Analyzing the Impact of Education Levels in Poland on Various Socioeconomic Sectors

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Introduction

Analyzing the impact of education levels in Poland on various socioeconomic sectors is a crucial topic that can provide valuable insights into the interdependencies between education and other aspects of social and economic life. This study aims to explore these interconnections by investigating how education influences different facets of society and the economy. With the hypothesis suggesting that **the higher the level of education, the better the socio-economic conditions**, we seek to understand the extent to which educational attainment shapes various socioeconomic indicators in Poland.

The data used includes categories such as:

- **Wages**: Data on average monthly gross wages will allow us to investigate the relationship between education and earnings.
- **Gastronomy**: Data on retail sales of goods will enable us to examine the impact of education on consumption and economic activity.
- **Labor Market**: Information on working conditions and the number of workplace accident victims will help assess how education levels influence safety and working conditions.
- **Healthcare**: New cases of venereal diseases will help us understand how education levels impact public health.

Data sources

The data used for the study was obtained from the Statistics Poland (GUS), specifically from the following categories:

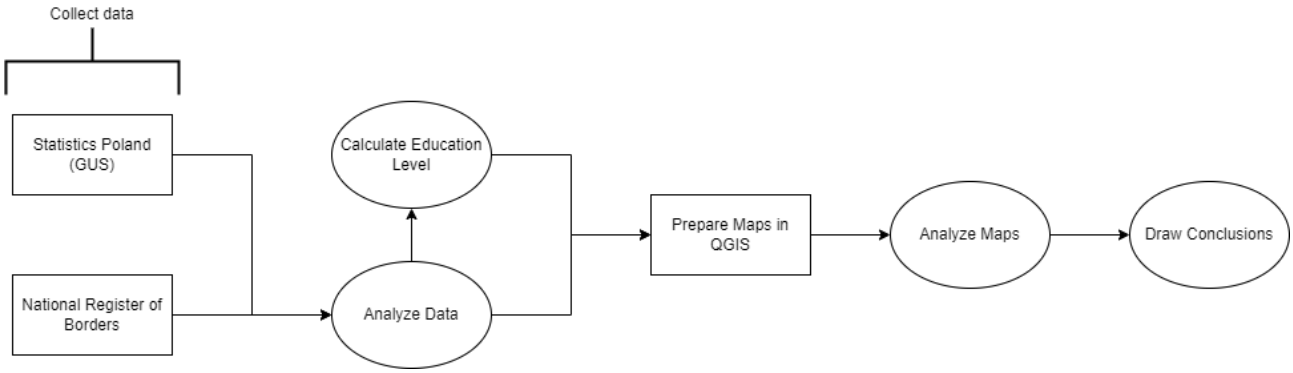
- Prices category, price indices group, price indices of goods and services subgroup; trade and gastronomy category, retail sales group, retail sales of goods subgroup;
- National censuses category, NSP 2021 – population group, resident population aged 13 and over by education level and gender subgroup;
- Healthcare, social care, and family benefits category, population health status group, new cases of venereal diseases subgroup;
- Wages and social benefits category, wages group, average monthly gross wages subgroup;
- Labor market category, working conditions group, workplace accident victims subgroup.

The boundaries of individual voivodeships, counties, and municipalities were delineated using data from the National Register of Borders, enabling precise spatial analysis.

All the data obtained is from 2021, ensuring the analysis's relevance and consistency. This comprehensive data set will facilitate a multidimensional analysis that reveals how education impacts various aspects of life in Poland.

Flow chart

The flowchart below illustrates the sequential steps involved in this process which encompasses data collection, analysis, map preparation, and conclusion drawing.



1 Education Levels in Poland

Calculated an education level which takes into account various education levels, each weighted according to its perceived contribution to overall educational attainment. The formula used for this calculation is as follows:

$$\text{Education Level} = \frac{h \cdot 8 + g \cdot 7 + f \cdot 6 + e \cdot 5 + d \cdot 4 + c \cdot 3 + b \cdot 2 + a \cdot 1}{a + b + c + d + e + f + g + h} \tag{1}$$

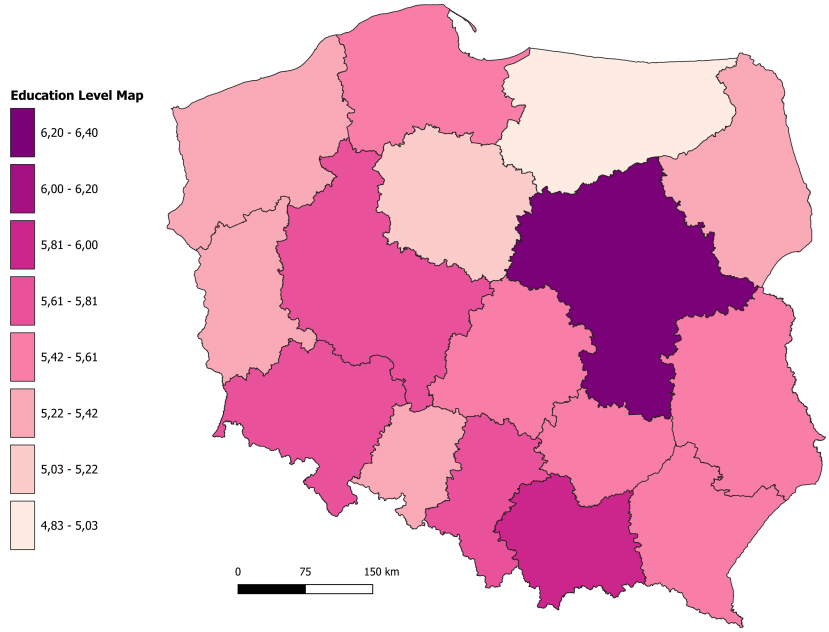
In this formula:

- **h**: Represents individuals with higher education.
- **g**: Represents individuals with secondary vocational education.
- **f**: Represents individuals with secondary education.
- **e**: Represents individuals with basic vocational education.
- **d**: Represents individuals with post-secondary education.
- **c**: Represents individuals with secondary school education.
- **b**: Represents individuals with primary education.
- **a**: Represents individuals with incomplete primary education or no school education.

This comprehensive approach allows for a detailed assessment of the overall education level in Poland, accounting for the distribution and quality of education among the population. The resulting index provides a single metric that reflects the educational attainment of the population, facilitating comparisons and trend analysis.

1.1 Education Level by Voivodeships

Map 1 illustrates the education level across different voivodeships for Poland in 2021. This visualization helps to identify regional disparities in educational attainment.

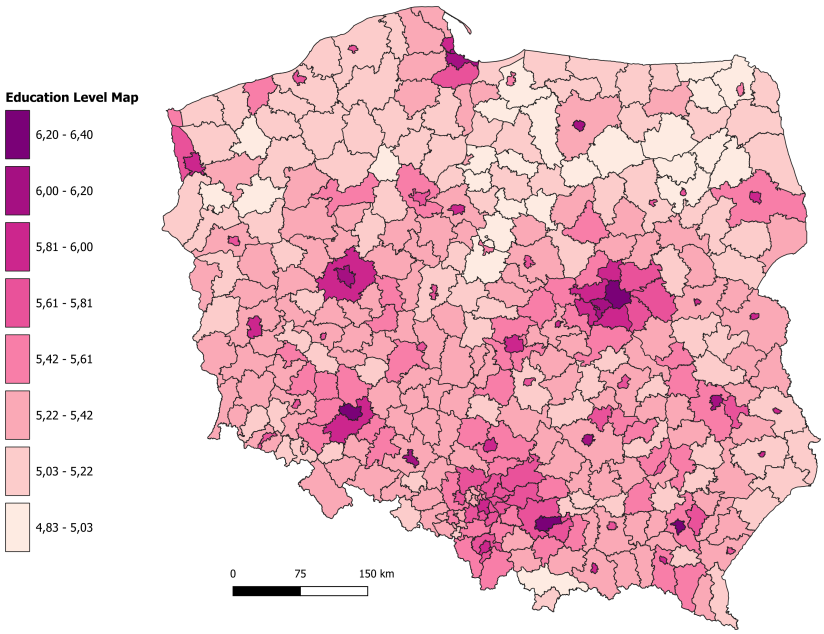


Map 1: Education Level by Voivodeships in Poland (2021).

It is worth noting that the highest education index is observed in the Mazowieckie Voivodeship, indicating a relatively higher level of educational attainment compared to other regions.

1.2 Education Level by Counties

Map 2 provides a detailed view of the education level at the county level for Poland in 2021. It highlights more localized variations in educational attainment within each voivodeship.



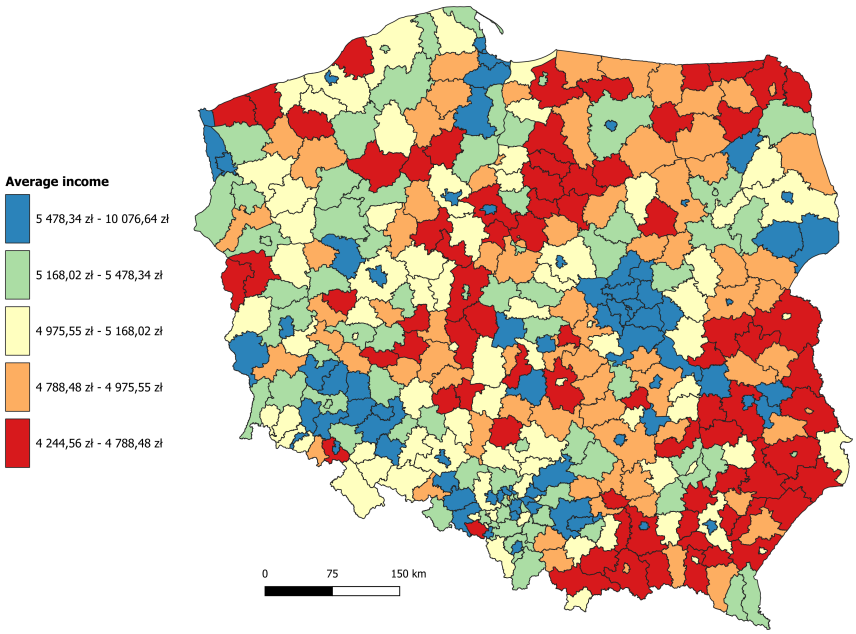
Map 2: Education Index by Counties in Poland (2021).

Additionally, most of the capitals of the voivodeships are depicted on the map, indicating their relatively higher educational indices compared to surrounding areas.

2 Average monthly gross salary

In this section, we explore the relationship between education levels and average monthly gross salary in Poland. Two maps have been prepared at the county level to investigate this relationship.

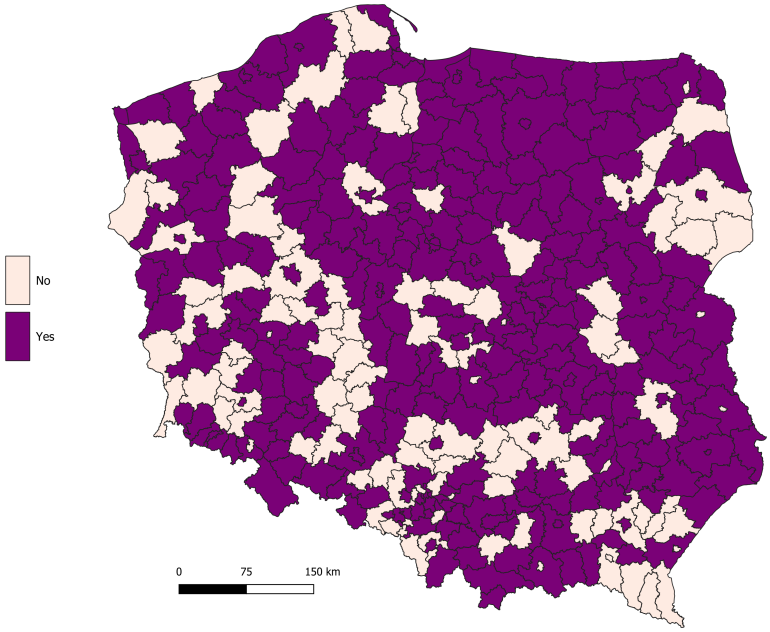
Map 3 depicts the average income across different counties, represented by varying colors. Through this visualization, we aim to identify regional disparities in income distribution.



Map 3: Average Income in Poland (2021).

Furthermore, a hypothesis has been formulated to determine whether there is a correlation between education levels and income. The hypothesis is expressed through a formula, which compares the education index of each county to the mean education index across all counties, and similarly compares the average income of each county to the mean average income. Counties meeting certain criteria based on this comparison are labeled accordingly on the Map 4.

Map 4 provides a visual representation of the counties that conform to the hypothesis, indicating areas where the education-income relationship aligns with the proposed theory.



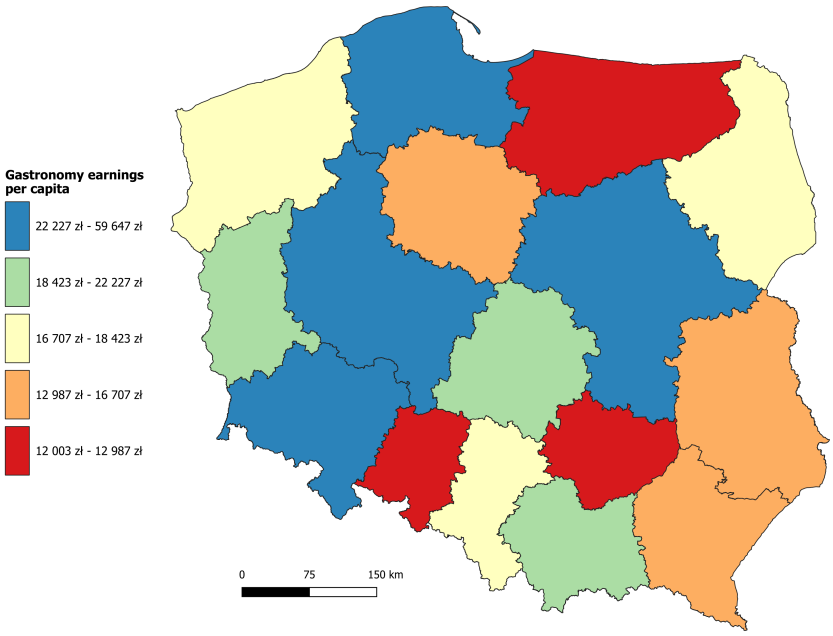
Map 4: Education-Income Relationship in Poland (2021).

Analysis of the results on Map 4 indicates a high level of agreement between education levels and average gross salary, reaching approximately 80%.

3 Gastronomy earnings

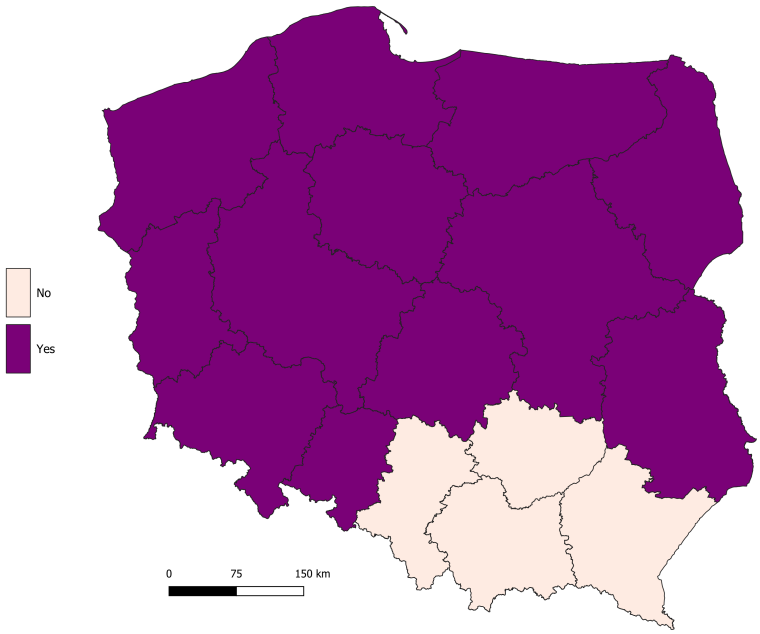
This section is dedicated to analyzing earnings in gastronomy at the voivodeship level in Poland. Two maps have been prepared to examine the relationship between earnings and education levels.

Map 5 depicts the average earnings per capita in gastronomy across different voivodeships. Through this visualization, we aim to identify regional disparities in the distribution of earnings in gastronomy.



Map 5: Average Gastronomy Earnings per Capita in Poland (2021).

Additionally, a hypothesis has been formulated to determine whether there is a correlation between education levels and earnings in gastronomy. The hypothesis is expressed through a formula that compares the education level of each voivodeship to the mean education level across all voivodeships and similarly compares the average earnings of each voivodeship to the mean average earnings. Voivodeships meeting certain criteria based on this analysis are labeled accordingly on Map 6.



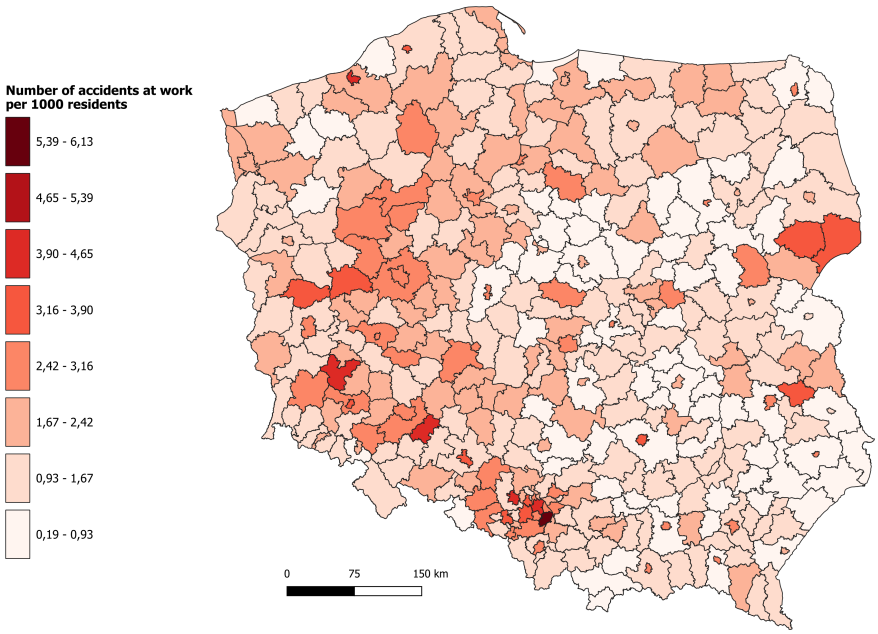
Map 6: Relationship between Education and Gastronomy Earnings in Poland (2021).

Analysis of the results on Map 6 indicates a high level of agreement between education levels and average earnings in gastronomy, reaching approximately 80%.

4 Workplace accidents

This section presents an analysis of workplace accidents at the county level in Poland, focusing on the number of accidents per 1000 residents. Additionally, it explores the correlation between workplace accidents and educational attainment using a formulated hypothesis.

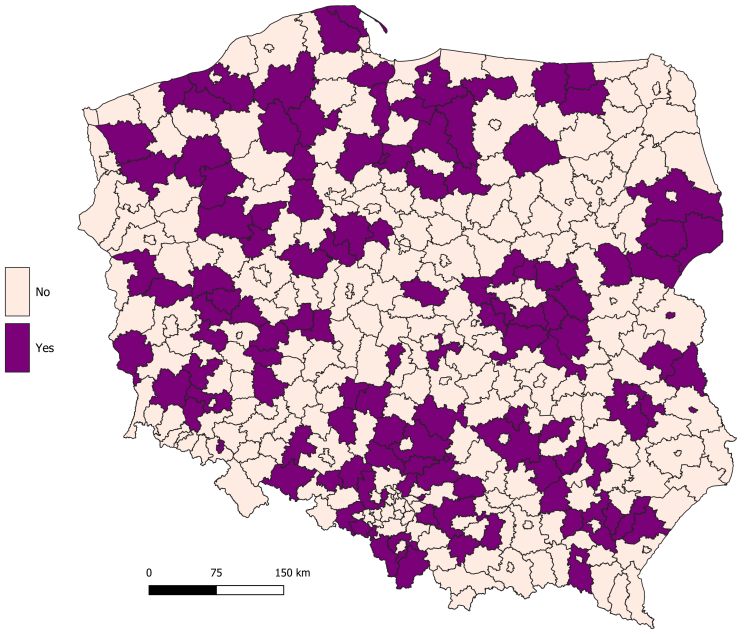
Map 7 illustrates the number of accidents at work per 1000 residents across various counties in Poland. Different colours represent different levels of accidents, providing insight into the geographical distribution of workplace safety.



Map 7: Number of Accidents at Work per 1000 Residents (2021).

Analysis of Map 7 reveals significant variations in workplace accidents among different counties. Some regions may experience higher rates of workplace accidents compared to others, which could be influenced by factors such as industrial activities, safety regulations, and workforce composition.

Map 8 evaluates the correlation between educational attainment and workplace accidents based on a formulated hypothesis. The hypothesis compares the educational level of each county to the mean educational level across all counties, along with the rate of workplace accidents per 1000 residents of each county relative to the mean accident rate.



Map 8: Correlation between Educational Attainment and Workplace Accidents (2021).

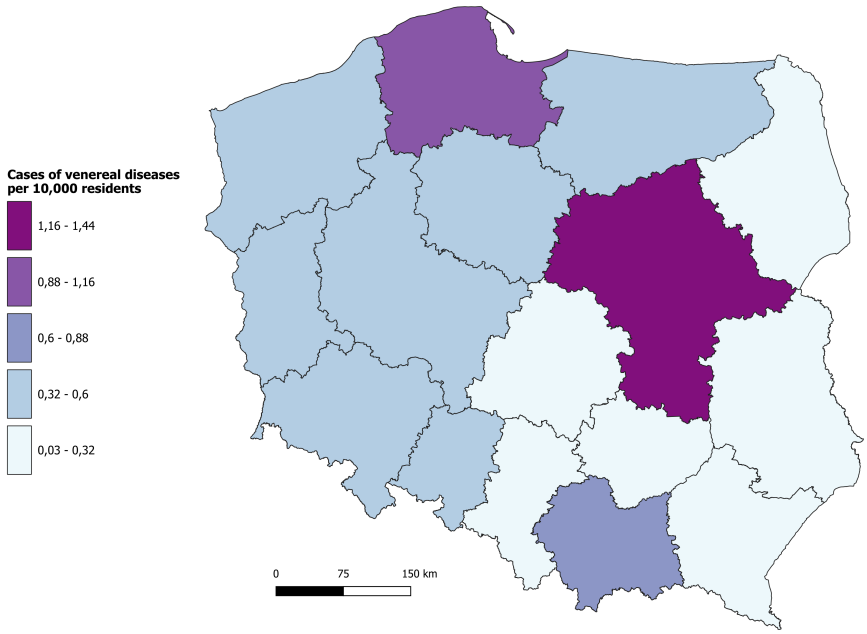
The analysis of the results depicted on Map 8 indicates that the theory aligns with observed

trends in approximately 50% of the counties, with mixed results across different regions.

5 Venereal diseases

This section presents an analysis of venereal diseases at the voivodeship level in Poland, focusing on the number of cases per 10,000 residents. Additionally, it explores the correlation between venereal diseases and educational attainment using a formulated hypothesis.

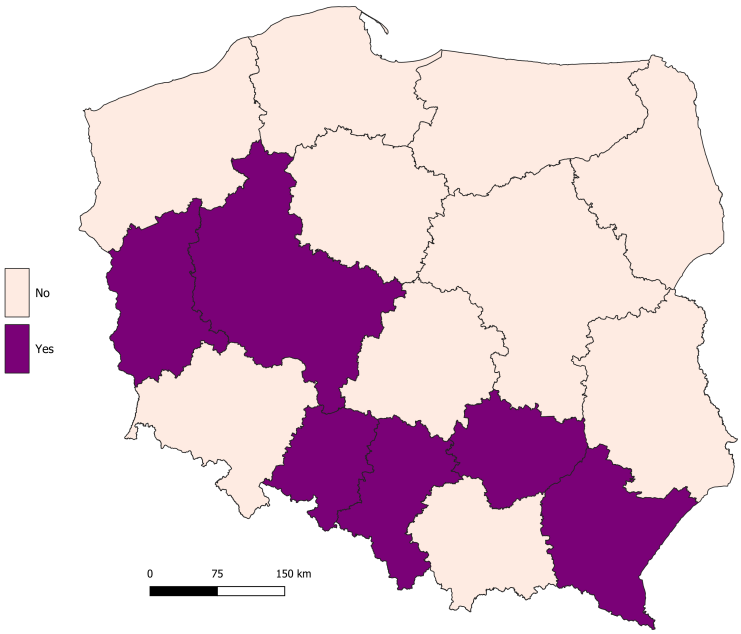
Map 9 illustrates the number of venereal disease cases per 10,000 residents across various voivodeships in Poland. Different colours represent different levels of venereal disease cases, providing insight into the geographical distribution of venereal disease prevalence.



Map 9: Number of Venereal Disease Cases per 10,000 Residents (2021).

Analysis of Map 9 reveals significant variations in venereal disease cases among different voivodeships. Some regions may experience higher rates of venereal disease cases compared to others, which could be influenced by factors such as sexual health education, access to healthcare services, and cultural norms regarding sexual behaviour.

Map 10 evaluates the correlation between educational attainment and venereal disease cases based on a formulated hypothesis. The hypothesis compares the educational level of each voivodeship to the mean educational level across all voivodeships, along with the rate of venereal disease cases per 10,000 residents of each voivodeship relative to the mean venereal disease case rate.



Map 10: Correlation between Educational Attainment and Venereal Disease Cases (2021).

The analysis of the results depicted on Map 10 indicates that the theory aligns with observed trends in approximately 38% of the voivodeships, with mixed results across different regions.

Results

This section provides an integrated analysis of the results obtained across various sectors, considering the influence of education levels and data availability on the outcomes.

Analysis of the results in the gastronomy sector reveals a significant correlation between education levels and average earnings. Approximately 80% of the voivodeships demonstrate a high level of agreement between educational attainment and earnings in this sector, indicating the importance of skills and qualifications in determining income levels.

Similarly, the analysis of results in the salary sector highlights a strong relationship between education levels and average gross salary. Around 80% of the voivodeships exhibit a high level of agreement between educational attainment and salary, underscoring the role of education in shaping earning potential.

The analysis of results in the veneral diseases sector indicates that only approximately 38% of the voivodeships show alignment with the hypothesis. However, it is crucial to acknowledge the limitations imposed by inadequate data on veneral diseases reporting, which may affect the accuracy of the analysis.

Analysis of results in the workplace accidents sector reveals a mixed picture, with approximately 50% of the counties exhibiting alignment with the hypothesis. However, disparities in workplace safety regulations and industrial activities contribute to varying outcomes.

By integrating insights from various sectors and considering the influence of education levels and data availability, this analysis offers a comprehensive understanding of the socioeconomic landscape in Poland.

References

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[2] Marek Pieniażek **and** Maciej Zych. *Statistical maps. Data visualisation methods*. Główny Urzad Statystyczny, 2020.