

# The Relationship of Education and Unemployment

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**Abstract:** Unemployment is a key factor of a country's economy. It significantly influences the characteristics of an economy's operating process. The aim of our research paper is to study and analyze the unemployment rate in two European countries. Concretely, we have decided to examine the Slovak Republic and Czech Republic. The mentioned two countries have formed one state till 1st January 1993, when they started their own separate and individual existence and operation. We analyze the unemployment rate in the mentioned countries between 2014 and 2021. Also, we concentrate on the achieved educational level of the unemployed population. Our goal is to answer the question, whether the unemployment rate among people with a diploma, university degree has shown a rising trend during the studied time period, which means from 2014 to 2021.

**Keywords:** unemployment; educational level; university degree

**JEL Classification:** E24; I25; J64

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## 1. Introduction

Unemployment is one of the most frequently mentioned terms and it is considered to be a key measure of the health of the economy. Unemployment in the macroeconomic sense expresses a part of the working-age population registered by the labor office, which is not working. It also refers to a situation on the labor market where people actively seeking a job are unable to find employment. Large range of factors can affect the development of unemployment. These can include for example demographic change, education level, age, active labor market policy (Petrušová et al., 2018). The phenomenon of unemployment is mentioned in the work by Kilimova and Nishnianidze (2018). They studied and stated the existence of a relationship between the level of education, gender and age structure on the example of several European countries and Russia. Flek et al. (2020) analyzed labor market prospects of unemployed people aged 50-65 in the Czech Republic and Slovakia. In contrast, this paper confirms the effect of the duration of unemployment on job-finding, while the impact of explanatory covariates (like education level, gender or household characteristics) is not significant. Older Czechs also face a lower probability of remaining unemployed. Stachová and Musilová (2019), relying on the partial results of correlation analysis, stated the existence of a relationship between the results of the secondary vocational education (i.e., skills required by the employers) and unemployment rate of graduates of secondary vocational schools in Bratislava and Banská Bystrica Regions. According to Teichler (2018) university graduates spend six months on average searching for a job after receiving their diploma. It can differ from 0 months up to one year. In Japan, students usually start seeking

a job in the final year of their university studies, while in south European countries, such as Italy or Spain students start to do it only after finishing the university. However, Green and Henseke (2016) stated in their work, that based on the economic theories of the dynamic labor market it is impossible to reach a situation without a mismatch in the employment and the educational level, since the market is in constant movement. In this case, the job seekers can be undereducated or overeducated and it can easily change with the dynamic labor market. Hojda et al. (2022) studied the factors influencing the wages of employees and their satisfaction. The mentioned factors were ex post analyzes about the faculty, the studied field and the extracurricular activities of the questionnaire samples.

The aim of the paper is to analyze the development of unemployment in Slovakia and the Czech Republic in the years 2014-2022. The analyzes are done from the aspect of the regional allocation and the achieved educational level.

## 2. Methodology

In the work "The Relationship of Education and Unemployment" we explore the relationship between education level and unemployment in two Central European countries, concretely the Slovak Republic and the Czech Republic. The selected countries were creating a common state, called Czechoslovakia, till 1993 January 1, when they were divided and started to operate as independent separate states. We have collected information from the data collections of the Statistical Office of the Slovak Republic and the Czech Statistical Office. The collected data is about the number of populations in each Slovak and Czech regions (CZSO, 2022b; STATdat, 2022c), the monthly average salary (CZSO, 2021c; STATdat, 2021c), and about the number of unemployed populations in the mentioned countries according to the level of their education. We examine the data at the level of 14 regions of the Czech Republic and 8 Slovak regions. The data collection was done in the time period, from 2014 to 2022. Moreover, our work concentrates on the comparison of unemployment rate in the mentioned two countries, based on the unemployed persons' regional allocation and the achieved educational level.

In our work we have used quantitative and even qualitative methods. As the qualitative method, we studied and analyzed domestic and foreign literature about the mentioned research area. Also, we used comparative research methods and descriptive research methods to process data. Also, we were working with secondary data collected from the national statistical offices. The following indicators of descriptive statistics were used: mean, standard deviation. Moreover, we have used the Hoover Index to compare the concentration of unemployed during the analyzed time period in each region of Slovakia and the Czech Republic.

The work titled "The Relationship of Education and Unemployment" is the continuation and at the same time the complement of the work: Labor Market Policy in the Slovak Republic and Hungary during the COVID-19 Pandemic (Bálintová et al., 2022a). In this work we analyzed COVID-19 effects on the unemployment rate in Slovakia and Hungary. In the future we are planning to analyze and work on the problem of unemployment rate further on in the Visegrad 4 countries.

### 3. Results

The primary objective of the research was to investigate the connection between education level and unemployment, and the aim was to study the correctness of the following statements:

S1: The growth of the number of unemployed is more intense in the Slovak labor market. The territorial distribution of the unemployed is also uneven both in Slovakia and the Czech Republic within the period from 2014 to 2021.

S2: There is an association between the level of education and unemployment rate: the share of people with a basic education level is larger among the unemployed than the share of people with advanced education within the period from 2014 to the second quarter of 2022 in both European countries.

The choice of the mentioned period was intentional. Considering the fact that some support programs from the 2014-2020 funding period will be extended, it represents the years of the last program period of the European Social Fund (ESF). One of the main goals of programs supported from the ESF during the mentioned period was to get more people into jobs. Although an evaluation of these programs is not carried out in this paper, it is important to see how the unemployment figures have changed during the years of their operation.

#### 3.1. Unemployment and Educational Structure of Unemployed

The development of the number of unemployed during the analyzed period in Slovakia and Czech Republic has shown a similar trend (Figure 1).

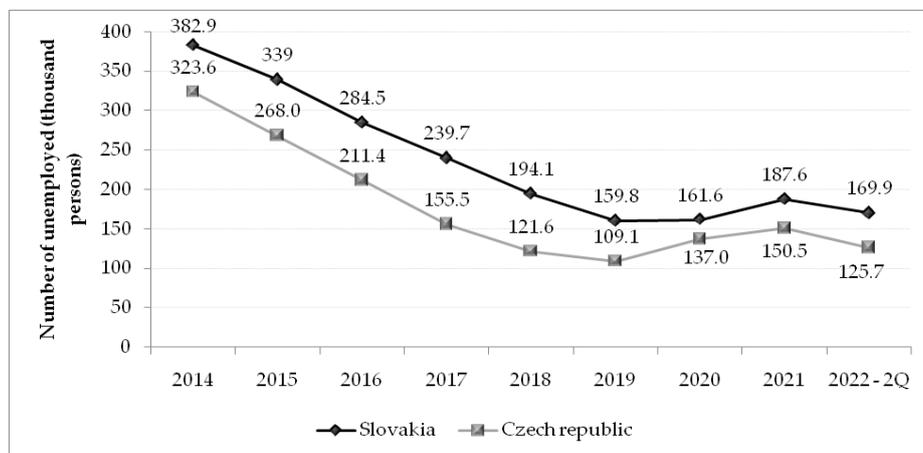


Figure 1. Number of unemployed in Slovakia and Czech Republic (STATdat, 2022a; STATdat, 2022b; CZSO, 2022a)

The number of unemployed gradually decreased in both countries during the years 2014-2022. The number of unemployed decreased intensively in Slovakia during the mentioned period. Among the unemployed, the number of job losers dropped on average 235.456 thousand persons each year in Slovakia. In the Czech Republic, the number of unemployed decreased annually by an average of 178.054 thousand persons. The standard deviation calculated from the data on the number of unemployed between 2014 and second quarter of 2022 was 82.433% (Slovak Republic) and 74.189% (Czech Republic). At the end of the period, as a result of the coronavirus epidemic,

among other things, the number of unemployed people began to increase again at the national and regional level. This was supported by the examination of the regional distribution of the unemployed. The analyzed data shows great regional diversity of unemployment both in Slovakia and the Czech Republic (Figure 2). The value of the Hoover index was 10.833% (Slovakia) and 12.872% (Czech Republic) in 2014, which indicates the relative extent of the differences between the territorial distribution of the two examined non-specific (absolute) indicators. Repeating the measurement for 2021, the value of the Hoover index was 21.766% (Slovakia) and 12.290% (Czech Republic). Thus, the degree of discrepancy between the regional distribution of the population and the number of unemployed continued to increase in Slovakia's regions. In the case of the Czech regions, the degree of deviations decreased slightly. We also measured changes in the spatial distribution of the unemployed over time using the Hoover index.

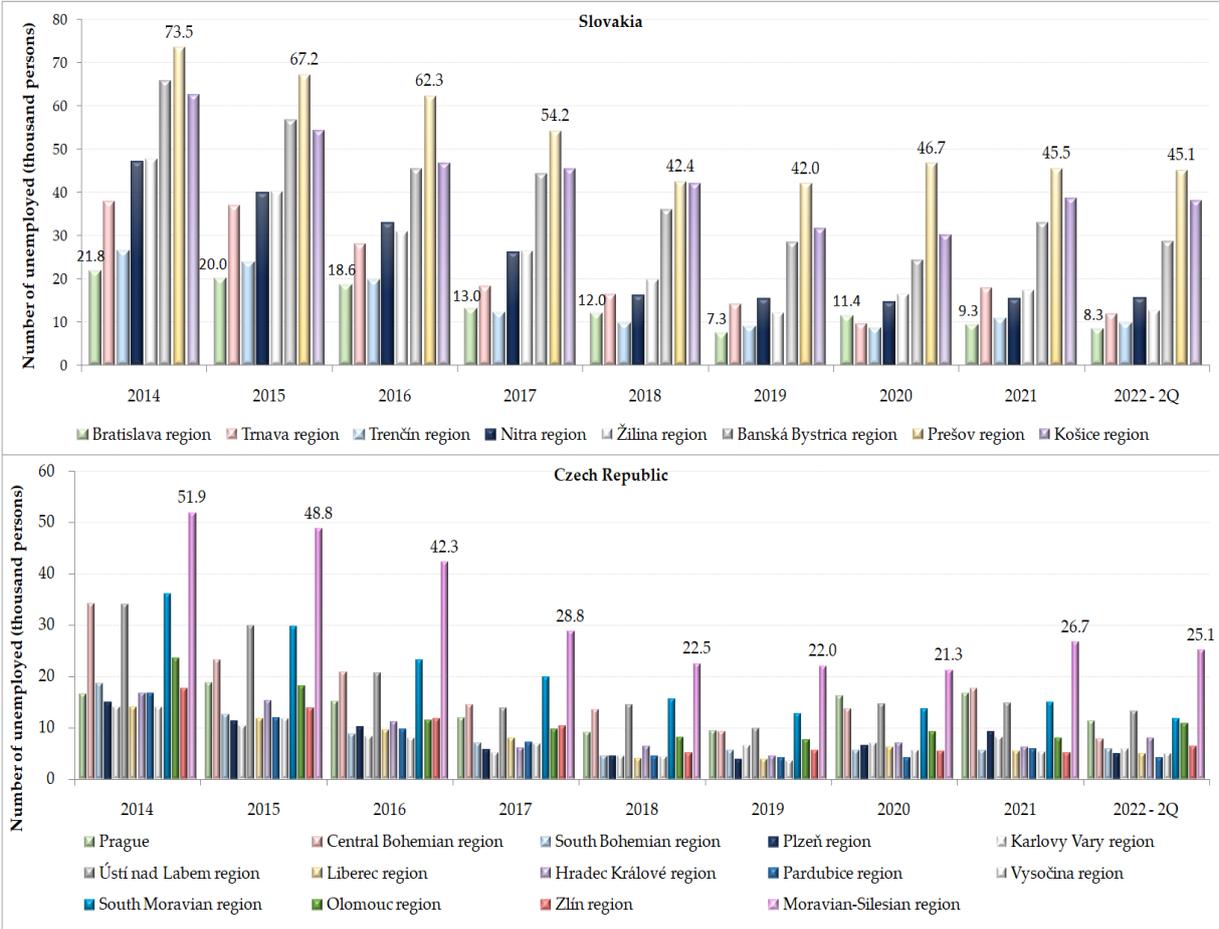


Figure 2. Territorial distribution of the unemployed in Slovakia and Czech Republic (CZSO, 2022a; STATdat, 2022a; STATdat, 2022b)

A dynamic interpretation of the Hoover index was also implemented to measure changes in the spatial distribution of the unemployed over time. The value of the indicator was 1.211% (Slovakia) and 1.450% (Czech Republic), which shows the change in the average territorial distribution of registered unemployed persons per year. The rate of change in the distribution of the unemployed per region was 1.211% (regions of Slovakia) and 0.828% (regions of the Czech Republic). The values show that in 2021, it was necessary to redirect nearly 2 percent of jobseekers from regions with higher unemployment data to regions that can be named as more attractive destinations for employers and

employees. The results can also be interpreted as the fact that the intensification of labor mobility would contribute to the equalization of unemployment data, and would also result in their reduction. In the case of the regions of the Czech Republic, the values of the index indicate less inequality in the distribution of the unemployed. We can say that statement no.1 was partially confirmed.

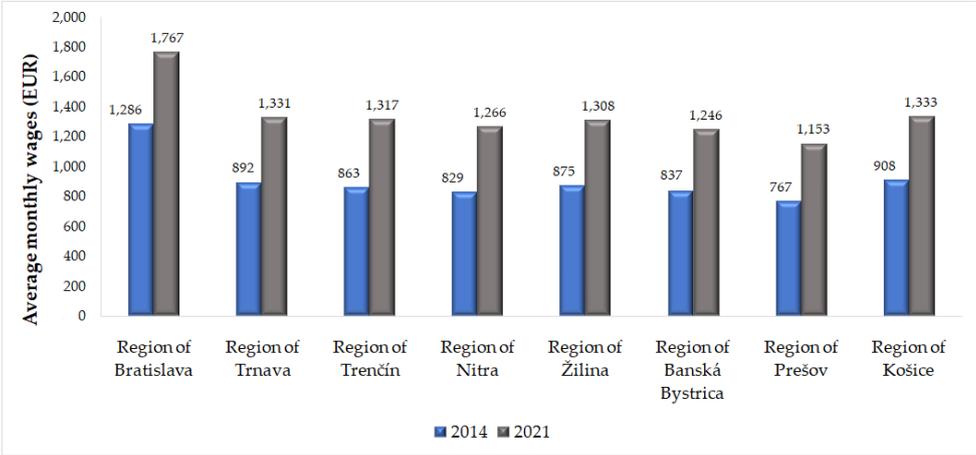


Figure 3. Average Monthly Wages 2014-2021, Slovakia (CZSO, 2021; STATdat, 2021)

Regional disparities are influenced by various macroeconomic factors, as unemployment rate and monthly average wages. On the previous graphs we are studying the trend of average monthly salaries in Slovakia and the Czech Republic in 2014 and 2021 (Figure 3; Figure 4).

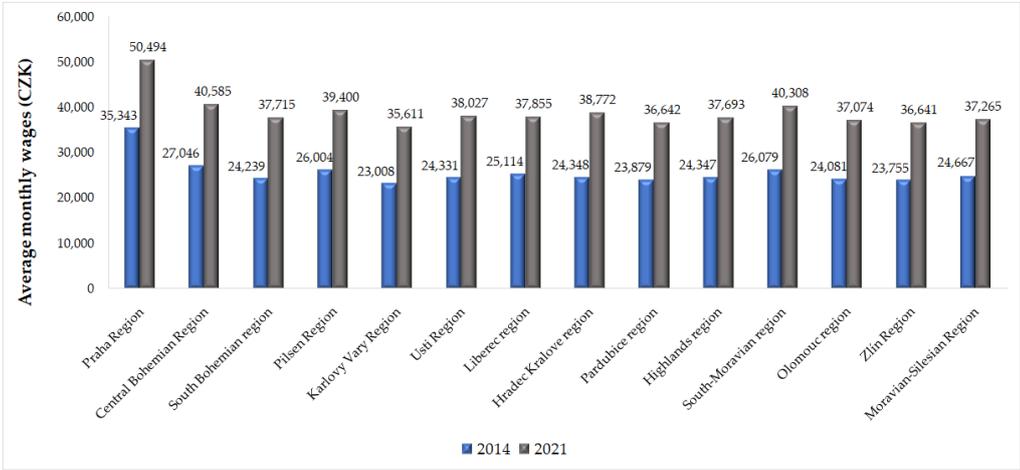


Figure 4. Average Monthly Wages 2014-2021, the Czech Republic (CZSO, 2021; STATdat, 2021)

We can observe a nationally and regionally unified rising trend on both countries. During the analyzed time period from the aspect of monthly average wages the problematic of regional disparities has not disappeared, is constantly present.

In Slovakia the average monthly nominal wage in 2021 has reached the highest level in the capital city, in Bratislava (Figure 5). While the lowest average salary was observed in Region Prešov, 1,153 EUR. In 2021, the lowest unemployment rate was in Bratislava region, where the monthly average salary was on the peak as well. In regions surrounding the capital city the monthly average salary was higher than in the regions situated further from it. Based on Figure 2. the highest unemployment rate was in Region Prešov, where the average monthly salary was the lowest in the country.

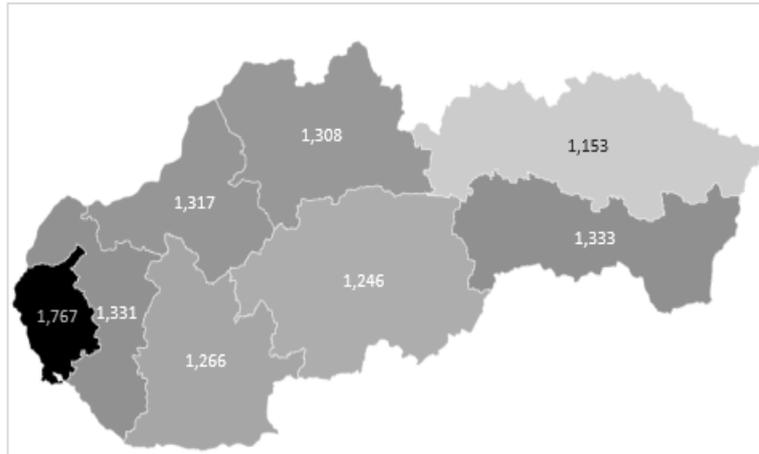


Figure 5. Territorial distribution of the average monthly salary in Slovakia – 2021 (CZSO, 2021; STATdat, 2021)

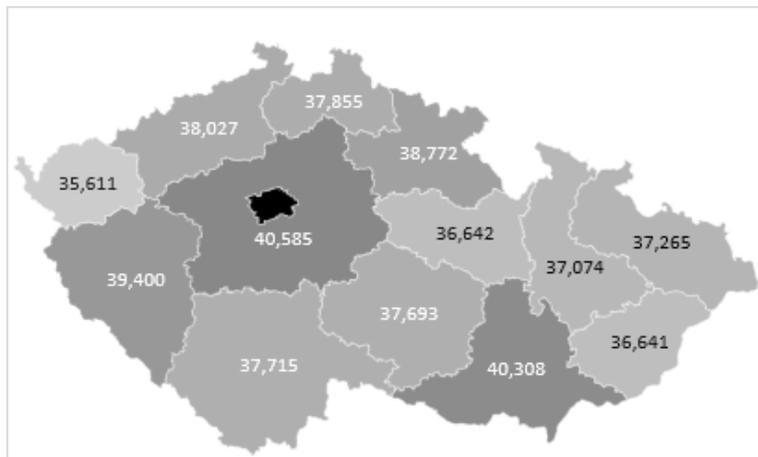


Figure 6. Territorial distribution of the average monthly salary in the Czech Republic – 2021 (CZSO, 2021; STATdat, 2021)

In the case of the Czech Republic similarly as in Slovakia, the highest monthly average gross wage was observed in the capital, in the Region of Prague, 50,494 CZK. While in Slovakia the lowest unemployment rate was observed in the region with the highest monthly salary rate, in the Czech Republic the lowest unemployment rate in 2021 was in Region Pardubice. However, here the monthly average salary was almost 15,000 CZK lower than in Prague Region. In the Czech Republic the highest unemployment rate was observed in the Central Bohemian Region. The mentioned region was the region with the second lowest monthly salary in the republic (Figure 6).

There are differences in the structure of unemployment between the two countries. Education structures of both countries are also different. Slovakia has a higher share of those unemployed people who completed upper secondary education with GCE (secondary school leaving examination). However, the share of unemployed with basic, pre-primary education or without education was also getting higher from 2018 to the second quarter of 2022. On the other hand, there is a higher proportion of unemployed people with lower secondary education without GCE in the Czech Republic as well as with tertiary education (Figure 7). In the examined period, the increase in unemployment among people with lower educational

qualifications can also be linked to the Covid-19 epidemic. The pandemic primarily affected live-labor-intensive sectors (for example hospitality, trade, manufacturing and construction) (Bálintová et al., 2022b), which sectors are also characterized by the employment of people with lower education. Adams-Prassl et al. (2020) also confirm that during the crisis caused by the coronavirus, the chance of job loss was significantly higher for workers with a lower (than college) education.

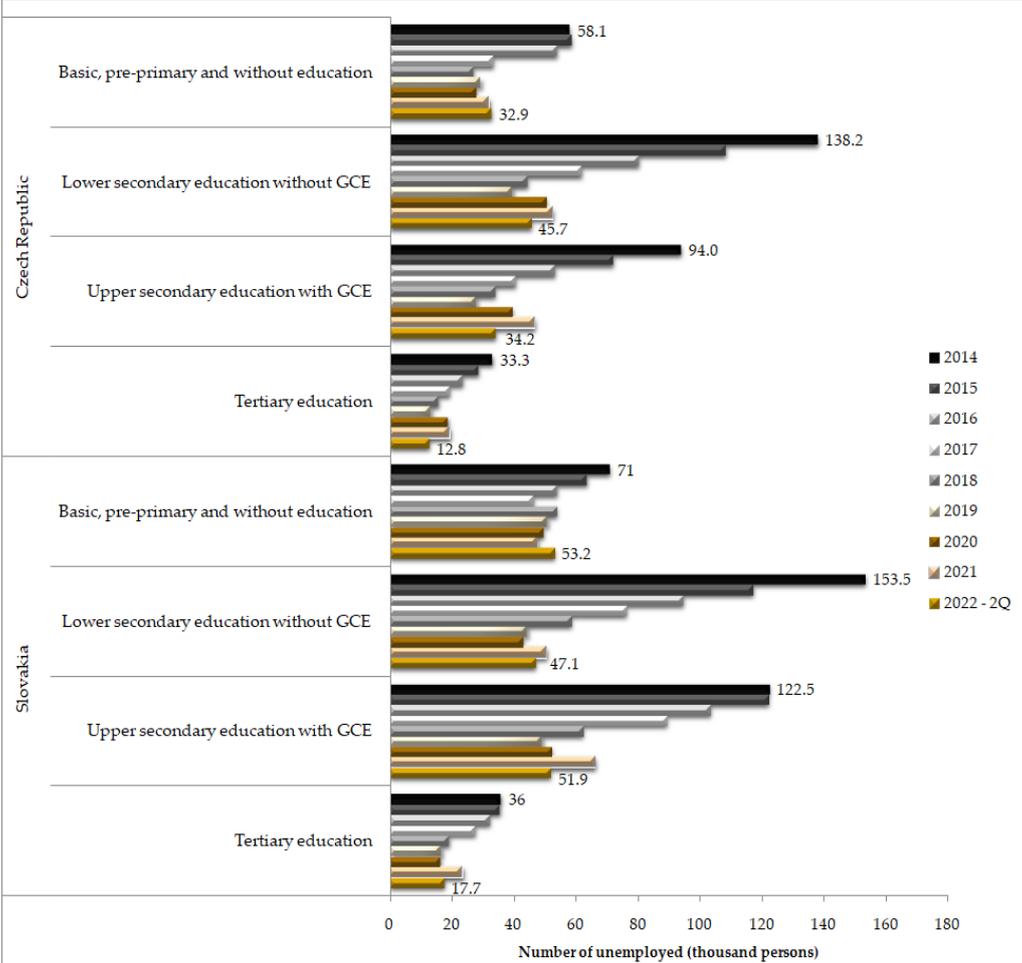


Figure 7. Education structure of unemployed in Slovakia and Czech Republic (CZSO, 2022a; STATdat, 2022a; STATdat, 2022b)

This finding is confirmed when comparing the proportion of people with basic, lower or upper secondary and tertiary education among the unemployed in both countries (Table 1). Based on the results of the analysis, the second statement was not confirmed.

In Table 1, we can perfectly observe the percentage rate of unemployed based on their educational level. While in Slovakia, in 2014, 40% of the unemployed population had lower secondary education without GCE, in 2022 only 27% of the unemployed had the mentioned educational level. In 2022 the group with the highest employment rate was among the basic, pre-primary and without education group. Which is very interesting is that during the analyzed 9 years the unemployment rate in the tertiary education level has grown as well. In Czech Republic, both in 2014 and 2022 the highest unemployment rate was in the lower secondary education without GCE.

Table 1. Educational structure of unemployed (CZSO, 2022a; STATdat, 2022a; STATdat, 2022b)

Country/Education level/Year (% of the total number of unemployed)		2022 2Q	2021	2020	2019	2018	2017	2016	2015	2014
Slovakia	Tertiary education	10.42	12.53	10.21	10.20	9.94	11.51	11.35	10.53	9.40
	Upper secondary education with GCE	30.55	35.24	32.36	30.60	32.15	37.30	36.38	36.05	31.99
	Lower secondary education without GCE	27.72	26.87	26.67	27.53	30.19	31.87	33.29	34.60	40.09
	Basic, pre-primary and without education	31.31	25.37	30.69	31.60	27.77	19.36	18.98	18.79	18.54
	Total	100.00	100.00	99.94	99.94	100.05	100.04	100.00	99.97	100.03
Czech Republic	Tertiary education	10.21	12.87	13.83	11.94	13.06	12.44	11.17	10.72	10.29
	Upper secondary education with GCE	27.22	30.95	28.93	25.20	28.02	26.13	25.22	26.90	29.06
	Lower secondary education without GCE	36.38	34.84	36.91	36.15	36.63	39.82	38.03	40.47	42.71
	Basic, pre-primary and without education	26.19	21.34	20.33	26.70	22.24	21.49	25.54	21.90	17.95
	Total	100.00	100.00	100.00	100.00	99.95	99.88	99.97	100.00	100.00

#### 4. Discussion

In the research titled: The Relationship of Education and Unemployment, we placed our main focus on indicators as unemployment rate and educational level. We analyzed the mentioned two indicators in Slovakia and the Czech Republic in the time period: 2014-2022. In the research we were analyzing the unemployment rate in some educational level groups. Also, we have stated two statements, which are the followings:

- S1: The growth of the number of unemployed is more intense in the Slovak labor market. The territorial distribution of the unemployed is also uneven in both Slovakia and the Czech Republic within the period from 2014 to 2021 in both European countries.
- S2: There is an association between the level of education and unemployment rate: the share of people with basic education level is larger among the unemployed than the share of people with advanced education within the period from 2014 to the second quarter first of 2022 in both European countries.

With the help of our quantitative research, we can state that the first statement was partially confirmed. (Figure 2.). Similar results were obtained by Privara et al. (2018) who, based on data for 2015, researched the regional differentiation of unemployment in the case of the regions of Slovakia and the Czech Republic (primarily with regard to the factors influencing unemployment such as gender, age, education level). Focusing on the regional evolution of long-term unemployment as a specific form of unemployment, their research results showed a relatively favorable labor market situation in the majority of Czech regions

and in the case of Western Slovakia. On the contrary, in the Eastern Slovakian region, the high unemployment rate is a continuous problem, and there are high levels of inequality between some regions of Slovakia, as well as between Slovakia and the Czech Republic.

However, the second statement cannot be confirmed, which means that the share of people with basic educational level was not larger than the other educational level groups. Ionescu (2012) stated that a high participation in education is not clearly or necessarily associated with a higher employment rate. So, based on her statement, employability is not necessarily in correlation with the educational level. Similarly, Kobylińska et al. (2017), claimed the reason for the unemployment of young European, primarily Polish, workers in the existence of graduates' purely theoretical knowledge. The degradation of higher education, its easy accessibility and the high number of university graduates increase unemployment among the representatives of the millennial generation even more. They note that, unlike what was experienced before, university education is no longer considered a key factor in the labor market. Experience and the existence of the so-called "soft skills", which do not require higher education, will be key factors. In contrast, according to Musilova and Stachova (2017), it is clear that higher education improves the labor market prospects of Slovak workers, and that those with higher education are more likely to keep their jobs in times of economic difficulties. Based on their research results, people with secondary education are in a more difficult labor market situation than young workers with higher education.

In the following time period, we would like to extend our research on more countries, concretely on the countries of the Visegrad 4 countries. These analyses could give us a better overview of the area. Moreover, we would like to concentrate on graduate unemployment and analyze it more into detail.

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Conflict of interest: none

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