

Analysis of The Effect of Population Density, Unemployment, Minimum Wage, and Human Development Index (IPM) on Criminality in North Sumatra

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Abstract

The study aims to analyze the effect of population density, unemployment, minimum wage, inequality and human development index on crime in North Sumatra province. The type of research used in this study was descriptive research using quantitative research methods. The type of data used in this research is secondary data. In this study, Microsoft Excel Home and Student 2021 and Eviews 12 Student were used for data processing and hypothesis testing. The result of this study is that population density and Human Development Index has a positive and significant effect on crime. Unemployment has a positive and insignificant effect on crime. The Minimum Wage have a negative and insignificant effect on crime, and then Population Density, Unemployment, Minimum Wage, and Human Development Index together have an effect on crime in North Sumatra Province.

Keywords population density, unemployment, minimum wage, human development index, and criminality

INTRODUCTION

Crime or crime is a human act that violates the laws, regulations, norms and values that apply in society. Crimes can be committed individually or in groups, either intentionally or unintentionally in order to fulfill their needs and desires. Crime has a negative impact both physically and psychologically for the aggrieved party. Physically it can threaten the lives of the victims then psychologically it can cause fear, loss of sense of security, an atmosphere that is not conducive, which causes damage to the community's life order and even worse, crimes can damage the existence of the nation and state such as the loss of people's trust in their own government or loss of sense trust other nations and countries to this nation itself.

Crime is a big problem that is always faced and difficult to avoid in various countries, both developed and developing countries. Based on Crime Index by Country data for 2022, Indonesia is a developing country with a crime rate of 46.12, ranking 70 out of 142 countries in the world. Even though Indonesia's crime rate is in a moderate position in the world, it cannot be denied that crime is one of the big problems facing Indonesia. The problem of crime in North Sumatra Province can be shown by comparing the number of crimes according to the regional police of each province in Indonesia.

Based on the Central Statistics Agency, the number of crimes in North Sumatra Province is always in the top three most crimes in Indonesia from 2016 to 2021. In 2016 it was ranked third, in 2017 it was ranked first, then in 2018 it was ranked second, in in 2019 it ranked second, and then in 2020-2021 it ranked first as the province with the most criminal acts in Indonesia. Several types of criminal cases in North Sumatra which can be presented in the following table:



Table 1.1 Number of Criminal Cases in North Sumatra in 2016-2021

Criminal Type	Total In Years					
	2016	2017	2018	2019	2020	2021
Homicides	161	92	107	104	99	96
Persecution Case	5.702	5.633	5.240	4.817	6.207	4.287
Moral Case	186	224	321	216	774	904
Theft Case	12.501	11.378	10.331	8.145	10.098	11.619
Narcotics Case	5.591	5.907	6.262	6.201	5.932	5.949
Fraud Case	2.068	2.434	2.067	2.333	2.809	2.853

Source: District/City Regional Police

Based on table 1.1 above, it can be seen in the period 2016-2021 that the highest cases of murder were in 2016 with 161 incidents, then the highest cases of maltreatment were in 2020 with 6,207 incidents. Then the highest cases of decency crimes, namely in 2021 as many as 904 incidents. Then the highest cases of theft were in 2016 with 12,501 incidents, then the highest narcotics crime cases were in 2018 with 6,262 incidents and the highest cases of fraud were in 2021 with 2,853 incidents. Backer (1968) was one of the pioneers who conducted a study of crime from an economics approach. In conducting the analysis, Becker takes an economic approach as was done by previous economists for every existing social problem. It can be assumed that a person can commit a crime if the expected utility exceeds the utility obtained and if a person uses available time and data sources to carry out other activities. Some people will become criminals, not because of their basic motivation, but because of the calculation and benefits of the costs that will be incurred (benefits and costs) (Backer, 1968).

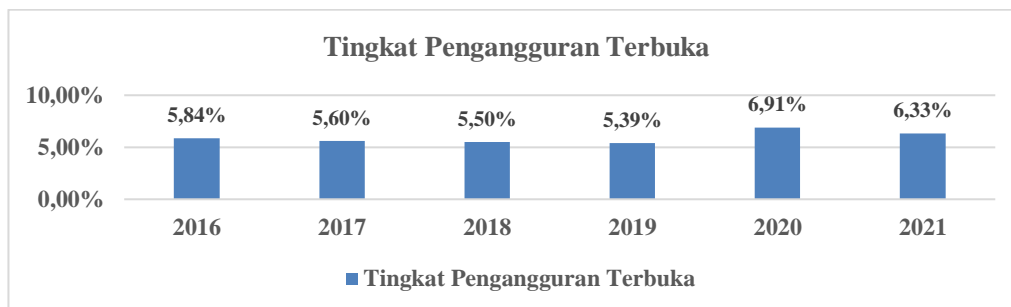
The Economy of Crime is mostly related to factors such as poverty, income, social exclusion, cultural characteristics, age, gender, education level and family background (Buananno, 2003). One of the structural problems that need to be considered in the analysis of Indonesian criminology is the problem of poverty. In criminological theory, this situation is actually considered very important because poverty is a form of structural violence with many victims. Crime in Indonesia is also driven by the economic crisis (Priyanto, 2012). The weakening of the economy can cause a person to lose his job, causing a person to lose income and be unable to meet his and his family's needs. These conditions can trigger a person to commit a crime.

Related to economic factors that have an impact on several other factors such as educational factors. People who are classified as poor will be synonymous with low education, because in life they cannot afford to pay for education costs which are increasingly expensive. Because of low education, a person will tend to be unemployed or only have a job as it is, so that this can influence a person to have a moral illness or evil

personality in order to achieve a desire (Utami, 2012). Socialist theory suggests that crime arises because of unequal economic pressures in society. This theory illustrates that to fight crime there must be an increase in the economic sector. In other words, prosperity, balance and social justice can reduce the occurrence of crime (Sundari, 2021).

Population growth can have positive and negative impacts on the welfare of a country. With an increase in population, the pace of the Indonesian economy can increase and the availability of abundant human resources can help accelerate the process of national development. On the other hand, if growth continues to increase rapidly until an area cannot accommodate it, it can reduce the welfare of the population, such as limited food resources, more pollution and unemployment. So that the many people who compete in getting food resources and territory in an urgent manner can encourage someone to commit criminal acts.

This ecological theory is a theory of looking for the causes of crime from the human environment and the social environment, such as population density, population mobility, the relationship between villages and cities, especially urbanization, as well as crime areas and slum housing. The denser the population in an area, the more various social conflicts will arise. Therefore population density is one of the factors that can cause crime (Susanto, 2011). According to Hurwitz in Adioetomo (2010) criminal acts are caused by people who are in the productive category but are not working or are unemployed. Unemployment is a situation where people do not have a job and are looking for work. Then according to (Bender, 2016) when an individual is longer unemployed, the opportunity to commit criminal acts will be higher. According to BPS data, the Open Unemployment Rate in North Sumatra for the 2016-2021 period tends to increase every year, as presented in the following figure:



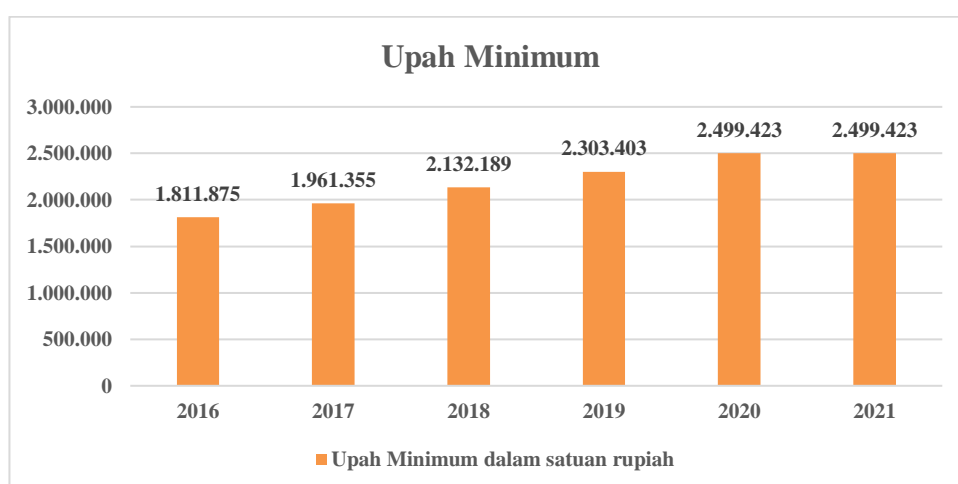
Source: BPS North Sumatra

Figure 1.3 Open Unemployment Rate (TPT) in North Sumatra Year 2016-2021 (percent)

Based on Figure 1.3 above, it can be seen that the Open Unemployment Rate (TPT) in North Sumatra tends to fluctuate or fluctuate from 2016 to 2021. In 2016 the open unemployment rate was 5.84% then decreased by 5.6% in 2017 then in 2018 the open unemployment rate decreased to 5.56%. Then in 2019 the Open Unemployment Rate decreased by 5.39%. Then in 2020 the Open Unemployment Rate increased quite sharply by 6.91% but then experienced a slight decrease of 6.33%.



According to Maulana (2014), wages or income reflect incentives to commit crimes that have a significant and large impact on the crime rate itself. The low minimum wage will have an impact on increasing the crime rate. Then Christine (2019) states that every increase in the minimum wage can increase welfare. According to BPS data, the Minimum Wage for North Sumatra Province always increases every year, as presented in the following figure:



Source: Office of Manpower and Transmigration of North Sumatra Province

Figure 1.4 North Sumatra Provincial Minimum Wage (UMP). Year 2016-2021 (Rupiah)

Based on Figure 1.4 above, it can be seen that the minimum wage for North Sumatra Province shows a continuous increase. In 2016 the North Sumatra Provincial Minimum Wage (UMP) was Rp. 1,811,875 then increased by 8.25% in 2017 to Rp. 1,961,355 then increased 8.7% in 2018 to IDR 2,132,189 then in 2019 wages increased 8.02% to IDR 2,303,403, then in 2020 it increased by 8.5% to IDR 2,499,423 and in 2021 the amount is the same as in 2021 of IDR 2,499,423.

Related to economic factors that have an impact on several other factors such as educational factors. People who are classified as poor will be synonymous with low education, because in life they cannot afford to pay for education costs which are increasingly expensive. Because of low education, a person will tend to be unemployed or only have a job as is, so that this can influence a person to have a moral illness or evil personality in order to achieve his desires (Utami, 2012).

Based on the explanation above, it can be concluded that crime is an important matter to pay attention to because crime is the biggest threat to human security in life, there are many economic and social factors and the impact of policies that can cause crime to increase or decrease. And the North Sumatra region is the region with the highest number of crimes in Indonesia. Therefore, the authors are interested in conducting research regarding "Analysis of the influence of population density, unemployment, minimum wages, and the Human Development Index on crime in North Sumatra Province".

METHOD

Types of Research

The type of research used in this research is descriptive research with quantitative research methods. Descriptive research is research that aims to describe systemically, factually, and accurately about the facts and characteristics of a particular object or population.

Study Population

According to Sugiyono (2013), population is a generalization area consisting of: objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn. The population in this study were 33 cities/districts in North Sumatra Province by analyzing how population density, unemployment, minimum wages, and the Human Development Index influence crime.

Types and Sources of Data

The type of data used in this research is secondary data. Secondary data is data that has been collected by data collection agencies and published to the data user community. In this research, the data used are data on population density, unemployment, minimum wage, and human development index in the districts/cities of North Sumatra province. This study uses a combination of time series data and cross section. The data taken in this study are 27 cities/regencies in Sumatra Province during the 2016-2021 period which were sourced from the Central Bureau of Statistics of North Sumatra (BPS Sumut).

Operational definition

According to Nazir (1988), an operational definition is a definition given to a variable or construct by giving meaning or specifying activities or providing an operation needed to measure the construct or variable. The operational definition is an indication of how a research variable is measured.

Panel Data Regression Model Selection

Theoretically according to some econometric experts it is said that, if the panel data owned has a larger amount of time (t) than the number of individuals (i), then it is recommended to use the Fixed Effect method. Meanwhile, if the panel data owned has a smaller amount of time (t) than the number of individuals (i), it is recommended to use the Random Effect method (Sriyana, 2014). However, the basis for this consideration is not entirely correct, because there is still an element of doubt in it. The best step is to do the test.

According to Sriyana (2014), there are three tests to select panel data estimation techniques. First, the F statistic test or also called the Chow test is used to choose between the Common Effect method or the Fixed Effect method. Second, the Hausman test is used



to choose between the Fixed Effect method or the Random Effect method. Third, the Lagrange Multiplier (LM) test is used to choose between the Common Effect method or the Random Effect method.

RESULTS AND DISCUSSION

Overview of Research Variables

This section will describe the research variables consisting of Crime, Population Density, Unemployment, Minimum Wage, and Human Development Index. During the 2016-2021 research period.

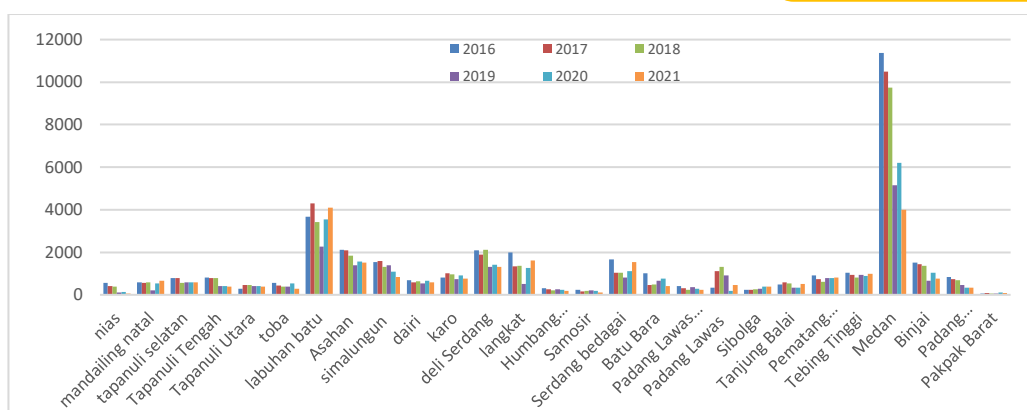


Source: Police Headquarters

Figure 4.2 Number of Crimes in North Sumatra in 2016-2021

Based on Figure 4.2 above, it can be seen that the Number of Crimes in North Sumatra Province fluctuated from 2016 to 2021. Where in 2016 the Number of Crimes in North Sumatra was 37,102 incidents then experienced an increase of 7.45% in 2017 as many as 39,867 incidents, then decreased 17.42% in 2018 as many as 32,922, then in 2019 there was a decrease of 6.35% again as many as 30,831 events, then in 2020 there was an increase of 7% namely as many as 32,990 events and in 2021 there was also an increase of 10.74%, namely as many as 36,534 incident. Meanwhile, the number of crimes nationally in Indonesia has decreased continuously from 2016 to 2021.

The Regional Police of North Sumatra Province recorded 36,635 crime cases reported by the public in 2021. Most of the reported crimes were cases of theft and narcotics crimes. Meanwhile, the regional office of the Ministry of Law and Human Rights also noted that the crime of theft was the most frequently committed crime by convicts aged 18 and under (BPS Sumatera Utara, 2022). The following is the development of crime between districts/cities in North Sumatra Province as presented in the figure below:



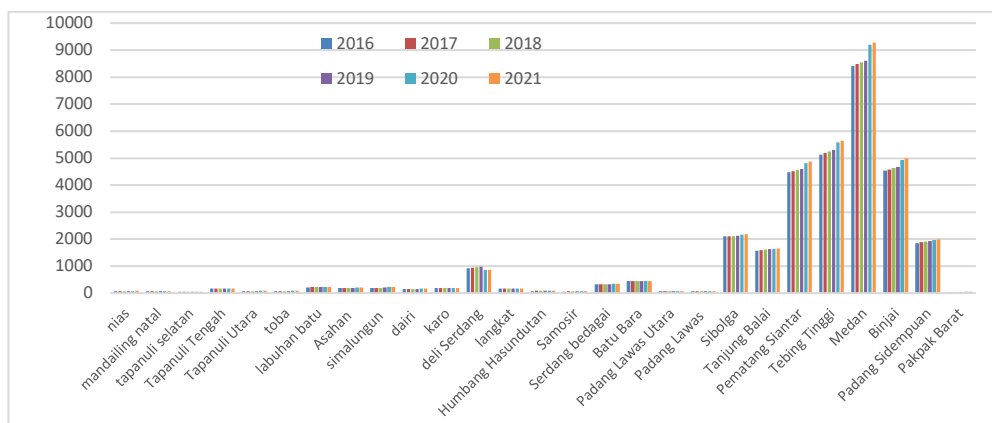
Source: District/City Regional Police

Figure 4.3 Development of Crime in Regencies/Cities in North Sumatra Province in 2016-2021

Based on Figure 4.3, it can be seen that the two areas with the highest number of crimes are Medan city in 2016 with 11,369 incidents and Labuhan Batu district in 2017 with 4,290 incidents. Where in 2016 Medan City had the highest number of Narcotics and Psychotropics crimes of 1,898 incidents. The most crimes were in the Labuhan Batu district in 2017, namely the category of ordinary theft with 972 incidents.

Population Density

North Sumatra is the fourth province with the largest population in Indonesia after West Java, East Java and Central Java. According to the projection results of the 2020 Population Census (SP), the population for 2021 will be 14,936,148 people. Meanwhile the results of the population census in 2020 reached 14,799,361 people. The population density in 2020 is 203 people per km², then in 2021 it will increase to 205 people per km². The population growth rate during the 2010-2020 period is 1.28 percent per year, and in 2020-2021 it will be 1.23 percent per year. The number of households in 2020 will reach 3.45 million and in 2021 it will reach 3.49 million households. The average number of household members in 2021 is 4.2. In 2021 the population of North Sumatra is 14,936,148 people consisting of 7,492,973 male residents and 7,443,175 female residents or with a sex ratio of 100.67 (Source: BPS North Sumatra Year 2022). The following is the development of Population Density between districts/cities in North Sumatra Province which is presented in the following graph:



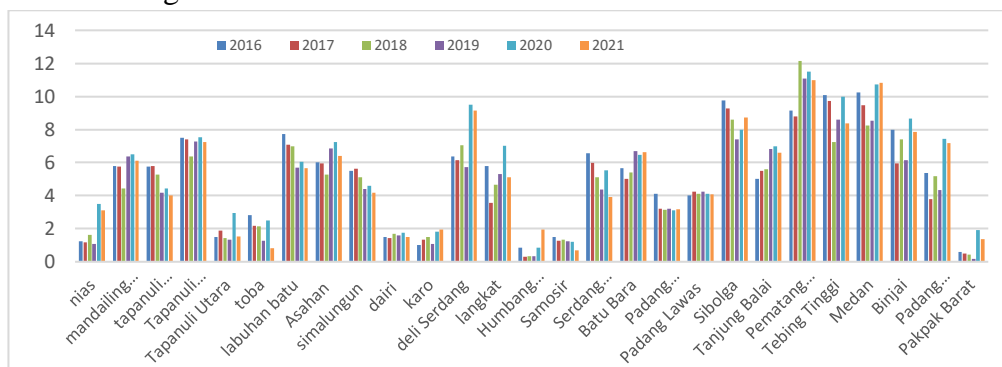
Source: Central Bureau of Statistics

Figure 4.4 Development of Population Density in Regencies/Cities in North Sumatra Province in 2016-2021

Based on Figure 4.4 above, the five areas with the highest population density in 2021 are Medan City with 9286 residents/km², Tebing Tinggi City with 5644 residents/km², Binjai city with 4990 residents/km², Siantar City with 4864.8 residents/km² and Sibolga city 2177 inhabitants/km². Urban areas have a higher population density than district areas, which is because in urban areas there are more jobs than in rural areas and they are also centers of government and more advanced economic activity, therefore resulting in large numbers of residents from migrating areas to cities.

Unemployment

The Open Unemployment Rate (TPT) in North Sumatra in August 2019 was 5.39% then in August 2020 it increased to 6.91%. It can be assumed that the increase in the unemployment rate in 2020 is due to the COVID-19 pandemic which has caused some companies to lay off their jobs or layoffs, causing many people to be unemployed. Then in August 2021 it experienced a slight decline to 6.33% because the economy was recovering which can be shown in the Central Bureau of Statistics data for economic growth in 2020 of -1.07% and in 2021 it experienced an increase of 2.61%. The following is the development of the Open Unemployment Rate between districts/cities in North Sumatra which is presented in the figure below:



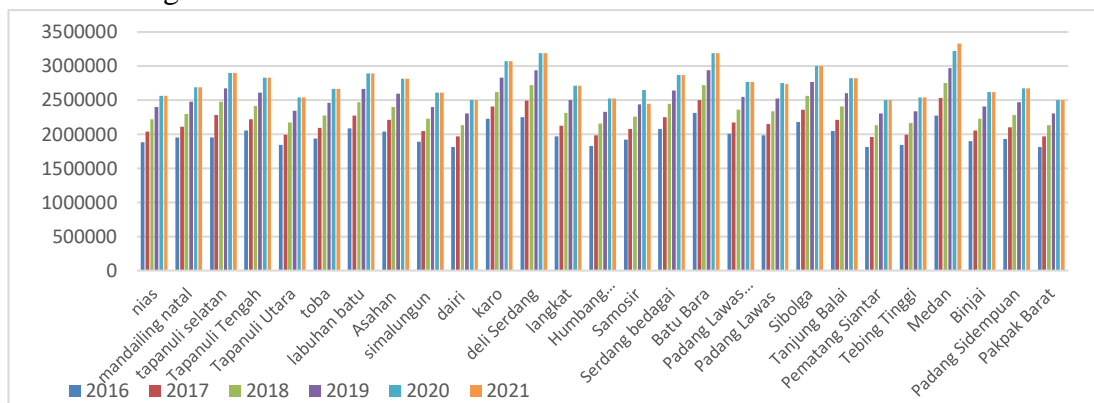
Source: Central Bureau of Statistics

Figure 4.5 Development of the Open Unemployment Rate between districts/cities in North Sumatra Province in 2016-2021

Based on figure 4.5 above, it can be seen that the five regions with the highest open unemployment rate in 2021 are Siantar City at 11%, Medan City at 10.81%, Kab. Deli Serdang 9.13%, Sibolga 8.72% and Tebing Tinggi City 8.37%. The average district/city shows a decrease in the open unemployment rate from 2020 to 2021. With the exception of 4 districts/cities that have experienced an increase, namely Humbang Hasundutan Regency, Kab. Batu Bara, Kab. North Padang Lawas and Sibolga City.

Minimum Wage

The minimum wage in Indonesia in 2019 was IDR 2,455,622, then in 2020 it increased by IDR 216,709 to IDR. 2,672,371. Then the Minimum Wage for North Sumatra Province is still below the average Indonesian minimum wage, namely in 2019 it was IDR 2,303,403 and in 2020 it increased by IDR 196,020 to IDR 2,499,423. The following is the development of the Minimum Wage between Regencies/Cities in North Sumatra Province which is presented in the figure below:



Source: Office of Manpower and Transmigration of North Sumatra Province

Figure 4.6 Development of Minimum Wage in Regencies/Cities in North Sumatra Province 2016-2021

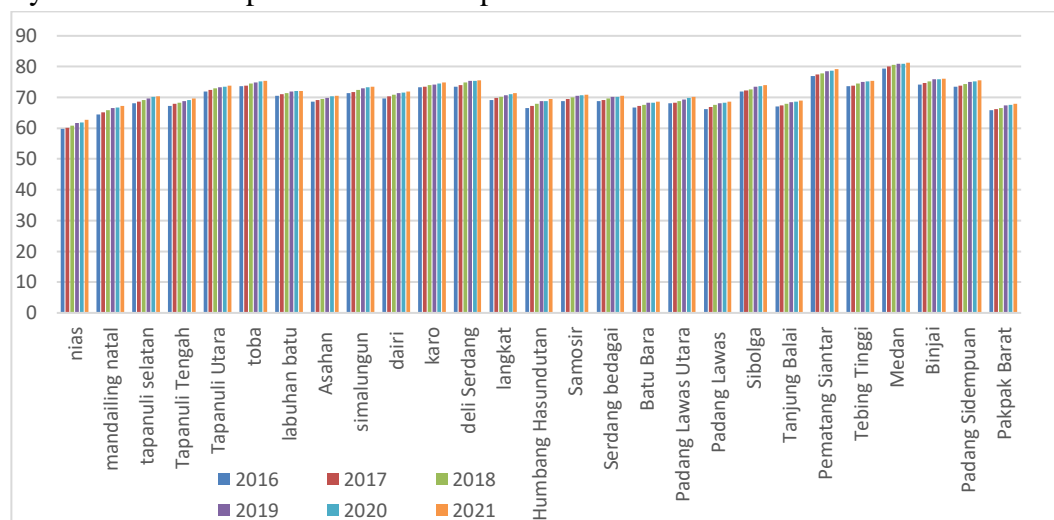
Based on Figure 4.6 above, in 2021 the highest minimum wage is the city of Medan, amounting to 3,329,867 and the lowest, namely the city of Samosir, amounting to Rp.2,449,621. then in 2020-2021 the district/city minimum wage tends to be relatively fixed except for Medan City which has increased from 2020 of Rp.3,222,557 to Rp.3,329,867 in 2021. Then Kab. Samosir experienced a decrease from 2020 of Rp. 2,648,577 to Rp.2,449,621. Regency. Padang Lawas has decreased from Rp.2,753,827 in 2020 to Rp.2,736,000 in 2021.

Human Development Index

Based on the 2021 Human Development Index (IPM) calculation, the highest Human Development Index is DKI Jakarta Province at 81.11, followed in second place by DI Yogyakarta Province at 80.22, and East Kalimantan Province at third position at 76.88.



While the Human Development Index for North Sumatra Province is 72.00 which is nationally ranked in 15th position out of 34 provinces in Indonesia.



Source: Central Bureau of Statistics

Figure 4.7 Development of the Human Development Index (IPM) in Regencies/Cities in North Sumatra Province in 2016-2021

Based on Figure 4.7 above, it can be seen that the five regions with the highest Human Development Index in 2021 are Medan City at 81.21, Siantar City at 79.17, Binjai City at 76.01, Kab. Deli Serdang at 75.53, City of Padang Sidempuan at 75.48. Then it can be seen that the Human Development Index is higher in urban areas compared to districts because it can affect education and information facilities about healthy living more easily in urban areas.

RESULT

Descriptive Statistical Analysis

Descriptive statistical analysis is used to determine the description of a data seen from the maximum value, minimum value, average value (mean), and standard deviation value. In this study, the variables used in the calculation of descriptive statistics are KM (crime), KP (occupation density), TPT (open unemployment rate), UM (minimum wage), HDI (human development index). Based on the descriptive statistical analysis, the sample description is obtained as follows:

Table 4.1. Descriptive statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
KM	51.00000	11369.00	1089.117	1608.242
KP	38.00000	9286.260	1215.417	2128.943
TPT	0.190000	12.14000	5.011049	2.923262
UM	1812990	3329867	2433247	348710.8
IPM	59.75000	81.21000	71.11512	4.051466

Source: EViews Processed Results 12

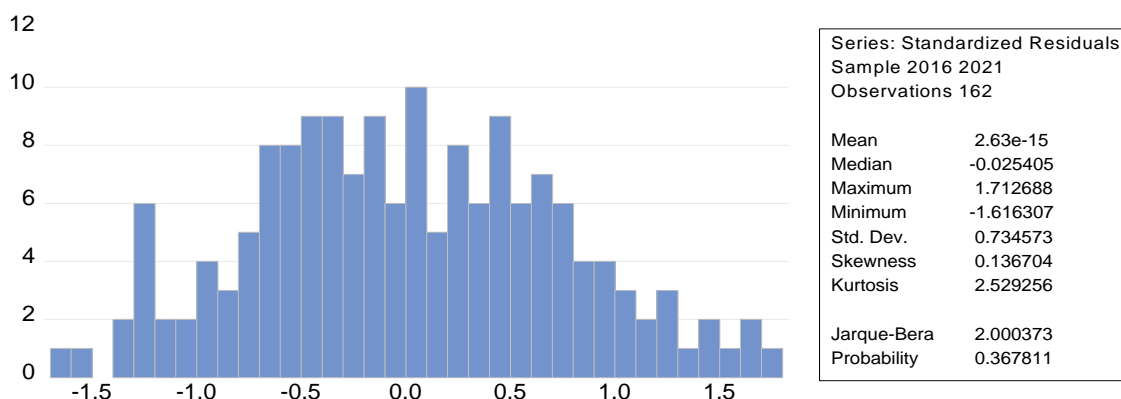
Based on Table 4.1, it is known that the minimum value of KM (criminality) is 51, with a maximum value of 11369. The average KM (criminality) is 1089,117 with a standard deviation of 1608,242. It is known that the minimum value of KP (population density) is 38, with a maximum value of 9286.26. The average KP (population density) is 1215.417, with a standard deviation of 2128.943. It is known that the minimum value of TPT (open unemployment rate) is 0.19, with a maximum value of 12.14. The average TPT (open unemployment rate) is 5.011049, with a standard deviation of 2.929262. It is known that the minimum value of MU (minimum wage) is 1812990, with a maximum value of 3329867. The average MU (minimum wage) is 2433247, with a standard deviation of 348710.8. It is known that the minimum value of the HDI (human development index) is 59.75, with a maximum value of 81.21. The average HDI (human development index) is 71.11512, with a standard deviation of 4.051466.

Classic assumption test

Normality Test

In this study, the normality test for residuals used the Jarque-Bera (J-B) test. In this study, the significance level used is $\alpha=0.05$. The basis for decision making is to look at the probability figures from J-B statistics, with the following conditions:

1. If the probability value of $p \geq 0.05$, then the assumption of normality is fulfilled.
2. If the probability < 0.05 , then the normality assumption is not met.



Source: Processed results of EViews 12 software

Figure 4.8 Normality Test with the Jarque-Bera Test

Note that based on Figure 4.8, it is known that the probability value of the J-B statistic is 0.367811. Because the probability value of p, which is 0.367811, is greater than the significance level, which is 0.05. This means that the normality assumption is met.

CONCLUSION

Based on the results of the research and discussion, the conclusions of this study are obtained:

1. Population Density has a positive and significant effect on Crime in North Sumatra Province.



2. Unemployment has a positive and insignificant effect on crime in North Sumatra Province.
3. Minimum Wage has a negative and insignificant effect on crime in North Sumatra Province.
4. The Human Development Index has a negative and significant effect on Crime in North Sumatra Province.
5. Population Density, Unemployment, Minimum Wage and Human Development Index have a joint effect on Crime in North Sumatra Province.

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