



The Qualification and Educational Level of Workforce as Employment Factor: Case Study in Nitra Region of Slovakia

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Abstract: *The prosperity of the region and the standard of living of its inhabitants depend on many socioeconomic factors. The main goal of the paper is to evaluate selected factors of the Nitra Region in the Slovak Republic and to compare their level in individual districts with a focus on the mutual relationship between the educational structure of the population and employment. The research sample is composed of available data in the DATAcube, the database of the Statistical Office of Slovakia, and from results of the Population and Housing Census of the Slovak Republic: number of inhabitants, age structure, level of education, unemployment, and others. The data analysis is carried out by descriptive statistics, method of comparison with usage of tabular and graphic presentation of results. Results of the Nitra Region showed that a district with a higher educated population is associated with a lower rate of unemployment.*

1. INTRODUCTION

The main factors of the development of each region are the economic potential and the level of population education. Economic conditions and a professionally founded workforce have a direct impact on progress in all regions. The analysis of key factors is important for decisions about the socio-economic development in the given territorial unit. The document **National Strategy of Regional Development of the Slovak Republic (2010)** states the initial and strategic aims for the support of regional development in Slovakia.

The importance of optimal population characteristics lies also in the optimization of the structure and number of the population to support socio-economic development (Ondrušek, 2009). The ageing of the population of the Slovak Republic is manifested in a decrease in the share of the population in pre-productive age and an increase in the share of the population in productive and post-productive age (Kopřlová & Kopřla, 2010). The age structure of Slovakia copies trends in most European countries and the ageing of the population is extending the productive period of inhabitants to ensure the necessary work activities (Országhová, 2017).

Higher qualification in human resources is a prerequisite for improving production capacity, sustainable economic growth, and competitiveness (Masárová et al., 2022). The unemployment rate is primarily correlated with the current economic development. The global economic crisis in the period of 2009-2010 significantly affected the unemployment rate in Slovakia, the consequences of which were manifested in disparities in the potential workforce between the districts of Slovakia (Hornýak Greganova & Pietrikova, 2017).

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Analyses in European countries show that in the labour market, the number of people with low qualifications is decreasing because requirements for current job positions are set for a higher qualification, i.e., a higher level of education. In 2018, the unemployment rate of people with low qualifications (less than primary, primary, and lower secondary education) was 13.2% as the European average. In the category of persons with upper-secondary and post-secondary education, the unemployment rate was 6.2%. Highly qualified persons with tertiary education had an unemployment rate of 4.1% ([The risk of unemployment decreases with increasing education, 2019](#)). [Jalovaara et al. \(2019\)](#) investigated the level of education in the Nordic countries; research has confirmed that people with low education have become the smallest segment in the labour market for both sexes. Women have higher aspirations to obtain tertiary education, while for men upper secondary education remains their most widespread level of qualification.

[Lazíková et al. \(2022\)](#) state that the part of graduates of Slovak universities are not satisfied with the field of finished study; moreover, today's employers expect a higher level of soft and hard skills from graduates. By [Schleutker et al. \(2019\)](#) reports in different areas of industry in Italy and Finland were analysed and responses from managers in companies show that specific soft skills, especially teamwork and flexibility in development, are increasingly important. According to [Host'ovecký \(2013\)](#), digital competence is important for all graduates, and social networks can also be used in the process of skills development. [Kirin et al. \(2021\)](#) present results of a comparison of the course of education in a traditional educational environment and an on-line teaching environment.

There are also other factors related to the topic of workforce education and its application in the labour market, for example, the possibility for parents of small children (primarily women) to participate in the work process. [Papcunová et al. \(2023\)](#) surveyed opinions on the quality and availability of school facilities which are still a topical issue for Slovak municipalities. Obtained results could contribute to the improvement of the situation in regions, which is the basis for residents to join the labour process successfully.

2. MATERIAL AND METHODS

This paper aimed to evaluate selected workforce indicators in districts of Nitra Region in the period 2000-2022. Research data samples were generated from several available databases: DATAcube - a public database of the Statistical Office of the Slovak Republic; Population and Housing Census of the Slovak Republic and Central Office of Labour, Social Affairs and Family.

These factors of districts of Nitra Region were evaluated: number of inhabitants, economic age structure, unemployment rate, and level of education of residents. The mutual relationship between educational structure and employment of inhabitants in this region was under investigation. The research assumption was verified: A higher share of people with higher completed education in a given district is accompanied by a lower percentage of unemployment. Data were processed and evaluated via methods of time series analysis and descriptive statistics. The development of indicators over a while was graphically displayed.

3. RESULTS

The Nitra Region, with a total area of 635,372 ha, ranks fifth among the other regions of the Slovak Republic. Nitra Region consists of these 7 districts: Komárno District, Levice District,

Nitra District, Nové Zámky District, Šaľa District, Topoľčany District, Zlaté Moravce District. In 2022, the total population of the Slovak Republic reached approximately 5.43 million people. The total number of inhabitants in the Nitra Region decreased from 714,602 in 2000 to 670,696 in 2022. The gradual decrease in the number of inhabitants has occurred since 2010 (Slovakia's population fell for the second year in a row last year, 2022). Figure 1 shows the development of the number of inhabitants in Nitra Region in the period 2000 - 2022. In 2011, there was a change in the methodology for reporting births, which, in conjunction with the Population and Housing Census, was manifested by a shift in the data.

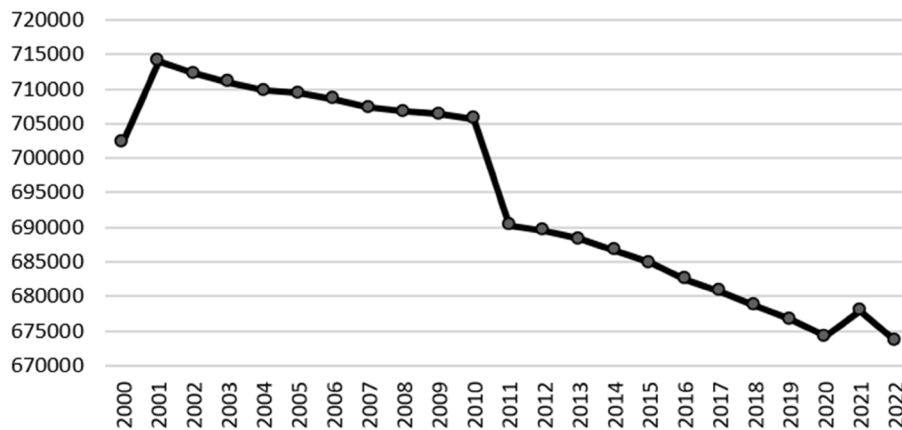


Figure 1. Development of population in Nitra Region

Source: DATAcube, 2023; own processing

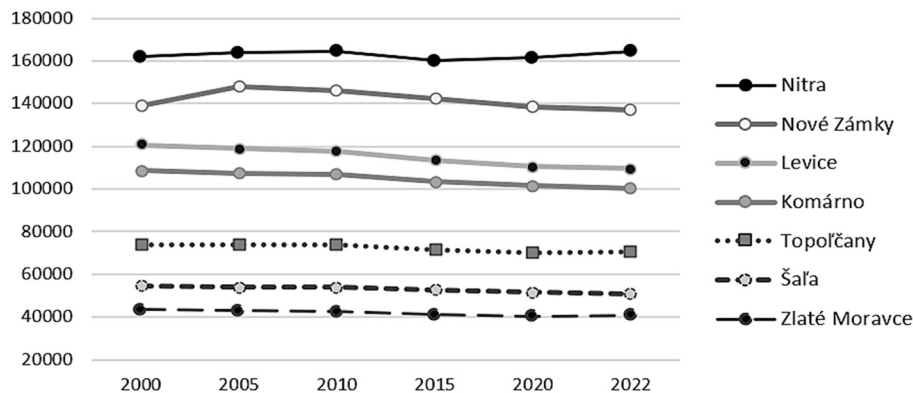


Figure 2. Development of number of inhabitants in districts of Nitra Region (2000-2022)

Source: DATAcube, 2023; own processing

Figure 2 presents the development of the number of inhabitants in districts of the Nitra Region in the period 2000-2022. The districts are arranged according to the number of inhabitants in absolute values. In the mentioned period, a slight decrease in the number of inhabitants was recorded except for Nitra. The Nitra District has the highest number of inhabitants, while the city of Nitra is also the capital of the region.

The next indicator is the population structure by economic age groups: pre-productive age (0-14 years), productive age (15-64 years), and post-productive age (65 and over). The increase in the quality of life and the average life expectancy is reflected in the increase in the post-productive population. In Table 1 there are summed up data about the structure of economic groups in all districts of the Nitra Region as of January 1, 2021. In the pre-productive age, the data ranged from 13.13% to 14.84%. In the category of productive age, the data are in the range of 67.14%

- 68.29%. The age category over 64 includes pensioners and working pensioners; data fluctuates in the range of 17.58% - 19.34%. It could be concluded that the population structure according to economic age groups in the districts of Nitra Region is balanced.

Table 1. Structure of economic age groups in districts of Nitra Region (to January 1, 2021)

District	Age group						Inhabitants overall (abs.)
	0-14 years (abs.)	0-14 years (%)	15-64 years (abs.)	15-64 years (%)	Over 64 years (abs.)	Over 64 years (%)	
Komárno	13,293	13.17	68,512	67.87	19,147	18.97	100,952
Levice	15,063	13.64	74,769	67.68	20,637	18.68	110,469
Nitra	24,452	14.84	110,642	67.14	29,694	18.02	164,788
Nové Zámky	18,148	13.13	93,295	67.52	26,725	19.34	138,168
Šaľa	7,276	14.13	35,152	68.29	9,049	17.58	51,477
Topoľčany	9,494	13.40	48,143	67.92	13,240	18.68	70,877
Zlaté Moravce	5,730	13.92	27,653	67.17	7,786	18.91	41,169

Source: Population and Housing Census 2021, own processing

Figure 3 presents the results of the state of education of residents in individual districts as of January 1, 2021 (according to Population and Housing Census 2021). Nitra region has developed a network of all types of schools: kindergartens, primary schools, different kinds of secondary schools, and universities. Tertiary education is available at three universities in the Nitra Region; two universities are situated in the city of Nitra. This is the main reason for the highest rate of tertiary-educated residents in Nitra District (22.31%).

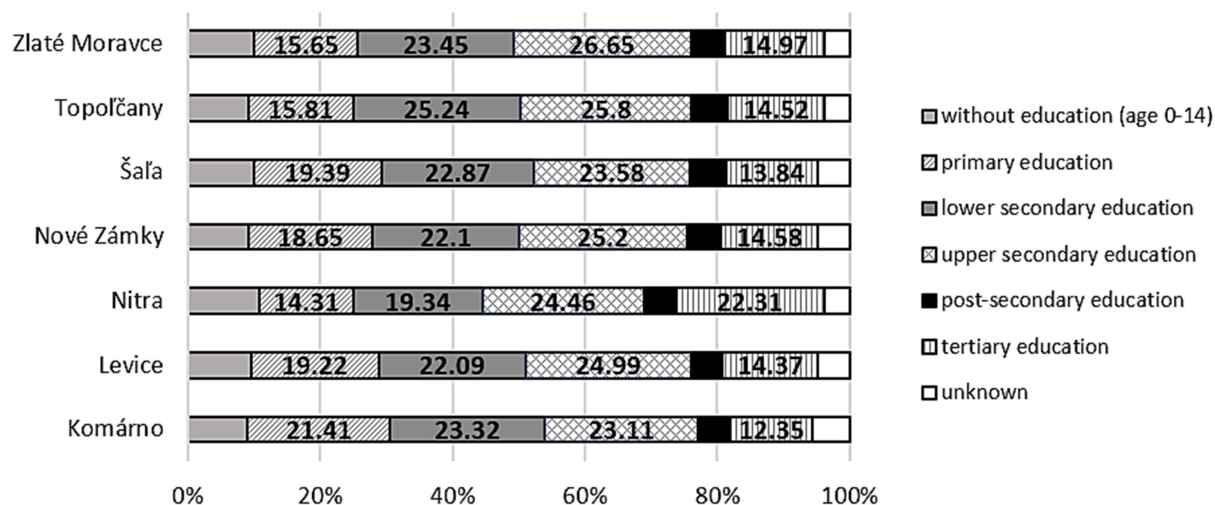


Figure 3. Level of education in districts of Nitra Region

Source: Population and Housing Census 2021, own processing

Figure 4 shows the development of unemployment in the age category 15-24 in the Nitra Region in the period 2001-2022 (expressed in absolute numbers). Development is irregular, high values in 2001 gradually decreased, and the increase occurred again in 2009 during the global financial crisis with a peak in 2012. During the COVID-19 pandemic in 2020-2022, based on state measures, unemployment was maintained with a very small increase.

Figure 5 shows a percentage comparison of the development of unemployment in individual districts. The percentage was calculated based on the number of unemployed in a given year in Nitra Region overall. The districts of Levice and Nové Zámky had the largest share.

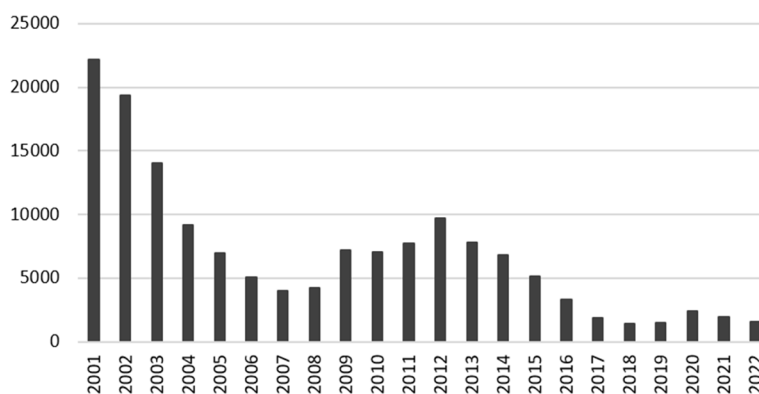


Figure 4. Development of unemployment in Nitra Region (2001-2022, absolute values)

Source: DATAcube, 2023; own processing

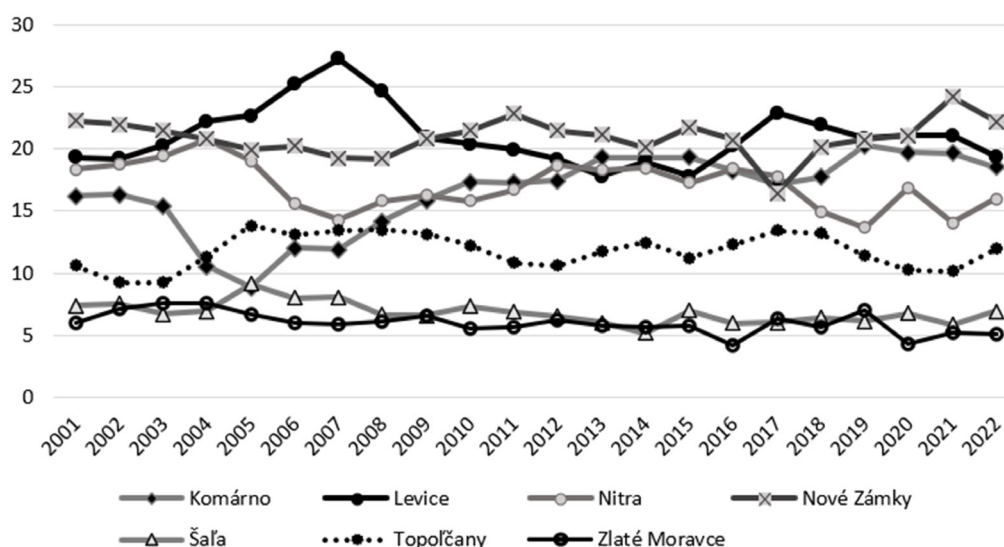


Figure 5. Percentage share of the district in the total unemployment in the region (in the given year)

Source: DATAcube, 2023; own calculations

In Table 2 there are presented data about the unemployment rate in districts of Nitra Region as of December 31, 2021. The registered unemployment rate was 4.80% for the entire Nitra Region. In individual districts, the registered unemployment rate ranged from 3.21% (in Nitra District) to 6.18% (in Komárno District).

Table 2. Unemployment rate in districts as of December 31, 2021

District	Economically active population	Job applicants together (JAT)	Disposable number of job applicants	Women	Unemployment rate calculated from JAT (in %)	Registered unemployment rate (in %)
Komárno	51,331	3,683	3,173	2,110	7.18	6.18
Levice	53,607	3,454	3,142	1,952	6.44	5.86
Nitra	82,030	3,028	2,630	1,758	3.69	3.21
Nové Zámky	69,704	4,181	3,854	2,406	6.00	5.53
Šaľa	26,457	1,292	1,112	762	4.88	4.20
Topoľčany	37,133	1,924	1,678	1,048	5.18	4.52
Zlaté Moravce	20,237	874	746	492	4.32	3.69
Nitra Region	340,499	18,436	16,335	10,528	5.41	4.80

Source: Unemployment - monthly statistics (2021), own processing

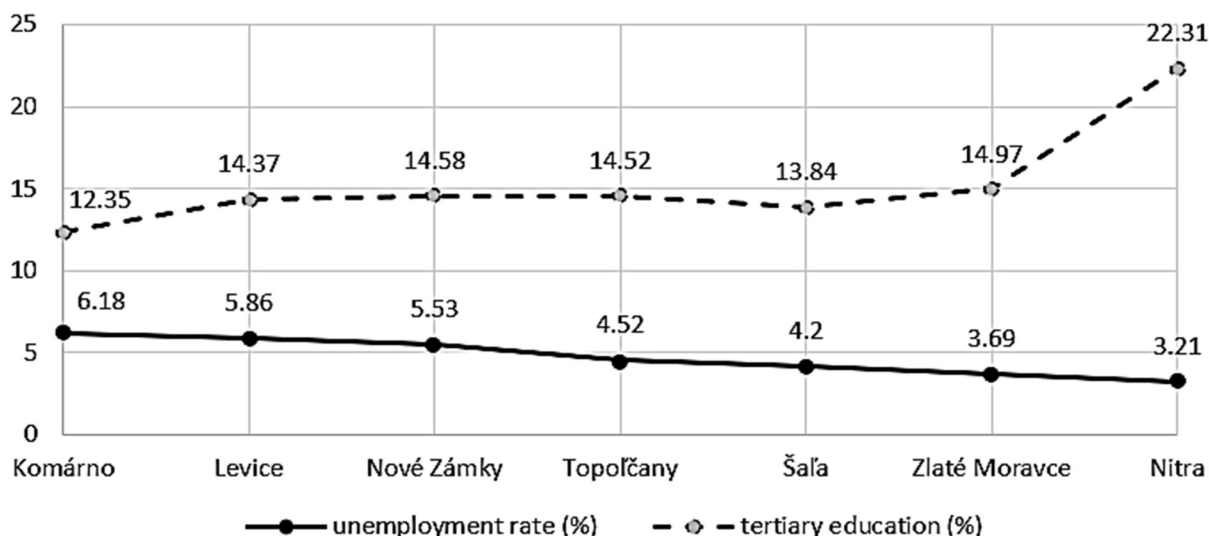


Figure 6. Unemployment rate and tertiary level of education in districts

Source: Own processing

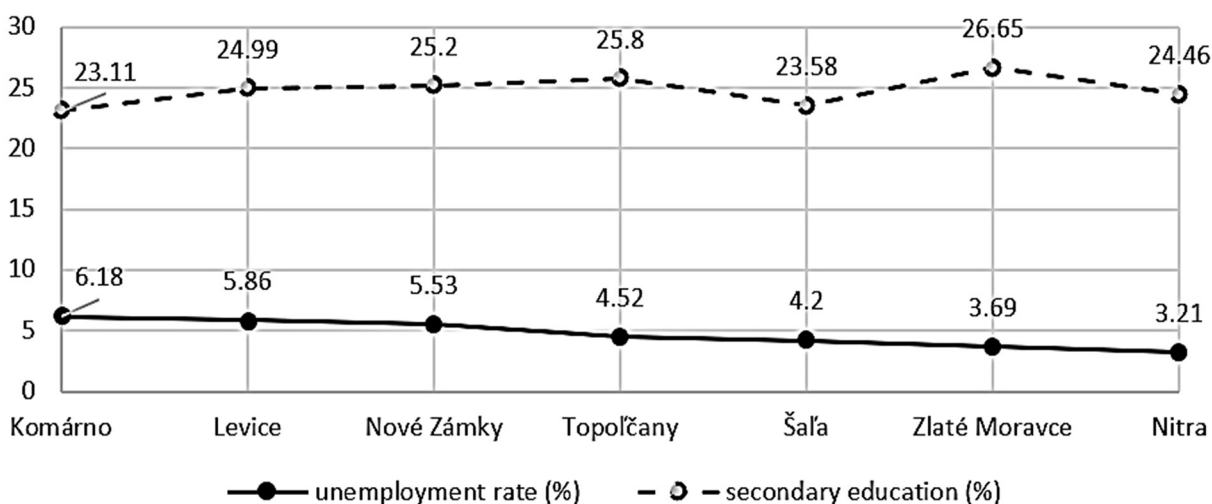


Figure 7. Unemployment rate and secondary level of education in districts

Source: Own processing

Figures 6 and 7 show data of districts on the unemployment rate and the corresponding share of people with a given level of education (districts are initially arranged in descending order according to the data in Table 2). Figure 6 shows data about the unemployment rate (%) and the share of tertiary educated people (%). Likewise, Figure 7 shows data about the unemployment rate (%) and the share of people with secondary education (%). Data confirm that the unemployment rate is decreasing with a higher level of education in the district. It is important to mention that other factors also influence the given state.

4. FUTURE RESEARCH DIRECTIONS

Changes in the labour market occur in connection with various fluctuations and crises in the economic, social or health sphere (e.g., the impact of the COVID-19 pandemic). Global problems affect a large part of the population in many countries, and the consequences of crises last for several years. Workers are looking for suitable employment and financial compensation in the labour market that is becoming interconnected across continents. [Rievajova and Privara \(2016\)](#) report



results about the migration of skilled workforce abroad, while the departure is reflected in the lack of qualified workers in many sectors and professions in the economy. Increasing migration abroad is also reflected among young people who leave Slovakia to study abroad and often stay there to work.

Employee migration is an important issue for many countries in the world. Research about workforce mobility was carried out in Australia and according to the results, only about five per cent of the workforce was defined as highly mobile; more than half of the workforce can be considered stable in a given region, unwilling to move even with a certain salary increase (Rolfe et al., 2020). How to maintain a trained workforce in the home country is a challenge for many countries and professions in Europe. Analyses examine various factors of departure and the possibilities of return in the home country, especially for younger age categories of qualified workers (Chevillard, 2021).

Both theoretical and empirical research examining the relationship between education and employment confirm the positive impact of higher education on a person's success in employment in the labour market. Obtained results about districts of the Nitra Region can be useful for improving interaction at the regional and local level in solving issues related to the education of young people as well as the adult population, and in improving the conditions of career application in this region.

5. CONCLUSION

The effective usage and flexibility of employees in the labour market is an essential determinant of economic performance and is associated with the appropriate qualification of the workforce. Analyses of selected indicators of the Slovak labour market confirm that the consequences of global problems and crises are reflected in the regions as well. The paper examined the relationship between the level of education of residents and the unemployment rate, while the focus was on the evaluation of data on the districts of the Nitra Region in the Slovak Republic. The obtained results confirmed that the unemployment rate is lower in districts with residents with a higher level of education.

In the current period, Slovakia faces a lack of qualified workforce. Companies are trying to solve this problem in various ways, e.g., by importing labour from abroad. Higher professional qualification in human resources is a prerequisite for the creation and transfer of innovations to companies and life in regions. The lack of workforce leads to the need for re-training of older employees for new kinds of professions.

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