

# POPULATION'S MOBILITY UNDER PANDEMIC CONDITIONS. EVIDENCE FROM UKRAINE (LVIV REGION)

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## Abstract

*High level of population's international mobility has become an important feature of the modern globalized world. The COVID-19 pandemic significantly affected the intensity, course and direction of global migration processes, but it did not stop them completely. But do the pandemic-related restrictions have any impact on potential mobility? This article provides the comparative analysis of labor and potential territorial population's mobility before and during the pandemic. It is based on the results of the sociological panel survey of the unemployed population in Lviv (2013–2016, 2018–2021). Our findings show that the COVID-19 pandemic has not only reduced the share of those who had real plans to international migration but also has influenced potential territorial mobility generally. At the same time, changes in labor mobility were not statistically significant, because they were detected only in one parameter and related to the first year of the pandemic. Conducting such study in other regions or population groups would give an interesting comparative analysis. Monitoring potential mobility can be a good base for developing effective measures of migration policy.*

**Keywords:** *Mobility, Labor mobility, Potential territorial mobility, Potential migration, Unemployed, Pandemic.*

## INTRODUCTION

Human resource mobility is a very important condition for economic development and innovation. At the same time, poor regulation of mobility processes can lead to considerable economic, social, and demographic problems. Rapid increase of the mobility rates in different countries as well as worldwide has made this issue a timely and important subject

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for scientific investigations within the last few decades. Furthermore, the interest in the issue of mobility has increased even more after 11 March 2020, when the World Health Organisation declared COVID-19 a pandemic. The restrictive measures implemented in response to this have had a significant impact on the population's migration behaviour and mobility as well. Such circumstances require new studies on mobility and developing new approaches to its regulation.

It is only natural that the pandemic-related restrictions have led to international mobility reduction, with Ukraine being no exception. For example, the total number of Ukrainian citizens who moved abroad in 2020 decreased almost threefold compared to 2019 (SMSU, 2021, p. 62). At the same time, according to the report of the International Organization for Migration, cross-border restrictions have not stopped labour mobility of Ukrainian citizens completely but rather led to its transformation from temporary to permanent one, and brought some changes in its direction and characteristics (IOM, 2022, p. 12-13). In particular, the changes are related to a higher concentration of Ukrainian labor migrants in areas where the need for workers had increased in the pandemic conditions (agriculture, health care, food industry) (Malynovska, 2021, p. 77).

The paper aims to explore the impact of pandemic restrictions on labor and potential territorial mobility (based on the results of the sociological survey of the unemployed in Lviv region, 2013-2016, 2018-2021). Previous studies show that economically active persons without a job are more likely to move abroad than those who are employed (DaVanzo, 1978; Matouskova, 2020; Caron and Ichou, 2020). Thus, they represent one of the most active groups of potential migrants, the so called "risk group". That is why the unemployed were chosen as an object for potential migration investigation. The relevance of research in the Lviv region is explained by the fact that it serves a kind of prototype of the migration processes that take place in Ukraine nowadays. Besides, bordering an EU country makes Lviv an important transit area for international migrants and, at the same time, the region of origin of a significant number of migrants.

The results of this research can be useful for further studies and understanding of mobility factors and provide information for mobility regulation. Additionally, the proposed study may serve as an empirical supplementation to the theoretical expanded aspiration-capabilities approach (Haas, 2021).

The paper is structured as follows. The first section provides a literature review highlighting relevant studies on this issue. Then in the methodological

part some theoretical concepts are specified, framework for potential migration is proposed, statistical hypotheses are formulated, and use of methods is explained. The next two sections are devoted to the examination of labor mobility and potential territorial mobility in 2013-2021 on the basis of the results of the sociological survey. After that, the statistical analysis of mobility in the pre-pandemic and pandemic period is presented, which confirms the statistically significant difference in the distribution of mobility indicators for the named periods. Finally, conclusions on population's mobility under the pandemic conditions are made.

## **1 LITERATURE REVIEW**

The key scholars developing the theoretical foundations of mobility are S. Miller, S. Lipset, H. Zetterberg, V. Kaufmann, D. Massey, P. Sorokin and other (Miller, 1955; Lipset and Zetterberg, 1956; Kaufmann, 2021; Massey, 1989; Sorokin, 1964). Zygmunt Bauman characterised contemporary society as "liquid modernity" (Bauman, 2000). It means that mobility is an important feature of our time. The concept of socio-spatial mobility is developed in the scientific works of William Clark and Maarten van Ham (e.g. Clark et al., 2011). Jason Long investigated labor mobility and has carried out a retrospective comparative analysis of intergenerational labor mobility in the USA and Great Britain (Long and Ferrie, 2013). In the early 2000s an integrated approach to mobility investigation was proposed and named a "new mobilities paradigm". In this paradigm the term "mobilities" is used in a broad sense and includes not only existing and potential physical movements, but also movements of pictures and information (Sheller and Urry, 2006, p. 212). Despite some critics of this approach (for example, Randell, 2020), it stimulated further mobility studies in the context of the European refugee crisis (Schorpp, 2016) and development of the politics of mobility (Cresswell, 2010). Additionally, there are numerous studies devoted to current problems of mobility regulation (Filipec and Macková, 2019; Fujita, 2018; Hlaváčková and Macková, 2020; Pankratz et al., 2018).

It is also worth mentioning systematic migration literature reviews, which have recently come out. An essential analysis of survey-based literature on formation of migration aspirations, its determinants and turn into actual migration is provided by Maryam Aslany, Jørgen Carling, Mathilde Bålsrud Mjelva and Tone Sommerfelt (Aslany et al, 2021). A comprehensive revision of theories concerning the connection between mobility and aspiration, which create the aspiration/mobility model, was made by J. Carling and K.

Schewel (2018). It provides an analysis of the influence of different obstacles or opportunities for turning migration desires into reality. Thus, the division of migration into two steps is proposed (migration as a potential course of the action and realization of mobility or immobility itself); the so-called “two-step approach”. The interpretation of mobility as people’s freedom to choose a place of living is proposed in the expanded aspiration-capabilities framework (Haas, 2021). It includes the analysis of not only the relationship between aspirations and abilities for its realization but also the reverse connection: in which ways does liberty affect aspirations.

Despite the fact that the pandemic is a new social challenge, several interesting investigations in this field have already been carried out in different countries. For example, investigation of COVID-19’s impact on the mobility behaviour of public transport users with regard to their desire to travel and their safety criteria perceptions was conducted in Poland (Przybylowski et al., 2021). The analysis of mobility trends before and after the pandemic outbreak through the lens of gender and equality was carried out in Spain (Mejía-Dorantes et al., 2021). The examination of the individual mobility patterns for all transport modes before and during the period of restrictions in ten countries was made (Barbieri et al., 2021). The relationship between transmission and mobility has been studied for 52 countries around the world (Nouvellet et al., 2021). The first comprehensive analysis of the influence of the pandemic on border management and human mobility was made through a collaboration between International Organization for Migration and the Migration Policy Institute. Cross-border mobility in 2020 was divided into three phases (mobility lockdowns, phased reopening and responses to new outbreaks and virus mutations) and peculiarities on each of them were outlined (Benton et al., 2021). Summarizing overview of the COVID-19 effects on mobility and lifestyle in many different countries is provided in the latest studies of Andre de Palma, Shaghayegh Vosough and Feixiong Liao (Palma et al., 2022).

It is worth noting that the studies mentioned mostly concern realized mobility (implemented, real movements). There is a gap in studying the potential mobility; the impact of the pandemic limitations in particular still remains underinvestigated.

## **2 METHODOLOGY**

Mobility is a very complex concept, which results in many different approaches to its definition. In the broadest sense it characterizes the ability

to move from one position to another. Adopting Kauffmann's theoretical analysis (Kauffmann, 2021) and general vocabulary definitions (Britannica, 2022), in this study we interpret mobility as a socio-spatial phenomenon, which includes:

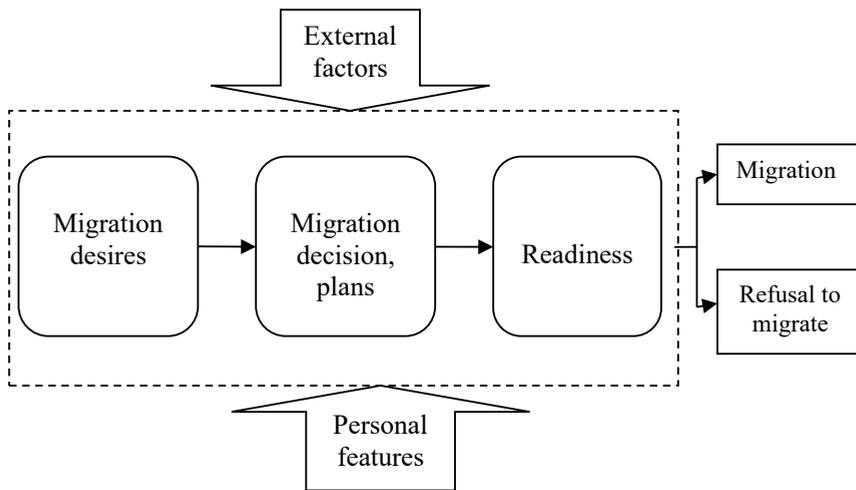
- ability, disposition, and desire to move and to change;
- processes of movement, transition and change (concerns changing places and status);
- adaptation to the new status, circumstances or integration in the host society;
- return and reintegration.

There are many different forms and types of mobility (for example, vertical and horizontal; economic, social, labor, educational, cultural, and tourist; voluntary and forced etc.) (Bil, 2018, pp. 20-21). This study focuses exclusively on territorial and labor mobility. We consider territorial mobility as involving not only the spatial movement of the economically active population, but also its ability, desire and readiness for such movement. We understand labor mobility in a similar way and define it as a movement of economically active population from one job/ profession to another as well as the ability, desire and readiness for such changes.

This study also distinguished between realized and unrealized (potential) mobility. Since migration is one of the forms of spatial mobility (Kauffmann, 2021), in this study "unrealized territorial mobility" and "potential migration" are used as synonyms. So "unrealized" means "potential" and "realized" equals "actual" movements.

Figure 1 shows a scheme of the potential migration analysis. It includes three stages of potential migration. First stage is the occurrence of a desire to migrate. The second stage is migration readiness. It means that the person has already made the decision to migrate and has migration plans in the nearest future.

**Figure 1:** A scheme of the potential migration analysis



*Source: authors*

After making the decision to migrate, the person begins preparations for this process. It is the closest step towards the implementation of the migration movement. When we talk about moving to another country, a potential migrant gathers all the information needed, tries to establish contacts, to find a job, prepares for departure and so on. Thus, the process from the moment of the decision to migrate (potential migration) to the proper implementation of the migration may take a long time (even several years). It is worth mentioning that all these stages depend on personal attitudes, values and migration desires, as well as on a variety of permanent and situational factors. So, a combination of push (economic, social and political hardships) and pull (comparative advantages) factors (Filipec et al., 2018, p. 36) influences the decision to migrate and determines the direction of movement.

Another aspect of this study concerns labor mobility. It is very close to territorial as it involves movements of workers across physical space (territorial mobility) and jobs (occupational mobility) (Long and Ferrie, 2005).

For the analysis of population's mobility changes after the coronavirus pandemic, the sociological panel survey was used. It was conducted by the authors in the autumns of 2013-2021 (except for 2017). Every year, on the

basis of a stratified sample, 500 questionnaires were distributed among unemployed persons – visitors of the Lviv City Employment Center. The major features of stratification are its sociodemographic characteristics, such as: gender, age and education. We set a 95 % confidence level with 5 % margin of error. The sociodemographic features of respondents did not differ significantly between the examined years. Gender ratio remained approximately the following: 40% males, 60% females. A majority of the unemployed had basic or complete higher education (70 %), 23% had technical and vocational education, and only 7% had complete secondary education. About 47 % of respondents were young people up to 35 years old, middle-aged persons (35–44 years old) comprised 31%, and older people (45 years and older) comprised 22 %.

Sociological interpretation and operationalization of the key concepts (which are dependent variables in this study) “potential territorial mobility” and “labour mobility” is presented in Table 1.

**Table 1:** *Interpretation of the key concepts*

<b>Concept</b>	<b>I level of interpretation (components)</b>	<b>II level of interpretation (indicators)</b>	<b>Operationalization (questions)</b>
Potential territorial mobility	Migration desires	Wish, willingness to migrate	If you had an opportunity to be employed abroad, what would you prefer: Would move abroad for permanent residence, for a few years to improve financial situation, for temporary work or for studying?
	Migration decision, plans	Formed intention to migrate, existence of a clear plan for migration	Are you planning to find employment abroad within the next 5 years?
	Readiness	Activities aimed at the realization of a migration plan	Have you made any preparations for the implementation of your migration plans?

Labor mobility	Changes across occupations (lateral or vertical)	Ability to change jobs (voluntary resignation), active position on the labor market (start a business), career movements	What is the main reason behind your unemployment? What are you willing to do to promptly solve the problem of your unemployment? Vertical career movement is not measured in this study
	Changes across physical space	Labour migration movements	Not measured in this study

Source: authors

Thus, changes in two dependent variables are investigated in the study: potential territorial mobility and labour mobility. These changes concern the pre-pandemic period, which refers to the period between 2013-2019, and the pandemic years – 2020-2021.

An important procedure of exploratory statistical analysis is the frequency analysis of the structure of primary data. Almost any research project begins with a frequency analysis of data in order to find out with what frequency the values of the features characterizing the object of modelling fall into different intervals. The simplest frequency analysis procedures are the compilation of frequency tables and histograms. Based on the results of the surveys, frequency tables are compiled that reflect the division of respondents by attitude - in our case, to the factors that affect the level of unemployment.

In the process of specifying models and evaluating their parameters, it is important to ensure that there are no anomalies among the primary data, since the presence of atypical observations and gross measurement errors often gives rise to a false impression of the structure and interaction among the studied objects.

The statistical hypotheses are:

$H_0$ : There is no statistically significant difference in the distribution of mobility indicators for the pre-pandemic and pandemic periods.

$H_1$ : There is statistically significant difference in the distribution of mobility indicators for the pre-pandemic and pandemic periods.

$\chi^2$  - test (Ringdal, 2007, p. 278-281) was used for verification of these hypotheses.

For analysis of potential mobility and its factors the method of nonmetric multidimensional scaling is used. Generally, the task of multidimensional

scaling is to reveal the structure of the research object (in our case, it is the migration desires). The procedure for implementing this method involves the analysis of subjective information concerning the proximity between the researched factors, which is based on the degree of certain parameters importance for respondents. To construct the geometric space, the SPSS statistical data processing package was used. The quality of the built model is determined using the indicators, namely Stress and RSQ, which vary from 0 to 1. If the Stress-value is close to 0, and RSQ close to 1, it indicates a good approximation of the model to reality.

### 3 LABOR MOBILITY

Voluntary resignation rate can serve as an indicator of mobility level of the economically active population which have freedom and possibility to make a choice. That's why labor mobility was studied through identifying the main reasons for unemployment. The results of the sociological survey are presented in Table 2. The share of voluntary resignations is the highest in 2018. It might have been caused by a certain stabilization of the economic situation and its slight improvement in Ukraine at that time.

During the period under research, it was only in 2020 that the highest level of closure of the enterprise was the main reason for unemployment. Reduction of personnel was also high that year. But it was the highest in 2014 – the year of significant political transformations and the war starting in the Eastern Ukraine.

It is also important to underline the high share of those who chose the option “other reasons” during the last year under research. Respondents had to specify those other reasons. And majority of those answers concerned the coronavirus and pandemic related restrictions.

**Table 2:** *Main reasons for unemployment, % of respondents*

Reasons for unemployment	2013	2014	2015	2016	2018	2019	2020	2021
Voluntary resignation, including the following reasons (in % to all reasons):	40	39.6	44.7	44.7	61.8	61	45.8	56
low wages	15.9	16.5	23.4	23.8	32.0	27.9	21.5	26.8
irregular payment of salaries	5.3	4	4.6	2.6	4.4	3.1	4.5	4.3

harmful, bad working conditions	4.2	3.3	4.6	6.4	5.6	6	3.8	3
inconvenient working schedule	5.6	5.5	2.9	7.3	6.8	9.6	3.2	8.8
changed place of residence	2.8	3	3.2	4.4	6.8	6.3	3.2	6.1
long distance from place of residence to workplace, long time spent on commuting	2	2	3,4	5	4.4	5.2	5.4	4
conflict with the staff or with the manager	4.2	5.3	2.6	5.2	1.8	2.9	4.2	3
Involuntary resignation, including the following reasons (in % to all reasons):	38.5	44.7	37.8	35.3	28.2	26,8	39.1	31.7
Closure of the enterprise	10.8	11.2	12.9	10.8	5.9	8.1	14.1	6.4
Change of enterprise's specialization	0.6	1.3	0.6	0.9	1.8	2.3	1.3	0.6
Reduction of personnel	19.3	25.4	20.3	17.5	13	9.6	20.2	15.2
Violation of labor discipline	0.3	0.8	0	0.3	0.3	0.3	0	0
End of contract	7.5	6	4	5.8	7.2	6.5	3.5	9.5
Couldn't find a job after graduation from the educational establishment	11.7	7	9.4	3.8	4.4	1.3	2.2	3.5
Couldn't find a job after working abroad	0.3	0.5	1.2	0	0.3	1.3	1	0.3
Other reasons	9.5	8.2	6.9	6.2	5.3	9.6	11.9	8.5
All	100	100	100	100	100	100	100	<b>100</b>

*Source: Sociological research conducted by the authors in 2013–2016, 2018–2021*

Another way to study labor mobility is identifying the most preferable ways of solving unemployment issues. Table 3 shows the answers to the question “What are you willing to do to promptly resolve the problem of your unemployment?” The majority of respondents chose the option of active search for work according to their profession in Ukraine every year under research. But the highest share of this answer was in 2014. It can be explained by the victory of the Revolution of Dignity (Euromaidan), election of a new president and government. Positive expectations for changes and hopes for better future were widespread at that time.

Desire to start one's own business in Ukraine was also a popular option throughout the years under research. But under the conditions of the

pandemic spreading in 2020 the share of such respondents was the smallest. The option “Move abroad for permanent residence” was also chosen the least frequently in 2020. also received the smallest number of choices in 2020.

**Table 3:** *Answers to the question “What are you willing to do to promptly solve the problem of your unemployment?” (in % of the number of observations, multiple options were allowed)*

Answers	2013	2014	2015	2016	2018	2019	2020	2021
Continue actively looking for a job according to my specialization in Ukraine	70.3	76.0	72.6	64.3	68.6	68	66.3	77.1
Obtain another specialization	18.9	19.0	16	15.1	16.9	15.6	18.9	15.2
Undergo special professional training or re-training	21.4	26.5	23.8	21.2	15.1	22.1	19.9	18.3
Change the type of activity	26.7	22.8	20	26.4	23.7	27.9	23.7	19.8
Start own business	28.9	21.3	23.5	29.6	24	21.4	17.6	17.4
Move to live and work in other regions of Ukraine	4.4	1.5	0.9	3.8	1.2	1.8	3.2	1.8
Move for temporary work to other regions of Ukraine without the change of the place of residence	1.4	1.8	1.2	2.3	1.5	1	1	0.9
Move for temporary work to other countries	5.8	6.0	8.1	6.1	6.2	4.9	4.5	3
Move to work abroad for a long period of time	9.7	5.8	9.5	6	6.5	4.7	4.5	2.7
Move abroad for permanent residence	8.9	7.5	6.8	4.1	3.8	4.2	2.6	2.7
Not willing to do anything	0.3	0.8	0.3	0.6	0.6	0.3	0.3	0.6
Other	0.6	0.8	0.3	0	3.8	0.5	1.3	1.5

*Source: Sociological research conducted by the authors in 2013–2016, 2018–2021*

#### 4 POTENTIAL TERRITORIAL MOBILITY

To study the potential territorial mobility, the following question was asked: “If you had an opportunity to be employed abroad, what would you prefer?” The question had six response options, which are presented in Table 4. The results of the sociological survey show that the biggest share of those who would move abroad for permanent residence is observed in 2013. It was a year of a very high level of population’s dissatisfaction with president’s and government’s activity and conditions in their country, which led to massive demonstrations and to Euromaidan. In 2017 a visa-free regime between Ukraine and the EU countries was introduced. As a result, in 2018 the number of those who would prefer moving abroad for temporary work was the largest (compared to other years studied). And in 2020 and 2021 – years when the pandemic was spreading – it was the group who would not move abroad at all that was the largest, exceeding one third of all respondents.

In order to give a better estimation of migration intentions’ dynamic development throughout the eight years under research, the Migration desire index (MDI) was calculated. The formula of the weighted average and point scale for its calculation was used (Ryndzak, 2019). Each of the answer options, which measures the degree of migration desires, received points from 0 to 5 (column 2 of Table 4). As such, MDI takes into account different levels of expressed desire to migrate. The results of the calculations of this index show that the lowest migration potential was in 2020 (at 2.3 points) and the highest one was in 2015 (2.9 points). The result for 2020 can be explained by the restrictions which were implemented as a response to the pandemic spreading and could influence not only real movement but the potential one as well. The active phase of the war in the East of Ukraine is one of the important factors of the highest value of MDI in 2015.

**Table 4:** *Migration desires of the unemployed (in % of the number of observations)*

Answers to the Questionnaire	Score in Points	2013	2014	2015	2016	2018	2019	2020	2021
Would move abroad for permanent residence	5	32.2	23.8	31.4	21.3	23.4	24.7	21.5	22

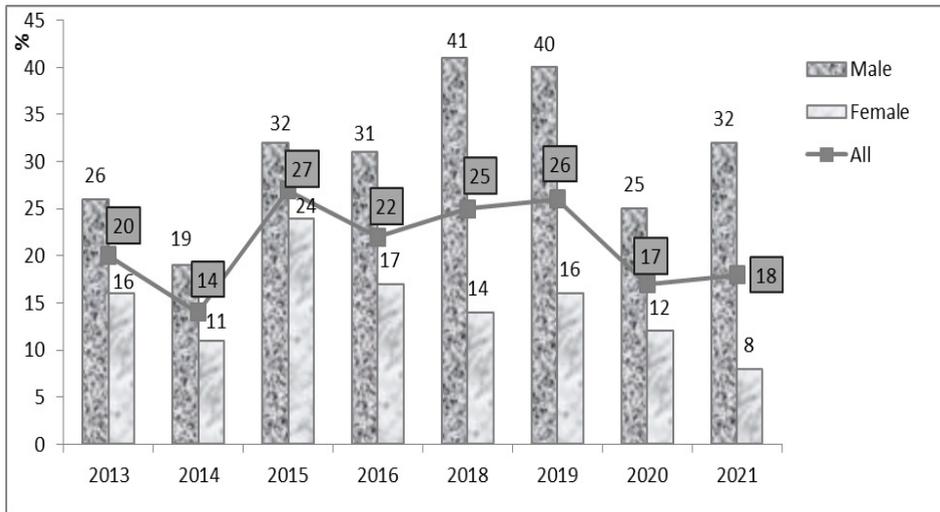
Would move abroad for a few years to improve the financial situation	4	17.2	17.5	18	18.6	16	18.8	15.7	14
Would move abroad for temporary work	3	7.5	11	10	13.6	21	12.8	10.3	10,4
Would move abroad only for studying or entertaining experience	2	14.7	16.5	12.3	12.7	13.9	16.7	16.3	17,7
Not sure	1	3.9	1.4	7.5	0.6	1.7	0.4	0	0
Would not move abroad	0	29.2	29.8	26	33.2	24	26.6	35.3	35,1
Migration Desires Index MDI		2.8	2.6	2.9	2.5	2.73	2.7	2.3	2,3

*Source: Sociological research conducted by the authors in 2013–2016, 2018–2021*

Then, in order to identify the share of those who had migration plans, the question “Are you planning to find employment abroad within the next 5 years?” was asked. Analysis of answers for the eight years under research shows that they are different (Graph 1). The smallest number of respondents planning to be employed abroad was in 2014 (only 14%) and in 2020 (17%). The result for 2014 can partly be explained by significant positive transformations in the political sphere and optimistic mood of the population in Ukraine. The result for the last year of research can be explained by the pandemic conditions.

Analysis of the affirmative answers to this question in gender distribution shows male predominance. Such result is not unexpected as a number of sociological studies show that males are most likely to have migration aspirations (Aslany et al., 2021, p. 20) and consequently have often been more involved in migration processes than females. But it is worth mentioning that in 2015 the share of men planning to move abroad grew significantly. Perhaps it was due to the intensification of hostilities in Eastern Ukraine; a deeper study is required on this issue. In 2020 the share of males having migration plans decreased by 15 percentage points in comparison with 2019, while such indicator for females is only 4 percentage points.

**Graph 1:** Existence of migration plans of the unemployed (in % of the respondents and in % of the respondents of each gender, who gave a positive response to this question)



Source: Sociological research conducted by the authors in 2013–2016, 2018–2021

Only during the last three stages of a panel survey (in 2019, 2020 and 2021) was the question about migration preparations asked (“Have you made any preparations for the implementation of your migration plans?”). The share of respondents who confirmed their preparation for migration was 18 % in 2019, 13 % in 2020 and 14 % in 2021. The share of those who had positive migration desires was 56 % in 2019, 47.5 % in 2020 and 46.4 % in 2021. The group of those who really planned to move abroad made up 26% in 2019, 17 % in 2020 and 18 % in 2021. Consequently, the coronavirus pandemic has reduced potential migration (territorial mobility) at all three stages of its manifestation. Specifically, the shares of potential permanent and temporary migrants (long-term and short-term) decreased in 2020 and 2021 compared to previous years.

## 5 STATISTICAL ANALYSIS OF MOBILITY IN PRE-PANDEMIC AND PANDEMIC PERIODS

Further analysis of the differences in the factors affecting mobility rates in the years before the pandemic (2013, 2015, 2016, 2018, 2019) and the years during the pandemic (2020, 2021) is based on frequency analysis.

2014 was an atypical year due to the political situation in the country, which is why it was excluded from the analysis. The distribution of nominal factors was verified using the chi-square test (Table 5).

**Table 5:** *Testing the hypothesis about the correspondence of parameters distributions using the chi-square test*

Parameters	Cases					Pearson Chi-Square		
	Valid		Missing		Total	Value	Asymptotic Significance (2-sided)	Decision
	N	Percent	N	Percent	N			
The main reason for unemployment * years	2290	99.8%	4	0.2%	2294	19.65	0.142	Retain the null hypothesis
What are you willing to do to promptly solve the problem of your unemployment? * years	2291	99.9%	3	0.1%	2294	11.87	0.374	Retain the null hypothesis
Are you planning to find employment abroad within the next 5 years?* years	2272	99.0%	22	1.0%	2294	0.81	0.000	Reject the null hypothesis

*Source: Sociological research conducted by the authors in 2013–2016, 2018–2021*

Based on chi-square test, we can conclude with 95 % probability that there are no statistically significant differences in the distribution of indicators such as “causes of unemployment” and “willingness to solve the problem of own employment”. At the same time, the distribution of answers to questions about employment plans abroad in pre-pandemic times differs at the 0.05 significance level from the distribution of answers during the pandemic.

Results of the nonmetric multidimensional scaling are presented in Table 6. For the pre-pandemic period indicators of model quality are as follows: Stress = 0,01336 and RSQ = 0,98664. For the pandemic period: Stress = 0,01696 and RSQ = 0,98304. Consequently, it provides grounds for

the conclusion that the model provides a good approximation to real data, which confirms its adequacy.

**Table 6:** *The model of multidimensional scaling*

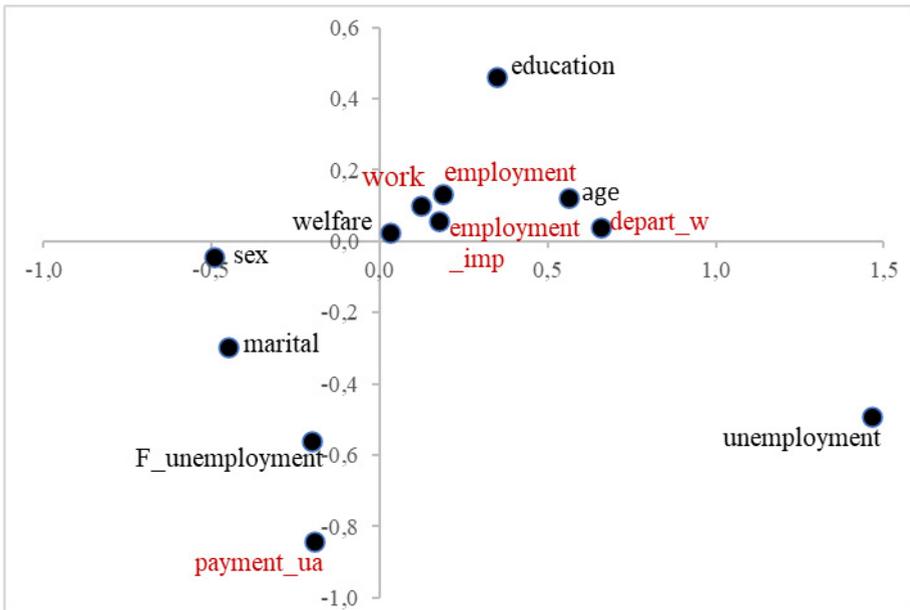
Parameters	Pre-pandemic period		Pandemic period	
	Dimension		Dimension	
	1	2	1	2
How do you estimate the opportunities for your employment in Ukraine?	0.189	0.133	-0.077	-0.112
In your opinion, will the opportunities of employment in Ukraine improve in the coming year?	0.175	0.055	-0.196	-0.018
How many times did you personally move abroad for temporary work?	0.656	0.039	-0.631	-0.082
Are you planning to be employed abroad in the nearest 5 years?	0.123	0.101	-0.424	-0.121
What level of average monthly salary could restrain foreign labour migration in Ukraine?	-0.195	-0.843	0.351	0.820
The main reason for unemployment	1.464	-0.491	1.497	-0.499
What are you willing to do to promptly solve the problem of your unemployment?	-0.204	-0.561	-0.314	-0.533
Estimation of family's financial situation	0.030	0.024	0.130	0.242
Education	0.349	0.463	0.363	0.407
Gender	-0.493	-0.043	-0.500	0.023
Age	0.561	0.123	0.497	0.017
Marital status	-0.452	-0.295	-0.435	-0.243

*Source: Sociological research conducted by the authors in 2013–2016, 2018–2021*

Factors characterizing the socio-demographic portrait of the respondents (gender, age, marital status and level of education) did not change their direction after the outbreak of the pandemic. This means that both in pre-pandemic times and during the pandemic period, they have practically the same influence on the decision to migrate.

Visualization of the obtained data (both the data sets of pre-pandemic and pandemic period) allowed us to divide the mobility parameters into two groups: those which impact on mobility underwent changes due to the impact of the pandemic, and those that were not affected by the pandemic (Graphs 2 and 3).

**Graph 2:** Visualization of mobility parameters in the constructed geometric space (data set of the pre-pandemic period)

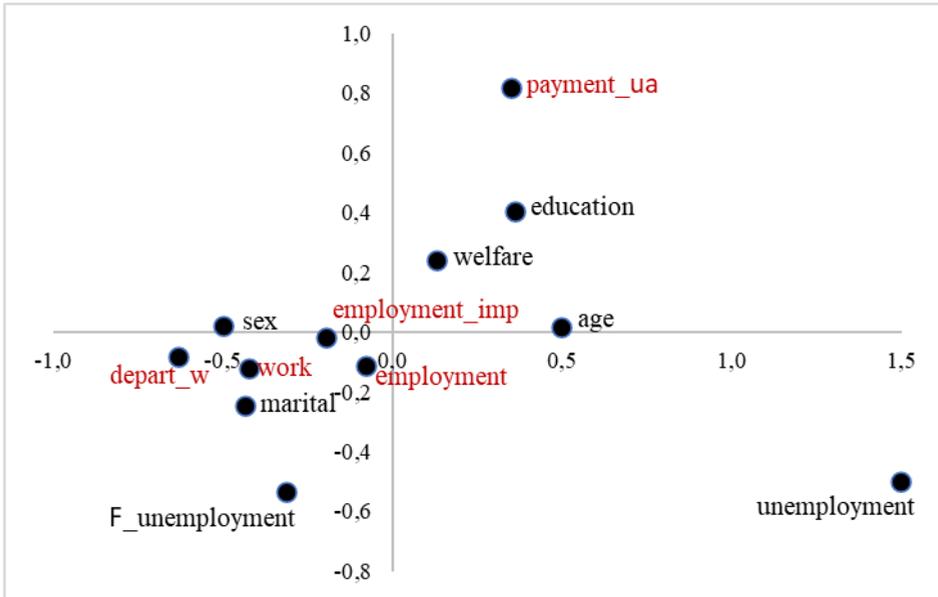


Note:

Parameters	Marking
How do you estimate the opportunities for your employment in Ukraine?	employment
In your opinion, will the opportunities of employment in Ukraine improve in the coming year?	employment_imp
How many times did you personally move abroad for temporary work?	depart_w
Are you planning to be employed abroad in the nearest 5 years?	work
What level of average monthly salary could restrain foreign labour migration in Ukraine?	payment_ua
The main reason for unemployment	unemployment
What are you willing to do to promptly solve the problem of your unemployment?	F_unemployment
Estimation of family's financial situation	welfare
Education	education
Gender	sex
Age	age
Marital status	marital

Source: the authors

**Graph 3:** Visualization of mobility parameters in the constructed geometric space (data set of the pandemic period)



Note:

Parameters	Marking
How do you estimate the opportunities for your employment in Ukraine?	employment
In your opinion, will the opportunities of employment in Ukraine improve in the coming year?	employment_imp
How many times did you personally move abroad for temporary work?	depart_w
Are you planning to be employed abroad in the nearest 5 years?	work
What level of average monthly salary could restrain foreign labour migration in Ukraine?	payment_ua
The main reason for unemployment	unemployment
What are you willing to do to promptly solve the problem of your unemployment?	F_unemployment
Estimation of family's financial situation	welfare
Education	education
Gender	sex
Age	age
Marital status	marital

Source: the authors

Comparison of the visualized geometric spaces confirms the hypothesis that the pandemic caused changes in the structure of factors that characterize

population mobility, but not for all of them. Changes are found in the cases of factors such as the estimation of the possibility of own employment in Ukraine, the hope of improving the possibility of employment in Ukraine, the number of trips to work abroad, plans to move abroad for employment in the near future, and the acceptable level of wages in Ukraine. It is worth noting that these factors changed both the spatial location and the direction.

## **CONCLUSION**

The pandemic related measures led to rising of unemployment rate, thus causing an increase in labor mobility. The structure of reasons for unemployment has also changed. Involuntary resignations are increasing, in particular for reasons including: "closure of the enterprise" and "reduction of personnel". It is well known that small and medium businesses have been suffering the most in the pandemic period. This situation most likely affects people's minds and their willingness to start their own business. The results of the panel survey show that the lowest level of desires to start own business was in 2020.

It came as no surprise that the Covid 19 coronavirus pandemic reduces real movements and related restrictions decreases the number of those who have migration plans. But our findings show that it also negatively influences population's migration desires and general potential mobility. Three levels of potential mobility were studied - migration desires, decision and readiness - and the influence of the pandemic was observed at all levels. Besides, the results of the research show that the share of those who were planning to move abroad for employment in the nearest future, decreased in the pandemic period. It is also worth mentioning that our findings reflect the national tendencies, revealed by the Institute of Sociology of the National Academy of Sciences of Ukraine (Vorona and Shulha, 2020, p. 525).

The chi-square test showed statistically significant differences in potential territorial mobility before and during the pandemic period. Concerning labor mobility, only the unemployment reasons related to enterprise closure stood out from the rest in 2020. But due to the visualization of mobility parameters in the constructed geometric space (in pre- pandemic period and during it) changes in some of them were found (for example, estimation of the possibility of own employment in Ukraine).

The value of this study is that it gives an opportunity to compare not only the last two years (a year before the pandemic – 2019 and during its spreading – 2020), but also to see the trends of the previous years. So

the peculiarities of the last year under research (2020) are much more visible against this background. Conducting the same survey during the second year of the pandemic spreading (2021) did not show any changes in respondents' potential territorial mobility, in spite of significant easing of mobility restrictions. The monitoring of population's mobility (especially potential territorial one) is a very important information basis for developing migration and socio-economic policy.

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