Research and data collection within the framework of the BSI-Brussels Centre Observatory on the Brussels Pedestrian Zone

Analysis of the impact of the extension of the Brussels pedestrian zone on accessibility, travel behaviour and satisfaction: Phase 2

Final Report

Date of delivery: 31/03/2022

VUB VRIJE UNIVERSITEIT BRUSSEL
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BRUXELLES MOBILITÉ
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Contract number:

BMB/DS-DB/2016.1004

Photo cover: Beliris

Contents

List of Figures

List of Tables

List of abbreviations & glossary

1st periphery	The area covered by the 33 municipalities surrounding Brussels and part of the Brussels Metropolitan Area (see below). The 33 municipalities are: Grimbergen, Vilvoorde, Machelen, Steenokkerzeel, Zaventem, Kortenberg, Kraainem, Wezenbeek-Oppem, Tervuren, Bertem, Overijse, Huldenberg, Hoeilaart, Sint-Genesius-Rode, Linkebeek, Beersel, Drogenbos, Halle, Sint-Pieters-Leeuw, Lennik, Dilbeek, Ternat, Asse, Merchtem, Wemmel, Meise, Braine-le-Château, Ittre, Braine-l'Alleud, Waterloo, Lasne, La Hulpe, and Rixensart.
BCR	Brussels-Capital Region
BMA	Brussels Metropolitan Area. In this survey, the Brussels Metropolitan Area is defined as the area that includes the 19 municipalities of the Brussels-Capital Region and the 1st periphery surrounding the BCR. This area corresponds to the perimeter of the 1st regional mobility plan, IRIS-1.
Boulevard Anspach	Boulevard Anspach, situated in 1000 Brussels. In the survey, this area refers to the perimeter to which the planning permissions for the renewal of the new pedestrian zone applies. This 'new' or extend pedestrian zone stretches between Place Fontainas and Place De Brouckère.
Brussels 1000	The area covered by the postcode 1000 which includes the city centre (i.e., "the Pentagon") but also other areas
BSI	Brussels Studies Institute
T1	Target Group 1 (Residents of the Brussels Metropolitan Area)
T2	Target Group 2 (Employees working at a company or other organisation (public, semi-public, civil society) that is located in the city centre).
T3	Target Group 3 (Visitors of the pedestrian zone, irrespective of their residential address)

Executive summary

2021 saw the completion of the works on the transformation of the Central Boulevards of Brussels into a pedestrian-friendly area after a process that lasted approximately six years. This document reports on the second and final phase of a study that sought to monitor and understand the impacts of the pedestrianisation on the travel behaviour of the 'users' of central Brussels, commissioned by the Cabinet of the Regional Minister for Mobility and Public Works and the mobility department of the Brussels Regional Government (Brussels Mobility), conducted in the last months of 2021 and early 2022. The first phase of the study was carried out in 2017, two years after motorised traffic was banned from the central arteries, but when the physical transformation had not yet begun. The second phase of the study was initially planned for 2019, i.e., the expected completion of the physical transformation, but it was delayed several times due to delays in the completion of the works but also due to the Covid-19 pandemic

Each phase of the study consists of three surveys that aimed to reach the most important target groups that may have been affected by the project: (T1) an online survey of the inhabitants of the Brussels Metropolitan Area (BMA) (i.e. the Brussels Region and 33 municipalities of the first periphery), (T2) an online survey of the employees who work in the Pentagon, (T3) a face-to-face survey of the actual visitors of the pedestrian zone (Boulevard Anspach and adjacent streets).

It must be kept in mind that since 2020, travel behaviour has been strongly affected by the Covid-19 pandemic and all results must be interpreted within its context. This is especially the case for the analysis of commuter travel behaviour (T2). Questions relating to the pandemic have been included in the survey wherever relevant, but it was decided not to make Covid the central theme of the study and to keep the 2017 and 2021 questionnaires as similar as possible for the sake of facilitating comparison.

The results of the second phase of the surveys show that **most people visit the pedestrian area for leisure reasons such as taking a stroll or shopping.** Most visits last 2 to 5 hours. The **most popular way to travel to the city centre is by public transport,** especially metro/tram/premetro. 57% of the online panel (T1) and 42% of the commuters (T2) use public transport as their main mode to access the city centre. The car is the second most popular mode, especially among commuters who live in the close

periphery around the Brussels Region. Of the people interviewed during their visit to the area (T3), only 12% had come by car.

Trends in modal shift over the period of 2017-2021 differ in the various studied populations. In the online panel (T1), the share of metro/premetro/tram has remained stable, but bus and car have dropped. Among the visitors (T3), bus usage has dropped but metro/premetro/car use has strongly increased. **Among commuters** (T2), the use of all **public transport modes has dropped**, while the **car use has increased,** and the share of **cycling has roughly doubled.** This is in line with global trends reflecting the effect of the pandemic on travel behaviour.

Since 2017, **support for the pedestrianisation has grown**, and **more people are now in favour of a car-free Boulevard Anspach than against.** The support is highest among those who live nearby and is lowest among those living in the close periphery around the Brussels Region. The more frequently one visits central Brussels, the higher the approval rate of the pedestrianisation is. Still, the strongest determinant of the approval of the pedestrianisation is whether one usually travels by car or not. **People who usually travel to the centre by car have a much more negative view on the pedestrianisation than users of all other transport modes**.

Although those who usually drive a car are generally negative about the pedestrianisation, their opinions about the ease of reaching their destinations and the signage towards the car parks have become more positive. **Among travellers who usually travel by public transport, a great majority is positive about the ease of reaching their destinations.**

Most people support the pedestrianisation and have a positive opinion about the new layout of Boulevard Anspach. However, **personal safety and cleanliness remain problematic. A majority of the respondents state that they avoid certain places at Boulevard Anspach to avoid being bothered, both at night and at daytime.** On the other hand, the **appreciation of the quality of the pavement, shops, bars/restaurants, green space and places to sit has strongly increased.**

1. Introduction

In 2021 the Brussels pedestrian area was finalised, after six years of works which transformed the city's central artery, Boulevard Anspach, and the adjacent streets. The process of reconfiguration started in 2012 with a decision of the Brussels City government to enlarge its central pedestrian zone. Implementation started in June 2015 with the closure of Boulevard Anspach for motorised traffic, a provisional traffic circulation plan and a temporary reconfiguration of the public space, after which different segments of the zone were one by one transformed into their current state.

The pedestrianisation project was a topic of heated debate. To fulfil the need for objective information, VUB conducted a study with the aim to monitor and understand the impacts of the transformation on travel behaviour and perception of the public space, in the framework of the Brussels Centre Observatory (BSI-BCO). The first phase of this study was carried out in 2017, after the closure of the area for motorised traffic, but before the major works had started. This resulted in the report "Analysis of the impact of the extension of the Brussels pedestrian zone on accessibility, travel behaviour and satisfaction" (phase 1) and two articles[1].

This document reports on the second phase of the study, which was conducted in the final months of 2021 and early 2022 after the works in the area were completed. This study was commissioned by the Government of the Brussels-Capital Region (Bruxelles Mobilité) and was carried out by the MOBI Research Centre at the Vrije Universiteit Brussel within the framework of the Brussels Studies Institute (BSI). The second phase was initially planned for 2019 but was delayed several times because of the Covid-19 pandemic. The methodology and the questionnaires were discussed with the Steering Group in March 2020 and September 2021. The first draft of this report was delivered on 1 March 2022. The final version contains revisions recommended by Loes Vandenbroucke on 8 and 20 March

[1] Keseru, I., Wuytens, N., de Geus, B., Macharis, M., Hubert, M., Ermans, T., Brandeleer, C., (2016): "Monitoring the impact of pedestrianisation schemes on mobility and sustainability." https://bsi-bco.brussels/nl/monitoring-the-impact-of-pedestrianisation-schemes-on-mobility-and-sustainability; Keseru, I., Wiegmann, M., Vermeulen, S., te Boveldt, G., Heyndels, E., Macharis, C. (2018): "The impact of the extension of the pedestrian zone in the centre of Brussels on mobility, accessibility and public space." https://bsi-bco.brussels/nl/the-impact-of-the-extension-of-the-pedestrian-zone-in-the-centre-of-brussels-on-mobility-accessibility-and-public-space/

2022.

Figure 1: Boulevard Anspach before the closure for traffic, during the provisional reconfiguration, and after the completion of the works. (Photo: Beliris)

1.1. Research goals

This study aims to provide insight into the impact of the pedestrianisation of the Brussels city centre, and more specifically on the travel behaviour of users of the area and how they perceive and appreciate the accessibility of the area and the (social) functioning and design of the public space and the built environment. To this, the second phase adds information on how behaviour and appreciation changed over time before and after the completion of the works. Since 2020, travel behaviour has been strongly affected by the Covid-19 pandemic and all results must be interpreted within this context. Although factors related to the pandemic have been included in the survey wherever relevant, it was decided not to make Covid the central theme of the study and to keep the 2017 and 2021 questionnaires as similar as possible for the sake of facilitating comparison. The research questions thus remained largely similar to those addressed in the first phase of the study:

1. What are the characteristics and current travel behaviour of the Brussels Metropolitan Area (BMA) inhabitants, the employees of the city centre and the visitors of the city centre and the central boulevards who use the pedestrianised area?
2. What is the degree of satisfaction with the pedestrianisation measures, the comfort of the pedestrianised area and the accessibility of the centre of Brussels?
3. How do the above variables vary according to different socio-demographic variables and place of residence?
4. How did travel behaviour and appreciation evolve since the transformation of the public space in the area?

1.2. Research strategy

The study consisted of a large-scale, repeated survey, of which the first phase took place during the spring of 2017, and the second at the end of 2021, approximately six months after the works were completed.

The survey measures:

- the (self-reported) individual travel behaviour and modal choice of the users of the pedestrian zone;

- the (individually perceived) accessibility of the pedestrian zone and the Brussels city centre;
- the opinion/satisfaction of users of the Brussels pedestrian zone with regards to the accessibility and the appreciation of the built environment (including public space) of the pedestrian zone.

The study focuses on three target groups (T), who together represent the *users* of the pedestrian zone:

- T1: Residents of the Brussels Metropolitan Area (BMA) (see definition in Table 1).
- T2: Employees working at a company, institution or other organisation that is located in or near the pedestrian zone, irrespective of their residential address.
- T3: Visitors of the pedestrian zone, irrespective of their residential address.

1.3. The structure of this report

The report first gives an overview of the general methodology used for the survey (chapter 2). Then separate chapters outline the methods of the surveys for each target group (T1, T2 & T3) (chapters 0, 0 and 5). In each of these chapters the results about the socio-demographic characteristics of the respondents and their current travel behaviour are presented and comparisons are made with data from the 2017 survey. Chapter 6 describes the changes in travel behaviour and perceptions about the new configuration, comparing the results for all three target groups for 2021 and 2017. Chapter 7 summarises the findings and provides recommendations.

2. General methodology: survey

2.1. Key concepts and operationalization: *what* do we observe?

The study examines the impact of the pedestrianisation (physical and traffic management measures) of Boulevard Anspach on several interrelated dependent variables and how users of the pedestrian area changed their travel behaviour in relation to these variables, and their overall appreciation of the accessibility and the quality of public space of the city centre. In the present phase of the survey (2021), many key concepts have remained identical to the first version (2017) but will be discussed here for the sake of clarity and comprehensiveness.

2.1.1. The project of the Brussels pedestrian zone (independent variable)

The survey focuses on the pedestrianisation and traffic-related measures on Boulevard Anspach and its adjacent streets, although it is not the first instance of pedestrianisation in Brussels, as various streets had already been closed for motor traffic in earlier decades (Grand Place, Rue Neuve, Place de la Monnaie, Rue des Bouchers, etc.).

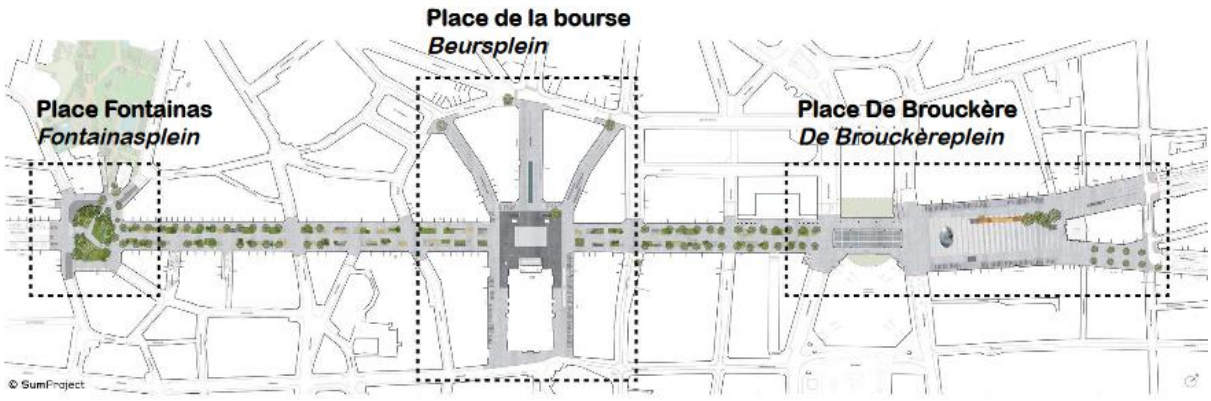

Figure 2: Perimeter of the new pedestrian zone in the Masterplan. (© SumProject, B-Group-Greisch, 2015)

We reduced the complexity of the entire urban project to the two main and well-known parts: the **urban design plan** (implemented between 2017 and 2021) (Figure 2) and the **traffic circulation plan** (implemented) (figure 3). This resulted in two sets of questions.

The first set addressed (self-reported) accessibility at micro- and mesoscale, respectively the Boulevard Anspach and the city centre (Pentagon). The second set addressed the users' perception or appreciation of the public space at Boulevard Anspach, after the works were completed.

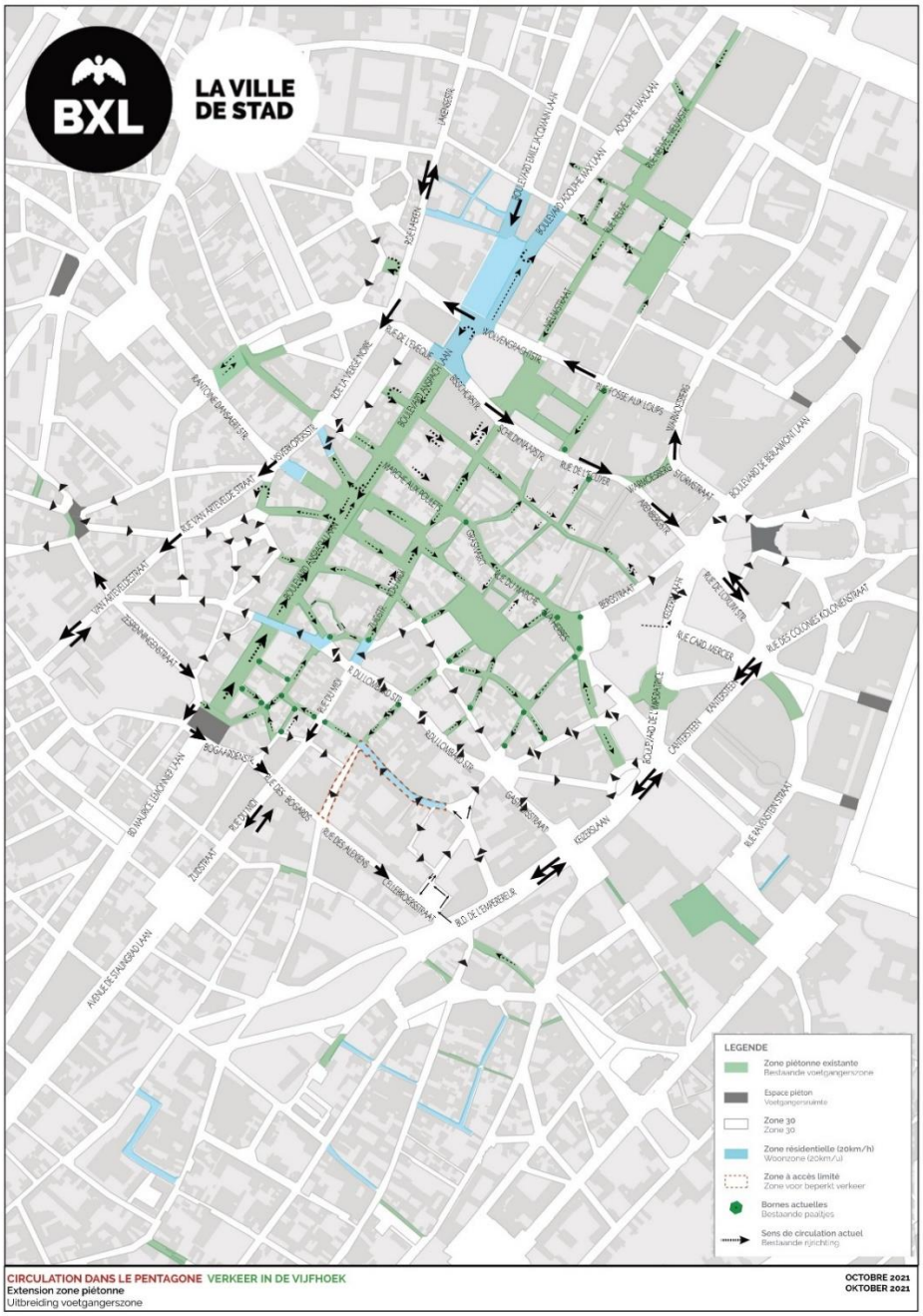

Figure 3: Circulation plan – Enlargement of the pedestrian zone. Traffic situation in October 2021. (© Ville de Bruxelles, 2021)

Since 2015, numerous traffic management measures have been implemented. Apart from the closure of streets for motor traffic, the measures include route adaptations for multiple bus lines, the relocation of several bus stops from Place de la Bourse and Place De Brouckère towards other places in the Pentagon; changes in traffic flow directions in various streets, the removal of approximately 300 parking places of which 150 at the Boulevard Anspach on a total of 25,000 public parking places within the pentagon (excl. private car parks); regulated access for certain groups of inhabitants, emergency services, and adapted time windows for goods deliveries.

The second part of the survey addresses the urban design aspect of the pedestrianisation. Since 2017, Boulevard Anspach has been completely refurbished with new surface material, benches, greenery, water features, improved access to metro stations and a new underground bicycle parking.

Given the complexity of the project and of human behaviour in general, one must bear in mind that it not possible to link outcomes to a single cause, be it either the urban design or the traffic management measures. This is strongly exacerbated by the impact of the Covid-19 pandemic, which greatly affected the usage of public space and travel behaviour.

2.1.2. The 'users' of the pedestrian zone (the target population)

The target group of the 2021 phase of the survey, the 'users' of the pedestrian area, is identical to 2017. This group largely coincides with those who live and work in the Brussels city centre or visit it. Visits to the city centre are directly linked to one or more activities (trip purposes) and generate a certain mobility demand.

As a reminder, mobility demand is generally generated by four types of activities (Lebrun et al., 2012):

- employment (work),
- education (full-program, part-time, complementary),
- retail and service activities (health, financial, administrative etc.),
- socio-cultural activities (including informal, social, leisure and tourism-related activities).

From an urban-geography perspective, these activities can be considered 'attractors'. They attract and generate mobility demand of different types of 'users'. Therefore, this survey

distinguishes three groups of users of the pedestrian zone in the city centre with a specific mobility demand:

- T1: Residents of the functional urban area around Brussels i.e., the Brussels Metropolitan Area (BMR), who visit or ever visited the city centre before the pedestrianisation for any purpose.
- T2: Employees working at a company or other organisation located in or near the pedestrian zone.
- T3: Visitors of the pedestrian zone, including those living outside the Brussels Metropolitan Area (including abroad) not covered by the two above categories.

2.1.3. Studied scales of use: accessibility of the city centre of Brussels

The pedestrianisation project is assumed to have different impacts on the direct accessibility of the city centre of Brussels by various modes of transport at different spatial scales. The perceived accessibility to the city centre varies according to the mode of transport. In this respect, the city centre can be defined by two different scales of usage (similar to 'zone of destination' in traffic modelling terms). The smallest zone consists of Boulevard Anspach and the adjacent streets which are located within the perimeter of the requested planning permissions of the extension of the pedestrianised areas (indicated by the pink area on the map in Figure 4). The larger scale contains the entire city centre of Brussels ('the Pentagon') and it is indicated by the yellow area (including the pink area) and delimited by the small ring road ('Petite Ceinture') R20 on the map in Figure 4.

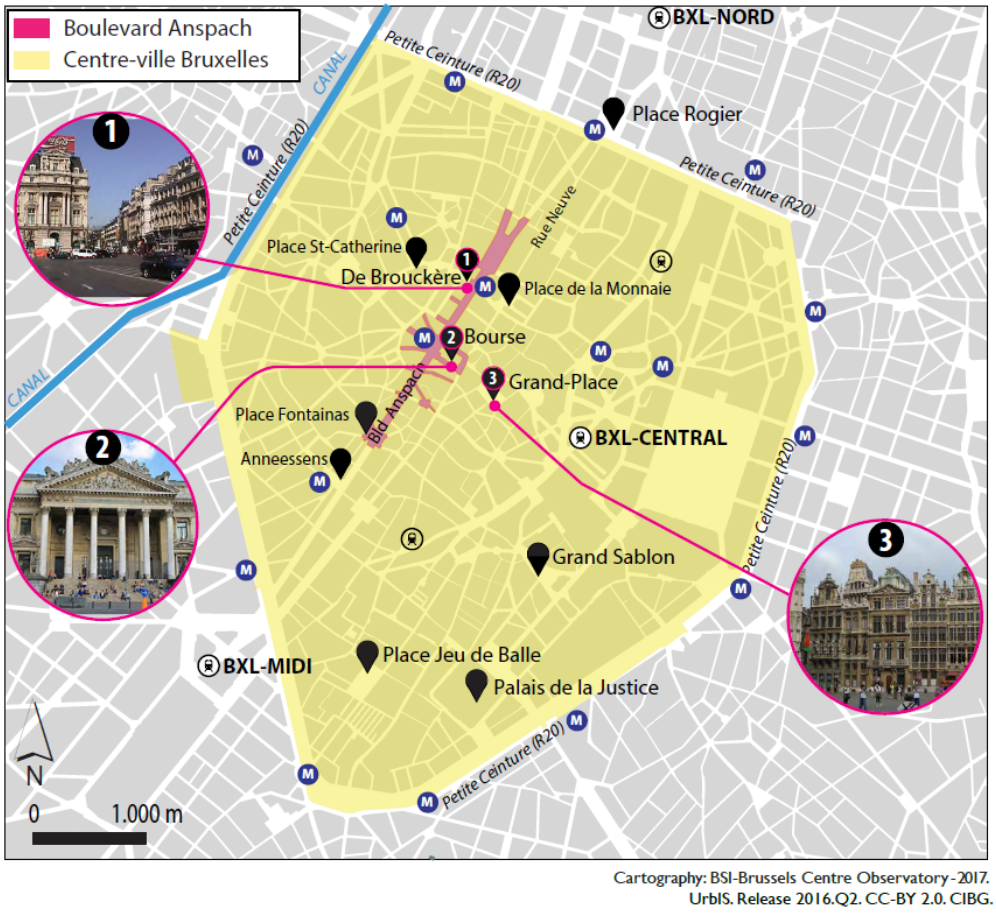

Figure 4: Zones of study. (© BSI-BCO, 2017)

In the questionnaires, the different spatial scales of usage are relevant in a number of ways. Car drivers, for example, are more likely to be impacted by the car-free Boulevard Anspach at the scale of the entire city centre, given the location of parking space and alternative driving routes chosen after the new circulation plan. In questions about the perception of public space, pedestrian and cycling comfort, the scale of inquiry is Boulevard Anspach. Questions of accessibility of destinations and parking by car are on the scale of the Brussels centre. Public transport is studied both for the accessibility of Boulevard Anspach and for destinations elsewhere in the centre.

2.1.4. Dependent variables: travel behaviour, satisfaction with the accessibility of the city centre and quality of public space

This study investigates the impact of the pedestrian zone on the travel behaviour of users, the satisfaction of accessibility of the city centre before and after the traffic circulation plan came into effect, and the general appreciation of the quality of public space along

Boulevard Anspach before (phase 1, 2017) and after the construction works (phase 2, 2021). We have identified four groups of variables that are crucial for the understanding of behavioural changes and perceptions of users due to the pedestrianisation scheme (see also Figure 6), related to:

1. Visits to Brussels city centre
2. Current travel behaviour
3. Perception and appreciation of the current situation and changes
4. Socio-demographic or personal factors to examine differences between population groups

In phase 1 of the study, not only *current* but also *retrospective* travel behaviour was investigated, i.e., respondents were asked whether and how their travel behaviour had changed over time. The reason for this was to obtain data about the state of affairs before any pedestrianisation measures had been taken, in absence of baseline measures (t=0). For this reason, no retrospective questions on travel behaviour needed to be asked in the current survey.

The variables for each target group are as follows:

1. Variables related to visits to the city centre and the new pedestrian zone:
    - Purpose of visiting the city centre
    - Frequency of visits
    - Duration of visits
    - Reasons for not visiting
2. Variables related to travel behaviour:
    - Day of travel
    - Trip starting point (home/elsewhere)
    - Travel duration
    - Transport mode
    - Parking behaviour of car users
    - Reasons for choosing a specific transport mode
3. Variables related to the perception and appreciation of accessibility and comfort of pedestrian area and the wider city centre:
    - By car
    - By public transport

- By bicycle
- On foot
- Perception of the quality of public space on Boulevard Anspach
  - Cleanliness
  - Built environment (facades, squares, …)
  - Greenery
  - Comfort of street surface
  - Safety

4. Socio-demographic variables (personal factors of respondents)

- Place of residence
- Employment status
- Place of work
- Sector of work
- Age
- Gender
- Level of education
- Disabilities limiting physical mobility
- Access to different transport modes
- Vehicle ownership and access

2.2. Sample areas: where do we observe?

To reach the above target groups, we defined geographical sampling areas for each of the groups. In phase 2 these areas are identical to phase 1.

2.2.1. T1: Residents of the Brussels Metropolitan Area (BMA)

Geographically speaking, the functional dependency zone of Brussels extends into its Metropolitan Area, which is, in short, the area where most 'users' of the pedestrian area live. Therefore, we will focus on the people that live in one of the municipalities of the Brussels Metropolitan Area, which consists of the 19 municipalities within the Brussels-

Capital Region (BCR) and 33 surrounding municipalities[2], i.e., the inner Brussels periphery ('de eerste rand'[3]) as defined by the IRIS-1 regional mobility plan (Brussels-Capital Region, 1997).

The Brussels Metropolitan Area is home to 1,400,084 inhabitants between 18 and 79 years old (Statbel, 01/01/2021). Extending the sampling area to the outer Brussels' periphery as defined by the IRIS-2 regional mobility plan was also considered. This would have meant that the sample would have included 83 additional municipalities. Considering that the attraction of the Brussels city centre decays with distance, extending the sample to the IRIS-2 zone would have resulted in an increasing number of non-qualifying respondents (those who never visited or visit the city centre) with a significantly increased cost. Therefore, we decided to limit the sampling area to the IRIS-1 zone. People visiting the city centre from outside the IRIS-1 zone are captured by the T2 and T3 samples. In T1, 21,2% of the respondents were excluded for most questions of the survey questionnaire because they had not been to the centre since 1 January 2021. Compared to 2017, this figure has doubled. The Covid-19 pandemic might have played a role in this.

[2] Grimbergen, Vilvoorde, Machelen, Steenokkerzeel, Zaventem, Kortenberg, Kraainem, Wezenbeek-Oppem, Tervuren, Bertem, Overijse, Huldenberg, Hoeilaart, Sint-Genesius-Rode, Linkebeek, Beersel, Drogenbos, Halle, Sint-Pieters-leeuw, Lennik, Dilbeek, Ternat, Asse, Merchtem, Wemmel, Meise, Braine-le-Château, Ittre, Braine-l'Alleud, Waterloo, Lasne, La Hulpe, and Rixensart.

[3] In this study we only refer to the 1st periphery; "de Brusselse Rand".

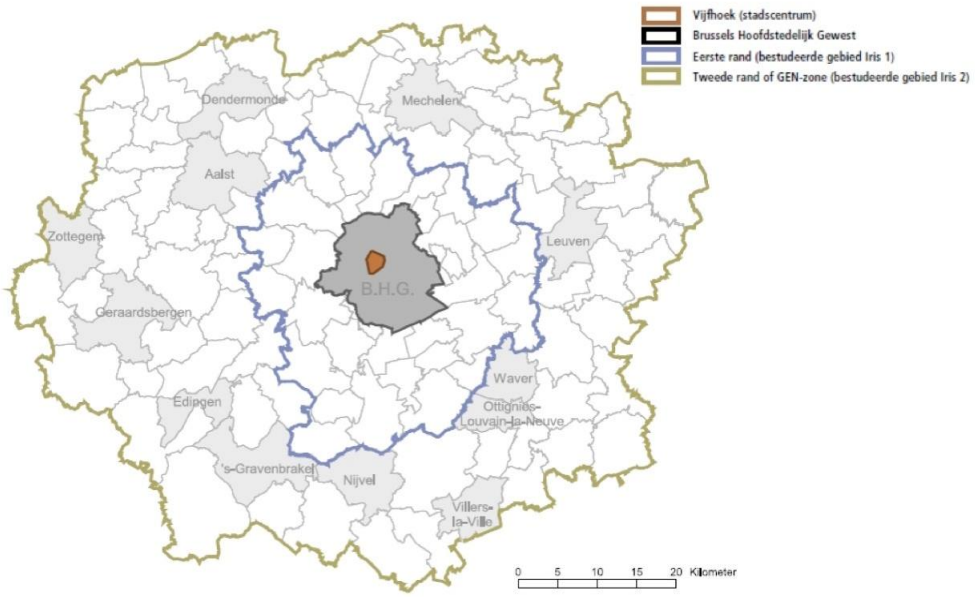

Figure 5: The definition of the Brussels Metropolitan Area for the purposes of this study (within the blue border). (Source: Lebrun et al., 2012, p6)

2.2.2. T2: Employees working in the Centre of Brussels ('Pentagon')

The second sample area covers the city centre of Brussels (4.41km²). The city centre comprises 10 statistical neighbourhoods and counts over 54,000 inhabitants (Statbel, 2021). Furthermore, it is still one of the most important and diverse 'spaces of work' in the Brussels-Capital Region. This study investigates the extent to which the pedestrianisation affects people employed in a company, organization or institution that is located in or near (i.e., in walking distance to) the pedestrian zone, i.e., in the 'Centre of Brussels'. The most important economic sectors in the Pentagon are the public administration, financial and insurance, human health and social work activities, wholesale and retail trade, including repair of motor vehicles and motorcycles and administrative and support service activities.

It is important to note that employees working in the sample area were selected irrespective of their place of residence. Consequently, this target group (T2) includes:

- residents living in or near the new pedestrian zone along Boulevard Anspach, within the city centre;
- residents living outside the city centre, but still within one of the municipalities of the BCR;

- commuters living within the 1st periphery surrounding the BCR (the BMA);
- commuters living outside the Brussels Metropolitan Area in one of the municipalities in the rest of Belgium.

2.2.3. T3: Visitors of the pedestrian zone– Boulevard Anspach

The city centre is a place of commerce, leisure and residence and therefore attracts different types of visitors. A third sample area is defined at the scale of the new pedestrian zone itself, including Boulevard Anspach between the Place de Brouckère and Place Fontainas with the Place de la Bourse halfway (Figure 2), as well as several adjacent streets (rue Paul Delvaux, rue Auguste Orts, rue Jules Van Praet, Borgval). Note that the area of the *new* pedestrian zone excludes the already existing pedestrian area such as the Rue Neuve, the Place de la Monnaie, the Grand Place and some adjacent streets.

2.3. Survey methods: *how* do we observe?

The survey method used in phase 2 is largely identical to the one used in phase 1. To address the research questions we have set up a survey with a standardized questionnaire with closed questions. The survey examines the specific opinions and experiences of the very diverse group of people that visit and use the pedestrian zone. Three different questionnaires were designed to address the three target groups, which were administered through different channels: computer-assisted web interview (CAWI) for T1 and T2, and computer-assisted personal interviews (CAPI, i.e., face-to-face) for T3 (Table 1).

It is important to note that the different groups should be considered as three distinctive populations and not as the three components of a single population. The groups overlap: a resident might be an employee as well as a visitor. Theoretically, one single person might have been approached three times for three different questionnaires.

Table 1: Target groups and survey methods

Survey	T1	T2	T3
Group of respondents	**Inhabitants that (no longer) visit the Brussels City Centre and the pedestrian zone**	**Employees working in the Brussels City Centre**	**Visitors of the new pedestrian zone within the Brussels City Centre**
Median duration of interviews	5.12 min	17.48 min	10.48 min
Planned sample Size (=nr. of respondents)	Min. n = 1000	Min. n = 800	Min. n = 1400
Realized sample Size (nr. valid respondents)	n=1007	n=824	n=1470
Survey method	Online questionnaire (CAWI)	Online questionnaire (CAWI)	Face-to-face survey (CAPI)
Selection of respondents	Online panel	Convenience sample	Intercept survey – on street at 5 locations in the pedestrian zone between 8-22h during weekdays and weekend
Area of sampling	**Brussels Metropolitan Area** Place of residence in one of 19 municipalities in the Brussels Capital Region or one of 33 municipalities in the 1st Brussels' periphery. (cf. area IRIS 1-plan, Lebrun et al., 2012).	**The Brussels City Centre - 'Pentagon'** People working within the Pentagon, regardless of their place of residence.	**The Pedestrian Area** People present at one of 5 locations on the Central Boulevards: 1) Place de Brouckère 2) Anspachlaan, 3) Place de la Bourse 4) Place Fontainas 5) Rue A. Orts.
Implementation of survey	Subcontractor (Kantar)	VUB	Subcontractor (Kantar)
Language of questionnaire	FR / NL / EN	FR / NL / EN	FR / NL / EN
Survey period	16/09/2021-17/10/2021	17/11/2021-08/02/2022	21/09/2021 – 25/10/2021

2.3.1. T1 – Residents of the Brussels Metropolitan Area

As this target group covers a large geographical area, an online self-administered CAWI (Computer Assisted Web Interviewing) survey was administered. Sampling was conducted

by Kantar, the subcontractor, by drawing respondents from their online access panels[4]. The final sample consists of individuals being 18 years old or above, living in the Brussels Metropolitan Area (33 municipalities) and fluent in French, Dutch, or English. A limitation is that inhabitants who do not understand any of these languages could not be reached. Weights based on gender, age and place of residence were applied afterwards to ensure that the sample reflects the actual population for these variables (see Section 3.1 for more information).

2.3.2. T2 – Employees working in the Brussels City Centre

The sample recruitment area for T2 consists of the Brussels City Centre (Pentagon). Similar to T1, the respondents filled in an online self-administered CAWI survey which was set up by VUB-MOBI using the Qualtrics online software (Qualtrics, 2020), and distributed by e-mail in French, Dutch and English. Respondents were recruited through public and private employers' organizations and federations with members located within the city centre (Pentagon) by VUB.

The final sample consists of people in the working age population, i.e., between 18 and 64 years old, having a fulltime or part-time (formal) job within the city centre, irrespective of their place of residence. This sample also includes commuters living outside the BCR. See section 4.1 for more information.

2.3.3. T3 – Visitors to the pedestrian zone

The sample and survey method for T1 and T2 provide data to people whose residential or workplace location is known, T3 extends these samples by including visitors of the pedestrian zone who may not be included in the first two groups:

- Visitors living outside the Brussels Metropolitan Area (T1 sampling area) and not working in the Pentagon (T2 sampling area) yet living elsewhere in Belgium.
- Visitors from abroad (for tourism or business).

[4] An online access panel consists of individuals who have registered to receive invitations to take part in online surveys and are financially reimbursed. While the panel is representative for certain demographic parameters, all individuals have chosen to become interviewees, i.e., people who have time and/or need (for economic reasons) to do so.

- Visitors with no internet access or not willing to take part in a permanent panel survey (not included in T1 and T2).

Since the characteristics of the actual population of visitors of the pedestrian zone was unknown prior to the survey, stratified sampling by residential or workplace address of the above group was not possible. A face-to-face intercept CAPI (Computer Assisted Personal Interview) survey administered by professional interviewers has been selected as the most suitable method to include this diverse group in the survey. This survey was administered by the subcontractor KANTAR (see Section 5.1 for more information).

2.4. Structure of the questionnaires

2.4.1. Overall questionnaire structure

The questions of the surveys for al target groups can be divided into three blocks that correspond to the four groups of variables this study aims to examine.

- **Block 1: Socio-demographic profile of respondents:** variables including age, gender, place of residence, employment status, place of work/education, sector of work, household composition as well as variables on access and use of different transport modes
- **Block 2: Travel behaviour** (at the time of the survey i.e., October 2021 – January 2022): variables related to current travel behaviour, travel purposes, use of transport modes, frequencies and trip duration,
- **Block 3: Appreciation of current situation (accessibility & built environment)** (at the time of the survey, i.e., after the transformation): variables related to user perception, preferences, priorities & needs in terms of public-urban space, traffic safety, access to retail, social life & interaction, etc.

2.4.2. Differences between the questionnaires

Similar to phase 1 in 2017, the survey of phase 2 consists of three questionnaires[5]**:** for each target group (inhabitants, commuters, visitors), specific questions were developed, specified to their (assumed) travel behaviour and knowledge of the local situation, and based upon existing studies and research. To maximise comparability, the questionnaires were made as similar as possible and were inspired by earlier large-scale surveys in mobility and spatial planning (e.g. BELDAM by Cornelis et al., 2012). Still, different populations require different questions and different contexts of administration (online, face-to-face) require different sequences and wording. The overlap between the questionnaires is approximately 75%.

In the 2021 version of the T2 questionnaire, an important difference with the other questionnaires and with the previous T2 version is that a second part was added with questions on the impact of Covid-19 on commuting behaviour. Since this part of the survey has no direct relation to the pedestrianisation project, it will not be discussed in the remainder of this report.

The focus of the questions for each target group is indicated below:

1. Target group 1**:** Inhabitants of the Brussels Metropolitan Area (n=1007; online)
    - General travel behaviour to the centre of Brussels, purposes and perception *since 1 January 2021*
2. Target group 2: Employees working in the centre of Brussels (n=824, online)
    - Commuting behaviour to the centre of Brussels and perception *since 1 January 2021*
    - Travel purpose to the centre of Brussels combined with commuting *since 1 January 2021*
3. Target group 3: Visitors to Boulevard Anspach (n=1470, face-to-face)
    - Travel behaviour for current visit (i.e., visiting Boulevard Anspach), purposes and perception.

[5] The English version (master version) of the questionnaires used for each target group are included in the Appendices 1, 2 and 3.

- General travel behaviour to the centre of Brussels, purposes and perception *since 1 January 2021*

The principal difference between the questionnaires concerns the type of visit and the related travel behaviour that respondents are inquired about. Travel behaviour (frequency, duration, modal choice) differs according to the purpose of travel. Ideally, people should be asked to report about their travel behaviour for each of the purposes they visit the centre of Brussels for. This would have, however, increased the length of the survey leading to many incomplete responses, both for the online and face-to-face questionnaires. For this reason, three different complementary strategies were chosen.

- In **T1**, travel behaviour was asked for the respondent's **most recurring purpose of visit**, which is assumed to be the most representative of the respondent's general travel behaviour towards the city centre of Brussels. After consideration, information about the respondent's most recent trip was not asked, as trip details risk being inaccurate when the trip was made a long time ago. New in the 2021 version of the survey is that respondents were also asked about their typical mode of transport for visiting the city centre **regardless of purpose.**
- In **T2**, respondents were asked about their **travel to work (commuting trip)** and possible activities they combine within the same visit.
- In **T3**, respondents were asked about
    - **current visit** to central Brussels including **visit to Boulevard Anspach** (since that is where the interviews were taken)
    - **habitual visits** to the centre of Brussels.

2.5. Conclusion

This section discussed the conceptual framework for the data that will be collected in this survey. Figure 6 provides a summary of the linkages between the study areas, the variables investigated, the target groups (survey population and survey areas), and the overall concept of the longitudinal monitoring of the impact of the pedestrian zone (time of study).

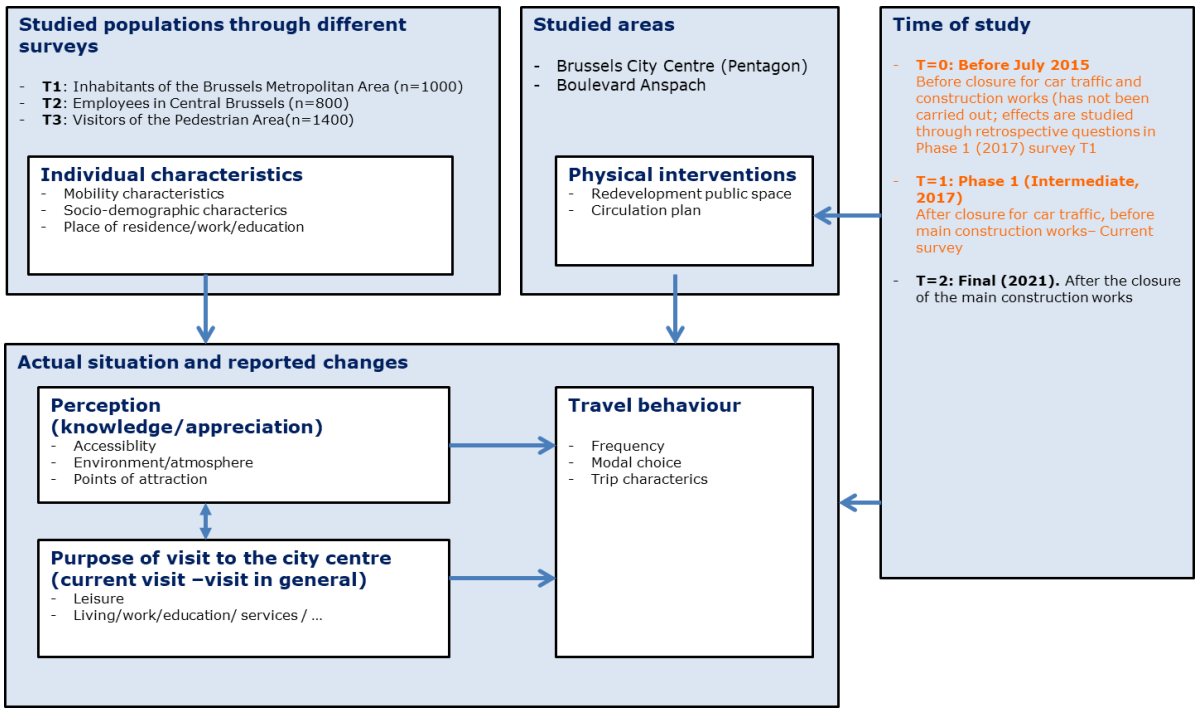

Figure 6: Conceptual model – survey on the impact of the pedestrian zone in the city centre of Brussels. This report presents the results of the final survey (t=2).

3. Target group T1 – Inhabitants of the Brussels Metropolitain Area

The survey for target group T1 covers the inhabitants of the Brussels Metropolitan Area. In section 3.1, we first discuss the methodology of the survey. In section 3.2, we present the socio-demographic characteristics of the sample and show the extent to which it approximates the actual composition of the survey population. In section 3.3, we look at the frequency of visits to and awareness of the car-free Boulevard Anspach. In section 3.4, we lay out the access to means of transport and in section 3.5, we discuss the characteristics of visits to the city centre. In section 3.6, we present the results of questions related to the travel behaviour of the sample.

3.1. Survey methodology

3.1.1. Target population

The survey of T1 targeted the inhabitants of the Brussels Metropolitan Area covering the Brussels-Capital Region and the inner periphery of Brussels periphery ('de Rand') (for definitions of the sample areas see section 2.2), as the potential users of the city centre. It aimed to reveal the frequency of visits and travel patterns of the overall population living in and around Brussels. The sample included inhabitants of at least 18 years old with their place of residence in one of 19 municipalities of BCR or in one of 33 municipalities in the 1st area surrounding the BCR, corresponding to the area to which the regional mobility plan, IRIS-I, applies.

3.1.2. Survey characteristics

The survey was administered by the subcontractor (Kantar) between 21/09/2021 and 25/10/2021. They reached out to the respondents through their online access panels. Quotas were determined for gender, age and place of residence to ensure the representativeness of the sample. As in 2017, the planned sample size was n=1000. As the 2021 questionnaire was to a large extent similar to the 2017 version, no pilot survey was needed.

3.1.3. Response rate and data cleaning

For confidentiality reasons, the subcontractor KANTAR could not specify the number of individuals to whom the questionnaire was sent, so a response rate could not be calculated. In many cases, the response time was short (43 respondents replied in under 90 sec), but this can be justified by the fact that in the uncleaned dataset of 1021 respondents, 21.1% of the respondents did not qualify for the bulk of the questionnaire because they had not been to the centre of Brussels since 1/1/2021. If a respondent is not qualified to respond to the bulk of the questionnaire, it does not take long to finish the questionnaire and therefore a short response time should not be a reason to clear a record.

Still, respondents who had a short response time (less than 120 sec) were marked as potentially suspicious. Of these respondents, 14 respondents indicated that they had been to the city centre since 1/1/2021. Because these respondents necessarily had to answer many more questions in the questionnaire, the response time is conspicuously short, so they were removed from the dataset. In the end, 1007 valid responses remain.

It must be borne in mind that web-based surveys are often subject to a lack of representativeness, for example due to non-response because of technical reasons (a percentage of the population does not have access to a computer or internet). This might lead to an underrepresentation of lower-educated, inactive, or elderly people. In addition, people choosing to take part in a permanent panel survey may also differ from the overall population.

3.1.4. Representativeness of the sample and weighting

When selecting participants for the online panel, the aim was to maximise representativeness in terms of gender, age and place of residence[6]. Typically, members of online access panels are specifically selected to ensure representativeness for certain demographic characteristics. Table 2 shows the distribution counts and proportions of demographic indicators (age, gender) and residential location in the unweighted T1 sample

[6] Representativeness for place of residence by post code was not possible because of the sample size. This has been mitigated by aiming at an even spatial distribution in the Brussels Periphery, i.e., municipalities surrounding the BCR. For reasons of equal distribution of recruitment, four sectors were defined (for definitions and a list of municipalities belonging to these sectors, please see Section 2.2 and Appendix 4).

and the corresponding 2021 Statbel data for comparison. For all listed indicators, the difference is lower than two percentage points. Still, these slight deviations have been corrected for through the application of weights. The weights were applied in the analysis of travel behaviour (sections 3.4, 3.5, 3.6, 3.7) but not in the socio-demographic overview of the sample (section 3.2) and the analysis of the filter question on whether people had visited the centre at all (section 3.3).

Table 2: Counts and proportions of the demographic indicators used for weighting of the T1 sample and the corresponding 2021 Statbel data

	Counts		Proportion (%)	
	Real Population (based on 2021 data)	Survey sample (unweighted)	Real Population (2021 data)	Survey sample (unweighted)
Gender				
Male	718,729	479	48.3%	47.6%
Female	770,285	528	51.7%	52.4%
Age (in years)				
18-34	448,661	296	30.1%	29.4%
35-54	531,648	335	35.7%	33.3%
55+	508,705	376	34.2%	37.3%
Place of Residence				
Brussels-Capital Region	944,417	651	63.4%	64.6%
North-East sector	150,293	89	10.1%	8.8%
North-West sector	123,890	82	8.3%	8.1%
South-East sector	169,232	116	11.4%	11.5%
South-West sector	101,182	69	6.8%	6.9%

Weights were calculated for every respondent, based on the latest demographic data from 2021 (Statbel, 2021), using the Random Iterative Method (RIM). RIM is used when weighting is needed to account for various characteristics, but when the relationship of the various combinations of those characteristics are unknown. The obtained weights ranged from 0.88109 to 1.24179, which is acceptable, so no trimming was required.

The final sample comprises individuals between 18 and 87 years old, having access to the internet and willing/able/available for taking part in a web panel survey, weighted by gender, age and place of residence, living in the Brussels Metropolitan Area and fluent in French, Dutch or English.

3.2. Additional socio-demographic characteristics of respondents

In this section, we present those socio-demographic characteristics of the respondents that were not corrected through weighting and in which the sample may differ from the real population (language, mobility restrictions, employment rate).

3.2.1. Language

A majority of the respondents completed the survey in French (68.8%), while 23.1% did so in Dutch. This aligns roughly with the findings of the third Brussels Language Barometer which found that 16% of the Brussels (BCR) population speaks Dutch well and 87% is confident in French (Janssens, 2018). Additionally, 8.0% completed the survey in English.

Table 3: Distribution of the respondents by the language selected for filling in the survey by region of residence (unweighted)

Language	Brussels	Flanders (Vlaams-Brabant)	Wallonia (Brabant Wallon)	Frequency (Percent)
Dutch	64	165	4	233 (23.1%)
French	522	100	71	693 (68.8%)
English	65	10	6	81 (8.0%)
Total	651	275	81	1007 (100.0%)

3.2.2. Employment status

The overall share of those in the sample with paid work is 55.1% (unweighted data). 24,8% are retired, 5.9% are students and 5.8% are unemployed. The remaining part do the housekeeping (3.6%), are inactive or have not answered (4.8%).

Table 4: Employment status T1 sample (unweighted)

Employment status	Frequency	Percentage
Employed	555	55.1%
Retired	250	24.8%
Unemployed	58	5.8%
Student	60	5.9%
Doing the housekeeping	36	3.6%
Other (inactive)	48	4.8%

3.2.3. Restricted mobility

The T1 population had the largest share of people with limited mobility. 21.6% (218) of the sample experience difficulties using certain modes of transport (unweighted data). 12.5% of the total sample have difficulties with walking (Table 5).

Table 5: Difficulties to use certain modes of transport for physical reasons[7] (unweighted)

	Frequency		Frequency	Percent
No	789			
Yes (temporarily or permanently)	218	**I have difficulty walking**	126	12.5%
		I use a wheelchair	42	4.2%
		I am visually impaired	17	1.7%
		I am pregnant	13	1.3%
		I have a stroller	15	1.5%
		Other	44	4.4%
Total	1007			

3.3. Visits to the city centre

To get to know whether respondents were eligible for questions about the pedestrian zone after its transformation, respondents of T1 were asked whether they had been to the centre of Brussels since the start of the year (1 January 2021). These results reveal that 21.4% (216) of the respondents have not visited the centre of Brussels since 1 January 2021 (unweighted data). The reasons for not visiting were about equally important.

[7] This is a multiple-choice question, in case people answer yes, they can choose multiple answers on the follow-up question

Table 6 : Visits to Boulevard Anspach and the city centre among respondents of T1

	Frequency		Percentage of total (n = 1007) and of subsample	
	Yes	No	Yes	No
Asked to all respondents (n = 1007)				
Did you visit the centre of Brussels since 1 January 2021?	791	216	78.6%	21.4%
Asked to those who have not visited the centre since [at least] 2021 (n = 216)				
I do no longer visit because of: Personal reasons (I no longer live/work/study there,...)	83		8.2% (38.4%)	
I do no longer visit because: The centre is difficult to access with my mode of transport	66		6.6% (30.6%)	
I do no longer visit because: Fear of Covid-19 contamination	70		7.0% (32.4%)	
I do no longer visit because of: Other	39		3.9% (18.1%)	
Asked to all those who have visited the centre since 2021 (n = 791)				
Have you ever been to Boulevard Anspach in Brussels (in pink on the map) since 1 January 2021?	667	124	66.2% (84.3%)	12.3% (15.7%)

78.6% of the respondents had visited the city centre since 1 January 2021. However, a substantial part of them (124 out of 791) had not been to Boulevard Anspach in that period. Therefore, altogether only 66.2% (667) of all respondents had been to Boulevard Anspach itself since 2021. This is lower than in 2017, when 89.7% (903) had visited the city centre since Boulevard Anspach was made car-free in July 2015 and of this group, 68 (7.5%) had not been to Boulevard Anspach itself in the same period.

3.4. Access to means of transport

Respondents in the three target groups were asked to mention all means of transport they have access to. Aggregated by the main modes (Table 7), 66.8%[9] have access to a car within their household or a shared car subscription; 51.9% have a subscription to at least one of the four public transport (PT) providers (STIB/MIVB, De Lijn, TEC, SNCB/NMBS) and

[9] Sum of individuals who have marked “Car that you own yourself” and/or “Company Car” and/or “Car of someone else in your household” and/or “Shared car subscription”.

36.7%[10] own a bicycle or have a bike sharing subscription and 4.6% has access to an electric scooter or monowheel.

Table 7: Which modes of transport do you have access to?

	Frequency	Percentage
Bike	369	36.7%
Public transport subscription	523	51.9%
Car	673	66.8%

Figure 7 shows the detailed numbers, compared to the results from 2017 (in grey). About half of the respondents have access to a personal car. Only 16 individuals (1.6%) hold a shared car subscription. 8.7% have a company car and 9% have a fuel card. While roughly one third has access to a bike, only 2.9% receive a cycling remuneration from their employer. 2.4% hold shared bike subscriptions, 12.3% own an electric bike and 4.6% own an e-scooter or electric bicycle. Only 16 individuals (1.6%) hold a shared car subscription: the majority used Cambio (n=10) followed by Poppy (5) Only 1 used Zen Car, and 3 were subscribed to other providers.

[10] Sum of individuals who have marked “Bike (non-electric)” and/or Electric bicycle” and/or “Villo! or Blue bike subscription”.

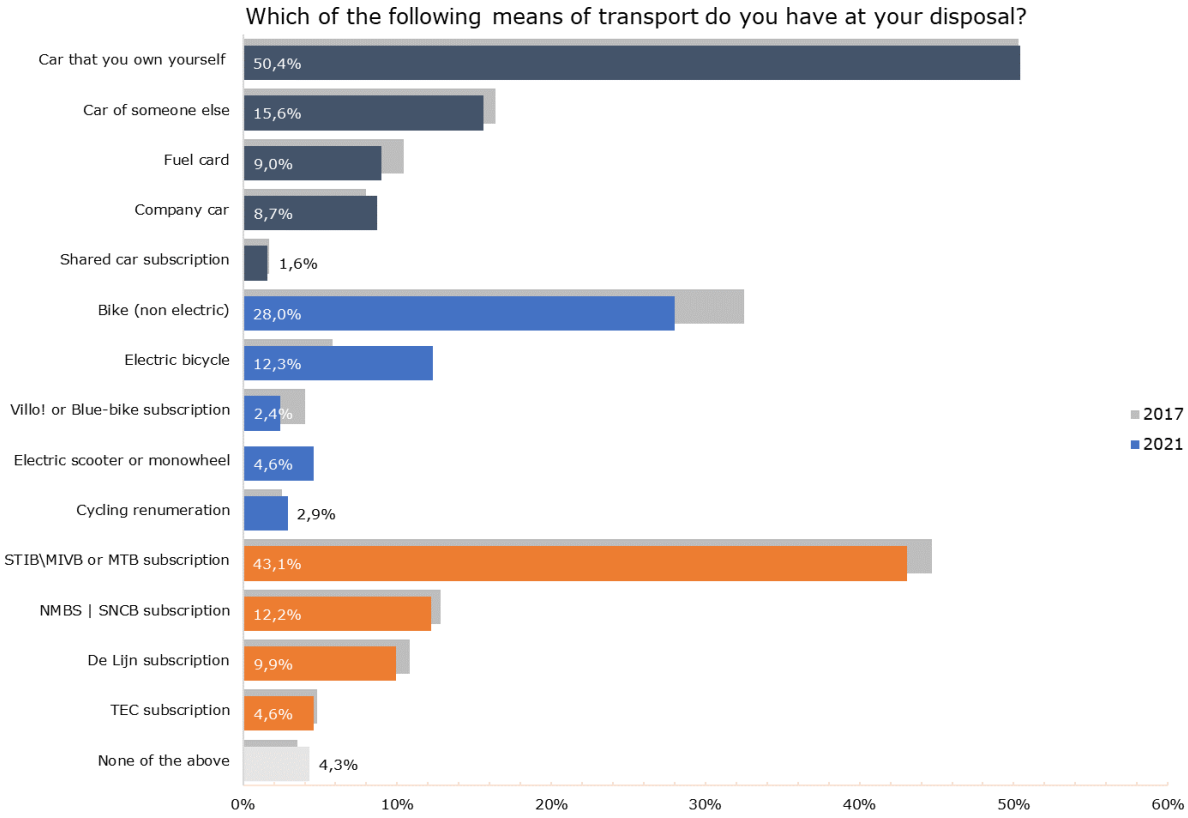

Figure 7: Means of transport at the disposal of the respondents (n=1007)

In a second step, we calculated the overlap between the three categories of public transport subscription, car, and bike. As shown in Table 8, it is clear that many respondents have more than one of these modes of transport at their disposal: 14.4% had access to all three modes. 13.3% had besides their car also a bike and 14.8% had besides the car also a public transport subscription. Those with only a bike or a bike and a public transport subscription were in the minority, with 3.3% and 5.7% respectively. 24.6% only had access to a car and 17.0% only a public transport subscription.

Table 8: Which combination of modes of transport do you have at your disposal?

	Frequency	Percentage
Bike and car	134	13.3%
Public transport subscription and car	149	14.8%
Public transport subscription and bike	57	5.7%
Only car	244	24.6%
Only bike	33	3.3%
Only Public transport subscription	171	17.0%
Bike, car and public transport subscription	145	14.4%
None of the above	73	7.3%
Total	1006	100%

3.5. Characteristics of the visits to the city centre

3.5.1. Purpose of visits to the city centre

All respondents who indicated that they had visited the city centre after January 2021 (789) were asked about the typical purposes of their visits (Figure 8). Multiple answers were possible.

Leisure shopping is the most common main purpose of visit and was mentioned by 44.9% of the visiting respondents (Figure 8), though this number has significantly decreased in comparison to 2017. The other popular activities were also related to the respondents' leisure time: taking a stroll or ride for leisure, going to a bar/restaurant and doing social or cultural activities were each mentioned by more than 15% of the visitors. These activities have also significantly diminished since 2017. 16.6% of visitors indicated "going to their workplace" as one of their purposes and 10.4% mentioned other work-related purposes.

When comparing the 2021 and 2017 questionnaires, we observe that the share of activities that people engage in has diminished for virtually all purposes (which is possible, as people could mention several purposes, so the percentages do not add up to 100%), which seems logical against the background of the Covid-19 pandemic.

In a second question, respondents were asked about the purpose for which they visit most often (only one answer possible). Here too, the most frequently mentioned activity is leisure shopping (24.6%). This is followed by going to the workplace (16.3%), taking a

stroll or ride for leisure (13.1%), going to a bar or restaurant (29.7%), and social or cultural activities (8.1%) (Figure 9). The ranking order of these puposes is similar as in 2017. We do notice, however, that the relative share of 'practical' purposes (going to work, picking up someone, education, visits) has increased at the expense of 'leisure-related' purposes (drinking/eating, culture, leisure shopping).

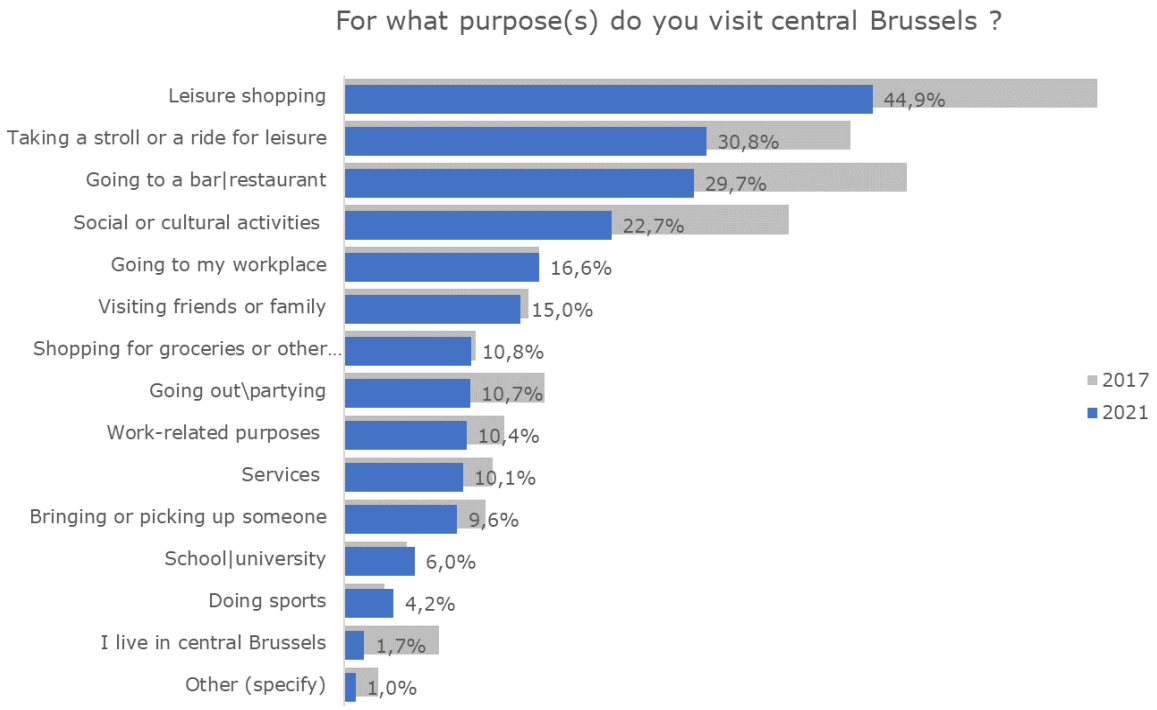

Figure 8: For what purpose(s) do you visit central Brussels? (Several answers possible, n=789)

When people are asked about the main reason to visit central Brussels (Figure 9) we notice that shopping remains the dominant purpose, but also that going to work takes a more important position. Compared to 2017, we see that going to once workplace has gained relative importance at the extent of most leisurely activities.

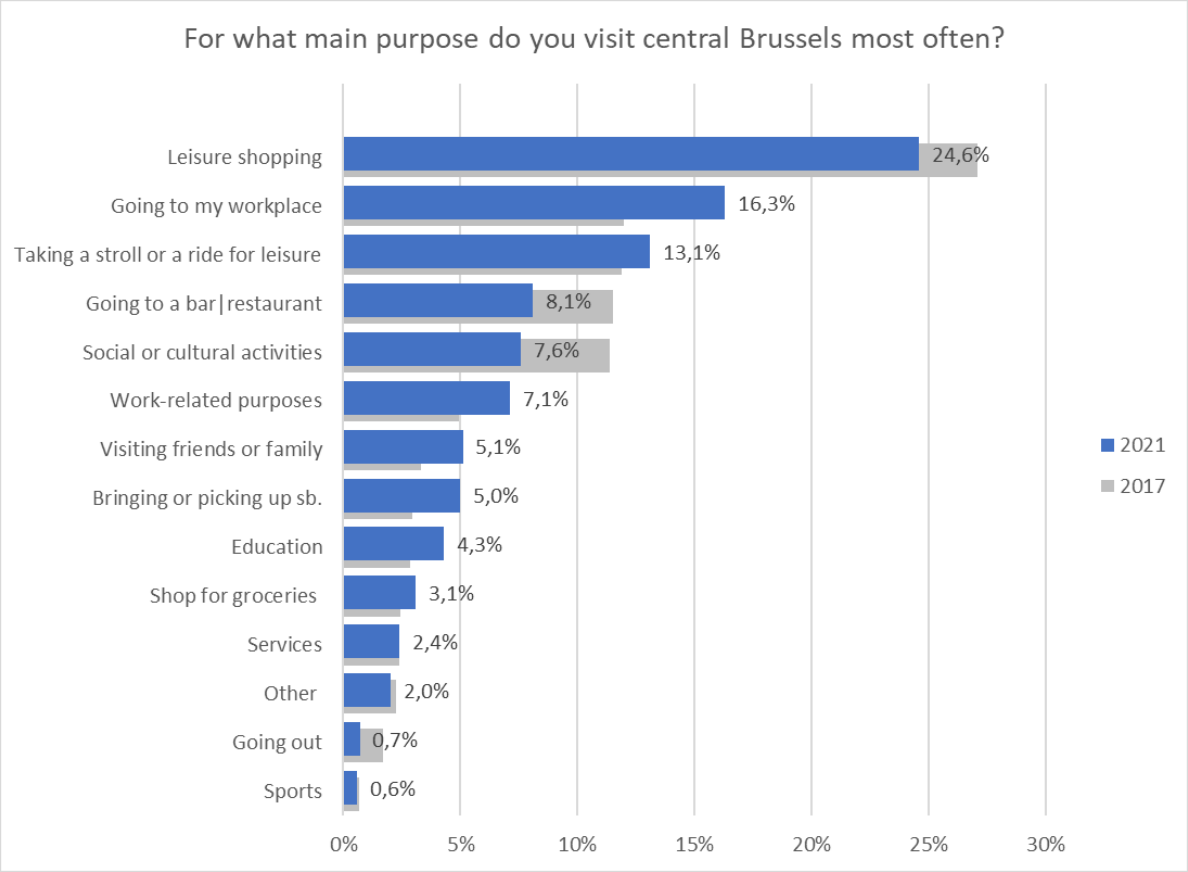

Figure 9: Distribution of respondents by main purpose of visit (n=789)

3.5.2. Frequency of visits

People who have visited the centre of Brussels since 2021 but do not live there were asked a question about their frequency of visits to the city centre (772 respondents). Irrespective of their purpose, approximately 40% of the respondents visit at least once a week. (This excludes people living in central Brussels and people who have not visited since 1 January 2021.) 32.3% travel to the centre 1 to 3 times a month and 25.1% less than once a month but at least once a year. Only 1.3% visit less than once a year.

Compared to 2017, we observe a relative increase in regular visitors (those who come once a week or more). This can be linked to the relative increase of 'practical' purposes for which visitors travel to the city centre (see 3.5.1).

Table 9: Frequency of visits (n=772)

	2017 (n=863)	2021 (n=772)
More than 4 times a week	13.0%	17.6%
1 to 4 times a week	15.0%	23.8%
1 to 3 times a month	34.4%	32.3%
Less than once a month but at least once a year	32.7%	25.1%
Less than once a year	4.9%	1.3%
Total	100.0%	100.0%

When breaking down the frequency by main purpose of visit, a more nuanced picture emerges (Figure 10). As expected, people visiting the centre for education, work, or work-related purposes come much more often. For the leisure activities (such as shopping, social and cultural activities, taking a stroll and going to a bar), more than half of the respondents go at least on a monthly basis and less than 10% visit on a weekly basis. This distribution is more or less the same as measured in 2017.

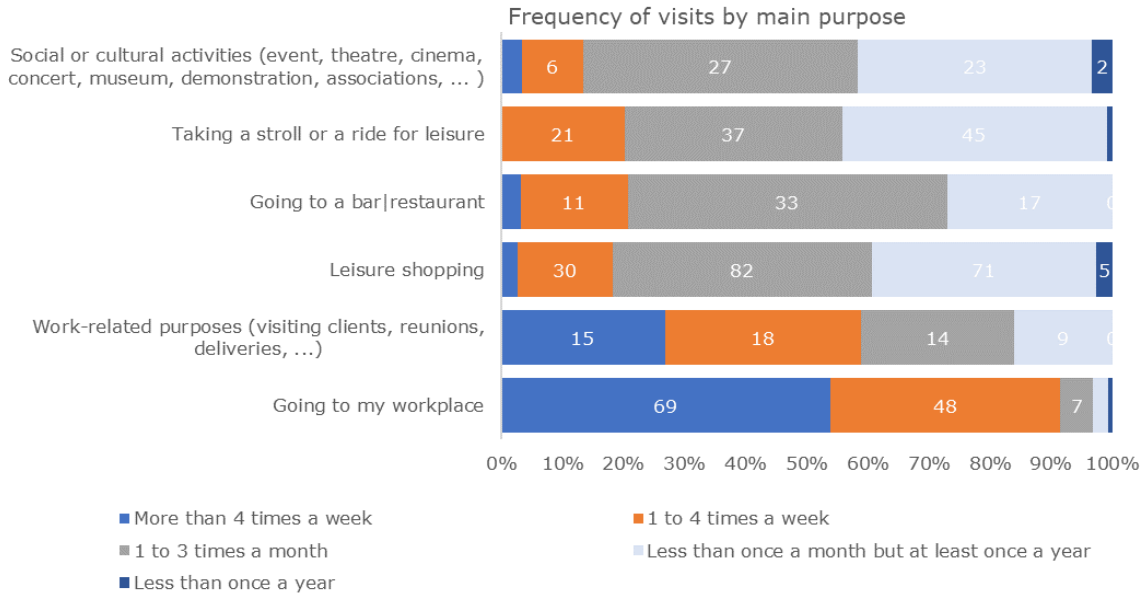

Figure 10: Frequency of visits by main purpose (n=772; the white numbers refer to respondent counts).

When comparing the various demographic groups, we notice that women come slightly less frequently to central Brussels than men: 39% of women and 44% of men come at least once a week (Figure 11). However, this difference is far less conspicuous as in 2017, when these numbers were 20% for women and 38% for men. People in higher age

categories also come less often, possibly because education/work purposes do not apply to them (Figure 12).

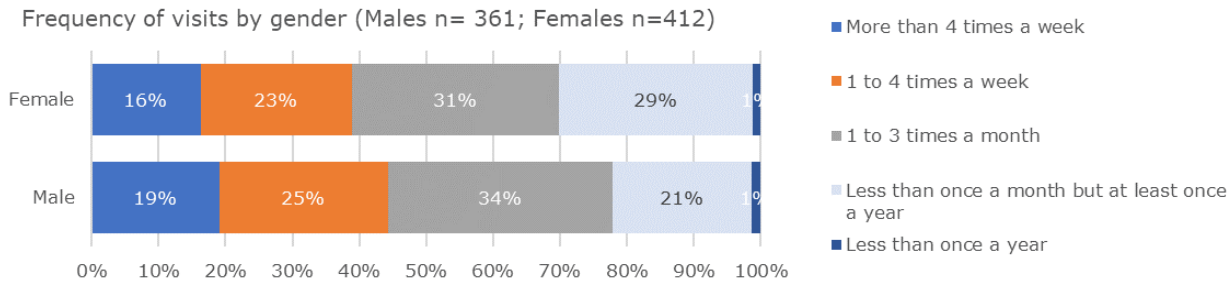

Figure 11: Frequency of visits by gender

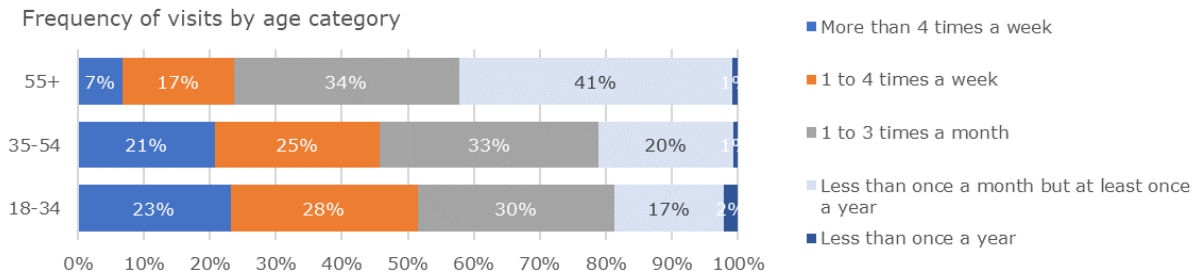

Figure 12: Frequency of visits by age group

In Figure 13 we observe that people who live within the Brussels Capital Region visit the centre more often than those who live in the periphery, which could be expected due to geographical proximity.

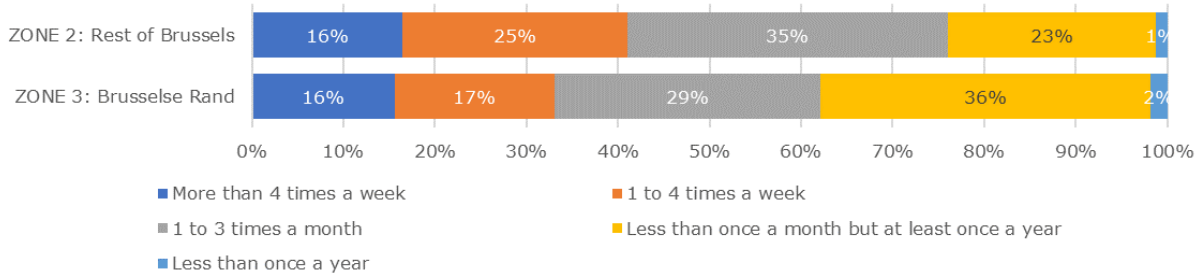

Figure 13: Frequency of visits to the centre of Brussels by the place of residence (Zone 2 n=475; Zone 3 n = 224). Zone 1 (n=73) is not included as the people living there are residents of the city centre and therefore frequency of visit is not applicable)

3.5.3. Duration of visits

Respondents were asked about the typical length of their stay in the centre of Brussels in relation to their indicated main purpose[11]. As highlighted in Figure 14, the time interval of 2 to 5 hours was mentioned the most. Those coming for social or cultural activities stay usually at least 2 hours. In total, only 16% of the visits are up to one hour, 32% take 1 to 2 hours, and 46% take 2 to 5 hours. These figures are roughly similar to those of 2017.

[11] For those who had chosen "Going to work" as their main purpose, the results were not usable since the questions left ambiguity, leading to some responding with the usual 8 hours they stay at their workplace and some providing the time they spend on the street before entering their location of employment. This category has been left out of the analysis.

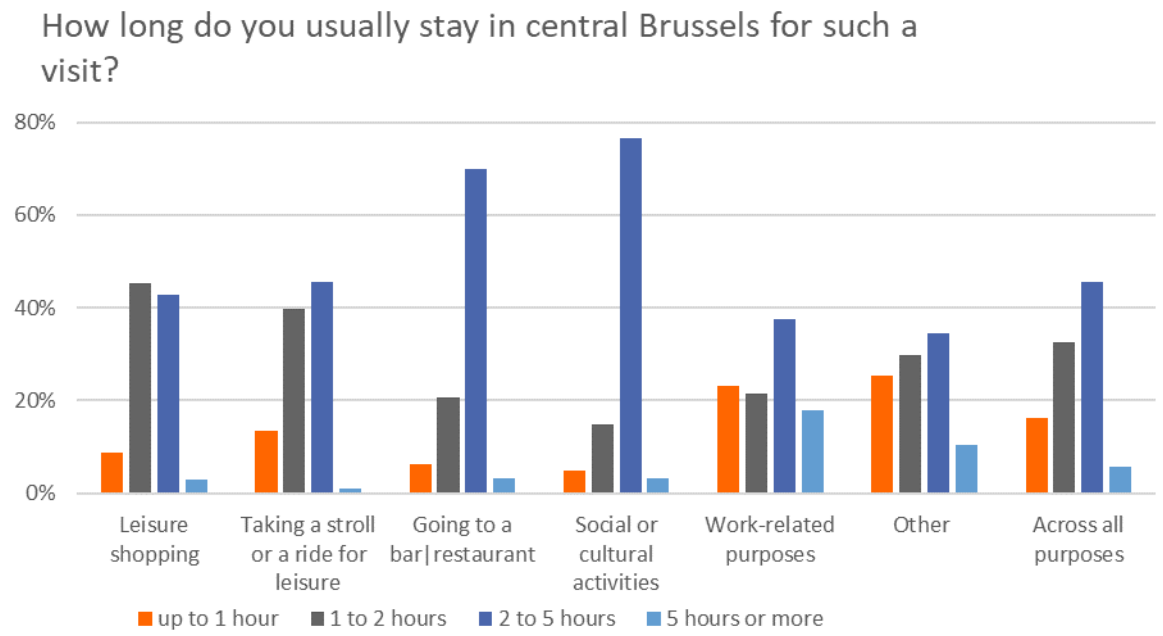

Figure 14: Duration of visits by purpose

3.5.4. Usual day of visit

People who come to the city centre for going to a bar or restaurant or for a leisurely stroll or ride are most likely to do so during the weekends (Figure 15). For all other purposes, there were more respondents who explicitly stated they come during the week than those stating to come during the weekend. However, for all leisure activities, a very large share also stated to come both on weekdays and weekends. This pattern has not significantly changed since 2017. We did not find a significant difference in days of visit according to gender.

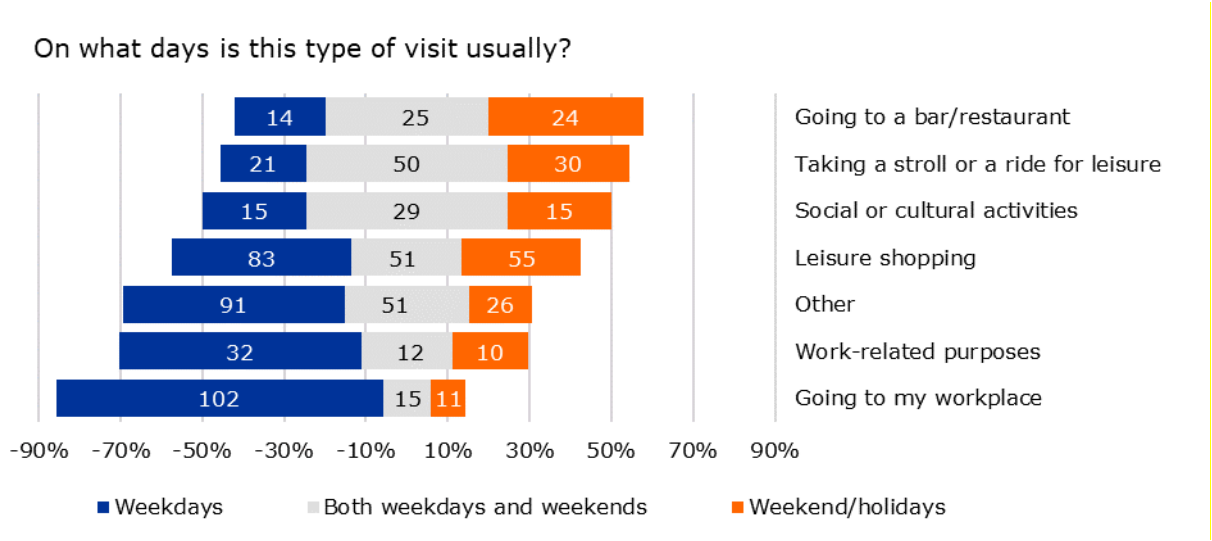

Figure 15: Usual day of visit by purpose of visit (n=772) and sorted by the share of "weekdays" from low to high (n=64; 103; 60; 193; 169; 55; 128) (numbers show the number of respondents)

3.6. Travel behaviour for visits to central Brussels

3.6.1. Main transport modes used to visit central Brussels regardless of purpose

In the 2021 questionnaire for T1 (residents of the Brussels Metropolitan Area, interviewed online), respondents were asked for their main mode of transport for visiting the centre of Brussels, regardless of their purpose of visit. This is an important addition to the 2017 survey, where all questions on travel behaviour were related to their purpose of visit (which will be discussed in section 3.6.2). For this reason, results regarding to this question cannot be compared with figures from 2017.

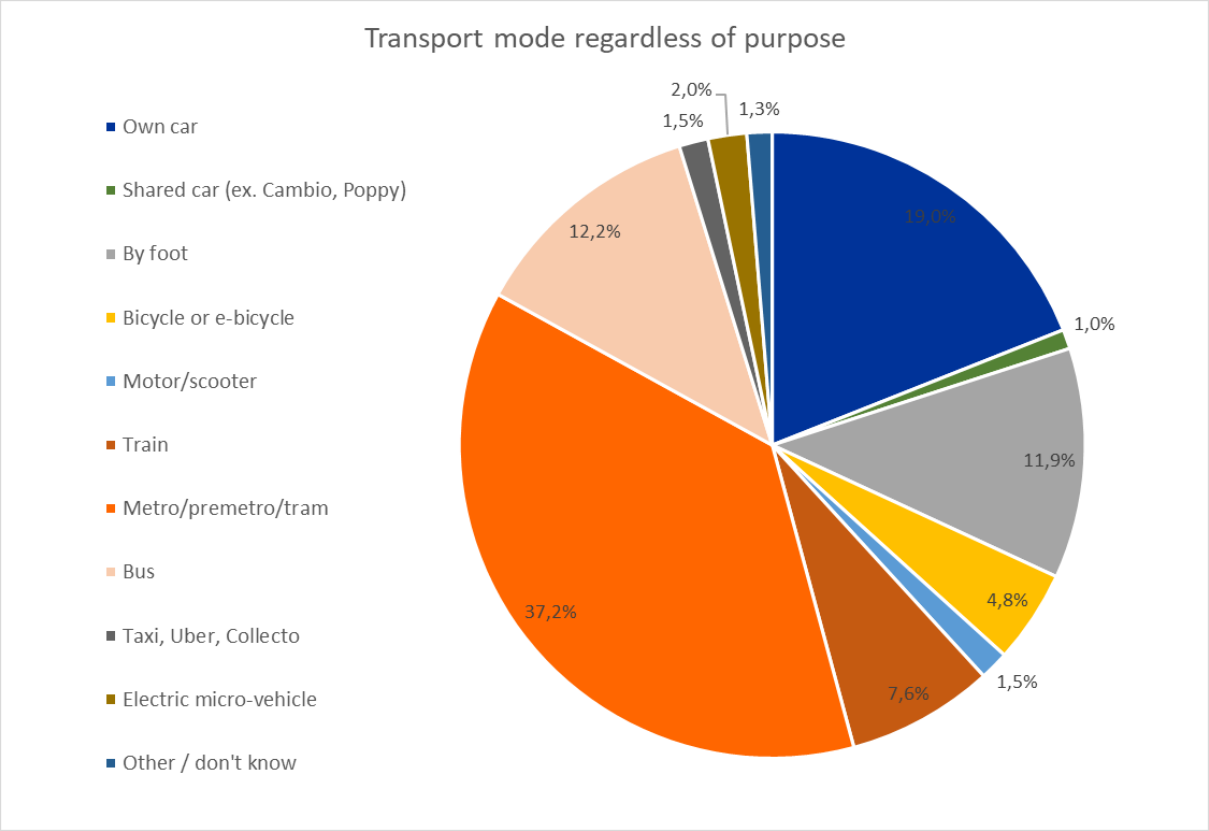

Figure 16: Transport mode to visit Brussels centre regardless of purpose (n=788).

Figure 16 shows the transport modal split of visits to the Brussels city centre by inhabitants of the Brussels Metropolitan Area. We notice that public transport is dominant with 57%. Among the different public transport modes, metro/premetro/tram is most used, more than train (7.6%), bus (12.2%) or any non-public transport mode (car: 19.0%, walking: 11.9%). This is strikingly different from the modal split of all travels made by inhabitants of the Brussels Capital Region, Flanders and Wallonia, where the car is dominant (46%, 59% and 73% respectively) (SPF Mobilité/FOD Mobiliteit, 2019).

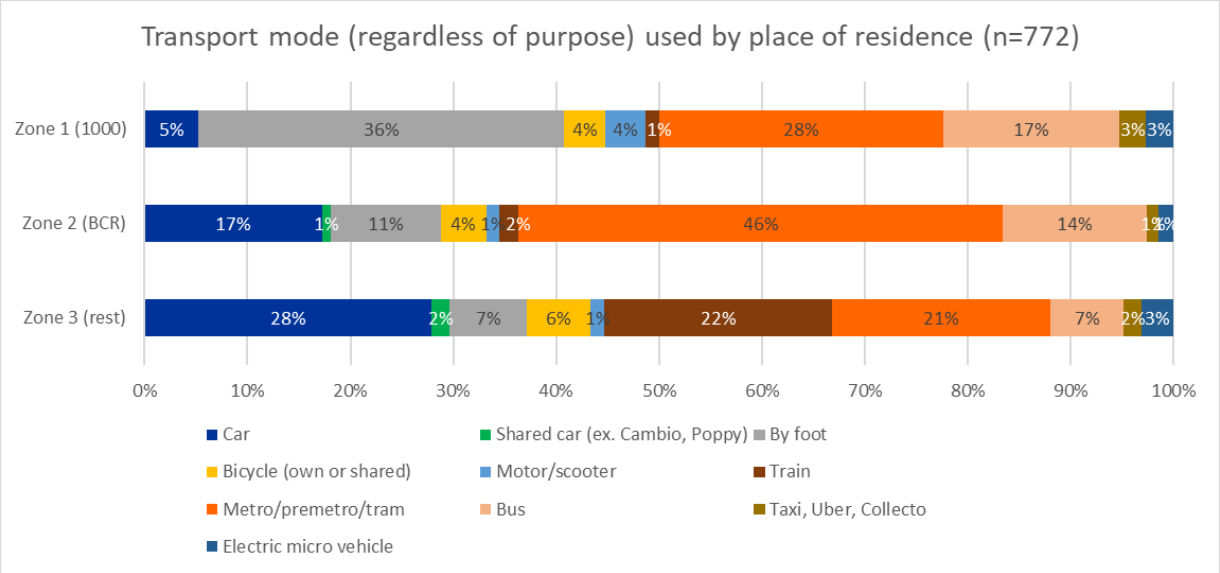

Figure 17: Transport mode to visit Brussels centre (regardless of purpose) by zone of residence (n=772)

When we examine mode of transport by zone of residence (Figure 17), we notice that the use of car increases by distance, ranging from 5% of city-centre inhabitants to 28% in the Brussels Periphery. The share of the train logically increases by distance, from almost negligible in within the Brussels capital region (1-2%) to 22% in the Periphery, but the contrary is true for bus usage, which remarkably has its highest share among people who live within central Brussels (postal code 1000). Metro/premetro/tram is dominant among people living in the Brussels Capital Region outside the centre (46%), but less so in the centre itself and the Periphery, though its share remains relatively high. Logically, the share of walking decays by distance (from 36% in the centre to 7% in the Periphery). Cycling, remarkably, has it highest rate of use among Periphery dwellers (6% compared to 4% elsewhere).

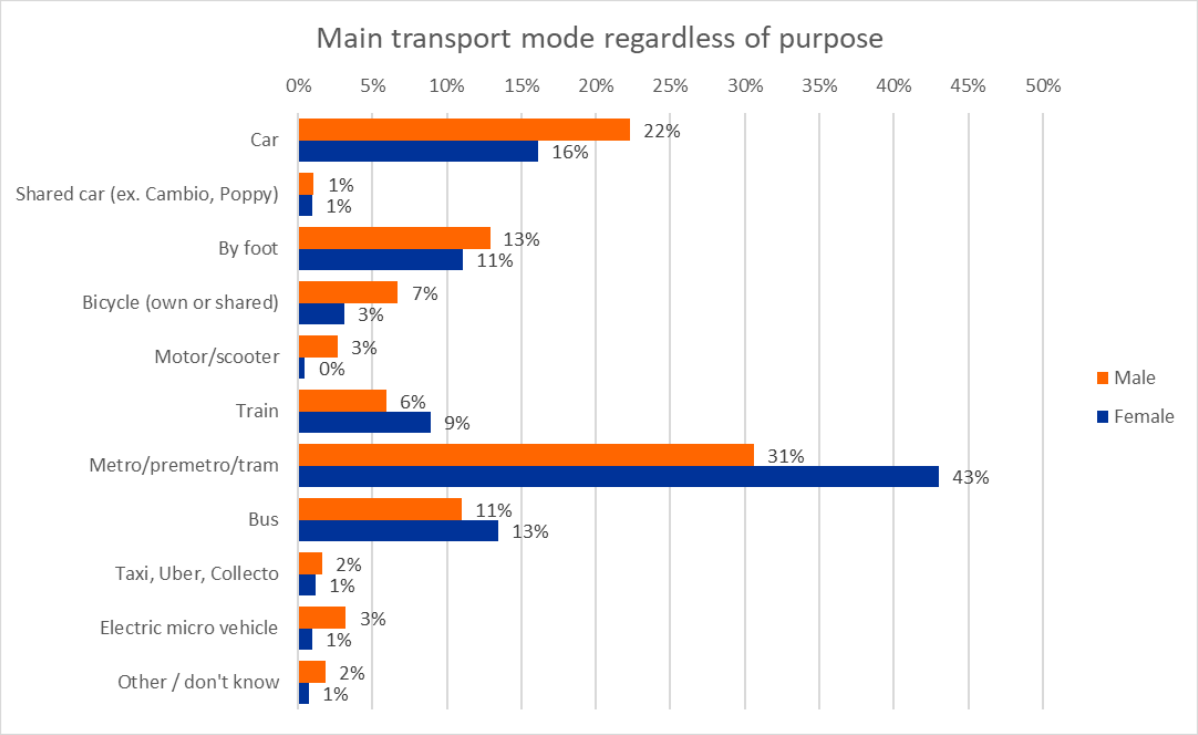

Figure 18: Main transport mode regardless of purpose by gender (n=788)

When observing the modal split breakdown by gender, various aspects catch the attention (Figure 18). Men travel relatively often by car (22% vs. 16%) but also much more often by bike than women (7% vs. 3%). Electric micro-vehicles are also more used by men than women (3% vs. 1%). This is compensated by women's higher usage of public transport in all modes, most notably metro/premetro/tram (43% vs. 31%).

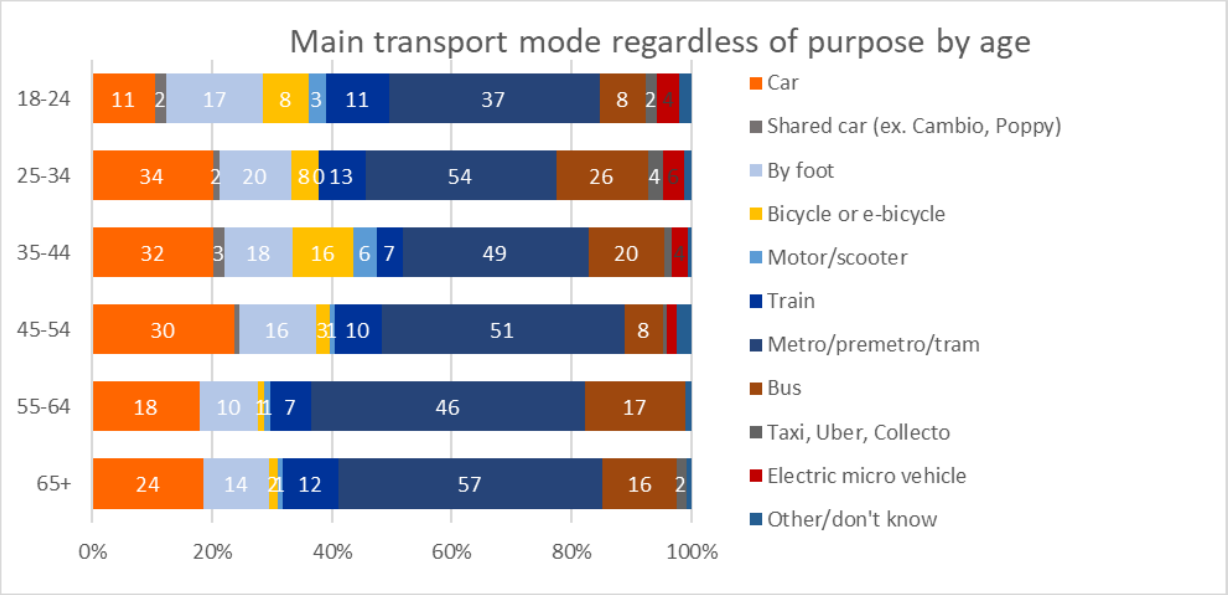

Figure 19: Main transport mode regardless of purpose by age (n=788)

When we examine the modal split by age group (Figure 19), we see that the usage of cars is highest in the 45-54 category and lowest among the youngest and eldest groups (10% and 19% respectively). Bicycle usage shows a remarkable drop between the age category where it is highest (35-44; 10%) and the next age category (45-54; 2%). Electric micro-vehicle use drops from 4% among the younger categories to 0% after 55 years old. While public transport is dominant in all age groups, its rate of use is highest among the two eldest categories (69% and 66%).

3.6.2. Main transport modes used to visit central Brussels by purpose

As in the 2017 survey, respondents were also asked what transport mode they mostly use when visiting the city centre for their personally most recurring purpose. This question was not posed to the people who indicated that they live in central Brussels, and who are therefore not included in the numbers below. In this section we discuss these figures as they allow comparison with the 2017 survey.

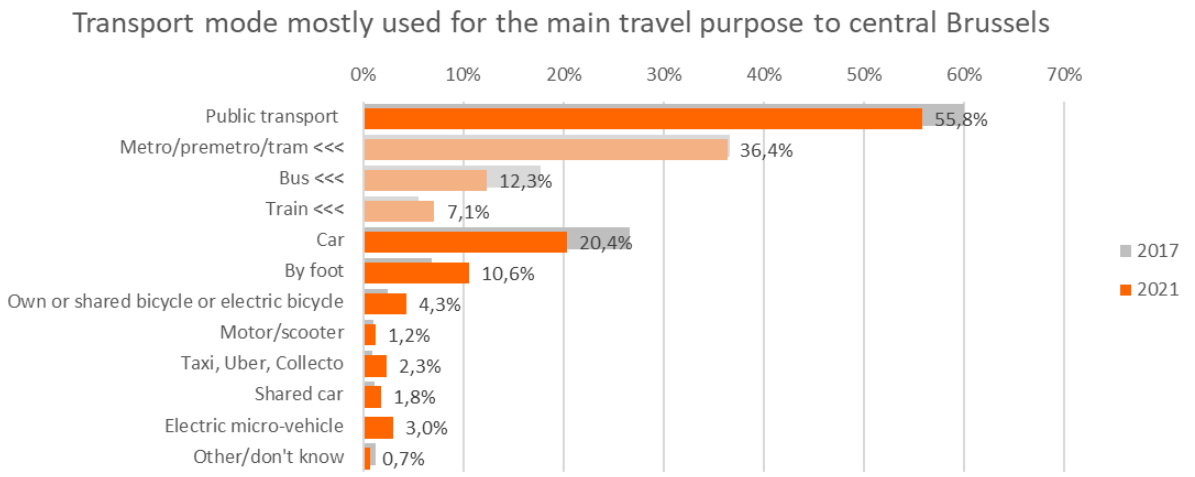

Figure 20: Transport mode used for main travel purpose to central Brussels

Figure 20 shows the modal split (relative to main travel purpose) in 2021 and in 2017. Remarkably, the shares of the dominant modes, public transport and car, have dropped, respectively from 60.0% to 55.8% and 26.6% to 20.4%. By contrast, significant increases can be observed for the share of people walking (6.8% to 10.6%) as well as cycling (2.5% to 4.3%). In 2017, usage of electric micro-vehicles was so low that it was categorised under 'other' but in 2017 it takes a share of 3%, higher than the usage of shared cars, taxis or motorbikes.

This figure also shows the evolution of the relative shares of the different types of public transport. We notice that the overall decrease of public transport use is mostly due to the decrease of bus use (from 17.8% to 12.3% of the total share), as the use of metro/premetro/tram has remained stable and train use has slightly gone up from 5.6% to 7.1%

Figure 21 shows the distribution of respondents by travel mode and zone of residence. The data shows that the car is a much more important main mode of transport for those living in the periphery (zone 3) than for people living within the Brussels Region (zones 1 and 2). Correspondingly, the proportion of respondents indicating public transport (including trains) as their main mode drops outside of the Brussels region, but it still is the most used mode together with the car. As above, their stated main mode is linked to their stated most common visiting purpose.

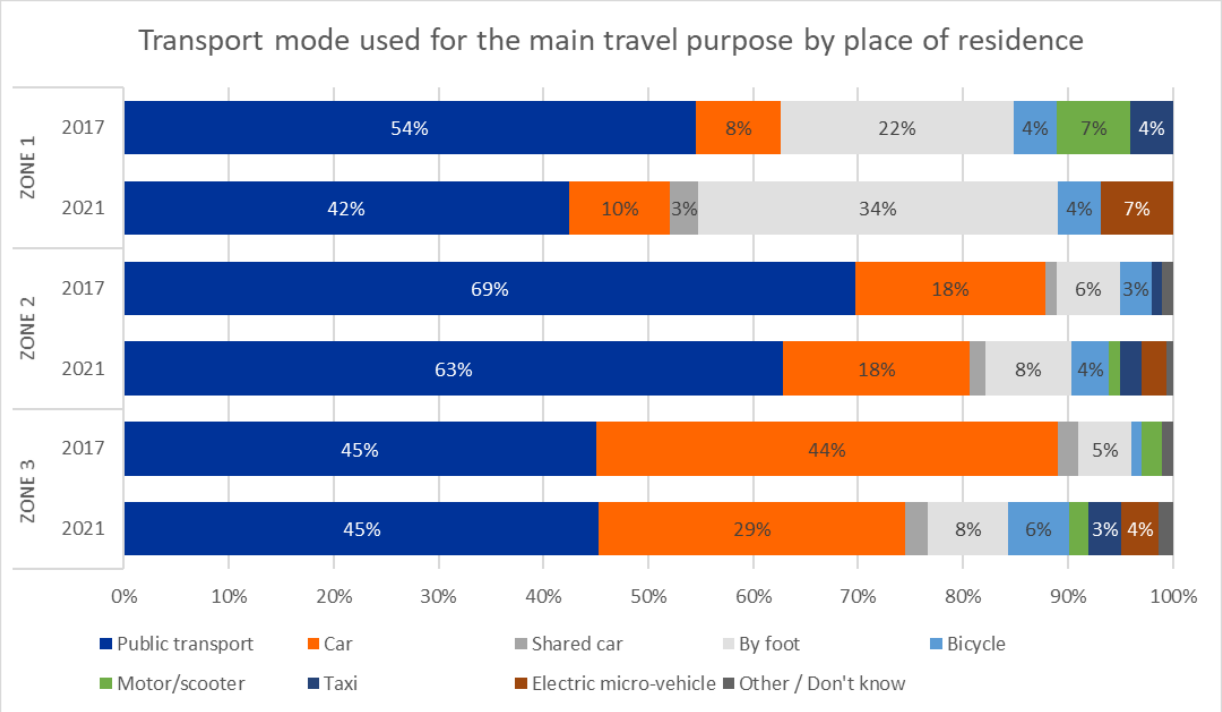

Figure 21: Transport mode by place of residence, comparing 2021 and 2017

Figure 21 also shows the evolution of transport mode use by place of residence between 2017 and 2021. An interesting difference is that among inner-city residents the share of walking has strongly increased at the expense of public transport. We also notice that among the same group, the use of motors/scooters and taxis has completely vanished, but the electric micro-vehicles have had a strong uptake. Among inner-city dwellers, the use of bicycles has also increased by more than half.

The numbers on the inhabitants of the rest of the Brussels Region show a somewhat different picture. Most important here is a slight decrease of public transport usage and a slight increased use of bikes, electric micro-vehicles and walking. Among residents of the Periphery, the share of car use has strongly decreased (44% to 29%), mostly at the advantage of cycling (from 1% to 6%), electric micro-vehicles (from 0% to 4%) and taxis (from 0% to 3%).

In terms of gender, women are more likely to visit by public transport, men come more likely by car and bicycle (Figure 22). Figure 22). When considering age, from age 25 onwards, people are more likely to come by car. The bicycle is more commonly used between the age 25 and 44 (Figure 23).

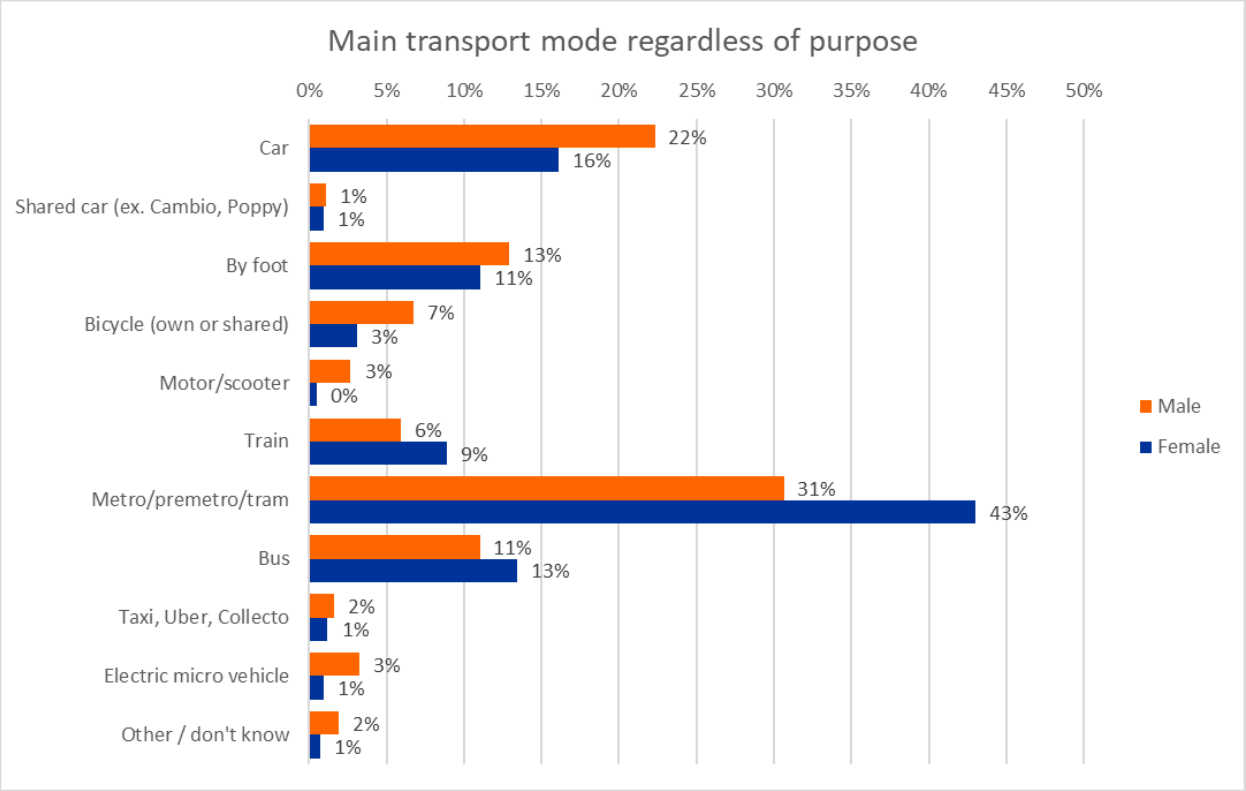

Figure 22: Main transport mode to central Brussels by gender (n=772)

When considering the differences in transport use between age categories (Figure 23), we see that public transport is dominant in all age groups, but especially among the youngest group. Car use is highest among the category between 45 and 54 years old. The popularity of walking shows a slight by gradual decrease by age. Remarkable is that cycling is most popular among those between 35 and 44 years old but drops to nearly zero in the next age category.

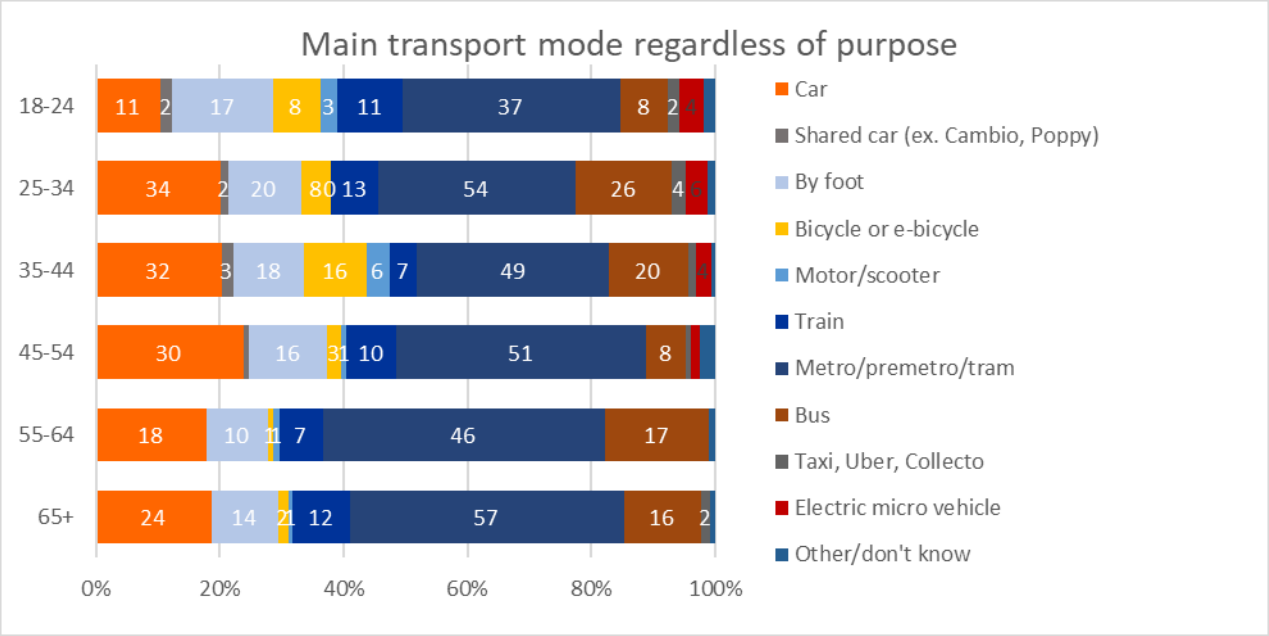

Figure 23: Main transport mode (regardless of purpose) by age category (numbers refer to cases; n=788).

3.6.3. Duration of travel

In the survey, respondents were asked how long their typical travel to the city centre takes (one way). Respondents needed on average 29.5 minutes[12] to travel to central Brussels from their home (median: 30.0 min). More than half of the respondents could reach the centre within 30 minutes, while the proportion of respondents who needed more than 60 minutes is only 3.3% (Figure 24).

[12] This number does not include 4 outlying cases where respondents mentioned unrealistically long travel times.

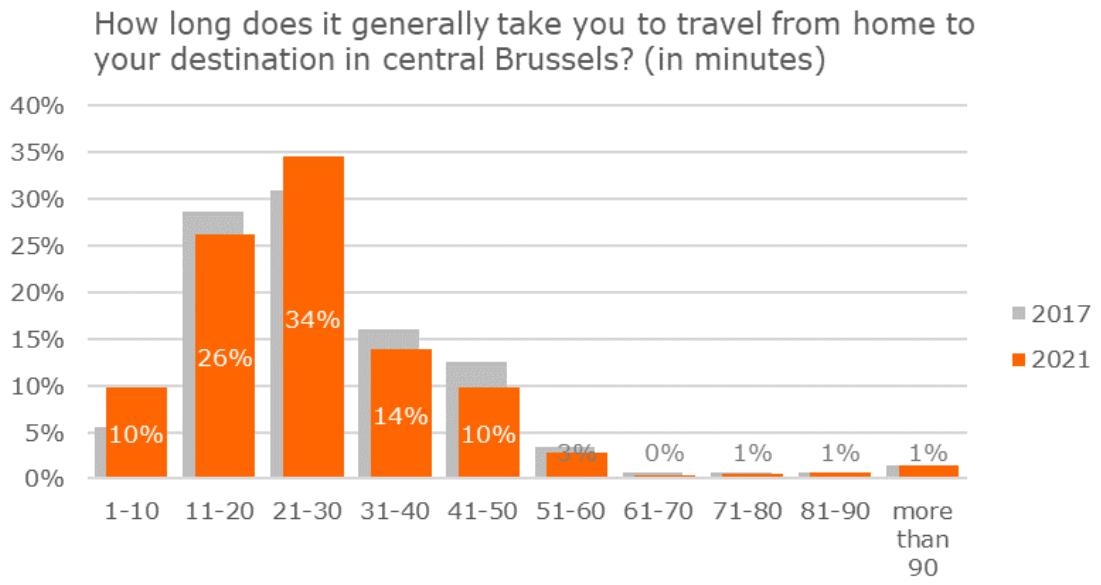

Figure 24: Grouping of respondents' estimations of their travel time from home to their destination in central Brussels (n=751)

Logically, travel time depends on distance to the city centre. When we consider the mean travel times by the zone of the place of residence, we see that a range from 26 minutes for Brussels 1000 residents to 33 minutes for people living in the periphery (Table 10). Remarkably, the difference in travel time is not as big as one would expect, given the differences in distance. This could be due to the fact that people do not necessarily take the fastest route to the centre, especially when taking a stroll or ride for leisure.

Table 10: Average travel time to the city centre by location of residence (in minutes)

Geographical distribution - place of residence of respondent	Mean	N	Std. Deviation
ZONE 1: City Centre – 1000	26.06	73	21.722
ZONE 2: Rest of the Brussels Capital Region	28.16	466	17.816
ZONE 3: Periphery	33.83	212	17.642
Average	29.55	751	18.363

3.6.4. Parking behaviour

Respondents who indicated that they usually visit the city centre (regardless of purpose) by car (n=150 or shared car (n=10) were asked whether they typically travel as passenger or as driver. 18% came as a passenger. Those coming as a driver (88.6%) were asked several follow-up questions about their parking behaviour.

Among them, 11.8% do not park their car in central Brussels, which is a slight increase compared to 2017 (8.5%). They might be parking just outside the centre or leave their car in a Park and Ride facility and had chosen "car" as their main transport mode for their trip. Further 45% always and 34% mostly park their car in the centre (Figure 25).

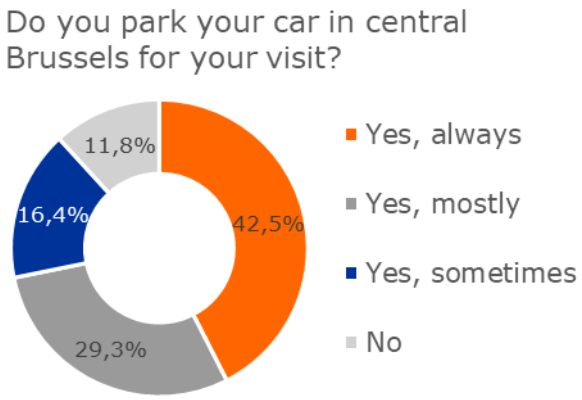

Figure 25: Share of respondents parking their car in central Brussels (in %, n=150)

As can be seen in Figure 26, 40.6% chooses a publicly accessible parking garage, which is a remarkable decrease since 2017 (57.1%). 38.6% park on the street, which is an increase from the 24.7% in 2017. The share people who use a parking belonging to their work or educational institution has decreased from 10.3% (2017) to 6.4% (2021).

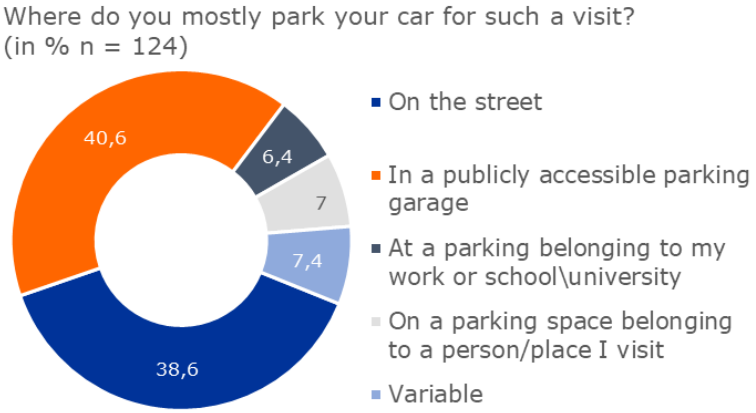

Figure 26: Parking habits of respondents coming to central Brussels by car (in %, n=171)

When looking for a parking space, we can see that over 60% typically find a parking space in less than 14 minutes. Yet, we also observe that compared to 2017 the share of driver

who quickly finds a spot has decreased and that most importantly the category of 15 to 30 minutes has increased most (Figure 27). Further details on car users' perception of accessibility and the parking situation can be found in section 6.2.1.

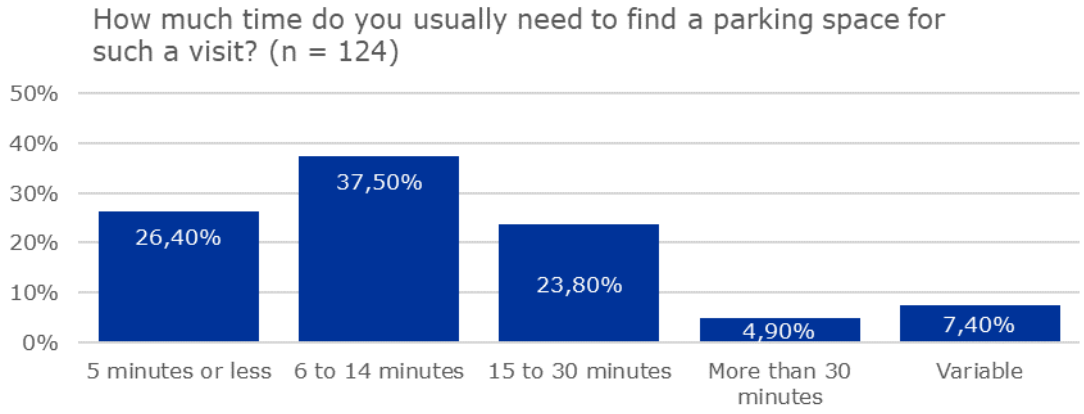

Figure 27: Time needed for finding a parking space in central Brussels (n=124)

3.7. Travel behaviour by purpose of visit

Figure 28 shows the most used modes of transport by purpose of visit for both 2021 and 2017. We notice that in the overall (total) share of both public transport and car use have slightly decreased at the advantage of walking, cycling and other modes. When we consider each type of purpose apart, we see that public transport remains the dominant category of transport everywhere, except for work-related purposes. The share of car use, while still important, shows a slight decrease for nearly all purposes. Travelling by foot has increased for all purposes, but most spectacularly for people taking a stroll for leisure, which can possibly be attributed to the upgrade of public space in the area. The share of cycling has doubled from 2% to 4% and shows its most significant increase for work-related purposes, which could possibly be linked to the advent of food deliveries by bike.

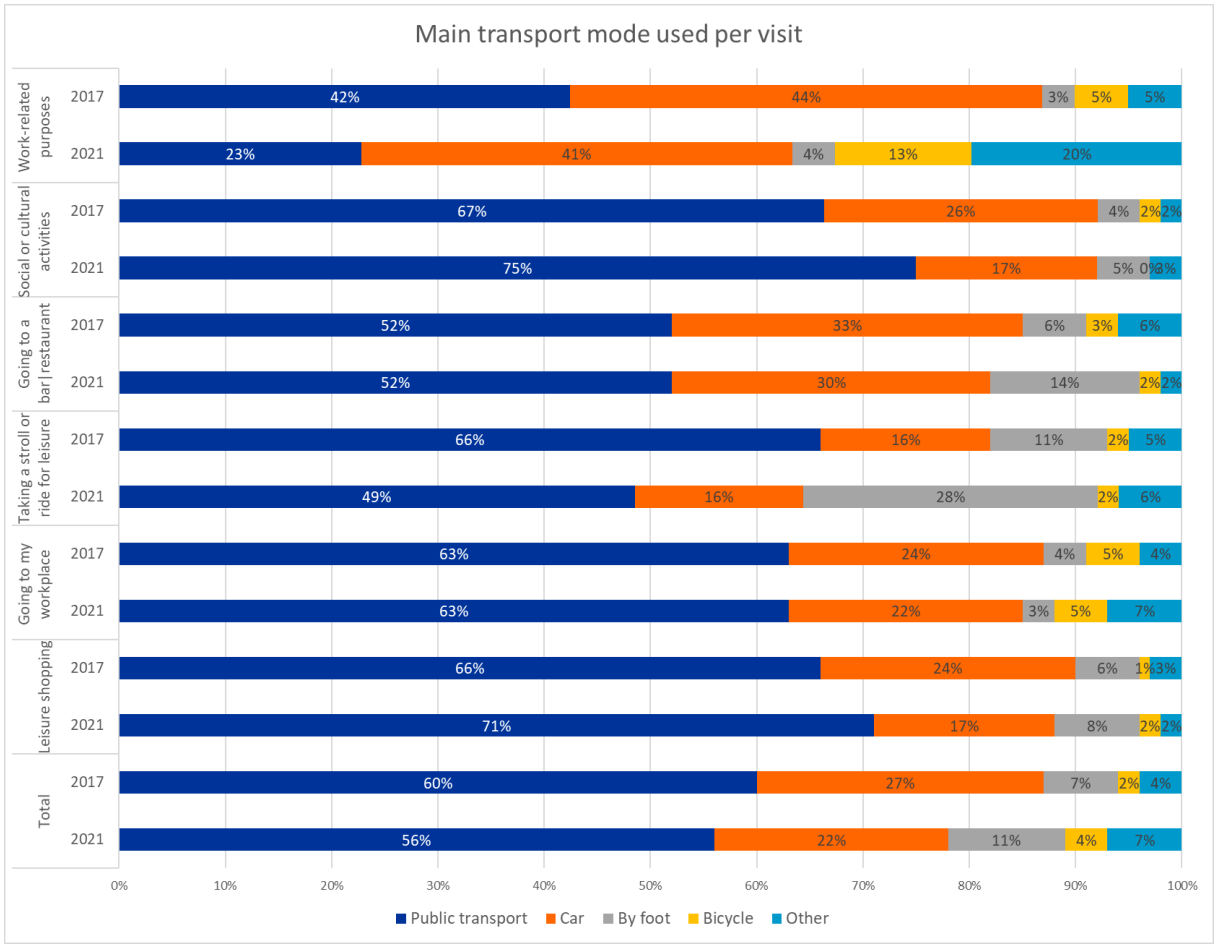

Figure 28: The distribution of T1 respondents by purpose and mode of transport (n =774 (2021))

4. Target group T2 - People employed in the city centre

This section focusses on target group T2, i.e., the people who work within the centre of Brussels (the Pentagon). The questionnaire for target group T2 reached 824 city centre employees. In section 4.1, we discuss the methodology of the survey. In section 4.2, we present additional sociodemographic characteristics of the sample. In section 4.3, we elaborate on the access to means of transport and in section 4.4, we analyse the results of questions related to the travel behaviour of the sample. Section 4.5 discusses the activities with which employees combine their trip to work.

4.1. Survey methodology

4.1.1. Target population

In the Belgian context, central Brussels is an important centre of employment. Since the people working are likely to be affected by the pedestrianisation in their commutes, it was decided to include them as a specific target group in this survey. The survey thus aims to shed light on commuting behaviour of this group to the centre of Brussels and their perception of the pedestrianisation, but also their 'use' of the centre for activities other than working. The target population comprises the working population between 18 and 64 years old with legally remunerated employment in one of the companies, organisations or public institutions located within the city centre (Pentagon).

4.1.2. Survey characteristics

The survey was administered between 17/11/2021 and 08/02/2022. During this period, many employees were forced to work from home. Therefore, the effect of the Covid-19 pandemic cannot be isolated from the effect of the pedestrianisation of Boulevard Anspach. The targeted sample size was n=800. A link to the online questionnaire was distributed to employees working in the centre of Brussels by email, via corporate newsletters and social media. The questionnaire was available in French, Dutch and English. As indicated in Table 11, respondents who were routed through the majority of the questionnaire had a median response time of 17.92 min. In contrast to the questionnaires for T1 and T3 who were

scripted and distributed by the subcontractor Kantar, the T2 survey was scripted and distributed by the VUB team using the Qualtrics survey software.

4.1.3. Sampling

As there are no exact data on the composition of the population employed in central Brussels in terms of sector and type of employment, it was decided to use a convenience sample for this target group and to use ex-post weighting according to the socio-demographic characteristics of the target group (see section 4.1.5). Thus, the survey is based on voluntary participation and being employed in the city centre was the only condition for taking part. In order to reach a group of respondents as large and as diverse as possible, we used several channels.

For distributing the survey, we first used a number of contact databases within which we selected companies or employees located in central Brussels. These include the Belfirst financial database (Belfirst, 2021), and contact lists of BECI, HUB.brussels, Atrium (Atrium, 2021), RAB-BKO and the schools locate within the Pentagon, but also the list of respondents to the 2017 survey who had indicated their interest in future participation. We also asked the various federations of shop owners organised by neighbourhood (Rue Neuve, Quartier St. Jacques, Notre-Dame aux Neiges, Béguinage-Dixmude, Dansaert, Anneessens, Stalingrad, Marolles, Sablon, Grand Place) to distribute the questionnaire among their members, be it by email, newsletter or social media. Lastly, companies with high numbers of employees among were contacted individually (e.g., Bpost, Federal Police, STIB/MIVB, Municipality of Brussels). In order to reach the required number of valid responses, the questionnaire was made accessible for a longer time than initially scheduled (2.5 months) and multiple reminders were sent.

4.1.4. Data cleaning

1321 respondents started the questionnaire. Of those, 245 negatively responded to the filter question on whether they were employed in central Brussels (Pentagon), so they were excluded. Another 191 individuals did not complete a substantial part of the survey, so they were removed too. Other exclusions include 9 individuals with response times that are too short (under 5 minutes), 41 respondents who are too old to be in the initially defined target group (over 64), 7 respondents with a too repetitive answer pattern on the scale questions (e.g., by indicating the 1st option on all questions) and 4 respondents who

replied 'my workplace is not located in the centre of Brussels' later in the survey. A manual check for non-serious replies did not lead to further exclusions. Eventually, a total number of 824 respondents were retained.

Table 11: Minimum and median response time depending on the respondents' latest visit to Boulevard Anspach (which determined the number of follow-up questions a respondent was asked)

T2	Minimum (fastest person)	Median
Group 1: Have been to Boulevard Anspach since 2021	6.38 min	17.92 min
Group 2: Have not been to Boulevard Anspach since 2021	5.05 min	15.62 min

Since the questionnaire was distributed by partner organisations, we cannot assess the full size of the population that received the invitation, so a response rate cannot be calculated.

4.1.5. Weighting and improvement of data quality

The data has been weighted to adjust for differences in the sample to the actual distribution of the population (employees within the Pentagon) in terms of socio-demographic variables. While a convenience sample can never be representative (as it is a non-probability sampling method), weighting is applied to improve data quality. The data has been weighted by gender, age and place of residence. As in 2017, data from the 2011 Census (StatBel, 2014) have been used as the base for calculating the weights. While we acknowledge that this is an old survey, we decided to use it anyhow since to our knowledge no relevant data on the composition of the working population in Brussels was available and using the same base for weighting as in 2017 ensures that any difference in results between the 2017 and the 2021 survey can be attributed to the actual collected data instead of to different weighting factors.

Similar to the T1 survey, The Random Iterative Method (RIM or "raking") method was employed, since some information was missing in both the Census 2011 data and the survey cases. When there is a lack of knowledge on the proportions of the population for some cells, the normal weighting method cannot be used. Raking is an iterative process that weights variable after variable instead of all at the same time. Raking uses iterative post-stratification to match marginal distributions of a survey sample to known population margins.

Table 12: Counts and proportions of socio-demographic indicators in the T2 sample and the corresponding Census 2011 data provided by Statistics Belgium

T2	Counts			Proportion		
	Real population (Census 2011)	Sample 2017 (valid cases)	Sample 2021 (valid cases)	Real population (Census 2011)	Sample 2017 (valid cases)	Sample 2021 (valid cases)
Gender						
Male	55,740	1,361	480	49.3%	56.6%	58.3%
Female	57,417	1,010	338	50.7%	42.0%	41.0%
(missing)	0	35	6	0.0%	1.5%	0.7%
Age (years)						
18-24	6,513	27	6	5.8%	1.1%	0.7%
25-34	29,711	475	126	26.3%	19.7%	15.3%
35-44	29,595	688	212	26.2%	28.6%	25.7%
45-54	30,337	684	249	26.8%	28.4%	30.2%
55-64	17,001	481	231	15.0%	20.0%	28.0%
(missing)	0	51	0	0.0%	2.1%	0%
Place of Residence (postal code)						
Zone 1: Brussels city centre (1000)	10,266	157	115	9.1%	6.5%	14.0%
Zone 2: Rest of BCR excluding city centre	29,164	865	374	25.8%	36.0%	45.4%
Brussels periphery	*11,332*	*282*	*127*	*10%*	*12%*	*16%*
Zone 3: North-East:	2,973	68	42	2.6%	2.8%	5.1%
Zone 3: North-West	2,608	65	31	2.3%	2.7%	3.8%
Zone 3: South-East	3,724	108	37	3.3%	4.5%	4.5%
Zone 3: South-West	2,027	41	17	1.8%	1.7%	2.1%
Zone 4: Rest of Belgium outside the BMA	62,395	1,097	208	55.1%	45.6%	25.2%
(missing)	0	5	0	0.0%	0.2%	0%
Education						
Primary education or without diploma	4,640	17	14	4.1%	0.7%	1.7%
Secondary education	44,464	538	118	39.3%	22.4%	14.3%
Higher education	55,046	1,851	692	48.6%	76.9%	84.0%
(missing)	9,007	0	0	8.0%	0.0%	0.0%

Comparison of the sample with the census data[13] shows that as in 2017, the 2021 sample has a significantly different distribution in terms of education of the respondents (see Table 12). 84% in the survey had attained higher education compared to only 49% of the census population). This difference can possibly be attributed to method of administering the survey. Lower-educated employees often do not have access to company email addresses or computers, which makes them underrepresented in the sample. In order to avoid disproportionately high weighting factors, we chose not to weight for education. The weighting factors in T2 therefore account only for age, gender and place of residence.

Even excluding educational level, the resulting weighting factors were still relatively large: not only because the sample was remarkably smaller than in 2017, residents of Zone 1 (Brussels 1000) (those living and working in the Brussels city centre) were also underrepresented while residents of Zone 2 (the rest of the BCR i.e. those 'commuting' within the entire BCR) were overrepresented. Younger age groups and females were also underrepresented. This bias–variance trade-off was treated similarly to 2017, by trimming the weights to lay between 0.5 and 1.5 while still adjusting the sample for age, gender and place of residence. Because of this trimming procedure, there is still a small bias left in the sample, although the variance is not as high as when the trimming would not happen. The trimming procedure also caused the total weighted (virtual) n=699 to differ from the actual n=824. This is because when weighting, an individual record in the dataset can be counted as something different than 1.0 cases. In the following chapters, when the data is weighted, we decided to report the weighted n instead of the actual n.

4.2. Additional socio-demographic characteristics of respondents

In this section we present the socio-demographic characteristics of the respondents that were not corrected through weighting (language, employment sector, restricted mobility).

[13] The census data may contain inaccuracies. The count of employees in headquarters listed in the Pentagon may also include employees working in other branch offices. Public sector information may also not be fully accurate.

4.2.1. Language

The majority of the respondents (63.7%) completed in the survey in French, while 27.2% chose Dutch and 9.1% chose English.

Table 13: Chosen languages to fill out survey by region of residence (unweighted)

Language	2017 (n=2406)	2021 (n=824)
Dutch	39.5%	27.2%
French	56.5%	63.7%
English	4.0%	9.1%

4.2.2. Place of residence

As can be seen in Table 12, in total 59.4% of the respondents of the 2021 questionnaire live within the Brussels Capital Region. 14% live within Brussels centre (postcode 1000) which is a relatively large proportion compared to the real population. A further 16% live in the Brussels Metropolitan Area outside the Capital Region (the Periphery), and over a quarter live elsewhere in Belgium. Overall, we notice that Brussels residents are overrepresented in the sample at the expense of employees living beyond the limits of the Metropolitan Area. Additionally, compared to the 2017 sample, we see a remarkable decrease in the share of respondents living in the rest of Belgium (25.2% in 2021 vs. 45.6% in 2017). Although weighting has been applied in the two samples to account for these differences, the weights were trimmed which can still cause some bias in the results.

4.2.3. Age

In the 2021 sample (see Table 12) older age groups (45-54 and especially 55-64) are overrepresented in comparison with both the Census population and the 2017 sample.

4.2.4. Type of employment sector

Sampling for T2 was done by means of reaching out to employers to distribute the survey amongst their employees. The sample therefore only contains individuals active in the workforce, including employees, workers, civil servants and self-employed individuals. As can be seen in Table 14, the sample is relatively balanced in terms of proportions of people working in the public and private sectors. This is an improvement compared with the 2017 sample, where only 19% of the respondents worked in the private sector.

Table 14: Sector of employment (unweighted n=824)

Sector	Percent
Private	40%
Public	37.4%
Other	4.5%
Self-employed	18.0%
Don't know	0.1%

4.2.5. Restricted mobility

Respondents were asked whether they experienced difficulties using certain modes of transport for physical reasons. Table 15 lists the unweighted frequencies. 4.9% reported difficulties in their daily mobility, which is percentage much lower than in the T1 sample (12.5%) but much lower than in the T3 sample (1.6%). Among the reasons that were mentioned as 'other', no reason was mentioned more than once.

Table 15: Do you have difficulties to use certain modes of transport for physical reasons? (unweighted n=824)[14]

	Frequency	Percent
No	784	95.1%
Yes	40	4.9%
I have difficulty walking	*18*	2.2%
I use a wheelchair	*1*	0.1%
I am visually impaired	*1*	0.1%
I am pregnant	*1*	0.1%
I have a stroller	*4*	0.5%
Other	*19*	2.3%

4.3. Access to means of transport

Respondents were asked what type of vehicles and subscriptions were available to them.

Figure **29** provides a detailed overview. Over a quarter now has a company car, and nearly all of them have a fuel card. The share of people having a bike has risen; the proportion of respondents with an electric bike has roughly tripled (to 18.7%). In contrast, the share of employees with public transport subscriptions (especially NMBS/SNCB) has sharply declined. This effect might be fully or partially attributed to the Covid-19 pandemic. Before and at the time of surveying, many employees have been forced to work from home for a longer period of time. Since most public transport subscriptions run for a full year, a

[14] This is a multiple-choice question, in case people answered yes, they could choose multiple answers on the follow-up question.

remarkable share of employees and employers might have refrained from renewing this subscription, causing the employees to opt for more flexible forms of commuting modes such as the car and bicycle. Additionally, the risk of contamination is larger when using public transport, which also can cause even more respondents to put their annual subscription on hold.

For a more comprehensive picture of the availability of transport modes, we aggregated the responses by the main modes (Table 16). 79% of the respondents have access to a car within their household or a shared car subscription[15], 72.5% have a subscription to at least one of the four public transport providers and 50.3% own a bike or have a bike sharing subscription[16].

[15] Sum of individuals who have marked “Car that you own yourself” and/or “Company Car” and/or “Car of someone else in your household” and/or “Shared car subscription”

[16] Sum of individuals who have marked “Bike (non-electric)” and/or Electric bicycle” and/or “Villo! or Blue bike subscription and/or Electric micro-vehicle (e-step, e-scooter or monowheel)”

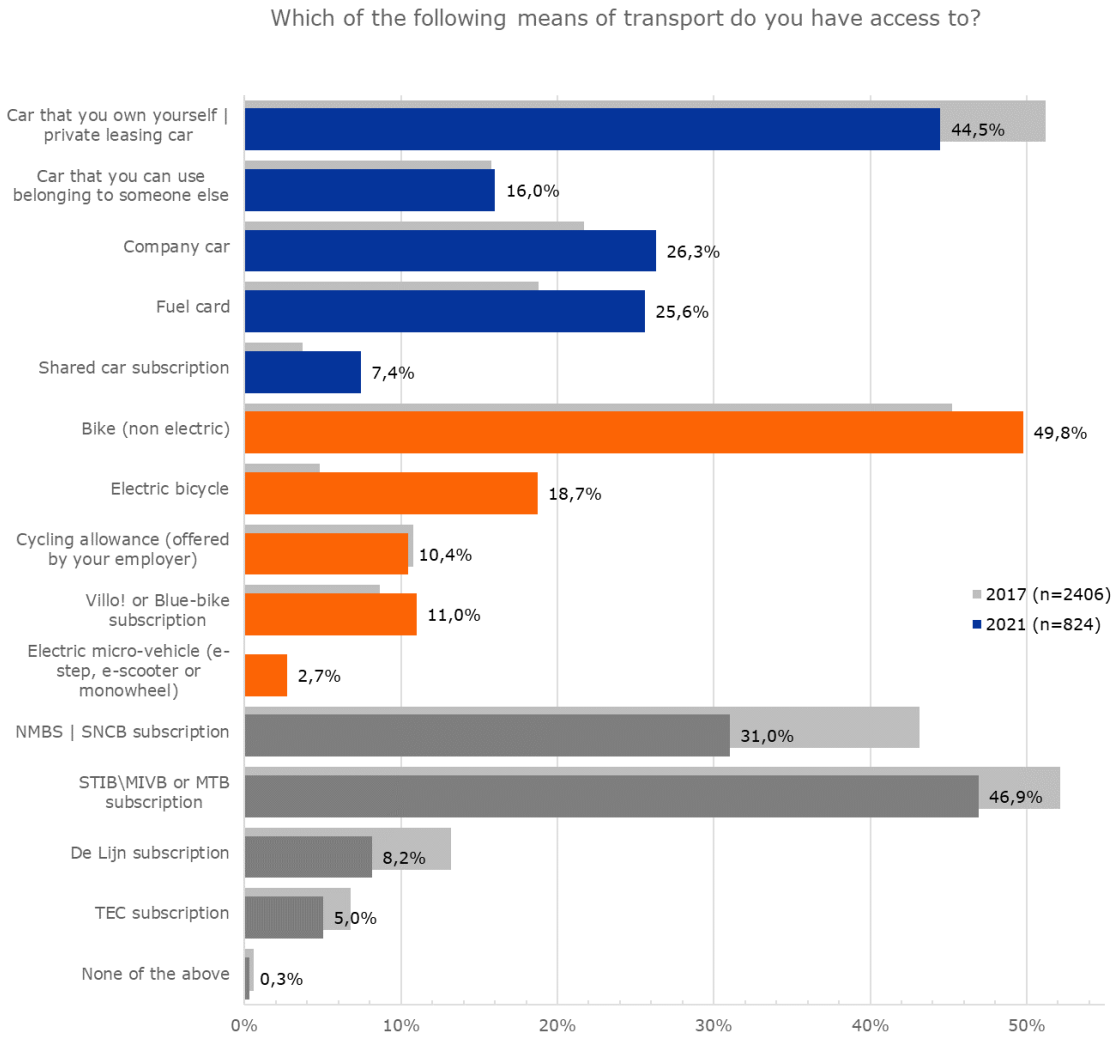

Figure 29: Share of respondents who have access to various means of transport (n=824)

Table 16: Which modes of transport do you have access to?

	2021 (n=699)	2017 (n=2406)
Bike or micro-vehicle	63.9%	50.3%
Public Transport Subscription	62.4%	72.5%
Car	76.7%	79.0%

4.4. Travel behaviour to central Brussels

The survey included questions about the respondents' typical journey to work. Table 17 shows their typical times of arrival by zone of residence. We notice by far the largest share of employees arrives during morning rush hour, which is to be expected, but that none of the respondents typically arrives during the night. Compared to 2017, slightly less

respondents arrive during rush hour and more respondents come during early morning or during the day, which might be an indication that work hours have become more flexible. The Covid-19 pandemic provided many employers with an opportunity to become more flexible in not only the space but also the time where people work.

Table 17: Distribution of respondents by arrival time at work. (n=699 [2021] and n=2403 [2017])

	ZONE 1		ZONE 2		ZONE 3		ZONE 4	
	2017	2021	2017	2021	2017	2021	2017	2021
Early morning (5.01 am – 7.00 am)	2%	4%	4%	4%	9%	6%	14%	7%
Morning rush hour (7.01 am – 10.00 am)	76%	69%	82%	79%	81%	74%	80%	77%
During the day (10.01 am – 4.00 pm)	12%	16%	8%	11%	4%	9%	3%	10%
Afternoon rush hour (4.01 pm – 7.00 pm)	2%	1%	1%	0%	1%	1%	1%	1%
Evening (7.01 pm – 10.00 pm)	0%	1%	0%	1%	0%	0%	0%	1%
Night (10.01 pm – 5.00 am)	0%	0%	0%	0%	0%	0%	0%	0%
Variable	8%	8%	5%	5%	5%	10%	4%	5%

4.4.1. Main transport modes used to visit central Brussels

Respondents were asked to name all modes they use (Figure 31) as well as the one they travel the longest distance with (Figure 30).

The most noticeable difference with 2017 is that the train is no longer the most popular main travel mode, i.e., the transport mode that was used on the longest part of the journey (Figure 30). In 2017, 40% of the sample indicated to use the train as their main travel mode, followed by the car (23.7%) and other public transport (metro, premetro, tram and bus; 21.3%). In line with previous findings, the car has gained popularity against public transport and is now the most used transport mode, 32.4% uses it as their main transport mode vs. train (25.2%) and other public transport (17.1%). Since this effect can for a large part be attributed to the Covid-19 pandemic (see also 4.3), the impact of the pedestrianisation on the main commuting mode became unclear. The decrease in the use of the train might also be partially caused by the sampling bias, since in 2021 there were less respondents living outside of the Brussels region, but Table 18 shows that public transport lost popularity among all regions and the bicycle and the car gained popularity among all regions.

The distribution of individuals using their car versus public transport not only differs from 2017, it also differs from T1. Although the car gained popularity in T1 as well, it was not

the most used transport mode to travel to the city centre. In T2, 32.4% of the employees come by car (vs. 20% in T1) and 42.3% come by public transport (vs. 57% in T1, with the metro/premetro/tram as most used transport mode, regardless of purpose). 17.7% travels the longest distance by bike. This is remarkably different than in T1, where it was merely 4.8%. In turn, fewer people come by foot (6% in T2; 11.9% in T1), which both is in line with the findings of 2017. The difference between T1 and T2 can be caused by the fact that among employees, their public transport subscriptions are paid by the employer. The mandatory teleworking might have caused employers to no longer renew this subscription forcing employees to look for other commuting modes.

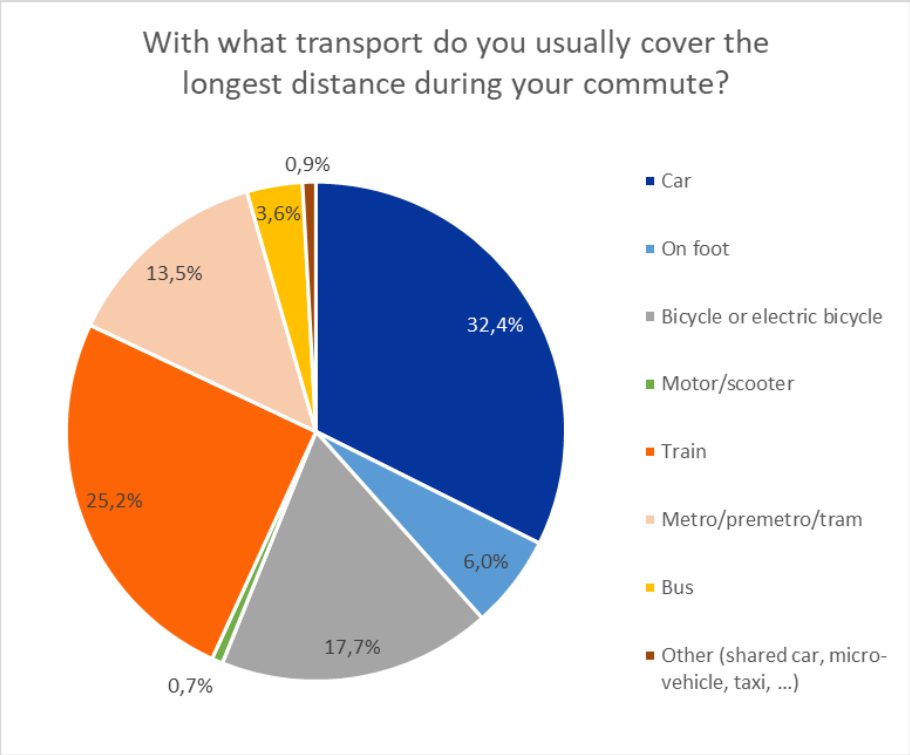

Figure 30: Main mode of transport used to visit central Brussels (T2, n=699)

Similar to 2017, the chosen main transport mode correlates with the place of residence (Table 18). Residents of the city centre mostly walk (42%); other BCR residents mostly take public transport (35%) or cycle (32%); residents of the periphery predominantly use their cars (49%), while commuters from further away living outside the BMA mostly use the train (54%) followed by the car (35%). Compared to 2017, cycling gained popularity in almost all regions but it is most popular in the BCR region, where 32% uses it as their main transport mode. The car especially became more popular in regions located further

away from the city centre, which are also the regions where the train and other public transport became less popular.

Table 18: Main transport mode (longest distance travelled) by place of residence in 2021 (n=699) vs. 2017 (n=2406)

	ZONE 1 City centre		ZONE 2 Rest of BCR		ZONE 3 Brussels Periphery		ZONE 4 Rest of BE	
	2017	2021	2017	2021	2017	2021	2017	2021
Car	18%	19%	18%	27%	37%	49%	25%	35%
By foot	36%	42%	4%	4%	0%	0%	0%	1%
Bicycle or shared bicycle	16%	15%	18%	32%	7%	15%	2%	5%
Motor/scooter	3%	3%	2%	1%	4%	1%	2%	0%
Train	4%	4%	2%	1%	27%	17%	67%	54%
Other public transport (Metro/Tram/Bus)	23%	14%	55%	35%	22%	17%	4%	3%
Other (shared car, micro-vehicle, Taxi,...)	1%	3%	0%	1%	0%	1%	0%	1%

When asked to mention all modes the respondents use on their way to work, we see that almost all modes have lost share except for the bicycle, which has gone up from 23.5% to 35.9% (Figure 31). This effect might be caused by the Covid-19 pandemic: since many respondents work from home full-time of part-time, they might also use less (different) transport modes when they do go to work. Of the individuals who listed that they undertake a part of their journey by bike, 8% uses a shared bicycle scheme. This share is similar to 2017. Almost half of the respondents used the car for some part of the journey compared to 32.4% using it as a main mode. Those who mentioned car as one of their modes of transport were asked whether they came as a passenger or as the driver. 4.3% came as a passenger and 95.7% came as a driver, which is again similar to 2017 (8% came as passenger and 92% came as a driver).

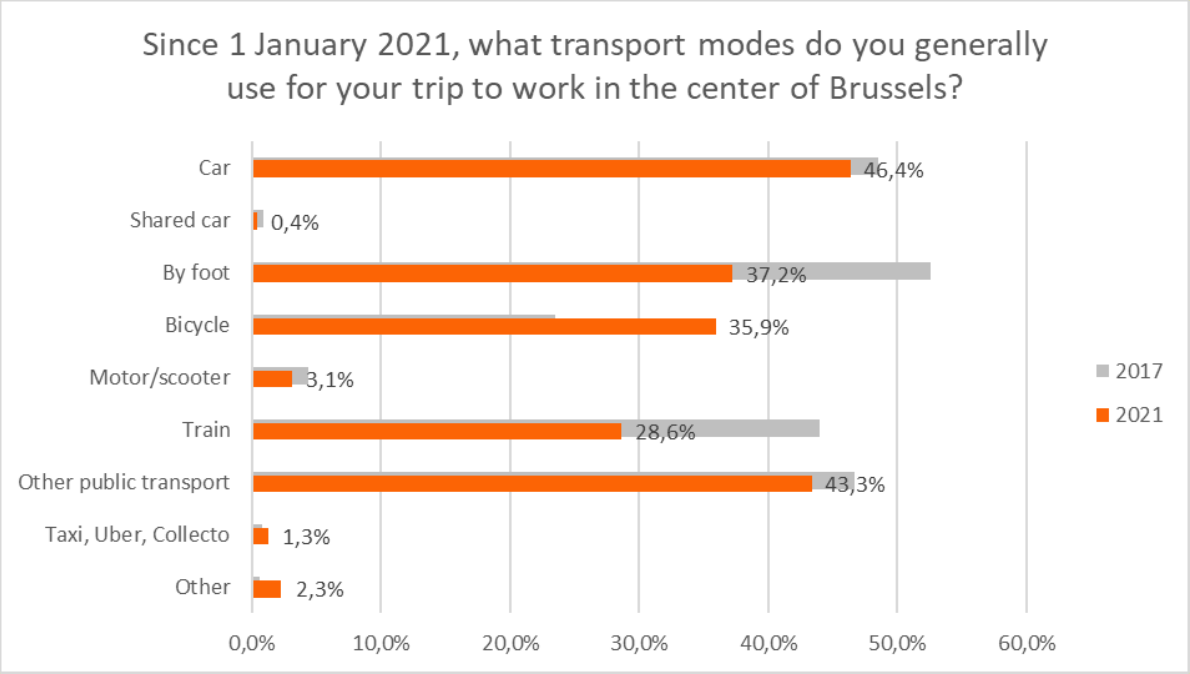

Figure 31: Modes used on the way to work in 2021 (n=699) compared to 2014 (n=2406). Multiple responses are possible.

4.4.1.1. Travel by public transport

We have asked the public transport users how long they need to walk to reach their workplace from their final stop (Table 19). The distribution is similar to 2017, where slightly more than half of the public transport users need to walk more than 5 minutes to reach their workplace, and the majority (48.1%) needs to walk between 6 and 14 minutes. For those arriving by train, two thirds (65.3%) needed more than 5 minutes whereas for those travelling the longest distance by other public transport, about two thirds (68.4%) needed less than 5 minutes.

Table 19: Time needed to walk from final stop/station to work in central Brussels

	2017 (n=1714)	2021 (n=352)
5 minutes or less	44,0%	41.0%
6 to 14 minutes	48,2%	48.1%
15 to 30 minutes	5,3%	7.2%
More than 30 minutes	0,5%	0.7%
Variable	0,7%	0.4%
I do not walk	1,3%	0.7%

4.4.2. Duration of travel

When examining the duration of travel, similarly to 2017, the minority of the respondents (7% vs. 5% in 2017) have the habit to stop somewhere else on the way to work, e.g., to drop off children (Table 20). The majority still travels to work directly from home.

Table 20: **Do you travel to your work directly from home? (n=699)**

	2021
Yes, always	66.0%
Yes, mostly	26.8%
Mostly not	6.1%
Never	1.1%

Additionally, respondents self-reported the time that they generally need without intermediate stops to travel from home to their work in central Brussels. Figure 32 shows the overall self-reported travel time across all modes of transport. The mean of 41 minutes (median: 35 minutes; std. deviation: 26 minutes) is 10 minutes shorter than in 2017, but their time still varies considerably depending on the main transport mode (Table 21).

Table 21: Time to travel from home to work by main mode of transport in minutes, 2021 vs. (2017)

	Mean	N	Std. Dev.	Median
Car	44.96 (53.17)	225 (542)	23.15 (28.05)	40 (45)
By foot	11.35 (18.04)	42 (100)	7.42 (15.57)	10 (12)
Bicycle	23.50 (24.90)	121 (189)	13.24 (18.09)	20 (20)
Motor/scooter	24.62 (33.77)	5 (51)	18.86 (21.78)	20 (30)
Train	67.50 (70.20)	175 (899)	20.43 (27.14)	60 (60)
Other public transport	27.09 (32.98)	121 (492)	11.34 (13.61)	25 (30)
Total	41.40 (51.15)	699 (2281)	25.80 (29.90)	35 (45)

Similar to 2017, pedestrians need on average the shortest time (11 minutes) to reach their work. The longest time is needed by those arriving by train, with an average of 68 minutes from door to door. The average travel time has decreased across all modes of transport compared to 2017. A shorter commute time by car can be attributed to Covid-19, where congestion levels decreased (at certain points in time) because of the larger share of teleworkers. But a shorter commute time by other transport modes might also be caused by the pandemic. Because employees who are typically living further away from their workplace, may now have gotten more flexibility in the place they work from and they might have opted to work from home more often than in 2017. Logically, the average travel time of the BMA population to the city centre (T1) is shorter (29.55 minutes), since it is a sample that lives closer to the city centre.

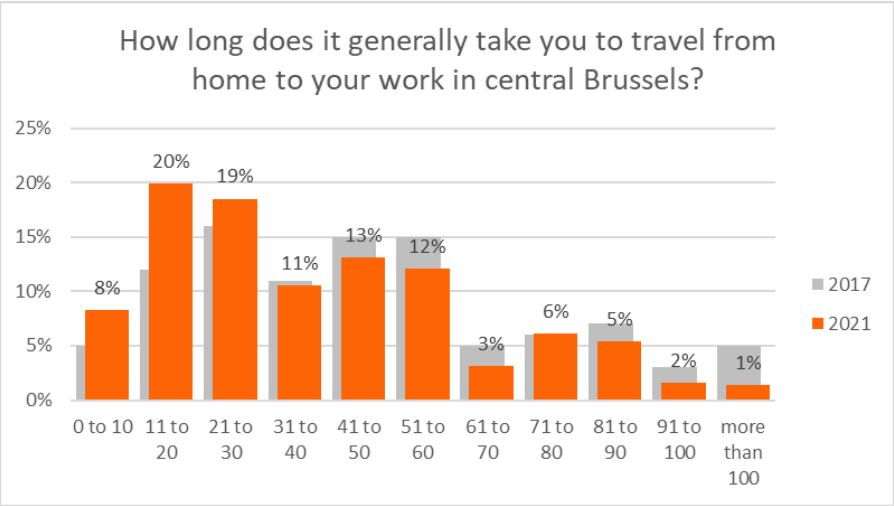

Figure 32: Respondents' estimation of their travel time from home to their work in central Brussels (n=2281)

4.4.2.1. Parking behaviour

Respondents who reported that they use the car as a driver for at least some part of their journey to work were asked where they park their vehicle (Figure 33). Compared to 2017, more respondents indicated that they parked in central Brussels (79% in 2021 vs. 65% in 2017). 20.6% of the car drivers did not park their car in central Brussels, they are likely to use park and ride facilities and use the car for the first leg of their journey to work (figure 34). COVID-19 might play a role in this increase since people are more hesitant to take public transport to get to their destination. Roughly two thirds of car-drivers always parked their car in the centre. This high amount compared to mostly (5.8%) and sometimes (6.7%) characterizes the habitual pattern of going to work every day and is again similar to 2017.

Figure 33: Distribution of the respondents by frequency of parking their car in the centre of Brussels

The parking behaviour of the respondents changed remarkably since 2017 (Figure 34). Most respondents indicate that they park at a parking space belonging to their work (41.8%). In 2017, choosing a publicly accessible parking garage was the most common option (33%), followed by about a quarter (28.1%) having a parking space provided by their employer. Additionally, 20% used to make use of Park and Ride facilities (P+R) or park near a station, while in 2021 this option was not chosen once. This might be explained by employers renting spaces in publicly accessible parking facilities (29.7%) or perhaps more employers have dedicated parking spaces in order to attract employees to the company. 20.9% find a spot along the streets, compared to 14.2% in 2017.

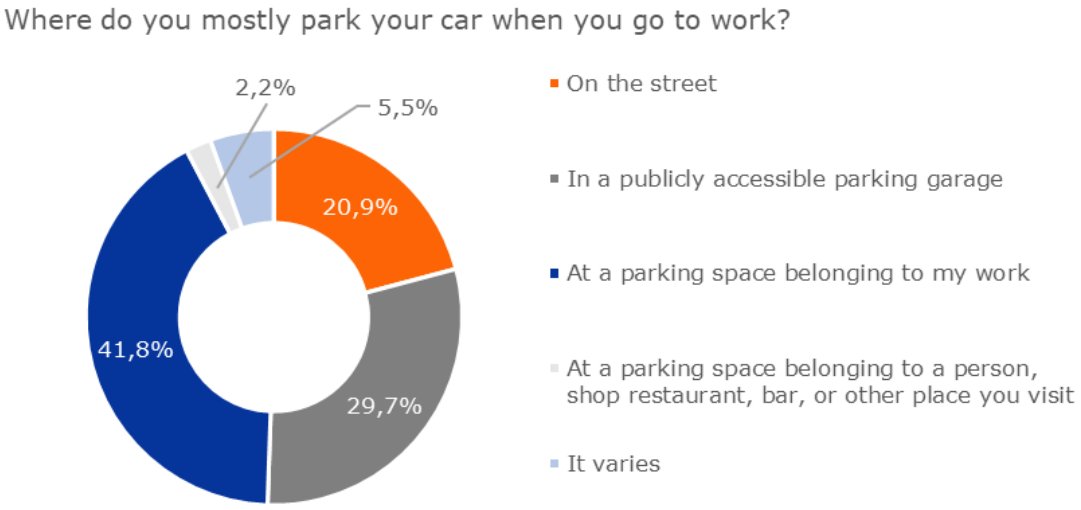

Figure 34: Parking behaviour of respondents who use the car for at least part of their journey to work

Since the majority of the respondents parks in dedicated parking spaces that employers provide for employees, it comes as no surprise that the majority (71.4%) also finds a parking spot within 5 minutes or less. The distribution in Figure 35 shows no remarkable differences with 2017. For comparison, in the T1 sample only 26% of car-drivers found a spot in 5 minutes or less.

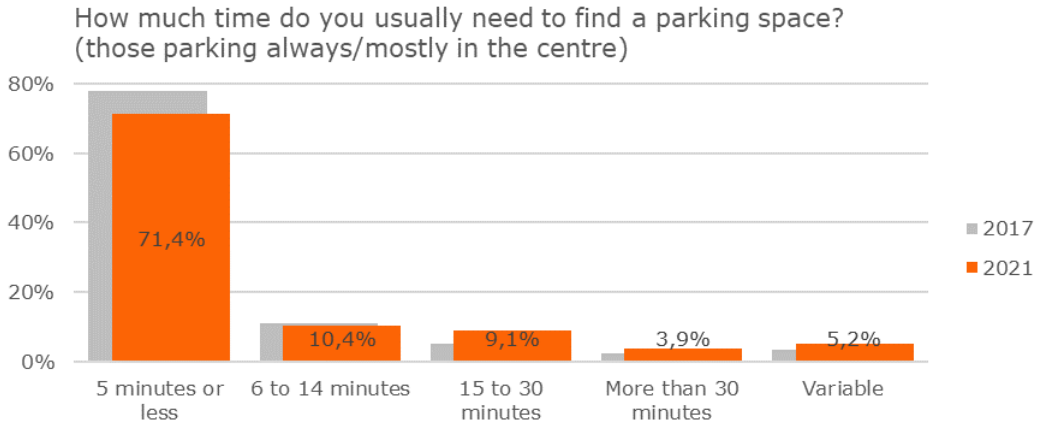

Figure 35: Time needed to find a parking place for those parking in the city centre (weighted n=88)

4.5. Other activities in central Brussels

The majority of the respondents sometimes combines the commute to/from work with some other activities in central Brussels, even more so than in 2017. In 2021, 28.6% of the survey participants indicated that they did not combine any other activity with their work in the city centre, compared to 40% in 2017. The Covid-19 pandemic and the larger proportion of teleworking may again play a role in this decrease. Employees come less to the office in general (at some points in time, it was mandatory to work from home at least a couple of days per week). Therefore, when they do commute to Brussels, the proportion of trips that are combined with other activities would be larger. 34% of the respondents combines commuting with other purposes at least once a week, 29% 1 to 3 times a month and less than 10% of the sample stated that they do it less frequently (Table 22).

Table 22: Do you combine your travel to/from work with any other activities in central Brussels?

	2017 (n=2406)	2021 (n=699)
No	40,5%	28.6%
Yes, more than 4 times a week	5,3%	6.4%
Yes, 1 to 4 times a week	23,7%	27.2%
Yes, 1 to 3 times a month	21,2%	29.3%
Yes, less than once a month but at least once a year	8,5%	7.9%
Yes, less than once a year	0,1%	0.1%
Yes, but don't know	0,7%	0.5%

Respondents who combine commuting with other purposes were asked about the usual activities they combine their trip to work with (Figure 36). There are no remarkable differences with 2017 in the activities they listed, however leisure shopping is no longer the most listed reason anymore, only 61.4% listed this vs. 72.7% in 2017. Compared to 2017, there seems to be a slight increase in the purposes related to more necessary trips such as shopping for groceries, going to school and work-related purposes, and a slight decrease in less necessary purposes such as leisure shopping and social or cultural activities.

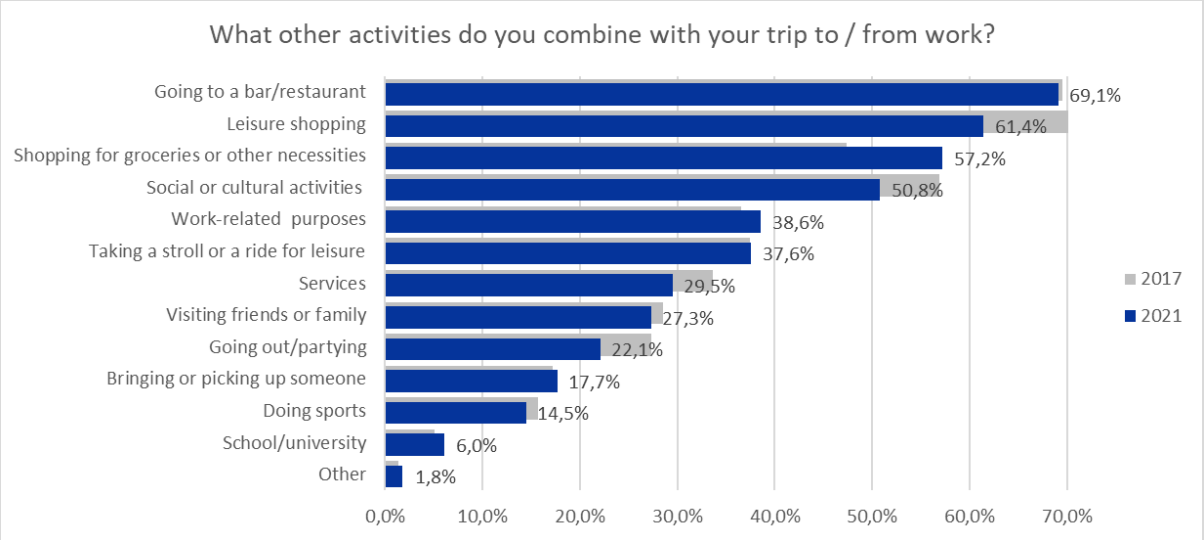

Figure 36: Activities in Brussels other than work, 2017 vs. 2021 (multiple answers possible)

5. Target group T3 - Visitors of Boulevard Anspach

As in 2017, visitors of Boulevard Anspach were contacted through face-to-face interviews conducted on-site. The responses provide an insight into the behaviour and perception of the actual users of the pedestrian area. Section 5.1 presents the survey methodology. In Section 5.2, we explore the socio-demographic characteristics of the visitors of Boulevard Anspach. In section 5.3, we discuss the access of the respondents to different means of transport, in section 5.4, the characteristics of their visits to the city centre, and in section 5.5, their travel behaviour in the same regard.

5.1. Survey Methodology

5.1.1. Target population

The survey of visitors to the city centre uses a convenience sample, since the characteristics of the actual population of visitors of the pedestrian zone was unknown prior to the launch of the survey, and recruitment by the residential or workplace address of the above group was not possible.

5.1.2. Survey characteristics

The interviews were conducted out by the subcontractor, KANTAR, between 16/09/2021 and 17/10/2021. The interviewers registered the answers on electronic devices. Respondents aged 18 or over were selected randomly by the interviewers based on their presence in public areas between 8h and 22h, both during the week and during the weekend at 5 locations in the pedestrian zone (Place de Brouckère, Boulevard Anspach, Place de la Bourse, Place Fontainas, Rue Auguste Orts) (see Figure 37).

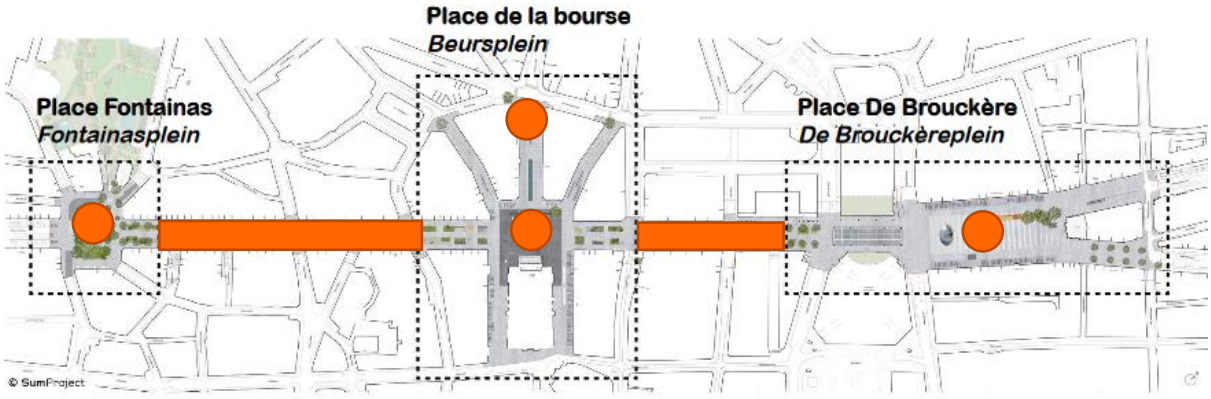

Figure 37: Survey locations for the face-to-face interviews indicated in orange. (Base map: SUMProject & B-Group Greisch, 2014)

Sub-targets were defined to approximate an even distribution across the locations, the days of the week and time of the day (see Table 23 for the final distribution). The actual survey was kept as similar as possible to the 2017 version, though minor updates were made so as to accommodate for the latest developments.

Table 23: Frequencies of sub targets for T3

	Frequency	Percent
Day of interview		
Sunday	186	12.7%
Monday	161	11.0%
Tuesday	158	10.8%
Wednesday	199	13.5%
Thursday	227	15.5%
Friday	271	18.4%
Saturday	267	18.2%
Total	1469	100.0%
Location		
Place de Brouckère	295	20.1%
Blvd Anspach	262	17.8%
Place de la Bourse	313	21.3%
Place Fontainas	290	19.7%
Rue Auguste Orts	309	21.0%
Total	1469	100.0%

5.1.3. Data cleaning

The first data cleaning has been carried out by the subcontractor KANTAR. The following checks have been performed:

- The interviewers were controlled on the ground through unannounced visits by the field supervisor to check how fieldwork was executed.
- On the full dataset, the day, time and length of the interviews was scrutinized.
- The data was checked in terms of content, especially in case of non-response.

As the composition of the sample population (i.e., all visitors to central Brussels) was unknown, the data has not been weighted.

5.1.4. Representativeness of the sample

As the composition of the population people visiting the pedestrian area is unknown, representativeness cannot be verified. Nevertheless, efforts have been made to draw a random sample from the visitors of the pedestrian area so as to provide a good understanding of the socio-demographic profile.

It must be kept in mind that face-to-face interviews are subject to sampling bias. Interviewers may ignore the sampling instructions due to difficulties such as perceived threat from passers-by or animals, bad weather, feeling uncomfortable asking specific types of people. In addition, the possibility exist that interviewers falsify interviews for people that are difficult to reach. In order to reduce such biases, interviewers were trained and were controlled during their work. Yet, sampling bias does not only depend on the interviewers: people's refusals to participate, hour of the day where interviews were conducted, weather conditions or events taking place in the streets might affect the composition of the sample.

5.2. Socio-demographic characteristics of respondents

The socio-demographic composition of the population of visitors of Boulevard Anspach, as well as their composition in terms of user-types (tourists, shoppers, etc.) was unknown. Therefore, the information below provides a picture of the composition of visitors interviewed on Boulevard Anspach. In order to provide an indication of the evolution of the visitor profile between we also show the 2017 numbers for the sake of comparison. It must be kept in mind, however, that an intercept sample is never truly random.

5.2.1. Language

The majority of the respondents (88.5%) answered the questions in French, while 4.4% did so in Dutch and 7.1% in English (Table 24). The proportion of Dutch has slightly increased at the expense of English.

Table 24: Distribution of the respondents by the language selected for the interview

	2017	2021
Language		
Dutch	4.0%	4.4%
French	88.3%	88.5%
English	7.8%	7.1%

5.2.2. Gender

Among the individuals encountered and interviewed on Boulevard Anspach, a slightly higher proportion was male (51.9%) (Table 25). A remarkable difference is that the 2021 sample is much more balanced in terms of gender than the one of 2017.

Table 25: Proportions of socio-demographic indicators in the T3 sample

	2017	2021
Gender		
Male	59.0%	51.9%
Female	41.0%	48.1%
Age		
18-24	22.8%	32.4%
25-34	26.4%	23.5%
35-44	17.2%	15.8%
45-54	14.9%	12.0%
55-64	9.5%	8.8%
65+	9.2%	7.5%
Place of Residence		
Zone 1: Brussels 1000	25.7%	17.7%
Zone 2: Rest of BCR (without Brussels 1000)	36.9%	56.7%
Zone 3: Brussels Periphery	4.2%	5.8%
Zone 4: Rest Belgium	10.7%	9.1%
Zone 5: Outside Belgium	22.0%	10.8%
Missing	0.3%	0%
Education		
Primary education or without diploma	7.6%	6.3%
Secondary education	42.3%	61.8%
Higher education	50.0%	31.9%

5.2.3. Age

In the 2021 face-to-face sample, the visitor has an average age of 36.4 years old (Table 26: Mean age by place of residence in T3. Residents of central Brussels (postal code 1000)

are older than the average visitor with a mean age of 42.1 years. This actually reflects the actual mean age of city centre residents (Brussels 1000). In contrast, visitors from the rest of Brussels and Belgium are younger. Of all groups, international visitors are youngest with a mean age of 33.8 years. We can notice compared to the 2017, the mean age has slightly decreased for all zones of residence.

Table 26: Mean age by place of residence in T3 (in years old)

	2017	2021
Zone of residence		
Zone 1: Brussels 1000	42.0	42.1
Zone 2: Rest of BCR	39.7	35.1
Zone 3: Brussels periphery	38.2	36.5
Zone 4: Rest Belgium	39.2	36.6
Zone 5: Outside Belgium	33.4	33.8
Overall	38.7	36.4

5.2.4. Place of residence

As can be seen in Table 25: Proportions of socio-demographic indicators in the T3 sample, in total 74.4% of the visitors live within the Brussels Capital Region, and 17.7% live within central Brussels (postal code 1000). Only 5.8% of the visitors live in the Brussels Periphery, while 9.1% live in the rest of the country. 10.8% of visitors come from abroad, which is remarkably lower than in the 2017 survey, when 22% lived abroad. A lower number of tourists due to the Covid-19 pandemic could be an explanatory factor here.

5.2.5. Education

Visitors are highly diverse in terms of education (Table 27). The sample reflects the contrast that prevails between the centre of Brussels as well as the BCR and the rest of Belgium in terms of the proportion of people with higher education diplomas. Most striking is that the Brussels Periphery has by the far proportion of people who completed higher education. In terms of evolution, we notice a remarkable increase of the share of visitors who only had secondary education at the expense of people with higher education.

Table 27: The distribution of the sample by education

	Primary education or without diploma		Secondary education		Higher education	
Zone	2017	2021	2017	2021	2017	2021
Zone 1: Brussels 1000 (n=256)	10%	10%	41%	59%	49%	31%
Zone 2: BCR (n=829)	9%	7%	42%	67%	49%	26%
Zone3: Brussels Periphery (n=84)	8%	1%	27%	42%	65%	57%
Zone 4: Rest Belgium (n=130	0%	2%	38%	49%	62%	49%
Zone 5: Outside Belgium (n=158)	6%	5%	49%	63%	45%	32%
Total (n=1457)	8%	6%	42%	62%	50%	32%

5.2.6. Employment status

By far the highest number in our sample of visitors are employed 51.9%, followed by students (19.7%) and unemployed 13.8%. The proportion of people that are retired (9.2% or doing the housekeeping (2.6%) is significantly lower. Compared to 2017, the share of students and unemployed has increased, mostly at the expense of people who are employed or doing the housekeeping (Table 28: Employment status .

Table 28: Employment status

	2017	2021
Employment status		
Employed	58.5%	51.9%
Retired	10.5%	9.2%
Unemployed	6.0%	13.8%
Student	14.1%	19.7%
Doing the housekeeping	6.8%	2.6%
Other (inactive)	4.0%	2.8%

5.2.7. Restricted mobility

The sample of T3 is by far the population with the lowest proportion of people with restricted mobility, which could be explained by the fact that people were intercepted while being mobile on the street. Only 23 of the respondents (1.6%) declared that they have difficulties to use certain modes of transport, most of them having difficulty walking (Table 29). The numbers of are too low for making any significant conclusions on evolution between 2017 and 2021.

Table 29: Do you have difficulties to use certain modes of transport for physical reasons?

	2017	2021
Restricted mobility		
No restricted mobility	98.4%	98,4%
Yes	1.6%	1.6%
I have difficulty walking	*1.3%*	*1.0%*
I use a wheelchair	*0.2%*	*0.3%*
I am visually impaired	*0.0%*	*0.1%*
I am pregnant	*0.0%*	*0.1%*
I have a stroller	*0.1%*	*0.1%*
Other	*0.1%*	*0.3%*

5.3. Access to different means of transport

Respondents were asked about the modes of transport they have access to including vehicle ownership and possession of public transport passes (Figure 38). Most remarkable here is the low number of people with access to a car (only 16.8% have their own car) or bicycle (only 16.8% have their own non-electric bicycle). Both these numbers have decreased significantly since 2017. In contrast, more than half of the respondents have a STIB/MIVB subscription (66.0%) and this share has risen (from 57.2% in 2017).

Considering zone of residence, there are clear differences: residents of the Brussels Capital Region (Zones 1 and 2) have a very high share of individuals with STIB/MIVB subscriptions (75.8% and 79.1% respectively) and a very low rate of car-ownership (8.1% and 12.6% respectively). Belgian residents outside the Brussels Capital Region have higher rates of both car ownership and bike ownership (Table 30: Access to means of transport by place of residence).

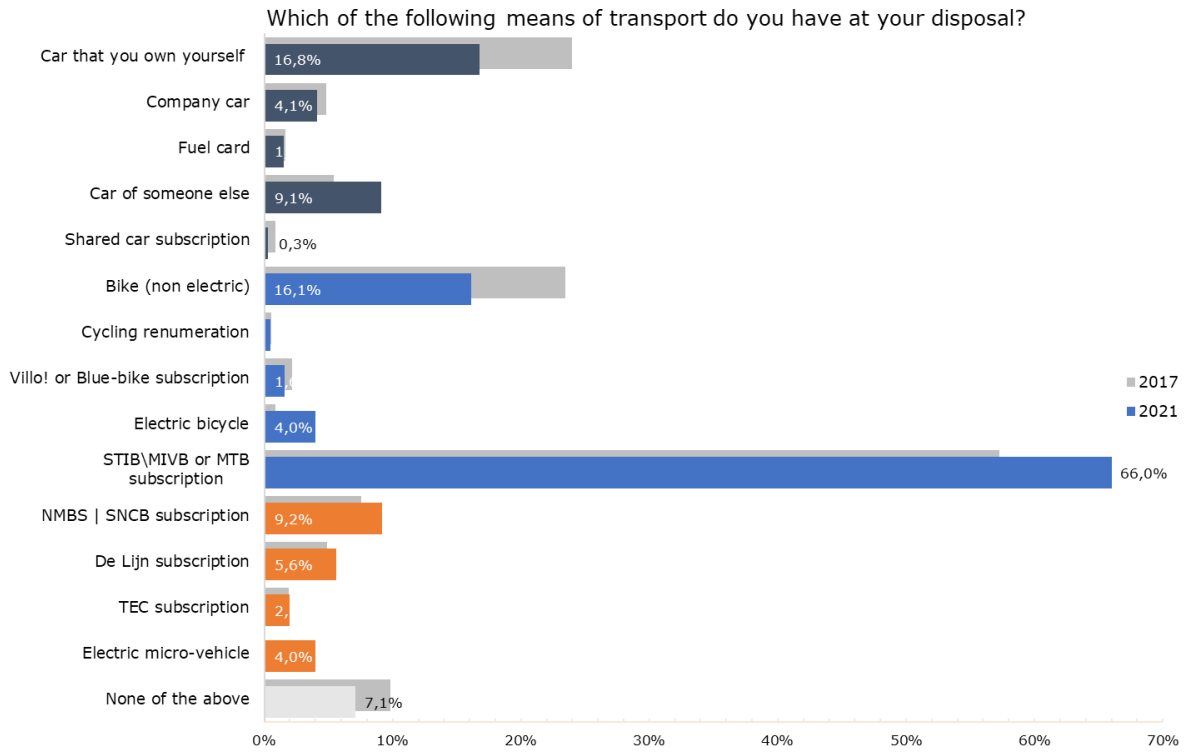

Figure 38: Share of respondents who have access to various means of transport (n=1469)

Table 30: Access to means of transport by place of residence

Means of Transport	ZONE 1: City Centre	ZONE 2: Rest of Brussels within BCR	ZONE 3: Brussels periphery	ZONE 4: Rest of Belgium (outside BCR)	ZONE 5: outside Belgium	All visitors
Car that you own yourself / private leasing car	8.1%	12.6%	24.7%	27.8%	39.9%	16.8%
Car that you can use belonging to someone else in your household	1.9%	10.2%	14.1%	9.8%	12.0%	9.1%
Company car	2.3%	1.4%	7.1%	9.8%	14.6%	4.1%
Fuel card	0.8%	0.4%	7.1%	6.0%	1.9%	1.5%
Bike (non-electric)	18.8%	15.0%	16.5%	23.3%	10.8%	16.1%
Electric bicycle	5.0%	3.5%	8.2%	6.0%	1.3%	4.0%
Electric scooter or monowheel	5.4%	4.0%	4.7%	3.8%	1.9%	4.0%
Cycling allowance	0.4%	0.6%	0.0%	0.8%	0.0%	0.5%
Villo! or Blue-bike subscription	3.8%	1.3%	0.0%	0.8%	0.6%	1.6%
NMBS/SNCB subscription	5.4%	3.6%	32.9%	45.1%	1.9%	9.2%
STIB/MIVB or MTB subscription	75.8%	79.1%	64.7%	36.1%	7.0%	66.0%
De Lijn subscription	3.1%	4.1%	25.9%	12.8%	0.6%	5.6%
TEC subscription	2.3%	1.2%	7.1%	6.0%	0.0%	2.0%
Shared car subscription	0.4%	0.2%	1.2%	0.0%	0.0%	0.3%
None of the above	8.8%	4.9%	1.2%	4.5%	20.9%	7.1%

5.4. Characteristics of the visits to the city centre

5.4.1. Purpose(s) of the visit

Respondents were asked about the purpose(s) of their current visit to central Brussels. Since the respondents answered this question while walking or staying on and around Boulevard Anspach, we consider this data as the closest approximation of the purpose of visiting the immediate vicinity of Boulevard Anspach keeping also in mind that some respondents may have just passed through Boulevard Anspach while their activities took place somewhere else in the city centre.

The majority of the respondents came to central Brussels for leisure related purposes, i.e., to take a stroll or do leisure shopping. This is followed by visiting family and friends and going to work (Figure 39).

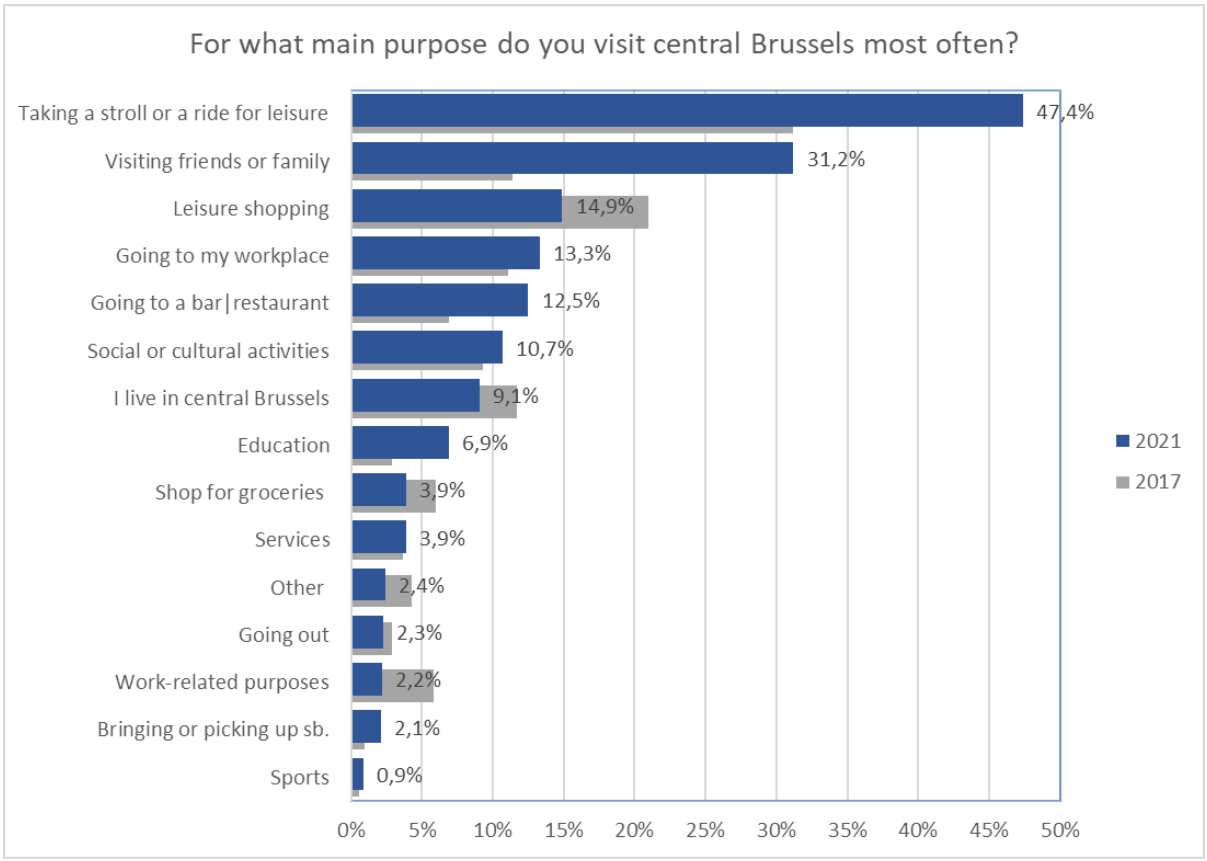

Figure 39: Distribution of respondents by purpose of the current visit (T3) (multiple answers possible) (n=1469)

When comparing the figures from 2021 and 2017, the most remarkable differences are a strong increase in the share of people taking a stroll or ride for leisure, which could possibly be linked to the quality upgrade of the public space in the area, as well as an increase in the share of people visiting friends or family. We also notice a strong decline in the share of people shopping and coming for work-related purposes. It must be but kept in mind that these are relative numbers, i.e., a decline in the share of people shopping does not mean that are fewer people shopping in absolute numbers, as the total amount of visitors might have increased.

Considering the distribution of the respondents by place of residence it shows that the two most important purposes overall, taking a stroll or a ride for leisure and visiting friends or family, are important across all geographical zones. We also notice that the importance of shopping, going to work or work-related purposes increase by distance.

Table 31: Purpose of current visit by respondent's place of residence

Purpose of Visit	ZONE 1: City Centre - 1000	ZONE 2: Rest of Brussels within BCR	Zone 3 and Zone 4: Rest of Belgium	ZONE 5: outside Belgium
I live in central Brussels	45.4%	0.7%	3.5%	2.3%
Bringing or picking up someone	1.9%	2.4%	1.2%	1.5%
Going to my workplace	8.5%	16.1%	21.2%	13.5%
Work-related purposes	0.4%	1.6%	8.2%	3.0%
School/university	3.5%	6.1%	22.4%	15.8%
Leisure shopping	7.7%	15.0%	17.6%	22.6%
Shopping for groceries or other necessities	11.5%	2.6%	1.2%	0.8%
Going to a bar/restaurant	11.5%	12.6%	16.5%	13.5%
Services	3.8%	4.3%	5.9%	3.0%
Visiting friends or family	20.4%	34.5%	24.7%	29.3%
Taking a stroll or a ride for leisure	36.2%	51.7%	22.4%	36.8%
Social or cultural activities	5.0%	10.4%	8.2%	13.5%
Going out/partying	0.8%	1.8%	2.4%	5.3%
Doing sports	1.5%	0.8%	1.2%	0.8%
Other (specify):	1.9%	1.7%	2.4%	3.8%

5.4.2. Frequency of visits

Table 32 shows how often the visitors of the pedestrian area typically come (people living in central Brussels are excluded). We notice that in the 2021 sample the largest proportion of visitors comes 1 to 4 times a week, followed by 1 to 3 times a month. This is a remarkable difference with 2017, when the highest share of visitors came more than 4 times week. It must be kept in mind that this does not imply that the pedestrian area is less frequently visited, but it does show that among those who come, visits are less recurrent. As could be expected in the light of the Covid-related decrease in tourism, the percentage first-timers has decreased strongly since 2017.

Table 32: Frequency of visits (T3) (excludes those who gave as reason of visit "I live in central Brussels", therefore n=1287(2017) and n=1209 (2021))

Frequency of visits	2017	2021
More than 4 times a week	39.1%	22.6%
1 to 4 times a week	21.6%	31.8%
1 to 3 times a month	13.4%	29.8%
Less than once a month but at least once a year	7.2%	7.4%
Less than once a year	5.0%	2.5%
This is my first time	13.8%	4.8%
Don't know	0.1%	1.2%

5.4.3. Duration of visit

As can be seen in Table 33: How long will you stay in central Brussels during this visit? the large majority of visitors spend 1 to 5 hours in the centre with 2-5 hours being the most frequent (31.1%), closely followed by 1-2 hours (29.9%). Compared to 2017, the strongest differences are the lower share of visitors who either spend under 1 hour in the centre or more than 24 hours, and the higher share of visitors for whom this question is not applicable as they live in the centre.

Table 33: How long will you stay in central Brussels during this visit?

Frequency of visits	2017	2021
Less than 30 minutes	5.8%	1.4%
30 minutes to 1 hour	6.7%	2.8%
1 to 2 hours	18.3%	29.9%
2 to 5 hours	30.1%	31.1%
5 to 10 hours	16.3%	12.4%
10 to 24 hours	3.8%	1.6%
More than 24 hours	7.4%	2.1%
Missing ("I live in central Brussels")	11.7%	18.0%

5.5. Travel behaviour to central Brussels

5.5.1. Transport modes used to visit central Brussels

All respondents were asked to list all the transport modes they used to come to Boulevard Anspach for their current visit. As can be seen in Figure 40, more than half of the visitors travelled by rail-bound local transport (metro, premetro or tram, 53%), followed by walking (27%) car (12%) and other forms of public transport (train 8.2%, bus 8.0%) and bike (5.8%). Compared to the 2017 survey, the most striking difference is that the share of people taking the metro/premetro/tram has strongly increased, at the expense of the share of people walking. The share of bus travellers has also increased, while the proportion of cyclists has gone up relatively strongly from 3.8% to 5.8%.

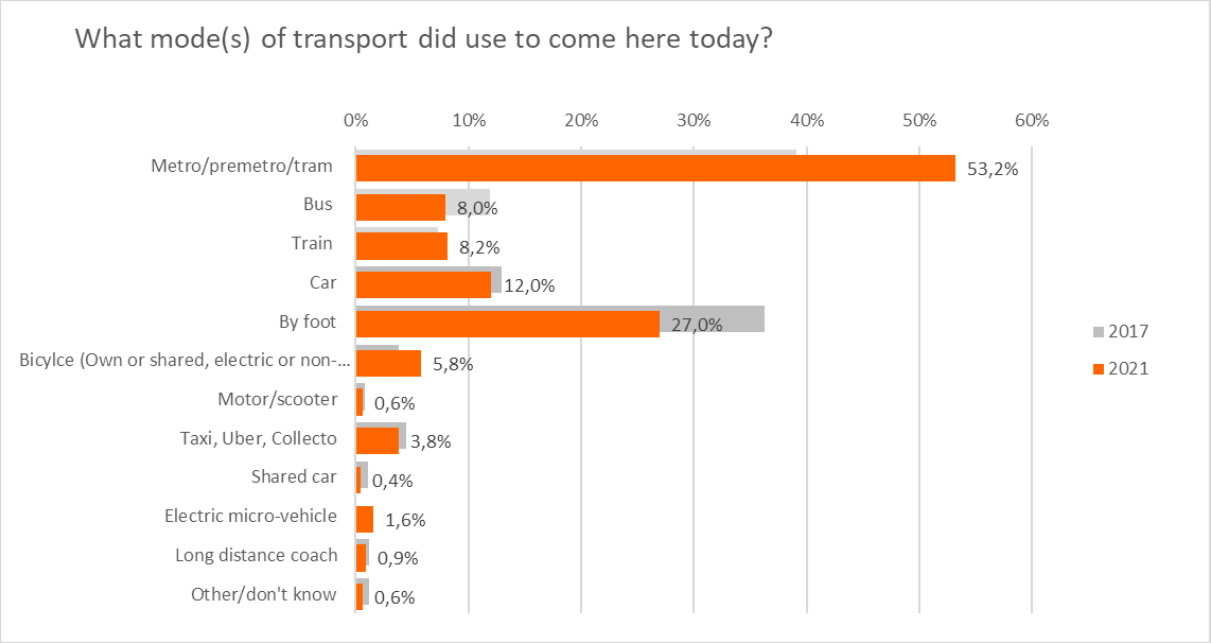

Figure 40: What mode(s) of transport did you use to come here today? (n=1469; multiple answers possible)

All regular visitors (i.e., those who did not answer "this is my first time" or "don't know" when ask about their frequency of visit, see Table 32) were asked whether these were their typical mode(s) of transport or whether they usually use other modes. The large majority, 95.4% of the respondents (excluding those visiting for the first time), answered that they usually use the same transport mode as at the time of the interview to access the city centre (Table 34).

Table 34: Usual mode of transport to access Boulevard Anspach

Is this your usual mode of transport to this place for a visit like this?		
Yes	1219	95.4%
No	59	4.6%
Missing ("This is my first time")	191	

The travel mode choice of first-time visitors (mostly tourists) is considerably different from the rest of the sample. Most striking is the high share of taxi travels. Compared to 2017, the share of taxi and public transport has increased among first-timers, at the expense of the travel by car and foot (Table 35).

Table 35: Transport mode choice of first timers vs. non-first timers visiting the city centre

First-time visits	2017 (n=177)		2021 (n=58)	
	Frequency	Percentage	Frequency	Percentage
Car (private or shared)	37	20.9%	9	15.5%
By foot	67	37.9%	16	27.6%
Bicycle	1	0.6%	1	1.7%
Public transport	19	10.7%	16	27.6%
Taxi	50	28.3%	21	36.2%
Long distance coach	8	4.5%	1	1.7%
Other	2	1.1%	2	3.4%

In the survey, various follow-up questions were asked about the respondents' specific mode of transport. In the following, we continue the analysis of the responses relating to the current trip to the city centre as these visits specifically involve visiting the pedestrianised area. Compared to information about people's typical behaviour, responses regarding a person's current trip are also assumed to be less distorted by memory.

5.5.2. Public transport users

In the survey, public transport users were asked how long they needed to walk from their stop or station to their destination. In terms of time spent walking from their final public transport stop to their destination in central Brussels. As Figure 41: Time needed to walk from the final stop to final destination in central Brussels shows, most people (63.6%) needed less than 5 minutes. In general, the picture shows a striking difference with 2017, when visitors on average needed to walk much longer.

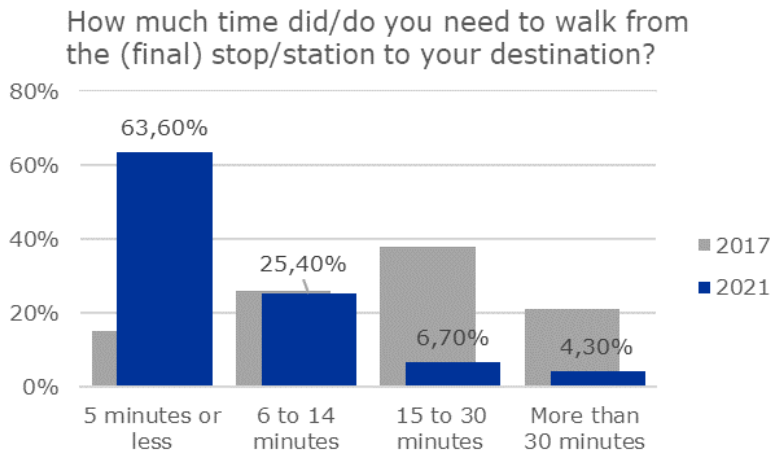

Figure 41: Time needed to walk from the final stop to final destination in central Brussels

5.5.3. Cyclists

Of the 85 respondents who visited central Brussels by bike, 73% used their own, and 27% used a shared bike. The latter represents a strong increase compared with the percentage in 2017 (Table 36).

Table 36: How did you come here?

How did you come here (bicycle)	2017 (n=56)	2021 (n=85)
Own bike (electric or non-electric)	91%	73%
Shared bike (electric or non-electric)	8%	27%

5.5.4. Car drivers or passengers

About 12% (183) of the respondents used the car for their current visit: 60.1% as drivers and 39.9% as passengers (

	2017 (n=189)	2021 (n=183)
As a driver	74.1%	60.1%
As a passenger	27.5%	39.9%

Table 37). Compared to 2017, this means that slightly more people have been driving as a passenger.

	2017 (n=189)	2021 (n=183)
As a driver	74.1%	60.1%
As a passenger	27.5%	39.9%

Table 37: How did you use the car for this visit? (Multiple answers possible, n=189)

5.5.5. Parking behaviour

Among the 110 (weighted) individuals who came by car as a driver, 83.6% (92) parked in central Brussels (Figure 42), whereas 16.4% (18) parked somewhere else. The majority (67.4%) parked in a public car park, while 20.7% parked on the street. Since 2017, this percentage has roughly halved. This is quite similar to T2 (employees) where roughly 80% of the respondents park their car in central Brussels, and none of them using park and ride facilities. When it comes to the difference between T2 and T3 in terms of parking behaviour, these groups behave more alike than in 2017, where there was a remarkable difference.

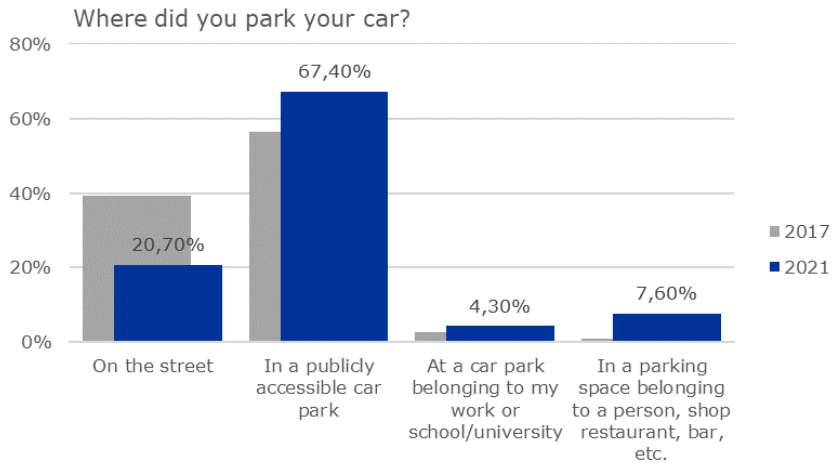

Figure 42: Parking location for the current trip (n=92)

Less than 30% of the respondents who travelled to the centre by car needed more than 5 minutes to find a parking place (Figure 43), which compares to T2. Compared to 2017, the share of drivers finding a parking space within 5 minutes has almost doubled.

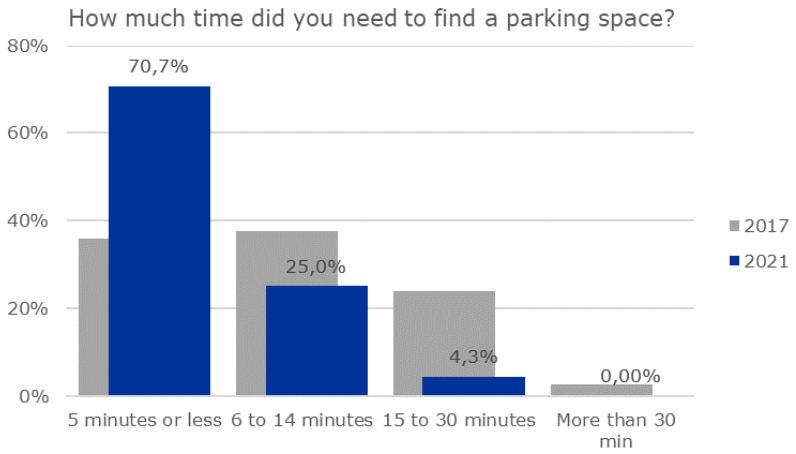

Figure 43: Time needed to find a parking place (n=92)

6. Travel behaviour, perception and appreciation of Boulevard Anspach: comparison of the three samples

Chapters 3, 4 and 5 started with descriptions of the socio-demographic characteristics and the travel behaviour of the different sample populations. They were examined separately, as the three sample populations are quite distinct from each other in these aspects. The following sections will explore the respondents' appreciation of the current and past situation in terms of accessibility and public space. The results from the three samples will be compared side-by-side in order to provide the most comprehensive insight as it will both highlight where all target groups have similar experiences and more clearly underline where perceptions and behaviour differ the most significantly.

The 2017 version of the study contained questions for examining how people changed their behaviour before and after pedestrianisation. These questions needed to be included as a frame of reference, as no measurements had been taken prior to the pedestrianisation in 2015. The current version contains does not include these questions, as the 2017 results will be used as reference. Also, it would not have been feasible to obtain reliable answers from respondents reporting on behavioural change since events dating back to 2015.

Most charts in this chapter indicate the degree to which respondents agree with various statements they were presented. When their answer is 'I don't know', their result is not included in the chart, which is why in most charts the total of the percentages of the bars do not add up to 100%.

6.1. Appreciation of the pedestrian area

Respondents of all target groups were asked questions asked about their perception, preferences, priorities and needs in terms of public-urban space, traffic safety, access to retail, social life and interaction. To ensure the reliability of the answers, these questions were only asked to respondents who had been to Boulevard Anspach since 1 January 2021.

6.1.1. Perception of pedestrianisation

In this section, we explore people's attitudes towards the car-free Boulevard Anspach and their perception of the need for pedestrianisation in general. To this end, respondents were asked whether they were in favour of a car-free Boulevard Anspach (Figure 44) and whether more streets should be dedicated to pedestrians (Figure 45). As a control question, respondents were also asked the contrary, i.e., whether they thought more streets should be made accessible for cars (Figure 46)[17].

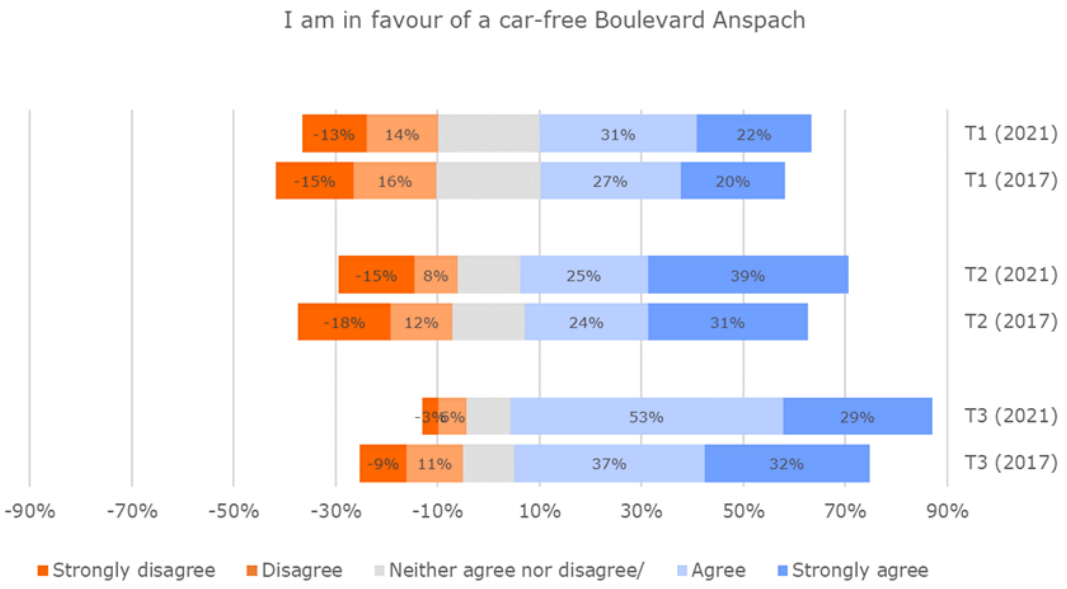

Figure 44: Attitude towards car-free Boulevard Anspach in 2021 and 2017 (2021: n=1007[T1], n=699 [T2], n=1469 [T3])

[17] In all three figures, people responding 'I don't know' or whose answers were missing were excluded from the analysis (T1: n=23, T2: n=94, T3: n=4).

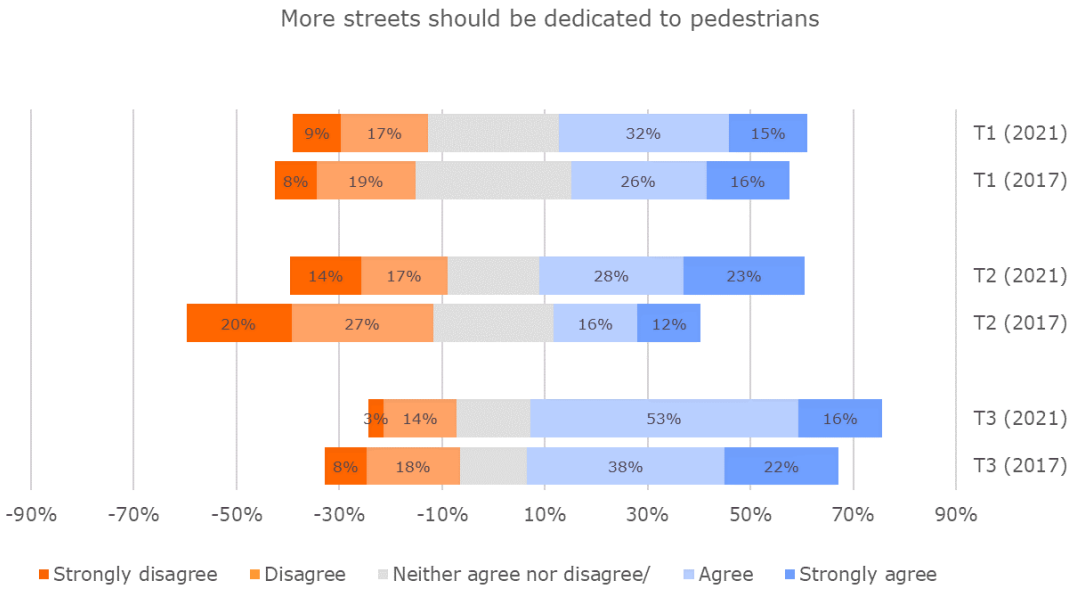

Figure 45: Attitude towards pedestrianisation in general in 2021 and 2017 (2021: n=1007[T1], n=699 [T2], n=1469 [T3])

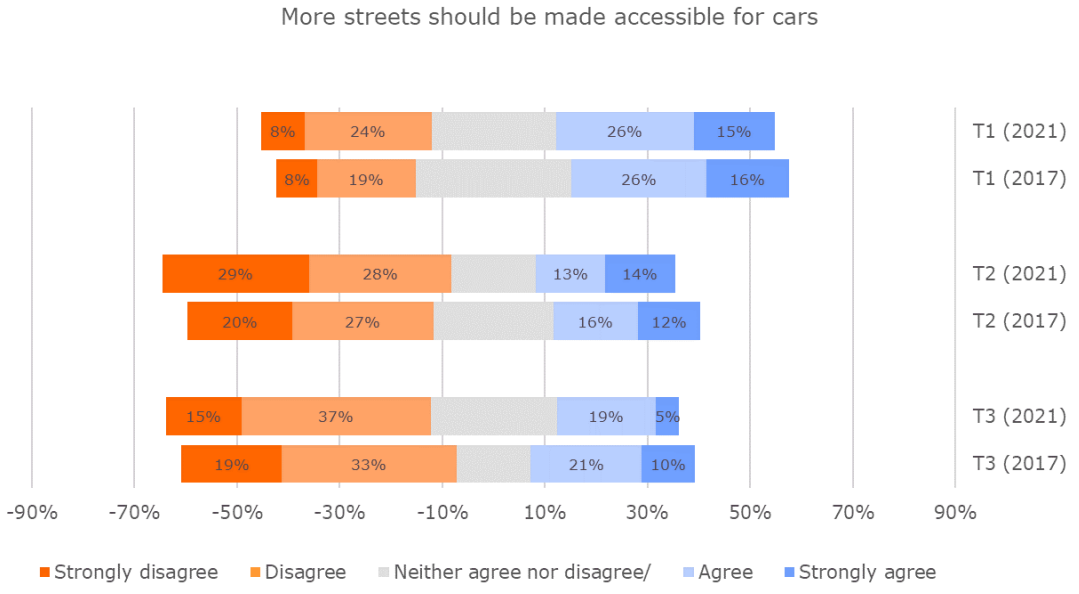

Figure 46: Attitude towards car accessibility in 2021 and 2017 (2021: n=1007[T1], n=699 [T2], n=1469 [T3])

In Figure 44 we observe that in all three target groups, more people are in favour a car-free Boulevard Anspach than against. Interestingly, we see that this is opinion is more prevalent among people who have been interviewed as visitors (T3) and as employees working in the centre (T2). In T1 (residents of the Brussels Metropolitan Area), in total

43% is favour and 27% against, while in T3 (i.e., people interviewed on Boulevard Anspach), in total 62% are in favour and only 9% against.

When comparing the numbers from 2021 with those from 2017, another interesting observation we can make is that in all target groups, support for the car-free Boulevard Anspach has increased. The rise in support has been most strong in T3, followed by T2.

Figure 45 shows the results for a question on the support of pedestrianisation in a more general sense. In general, respondents show a positive attitude towards more pedestrianisation. Here too, T3 has the strongest position in this respect. An interesting observation is that the strongest shift towards a favourable attitude has taken place among T2 (i.e., people who work in in the centre). Among this group, in 2021, 53% are in favour and 31% against, while in 2017 only 18% were in favour and 47% were against.

Figure 46 shows the results of a 'control' question, i.e., the attitude of people towards more streets accessible by cars. Here we notice among the respondents of T1, there are more people in favour of making more streets more accessible for car than against (41% vs. 32%), even though this group also had more supporters of making more streets car-free. T3 and T3 are less contradictory. Interestingly, the strongest opponents of making more streets accessible for cars are the people who work in the centre (T2). As for the other two questions, in all three target groups we notice a shift in the direction of a favourable position towards pedestrianisation.

6.1.2. Exploring support of pedestrianisation by socio-demographic and travel behaviour characteristics

In this section we analyse the support for the pedestrianisation of Brussels' centre among the various subsections of the population in the three sample groups. Before discussing the differences in attitude between these subsections, it is worth noting that no remarkable differences were found between groups subdivided by occupation (retired, unemployed or not), income (only measured for T2) and mobility restrictions.

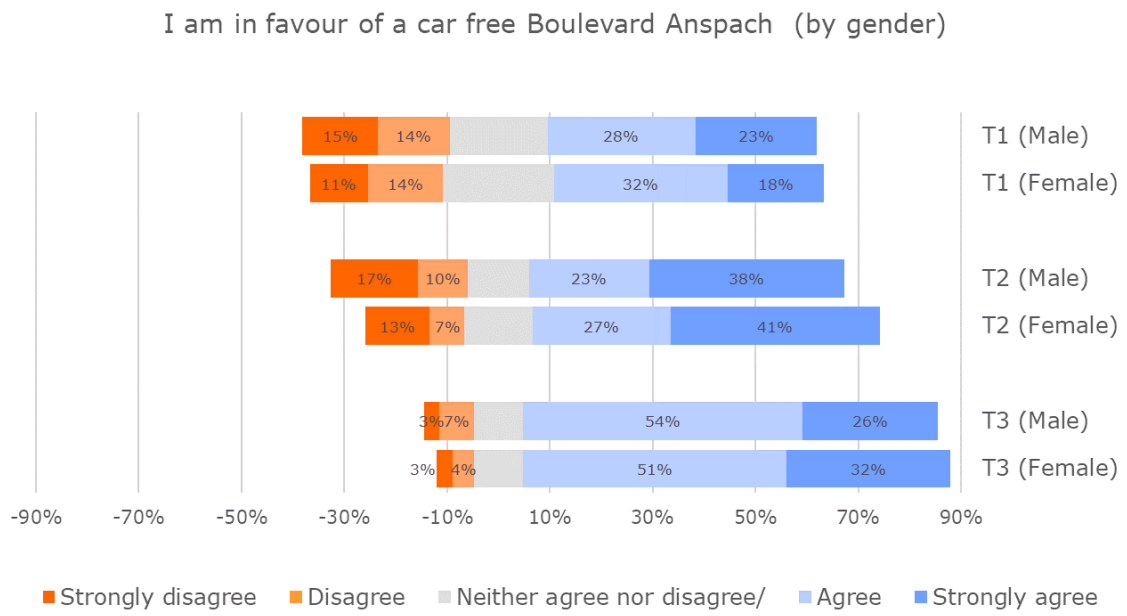

Figure 47: Support for car-free Boulevard Anspach by gender

Figure 47 shows the support for the pedestrianisation of Boulevard Anspach by gender. Here we notice that in all groups women have a slightly more positive attitude than men, although this is most outspoken in T2 (employees).

Figure 48 indicates the degree of support among different age groups. Here we notice interesting differences among different age classes. In T1 we can observe a slight difference between a younger 'cohort', between 18 and 44, who have a slightly more favourable attitude than the older classes. Among the people working in the centre (T2), we notice that the older the respondent, the higher the likelihood of a negative attitude. It must be noted that the youngest age class in T2 (18-24) consist of a very low number of respondents, so the results of this subgroup cannot be considered representative. For T3, we notice that support is fairly equal among the different age groups, though, the oldest generation (over 65) is stronger in their opinion than the younger groups.

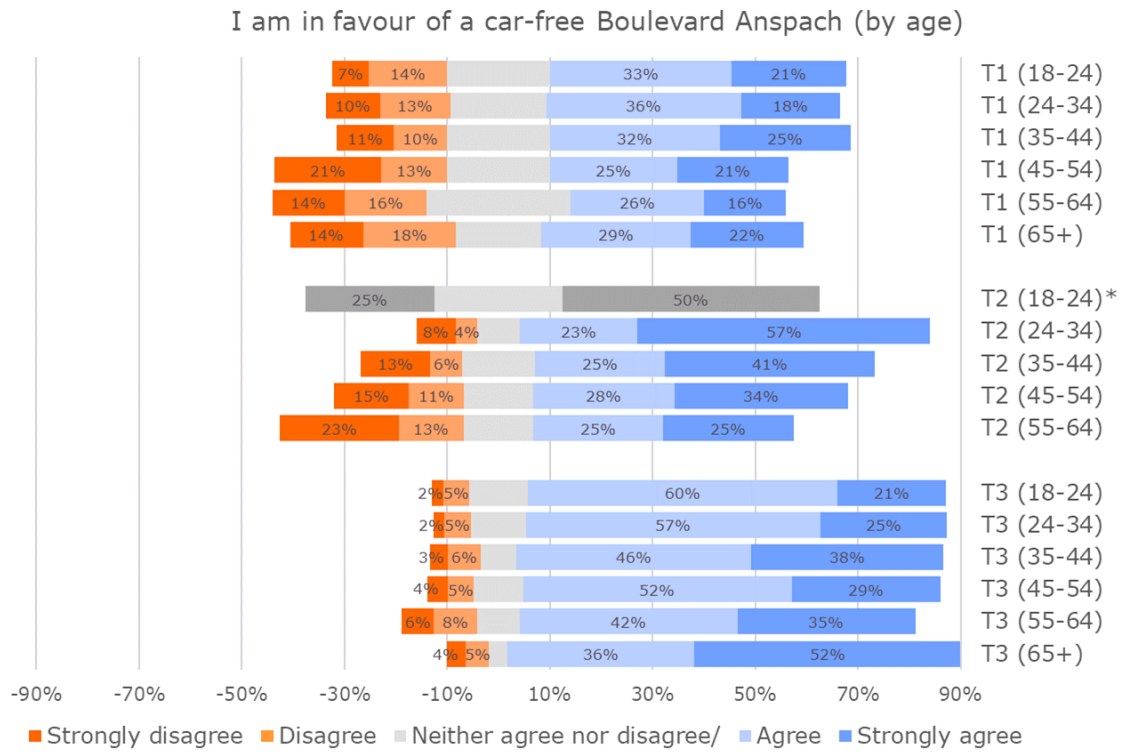

Figure 48: Support for car-free Boulevard Anspach by age (*too few cases to be significant)

Figure 49 displays the differences in support by zone of residence. For T1 we remark an interesting difference between the people who actually live in the centre of Brussels (postcode 1000), whose position is strongly favourable, and those who live elsewhere.

Among T2, people who commute from the Brussels Periphery clearly have the least favourable attitude; less so than employees who live further away in Belgium. This could possibly be related to the fact commuters from the Periphery have a high share of car use, while those further afield commute more by train. T3 shows a similar pattern, though less outspoken. As could be expected, visitors from abroad, which are likely to be mostly tourists, have an overwhelmingly favourable appreciation of the pedestrianisation (close to 90%).

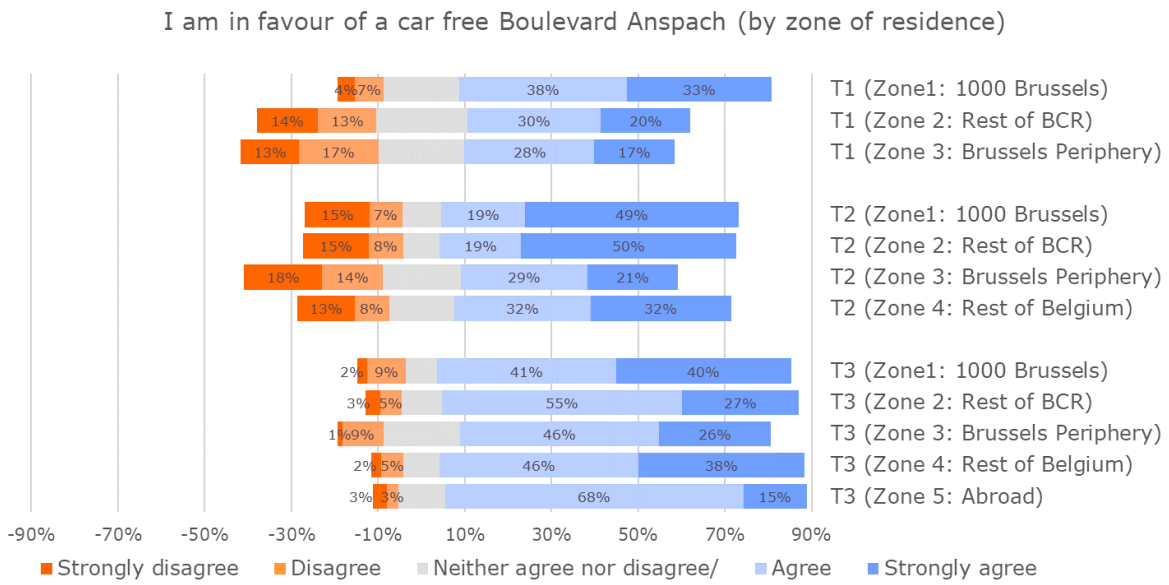

Figure 49: Support for car-free Boulevard Anspach by zone of residence

When we categorise respondents by their usual purpose of visit of central Brussels (question only asked in T1), we spot remarkably little difference between the groups, though understandably, those who come for a leisurely stroll or ride are most fervent in their support (Figure 50).

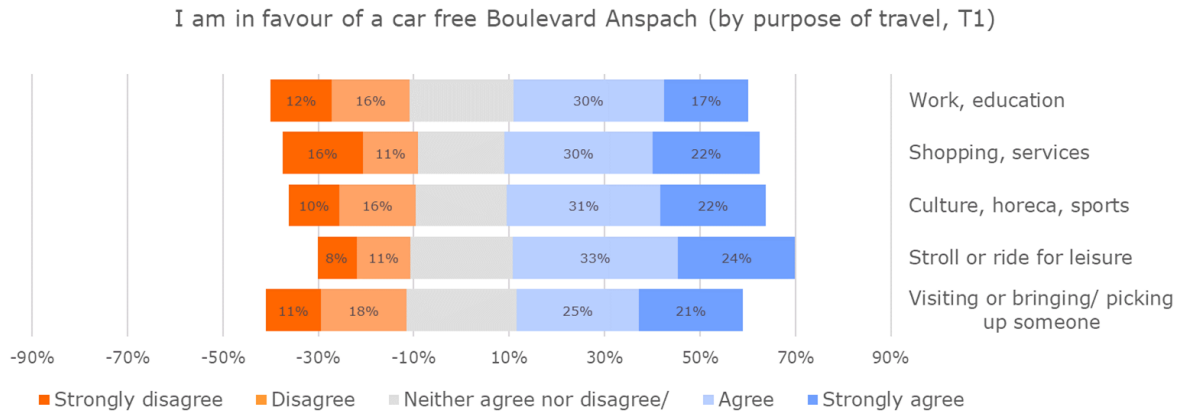

Figure 50: Support for car-free Boulevard Anspach by purpose of visit

When we analyse support among subdivisions by frequency of visit (Figure 51), we distinguish a remarkable pattern. Among the respondents who were intercepted while visiting the area (T3), we notice that appreciation is generally positive, regardless of how

often one visits. Among the inhabitants of the Metropolitan Area, however, we can discern a clear correlation between frequency of visit and rate of appreciation[18].

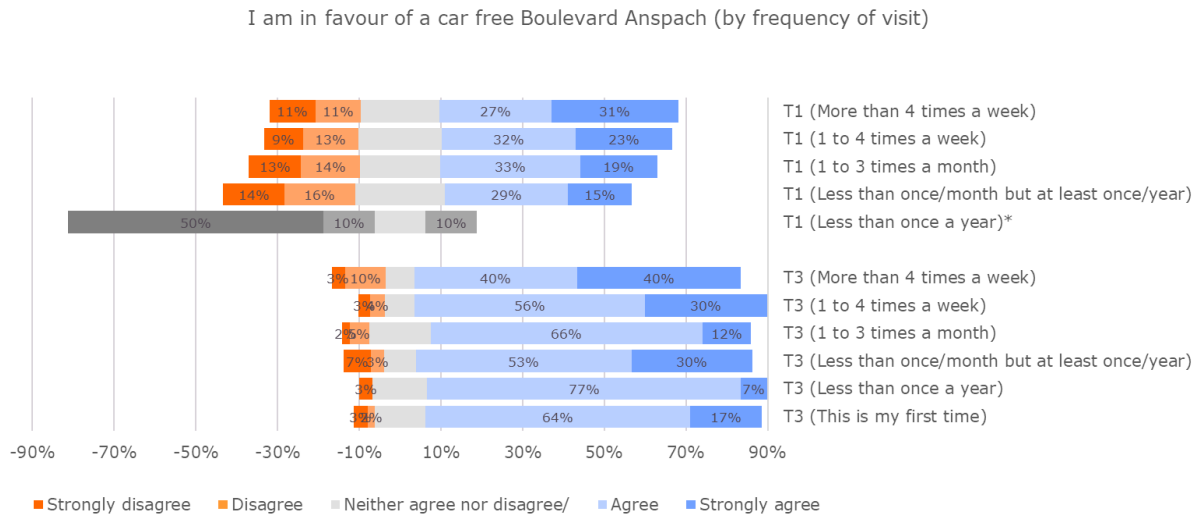

Figure 51: sSupport for car-free Boulevard Anspach by frequency of visit (*too few cases for being significant.)

Of all determinants for support for the pedestrianisation, the respondent's usual mode of transport is perhaps the most significant. As can be seen in Figure 52, there is a strong opposition between car drivers on the one hand and users of all other modes on the other hand. Approximately half of car drivers (T1: 46%, T2: 52%) opposes the pedestrianisation, while users of the other modes are largely in favour. Furthermore, we notice that people whose usual mode is walking or cycling are more favourable than those who travel by public transport. It must be noted that this analysis does not include the T3[19] sample, whose members are generally more favourable towards pedestrianisation than those of the other samples.

[18] Subgroup T1 with frequency <once a year has too few cases to be representative.

[19] T3 respondents could not be included as they were not asked about their usual mode of travel regardless of purpose.

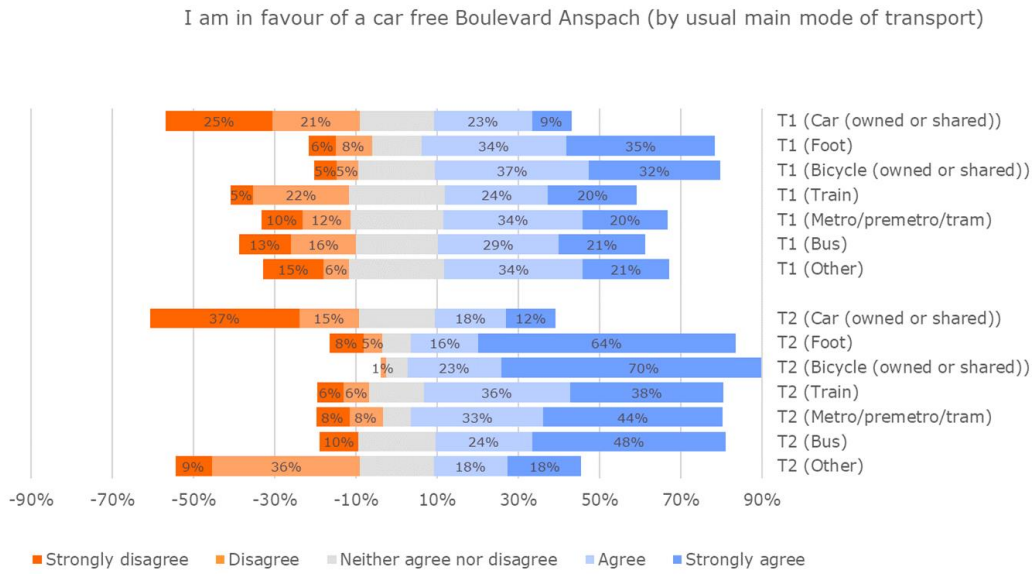

Figure 52: Support of car-free Boulevard Anspach by usual mode of transport

6.1.3. Perception of cleanliness, comfort, and atmosphere of Boulevard Anspach

Both in 2021 and in 2017 participants of the surveys were asked multiple questions to gauge their general appreciation of the pedestrian area in several aspects. The data from 2021 and 2017 allows for interesting comparisons as between the two moments of measurement the area has undergone a complete transformation. Figure 44, Figure 45, and Figure 46 show the results for the inhabitants of the BMA, employees and visitors respectively. We can see that as a whole, the T3 group has the strongest opinions, either positive or negative.

For all target groups, we can observe a more favourable opinion in several aspects. Nearly everyone appreciates the physical comfort of the pavement, which is a great improvement compared to 2017. Another strong improvement concerns people's opinions about the quantity of greenery (plants, flowers, etc.), which has shifted from strongly negative in 2017 to more or less half positive and half negative. This means that even though a substantial amount of green has been added to the area, many people think there is still room for more.

When it comes to appreciation of shops, bars/restaurants and the look of buildings, the opinions in all target groups have also become more positive. This also counts for the number of places to seats and benches to sit down on.

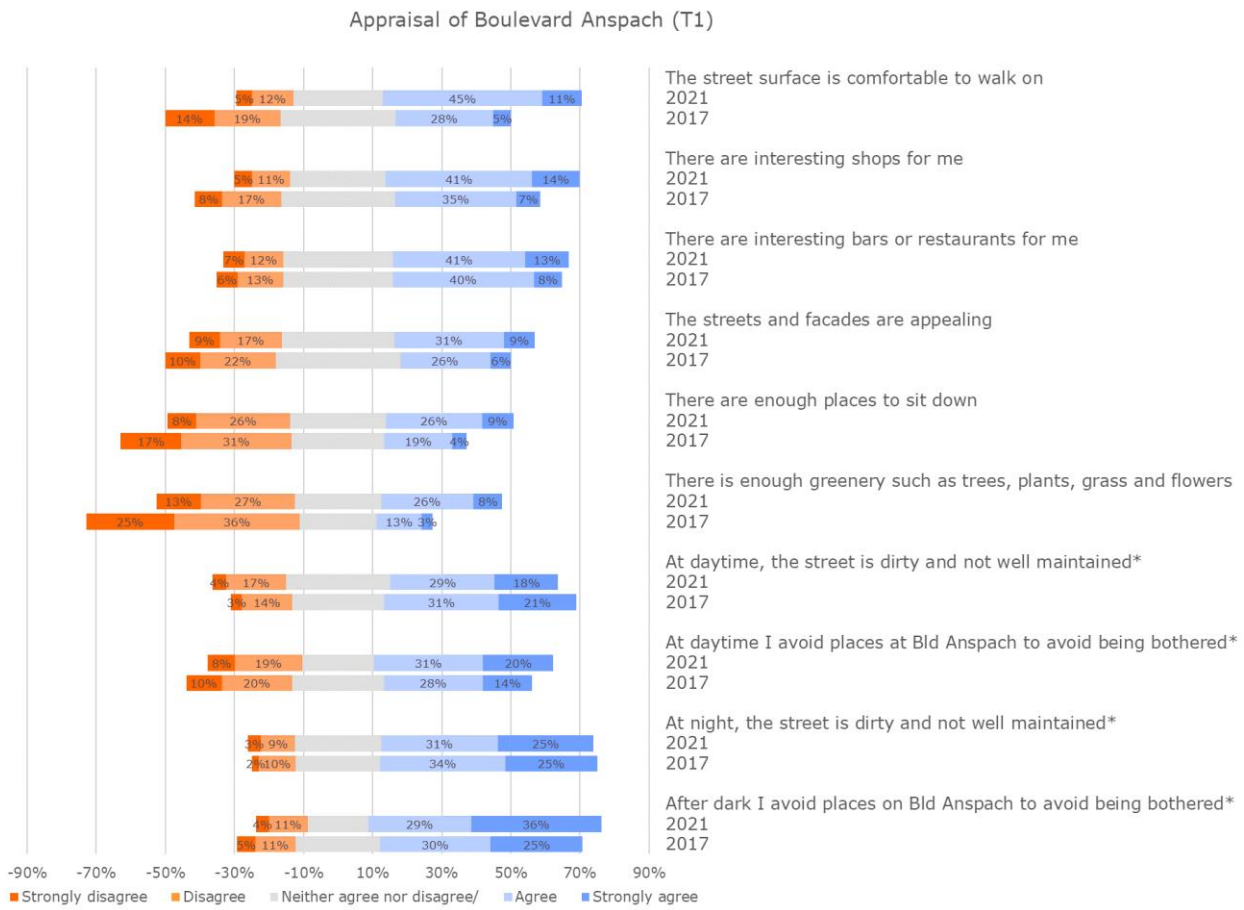

Figure 53: Appreciation of Boulevard Anspach in T1 (*negative phrasing)

There are, however, several aspects that remain concerning. Most importantly, the proportion of people who indicate that at night they avoid certain places on Boulevard Anspach for being bothered or harassed as actually grown. In T3, this share amounts to 63%, even though this is the target group with typically the most favourable opinion about the area.

In T3, the feeling of social safety has also deteriorated at daytime, as well as the appreciation of tidiness, both at day and at night. Remarkably, this negative trend is not shared by T1 and T2, though the general opinion with regard to these issues in these groups remains negative.

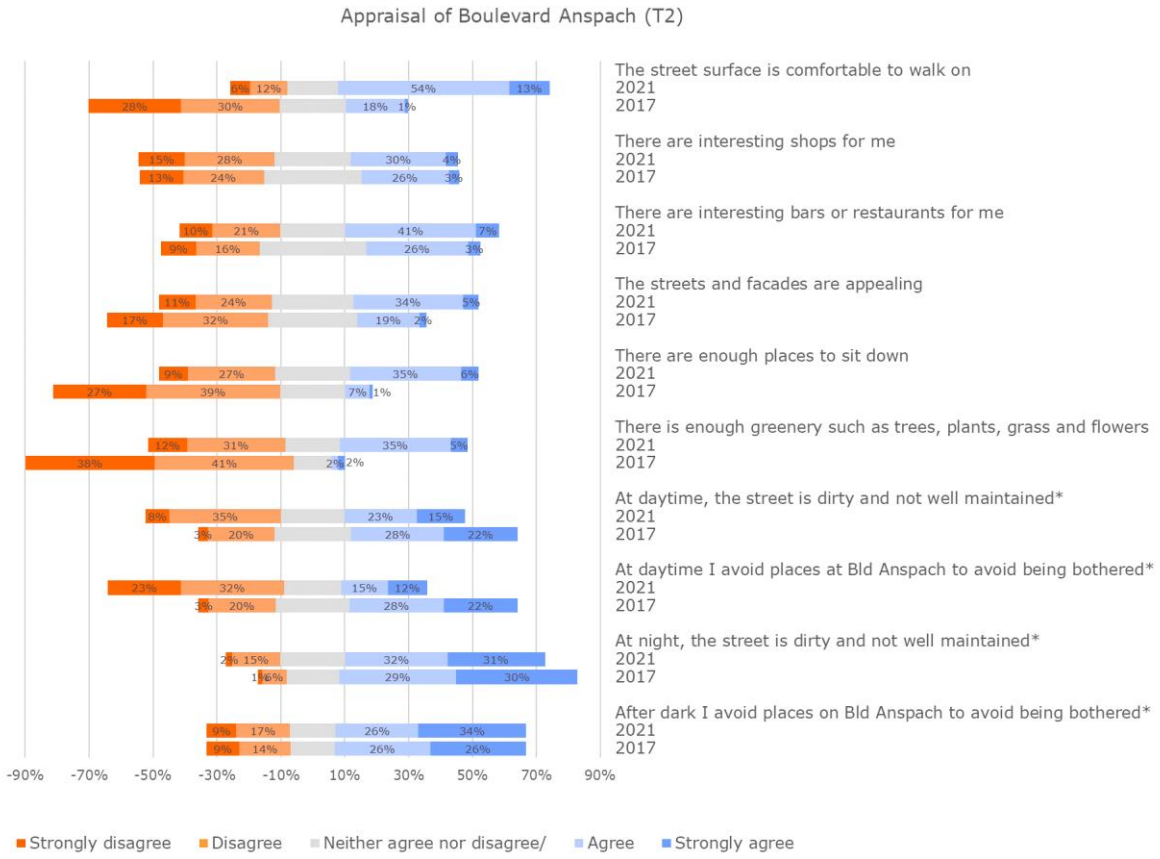

Figure 54: Appreciation of Boulevard Anspach in T2 (*negative phrasing)

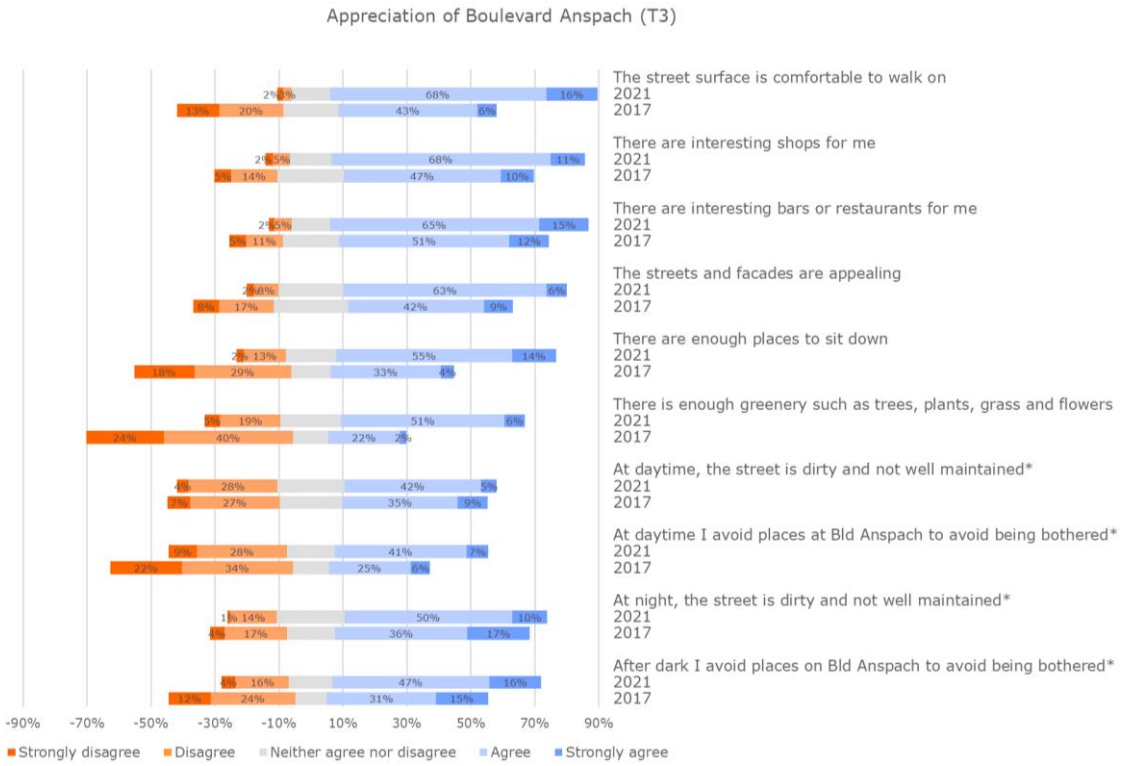

Figure 55: Appreciation of Boulevard Anspach in T3 (*negative phrasing)

6.2. Appreciation of the centre for different transport modes

As we noticed in Figure 52: Support of car-free Boulevard Anspach by usual mode of transport, people's usual mode transport is a key determinant in their appreciation of the pedestrian area. In this section we therefore analyse the responses on several mode-related questions on accessibility and comfort. It must be noted that the questions for car drivers and public transport users not only relate to Boulevard Anspach but to the wider centre of Brussels (the Pentagon), as one of the aims of this research is to study the wider mobility impacts of the pedestrianisation measures. The mode-specific questions were only asked to respondents who use the respective mode as their usual mode of transport. For this reason, the sample sizes are different from the general appreciation analysis.

6.2.1. Car users

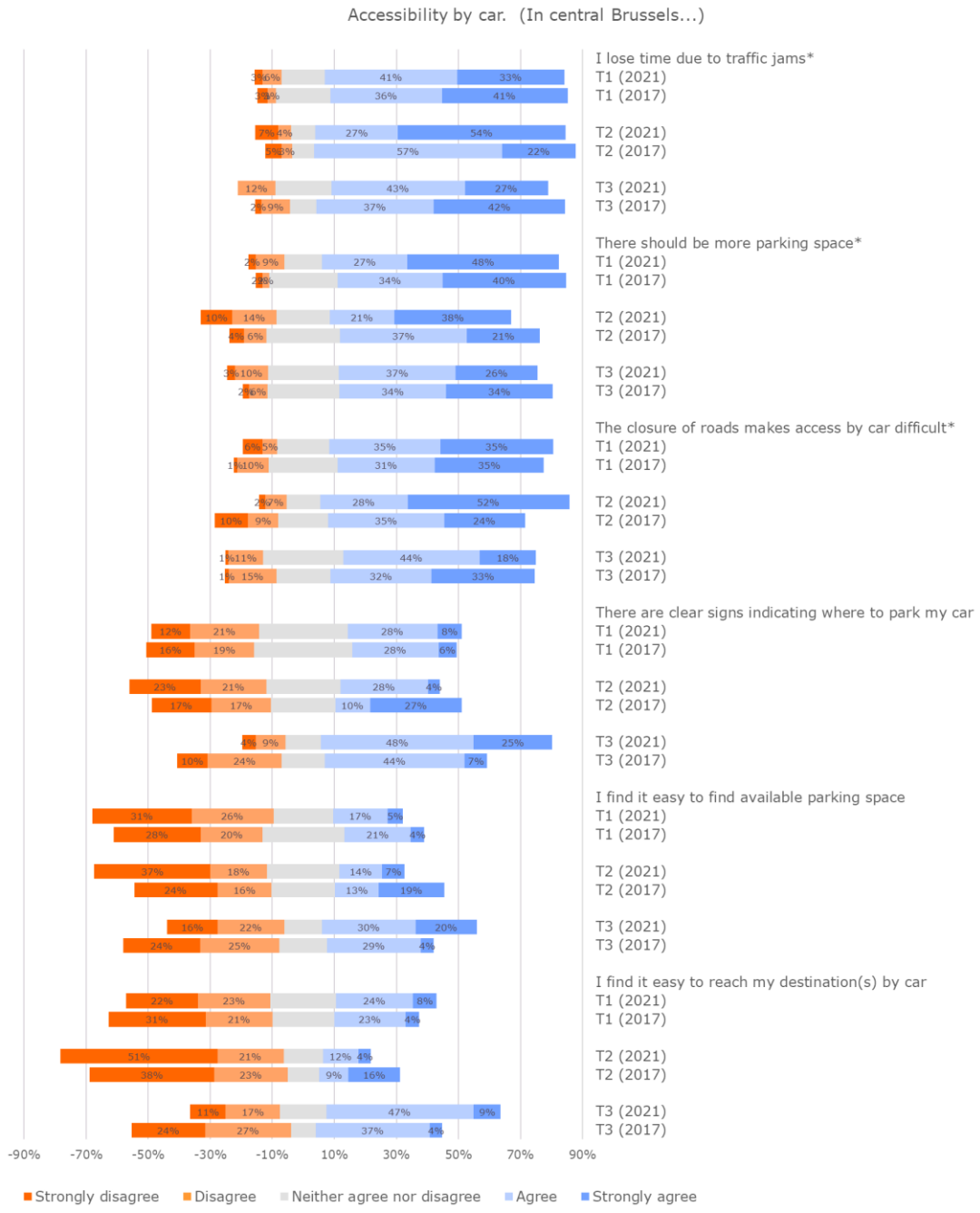

Figure 56: Appreciation of accessibility by car by those who usually go by car to the city centre (T1: n=185, T2: n=259, T3: n= 116 (2021), *negative phrasing)

Figure 56 shows the degrees to which respondents who usually travel by car agree to various statements relating to accessibility and comfort of visiting central Brussels by car. The great majority of them feel they lose time in traffic jams, though this number has

(very) slightly decreased since 2017 especially among the T3 respondents. A majority of car drivers thinks there should be more parking spaces in the centre, but this number has decreased too, remarkably especially among those who drive to central Brussels for work (T2). This is remarkable in the sense that the originally planned car parks have not (yet) been realised. Still, the share of people indicating that access to their destinations has become more difficult due to the closure, has augmented in T1 and especially T2.

For the appreciation of parking signage, there is a remarkable difference between those who were interviewed online (T1 and T2) and those interviewed during their visit (T3), with the latter showing a far greater appreciation and positive evolution. In a similar vein, in 2021 T3 respondents found it easier to find parking spot than in 2017, but this positive trend is not emulated in the other groups. Lastly, the share of respondents stating that it is easy to reach their destinations by car has risen among the BMA residents (T1) and especially among the visitors to the centre (T3), but not among the commuters (T2).

6.2.1. Cyclists

Figure 57 depicts the appreciation of the pedestrian area by cyclists. They seem divided over whether they are bothered by pedestrians. While the share of cyclists bothered by pedestrians has risen in all target groups, this is more the case in T2 (60%) than in T3 (45%). Cyclists are also divided over whether nuisance from delivery vehicles is a problem. T1 respondents have become slightly more negative in this respect, while T2 and T3 have become more positive.

A great majority of respondents still indicates a need for more guarded bicycle parking, although their share has slightly decreased. This is an interesting observation, since a bicycle parking previously opened at Bourse metro station. Still, a majority of cyclists (57%) says that they enjoy cycling on Boulevard Anspach.

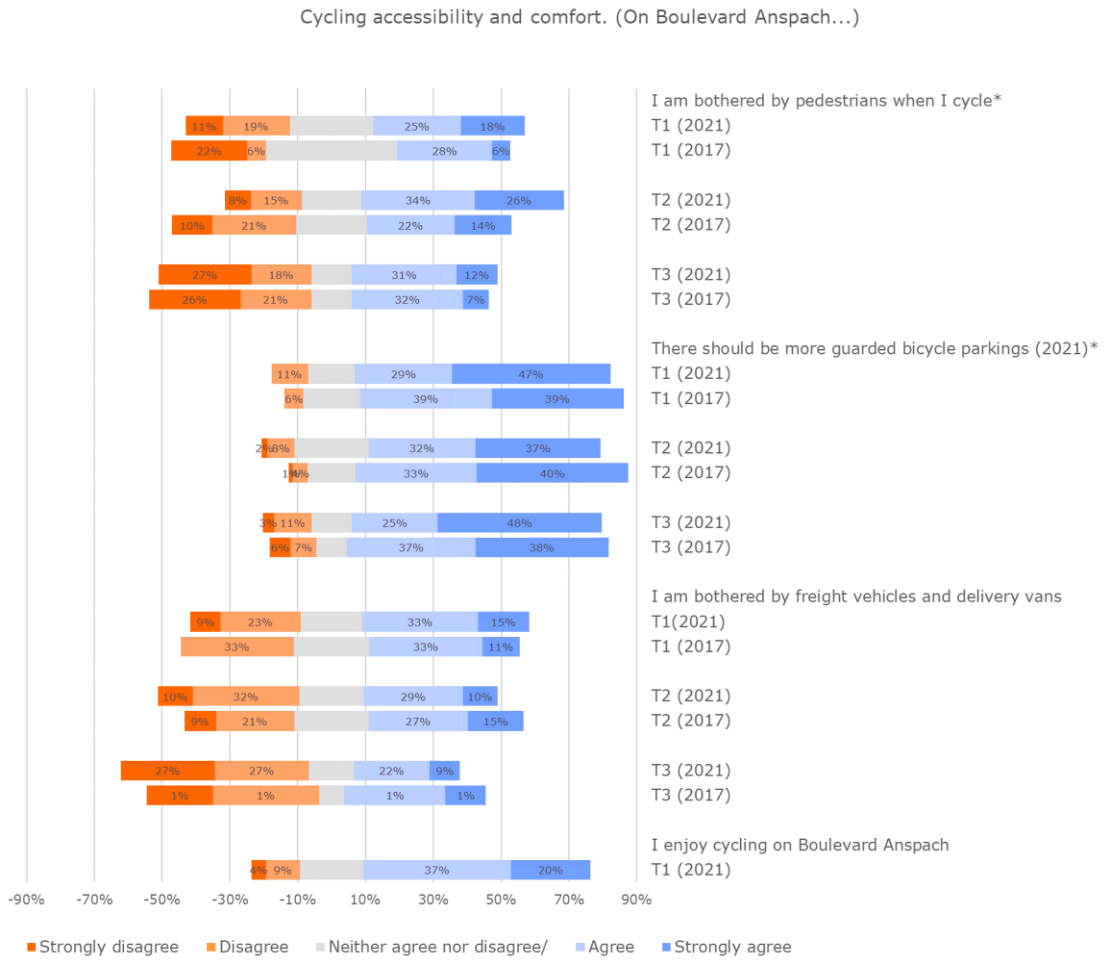

Figure 57: Appreciation of accessibility and comfort by bike by those who typically come by bike (T1: n=57, T2: n=202, T3: n=91 (2021), *negative phrasing)

Figure 58 shows the results on questions on walking comfort on Boulevard Anspach (only T1 and T3 in 2021; in 2017 these questions were not part of the survey). It indicates that despite the social safety issues a strong majority enjoys walking on Boulevard Anspach, especially T3. A substantial minority of the respondents agree with the statements on nuisance caused by bicycles or delivery vehicles, but this share is relatively small, especially in the T3 sample.

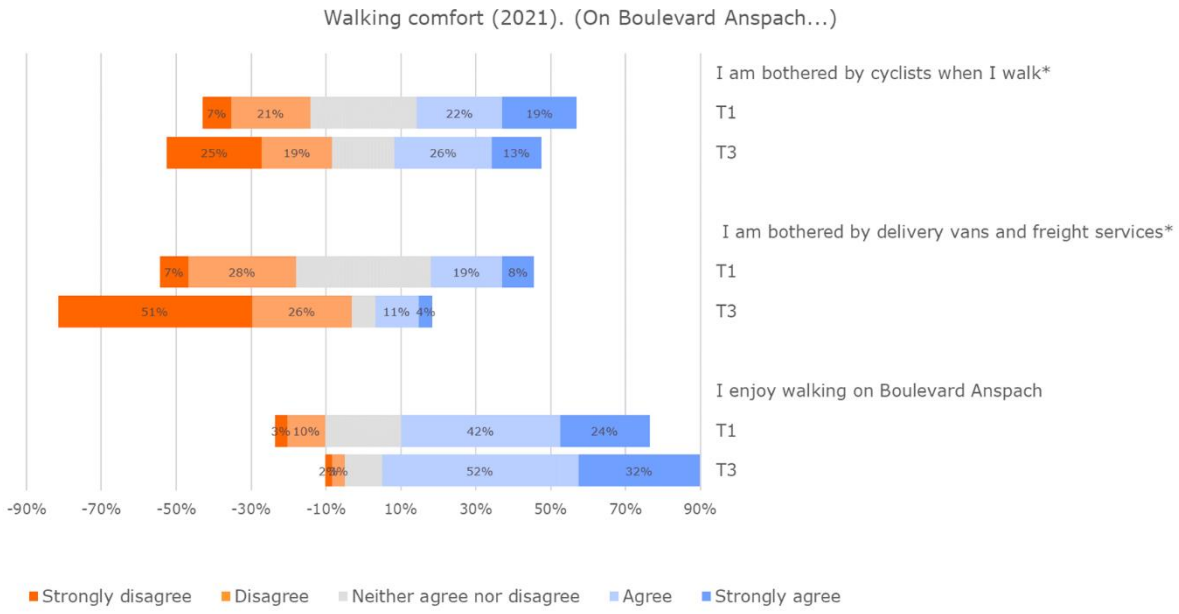

Figure 58: Appreciation of walking comfort on Boulevard Anspach by those who typically come by foot (T1: n=133, T3: n=404 (2021), *negative phrasing)

Figure 59[20] shows the results of the questions with regard to public transport. We notice that the appreciation of the respondents of the accessibility by public transport is overwhelmingly positive. Respondents of both T1 and T3 rate the ease of travelling by rail-bound local transport ((pre)metro, tram) higher than by bus (95% vs. 74% in both samples). Respondents are also generally positive about the location and the facility to locate the bus stops De Brouckère and Grand Place, though slightly more so in T3 than in T1.

[20]Following differences in phrasing of the statements, no comparison is made with 2017.

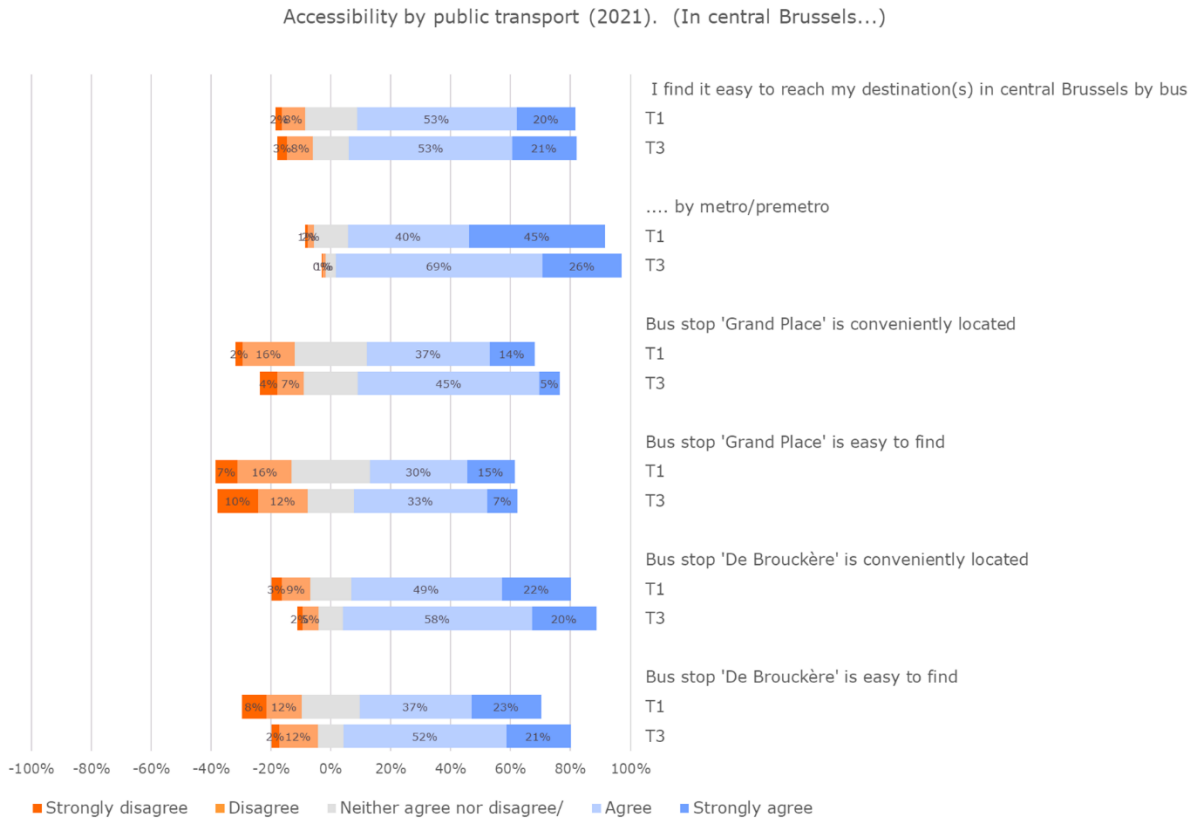

Figure 59: Appreciation of accessibility by public transport by those who typically come by public transport (T1: n= 131, T3: T=121).

7. Conclusions

The survey that has administered to monitor the impact of the pedestrianisation of Boulevard Anspach aimed to answer the following questions:

1. What are the characteristics and current travel behaviour of the Brussels Metropolitan Area (BMA) inhabitants, the employees of the city centre and the visitors of the city centre and the central boulevards who use the pedestrianised area?
2. What is the degree of satisfaction with the pedestrianisation measures, the comfort of the pedestrianised area and the accessibility of the centre of Brussels?
3. How do the above variables vary according to different socio-demographic variables and place of residence?
4. How did travel behaviour and appreciation evolve between since the transformation of the public space in the area?

In this section, we summarise the most important findings that answer the above research questions. When interpreting the results of the 2021 survey the context of the Covid-19 pandemic must be kept in mind.

7.1. Travel behaviour of metropolitan inhabitants, employees and visitors to Boulevard Anspach

7.1.1. Visits to the city centre and the pedestrian zone

The survey of the inhabitants of the Brussels Metropolitan Area (BMA) made it possible to reach persons who had not visited the city centre since 1 January 2021 and ask about their reasons for not visiting.

21% of the inhabitants of the BMA had not visited the centre of Brussels since 1 January 2021. In addition, another **12%** of those who visited the city centre since **had not been to the central boulevards** (Boulevard Anspach). The main reasons cited for not visiting are personal reasons (not working, living or studying there) and fear of Covid-19 contamination. **7% indicated that the centre is too difficult to access with their preferred mode of transport.**

7.1.2. Why do people visit the city centre?

In 2021, just like in 2017, most of the respondents in the samples of BMA residents (T1) and visitors of Boulevard Anspach (T3) mention a **leisure-related purpose as the main purpose of visiting**. Leisure shopping, visiting bars and restaurants, taking a stroll and attending social and/or cultural activities are mentioned as the most important reasons. **Leisure shopping** is mentioned by the largest proportion of respondents living in the BMA (T1) as their **main purpose** (25% of the visitors from the BMA).

For the **visitors** that were interviewed on Boulevard Anspach (T3), by far the most common purpose of visit is **taking a stroll or ride for leisure** (47%). While in 2017, leisure shopping was the second most mentioned reason for visiting by this group, this position has now been taken over by visiting friends or family. Among the **people who work** in the city centre, the most important 'other' purpose (apart from working) in 2021 is going to a **bar or restaurant** (69%), while in 2017 this was leisure shopping (Figure 60).

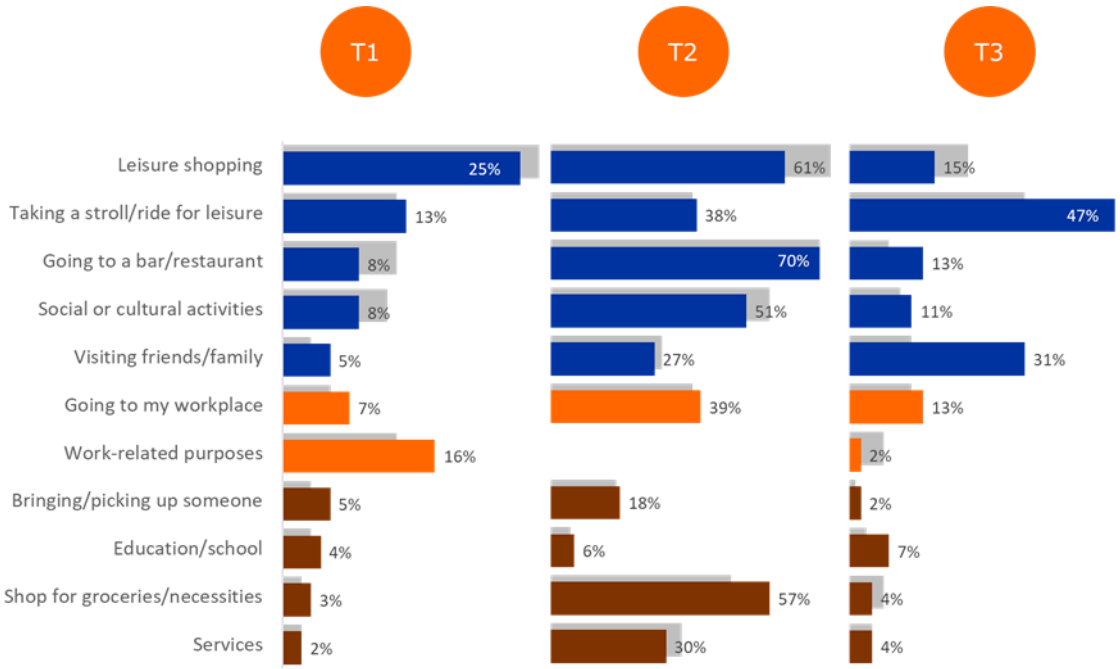

Figure 60: Main reasons for visiting the city centre (number of respondents: T1: n=789; T2: n=499 [visits combined with visiting the workplace]; T3: n=1470)

7.1.3. Who are the visitors of the city centre and Boulevard Anspach?

The data from the face-to-face interviews carried out on and around Boulevard Anspach allows us to make an approximation of the characteristics of the visitors of the pedestrian zone. **Residents of the Brussels Capital Region make up the largest part of the visitors** (74%). Compared to 2017, the biggest change is the increase of the proportion of visitors who live within the Brussels Capital Region, but outside the centre (37% in 2017 to 57% in 2021). In contrast, only 6% of visitors come from the close periphery of Brussels. The number of foreign visitors (11%) has halved in comparison to 2017, which is not surprising in light of the Covid-19 pandemic.

7.1.4. How often do people visit the city centre?

Of the respondents from the Brussels Metropolitan Area (T1) who have visited the centre since January 2021, **42% visit with a frequency of at least once a week**. Considering various demographic variables, we see that women tend to go somewhat less frequently to central Brussels than men. Those in the older age categories also go less often, possibly because education/work purposes do not apply to them.

Among those who were intercepted on/around Boulevard Anspach (T3), as in 2017, a high percentage (54%) visits the centre at least once a week. This shows that the interviewed users of the pedestrian zone are mostly regular visitors.

7.1.5. How long do people stay in the city centre?

Both the BMA sample (T1) and the visitors (T3) were asked about the usual length of their stay. As in 2017, this turned out to be very diverse. Lengthier stays beyond 5 hours tended to be linked to work purposes. **Visits of 2 to 5 hours are most common**, while visits lasting less than an hour are relatively rare.

7.1.6. How do people travel to the city centre and Boulevard Anspach?

The majority of visitors to Boulevard Anspach (T3) have a public transport subscription (70%), while only about one third of them (30%) have access to a car. This is much higher in the other two samples with 77% of employees and 67% of BMA residents having access to a car. 62% of employees and 52% of BMA residents hold a public transport subscription. Surprisingly, only 20% of the visitors to Boulevard Anspach owns a bike.

Despite that many visitors from the BMA and commuters to the city centre have access to a car, all surveys confirm that overall[21], the **most popular mode of transport to access the city centre is public transport.** 57% of the residents of the BMA (T1), 42% of the commuters (T2) use public transport as their main mode to access the city centre (Figure 61). While for the commuters, train is the most used public transport mode, for the BMA residents, metro/premetro/tram is by far the most popular. Among the visitors of Boulevard Anspach (T3) this is also the most popular mode, with 53% doing at least a part of their journey by metro, premetro or tram[22].

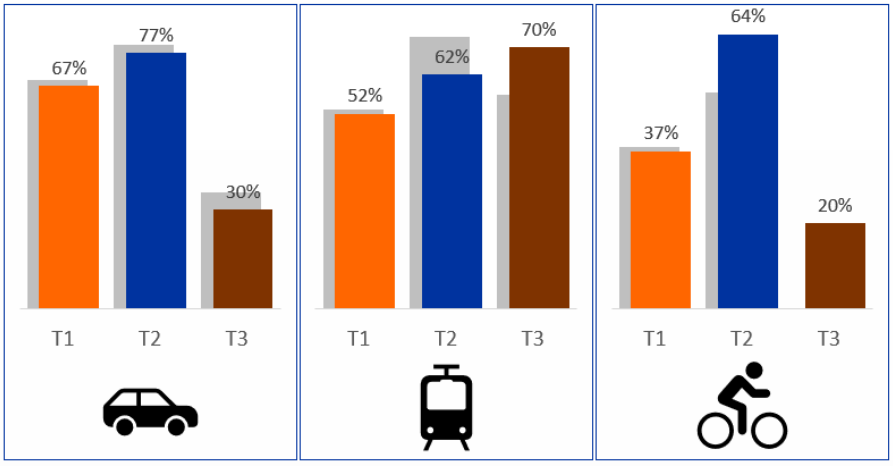

Figure 61: Access to different modes of transport: car (private or shared); public transport subscription; bicycle.

The **car is the second most popular mode** of transport and is used as a main mode to visit the centre by 20% of the BMA residents and 34% of commuters. Of the people interviewed while visiting Boulevard Anspach (T3), only 12% had come by car. While walking proved to be the third most popular mode (12%) among the residents of the BMA (T1), for commuters (T2) this is cycling (18%).

[21] As questions with regard to the overall (regardless of purpose) main mode of purpose were new in the 2021 survey, there is no data from 2017 to compare with.

[22] The percentages of T3 cannot be directly compared with those of T1 and T2: In T3, respondents were able to name multiple modes (total adds up to 107.5%) while in T1 and T2 only one answer was possible.

As can be expected, the share of car use increases by distance, although **among commuters** (T2), **car use is much higher among people living in the close periphery than among those living further away**, for whom the train is the dominant mode. The share of cycling is highest among those living within the Brussels Capital Region but outside the centre. When analysing the most used modes by purpose of travel, we notice that for work-related purposes (but not commuting) the share of public transport is relatively low, and for taking a leisurely stroll or ride the share of walking is relatively high.

Compared to 2017[23], the 2021 data on modal split shows a diverse evolution. Among BMA residents (T1), the share of metro/premetro/tram has remained stable, while the share of bus and car have dropped. Among the people interviewed as visitors (T3), however, bus use has dropped but metro/premetro/car use has strongly increased. **Among commuters** (T2), the use of all **public transport modes has dropped**, while the **share of the car has risen** and the share of **cycling has roughly doubled**, which is in line with other tendencies related to the Covid-19 pandemic.

7.2. Appreciation of the accessibility and comfort of central Brussels and the pedestrian area

7.2.1. Support for pedestrianisation

More people are in favour than against a car-free Boulevard Anspach and pedestrianisation in general. Compared to the first phase of this study (2017), support for pedestrianisation has grown. This tendency is strongest among the people interviewed while visiting the area (T3), of whom 82% is in favour of the car-free Boulevard Anspach. Of the same group, 69% agrees with the statement that more streets should be dedicated to pedestrians. Support is lowest among the residents of BMA (T1), of whom still a higher proportion is in favour than against the pedestrianisation (47% vs. 36%).

[23] Questions relating people's main transport mode for their most typical purpose of visit allow for this comparison

While among the BMA residents and the visitors, support for the pedestrianisation is fairly even in all age groups, **among commuters, support decreases by age.**

Considering zone of residence, **support for pedestrianisation is highest among those who live nearby** (postcode 1000 in Brussels) and is **lowest among those who live in the close periphery** around Brussels but rises again among people living elsewhere in Belgium or abroad. **The more frequently one visits central Brussels, the higher the approval rate of the pedestrianisation is.**

The strongest determinant for approval of the pedestrianisation is whether one usually travels by car or not. In other words, car drivers have a much more negative view on the pedestrianisation than users of all other transport modes.

7.2.2. Degree of satisfaction with the accessibility of the centre of Brussels

Confirming results from the previous phase of the study and international literature, **those who usually drive a car to the city centre have the most negative opinion about the accessibility of the city centre**. While most car drivers state that there should be more parking space, their number has slightly diminished since 2017. Among the car drivers who were interviewed during their visit to Boulevard Anspach (T3), **the proportions stating that it is easy to reach their destinations by car, and that there is clear signage towards the car parks, have strongly increased**, though this trend is not visible among BMA residents (T1) or commuters (T2).

In contrast, **the great majority of public transport travellers are positive about accessibility** and are positive about the location and the facility to find the relevant bus stops.

7.2.3. Appreciation of the public space of the pedestrianised area

While most people support the pedestrianisation of Boulevard Anspach and are generally positive about its new configuration, **the perceptions of personal safety and cleanliness remain problematic. A majority of the respondents state that they avoid certain places at Boulevard Anspach to avoid being bothered, both at night and at daytime.** Furthermore, **this perception has deteriorated since 2017** among the visitors of the area (T3), though not in the other studied populations (residents of the

BMA and commuters)**.** To a lesser extent the same is true for the perceived cleanliness of the area.

On the other hand, **appreciation of the quality of the pavement, shops, bars/restaurants, green space and places to sit has strongly increased** in all groups, which is encouraging, given the extent of the physical makeover the area has undergone.

8. Acknowledgements

The research team would like to thank all the people who have contributed to this research in one way or another: Bruxelles Mobilité/Brussel Mobiliteit, the cabinet of the Brussels Minister for Mobility and Public Works, BECI, Ville de Bruxelles/Stad Brussel, Hub.brussels, Perspective.brussels, STIB/MIB, Police Fédérale/Federale Politie, Brussels Studies Instititute, Shopera, Muntpunt, Bral, Kantar and of course all colleagues and steering group members who provided valuable comments on the questionnaires and the first draft of this report (An Descheemaeker, Sebastiano Cincinnato, Anneloes Vandenbroucke, Carole Poncin, Renaud Prioux De Cambry De Baudimont, Florent Verstraeten) and of course all respondents who took the time to complete the questionnaires.

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