

## DESIGN FOR HEALTH AND WELL-BEING. THE HOUSING NEEDS OF FUTURE SENIORS

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### Abstract

This paper presents the results of the research made on a sample of 2,000 of young respondents surveyed in the scope of their housing needs, including their expectations as to the place of residence, form of residence and size of their living space. The methodology assumed for the presentation of results of quantitative variables included such statistical measures as the arithmetic mean, standard deviation or quantity. Whereas, the quantitative variables have been presented via quantity and percentages. To assess the percentage difference between the analysed parameters, the author has used Pearson's chi-squared test, chi-squared test and others. Comparative analyses drawn up on the basis of the data show the tendencies in the housing preferences among young people, both in the short and long time perspective. The research was intended to diagnose the housing needs of young people and to juxtapose their expectations with the tendencies. It can effectively help architects create solutions that properly meet the factual needs of the residents as well as improve the quality of designed housing for the future senior residents.

**Keywords:** Ageing societies; Designing for health and well-being; Future seniors; Housing architecture; Living environment new technologies.

### 1. INTRODUCTION

The research on the preferences concerning housing for the seniors has been going on for many years.

It is obvious that the needs of the users (seniors in this case) as well as their preferences and lifestyles pre-determine their health and affect their individual expectations with respect to the living space, in particular its adaptation to their limited psychomotor abilities at an old age.

Accounting for the fact that at present we are facing a strong trend of ageing societies, which continues to intensify, it is crucial today to compare the precisely defined spatial needs of present seniors with the needs of the seniors in the future (today's young citizens). They differ from today's seniors – they have new skills e.g. they are computer literate and have acquired new

competencies, they have different expectations and spatial needs, they are professionally active longer and their vision of life at an old age and the ageing process itself is also different. A wide range of social and demographic changes that need to be addressed today has triggered the research on the living environment of the future seniors.

Even if the housing situation of the elderly has slightly improved in Poland, it is still far from ideal from the perspective of the seniors. On the grounds of the statistical data of the Central Statistical Office in Poland (GUS), the seniors living in big cities certainly enjoy a higher housing standard than the seniors in rural districts [1, 2].

The impact of built environment on the life quality of inhabitants in cities has been the subject of numerous

studies for decades. More and more frequently they evolve into research focused on special needs of certain (usually perceived as special care) groups of inhabitants, e.g. children, the disabled or seniors [3].

At present, the aforementioned research is being focused on several areas. Above all, the issue of customisation in architectural design in view of the seniors' needs is deemed an important research topic. Current models and forms of housing for the seniors, such as e.g. assisted living flats or co-housing, better address the needs of the seniors and their old age reduced abilities in order to respectively adapt the built environment [4, 5].

The issue of the so-called *person-environment fit* (P-E fit) has been studied for many years [6]. Adapting space to the changeable age-related needs of its users has become a new challenge and new terms such as “age proof homes” or “future proof homes” have been coined. The idea originated in the Netherlands and was first described by Hans Becker in 1950 as “levesloopbestendige” and “age-proof dwellings” [7–10].

Research literature clearly states that mutual relations between ecology, ageing, development of new technologies and built environment for the seniors needs to be further analysed.

The seniors have other needs and expectations than young people and follow different criteria in the selection of their place of residence.

New abilities, competencies and skills of the future societies that might have a direct impact on forms and functions of residential buildings have to be evaluated first, before the latter can be defined anew. To be able to design solutions that will address the needs of the seniors and to be able to propose customised architectural concepts of housing adapted to the individual needs, we have to develop a new definition of the needs and characteristics of the ageing society (the seniors of the future) [11].

Bugajska and Iwański proposed a set features of an accommodation, which make it more suitable for the seniors [12]. The list includes: size of the apartment, number of rooms, it's technical condition, architectural barriers (e.g. narrow halls, high thresholds), condition of the whole building, an available lifts or platforms, also the number of persons living in the flat, and adaptive potential of the flat for future modernizations and adaptations.

It seems to be important to include these quite precisely defined spatial needs of the future seniors (today's young) in the process of designing relevant

housing for them. Young people today have a totally different vision of the old age and ageing than present seniors, at the same time, there is no doubt, these two generations have totally different life experience. The seniors of the future definitely will have different skills, abilities and competencies as well as spatial expectations and professional opportunities than the current generation of the elderly. Moreover, they will represent a larger share in the society when they get old [11].

## 2. METHODOLOGY

The survey research on housing expectations was conducted in 2020 on a sample of over 2,000 young people – students (Poznan University of Technology). This research continued the studies made by the Institute of Urban Development in Cracow, entitled: “Housing conditions and preferences of young Poles in 2007 and 2011” [13].

The respondents were selected at random. The applied method was the diagnostic poll. The questionnaire was sent electronically to 15,000 students, of which 2,000 agreed to participate in the poll and provided their feedback answering the questions asked. The respondents (here students) were asked about a wide range of aspects related to the expectations they had in respect of the living space such as the location, optimum area or type of development soon after the completion of studies, in further time perspective and at an old age.

The methodology assumed for the presentation of results of quantitative variables included such statistical measures as the arithmetic mean, standard deviation or quantity. Whereas, the quantitative variables have been presented via quantity and percentages.

To assess the percentage difference between the analysed parameters, the author has used Pearson's chi-squared test, chi-squared test (maximum-likelihood), Cramér's V and the test for differences between two strata weights.

To determine the significance level in respect of a fit or difference, the following signs were used:  $p < 0.05$  – statistically significant values,  $p 0.05$  – statistically insignificant values [14, 15].

Statistical analysis of the research results was made with the use of STATISTICA 10 (StatSoft Inc.) (an advanced analytics software package).

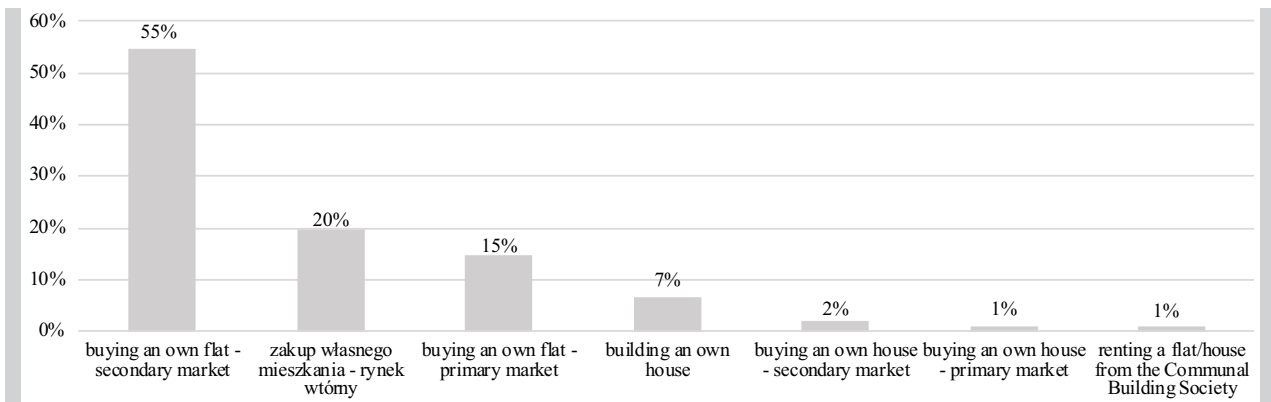
The data obtained in further research, i.e. in 2007, 2011 and 2020, has facilitated a comparative analysis of the housing situation of young people and their

future housing aspirations, in this their vision of the place of residence at an old age. As a result, we have been able to assess certain tendencies that may prove useful in forecasting housing problems and developing relevant solutions, this shall in particular concern identification of problematic issues inherent in designing housing suitable for the generation of future seniors.

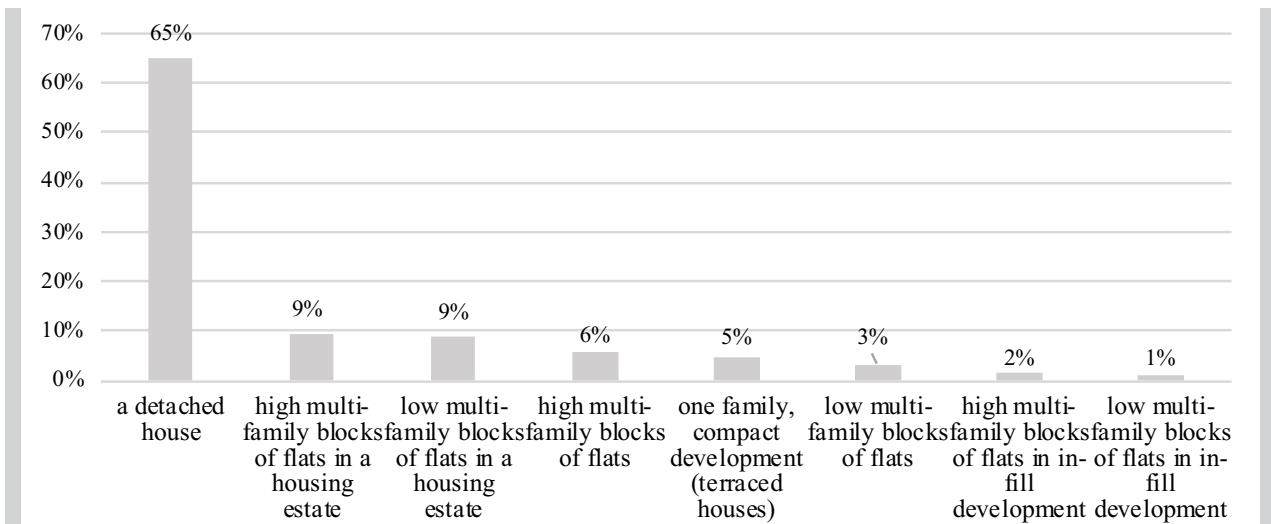
### 3. RESULTS

The research was developed with the intention to assess the housing needs of students, including their expectations as to the location, preferred forms of housing and desired size parameters. It has been found that more than 50% of the respondents are thinking of renting a flat immediately after graduation and less than 20% – of buying their first flat/house.

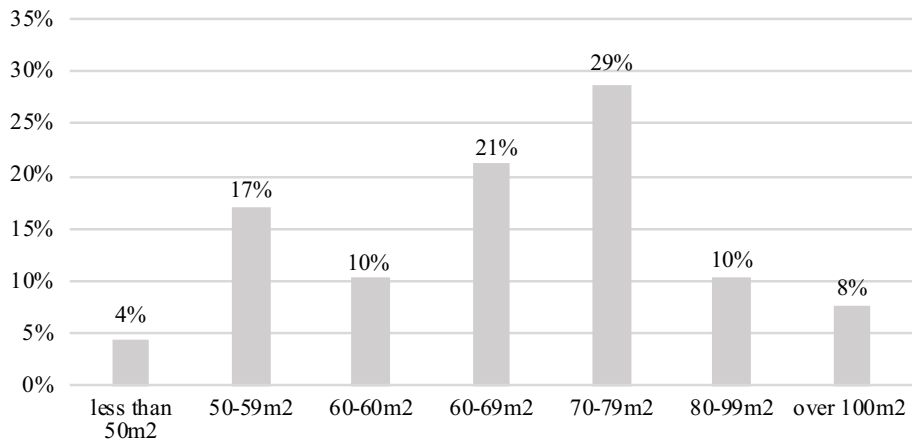
A large majority of the respondents would prefer to live outside of a city centre, however, in the vicinity of a major city. It is also important to note that young people do have preferences in respect of the surface area (size) of their flat (living space) (41.5%). However, when it comes to the preferred and optimum flat area, the opinions were divided. Generally, over 70% of the respondents deemed a flat area under a 79 m<sup>2</sup> a satisfactory living space, of which 28.6% were of the opinion that 70–79 m<sup>2</sup> made a satisfactory living space, 21.2% were happy with an area of 60–69 m<sup>2</sup> and 17.2% – with an area of 50–59 m<sup>2</sup>.



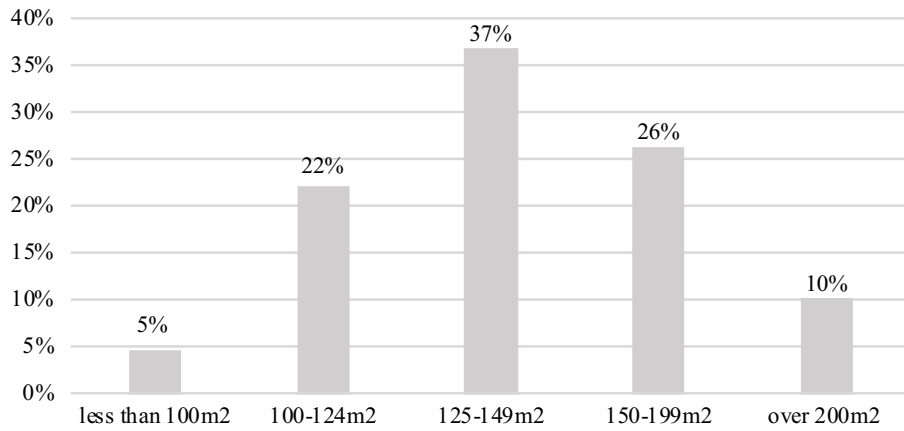
**Figure 1.**  
Housing plans of young people within 3 years after completion of studies (graduation). A. Gawlak



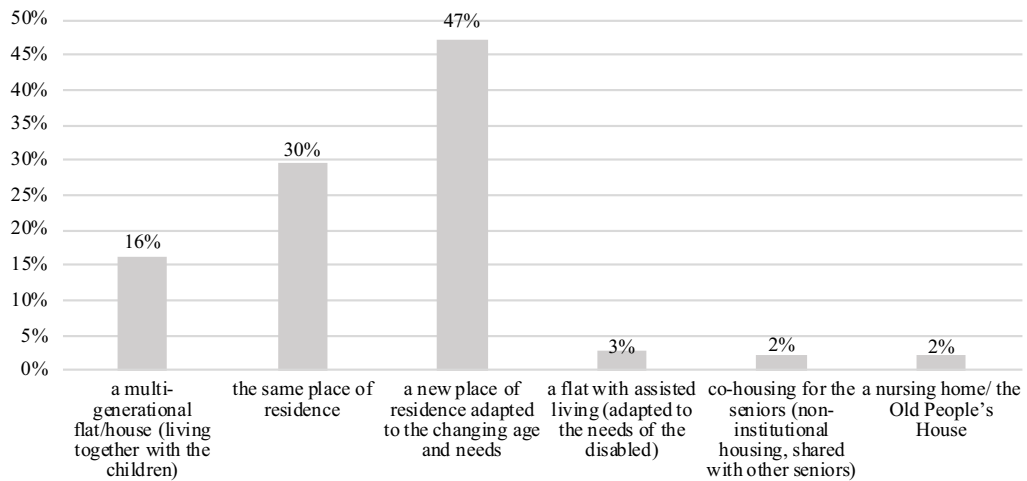
**Figure 2.**  
Preferred forms of residential development. Prepared by: A. Gawlak



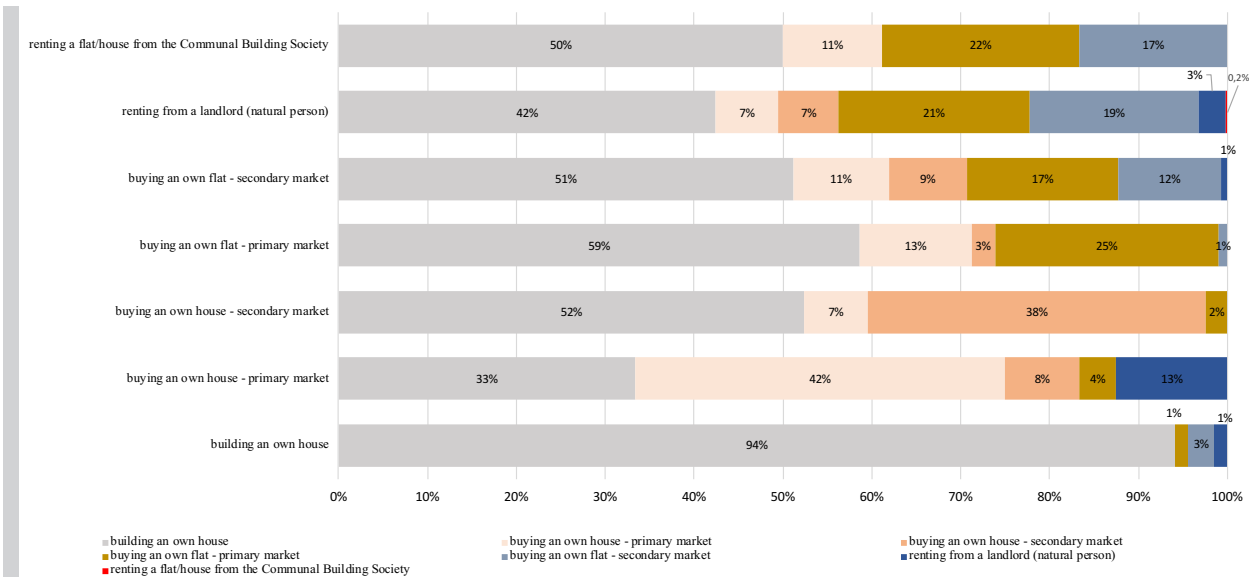
**Figure 3.**  
Optimum flat size as per the preferences of young people. A. Gawlak



**Figure 4.**  
Optimum house size as per the preferences of young people. A. Gawlak



**Figure 5.**  
Expectations of young people regarding their place of residence at an old age. A. Gawlak



**Figure 6.** Interdependencies between housing plans in the 3 year period after completion of studies and housing plans in the long term perspective. A. Gawlak

Whereas, when it comes to the preferred size of a house, no clear tendency was observed because the respondents provided largely different answers and their preferences ranged from 100 to 199 m<sup>2</sup>. Here, individual experiences and models adopted from the surroundings may have played a role.

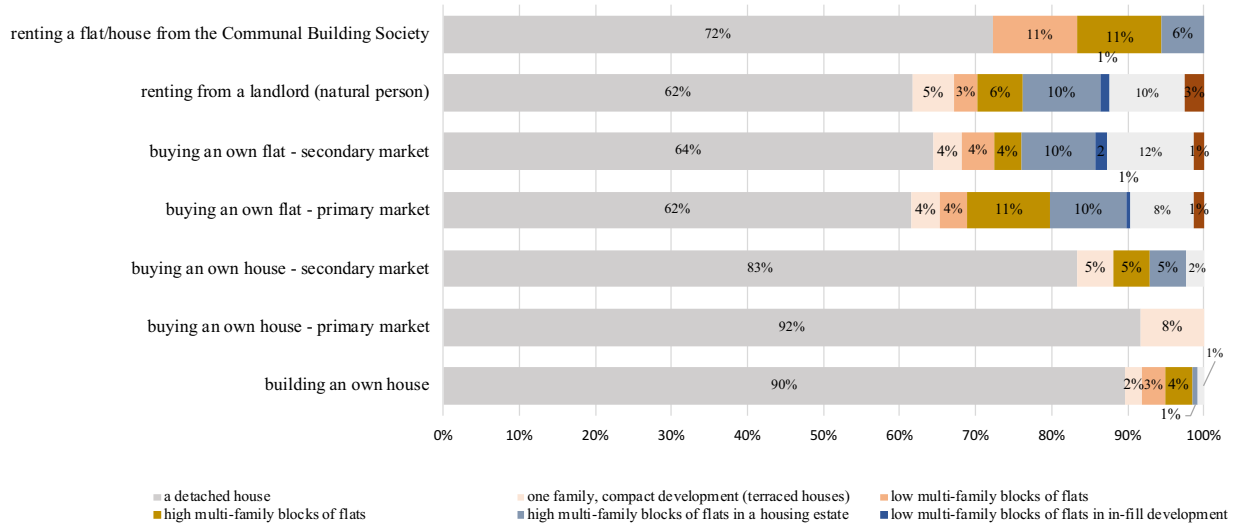
Young people tend to have a pre-defined vision of their place of residence for future-selves. Almost half of them (47.3%) consider changing their place of living and moving to a relevant form of housing that would be adapted to the precise needs of the seniors. Nevertheless, a significant group of the respondents (29.6%) would prefer to live in the same place of residence or consider sharing a house or a flat with other family members (16.2%). Only 2.2% of the respondents considered living in the Old Peoples' House. At the same time, an equally low percentage of the respondents took into account modern, alternative solutions such as the co-housing (2.2%) and assisted living in independent apartments (2.7%). Such results may reflect insufficient knowledge that young people have on such new solutions.

The next step of the research assessed the evolution of the housing plans of young people after graduation, i.e. a correlation was found between aspirations the students had immediately after completion of studies (within a 3 year period after graduation) and those in the long term perspective. It was found that young people in general planned to buy a house in the long term perspective. Those respondents who first declared buying a house from a developer turned

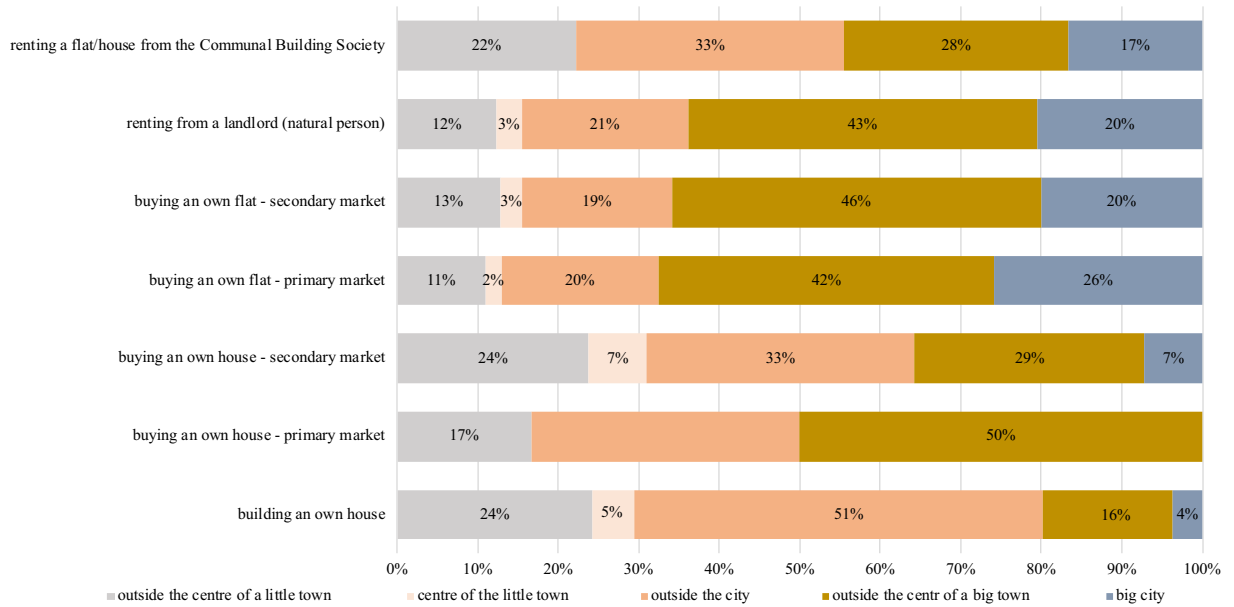
out to be those most likely to change their plans, then, the most often selected option was the purchase of a flat. It is also important to note that those respondents who planned to buy their own house immediately after graduation were the least likely to change this decision (94%).

In the subsequent step of the research, the author tried to find out whether the housing plans in the 3 year period after completion of studies stemmed from general preferences as to the housing form, i.e. whether the housing form had any impact on the housing trends prevailing among young people. A detached house turned out to be the most popular form of housing. Such a tendency only confirms earlier studies, in which it was concluded that certain aspirations as to the place of residence are passed down from generation to generation. Almost 100% of the respondents who planned to build their own house were thinking of a detached house, whereas only about 60% of the respondents who initially planned to buy or rent a flat saw a detached house as a preferred housing option.

Young people clearly based their housing plans on the preferred location. Respondents planning to buy or built a house usually preferred locations outside of the city (61%) or, if in a small town or big city, then outside of the centre (40–50%). Respondents planning to rent or buy a flat also preferred locations outside of the city/town centre. A relatively small group of respondents wanted to live in the city/town centre (max. 20%). A small town centre was the least popu-



**Figure 7.** Interdependencies between housing plans in the 3 year period after completion of studies and preferred forms of residential development. A. Gawlak

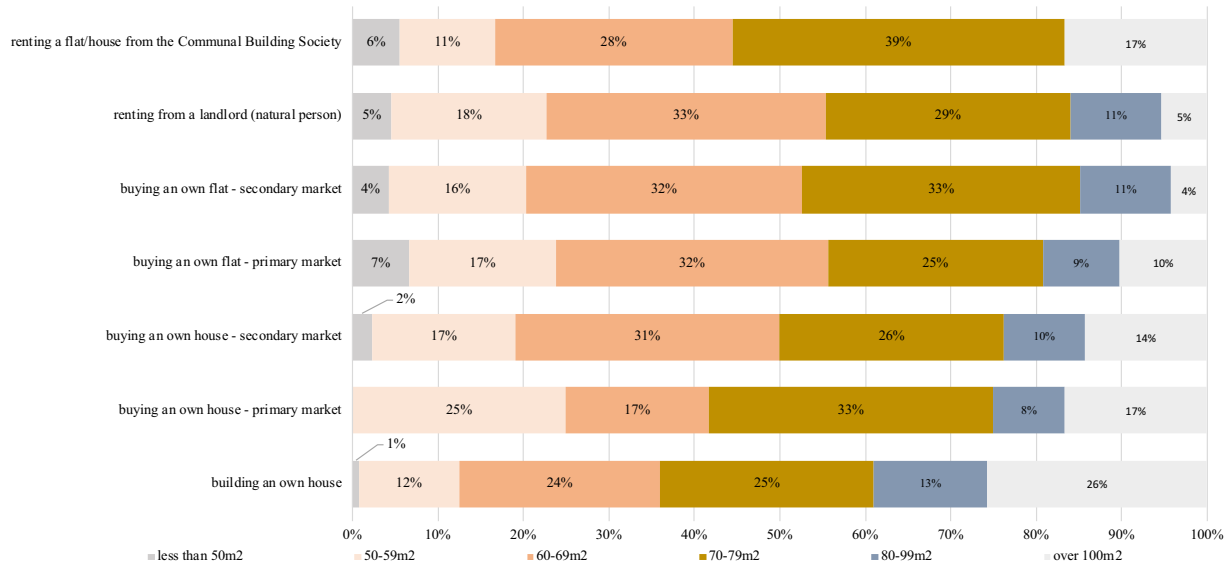


**Figure 8.** Interdependencies between housing plans in the 3 year period after completion of studies and preferred location of the place of residence. A. Gawlak

lar location irrespectively of the housing plans of the respondents, only 2–7% of respondents selected it as their preferred location on average.

Young people, regardless of their housing plans, tend to have a well-established preference as to the optimum size of the flat. The optimum flat ranges from 60–69m<sup>2</sup> or 70–79m<sup>2</sup>. This option was selected by about 60% of the respondents, regardless of their plans as to the place of residence in the 3 year period after completion of studies.

The research conducted in 2020 was compared with the studies made in 2007 and 2011, partly on the basis of the same opinion poll. The data obtained in further research has facilitated a comparative analysis of the housing situation of young people and their future housing aspirations, including their vision of the place of residence at an old age. As a result, we have been able to assess certain tendencies that may prove useful in forecasting housing problems and developing relevant solutions, this shall in particular



**Figure 9.** Interdependencies between housing plans in the 3 year period after completion of studies and the preferred flat size. A. Gawlak

concern identification of problematic issues inherent in designing housing suitable for the generation of future seniors.

First, places of residence of young people during their studies were compared. The following options were considered: living with parents or other family members, living independently in a rented flat or sharing a rented flat with other students, living in one’s own flat, living in a room in a dormitory, a rented room or other options.

In the long term perspective half of the respondents considered purchasing their own house, almost 20% were planning to buy a flat on the primary market (a developer) and 13% wanted to buy a flat on the secondary market. The housing form that prevailed among the choices made by young people were detached houses (about 65%). Statistically, a large group of students continues to live with their parents

during their studies. However, if in 2007 and 2011 this concerned half of the respondents, then in 2020 only 1/4 of them, i.e. 25%, lived with the parents. The tendency of renting flats with other students has significantly increased. In 2007 hardly any respondent shared a rented flat with other students, in 2011 – 13% of respondents lived in a rented flat with other students and in 2020 this percentage increased to 31%. The percentage of students living in a dormitory was relatively stable and ranged from 11% to 14%. Analysing the data broken down per respective years, it can be observed that the number of students renting individually an entire flat as well as those having their flat and living with parents showed a declining tendency.

**Table 1.** Comparative analysis of the results of the research conducted in 2007, 2011 and 2020 (question 1)

Indicate your place of residence during your studies	year			p	
	2021 n=2034	2011 n=516	2007 n=617	2021–2011	2021–2007
with the family members	2%	1%	2%	0.1268	1.0000
in an independently rented flat	3%	4%	13%	0.2492	<0.0001
in the own flat	7%	11%	13%	0.0025	<0.0001
in a dormitory	14%	10%	11%	0.0165	0.0546
in a rented room	17%	10%	11%	0.0001	0.0003
with parents	25%	51%	47%	<0.0001	<0.0001
in a rented flat shared with other students	31%	13%	0%	<0.0001	<0.0001
other	-	0.4%	3%	0.0043	<0.0001

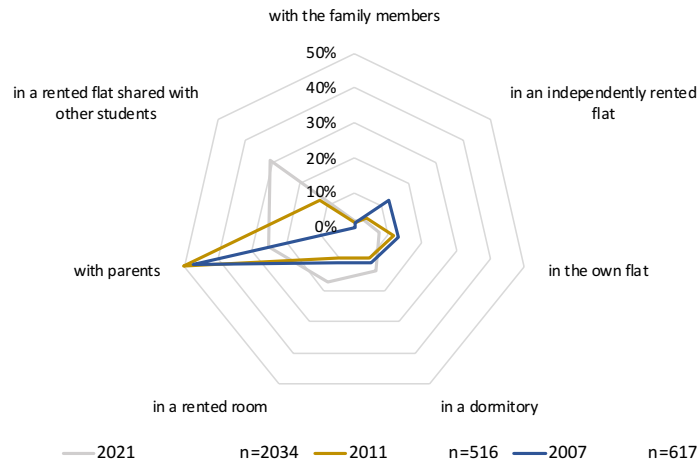


Figure 10. Comparative analysis of the results of the research conducted in 2007, 2011 and 2020 (question 1). A. Gawlak

As regards the preferred form of housing, the majority of young people prefer detached houses (in respective years from 60–69%). This is followed by low housing estate development (an option selected by 9–27%), yet this trend is declining.

The preferences as to the form of housing as per the results obtained in respective years are convergent. Nevertheless, in the time span of the 10 years of research a change in the optimum surface area of a flat can be observed.

Table 2. Comparative analysis of the results of the research conducted in 2007, 2011 and 2020 (question 4)

Indicate which, in your opinion, is the optimum size of a flat	year			p	
	2021 n=2034	2011 n=516	2007 n=617	2021–2011	2021–2007
less than 50 m <sup>2</sup>	4%	6%	7%	0.0480	0.0020
50–59 m <sup>2</sup>	17%	13%	14%	0.0276	0.0772
60–69 m <sup>2</sup>	32%	23%	20%	0.0001	<0.0001
70–79 m <sup>2</sup>	29%	17%	18%	<0.0001	<0.0001
80–99 m <sup>2</sup>	10%	21%	20%	<0.0001	<0.0001
over 100 m <sup>2</sup>	8%	21%	21%	<0.0001	<0.0001

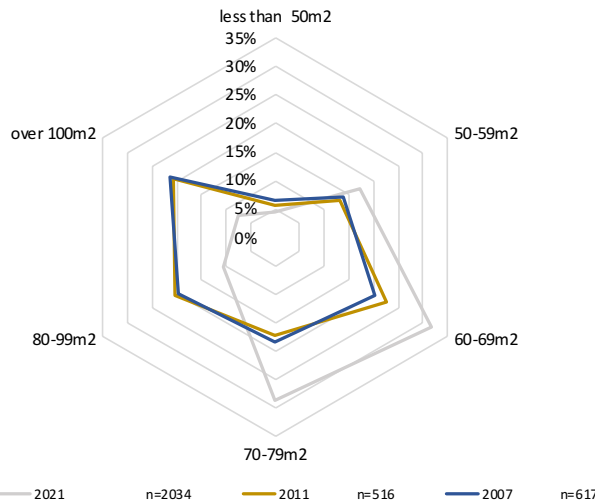


Figure 11. Comparative analysis of the results of the research conducted in 2007, 2011 and 2020 (question 4). A. Gawlak



The 2007 and 2011 research rendered convergent poll feedback but the 2020 research showed a statistically significant difference. If earlier young people expressed interest in flats of an area over 100 m<sup>2</sup>, then in 2020 only 8% of respondents wanted to have such a large flat. It may be inferred that aspirations of young people became more rational and objective, in 2020 the most often selected optimum flat size was 60–69 m<sup>2</sup> (around 32%), followed by 70–79 m<sup>2</sup> (around 29%).

A similar trend of pragmatic rationalisation of expectations and aspirations can be observed in respect of the presumed optimum size of a house. In 2007 and 2011 a much larger group of respondents preferred to have large size houses (150–190 m<sup>2</sup> and over 200 m<sup>2</sup> – 32% in 2011 and 39% in 2007), whereas in 2011 the first choice of the respondents were the houses of the area up to 149 m<sup>2</sup> (37% of the respondents). The percentage of respondents interested in houses of an area smaller than 100 m<sup>2</sup> or ranging from 100–124 m<sup>2</sup> remained at the same level in each year of the research.

#### 4. DISCUSSION

Young people tend to have a pre-defined vision of their place of residence in the future. Almost half of them (47.3%) consider changing their place of residence and moving to a relevant form of housing that would be well aligned to the needs of the seniors. Nevertheless, a significant group of the respondents (29.6%) would prefer to live in the same place of residence or considers sharing a house or a flat with other family members (16.2%). Only 2.2% of the respondents considered living in the Old Peoples' House. At the same time, an equally low percentage of the respondents took into account modern, alternative solutions such as the co-housing (2.2%) and assisted living in independent apartments (2.7%). Such results may reflect insufficient knowledge that young people have on such new solutions. The results of the research (feedback of the respondents) used for the purpose of conducting a comparative analysis have shown relevant trends in the preferences of young people and how relevant aspects of sharing accommodation are interrelated. Without doubt, the financial and family situation of the student has an impact on his/her housing preferences in respect of the place of residence during their studies, which, next to a large extent affects their further, short and long term housing plans. Apart from that, our housing preferences are closely correlated with the pre-

ferred place of residence at an old age as they derive from current housing conditions (place of residence during the studies) as well as from short and long term housing plans. The obtained results are convergent with earlier research conducted on the preferred forms of housing in Poland.

A comparison of the obtained results clearly shows differences in the preferences of young people depending on the year of the poll. The expectations are certainly not as high as they used to be and seem more rational, especially if we compare the results obtained in 2007 and 2011 with the results of 2020. It can be noted that even if aspirations as to the place of residence or to the size of a flat or a house changed, the trends as to the preferred form of housing remained the same. In this respect the feedback of the respondents given in all the years was convergent (a detached house was always the most frequently selected option). Based thereon, current spatial needs shall be taken into account assessing the housing needs of the seniors of the future in order to be able to most accurately define the needs of the ageing generations and to come up with solutions that will ensure them comfort and safety in the place of residence [16].

This or any similar type of research, intended to diagnose the housing needs of young people and to juxtapose their expectations and preferences, stands a good chance to effectively help architects create solutions that meet the factual needs of the residents. This way the research can improve the quality of designed housing for the future residents, in particular by better addressing the needs of the future seniors.

#### 5. CONCLUSIONS

The conducted studies has shown correlations between the life experience of young people, their place of residence during studies, future housing plans and preferred type of housing, including also in old age. The conducted research has confirmed an established tendency of young people to choose a place of residence in a house, outside the city, rather than in apartment in the city. A large majority of the respondents wanted to live in a detached house. Young people tend to choose locations outside the city or outside the city center. It should be underlined here that such a trend will be declining. The respondents indicated also some disadvantages of living outside the city, which mainly are: not sufficient infrastructure, long time of commuting to work and

driving children to school as well as annoying neighborhood around. For the aforementioned reasons, a new trend can be observed, i.e. the come back to the cities and it may be expected to intensify, especially in the senior age groups that view easy access in particular to medical facilities and means of public transport as the key criteria underlying their choice of the place of living [11]. The feeling of safety in the place of living, connected with the accessibility to services, is equally important. As the research has shown such feelings are not age dependent. A detached house has proven to be a distinctly preferred form of housing. It may be concluded from the research that young generation shows high awareness as regards their future spatial needs [11].

Young people's awareness of the physiological and social aspects of ageing processes and of the future limits connected therewith is constantly increasing. In consequence, it may be noticed that the decisions made in respect of the place of residence are more and more conscious, and more and more often guided with access to facilities that might prove vital in assuring independent and safe living in the future. The research has also confirmed that young respondents were aware of inevitable processes inherent in ageing. Almost half of them (aged from 19 to 25) considered changing their place of residence to a place better adapted to the needs and limitations of the elderly. Whereas 30% of the respondents declared they would be living in the same place until an advanced old age. This may stem from their awareness of the fact that their living space can be respectively adapted before they might suffer from any adverse effects of the old age.

It is crucial to admit that many studies on future forms concerning housing at an old age have confirmed a negative approach tendency in respect of living in the Old Peoples' House or a nursing home (only about 2.2% of the respondents consider it as an acceptable form) [11].

The current trend among the present and future generations of the seniors is the ageing in place [17], described among others by a team of researchers from New Zealand and Canada. Polish research also confirms that trend, e.g. the studies carried out by S. Dudek-Mańkowska [18]. It is highly likely that such an approach is linked with the so-called *autobiographical insideness* phenomenon, which consist in emotional attachment to a place of living through its identification as inherent in positively perceived past experiences or through its subjective positive perception [11].

However, taking into account the earlier studies carried in 2007 and 2011, a change in the preferences of young people and their pragmatic rationalisation can be observed in the aspect of their own place of residence in future. A clear change in the aspirations e.g. as to the surface area (size) of a flat in future into a more rational approach can be noted. The expectations have rationally down-sized.

It is also worth noting that expectations of young people as to the preferred form of residential development converge with those of the seniors, namely a detached house is always the most popular option at a young and old age. Moreover, the expectations as to the location are also convergent. This is confirmed by the research made by the W. Bonenberg team "Future City Lab". The research has concluded that also the seniors most often choose locations some 6–7 km away from the centre [19].

The research conducted in 2009 by CBOS showed that the seniors were a social group that was the least willing to change their place of residence. Over 75% of the senior respondents stated that they would prefer to continue living in their place of residence. The results were compared to the results of the studies made in 2020. The comparative analysis shows that the feeling of independence and the will to remain independent at an old age has increased as compared to the research made about 10 years earlier when the number of the respondents who made a declaration on independent living was by 10% lower.

At the same time it shall be noted that new factors have arisen that require to be incorporated into the research, namely the new technologies and their application options in the daily life of the seniors, both for the health care purposes (monitoring and prophylactics) and efficient and safe management of space in one's flat. What is more, such technologies can extend the area accessible around the place of residence, facilitate moving around, maintain social contacts or family bonds, also at a distance, and in this sense can change the perspective of the seniors in the perception of their place of residence. Owing to digital skills, the seniors are less prone to alienation and the feeling of loneliness in the place of residence. Equipment based on advanced, new technologies can support the seniors in their contact with the external surroundings and shall be viewed as an unprecedented potential [20]. Such technologies stand a chance to play an important role in supporting independent living of the seniors in their place of residence, they can allow the seniors to continue living in their places of residence as long as possible, which, with age, is

becoming perceived as an increasingly important need, especially at an advanced old age (from 80 to 94). Unexpectedly, only few young people seemed to be attracted with the vision of senior's co-housing. Despite the fact that this innovative form is gaining in popularity and is postulated as a perfect alternative for more institutional forms of housing (state run nursing homes, etc.), it is not popular in Poland and hardly accessible, therefore, young people, either do not have sufficient knowledge about it or have not had a chance to form any opinion on this new form of housing. It seems to be crucial to put an attention to education of not only the youth but the society in general about the consequences of global ageing, which requires an update of the forecast needs of the seniors in future, both as regards their types and scale. Architects and urban planners shall be jointly liable with other professional groups for developing new solutions to the problem. This process can be effectively facilitated with high social awareness and participation [16].

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