Task 4.1. – Survey and Choice Experiment

Draft Survey Analysis – United Kingdom

Responsible partner: **BOKU**

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This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818.

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Annexes:	

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CO	Confidential, only for members of the consortium (including Commission Services)	CO

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Version	Date	Partner	Author	Changes
1.	21/02/2024	BOKU	Feilhammer, Wanner, Jungnickel & Pröbstl-Haider	1st draft

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1 SAMPLE DESCRIPTION – DEMOGRAPHIC INFORMATION

N = 1002

The sample consists of approximately 50% males and 49% females (N=987).

Table 1: Sample demographics - gender

	n	%
Female	487	49
Male	500	50.4
Diverse	2	0.2
Prefer not to say	4	0.4

The average **age** of the sample is 56.3 years (N=766). The age range is between 19 and 93 years.

The **level of education** is relatively high with 31% having a Bachelor's degree (N=308).

Table 2: Sample demographics - education

	n	%
Bachelor's Degree	308	30.9
Secondary school	273	27.4
Trade/technical/vocational training	234	23.5
Master's Degree	138	13.9
Doctorate	24	2.4
Primary	6	0.6
none completed	3	0.3
prefer not to say	10	1

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2 LIVING ARRANGEMENTS

Question 1: Participants are fairly evenly distributed over the middle **city size** categories. About 18% (N=180) and 18.4% (N=184) of participants live in the smallest and the largest category, respectively. Only 11.5% (N=115) of participants come from cities with 500,001-1.5 million residents.

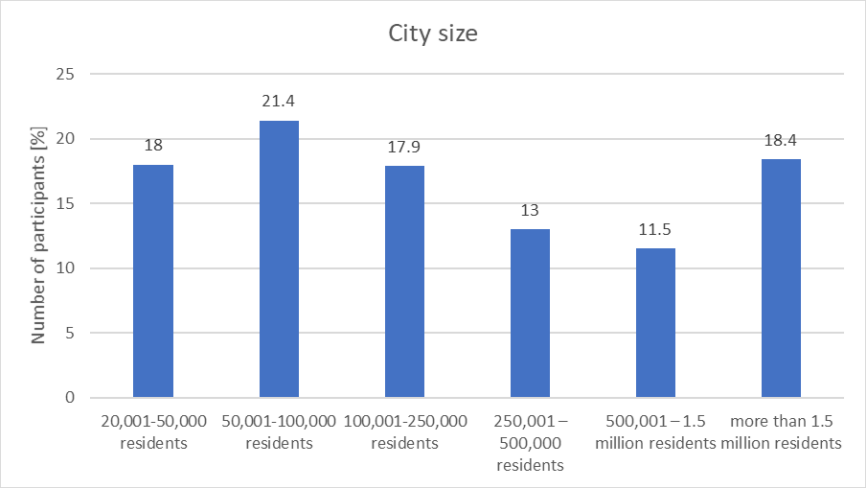

Figure 1: Participants by city size

Question 1a: Only 16.3% (N=163) live in the **city centre**, 38% (N=380) live in urban districts of the city and 45.8% (N=458) live in the suburbs.

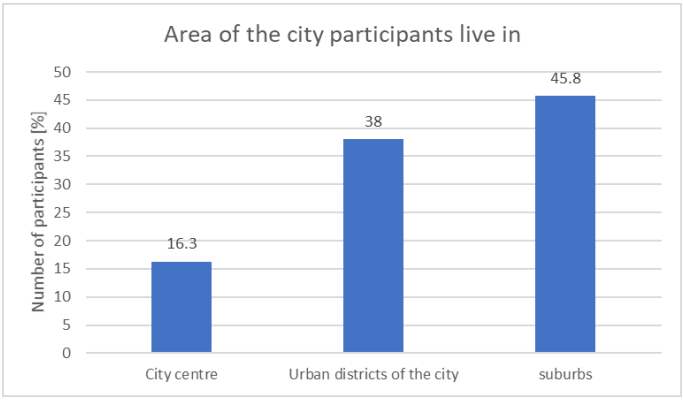

Figure 2: Area of the city participants live in

Question 21: The **number of people per household** show a preference of 2 person households, followed by single households.

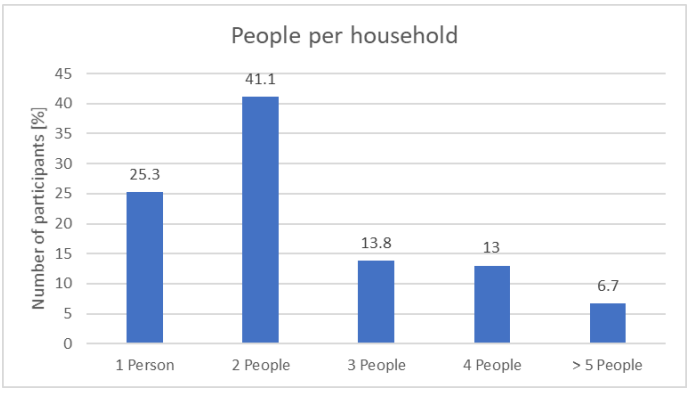

Figure 3: Number of people per household

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Question 22: Less than 25% of respondents reported **children under the age of 18** living in the household (N=999).

Table 3: Respondents living with children under the age of 18

	n	%
Children under 18	234	23.4
No children under 18	765	76.6

Question 25: The **monthly household net income** lies primarily over 2000€ (N=509, under 2000€ N = 362).

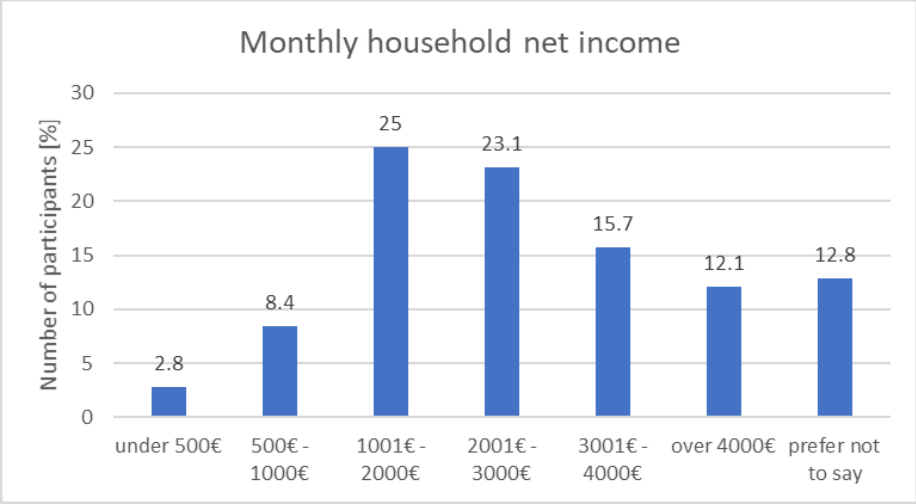

Figure 4: Monthly household net income

Question 23: The **number of cars** available in the household is primarily one (56.2%). 19.9% of participants have two cars available in the household. About 19% (N=189) do not own a car.

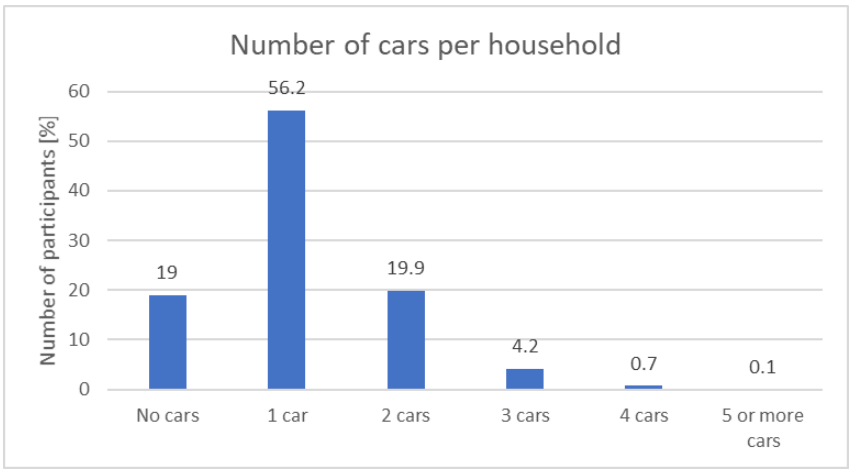

Figure 5: Number of cars per household

The **size of the city** does not significantly determine the number of cars owned by participants (Chi square = 0.095). Participants living in cities with 250,001 to 500,000 residents own the highest amount of cars on average.

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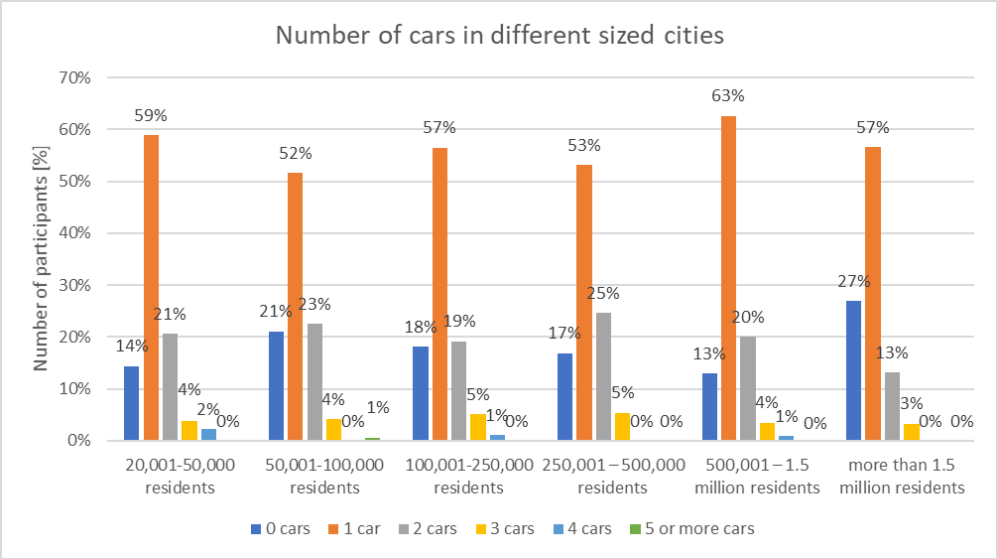

Figure 6: Number of cars per household by city size (Chi square = 0.095)

3 NEIGHBOURHOOD

Question 2: The most dominant building form is semi-detached houses (40.4%; N=396), followed by row houses (25.2%; N=247) and detached houses (22.9%; N=224).

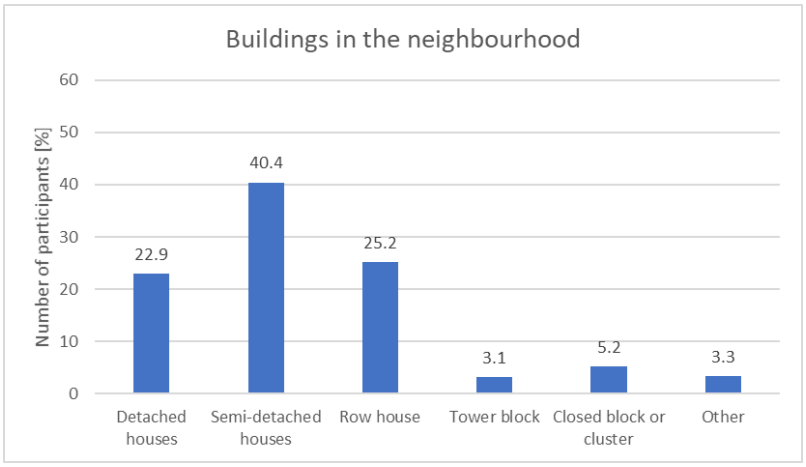

Figure 7: Types of buildings characterising the neighbourhood

The **major building height** is mainly two storeys (69.6%; N=683), followed by three to four storeys (16.4%, N=161).

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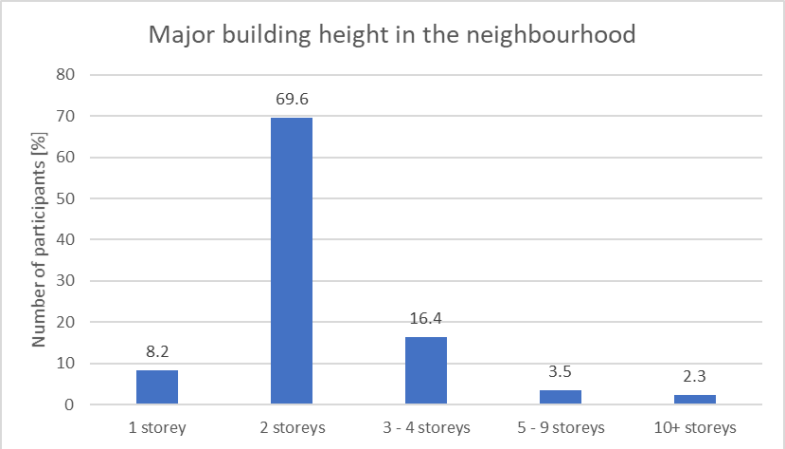

Figure 8: Predominant building height in the neighbourhood

About 7.6% of the participants' houses were **built after 2010**. Almost half (49.3%) of the houses were built between 1940 (26.4%; N=263) and 1989 (22.9%; N=228).

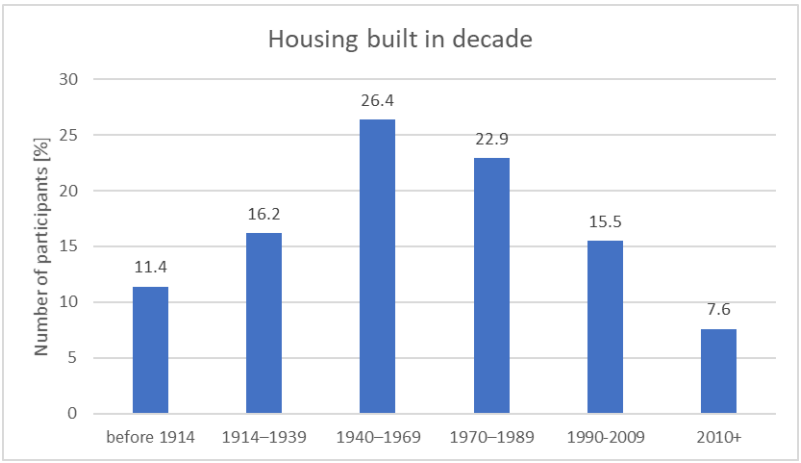

Figure 9: Decade in which housing was built

Question 4: The most **dominant elements of the neighbourhoods** are private gardens (Ø = 2.45) and parking and traffic areas (Ø = 1.89). Private balconies and terraces (Ø = 1.35), community gardens (Ø = 1.34) and derelict or unused areas (Ø = 1.23) are rather rare in the neighbourhood.

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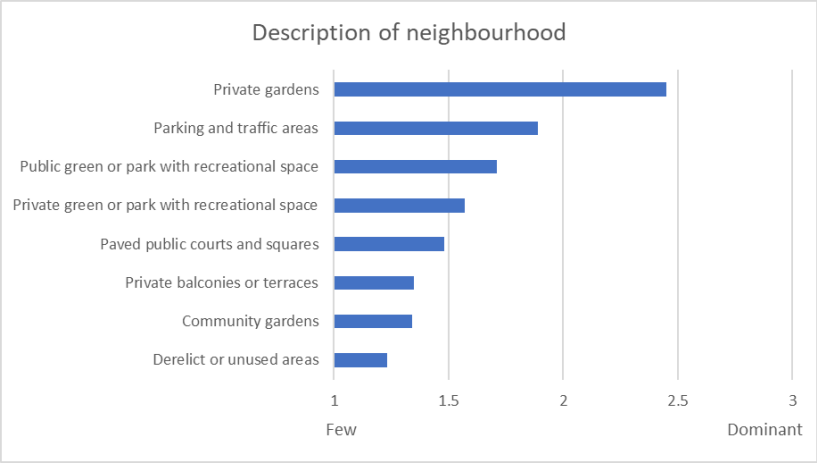

Figure 10: Description of neighbourhood surroundings

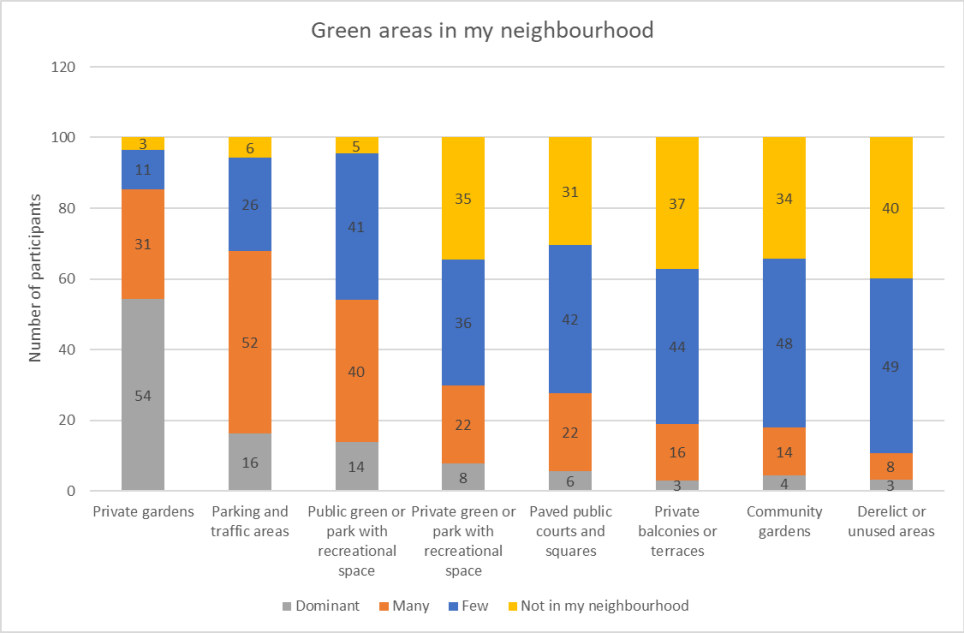

Figure 11: Green areas in my neighbourhood

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Question 6: **Parking arrangements** in the neighbourhood are mostly private parking (63.6%; N=637) or public on street parking (60.5%; N=606) (multiple answers possible).

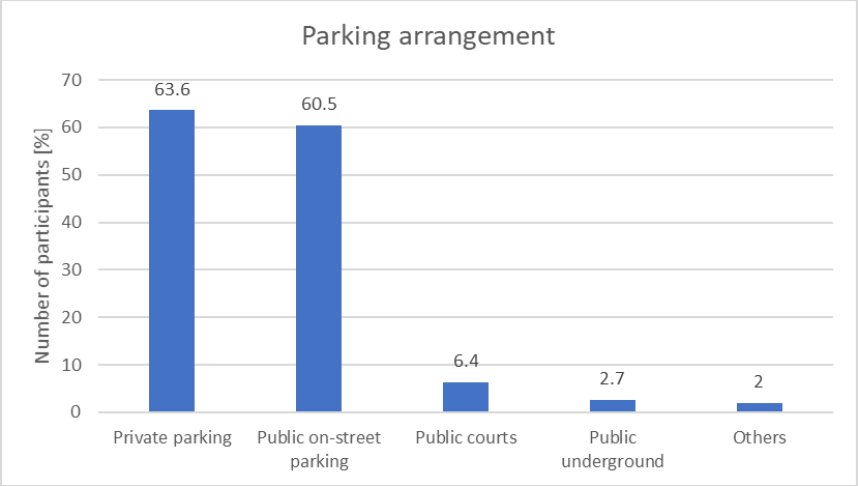

Figure 12: Parking arrangements in my neighbourhood

Question 7: The **walking distance to relevant infrastructure** is shortest (0-5 min walking) to slow public transport and longest (further away than 15 min walking) to participants' place of employment. For about 28%, fast public transport does not apply.

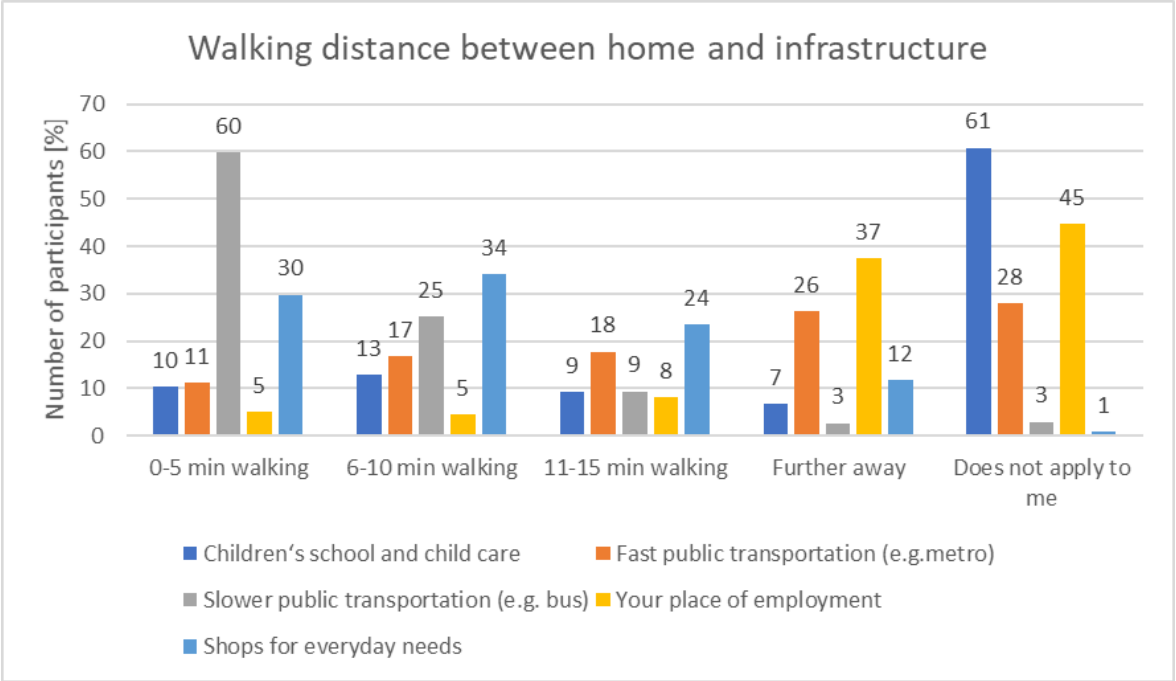

Figure 13: Walking distance between home and types of infrastructure

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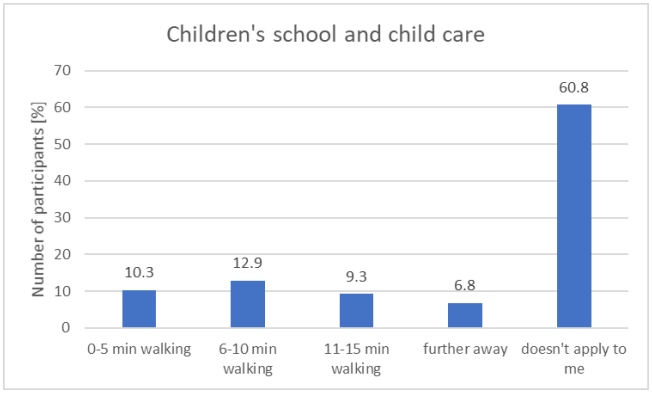

Figure 14: Walking distance to children's school and child care

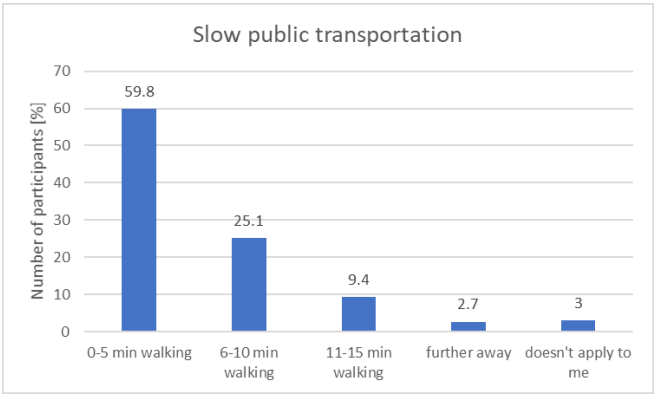

Figure 15: Walking distance to slow public transportation

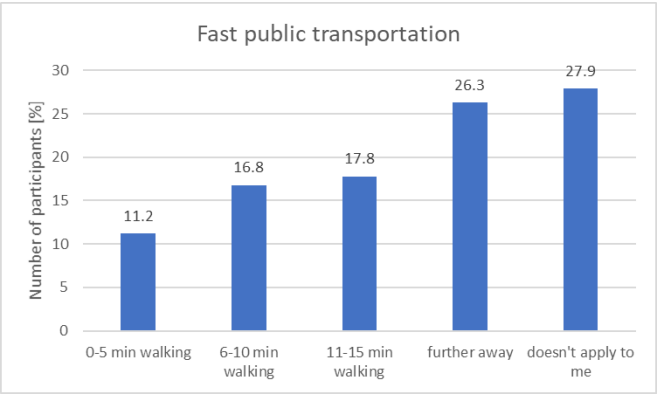

Figure 16: Walking distance to fast public transportation

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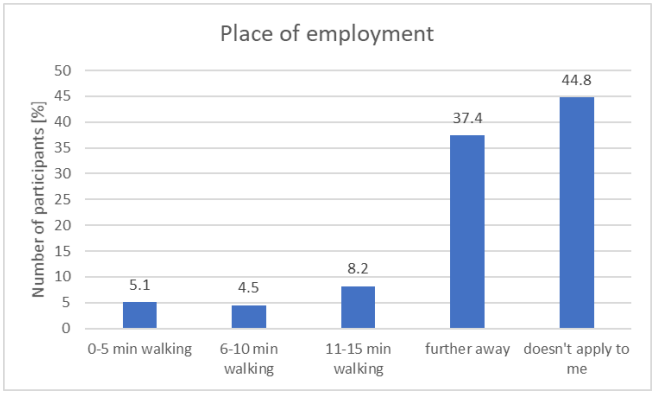

Figure 17: Walking distance to place of employment

Figure 18: Walking distance to shops for daily needs

Some differences emerge in the comparison of walking distances in the city sizes.

Walking distance to **children's school and child care** differs significantly between city size (Chi square = 0.008). In larger sized cities, child care tends to be further away than in smaller cities.

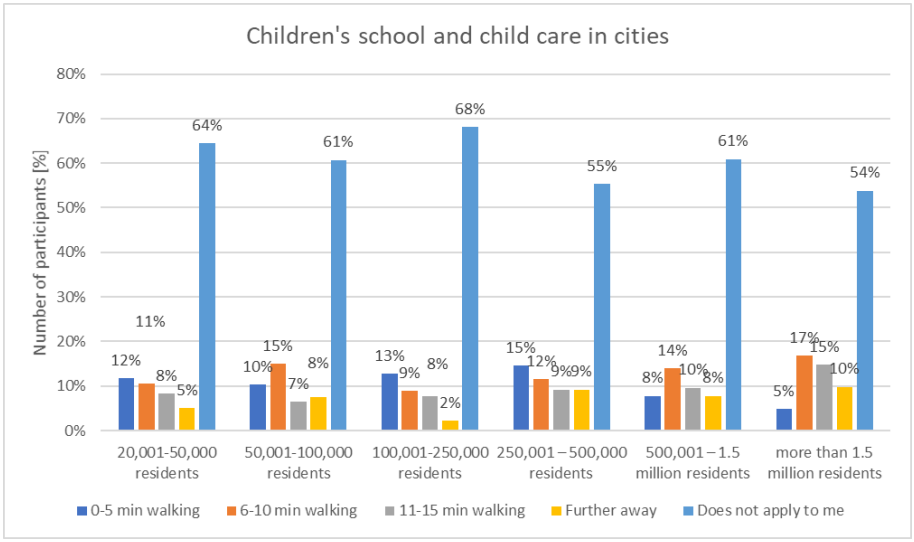

Figure 19: Walking distance to children's school and child care by city size (Chi square = 0.008)

Fast public transport is in smaller city sizes often not available (Chi square = < 0.001).

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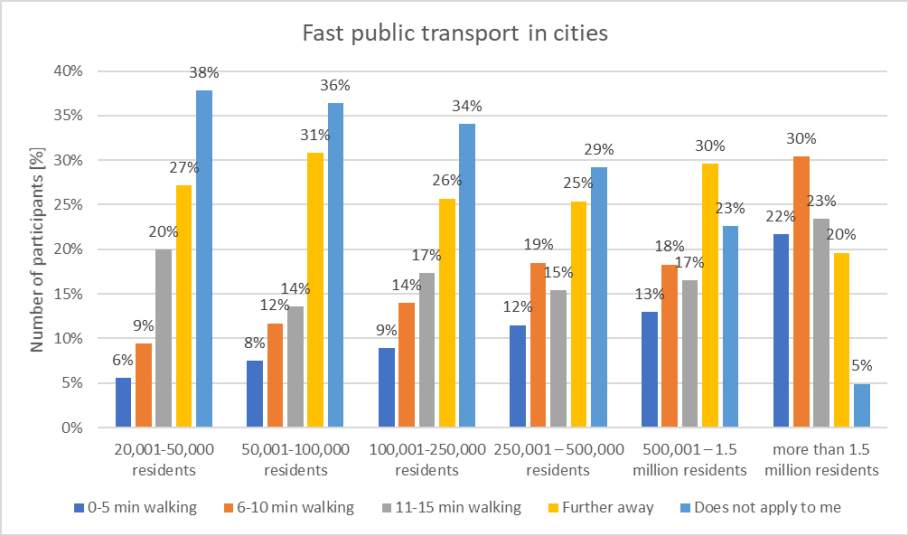

Figure 20: Walking distance to fast public transport by city size (Chi square = < 0.001)

Slow public transport is frequently available in all cities and does not significantly differ between city sizes (Chi square = 0.755).

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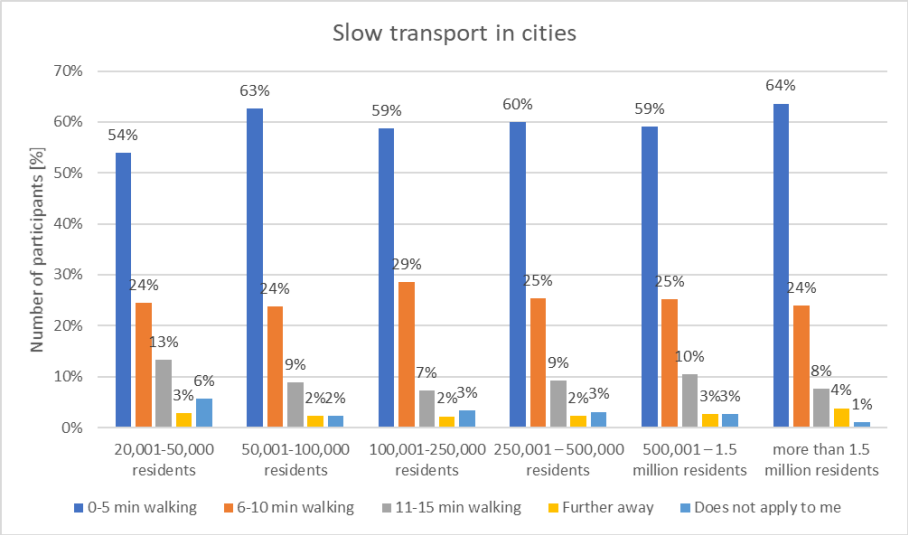

Figure 21: Walking distance to slow public transport by city size (Chi square = 0.755)

The distance to the **place of employment** does significantly differ between city sizes (Chi square = 0.037). For at least 32.2% of participants in the second smallest city size their place of employment is further away than 15 minutes by foot. This number increases to 44% in the largest city category.

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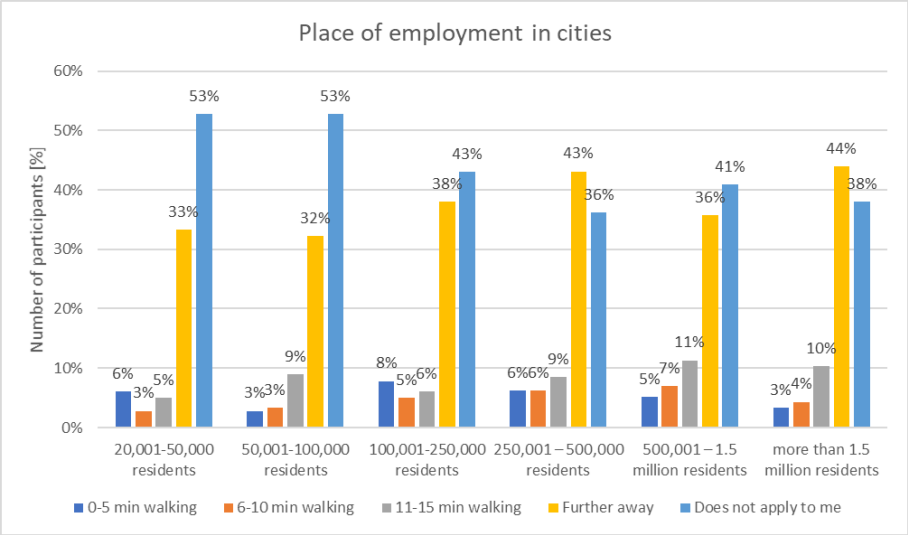

Figure 22: Walking distance to place of employment by city size (Chi square = 0.037)

The distance to **shops for everyday needs** does not significantly differ between the city sizes (Chi square= 0.222). At least 59.4% of participants live in a short walking distance (0 up to 10 minutes) to shops in every city size.

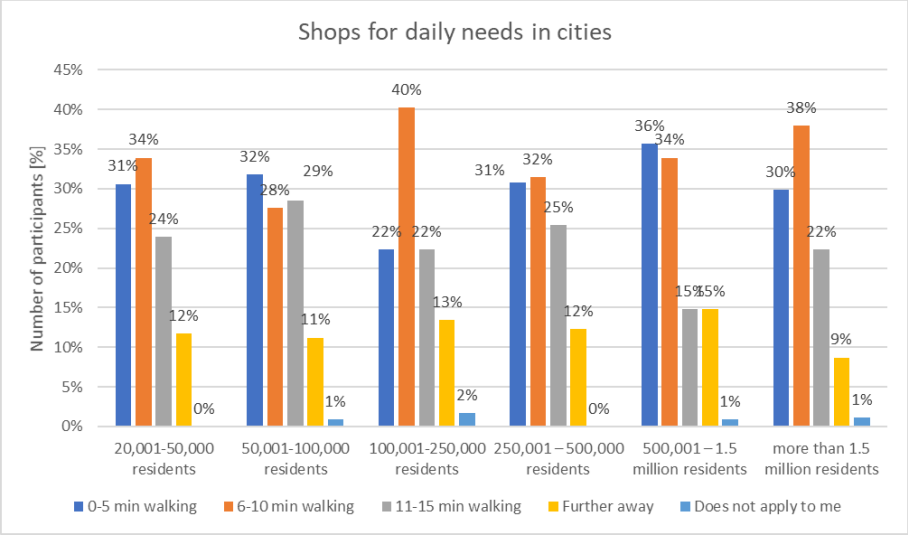

Figure 23: Walking distance to shops for everyday needs by city size (Chi square = 0.222)

Question 12: If participants could select the type of infrastructure, they would want to live close to, 68.3% (N=684) stated that they would choose shops for everyday needs, followed by green areas (64%; N=641) and fast public transportation (25.8%; N=259). This result is of interest in relation to the figures above stating the distance to these infrastructures.

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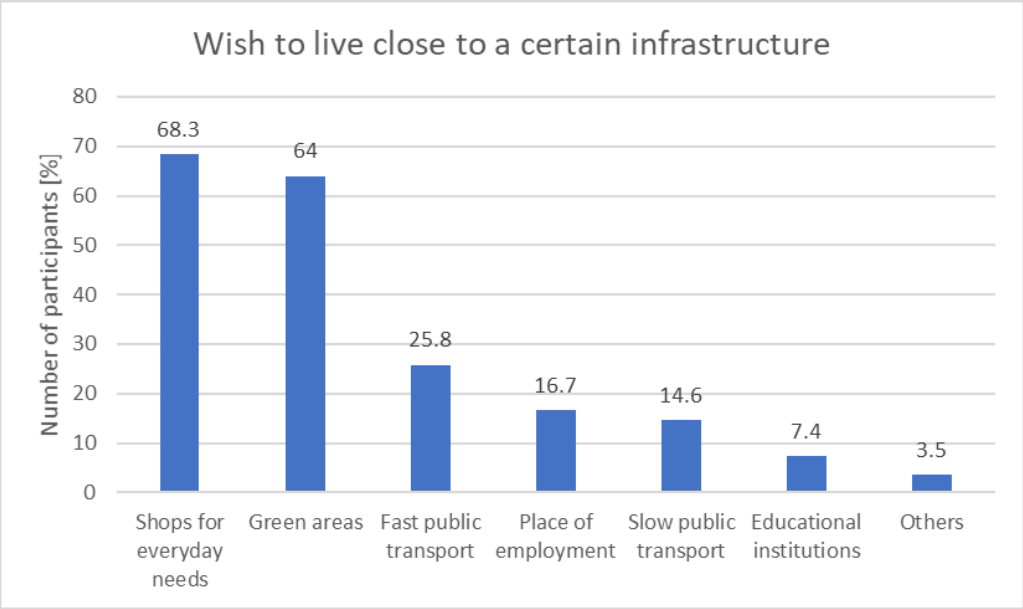

Figure 24: Infrastructure respondents wish to live close to

Other infrastructure, which participants wish to live close are included in Table 4.

Table 4: Other infrastructure respondents wish to live close to

Infrastructure	n
Sea side	4
Pub	4
Doctors and medical / health care	3
Countryside	3
Beach	2
Coast	2
Woods	2
Lakes	2
Parks	2
Airport	1
Allotment to grow vegetables and fruit	1
Easy transport links to roads	1
Cycle ways	1
Entertainment	1
Friends and family	1
Historical buildings	1
Swimming pool	1

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Library	1
Malls	1
Mountains	1
Middle of nowhere	1
Parking	1
Restaurants	1
River	1
Town center	1

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4 GREEN SPACES

4.1 WALKING DISTANCES TO DIFFERENT GREEN SPACES IN THE NEIGHBOURHOOD

Question 8: For over 60% of all participants, street greening is less than 5 walking minutes away, making it the most accessible green infrastructure. Parks follow with 34.2%. Those two types of green spaces are also rarely not applicable to participants.

Derelict areas are mostly either not applicable or further than 15 minutes away.

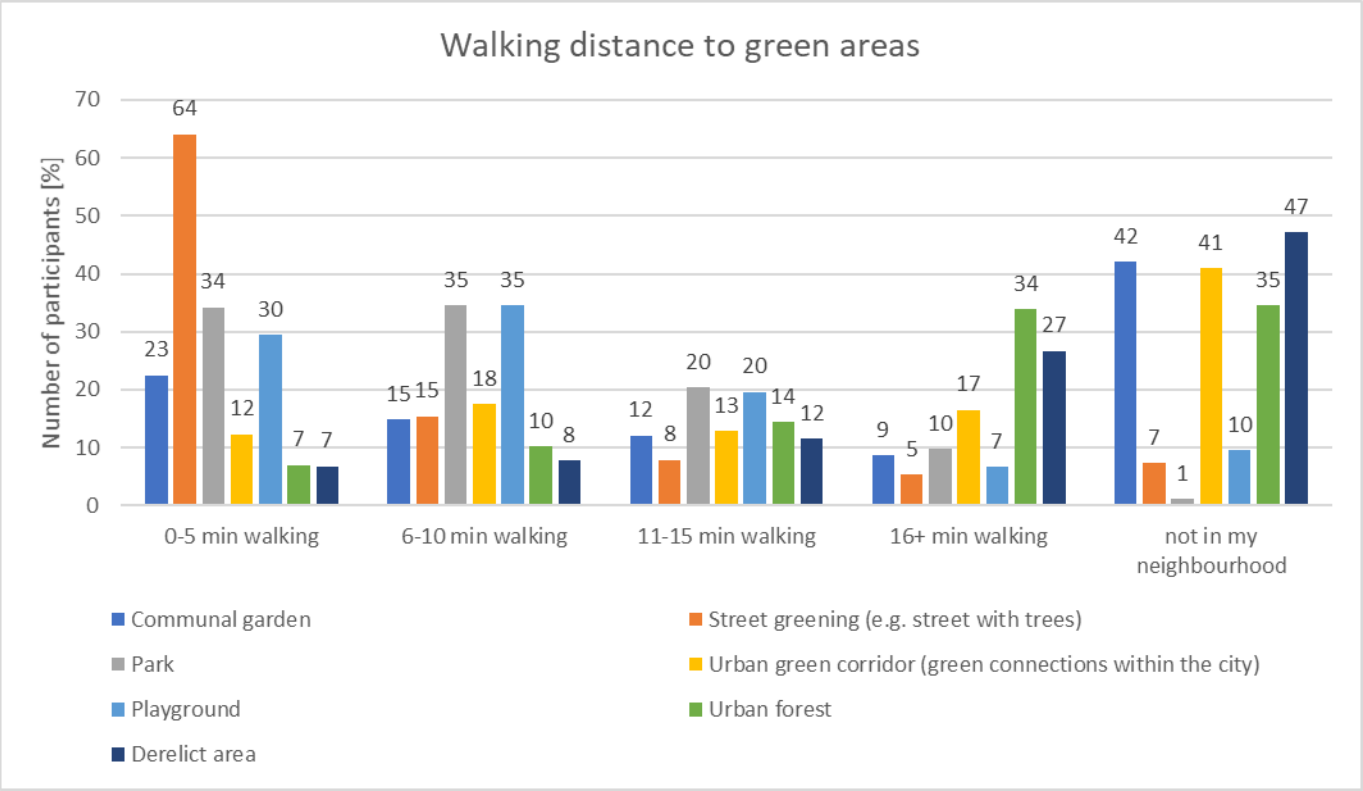

Figure 25: Walking distance to different green areas

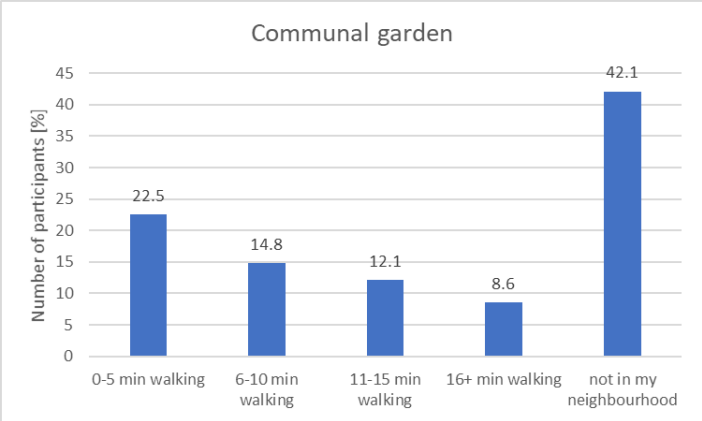

Figure 26: Walking distance to a communal garden

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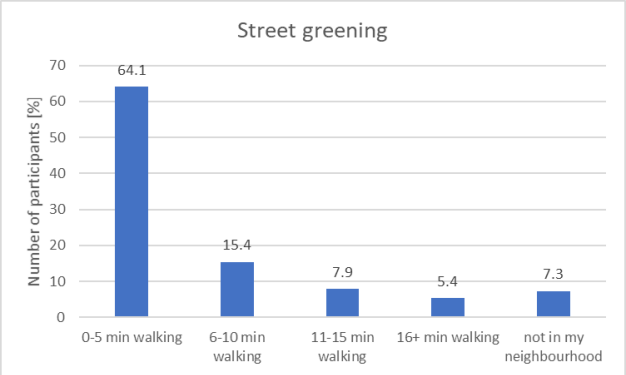

Figure 27: Walking distance to street greening

Figure 28: Walking distance to a park

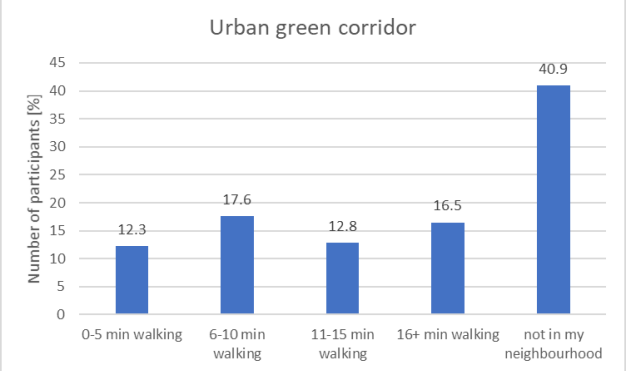

Figure 29: Walking distance to an urban green corridor

Figure 30: Walking distance to a playground

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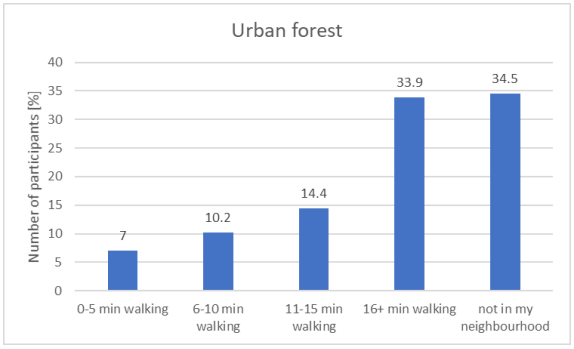

Figure 31: Walking distance to an urban forest

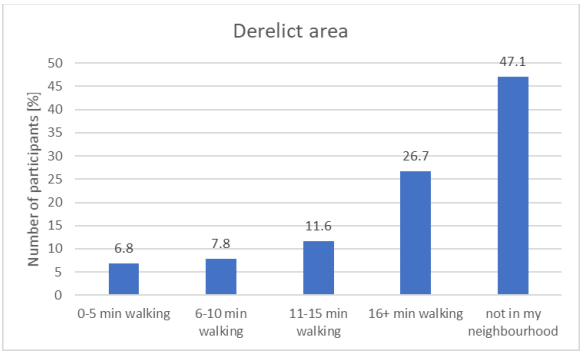

Figure 32: Walking distance to a derelict area

4.2 WALKING DISTANCE TO DIFFERENT GREEN SPACES IN DIFFERENT CITY SIZES

Significant differences exist between the walking distance in cities to **urban green corridors** (Chi square = < 0.001) and to **street greening** (Chi square = 0.038). Street greening is easily accessible in all cities with more than 50% of participants saying street greening is 0-5 walking minutes away in every city size. **Playgrounds** are also in a short walking distance in all cities, but tend to be nearer the smaller the city. **Parks** can be reached by over 60% of participants in each city size in 10 minutes or less.

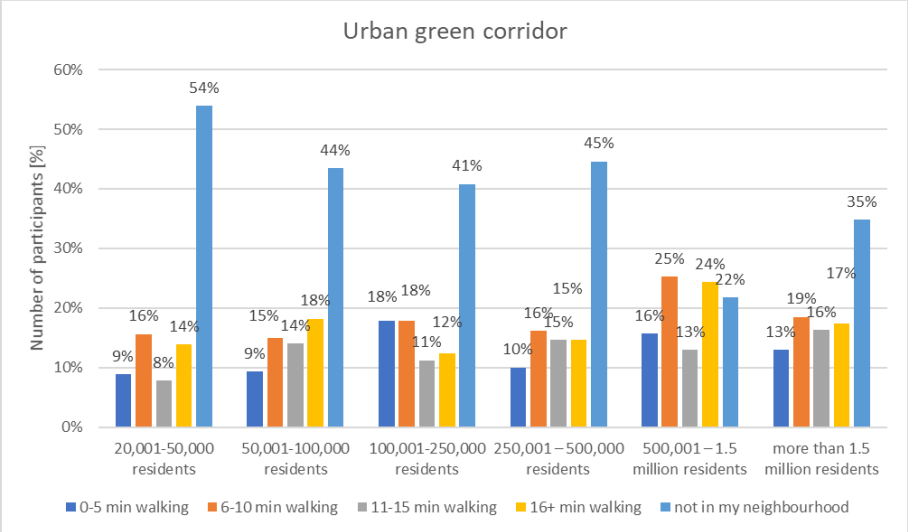

Figure 33: Walking distance to an urban corridor by city size (Chi square = < 0.001)

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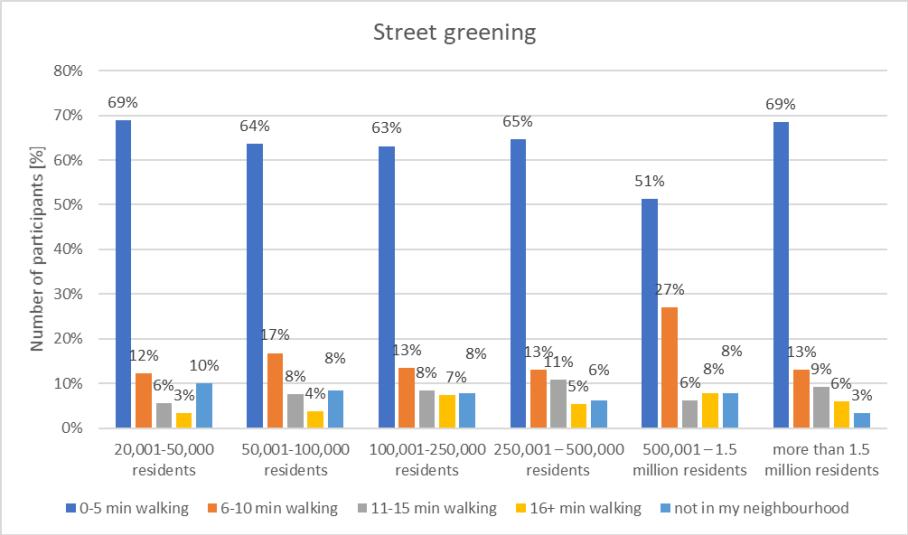

Figure 34: Walking distance to street greening by city size (Chi square = 0.038)

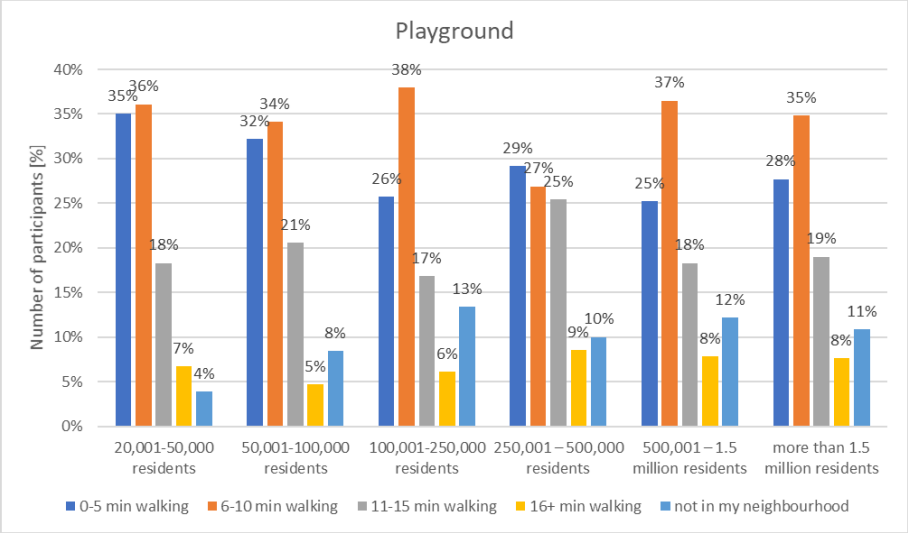

Figure 35: Walking distance to a playground by city size (Chi square = 0.274)

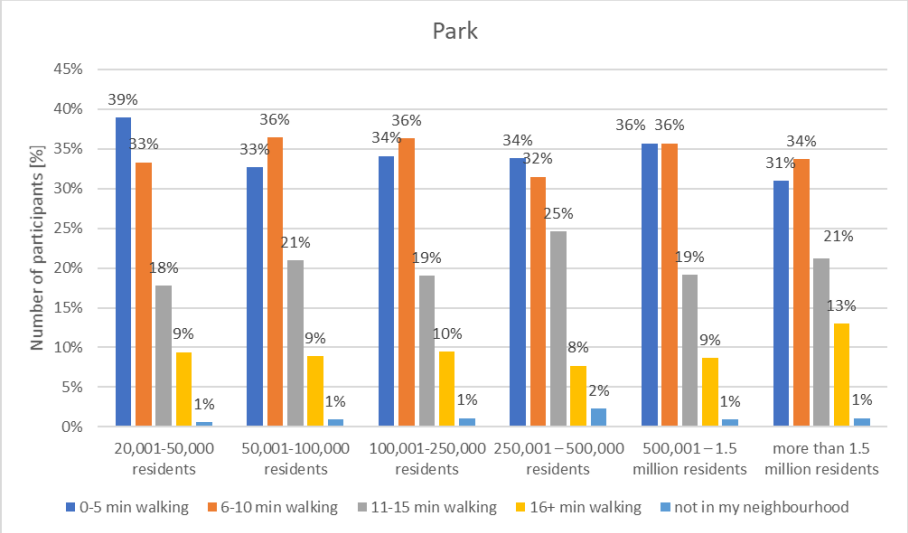

Figure 36: Walking distance to a park by city size (Chi square = 0.965)

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4.3 COMPANIONSHIP AT GREEN AREAS IN THE NEIGHBOURHOOD

Question 9: Participants usually spend time with their partner (Ø = 2.86), alone (Ø = 2.58) and with children (Ø = 2.54) in green areas. Spending time with neighbours (Ø = 1.57) is not very common and received the "never" category more often than others. 38% of participants state that they never go to green areas with "others", 20.4% state that this seldom happens.

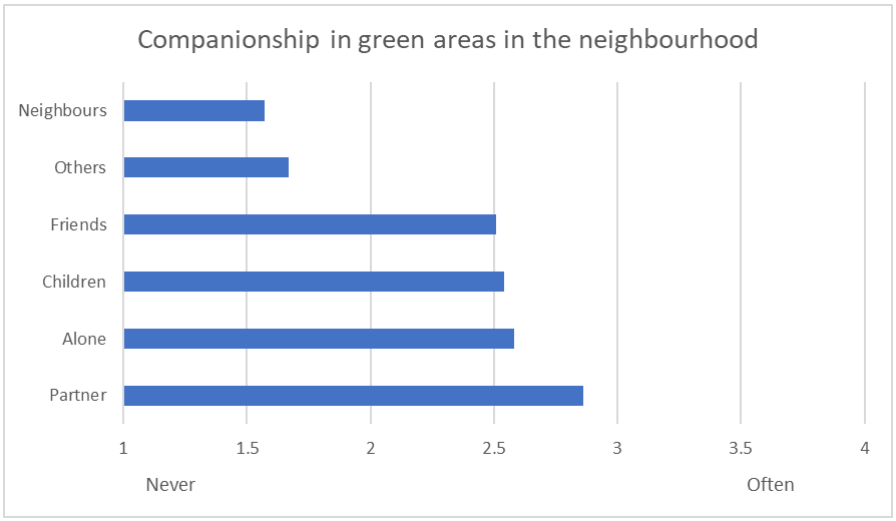

Figure 37: Companionship in green areas

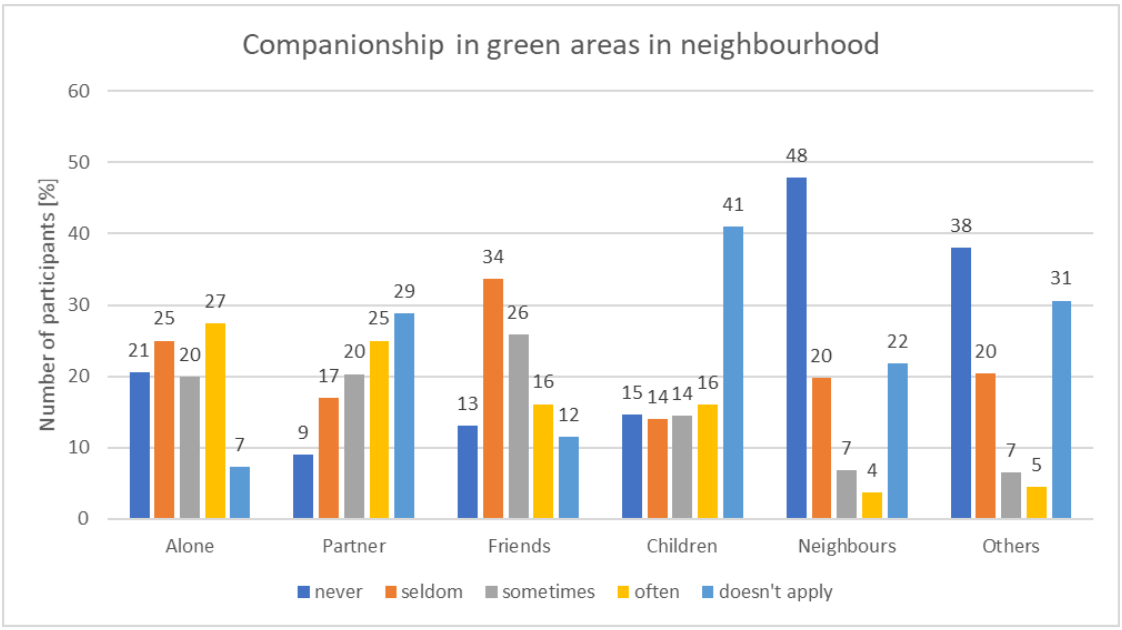

Figure 38: Frequency of types of companionship in green areas

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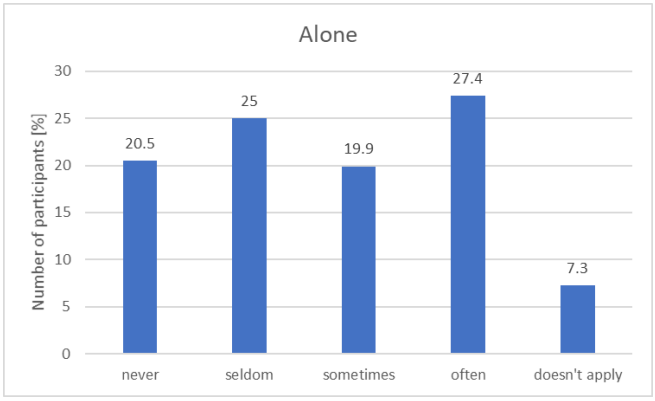

Figure 39: Frequency of time spent alone in green areas

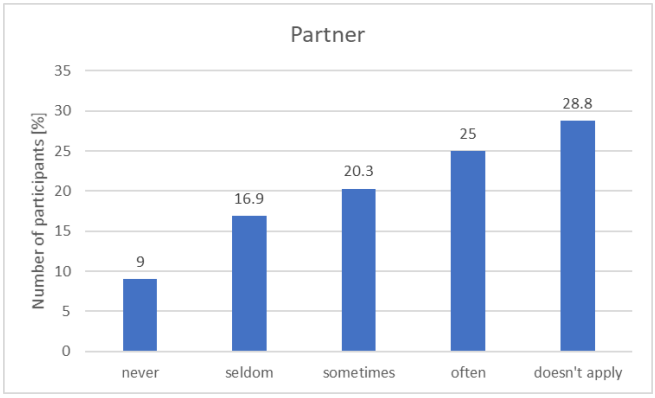

Figure 40: Frequency of time spent with partner in green areas

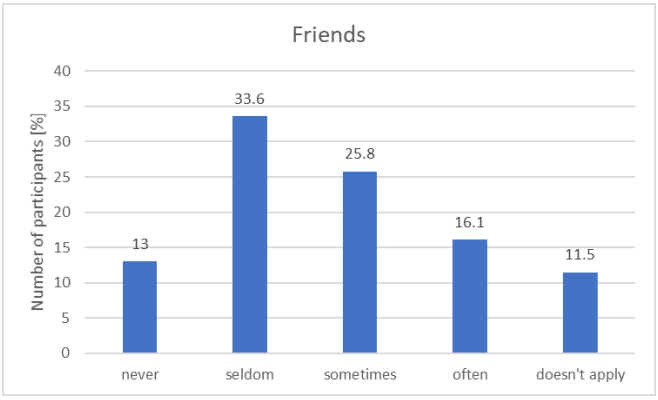

Figure 41: Frequency of time spent with friends in green areas

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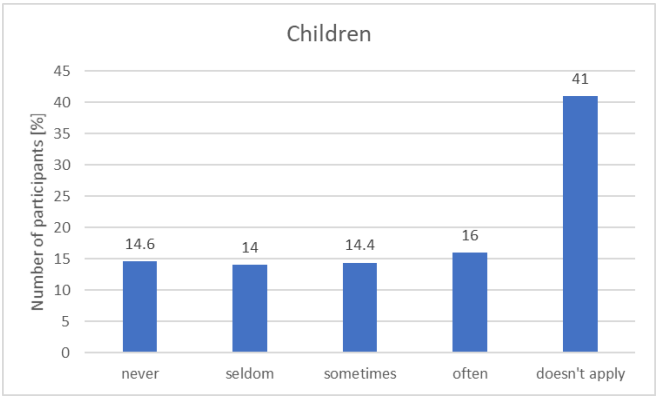

Figure 42: Frequency of time spent with children in green areas

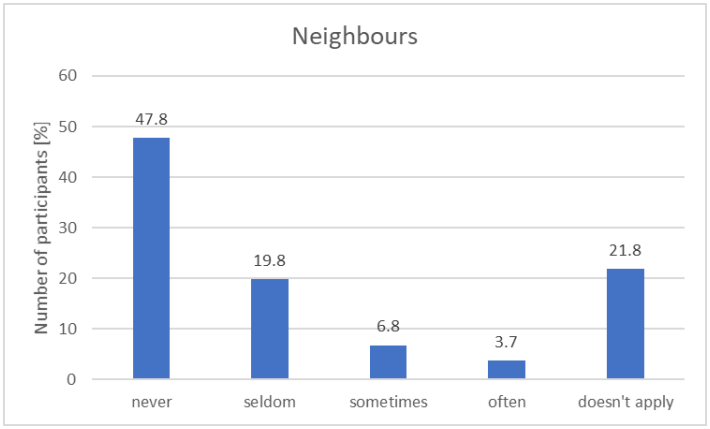

Figure 43: Frequency of time spent with neighbours in green areas

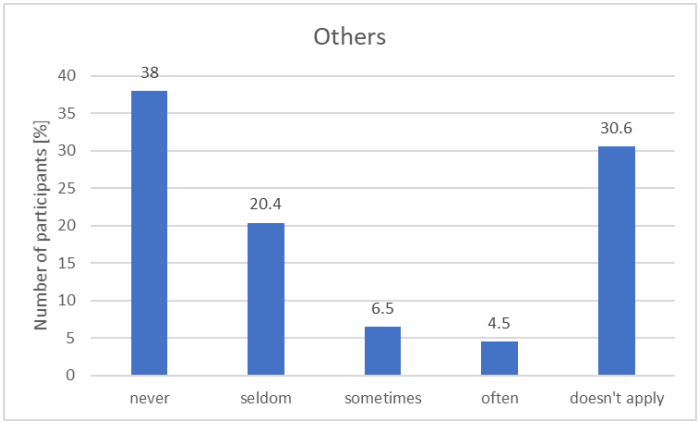

Figure 44: Frequency of time spent with others in green areas

4.4 RATING OF THE AMOUNT OF GREEN AREAS IN THE NEIGHBOURHOOD

Question 10: Generally, about 87% of participants **rate the amount of green** areas in their neighbourhood either as excellent (23.9%; N=266) or good (60.5%; N=599). No significant difference exists between the rating in different sized cities (Chi square = 0.108).

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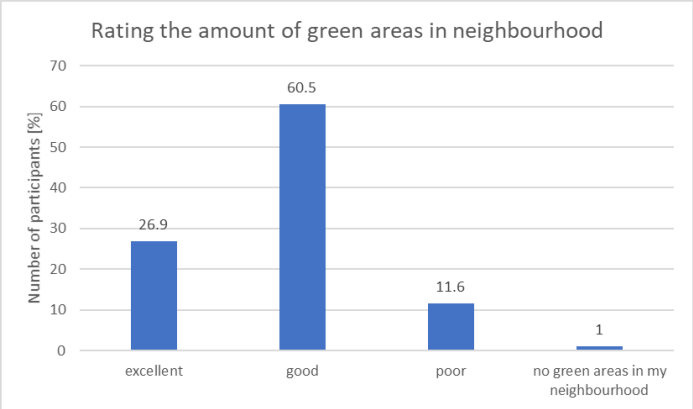

Figure 45: Rating the amount of green areas in neighbourhood

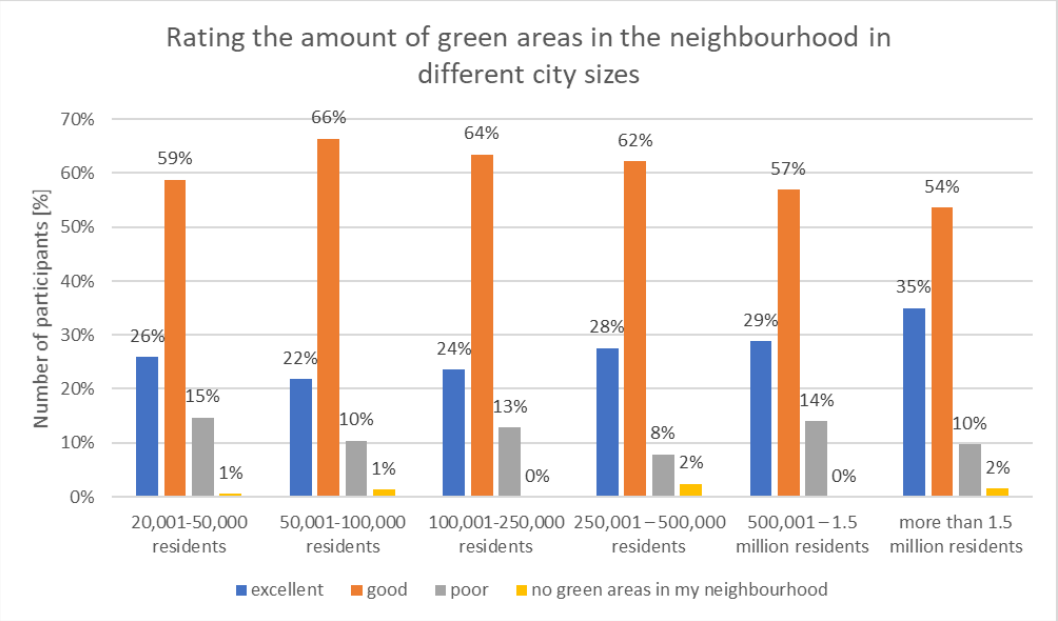

Figure 46: Rating the amount of green by city size (Chi square = 0.108)

Question 11: About 30% of the participants (29.7%; N=297) spend **30 minutes or less a week in green areas**. 20.4 % (N=204) spend about one hour and 28.9% (N=289) spend two to four hours in green areas. No significant differences exist between city sizes (Chi square= 0.616).

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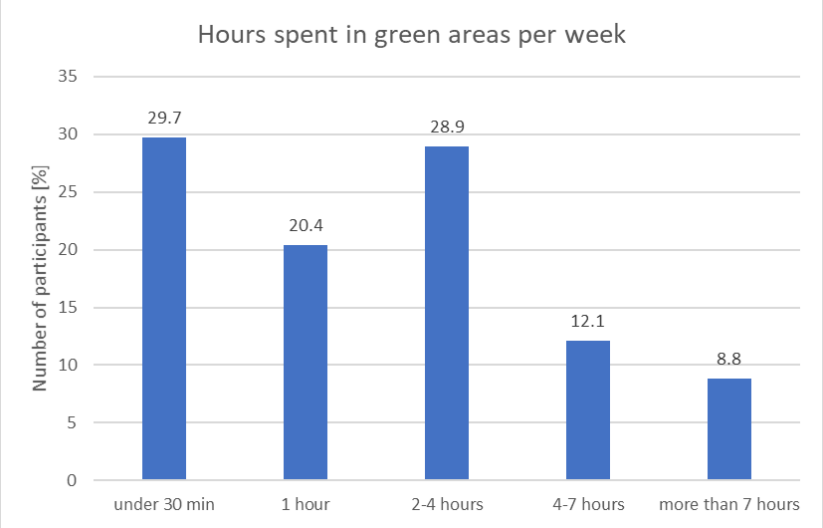

Figure 47: Number of hours spent in green areas per week

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5 CLIMATE CHANGE

Question 13: The major opinion of 74.7% of participants was that **climate change can already be perceived**.

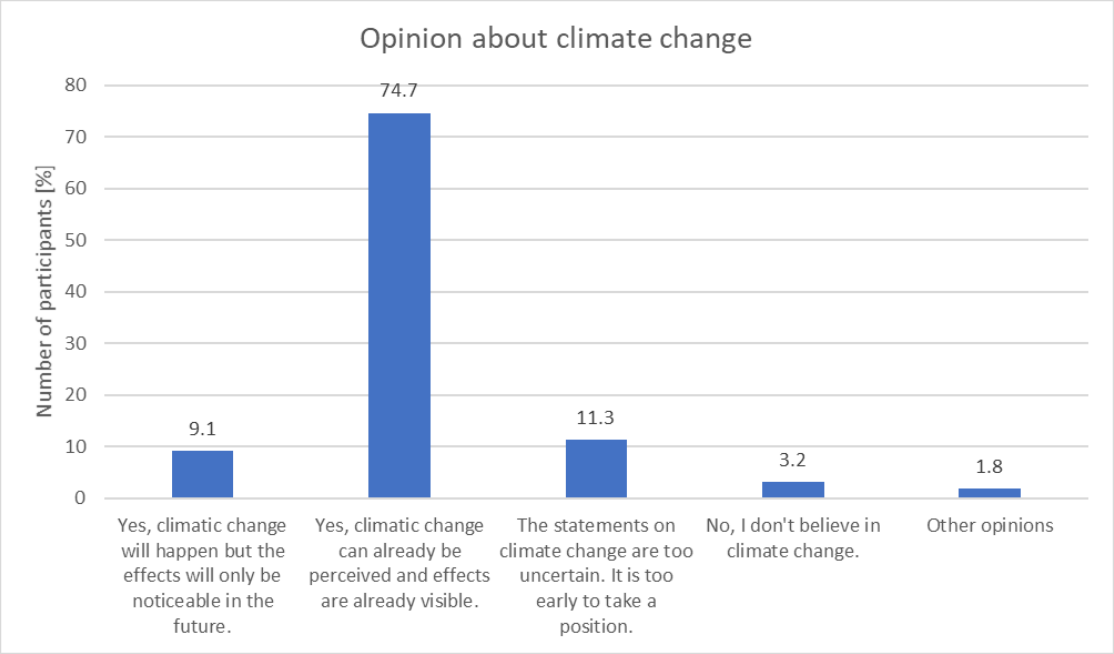

Figure 48: Respondents' opinion about climate change

Other opinions include

- We hope we can reverse the possibility of it occurring by making positive changes.
- I agree climate change is happening, we affect the rate, but are not the cause, it happened before humans were around.
- I believe in climate change but think it has more to do with nature than man.
- Climate change has always existed but the current panic is gross over-reaction.
- The climate change is not as serious as claimed.
- Climate change has been in constant existence as it constantly changes. Too much scaremongering is taking place.
- Climate change is real but started at the end of the last ice age and is continuing.
- The climate has always changed over the centuries
- Climate is constantly changing.
- The climate is ever changing.
- The climate has always changed. Why do we expect it to stay the same?
- Mother Nature knows best, we know nothing.
- Natural evolution
- Let other countries do it as well.
- Our biggest concern isn't CC, it's world's overpopulation.
- Yes, climate change can already be perceived and it's too late to do anything about it.

Question 14: Despite this general acceptance of the effects of climate change, only 44.3% of participants (N=444) believe that climate change effects will **occur in their neighbourhood**.

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Table 5: Respondents expectation of climate change effects in their neighbourhood

	n	%
No, I don't expect effects by climate change	558	55.7
Yes, I expect the following effects to happen in my neighbourhood	444	44.3

Question 14a: Out of 444 participants who proceeded to questions 14a to c, about 90% (N=398) already **experienced heat waves**.

Table 6: Respondents who have experienced heat waves in their neighbourhood

	n	%
No, I never experienced heat waves in my neighbourhood	46	10.4
Yes, I experienced heat waves already	398	89.6

Question 14b: On average, participants stated to experience 12.76 days of **heat waves per summer**. The number of reported heat waves (days) ranged from one to 90.

Question 14c: About 44% of the reduced number of participants stated to be **negatively affected by heat waves in their wellbeing**. 14.3% even stated that heat waves negatively affect their health.

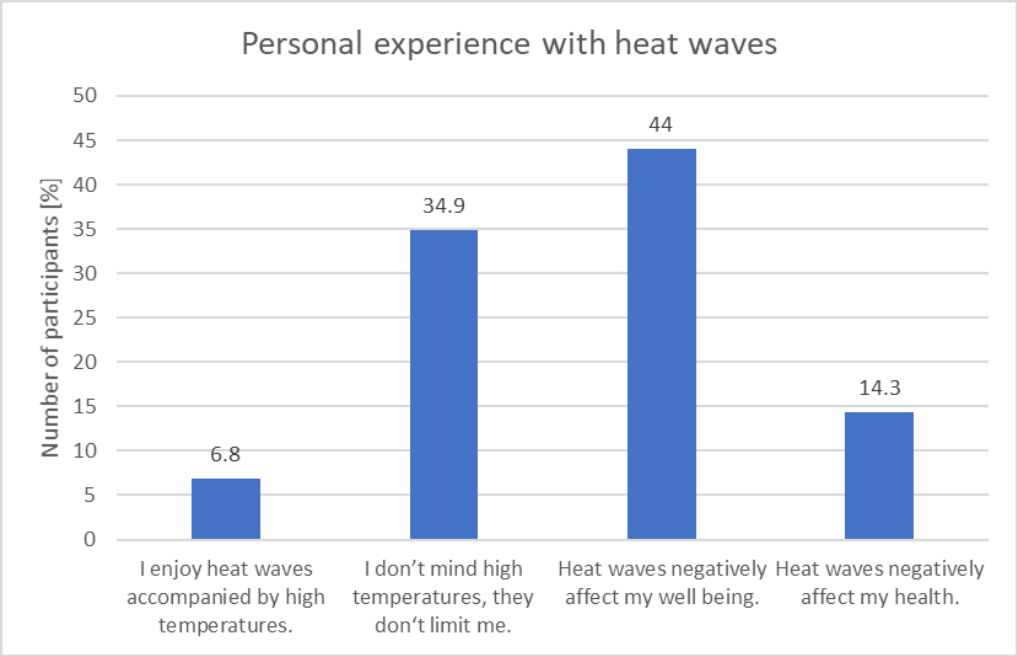

Figure 49: Respondents' personal experience with heat waves

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6 MEASURES AT CITY LEVEL TO COMBAT CLIMATE CHANGE

Question 15: A broad consensus exists regarding the **importance of actively addressing climate change** through strategies on the communal level. About 89% state that it is either very important or important.

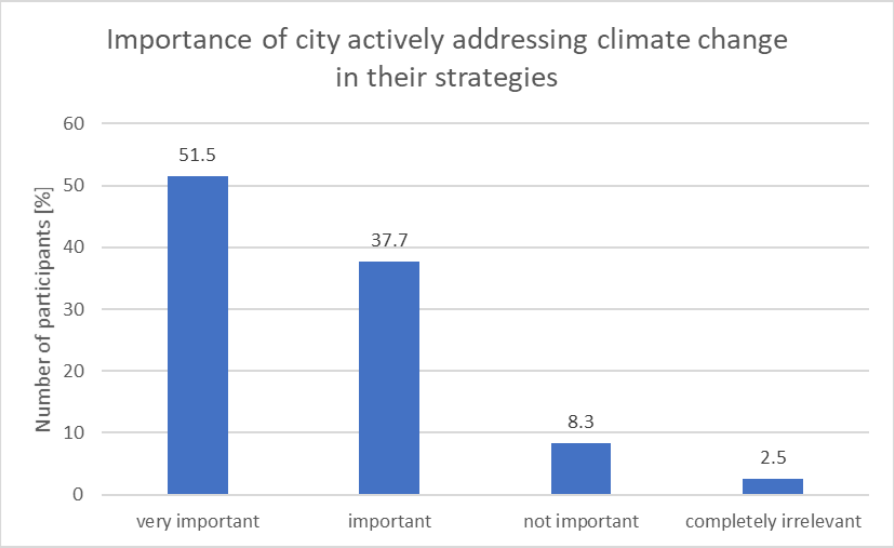

Figure 50: Importance of addressing climate change in strategies at the communal level

Question 16: Regarding the **desired quality of life in the neighbourhood**, participants identified all strategies as almost equally important (Ø between 3.4 and 2.91). Air quality improvement and micro-dust reduction was the most important measure (Ø = 3.4), followed by conserve and increase urban biodiversity (Ø = 3.31), stormwater management (Ø = 3.17) and improving urban climate by fresh air corridors (Ø = 3.14).

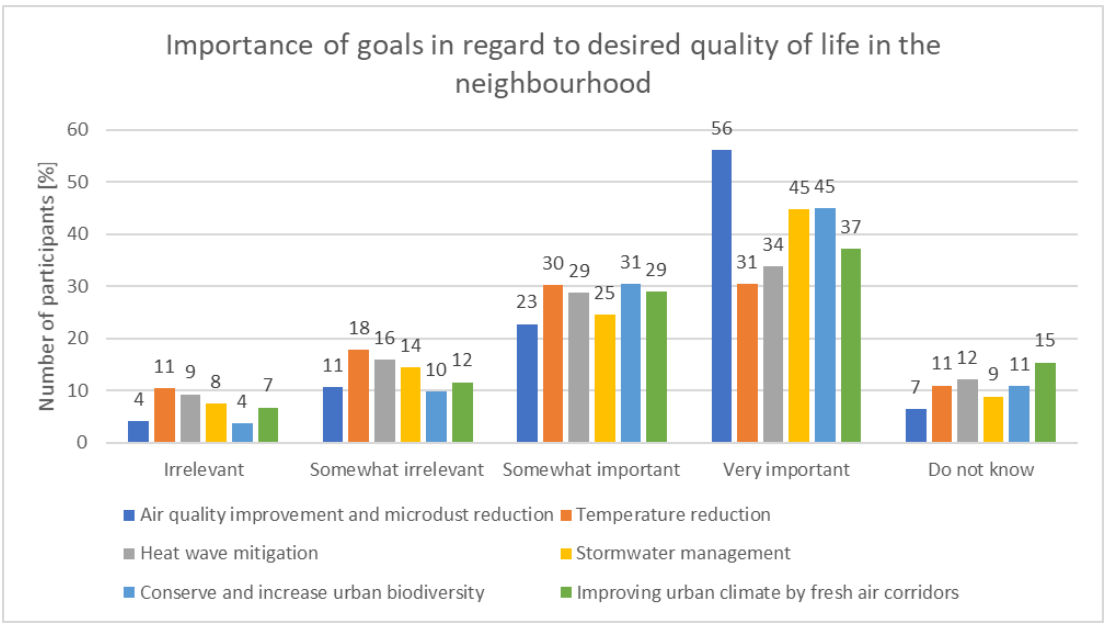

Figure 51: Importance of goals in regard to desired quality of life in their neighbourhood (comparative)

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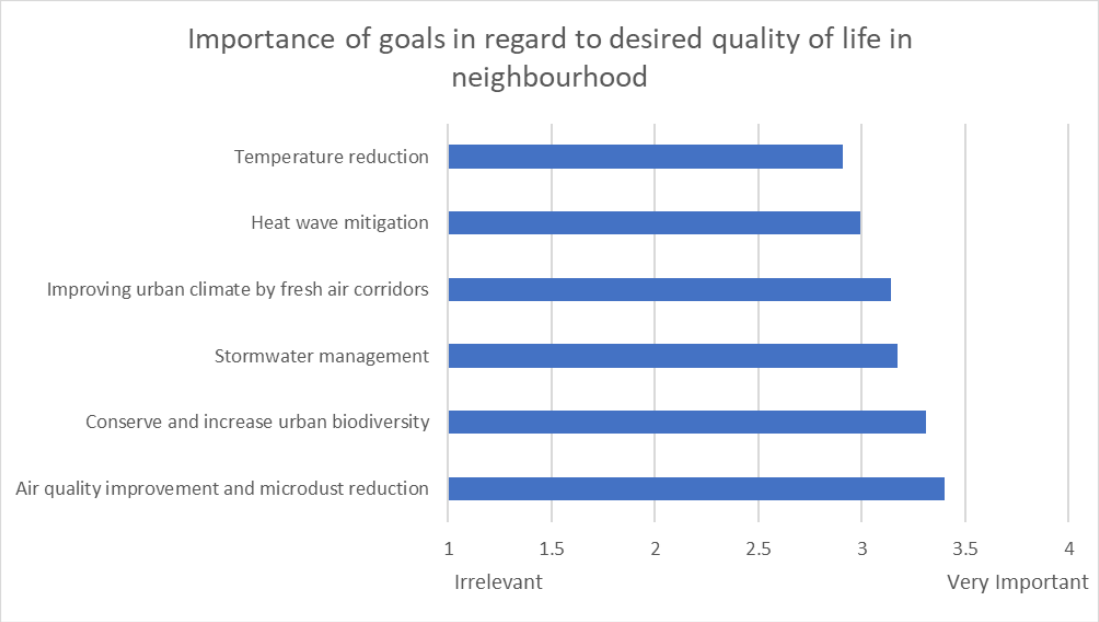

Figure 52: Importance of goals in regard to desired quality of life in their neighbourhood (average)

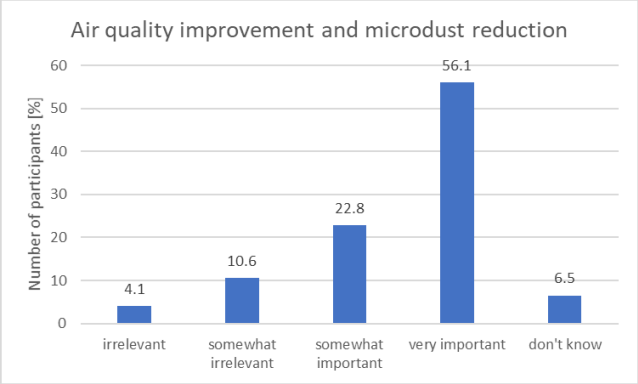

Figure 53: Importance of air quality improvement and microdust reduction

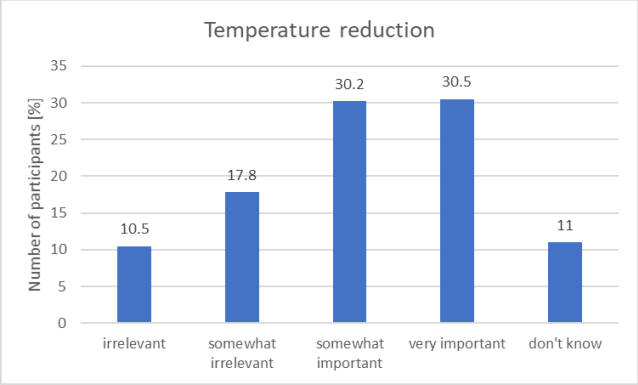

Figure 54: Importance of temperature reduction

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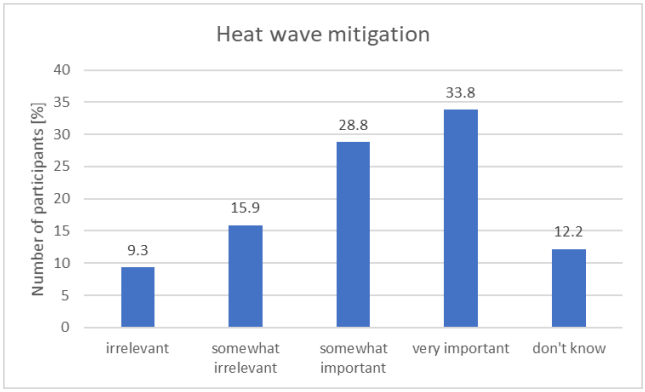

Figure 55: Importance of heat wave mitigation

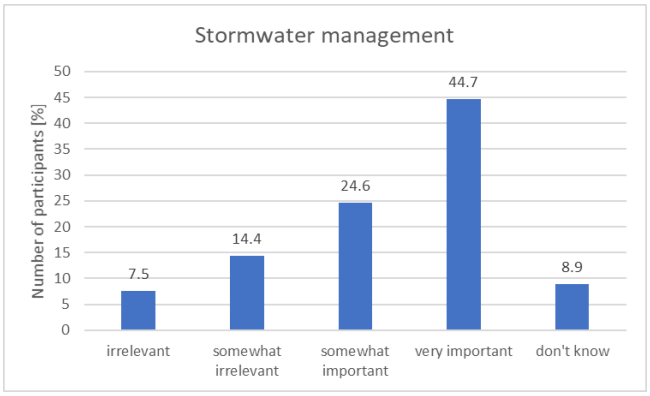

Figure 56: Importance of stormwater management

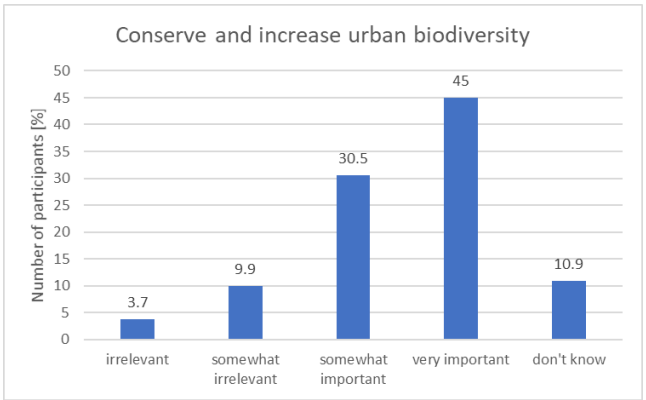

Figure 57: Importance of conserving and increasing urban biodiversity

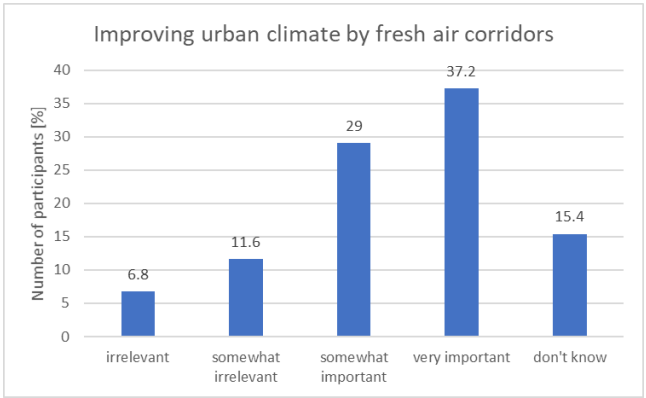

Figure 58: Improving urban climate by fresh air corridors

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Significant differences exist between cities regarding the evaluation of **air quality improvement and microdust reduction** (Chi square = 0.017) and **temperature reduction** (Chi square = 0.037). **Air quality improvement and micro dust reduction** was ranked "very important" from 49.7% to 84.8% of the participants. The importance of **heat wave mitigation** is high for all cities (between 57% and 74.5% ranked it as somewhat or very important, with 74.5% in the biggest city size category). **Improving urban climate by fresh air corridors** ranges between 56.1% and 78.3% in importance in the cities.

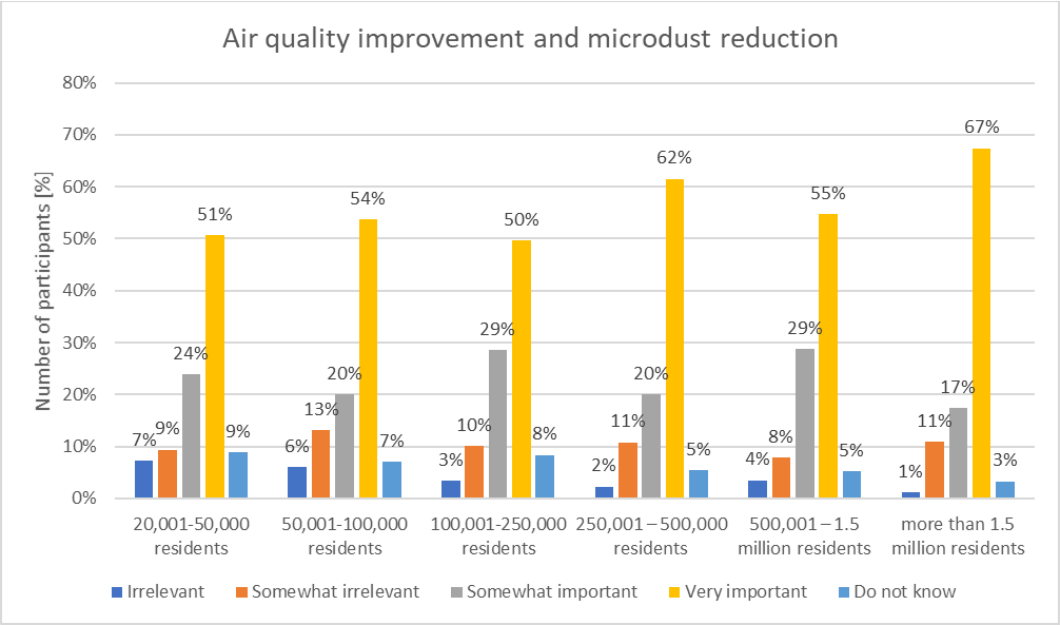

Figure 59: Importance of air quality improvement and microdust reduction by city size (Chi square = 0.017)

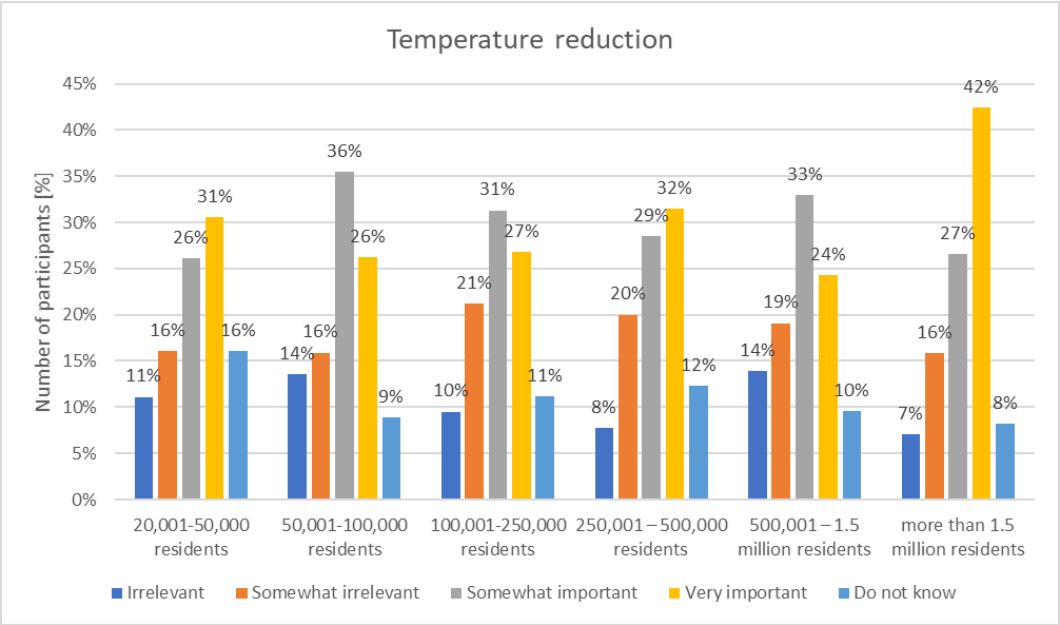

Figure 60: Importance of temperature reduction by city size (Chi square = 0.037)

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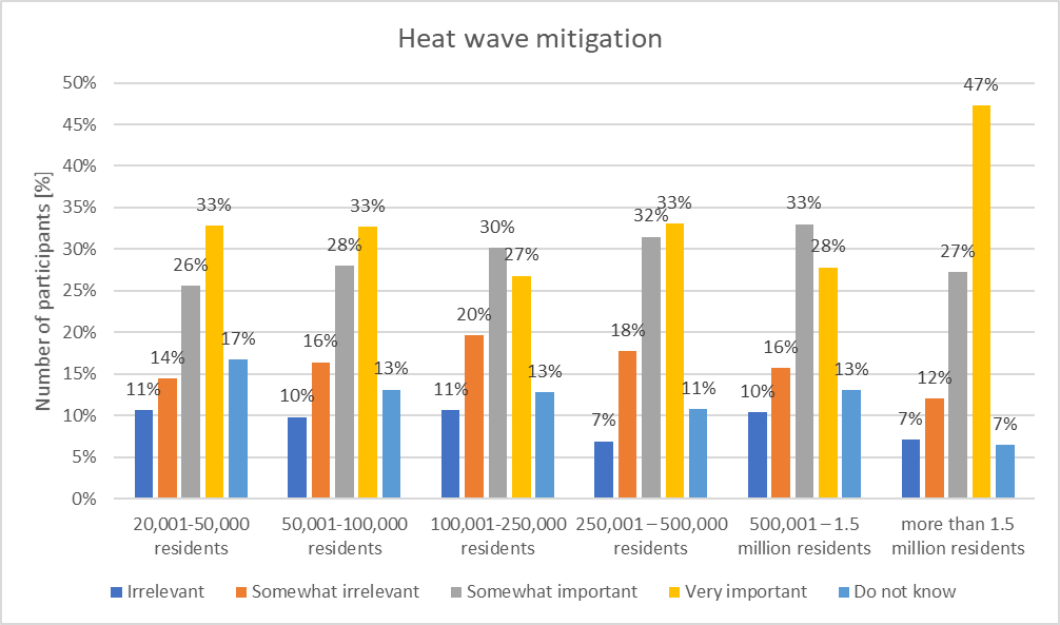

Figure 61: Importance of heat wave mitigation by city size (Chi square = 0.06)

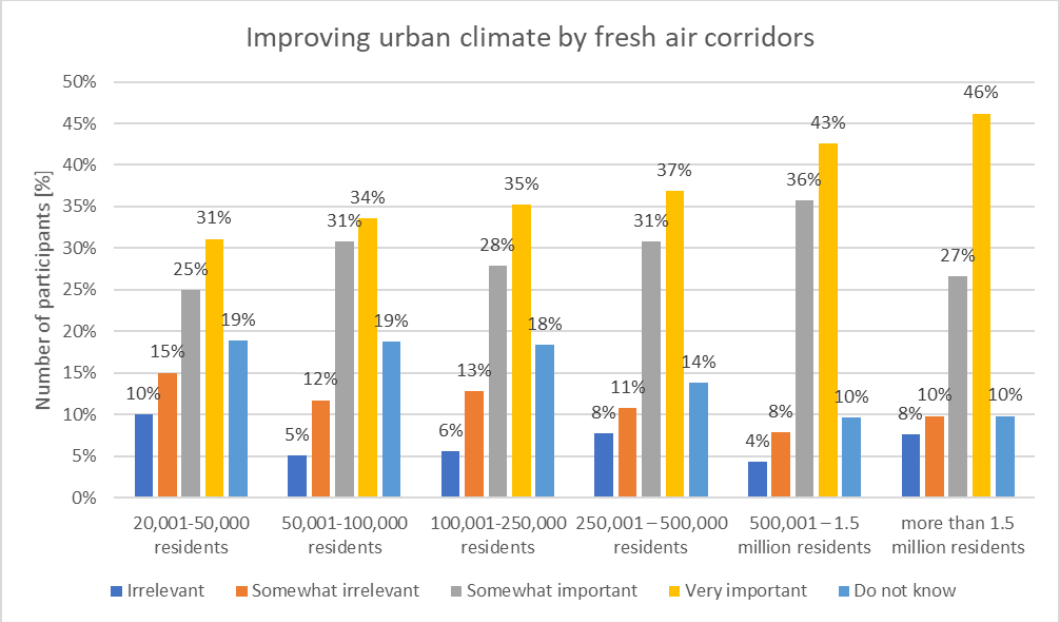

Figure 62: Importance of improving urban climate by fresh air corridors by city size (Chi square = 0.054)

Question 17a-d: Overall, **measures to enhance urban greening** were found to be particularly useful in contributing to the aesthetic of the urban landscape and urban biodiversity. All measures were ranked between high and very high for these effects. The measure with the highest impact to urban strategies (biodiversity, aesthetics, water retention and climate change) was the development of urban green corridors (Ø = 3.22 over all effects), followed by street greening by trees and hedges (Ø = 3.13). For each effect, another measure was found to be of particular importance: rain gardens for climate change mitigation, communal gardens for health benefits and street greening for aesthetic of urban landscapes. For urban biodiversity urban green corridors scored the best (Ø = 3.25), but all measures were almost of equal importance (Ø = between 3.13 and 3.25).

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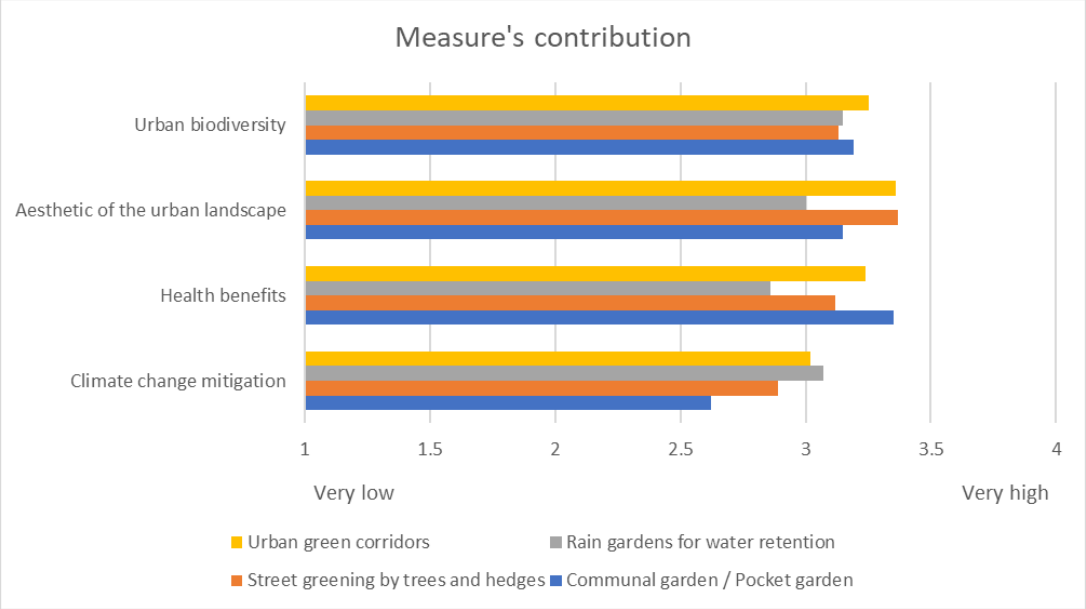

Figure 63: Different NBS contributions to urban strategies

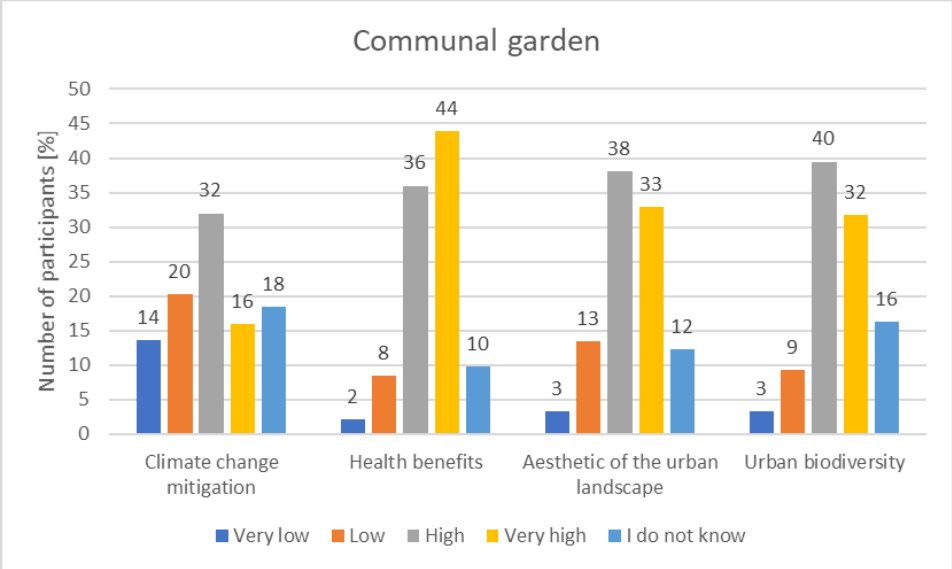

Figure 64: Communal gardens' contributions to urban strategies

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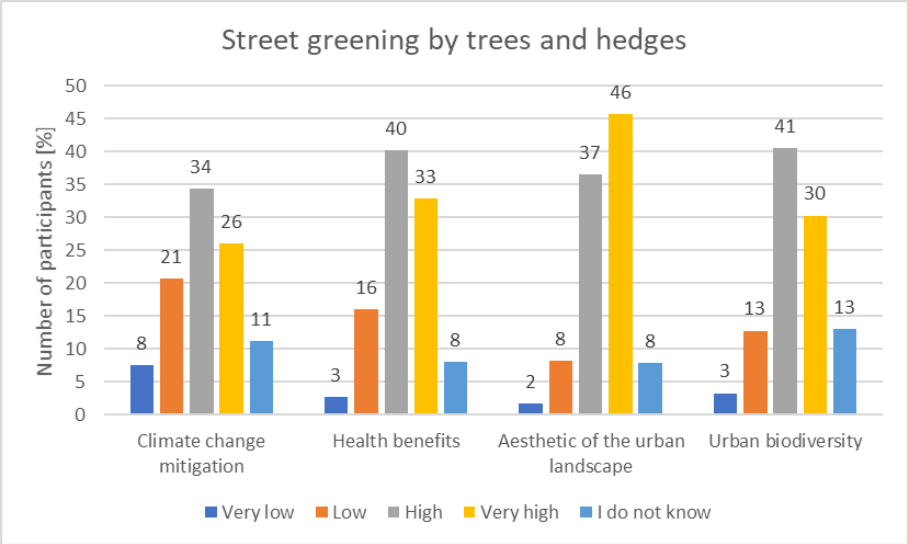

Figure 65: Street greening's contributions to urban strategies

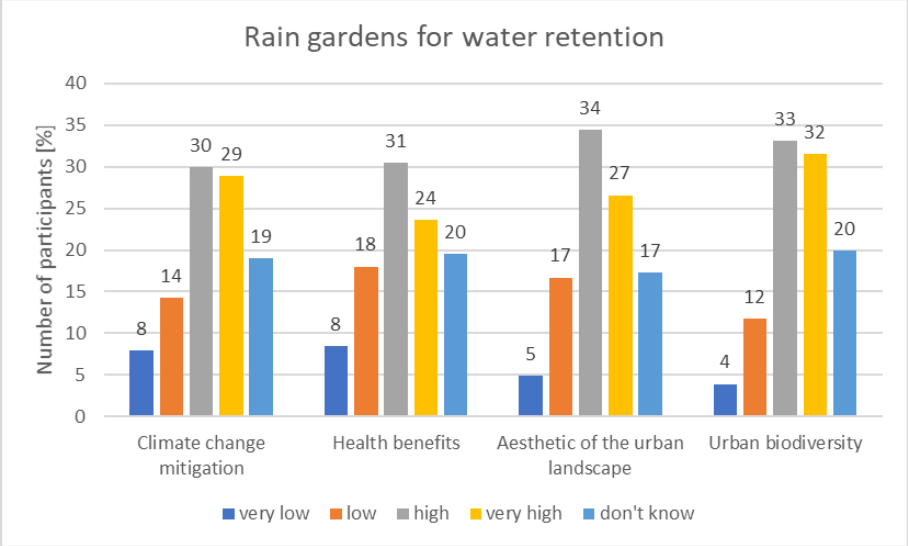

Figure 66: Rain gardens' contributions to urban strategies

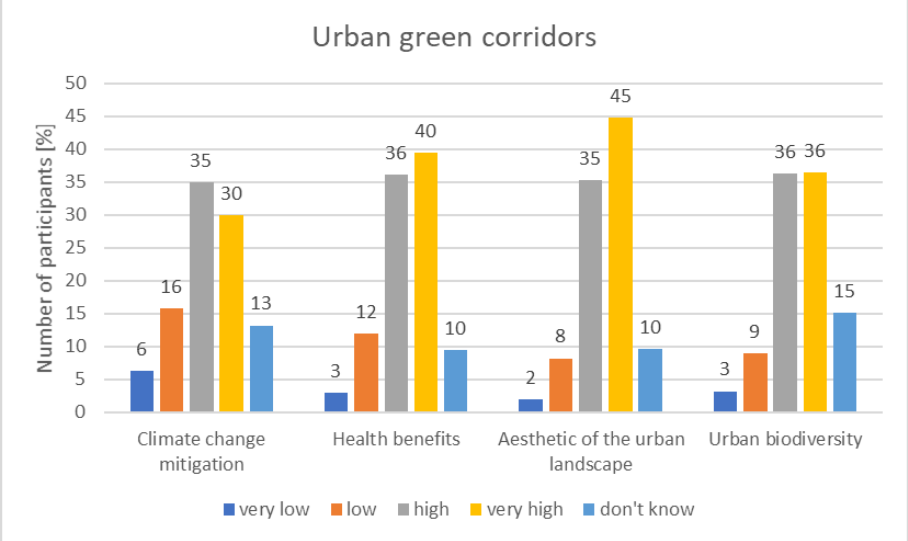

Figure 67: Urban green corridors' contributions to urban strategies

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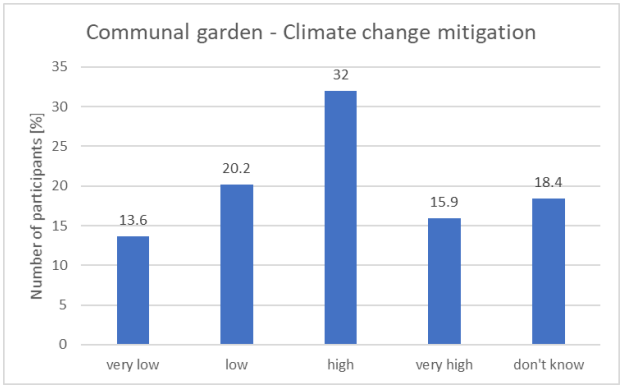

Figure 68: Communal gardens' importance for climate change mitigation

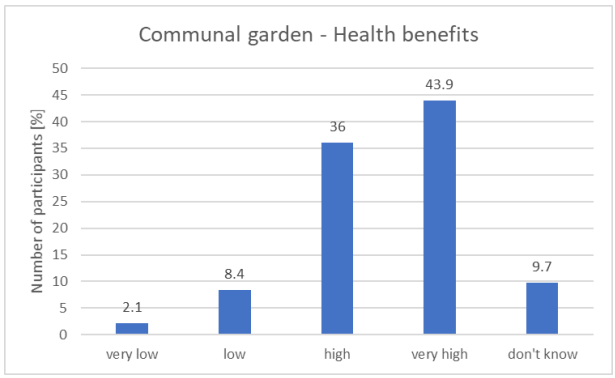

Figure 69: Communal gardens' importance for health benefits

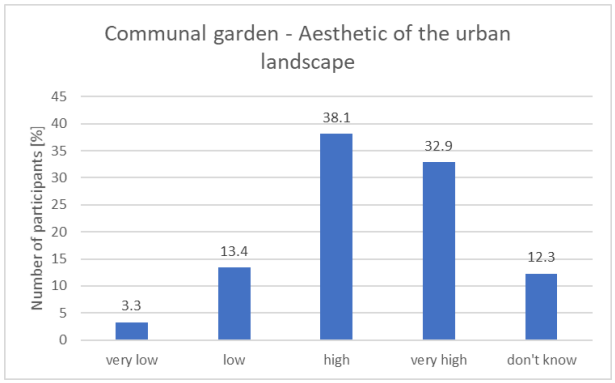

Figure 70: Communal gardens' importance for aesthetic of the urban landscape

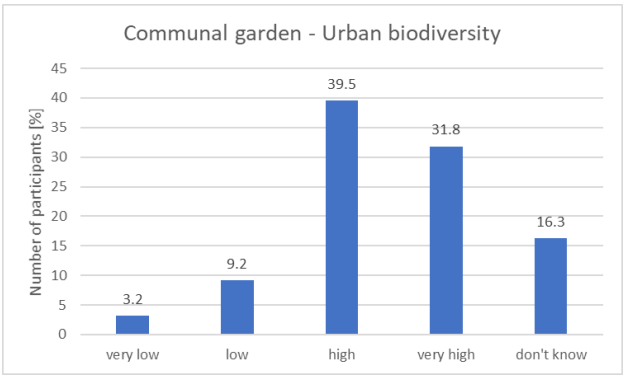

Figure 71: Communal gardens' importance for urban biodiversity

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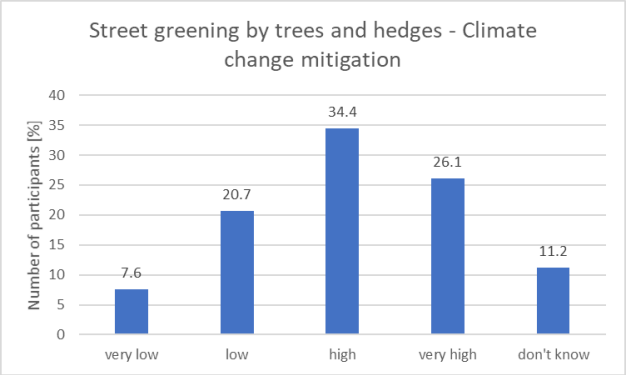

Figure 72: Street greening's importance to climate change mitigation

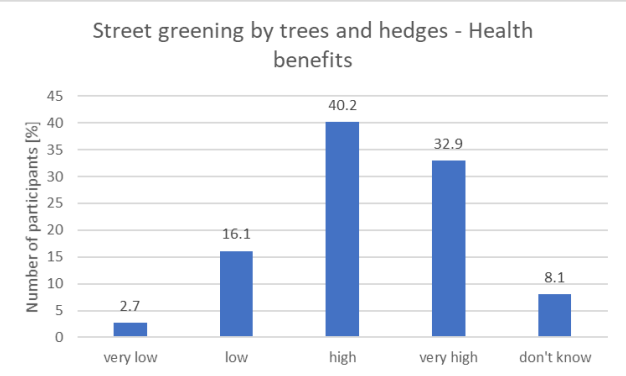

Figure 73: Street greening's importance for health benefits

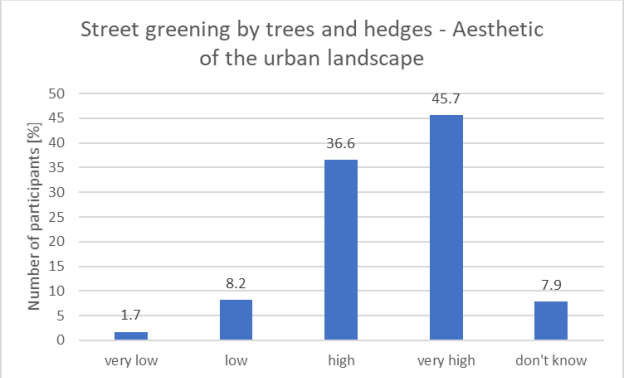

Figure 74: Street greening's importance for aesthetic of the urban landscape

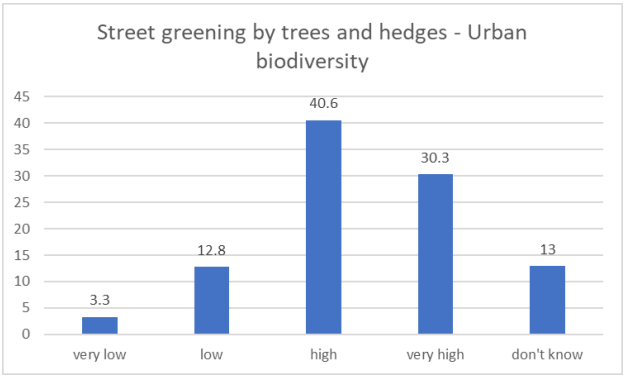

Figure 75: Street greening's importance for urban biodiversity

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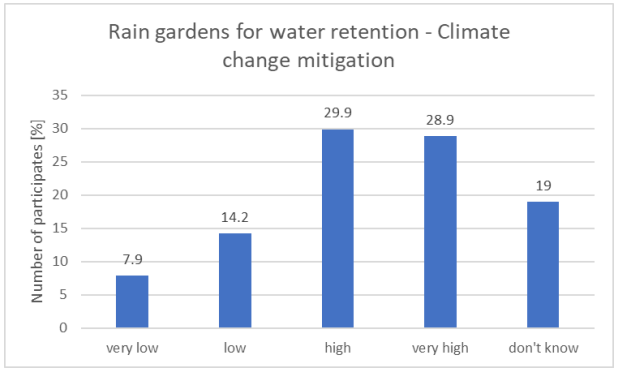

Figure 76: Rain gardens' importance for climate change mitigation

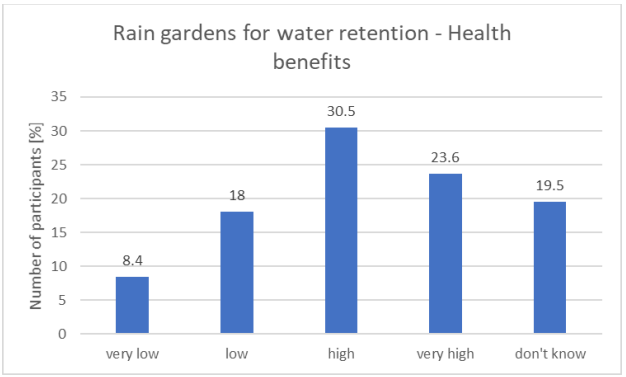

Figure 77: Rain gardens' importance for health benefits

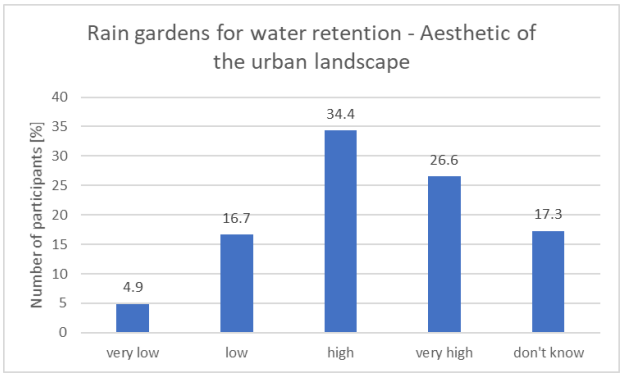

Figure 78: Rain gardens' importance for aesthetic of the urban landscape

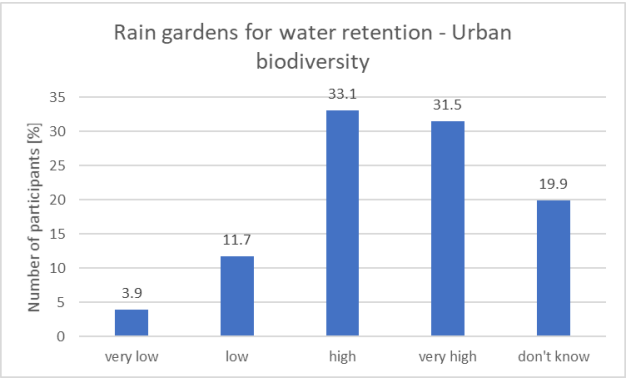

Figure 79: Rain gardens' importance for urban biodiversity

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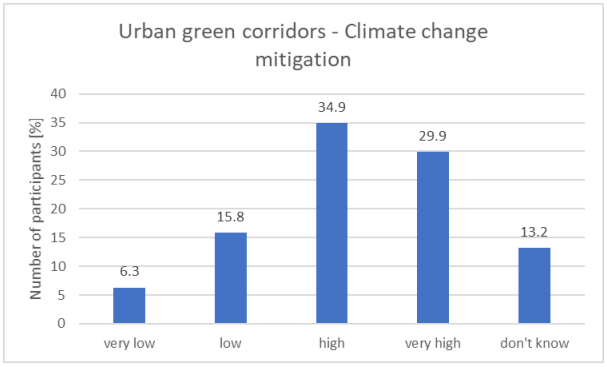

Figure 80: Urban green corridors' importance for climate change mitigation

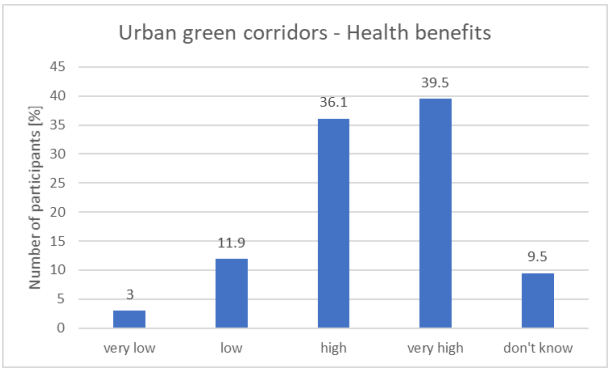

Figure 81: Urban green corridors' importance for health benefits

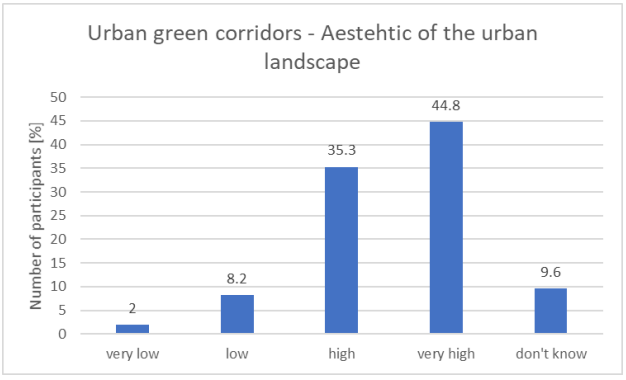

Figure 82: Urban green corridors' importance for aesthetic of the urban landscape

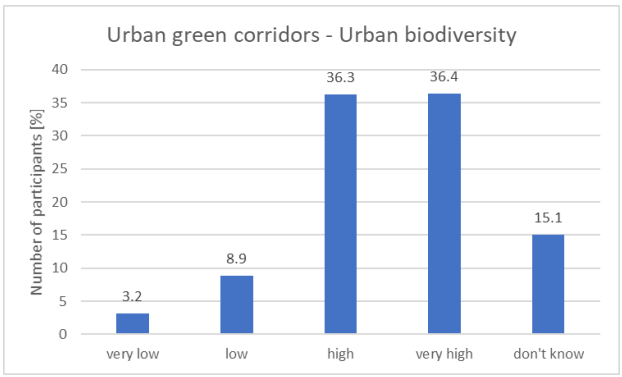

Figure 83: Urban green corridors' importance for urban biodiversity

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Task 4.1. – Survey and Choice Experiment

Draft Survey Analysis - Slovenia

Responsible partner: **BOKU**

Authors: Magdalena Feilhammer, Alice Wanner, Meike Jungnickel & Ulrike Pröbstl-Haider

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818.

DOCUMENT DETAILS

Title:	Draft survey analysis - Slovenia
Annexes:	

Work Package:	4
Task:	4.1. – Survey with integrated choice experiment
Deliverable type:	Internal draft analysis of the Slovenian sample
Lead Partner:	BOKU
Submission date:	21/02/2024

Dissemination level:		
PU	Public	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including Commission Services)	CO

DOCUMENT HISTORY

Version	Date	Partner	Author	Changes
1.	22/02/2024	BOKU	Feilhammer, Wanner, Jungnickel & Pröbstl-Haider	1st draft

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

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This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

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1 SAMPLE DESCRIPTION – DEMOGRAPHIC INFORMATION

N = 929

The sample consists of approximately 57% males and 43% females (N=929).

Table 1: Sample demographics - gender

	n	%
Female	399	42.9
Male	526	56.6
Diverse	2	0.2
Prefer not to say	2	0.2

The average **age** of the sample is 42.81 years (N=830). The age range is between 17 and 81 years.

The **level of education** is average high with 39% having a Bachelor's degree (N=393).

Table 2: Sample demographics - education

	n	%
Bachelor's Degree	393	39.1
Secondary school	269	26.8
Master's Degree	110	11
Trade/technical/vocational training	107	10.7
Doctorate	24	2.4
Primary	18	1.8
none completed	3	0.3
prefer not to say	9	0.9

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2 LIVING ARRANGEMENTS

Question 1: Participants are mainly coming from either rather small cities (28.9% (N=270) from cities with 20,0001-50,000 residents) or the largest city category (37.7% (N=352) from cities with 250,001-500,000 residents). With Slovenia having only one city over 250,000 residents, we can assume that participants from this category live in Ljubljana.

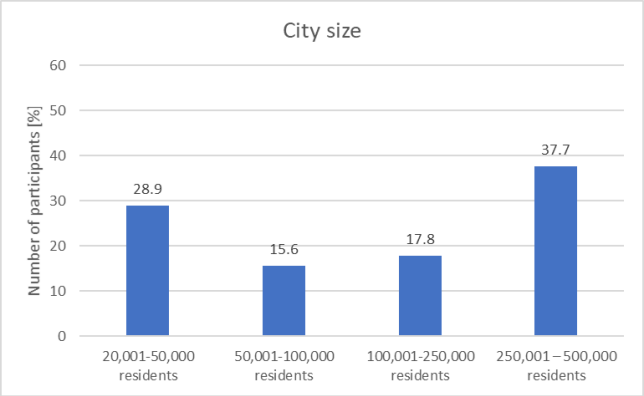

Figure 1: Participants by city size

Question 1a: About 54.1% (N=505) live in the **urban districts of the city**, followed by the city centre (N=260; 27.8%). About 18.1% (N=169) live in suburbs.

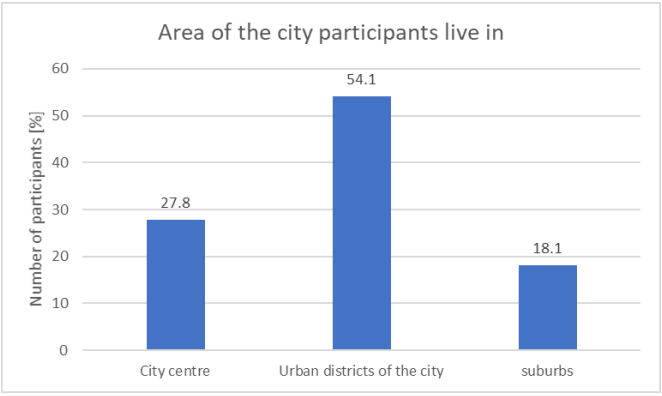

Figure 2: Area of the city participants live in

Question 21: The **number of people in the households** show a preference of 2 person households.

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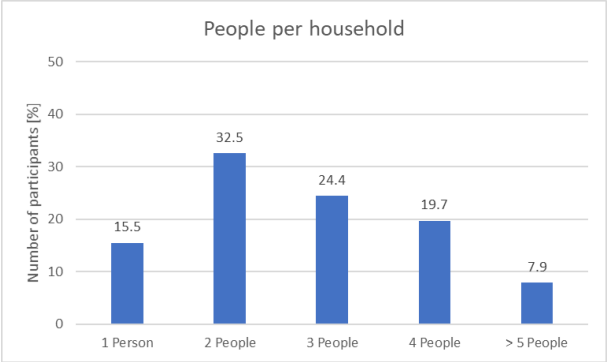

Figure 3: Number of people per household

Question 22: Interestingly, only 35% of respondents reported **children under the age of 18** living in the household (N=932).

Table 3: Respondents living with children under the age of 18

	n	%
Children under 18	331	35.5
No children under 18	601	64.5

Question 25: The **monthly household net income** lies primarily under 2000€ (N=673, N over 2000€ = 143).

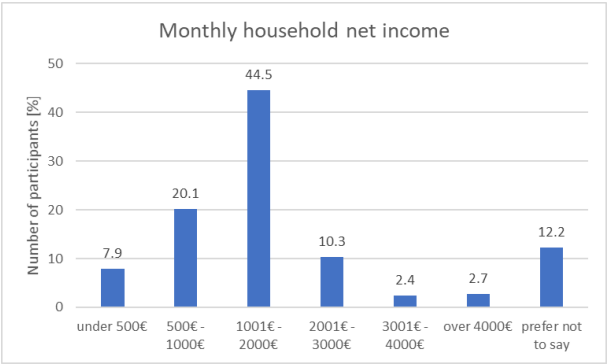

Figure 4: Monthly household net income

Question 23: The **number of cars** available in the household is often one (47%) or two (35.5%). About 8.7% (N=81) do not own a car. Only 6 participants own more than 5 cars.

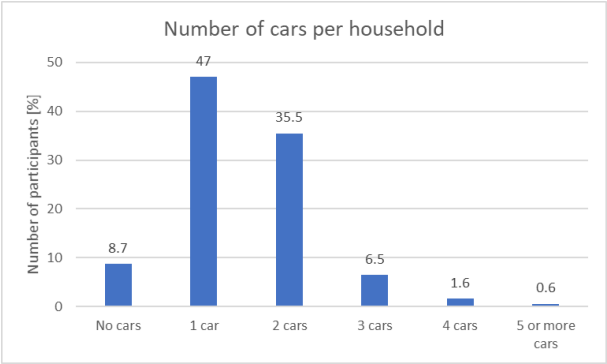

Figure 5: Number of cars per household

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The **size of the city** significantly determines the number of cars owned by participants (Chi square = 0.018). Participants living in cities with 20.001-50.000 residents tend to own a higher amount of cars.

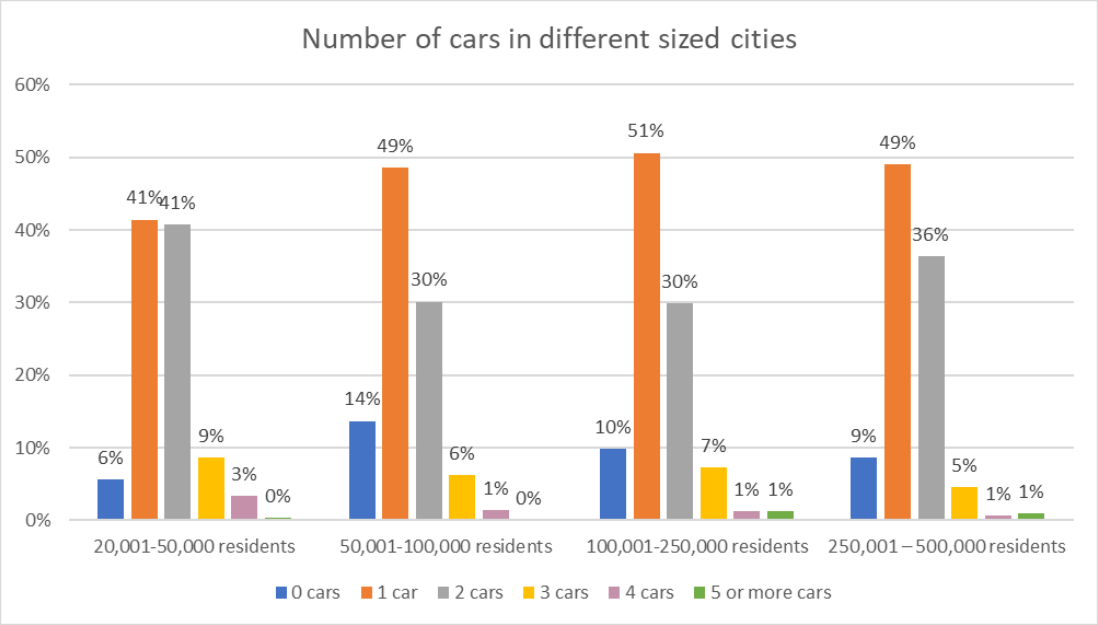

Figure 6: Number of cars per household by city size (Chi square = 0.018)

3 NEIGHBOURHOOD

Question 2: The most dominant building form is the tower block with more than half of participants choosing this answer (52.7%; N=488), followed by detached houses (32.8%; N=304) and row houses (8.6%; N=80).

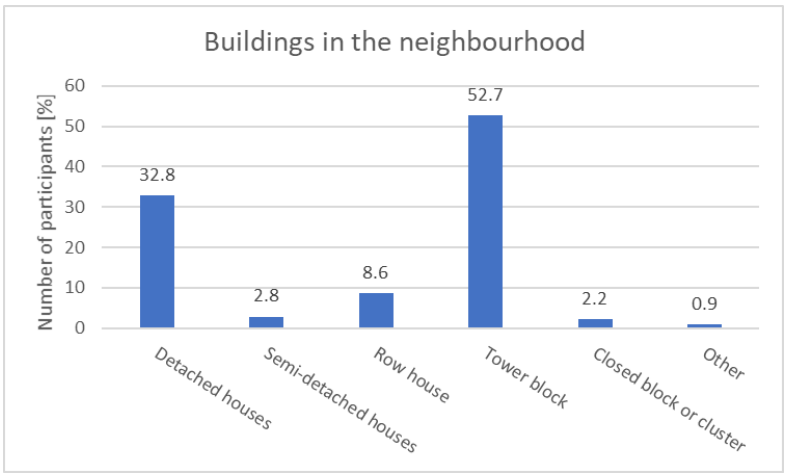

Figure 7: Types of buildings characterising the neighbourhood

Question 3: The **major building height** is between two storeys (28.4%; N=263) and three to four storeys (31.7%; N=294). Buildings with five up to nine storeys are also very common (24.9%; N=230).

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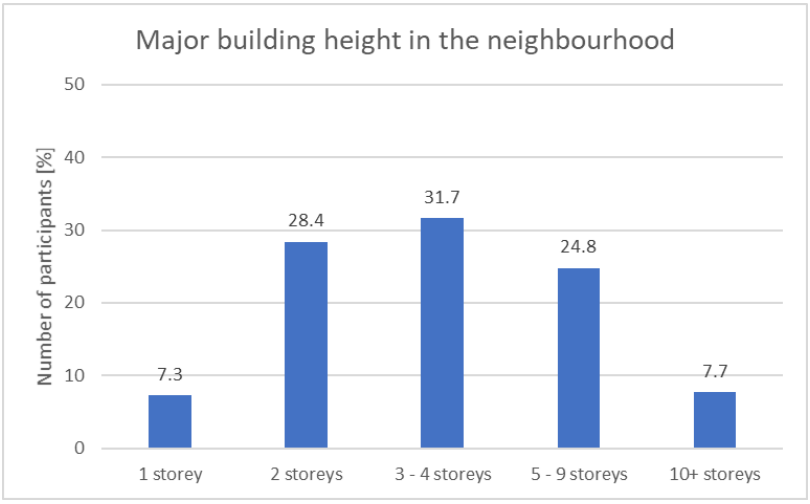

Figure 8: Predominant building height in the neighbourhood

Question 5: About 9.2% of participants' houses were **built after 2010**. The majority (63.5%) of houses were built between 1940 (22.7%; N=212) and 1989 (40.8%; N=380).

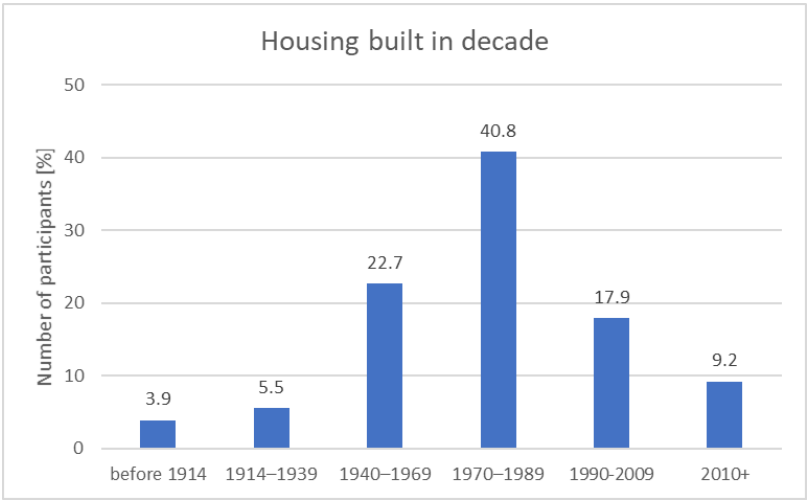

Figure 9: Decade in which housing was built

Question 4: The most **dominant elements of the neighbourhoods** are private balconies and terraces (Ø = 2.33) and parking and traffic areas (Ø = 2.01). Community gardens (Ø = 1.66), private green or parks with recreational space (Ø = 1.61) and derelict or unused areas (Ø = 1.28) are rather rare in the neighbourhood.

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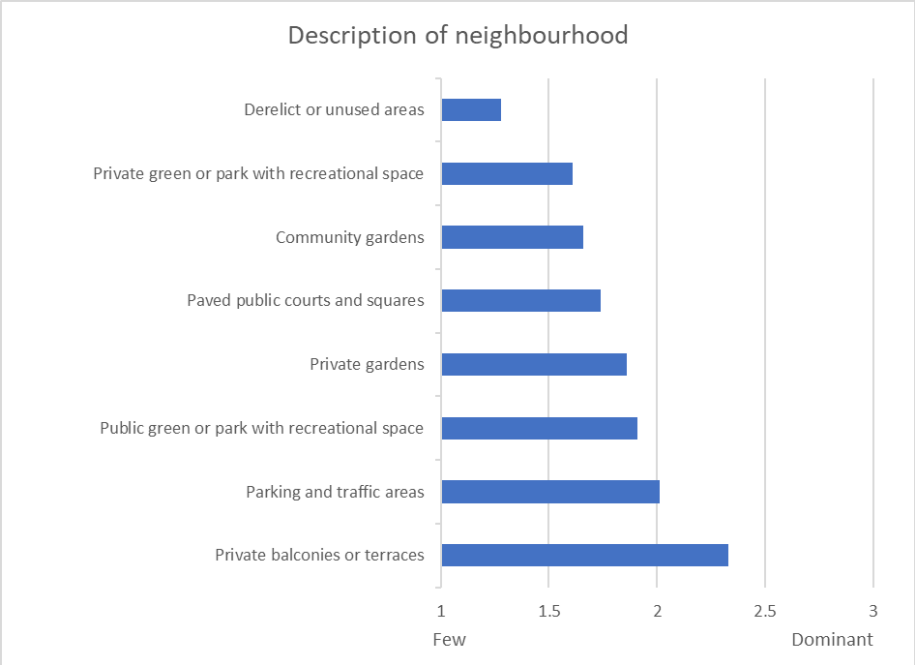

Figure 10: Description of neighbourhood surroundings

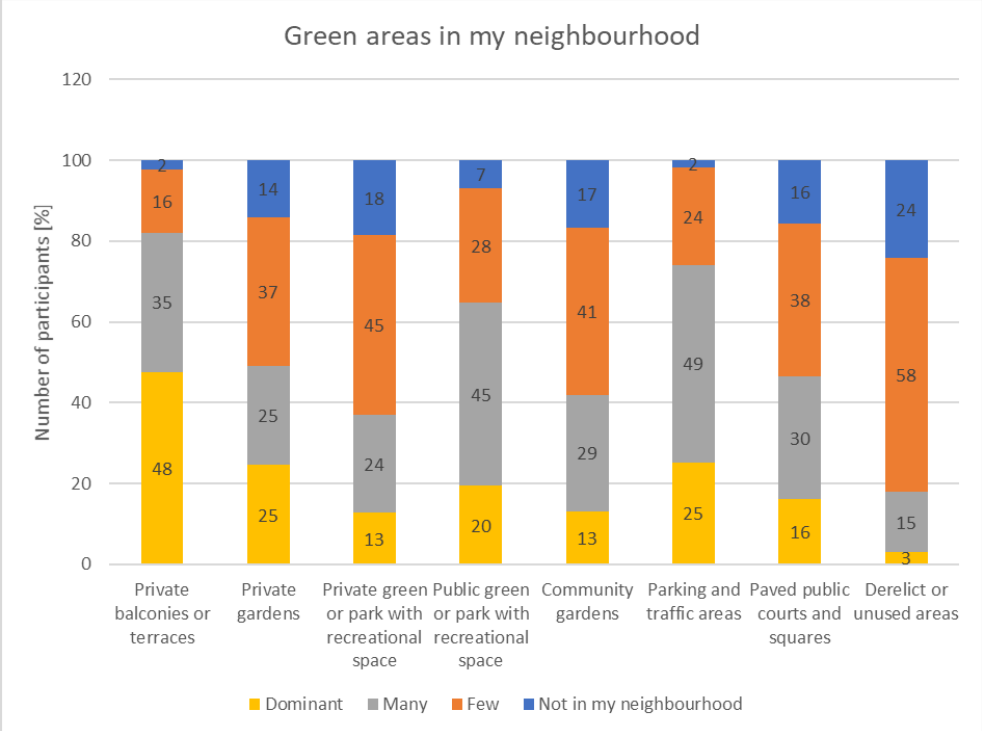

Figure 11: Green areas in my neighbourhood

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Question 6: **Parking arrangements** in the neighbourhood are mostly private parking (45%; N=452) or public on street parking (39%; N=390) (multiple answers possible).

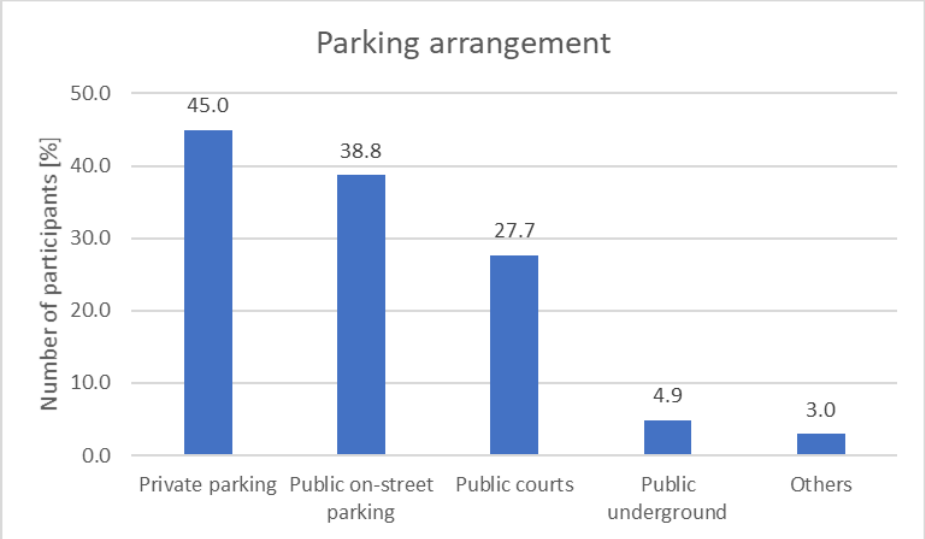

Figure 12: Parking arrangements in my neighbourhood

Question 7: The **walking distance to relevant infrastructure** is shortest (0-5 min walking) to slow public transport and longest (further away than 15 min walking) to participants' place of employment. For about 52%, fast public transport is not available.

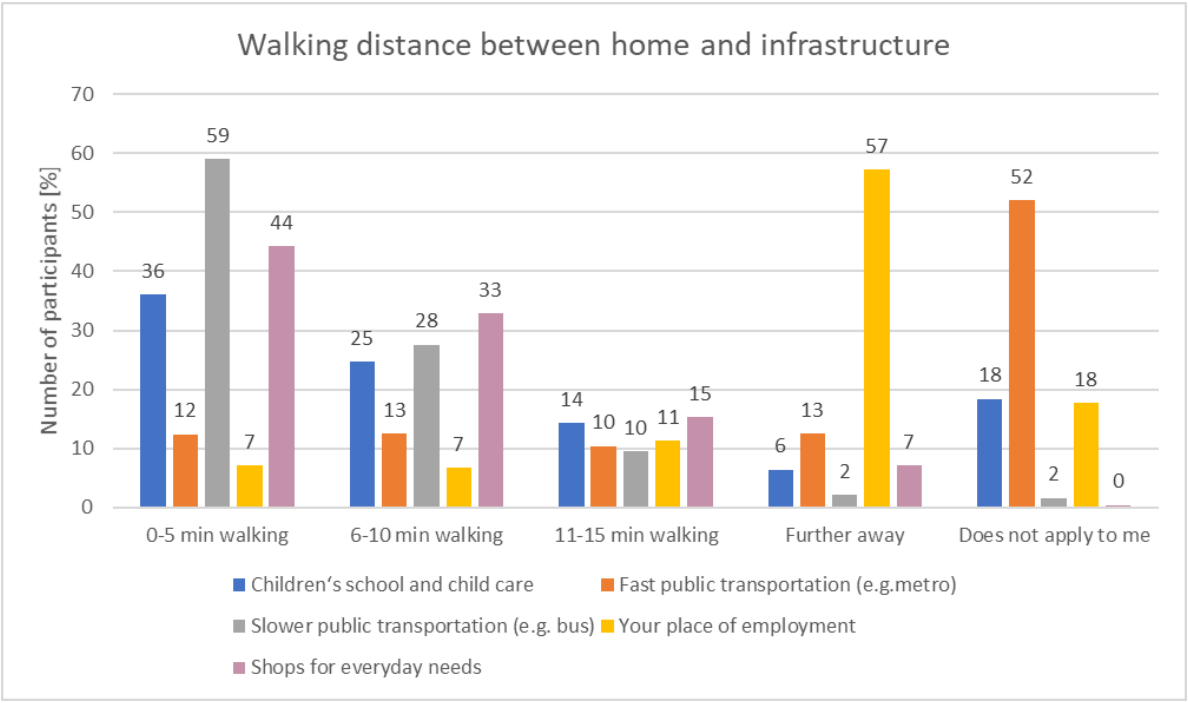

Figure 13: Walking distance between home and types of infrastructure

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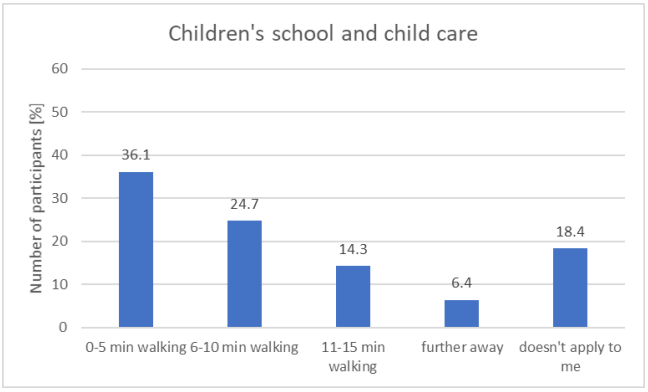

Figure 14: Walking distance to children's school and child care

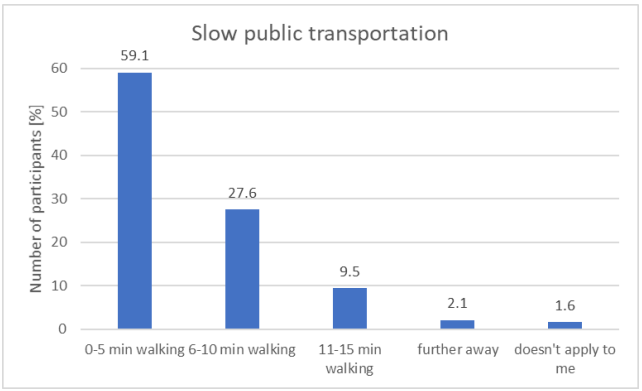

Figure 15: Walking distance to slow public transportation

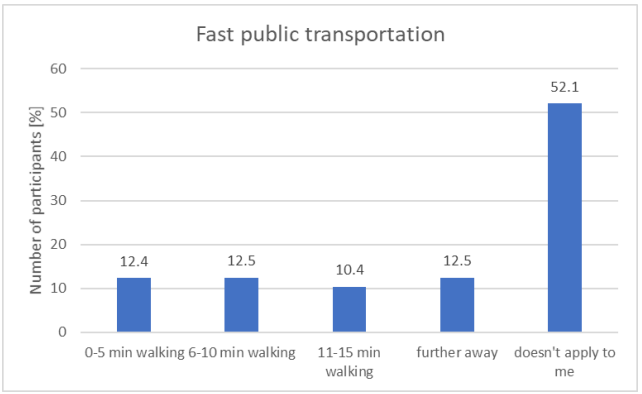

Figure 16: Walking distance to fast public transportation

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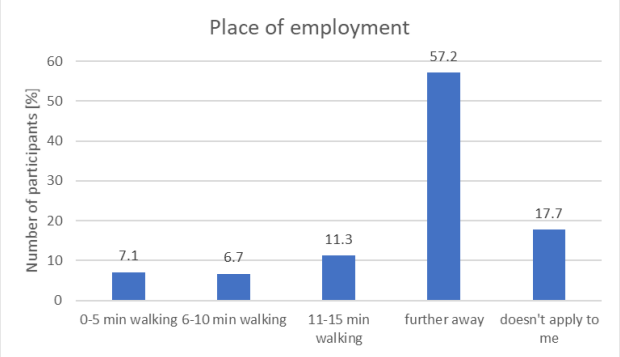

Figure 17: Walking distance to place of employment

Figure 18: Walking distance to shops for daily needs

Some significant differences emerge in the comparison of walking distances in the city sizes.

Fast public transport is often not available in all cities. In every city size category over 40% of participants indicate that fast transport does not apply to them (up to 54.2% and 58.2% in the two biggest city size categories). 13.3% and 13.9% of the people from cities with 100,001-250,000 and 250,001-500,000 residents respectively say that fast public transport is available in 0-5 minutes walking distance.

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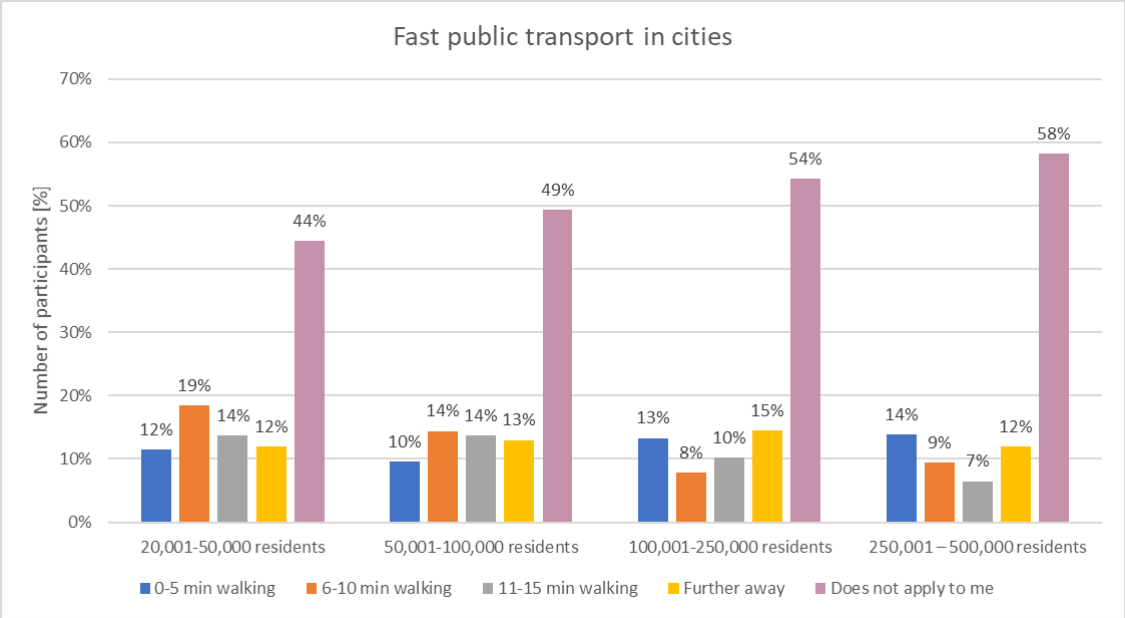

Figure 19: Walking distance to fast public transport by city size (Chi square = 0.001)

Slow public transport is frequently available in all cities with a significantly higher availability in larger cities (Chi square = < 0.001).

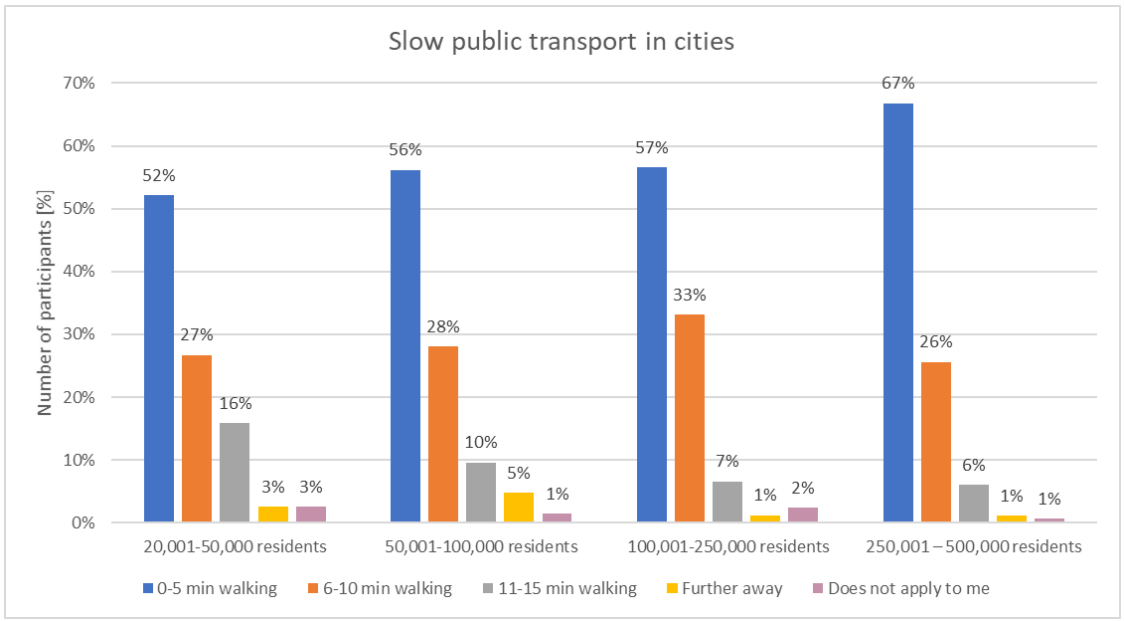

Figure 20: Walking minutes to slow public transport by city size (Chi square = < 0.001)

The distance to the **place of employment** does not significantly differ between city sizes (Chi square = 0.503). For more than half of all participants (53.7% at least) their place of employment is further away than 15 minutes by foot. This number increases to 59.7% in the largest city category.

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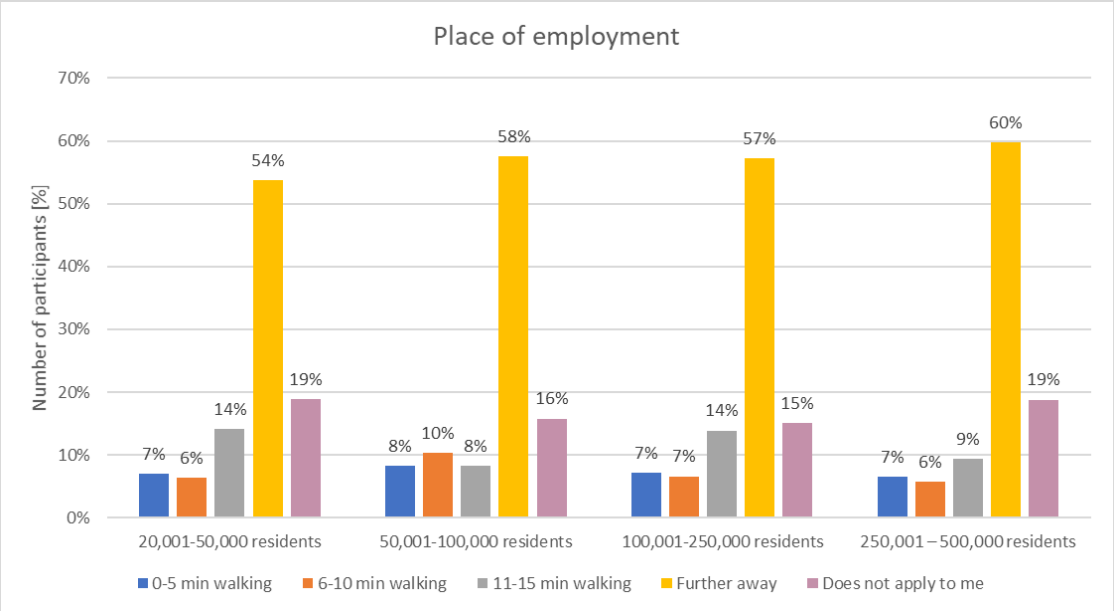

Figure 21: Walking distance to place of employment by city size (Chi square = 0.503)

The distance to shops for everyday needs also does not significantly differ between the city sizes (Chi square = 0.214). At least 75% of participants live in a short walking distance (0 up to 10 minutes) to shops for every city size.

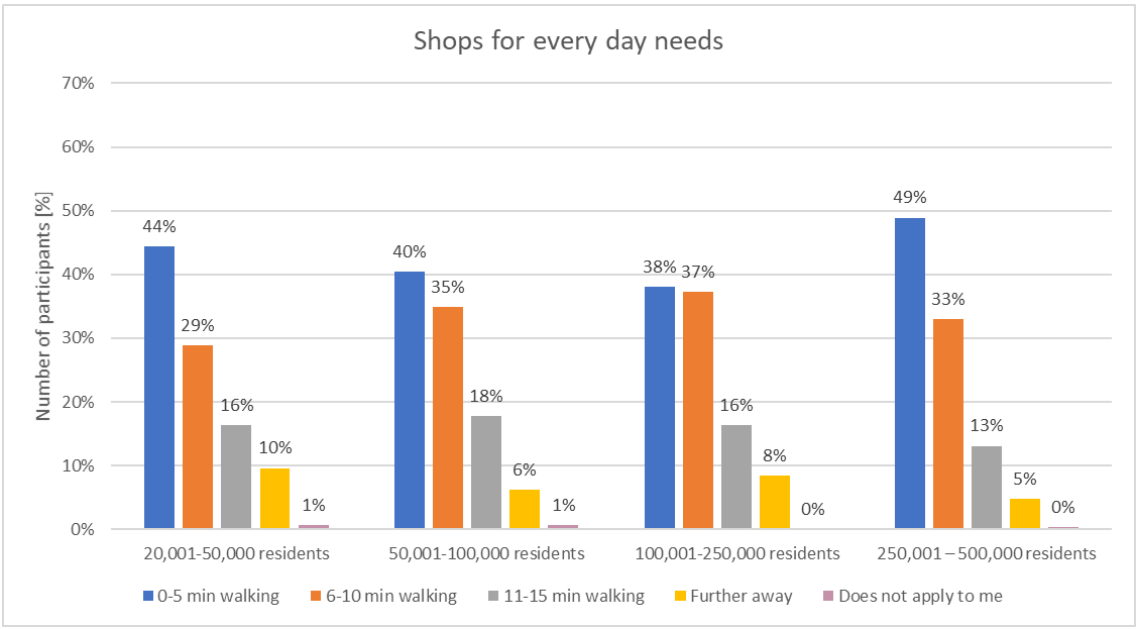

Figure 22: Walking distance to shops for everyday needs by city size (Chi square = 0.214)

Question 12: If participants could select the type of infrastructure, they would want to live close to, 42.2% (N=424) stated that they would choose green areas, followed by their place of employment (37.7%; N=379) and fast public transportation (34.9%; N=350). This result fits well to the figures above stating the distance to these infrastructures.

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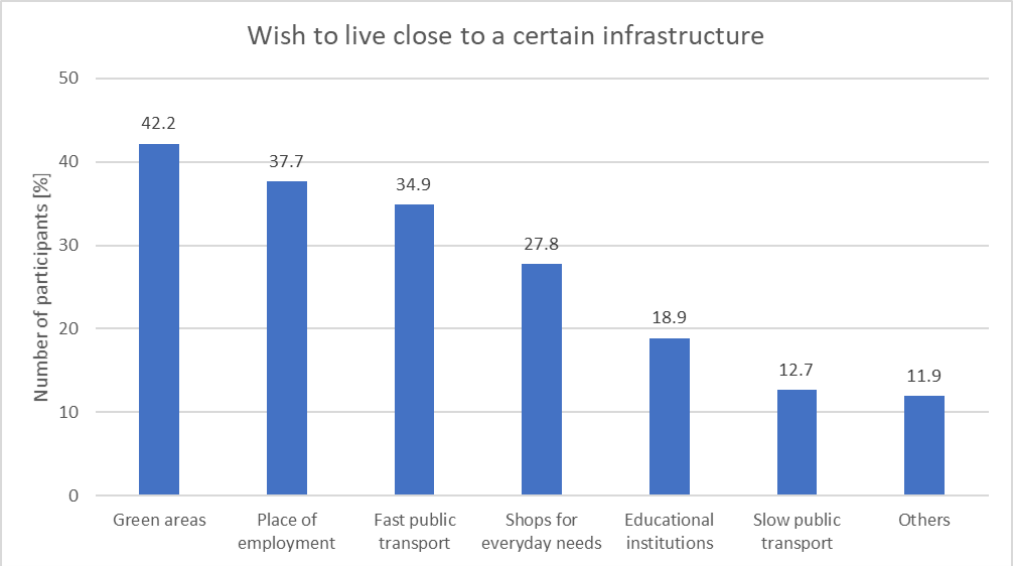

Figure 23: Infrastructure respondents wish to live close to

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Other infrastructure participants would wish to live close to are included in Table 4:

Table 4: Other infrastructure respondents wish to live close to

Infrastructure	n
Sports facilities (Tennis court, stadium, polygons, skatepark, pump track), rock climbing centre, swimming pool)	9
Playgrounds	7
Different shops / shopping centre	7
Healthcare facilities	5
Parking spaces / underground garage	4
Fitness centre	3
Bike and scooter rental	3
Bar / Restaurant / Bakery	3
Bank	3
Post Office	3
Bike lanes	2
Pharmacy	2
Pet store	2
Sidewalks, good road connection, pavement	2
Park	2
Train	1
Airport	1
Dog park	1
Zoo	1
Swimming pool	1
Pond	1
The sea	1
More light	1
More trees	1
Recreation centre	1
Entertainment and cultural facilities	1
Library	1
Space for picnics and large groups outside	1
Social group space	1

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Forest area	1
A wider public road	1

4 GREEN SPACES

4.1 WALKING DISTANCES TO DIFFERENT GREEN SPACES IN THE NEIGHBOURHOOD

Question 8: For over 60% of all participants, street greening is less than 5 walking minutes away, making it the most accessible green infrastructure. Playgrounds follow with 50%. Those two types of green spaces are also rarely not applicable to participants.

Derelict areas are mostly either not applicable or further than 15 minutes away.

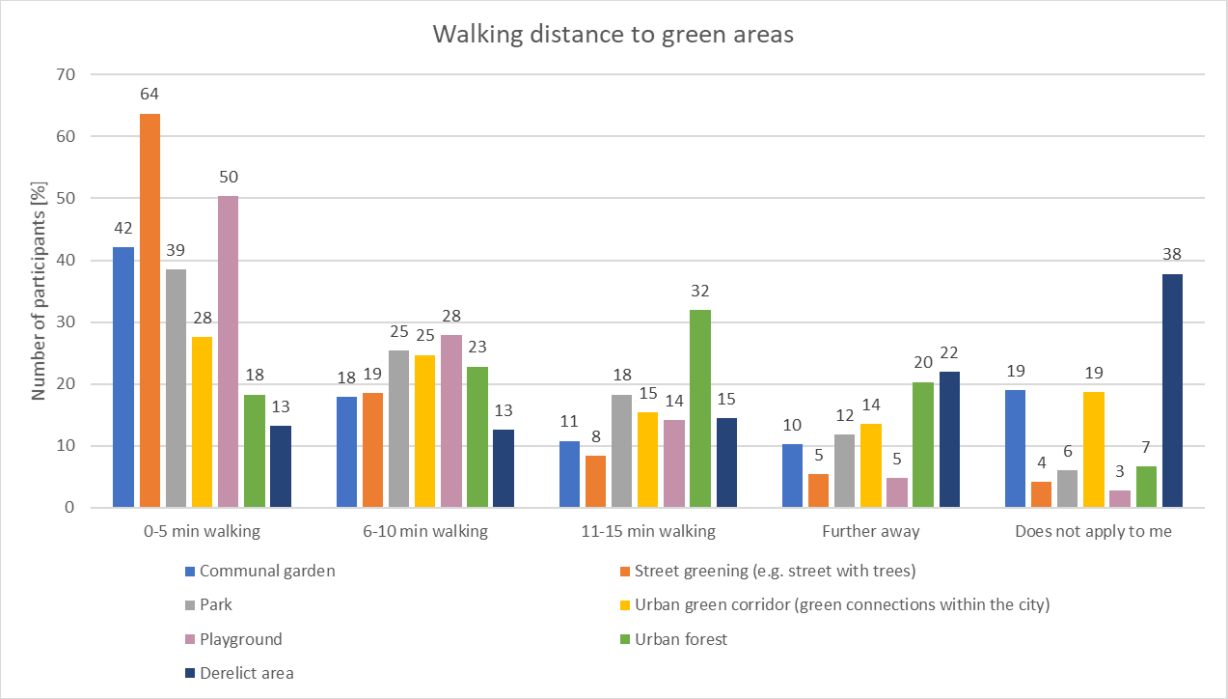

Figure 24: Walking distance to different green areas

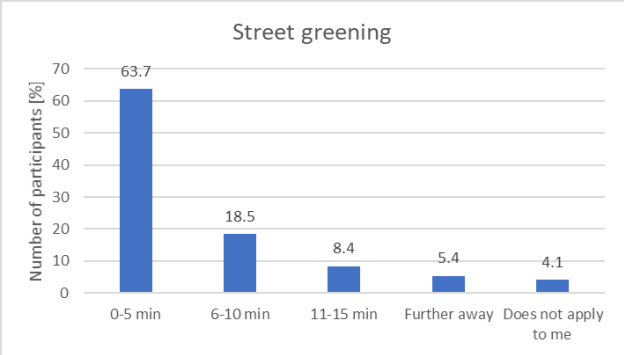

Figure 25: Walking distance to street greening

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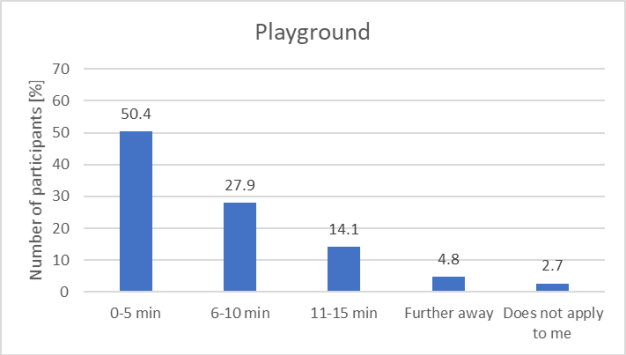

Figure 26: Walking distance to a playground

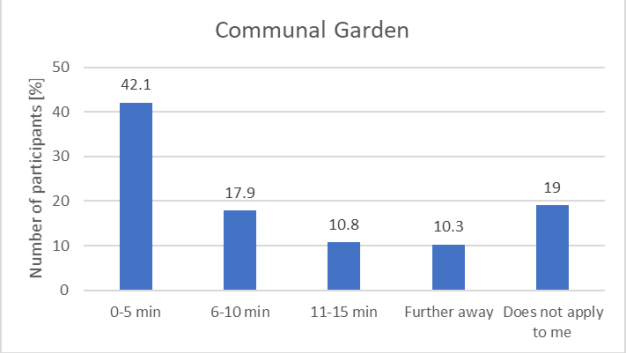

Figure 27: Walking distance to a communal garden

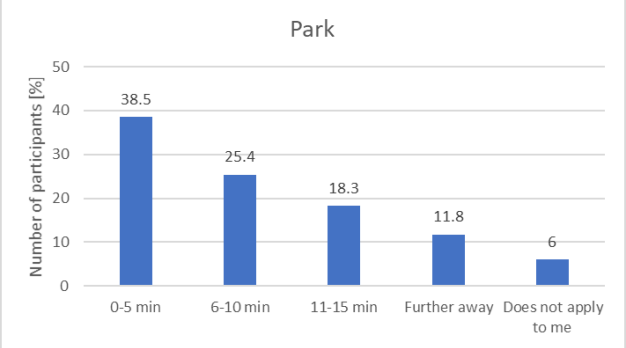

Figure 28: Walking distance to a park

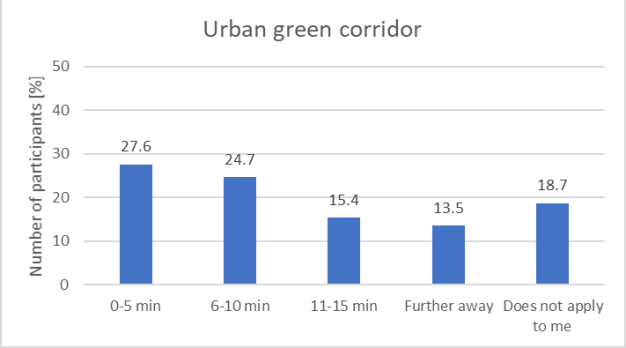

Figure 29: Walking distance to an urban green corridor

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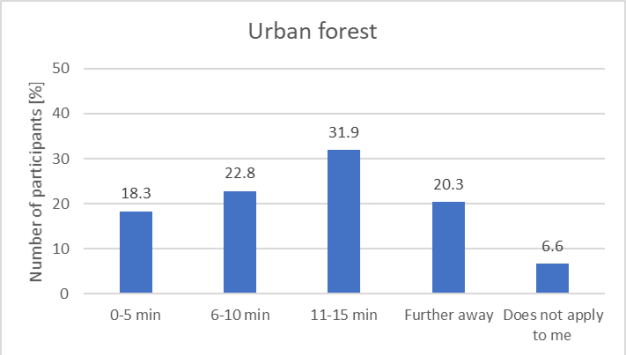

Figure 30: Walking distance to an urban forest

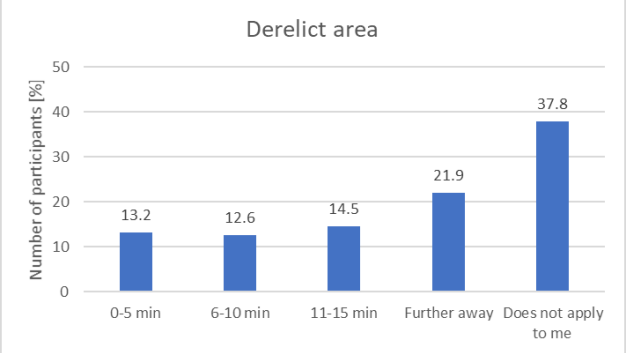

Figure 31: Walking distance to a derelict area

4.2 WALKING DISTANCE TO DIFFERENT GREEN SPACES IN DIFFERENT CITY SIZES

Significant differences exist between the walking distance in cities to parks (Chi square = < 0.001), street greening (Chi square = 0.026) and playgrounds (Chi square = 0.026). **Parks** are quickly accessible in all cities but tend to be especially near in the biggest city size category. **Street greening** is easily accessible in all cities. In smaller cities, this infrastructure tends to be slightly further away. **Playgrounds** are also in a short walking distance in all cities.

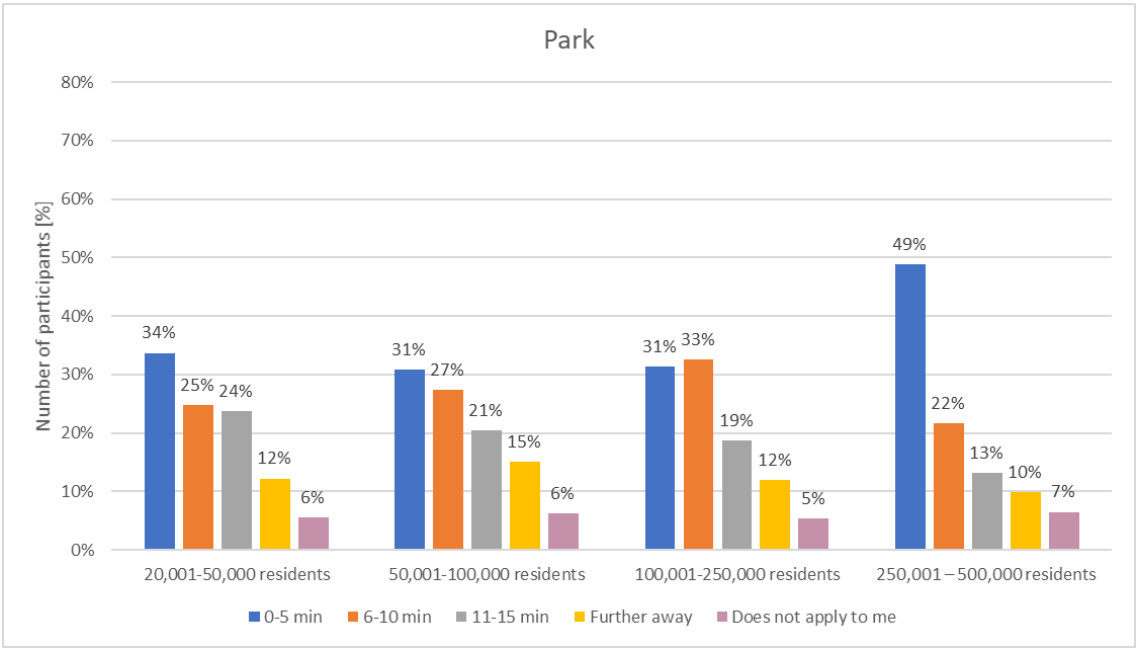

Figure 32: Walking distance to a park by city size (Chi square = < 0.001)

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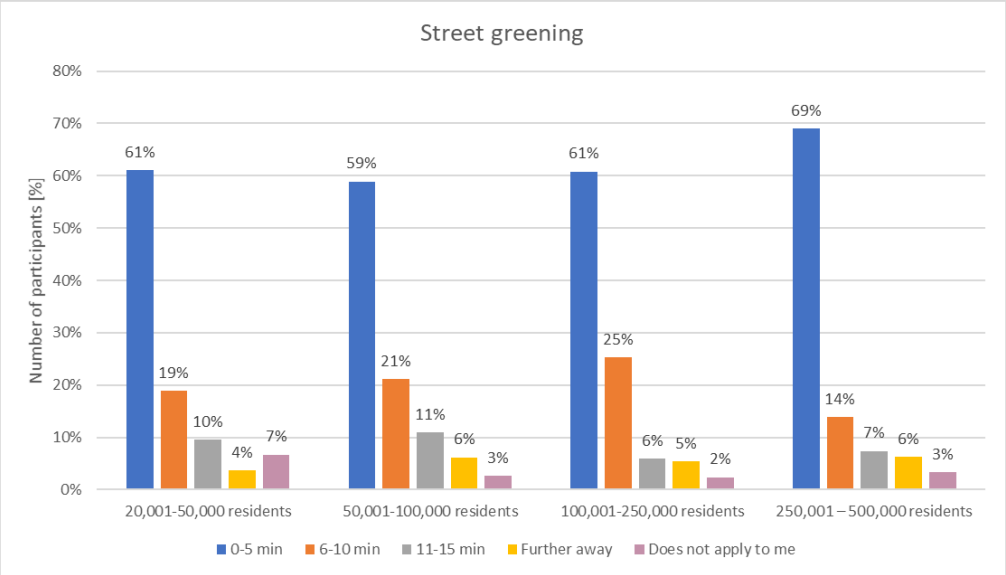

Figure 33: Walking distance to street greening by city size (Chi square = 0.026)

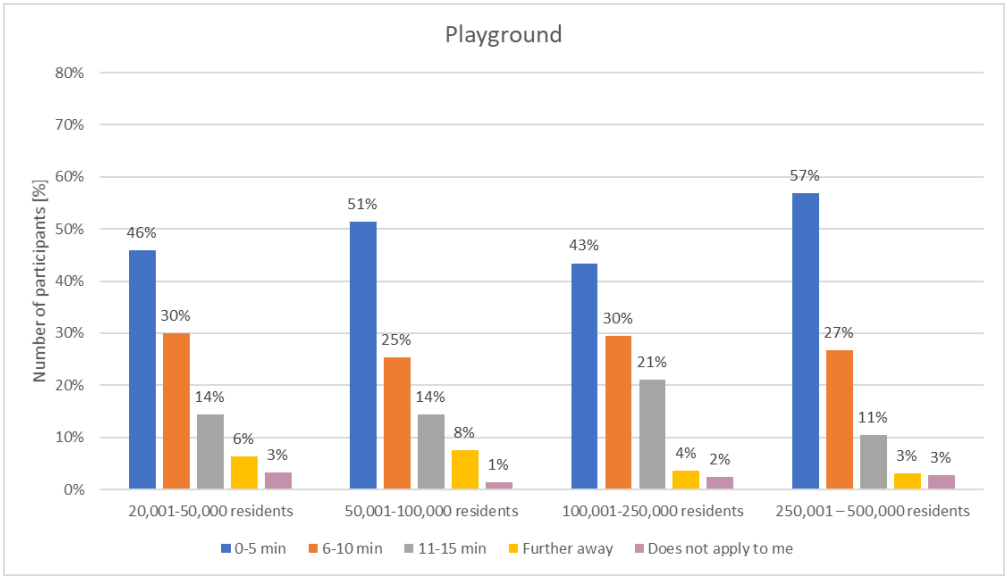

Figure 34: Walking distance to a playground by city size (Chi square = 0.026)

4.3 COMPANIONSHIP AT GREEN AREAS IN THE NEIGHBOURHOOD

Question 9: Participants usually spend time with their partner (Ø = 3.03), friends (Ø =2.86) and children (Ø = 2.71) at green areas. Spending time with neighbours (Ø = 1.81) is not very common and received the “never” category more often than others. 31% of participants state that they never go to green areas with “others”, 36% state that this seldom happens.

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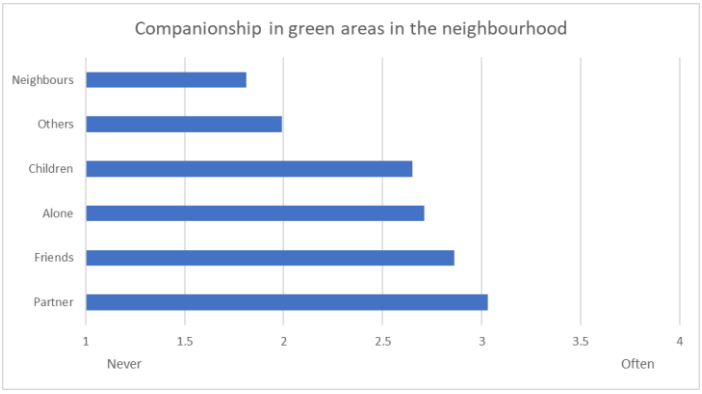

Figure 35: Companionship in green areas

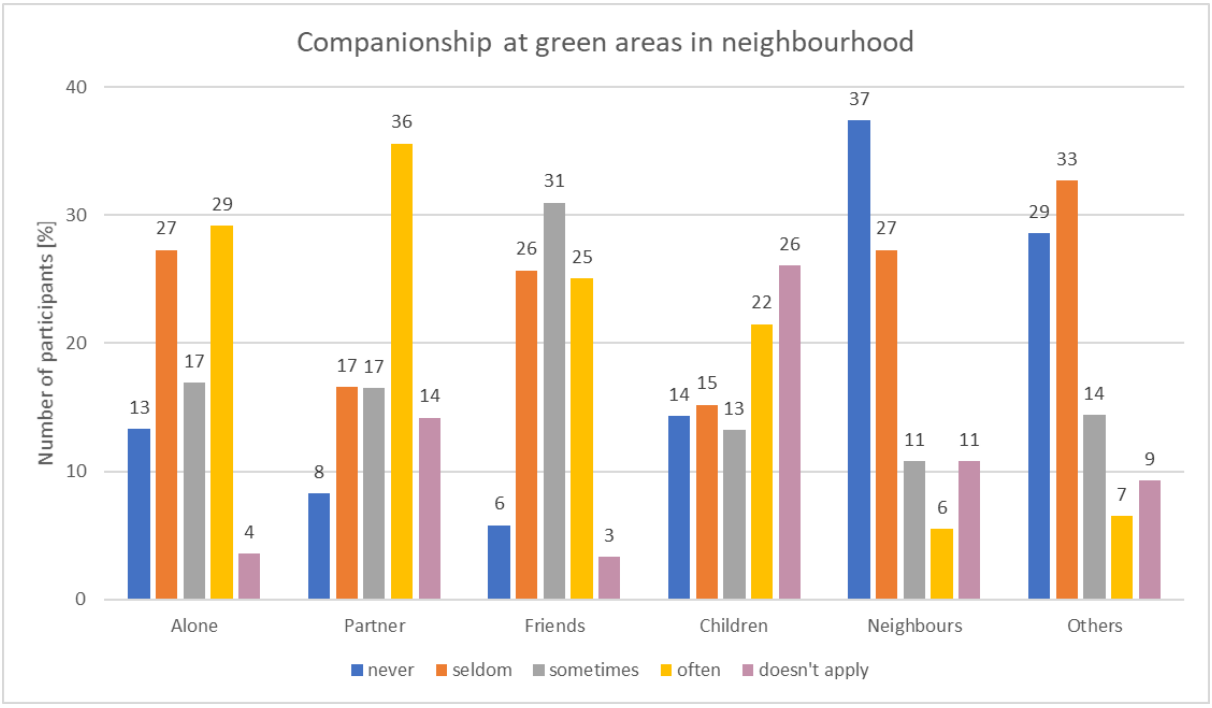

Figure 36: Frequency of types of companionship in green areas

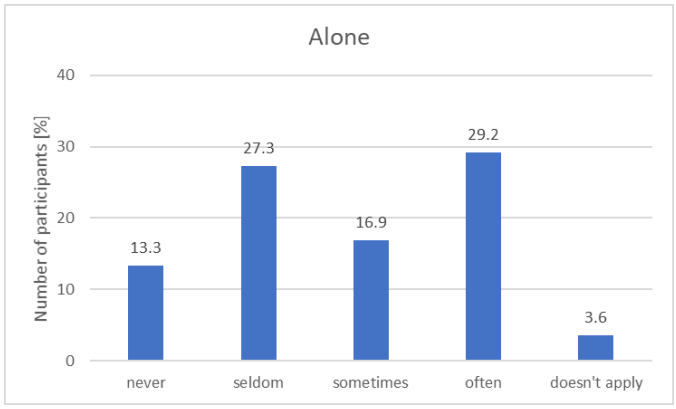

Figure 37: Frequency of time spent alone in green areas

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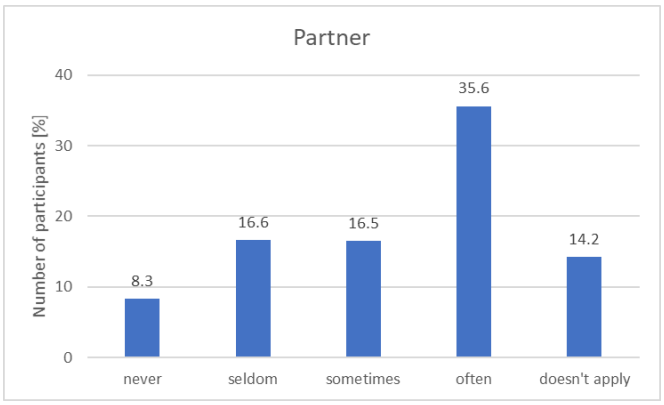

Figure 38: Frequency of time spent with partner in green areas

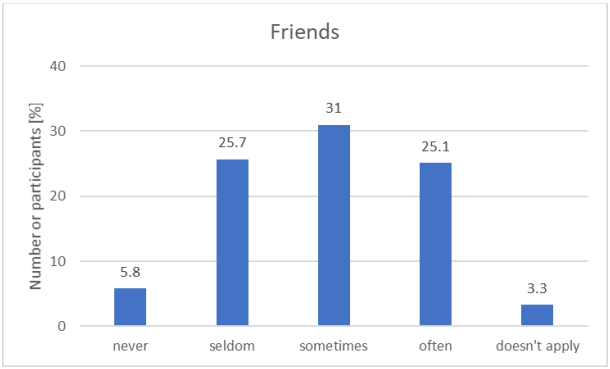

Figure 39: Frequency of time spent with friends in green areas

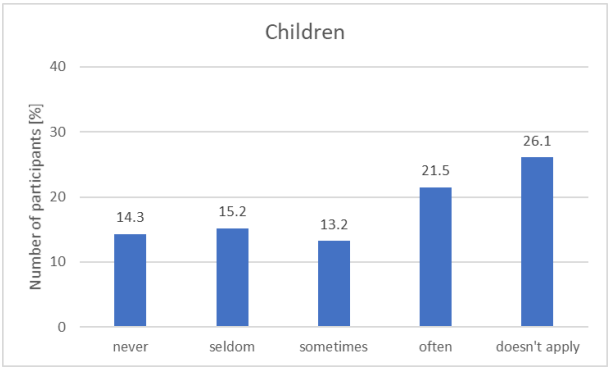

Figure 40: Frequency of time spent with children in green areas

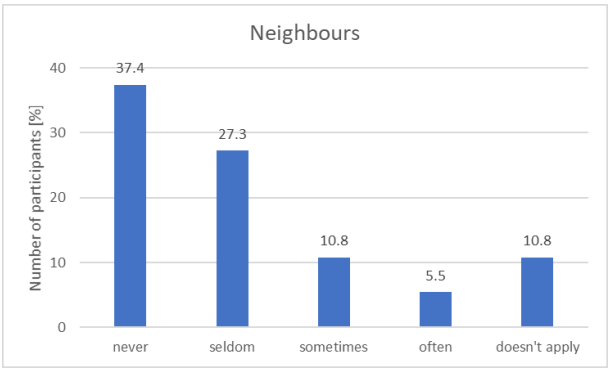

Figure 41: Frequency of time spent with neighbours in green areas

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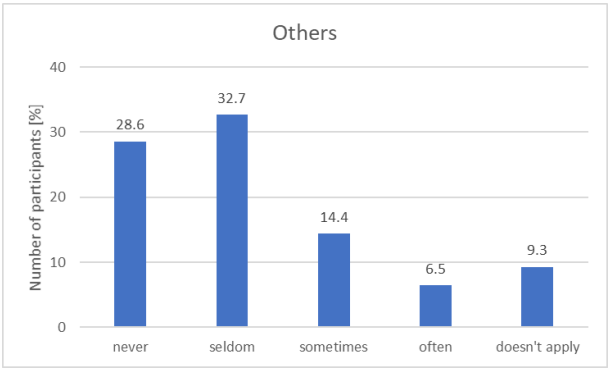

Figure 42: Frequency of time spent with others in green areas

4.4 RATING OF THE AMOUNT OF GREEN AREAS IN THE NEIGHBOURHOOD

Question 10: Generally, about 82% of participants **rate the amount of green** areas in their neighbourhood either as excellent (34.1%; N=316) or good (47.5%; N=441). A significant difference exists between the rating in different sized cities (Chi square = 0.034).

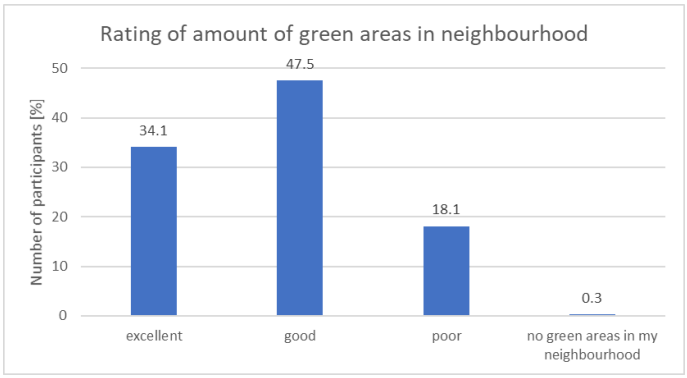

Figure 43: Rating of amount of green areas in neighbourhood

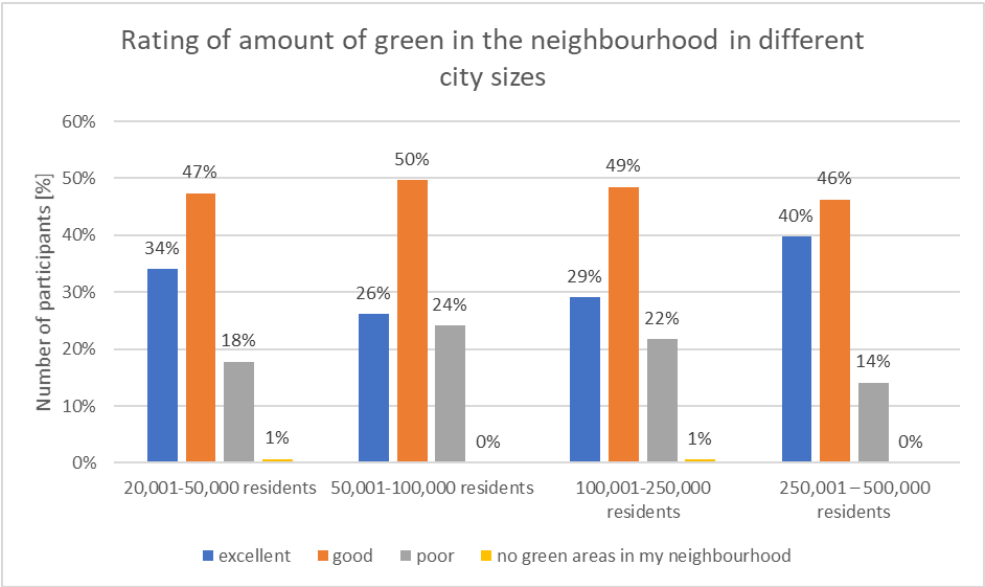

Figure 44: Rating the amount of green by city size (Chi square = 0.034)

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Question 11: Over one third of participants (35.9%; N=335) spend between two and four hours a week in green areas. No significant differences exist between city sizes.

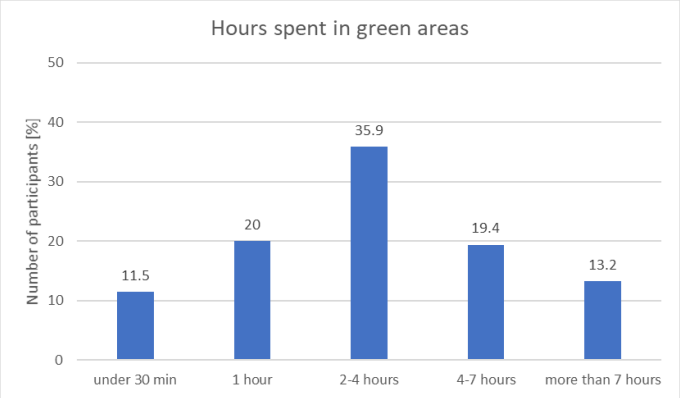

Figure 45: Number of hours spent in green areas per week

5 CLIMATE CHANGE

Question 13: The major opinion of 73,4% of participants was that **climate change can already be perceived**.

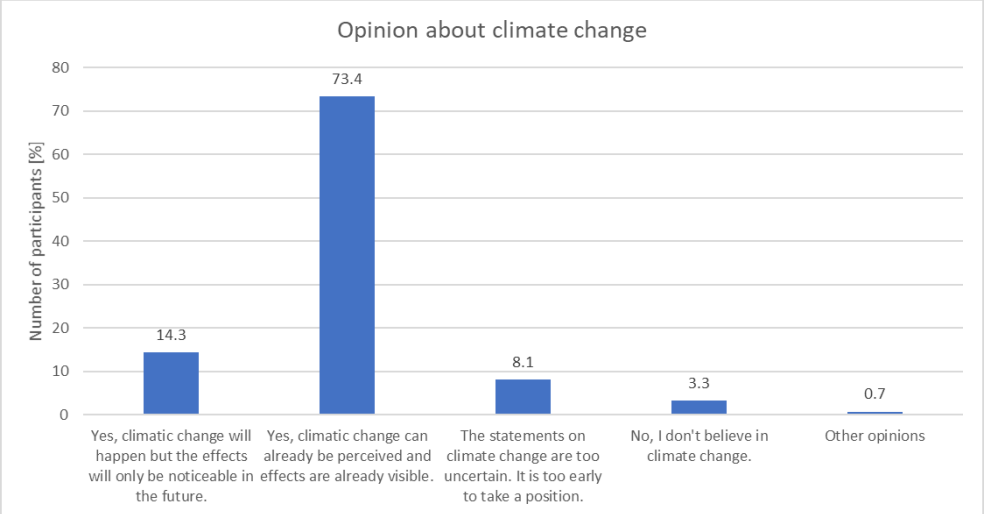

Figure 46: Respondents' opinion about climate change

Other opinions include

- Climate change is happening, but I believe it is due to natural cycles and not just mankind.
- Climate change is a natural part of the Earth's cycle
- We are in a cycle (1000-year cycle) on our planet where the climate is slowly changing.
- Climate change is normal in Earth's evolution and would have happened with or without humans.
- Climate change is real, but it is positive and should be encouraged (more CO2 should be released into the atmosphere).
- Why are the other planets in our Solar System warming up ?
- The changes are here, more drastic every year

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Question 14: Despite this general acceptance of the effects of climate change, only 48.4% of participants (N=452) believe that climate change effects will **occur in their neighbourhood**.

Table 5: Respondents expectation of climate change effects in their neighbourhood

	n	%
No, I don't expect effects by climate change	482	51.6
Yes, I expect the following effects to happen in my neighborhood	452	48.4

Question 14a: Out of 451 participants who proceeded to questions 14a to c, about 82% (N=370) already **experienced heat waves**.

Table 6: Respondents who have experienced heat waves in their neighbourhood

	n	%
No, I never experienced heat waves in my neighbourhood	81	18
Yes, I experienced heat waves already	370	82

Question 14b: On average, participants stated to experience 18.52 days of **heat waves per summer**. The number of reported heat waves (days) ranged from two to 60.

Question 14c: About 60% of the reduced number of participants stated to be **negatively affected by heat waves in their wellbeing**. 10% even stated that heat waves negatively affect their health.

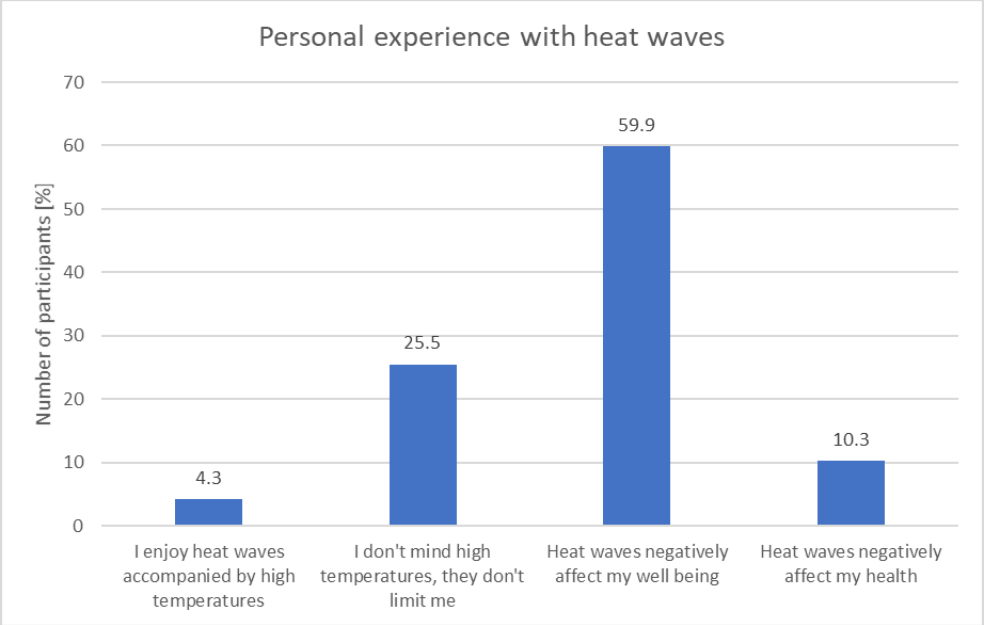

Figure 47: Respondents' personal experience with heat waves

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6 MEASURES AT CITY LEVEL TO COMBAT CLIMATE CHANGE

Question 15: A broad consensus exists regarding the **importance of actively addressing climate change** through strategies on the communal level. About 91% state that it is either very important or important.

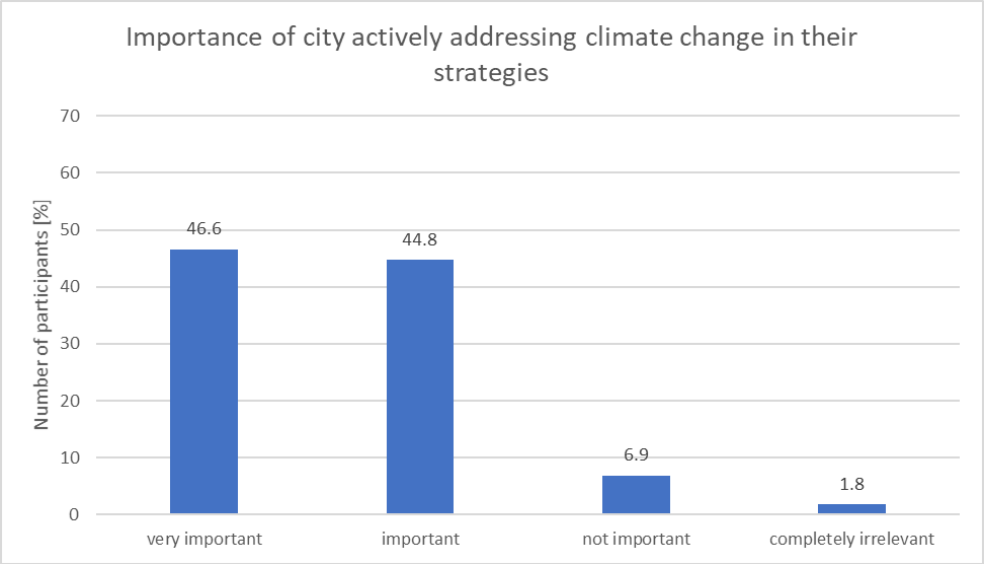

Figure 48: Importance of addressing climate change in strategies at the communal level

Question 16: Regarding the **desired quality of life in the neighbourhood**, participants identified all strategies as almost equally important (Ø between 3.64 and 3.18). Air quality improvement and micro-dust reduction was the most important measure (Ø = 3.64), followed by improving urban climate by fresh air corridors (Ø = 3.51), conserve and increase urban biodiversity (Ø = 3.35) and stormwater management (Ø = 3.33).

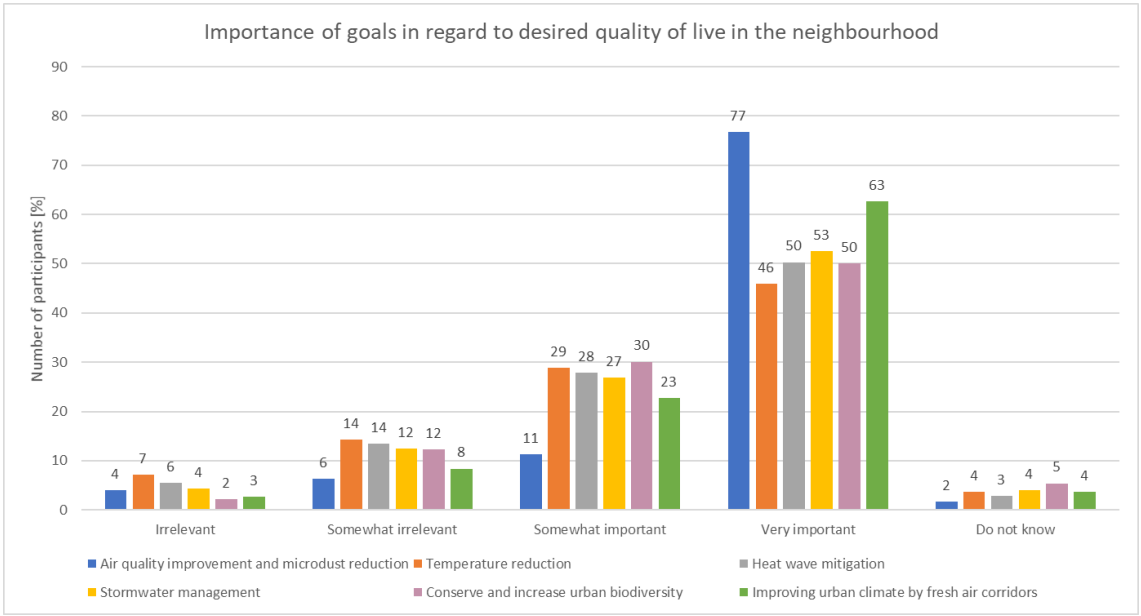

Figure 49: Importance of goals in regard to desired quality of life in their neighbourhood (comparative)

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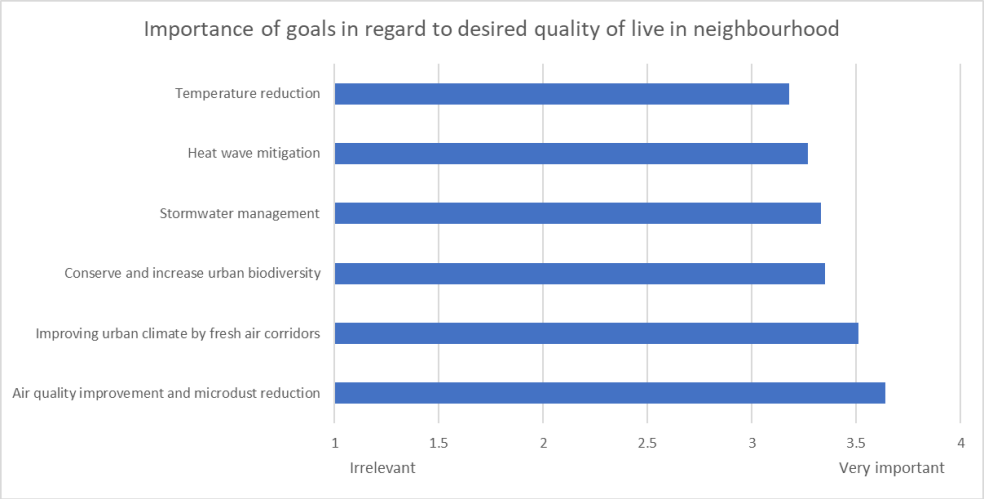

Figure 50: Importance of goals in regard to desired quality of life in their neighbourhood (average)

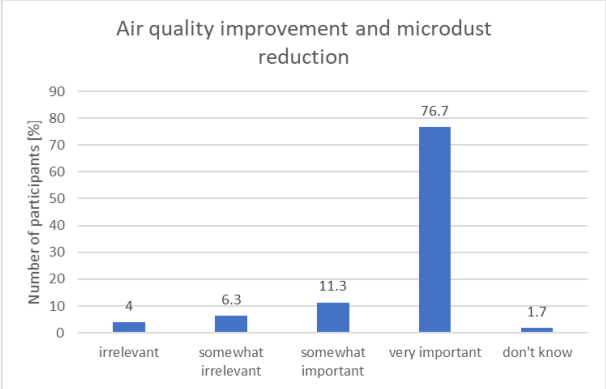

Figure 51: Importance of air quality improvement and microdust reduction

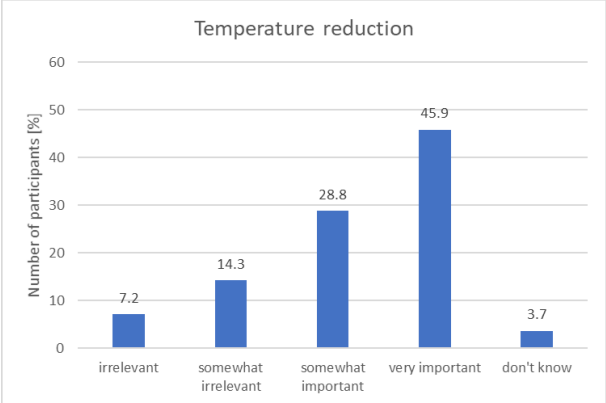

Figure 52: Importance of temperature reduction

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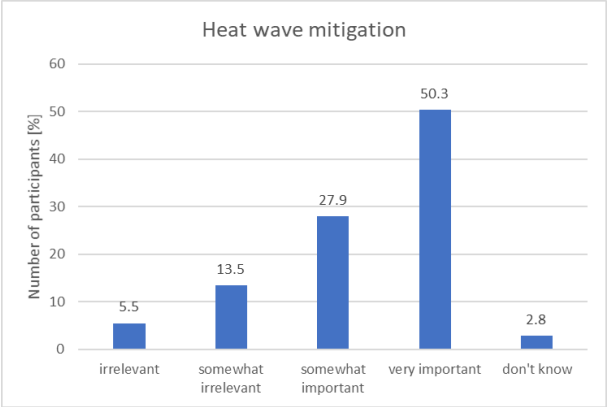

Figure 53: Importance of heat wave mitigation

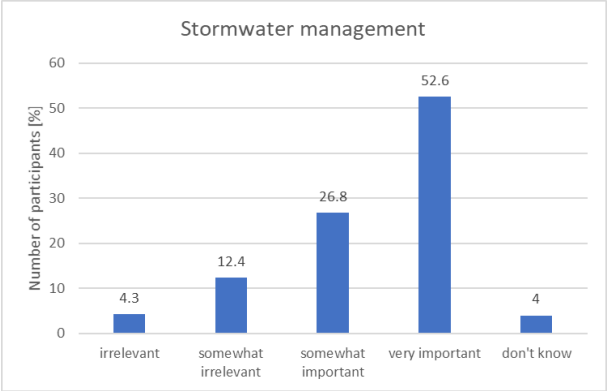

Figure 54: Importance of stormwater management

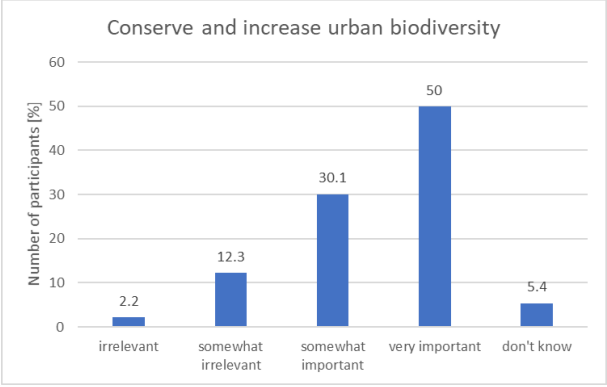

Figure 55: Importance of conserving and increasing urban biodiversity

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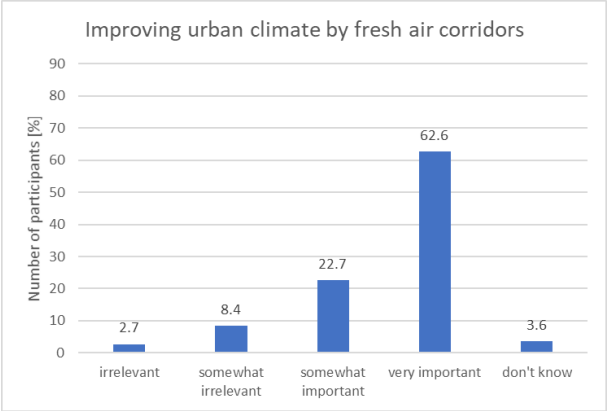

Figure 56: Importance of improving urban climate by fresh air corridors

Significant differences exist between cities regarding the evaluation of **stormwater management** (Chi square = 0.034) and improving urban climate by fresh air corridors (Chi square = 0.006). **Improving urban climate by fresh air corridors** for instance ranges between 78.1% and 89.8% in importance in the cities. The importance of **heat wave mitigation** is comparably high for all cities (between 76.3% and 80.1% ranked it as somewhat or very important). Similarly, **air quality improvement and micro dust reduction** was ranked "very important" from 70.7% to 81% of the participants.

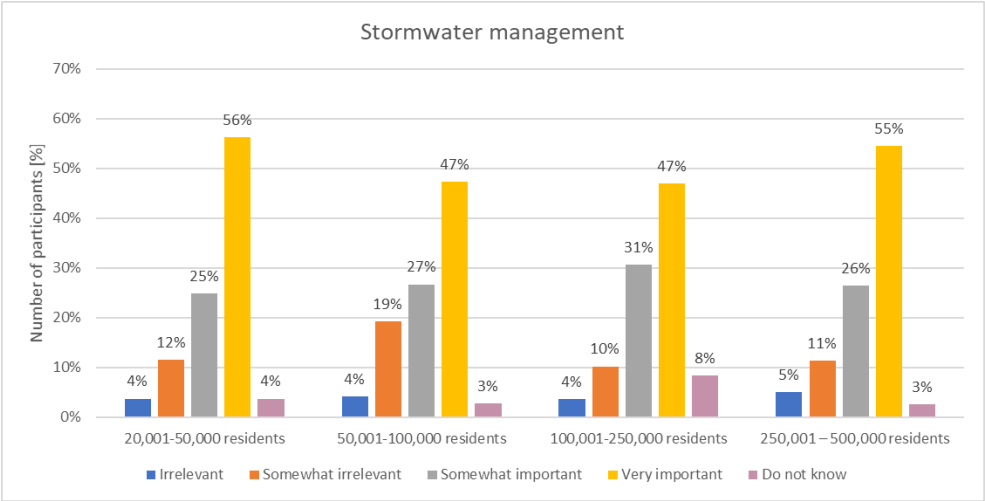

Figure 57: Importance of stormwater management (Chi square = 0.034)

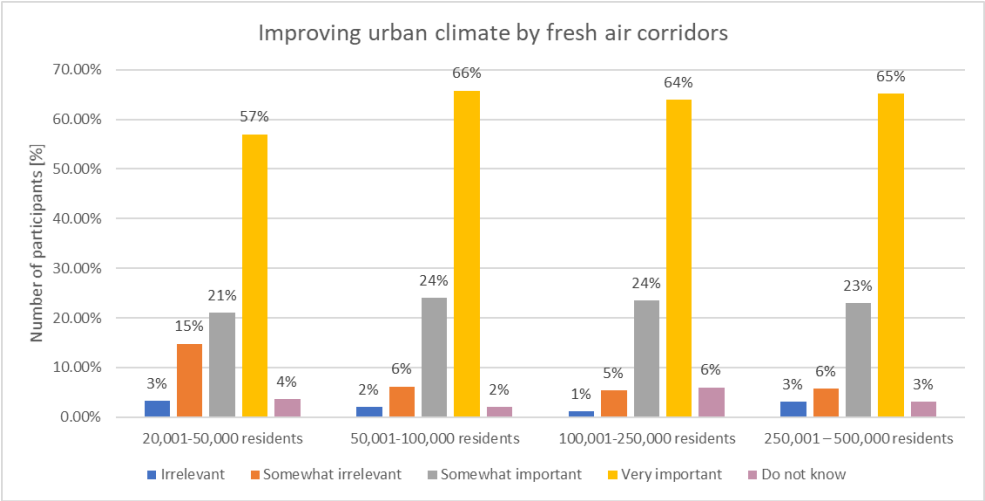

Figure 58: Importance of improving urban climate by fresh air corridors by city size (Chi square = 0.006)

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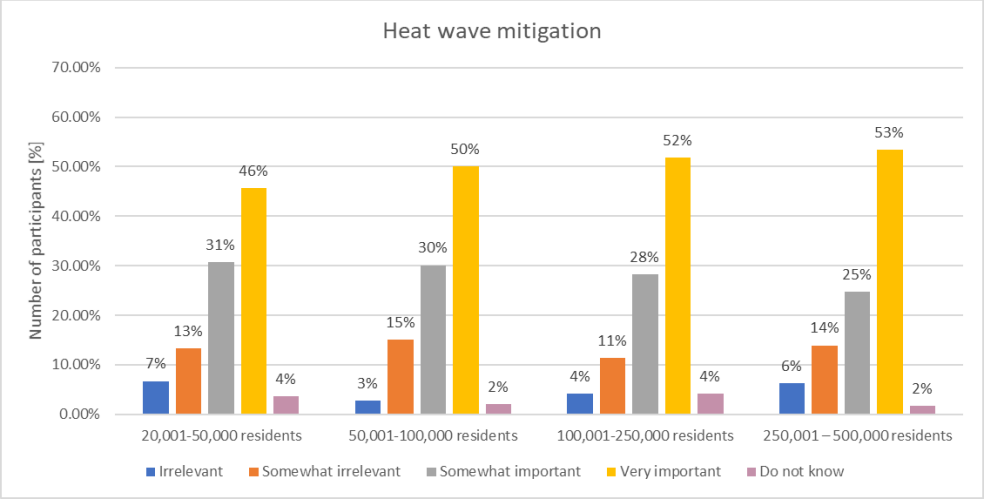

Figure 59: Importance of heat wave mitigation by city size (Chi square = 0.407)

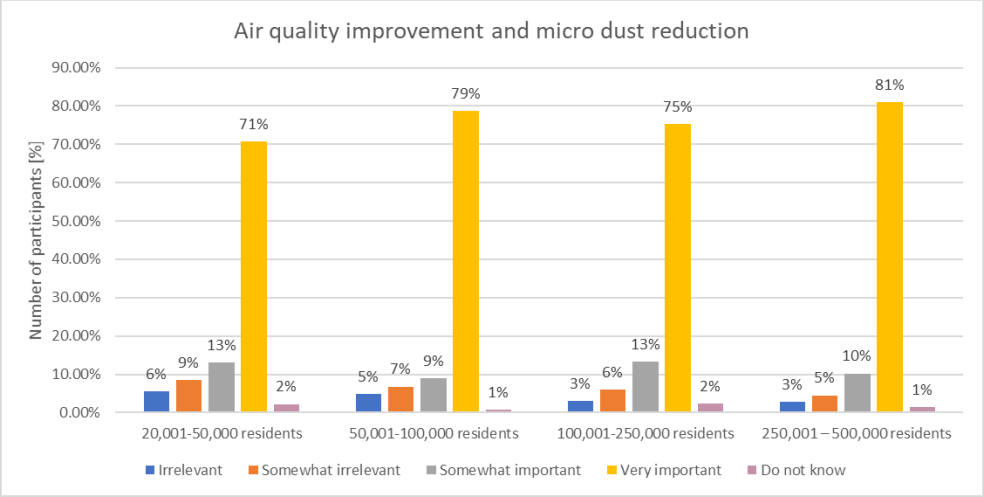

Figure 60: Importance of air quality improvement and microdust reduction by city size (Chi square = 0.309)

Question 17a-d: Overall, **measures to enhance urban greening** were found to be particularly useful in contributing to urban biodiversity and regarding health benefits. All measures were ranked between high and very high for these effects. The measure with the highest impact to urban strategies (biodiversity, aesthetics, water retention and climate change) was the development of urban green corridors (Ø = 3.4 over all effects), followed by street greening by trees and hedges (Ø = 3.38). For each strategy, a different measure was found to be of particular importance: urban green corridors for climate change mitigation and for health benefits, street greening for aesthetic of urban landscapes. For urban biodiversity, street greening by trees and hedges and urban green corridors scored the best (each Ø = 3.37), but all measures were almost of equal importance (Ø = between 3.02 and 3.37).

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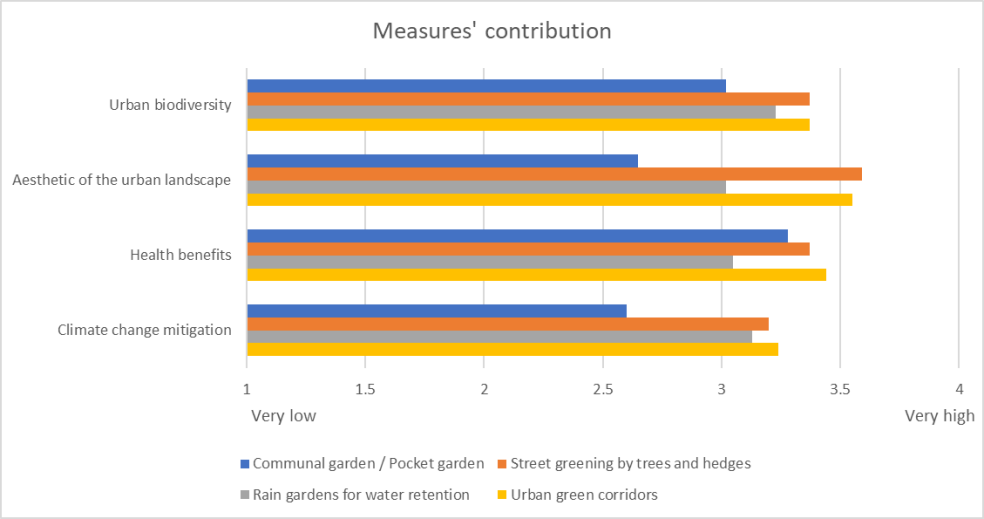

Figure 61: Different NBS contributions to urban strategies

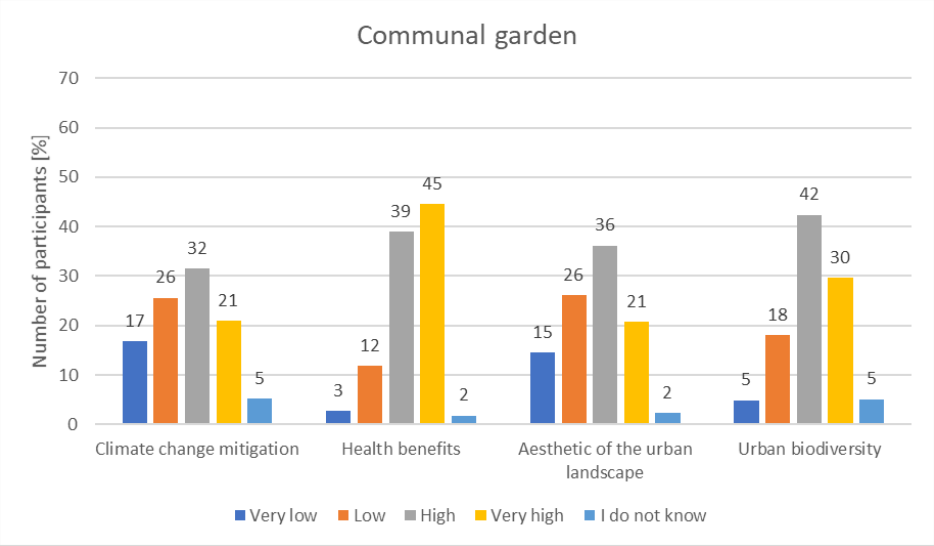

Figure 62: Communal gardens' contributions to urban strategies

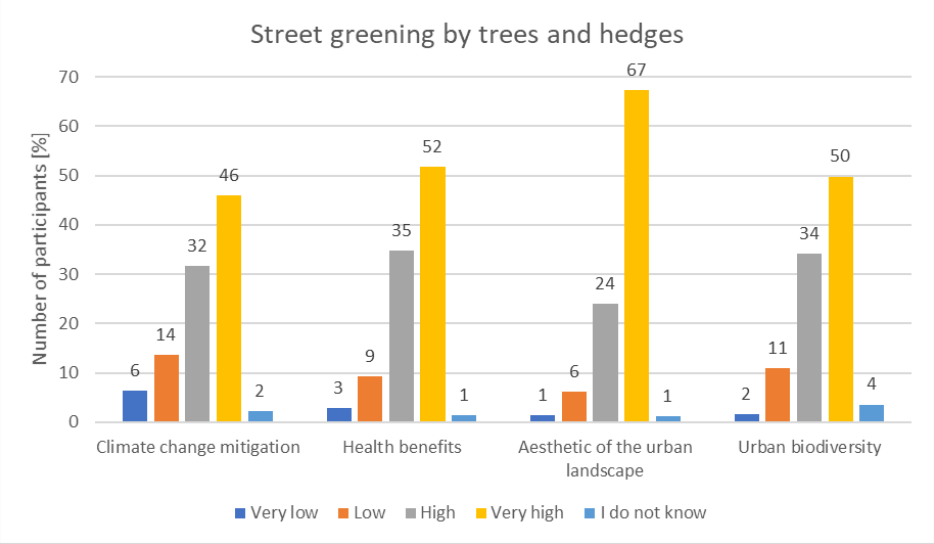

Figure 63: Street greening's contributions to urban strategies

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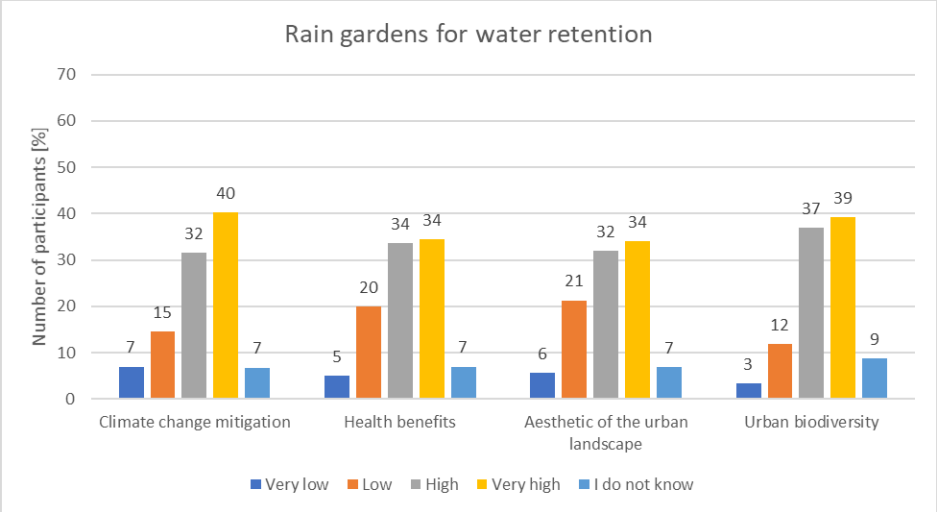

Figure 64: Rain gardens' contributions to urban strategies

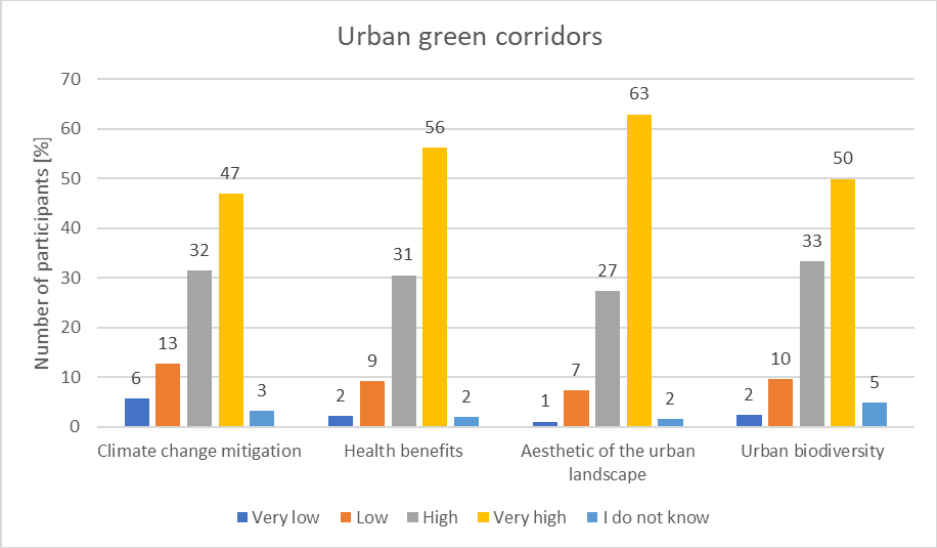

Figure 65: Urban green corridors' contributions to urban strategies

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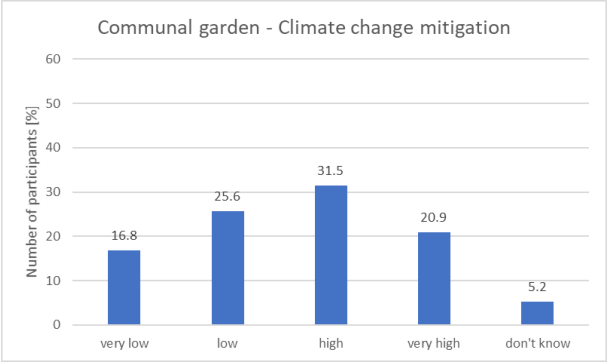

Figure 66: Communal gardens' importance for climate change mitigation

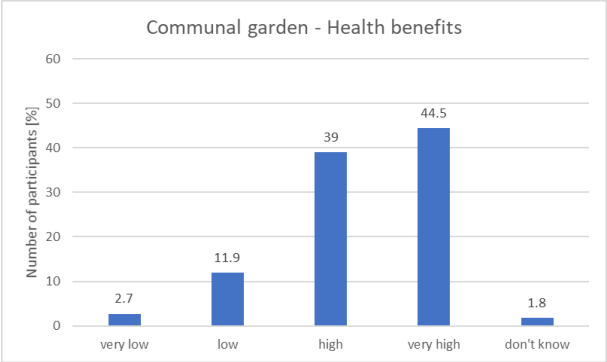

Figure 67: Communal gardens' importance for health benefits

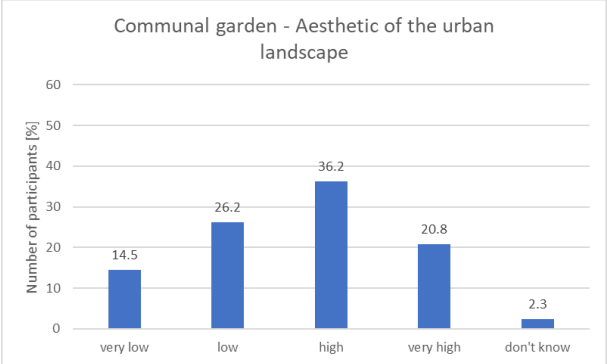

Figure 68: Communal gardens' importance for aesthetic of the urban landscape

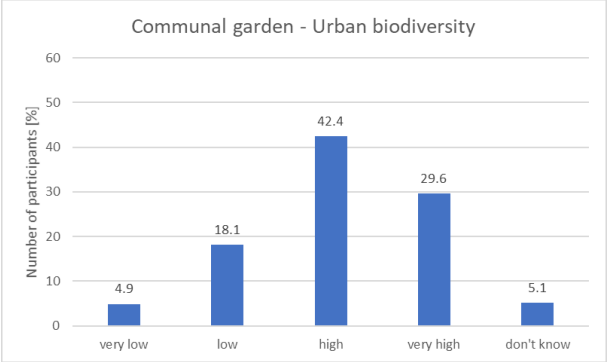

Figure 69: Communal gardens' importance for urban biodiversity

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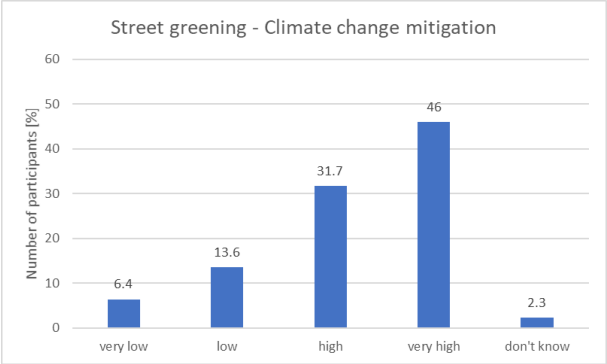

Figure 70: Street greening's importance to climate change mitigation

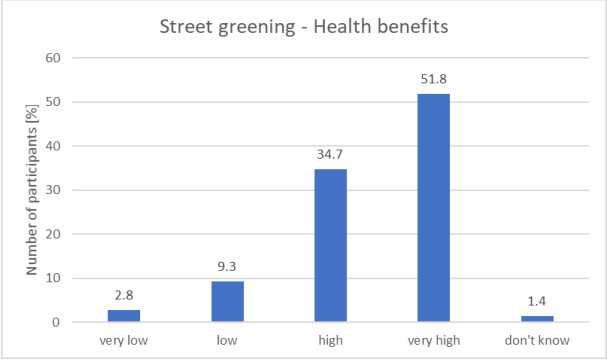

Figure 71: Street greening's importance for health benefits

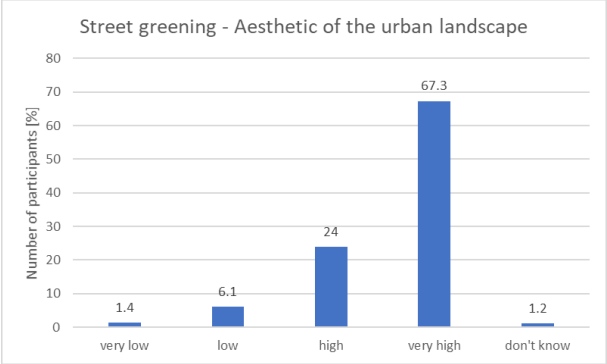

Figure 72: Street greening's importance for aesthetic of the urban landscape

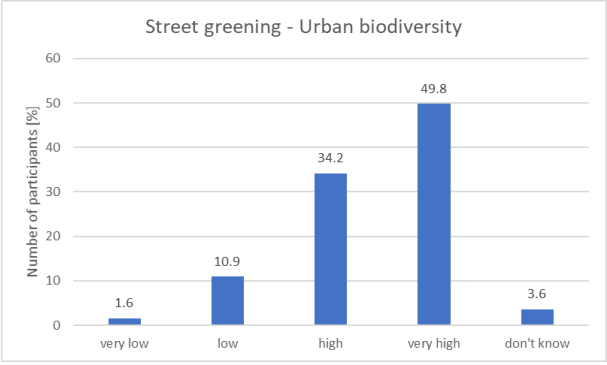

Figure 73: Street greening's importance for urban biodiversity

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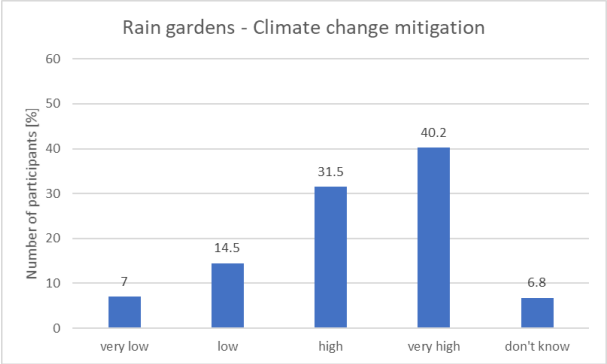

Figure 74: Rain gardens' importance for climate change mitigation

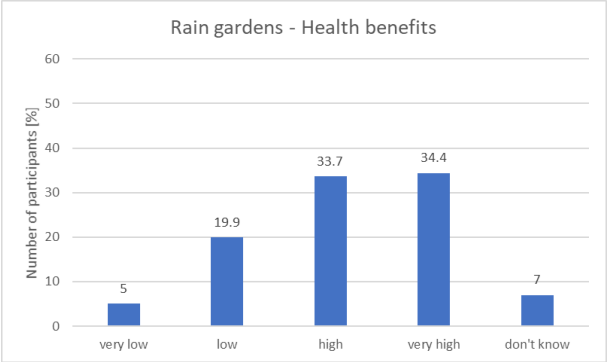

Figure 75: Rain gardens' importance for health benefits

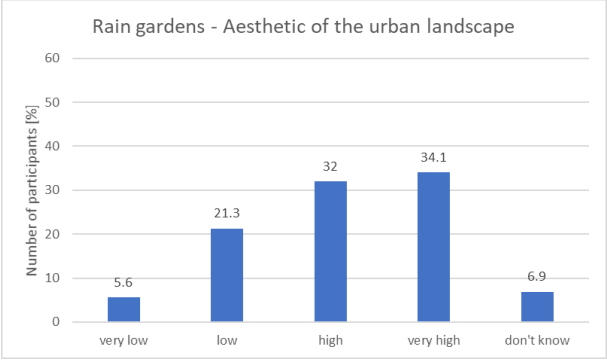

Figure 76: Rain gardens' importance for aesthetic of the urban landscape

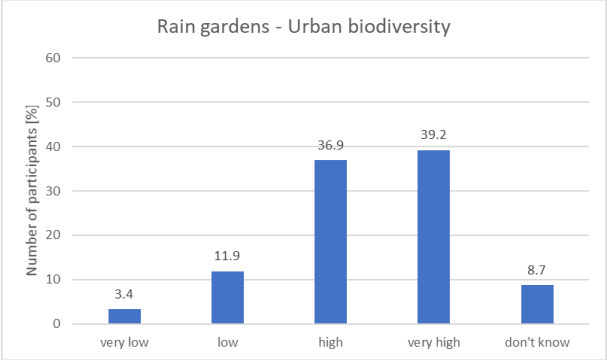

Figure 77: Rain gardens' importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

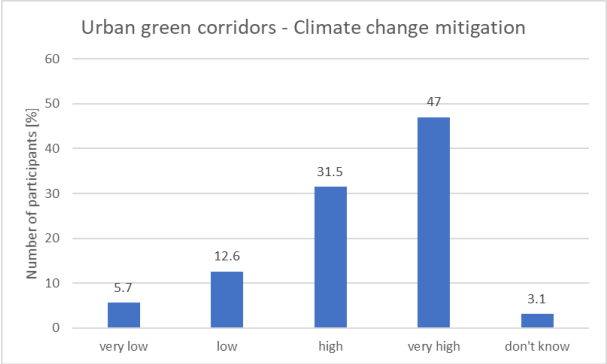

Figure 78: Urban green corridors' importance for climate change mitigation

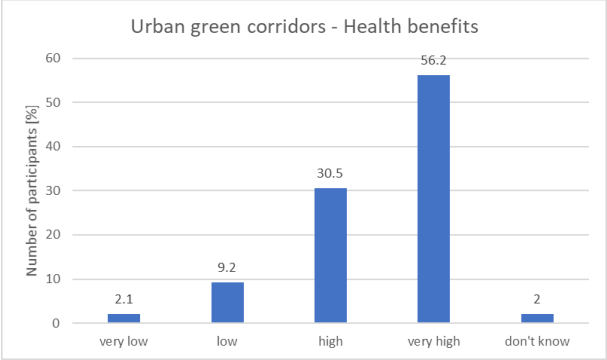

Figure 79: Urban green corridors' importance for health benefits

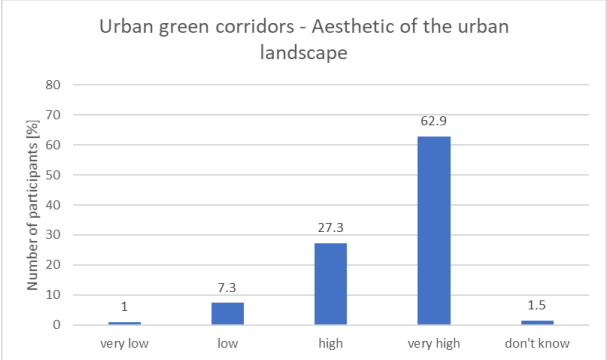

Figure 80: Urban green corridors' importance for aesthetic of the urban landscape

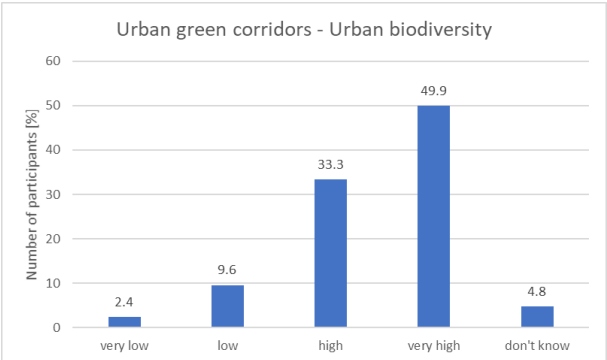

Figure 81: Urban green corridors' importance for urban biodiversity

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Task 4.1. – Survey and Choice Experiment

Draft Survey Analysis – Poland

Responsible partner: **BOKU**

Authors: Magdalena Feilhammer, Alice Wanner, Meike Jungnickel & Ulrike Pröbstl-Haider

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818.

DOCUMENT DETAILS

Title:	Draft survey analysis – Poland
Annexes:	

Work Package:	4
Task:	4.1. – Survey with integrated choice experiment
Deliverable type:	Internal draft analysis of the Polish sample
Lead Partner:	BOKU
Submission date:	22/02/2024

Dissemination level:		
PU	Public	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including Commission Services)	CO

DOCUMENT HISTORY

Version	Date	Partner	Author	Changes
1.	22/02/2024	BOKU	Feilhammer, Wanner, Jungnickel & Pröbstl-Haider	1st draft

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

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1 SAMPLE DESCRIPTION – DEMOGRAPHIC INFORMATION

N = 1021

The sample consists of approximately 52% females and 48% males (N=1012).

Table 1: Sample demographics - gender

	n	%
Female	522	51.6
Male	489	48.3
Diverse	0	0
Prefer not to say	1	0.1

The average **age** of the sample is 39.95 years (N=1012). The age range is between 18 and 76 years.

The **level of education** is high with 36% having a Master's degree (N=371).

Table 2: Sample demographics - education

	n	%
Master's Degree	371	36.4
Trade/technical/vocational training	277	27.2
Secondary school (high school degree or equivalent)	194	19.0
Bachelor's Degree	152	14.9
Doctorate	11	1.1
Primary	10	1.0
prefer not to say	4	0.4

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2 LIVING ARRANGEMENTS

Question 1: Participants are fairly evenly distributed over the middle **city size** categories. About 12% (N=120) and 13% (N=137) of participants live in the smallest and the largest category, respectively.

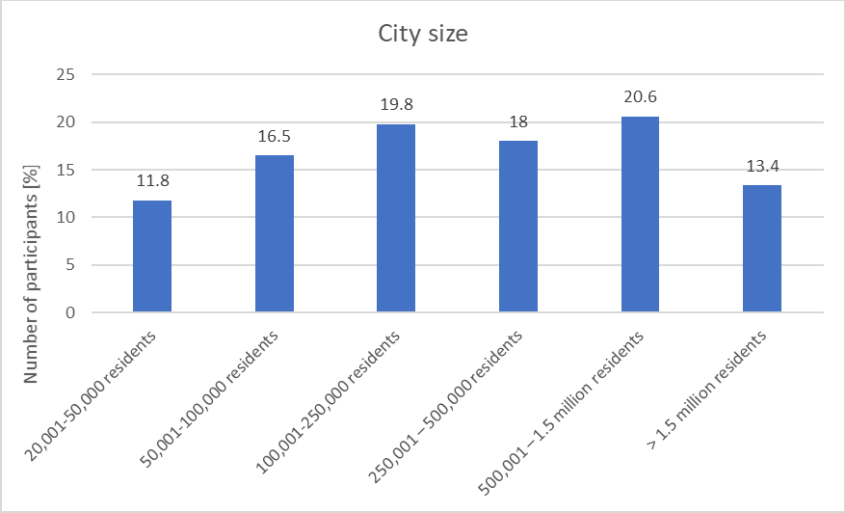

Figure 1: Participants by city size

Question 1a: About 50% (N=510) live in the **city centre**, followed by urban districts (N=461; 45.2%). Approximately 5% (N=50) live in suburbs.

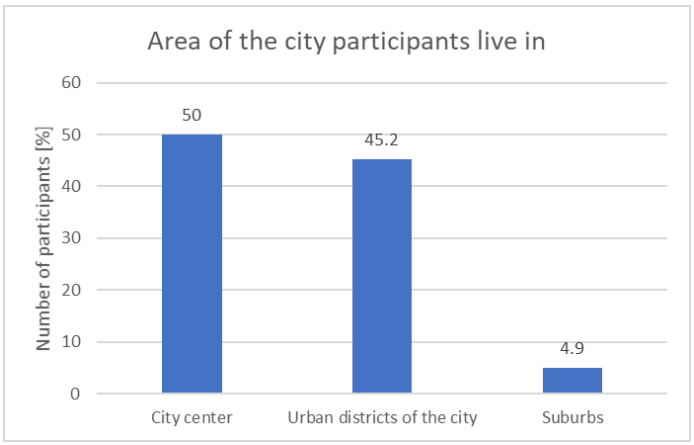

Figure 2: Area of the city participants live in

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Question 21: The **number of people in the households** is evenly distributed.

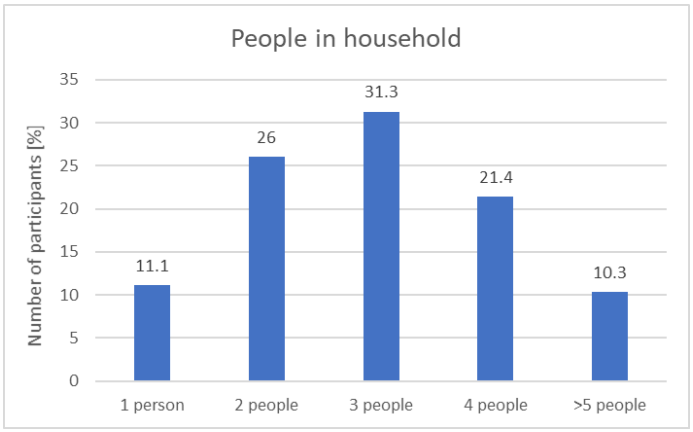

Figure 3: Number of people in household

Question 22: 49.1% of respondents reported **children under the age of 18** living in the household (N=1021).

Table 3: Respondents living with children under the age of 18

	n	%
Children under 18	501	49.1
No children under 18	520	50.9

Question 25: The **monthly household net income** lies primarily under 2000€ (N=733).

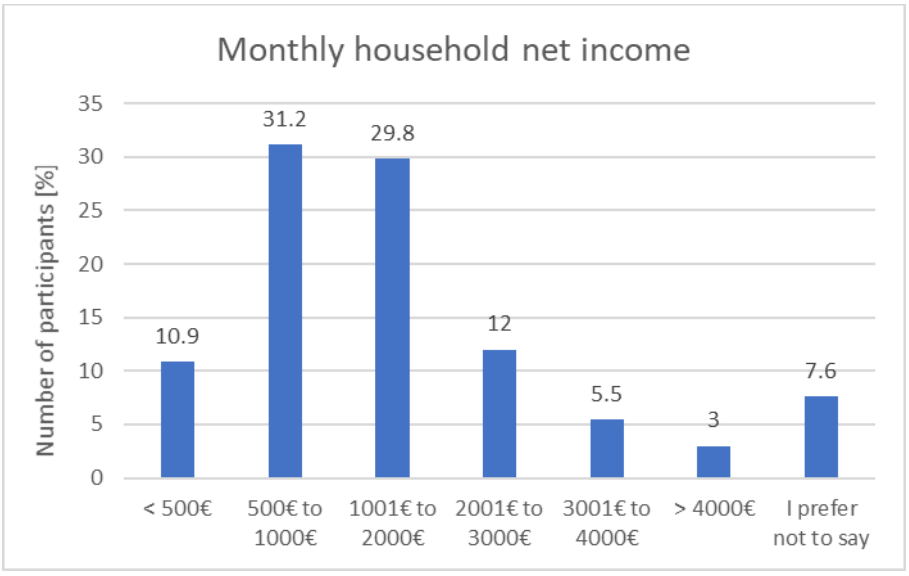

Figure 4: Monthly household net income

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Question 23: Compared to the number of people living in the household, the **number of cars** available in the household is rather low. About 15% (N=157) do not own a car and over 80% own one or two cars. Only 3 participants own more than 5 cars.

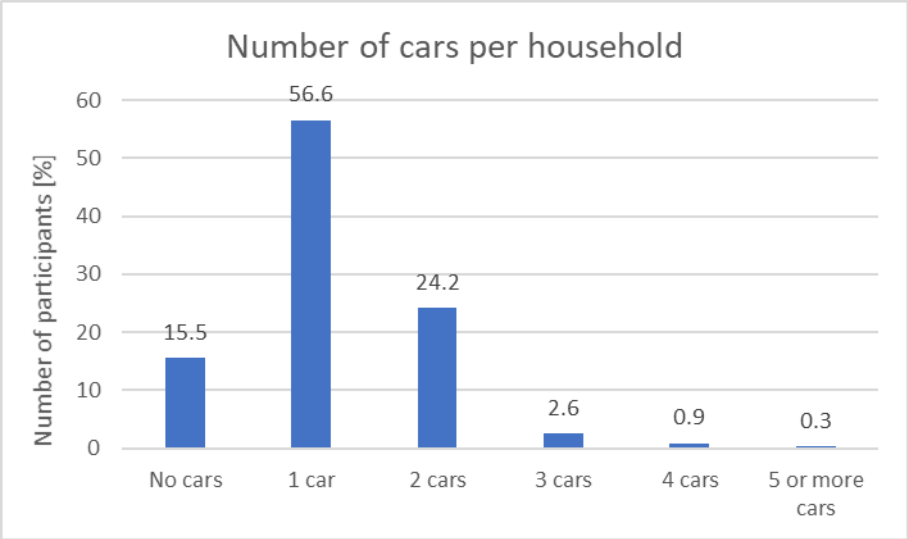

Figure 5: Number of cars per household

The **size of the city** significantly determines the number of cars owned by participants (Chi square = 0.037). Participants living in cities with 250.001 to 500.000 residents own the highest number of cars.

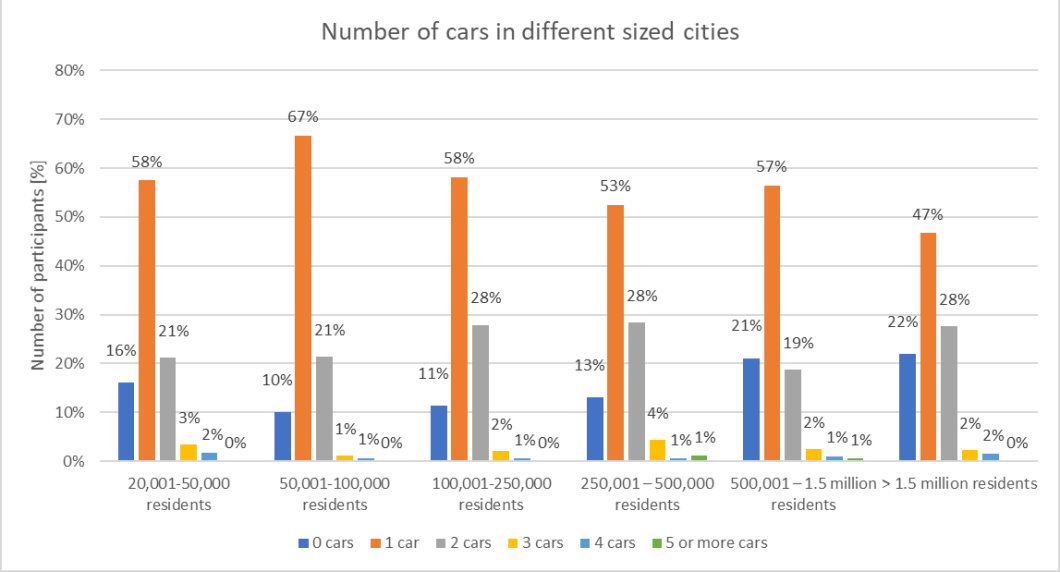

Figure 6: Number of cars perhousehold by city size (Chi square = 0.037)

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3 NEIGHBOURHOOD

Question 2: Half of all participants' neighbourhoods are characterized by closed blocks or clusters of buildings (50.1%; N=499), followed by tower blocks (23.4%; N=233) and detached houses (18%, N=179).

The **major building height** is between three and four storeys (48.8%; N=486).

About 16% of the participants' houses were **built after 2010**. The majority (62%) of houses were built between 1970 (N=381; 37.4%) and 2009 (N=249; 24.4%).

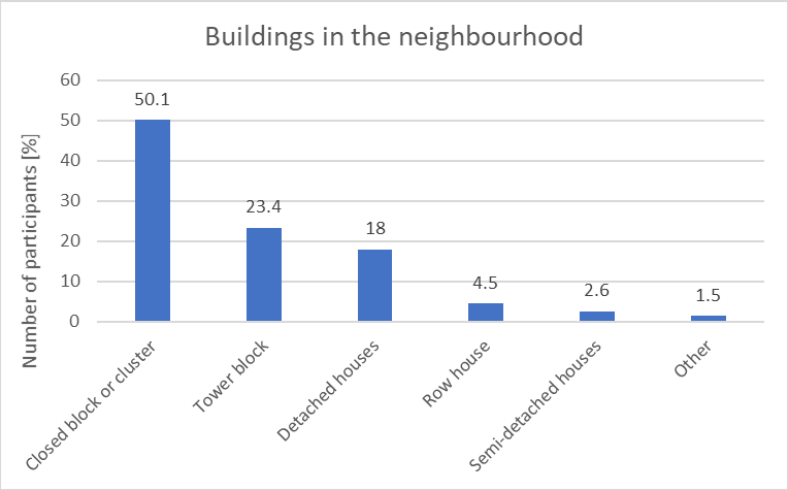

Figure 7: Types of buildings characterising the neighbourhood

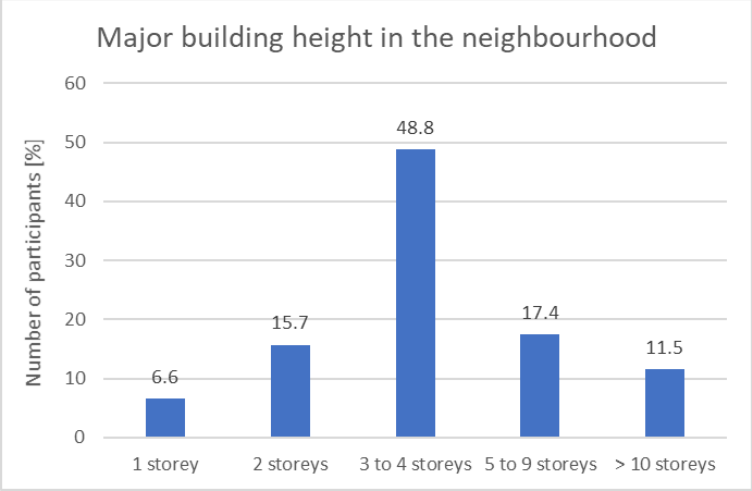

Figure 8: Predominant building height in the neighbourhood

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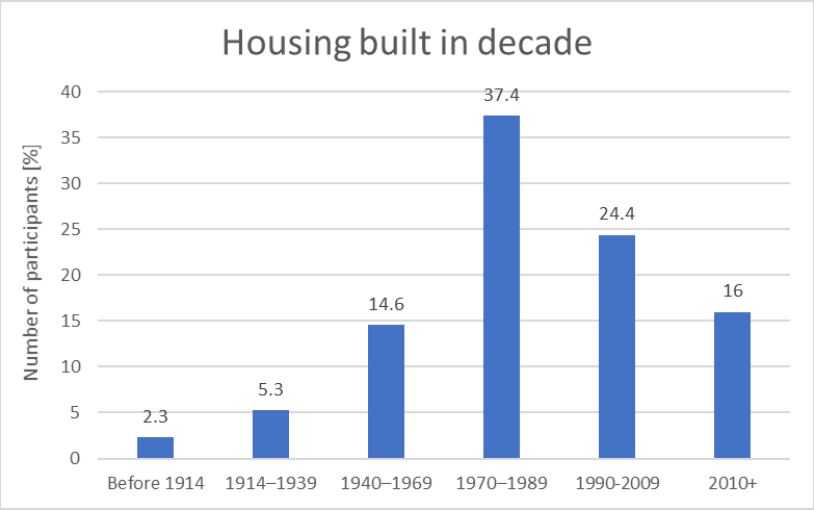

Figure 9: Decade in which housing was built

Question 4: The most **dominant elements of the neighbourhoods** are private balconies and terraces (Ø = 2.24) and parking and traffic areas (Ø = 2.24). Community gardens (Ø = 1.58), public green or park with recreational space (Ø = 1.83) and private gardens (Ø = 1.61) are less dominant.

Figure 10: Description of neighbourhood surroundings

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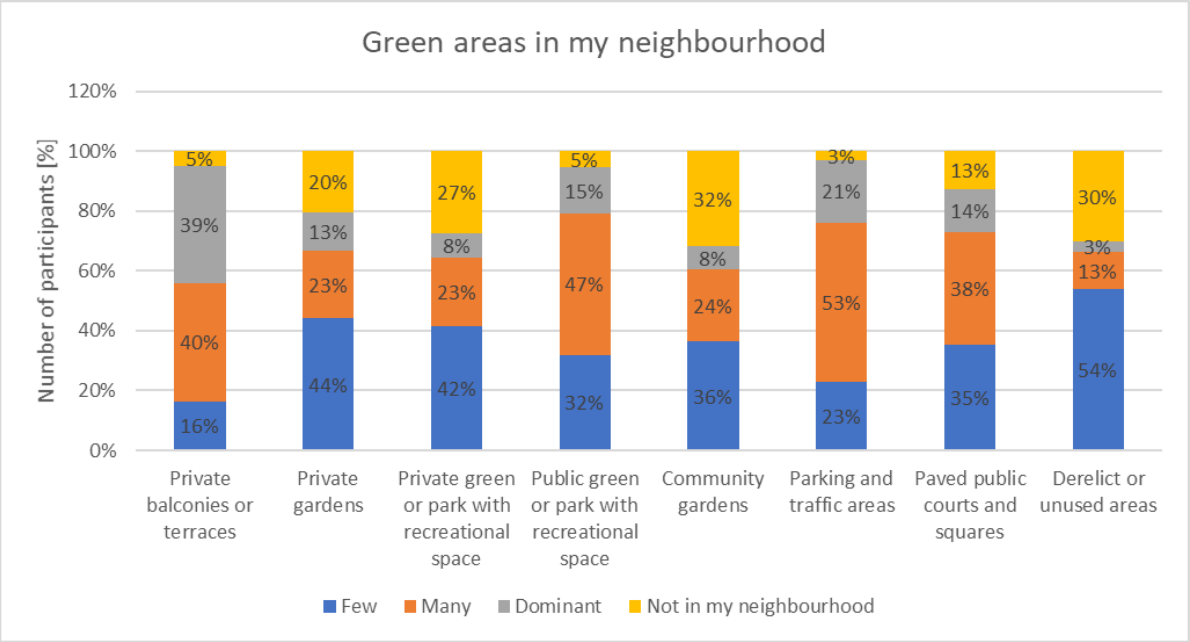

Figure 11: Green areas in my neighbourhood

Question 6: **Parking arrangements** in the neighbourhood are mostly public on-street parking (71.2%; N=727) or private parking (39.4%; N=402) (multiple answers possible).

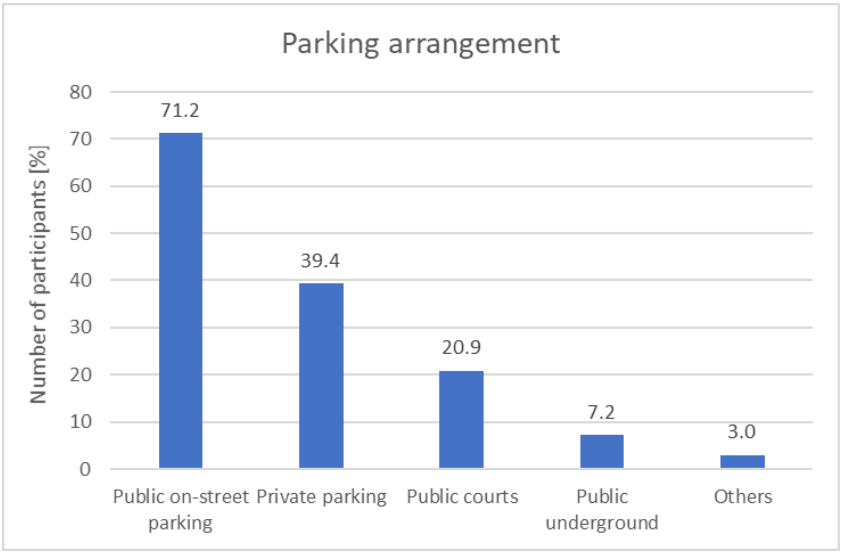

Figure 12: Parking arrangements in my neighbourhood

Question 7: The **walking distance to relevant infrastructure** is shortest (0-5 min walking) to slow public transport and longest (further away than 15 min walking) to participants' place of employment. For about 47%, fast public transport is not available.

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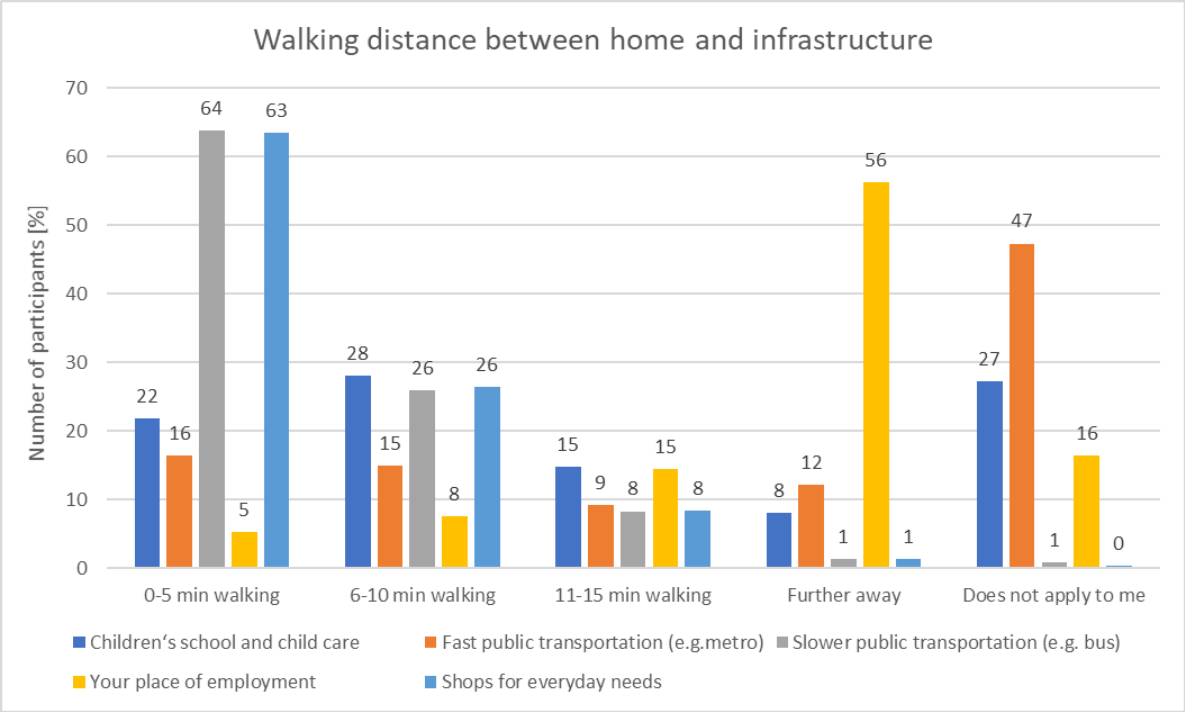

Figure 13: Walking distance between home and types of infrastructure

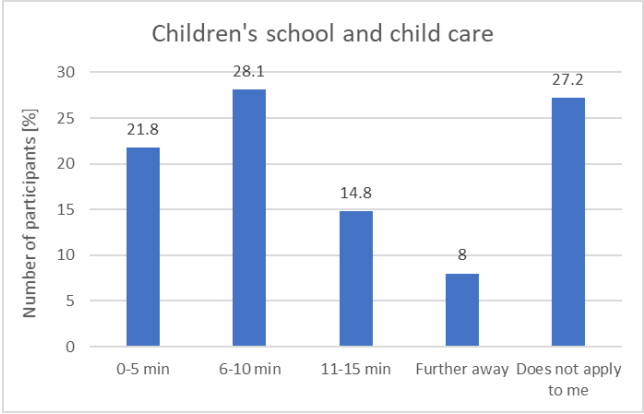

Figure 14: Walking distance to children's school and child care

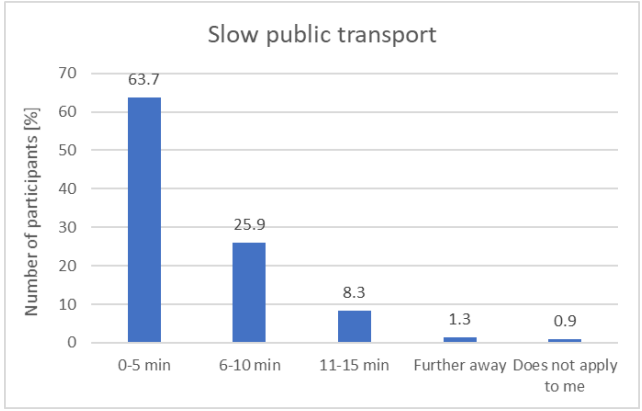

Figure 15: Walking distance to slow public transportation

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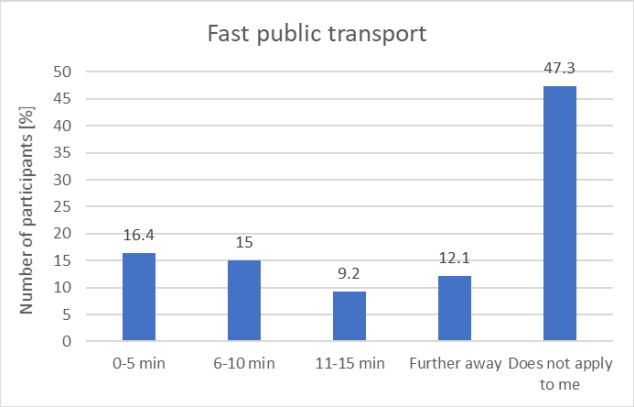

Figure 16: Walking distance to fast public transportation

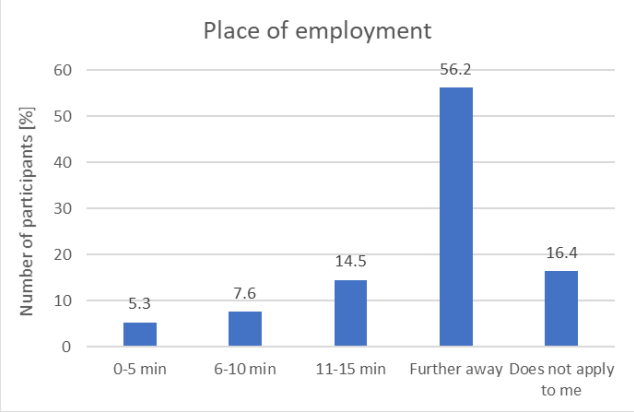

Figure 17: Walking distance to place of employment

Figure 18: Walking distance to shops for daily needs

Significant differences emerge in the comparison of walking distances in the city sizes.

Fast public transport is often not available. Up to the second largest city size, over 40% indicate that fast transport does not apply to them. Fast public transport is significantly less available for participants from small and medium-sized cities (Chi square = <0.001).

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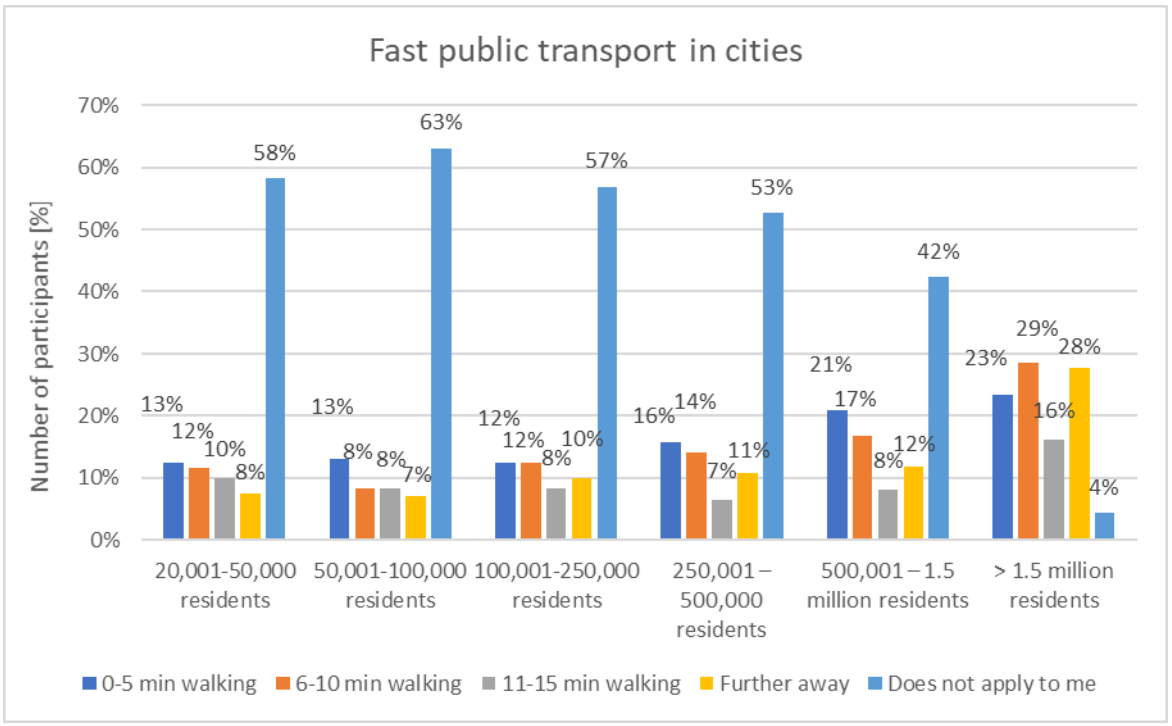

Figure 19: Walking distance to fast public transport by city size (Chi square = < 0.001)

Slow public transport is frequently available in all cities with a significantly higher availability in larger cities (Chi square = 0.011).

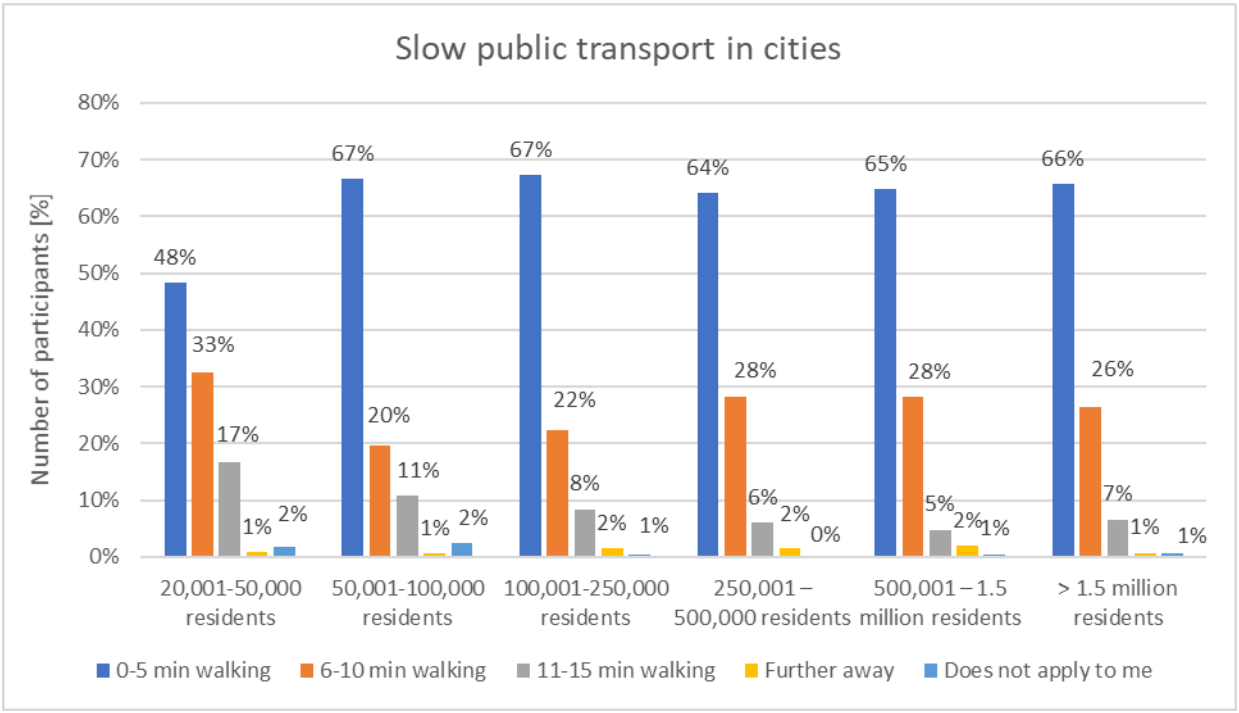

Figure 20: Walking minutes to slow public transport by city size (Chi square = 0.011)

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The distance to the **place of employment** differs significantly between city sizes (Chi square = < 0.001). For almost half of all participants (46% at least) their place of employment is further away than 15 minutes by foot. This number increases to 72% in the largest city category.

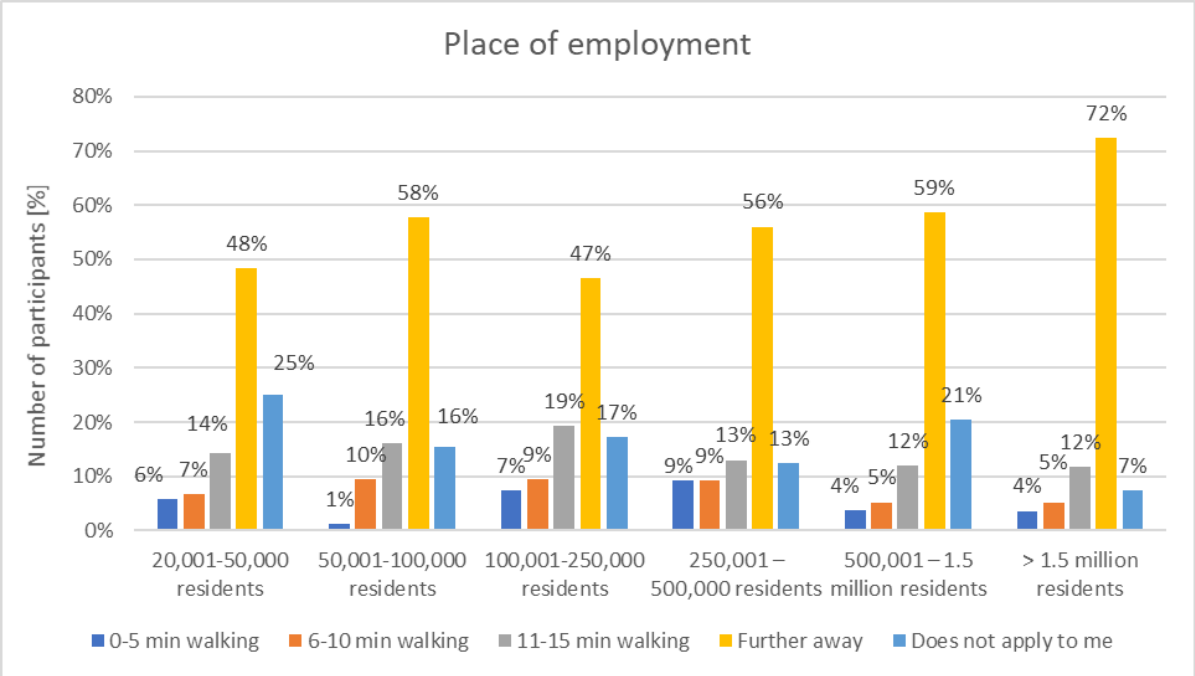

Figure 21: Walking distance to place of employment by city size (Chi square = 0.001)

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The distance to shops for everyday needs also differ significantly between the city sizes (Chi square = 0.012), despite the differences being subtle in the figure. Interestingly, at least 60% of participants live in a short walking distance to shops.

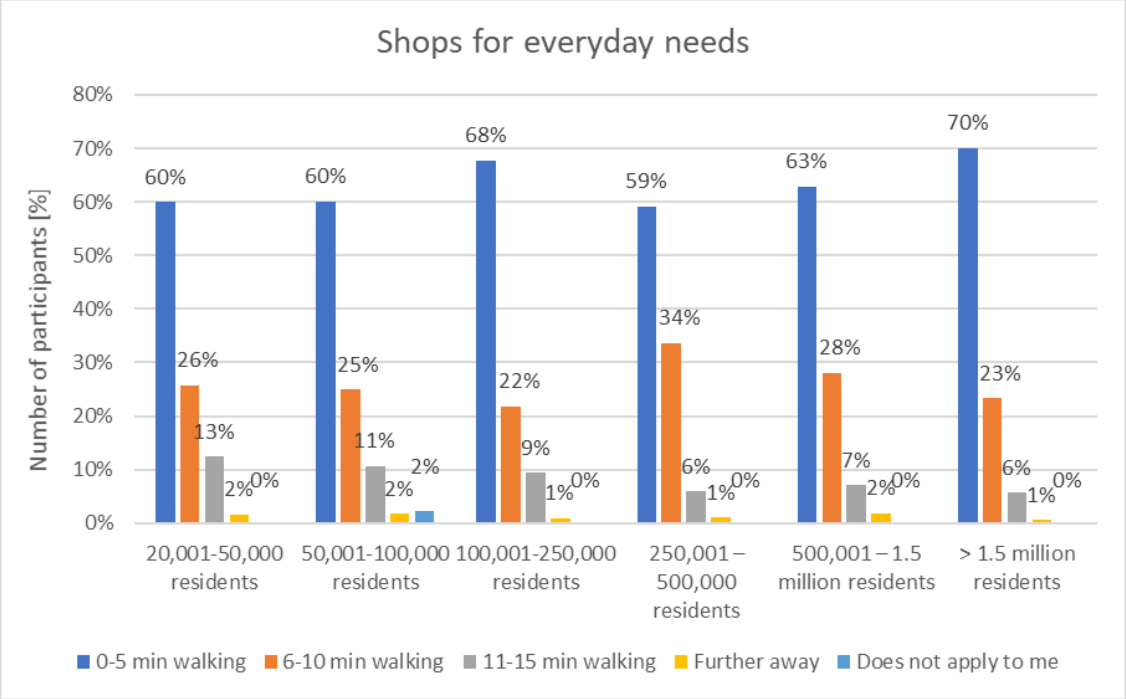

Figure 22: Walking distance to shops for everyday needs by city size (Chi square = 0.012)

Question 12: If participants could select the type of infrastructure, they would want to live close to, almost 70% (N=704) stated that they would choose green areas, followed by their place of employment (40%; N=410) and shops for everyday needs (34%; N=346).

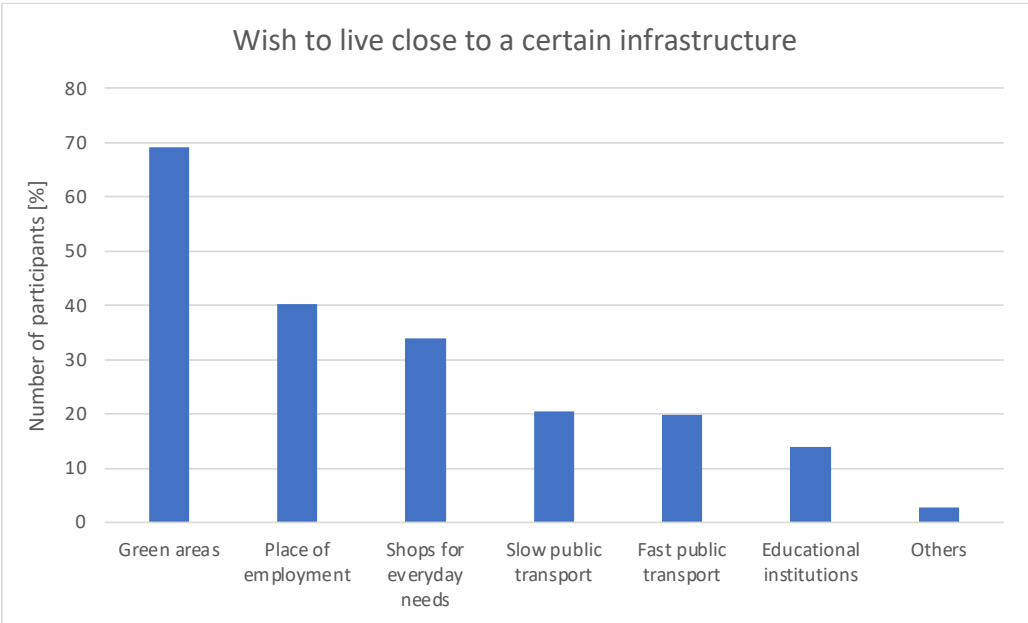

Figure 23: Infrastructure respondents wish to live close to

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Other infrastructure, which participants wish to live close are included in Table 4**Error! Reference source not found.**:

Table 4: Other infrastructure respondents wish to live close to

Infrastructure	**n**
Water (lake, sea, river)	5
Satisfied (everything is close)	4
Away from city	3
Cinema	1
City center	1
Cottage	1
Forests	1
Gym	1
Jungle	1
Medical clinic	1
Pole dance studio	1
Quiet environment	1
Sports	1
Swimming pool	1

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4 GREEN SPACES

4.1 WALKING DISTANCES TO DIFFERENT GREEN SPACES IN THE NEIGHBOURHOOD

Question 8: For over 70% of all participants, street greening is less than 5 walking minutes away, making it the most accessible green infrastructure. Playgrounds and parks follow. Those three types of green spaces are also rarely not applicable to participants.

Urban forests and derelict areas are either not applicable or further than 15 minutes away.

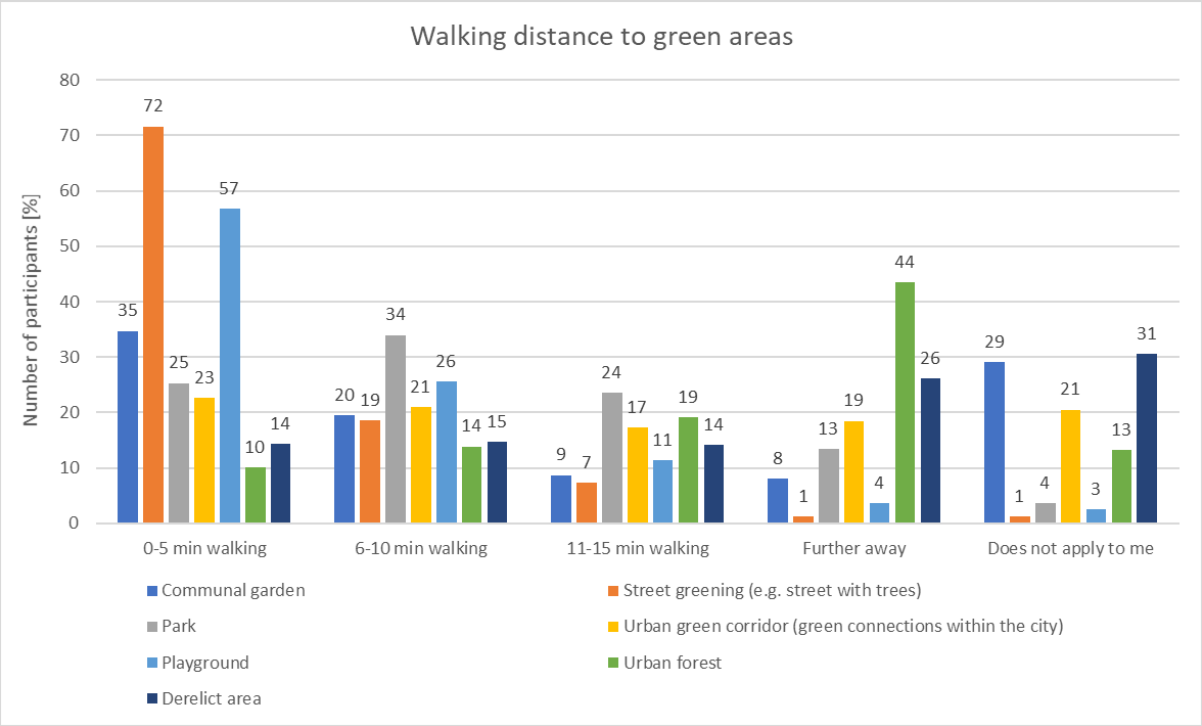

Figure 24: Walking distance to different green areas

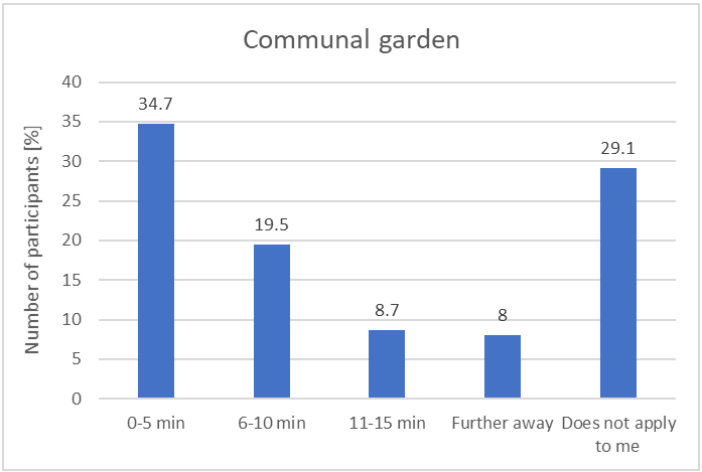

Figure 25: Walking distance to a communal garden

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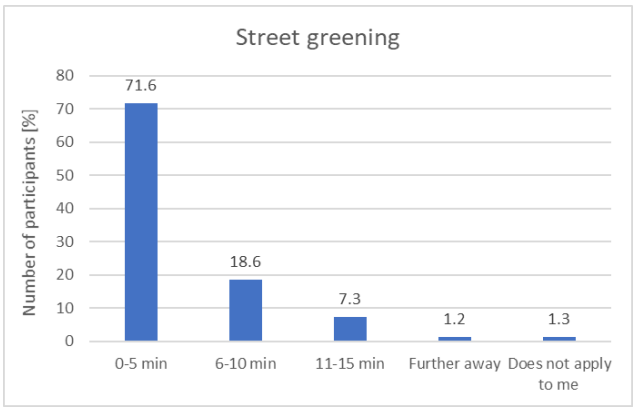

Figure 26: Walking distance to street greening

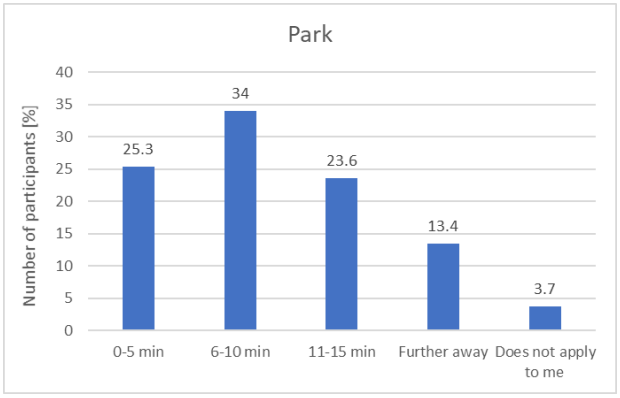

Figure 27: Walking distance to a park

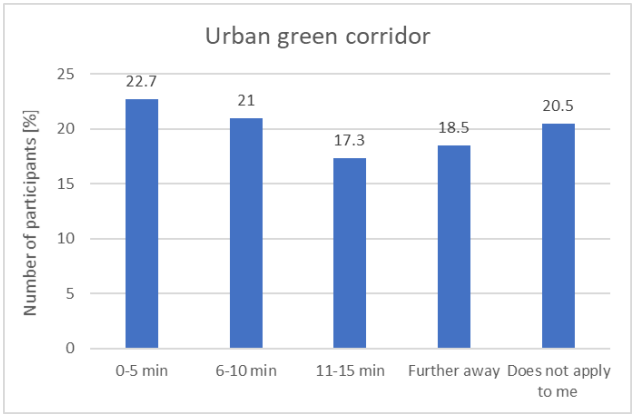

Figure 28: Walking distance to an urban green corridor

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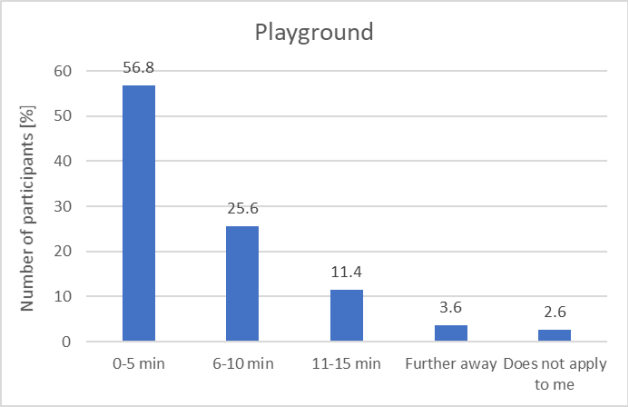

Figure 29: Walking distance to a playground

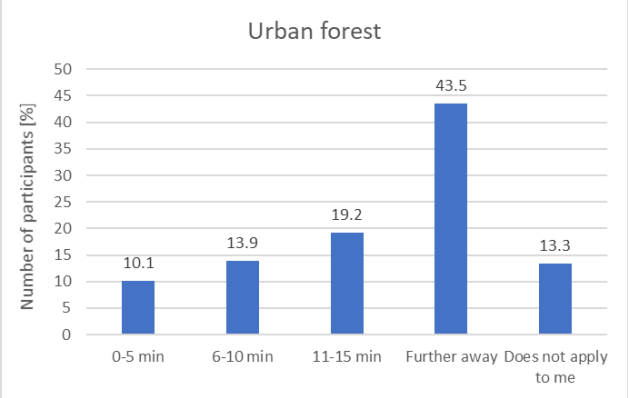

Figure 30: Walking distance to an urban forest

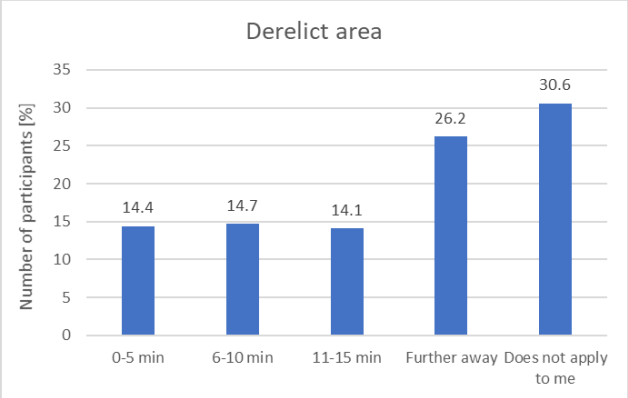

Figure 31: Walking distance to a derelict area

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4.2 WALKING DISTANCE TO DIFFERENT GREEN SPACES IN DIFFERENT CITY SIZES

Significant differences exist between the walking distance in cities to parks (Chi square = 0.003), street greening (Chi square = 0.008) and playgrounds (Chi square = 0.029). **Parks** are quickly accessible in all cities but tend to be further away, the larger the city size. **Street greening** is easily accessible in all cities. In smaller cities, this infrastructure tends to be slightly further away. **Playgrounds** are also in a short walking distance in all cities, but seem to be further away in larger cities.

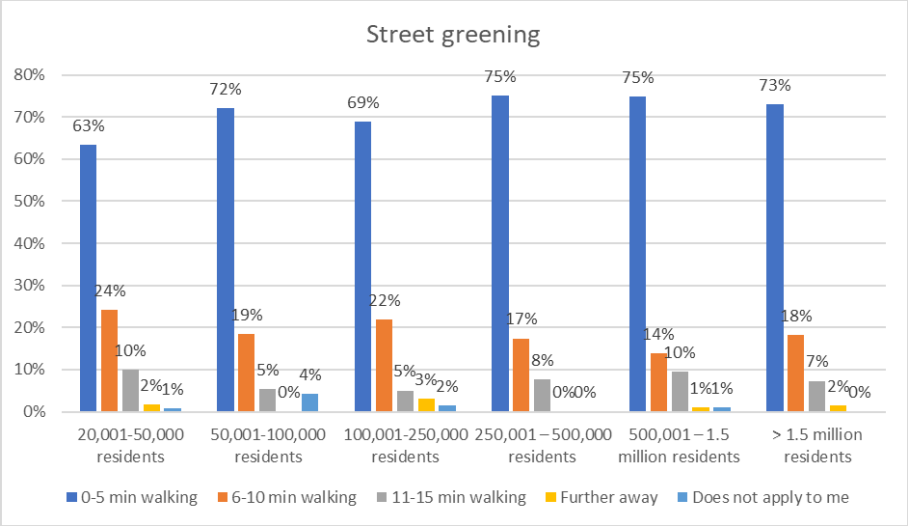

Figure 32: Walking distance to street greening by city size (Chi square = 0.008)

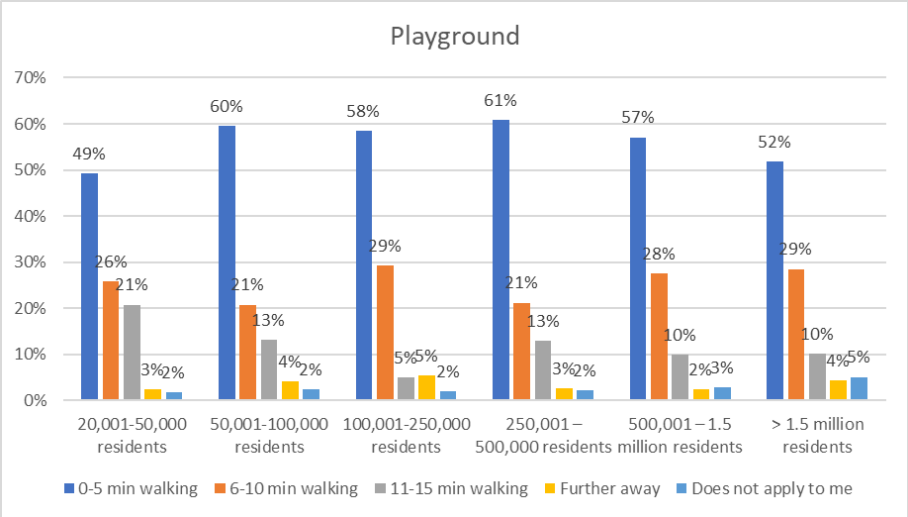

Figure 33: Walking distance to a playground by city size (Chi square = 0.029)

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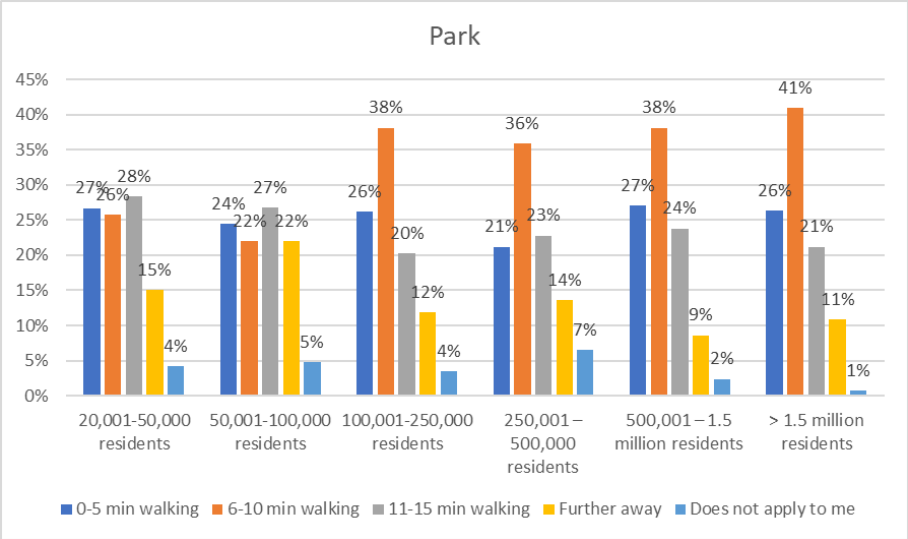

Figure 34: Walking distance to a park by city size (Chi square = 0.003)

4.3 COMPANIONSHIP AT GREEN AREAS IN THE NEIGHBOURHOOD

Question 9: Participants usually spend time with their partner (Ø = 3.22), children (Ø =3.08) and friends (Ø = 2.72) at green areas. Spending time with neighbours (Ø = 1.82) is not very common and received the "never" category more often than others. Over 65% of participants state that going to green areas with "others" does not apply to them.

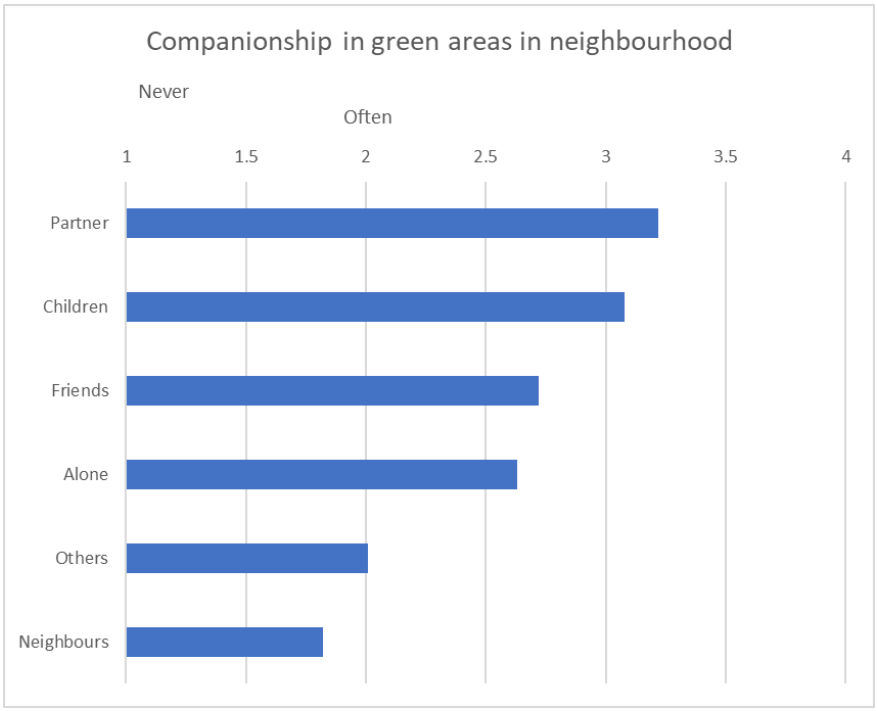

Figure 35: Companionship in green areas

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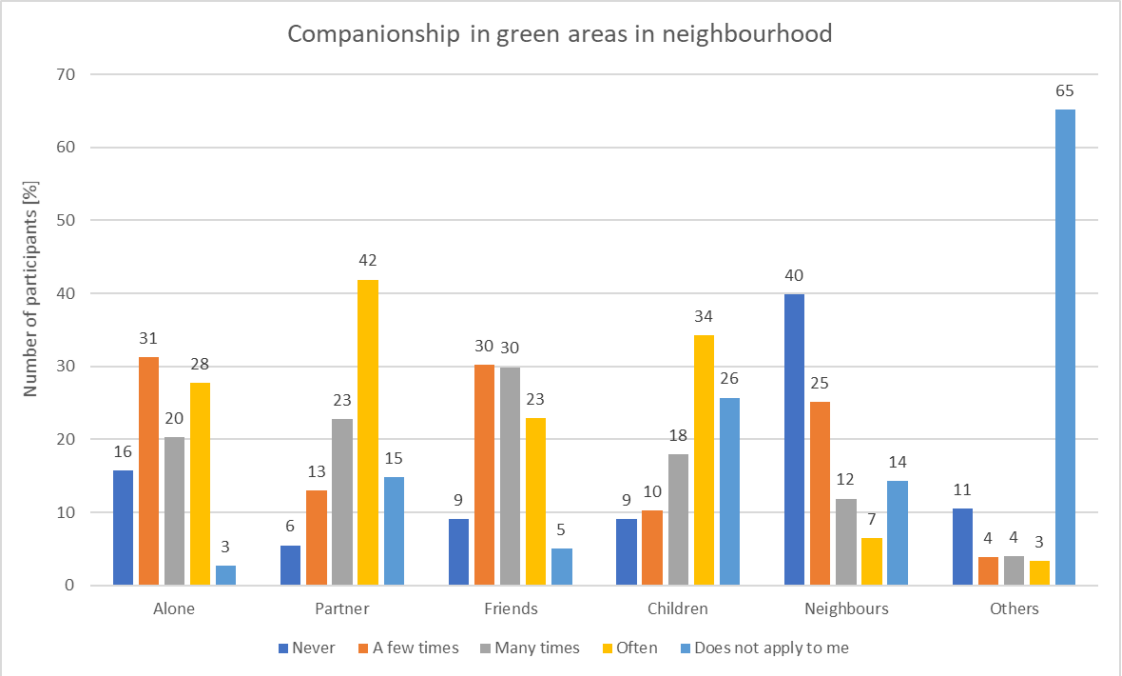

Figure 36: Frequency of types of companionship in green areas

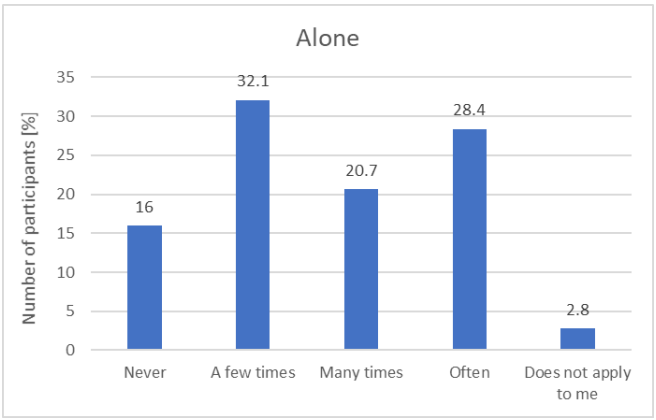

Figure 37: Frequency of time spent alone in green areas

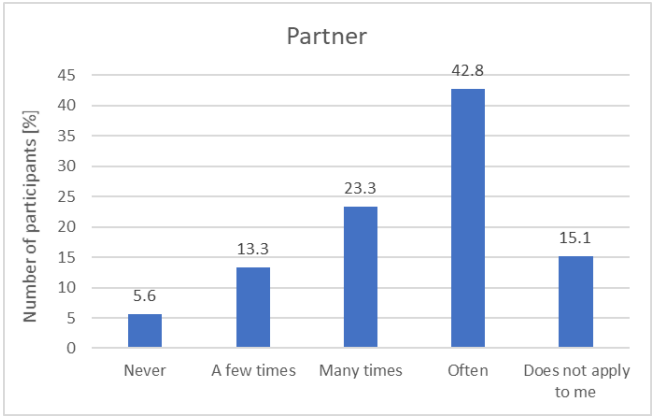

Figure 38: Frequency of time spent with partner in green areas

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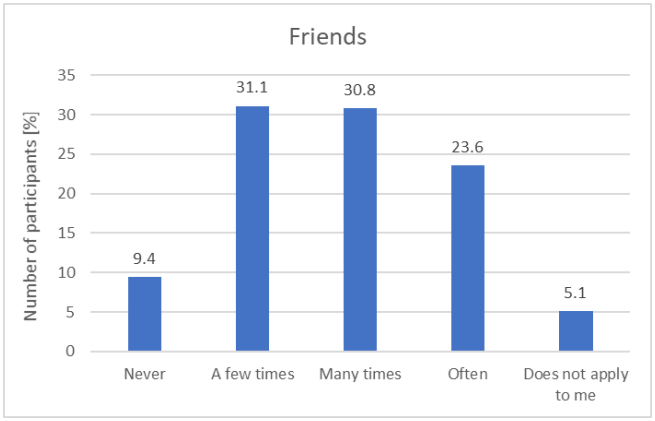

Figure 39: Frequency of time spent with friends in green areas

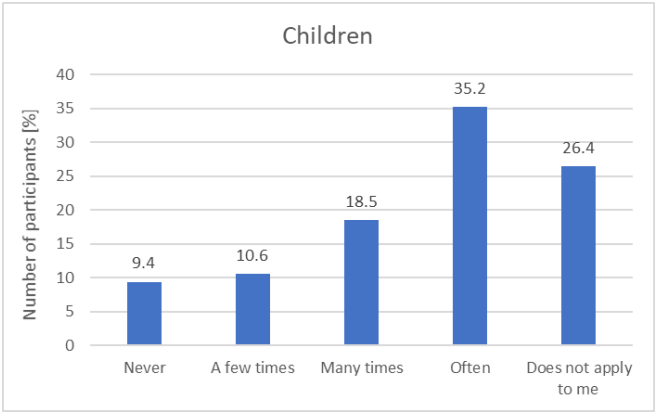

Figure 40: Frequency of time spent with children in green areas

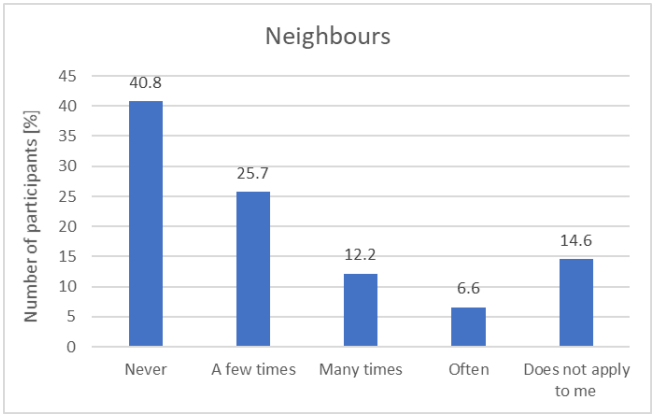

Figure 41: Frequency of time spent with neighbours in green areas

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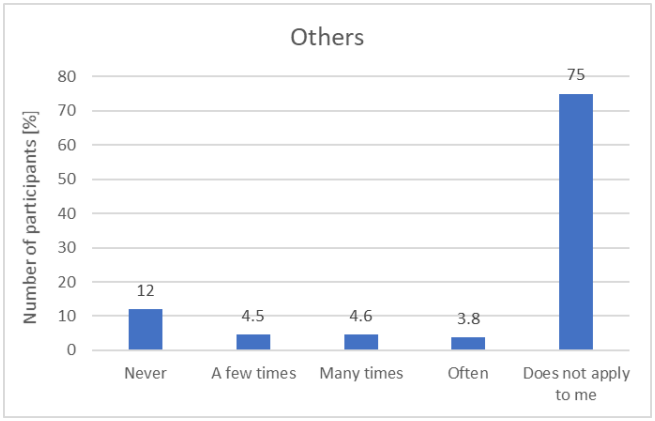

Figure 42: Frequency of time spent with others in green areas

4.4 RATING OF THE AMOUNT OF GREEN AREAS IN THE NEIGHBOURHOOD

Question 10: Generally, about 70% of participants **rate the amount of green** areas in their neighbourhood either as excellent (16%; N=158) or good (56%; N=572). No significant difference exists between the rating in different sized cities.

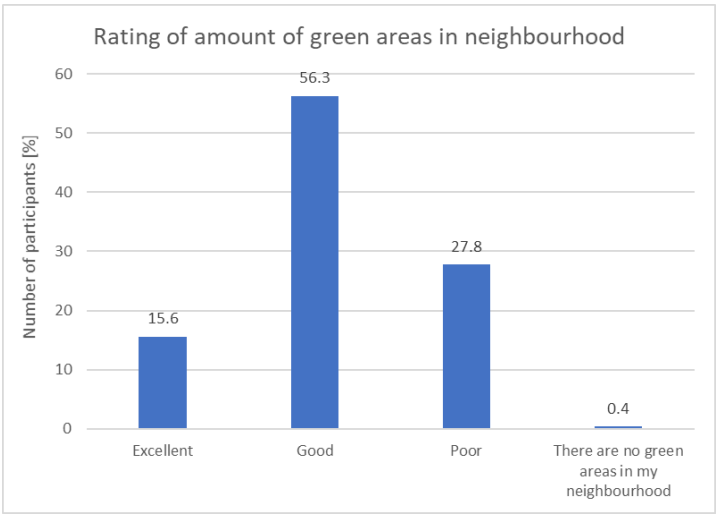

Figure 43: Rating the amount of green areas in neighbourhood

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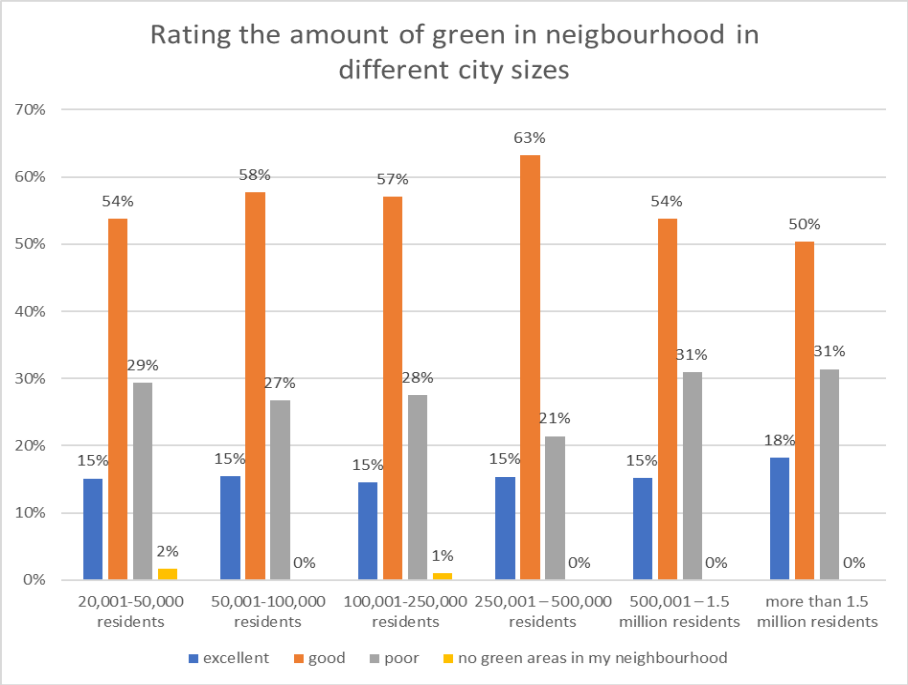

Figure 44: Rating the amount of green by city size (Chi square = 0.290)

Question 11: Over one third of the participants (38.3%; N=391) spend **two to four hours a week in green areas**. No significant differences exist between city sizes.

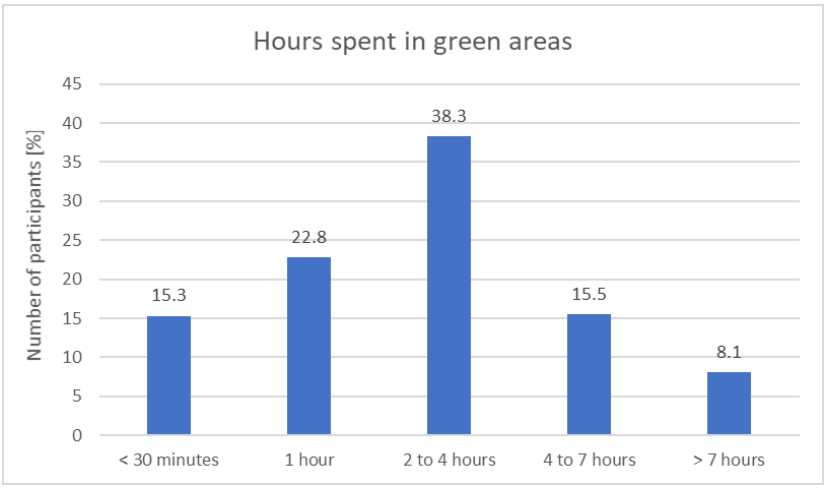

Figure 45: Number of hours spent in green areas per week

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5 CLIMATE CHANGE

Question 13: The major opinion of 69% of participants was that **climate change can already be perceived**.

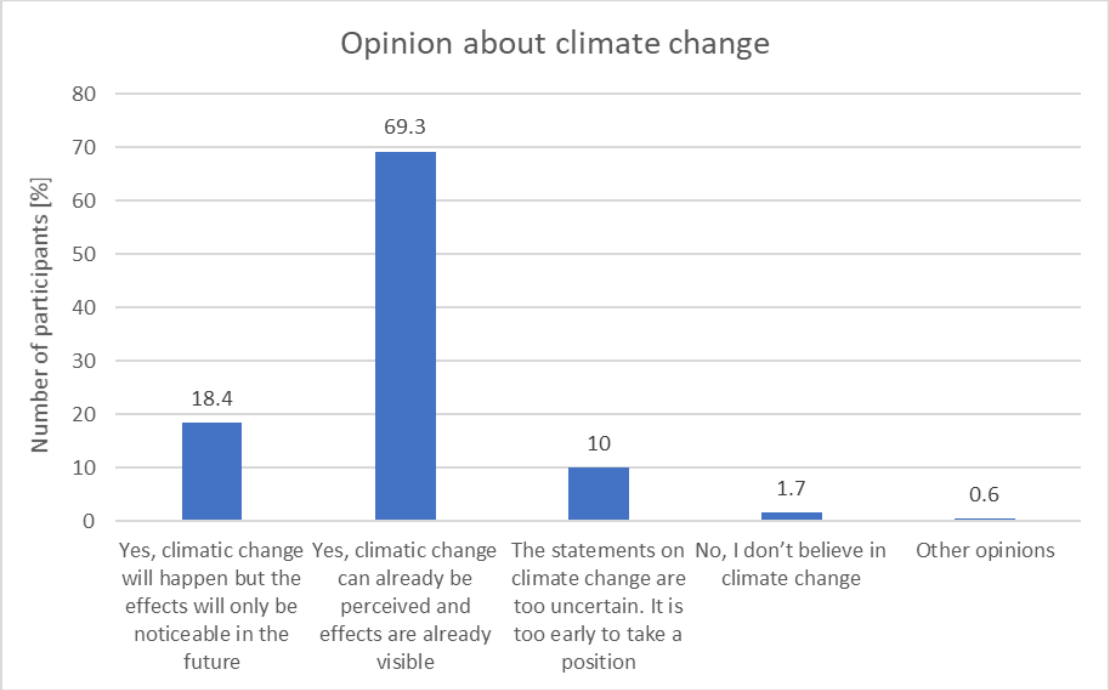

Figure 46: Respondents' opinion about climate change

Other opinions include

- Man has an impact on the climate, but I would love to hear, read articles about why the climate was changing, when there was no industry and the glaciations affected the Earth.
- This is normal and should not be exaggerated.
- The Earth's climate is changing all the time, but these changes are far-reaching.
- The climate is changing, there are atmospheric phenomena unprecedented before, such as hurricanes or droughts.
- Climate change is independent of man. They were in the past, when there was no man on Earth yet.
- Climate change has accompanied the world since its inception.

Question 14: Despite this general acceptance of the effects of climate change, only 48.7% of participants (N=497) believe that climate change effects will **occur in their neighbourhood**.

Table 5: Respondents expectation of climate change effects in their neighbourhood

	n	%
No, I don't expect effects by climate change	524	51.3
Yes, I expect the following effects to happen in my neighbourhood	497	48.7

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Question 14a: Out of 496 participants who proceeded to questions 14a to c, about 88.7% (N=440) already **experienced heat waves**.

Table 6: Respondents who have experienced heat waves in their neighbourhood

	n	%
No, I never experienced heat waves in my neighbourhood	56	11.3
Yes, I experienced heat waves already	440	88.7

Question 14b: On average, participants stated to experience 19.79 days of **heat waves per summer**. The number of reported heat waves (days) ranged from two to 99.

Question 14c: About 26% of the reduced number of participants stated to be **negatively affected by heat waves in their wellbeing**.

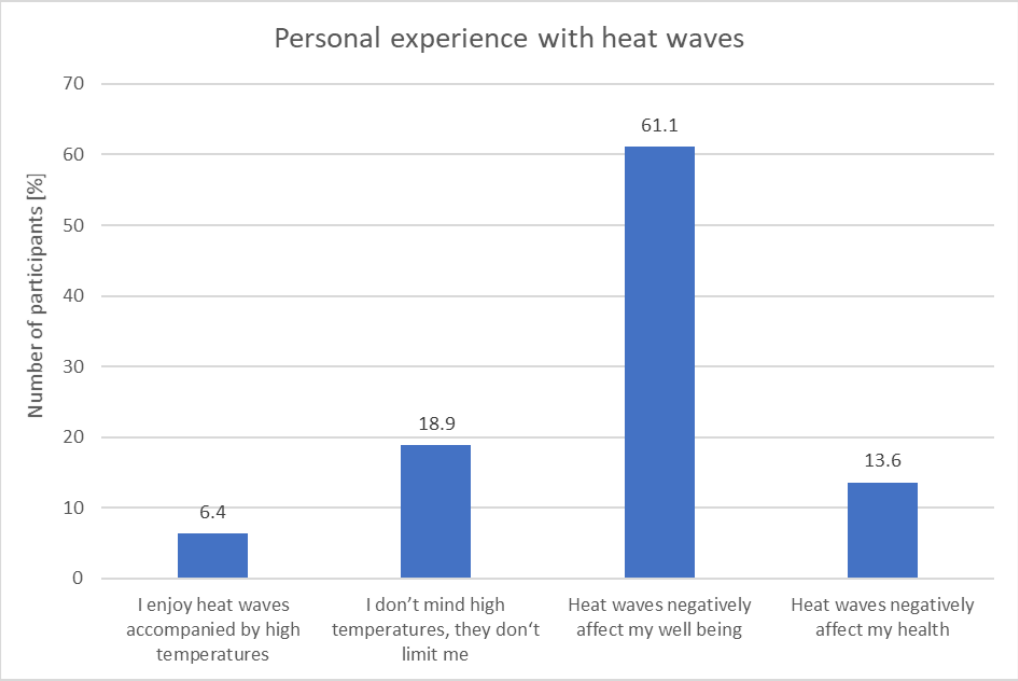

Figure 47: Respondents' personal experience with heat waves

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6 MEASURES AT CITY LEVEL TO COMBAT CLIMATE CHANGE

Question 15: A broad consensus exists regarding the **importance of actively addressing climate change** through strategies on the communal level. About 91% state that it is either very important or important.

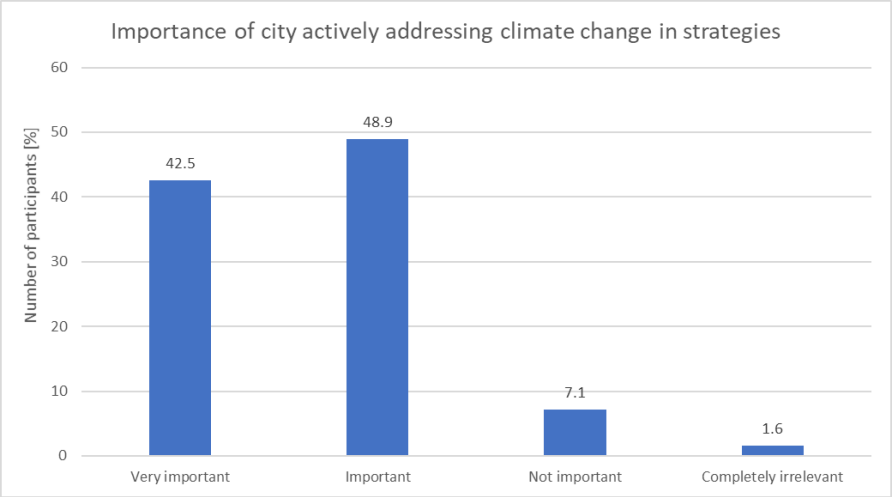

Figure 48: Importance of addressing climate change in strategies at the communal level

Question 16: Regarding the **desired quality of life in the neighbourhood**, participants identified all strategies as almost equally important (Ø between 3.68 and 3.07). Air quality improvement and micro-dust reduction was the most important measure (Ø = 3.68), followed by improving urban climate by fresh air corridors (Ø = 3.55), stormwater management (Ø = 3.54) and conserve and increase urban biodiversity (Ø = 3.49).

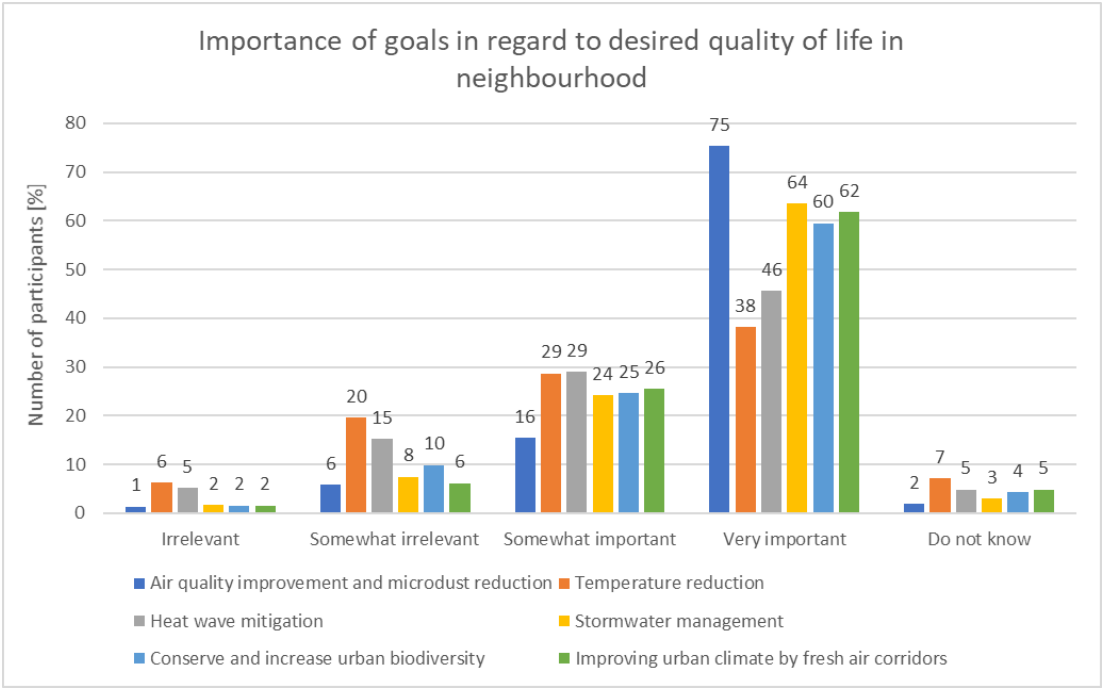

Figure 49: Importance of goals in regard to desired quality of life in their neighbourhood (comparative)

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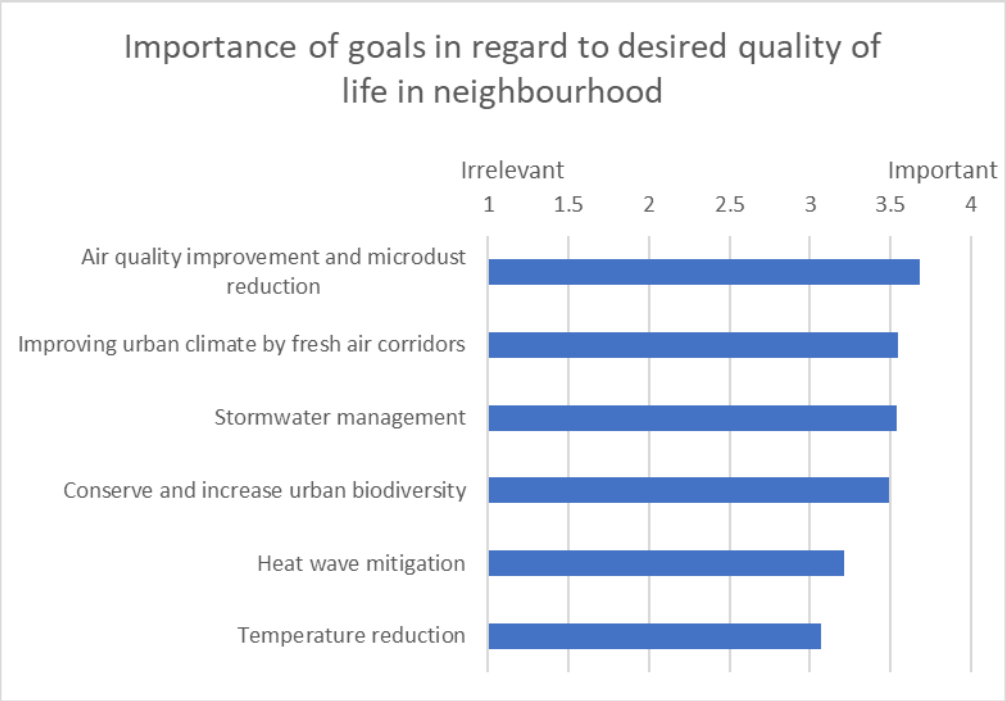

Figure 50: Importance of goals in regard to desired quality of life in their neighbourhood (average)

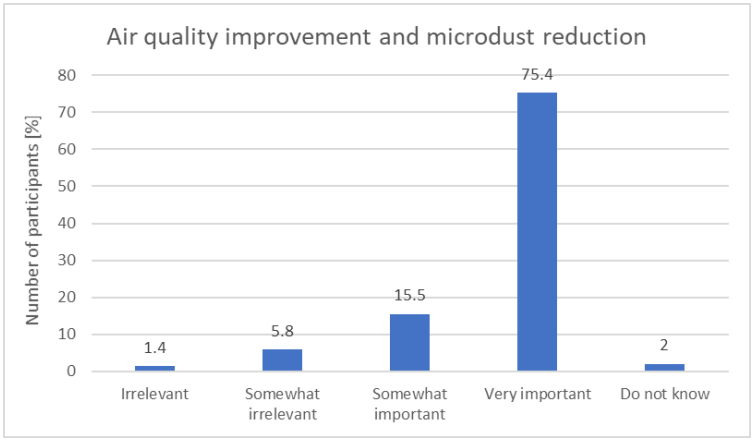

Figure 51: Importance of air quality improvement and microdust reduction

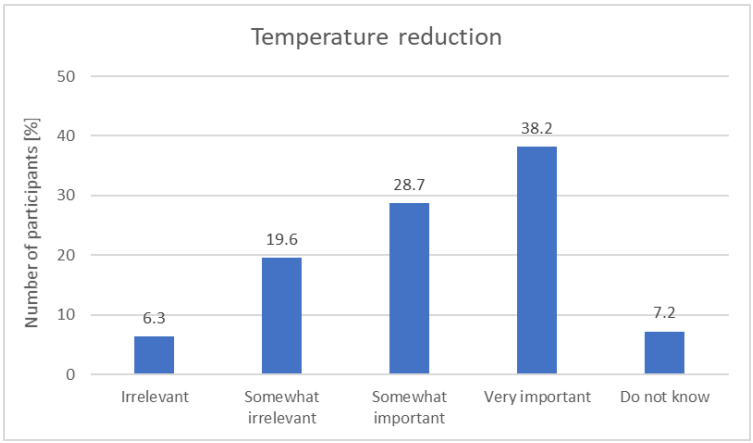

Figure 52: Importance of temperature reduction

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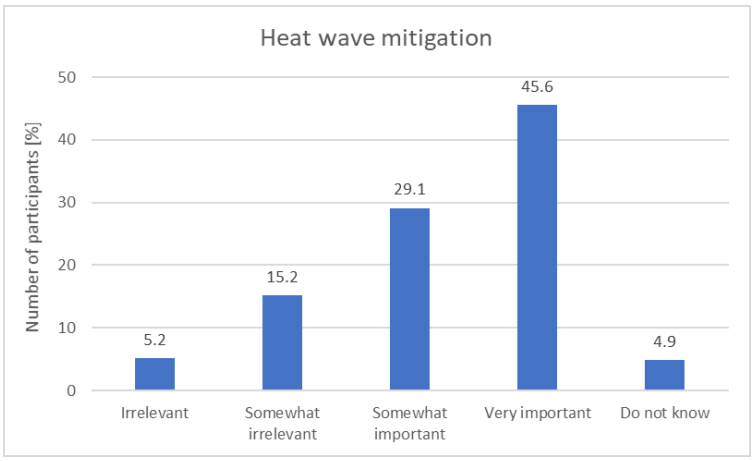

Figure 53: Importance of heat wave mitigation

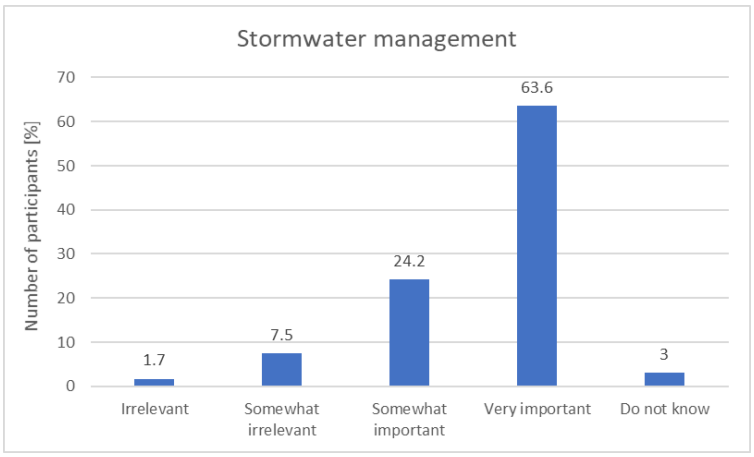

Figure 54: Importance of stormwater management

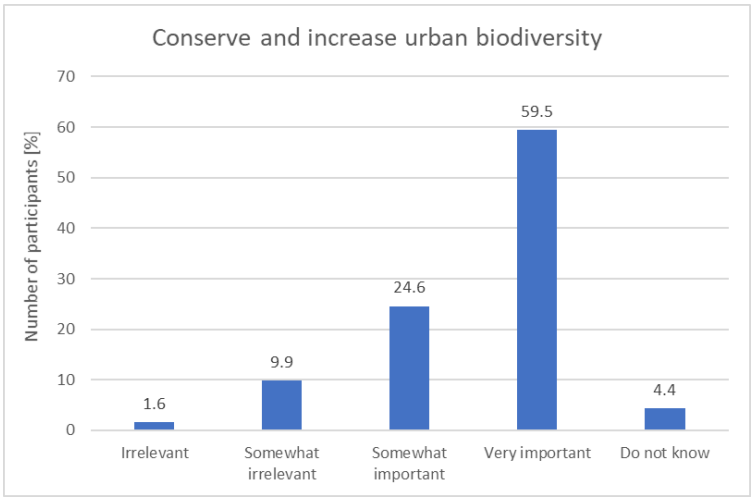

Figure 55: Importance of conserving and increasing urban biodiversity

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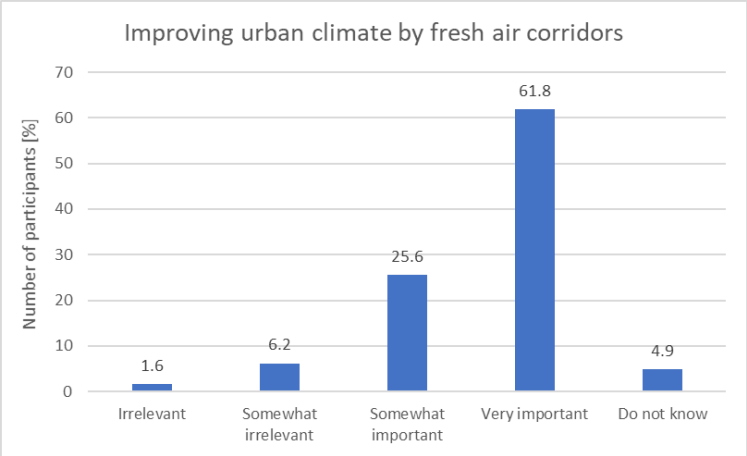

Figure 56: Improving urban climate by fresh air corridors

Significant differences exist between cities regarding the evaluation of heat wave mitigation (Chi square = 0.043) and improving urban climate by fresh air corridors (10% level; Chi square = 0.076). The importance of **heat wave mitigation** is comparably high for all cities (between 71% and 78% ranked it as somewhat or very important). **Improving urban climate by fresh air corridors** ranges between 83% and 91% in importance in the cities.

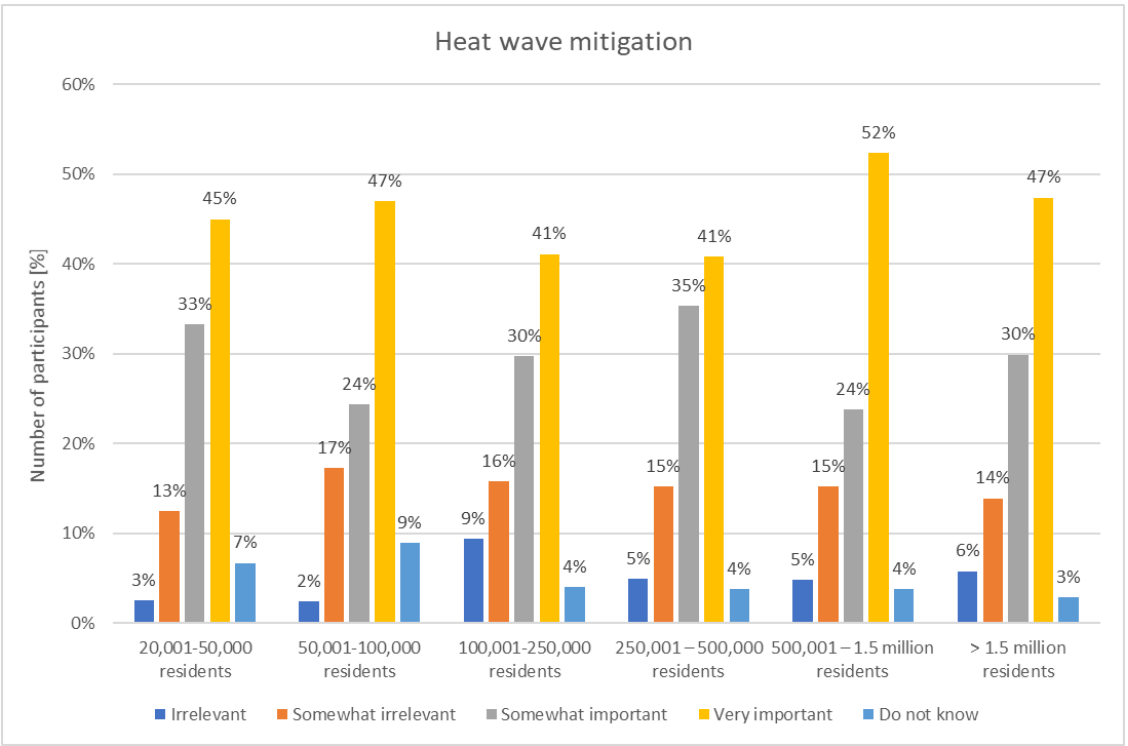

Figure 57: Importance of heat wave mitigation by city size (Chi square = 0.043)

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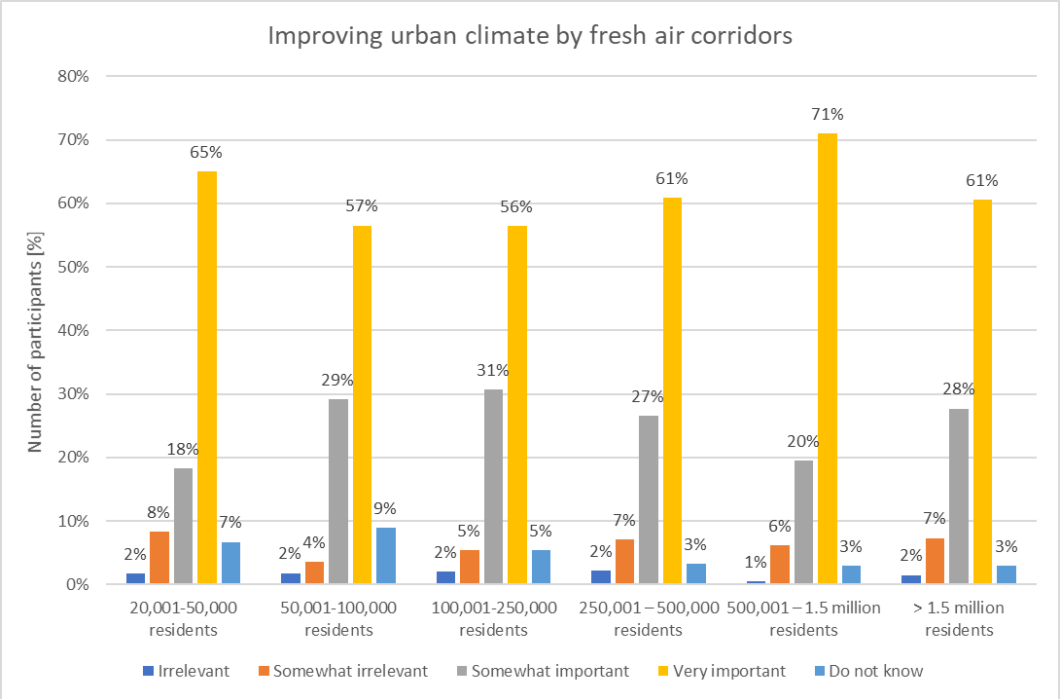

Figure 58: Importance of improving urban climate by fresh air corridors by city size (Chi square = 0.076)

Question 17a-d: Overall, **measures to enhance urban greening** were found to be particularly useful in contributing to urban biodiversity. All measures were ranked between high and very high for this effect. The measure with the highest impact for all effects (climate change mitigation, health benefits, aesthetics and urban biodiversity) was the development of urban green corridors (Ø = 3.48 over all effects), followed by street greening by trees and hedges (Ø = 3.47). For each effect, another measure was found to be of particular importance: rain gardens for climate change mitigation, urban green corridors for health benefits and street greening for aesthetic of urban landscapes. For urban biodiversity, all measures were almost of equal importance (Ø = between 3.36 and 3.51).

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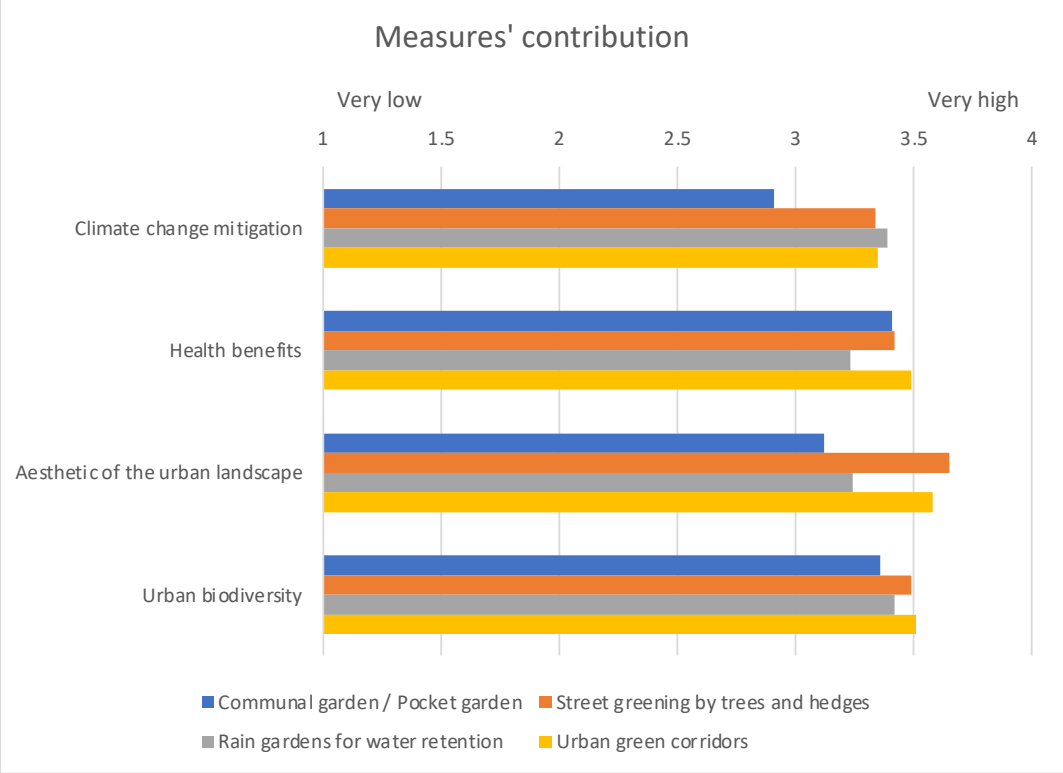

Figure 59: Different NBS contributions to urban strategies

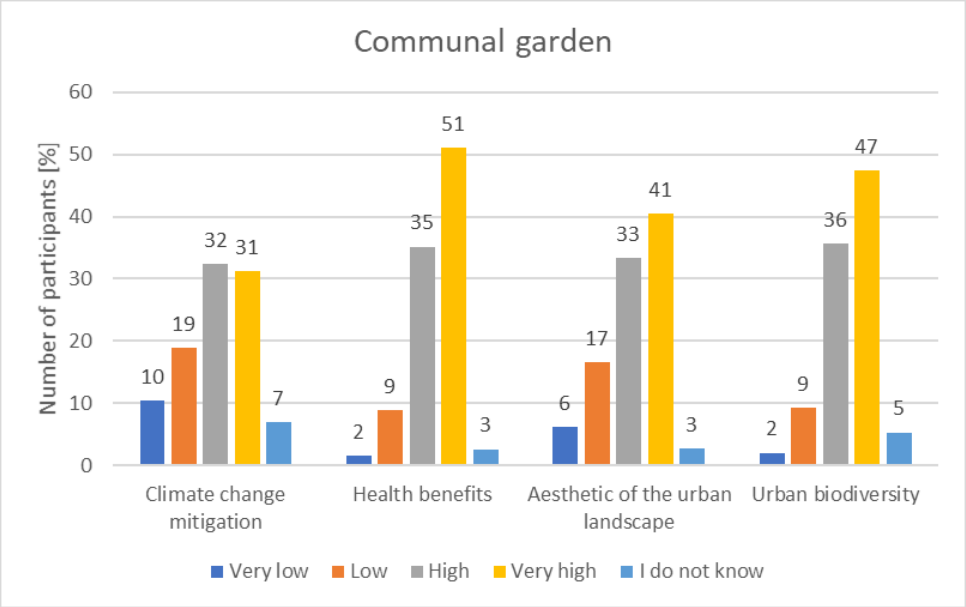

Figure 60: Communal gardens' contributions to urban strategies

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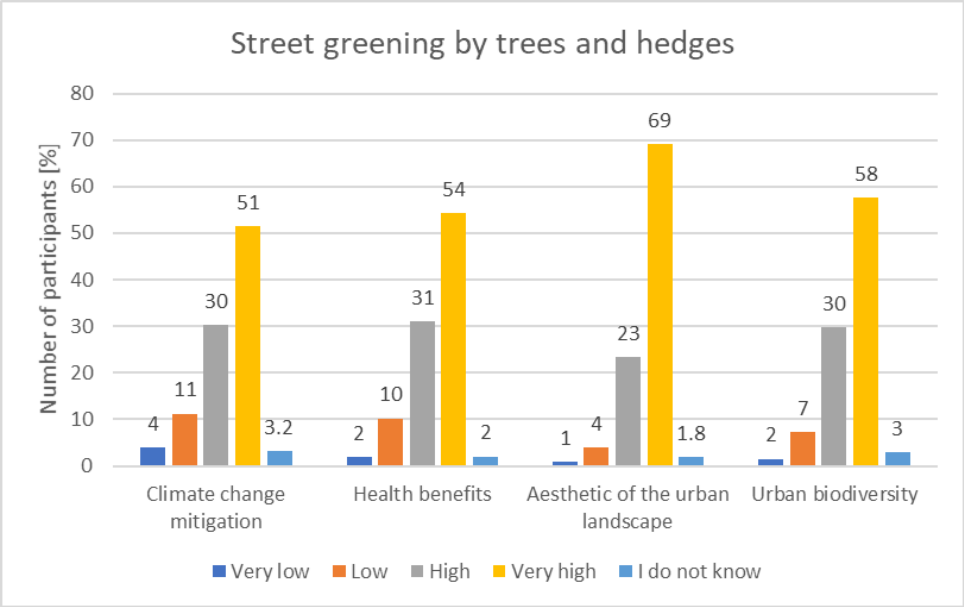

Figure 61: Street greening's contributions to urban strategies

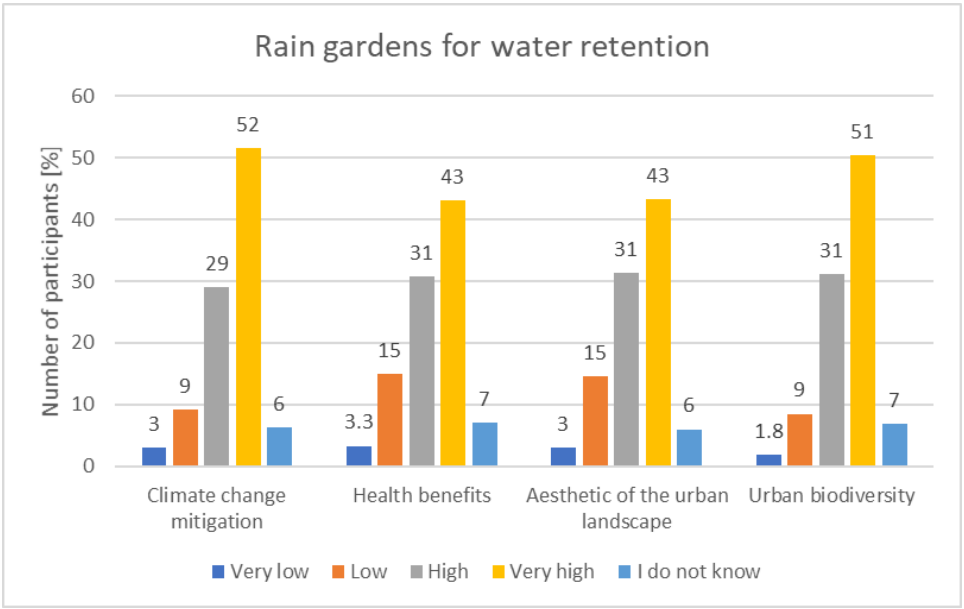

Figure 62: Rain gardens' contributions to urban strategies

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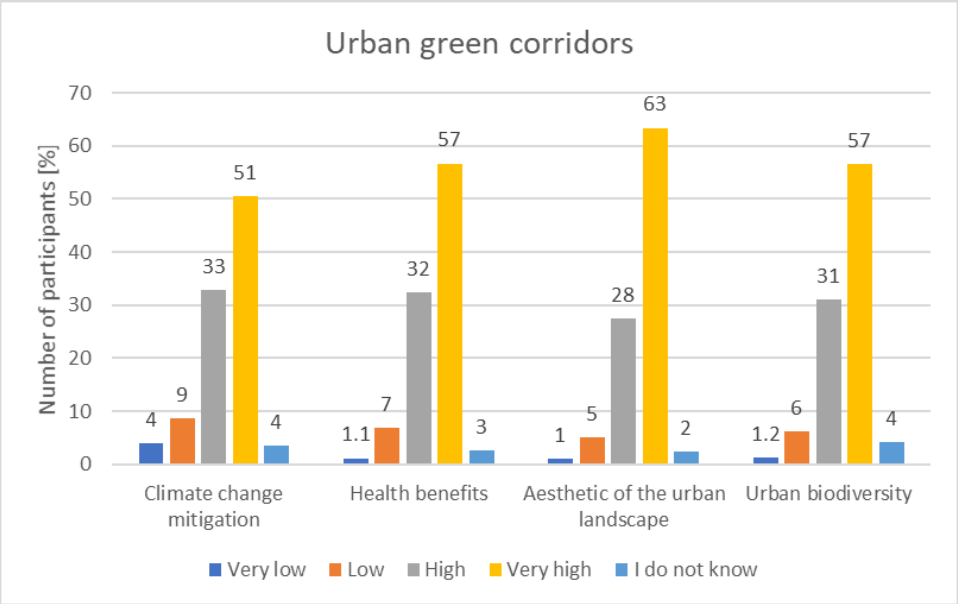

Figure 63: Urban green corridors' contributions to urban strategies

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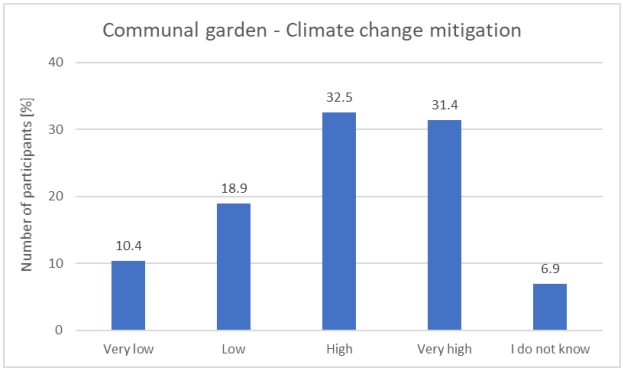

Figure 64: Communal gardens' importance for climate change mitigation

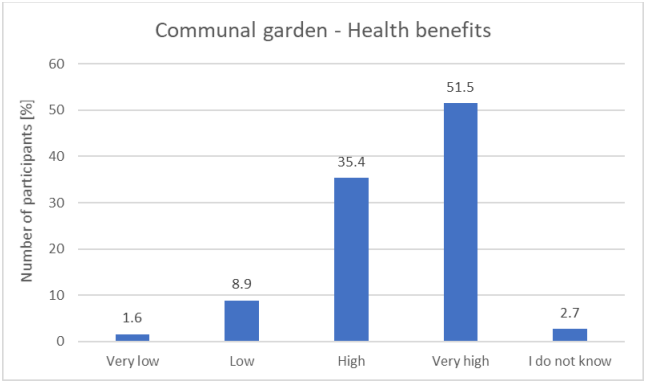

Figure 65: Communal gardens' importance for health benefits

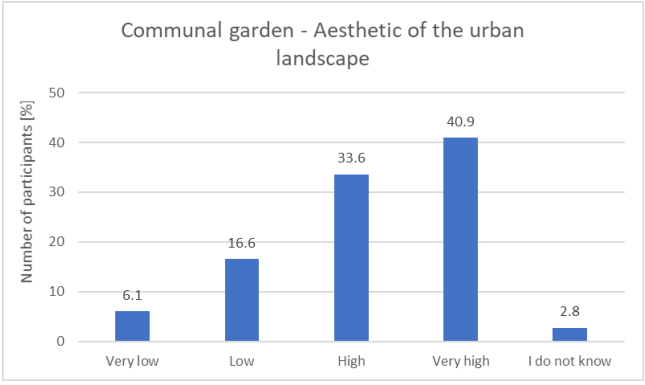

Figure 66: Communal gardens' importance for aesthetic of the urban landscape

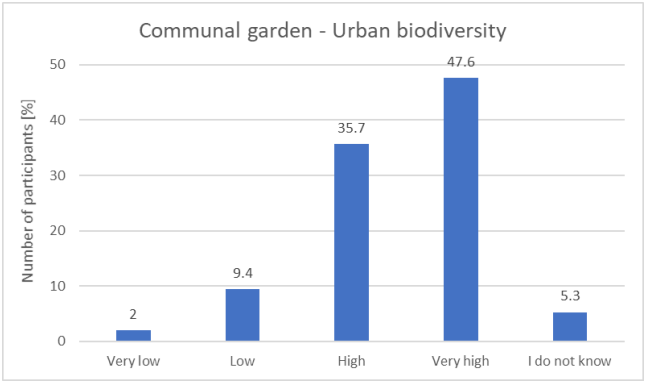

Figure 67: Communal gardens' importance for urban biodiversity

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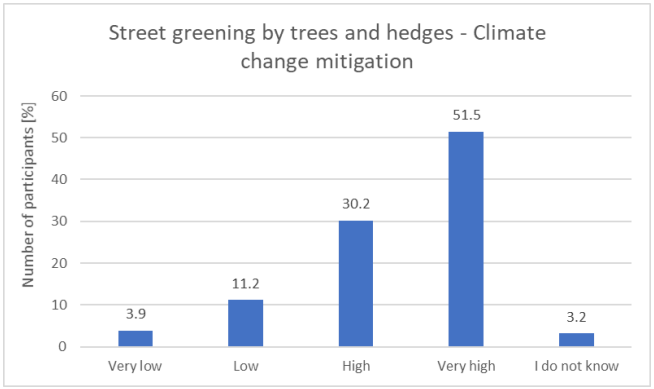

Figure 68: Street greening's importance to climate change mitigation

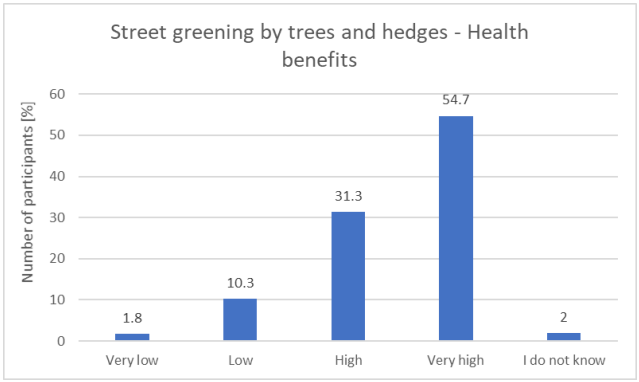

Figure 69: Street greening's importance for health benefits

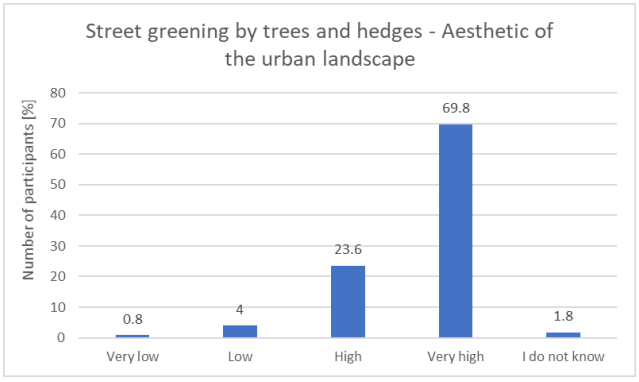

Figure 70: Street greening's importance for aesthetic of the urban landscape

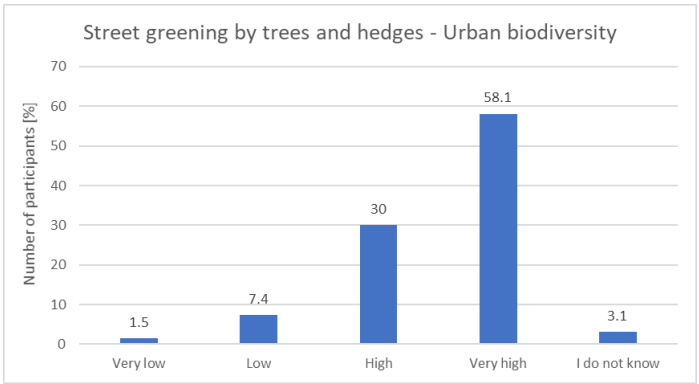

Figure 71: Street greening's importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

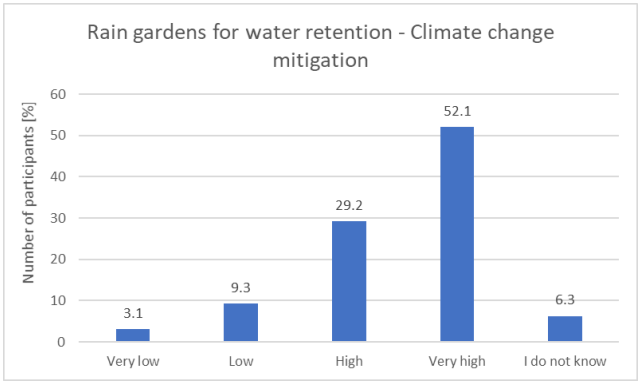

Figure 72: Rain gardens' importance for climate change mitigation

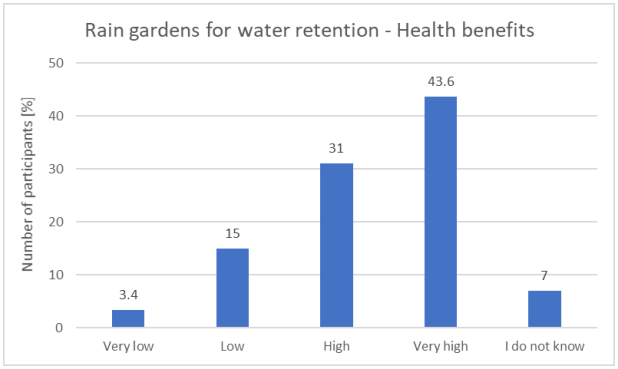

Figure 73: Rain gardens' importance for health benefits

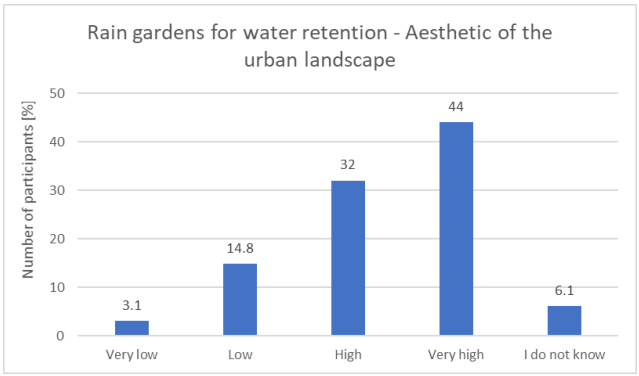

Figure 74: Rain gardens' importance for aesthetic of the urban landscape

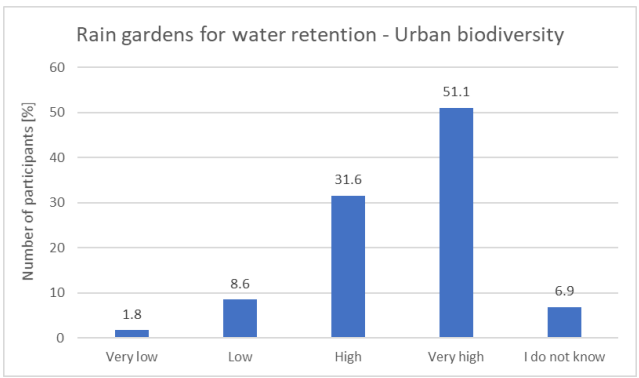

Figure 75: Rain gardens' importance for urban biodiversity

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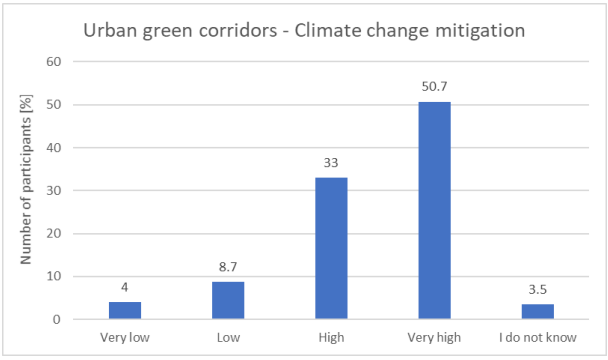

Figure 76: Urban green corridors' importance for climate change mitigation

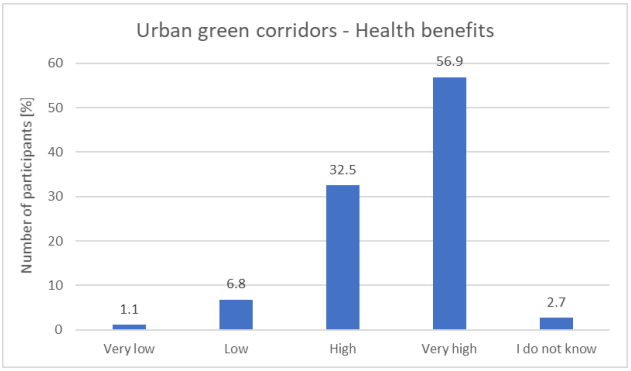

Figure 77: Urban green corridors' importance for health benefits

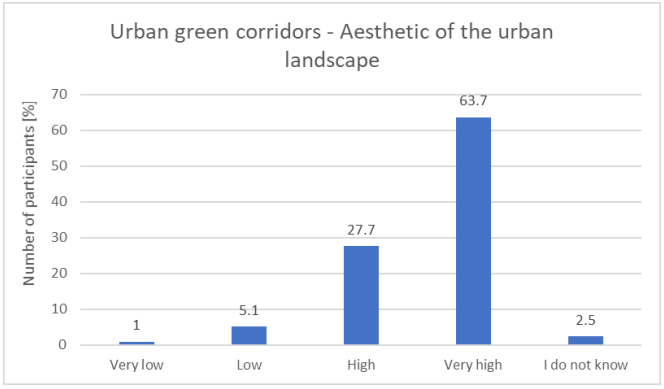

Figure 78: Urban green corridors' importance for aesthetic of the urban landscape

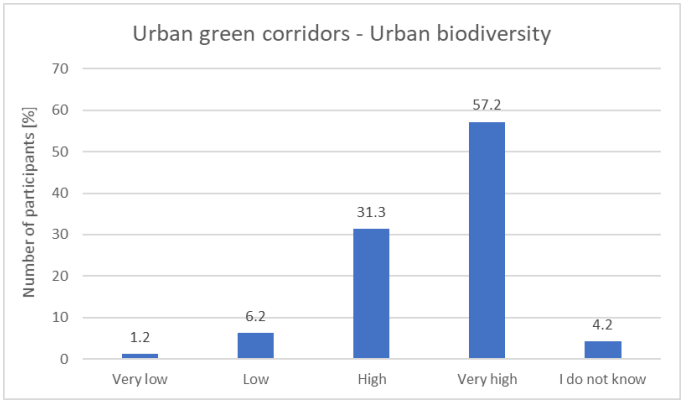

Figure 79: Urban green corridors' importance for urban biodiversity

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Task 4.1. – Survey and Choice Experiment

Draft Survey Analysis – Netherlands

Responsible partner: **BOKU**

Authors: Magdalena Feilhammer, Alice Wanner, Meike Jungnickel & Ulrike Pröbstl-Haider

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818.

DOCUMENT DETAILS

Title:	Draft survey analysis – Netherlands
Annexes:	

Work Package:	4
Task:	4.1. – Survey with integrated choice experiment
Deliverable type:	Internal draft analysis of the Dutch sample
Lead Partner:	BOKU
Submission date:	21/02/2024

Dissemination level:		
PU	Public	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including Commission Services)	CO

DOCUMENT HISTORY

Version	Date	Partner	Author	Changes
1.	21/02/2024	BOKU	Feilhammer, Wanner, Jungnickel & Pröbstl-Haider	1st draft

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2 SAMPLE DESCRIPTION – DEMOGRAPHIC INFORMATION

N = 1012

The sample consists of approximately 49% males and 51% females (N=1005).

Table 1: Sample demographics - gender

	n	%
Female	489	48.7
Male	514	51.1
Diverse	2	0.2
Prefer not to say		None

The average **age** of the sample is 53.45 years (N=911). The age range is between 16 and 89 years.

The **level of education** shows that about 30% (N=298) of participants completed secondary school, about 28% (N=277) have a Bachelor's degree and about 25% (N=254) received trade / technical / vocational training.

Table 2: Sample demographics - education

	n	%
Secondary school	298	29.5
Bachelor's Degree	277	27.5
Trade/technical/vocational training	254	25.2
Master's Degree	129	12.8
Doctorate	28	2.8
Primary	16	1.6
prefer not to say	5	0.5
none completed	2	0.2

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3 LIVING ARRANGEMENTS

Question 1: Participants are mainly coming from the smaller **city size** categories on the scale. About 13% (N=128) live in the largest category. Only 5.1% (N=52) of participants come from cities with 250,001-500,000 residents.

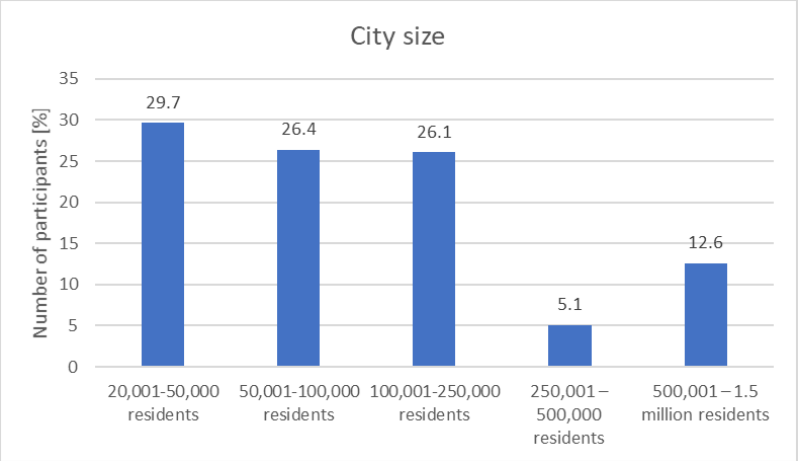

Figure 1: Participants by city size

Question 1a: Only 16.7% (N=169) live in the **city centre**, 42.4% (N=429) live in urban districts of the city and 40.9% (N=414) live in the suburbs.

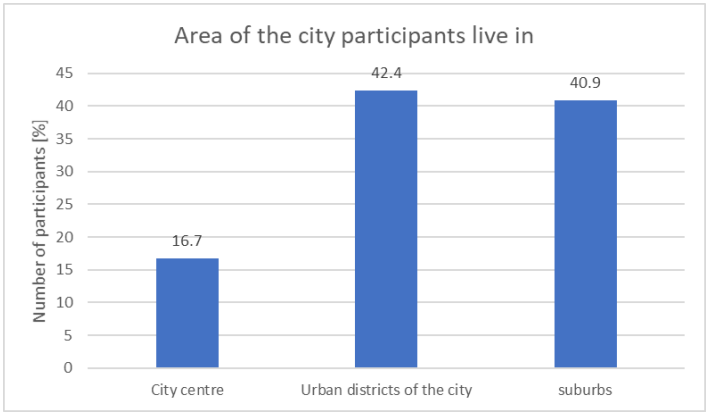

Figure 2: Area of the city participants live in

Question 21: The **number of people per household** show a preference of 2 person households, with almost half of the participants living in this household form (47.8%, N=479) followed by single households (22.8%, N=228).

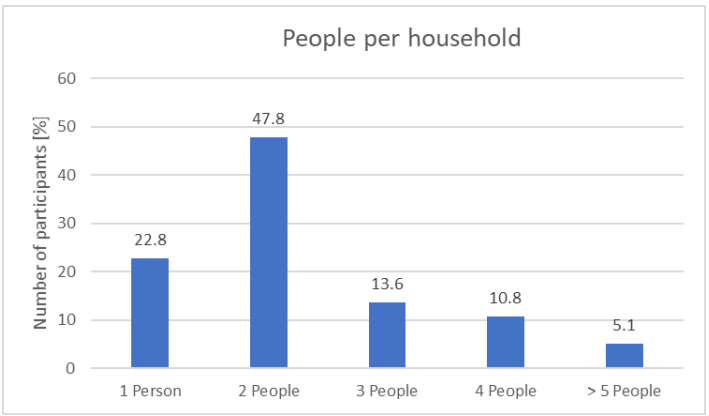

Figure 3: Number of people per household

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Question 22: Less than 20% of respondents reported **children under the age of 18** living in the household (N=1008).

Table 3: Respondents living with children under the age of 18

	n	%
Children under 18	173	17.2
No children under 18	835	82.8

Question 25: The **monthly household net income** lies primarily over 2000€ (N=555, under 2000€ N=279).

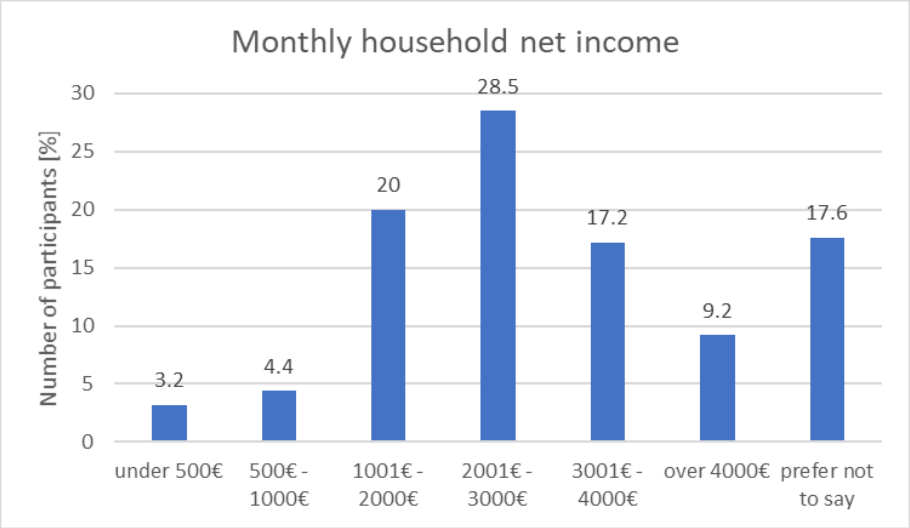

Figure 4: Monthly household net income

Question 23: The **number of cars** available in the household is primarily one (59.5%, N=597). 19.7% (N=198) of participants have two cars available in the household. 17.6% (N=177) of the participants do not own a car.

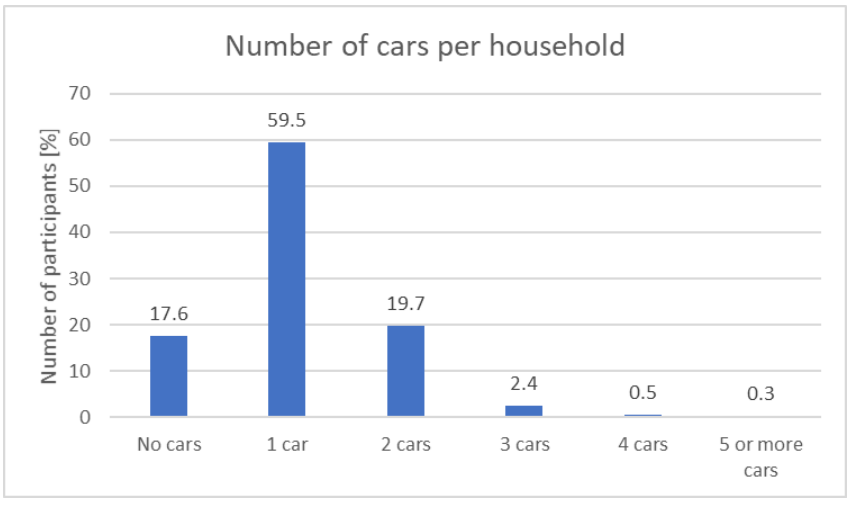

Figure 5: Number of cars per household

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The **size of the city** does significantly determine the number of cars owned by participants (Chi square = 0.005). Participants living in smaller cities own a higher amount of cars.

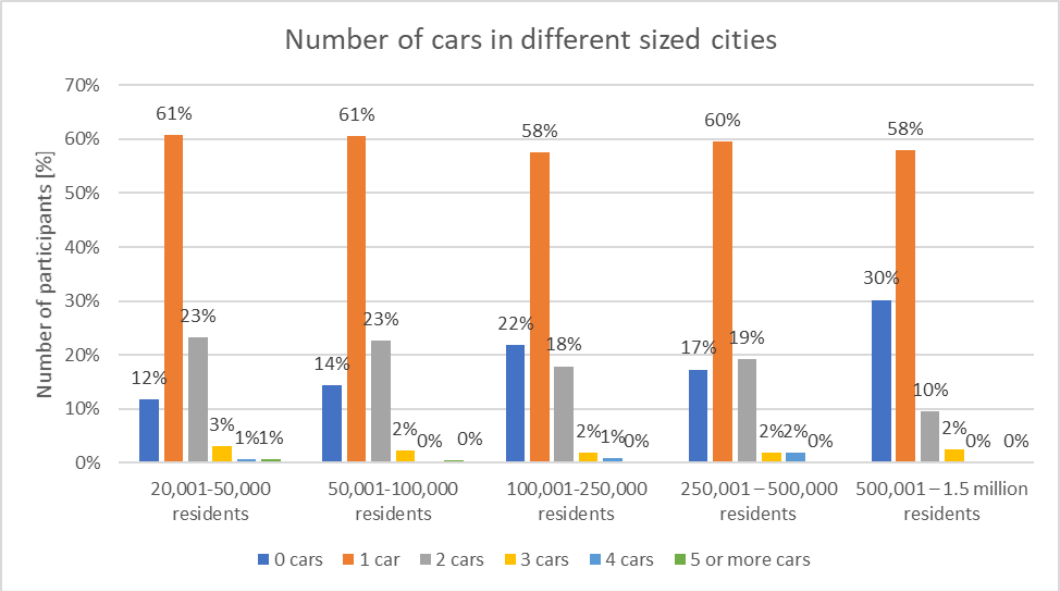

Figure 6: Number of cars per household by city size (Chi square = 0.005)

4 NEIGHBOURHOOD

Question 2: The most dominant building form is row houses (57.4%; N=564), followed by semi-detached houses (13%; N=128) and tower blocks (9.8%; N=96).

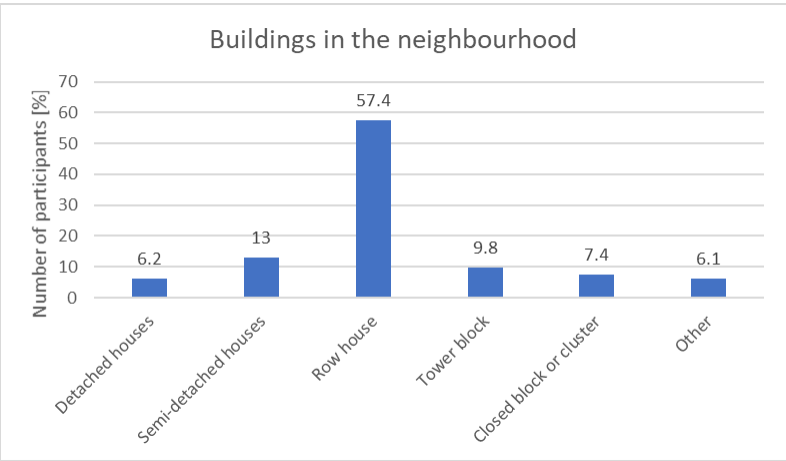

Figure 7: Types of buildings characterising the neighbourhood

The **major building height** is mainly two storeys (41.1%; N=405) or three to four storeys (46.5%, N=458).

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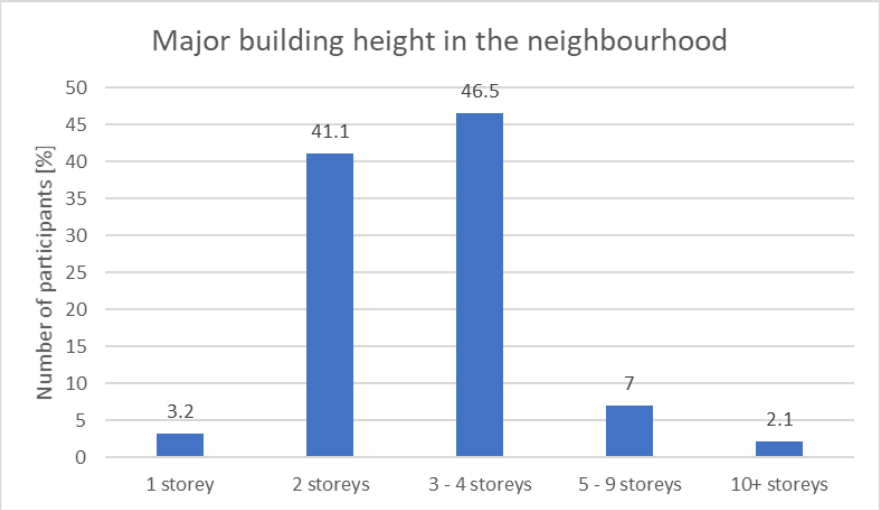

Figure 8: Predominant building height in the neighbourhood

About 9.7% of the participants' houses were **built after 2010**. About 36% of the houses were built between 1970 and 1989, followed by 1990 to 2009 with 24%.

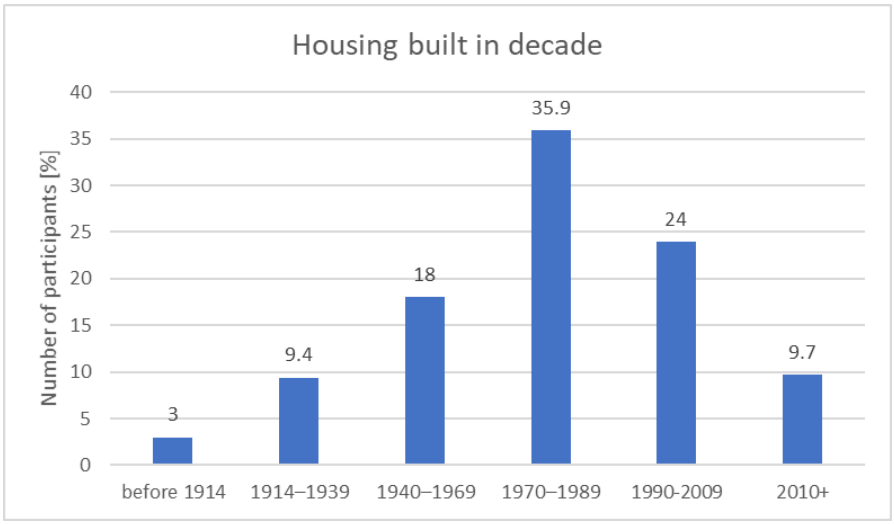

Figure 9: Decade in which housing was built

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Question 4: The most **dominant elements of the neighbourhoods** are private gardens (Ø = 2.15) and parking and traffic areas (Ø = 1.83). Paved public courts and squares (Ø = 1.41), community gardens (Ø = 1.25) and derelict or unused areas (Ø = 1.22) are rather rare in the neighbourhood.

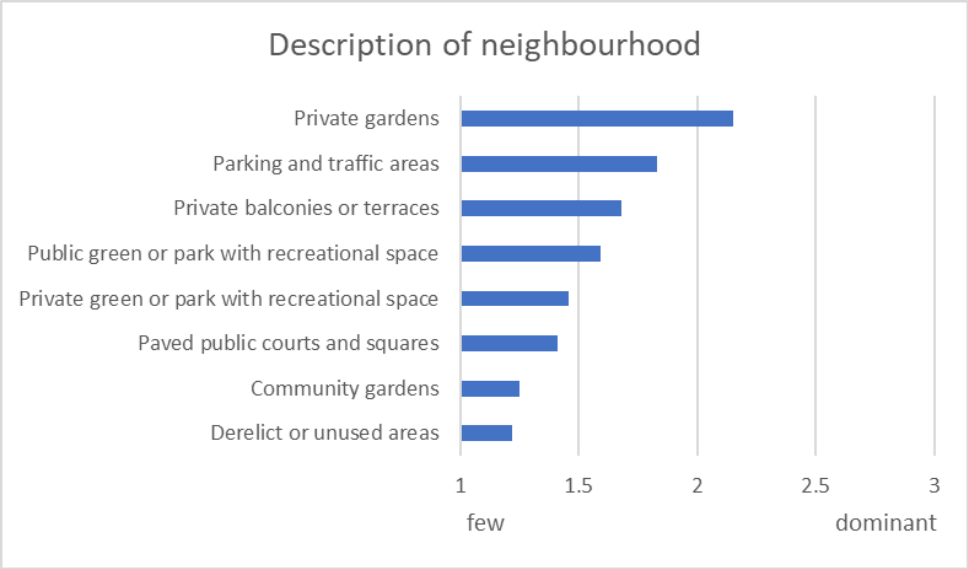

Figure 10: Description of neighbourhood surroundings

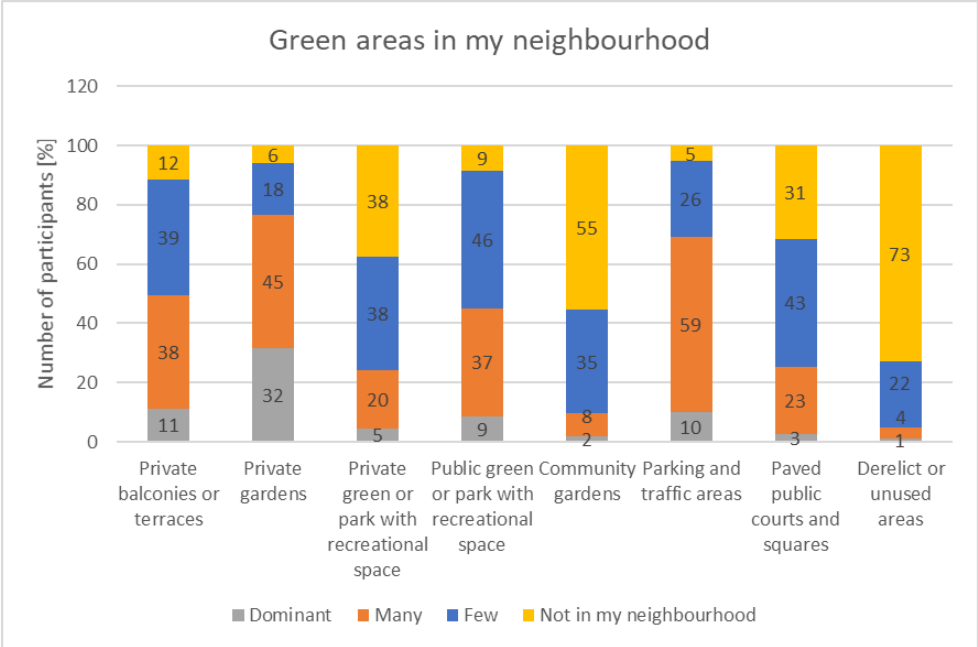

Figure 11: Green areas in my neighbourhood

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Question 6: **Parking arrangements** in the neighbourhood are mostly public courts (60.8%; N=615) or public on street parking (53.4%; N=540) (multiple answers possible).

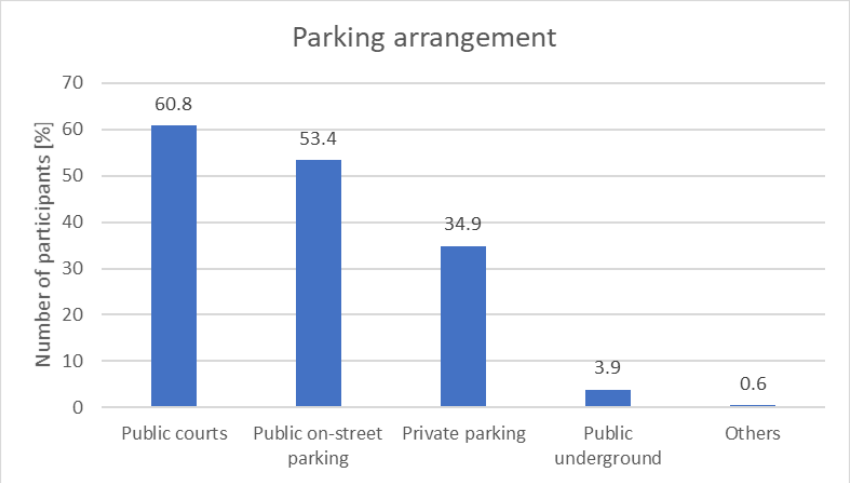

Figure 12: Parking arrangements in my neighbourhood

Question 7: The **walking distance to relevant infrastructure** is shortest (0-5 min walking) to slow public transport and longest (further away than 15 min walking) to participants' place of employment. For about 35%, fast public transport does not apply.

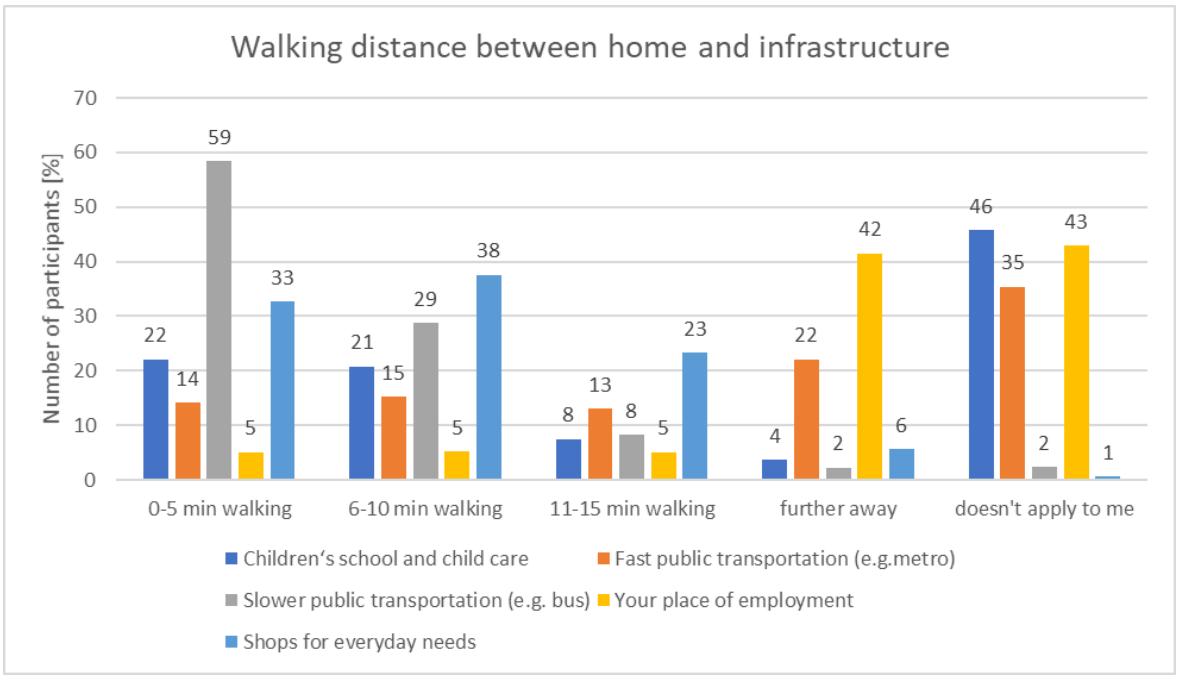

Figure 13: Walking distance between home and types of infrastructure

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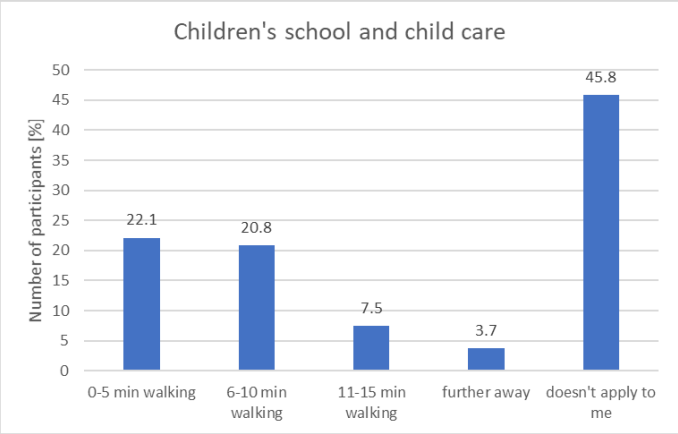

Figure 14: Walking distance to children's school and child care

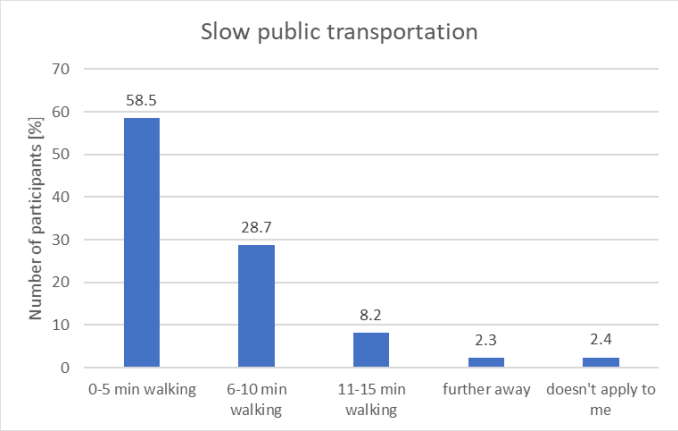

Figure 15: Walking distance to slow public transportation

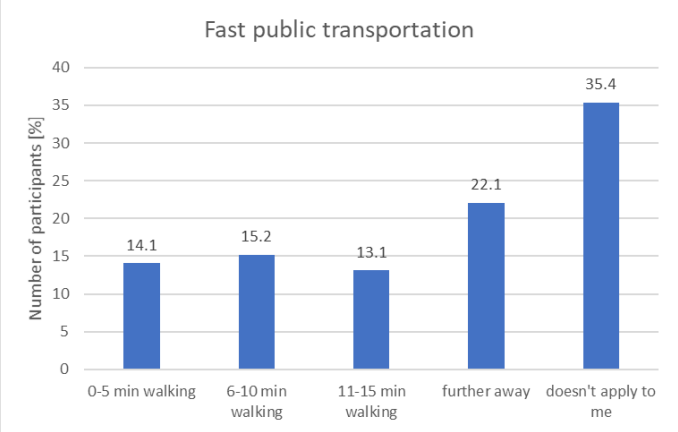

Figure 16: Walking distance to fast public transportation

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Figure 17: Walking distance to place of employment

Figure 18: Walking distance to shops for daily needs

Significant differences emerge in the comparison of walking distances in the city sizes.

Fast public transport is in smaller city sizes often not available (Chi square = < 0.001).

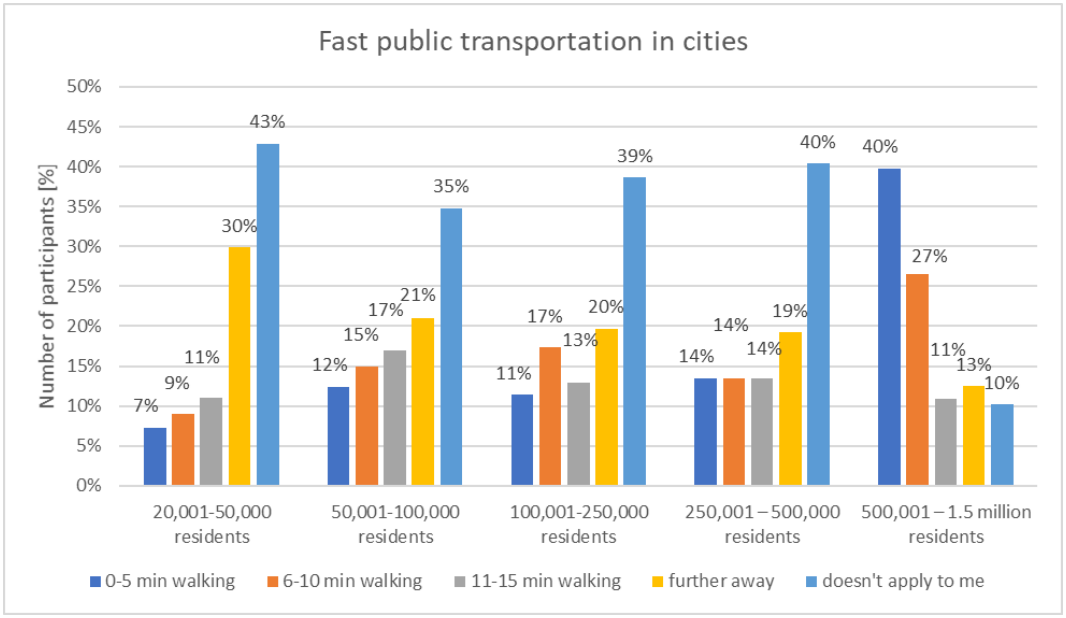

Figure 19: Walking distance to fast public transport by city size (Chi square = < 0.001)

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Slow public transport is frequently available in all cities but does also significantly differ between city sizes (Chi square = 0.003).

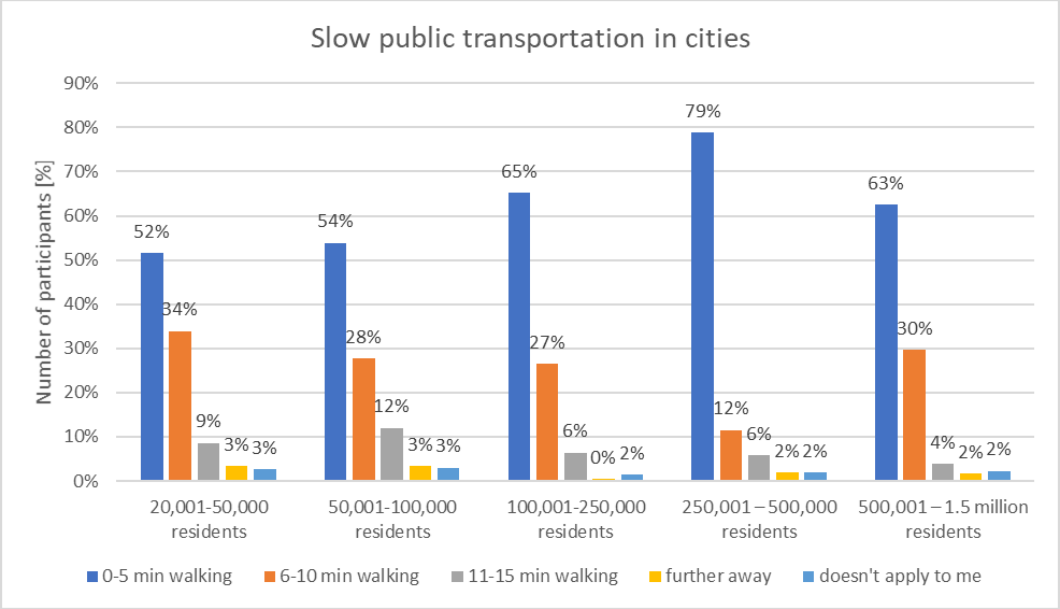

Figure 20: Walking minutes to slow public transport by city size (Chi square = 0.003)

The distance to the **place of employment** does not significantly differ between city sizes (Chi square = 0.825). For at least 36.7% of participants in different city sizes their place of employment is further away than 15 minutes by foot. This number increases to 46.9% in the largest city category.

Figure 21: Walking distance to place of employment by city size (Chi square = 0.852)

The **distance to shops for everyday needs** does not significantly differ between the city sizes (Chi square = 0.051). At least 65.5% of participants live in a short walking distance (0 up to 10 minutes) to shops in every city size.

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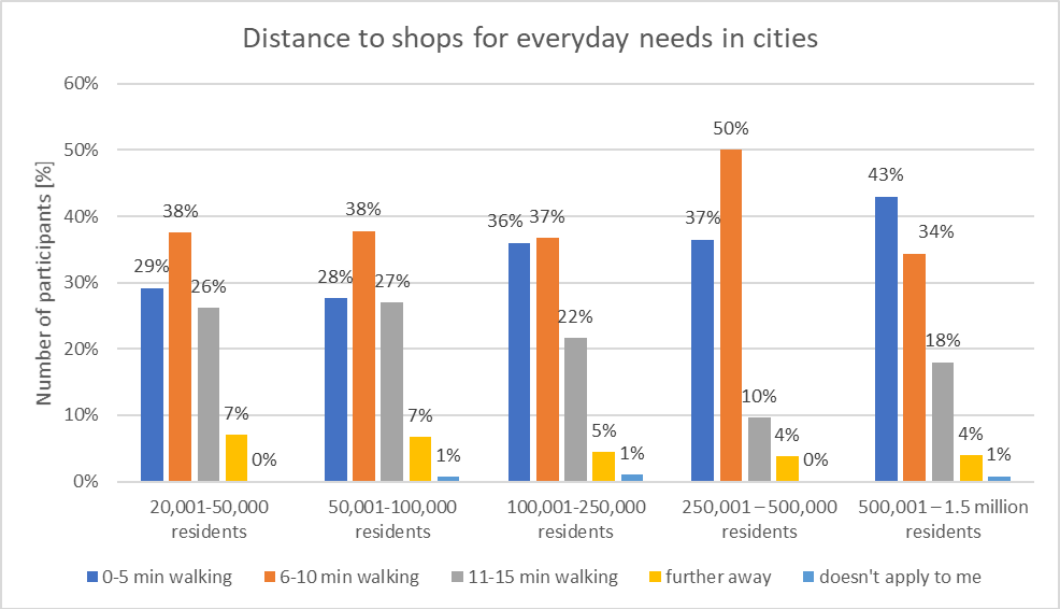

Figure 22: Walking distance to shops for everyday needs by city size (Chi square = 0.051)

Question 12: If participants could select the type of infrastructure, they would want to live close to, 67.7% (N=685) stated that they would choose shops for everyday needs, followed by green areas (56.3%; N=570) and their place of employment (20%; N=202). This result is of interest in relation to the figures above stating the distance to these infrastructures.

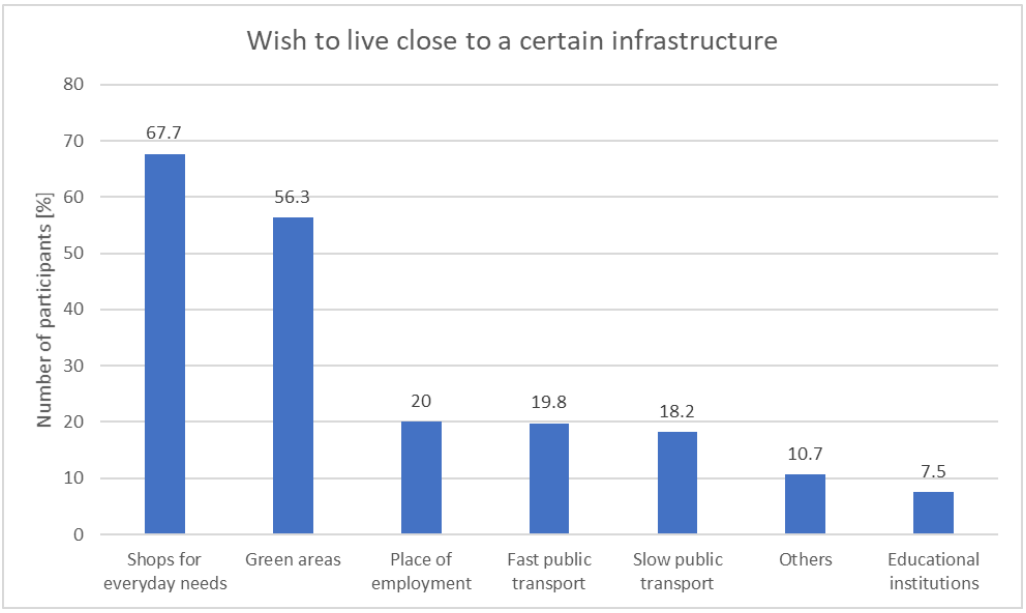

Figure 23: Infrastructure respondents wish to live close to

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Other infrastructure, which participants wish to live close are included in Table 4:

Table 4: Other infrastructure respondents wish to live close to

Infrastructure	n
Nature and greenery (e.g. park, harvest garden)	7
Doctors / medical care	7
Forest	6
Restaurants, gastronomy	4
Friends, family, children	4
Shops	4
Sport facilities	3
Water	3
City center	3
Social facilities (e.g. neighbourhood center)	2
Parking lots	2
Bank or ATM	2
Countryside	2
Swimming pool	1
Beach	1
Highway	1
Letterbox	1
Public transportation (bus station, train station)	1
Nightlife	1
Church	1

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5 GREEN SPACES

5.1 WALKING DISTANCES TO DIFFERENT GREEN SPACES IN THE NEIGHBOURHOOD

Question 8: For almost 89% of all participants, street greening is less than 5 walking minutes away, making it the most accessible green infrastructure. Playgrounds follow with 57%. Those two types of green spaces are also rarely not applicable to participants, as well as parks.

Derelict areas and urban forests are mostly either not applicable or further than 15 minutes away.

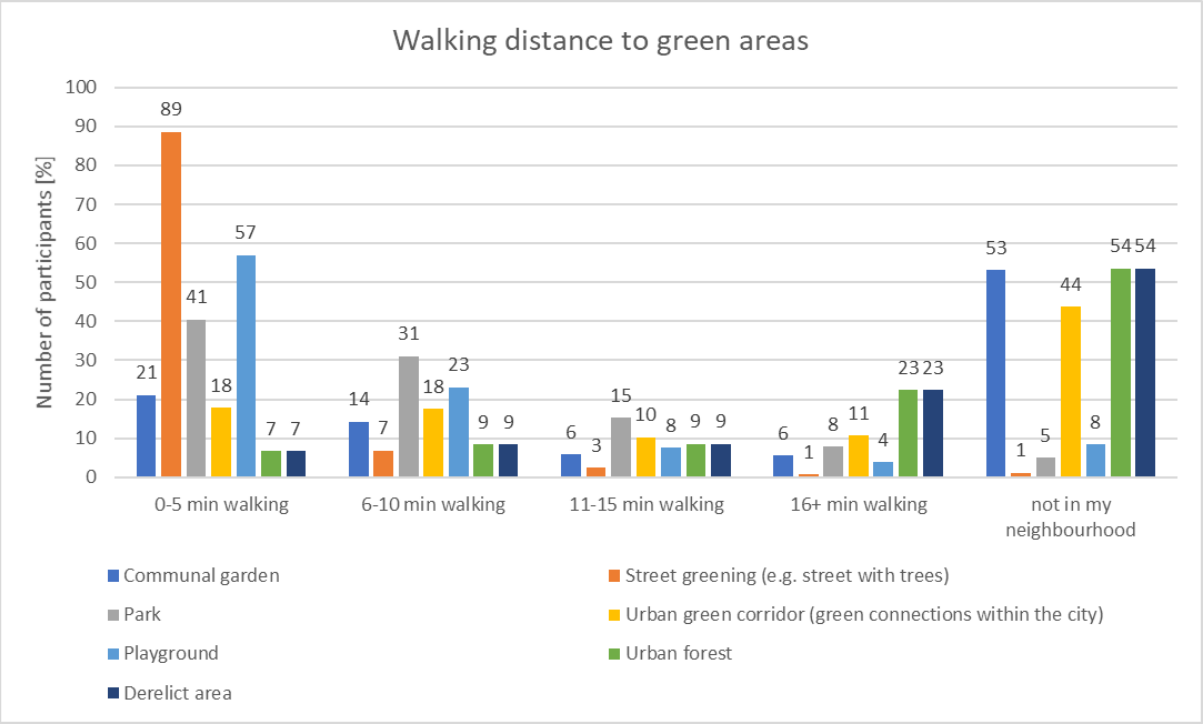

Figure 24: Walking distance to different green areas

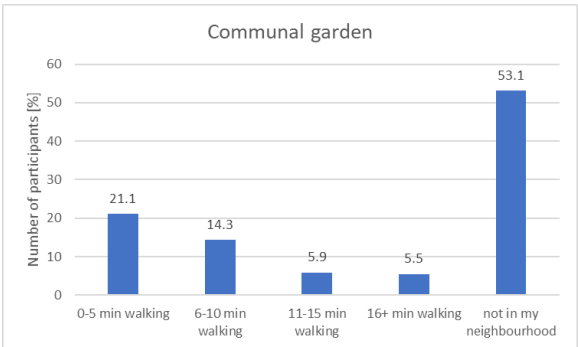

Figure 25: Walking distance to a communal garden

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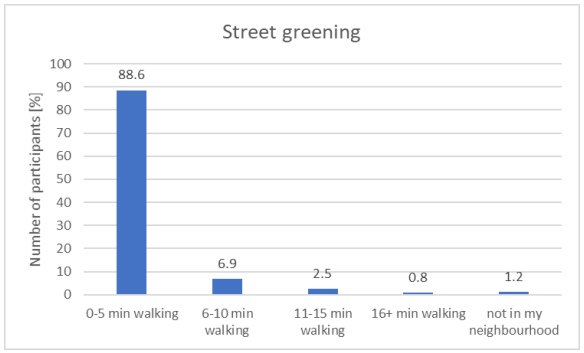

Figure 26: Walking distance to street greening

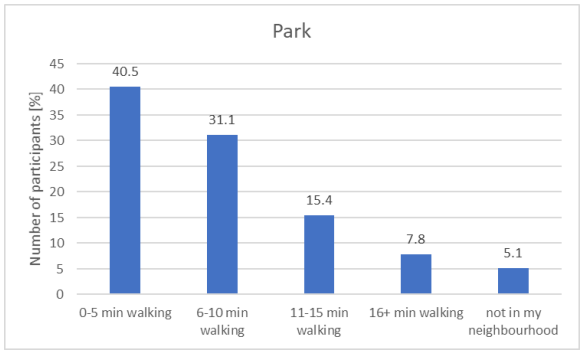

Figure 27: Walking distance to a park

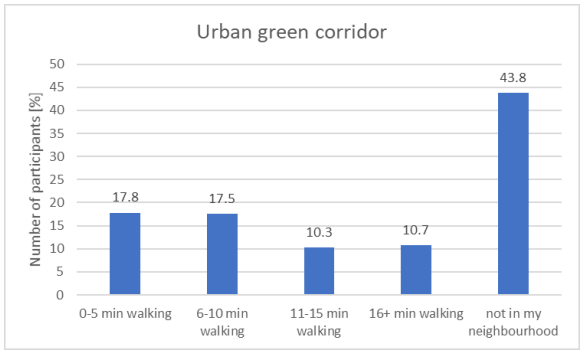

Figure 28: Walking distance to an urban green corridor

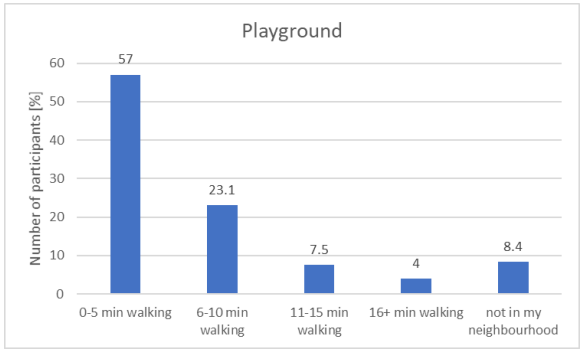

Figure 29: Walking distance to a playground

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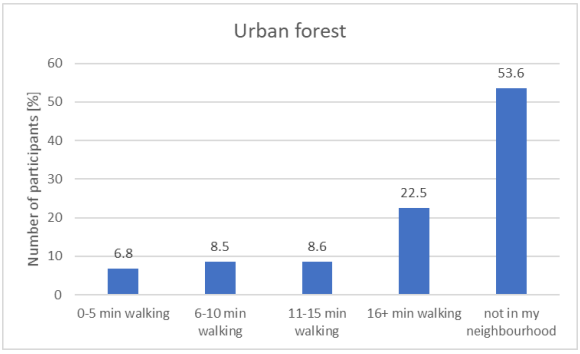

Figure 30: Walking distance to an urban forest

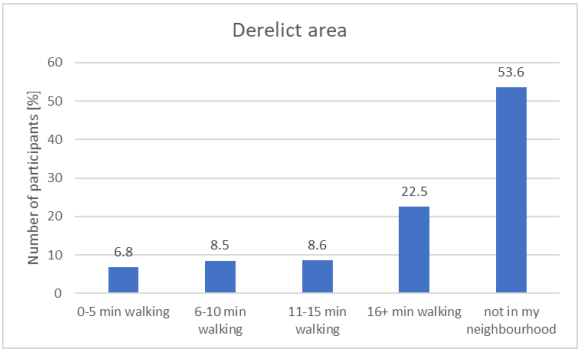

Figure 31: Walking distance to a derelict area

5.2 WALKING DISTANCE TO DIFFERENT GREEN SPACES IN DIFFERENT CITY SIZES

Significant differences exist between the walking distance in different sized cities to **communal gardens** (Chi square = 0.004), street greening (Chi square = 0.038), urban green corridors (Chi square = 0.005), urban forests (Chi square = 0.01) and derelict areas (Chi square = 0.004). **Street greening** is easily accessible in all cities with more than 80% of participants saying street greening is 0-5 walking minutes away in every city size. **Playgrounds** are also in a short walking distance in all city sizes (more than 46.9% say 0-5 min walking distance for each category). **Parks** can be reached by over 68.9% of participants in each city size in 10 minutes or less.

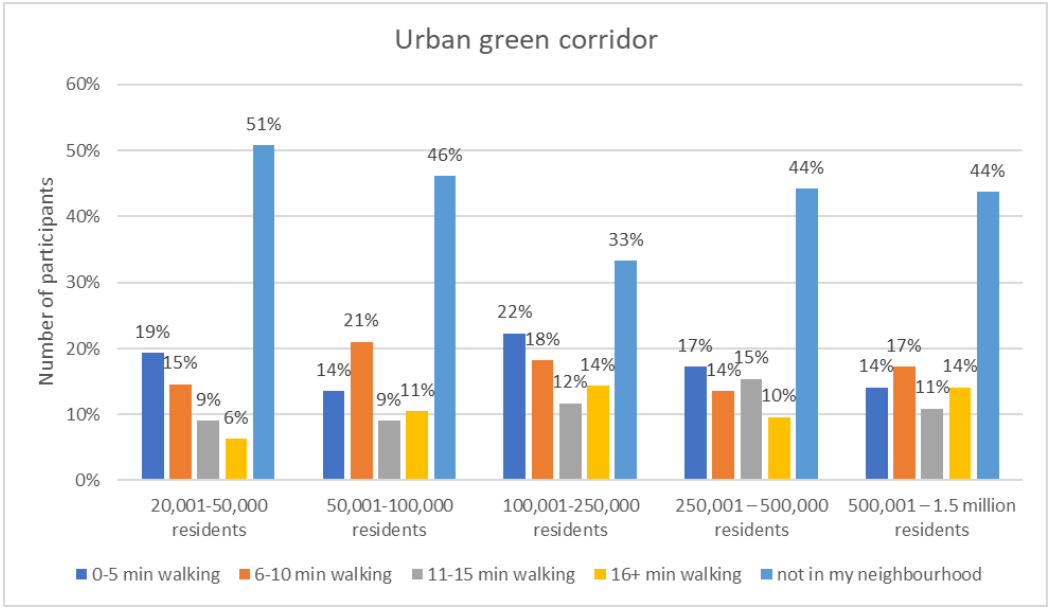

Figure 32: Walking distance to an urban corridor by city size (Chi square = 0.005)

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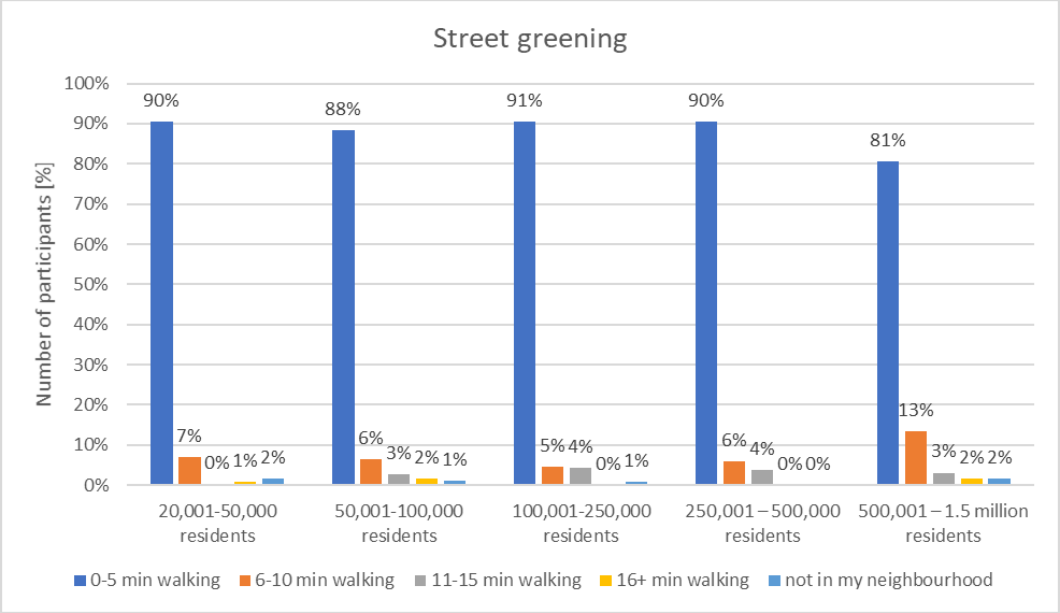

Figure 33: Walking distance to street greening by city size (Chi square = 0.038)

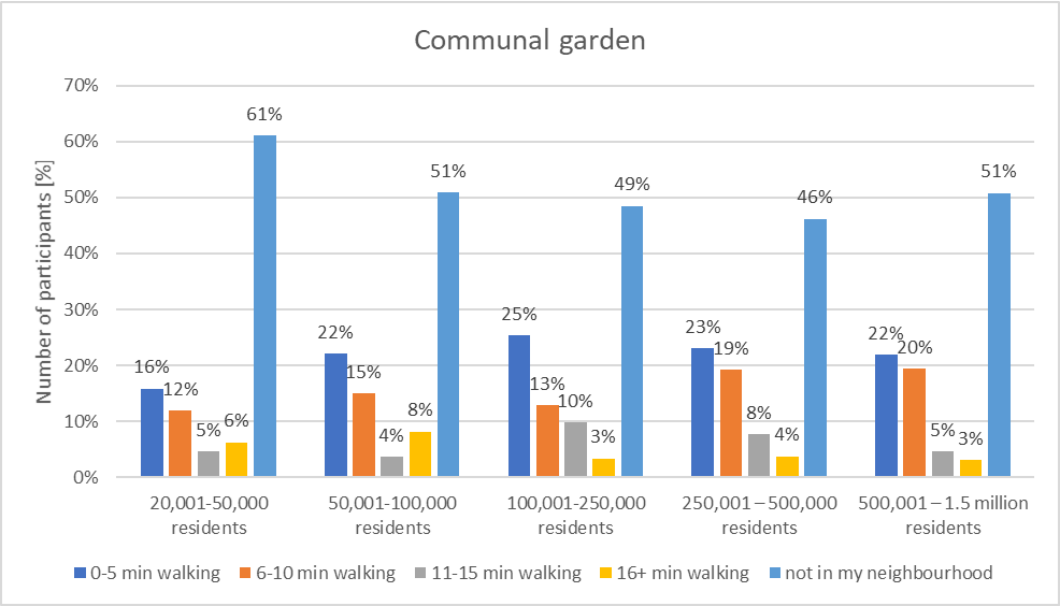

Figure 34: Walking distance to a communal garden by city size (Chi square = 0.004)

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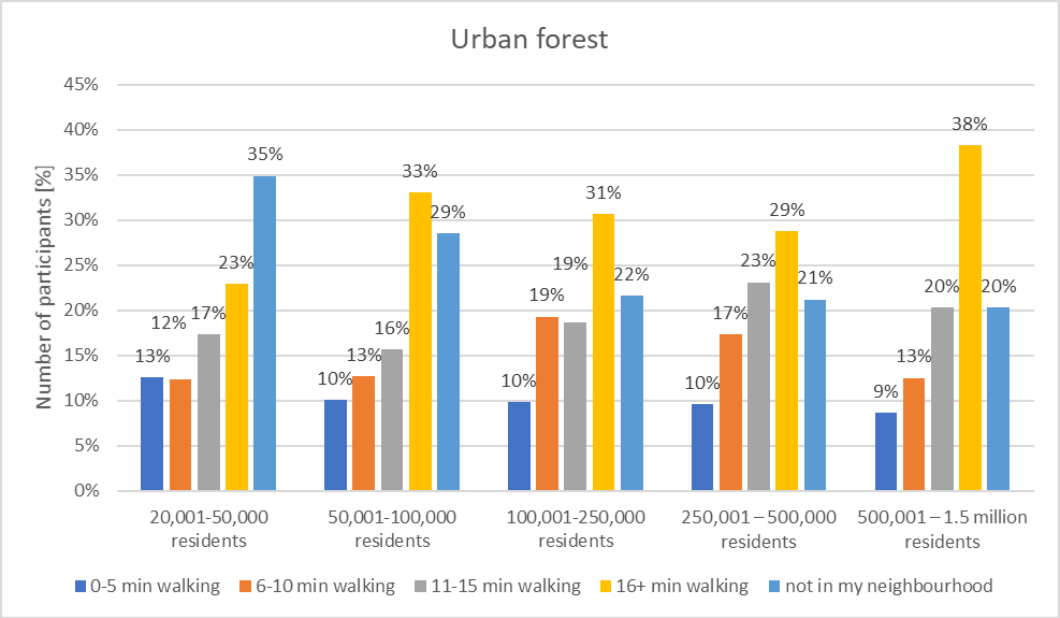

Figure 35: Walking distance to an urban forest by city size (Chi square = 0.01)

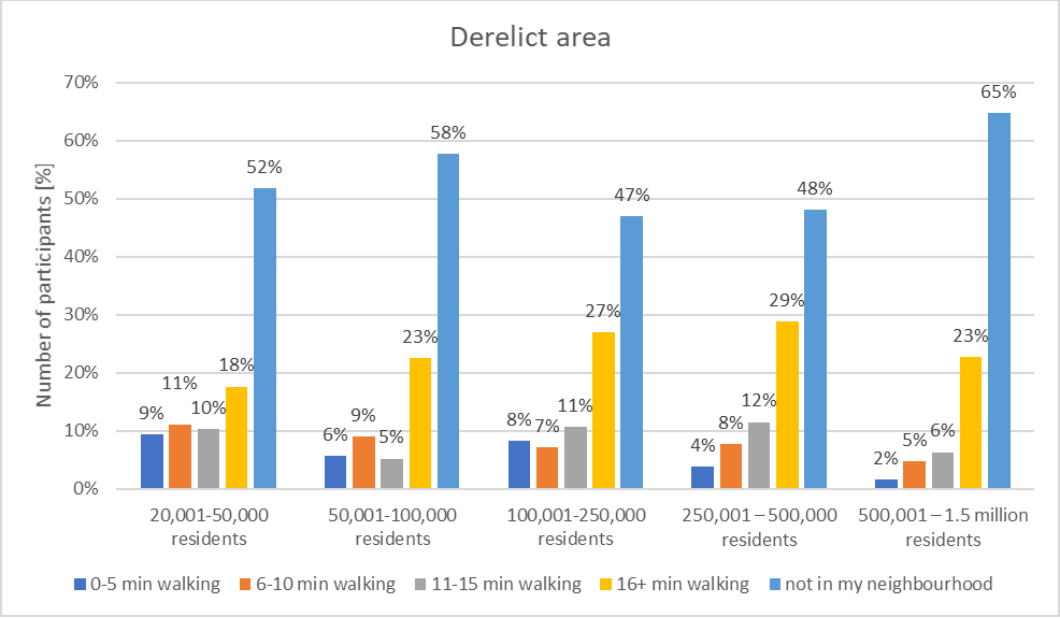

Figure 36: Walking distance to a derelict area by city size (Chi square = 0.004)

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5.3 COMPANIONSHIP IN GREEN AREAS IN THE NEIGHBOURHOOD

Question 9: Participants usually spend time with their partner (Ø = 2.8), alone (Ø = 2.57) and with children (Ø = 2.15) at green areas. Spending time with neighbours (Ø = 1.41) is not very common and received the "never" category more often than others. 34.9% of participants state that they never go to green areas with "others", 14.4% state that this seldom happens.

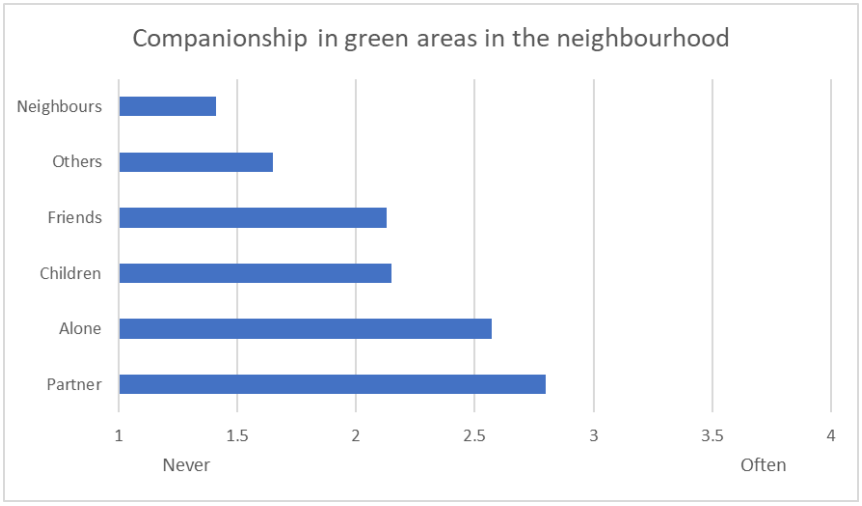

Figure 37: Companionship in green areas

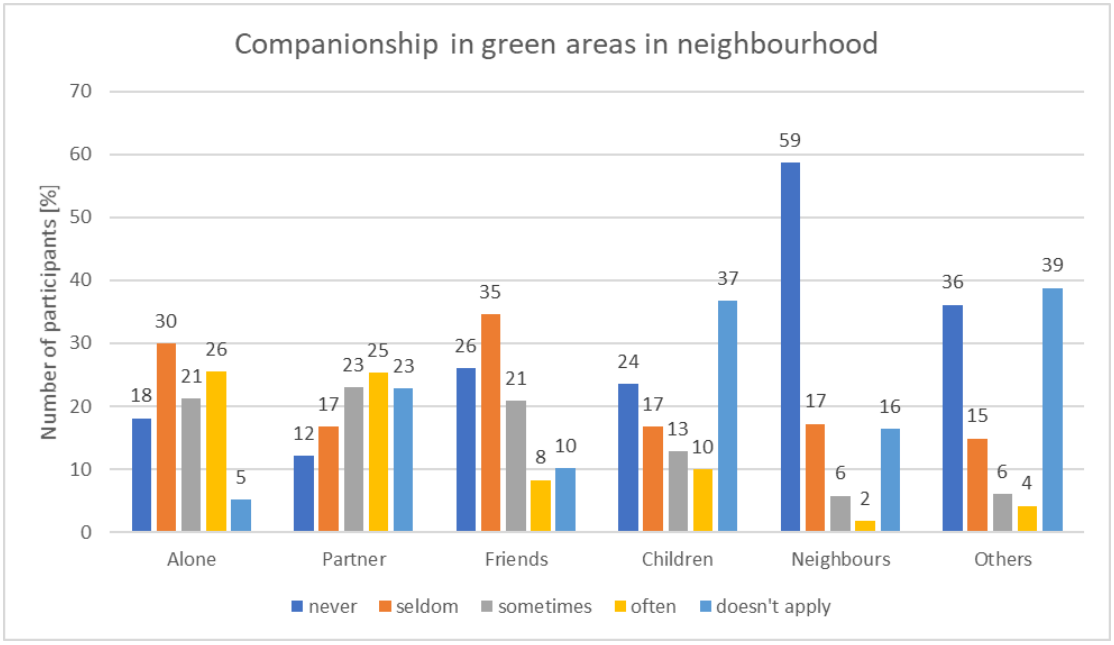

Figure 38: Frequency of types of companionship in green areas

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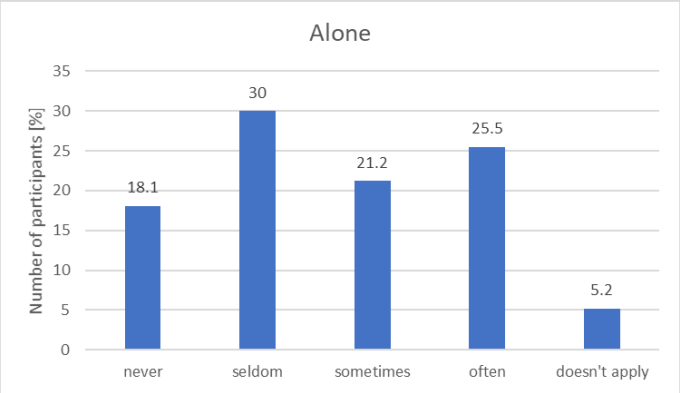

Figure 39: Frequency of time spent alone in green areas

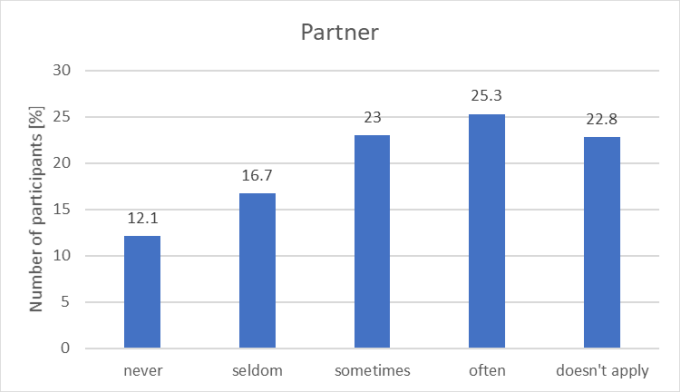

Figure 40: Frequency of time spent with partner in green areas

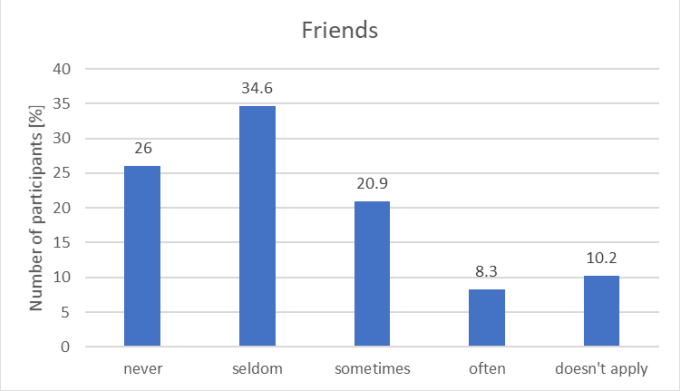

Figure 41: Frequency of time spent with friends in green areas

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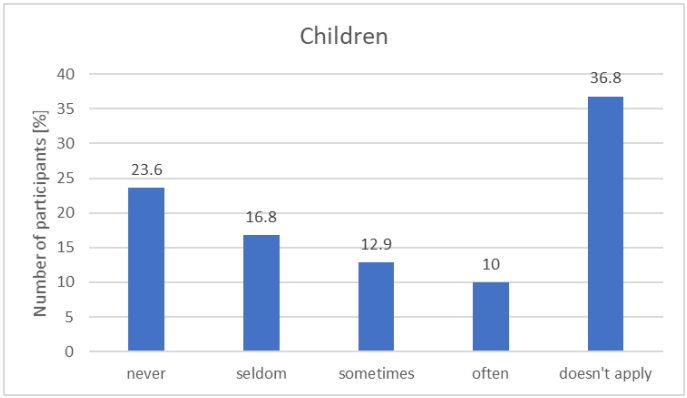

Figure 42: Frequency of time spent with children in green areas

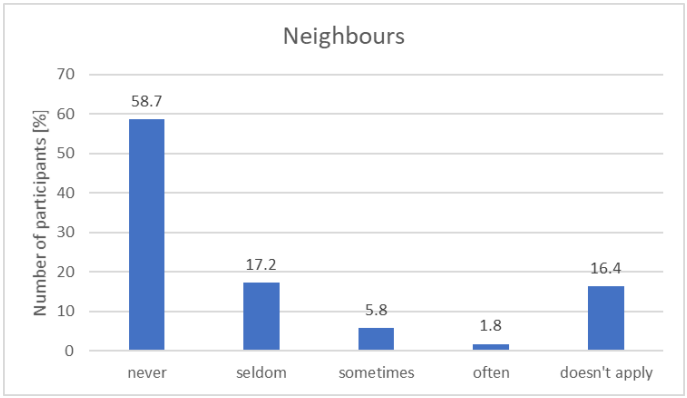

Figure 43: Frequency of time spent with neighbours in green areas

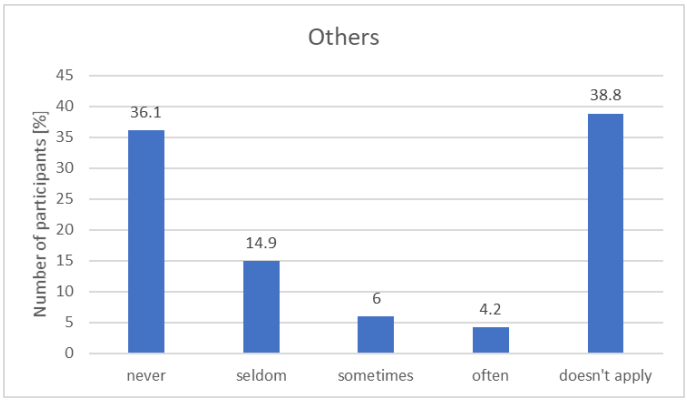

Figure 44: Frequency of time spent with others in green areas

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5.4 RATING OF THE AMOUNT OF GREEN AREAS IN THE NEIGHBOURHOOD

Question 10: Generally, about 88% of participants **rate the amount of green** areas in their neighbourhood either as excellent (20.9%; N=210) or good (67.2%; N=675). No significant difference exists between the rating in different sized cities (Chi square = 0.553).

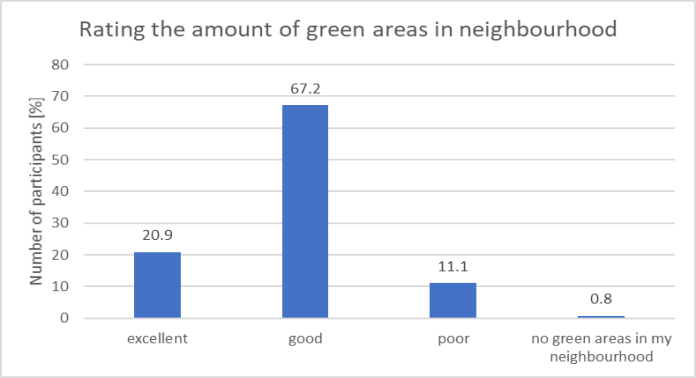

Figure 45: Rating the amount of green areas in neighbourhood

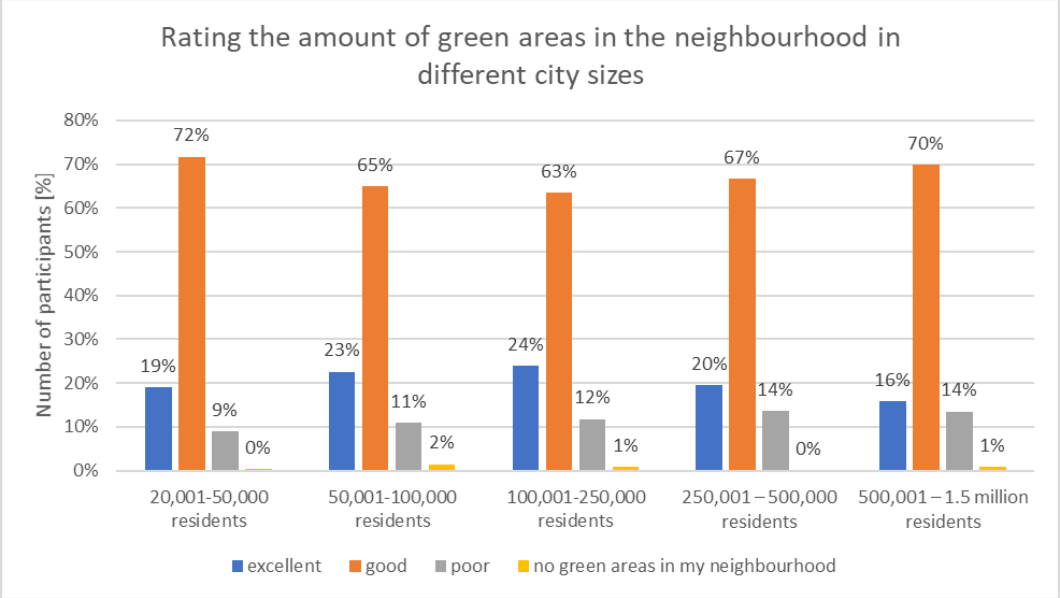

Figure 46: Rating the amount of green by city size (Chi square = 0.553)

Question 11: About 30% of the participants (29.9%; N=302) spend **30 minutes or less a week in green areas**. 23.2% (N=234) spend about one hour and 27.4% (N=276) spend two to four hours in green areas. No significant differences exist between city sizes (Chi square = 0.331).

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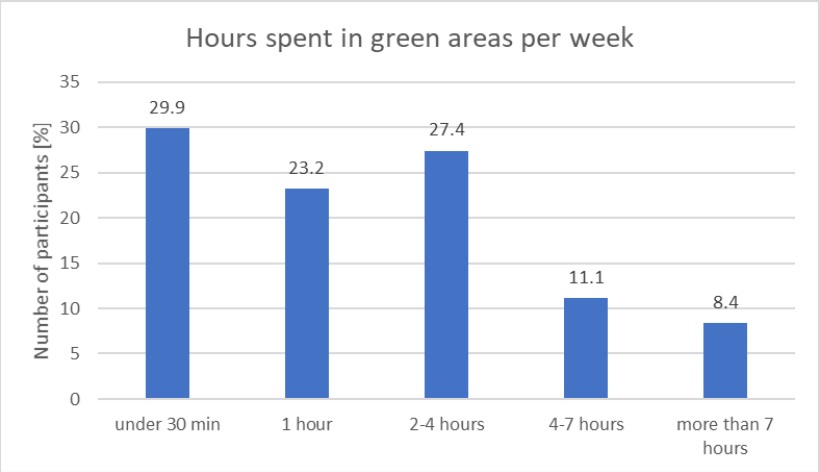

Figure 47: Number of hours spent in green areas per week

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6 CLIMATE CHANGE

Question 13: The prevailing opinion of 69.4% of participants was that **climate change can already be perceived**.

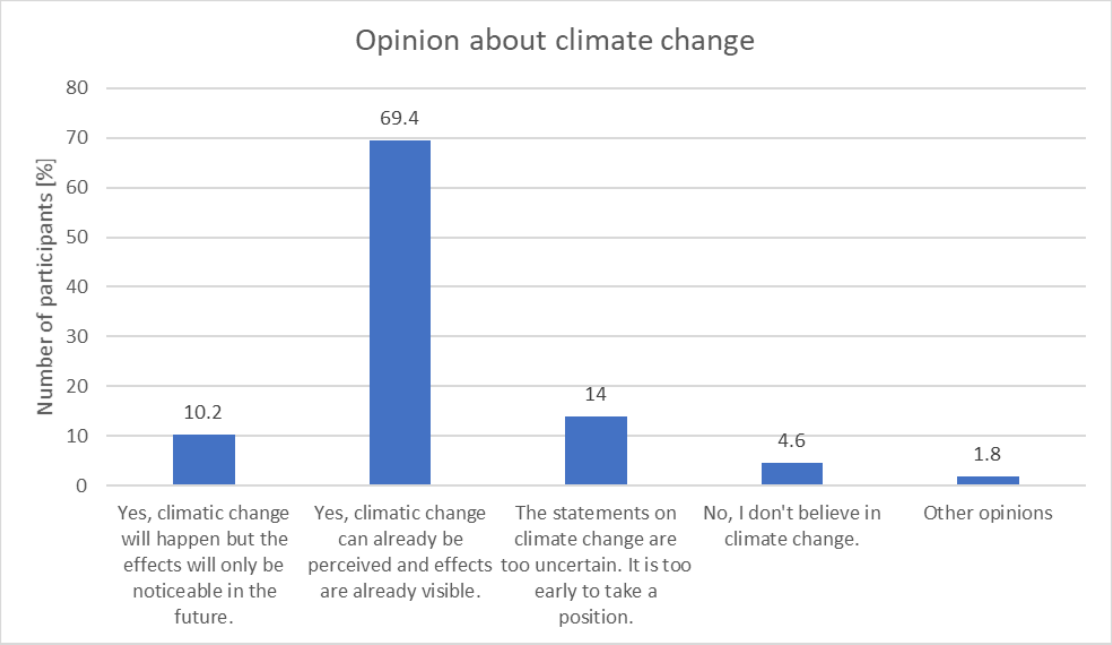

Figure 48: Respondents' opinion about climate change

Other opinions include

- Change is now hype; there has always been change and there always will be.
- There is change and if it is man-made they will be the first to notice it.
- There have always been climate changes, which is not to say we shouldn't pay attention.
- No idea.
- It is unfortunate that climate has become a revenue model.
- Hotter and drier summers.
- I'm not so concerned with that.
- I think we are heading for another ice age. In previous ones, it got warmer before that too. But fortunately that will take many years.
- I don't believe we have any influence on climate change.
- Yes there are changes, but people are striking out with measures.
- Climate has been changing for centuries.
- Climate is certainly changing, it has been doing so for thousands of years.
- Climate change has been happening for centuries we should not be so spastic about it.
- Climate change exists but we as humanity cannot change it no matter what measures we take.
- Climate change is part of it.
- Climate change has always been there, find it strange that we are now going to be so vehement about it for such a small country.
- Speaks for itself.
- Many different opinions.

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Question 14: Despite this general acceptance of the effects of climate change, only 41.2% of participants (N=417) believe that climate change effects will **occur in their neighbourhood**.

Table 5: Respondents expectation of climate change effects in their neighbourhood

	n	%
No, I don't expect effects by climate change	595	58.8
Yes, I expect the following effects to happen in my neighbourhood	417	41.2

Question 14a: Out of 416 participants who proceeded to questions 14a to c, about 93% (N=386) already **experienced heat waves**.

Table 6: Respondents who have experienced heat waves in their neighbourhood

	n	%
No, I never experienced heat waves in my neighbourhood	30	7.2
Yes, I experienced heat waves already	386	92.8

Question 14b: On average, participants stated to experience 10.07 days of **heat waves per summer**. The number of reported heat waves (days) ranged from one to 95.

Question 14c: About 50% of the reduced number of participants stated to be **negatively affected by heat waves in their wellbeing**. 11.9% even stated that heat waves negatively affect their health.

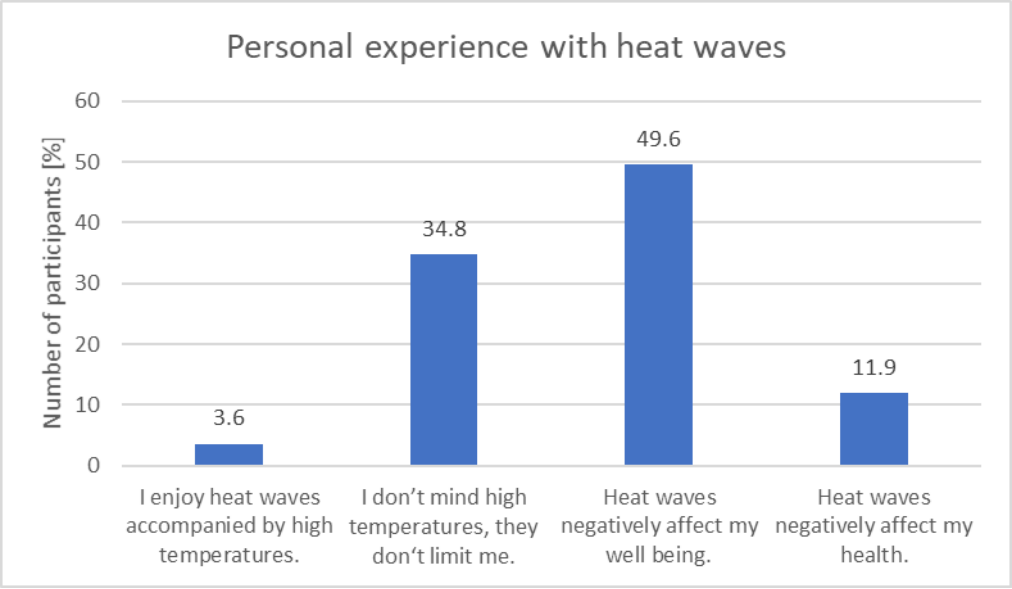

Figure 49: Respondents' personal experience with heat waves

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7 MEASURES AT CITY LEVEL TO COMBAT CLIMATE CHANGE

Question 15: A broad consensus exists regarding the **importance of actively addressing climate change** through strategies on the communal level. About 85% state that it is either very important or important.

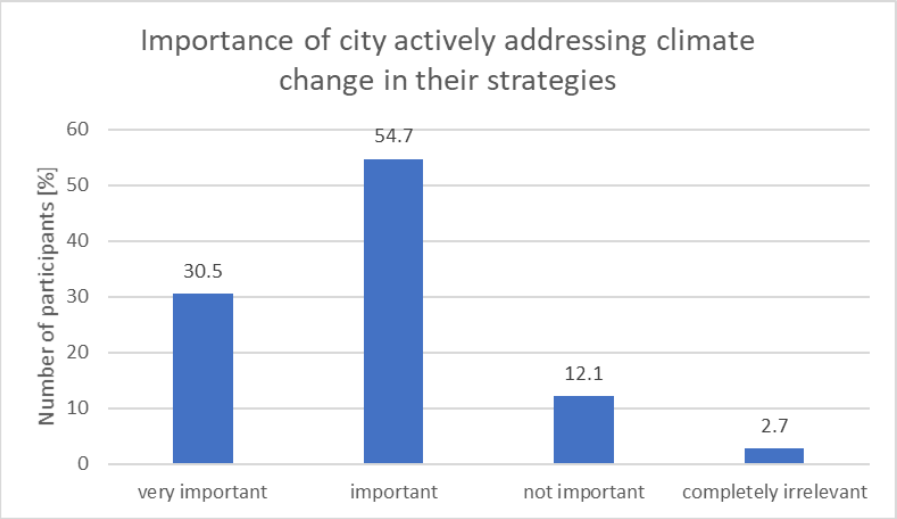

Figure 50: Importance of addressing climate change in strategies at the communal level

Question 16: Regarding the **desired quality of life in the neighbourhood**, participants identified all strategies as almost equally important (Ø between 3.51 and 2.91). Stormwater management was the most important measure (Ø = 3.51), followed by air quality improvement and microdust reduction (Ø = 3.43), conserve and increase urban biodiversity (Ø = 3.26) and improving urban climate by fresh air corridors (Ø = 3.08).

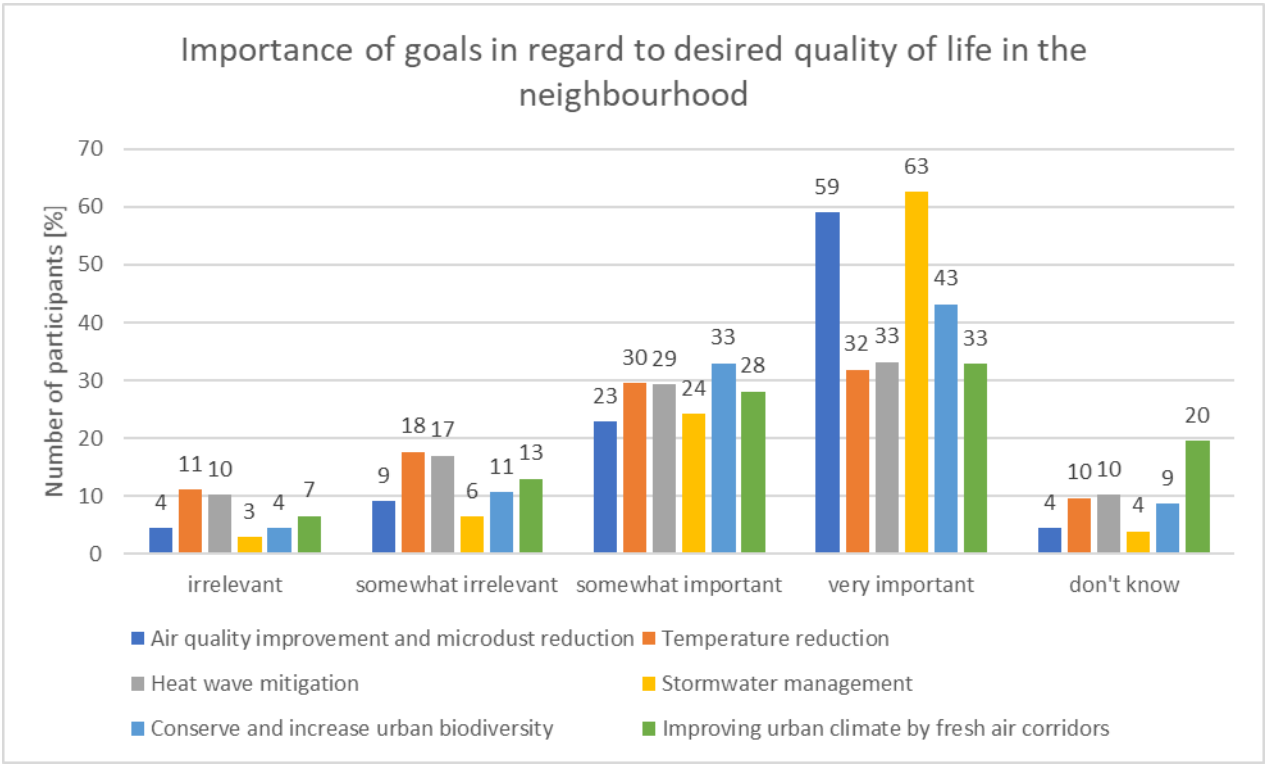

Figure 51: Importance of goals in regard to desired quality of life in their neighbourhood (comparative)

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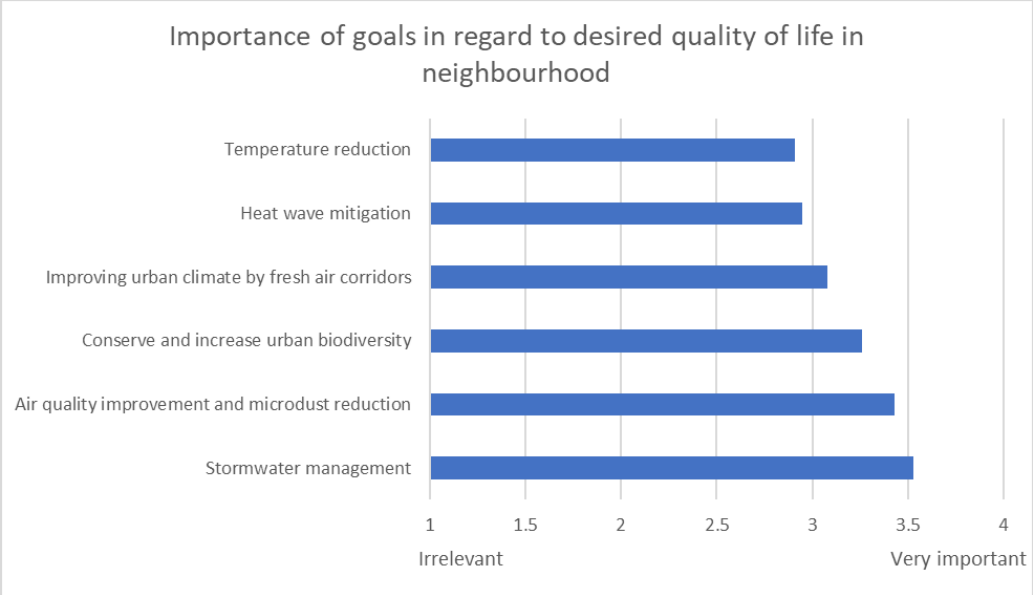

Figure 52: Importance of goals in regard to desired quality of life in their neighbourhood (average)

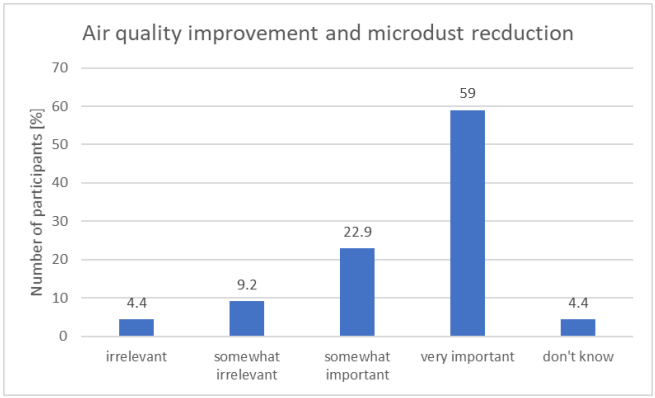

Figure 53: Importance of air quality improvement and microdust reduction

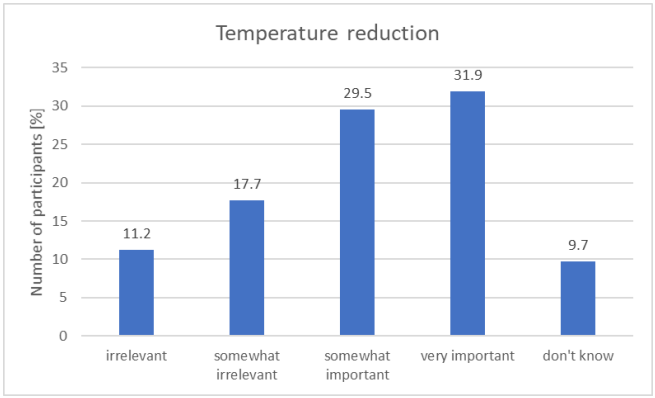

Figure 54: Importance of temperature reduction

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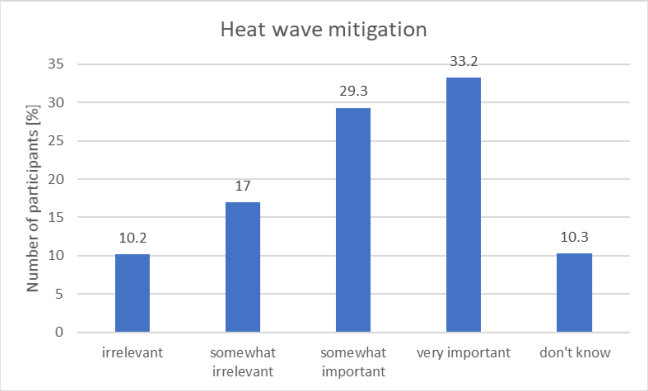

Figure 55: Importance of heat wave mitigation

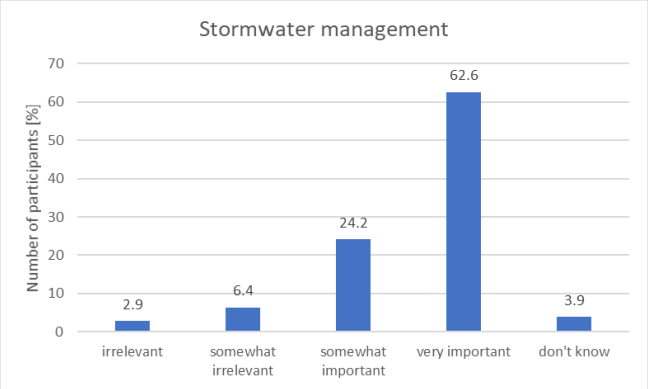

Figure 56: Importance of stormwater management

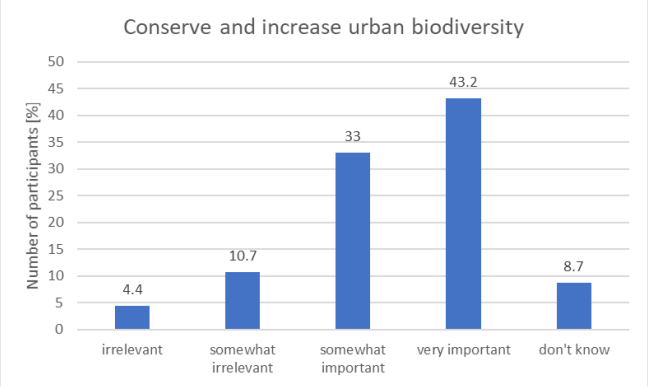

Figure 57: Importance of conserving and increasing urban biodiversity

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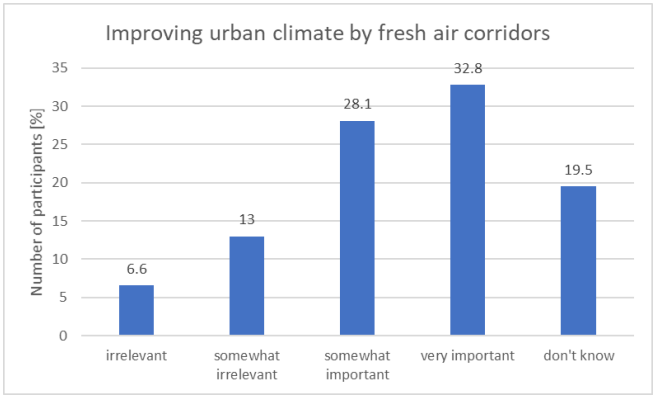

Figure 58: Improving urban climate by fresh air corridors

Significant differences exist between cities regarding the evaluation of **improving the urban climate by fresh air corridors** (Chi square = 0.046), it ranges between 29.5% and 42.3% in importance according to the size of the city. The importance of **stormwater management** is high for all cities, but its also differs between city sizes (between 56.8% and 67.3% ranked it as very important). **Air quality improvement and microdust reduction** was ranked "very important" from 53.9% to 75% of the participants.

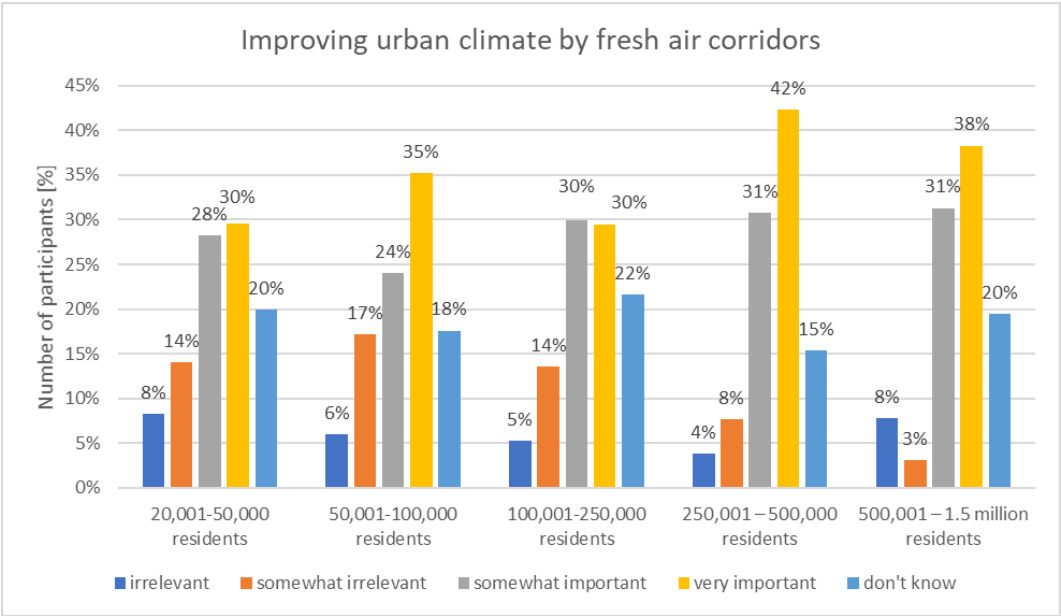

Figure 59: Importance of improving urban climate by fresh air corridors by city size (Chi square = 0.046)

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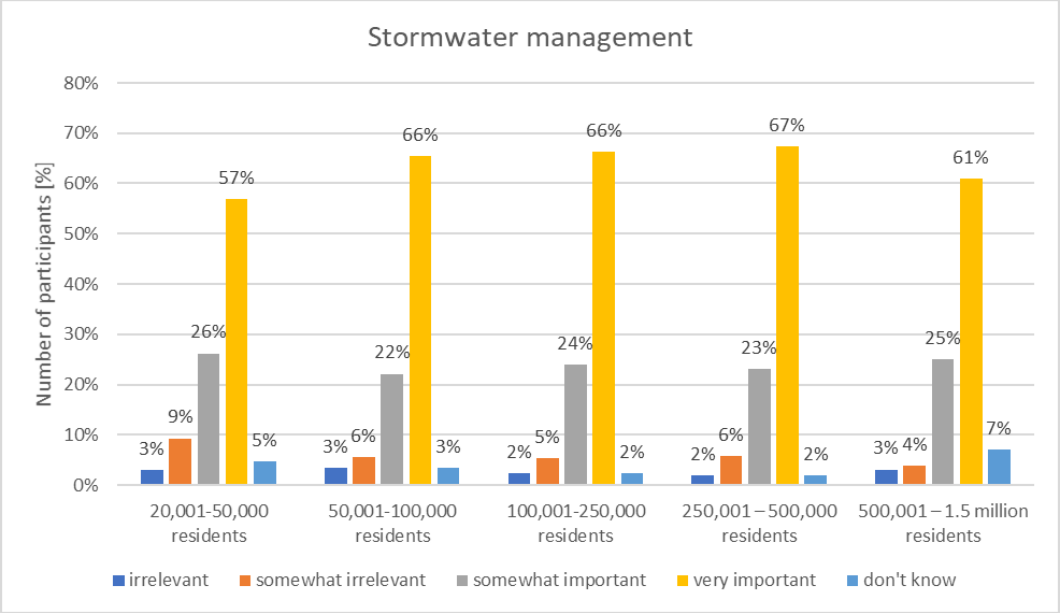

Figure 60: Importance of stormwater management by city size (Chi square = 0.0396)

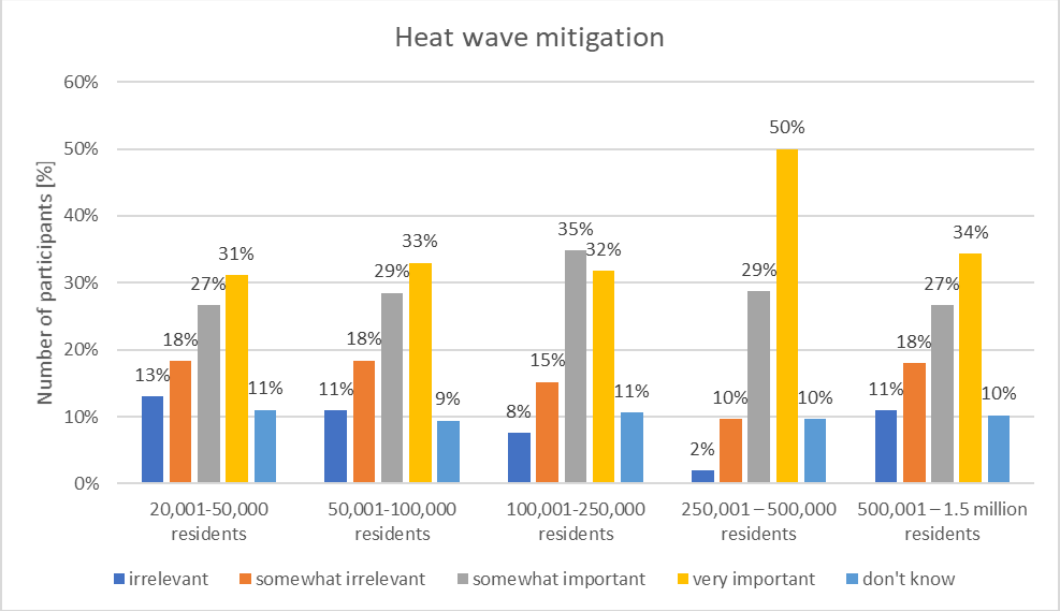

Figure 61: Importance of heat wave mitigation by city size (Chi square = 0.0226)

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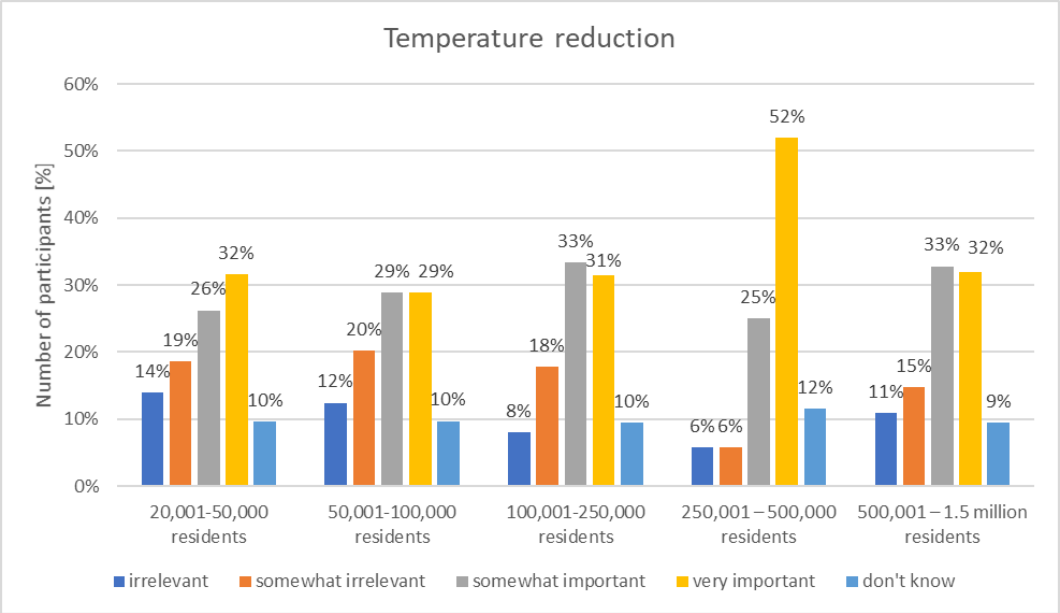

Figure 62: Importance of temperature reduction by city size (Chi square = 0.0116)

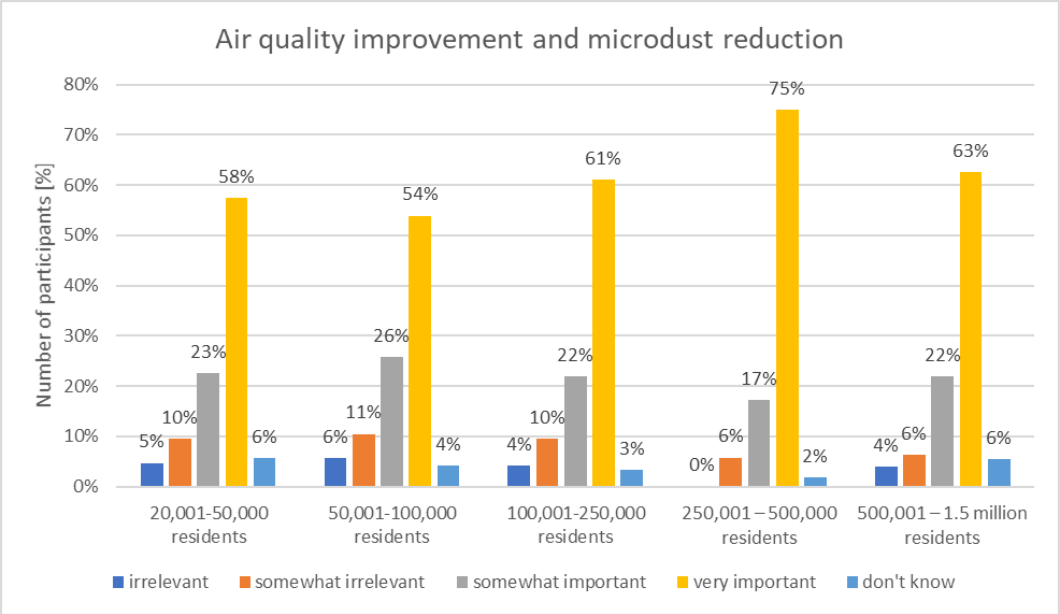

Figure 63: Importance of air quality improvement and microdust reduction by city size (Chi square = 0.0574)

Question 17a-d: Overall, **measures to enhance urban greening** were found to be particularly useful in contributing to the aesthetic of the urban landscape and urban biodiversity. The measure with the highest impact to urban strategies (biodiversity, aesthetics, water retention and climate change) was street greening by trees and hedges (Ø = 3.125 over all effects), followed by urban green corridors (Ø = 3.12). Street greening by trees and hedges also scored the best for the effects health benefits (Ø = 3.11) and aesthetic of the urban landscape (Ø = 3.36). For climate change mitigation rain gardens were found to be especially useful (Ø = 2.92) and for the urban biodiversity urban green corridors scored best (Ø = 3.2).

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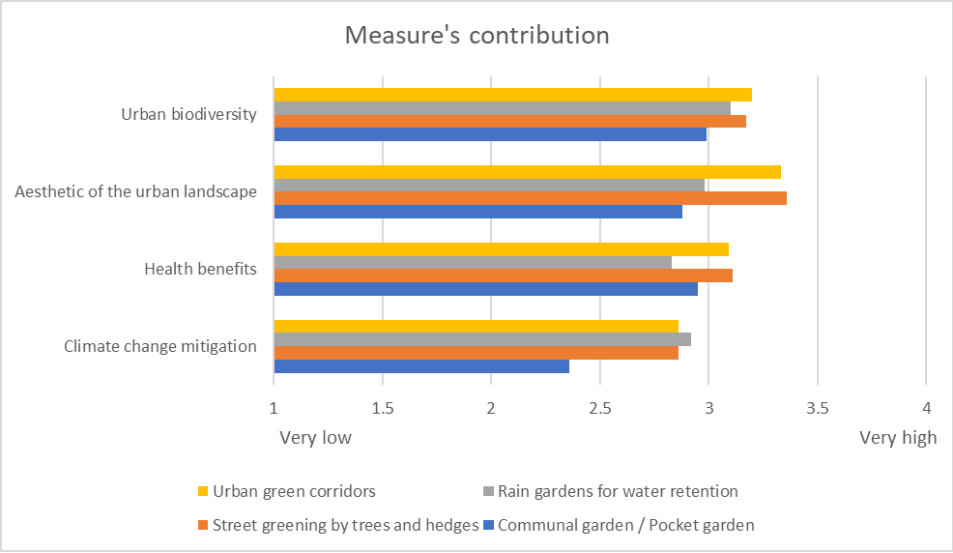

Figure 64: Different NBS contributions to urban strategies

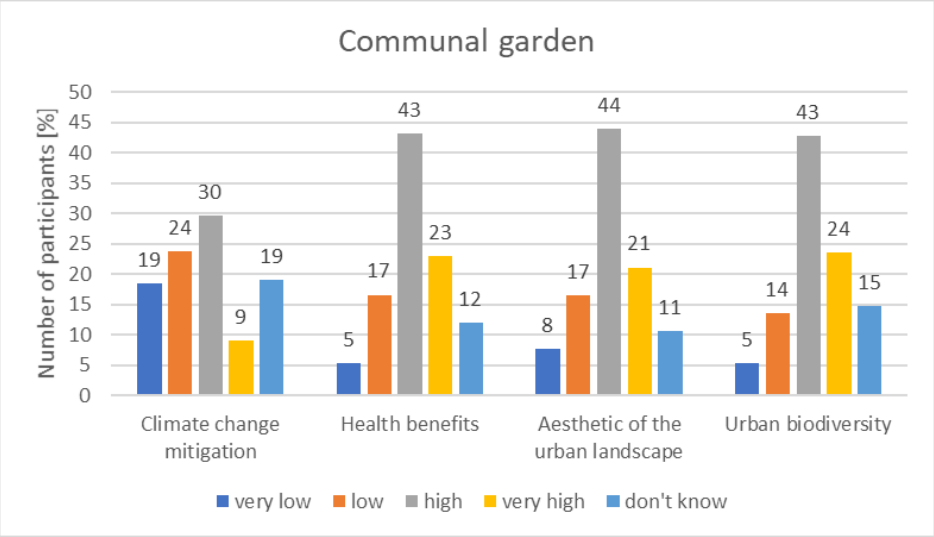

Figure 65: Communal gardens' contributions to urban strategies

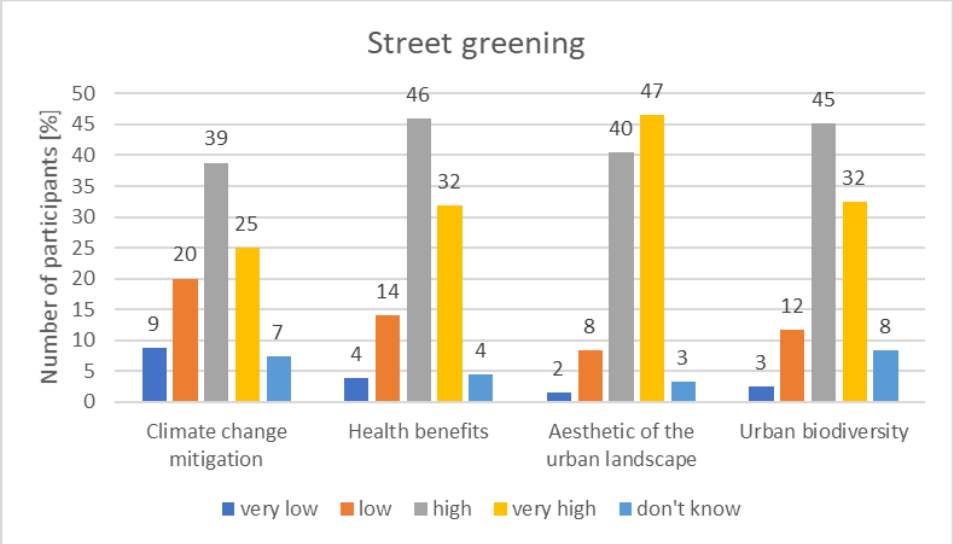

Figure 66: Street greening's contributions to urban strategies

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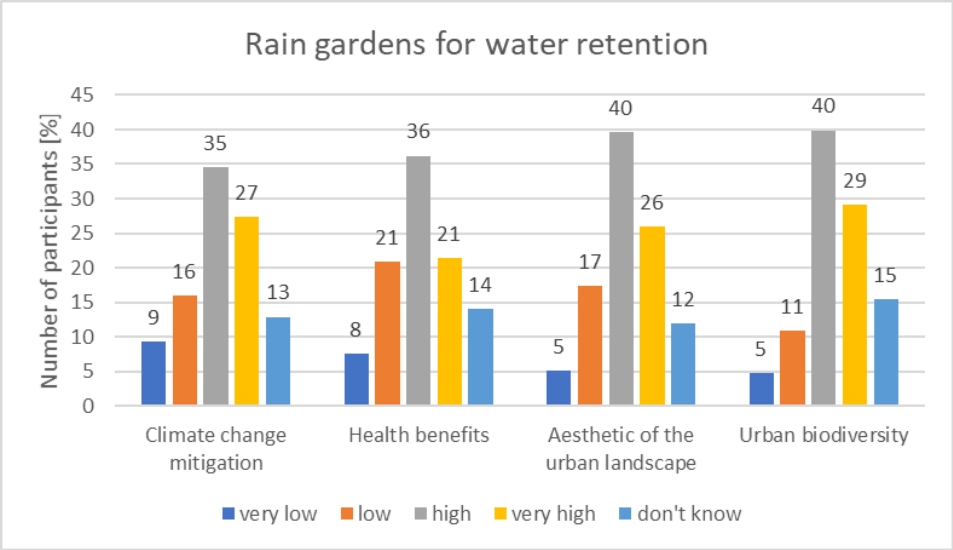

Figure 67: Rain gardens' contributions to urban strategies

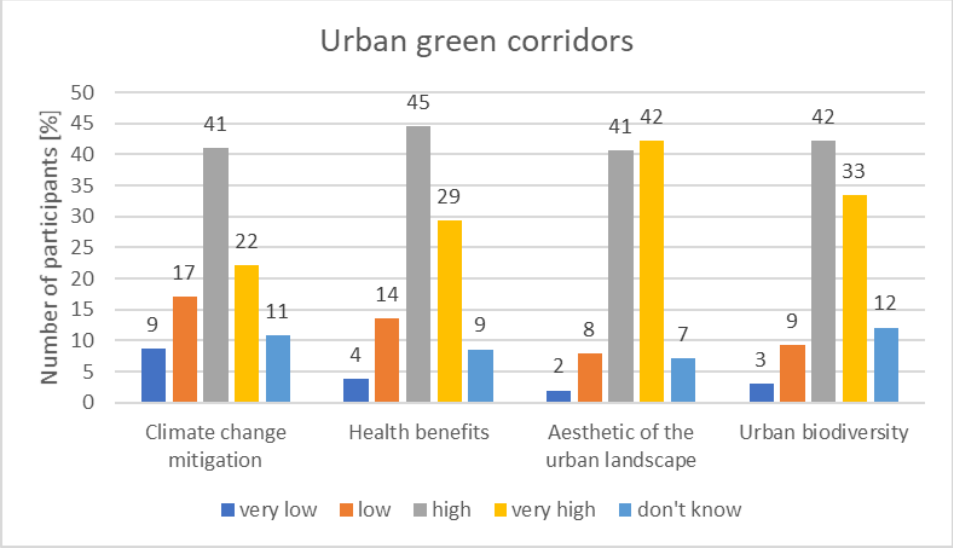

Figure 68: Urban green corridors' contributions to urban strategies

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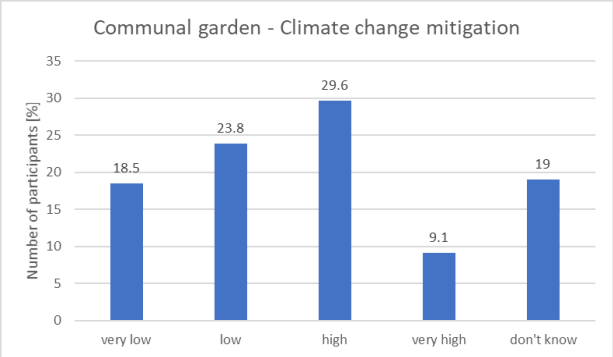

Figure 69: Communal gardens' importance for climate change mitigation

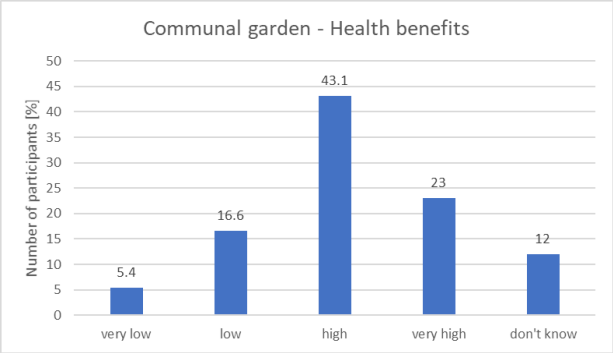

Figure 70: Communal gardens' importance for health benefits

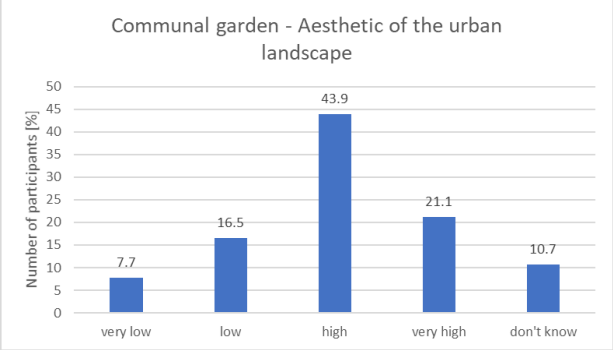

Figure 71: Communal gardens' importance for aesthetic of the urban landscape

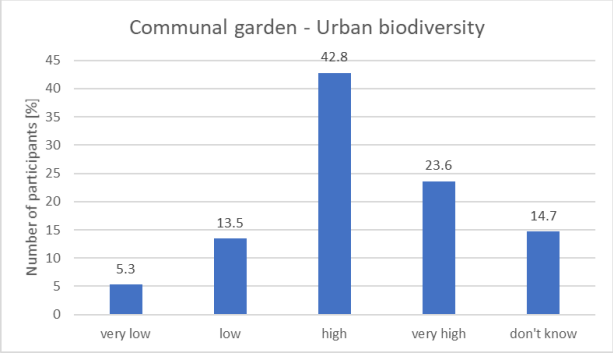

Figure 72: Communal gardens' importance for urban biodiversity

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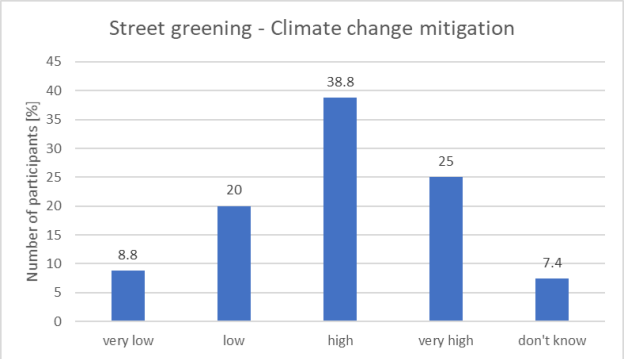

Figure 73: Street greening's importance to climate change mitigation

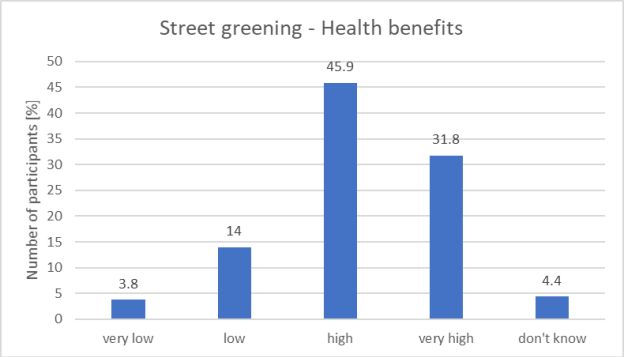

Figure 74: Street greening's importance for health benefits

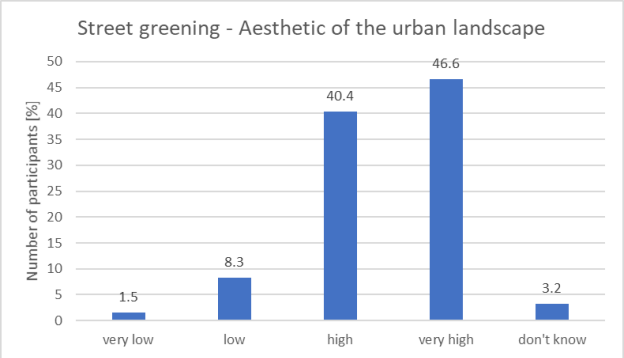

Figure 75: Street greening's importance for aesthetic of the urban landscape

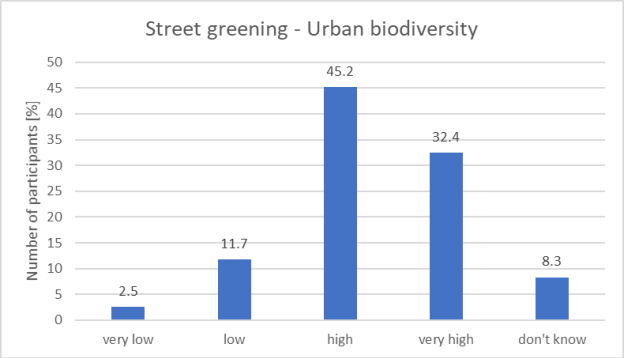

Figure 76: Street greening's importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

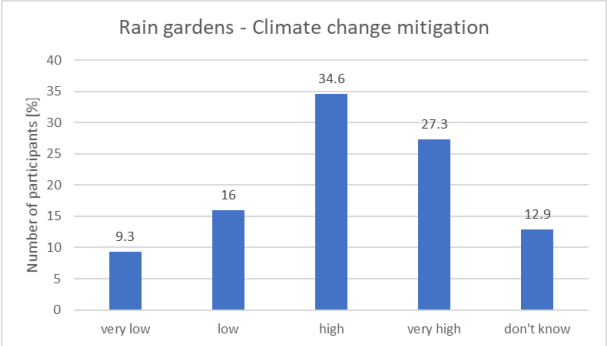

Figure 77: Rain gardens' importance for climate change mitigation

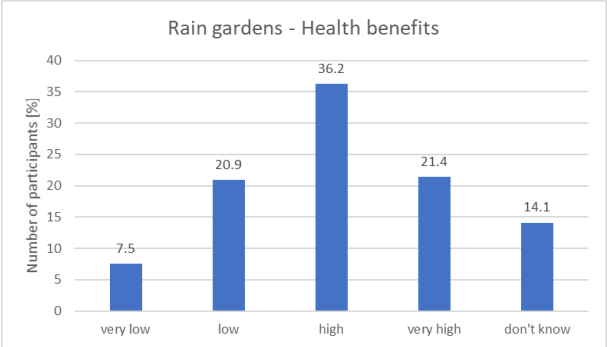

Figure 78: Rain gardens' importance for health benefits

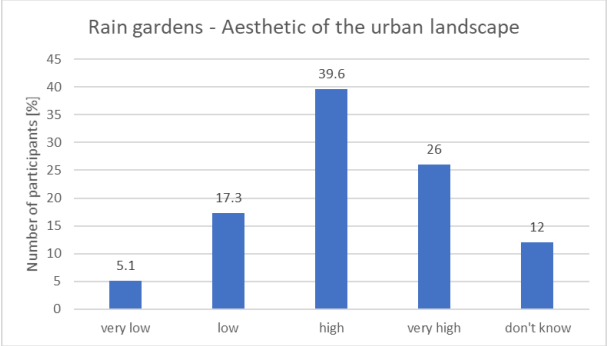

Figure 79: Rain gardens' importance for aesthetic of the urban landscape

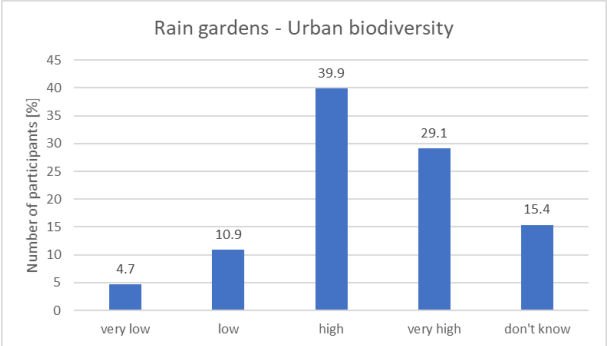

Figure 80: Rain gardens' importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

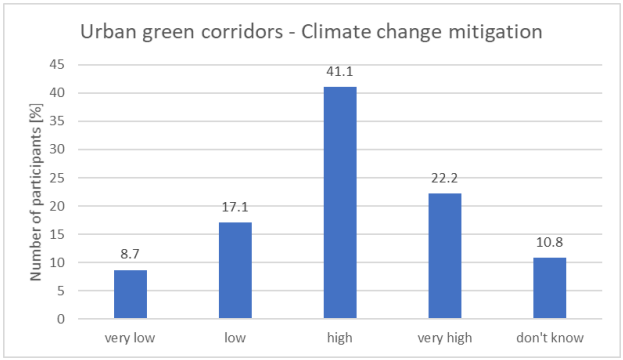

Figure 81: Urban green corridors' importance for climate change mitigation

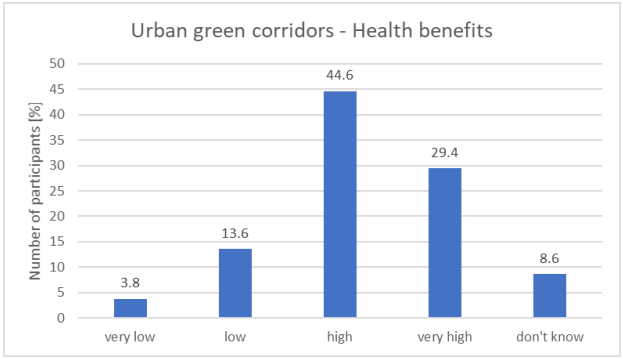

Figure 82: Urban green corridors' importance for health benefits

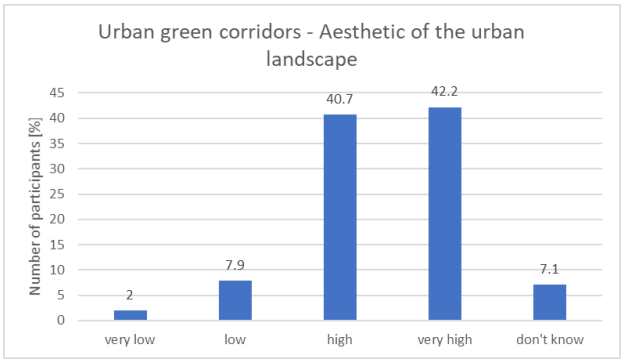

Figure 83: Urban green corridors' importance for aesthetic of the urban landscape

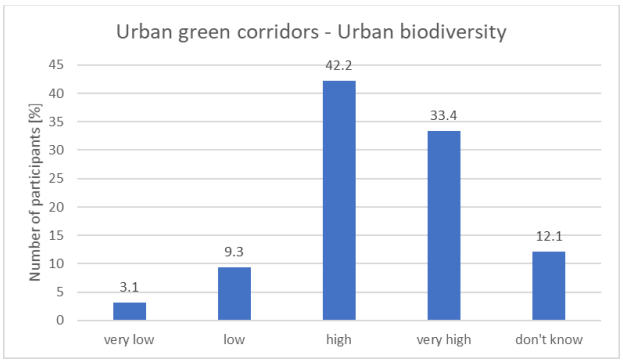

Figure 84: Urban green corridors' importance for urban biodiversity

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Task 4.1. – Survey and Choice Experiment

Draft Survey Analysis - Hungary

Responsible partner: **BOKU**

Authors: Alice Wanner, Magdalena Feilhammer, Meike Jungnickel & Ulrike Pröbstl-Haider

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818.

DOCUMENT DETAILS

Title:	Draft survey analysis - Hungary
Annexes:	

Work Package:	4
Task:	4.1. – Survey with integrated choice experiment
Deliverable type:	Internal draft analysis of the Hungarian sample
Lead Partner:	BOKU
Submission date:	21/02/2024

Dissemination level:		
PU	Public	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including Commission Services)	CO

DOCUMENT HISTORY

Version	Date	Partner	Author	Changes
1.	21/02/2024	BOKU	Wanner, Feilhammer, Jungnickel & Pröbstl-Haider	1st draft

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1 SAMPLE DESCRIPTION – DEMOGRAPHIC INFORMATION

N = 1017

The sample consists of approximately 54% males and 46% females (N=1007).

Table 1: Sample demographics - gender

	n	%
Female	465	46.2
Male	539	53.5
Diverse	0	0
Prefer not to say	3	0.3

The **average age** of the sample is 38.64 years (N=936). The range is between 18 to 72 years.

The **education levels** of the sample vary with 48% holding a university degree (37.3% Bachelor's degree, 10.7% Master's degree) (N=1015).

Table 2: Sample demographics - education

	n	%
None completed	3	0.3
Primary	18	1.8
Secondary	377	37.1
Trade/technical/vocational training	110	10.8
Bachelor's Degree	379	37.3
Master's degree	109	10.7
Doctorate	15	1.5
Prefer not to say	4	0.4

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2 LIVING ARRANGEMENTS

Question 1: Nearly half of the participants (49.1%, N=499) live in the largest category (>250,000 residents). These are most likely residents of Budapest. Approximately 17% (N=170) live in the smallest category (20,001-50,000 residents).

Figure 1: Participants by city size

Question 1a: About 42.7% (N=505) live in the **urban districts of the city**, followed by the city centre (N=260; 41.1%). About 16.1% (N=169) live in suburbs.

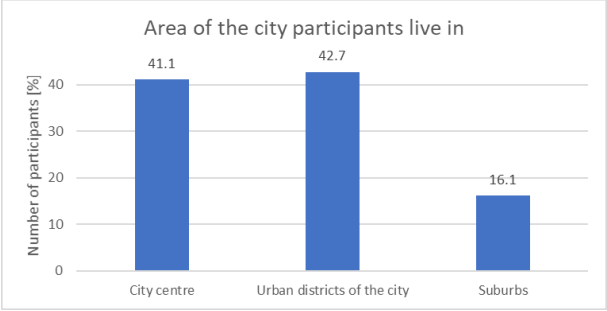

Figure 2: Area of the city participants live in

Question 21: The household sizes vary among the respondents. However, one third of the households consists of 2 people (32.5%).

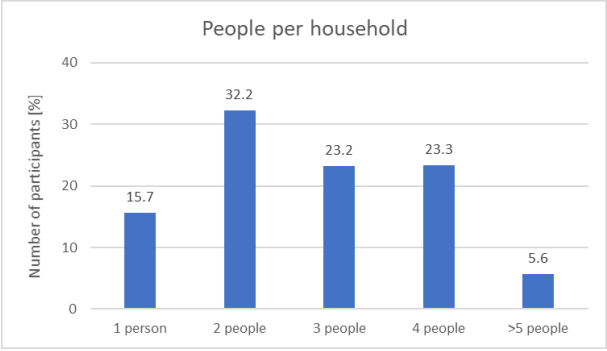

Figure 3: Number of people per household

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Question 22: Households with **children under the age of 18** account for about 40% (N=401) whereas 60% (N=609) are households without children under 18.

Table 3: Respondents living with children under the age of 18

	n	%
Children under 18	401	39.7
No children under 18	609	60.3

Question 25: The **monthly household income** lies primarily from 500€ to 1000€ a month (N=340) (N= 1015).

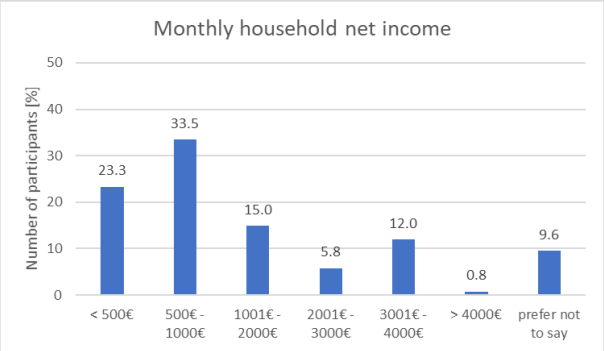

Figure 4: Monthly household net income

Question 23: Nearly 22% do not own a car. In contrast households with 1 to 4 cars sum up to 77.9%. Only 3 participants indicated having 5 or more cars in their households.

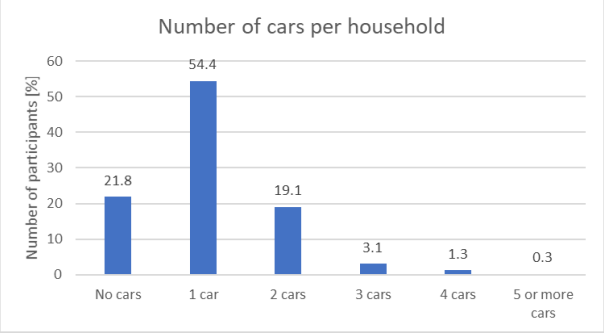

Figure 5: Number of cars per household

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The **size of the city** does not significantly determine the number of cars owned by participants (Chi square = 0.067). Across all city sizes, households with one car are the dominant category. Roughly 20% across all city sizes have no car. The largest city size category, however, shows fewer households with two cars, compared to the other city sizes.

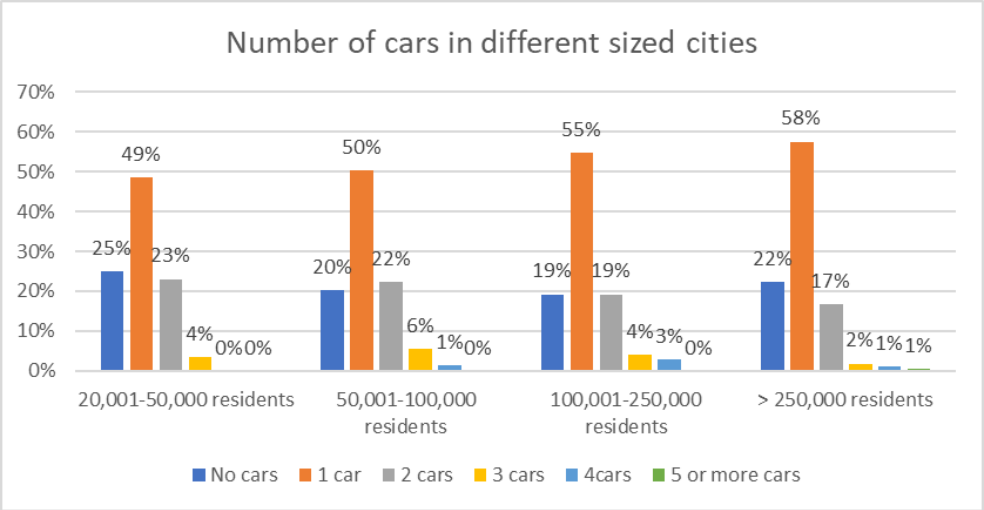

Figure 6: Number of cars per household by city size (Chi square = 0.067)

3 NEIGHBOURHOOD

Question 2: The participants' neighbourhoods are mostly characterized by detached houses (33.6%, N=338) and closed block or cluster (32.9%, N=331), followed by semi-detached (13.6%, N=137) and row houses (12%, N=121).

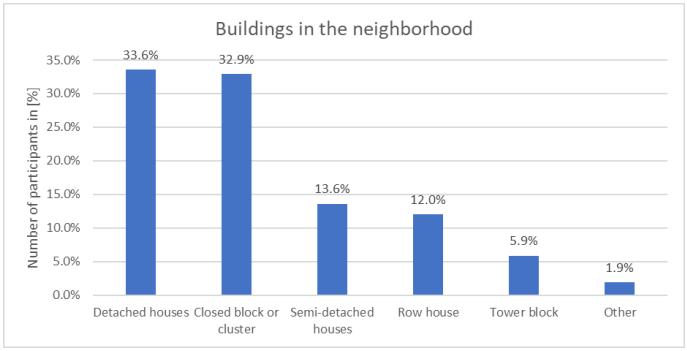

Figure 7: Types of buildings characterising the neighbourhood

Question 3: The **major building height** tends to be 3 to 4 storeys (39%; n=392). Buildings with only 1 storey are also common (19.3%, n=194).

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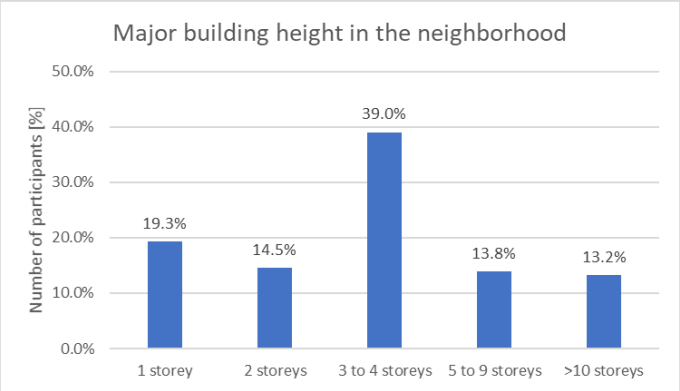

Figure 8: Predominant building height in the neighbourhood

Question 5: Only 6.2% of the houses were **built after 2010** (N=63). The majority (68.8%) was built between 1970 (40%; N=405) and 2009 (28.8%, N=292).

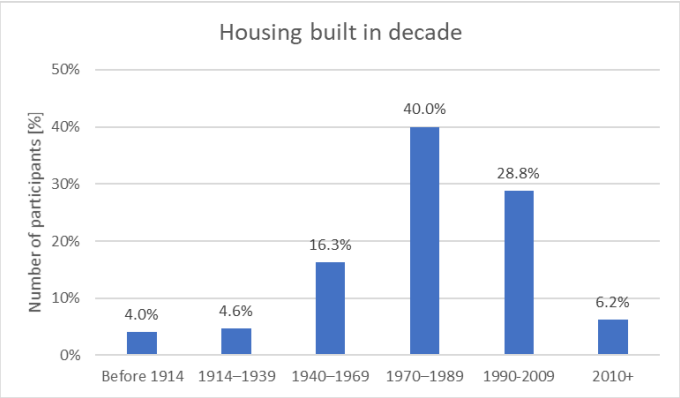

Figure 9: Decade in which housing was built

Question 4: The most dominant elements of the neighbourhoods are parking and traffic (Ø = 2.05), and private balconies and terraces (Ø = 2.02). This is followed by public green or parks with recreational space (Ø = 1.88) and paved public courts or squares (Ø = 1.9). Community gardens (Ø = 1.65) and derelict areas (Ø = 1.47) are rare. Half of participants indicate gardens and private green areas as dominant or frequent in their neighbourhood.

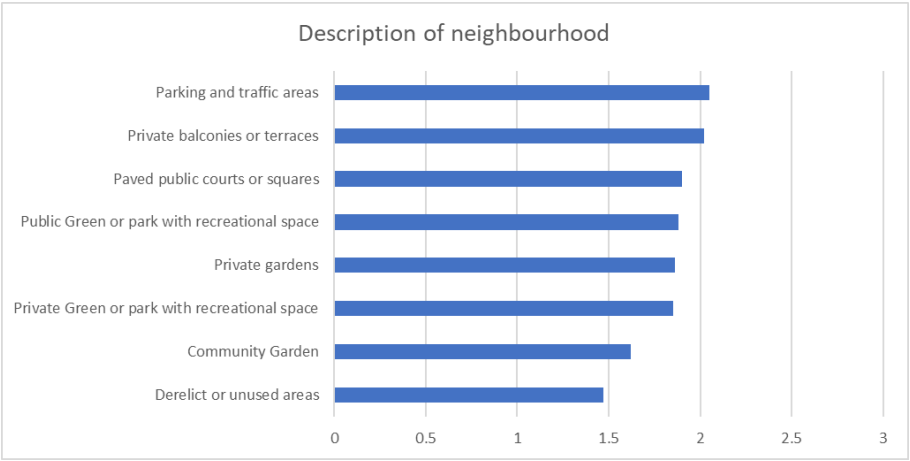

Figure 10: Description of neighbourhood surroundings

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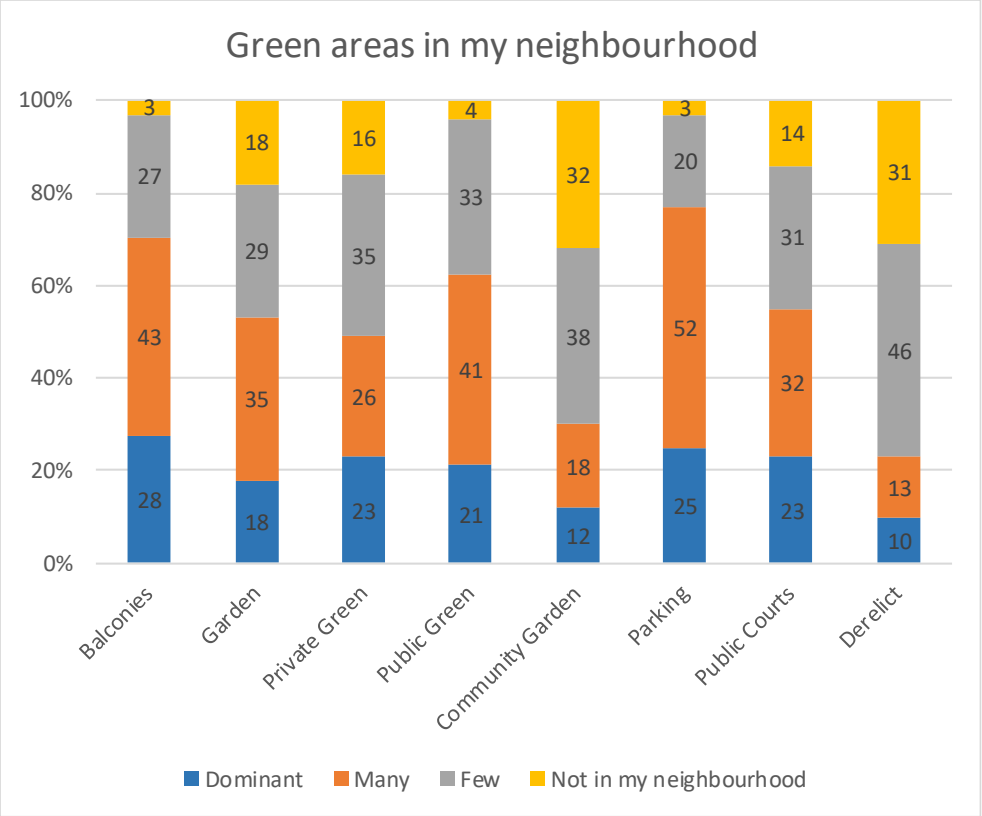

Figure 11: Green areas in my neighbourhood

Question 6: **Parking arrangements** in the neighbourhood are mostly public on-street parking (69%, N=699) or private parking (48%, N=492) (multiple answers possible).

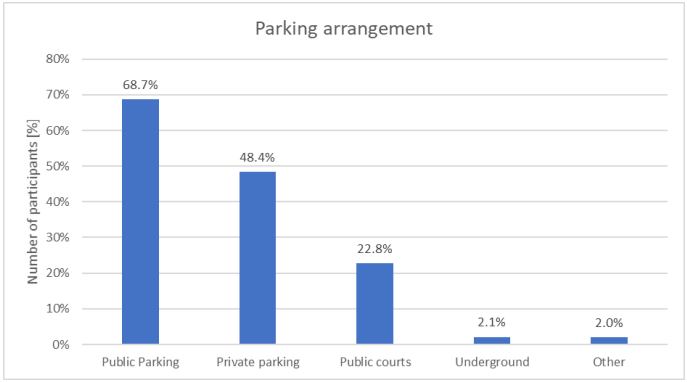

Figure 12: Parking arrangements in my neighbourhood

Question 7: The **walking distance to relevant infrastructure** is shortest (0-5 min walking) to slow public transport and longest (further away than 15 min walking) to participants' place of employment. For about 36%, fast public transport is not available.

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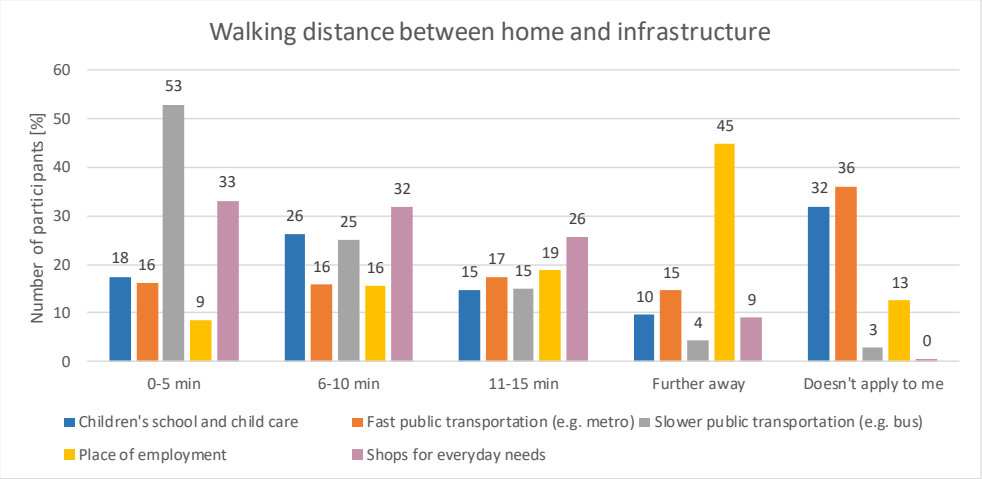

Figure 13: Walking distance between home and types of infrastructure

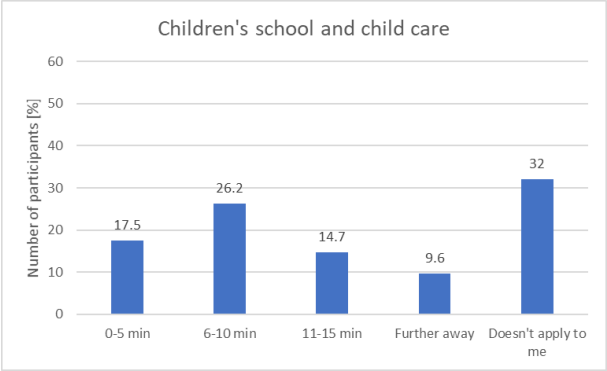

Figure 14: Walking distance to children's school and child care

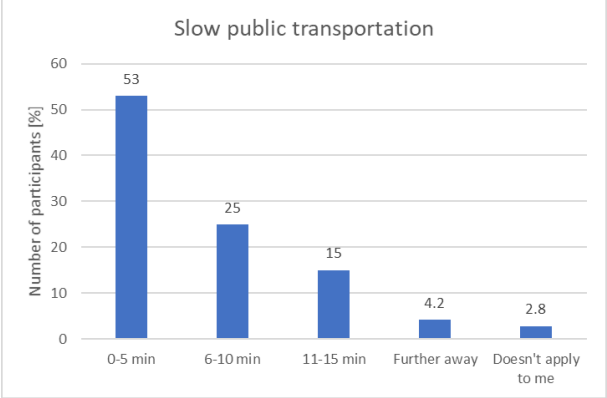

Figure 15: Walking distance to slow public transportation

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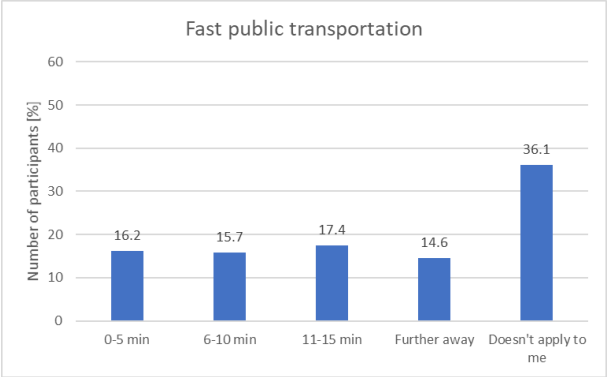

Figure 16: Walking distance to fast public transportation

Figure 17: Walking distance to place of employment

Figure 18: Walking distance to shops for daily needs

There are some significant differences, which emerge in the comparison of walking distances in the city sizes.

Fast public transportation is generally not available for 36% of participants. It is significantly less available for participants from small and medium sized cities (more than 50%) (Chi square = < 0.001).

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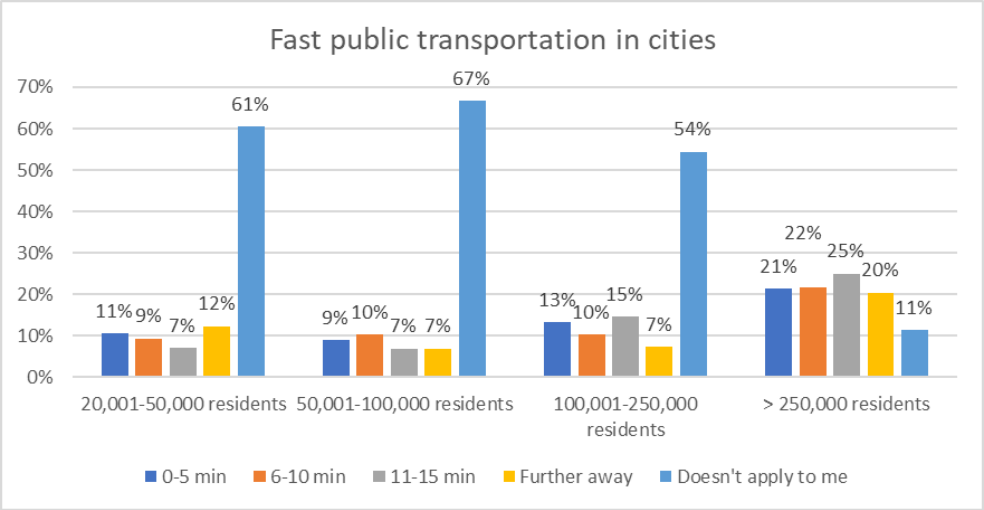

Figure 19: Walking distance to fast public transport by city size (Chi square = < 0.001)

Slow public transport is frequently available in all cities, with a higher availability in cities with more than 50.000 residents. There are significant differences in the distribution among cities regarding slow public transport (Chi square = 0.013).

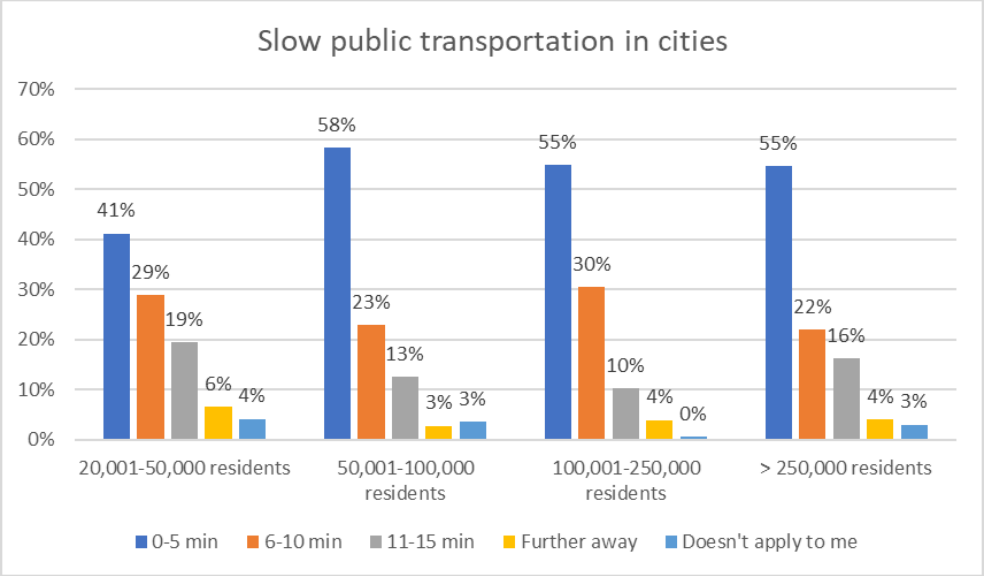

Figure 20: Walking minutes to slow public transport by city size (Chi square = 0.013)

The distance to the **place of employment** significantly differs between city sizes (Chi square = 0.02). In small cities and cities with 100,000-250,000 residents, 40% live more than 15 minutes' walk from their place of employment. In the other categories it is 47%. Furthermore, 22% in the smallest cities indicated employment does not apply to them. This drops to 11% or below in the other city sizes.

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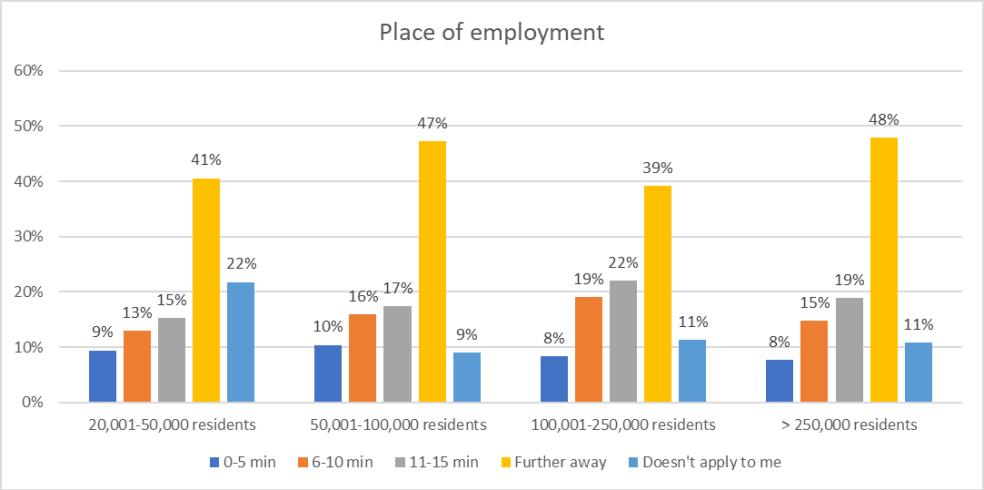

Figure 21: Walking distance to place of employment by city size (Chi square = 0.02)

The availability of **shops for everyday needs** significantly differs between the city sizes (Chi square= 0.046). At least 65% of participants live in a short walking distance (0 up to 10 minutes) to shops for every city size (660 out of 1017 respondents).

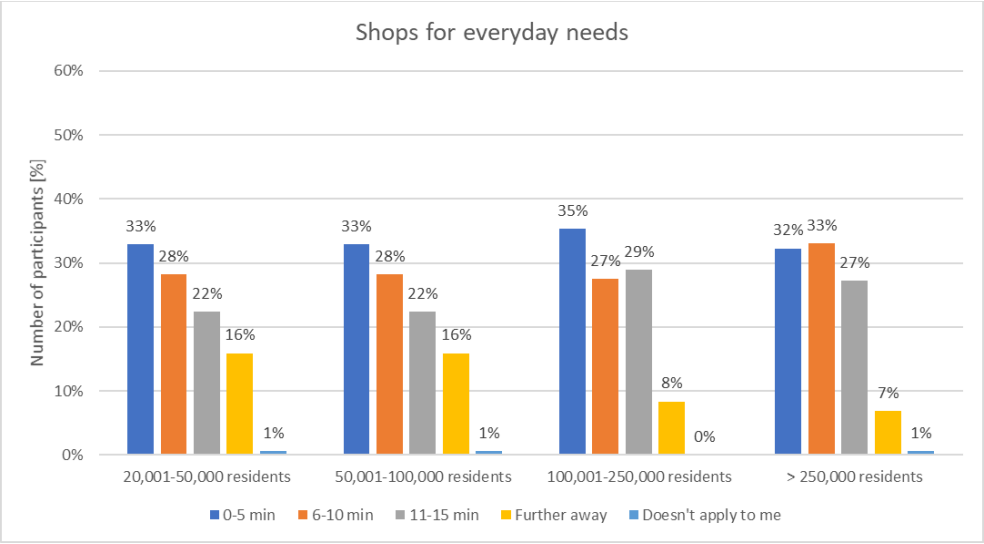

Figure 22: Walking distance to shops for everyday needs by city size (Chi square = 0.046)

Question 12: If participants could select the type of infrastructure, they would want to live close to, 51.9% (N=528) stated that they would choose green areas, followed by their place of employment (40.1%; N=408) and fast shops for daily needs (37.9%; N=385). This result is of interest in relation to the figures above stating the distance to these infrastructures.

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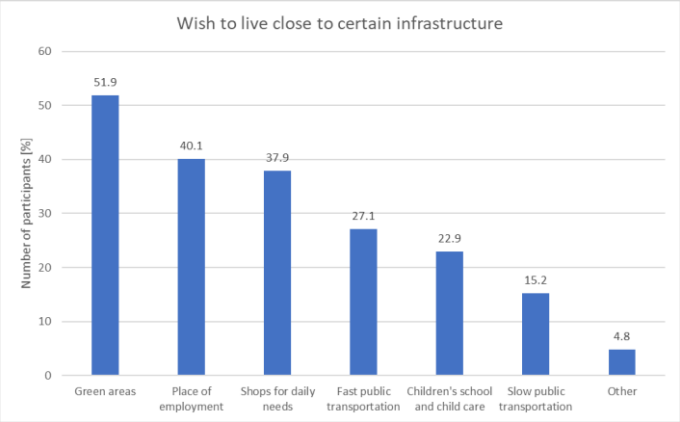

Figure 23: Infrastructure respondents wish to live close to

Other infrastructure participants would wish to live close to are included in Table 4:

Table 4: Other infrastructure respondents wish to live close to

Infrastructure	n
Sport facility	7
Mall, specialty shops	6
medical institutions	6
Forest	5
Water front	4
Park	3
Partner	2
Cafes and bustling areas	2
Mountains	2
Suburbs	2
Away from people	2
Family members	1
Playground	1
Office	1
Farm	1
Museum	1
Excursions	1
Market	1

4 GREEN SPACES

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4.1 WALKING DISCTANCES TO DIFFERENT GREEN SPACES IN THE NEIGHBOURHOOD

Question 8: For more than 70% of all participants, street greening is less than 5 minutes away, making it the most accessible form of green infrastructure. Playgrounds and parks follow. Those three types of green spaces are also rarely not applicable to participants.

Communal gardens and derelict areas are the most common in the category “doesn’t apply to me”.

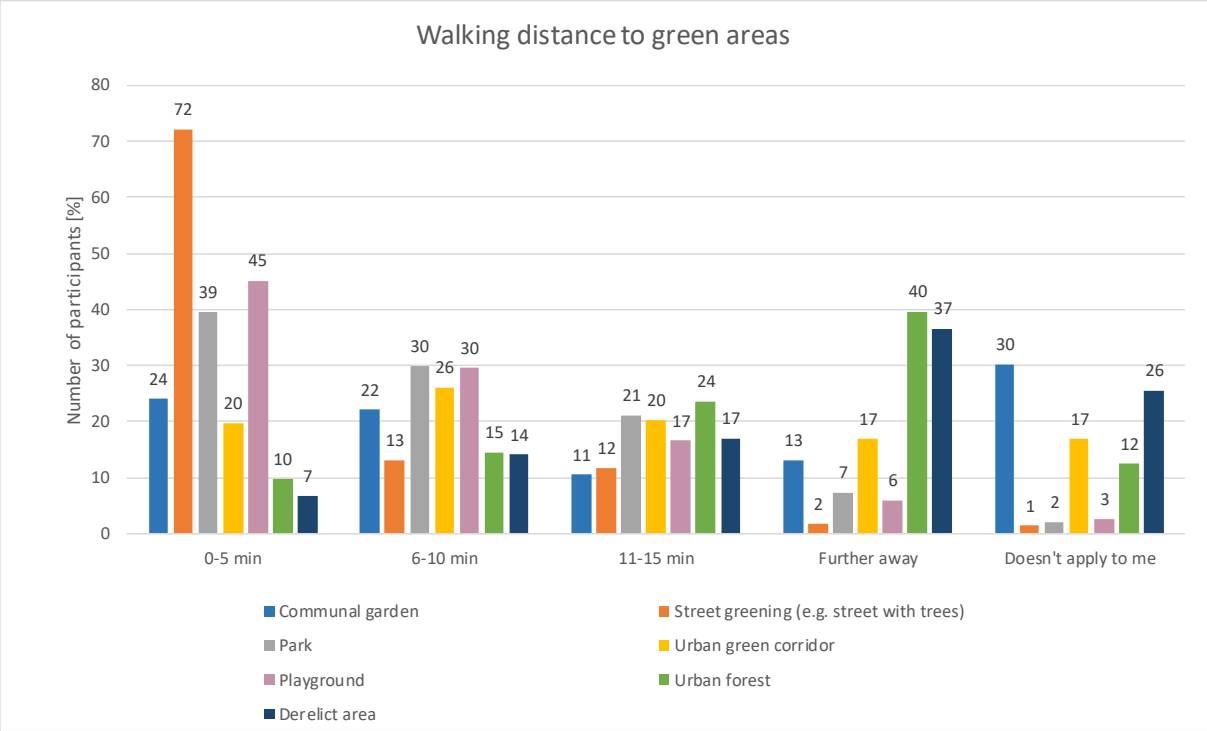

Figure 24: Walking distance to different green areas

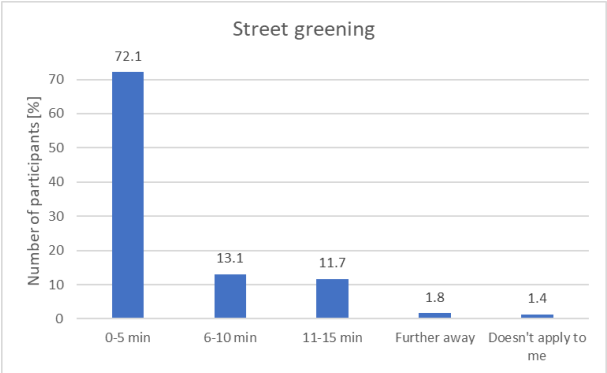

Figure 25: Walking distance to street greening

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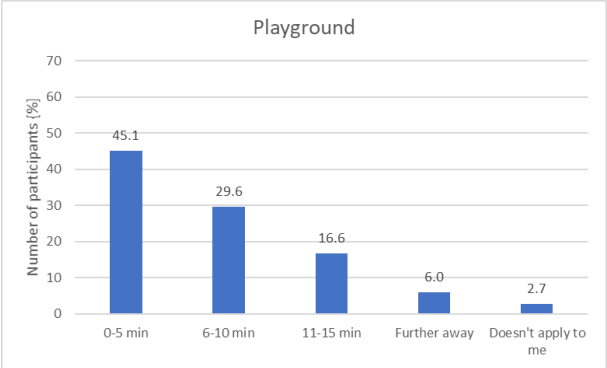

Figure 26: Walking distance to a playground

Figure 27: Walking distance to a communal garden

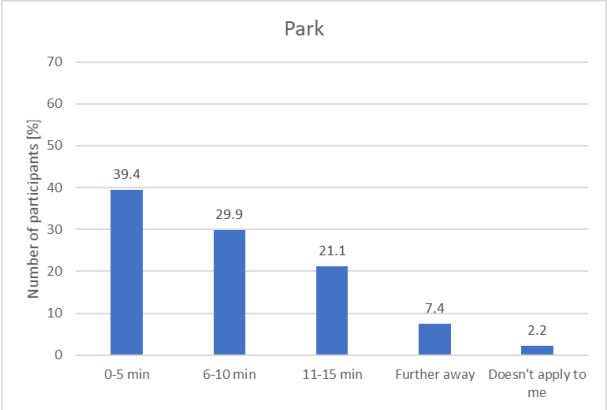

Figure 28: Walking distance to a park

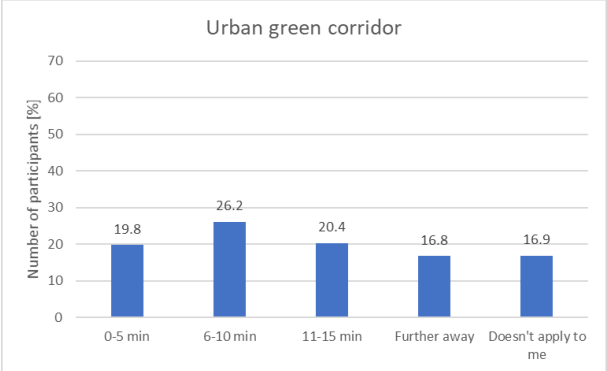

Figure 29: Walking distance to an urban green corridor

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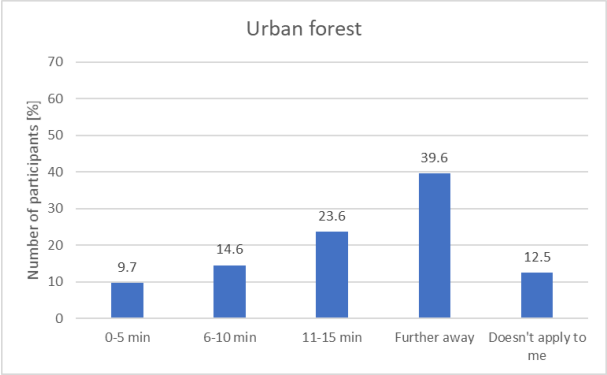

Figure 30: Walking distance to an urban forest

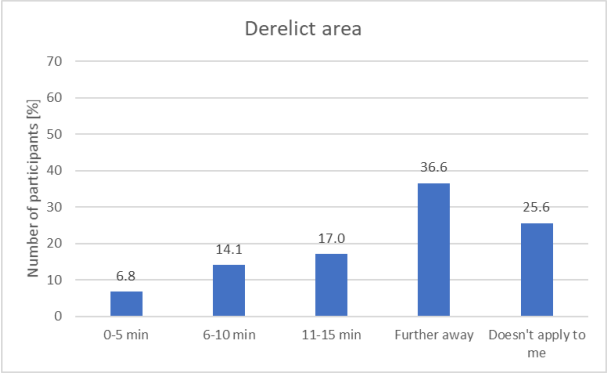

Figure 31: Walking distance to a derelict area

4.2 WALKING DISTANCE TO DIFFERENT GREEN SPACES IN DIFFERENT CITY SIZES

Significant differences exist between the walking distance in cities to parks (Chi square = 0.011) which tend to be especially near in cities with 100,001 – 250,000 residents. In larger cities, street greening tends to be slightly further away and significant differences exist between the walking distance to street greening (Chi square = 0.0013). **Playgrounds** are in a short walking distance in all cities (Chi square = 0.207).

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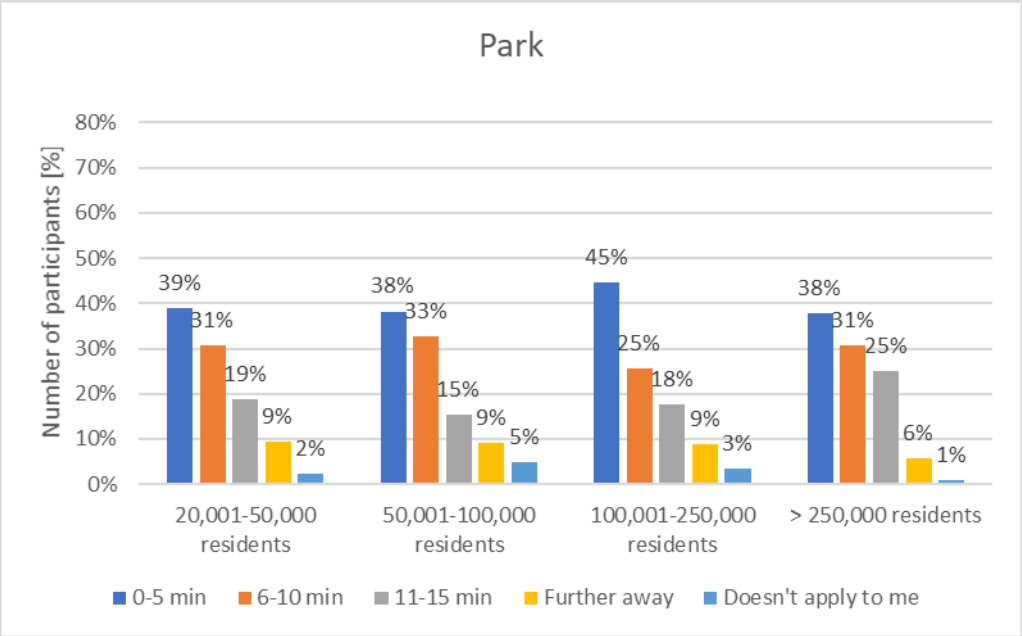

Figure 32: Walking distance to a park by city size (Chi square = 0.011)

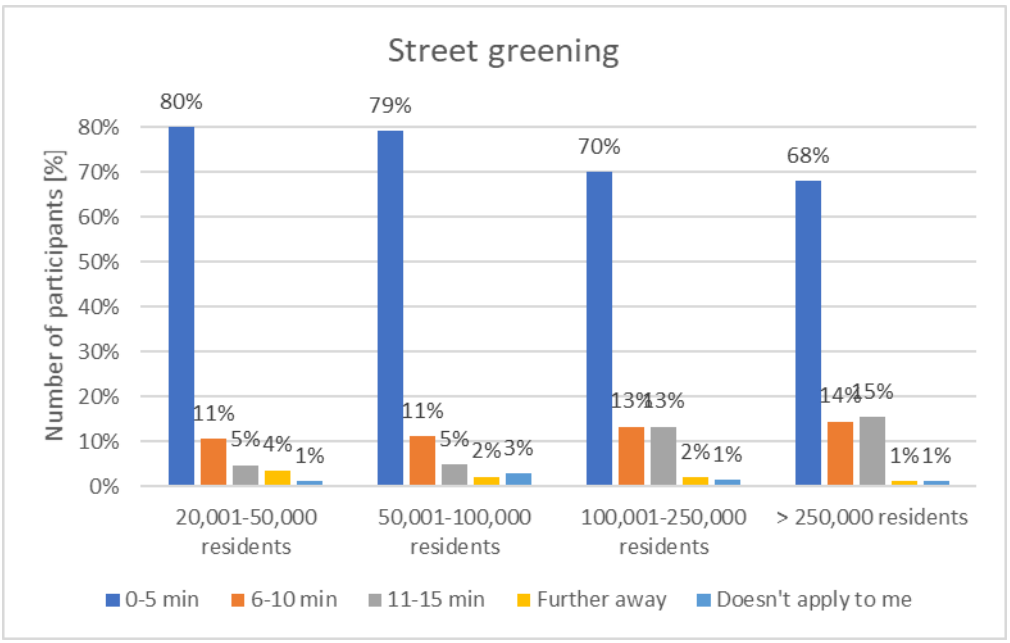

Figure 33: Walking distance to street greening by city size (Chi square =0.0013)

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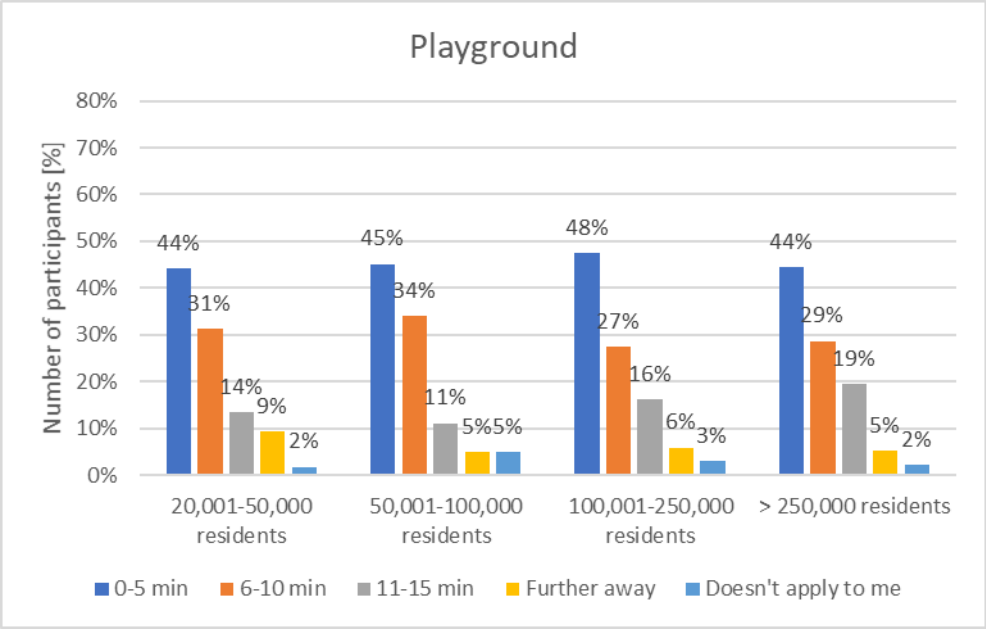

Figure 34: Walking distance to a playground by city size (Chi square = 0.207)

4.3 COMPANIONSHIP AT GREEN AREAS IN THE NEIGHBOURHOOD

Question 9: Participants usually spend time with their partner (Ø = 2.97), friends (Ø =2.74) and children (Ø = 2.58) at green areas. Spending time with neighbours (Ø = 1.71) is not very common and received the "Never" category more often than others. 29% of participants state that they never go to green areas with "others", 15% state that this seldom happens.

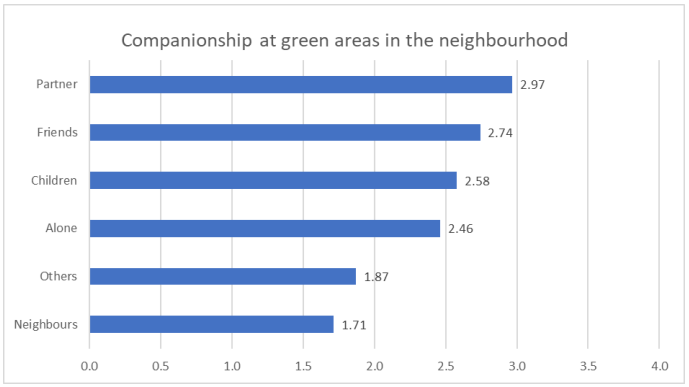

Figure 35: Companionship in green areas

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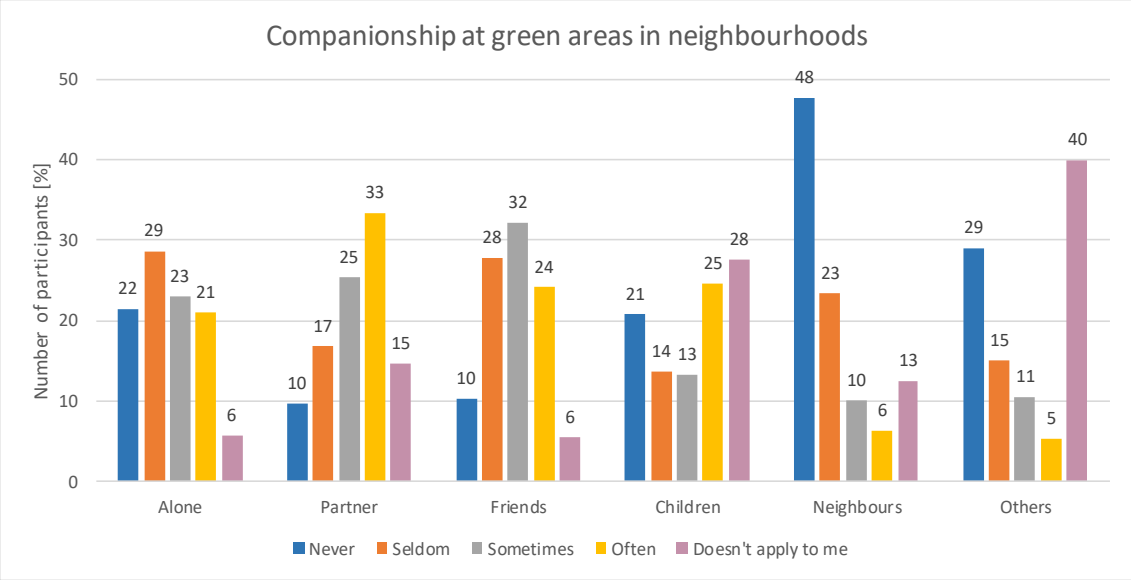

Figure 36: Frequency of types of companionship in green areas

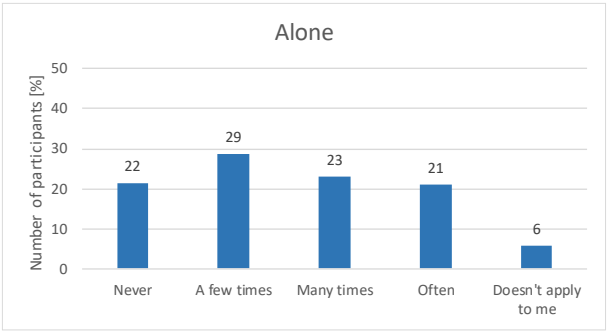

Figure 37: Frequency of time spent alone in green areas

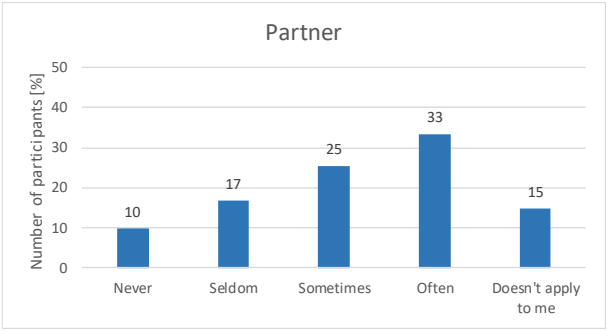

Figure 38: Frequency of time spent with partner in green areas

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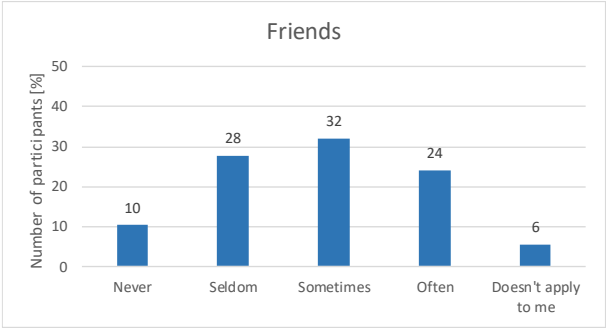

Figure 39: Frequency of time spent with friends in green areas

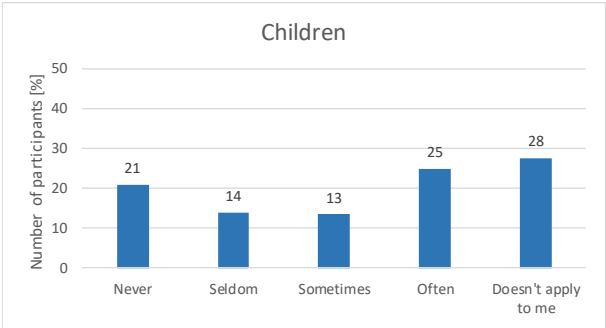

Figure 40: Frequency of time spent with children in green areas

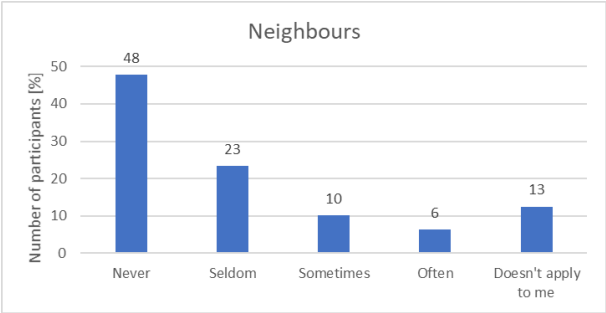

Figure 41: Frequency of time spent with neighbours in green areas

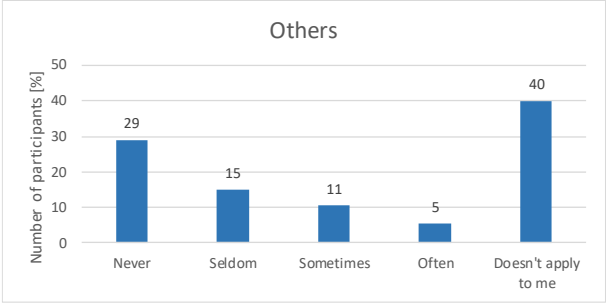

Figure 42: Frequency of time spent with others in green areas

4.4 RATING OF THE AMOUNT OF GREEN AREAS IN THE NEIGHBOURHOOD

Question 10: Generally, about 80% of participants **rate the amount of green areas** in their neighbourhood either as excellent (19%, N=195) or good (60%, N=609). No significant difference exists between the rating in different sized cities (Chi square = 0.472).

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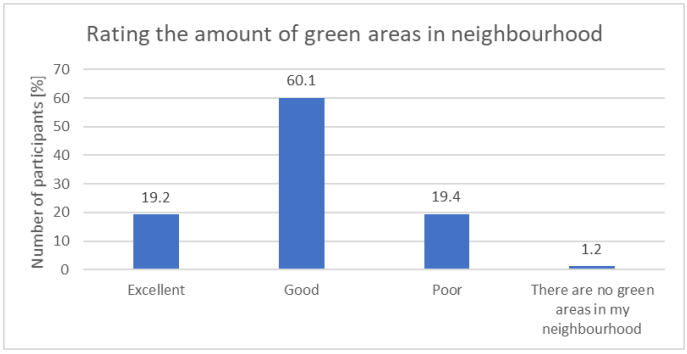

Figure 43: Rating the amount of green areas in neighbourhood

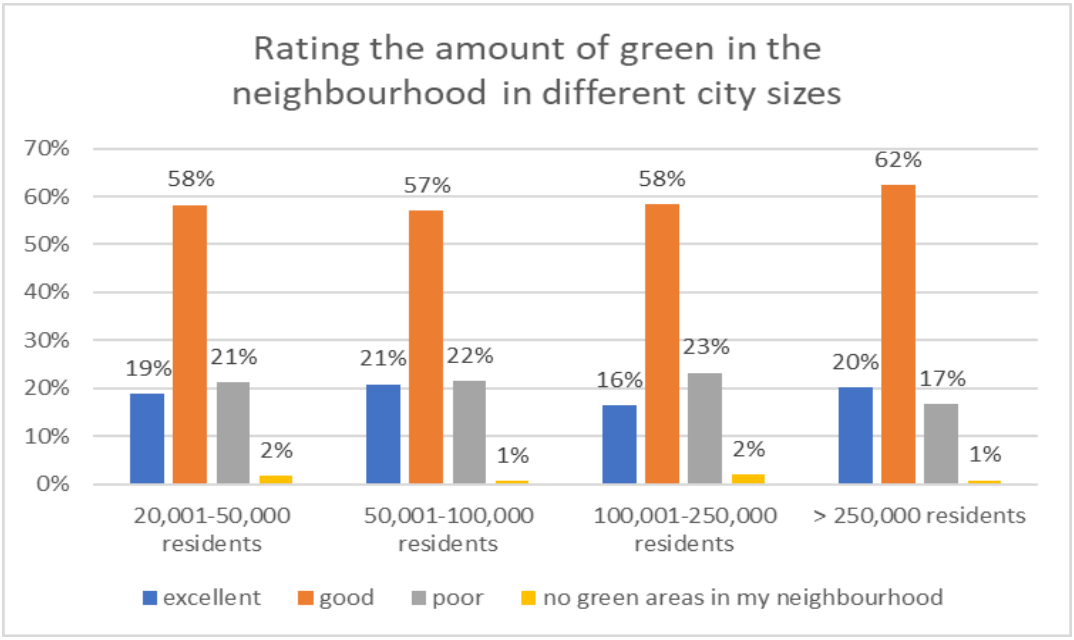

Figure 44: Rating the amount of green by city size (Chi square = 0.472)

Question 11: Over one third of participants (36.1%; N=367) spend between two to four hours a week in green areas. No significant differences exist between city sizes.

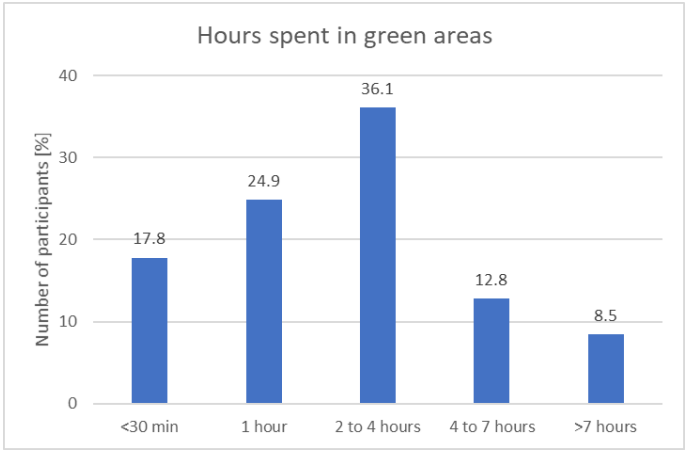

Figure 45: Number of hours spent in green areas per week

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5 CLIMATE CHANGE

Question 13: The major opinion of 81.1% of participants was that **climate change can already be perceived**.

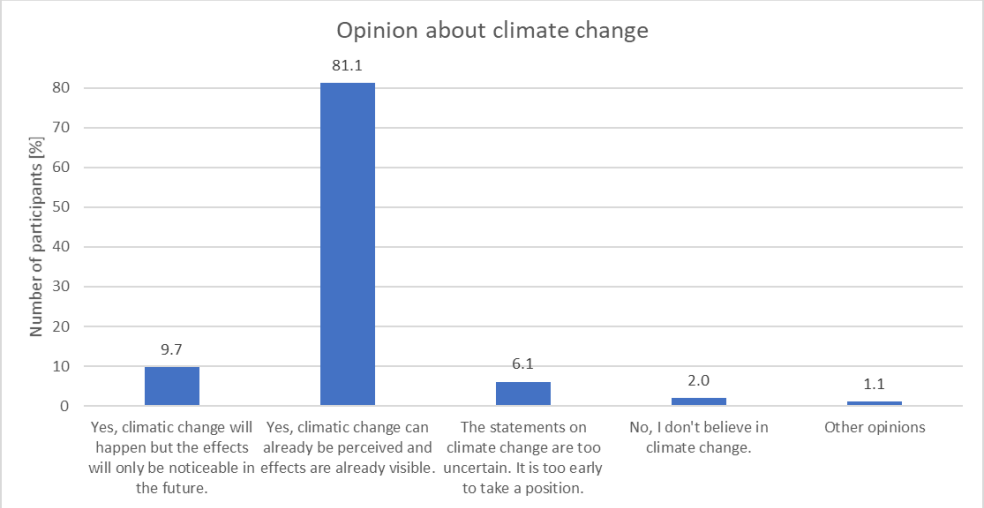

Figure 46: Respondents opinion about climate change

Other opinions include

- Climate change is happening, but I believe it is due to natural cycles and not just mankind.
- Climate change is a natural part of the Earth's cycle
- We are in a cycle (1000-year cycle) on our planet where the climate is slowly changing.
- Climate change is normal in Earth's evolution and would have happened with or without humans.
- Climate change is real, but it is positive and should be encouraged (more CO2 should be released into the atmosphere).
- Why are the other planets in our Solar System warming up?
- the changes are here, more drastic every year

Question 14: Despite this general acceptance of the effects of climate change, only 48.4% of participants (N=452) believe that climate change effects will **occur in their neighbourhood**.

Table 5: Respondents expectation of climate change effects in their neighbourhood

	n	%
No, I don't expect effects by climate change	549	54
Yes, I expect the following effects to happen in my neighbourhood	468	46

Question 14a: Out of the 468 participants who proceeded to questions 14a to c, about 84.6% (N=396) already **experienced heat waves**.

Table 6: Respondents who have experienced heat waves in their neighbourhood

	n	%
No, I never experienced heat waves in my neighborhood	72	15.4
Yes, I experienced heat waves already	369	84.6

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Question 14b: On average, participants stated to experience 20.04 **heat waves per summer**. The number of reported heat waves ranged from 2 to 99.

Question 14c: About 60% of the reduced number of participants states to be negatively affected by heat waves.

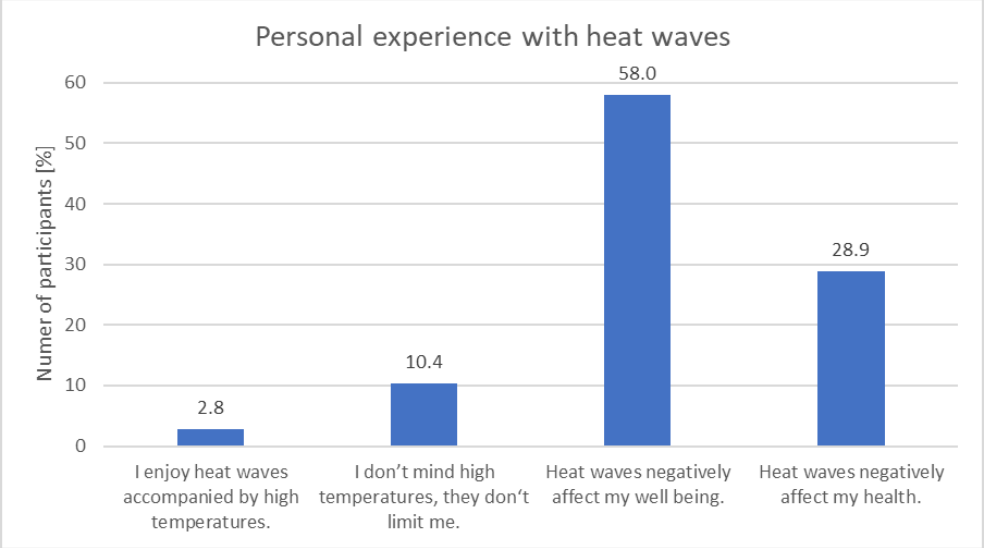

Figure 47: Respondents personal experience with heat waves

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6 MEASURES AT CITY LEVEL TO COMBAT CLIMATE CHANGE

Question 15: A broad consensus exists regarding the **importance of actively addressing climate change** through strategies on the communal level. About 94% state that it is either very important or important.

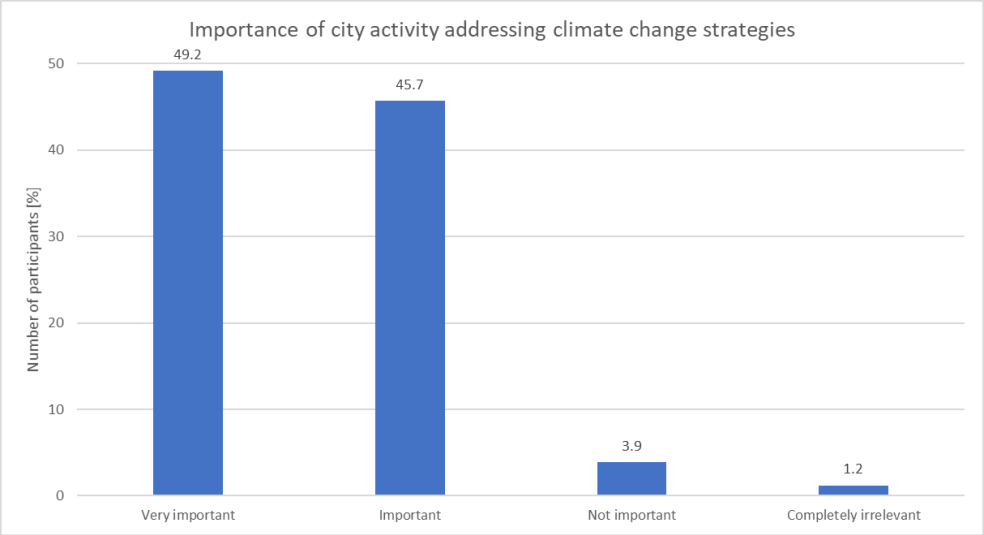

Figure 48: Importance of addressing climate change in strategies at the communal level

Question 16: Regarding the **desired quality of life in the neighbourhood**, participants identified all strategies as almost equally important (Ø between 3.64 and 3.29). Air quality improvement and micro-dust reduction was the most important measure (Ø =3.64), followed by improving urban climate by fresh air corridors (Ø =3.55), stormwater management (Ø =3.50) as well as conserve and increase urban biodiversity (Ø =3.46).

Figure 49: Importance of goals in regard to desired quality of life in their neighbourhood (comparative)

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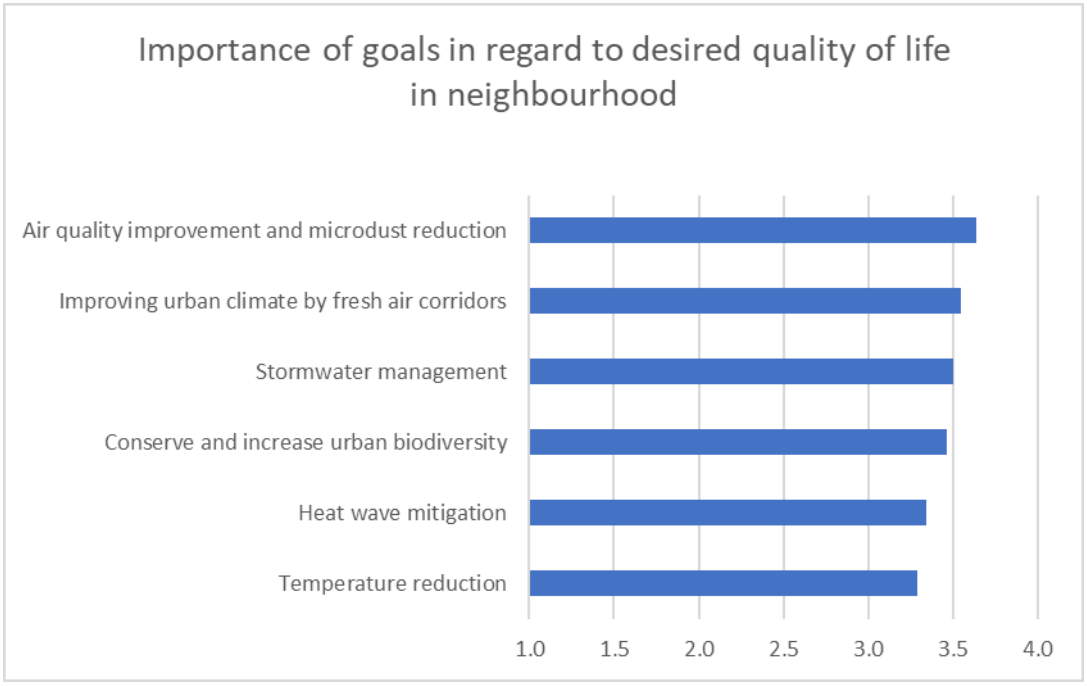

Figure 50: Importance of goals in regard to desired quality of life in their neighbourhood (average)

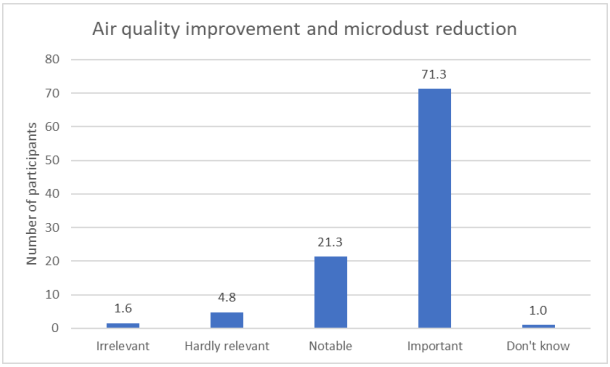

Figure 51: Importance of air quality improvement and microdust reduction

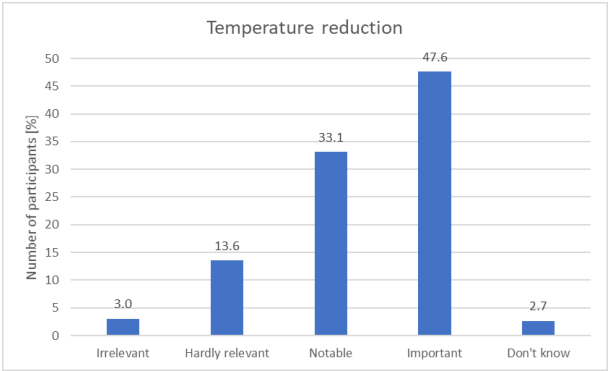

Figure 52: Importance of temperature reduction

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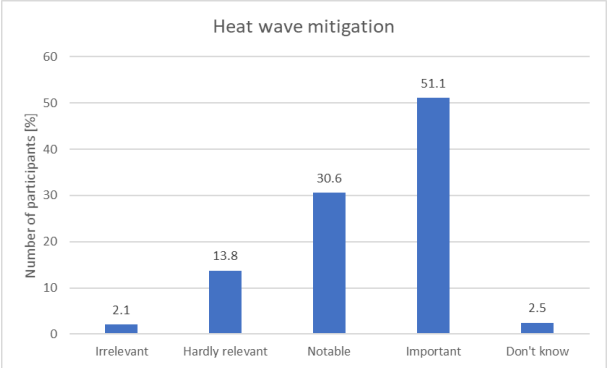

Figure 53: Importance of heat wave mitigation

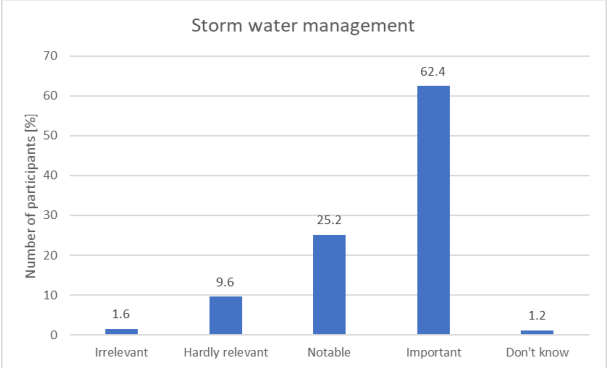

Figure 54: Importance of stormwater management

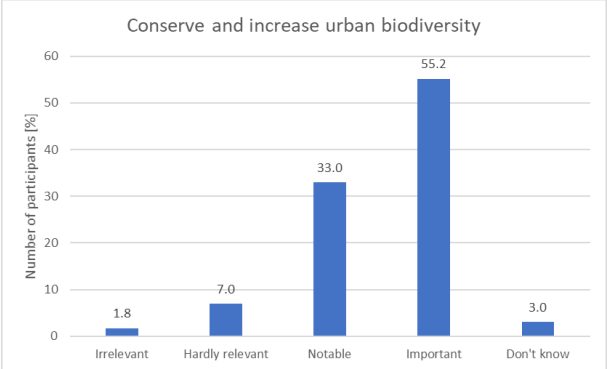

Figure 55: Importance of conserving and increasing urban biodiversity

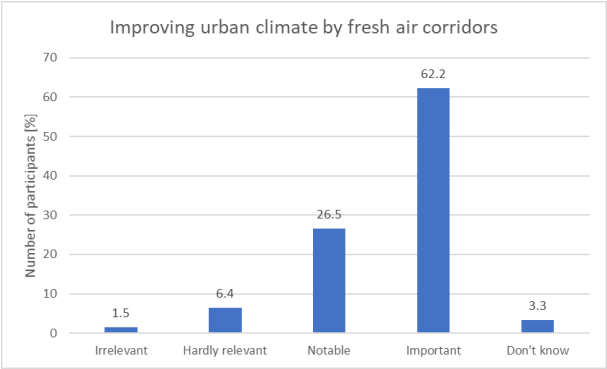

Figure 56: Improving urban climate by fresh air corridors

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Significant differences exist between cities regarding the evaluation air quality improvement and microdust reduction (Chi square = 0.021). **Air quality improvement and micro dust reduction** was ranked "very important" from 90% to 96% of the participants.The importance of **heat wave mitigation** is comparably high for all cities (between 82% and 87% ranked it as somewhat or very important). **Improving urban climate by fresh air corridors** ranges between 87% and 96% in importance in the cities. **Temperature reduction** is important for residents of all cities, ranging from 79% and 86% of participants which ranked it as somewhat or very important.

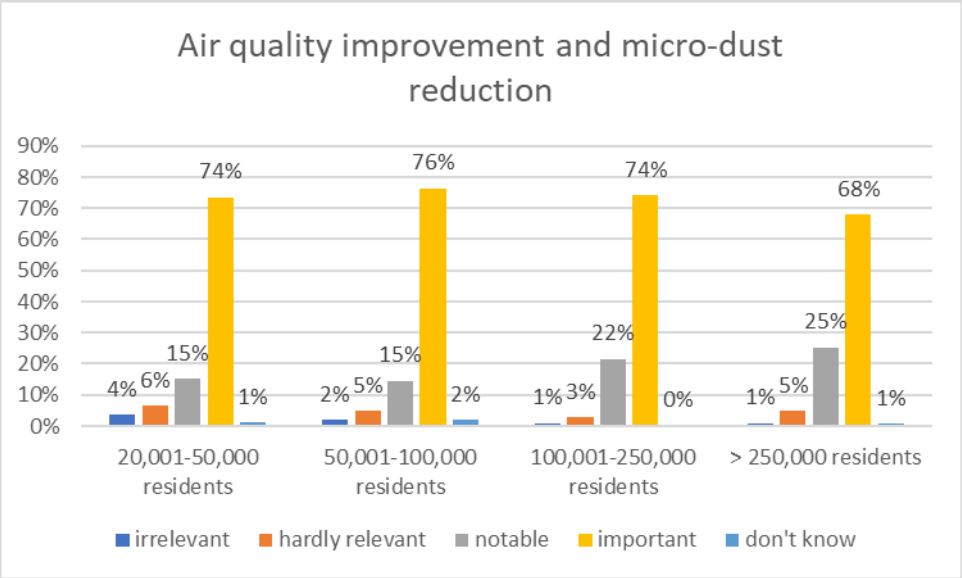

Figure 57: Importance of air quality improvement and microdust reduction by city size (Chi square = 0.021)

)

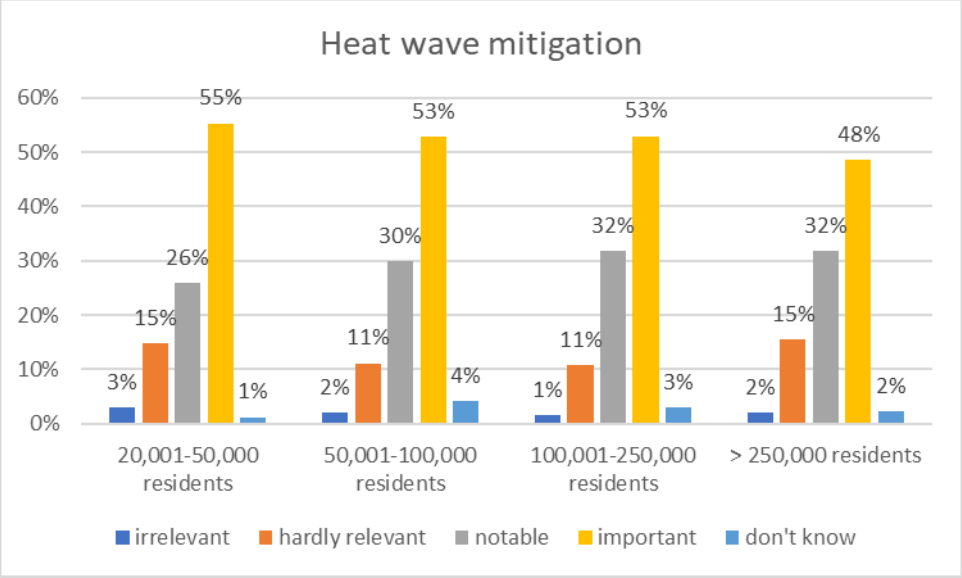

Figure 58: Importance of heat wave mitigation by city size (Chi square = 0.621)

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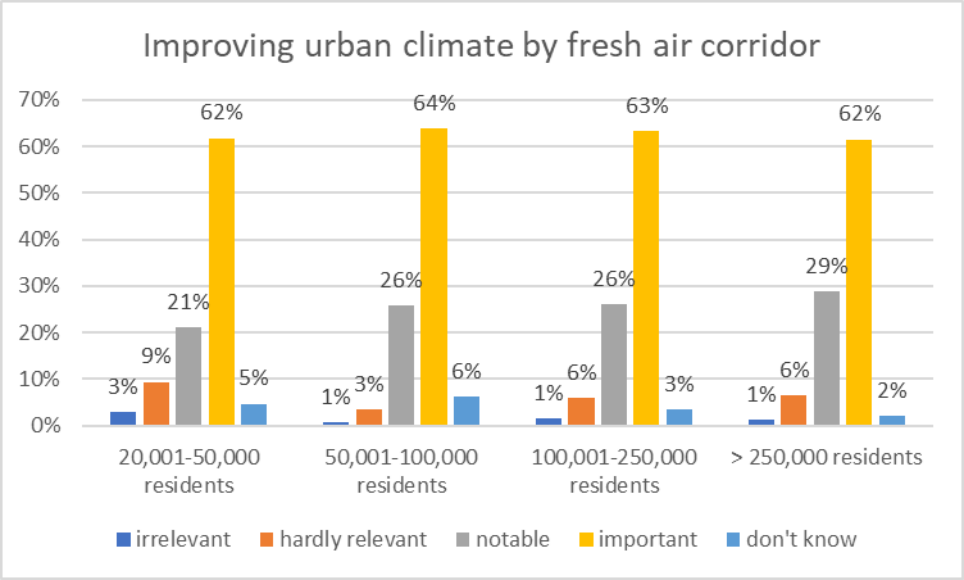

Figure 59: Importance of improving urban climate by fresh air corridors by city size (Chi square = 0.296)

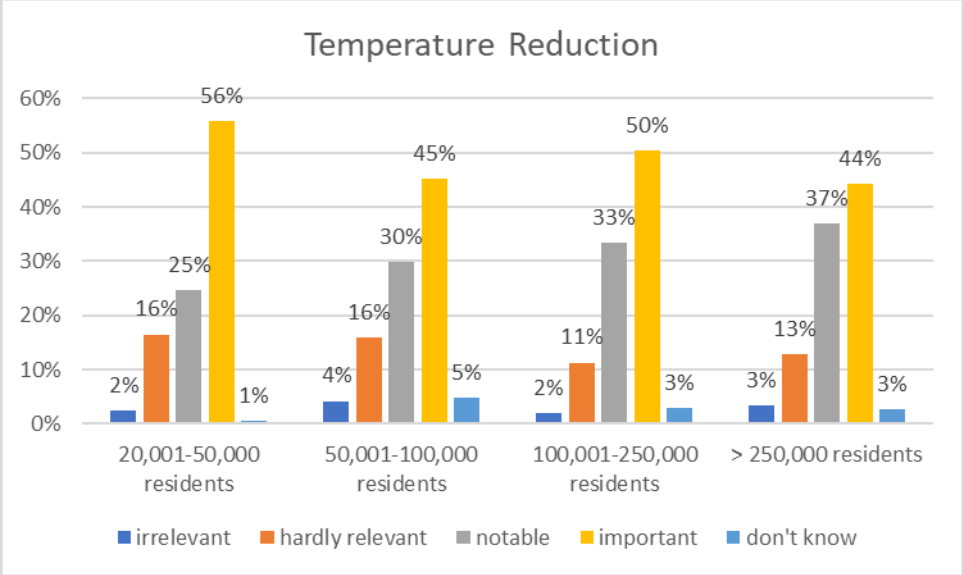

Figure 60: Importance of temperature reduction by city size (Chi square = 0.102)

Question 17a-d: Overall, **measure to enhance urban greening** were found to be particularly useful in contributing to urban biodiversity and regarding health benefits. All measures were ranked between high and very high for these effects. The measure with the highest impact for all effects was the development of urban green corridors (Ø = 3.4 over all effects), followed by street greening by trees and hedges (Ø = 3.38). For each effect, another measure was found to be of particular importance: urban green corridors for climate change mitigation and for health benefits, street greening for aesthetic of urban landscapes. For urban biodiversity, street greening by trees and hedges and urban green corridors scored the best (each Ø = 3.37), but all measures were almost of equal importance (Ø = between 3.02 and 3.37).

Overall, street greening was rated the most important measure to enhance urban greening, followed by urban green corridors, rain gardens and communal gardens. This ranking was followed across all contributions by measurements.

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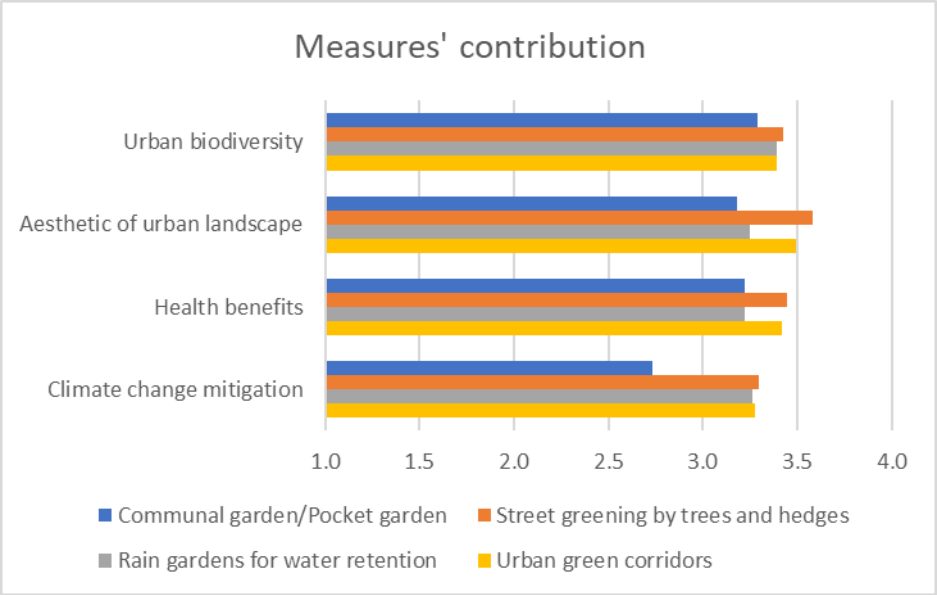

Figure 61: Different NBS contributions to urban strategies

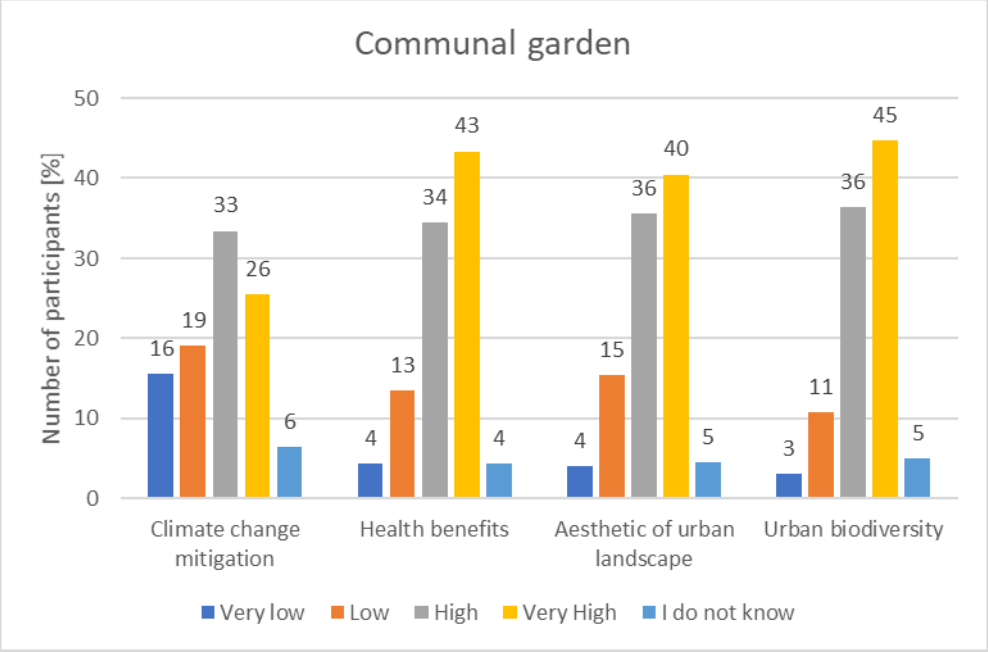

Figure 62: Communal gardens' contributions to urban strategies

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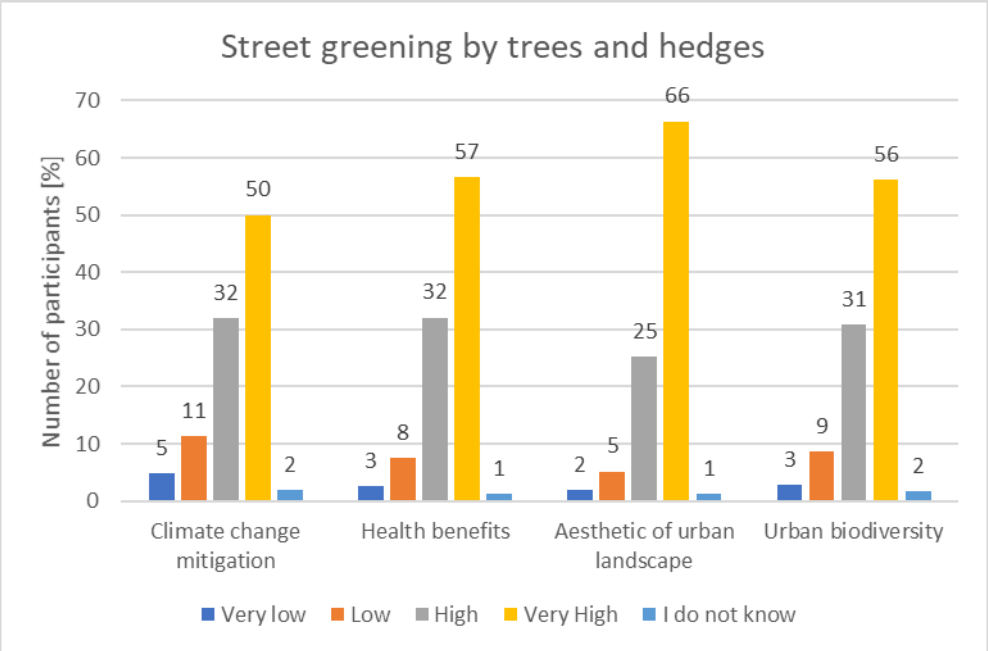

Figure 63: Street greening's contributions to urban strategies

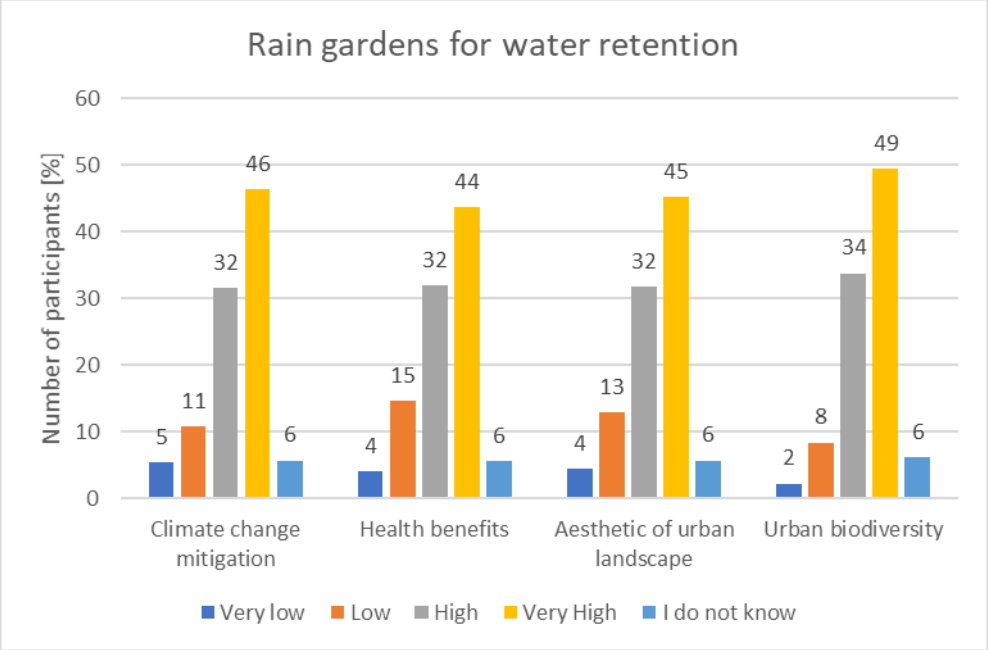

Figure 64: Rain gardens' contributions to urban strategies

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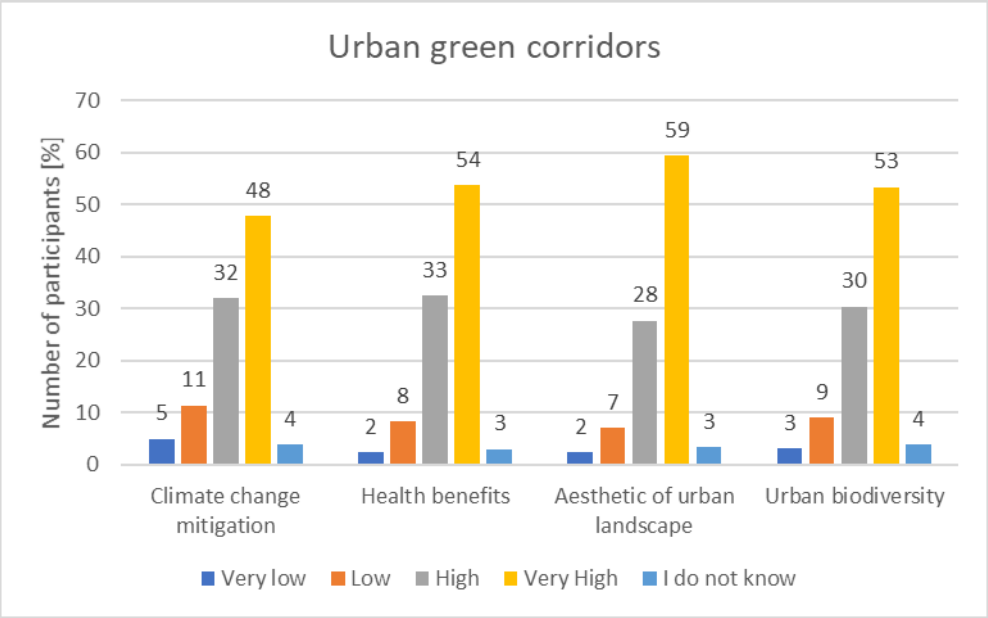

Figure 65: Urban green corridors' contributions to urban strategies

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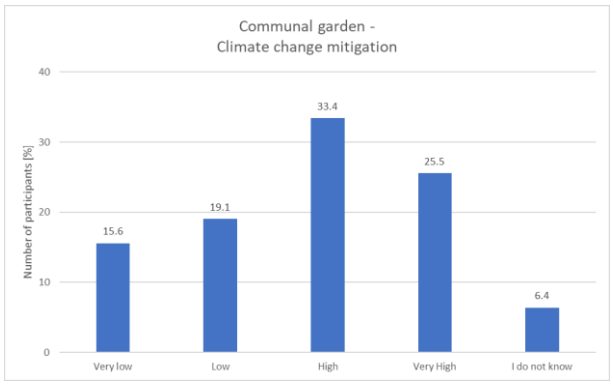

Figure 66: Communal gardens' importance for climate change mitigation

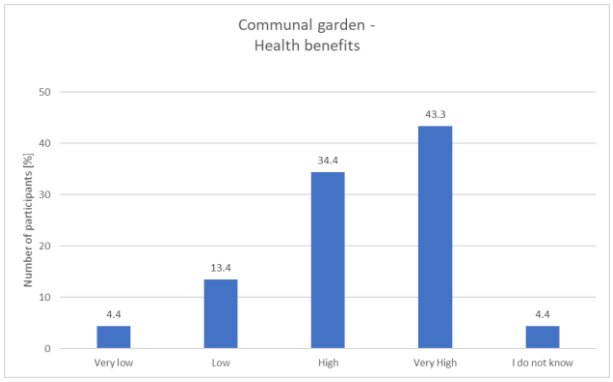

Figure 67: Communal gardens' importance for health benefits

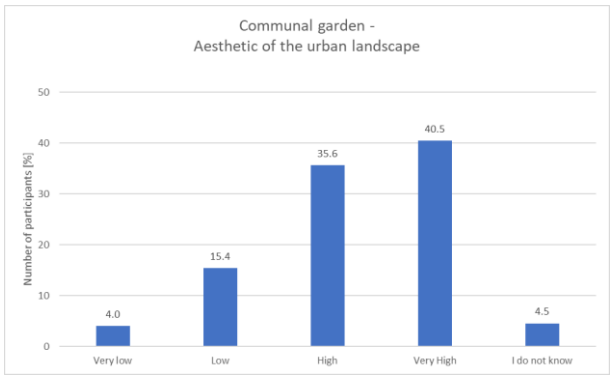

Figure 68: Communal gardens' importance for aesthetics of the urban landscape

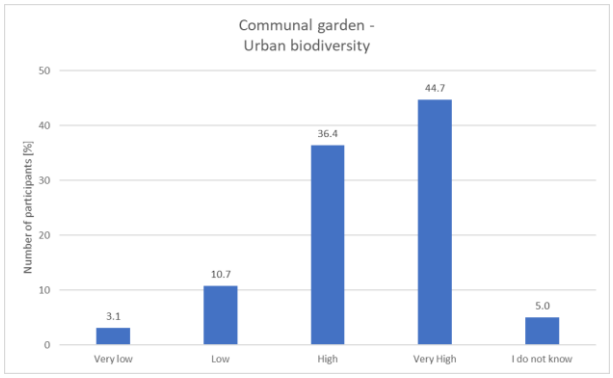

Figure 69: Communal gardens' importance for urban biodiversity

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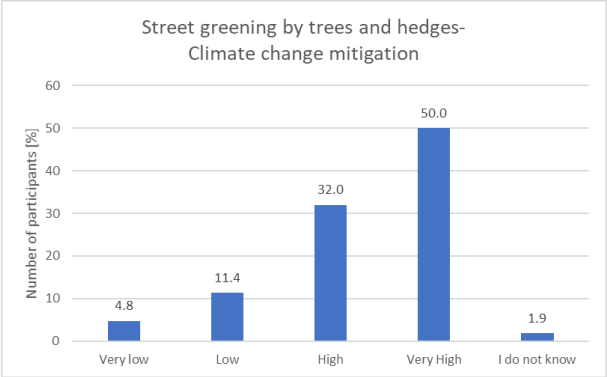

Figure 70: Street greening's importance to climate change mitigation

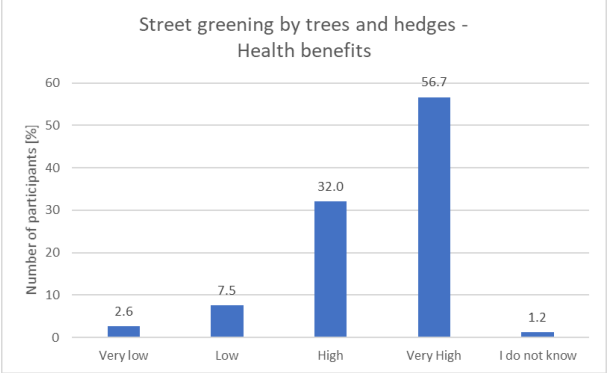

Figure 71: Street greening's importance for health benefits

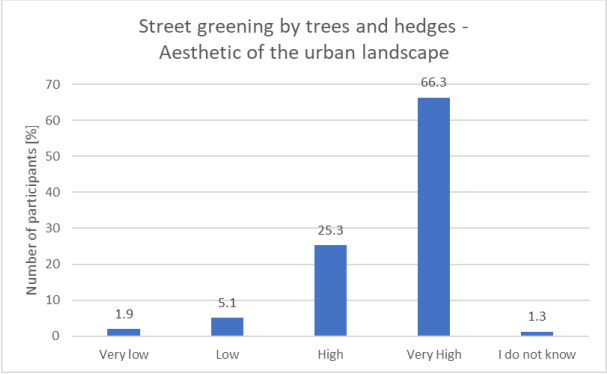

Figure 72: Street greening's importance for aesthetic of the urban landscape

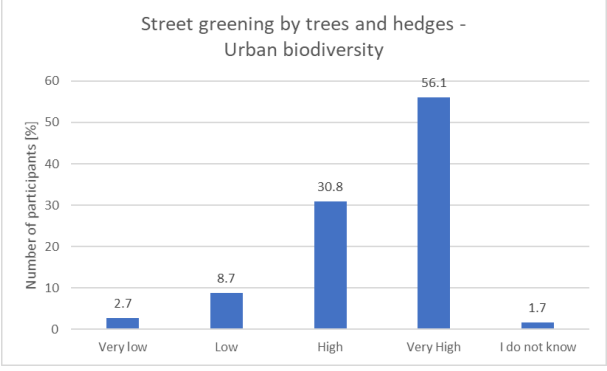

Figure 73: Street greening's importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

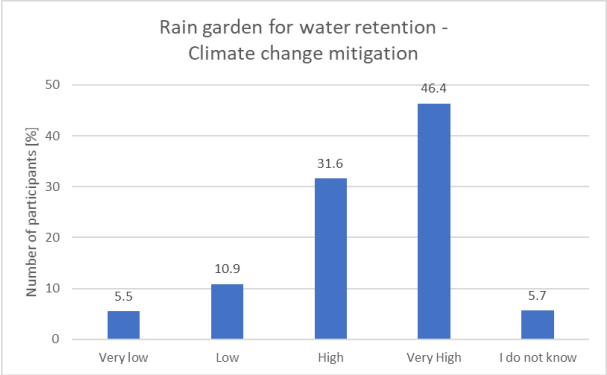

Figure 74: Rain gardens' importance for climate change mitigation

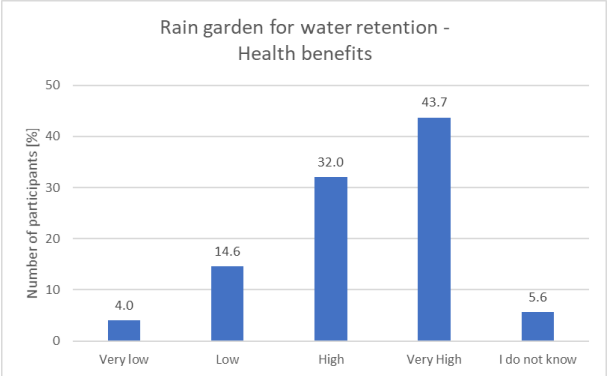

Figure 75: Rain gardens' importance for health benefits

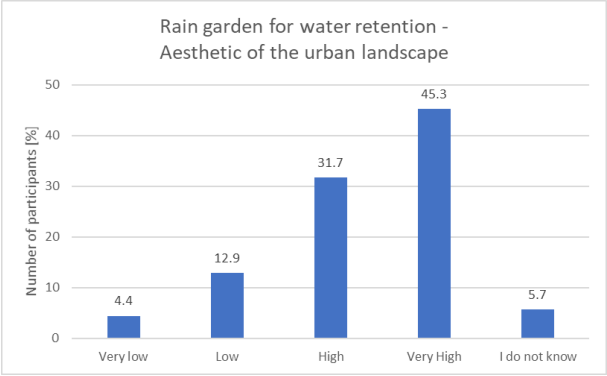

Figure 76: Rain gardens' importance for aesthetic of the urban landscape

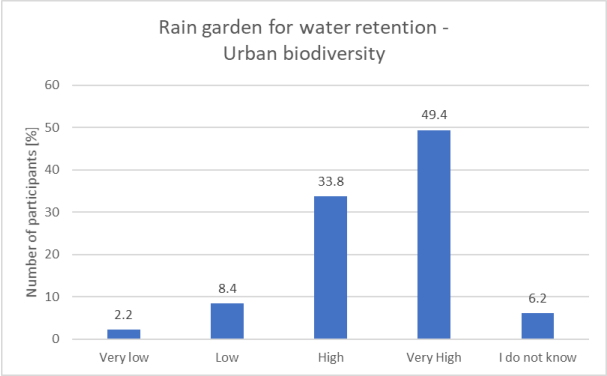

Figure 77: Rain gardens' importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

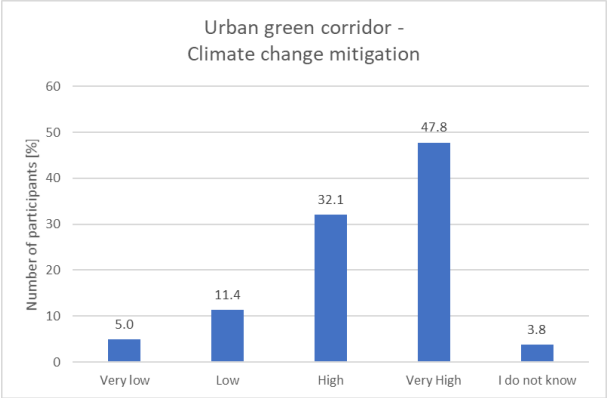

Figure 78: Urban green corridors' importance for climate change mitigation

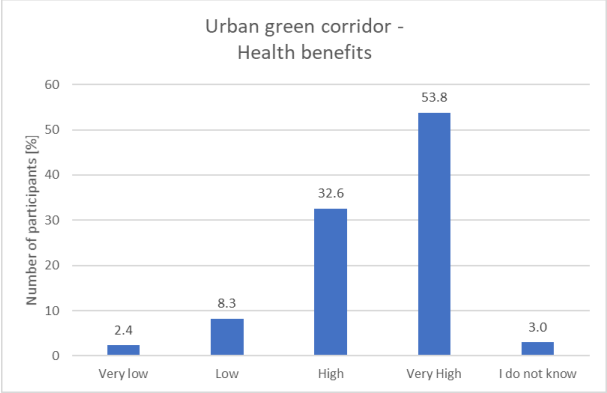

Figure 79: Urban green corridors' importance for health benefits

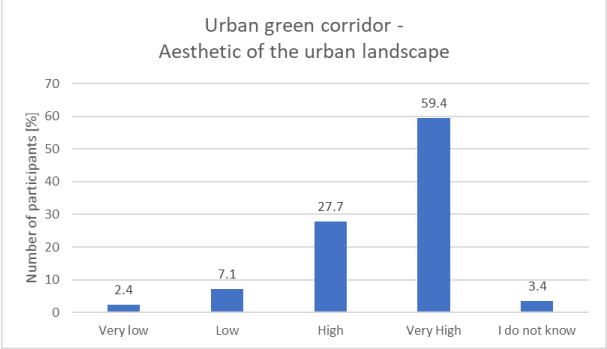

Figure 80: Urban green corridors' importance for aesthetic of the urban landscape

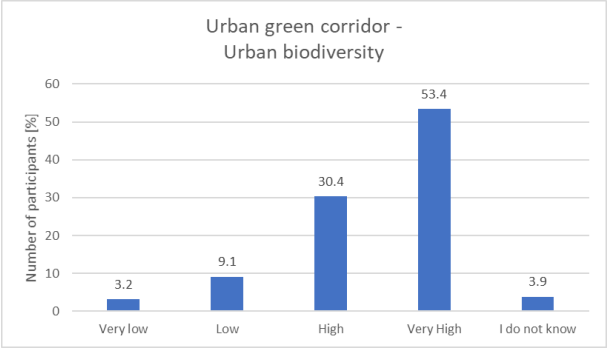

Figure 81: Urban green corridors' importance for urban biodiversity

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Task 4.1. – Survey and Choice Experiment

Draft Survey Analysis – Greece

Responsible partner: **BOKU**

Authors: Magdalena Feilhammer, Alice Wanner, Meike Jungnickel & Ulrike Pröbstl-Haider

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818.

DOCUMENT DETAILS

Title:	Draft survey analysis – Greece
Annexes:	

Work Package:	4
Task:	4.1. – Survey with integrated choice experiment
Deliverable type:	Internal draft analysis of the Greek sample
Lead Partner:	BOKU
Submission date:	22/02/2024

Dissemination level:		
PU	Public	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including Commission Services)	CO

DOCUMENT HISTORY

Version	Date	Partner	Author	Changes
1.	21/02/2024	BOKU	Feilhammer, Wanner, Jungnickel & Pröbstl-Haider	1st draft

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

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1 SAMPLE DESCRIPTION – DEMOGRAPHIC INFORMATION

N = 1004

The sample consists of approximately 58% males and 40% females (N=989).

Table 1: Sample demographics - gender

	n	%
Female	401	40.5
Male	583	58.9
Diverse	2	0.2
Prefer not to say	3	0.3

The **average age** of the sample is 38.82 years (N=878). The age range is between 16 and 69 years.

The sample is highly **educated** with 66% having a university degree (46% Bachelor, 20% Master) (N=1002).

Table 2: Sample demographics - education

	n	%
Bachelor's Degree	466	46.5
Master's Degree	202	20.2
Secondary school (high school degree or equivalent)	193	19.3
Trade/technical/vocational training	104	10.4
Doctorate	20	2
I prefer not to say	8	0.8
Primary	6	0.6
None completed	3	0.3

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2 LIVING ARRANGEMENTS

Question 1: Over 55% of the participants (N=560) live in the largest **city size** category. The other half of the sample (N=444) is evenly distributed over the defined city size categories.

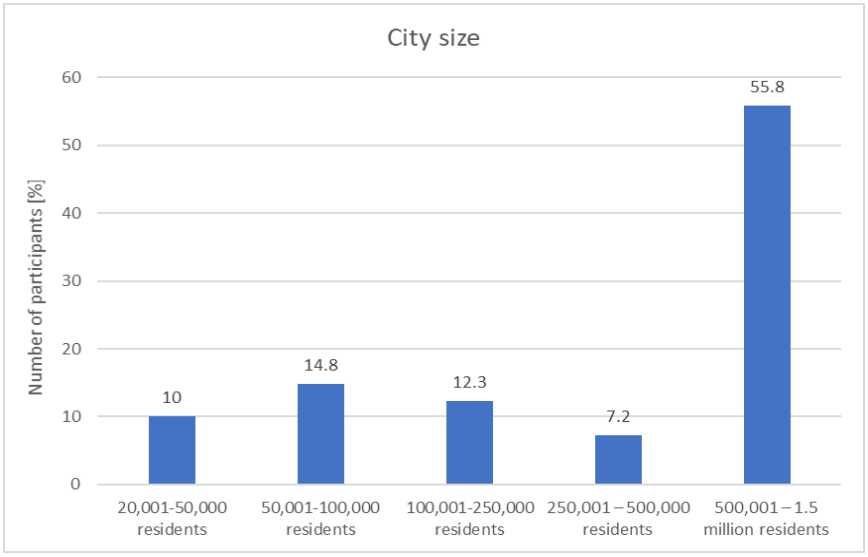

Figure 1: Participants by city size

Question 1a: About 45% (N=462) live in the **city centre**, followed by urban districts (N=340; 33.9%). Approximately 20% (N=202) of the participants live in suburbs.

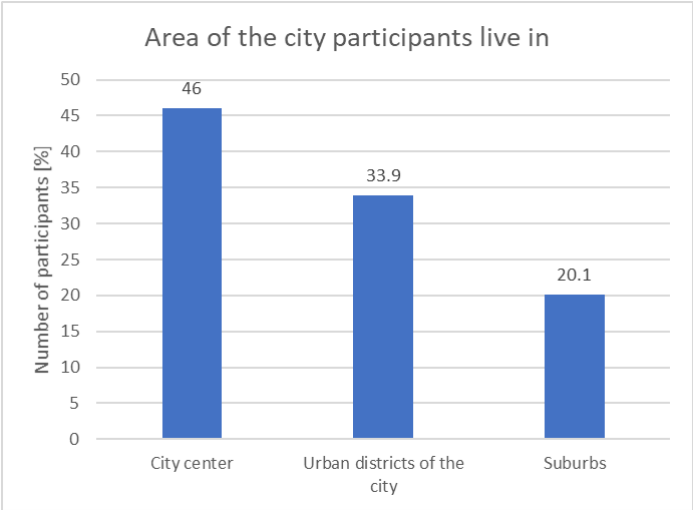

Figure 2: Area of the city participants live in

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Question 21: The **number of people per household** is evenly distributed (N=994).

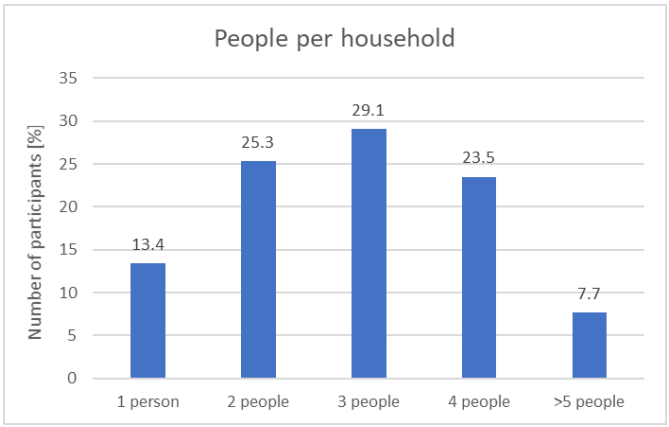

Figure 3: Number of people per household

Question 22: Interestingly, only 40% of respondents reported **children under the age of 18** living in the household (N=996).

Table 3: Respondents living with children under the age of 18

	n	%
Children under 18	403	40.1
No children under 18	593	59.1

Question 25: The **monthly household income** lies primarily under 2000€ (N=1002).

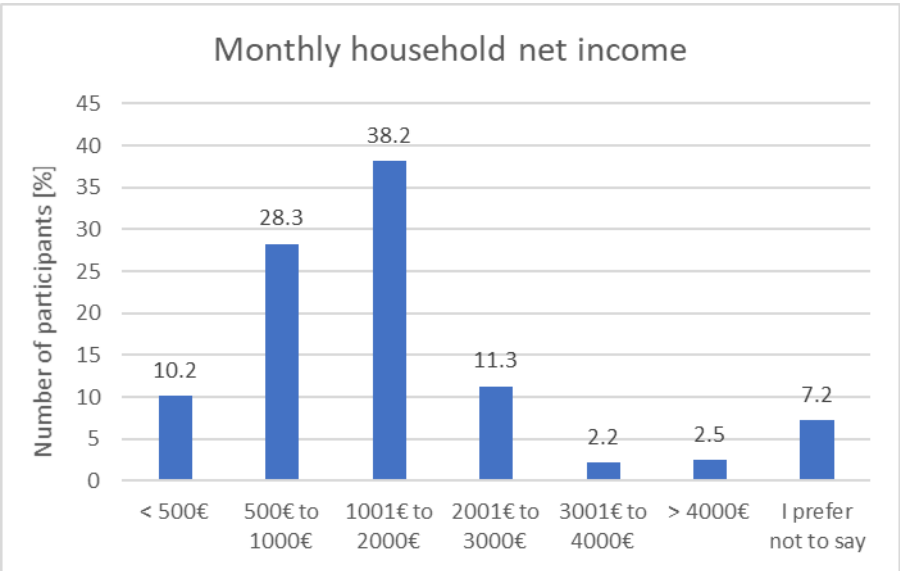

Figure 4: Monthly household net income

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Question 23: Compared to the number of people living in the household, the **number of cars** available in the household is rather low. About 10% (N=97) do not own a car and over 85% own one to two cars. Only 2 participants own more than 5 cars.

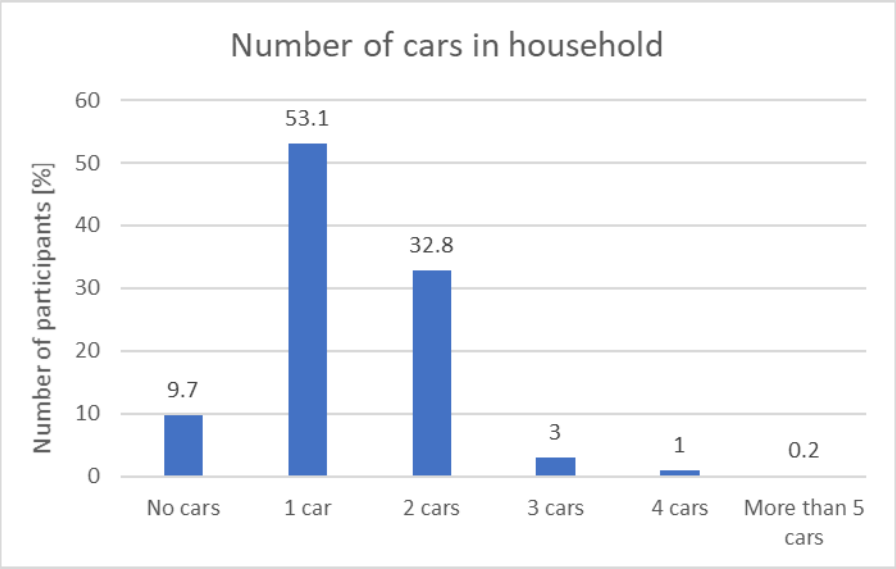

Figure 5: Number of cars per household

The **size of the city** does not determine the number of cars owned by participants. Even ownership of more cars is equally distributed across city sizes.

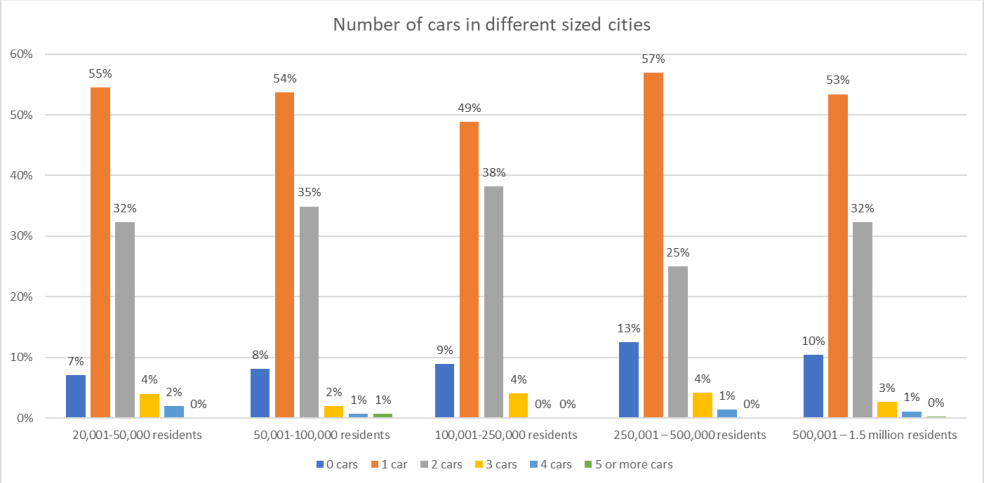

Figure 6: Number of cars per household by city size (Chi square = 0.914)

3 NEIGHBOURHOOD

Question 2: The participants' neighbourhoods are mostly characterized by closed blocks or clusters of buildings (72%; N=721), followed by detached houses (12%; N=121) and row houses (8%; N=84).

The **building height** tends to be between three and nine storeys.

Only 9% of the participants' houses were **built after 2010**. The majority (80%) was built between 1970 (N=434; 43.2%) and 2009 (N=372; 37.1%).

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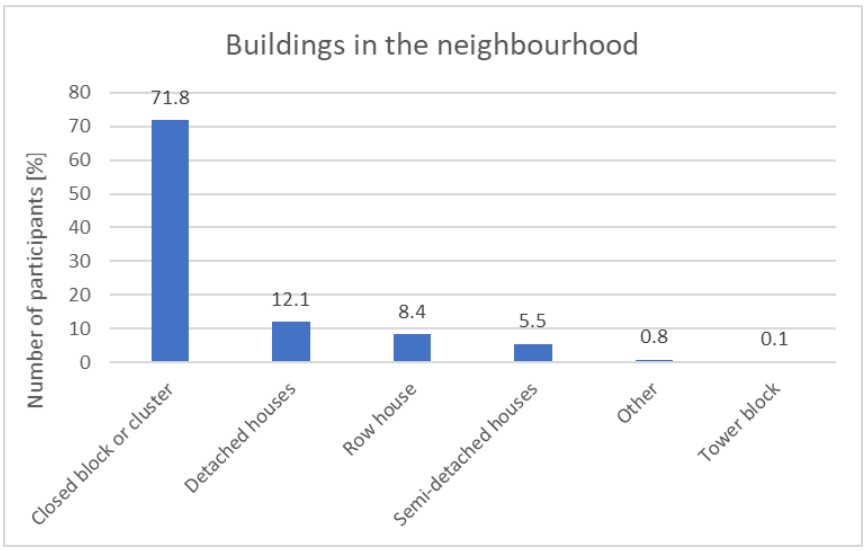

Figure 7: Types of buildings characterising the neighbourhood

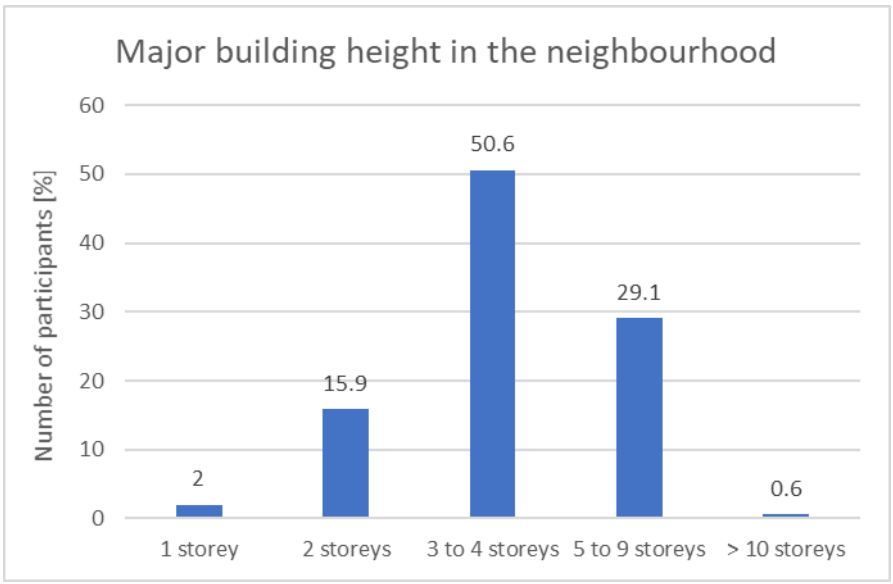

Figure 8: Predominant building height in the neighbourhood

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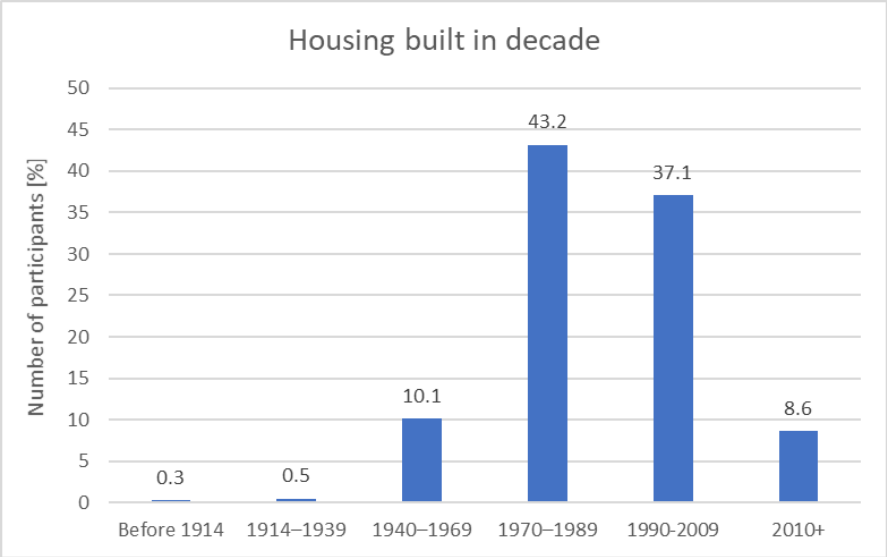

Figure 9: Decade in which housing was built

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Question 4: The most **dominant elements of the neighbourhoods** are private balconies and terraces (Ø = 2.46) and parking and traffic areas (Ø = 1.8). Community gardens (Ø = 1.65), public green or park with recreational space (Ø = 1.62), private gardens (Ø = 1.61) and paved public courts and spaces (Ø = 1.6) were each rated equally dominant.

Figure 10: Description of neighbourhood surroundings

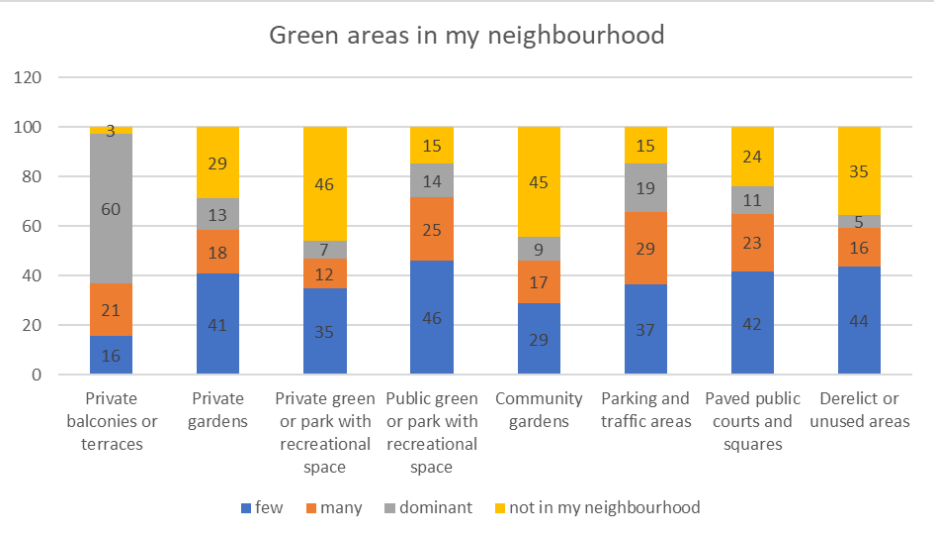

Figure 11: Green areas in my neighbourhood

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Question 6: **Parking arrangements** in the neighbourhood are mostly public on-street parking (69.6%; N=699) or private parking (58.9%; N=591) (multiple answers possible).

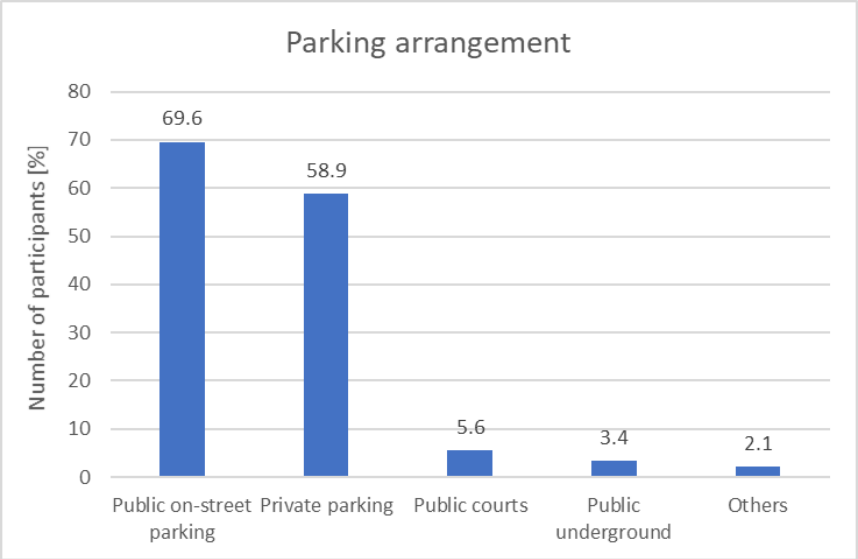

Figure 12: Parking arrangements in my neighbourhood

Question 7: The **walking distance to relevant infrastructure** is shortest (0-5 min walking) to slow public transport and longest (further away than 15 min walking) to participants' place of employment.

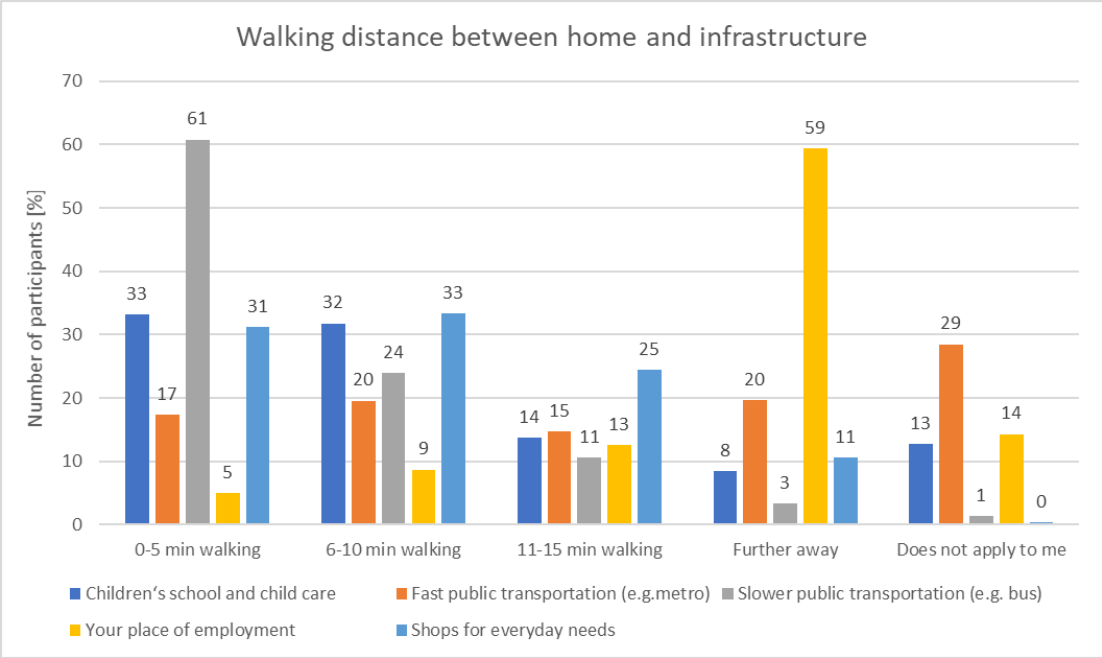

Figure 13: Walking distance between home and types of infrastructure

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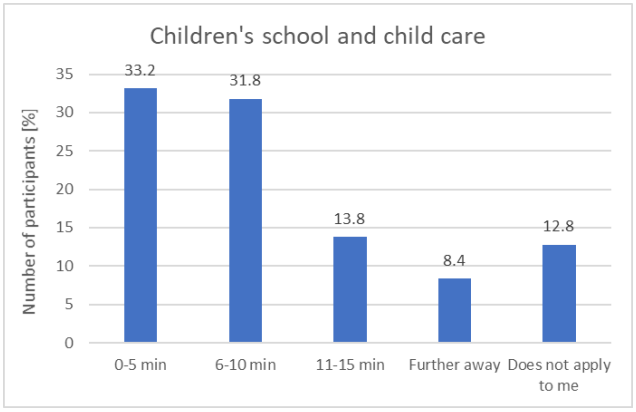

Figure 14: Walking distance to children's school and child care

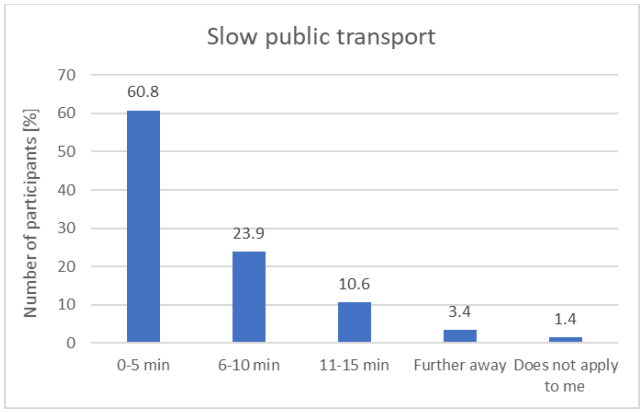

Figure 15: Walking distance to slow public transportation

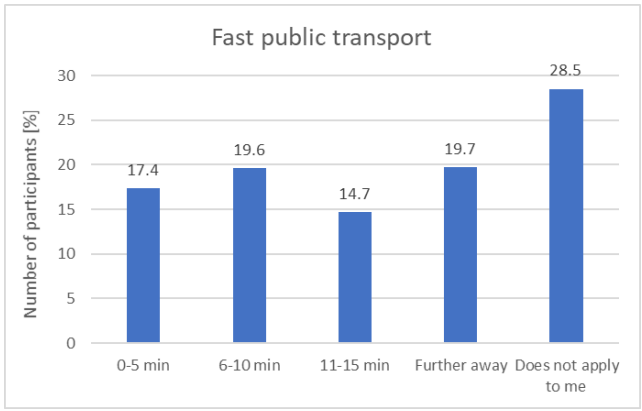

Figure 16: Walking distance to fast public transportation

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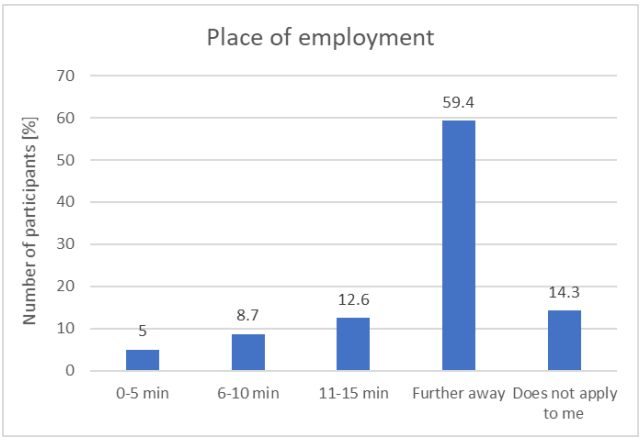

Figure 17: Walking distance to place of employment

Figure 18: Walking distance to shops for daily needs

Fast public transport is generally not available for 28.5% of the participants. When comparing fast public transport in cities, it becomes clear that it is significantly less available for participants from small and medium-sized cities (40% and more) (Chi square = < 0.001).

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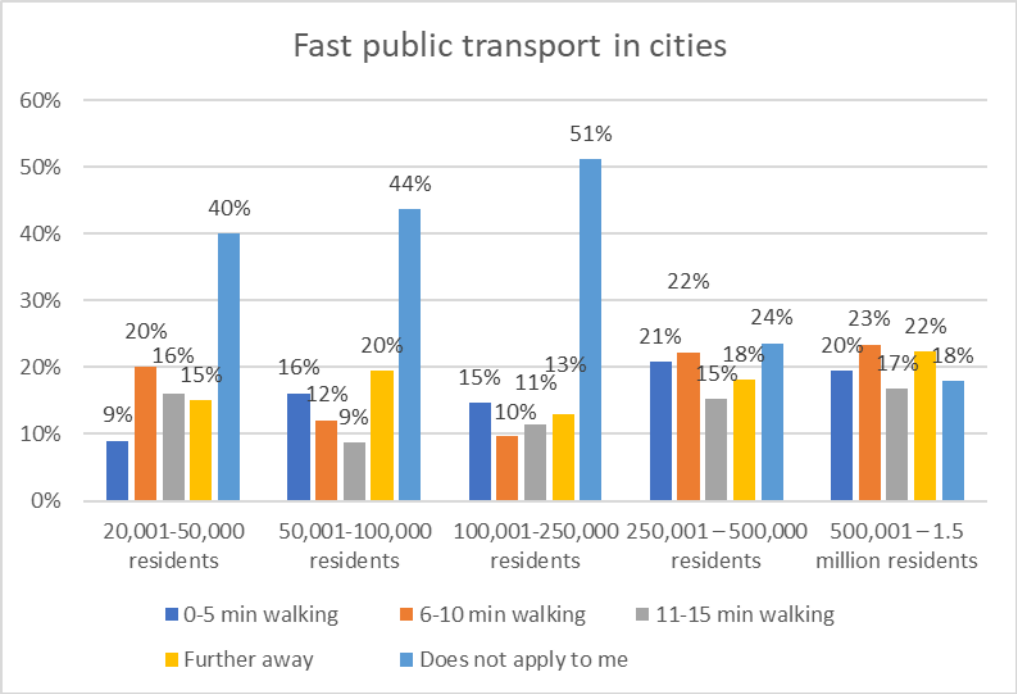

Figure 19: Walking distance to fast public transport by city size (Chi square = < 0.001)

Slow public transport is frequently available in all cities with a significantly higher availability in larger cities (Chi square = < 0.001).

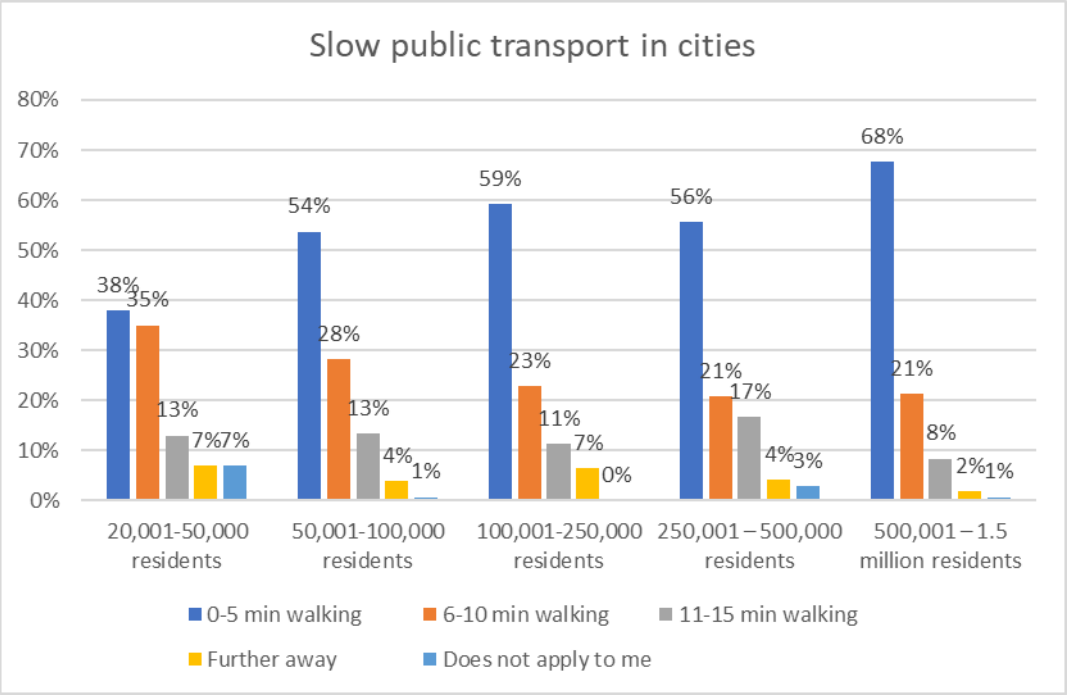

Figure 20: Walking minutes to slow public transport by city size (Chi square = < 0.001)

The distance to the **place of employment** differs significantly between city sizes (Chi square = 0.007). In smaller cities, about 48% live further than 15 minutes by foot to their place of work, which increases to 63% in the largest cities.

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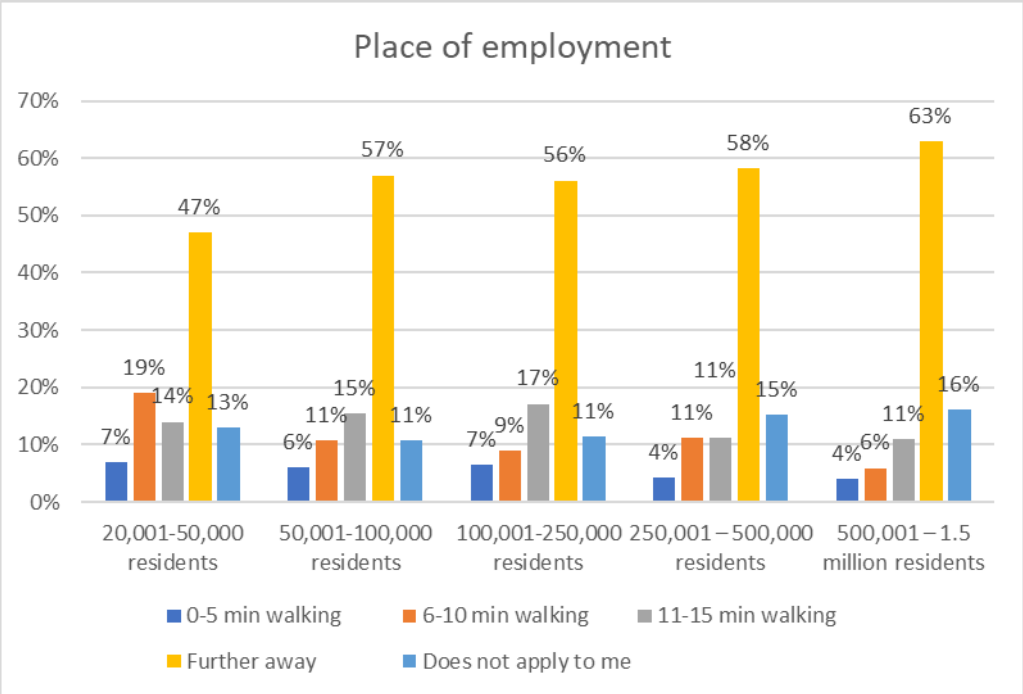

Figure 21: Walking distance to place of employment by city size (Chi square = 0.007)

The **distance to shops for everyday needs** does not significantly differ between the city sizes (Chi square = 0.327). At least 64.5% of participants live in a short walking distance (0 up to 10 minutes) to shops in every city size.

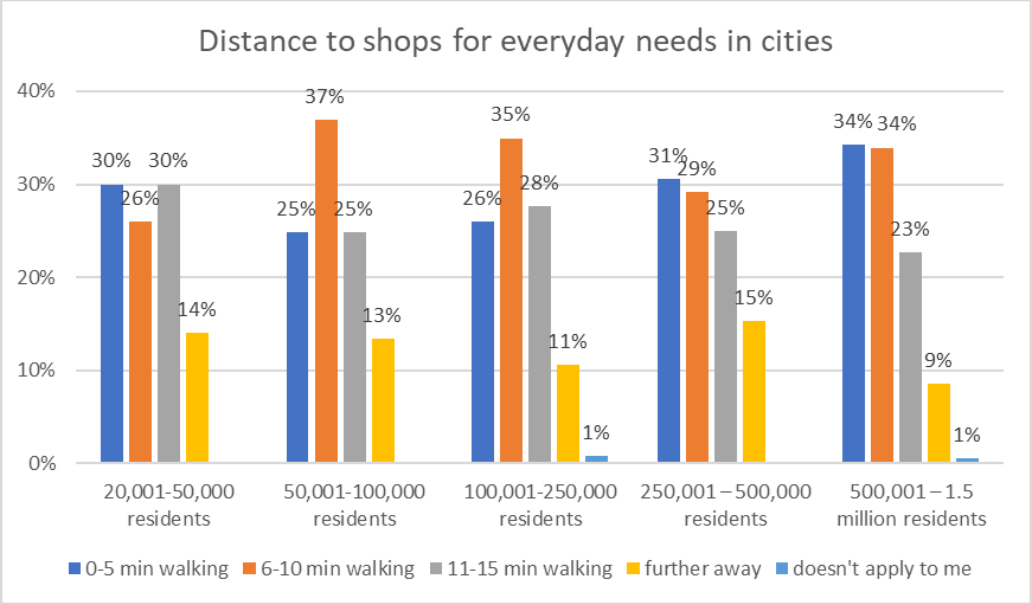

Figure 22: Walking distance to shops for everyday needs by city size (Chi square = 0.327)

Question 12: If participants could select the type of infrastructure, they would want to live close to, over 60% (N=632) stated that they would choose green areas, followed by their place of employment (50%; N=506).

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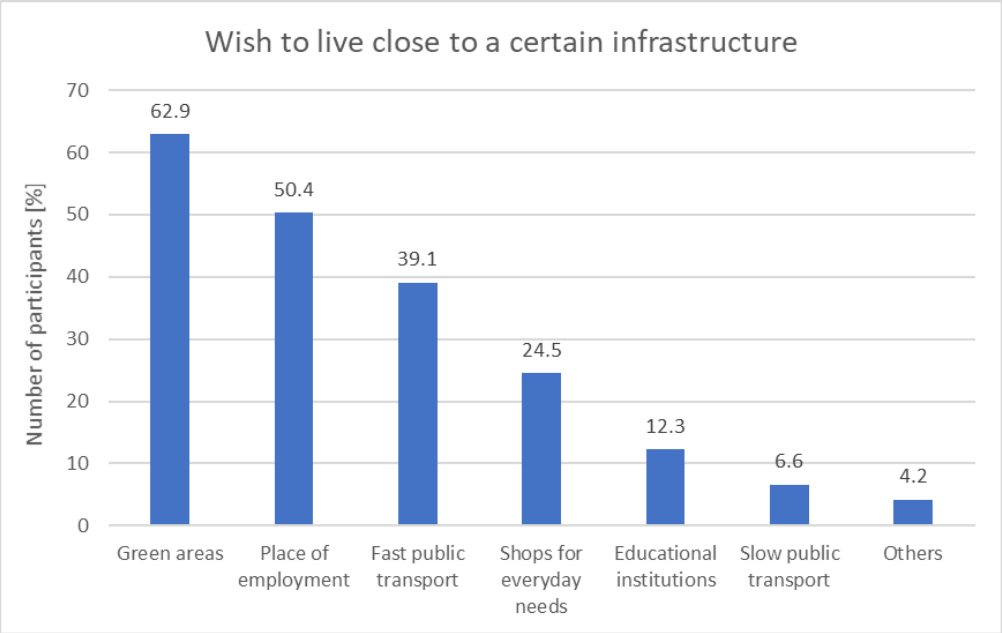

Figure 23: Infrastructure respondents wish to live close to

Other infrastructure, which participants wish to live close are included in Table 4:

Table 4: Other infrastructure respondents wish to live close to

Infrastructure	n
Satisfied (everything is close)	8
Water (lake, sea, river)	7
Entertainment stores	2
Parks	2
Province	2
School	2
Single-family households; less noise	2
Away from cities and prisons	1
Beach	1
Culture and art	1
Family	1
Field	1
Focus areas	1
Forest	1
Friends	1
Gym	1
Hospital	1

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Large department stores	1
Sports	1

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4 GREEN SPACES

4.1 WALKING DISTANCES TO DIFFERENT GREEN SPACES IN THE NEIGHBOURHOOD

Question 8: For over 60% of all participants, street greening is less than 5 walking minutes away, making it the most accessible green infrastructure. Playgrounds and parks follow. Those three types of green spaces are also rarely not applicable to participants.

Urban forests and derelict areas are either not applicable or further than 15 minutes away.

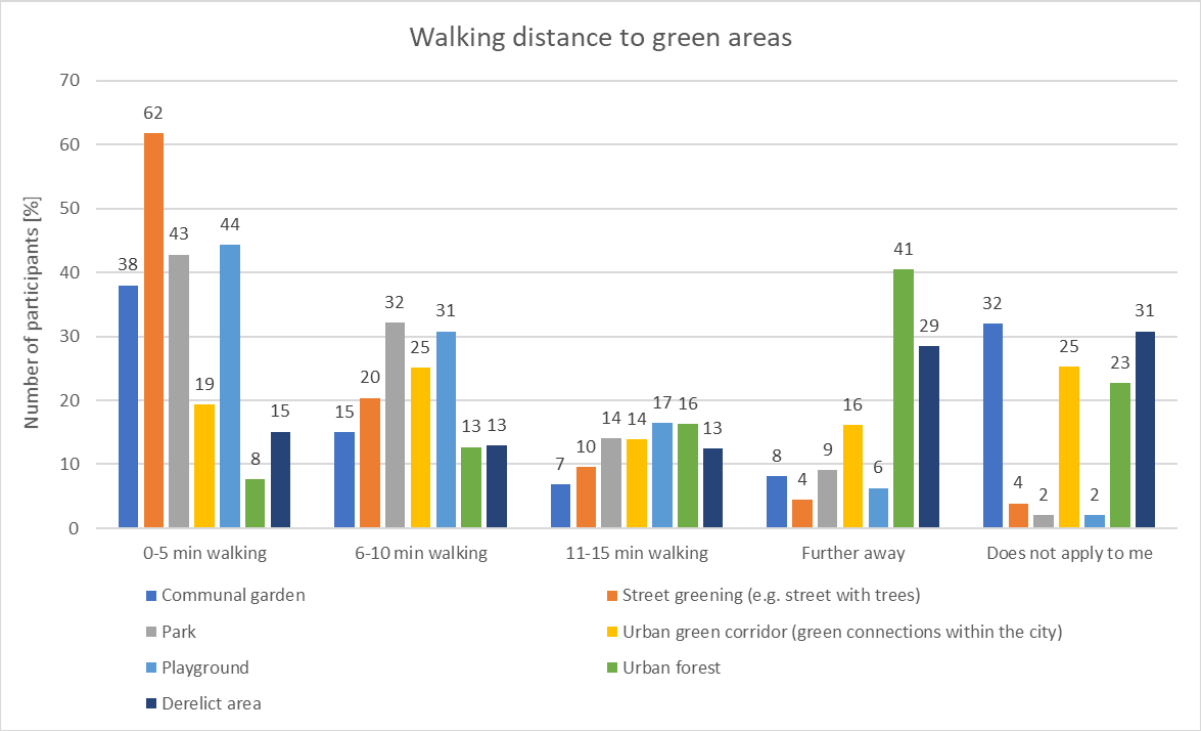

Figure 24: Walking distance to different green areas

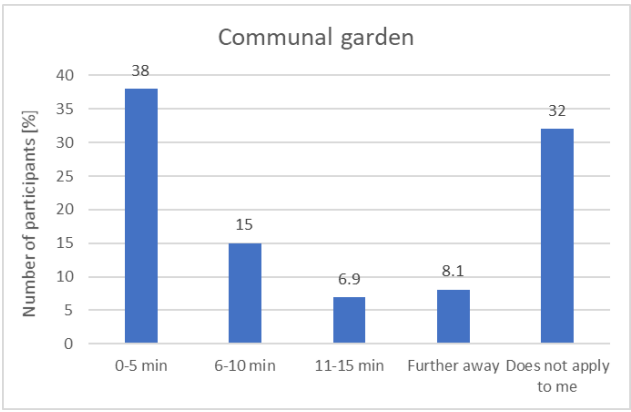

Figure 25: Walking distance to a communal garden

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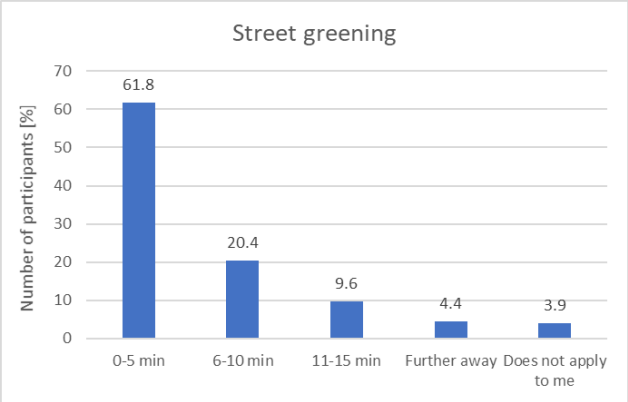

Figure 26: Walking distance to street greening

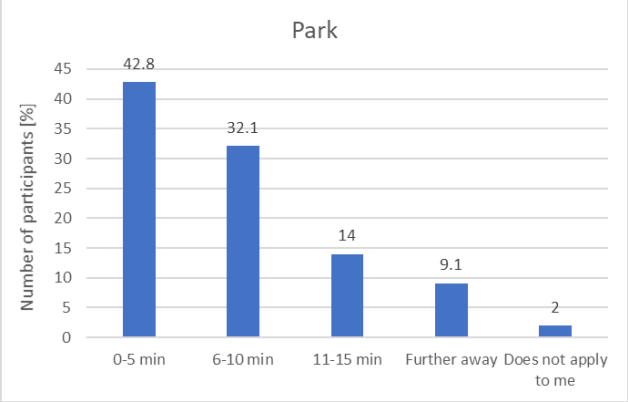

Figure 27: Walking distance to a park

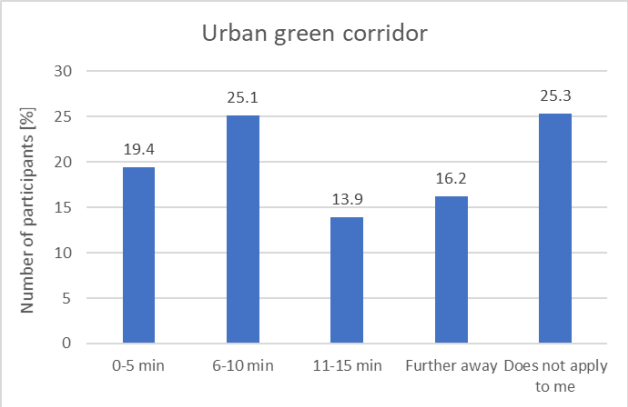

Figure 28: Walking distance to an urban green corridor

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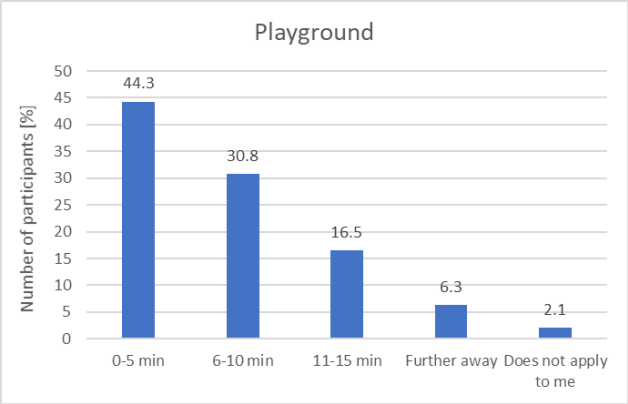

Figure 29: Walking distance to a playground

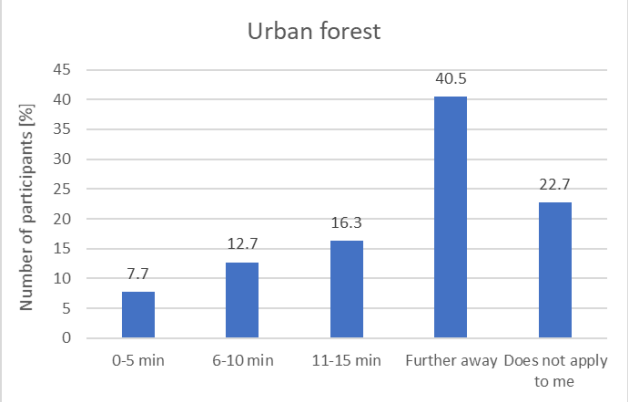

Figure 30: Walking distance to an urban forest

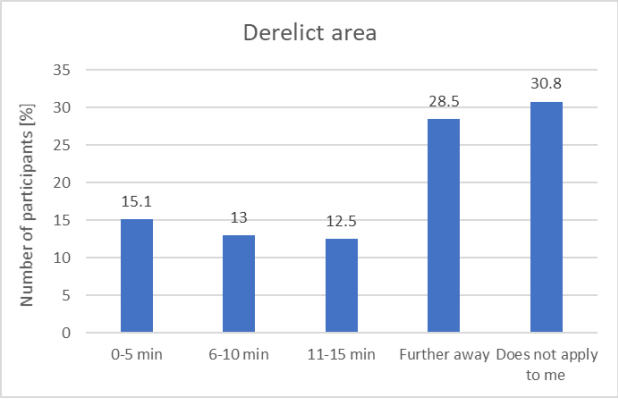

Figure 31: Walking distance to a derelict area

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4.2 WALKING DISTANCE TO DIFFERENT GREEN SPACES IN DIFFERENT CITY SIZES

Significant differences exist between the walking distance in cities to parks (Chi square = 0.007), derelict areas (Chi square = 0.015) and street greening (on a 10% level; Chi square = 0.059). **Parks** are quickly accessible in all cities, while cities with 250,001 to 500,000 residents are an exception with parks being less easily available. **Derelict areas** do not apply to about 25 to 35% of the participants in all cities. The difference mostly results from the varying distance of the areas in the defined city categories. **Street greening** is easily accessible in all cities. The significance arises from the differences in cities with 250.001 to 50.000 residents.

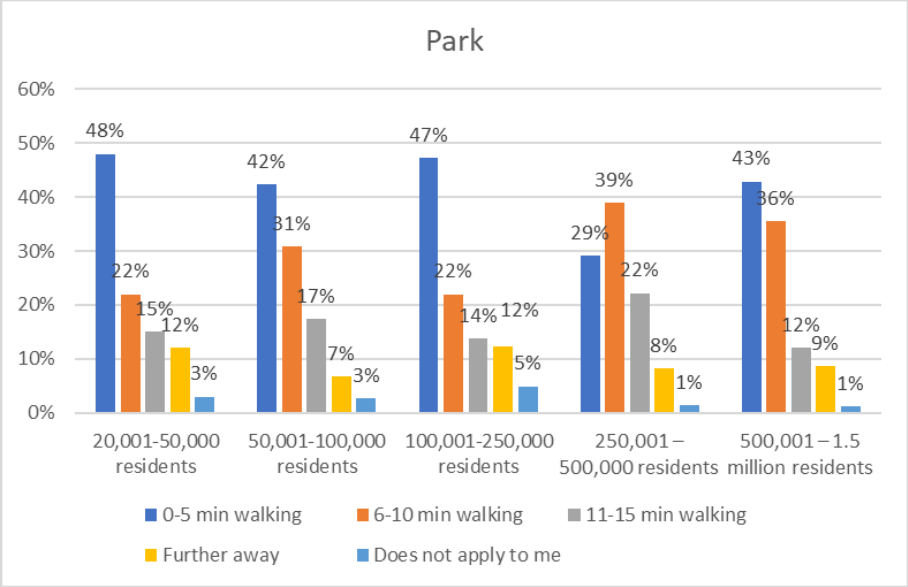

Figure 32: Walking distance to a park by city size (Chi square = 0.007)

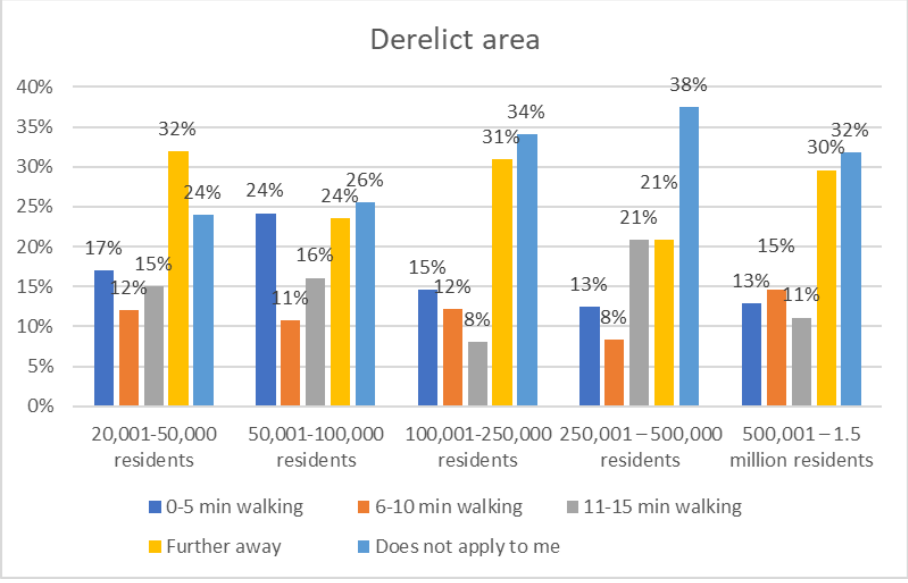

Figure 33: Walking distance to a derelict area by city size (Chi square = 0.015)

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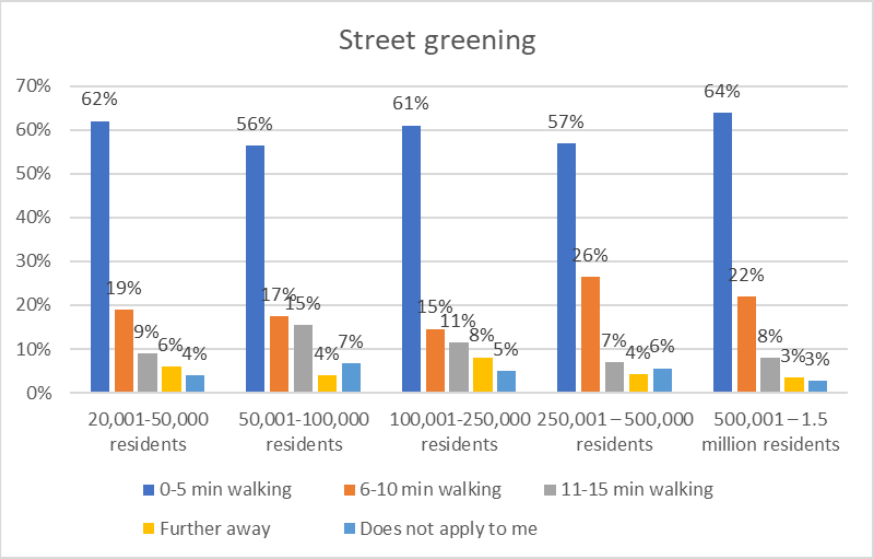

Figure 34: Walking distance to street greening by city size (Chi square = 0.059)

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4.3 COMPANIONSHIP AT GREEN AREAS IN THE NEIGHBOURHOOD

Question 9: Participants usually spend time with their partner (Ø = 2.93), friends (Ø = 2.87) and children (Ø = 2.81) at green areas. Spending time with neighbours (Ø = 1.83) is not very common and received the "never" category more often than others and "Does not apply to me" the second most often.

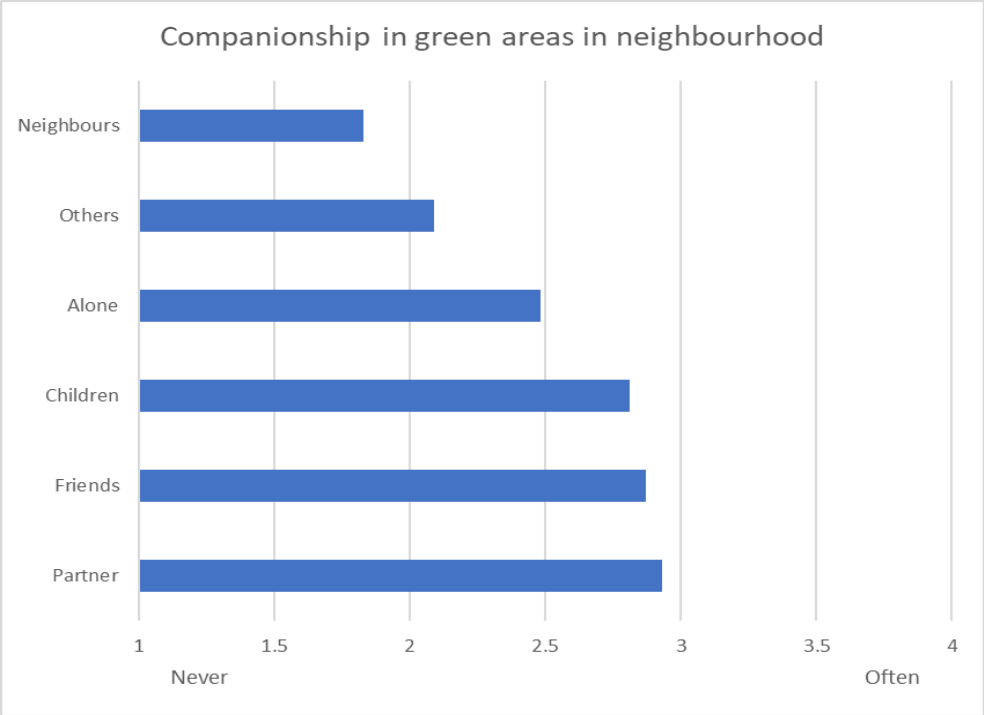

Figure 35: Companionship in green areas

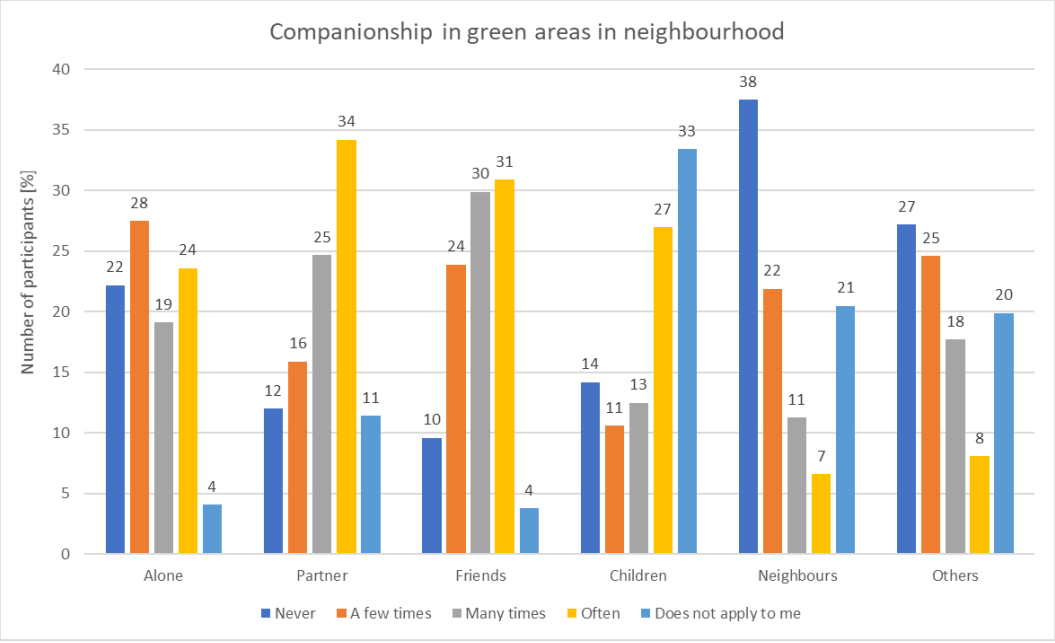

Figure 36: Frequency of types of companionship in green areas

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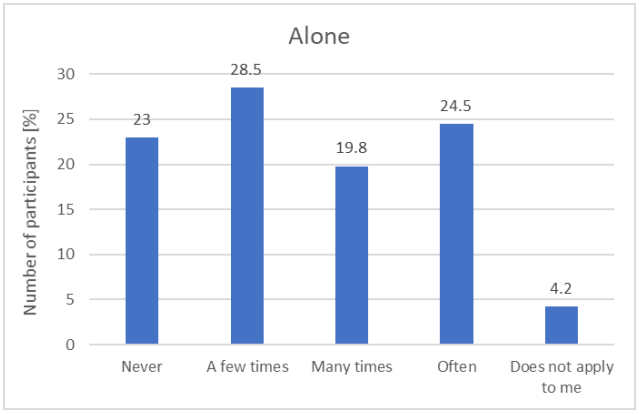

Figure 37: Frequency of time spent alone in green areas

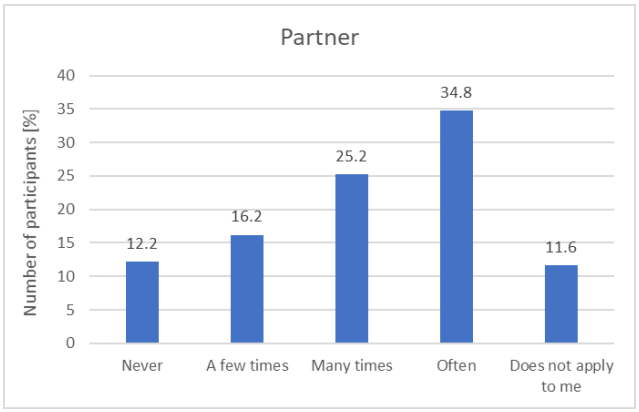

Figure 38: Frequency of time spent with partner in green areas

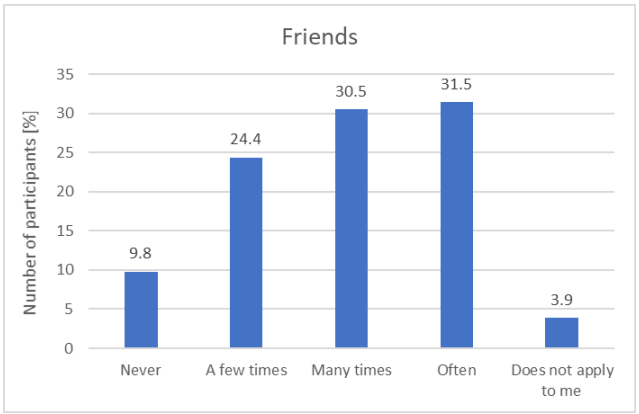

Figure 39: Frequency of time spent with friends in green areas

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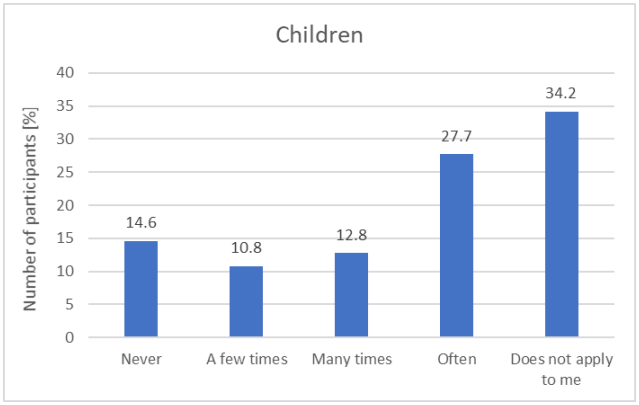

Figure 40: Frequency of time spent with children in green areas

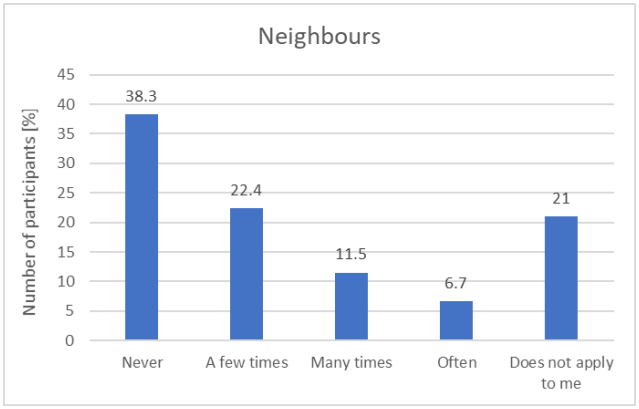

Figure 41: Frequency of time spent with neighbours in green areas

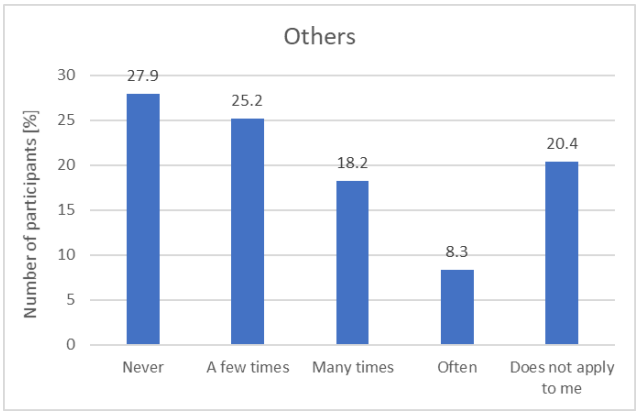

Figure 42: Frequency of time spent with others in green areas

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4.4 RATING OF THE AMOUNT OF GREEN AREAS IN THE NEIGHBOURHOOD

Question 10: Generally, about 60% of participants **rate the amount of green** areas in their neighbourhood either as excellent (12%; N=120) or good (50.3%; N=505). No significant differences exist between the rating in different sized cities (Chi square = 0.457).

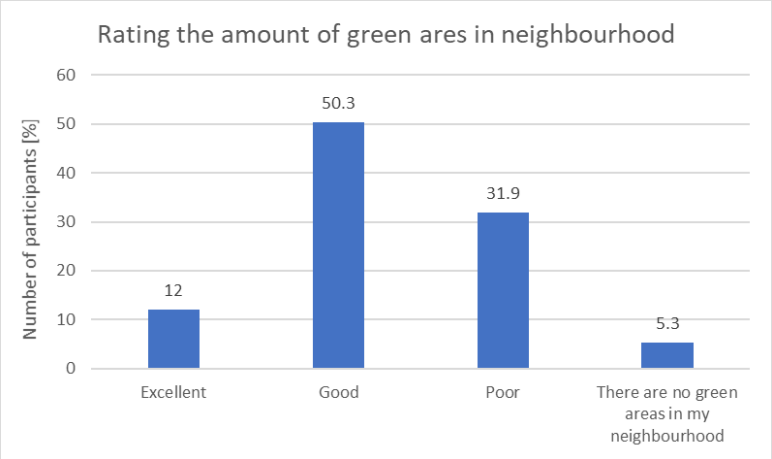

Figure 43: Rating the amount of green areas in neighbourhood

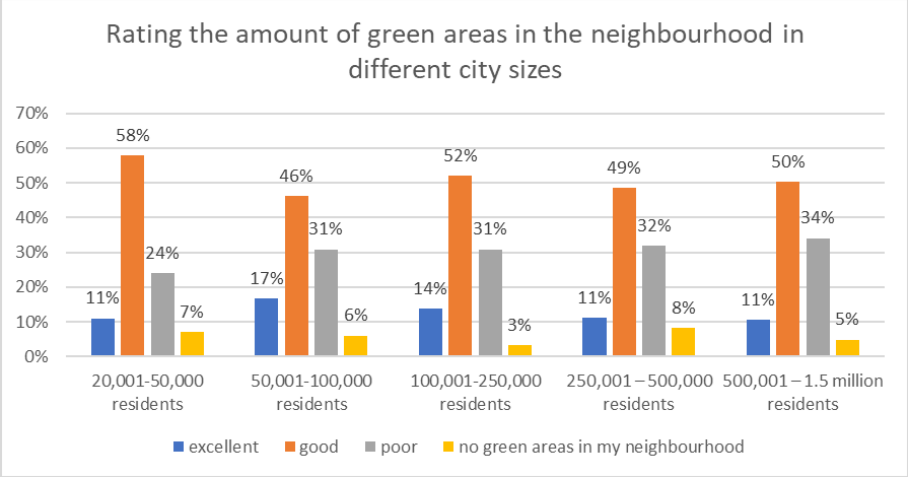

Figure 44: Rating the amount of green by city size (Chi square = 0.457)

Question 11: Over one third of the participants (32.7%; N=328) spend **two to four hours a week in green areas**. No significant differences exist between city sizes.

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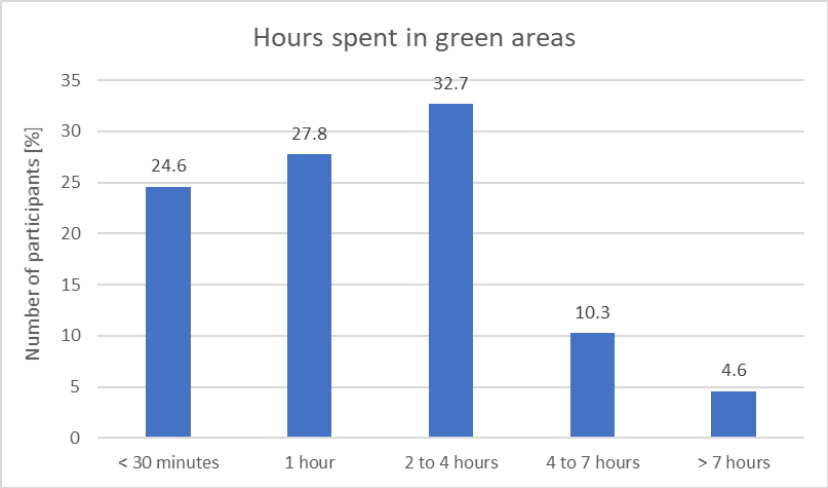

Figure 45: Number of hours spent in green areas per week

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5 CLIMATE CHANGE

Question 13: The prevailant opinion of 76% of participants was that **climate change can already be perceived**.

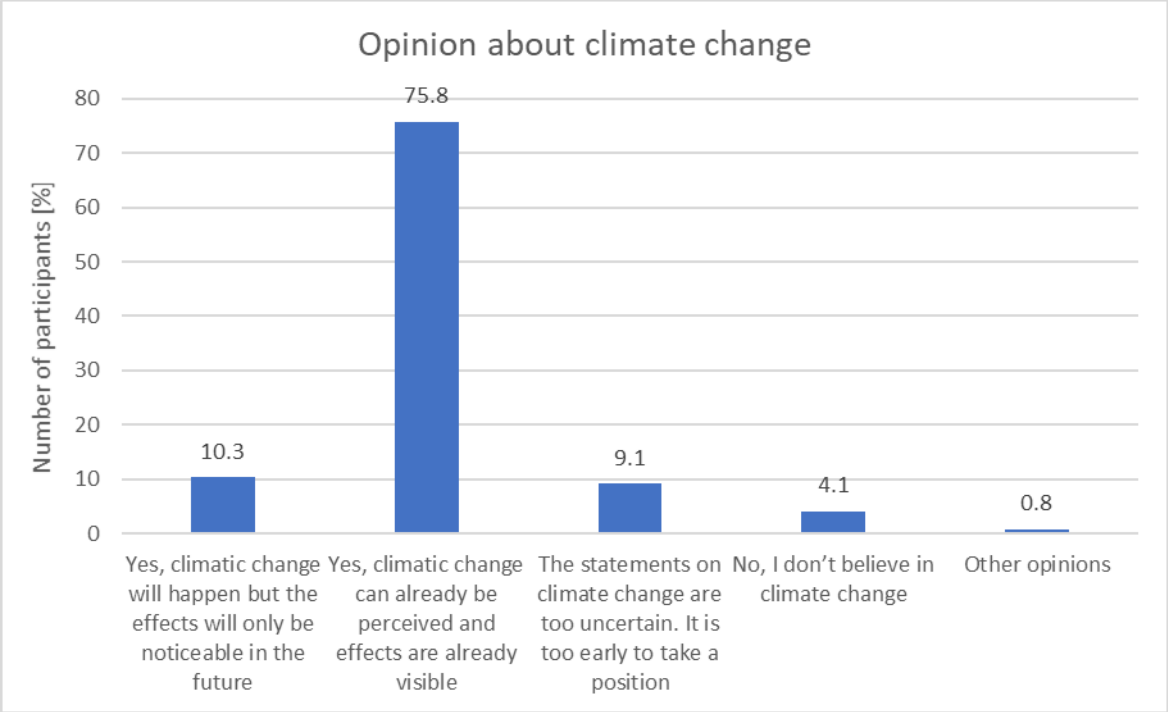

Figure 46: Respondents' opinion about climate change

Other opinions include

- We are experiencing climate change, but not to the degree that they present it to us.
- I haven't formed a complete opinion.
- Climate change is happening and the effects are already very noticeable.
- The planet will make its cycle and man cannot stop it.
- The climate is changing, but not because of man.
- The phenomenon of climate change is already starting to have effects.
- There is climate change but it is only used by governments as an excuse for extra taxes (which do not go to the environment).

Question 14: Despite this general acceptance of the effects of climate change, only 45.7% of participants (N=459) believe that climate change effects will **occur in their neighbourhood**.

Table 5: Respondents expectation of climate change effects in their neighbourhood

	n	%
No, I don't expect effects by climate change	545	54.3
Yes, I expect the following effects to happen in my neighbourhood	459	45.7

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Question 14a: Out of 456 participants who proceeded to questions 14a to c, about 89.5% (N=408) already **experienced heat waves**.

Table 6: Respondents who have experienced heat waves in their neighbourhood

	n	%
No, I never experienced heat waves in my neighbourhood	48	10.5
Yes, I experienced heat waves already	408	89.5

Question 14b: On average, participants stated to experience 16.05 (days) **heat waves per summer**. The number of reported heat waves (days) ranged from two to 90.

Question 14c: About 71% of the reduced number of participants stated to be **negatively affected by heat waves in their wellbeing**.

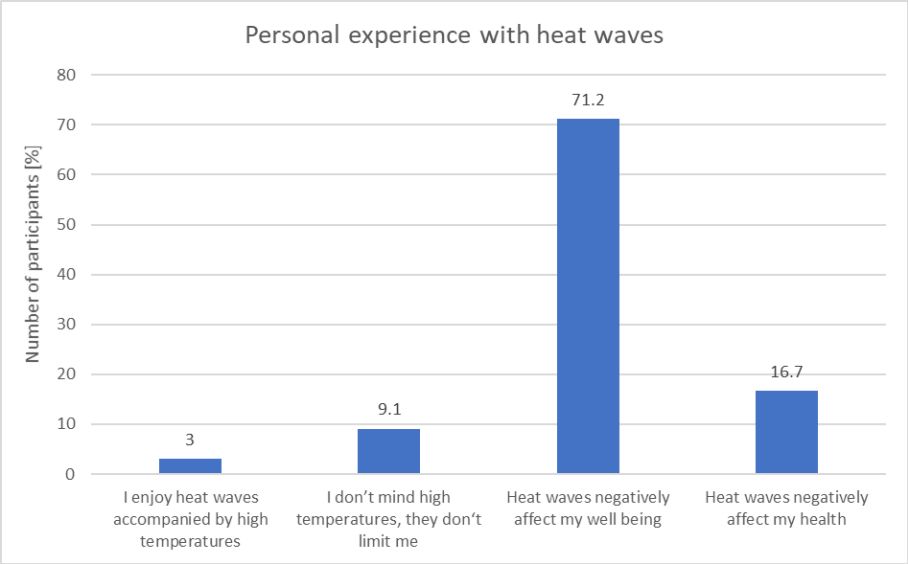

Figure 47: Respondents' personal experience with heat waves

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6 MEASURES AT CITY LEVEL TO COMBAT CLIMATE CHANGE

Question 15: A broad consensus exists regarding the **importance of actively addressing climate change** through strategies on the communal level.

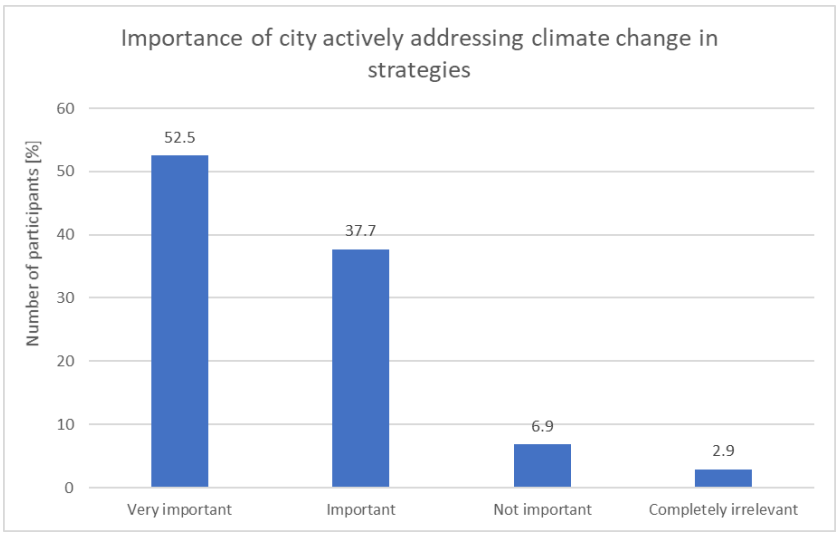

Figure 48: Importance of addressing climate change in strategies at the communal level

Question 16: Regarding the **desired quality of life in the neighbourhood**, participants identified all strategies as almost equally important. Air quality improvement and micro-dust reduction was the most important measure (Ø = 3.54), followed by improving urban climate by fresh air corridors (Ø = 3.46), temperature reduction (Ø = 3.46) and conserve and increase urban biodiversity (Ø = 3.31). Stormwater management was rated equally very important and irrelevant. All other strategies were perceived as rather important.

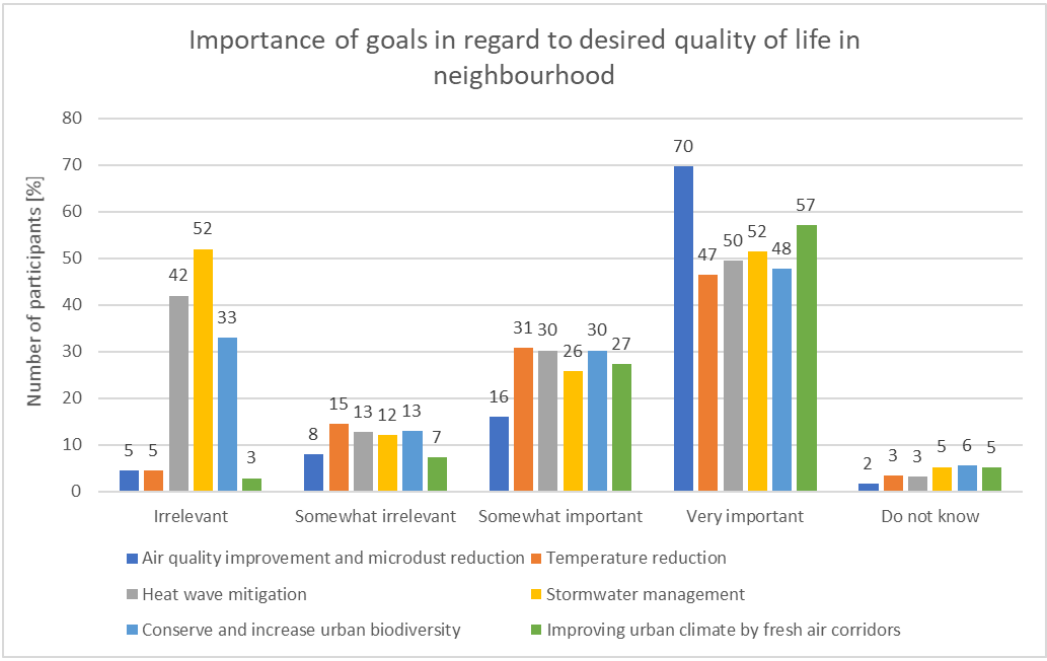

Figure 49: Importance of goals in regard to desired quality of life in their neighbourhood (comparative)

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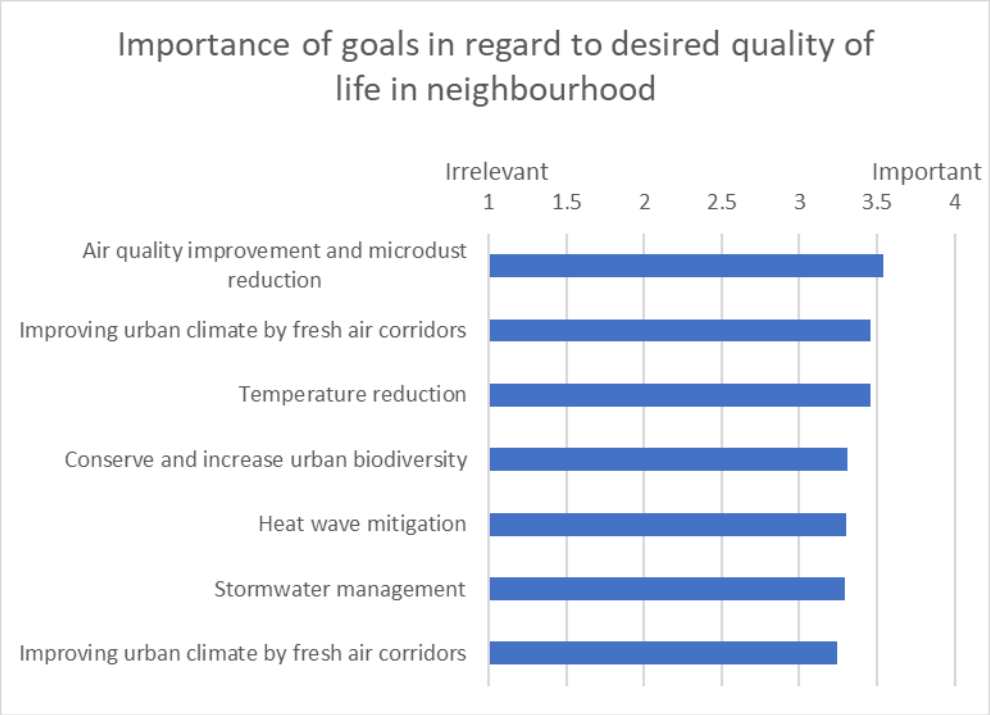

Figure 50: Importance of goals in regard to desired quality of life in their neighbourhood (average)

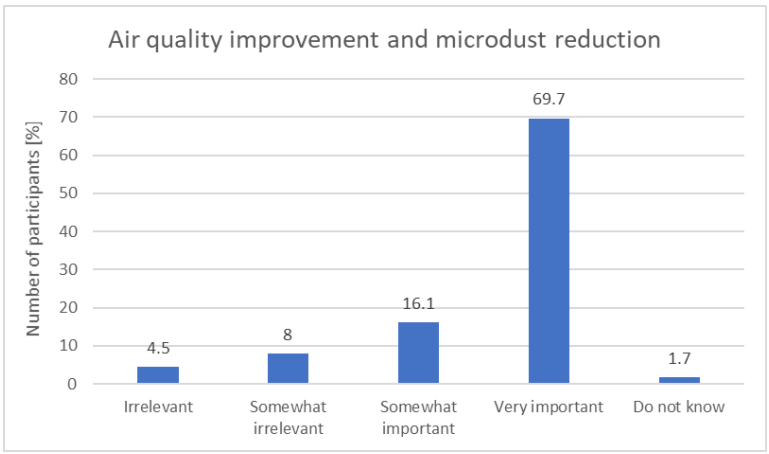

Figure 51: Importance of air quality improvement and microdust reduction

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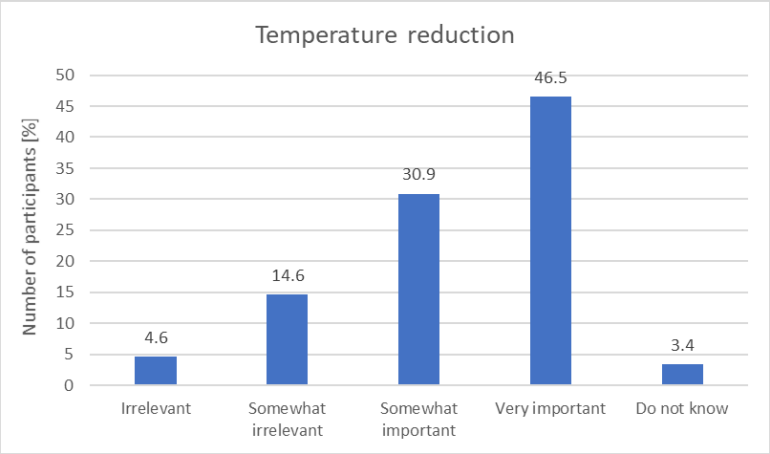

Figure 52: Importance of temperature reduction

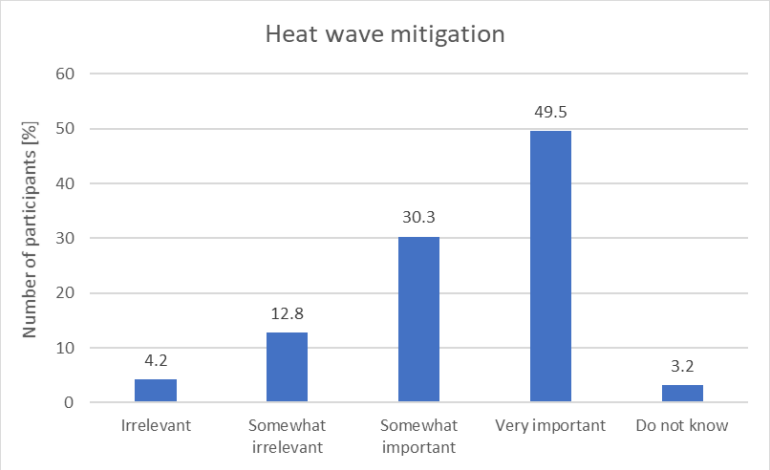

Figure 53: Importance of heat wave mitigation

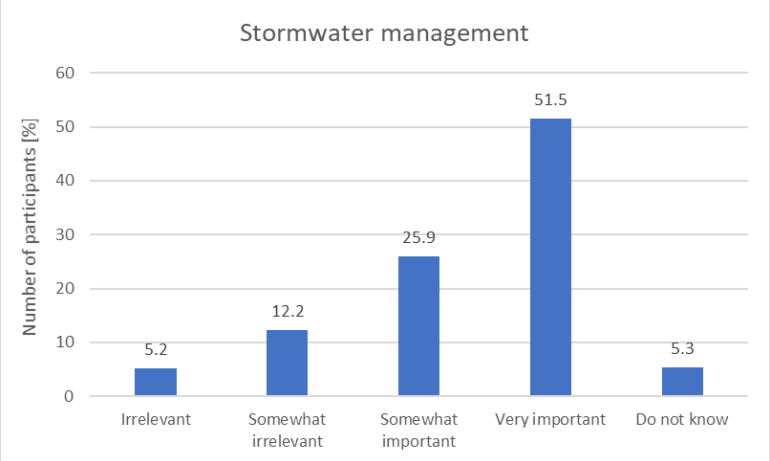

Figure 54: Importance of stormwater management

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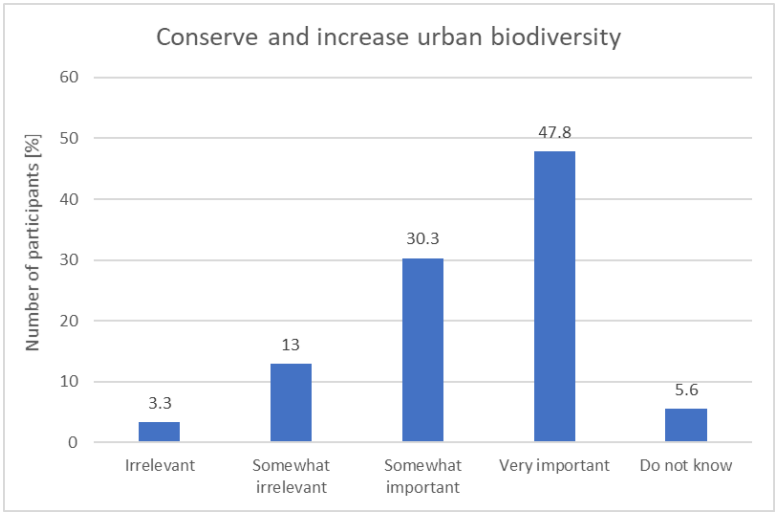

Figure 55: Importance of conserving and increasing urban biodiversity

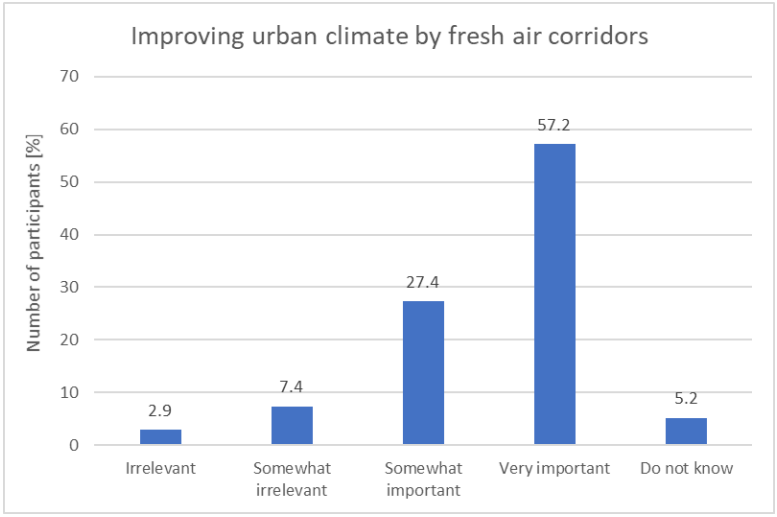

Figure 56: Improving urban climate by fresh air corridors

Significant differences exist between cities regarding the evaluation of air quality improvement and microdust reduction (Chi square = < 0.001), temperature reduction (Chi square = 0.013), improving urban climate by fresh air corridors (Chi square = 0.006) and heat wave mitigation (10% level; 0.058). **Air quality improvement and microdust reduction** is particularly important for residents in the largest city category (77%), compared to 65% in the smallest two city sizes.

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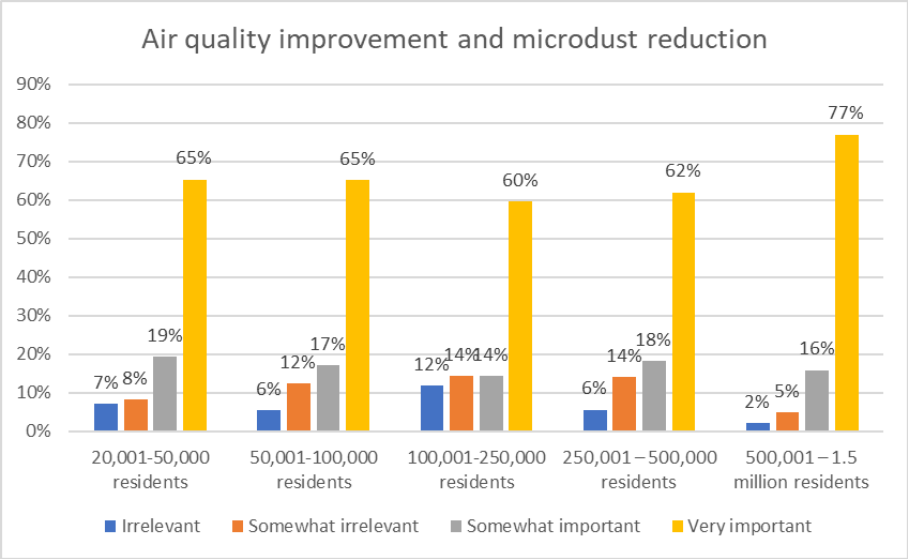

Figure 57: Importance of air quality improvement and microdust reduction by city size (Chi square = < 0.001)

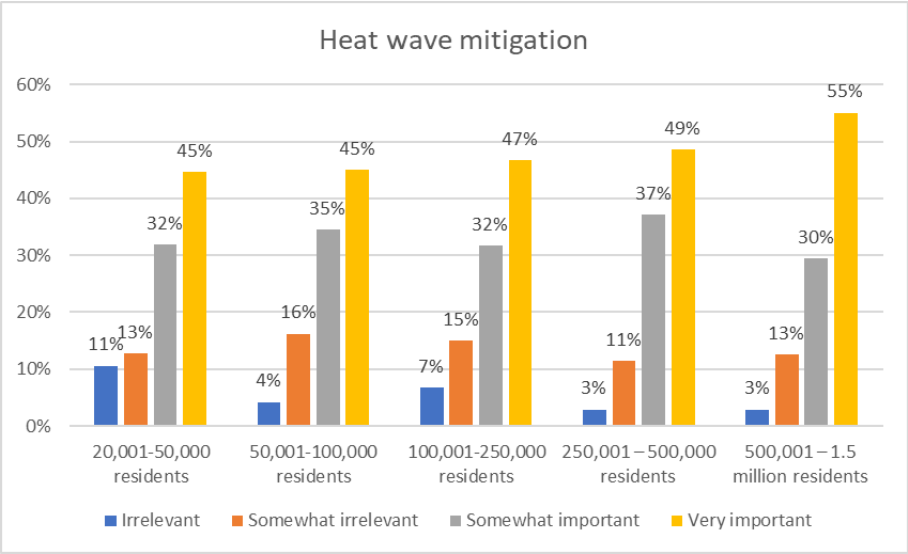

Figure 58: Importance of heat wave mitigation by city size (Chi square = 0.058)

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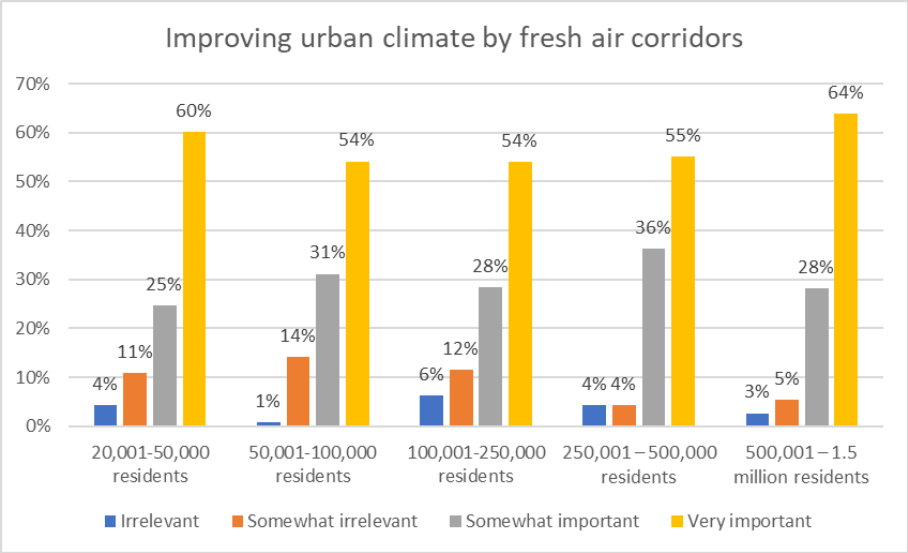

Figure 59: Importance of improving urban climate by fresh air corridors by city size (Chi square = 0.006)

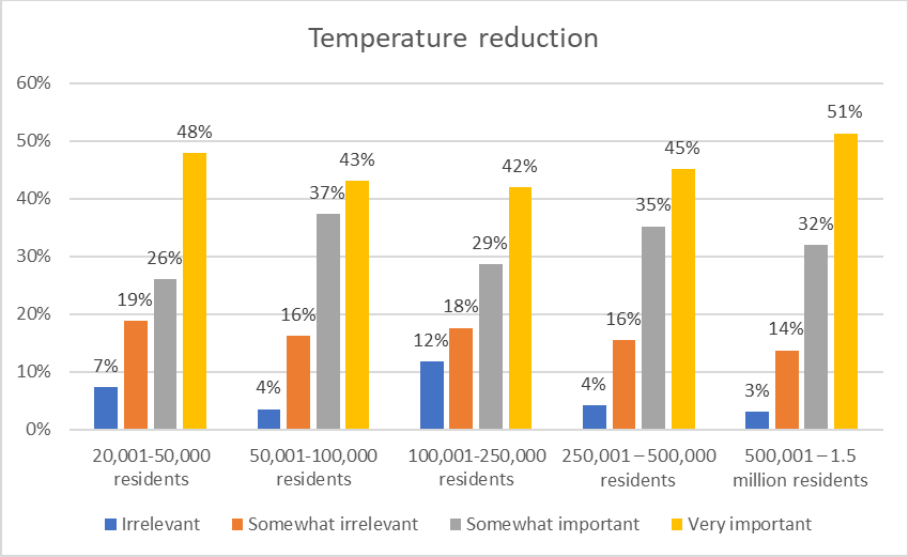

Figure 60: Importance of temperature reduction by city size (Chi square = 0.013)

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Question 17a-d: Overall, urban green corridors were rated the most important **measure to enhance urban greening**, followed by street greening by trees and hedges, rain gardens for water retention and communal gardens. Only in terms of aesthetic of the urban landscape, street greening was ranked as the largest contributor (Ø = 3.61), followed by urban green corridors (Ø = 3.57).

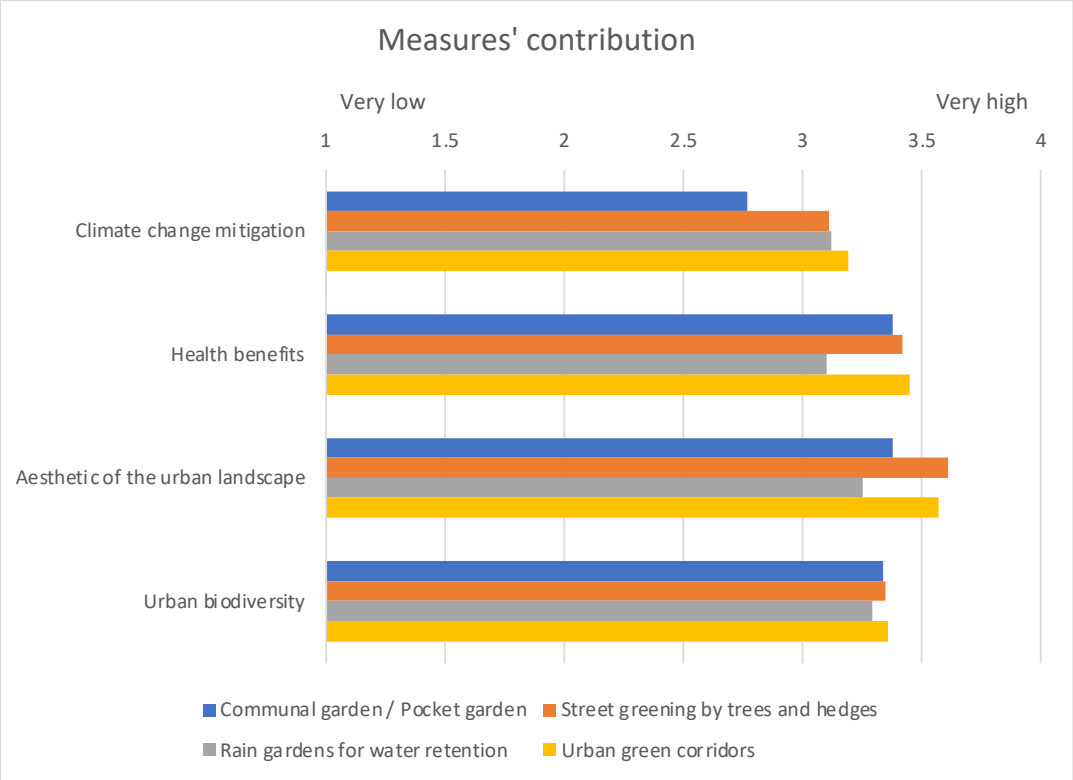

Figure 61: Different NBS contributions to urban strategies

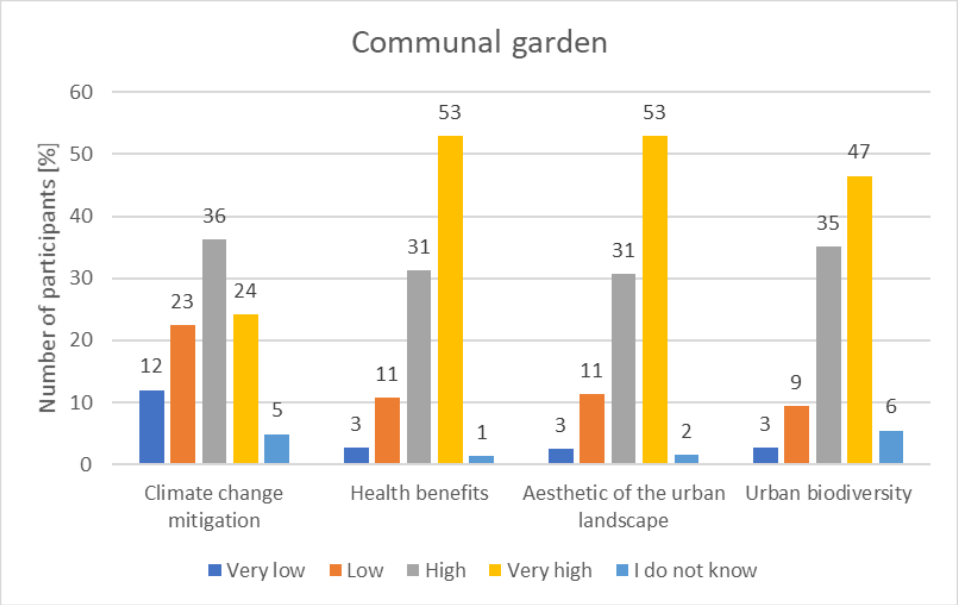

Figure 62: Communal gardens' contributions to urban strategies

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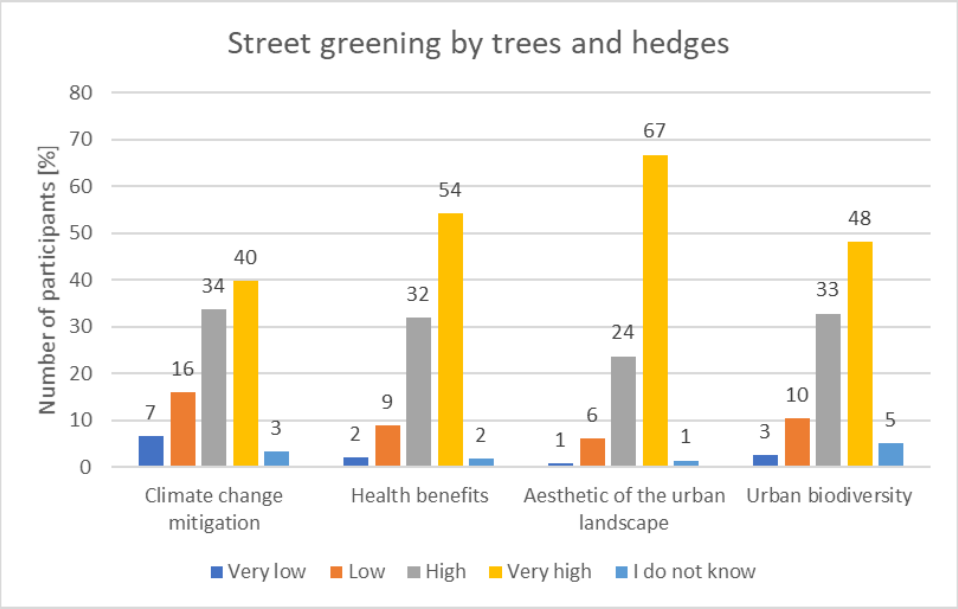

Figure 63: Street greening's contributions to urban strategies

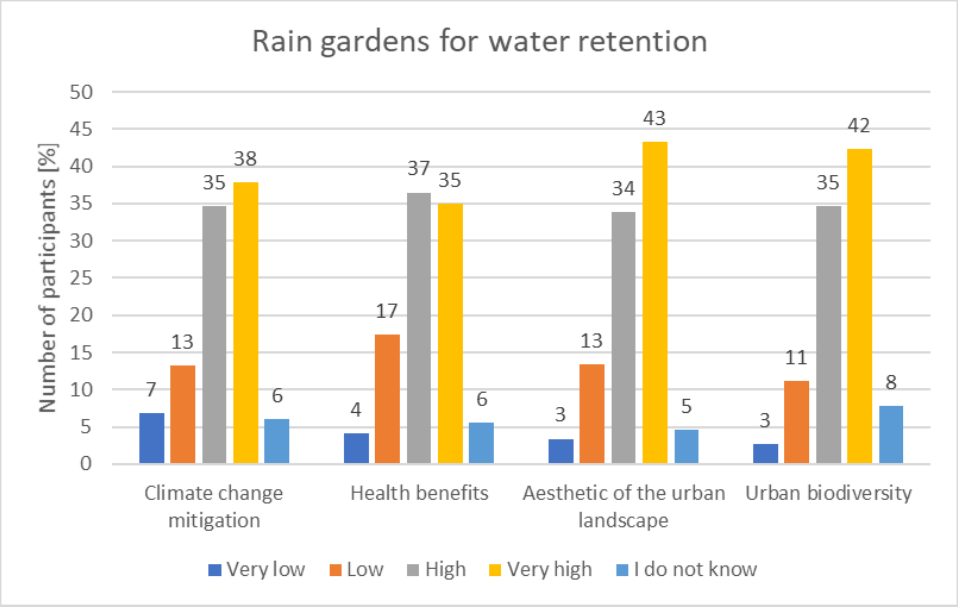

Figure 64: Rain gardens' contributions to urban strategies

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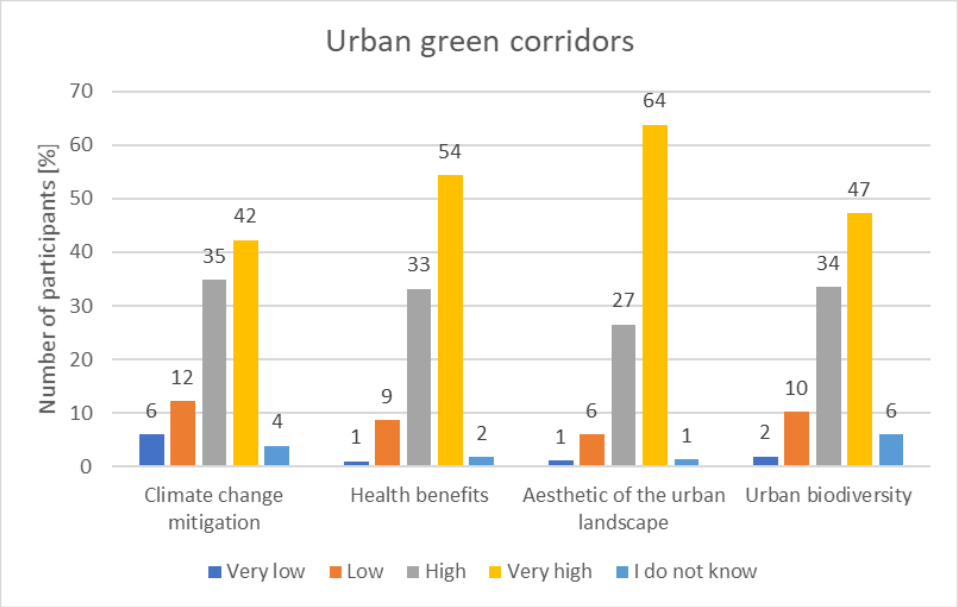

Figure 65: Urban green corridors' contributions to urban strategies

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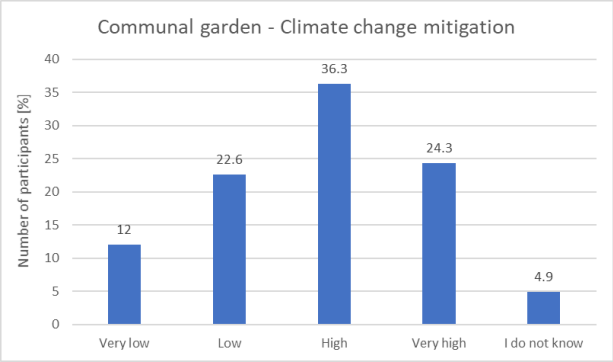

Figure 66: Communal gardens' importance for climate change mitigation

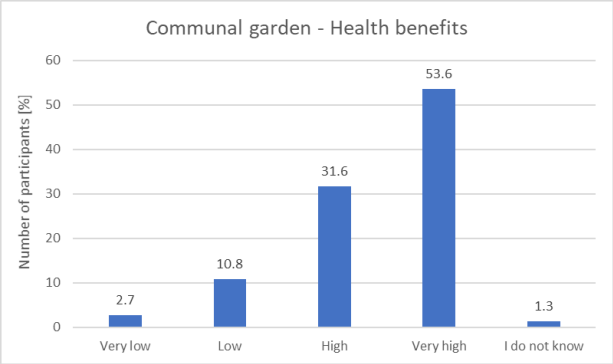

Figure 67: Communal gardens' importance for health benefits

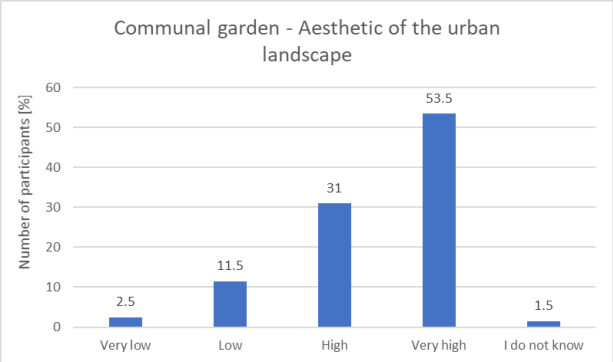

Figure 68: Communal gardens' importance for aesthetic of the urban landscape

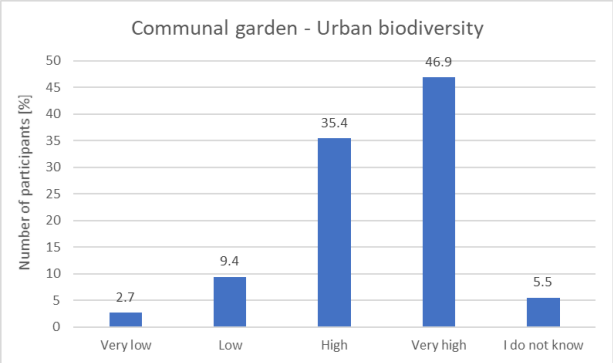

Figure 69: Communal gardens' importance for urban biodiversity

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

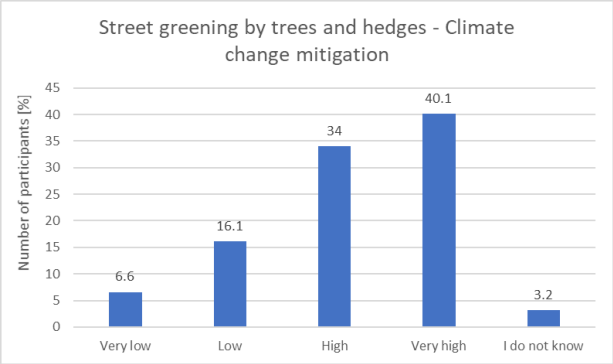

Figure 70: Street greening's importance to climate change mitigation

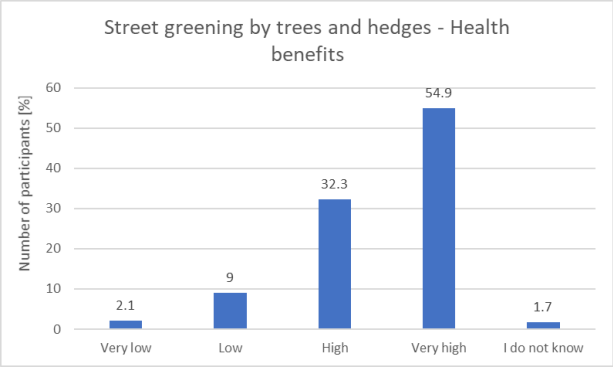

Figure 71: Street greening's importance for health benefits

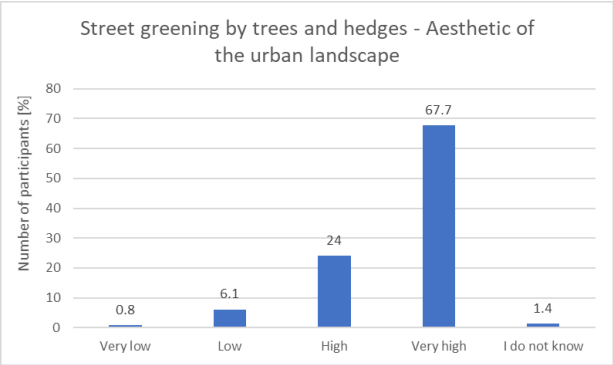

Figure 72: Street greening's importance for aesthetic of the urban landscape

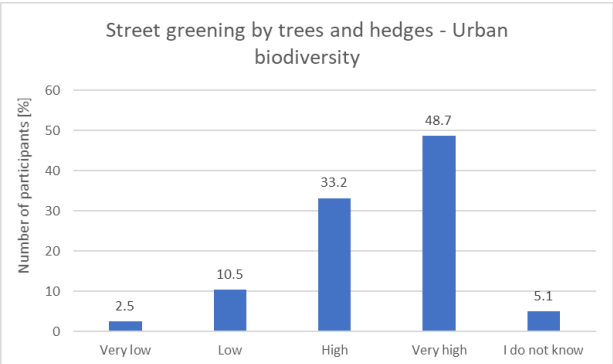

Figure 73: Street greening's importance for urban biodiversity

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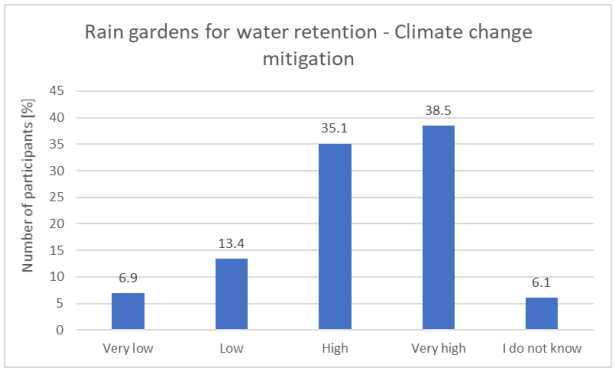

Figure 74: Rain gardens' importance for climate change mitigation

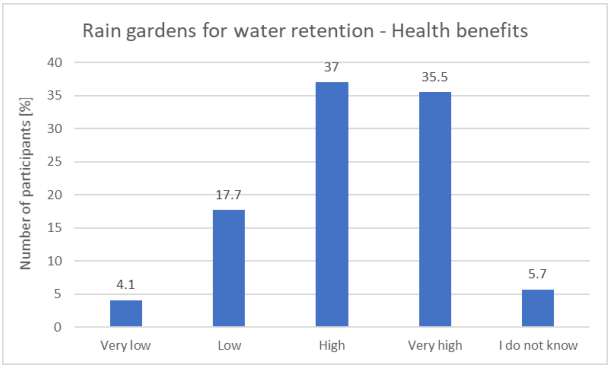

Figure 75: Rain gardens' importance for health benefits

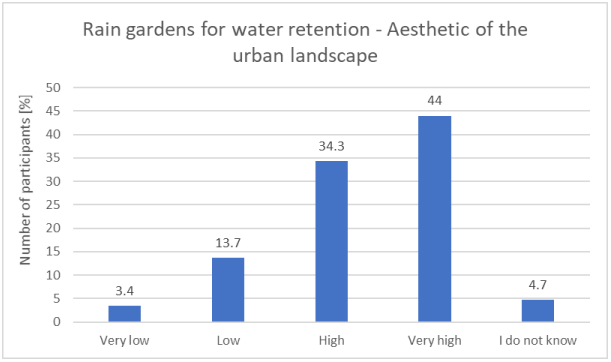

Figure 76: Rain gardens' importance for aesthetic of the urban landscape

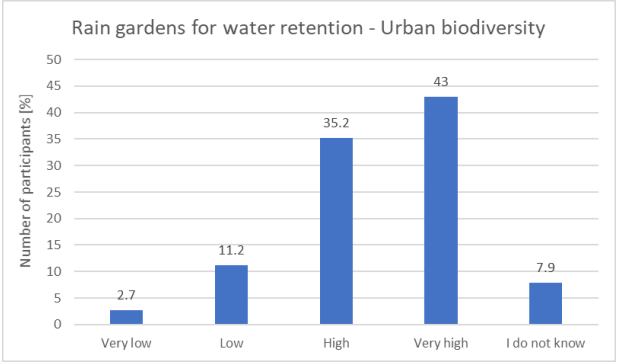

Figure 77: Rain gardens' importance for urban biodiversity

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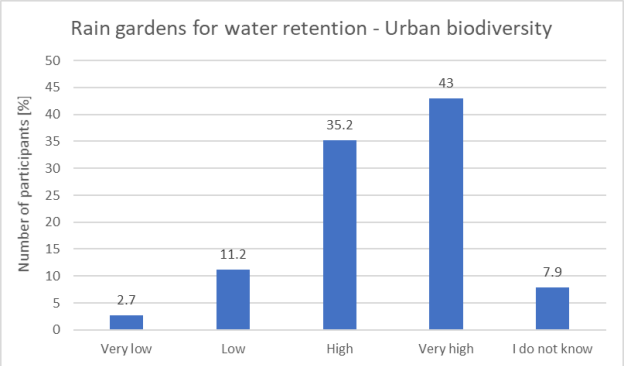

Figure 78: Urban green corridors' importance for climate change mitigation

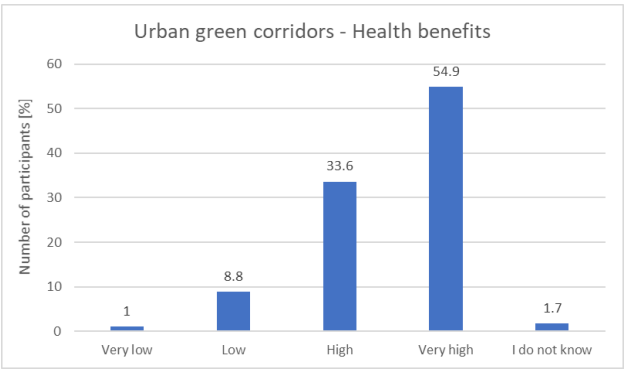

Figure 79: Urban green corridors' importance for health benefits

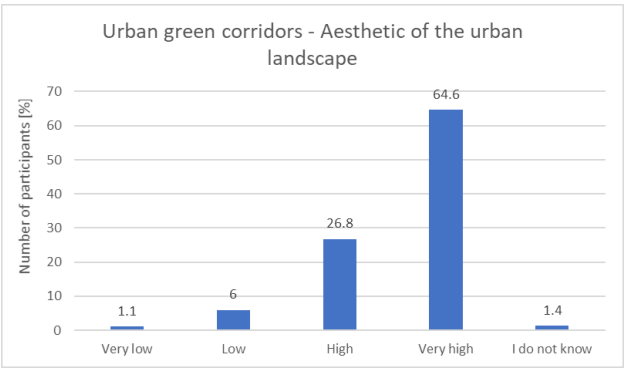

Figure 80: Urban green corridors' importance for aesthetic of the urban landscape

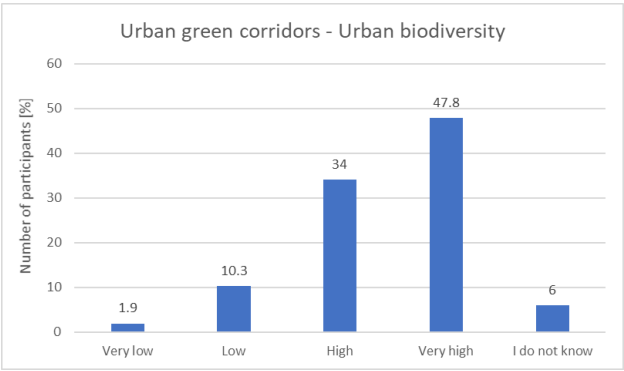

Figure 81: Urban green corridors' importance for urban biodiversity

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