

## Methodology and Data Collection Challenges in the Development of Multidimensional Inequality Profiles for Households

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### ABSTRACT

*Inequality is a topic that is widely discussed in almost every country. The issue has long been recognised as one of the most important and long-standing social and economic challenges. This study identifies multidimensional inequalities in households in Kompleks Perkampungan Rambong, Baling, Kedah, such as income, health, education, and well-being. It also defines the indicators for each dimension that cover inequality elements critical to providing a thorough knowledge of household inequality. However, obstacles must be overcome during the data collection process, such as the COVID-19 pandemic, which resulted in the imposition of a movement control order. In addition, the issue of penetration with the study subject is also considered a stumbling block. This paper also discussed the methodological issues and challenges in data collection in accomplishing the multidimensional measurements of inequality among households.*

**Keywords:** Challenges, Household, Inequality, Multidimensional, Poverty

### 1. INTRODUCTION

The increase in inequality over the last several decades has sparked the interest of both academics and the public (Amromin et al., 2018). Inequality is defined as discrepancies in status, rights, and opportunity. Economic inequality, often known as 'income inequality', 'financial inequality' or, more broadly, 'inequality across communities or households' is a focus in examining inequality among societies or households. Inequality refers to societal problems that affect the quality of life of individuals or households, such as poor health, inadequate education, high unemployment, etc, which usually exacerbates inequalities between high-, middle-, and low-income households. This issue has led to poor economic growth, identified as the most important and long-standing social and economic challenges facing the world's developed and developing countries (Kanter, 1999). Previous research has focused substantially on income inequality in households (see Albert et.al., 2007; Gradin et.al., 2008; Graafland & Lous, 2018). Income inequality refers to the degree to which income is distributed unevenly across people or households in which salaries, dividends, interest on savings accounts, rent from real estate, and other revenue are all types of income (Trapeznikova, 2019).

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The Gini coefficient is a common way of calculating such disparities. However, household inequality measures assets, health, education, and access to essential utilities in addition to total income, resulting in a more realistic set of household inequality profiles. This is due to the fact that there are additional aspects or elements that can be considered dimensions that can impact inequality between communities (McKenzie, 2005). In other words, income-based inequality assessments are still useful, but they are insufficient to describe an individual's well-being because income is the only dimension of interest (Sen, 2006). It is based on the principle that while measuring inequality, it should take into consideration the normative or implicit dimensions that can influence income inequality for individuals or households (Steward, 2013).

Hence, various norms, also known as multidimensional inequality, must also be taken into consideration (McKenzie, 2005). This dimension system does not rely on income alone, but also takes into consideration the deprivation of various other factors, including access to health, education and living standards to measure inequality in a holistic way. The principle is based on the sense that each measure of inequality must involve normative or implicit dimensions that may affect income inequality for individuals or households (Steward, 2013). For example, a dimension of household inequality does not only take into account the total household income but also evaluates the sum of properties, health, education, and access to basic facilities, culminating in a more realistic set of criteria for household inequalities. On this note, it is noted that in most of the past studies, inequalities have been measured using a one-dimensional approach of focusing only on, for example, income, health or education. For instance, economic inequality, especially income inequality refers to the extent to which income (i.e., salary, wages, dividends, welfare benefits, pensions and etc.) is distributed unevenly among individuals or households. Looking at this gap, it is found that the dependency of household inequality measurements focuses on a single aspect, i.e., income from wages regardless of assets such as farmland, livestock, machinery and other assets that generate ancillary income. This side income would add to the degree of disparity between households and other households that depend solely on wages. From another perspective, it will contribute to the reduction of inequalities in better-income households. The well-being aspect should also be taken into consideration in terms of basic facilities impacts both the quality of health and household education.

However, there are some challenges in terms of issues that the researchers encountered during the implementation of this study in reaching the study's goals and objectives in measuring household inequality through multidimensional indicators. Therefore, this paper focuses on the experience and challenges of data collection in measuring multidimensional household inequality, i.e., income, health, education, and well-being. The data collection process was conducted in the Kompleks Perkampungan Rambong to fulfil the study's aims of measuring each dimension of inequality. The complex is made up of seven villages and is in Baling, Kedah, which is regarded as one of Malaysia's poorest districts. The complex area is mapped as an area with most of the population categories under B40. Thus, based on these characteristics, this scope area is consistent with the objectives of this study.

This paper is divided into the sections below. The first section serves as an introduction to the paper, reflecting its objectives. It is followed by a data collection methodological approach used to establish the various dimensions appropriate for measuring household inequality. The next section highlights the literature, followed by challenges and difficulties encountered in gathering data for this study. Finally, this paper will conclude with a conclusion.

## **2. LITERATURE REVIEW**

A number of studies have proposed various dimensions for identifying inequality and poverty within households such as income, health, education and wellbeing (Mussini, 2013; Espinoza-Delgado & Klasen, 2018; Song & Zhou, 2019; Van Phan & O'Brien, 2019; Klasen & Lahoti, 2021; Baltruszewicz, 2021; Wroński, 2021). This paper will not go into detail about measuring income

inequality since the Gini coefficient is extensively used to do so. The discussion on inequality indicators will focus on the other dimensions, such as health, education, and wellbeing.

Although the health of low-income individuals has been a driving force in public health (Chokshi, 2018), to achieve health equality, individuals, families, and communities are considered healthy when they have adequate knowledge and control over their lives, and their needs and rights are supported by institutions, environments, and policies that enable and promote improved health (Mussini, 2013; Espinoza-Delgado & Klasen, 2018). This implies, that while income is a significant factor in obtaining a sufficient level of health for an individual or household, the individual must also have easy access to health care facilities, nutritious food supplies, and health-related knowledge to close health-related gaps among households.

In terms of measuring health inequality, the percentage of people who are overweight based on their body mass index (BMI) is one of the health indicators that is most used in measuring health inequalities (Marmot, 2013). Furthermore, other indicators such as life expectancy at birth, smoking habits, living, and working conditions, and physical activity are measurements that are frequently used in determining health disparities across individuals (Pigeyre et al., 2016). Interestingly, studies in Spain use fewer common indicators to measure health inequalities, such as sexual health information and mental illness caused by drug or alcohol misuse, which may be beneficial for assessing alcohol and substance abuse data that has to be addressed by the health care system (Albert-Ballestar & García-Altés, 2021).

A study by Penman-Aguilar et al. (2016) has suggested a set of practices of measurement, as shown in Table 1.

**Table 1.** Health Inequality Measurement (Source: Penman-Aguilar et al., 2016)

No.	Measurements
1.	Examine health disparities and their determinants in relation to socioeconomic status.
2.	Social and structural determinants of health should be examined, and multiple levels of assessment should be addressed.
3.	The justification for methodological decisions and measures should be made explicit.
4.	The groups to be compared should be classified by multiple social statuses at the same time.
5.	Stakeholders and their communication requirements are frequently taken into account while selecting analytic methods.

Although the above measurements represent the role of health social determinants in shaping population health, the authors note that studies on how to measure health disparities, health inequalities, and health social determinants nationally, as well as ongoing health equity challenges, are needed.

Monitoring inequalities in the education dimension is essential to understanding how and to what extent education contributes to a more equitable society. Indicators that encompass various aspects of education, from resources to access, participation, and achievement, are used in the technique for measuring educational dimension inequality. This is done by calculating the percentage of people who have completed a specific level of education or the number of years of education completed (Antoninis et al., 2016; Morrisson & Murtin, 2013; Meschi & Scervini, 2014).

Previous studies on educational inequality have also demonstrated that this dimension has a measurement that is more focused on the correlation between income inequality and educational inequality (Foldvari & Leeuwen, 2011; Campos et al., 2016; Lee & Lee, 2018; Banzragc, 2019) and the effect of education inequality on economic growth (Ibourk & Amaghous, 2013; Tchamyou et

al., 2019; Permanyer et al., 2022). This type of measurement indicates that there is a correlation between income and education in terms of contributing to household inequality. For instance, an increase in educational duration helps to reduce income inequality and a more equal distribution of education was related to growth in the economy (Banzragc, 2019).

Other techniques to measure educational inequality can be found in a variety of indicators, such as education category or level, and competencies, whether in primary, secondary, or higher education. Individual learning achievement is also used as an indicator to enable the measurement of educational inequalities in learning outcomes (Ferreira & Gignoux, 2014; Dijkstra et al., 2021). The concept of well-being has become more widespread in the social sciences (Kollamparambil, 2021; Shiba et al., 2022). This allows research to widen its scope beyond the restricted economic focus on income and consumption as the primary indicators of inequality that have been commonly employed in the past. The emphasis on disparities in basic abilities should be used to determine well-being inequality. This ability-based approach highlights not only what people have, but also how much freedom they must do and be. Based on this description, the concept of well-being inequality as a part of multidimensional inequality is considered.

Previous research has proposed two ideas, capability, and functioning, in approaches to measuring well-being inequality (Sen, 1985; Robeyns, 2018). However, these two ideas are seen as ambiguous in determining differences in individual well-being. Nevertheless, there are suggestions from the literature to consider social and historical contexts (Qizilbash, 2011). This demonstrates that life history, such as the lineage of individuals and households, should be considered when assessing inequality. There are scholars who look at lineage aspects of socioeconomic development in a household. Foltz et al. (2020) for example, examined the significance of lineage in China and discovered that lineage social networks promote rural income disparity via migratory effects. This demonstrates that able-bodied households tend to migrate to other areas, impacting the inequality gap in the community left behind. He et al. (2018) investigated heterogeneity based on lineage, which may have an impact on the socioeconomic status of rural populations. The authors demonstrate that residents in villages with genetic diversity (lineage) contribute less to reducing the inequality gap. Therefore, lineage factors must also be considered when evaluating household inequality.

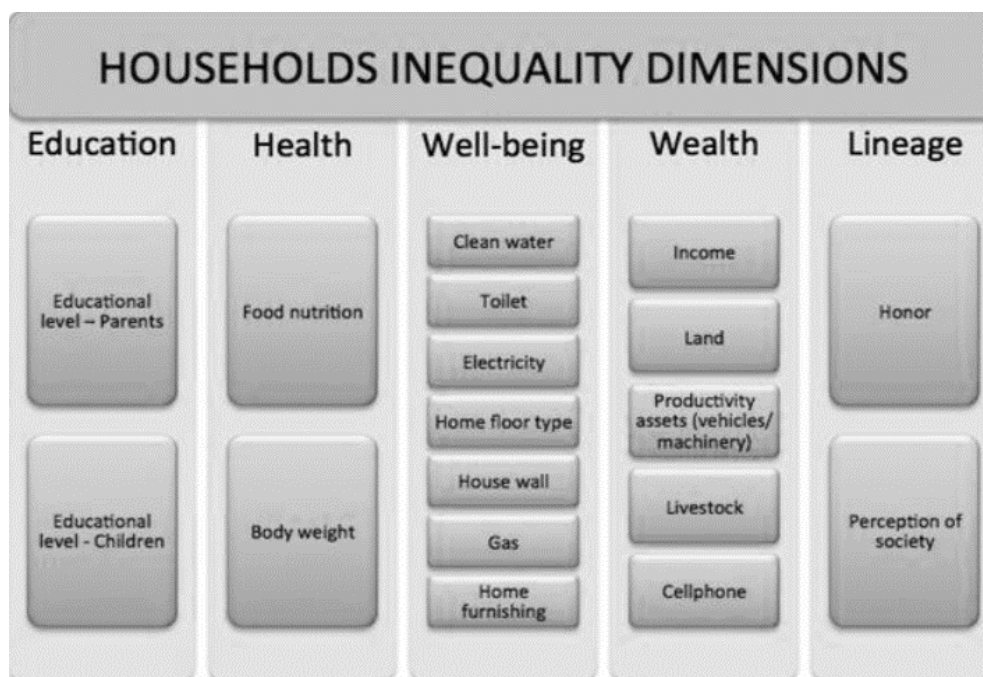


Figure 1. A Multidimensional Inequality Framework

As a result of the preceding discussion, it is possible to conclude that multidimensional indexes and measurements, as indicated in Figure 1, should be considered when examining inequality among individuals and households.

This study focuses on household inequality. Considering the findings and recommendations from previous studies. Figure 1 depicts a framework that may be used to access multidimensional household inequality. This framework reflects multidimensional health, education, well-being, and income (wealth). The element of descent or history is also included, which is consistent with Greve (2021), who believes that access to precise knowledge, including historical contexts such as lineage and contemporary reality, should be considered when measuring a society's influence on the structure of daily life. The next section describes the multidimensional measurement of household inequality utilised in this study as well as issues and challenges in the data collection process.

### 3. METHODOLOGICAL APPROACH FOR DATA COLLECTION

This study was conducted quantitatively, involving four different phases of the research process. Phase 1 involved determining the dimensions and indicators representing the households at the bottom of the wealth pyramid from the literature review and interview, which is displayed in Figure 1. Based on the determined dimensions and indicators, a questionnaire was developed for the data collection purpose in Phase 2, a combination of quantitative and qualitative data. The summary of data collected is tabulated in Table 2. From Table 2, data collected consist of 674 variables, of which some used a defined answer based on scale or score, and some were based on the interview's response. Hence, the data collected contains either string, numeric or date format, representing categorical variables (i.e., nominal, ordinal) and binary variables (i.e., scale). To collect the data, the data collection process needs to be strategically planned as it involves more than 500 variables. Hence, the interview protocol was developed to guide the enumerator during the data collection process.

The study applied the purposive sampling technique, whereby the potential survey respondents were pre-identified based on the house's physical appearance and information obtained from the village head. Then, the pilot test was conducted to examine the quality of the questionnaire from various perspectives. It includes the consistency between the questionnaire constructed and the interview protocol developed, the level of language suitability used both in the questionnaire and interview protocol and the time estimated to collect the data at each house.

The data were collected via a semi-structured interview once the questionnaire and the interview protocol were ready in Phase 3. As the interview session lasted between 20 and 30 minutes, each interview session was led by two enumerators; one enumerator acted as the interviewer, and the other one served as the recorder. All the interview sessions were recorded orally and in writing in the questionnaire form. In the final phase of this study, the data collected were then key-in into Ms Excel for the analysis purpose. The variables and values to be stored in the profile were carefully planned based on the type of variables and their level of measurement defined in Table 2.

**Table 2.** Summary of Data Collected

<b>Dimension</b>	<b>Number of Main Variables</b>	<b>Number of Variables</b>	<b>Type of Variables</b>	<b>Level of Measurement</b>	<b>Values</b>
Demographic	7	8	String Numeric General	Nominal Scale	Pre-defined Fill in the blank

Dimension	Number of Main Variables	Number of Variables	Type of Variables	Level of Measurement	Values
Education	3	24	String Numeric	Nominal Ordinal Scale	Pre-defined
Health	8	86	String Numeric	Nominal Scale	Pre-defined Fill in the blank
Wellbeing	2	33	String Numeric	Nominal Scale	Pre-defined Fill in the blank
Wealth	7	525	String Numeric Date	Nominal Scale	Pre-defined Fill in the blank
Total	27	674			

#### 4. CHALLENGES IN DATA COLLECTION

The researcher of this study discovered several challenges during the data collection process. Firstly, some potential respondent was reluctant to be interviewed, and some hid accurate information during the interview session based on concerns about the confidentiality of their data. Secondly, the dialect and literacy comprehension barriers, as all of the enumerators are not locals, have led to difficulty in establishing the rapport between the respondents and the enumerator. Lack of experience conducting interview-based on quantitative and qualitative approaches among the enumerators has also led to this barrier. Apart from participants' and enumerators' barriers, collecting the data for this study has also been impacted by the Government's Movement Control Order (MCO) due to the COVID-19 pandemic. While the advancement of technology makes the online interview possible, collecting the data for this study must be done face to face as the internet coverage in the village selected is very poor.

To overcome the issues mentioned above, the research team had to take the initiative of discussing them with the chief of the district. After the fruitful discussion, some of the considerations are to advertise and inform the villagers about the study. Besides, the Village committee members were also promised to assist. Cooking oil and sugar are also given as a token for those who are willing to participate in this study.

#### 5. CONCLUSIONS

This study focuses on the findings of household inequality in the Kompleks Perkampungan Rambong, Baling, Kedah. According to the literature, the Gini coefficient approach is commonly used by economists and researchers to measure income inequality. This technique, on the other hand, merely measures the degree to which income, wages, dividends, welfare benefits, pensions, and so on are allocated unequally across individuals or households. This could lead to a weakening of inequality assessment standards. Therefore, several dimensional indicators such as health, education, and wellbeing have been identified and applied in this study based on the study scope and subject. This is in line with the idea-based principle that each dimension of inequality includes a normative or implicit dimension that affects income inequality for individuals or households.

Although indicators for dimensions have been established, there are challenges that are beyond the control of researchers in order to achieve the research objectives. The MCO imposed by the government in response to the outbreak of the COVID-19 pandemic has impacted the data

collection procedure. Because the data collection is analogous to a census in that an interview method is necessary for each home (research needs), movement restrictions have limited the data collection process from being carried out for an extended period of time. This has a significant impact on the study in terms of time frame.

Factors among the study participants also contributed to the data gathering issue. Lack of cooperation among participants to be interviewed due to the stigma of prejudice against the research team, particularly the research assistants (RAs). This results in RAs not being treated properly. The participants also liked to expect rewards from the interview session and tended to conceal key information during the interview. As a result, the data obtained is unlikely to be exhaustive. In order to address this issue, the research team provided tokens such as sugar and cooking oil to each participant's household as a consolation. In addition, a meeting between the research team with the penghulu, head, and village committee was organised to explain the purpose of this study. As a result, the majority of the villagers began to cooperate.

This paper contributes in a number of ways. First, a review of the literature was conducted in order to establish measurements for the identified dimensions, namely health, education, and well-being. Second, this study has presented indicators to quantify inequality based on the study's household and environmental scope. These measuring indicators can be used by policymakers as a reference or guide to examine household disparities between populations. The indicators are also predicted to contribute to the achievement of two United Nations (UN) Sustainable Development Goals (SDG): Goal 1—No Poverty; to eradicate poverty for everyone everywhere, as well as to reduce at least half of the community (from the proportion of men, women, and children) living in poverty in all dimensions; and SDG Goal 10—Reduced Inequalities; to achieve and sustain income growth for the lowest income half of the population, as well as to ensure equal opportunity and reduce outcome inequalities.

This study will contribute to one of the dimensions of Malaysia Plan 12—Social Re-engineering based on the formulation of 'Shared Prosperity' at the national level (Kemakmuran Bersama). Third, this paper also describes the challenges and challenges encountered during the data collection process throughout the duration of this study. It might be utilised as a reference and lesson learnt for future study, particularly in the face of a pandemic crisis.

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