

RELATIONSHIP BETWEEN SICK LEAVE AND WAGES BY VOIVODESHIP AND INDUSTRY. THE CASE OF POLAND

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Abstract

The aim of the study was to confirm whether employees insured with the Social Insurance Institution (ZUS) are increasingly taking advantage of the right to sick leave and to prove that there is a relationship between sick leave and wages in individual voivodeships and sections of the national economy. The research was conducted based on data provided by ZUS and Statistics Poland. The analyses in the part concerning changes in sick leave usages were conducted in the period 2006-2023, while the part concerning the relationship between wages and sick leave in 2023. The analyses indicate a growing trend in sick leave, especially during the COVID-19 pandemic. A relationship was also demonstrated between wages and the number of sickness absences and the number of days spent on it.

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INTRODUCTION

The basic rights of employees in Poland are defined in the Labor Code and by other laws regulating labor relations. These rights are intended to provide employees with decent working conditions, protect them from abuse and enable them to fulfill their professional goals in a manner consistent with their needs and qualifications. One of the most basic rights of employees is the right to absence in the case of sickness, which is the foundation of social and health policy. Such a mechanism not only protects the interests of employees but also contributes to the stability of the labor market and the efficiency of the economy by enabling employees to recover without the risk of losing their livelihoods and preventing their long-term professional exclusion. As a result, employees may return to work in full strength, which translates into their motivation and commitment to performing their duties.

Protecting employee rights also helps reduce the risk of social tensions and conflicts, supporting social and economic stability. The long-term benefits of ensuring decent working conditions include increased productivity and innovation, which are key to sustainable development. Support for workers' rights is the basis for a healthy and stable economy. Regulations protecting such rights not only support individuals but also contribute to overall socio-economic well-being. In the long term, ensuring fair working conditions contributes to the creation of a just society and a well-functioning economy. Ensuring a good working environment is therefore key to achieving sustainable development, supporting not only individuals but also society as a whole and its stability. This article focuses on the analysis of workers' sickness absence, as this issue is fundamental to understanding the complex relationships between health and socio-economic development.

The aim of the article was to demonstrate that employees insured with ZUS are increasingly making use of their right to sick leave and to prove that there is a relationship between sick leave and remuneration, broken down by voivodeship and section of the national economy.

LITERATURE REVIEW

Sickness insurance is one of the pillars of the social security system, aimed at protecting employees from the financial consequences of absence at work caused by illness (Nowacka, 2022). In Poland, the sickness insurance system is regulated mainly by the Act of June 25 1999 on cash benefits from social insurance in the event of illness and maternity, which specifies the principles of operation of this type of insurance and the rights and obligations of both employees and employers (Ryś, 2018). Sickness insurance is obligatory for

those employed under an employment contract and for persons performing work under a mandate contract, if this is their only source of income. Sickness insurance contributions are paid by the employee. The employee pays 2.45% of the gross salary as a contribution to sickness insurance. In the event of incapacity for work due to illness, the insured person is entitled to the sickness benefit. This benefit is due after the so-called waiting period, which is 30 days of uninterrupted sickness insurance (for employees under an employment contract) or 90 days for other insured groups, such as contractors. The sickness benefit is paid from the 34th day of incapacity for work by ZUS, while for the first 33 days (for people over 50 years of age - 14 days) the employer covers the sickness allowance. The amount of the benefit is 80% of the salary basis, however in the case of hospitalization the insured person receives 70% of the salary. In the case of illness occurring during pregnancy, the amount of the benefit is 100%. Additionally, sickness insurance covers rehabilitation benefits and benefits related to the care of a sick family member.

Health insurance plays a key role in the social security system, providing financial stability during periods of illness and inability to work. It protects employees from a sudden drop in income, which is important for both the individual and their family. As a result, insured people can focus on recovery without the additional stress related to financial issues.

In the context of health insurance, a particularly important concept is the sickness absence, defined as temporary incapacity for work (Gierczyński, 2014). It is the result of various external factors that go beyond purely health aspects (Pęciło-Pacek, 2014). They include various factors, such as demographics, conditions at the workplace, psychosocial matters, economic conditions and cultural differences. The reasons for employee absence are mainly divided into four categories:

- due to one's own illness, when the employee is unable to work for health reasons;
- related to the obligation to care for a sick child under 14 years of age, including one's own children, spouse's children or stepchildren;
- due to care for another family member, including spouse, parents, parents-in-law, grandchildren, siblings and children over 14 years of age, provided that they live with the employee and need care;
- all types of leave.

The most commonly granted type of leave is vacation leave, which is intended to regenerate the employee's vitality (Striker, 2016). The sickness insurance contribution also covers benefits granted for parents during maternity or parental leave.

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caused by illness. In Poland, the sickness insurance system is mainly regulated by the Act of June 25 1999 on cash benefits from social insurance in the event of illness and maternity, which specifies the principles of operation of this type of insurance and the rights and obligations of both employees and employers. Sickness insurance is obligatory for employees employed under an employment contract and for people performing work under a mandate contract, if this is their only source of income. Mandatory contributions to sickness insurance are charged to the employee, who bears the cost of 2.45% of gross remuneration.

Health insurance plays a key role in the social security system, providing financial stability during periods of illness and inability to work. It protects employees from a sudden drop in income, which is important for both the individual and their family. As a result, the insured person may focus on getting well without the additional stress of financial issues.

Absence due to illness is a significant issue for both employees and employers, as it affects the efficiency of the organization and the well-being of employees. From an organizational perspective, employee absence due to illness can lead to a significant drop in productivity. Employers often have to use additional resources to replace absent employees, which is associated with financial and organizational costs (Kujawska, 2015). Absence due to illness leads to a decrease in work efficiency, as the absence of an employee means that their duties have to be taken over by other team members, which leads to work overload and reduced productivity. It is also often associated with the need to quickly train replacement employees, which may not be effective and causes errors and delays. Absence due to illness generates additional costs for the employer. Payments of sickness benefits, replacement costs and potential overtime for other employees are just some of the expenses that the organization has to bear. Long-term absences may also require the hiring of new employees on a permanent or temporary basis, which is associated with recruitment and training costs. In the absence of key employees, projects can be delayed or even halted. Not having the right people to carry out tasks can lead to a decrease in the quality of products or services, which in turn affects customer satisfaction and the company's reputation.

On the other hand, absences may have a number of benefits. Employees who stay home when sick protect not only their own health, but also the health of their co-workers. Regular breaks from work due to illness can help prevent burnout (Kowalczyk et al., 2015). Employees who have the opportunity to rest and regenerate are more effective and engaged in their work upon returning (Pęciłło & Antoniak, 2013). Policies that support employees during illness, such as access to

paid sick leave, can help improve morale and job satisfaction. Employees feel more appreciated and supported by their employer, which affects their loyalty and commitment.

Due to its great economic importance and the widespread availability of statistical data, sickness absence is the subject of many studies and analyses. The first publications analysing the development of this phenomenon date back to the mid-20th century (Striker, 2016).

Kowalczyk et al. (2015) studied sick leave in the years 2006-2013. Their study confirmed that women used sick leave more often than men. They also studied sick leave by voivodeship and highlighted that it was increasing in most of them. The number of days of sick leave caused by pregnancy, childbirth, postpartum, diseases of the musculoskeletal system, muscles and connective tissue, as well as mental and behavioral disorders also increased in the analyzed period. They concluded that the variability and conditions of the level of sick leave make it possible to prevent permanent incapacity for work. Studying sick leave usage enables us to draw conclusions regarding the health status of the entire population.

In turn, Jurek (2021a) described the relationship between sickness absence and the situation on the labor market. He confirmed the impact of cyclical and seasonal unemployment on sick leave in Poland. According to Striker (2016), sickness absence is a derivative of individual attitudes and conditions, but it is also influenced by: a sense of duty towards co-workers and the employer, avoiding the effects of absence (lower pay, poor work evaluations), the belief that one is irreplaceable at work, the conviction that absence from work is a manifestation of a lack of professionalism and sets a terrible example for other employees. Jurek (2021a) divides the causes of sickness absence into individual, external and social.

The relationship between sickness absence and other factors was also studied by Sloway and Zubrzycki (2018) in the context of gender, Kristensen et al. (2010) in relation to socio-economic status, Melchior et al. (2003) analyzing psychosocial factors related to work and social relations. Psychosocial factors influencing behavior on the labor market were studied by Kivimäki et al. (1997). They analyzed the relationships and behaviors of employees at three turning points: before, during and after the crisis and showed that employment characteristics, life events, social support and personality were significant in predicting future sickness absence.

Absence due to illness may also be influenced by work, and in particular by the conditions under which it is performed (Pęciłło & Antoniak, 2013). Batt-Rawden and Tellnes (2012) draw attention to the differences in

the causes of absence due to illness in men and women. According to the results of their research, women use sick leave due to family burdens and caregiving responsibilities, while men use it as a result of stress and conflicts at work. Similar conclusions were reached by Sabbath et al. (2012), their research also proved that burdens related to work and family responsibilities have a significant impact on the number of days spent on sick leave. However, in the results of their research, no division by gender was found.

Sickness absence has a complex impact on the functioning of the organization and the health and well-being of employees. Effective management of such leave, including the implementation of health and support policies for employees, is crucial for minimizing the negative effects and maximizing work efficiency. This is especially important, as Slowey and Zubrzycki (2018) highlight for older people, especially after reaching retirement age. Jurek (2021b) indicates that sickness absence may be a determinant of the health status of the population and also indicates that age determines different behaviors related to the use of sick leave. He claims that young people use sick leave more often, but it is short, while older people rarely go on sick leave, but when they decide to do so, it is rather long-term. Employers should strive to create a work environment that is conducive to health and provides support during illness, which will benefit both employees and the entire organization.

GAP IDENTIFIED UNDER LITERATURE REVIEW

As mentioned, the subject of sickness absence has been eagerly taken up by researchers. However, factors that affect this phenomenon are examined, but most often these are personality traits, or those that individuals have no influence on, such as gender or age. However, purely economic factors (wages), geographical factors (place of residence), or place of work (industry in which they work) are omitted. Analyzing the literature on the subject, the authors noticed that there is a research gap in the analysis of the impact of wages in individual voivodeships and sections of the national economy on sickness absence. Similar studies, albeit for the years 2007-2013, were conducted by Kowalczyk et al. (2015), however, in this article the authors focused on the analysis of sickness absence in general, sickness absence due to one's own illness, and analyzed sickness absence divided into voivodeships and sections of the Polish Classification of Activities. The authors of this study extended this analysis to include the impact of average wages on sickness absence. This approach has not yet been used in the literature on the subject, therefore the research results can be considered unique.

METHODOLOGY

The analyses presented in this article were prepared based on data available in public statistics of ZUS and Statistics Poland. The data collection process included secondary analysis of existing reports and statistics on sickness absence and processing of data from ZUS statistical databases. Additional data on the number of people of working age in Poland and the number of full-time positions in individual sections of the national economy were provided by Statistics Poland databases.

Study was carried out using techniques such as comparative analysis, which enabled the comparison of the level of sickness absence; trend analysis, which examined the changes in the level of sickness absence over time; and the chi-square test performed using the IBM SPSS Statistic Viewer program.

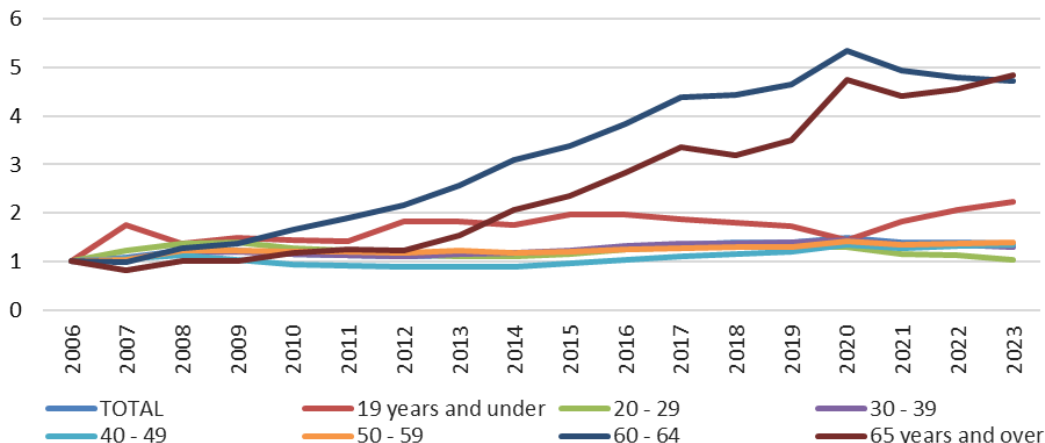
To confirm the relationship between the studied variables, a chi-square test was conducted to verify the null hypothesis (H_0) assuming no relationship between the studied variables. The p-value obtained in the chi-square test ranges from 0 to 1. If the p-value is greater than 0.05, the null hypothesis is rejected in favor of the alternative hypothesis (H_1), which suggests the existence of a relationship between the variables. The chi-square test indicates the existence of a relationship but does not provide information about its strength or direction. To assess this, the Lambda coefficient was used. This is a measure of dependence based on the proportional reduction of error when the value of the independent variable is used to predict the value of the dependent variable. The Lambda coefficient values range from 0 to 1. Correlations between variables can be interpreted as strong, moderate, and weak, but they may differ depending on the research context. For example, a correlation coefficient of 0.9 might be considered a strong correlation in the social sciences such as economics, whereas in physics, where measurement standards are extremely precise, such a coefficient might be considered moderate.

RESULTS

This part of the article will analyse the number of days of sickness absence in Poland between 2006 and 2023 and the relationship between sickness absence and average remuneration in individual voivodeships and sections of the national economy. Absence due to health issues among employees insured with ZUS has increased significantly over time.

It is growing particularly rapidly in the oldest age groups. One explanation for this fact may be the changing age structure of Polish society, where the number of people aged 60+ is growing rapidly.

Figure 1: Dynamics of sick leave in days among employees by age groups

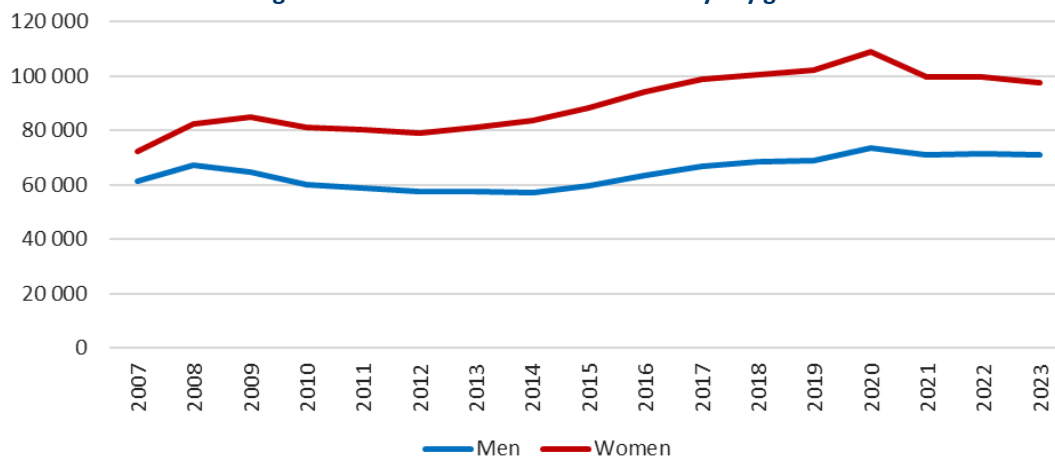


Source: Authors' own work based on ZUS "Sickness absence" yearbooks.

Another reason may be the situation related to the COVID-19 pandemic, as the virus was particularly dangerous for the elderly and those with comorbidities. Therefore, the elderly were sent on sick leave to isolate from the potential danger of contracting the virus.

Analysis of data on sick leave indicates that the average share of women in the total number of sick leave days in the analyzed period was 58%, while the percentage share of men oscillates around 42% (see: Figure 2).

Figure 2: Number of sickness absence days by gender



Source: Authors' own work based on ZUS "Sickness absence" yearbooks.

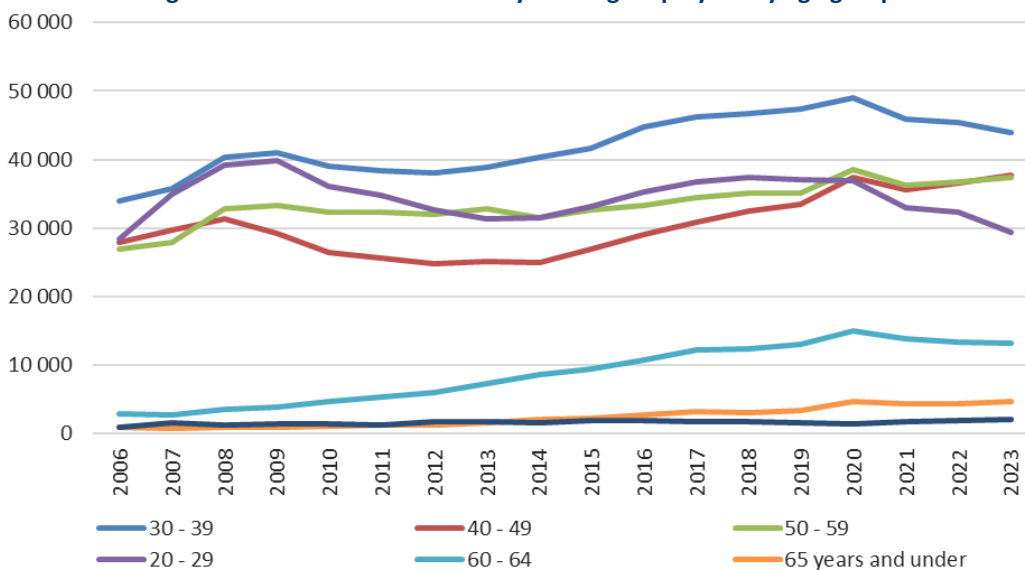
Analysis of the "Sickness absence" yearbooks shows that the higher share of women in the total number of sickness absence days is due to pregnancy and postpartum issues.

In 2023, the highest number of sickness absence days was recorded in the age group 30-39, whose share was 26% in the total number of sickness absence days. The smallest share in sickness absence was recorded in the age group of 19 years and younger, constituting only 1% of all absence days (see: Figure 3).

In 2023, the number of days of absence due to sickness was 37.9% higher than in 2006. A particularly large

increase was recorded during the COVID-19 pandemic. This increase can be attributed to both the direct effects of infection with the virus and the indirect consequences of the pandemic, such as increased stress, mental strain and changes in working conditions and daily life. An important aspect is the significant increase in the number of days of absence due to sickness in the group of diseases related to "mental disorders". This increase can be interpreted as a positive signal of increasing public awareness of the importance of mental health and the need to treat mental disorders.

Figure 3: Number of sick leave days among employees by age group



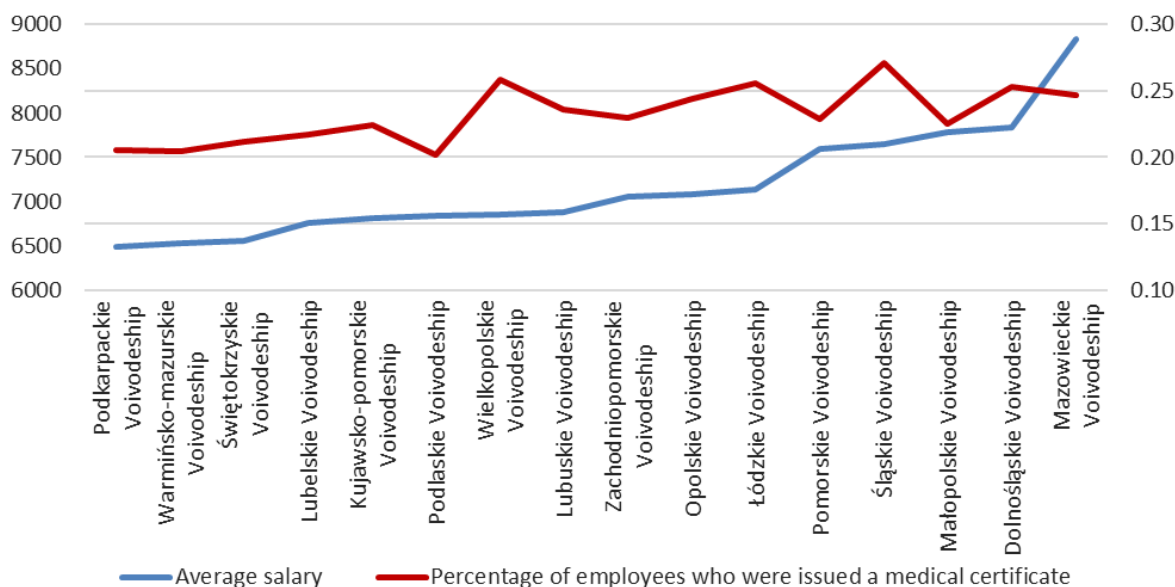
Source: Authors' own work based on ZUS "Sickness absence" yearbooks.

Healthy employees are the foundation of a stable and growing economy, so investments in the mental and physical health of employees should be seen as strategic actions aimed at long-term economic growth. In this context, the development of mental health support programs, the promotion of a healthy lifestyle and flexible forms of work can contribute to improving the quality of life of employees and strengthening the economy's resilience to future crises. In the long term, the health and well-being of workers contributes to sustainable development by ensuring social and economic stability, as well as by reducing the burden on

health systems. It is therefore crucial that health and social policies are an integral part of economic development strategies, in order to build more resilient and sustainable societies.

The figure below illustrates the relationship between the average wage in each voivodeship and the percentage of working-age employees who were issued a medical certificate for each voivodeship for 2023. The voivodeships in the graph are arranged in order of increasing average wage. It can be seen that areas with higher average wages tend to show higher percentages of employees receiving medical certificates.

Figure 4: Average salary and percentage of employees who were issued a medical certificate among working-age people by voivodeship

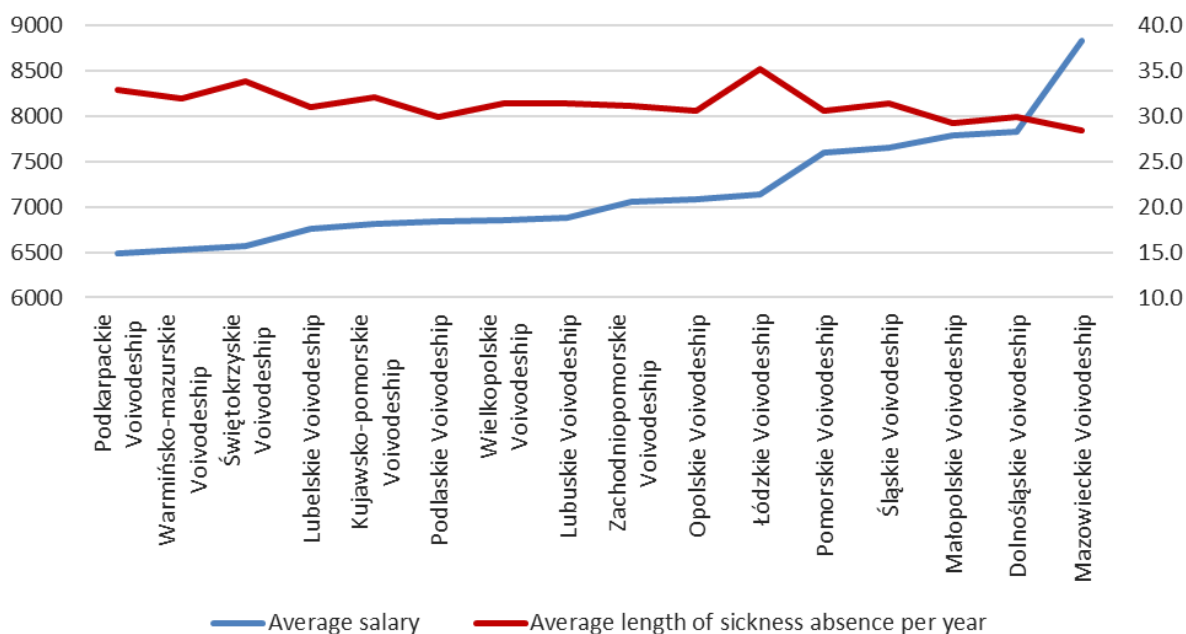


Source: Authors' own work based on ZUS "Sickness absence" yearbooks and Statistics Poland data.

An analysis of the relationship between the average salary in individual provinces and the percentage of employees of working age who were issued a medical certificate was conducted using the chi-square test, which confirmed the existence of a statistically significant relationship between the variables studied. A value above the significance level of 0.05 (in this case 0.302) indicates the statistical significance of the relationship between these variables. Additionally, the analysis was supplemented with the Lambda coefficient, the result of which was 0.714. This value suggests the occurrence of a strong relationship between the analyzed variables.

The figure below presents data on the average salary by voivodeship and the average length of sick leave in each of them for 2023. The voivodeships on the graph have been arranged in order of increasing average salary. It can be observed that with the increase in average salary, the average length of sick leave tends to decline, which means that people who earn more usually spend less time on sick leave. In this case, the chi-square test also confirmed the existence of a relationship between these variables with a value of 0.257, and the value of the Lambda coefficient, which was 0.897, indicates a strong relationship between them.

Figure 5: Average salary and average length of sickness absence by voivodeship

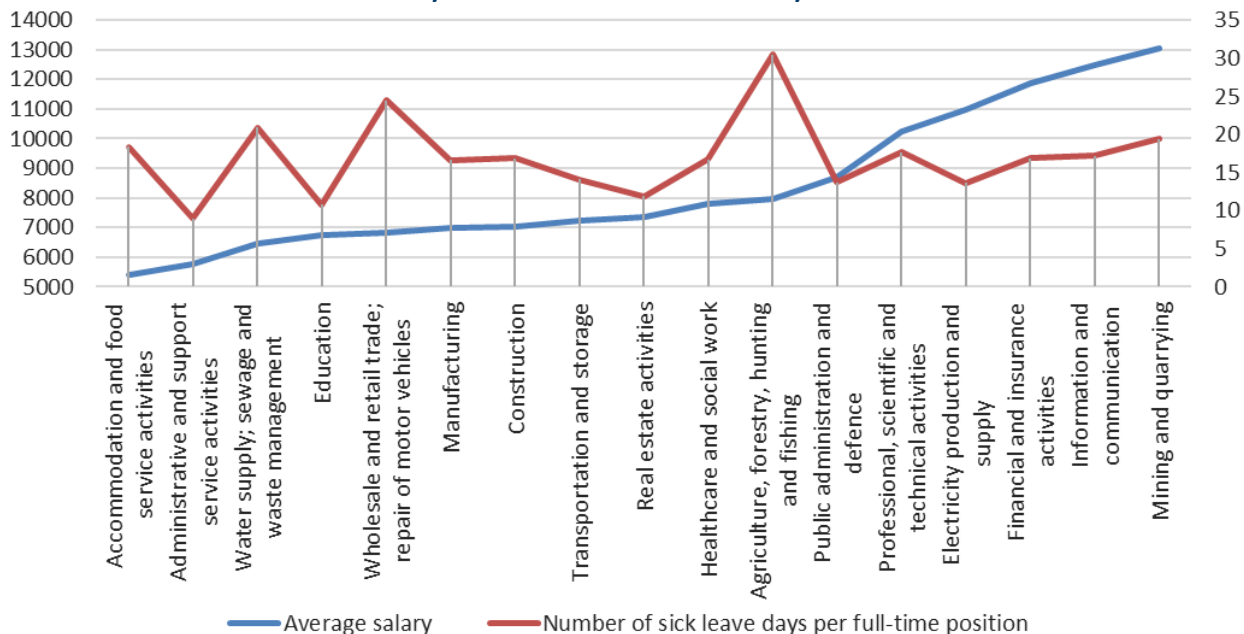


Source: Authors' own work based on ZUS "Sickness absence" yearbooks and Statistics Poland "Employment and remuneration in the national economy" data.

The figure below presents data on the average wage received by employees in individual sections of the national economy and the number of sickness absence days per full-time job in 2023. Individual sections of the national economy in the chart have been arranged in order of increasing average wages. It can be

noticed that as the average wage increases, the number of sick leave days decreases. In this case, the chi-square test also confirms the existence of a relationship between variables (0.242), and the Lambda coefficient indicates a very strong positive relationship between them (0.968).

Figure 6: Average salary and number of sickness absence days per full-time job by section of the national economy

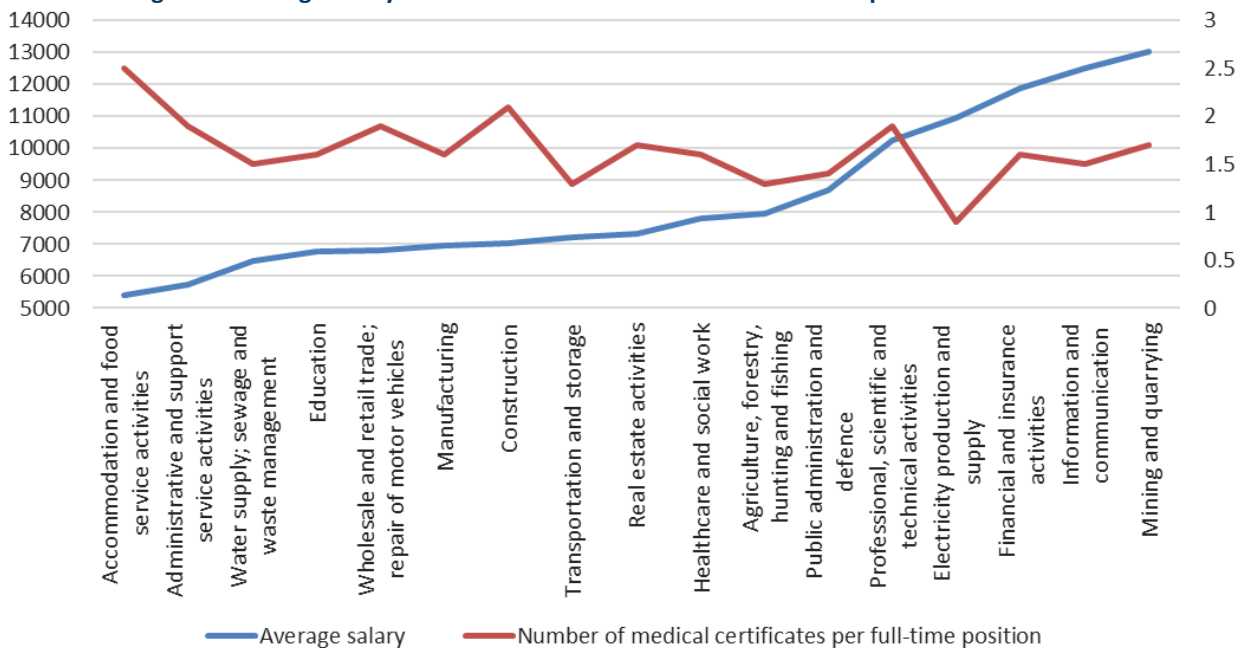


Source: Authors' own work based on the ZUS "Absence from sickness" yearbooks and Statistics Poland "Employment and remuneration in the national economy" yearbooks.

The figure below presents the relationship between the average salary in individual sections of the economy and the number of medical certificates issued per full-time job. The individual sections of the national economy on the chart have been arranged in order of increasing average salary. It can be seen that in 2023, as the average salary in individual sections of the na-

tional economy increases, the number of medical certificates per full-time job decreases. This suggests that people who earn more are less likely to use sick leave. In this case, the chi-square test was 0.298, confirming the relationship between the variables, and the Lambda coefficient took the value of 0.724, which indicates a strong relationship between them.

Figure 7: Average salary and number of medical certificates issued per full-time contract

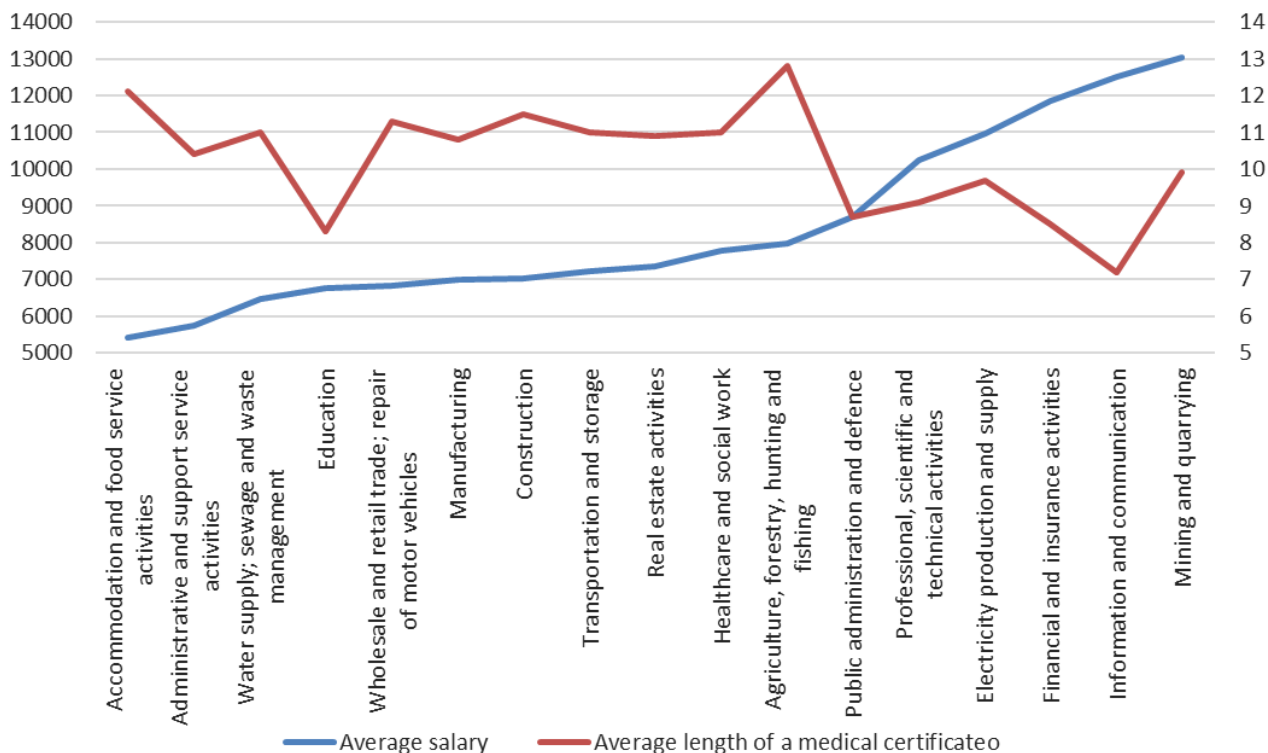


Source: Authors' own work based on the ZUS "Absence from sickness" yearbooks and Statistics Poland "Employment and remuneration in the national economy" yearbooks.

The figure below illustrates the relationship between average wages in various sections of the national economy and the average length of sick leave. In this case, the individual sections of the national economy in the graph have also been arranged in order of increasing average wages.

Data analysis shows that in 2023, in sectors where average salaries are higher, the average length of a medical certificate is significantly shorter. The chi-square test was 0.248, which indicates the existence of a relationship between these variables, while the Lambda coefficient was 0.933, suggesting a very strong relationship between these variables.

Figure 8: Average salary and average length of sickness absence by section of the national economy



Source: Authors' own work based on the ZUS "Absence from sickness" yearbooks and Statistics Poland "Employment and remuneration in the national economy" yearbooks.

DISCUSSION

The chi-square test analysis showed that there is a strong correlation between the average salary and:

- A) the percentage of employees who were issued a medical certificate among people of working age in individual voivodeships,
- B) the average length of sickness absence in individual voivodeships,
- C) the number of days of sickness absence per full-time position in individual sections of the national economy,
- D) the number of medical certificates per full-time contract in individual sections of the national economy,
- E) the average length of sick leave in individual sections of the national economy.

Studies have shown that the highest number of sick leave certificates are currently issued in the 30-39 age group. Women use sick leave more often, mainly due to pregnancy and postpartum. The province with

the highest number of sick leave days per employee is the Łódź province, which means that employees there use sickness absence most often. Analyses also indicate that in provinces with the highest average salary, employees use sick leave more often. Higher earnings may encourage more frequent use of sick leave, which may be the result of increased stress related to job requirements and access to private treatment.

Another absorbing observation is the tendency of higher-income employees to have shorter periods of absence related to sick leave, which may result from easier access to health care and motivation to return to work quickly. Further analyses show that similar trends can be observed in various sectors of the economy.

The observed disproportions in sick leave between different demographic groups and sectors of the economy suggest the need to support employees with lower earnings and in older age groups. The conclusion from

the above analysis is the urge to take action to create a more balanced and fair labor market.

The results of the research presented in the paper allowed for a positive verification of the research hypothesis included in the purpose of the article, stating that: "employees insured with ZUS increasingly use the right to sick leave and it has been proven that there is a relationship between sick leave and remuneration in individual voivodeships and sections of the national economy". The relation is between the average wage and the average length of sickness absence in a voivodship. The analyses also allowed for finding relationships between sickness absence and remuneration in individual provinces and sections of the national economy.

The results of the conducted analysis showed disproportions between the number of sick leave days occurring in individual provinces and PKD industries. In this area, the results of the research presented in this study are identical to the research of Kowalczyk et al. (2015). However, the situation looks different if we take into account the voivodeships and industries with the highest and lowest sickness absence days. However, this is not surprising, because the studies are conducted in a considerable time interval from each other and the differences most likely result from this reason.

Similar results to the following paper were obtained by Melsom and Mastekaasa (2018), who studied the behavior of men and women on the labor market. Their research also showed that sick leave is higher between women than men. Our research presented a very captivating relationship, especially in terms of the relationship regarding the amount of pay. It turned out that with an increase in pay, a larger percentage of employees use sickness absence, but the total number of both sick leave and sick leave days decreases. This can be explained by the fact that employees who earn more are more willing to use their right to sick leave, but they spend less time on it.

CONCLUSION

Sickness absence, as an employee right, plays a key role in protecting their health and well-being. Enabling employees to exercise this right is in line with the principles of social justice and contributes to long-term productivity growth and sustainable economic development.

Providing employees with the opportunity to execute sick leave has a direct impact on their health, which in turn affects their productivity and quality of life. Healthy employees are more effective, creative and engaged in their work, which is reflected in better results for the entire organization and the economy as a whole. Regular access to sick leave prevents long-term and serious health problems that can result from

ignoring the initial symptoms of illness. Employees who have the right to adequate rest and recovery recover more quickly, which reduces long-term health care costs and increases overall work efficiency. Supporting employees in using their right to sick leave is essential in maintaining a healthy and balanced workforce. Employers who look after the health of their employees by enabling them to take sick leave benefit from long-term employee loyalty and satisfaction. This increases work commitment and reduces employee turnover, which is beneficial in terms of the costs of recruiting and training new employees.

From a social perspective, promoting the right to sickness absence supports public health by reducing the risk of spreading infectious diseases and improving the overall quality of life of the community.

In summary, providing employees with the opportunity to exercise their right to sick leave not only meets the ethical obligations of employers, but also creates conditions conducive to effective work, economic growth and the development of society as a whole. It is an investment in the health and well-being of people that benefits both individuals and entire communities.

Data on sickness absence are collected and published regularly by ZUS and Statistics Poland. They are subject to detailed analysis, but the research approach presented in this article is unique.

The research conducted in this text has its limitations. The most significant concerns the fact that it refers exclusively to the territory of Poland, so its results can only be directly related to the territory of this country. Differences between countries and the organization of sickness insurance systems will largely determine the behavior of citizens of other countries in relation to the use of the right to sickness insurance. The research related sickness absence to individual voivodeships and sectors of the national economy, treating them as integral wholes, while they are internally divided and different. The research results proved that sickness absence depends on the level of wages and the sector in which companies operate. With such knowledge, it is possible to more effectively identify problems that plague individual industries and influence the health and well-being of employees.

Knowing these limitations, in the next stages of the study it will be possible to identify the relationships between specific industries and the diseases most frequently occurring in them. It will be possible to go even further into the analysis of available data, as it seems that not only the length of the leave, but also its specific cause is an important direction which further analyses should explore.

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