

# Analysis of the Effects of Population, School-Age Population and Economic Growth on Unemployment in North Sumatra Province

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**Abstract:** The purpose of this research is to find out how the effect of population size, school-age population and economic growth on unemployment. This research was conducted in the province of North Sumatra. The data analysis technique in this study is quantitative analysis. The source of data in this study is secondary data downloaded via [www.bps.go.id](http://www.bps.go.id), especially data on population, school-age population, economic growth and unemployment in the province of North Sumatra. The analysis used is the Statistical Package for the Social Sciences (SPSS). By population (X1), school-age population (X2), economic growth (X3), and unemployment (Y). The results showed that X1 had a negative and not significant effect on Y, X2 had a negative and not significant effect on Y. X3 had a negative and significant effect on Y. It has a negative effect, meaning that the increasing the X variable, the Y variable will decrease. 92.9% of the total population, school-age population and economic growth affect the unemployment rate in the province of North Sumatra and 7.1% are influenced by other variables that are not included in the study.

**Keywords:** Total population, School-age population, Economic growth, Unemployment

## 1 Introduction

In general, developing nations grapple with a spectrum of challenges, encompassing issues such as poverty and widespread unemployment. The latter, a significant facet of both economic and social dilemmas, is exacerbated by rapid population growth. The burgeoning population not only intensifies the strain on available resources but also amplifies the number of individuals entering the labor force. However, the conundrum arises when this surge in labor force is not met with corresponding job opportunities, resulting in escalating unemployment rates. A case in point is the province of North Sumatra, where the population has surged to 14,799,361 people. This rapid demographic expansion has precipitated a cascade of fresh predicaments. The palpable consequence of population growth is reflected in the economic landscape, specifically in the average income per capita. The imbalance between the expanding labor force and the limited availability of employment opportunities has led to a

pronounced rise in unemployment rates Analyzing the dynamics of North Sumatra province from 2016 to 2020, Table 1 provides insights into the interplay between population growth, the demographic structure, economic growth, and the pervasive issue of unemployment.

**Table 1.** Population Overview for the period 2016-2020

YEARS	TOTAL POPULATION	SCHOOL AGE POPULATION	ECONOMIC GROWTH (BILLION)	TOTAL UNEMPLOYMENT
2012	13.937.797	4.275.238	440.955,50	379.982
2013	13.326.307	4.311.313	375.924,16	412.202
2014	13.766.851	4.436.069	419.573,30	390.712
2015	13.937.797	4.463.851	315.790,15	428.794
2016	14.102.011	4.485.608	350.750,15	410.500
2017	14.262.147	4.502.601	420.720,12	395.200
2018	14.415.391	4.463.851	429.532,10	387.300
2019	14.562.549	4.523.805	442.850,13	370.000

Source: *BPS Sumatera Utara 2012-2019*

In other words, economic growth is more indicative of quantitative changes and is usually measured using gross domestic product facts or per capita output income. Development is carried out to realize the ability of natural society in terms of eradicating unemployment and poverty. From the population, school-age population and economic growth above, it can be concluded that the amount of economic growth in North Sumatra Province from 2012-2019 the highest was in 2019 reaching 442,850 billion rupiah. The population of North Sumatra Province is increasing from year to year. The increasing population will cause an increase in the need for natural resources which will decrease over time and increase the number of family members that must be borne, thereby reducing people's welfare and causing unemployment.

The challenge of mounting unemployment poses a more intricate and severe issue in the economic development of developing nations, surpassing even the less favorable shifts in income distribution that primarily impact low-income populations. Unemployment is a multifaceted predicament, intricately woven with factors that interact in complex patterns, often challenging easy comprehension. Failing to promptly address unemployment can instigate social insecurity, potentially spiraling into poverty. The root causes of unemployment are diverse, with one prominent factor being the rapid transformation of the labor force, outpacing the availability of a sufficiently broad spectrum of job opportunities. This mismatch stems from a sluggish growth in job creation, unable to keep pace with the influx of willing workers, thereby leading to a labor market where the supply of available labor exceeds the demand.

Within the realm of economic growth theory, the augmentation of output per capita over the long term is expounded, elucidating how various factors interplay in a growth process. The term "unemployment" designates individuals who are entirely without work, actively seeking employment, working fewer than two days per week, or striving to secure a suitable job. The

genesis of unemployment is generally rooted in the disproportionate ratio between the labor force or job seekers and the available job opportunities capable of absorption. Unemployment, being a recurrent economic quandary, poses a threat to productivity and income, culminating in potential poverty and other societal tribulations..

According to [19] about labor it is called that: Labor is everyone who is able to produce goods or services both to meet their own needs and for the community. This law gives us the understanding that anyone who is able to work both for his own needs and to meet the needs of others is said to be labor. So those who are classified as non-labor force are residents who are under 15 years old or older but do not work or find work for certain reasons or reasons, such as those who are still in school, those who take care of the household, retirees, and so on. Furthermore, states that: those who are not in the labor force can reach 37 percent of their population are still in school, keeping a house, retiring, seriously ill so unable to work, or have given up and will not look for another job.

Manpower encompasses the labor force, which is further divided into the working group and those actively seeking employment. On the flip side, the non-labor force category includes individuals engaged in various activities: 1) Students attending school, 2) Individuals managing household responsibilities without financial compensation, and 3) Others, such as income recipients. Those attending school focus primarily on educational pursuits, while those caring for households do so without monetary remuneration. The "others" category comprises two subtypes: 1) Income recipients, obtaining earnings through avenues like pension benefits, interest, or property rent, and 2) Individuals dependent on others due to factors like old age, disability, or chronic illness.

The employment quandary stands out as a pivotal indicator of economic development, drawing significant attention from researchers and policymakers. Undeniably complex, this issue is intricately intertwined with various factors, their interactions weaving patterns not always easily decipherable. Its magnitude is vast, impacting millions of lives. Labor-related challenges persist and evolve across countries, transcending the boundaries of development, economic ideologies, be it capitalism or socialism..

Workers face a pressing issue directly impacting them: the inadequacy or insufficiency of their income (salary) to meet the escalating demands of life and support their dependents. This imbalance, where the cost of living rises while salaries remain relatively stagnant, has catalyzed recent protest movements among workers in various regions. In the context of a capitalist system, the meager wages of laborers ironically serve as an advantage for foreign investors. Moreover, the government, often prioritizing the augmentation of its revenue, tends to perpetuate such conditions, aligning more with investors rather than the workers who are fundamentally its own citizens.

Job opportunities denote the availability of employment for those seeking work, essentially reflecting the number of individuals actively contributing to the economy. It can also be construed as job vacancies, representing the quest for labor sources. The prevalence of job opportunities hinges on the government's capacity to foster secure and favorable investment climates and the quality of human resources in generating employment. The legal definition of the population, as stipulated in Article 26 paragraph 2 of the Indonesian Constitution (1945),

encompasses both Indonesian citizens and foreign citizens residing in Indonesia. Broadly speaking, the general definition of population refers to all individuals residing in a country's geographical area for a specified duration, meeting conditions outlined by state regulations. In the Indonesian context, residency is attributed to individuals or groups residing in Indonesian territory for approximately six months or less, or those domiciled for less than six months with the intention of settling down.

Economic growth entails the augmentation of either gross national product or real national income, signifying the evolution of an economy through authentic output expansion. In accordance with Suryana (2005), economic growth is delineated as a surge in GDP (Gross Domestic Product), irrespective of whether this surge outpaces or lags behind concurrent population growth, and regardless of alterations in the economic structure. Kuznets characterizes economic growth as the amplification of a country's enduring capacity to supply diverse goods and services to its populace, demonstrated through sustained output growth (Todaro, 2006). A parallel definition by Arsyad (2004) encompasses economic growth as an upswing in Gross Domestic Product/Gross National Income, irrespective of its magnitude in comparison to population growth or the occurrence of structural changes in the economy.

Several key factors impact the economic growth of a society (country):

1. **Capital Accumulation:** This occurs when a portion of present income is saved and subsequently invested to augment future output.
2. **Population Growth:** Traditionally considered a positive factor, especially when correlated with an increase in the labor force, stimulating economic growth.
3. **Technological Progress:** Economists consider technological advancements as the most crucial factor for sustained economic growth.
4. **Institutional Resources:** Institutions, encompassing both informal rules (customs, traditions, social norms, and religion) and formal rules (constitutions, laws, regulations, and property rights), play a central role in economic growth and development by governing political, economic, and social interactions.

Unemployment, as defined by Sukirno in Nugroho (2015), pertains to individuals classified in the labor force actively seeking work at a specific wage level but unable to secure desired employment. Generally, unemployment arises due to an imbalance between the size of the labor force or job seekers and the available job opportunities.

## **2 Research Methods**

Based on the type of data and analysis used, this research includes quantitative research because it refers to the calculation of data in the form of numbers. So this research requires information to collect relevant and accurate data, books, and records related to the research. This study used secondary data obtained from the Central Bureau of Statistics of North Sumatra through the official website of [www.sumut.bps.go.id](http://www.sumut.bps.go.id) dari in 2015-2019. The classical assumption test in this study is used to ensure that the data are normally distributed, there is no multicollinearity, and there is no heteroscedasticity in the model used. If all of that is fulfilled then the analysis model is worth using, including Normality, Multicollinearity,

Heteroscedacity, Autocorrelation.

### 3 Results and Discussion

The purpose of the normality test is to ascertain if a given sample is drawn from a population exhibiting a normal distribution. In this research, the Kolmogorov-Smirnov non-parametric statistical test is employed for normality testing. A dataset is considered to possess a normal distribution when the Asymp. Sig. value exceeds the predetermined alpha threshold of 0.05. The findings from this analysis are as follows:

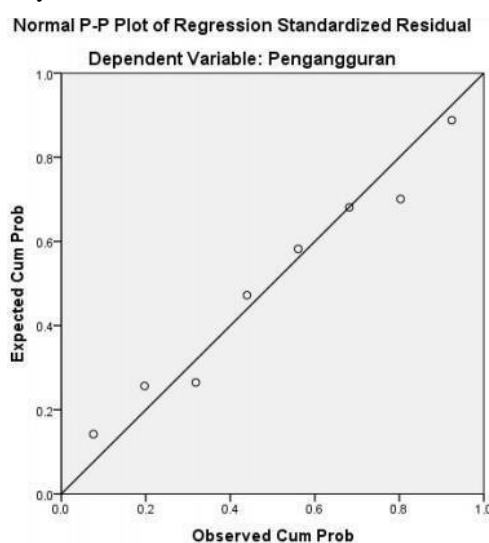


Figure 1. Normality Test

The multicollinearity test serves the purpose of assessing potential correlations among independent variables within a regression model. An optimal regression model is achieved when there is an absence of correlation among independent variables, as indicated by a Variance Inflation Factor (VIF) value below 10 and a Tolerance value exceeding 0.1. In essence, a VIF value under 10 and a Tolerance value over 0.1 signify the absence of multicollinearity issues among the independent variables in the regression model. The outcomes of the multicollinearity test are presented in the subsequent table..

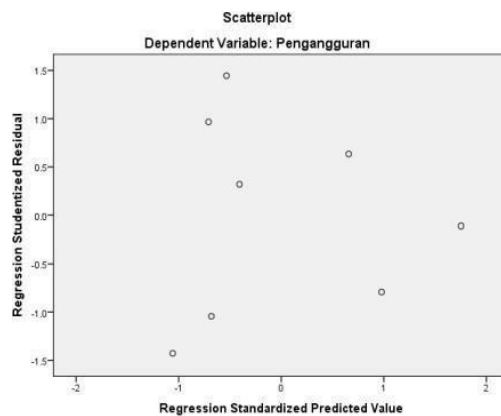
Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error				Beta	Lower Bound	Upper Bound	Tolerance
(Constant)	642339.402	218275.300		2.943	.042	36310.014	1248368.790		
Jumlah Penduduk	-.002	.019	-.051	-.105	.921	-.055	.051	.077	13.067
Penduduk Usia Sekolah	-.014	.100	-.066	-.138	.897	-.291	.264	.078	12.894
Pertumbuhan Ekonomi	-.392	.067	-.955	-5.818	.004	-.579	-.205	.661	1.513

a. Dependent Variable: Pengangguran

**Figure 2. Multicollinearity test**

The objective of the heteroscedasticity test is to examine whether there is variance inequality among the residuals of different observations within the regression model. The test is interpreted as follows: a) When the significance value (sig) exceeds 0.05, there is no indication of heteroscedasticity in the regression model. b) Conversely, if the significance value (sig) is less than 0.05, it suggests the presence of heteroscedasticity symptoms in the regression model. The tabulated results of this heteroscedasticity test offer insights into the nature of variance equality or inequality among the residuals..



**Figure 3. Heteroscedasticity test**

Examining the correlation between confounding errors in the current period (t) and the errors in the preceding period (T-1), this study aims to investigate the presence of autocorrelation. Autocorrelation is considered absent when the difference between the upper limit (dU) and the lag parameter (d) is within the range of dU to 4 – dU. To discern whether the variables under scrutiny in this study encounter autocorrelation issues, the relevant details are presented in the forthcoming table..

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. Change	
1	.964 <sup>a</sup>	.929	.875	6773.58250	.929	17.403	3	4	.009	2.058

**Figure 4. Autocorrelation test**

### 3 Conclusion

Based on the outcomes of the data analysis on the correlation between the Number of Population, School-Age Population, Economic Growth, and Unemployment in North Sumatra Province, several conclusions can be drawn. Firstly, the study reveals that the population has a negligible and adverse impact on unemployment in North Sumatra Province. Similarly, the number of school-age population exhibits a negative and insignificant effect on unemployment in the province. On the other hand, economic growth displays a notable negative and significant influence on unemployment in North Sumatra Province. The determination value, standing at 0.929, signifies that 92.9% of the variations in unemployment can be attributed to the population, school-age demographics, and economic growth, leaving 7.1% influenced by unaccounted variables not considered in this study.

Drawing on the earlier elaboration and the derived conclusions from the analysis, recommendations are put forth to alleviate the poverty rate in Indonesia. Within the academic realm, this research is positioned to serve as a valuable resource and reference for comprehending the intricacies of unemployment in North Sumatra Province. Furthermore, it is suggested that future research endeavors incorporate additional variables to enhance the depth of understanding. For the government, emphasis is placed on the imperative to bolster employment opportunities for effective labor absorption and a subsequent reduction in unemployment rates. Additionally, the formulation of well-considered labor policies is encouraged..

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