almost reached a point of parity.

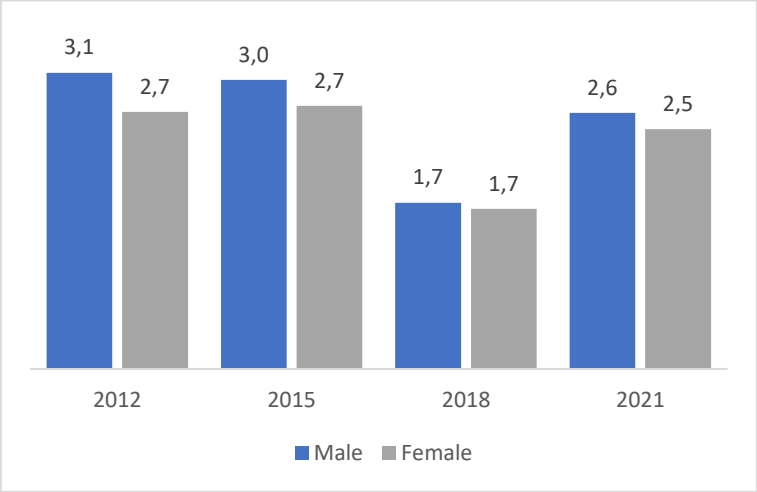


Figure 98. Average Job Seeking Period (Months) by Gender, 2012-2021
Source: SAKERNAS, author's calculation (2023)

In addition, gender imbalance looks to be in full force in the issue of informality within the labor force (Figure 99). Throughout history, females have found themselves unfavorably in many aspects. Such imposition leaves a lasting cultural impact on many societies—Indonesia included—even after the emergence of emancipation movement in recent times. As a result, a significant portion of Indonesian females have been consistently operated as informal workers. Between 2012 and 2021, informal female workers invariably outnumbered their male compatriots by around 7 p.p.

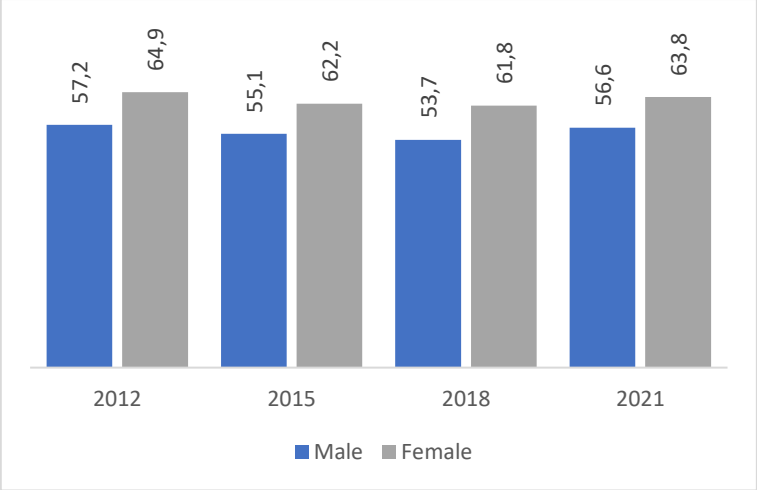


Figure 99. Percentage of Informal Workers (%) by Gender, 2012-2021
Source: SAKERNAS, author's calculation (2023)

Moving forward, referring the percentage of households with access to decent water by gender of household head (Figure 100), we can see that throughout the years, there are no significant differences of household access to decent drinking water between families that has a father as a household head and a mother as a household head. This means that the accessibility to decent drinking water is not tied to the household head's gender.

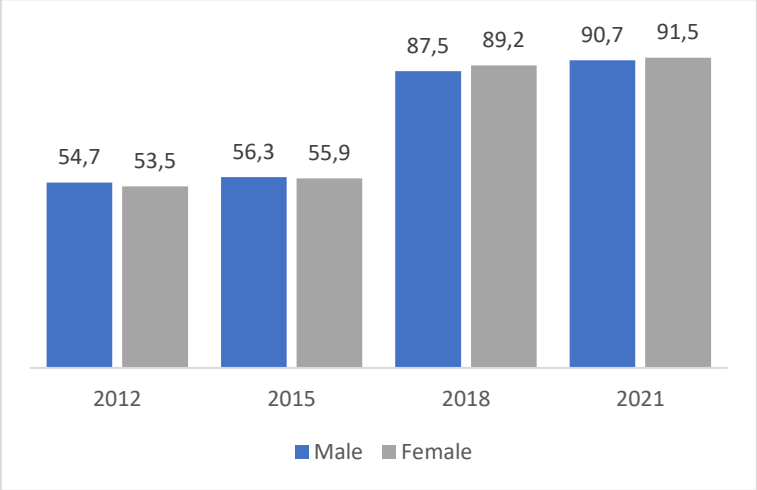


Figure 100. Household Access to Decent Drinking Water by Gender of Household Head (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

According to the percentage of households with access to sanitation by gender of household head (Figure 101), both genders experienced an increasing trend throughout 2012-2021, with the percentage of 80.6% in 2021 for male and 78.6% for female in 2021. However, the figure depicts signs of inequality, where the household who has a father as their household head have a slightly higher percentage of having access to decent sanitation throughout 2012-2021, amounting to 2.4% of differences.

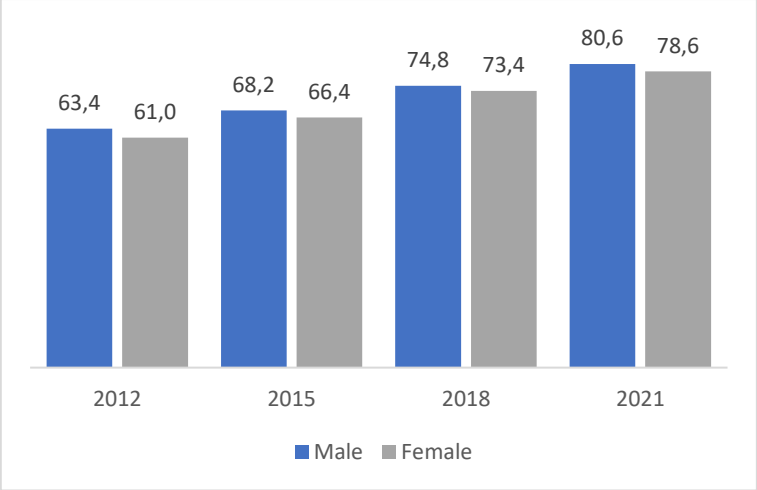


Figure 101. Household Access to Decent Sanitation by Gender of Household Head (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Figure 102 illustrates the progression of electricity access based on the gender of the household head. In general, there is a steady upward trend for both genders over the years. However, when making a gender-based comparison, female household heads exhibit a slightly higher percentage of electricity access than their male counterparts between the years 2015 and 2021, though the difference is marginal.

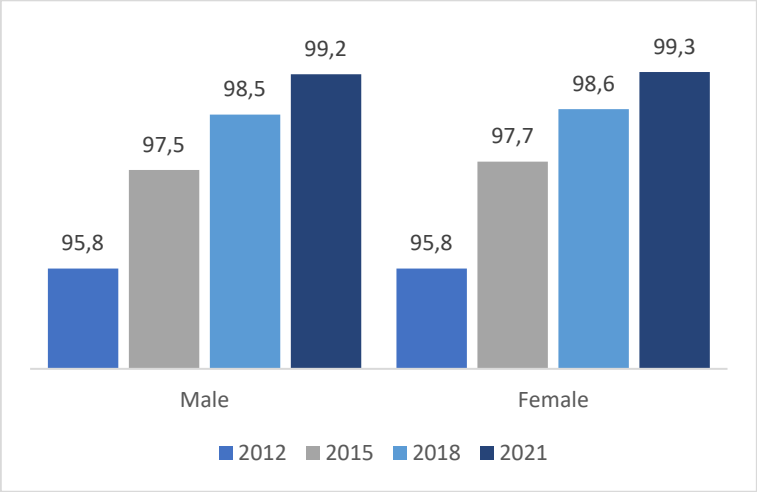


Figure 102. Household Access to Electricity by Gender of Household Head (%), 2012-2021
Source: SUSENAS, author's calculation (2023)

Chapter 5

Conclusion and Recommendation

5.1. Conclusion

This research investigates inequality in Indonesia and analyze it through multidimentional aspects. It evaluates inequality using several diagnostic approach and overlay it with various social and spatial characteristics, to understand the extent and context of inequality in Indonesia. Our study finds improvements in reducing inequality over the last decade, but also identify ongoing challenges in various areas.

Examining economic inequality in Indonesia, both inequality in expenditure and wage has been on a declining trend in the past decade. It is consistent throughout various measurements. Although Java is relatively wealthier than non-Java, it experiences higher levels of inequality. Similarly, by region status, inequality within the urban population is higher than within the rural population.

In terms of labor market inequality, the unemployment rate experienced a temporary decline before the pandemic but is rising again during the pandemic. Notably, Java has a higher unemployment rate compared to non-Java, and urban areas show higher unemployment rates than rural areas. Government's focus on vocational study has not been fruitful, shown by vocational graduates faced a higher rate of unemployment compared to other educational backgrounds, in a time when many government policies aimed at vocational education. Moreover, people in lower income quantiles have lower access to social insurance compared to those in higher income quantiles.

In terms of physical assets inequality, Indonesia has witnessed declining inequality over time. However, in contrast to economic inequality findings, higher inequality in physical asset ownership is observed in non-Java and rural areas, reflecting disparities in access to tangible resources. When incorporating boats as physical assets, the overall asset score index is higher for non-Java. This is due to the presence of higher use of boats as means of transportation and for working purposes in non-Java rather than in Java.

Education inequality in Indonesia shows both positive and negative trends. Enrollment rates for primary, secondary, and tertiary education have increased, while early childhood education enrollment has declined. Notably, the higher quintile has better access to pre-school compared to the lower quintile. Programs focused on early childhood development are associated with improvements in several areas. Children participating in these programs tend to achieve higher scores in math and reading tests and exhibit better attendance rates. They also experience fewer disciplinary issues and demonstrate more appropriate behaviour. Furthermore, involvement in such programs is linked to increased future earnings for the children and a higher likelihood of them completing college. Additionally, these children typically show enhanced social interaction skills and greater emotional maturity (Bakken et al., 2017; Kawarazaki, 2022).

Health inequality analysis highlights a disparity in health insurance access, with higher quintiles having better access than lower quintiles. Additionally, it was noted that quintile 2 of the population (near-poor/vulnerable population) exhibits high smoking behavior, indicating potential health challenges within this group.

Spatial inequality is also a significant concern found in the report, with Java enjoying better wealth and infrastructure access compared to non-Java regions. Notably, the eastern part of Indonesia relatively lags behind in terms of infrastructure access, warranting targeted efforts for regional development.

With regard to gender inequality, female household heads have a higher mean and median of expenditures, possibly due to having more household members (high dependency). However, one sees higher inequality within female-led households. Lower LFPR for females and predominantly working in informal sectors, indicating lower job security. The report also delves into gender inequality, revealing nuanced patterns. Female household heads have higher mean and median expenditures, likely due to supporting more household members (high dependency). However, there is higher inequality within female-led households. Additionally, female labor force participation rate (LFPR) is lower, and women are predominantly engaged in informal sectors, indicating lower job security and economic vulnerabilities for women.

5.2. SDGs Implication

Reducing inequality is a part of global commitment under Sustainable Development Goals #10 (SDGs #10). SDGs has put a comprehensive target under SDGs #10, not only focusing on reducing income inequality indicators (10.1), but also promoting social, economic, and political inclusion (10.2), equal opportunities, and ending discrimination (10.3), adopting fiscal and social policies that promote equality (10.4), improved regulation of global financial markets and institutions (10.5), enhanced representation for developing countries in financial institution (10.6), as responsible and well-managed migration policies (10.7).

This paper provides a partial explanation of some of the aforementioned SDGs' targets. In Chapter 2, we provide an exposition of fiscal and social policies taken by the government that aimed at promoting equality in Indonesia. Our main findings in Chapter 3 present the current state of inequality in Indonesia, both within and between groups, as well as the multidimensional aspect of inequality, examining whether equal opportunities has been served for all population group in Indonesia.

This report aims to provide an exposition of the current state of inequality in Indonesia and the multidimensional aspect of it. It highlights the progress that has been made and several challenges that remain to be addressed for future policies. This report may also start discussions on how policies need to be implemented effectively to improve the distribution of wealth and equal opportunities for people in Indonesia.

5.3. Policy Recommendation

Initiatives are underway to level the playing field in basic household service access by enhancing social assistance programs for those in the lower quintiles. This expansion will not only broaden the reach of existing programs but also focus on enhancing their effectiveness, ensuring that aid is more precisely targeted and impactful for those who need it most. This strategic development in social assistance is a

cornerstone in fostering a more inclusive society where every citizen can access their fundamental needs.

On the solid base of improved social support, measures are being taken to guide economic activities from the informal to the formal sector, which is a crucial step in reducing the expansive informal economy of Indonesia. The pervasiveness of the informal sector leads to increased vulnerability among workers, with women being especially at risk due to their predominant employment in these areas. By extending social program coverage into the informal sector, the strategy aims to alleviate these vulnerabilities and bolster worker support, paving the way for a more protected and stable workforce.

Further anchoring these efforts, fostering industrial development is identified as a critical driver for Indonesia, which has faced the challenge of deindustrialization and the resulting economic stagnation. Revitalizing the industrial sector is key to unlocking economic growth and harnessing the country's demographic dividend. Such industrial advancement promises to generate substantial employment opportunities, thereby absorbing the workforce effectively and sustainably. This concerted approach, previously outlined in the Inequality Diagnostic Report for Indonesia, is a significant focus of Indonesia's economic revitalization plan.

5.4. Way Forward

This report should not be the end of the assessment of inequality in Indonesia. We identified several activities that are important to follow after the Inequality Diagnostic Report for Indonesia, as well as some avenues for future research. First, the Inequality Diagnostic Report for Indonesia must be updated within three years after this report is published. It may come in more thematic updates, such as short brief series or working papers focusing on one aspect of inequality. The updates should act as an evaluation of government efforts in reducing inequality and stimulate discussion within academic and research society.

During the process of producing the Inequality Diagnostic Report for Indonesia, we received important feedback that cannot be addressed in this paper and is left as an avenue for future research. It includes the topic of biodiversity, inequality in environmental conditions, and access to clean energy. The topic is relevant to Inequality in access and important for Indonesia as a developing country, but it cannot be provided in this report. It is believed that such topics should be assessed in future reports or other knowledge products.

Lastly, regarding the data availability, this report suggests the BPS add several variables to its existing surveys to expand the analysis of diagnostic reports in the future. Variables related to environmental indicators and transportation access are important in understanding inequality in those dimensions. Adding these aspects will enrich the future report and provide important pieces of information to evaluate public policies.

Initiatives are underway to level the playing field in basic household service access by enhancing social assistance programs for those in the lower quintiles. This expansion will not only broaden the reach of existing programs but also focus on enhancing their effectiveness, ensuring that aid is more precisely

targeted and impactful for those who need it most. This strategic development in social assistance is a cornerstone in fostering a more inclusive society where every citizen can access their fundamental needs.

References

Banerjee, A. K. (2010). A multidimensional Gini index. Mathematical Social Sciences, 60(2), 87-93.

Barro, R. J. (2000). Inequality and Growth in a Panel of Countries. Journal of Economic Growth 5, 5-32.

Berg, A., Ostry, J. D., Tsangarides, C. G., & Yakhshilikov, Y. (2018). Redistribution, inequality, and growth: new evidence. Journal of Economic Growth, 259-305.

BPS-Statistics Indonesia. (2023). Indeks Kebahagiaan. https://www.bps.go.id/indicator/34/601/1/indeks-kebahagiaan-menurut-provinsi.html

BPS-Statistics Indonesia. (2021). Indikator Pasar Tenaga Kerja Indonesia Agustus 2021.

BPS-Statistics Indonesia. (2021). Survei Angkatan Kerja Nasional 2021.

BPS-Statistics Indonesia. (2018). Survei Angkatan Kerja Nasional 2018.

BPS-Statistics Indonesia. (2015). Survei Angkatan Kerja Nasional 2015.

BPS-Statistics Indonesia (2012). Survei Angkatan Kerja Nasional 2012.☒

BPS-Statistics Indonesia. (2021). Survei Sosial Ekonomi Nasional 2021.

BPS-Statistics Indonesia. (2018). Survei Sosial Ekonomi Nasional 2018.

BPS-Statistics Indonesia (2015). Survei Sosial Ekonomi Nasional 2015.

BPS-Statistics Indonesia (2012). Survei Sosial Ekonomi Nasional 2012.

Chatterjee, S., & Turnovsky, S. (2012). Infrastructure and inequality. *European Economic Review Vol. 56 (8)*, 1730-1745.

Haddad, E. A., & Barufi, A. B. (2017). From rivers to roads: Spatial mismatch and inequality of opportunity in urban labor markets of a megacity. *Habitat International Vol. 68*, 3-14.

Dinb, J. B., Alamsyah, Z., & Qaim, M. (2018). Land-use change and income inequality in rural Indonesia. *Forest Policy and Economics Vol. 94*, 55-66.

Gründler, K., & Scheuermeyer, P. (2015). Income Inequality, Economic Growth, and the Effect of Redistribution. *Würzburg Economic Papers*, 833477102.

Hanandita, W., & Tampubolon, G. (2016). Multidimensional Poverty in Indonesia: Trend Over the Last Decade (2003-2013). *Social Indicators Research*, 128 (2): 559-587.

Hill, H. (2021). What's Happened to Poverty and Inequality in Indonesia over Half a Century. *Asian Development Review Vol. 38*, 68-97.

Hoff, K., & Stiglitz, J. E. (2004). After the Big Bang? Obstacles to the Emergence of the Rule of Law in Post-Communist Societies. *American Economic Review Vol. 94*, 753-763.

ILO. (2013). Skills and Livelihoods Training: A Guide for Partners in Child Labour Projects. Geneva, Switzerland: ILO.

Jones, C. I., & Klenow, P. J. (2016). Beyond GDP? Welfare across Countries and Time. *American Economic Review*, 2426-2457.

Kemendikbud. (2023). Statistik Data Pendidikan. https://statistik.data.kemdikbud.go.id/

Kusumawardani, D., & Dewi, A. K. (2020). The effect of income inequality on carbon dioxide emissions: A case study of Indonesia. Heliyon, e04772.

Leigh, A., & van der Eng, P. (2009). Inequality in Indonesia: What can we learn from top incomes? Journal of Public Economics 93, 209-212.

Lockley, A., Tobias, J. & Bah, A. (2013). Gender Analysis of the Unified Database. TNP2K. https://www.tnp2k.go.id/images/uploads/downloads/Gender%20analysis%20report-final.pdf

Lu, H., Zhao, P., Hu, H., Zeng, L., Wu, K., & Lv, D. (2022). Transport infrastructure and urban-rural income disparity: A municipal-level analysis in China. *Journal of Transport Geography Vol. 99*, 103292.

Madsen, J. B., Islam, M. R., & Doucouliagos, H. (2018). Inequality, financial development and economic growth in the OECD, 1870–2011. *European Economic Review*, 605-624.

Marein, B. (2022). Colonial Roads and Regional Inequality. *Journal of Urban Economics Vol. 131*, 103492.

Mdingi, K., & Ho, S.-Y. (2021). Literature review on income inequality and economic growth. *MethodsX*, 101402.

Pelzl, P., & Poelhekke, S. (2021). Good mine, bad mine: Natural resource heterogeneity and Dutch disease in Indonesia. *Journal of International Economics Vol 131*, 103457.

Prakarsa. (2015). *Multidimensional Poverty Index Indonesia.* Jakarta: Prakarsa - Ford Foundation.

Puspa Artha, D. R., & Dartanto, T. (2018). The Multidimensional Approach to Poverty Measurement in Indonesia: Measurements, Determinants, and its Policy Implications. *Journal of Economic Cooperation & Development Vol. 39 (3)*, 1-38.

Shifa, M., & Ranchhod ,V.(2019). Handbook on Inequality Measurement for Country Studies. ACEIR Publications. University of Cape Town.

Seo, H.-J., HansSung, K., & Young, S. L. (2020). The Dynamic Relationship between Inequality and Sustainable Economic Growth. *Sustainability 12 (14)*, 5740.

Sonin, K. (2003). Why the rich may favor poor protection of property rights. *Journal of Comparative Economics*, 715-731.

Stiglitz, J. E. (2016). Inequality and Economic Growth, in M. Jacobs and M. Mazzucato. Rethinking Capitalism: economics and policy for sustainable and inclusive growth. Oxford: Joh Wiley and Sons.

Stiglitz, J., Fitoussi, J., & Durand, D. (2018). *Beyond GDP: Measuring what counts for Economic and Social Performance.* Paris: OECD Publishing.

Sujarwoto, & Tampubolon, G. (2016). Spatial inequality and the Internet divide in Indonesia 2010–2012. *Telecommunications Policy Vol. 40 (7)*, 602-616.

Sumarto, S., & De Silva, I. (2014). *Beyond the Headcount: Examining the Dynamics and Patterns of Multidimensional Poverty in Indonesia.* Jakarta: TNP2K.

Thye, G. L., Law, S. H., & Trinugroho, I. (2022). Human capital development and income inequality in Indonesia: Evidence from a nonlinear autoregressive distributed lag (NARDL) analysis. *Development Economics*, 2129372.

Wicaksono, E., Amir, H., & Nugroho, A. (2017). The sources of income inequality in Indonesia: A regression-based inequality decomposition. *ADBI Working Paper Series No. 667*, pp. 1-12.

Williamson, J. G. (1965). Regional inequality and the process of national development: a description of the patterns. Economic development and cultural change , 13(4, Part 2), 1-84.

World Bank. (2010). Education, Training, and Labor Market Outcomes for Youth in Indonesia. Human Development Department–East Asia and Pacific Region. Jakarta: World Bank.

World Bank. (2011). Revitalizing Public Training Centers in Indonesia: Challenges and the Way Forward. Human Development Department–East Asia and Pacific Region. Jakarta: World Bank.

World Bank. (2015). *Indonesia's Rising Divide.* Jakarta: The World Bank Office.

Wirdana, A. (2017, January 16). Employers find Indonesia's vocational school grads of little use. Nikkei Asia. https://asia.nikkei.com/Economy/Employers-find-Indonesia-s-vocational-school-grads-of-little-use2

Yunma, A., Rakhmadi, M. F., Hidayat, M. F., Gultom, S. E., & Suryahadi, A. (2015). Estimating the Impact of Inequality on Growth and Unemployment in Indonesia. *SMERU Working Paper*, pp. 1-39.