

ARCHITECTURAL ADAPTATION OF RETAIL SPACES TO THE NEEDS OF THE ELDERLY

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HIGHLIGHTS

- Changes in architectural solutions are connected with life condition, life expectancy of older adults.
- The architectural solutions for older people are not sufficient.
- The social aspect of trade is completely omitted.

ABSTRACT

Background: The role of architects is to create sustainable spaces that are artificial yet mimic natural environments, taking into account the needs of all users. One such group is the elderly, whose spatial requirements change with age. Physical and psychological limitations emerge as they age. This issue is mainly considered regarding the organization of architectural space and its impact on older adults. **Material and Methods:** This article attempts to address the question of solutions that can improve the quality of life for elderly individuals, considering their specific needs and limitations when functioning in retail spaces. These issues will be discussed based on 3 types of grocery stores, in the context of architectural and social adjustments. The spatial solutions illustrated will highlight both limitations and possibilities for organizing retail spaces. The article includes a case study of an 84-year-old elderly person, suffering from obesity, hypertension, 2 heart attacks, and using a walker. **Results:** The article's goal is to improve the design process by making rational use of space and enhancing functionality, based on the needs of elderly people and their mental well-being. **Conclusions:** The research can be used by planners and urban designers to create accessible spaces (Design for All). The article suggests directions for changes in the ergonomics of retail spaces, particularly regarding their social role in the lives of senior citizens. *Med Pr Work Health Saf.* 2025;76(4)

Key words: urban planning, sustainable environment, permanent space, semi-permanent space, temporary space, senior-friendly architecture

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INTRODUCTION

The ageing population is a global issue, particularly evident in highly developed countries. In Poland, as of the end of 2022, the elderly constituted 25.7% of the total population [1]. The situation of seniors is not sufficiently addressed by programs ensuring a comfortable and dignified life. Therefore, grassroots initiatives, often related to seniors' daily lives, are crucial. This also applies to commerce. In architectural terms, it involves shaping the built environment at the urban scale, in architecture, interiors, and everyday objects. All these elements affect user comfort, including the elderly. Contemporary architectural design integrates various scientific disciplines, ranging from urban planning, spatial planning, architecture, and interior design to emerging fields such as architectural psychology. In 1982, architect and psychologist Rapoport [2] categorized space into 3 types: permanent

space (urban planning, buildings, rooms), semi-permanent space (movable elements, furniture, accessories, color, light, scent, sound), and temporary space (informal, surrounding the body, generating sensations and emotions). This article discusses retail spaces of various sizes, their infrastructure, building organization both externally and internally, and the functionality of elderly individuals within these spaces. The issues are illustrated through 3 types of retail environments: a large shopping centre ($>18\,000\text{ m}^2$), a medium-sized shopping centre (1200 m^2), and a small neighborhood store ($<70\text{ m}^2$). The ease of seniors functioning in these areas mainly depends on their physical and mental condition and their increasing life expectancy. According to the World Health Organization (WHO) [3,4], 3 stages of old age can be distinguished: young old age (early old age, the transition period from employment to retirement, 60–74 years), old age (later old age, when func-

tional disorders appear, 75–89 years), and very old age (longevity, advanced age requiring special care, >89 years). The ageing process is associated with a range of changes, including motor impairments (movement limitations) and psychological decline (reduced concentration, memory loss, and hearing deficits). The most common diseases include cardiovascular, neurological, gastrointestinal, kidney, respiratory, sensory organ disorders, and cancers. Each of these senior groups has different needs, but they all share 1 thing in common: as they age, their way of functioning changes, and more limitations (illnesses) arise. Retail solutions must account for these changes. Starting from “young old age” where seniors are more socially engaged, mobile, and independent, through “old age” where various ailments appear but seniors still function in retail spaces, to “very old age” where life activity shifts mainly to the home environment. Efforts should focus on facilitating shopping through ergonomics, specialized customer service, senior-friendly offers, shopping-supportive technologies, social integration, enhanced shopping comfort, and the elimination of barriers. The basis of everyone’s existence is the satisfaction of basic needs: physiological (food, drink, sleep, shelter), safety, belonging and love, recognition and self-realisation. Grocery shopping is at the top of the needs and is an integral part of human well-being. It is therefore very important to create a space conducive to the fulfilment of this need. The division into permanent space, semi-permanent space and non-permanent space makes it possible to conduct a study of how older people function in an architectural environment such as a large shopping centre, a medium-sized shopping centre and a neighborhood grocery shop. The researcher is an architect and the main focus here is the analysis of the functionality of the architectural solutions, the social aspect is covered sketchily.

MATERIAL AND METHODS

Permanent space in retail environments

Permanent space forms the foundation for both individual and group activities. It encompasses both materialized and hidden patterns that determine human behaviour [5,6]. A typical example of permanent space includes urban planning structures, villages, cities, related infrastructure, buildings, and rooms containing fixed elements such as elevators, ramps, and stairs. Shopping centres and retail stores also fall under the category of permanent space. Each of these entities has specific patterns that assign them a particular meaning.

Infrastructure and organization of interior retail spaces

Large shopping centres are typically located outside residential areas, often in industrial zones of a city. They feature well-developed transportation networks, frequently providing free public transport and large parking areas. These centres are accessible by car as well as by specialized transportation services. Their urban planning includes road networks and a broad range of services, such as home improvement stores, furniture stores, clothing shops, florists, cinemas, and food courts. The architecture of these structures is designed to maximize the utilization of customer potential. In permanent space, an essential role is played by the matrix – the pattern on which the entire spatial organization is based. Large shopping malls follow grid-based layouts, encompassing streets, parking areas, entrances, and corridors within the shopping centre. Such solutions facilitate movement and orientation, particularly for seniors. Signage for movement zones, entrances, and exits aids navigation, as does the numbering and labelling of different sections. Parking lots in large shopping malls are designed to provide direct access to entrances. Parking spaces are arranged perpendicularly or parallel to the building, with wide walkways that improve accessibility for seniors. In the case of neighborhood stores, the spatial matrix is less structured, and space organization mainly follows the layout of streets and residential blocks. Due to shorter distances, orientation in such areas is easier, and shopping in local stores is more convenient, if seniors can move independently. Medium-sized shopping centres combine elements of both large malls and small stores (Figures 1 and 2). Although their spatial layout resembles that of larger malls, their proximity to residential areas makes them more accessible. The ability to reach these centres by car or public transport is particularly beneficial for older adults.

In large and medium-sized shopping centres, key infrastructure components include elevators, stairs, and ramps, which facilitate movement between different floors and underground parking lots. Ramps are relatively rare, and entrances are usually designed at sidewalk level, eliminating architectural barriers. Small neighborhood stores often feature stairs rather than ramps, posing challenges for seniors with mobility impairments. In large and medium-sized malls, seniors with spatial orientation difficulties may experience challenges and psychological or physical discomfort. Smaller stores, due to their intimate scale, serve as an alternative to large shopping centres, especially for seniors who value inde-



Source: GoogleMaps (a,b). Photo: Karolina Wilk-Palka (c)

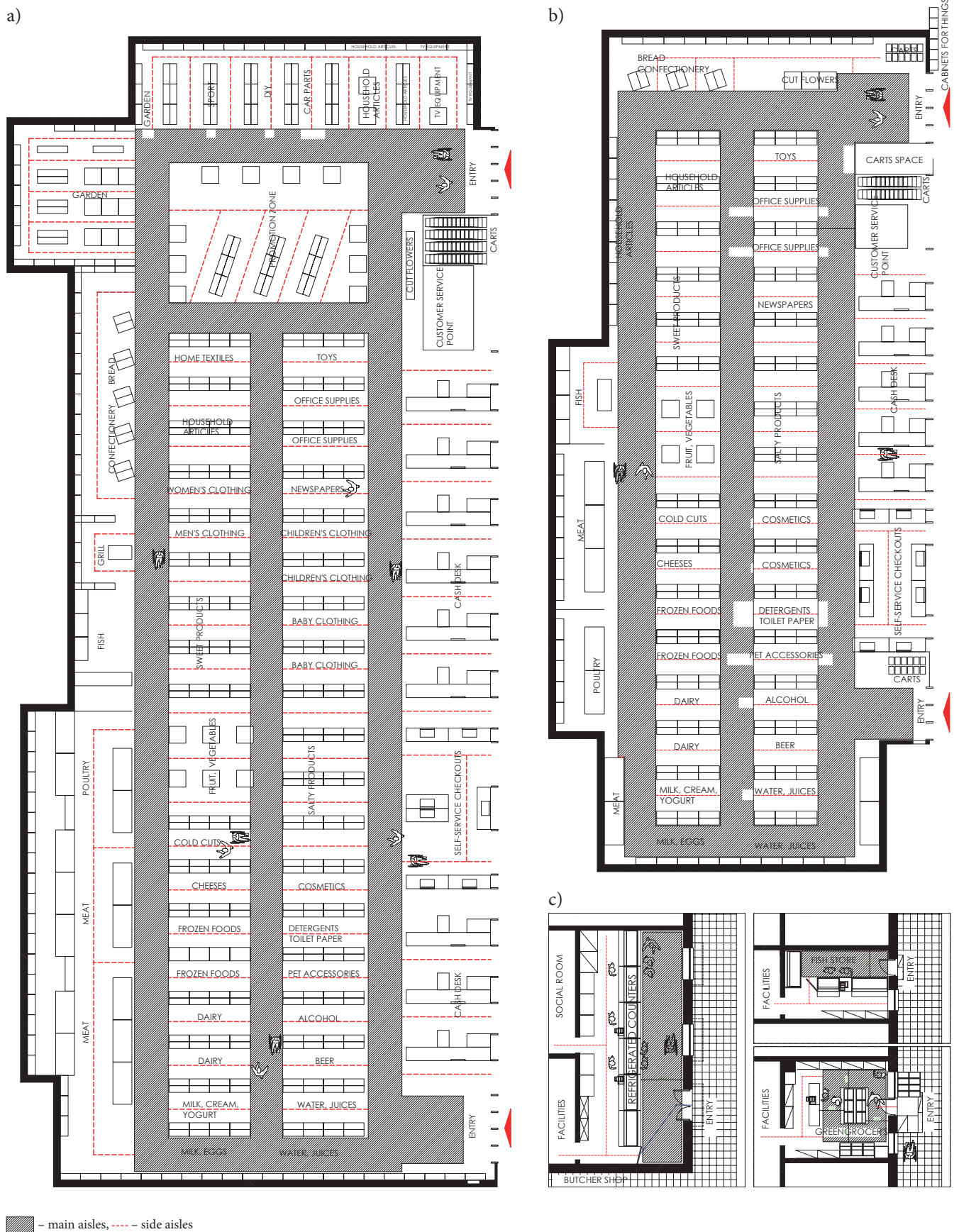
Figure 1. Infrastructure solutions around stores: a) large shopping mall, b) medium shopping mall, c) small neighborhood shops

pendence and convenience in daily activities. The layout of rooms in large shopping centres follows simple, easily comprehensible patterns. The simpler the layout, the easier it is for seniors to navigate. In large malls, wide aisles facilitate movement, leading customers through various service zones, including grocery stores, clothing stores, shoe shops, drugstores, and entertainment areas such as cinemas and gyms. Smaller aisles accommodate additional services such as restrooms and coat check areas, while grocery stores organize their space into sections for different product categories. The arrangement of products on shelves is usually consistent, aiding senior shoppers in locating items quickly. Aisles in large malls range 180–220 cm in width, allowing for smooth movement, including for individuals using wheelchairs,

walkers, or canes. In medium-sized shopping centres, spatial organization follows similar principles, but aisles are narrower (120–180 cm). Compared to large malls, product selection is more limited, and the atmosphere is more intimate. In small stores, space is organized more flexibly, but passageways are often irregular and narrow. Due to efforts to maximize available space, seniors may encounter difficulties navigating, especially when using mobility aids such as wheelchairs. The reduced store size makes movement more challenging, which can be problematic for seniors with limited mobility.

Semi-permanent space in retail environments

Semi-permanent spaces refer to the arrangement of objects within a specific area. Common elements in such spaces



include furniture, decorations, lighting, colors, scents, sounds, and even animals. These elements define and identify the space, assigning it a particular function and character. They establish boundaries and directions; in homes, they extend the personality of the occupants. In retail environments, semi-permanent elements are used to elicit specific reactions: they aid spatial orientation, direct customer movement, encourage customers to pause in certain areas, prompt changes in movement direction, reinforce brand identities, and enhance sensory experiences. Two researchers, Osmond and Sommer [5,7,8], demonstrated that the organization of semi-permanent space can significantly influence behavioural changes, and that the magnitude of this impact can be quantified. They classified spaces as either “sociopetal” or “sociofugal.” Sociopetal spaces foster interpersonal interaction and communication, whereas sociofugal spaces discourage it. When appropriately utilized, both types of spaces can yield positive effects. Sociofugal arrangements in public-use areas promote movement and foot traffic, examples include retail stores, corridors, restrooms, and coat check areas. Sociopetal spaces, on the other hand, encourage social interaction and engagement, examples include food courts, entertainment zones, and promotional areas. Based on this understanding, studies have established a strong correlation between product placement in stores and consumer demand.

Furniture

Large and medium-sized shopping centres arrange goods in specific sequences (Figures 2a and 2b) – division by industry – at designated heights, on shelves, in baskets, refrigerators, display cases, etc. Promotional campaigns or the most expensive products are displayed at the store entrance. A clear and simple layout is visible, with paths delineated by the furniture. The presentation method also determines the type of displayed products, and the order is not random:

- tall shelves (170–210 cm): consumer electronics, household appliances, automotive accessories, DIY, sports, gardening, school and stationery supplies (culture), household items, toys, footwear, biscuits, crisps, chocolates, bars, sweets, coffee, tea, breakfast products, flour, sugar, cake additives, preserves, canned fish and meat, rice, groats, pasta, soups, sauces, dietary products, oils, vinegars, ketchup, mustards, mayonnaise, spices, detergents, toilet paper, pet products, beer, water, beverages, juices, eggs (Figures 3a and 3b);
- hangers: women’s, men’s, children’s, and infant textiles;
- low shelves (130 cm): cosmetics;
- baskets and shelves (130–230 cm): bread, confectionery, vegetables, fruits (Figures 3c–f);
- low refrigerators: frozen foods, meats, cold cuts, cheeses, chips, pizza (Figure 3g);
- tall refrigerators: cheeses, kefirs, yogurts, butter, milk (Figure 3h);
- over-the-counter sales: fish, poultry, meats, cheeses, cold cuts (Figure 3i–l).

All these elements furniture serve more “hidden” rather than “explicit” communication. The careful selection of equipment (furniture) and its arrangement in space clearly convey specific meanings and functions (Figures 2a and 2b). Due to the extensive assortment in shopping centres, seniors need to cover significant distances; however, standardisation of assortments facilitates orientation. Products are always in the same place. The marking of aisles and their width also play a crucial role, indicating whether it is a main route or a side aisle (Figures 2a and 2b – aisle sizes). In local shops, the division by industry and store size determines the display method. While seniors in large and medium-sized centres mostly select products themselves (except for items sold over-the-counter), in local shops, they always interact with a shop assistant. These assistants are often local residents, familiar with customers, making shopping more personalised and socially engaging. In large and medium-sized centres, seniors have a wide selection of products in fixed locations, and movement is smooth thanks to standardised aisle widths, avoiding collisions with other customers. In smaller stores, due to narrower passageways, movement is less fluid and even prone to congestion. People in wheelchairs or with walkers face difficulties selecting items and accessing checkouts. The limited space in these stores often results in queues.

Physical characteristics of space

Apart from furniture, the level of engagement is undoubtedly influenced by the physical characteristics of the space, such as lighting, colors, scents, and sounds [9].

Lighting

Existing research on the importance of lighting suggests that it affects the comfort of individuals in a given space [10]. Interior designers often overlook this aspect, which plays a key role in shaping perception. Overly bright, strong lights are perceived as unpleasant or even painful, whereas excessively dim lighting makes spaces appear untidy and unclean. Therefore, lighting is one of the fundamental aspects ensuring good sales in shopping centres. This is well illustrated in Figures 3a–3b,



Photos: Karolina Wilk-Palka

Figure 3. Methods of sorting the assortment in grocery store: a, b) high and low shelves; baskets and shelves for: c, d) bread; e, f) fruits and vegetables; g, h) low and high refrigerated display counters; i, j) goods sold behind the counter in large and medium shopping mall; k, l) goods sold behind the counter in small neighborhood store

in Figures 3c–3d – well-lit areas are clear and accessible for visitors, whereas in Figures 3k and 3l – areas with weaker lighting result in poorly visible assortments, discouraging customers from entering these spaces. Shopping centres illuminate goods evenly (depending on the furniture they are displayed on) using LED lamps with natural or cool white light, in the range of 4000–6000 K. Cooler lighting better highlights products, while warm lighting is used to create a cosier atmosphere and is reserved for private spaces (2700–3000 K). Medium and large centres also adjust light heights according to room height. Properly selected lighting can effectively deter criminals. As shown in the images (Figures 3a and 3b, 3c and 3d), shopping centre lighting consists of linear LEDs and spotlights that evenly illuminate the space (Figures 3k and 3l). In local shops, general overhead lighting is usually LED and sometimes integrated into refrigerated counters. There is more flexibility in these settings, and spaces are not evenly lit like in shopping centres. The color and intensity of light are less significant and depend on the preferences and financial capabilities of the shop owner or tenant. Lighting is often insufficient, especially in winter when daylight hours are shorter, and shops are poorly illuminated. Elderly individuals with vision problems benefit from appropriate lighting, as it enables them to move around stores efficiently, locate entrances and exits, find check-outs, and identify products. Labels and product descriptions remain legible for them.

Color scheme

The color scheme of interiors significantly influences human behaviour [11–14]. Similar to how dark and bright rooms are perceived differently by the elderly, the same principle applies to color selection. Colors are associated with different moods: warm tones raise blood pressure, stimulate activity, and create a tense atmosphere, while cool tones provide relaxation, encourage reflection, and promote rest. More natural, neutral colors help seniors concentrate and navigate spaces, making the environment clear and easy to comprehend. In stores, colors serve as a backdrop for the assortment. Color accents appear in advertisements, promotional campaigns, aisle markings, product categories, and brand names. This allows seniors to focus on the assortment and shopping. Shops are painted in neutral, pastel shades, predominantly white, beige, and grey, with accents limited to brand logos. Ceilings are often painted in dark colors (black, graphite) to reduce the perceived height of the store and create a cosier atmosphere.

Sound

The types of sounds and their intensity have a significant impact on quality of life [9]. Some sounds can contribute to relaxation and calmness, while others stimulate and trigger aggressive behaviour. This is often an individual matter, dependent on personal preferences and tolerance for sound intensity. The music preferred by seniors is gentle and subdued, often associated with nature sounds. Scientific research suggests that as many as 75% of shoppers choose stores that play music [9]. Music not only encourages impulsive purchases but also diverts attention from the passage of time, leading older adults to spend more time in stores and ultimately spend more money. For highly sensitive individuals, large shopping centres have introduced music-free hours. These apply to common areas where music is turned down, lighting is dimmed, and announcements are minimized. Typically, this occurs at fixed times between 11:00 AM and 2:00 PM (according to internal mall regulations). During this time, there are the most elderly shoppers, who can focus on shopping in silence without being distracted by loud sounds or harsh lighting.

Scent

Scents play a role in shaping the atmosphere of interiors, complementing lighting, color, and sound. Studies show that scent can evoke stronger impressions than images, and 65% of people can recall a specific scent memory after a year [9]. Scents can trigger different emotional reactions in seniors. Floral fragrances evoke a sense of elegance and luxury, while citrus notes refresh and energize. Like sound, scent triggers emotions and memories, serving as a tool for building relationships with customers. A well-chosen scent makes older adults feel comfortable and welcome, increasing the likelihood of purchases. Scents associated with a particular brand help build customer loyalty. In retail, scents enhance product appeal, well-selected scents can increase purchase likelihood. Seniors, who often experience reduced olfactory sensitivity, may not detect scents in large spaces, whereas overly intense fragrances may be overwhelming for highly sensitive individuals. Such individuals tend to prefer smaller stores that do not use scent marketing strategies. For seniors, scent, sound, and color play a crucial role in experiencing comfort in a retail space.

Small-scale elements

Small-scale elements in retail spaces include shopping carts and baskets, which impact the shopping experience [15]. Seniors can choose from different types of carts, ranging



Photos: Karolina Wilk-Palka

Figure 4. Types of shopping carts: a) large shopping carts, b) small shopping carts, c) trolley for small shopping carts, d) medium-sized shopping cart, e) own rolling shopping bag

from large, heavy carts to medium-sized and small baskets (Figures 4a–d). Carts are available at store entrances, while smaller baskets are mainly used for navigating the store (Figures 4c and 4d). Despite their capacity, carts can be difficult to manoeuvre, especially when filled with many items. Seniors, who shop less frequently and buy smaller quantities, often prefer lighter, more manoeuvrable baskets. In smaller stores, older shoppers frequently use their own shopping bags or wheeled carts, making it easier to carry

purchases without excessive strain (Figure 4e). The flow of movement in a store is regulated not only by the arrangement of shelves, baskets, and racks but also by checkout counters, which act as bottlenecks. In large shopping centres, checkouts are located near exits, along with customer service points. An insufficient number of cashiers can lead to long lines, which is why self-checkout stations have been introduced. These often pose difficulties for older adults who lack experience with modern technology. In smaller

stores, where service is more personal, seniors feel more comfortable, prefer cash payments, and are familiar with the staff, making shopping easier and more enjoyable.

Temporary and informal spaces in retail environments

Temporary space refers to the area that directly surrounds an individual body – it is an informal boundary associated with the amount of space needed to maintain psychological comfort. This space varies from person to person and is influenced by factors such as height, weight, gender, mood, and social or professional status. It is also determined by geographic location and cultural background. Elements of temporary space include permanent and semi-permanent features that define its boundaries. Temporary space is closely linked to personal experiences and to proxemics [16], which examines spatial relationships between individuals as well as between people and material surroundings. It defines the physical distance maintained to others, surrounding objects, and the type of interaction taking place. The boundaries set by temporary space play an important role in interpersonal relationships. Large shopping centres provide seniors with anonymity, isolation, and a sense of freedom and spaciousness. However, older adults may also feel lonely, lost, and disoriented in such environments. Seniors who value tradition prefer small stores, which offer intimacy, familiarity, and personalized customer service. For older adults, direct interactions and the ability to engage with others in retail spaces hold greater significance.

Case study

Study carried out as an observation of a specific case. Duration of observation approx. 12 months (2023–2024, Wrocław, Poland), in order to ensure that the study conditions were as natural as possible. The study was carried out without external manipulation, as an attempt to illustrate the way an elderly person (dependent variable) functions in 3 locations of shopping spaces (independent variable). The choice of the 3 types of shops related to the senior's place of residence and his possibilities of movement. The observation included: an elderly single gentleman, aged 84, living in the city centre on the outskirts of the old town, in the attic of an apartment building. The gentleman does not have a driving licence and moves short distances by public transport. Moving longer distances only with the help of a third party with a car. Senior has undergone 2 heart attacks, is overweight, and moves about with a walker. He does

larger purchases occasionally, 1 every 3 months with the help of family and neighbours (Table 1).

Evaluation criteria of adapting shop spaces to the needs of older people:

- good – G (1 pt),
- insufficient – I (0.5 pts),
- poor – P (0 pts).

Large shopping centre (16.5 pts)

The infrastructure of a large shopping centre, following existing regulations, is well adapted to accommodate elderly individuals with mobility impairments (walkers). Spacious car parks, clear signage, street-level entrances, and the availability of lifts between floors facilitate movement. However, the distances to be covered and the lack of resting areas (e.g., benches) outside the building remain problematic. Bus access is possible only with the assistance of others, who must help with boarding, alighting, and carrying purchases. Inside, a clear and readable layout, aisle hierarchy, and additional services (e.g., rest zones, toilets) enhance the shopping experience. A wide range of goods, arranged in fixed locations, aids orientation. The long distances can be exhausting, and introducing additional resting areas, especially inside the grocery hall, would be beneficial. Movement within the store is smooth due to the wide aisles, and the absence of congestion ensures comfort. Assistance is required for transporting groceries (large, heavy trolleys), retrieving items from shelves, unloading at the checkout, and using self-service tills. The lack of direct interaction with other customers and shop staff, as well as the anonymity of the shopping experience, can lead to feelings of alienation and social isolation.

Medium-sized shopping centre (18.5 pts)

The infrastructure of a medium-sized shopping centre, in compliance with regulations, is well adapted for elderly individuals with mobility impairments (walkers). The centre is conveniently located near residential areas, with good public transport connections and walkable access. Shorter distances, level entrances and exits facilitate movement. However, the lack of resting areas both outside and inside the store is a drawback. The availability of smaller trolleys is advantageous. A fixed layout of furniture and goods simplifies navigation. Aisles are narrower (120–180 cm) but still allow for smooth movement. Both standard and self-service checkouts are available, with additional staff assistance and cash payment options. As in large shopping centres, there is limited opportunity for social interaction.

Table 1. Study aimed at verifying and evaluating 3 types of shopping spaces in terms of architectural and social adaptation to the needs of elderly people with described dysfunctions, 2023–2024, Wrocław, Poland

Adaptation	Solution evaluation	Adaptation	Solution evaluation
Large shopping mall		Medium shopping mall – cont.	
permanent space		permanent space – cont.	
infrastructure		infrastructure – cont.	
located at large distances from residential areas	P	accessible by private car	P
accessible by free public transport	I	pedestrian access	G
accessible by private car	P	parking	P
no pedestrian access	P	clear entrance and exit signage	G
large parking lots	P	elevators, ramps	G
clear signs for entrances and exits	G	space organization inside	
elevators, ramps	G	clear plan/layout	G
space organization inside		simple passage layout	G
clear plan/layout	I	passageways according to regulations	G
corridor hierarchy	G	clear aisle signage	G
passageways according to regulations	G	no major traffic collisions	G
clear aisle signage	G	short distances to cover	G
no traffic collisions	G	semi-permanent space	
long distances to cover	P	furniture, color, sound, light, scent, carts, checkouts	
semi-permanent space		furniture in fixed places, permanent organization of space	G
furniture, color, sound, light, scent, carts, checkouts		assortment in fixed locations	G
furniture in fixed places, permanent organization of space	G	wide range of products	G
assortment in fixed locations	G	well-lit areas	G
wide range of products	G	neutral color scheme	G
well-lit areas	G	loyalty programs with discounts	G
neutral color scheme	G	no hours without music	P
loyalty programs with discounts	G	choice of carts (large, small)	I
hours without music	G	multiple checkout stations	G
choice of carts (large, small)	I	self-checkout stations with helpful staff, cash payment option	G
multiple checkout stations	G	temporary space	
self-checkout stations	P	correlations	
temporary space		no collisions with other shoppers	G
correlations		no contact with other customers/anonymity	P
no collisions with other shoppers	G	limited contact with staff	P
no contact with other customers/anonymity	P	Small neighborhood store	
limited contact with staff	P	permanent space	
Medium shopping mall		infrastructure	
permanent space		located in residential areas	G
infrastructure		accessible by public transport	G
located in residential areas	G	accessible by private car	P
accessible by public transport	G	pedestrian access	G
		no parking	P
		clear store windows	G
		no elevators, ramps	P

Table 1. Study aimed at verifying and evaluating 3 types of shopping spaces in terms of architectural and social adaptation to the needs of elderly people with described dysfunctions, 2023–2024, Wrocław, Poland – cont.

Adaptation	Solution evaluation
Small neighborhood store – cont.	
permanent space – cont.	
space organization inside	
plan adapted to store interior	I
clear passage layout	I
no maintained distances, passages	P
small space	I
potential traffic collisions	P
short distances to cover	G
semi-permanent space	
furniture, color, sound, light, scent, carts, checkouts	
furniture adapted to the industry	I
assortment in fixed locations	G
small product range	I
no well-lit areas	P
varied color scheme	I
no loyalty programs with discounts	P
no hours without music	P
own shopping bags and trolley bags	G
no multiple checkout stations	P
service from behind the cash counter	G
temporary space	
correlations	
potential traffic collisions with other shoppers	P
contact with other customers/creating connections	G
good contact with staff	G

Assessment of solutions: G – good (1 pt), I – insufficient (0.5 pts), P – poor (0 pts).

Small local shop (14.5 pts)

A small local shop is conveniently located close to the senior’s residence. Its infrastructure is less developed and limited to the immediate neighborhood. The ability to walk to the shop and cover short distances is a clear advantage, although barriers such as steps or a lack of ramps are common. The store’s interior layout is dictated by the available space – crowded furniture and narrow passages hinder movement. The selection of goods is limited but tailored to customer needs. Resting areas are located outside the shop – in squares, parks, or on benches along streets and bus stops. Assistance is available only from behind the counter,

restricting independent product selection. However, the staff are helpful and responsive to customer needs. Frequent social interactions and opportunities to meet local acquaintances foster a sense of community integration.

RESULTS

Medium-sized shopping centres provide the best shopping experience, offering accessibility and functionality. The infrastructure is well developed here. Access by public transport as well as by own transport (with the help of third parties) is possible. The proximity of the establishments is also an advantage. The space inside the shop allows flexible arrangement, the aisles are wide, which facilitates movement. The mobile elements – furniture – are spaced at appropriate distances, only the height of the shelves is problematic. People using a walker may not be able to reach the higher shelves. The social aspect of shopping in this type of shop is completely overlooked. Older people may feel isolated and excluded from the community.

DISCUSSION

The innovative research method was developed to assess the architectural adaptations of retail spaces for elderly individuals while considering social aspects. The questions focused on specific areas, including infrastructure, internal store layout, and small interior elements. Particular attention was paid to the senior’s interactions with other shoppers and the surrounding environment. The innovative aspect of the study is its comprehensive approach to architectural space as a factor in elderly well-being. The results are based on a single case study with specific impairments and are not conclusive. They are divided into 3 types of space, which equally affect the viewer while interacting with all their components. Up to now, research has focused on the components rather than the overall theme, which is a mistake because all its components affect the viewer at the same time. Large shopping centers and medium-sized shops have an advantage over small shops in this respect, due to larger spaces (wider aisles), flexibility of the arrangement (furniture can be rearranged), loyalty programmers, additional staff and the possibility of financing services to assist the elderly – shopping assistants. Unpacking goods in shopping aisles, which can cause collisions with shoppers and a lack of direct contact with staff, is problematic. Small neighborhood shops are friendlier in terms of personalizing the shopping process, but their

interiors in terms of functionality often make shopping impossible. Small spaces, tightly packed merchandise, high shelves and narrow aisles. All of these elements contribute to the comfort of the elderly as one of their basic needs is met. In relation to the article of Kurtyka-Marcak [17] the problem is clearly visible, mainly related to movement disorders in older people, their movement, mobility, functioning in both public and residential spaces. It has been shown that a much larger part of the population is affected by movement dysfunctions than indicated by disability certificates. This is an important part of the described permanent space, on semi-permanent – functionality of the assumption (infrastructure, interior layout, small elements – furniture). The study conducted on the unit indicated similar problems. However, it is not reliable and the sample should be extended to a larger part of the population. The research of other scientists focuses mainly on individual elements of space and is a component of this work. Therefore, cooperation with other fields of science is important in order to supplement the results of this research. The functioning of older people in commercial spaces is mainly related to their physical condition, adjustment to their dysfunctions and ensuring mental well-being. The Building Law [18] defines the functional outline of the designed spaces, but field research (case studies) is needed to consider more personalized solutions, tailored to the individual rather than generalizing their needs.

CONCLUSIONS

The studies carried out are not conclusive (too small research group). Introduce additional questions about the functionality of display furniture solutions in the context of older people and age-related limitations. The length of time it takes to conduct the research also plays a key role. Researchers from other fields such as medicine (e.g., family doctor), psychology and computer science must also be involved. The solutions to be implemented in the future will be closely linked to technological growth and new operating systems to facilitate shopping, which also needs to be researched. In the future, the research can be used to evaluate other architectural objects especially public buildings by creating a checklist based on the research.

AUTHOR CONTRIBUTIONS

Research concept: Przemysław Nowakowski, Karolina Wilk-Pałka

Research methodology: Karolina Wilk-Pałka, Przemysław Nowakowski

Collecting material: Przemysław Nowakowski, Karolina Wilk-Pałka

Statistical analysis: Przemysław Nowakowski, Karolina Wilk-Pałka

Interpretation of results: Przemysław Nowakowski, Karolina Wilk-Pałka

References: Karolina Wilk-Pałka, Przemysław Nowakowski

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