Development or decrease?

A research about the relationship between population development and the development of jobs per 1000 inhabitants in the municipalities within a range of 30 kilometers of the municipality of Groningen

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Abstract

There is an urbanization trend in the Netherlands that is predominantly caused by younger people moving from rural areas to urban areas. This trend is expected to keep existing. This thesis aims to discover the correlation between population development and the number of jobs per 1000 inhabitants of a municipality within a range of 30 kilometers of the municipality of Groningen. People who move into the city of Groningen are often young and come in to study. People that leave the city of Groningen are often a little older and are leaving to find a job elsewhere. The correlation between population development and the jobs ratio was tested using a linear regression. There was, under the conditions of this model, no correlation between the dependent and the independent variables. However, after the control variables were added, there was a linear correlation. The ratio of people aged between 15-25 and 25-45 correlates positively with the jobs ratio. The age group 45-65 correlates negatively with the jobs ratio. Education levels of university and university of applied sciences also showed a positive correlation with the jobs ratio. People both follow jobs and jobs follow people. Jobs tend to concentrate in the city, just as people in the age group of 15-45 with a university or university of applied sciences degree do.

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1. Introduction

Groningen is growing (CBS, 2017). Even though the municipalities surrounding the city of Groningen deal with population decline, the population in the city is still rising. The city mostly attracts people under the age of 25 from the northern provinces of the Netherlands. The people that leave are mostly in their twenties, and move towards the Randstad (CBS, 2017). According to the population prognosis of 2016, population in the city of Groningen will increase by more than 10% from 2015 to 2030. Mostly, the regions that are smaller in terms of population will encounter further population decline. In 2030, almost 1 out of 5 rural regions is expected to have less inhabitants than they had in 2016 (CBS, 2016).

Population growth can influence economic development through 3 mechanisms: firstly, through the size of a population. With a larger population, economies of scale create a higher income, and less diminishing returns. However, if a population is too large these effects vanish. There is thus an optimum population size. Secondly, through the growth rate of a population. Changes in population size at a higher rate need a higher level of investment to achieve rising outputs. Thirdly, through age distribution. When a population has a lower birth rate, this population often has a higher percentage of the population in ages between 15 and 65 as opposed to a population with a relatively high birth rate. With the same resources and capital available, this population can thus have a greater output and income as a result of having a high percentage of the population eligible for productive work. Also, populations in which there is a higher birth rate would have to support more children, this has an effect on availability of capital for output (Coale & Hoover, 1958).

But it also works the other way around: economic development can influence population growth through births, deaths and migration. In classic economics, the assumption is held that a rise in incomes tends to decrease birth- and death rates. The demographic transition theory states that when an economy is predominantly based on agriculture (and is thus non-developed), death rates are high and birth rates are high and stable. When the economy moves upward the transition, according to the demographic transition theory, this results in a decrease in death rates, followed by a decrease in birth rates. One of the characteristics of economic development is urbanization (Coale & Hoover, 1958).

The Coale & Hoover theory (1958) was among the first theories on the relationship between economic development and population development, and there has been added to since. According to Kelley (2001), population growth affects economic development positively in the long run. Nguyen & Nguyen (2018) add to this by stating that there is a causal relationship between economic development and population development, but not a linear relationship. When population grows too much, a treshold is reached after which more population growth causes economic decline. Urbanization and economic development are interrelated, and the concentration of capital in urban areas is a part of this process. Urbanization is not essential for economic development, but there is a causal relationship between the two (Buckley et. al., 2008).

People and firms tend to settle in cities because cities are mostly agglomeration economies. There is a higher productivity, more information, knowledge, creativity and financial assets. This leads to a variety in consumption, reduction in costs, improvement of output and utility but also to higher rents and more crowded places of residence. The world is getting more and more unequal, as more and more people move to cities (Buckley et. al., 2008). The trend of urbanization has a connection to locational disadvantage of rural regions, where there is a decline in amenities and services. Often, municipalities defend these actions by population decline. However, the less services there are, the faster the process of decline goes (Costello, 2009).

The most important reason for people to move out of cities is the lack of affordable housing. High rents are a push factor to move out of the city. Also, people leave the city because of lifestyle reasons. People generally want less stress; they want to be closer to nature and live a more relaxed lifestyle. Rural areas have often been labeled as places where this is still possible (Costello, 2009).

A change in the number of jobs per 1000 inhabitants in a municipality (or the jobs ratio) has an economic impact on a municipality. A decrease in population can lead to a decline in jobs, which can lead to population decline again. This could put municipalities in a negative, vicious circle. This can maybe be prevented by finding the cause of population decline. The correlation between population development and the jobs ratio will be studied in the municipalities that lie within a range of 30 kilometers of the municipality of Groningen. This way, several municipalities in the provinces of Groningen, Drenthe and Friesland are selected. Around 66% of total migration towards the city of Groningen comes from these provinces (CBS, 2017).

This research will therefor focus on the correlation between population development and the jobs ratio in the municipalities within a range of 30 kilometers of the municipality of Groningen, by trying to answer the following research question:

How can the correlation between the population growth of the municipality of Groningen and the population decline of the municipalities surrounding the city of Groningen, and economic development in the form of jobs per 1000 inhabitants in the municipalities within a range of 30 kilometers of the municipality of Groningen be explained?

The sub-questions are the following:

- To what extent is there still an urbanization trend in the Netherlands, and why?
- Who leave the municipality and who settle into the municipality of Groningen?
- To what extent does population development correlate with change of the jobs ratio in the municipalities within a range of 30 kilometers of the municipality of Groningen?

This research thus studies a broader phenomenon about which theories have been formed and tries to find out whether these theories also apply in this case, and if not, why.

In the theoretical framework, the urbanization trend in the Netherlands and the reasons for that trend will be explained. After that, it will clarify who leave and settle into the municipality of Groningen, and what their motives are. Following the theoretical framework, there is the conceptual model and methodology. Hereafter the results will be presented and a conclusion will be drawn.

2. Theoretical framework

2.1 Key concepts

In this chapter, existing theories that are relevant to this thesis will be discussed. The key concepts are urbanization, population development and economic development.

Urbanization is often referred to as the shift of population from rural areas to more urban areas (Dyson, 2010).

Population development is the sum of the number of deaths, number of births, immigration into a municipality and emigration out of a municipality.

Economic development is in this research measured as the number of jobs per 1000 inhabitants of a municipality, also referred to as the jobs ratio. The jobs ratio is a proper indicator for economic development, because if aligns with GDP. So, when the GDP increases, the number of jobs per 1000 inhabitants increases as well (Bartik, 1994).

These concepts will be extensively discussed in the next paragraphs.

2.2 Urbanization in the Netherlands

Urban growth can be a result of urban natural increase or migration patterns (Dyson, 2010). Natural increase is acquired by deducting the death rate from the birth rate. This rate of natural increase shows how fast a population is growing or declining. When mortality rates decline, this causes population growth. Fertility decline is the main cause of population ageing (Dyson, 2010). The birth rate is defined as births per 1,000 persons in a specific period, the death rate as deaths per 1,000 persons in a specific period (Dyson, 2010).

Internal migration can be an important part of the growth of a city. The cause for this kind of migration are mostly rural push factors, such as poverty, and on urban pull factors, such as industrialization (Jedwab et. al., 2017). Migration is a mechanism of transferring human capital, knowledge and financial assets. The reason for migration is mostly job opportunities. Therefore, migrants often move to the city, where most of the job opportunities, in theory, locate (Williams, 2009). Urbanization can thus be linked to the job opportunities in cities, however, people that move to a city do not necessarily only look for jobs or other financial outcomes, non-economic spatial characteristics also play a role (Royuela, 2015).

Urbanization may thus not come from migration patterns alone. Internal population growth can also play a role. Increases in income do not have to be the only driver of urbanization, high fertility rates or lower death rates can also play a role in this process. If this is the case, then this would not necessarily end up in economic growth, because the effects of congestion can possibly decrease the benefits the agglomeration brings (Jedwab et. al., 2017). Over the past few decades, there has been worldwide urbanization. In 2007, world population predominantly lived in urban areas for the first time. This worldwide trend is expected to pursue, and by 2050 the world will be around 66% urban (United Nations, 2014).

In the period 1990-2015, the Dutch population has grown by 13,5 percent. On average, urban municipalities grew more than non-urban municipalities. In all regions, the city experienced bigger population growth than rural regions did (NIDI, 2018). In 2011, more than half of the population of the Netherlands lived in urban areas. Concentration of people, activities and social opportunities is a good source for growth and renewal (Compendium voor de Leefomgeving, 2019).

The population prognosis is a rapport published by CBS (Centraal Bureau voor de Statistiek) and PBL (Planbureau voor de Leefomgeving) that aims to describe the most probable future development, taking into account recent developments and insights on national and regional levels. According to the population prognosis of 2016, a lot of smaller, peripheral municipalities will keep experiencing population decline while the urban areas keep growing. Of the expected growth of the Dutch population, almost 75% is expected to take place in bigger municipalities. The biggest growth is expected in the cities of Amsterdam, Rotterdam, Den Haag and Utrecht, but there are several other cities that will encounter strong growth, among which Groningen (CBS, 2016).

Until 10 years ago, there was a suburbanization trend in the Netherlands. This is a growth located more towards the edges of urban areas, towards the surrounding villages and is generally driven by easy accessibility to the city (Dyson, 2010). That has turned around now: people move more towards cities and away from rural areas. These people are mostly young and looking for a job. The population in urban municipalities has increased on average, not only because of migration, but also because the population is younger here. A bigger part of the population is in a fertile age, so more children are born (NIDI, 2018). In non-urban municipalities, natural growth has decreased notably. This is a result of ageing, which leads to an increase in deaths and a decline in births.

The last 25 years, the Dutch population has aged more and more. The share of people older than 65 has increased from 12,8 percent in 1990 to 17,8 percent in 2015, and the share of younger people has decreased from 25,7 percent to 22,7 percent. This shift was more obvious in non-urban areas, as opposed to urban areas (NIDI, 2018). Especially smaller municipalities will see their population decline. In the future, the Netherlands is expected to keep growing, but at a slower pace than it used to. The share of people of 65 years and older is remarkably lower in cities than it is in smaller municipalities. According to the prognosis, in 2030, the share of people of 65 and older in cities will be around 17%, while the share of elderly people in smaller municipalities will be 26%. Cities are and remain relatively young because of the continuous influx of younger people. Smaller municipalities encounter outflow of younger people (CBS, 2016).

2.3 Migration towards and from the city of Groningen

Migration has always been around and has increased over the last decades. International migration in Europe increased since the refugee crisis and migration into the Netherlands rose in 2015 and 2016 and stabilized in 2017. Worldwide, people mostly migrate to economically thriving areas (OECD, 2018). In 2017, 235,000 immigrants settled in the Netherlands, and 154,000 people emigrated out of the Netherlands (CBS, 2018). The biggest share of these migrants comes to urban areas in the Netherlands to study or work (CBS, 2018; Venhorst, 2017). Often, people that immigrate into the Netherlands emigrate again within 2 years (CBS, 2018).

Internal migration in the Netherlands has recently shifted from suburbanization to urbanization. More people prefer to live in the city, as can be concluded from the rising house prices in urban areas. These urban areas grow in popularity because there are more people that are higher educated, because people tend to get children at a later age and because there are more jobs available in urban areas. Mostly, younger, higher educated people migrate towards the city (ter Heide & Smit, 2016).

Movements from and to the city of Groningen have a clear spatial structure. The city of Groningen predominantly pulls people out of the northern provinces of Groningen, Friesland and Drenthe. Two thirds of the people that settle in the city of Groningen come from these provinces. A lot of students move to Groningen to live on their own and study. Therefore, the city of Groningen attracts a lot of younger people between the ages of 18 and 21. After studying, a lot of these younger people leave the city again, resulting in a decrease of people in the age group from 23 to 30. People that are older than 40 rarely come to the city of Groningen, and they also rarely leave (CBS, 2017). The people that leave Groningen are thus often people that finished their study program. These people are likely to leave towards the Randstad area. The city of Groningen seems to be just a step towards a good job in the bigger cities of the Netherlands (CBS, 2017). The university of Groningen thus plays a significant role in the migration patterns to and from the municipality of Groningen. This aligns with Goddard & Vallance (2013), who state that the presence of a university influences not only employment and the built environment, but also migration flows.

Not all municipalities in the northern part of the Netherlands are shrinking. As a result of the past suburbanization trend, there are some municipalities close to the city of Groningen, like Haren and Tynaarlo that have a positive balance when it comes to movements towards and from the city of Groningen. This means that these municipalities attract more people from the city of Groningen, than they encounter people that leave from these municipalities towards the city of Groningen (CBS, 2017).

The province of Groningen counts around 580,000 inhabitants, of which 54,000 are students (Provincie Groningen, 2018). The city of Groningen counts around 200,000 inhabitants, of which 31,000 are students. In 2015, Groningen was, after Wageningen, the city with the highest share of student households. The approximately 25,000 student households in the city of Groningen made up 22% of total households (CBS, 2018).

In 2018, the number of registrations for the Rijksuniversiteit Groningen has reached the highest number of applicants ever. The university is aiming not to grow any more, and they state that they want to introduce a drawing system for particular studies to limit the influx in the city (DvhN, 2018). Because the influx in the city of Groningen is predominantly caused by young people coming to the city to study, this drawing system might limit a part of the influx to the city. However, there will still be students coming into Groningen to study at the university of applied sciences.

Other reasons for people to migrate towards the city of Groningen are mostly not house-related. People more often migrate for amenities, health care opportunities and accessibility. Moving is more frequently house-related when people move within the city of Groningen (Provincie Groningen, 2012).

3. Conceptual model

Figure 1 shows the conceptual model. Population development consists of birth rate, death rate and migration. Changes in birth- and death rate are demographic factors. Push and pull factors have an impact on migration flows. All these factors together can contribute to urban growth and/or rural decline. Population development results in urban growth and rural decline. Population development can have an impact on economic development, just as economic development can have an impact on population development.

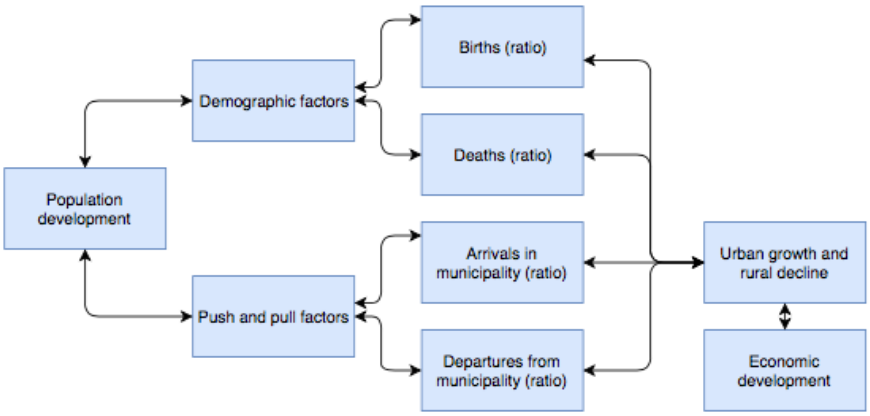

Figure 1: Conceptual model

The hypothesis that follows from this conceptual model is the following:

Population development (the urban growth of the city of Groningen and the decline of the rural municipalities) correlates positively with the jobs ratio in the municipalities within a range of 30 kilometers of the municipality of Groningen

Urban growth has an impact on economic development, however, urban growth does not necessarily end up in economic growth because at a certain point the downsides of urban overpopulation countervail the advantages of the agglomeration (Jedwab et. al., 2017). As mentioned before, according to Coale and Hoover (1958), population growth can influence economic development through 3 mechanisms, being population size, growth rate and age distribution. Migration has an impact on urban growth because of the pull factors of the city, and the push factors of the rural. However, a part of urban growth can also be an effect of demographic factors which are birth- and death rates (Jedwab et. al., 2017).

4. Methodology

4.1 Selected municipalities

In this research, the correlation between the number of jobs per 1000 inhabitants and population development and its components within several municipalities in the northern provinces of the Netherlands is studied. The goal is to find out whether there is a relation between the growth of the city of Groningen and the decline of (most of the) the surrounding municipalities and the economy of the municipalities within a range of 30 kilometers of the municipality of Groningen.[1]

The 30-kilometer range is set to minimize the effect of other cities in the northern provinces. Because Groningen is located close to three provincial borders, it is not only relevant to look at the province of Groningen, but also at the provinces of Drenthe and Friesland. By using a 30-kilometer range, the most interesting cases like Pekela, Loppersum and Appingedam (regions with the biggest population decline among municipalities country-wide) are included, as well as regions that show an increase, like Haren and Tynaarlo. Figure 2 shows the selected municipalities. There is a total of 38 municipalities or cases.

Figure 2: Selected municipalities

4.2 Data sources

LISA.NL is a Dutch website that aims to gives insight in job availability in the Netherlands. The data is achieved by combining 21 regional job availability registers. This way, the initiative created a country-wide file. The number of jobs that is based on full timers, part timers and temporary workers (LISA.NL, 2019).

CBS is a Dutch institution that publishes statistical information about the Netherlands. CBS has been peer reviewed in 2015, and is listed as an independent, professional organization. CBS uses register data. Population observations in the dataset that is used in this research are based on information that is supplied to Statistics Netherlands by the Municipal population register. In very few cases the data that is collected by Statistics Netherlands are not complete. In these cases, the data are estimated (CBS, 2019).

[1] Aa en Hunze, Achtkarspelen, Appingedam, Assen, Bedum, Bellingwedde, Borger-Odoorn, Dantumadiel, De Marne, Delfzijl, Dongeradeel, Eemsmond, Groningen, Grootegast, Haren, Heerenveen, Hoogezand-Sappemeer, Kollummerland en Nieuwkruisland, Leek, Loppersum, Marum, Menterwolde, Midden-Drenthe, Noordenveld, Oldambt, Ooststellingswerf, Opsterland, Pekela, Schiermonnikoog, Slochteren, Smallingerland, Stadskanaal, Ten Boer, Tynaarlo, Tytsjerksteradiel, Veendam, Winsum and Zuidhorn

The research will be quantitative. CBS provides information on births, deaths, immigration into and emigration out of a municipality, per municipality, per year. Economic growth will be measured by the number of jobs per 1,000 persons within a municipality. The Dutch database LISA.NL provides information on the number of jobs in a municipality. CBS provides data on the number of inhabitants per municipality. By dividing the number of jobs in a municipality by the number of inhabitants per municipality and multiplying it by 1,000, a new variable is created. This variable is the number of jobs per 1,000 inhabitants, or the jobs ratio.

4.3 Statistical analysis

The research will focus on statistical analysis. The dependent variable will be the number of jobs per 1,000 inhabitants. The independent variables will be total population development, births, deaths, immigration into and emigration out of a municipality. All these variables will be made relative by dividing the numbers by the inhabitants of a municipality and multiplying it by a thousand. There are some factors that might also influence the development of the number of jobs per 1,000 inhabitants, these factors will be added as control variables. The control variables are sex, age, education level and number of benefit recipients. These variables will also be made relative to population within the municipality to make them comparable. The age group <5 is excluded to rule out the problem of multicollinearity.

The control variables are added because they possibly influence the jobs ratio. Education level might influence jobs per 1,000 inhabitants in a municipality, because higher educated people are relatively less often unemployed, and they have the highest chance to get a well-paid job and therefore a higher income (CBS, 2017). The number of benefit recipients can have an effect, because if more people receive benefits, often more people are unemployed. Age and sex can have an effect because in general people under 20 and over 80 and women are more often unemployed (CBS, 2017).

To answer the research question by using the described data, multiple linear regression will be used. Multiple linear regression is suitable because the aim is to explain the dependent variable by studying more than one independent variable. The first model will contain only the independent variables, and in the second model the control variables will be added. If there is a significant effect between the dependent variable (jobs ratio) and independent variables (population development and its components), then there is a linear connection between the dependent and the independent variables. If there is a significant effect in the second model, then there is a linear connection between the dependent variable on the one hand, and the independent and the control variables on the other hand. Figure 3 is a visual representation of the variables that will be included in the research.

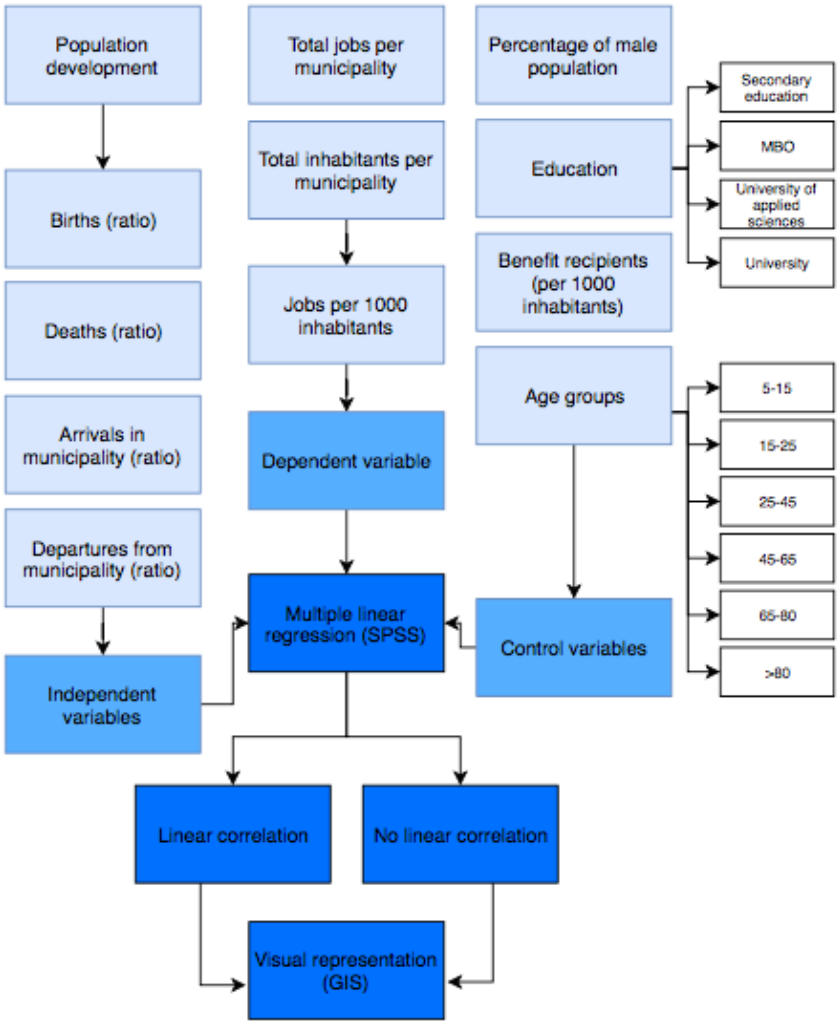

Figure 3: visual representation of data-analysis

5 Results

5.1 Multiple linear regression

To find out whether there is a correlation between the dependent variable (jobs ratio) on the one hand, and the independent variables (birth ratio, death ratio, arrivals in municipality ratio and departures from municipality ratio, population growth ratio) and the control variables (age, sex, education level, benefit recipients ratio) on the other hand, a regression was run consisting of two models.

In the first model, the dependent variable was measured against the independent variables, and in the second model the control variables were added. The regression consisted of 38 cases.

Figure 4 is a graphic presentation of the dependent variable, the jobs ratio. The job ratio is the highest in the municipalities of Groningen, Assen and Schiermonnikoog. Groningen and Assen are the two biggest cities in the dataset, and Schiermonnikoog is an island with very little inhabitants but relatively much tourism. This information can help explain the differences in the number of jobs per 1,000 inhabitants of a municipality.

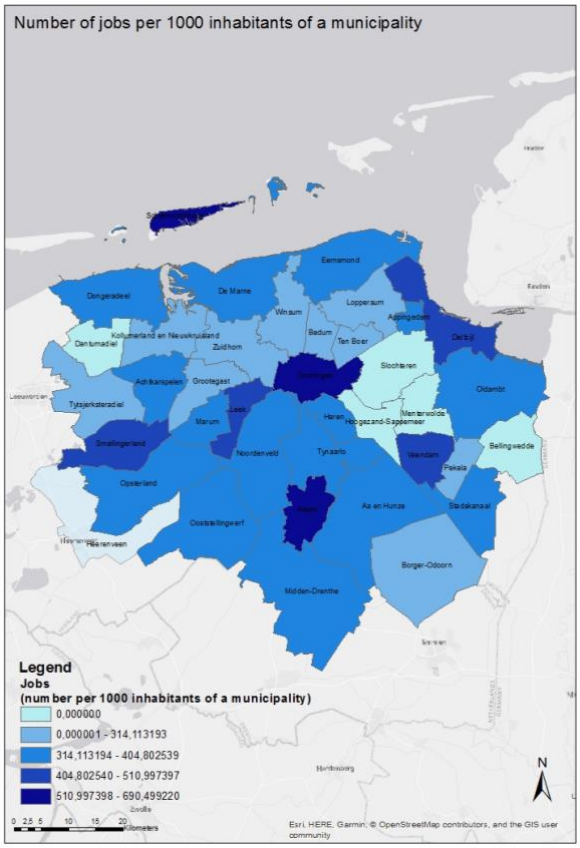

Figure 4: Number of jobs per 1000 inhabitants of a municipality
Source: Own elaboration based on data provided by LISA.NL.

5.2 Population development and economic development

The first model was not significant (see figure 6 on page 16). There is thus no linear correlation between the jobs ratio and population development in this model. This does not complement to the Coale & Hoover (1958) theory about the relationship between population development and economic development. However, they do state that urbanization often goes together with economic development, which seems correct when looking at figure 4. The absence of a correlation in this model can be explained by the fact that between economic development and population development there is causality, but this effect is not proportional and therefore not linear (Nguyen & Nguyen, 2018).

Figure 5 is a visual representation of population development. The red regions show a decline in population, the blue regions show an increase. Population increase in Groningen is very moderate. Haren and Marum appear to be growing even more. This can be explained by suburbanization movements: outward growth of urban development, more towards the surrounding villages and towns. Suburbanization is often driven by easy accessibility to the city (Dyson, 2010). You can clearly see that the blue, growing areas are located close to the municipality of Groningen, while the declining regions concentrate more outward. This relates to the trend that urban regions experience more population growth than rural regions do, as described by NIDI (2018).

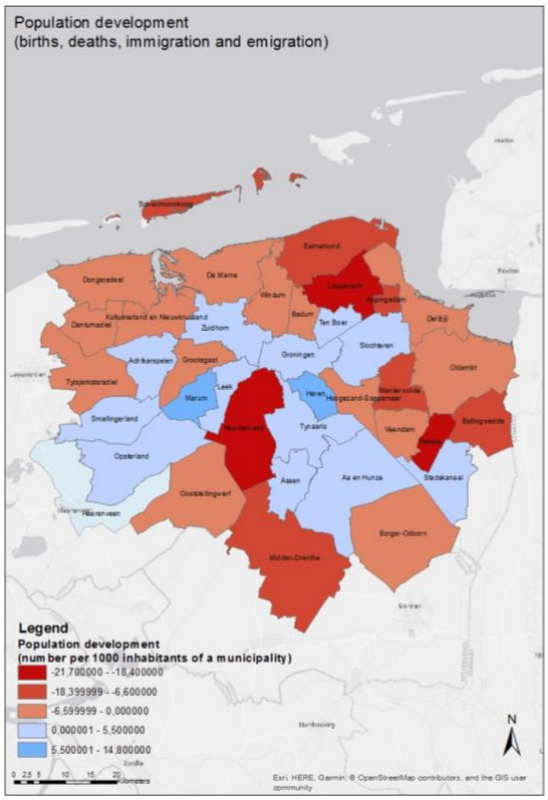

Figure 5: Population development
Source: Own elaboration based on data provided by CBS.

Model	N	R	Std. Error	Significance
1	37	0,379	163,174	0,412
2	37	0,838	122,962	0,022

Figure 6: Regression output

5.3 Economic development, age and education

As can be seen in figure 6, the second model is significant (regression output can be consulted in appendix D, page 30). There is thus a linear correlation between the dependent variable on the one hand, and the independent and control variables on the other hand.

Because this model is significant, it is relevant to look at correlations. The model shows that the correlation between the jobs ratio and the independent variables are all insignificant. Urban growth in the municipality of Groningen and decline in the rural regions in the municipalities does thus not correlate with the jobs ratio in the municipalities within a range of 30 kilometers of the municipality of Groningen.

In contrast, the dependent variable, jobs ratio, shows a significant correlation with some control variables. These are the variables highest level of education (applied sciences), highest level of education (university) and the age categories 15-25, 25-45 and 45-65. These results are listed in figure 7.

	Coefficients	Std. Error	Pearson Correlation
Independent variables			
Live born children ratio	-40,673	37,233	0,013
Deaths ratio	-74,788	29,893	-0,225
Arrivals in municipality ratio	-12,028	15,97	0,045
Departures from municipality ratio	11,854	15,947	0,029
Population growth ratio	7,37	14,694	0,217
Control variables			
Percentage of male population	32,406	66,633	-0,208
Highest level of education: secondary education	20,853	13,923	-0,122
Highest level of education: MBO	15,409	12,087	-0,201
Highest level of education: applied sciences	29,918*	19,022	0,38
Highest level of education: university	1,507*	11,199	0,377
Benefit recipients ratio	1,566	2,581	-0,13
Age 5-15	-117,214	174,488	-0,179
Age 15-25	-149,413*	153,624	0,329
Age 25-45	58,424*	131,731	0,36
Age 45-65	-16,146*	116,55	-0,458
Age 65-80	-18,947	125,54	-0,203
Age >80	179,876	116,568	0,146

Note: * represents significance at the 0,05 level

Figure 7: Results estimating the effect of the independent variables and control variables on the jobs ratio

Because the results come from a regression, the direction is unclear. It can thus be that these variables influence the jobs ratio, or that the jobs ratio influences these variables.

Education level was added in the analysis because according to CBS (2017), the higher educated are more often employed and have the highest chance to get a well-paid job. Following this, and the fact that the skilled people locate in the city (Glaeser & Saiz, 2003), it seems logical that there is a correlation between education level and the jobs ratio. Figure 8 and 9 on the next page show the ratio of people that have completed university or applied sciences as their highest level of education.

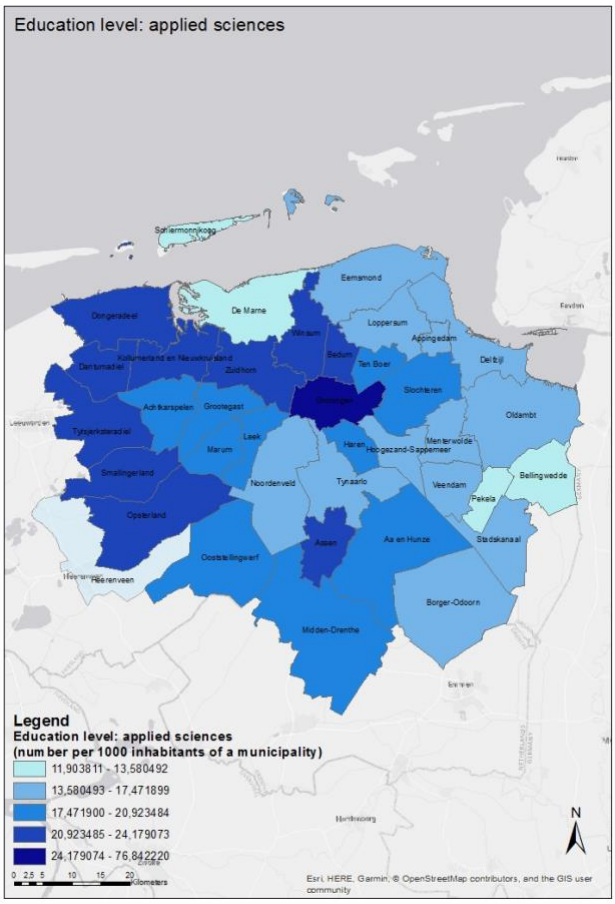

Figure 8: Highest level of education: applied sciences
Source: Own elaboration based on data provided by CBS

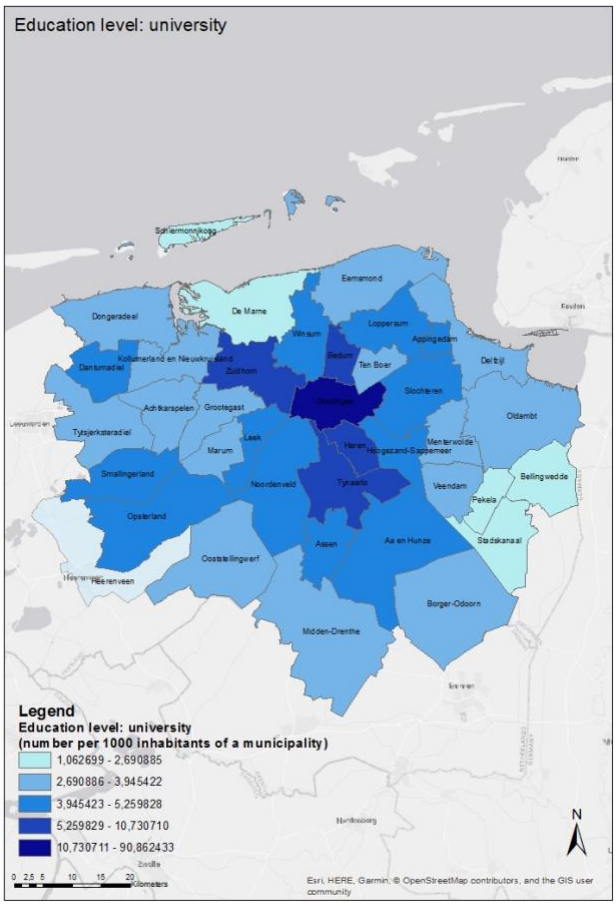

Figure 9: Highest level of education: university
Source: Own elaboration based on data provided by CBS

In these figures it is obvious that Groningen has very high numbers of people that have completed a program in either the university of applied sciences or the university. Groningen has relatively low numbers of people that completed secondary education or MBO as their highest level of education (maps can be consulted in appendix A and B on page 26 and 27). People are thus generally higher educated in the city of Groningen than they are in other municipalities, but does this lead to more jobs, or does the presence of more jobs in the city attract the higher educated?

Age has been added because people under 20 and over 80 are more often unemployed (CBS, 2017). The regression has shown a positive, moderate correlation to the age groups 15- 25 and 25-45. This means that either the jobs ratio increases as an effect of these people being present or the other way around. In figures 10 and 11 is a visual presentation of these two age groups. Both age groups are highly represented in the municipality of Groningen. It is very likely that this is an effect of the presence of the university of Groningen and the university of applied sciences in Groningen. Again, these age groups locate predominantly in the city, just as jobs seem to do. So, do jobs follow people or do people follow jobs?

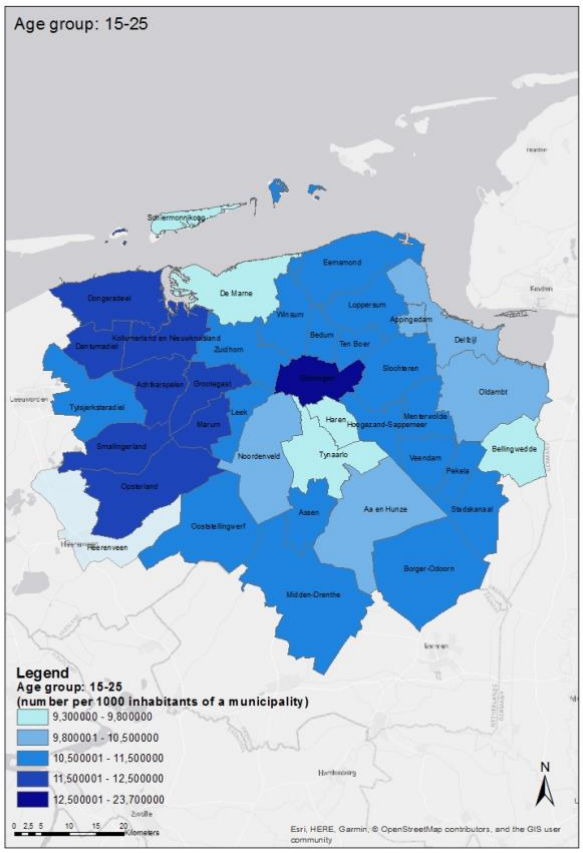

Figure 10: Age group 15-25
Source: Own elaboration based on data provided by CBS

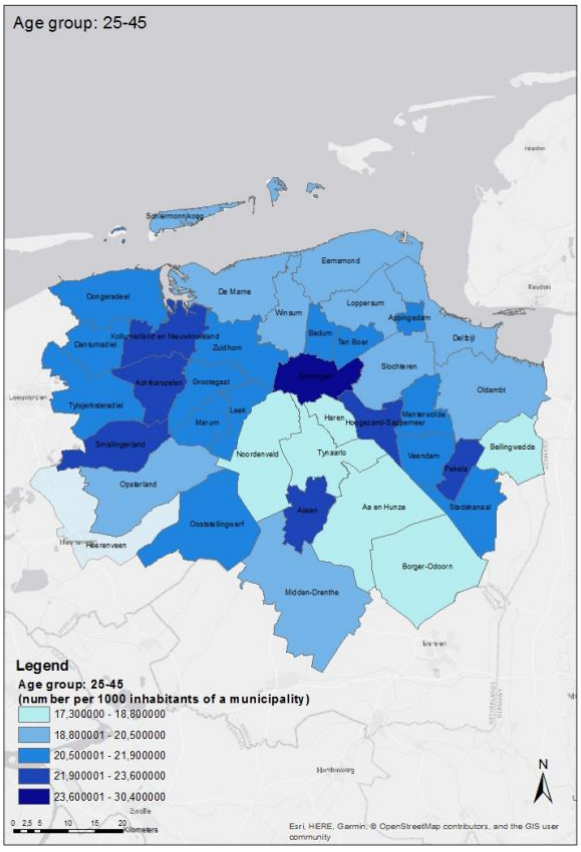

Figure 11: Age group 25-45
Source: Own elaboration based on data provided by CBS

For the age group of 45-65 there is a negative correlation: either significantly less jobs locate where there are more people in this age group, or less people in this age group locate where jobs locate. This map can be consulted in appendix C on page 29.

To ensure that the correlation was not absent because of the presence of the municipality of Groningen, which is an outlier regarding the jobs ratio and a place of concentration for younger and skilled people, the regression was also ran excluding the municipality of Groningen. The result, however, was the same (and can be consulted in appendix E on page 35). The model turned out to only be significant after the control variables were added. There is thus no linear correlation between the jobs ratio on the one hand, and population development on the other hand under the conditions of this model, whether the municipality of Groningen is taken into account or not. Adding all municipalities in the northern provinces (appendix F, page 40), and excluding Groningen from that analysis (appendix G, page 49) also made no difference.

5.4 What comes first?

This leads to the question: what comes first? So, do jobs follow people or do people follow jobs? This is a question that is debated often, and the answer seems to be that both jobs follow people and people follow jobs (Hoogstra et. al., 2017; Partridge & Rickman, 2003). However, there is no consensus on which of the two processes is stronger. Arauzo-Carod (2007) states that the influence of the place where population locates on the location of jobs is much stronger, and that location patterns of firms depend on where professional groups locate. However, Partridge and Rickman (2003) state that they found the effect of people following jobs to be stronger. However, they also state that which one of the two is stronger might be different in different areas.

Human capital tends to locate more in the city than on the rural. This is not only because the education in the city produces the higher educated, but also because this education attracts skilled people (Glaeser & Saiz, 2003), resulting in brain drain in non-urban areas (Arauzo-Carod, 2007). This is an important economic concern, because higher levels of human capital often go with economic growth, so that also locates in the city (Arauzo-Carod, 2007). Cities are thus often higher skilled and have therefor become more populous and better paid. Skill composition may be the most powerful predicter for urban growth (Glaeser & Saiz, 2003).

So, people both locate where their desired jobs are, and jobs locate where their desired workers are. Accordingly, the desired people seem to be the higher educated, they either finished a program at the university applied sciences or at the university and are aged between 15 and 45 (and specifically not between 45 and 65).

6 Conclusion

6.1 Research question

This thesis aimed to answer the following research question:

How can the correlation between the population growth of the municipality of Groningen and the population decline of the municipalities surrounding the city of Groningen, and economic development in the form of jobs per 1000 inhabitants in the municipalities within a range of 30 kilometers of the municipality of Groningen be explained?

This conclusion will answer the three sub questions first, and then formulate a conclusion.

6.2 Urbanization in the Netherlands

The Dutch population has grown a lot since the 1990s, and this growth mainly concentrated in urban municipalities. Over the whole of the Netherlands, urban municipalities have, since then, grown more than non-urban municipalities did (Compendium voor de Leefomgeving, 2019). The population prognosis (CBS, 2016) predicts that peripheral municipalities will experience a decline in the coming years, and urban areas will experience an increase in population size. There is thus still an urbanization trend in the Netherlands. This has led to a younger population in cities, and an ageing population on the rural. This strengthens the urbanization effect because the fertility rate is higher in cities (NIDI, 2018).

6.3 Immigration into and emigration out of the municipality of Groningen

Immigration into the municipality of Groningen predominantly comes from the provinces of Groningen, Friesland and Drenthe. Most people that migrate into the municipality of Groningen, are young and come to study. The university of Groningen is the cause for a great part of this migration, and the university of applied sciences to a lesser extent (Provincie Groningen, 2018). The people that leave the city of Groningen are often a little bit older and are generally people that have finished their study and move away to get a job elsewhere (CBS, 2017). Some of the migration out of the municipality of Groningen is caused by an older age group, and shows a trend of suburbanization (CBS, 2017). These people thus move out of the city to enjoy advantages of less urban areas, while keeping high accessibility to the city (Dyson, 2010).

6.4 Statistical correlation between jobs ratio and population development

After running a regression, no statistical correlation could be found between the jobs ratio and population development. However, after adding the control variables percentage of male population, number of benefit recipients per 1,000 inhabitants, age groups and education level into the analysis, the regression did show a correlation. This correlation was the strongest for some specific age groups and education levels. The correlation between the jobs ratio and age groups 15-25 and 25-45 was positive, so either the presence of people in this age groups leads to a higher jobs ratio, or the other way around.

There was a negative correlation between the jobs ratio and age group 45-65. The regression also showed a positive correlation with the education levels of applied sciences and university. All of these correlations seem to be explainable by the presence of the university of Groningen and the university of applied sciences in Groningen.

To make sure that the municipality of Groningen, showing a concentration of young people and highly educated people, was not just an outlier that caused the results to be as they are, a regression was run without the municipality of Groningen. However, this regression showed the same trend. People both locate where their desired jobs are, and jobs locate where their desired workers are. There is a concentration of jobs in urban areas, and in urban areas people between 15-45 with a university or university of applied sciences degree tend to locate.

6.5 Overall conclusion

There is still an urbanization trend in the Netherlands, and this trend is predominantly caused by young people moving towards urban areas. The prognosis is that this will keep happening the coming years. Immigration into the municipality of Groningen is predominantly caused by people between the age of 18 and 21, coming in to study. Emigration out of the municipality of Groningen is predominantly caused by somewhat older people between the age of 23 and 30, leaving to find a job elsewhere. There is, under the conditions of this model, no correlation between the jobs ratio and population development. There is, however, a correlation between the jobs ratio and some specific age groups and education levels. These correlations can be explained by the presence of the university of Groningen and the university of applied sciences. People both follow jobs and jobs follow people, these people are predominantly aged between 15-45 and have either finished education at a university or at a university of applied sciences.

6.6 Recommendations

In the light of this research, it might be interesting for further research to look for the reason why economic development and population development do not correlate in this case. If GDP numbers become available per municipality, this might be a better predictor for economic development, as the jobs ratio is a variable that is used because it often aligns with GDP.

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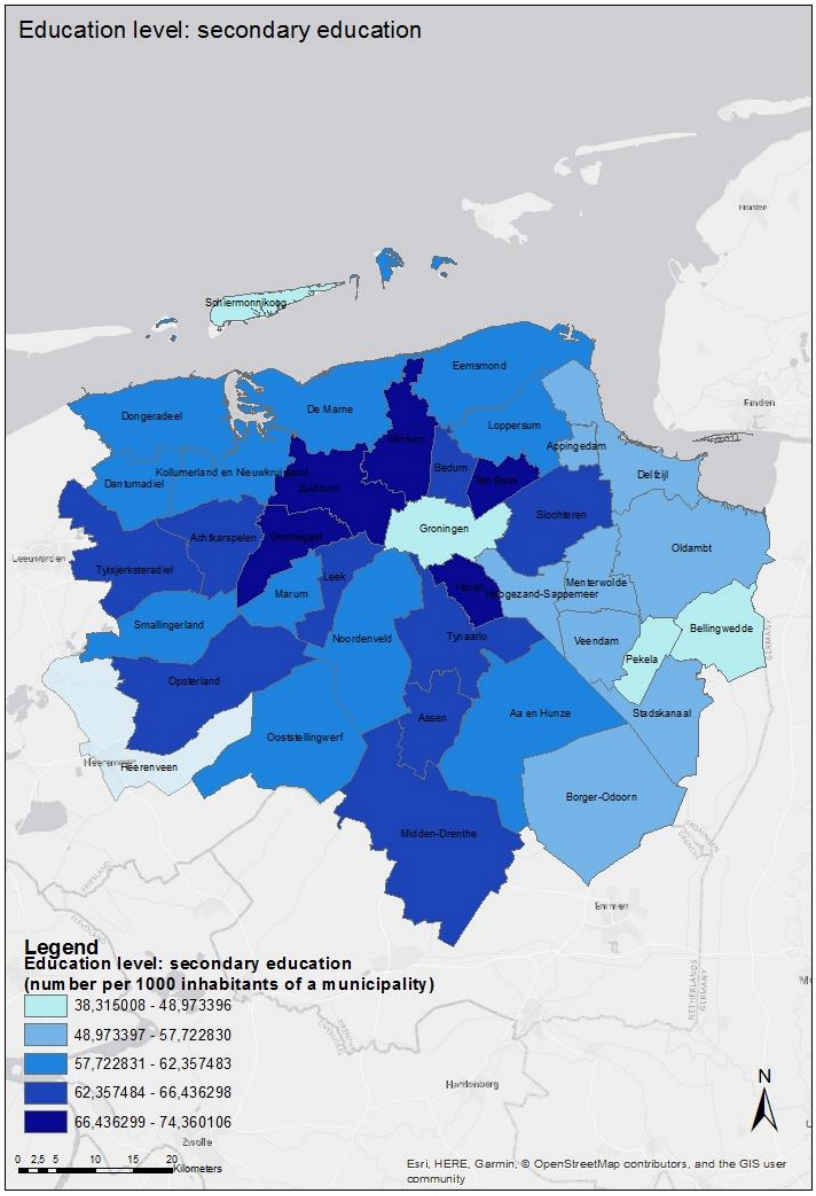
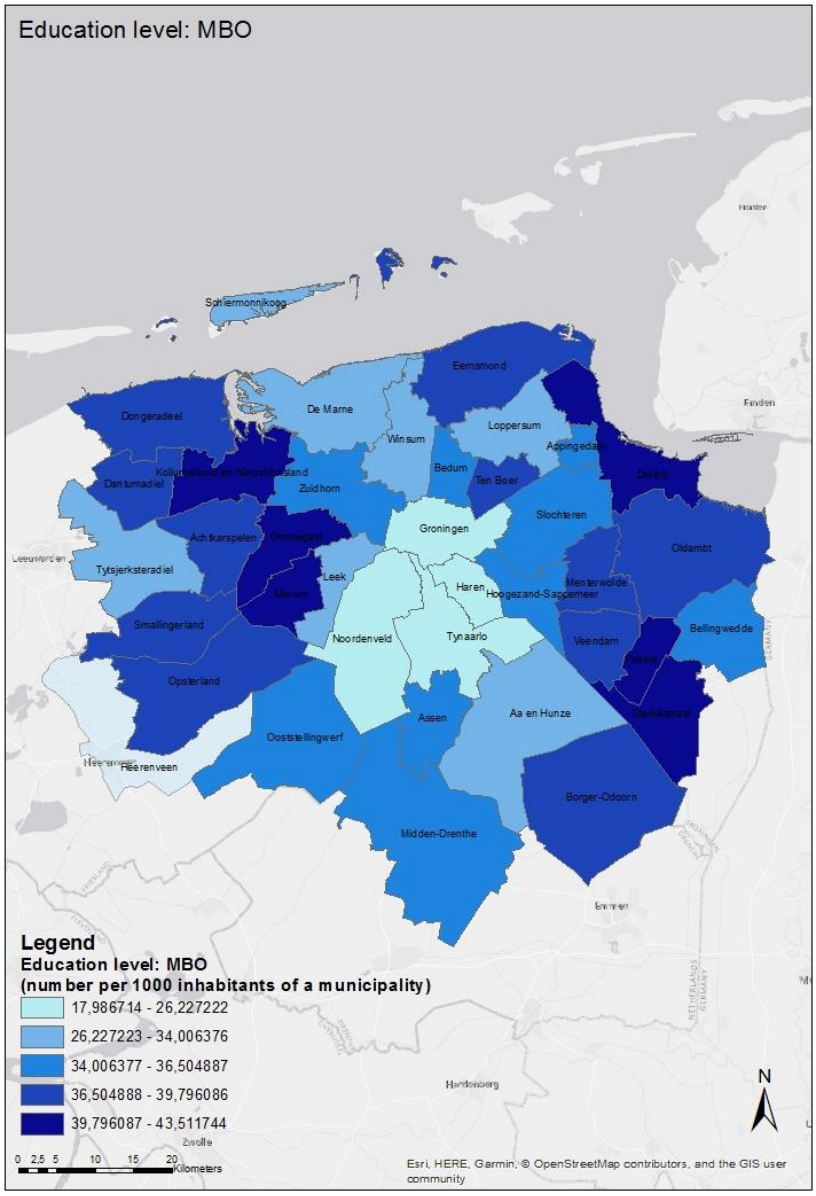
Appendix overview

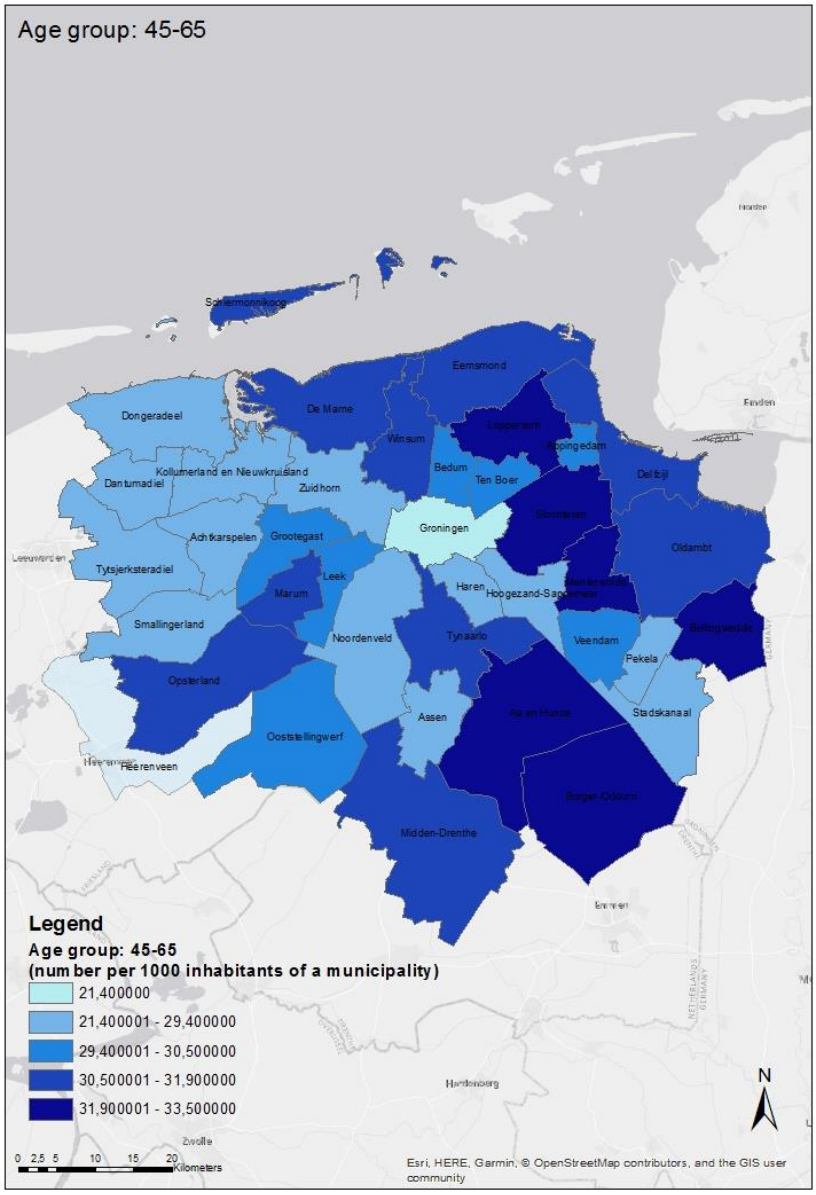
A. Visual representation (education level: secondary education)



B. Visual representation (education level: MBO)



C. **Visual representation (age group: 45-65)**



D. Regression output (all selected municipalities)

Descriptive Statistics

	Mean	Std. Deviation	N
Jobs ratio	322,789108115245900	163,624232449182100	37
Live born children ratio (per 1000 inhabitants)	8,310810810810812	1,179638311749219	37
Deaths ratio (per 1000 inhabitants)	10,575675675675674	1,816499289752041	37
Arrivals in municipality ratio (per 1000 inhabitants)	69,743243243243260	86,295418123960620	37
Departures from municipality ratio (per 1000 inhabitants)	69,224324324324330	89,049609785798620	37
Population growth ratio (per 1000 inhabitants)	-2,710810810810811	7,542390712344307	37
Percentage of male population on 1 January	50,042894843438155	,812045507644238	37
Education living municipality ratio (secondary education)	60,209399613169100	7,471760064208016	37
Education living municipality ratio (MBO)	35,655980513934010	5,155131758127214	37
Education living municipality ratio (Applied sciences)	20,044574197905245	0,168831902497951	37
Education living municipality ratio (University)	6,505003060775068	14,348945575819354	37
Benefit recipients ratio	302,631024850072150	33,006682849572580	37
Age 5-15	11,354054054054055	1,279451834574869	37
Age 15-25	11,289189189189190	2,245833646726481	37
Age 25-45	20,886486486486483	2,176664390269631	37
Age 45-65	30,264864864864865	2,136224111242417	37
Age 65-80	16,427027027027023	2,119309196759990	37
Age >80	5,135135135135133	1,008358461454451	37

		Jobs ratio	Live born children ratio (per 1000 inhabitants)	Deaths ratio (per 1000 inhabitants)	A rati
Pearson Correlation	Jobs ratio	1,000	,013	-,225	
	Live born children ratio (per 1000 inhabitants)	,013	1,000	-,307	
	Deaths ratio (per 1000 inhabitants)	-,225	-,307	1,000	
	Arrivals in municipality ratio (per 1000 inhabitants)	,045	-,099	-,124	
	Departures from municipality ratio (per 1000 inhabitants)	,029	-,100	-,142	
	Population growth ratio (per 1000 inhabitants)	,217	,230	-,052	

	Percentage of male population on 1 January	-,208	-,058	-,422
	Education living municipality ratio (secondary education)	-,122	,221	-,115
	Education living municipality ratio (MBO)	-,201	,054	-,130
	Education living municipality ratio (Applied sciences)	,380	,366	-,440
	Education living municipality ratio (University)	,377	,224	-,331
	Benefit recipients ratio	-,130	-,360	,743
	Age 5-15	-,179	,371	-,263
	Age 15-25	,329	,358	-,505
	Age 25-45	,360	,503	-,478
	Age 45-65	-,458	-,571	,271
	Age 65-80	-,203	-,549	,625
	Age >80	,146	-,361	,749
Sig. (1-tailed)	Jobs ratio	.	,469	,091
	Live born children ratio (per 1000 inhabitants)	,469	.	,032
	Deaths ratio (per 1000 inhabitants)	,091	,032	.
	Arrivals in municipality ratio (per 1000 inhabitants)	,395	,280	,232

	Departures from municipality ratio (per 1000 inhabitants)	,433	,277	,201
	Population growth ratio (per 1000 inhabitants)	,099	,086	,379
	Percentage of male population on 1 January	,108	,366	,005
	Education living municipality ratio (secondary education)	,235	,094	,249
	Education living municipality ratio (MBO)	,116	,376	,222
	Education living municipality ratio (Applied sciences)	,010	,013	,003
	Education living municipality ratio (University)	,011	,091	,023
	Benefit recipients ratio	,222	,014	,000
	Age 5-15	,145	,012	,058
	Age 15-25	,024	,015	,001
	Age 25-45	,014	,001	,001
	Age 45-65	,002	,000	,052
	Age 65-80	,114	,000	,000
	Age >80	,194	,014	,000
N	Jobs ratio	37	37	37
	Live born children ratio (per 1000 inhabitants)	37	37	37
	Deaths ratio (per 1000 inhabitants)	37	37	37
	Arrivals in municipality ratio (per 1000 inhabitants)	37	37	37
	Departures from municipality ratio (per 1000 inhabitants)	37	37	37
	Population growth ratio (per 1000 inhabitants)	37	37	37
	Percentage of male population on 1 January	37	37	37

	Education living municipality ratio (secondary education)	37	37	37
	Education living municipality ratio (MBO)	37	37	37
	Education living municipality ratio (Applied sciences)	37	37	37
	Education living municipality ratio (University)	37	37	37
	Benefit recipients ratio	37	37	37
	Age 5-15	37	37	37
	Age 15-25	37	37	37
	Age 25-45	37	37	37
	Age 45-65	37	37	37
	Age 65-80	37	37	37
	Age >80	37	37	37

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)[b]	.	Enter
2	Education living municipality ratio (MBO), Education living municipality ratio (secondary education), Age 45-65, Percentage of male population on 1 January, Age 65-80, Age >80, Education living municipality ratio (Applied sciences), Benefit recipients ratio, Age 5-15, Education living municipality ratio (University), Age 25-45, Age 15-25[b]	.	Enter

a. Dependent Variable: Jobs ratio
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,379[a]	,144	,005	163,173690977181820
2	,838[b]	,702	,435	122,962684649887020

a. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)
b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (MBO), Education living municipality ratio (secondary education), Age 45-65, Percentage of male population on 1 January, Age 65-80, Age >80, Education living municipality ratio (Applied sciences), Benefit recipients ratio, Age 5-15, Education living municipality ratio (University), Age 25-45, Age 15-25

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	138428,764	5	27685,753	1,040	,412[b]
	Residual	825395,256	31	26625,653		
	Total	963824,020	36			
2	Regression	676547,405	17	39796,906	2,632	,022[c]
	Residual	287276,615	19	15119,822		
	Total	963824,020	36			

a. Dependent Variable: Jobs ratio
b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)
c. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (MBO), Education living municipality ratio (secondary education), Age 45-65, Percentage of male population on 1 January, Age 65-80, Age >80, Education living municipality ratio (Applied sciences), Benefit recipients ratio, Age 5-15, Education living municipality ratio (University), Age 25-45, Age 15-25

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t
1	(Constant)	764,744	322,437		2,372
	Live born children ratio (per 1000 inhabitants)	-7,678	25,860	-,055	-,297
	Deaths ratio (per 1000 inhabitants)	-40,243	23,775	-,447	-1,693
	Arrivals in municipality ratio (per 1000 inhabitants)	16,835	15,331	8,879	1,098
	Departures from municipality ratio (per 1000 inhabitants)	-16,649	15,309	-9,061	-1,088
	Population growth ratio (per 1000 inhabitants)	-9,554	14,457	-,440	-,661
2	(Constant)	-1346,621	11146,210		-,121
	Live born children ratio (per 1000 inhabitants)	-40,673	37,233	-,293	-1,092
	Deaths ratio (per 1000 inhabitants)	-74,788	29,893	-,830	-2,502
	Arrivals in municipality ratio (per 1000 inhabitants)	-12,028	15,970	-6,344	-,753
	Departures from municipality ratio (per 1000 inhabitants)	11,854	15,947	6,451	,743
	Population growth ratio (per 1000 inhabitants)	7,370	14,694	,340	,502
	Percentage of male population on 1 January	32,406	66,633	,161	,486
	Education living municipality ratio (secondary education)	20,853	13,923	,952	1,498
	Education living municipality ratio (MBO)	15,409	12,087	,485	1,275
	Education living municipality ratio (Applied sciences)	29,918	19,022	1,859	1,573
	Education living municipality ratio (University)	1,507	11,199	,132	,135
	Benefit recipients ratio	1,566	2,581	,316	,607
	Age 5-15	-117,214	174,488	-,917	-,672
	Age 15-25	-149,413	153,624	-2,051	-,973
	Age 25-45	58,424	131,731	,777	,444
	Age 45-65	-16,146	116,550	-,211	-,139
	Age 65-80	-18,947	125,540	-,245	-,151
	Age >80	179,876	116,568	1,109	1,543

a. Dependent Variable: Jobs ratio

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity St Tolerance
1	Percentage of male population on 1 January	-,407[b]	-1,937	,062	-,333	
	Education living municipality ratio (secondary education)	-,233[b]	-1,139	,264	-,204	
	Education living municipality ratio (MBO)	-,188[b]	-,928	,361	-,167	
	Education living municipality ratio (Applied sciences)	,318[b]	1,528	,137	,269	
	Education living municipality ratio (University)	,306[b]	1,532	,136	,269	
	Benefit recipients ratio	,182[b]	,641	,526	,116	
	Age 5-15	-,303[b]	-1,427	,164	-,252	
	Age 15-25	,276[b]	1,253	,220	,223	
	Age 25-45	,483[b]	2,193	,036	,372	
	Age 45-65	-,646[b]	-3,326	,002	-,519	
	Age 65-80	-,090[b]	-,340	,736	-,062	
	Age >80	,837[b]	3,069	,005	,489	

a. Dependent Variable: Jobs ratio

b. Predictors in the Model: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

E. Regression output (selected municipalities, excluding Groningen)

Descriptive Statistics

	Mean	Std. Deviation	N
Jobs ratio	312,574938332981800	153,516629150713780	36
Live born children ratio (per 1000 inhabitants)	8,275000000000000	1,175797601630485	36
Deaths ratio (per 1000 inhabitants)	10,677777777777775	1,731244162215818	36
Arrivals in municipality ratio (per 1000 inhabitants)	68,897222222222240	87,363769823524550	36
Departures from municipality ratio (per 1000 inhabitants)	68,466666666666670	90,191757621509640	36
Population growth ratio (per 1000 inhabitants)	-2,811111111111111	7,624313656333843	36
Percentage of male population on 1 January	50,044127491510860	,823529351794261	36
Education living municipality ratio (secondary education)	60,817577152645214	6,583744248744023	36
Education living municipality ratio (MBO)	35,922493603006360	4,963014274403959	36
Education living municipality ratio (Applied sciences)	18,466861827114320	3,410078577126968	36
Education living municipality ratio (University)	4,161741114370788	1,675649512215039	36
Benefit recipients ratio	304,491769725875660	31,445190970009854	36
Age 5-15	11,455555555555556	1,136522124589988	36
Age 15-25	10,944444444444445	,815368258411742	36
Age 25-45	20,622222222222220	1,488452909396889	36
Age 45-65	30,511111111111113	1,544719628333482	36
Age 65-80	16,627777777777776	1,756719525725006	36
Age >80	5,191666666666666	,961360642898536	36

		Jobs ratio	Live born children ratio (per 1000 inhabitants)	Deaths ratio (per 1000 inhabitants)	A rati
Pearson Correlation	Jobs ratio	1,000	-,063	-,109	
	Live born children ratio (per 1000 inhabitants)	-,063	1,000	-,264	
	Deaths ratio (per 1000 inhabitants)	-,109	-,264	1,000	
	Arrivals in municipality ratio (per 1000 inhabitants)	,024	-,112	-,111	
	Departures from municipality ratio (per 1000 inhabitants)	,010	-,112	-,132	
	Population growth ratio (per 1000 inhabitants)	,202	,219	-,026	
	Percentage of male population on 1 January	-,221	-,058	-,453	

	Education living municipality ratio (secondary education)	,082	,366	-,348
	Education living municipality ratio (MBO)	-,093	,120	-,266
	Education living municipality ratio (Applied sciences)	,070	,589	-,376
	Education living municipality ratio (University)	,003	,358	,084
	Benefit recipients ratio	,000	-,321	,709
	Age 5-15	,006	,535	-,520
	Age 15-25	-,078	,527	-,553
	Age 25-45	,128	,553	-,355
	Age 45-65	-,291	-,629	,047
	Age 65-80	,020	-,551	,557
	Age >80	,317	-,323	,716
Sig. (1-tailed)	Jobs ratio	.	,358	,263
	Live born children ratio (per 1000 inhabitants)	,358	.	,060
	Deaths ratio (per 1000 inhabitants)	,263	,060	.
	Arrivals in municipality ratio (per 1000 inhabitants)	,444	,258	,260
	Departures from municipality ratio (per 1000 inhabitants)	,477	,258	,221

	Population growth ratio (per 1000 inhabitants)	,119	,099	,439
	Percentage of male population on 1 January	,097	,369	,003
	Education living municipality ratio (secondary education)	,318	,014	,019
	Education living municipality ratio (MBO)	,295	,243	,058
	Education living municipality ratio (Applied sciences)	,342	,000	,012
	Education living municipality ratio (University)	,493	,016	,314
	Benefit recipients ratio	,499	,028	,000
	Age 5-15	,487	,000	,001
	Age 15-25	,325	,000	,000
	Age 25-45	,229	,000	,017
	Age 45-65	,043	,000	,393
	Age 65-80	,453	,000	,000
	Age >80	,030	,027	,000
N	Jobs ratio	36	36	36
	Live born children ratio (per 1000 inhabitants)	36	36	36
	Deaths ratio (per 1000 inhabitants)	36	36	36
	Arrivals in municipality ratio (per 1000 inhabitants)	36	36	36
	Departures from municipality ratio (per 1000 inhabitants)	36	36	36
	Population growth ratio (per 1000 inhabitants)	36	36	36
	Percentage of male population on 1 January	36	36	36
	Education living municipality ratio (secondary education)	36	36	36
	Education living municipality ratio (MBO)	36	36	36
	Education living municipality ratio (Applied sciences)	36	36	36

	Education living municipality ratio (University)	36	36	36
	Benefit recipients ratio	36	36	36
	Age 5-15	36	36	36
	Age 15-25	36	36	36
	Age 25-45	36	36	36
	Age 45-65	36	36	36
	Age 65-80	36	36	36
	Age >80	36	36	36

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)[b]		.Enter
2	Education living municipality ratio (MBO), Age 45-65, Education living municipality ratio (secondary education), Percentage of male population on 1 January, Education living municipality ratio (Applied sciences), Age 65-80, Education living municipality ratio (University), Age >80, Age 15-25, Benefit recipients ratio, Age 5-15, Age 25-45[b]		.Enter

a. Dependent Variable: Jobs ratio
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,280[a]	,078	-,076	159,206679190380270
2	,810[b]	,656	,331	125,562848237410960

a. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)
b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (MBO), Age 45-65, Education living municipality ratio (secondary education), Percentage of male population on 1 January, Education living municipality ratio (Applied sciences), Age 65-80, Education living municipality ratio (University), Age >80, Age 15-25, Benefit recipients ratio, Age 5-15, Age 25-45

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	64454,439	5	12890,888	,509	,767[b]
	Residual	760403,001	30	25346,767		
	Total	824857,440	35			
2	Regression	541068,920	17	31827,584	2,019	,075[c]
	Residual	283788,519	18	15766,029		
	Total	824857,440	35			

a. Dependent Variable: Jobs ratio
b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)
c. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (MBO), Age 45-65, Education living municipality ratio (secondary education), Percentage of male population on 1 January, Education living municipality ratio (Applied sciences), Age 65-80, Education living municipality ratio (University), Age >80, Age 15-25, Benefit recipients ratio, Age 5-15, Age 25-45

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t
1	(Constant)	622,463	326,905		1,904
	Live born children ratio (per 1000 inhabitants)	-17,153	25,916	-,131	-,662
	Deaths ratio (per 1000 inhabitants)	-16,237	27,620	-,183	-,588
	Arrivals in municipality ratio (per 1000 inhabitants)	3,589	17,093	2,042	,210
	Departures from municipality ratio (per 1000 inhabitants)	-3,449	17,061	-2,026	-,202
	Population growth ratio (per 1000 inhabitants)	2,025	15,851	,101	,128

2	(Constant)	1614,142	13006,547		,124
	Live born children ratio (per 1000 inhabitants)	-31,585	42,649	-,242	-,741
	Deaths ratio (per 1000 inhabitants)	-73,892	30,585	-,833	-2,416
	Arrivals in municipality ratio (per 1000 inhabitants)	-13,348	16,547	-7,596	-,807
	Departures from municipality ratio (per 1000 inhabitants)	13,152	16,516	7,727	,796
	Population growth ratio (per 1000 inhabitants)	9,367	15,594	,465	,601
	Percentage of male population on 1 January	15,600	76,853	,084	,203
	Education living municipality ratio (secondary education)	21,671	14,324	,929	1,513
	Education living municipality ratio (MBO)	14,284	12,572	,462	1,136
	Education living municipality ratio (Applied sciences)	27,644	20,017	,614	1,381
	Education living municipality ratio (University)	-14,110	35,115	-,154	-,402
	Benefit recipients ratio	1,314	2,690	,269	,488
	Age 5-15	-145,758	188,228	-1,079	-,774
	Age 15-25	-169,616	162,647	-,901	-1,043
	Age 25-45	33,636	144,472	,326	,233
	Age 45-65	-33,543	124,630	-,338	-,269
	Age 65-80	-37,720	134,264	-,432	-,281
	Age >80	156,748	128,788	,982	1,217

a. Dependent Variable: Jobs ratio

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity St Tolerance
1	Percentage of male population on 1 January	-,388[b]	-1,709	,098	-,302	
	Education living municipality ratio (secondary education)	-,062[b]	-,260	,797	-,048	
	Education living municipality ratio (MBO)	-,063[b]	-,278	,783	-,052	
	Education living municipality ratio (Applied sciences)	-,013[b]	-,044	,965	-,008	
	Education living municipality ratio (University)	-,126[b]	-,525	,604	-,097	
	Benefit recipients ratio	,312[b]	1,088	,285	,198	
	Age 5-15	-,140[b]	-,531	,600	-,098	
	Age 15-25	-,198[b]	-,753	,458	-,138	
	Age 25-45	,332[b]	1,420	,166	,255	
	Age 45-65	-,606[b]	-2,871	,008	-,470	
	Age 65-80	,156[b]	,579	,567	,107	
	Age >80	1,035[b]	4,043	,000	,600	

a. Dependent Variable: Jobs ratio

b. Predictors in the Model: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabi Arrivals in municipality ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

F. Regression output (all municipalities in Groningen, Friesland and Drenthe)

Descriptive Statistics

	Mean	Std. Deviation	N
Jobs ratio	333,864521603508100	194,519572344233780	59
Live born children ratio (per 1000 inhabitants)	8,427118644067797	1,237047445425038	59
Deaths ratio (per 1000 inhabitants)	10,354237288135588	1,688329314369100	59
Arrivals in municipality ratio (per 1000 inhabitants)	67,940677966101690	71,506267192521660	59
Departures from municipality ratio (per 1000 inhabitants)	65,501694915254230	72,529638392546770	59
Population growth ratio (per 1000 inhabitants)	-,376271186440678	9,070021461082673	59
Percentage of male population on 1 January	50,097392915902425	,841740276953606	59
Education living municipality ratio (secondary education)	60,210051319799405	6,856516771391506	59
Education living municipality ratio (MBO)	35,300350134160740	5,204799811279820	59
Education living municipality ratio (Applied sciences)	22,088081859222818	14,898345230984045	59
Education living municipality ratio (University)	5,280919443979347	11,437745335770138	59
Benefit recipients ratio	298,136427965873600	32,217949080635960	59
Age 5-15	11,362711864406780	1,218520627234000	59
Age 15-25	11,345762711864410	2,026660411978823	59
Age 25-45	21,055932203389823	2,089899451998182	59
Age 45-65	30,116949152542370	2,014186970601879	59
Age 65-80	16,408474576271190	1,947349050021169	59
Age >80	5,091525423728813	,907115195435930	59

	Jobs ratio	Live born children ratio (per 1000 inhabitants)	Deaths ratio (per 1000 inhabitants)	A

Pearson Correlation	Jobs ratio	1,000	-,034	-,053
	Live born children ratio (per 1000 inhabitants)	-,034	1,000	-,419
	Deaths ratio (per 1000 inhabitants)	-,053	-,419	1,000
	Arrivals in municipality ratio (per 1000 inhabitants)	,032	-,185	-,041
	Departures from municipality ratio (per 1000 inhabitants)	-,012	-,145	-,072
	Population growth ratio (per 1000 inhabitants)	,354	-,089	-,004
	Percentage of male population on 1 January	-,266	,035	-,452
	Education living municipality ratio (secondary education)	-,229	,174	-,137
	Education living municipality ratio (MBO)	-,314	,158	-,086

Education living municipality ratio (Applied sciences)	,284	,272	-,370
Education living municipality ratio (University)	,244	,161	-,257
Benefit recipients ratio	-,118	-,257	,727
Age 5-15	-,235	,362	-,302
Age 15-25	,260	,292	-,459
Age 25-45	,415	,461	-,412
Age 45-65	-,392	-,622	,297
Age 65-80	-,181	-,446	,562
Age >80	,083	-,293	,713

Sig. (1-tailed)	Jobs ratio	.	,400	,344
	Live born children ratio (per 1000 inhabitants)	,400	.	,000
	Deaths ratio (per 1000 inhabitants)	,344	,000	.
	Arrivals in municipality ratio (per 1000 inhabitants)	,406	,081	,380
	Departures from municipality ratio (per 1000 inhabitants)	,464	,136	,295
	Population growth ratio (per 1000 inhabitants)	,003	,250	,488
	Percentage of male population on 1 January	,021	,398	,000
	Education living municipality ratio (secondary education)	,040	,093	,150
	Education living municipality ratio (MBO)	,008	,116	,260
	Education living municipality ratio (Applied sciences)	,015	,019	,002

	Education living municipality ratio (University)	,031	,112	,025
	Benefit recipients ratio	,188	,025	,000
	Age 5-15	,037	,002	,010
	Age 15-25	,023	,013	,000
	Age 25-45	,001	,000	,001
	Age 45-65	,001	,000	,011
	Age 65-80	,085	,000	,000
	Age >80	,265	,012	,000
N	Jobs ratio	59	59	59
	Live born children ratio (per 1000 inhabitants)	59	59	59
	Deaths ratio (per 1000 inhabitants)	59	59	59
	Arrivals in municipality ratio (per 1000 inhabitants)	59	59	59
	Departures from municipality ratio (per 1000 inhabitants)	59	59	59

	Population growth ratio (per 1000 inhabitants)	59	59	59
	Percentage of male population on 1 January	59	59	59
	Education living municipality ratio (secondary education)	59	59	59
	Education living municipality ratio (MBO)	59	59	59
	Education living municipality ratio (Applied sciences)	59	59	59
	Education living municipality ratio (University)	59	59	59
	Benefit recipients ratio	59	59	59
	Age 5-15	59	59	59
	Age 15-25	59	59	59
	Age 25-45	59	59	59
	Age 45-65	59	59	59
	Age 65-80	59	59	59
	Age >80	59	59	59

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)[b]	.	Enter
2	Education living municipality ratio (secondary education), Education living municipality ratio (University), Education living municipality ratio (MBO), Percentage of male population on 1 January, Education living municipality ratio (Applied sciences), Age >80, Age 45-65, Benefit recipients ratio, Age 65-80, Age 5-15, Age 15-25, Age 25-45[b]	.	Enter

a. Dependent Variable: Jobs ratio

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,363[a]	,132	,050	189,591528293017720
2	,778[b]	,605	,442	145,338335216578630

a. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (secondary education), Education living municipality ratio (University), Education living municipality ratio (MBO), Percentage of male population on 1 January, Education living municipality ratio (Applied sciences), Age >80, Age 45-65, Benefit recipients ratio, Age 65-80, Age 5-15, Age 15-25, Age 25-45

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	289513,891	5	57902,778	1,611	,173[b]
	Residual	1905082,223	53	35944,948		
	Total	2194596,113	58			
2	Regression	1328543,614	17	78149,624	3,700	,000[c]
	Residual	866052,499	41	21123,232		
	Total	2194596,113	58			

a. Dependent Variable: Jobs ratio

b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

c. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (secondary education), Education living municipality ratio (University), Education living municipality ratio (MBO), Percentage of male population on 1 January, Education living municipality ratio (Applied sciences), Age >80, Age 45-65, Benefit recipients ratio, Age 65-80, Age 5-15, Age 15-25, Age 25-45

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	t
1	(Constant)	418,973	316,240		1,325
	Live born children ratio (per 1000 inhabitants)	-,139	26,313	-,001	-,005
	Deaths ratio (per 1000 inhabitants)	-9,470	23,771	-,082	-,398
	Arrivals in municipality ratio (per 1000 inhabitants)	2,807	15,238	1,032	,184

	Departures from municipality ratio (per 1000 inhabitants)	-2,667	15,268	-,995	-,175	
	Population growth ratio (per 1000 inhabitants)	5,019	15,289	,234	,328	
2	(Constant)	1619,120	8451,064		,192	
	Live born children ratio (per 1000 inhabitants)	-71,970	30,601	-,458	-2,352	
	Deaths ratio (per 1000 inhabitants)	-30,738	29,324	-,267	-1,048	
	Arrivals in municipality ratio (per 1000 inhabitants)	-17,145	13,937	-6,302	-1,230	
	Departures from municipality ratio (per 1000 inhabitants)	16,954	13,980	6,322	1,213	
	Population growth ratio (per 1000 inhabitants)	17,857	14,285	,833	1,250	
	Percentage of male population on 1 January	-45,591	45,751	-,197	-,996	
	Education living municipality ratio (secondary education)	15,815	11,124	,557	1,422	
	Education living municipality ratio (MBO)	-5,870	9,473	-,157	-,620	
	Education living municipality ratio (Applied sciences)	-,846	5,652	-,065	-,150	
	Education living municipality ratio (University)	-6,066	6,529	-,357	-,929	
	Benefit recipients ratio	-,660	1,841	-,109	-,359	
	Age 5-15	-105,776	116,982	-,663	-,904	
	Age 15-25	7,486	90,696	,078	,083	
	Age 25-45	100,627	88,502	1,081	1,137	
	Age 45-65	-16,887	78,079	-,175	-,216	
	Age 65-80	30,550	77,345	,306	,395	
	Age >80	96,756	97,316	,451	,994	

a. Dependent Variable: Jobs ratio

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity St Tolerance
1	Percentage of male population on 1 January	-,333[b]	-2,132	,038	-,284	
	Education living municipality ratio (secondary education)	-,308[b]	-2,219	,031	-,294	
	Education living municipality ratio (MBO)	-,238[b]	-1,551	,127	-,210	
	Education living municipality ratio (Applied sciences)	,254[b]	1,759	,085	,237	

	Education living municipality ratio (University)	,263[b]	1,865	,068	,250
	Benefit recipients ratio	,158[b]	,703	,485	,097
	Age 5-15	-,323[b]	-2,192	,033	-,291
	Age 15-25	,302[b]	1,902	,063	,255
	Age 25-45	,590[b]	3,948	,000	,480
	Age 45-65	-,701[b]	-4,841	,000	-,557
	Age 65-80	-,144[b]	-,803	,426	-,111
	Age >80	,295[b]	1,534	,131	,208

a. Dependent Variable: Jobs ratio

b. Predictors in the Model: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

G. Regression output (All municipalities in Groningen, Friesland and Drenthe, excluding Groningen)

Descriptive Statistics

	Mean	Std. Deviation	N
Jobs ratio	327,715647488452200	190,346632248886400	58
Live born children ratio (per 1000 inhabitants)	8,406896551724138	1,237975436789101	58
Deaths ratio (per 1000 inhabitants)	10,413793103448272	1,639367472786012	58
Arrivals in municipality ratio (per 1000 inhabitants)	67,384482758620690	72,001934188747680	58
Departures from municipality ratio (per 1000 inhabitants)	64,967241379310350	73,045809678274820	58
Population growth ratio (per 1000 inhabitants)	-,398275862068965	9,147648367717634	58
Percentage of male population on 1 January	50,099097629748655	,848989117595702	58
Education living municipality ratio (secondary education)	60,587552063381660	6,267470153437650	58
Education living municipality ratio (MBO)	35,459640493244030	5,103127256343012	58
Education living municipality ratio (Applied sciences)	21,144045002547720	13,128257014864797	58
Education living municipality ratio (University)	3,805376104542282	1,551469861672716	58
Benefit recipients ratio	299,213880011472400	31,408785320288164	58
Age 5-15	11,425862068965518	1,127574690384475	58
Age 15-25	11,132758620689659	1,206472010717065	58
Age 25-45	20,894827586206887	1,698856417607651	58
Age 45-65	30,267241379310345	1,664952233763436	58
Age 65-80	16,532758620689660	1,712122713571632	58
Age >80	5,125862068965517	,875506939831941	58

		Jobs ratio	Live born children ratio (per 1000 inhabitants)	Deaths ratio (per 1000 inhabitants)	A
Pearson Correlation	Jobs ratio	1,000	-,067	,013	

Live born children ratio (per 1000 inhabitants)	-,067	1,000	-,403
Deaths ratio (per 1000 inhabitants)	,013	-,403	1,000
Arrivals in municipality ratio (per 1000 inhabitants)	,018	-,194	-,025
Departures from municipality ratio (per 1000 inhabitants)	-,027	-,154	-,059
Population growth ratio (per 1000 inhabitants)	,360	-,092	,001
Percentage of male population on 1 January	-,270	,037	-,474
Education living municipality ratio (secondary education)	-,144	,253	-,289
Education living municipality ratio (MBO)	-,272	,195	-,160
Education living municipality ratio (Applied sciences)	,196	,243	-,283

	Education living municipality ratio (University)	,025	,272	,088
	Benefit recipients ratio	-,059	-,235	,707
	Age 5-15	-,155	,452	-,464
	Age 15-25	,112	,325	-,423
	Age 25-45	,347	,484	-,325
	Age 45-65	-,318	-,677	,180
	Age 65-80	-,073	-,445	,512
	Age >80	,166	-,270	,689
Sig. (1-tailed)	Jobs ratio	.	,310	,460

Live born children ratio (per 1000 inhabitants)	,310	.	,001
Deaths ratio (per 1000 inhabitants)	,460	,001	.
Arrivals in municipality ratio (per 1000 inhabitants)	,447	,072	,425
Departures from municipality ratio (per 1000 inhabitants)	,421	,124	,331
Population growth ratio (per 1000 inhabitants)	,003	,245	,497
Percentage of male population on 1 January	,020	,392	,000
Education living municipality ratio (secondary education)	,140	,028	,014
Education living municipality ratio (MBO)	,019	,072	,116
Education living municipality ratio (Applied sciences)	,070	,033	,016
Education living municipality ratio (University)	,426	,019	,256

	Benefit recipients ratio	,330	,038	,000
	Age 5-15	,122	,000	,000
	Age 15-25	,202	,006	,000
	Age 25-45	,004	,000	,006
	Age 45-65	,007	,000	,088
	Age 65-80	,292	,000	,000
	Age >80	,107	,020	,000
N	Jobs ratio	58	58	58
	Live born children ratio (per 1000 inhabitants)	58	58	58
	Deaths ratio (per 1000 inhabitants)	58	58	58
	Arrivals in municipality ratio (per 1000 inhabitants)	58	58	58
	Departures from municipality ratio (per 1000 inhabitants)	58	58	58
	Population growth ratio (per 1000 inhabitants)	58	58	58
	Percentage of male population on 1 January	58	58	58

	Education living municipality ratio (secondary education)	58	58	58
	Education living municipality ratio (MBO)	58	58	58
	Education living municipality ratio (Applied sciences)	58	58	58
	Education living municipality ratio (University)	58	58	58
	Benefit recipients ratio	58	58	58
	Age 5-15	58	58	58
	Age 15-25	58	58	58
	Age 25-45	58	58	58
	Age 45-65	58	58	58
	Age 65-80	58	58	58
	Age >80	58	58	58

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)[b]	.	Enter
2	Education living municipality ratio (Applied sciences), Education living municipality ratio (University), Age 25-45, Education living municipality ratio (MBO), Education living municipality ratio (secondary education), Age >80, Percentage of male population on 1 January, Benefit recipients ratio, Age 45-65, Age 15-25, Age 5-15, Age 65-80[b]	.	Enter

a. Dependent Variable: Jobs ratio

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,373[a]	,139	,056	184,924127731934050
2	,763[b]	,582	,404	146,969371671125540

a. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (Applied sciences), Education living municipality ratio (University), Age 25-45, Education living municipality ratio (MBO), Education living municipality ratio (secondary education), Age >80, Percentage of male population on 1 January, Benefit recipients ratio, Age 45-65, Age 15-25, Age 5-15, Age 65-80

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	286974,386	5	57394,877	1,678	,156[b]
	Residual	1778240,517	52	34196,933		
	Total	2065214,903	57			
2	Regression	1201215,055	17	70659,709	3,271	,001[c]
	Residual	863999,848	40	21599,996		
	Total	2065214,903	57			

a. Dependent Variable: Jobs ratio

b. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)

c. Predictors: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants), Education living municipality ratio (Applied sciences), Education living municipality ratio (University), Age 25-45, Education living municipality ratio (MBO), Education living municipality ratio (secondary education), Age >80, Percentage of male population on 1 January, Benefit recipients ratio, Age 45-65, Age 15-25, Age 5-15, Age 65-80

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	t
1	(Constant)	319,129	312,781		1,020
	Live born children ratio (per 1000 inhabitants)	-12,359	26,437	-,080	-,467
	Deaths ratio (per 1000 inhabitants)	13,008	25,957	,112	,501
	Arrivals in municipality ratio (per 1000 inhabitants)	-10,003	16,283	-3,784	-,614

	Departures from municipality ratio (per 1000 inhabitants)	10,129	16,307	3,887	,621	
	Population growth ratio (per 1000 inhabitants)	17,475	16,255	,840	1,075	
2	(Constant)	-165,285	10321,759		-,016	
	Live born children ratio (per 1000 inhabitants)	-73,382	31,282	-,477	-2,346	
	Deaths ratio (per 1000 inhabitants)	-31,039	29,669	-,267	-1,046	
	Arrivals in municipality ratio (per 1000 inhabitants)	-16,990	14,103	-6,427	-1,205	
	Departures from municipality ratio (per 1000 inhabitants)	16,801	14,145	6,447	1,188	
	Population growth ratio (per 1000 inhabitants)	17,670	14,458	,849	1,222	
	Percentage of male population on 1 January	-39,010	50,954	-,174	-,766	
	Education living municipality ratio (secondary education)	15,391	11,332	,507	1,358	
	Education living municipality ratio (MBO)	-5,524	9,645	-,148	-,573	
	Education living municipality ratio (Applied sciences)	-1,204	5,832	-,083	-,206	
	Education living municipality ratio (University)	1,182	24,421	,010	,048	
	Benefit recipients ratio	-,696	1,865	-,115	-,373	
	Age 5-15	-86,918	133,177	-,515	-,653	
	Age 15-25	23,767	105,832	,151	,225	
	Age 25-45	117,547	104,986	1,049	1,120	
	Age 45-65	-4,773	88,194	-,042	-,054	
	Age 65-80	47,475	95,560	,427	,497	
	Age >80	111,696	109,695	,514	1,018	

a. Dependent Variable: Jobs ratio

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity St Tolerance
1	Percentage of male population on 1 January	-,292[b]	-1,798	,078	-,244	
	Education living municipality ratio (secondary education)	-,224[b]	-1,596	,117	-,218	
	Education living municipality ratio (MBO)	-,159[b]	-,990	,327	-,137	
	Education living municipality ratio (Applied sciences)	,155[b]	1,110	,272	,154	

	Education living municipality ratio (University)	-,041[b]	-,285	,777	-,040
	Benefit recipients ratio	,220[b]	1,002	,321	,139
	Age 5-15	-,229[b]	-1,464	,149	-,201
	Age 15-25	,100[b]	,651	,518	,091
	Age 25-45	,483[b]	3,299	,002	,419
	Age 45-65	-,673[b]	-4,366	,000	-,522
	Age 65-80	-,008[b]	-,048	,962	-,007
	Age >80	,331[b]	1,794	,079	,244

a. Dependent Variable: Jobs ratio

b. Predictors in the Model: (Constant), Population growth ratio (per 1000 inhabitants), Deaths ratio (per 1000 inhabitants), Arrivals in municipality ratio (per 1000 inhabitants), Live born children ratio (per 1000 inhabitants), Departures from municipality ratio (per 1000 inhabitants)