INVESTIGATING EMPLOYMENT OPPORTUNITIES FOR PEOPLE WITH DISABILITIES IN UKRAINE: QUANTITATIVE ANALYSIS AND POLICY-RELEVANT INSIGHTS

by

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Abstract

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This research explores wage disparities and employment barriers faced by persons with disabilities in Ukraine's labor market. Despite Ukraine's 2009 ratification of the Convention on the Rights of Persons with Disabilities, significant discrimination continues to affect this vulnerable group. The research is particularly timely given the documented increase in Ukraine's population with disabilities from 2.7 million in early 2021 to over 3 million by late 2023, a trend accelerated by the ongoing war. Through quantitative analysis using OLS regression and the Propensity Score Matching technique, we demonstrate that there is a statistically significant association between disability status and wages, controlling for other socioeconomic variables. By examining policy frameworks from various countries that have successfully addressed similar challenges, we develop policy recommendations aimed at creating a more inclusive Ukrainian labor market.

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I am grateful to my supervisor, Olha Halytsia, for her support and guidance during the writing of this thesis. I also want to thank all my other KSE Professors who supported our learning process and shared their knowledge with me. Personal gratitude to my sister for encouraging my work and her emotional support.

LIST OF ABBREVIATIONS

CRPD Convention on the Rights of Persons with Disabilities

ILO International Labor Organization

OECD Organization for Economic Co-operation and Development

PSM Propensity Score Matching

SSSU State Statistics Service of Ukraine

PSM Propensity Score Matching

Chapter 1

INTRODUCTION

Approximately 1.3 billion people are reported to have some form of disability all over the world, according to the World Health Organization[1]. That is estimated to be 16 percent of the overall global population. The concept of disability is evolving, and it is reflected in the change in local policies to document all people with disabilities; however, cultural difference also plays a role in measuring and defining disabilities.

The Convention on the Rights of Persons with Disabilities (CRPD)[2], which Ukraine became a signatory to in 2009, reassures "the right of persons with disabilities to work, on an equal basis with others; this includes the right to the opportunity to gain a living by work freely chosen or accepted in a labor market and work environment that is open, inclusive and accessible to persons with disabilities". Even though the majority of countries signed this convention, empirical evidence shows that the labor market is historically not sufficiently inclusive to people with disabilities, both physical and intellectual, and the inequality in wages has been historically noted and documented. This discrimination is regrettably still prominent today. The significant and crucial challenges faced by people with disabilities with respect to employment and wage disparity should not remain ignored and undervalued.

Even at the beginning of 2021, there were over 2.7 million persons with disabilities in Ukraine[3]. As Ukraine faces the challenges of war, more and more people are

[1] https://www.who.int/health-topics/disability/

[2] The international human rights treaty of the United Nations intended to protect the rights and dignity of persons with disabilities, it has 164 signatories and 191 parties, 190 states and the European Union World as of March 2024.

[3] State Statistics Service of Ukraine. 2021. SOCIAL PROTECTION OF THE POPULATION OF UKRAINE IN 2020. Statistical Publication, Kyiv: State Statistics Service of Ukraine.

injured and are being affected by wage discrimination, while market performance suffers as well. While I acknowledge that official data following Russia's full-scale invasion is scarce due to limited access to occupied territories, difficulties of registration, and absence of identity documentation in some cases, it is necessary to mention that numbers definitely increased since then. The Ministry of Reintegration of the Temporarily Occupied Territories of Ukraine[4] stated that there are over 3 million persons with disabilities in Ukraine as of September 2023. Moreover, these numbers are predicted to have increased since then. According to the damage and needs assessment conducted by the World Bank Group for 2022-2023[5], 130,000 persons acquired disability status in Ukraine, and around 1.3 million internally displaced people reported having at least one household member with a disability.

Looking back at the historical data from the State Statistics Service of Ukraine (SSSU) on the number of people with disabilities in Ukraine, we can see that even before 2014, the country recorded significant numbers, with two remarkable shifts standing out: a dramatic 10% surge in 2010 that added 243,700 people (reaching 2.67 million), and a stark 9% decline in 2015 when numbers fell by 263,200 (to 2.56 million), before gradually climbing to 2.72 million by 2021 (Figure 1).

With increasing numbers of war veterans and people with permanent physical impairment, it is highly important to aim to provide people with disabilities equal opportunities, including reasonably paid jobs without discrimination. Exploring wage disparities that are faced by people with disabilities can help with understanding and evaluating this problem, which potentially results in addressing

[4] https://minre.gov.ua/en/.
[5] World Bank; Government of Ukraine; European Union; United Nations. 2023. *Ukraine Rapid Damage and Needs Assessment: February 2022 – February 2023 (English)*. Washington, D.C.: World Bank Group.

this issue and leads to justice in the labor market and a more inclusive society overall.

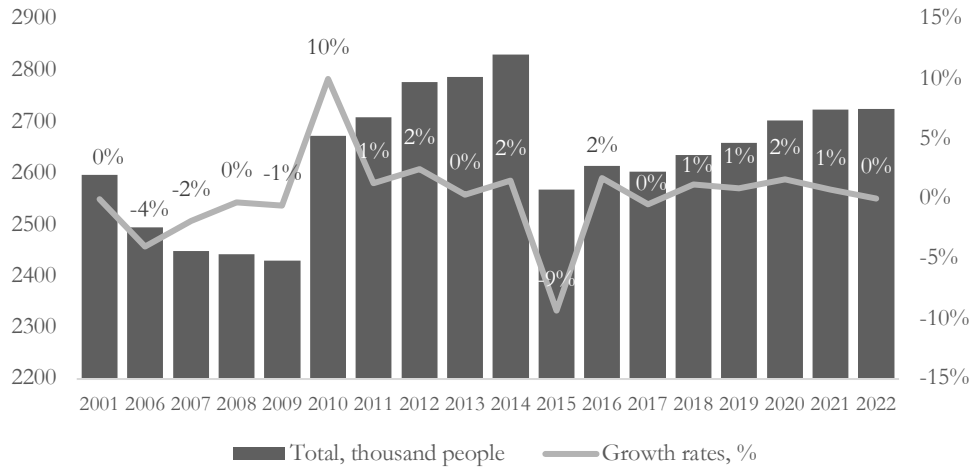

Figure 1. Total number of registered persons with disabilities and annual growth rates (RHS) in Ukraine, 2001-2022

Source: Own presentation based on SSSU data

In Ukraine, individuals with disabilities recurrently experience discrimination during the hiring process, are restrained in their career growth, and are given worse pay or working conditions (Overchuk, 2021). Despite recent legislative advancements like the 2022 Draft Law 5344-d on "Amendments to Certain Laws of Ukraine on Ensuring the Rights of Persons with Disabilities to Work"[6] individuals with disabilities remain challenged with employment.

The complex economic barriers faced by people with disabilities are also present in other fields, including discriminatory practices in credit, lending, and insurance.

[6] Verkhovna Rada of Ukraine. 2022. *Draft Law on Amendments to Certain Laws of Ukraine on Ensuring the Rights of Persons with Disabilities to Work.*

These issues further limit their ability to access economic opportunities and make conditions for people with disabilities more challenging.

Employment opportunities for people with disabilities and the wage disparities faced by individuals with disabilities in Ukraine are the focus of this thesis. The main hypothesis is that individuals with disabilities in Ukraine get substantially lower wages than non-disabled people, controlling for other factors. We aim to explore employment opportunities and whether the more rewarding jobs stay out of reach for the population with disabilities. This thesis also aims to look at policy frameworks targeting the employment of people with disabilities in different countries and to provide policy-relevant recommendations in this context for Ukraine.

In the following work, we present a detailed literature overview in Chapter 2, outline the applied methodology in Chapter 3, describe the data used in our analysis in Chapter 4, show the results of the empirical analysis and discuss our findings in Chapter 5, and summarize limitations and suggestions for future research in Chapter 6.

Chapter 2

LITERATURE REVIEW

2.1 Wage Gap Examination

The framework of disability within the labor market has been established over time with multiple studies on the topic, mainly written by foreign researchers. The diverse literature shows that people with disabilities face major challenges in the labor market. They are often discriminated against, are less likely to be employed, and earn lower wages. Several empirical studies provide evidence of the existence of negative and statistically significant impacts of disability on wages. While the exact magnitude of this effect varies across countries, the results are mainly the same, while also reflecting countries' economic well-being and the nature of policies on disability.

To illustrate this, for instance, Myers and Sai (2014) compare the effect of disability on earnings in the United States and China, using the same empirical model for both datasets. Interestingly, the results of this work show that the impact of disability on wages is greater in the U.S., where policies focus on anti-discrimination, compared to China, where affirmative action directs employers to hire a quota of disabled workers or face penalties. In the United States, workers with disabilities earn 55.02% less than able-bodied workers before adjusting for factors like education and experience. After considering these factors, the gap narrows to 42.97%. The unadjusted earnings gap in China is 31.69%, which reduces to 16.75% after controlling for relevant factors. This indicates that, in reality, the anti-discrimination policies alone may not be sufficient to close earnings gaps between disabled and non-disabled workers.

Further supporting this, Malo and Pagán (2012) examine wage differences among disabled workers in Europe, emphasizing the important role of workplace

characteristics. Their results show that having good setups for workers and helpful spaces cut down wage differences, which means policy actions that focus on work conditions can be as useful as steps against discrimination.

Ultimately, it's been established that disability negatively affects employment rates as well as wages themselves. For instance, the participation rate for people with disabilities in the labor force worldwide is so low that roughly 70 percent of people with disabilities are not engaged in the labor market at all (Stoevska, 2022). Globally, people with disabilities are 24.9 percentage points less likely to participate in the labor force compared to those without disabilities (Ananian & Dellaferrera, 2024).

For those active in the work field, the employment rate was reported to be significantly higher for individuals with disabilities compared to people without disabilities in more than half of the countries with available data, and unemployment rates are 7.5 percentage points higher for individuals with disabilities across all countries (Stoevska, 2022). However, the unemployment gap between people with and without disabilities is smaller in developing countries.

Jones and Sloane (2010) contribute to this discussion by exploring the concept of skill mismatch among disabled workers. They found that disabled workers were much more likely than their nondisabled counterparts to be overqualified for jobs, which placed higher wages, leading to discontent. Such mismatches of skills are most pronounced in industries where there are few provisions for adjustments, hence underscoring the targeted policy intervention needed to address issues of job matching and workplace inclusiveness.

Notably, this gap is not statistically significant for women in lower-middle-income countries or for men in low-income countries (Ananian and Dellaferrera, 2024). Specific research was done on the impact of disability on a person's education and labor market position in low-income contexts based on data from Nepal (Acharya

& Yang, 2022). Interestingly, the most significant effect of disability in the work field was indirectly caused by the influence that the disability had on schooling. Acharya and Yang point out that children with disabilities are 16.5 percentage points less likely to be enrolled in school. Moreover, disabled individuals complete 0.43 fewer years of schooling on average. The authors conclude that while disabled individuals are 21.4 percent less likely to be employed, employment in paid jobs shows no significant difference after controlling for educational attainment.

Unsurprisingly, for women in low-income countries, the gap is negative (- -1.5 percentage points), meaning women with disabilities are less likely to be unemployed than women without disabilities (Ananian & Dellaferrera, 2024). Another fact observed through the cross-country examination affirms that both monthly and annual wages are generally lower for people with disabilities (Stoevska 2022).

Houtenville and Kalargyrou (2012) provide a unique perspective by looking at employers' attitudes toward hiring disabled workers in the leisure and hospitality industries. The study noted, "Although employers value diversity, the often-perceived cost of hiring disabled workers is due to anticipated accommodations: this presents a major barrier to employment for persons with disabilities, specifically in sectors where such interactions are prominent." The authors relate that awareness campaigns and financial incentives for employers could mitigate such perceptions and therefore improve hiring rates.

It is worth paying attention to the number of working hours the average disabled employee has. On average, 13% of workers with disabilities work less than 20 hours per week, compared to 8% of workers without disabilities (Ananian & Dellaferrera, 2024). In advanced economies, individuals with disabilities often work part-time, either due to challenges in accessing full-time positions or a preference for part-time work.

It is observed that people with disabilities are less likely to work as employees compared to those without disabilities (Ananian & Dellaferrera, 2024), contrary to seeking self-employment, especially in developed countries (Pagán, 2009). In many countries, this is not by choice but due to a lack of other job opportunities, often leading to informal work. People with disabilities generally have lower education levels than those without disabilities, mainly due to non-inclusive schools and other access barriers. This is especially true for those born with disabilities or who acquire them during childhood. Even when factors like age, education, and occupation are considered, having a disability lowers the chances of being an employee for both men and women. This pattern is consistent across all levels of economic development, except for men in high-income countries and women in low-income countries, where the difference is not statistically significant.

Furthermore, disabled individuals are challenged not only with being hired but also with remaining in their previous positions. The analysis of the impact of disability onset on the labor market is a crucial part of the complex understanding of wage disparities. Collischon, Hiesinger, and Pohlan (2023) report that the likelihood of being employed decreases by 10 percentage points just one year after disability onset, followed by a decrease of 16 percentage points after five years. Moreover, days of potential unemployment generally increase by 36 days per year one year after onset and by 55 days after five years, respectively. The authors claim that the annual earnings decline sharply by 41% over five years post-disability onset. As for those who remain employed, daily wages decrease by 7% after five years, partially due to shifts to lower-paying or less demanding jobs. This indicates that even as some firms adjust to accommodate their disabled employees, a noticeable number of people with disabilities lose their jobs. So, disability is stated to reduce long-term employment prospects. All those downsides are even larger for older, severely disabled, and low-skilled individuals.

As a result of wage discrimination, global self-employment rates among people with disabilities are expected to be high. The main reasons for this include the flexibility and better work-life balance that self-employment offers (Pagán 2009). Previous studies mention that disabled people worldwide prefer maintaining informal business as their self-employment option. In developing countries, 80% of self-employed individuals work informally, compared to 40% of employees worldwide and only 10% in high-income countries (ILO 2023). Data also shows that people with disabilities are more likely to have informal jobs than those without disabilities (Stoevska 2022).

One of the main problems with exploring the wage gap for disabled employees is whether it appears due to discrimination against these groups of people or as a result of less effective performance of workers due to their health abilities. Different research demonstrates slightly different results. Johnson and Lambrinos (1985) estimate that discrimination explains 30% to 50% of the wage gap between disabled and non-disabled workers, while DeLeire (2001) finds it accounts for only 5-8%. Kruse et al. report that even in jobs where disabilities do not impact ability or productivity, workers with disabilities earn 15-20% less than their non-disabled peers. Research by Liao, Gao, Zhu, and Yang (2024) shows that disability-related discrimination in China contributes to 38.9-52.4% of the wage gap. However, those differences relate mainly to the data used by the authors of different countries. Nevertheless, the existence of the wage gap is clear.

Contrary to previously mentioned studies on the wage gap, Hallock, Jin, and Waldman (2021) focus on other factors contributing to the labor market discrimination of disabled workers. According to the U.S. Labor Department's June 2019 Employer Costs for Employee Compensation survey, hourly wages and salaries make up 69% of the total hourly costs employers pay for an average civilian worker. The remaining 31% comes from employee benefits, such as paid leave, health insurance, retirement plans, and legally required benefits like social security.

Hallock, Jin, and Waldman (2021) construct a measure of total compensation that includes both employees' wages, salaries, and non-wage and salary benefits. This research points out that focusing only on wages and salaries can result in biased estimates of the true earnings gap between workers with and without disabilities. There is also a consistent gap in benefits between these groups. For example, among full-time male workers, those without disabilities receive about 5% more in benefits than those with disabilities, even after accounting for education and work experience. For female workers, though, the gap is even larger, with those without disabilities earning 13% more in benefits. Among women with less than a high school education or those working in high-risk jobs, the benefits gap increases to as much as 20%. As for the gap in the variety of categories of benefits, they are inconsistent. For instance, while male workers without disabilities receive more paid leave and retirement benefits, male workers with disabilities earn higher benefits in supplemental pay categories like overtime and shift differentials. In the case of Ukraine, the literature exploring the labor market is limited as most local studies primarily focus on general labor market dynamics. CRPD manifested that those barriers for the citizens of Ukraine with disabilities are worsened by the limited availability of job opportunities and the lack of policies supporting employment for people with disabilities. This was evident in the 2021 SCORE data, where individuals with disabilities scored lower than the general population in employment opportunities. Furthermore, 23% of people with disabilities reported lacking money for food, compared to 11% of the general population. One of the most recent and relevant studies in Ukraine, done by reSCORE Ukraine, investigates the local average person with disability experience (Machlouzarides & Uretici, 2023). This report claims higher levels of household poverty and fewer employment opportunities compared to those without disabilities.

Additionally, Machlouzarides and Uretici (2023) calculated that individuals with Group I disability status face the most severe economic challenges, with even lower

employment opportunities and higher poverty levels than those with Group II or III disabilities. Besides, women with disabilities are suggested to be facing additional disadvantages, reporting the highest levels of household poverty due to the intersection of disability and gender-related barriers. Moreover, the average score for employment opportunities is reported as 2.8 out of 10 for respondents with Group I disability status, compared to 3.4 for Group II, 3.5 for Group III, and 4.2 for individuals without disabilities. Main findings from the mentioned studies are summarized in Table 1.

Table 1. Main results from studies on wage gaps in the world

Country	Authors	Main Results
China & USA	Myers & Sai (2014)	In the US, workers with disabilities earn 42.97% less than non-disabled workers, and in China, the gaps are 16.75%. Anti-discrimination policies alone may be insufficient compared to China's quota system.
Europe	Malo & Pagán (2012)	Good workplace setups and helpful spaces reduce wage differences. Policy actions focusing on work conditions can be as effective as anti-discrimination measures.
Global	Stoevska (2022)	Approximately 70% of people with disabilities are not engaged in the labor market at all, and unemployment rates are 7.5 percentage points higher for individuals with disabilities across countries.
Global	Ananian & Dellaferrera (2024)	The unemployment gap is not statistically significant for women in lower-middle-income countries or men in low-income countries. 13% of workers with disabilities work less than 20 hours weekly (vs 8% without).
UK	Jones & Sloane (2010)	Disabled workers are more likely to be overqualified for jobs, creating wage spread discontent. Skill mismatches are most pronounced in industries with few adjustment provisions.
Nepal	Acharya & Yang (2022)	Children with disabilities are 16.5 percentage points less likely to be enrolled in school and complete 0.43 fewer years of schooling. Disabled individuals are 21.4 percent less likely to be employed, but there is no significant difference in paid employment after controlling for education.
European countries	Pagán (2009)	People with disabilities are more likely to seek self-employment, especially in developed countries, due to workplace flexibility and better work-life balance.
USA	Johnson & Lambrinos (1985)	Discrimination explains 30-50% of the wage gap between disabled and non-disabled workers.

Table 1. Continued

Country	Authors	Main Results
Germany	Collischon, Hiesinger, & Pohlan (2023)	Employment likelihood decreases by 10 percentage points one year after disability onset and by 16 percentage points after five years. Annual earnings declined by 41% over five years. Daily wages decrease by 7% for those who remain employed. The effects are larger for older, severely disabled, and low-skilled individuals.
USA	DeLeire (2001)	Discrimination accounts for only 5-8% of the wage gap between disabled and non-disabled workers.
USA	Kruse et al. (year not specified)	Even in jobs where disabilities do not impact ability or productivity, workers with disabilities earn 15-20% less than their non-disabled peers.
China	Liao, Gao, Zhu, & Yang (2024)	Disability-related discrimination contributes to 38.9-52.4% of the wage gap in China.
USA	Hallock, Jin, & Waldman (2021)	Beyond wage gaps, significant benefit gaps exist. Men without disabilities receive 5% more benefits than those with disabilities. For women, the gap is 13% and can reach 20% for those with less education or in high-risk jobs.
Ukraine	Machlouzarides & Uretici (2023)	Individuals with Group I disability status face the most severe economic challenges (employment opportunities score: 2.8/10 vs 4.2/10 for non-disabled). Women with disabilities report the highest household poverty levels.
Ukraine	Dariievska & Martsenyuk (2020)	ATO veterans with disabilities face institutional barriers (medical commission, employment services, employers) and individual barriers (family responsibilities, motivation, psychological rehabilitation). Veterans find employment mainly through personal connections and veteran-focused organizations.

As for direct war-related injuries, the barriers to employment for Anti-Terrorist Operation (ATO) veterans with disabilities can be grouped into institutional and individual factors (Dariievska & Martsenyuk, 2020). Institutional barriers include challenges related to the medical and sanitary expert commission, the State Employment Service, and employers. Individual barriers involve excessive family responsibilities, lack of motivation, and insufficient psychological rehabilitation. Veterans find employment mainly through two avenues: personal connections and public organizations focused on veterans' affairs. Despite these challenges, many veterans with disabilities are internally motivated to contribute to society. This

motivation, developed after returning from the ATO zone, drives their participation in initiatives and projects that support fellow veterans, promote societal development, and create public benefits.

2.2 Applied Methodological Approaches

With respect to applied methodological approaches, the reviewed papers employ a broad variety of methodologies to assess wage gaps and their overall impact on people with disabilities. We have combined the main methods and techniques observed in our reviewed literature in Table 2, revealing several methodological patterns and approaches. Mostly, the methodology is chosen in response to what kind of data researchers are working with.

The literature has shown great thrust towards handling unobserved heterogeneity by way of fixed effects techniques. For instance, Lamichhane and Sawada (2013) apply sibling fixed effects to take account of household-specific factors, and Heyer and Thomsen (2021) employ the AKM fixed effects model to factor out individual-level and establishment-level heterogeneity. These methods are useful in that they help to solve the causal link between disability and wages from time-invariant, unobservable characteristics.

To sum up, from the highlighted approaches of the study, including methodological approaches, in Table 2, the reviewed studies primarily employ three main methodological approaches. First, many researchers use quantitative analysis of large-scale survey data with regression models and decomposition techniques, as seen in Myers and Sai (2014), Hallock et al. (2021), and Juan et al. (2024). These methods help isolate the specific effects of disability on wages and employment while controlling for other factors like education and work experience.

Table 2. Methods and models used in the literature review

Authors	Method	Approach of study
Lamichhane and Sawada (2013)	Sibling Fixed Effects	Controls for family-level unobserved heterogeneity by comparing outcomes between siblings with and without disabilities within the same household. Accounts for shared family characteristics like genetics, upbringing, and socioeconomic background.
Heyer and Thomsen (2021)	Propensity Score Matching (PSM)	Creates matched comparison groups based on pre-disability characteristics to address selection bias. Uses both 5-nearest-neighbor and exact matching techniques to compare similar individuals who differ only in disability status.
Heyer and Thomsen (2021)	Event-Study Design	Examines wage trajectories before and after disability onset to capture dynamic effects over time. Controls for time-varying worker characteristics to isolate the impact of becoming disabled.
Heyer and Thomsen (2021)	AKM Fixed Effects	Separates individual worker effects from workplace/establishment effects on wages. Accounts for both person-specific and firm-specific factors that influence compensation levels.
Johnson and Lambrinos (1985)	Earnings Functions	Standard human capital approach examining how health status affects wages alongside traditional factors like education, experience, and occupation. Estimates return to various worker characteristics.
Johnson and Lambrinos (1985)	Heckman Correction	A two-step procedure correcting sample selection bias when analyzing wages only for employed individuals. Uses a probability model for labor force participation to adjust wage equations.
Johnson and Lambrinos (1985)	Oaxaca-Blinder Decomposition	Decomposes wage differences between groups into explained components (due to observable characteristics) and unexplained components (potentially attributable to discrimination).
Pagán (2009)	Logistic Regression	Estimates the probability of self-employment versus wage employment as a function of disability status and demographic characteristics, including age, education, and occupation.

Table 2 - Continued

Authors	Method	Methodological Approach
Jones et al. (2014)	Interval Regression	Accounts for wage data reported in ranges or intervals, focuses on Controls for personal and employment characteristics while handling censored wage observations.
Jones et al. (2014)	Random Effects GLS	Hierarchical data analysis incorporating random effects at establishment level. Accounts for clustering of workers within firms while examining disability wage gaps.
Myers and Sai (2014)	Cross-national Decomposition	Comparative analysis decomposing wage gaps across countries (US and China) to understand how different institutional contexts affect disability-related wage disparities.

First, many researchers use quantitative analysis of large-scale survey data with regression models and decomposition techniques, as seen in Myers and Sai (2014), Hallock et al. (2021), and Juan et al. (2024). These methods help isolate the specific effects of disability on wages and employment while controlling for other factors like education and work experience.

A second methodological strand focuses on comparative analysis across different contexts, exemplified by studies comparing outcomes between countries or regions. For instance, Myers and Sai's comparison of China and the US, and Ananian and Dellaferrera's (2024) cross-country analysis demonstrate how different policy environments and economic contexts influence disability-related labor market outcomes.

The third approach involves qualitative research methods, which are particularly evident in studies examining specific local contexts or vulnerable populations. Dariievska and Martsenyuk's (2020) research on Ukrainian veterans and Machlouzarides and Uretici's (2023) SCORE assessment use interviews and surveys to provide deeper insights into the personal experiences and specific challenges faced by people with disabilities in the labor market.

These varied methodological approaches reflect the complexity of studying disability-related wage and employment gaps. While quantitative methods help establish broad patterns and measure disparities, qualitative approaches provide deeper insights into individual experiences and context-specific barriers. This methodological diversity helps build a comprehensive understanding of both the quantifiable impacts and lived experiences of disability in employment contexts.

2.3 Implemented Policies In Different Countries

Looking back at the literature, we can observe the differences in other countries' policies regarding people with disabilities. In the tables provided, we summarize the essential aspects of these policies, detailing the quota obligations for employing individuals with disabilities, the penalties for failing to meet these quotas, and the financial rewards offered. This comparison highlights the varied regulatory strategies adopted by different countries and demonstrates the underlying principles of disability employment policies. These range from compulsory inclusion through quotas to market-driven incentives designed to promote voluntary recruitment. Table 3 presents employment policies for people with disabilities for the most relevant countries in these contexts. The full version of this table is provided in Appendix 1.

Reviewing these different policies, the various intervention models emerge. Nations like Germany, Ukraine, and China use quota systems with defined targets to ensure disabled individuals' representation in workplaces. This approach assumes that without such mandates, market forces would fail to adequately include disabled workers. The success of quotas often depends on strict enforcement, as seen in Germany's tiered fines for non-compliance. On the other hand, the United Kingdom and Nordic countries focus on anti-discrimination laws and improving workplace accessibility, moving away from quotas. This method

aims to eliminate barriers and promote accessible environments, relying heavily on the effective enforcement of laws and universal design in workplaces. For example, Sweden supports this model with significant wage subsidies. However, no single approach fully addresses the issue. Countries like Spain that combine moderate quotas with tax incentives and alternative compliance options may see more balanced results. The five countries presented in Table 3 offer practical models that Ukraine could realistically adapt, given its current 30% disability employment rate. Effective policies tackle both employer reluctance and challenges.

Table 3. Employment policies for people with disabilities in selected countries

Country	Employment Rate	Quota Requirements	Penalties for Non-Compliance	Financial Incentives
Poland	~45%	6% quota for companies with 25+ employees	Monthly levy paid to the State Fund for Rehabilitation of Disabled Persons	Tax deductions and wage subsidies
Turkey	33.4%	Private: 3% of workforce (50+ employees) Public: 4% of workforce	Administrative penalties; proceeds fund disability initiatives	Tax relief provided
Spain	40.2%	50+ employees: 2% of workforce	Fines €751-€7,500; loss of subsidies	Tax bonuses based on age, gender, and disability type
Germany	58.7%	Tiered system: 20-39: 1 person 40-59: 2 persons 60+: 5%	Levy €140-€720 per month per unfilled position	Temporary wage subsidies through the Federal Employment Agency
Netherlands	61.7%	No current quota requirement, but may be implemented if the target of 100,000 jobs by 2026 is not met	May face sanctions if quotas are implemented and not met	Various incentives available

Turkey stands out as particularly relevant, with a similar employment rate (33.4%) and a manageable quota system requiring just 3% of the workforce in private companies with 50+ employees. Their approach of channeling penalty funds back into disability initiatives creates a self-sustaining system that Ukraine could implement without significant additional budget requirements. Germany's tiered approach provides a long-term vision, with its sophisticated system achieving a 58.7% employment rate through graduated requirements based on company size. However, Ukraine might start more modestly with Spain's balanced approach combining a 2% quota with tax incentives. As the Tax incentives can be a game-changer for encouraging businesses to hire people with disabilities because they make inclusion financially smart, not just morally right, so for Ukraine, a simple tax relief system could transform how companies view disability employment - from a burden into a business opportunity. The system would work on two levels. Companies that meet basic hiring quotas get a 2% corporate tax reduction - a nice reward for doing what's required. But companies that go above and beyond, hiring 50% more people with disabilities than required, would earn a 5% tax cut. This creates clear motivation to exceed expectations rather than just meet minimum requirements.

The problem of low employment rates can be addressed in another way by identifying some potential problems. The current disability benefits system in many countries, including Ukraine, creates what economists call a "benefits cliff" – a sudden and complete loss of financial support when individuals begin earning income through employment. This system inadvertently discourages persons with disabilities from seeking work, as they face the impossible choice between maintaining essential financial security and pursuing employment opportunities that might not provide equivalent financial stability. The fear of losing guaranteed benefits often outweighs the potential gains from uncertain employment,

particularly when jobs may be part-time, temporary, or pay wages that are lower than benefit amounts.

The Netherlands implemented a reformed benefits system that instead create a gradual transition period where disability benefits decrease proportionally as employment income increases, rather than terminating abruptly. through their Participation Act, which transformed their approach to disability benefits by recognizing that many individuals with disabilities can contribute meaningfully to the workforce when provided with appropriate support and security. Their model allows individuals to maintain partial benefits while working, with gradual reductions based on earned income. This reform led to an increase in workforce participation among persons with disabilities because it eliminated the financial risk of employment while maintaining incentives for work. The Dutch system also includes provisions for individuals to return to full benefits if employment doesn't work out, removing another barrier to attempting workforce participation. This comprehensive approach recognizes that employment for persons with disabilities often involves trial periods, accommodation adjustments, and gradual skill development that traditional benefit systems don't accommodate effectively.

Chapter 3

METHODOLOGY

The hypothesis model is the OLS model, the log-linear model. It is widely accepted method for analyzing wage differentials, first formalized by Mincer (1974) in his seminal work on earnings functions. This cross-sectional OLS model follows the methodological framework utilized by Johnson and Lambrinos (1985) in their influential examination of disability-related wage discrimination, where they effectively decomposed earning disparities between workers with and without disabilities. Similarly, Myers and Sai (2014) employed cross-sectional OLS models in their comparative analysis of disability effects on earnings in the United States and China, demonstrating the method's versatility across different economic contexts. The log-linear specification is particularly appropriate for wage studies as it accounts for the typically right-skewed distribution of income data while allowing for interpreting coefficients as percentage effects.

The hypothesis model is the OLS model, the log-linear model:

$$ln(salary_i) = \alpha + \beta_1 disability\_friendly_i + \sum_{j=2}^{19} \beta_j x_{ij} + \varepsilon_i \qquad (1)$$

where *i* denotes the individual observation, $ln(salary_i)$ is the natural logarithm of salary, α is the intercept term, β_1 through β_{19} are the regression coefficients of the explanatory variables, ε_i is the error term.

There is a severe imbalance in our dataset between vacancies that mention welcoming candidates with disabilities and those that do not, with disability-friendly postings representing a small minority. This imbalance can lead to unreliable coefficient estimates and selection bias, as disability-friendly job postings

may systematically differ from regular postings in ways that affect wages beyond just their disability inclusiveness.

To address this problem, we employ Propensity Score Matching (PSM), a technique introduced by Rosenbaum and Rubin (1983) that creates comparable treatment and control groups by matching observations with similar characteristics. The propensity score is formally defined as:

$$p(X) = Pr(D = 1|X) \tag{2}$$

where D is the treatment indicator and X represents the vector of observed covariates. PSM collapses the multidimensional covariate space into a single scalar - the propensity score - defined as the conditional probability of being treated given observed covariates. This approach aligns with Heyer and Thomsen's (2021) methodological strategy, who successfully applied PSM in their analysis of disability wage effects to control for pre-disability characteristics and reduce selection bias.

The core advantage of PSM lies in its ability to reduce dimensionality while avoiding model misspecification of the outcome equation. Instead of matching jobs on all observable characteristics simultaneously (which would be infeasible given the curse of dimensionality), PSM estimates the probability that a job posting will be disability-friendly based on its characteristics, then matches jobs with similar propensity scores. According to the propensity score theorem, when we condition on the propensity score, treatment assignment becomes independent of covariates, resulting in balanced distributions between treatment and control groups.

Our PSM implementation follows standard procedures: First, we estimate propensity scores using logistic regression with job characteristics as covariates (industry, location, education requirements, experience level, etc.). Second, we use

these predicted probabilities to match disability-friendly job postings with similar regular postings using nearest neighbor matching. Third, we assess covariate balance before and after matching through t-tests to ensure successful matching. Finally, we calculate the average treatment effect (wage difference) using only the matched sample.

By employing both OLS regression and PSM, this study aims to provide robust estimates of the wage disparities faced by people with disabilities in the Ukrainian labor market. While the OLS model offers insights into the overall relationship between disability-friendly status and wages while controlling for observable characteristics, PSM enhances the analysis by reducing selection bias and improving causal inference. This dual methodological approach follows the precedent set in contemporary labor economics research on disability wage gaps, including the work of Hallock, Jin, and Waldman (2021), who similarly employed multiple analytical techniques to ensure the reliability of their findings on total compensation differences between workers with and without disabilities.

Chapter 4

DATA

4.1. Data Description

The data[7] used for my research was collected by the author using web-scraping from an open-source job advertisement called "work.ua". Overall, the dataset consists of 3780 observations. We gathered information on the name of the vacancy and name of the company; minimum and maximum offered salary for this position; whether the advertised position is disability friendly; the location and the level of education and experience required; whether or not the students are welcome in the position; and, finally, the description in advertisement sorted vacancies in 12 sectors. The analyzed sectors in the Ukrainian job market include Information Technology (IT), Sales, Finance, Marketing, Manufacturing, Healthcare, Education, Service, Administrative, Logistics, Human Resources (HR), Legal, and Other miscellaneous positions, representing a comprehensive cross-section of the economy.

Since job postings use both English and Ukrainian, we looked at job titles and descriptions in both languages to sort them correctly. Each sector has its own type of job. For example, IT includes jobs like developers and QA testers, while Sales covers everything from store sales to managing big client accounts. Finance jobs include accountants and bankers, while manufacturing jobs include engineers and factory workers. Service sector jobs focus on customer service and hospitality, and Healthcare covers medical and pharmacy jobs. Education includes teachers and

[7] Several attempts were made by the author to obtain data relevant for this study. The State Statistics Service of Ukraine stated they do not have survey data for people with disability on their income. The National Assembly of People with Disabilities of Ukraine verbally confirmed availability of relevant data and agreed to share it for this study but, unfortunately, no data was received despite multiple follow-ups and reminders. Both the Ministry of Finance of Ukraine and the State Employment Center replied that they do not have relevant data.

trainers, while Logistics deals with transportation and supply chain jobs. We also have specific groups for HR, Legal, and Marketing jobs. This way of sorting helps us understand how salaries and job conditions differ in these economic sectors.

In order to improve future analysis, the location was later converted to the dummy variable "Big City", standing for the biggest Ukrainian cities, including Kyiv, Kharkiv, Lviv, Odesa, and Dnipro. In this collected dataset, approximately 49.8% of the positions are in major cities (M = 0.498, SD = 0.500). The most common location for work advertising was Kyiv, the capital city, where the number of direct posts was 83, and the second most popular city mentioned was Lviv, with 22 citations (Figure 2).

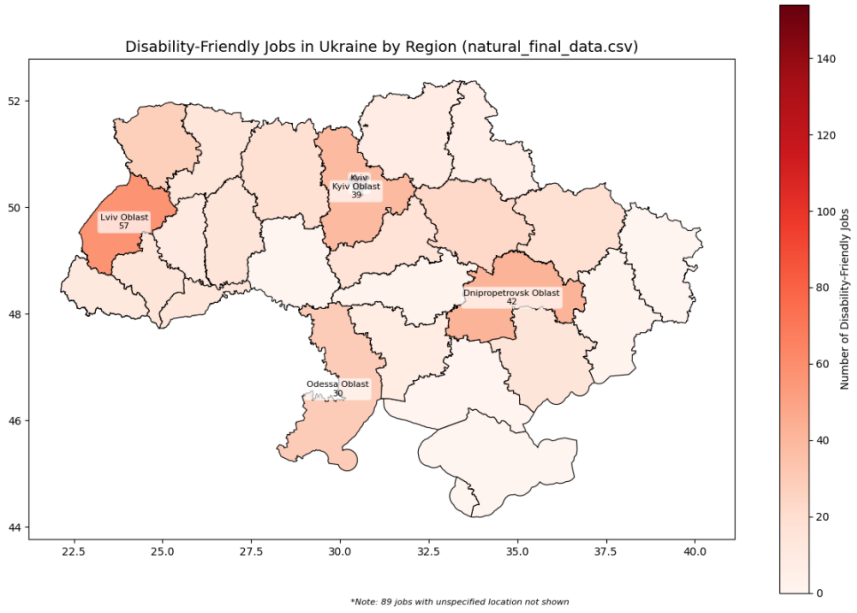

Figure 2. Heat-map of disability-friendly job offers.

Education initially was classified into four categories: "not mentioned", "high-school", which mostly meant a high-school graduate or undergraduate student,

"special-professional" meaning technical colleges or local training, and "high" for university graduates. Interestingly, the majority of positions did not mentioned education requirements, so we consider them as positions for high-school graduates, as well as the ones specifying only basic education. The higher, university level education was represented as a dummy variable. Furthermore, the experience requirements were presented ordinarily with categories from "without experience", with the largest number of positions, to "1-3 years"(3.80%) and "3-5 years"(0.58%), concluding with senior positions for "5+ years" of experience with 203 positions (4.20%).

The search was done in such a way that it aimed to collect data representative of the current labor market. That is why the number of vacancies that accept and encourage people with disabilities to enroll in those positions is quite small. That is why the data shows that 13.6% of positions are disability friendly. On average, the salary for people with disabilities in our sample ranges from 21284 to 31457 UAH.

Table 4. Descriptive statistics for key continuous and ordinal variables

Variable	**Mean**	**SD**	**Median**	**Min**	**Max**
Average Salary(UAH)	26,924	15,516	23,500	1,400	160,000
Log(Salary)	10.01	0.93	10.06	7.244	11.98
disability_friendly	0.13	0.34	0.0	0.0	1.0
big_city	0.51	0.5	0.0	0.0	1.0
remote_work	0.05	0.21	0.0	0.0	1.0
student_friendly	0.03	0.16	0.0	0.0	1.0

Meanwhile, the average salary for exclusive advertisements ranged from 22219 to 31798 UAH. The average salary observed in the dataset is 26,924.06 UAH, ranging from 1,400 to 160,000. The salary distribution demonstrates substantial positive skewness (5.93). The median salary of 23,500 being lower than the mean confirms

this right-skewed nature of the salary distribution. Meanwhile, remote work opportunities are relatively scarce, representing only 5% of the positions. Part-time positions are uncommon in the dataset, comprising just 4.9% of the total listings.

4.2. Statistical Analysis

Performed correlation analysis shows (Appendix 2) that most correlation coefficients fall below 0.10, indicating limited linear relationships in the dataset. The strongest correlations with log salary are modest: experience shows the highest positive correlation ($r = +0.067$), while education sector employment exhibits the strongest negative association ($r = -0.091$). The correlation analysis reveals that while most variables had statistically significant level of correlation, there was not statistically significance of correlation detected between remote_work and the disability_friendly ($r = +0.022$, $p = 0.185$). Additionally, a statistically significant but weak negative correlation was found between big_city location and disability_friendly status ($r = -0.048$, $p = 0.003$), suggesting disability-friendly positions are slightly less common in major cities. The correlation between student_friendly and disability_friendly positions approaches marginal significance ($r = +0.031$, $p = 0.055$), indicating a potential weak positive association between jobs welcoming students and those accommodating disabilities.

A number of contingency tables were created to overview the association of the number of disability-friendly courses with job-specific variables. Table 5 shows not only those sectors with a higher share of vacancies open to people with disabilities – SECTORS – but also suggests that policies implemented for these specific sectors might help raise the employment rate for people with disabilities. Based on the obtained Chi-square value of $\chi2=24.70$, $p=0.0163$, we can state that a statistically significant association (at 5% significance level) between sector and

disability-friendly status is observed. The highest percentage of disability-friendly job offers is noted in IT, Administrative, and HR sectors, and the lowest is in Legal.

Table 5. Contingency table of Disability-Friendly Jobs by Economic Sector

Sector	**Not Disability-Friendly (%)**	**Disability-Friendly (%)**
Administrative	76.32	23.68
IT	81.73	18.27
Healthcare	83.49	16.51
Logistics	84.38	15.63
Finance	86.07	13.93
Other	86.17	13.83
Marketing	86.18	13.82
Manufacturing	86.19	13.81
HR	87.50	12.50
Sales	88.24	11.76
Education	88.30	11.70
Service	89.91	10.09
Legal	90.91	9.09

Moreover, the significant association between location, whether in one of the metapolicies or outside them, and disability-friendly status was observed after performing the Chi-square test on the appropriate contingency table of the disability-friendly jobs by location (Table 6) with parameters of $\chi 2 = 10.24$, $p = 0.0014$.

Table 6. Contingency table of disability-friendly jobs by Big city location

	Not Friendly	**Friendly**	**Total**
Other Cities	42.58	7.63	50.21
Big Cities	43.82	5.97	49.79
Total	86.40	13.60	100

On the other hand, the Chi-square test ($\chi 2=2.58$, $p=0.1082$), used on the contingency table of disability-friendly jobs by the remote work possibility (Table 7), revealed no statistically significant association (at conventional significance levels) between remote work and disability-friendly status.

Table 7. Contingency table of disability-friendly jobs by remote work option

	Not Friendly	**Friendly**	**Total**
In-Office	82.35	12.75	95.10
Remote	4.05	0.85	4.90
Total	86.40	13.60	100

With respect to the association between disability-friendly jobs and the experience level (Table 8), the chi-squared test ($\chi 2=5.84$ and $p=0.2113$) suggests no significant association between them.

Table 8. Contingency table of disability-friendly jobs by experience level

	Not Friendly	**Friendly**	**Total**
Not- Experience	78.78	12.65	91.42
1-3Years	3.29	0.52	3.80
3-5Years	0.54	0.04	0.58
5+Years	3.80	0.39	4.20
Total	86.40	13.60	100

Based on these findings, the Ukrainian job market demonstrates clear sectoral and geographical disparities in disability inclusion, with administrative, IT, and healthcare sectors leading in accessibility while legal and service sectors lag behind. The concentration of disability-friendly positions in major cities, combined with the lack of significant association between remote work options and disability

accommodation, suggests that current inclusion efforts are geographically constrained and may not fully leverage technological solutions that could expand opportunities for people with disabilities.

Chapter 5

ESTIMATION RESULTS

The estimations, following model (1), are presented in Table 9. Note that he administrative sector is considered the base for other sectors, "not specified" is considered a base for experience, as in those jobs experience does not matter, and we believe this to be entry-level positions postings, and high-school education is implied as the base for education requirements.

Results exhibit limited explanatory power ($R^2 = 0.048$), indicating that while some variables are significant, much of the salary variation remains unexplained by observed job characteristics. Based on the Breusch-Pagan test (Breusch-Pagan p-value is 0.000002) for heteroskedasticity, heteroskedasticity was detected. The model successfully controls for sector, education, experience, location, and work arrangements while using heteroskedasticity-robust standard errors to ensure reliable statistical inference

Several sectoral effects are evident. The central finding reveals that disability-friendly job postings show no statistically significant wage penalty compared to regular job postings. The estimated effect of + 0.77% suggests that, on average, jobs explicitly welcoming disabled workers pay virtually the same as comparable positions that do not mention disability accommodation. This result contradicts common concerns about wage discrimination against disability-inclusive positions and indicates that Ukrainian employers do not systematically underpay workers in jobs designed to be accessible to people with disabilities. Despite the model's modest explanatory power, the robust standard errors and large sample size (N = 3780) provide confidence in this key finding regarding the absence of wage discrimination.

Table 9. Estimation results

Variable	Coefficient	Robust SE	Sig
Intercept	9.618	0.086	***
disability_friendly	0.008	0.039	
Sector (Base: Administrative)			
Education	-0.011	0.124	
Finance	0.226	0.106	**
HR	0.388	0.137	***
Healthcare	-0.110	0.144	
IT	0.456	0.106	***
Legal	-0.011	0.175	
Logistics	0.501	0.092	***
Manufacturing	0.466	0.090	***
Marketing	0.324	0.128	**
Other	0.252	0.086	***
Sales	0.380	0.087	***
Service	0.291	0.089	***
Education Level (Base: high-school)			
high-education	0.020	0.088	
special professional	-0.243	0.264	
Experience (Base: no experience)			
1-3 years	0.125	0.076	
3-5 years	0.463	0.406	
5+ years	0.310	0.083	***
big_city	0.132	0.029	***
remote_work	0.200	0.078	**
student_friendly	-0.151	0.082	*

The regression identified substantial sectoral wage differentials, with Information Technology (+45.9%), Logistics (+50.1%), and Manufacturing (+46.6%) sectors offering the largest premiums compared to Administrative jobs. Geographic location plays a significant role, with positions in major cities commanding a 14.08% wage premium, reflecting higher living costs and greater economic activity in urban centers. Remote work opportunities provide an even larger premium of

22.16%, suggesting that flexible work arrangements are highly valued and compensated accordingly in the Ukrainian labor market. Workers with over five years of experience earn significantly more (+36.38%) than those with unspecified experience levels, demonstrating the substantial return to professional experience in the Ukrainian job market.

For the use of the PSM, in equation (2) we have D = 1 for disability-friendly job postings, D = 0 for regular postings; X are job characteristics such as industry, location, education requirements, experience level, etc. The equation (2) represents the conditional probability that a job posting will be disability-friendly given its observable characteristics.

Based on PSM analysis results (Appendix 3), several important findings emerge regarding wage gaps and disability-friendly employment practices in the Ukrainian job market. The analysis successfully matched 501 treated units (disability-friendly positions) with 501 control units, achieving good covariate balance with a 64.7% % improvement in standardized bias and eliminating all statistically significant pre-matching differences between groups.

The central finding reveals that disability-friendly job postings have a modest negative effect on salary levels, with an estimated treatment effect of -4.53% that is not statistically significant (p-value = 0.276). The 95% confidence interval ranges from -12.18% to +3.79%, suggesting that while the point estimate indicates a wage penalty, the effect could range from a substantial penalty to a modest premium. This result is robust across different matching specifications, with consistent effects observed using various caliper restrictions from 0.01 to 0.1.

These findings suggest several plausible explanations for the modest wage differential in disability-friendly positions. First, the results may indicate that employers who advertise disability-friendly positions are not engaging in substantial

compensating wage differentials - while there appears to be a small wage penalty, it is not statistically distinguishable from zero and could reflect measurement error rather than systematic discrimination. This could reflect that disability accommodation is viewed as a standard business practice rather than a cost-imposing constraint requiring substantial wage adjustments. Alternatively, the modest negative effect might reflect that disability-friendly job advertisements serve primarily as signaling mechanisms rather than indicators of substantively different job characteristics. Employers may include disability-friendly language to comply with anti-discrimination regulations or demonstrate corporate social responsibility without this designation fundamentally altering the compensation structure of the position. In this interpretation, the disability-friendly label represents symbolic inclusion rather than material accommodation that would warrant different compensation levels.

The results also suggest that any potential productivity concerns or accommodation costs associated with hiring workers with disabilities are not being substantially passed through to wage determination in this market context. If employers perceived workers with disabilities as requiring costly accommodations or having systematically different productivity profiles, economic theory would predict larger compensating wage differentials. The modest and statistically insignificant differential implies either that accommodation costs are minimal, that employers do not anticipate significant productivity differences, or that anti-discrimination norms and regulations effectively prevent substantial wage discrimination from manifesting in posted salary ranges.

The treatment effect has a robust standard error of 0.042560, which creates some uncertainty around our estimate, leading to the confidence interval (-12.18% to +3.79%) and the non-significant result (p-value = 0.276). The robust error tells us that while there appears to be a modest wage penalty, we cannot be statistically confident that this effect differs from zero due to natural variability in salary data.

The robust errors in balance tests confirm that matching worked well. After matching, no variables showed significant differences between disability-friendly and regular job groups (all p-values > 0.05). Before matching, 1 variable was significantly different (big_city), but matching eliminated these imbalances. This means we successfully controlled for observed differences that could bias our results.

The robust errors suggest three important things: First, any real wage gap associated with disability-friendly positions would mighgt need to be quite large (over 12%) to be definitively detectable with this data - moderate gaps remain within the margin of uncertainty. Second, the matching procedure successfully removed bias from observed factors, making our causal interpretation more reliable. Third, the consistent results across different methods confirm that any wage gap, if present, is modest and economically small rather than reflecting substantial discrimination.

The PSM findings provide an interesting comparison to the OLS regression results. While the OLS model estimated a small positive effect of disability-friendly postings (+0.77%, p = 0.846), the PSM analysis suggests a modest negative effect (-4.53%, p = 0.276). Both approaches yield statistically insignificant results, indicating no clear evidence of systematic wage discrimination in either direction. The difference in point estimates likely reflects the different methodological approaches: OLS controls for observable characteristics linearly while assuming functional form restrictions, whereas PSM creates a more flexible matching approach that better accounts for selection bias by comparing only jobs with similar propensity scores. The fact that both methods yield economically small and statistically insignificant effects reinforces the central conclusion that disability-friendly job postings do not exhibit substantial wage penalties or premiums in the Ukrainian labor market. The convergence on statistical insignificance across both parametric (OLS) and semi-parametric (PSM) approaches strengthens confidence

in the finding that employers are not systematically adjusting wages based on disability-friendly job designations.

Chapter 6

CONCLUSIONS AND POLICY RECOMMENDATIONS

This thesis investigated wage disparities faced by people with disabilities in Ukraine, an issue that has grown more urgent as the number of Ukrainians with disabilities has increased. Our analysis explored whether people with disabilities receive lower wages than non-disabled individuals by examining the association of salary based on the open-source platform for job advertisements for vacancies. Based on our analysis of the wages presented for people with and without disabilities, we can suspect the existence of a wage gap between those categories. Our OLS regression model estimated a small positive coefficient of 0.008 for disability-friendly postings (+0.77% salary difference, $p = 0.846$), while the propensity score matching approach yielded a treatment effect of -4.53% ($p = 0.276$). However, both methods produced statistically insignificant results. Given our model's limited explanatory power ($R^2 = 0.048$), as well as the lack of a significant relationship between disability-friendly job postings and salary levels in addition to detected heteroskedasticity, these findings should be interpreted cautiously.

Importantly, this study examined a proxy measure rather than direct wage gaps experienced by workers with disabilities. We analyzed whether job postings explicitly mentioning disability accommodation differ in posted salaries from regular postings, rather than measuring actual wages paid to disabled versus non-disabled workers. This approach may explain the lack of statistical significance, as job posting characteristics may not fully capture the wage discrimination that occurs in actual employment relationships. The proxy nature of our measure means that employers might post similar salary ranges for all positions while

making different wage offers during negotiations, or that wage gaps emerge through differential hiring, promotion, or working conditions rather than posted salary differences.

As Ukraine rebuilds post-war, fully integrating people with disabilities into the labor market is both a moral imperative and an economic opportunity. With targeted policies, better data, and the adoption of successful practices from other countries, Ukraine can work toward reducing wage disparities and creating a more inclusive labor market.

While our research provides valuable insights, we acknowledge its limitations. The biggest challenge for the exploration of this topic was the lack of proper data collected that can express the real wage gap more accurately, not just through the proxy as it is used in this work. The improvement in regular gathering and sharing information on economical status (either some or all of following - hourly wage rates, total compensation, including benefits and bonuses, pre-tax and after-tax income) for people with disabilities with data on their disability status characteristics such as type of disability (physical, sensory, cognitive, psychosocial) disability group, and age of onset (congenital or acquired), - will lead to better future researches and understanding of the existing wage gap, not just it association. Future studies would benefit from more comprehensive data on disability characteristics and wage structures. Qualitative research exploring the lived experiences of people with disabilities in the workforce would also provide deeper insights into employment barriers and success factors.

As for policy recommendations, based on analysis of employment policies in a variety of countries through the literature review, one of the ideas is for Ukraine to implement a reformed benefits system following the Netherlands' footsteps. During a transitional period of 18 to 24 months, individuals could maintain a safety net while gaining work experience and proving their capabilities to

employers. The system would calculate benefit reductions based on a sliding scale – for example, for every dollar earned through employment, benefits might decrease by fifty cents rather than dollar-for-dollar, ensuring that work always results in increased total income.

Moreover, Ukraine could consider implementing a targeted tax relief system similar to Spain and Turkey's successful models. Companies meeting basic disability employment quotas would receive a 2% corporate tax reduction, while those exceeding requirements by 50% would earn a 5% tax cut. Additionally, businesses could fully deduct workplace accommodation expenses up to $5,000 per employee with disabilities. This approach transforms disability employment from a compliance burden into a profitable business strategy, as demonstrated by Spain's 40.2% employment rate for people with disabilities. The system addresses employers' primary concern about accommodation costs while providing clear financial incentives that make inclusive hiring practices economically attractive rather than merely socially responsible.

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APPENDIX 1: EXTENDED TABLE OF EMPLOYMENT POLICIES FOR PEOPLE WITH DISABILITIES IN SELECTED COUNTRIES

Country	Employment Rate of People with Disabilities	Quota Requirements	Penalties for Non-Compliance	Financial Incentives
Argentina	24.8%	Public sector only: 4% of workforce No requirement for the private sector	-	-
Austria	66.2%	25+ employees: 1 "beneficiary disabled person" (50% + disability) per 25 employees	Compensatory tax ranging from €320 to €477 per month for each missing disabled employee	-
Brazil	28.3%	100-200 employees: 2% of workforce 201-500 employees: 3% of workforce	Fines between BRL 3,215.07 and BRL 321,505.87 Possible legal action by the Public Attorney's Office	-
China	43.0%	Minimum 1.5% of workforce (specific percentage determined by local government)	Payment into a fund for the protection of the employment of disabled persons	Deductions and exemptions for employers hiring disabled persons
Denmark	61.7%	No quota system; relies on anti-discrimination legislation and active labor market policies	-	Wage subsidies of up to 50% for employers hiring people with disabilities; funding for workplace accommodation and personal assistance

Country	Employment Rate of People with Disabilities	Quota Requirements	Penalties for Non-Compliance	Financial Incentives
France	46.6%	20+ employees: 6% of workforce	Exclusion from public procurement Annual contribution to Agefiph Possible civil action by disability advocacy groups	-
Germany	58.7%	20-39 employees: 1 severely disabled person 40-59 employees: 2 severely disabled persons 60+ employees: 5% of workforce	Compensatory levy based on non-fulfillment level €140-€360 per month per unfilled position €720 if no severely disabled persons employed	Temporary wage subsidies through the Federal Employment Agency
Italy	53.7%	15-35 employees: 1 disabled worker 36-50 employees: 2 disabled workers 50+ employees: 7% of workforce	€153.20 for each working day of delay in hiring	Tax concessions and incentives based on the employee's degree of disability
Japan	48.6%	Private sector: 2.3% of workforce (43.5+ employees) Public sector: 2.6% of workforce	Levy system for non-compliance	Subsidies for workplace accommodation
Nepal	20.0%	No formal quota system identified in the literature	-	Limited financial support programs for people with disabilities

Country	Employment Rate of People with Disabilities	Quota Requirements	Penalties for Non-Compliance	Financial Incentives
Netherlands	61.7%	No current quota requirement, but may be implemented if the target of 100,000 jobs by 2026 is not met	May face sanctions if quotas are implemented and not met	Various incentives available
Spain	40.2%	50+ employees: 2% of workforce	Fines ranging from €751 to €7,500 Loss of subsidies and aid	Tax bonuses based on age, gender, disability type, and contract type
Sweden	67.8%	No quota system; focuses on universal design and accessibility	-	Wage subsidies covering up to 80% of salary costs for employers hiring people with reduced work capacity; grants for workplace adaptations
Turkey	33.4%	Private sector: 3% of workforce (50+ employees) Public sector: 4% of workforce	Administrative penalties (amount not specified) Penalty proceeds used for initiatives supporting disabled workers	Tax relief provided
Ukraine	30.0%	4% quota for companies with 8+ employees	Administrative fines for non-compliance	Tax benefits for enterprises founded by public organizations of persons with disabilities
United Kingdom	54.8%	No quota requirement	-	-
United States	37.6%	No federal quota requirement	-	Tax incentives and workplace accommodation funding

APPENDIX 2: ANALYSIS AND VISUALISATIONS

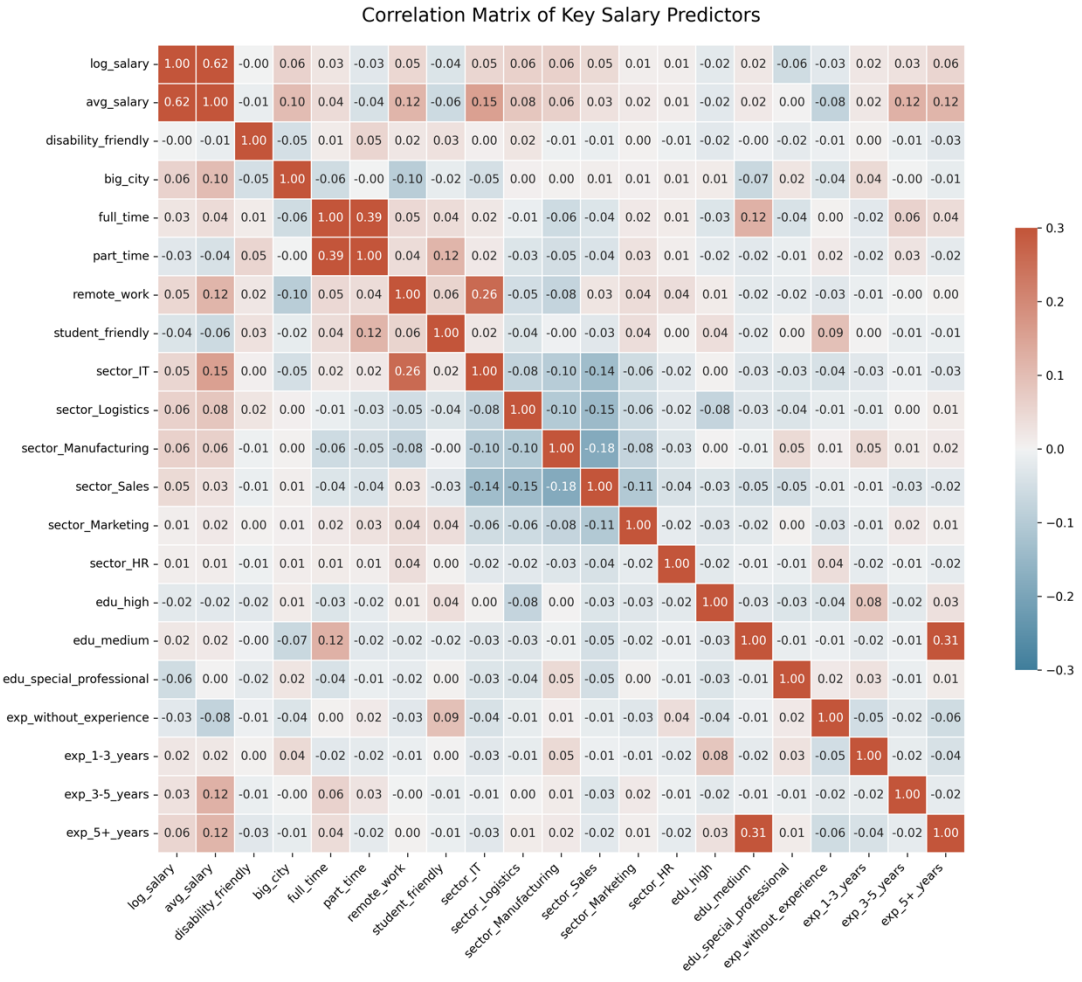


Figure 3.1. The correlation matrix for key data in the dataset

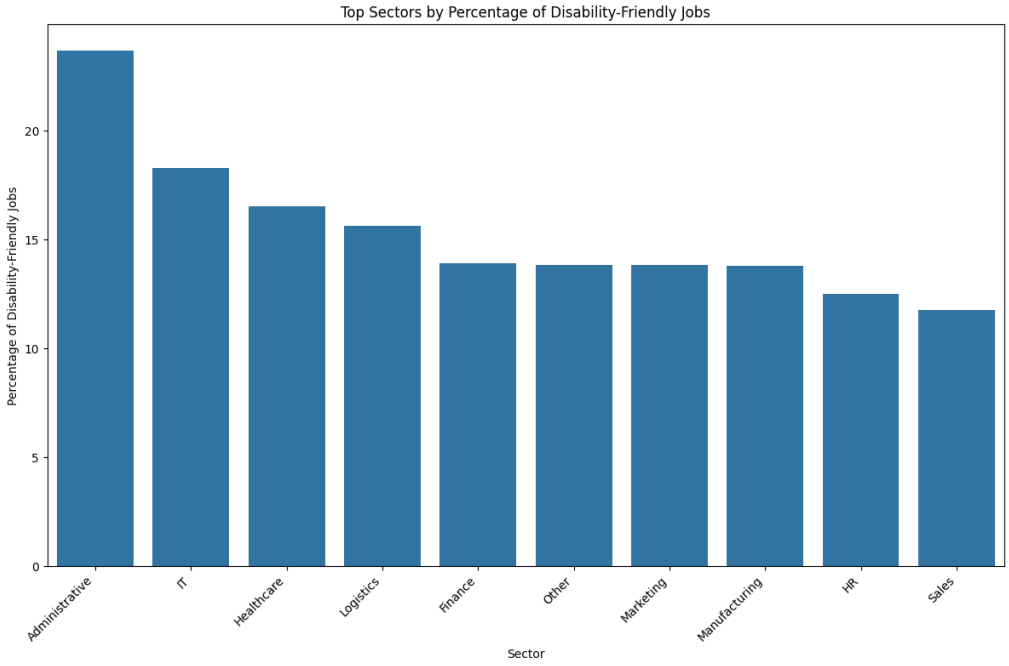
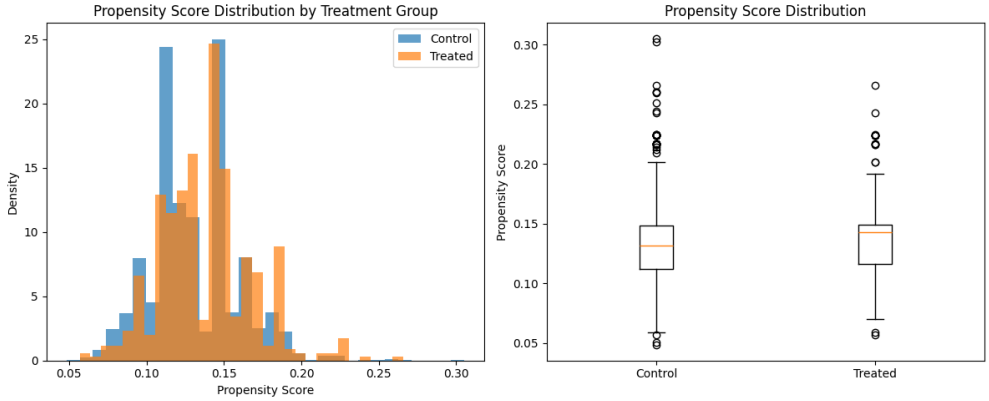


Figure 3.2. Histogram of the percentage of Disability-Friendly Jobs among all jobs by Sectors**.**

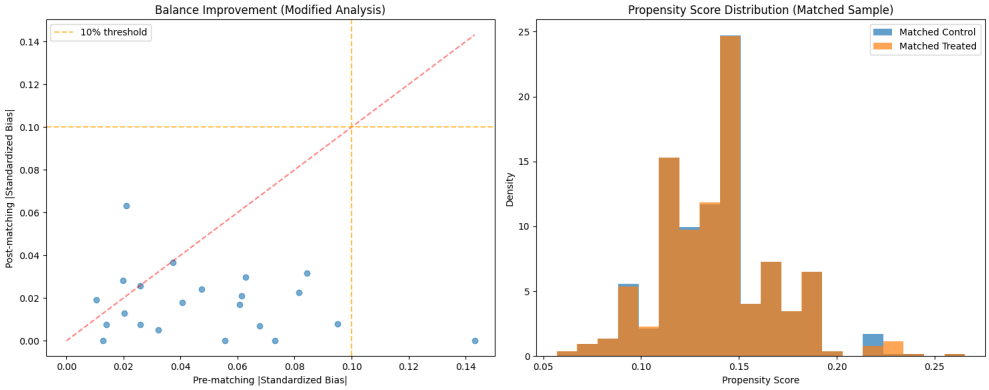
APPENDIX 3: ESTIMATIONS

```
PROPENSITY SCORE MATCHING ANALYSIS

Treatment: disability_friendly | Outcome: log_salary

Propensity Score Summary:
Mean: 0.1326
Std: 0.0286
Min: 0.0483
Max: 0.3052
```




```
Common Support Region: [0.0568, 0.2656]
Observations in common support: 3776/3780 (99.9%)
Pre-Matching Balance Summary:
Mean absolute standardized bias: 0.050
Maximum absolute standardized bias: 0.143
Variables with significant differences (p<0.05): 1/22

Enhanced matching results :
Caliper 0.01: 501 matched pairs
Caliper 0.05: 501 matched pairs
Caliper 0.1: 501 matched pairs
Caliper 0.2: 501 matched pairs

Using caliper = 0.05
Successful matches: 501
Matched dataset size: 1002

Mean absolute standardized bias: 0.018
Maximum absolute standardized bias: 0.063
Variables with significant differences (p<0.05): 0/22

Balance Improvement:
Mean absolute standardized bias: 0.050 → 0.018 (+64.7%)
Maximum absolute standardized bias: 0.143 → 0.063
```

Significant variables: 1 → 0



AVERAGE TREATMENT EFFECT (ATE) RESULTS:
ATE (log points): -0.046352
Robust SE: 0.042560
t-statistic: -1.089
p-value: 0.276368
95% CI: [-0.129869, 0.037165]

Percentage Effect on Salary:
ATE: -4.53%
95% CI: [-12.18%, +3.79%]
Significance:

ROBUSTNESS TESTS
1. MATCHING METHOD COMPARISON:
Caliper 0.01: ATE = -0.046352 (SE: 0.042560), N = 501 pairs
Caliper 0.03: ATE = -0.046352 (SE: 0.042560), N = 501 pairs
Caliper 0.05: ATE = -0.046352 (SE: 0.042560), N = 501 pairs
Caliper 0.1: ATE = -0.046352 (SE: 0.042560), N = 501 pairs

2. COMMON SUPPORT ASSESSMENT:
min_ps_treated: 0.0568
max_ps_treated: 0.2656
min_ps_control: 0.0483
max_ps_control: 0.3052
common_support_range: 0.2087
pct_in_support: 99.8942

FINAL RESULTS SUMMARY:
Treatment Effect: -4.53%
95% Confidence Interval: [-12.18%, +3.79%]
Robust Standard Error: 0.042560
P-value: 0.276368
Sample Size: 1002 (matched from 3780 original)
Balance Improvement: 64.7%