

Analysis in Selected European Smart City Districts regarding Ageing Population

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1 ABSTRACT

Urban regions are changing at all levels. Technological and demographic change poses major challenges for urban planning and regional development. Evaluation from the report "Europe's demographic future" from 2017, prepared by the Berlin Institute for Population and Development, illustrates the demographic development of the population 65+ by 2050. According to this, an increase of up to 55% of the population over 65 in Europe is forecast by 2050. Independence and the associated opportunity for a self-determined, autonomous life in old age is the wish of the aging population and is often accompanied by a changed form of living. But how can this predicted increasing demand and the associated range of infrastructure and services be implemented and managed in urban areas? In order to identify the parameters and necessary framework conditions that influence the development of an age-friendly, smart city district, this paper deals with the comparison of seven European smart city districts and their offers in relation to their aging population, for autonomy and flexibility also in old age. Modern forms of housing, shared flats, mixed concepts of senior and students, where the collective is lived, are reality. Flexibility of use plays an important role here. Common spaces, accessibility at all levels, good public transport connections and an environment with the best infrastructure are indicators of self-determination even in old age. A case study of seven selected European Smart City districts focusing on "Living in old age" will be analysed and evaluated here. The selected European Smart City districts: „Malmö BO01“, „Stockholm - Hammarby Sjöstad“, „Vienna Seestadt Aspern“, „Hamburg – Hafencity“, „Helsinki – Kalasatama“, „ Helsinki – Jätkäsaari „, and „Copenhagen – Nordhavn“. Here, the ratio of offers for older people to registered residents +65 is analysed and compared: „Vienna Seestadt Aspern“, with 6.348 inhabitants and a population density of 2.645 inhabitants per km², has 2.39% inhabitants in the category +65, despite multiple offers, although various assemblies on the construction site D13 „Aspern Die Seestadt Wiens“ advertise with a focus on communal living. „Hamburg Hafencity“, with an average age of 35,7 years and a population density of 1.893 inhabitants per km², has a population +65 of 9,2%. The percentage of one-person households is 37,6%. Here, intergenerational communal housing solutions can benefit from one another and form synergies. Another positive aspect in this district is the medical infrastructure, which with 13 established medical facilities, including a pharmacy, forms a good basis for an independent life in old age. The infrastructure and the necessary services are available in many districts. Society is currently undergoing a rethink, and the population is also willing to accept these social offers. The percentage of the resident population +65 is still manageable in Smart City districts, but the result is that they are still relatively young. However, the population will change in the future and in 2050 there will be more old people than young people, even those currently under 65 will follow the demographic change with the desire to age autonomously and independently.

Keywords: ageing population, Smart City districts, autonomous, flexibility, districts

2 INTRODUCTION

Smart City is the challenge of the new generation of the city. Digitalization is driving social change. The analysed target group 65+, too, is discovering the digital world and its numerous possibilities to make life easier in old age, more and more for itself. In the future, it will be easier for older people to live in their own homes for as long as possible and to participate in social life in a self-determined way. Although older people attach great importance to self-determination, people often have to make themselves dependent against their will. The older people get, the more time they spend in their home. With this reduced radius, the demands on the apartment also changes and the need for comfort and security increases. My thesis on this is: Old people prefer to live autonomously and longer in a Smart City District than in rural areas, because they can manage their everyday life there independently and therefore do not have to seek outside help from a nursing home. Accessibility, networking in old age and an appropriate infrastructure in the immediate vicinity are considered important factors for senior living. There are now many alternative forms of living, such as intergenerational living for seniors and students. Alternative concepts are the future here. Today's best agers

do not want to live in the home, but rather self-determined in associations that offer a social life. Therefore, the following part deals with the analysis of seven European Smart City Districts in relation to the population living in them, their percentage 65+ and the offer for independent living in old age per district.

3 SMART CITY

The term Smart City is the development of future-oriented urban planning programmes and strategies, in the form of creative networking, as well as innovative integration of different areas of a city. Its intelligent structure and the associated infrastructure overcome the urban challenges of the city and operate 24 hours a day, seven days a week. There are various interpretations and interpretations worldwide. Innovative smart city concepts include technical, social, economic and ecological developments. It offers its residents an energy-efficient and low-emission city with a high quality of life and minimal resource consumption.¹ The use of information and communication technologies, which promise a change in cities as systems and as a society, can only lead to smart city development in combination with other factors. In order to bring about this change in living conditions, smartness must be thought through in terms of innovative ability, ecological sustainability and quality of life. Participative processes of participation and the integration of social aspects of urban society are essential here, because smart cities are committed to sustainable and integrated urban development at all levels in order to improve living conditions in cities.²

4 DEMOGRAPHIC CHANGE

Demographic change is changing European society. The world's lowest birth rate contrasts with increased life expectancy. Demographic change is increasing, with the increase in single households and increased mobility, an increasing number of people in need of care. Due to this demographic development, the aging population and its holistic area of life, from economy to architecture, is being brought into focus, because in our affluent society you not only live longer, you also age more slowly. The reasons for higher life expectancy are growing prosperity, advances in medicine, hygiene and health care, and accident prevention.³

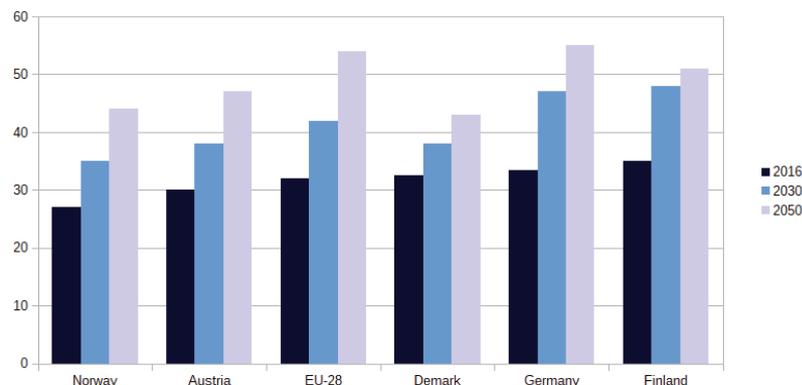


Fig. 1 Europe's demographic future - Percentage over 65 years old

The graphic illustrates the evaluation from the report "Europe's demographic future" from 2017, prepared by the Berlin Institute for Population and Development. In this study, the demographic development of the population 65+ is forecast by 2050. According to this, by 2030 more than 40% of the population in Europe will be over 65 years old. In 2050, an increase of over 65-year-olds in Europe's population is forecast with an average of up to 55%. This share of the population is expected to be 44% in Norway and Denmark in 2050, 49% in Austria and Finland and 55% in Germany. The calendar age will lose more and more meaning, because the population has two age values, so to speak. A value based on the year of birth and one based on actual skills and behaviour. One of the greatest challenges of the future will be to keep the aging population, economically and socially, efficient.⁴

¹ Lobsiger 2015, 13 -14.

² Bundesinstitut für Bau-, Stadt- und Raumforschung 2017, 12.

³ Hergott 2012, 8-11.

⁴ Hergott 2012, 10-11.

5 LIVING IN OLD AGE

Participation is a social phenomenon based on relationships with other people. It is an important factor in physical self-determination and medical health. This aspect also has a high impact, in the areas of housing and social integration, in relation to the satisfaction of the residents of a neighbourhood. It is also an important indicator in the case of supportive digitalization in order to be able to lead a certain lifestyle, because older people want actively designed leisure time in order to maintain physical and mental fitness as well as social contacts. The technical assistance systems are in a process of constant further development and are becoming increasingly important. These systems are used in nursing to support older people and those in need of care, as they allow them to stay in their own home for longer. The desire to be able to live autonomously in your own apartment for as long as possible often goes hand in hand with a change in living arrangements.⁵

5.1 Living in a district

Independent living in a familiar environment can be best achieved in a district even in old age, through participation and mutual help. A district is a social space and describes the individual radius of action, the extent of which is variable, and promotes quality of life. The radius of action is a dynamic process and is made up of the available offers and individual skills in everyday life. To do this, one is faced with the question of what skills are required to use the available offer. The radius of action can be expanded by the social space offered in a quarter, in the form of one's own apartment and the regularly used public space. Activities and interactions of everyday life take place here. The advancing digitalisation is already having an impact on networking in the district. In this context, older people have a local connection and digitalization in the district can become a concrete problem solver in everyday life. Neighbourhoods and social-spatial networking at the district level are essential in order to receive help when needed, because support from the surrounding area improves living together, reduces the need for help and increases the quality of life.⁶

5.2 Survey Target group

In order to better understand the target group 65+, a survey of 63 people aged 65+ was carried out in Austria and Germany. 34% of those questioned form the 65-69 year olds. 70-74 year olds are 33%. The age groups 75-79 and 80-84 each make up 14%. The age group 90 - 94 make up 5%. For this purpose, questions were asked in the area of digitalization, infrastructure and mobility, in terms of habit and relevance, and the following findings were obtained: Basic tenor: The older population 65+ is afraid of change. 67% find nursing robots as not necessary and 5% find nursing robots as very important. The emergency bracelet, on the other hand, was rated as very important by 81%. Many do not have a PC, but a smartphone. Whats App is used by 62% and the mobile phone by 86% every day. 76% have never used Facebook. The target group rarely orders online but goes shopping regularly. 33% go shopping daily and 57% weekly. 67% have never ordered anything online. Small-scale infrastructures and businesses must be preserved! Public space is of great importance for 66%. Barrier-free accessibility as a human right. 95% find that public spaces should be barrier-free. Short distances are particularly important. 62% of the respondents walk up to 2 km on foot. Short distances to medical aid are very important for 76%. 66% find short routes to shopping very important and 34% find short routes to green spaces very important. Social infrastructure in the neighbourhood is important. Networking in the neighbourhood has a significant impact on housing satisfaction and is an important quality feature. Neighbourhood relationships were rated as particularly important by 71%. It is important to be used. 86% find it very important to be needed.

⁵ Naujoks u.a. 2017, 9-10.

⁶ Naujoks u.a. 2017, 15.

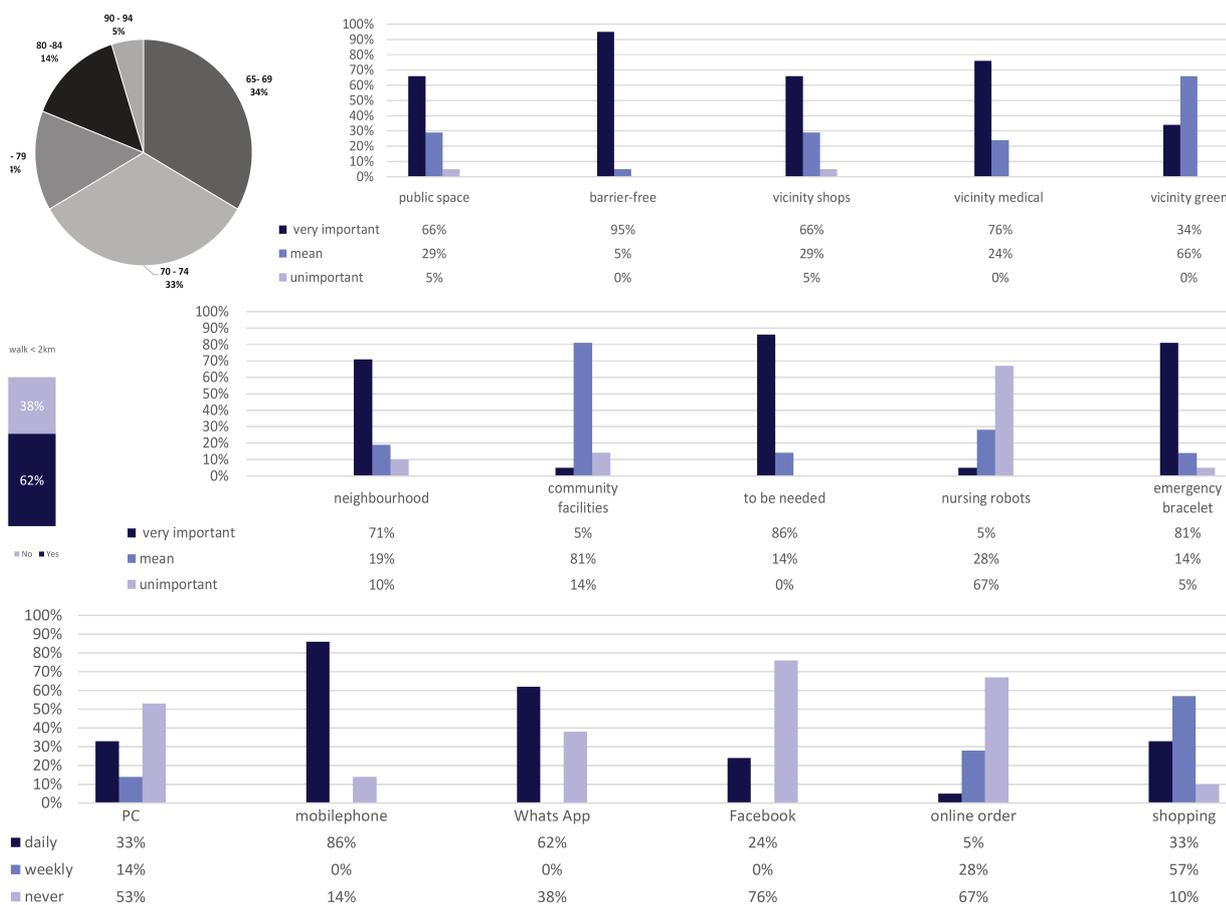


Fig. 2: Core data of the respondent's target group 65+ as a diagram

6 ANALYSED SMART CITY DISTRICTS

6.1 Smart City districts

In old age, one's own home is the centre of life. However, many apartments are not suitable for the elderly. That is why many older people, at age 65+, are considering changing their living situation. Parameters for selecting the new living situation are not only aspects of accessibility in the form of levels and thresholds, but also short distances and social aspects, such as a good neighbourhood network. That's why some move to a smart city district. A case study of seven selected European Smart City neighbourhoods focusing on "Living in old age" will be analysed and evaluated here. The selected European Smart City districts: "Malmö BO01", "Stockholm - Hammarby Sjöstad", "Vienna - Aspern", "Hamburg - HafenCity", "Helsinki - Kalasatama", "Helsinki - Jätkäsaari" and „Copenhagen – Nordhavn”. The districts were selected based on "Mapping Smart Cities in the EU"⁷ and in the Smart City publication "Technical Tours Smart Cities 2014-2018".⁸ All seven considered Smart City districts were selected according to the indicators of sustainability and innovative strength in the area of urban and district development and considered and defined as a Smart City project based on an already implemented project.

	population	0 - 64	>65	%	ha
Malmö - BO01/ Västra Hamnen	10203	8945	1258	12,33	175
Stockholm - Hammarby Sjöstad	18902	16564	2338	12,36	110
Vienna - Seestadt Aspern	6.348	6196	152	2,39	240
Hamburg - HafenCity	4.592	4168	42-4	9,20	157
Helsinki - Kalasatama	2910	2559	351	12,06	175
Helsinki - Jätkäsaari	6901	6432	478	6,92	68,5
Copenhagen - Nordhavn	2896	2781	115	4,00	55,4

Table 1: The selected European Smart City districts. (population 65+, population and district size)

⁷ Cave u.a. 2014, 180-198.

⁸ BMVIT 2020, 19-20.

6.1.1 Malmö - BO01/ Västra Hamnen

The project start of Bo01 - Västra Hamnen in Malmö was in 2001, through the Bo01 architectural exhibition. Since then, an internationally known example of sustainable urban development has established itself here. The Bo01 quarter is Sweden's first climate-neutral district. Malmö - BO01 / Västra Hamnen, has a very high number of the considered target group 65+ with 12.3%. The population of the district is 10203, of which 1258 are 65+. The population density is 5830 people per km².⁹ Pedestrian zones, room sequences of different sizes, wind-protected inner streets and extensive urban spaces refer to the human scale. Västra Hamnen, as a residential and office town, has eight kilometres of shoreline with swimming areas, green areas and beach promenades with many beautiful parks. Pedestrians and bicycles have priority, so bus stops have been set up within a radius of 300 m from the residential buildings. High priority is given to public space as a lifeline and meeting point. The Västra Hamnen project pursues the goal of an urban district that covers all areas of life around the focus of diverse living and training. The mix focuses on affordable social sustainability. MKB Senior Accommodation is a house in Västra Hamnen for people aged 55 and over, it offers regular activities for residents and cafes for the elderly living there. Attendo Västra Varvsgatan senior accommodation also offers 53 apartments on three floors with a courtyard, terraces and balconies.

6.1.2 Stockholm - Hammarby sjöstad

Hammarby sjöstad on the southern outskirts of Stockholm, has 12.4% of the considered target group 65+. The population of the district is 18902 people. 2338 of them are 65+. The population density is 17,184 people per km².¹⁰ Hammarby Sjöstad was planned for a balanced mix of rental and condominiums. The district's rainwater is collected and the waste is transported through an underground suction system. The focus is on public transport, in the form of light rail, bus and ferry, as well as bicycle and foot traffic. The green space concept provides 25m² of free space per apartment. All green areas are interconnected. Stockholm pays strict attention to standardized dimensions and materials in the area of barrier-free accessibility, such as the inclination of the streets, non-slip materials or the lowering of the curb. The ground floor zone of the building offers space for shops and public services such as a health centre. Hammarby sjöstad has its own apartments for customers aged 55 and over, which must also be sold to them. Homes for older people who need medical care are called Seniorsgården. There are gyms for seniors and regular senior meetings in a cafe. In addition, a caretaker service for small-scale repairs in everyday life is offered throughout the city of Stockholm for seniors.

6.1.3 Vienna – Seestadt Aspern

The Seesatdt Aspern master plan places great emphasis on public space in the context of smart development processes, participation and inclusion. The Urban Lakeside is young because more than half of the urban residents are between 19 and 39 years old. At 2.4%, Seesatdt Aspern currently has a small number of the target group 65+ considered. The population of the district is 6,348. 152 of these residents are 65+. The population density is 2,645 people per km².¹¹ An important point in the design of public spaces is accessibility. Thus, for example, all sidewalks are made in sufficient width and angle. The assemblies in Seestadt Aspern are very concerned about a mixed life. "MISCHA" offers communal living in response to demographic developments. In addition to „MISCHA“, there is also a dormitory for senior citizens. "Yella Yella" works with overarching concepts such as childcare for neighbours. "LiSA" - nine living spaces for older people who want to live in a community and are interested in integrating into a home community. "Gesiba" - offers 36 manageable apartments especially for seniors. "House of Life" is a cross-generational, barrier-free housing project that relies on neighbourhood help. There is good public transport links by bus and subway. A high-quality open space - with more than 30 business locations, as well as pharmacies, doctors, banks is located directly at the „Seepark“.

6.1.4 Hamburg - HafenCity

The HafenCity has an average age of 35.7 years and, at 9.2%, has a relatively high number of the target group 65+ considered. The population of the district is 4,592, of which 424 are 65+. The population density

⁹ City of Malmö - Business and External Relations Department (31.12.2018).

¹⁰ Stockholms Stad - Business and External Relations Department (31.12.2018).

¹¹ Bundesanstalt Statistik Österreich (01.01.2019).

is 5830 people per km².¹² The future-proof urban structure of HafenCity shows a delicate, inclusive mix of uses from social infrastructure, such as work, living and educational and leisure facilities with a large public ground floor zone. Accessibility and social meeting places as well as networks and associations are intended to strengthen participation here. The proportion of single-person households is 37.6%. Here, cross-generational municipal living solutions can benefit from each other and create synergies. Another positive aspect in this district is the medical infrastructure, which, with 13 established medical facilities, including a pharmacy, forms a good basis for independent living in old age. The area division in HafenCity is 24% traffic areas, 31% building floor areas and 25% public open spaces, here a distinction is made between "green open spaces" and "blue open spaces". 41 accessible senior apartments have been rented by the „Martha Foundation“, in the middle of HafenCity with a view of the harbour, since summer 2009 with a common room and additional services such as emergency calls and caretaker services.

6.1.5 Helsinki - Kalasatama

Kalasatama is Helsinki's Smart City model area and, at 12.1%, has a very high number of the target group 65+ considered. The population of the district is 2910, of which 351 are 65+. The population density is 1663 people per km².¹³ The water edge with the promenade is 5 km long and the metro station is 7 minutes from the centre. There are common rooms and rooms for temporary use in the buildings. The offer in public space consists of social infrastructure such as a health centre. The focus is on foot and bike connections. A large number of the street blocks consist of different residential buildings, which are arranged around a collectively used courtyard. Special forms of living such as senior citizens' communities are also offered here. Kotisatama is a barrier-free low-energy house with condominiums for 85 residents 48+ and offers senior citizens a new type of living facility, which is partly based on the collective help of neighbours. There are also common rooms such as a sauna and roof terrace with a garden, workshop and kitchen. "Kalasatama is an innovation laboratory, so every third inhabitant has already participated in a survey.

6.1.6 Helsinki - Jätkäsaari

Helsinki - Jätkäsaari has 6.9% of the target group 65+ considered. The district has 6901 residents, 478 of whom are 65+. The population density is 5949 people per km².¹⁴ The blocks of flats in the area are usually 7-8 stories high and there are large and sheltered courtyards between the blocks. Jätkäsaari as a test site for intelligent mobility solutions, is a district that is characterized by a variety of wide services, shops, a park with a total area of 2.4 hectares, a dense tram network and well-developed bicycle and pedestrian paths. City Village CO-10 is a startup for sustainable development. The "generation block" is a developed concept for multi-generation residential construction. The concept unites people of all ages and offers a variety of urban living options.

6.1.7 Copenhagen - Nordhavn

Copenhagen - Nordhavn has 4% of the target group 65+ considered. The population of the district is 2,896, of whom 115 are 65+. The population density is 5830 people per km².¹⁵ Nordhavn is planned as a green district on many levels. Water is the subject of the redesign of the port area. The concept of public space and urban planning is under the water, above the water and on the water. Temporary projects increase activity in the port area. The area is 600m from the Nordhavn train station. The prioritization is based on cycling. There is even a bicycle highway for this. The district consists of a mixed use of public and private facilities for a lively, varied district and active ground floor zones. HOLO operates autonomous buses for senior citizens in the district. The development plan is designed with a special focus on public spaces. The district consists of small residential units for singles, the elderly and medium-sized houses.

6.2 District advertising strategy

A Smart City district has many advantages for "living in old age". In order to transport them and attract the 65+ target group, these advantages, such as vicinity to shops and green, networking, and collective living solutions must also be advertised and illustrated accordingly. For this, the respective official Smart City

¹² Hamburger Melderegister Statistikamt Nord (31.12.2018).

¹³ Statistics Finland - Tilastokeskus (31.12.2018).

¹⁴ Statistics Finland - Tilastokeskus (31.12.2018).

¹⁵ Københavns Kommune (01.01.2019).

district homepage was analysed. Unfortunately, the analysed Smart City districts "Malmö BO01", "Stockholm - Hammarby Sjöstad", "Vienna – Seesatdt Aspern", "Hamburg - Hafencity", "Helsinki - Kalasatama", " Helsinki - Jätkäsaari " and „Copenhagen – Nordhavn” apply rarely or not the 65+ target group. The following table shows the evaluation of all SC district pages with the rating key 0-3.

Smart City district	mobility	energy	65 +	family	leisure	business	
Malmö - BO01/ Västra Hamnen	0	1	1	3	3	1	www.vhamnen.com
Stockholm - Hammarby Sjöstad	2	3	1	2	0	0	www.hammarbysjostad20.se/?lang=en
Vienna - Seestadt Aspern	1	0	1	3	2	3	www.aspern-seestadt.at
Hamburg - Hafencity	2	0	1	2	2	1	www.hafencity.com
Helsinki - Kalasatama	2	0	1	1	1	1	www.uuttahelsinki.fi/fi/kalasatama
Helsinki - Jätkäsaari	2	0	0	1	2	1	www.uuttahelsinki.fi/fi/jatkasaari
Copenhagen -Nordhavn	3	1	1	2	3	1	www.byoghavn.dk/nordhavn/

Table 2: district advertising strategy (0 = not advertised, 1 = minimally advertised, 2 = advertised, 3 = heavily advertised)

7 CONCLUSION

Smart City districts are still very young districts, which is why it can be concluded that the population in the districts will change due to increasing demographic change. The key words are integration and networking. It is about social networks, barriers and participation of the residents through active involvement. Smart city districts are good places to age autonomously, as the results of the target group surveyed reflect (Fig. 2: Core data of the respondent's target group 65 +). It can be derived from the survey that the desires of the aging population go hand in hand with the advantages offered by a Smart City district. Smart City districts would meet the demands of the aging population of interaction and self-determination. The percentage of the resident population 65+ is between 2% and 12% in the analysed Smart City districts. In the EU, the population of the 65+ group had already been just over 30% in 2016 (Fig. 1 Europe's demographic future). Thus, the population 65+ in the analysed Smart City districts is 18% to 28% lower than the European average of 2016 and thus strongly underrepresented. It can be concluded from the analysis that there are differences in the implementation and theming of the seven Smart City districts analysed in relation to the aging population. In order to be able to analyse these measures and focal points in depth in the analysed Smart City districts, a field study would be necessary to take up the feeling of the residents and the real offer for the participation of older people in the district. Even if these analysed districts, as the evaluations of the advertising strategy (Table 2) make visible, currently rarely advertise with qualities for living in old age, the age of the population in the district will change in the future.

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