Google Cloud Services as Monitoring Tools and Prevention of Inclusion in the Rear Labor Market

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Abstract
The purpose of the work is to get acquainted with cloud-based information retrieval technologies used in applied research under conditions of uncertainty. The main task is to outline the state and argue for the prospects of using Google cloud services (in particular, Google Forms) as a tool for monitoring and preventing inclusion in the rear labor market, as well as considerations for improving the use of these services.

Keywords
Google Forms, Statistical Analysis, service, labor market

1. Introduction

The use of Google cloud services is of particular importance for improving the information and analytical support of the organization and regulating the development of the labor market. We agree that cloud technologies best meet the modern needs of solving urgent socio-economic problems of Ukrainian society[1, 2], including increasing the level and quality of access to socio-economic services, optimizing the relationship between the processes of scientific research, personnel training, and business needs in the workforce, organization, and development of the labor market environment with all its social security requirements. A demonstrative argument was, in particular, Resolution of the CMU "Some issues of ensuring the functioning of information and communication systems, electronic communication systems, public electronic registers under martial law" No. 263 of March 12, 2022 [3], the adoption of which allowed Ukrainian state institutions to use cloud technologies for the period of the war with the placement and processing of data in foreign data centers (with the setting of data backup, restoration of work after accidents, protection of systems from cyber attacks, support of population access to state social services, organizations workplaces of remote work, etc.). This step not only secured critical data from enemy attacks, but also opened a new window of opportunity for the Ukrainian state and society in the global world of digital transformation and the use of information technologies. Currently, the issue of rebuilding the economy and its regions is being actively discussed in Ukraine. The problem of inclusion in the labor market is acute, both in the immediate vicinity of the combat zone and in the rear.

Unfortunately, the existing system of accounting and statistics does not allow for full-fledged monitoring or prevention of this phenomenon (the basis is administrative data; expert surveys - focus groups; surveys of employers[4,5]).

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Conditions of uncertainty indicate that Google's cloud services can provide a way out of the situation. Approbation of methodical approaches should be started from the rear regions. Google Forms can be the very tool that will help to assess the state, factors, and risks of the development of labor markets thanks to the mass coverage of the active part of Internet users. Moreover, Google's cloud services can pave the way for the development of digital social analytics - data science as such, in which the social functions and social tasks of the digital world [6], analysis methods, and social technologies for working with data, the foundations and resources of their visualization will occupy a prominent place [7]. At the same time, studies of the social vulnerability of the population as a state of its inability to satisfy its needs not only in work but also in life in general [8, 9, 20]. The choice of a relevant cloud service is the key to reducing financial costs for the administration of social services, including in the labor market, it is also security, privacy, and transparency of social information in a constantly changing world.

2. Related Works

The topic of using Google cloud services to research the information and research infrastructure of the inclusive labor market is the subject of a wide scientific discourse. If we analyze the publication activity of scientists, we can come to the opinion that there are already several directions of realization of research interests in this field - search and systematization of the source base for conducting research through an account in Google Academy (Google Scholar); preparation, presentation and storage of analytical materials using the free office package from Google and its functionality [10]; organization of communication with other scientists - specialists in this subject with work planning through Google Calendar. A. Yatsyshyn's works are devoted to these and other similar questions [1], Yu. Nosenko, M. Popel, M. Shishkina [11], O.Hulai, V.Kabak [12], I.Demydov [19] and many others. The article by A. V. Yatsyshyn is devoted to the study of the features of the use of Google cloud services for development of informational and research competence of graduate students, doctoral students and scientists [1]; methodical recommendations Nosenko Yu.G. [3], Popel M.V. [4], Shishkina M.P. - for formation of pedagogical and scientific research skills, in particular using Office 365 and Google services: e-mail, electronic calendar, text editor, electronic book, electronic notebook, file storage, etc [11]; article by O. Hulai, V. Kabak - for analysis of Google's digital tools in terms of their use when organizing the educational process in distance and mixed formats; article by O.Hulai, V.Kabak - for developers of the functional scheme of the organization of training with the help of Google digital tools [12]]; article by P. Zhezhnych, A.Shilinh, and I.Demydov - for effectively plan educational services and to create quality content for specialized educational communities, taking into account the motivational intentions of potential entrants [24]. A clear confirmation of the expansion of the limits of application of Google cloud services for the study of financial markets was the work of S. Madeira, where the author examines the population's access to consumer credit, the choice of creditor, the decision on the amount of the loan and the behavior of families in Chile [21]. As for conducting online surveys using Google Forms, it has become widespread in various areas of social and humanitarian scientific knowledge. Research by N. Rohmah, H. Mohamad, M. Shofiyuddin convinces that Google forms can be one of the recommended programs for conducting online measurements.

Uses of Google Forms for early childhood education (ECE) in the digital age are:

1. Online registration forms for accepting new students
2. Activity registration form;
3. Survey of users of services for young children;
4. An alternative method of manufacturing digital offer boxes;
5. Collect criticism and proposals for the development of HVAC facilities;
6. Collection of parents' wishes regarding children's education or parental activities;
7. Tools for developing teachers' competence through research [22].

The Covid-19 pandemic gave birth to a new wave of interest among scientists in online survey tools using Google Forms. In a work devoted to this topic, in particular, V. Prasad (India)

substantiates the need to take into account precautionary measures at the stage of preparing Google forms (patients are people with special needs, with and without education, with and without knowledge of languages, etc.)[23]. The labor market was no exception. Especially when it comes to the phenomenon of inclusion on it.

3. Methodology and setup

The methodology of research on inclusion in the labor market involves the use of an interdisciplinary approach. On the one hand, it is about the potential of information technologies (in particular, about the advantages of Google cloud services, such as cost-effectiveness - free of charge; organizational simplicity - ease of use, accessibility from any digital device connected to the Internet, availability of the necessary functionality, high decision-making speed in conditions of uncertainty, etc.). On the other hand, methods and approaches in the field of social sciences that help to investigate the phenomenon of inclusion in the dimensions of social economy and politics. It is about the fact that the organization of data collection and systematization should be complemented by their interpretation, and theoretical explanation with the help of the conceptual and terminological and methodological apparatus of statistics, sociology, social and qualitative analysis. The latter helps to clarify the asymmetry of the characteristics of demand and supply in the rear labor market under the influence of the phenomenon of inclusion, to suggest ways to prevent the growth of social tension in society. In both cases, the applied methodology requires improvement. So, in the area of information technology, Google Forms cloud services make it possible to observe the principle of anonymity of the respondent, but there is no certainty that no more than one form is filled out from one account (of course, one-time filling of the form can be allowed provided that the account is preserved, its closed coding, however, this would mean a violation of the principle of anonymity).

The use of Google Forms is also associated with problems of guaranteeing data security, a limited functional platform, limited integration with other programs and services, inefficient response management, and even the banal lack of access to an Internet connection. Of course, there are also new prospects for the use of Google Forms cloud services for monitoring and prevention of inclusion in the labor market - from the processing of unstructured data (using natural language processing methods for interaction with users, a better understanding of the needs and problems of the audience) to the involvement of artificial intelligence for the development of personal inclusion programs, etc. In terms of social economy and politics, the organization of data collection on the phenomenon of inclusion in the labor market is extremely important, but it is only a separate part of the work on monitoring and preventing the risks of this phenomenon in the field of labor and employment. The formation of a selective population of labor force carriers with inclusion rests on the dispersion of sources of relevant information on the ground. The organization of the management system for the competitiveness of the services of a specific group of people with inclusion, in particular, with disabilities in the labor market, is at the junction of the economic effectiveness of the state employment policy (proactive measures) and the social responsibility of the state policy of social protection of the population (mainly passive instruments of influence). The issue of economic activity or inactivity of people with inclusion in the labor market is closely correlated with the degree of readiness of such citizens to be included in public life, with various risks of their socio-economic activity, including beliefs to accept or not to participate in online surveys (including using Google Forms).

In Ukraine, the war significantly changed the structure of inclusion in the labor market. It influenced its gender-age dimensions, the availability of jobs and social infrastructure for people with disabilities, and stereotypes regarding the development of new professions that took place in the relevant circles (including veterans) in the pre-war period. Inclusion in the labor market is a derivative of the risks of social vulnerability of the population. This phenomenon is considered a realized threat or damage or loss, which leads to the impossibility of meeting the basic needs of the population. The risks of social vulnerability of the population are all possible losses that lead to the impossibility of meeting the basic needs of the population even at a low level. At the same

time, losses caused by war, which a person defines as the most important (or most difficult), can be defined as vulnerability risks since overcoming them requires external assistance. The list of losses together with the frequency of their realization allows to determine a certain ordered set of risks of social vulnerability of the population of the Carpathian region during the war. The probability of occurrence of the risk of vulnerability is defined as the frequency of cases of inability to meet basic needs and cases of loss, in other words, it demonstrates the level of vulnerability of the population to specific risks in the region. These questions require supplementing the toolset of Google Forms cloud technologies with data processing and presentation software (both Microsoft Exel and IBM SPSS Statistics 22, Power BI).

4. Experiment

A special study was conducted to identify regularities, as well as features of the economic activity of socially vulnerable population groups in the rear labor market of Ukraine, to study the main risks of social vulnerability in the conditions of war. The survey was conducted using Google Forms in April 2023 (April 1, 2023 - April 10, 2023). The survey made it possible to form a reliable database of real needs, risks (dangers), and the possibilities of their elimination among the population of the so-called rear-Carpathian region of Ukraine (Lviv, Ivano-Frankivsk, Zakarpattia and Chernivtsi regions). The method of selection of units in the sample population assumed compliance with the sign of settlement status ("local resident", "forcefully displaced person"). The representativeness of the sample was ensured by the use of filter questions and corrective weighting factors. In total, 586 people were covered by the examination program. In the process of work, it was possible to select 154 questionnaires, which were filled out by adults - members of households in the region (while complying with the requirements of compliance of the household with the structure of division by size). Persons who did not live in the specified region at the time of the survey were not included in the survey. A feature of the survey with the help of the distribution of specific Google Forms was the mass coverage of the active part of Internet users. The algorithm of the statistical analysis of the resulting values of indicators of the level of satisfaction of socio-economic needs of the population of the Carpathian region of Ukraine is given in Table 1.

Table 1
Statistical analysis of indicators of the level of satisfaction of socio-economic needs of the population of the regions of the Carpathian region (local residents/internally displaced persons, I quarter of 2023)

List of basic needs	Statistical coefficients of the set of indicator values									
	The smallest value	The greatest value	Mode	Median	Average value	Range of variation	Dispersion	Mean square deviation	Oscillation coefficient, %	Quadratic coefficient of variation, %
	Min	*Max*			$\bar{x}$	*R*	σ^2	σ	V_R	V_σ
Income, amount of income (profit)	0/0	10/9	5/2	5/4	5,22/3,94	10/9	7,06/7,58	2,66/2,75	191,55/228,17	50,90/69,82
Things, essential items	0/0	10/10	10/8	7,5/5,5	6,55/5,33	10/10	8,96/6,94	2,99/2,63	152,64/187,50	45,69/49,40

Medicine	0/1	10/10	10/5	7/5	6,68/5,78	10/9	8,88/9,12	2,98/3,02	149,61/155,77	44,60/52,28
Medical services, qualified medical assistance	0/1	10/10	10/4	7/6	6,22/5,83	10/9	10,38/6,15	3,22/2,48	160,76/154,29	51,79/42,50
Food	1/2	10/10	10/8	8/6,5	7,68/6,33	9/8	5,36/6,94	2,32/2,63	117,24/126,32	30,16/41,60
Housing, place of residence	1/0	10/10	10/10	9/5,5	8,54/5,50	9/10	4,25/10,50	2,06/3,24	105,43/181,82	24,15/58,92
Residential and communal living conditions	0/1	10/10	10/4	8/5	7,10/5,33	10/9	6,46/7,41	2,54/2,72	140,79/168,75	35,79/51,05
Safety of life	0/0	10/10	5/5	5/5	5,80/5,67	10/10	6,83/7,53	2,61/2,74	172,37/176,47	45,04/48,42
Availability of a place of work	0/0	10/10	10/0	7/5	6,56/4,72	10/10	9,48/13,51	3,08/3,68	152,47/211,76	46,94/77,83
The possibility of learning, self-development	0/0	10/10	8/4	7/5	6,72/5,17	10/10	7,24/8,85	2,69/2,98	148,80/193,55	40,04/57,59
Psycho-emotional stability	0/0	10/10	5/5	5/4,5	4,71/4,28	10/10	6,10/6,57	2,47/2,56	212,17/233,77	52,41/59,90

In order to study the social vulnerability of the population of the region to the impact of socio-economic risks, the respondents were asked to rate the weight of personal losses related to the war. As a result, topics that are painful in Ukrainian society such as "loss of a sense of security and moral and psychological peace", "large-scale damage to the country", and "life of familiar and unfamiliar military or civilian citizens" were in the first place. This additionally confirmed that they especially "work" for the consolidation of the Ukrainian people (Table 2).

Table 2
Self-assessment of your most important losses caused by full-scale war, % (The proportion of respondents citing loss as their most important loss caused by a full-scale invasion)

Losses caused by war	The share of respondents who attribute the loss to the most important		
	All interviewed	IDPs	Not an IDP
Lack of security and moral and psychological peace	72,7	66,7	73,5
Large-scale damage to the country (destroyed cities, villages, infrastructure, economy, etc.)	69,5	55,6	70,6
The lives of familiar and unfamiliar soldiers or civilians	61	44,4	63,2
A happy life is possible	57,8	66,7	57,4
Profit, income	37	61,1	34,6
My physical health or of the loved ones	31,8	50	29,4
Opportunities for career or personal growth and development	26	27,8	26,5

Work (place of work)	19,5	50	16,2
Life of relatives	18,8	22,2	18,4
Ability to work	13	27,8	9,6
Housing, place of residence (damage, destruction, occupation)	13	61,6	6,6
Immovable or movable property that is destroyed or damaged	9,7	33,3	6,6

It is worth adding that these things are felt almost equally among locals and among IDPs. As for other components of vulnerability - personal and other material losses, the indicators are much higher among IDPs. Attention is also drawn to the uncertainty and fear of IDPs in the labor market: in particular, the loss of profit (income) is 1.8 times higher than among the local population; loss of working capacity by 2.9 times; loss of work as place of work and source of income by 3.1 times; destruction or damage to one's own immovable or movable property in 5.1 times; loss of housing, place of residence (damage, occupation, destruction, etc.) in 9.3 times.

However, all outlined losses with more/less the same frequency are clocked as the heaviest. That is, all the considered risks of social vulnerability of the population are in one way or another connected with the war and genocidal terrorist activities against the Ukrainian people. The appearance of the former is directly caused by military actions (such as the loss of a sense of security and to a large extent the loss of psycho-emotional stability, loss of living space for internally displaced persons, loss of work and income in connection with forced relocation, etc.), the latter is caused indirectly (loss of level income, lack of food and essential goods, etc.). It is obvious that many of the indicated risks also occur in the peaceful life of socially vulnerable population groups, but their levels are much lower. To assess the satisfaction of basic needs, respondents were asked to self-assess their level of satisfaction, providing a satisfaction rating for each need from 0 (absolutely unsatisfied, complete absence) to 10 points (completely satisfied). The overall satisfaction index was calculated as an arithmetic mean (Table 3).

Table 3
The average assessment of satisfaction of the basic needs of the population of the Carpathian region in the first quarter of 2023

Basic needs of the population	Arithmetic average of satisfaction levels		
	All interviewed	IDPs	Not an IDP
Psychoemotional stability	4,7	4,3	4,7
Income, its size	5,1	3,9	5,2
Safety of life	5,8	5,7	5,8
Work, place of work	6,3	4,7	6,6
Medical services, qualified medical assistance	6,2	5,8	6,2
Necessary primary items	6,4	5,3	6,6
Opportunity for learning and self-development	6,5	5,2	6,7
Medicine	6,6	5,8	6,7
Residential and communal conditions	6,9	5,3	7,1
Food and different consumable products	7,5	6,3	7,7
Housing, place of residence	8,2	5,5	8,5

The average indicator of satisfaction of needs is informative only in the case when the average value is typical for a homogeneous population. The statistical analysis obtained as a result of the survey of indicators of satisfaction of the needs of the population of the Carpathian region in the 1st quarter of 2023 (Table 1) gives reasons to assert that the values of satisfaction with such needs as "food, foodstuffs" and "housing" can be considered a homogeneous set of values of the

indicator of satisfaction, place of residence", the average satisfaction rating of which is simultaneously the highest (7.5 and 8.2, respectively). In general, the least satisfied are the needs for psycho-emotional stability, income (required level of income), availability of a place of work for IDPs, and security of life.

In order to stratify the level of life satisfaction, the rating scale was conditionally divided into several subgroups (Fig. 1). Critically low level of need satisfaction was considered a level from 0 to 2 points inclusive. This meant that households with this level do not cope with threats, they cannot provide even a low level of satisfaction of basic needs, and therefore are socially vulnerable and need help in facilitating the satisfaction of a specific need.

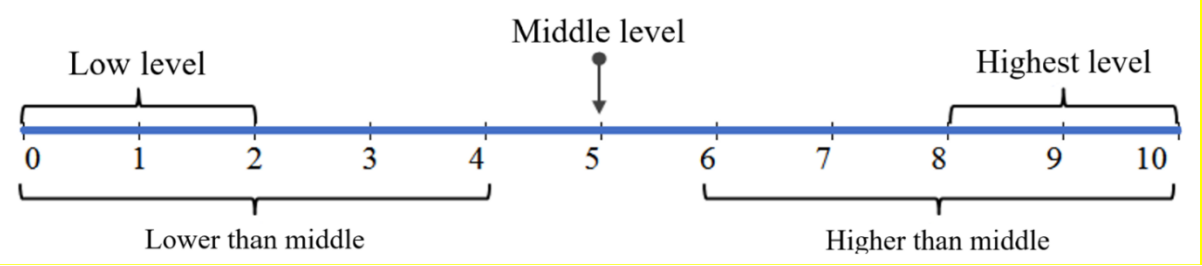

Figure 1: The scale of levels of satisfaction with the needs of the population *suggested by the authors

A critically low level of need satisfaction determines vulnerability according to the indicator of satisfaction of this need. In this way, the social vulnerability of the population of the Carpathian region is assessed by indicators reflecting the satisfaction of basic needs. Accordingly, consideration of the satisfaction of the needs of the population covered by the survey will allow us to investigate the social vulnerability according to the indicators of the social vulnerability of the population, which reflect the satisfaction of the basic needs of the population of the Carpathian region: basic needs - food, foodstuffs; essential goods; living conditions – availability of housing, place of residence and housing and communal living conditions; health care - drugs, medicines, medical services and qualified medical assistance; means of livelihood - income, availability of a place of work, financial and other non-monetary assistance; education - opportunities for learning, self-development; protection - safety of life, psycho-emotional stability

5. Results

The conducted online survey of the population of the Carpathian region made it possible to form a measure of certain inclusion in the rear labor market, to diagnose a wider range of problems in the social life of residents of the rear region.At the same time, establishes that the use of the average indicator of needs satisfaction cannot be used as an informative source of information due to too high variation indicators, which indicates a high heterogeneity of the population. Internally displaced persons have lower needs satisfaction ratings and higher heterogeneity of responses than the local population. It should be noted that insufficient representativeness occurred in the segment of single elderly persons and other particularly passive population groups. Internally displaced persons (IDPs) made up 9.4% of the persons surveyed.

In general, the novelty of the research is determined by the improvement of methodological support for the analysis of inclusion in the rear labor market in war conditions using an interdisciplinary approach. The technical aspects of the work concern the addition of Google Forms cloud technology tool set with data processing and presentation software (both Microsoft Excel and IBM SPSS Statistics 22, Power BI).

The socio-economic aspects of the research are aimed at implementing the provisions of the theory of risks into the general framework of the methodology for the analysis of indicators of social vulnerability of persons with inclusion in the rear labor market. It is proposed to consider the social vulnerability of the workforce with inclusion as a characteristic of the degree of

inability of its carriers to meet the requirements of specific development mechanisms - life support, compensation, and transformation. So, in particular, the first - to satisfy the need to protect the safety of life; the second - to satisfy the need to restore one's strength; third, to satisfy the need for the transformation of the prerequisites for development (by raising the standard of living, increasing the opportunities for education and employment, etc.). By the way, meeting the needs for compensation of forces and resources (survival condition) requires political, legislative, financial, and economic efforts, as well as organizational measures to prevent possible damage or correct the damage (including rescue operations). The needs of development (transformation) are mostly solved by financial and economic means.

Let us dwell in more detail on individual components of the social security of the population of the region, as well as on considerations for improving the use of the offered services (Table 4).

Basic needs. The population of the Carpathian region is provided with food products, and 77.5% rate satisfaction with the sufficiency of food products in their families from 6 to 10 points, that is, above the average level. Less than 3% of those surveyed had a critically low level of food satisfaction, including households with a low level of income per family member and IDP households. The satisfaction of the need for basic necessities is lower than the need for food. According to this indicator, 14% of those surveyed were socially vulnerable. 27.9% of respondents rated satisfaction of this need as 4 points or less. Among them, there are no households without pensioners and unemployed people. A low level of income and the presence of IDP status significantly increase the chances of being socially vulnerable according to this indicator.

Accommodation. The population's satisfaction with the need for housing as a place of residence has the highest indicators, so 83.8% of respondents rate it as 6 or more points. Less than 5% of those covered by the survey need help in solving the problem of housing availability, half of whom are internally displaced persons, and the other half - are households with a monthly income of up to UAH 2,500, per family member. According to the results of the survey, 7% of those covered by the survey were socially vulnerable in terms of housing and communal living conditions. Their affiliation is significantly determined by the availability of housing, place of residence (satisfaction of the need for "place of residence") and the level of monthly income per person (table 4).

Having the status of an IDP affects the level of satisfaction of the need for "housing and communal living conditions". Internally displaced persons have a lower level of satisfaction with a need and are three times more likely to have a critically low level of satisfaction of a given need. However, the presence of IDP status as well as the frequency of financial assistance are not determining factors of the appearance of this social risk, they are reflected in the appearance of such threats as: lack of a permanent place of residence, and a decrease in income per person, an increase in expenses, etc.

Health care. Health problems require immediate intervention and the provision of necessary medical assistance. According to the results of the survey, 17.9% of people need help in obtaining qualified medical care, 12.3% - in the availability of medicines. Only the amount of income per person is decisive in the satisfaction of these needs. The presence of IDP status does not explain social vulnerability according to these indicators. The availability of drugs and medicines is determined by the level of income. Among IDPs, the probability of being socially vulnerable and in need of qualified medical care is much lower than among permanent residents. It is obvious that such a situation is most influenced by one's own experience and objective comparisons.

Means of livelihood. The amount of income per person and the availability and satisfaction with the availability of a place of work significantly affect the social vulnerability of the population. Among those surveyed, 11.1% of the population in the first quarter had average per capita incomes below the poverty line. More than a third (37.2%) received an average monthly income of UAH 2,500. up to UAH 5,000 per person. Thus, almost half of the surveyed population of the Carpathian region had an income of up to 5,000 thousand/person. Among them, the absolute majority of socially vulnerable persons according to all indicators. Less than one-fifth (18.8%) of the respondents had an average monthly income per person of UAH 10,000 or more.

Among them, the least socially vulnerable persons were socially vulnerable persons for only 3 out of 11 indicators.

Livelihood loss is one of the most common and severe losses of a population as a result of war, after the loss of psycho-emotional stability, security, and moral and psychological losses. More than half (58%) of the respondents recognize the loss of income and profit as one of the most important material losses associated with a large-scale war. Among them, 31% also lost their job as the main source of income. Satisfaction with income and profit correlates with such factors as the amount of income per household, the number of unemployed people and the number of pensioners in the family, satisfaction with the availability of work, places of work.

Table 4

Distribution of surveyed households of the Carpathian region by levels of satisfaction of basic needs (According to the results of our own survey, based on the self-assessment of the level of satisfaction of the population's needs in the 1st quarter of 2023)

Vulnerability indicators	Critically Low (Socially Vulnerable)		Below average (low level)		Average		Above average		High and highest	
	% of respondents	% of persons covered by the survey	% of respondents	% of persons covered by the survey	% of respondents	% of persons covered by the survey	% of respondents	% of persons covered by the survey	% of respondents	% of persons covered by the survey
Food, consumable products	3,9	2,7	15,6	15,7	7,8	6,8	77,3	77,5	59,1	60,1
Housing, place of residence	3,9	4,8	10,4	10,9	5,8	4,9	83,8	84,1	74,7	75,4
Residential and communal conditions	5,8	7,0	18,8	17,9	14,9	14,7	66,2	67,4	50,0	52,0
Opportunity for learning and self-development	9,1	7,7	20,8	20,5	14,9	15,0	64,3	64,5	46,1	45,7
Safety of life	11,0	11,8	30,5	31,1	20,8	20,0	48,7	49,0	27,9	29,2
Medicine	12,3	12,3	26,0	25,6	11,7	14,5	62,3	59,9	48,1	46,6
Necessary primary items	14,9	14,0	27,9	27,6	11,7	11,6	60,4	60,8	46,8	47,1
Work, place of work	15,6	16,4	24,0	24,9	16,2	15,9	59,7	59,2	44,8	43,5
Income, its size	18,2	16,6	39,6	38,9	17,5	17,4	42,9	43,7	18,8	17,7
Medical services, qualified medical assistance	17,5	17,9	29,2	29,9	11,0	12,5	59,7	57,7	41,6	40,1
Psychoemotional stability	22,1	25,6	42,9	45,2	23,4	21,2	33,8%	33,6	11,7	11,3

The highest probability of being socially vulnerable according to the indicator of the amount of income and profit is in those households whose monthly income per person is less than UAH 2,500. Yes, 40% of them are socially vulnerable, 39% are IDPs (closely related to the lack of work, places of work for IDPs), every third (33%) of those households with three able-bodied

unemployed or three pensioners (unable to work), 22.6% of respondents from among those whose households have one child.

The level of satisfaction of the need for a job, a place of work mostly correlates with the same factors, which is obvious, taking into account the relationship between the satisfaction of the need for a place of work and satisfaction with income. Also, the share of socially vulnerable persons in households with one child is growing significantly (Figure 2).

The majority of the surveyed population of the Carpathian region did not receive any financial or other non-material assistance during the first quarter of 2023. Only 5% of households covered by the survey constantly (systematically) received financial assistance in the form of additional payments, or assistance from charitable organizations relatives, or acquaintances. 15% of surveyed households sometimes received such assistance. The availability of permanent assistance has a significant effect on reducing the level of social vulnerability according to the vast majority of indicators. Just as a high level of household income contributes to reducing the level of vulnerability on all indicators, even such as the feeling of security.

Education. The entire population of the Carpathian region is satisfied with the opportunities for self-development and education. According to this indicator, 7.7% of those covered by the survey are socially vulnerable, of which 5.5% are members of households with an average monthly income per person of up to UAH 5,000, 1.7% are IDPs.

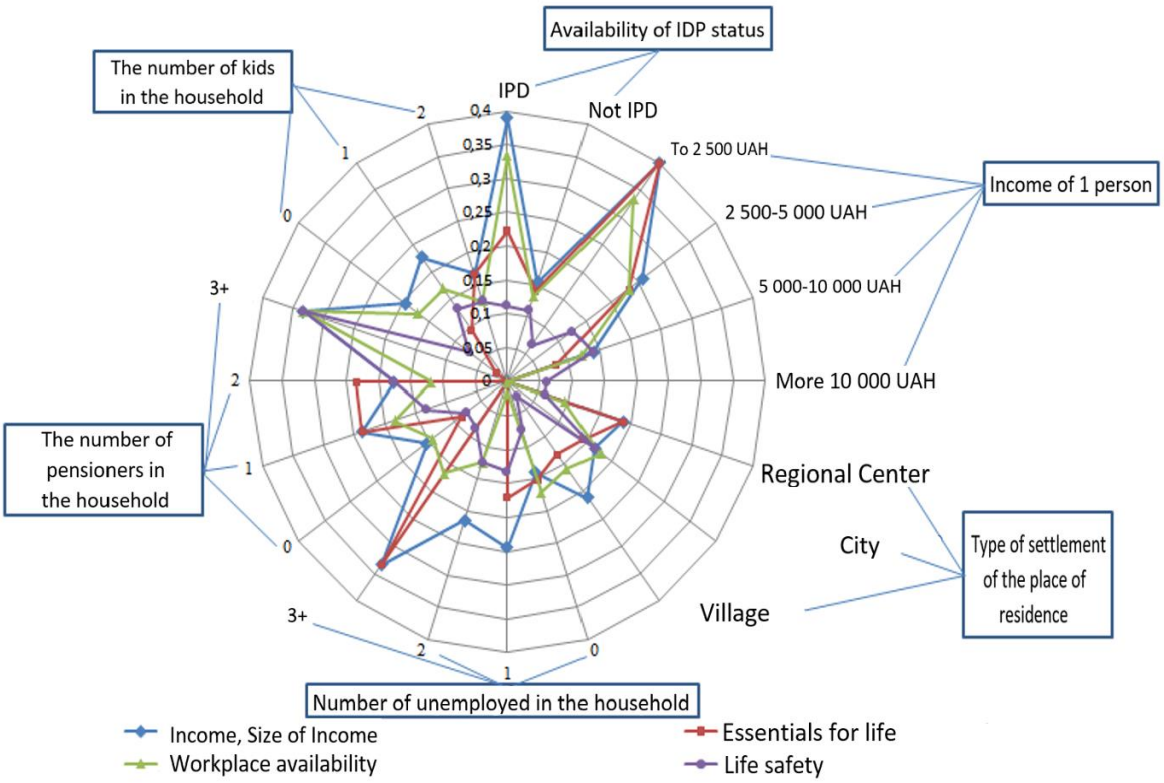

Figure 2: The probability of the emergence of risks of social vulnerability of the population of the Carpathian region in the 1st quarter of 2023 according to vulnerability factors

Protection. The highest level of social vulnerability of the population of the Carpathian region according to indicators of population protection, which is evident during the war. At the time of the survey, the Carpathian region was the region with the lowest civilian casualties and the least destruction. Therefore, 11.8% of respondents had a critically low level of satisfaction with the need for life safety of the population of the region. The situation with a sense of psycho-emotional stability is much worse. More than a quarter of respondents needed help, 7.1% of respondents received psychological help, and another 20.8% needed such help, but did not receive it for one reason or another (lack of opportunities, lack of information, low level of availability of

psychological services). It is significant that indicators of social vulnerability according to security indicators among IDPs are lower than among the permanent population.

The most and least widespread risks of social vulnerability of the population of the Carpathian region in the first quarter of 2023 are highlighted according to the values of the levels of vulnerability of the population of the region (Fig. 3).

The result of the study is the determination of the probability of the appearance of risks of social vulnerability of the population of the Carpathian region at the beginning of 2023, the identification of socially vulnerable groups of the population according to the levels of vulnerability to the main risks, as well as the study of the relationship between the levels of vulnerability and the main characteristics of the respondents covered by the survey.

Since the population of respondents is heterogeneous, as is the population in society, an additional detailed analysis of the demographic and social characteristics of the groups of respondents, formed by the value of the level of satisfaction of needs, was conducted. Particular attention is paid to the identification of socially vulnerable groups of the population of the Carpathian region during a full-scale war and to the determination of the probability of the appearance of risks of vulnerability. Quantitative characteristics of risks, such as volume or cost of loss, are not determined. The risk of social vulnerability is defined as a specific loss or damage, as a result of which a person (group of persons) cannot meet their basic needs. The occurrence of such a risk is determined by the presence of a certain prerequisite, such as a factor (factor or threat) and the probability of the occurrence of the risk (the frequency of occurrence of the risk, determined in homogeneous populations).

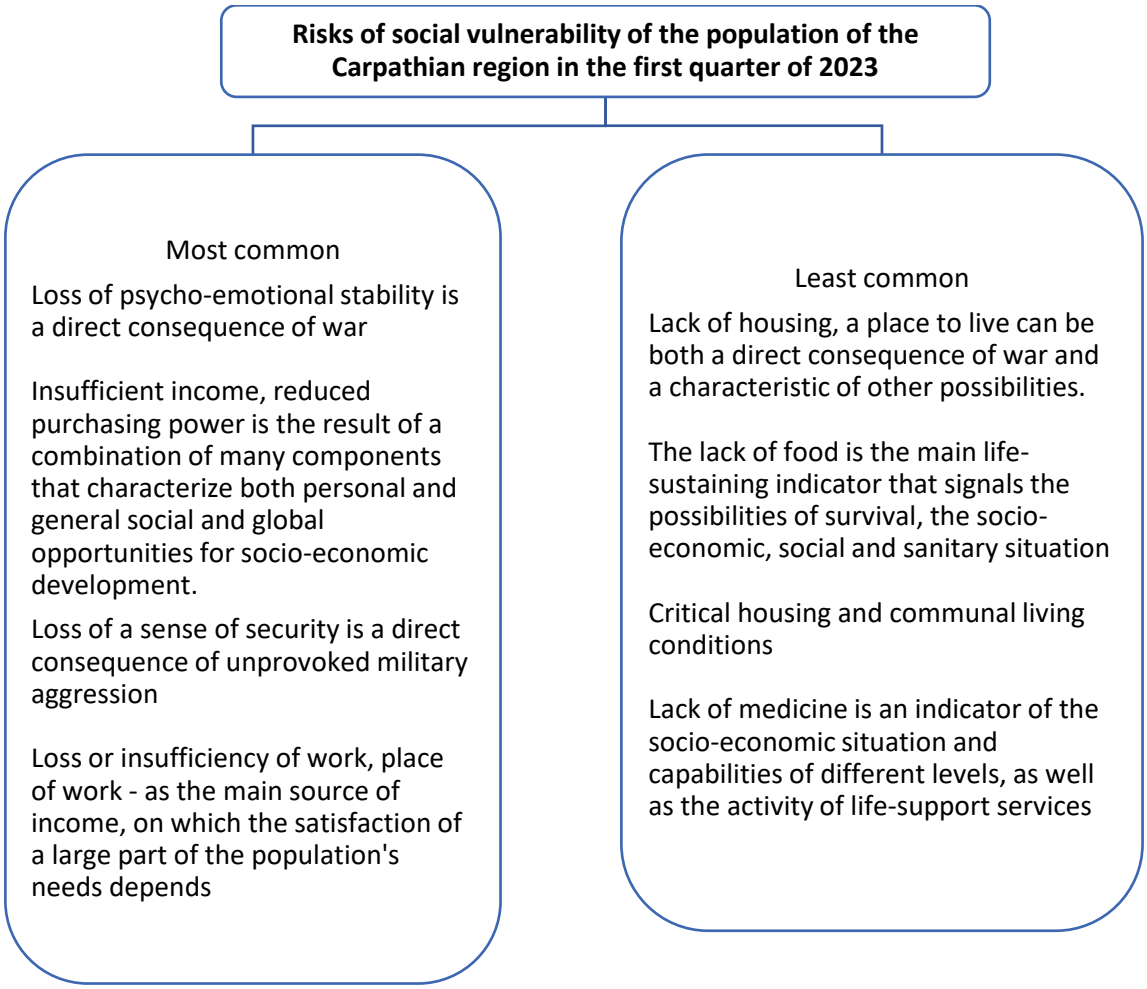

Figure 3: The most and least widespread risks of social vulnerability of the population of the Carpathian region in the 1st quarter of 2023.

6. Discussions

The conducted research was not without controversial moments. Thus, on the basis of the analysis of the survey results, the factors - growth (stimulators) and factors - reduction (where stimulators) of the social vulnerability of the population of the Carpathian region were determined, and their rating was determined according to the influence on the probability of the occurrence of the risk of social vulnerability (Fig. 4). The survey covered households without children (26.6%) and households with one (34.4%) or two (31.2%) children. Households with three children accounted for only 7.8% of respondents. The presence of children in the household affects expenditure and average income per capita but is not a determinant for the emergence of risks of social vulnerability. On the contrary, there is a significant decrease in the probability of the risk of social vulnerability in households without children. This suggests that in households with one or two children, the risk of vulnerability is correlated with the level of income and financial support of the household.

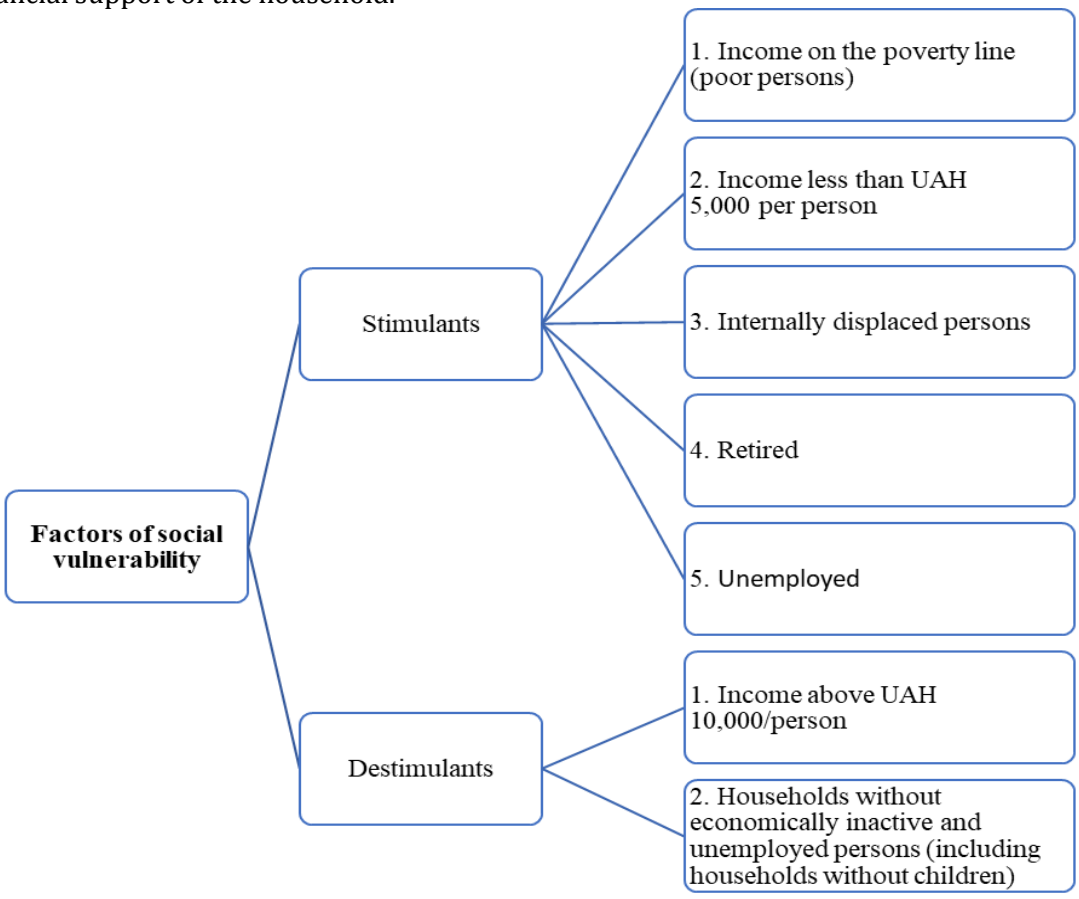

Figure 4: Rating of factors of social vulnerability of the population of the Carpathian region (2023).

7. Conclusions

The topic of social vulnerability of the population, inclusion in the labor market in the conditions of war has become extremely relevant for Ukrainian society. In the conditions that have developed, the question arises of determining the real state of problems, the possibilities of prevention and their overcoming. Rights and responsibilities rest on the state, business, and the population itself. In the conditions of the relatively remote Carpathian region of Ukraine, where both local residents and a large number of forcibly displaced people live, solving the problems requires special research.

Among the tools for monitoring and preventing inclusion in the labor market, Google's cloud services occupy a favorable place. It is a fairly cheap, convenient, and fairly simple tool that, in conditions of war and shortage of resources, allows you to collect data for the development of operational solutions and quickly find ways to solve problems. However, in order to develop a more balanced, effective state policy, an interdisciplinary approach should be used, which involves supplementing the Google Forms cloud technology toolkit with a number of additional methodological techniques, using data processing and presentation software such as Microsoft Excel, IBM SPSS Statistics 22, Power BI. Moreover, it includes provisions of risk theory, methods and techniques of analysis of social economy and politics, etc. Google Cloud services are an organic component of the development of digital socio-analytics - data science, where new social functions and social tasks of the digital world, modified algorithms, technologies for working with data, and the foundations and resources of their visualization occupy a prominent place. Research on the social vulnerability of the population (the state of inability to meet one's needs not only in work but also in life in general) will be more objective. At the same time, the social vulnerability of the workforce with inclusion is taken as a characteristic of the degree of inability of its carriers to meet the requirements of specific development mechanisms - life support, compensation, and transformation. So, in particular, the first - is to satisfy the need to protect the safety of life; the second is to satisfy the need to restore one's own forces and resources; thirdly, to satisfy the need for the transformation of the prerequisites for development (by raising the standard of living, increasing the opportunities for education and employment, etc.).

Thus, according to the results of the conducted research, it was possible to single out the most and least widespread risks of social vulnerability and inclusion in the rear labor market of Ukraine, in particular, its regions of the Carpathian region. Thus, the most common risks include: loss of psycho-emotional stability – a direct consequence of the war; insufficient income, decrease in purchasing power - the result of a combination of many components that characterize both personal and general social and global opportunities for socio-economic development; the loss of a sense of security is a direct consequence of unprovoked military aggression; loss or shortage of work, places of work - as the main source of income, on which the satisfaction of a large part of the population's needs depends. The least common risks: lack of housing, and a place to live - can be both a direct consequence of war and a characteristic of other human capabilities; shortage of food and products is the main life-sustaining indicator that signals the possibilities of survival, the socioeconomic, social and sanitary situation; the lack of drugs and medicines is an indicator of the socio-economic situation and capabilities of different levels, as well as the activity of life-support services. Each of the conclusions is a prerequisite for work within the framework of the next iteration of prevention of inclusion in the rear labor market, even in the part of modeling the social protection of the unemployed (starting from the paradigm of social solidarity dominant in previous history to the paradigm of contractual exchange and the paradigm of civil rights).

Summarizing the results of the research, it can be stated that the useless Google Forms service is really currently the most simple and effective tool for organizing ongoing work on monitoring and organizing the prevention of inclusion in the labor market. The results obtained with its help confirmed that the social vulnerability of the population of the region depends on the general state of the security situation and the strategic prospects of the territory's development. Forcedly displaced persons from regions with an increased risk of man-made disasters - point to the risks of inclusion corresponding to environmental factors. When it comes to the cohort of respondents from the regions of hostilities, life safety factors come to the fore. Another part of the interviewees, who are representatives of regions with established conditions of socio-economic development, emphasize the limitations of access to benefits and opportunities. That is, the useless Google Forms service will have different geospatial and time horizons of application in the future. After all, in Ukraine (at least in the rear regions, where it is possible), it is already necessary to work on the formation of a system of local accounting and statistics. Moreover, in order to harmonize administrative and statistical data with their detailing to the level of territorial communities or their parts; analyze available sources of statistical and administrative data, features of the practice of collecting, storing, exchanging, and providing this data; identification of best practices, international experience in the field of development and

functioning of municipal statistics; development of the concept of municipal (local) statistics in Ukraine and the corresponding draft law.

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