



Research Article



The Face of Urban Poverty: Kauman, Malang City

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Abstract

Urban poverty is a complex phenomenon that extends beyond income deprivation to include inequalities in education, health, housing, and access to infrastructure. This study examines the face of urban poverty in Kauman, Malang City—an area located in the city center yet designated as a slum in 73% of its territory. Using the Multidimensional Poverty Index (MPI) based on the Alkire–Foster framework, this research analyzes deprivation across three key dimensions: education, health, and standard of living. The findings reveal that the education dimension contributes most significantly to multidimensional poverty, followed by living standards, while the health dimension remains relatively stable. Spatial analysis indicates that deprivation is not uniformly distributed; high levels of poverty are concentrated in specific neighborhood units (RWs), especially RW 03 and RW 02. The results highlight the limitations of income-based poverty measurement and emphasize the importance of multidimensional approaches to understanding urban deprivation. The study concludes that reducing poverty in Kauman requires integrated strategies focusing on improving educational access, infrastructure quality, and basic urban services through community-based and participatory interventions aligned with national policy frameworks.

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1. Introduction

Poverty is often understood as a condition where an individual or household is unable to meet basic needs such as food, clothing, and shelter (Klugman, 2003). In the contemporary urban context, however, this definition becomes increasingly insufficient. Poverty is not only about the lack of income but also about unequal access to essential services such as education, health, decent housing, clean water, and infrastructure (Aguilar & Sumner, 2020; Kaiser et al., 2024). These non-monetary deprivations are interrelated, creating a complex web of disadvantage that defines the nature of urban poverty in developing countries. Rapid urbanization—while promising economic growth and modernization—has also deepened inequalities and spatial fragmentation. Cities in developing countries like Indonesia are often characterized by a paradoxical coexistence between areas of prosperity and deprivation. Economic centers that symbolize modernization frequently border with urban slums, revealing the uneven distribution of development benefits and the persistence of socio-economic exclusion (Fauzi et al., 2022).

Urban poverty in Indonesia represents a multidimensional problem that intertwines structural, social, and institutional elements. It is not merely a symptom of insufficient income but a condition resulting from limited access to social rights and public services. The poverty experienced by urban residents often manifests as a consequence of unequal opportunities, fragile employment, and exclusion from decision-making processes. Population density, unemployment, and disparities in access to education, health, and housing services are among the main drivers of this issue (Rukmana & Ramadhani, 2021). Although the government has made efforts to alleviate poverty through national



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and local programs, the persistence of these problems reveals a mismatch between macro-level policy frameworks and local realities.

Malang City illustrates this multidimensional urban poverty vividly. Known as a city of education and culture, Malang embodies a progressive urban identity, yet poverty continues to exist within its borders. In particular, Kauman Subdistrict presents an interesting paradox. Geographically located at the heart of the city and adjacent to the economically vibrant Kayutangan Heritage corridor, Kauman faces severe deprivation that challenges the notion that central urban areas automatically enjoy prosperity (Harjo et al., 2021). Approximately 73% of Kauman's total area—covering around 0.61 km²—is officially categorized as a slum under Malang Mayoral Decree No. 188.45/86/35.73.112/2021. This condition reflects the reality that spatial proximity to development projects does not necessarily ensure social inclusion or access to the benefits of growth. On the contrary, Kauman's condition reveals how economic restructuring and heritage-based urban revitalization can create new forms of marginalization for long-standing residents.

To address slum conditions and improve infrastructure, the government has implemented the Slum-Free City Program (*KOTAKU*) since 2016. This initiative is intended to strengthen basic urban infrastructure, enhance environmental quality, and expand access to services in deprived areas (Harjo et al., 2021). However, the program's interventions have often been spatially selective, with concentrated development occurring along the Kayutangan Heritage corridor. As a result, other RWs within Kauman—particularly those with dense populations and severe deprivation—have received limited benefits. The unequal distribution of program focus has created gaps in social welfare outcomes, illustrating how even well-intentioned urban revitalization efforts can perpetuate inequality when they prioritize aesthetic and economic value over social equity.

Furthermore, inefficiency and inequality are evident in the distribution of social assistance programs for education and social protection, such as the Smart Indonesia Card (KIP) and the Social Protection Card (KPS). Although these programs are designed to support low-income households, their implementation has been marred by targeting errors and a lack of community involvement (Sulhan & Sasongko, 2017). Limited citizen participation and low policy literacy reduce the effectiveness of these initiatives, leaving some of the most vulnerable households excluded from social protection mechanisms. The persistence of such exclusion perpetuates the cycle of poverty, especially among households with unstable incomes and limited educational attainment. This problem reflects a broader challenge in Indonesia's poverty governance system, where policy implementation often fails to account for the complexity of local socio-economic structures.

In Kauman, deprivation is further exacerbated by inadequate infrastructure and environmental stress. Many households still lack clean water connections and depend on shallow wells of poor quality and inconsistent availability, particularly during the dry season (Leta et al., 2023). Sanitation facilities are inadequate, and electricity access remains uneven. Some households have low-capacity electrical connections that cannot support basic appliances, limiting their standard of living and productivity. These infrastructural deprivations reduce quality of life and increase the cost of living, trapping households in a cycle of multidimensional poverty (Alkire & Santos, 2010).

The multidimensional nature of poverty in Kauman is best captured through the *Multidimensional Poverty Index (MPI)* framework developed by Alkire and Foster (2011), which measures deprivation across the dimensions of education, health, and standard of living (Alkire et al., 2010; Alkire & Santos, 2010). Each dimension reveals distinct forms of deprivation that interact and reinforce one another. In the education dimension, barriers such as limited school attainment and unequal access to higher education restrict opportunities for social mobility (Syaifullah et al., 2019). Although participation in basic education is relatively adequate, disparities remain in higher education attainment between neighborhood units. This educational inequality contributes to income gaps and perpetuates generational cycles of poverty, as limited educational achievement translates into restricted access to formal and better-paying jobs.

In the health dimension, indicators such as child mortality and malnutrition appear relatively stable, suggesting some success in health outcomes compared to other poverty dimensions (Ramadhani & Ridwan, 2024). However, this apparent stability conceals fragility. Without continued access to affordable healthcare, nutritional security, and a

healthy living environment, minor economic shocks can lead to a resurgence of poor health outcomes. Health vulnerability in Kauman is often associated with the quality of housing and sanitation conditions, indicating that physical environment and social infrastructure remain crucial determinants of well-being.

The standard of living dimension shows the most visible inequalities in Kauman. Issues such as limited sanitation facilities, poor housing materials, low-quality residential floors, and dependence on expensive or high-emission cooking fuels characterize many households (Alkire & Foster, 2011). Electricity capacity also varies significantly, with some families unable to afford sufficient power for essential household needs. Moreover, limited ownership of information and mobility assets restricts residents' access to employment, education, and government services. Severe deprivation tends to concentrate in certain areas—such as RW 03—where high population density, deteriorating infrastructure, and low household purchasing power converge (Leta et al., 2023).

These patterns mirror the broader findings of studies on urban poverty across Indonesia, including in major metropolitan areas like Jakarta. Economic inequality has produced spatial segregation and unequal access to basic services, demonstrating that growth-oriented policies without distributive mechanisms exacerbate urban inequality (Rukmana & Ramadhani, 2021). At the international level, the characteristics of Kauman's poverty also resemble patterns observed in Latin American cities, where education, housing, sanitation, and clean water access are interdependent determinants of urban deprivation (Marcelino & Cunha, 2024; Saracostti, 2007). This comparative perspective underscores the universality of multidimensional poverty as a global urban phenomenon.

The persistence of multidimensional poverty in Kauman exposes the inadequacy of income-based poverty measures in capturing complex deprivations. Households that appear to have “sufficient” income may still experience poverty when evaluated in terms of education, health, and living standards ((Marcelino & Cunha, 2024; Siddiqui & Parveen, 2022). This suggests that income alone cannot reflect the true extent of poverty. Instead, poverty should be understood as a multidimensional construct encompassing a range of interlinked deficiencies in capability and opportunity (Aguilar & Sumner, 2020; Alkire & Santos, 2010). From a policy perspective, this realization implies the need for interventions that target specific deprivations rather than applying uniform economic solutions.

In the case of Kauman, the application of the MPI framework offers a more comprehensive understanding of how poverty manifests in the urban setting. By examining multiple dimensions simultaneously, policymakers can identify the most pressing deprivations and the spatial areas where they concentrate. Such analysis allows for more targeted community-based interventions—such as scholarships for poor school-age children, improved learning facilities, increased public awareness about educational rights, and participatory mechanisms for educational assistance governance (Ari, 2011). In terms of living standards, priorities should include ensuring access to clean drinking water, proper sanitation, adequate electrification, and financial support for vulnerable households. These approaches align with the national development agenda and international best practices for tackling multidimensional poverty (Alkire & Foster, 2011).

From a broader theoretical standpoint, the logic of multidimensional poverty in Kauman reflects a recursive relationship between structure and agency. Structural factors—such as policy bias, infrastructural inadequacy, and economic inequality—shape household capabilities and limit individual agency. Conversely, limited human capital and social participation at the household level perpetuate structural deprivation. This cyclical interdependence creates a form of “urban entrapment,” where the poor remain in close physical proximity to economic centers but are excluded from their benefits. Therefore, addressing urban poverty requires not only redistributive policies but also institutional reforms that promote participation, accountability, and local empowerment.

This study is grounded in the theoretical framework of the Multidimensional Poverty Index (MPI) as proposed by Alkire & Foster (2011), which conceptualizes poverty as a condition of simultaneous deprivation across several essential dimensions of human well-being. By adopting this framework, the research aims to provide a more accurate representation of urban poverty in Kauman, Malang City. The analysis focuses on identifying the dominant dimensions of deprivation, exploring spatial disparities between RWs, and evaluating the extent to which current government interventions address or neglect these multidimensional aspects. The ultimate goal is to generate insights

that support the formulation of more contextually relevant and socially just poverty reduction strategies at the local level.

In essence, the logical flow of this study begins with the recognition that conventional income-based poverty assessments fail to capture the multifaceted nature of deprivation. It proceeds by linking the macro context of urbanization and policy implementation with the micro realities of household well-being in Kauman. Through the lens of the MPI framework, the study evaluates the interconnections between education, health, and living standards while considering the spatial disparities within the community. Finally, it positions its findings within the broader discourse of urban development, equity, and governance. The expectation is that the results will not only deepen the academic understanding of multidimensional poverty in Indonesia but also contribute to the refinement of public policy and program design.

Thus, this research examines the face of urban poverty in Kauman, Malang City, through the lens of multidimensional deprivation with the MPI framework, aiming to map the manifestations of poverty in education, health, and living standards along with spatial disparities between RWs. The findings are expected to provide empirical evidence that supports the formulation of more precise, locally relevant, and socially just policies, consistent with the arguments presented by Alkire and Santos (2010), Alkire et al. (2010), and Harjo et al. (2021).

2. Methods

2.1 Research Design and Methods Used

This study uses the Alkire–Foster (AF) framework to measure multidimensional poverty through the Multidimensional Poverty Index (MPI), which captures deprivation in three dimensions: education, health, and standard of living (Alkire et al., 2010; Alkire & Foster, 2011; Alkire & Santos, 2010). AF applies dual cut-off approach: (1) a deprivation threshold per indicator to determine whether a household is deprived on a particular indicator, and (2) a multidimensional poverty threshold (k) on a weighted deprivation score to identify multidimensionally poor households.

2.2 Measuring Instruments

The instrument is a structured household-level questionnaire that operationalizes MPI indicators according to the OPHI definition and national regulations. The variables measured are:

1. Education:

- *Years of schooling* (a household is not deprived if ≥ 1 member completes ≥ 5 years of school);
- *School attendance* (there are school-age children who do not attend school = deprivation) (Alkire & Santos, 2010). This indicator is in line with the National Education System Law No. 20/2003 and PP No. 47/2008 concerning compulsory education.

2. Health:

- *Nutrition* (there are malnourished members);
- *Child mortality* (there has been a child death in the household) (Alkire & Santos, 2010). Normative strengthening by Health Law No. 36/2009 (Ministry of Health of the Republic of Indonesia, 2009).

3. **Standard of Living** (6 indicators): electricity, drinking water, sanitation, floor quality, cooking fuel, assets (OPHI, 2010). The definition of deprivation refers to OPHI/MDGs standards and national technical regulations (Presidential Decree No. 4/2016 for electrification; Law No. 17/2019 & SPAM regulations for water; Minister of Health Regulation No. 3/2014 & No. 2/2023 for sanitation/environment) (Alkire & Santos, 2010; OPHI, 2010).

The instrument contains modules on household identity, member composition, variables for each indicator, and simple physical evidence (floor observations, water sources, fuel, and assets) to reduce self-report bias (referring to OPHI standard measurement practices).

2.3 Sampling Method

The sampling method for this study was cluster sampling. This is because the study covers a wide area and has extensive data sources. (Amin et al., 2023). In determining the number of samples using the Isaac and Michael method. The formula for calculating the number of samples using this method is as follows. (Amin et al., 2023).

$$s = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2(N-1) + \lambda^2 \cdot P \cdot Q} \quad (1)$$

Information :

s : Number of samples

λ^2 : Chi Square

N : Population Size

P : Correct Chance 5% (0.5)

Q : Wrong Chance 5% (0.5)

d : The difference between the sample mean and the population mean (0.001;0.005,0.10 according to the error tolerance percentage)

Table 1. Research Sample

RW	Total Family Card	Percentage	Sample
RW 01	291	13%	38
RW 02	350	15%	46
RW 03	260	11%	34
RW 04	150	7%	20
RW 05	300	13%	40
RW 06	90	4%	12
RW 07	50	2%	7
RW 08	380	16%	50
RW 09	278	12%	37
RW 10	158	7%	21
TOTAL	2307	100%	305

Source: Kelurahan Kauman Profile, 2024

Table 1 shows the distribution of the research sample based on the number of Family Cards (KK) in each RW (neighborhood unit). Of the total 2,307 KK, 305 KK were selected as the research sample with proportions adjusted as percentages. RW 08 had the largest sample size, with 50 KK (16% of the total), while RW 07 had the smallest

sample size, with 7 KK (2%). In general, the sample distribution was proportional to the number of KK in each RW, thus maintaining the representation of each RW in this study.

2.4 Data Collection Technique

Primary data: household questionnaires (door-to-door) by trained enumerators per RW, with observational verification for living standards indicators. The results are tabulated per RW and presented in tables of poor–non-poor distribution and MPI indicators (education, health, living standards) (see series of tables & narrative results).

Secondary data: The Mayor of Malang's Decree on slum areas (2021) and the KOTAKU study in Malang as a policy context and physical environmental comparison (Harjo et al., 2021; Malang City Government, 2021).

3. Results

3.1 Poverty Characteristics

The total population of Kecamatan Kauman is 2307 households. The table below shows the results of the primary survey conducted on the number of families in Kecamatan Kauman, both poor and non-poor.

Table 1: Number of Poor and Non-Poor Households in Kauman Subdistrict

Table 2. Number of Poor and Non-Poor Households in Kauman Subdistrict

RW	Not Poor	Poor	Percentage Not Poor	Percentage of Poor Households
RW 1	238	53	10%	2%
RW 2	275	75	12%	3%
RW 3	202	58	9%	3%
RW 4	105	45	5%	2%
RW 5	225	75	10%	3%
RW 6	38	52	2%	2%
RW 7	25	25	1%	1%
RW 8	300	80	13%	3%
RW 9	221	57	10%	2%
RW 10	118	40	5%	2%
TOTAL	1747	560	76%	24%

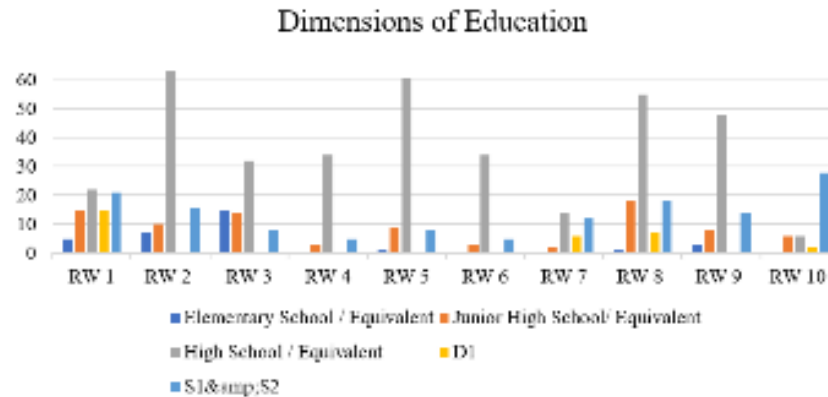
Source: Kelurahan Kauman Profile, 2024

Overall, 76% of households in Kelurahan Kauman are classified as non-poor and 24% as poor. RW 8 and RW 2 have the largest number of non-poor households, while the highest number of poor households are found in RW 2, RW 5, and RW 8. RW 6 shows considerable inequality as the number of poor households is almost equal to the non-poor ones, while RW 7 has the smallest number of households in both categories. This pattern shows that although the majority of households are not poor, there are some RWs with high poverty concentration that need to be prioritized for intervention.

3.2 Education

This dimension can be measured through the latest education level of the residents of each RW in Kauman (Syaifullah et al., 2019). Based on the figure below, there are 5 categories for the last education. From the figure below, it can be seen that the community in Kauman Village has a senior high school education or equivalent. Thus, the average community participates in learning activities for 6-12 years and has fulfilled the applicable regulations.

Figure 1. Graph of Education of Respondents in Kelurahan Kauman



Source: Primary Survey, 2025

The graph shows the distribution of education levels in each RW in Kelurahan Kauman. In general, the majority of residents in almost all RWs have a senior high school education or equivalent, with the highest number in RW 2 and RW 8. The education level of elementary school or equivalent is fairly evenly distributed in all RWs, but the number is relatively lower than that of senior high school. S1/S2 education is still minimal and unevenly distributed, with the highest number in RW 10. Meanwhile, D1 graduates only appear in very small numbers in several RWs. This pattern indicates that although most of the residents have reached secondary education, the level of higher education is still low, which could be the focus of human resource capacity building in this area. The higher the level of education attained by residents of Kauman Village, the greater its impact on their employment. Individuals with higher levels of education are more likely to work in the formal sector with more adequate income. Conversely, individuals with lower levels of education are more likely to be employed in the informal sector and tend to have inadequate income (Satriawan, 2023).

3.3 Health

The health dimension is measured by nutrition and child mortality. In Kelurahan Kauman, there are no records of toddlers or children who are malnourished or have died. Thus, the health dimension in Kelurahan Kauman can be said to be very good.

3.4 Standar of Living

The dimension of decent living standards in Kecamatan Kauman includes access to clean water, sanitation, electricity, flooring, cooking fuel, and asset ownership. The sources of clean water used include PDAM, boreholes, or both. Most households have individual septic tanks, except in RW 03, where many households do not have proper sanitation. Electricity access varies, with 19% using 450 VA and 81% having at least 900 VA. All houses use tiled floors, and LPG is the main fuel for cooking. Residents own information assets (e.g. television, digital news) and mobility assets (e.g. bicycle, motorcycle, car), indicating adequate access to communication and transportation resources.

3.5 Multidimensional Poverty Index

This measurement looks at three aspects, namely education, health, and living standards, which are used to identify the reality of poverty in Kelurahan Kauman. In the analysis of the Multidimensional Poverty Index, calculations related to the MPI calculation are required, as in the table below.

1. The score of each person in the family in the house, for example family in house 1, namely:

$$(1 \times 0.167) + (1 \times 0.167) = 0.33$$

2. Multidimensional Poverty Rate

$H = \frac{q}{n}$ and then in this report it is adjusted to the data obtained, namely

$$H = \frac{(5 + 3 + 2 + 3 + 4 + 4 + 4)}{(5 + 4 + 3 + 4 + 2 + 5 + 3 + 2 + 5 + 4 + 4 + 4 + 5 + 3 + 4 + 2 + 5 + 4)}$$

$$H = 0,32$$

1. Multidimensional Poverty Intensity

$$A = \frac{(\text{Families in Poverty} \times \text{Score})}{\text{Total Population of Families in Poverty}}$$

$$A = \frac{(5 \times 0,28) + (3 \times 0,45) + (2 \times 0,22) + (3 \times 0,28) + (4 \times 0,22) + (4 \times 0,22) + (4 \times 0,39)}{(5 + 3 + 2 + 3 + 4 + 4 + 4)}$$

$$A = 0,29$$

1. MPI Calculation

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

$$\text{MPI} = 0.32 \times 0.29$$

$$\text{MPI} = 0.09$$

So from these calculations, the MPI results are obtained which can be seen in the table below.

Table 2. Poverty Level in Kauman Village

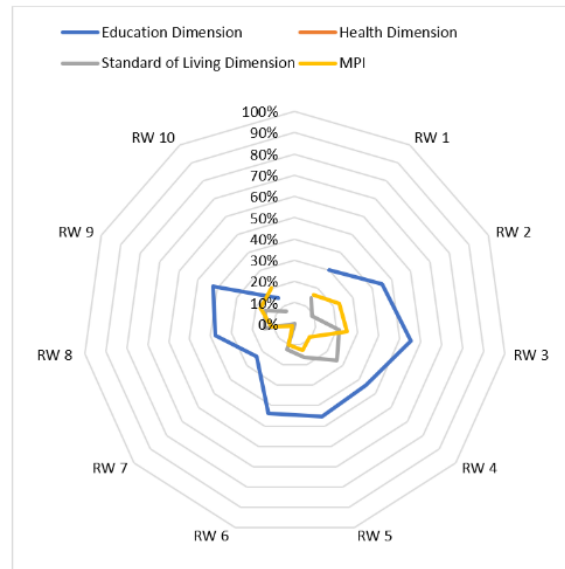
Poverty Level				
RW	(H)	(A)	MPI	Description
RW1	0,37	0,43	0,15	Medium
RW2	0,41	0,54	0,22	Medium
RW 3	0,60	0,41	0,24	Medium
RW 4	0,32	0,29	0,09	Very Low
RW 5	0,33	0,39	0,13	Very Low
RW 6	0,25	0,40	0,10	Low
RW 7	0,0	0,44	0,01	Very Low
RW 8	0,27	0,40	0,11	Low
RW 9	0,44	0,40	0,17	Low
RW 10	0,52	0,38	0,20	Medium

Source: Analysis Result, 2025

RW 03 records the highest headcount ratio of 0.601 (60%), which indicates the largest proportion of multidimensionally poor households, while RW 07 has the lowest ratio of 0.032 (3%). RW 02 shows the highest poverty intensity of 0.548 (55%), which reflects the average proportion of deprivation experienced across multiple dimensions. The highest MFI value is found in RW 03 at 0.247, which indicates that this area experiences the most severe multidimensional poverty and needs to be prioritized for targeted interventions.



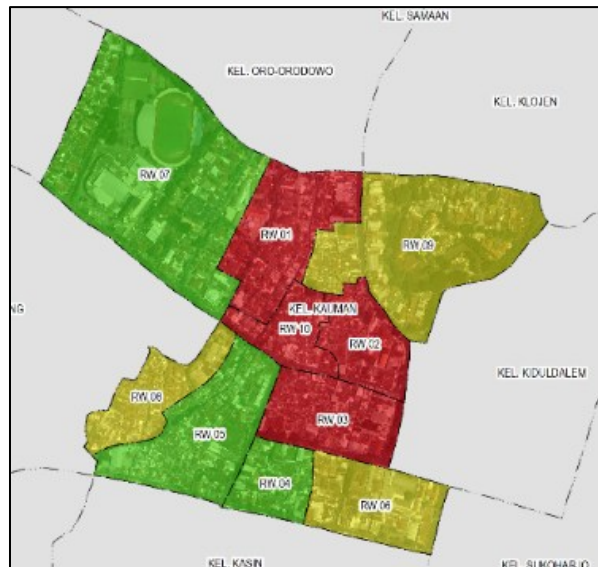
Figure 2. Dimension Contribution Radar Chart in Kauman



Source: Annalysis Result, 2025

Based on the figure above, the education dimension is the largest contributor to multidimensional poverty in most RW, especially in RW 2 to RW 6, which reflects the high deprivation in school enrollment and educational attainment. The health dimension contributes the least and is relatively stable in all RW, so it is not the dominant factor in shaping poverty in this area. Meanwhile, the standard of living dimension shows a moderate contribution with even variation between RWs, with the highest values in RW 3 and RW 4. The highest MPI values are in RW 2 and RW 3, indicating the accumulation of deprivation in more than one dimension. Therefore, poverty reduction strategies should prioritize improving access to and quality of education, along with improving aspects of living standards in RW with high contributions, to reduce poverty more effectively.

Figure 3. Distribution of Poverty Levels in Kauman



Source: Primary Survey, 2025

The map in Figure 3 shows the distribution of poverty levels in Kelurahan Kauman, which is divided into three categories based on color: red (high poverty), yellow (medium poverty), and green (low poverty). Areas with high poverty rates include RW 01, RW 02, RW 03, RW 05, and RW 08, which are concentrated in the central part of the kelurahan. These areas may have high population density, limited access to basic infrastructure, and deprivation in education and living standards.

The moderate poverty category is seen in RW 04, RW 06, and RW 09, which are generally located in the southern and eastern parts of the neighborhood. Meanwhile, areas with low poverty levels (marked in green) include RW 07 and RW 10, which are located in the northwest and southwest parts of the kelurahan. This pattern indicates that there is a significant difference in socio-economic conditions between RWs, so poverty reduction interventions should be focused on RWs with high categories, especially in the central area of Kelurahan Kauman.

Based on the results of the headcount index, poverty intensity, and Multidimensional Poverty Index (MPI) values, the highest level of multidimensional poverty in Kelurahan Kauman is found in RW 03 with a headcount ratio of 60.1%, which means that more than half of the households in this area experience deprivation on welfare indicators. The highest poverty intensity is found in RW 02 with a percentage of 54.8%, indicating that poor households in this area experience deprivation in more than half of the measured welfare dimensions. The highest MPI value is also found in RW 03, at 24.7%, which confirms that this RW has the most serious multidimensional poverty condition, both in terms of number and depth of deprivation.

Factors that influence multidimensional poverty in Kelurahan Kauman include low educational attainment, low living standards (seen from the condition of sanitation, limited access to clean water, and low electricity power), and the large number of family members in one house.

4. Discussions

Pockets of poverty in urban centers are not an anomaly: the literature on Indonesian megacities shows that socioeconomic segregation and unequal access to services can persist even in high-value zones due to subtle processes of spatial sorting—through land prices, permits, and labor market selection. (Rukmana & Ramadhani, 2021). Kauman's discovery was precisely on that path: this area is adjacent to the Kayutangan Heritage tourism-economic corridor, but it actually has priority slum status with a wide coverage and high degree of slum (73% or ± 0.61 km²) (Harjo et al., 2021; Ulum & Anggraini, 2021).

The policy context reinforces this picture. The KOTAKU program, which has been aimed at improving basic infrastructure since 2016, has focused primarily on the Kayutangan corridor, meaning that not all neighborhood units (RW) in Kauman have experienced equal improvements. This is also reflected in your manuscript, which states that the program's focus "only touches on Kajoetangan Heritage." (Harjo et al., 2021), while Kauman remains designated as a slum area through a Mayoral Decree (2021) (Malang City Government, 2021). The impact is heterogeneity in MPI results between RWs—a phenomenon that is compatible with the argument of service inequality in developing urban areas. (Fauzi et al., 2022; Kriswibowo et al., 2020).

From a social policy instrument perspective, the Kauman case study highlights the problem of targeting leakage. The distribution of KIP and KPS was found to be uneven—many eligible households did not receive them, partly due to a lack of citizen engagement and policy literacy (Sulhan & Sasongko, 2017). In your secondary survey results, this is highlighted as mistargeting, which reduces the effectiveness of the safety net. Theoretically, such mistargeting would hinder progress in education and living standards because the neediest households would not experience the policy's "shock absorber" (Aguilar & Sumner, 2020).

The basic infrastructure dimension adds another layer of explanation. Not all Kauman households are connected to the water network; some still use wells with low pressure and uneven distribution during the dry season (Ari, 2011; OPHI, 2010). In certain neighborhood units (e.g., RW 03 in your study notes), sanitation is a relative weak point, holding back living standards—a common pattern that increases intensity (A) among poor groups. (House & Santos, 2013; Widyastuti et al., 2023) In the Kauman context, the regulatory package—Presidential Decree 4/2016 (electrification), Law 17/2019 (Water Resources), and Ministerial Decrees 3/2014 & 2/2023 (STBM/basic services)—provides standard references, but actual achievements on the ground show gaps in RW-specific implementation as captured via the MPI. (Alkire & Santos, 2010).

In the education dimension, the contribution radar shows education as the largest contributor to many neighborhood units (RW), while health tends to be small and stable. This is consistent with social mobility theory, which positions education as a lever for long-term well-being in urban areas (Siddiqui & Parveen, 2022; Syaifullah et al., 2019). Interestingly, facility data in Kauman shows a relatively complete range of educational institutions (kindergarten to high school), but travel time to school varies significantly between neighborhood units (RW); physically "close enough" access does not automatically lead to improved school achievement due to frictions in cost, quality, or household preferences. Law of the Republic of Indonesia Number 20 of 2003. In other words, institutional supply alone is not enough without effective demand-side support (KIP/PKH, scholarships, transportation, school mentoring). (Aguilar & Sumner, 2020).

On the health side, the absence of malnutrition and child mortality findings during the observation period in Kauman indicates that the health dimension is "not dominant" compared to education/standard of living, not necessarily an absence of latent risks (Law 36/2009). This aligns with the results of the 2018–2020 study on government spending and multidimensional poverty, which showed that the spatial-temporal influence of health policies can differ across regions (Ramadhani & Ridwan, 2024). For Kauman, policy priorities are clearer: reducing educational deprivation and improving living standards in bottleneck areas (water, sanitation, electricity/clean energy, and assets), while ensuring health indicators do not deteriorate as economic conditions tighten. Sectoral development planning results in health interventions that often operate in isolation from social protection programs and other development initiatives (Sari, 2023). Consequently, efforts to improve population health do not consistently reach poor households in an effective and sustainable manner, particularly in urban areas characterized by high levels of inequality.

The Alkire–Foster (AF) framework you use is relevant because it captures two facts simultaneously: how many households are poor (H) and how severely they are deprived (A); the product of the two (MPI) facilitates cross-RW prioritization. In the Kauman case, the combination of high H and moderate A (e.g., in densely clustered RWs) suggests the need for broad-reaching interventions that provide universal basic services (safe drinking water, sanitation, and adequate electrification), while the pattern of low H but high A (e.g., in small clusters like RW 07 in your table) indicates the need for in-depth, case-management interventions for the most deprived households. (Marcelino & Cunha, 2024)

5. Conclusion

This study addresses the primary objective: to capture multidimensional poverty in Kauman—not simply “who is poor” but also the severity of deprivation experienced—using the Alkire–Foster (Multidimensional Poverty Index/MPI) framework at the RW (neighborhood unit) granularity. Our results present maps of prevalence (H), intensity (A), and poverty summary (MPI) across RWs, accompanied by consistent tables/graphs, so that the visibility of pockets of deprivation in the city center can be measured and compared. Thus, this study fulfills its goal of providing an operational evidence base for formulating addressing priorities at the RW level.

Our contribution to knowledge lies in three areas. First, we demonstrate the application of the micro-scale MPI (community-based income index) in a central city area generally considered “developed,” demonstrating that proximity to economic corridors is not synonymous with well-being. Second, we integrate national standards (education, health, and basic services) into the deprivation threshold, making the indicator readily usable for auditing public programs. Third, we demonstrate differences in H–A profiles across neighborhoods—information not readily apparent using income measures or neighborhood aggregates alone—which paves the way for more precise interventions.

Scientifically, the selection of MPI at the RW unit is justified because: (i) it separates the prevalence and depth of deprivation so that policies are not “sweeping the floor,” (ii) it is compatible with the basic service indicators mandated by local governments, and (iii) it reduces the ecological fallacy that often arises in coarse-grained aggregations. Furthermore, this approach can be replicated in other *kelurahan* in Malang or other Indonesian cities, provided that the household survey, threshold definitions, and weighting procedures are kept consistent (Muliani et al., 2022).

A direct application of our findings is the establishment of differentiated policy packages at the neighborhood (RW) level. A high H–moderate A profile requires broad-based basic services (safe drinking water, sanitation, adequate electrification, and improved housing environments) to reduce prevalence; a low H–high A profile requires in-depth interventions targeting the most affected households (retargeting of education/social assistance, household sanitation improvements, and productive asset support). Furthermore, RW maps and tables can be integrated into planning mechanisms (e.g., *musrenbang*), KOTAKU monitoring, KIP/KPS retargeting, and evidence-based budgeting at the village–sub-district level.

Extensions of this work are open in several directions. (1) Longitudinal/Panel. Conduct annual remeasurements to create a panel MPI for neighborhood units (RW), so that the rate of improvement and program impact can be estimated. (2) Spatial analytics. Test for spatial dependencies (e.g., Moran's I/LISA) and model spillovers between neighborhood units (RW) so that intervention designs take neighborhood connectivity into account. (3) Robustness. Test sensitivity to multidimensional poverty thresholds (*kkk*) and alternative weighting schemes, and evaluate potential MAUP (changes in outcomes due to differences in regional items). (4) Accessibility integration. Combine the MPI with affordability indices (distance/time to school, health center, water network) to link deprivation to real spatial barriers. (5) Policy evaluation. A sectoral planning approach causes poverty alleviation programs to operate in a fragmented spatial manner, where interventions in education are not effectively linked with improvements in health, residential environment, or employment creation (Yusri, 2022). In contrast, multidimensional poverty requires simultaneous and integrated interventions across sectors and territories to address the interconnected nature of deprivations. Design a quasi-experimental study of a scholarship–sanitation remediation–clean energy subsidy package in priority RWs to test causal reductions in A and MPI. (6) Community participation. Develop participatory mapping (PGIS) to validate household indicators and minimize mistargeting of aid. (Suprayitno et al., 2020).

In summary, this research advances the practice of urban poverty mapping by operationalizing the MPI at the neighborhood level and presenting a readily actionable decision matrix. The resulting framework and artifacts—the MPI H–A table, neighborhood rankings, and concise graphs—provide a clear scientific justification for program prioritization and a foundation for subsequent policy experiments. The suggested next steps will strengthen external validity, test the robustness of the results to methodological choices, and accelerate the translation of findings into measurable welfare improvements for Kauman residents.



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