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Assessment of the socio-economic performance of vulnerable and depressed territories in Kazakhstan

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ABSTRACT
Relevance. In Kazakhstan, regional disparities present a major challenge to national development. The COVID-19 pandemic and the recent political turmoil exacerbated this situation because smaller towns and settlements in less accessible regions lack the resources to cope with the consequences of the crisis on their own.
Research objective. The study aims to propose a methodological approach to assessing the socio-economic performance of vulnerable and depressed territories.
Data and methods. The methodological approach is developed taking into account the specifics and peculiarities of territorial development, as well as the availability of statistical information in small towns and settlements. The depressiveness and vulnerability ranking were compiled for monotowns and small towns in Kazakhstan. The study relies on the statistical data provided by the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan.
Results. The proposed methodology was applied to analyze the aggregate indicators characterizing the socio-economic performance of towns and settlements in East Kazakhstan, North Kazakhstan, and Zhambyl regions between 2009 and 2019. The towns of Ridder, Semey, Mamlyutka, Sergeevka, Karatau, and Janatas were classified as severely depressed areas. The same towns and the town of Bulaev demonstrated the highest levels of vulnerability.
Conclusions. The research findings may be of interest to government agencies of all levels. The methodology can be used for assessing the socio-economic performance of lagging areas for more informed decision- and policy-making.

KEYWORDS
region, regional economy, vulnerability, depressed areas, territories, monotowns, small towns, Kazakhstan

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Оценка социально-экономического положения уязвимых и депрессивных территорий в Казахстане

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АННОТАЦИЯ
Актуальность. В Казахстане региональные различия представляют серьезную проблему для национального развития. Пандемия COVID-19 и недавние политические потрясения усугубили эту ситуацию, поскольку у небольших городов и поселков в менее доступных регионах не хватает ресурсов, чтобы самостоятельно справиться с последствиями кризиса.
Цель исследования – предложить методологический подход к оценке социально-экономических показателей уязвимых и депрессивных территорий.
Данные и методы. Методический подход разработан с учетом специфики и особенностей территориального развития, а также наличия статистической информации в малых городах и поселках. Рейтинг депрессивности и уязвимости составлен для моногородов и малых городов Казахстана. Исследование опирается на статистические данные, предоставленные Агентством стратегического планирования и реформ Республики Казахстан.
Результаты. Предложенная методика применена для анализа сводных показателей, характеризующих социально-экономическую деятельность городов и поселков Восточно-Казахстанской, Северо-Казахстанской и Жамбылской областей за 2009–2019 годы. Города Риддер, Семей, Мамлютка, Сергеевка, Каратау, Жанатас были отнесены к сильно депрессивным рай-

КЛЮЧЕВЫЕ СЛОВА
регион, региональная экономика, уязвимость, депрессивные районы, территории, моногорода, малые города, Казахстан

БЛАГОДАРНОСТИ
Статья подготовлена в рамках проекта грантового финансирования Министерства образования и науки Республики Казахстан «Приоритеты и механизмы инклюзивного регионального развития Казахстана в условиях преодоления спада экономики» (ИРН AP09259004).

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онам. Эти же города и город Булаев продемонстрировали наивысший уровень уязвимости.
Выводы. Результаты исследования могут быть интересны государственным органам всех уровней. Эту методологию можно использовать для оценки социально-экономических показателей отстающих регионов для принятия более обоснованных решений и планирования политики.

ДЛЯ ЦИТИРОВАНИЯ
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评估哈萨克斯坦脆弱和萧条地区的社会经济状况

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摘要
现实性：哈萨克斯坦的地区差异对国家发展构成了严重挑战。新冠疫情和最近的政治动荡加剧了这种情况，交通不便的小城市和乡镇缺乏自行应对危机的资源。
研究目标：提出评估脆弱和萧条地区社会经济指标的方法。
数据和方法：该研究方法的制定考虑了地区发展的具体情况和特点，以及小城市和乡镇现有的统计信息。研究还为哈萨克斯坦的单一产业城市和小城镇进行了脆弱和萧条性评级。研究基于哈萨克斯坦共和国战略规划和改革署的统计数据。
研究结果：本文综合研究了东哈萨克斯坦、北哈萨克斯坦、江布尔州2009-2019年的城市乡镇的社会经济活动参数。里德、塞米伊、马柳特卡、谢尔盖夫卡、卡拉套、让那塔斯市被认为是最萧条的地区。这些城市和布拉耶夫市并列为哈萨克斯坦最脆弱地区。
结论：该研究结果可能会引起各级政府机构的兴趣。研究方法可用于评估落后地区的社会经济表现，以便做出更明智的决策和政策规划。

关键词
区，区域经济，脆弱性，萧条地区，地区，单一产业城市，小城镇，哈萨克斯坦

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Introduction

In the twenty-first century, the development of territories of different levels in Kazakhstan is affected by a variety of factors, including long-standing ones and those that have emerged comparatively recently and that are difficult to measure. These factors include the deteriorating epidemiological situation and restrictions introduced by the government to curb the spread of the novel coronavirus, climate change, and digital transformation. The latter proved a challenge for many small towns and settlements in rural and remote areas lacking the necessary resources and infrastructure. The most persistent internal problems that affect the socio-economic processes in the country include the decrepit social, manufacturing and transport infrastructure, the economic decline in some of the territories accompanied by the falling living standards, rising unemployment and outmigration, and the resulting depopulation. In Kazakhstan, for example, in a 20-year period (from 1999 to 2019), the level of wear and tear of the utility networks reached 80–90% and the rate of population decline rose from 10% to 39% in a five-year period (2015–2019). In 27 monotowns, the population shrank by 1.5% (21 thousand people) with high-skilled workers accounting for a considerable proportion of outbound migrants. In recent years, some Kazakh towns and rural settlements have been struggling with the problems of population aging and shrinking due to the declining rates of natural increase along with the negative net migration rates.

All of the above points to some major flaws in regional policy-making and planning. Since reliable information is essential to evidence-based policy-making, it is necessary to develop a toolbox for gathering evidence on the trends of socio-economic development and vulnerabilities of territories in Kazakhstan. There is, however, a number of impediments that have to be addressed first.

The main problem is the lack of data availability in depressed areas, which drastically obscures the picture. Moreover, the indicators used by statistics services in small towns and settlements may vary significantly. In some cases, it may be problematic and sometimes even impossible to measure the cause and effect relationships between different factors. This complicates the analysis of trends and factors of development of such territories and creates difficulties for their ranking and comparison.

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All of the above necessitates the creation of a comprehensive methodological framework for assessing the level of socio-economic performance of vulnerable and depressed territories.

For more representative results, we are going to distinguish between vulnerable and depressed territories. While depressed territories are understood as territories with the lowest levels of social and economic indicators among other struggling areas, vulnerable territories are defined as territories that are subject to adverse environmental impacts (environmentally vulnerable regions, districts, cities, and rural settlements) and suffer from the lack of adequate infrastructure.

There is substantial research literature proposing various approaches to the analysis and assessment of regional vulnerabilities (Ferré et al., 2012; Michalek et al., 2012). However, no clear distinction is made between depressed and vulnerable regions even though they are facing different problems. There is evidence that struggling regions have always been at a disadvantage due to certain challenges they encountered in their socio-economic development and, as a result, are suffering from poor infrastructure quality and so on (Glaeser & Maré, 2001; Samarina, 2008; Michalek et al., 2012; Lee et al., 2017). Despite claims to the opposite, none of the studies in this area is entirely free from research bias.

There is also a perceived lack of studies devoted to the development of territories with shrinking populations.

The proposed methodological approach is aimed at assessing the socio-economic performance of vulnerable and depressed territories in Kazakhstan.

This objective has determined the following tasks:

first, to review the existing research literature and identify the main methodological approaches that would be suitable for analyzing the current state and development prospects of depressed and vulnerable territories;

second, to build a methodological framework for studying the socio-economic performance of vulnerable and depressed territories;

and, finally, to test this methodology by using the data on low-performing districts, towns and settlements of Kazakhstan.

Literature review

The international research literature offers a wide range of methodological approaches and systems of criteria for analyzing trends of regional development and measuring the impact of various factors on regional socio-economic processes. This diversity of methods, however, complicates the choice of the most suitable methods for the analysis of trends of socio-economic development in territories of different scales and levels. In his seminal work, Krugman (1991) argued that since the early stages, economic development has been linked to the growth in urbanization and inequality. Structural changes in the urban economy contribute to economic growth by enabling an increase in profit.

The use of different methods and sets of indicators may lead to different results, which, to make matters worse, are not always accurate and thus may negatively affect the quality of the government's strategic decision-making. Some of the research methodologies place more emphasis on the determinants of regional development (Lee et al., 2017; Kiryluk-Dryjska et al., 2020). In an earlier study, Glaeser and Maré (2001) examined the variation in inequality between cities . They found that skill inequality can explain about a half of the variation in city-level income inequality and contribute to rural-urban migration. Another study showed the inverse relationship between poverty and city size: inequality is deeper in small towns than in large cities (Ferré et al., 2012).

Other approaches applied to the assessment of the level of regional development include index-based methods and qualitative econometric methods (Iskandar, 2017; Tianming et al., 2018; Fang et al., 2019). Fei & Chenghu (2008) argue that such regional inequality indexes as the variation coefficient and the Gini index can only reveal overall inequality and have limited ability in revealing spatial dependence. Instead, they use exploratory spatial data analysis such as spatial autocorrelation, which has proven to be effective for the analysis of spatial agglomerations and clusters and can reveal patterns of regional inequality.

There is substantial empirical literature discussing regional disparities in unemployment. For instance, Moretti (2013) analyzed a variety of data (e.g. salary levels, education, etc.) and found that larger cities tend to have a more qualified workforce with higher productivity. Employers in rural areas are likely to be at a disadvantage with respect to their workforce needs because of the small and sparsely distributed populations, which exacerbates the wage inequality between urban and rural areas. Filiztekin (2009) investigates regional unemployment disparities by using spatial and non-parametric methods. Shiode (2014) examines the

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spatial distribution of aging populations in Japan by using the aging population ratio and the aging population density to identify the types and locations of aging communities more accurately. The author emphasizes, however, that each of these indices alone is unable to detect aging communities in certain types of urban or rural settings.

An important factor that needs to be considered is social development, which is the result of a large number of social processes. There are studies focusing on the role of social processes in tackling the problems of institutional disparities in regions and stable development of rural territories (see, for example, Diener, 1995; Michalek et al., 2012). The indicators revealing social disparities may include the coefficients corresponding to the most 'socially significant' parameters: the income level, the net migration rate, the government's budget capacity, housing and public utilities, and so on.

The research literature on post-Soviet countries offers a diversity of approaches. For instance, Samarina (2008) describes a methodology based on a set of five indicators. In our view, however, a more extensive methodology is required to get a fuller picture of the trends that drive the development or deterioration of towns and cities and to shed light on their development potential. Baramzin (2010) proposes to evaluate the socio-economic development of small towns by using coefficients, which are then grouped into three categories characterizing these towns' economic, social and financial situation. The advantage of this approach lies in the fact that it can be used to rank any towns regardless of the region(s) they are located in. Polyakova & Simarova (2014) consider cohesion as a characteristic of spatial development and its role in the implementation of an economic policy. Mansurova (2015) investigated the reasons why some areas start lagging behind their peers as well as the implications of these areas' sluggish growth. The reasons why some regions underperform may lie in the economic effects of market readjustments. The author defines a depressed region as a region whose economic performance falls below the average level.

To study the causes of the growing poverty in some regions of Kazakhstan, statistical data are regularly collected on monetary consumption expenditures of households. Questionnaire surveys are also conducted to collect the data for specific indicators. Esanov (2006) calculated the staff number index and the poverty gap index to show the stable connection between the decreasing inequality and declining poverty. There is evidence that the transition to a market economy contributed to the narrowing of the gender gap in Central Asian countries because it is primarily women who plan for their children's education and thus provide the future qualified workforce for regional economies (Anderson, & Pomfret, 2002; Kireyeva & Satybaldin, 2019).

Some studies propose to use a ranking methodology based on a set of indicators reflecting the structure of the regional product, the use of fixed funds and human resources, R&D, and information infrastructure (Girina, 2015; Turgel et al., 2020; Kireyeva et.al, 2020), and the level of innovation activity (Amrin & Nurlanova, 2020; Kangalakova et al., 2021). Some methods of analysis of regional development are based on economic indicators and spatial disparities (Drigo, 2008; Kuznetsova, 2014; Kolamak, 2020; Zubarevich & Safronov, 2020).

Nevertheless, all of the above-mentioned methods are not suitable for our research objective as they do not allow for a comprehensive analysis of the problem, leaving out some of the important aspects related to the development of regional infrastructure and the state of the environment. In this respect, the study of Tian & Sun (2018) is worthy of interest: it analyzes the current state and dynamics of regional development focusing on financial indicators and the volume of gross regional product. The authors argue that for their development, regions rely primarily on the harmonious development of the urban comprehensive carrying capacity (UCC) and economic growth. It should be noted, however, that the Chinese official statistics system has some significant peculiarities, which means that the proposed methodology needs to be carefully adjusted in order to be applied to other countries, including Kazakhstan. Therefore, we are going to propose our own methodology, which will be described in more detail in the following section.

Data and methods

As our literature review has shown, international researchers use a diversity of methods to study the trends and prospects of development of specific territories. The choice of methodology generally depends on the goals and subject matter of each particular study.

To analyze the current state and trends of regional and local socio-economic development as well as the key factors that influence it, we have devised the following methodological framework, which lays a special emphasis on the areas that exhibit persistently low economic growth. Moreo-

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ver, the proposed approach takes into account the challenges of collecting data in such areas. The research procedure comprises four stages.

At the first stage, we are going to choose the evaluation criteria for the ranking of depressed and vulnerable areas and to build a sample of such areas.

At the second stage, depressed/vulnerable districts of Kazakhstan are identified in accordance with the selected criteria.

At the third stage, depressed/vulnerable towns and settlements of Kazakhstan are identified in accordance with the selected criteria. The sample comprises the following groups: a) small towns with a population under 50 thousand people; b) monotowns, whose development depends on their town-forming enterprises; c) strategically important towns in border areas located 50 km or less from Kazakhstan's national border; d) villages and the so-called 'base rural settlements'.

Finally, the towns and settlements are ranked depending on their socio-economic performance and vulnerability levels.

Thus, to analyze the current state and trends of development of districts, towns and settlements in Kazakhstan and to assess the vulnerability of their economies and social sphere, we are going to use the following system of factors and indicators (see Table 1).

Table 1

System of factors and indicators of development of regions/towns and cities in Kazakhstan

Factors	Indicators	Measurement units
Social	Population	people
	Population density	people per sq. km of land area
	Fertility rate	per mille ‰
	Mortality rate	per mille ‰
	Rate of natural increase	per mille ‰
	Net migration rate	people
	Average monthly nominal wage of one employee	tenge
	Number of employees	people
	Unemployment	%
	Number of health care units (hospitals, outpatient clinics, rural health clinics, etc.)	units
	Number of educational institutions – pre-school educational institutions (nurseries, kindergartens, play schools), schools, colleges, and universities	units
Economic	Industrial production per capita	ths tenge
	Agricultural production per capita	ths tenge
	Construction per capita	ths tenge
	Services per capita	ths tenge
	Share of small business in the total output of goods and services	%
	Retail turnover per capita	ths tenge
	Wholesale trade turnover per capita	ths tenge
	Housing commissioned per capita	sq.m
	Fixed assets per capita	ths tenge
	Total investment per capita	ths tenge
	Local government's spending per capita	ths tenge
Infrastructural	Road density	km per ha
	Passenger turnover of all transport modes,	mln passengers per km
	Cargo turnover of all types of transport	mln tenge/Ton-km
	Access to gas supply	%
	Percentage of homes connected to water supply system	%
	Percentage of homes with central heating systems	%
	Share of dilapidated housing	%
Environmental	Amount of unpurified atmospheric emissions per capita	kg
	Amount of disposed solid domestic waste per capita	tons
	Share of disposed hazardous waste of enterprises	%
	Investment in environmental conservation and rational use of natural resources per capita	ths tenge
	Access to safe drinking water – share of the population enjoying access to drinking water from decentralized sources of water supply	%

Source: compiled by the authors

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As Table 1 illustrates, the proposed methodology includes 34 key indicators grouped into four categories: social (11); economic (11); infrastructural (7); and environmental (5). Expert weighting was used to determine the weights for the resulting intermediate indicators. The experts assigned the biggest weight to the whole set of economic indicators, since, for their stable growth, territories in Kazakhstan rely primarily on the efficient development of the key economic sectors and industries.

In accordance with the proposed methodology, we calculated intermediate social, economic, infrastructural and environmental indicators by applying the arithmetic mean method. For data normalization, we used standardized estimate (Y), which is a metric that characterizes the deviation of values from the mean of the data set. It is calculated for each value according to the following formula:

$$Y = \frac{x_i - \mu}{\sigma}, \quad (1)$$

where Y is the standardized estimate; x_i is the input element of the indicator, μ, the arithmetic mean, and σ, the standard deviation.

The indicators were aggregated by calculating the arithmetic mean of the normalized data for the given towns and settlements (2):

$$R_i = \frac{Y(z_1 + z_2 + z_3 + \ldots)}{n}, \quad (2)$$

where R_i is the mean value for the given territory and z_i are the normalized indicator values.

The aggregated indicators were calculated by weighing the intermediate indicators taking into account their weighting coefficients. Then the districts and the corresponding towns/settlements were ranked according to the values of the aggregated indicators in descending order (see Table 2).

Table 2

Ranking of districts, towns and settlements by their socio-economic performance

No.	Level of development of districts/towns and settlements	Scale
1	Stronger territories with the indicator values above 0.1	[0.1 ≥ 0.5]
2	Depressed and vulnerable territories with indicator values equal to or below zero	[0.00 ≥ –0.1]
3	Severely depressed and vulnerable territories with the indicator values below 0.2	[–0.2 ≥ –0.5]

Source: compiled by the authors

Therefore, our aggregated indicator calculations are based on the scale shown above. For our calculations, we divided the territories into three categories: stronger territories whose development is close to normal; depressed and vulnerable territories with indicator values equal to or below zero; and severely depressed and vulnerable territories. For each indicator of the group, we determined the score within the indicator value range according to the scale. The scale of vulnerability of territories is built in descending order, that is, the lower is the value (below 0), the worse is the territory's performance and the more vulnerable and depressed it is and vice versa: the higher is the value (above 0.1), the better is the situation and the less vulnerable and depressed is the territory.

To calculate the indicators, we used the data from the official website of the Bureau of National Statistics; the information provided by various government agencies (akimats of districts and cities, ministeries, departments, etc.); the information provided by the websites of regions, districts, cities, and settlements; and the data from academic publications.

Results

We have applied the above-described methodological approach to analyze the trends of development and socio-economic performance of territories in Kazakhstan and to identify the most vulnerable and depressed areas. To conduct stratified sampling, data analysis on different levels was necessary. The sample does not include large cities or agglomerations that are the pivotal 'growth points' and are the least vulnerable to the effects of negative factors. Zhambyl, North Kazakhstan and East Kazakhstan regions were chosen because they contain a sufficient number of vulnerable and depressed areas of different levels – from rural settlements to towns and districts. The choice of these regions can be explained by the following:

1) these regions are struggling with negative demographic trends (declining population density, negative net migration rates, etc.);

2) according to our set of criteria, these regions can be classified as depressed (the level of industrial production per capita is below the national average; low income levels; resource exhaustion; high unemployment);

3) a high degree of wear and tear of the engineering and social infrastructure; poor environmental quality;

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4) the selected regions are located along the border and are geopolitically and strategically significant.

The input data for the analysis of the districts and towns in Kazakhstan for the period of 2009–2019 were obtained from the information provided by the Bureau of National Statistics, regional statistical departments, and so on. Thus, we calculated the indicators characterizing the socio-economic performance of East Kazakhstan, North Kazakhstan and Zhambyl regions and identified depressed and vulnerable territories.

Another question to be considered is the types of low-performing areas and criteria for their classification. Some regions are enjoying smooth development and they are quite self-sufficient for that matter. Others are unable to deal with their problems effectively and need state support. In regional theory, such territories are commonly referred to as lagging regions, that is, depressed and vulnerable.

We analyzed the data on three regions of Kazakhstan by applying the above-described methodological framework and the system of indicators to identify the depressed (low-performing) and vulnerable districts.

Our ranking has indicated the areas with the most depressed and vulnerable towns and settlements (see Table 3).

In East Kazakhstan Region, low-performing districts include Abay, Katon-Karagay, Kokpekti, and Kurshim. Other districts cannot be classified as vulnerable as they demonstrate higher degrees of stability and resilience in the sphere of infrastructure development and environmental prosperity.

By applying the same method, in North Kazakhstan Region, the following depressed districts were identified: Akzhar, Mamlyut, Shal akyn, and Ualikhanov. The group of vulnerable regions lacking adequate infrastructure and affected by environmental degradation include Ualikhanov (–0.08), Akzhar (–0.06), Timiryazev (–0.03), and Akkayin (–0.01).

In Zhambyl Region, the analysis of the aggregated indicators has revealed the following depressed and vulnerable districts: Jualy, Moiynkum, Sarysu, and Talas. Bayzak (–0.22), Turar Ryskulov (–0.33), and Sarysu (–0.21) districts were found to be vulnerable in terms of the environment and infrastructure.

Thus, our analysis has shown that in all the three regions there are lagging areas struggling both socially and economically and facing systemic issues such as poor infrastructure and environment. Nevertheless, there are reasons for optimism regarding these districts' potential for development, if we take into account their economic specialization, resources, transport infrastructure, and the transport flows between cities and regions.

Table 3

Ranking of depressed and vulnerable districts in Kazakhstan

Region	District	Level of underperformance	Scale	Level of vulnerability	Scale
East Kazakhstan Region	Abay	–0.41	▼ ≥ –0.1	–0.30	▼ ≥ –0.1
	Katon-Karagay	–0.31	▼ ≥ –0.1	–0.22	▼ ≥ –0.1
	Kokpekti	–0.20	▼ ≥ –0.1	–0.20	▼ ≥ –0.1
	Kurshim	–0.09	▭ [0; –0.1]	–0.23	▼ ≥ –0.1
North Kazakhstan Region	Akzhar	–0.20	▼ ≥ –0.1	–0.06	▭ [0; –0.1]
	Mamlyut	–0.15	▼ ≥ –0.1	–0.12	▼ ≥ –0.1
	Shal akyn	–0.27	▼ ≥ –0.1	0.00	▭ [0; –0.1]
	Ualikhanov	–0.16	▼ ≥ –0.1	–0.08	▭ [0; –0.1]
	Akkayin	–0.13	▼ ≥ –0.1	–0.01	▭ [0; –0.1]
Zhambyl Region	Jualy	–0.15	▼ ≥ –0.1	0.40	▲ ≥ 0.01
	Moiynkum	–0.16	▼ ≥ –0.1	–0.01	▭ [0; –0.1]
	Sarysu	–0.23	▼ ≥ –0.1	0.02	▲ ≥ 0.00
	Talas	–0.23	▼ ≥ –0.1	0.18	▲ ≥ 0.00
	Bayzak	–0.02	▭ [0; –0.1]	–0.21	▼ ≥ –0.1
	Turar Ryskulov	–0.05	▭ [0; –0.1]	–0.28	▼ ≥ –0.1

Source: the authors' calculations are based on statistical data from the Bureau of National Statistics (2021) Retrieved from: https://stat.gov.kz/official (Accessed: 25.10.2021). (In Russ.)

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These results were used for further analysis. The ranking of depressed districts presented in Table 3 above has shown the most vulnerable territories. Table 4 illustrates the sample of towns and monotowns in Kazakhstan ranked depending on their socio-economic performance and vulnerability levels.

Analysis of the aggregated indicators for 2009-2019 has revealed the following lowest performing areas in East and North Kazakhstan and in Zhambyl Region: Ridder (–0.20), Semey (–0.02), Mamlyutka (–0.16), Sergeyevka (–0.33), Karatau (–0.07), and Janatas (–0.01). We found evidence for some positive trends in the socio-economic development of the following cities: Taiynsha (0.38), Kurchatov (0.22), and Shu (0.09). The most vulnerable towns and cities were Semey (–0.16), Ridder (–0.11), Bulaevo (–0.36), and Mamlyutka (–0.21). These are poor territories struggling environmentally, lacking adequate social and transport infrastructure.

As our calculations of the aggregated indicators show, there are two towns in East Kazakhstan that can be described as depressed in terms of their socio-economic development and vulnerable in terms of their infrastructure quality and the state of the environment. The population of Ridder, for example, has shrunk by two thousand people in the given period due to environmental degradation. Semey, a former regional centre, had an average wage of just 77.0% of the national average and the level of unemployment in 2020 was 5.3%, which is higher than the national average (4.9%). This town also suffers from migration outflow, as a result of which its population has shrunk by 8.2 thousand people. A similar situation is characteristic of smaller towns in North Kazakhstan – Mamlyutka and Sergeevka. Not only are these territories struggling economically and socially, they are also facing serious infrastructure problems and environmental degradation. All of the above points to the urgent need for effective action on the part of the government to support these territories and stimulate their development.

Conclusions

Despite the vast body of research on lagging territories and the diversity of methodological approaches, there is still a perceived lack of a comprehensive methodology for assessing such territories' socio-economic performance that would draw a clear distinction between depressed and vulnerable regions, since they may be facing different problems. Some studies argued that low-growth regions have always been laggards in terms of socio-economic development due to specific challenges they have to deal with. Other studies concentrated on human capital, unemployment, and other economic factors to explain regional discrepancies. Nevertheless, as our literature review has shown, not all the methods applied to explore this problem are suitable for a comprehensive analysis since some of them leave out important aspects related to infrastructure and environment.

The proposed research methodology can be used to identify vulnerable and depressed territories and the spheres in which they underperform. The research procedure comprises four stages: at the first stage, ranking criteria are selected and the sample of territories is created; at the second stage, vulnerable and depressed districts are

Table 4

Levels of underperformance and vulnerability of towns and monotowns in Kazakhstan

Region	Cities	Level of underperformance	Scale	Level of vulnerability	Scale
East Kazakhstan Region	Kurchatov	0.22	≥ 0.00	0.27	≥ 0.00
	Ridder	–0.20	≥ –0.1	–0.11	[0; –0.1]
	Semey	–0.02	[0; –0.1]	–0.16	≥ –0.1
North Kazakhstan Region	Bulaevo	0.12	≥ 0.00	–0.36	≥ –0.1
	Mamlyutka	–0.16	≥ –0.1	–0.21	≥ –0.1
	Taiynsha	0.38	≥ 0.00	0.09	≥ 0.00
	Sergeyevka	–0.33	≥ –0.1	0.38	≥ 0.00
Zhambyl Region	Janatas	–0.01	[0; –0.1]	–	–
	Karatau	–0.07	[0; –0.1]	–	–
	Shu	0.09	≥ 0.00	–	–

Source: the authors' calculations are based on statistical data from the Bureau of National Statistics (2021) Retrieved from: https://stat.gov.kz/official (Accessed: 25.10.2021). (In Russ.)

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identified; at the third stage, vulnerable and depressed towns and settlements within these districts are identified; and finally, the territories are ranked depending on their socio-economic performance and vulnerability levels. The proposed methodology can be of interest to local, regional and national authorities as it can be used for monitoring the development of territories of different levels for more evidence-based decision- and policy-making, in particular for devising measures of state support for lagging areas.

The proposed methodology was tested by using the data on towns and settlements in Zhambyl region, East Kazakhstan and North Kazakhstan. Our analysis of the aggregated indicators has shown that the most vulnerable and depressed towns of Kazakhstan are as follows: Ridder, Semey, Mamlyutka, Sergeevka, Karatau, Bulaevo, and Janatas. It was shown that the biggest risk for the economies of these territories is their low level of diversification, which makes them particularly vulnerable to external shocks: these territories specialize on a narrow range of traditional, basic industries with low value added. These industries include agriculture, extractive and manufacturing industries in need of major modernization to replace the obsolete technologies, and power engineering with outdated facilities built in the Soviet period. In all of the territories in our sample, despite the recent growth in the average nominal wage, this indicator remains below the national average, which shows a decline in real wages. This means that the wage growth rates in these depressed and vulnerable territories are below the national rate of inflation determined by the COVID-19 recession.

Therefore, the main priority in the strategic development of these regions should be to stimulate the sectors that hold the most potential and competitive advantage. Zhambyl region and East Kazakhstan appear to be the most promising in this respect. To promote economic growth in lagging regions and help them overcome depopulation, the national government first and foremost needs to develop the transport and social infrastructure, provide access to communications and the broadband Internet, improve the quality of government regulation, stimulate entrepreneurship, and attract investment. To reduce the dependence on the external customer, it is recommended to develop the domestic processing chain and stimulate domestic demand.

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