


Article

Use of Field Reserves in Emergencies as Assessed by Urban Residents and Refugees in Warsaw and Lviv during the War in Ukraine

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Abstract: Land management in crises requires quick solutions, which, without proper knowledge and experience, can lead to harmful interventions in established cities. In this regard, when choosing areas for placing critical infrastructure, such as temporary residences for refugees or field hospitals, it is essential to take into account not only the existing experience of scientists and experts on the topic but also the opinions of those who are intended to benefit from these services and of the people who live nearby. The purpose of this study was to identify the needs and opinions regarding the placement of critical infrastructure and facilities for those forcibly displaced as a result of the war in Ukraine (based on the example of Lviv, Ukraine) and the effects on the residents of Warsaw (Poland) as a city that faced a powerful wave of migrants from Ukraine. In the summer of 2022, a survey of 81 internally displaced persons who lived in two modular towns in Lviv was conducted. During 2022–2023, the residents of Warsaw were surveyed concerning the essential criteria for emergency site locations and their attitudes toward refugees from Ukraine. The results of our research showed that for internally displaced persons in temporary shelters in Lviv, it was vital to provide for their basic needs, along with a sense of security, and to encourage the unity of the people living nearby. A significant result of the survey indicated the necessary yet undesirable infrastructure facilities within a radius of up to 1 km around residents' homes. It was determined that the most important objects, which should be placed within the limits of pedestrian accessibility, were bomb shelters, medical institutions, centers for administrative services, and others. In return, the most undesirable infrastructure facilities were military facilities, burial sites, and memorial complexes, etc. The results of the Warsaw survey were related to the criteria for choosing sites for the placement of significant critical infrastructure facilities and also demonstrated the positive attitude of the citizens toward the immigrants from Ukraine and their readiness to help if needed. The results could serve as a solid basis for the selection of plots for constructing temporary accommodation for refugees and internally displaced persons in European cities during crisis events.

Keywords: refugee studies; land management; field reserves; temporary refugee accommodation; urban social space and refugee reception; urban spatial structure; survey research of displaced people



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1. Introduction

So far, an increasing number of people have become internally displaced persons (IDPs) or had to leave their home country and become external refugees. According to the definition of internally displaced persons (IDPs) in the Guiding Principles on Internal Displacement, these are “persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed

an internationally recognized border” [1]. The definition of a refugee in the 1951 Convention on the Status of Refugees says that it is a person who “owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable, or owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it” [2]. Later amendments expanded this definition to include those displaced by armed conflict and natural disasters. There are two basic differences between these two groups. The first relates to the fact of crossing a country’s border, and the second is the legal anchoring of the definition in international law—only refugees have their status and consequent rights; IDPs is only a descriptive term. However, the problems faced by IDPs and refugees are often the same.

According to the data from the World Migration Report 2022 [3], by the end of 2020, there were 26.4 million refugees globally. Moreover, 71.1 million people were living in internal displacement worldwide at the end of 2022, which was a 20% increase that year and the highest number ever recorded [4]. UNHCR [5] reports that currently there are 108.4 million forcibly displaced people worldwide. More than half—52 million—are refugees from three countries: the Syrian Arab Republic, Ukraine, and Afghanistan. Armed conflicts are the main reason for mass migration. Moreover, the number of displacements associated with conflict and violence nearly doubled, reaching 28.3 million. The war in Ukraine led to 16.9 million displaced people, the highest figure ever recorded for any country [4]. The refugee crisis is a pressing problem for host countries in particular. According to UNHCR data, as many as 38% of refugees have found refuge in five countries, with the largest number in Turkey (3.6 million) [5]. Poland is currently home to about 1 million Ukrainian refugees [6].

Today’s conflict in Ukraine, the unstable situation in other parts of the world, such as in the Middle East, and natural disasters as a consequence of climate change, have testified to the need for decisive action in the context of spatial planning for refugees and IDPs.

Spatial planning is paramount for maintaining spatial order and is fundamental in crises, for example, in handling unexpected waves of refugees. Numerous studies have indicated that significant deficiencies in spatial planning during a migration crisis result in social [7–9], economic [10,11], and environmental [12–14] problems. In addition, mass numbers of refugees have also caused other problems, including issues in land-use conversion from agricultural to urban use [15,16], the degradation of environmentally valuable areas [17], and deforestation [18].

Areas in the urban fabric that are particularly important from the point of view of their possible reuse are land reserves [19], especially in the emergency phase of a refugee wave. Although no single legally standardized definition of this concept exists, considerations regarding this topic have appeared in the literature for many years. According to these, land reserves are natural areas that can be converted into residential areas, e.g., forests, plantations, and meadows; agricultural lands; disused industrial lands that can be converted; and allotment gardens [20].

In urban planning practice, land reserves have often been referred to as urban voids [21]. These areas were originally created due to natural disasters or wartime destruction. In recent years, however, land reserves have been appearing more and more frequently in cities, and the reasons for their creation have been different [22]. Among the most important of these was the progressive deindustrialization of central parts of urban centers. Former industrial, warehousing, railway, and port facilities that used to operate in these locations have become appealing development areas. However, due to the historical contamination of the land surface and the need for major redevelopment, they have often remained undeveloped [23,24]. A huge advantage of these areas is that they are often equipped with the necessary connections to technical infrastructure. Unfortunately, areas of former industrial activity constitute a very heterogeneous group that varies in terms of size, the

proportion of open areas, and the state of preservation of the industrial infrastructure [25]. Often, the rational management of such areas is not easy due to their problematic conditions, as they are often areas with unregulated ownership status, or they may be contaminated or flood-prone areas [26].

Given the emergencies that can occur, the rational management of land reserves has become an even greater challenge for many cities worldwide. Together with public green spaces, they have been important in terms of epidemiological constraints, playing not only a natural or ecological role but also a social one [27]. An excellent example was the use of land reserves to construct temporary housing, isolation sites, vaccination points, and field hospitals during the COVID-19 pandemic [28]. Land reserves have also successfully functioned as public spaces [29] and sites for sustainable urban residential development [30]. In contrast, in the face of the armed conflict in Ukraine, these areas have become sites used for the construction of camps and temporary housing for IDPs, as well as crisis management points, both in areas not involved in active hostilities in Ukraine (e.g., Lviv) and in many cities in countries that have become major destinations for migratory movements. These are particularly difficult areas to manage, sometimes referred to as liminal ‘States of Exception’, based on the writing of Italian philosopher Giorgio Agamben [31]. They require at the same level not only the creation of a living space but also adequate social care. Among these countries, a large wave of refugees arrived in Poland [32]. According to the Border Guard, more than 14.8 million refugees from Ukraine have crossed the Polish–Ukrainian border since the beginning of the conflict (as of August 2023) [33].

The use of land reserves in the face of emergencies, i.e., climate catastrophes, armed conflicts, and the resultant displaced people, has been justified for several reasons. First, these areas can be developed immediately, given their disuse, which is extremely important in the emergency phase of a refugee wave. Second, many of these areas have a utility network that facilitates development and use. Third, convenient locations within city limits allow refugees to benefit from public transportation services.

However, the opinions of the refugees, as well as the residents of the city, should play important roles in the spatial planning of land reserves. So far, many studies have been related to placing critical infrastructure in cities. In particular, many studies considered the problem of the location of shelters for refugees of natural disasters [34–36]. These studies typically used computer modeling and geographic information systems. However, some have considered the social and physical needs of the refugees [37]. The opinions of the refugees and IDPs should be considered when choosing areas for temporary housing placement, as they are the main users of the spaces. Therefore, considering public opinion is crucial when placing critical infrastructure and facilities in cities.

In Ukraine in particular, sociological surveys of IDPs have been conducted regarding the quality of living in cities. For example, one report studied the housing needs of IDPs living in modular towns in Lviv [38]; it was conducted by the municipal institution “The Institute of the City” on the order of the Faculty of Architecture of the Warsaw University of Technology during 27 October–4 November 2022. A total of 163 people aged 18 and over were interviewed. The survey concerned the living conditions (e.g., characteristics of housing and open outdoor spaces) of IDPs, their employment and leisure activities, and their plans for the future. The study did not consider the problem of localization and the selection of sites for placing modular towns at the city level, which is the topic of this study.

At the same time, Wise Europa, the Warsaw Institute for Economic and European Studies Foundation, was the initiator of the Reconstruction of Ukraine program, as they have been developing optimal solutions for urban space planning and housing policies during and after the ongoing armed conflict. Amid the recommendations contained in the concluding section of the study, it was assumed that the key groups were local communities and displaced persons, both of whom should be allowed to participate in the development of urban space planning and housing policy projects [39].

The aforementioned negative consequences due to a lack of planning, especially in crises and emergencies, and the importance of refugees’ opinions during the planning

process have testified to the need for immediate intervention in this area. Spatial planning in crises requires a methodical approach that is based on the knowledge and experience of experts and the public [40]. Only by considering the social, economic, and environmental aspects of spatial planning is the sustainable development of urban space possible. Currently, there is a lack of methodologies for managing space during emergencies, particularly those that consider the opinions of the future inhabitants of these places, namely, refugees. The research carried out for this article was an attempt to fill the identified knowledge gap. Moreover, the goals of the article were to support the process of site selection for investments related to limiting the negative effects of the refugee crisis on the lives of city residents, as well as supporting the selection of locations for temporary accommodations for people in crisis. In the longer term, it may be possible to create guidelines for municipal governments concerning the selection of locations of temporary residence for refugees and to effectively manage land reserves in an emergency.

2. Materials and Methods

This research was divided into two parts: first, a survey of city residents of Warsaw assessed the potential use of field reserves, and second, a survey of internally displaced persons in Lviv assessed places of temporary residence. The first survey was conducted with two groups of Warsaw residents: the first in 2022 and the second in 2023. The survey of IDPs regarding places of temporary residence was carried out in 2022 in two modular camps in Lviv. The survey aimed to assess the potential use of land reserves in emergency situations according to city residents and the IDPs in temporary accommodations. The locations of Warsaw and Lviv are presented in Figure 1.



Figure 1. The locations of Warsaw and Lviv on a map of Eastern Europe. (Source: authors' elaboration).

The surveys were conducted under inherently difficult situations of refugee flight, just a few months after the invasion of Ukraine. This was a difficult survey to undertake among a population that was moving and changing quickly. It was also a refugee/IDP population that is still fearful. Memories of the terror involved with flight were still very fresh, and therefore the surveys were voluntary and anonymous. They did not require collecting personal or sensitive data from participants, only the answers to the questions on the form. A sociologist was consulted about the questions in both surveys to verify how

they were formulated. Before completing the survey, respondents were informed about the purpose of the study, the scope of the data being collected, the expected scientific benefits, and the implications of participating in the study.

2.1. The Assessment of the Potential Use of Field Reserves by City Residents of Warsaw

The first survey involved 100 people (in each part of the survey) who were residents of Warsaw aged between 20 and 60 and was conducted electronically using the Mentimeter (version 3.0.0.) software in Polish. It was an open survey, without a top-down defined sample, and its aim was to find out the general opinion of the average resident of the Polish capital without the need to obtain sensitive data. The first part of the survey with the first two questions was conducted in May 2022 and the second part in May 2023. The first part of the survey examined the relevance of individual factors in the choice of location for certain types of investment. Respondents were given a set of criteria—public transport accessibility, area (acreage), current usage, purpose in the local plan, ownership, pollution, walking distance to residential areas, and availability of technical infrastructure. They were asked to rate each criterion on a scale of 1 to 5, where 1 meant a criterion was entirely unimportant and 5 meant a criterion was highly important. Three types of investment—frontline services, public open spaces, and major infrastructure developments (single-site hospitals, temporary housing)—were assessed in this respect. For the purposes of this text, the results for the third type of investment have been used as relevant to the refugee wave. The importance of each criterion was averaged and, in the course of further transformations described later in the text, presented in the form of a ranking. Based on the survey, it was possible to identify needs and to determine which factors were dominant for residents when deciding on the location of a particular facility. The survey concluded with an open question: “For which forms of use/location of which facilities can land reserves in the city be allocated in an emergency?”

The second part of the survey, conducted a year later, aimed to examine how the armed conflict in Ukraine, which had then been going on for more than a year, had influenced the responses of Warsaw residents. This was carried out by repeating the open-ended question about what existing land reserves in the city should be used. Subsequently, the questionnaire was supplemented with the question “Which spaces in the city/neighbourhood could be used for the purpose of creating housing and assistance for refugees?” The second part of the questionnaire was concluded with three close-ended questions concerning the attitudes of Warsaw residents towards displaced persons arriving in the city. Respondents answered three questions:

1. How do you assess the assistance offered by Poland to refugees from Ukraine?
2. What is your attitude to refugees from Ukraine residing on Polish territory?
3. How has the current political situation changed your attitude towards Ukrainian citizens coming to Poland?

In each case, they could select an answer from 1 to 5, where 1 implied a very negative attitude and 5 a very positive attitude.

The Historical Context of Polish–Ukrainian Relations

This group of questions is particularly relevant to the historical nature of Polish–Ukrainian relations. Political relations between Poland and Ukraine date back to the beginnings of the statehood of Poland and Kievan Rus’ in the 10th century. The two countries bordered each other, which naturally fostered mutual contact and influence, but also created competitive interactions. In the 14th century, part of the Ruthenian lands were incorporated into the Polish state, and in the 16th century, as a result of the incorporation of Volhynia and Kievshchyna at the time of the Union of Lublin (1569), the rest of the lands of modern Ukraine joined them. Between 1569 and 1795, the territory of present-day Ukraine was substantially part of the Polish–Lithuanian Commonwealth. The period of Poland’s partition (1795–1918) was a moment of national rebirth for Ukrainians, as well as Poles. An important point of contention in mutual relations was the attitude to Ukrainian lands. The

Poles believed that they should be incorporated into a reborn Poland, which the Ukrainians opposed. Between 1918 and 1939, several areas of today's Ukraine became part of Poland again—the voivodships of Lwów, Volhynia, Tarnopol, and Stanisławów. The remaining areas became part of the Union of Soviet Socialist Republics as the Ukrainian Soviet Socialist Republic. This was a period of heightened tensions between Poles and Ukrainians. The ties that had united Poles and Ukrainians living in this region for several hundred years were severely damaged. The establishment of the independent state of Ukraine in 1991 led to a major rebuilding of Polish–Ukrainian relations. A particularly significant moment was Poland's accession to the European Union in 2004. Since then, a higher percentage of Ukrainian citizens have come to Poland for education and work, and in 2012 the two countries co-hosted the Euro 2012 European Football Championship. However, contentious disputes over a difficult history continue to feature in political discourse, as does rivalry in the economic sphere, where both countries are leaders in the agricultural sector. In this complex context, the importance of supporting refugees from Ukraine and the attitude of Polish citizens towards them, despite the existing unresolved disputes, should be highlighted.

2.2. *The Assessment of Places of Temporary Residence by War Refugees in Lviv*

A sociological survey of IDPs in 2 modular towns in the city of Lviv (Ukraine) was conducted to assess the places of temporary residence in July 2022 (Figure 2). When choosing sites for the placement of modular camps, the City Council of Lviv had to quickly make a decision and choose sites that were sufficient in terms of area, as well as those that were already prepared, that is, paved for the placement of modular buildings without additional preparatory work. In addition, these plots had communal ownership. In Sykhiv, in particular, the site of the modular town had originally been a parking lot for recreational purposes according to the category of land. In Stryiskyi Park, which was a monument of landscape art and by category belonged to natural reserve lands, the modular town was located on the asphalt-based sports grounds. Before winter 2023, the modular camp was moved from Stryiskyi Park to the Sykhivskyi district of Lviv, where there was a free plot nearby and an opportunity to expand the existing modular town. Two-story modules were erected there with the placement of benefits in the middle of the module, thereby increasing the town's capacity. However, after the Kakhovka hydroelectric plant was destroyed, which caused flooding in large areas of the Kherson region of Ukraine during the second half of June 2023, a new wave of migrants arrived in Lviv. Therefore, the city authorities once again resumed the functioning of the modular town in Stryiskyi Park.

Criteria such as the type of property and the category of the plot, the area of the plot, the type of paving, and the proximity of engineering networks were the main considerations when selecting plots in Lviv for the placement of temporary housing for IDPs. However, we had the opportunity to interview temporarily displaced people who had been living in these towns for a long time and ascertain their needs and preferences regarding their temporary residences. These criteria could be considered in the future when relocating IDPs or refugees and temporary living spaces, as well as when placing similar infrastructure in other cities in Ukraine, Poland, and other countries that could potentially receive refugees from military zones.

The survey concerned the public opinion of IDPs who lived in these towns regarding the quality of living conditions there and the peculiarities of the location of these towns in the city's structure. The development of the questionnaire was based on an expert approach. The survey was carried out face-to-face by filling out paper questionnaires and taking part in interviews, which were conducted in Ukrainian. The respondents were selected randomly, with the assumption that sampling was limited by the willingness to participate in the survey and the availability of participants of a particular gender and age group (due to military operations, among other circumstances, a high percentage of respondents were female and elderly IDPs). During the survey, 81 completed questionnaires (Supplementary File S1) were received, with 58 in the Sykhiv modular town and 23 in the Stryi Park modular town. The first 9 questions in the questionnaire were of the closed

type, where it was necessary to choose one of the proposed answer options. This block of questions related to the respondents' general data regarding their age, gender, family, status, place of residence, and possible future plans regarding potential changes of place of residence. The socio-demographic and other basic characteristics of the respondents are presented in Table 1.

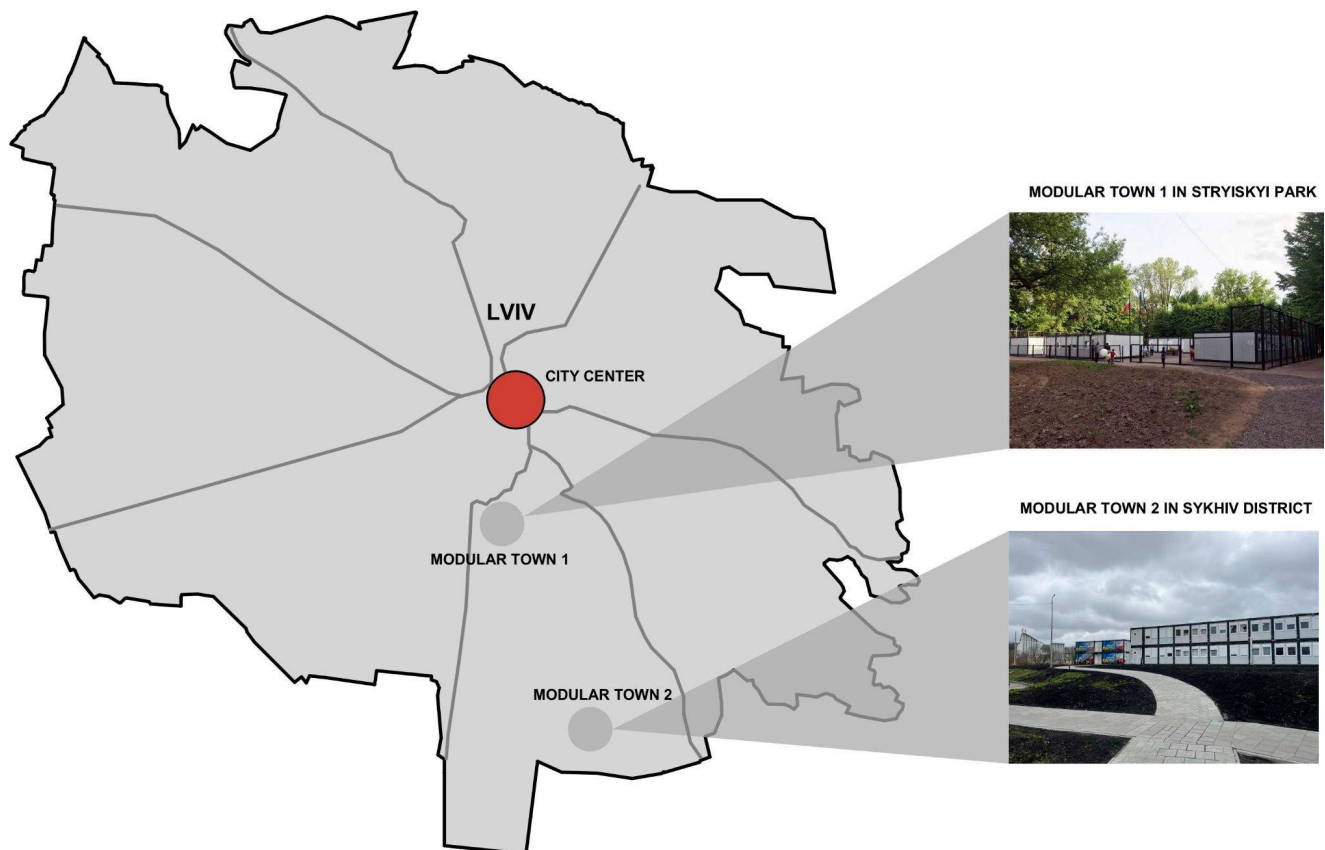


Figure 2. The locations of modular towns (grey circles) on a map of Lviv (Ukraine). (Source: authors' elaboration).

Table 1. Socio-demographic and other basic characteristics of the respondents in the survey of IDPs' temporary residence places in Lviv (Ukraine, Lviv, July 2022) (source: authors' elaboration).

Question №	Content of the Question	Answer Options				
		The Number of People Who Answered the Question				
1	The age of the respondent	Up to 16 years	17–24 years	25–35 years	36–59 years	More than 60
		8	8	5	30	30
2	The gender of the respondent	Man			Woman	
		20			61	
3	The marital status of the respondent	Single	Married and have children	Married and have no children	Divorced and have children	Divorced and have no children
		31	29	3	14	1
4	The family integrity of the respondent	The whole family lives together		The family is temporarily separated (husband/wife/child at the front/in another city)		You have lost a family member (husband/wife/child) due to the war
		45		30		2
5	Does the person have the status of an internally displaced person?	Yes			No	
		78			3	
6	Employment status	Employed	Unemployed	Looking for a job	On maternity leave	Retired
		12	19	12	4	34

Table 1. Cont.

Question №	Content of the Question	Answer Options					
		The Number of People Who Answered the Question					
7	The current place of living	In a modular camp	In a temporary shelter (gym/school, etc.)	In a hotel/hostel/dormitory	Rent an apartment/room	With friends/acquaintances/relatives	
		77	1	1	1	1	
8	Duration of stay at the place of temporary residence	From the beginning of the war	1–2 months	1 week–1 month		Just moved in	
		23	39	11		4	
9	How long does the person plan to stay in the place of temporary residence?	Until the war is over	Until I rebuild/repair my previous home	Until the state gives me new housing	Until I can buy/rent a new home by myself	Permanently	It's hard to say/I don't know
		39	0	16	6	0	20

The next set of questions related to the qualitative characteristics of the existing living conditions in the modular towns of Lviv. These were two open-ended questions where people had to write independently about what they liked and disliked about their current place of residence.

The final 3 questions in the questionnaire required the respondents to prioritize, i.e., give points from 0 to 10, among the proposed answer options. These questions were presented in the form of a table with a list of infrastructure objects in the vicinity of their place of residence, where it was convenient to arrange points. First, people decided on those infrastructure objects that should be within walking distance near their place of residence, later on within transport accessibility, and finally, people decided on those objects that are not desirable near their place of permanent residence. At the end of each list of infrastructure objects, there was an empty column where respondents could add their options.

3. Results

3.1. The Assessment of the Potential Use of Field Reserves by City Residents

In terms of the importance of individual factors in site selection for large infrastructure projects, such as single-site hospitals and temporary accommodation for refugees, the resulting values representing the importance of each criterion were added together, and then each value was divided by the sum to obtain the percentages, and thus, the normalized weights, as shown in Table 2. On this basis, a ranking of the importance of the criteria was created.

Table 2. Results of the survey conducted in Warsaw in 2022 (source: 15).

Criteria	Large Investments		
	Average Survey Score	%	Ranking
Public transport accessibility	4.1	16.80	3
Area (acreage)	4.4	18.03	1
Current usage	2.8	11.48	8
Purpose in the local plan	3	12.30	5
Ownership	2.9	11.89	6
Pollution	3.3	-	4
Walking distance to residential areas	2.9	11.89	6
Availability of technical infrastructure	4.3	17.62	2
Sum	27.7		

Regarding locating large infrastructural developments, for example, single-tenant hospitals or temporary housing, the area was found to be the most important criterion (4.4), followed by the availability of technical infrastructure (4.3); public transport accessibility (4.1); pollution (3.3); purpose in the local plan (3); ownership and walking distance to residential areas (2.9); and finally, current usage (2.8).

A key result was the accessibility of the areas for potential buyers and the demand at the location. In addition, for the selected area, it was recommended that a set of guidelines be created that would provide guidance on developing the area, including the adopted share of biologically active areas and solutions to minimize the negative impact on the surroundings. Depending on the situation, the crisis development may only be a temporary element in the city space and should be planned in such a way that its effects would not be long-lasting.

An important question from the point of view of the possibility of seeking land reserves in a crisis was to define which spaces can be developed for this purpose. Due to the changes in the current crises and priorities, this question was asked of respondents in both years analyzed. The most frequently indicated answers from the surveyed group of Warsaw residents included the following: field hospital, shelter/bunker, temporary housing, dormitory, health services, park, military area, camps, refugees, warehouses, educational facilities, and catering. In both 2022 and 2023, field hospital (74 and 88 responses, respectively) and temporary housing (42 and 32 responses, respectively) were the most frequently indicated responses, as shown in Figure 3. The Chi-square test for the data analyzed indicated a significant statistical difference in the incidence of responses in 2022 and 2023 at $p < 0.01$ ($p = 0.00024$). Probably due to the current political situation, the number of people indicating military land as a reserve destination increased significantly (from 5 responses in 2022 to 27 responses in 2023), while the number of respondents indicating health services or parks, the destinations most commonly associated with COVID-19 pandemic prevention, decreased.

Among the spaces that respondents believed could be allocated for places to house and help refugees, the most frequently mentioned were stadiums/sports facilities, halls and warehouses, schools, parks, vacant lots, wastelands, squares, offices, dormitories, community centers, churches, and railway stations. It should be noted that Warsaw residents allocated sports facilities (20 responses), as well as halls and warehouses (13 responses), i.e., spaces that were not necessary from the point of view of the rational use of urban space and the everyday functioning of residents, as shown in Figure 4. These facilities had already served as aid stations and isolation facilities during the COVID-19 pandemic and were now being used successfully to help the waves of Ukrainian refugees. It was worth noting that educational facilities (schools, dormitories), as well as cultural and religious facilities, had also appeared among the listed facilities.

The last part of the survey concerned the attitudes of Warsaw residents toward refugees from Ukraine and Poland's assistance. On a 1–5 point scale, a value of 1 indicated a very negative attitude; 3, a neutral attitude; and 5, a very positive attitude, as shown in Figure 5. The shaded areas in the figure represent the distribution of the individual responses that comprise the average depicted. The respondents rated the assistance offered to Ukrainian refugees very positively (4.2). It is worth mentioning that the assistance provided to refugees from Ukraine includes not only the assistance offered through official channels by the state authorities but also the assistance provided by the residents themselves by welcoming refugees into their homes or participating in collections of food and necessities. This was a widespread phenomenon, particularly intensely visible in the first months of the war. Some Warsaw residents assessed their attitude toward people coming from Ukraine and staying in the territory of Poland as neutral (3.3), and, importantly, the current geopolitical situation had not changed this view negatively or positively (3.2), and this was largely shaped by their experiences with people coming to Poland from Ukraine in previous years.

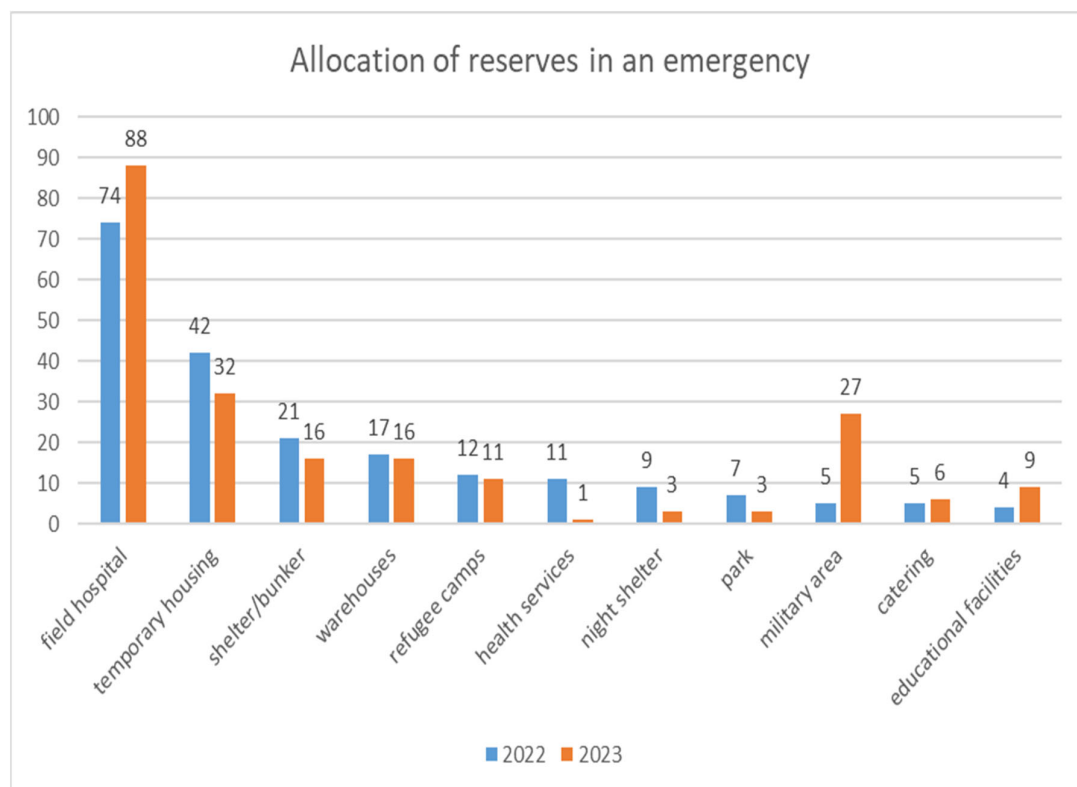


Figure 3. Allocation of reserves in an emergency according to the opinions of Warsaw residents (source: authors' elaboration based on answers to questions of a survey conducted in Warsaw in 2022 and 2023).

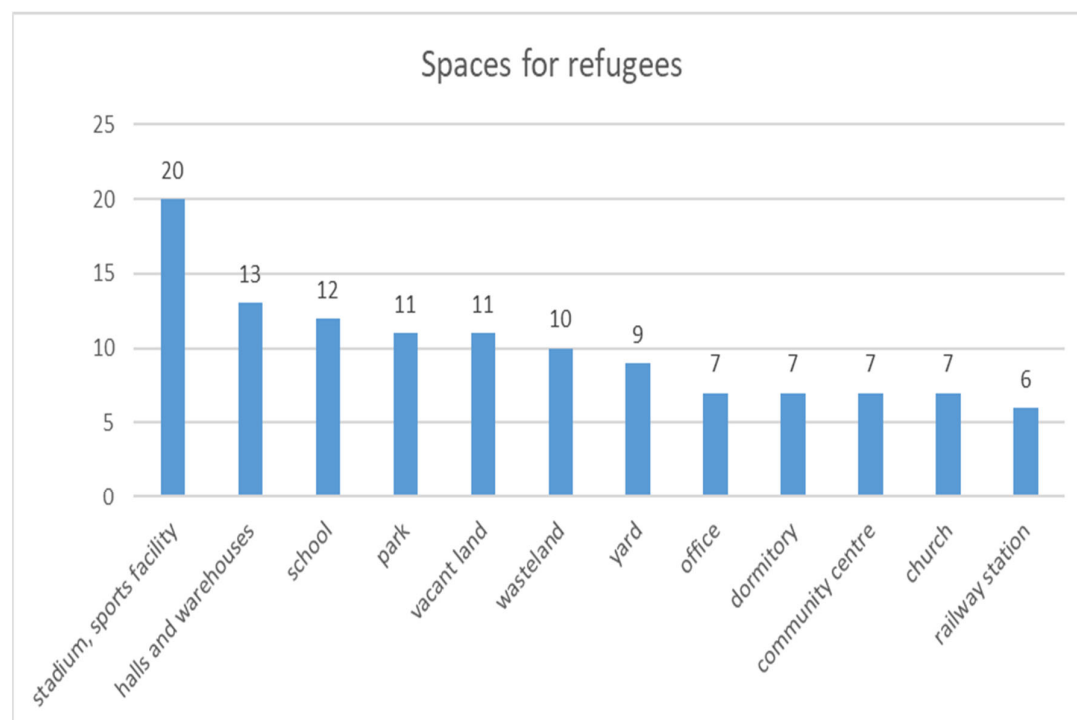


Figure 4. Possible spaces for refugees, according to the opinions of Warsaw residents (source: authors' elaboration based on answers to questions of a survey conducted in Warsaw in 2022).

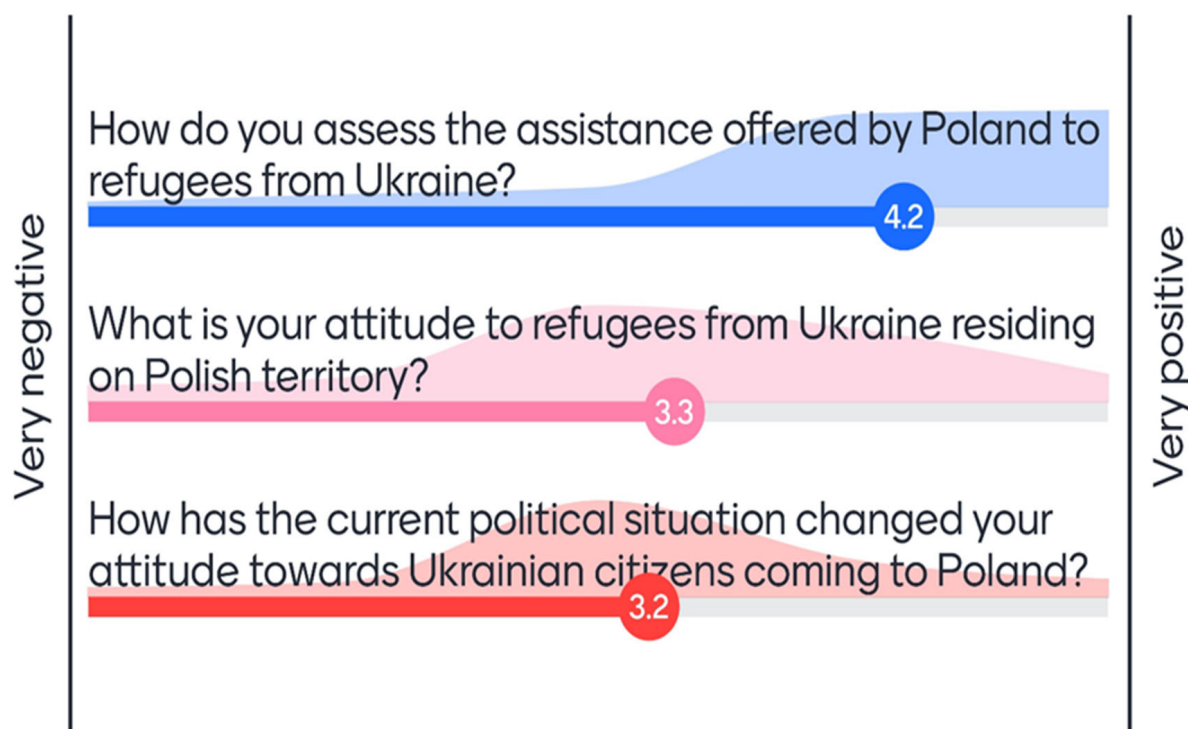


Figure 5. Results from the survey regarding the attitudes of Warsaw residents toward refugees from Ukraine (source: authors' elaboration based on answers to questions of a survey conducted in Warsaw in 2023).

3.2. The Assessment of Places of Temporary Residence by IDPs in Lviv

The majority of respondents were satisfied with their living conditions, answering yes (54), no (2), and partially (25). As for specific indicators of the quality of living in modular towns, they were not specifically mentioned in the survey. People themselves named what they liked and what they did not like about the living conditions in the town. Primarily, respondents pointed to the satisfaction of basic needs: living in a safe place, free housing and food, and the ability to prepare food independently (availability of an equipped kitchen); the ability to ensure hygienic needs (availability of bathrooms with toilets and showers); availability of personal space (living in a separate module); the presence of children's playgrounds on the territory of the town; and the availability of free Internet. In addition, an important factor was the attitude and the attention of the town administration, as well as other social services, representatives of volunteer organizations, and the church, which organized leisure activities and various public events. As for the external environment of the modular towns, the residents mentioned the proximity of the park and recreational areas (significant greenery) as a positive characteristic. One of the towns where the survey had been conducted was located directly in Stryiskyi Park, and the other bordered Sykhivskiy Park in Lviv. Some also mentioned the proximity of necessary infrastructure: pharmacies, shops, polyclinics, and churches.

Among the things respondents did not like about their living conditions, they mentioned the following: inappropriate behavior of other residents of the town, separate location of bathrooms from residential modules, modules were too small, settlement of different families in one module, fear of wintering in modules, overheating of modules in summer, noise, lack of a permanent doctor on duty in the town, insufficient private space, and constant visits by outsiders (the city's residents). There was also a lack of nearby shelters in the environment (bomb shelters, underground car parks, and other shelters in case of air alarm).

The residents of the towns were also asked about the priority of placing various infrastructure facilities within walking distance (5–20 min), transport accessibility (up to

1 h by public transport) to their place of residence, and what should not be nearby (up to 20 min foot traffic) their place of residence.

To determine the objects that should be placed within the limits of pedestrian accessibility, a list of infrastructure objects was proposed. It was necessary to evaluate the priorities of the listed objects on a 10-point scale, where 10 indicated it must be near the place of residence, 5 indicated it should be close to the place of residence, and 0 indicated it did not need to be close to the place of residence. However, not all respondents correctly filled out the questionnaire in this section. A total of 77 people out of 81 respondents answered this item. Instead of the number of points, 17 of them put ticks, which in the process of final calculations was accepted by us as 10 points. A smaller part of the respondents (11 people) put 10 points against each infrastructure object important to them without ranking them. Those categories that scored the minimum number of points were often evaluated by people as unimportant, that is, they received 0 points.

The following objects scored the most points, ranked from the maximum number of points to the minimum, as presented in Figure 6: (1) bomb shelters, (2) medical institutions, (3) centers for administrative services, (4) public transport stops, (5) trade establishments, (6) centers for volunteering and humanitarian assistance, (7) recreational areas, (8) educational institutions, (9) catering establishments, (10) religious institutions, (11) sports facilities, and (12) cultural and entertainment complexes.

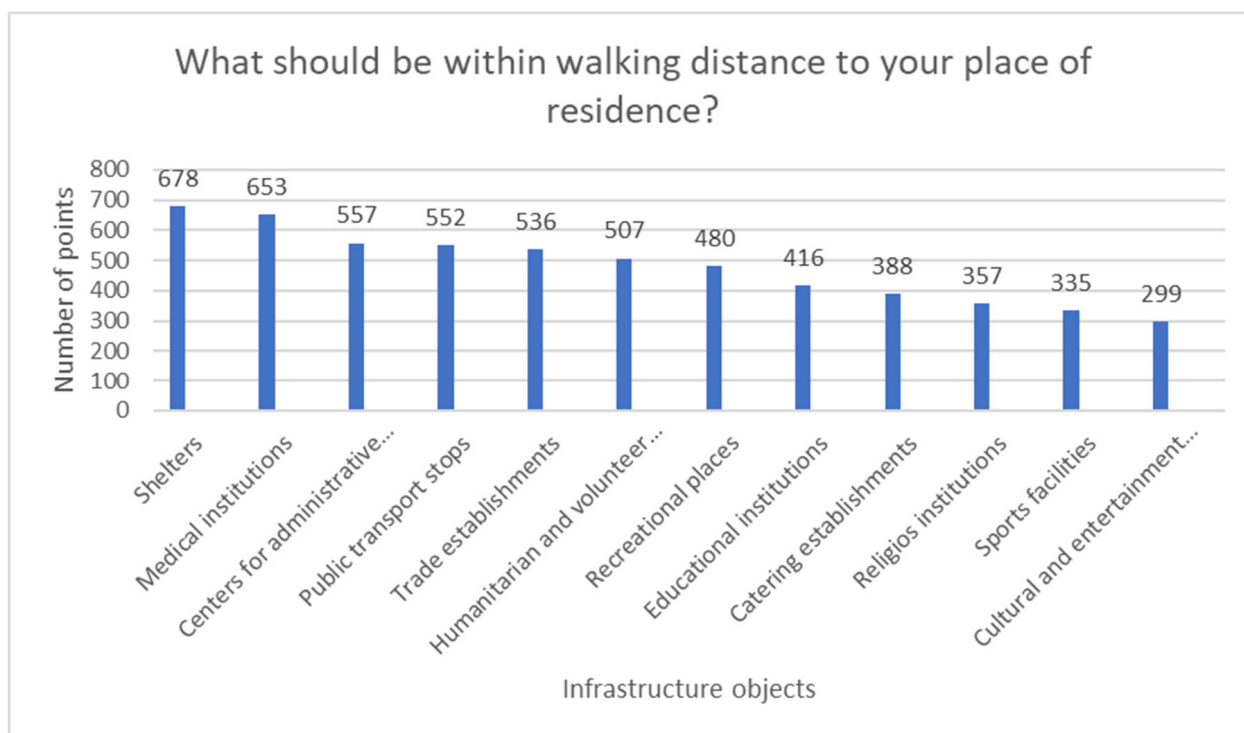


Figure 6. The results of the survey of forcibly displaced persons who lived in modular towns in Lviv concerning the infrastructure benefits that had to be within walking distance to their place of residence (source: authors' elaboration based on answers to questions of a survey conducted in Lviv in 2022).

Among those objects that should be nearby but should have been added to the proposed list, the residents also named such places as the office of a doctor on duty, a swimming pool, a veterinary clinic, and a library.

To determine the objects that should be located within transport accessibility (up to 1 h of travel by public transport), a list of infrastructures was proposed. It was necessary to evaluate the priority locations on a 10-point scale, where 10 indicated it must be within transport accessibility to the place of residence, 5 indicated it should be within transport

accessibility to the place of residence, and 0 indicated it did not need to be within transport accessibility to the place of residence.

It should be noted that not everyone answered this question, as many people did not understand the difference between what should be near and within transport accessibility or did not consider this question important. Therefore, the total number of points was lower than in the previous question. Out of 81 respondents, 53 people answered this question, 10 of whom put ticks instead of the number of points, which in the process of final calculations was accepted by us as 10 points. The following places scored the most points, ranked from the maximum number of points to the minimum, as presented in Figure 7: (1) bomb shelters, (2) medical institutions, (3) public transport stops, (4) volunteering and humanitarian aid centers, (5) trade establishments, (6) educational establishments, (7) administrative service centers, (8) recreational areas, (9) cultural and entertainment complexes, (10) sports facilities, (11) religious institutions, and (12) public catering establishments.

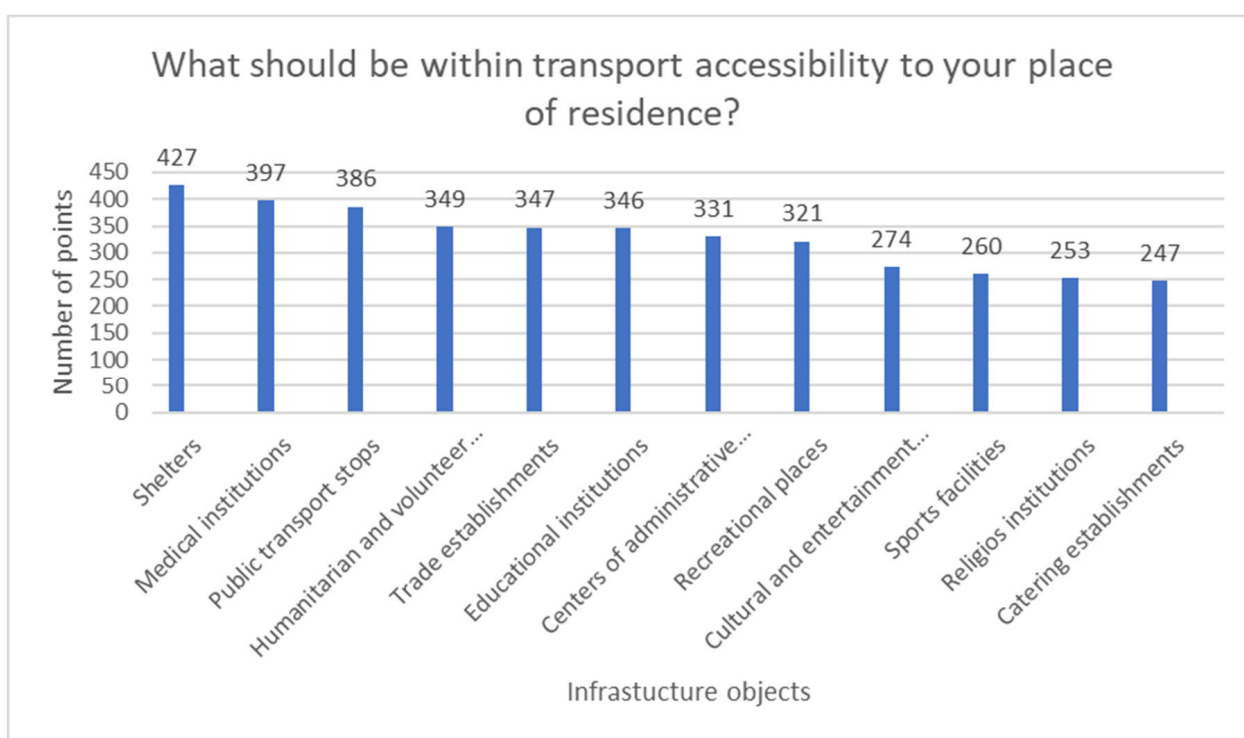


Figure 7. The results of the survey of forcibly displaced persons who lived in modular towns in Lviv concerning the infrastructure objects that had to be within transport accessibility to their place of residence (source: authors' elaboration based on answers to questions of a survey conducted in Lviv in 2022).

Among those places that should be within transport accessibility but were not on the proposed list, the residents also suggested a library.

To determine the objects that should not be close (up to 20 min on foot) to the places of residence of the interviewees, a list of infrastructure locations was proposed, and it was necessary to evaluate the priority of the listed objects on a 10-point scale, where 10 indicated it could not, in any case, be near the place of residence, 5 indicated it was desirable that it was not close to the place of residence, and 0 indicated it may be near the place of residence. Out of 81 respondents, 73 people answered this question, 16 of whom put ticks instead of the number of points, which in the process of final calculations was accepted by us as 10 points. Most of the respondents used the scale of 10, 5, or 0 points to assess the importance of the location of the infrastructure object. However, there were also intermediate grades from 1 to 4 and from 6 to 9 points.

Among the infrastructure that was considered an undesirable neighbor for the IDPs, the following objects scored the most points, ranked from the maximum number of points to the minimum, as presented in Figure 8: (1) military locations; (2) burial sites and memorial complexes (cemeteries, crematoriums, memorials to fallen soldiers, etc.); (3) warehouses and logistics centers; and (4) animal shelters, veterinary clinics, and dog walking areas.

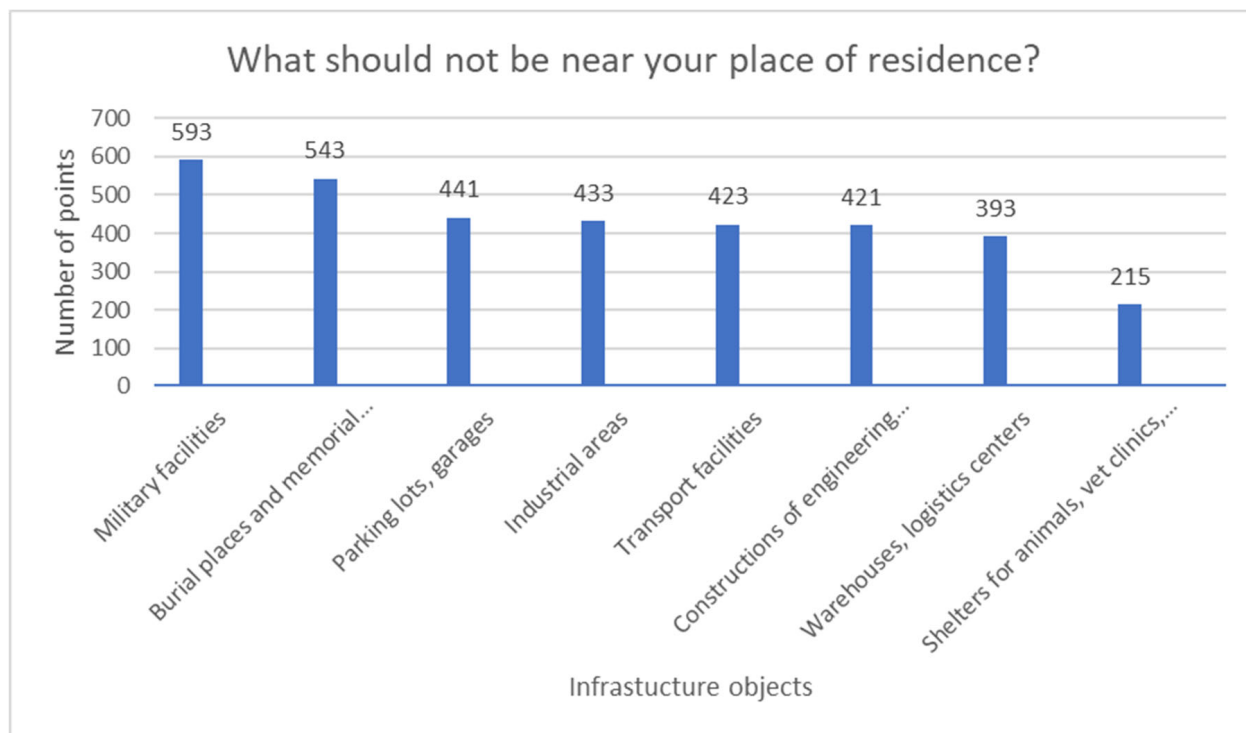


Figure 8. The results of the survey of forcibly displaced persons who lived in modular towns in Lviv concerning the infrastructure that should not be within walking distance of their place of residence (source: authors' elaboration based on answers to questions of a survey conducted in Lviv in 2022).

Among those locations that should not be nearby but were not listed, residents also named items such as dangerous objects from the war, chemical plants, airports, bars, and liquor stores.

4. Discussion

Addressing the topic of using field reserves for the refugee waves was justified by the research undertaken on this topic but on a different spectrum. Efforts to date have focused primarily on the social aspects and systemic solutions associated with welcoming refugees [41,42]. This research shed light on the needs of refugees at the places of their temporary residence and also considered the opinions of city residents. Due to the sudden nature of the relocation of the refugees, this research was important for developing a methodology for rapid responses during crisis events.

The survey of IDPs in two modular towns in Lviv showed important indicators of environmental quality for residents of modular towns, as well infrastructure facilities, which were categorized as most needed nearby (within walking distance), within transport accessibility, and categorically should not be near the place of residence of IDPs. In the respondents' answers regarding the quality of the living environment, there were some contradictory responses; for example, some liked the ability to ensure hygienic needs, but others said they did not like the separate location of the bathrooms; another example would be the availability of personal space versus insufficient private space. This can be explained by the different characteristics of the people who responded, as well as the different living conditions in the same modular town. The majority of elderly people, as well as mothers

with small children, complained about the separate location of bathrooms from their apartments. Others were more or less satisfied. Also, some families lived in separate modules, and some had to divide one module into two families. This caused some drastic differences in the responses related to satisfying the need for private space. So, from this, we can draw conclusions about the importance of privacy for displaced persons, as well as the importance of taking into account age, gender, and family characteristics when settling different people together. The relationship between people's age and their needs can also be traced in other facilities. Elderly people more often emphasized the need for the presence of a permanent doctor on duty and a medical center directly in the modular town. Instead, the respondents, regardless of age, highly appreciated the need for a medical facility to be located within walking distance of their place of residence. Also, those who had small children often mentioned the desired proximity of children's playgrounds. In addition, the survey results in Lviv showed that the location of infrastructure within transport accessibility (from 1 km or more from the place where they live) was less important for residents than infrastructure within walking distance. At the same time, the majority of respondents indicated the importance of proximity on foot to public transport stops. This nevertheless confirms that for many residents, objects of episodic visits, located within the limits of transport accessibility, are also important.

On the other hand, the survey results in Warsaw indicated the most important criteria for residents when locating large investments, such as temporary refugee accommodations. Criteria related to accessibility in the broadest sense, such as space, infrastructure, and transport, were identified as key. Ensuring these necessary conditions could make selecting optimal locations for hosting resettled persons possible. For this purpose, among other things, a simple decision-making model was developed to create a ranking of the reserves located within a city area [19].

According to data from property sales platforms, in just two months since the start of the war in Ukraine, the offer of flats for rent in brokerage agencies in large Polish cities has decreased by as much as 60–80% [43]. The cheapest units have been rented out and only expensive properties remain, for which there are not many applicants. For this reason, it was necessary to create temporary accommodation. In addition, in the period March–December 2022, the health care system was significantly overloaded. The cost of health services targeted at refugees amounted to more than PLN 500 million in Poland, and these were provided, among other factors, through the creation of dedicated medical facilities [44]. The survey data could serve as a solid basis for the selection of plots for the construction of temporary accommodation for refugees and IDPs in European cities during emergencies and crisis events.

A very limited number of similar studies were related to determining criteria for selecting spaces to place temporary housing and shelters for refugees. Most of the analyzed studies considered transport accessibility [45]; proximity to the main infrastructure facilities [46]; shelter size [47]; the safety of the site; the ownership of the site; the nature of the surface of the site; and other economic, social, and cultural factors [48,49], as the most important criteria. Moreover, vacant lots, stadiums, and public green spaces that could be used as multi-purpose sites were the most appropriate options for temporary settlement [50]. The characteristics of plots for placing temporary housing were considered in more detail in a study by Iranian scientists [51]. Given the growing number of refugees due to conflicts and war-torn regions across the world, this study was conducted in Iran to identify the criteria for sheltering refugees due to conflict, using the views of experts and opinion holders. Many of these criteria were consistent with those mentioned in reliable international sources, such as the UN Refugee Agency [52]. However, beyond the common criteria, this study identified other necessary criteria. According to the study, the most important properties of the land selected for refugee camps were land type, slope, area, topography, height, and vegetation. The study results showed that rocky land, prairies, and forests were unsuitable sites. Arable land and land with steep slopes or without slopes were also unsuitable campsites. In addition, the essential criteria were security (hazard, military);

the uniformity, homogeneity, resemblance, and consistency among displaced persons and the host community; access to infrastructures and welfare facilities; and environmental factors (must not damage and destroy the rare fauna and flora of the region, and the location must also not be a protected area). In particular, the need to ensure homogeneity among displaced persons who were resettled together, as found in the aforementioned Iranian study, was confirmed by the results of a sociological survey in Lviv, where many residents complained about heterogeneity (by age, culture, and region), which hindered the understanding and the psychological comfort of residents. However, regarding whether it was undesirable to place refugee camps in protected natural zones, as suggested by the Iranian study, this did not coincide with the results of our survey of residents in the modular town in Stryiskyi Park in Lviv, which was part of the nature reserve fund. On the contrary, the residents of this modular town preferred living in the park. Most did not know that the park was included in the list of locations of the Nature Reserve Fund of Ukraine. Furthermore, when the city authorities of Lviv started negotiations with the residents of this modular town regarding their relocation to another town, which was more suitable from the point of view of city managers, the residents did not want to relocate from the park.

A comparative analysis of site selection criteria according to our sociological studies and expert data from the previously mentioned scientific studies indicated that the criteria generally coincided. In various studies, scientists ranked the criteria somewhat differently depending on the type of emergency (natural disaster, war, etc.) and the type of critical infrastructure, but in general, these criteria coincided. For this reason, the answers of respondents from Warsaw and Lviv are intended to complement each other in order to create guidelines for crisis management in the city. The responses of refugees relate, among other things, to expectations of their places of residence, while those of Warsaw residents are directed at indicating the spaces that can fulfill such a function in the first place.

The attitudes of Warsaw's residents toward people arriving from Ukraine also comprised an important element of the survey. To identify land reserves that could be used for refugees, there must be a willingness to help. In this respect, Polish residents have shown a very positive attitude since the beginning of the armed conflict, which was confirmed by the survey results. However, it is worth mentioning that this attitude is a result of the current crisis situation and security threat. The general attitude of Poles towards Ukrainians has not been affected by the refugee wave, which to a major extent has been shaped by the relations established previously, which result, among other factors, from a joint complex history and are not immediately amendable. These relations remain at a neutral level. In addition, with the prolongation of the armed conflict and emergency, the local population is beginning to get used to the current circumstances and spectacular relief operations are becoming less frequent. The refugees themselves are also beginning to look for permanent accommodation for themselves, leaving the created places of temporary residence, and partially returning to Ukraine as well.

5. Conclusions

Given modern societies' challenges and crises, sustainability is a crucial strategy for building a sustainable future for our planet. The rational management of space, with a particular focus on land reserves, and the social opinions and decisions taken in this regard, significantly impact the achievement of sustainable development goals and, consequently, the achievement of living conditions today and in the future. Responding quickly to crises, such as incoming refugees and IDPs, allows cities to build resilience and implement sustainability principles. Evolving urban spatial and social structure due to migration is an essential object of research given the current geopolitical situation. The deepening migration crisis in Europe, the intensive migration of refugees from Ukraine during the war, and other places, are challenges for contemporary European cities, including Lviv (Ukraine) and Warsaw (Poland) as described in the article. The research conducted attempts to develop guidelines for urban development strategies regarding the spatial movement of

urban populations and the harmonious coexistence of different social groups, including particularly vulnerable ones such as refugees or IDPs. Mass migration forced by armed conflict, as exemplified in this article, is a challenge for many cities, but also an opportunity to realize urban integration. Refugee camps, Agamben's 'States of Exception', can paradoxically become spaces of urban renewal and testify to their strength. Of course, for this to happen, the opinions of newcomers and existing city residents must be considered. Given the lack of available methodologies for managing space in situations of influx of IDPs and refugees, the purpose of this article was to try to fill the existing knowledge gap and answer the question of what criteria are crucial for locating places of temporary residence for IDPs and refugees.

The results of our research could be used for the management of the territories of European cities in crises. Due to the limited survey sample, although the results of the research do not provide a clear answer to the problem of urban space management in a crisis situation such as a wave of refugees, they can provide a basis for discussion and signal the needs arising from direct contact with residents and displaced persons. The developed site selection criteria included both the characteristics of the sites for constructing critical infrastructure and facilities as well as the territory within a radius of 1 km around the site. Another important aspect was the question of the durability of these urban planning solutions since some critical infrastructure facilities, such as refugee shelters and field hospitals, were temporary facilities, and over the long term, the function of these sites would change once the crisis has abated. The construction of these facilities does not typically require significant or expensive interventions in the existing urban environment, so further changes to the function of the territory should not be problematic for the city. The problem of the durability of urban planning solutions, which is related to the location of critical infrastructure objects, would require additional analysis and may be a continuation of this research in the future, also in the context of potential internal migration of refugees to their final destinations or return to their home cities. However, the results presented can serve as a basis for developing guidelines for cities facing the problem of IDPs or refugee influx. The shaping of the space of modern cities should take place with the strong participation of modern society toward achieving sustainable development goals. This was reflected in the surveys answered by displaced people living in Lviv (Ukraine) and Warsaw (Poland) residents. Only by taking their voice into account is it possible to make rational use of land reserves, with particular consideration for emergencies, such as nearby refugees.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su151814022/s1>, File S1: Questionnaire of a survey conducted in Lviv.

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