

## **ANALYSIS OF BIRTH, DEATH, AND MIGRATION IN KEDIRI CITY, EAST JAVA**

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### **Abstract**

Population growth is a dynamic of wages in a population from time to time. Population growth is influenced by several factors, including births, deaths, and migration. In demography itself, it is commonly referred to as natural population growth and total population growth. This article uses a quantitative research method with secondary data sources coming from BPS 2021 data. The data collection technique used is a literature study technique, and the data analysis technique uses formulas or quantitative calculations. In this paper can be found about fertility, mortality, and migration in the city of Kediri. Not only that, this paper also describes how fertility, mortality, and migration rates affect the rate of growth and population projections in Kediri City.

Keywords: Fertility, Mortality, Migration

### **1. Introduction**

Kediri is a city located in East Java Province, Indonesia. Kediri city has an area of 63.40 km<sup>2</sup> and the entire area was surrounded and bordered by Kediri. The city of Kediri itself is separated by the Brantas River in the middle of the city. The Brantas River stretches for 7 km from south to north. In addition, the city of Kediri is also located between a valley at the foot of the Mount Wilis volcano with a height of 2,552 meters. The city of Kediri is located between 07°45'-07°55' South Latitude and 111°05'-112°3' East Longitude. The entire area of Kediri City itself is directly adjacent to the Kediri Regency area. Based on data from the Central Bureau of Statistics of the City of Kediri in 2020, the population of the City of Kediri is 294,950 people with a population density of 4,652.20 people/km<sup>2</sup>.

A population is a group of certain species that live in an area for a certain period of time. Population can be said to refer to only one species of living things, in contrast to an ecosystem which includes all species in an area. Population dynamics are changes in population levels over time, space and varying population densities. Population in an area will change over time, it can be caused by fertility (birth), mortality (death), and some move to other areas (migration).

In general, births are said to have a great influence on the population because with births, the population of an area will increase. Birth rate or commonly called natality is the

frequency of live births in a population. The birth rate is calculated by calculating the number of live births per thousand population in each year. According to Ainy, et al (2019), the high and low birth rates are influenced by two factors, namely demographic and non-demographic factors. It was also explained that demographic factors consist of age structure, marital structure, and age of marriage. While non-demographic factors consist of the population's economy, education, urbanization, and industrialization (Mantra, 2013 in Ainy, et al., 2019).

Death or mortality is the frequency of death that occurs in a population in a certain area. Utomo (1985) in Alfana, MAF (2017) explains that death can be interpreted as an event of permanent loss of all signs of life, which can occur at any time after a live birth. If birth has a positive impact on the rate of population growth, it is different from death. Death tends to have a negative impact on the rate of population growth. As the number of deaths increases, the rate of population growth will be lower (Ainy, et al., 2019).

Population movement or migration is the activity of changing places of residence over a relatively long period of time, at least one year. Migration itself is divided into two kinds, namely in-migration and out-migration. In-migration causes an increase in the rate of population growth in an area. Meanwhile, out-migration results in a decrease in the rate of population growth in an area. The influx of residents into a destination area and the movement of people out of the area of origin also cause an increase or decrease in the population in an area (Ainy, et al., 2019).

These births, deaths and migrations are called population dynamics. Population dynamics is the change or growth of the population over time. In general, population growth can be divided into three, namely natural growth, migration and total growth. Population dynamics that occur in an area must be balanced. If it is one-sided, it will cause social inequality or it can also cause a population explosion in a certain area. The fertility rate has a positive effect on the rate of population growth or increases the number of residents, while the mortality rate has a negative effect or a reducing factor on the rate of population growth (Wardhana, et al., 2020).

This population dynamics can affect development in encouraging economic growth, when the population increases it needs to be accompanied by a population of sufficient quality so that it can become the capital of economic growth. On the other hand, it will be a burden for a country if the quality of its population is low and hinders development. Therefore, this paper is made so that readers can understand the importance of balancing fertility, mortality and also migration in each region.

## **2. Methods**

The method used in this paper is a type of quantitative research. Quantitative research methods can also be interpreted as research methods based on the philosophy of positivism, used to examine certain populations or samples, data collection using research instruments, quantitative/statistical data analysis, with the aim of testing predetermined hypotheses (Sugiyono, 2011) . The data source used by the author is a secondary data source. Where secondary data sources are sources that are not directly obtained by researchers. The secondary data sources in this study are the fertility, mortality, and migration rates of the population of Kediri City in 2020 according to the Central Statistics Agency in 2021. The

The data collection technique used in this paper is literature study. Where literature study is a data collection technique using books, journals, and other literature related to research. The data analysis used in this paper is by using quantitative analysis techniques. An instrument is said to be valid if the instrument is able to measure what it wants to measure (Suharsimi, A., 2007). A valid instrument means that the measuring instrument used to obtain data (measurement) is valid. This validity test is used to determine whether the items in the instrument are valid or not.

## **3. Results and Discussion**

Population growth or dynamics is a phenomenon of population change, either increasing or decreasing the population in an area from time to time. Changes in population are influenced by demographic factors, such as births (fertility or birth rate), deaths (mortality), and population movement (migration); and non-demographic factors, such as education and health levels. It is said to increase when there are births and the number of people who come to the area, on the contrary it can be said to decrease if there are deaths and there are residents who leave the area. Population growth rate is the rate of population growth in a region/country over a certain period of time (%).

For this reason, it is necessary to calculate the number of population growth to predict the population of an area in the future. The determination of the population can be done through surveys, records and population censuses for a certain period of time and a schedule that has been adjusted according to the region. Population growth is one of the factors related to the socio-economic conditions of a region.

Factors affecting population growth include:

1. Birth (Fertility or Natality)

Birth is a natural factor related to the reproductive ability of the population. Birth is the increase in population in an area marked by the birth of a live baby. The supporting factor (pro-natality) is the existence of early marriages, such as in remote villages, which requires their daughters to marry immediately when they reach their teens, and the notion that late marriage can be embarrassing. In addition, there is an assumption that many children have a lot of fortune, children will be the pride of their parents, the successor of the family is male, so people will continue to have children until they have children, thereby increasing births. Family planning programs that are not implemented actually increase the birth rate. Inhibiting factors (anti-natality) for births, such as delaying marriage, limiting child support, the assumption that children will be a burden to family needs, and family planning programs to limit the number of children.

## 2. Death (mortality)

Death is a natural cause of overcrowding. Death is a phenomenon of permanent loss of signs of human life or a reduction in the population of an area. Factors supporting the causes of death, such as war, natural disasters, disease outbreaks, traffic and industrial accidents, suicide and homicide, unhealthy lifestyles, irregular eating habits, not maintaining health and lack of health services in health areas (health centers, pharmacies, houses) sick). The inhibiting factor is of course the opposite of the supporting factors, such as a healthy lifestyle, a regular diet and nutritious food, adequate health education, a low poverty rate, a high education level of the population and a belief in the teachings of their religion. prohibited from committing suicide and killing people.

## 3. Migration

Population comes from outside the area who move to other areas in order to develop themselves, seek safety and protection, study, work. Meanwhile, residents leave or move from one area to another to settle, work or study in large numbers (TKI).

Formula for

### 1. Natural Population Increase

The result of natural population growth is obtained from the difference between the number of births and the number of deaths. The calculation of the difference between the number of births and the number of deaths of people migrating (in and out of the region) is not taken into account because it is relatively small. The formula for calculating natural population growth: The

formula:

$$\mathbf{T = L - M}$$

Description:

T = Total population growth/year

L = Number of births/year

M = Number of deaths/year

## 2. Migration Population Growth The

results of the calculation of the migration population are obtained from the difference in the number of in-migration population (immigration) and the number of out-migration (emigration).

Formula:

$$\mathbf{T = I - E}$$

Information:

T = Total population growth/year

I = Number of in-migration/year

E = Number of out-migration/year

## 3. Total Population Growth (Total Population Growth) Population

growth which is the result of calculation of natural population growth plus migration population growth. It shows the size of an area's population growth over a year, taking birth, death and migration factors into account. The formula determines the total population growth:

Formula:

$$\mathbf{T = (LM) + (IE)}$$

Description:

T = Total population growth/year

L = Number of births/year

M = Number of deaths/year

I = Number of immigrants (people who enter a country/year) area to stay/year)

E = Number of emigrants (residents leaving/going to another country/territory)/year

## 4. Population Growth Projection

In order to plan development in an area, some information about the condition of the population in that area will be required. Such as the number, distribution, and composition of the population based on age. The available information does not only contain information at that time (year), but also past and present information is also available based on survey and census results. As for the future, it is necessary to make a projection from the existing information, where this projection contains an estimate of the population and its composition in the future.

Formula:

$$P_t = P_0 + (L - M) + (I - E)$$

Information:

$P_t$  = Total population in year t

$P_0$  = Total population in base year

Kecamatan Subdistrict	Jumlah Penduduk Awal Tahun The Number of Population Early in The Year	Lahir Birth	Mati Death	Datang Come	Pindah Move	Jumlah Penduduk Akhir Tahun Year-End Population
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mojoroto	112 545	1 213	564	1 656	1 400	112 237
Kota	91 276	901	522	1 108	1 193	89 833
Pesantren	91 129	913	601	1 288	1 021	90 192
<b>Kota Kediri</b>	<b>294 950</b>	<b>3 027</b>	<b>1 687</b>	<b>4 052</b>	<b>3 614</b>	<b>292 262</b>

Table 1. Number of Population: Birth, Death, Coming, and Moving by District Result Population Registration, 2020 (BPS, 2020)

Based on the data from Table 1 above, we can find out about fertility, mortality and migration in the City of Kediri, East Java. If calculated using the above formula, the following results will be obtained:

1. Natural Growth of Kediri City in 2020

$$T = L - M$$

$$T = 3,027 - 1,687$$

$$T = 1,340$$

2. Migration Population Growth in Kediri City in 2020

$$T = I - E$$

$$T = 4,052 - 3,614$$

$$T = 438$$

3. Population Growth Total City of Kediri in 2020

$$T = (L - M) + (I - E)$$

$$T = 1,340 + 438$$

$$T = 1,778$$

4. Projected Population of Kota Kediri in 2020

$$P_t = P_0 + (L - M) + (I - E)$$

$$P_t = 292.262 + 1,340 + 438$$

$$P_t = 294,040$$

According to the Geography Book Package C with the title Module Theme 9: Uneven Density by Kustopo (2018), the magnitude of the population growth rate is classified into 3, namely as follows:

1. Rapid population growth, if the population growth rate is higher than 2% per year.
2. Medium population growth, if the population growth rate is between 1% - 2% per year.
3. Population growth is slow, if the rate of population growth is less than 1% per year.

Based on BPS data (2021), the population growth rate of Kediri City in 2020 is 0.64%. With a projected population of 294,040, this figure is quite high.

As we already know that population growth in a region greatly affects various aspects in that region, including the economy. For some people, a large population is a positive thing because with a population so large that it can be used as a subject of development, the economy will develop if the number of workers is large. But on the other hand, some people doubt whether a large population is an asset as previously described, but on the contrary, the population is a burden for development (Rochaida, E., 2016). This is related to the fulfillment of needs that are increasingly related to population development.

Rapid population growth will also result in a rapid increase in the number of workers. Wahyuningsih, (2009) in Rochaida, E., (2016) says, many theories and empirical frameworks have proven that labor is not only seen as a part of the unit in the creation of output

(production), but also how the quality of the workforce interacts with other factors. -Other production factors to create added value. For this reason, great efforts have been made to increase the share of the population's income, among others by diversifying the jobs produced by the government and the private sector. This is intended so that the population has a choice in an effort to find work, in an effort to earn income, so that they can meet their needs and improve their welfare.

The problem now is, the City of Kediri has a relatively high projection number because this city has its own charm for immigrants. The existence of a large industrial sector in Kediri City makes people from outside regions choose to move and settle in the Kediri City area. This can be seen in the BPS data for 2021, where the City of Kediri has a total of 4,052 in-migration figures in 2020. Apart from the industrial sector, the existence of public facilities such as schools, universities, and large supermarkets in the city area makes people from the outside, they think that living in urban areas will make it easier for them to fulfill their daily needs.

The high number of projections, if not balanced with regional development, will lead to social inequality. Where a dense population, with an increasingly narrow area and diminishing employment opportunities will cause a decrease in the quality of an area.

#### **4. Conclusion**

Based on the description above, it can be concluded that the City of Kediri has a total population of 292,262 in 2020 with:

- 1) The natural population is 1,340.
- 2) Migration population growth is 438.
- 3) Total population growth is 1,778.
- 4) Projected population growth 294,040.
- 5) Population growth rate of 0.64%

Despite having a relatively low population growth rate, the City of Kediri has a fairly high projection rate. This can be driven by several factors, including the economic sector which is related to promising employment opportunities and from the education sector as a public facility that can be utilized.



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