

Economic Development Patterns and Regional Inequality in Districts and Cities of West Sumatra Province

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Abstract

Uneven regional development may lead to disparities in economic performance across regions. West Sumatra Province, which consists of seven cities and twelve regencies, exhibits diverse economic, demographic, and natural resource characteristics that contribute to variations in regional development. This study aims to analyze patterns of economic development and the level of regional inequality among districts and cities in West Sumatra Province during the period 2011–2019. The analysis employs the Klassen typology to classify regional economic growth patterns and the Williamson Index to measure the degree of regional inequality. Secondary data on Gross Regional Domestic Product (GRDP) and GRDP per capita were obtained from the Central Bureau of Statistics. The results of the Klassen typology analysis indicate that most cities in West Sumatra Province fall into the category of advanced and rapidly growing regions, while several regencies are classified as developed but depressed, fast-growing, or relatively lagging regions. Furthermore, the Williamson Index results show that regional inequality in West Sumatra Province during the study period remains at a low level and tends to approach zero, suggesting that economic growth and development across regions are relatively even.

Keywords: *regional inequality, economic development patterns, Klassen typology, Williamson Index, West Sumatra Province*

1. INTRODUCTION

Regional development is an ongoing process that aims to enhance the utilization of available resources in order to promote economic growth and improve societal welfare. The success of regional development is commonly measured by the rate of economic growth, which is reflected in changes or increases in Gross Regional Domestic Product (GRDP). Higher GRDP growth is generally associated with improvements in community welfare and living standards (Raafi'i et al., 2018).

Economic development in Indonesia encompasses all aspects of community life, both in rural and urban areas, with the primary objective of improving and elevating the standard of living of the population. Development efforts are directed toward expanding economic sectors by optimally utilizing regional potential, including natural resources and human resources (Prawidya, 2016). However, economic development does not always occur evenly across regions.

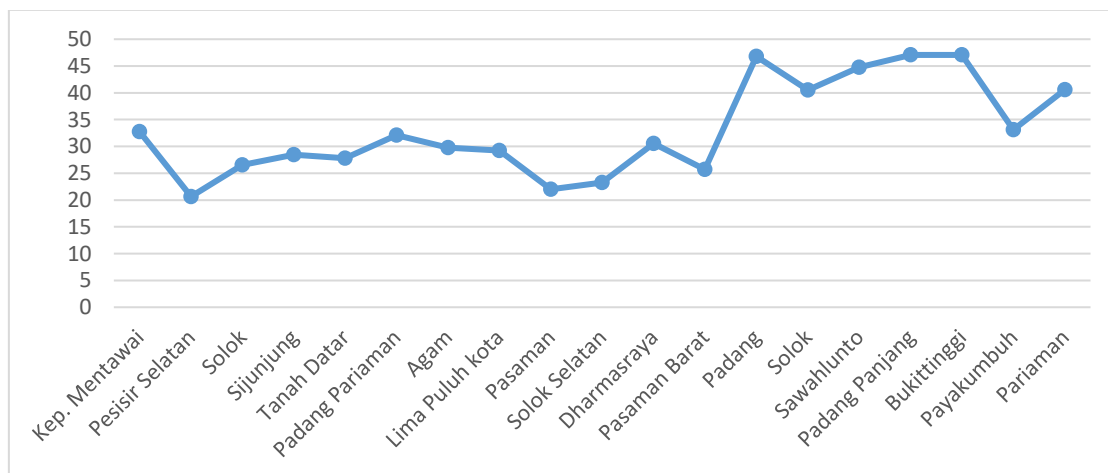
Uneven or spatially concentrated economic development often emerges when economic activities and investments are clustered in certain growth centers. Such concentration tends to accelerate development in core regions while limiting spillover effects to surrounding areas. As a result,

some regions experience rapid economic growth, whereas others develop at a slower pace (Jhingan, 2003). According to Sari et al. (2019), high levels of regional inequality arise when economic and development activities are concentrated in only a few regions. Underdeveloped regions often exhibit strong dependence on more advanced areas due to limited local resources and economic capacity (Adisasmita, 2013).

Economic inequality is one of the most frequently discussed forms of inequality in regional development studies. It is commonly reflected in disparities in per capita income, employment opportunities, and access to economic resources across regions (Yeniwati, 2013). In an economic context, inequality represents a structural condition that arises from differences in regional development levels, resulting in unequal growth capacities and development outcomes among regions (Mandei, 2020).

Regional inequality remains a critical challenge, particularly when certain areas achieve substantial economic growth while others lag behind due to resource constraints and limited investment inflows. Investors tend to favor urban areas with better infrastructure, market access, and institutional support. Furthermore, imbalances in fiscal redistribution from the central government to subnational regions may also contribute to disparities in regional development (Kuncoro, 2004).

West Sumatra Province consists of seven cities and twelve regencies with diverse economic structures, demographic conditions, and natural resource endowments. These differences contribute to variations in economic performance and development levels across districts and cities. In 2019, high GRDP per capita levels in West Sumatra Province were concentrated in only a few cities, namely Padang, Padang Panjang, and Bukittinggi, while many regencies exhibited relatively lower income levels. This condition highlights the presence of regional development disparities and underscores the importance of examining patterns of economic development and the degree of regional inequality among districts and cities in West Sumatra Province.



Source : (Badan Pusat Statistik, 2019)

Figure 1. GRDP Per Capita of districts/cities of West Sumatra Province in 2019

2. RESEARCH METHODS

This study employs a quantitative descriptive approach to analyze patterns of economic development and regional inequality across districts and cities in West Sumatra Province. The analysis utilizes two main analytical tools, namely Klassen typology and the Williamson Index, applied to secondary time-series data covering the period 2011–2019.

Descriptive quantitative analysis is used to systematically present and interpret regional economic conditions through tables, graphs, and diagrams. The data used in this study consist of secondary data on Gross Regional Domestic Product (GRDP) and GRDP per capita, obtained primarily from publications of the Central Bureau of Statistics (Badan Pusat Statistik/BPS) of West Sumatra Province. Additional supporting information was collected from academic literature, scientific journals, official reports, and relevant previous studies.

2.1. Klassen Typology Analysis

Klassen typology analysis is applied to classify districts and cities in West Sumatra Province based on their economic growth performance and per capita income levels (Muta'ali, 2015). This method compares regional economic indicators with provincial averages to identify relative development positions among regions.

Based on the Klassen typology framework, regions are classified into four categories:

- **Advanced and Fast-Growing Regions**
Regions that exhibit both economic growth rates and GRDP per capita levels higher than the provincial average.
- **Developed but Depressed Regions**
Regions with GRDP per capita above the provincial average but economic growth rates below the provincial average.
- **Fast-Growing Regions**
Regions that experience economic growth rates higher than the provincial average but have GRDP per capita levels below the provincial average.
- **Relatively Underdeveloped Regions**
Regions characterized by both economic growth rates and GRDP per capita levels lower than the provincial average.

This classification enables the identification of spatial patterns of economic development and highlights disparities in regional economic performance.

2.2. Williamson Index Analysis

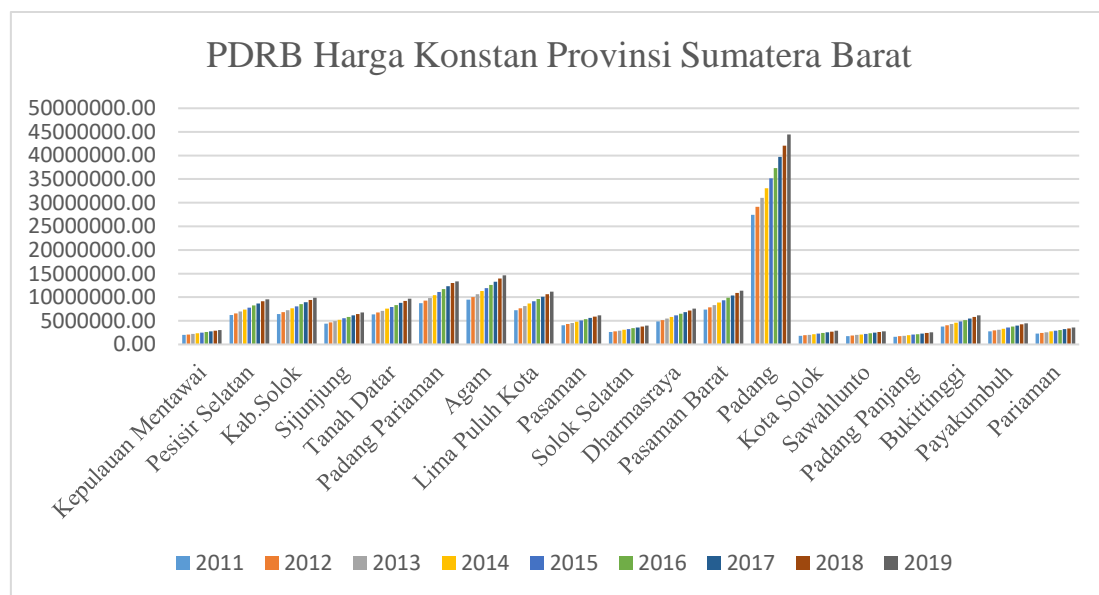
Regional inequality is measured using the Williamson Index, which is widely applied to assess disparities in economic development across regions. The Williamson Index allows for comparison of inequality levels over time and facilitates the analysis of trends in regional disparities.

In this study, the Williamson Index is calculated using GRDP per capita data of districts and cities in West Sumatra Province for the period 2011–2019. An index value approaching zero indicates lower levels of regional inequality, whereas higher values reflect greater disparities in economic development. The use of this index provides an empirical basis for evaluating the extent and dynamics of regional inequality in West Sumatra Province during the study period.

3. RESULTS AND DISCUSSION

3.1. Regional Economic Structure of West Sumatra Province

Economic growth in West Sumatra Province during the period 2011–2019 was predominantly driven by the agriculture, forestry, and fisheries sector, which consistently contributed more than 20 percent to the provincial Gross Regional Domestic Product (GRDP). Within this sector, the food crops and plantation subsectors accounted for the largest share, contributing more than 6 percent on average throughout the study period. This indicates the continued importance of primary-sector activities in shaping the regional economic structure of West Sumatra.



Source : (Badan Pusat Statistik Sumatera Barat, 2020)

Figure 2. GRDP at Constant Prices for West Sumatra Province 2011-2019

In terms of spatial contribution to GRDP, significant differences were observed across districts and cities. Among the nineteen administrative regions in West Sumatra Province, Padang City emerged as the largest contributor to provincial GRDP, accounting for more than 25 percent of total output on average during 2011–2019. This reflects Padang City's role as the main economic center, supported by relatively advanced infrastructure, diversified economic activities, and its function as a regional service hub.

Conversely, Padang Panjang City recorded the smallest contribution to provincial GRDP, with an average share of approximately 1.40 percent over the same period. This relatively low contribution is associated with the city's smaller economic base and limited scale of productive activities. The contrast between Padang City and Padang Panjang City highlights the uneven spatial distribution of economic activities within West Sumatra Province and underscores the presence of structural disparities among districts and cities.

Table 1. GRDP per capita of districts/cities in West Sumatra Province in 2011-2019

No	District/City	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Kepulauan									
	Mentawai	113.3	111.3	109.9	108.7	107.6	106.5	105.5	104.4	103.4
2	Pesisir Selatan	63.3	63.3	63.5	63.7	64.2	64.4	64.8	65.1	65.2
3	Kab.Solok	80.7	81.2	81.3	81.7	82.2	82.5	83.0	83.4	83.8
4	Sijunjung	93.8	93.1	92.7	92.3	92.0	91.5	91.0	90.5	89.9
5	Tanah Datar	82.8	83.1	83.8	84.5	85.3	85.8	86.5	87.1	87.9
6	Padang Pariaman	97.8	98.1	98.8	99.6	100.9	101.6	102.5	103.4	101.4
7	Agam	90.6	90.9	91.4	91.8	92.3	92.8	93.3	93.8	94.0
8	Lima Puluh Kota	90.2	90.3	90.7	91.0	91.4	91.6	91.8	92.1	92.4
9	Pasaman	69.7	69.6	69.5	69.6	69.7	69.5	69.5	69.5	69.4
10	Solok Selatan	77.7	77.0	76.5	76.1	75.6	75.0	74.4	73.9	73.5
11	Dharmasraya	107.8	105.9	104.5	103.3	102.1	100.5	99.2	97.9	96.5
12	Pasaman Barat	86.8	86.0	85.5	84.8	84.3	83.6	82.9	82.3	81.3
13	Padang	142.5	142.0	142.5	143.0	144.2	144.9	146.0	147.1	147.7
14	Kota Solok	131.1	130.7	130.0	129.3	129.0	128.7	128.4	128.2	128.0
15	Sawahlunto	136.9	136.0	136.6	137.1	138.2	139.1	139.9	140.8	141.3
16	Padang Panjang	150.3	149.6	149.4	149.6	150.1	150.1	150.5	151.4	151.9
17	Bukittinggi	148.1	147.6	147.1	146.7	146.9	147.2	147.5	148.1	148.6
18	Payakumbuh	102.3	102.2	102.2	102.4	102.7	103.0	103.5	104.0	104.6
19	Pariaman	126.2	126.0	125.9	126.2	126.6	126.9	127.4	127.8	128.2

Source : analysis result

The development of Gross Regional Domestic Product (GRDP) per capita reflects the average income level of a region and serves as a key indicator for assessing regional economic performance and population welfare. Differences in GRDP per capita across districts and cities indicate variations in economic structure, productivity, and development capacity. The distribution of GRDP per capita across districts and cities in West Sumatra Province during 2011–2019 is presented in Table 1.

Table 1 shows the development of Gross Regional Domestic Product (GRDP) per capita across districts and cities in West Sumatra Province during the period 2011–2019. Overall, the table reveals persistent disparities in per capita income levels between urban and rural areas, indicating uneven regional economic development within the province.

Urban areas consistently recorded higher GRDP per capita values compared to most regencies throughout the study period. Padang Panjang City exhibited the highest GRDP per capita, increasing from 150.3 in 2011 to 151.9 in 2019, reflecting strong and stable economic performance. Similarly, Bukittinggi, Padang, and Sawahlunto maintained relatively high income levels, reinforcing the role of cities as primary centers of economic activity, services, and trade in West Sumatra Province.

In contrast, several regencies showed significantly lower GRDP per capita values. Pesisir Selatan, Pasaman, and Solok Selatan consistently recorded the lowest levels over the observation period. Although some regencies such as Agam, Tanah Datar, and Lima Puluh Kota experienced gradual increases in GRDP per capita, their income levels remained substantially below those of major cities. This pattern suggests a continued dependence on primary-sector activities and limited structural transformation in these areas.

A different trend is observed in Kepulauan Mentawai and Dharmasraya, where GRDP per capita declined steadily during the study period. This downward trend may indicate structural constraints, geographical limitations, or weaker integration with provincial economic growth centers.

Overall, the table highlights a clear urban–rural divide in income levels, where cities benefit more from economic growth than regencies. Although GRDP per capita generally increased over time in many regions, the relative gaps between districts and cities persisted. These findings confirm the existence of regional disparities in West Sumatra Province and provide a strong empirical basis for further classifying regional development patterns using the Klassen typology and for measuring inequality dynamics using the Williamson Index.

Development of the Gross Regional Domestic Product (GRDP) per capita is an illustration of the average income of the people of a region and is one of the indicators in measuring the welfare level of the population of a region. The percentage of GRDP per capita of districts/cities in West Sumatra Province in 2011-2019 can be seen in the table below.

Table 2. Results of Klassen Typology Analysis of West Sumatra Province 2011-2019

LPE (r)	GRDP per Capita (Y)	
	Yi>Y	Yi<Y
ri>r	Fast Developed and Developing Region : <ul style="list-style-type: none"> • Padang • Kota Solok • Sawahlunto • Padang Panjang • Bukittinggi • Payakumbuh • Pariaman • Dharmasraya 	Fast Developing Region : <ul style="list-style-type: none"> • Lima Puluh Kota • Pasaman Barat
ri<r	Developed But Depressed Region : <ul style="list-style-type: none"> • Kepulauan Mentawai • Padang Pariaman 	Relatively Disadvantaged Region : <ul style="list-style-type: none"> • Pesisir Selatan • Kab.Solok • Sijunjung • Tanah Datar • Pasaman • Solok Selatan

Source : analysis result

Table 2 presents the results of the Klassen typology analysis for districts and cities in West Sumatra Province during the period 2011–2019. The classification combines regional economic growth rates (LPE) and GRDP per capita to identify disparities in development performance across regions.

The fast developed and developing regions (high growth and high GRDP per capita) are dominated by urban areas, including Padang, Kota Solok, Sawahlunto, Padang Panjang, Bukittinggi, Payakumbuh, and Pariaman, as well as Dharmasraya Regency. These regions exhibit economic growth rates and income levels above the provincial average, indicating their role as primary growth centers. The dominance of cities in this quadrant reflects the concentration of economic activities, services, and infrastructure in urban areas, which enables faster economic expansion and higher income levels.

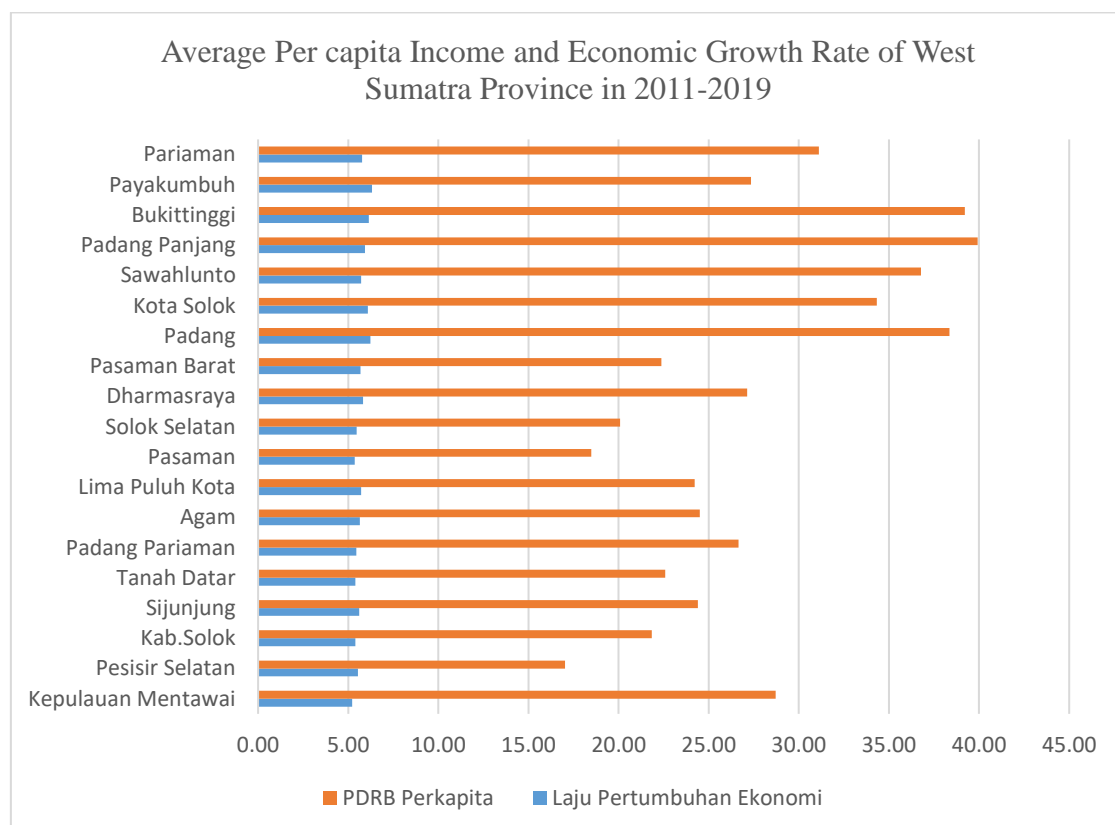
The fast-developing regions (high growth but low GRDP per capita) consist of Lima Puluh Kota and Pasaman Barat. These regions demonstrate relatively high economic growth rates but have not yet achieved income levels comparable to the provincial average. This condition suggests that

economic expansion in these areas is driven mainly by primary or resource-based sectors, with limited value-added activities. Without structural transformation, the sustainability of growth in these regions may remain vulnerable.

The developed but depressed regions (low growth but high GRDP per capita), represented by Kepulauan Mentawai and Padang Pariaman, indicate areas that possess relatively high income levels but experience slower economic growth. This pattern may reflect structural stagnation, geographical constraints, or limited diversification of economic activities, which reduce growth momentum despite relatively favorable income conditions.

Finally, the relatively disadvantaged regions (low growth and low GRDP per capita) include Pesisir Selatan, Solok Regency, Sijunjung, Tanah Datar, Pasaman, and Solok Selatan. These regions face dual challenges of limited economic growth and low income levels, suggesting persistent structural constraints, weaker connectivity, and a high dependence on traditional economic sectors. Their position in this quadrant highlights the need for targeted regional development policies to reduce spatial inequality.

Overall, the Klassen typology analysis reveals a clear spatial polarization of economic development in West Sumatra Province, with urban areas functioning as growth poles while several regencies remain relatively lagging. These findings provide strong empirical evidence of uneven regional development and form the basis for further assessment of regional inequality using the Williamson Index.



Source : analysis result

Figure 3. Average Per capita Income and Economic Growth Rate of West Sumatra Province in 2011-2019

Figure 3 illustrates the relationship between average GRDP per capita and economic growth rates across districts and cities in West Sumatra Province during the period 2011–2019. The figure reveals a non-linear relationship between income levels and growth performance, indicating that regions with higher income levels do not always experience higher economic growth, and vice versa.

Several urban areas, such as Padang Panjang, Bukittinggi, Padang, Sawahlunto, and Kota Solok, exhibit high average GRDP per capita accompanied by moderate economic growth rates. This pattern suggests that these cities have reached a relatively mature stage of economic development, where income levels are high but growth rates tend to stabilize. Their economic structures are dominated by services, trade, and urban-based activities that generate stable income but limited acceleration in growth.

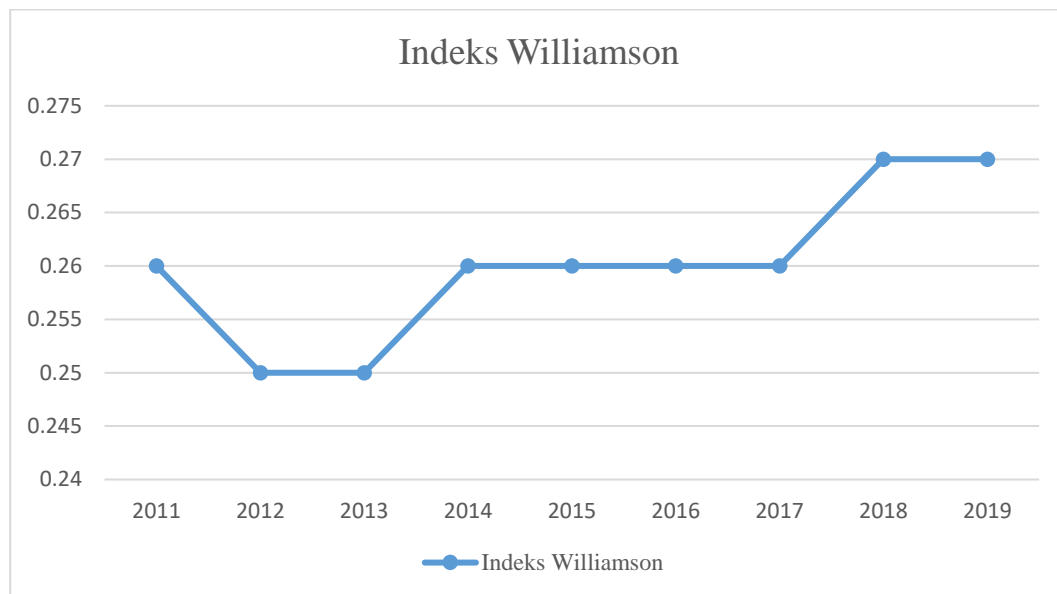
In contrast, regions such as Lima Puluh Kota, Pasaman Barat, and Dharmasraya show relatively higher economic growth rates despite having lower average per capita incomes. This pattern reflects the traits of emerging or catching-up regions, where economic growth mainly depends on primary sectors or resource-based activities. Although growth rates are fairly high, the limited value-added structure restricts the rise in income levels.

Meanwhile, Pesisir Selatan, Solok Selatan, and Kepulauan Mentawai show both low per capita income and low economic growth rates, indicating persistent structural disadvantages. These regions face multiple development constraints, including limited accessibility, weaker economic diversification, and lower integration with provincial growth centers.

Overall, the figure confirms the existence of spatial economic polarization in West Sumatra Province. Regions with high income are not necessarily the fastest growing, while regions experiencing faster growth have not yet translated that growth into higher income levels. This divergence underscores the relevance of the Klassen typology classification and supports the subsequent findings on regional inequality measured by the Williamson Index.

3.3. Level of Inequality District/City of West Sumatra Province

Figure 4 presents the results of the Williamson Index analysis for West Sumatra Province during the period 2011–2019. Overall, the index values range between 0.25 and 0.27, indicating that regional inequality in West Sumatra remains in the low category throughout the observation period. Values closer to zero suggest a relatively even distribution of regional income, while higher values reflect greater disparity.



Source : analysis result

Figure 4. Results of Analysis of the Williamson Index of West Sumatra Province in 2011-2019

During the early period, the Williamson Index declined from 0.26 in 2011 to 0.25 in 2012–2013, suggesting a temporary reduction in regional inequality. This decline indicates a short phase of more balanced regional economic performance, possibly influenced by more uniform growth across districts and cities. However, beginning in 2014, the index increased and remained relatively stable at 0.26 until 2017, signaling a gradual widening of regional disparities.

A more noticeable increase occurred in 2018–2019, when the Williamson Index rose to 0.27. Although this value still falls within the low inequality category, the upward trend indicates a strengthening concentration of economic growth in certain regions, particularly urban centers with higher GRDP per capita. This pattern suggests that recent economic growth has increasingly favored already developed areas, while less developed regions have not experienced proportional gains.

Despite the relatively low overall level of inequality, the upward trend in the latter years highlights the presence of latent regional disparities. When interpreted together with the results of the Klassen typology, the Williamson Index confirms that urban areas function as dominant growth poles, while several regencies continue to face structural limitations. Therefore, even modest increases in inequality warrant policy attention to prevent further spatial polarization in regional development.

4. Conclusions

This study shows that uneven regional development continues to be a key characteristic of West Sumatra Province, caused by differences in economic structure, demographic conditions, and resource endowments across districts and cities. The Klassen typology analysis highlights a clear spatial differentiation of development patterns. Urban areas lead the fast-growing and developing regions, emphasizing their role as provincial growth centers, while several regencies fall into categories such as fast developing, developed but depressed, and relatively disadvantaged, reflecting different stages of economic transition and structural challenges.

The results of the Williamson Index analysis indicate that regional inequality in West Sumatra during the period 2011–2019 remained at a low level, as reflected by index values close to zero. However, the observed upward trend in recent years suggests the emergence of latent disparities, particularly as economic growth becomes increasingly concentrated in urban areas. This finding implies that relatively balanced regional development does not necessarily eliminate the risk of future inequality.

The persistence of primary-sector dominance, especially in agriculture, forestry, and fisheries, limits value-added growth and contributes to uneven income distribution across regions. Furthermore, structural challenges such as limited economic diversification, high unemployment and poverty, and unequal access to essential public services, including health and education, continue to constrain inclusive regional development.

Overall, the findings highlight the need for region-specific development strategies that promote economic diversification, strengthen urban–rural linkages, and improve access to basic services in lagging regions. Such approaches are essential to ensure more balanced and sustainable regional development in West Sumatra Province.

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