# MAPPING DEVELOPMENT DISPARITIES: A TYPOLOGY OF REGENCIES AND CITIES IN NORTH SUMATERA BASED ON ECONOMIC, HUMAN DEVELOPMENT AND INCOME DISTRIBUTION INDICATORS

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## ABSTRAK

Penelitian ini bertujuan untuk menganalisis kinerja ekonomi, pembangunan manusia, dan ketimpangan distribusi pendapatan guna mengklasifikasikan kabupaten dan kota ke dalam tipologi pembangunan terbaik dan terburuk di Provinsi Sumatera Utara. Penelitian ini menggunakan data sekunder berupa pertumbuhan ekonomi, Produk Domestik Regional Bruto (PDRB) per kapita, Indeks Pembangunan Manusia (IPM), dan koefisien Gini yang bersumber dari Badan Pusat Statistik (BPS) selama periode 2020–2024. Metode analisis yang digunakan adalah tipologi Klassen dengan tiga pendekatan perbandingan, yaitu antara pertumbuhan ekonomi dan PDRB per kapita, IPM dan PDRB per kapita, serta IPM dan koefisien Gini. Hasil tipologi selanjutnya dipetakan untuk menentukan klasifikasi pembangunan masing-masing daerah. Hasil penelitian menunjukkan bahwa Kota Medan merupakan satu-satunya kota yang tergolong sebagai daerah dengan kinerja terbaik di antara delapan kota di Sumatera Utara. Sebaliknya, Kabupaten Humbang Hasundutan, Nias, Nias Selatan, Nias Barat, dan Nias Utara dikategorikan sebagai daerah dengan kinerja terburuk. Temuan ini memberikan informasi penting bagi para pengambil kebijakan, khususnya pemerintah daerah di kabupaten tertinggal, sebagai dasar untuk mengevaluasi strategi pembangunan yang ada dan merumuskan kebijakan pembangunan daerah yang lebih efektif, inklusif, dan berkelanjutan.

**Kata Kunci: Tipologi Klassen, Pertumbuhan Ekonomi, PDRB Per Kapita, Indeks Pembangunan Manusia, Ketimpangan Pendapatan, Sumatera Utara**

## *ABSTRACT*

*This study aims to analyze economic performance, human development, and income distribution inequality in order to classify regencies and cities into the best and worst development typologies in North Sumatra Province. The study employs secondary data on economic growth, gross regional domestic product (GRDP) per capita, Human Development Index (HDI), and the Gini coefficient obtained from Statistics Indonesia (BPS) for the period 2020–2024. The analytical method used is the Klassen typology, applied through three comparative approaches: economic growth and GRDP per capita, HDI and GRDP per capita, and HDI and the Gini coefficient. The typology results are subsequently mapped to determine the development classification of each region. The findings reveal that Medan City is the only city classified as the best-performing region among eight cities in North Sumatra. In contrast, Humbang Hasundutan Regency, Nias, South Nias, West Nias, and North Nias are categorized as the worst-performing regions. These results provide important insights for policymakers, particularly local governments in underdeveloped regencies, to evaluate existing development strategies and to formulate more effective, inclusive, and sustainable regional development policies.*

Keywords: Klassen Typology, Economic Growth, GRDP Per Capita, Human Development Index, Income Inequality, North Sumatra

## INTRODUCTION

The goal of development is essentially to improve the welfare of the population, both at the national and regional levels. However, development success can vary between regions due to differences in regional conditions, which have implications for the development strategies implemented in each region. Therefore,
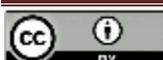
adjustments are necessary to address existing conditions, not only the problems faced but also the needs and potential of the region in question. Following Kuncoro (2015) in Masbiran (2019), the main targets to be achieved in regional development are: (1) increasing regional economic growth, (2) increasing per capita income, (3) reducing poverty, unemployment, and inequality, and (4) improving the quality of human development. Based on this perspective, the success of a region's development can be measured by economic growth, Gross Regional Domestic Product (GRDP) per capita, the number or percentage of poor people, the number or rate of unemployment, income distribution inequality, and the human development index. From the six indicators mentioned above, only four were analyzed in this study: economic growth, GRDP per capita, the human development index (HDI), and income inequality, as proxied by the Gini coefficient. In this case, economic growth and GRDP per capita are economic indicators (Masbiran, 2019), the HDI is an indicator of human development, and the Gini coefficient is an indicator of income distribution inequality. The Human Development Index measures human development achievements based on four components of quality of life (Amaluis et al., 2024), and the Gini coefficient is an indicator of income distribution inequality because "if income distribution inequality increases, it means income is becoming more unequal" (Rasendriya, et al., 2025). In other words, inequality is the gap between high-income and low-income populations (Maskur et al., 2023), which signifies inequality in income distribution.

Based on published data from the Central Statistics Agency (BPS) (https://sumut.bps.go.id) on economic growth, GRDP per capita, HDI, and the Gini coefficient of regencies and cities in North Sumatra for the period 2010-2024, it is known that economic growth and the Gini coefficient tended to fluctuate. Conversely, GRDP per capita and HDI tended to increase. However, some regencies and cities were impacted by the COVID-19 pandemic, resulting in negative economic growth, with GRDP per capita and HDI declining, and the Gini coefficient increasing in 2020. This secondary data can be analyzed using statistical methods, but also using a typology method in the form of a simple quadrant system to determine the pattern and structure of regional economic growth, known as the Klassen typology (Purba, 2021), (Masbiran, 2019), (Sari, Riyono, Supandi, 2019), (Harjanti et al., 2021), (Nihayah

et al., 2023). Although this typology uses data on economic growth and per capita income (Purba, 2021), (Elpisah et al., 2021), and (Kautsar, et al., 2024), it can be expanded to include two other indicators, the Human Development Index (HDI) and the Gini coefficient, to provide a more comprehensive analysis method for determining and assessing the types of districts and cities in North Sumatra Province. This phenomenon is interesting because district or city types can change from year to year.

Based on this phenomenon, the objective of this paper is to identify which districts and cities are classified as the best and worst types based on these four indicators. The results of this analysis can provide important information and serve as evaluation material for policymakers to spur better and more sustainable development, increasing public access to education, health, and purchasing power, along with a more equitable income distribution.

This study differs fundamentally from other studies because it uses Klassen's typology analysis, not only based on economic growth and per capita GRDP data but also using HDI data in relation to per capita GRDP and HDI with the Gini coefficient. Based on exploration, no research title has been found with the exact same research method and region. A number of studies have attempted to determine the influence of several economic variables on the HDI or the Gini coefficient or conversely the influence of the HDI on other economic variables or factors that influence income distribution inequality using statistical analysis, such as multiple linear regression analysis based on time series or panel data.

## LITERATURE REVIEW
### Economic Growth

Economic growth is a quantitative measure that describes the development of an economy in one year compared to the previous year. Thus, economic growth increases the economy's capacity to produce goods and services (Sukirno, 2014). Therefore, economic growth can be one of the vital components of economic standards in a region (Karina et al., 2025). Regional economic growth theory emphasizes the economic growth of a specific region, rather than a single country, as is common in macroeconomic analysis. Regional economic growth theory explicitly incorporates elements of location and region, variations in regional economic potential, and the influence of neighboring regions into its analysis, unlike
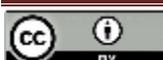
growth theory in macroeconomics (Sjafrizal, 2018: 97). Economic growth is calculated from the gross regional domestic product (GRDP) at real prices (Purba, 2021). Therefore, economic growth, as an indicator of the success of economic development, reflects the level of economic activity development caused by increased production of final goods and services valued at real prices, excluding the effects of inflation.

Every region desires stable and sustainable economic growth as a foundation for development, so it is important to assess the extent to which the level of economic development changes annually (Napitupulu et al., 2025). Therefore, the higher and better the economic growth of a region, the better the economic performance of the region, and vice versa. According to Badrudin in Masbiran (2019), quality economic growth is growth that supports the achievement of higher human development. Therefore, a region requires sustainable economic growth to improve economic development and the welfare of its population.

**Gross Regional Domestic Product (GRDP) per Capita**

Gross Regional Domestic Product (GRDP) per capita of a region is the ratio of total GRDP to the population of the region. According to the calculation method, GRDP per capita will increase if the growth of GRDP at real prices is greater than the growth of the region's population. (Purba, 2021). Karina et al., (2025) stated that GRDP is an important indicator in macroeconomics used to plan development policies, assess development outcomes, and determine the direction of a region's development.

Gross Regional Domestic Product per capita can be used as a better measure of growth because it reflects the prosperity of a region's population compared to the GRDP value, which is a measure of its economic growth. Purba (2021) stated that GRDP per capita at constant prices is useful for determining the real growth of per capita income or the increase in population prosperity. This means that if GRDP per capita growth decreases, it means that population prosperity has decreased, and vice versa. Increased prosperity means increased purchasing power, thus increasing the ability to purchase goods and services. Following Nasution (2019), higher GRDP per capita growth leads to better human development performance. Therefore, increased population prosperity can drive an increase in the human development index.

**Human Development Index**

The human development index (HDI) is one

method of measuring the level of human development in a region. This index integrates several key indicators to provide a more comprehensive picture of the progress of a society. According to BPS (2024 ), the HDI is a measure of human development based on a number of basic components of quality of life, namely longevity and healthy, knowledge, and decent living.

In fact, the concept of human development introduced by the United Nations Development Programme (UNDP) is defined "as a process to expanding the choices available to poople, where the elements clearly point to the desired goals of a healthy and long life, education, and the ability to enjoy a decent life" (Bemby & Bashir, 2015). Indonesia has adopted the UNDP's human development measurement by calculating the same index, which consists of three dimensions, namely: (1) the dimension of longevity and healthy living, (2) the dimension of knowledge, and (3) the dimension of a decent standard of living (BPS, 2024).

The concept of human development developed by the United Nations sets human development performance rankings on a scale of 0.0 – 100.0 with the following categories: (a) Very high if the HDI is above 80.0 , (b) High if the HDI is between 66.0 – 79.9, (c) Lower middle if HDI is between 50.0 – 65.9, and (d) Low if HDI is less than 50.0 (Siswati & Hermawati, 2018). As one of the important indicator in measuring human development progress, the HDI is used in various development plans because it provides important information for policymakers to develop better and more sustainable development policies.

**Gini Coefficient**

One measure of income inequality is the Gini coefficient, introduced by Italian statisticians in 1912 (Todaro & Smith, 2012). Gini coefficient data in Indonesia are published by the Central Statistics Agency (BPS) at both the national and regional levels. This income inequality index is widely used by economists "because this calculation adequately explains the relationship between high-income population groups and other population groups" (Farhan and Sugianto, 20224). In other words, income distribution inequality reflects the unequal distribution of income in society. Kolluru & Semenenko (2021) state that the Gini coefficient is a popular measure of socioeconomic inequality, especially in income and wealth distribution. Inequality in income distribution illustrates the economic disparity between population groups based on their income. According to Maipita (2014: 168), the Gini

coefficient can be used to compare the income distribution of different population groups, both between countries and between regions. Reku (11/25/2025) stated that the function of the Gini coefficient in economics includes measuring the level of income inequality in a society. This information is useful for governments and organizations in identifying problems that need to be addressed and designing appropriate policies.

The Gini coefficient or Gini ratio (GR), is a measure of aggregate inequality that ranges from 0 (perfect equality) to 1 (perfect inequality) (Todaro and Smith, 2012). The benchmarks for inequality based on the Gini coefficient in Indonesia, as published by DPR.go.id in a Wikipedia publication (11/25/2025), are: (a) If GR <0.40, the level of inequality is low or relatively even. (b) If GR is between 0.40 and 0.50, the level of inequality is moderate. (c) If GR >0.50, the level of inequality is high or the income distribution is very unequal.

**Regional Typology**

Regional typology is the science of grouping regions based on specific types or characteristics to understand their similarities and differences. The regional typology analysis tool, known as the Klassen typology, is used to describe the patterns and structure of a region's economic growth (Nihayah et al., 2023), (Purba, 2021), (Harjanti et al., 2021), (Masbiran, 2019), (Sari, Riyono, and Supandi, 2019), and (Bemby and Bashir, 2015). This typology essentially divides regions based on two main indicators: economic growth and the region's per capita GRDP within its reference area.

These two indicators create four distinct types or classifications. In addition to economic growth and per capita GRDP, typologies can also be based on HDI data with GRDP per capita or HDI data with the Gini coefficient. Purba (2021) stated that regional typology is useful for facilitating local governments in formulating development programs to accelerate regional development. It also serves as an important source of information for district, city, or provincial governments at the national level to accelerate the development of underdeveloped regions.

## RESEARCH METHODS

Each district and city in North Sumatra has distinct characteristics in terms of economic and human development. Therefore, they may differ in economic growth, GRDP per capita, the human development index, and the Gini coefficient. To compare data for these four indicators, the Klassen typology analysis was used based on economic growth and GRDP per capita data (Table 1). Similarly, the second typology is based on HDI data with GRDP per capita, and the third is based on HDI data with the Gini coefficient.

Then, the results of the three typologies are mapped using the overlay method and subsequently classified according to quadrants as shown in Table 2. The term "high" means that the achievement of the regency or city is greater than that provincial achievement, while the term "low" means that the achievement of the province is greater than that of the regency or city

### Table 1. Typology Based on Economic Growth and GRDP per Capita

| Economic growth (Rg) | GRDP Per Capita (Y) | |
|---|---|---|
| | Low ($Y_s < Y_r$) | Height ($Y_s > Y_r$) |
| Height ($Rg_s > Rg_r$) | **Quadrant III** High economic growth and low GRDP per capita | **Quadrant I** High economic growth and GRDP per capita |
| Low ($Rg_s < Rg_r$) | **Quadrant IV** Low economic growth and GRDP per capita | **Quadrant II** Low economic growth and high GRDP per capita |

Note: s refers to regencies or cities and r refers to North Sumatra.
Source: adopted from Purba, dd2021

### Table 2. Classification Criteria for Regencies and Cities in North Sumatra

| Basic Typology | Classification | | | |
|---|---|---|---|---|
| | Quadrant I | Quadrant II | Quadrant III | Quadrant IV |
| Economic growth and GRDP per capita | High economic growth and GRDP per capita | Low economic growth and high GRDP per capita | High economic growth and low GRDP per capita | Low economic growth and GRDP per capita |

| HDI and GRDP per capita | High HDI and GRDP per capita | Low HDI and high per capita GRDP | High HDI and low GRDP per capita | Low HDI and GRDP per capita |
|---|---|---|---|---|
| HDI and GR | High HDI and GR | Low HDI and high GR | High HDI and low GR | Low HDI and GR |

## RESEARCH RESULT

### Typology Based on Economic Growth and GRDP Per Capita

The typology results are presented in Figure 1. Following Purba (2021), Masbiran (2019), Purba (2013), and Bemby & Bashir (2015), regencies and cities with high economic growth and per capita GRDP are referred to as "developed and fast-growing regions". Regions with low economic growth but high GRDP per capita are referred to as "developed but depressed regions". Regions with high economic growth but low GRDP per capita are referred to as "growing" or "developing" or "fast-growing" regions. And regencies or cities with low economic growth and GRDP per capita are referred to as "relatively underdeveloped regions". Based on this definition, 33.33% are classified as "relatively underdeveloped regions" (in Quadrant IV) and 21.21% as "developed and rapidly growing regions" (in Quadrant I). The remainder are in Quadrant II (developed but depressed regions) and Quadrant III (developing region
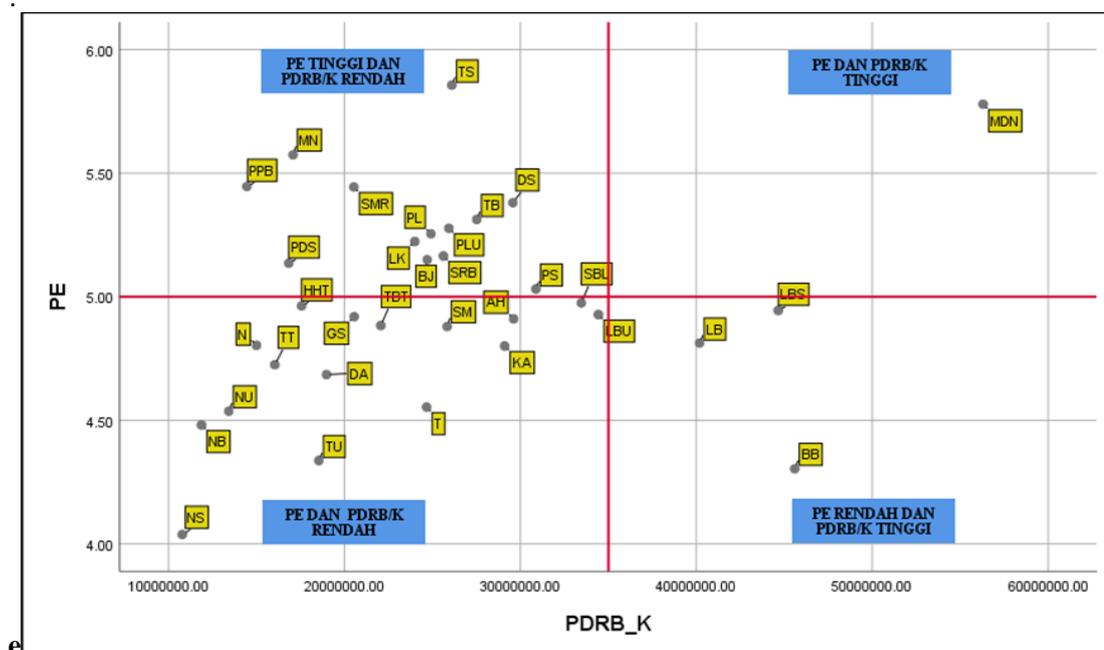


**Figure 1. Position of Regencies and Cities Based on Economic Growth and GRDP per Capita**
Source: https://sumut.bps.go.id (processed data).

Note:
N = Nias, GS = Gunungsitoli, SMR = Samosir, MN = Mandailing Natal, SRB = Serdang Bedagai, BJ = Binjai, TS = South Tapanuli, BB = Batu Bara, MDN = Medan, TT = Central Tapanuli, PLU = North Padang Lawas, NU = North Nias, TU = North Tapanuli, PL = Padang Lawas, NB = West Nias, T = Toba, LBS = South Labuanbatu, SBL = Sibolga, LB = Labuhan Batu, LBU = North Labuanbatu, KA = Karo, AH = Asahan, TB = Tanjungbalai, SM = Simalungun, PDS = Padangsidimpuan, DA = Dairi, HHT = Humbang Hasundutan, DS = Deli Serdang, PS = Pematangsiantar, LK = Langkat, TBT = Tebing Tinggi, NS = South Nias, PPB = Pakpak Bharat.

### Typology Based on HDI and GRDP per Capita

The results of the typology are presented in Figure 2. There are three cities and six regencies with high HDI and GRDP per capita (Quadrant I) and five regencies and one city with low HDI but high GRDP per capita (Quadrant II). There are also five regencies and three cities with high HDI but low GRDP per capita (Quadrant III) and in Quadrant IV there are nine regencies and one city with HDI and GRDP per capita lower than the provincial average. So based on this typology, 27.27% are in Quadrant I and 30.30% are in

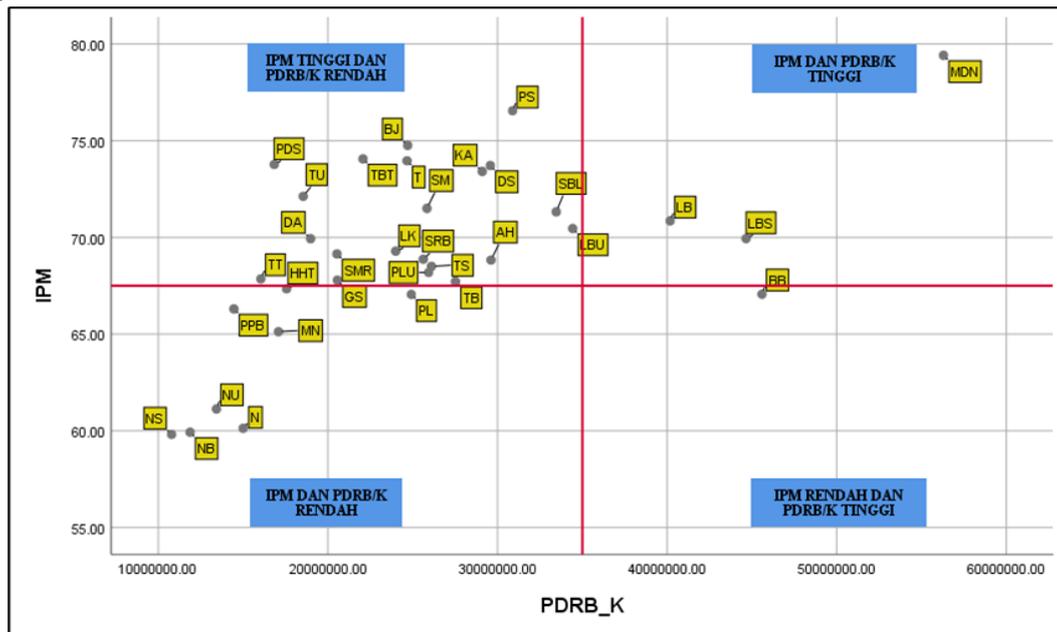Quadrant IV. The other regencies and cities are in
Quadrant II and Quadrant III



**Figure 2. Position of Regencies and Cities Based on Human Development Index and GRDP per Capita**
Source: https://sumut.bps.go.id (processed data).

**Typology Based on HDI and Gini Coefficient**

The typology results are presented in Figure 3. There are five regencies and eight cities in Quadrant I because they have high HDI and Gini coefficient. No regencies or cities are in Quadrant II. Eleven regencies are in Quadrant III because to they have high Gini coefficient, and nine regencies are in Quadrant IV. Based on this typology, all cities, including five regencies, are in Quadrant I because they have high HDI and high Gini coefficient. Especially for Quadrants I and IV, the results of this typology are better than the previous typology
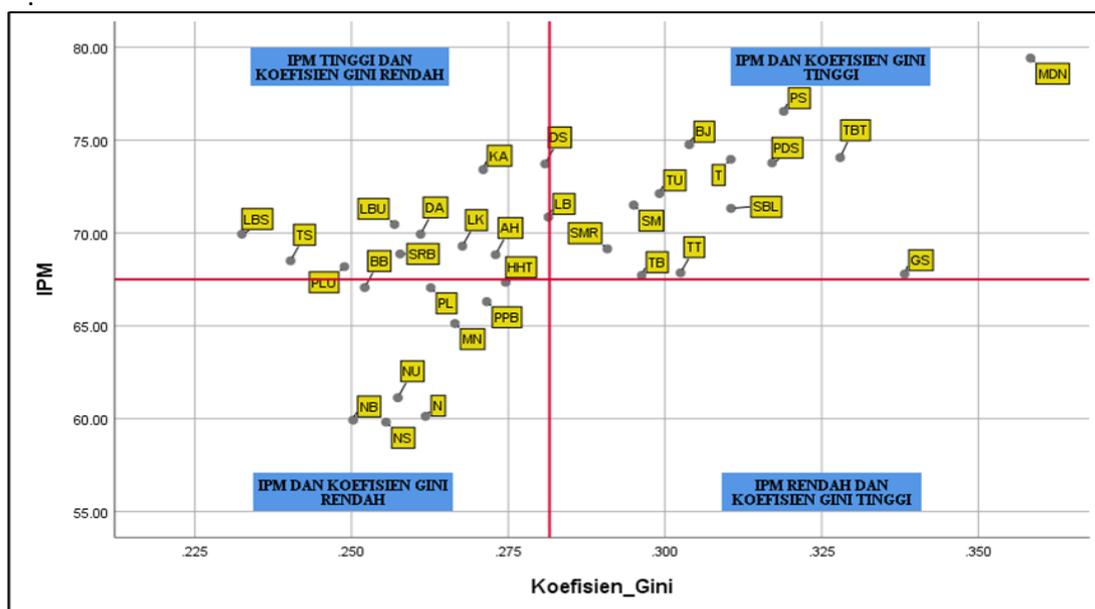


**Figure 3. Position of Regencies and Cities Based on HDI and Gini Coefficient**
Source: https://sumut.bps.go.id (processed data)

**Mapping of Regencies and Cities**

The results of mapping the three typologies are presented in Table 3. Medan is the only city consistently falls in Quadrant I. Then there are five regencies in Quadrant IV, namely Humbang Hasundutan, Nias, South Nias, West Nias, and North Nias. No other regions are consistently in Quadrant II or Quadrant III. Based on the typology, cities that are consistently in Quadrant I can be referred to as the "best type" and those in Quadrant IV as the "worst type." These mapping results, particularly the best and worst types, need to be discussed further.

**Table 3. Mapping Results for Regency and Cities**

| Base Typology | Quadrant I | Quadrant II | Quadrant III | Quadrant IV |
|---|---|---|---|---|
| Economic Growth and GRDP per Capita | **Medan** | Labuanbatu Selatan | Padangsidimpuan | Tebing Tinggi |
| | Deli Serdang | Labuhan Batu | Binjai | **Humbang Hasundutan** |
| | Tapanuli Selatan | Labuanbatu Utara | Mandailing Natal | Tapanuli Tengah |
| | Tanjung Balai | Sibolga | Pakpak Bharat | Tapanuli Utara |
| | Padang Lawas Utara | Asahan | Samosir | Dairi |
| | Serdang Bedagai | Karo | Padang Lawas | Toba |
| | | Simalungun | Langkat | Gunungsitoli |
| | | Batu Bara | | **Nias** |
| | | | | **Nias Selatan** |
| | | Pematangsiantar | | **Nias Barat** |
| | | | | **Nias Utara** |
| HDI and GRDP per Capita | **Medan** | Tanjung Balai | Binjai | Padang Lawas |
| | Deli Serdang | Padang Lawas Utara | Tebing Tinggi | **Humbang Hasundutan** |
| | Karo | Serdang Bedagai | Padangsidimpuan | Tapanuli Tengah |
| | Simalungun | Tapanuli Selatan | Toba | Pakpak Bharat |
| | Sibolga | Asahan | Tapanuli Utara | Mandailing Natal |
| | Labuhan Batu | Batu Bara | Dairi | Langkat |
| | Labuanbatu Selatan | Pematangsiantar | Samosir | Gunungsitoli |
| | Labuanbatu Utara | | | **Nias** |
| | | | | **Nias Selatan** |
| | | | | **NiasBarat** |
| | | | | **Nias Utara** |
| HDI and Gini Coefficient | **Medan** | | Labuhan Batu | Mandailing Natal |
| | Pematangsiantar | | Deli Serdang | **Humbang Hasundutan** |
| | Tebing Tinggi | | Karo | Padang Lawas |
| | Padangsidimpuan | | Asahan | Batu Bara |
| | Binjai | | Dairi | Pakpak Bharat |
| | Gunungsitoli | | Serdang Bedagai | **Nias** |
| | Sibolga | | Labuanbatu Utara | **Nias Selatan** |
| | Tapanuli Utara | | Labuanbatu Selatan | **Nias Barat** |
| | Toba | | Tapanuli Selatan | **Nias Utara** |
| | Simalungun | | Padang Lawas Utara | Langkat |
| | Samosir | | | |
| | Tanjung Balai | | | |
| | Tapanuli Tengah | | | |

Source: Figure 1, Figure 2, and Figure 3

**DISCUSSION**
**Best Type: Medan City**

Medan is the fourth largest city in Indonesia after Jakarta, Surabaya, and Bandung, and the largest city outside of Java. It is the gateway to western Indonesia, supported by the presence of Belawan and Kualanamu International Airport (formerly Polonia), which is the second largest airport in Indonesia. Access to the seaport and airport is provide by toll roads and railways, and it

is the first city in Indonesia to have a dedicated airport train service. Thus, Medan is an important city as a centre for trade, industry, education, and business in Indonesia.

The achievement of being a "developed and fast-growing region" in accordance with the first typology, had already been achieved in previous years. Based on of data from 2001 to 2011 this city as a "developed and fast-growing region" during that period (Purba, 2013). This achievement continued in the 2010-2024 period, proving that Medan is in the highest "caste" of this classification.

In addition to economic growth and GRDP per capita, the city showed above average performance compared to the provincial in term of HDI, which increased from 2010 to 2024. The average HDI during this period reached 79.412, the highest ranking highest, far higher than the province's achievement of 70.534. It is estimated that the city's higher economic growth has contributed to this HDI achievement. As stated by the United Nations Development Program (UNDP), Bemby & Bashir (2015) note that human development can be sustainable if supported by economic growth. This means that high economic growth also supports higher human development in the city of Medan. A number of studies have show the positive influence of economic growth on the HDI. For example, research by Baeti (2013), Syofya (2018) Pamungkas, and Dewi (2022) supports the above view, that economic growth has a positive and significant effect on the HDI.

In terms of the Gini coefficient, Medan ranks highest (GR = 0.3583), above the provincial average (GR = 0.3185). Not only Medan, the Gini coefficient of other cities are also higher than those of regencies. Except for Toba Regency, which ranks seventh, seven of the eight cities rank first to eighth, including four cities above the provincial average. However, the Gini coefficients of all regencies and cities are at very low level of inequality. This high Gini coefficient may be due to regional inequality, as suggested by Myrdal, which is caused by the greater influence of the backwash effect compared to the spread effect (Hasanah, Sari & Nasution, 2020). This view aligns with Tiara (2016) who states that urban areas continue to experience higher economic growth because potential resources continue to move to developed area as centers of growth with higher economic growth.

Based on the explanation above, it is undeniable that Medan is not only the largest city but also the most developed in North Sumatra.

**Worst Type:**

**1. Humbang Hasundutan Regency**

Humbang Hasundutan Regency was split off from Tapanuli Utara Regency, which was formed on Undang-Undang Nomor 9 Tahun 2003. The classification of this regency follows the first typology based on data from 2001–2011 as a "relatively underdeveloped area" in 2004, 2006–2008, and 2010–2011, while in 2005 and 2009 it was classified as a "developing area" (Purba, 2013). Then, it was classified as a "relatively underdeveloped region" in the 2010–2024 period. This shows that the regency concerned find is difficult to escape from this lowest "caste," where economic growth, GRDP per capita, and HDI are below the provincial average.

It is estimated that this classification is related to the limited number of leading sectors, namely sectors whose contribution and growth rates are higher than the contribution and growth of the same sector at the provincial level. The results of research by Purba & Avani (2018) and Purba (2021) based on data from 2011-2016, show that only two sectors were consistently leading sectors throughout the research period, namely accommodation and food and beverage services (sector 9th) and government administration services, defense and social security services (sector 14th). Even if there are two other sectors but they are not consistent, namely agriculture, forestry, and fisheries sector (sector 1) only in 2013 while construction (sector 6th) only in 2014-2016. Therefore, it will be difficult to achieve high economic growth and GRDP per capita if it is only supported by two of the seventeen sectors classified as leading sectors. Thus, the limited number of leading sectors is predicted to contribute to its classification as a "relatively underdeveloped area" in North Sumatra.

The backwardness of this district can also be seen from its regional economic structure. Research on the sectoral economic potential of Humbang Hasundutan Regency shows that the contibution of the agricultural sector to the regency's GRDP averaged 46.99% in the 2010-2018 period, while the manufacturing industry only contributed 1.60% in the same period (Purba & Hutabarat, 2020: 68-69). This very uneven contribution illustrates that the regional economic structure is still agrarian and certainty not advanced. Sjafrizal (2014) states that "an economy is said to be advanced when the contribution of the
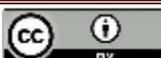
industrial sector exceeds that of the agricultural sector." Based on this view, this district will find it difficult to move up the "ranks" but will tend to remain in the classified of "relatively underdeveloped region."

Furthermore, in terms of HDI, the average is only 67,342 (ranked 25th), which is below the provincial average. With low economic growth and per capita GRDP, it will be difficult for Humbang Hasundutan Regency to approach the provincial HDI. If economic growth is positive but not of high quality and educational and health facilities are limited, it will be difficult to increase the HDI. Farhan & Sugianto (2022) state that HDI improvement will develop rapidly in areas that have access to adequate health and education facilities. This means that low economic growth and per capita GRDP, it is also impossible to boost the HDI. If per capita income is low, it will be difficult for residents to improve their quality of life through investment in education and health, and as a result, the HDI will remain low.

Based on the Gini coefficient, income distribution inequality in this district is lower than in the province. A low Gini coefficient reflects low income inequality among population groups. This aligns with the definition of income distribution inequality as defined by Maskur et al. (2023), which states that income distribution inequality as the gap between high-income and low-income residents. Therefore, it will be difficult for this regency to escape the classification of "relatively underdeveloped area" because per capita GRDP is low, even though the income distribution gap is low. If there are no breakthroughs in regional development that can drive economic growth and simultaneously increase GRDP per capita, this status will persist in the long term.

## 2. Nias, Nias Selatan, Nias Barat, and Nias Utara

Initially, there was only one regency in the Nias Islands, namely Kabupaten Nias. However, after the era of autonomy, it underwent expansion, resulting in the formation of Nias Selatan Regency in accordance with Undang-Undang Nomor 9 Tahun 2003 concerning the formation South Nias Regency, Pakpak Bharat Regency, and Humbang Hasundutan Regency in North Sumatra Province. It is then further expanded to form Nias Barat Regency, Nias Utara Regency, and Gunungsitoli City in 2008, so that the Kepulauan Nias now consist of four regencies and one city.

The typology of regencies and cities in the Kepulauan Nias based on data from 2001-2011 shows that Nias Regency was classified as a "developing area" in 2001-2003 and 2008-2011, while in 2005-2007 it was classified as a "relatively underdeveloped area." Then, Nias Selatan Regency, which was a "developing area" in 2004 and 2005-2011, was downgraded to a "relatively underdeveloped area". This shows that the regency of origin (kabupaten induk) has performed better in the last four years compared to Nias Selatan Regency. Conversely, the new regencies, Nias Utara, was classified as a "developing area" in 2009-2011, and Nias Barat was "developing area" in 2009 and 2011, but in 2010, but ini 2010 it was downgraded to "relatively underdeveloped area" (Purba, 2013). In the 2010-2024 period, all four regencies were classified as "relatively underdeveloped areas," indicating that it is difficult for these regencies to escape this status.

The results of this typology are thought to be related to the development inequality that occurs in the Kepulauan Nias region. The results of research by Purba & Novita (2018) based on data from 2001-2016 show that the Williamson inequality index is relatively small, ranging from 0.111 and 0.134 and tends to increase, with the highest index occuring from 2014 to 2016. Based on this index, the development inequality that occurs is still relatively low (Purba, 2021), which can be interpreted as there is almost no intensive development that distinguishes one regencies from another city or regencies. Based on the average GRDP per capita for the 2010-204 period, except for Gunungsitoli, the other four districts are classified as low (ranked 29, 31, 32, and 33) with no significant differences between them. In other words, the degree of development inequality in the Kepulauan Nias is very low, but at a low per capita income level.

Similarly, Daeli (2018), who studied development inequality in regencies and cities, stated that Kuznets' "inverted U" hypothesis does not apply in the Kepulauan Nias (Purba & Siregar, 2020). This means that development in this archipelago has had little effect on economic inequality between regions, with the inequality index between the five regions being very low.

Furthermore, research by Laia (2016), which examined the sectoral potential of sub-districts in Nias Selatan Regency, stated that the regency's economy could develop, supported by the regency's own economic potential. Each sub-district has certain sectors that contribute the most to its regional income. Similarly, Gulo & Purba (2024), who examined the sectoral potential in the same regency based on data from 2015-2023 data,

showed that the agricultural sector is still the dominant sector, contributing significantly to the regional economy, but its growth rate has declined over the years. While the industrial sector shows relatively stable growth, the services sector shows rapid growth. Nevertheless, economic structure transformation is still very slow. The agricultural sector continues to play an important role in the formation of GRDP.

The research result mentioned above indicate that the four districts in the Kepulauan Nias are in Quadrant IV and each has not been able to match, let alone exceed, provincial data in terms of economic growth, per capita GRDP, and HDI, even though the Gini coefficient is relatively low, with Nias Regency ranked 23rd, Nias Utara ranked 26th, Nias Selatan ranked 28th, and Nias Barat ranked 30th. In terms of GRDP per capita, they are far below the provincial average. In other words, a low Gini coefficient only indicates that income distribution inequality is relatively low. However, when looking at the Gini coefficient and per capita GRDP rankings, there is no trade-off between the two indicators. This means that even if efforts are made to reduce the Gini coefficient, per capita GRDP will remain low. Coversely, if per capita GRDP is increase, it does not necessarily guarantee that the Gini coefficient will remain low.

## CONCLUSION

Based on the typology and mapping, Medan is the only city that consistently rank in Quadrant I, indicating that it is the most advanced city among all cities and regencies in North Sumatra. Medan rank is in the best category, with economic growth, per capita GRDP, HDI, and Gini coefficient above the provincial average. Conversely, Humbang Hasundutan, Nias, Nias Selatan, Nias Utara, and Nias Barat are in the worst category, where economic growth, per capita GRDP, HDI, and Gini coefficient are lower than the North Sumatra provincial average.

Regions in in the worst category require special attention from local governments to developed their areas so that they can catch up with other regions ini North Sumatra. In addition, researchers interested in this topic can use panel data to determine the direct and indirect effects of economic growth, per capita GRDP, HDI, and Gini coefficient on the categories of regions in North Sumatra.

## REFERENCES

Agung, F., Karina, D., & Utami, A. F. (2025). Analysis of Economic Potential in Southwest East Java Province Using LQ, Shiftshare, and Klassen Typology Analysis Methods. 4(3), 1303–1320.

Baeti, N. (2013). Pengaruh Pengangguran, Pertumbuhan Ekonomi, Dan Pengeluaran Pemerintah Terhadap Pembangunan Manusia Kabupaten/Kota Di Provinsi Jawa Tengah Tahun 2007-2011. Economics Development Analysis Journal, 2(3), 85–98. http://journal.unnes.ac.id/sju/index.php/edaj

Bangun, R. H. (2020). Determinan Peningkatan Pembangunan Manusia Di Sumatera Utara. Jurnal Ilmu Administrasi Publik, 8(1), 32–39. https://doi.org/10.31289/publika.v8i1.3066

Basit, A. A. (2024). Unlocking R Evenue P Otential : A K Lassen T Ypology A Nalysis Of R Egional T Ax P Olicies In G Arut R Egency , I Ndonesia. 2022, 1097–1107.

BPS. (2010). Gini Ratio Kabupaten Rembang Tahun 2009. Badan Pusat Statistik Kabupaten Rembang dan Bappeda Kabupaten Rembang.

BPS. (2024). Indeks Pembangunan Manusia 2023 (Vol. 18). Jakarta: Badan Pusat Statistik.

Bemby, B. & Bashir, A.S. (2015). Analisis Tipologi dan Hubungan Antara Indeks Pembangunan Manusia dan Pertumbuhan Ekonomi di Provinsi Sumatera Selatan. Jurnal Ekonomi Pembangunan, 13(1), 21-36.

Elpisah, E., Suarlin, S., & Yahya, M. (2021). Klassen Typology and Williamson Index to Measure Macroeconomics in South Sulawesi Province. 1(1), 37–49.

Farhan, M., & Sugianto. (2022). Analisis Faktor-Faktor Yang Mempengaruhi Tingkat Ketimpangan Pendapatan Di Pulau Jawa. Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan, 1(4), 243–258. https://doi.org/10.54443/sibatik.v1i4.29

Gulo, F. M., & Purba, E. F. (2024). Analisis Potensi Sektoral Ekonomi Kabupaten Nias Selatan Tahun 2015-2023. Jurnal Ekonomi, Manajemen, Akuntansi, 3(6), 2685–2696.

Harjanti, D. T., Apriliyana, M. I., & Arini, A. C. (2021). Analysis Of Regional Leading
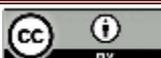
Sector Through Location Quotient Approach, Shift Share Analysis, And Klassen Typology ( Case Study : Sanggau Regency , West Kalimantan Province ). 21(2).

Hasanah, U., Sari, W. I., & Nasution, D. P. (2020). Disparitas Pendapatan Antar Kecamatan Di Kota Medan. Jurnal Kajian Ekonomi Dan Kebijakan Publik, 5(1).

Kolluru, M., & Semenenko, T. (2021). Income Inequalities In EU Countries: Gini. 9(1), 125–142. https://doi.org/10.2478/eoik-2021-0007

Laila, H. S. (2016). Analisis Potensi Wilayah Kecamatan di Kabupaten Nias Selatan. http://repositori.usu.ac.id/handle/1234567 89/41446

Maipita, I. (2014). Mengukur Kemiskinan & Distribusi Pendapatan. UPP STIM YKPN.Masbiran, V. U. K. (2019). Analisis Tipologi Daerah Berdasarkan Indikator Fundamental Ekonomi. Jurnal Kebijakan Pembangunan, 14(2), 195–211.

Maskur, S. R. R., et.al. (2023). Pengaruh Ketimpangan Pendapatan, pengangguran dan Pembangunan Manusia Terhadap Kemiskinan di Indonesia Periode 2017-2021. Jurnal Progres Ekonomi Pembangunan (JPEP). 8(1), 82-95. https://ojs.uho.ac.id/index.php/JPEP

Maulana, I., Salsabila, Z., & Dermawan, D. (2022). Pengaruh Penduduk Miskin, Tingkat Pengangguran Dan PDRB Terhadap IPM Di Wilayah Provinsi Banten Pada Tahun 2019–2021. Jurnal Ekuilnomi, 4(2), 164-170

Napitupulu, D. S. Br, Nababan, T. S., & Purba, E.F. (2025). Pengaruh Pertumbuhan Ekonomi, RLS, dan UHH Saat Lahir Terhadap IPM di Indonesia Tahun 2010-2023. Journal of Innovative and Creativity. 5(3), 25973-25982. https://joecy.org/index.php/joecy/article/view/3866

Nasution, M. (2019). Faktor Determinan Indeks Pembangunan Manusia di Indonesia. Jurnal Budget. 4(1), 121-143.

Narulita, L., Asmara, K., & Nisa, F. L. (2025). Evaluasi Dampak Infrastruktur Jalan Tol Terhadap Pertumbuhan Ekonomi Di Mojokerto Dengan Pendekatan Synthetic Control Method (SCM). Jurnal Ekuilnomi, 7(3), 802-810

Nihayah, D. M., Mafruhah, I., & Hakim, L. (n.d.). Application of klassen typology in the pattern of environmental carrying capacity and its role in regional economic development Application of klassen typology in the pattern of environmental carrying capacity and its role in regional economic development. https://doi.org/10.1088/1755-1315/1180/1/012052

Pamungkas, B. D. & Dewi, N. T. (2022). Analisis Determinan yang Mempengaruhi Indeks Pembangunan Manusia (IPM) Kabupaten Sumbawa. Jurnal Ekonomi & Bisnis. 10(3), 293-303.

Panjaitan, P. D., Purba, E., Damanik, D., & Siahaan, R. C. (2025). Analisis Konvergensi Pertumbuhan Ekonomi Di Kawasan Sisi Batas Labuhan. Jurnal Ekuilnomi, 7(2), 600-607

Pakpahan, E., & Damanik, D. (2025). Pengaruh Sektor Basis Terhadap Pendapatan Asli Daerah (PAD) Dan Laju Pertumbuhan PDRB Di Kota Medan. Jurnal Ekuilnomi, 7(2), 411-420

Pardede, N. W. (2021). Analisis Faktor-Faktor yang Mempengaruhi Indeks Pembangunan Manusia (IPM) di Sumatera Utara. https://repositori.usu.ac.id/handle/123456 789/32317 diakses pada 21 Agustus 2024.

Purba, E F. (2021). Ekonomi Regional. Teori dan Aplikasi. Medan: LPPM UHN Press.

Purba, E. F. & Siregar, A. H. (2020). Ketimpangan Distribusi Pendapatan Antarwilayah di Provinsi Sumatera Utara Tahun 2010-2016. Visi Ilmu Sosial dan Humaniora (VISH). 1(01) Juni, 1-10. https://ejournal.uhn.ac.id/index-php/humaniora/article/view/19

Purba, E. F. & Hutabarat, E. S. (2020). Analisis Potensi Ekonomi Sektoral Kabupaten Humbang Hasundutan Tahun 2010-2018. Visi Ilmu Sosial dan Humaniora (VISH). 01(02) Desember, 59-75. https://ejournal.uhn.ac.id/index-php/humaniora/article/view/64

Purba, E. F. & Avani (2018). Analisis Sektor Unggulan Tujuh Kabupaten di Kawasan strategis Nasional Danau Toba Periode 2010 – 2016. Visi Majalah Ilmiah Universitas HKBP Nommensen, 26(2), Juni, 3521 – 3532.

Purba, E. F. dan Novita, L. (2019). Ketimpangan Pembangunan Provinsi Sumatera Utara Sejak Era Otonomi Hingga Tahun Pertama Era Masyarakat Ekonomi
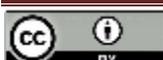
ASEAN (MEA): Analisis Antar Wilayah. Visi Majalah Ilmiah Universitas HKBPNommensen. 27(2), Juni, 4006-4024.

Purba, E.F. (2013). Tipe Pertumbuhan Wilayah Pantai Timur, Dataran Tinggi, Pantai Barat dan Nias Tahun 2001-2011. Jurnal Ekonomi dan Bisnis Nommensen, IV(2), Juli, 1-12.

Rasendriya, C. et.al. (2025). Pengaruh Sosial Ekonomi Terhadap Ketimpangan Pendapatan di Provinsi Bali Tahun 2019-2023. Socius: Jurnal Penelitian Ilmu-Ilmu Sosial, 02(12), June, 437-445. DOI: https://doi.org/10.5281/zenodo.15683326

Riani, A. O., & Suseno, D. A. (2025). Pengaruh Infrastruktur, Teknologi, Dan Tenaga Kerja Terhadap PDRB Per Kapita Dan Ketimpangan Pendapatan Pulau Jawa. Jurnal Ekuilnomi, 7(1), 230-239

Reku. (2025). Apa itu Indeks Gini dan Mengapa Penting untuk Dipahami? https://reku.id/campus/apa-itu-indeks-gini, 1-4 diakses 25 Nopember 2025.

Ruwandari, N. D., & Suharlina, H. (2021). Classification Of Potential Agricultural Sub Sector In ( Lq ) Approach And Klassen Typology. 5(10), 157–169.

Sembiring, H. Y., Purba, E., & Purba, D. G. (2024). Pengaruh Komponen Indeks Pembangunan Manusia Terhadap Pertumbuhan Ekonomi Di Kabupaten Samosir. Jurnal Ekuilnomi, 6(1), 103-113

Simamora, D.P. et.al. (2024). Analisis Faktor-Faktor yang Mempengaruhi Ketimpangan Distribusi Pendapatan di Sumatera Utara. Jurnal Penelitian Ilmiah Multidisiplin. 8(10), Oktober, 502-510.

Sari, I. P., Riyono, B., & Supandi, A. (2019). Indeks Pembangunan Manusis di Madura: Analisis Tipologi Klassen. Journal of Applied Business and Economics (JABE). 6(2), Desember, 82-95.

Sibatuara, T. C., & Hutabarat, R. E. (2025). Kausalitas Antara Pertumbuhan Ekonomi Dengan Ketimpangan Pendapatan Di Indonesia Dan Thailand: Studi Komparatif. Jurnal Ekuilnomi, 7(2), 295-301

Siswati, E. & Hermawati, D.T. (2018). Analisis Indeks Pembangunan Manusia (IPM) Kabupaten Bojonegoro. 18(2), Desember, 93-114.

Sjafrizal. (2018). Analisis ekonomi regional dan penerapannya di Indonesia. Rajawali Press.

Sjafrizal. (2014). Perencanaan pembangunan daerah dalam era otonomi. PT Rajagrafindo Persada.

Sukirno, S. (2006). Ekonomi Pembangunan Proses, Masalah, dan Dasar Kebijakan. Kencana Prempedia Group.

Syofya, H. (2018). Pengaruh Tingkat Kemiskinan dan Pertumbuhan Ekonomi terhadap Indeks Pembangunan Manusia Indonesia. Jurnal Ilmiah Ekonomi dan Bisnis. 15(2), September, 177-185.

Tiara, S. (2016). Analisis Ketimpangan Distribusi Pendapatan di Propinsi Sumatera Utara. EKONOMIWAN. Jurnal Ilmu Ekonomi dan Studi Pembangunan, 16(1), 1-16. https://jurnal.umsu.ac.id/index.php/ekawan/article/view/1013/pdf_41

Todaro, M. P., & Smith, S. C. (2012). The Developed and Developing World Income.

Wikipedia. (2025). Koefisien Gini. https://id.wikipedia.org/wiki/Koefisien_Gini diakses 25 Nopember 2025.

Windari, S., & Imaningsih, N. (2025). Analisis Pengaruh Tingkat Pengangguran Terbuka, Penanaman Modal Dalam Negeri, Inflasi, dan Laju Pertumbuhan Ekonomi Terhadap Tingkat Kemiskinan di Provinsi Sumatera Utara. Jurnal Ekuilnomi, 7(3), 833-843

World Bank Group. (2015). Meluasnya Ketimpangan di Indonesia. https://www.worldbank.org/in/news/feature/2015/12/08/indonesia-rising-divide