Waalre Future Connections

improving liveability and mobility

Title:
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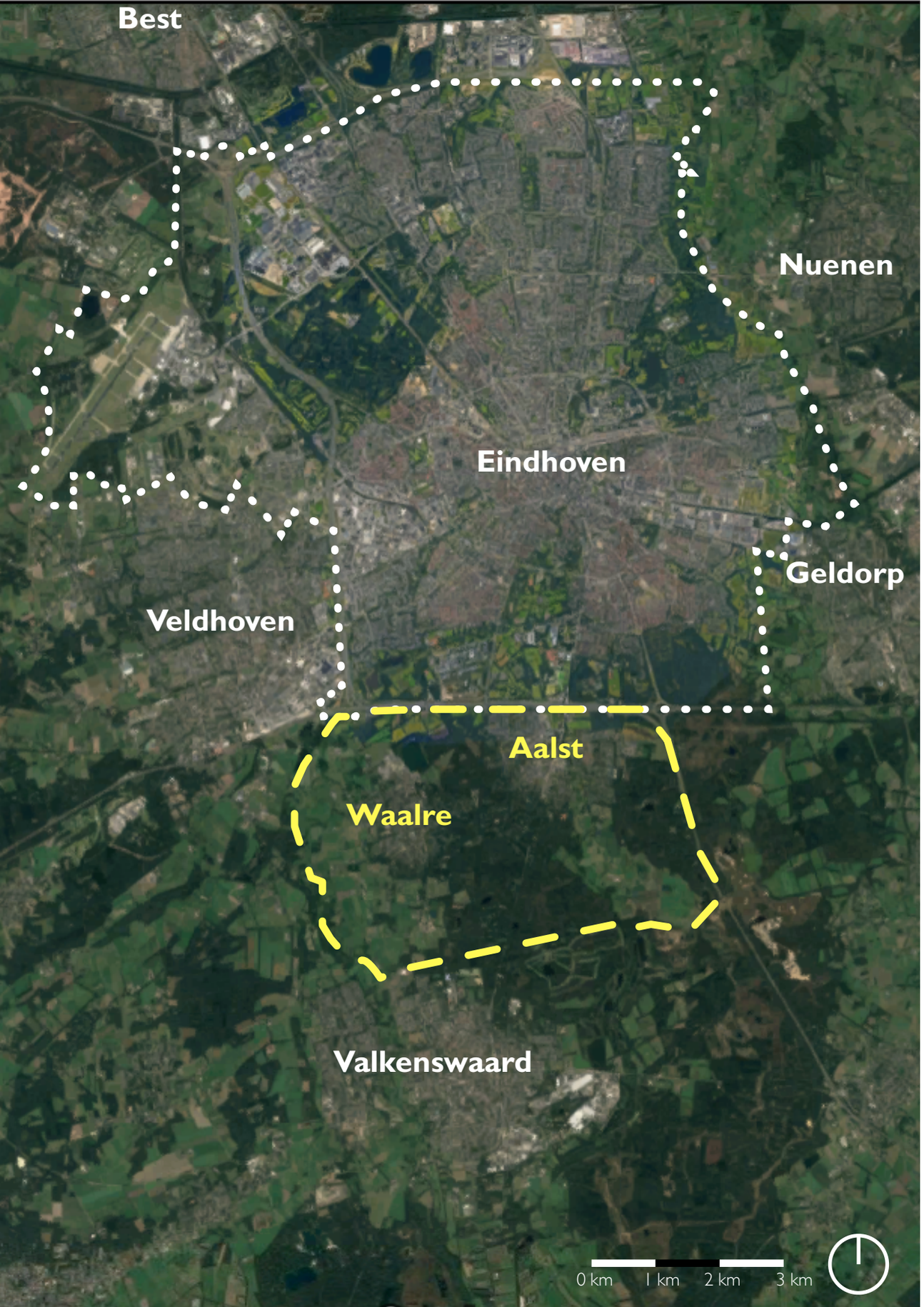
1. Introduction

The way we move around is constantly changing. The Metropolitan Region of Eindhoven is developing a new innovative regional fast bus service connecting the municipalities of Eindhoven, Waalre, Valkenswaard and beyond. The development of this high-quality public transport service (HOV: Hoogwaardig Openbaar Vervoerslijn) is a reason to rethink in the way the mobility network and the new node (the bus stop) is embedded in its spatial, technological, functional and economical context. The Eindhovenseweg in Aalst, part of the municipality of Waalre, will have at least one bus stop. The fast bus service makes it necessary to redesign certain elements in the municipality of Waalre. Therefore, it is an opportunity to improve its spatial quality and its liveability. Moreover, it asks for new mobility solutions to connect the village of Waalre to and from the bus stop (‘the first & last mile’). The new service offers an opportunity to use or develop the new (ICT) technologies that could make the use of the new line more efficient, and offers an opportunity to stimulate the development of new programs around the mobility node to facilitate daily living patterns. Above all, it is an opportunity to improve the way the inhabitants of the municipality of Waalre can move around in the region in an efficient, pleasurable and healthy way.

To achieve this ambitions the municipality of Waalre aspires to know more about the wishes and demands of its inhabitants, in order to maximize the use of this future HOV-connection. In this report the prospective users of the fast bus service are researched: what are their opinions and experiences with regard to the use and comfort of the upcoming transport? How can we make better future connections? The wishes and demands with respect to their current and future daily mobility patterns is explored, and scenario’s that include new spatial, programmatic and business models are presented to the prospective users and analyzed. Recommendations for better future mobility related to the HOV-connection in the municipality of Waalre are offered.



2. The municipality of Waalre

Waalre is a municipality in the province of North Brabant in the south of the Netherlands, part of the Metropolitan area Eindhoven. The municipality of located south of Eindhoven, north of Valkenswaard, borders with the Dommel river in the east, and highway A2 in the west. Waalre consists of the villages Aalst & Waalre that have merged in 1923. Before the merger Aalst and Waalre had two very distinguished characters, whereas Aalst mainly consisted of houses placed along the main road between Eindhoven and Valkenswaard (lintbebouwing) and Waalre was centered around a market place, connected by a clear road structure (Gemeente Waalre, 2017). In the 19th century, Aalst was split in two with the construction of the 'Napoleontic 'steenweg', a main road connecting Valkenswaard with Eindhoven. As the construction of this road led to substantial traffic increase with accompanied air- and noise pollution, the perimeter turned its back on the street over the course of time. Today, this road is known as N69 and is still considered a huge barrier between east and west of Aalst. Today, the municipality of Waalre presents itself as a green residential community using the slogan "Waalre Groenfontein" (Waalre Green Fountain).

	Eindhoven	***Waalre***
Inhabitants	*224 755*	*17 023*
Density of inhabitants	*2 564/km2*	*760/km2*
Households	*114 614*	*7 340*
Numbers of houses	*106 732*	*7 556*
WOZ-value (home-value)	*€ 211.000*	*€ 305.000*
Age group 0-24	*29 %*	*27 %*
Age group 25-44	*30 %*	*20 %*
Age group 45-65	*25 %*	*29 %*
Age group 65 +	*17 %*	*23 %*
Cars	*98 370*	*9 205*
Cars per household	*0,9*	*1,3*
Distance to train station	*3,2 km*	*6,9 km*

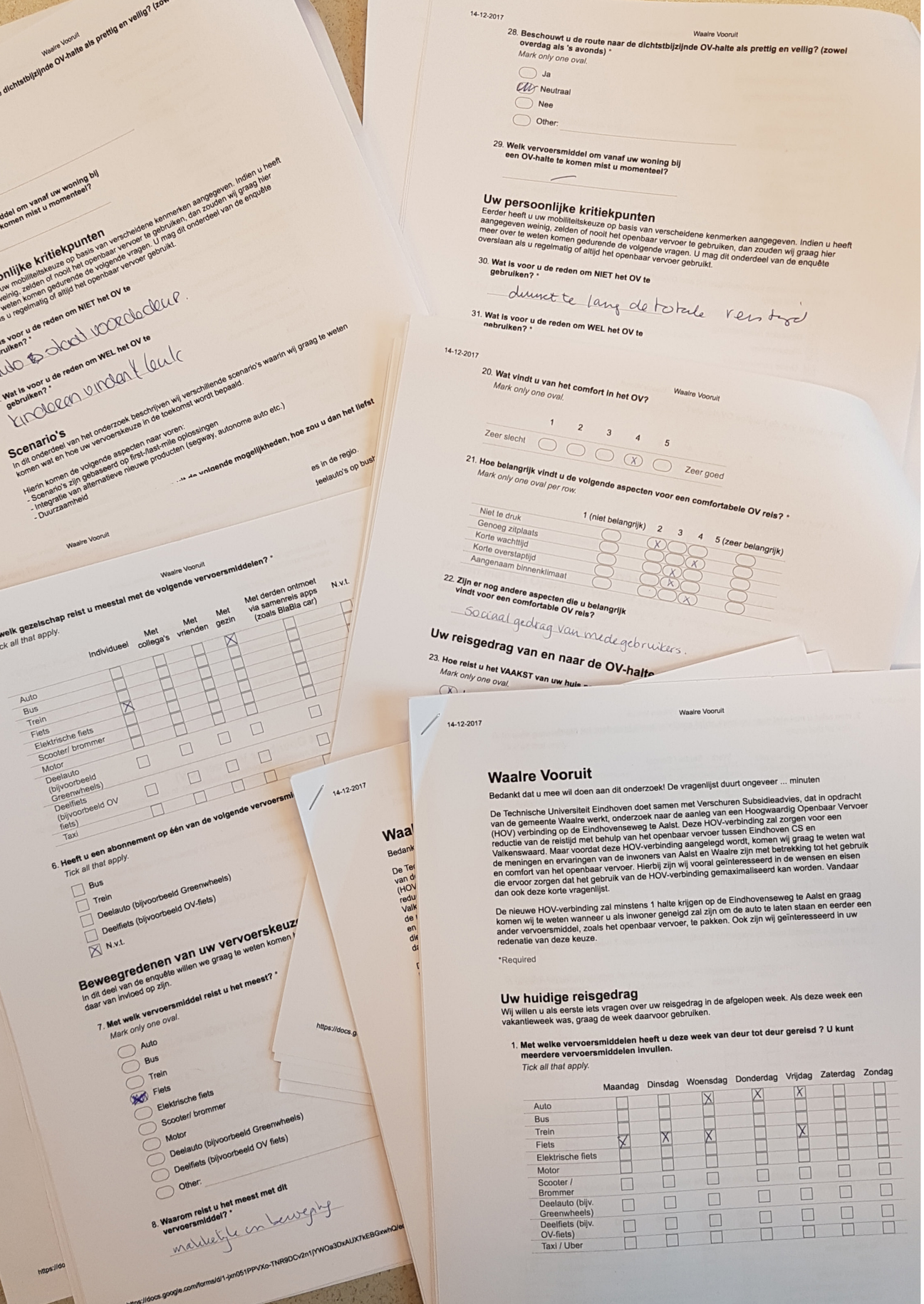
Source: CBSinuwbuurt (2017), CBS (2017)

CBS (2017) divides the municipality of Waalre into four neighbourhoods: Waalre, Aalst, Ekenrooi, and Voldijn. Compared to Eindhoven, the municipality of Waalre is not a dense urban area and the demographics are quite well divide. The municipality has a higher percentage of older age groups compared to Eindhoven. Moreover, the number of cars per household is higher in than in Eindhoven. The difference in home-value between Eindhoven and Waalre is also striking. In 2017, the municipality of Waalre was part of the top 5 municipalities with the highest percentage of households that are worth more than a million in the Netherlands Moreover, most millionaires in the province of Brabant live in the municipality of Waalre (Van Lanschot Bankiers, 2017).

Future mobility in Waalre

The municipality of Waalre is part of various future mobility projects. One of these plans is 'Duurzaam door Waalre' (Sustainable through Waalre). In this project, the municipality of Waalre is planning to redesign the Eindhovenseweg and the Traverse. This plan includes a high-quality public transportation service (HOV, Hoogwaardig Openbaar Vervoerslijn), which exists of a fast bus connection between Valkenswaard through Aalst to the center of Eindhoven. According to Duurzaam door Waalre the redesign of the Eindhovenseweg will provide opportunities for shopping-center Den Hof, which is located next to this road. It is not only an opportunity to improve accessibility, but it also provides an opportunity to improve the livability of the two cores. In so called 'think thanks' (denktanks) board members develop an integral vision for these areas together with residents, retailers and neighbours of specific areas. The aim of these groups is to make the cores greener, safer and more sustainable. Examples of these think thanks are: Eindhovenseweg/Den Hof and Waalre Traverse (Duurzaam door Waalre, 2018).

Duurzaam door Waalre is closely related to another project led by the province of Brabant called 'Grenscorridor N69'. This project includes a new provincial road from Belgium to the A67/A2, also known as 'Westparallel'. Their aim is to redirect predominantly freight traffic that is currently driving through Valkenswaard, Waalre and Aalst over the newly build bypass. (Goudappel Coffeng, 2014). This new infrastructure will be ready in 2019. Grenscorridor N69 is a project that not solely consists of the construction of new infrastructure, but also aims to improve livability, accessibility and spatial quality in the region. Moreover, the project aspires to improve problems of livability and accessibility that last for more than 30 years (Provincie Noord-Brabant, 2018)



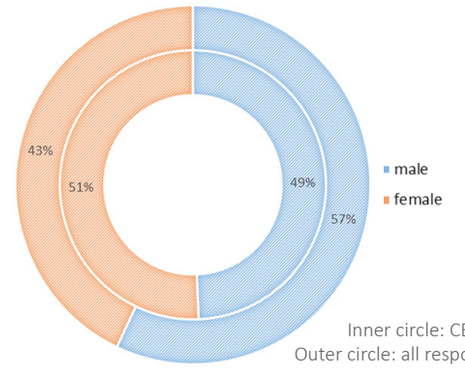
3. Research approach

In order to develop insights into the role of future mobility in the municipality of Waalre, the report analyses four important categories – travel behaviour, public transport, first- and last mile, and future scenarios through a mixed methods study. Through surveys and qualitative interviews in the municipality of Waalre we identified use, challenges and requirements for future mobility for residents. For geographical demarcation of the research, the CBS boundaries for neighborhoods is used. First, approximately 50 semi-structured interviews and surveys were held with residents living in Waalre, by going several times to specified areas and approaching people in person to interview them. Second, the Municipality of Waalre sent letters to every household in Waalre, in which a link was presented to an online survey. Third, an on-line campaign is held through Facebook, presenting the link to the online survey as an advertisement. In total, the results represent 1176 residents of the municipality of Waalre, representing 7% of the total population of the municipality.

The data collection was carried out by a group of 4 graduate students over a period of seven weeks during the research seminar on urbanism and urban architecture from Eindhoven University of Technology. The surveys and interviews covered among other topics daily travel behaviour, travel time, commute, facility use, and travel motives. The interviews were transcribed and the results of the survey collated.

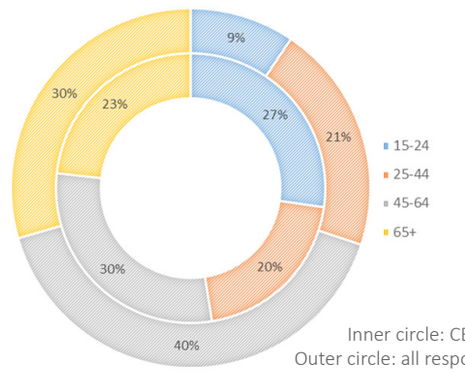
4. Waalre Highlights

In this chapter highlights from the data are presented. First, basic information of the respondents is introduced to analyze to what extent these respondents represent the variety of residents within the municipality of Waalre. Second, current travel behaviour of the respondents is outlined. Third, travel reasons of this travel behaviour are elucidated. Fourth, the respondent's experience of public transport is explored. In the last section results on presented future mobility scenarios are analyzed. The 1176 respondents represent 7 % of the total population of the municipality of Waalre.



Inner circle: CBS,2017
Outer circle: all respondents

Gender



Inner circle: CBS,2017
Outer circle: all respondents

Age categories

4.1 Focus group

Gender & age categories

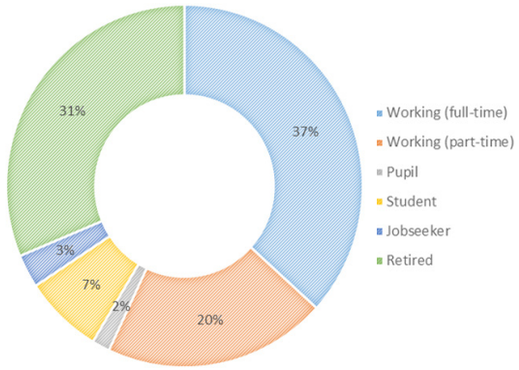
Based on gender, there is a slight representation of male respondents compared to the statistics of Waalre according to CBS (2017).

The graph representing the various age categories presents an unbalanced distribution. Where according to CBS (2017) the four age categories within the municipality of Waalre are more or less equally distributed, the age categories represented through the respondents show major differences. Only one-third of the respondents are younger than 45 years old, which should take up almost half of the inhabitants according the numbers of CBS (2017). The major part of the respondents (70 %) are older than 45 years old. This has to be taken in consideration when interpreting the results.

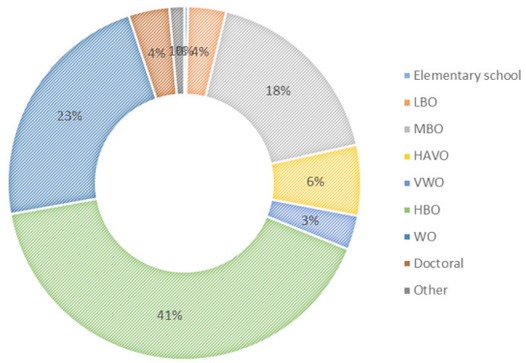
Employment status
The graph shows a relatively high percentage of retired respondents. However, the higher age group (65+ years old) is highly represented as well. More than half of the respondents' is working (full-time and part-time). Slightly 10 % is pupil or student, and only 2 % of the respondents is job seeking.

Level of education
The graph shows that almost 70 % of the respondents have a higher education level (HBO, WO, Doctoral). The other 30 % of the respondents can clustered under the umbrella of lower education (elementary school, LBO, MBO, HAVO, VWO). More than 40 % of the respondents is HBO trained. The second largest group is with a quarter of the respondents WO trained.

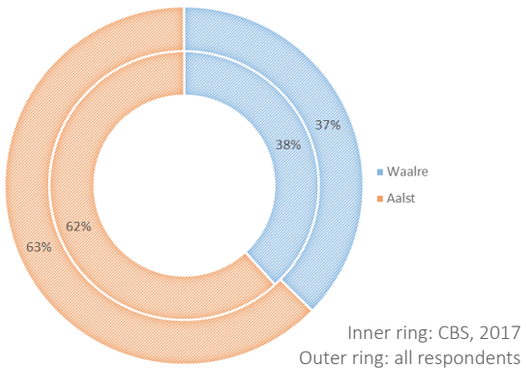
Residence
Based on the distribution of respondents in Waalre and Aalst, the research shows a very accurate representation. About one third of the respondents is takes residence in the village of Aalst, and two third of the respondents takes residence in the village of Waalre. Based on postal codes the research determined where respondents live within the municipality.



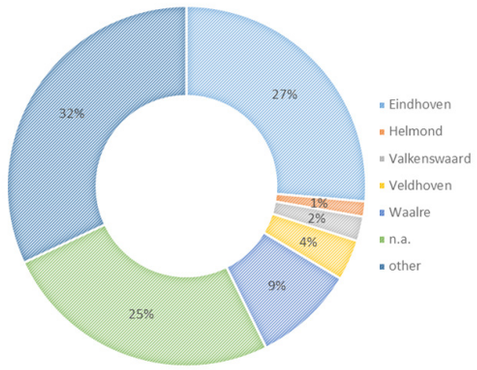
Employment status



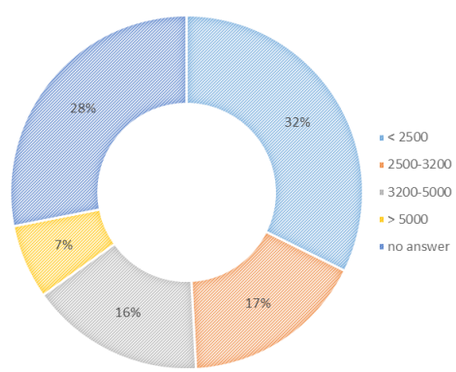
Level of education



Residence



Employment place



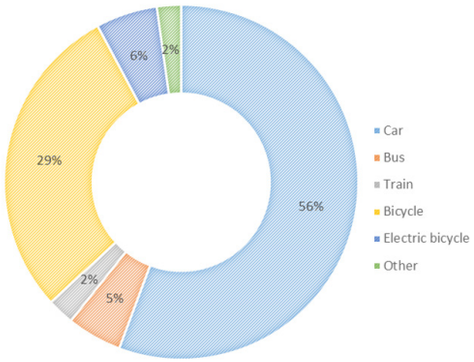
Income level

Employment place
The municipality of Waalre is the most common place to work, thus respondents work very close to their home address. An interesting observation is that more than a quarter of the respondents indicate they work in the city of Eindhoven. Eindhoven as Brainport region houses among others the High Tech Campus, Eindhoven University of Technology, and large companies like ASML. A quarter of the respondents indicate work is not applicable. This is in slight contradiction with the group of respondents indicating they are 'retired' (31 %). However, retired respondents could have answered the question based on where they used to work.

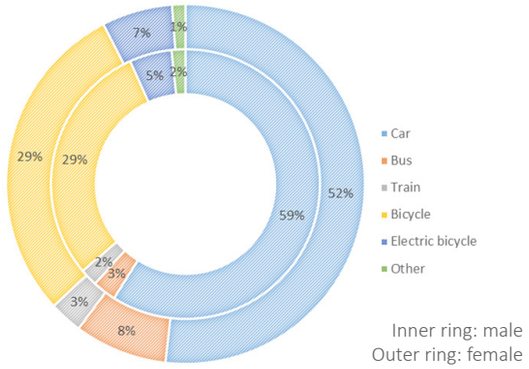
Income level
CPB (2017) estimates the average Dutch income level in 2017 is €37.000, which results in a monthly income of 2.855 gross and €2.152 net. Research on Metropole region Eindhoven (2017) shows that the spendable income in Waalre is about 20 % higher than the rest of south east North-Brabant. The residents of Waalre, and the respondents of the research, are relatively prosperous.

4.2 Current travel behaviour

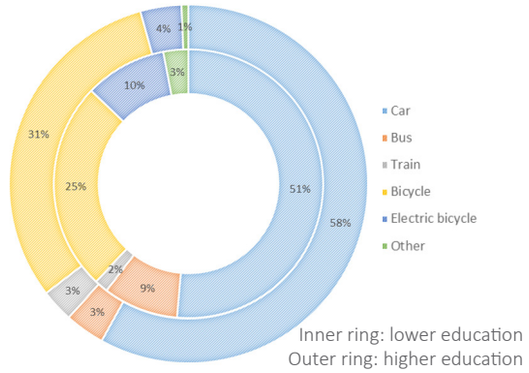
In this section, what people do over space and how people use transport is presented. Travel is the necessary link between activities, involving the movement from one activity location to the next. Multiple factors influence choice and frequency of trips, varying from geographical and meteorological to social and environmental reasons (Creemers et al., 2015; Schwanen, 2002; Nillson & Küller, 2000). On a national level, longer distances are mainly covered by traveling with car. Shorter distances are mainly covered by traveling by bicycle of by walking. In recent years, however, there is an ongoing trend in the Netherlands where people leave their car more often and use different means of transport when traveling long distances (CBS, 2017) . Also, there is a remarkable number of bicycles in the Netherlands in comparison to other countries: there are more bicycles (22 million) than inhabitants (17 million). Six modes of transport can be distinguished in this chapter: 1. car, 2. bus, 3. train, 4. bicycle, 5. electric bicycle, 6. other (moped, motor, taxi, über). The tram and metro are not considered at all in this research, as they are not applicable in the environment of the municipality of Waalre.



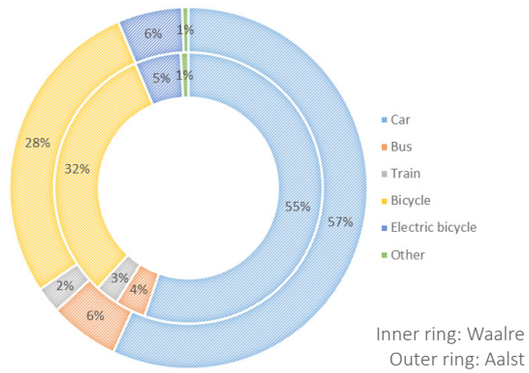
Most used mode of transport (all respondents)



Most used mode of transport per gender (all respondents)



Most used mode of transport & level of education (all respondents)



Most used mode of transport per residence (all respondents)

4.2.1 Choice of transportation

More than half of the respondents indicate they mostly use the car as a mode of transport. Second most used mode of transport is the bicycle, with almost 30 %. CBS (2016) state women travel 10 kilometers less per day than men and their choice of transport is adjusted accordingly: women are more likely to take the bicycle as they travel less. However, there is no major difference between gender in our study when comparing gender on this topic. Comparing the two villages (Aalst & Waalre), slightly more respondents in Aalst use the car as their most used mode of transport. As the connection with public transport in Aalst is considered better than in Waalre, one could expect a higher percentage of car-users in Waalre.

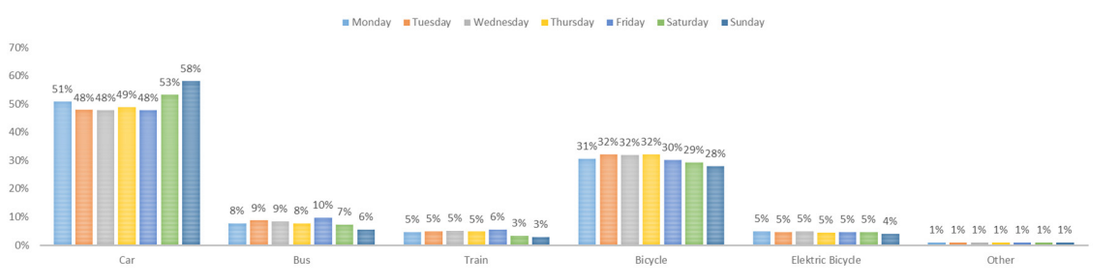
However, the percentage of respondents indicating they use public transport (bus, train) in Aalst is higher than Waalre. Clery and Rhead (2013) state education plays a crucial role in raising awareness of environmental challenges. The higher the education, the more environmental friendly choices like taking public transport or the bicycle instead of taking the car are made. However, when plotting the level of education against the most chosen mode of transport, this statement is not supported by this research. Respondents with higher education levels (HBO, WO, Doctoral) use the bicycle ánd the car more than the lower levels of education (elementary, LBO, MBO, HAVO, VWO). The bus and electric bicycle is used more among the respondents with lower levels of education.

4.2.2 Transportation to activities

Mobility is an essential element in people's daily activity patterns. Viti et al. (2010) state that the scheduling and time dedicated to the different activities depend among others on the duration and the opportunity of travelling from one activity to the next. Therefore, faster mobility options allows people to schedule more activities within a day and to travel longer distances with comparable travel times. On average, one travels 32 km per day (CBS, 2016). Activities are categorized in traveling to (1) work, (2) friends, (3) shops, (4) culture, and (5) school. Modes of transportation are categorized in 1. car, 2. bus, 3. train, 4. bicycle, 5. electric bicycle, 6. other (moped, motor, taxi, über).

Most used mode of transport per day
Travel is strongly correlated with activity timing and the chosen mode of transport (Viti, et al., 2010). Therefore, the disaggregate behavioral aspects over the week are of researched. The car and bicycle are the most used mode of transport for any day of the week, making up about 80 % of the total travels done. Where the car is slightly more used on weekends, the bicycle is slightly less used in on Saturdays and Sundays. This result suggest ways of travel differ from weekdays to weekends.

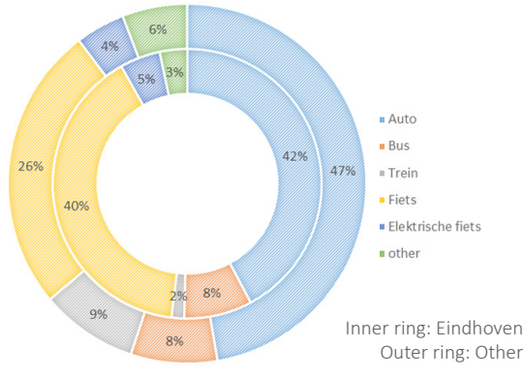
1) Traveling to work
About 10.000.000 commuter trips are made on weekdays (CBS, 2016). The graph shows the older people become, the less they make use of the public transport to travel to work and the more they take the car. Younger people (age category 15-24) tend to use the bicycle to travel to their work. However, this result can partly be explained because residents in the Netherlands can obtain their driver's license when they turn 18. This is also in line with the national trend that car ownership is decreasing among young people (CBS, 2017). Another interesting observation if the increase of the electric bicycle among the age group is 45-64 years old. Research done by Univé and Growth for Knowledge (2016) indicates 16 % of all Dutch residents owns an electric bicycle, which increases the frequency of cycling (utilitarian and recreational). Respondents who take the (electric) bicycle to their work indicate they use this mode of transport when they have to cycle up to 30 minutes.



Mode of transport per day (all repondents)

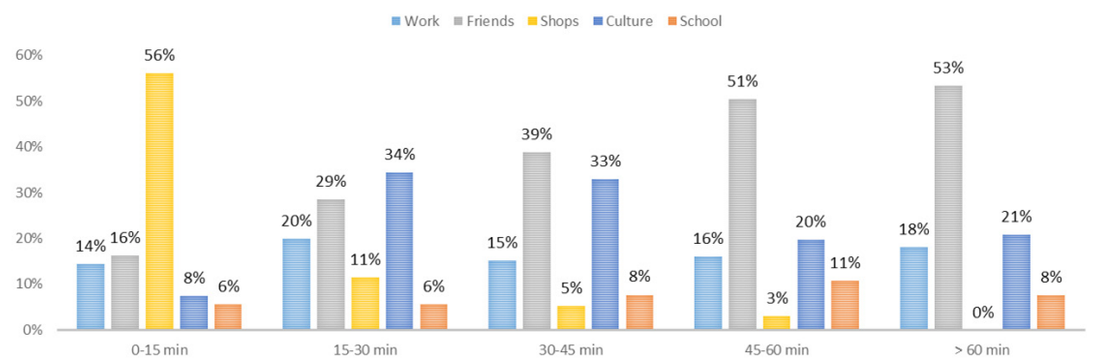
Respondents tend to walk to their work then they have to walk up to 15 minutes. Almost half of the respondents who use public transport to travel to their work travel more than 60 minutes. The car is mostly used when the travel time is between 15 to 30 minutes.

Respondents who indicate they work in Eindhoven use the car slightly less than respondents indicating they work elsewhere. Moreover, the bicycle is used almost 10 % more to reach Eindhoven for work reasons compared to other work related destinations. The use of public transport is the same.



Travel to work Eindhoven - other

CBS (2016) indicates that highly educated men and women with jobs commute considerably more than workers with low- and medium level education. With a high educational level the commute distance travelled is about 30 km, where the lower level education workers travel 19 km. This is mainly because there is a greater distance between the home address and the place of work for highly educated workers than for the less educated workers. The respondents of this research are mostly highly educated (HBO, WO, Doctoral), making up about 70 percent of all respondents. However literature states these high level education workers travel further than lower level education workers, the data shows that 45 % respondents work approximately within 10 kilometers of their home address and only The city of Eindhoven is within this reach. The high level of education can be explained with Eindhoven being the "smartest region of the world", whereas a lot of highly educated people live nearby.



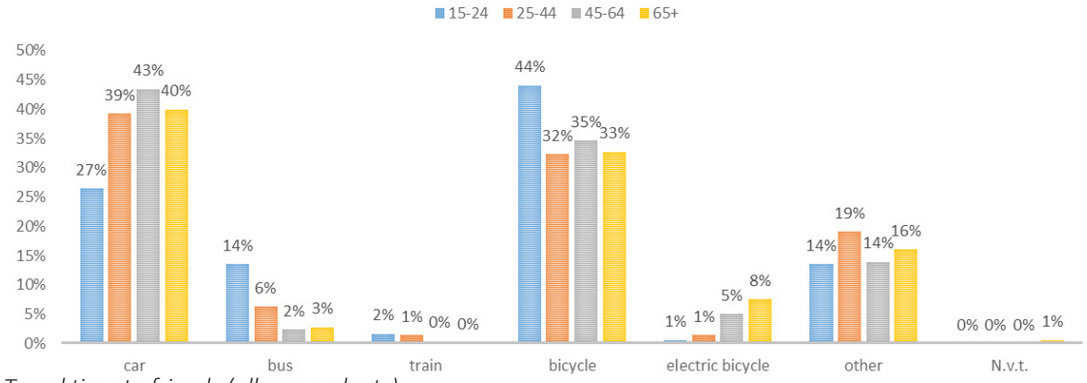
Average travel time (all respondents)

2) Traveling to friends
The use of the regular bicycle decreases the older the respondents become. Again, the use of the electric bicycle increases. However, it is striking the older respondents use their car to travel to friends.

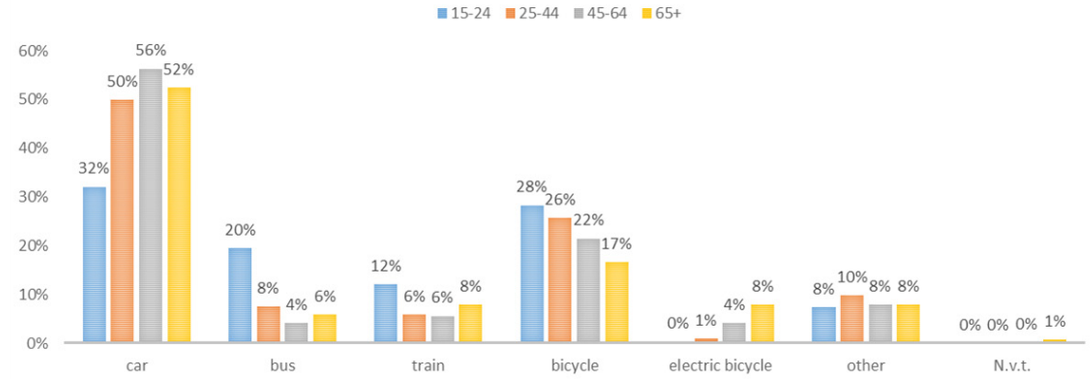
3) Traveling to shops
Both car and bicycle are frequently used modes of transport to cover the distance to shops. The car seems to be a common mode of transport to move larger amount of (supermarket) bags, however results show the bicycle is also frequently used. Comparing the age differences, the use of public transport seems to decrease where the use of the electric bicycle increases. The electric bicycle is becoming increasingly popular in the Netherlands. In 2015, nearly 1 million bicycles were sold of which one out of four was an e-bicycles (CBS, 2016). On a national level, CBS (2016) state more than a tenth of all cycling kilometers are covers on an e-bicycle. However, this does not come forward in this research.

4) Traveling to culture
Striking is the relatively high use of public transport (bus and train) when undertaking a cultural activity compared to the other activities. As the city of Eindhoven offers much more cultural activities than Waalre (musea, cinema, festivals, etc.) this is in expected result. The nearest cinema is 5,3 kilometers away from the center of Waalre, a distance people are not likely to cycle (van der Blij, Veger, & Siebos, 2010). Again, the older one becomes the more the car is used.

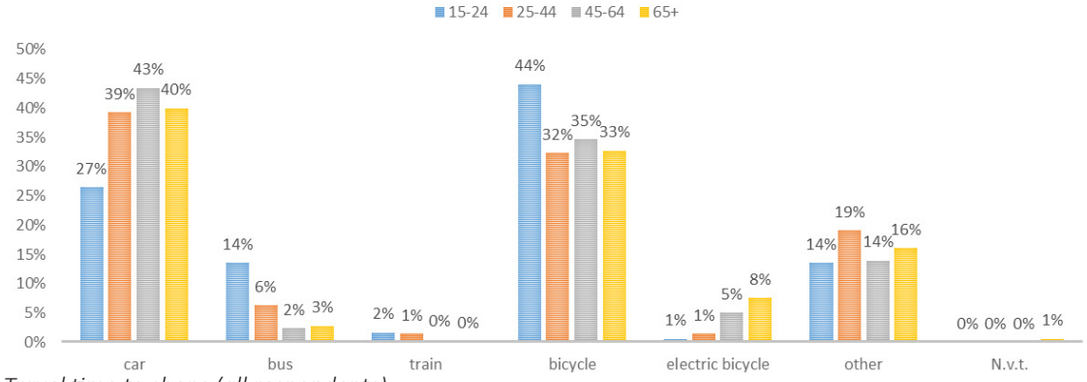
5) Traveling to school
Only when traveling to school, the bicycle outweighs the car. The majority of youngest respondents (15 – 24 years old) are traveling to school with public transport. This is in line with Chakrabarti (2017), who states public transport users are younger on average than users of other modes of transport. Students in the Netherlands often have a student pass for public transport, which they use half over the time for their study. Half of the youngest respondents covers this trip by public transport, and about one third covers the trip by bicycle. The next age category (25 – 44 years old) contains students who continue their education at MBO, HBO or university. In this age category we see a major decrease of the use of public transport. According to CBS (2017), 32 % of the residents of the municipality of Waalre between 18 and 30 years old own a car.



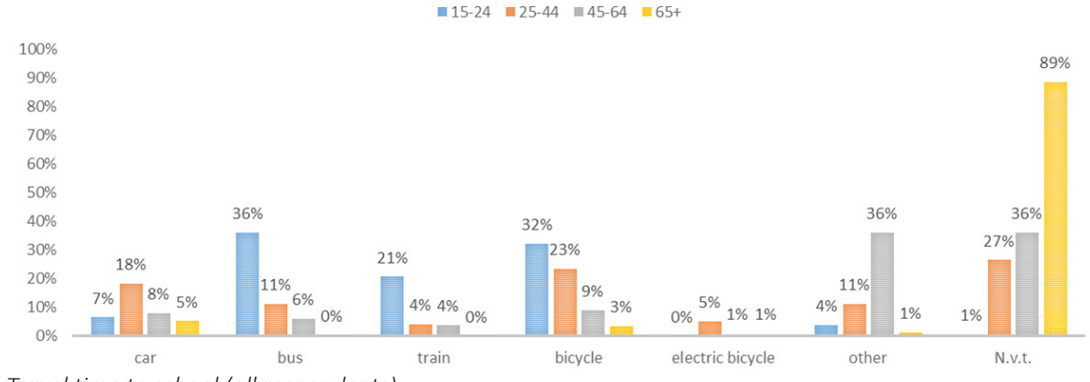
Travel time to friends (all respondents)



Travel time to culture (all respondents)

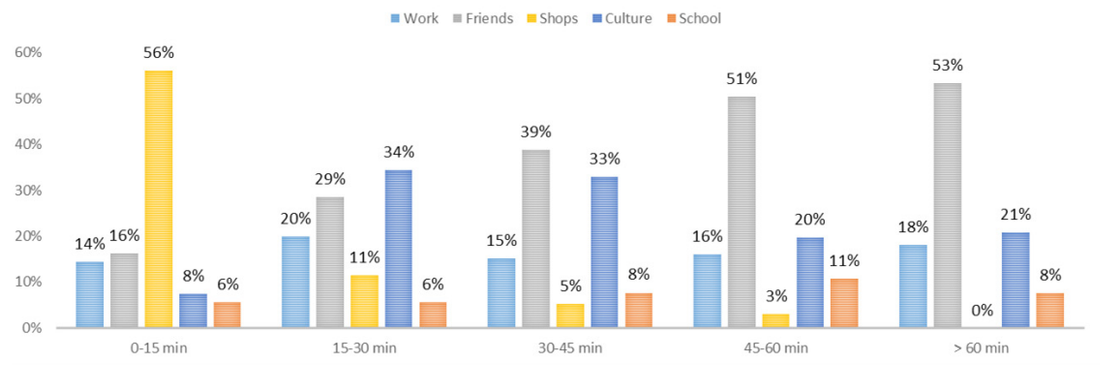


Travel time to shops (all respondents)

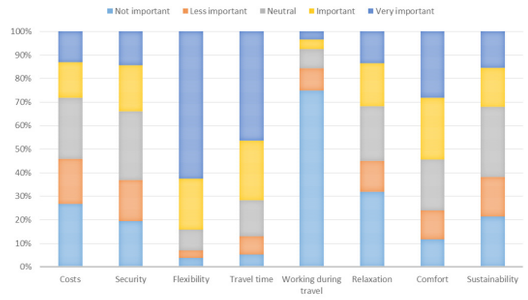


Travel time to school (all respondents)

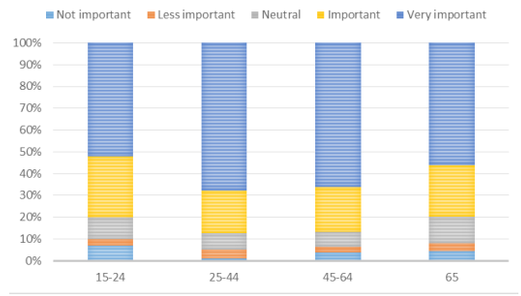
Activities & travel time
The graph shows average travel time to various activities. It can be concluded that basic activities like going to the supermarket are preferable as short as possible, up to 15 minutes. Travel to friends, on the contrary, is where the respondents take their time for. More than half of the respondents indicate they travel more than 60 minutes to visit friends. Commuting accounts for most of the distance travelled, while social and leisure activities take up most of the travel time.



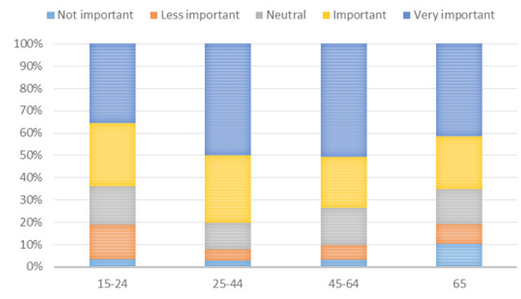
Average travel time (all respondents)



Importance for choosing most used mode of transport (all respondents)



Flexibility & age groups (all respondents)



Travel time & age groups (all respondents)

4.3 Travel reasons

According to Dell`Ollio et al. (2011) and Beirão et al. (2007) travel time, costs and comfort are the most important aspects of transport choice. Both state that safety and flexibility are to a lesser important for ones choice of transport. For the following chapter, the following indicators can be categorized: 1. Costs, 2. Safety, 3. Flexibility, 4. Travel time, 5. Working during travel time, 6. Relaxation during travel, 7. Comfort, 8. Sustainability.

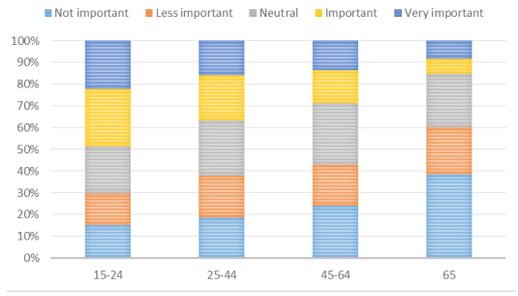
4.3.1 Indicators for travel reasons

More than two-third of the respondents indicate flexibility is the most important reason for choosing their most used mode of transport. This is in contradiction with literature (Dell'Ollio et al, 2011; Beirão et al., 2007) which states travel time, costs and comfort are main reasons and not flexibility. Further, respondents indicate the second important reason is travel time, followed up by comfort. Working during travel seems not to be important at all.

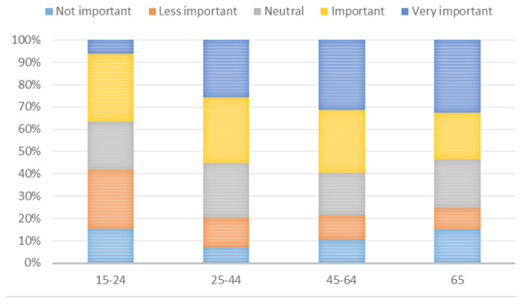
Travel time
Travel time is considered as most important factor among the respondents between 25 and 64 years old. It is plausible this age category consist mostly out of respondents who have more turbulent lives (e.a. work, children) compared to the youngsters and the retired group. Therefore, travel time is of major influence.

Travel costs
Regarding travel costs, the older age category (65+ years old) attach considerable more value to costs, as almost more than one-third of these group indicates this is 'the most important reason'. Meanwhile, a quarter of the youngest age group (15-24 years old) consider travel costs as the least important factor for choosing their most used transport mode.

Comfort
Furthermore, also comfort becomes more important when respondents become older. The age category that values comfort the most is the oldest age category (65 + years old), with almost one third of the respondents stating this is the most important reason for choosing their most used mode of transport. Comfort is least important to the youngest age category (15-24 years old).



Flexibility & age groups (all respondents)



Travel time & age groups (all respondents)

4.3.2 Motives for travel modes

The top three modes of transport in this research are the car, the (electric) bicycle and the bus. In an open question, we asked respondents why they use this specific mode of transport the most.

Car
Respondents indicating they use the car most (45 %, 658 respondents) gave various reasons for choosing this mode of transport above other, ranging from work related issues ("I'm an account manager and have to travel a lot to visit customers") to independence ("it provides most freedom, I work very irregularly"). The four most frequent mentioned reasons are travel time, ease of having the car in front of the door, the absence of having a full-fledged alternative mode of transport, and the distance of the destination.

The (electric) bicycle
Respondents who cycle most, normal and electric bicycle (23 %, 344 respondents), place health reasons on top of reasons why they cycle most. One respondent answered: "It is good for body and soul". Next to this, travel time and easy are frequently mentioned. However the bicycle might be more flexible than the car (park everywhere, no gas needed), respondents who indicate they value flexibility as highly important still chose the car over the bicycle.

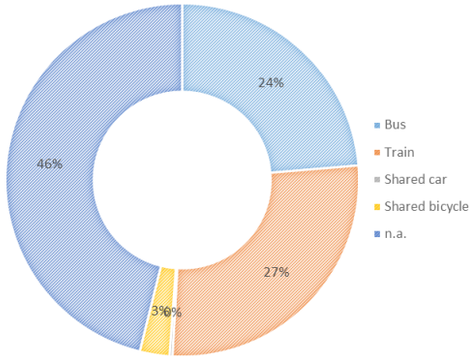
Bus
Respondents who indicate they most frequently use the bus (4 %, 62 respondents) answer they use this mode of transport because they travel for free, probably because of the government sponsoring public transport cards. It is striking that almost a quarter of the respondents states they use the bus because "Today the day it is my only opportunity". None of the respondents answered they take the bus because of sustainability reasons.

4.4 Public transport

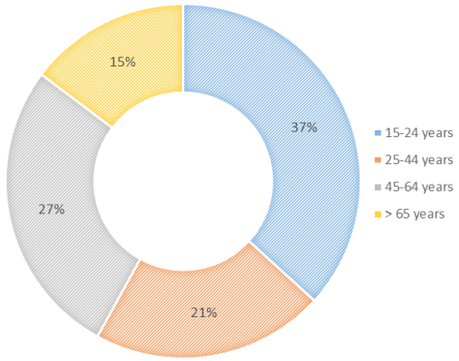
Public transport plays an important social role to ensure that all members of society are able to travel, including groups such as the young, the old, the poor and those with medical conditions. Public transportation creates locations of social encounters that mixes the social, ethnic and other types of affiliation. Moreover, public transport is regarded as significantly more energy efficient than other forms of travel (Beirão & Cabral, 2007), and it utilizes urban space more efficiently than a car does.

Subcription

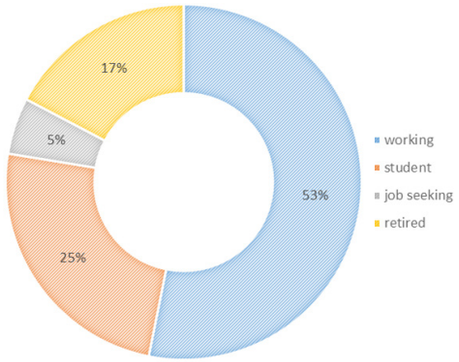
More than half of the respondents indicate they have a subscription on a mode of (public) transport (bus, train, shared car, shared bicycle). However, during the interviews it became clear that the definition of subscription was different for various people. Various people indicate they have a subscription by stating they have a public transport card. However, the public transport card itself is not a subscription as there are no periodic costs. This has to be taken in consideration when interpreting the results. Comparing the two districts, almost 10 % more respondents in Aalst indicate they have a subscription.



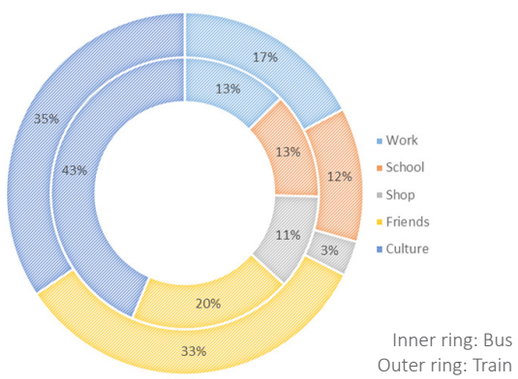
Subscription on mode of transport (all respondents)



Distribution of age groups using public transport during a regular week (1125 respondents)



Distribution of groups based on employment status using public transport during a regular week (1125 respondents)



Distribution of goals of public transport use. (1125 respondents)

4.4.1 Bus and train

About 13 % of the respondents travels with public transport during a regular week (1125 out of 8800 trips made). Out of these respondents, more than one third of the users are of the youngest age category (15-24 years). Retired respondents use public transport the least with 15 %. When specified per employment status, more than half of the respondents that use public transport during a regular week are considered students. A quarter of the respondents is seeking jobs and only 10 % of the working class (full-time and part-time) uses public transport.

Goal of public transport use

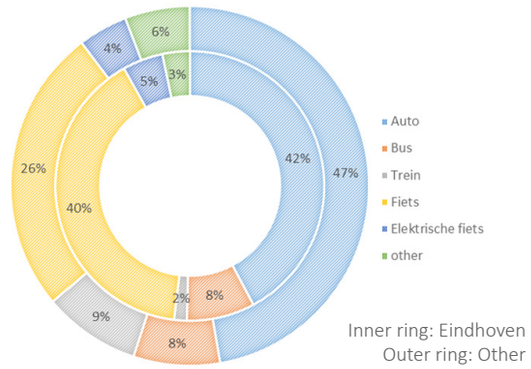
Public transport (both bus and train) is mostly used when traveling to cultural activities, with takes up about one third up to half of all the respondents. Traveling to friends is second destination to travel to with public transport. A considerably smaller percentage travels with public transport to reach work and school. Public transport is used least when traveling to shops. As the largest group of public transport users is considered to be a student, this is a striking result. The result indicates they don't use public transport to reach school, but mainly to travel to cultural activities and visit friends.

Travel time to work

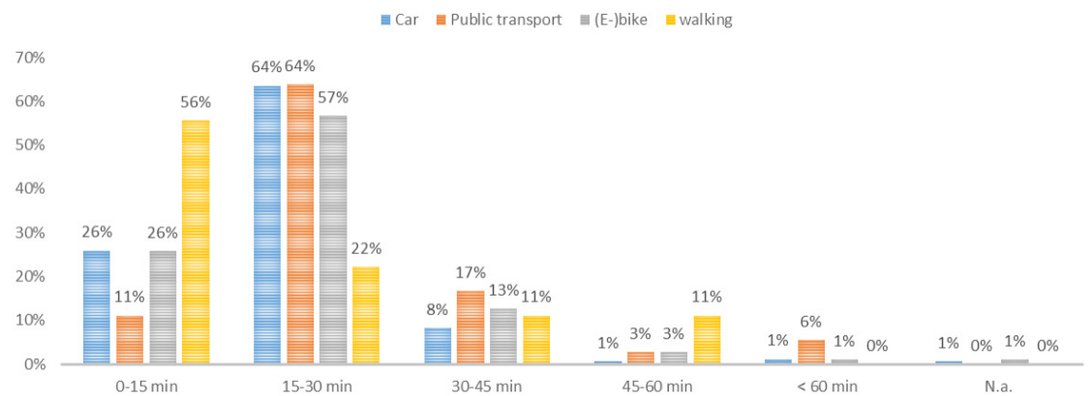
Out of the respondents indicating they use public transport to travel to work (9 %, 163 respondents), respondents from the Aalst-district that use public transport to reach work cover the longest travel time with more than half of the respondents indicating they travel more than 60 minutes to work. Interesting is

Waalre, where there is a relatively large group of respondents who travel 15 up to 30 minutes to work ánd a relatively large group of respondents who travel up to 60 minutes to work.

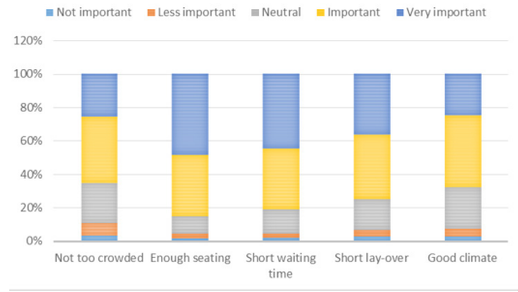
Travel time to work in Eindhoven
Keeping in mind that not even 10 % of the respondents works in the direct environment (Waalre, Veldhoven, Valkenswaard) and more than a quarter of the respondents works in Eindhoven (393 respondents), different means of travel to Eindhoven (bicycle, car, public transport) are plotted against travel time. It stands out that the fastest way of traveling to Eindhoven is the bicycle. More than 25 % of the users of the bicycle reach Eindhoven within 15 minutes, where only 10 % of the public transport users reaches Eindhoven within 15 minutes. More than half of the respondents indicate their travel time to Eindhoven is between 15 and 30 minutes, independent they use bicycle, car or public transport. Furthermore, the percentage of respondents who travel with public transport and reach Eindhoven in more than 60 minutes stands out.



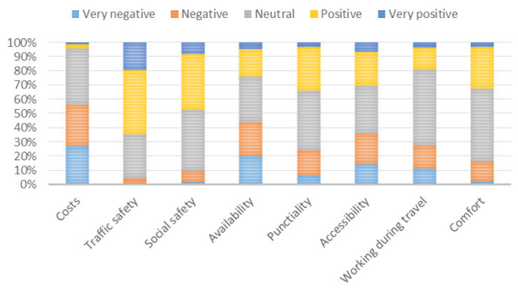
Travel to work Eindhoven - other



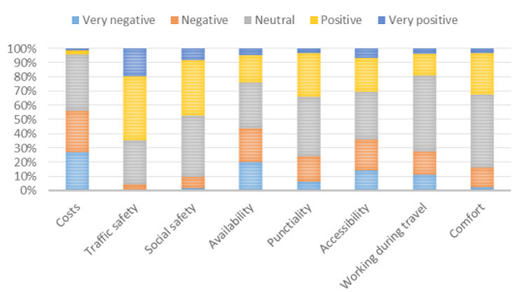
Travel time to work in Eindhoven by transport mode (379 respondents)



The importance of elements that are accompanied with a public transport trip (all respondents).



The evaluation of elements that are accompanied with a public transport trip (all respondents).



The evaluation of elements that are accompanied with a public transport trip (all respondents).

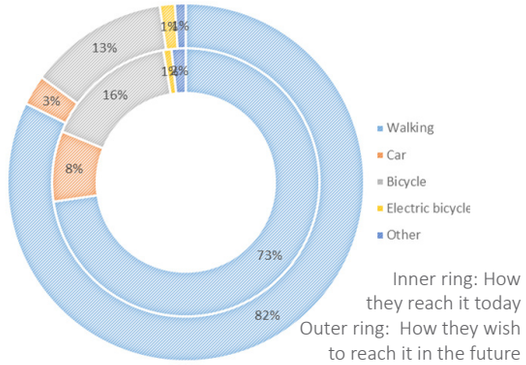
4.4.2 Experience of Public Transport

The respondents are asked to assess the importance of various aspects that have influence on their experience of a public transport trip, valuating these aspects from not important to very important. The aspects are costs, traffic safety, social security, frequency, punctuality, accessibility of public transport stop, working during travel, comfort and sustainability. Three aspects stand out, as almost half of the respondents indicate frequency, punctuality and accessibility are the most important aspects that have influence on their experience of a public transport trip.

Furthermore, respondents are asked how they currently value those various aspects that have influence on their experience of a public transport trip. The three most important aspects as mentioned above, frequency, punctuality and accessibility, are rated considerably negative to neutral. The most negative valued aspect is the cost of public transport. Half of the respondents indicate public transport tickets are too expensive, although respondents do not value this as highly important for their experience of a public transport trip. Only a quarter of the respondents indicates they rate comfort as positive during their trip. Two aspects are rated (very) positive: traffic safety and social safety. Almost three quarter of the respondents value traffic safety as (very) positive, and half of the respondents rate social safety as (very) positive.

Comfort during a public transport trip can disaggregated into five elements: bustle in the bus, availability of seating, waiting time, switching time, indoor climate. Respondents are asked how important these elements are for their experience of comfort. For every single element, more than half of the respondents indicate they value this as a (very) important element for their experience of comfort. The availability of seating and short waiting times are considered essential, with more than 75 % of the respondents valuating this as important. Still of major importance, but the least in this category, are bustle in the bus and the indoor climate.

Other aspects of relevance for a comfortable public transport trip mentioned range from information provision (“I would like more reliable, actual information about travel possibilities”), better wheelchair and baby car accessibility, more quiet spaces in trains and busses, and cleaner sanitary (“I think trains are cleaned poorly. Sometimes the toilets are plain dirty.”).



Distribution of how respondents (want to) reach a public transport stop. (987 respondents)

4.4.3 First & Last Mile

The use of public transport is strongly determined by the quality of its first and last mile. How far people are prepared to walk to certain public transport stops is indicated as the area of influence of a public transport stop (van der Blij, Veger, & Siebos, 2010). The area of influence is becoming larger when its public transport is faster, the frequency higher and the travel is longer in distance.

Today, almost three quarter of the respondents walk to a public transport stop which is within a proper distance, and even more respondents (82 %) would like to walk to a public transport stop in the future.

case study bus top Den Hof, Aalst

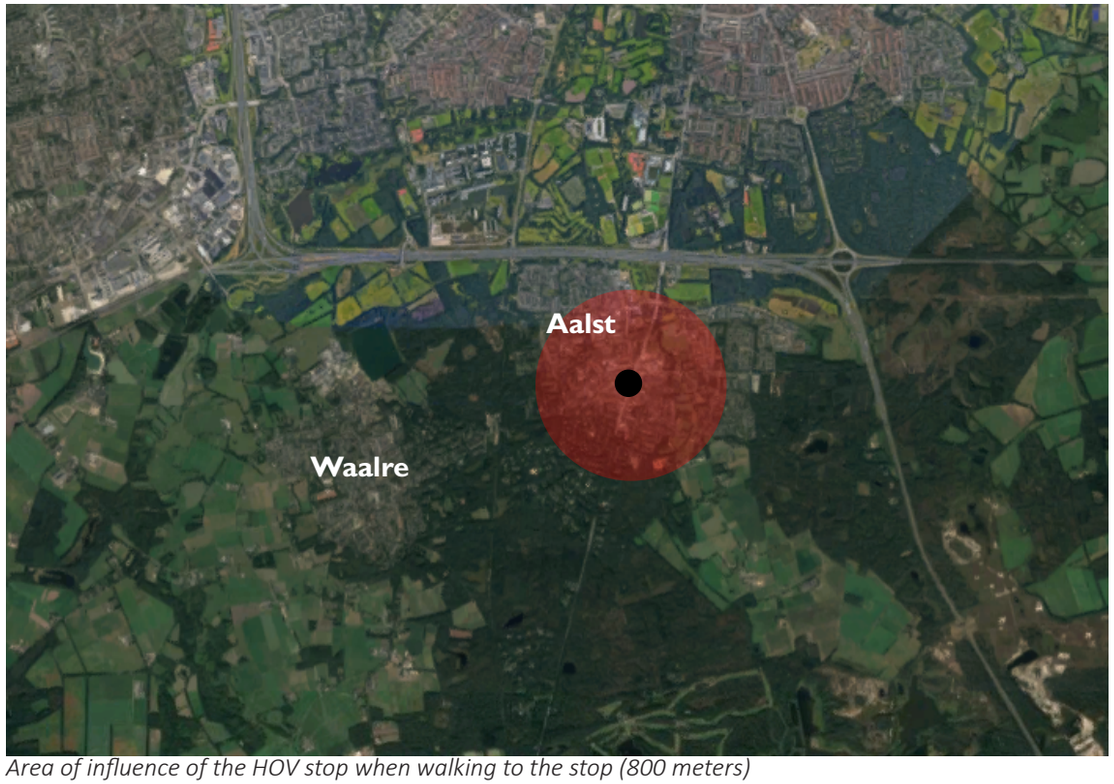
With the future HOV stop in Aalst in mind, a small case study is done on the first and last mile towards this future HOV stop. The dot on the map is the location of the future bus stop. The area of influences by different means of transportation are presented on the next pages.

The size of a public transport network has been determined by a walking distance up to 400 meters to a public transport stop (van der Blij, Veger, & Siebos, 2010). The dot on the map is the current bus stop ‘Den Hof’. The area of influence does not reach very far into the municipality.

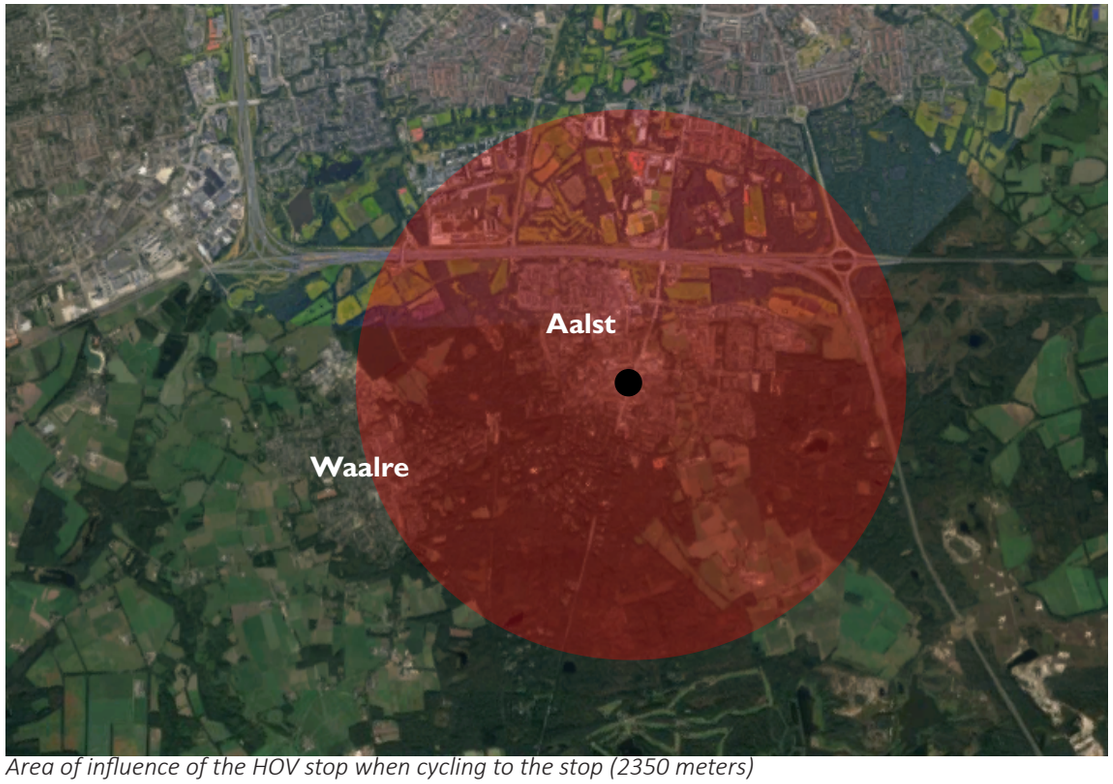
When transforming the current bus stop into a HOV stop, research shows the area of influence doubles. Travelers are prepared to walk about 800m towards this high-quality public transport stop. When cycling towards to HOV stop, the area of influence becomes about 2350 meters. As people cover 1,5 times more distance with an e-bicycle than with a regular bicycle (CBS, 2016), this area of influence becomes even 3525m, covering almost the full municipality of Waalre.

Location of bus stop Den Hof in Aalst. source: google maps, edited by the authors

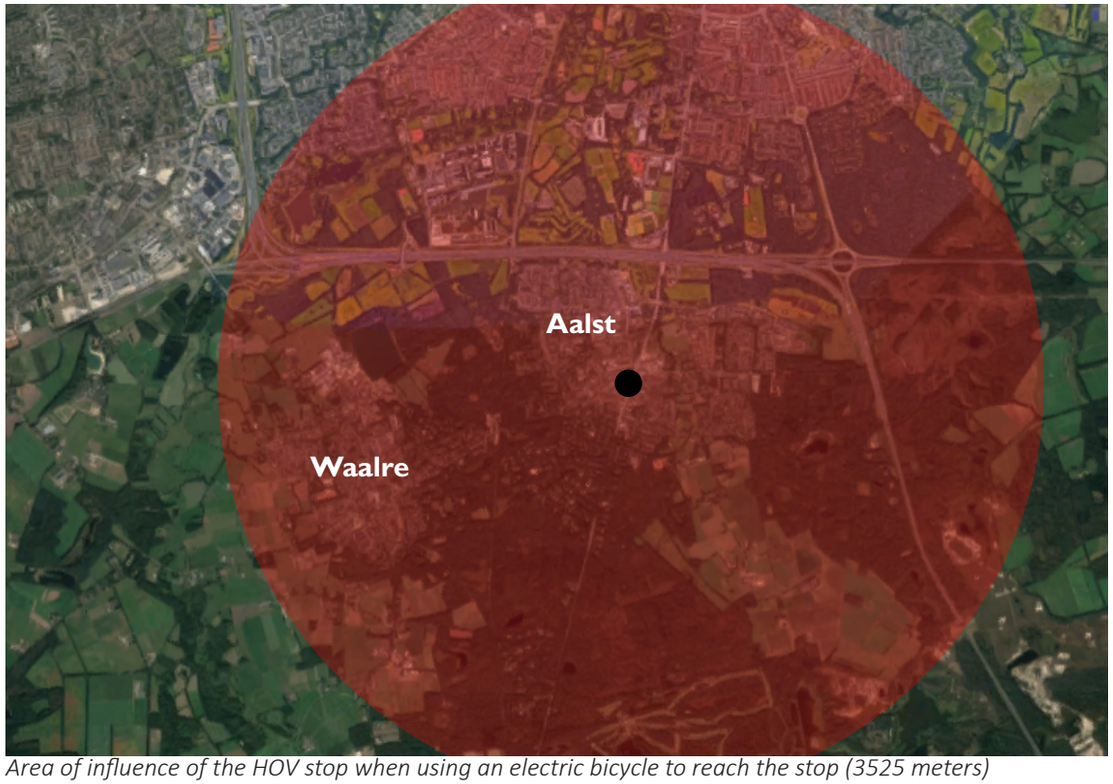
Area of influence the regular OV stop when walking (400 meters)
source: google maps, edited by the authors



Area of influence of the HOV stop when walking to the stop (800 meters)
source: google maps, edited by the authors



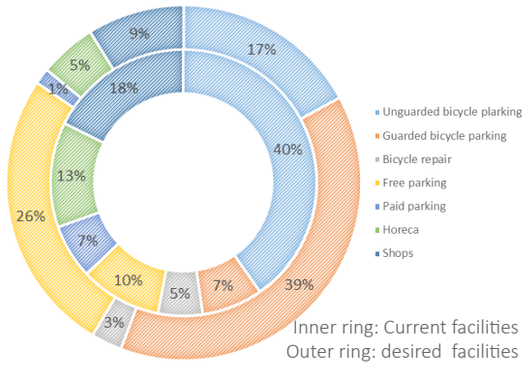
Area of influence of the HOV stop when cycling to the stop (2350 meters)
source: google maps, edited by the authors



Area of influence of the HOV stop when using an electric bicycle to reach the stop (3525 meters)
source: google maps, edited by the authors

Facilities at public transport stop

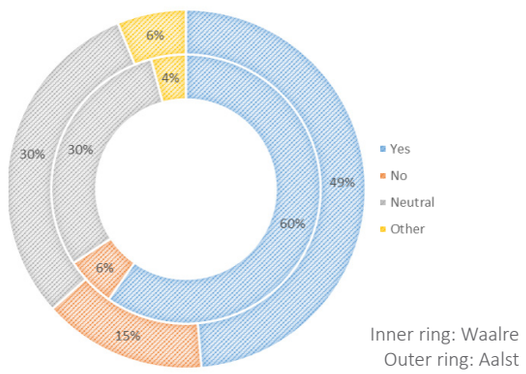
Supervised bicycle parking is by far the most preferred future facility at the public transport stop with 39 % of the respondents answered they would like to have this facility in the future. At this moment, public transport stops in Aalst and Waalre do not offer any supervised bicycle parking. The supervised bicycle parkings mentioned are most likely the ones in the city of Eindhoven. Remarkable is that most respondents prefer to walk to a public transport stop, but also prefer a supervised bicycle parking. Could it be possible to get the car users out of the car when a supervised bicycle parking is provided at the public transport stop?



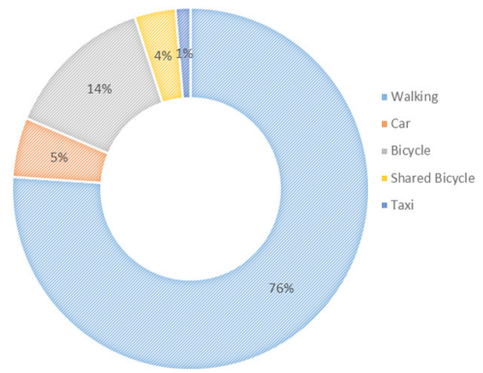
(Desired) Facilities at the public transport stop.

Safety of public transport stop

Only a small part of public transport users is feeling unsafe on their way to the public transport stop and at the public transport stop, of which most users feeling unsafe are women. Multiple respondents indicate they feel less safe in the evening ("I feel safe by day and unsafe by night"). A significant higher amount of respondents from Aalst feels unsafe (15 %) compared to respondents from Waalre (6 %). "I have to cross the main road where I have to wait very long for the traffic light. It's safe but people drive fast", one respondent from Aalst said. More specific reasons were mentioned, like the Bergstraat in Waalre: "During rush hour, cars even drive at the wrong side of the road!".



Safety of public transport stop (all respondents)



Distribution of how respondents desire to travel further from their last public transport stop to their final destination (1182 respondents)

Last Mile

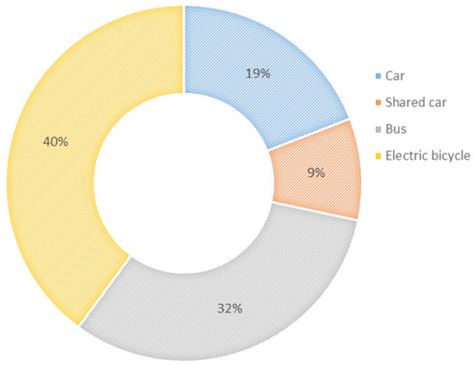
The last mile is mainly done on foot (76 %). As about a quarter of the respondents works in Eindhoven, it could be interesting to attract users to public transport by providing (shared) bicycles along public transport routes. Not only facilities near the first public transport stop are of importance, also the ones beyond the border of the municipality that cover the last mile have to be taking in consideration. Shared bicycles (OV-fiets) are for example only provided at the train station of Eindhoven, whereas the city of Utrecht offers four places to rent a shared bicycle. The research does not show where in Eindhoven the respondents work, but it is plausible that a part of the respondents works at places like the High Tech Campus. These commuters could benefit from a shared bicycle system near a bus stop halfway the HOV- route to cycle to the campus, instead of traveling to the train station of Eindhoven first in order to travel further. Offering supervised bicycle parking at bus stops along the route could also motivate commuters to park their regular bicycle near their bus stop and travel further.

4.5 Scenario’s

The future high-quality public transport service (HOV) offers opportunities to use or develop new (ICT) technologies, and to stimulate the development of new programs around the mobility node. In order to get the respondents acquainted with future possibilities, we offered these prospective users six future scenario’s that are related to future travel. Per scenario they could choose their preferred way of travel. This part of the survey was not obligatory. However, more than 1000 respondents answered every question related to scenarios.

Scenario: Travel time
The respondents could choose between the following options regarding travel time:

- Car: 20 minutes slower because of the increase of traffic.
- Shared car: 10 minutes faster because shared cars are allowed on bus lanes.
- Bus: Same travel time as current situation.
- Electric bicycle: 10 minutes faster because of better technology and infrastructure.



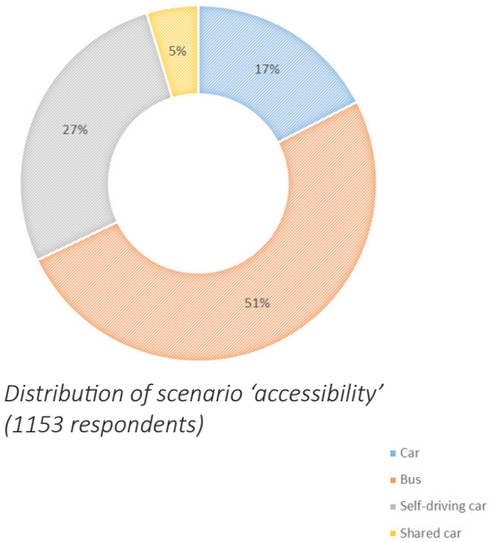
Distribution of scenario ‘travel time’ (1154 respondents)

The result shows travel time has major influence on transportation choice. Where earlier results show the respondents are mostly attached to their car, this result shows the respondents are inclined to leave their car for a faster mode of travel (electric bicycle, in this scenario). Despite the shorter travel time of the shared car than the normal car, this option is not preferred. Respondents prefer to share a bus instead of a car.

Scenario: Accessibility
In this scenario the respondents could choose between the following options regarding accessibility:

- Car: Less relaxed driving because of increase of traffic.
- Bus: More convenient to reach because of new transport nodes and infrastructure.
- Self-driving car: More efficient because one can work in the car.
- Shared car: Comfort of a regular car without buying one yourself.

The result illustrates that accessibility is more important than relaxation, efficiency and comfort as almost half of the respondents replied they would prefer the more convenient and reachable bus in this scenario.

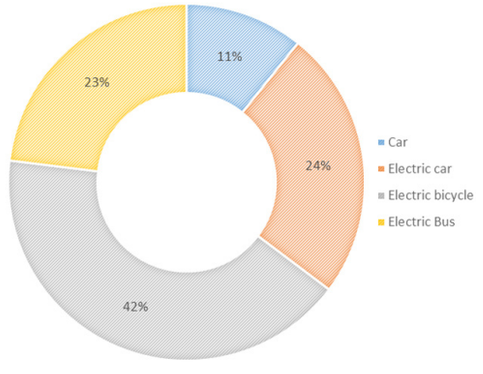


Distribution of scenario 'accessibility' (1153 respondents)

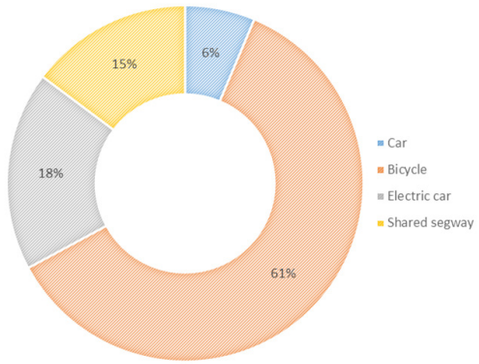
Scenario: Parking
The scenario of parking includes the next future options:

- Car: Search 10 minutes for parking and walk 10 minutes to your destination.
- Electric car: Free parking and walk 10 minutes to your destination.
- Electric bicycle: free parking at your destination.
- Electric bus: walk 10 minutes to your destination.

In this scenario, the only way to park you transport mode next to your location is when one travels with the electric bicycle. The results show that parking close or next to your location is seen as an important factor. However, the electric bus with a ten minutes' walk is also a more popular choice in this scenario.



Distribution of scenario 'parking' (1154 respondents)



Distribution of scenario 'public transport stop' (1117 respondents)

Scenario: Public transport stop
The respondents could choose between different options regarding traveling to public transport stop:

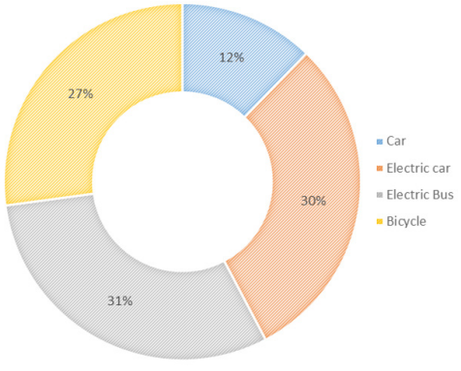
- Car: No parking available.
- Bicycle: Supervised bicycle parking available.
- Electric car: Special parking available.
- Shared Segway: Available everywhere to transport you to the public transport stop.

The result shows that the car is less preferable if there is no parking available. Many respondents prefer the bicycle in this scenario. Remarkable is the percentage that prefer to use the shared Segway in this scenario.

Scenario: Sustainability
This scenario will give an indication of respondents that leave the car if there are different sustainable transport modes in the future. This will be encouraged by increase of the price of fuel in this scenario. The respondents could choose between the following scenarios:

- Car: Price of fuel increase with 5%.
- Electric car: More sustainable than the 'normal' car, equally in comfort but more expensive in purchase.
- Electric bus: Even more sustainable and cheaper than the electric car.
- Bicycle: Slower and less comfortable than other option but energy neutral.

The answers on this scenario are really different. 12 % of the respondents on this scenario still wants to use the car.



Distribution of scenario 'sustainability' (1154 respondents)

5. Waalre key learnings and recommendations

Travel behaviour
Independent of the activity the respondents are going to undertake, the car is with more than 50 % the most chosen most of transport to cover any distance. Typically Dutch, the bicycle represents about 30 % of all trips made, especially the trips of which the destination is reached within 15 minutes. Striking is the rise of the electric bicycle among older people, which seems to be an ongoing trend for the upcoming years (Univé & GfK, 2016). Less than 10 % of all distances made to reach any activity is covered by public transport. The only form of activity where we observe a slight rise of the use of public transport is when respondents travel to reach cultural activities, of which predominantly the younger age group (15 – 24 years old) makes use of the bus. Education or gender seems not to be of influence on the transportation choice. Regarding travel time, respondents are willing to travel more than 60 minutes to visit friends, but only 15 minutes to do their groceries.

Travel choices
Flexibility, travel time and comfort are the three most important aspects for respondents to choose their mode of transport. Less important seems to be travel costs, safety, relaxation during travel, working during travel and sustainability. The reasons for choosing a specific mode of transport range from health reasons to having no other full-fledged options.

Public transport
More than 10 % of all trips made during a week is made by public transport. The youngest age category (15 – 24 years old) uses public transport to cover distances the most. Striking is the result that the city of Eindhoven is faster to reach by bicycle than with public transport. More than 25 % of the respondents who cycle reach the city of Eindhoven within 15 minutes, where only 10 % of the respondents who use public transport reaches Eindhoven within these 15 minutes.

Frequency, punctuality and accessibility are considered to be the three most important aspects for the respondents' experience of public transport. Where frequency and punctuality are relatively positive valued, accessibility could be improved according the respondents. Social safety, traffic safety and comfort are the three most positively valued aspects of a public transport trip. Although costs is not considered to be of importance for a public transport trip, traveling by public transport is valued as expensive. The use of public transport is strongly determined by the quality of its first and last mile. With the future HOV stop at the

Eindhovenseweg in Aalst in mind, its area of influence ranges from a small part of the neighbourhood when people walk to the stop, to covering the whole municipality when people use an electric bicycle to reach the stop. Moreover, facilities offered at the starting public transport stop as well as the ending public transport stop are of major importance. Almost half the respondents desires supervised bicycle parking near public transport stops in the future.

Scenarios

The presented scenarios, although suggestive, show there is an actual turning point where respondents are inclined to choose other means of transport over the car. Future changes in mobility are inevitable, and respondents are willing to assess every situation again when parameters change.

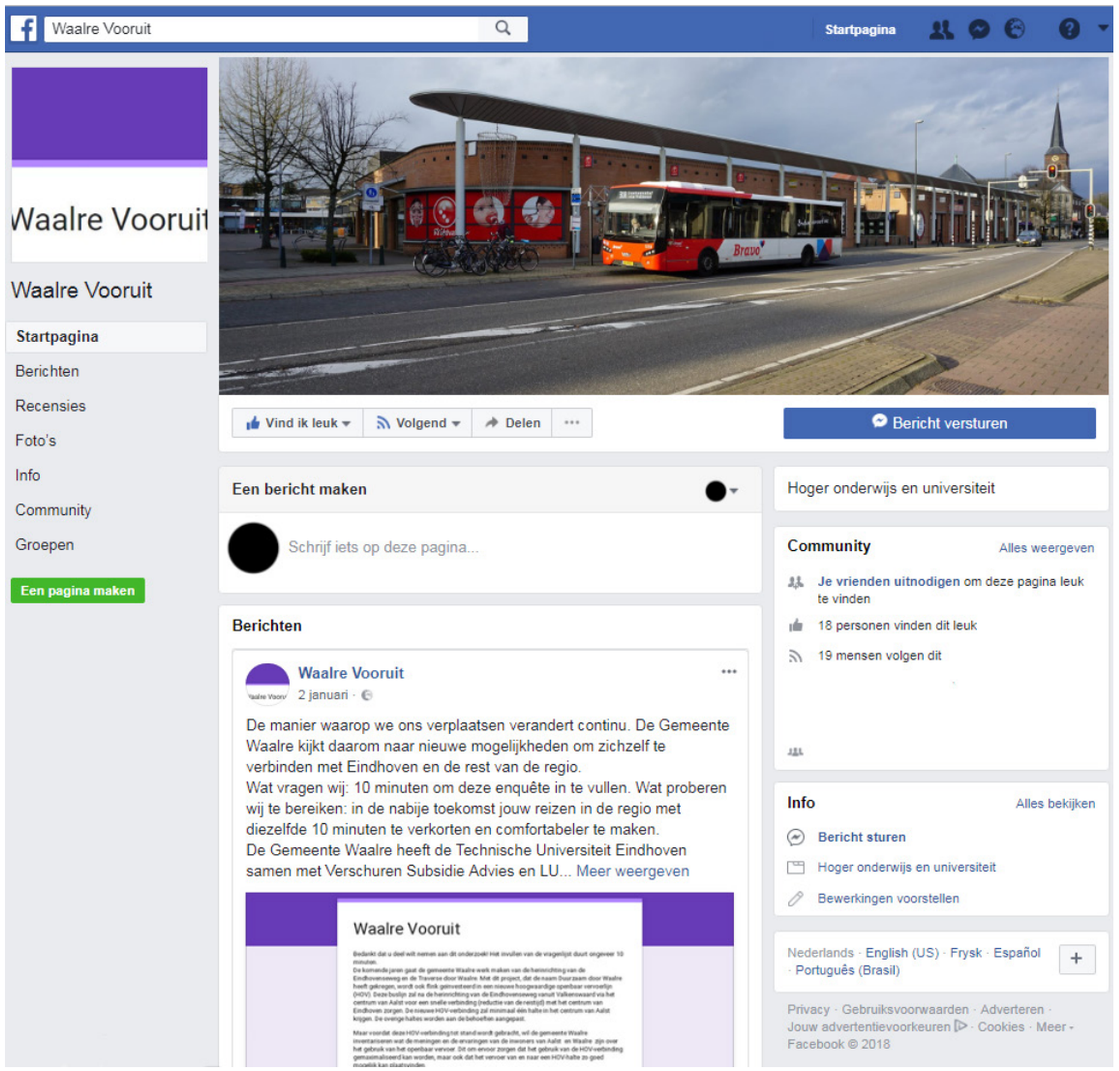
Recommendations for the future HOV stop at Den Hof in Aalst

However more research should be done on the influence of a future HOV stop at the Eindhovenseweg in Aalst, the following recommendations could be made for future (high quality) public transport stops based on this research:

1. Provide a guarded bicycle parking at the public transport stop. These guided bicycles parkings could provide social workspaces, where the work can be carried out by people long-term unemployed or people with a work disability.

2. Having multiple facilities at both the starting and ending public transport stop are of major importance for the attractiveness of a public transport stop. For example, the guarded bicycle parking as mentioned above could be extended to a bicycle repair shop. As people spend as least time as possible on traveling to the supermarket, a pick-up point for the local supermarket could be provided in order to combine activities (traveling and shopping). A coffee bar could serve that one cup of hot coffee near the stop when waiting on the bus, or a small café could be the place where you meet a friend who visits you by using public transport.

3. Place shared bicycle along to the public transport route. The research shows that more than a quarter of the respondents works in the city of Eindhoven. As the only shared bicycles can be found at the train station of Eindhoven, respondents have no other option than to walk whenever they exit public transport along the route. Shared bicycles along this route could lower the threshold for workers to use public transport, where they have a convenient and flexible mode of transport to travel further when they get off the bus earlier than the train station.



6. Comments of respondents

Multiple respondents have commented on the content of the survey. One of the most frequent recurring comments was that the research would be too focused on the development of a single HOV-line, whereas various local bus lines, the ones that connected the residential areas, have been lifted in recent years. The survey would also focus too much on the bus as a mode of public transport, and less on the train as mode of public transport. As the municipality of Waalre only provides a bus connection, the train is considered as less important in this survey.

Most of the criticism was expressed on the scenarios in the survey. Our aim was to do research on how methods of transport other than the car could be improved, and when respondents would be inclined to get out of their cars. In practice, the respondents were found to be steering the questions, and they were prevented from making a free choice.

As final criticism respondents commented the research did not ask enough about the times people use transport. Currently, most busses run during the day, which is useful for commuters and students. However, there is a growing demand for bus transport later in the evening, when people travel to visit the theatre, the cinema, or undertake other cultural activities. Our research shows a significant percentage of respondents travels to cultural activities with public transport. Providing busses until late in the evening connecting the larger city cores of Eindhoven and Valkenswaard with Aalst and Waalre is a frequently mentioned suggestion.

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Appendix: survey

Waalre Vooruit

Bedankt dat u mee wil doen aan dit onderzoek! De vragenlijst duurt ongeveer ... minuten

De Technische Universiteit Eindhoven doet samen met Verschuren Subsidieadvies, dat in opdracht van de gemeente Waalre werkt, onderzoek naar de aanleg van een Hoogwaardig Openbaar Vervoer (HOV) verbinding op de Eindhovenseweg te Aalst. Deze HOV-verbinding zal zorgen voor een reductie van de reistijd met behulp van het openbaar vervoer tussen Eindhoven CS en Valkenswaard. Maar voordat deze HOV-verbinding aangelegd wordt, komen wij graag te weten wat de meningen en ervaringen van de inwoners van Aalst en Waalre zijn met betrekking tot het gebruik en comfort van het openbaar vervoer. Hierbij zijn wij vooral geïnteresseerd in de wensen en eisen die ervoor zorgen dat het gebruik van de HOV-verbinding gemaximaliseerd kan worden. Vandaar dan ook deze korte vragenlijst.

De nieuwe HOV-verbinding zal minstens 1 halte krijgen op de Eindhovenseweg te Aalst en graag komen wij te weten wanneer u als inwoner geneigd zal zijn om de auto te laten staan en eerder een ander vervoersmiddel, zoals het openbaar vervoer, te pakken. Ook zijn wij geïnteresseerd in uw redenatie van deze keuze.

*Required

Uw huidige reisgedrag

Wij willen u als eerste iets vragen over uw reisgedrag in de afgelopen week. Als deze week een vakantieweek was, graag de week daarvoor gebruiken.

1. **Met welke vervoersmiddelen heeft u deze week van deur tot deur gereisd ? U kunt meerdere vervoersmiddelen invullen.**
   Tick all that apply.

	Maandag	Dinsdag	Woensdag	Donderdag	Vrijdag	Zaterdag	Zondag
Auto	☐	☐	☐	☐	☐	☐	☐
Bus	☐	☐	☐	☐	☐	☐	☐
Trein	☐	☐	☐	☐	☐	☐	☐
Fiets	☐	☐	☐	☐	☐	☐	☐
Elektrische fiets	☐	☐	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐	☐	☐
Scooter / Brommer	☐	☐	☐	☐	☐	☐	☐
Deelauto (bijv. Greenwheels)	☐	☐	☐	☐	☐	☐	☐
Deelfiets (bijv. OV-fiets)	☐	☐	☐	☐	☐	☐	☐
Taxi / Uber	☐	☐	☐	☐	☐	☐	☐

2. **Hoe reist u meestal naar uw werk en/of studie/school? (van deur tot deur)**
   Tick all that apply.

	Werk	Studie / School
Auto	☐	☐
Bus	☐	☐
Trein	☐	☐
Fiets	☐	☐
Elektrische fiets	☐	☐
Scooter / Brommer	☐	☐
Motor	☐	☐
Deelauto (bijv. Greenwheels)	☐	☐
Deelfiets (bijv. OV-fiets)	☐	☐
Taxi / Uber	☐	☐
Lopend	☐	☐
N.v.t.	☐	☐

3. **Hoe reist u meestal naar de volgende vrijetijdsbestemmingen? (van deur tot deur)**
   Tick all that apply.

	Sport	Vrienden / Familie	Winkels (supermarkt etc.)	Cultuur (museum / theater / bioscoop etc.)
Auto	☐	☐	☐	☐
Bus	☐	☐	☐	☐
Trein	☐	☐	☐	☐
Fiets	☐	☐	☐	☐
Elektrische fiets	☐	☐	☐	☐
Scooter / Brommer	☐	☐	☐	☐
Motor	☐	☐	☐	☐
Deelauto (bijv. Greenwheels)	☐	☐	☐	☐
Deelfiets (bijv, OV-fiets)	☐	☐	☐	☐
Taxi / Uber	☐	☐	☐	☐
Lopend	☐	☐	☐	☐
N.v.t.	☐	☐	☐	☐

4. **Wat is de gemiddelde reistijd naar de volgende bestemmingen? (van deur tot deur)** *
   Tick all that apply.

	0-15 min	15-30 min	30-45 min	45-60 min	Meer dan 60min	N.v.t.
Werk	☐	☐	☐	☐	☐	☐
Studie/ school	☐	☐	☐	☐	☐	☐
Sport	☐	☐	☐	☐	☐	☐
Vrienden/ familie	☐	☐	☐	☐	☐	☐
Winkels (supermarkt etc.)	☐	☐	☐	☐	☐	☐
Cultuur (museum / theater / bioscoop etc.)	☐	☐	☐	☐	☐	☐

5. **In welk gezelschap reist u meestal met de volgende vervoersmiddelen?** *
Tick all that apply.

	Individueel	Met collega's	Met vrienden	Met gezin	Met derden ontmoet via samenreis apps (zoals BlaBla car)	N.v.t.
Auto	☐	☐	☐	☐	☐	☐
Bus	☐	☐	☐	☐	☐	☐
Trein	☐	☐	☐	☐	☐	☐
Fiets	☐	☐	☐	☐	☐	☐
Elektrische fiets	☐	☐	☐	☐	☐	☐
Scooter/ brommer	☐	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐	☐
Deelauto (bijvoorbeeld Greenwheels)	☐	☐	☐	☐	☐	☐
Deelfiets (bijvoorbeeld OV fiets)	☐	☐	☐	☐	☐	☐
Taxi	☐	☐	☐	☐	☐	☐

6. **Heeft u een abonnement op één van de volgende vervoersmiddelen?** *
Tick all that apply.

- ☐ Bus
- ☐ Trein
- ☐ Deelauto (bijvoorbeeld Greenwheels)
- ☐ Deelfiets (bijvoorbeeld OV-fiets)
- ☐ N.v.t.

Beweegredenen van uw vervoerskeuze

In dit deel van de enquête willen we graag te weten komen hoe u het liefst reist en welke factoren daar van invloed op zijn.

7. **Met welk vervoersmiddel reist u het meest?** *
Mark only one oval.

- ◯ Auto
- ◯ Bus
- ◯ Trein
- ◯ Fiets
- ◯ Elektrische fiets
- ◯ Scooter/ brommer
- ◯ Motor
- ◯ Deelauto (bijvoorbeeld Greenwheels)
- ◯ Deelfiets (bijvoorbeeld OV fiets)
- ◯ Other: _____

8. **Waarom reist u het meest met dit vervoersmiddel?** *

_____

9. **Hoe belangrijk zijn de volgende overwegingen om te kiezen voor dit meest gebruikte vervoersmiddel?** *
Mark only one oval per row.

	1 (minst belangrijk)	2	3	4	5 (meest belangrijk)
Kosten	◯	◯	◯	◯	◯
Veiligheid	◯	◯	◯	◯	◯
Flexibiliteit (beschikbaarheid)	◯	◯	◯	◯	◯
Tijd (duur van de reis)	◯	◯	◯	◯	◯
Werken tijdens de reis	◯	◯	◯	◯	◯
Ontspanning tijdens de reis	◯	◯	◯	◯	◯
Comfort	◯	◯	◯	◯	◯
Duurzaamheid (milieu)	◯	◯	◯	◯	◯

Skip to question 32.

Reizen met het Openbaar Vervoer (OV)

Op uw reis zijn natuurlijk meerdere invloeden van toepassing. In dit onderdeel ontdekken wij graag de kenmerken van de reis die op u van toepassing zijn

10. **Wanneer reist u met het OV?** *
Mark only one oval.

- ◯ Voornamelijk binnen de spits
- ◯ Voornamelijk buiten de spits
- ◯ Ik reis nooit/ nauwelijks met het OV

11. **Hoe vaak stapt u gemiddeld over tijdens uw OV-reis op een ander OV-vervoersmiddel?** *
Mark only one oval.

- ◯ 0x
- ◯ 1x
- ◯ 2x
- ◯ 3x
- ◯ 4x of meer

12. **Hoe belangrijk zijn de volgende overwegingen tijdens uw keuze voor een OV reis?** *
Mark only one oval per row.

	1 (niet belangrijk)	2	3	4	5 (zeer belangrijk)
Kosten	◯	◯	◯	◯	◯
Verkeersveiligheid	◯	◯	◯	◯	◯
Sociale veiligheid	◯	◯	◯	◯	◯
Frequentie (hoe vaak het OV gaat)	◯	◯	◯	◯	◯
Betrouwbaarheid (stiptheid)	◯	◯	◯	◯	◯
Bereikbaarheid van de OV-halte	◯	◯	◯	◯	◯
Werken tijdens de reis	◯	◯	◯	◯	◯
Comfort	◯	◯	◯	◯	◯
Duurzaamheid (milieu)	◯	◯	◯	◯	◯

13. **Wat vindt u van de huidige OV-tickets?**
Mark only one oval.

	1	2	3	4	5	
Erg duur	◯	◯	◯	◯	◯	Erg goedkoop

14. **Wat vindt u van de verkeersveiligheid in het OV?**
Mark only one oval.

	1	2	3	4	5	
Erg onveilig	◯	◯	◯	◯	◯	Erg veilig

15. **Wat vindt u van de sociale veiligheid in het OV?**
Mark only one oval.

	1	2	3	4	5	
Erg onveilig	◯	◯	◯	◯	◯	Erg veilig

16. **Wat vindt u van het huidige aantal OV mogelijkheden per uur?**
Mark only one oval.

	1	2	3	4	5	
Zeer slecht	◯	◯	◯	◯	◯	Zeer goed

17. **Wat vindt u van de betrouwbaarheid van het OV?**
Mark only one oval.

	1	2	3	4	5	
Altijd te vroeg / te laat	◯	◯	◯	◯	◯	Altijd op tijd

18. **Wat vindt u van de bereikbaarheid van het OV?**
Mark only one oval.

	1	2	3	4	5	
Zeer slecht	◯	◯	◯	◯	◯	Zeer goed

19. **Wat vindt u van de mogelijkheid tot werken tijdens de OV-reis?**
Mark only one oval.

	1	2	3	4	5	
Zeer slecht	◯	◯	◯	◯	◯	Zeer goed

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20. **Wat vindt u van het comfort in het OV?**
Mark only one oval.

	1	2	3	4	5	
Zeer slecht	◯	◯	◯	◯	◯	Zeer goed

21. **Hoe belangrijk vindt u de volgende aspecten voor een comfortabele OV reis?** *
Mark only one oval per row.

	1 (niet belangrijk)	2	3	4	5 (zeer belangrijk)
Niet te druk	◯	◯	◯	◯	◯
Genoeg zitplaats	◯	◯	◯	◯	◯
Korte wachttijd	◯	◯	◯	◯	◯
Korte overstaptijd	◯	◯	◯	◯	◯
Aangenaam binnenklimaat	◯	◯	◯	◯	◯

22. **Zijn er nog andere aspecten die u belangrijk vindt voor een comfortable OV reis?**

Uw reisgedrag van en naar de OV-halte

23. **Hoe reist u het VAAKST van uw huis naar een OV-halte?** *
Mark only one oval.

- ◯ Lopend
- ◯ Auto
- ◯ Fiets
- ◯ Elektrische fiets
- ◯ Motor
- ◯ Scooter / Brommer
- ◯ Taxi / Uber
- ◯ Ik reis niet met het OV
- ◯ Other: _____

24. **Hoe reist u het LIEFST van uw huis naar een OV-halte?** *
Mark only one oval.

- ◯ Lopend
- ◯ Auto
- ◯ Fiets
- ◯ Elektrische fiets
- ◯ Motor
- ◯ Scooter / Brommer
- ◯ Taxi / Uber
- ◯ Ik reis niet met het ov
- ◯ Other: _____

25. **Welke voorzieningen zijn er bij de OV-halte die u gebruikt?** *
Tick all that apply.

- [ ] Onbewaakte fietsenstalling
- [ ] Bewaakte fietsenstalling
- [ ] Fietsenmaker
- [ ] Gratis parkeerplaats
- [ ] Betaalde parkeerplaats
- [ ] Horeca
- [ ] Winkels
- [ ] Kinderdagverblijf
- [ ] Huisarts/ apotheek
- [ ] Pakket service
- [ ] Ik reis niet met het OV
- [ ] Other: _____

26. **Welke van deze voorzieningen bij een OV-halte stelt u op prijs?** *
Tick all that apply.

- [ ] Onbewaakte fietsenstalling
- [ ] Bewaakte fietsenstalling
- [ ] Fietsenmaker
- [ ] Gratis parkeerplaats
- [ ] Betaalde parkeerplaats
- [ ] Horeca
- [ ] Winkels
- [ ] Kinderdagverblijf
- [ ] Huisarts/ apotheek
- [ ] Pakket service
- [ ] Other: _____

27. **Hoe reist u het liefst verder nadat u van het OV gebruik gemaakt heeft?**
Mark only one oval.

- ◯ Lopend
- ◯ Auto
- ◯ Fiets
- ◯ Deelfiets (bijv. OV-Fiets)
- ◯ Taxi/ Uber

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28. **Beschouwt u de route naar de dichtstbijzijnde OV-halte als prettig en veilig? (zowel overdag als 's avonds)** *
Mark only one oval.

- ◯ Ja
- ◯ Neutraal
- ◯ Nee
- ◯ Other: _____

29. **Welk vervoersmiddel om vanaf uw woning bij een OV-halte te komen mist u momenteel?**

_____

Uw persoonlijke kritiekpunten

Eerder heeft u uw mobiliteitskeuze op basis van verscheidene kenmerken aangegeven. Indien u heeft aangegeven weinig, zelden of nooit het openbaar vervoer te gebruiken, dan zouden wij graag hier meer over te weten komen gedurende de volgende vragen. U mag dit onderdeel van de enquête overslaan als u regelmatig of altijd het openbaar vervoer gebruikt.

30. **Wat is voor u de reden om NIET het OV te gebruiken?** *

_____

31. **Wat is voor u de reden om WEL het OV te gebruiken?** *

_____

Scenario's

In dit onderdeel van het onderzoek beschrijven wij verschillende scenario's waarin wij graag te weten komen wat en hoe uw vervoerskeuze in de toekomst wordt bepaald.

Hierin komen de volgende aspecten naar voren:
- Scenario's zijn gebaseerd op first-/last-mile oplossingen
- Integratie van alternatieve nieuwe producten (segway, autonome auto etc.)
- Duurzaamheid

32. **Als u in de toekomst kunt kiezen uit de volgende mogelijkheden, hoe zou u dan het liefst reizen?**
Mark only one oval.

- ◯ Met de auto: 20 minuten langzamer dan nu, door toegenomen files in de regio.
- ◯ Met de deelauto: 10 minuten sneller dan nu, door toestaan van deelauto's op busbanen.
- ◯ Met de bus: Gelijke reisduur als in de huidige situatie.
- ◯ Met de elektrische fiets: 10 minuten sneller dan nu, door betere technologie en infrastructuur.

33. **Als u in de toekomst kunt kiezen uit de volgende mogelijkheden, hoe zou u dan het liefst reizen?**
Mark only one oval.

- ◯ Met de auto: Minder ontspannen rijden dan nu, door toegenomen verkeersdrukte.
- ◯ Met de bus: Makkelijker te bereiken dan nu, door nieuwe vervoersmiddelen en infrastructuur.
- ◯ Met de zelfrijdende auto: Efficiënter reizen dan nu, door te kunnen werken in de auto.
- ◯ Met de deelauto: Comfort van de auto van nu, zonder er een zelf te hoeven aanschaffen.

34. **Als u in de toekomst kunt kiezen uit de volgende mogelijkheden, hoe zou u dan het liefst reizen?**
Mark only one oval.

- ◯ Met de auto: U zoekt 10 minuten naar een parkeerplaats en loopt 10minuten naar uw bestemming.
- ◯ Met de elektrische auto: U kunt gratis kunt parkeren en loopt 10min naar uw bestemming.
- ◯ Met de elektrische fiets: U kunt die gratis parkeren op uw bestemming.
- ◯ Met de elektrische bus: U moet 10min lopen naar uw bestemming.

35. **Als u in de toekomst kunt kiezen uit de volgende mogelijkheden, hoe zou u dan het liefst naar de HOV-halte reizen?**
Mark only one oval.

- ◯ Met de auto: Waar geen parkeerplaatsen voor aanwezig zijn.
- ◯ Met de fiets: Waar een bewaakte fietsenstalling voor aanwezig is.
- ◯ Elektrische auto: Waar speciale parkeerplaatsen voor aanwezig zijn.
- ◯ Gedeelde Segway: Overal beschikbaar om u snel naar de OV-halte te vervoeren.

36. **Als u in de toekomst meer rekening moet gaan houden met duurzaamheid, hoe zou u dan reizen?**
Mark only one oval.

- ◯ Met de auto: U blijft bij de vervuilende auto.
- ◯ Met de elektrische auto: Duurzamer dan de "normale" auto, evenveel comfort en duurder in aanschaf.
- ◯ Met de elektrische bus: Nog duurzamer dan de elektrische auto en goedkoper.
- ◯ Met de fiets: Langzamer en minder comfortabel dan bovenstaande maar energie neutraal.

Personalia

Bedankt voor het beantwoorden van voorgaande vragen. Als laatste komen wij graag nog iets meer te weten over u. Alle antwoorden zijn anoniem, vertrouwelijk, en worden niet met derden gedeeld.

37. **Wat is uw postcode?** *

_____

38. **Wat is uw geslacht?** *
Mark only one oval.

- ◯ Man
- ◯ Vrouw
- ◯ Anders

39. **Wat is uw leeftijd?** *

_____

40. **Wat is uw hoogst genoten opleiding?** *
Mark only one oval.

- ◯ Basisonderwijs / Lagere school
- ◯ Lager Beroepsonderwijs (LBO / VBO / VMBO)
- ◯ Middelbaar Beroepsonderwijs (MBO)
- ◯ Hoger Algemeen Voortgezet Onderwijs (HAVO)
- ◯ Voorbereidend Wetenschappelijk Onderwijs (VWO)
- ◯ Hoger Beroepsonderwijs (HBO)
- ◯ Wetenschappelijk Onderwijs (WO)
- ◯ Doctoraat
- ◯ Other: _____

41. **In welke van de onderstaande groepen kan u zich het beste vinden?** *
Mark only one oval.

- ◯ Scholier
- ◯ Student
- ◯ Full-time werkende
- ◯ Part-time werkende
- ◯ Gepensioneerd
- ◯ Werkzoekende

42. **In welke stad/dorp bevindt uw werk/studie zich?** *
Mark only one oval.

- ◯ Aalst
- ◯ Eindhoven
- ◯ Helmond
- ◯ Valkenswaard
- ◯ Veldhoven
- ◯ Waalre
- ◯ N.v.t.
- ◯ Other: _____

43. **In welke stad/dorp bevindt zich uw studie/school?** *

Mark only one oval.

- Aalst
- Eindhoven
- Helmond
- Valkenswaard
- Veldhoven
- Waalre
- N.v.t.
- Other: _____

44. **Kunt u ons een schatting geven van wat u op maandelijkse basis netto verdient?**

Mark only one oval.

- Minder dan € 2500
- € 2500 - € 3200
- € 3200 - € 5000
- Meer dan € 5000
- Wil niet antwoorden

Tenslotte

Bedankt voor al uw antwoorden. Indien u kans wil maken op het winnen van <prijs>, kunt u hieronder uw e-mailadres achterlaten zodat wij contact met u op kunnen gaan nemen. Uw e-mailadres wordt alleen gebruikt indien u gewonnen heeft. Deze informatie wordt niet verstrekt aan derden.

45. **Op welk e-mailadres kunnen wij u bereiken indien u een prijs heeft gewonnen?**

_____

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