Analysis of The Effect of Inflation, GRDP, Total Population and HDI on The Rate of Open Unemployment in Four Cities in The Province of North Sumatra

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Abstract

Study This aim for test and analyze influence inflation, GRDP, total population, and HDI against level unemployment open at four cities in North Sumatra Province. The type of data used in study is quantitative data types with secondary data. The object in study is four cities in North Sumatra Province. Study This using panel data (Pooled Data). combines Time Series and Cross Section data for 16 years that is start from 2005-2020. Variables used are inflation, GRDP, Total Population and HDI. Method analysis in study This use Fixed Effect Model (FEM), using E-views 10 as tool estimate. Regression results show that Inflation influential negative and no significant to the Open Unemployment Rate, GRDP has an effect negative and significant to the Open Unemployment Rate, Total Resident influential positive and significant effect on the Open Unemployment Rate and HDI negative and no significant to the Open Unemployment Rate. Then exists a connection between Inflation, GRDP, Total Population and HDI with an Open Unemployment Rate of 62.19%. the rest of 37.81% explained by variables others who don't enter into models.

Keywords	*Open Unemployment Rate, Inflation, GRDP, Total Population and HDI.*

INTRODUCTION

One objective of the development of the economy is to overcome unemployment. Unemployment happen Because no balance between number of work force with amount chance available work. According to Keynes " the economy always faces problem unemployment and use power Work full seldom valid" (Sukirno, 2013:79). Indonesia is a developing country where is one problem encountered _ that is unemployment. Problem unemployment experienced in Indonesia is shown with level unemployment open from year to year, as presented in the following figure:
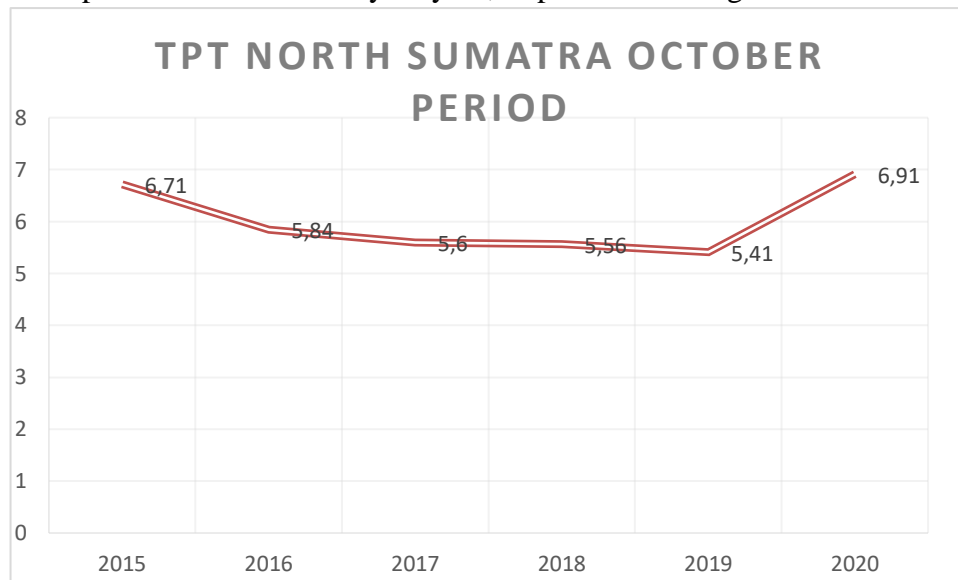

Source: Central Bureau of Statistics

Figure 1.1 Percentage of Indonesia's Open Unemployment Rate for the 2015-2020 Period

North Sumatra is one Province in Indonesia which is located on the island of Sumatra. Problems neither is unemployment escape experienced North Sumatra Province. From BPS data for the 2015-2020 period it shows that level unemployment open to the province sumatra north experience decline from year year, as presented in Figure 1.2 below :
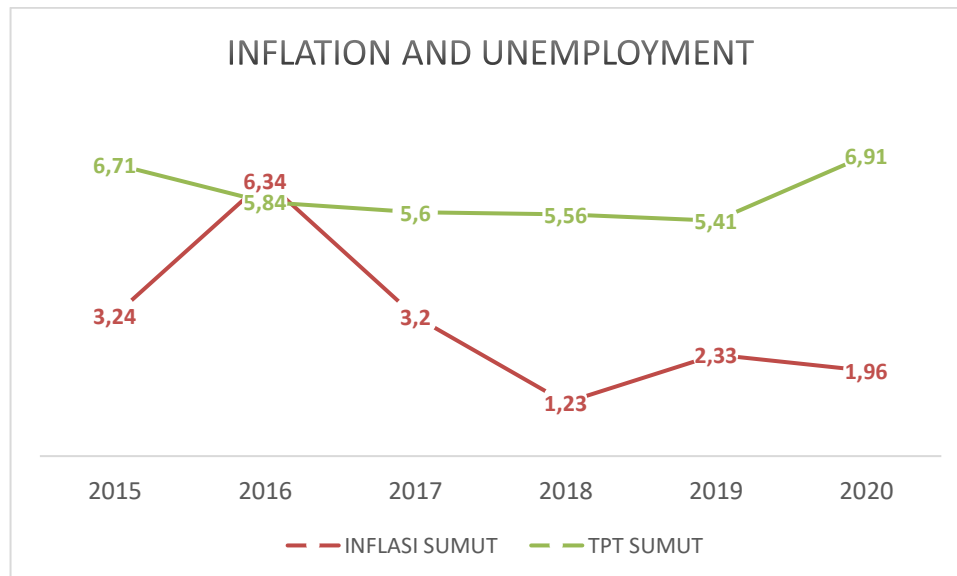

Source: BPS North Sumatra

Figure 1.2 Percentage of the Open Unemployment Rate in North Sumatra Province for the 2015-2020 period

From figure 1.2 above can is known that level unemployment open in North Sumatra Province experienced decline from year year, this can be seen from the graph in figure 1.2 where in 2015 the level unemployment in North Sumatra Province reached 6.71 % and in next always experience decline until 2019, namely in 2016 it was 5.84%, in 2017 it was 5.6%, in 2018 it was 5.56 % and in 2019 it was 5.41%.

The year 2020 level unemployment open in North Sumatra Province experienced even increase exceed level unemployment open in 2015 i.e., by 6.91%. Ascension level unemployment open in 2020 caused Because the covid-19 pandemic that hit Indonesia which also gave impact to Province North Sumatra, where pandemic the require public for reduce outside activity home of course lower consumption society and result lowering income companies' producer goods and services and forced do termination connection work (layoff) for stabilize expenses, as a result Lots society to be unemployment. Likewise, with business micro small medium enterprises (MSMEs) where decline consumption public causing SMEs to experience loss so that forced close temporary his efforts and causes happening enhancement unemployment.

Unemployment open is unemployment Where they the same very No own job. According to Disnakertrans if force Work Work one hour deep a day Already not categorized in unemployment open. Unemployment happen Because growth entering residents force Work taller from growth chance available work. Height number unemployment No only

raises various problem in the field economy, but also raises
various problem in the field social, like poverty and vulnerability social (BPS, 2011) in
Figure 1.3 below:

Source: BPS North Sumatra

Figure 1.3 Comparison Percentage of North Sumatra's Inflation Rate and North Sumatra's Open Unemployment Rate for the 2015-2020 Period
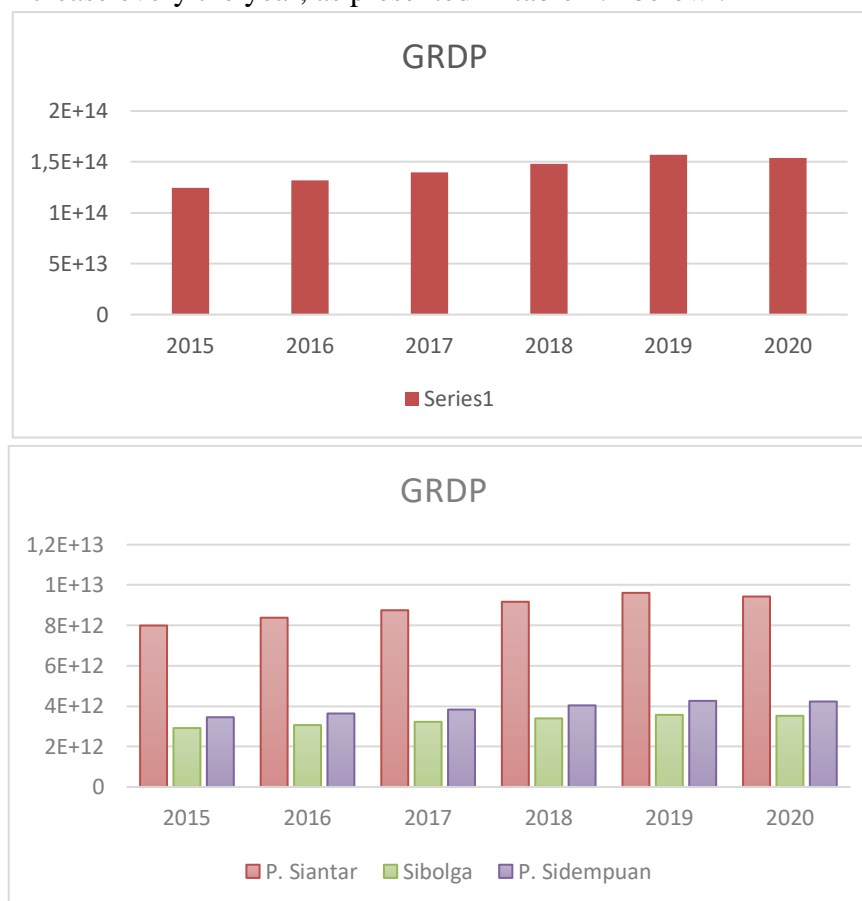
From figure 1.3 above can is known that level inflation in North Sumatra Province experienced fluctuation from year to year. Connection level inflation with level unemployment open characteristic negative matter This can seen in 2015-2017 where _ level inflation increase from 3.24% to 6.34% meanwhile level unemployment decrease from 6.71% to 5.84%. But different with 2016-2017 year where level inflation decrease from 6.34% to 3.2% meanwhile level unemployment decrease from 5.84% to 5.6%, where matter This opposite with existing theory.

Change level inflation it also has influence to growth economy, if level inflation tall so can cause slow down growth economy vice versa relative inflation low and stable can push creation growth economy. Benefit from development economy something area can seen from regional economic growth. Economic Growth Shows that economy something area experience growth compared to with year before. Growth an economy area happen if production goods and services end experience enhancement compared to with year before. Growth economy a country or a continuous area develop show enhancement describe that the economy of the country or region develop with good (Amri, 2007).

Product North Sumatra Province's Gross Regional Domestic Product (GRDP). description about performance development economy in a manner periodically, so can determine direction economy area. Product Gross Regional Domestic (GRDP) above base price constant (real) is used For show rate growth economy in a manner whole from year to year (GRDP of North Sumatra Province, 2021: 5). GRDP is one indicator important For know role and potential economy in a region _ period certain . According to Mankiw (2006), growth economy (GDP) has influential negative to unemployment. This means if GDP

experiences increase, then matter the will lower-level unemployment in the country or region. It is known with term law okun. According to data from the BPS GRDP in the four cities in the Province of North Sumatra above base price constant 2015-2020 period always experience increase every the year, as presented in table 1.4 below :
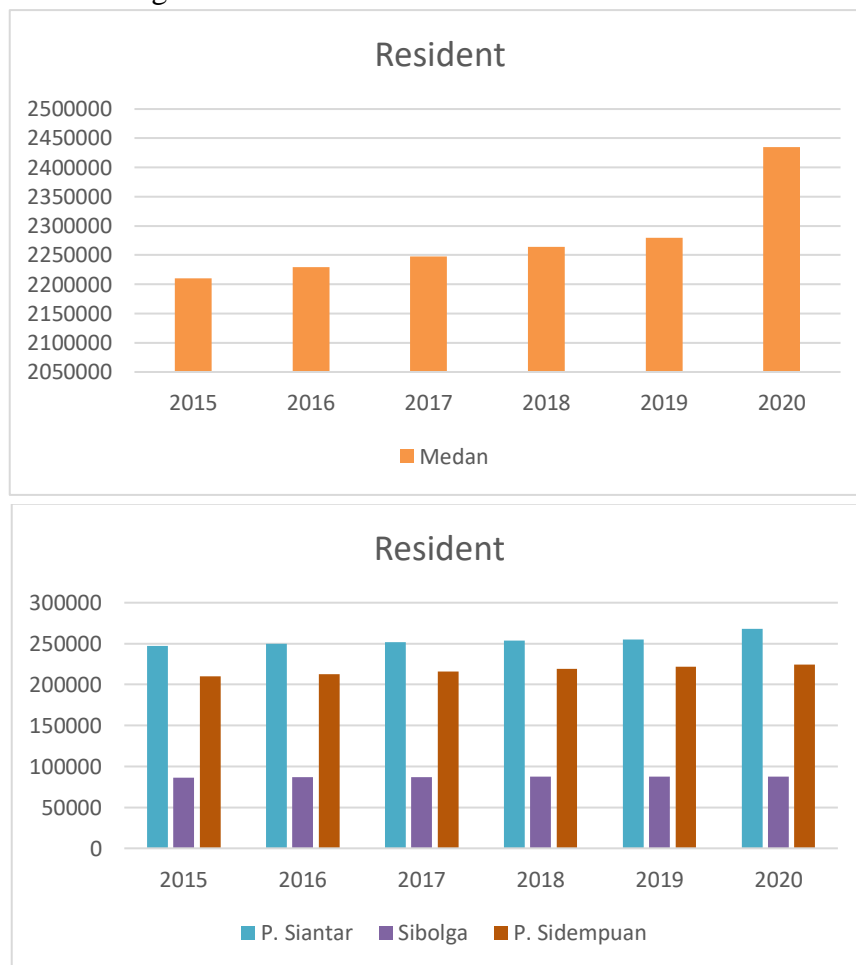

Source : BPS North Sumatra

Figure 1.4 Comparison Total GRDP in Four Cities in North Sumatra Province 2015-2020 Period

In chart 1.4 above can be seen that GRDP at four cities in the province of North Sumatra tend experience increase every year , but in 2020 the GRDP in four cities in North Sumatra Province will experience decline compared to with year before. The decline in GRDP in 2020 caused by a pandemic national Covid-19 that hit Indonesia, which also gave impact to economy Where is North Sumatra Province? The covid-19 pandemic requires public For guard distance and reduce activity outside house that causes rotation wheel economy North Sumatra Province decreased, so influence production goods and services produced in North Sumatra Province.

Increase Resident from year to year can be one causative factor problem unemployment in a country or region. Enhancement amount residents at first will give impact positive to something area Because will increase amount force work in the area the. But on the other hand improvement amount force Work will give impact negative to

something area if enhancement amount force Work No comparable with amount chance available jobs in the area the. Enhancement amount force work on one area precisely will create problem unemployment in the area that, if enhancement number of work force No comparable with absorption power work.

Unemployment showing exists difference between demand (*demand of labor*) and supply middle work (*Supply of labor*) in something economy. Whereas increase increasing population _ rapidly and increasingly big the amount cause problem unemployment become increase bad (Budiarto, 1985). According to BPS data Total population at four cities in North Sumatra Province for the 2015-2020 period always experience enhancement from year to year , as shown in Figure 1.5 below :

Source : BPS North Sumatra

Figure 1.5 Comparison Amount Population in Four Cities in North Sumatra Province 2015-2020 period
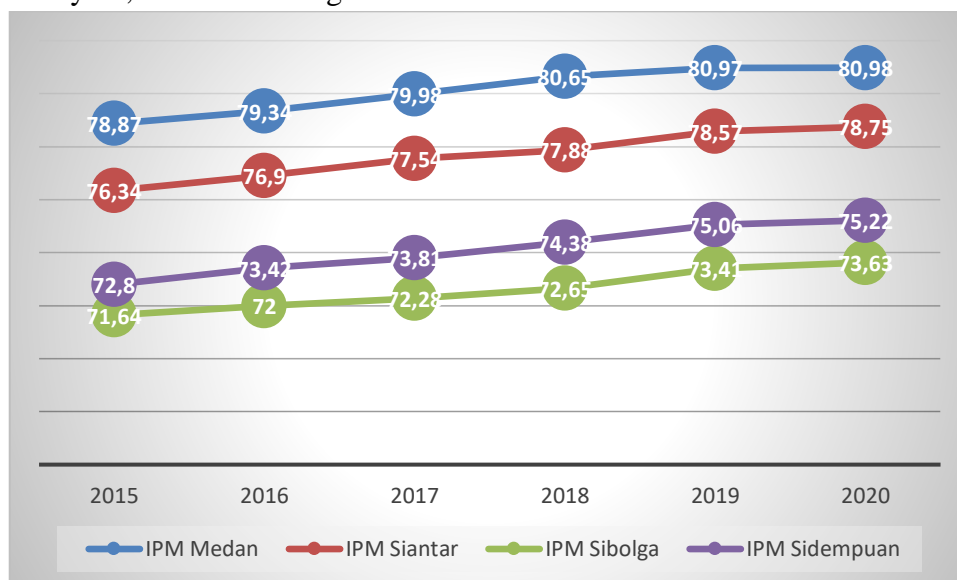
Figure 1.5 is shown that amount population at four city research in North Sumatra Province always experience enhancement from year to year. Enhancement amount resident This worried will raises problems new in development economy that is unemployment. From Figure 1.5 can is known that amount resident the most from 4 Cities in the Province North Sumatra is located in the city of Medan, this caused because the city of Medan is center economy area North Sumatra Province. Many societies consider that Medan City has

absorption power high work with many the existing industries in the city of Medan, presumption This that's what makes public from other cities / regencies in North Sumatra Province flocked do migration with hope can obtain work in place purpose.

Development Progress in a country or region also can is known with see How development Human Development Index (IPM) in the country or region. Advances in Human Development be very important Because man is creatures that can utilise source Power nature (SDA) as well see existing potentials in area To use For advance development in the area the.

According to Todaro and Smith (2011:445), that development man is objective development. Human development will produce power understand work will development technology so that will produce specialization power appropriate work with demand in the energy market Work as well as capable lower problem unemployment. From BPS HDI data at four cities in North Sumatra Province experienced the 2015-2020 period enhancement from year to year, as shown in Figure 1.6 below :

Source : BPS North Sumatra

Figure 1.6 Comparison Human Development Index (IPM) in Four Cities in North Sumatra Province 2015-2020 Period

In Figure 1.6 it is known that Human Development Index (IPM) at four city in North Sumatra Province Always experience enhancement Every the year. This shows success in enhancement progress development people in the four cities the year. From the graph in Figure 1.6 you can is known that The Human Development Index (IPM) is the highest found in 2020 in Medan City of 80.98 and the lowest in 2015 was in Sibolga City ie 71.64.

Based on from background back above, then writer interested For researching How connection between inflation , GRDP, total population and HDI against level unemployment at four city (Medan City, Pematang City Siantar, Sibolga City, Padang Sidempuan City) in North Sumatra Province .

METHOD
Type Study

Type study This includes research in analysis quantitative. According to Sugiyono (2014), research quantitative is research that analyzes data quantitative / statistical, with objective for test hypothesis that has set Then interpret results analysis for obtain conclusion. kindly explicit research This including in study quantitative, because study This analyze how influence inflation, GRDP, total population, HDI against level unemployment open so that can give conclusion about what happened is in accordance with theory or happening something phenomenon new economy.

Types and Sources of Data

The type of data used by researcher in study This is secondary data. According to Kuncoro (2013, 127) Secondary data is normal data collected by the institution data collector. Secondary data in study This is combined from *cross section* data and *time series data* with amount as many as 64 observations, where study This using 4 Cities in North Sumatra Province during period 2005-2020 sourced from the Central Bureau of Statistics of North Sumatra (BPS Sumut) of North Sumatra Province basically has 8 Cities, but in study This only include 4 Cities because the data regarding Inflation in North Sumatra Province is only measured of 5 cities namely Medan City, Pematang City Siantar, Sibolga City, Padang Sidempuan City and Gunungsitoli City.

Methods Analysis
Statistics Descriptive

According to Sularso (2003), Statistics descriptive used for describing and present summary information and some big data. Statistics descriptive No used for answer hypothesis, but rather only for serve information certain. Statistics Descriptive This consists of average, standard deviation, variance, maximum, minimum, kurtosis and skewness (Ghozali, 2006).

Methods Panel Data Analysis

Method analysis used in study This is method panel data analysis. Data with panel characteristic is structured data massage time as well as a cross section (Arifieanto, 2012: 148). According to Suliyanto (2011:229), excellence use of inner panel data study namely:
1. Panel data has more heterogeneity _ tall Because covers a number of object and some time.
2. Panel data can provide informative and meaningful data level low collinearity.
3. Panel data can detect and measure the influence data that does not can observed with pure time series data.

For describes the panel data in detail short, for example in *cross section* data, value from something variable or more collected for several sample units at a time. In the data panel, the unit *cross section* is the same surveyed a number of times. In the panel data model, the model equation uses cross-sectional data.

According to Gujarati (2012) equation *cross section* and *time series models* are written down in formula:

1. *cross section* model equation is:

$Y_{i} = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + u_i$; i = 1,2,3, …, N, where N is many data *cross-section*

2. *Time series* model equations namely:

$Y_{t} = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + u_t$; t = 1,2,3, …, T, where t is many *time-series* data.

3. Given the panel data is combined from *time-series* and *cross-section,* then the model can written with:

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + u_{it}$; t = 1,2,3, ..., T ; i = 1,2,3,…,N.

Where is amount, observations used in research and t is Lots Of time used in research. The number of panel data can be seen from i x t. In study This many *time* series used researcher that is started 2005-2020 and the cross-section *data* used researcher is four cities in North Sumatra Province.

In panel data processing method regression used namely: *Common Effect Model* (CEM)*, Fixed Effect Model* (*FEM*) *and Random Effect Model* (*REM*).

Common Effect Model (CEM) **or** *Pooled Regression*

Models without influence individual (*Common Effect*) is estimation that combines (*pooled*) all *time-series* data and *cross sections* and uses OLS (*Ordinary Least Square*) approach to suspect parameters (Gujarati, 2012). Research models deep *common effect model* study this, namely:

Y it = βo $\beta_1 INF_{nit}$ + $\beta_2 PDRB_{it}$ + $\beta_3 POP_{it}$ + $\beta_4 IPM_{it}$ + u it ; t=1,2,3,4....,T ; i = 1,2,3,4.....N, adopted from (Gujarati, 2012)

Description:
Yit = Unemployment rate open on the observation unit to - *I* and time t - *th.*
INF = Inflation in the unit of observation to - *I* and time t - *th.*
GRDP = Product gross regional domestic product by unit of observation to - *I* and time t - *th.*
POPs = amount population in the observation unit to - *I* and time t - *th.*
HDI = Index development human on the observation unit to - *I* and time t - *th.*
β_0 = Constant
β_1 , β_2 , β_3 β_4 = *Slopes* or coefficient variable independent
u it = Error or *error term* in the observation unit to - *I* and time t - *th.*

RESULTS AND DISCUSSION
Overview Study

North Sumatra Province is one of the provinces located in the northern part of the island Sumetera, Province that often called with Sumut 's abbreviation bricked san with Riau Province and Padang Province next door its south while next door North abut with Aceh

Province. The province of North Sumatra was established on December 7, 1956, based on base Law Number 24 of 1956.
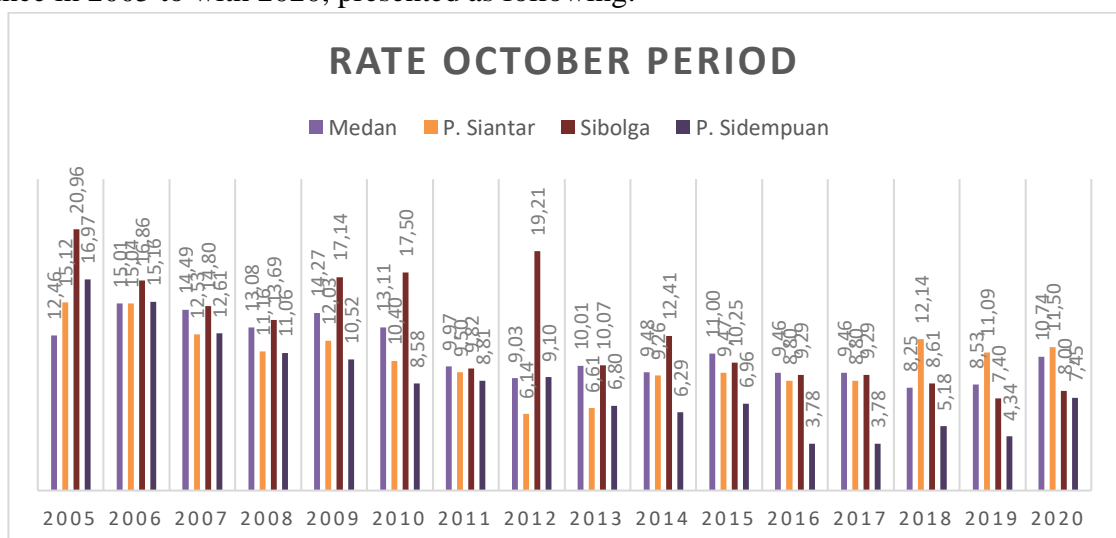
Position Geography North Sumatra Province is located in the western part of Indonesia located at 1° – 4° North latitude and 98° – 100° East longitude. The total area of North Sumatra Province is 72,981.23 ^{km2} or around 3.69% of the total area throughout Indonesia. Pro p inci North Sumatra has amount Resident as many as 14,936,148 souls. The ethnic group the people of North Sumatra Province are among them is Malay, Karo, Simalungun, Pakpak/Dairi, Batak, Toba, Mandaling and Nias. Capital North Sumatra Province is Medan City.

Medan city is the capital city of North Sumatra Province. Field city is city biggest fourth in Indonesia after DKI Jakarta, Surabaya and Bandung. Field city is door gateway to Indonesia west with existence of Belawan Port and International Airport Kualanamu which is airport biggest second in Indonesia. Medan city has an area of 265.10 km ^{2} or 3.6% of the whole area of North Sumatra. Medan city has a relatively area small with amount relative population big i.e. in 2022 the population of Medan City is 2,494,51people, with level density population 9,413 people / km^2.

Development of the Open Unemployment Rate in Four Cities in North Sumatra Province

Kindly Specific unemployment open consists from those who don't own job and search jobs, those who do not work and prepare effort, those who do not working and not look for work Because feel No Possible get jobs, and those who don't working and not look for work Because Already accepted workbut Not yet start work.

According to BPS, level unemployment open is percentage amount unemployment to amount force work. High TTP show that there is Lots force no work absorbed in the job market. Following This is Chart level unemployment open at four cities in North Sumatra Province in 2005 to with 2020, presented as following:
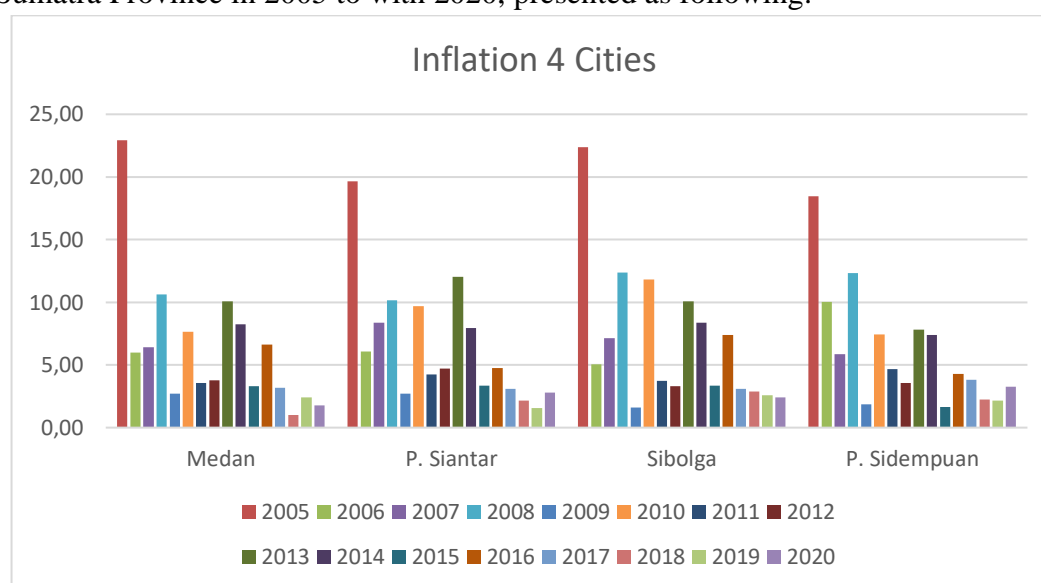

Figure 4.1 Development of the Open Unemployment Rate in Four Cities in North Sumatra Province 2005-2020 Period (%)

In the available graph in Figure 4.1 shows that there is difference level unemployment open at four cities in North Sumatra Province. As for the city that has level unemployment open highest during the 2005-2020 period is Sibolga City that is the highest of 20.69% in 2005. Meanwhile the level of unemployment opens Lowest that is located in the City of Padang Sidempuan, by 3.78% in 2017.

Progress Inflation in Four Cities in North Sumatra Province

Inflation according to Nopirin is an ascension process prices general goods in a manner Keep going continuously. Ascension that price only very just with enough percentage big no is inflation. Following This is Chart about level inflation at four cities in North Sumatra Province in 2005 to with 2020, presented as following:
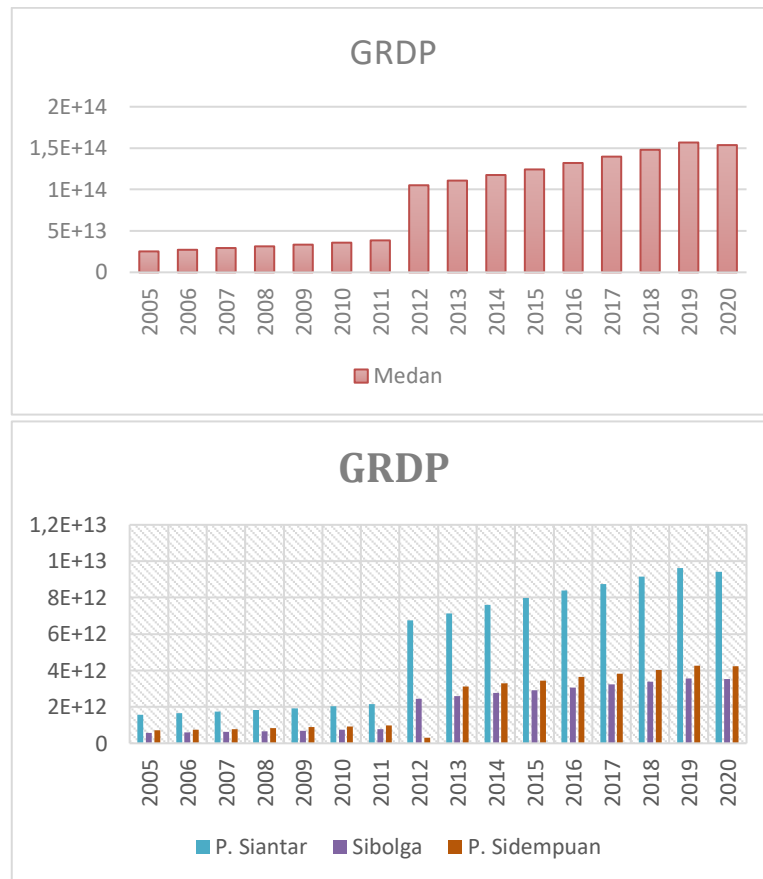

Figure 4.2 Development Inflation in Four Cities in North Sumatra Province 2005-2020 Period (%)

In the available graph in Figure 4.2 shows movement inflation at four cities in North Sumatra Province in the 2005-2020 period. Development inflation at four cities in North Sumatra Province experienced fluctuation year year. Inflation highest found in the city of Medan, namely 22.91 % in 2005. Meanwhile inflation, the lowest, is also found in Medan City at 1% in 2018.

Progress Product Gross Regional Domestic (GRDP) in Four Cities in North Sumatra Province

GRDP is one indicator important for knowing role and potential economy in a region period certain. regional role in support economy national Enough big However sometimes No in line with development economy national, role the become optimum load. Phenomenon economy moment This tend demand exists role active from executives. For more Lots dig potency economy the area as well as play more role big in stimulate activity economy area.

Following This is information about GRDP level at four cities
in North Sumatra Province for the 2005-2020 period, which are presented in Figure 4.3
below:

Figure 4.3 Development of GRDP in Four Cities in North Sumatra Province for the 2005-2020 Period

In the available graph in Figure 4.3 shows How GRDP development in four cities in North Sumatra Province. The city of Medan in North Sumatra Province is the largest contributor to GRDP with a mark of 156.78 trillion in 2019. Meanwhile _ the lowest contributor to GRDP in North Sumatra Province from 4 research cities namely the City of Padang Sidempuan of 295.27 billion.

Statistics Descriptive

Study This using secondary data. Secondary data used obtained from the Central Statistics Agency of North Sumatra in 2005-2020. Using the Open Unemployment Rate, Inflation, GRDP prices constant, Sum Population and Human Development Index at four cities in the Province North Sumatra. Data used for study This is panel data i.e., combined from time series data from 2005-2020 and the cross sections taken from 4 cities in North Sumatra.

Table 4.2 Statistics Descriptive

	TPT (%)	INF (%)	GRDP (Rp)	RESIDENTS (Soul)	HDI (Index)	C
Means	10.79109	6.371406	2.45E+13	672378.9	74.46922	1.000000
Median	10.04000	4.695000	3.49E+12	227561.5	74.45000	1.000000
Maximum	20.96000	22.91000	1.57E+14	2435252.	80.98000	1.000000
Minimum	3.780000	1.000000	2.95E+11	84480.00	57.54000	1.000000
std. Dev.	3.640110	4.904849	4.53E+13	871465.5	3.783898	0.000000

Source: E-views (data processed)

Based on table, value the variable of the highest Open Unemployment Rate namely 20.96% which is the Open Unemployment Rate of Sibolga City in 2005. The lowest Open Unemployment Rate variable value namely 3.78% which is the Open Unemployment Rate of Padang Sidempuan City in 2017. The average value of the Open Unemployment Rate variable data is 10.79%. The median value or mark the middle of the variable data Open Unemployment Rate is 10.04%.

Implications is consequence or consequence direct from results invention something study scientific. Based on results study show a number of things that can carried out by the Government four cities in the province of North Sumatra in connection with policy push level unemployment open namely:

1. Based on results analysis, Inflation No influential significant negative to level unemployment open. Ascension level demand-based inflation aggregate is something policy that can applied government in research. Increase request aggregate is something key success in lower-level unemployment open with method apply policy monetary like increase the money supply in society, give help social to society that can increase Power buy society.

2. Based on results analysis, GRDP has an effect significant negative on the level of unemployment open. Increase production goods and services is something policy that can applied government in research. With increase production goods and services from various sectors, especially in the sector characteristic economy congested work as well as increase production business expected micro, small and medium enterprises (MSMEs). capable push level unemployment open to government four city in research.

3. Based on results analysis, Total Resident influential significant positive to level unemployment open. Notice development amount resident in their respective regions so as not to there is over population is something policy that can applied government in research. With notice development amount resideducation. overpopulation occurs with method aceducation. The Alization family programme planned make giving family or lead to insight how importance arrange decent life with the costs will be given for need everyday and needs the child 's education. Create field work in sparse areas resident so that congested area its inhabitants can do transmigration so that capable push level unemployment open on the government four city in research.

Based on results analysis, HDI is not influential significant
negative to level unemployment open. Increase human capital development with method increase Health facilities, repair economy society and improve quality education is policy that can taken government in research. With increase Health facilities, repair economy society and improve quality education in each area of course expected capable push level unemployment open to government four city in research.

CONCLUSION

Based on results analysis and discussion that has been done, then obtained conclusion as following:
1. Test Results show that Inflation influential negative and no significant on the Open Unemployment Rate in Four Cities in North Sumatra Province for the 2005-2020 period.
2. Test Results show that GRDP has an effect negative and significant on the Open Unemployment Rate in Four Cities in North Sumatra Province for the 2005-2020 period.
3. Test Results show that Amount Resident influential positive and significant on the Open Unemployment Rate in Four Cities in North Sumatra Province for the 2005-2020 period.
4. Test Results show that HDI has an effect negative and no significant on the Open Unemployment Rate in Four Cities in North Sumatra Province for the 2005-2020 period.

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