Article

Influence of Revitalization on the Social and Economic Well-Being of Residents: Case Study of Lithuania

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Abstract: The lack of public spaces, recreational areas, and sports facilities in older city neighborhoods, as well as the importance of people's social and economic well-being, have been exposed by the COVID-19 pandemic. Revitalization is used to update the physical environment of old neighborhoods; it improves not only the physical environment of the neighborhood, but also contributes to ensuring the social and economic well-being of the residents. The article aims to identify which typical revitalization project solutions, only referring to physical environmental improvement projects, improve the social and economic well-being of the residents. To achieve this goal, a statistical analysis of the Žirmūnai triangle residents was performed with obtained survey data. The hypothesized connections between typical revitalization solutions and changes in the social and economic well-being of the population were verified using Pearson's Chi-Square test. The results showed that the public spaces, sports, and playgrounds provided by revitalization were directly related to the social and economic well-being of the residents. As a result of this typical revitalization solution, 17% of the residents experienced an improvement in their economic well-being, 17% of the residents got to know their neighbors, and 95% of the residents indicated that they enjoy living in the neighborhood.

Keywords: housing revitalization; social well-being; economic well-being; human health

1. Introduction

The New Urban Agenda, released by the UN in 2016, set the objective of achieving sustainable city development focused on the population's psychological and physical health [1]. The COVID-19 pandemic has only further highlighted the importance of pursuing this goal, not only during the pandemic, but also after it. The pandemic has changed people's travel habits, leisure activities, work organization, social relationships, and physical and emotional health [2–4]. Isolation and the inability to communicate led to loneliness and feelings of isolation, which contributed to the onset of depression [5,6]. People were forced by the pandemic to spend their free time in their homes or other nearby living spaces. Many studies have highlighted the importance of public spaces during the COVID-19 pandemic for the emotional and physical well-being of residents [2–4,7–9]. The presence of public spaces in the neighborhood during the pandemic allowed residents to go outdoors, as well as use playgrounds and sports equipment. Within the constraints, this became one of the places where people could socialize while keeping their distance. The range of leisure opportunities provided in public areas could accommodate the needs of people of various ages [7,10,11]. Children could play in playgrounds, adults could use sports equipment, and the elderly could use parks or footpaths. A well-organized living environment encourages residents to be outdoors, use its benefits, engage in physical activities, or communicate with

neighbors. The pandemic highlighted the importance of public spaces for human wellbeing and that cities should be expanded to ensure the good physical and mental health of its citizens [12]. Ma, Huang, and Liu [13] found that residents who lived in neighborhoods with a better developed living environment experienced a smaller deterioration in mental well-being during the pandemic than residents who lived in poorer neighborhoods. Gul, Jokhio, Sultan, Smith, Nizam, Moeinaddini, and Hafiz [14] found that neighborhoods with more visual access to green space were more comfortable during the pandemic. According to McCormack, Petersen, Naish, Ghoneim, and Doyle-Baker [15], during the epidemic, individuals started using public areas as locations to exercise and maintain their physical activity. Faedda, Plaisant, Talu, and Tola [16] determined that cities must be expanded to ensure residents have access to public spaces, as they are important for both physical and mental health, and that the development must be carried out after assessing the changed socialization habits of residents as a result of the pandemic. The pandemic caused business closures, job losses and a decline in economic well-being. The loss of jobs was caused by the closure of various institutions, where it was no longer possible to organize teleworking [17]. Seeing how various organizations were closing, people began to worry about their jobs, financial stability, and existing commitments. The pandemic caused anxiety about their future, ensuring their family's financial well-being, and their ability to generate income. Most of the job losses were in companies where contactless work could not be ensured—factories, convenience stores, and service companies. Mostly, such jobs do not pay well and are occupied by minimum wage earners. They often live in old neighborhoods, and, therefore, they tend to be most affected by the pandemic. The loss of jobs also limited them socially, as they could no longer afford to go to places that required spending money—theatres, sports clubs, various activities, etc. As the pandemic left people isolated and unemployed, the effects of the pandemic are still being felt now that the restrictions are over. One way to help people recover more quickly from the pandemic and its consequences is to revitalize old neighborhoods—renew environmental and public spaces. Revitalization, as a physical renewal of the living environment, should improve people's social well-being, economic well-being, and ensure sustainability [18].

The social and economic well-being of the population remains one of the main objectives of urbanization, and urban development must be people-centered first and foremost. Sustainable urbanization must encourage residents to use public spaces, footpaths, and cycle paths. It must allow for the development of social ties and economic prosperity. As much as we would like to ensure the well-being of residents across all the city, we are aware of neighborhoods in cities that are unattractive, have no leisure facilities, are unmaintained, and have the stigma of being an 'unsafe' neighborhood [19]. Most often, cities have such old neighborhoods adjacent to the central part of the city, which were created only after the beginning of urban development. Cities began to spread laterally as the world's population increased, and most of the investment went towards developing new neighborhoods rather than improving old ones. In order to achieve sustainable urbanization—which focuses on the physical, psychological, social, and economic well-being of the population—we need not only to build new functional neighborhoods, but also to renovate the old ones.

Revitalization is the most common approach to renew old neighborhoods, because it has multiple benefits as a physical improvement of the living environment. Revitalization improves the physical condition of the neighborhood by providing sidewalks, bicycle paths, and public spaces; by increasing the social well-being of residents; by providing an opportunity to make social connections and increase the economic well-being of residents; and by increasing the price of real estate [20,21]. The revitalization of residential neighborhoods is a widely studied topic among academics. It analyzes its processes, offers suggestions for their improvement and optimization [22–25], uses technology to reduce the number of errors [26,27], and analyses the social and economic benefits of revitalization [28–32].

The beneficiaries of the revitalization process are the residents of the neighborhood, so it is crucial to know what has changed in their lives after revitalization. The literature review found that social and economic changes are primarily only assessed in the general

context of revitalization—everything is seen as a process that has had positive or negative benefits [27,30,31,33]. However, there is a lack of analysis that identifies the link between revitalization project solutions and the social and economic well-being of residents. The article examines neighborhood revitalization as a physical renewal of the environment, during which sidewalks are renewed, bicycle paths are installed, and public spaces are created.

In order to remedy this knowledge gap, the study has two main objectives: (1) to determine the impact of the typical technical solutions used in revitalization on the social well-being of the population and (2) to determine the impact of the typical technical solutions used in revitalization on the economic well-being of residents. To achieve the objectives, a revitalization project of the Žirmūnai triangle neighborhood was selected. After identifying the typical technical solutions applied in the revitalization, a survey of the residents of the Žirmūnai triangle was carried out to examine the relationship between the typical technical solutions and the social and economic well-being of the residents.

The paper is organized as follows. Section 2 of the paper provides a literature review on revitalization and its impact on social and economic well-being. Section 3 presents the study area and analyses it before and after revitalization. Section 4 describes the materials and methodology used in the study. Section 5 presents the results of the study. Section 6 discusses the results obtained. Section 7 presents the conclusions of the study.

2. Literature Review

The physical renewal of neighborhood environments in the literature is usually called "urban revitalization", "urban renewal", or "urban regeneration". All these terms essentially refer to the same environmental renewal procedure for the neighborhood. Balsas [34] highlighted that there was no universally accepted concept of "urban revitalization", and that its application had changed throughout time. Yu and Kwon [21] described "urban revitalization" as the renewal of the neighborhood's physical environment through infrastructure improvements that create opportunity for the neighborhood's living environment to flourish. Zheng, Qiping, and Wang [35] used the term "urban regeneration," which indicates the environmental renewal of the neighborhood to address the social and economic issues of the residents. Meanwhile, Huang, Pai, and Liu [36] and Heang, Zheng, Hong, Liu, and Liu [19] described the renewal of the neighborhood physical environment as "urban renewal", which ensures social and economic well-being of residents. In essence, "urban regeneration", "urban renewal", and "urban revitalization" all refer to the physical neighborhood environment renewing, which has an impact on the social and economic well-being of residents. For the purpose of maintaining consistency in terminology, this article will refer to the physical renewal of the neighborhood environment as revitalization. This phrase was used in the Žirmūnai triangle project vision.

Revitalization is initiated by local authorities, as they are responsible for urban development and maintenance. Funding is often local, or there may be a mix of funding, either partly from local authorities or from international projects. Cai, Yang, and Li [37] found that the success of revitalization was determined by factors such as the project development process, legal structure, unknown consequences, and funding sources. According to Zhu, Li, and Jiang [29], the failure of revitalization was caused by citizens' unwillingness to participate financially, a lack of revitalization initiatives examples, ill-conceived project designs, and confusing legal frameworks. Liu, Wu, Liu, and Li [38] also asserted that the lack of cooperation between municipal authorities and residents had a negative impact on revitalization. Heang, Zheng, Hong, Liu, and Liu's [23] study confirmed that the best revitalization results were achieved through cooperation between the authorities and residents, as residents pointed out problem areas in the neighborhood that could only be identified after a long period of time. It is also important to be aware of the difficulties that are most often encountered in cooperation between authorities and residents [29]. It is common to find more than one neighborhood in a city that needs revitalization, and it is, therefore, necessary to establish criteria for the selection of priority areas [24].

It has been observed, after analyzing the implemented examples of revitalization, that it is carried out mostly in multistory apartment buildings neighborhoods [39]. However, previous studies identified the same problems in multistory apartment building neighborhoods: a lack of green spaces, lack of parking spaces, lack of playgrounds or sports grounds, unpaved pedestrian pathways, and a lack of bicycle paths [25,39,40]. An analysis of the Re-Block urban renewal projects in Budapest, Magdeburg, Rome, Gelsenkirchen showed that all the projects used the same technical solutions: the creation of a central square, the creation of pedestrian paths, the creation of cycle paths, the creation of sports grounds and playgrounds, and the creation of parking spaces [41,42]. It might be stated that the project organizer is responsible for the use of selected solutions; however, an examination of other revitalization projects revealed the same typical solutions as those stated above [21,31,39,43]. Taking into account the most commonly used revitalization solutions, the article names sidewalks, bicycle paths, central squares, sports fields, playgrounds, and parking lot installation as typical revitalization solutions. In Slovakia, the revitalization of small towns was based on park renovations, pedestrian pathways, bicycle path, and playground installation [44]. Mareeva, Ahmad, Ferwati, and Garba [45] explored the possibilities of neighborhood renewal and proposed implementation solutions that were analogous to typical solutions. The identification of typical revitalization solutions and knowledge sharing enabled the prevention of potential errors [46]. Solutions such as pedestrian path installation, bicycle path installation, and public space creation are also used because of their benefits for the residents. Duan, Lei, Tong, Wang, and Hou [47] revealed that inhabitants had more route alternatives, including walking routes and routes for quick walks to service providers, the wider the network of pedestrian paths were. According to the study, by balancing the amount of green space and pedestrian paths, people were more likely to enjoy walking. Sehgal and Toscano [48] investigated how the developed environment in neighborhoods in terms of pedestrian paths, amenities, parking, and green spaces interacted with blood pressure. It was found that neighborhoods lacking such infrastructure or leisure facilities had higher blood pressure compared to neighborhoods with such infrastructure. The study also suggested that residential environments should be designed to protect and promote the health of the population. Rivera-Navarro, Bonilla, Gullon, Gonzalez-Salgado, and Franco [49] found that the physical activity of the residents was directly related to the availability of physical activity facilities in the neighborhood. Physical activity is linked to psychological health. Haron, Zainol, Wan Omar, and Rahman [50] examined the relationship between the provision of a cycling path and the willingness to use it in a neighborhood and found that the main factors that influenced cycling in a neighborhood were the opportunities created for cycling by the provision of paths, the benefits gained in terms of shorter paths, faster access to facilities, and the physical activity generated.

The existence of interpersonal connections and a feeling of community, as well as the accessibility of social services, are indicators of social well-being, and they depend on the physical environment of the neighborhood [51,52]. Thus, revitalization technical solutions that improve the neighborhood environment have a positive impact on social well-being. The environment in the new neighborhoods is far better than that in the old ones. Csomós, Farkas, Kolcsár, Szilassi, and Kovács [53] discovered that the distribution of social groupings in various sorts of communities was what caused the biggest social inequities. Young people want to live in nice neighborhoods where real estate is more expensive and they can afford it, while low-income people cannot afford to buy property in nice neighborhoods, thus leading to marked social inequalities. Planners of revitalization projects should understand that the decisions they make could influence social capital in a neighborhood. The built environment can promote or hinge social interactions between residents [54]. The presence of public spaces in the neighborhood helps to integrate different social groups [36]. Shemai and Hananel [55] noted that revitalization not only aimed to ensure urban diversity, but also created social and economic diversity. The public areas can be modified for different occasions and to facilitate interaction between members of various social

groupings [12]. Further social benefits result from using the newly built public places for events as well as leisure areas, since various individuals participate in similar pursuits. It also adds economic benefits, as investors, event hosts, and food vendors are attracted. Community centers are established in some regeneration projects so that residents can participate in a variety of activities [56]. Community centers can encourage social capital in neighborhood [57,58]. Mouratidis and Yiannakou [51] found that services and their accessibility also had a positive impact on social well-being. Revitalization in small towns had included the creation of public spaces, local frontages, social gathering places, and the renovation of natural places such as lakes and riversides. These solutions helped to create social links, as people become involved in organized events, met new people, and crime rates also decreased [59]. According to recent research, community revitalization projects that refurbished public places fostered social interactions, made it easier for newcomers to settle in, boosted neighborhood satisfaction, and enhanced their inhabitants' psychological well-being [60]. The renovated environment of the neighborhood gives residents satisfaction regarding their living environment [32]. However, there are also negative effects of neighborhood revitalization. Nixon, Carlton, and Ma [61] examined an example where the economic value of a neighborhood increased because of revitalization and residents were displaced from their residences, as new residents with higher incomes took their place. This was also confirmed by Ruming, Mee, and McGuirk [62], who determined that the effort to ensure equality between different groups of people, by revitalizing neighborhoods, did not always end in ensuring equality, as it can deepen social exclusion. Therefore, when preparing revitalization projects, it is important to maintain a balance so that residents are not pushed out of their neighborhoods.

Depending on the location of a neighborhood in a city, the economic prosperity of neighborhoods and the number of businesses located there vary. Neighborhoods closer to the city center have an increase in the number of businesses and small shops, while those further away have a corresponding decrease. As most jobs are concentrated in the central part of the city, businesses are concentrated around the center. Therefore, the distance to the city center also changes the indicator of economic well-being. As the neighborhoods close to the city center are old, even though their location is convenient, businesses do not locate there. These neighborhoods are usually places with a few shops, beauty salons, and other local service businesses. Park and Kim [33] found that the revitalization of the park had increased the sales of the surrounding stores, attracted more people, increased economic prosperity, and created new jobs. A study on the revitalization of small towns in Poland found that revitalization helped to create new jobs for locals but did not reduce the unemployment rate [59]. Lin, Huang, Fu, Chen, Zhao, Li, and Tzeng [63] and Hui, Chen, Lang, and Ou [43] discovered that revitalizing a neighborhood boosts the area's economic prosperity. It becomes attractive to investors due to the landscaped environment and new residents who would like to buy a home there. Wadu Mesthrigea, Wongb, and Yuka [64] confirmed that revitalizing a whole neighborhood, rather than a single building, increased the price of real estate in the neighborhood and had a positive impact on surrounding areas. This conclusion was supported by Dewi, Susanti, and Wungo's [65] study, which found an increase in the price of real estate in the neighborhood after revitalization. As the price of real estate in the whole neighborhood increases, the economic well-being of the residents also improves, as they have higher-value properties. Also, as the neighborhood is revitalized, new businesses seek to locate there, thereby producing jobs. Wilaon and Hodges [66] found that the emergence of local retail outlets in the neighborhoods increased social connections between local people.

Following the pandemic, communication patterns have changed, and people have become more secretive by avoiding encounters and gathering in public spaces. Residents have been found to prefer small public spaces adjacent to their homes where there are fewer people than large public spaces in common urban areas [67]. In the post-pandemic period, residents feel safer walking in spaces where there are up to three people, more greenery, and fewer paths in the general area. Such change also shapes a new approach to

planning solutions for public spaces. Sikorska and Sikorski [68] analyzed possible solutions for the management of public spaces that restricted the flow of people. It was proposed to organize the environment in such a way that the most necessary services could be reached on foot or by bicycle, as well as ensure people's physical activity. After the pandemic, people's daily routines altered; they now spend more time in local communities and make less unnecessary trips [12]. Also, the pandemic compelled planners to consider innovative urban design strategies that would be advantageous both during and after the outbreak. Sait and Jivraj [69] proposed a possible neighborhood design option that had ensured a 15-minute neighborhood concept but, at the same time, had ensured normal life during the pandemic. It was proposed to create various public and private spaces to allow free time and safe communication with neighbors to ensure daily services within the neighborhood (goods, work, sports) that would be accessible on foot or by bicycle. The 15-minute city concept ensures the accessibility of services and the reduction of the need to move around the city. According to this concept, the most necessary daily services are obtained in the neighborhood, thus reducing the need to make trips by means of vehicles, thus reducing environmental pollution, which is an important aspect to ensure city sustainability [70]. Mocák, Matlovičová, Matlovic, Penzes, Pachura, Mishra, Kostilníková, and Demková [71] examined the example of the revitalization of the neighborhood of Špitalka, which had created places for trade so that residents could purchase goods and sellers could earn money without moving away from their place of residence. This example not only substantiates the concept of the 15-minute city, but also confirms how important it is to have common spaces in the community where residents can meet, communicate, and ensure social capital [54].

Bereitschaft and Scheller [72] analyzed the solutions for the transformation of public spaces applied in the world during the pandemic period. Wider than necessary sidewalks and bicycle paths were installed to ensure distance, so that residents could feel safe using them. Instead of parking spaces on the streets, small public spaces with raised seating areas were set up for communication. In order to preserve the distance, cafes used to occupy the seats with plush toys. Business owners tried to adapt to the pandemic restrictions and at the same time ensure quality services during the quarantine period. Askarizad and He [5] used the grid-based method in their studio, proposed furniture and landscaping solutions for public spaces that ensured a safe distance of at least one meter between seating areas, and created many separate small spaces for safe communication in a large public space. In small spaces, 2–4 people could communicate while keeping a safe distance. Such a design of public spaces would ensure safe distance and allow people to communicate in more private spaces.

After the pandemic, the goal is to maintain safe distances, although personal safety from criminality is still crucial. Built environment can promote safety in neighborhood [54]. The most vulnerable groups in terms of security are children and women [73]. Blöbaum and Hunecke [74] found that women had not used neighborhood public spaces, recreation areas, sports equipment, or other leisure opportunities due to a sense of insecurity. For women, the feeling of security in the environment increases by the presence of other women, environmental lighting, and visibility of space [75]. Perez-Tejera, Anguera, Guardia-Olmos, Dalmau-Bueno, and Valera [73] and Sun, Lin, and Yin [54] found that women felt safer when living in a neighborhood for a long time, even though it did not have additional security solutions. Matlovičová, Mocák, and Kolesárová [76] analyzed environmental planning solutions that could increase security—such as the creation of monitored spaces (increases the feeling of security), the use of greenery near buildings (to protect against vandalism), and the installation of lighting (ensures the ability to notice other people). When choosing revitalization solutions, it is important to consider the safety of the most vulnerable groups of people, because designers have the potential to prevent crime from happening [77]. Alonso, Andrews, and Jorda [78] found that, after the revitalization and proper re-planning of spaces, the number of crimes in the neighborhood decreased by 10–15 percent.

The review of the literature showed that revitalization, in which only the physical environment was renewed, not only improved the neighborhood's aesthetics, but also increased social ties among residents, improved their social well-being, and boosted the neighborhood's and the surrounding area's economic prosperity. The distinctiveness of the living environment was particularly accentuated by the pandemic, as it was probably the only place where inhabitants could spend their leisure time safely. Revitalization is about neighborhood renewal technical solutions that change many areas of life. Yet, little research has been done to determine how the most common revitalization solutions actually increase social and economic well-being. Using the example of Žirmūnai triangle revitalization project, during which the physical environment of the neighborhood was renewed; pedestrian paths and bicycle paths were installed; and public spaces, playgrounds, and sports fields were created, this study's aim is to identify the link between these typical revitalization solutions and the social and economic well-being of the inhabitants.

3. Study Area before and after Revitalization

3.1. Žirmūnai Triangle before Revitalization

The Žirmūnai neighborhood was built in Vilnius around 1955 (Figure 1, left). It was planned according to the mass construction model, which had guaranteed residences for many residents. The neighborhood is 2–3 km from the city center (Figure 1, right), near the Neris River and near commercial and business centers. The Žirmūnai triangle is a part of the Žirmūnai microdistrict bounded by Tuskulėnai St., Minties St., and Žirmūnų st.
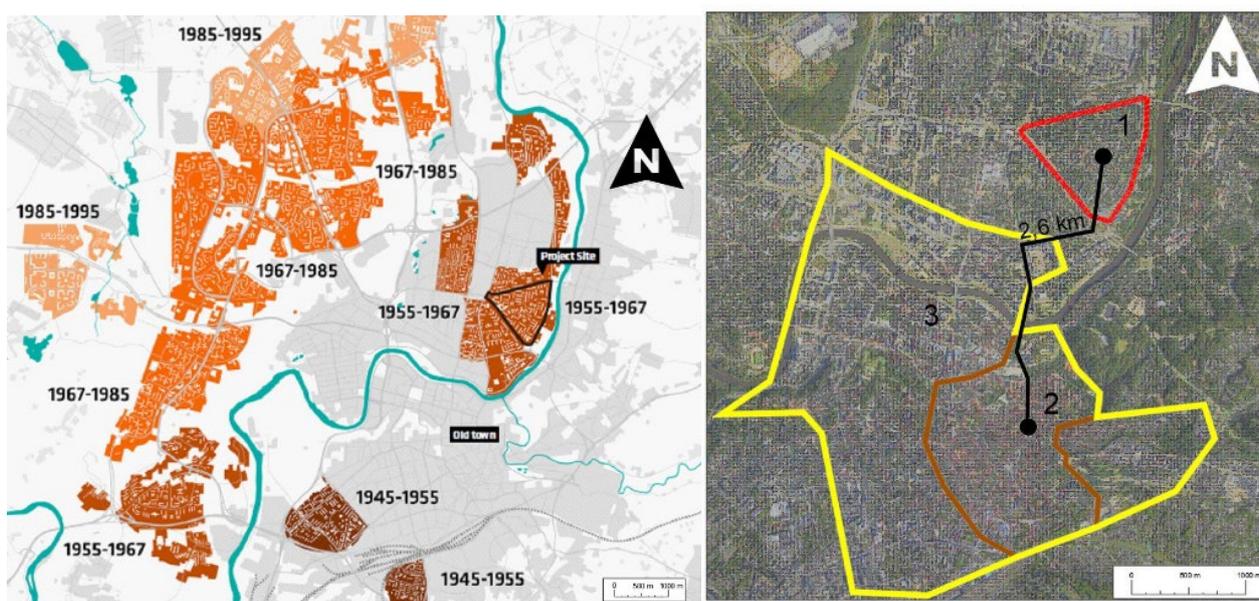
Figure 1. Mass construction districts in Vilnius (**left**). Žirmūnai triangle neighborhood place in the city, where 1—Žirmūnai triangle, 2—Vilnius city old town, 3—central business district (**right**).

The Žirmūnai triangle is dominated by multistory apartment buildings, but also includes low-rise buildings and new multistory apartment buildings. The old multistory apartment buildings are outdated and do not meet energy consumption requirements. Residents are frustrated by the noise in their flats, the high heating costs, and the tightness of the buildings [79]. The neighborhood has a number of social services that are typical of a multistory apartment building neighborhood, such as kindergartens, a school, education centers, a library, and commercial, business, and retail services [80]. The public transport system in the neighborhood is well developed, as the district was built when the city was just beginning to expand [81]. Trolleybus routes run every few minutes, and the distances between stops are short, so journey times are satisfactory. Most of the mass housing estates have good public transport services. The neighborhood fully met the

accessibility requirements for pedestrian routes [81], but there were some weaknesses that are also relevant for other multistory apartment building neighborhoods, such as worn pavements, a lack of proximity to the properties, trampled paths next to the paths, and sharp angled bends in paths. The unevenness of paths was noted, and no warning surfaces for the visually impaired were installed. Existing paths were interrupted at playgrounds or car parking areas. The existing path network did not meet the needs of the current population, was confusing and worn out, and was in need of renewal [81]. There were no bicycle paths in the neighborhood, as they were not planned at the time of the mass construction; the nearest is along the Neris river, which is intended for recreational use and not for daily trips. The Žirmūnai triangle has plenty of green spaces, but these have been poorly maintained with shabby and unrenewed plantations. There were also old children's playgrounds on the neighborhood, with metal equipment that was unsafe and, therefore, not up to modern standards. There were no sports facilities in the neighborhood. The lack of parking is one of the most pressing and fundamental problems of multistory apartment building neighborhoods. It should be appreciated that neighborhoods were designed for a maximum of 170 cars per 1000 inhabitants, whereas the current level of motorization is around 500 cars per 1000 inhabitants. This problem can always be found in the literature and in examples of revitalization [82,83]. Residents park their cars wherever possible—on the shoulders of the highway, on pavements, on lawns, etc. [84].

The analysis of the existing situation shows that the neighborhood is characterized by dilapidated dwellings surrounded by a confusing system of internal streets. The multistory apartment buildings are connected by untidy pavements with deteriorated tiles and a lack of warning surfaces for the visually impaired. There are no bicycle paths in the neighborhood, public spaces are not maintained, and there are no sports/playgrounds. The neighborhood is visually blighted by untidy parking due to a severe lack of parking spaces. The problems identified in the current situation are typical of those found in most old neighborhoods [25,39,40].

3.2. Žirmūnai Triangle after Revitalization

In Lithuania, individual multistory apartment buildings have been renovated since 2004, but the renovation is limited to apartment buildings only, while the surrounding environment remains in the same condition—poor. The authorities of Vilnius City, seeing the aging neighborhood and the unattractiveness of their surroundings, took part in the Re-Block project, which aims to renovate the surroundings of apartment blocks. The Žirmūnai triangle was a pilot project that could be extended to other neighborhoods in the Vilnius city.

The revitalization project used a "bottom up" procedure that involved local residents in the planning process, which is a common practice in cities around the world [39,43]. The planning of the revitalization involved representatives of local authorities, residents of the Žirmūnai triangle, representatives of the companies located in the district, and representatives of public institutions. The residents were continuously involved in the planning process, and nine meetings were held during the preparation of the revitalization project, which was divided into three main phases.

The aim of the first phase was to identify the problems in the neighborhood and find solutions to them. To achieve this goal, three meetings were organized with the residents, during which they expressed problems such as the lack of public spaces, the lack of sports and play grounds, and the feeling of insecurity in the neighborhood. Residents suggested that these problems should be solved by providing public spaces, sports and play grounds, lighting in the neighborhood, and avoiding unsafe (dark) places in the planning of developments. The result of the first phase was an initial vision for the neighborhood.

The aim of the second phase was to elaborate the vision for the renewal of the neighborhood. To achieve this goal, three meetings with residents were organized, where groups of residents and local authorities worked on more specific problems and solutions were found in the form of games—workshops. The participants in the creation of the vision were

divided into four groups: experts, residents, representatives of business institutions, and representatives of social institutions. The teams created visions of the Žirmūnai triangle of the groups they represented. Using cards, which presented various designs for the arrangement of public spaces, sports equipment, principles of renovation, principles of transport organization, examples of building possibilities, and sustainable development ideas, the participants assigned them to certain areas of the neighborhood as possible solutions. Later, all teams presented their Žirmūnai triangle visions and found similar ideas and main planning principles. Based on this, the three visions of the neighborhood were drawn up. The decision to choose a vision was based on a voting system, where all participants representing various groups of residents, business entities, and social institutions of the Žirmūnai triangle voted for the option most acceptable for them. The "Kaimynijų" vision was chosen by the residents' majority vote. The essence of this vision was that the multistory apartment buildings in the neighborhood would join together to form the community "Kaimynija" and manage the inner courtyards of the multistory apartment buildings on their own, while the rest of the neighborhood environment (public spaces, pedestrian and bicycle paths, playgrounds) would be managed by the local authorities.

The third phase, consisting of three meetings, was again devoted to detailing the renovation solutions according to the chosen vision of the "Kaimynijų", wherein they discussed the sources of funding and planning of the sequencing of works. In the third phase, the final objective of the revitalization project was born and then handed over to the designers for implementation.

The final vision, Figure 2, of the neighborhood revitalization was approved on 2 February 2015, and the project preparation started. The building permit was obtained on 9 September 2018, the construction works started on 9 September 2019, and the construction works were completed on 9 September 2021.

Figure 2. Vision for the Žirmūnai triangle. 1,2,3—pedestrian and bicycle paths along the main streets; 4—internal network of pedestrian paths; 5—public space, 6,7,8—sports and playgrounds, 9—public parking.

The revitalization project in the neighborhood included a 3.1 km bicycle and pedestrian path along the streets that bordered the neighborhood (Figure 3). The inner pedestrian

paths of the quarter were upgraded, and footpaths were created in grassy areas. A public space of 1.2 ha was created (Figure 4), with quiet recreation areas, a playground for children under 3 years, a playground for children aged 4–12 (Figure 5) and a teenager's active recreation area. There were three sports and active recreation areas (Figure 6) on the main streets of the neighborhood and a small quiet recreation area next to the neighborhood library.

Figure 3. Bicycle and pedestrian paths in Žirmūnai triangle before (**right**) and after (**left**) revitalization.

Figure 4. The main public space in Žirmūnai triangle before (**right**) and after (**left**) revitalization.

Figure 5. Playground for children aged 4–12 in Žirmūnai triangle before (**right**) and after (**left**) revitalization.

The creation of public spaces, sports and play areas, and pedestrian and cycle paths were the most common revitalization solutions and can be seen in the regeneration plans for the Tossehof and Morandi districts [40,42].
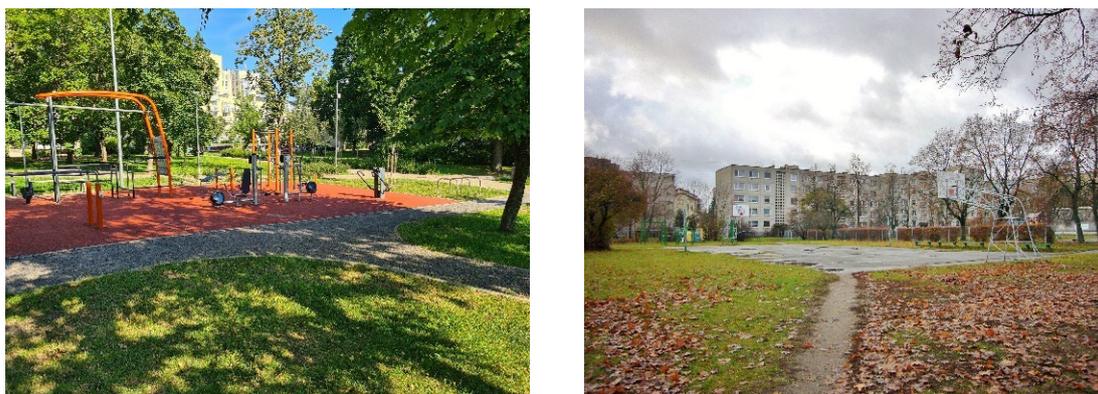
Figure 6. Sports and active recreation areas in Žirmūnai triangle before (**right**) and after (**left**) revitalization.

4. Methods and Data

The scientific literature shows that revitalization is a positive process from both a social and economic point of view, but there is a lack of information on the impact of the technical solutions implemented in a revitalization project on the social and economic well-being of residents. It is not clear how the solutions applied affect the inhabitants and what benefits they bring. Using the example of the Žirmūnai triangle revitalization project, an assessment of the impact of the revitalization solutions on people's social and economic well-being was carried out. The subject of this study is the Žirmūnai triangle neighborhood after the implementation of the revitalization project. The aim of the study is to determine the impact of the typical technical solutions applied during the revitalization process on the social and economic well-being of the residents.

4.1. Data Sources

In 2015, before the revitalization of the Žirmūnai triangle, the Vilnius City Municipality carried out a survey of residents, which is presented in the Žirmūnai triangle Urban Vision and Action Plan [84]. The survey was carried out by visiting residents at their homes and asking questions related to their lifestyle in the neighborhood. The survey included questions on age, travel habits, income, available means of transport, and satisfaction with the neighborhood. A total of 415 respondents participated in the survey. The results were necessary for the project developers to get a general picture of the population living in the neighborhood.

Taking into account the survey of residents of the Žirmūnai triangle carried out in 2015 and the aim of this study, a survey was carried out in 2021, which consisted of 2 groups of questions. The first group of questions was similar to the 2015 survey (Appendix B) and the second group of questions (Appendix C) was designed to find out the impact of the technical solutions applied during the revitalization on social and economic well-being.

The survey was conducted electronically, as pandemic restrictions were still in place in Lithuania. The social network—Facebook—was searched for the apartment building communities of the residents of the Žirmūnai triangle, the communities of the neighborhood, and the district headquarters, and the survey links were sent to them. The surveys were compiled, sent, and analyzed by Miglė Zabielaitė-Skirmantė. The survey was carried out from 8 December 2021 to 20 December 2021, and 149 residents of the Žirmūnai triangle responded.

4.2. Methods

The questionnaire survey method was used to determine the impact of the typical technical solutions applied during the revitalization on the social and economic well-being of the inhabitants. The data from the first group of the survey of the Žirmūnai triangle residents were compared with the data from the survey conducted in 2015. The percentage

of responses was compared, as the results of the 2015 survey were presented only in percentage terms. The results were compared to find out the age, income, travel habits and opinion of the respondents about the neighborhood and to determine whether these indicators had changed between 2015 and 2021.

The results of the second questionnaire, which were related to changes caused by revitalization, were statistically analyzed with SPSS Statistics software. The changes in social and economic well-being before and after the implementation of the revitalization were analyzed using the Paired Sample Test (the results of the Paired Sample Test are considered statistically significant if $p < 0.05$), and the Pearson's Chi-Square Test (the Pearson's Chi-Square Test is used to test the hypothesis, it is accepted if $p < 0.05$) to determine whether the technical solutions applied during the revitalization were related to the changes in the social and economic well-being of the population. The Pearson's Chi-Square Test was used to test these hypotheses:

- The social and economic well-being of the people improved as a result of using the equipment installed during the revitalization (HIP_1).
- People who spend more time in the yard after revitalization experienced an improvement in social well-being (HIP_2).
- The provision and use of cycling facilities is associated with an improvement in social well-being (HIP_3).
- The installation of facilities is associated with the establishment of new connections (HIP_4).
- Revitalization of a neighborhood is linked to a safe place to live (HIP_5).
- Knowing your neighbors increases the feeling of security in the neighborhood (HIP_6).

4.3. Variables

The data from the completed survey were restructured by assigning abbreviations and values to the variables to allow the data to be used with the SPSS Statistics software.

Social well-being before revitalization was coded as Soc_A, social well-being after revitalization was coded as Soc_B, economic well-being before revitalization was coded as Eko_A, and economic well-being after revitalization was coded as Eko_B. The possible answers from the questionnaire were: very good—5, good—4, average—3, bad—2, very bad—1, and other—0. The use of public spaces, sports, and play equipment after revitalization was coded as VSP, people spending more time in the yard after revitalization was coded as KIEM, people cycling more after revitalization was coded as DV, people participating in a "Kaimynijų" program were coded as KAMN, people enjoying living in the neighborhood were coded as ZIRM, people getting to know more of the neighbors after revitalization were coded as BEND, and people who feel more secure in their neighborhood after revitalization were coded as SAFE. The possible answers from the questionnaire were given the following values: yes—2, no—1, and other—0. The change in social well-being was coded as SOC_P, the change in economic well-being was coded as EKO_P. The values were assigned to the variables 2—improved, 1—deteriorated, and 0—no change.

5. Results

5.1. Analysis of Data from the Group 1 Questions

The results of the first group of responses to the 2021 survey were compared with the results of the 2015 survey. Table 1 provides general data on the respondents to the revitalization survey in 2015 and to the 2021 survey.

Table 1 shows that in 2015 the survey had the highest participation of respondents aged 18–29, 50–59, and 60–69, and, in 2021, the survey had the highest participation of respondents aged 30–39 and 18–29. The 2015 survey was carried out with live interviews, so the age group of the respondents reflects a more nonworking age group, as the survey was carried out during working hours. A total of 46% of respondents to the 2015 survey indicated that their family income was mostly defined by being able to buy food, but they had to save for household goods; 5% of respondents could afford everything, and 8% of respondents indicated that they only had enough money for food. In the 2021 survey,

36.6% of the respondents indicated that they could easily buy household goods but would need to save for a car, 14.1% could afford everything, and 1.3% could only afford food. The age distribution and working capacity was also confirmed by the respondents' choice of description of family income. Respondents in the 2015 survey were more likely to be of nonworking age, and, therefore, their income was defined by their ability to buy food, whereas respondents in the 2021 survey were of working age and described their income as being able to buy household goods easily but needing to save for a car.

Table 1. Basic Characteristics of Interviewees.

Variables		**2015 Survey Results, % [84]**	**2021 Survey Results, %**
Interviewees	N	415	149
Age	18–29	24	21.1
	30–39	16	38.3
	40–49	7	18.8
	50–59	22	15.4
	60–69	23	2.7
	70–79	8	2.7
Which of the following statements about your family income would best suit you?	We can afford everything	5	14.1
	We can afford car but for house or flat we have to save	15	33.6
	We can afford household goods but for car we have to save	20	36.2
	We can afford food but for household goods we have to save	46	14.1
	We can afford only food	8	1,3
	Hard to say	6	0.7

Table 2 shows a comparison of the results of the first set of questions with the results of the 2015 residents' survey conducted in the Žirmūnai triangle Urban Vision and Action Plan [84]. The results reveal the residents' views on their neighborhood, their daily travel habits, and the means of transport used for this purpose. The results of parking habits in the neighborhood are presented.

Table 2. Comparison of the results of the first group of questions with 2015 covered with results.

	2015 m. Survey Results, % [84]	**2021 m. Survey Results, %**	**Change, p%**
People would recommend living in the Žirmūnai triangle	80.0	86.0	6.0
Families owning car	60.0	85.9	25.9
Families owning one or more bikes	40.0	47.2	7.2
Families that use car every day	59.3	54.9	−4.4
Families that use car every day rarely (once a week or several weeks)	26.7	23.9	−2.8
Residents make daily trips by car	34.0	48.6	14.6
Residents make daily trips by public transport	38.0	26.1	−11.9
Residents make daily trips by bicycle	5.6	1.4	−4.2
Residents make daily trips by foot	14.7	17.6	2.9
Residents would agree to park the car (in a secure parking lot) within the yard area	67.9	26.8	−41.1
Residents would agree to park the car (in a secure parking lot) in an adjacent yard or alike distance	25.2	60.6	35.4

Table 2 shows that, after revitalization, 6p% of the respondents would recommend living in the neighborhood to other people. The number of families with cars increased by 25.9p%, and the number of families with bicycles by 7.2p%. There was a 4.4p% decrease in the number of families using a car every day and a 2.8p% decrease in the number of

families using a car once a week. In 2021, there was a 14.6p% increase in the number of respondents making daily car trips, an 11.9p% decrease in the number of respondents making daily trips by public transport, a 4.2p% decrease in the number of respondents making daily trips by bicycle, but there was a 2.9p% increase in the number of respondents making daily trips by foot. The number of residents who wanted to park in their backyard decreased by 41.1p%, while the number of people who wanted to park further away from the backyard increased by 35.4p%.

5.2. Analysis of Data from the Group 2 Questions in the 2021 Survey

The data in Appendix A Table A1 show the changes in the neighborhood after the implementation of the revitalization.

The respondents rated social well-being before revitalization as very good rather than average ($M = 3.56$, $SD = 1.03$), with 43% of the respondents selecting good and nearly 35% of the respondents selecting average. After revitalization, the average rating of social well-being was higher than before revitalization ($M = 3.82$, $SD = 0.99$), with 50% of respondents rating social well-being as good, and 23% of respondents selecting as it average. Social well-being improved slightly but not significantly after revitalization. The economic well-being before revitalization was rated very good by the respondents ($M = 3.54$, $SD = 0.88$), with 46% of the respondents selecting a good rating and 38% of the respondents selecting a medium rating. After revitalization, the average economic well-being rating was lower than before revitalization ($M = 3.52$, $SD = 0.98$), with 39% of the respondents rating the economic well-being as good and 40% of the respondents rating it as average. Economic well-being decreased slightly after revitalization. Of the 149 surveyed respondents, 89% indicated that they liked living in the neighborhood, while 11% indicated that they did not like living there ($M = 1.86$, $SD = 0.32$). After revitalization, 34% of respondents reported spending more time in their yard, while 62% of respondents did not spend more time in their yard ($M = 1.30$, $SD = 0.54$). During the revitalization process, bike paths were installed, and 22% of the respondents indicated that they started cycling more after the installation of the bike paths, but 75% of the respondents did not increase their cycling because of the installation of the bike paths ($M = 1.17$, $SD = 0.50$). Revitalization renewed pavements throughout the neighborhood and provided easy access to public transport stops, but the installation of the paths has only encouraged 7% of respondents to use public transport more than before revitalization, while 91% of respondents were affected by the installation of the paths ($M = 1.05$, $SD = 0.29$). A total of 12% of the respondents indicated that they got to know more neighbors after revitalization, but 87% of the respondents indicated that they did not get to know more neighbors after revitalization ($M = 1.11$, $SD = 0.35$). A total of 63% of the respondents indicated that they use the public spaces, playgrounds, and sports fields provided in the neighborhood during the revitalization process, while 35% indicated that they do not use the facilities ($M = 1.61$, $SD = 0.53$). A total of 58% of the respondents indicated that they felt safer in the neighborhood after revitalization, while 38% of the respondents indicated that the feeling of safety had not changed ($M = 1.54$, $SD = 0.58$). During the revitalization process, parking spaces were redesigned and reduced by placing new spaces further away from the houses on the main streets. This redesign of parking spaces improved parking for 11% of the respondents, while 83% of respondents did not see an improvement ($M = 1.06$, $SD = 0.41$). During the revitalization process, the management of the internal courtyards of the blocks of flats was left to the discretion of the residents to manage, as a test of revitalization work to be financed by the residents themselves. Only 8% of the respondents indicated that they participate in the "Kaimynijų" program, while 47% did not participate, and 45% of the respondents did not know if their apartment building participates in the program.

To determine the changes in social and economic well-being before and after the revitalization of the Žirmūnai triangle, a Paired Sample Test was carried out (the results are considered to be statistically significant at $p < 0.05$) with the SPSS Statistics software (IBM, Armonk, NY, USA), and the results are presented in Table 3.

Table 3. Paired Sample Test results social and economic well-being before and after revitalization.

		SOC_A-SOC_B	EKO_A-EKO_B
	Mean	−0.261	0.020
	Std. Deviation	0.791	0.609
	Std. Error Mean	0.064	0.049
95% Confidence Interval of the Difference	Lower	−0.389	−0.078
	Upper	−0.133	0.118
	t	−4.035	0.403
	df	148	148
Significance	One-Sided p	<0.001	0.344
	Two-Sided p	<0.001	0.687

A sample *t*-test was used to detect changes in social well-being. The data used were SOC_A and SOB_B. The results showed a small change in social well-being before ($M = 3.56$, $SD = 1.03$) and after ($M = 3.82$, $SD = 0.99$) revitalization. The results were statistically significant at t (149) = −4.03 and $p = 0.001$. Significance increased by 0.26 with a 95% confidence interval of −0.38 to −0.13. Social well-being was only marginally related to revitalization.

A sample *t*-test was used to detect changes in economic well-being. The data used were EKO_A and EKO_B. The results showed a small change in economic well-being before ($M = 3.54$, $SD = 0.88$) and after ($M = 3.52$, $SD = 0.98$) revitalization. The results were statistically insignificant at t (149) = 0.43 and $p = 0.344$. Significance decreased by 0.02 with a 0.95% confidence interval from −0.07 to 0.11. Economic well-being was not related to revitalization.

Table 4 shows the results of the hypothesis testing using the Person's Chi-Square test with SPSS Statistics. The hypothesis is accepted when $p < 0.05$.

Table 4. Hypothesis test with Person's Chi-Square test.

Hypothesis	Test Item		Value	df	Person's Chi-Square Asymptotic Significance (2-Sided)	Test Result
HIP_1	VSP	SOC_P	4.640 [a]	2	0.098	Independent
	VSP	EKO_P	9.429 [b]	2	0.009	Dependent
HIP_2	KIEM	SOC_P	1.026 [c]	2	0.599	Independent
HIP_3	DV	SOC_P	0.198 [d]	2	0.906	Independent
HIP_4	BEND	VSP	5.853 [e]	1	0.016	Dependent
HIP_5	ZIRM	VSP	9.345 [f]	1	0.002	Dependent
Hip_6	BEND	SAUG	1.612 [g]	1	0.204	Independent

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.17. [b] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.38. [c] 1 cell (16.7%) has expected count less than 5. The minimum expected count is 4.79. [d] 1 cell (16.7%) has expected count less than 5. The minimum expected count is 3.10. [e] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.64. [f] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.28. [g] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.49.

Hypothesis 1. *People's social (SOC_P) and economic well-being (ECO_P) is improved when they use revitalization equipment (VSP). The Person's Chi-Square test showed that equipment use and social well-being were significantly independent of each other, X^2 (2, N = 149) = 4.6, p > 0.05, but equipment use and economic well-being were significantly dependent on each other, X^2 (2, N = 149) = 9.4, p < 0.05. The provision of social well-being and equipment did not indicate dependency, as it is likely that the respondents did not understand the concept of social well-being. This statement is substantiated by HIP_4 results, since a strong dependence was found between the use of equipment and getting to know neighbors, which is basically social well-being. Economic well-being was related to the installed equipment, since the improvement of the environment made the neighborhood*

more attractive, which was equivalent to new neighborhoods, thus raising the price of real estate or creating additional jobs.

Hypothesis 2. *People who spend more time in the yard (KIEM) after revitalization experience an improvement in social (SOC_P) well-being. The Person's Chi-Square test showed that spending time in the yard was significantly independent with improvements in social well-being, X^2 (2, N = 149) = 1.0, p > 0.05. During the revitalization, only the public spaces were renovated, not the courtyards of the multistory apartment buildings, so it can be seen that people did not spend more time in them. Only a renewed environment encourages people to use it, while unrenovated areas continue to remain unused.*

Hypothesis 3. *The presence and use of cycling infrastructure (DV) is associated with improvements in social well-being (SOC_P). The Person's Chi-Square test showed that cycling is significantly independent with improvements in social well-being, X^2 (2, N = 149) = 0.19, p > 0.05. Cycling was not associated with new social connections, as people cycle alone, mostly for leisure or sport, and cycling does not create the conditions for direct social connections.*

Hypothesis 4. *The use of equipment (VSP) is associated with making new connections (BEND). The Person's Chi-Square test showed that equipment use was significantly dependent with familiarity X^2 (1, N = 149) = 5.8, p < 0.05. The newly installed equipment in the neighborhood attracted residents to use it, which created conditions for people to communicate, discuss changes, and share their opinions—thereby ensuring social well-being.*

Hypothesis 5. *Neighborhood revitalization and its implemented solutions (VSP) are related to neighborhood liking (ZIRM). The Person's Chi-Square test showed that the use of revitalization facilities and neighborhood liking were significantly dependent X^2 (1, N = 149) = 9.3, p < 0.05. The renewal of the environment was most significantly related to the reliability of living here. People like a well-maintained environment, new equipment, and well-maintained trails. Žirmūnai was one of the most run-down neighborhoods, so such a change in the environment greatly affected people's attitudes towards it.*

Hypothesis 6. *Knowing neighbors (BEND) increases feelings of safety (SAUG) in the neighborhood. The Person's Chi-Square test showed that knowing neighbors was significantly independent with feeling safe X^2 (1, N = 149) = 1.6, p > 0.05. For the respondents, getting to know their neighbors does not give them a sense of security, because it takes longer than half a year after revitalization to ensure or feel security. It takes time for people to start trusting other people to protect them from something, which is why addiction is not defined here.*

6. Discussion

The COVID-19 pandemic affected people's physical and mental health, since they felt alone and unable to communicate with others [2–4], as well as their economic well-being, because many lost their employment [6,24,28]. The pandemic showed the importance of a close living environment, as it was probably the only place where people could exercise, socialize, and spend their leisure time safely. When restrictions started, some residents found that there was no leisure space in their neighborhood, no public spaces, no sports grounds, and no playgrounds. This made the residents' psychological health even worse, as they felt inferior to the residents of the other new neighborhoods. With the end of the pandemic, the need of residents to spend their free time in their living environment has not changed [85]. The pandemic has shown how important and necessary a close living environment is for maintaining good physical and psychological well-being. It seems that once the pandemic is over, the population should return to life as it was before the pandemic. People should go to work, public places, and sports clubs again, as well as want to communicate with other people. However, the pandemic has isolated people and changed their living habits: now residents avoid physical contact. This is

because the COVID-19 virus has not disappeared. Some people have lost their loved ones because of it and are afraid of getting sick or infecting other people. Therefore, the renovation of the living environment after the pandemic period creates favorable opportunities for making social connections safely and keeping a social distance, since residents can communicate with neighbors in the public spaces provided. Neighborhood revitalization is also a sustainable way of renewing the environment, as it aims to turn the old into new again, thereby giving the neighborhood the opportunity to look attractive again and make the residents want to be there. The end of the pandemic has confirmed the need to change the approach to public spaces and learn to plan them anew in order to ensure the needs of the population both during and after the pandemic [86,87].

Revitalization is also used to ensure equal living conditions in the city by renewing a neighborhood's environment. Typical solutions used in revitalization are the creation of public spaces, the installation of sports grounds and playgrounds, and the renewal of pavements and bicycle paths. Revitalization as a physical renewal of the neighborhood environment brings positive changes to social and economic well-being as well. A renewed environment provides residents with opportunities to use and interact in public spaces and to engage in physical activities on sports grounds or in playgrounds. The upgraded environment of the neighborhood attracts investment, increases the value of property in the neighborhood, creates new jobs, and, thus, improves the economic well-being of the residents. Revitalization has been found to improve social and economic well-being. However, there is a lack of research that clearly identifies the benefits of the typical revitalization solutions used in terms of social and economic well-being.

To find out the benefits of the adapted typical revitalization solution for social and economic well-being, a survey of the Žirmūnai triangle residents after revitalization was conducted. The survey consisted of two groups of questions: the first group of questions was compared with the results of a survey carried out in 2015, before the revitalization of the neighborhood, while the second group of questions was analyzed to establish the link between the solutions used and the social and economic well-being changes. The survey was carried out in December 2021, when COVID-19 restrictions were still in force in Lithuania.

The results showed a decrease in physical activity in 2021, with a 15p% increase in the number of daily car trips, a 12p% decrease in the number of public transport trips, and a 4p% decrease in the number of bicycle trips compared to 2015. The provision of a bicycle path during revitalization did not encourage residents to cycle more (73%), and the provision of a more convenient pedestrian path system did not encourage residents to use public transport (91%). The respondents' varied ages are somewhat reflected in these results. In 2015, the majority of responders were between the ages of 50 and 69; in 2021, the age range was 18 to 39. As a result, there are differences in physical activity levels between age groups, with older people often being less active. The decrease in physical activity was also due to the pandemic, as a part of the population worked from home and no longer needed to commute to work, while the remaining part of the population that continued to work from home avoided the possibility of being infected and opted for private transport instead of public transport. This observation is also mentioned by Majewska, Denis, Jarecka-Bidziska, Jaroszewicz, and Krupowicz [12], who found that, during the pandemic, the population switched from using public transport to driving.

The results show that, during the COVID-19 period, residents avoided interacting with their neighbors, because they did not get to know their neighbors after improving the neighborhood's surroundings and installing public and sports spaces (87%), and the lack of contact with neighbors was also due to the lack of knowledge about whether the resident's apartment building was part of the "Kaimynijų" program (45%).

It has been found that the typical solutions used in the revitalization process—the provision of public spaces, sports, and playgrounds—will directly contribute to the social and economic well-being of the residents. As a result, 17% of the residents experienced an improvement in their economic well-being, 17% of the residents got to know their

neighbors, and 95% of the residents indicated that they like living in this neighborhood. The use of public spaces, sports, and playgrounds is directly related to physical activity, so the provision of such facilities in the neighborhood also improves the physical health of the residents. It was found that typical revitalization solutions used in the neighborhood, such as the provision of bicycle paths and pedestrian paths, were not associated with a change in socio-economic well-being. It should be observed that most respondents in the study concerning the effects of revitalization typical solutions on social and economic well-being were in the range of ages of 18 and 39. Therefore, the obtained results reflect the changes experienced by the residents of these younger age groups rather than respondents of 2015 survey. It has been established that social well-being deteriorates with increasing age, and, for people aged 55 and older, social well-being is most dependent on their financial status [88,89]. However, Enssle and Kabisch [90] found that public spaces in the residential environment can have a positive effect on the social well-being of elderly residents. Taking this into account, it is likely that the renovated living environment during the revitalization should have a positive impact on the elderly population but should not improve their economic well-being. Additionally, the obtained results mostly reflect changes in the social and economic well-being of the population aged 18–39.

The results confirm studies [2–6] that found that the physical health and psychological health of the population deteriorated during the pandemic period, as the population was less physically active and did not socialize with people. The results of the study support the study of Sendi and Kerbler [19], who found that the creation of public spaces had a positive impact on the social connections of the residents. The results obtained and the example of the revitalization of the Žirmūnai triangle analyzed are in line with the study of Zielinska-Szczepkowska, Jaszczak, and Žukovskis [59], who analyzed revitalization solutions in small towns that improved the sense of security, but the revitalization of the Žirmūnai triangle did not lead to the creation of any new jobs. This study extends the study of Dsoiza et al. [11] by providing an example of revitalization with clearly identified outcomes that could motivate residents to contribute to revitalization. The results of the study are complementary to the study of Mareeva et al. [45], which proposes revitalization solutions for the neighborhood to be used in the revitalization of the Žirmūnai triangle, and our study can be used to find the results of changes in the social and economic well-being of the residents. The results obtained are analogous to those of Rivera-Navarro et al. [49], who found that residents were more physically active in the presence of various sports facilities in the neighborhood than in the absence of sports facilities in the neighborhood. The results are different from the studies of Bogdanovic and Mitkovic [39] and Haron et al. [50], which suggest that the creation of pedestrian paths and bicycle paths promotes physical activity, yet the studies did not establish a link between the provision of pedestrian paths and bicycle paths to commuting that included physical activity.

In addition to improving the neighborhood's environment, revitalization should focus on the development of public spaces, as well as sports and play facilities, to improve the social and economic well-being of the residents, as these are the most important contributors to their social and economic well-being. The provision of pedestrian paths and bicycle paths during revitalization did not have an impact on social and economic well-being.

The study could be used as a basis for further research on the impact of revitalization solutions on the social and economic well-being of their corresponding residents. It is suggested that a revitalized neighborhood and the non-revitalized neighborhood be used as a control group for further study in order to compare the social and economic changes between the revitalized and the non-revitalized neighborhoods.

7. Conclusions

The article analyzes revitalization as a physical renewal of the neighborhood living environment, which affects both the social and economic well-being of the population. The importance of revitalizing old city neighborhoods was highlighted by the COVID-19 pandemic, as the immediate environment of the inhabitants became perhaps the only place

where they could spend their leisure time, socialize, and stay physically active. In the aftermath of the pandemic, the neighborhood's living environment remains as important as it was during the pandemic, as the pandemic changed normal life patterns and helped to create new habits and needs. The study analyzed revitalization as an environmental renewal project, during which neighborhood pedestrian paths were renovated, bicycle paths were installed, public spaces were renewed, and playgrounds and sports fields are created. The mentioned solutions of the revitalization project are named as typical technical solutions of the revitalization project. The purpose of the study was to determine how these typical solutions of revitalization, which only renew the physical environment of the neighborhood, affected the social and economic well-being of the residents. To achieve this goal, typical revitalization solutions of the Žirmūnai triangle revitalization project were identified, and their impact on the social and economic well-being of residents was analyzed using data from a survey of residents.

The study found that the public spaces, sports, and playgrounds provided by the revitalization were directly related to the socio-economic well-being of the residents. As a result of this revitalization, 17% of the residents experienced an improvement in their economic well-being, 17% of the residents got to know their neighbors (representing a positive change in their social well-being), and 95% of the residents indicated that they liked living in the neighborhood (representing a positive change in their social well-being). The installation of pedestrian paths and bicycle paths in the revitalization project of the Žirmūnai triangle was not associated with changes in the social and economic well-being of the residents.

The results would be useful for revitalization project promoters, as they identify which technical solutions in a revitalization project have the greatest impact on the social and economic well-being of the residents. The results can be applied by revitalizing project promoters in the conceptual design of the project, and by focusing more on the design of public spaces, sports, and playgrounds, which have the greatest impact on socio-economic well-being. This study is also an excellent example of a revitalization project for residents who do not want to revitalize their neighborhood, because they do not think it will improve their social and economic well-being.

This survey may have limitations due to the sample size of respondents. The results of the study regarding the impact of revitalization on social and economic well-being may have inaccuracies, as the majority of respondents in the survey were 18–39 years old. Such a survey should be repeated before and after the revitalization of the project with the same respondents to obtain very clear results. It should also be carried out in more than one neighborhood to provide more detailed results, and a non-revitalized block should be used as a control group to capture the changes. More replicated studies of this type would add precision to the results obtained.

Appendix A

Table A1. 2021 survey statistics.

Question	Variable	Answer	N Valid	N Missing	Mean	Median	Mode	Std. Deviation	Frequency	Percent
How do you assess your social well-being before revitalization? (SOC_A)			149	0	3.557	4.000	4.00	1.029		
	0	Other							5	3.4
	1	Very bad							1	0.7
	2	Bad							6	4
	3	Average							52	34.9
	4	Good							64	43
	5	Very good							21	14.1
How do you assess your social well-being after revitalization? (SOC_B)			149	0	3.818	4.000	4.00	0.993		
	0	Other							4	2.7
	1	Very bad							1	0.7
	2	Bad							3	2
	3	Average							34	22.8
	4	Good							75	50.3
	5	Very good							32	21.5
How do you assess your economic well-being before revitalization? (EKO_A)			149	0	3.543	4.000	4.00	0.881		
	0	Other							2	1.3
	1	Very bad							3	2
	2	Bad							4	2.7
	3	Average							57	38.3
	4	Good							69	46.3
	5	Very good							14	9.4
How do you assess your economic well-being after revitalization? (EKO_B)			149	0	3.523	4.000	3.00	0.983		
	0	Other							4	2.7
	1	Very bad							1	0.7
	2	Bad							6	4
	3	Average							60	40.3
	4	Good							58	38.9
	5	Very good							20	13.4
Do you like living in the Žirmūnai triangle neighborhood? (ZIRM)			149	0	1.885	2.000	2.00	.319		
	2	Like							132	88.6
	1	Dislike							17	11.4

Table A2. 2021 survey statistics continuation.

Question	Variable	Answer	N Valid	N Missing	Mean	Median	Mode	Std. Deviation	Frequency	Percent
Did you start spending more time in the yard after the revitalization? (KIEM)			149	0	1.302	1.000	1.00	0.541		
	2	Yes							51	34.2
	1	No							92	61.7
	0	Other							6	4
Do you cycle more after the revitalization? (DV)			149	0	1.167	1.000	1.00	0.498		
	2	Yes							33	22.1
	1	No							108	72.5
	0	Other							8	5.4
Do you use public transport more after revitalization? (VT)			149	0	1.047	1.000	1.00	0.292		
	2	Yes							10	6.7
	1	No							136	91.3
	0	Other							3	2
Have you met more neighbors after revitalization? (BEND)			149	0	1.107	1.000	1.00	0.351		
	2	Yes							18	12.1
	1	No							129	86.6
	0	Other							2	1.3
Do you use new public spaces, playgrounds, sports equipment after revitalization? (VSP)			149	0	1.610	2.000	2.00	0.529		
	2	Yes							94	63.1
	1	No							52	34.9
	0	Other							3	2
Do you feel safer in neighborhood after revitalization? (SAUG)			149	0	1.543	2.000	2.00	0.575		
	2	Yes							87	58.4
	1	No							56	37.6
	0	Other							6	4
Has parking improved after revitalization? (PARK)			149	0	1.060	1.000	1.00	0.406		
	2	Yes							17	11.4
	1	No							124	83.2
	0	Other							8	5.4
Do you participate in the "Kaimynijų" program? (KAIM)			149	0	.630	1.000	1.00	0.629		
	2	Yes							12	8.1
	1	No							70	47
	0	Other							67	45

Appendix B

Table A3. Žirmūnai triangle question 1 group questions.

Question	Answer
Age	18–29 30–39 40–49 50–59 60–69 70–79
Which of the following statements about your family income would best suit you?	We can afford everything We can afford car but for house or flat we have to save We can afford household goods but for car we have to save We can afford food but for household goods we have to save We can afford only food Hard to say
Would you recommend living in the Žirmūnai triangle? Does your family own a car? Does your family own one or more bikes? Does your family use car every day? Does your family use car rarely (once a week or several weeks)? Do you make daily trips by car? Do you make daily trips by public transport? Do you make daily trips by bicycle? Do you make daily trips by foot? Would you agree to park the car (in a secure parking lot) within the yard area? Would you agree to park the car (in a secure parking lot) in an adjacent yard or alike distance?	Yes/No/Other

Appendix C

Table A4. Žirmūnai triangle question 2 group questions.

Question	Answer
Is your apartment building participating in the Neighborhood Program? Did you start spending more time in the yard after the complex renovation? Did you start cycling more after the complex renovation? Did you start using public transport more after the complex renovation? Have you met more neighbors since the complex renovation? Do you use new public spaces, playgrounds, sports equipment after the complex renovation? Do you feel safer in the Žirmūnai triangle after the complex renovation? Has parking improved since the complex renovation?	Yes/No/Other
How do you assess the quality of your life before/after the complex renovation of the Žirmūnai triangle? How do you assess your economic well-being before/after the complex renovation of the Žirmūnai triangle?	Very well/Well/Average/Bad/Very bad/Other

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