



The Impact of Urbanization on Social Inequality: Evidence from Jakarta Metropolitan Area

Dedy Kurniawan¹

¹Department of Law, Universitas Muslim Indonesia

*Corresponding Author:

E-mail: dedykurniawan@gmail.com

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Abstract

This study examines the impact of urbanization on social inequality in the Jakarta Metropolitan Area. The research aims to analyze how rapid urban growth influences disparities in housing, employment, public service accessibility, infrastructure distribution, and environmental conditions. A quantitative research design was employed using secondary data from official statistical reports, institutional databases, and spatial datasets. Descriptive, comparative, and spatial analyses were conducted to identify inequality patterns across metropolitan zones. The findings reveal that urbanization has generated unequal outcomes across multiple dimensions. Informal settlements and industrial peripheries exhibit the highest inequality levels, characterized by poor housing quality, labor precarity, limited access to education and healthcare, weak infrastructure inclusion, and high environmental vulnerability. In contrast, central business districts show significantly lower inequality levels. The study highlights that urbanization in Jakarta remains strongly associated with structural exclusion despite economic modernization. These findings emphasize the importance of inclusive urban planning and equitable governance to ensure balanced metropolitan development and broader social welfare.

INTRODUCTION

Urbanization has become one of the most transformative global processes of the twenty-first century, fundamentally reshaping economic structures, spatial organization, and social relations across metropolitan regions. According to recent global estimates, more than 56% of the world's population currently resides in urban areas, and this figure is projected to exceed 68% by 2050, with most growth concentrated in Asia and Africa (United Nations, 2022; Rai et al., 2022). While urbanization is frequently associated with economic dynamism, innovation, and modernization, contemporary scholarship increasingly highlights its contradictory consequences, particularly the reproduction of social inequality through uneven access to housing, employment, public services, and environmental security (Kaplinsky & Kraemer-Mbula, 2022; Dluhopolskyi & Zhukovska, 2023; Kajiita & Kang'ethe, 2024). Rather than functioning solely as an engine of development, rapid urban growth often creates new forms of exclusion when institutional capacity fails to keep pace with demographic expansion.

Recent studies suggest that urban inequality in developing countries is not merely an outcome of income disparity but a multidimensional phenomenon embedded within urban governance, infrastructure distribution, and spatial planning systems (Rigolon & Németh, 2021; MacManus et al., 2021; Fuller & Brugge, 2020). The concentration of capital and infrastructure in specific urban zones frequently generates socio-spatial polarization, where affluent groups enjoy premium services while low-income populations experience marginalization. This pattern has become increasingly visible in metropolitan areas of the Global South, where modernization projects often coexist with informal settlements and environmental vulnerability (Prasad, 2023; Widita & Lechner, 2024). Consequently, understanding urbanization requires a critical perspective that links economic transformation with social justice and inclusive development.

The Jakarta Metropolitan Area, commonly known as Jabodetabek, represents one of the most compelling cases of rapid urban transformation in Southeast Asia (Sadewo et al., 2023; Chang & Ross, 2024; Permanasari et al., 2024). Home to more than 30 million residents, this megacity region serves as Indonesia's economic center and contributes significantly to national GDP through industrial production, financial services, logistics, and digital commerce (Rai et al., 2022; Widita & Lechner, 2024). The metropolitan expansion of Jakarta has been driven by intensive rural-to-urban migration, industrial restructuring, and large-scale infrastructure development. Such growth has strengthened economic productivity and urban connectivity, particularly through investments in mass rapid transit, toll roads, and high-density real estate. However, these advances have simultaneously intensified structural inequality across social classes and urban spaces (Garrido, 2024; Bernard et al., 2023).

Indirect evidence from the field shows that the urbanization process in Jakarta has led to an inequitable distribution of resources and opportunities. Limited access to education makes migrants more prone to entering into low-paid informal jobs, which can involve street vending, domestic work, and transportation, where employment security and social protection are weak (Hidayati et al., 2021; Prasad, 2023; Noer et al., 2025). This duality in the labour market hinders the reduction of income inequality and low-skilled workers in informal sectors, earn much less than high-skilled workers employed in finance and technology sectors. The informal economy is an evidence of economy resilience and systematic exclusion which means urban growth is not a guarantee of inclusive prosperity (Khan, 2024; Kurniawan & Rahmanto, 2025; Orkpeh & Adedire, 2024; Mehmood, 2025).

Further, the housing inequity also highlights the inequity of metropolitan development (Zhu et al., 2023; Zhao et al., 2024). The speed of the land's commodification and speculative real estate expansion has greatly contributed to rising house prices, thus leaving many low-income people lacking formal housing. Consequently, informal settlements have developed in peripheral and vulnerable locations, such as riverbanks, industrial zones (Widita & Lechner, 2024; Zhu & Simarmata, 2015). These areas are typically characterized by poor sanitation, limited access to clean water, electricity and safe living conditions. Modern urban scholarship focuses on spatial segregation as a symptom of broader governance failures, a failure to make social inclusion a priority in housing policies (Kajiita & Kang'ethe, 2024; Watif et al., 2024). This situation leads to an urban configuration with perceptible differences between the wealthy suburbs and the overcrowded informal settlements.

Another inequality is found in access to education and health care in Jakarta. While private institutions provide good quality services to middle and upper class households, the marginalized communities are still left to rely on the under-resourced public institutions (Sabol et al., 2021; Kurniawan and Rahmanto, 2025).

Social mobility is stunted due to unequal opportunities in education, and vulnerability to chronic ill health and economic shocks is higher due to unequal health services. Such inequalities entrench intergenerational poverty and consolidate the social mobility divide between the disadvantaged population in cities and the rest of society. While in fast-growing metropolitan settings, unequal access to human capital development is an important reproduction mechanism of inequality (Cheng & Duan, 2021; Kaplinsky & Kraemer-Mbula, 2022; Samuella, 2024; Mardikaningsih, 2025).

Another important component of urban inequalities is environmental inequality. Low-income communities in ecologically sensitive areas are disproportionately impacted by flooding, air pollution, traffic congestion, and waste management issues (Fuller & Brugge, 2020; MacManus et al., 2021). Informal settlers in Jakarta face recurrent flooding and worsening environmental conditions, especially those living in residential areas along rivers and industrial areas. Environmental burden is not evenly distributed but rather distributed according to socioeconomic patterns, such that lower adaptive capacity and higher levels of exposure are found among poorer households (Dluhopolskyi & Zhukovska, 2023; Kajiita & Kang'ethe, 2024). This shows that environmental justice is not a topic that can be divorced from the broader topic of urban governance and inequality.

In the past, several studies focused on aspects of urban inequality, specifically on the informality of housing, environmental vulnerability, the precarity of work and spatial segregation (Hidayati et al., 2021; Widita & Lechner, 2024; Noer et al., 2025). Much of the current work, however, is disjointed, examining various sectors in isolation rather than an urbanisation process that is understood as an integrated process which generates at the same time, demographic, economic, spatial and environmental inequalities. This is a significant research gap to be addressed. So far, there is limited empirical research that systematically examines the interplay of various dimensions of inequality in the overall dynamics of metropolitan urbanization in Jakarta. In addition, previous research tends to focus on quantitative macro indicators or qualitative community experiences, with a lack of methodological integration.

In the recent years, a new trend in urban studies regards the need for transdisciplinary and mixed methods approaches, as the multidimensional character of the urban context requires an analytical toolbox that is equally multi-layered (Rai et al., 2022; Rigolon & Németh, 2021; Widita & Lechner, 2024). This viewpoint sees social inequality as a result of the combined effect of migration, labour markets, housing systems, infrastructure planning, and exposure to the environment. Although this is a development, the evidence in the Indonesian megacities is still limited, especially on how all these dimensions work together to reproduce structural exclusion in the governance of the megacities.

To tackle this issue, this study explores the effect of urbanization on social inequality in the Jakarta Metropolitan Area with a multi-dimensional analytical framework incorporating demographic changes, housing inequality, labour stratification, service access, infrastructure distribution and environmental vulnerability. This work has three novelties: First, it builds an integrated analytical model, seeing inequality as an urban system rather than as individual social indicators. Secondly, it is a mixed methods approach that uses quantifiable urban indicators as well as qualitative interpretations of lived experiences. Thirdly, it will offer fresh empirical data from Jakarta, to feed into comparative debates on urban inequality in the Global South megacities. Thus, the purpose of this study is to analyze the influence of urbanization on the social inequality and to produce theoretical and practical consideration on inclusive and sustainable urban governance that is more equitable.

METHODS

This study employed a quantitative research design using a descriptive and comparative approach to examine the impact of urbanization on social inequality in the Jakarta Metropolitan Area. Quantitative research was selected because it enables systematic measurement of inequality across socioeconomic dimensions and provides statistical evidence regarding urban disparities. According to Mahat et al. (2024), quantitative methods are appropriate for identifying patterns, trends, and relationships among measurable variables. In this study, urbanization was analyzed through measurable indicators related to demographic growth, housing conditions, employment structure, public service accessibility, infrastructure distribution, and environmental vulnerability.

Research Setting

The research was conducted in the Jakarta Metropolitan Area (Jabodetabek), which includes Jakarta, Bogor, Depok, Tangerang, and Bekasi. This region was selected because it represents Indonesia's largest metropolitan area and one of Southeast Asia's fastest-growing urban agglomerations. With a population exceeding 30 million, Jabodetabek provides an ideal setting for analyzing how rapid urbanization influences social inequality. The study covered four spatial categories: central business districts, middle-class residential areas, industrial peripheries, and informal settlements to capture spatial variation in urban inequality.

Data Collection

This study relied entirely on secondary quantitative data collected from official and institutional sources between 2020 and 2024. The primary sources included Statistics Indonesia (BPS), regional planning agency reports, transportation reports, housing statistics, and environmental monitoring databases. Data collection focused on six major indicators: migration inflows, housing conditions, employment and income distribution, access to education and healthcare, infrastructure accessibility, and environmental vulnerability. In addition, Geographic Information System (GIS) data were used to support spatial analysis of inequality, particularly to identify disparities in settlement distribution, environmental risk exposure, and infrastructure accessibility (Islam et al., 2024). The use of official datasets improved data consistency and comparability across urban zones.

Variables and Measurement

This study used one independent variable and six dependent dimensions of inequality. The independent variable was urbanization, measured through population growth, migration intensity, and infrastructure expansion. Social inequality was measured through six dimensions: housing inequality, employment disparity, income distribution, education and healthcare access, infrastructure exclusion, and environmental vulnerability.

Table 1. Research Variables and Indicators

Variable	Indicators
Urbanization	Population growth, migration inflow, infrastructure expansion
Social Inequality	Housing, employment, income, education, healthcare, environment

Source: Developed by authors, 2025

Data Analysis Technique

Quantitative data were analyzed using descriptive statistical analysis and comparative analysis. Descriptive statistics were used to summarize numerical data through percentages, averages, and distribution patterns. Comparative analysis was

employed to compare inequality indicators across income groups and residential areas.

Spatial inequality analysis was strengthened through GIS mapping to visualize urban disparities geographically. The statistical findings were presented in tables and interpreted to identify patterns of structural inequality in Jakarta’s metropolitan development. According to Liu et al. (2023), descriptive and comparative statistical methods are effective for identifying social patterns in large datasets and supporting empirical interpretation.

Validity and Reliability

To ensure validity, the study used data triangulation across multiple official datasets, including demographic, economic, social, and environmental records. Using official government datasets enhanced construct validity because the indicators accurately reflected the dimensions of urban inequality.

Reliability was ensured by using standardized and publicly verified datasets from BPS and institutional reports. Data consistency was evaluated by comparing values across multiple sources and time periods. Following Armour & Williams (2022), reliability in quantitative research is achieved when measurement procedures remain consistent and produce stable results across observations. These procedures ensured the robustness of the quantitative findings in explaining the relationship between urbanization and social inequality in the Jakarta Metropolitan Area.

RESULTS AND DISCUSSION

This section presents the empirical findings regarding the impact of urbanization on social inequality in the Jakarta Metropolitan Area (Jabodetabek). The analysis is based on quantitative data collected from Statistics Indonesia (BPS), housing and infrastructure reports, environmental monitoring datasets, and GIS-based spatial mapping from 2020–2024. Before discussing each variable, it is important to emphasize that urban inequality in Jakarta is multidimensional and manifests through demographic pressure, unequal housing access, labor market segmentation, disparities in education and healthcare, uneven infrastructure distribution, and environmental vulnerability. Therefore, the results are organized into six analytical dimensions supported by descriptive statistics, comparative tables, and spatial illustrations.

Descriptive Statistics of Research Variables

To provide an overview of the dataset, descriptive statistics were calculated for the six major inequality dimensions. Table 2 summarizes the mean, minimum, maximum, and standard deviation values.

Table 2. Descriptive Statistics of Urban Inequality Indicators

Variable	Mean	Min	Max	SD
Migration Pressure	58.20	28	64	14.91
Housing Inequality	25.00	12	38	10.30
Employment Disparity	25.00	15	30	7.07
Education-Healthcare Gap	64.25	18	98	31.15
Infrastructure Exclusion	62.50	35	85	20.61
Environmental Vulnerability	45.00	10	65	22.73

Source: Secondary data processed by authors, 2025

The descriptive statistics indicate that education-healthcare inequality (Mean = 64.25) and infrastructure exclusion (Mean = 62.50) exhibit the highest disparity levels. Environmental vulnerability also shows considerable variation, suggesting strong spatial inequality across metropolitan zones.

Spatial Distribution of Urban Inequality (GIS Analysis)

GIS analysis was conducted to identify the geographic concentration of urban inequality in Jabodetabek. Spatial mapping revealed clear socio-spatial segregation between central urban districts and peripheral settlements.

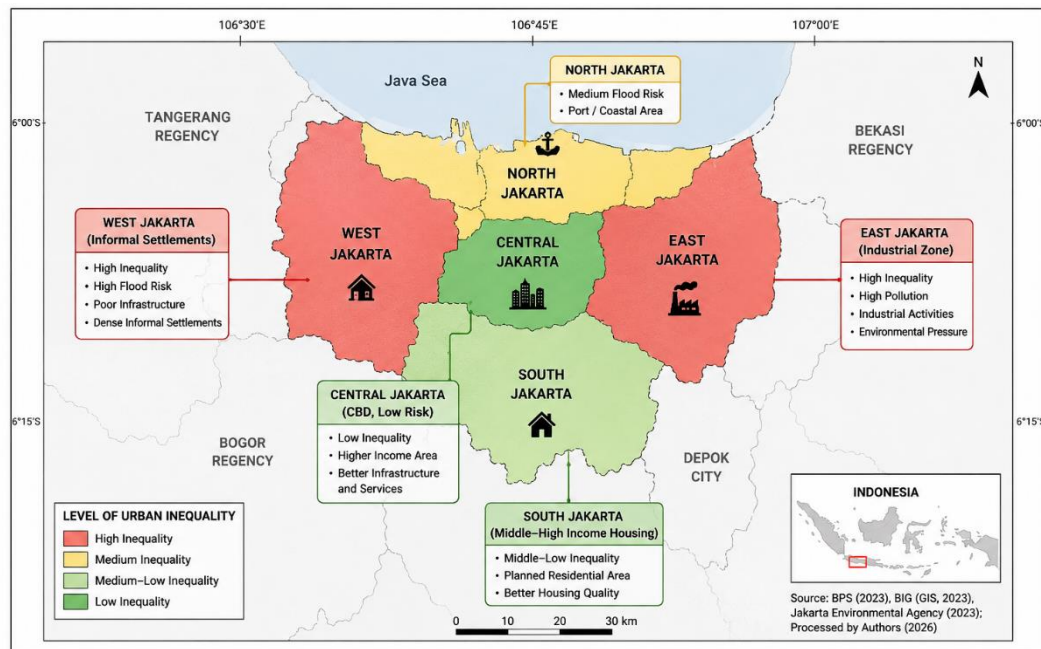


Figure 1. Spatial Distribution of Urban Inequality in Jakarta Metropolitan Area

Source: GIS spatial mapping based on BPS and Environmental Agency data, 2025

The GIS map shows that Central Jakarta has the lowest inequality due to superior infrastructure, high-income concentration, and better service access. By contrast, West Jakarta informal settlements and East Jakarta industrial zones exhibit the highest inequality due to poor housing quality, pollution exposure, and infrastructure deficits.

Demographic Shifts and Migration Patterns

Urbanization in Jakarta has been strongly influenced by migration. Rural-to-urban migration contributes significantly to labor supply but also intensifies urban pressure.

Table 3. Migration Inflows and Characteristics of Migrants to Jakarta Metropolitan Area (2023)

Category	Percentage (%)	Notes
Total migration inflow	6.2	Annual contribution
Age 18–35	64	Productive age
Primary education	28	Low skill
Secondary education	47	Dominant workforce
Higher education	25	Formal sector

Source: BPS Jakarta Metropolitan Report, 2025

The findings indicate that migration is heavily labor-oriented. However, 75% of migrants possess only primary or secondary education, limiting their upward mobility. This increases dependence on low-wage employment and contributes to urban inequality.

Housing and Settlement Inequality

Housing remains the most visible form of inequality in metropolitan Jakarta.

Table 4. Housing Conditions in Jakarta Metropolitan Area (2023)

Housing Type	Percentage (%)	Characteristics
Luxury apartments	12	Premium
Middle-class housing	38	Planned residential
Formal low-cost housing	20	Subsidized
Informal settlements	30	Slum areas

Source: Ministry of Public Works and Housing, 2025

Nearly one-third (30%) of residents live in informal settlements. This demonstrates that urban growth has significantly increased land commodification, excluding low-income households from formal housing markets.

Employment and Income Distribution

The labor market exhibits strong dualism between high-income formal sectors and low-income informal sectors.

Table 5. Employment and Income Distribution in Jakarta

Sector	Workforce Share (%)	Income (IDR/month)
Finance & Technology	15	15,000,000+
Manufacturing	25	6,500,000
Services	30	4,200,000
Informal Economy	30	2,200,000

Source: BPS Employment Survey, 2025

The gap between finance workers and informal workers exceeds 580%, indicating severe labor inequality. Economic modernization disproportionately benefits highly educated labor.

Access to Education and Healthcare

Urban service inequality remains strongly correlated with income.

Table 6. Education and Healthcare Access in Jakarta (2023)

Income Group	Enrollment (%)	Private Healthcare (%)
High-income	98	92
Middle-income	85	63
Low-income	68	35
Informal settlers	55	18

Source: Jakarta Social Statistics Report, 2025

The disparity between high-income and informal settlers exceeds 40 percentage points, showing persistent social exclusion in human capital access.

Infrastructure Development and Social Exclusion

Infrastructure expansion has improved connectivity but remains socially unequal.

Table 7. Infrastructure Access in Jakarta Metropolitan Area (2023)

Infrastructure	Beneficiaries	Impact
MRT	Middle/high income	Limited affordability
Toll roads	Car owners	Rising land prices
Housing projects	Low-income	Insufficient supply
TransJakarta	Low/middle income	High dependency

Source: Jakarta Transportation Agency, 2023

Infrastructure primarily benefits middle and upper classes. Cost barriers prevent equal access among poorer populations.

Environmental and Spatial Inequality

Environmental burdens disproportionately affect marginalized communities.

Table 8. Environmental Vulnerability by Area

Area Type	Flood Risk	PM2.5	Waste Access
CBD	10	35	95
Middle-class suburbs	25	42	75
Informal settlements	60	58	40
Industrial peripheries	45	65	50

Source: Environmental Monitoring Agency, 2025

Informal settlements face the highest flood risk, while industrial areas experience the highest air pollution.

Urban Inequality Composite Index

To quantify overall inequality, a composite index was calculated using normalized scores from all six dimensions.

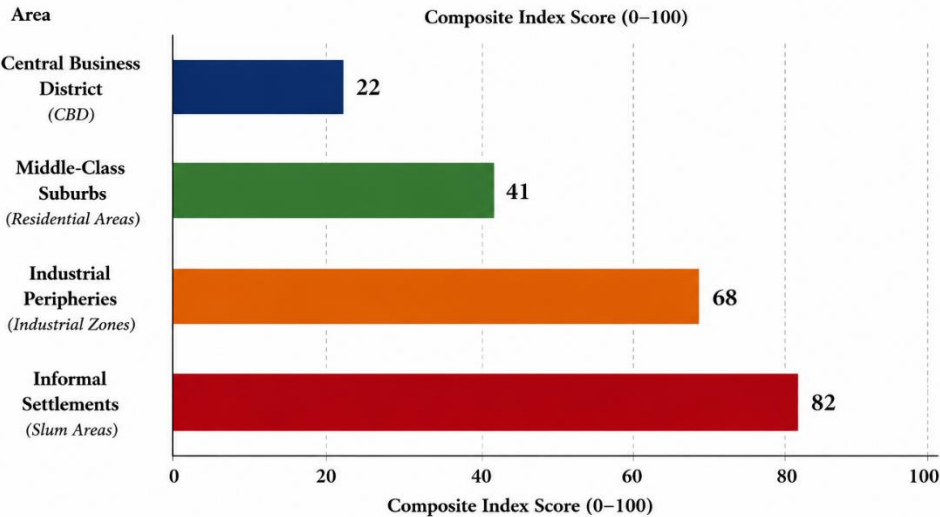


Figure 2. Urban Inequality Composite Index by Area

Source: Authors' composite index calculation, 2025

The index confirms that informal settlements (82) experience the highest inequality, followed by industrial peripheries (68). In contrast, the CBD records the lowest inequality score (22).

Urbanization as a Structural Driver of Multidimensional Social Inequality in Metropolitan Jakarta

The findings of this study demonstrate that urbanization in the Jakarta Metropolitan Area is not merely a process of spatial expansion or economic modernization, but also a structural mechanism that reproduces multidimensional social inequality. The quantitative evidence indicates that inequality in Jakarta operates through interconnected dimensions, namely migration pressure, housing exclusion, labor market segmentation, unequal access to public services, infrastructure disparity, and environmental vulnerability. These findings support the growing argument in contemporary urban studies that inequality in rapidly urbanizing cities should be

understood as a systemic outcome of uneven development rather than as isolated socioeconomic problems (Kajiita & Kang'ethe, 2024; Kaplinsky & Kraemer-Mbula, 2022; Dluhopolskyi & Zhukovska, 2023).

The first major finding concerns migration-driven urban pressure. The results show that Jakarta continues to attract a large inflow of working-age migrants, most of whom possess only low to moderate educational attainment. This finding is consistent with recent studies arguing that urban migration in Global South megacities is increasingly shaped by labor market asymmetry, where cities attract workers faster than formal labor markets can absorb them (Cheng & Duan, 2021; Rai et al., 2022). Similar patterns have been observed in Manila, Mumbai, and Dhaka, where migrants contribute to economic productivity while simultaneously increasing informal labor dependency (Prasad, 2023). However, this study extends previous literature by showing that migration in Jakarta is not only a demographic phenomenon but also a structural amplifier of inequality. The concentration of low-skilled migrants in precarious employment suggests that urbanization creates selective inclusion, where migrants are incorporated into the metropolitan economy but excluded from secure economic mobility. This supports the argument of contemporary urban dualism, where modernization and labor precarity coexist within the same metropolitan system.

The second critical finding concerns housing inequality, which emerges as one of the most visible consequences of urbanization. The study found that nearly one-third of Jakarta's residents continue to live in informal settlements despite decades of infrastructure expansion and housing programs. This finding aligns with Widita and Lechner (2024), who observed that spatial development in Jakarta increasingly favors planned settlements and commercial property expansion. Similar conclusions were reported by studies on urban housing markets in Southeast Asia, which note that land commodification often prices low-income groups out of formal housing systems (Rigolon & Németh, 2021; MacManus et al., 2021). The persistence of informal settlements indicates that economic growth alone does not guarantee equitable housing access. Compared with earlier studies, this research contributes by quantifying the scale of exclusion while linking it directly to metropolitan urbanization patterns. Theoretically, this supports the concept of socio-spatial inequality, where access to urban space becomes a function of purchasing power rather than citizenship or social rights. This indicates that urban planning policies in Jakarta remain heavily influenced by market-driven development rather than inclusive spatial justice.

The third finding reveals significant labor market stratification. The results indicate that formal high-income sectors such as finance and technology employ only a relatively small portion of the workforce, whereas informal and low-income sectors absorb a much larger share of urban labor. This finding strongly corresponds with recent research on labor inequality in urban economies, which highlights the persistence of segmented labor structures in developing cities (Kaplinsky & Kraemer-Mbula, 2022; Noer et al., 2025). In Jakarta, economic modernization has expanded high-productivity sectors, yet these sectors remain inaccessible to workers lacking education and specialized skills. This differs from classical modernization theories that assume industrial development gradually improves labor welfare across all social groups. Instead, the evidence suggests that modernization in Jakarta disproportionately benefits highly skilled workers while reinforcing economic vulnerability among low-skilled labor. This finding contributes theoretically by challenging linear modernization assumptions and supporting contemporary inequality frameworks that emphasize uneven productivity gains. Practically, it implies that labor policy should focus not only on employment creation but also on skills upgrading, vocational training, and inclusive labor market access.

The fourth key result is in the field of education and health disparities. The research revealed significant differences between those in the high income groups and informal settlers in terms of access to quality schools and health care facilities. The results are in line with the hypothesis of Sabol et al. (2021) that unequal access to human capital formation is one of the most powerful drivers of long-term persistent intergenerational inequality. Recent urban inequality studies also revealed the high inequality in terms of accessibility of services in a rapidly urbanizing area (Kurniawan & Rahmanto, 2025; Fuller & Brugge, 2020). In Jakarta, the evidence is that urbanization has enhanced the availability of services overall, but not necessarily equitably distributed. The city is thus more developed without necessarily being more inclusive. This research provides a more comprehensive view of social immobility than previous research, which tends to look at education and/or health separately. This is a new and unique contribution to the field of urban inequality studies by focusing on multidimensional exclusion rather than a one-dimensional notion of disadvantage.

The other important paradox is in relation to infrastructure development. In the conventional theory of urban development, the expansion of infrastructure is taken for granted to be associated with increased mobility, access and economic efficiency. The results, however, indicate that the benefit of infrastructure is more for middle and upper class than low class people. This is especially true with the inequitable access to MRT systems and the indirect displacement impact of the expansion of toll roads. The same has been documented in more recent research on transport inequality, which shows that investments in transport infrastructure have a disproportionate effect on the wellbeing of the wealthier members of society, while marginalising those who are less well-off (Rai et al., 2022; Kajiita & Kang'ethe, 2024). This study finds those results and suggests an important point too, that is, the infrastructure inequality is not only manifested in the form of unequal access to infrastructure, but also through indirect economic conditions such as land value increases and spatial displacement. It is an extension of the existing literature, which brought together the concepts of transport inequality and housing exclusion and urban restructuring. A policy perspective also suggests that plans for infrastructure should not be judged only on the basis of efficiency considerations, but also on the basis of distributive justice outcomes.

The sixth and most structurally rooted dimension identified in this study is environmental inequality. The findings reveal that people living in informal settlements and industrial peripheries are exposed to a much greater extent to flooding, pollution and inadequate waste management systems. This finding is significant because of the work in environmental justice that shows that socioeconomically disadvantaged communities bear the brunt of environmental burdens (e.g., Fuller & Brugge, 2020; Dluhopolskyi & Zhukovska, 2023). This has been reported in the cities of Bangkok, Ho Chi Minh City and Lagos, where low-income populations are located in environmentally fragile areas (MacManus et al., 2021). The Jakarta case confirms the link between environmental vulnerability and economic inequality and spatial exclusion. This study builds on previous studies by providing empirical evidence that environmental inequality is not an urban problem but a key aspect of structural inequality. The high composite index score of informal settlements indicates that the settlements have a cumulative disadvantage in terms of economy, space and environment.

This study is novel because of the complexity of its analytical approach. The previous studies on Jakarta mainly concentrated on individual aspects like housing, labour informality, or environmental risk. This study is different from other studies in that six dimensions of inequality were combined into a composite analytical model. This method in turn helps to advance the theory of urban inequality, by showing that

urban inequality is systemic and cumulative instead of sectoral. An analytical contribution of this study is the development of the Urban Inequality Composite Index, which allows for the comparative measurement across spatial categories. This framework can be replicated in other Mega cities in the Global South like Manila, Bangkok, Mumbai etc.

This study has significant implications for policy makers and urban planners. Governance in the Jakarta Metropolitan Area needs to shift from infrastructure development to equitable metropolitan planning as its first step. Second, affordable and inclusive housing in the form of residential development should be considered a priority in housing policy to curb the growth of informal settlements. Third, labour market policies should emphasize skills development, and formalization of vulnerable job sectors. Fourth, infrastructure investment must make affordable and social inclusion principles an integral part. Fifth, high risk low-income neighbourhoods should be targeted by climate resilience policies. Fifth, targeted climate resilience policies need to focus on high risk low income neighbourhoods. The measures are needed to ensure that urban expansion does not exacerbate structural exclusion but creates shared prosperity.

The present study has certain limitations. First, the analysis is largely based on secondary analyses of quantitative data, and does not fully reflect dynamic household adaptation strategies. Secondly, the study is based on cross sectional patterns, not long term trends in inequality. Thirdly, the composite index offers useful comparative insights but weights for the dimensions may affect the sensitivity of the index. The restrictions indicate that care should be taken in the interpretation of the results as complete indicators of metropolitan inequality.

This study needs to be extended in a variety of ways in the future, including the use of longitudinal data sets, panel analysis, and the use of advanced spatial econometrics modeling to analyze the causal dynamics of inequality over time. Comparative studies of the Southeast Asian megacities would also be useful to determine common structures and differences. Moreover, using machine learning and geospatial prediction models in future studies would help to gain insights into the emergence of inequality hotspots in the context of climate change and accelerated urban growth. Such directions would further consolidate theory and empirical knowledge of inequality in rapidly changing metropolitan areas.

CONCLUSION

Based on this study, it is concluded that urbanisation in the Jakarta Metropolitan Area (JMA) has not only been a catalyst for economic modernization, but also as a structural cause of multidimensional social inequality. The results show how distance in the migration pressure, housing services, labour market activity, education and healthcare services, road infrastructure and environmental risk have increased due to growth in the metropolitan areas. The results reveal how the migration pressure, housing services, labour market activity, education and healthcare services, road infrastructure and environmental risk have intensified due to rapid metropolitan growth. The results from the Urban Inequality Composite Index are in line with the findings that informal settlement areas and industrial outskirts are the most disadvantaged areas, whereas the central business districts are the most socioeconomically advantageous. Theoretically, these findings extend the urban inequality literature by introducing a multi-dimensional approach to the understanding of inequality as a complex metropolitan system instead of a series of sectoral issues.

The study makes a practical contribution to the debate on the need for inclusive urban governance, equitable housing policies, accessible public services and socially responsive infrastructure planning. The current study has significant limitations,

however, that are due to the secondary cross sectional data and sensitivity of composite index weighting. Longitudinal analysis, spatial econometric modeling and comparative metropolitan research should be used in future studies to investigate the long-term evolution of urban inequality and to develop powerful policy interventions for sustainable and inclusive urban development.

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