



**Geographia Polonica**  
2020, Volume 93, Issue 2, pp. 229-244  
<https://doi.org/10.7163/GPol.0171>



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# THE IMPACT OF SOCIAL STRUCTURE AND PHYSICAL CHARACTERISTICS ON HOUSING ESTATE RENOVATION IN POSTSOCIALIST CITIES: CASES OF VILNIUS AND BUDAPEST

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## Abstract

The article aims to analyse the renovation of housing estates in postsocialist cities. Two cities with different share of housing estates and public support system, Vilnius and Budapest are in the focus of the analysis. The renovation of housing estates is a new process in both of them; it started only in the 2000s and its outcome is far from spectacular. The most important and most common type of renovation activities is the insulation of blocks of flats because it significantly decreases the utility costs. The article investigates whether and how the social and physical characteristics of housing estates influence their renovation. The size, age, type, spatial location all have some impact on the renovation level. The authors point out that the necessity of renovation and its costs depend on the physical characteristics of the buildings but the opportunity for renovation derives from the ability to finance it. Consequently, the social status of the inhabitants and the availability of state support are of crucial importance. The findings of the analysis indicate that different combinations of state support and social status result in very different renovation activities in the two cities.

## Key words

housing estate • urban renewal • Budapest • Vilnius

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## Introduction

Many similar trends of development were common for all European capital cities at the beginning of 21st century. The city growth

and sprawl processes were followed by polarisation and socio-spatial segregation in times of neo-liberal economic policy (Tammaru, Musterd, van Ham, & Marcińczak, 2016). The fast growth and sprawl of capital cities

was monitored in all postsocialist countries of East and Central Europe and these processes gained a lot of scientific attention (Borén & Gentile, 2007; Gentile, Tammaru, & van Kempen, 2012). Besides the obvious and visible process of the raise and development of new urban spaces, the less spectacular changes happening inside the areas of housing estates developed in the post-war period also modify the socio-spatial structure of urban society (Ubarevičienė, 2017; Krišjāne, Bērziņš, Sechi, & Krūmiņš, 2019). The renovation of housing estates is one of those processes, which recently gained special attention among researchers all over Europe (Hess, Tammaru, & van Ham, 2018; Hess & Tammaru, 2019).

Renovation of housing estates is strongly connected to urban regeneration and social housing in Western-European cities (Watt, 2017). One of the main types of urban regeneration policies is the area-based, socially oriented policy (Droste, Lelevrier, & Wassenberg, 2008). There are various targeted areas from deprived city centres to old industrial areas, but post-war large housing estates became especially important in the second half of the 20th century. The criteria for the selection of target areas are mainly based on social characteristics and not on the physical problems of buildings or areas. The experience of Western-European urban regeneration suggests that the physical renovation must be combined with social, cultural, and economic targets and the cooperation of different actors in the decision-making process is also important (Droste & Knorr-Siedow, 2005). Since the social housing is significant in Western Europe and the local governments are usually responsible for social housing, their financial contribution to the related renovation projects is obviously needed, which also means that they can shape the urban regeneration policy.

The urban regeneration in the postsocialist cities developed in a very different way. After the deregulation and mass housing privatization period of the 1990s, the local governments lost the possibility of being the

main actors of the process (Tosics, 2005). Consequently, the market forces have played a major role in housing renovation. Large urban renewal projects can be found both in the inner residential and in the brownfield zone (Temelová, 2007; Górczyńska, 2014; Boros, Fabula, Horváth, & Kovács, 2016; Tolnai, 2018; Czirfusz, Horváth, Jelinek, Pósfai, & Szabó, 2020). In inner city neighbourhoods, the renovation of houses and status of inhabitants spatially overlapped already in the early 1990s (Kovács & Wießner, 1996).

While the investors transformed the upgrading quarters of the cities, changes were limited in the other, less attractive residential areas (Burneika, 2008; Brade, Herfert, & Wiest, 2009). Large housing estates often (but not exclusively) belong to the latter group, often social and/or physical downgrading process occurs (Temelová, Novák, Ouředníček, & Puldová, 2011; Neugebauer & Kovács, 2015). There are examples for public housing programmes in housing estates like the ones in Tallinn (Leetmaa, Holvandum, Mägi, & Kährik, 2018), but it is rare in the postsocialist region. Public initiated projects are also carried out in some other cities, but they are focusing on local environment, and not on the housing stock (Benkő, 2017).

The renovation of large housing estates has a long history in the Western part of Europe, but it is quite new in the postsocialist cities. There's a time lag in the development of HEs in the two parts of Europe: their construction ended in the turn of the 1970s in the Western cities and only after 1989 in the postsocialist ones (Wassenberg, 2018), so the renovation of the Western HEs also started earlier (Turkington, van Kempen, & Wassenberg, 2004).

Besides the time lag, the structural differences also have an impact on the renovation process (Hess et al., 2018). While in the Western part of Europe only a small part of the housing stock is located in the housing estates, this share is much higher in the postsocialist cities (Turkington et al., 2004). As the Eastern and Western HEs' position in the housing

market is different, their social composition is also divergent. In the postsocialist cities, the HEs are inhabited by a wide range of population, which is inevitable when HEs dominate the housing stock (Ščerbinskaitė & Krupickaitė, 2017; Marin & Chelcea, 2018). In Western countries, the housing estates have become the home of vulnerable social classes (Bolt, 2018). Their outstanding role in social housing makes the HEs eligible for substantial state support. It also explains that the renovation process was managed mainly by local and/or national governments in the Western cities (Bolt, 2018), while in the post-socialist cities the government-involvement is moderate.

The non-residential development in housing estates typically started with the emergence of new commercial and service units, which was followed by small scale local development projects (like the improvement of public green areas) a bit later (Szafranska, 2012). In most cases, there was no strategy behind the actual developments, different activities ran parallel (Warchalska-Troll, 2013). The general trend is the lack of comprehensive HE-development policy (Ouredníček, Špačková, & Pospíšilová, 2018). Though some EU-support became available in the 2010s, the renovation of housing estates has mainly remained a bottom-up process in the postsocialist cities. As a consequence, the social structure, geographic location and the physical characteristics of the HEs are likely to have an impact on their renovation (Fig. 1).

## Focus of the research

The renovation of housing estates in postsocialist cities is supported but not managed by local municipalities/state institutions, due to the lack of public housing. This means that, besides the government's housing policy, private actors may also have an impact on the renovation process. The relatively big role of the flat owners and their communities in decision-making, financing and organization raises the question if the socio-demographic composition of the inhabitants significantly influences the renovation activities. A related research question is how important the physical and spatial characteristics of housing estates are, whether or not they have an impact on the renovation process.

Though the share of housing estates in postsocialist cities is generally higher than in the Western-European ones, significant differences can be found between them. In some cities, the housing estates are important but not dominant, like in Leipzig or Prague (with one or two fifths of housing stock) while in others more than half of the housing stock was built in the postwar period, like in Bratislava or Bucharest (with three of four fifths). The share of housing estates is proved to have an effect on the housing market process (Kovács & Herfert, 2012), thus it is also likely to result in renovation rate differences. So it is worth comparing cities of each types; Budapest representing the postsocialist cities



**Figure 1.** Housing estates in Vilnius (Žirmūnai – left) and Budapest (Békásmegyer – right)

where the share of HE-flats is relatively low (one third), and Vilnius as an example of the ones with a relatively high (two thirds) share.

These cities are also different in size: Budapest belongs to the largest postsocialist cities (almost two million inhabitants), while the population of Vilnius, similarly to other Baltic capitals or Bratislava, is around half million. Budapest suffered from a sharp population decline till the mid-2000s followed by a very slow growth since then. By contrast, the population loss was moderate in Vilnius during the first two decades after becoming a capital and significant growth more recently.

The authors' decision to compare these two cities is also has to do with the different roles they played in their countries during the last century. Vilnius became the capital city of an independent country just three decades ago when the Soviet Union fell apart. This has led towards concentration of power, economy and population in the city (Ubarevičienė, 2018). Budapest was traditionally the centre of economic development in Hungary, but the suburbanization and polycentric development of the agglomeration zone has somewhat changed its position (Szabó T., Szabó B., & Kovács, 2014). We assume, that a Vilnius/Budapest comparison will represent to at least some extent the differences of renovation processes between the new and old capitals of post socialist EU member states

## Our hypotheses

1. *The age structure of the inhabitants has an impact on renovation; the share of renovation is lower in HEs where the elder generations tend to live.* This hypothesis is based on both social and economic reasoning. Due to their socialization, the elderly are rather passive stakeholders than proactive actors in the housing market (Kährlik & Tammaru, 2010). They started their housing career in the state-socialist system (in several cases even in their current flat). That time, the public authorities distributed the dwellings, and the maintenance was also their responsibility.
2. *The HEs' social structure has an effect on renovation; the housing estates with more affluent inhabitants are more renovated.* The basis of this hypothesis is the fact that a large part of the financial burden of renovation is placed on HE inhabitants in postsocialist countries. Its effect is expected to be stronger in Vilnius than in Budapest because less public support is available for the inhabitants of the Vilnius HEs, so their financial contribution is crucial to any renovation project.
3. *The physical characteristics of the houses, namely their age, size and building materials also have an effect on renovation. Our hypothesis is that the older, pre-fabricated and large buildings are more likely to be renovated.* The condition of the oldest buildings is the worst, which can supposedly lead to a renovation decision. The size is probably important because the large houses have lower unit costs of renovation. The eligibility for public support can (and in Budapest actually does) also depend on the buildings' technological characteristics; this is how the building material becomes an influencing factor of renovation.
4. *The geographic location of HEs and their current prestige in the housing market are closely related - HEs in the most prestigious areas potentially should be more actively renovated because they attract affluent people who can afford to cover the renovation costs.* HEs with insufficient

transport connection are likely to be less renovated due to their bad position in the housing market which results in lower status population. (Even the newcomers are relatively poor people in these HEs). We also can hypothesize, that the renovation of houses in better locations can be regarded as more promising long term investment because these buildings are more attractive places for permanent residence or short time renting, therefore the investment in their renovation is less risky.

### Characteristics of the cities to be compared

One of the major differences between the two cities is that the role of housing estates in the housing stock is twice more important in Vilnius than in Budapest. The proportion of the HE dwellings is around 60% in Vilnius and only about 32% in Budapest. Though this share is slowly decreasing in both cities because of the new construction (none of them started to demolish HEs), the gap between the cities does not seem to narrow.

There is a difference in the size of HEs, as well. Due to the Soviet construction scheme, planning of HEs was based on micro-rayons (residential complexes), and the housing estates were built in the large

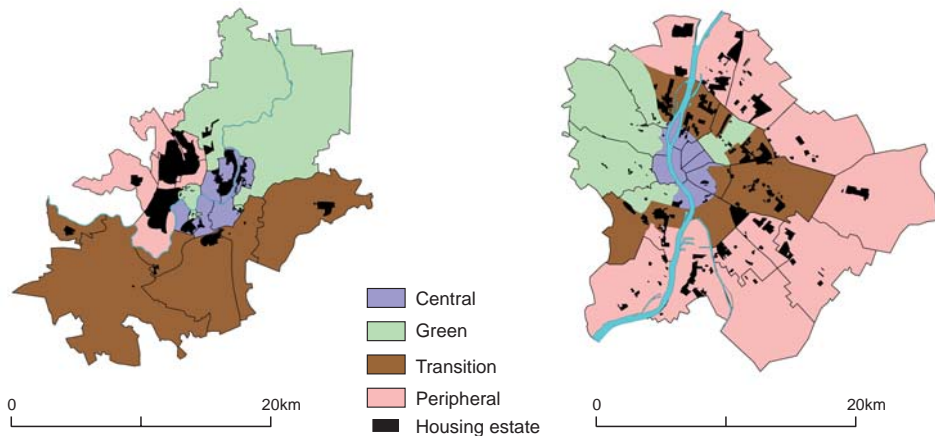
empty areas around the city core in Vilnius (Drémaitė, 2011). The HEs are more dispersed in Budapest, there are 151 HEs there and half of them are small (less than 1000 dwellings). The number of HEs is much lower, only 27 in Vilnius and less than a quarter of them are relatively small.

In short, the largest part of the housing stock consists of HE dwellings in Vilnius, and the concentration of housing estates is bigger than in Budapest.

The location of HEs is also different in the two cities. Most housing estates built after 1960 were constructed in the North-Western part of Vilnius, the half of the HEs are concentrated in this zone. Due to the smaller size of the city, a quite large part of HEs has central location. By contrast, the HEs are dispersed in transitional and low-rise residential (peripheral) zones in Budapest (Fig. 2).

Despite the general dominance of prefabricated buildings in both cities' housing estates, there are some differences in this respect, as well. Brick houses were constructed mainly in the 1950-60s in Budapest HEs, but through the whole state-socialist period (until the 1990s) in Vilnius.

Whether or not housing estates (or only some of their buildings) are renovated, equally depends on the emergence of initiators and the criteria for the distribution of available



**Figure 2.** Location of housing estates in the residential zones of Vilnius (left) and Budapest (right)

public support. The main actors are the ‘housing communities’<sup>1</sup> in both cities they have to initiate the renovation process (or agree to initiatives from municipality in Lithuania during most recent years)<sup>2</sup>, they have the right to apply for public funds. The public support is available only for the renovation of old-type and prefab panel buildings in Budapest. By contrast, all soviet multi-flat houses (panel, brick, concrete or wooden houses with more than two flats) built before 1993 are eligible for state support in Vilnius (Ministry of Lithuania ..., 2019).

The government funds for energy sufficient renovation are distributed by public authorities in both cities, but the conditions and the rules of distribution are different. In Budapest, the municipalities of the districts also play an important role, they can provide some support for the renovation. The ‘classic’ method of financing used in the 2000s was that the central government, the local municipality and the inhabitants equally covered one third of the total cost of renovation. After 2009, the government offered some additional renovation support (from international, mostly from EU sources).

In Vilnius, the conditions for public support used to change over time. What has remained unchanged is that the renovation support does not exceed 40% of the costs of investments targeted for improving heating effectiveness. In addition, fixed 3% rate, state guaranteed loan is also available for 5 years. The conditions for getting state support are stricter than the Hungarian ones. The support is given only for those renovation projects which reduce the heating-related energy consumption by at least 40%. This usually means that complete renovation

(including change of windows, heating points, etc.) is necessary (Vilnius Municipality, 2020).

## Methodology

For the purposes of this analysis, the housing estate is defined as a group of apartment houses (more than 3 residential buildings of the same or at least similar type) built between 1945 and the late 1990s<sup>3</sup>. These multi-dwelling buildings differ from the older and newer residential buildings, both inhabitants and authorities regard them as typical houses of the socialist era. Their eligibility for state support does not depend on their size, so there is no reason to neglect the smaller ones while studying the renovation of housing estates.

The analysis is based on a primary research of HE renovation which was necessary because there was no available central database about renovated houses in either city. A fieldwork was carried out in Budapest in 2017 and in Vilnius in 2018-19. The results of the field work were systematically checked and arranged in a database which includes all buildings of the housing estates. Information on the physical characteristics (location, construction time, size, building material, etc.) and renovation status of each building is available in this database.

The 2011 census data are the source of information on the social and demographic characteristics of housing estates. The aggregation of census tracts to the level of housing estates gave us the possibility to analyse 88% and 87% of the housing estates in Vilnius and in Budapest, respectively. By dropping the too heterogeneous census tracts (those in which less than 90% of the flats are part of a housing estate) we lost mostly the small HEs and some part of larger ones, but this loss does not dramatically change the picture as a whole.

In the first half of the article, the impact of the socio-demographic characteristics

<sup>1</sup> The ‘housing community’ is the organization of flat owners. Its decision-making body is the assembly of owners which also hires the firm responsible for housing management.

<sup>2</sup> The newest programme in Lithuania is targeted to municipality initiated neighbourhood level renovation projects, but it was not case in the period analysed in our paper.

<sup>3</sup> In Budapest the last pre-fab buildings (in housing estates) were built in 1993 while in Vilnius the HE construction continued until the end of the decade.

on HE renovation is analysed at the level of housing estates. In the second part, we shift to the level of buildings because the physical characteristics may vary within the HEs. The buildings are the adequate units of analysis also because the housing communities (and the managements of residential buildings appointed by them) are the main actors of renovation.

In the article, we focus on the insulated houses (renovated is used as a synonym for insulated in the text) because insulation plays a decisive role in decreasing the utility costs (Zavadskas, Raslanas, & Kaklauskas, 2007; Kovács & Herpai 2011). While in Budapest a complete insulation of the buildings is typical, in Vilnius lots of houses are only partly insulated. These latter are also included in our analysis, but we consider only some part of their flats renovated.

In the analysis, the share of flats in renovated houses is used as an indicator of the level of renovation.

## Results

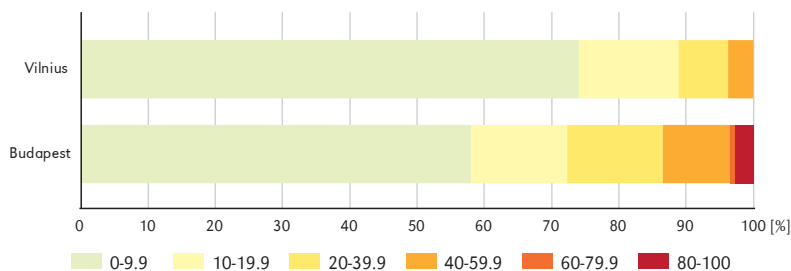
The share of renovation in the two cities is very different, while in Vilnius only 9% of the flats, in Budapest 21% of them are in renovated houses. The insulation of walls started at the turn of the century in Budapest and in the mid-2000s in Vilnius,<sup>4</sup> and still is in

an early stage. There are clear differences not only between the cities but also within them among the housing estates (Fig. 3). In both cities the majority of HEs have only minimal renovation level. There are some completely or almost completely renovated HEs in Budapest, while in Vilnius there is only one HE where the renovation level exceeds 50%, and the standard deviation of the renovation rate is higher in Budapest<sup>5</sup>.

The age-structures of the inhabitants of housing estates in the two cities are roughly similar, though the HE population is a bit younger in Vilnius. The share of the oldest dwellers (above 60 years) is about a quarter of the population, among them we can find the first 'settlers' of the housing estates.

The census data do not confirm our hypothesis. The age structure of the population and the renovation rate are not really correlated. Moreover, weak as it is<sup>6</sup>, the connection is not the type we expected. In the housing estates with relatively high (above average) renovation rate, the share of the elderly is not lower but higher than in the less renovated housing estates (Tab. 1).

While looking for some explanation, we have checked whether the time gap between the census in 2011 and the fieldwork in the end of the decade is responsible for these results. It turned out that this is not the case: the correlation between the share



**Figure 3.** Composition of housing estates by their renovation level (%)

<sup>4</sup> The database for 2012 is available for Budapest due to an earlier field study. In Vilnius, the data on the year of renovation come from the vilnius21.

<sup>5</sup> The standard deviation is 7.6 in Vilnius, and 19.6 in Budapest.

<sup>6</sup> The correlation index reflecting the relationship between the rate of renovation and the share of the elderly is only -0.046 in Vilnius and -0.146 in Budapest.



of the elderly and the 2012 renovation share is even weaker.

The renovation rate is not strongly influenced by the share of any other age group either; the correlation indexes are also very low. This suggests that the demographic composition of the housing estates' inhabitants has a very weak and maybe contradictory impact on the renovation process.

The social status is represented by the occupation in our analysis. The ISCO-groups are aggregated into three groups as high (ISCO1-2), middle (ISCO3-5) and lower (ISCO7-9) social status.<sup>7</sup> The two cities are very different in terms of the renovation/social composition relationship. While in Vilnius the renovation rate is strongly connected to the social status of the HEs' population, the connection is weaker in Budapest and its nature is the exact opposite of both the Vilnius pattern and our expectations (Tab. 2).

One of the most important explanatory factors is the different Hungarian and Lithuanian state support system. As described above, the conditions of state contribution to the renovation of HE-buildings are stricter in Vilnius, the inhabitants have to cover a much larger part of the costs than in Budapest. No wonder, then, that only the highest social groups can afford the renovation, only their share is positively correlated with the renovation rate.<sup>8</sup> The correlation with the share of lower status population is strongly negative.

In Budapest, the correlation between the renovation rate and the share of the high status population is negative, which suggests that the most affluent inhabitants have a different housing career (Musterd & Van

Kempen, 2005). They plan to live in the housing estates only for a short period, so the long term improvement of the HEs is not a priority for them. By contrast, the middle social groups for whom leaving the housing estates is not a realistic option, seem to be more willing to have the HE buildings insulated. Thanks to its relatively wide availability, they are able to get the state support and they can cover the rest of the renovation costs. There is a weak but positive correlation between their share within the HEs' population and the renovation rate. The lack of strong correlation is explained by the fact that the middle social groups are typically the less spatially segregated groups and rarely concentrated in any part of the cities (Marcinićzak et al., 2015).

We also have to mention a methodological problem which can explain the difference we have found between the two cities. According to the census data, in Vilnius HEs (but also in the whole city) the share of high status inhabitants is incredibly high, 43%, which is almost the double of the Budapest figure. This can be an outcome of some methodological difference. Though the ISCO itself is a standard international classification system, maybe the two countries applied it in different ways.<sup>9</sup> If lots of well-paid jobs of middle groups are classified as higher in Vilnius (while they are middle in Budapest), then it is not surprising that Vilnius shows strong positive correlation.

The social status of HEs also depends on the housing supply. As we have already mentioned, only one third of the inhabitants of Budapest live in HEs. The housing estates started to become the home of lower middle class people in the 2000s (Kovács, Egedy, & Szabó, 2018). In Vilnius, the figure is almost

<sup>7</sup> In detail, the high group consists of managers (ISCO1) and professionals (ISCO2); the middle status group includes technicians and associate professionals (ISCO3), clerical support workers (ISCO4) and services and sales workers (ISCO5); while craft and related trades workers (ISCO7), plant and machine operators and assemblers (ISCO8), and elementary occupations (ISCO9) belong to the low status category.

<sup>8</sup> The correlation index between the share of renovation and ISCO1-2 group is -0.131 in Budapest, while 0.456 in Vilnius.

<sup>9</sup> An alternative method of aggregation can solve this classification problem. The regrouping of data into the categories of white and blue-collar workers (ISCO1-4 and ISCO5-9) results in a similar composition of the HE population in the two cities. However, the correlation analysis still indicates quite strong and positive (0.408) connection between the rate of renovation and the share of white-collar workers in Vilnius, while the correlation is weak and negative (-0.114) in Budapest.



**Table 1.** Age structure of the HE-inhabitants living in housing estates where the renovation rate is relatively low and relatively high

Age group	Vilnius		Budapest	
	relatively low	relatively high	relatively low	relatively high
	renovation rate			
0-20	19.3	17.3	15.4	16.3
21-40	31.5	28.0	33.6	32.1
41-60	28.1	25.2	26.0	25.1
61+	21.1	29.5	25.0	26.5
Total	100.0	100.0	100.0	100.0

**Table 2.** Social structure of the HE-inhabitants living in housing estates where the renovation rate is relatively low and relatively high

ISCO group	Vilnius		Budapest	
	relatively low	relatively high	relatively low	relatively high
	renovation rate (%)			
ISCO 1-2	44.3	49.3	27.0	22.3
ISCO 3-4-5	30.1	29.4	50.0	51.5
ISCO 7-8-9	25.6	21.3	23.0	26.2
Total	100.0	100.0	100.0	100.0

the double; 60% of the population live in HEs. Since the proportion of lower social groups is only 30% of the population, it goes without saying that a significant part of the higher social groups must live in the HEs. Then it seems logical that the Vilnius HEs' population is less homogenous than the inhabitants of the housing estates in Budapest.

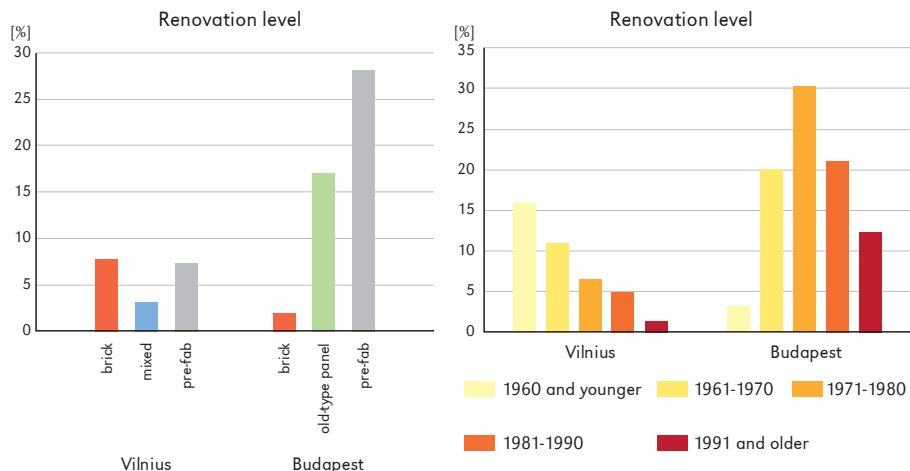
### The physical characteristics of housing estates

The physical characteristics of the houses are as important as the social composition of their inhabitants. The need and opportunity for renovation are somewhat influenced by the size, age and type of the buildings. The type and the age of the building have an impact on the quality: in Budapest, the pre-fab houses of the 1970s have the lowest quality (Egedy, 2000), in Vilnius, the so called

khrushchyovkas, the brick houses constructed in the 1960s (Drémaitė, 2017) are regarded as the worst quality buildings.

In Budapest, there are significant differences between the renovation level of brick, old-type panel, and pre-fab houses mainly because state support is available only for the renovation of panel buildings in Hungary.<sup>10</sup> The brick and pre-fab buildings are practically at the same level of renovation in Vilnius where the state support does not depend on the type of building (Fig. 4). The explanation for the renovation rate differences by construction periods is similar. The older buildings are the most renovated in Vilnius, but this is not the case in Budapest where the state support is only available for the renovation of panel buildings which appeared and

<sup>10</sup> In Vilnius, only houses built after 1993 are not eligible for public support.



**Figure 4.** The level of renovation by type and age of buildings (%)

became dominant in the second half of the 1960s. As a consequence, these generations of HEs have higher renovation level.

We can get a clearer picture if we analyse the age impact separately in each type of buildings (Tab. 3). The age has a clear effect within the group of pre-fab buildings in both cities: the first generations of them are the most renovated. In Budapest, there is also another, an older type of panel buildings (middle size blocks and cast-concrete ones) where the age has an inverse effect: the first generation of them is the least renovated. The explanation is that the first experimental panel buildings are of much higher quality than the later types (cast concrete towers), so the renovation of these latter is more urgent. The brick houses are

different in the two cities. In Budapest, the majority of them were constructed in the 1950s, and the brick houses generally have better position in the housing market than the pre-fab ones (Szabó & Bene, 2019). In Vilnius, the brick houses remained important through the whole period, one fifth of the HE dwellings are brick buildings. A large part of them, the already mentioned called khrushchyovkas of the 1960s are low quality buildings (Gunko, Bogacheva, Andrey, & Ilya, 2018), their low renovation level can be explained by the supposedly low status inhabitants. The explanation is similar in the case of the typically low quality mixed houses.

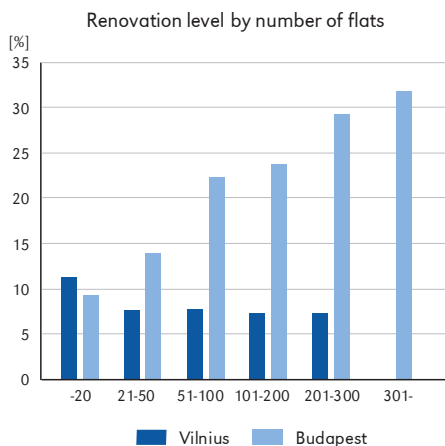
The impact of the building size is ambiguous. On the one hand, the unit cost of renovation is lower in the large houses; on the

**Table 3.** Renovation level by type and age of buildings

Construction period	Vilnius				Budapest			
	brick	mixed	pre-fab	total	brick	old-type panel	pre-fab	total
...-1960	12.5	33.3	26.5	15.9	2.2	9.5	-	3.2
1961-1970	4.9	7.9	13.5	11.0	0.4	14.3	42.8	20.0
1971-1980	9.7	4.0	6.1	6.5	-	15.7	34.8	30.3
1981-1990	10.9	1.0	4.4	4.9	0.0	37.2	19.4	21.0
1991-...	0,0	0,0	2,2	1,4	-	0,0	13,3	12,3

other hand, the management of the preparation process is more complicated because it is difficult to reach an agreement if several hundreds of inhabitants have to be convinced about the necessity and feasibility of the renovation.

The Budapest figures suggest that the unit costs of renovation are more important than the management problems (Fig. 5). It is also likely that the large houses typically have lower status population because the largest buildings were built during the 1970s mass housing programs when dwellings were allocated on the basis of social criteria (Csizmady, 2001). These inhabitants can hardly afford moving into better quality buildings, thus they are interested in the renovation if they want to avoid their dwellings' loss of position in the market.



**Figure 5.** Renovation rate by building size (number of flats in the building)

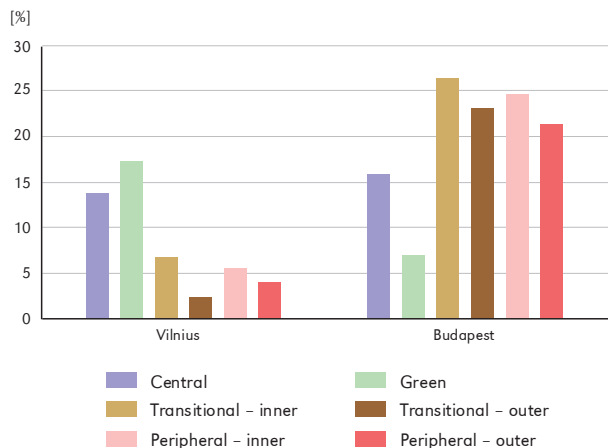
In Vilnius, the relation is the opposite; the smallest houses are the most and the largest ones are the least renovated. The relationship between the social composition of inhabitants and the size of the buildings is weakly analysed in Vilnius. The census data show that the share of low status ISCO groups is the highest in neighbourhoods where high-rise buildings compose higher share of the housing stock (Burneika, Ubarevičienė, & Baranuskaitė, 2019).

The location of the HEs became an important factor in the housing market after the change of regime. Though the urban structure of the two cities is very different, for the purpose of this comparison the HEs are classified into four different residential zones, namely the central part of the cities, the villa quarters, the transitional and the peripheral zones. Very few housing estates are located in the first two of them, but they are of the highest prestige (due to their good availability or green environment). The majority of the HEs are located in the other two zones, which are so large that it looked reasonable to divide them into inner and outer parts (on the basis of their public transport connection).

The renovation level we found in the different zones confirms our former findings on the impact of the inhabitants' social status on renovation: the wealth of inhabitants is an important influencing factor only in Vilnius, where the HEs located in the most prestigious zones are more renovated, while the opposite can be seen in Budapest (Fig. 6). It is not surprising that in Vilnius the less renovated HEs are located in the outer parts of the transitional and the peripheral zones. The renovation rate of HEs is slightly lower in the outer than in the inner parts of these two zones in Budapest, as well, but still much higher than either in the central parts or in the villa quarters of the city.

## Conclusions

The intensity of renovation and its spatial structure are clearly different in the two cities while the economic performance is rather similar, which suggests that the economic welfare does not have much impact on the renovation process. Despite the fast economic growth in Lithuania during the last decade, the renovation level is still lower in Vilnius than in Budapest. This is probably explained by the difference between the governmental policies of distribution of funds in the two countries, namely the more generous and more easily available public support for the renovation of panel buildings in Budapest and



**Figure 6.** The level of renovation in different residential zones

the less large support in Vilnius which is available for all kinds of buildings but covers only a small part of the renovation costs. The state support system is all the more important in the Vilnius case because municipalities play only a minimal role in the renovation process in Lithuania. The social composition of the HEs is likely to be another explanatory factor. A more detailed analysis also reveals important differences within the cities.

Our first hypothesis is not confirmed by the data: the age structure of the population does not have a direct impact on the renovation level. The HEs lived mainly by older people are not significantly less renovated.

In Vilnius, where the social heterogeneity of HEs has remained large (Burneika et al., 2019), the renovation level indicates the importance of market forces: mostly the HEs where the affluent, high status population lives were renovated. This confirms our second hypothesis. What happens is similar to a non-supported renovation process because the public support is available only for the wealthy inhabitants, who are able to cover the largest part of the renovation costs. By contrast, the experiences clearly contradict our expectations in Budapest, where the social segregation had already started within the zone of housing estates (Kovács et al., 2018). The level of renovation

is higher in pre-fab HEs with lower and middle status population because the public support is exclusively targeted to panel buildings.

The third hypothesis is partly confirmed: the physical characteristics of HEs have very different impact on renovation in the two cities. The effect of the age of buildings is similar in both capitals, but only in the case of pre-fab houses (the dominant part of HE buildings): the oldest ones are the most renovated. The impact of the type of buildings and the building size is completely different in Vilnius and Budapest. The type of buildings is a strong factor only in Budapest, as a result of the selective public support system. In Vilnius, the renovation depends on the quality of houses; the worst quality buildings are the least renovated. The size of buildings is a strong influencing factor, the unit costs seem to be important in Budapest, and the management problems in Vilnius.

Our hypothesis about the impact of the spatial location of HEs is confirmed in Vilnius and has to be rejected on the basis of the Budapest data. In Vilnius, the best located HEs are the most renovated. In Budapest where the renovation of HEs does not depend on their social status, the role of location is less important.

The different physical and social characteristics of HEs are interrelated, weaken

or strengthen each other. For example, it is probable that the impact of the age of inhabitants proved to be unimportant because the first HEs where the older inhabitants live started to upgrade in both cities; they are typically the central ones in Vilnius, and the brick houses in Budapest.

The HE renovation in the postsocialist cities has followed a path very different from the Western-European one. Not only the level is lower, the whole process is divergent. The HE renovation is part of a more widely defined urban regeneration process which is a basically state-led development program in the Western-European cities, where the aim is to revitalize the poor neighbourhoods. In postsocialist cities, the renovation means the energy saving insulation of blocks of flats. Our results suggest that the case of Budapest is somewhat closer to the Western type: the role of public authorities is significant, the public support covers a large part of the costs, but it is only available for the renovation of panel buildings, thus its most important beneficiaries are the downgrading HEs. In Vilnius, the public support covers only a small part of the renovation costs, its availability is limited and its distribution follows strict rules, so the most prestigious HEs are the most likely to be renovated.

In the 1990s, one of the main motivations for the mass housing privatization was that the local governments wanted to get rid of the maintenance and renovation burden of the housing stock. If they hoped that

the new private owners will be able to cover these costs, the experiences of the last three decades of HEs prove that this hope has not been fulfilled. In the first decade nothing happened. The HE renovation started only in the 2000s when some public support became available, but the renovation level remained very low until the EU-membership of the two countries. Since 2004, some EU-funds have also been used for supporting the energy-saving renovation.

Our research findings suggest that the state support, however limited, is indispensable for the renovation of HEs. Though there are no targeted geographical areas for development in these two cities, their divergent policies still have spatially very different results.

## Acknowledgements

The database was developed by the authors. The source of information they used was partly their own field work, partly the work (data collection in the field) of students of the Eötvös Loránd University during their summer practice. The project is supported by Eötvös Scholarship by Tempus Public Foundation and by Hungarian Scientific Research Fund (K119710).

Editors' note:

Unless otherwise stated, the sources of tables and figures are the authors', on the basis of their own research.

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