Erasmus University Rotterdam Mobility survey 2010

Master Thesis

Erasmus University Rotterdam
Erasmus School of Economics
Msc. Economics & Business
Urban, Port and Transport Economics

[BUILDING A MOBILITY POLICY]

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ERASMUS UNIVERSITEIT ROTTERDAM

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Research summary

This research is based on the results of the Erasmus University Rotterdam Mobility survey 2010. In this research a review of the results of the Mobility survey analysis is constructed based on the gathered data from the survey. This is done with the purpose of gaining a better insight in the mobility of the employees and students of the Erasmus University and the variables which influence it.

The reviewed literature shows that mobility is a changing phenomenon, and is comprised of a combination of intangible factors and rational factors. Mobility is heavily influenced by societal trends and irrational consumer behavior. To find the most effective way to improve the mobility of the employees and students of the Erasmus Universiteit Rotterdam, Mobility Management was researched. The literature researched concludes that soft measures used on a small scale can have very cost effective effects on mobility.

The results of the Mobility survey confirm these general findings of the literature.
The analysis showed that the factors differ between employees and students, most of which is displayed per modality, however there are similarities within the decision making process.
With the decision for using the car for transportation, a large share of the consideration seems based on non-rational variables, such as independence. Public transport is generally viewed as the fastest alternative, but also as a comfortable alternative, as it makes working while traveling possible. Bike users mostly focus on the financial aspect of travel and its contribution to their health.

Based on these findings, the answer to our sub research question is:

Sub Research question

"What are the main factors that influence the mobility of the employees and students of the Erasmus University Rotterdam University?

The main factors that influence the Erasmus university are comprised of a set of intangible preferences and rational preferences. The most influential might be parking and the cyclists facilities. Even though the connectivity to the public transport network has the largest negative impact on the mobility on the employees and students of the Erasmus Universiteit Rotterdam, parking and bicycle facilities can be influenced by the policies available for the Erasmus Universiteit Rotterdam.

The answer to the main research question is:

Research question

"How can the Erasmus University Rotterdam formulate a effective mobility policy for employees and students?"

Based on the current Modal Split and preference with regard to mobility of the employees and students of the Erasmus Universiteit Rotterdam, the most efficient policies seem to be a combination of discouraging car usage, and simultaneously stimulating the other viable modalities. Although the quality and connectivity of public transport are hard to improve by the university, it should not be ignored. The results of the survey clearly show that a large portion of employees and students is willing to travel with other transport modes, if the alternatives are viable substitutions. This can be achieved by implementing the policy of the public transport subscription or the Individual travel budget, possibly in combination with paid parking. By letting the employees and student decide about their own mobility, a much larger target group can be reached when offering alternatives and the effect of these alternatives will be much larger then when applying a single policy.

The key to improving the mobility of the employees and students of the Erasmus Universiteit Rotterdam seems to lie in "Soft Measures". This means mainly stimulating the other modalities (other than car usage), differentiating working hours and working at home. Hard measures are not a viable option for the university. The hard measures worth considering are rooted in cyclist facilities. Applying these methods individually might prove less effective, as was the conclusion when evaluating working at home. A policy will almost never please all the preferences of the different people in the target group. The results of the case studies performed by Cairns et.al.(2008) enforces the idea of using individually applied policies. The results, all be it on small scale, are very cost effective in relation to their benefits.

The new mobility policy must combine alternative policies, and focus mainly on public transport and cyclists. Although these modalities already have a large share in the modal split, there is still plenty of room to stimulate a higher use of these modalities.
Many facets of the approach of the Stanford university can be used as a prima example. The Stanford mobility policy has many facets, giving complete information and services for cyclists, carpoolers and users of public transport. Stanford incentivizes by starting programs and Commute clubs, including the target groups (students) in the creation of new policies and instruments and used clever financial incentives to stimulate mobility.

By combining "soft measures" on a small scale and implement subtle changes such as improving the (safety of) bike lanes and access roads, improving and expanding current cyclist facilities, and discouraging car usage, namely on **short distances**, the Erasmus University can effectively improve their mobility.

I Introduction

§ 1.1 Mobility

Highways are flooding with cars while at the same time the environment is increasingly recognized as endangered. As a result of these rapid changes, the daily lives of people are also changing. Where people decide the work, and how they travel to work. A few years ago it perhaps would be more common to work in a company near your home, today people commute for hours a day. Some people would work for a few years before they could afford to take the car to work every day, in present day teenager get a car the day they turn 18.
Changes in income and social status cause changes in mobility; the way people move.
The Erasmus University Rotterdam moves amidst this changing environment. With 19487 students and 3000 employees the amount of people moving within the university and in its surroundings is enormous. In academic tradition, the Erasmus Universiteit Rotterdam strives to be progressive in their mobility management and seeks solutions for harboring all its visitors.

To determine the state of the current Mobility policy of the Erasmus Universiteit Rotterdam, the decision was made to perform a Mobility research. This research is based on the Mobility survey Report 2010, which in turn is based on the Mobility survey 2010. The Mobility survey 2010 is a collection of mobility related questions, with the purpose to gain insight in the mobility of employees and students and to get an insight of the attitude of respondents with regard to. facilities on the campus and on alternative policy option.
It will also form an important basis for the accountability of the universities parking policy towards the municipality of Rotterdam. Due to the ever increasing number of cars moving in, out and through the city of Rotterdam, the number of parking places available are essential for the mobility of inhabitants of Rotterdam.
The Erasmus University is obliged to add a number of parking places according to certain standards to compensate for increasing rates of car users.
The other option is to give viable alternatives which can replace the need for additional parking places. This can be done by the means of mobility management. A collection of tools which can be used to influence the mobility to suit the organization.

The purpose of this research is to display and review the results of the Mobility survey Report 2010. This research will attempt to gain an insight in the mobility of employees and students based on the results of the report and relevant literature.
With this purpose in mind the following research question has been formulated:

Research question

"How can the Erasmus university formulate an effective mobility policy for employees and students?"

In order to get an insight into the mobility of the university, the variables which influence the mobility need to be understood first. Therefore, a sub research question is formulated:

Sub Research question

"What are the main factors that influence the mobility of the employees and students of the Erasmus University Rotterdam University?

§ 1.2 Methodology

This research is based on the Mobility survey Report 2010, distributed in the period May- July among all the students and employees of the Erasmus university. The survey was created by selecting a number of key topics with regard to mobility.
The survey was distributed per email and entered via an online survey program. The output of the survey consisted of the response to individual question and comments/suggestions, which were gathered in excel and SPSS. The survey was send to 3000 employees and 19487 students, of which approximately 1000 employees responded and 1600 students, translating to a response rate of 36.1% and 8.4% respectively.

The analysis was formed by examining key questions in the survey and compare them with key variables with the use of cross tables. With the goal of expanding the research, other sources were used for analyzing key elements. The NS has made a Mobility Scan for the Erasmus University Rotterdam, with which the potential of traveling by train can be explored. These results are also incorporated in the research.

§ 1.3 Structure of the thesis

The structure of the thesis is based on the purpose of the research and the research questions, and is as followed.

In chapter 2 the literature used in this research will be reviewed. This review will be split into two segments; Mobility and Mobility on campus.
Chapter 3 will give an introduction to the Mobility survey and the accompanied Report. It will elaborate on the response rate, methodology and sample size determination.

The fourth and fifth chapter will be the start of the rapport made based on the mobility survey. In these chapters, the initial data for employees and students respectively are analyzed. It is attempted to make a basis for understanding the factors influencing mobility by constructing the modal split and examining key questions from the survey. In order to deepen the analysis, the results of the NS mobility scan are used in conjunction with an experiment using postal codes, in chapter 6.

Chapter 7 will continue with a more specific analysis based on two important elements reoccurring in analysis in previous chapters: Parking and Cyclist facilities. In this chapter the effect of parking fees are also analyzed.

Chapter 8 will review the alternative policies available to the Erasmus Universiteit Rotterdam. A number of policies have been presented in the survey and assessed by the respondents. Based on the opinion of the respondents the effectiveness of the policies is estimated.

The conclusions of the research will be presented in chapter 9.

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II Literature review

The research is not only based on the results of the survey, but also on a collection of literature. The literature examined will be divided into two sections, general mobility and mobility applied to a campus.

§ 2.1 Mobility

Mobility of people can be viewed from economic perspective and from societal perspective. Economically, mobility should function according to the cost- minimization principle. This implies that people will want to achieve their goals with minimal costs/ effort. (Loukopoulos et.al. 2003) In terms of Mobility this would mean that people would travel as efficient as possible, at minimal costs. Loukopoulos et.al (2003) performed 2 studies, a focus group study and a internet survey. The results of the internet survey showed a failure to confirm the principles of the cost- minimalization principle when looking at mobility. The correlation between the alternative policies and the level of car reduction proposed in the survey to the respondents, got stronger as the alternatives got more expensive.

As mentioned in the introduction; Mobility is interdependent on a changing world. According to the study of Rudinger et.al (2006), mobility and its behavior are dependent on societal trends. In the study Rudinger et al. (2006) mentions that:

"It is increasingly evident that the corresponding (modern) lifestyles in affluent societies, and the mobility behaviors associated with such life styles, are not consistent with protection of environmental quality, efficient use of human, natural, and financial resources, and promotion of social cohesion and just distributions of opportunities and costs of using transport systems." (Rudinger et.al (200) page 679.

Mobility can only partly be derived from a set of rational values. Increases in expendable income has led to different lifestyles, meaning more and expensive cars. Although the dominance of the internet in the modern business world, the car is still as social status and thus the car user keep rising.
Rudinger et.al also mentions another explanation for the sustained interest in car usage. Every country goes through a process of urbanization and suburbanization (urban sprawl). When general welfare rises, the clusters in cities will spread out, making the distances larger. This generally means that public transit becomes less attractive. Public transport becomes inefficient, since it requires high ridership, which will decrease investments, which will lead to a vicious cycle.
Lastly Rudinger et.al (2006) brings up aging of the society as a contributing factor for the change in mobility. The share of elderly in the population keeps growing and elderly keep driving longer than 10 years ago.

Due to the changing nature of mobility, the realization soon set in that expanding the roads and making more parking spaces could not be the only solution. In comes Mobility Management and Soft Measures. These styles of management are often named in articles as having great potential, but are these estimates realistic?

Cairns et.al (2008) acknowledges that mobility manages balances on the planes of economics, communication and behavior psychology. Cairns evaluates several soft measures, ranging from travel plans to car sharing schemes. Of particular interest is his analysis on individual travel plans. Individual travel plans are meant to influence the mobility on a individual level, and eventually scaling up to target groups. The results of 26 case studies (26 companies using individual travel plans are as followed:

- *10% of travel plans achieve no change;*
- *20% reduce car use by >0–10%;*
- *35% reduce car use by >10–25%;*
- *25% reduce car use by >25–35%; and*
- *10% reduce car use by over 35%.*

Cairns et.al (2008) continues to apply the travel plans cases to high and low intensity traffic situations, in where the results give traffic reduction of 21% in peak period and 11% on lower intensity. Important to note is that this could be achieved with relatively low investments, however the projected numbers may only be achievable on a larger scale application.

The literature so far seems to confirm the assumption made in the introduction. Mobility is constantly changing and an insight in the diverse variables are essential for forming effective policies. Furthermore small scale policies which are individually applied can result in cost efficient results.

As these mobility policies are implemented on small scale and individually, it is crucial to have an insight in the preferences of the target groups. For a reference on how a survey can be implemented to research these preferences, the research of Bhattacharjee et.al. (1997) is reviewed.
Bhattacharjee et.al. (1997) performed a survey among the population of the city of Bangkok with reference to Mobility Management. The city's increase traffic problems were reason to invest more into the development of Mobility Management policies. The research used a "ordered probit model" to evaluate the opinions of respondents about certain policies.
The interesting part of the composition of the survey was the use of different categories. Figure 1 shows the categories. The policies are spread out over public transport, car use, differentiating work hours and financial policies.
The initial responses to the survey were that 82% of respondents approved the implementation of TDM policies. However the use of the ordered probit model resulted in a overview of the appreciation of the individual policies per travel group.

Category	Strategy no.	Description of the technique
1. Public transit improvement	1a	Rapid mass rapid transit
	1b	Bus lanes
2. Ride sharing strategy	2a	Introducing school bus
	2b	Introducing staff bus
	2c	Car-pooling in the congested area of the CBD
3. Peak period dispersion	3a	Staggered working hours
	3b	Staggered school hours
4. Fiscal restraint	4a	High annual road tax
	4b	Increase on-street parking fees
	4c	Impose parking fees on Government offices

Figure 1: An overview of the categories of policies used by the survey. (source: Bhattacharjee et.al (1997) '"Commuters' attitudes towards travel demand management in Bangkok."p163

The research for showed that car users strongly disfavor fiscal restraints of any form. Implementing these kind of policies would be effective, however a very unpopular decision. Also, Bhatacharjee et.al. (1997) emphasizes the relations of certain demographic characteristics with respect to mobility policies. Car users, namely high incomes and government employees were relatively supportive of public transit improvement in contrast to female commuters. It should be noted that Bhatacharjee et.al. (1997), notes in the recommendations of the research that a high positive response for a policy does not mean it will be successful. Actual behaviors often differ from stated intentions. (Benakiva and Morikawa, 1990)

§ 2.2 Mobility on campus

After having briefly looked at mobility in general, it might prove useful to look at a case studies of mobility on a campus. When researching for articles or example universities, the differences between universities from different countries where striking. If for example the approach of American Universities is compared to those of Dutch universities, the difference is very large. American universities (especially the larger ones) really promote the importance of thinking about mobility, and dedicate much more communication to their mobility plans and alternatives. The case study used is a excellent example of this, the University of Stanford in the United States.

Stanford is considered to be one of the leading universities worldwide, with seven academic schools with 6.900 undergraduate students (bachelor) and 8.400 graduate students (master).
For a university as large as Stanford an insight in the mobility of its student and employees is essential. Furthermore the large distances between home and the university in the United States make traveling to and from the university more complex than in the Netherlands. However, the mobility from dorm rooms to the main campus are comparable with the mobility in the Netherlands and are relevant for this research.

§ 2.3 Stanford Parking and Transportation services

The Stanford University has formed a special department for mobility related subjects; The Stanford University Parking and Transportation Services. (SP&TS)This is the central department which governs logistics concerning parking, mobility management and real estate.
Using different forms of modalities is encouraged through a diversity of programs designed for students.

§ 2.3.1 Bicycle policies

Stanford promotes the use of bikes on a large scale. The SP&TS is able to assist the student in the entire process of using a bike for commuting and traveling.
Riding a bike is not a integral part of a person's upbringing as it is in the Netherlands, so the department start with arranging the opportunity for learning how to ride a bike. This includes basic tutorials and safety instructions on how to safely use a bike.
Also repair stands are offered so that "it's making it more convenient to the campus community to maintain safe bicycles."

Several folders on getting around campus and its surrounding area are readily available, so that the options available in terms of bike use and public transport are known to all visitors. The university also offers registration programs for help to register bikes. (bicycles must be registered by law in Santa Clara County)

Next to the very complete package of services for riding and maintain a bike, the emphasis of this section is on health.

Figure 2 Promotion of the Bewell program
(Source: transportation.stanford.edu)

The biking program is part of a larger projects called Bewell @ Stanford. This project offers students a guide for a healthy way of living on the campus. From tips for healthy restaurants to stress workshops. Exercise and wellness is an important part of this Bewell project, and is integrated with the promotion of bike usage.

Clear from the way that the bicycle policy is meant to give a complete guide for using a bike. A student can find all the information and all the help it needs on the departments site, which lowers the threshold for using the bike to commute from dorms to the campus, and thus promotes bike usage.

§ 2.3.2 Carpooling policies

"Carpooling: a great way to get to and from campus"

"Save money, reduce wear and tear on your vehicle, reduce pollution, and take the stress out of driving. When you share the driving, you arrive at your destination refreshed and ready to start the day."
(SP&TS website)

This is one of the many ways that Stanford actively promotes their carpooling policy. Although carpooling in the United States is of a completely different proportion the in the Netherlands, (distances traveled are much larger, thus making cost saving effect much larger) the way the carpooling policies are promoted can be an example. The department rewards students who actively carpool with carpooling only parking space, and financial reward systems.
One of the reasons the carpooling system works so effective for Stanford, is the link with "Zimride".

This is a website which connects student from all over the country for the ability to carpool. The students can register via the university.

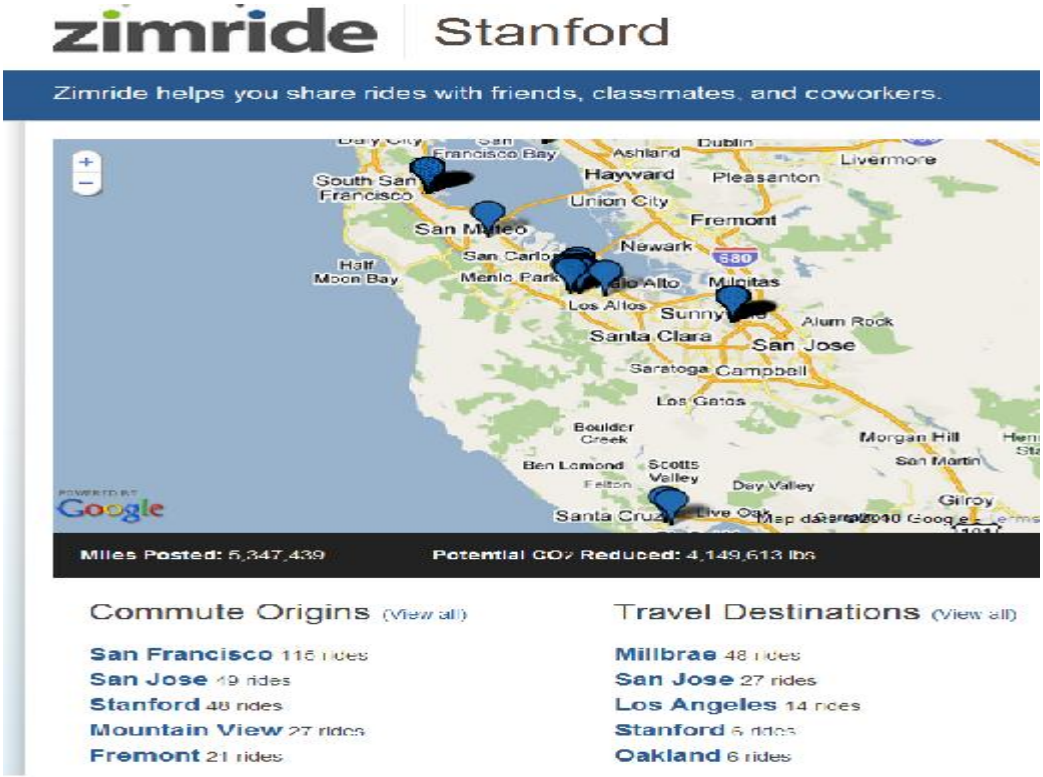

Figure 3: An overview of the Zimride program (Source: zimride.com)

As can be seen from the figure the system organizes origins and destination per city and uses Google maps as a visual reference.

§ 2.3.3 Commute club

A last admirable feature that Stanford has is the commute club. This commute club is a university club which has enlisted thousands of students who:
"care about the environment, who benefit financially by not driving alone, and who help the university reduce peak-hour commute trips, a critical goal in the university's growth plan."

The goal of the commute club is to actively seek a cooperation with students to develop new mobility policies. The commute club also uses a membership system, which give several financial benefits, access to mobility related programs such as zimride and coupons for experimental policies. This way the university includes the target groups into the discussion, stimulates them to actively think about their own mobility and has the ability to test and promote new policies.

III Introduction: the Erasmus University Rotterdam Mobility Survey

§ 3.1 Initiative Erasmus Universiteit Rotterdam Mobility Survey

The creation of the Mobility survey has been started by a collaboration of “Slim Bereikbaar” and Erasmus University Rotterdam. The purpose of the survey is to get more insight in the mobility of employees and students and to get an insight in the attitude of respondents with regard to. facilities on campus and alternative policy options.
Through an analysis of above mentioned subjects, decisions with regard to. parking, campus facilities and other mobility related issues can be made on a well informed basis.

The end goal of this research is to display the results of Mobility survey, in a complete and accurate manor. Following, certain subjects will be put through an analysis, in attempt to find relations and correlations. This is done to construct reliable data specified per modality, with which accurate assessment of the Mobility can be performed.

§ 3.2 Execution of the Mobility survey

The survey is based on a number of key subjects, in which more insight is critical for a accurate understanding of the mobility of the employees and students of the Erasmus Universiteit Rotterdam. These key subjects are (not limited to):

1. What is the composition of the Modal Split of students and employees of the Erasmus Universiteit Rotterdam
2. What are the factors in the decision to choose for one form of transportation or the other.
3. What is the general opinion concerning the cyclist facilities.
4. Insight in the parking behavior of students and employees of the Erasmus Universiteit Rotterdam
5. What are the reactions of the respondents on certain policy options with regard to. parking

Insight in above mentioned subjects are needed for the construction of the new mobility policy of the Erasmus Universiteit Rotterdam. An integral part of the formation of this new policy is the consultation with the Rotterdam Municipality regarding the number of (available) parking spaces on the Erasmus Universiteit Rotterdam campus.

§ 3.3 Results of the survey: Responses

The survey has been distributed among the employees and students of the Erasmus University.
The total population consists of circa 3000 employees and 19000 students.
Included in the population of employees are all forms of employment contracts, which also includes hospitality agreements. The student population consists of fulltime and part-time Bachelor and Master Students. Not included are course followers, exam course members and "HOVO-ers".

The survey has been distributed in two versions, an English version and a Dutch version. Both versions have been processes as separate results, however presented as one population. If the difference between the two version is important and/ or relevant, this will be reported separately.

The total response of the Mobility survey:

Population of Employees (Incl. Hospitality agreements)	
Employees Dutch Survey	N= 1000
Employees English Survey	N= 83
Total Employees Survey	**N= 1083**

Figure 3a: Total response of employees of the Erasmus Universiteit Rotterdam

Population of Students	
Students Dutch Survey	N= 1453
Students English Survey	N= 183
Total Students Survey	**N= 1636**

Figure 3b: Total response of employees of the Erasmus Universiteit Rotterdam

Response Rate Employees (Incl. Hospitality agreements)
1083 / 3000 = **36.1%**

Figure 3c: The response rate of the employees of the Erasmus Universiteit Rotterdam

Response Rate Students
1636 / 19487 = **8.4%**

Figure 3d: The response rate of the students of the Erasmus Universiteit Rotterdam

The response is sufficiently large enough for an accurate assessment of the average of the population. Because there are only a limited number of answer possibilities for each question, the spread of the data is relatively small. Statistically, if there is a relative small spread or variance, then there is no need for a large sample size. This is further proven in the next chapter.

§ 3.4 Sample size of the survey

Afore mentioned response rates only have a significant relevance if the total response is statistically large enough. The data from the survey is a sample of the population. The sample is only relevant if it is a adequate average of what the total response of the population would have been. Construction a Random Sample which is large enough, is a good approximation of the population due to the theory of the Normal distribution. For the purpose of this research we will assume that the dataset is in a normal distribution.

There is a formula that can be used to calculate the minimum size of a random sample needed to produce statistically relevant conclusions

$$n = \left[\frac{z_{\alpha/2}\sigma}{E}\right]^2$$

Formula for sample size determination

n= Sample Size
z= Critical Value

Q= Standard Deviation
E= Margin of Error

Figure 3e: Formula for calculating the sample size

For the critical value Z, 1.96 is chosen, which corresponds with a reliability interval of 95%. This means that there is a statistical chance of 5% that the data gathered is purely coincidental and thus not a reflection of the population. The Margin of Error is set at 1.0. If the formula reveals that the sample size is not large enough, the Margin of Error can be increased. This will reduce the minimum sample size needed, but will also decrease the reliability of the dataset.

In Appendix 1 the results of the calculation can be found. Seeing as every question can be considered as a separate variable (as it is used in the analysis), and therefore every standard deviation is individually calculated. The largest required sample size is set at **129** observations. For students 1635 observations are available and for employees **1083** observations, meaning that the minimum sample size requirements are met with ease. The small sample requirement can be led back to the fact that there cannot be a large variation within a question. A question usually has a maximum of 6 options, which will keep the standard deviation and it's accompanied statistical risk of incorrect observations small. Therefore the need for a large sample size is limited.

IV Employees

In this chapter the analysis will focus on the Employees Survey. First the approach will be to look at the results in general by highlighting several questions. In paragraph 2.2 this analysis is continued by a more in- depth look at key subjects. For all questions and data which is referred to in this report, the complete overview can be find in the Appendix.

§ 4.1 Overview

In this paragraph a overview of the important characteristics of the respondents of the Employees Survey is created. With Mobility a large number of factors are of influence, the most important being:

- Demographic characteristics of the traveler
- The choice of the transportation means
- Travel time and travel behavior

Travel behavior will be examined in chapter 6.

§ 4.1.1 Demographic characteristics

A number of questions have been stated in the survey regarding the characteristics of the respondents, with the purpose of making the analysis more specific per target group.
In this paragraph a selection of these questions will be highlighted. For a complete overview of the questions and its results, please find the appendix.

[2/32] **What is your age?**

Age		
18 - 24 years	65	6.0%
25- 34 years	369	34.1%
35 - 49 years	378	34.9%
50 - 65 years	264	24.4%
65 and over	6	0.6%
Total	**1082**	**100.0%**

Table 1: Results of question 2 of the mobility survey regarding age.

[3/32] **What is the composition of your household?**

Household composition		
One person households	258	23.8%
Multiple person households	562	51.9%
Multiple person households with one or more children under the age of 12	263	24.3%
Total	**1083**	**100.0%**

Table 2: Results of question 3 of the mobility survey regarding household composition.

[5/32] **What function do you have within the Erasmus Universiteit Rotterdam?**

Function		
WP (Academic Staff)	510	47.1%
OBP (Support and Management staff)	565	52.2%
Other:	7	0.6%
Total	**1082**	**100.0%**

Table 3: Results of question 5 of the mobility survey regarding function

The tables above are of importance, because demographic factors like this may or may not influence the way respondents influence and assess mobility.
Young people have the ability to switch forms of transportation seeing as they are rarely bound to external factors limiting choice of transport. The factor of physical strain for example can be a limitation for elder people, restricting their options in transportation (cycling, multiple modes of public transport).

This same reasoning can be applied to function and household composition. Function can partially determine travel behavior (more about this is chapter 4.2.2). The composition of a household also influences mobility, especially when looking at the ability to carpool/ sharing a car and the factor of children.

§ 4.1.2 Transportation decision making

One of the cornerstone questions of the survey is the question concerning the transportation means. This question will give insight in the Modal Split, which in turn can be used for many cross table comparisons.
It might prove useful to divide results of certain questions into the categories of the largest transport modes. More concerning this in chapter 4.2.3.

[19/32] **What kind of transportation do you use to get to work? (1 answer allowed)** ***(If you make use of more than one transportation mean, please refer to the mean (or combination of) with which you cover the largest distance)***

Car (traveling alone)	368	33.9%
Carpooling	23	2.1%
Motorbike	8	0.7%
Bus	31	2.9%
Train	72	6.6%
Tram	25	2.3%
Subway	46	4.2%
Train+tram/bus/subway	62	5.7%
Bike	331	30.5%
Moped/scooter	3	0.3%
Walking	12	1.1%
Public transport+ car	5	0.5%
Public transport+bike	75	6.9%
Other:	23	2.1%
Total	**1084**	**100.0%**

Table 4: Results of question 19 of the mobility survey regarding transport mode.

From this table it is easy to see what are the largest modalities; Care (traveling alone) and Bike. However, on further inspection it seems that Public transportation is divided in multiple sections. For the purpose of composing the Modal Split of the Erasmus Universiteit Rotterdam, the different forms of Public transportation will be put into one Public transport category.

Transportation means		
Car	391	36.0%
Public Transport	316	29.2%
Bike	331	30.5%
Other	46	4.3%
Total	**1084**	**100.0%**

Table 5: A summary of the largest modalities

These result lead to the following Modal Split for Employees:

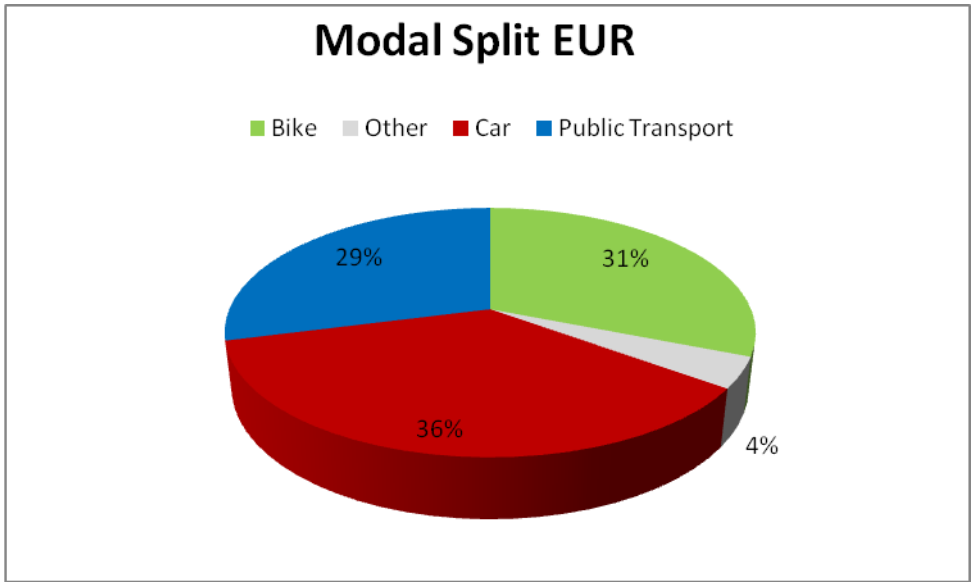

Figure 4a: The modal split for employees of the Erasmus Universiteit Rotterdam

Now that the modal split has been determined, it is possible to analyze the modalities more in-depth. By looking at the factors why respondents choose a transportation means over another and to try and find significant relationships, the composition of above model can be explained more accurately. The results of a few relevant questions with regard to. the Modal Split are displayed in this chapter, and in chapter 4.2 the emphasis is on looking at every Modality individually. In chapter 4.2 the relation between the factors why people choose a modality or why not is attempted to be explained.

Question 20 of the survey asks what the main reason is for choosing the current mode of transportation. However, as can be seen in Table 6, the majority (77.8%) of the response consist of a combination of answers. The problem with these combinations is that the diversity of the combination is

too large to make a category for each unique combination. Treating this 77.8% as other, hurts the value of the response to this question. With these kind of questions another type of data processing is chosen. Instead of counting a combination of answers as one response, each individual answer in that combination is counted. This leads to a much higher total, but eliminates the combination factor.
For example if a person chooses for Comfort and Safety, this is counted as 1 Comfort response and 1 safety, instead of 1 response "Comfort and Safety".

[20/32] **What is/are the most important reason(s) why you use your current means of transport?** ***(Max 3 answers allowed)***

Choice of transport mean		
Comfort	309	12.9%
Cheap	231	9.6%
Reliable	183	7.6%
Fast	500	20.9%
Dropping off/ picking up children	97	4.0%
Safety	26	1.1%
Independence	266	11.1%
Flexibility	276	11.5%
Good for my health	269	11.2%
Good for the environment	241	10.1%
Total	**2398**	**100.0%**

Table 6: Results of question 20 of the mobility survey regarding motivation for choice modality.

After this conversion it appears that almost 21% chooses its transport mode based on if it's fast or not (i.e. short commute). Comfort follows as an important factor with 12.9%.
In chapter 4.2 a cross table analysis is used to compare table 6 with the four largest modalities.

Another important question for gaining insight in Mobility, is question 29 of the survey. Instead of choosing multiple answers which suits the decision making process of the respondent, here the person is asked to prioritize among factors in sets of two.

Naast de verschillende keuzes te presenteren zoals in Table 6, wordt er bij vraag 29 gevraagd om prioriteit te geven aan bepaalde kwaliteiten van een Transport means.

[29/32] **What do you value more in your travel to work?**
(please choose between the two options)

Priorities		
Traveltime vs Travel comfort		
	Traveltime	870
	Travel comfort	215
Travel costs vs Travel comfort		
	Travel costs	645
	Travel comfort	426
Traveltime vs Travel costs		
	Traveltime	817
	Travel costs	244
Flexibility vs Traveltime		
	Flexibility	663
	Traveltime	409
Travel comfort vs Flexibility		
	Travel comfort	265
	Flexibility	796
Travel costs vs Flexibility		
	Travel costs	360
	Flexibility	723

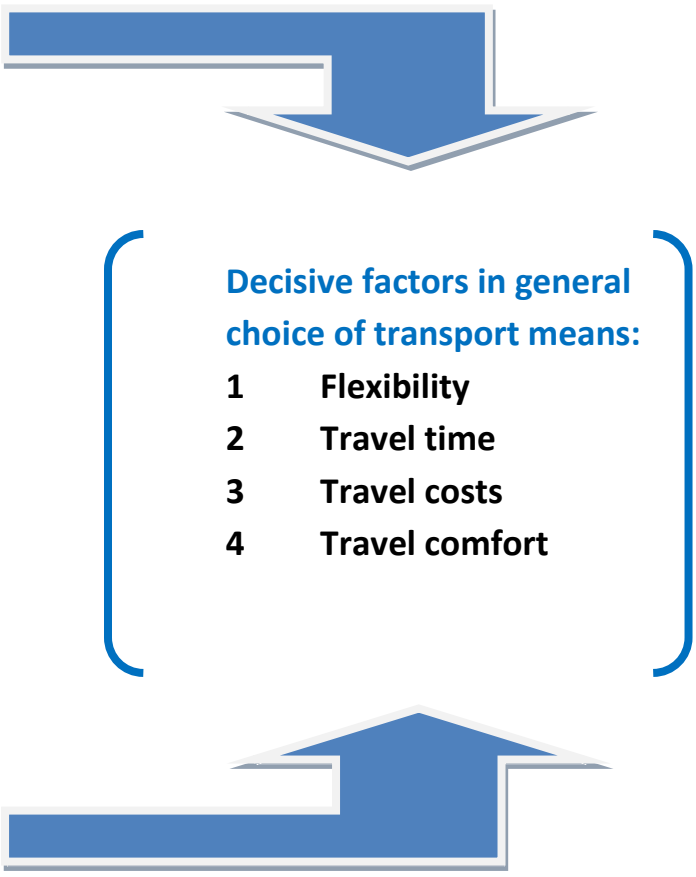

Figure 4b: Results of question 29of the mobility survey regarding priorities in travel

§ 4.1.3 Travel time

Travel time is an important factor in the choice for modality, as can be seen in the results of table and figure 2b. The actual (physical) distance large determines what transport means are a viable or not. Commuting by bike is a good example of a modality largely influenced by travel distance. If distances are large the bike will often not be seen as an (attractive) option. The same goes for using the car for very short distances or on overcrowded roads.
There is also such a thing as a "psychological distance", which can play a role in the decision making. The actual distance could be perfectly viable to cover by bike or on foot, however the traveler perceives this distance as too large. This could be due to preferences (dislike to physical strain) or that the traveler is not fully aware of the optimal travel route or all the available transportation options.
Also a part of this psychological distance are perceptions of transport modes. Even if a person has never used the public transport, he/she can still have an opinion about it, which prevents him/her of seeing public transport as a viable option. Public transport is a good example of a transport mode which has a bad image among a lot of people. Despite the fact that it could be the cheapest and fastest way for a person to travel to work, it often isn't chosen because for example it's unsafe, uncomfortable or unclean.

[9/32] What is your average travel time from your **Residence** to the **University**? **(in minutes)**

Travel time Residence – University		
< 5 minutes	2	0.2%
5 - 10 minutes	187	17.3%
11 - 30 minutes	398	36.7%
31 - 45 minutes	172	15.9%
46 - 60 minutes	142	13.1%
> 60 minutes	182	16.8%
Total	**1083**	**100.0%**

Table 7: Results of question 9 of the mobility survey regarding travel time

[10/32] **What is your average travel time from the University to your Residence? (in minutes)**

Travel time University – Residence		
< 5 minutes	19	1.8%
5 - 10 minutes	179	16.5%
11 - 30 minutes	366	33.8%
31 - 45 minutes	179	16.5%
46 - 60 minutes	138	12.7%
> 60 minutes	202	18.7%
Total	**1083**	**100.0%**

Table 8: Results of question 9 of the mobility survey regarding travel time

The following questions are regarding traveling behavior. These questions are regarding flexible working hours and working at/from home. There can be a noticeable difference in transportation choice between a person working 5 days a week, or someone who works at home for 2 days in the week. Also flexible hours can make traveling by car a viable option for people who do not use it due to traffic. For companies who want to discourage car usage, flexible hours can be used to synchronize working hours with the operating schedule of public transport for example.

[13/32] **Do you have flexible working hours?**

Flexible working hours		
Yes	887	81.9%
No	196	18.1%
Total	**1083**	**100.0%**

Table 9: Results of question 13 of the mobility survey regarding flexible working hours.

[14/32] **Do you sometimes work at/from home?**

Working from home		
Ja	703	64.9%
Nee	380	35.1%
Total	**1083**	**100.0%**

Table 10: Results of question 14 of the mobility survey regarding working at home

In order to get more specific data concerning this section, table 9 and 10 are compared with question 5 (WP or OBP) via cross-table. Table 11 displays the result of this cross comparison.

The percentages between brackets indicate how large the share of the category is in relation to the Total of "yes" or "no". For example from the table it can be seen that 94.9% of WP personnel says yes to the question if they (can) work at home and 5.1% says no.
Of all the people that have the ability to work at home, 57.3% is WP and 42.7% is OBP.
The same analysis has been performed for flexible working hours.

Cross table of the results of question 13/14 and function					
	WP		OBP		
Yes	94.9%	57.3%	69.1%	42.7%	**100.0%**
No	5.1%	13.8.%	30.9%	86.2%	**100.0%**
Total	**100.0%**		**100.0%**		

Table 11: A cross table of the results of question 13 and 14 of the mobility survey with function

[15/32] **I do not work from/ at home, because :** ***(Max 3 answers allowed)***

Reasons not working at/ from home		
No reply	35	8.8%
I do not like working at home	32	8.0%
No adequate facilities	19	4.8%
Nature of my job does not allow it	187	46.8%
My employer does not allow it	58	14.5%
Nature of my job does not allow it and my employer does not allow it	31	7.8%
I do not like working at home and nature of my job	9	2.3%
No adequate facilities and nature of my job	8	2.0%
Other combinations	18	4.5%
Other:	3	0.8%
Total	**400**	**100.0%**

Table 12: Results of question 15 of the mobility survey regarding the reason why not working at home

Question 15 of the survey is a question which only appears when the respondent chooses “no” at question 14. As a consequence, the total number of answers is lower than the general amount.

From the table can be read that a majority of the people who do not work at home, claim this is because the nature of their work does not allow it. Examples of this could be operational personnel such as cleaning personnel, or maintenance personnel. 14.5% indicates that his or her employer does not allow it. The Erasmus Universiteit Rotterdam can view the benefits and drawbacks of working at home for employees, and look at what kind of personnel is not allowed to work at home and why. Is this within reason, or are there more benefits of giving this employee the freedom to work at home?

§ 4.2 Analysis

After the brief discussion of the results of the survey in chapter 4.1, in this chapter the results will be reviewed more detailed.

First the focus will be on more general aspects of mobility, after which the analysis will continue by looking at the four largest modalities.
The modalities will be analyzed based on the focus points mentioned in chapter 4.1:

- Demographic characteristics of the traveler
- The choice of the transport means

§ 4.2.1 General aspects

Starting with the general aspects of mobility, the focus will be on questions concerning the entirety of mobility. A good example of this is question 30:

[30/32] **Generally speaking, how do you judge the accessibility of the campus?**

Appreciation Mobility		
Bad	49	4.5%
Poor	200	18.5%
Sufficient	380	35.1%
Good	399	36.8%
Excellent	55	5.1%
Total	**1083**	**100.0%**

Table 14: Results of question 30 of the mobility survey regarding the appreciation of mobility

In table 14 can be seen that 77% of the employees of the Erasmus Universiteit Rotterdam judge the accessibility (mobility) quite positively. Important to note is that 23% of the employees find the mobility poor/bad and why.
Can this be improved by the Erasmus Universiteit Rotterdam or is this a result of external factors?

The results of table 14 are interesting, however this says nothing about what groups of people find the mobility good or bad. Differentiating between several groups is important for gaining insight which factors contribute to their current opinion on mobility, but also to determine the most efficient way to improve mobility for said groups.

In table 15 and 16 a cross table analysis is performed by comparing table 14 with the four largest modalities.

Appreciation Mobility			
	Bad- Poor	Sufficient- Excellent	Total
Car	15.9%	84.1%	100.0%
Public Transport	35.2%	64.8%	100.0%
Bike	21.5%	78.5%	100.0%
Other	0.0%	100.0%	100.0%

Table 15: : A summary of the results of question 30 displaying the four largest modalities

Appreciation Mobility			
	Bad- Poor	Sufficient- Excellent	Total
Car	15.8%	84.2%	100.0%
Carpooling	17.4%	82.6%	100.0%
Motorbike	0.0%	100.0%	100.0%
Bus	16.1%	83.9%	100.0%
Train	55.6%	44.4%	100.0%
Tram	24.0%	76.0%	100.0%
Subway	15.6%	84.4%	100.0%
Train+ tram/bus/subway	33.9%	66.1%	100.0%
Bike	21.5%	78.5%	100.0%
Moped/ scooter	0.0%	100.0%	100.0%
Walking	0.0%	100.0%	100.0%
Public transport + car	0.0%	100.0%	100.0%
Public transport + car	42.7%	57.3%	100.0%

Table 16: A summary of the results of question 30 displaying the response for the individual travel options

§ 4.2.2 Demographic characteristics

The demographic characteristics used in this survey are:

- Gender
- Age
- Household composition
- Contract type
- Function within Erasmus Universiteit Rotterdam

In appendix 2 the cross tables for these individual characteristics can be found. The cross tables only have statistical relevance if the characteristics have an influence on the other variables, say choice of transport mode. The use of these characteristics are important for categorizing the different groups of people and for focusing policies on specific target groups, however not all characteristics may be as relevant.
By means of a statistical method the relation between the individual characteristics and the choice of transportation will be analyzed. This will be done by means of Chi2.
When working with cross tables, the Chi2 indicates if there is a (systematic) pattern in the comparison of the different cells in the table. The different cells present the different answers. The Chi2 method displays a p-value, which can be translated as a "chance". The larger this p-value becomes, the larger the chance is that the combination of answers observed (say Age= 65 and older and Car usage) is pure coincidence instead of a **significant** relation.

In Appendix 2 the complete output of this statistical analysis can be found. The summary of the results is as followed:

Variable		Cross variable	Chi2 value	P- value
		Transport means		
Gender		No Relation	15.425	0.219
Age		Singnificant relation	14280	0.000
Household		Singnificant relation	63.66	0.000
composition				
Contract type		No Relation	59.454	0.853
Function		Singnificant relation	77.682	0.000

Table 17 A summary of the results of a chi2 calculation

Gender and contract type seem to have no significant relation with the choice of transportation means. The high P-values indicate that the relation observed are not strong enough to dismiss the factor of chance.

Now it is determined that Age, Household composition and Function have some form of influence on the choice of transportation. With this knowledge the cross tables can be re-examined (see table 17 through 19). For example with regard to. the results for household composition reveal that **twice as many** people with a household composed of multiple inhabitants travel by bike then single households.

Cross Table Transportation choice versus Age

		Car	P.T.	Bike	Other
Age	18-25 years	2.1%	7.9%	9.4%	0.0%
	26-35 years	26.2%	43.8%	34.7%	40.0%
	36-45 years	41.4%	27.6%	34.1%	40.0%
	46-65 years	29.8%	22.5%	20.8%	20.0%
	65 years or older	0.5%	0.6%	0.9%	0.0%
	Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 18: A cross table of the variable Age versus the four largest modalities

Cross Table Transportation choice and Household composition					
		Car	P.T.	Bike	Other
Household composition	One person household	17.2%	27.6%	26.9%	47.8%
	Multiple person household	50.1%	57.5%	49.5%	30.4%
	Multiple person household with children under the age of 12	32.6%	14.9%	23.6%	21.7%
	Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 19: A cross table of the variable Household composition versus the four largest modalities

Cross Table Transportation choice and Function					
		Car	P.T.	Bike	Other
Function	WP(Academic Staff)	38.3%	54.9%	56.8%	47.8%
	OBP (Support and Management Staff	60.4%	44.4%	43.2%	52.2%
	Other:	1.3%	0.6%	23.6%	0.0%
	Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 20: A cross table of the variable Function versus the four largest modalities

Now that demographic characteristics have been examined the analysis continues by looking at the choice of transport mode.
Each of the four largest modalities gets a separate paragraph in which the pro and cons of the modality will be researched. These reasons will give an insight in why respondents choose for one modality over the other.

§ 4.2.3 Car usage

In chapter 4.1.2 the focus of the analysis was on determining the basic characteristics which (for a part) determine why people choose for a mode of transport. In this section the focus will be on car usage. Why do people like using the car for traveling and what are their dislikes about their car?

In appendix 3 the complete results can be found of the cross tables of this chapter. When comparing the four largest modalities with the main reasons why people choose for their mode of transport the following composition occurs:

Choice of transportation means						
	Comfort	Fast	Independence	Flexibility	Other	**Total**
Car	24.3%	25.1%	22.5%	21.0%	7.0%	**100.0%**

Table 21: A summary of the main reasons for choosing car as modality

These results create a ranking specifically for car usage, which can be compared with the ranking made in chapter 4.1.3.

Determining factors in total choice of modality:		Determining factors in choice for Car:	
1	**Flexibility**	**1**	**Fast (Travel Time)**
2	**Travel time**	**2**	**Comfort**
3	**Travel costs**	**3**	**Independence**
4	**Comfort**	**4**	**Flexibility**

Table 4c: A comparison of determining factors between all modalities and car.

In this comparison it clearly shows that the car user has different priorities then the general respondent. When stimulating or discouraging car usage, the focus points of the policy used should be on this ranking. If for example, Public transport is promoted to discourage car usage, it will have little effect is comfort is (perceived as) low, seeing as it is an important reason why people choose to travel by car.

Now that the main reasons for choosing the car as transport means are know, the analysis will continue by looking at the dislikes of car usage and what could trigger a car user from switching modality.

[22/32] **What would be the main reason (s) for you not to travel by car to the university?** ***(Max 3 answers allowed)***

Main reason to no longer use the car for commute		
Paid parking	23	6.6%
Better connectivity with Public Transport	28	8.1%
Safety (safer use of bike or P.T.)	5	1.4%
Shorter travel time with P.T.	61	17.6%
Better facilities for cyclists	4	1.2%
An alternative for dropping off/ picking up my children	19	5.5%
None, I do not have a viable alternative	83	24.0%
Other:	5	1.4%
Better connectivity and shorter travel time with P.T.	81	23.4%
Paid parking + Better connectivity and shorter travel time P.T.	22	6.4%
Better connectivity and shorter travel time P.T. and an alternative for dropping off/ picking up children	15	4.4%
Total	**346**	**100.0%**

Table 22 Results of question 22 of the mobility survey regarding the main reasons for not using the car

Table 22 is a derivative from the results of question 22 of the survey. The non-relevant categories have been removed and the most occurring combination of answers have been added.

From this table the following ranking can be constructed:

1. **A viable alternative for traveling by car**
2. **A better connectivity with Public transport**
3. **Shorter travel time with Public transport**

These results combined with the results from table 14 and figure 2c can be used for designing policies to discourage/encourage workers to travel by car.

Almost a fourth of the respondents of this question say they have no (viable) alternative for traveling by car. But is this really the case? Does the respondent live on such a distance or so detached from the public transportation network, or does he/she has the perception that the car is the only option? By performing a “postal-code check” the relation between the answer of people and their home-work distance can be analyzed. More about this in chapter 6.

§ 4.2.4 Public Transport

After the brief analysis of car usage, the same approach will be used for the modality Public Transport.

Choice of transport means

Choice of transportation means						
	Comfort	Fast	Cheap	Good for the environment	Other	Total
Public Transport	13.7%	26.0%	19.1%	9.9%	31.3%	100.0%

Table 23: A Summary of he most important reasons for choosing public transport

Again, these results can be translated into the rankings used in the car chapter and compared with the general ranking in decisive factors

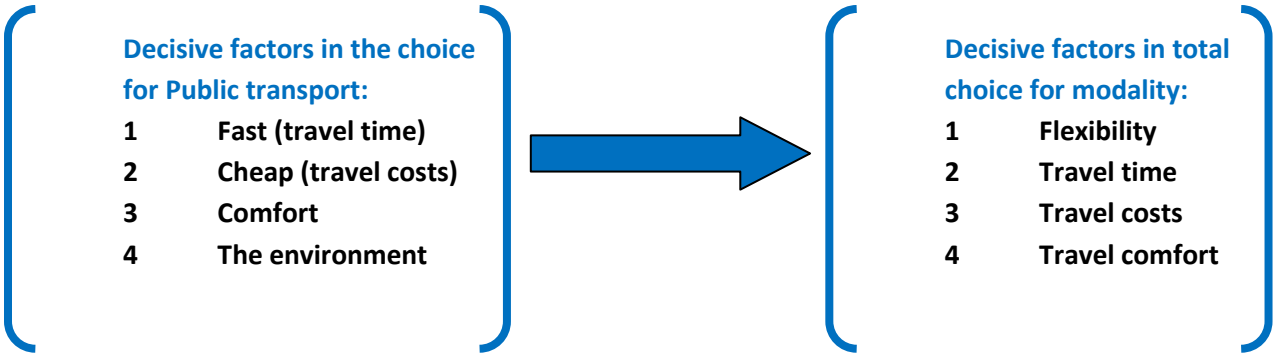

Figure 4d: A Summary of he most important reasons for choosing public transport versus the reasons for all modalities

The results of figure 2d are surprising, due to the fact that comfort is in the top 4. It has been theorized that car users choose their transportation for a large part based on speed and comfort. Public transport is chosen based on travel time and costs as expected, but also for comfort. Even more surprising, as lack of comfort seems one of the bases of the negative stigma surrounding public transport.

The term comfort is a broad definition, and in terms of public transport comfort can mean; working during the commute, having breakfast and reading the newspaper, or not having to drive to work.

In the car segment the analysis continued by looking at the question indicating what would trigger respondents to no longer use the car. However this question does not exist for public transport. To have some form of comparison, question 24 is used.

[24/32] **What is / are the main reason (s) that you currently do not use public transport?** ***(Max 3 answers allowed)***

Main reasons to not use public transport		
Travel time is too long	82	29.0%
Too expensive	25	8.8%
The First part of my travel is too long/ impractical	5	1.8%
The Last part of my travel is too long/ impractical	10	3.5%
Dropping off/ picking up my children	18	6.4%
Other;	6	2.1%
Travel time is too long and bad P.T. connectivity and too expensive	49	17.3%
Travel time is too long and bad P.T. connectivity and the First part of my travel is too long/ impractical	34	12.0%
Travel time is too long and bad P.T. connectivity and the Last part of my travel is too long/ impractical	30	10.6%
Travel time is too long and bad P.T. connectivity and dropping off/ picking up children	24	8.5%
Total	**283**	**100.0%**

Table 24: Results of question 24of the mobility survey regarding the main reasons for not using public transport.

These results can be organized as followed:

1. **Travel time is too long**

2. **Travel time is too long, bad P.T. connectivity and too expensive**

3. **Travel time is too long, bad P.T Connectivity and first (last) part of my travel is too long/ impractical**

Obvious from this summation is that travel time and the quality of the connectivity are key issues in deciding to use public transport or not.
Unfortunately the connectivity is an issue where the Erasmus Universiteit Rotterdam cannot change much. The options for improving connectivity from Erasmus Universiteit Rotterdam to the public transport network are extremely costs ineffective, unless many people will stop using their car and start using public transport.

Costs and travel time are interesting issues to examine. Although the Erasmus Universiteit Rotterdam cannot influence travel time itself, it can inform employees more about transportation options, by applying the NS Mobility check.
Further more, the costs aspect is important for a portion of workers. This can be improved by using a public transport subscription more synchronized with the travel needs of the workers.

§ 4.2.5 Bike usage

Choice of transportation means

Choice of transportation means						
	Good for my health	Fast	Cheap	Good for the environment	Other	Total
Bike	42.4%	24.2%	18.8%	12.7%	1.8%	100.0%

Table 25: A summary of the main reasons for choosing to travel by bike

This again leads to a ranking, which can be compared to the general decisive factors, creating the same figures as with car usage and public transport.

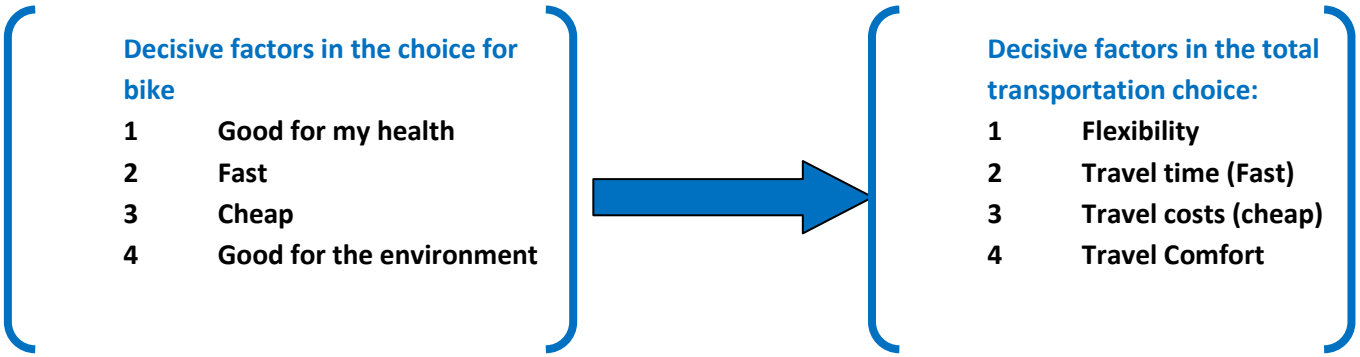

Figure 4e: The decisive factors for choosing the bike versus the reasons for all modalities.

[25/32] **What is/ are the main reason (s) for you not to travel by bike to the university?**

(Max 3 answers allowed)

Main reasons for not to travel by bike		
Distance is too large	354	74.4%
Physical strain	3	0.6%
Not enough facilities for cyclists	6	1.3%
Unsafe roads to the university	15	3.2%
Dropping off/ picking up my children	21	4.4%
Other;	5	1.1%
Distance is too large and physical strain	25	5.3%
Distance is too large and unsafe roads to the university	25	5.3%
Distance is too large and dropping off/ picking up my children	22	4.6%
Total	**476**	**100.00%**

Table 26: Results of question 25 of the mobility survey regarding the main reasons not to travel b bike

The results of the table are very one-sided, almost ¾ of the response indicates that they find the distance too large. Interesting is the fact that not many employees find the physical strain a problem. This could open up opportunities like encouraging use of the E-Bike to bridge larger distances

V Students

§ 5.1 Overview

The student analysis is performed separately because the target group differ substantially from employees in size, modal split and composition of the survey.
The relations between the different demographic characteristics analyzed in chapter 2 also apply for students with regard to. the relevant demographics used for students (not function etc.).

§ 5.1.1 Demographic characteristics

In the survey several questions have been asked concerning the demographic characteristics of the respondents, with again the purpose to adapt a more specific analysis. In this paragraph a few questions will be displayed. As mentioned the analysis of chapter 2 will apply for the chapter.

[2/22] **What is your age?**

Leeftijd		
18 - 24 years	1255	76.9%
25- 34 years	307	18.8%
35 - 49 years	56	3.4%
50 - 65 years	13	0.8%
65 or over	0	0.0%
Total	**1631**	**100.0%**

Table 29

[3/22] **What is the composition of your household?**

Household composition		
One person households	492	30.1%
Multiple person households	1067	65.3%
Multiple person households with one or more children under the age of 12	76	4.6%
Total	**1635**	**100.0%**

Table 30

§ 5.1.2 Transportation decision making

As mentioned in chapter 2, the decision making process is key in understanding the modal split. This basic data can be used for cross table comparisons and for construction of said modal split.

Like in chapter 2, the results will be divided into the categories of the largest transport modes. More concerning this in chapter 2.2.2.

[11/22] **What kind of transportation do you use to get to work? (1 answer allowed)**
(If you make use of more than one transportation mean, please refer to the mean (or combination of) with which you cover the largest distance)

Car (traveling alone)	179	11.0%
Carpooling	15	0.9%
Motorbike	6	0.4%
Bus	115	7.0%
Train	117	7.2%
Tram	148	9.1%
Subway	151	9.2%
Train+ tram/bus/subway	179	11.0%
Bike	508	31.1%
Moped/scooter	5	0.2%
Walking	29	1.8%
Public transport+ car	28	1.7%
Public transport+ bike	153	9.4%
Other:		0.0%
Total	**1633**	**100.0%**

Table 31

The table shows that the usage of the bike is by far the largest modality for students. The next largest modality seems to be car usage and public transport. However, like in the analysis for employees the different modes of transport have to be combined to one to give a representative image.

Transportation means		
Car	179	11.1%
Public Transport	891	55.1%
Bike	508	31.4%
Other	40	2.5%
Total	**1618**	**100.0%**

Table 32

This can be constructed into the following modal split:

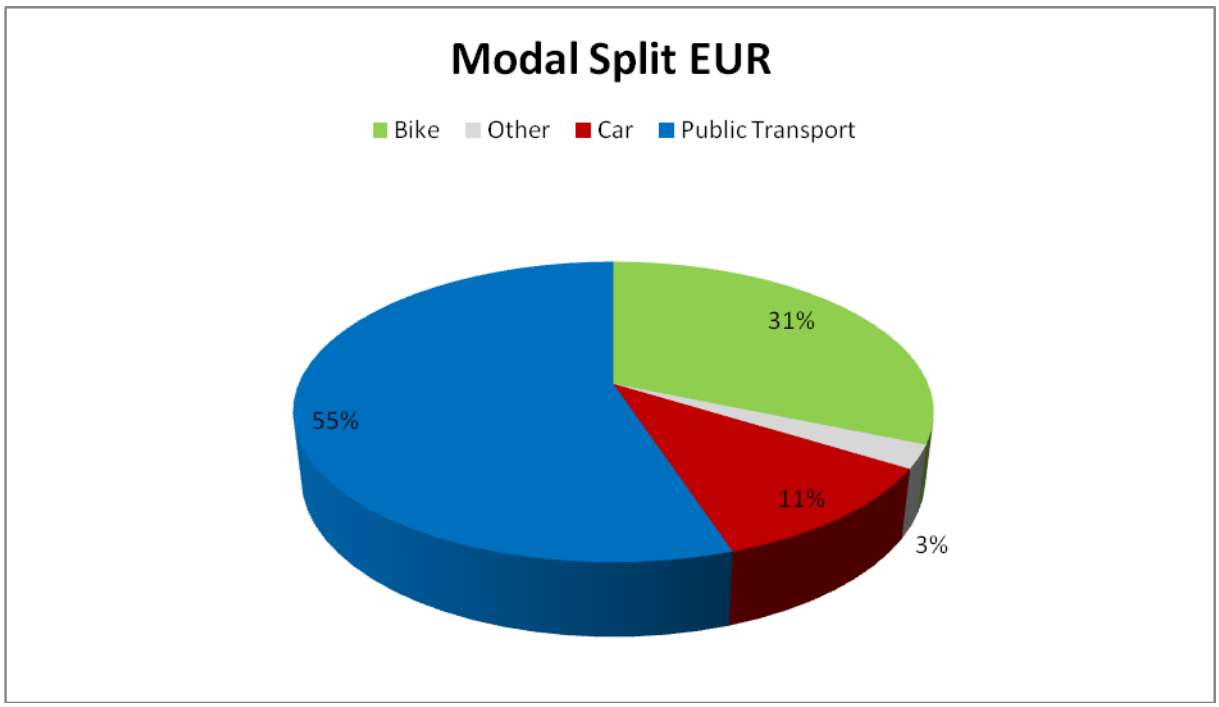

Figure 3a

Now that the modal split has been determined, it is possible to analyze the different modalities more in-depth.

Question 20 of the survey gives information about the motives for the transportation decision. Like the table constructed for employees, the majority of the answers was "a combination of anwers" and therefore the method of chapter 2.1.3 has been used again.

[12/22] **What is/are the most important reason(s) why you use your current means of transport?** ***(Max 3 answers allowed)***

Choice of transport mean		
Comfort	257	7.4%
Cheap	864	25.0%
Reliable	237	6.8%
Fast	969	28.0%
Dropping off/ picking up children	1	0.1%
Safety	38	1.1%
Independence	396	11.4%
Flexibility	355	10.3%
Good for my health	240	6.9%
Good for the environment	103	3.0%
Total	**3460**	**100.0%**

Table 33

After the conversion it appears that 28% chooses for speed as the main characteristic for their decision making with regard to. transportation means. Cheap comes in second place with 25% and a number of characteristics with 10% after that.
In chapter 3.2 this table is cross examined with the largest modality groups.

Question 20 is another question which give a good insight in the decision making process of students

[29/32] **What do you value more in your travel to work?**
(please choose between the two options)

Priorities		
Traveltime vs Travel comfort		
	Traveltime	1498
	Travel comfort	136
Travel costs vs Travel comfort		
	Travel costs	1253
	Travel comfort	374
Traveltime vs Travel costs		
	Traveltime	954
	Travel costs	684
Flexibility vs Traveltime		
	Flexibility	829
	Traveltime	797
Travel comfort vs Flexibility		
	Travel comfort	316
	Flexibility	1310
Travel costs vs Flexibility		
	Travel costs	942
	Flexibility	685

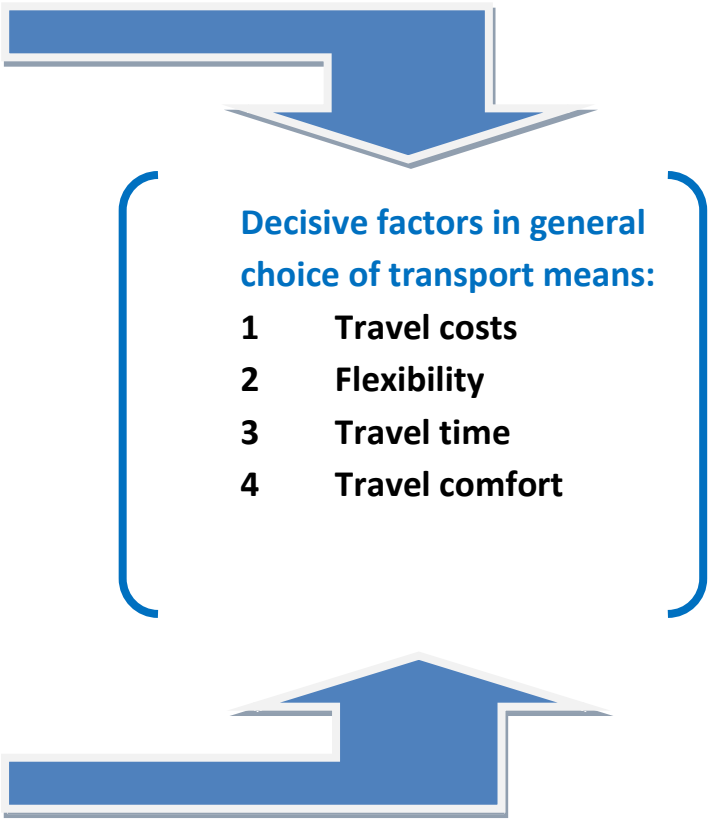

Figure 3b

§ 5.1.3 Travel time

Travel time is an important factor for the decision of transportation means, like we have seen with employees. The difference with employees is that travel time is deemed less important by students then employees. In the overviews of decisive factors it ranks one place lower with students.

[7/22] **What is your average travel time from your home to the university? (in minutes)**

Travel time Home – University		
< 5 minutes	0	0.0%
5 - 10 minutes	210	12.9%
11 - 30 minutes	671	41.3%
31 - 45 minutes	210	12.9%
46 - 60 minutes	219	13.5%
> 60 minutes	316	19.4%
Total	**1626**	**100.0%**

Table 30

[8/22] **Wat is uw gemiddelde reistijd van de universiteit naar uw woonplaats? (in minutes)**

Travel time University – Home		
< 5 minutes	0	0.0%
5 - 10 minutes	232	14.3%
11 - 30 minutes	657	40.4%
31 - 45 minutes	225	13.8%
46 - 60 minutes	188	11.6%
> 60 minutes	324	19.9%
Total	**1626**	**100.0%**

Table 31

§ 5.2 Analysis

After looking at the data for students on a basic level in chapter 3.1, the research now continues with a more detailed view. First some general questions regarding mobility are reviewed, after which the analysis can be performed based on the four largest modalities.
The modalities will be analyzed based on the main points mentioned in chapter 2.1:

- Demographic characteristics of the traveler.
- The choice of transportation means.

As mentioned at the start of this chapter, the demographic characteristics have been analyzed in the chapter for employees and the same conclusions will be assumed for students.

§ 5.2.1 Overview

Firstly, the general opinion about mobility is reviewed.

21/22] **Generally speaking, how do you judge the mobility policy of the university?**

Appreciation Mobility		
Bad	51	3.1%
Poor	235	14.5%
Sufficient	631	38.8%
Good	613	37.7%
Excellent	96	5.9%
Total	**1626**	**100.0%**

Table 32

Table 32 shows that 76.5% of the students judge mobility as positive. Important in this judgment is too focus on the 17.6% that evaluates the mobility as poor or bad.

But what people find the mobility positive and which find it negative? Is there a clear division between groups?
By means of cross table the answers of the respondents can be cross referenced with the respondents of the four largest modalities. Tables 33 and 34 display the results of this cross comparison. The tables show that car users are generally satisfied about mobility (87.5%). In contrast to this, the data suggests that the users of Public transport value the mobility a lot less positive, with 22.6% valuing the mobility with poor to bad.

To get a better understanding of the good and poor ratings, the four modalities are divided back to their original forms. Table 34 shows that mainly train users and users of multiple forms of public transport have a larger portion of respondents who value the mobility less positive. Also the combination of public transport and bike/ car is valued positively in general, but still has 20-30% of unsatisfied users.

Appreciation Mobility Erasmus Universiteit Rotterdam			
	Bad- Poor	Sufficient- Excellent	Total
Car	12.5%	87.5%	100.0%
Public Transport	22.6%	77.4%	100.0%
Bike	12.1%	87.9%	100.0%
Other	0.0%	100.0%	100.0%

Table 33

Appreciation Mobility Erasmus Universiteit Rotterdam			
	Bad- Poor	Sufficient- Excellent	Total
Car	12.8%	87.2%	100.0%
Carpooling	8.3%	91.7%	100.0%
Motorcycle	0.0%	100.0%	100.0%
Bus	11.4%	88.6%	100.0%
Train	28.6%	71.4%	100.0%
Tram	22.6%	77.4%	100.0%
Subway	13.2%	86.8%	100.0%
Train + tram/bus/subway	32.0%	68.0%	100.0%
Bike	12.1%	87.9%	100.0%
Moped/ scooter	40.0%	60.0%	100.0%
On foot	0.0%	100.0%	100.0%
Public transport + car	28.6%	71.4%	100.0%
Public transport+ bike	22.5%	77.5%	100.0%

Table 34

§ 5.2.2 Car usage

In chapter 3.1.2 the basic elements of why and how people choose for a transportation mean were analyzed. In this chapter the elements specifically applying for car usage are analyzed.

For the four largest modalities the results are:

Choice of transportation means						
	Comfort	Fast	Independence	Flexibility	Other	Total
Auto	27.0%	30.0%	22.8%	18.4%	1.9%	100.0%

Table 35

These factors can now be translated into a figure similar to figure 2b from chapter 3.1.2.

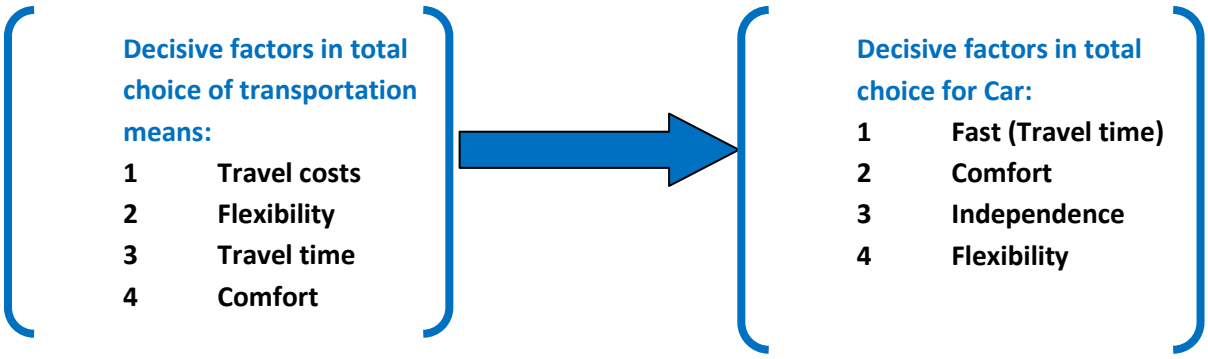

Figure 3c

From this comparison we can see that the priorities differ for the choice of car usage and the total decision making process. However, it is interesting to note that the decisive factors a ranked in the same order as employees. This can be partly explained by the universal attractions a car has, but the different demographic characteristics a student usually has then an employee. A car is not an option for all age groups, income groups etc.

Instead of looking only at the positive aspects of car usage, it is essential for this research to also consider the factors which cause people to use their car less or not at all.

[14/22] **What would be the main reason (s) for you not to travel by car to the university?** ***(Max 3 answers allowed)***

Main reason to no longer use the car for commute		
Paid parking	211	56.3%
Better connectivity with Public Transport	26	6.9%
Safety (safer use of bike or P.T.)	6	1.6%
Shorter travel time with P.T.	28	7.5%
Better facilities for cyclists	5	1.3%
An alternative for dropping off/ picking up my children	0	0.0%
None, I do not have a viable alternative	91	24.3%
Other:	8	2.1%
Total	**375**	**100.0%**

Table 36

The table above is a derivative of the outcome of question 14 from the survey. The categories “no reaction”, not relevant, I do not travel by car” and a “combination of answers” have been removed for purpose of a relevant table fit for analysis.

The table shows that a few factors weigh heavily into the consideration of using the car less:

- **Paid parking**
- **A viable alternative for using the car**
- **Shorter travel time with Public transport**

Striking is the number of students which are opposed to paid parking. Above results and this conclusion are important when formulating a new mobility policy. A large portion of the respondents indicate that they do not have a viable alternative for their car, but how can this be verified. By the use of a postal code check, the distance which needs to be traveled can be compared to viable transport modes. Obviously, there are plenty of good reasons not to have a viable alternative to a car. However, this large portion in the survey results could also be the result of students which are not fully aware of their travel options.
The use of the Mobility Scan can explore all viable travel options and the Erasmus Universiteit Rotterdam could communicate this to the students. More about these subjects in chapter 6.

§ 5.2.3 Public transport

Choice of transportation means						
	Cheap	Fast	Independence	Flexibility	Other	Totaal
Public Transport	33.1%	26.6%	14.9%	12.5%	12.9%	100.0%

Table 37

After Car usage has been explored in chapter 3.2.3, it is now time to review public transport.

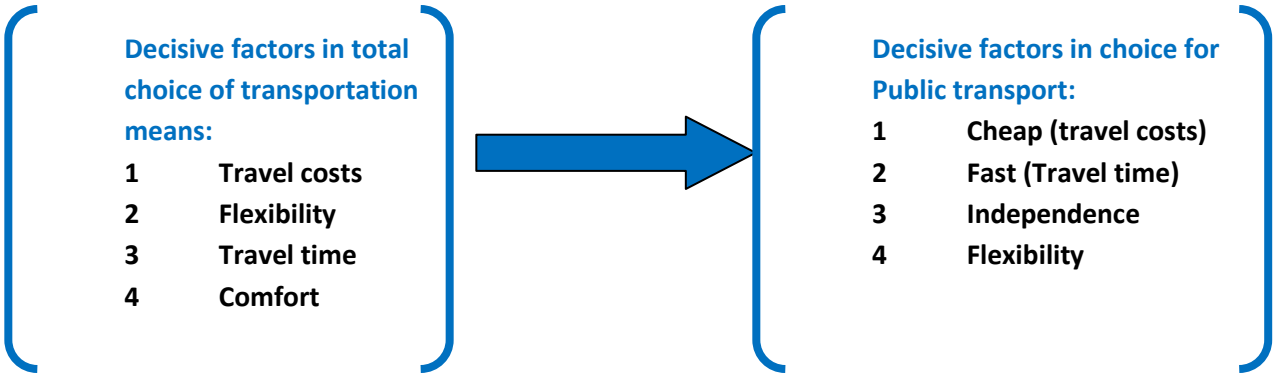

Figure 3d

Here we see a resemblance between the factors in general and those for public transport. This makes sense, because a large portion of the respondents travel with public transport, which means that the factors most important for public transport translate partly into the general decision making process. Further more, it makes sense that travel costs are a positive factor in traveling by public transport for students, because they have their “OV jaarkaart”. This makes it possible for students to travel for near to no costs, which makes it an attractive alternative.

The analysis in the car section was continued by reviewing the factors for using the car less, however this question was not implemented in the student survey. Instead, we will use question 19 of the survey.

[19/22] **What is / are the main reason (s) that you currently do not use public transport?** ***(Max 3 answers allowed)***

Main reasons to not use public transport		
Travel time is too long	324	34.4%
Too expensive	162	17.2%
The First part of my travel is too long/ impractical	170	20.2%
The Last part of my travel is too long/ impractical	41	3.9%
Dropping off/ picking up my children	50	5.3%
Other;	160	19.0%
Total	**907**	**100.0%**

Table 38

The main motives are:

- **Travel time is too long**
- **The first part of my travel is too long/ impractical**
- **Too expensive**

When reviewing the factors for choosing for public transport, it is clear that travel time once again proves to be an important factor.
The first and last part of the travel are difficult/ impractical are factors that hard to influence for the Erasmus Universiteit Rotterdam The costs and travel time however, are interesting for the university to review.

§ 5.2.4 Bike usage

Choice of transport means						
	Comfort	Fast	Independence	Flexibility	Other:	Total
Bike usage	11.6%	41.0%	15.5%	16.9%	15.0%	100.0%

Table 39

This composition can be translated in the following figure:

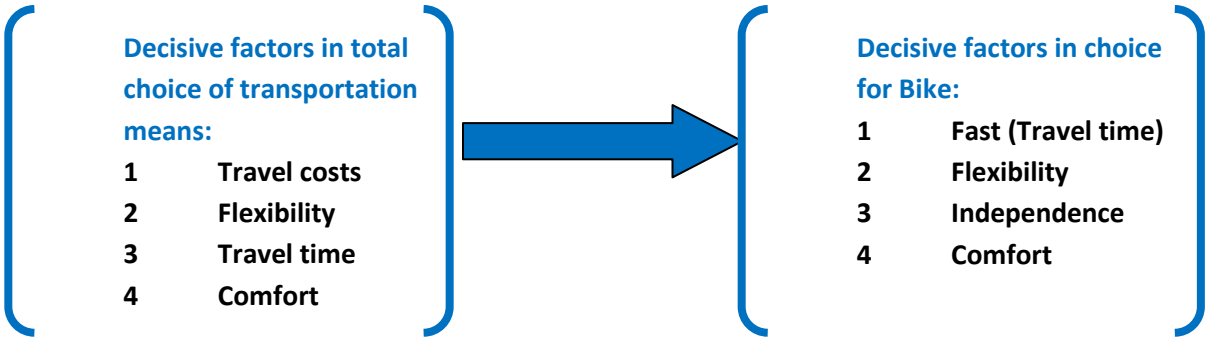

Figure 3e

When comparing these results with the results for not using bike usage , the results are quite one sided compared to the other modalities. More than ¾ of the students finds the distance to the university too large. The bike then will be mostly used for shorter distance, especially by students. Students consider public transport as an adequate alternative, for short to medium distances. Employees can also use public transport, however the financial aspect plays a larger role then it does with students (as explained in chapter 3.2.4).

[15/22] **What is/are the main reasons that you currently do not travel by bike?** ***(Max 3 answers allowed)***

Main reasons to not use bike		
Distance is too large	582	84.7%
Physical strain	52	7.6%
Insufficient facilities for cyclists	19	2.8%
Unsafe travel routes	24	3.5%
Dropping off/ picking up children	2	0.3%
Other:	8	1.2%
Total	**687**	**100.0%**

Table 40

VI Analysis: NS Mobility Scan and Postal code experiment

In the previous chapters the analysis of mobility for employees and students was composed as followed:

1 Overview of Demographic characteristics and Travel behavior

2 Overview of composition of modalities → construction of Modal split

3 Analysis per modality focused on the rationale behind choosing for one modality over the other

This structure can be expanded by looking at the data one step closer. This can be done by including distance (i.e. travel time) into the equation. This can be done by the use of the NS Mobility check and an experiment using a postal code check compared with the modalities of the modal split.

Throughout the analysis, employees and students indicated on more than one occasion that they had no viable alternative for the use of their car. By the additional analysis performed in this chapter, the groups that have indicated that they have no alternative can be reviewed, and the reason for the lack of alternatives can be determined. If possible, solutions to the lack of alternatives can be offered by the Erasmus Universiteit Rotterdam based on the Mobility check and the postal code experiment.

A geographical representation is used as a basis for analyzing the distances and possible alternatives of respondents. The first assumptions can be made based on these figures.

In chapter 6.2, these assumptions can be further analyzed by applying the NS Mobility Scan and the postal code check

§ 6.1 Geographical summary

The maps used in this section are made with the use of the software ArcGis. This software is able to convert geographical data (postal codes) into a geographical representations.

First, the car users:

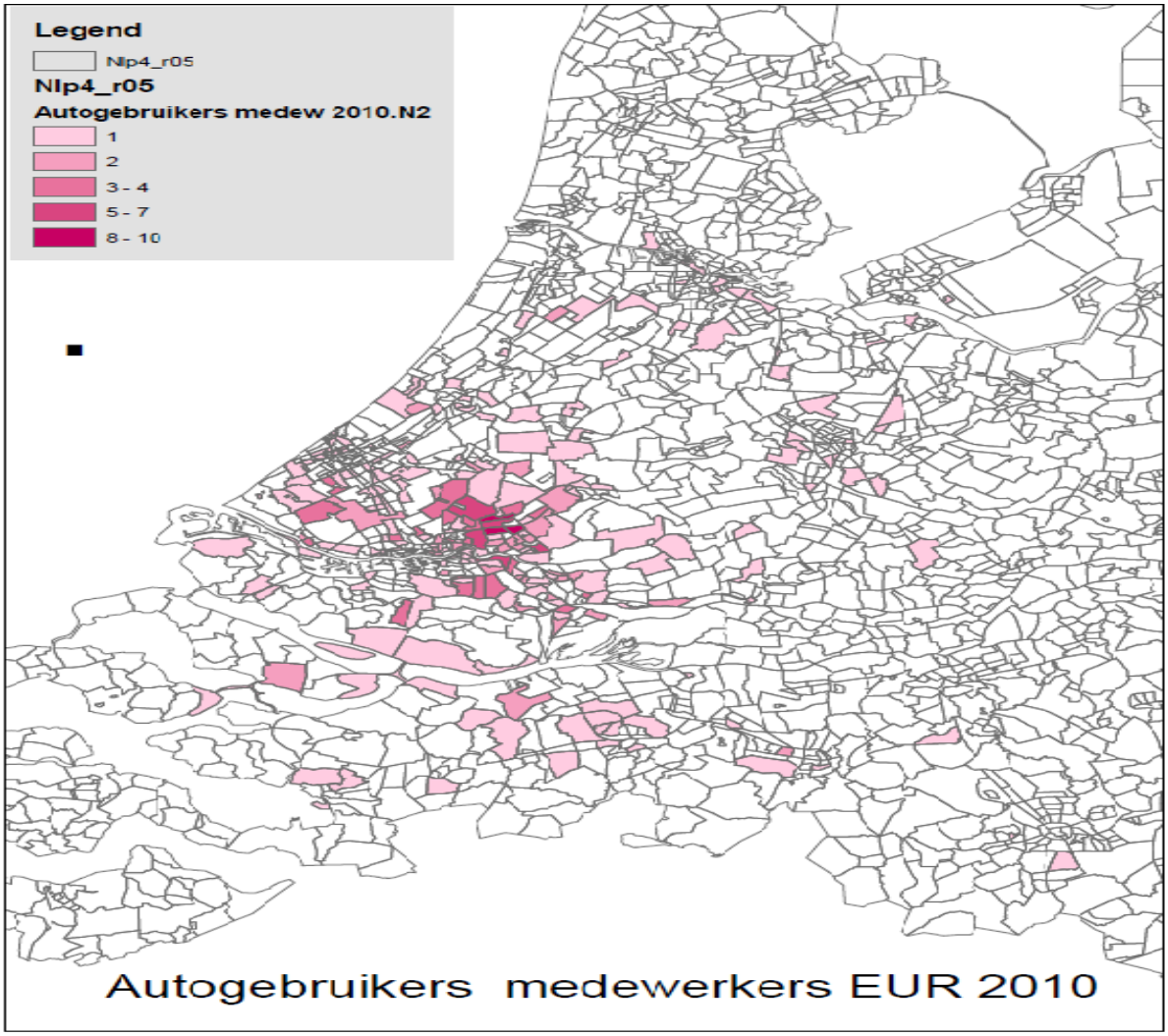

Figure 4a

In above figure is clearly shows that there is a cluster of car usage in a relative short distance to the university. A area with darker colors indicate a larger number of people living in the same postal code. The lighter colors indicate a smaller number of employees. These smaller numbers are more spread out and live on considerable larger distances. For some respondents the location with regard to. the public transport network and the sheer distance, would result in the only viable alternative being the use of their car.

What triggers the groups of employees living on relative short distance of the Erasmus Universiteit Rotterdam to travel by car.? This and more will be analyzed in chapter 4.2.

The representation for public transport users:

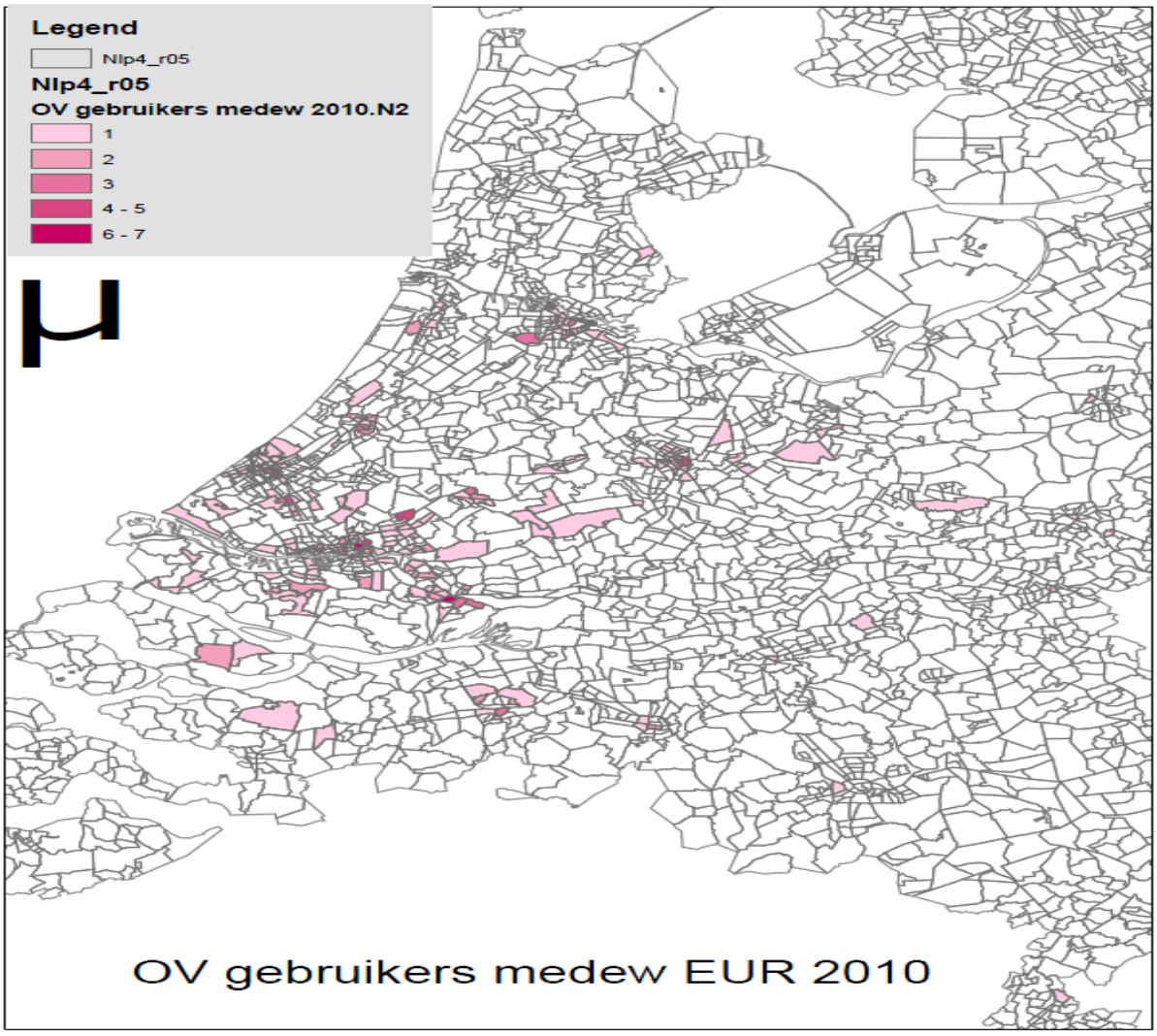

Figure 4b

Interesting of this overview is that the spread of public transport users is quite large. Based on the analysis in previous chapters, in which travel time was important factor the opposite was expected. For commuters from large cities such as Amsterdam, Utrecht and Den Hague, the usage of public transport can be explained due to the direct connection to Rotterdam by train. It's the commuters from more remote areas such as the southern and eastern parts of the country that are more surprising. Possible explanations for this travel behavior can be the simple lack of possession of a car, or that the roads that are used for the commute are too heavily congested.

Lastly, the representation of cyclists.

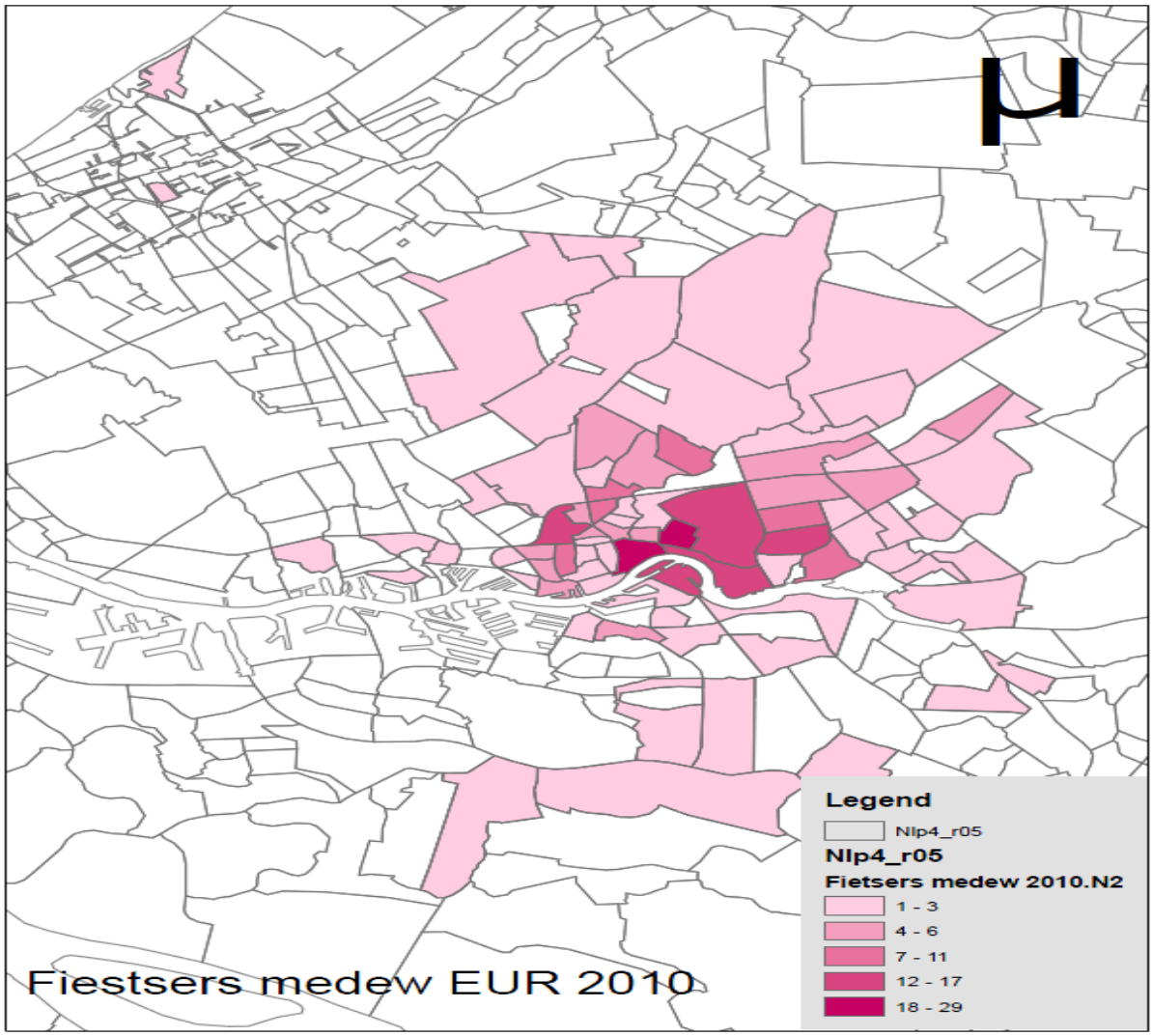

Figure 4c

The overview is made on a smaller scale, as the bike users live in relative close proximity to the university. This complies with the analysis in previous chapter, which concluded that cyclist are most common when travel time is short and the distance is short.

Even though a number of employees chose to travel by bike when living on a short distance from the university, the large share of car users in this close proximity is yet to be explained.
To get more insight in this phenomenon, the NS Mobility Scan is applied.

§ 6.2 NS Mobility Scan

The Mobility Scan is an application of the National Railway Services Netherlands. This application can be used for companies and institutions that wish to get more insight in the mobility of their employees.

§ 6.2.1 NS Mobility Scan results: A First look

"The NS whishes to use the Mobility scan to contribute to the solutions of the mobility issues in the Netherlands. Car users can be hard to persuade to try other modalities. Good and reliable travel information concerning car use and public transport from door to door is of great importance for achieving behavioral changes. With a fast and easy comparison of travel information for commuting, the NS Scan offers this essential information. Companies can easily review for which employees public transport is a viable alternative. (www.ns.nl)

By performing the scan, the alternatives (mainly Public transport) can be evaluated for the employees in their daily commute. It is not very effective to implement a new mobility policy to reduce car usage, when 90% does not have a viable alternative for using the car.
For the purpose of this research the analysis in this chapter will be mainly focused on car usage, based on figure 4a.

Important to note, is that the figures and numbers used by the NS scan differ from the sample used in this research. The amount of the used data and the composition of it give other results. Still the results are quite relevant for this analysis.

There are two important restrictions that must be taken into account when analyzing the results of the NS Mobility Scan:

- Distances of commutes smaller then 7km will automatically assigned to the categories "walking and or cycling". These distances are often traveled most efficient (cost wise, travel time etc.) on foot or by using a bicycle.
- If the travel advice given for public transport is longer than 1.5 times the travel time by car, the employee is assigned to car usage. Public transport is not an effective alternative mode of transportation for these employees.

Mobility employees	Number of employees	Share
Current train users	71	4%
Lease-car users	0	0%
Walking and cycling	909	46%
Users of other forms of public transport	113	6%
Car users	447	22%
Users of train + combination of public transport	412	21%
Users of train + walking/ cycling	43	2%
Users of train + "OV Fiets"	0	0%
Potential # train users	**455**	**23%**

Table 41

The most important information which can be gathered from this table is the potential amount of train users which can be gained. The 455 employees are based on a summation of the three forms of train users directly above the number of potential train users. The number of employees per category is based on individual travel advice. Per postal code the most efficient travel option is selected for the employee, with exception of the above restrictions.

When a closer look is taken at the data used for the scan, the assumptions displayed in figure 4a are confirmed. A large group of employees live in a close proximity to the Erasmus Universiteit Rotterdam, and for them walking or cycling is the best alternative in general. The data also shows that a portion of the employees lives to far away from the university or the travel time of public transport is too long, for public transport to be a viable option. This will result in a travel time large then 1.5x the travel time with the car, and therefore public transport is not considered as a good alternative.

The most important conclusion of the NS Mobility Scan is that there is a group of employees (23%) that has the alternative of using public transport instead of using their car. Also the group of people living in close proximity to the Erasmus Universiteit Rotterdam appear to have more efficient options then car use.

There are opportunities within these groups for the Erasmus Universiteit Rotterdam to change discourage car users and stimulate them to use public transport of travel on foot/ by bike. The most important variables for **not** choosing reviewed in chapter 2.2.4 where:

1. **Travel time is too long**
2. **Travel time is too long, connection with public transport is bad, costs are too high**
3. **Travel time is too long, connection with public transport is bad, first part of the travel is too long/impractical.**

Based on the Mobility scan, the conclusion can be made that for a certain number of employees the travel time is indeed too long or the connection with public transport is poor, so that public transport is not a viable option for them.
However, there is a portion of the employees that find the costs too high, and a portion of the employees have the **perception** that the distance is too large, or that they do not have any alternative to car usage. A part of these target groups can be stimulated by a policy focused on cost reduction of public transport use (Public transport subscription, Individual travel budget). The other segment can be stimulated by informing them better about the available travel options.

Then the group which lives in close proximity still remains. The Mobility Scan states that the best suited alternative for them should be walking or cycling, however the employees still choose to user their car. The why and how of this decision making will be discussed in chapter 4.3.

§ 6.2.2 Positive externalities

The potential of influencing the Modal Split can cause positive externalities and can reduce negative externalities. Although the statements below are partly based on **assumptions,** the examples give a good image of the possibilities of positively effecting the Modal Split.

1. Physical Excersise

One of the potentials of the Mobility Scan is that employees are motivated to use their car less and start using the other modes of transportation. Per definition these other modes require more physical effort then traveling by car, thereby making the commute a more healthy activity.

2. Parking

If the Erasmus University succeeds in lowering the amount of employees that will commute by car, the effects on parking will be noticeable. Less parking spaces are required at the same time, and investments needed for expanding parking facilities can be used for other goals.

3. Positive for the environment

The Mobility Scan makes a calculation for CO2 output based on the potential amount of workers that can switch from commuting by car to commuting by train:

- 1 kilometer of traveling by car means an average CO2 emission of 126g
- 1 kilometer of traveling by train means an average CO2 emission of 39g

Based on the total number of employees that will reduce their kilometer travels by car, the NS Scan estimates that this reduction will translate in a reduction of CO2 emission of **1,008 tons** per year. This is roughly equal to the CO2 filtering of 50.000 trees, or put differently, 672 football pitches worth of trees. (based on calculation of the NS Mobility Scan)

4. Increase in labor productivity

Based on the average travel time that can be used to work instead of used for driving, the Mobility scan has computed that the change from car to train results **in 98,371 working hours extra** per year.

As noted in chapter 4.2.1 the scan is made with two large restrictions. For Erasmus Universiteit Rotterdam it is important to get an insight in the groups excluded due to these restrictions, mainly the group which lives in close proximity to the Erasmus Universiteit Rotterdam and travels by car.
To gain this insight, a small experiment is performed in the next chapter.

§ 6.3 Postal code experiment

In this chapter a experiment is performed based on a target group of employees which travel by car and lives within 7km of the Erasmus Universiteit Rotterdam. The sample size for this experiment is 50.

Even though the target group has alternatives based on the NS Mobility Scan, they still choose to travel by car. The goal of this experiment is to get an insight in why these employees choose to travel by car. This can be analyzed by determining the distances for all the employees who have indicated that they travel by car to the university. These are filtered up to a distance of 7km.
Based on this sample the responses to a few questions of the respondents are analyzed.

The following questions was analyzed first:

What is/are the most important reason(s) why you use your current means of transport? ***(Max 3 answers allowed)***

For the sample of 50 employees the response was as followed:

1	**Comfort**	**31%**
2	**Fast**	**28%**
3	**Independence**	**17%**
4	**Flexibility**	**16%**
5	**Picking up/ dropping off children**	**8%**

To get an idea of how this ranking compares to the total sample, the overview of car usage of chapter 2.2.3 is used.

Decisive factors in choice for Car:

1	**Fast**
2	**Comfort**
3	**Independence**
4	**Flexibility**

From the comparison it is obvious that the motivation for choosing the car to commute is more or less the same for the sample size of this experiment, with the large difference that Comfort is the most important factor for choosing the car.
Another interesting thing is the 8% of employees which uses the car for commuting because they need it for picking up and dropping off their children. Although it only concerns a few people in this sample, the effects translated to the population could possibly be of a larger scale. The use of the car for this specific group of people is rational, because there are no real alternative when dealing with several children.

Although these insight may prove useful, there is not much the Erasmus Universiteit Rotterdamcan change about these factors. That's why the next question is also reviewed:

What is / are the main reason (s) that you currently do not use public transport?
(Max 3 answers allowed)

The results for this question are quite similar to the results of the previous question. The majority of the replies is "Shorter travel time with public transport" (Fast) and "picking up/ dropping off children". The respondents which choose these answers in the previous question generally pick the same answers in this question.

What is/are the main reasons that you currently do not travel by bike?
(Max 3 answers allowed)

1	**Physical strain**	**36%**
2	**Distance is too large**	**25%**
3	**Picking up/ dropping off children**	**21%**
4	**Better facilities for cyclists**	**18%**

The results of this figure indicate that for this sample group a large portion has the ability to use alternative forms of transport. The reasons for physical strain or finding the distance too large can be numerous (medical etc.), however for most there is room to encourage using their bike

The experiments shows that a portion of the employees do not have an alternative for their car. This is mainly the group which has children which they have to pick up and drop off at daycare/ school.
The remaining employees are eligible for stimuli presented by the Erasmus Universiteit Rotterdam. Public transport for example can be made more attractive by financial stimuli. Also a portion of employees might consider a switch from using their car, if the facilities for cyclists are in a better condition.

VII Analysis: Parking and cyclist facilities

In multiple occasions during this research the facilities for cyclists have been a factor in the mobility of employees and students. Also parking and parking fees seem a important variable in determine what transport mode to choose. For these reasons, the following chapter will cover these two variables.

The use of the car and cycling are two modalities on which the Erasmus Universiteit Rotterdam can have great influence. Public transport can realistically only be stimulated by financial stimuli and better communication, while there are more policy option for car usage and bike usage.
A much discussed instrument in influencing car usage, is the implementation of parking fees.
Parking fees can be used to discourage the use of the car for commuting, and can be used for making other travel options more attractive.

In this chapter the parking situation of the Erasmus Universiteit Rotterdam is reviewed first. This is essential for the analysis, because an insight is needed in where people park. Charging parking fees in areas where only a small portion of employees work has little effect on commuting by car. More over if there are plenty of other parking areas which are free, the car users will just avoid the areas with parking fees and continue to use their car.
After the analysis of parking, the cyclist facilities are analyzed. These facilities are a returning factor in the survey and this analysis. The state of the cyclists facilities determine for a part, the attractiveness of commuting by bike . As shown in chapter 4, traveling by bike was a viable alternative for a large segment of the sample of people living within 7km of the Erasmus Universiteit Rotterdam. The question therefore is what the current opinion on the cyclist facilities really is, and what can be done to improve them if needed.

§ 7.1 Parking

[21/32] **If you travel by car, where do you usually park when you arrive at the university?**

Employees

Where do you park?		
On the parking of the university	640	96.1%
P+R Kralingse Zoom (metro station)	10	1.5%
In a residential area surrounding the Erasmus Universiteit Rotterdam	9	1.4%
Brainpark	1	0.2%
Other:	6	0.9%
Total	**666**	**100.0%**

Table 42

The employees park almost exclusively on the parking of the university. Interesting is the fact that only a small portion parks at the park and ride at the metro station, even though it is always at full capacity.

Students display a completely different parking behaviour.

Students

[13/22] **If you travel by car, where do you usually park when you arrive at the university?**

Where do you park?		
On the parking of the university	284	43.7%
P+R Kralingse Zoom (metro station)	111	17.1%
In a residential area surrounding the Erasmus Universiteit Rotterdam	144	22.2%
Brainpark	90	13.8%
Other:	21	3.2%
Total	**650**	**100.0%**

Table 43

This table shows that a large portion also parks on the parking of the university, however there are also a lot of students which park elsewhere. The cause for this could be that students value travel costs more in their commute, and their costs are usually higher when parking on the parking of the university.

Based on these results the response can be compared to other variables. For estimating the parking pressure, it is important that an insight is gained in who parks where, and when. By using a cross table these variables can be determined.

Firstly, the analysis will focus on what users park on what parking grounds. Important in this section that there is a difference between the questions used in this part of the analysis; “How do you travel” and “Where do you park”.

The question How do you travel asks what transportation means is used the most when commuting to the university. Where do you park asks **when the car is used** , where does that person park. It is possible that one respondent that travels by public transport most of the time, but travels by car once a month and parks on the parking of the university.
This gives the following results:

- How do you travel? = Public transport
- Where do you park? = Parking of the university

This can be confusing when analyzing the data, because how can someone who travels with public transport, also reply that he/she parks on the university. Even though this difference exists, it is still interesting to examine who parks on what facilities in general.

The tables below are based on the three largest modalities and carpooling, and are compared with the different parking facilities on the Erasmus Universiteit Rotterdam and in its surroundings.

Students

	Auto		Carpool		O.V		Bike		Total
University	**128**	74.9%	**9**	64.3%	**71**	28.2%	**38**	34.5%	**246**
P+R	**7**	4.1%	**0**	0.0%	**71**	28.2%	**21**	19.1%	**99**
Residential area	**22**	12.9%	**4**	28.6%	**62**	24.6%	**34**	30.9%	**122**
Brainpark	**14**	8.2%	**1**	7.1%	**48**	19.0%	**17**	15.5%	**80**
Total	171	**100.0%**	14	**100.0%**	252	**100.0%**	110	**100.0%**	**547**

Table 44

Employees

	Auto		Carpool		Public transport		Bike		Total
University	**366**	100.0%	**22**	95.7%	**85**	93.4%	**136**	92.5%	**609**
P+R	**0**	0.0%	**1**	4.3%	**3**	3.3%	**5**	3.4%	**9**
Residential area	**0**	0.0%	**0**	0.0%	**3**	3.3%	**6**	4.1%	**9**
Brainpark	**0**	0.0%	**0**	0.0%	**0**	0.0%	**0**	0.0%	**0**
Total	366	**100.0%**	23	**100.0%**	91	**100.0%**	147	**100.0%**	**627**

Table 45

The tables display that all employees that travel by car park on the university. The people that park on other facilities are users that usually travel with other modes of transport.
The table for students displays a similar image. However, students who usually travel by public transport, display a behavior of “wild parking”. Wild parking means, that parking occurs on many facilities other than the one preferred.

§ 7.2 Parking fees

As mentioned in the previous section, parking fees are a instrument often used in discouraging car usage. The following question was asked in the employee survey:

[23/32] **If paid parking would be introduced, would you use the car less to travel to the university?**

Implementation of parking fees		
Yes	207	33.20%
Yes, if the parking fees are more than 35e	78	12.50%
No	339	54.30%
Total	**624**	**100.00%**

Table 46

The table shows that 33% would use their car less often, if parking fees would be implemented. An additional 13% would switch to other modalities. To get more insight in how the different modalities of the modal split feel about the implementation of parking fees, a cross table is used to compare the above questions with the modal split.

Choice of transportation means						
	Car	Public transport	Bike	Other		Total
Yes	39.6%	25.4%	31.5%	3.6%		100.0%
Yes, if the parking fees are more than 35 e	80.3%	9.2%	9.2%	1.3%		100.0%
No	75.5%	9.7%	14.2%	0.6%		100.0%

Table 47

Table 47 shows how the response is divided among the modal split. Of the 207 people who will reduce car usage regardless of the height of the parking fees, 39.6% are actual car users. The large shares of users who normally travel by public transport and by bike can be explained. These users do not travel by car that often, so by making commuting by car more expensive it is easier for these segments to complete disregards the car as a viable transport mode.

Implementation of parking fees versus Reasons to travel less by car.

	Better connectivity with public transport	Safety (Unsafe by bike or public transport)	Shorter travel time with public transport	Better facilities for cyclists	An alternative for picking up/ dropping off children	None, I do not have an alternative for car usage	Better connectivity P.T + shorter travel time P.T	Better connectivity P.T + shorter travel time P.T +Paid parking	Better connectivity P.T + shorter travel time P.T + alternative for picking up/dropping off children
Yes	10.5%	0.0%	15.8%	14.5%	7.9%	11.8%	21.1%	13.2%	5.2%
Yes, if the parking fees are more than 35 e	11.1%	0.0%	20.0%	4.4%	4.4%	4.4%	**35.6%**	20.0%	0.1%
No	9.3%	1.5%	16.1%	7.8%	3.9%	**33.2%**	21.0%	2.0%	5.2%

The cross table above is composed by comparing the question regarding parking fees with the reasons why people would use their car less.
the first result that is striking if that 33% of the respondents who answered no to the parking fees question, also answered that they do not have an alternative for their commute by car. A logical result, but this reinforces the image created throughout the analysis. Furthermore, the share of people who might switch if parking fees would be higher than 35 e is largely distributed to people who would switch from commuting by car if public transport would be better. The expectation therefore would be that a large portion of the people that would consider switching their transport mode from car due to parking fees, will switch to public transport.

§ 7.3 Cyclist facilities

In this chapter the facilities for cyclists are analyzed. Seeing as cyclists are a third of the modal split, it is important that the state of bike facilities are reviewed. In this section the analysis will cover both employees and students, seeing as bike usage is high among students.

Students

[16/22] **How do you judge the current facilities for cyclists on campus?**

Appreciation facilities for cyclists		
Bad	45	4.7%
Poor	187	19.7%
Sufficient	526	55.4%
Good	177	18.7%
Excellent	14	1.5%
Total	**949**	**100.0%**

Table 49

Employees

[26/32] **How do you judge the current facilities for cyclists on campus?**

Appreciation facilities for cyclists		
Bad	26	3.0%
Poor	170	19.3%
Sufficient	494	56.2%
Good	187	21.3%
Excellent	2	0.2%
Total	**879**	**100.0%**

Table 50

The facilities are valued as sufficient, however 22.4% and 22.3% value the facilities for cyclists as insufficient. To see who exactly find the facilities sufficient and insufficient a cross table is used again to compare with the modal split.

Students

Appreciation facilities for cyclists			
	Car	Public transport	Bike
Bad	7.1%	5.9%	3.6%
Poor	28.6%	20.7%	19.2%
Sufficient	50.0%	56.9%	56.7%
Good	14.3%	16.5%	20.5%
Excellent	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**

Table 51

Employees

Appreciation facilities for cyclists			
	Car	Public transport	Bike
Bad	3.8%	1.6%	3.3%
Poor	16.0%	20.3%	20.5%
Sufficient	42.6%	50.4%	34.4%
Good	22.8%	15.9%	23.9%
Excellent	0.0%	0.0%	0.7%
Total	**100.0%**	**100.0%**	**100.0%**

Table 52

Students who use their car to travel to work value the facilities the lowest. Further research could indicate that a part of the students travels by car, because the cycling facilities are not appreciated. Employees traveling by bike are relatively unhappy with the cyclist facilities . Although there is a large group that values the facilities as good to excellent, it has the largest share of negative reviews.

Another way to review the facilities for cyclists is to analyze the open comments on the question;

Do you have any suggestions/ comments regarding the bike facilities on the campus?

Some examples of the comments which appear quite often:

- Separate the bike lanes from the sidewalks/ increase the safety of bike lanes
- Improve the bike sheds/ storage facilities, both in quality and quantity (the T building is mentioned a couple of times as a positive example)
- Removing broken/ unused bikes from facilities
- Make tools available for repairing of bikes
- The need for shower facilities

The exerts of this question are confirmed by the following:

Is er van uw kant een behoefte aan een fietsenmaker of reparatieservice op de universiteit?

Students

Bike repair facilities		
Yes	356	59.6%
No	241	40.4%
Total	**597**	**100.0%**

Table 53

Employees

Bike repair facilities		
Yes	429	64.3%
No	238	35.7%
Total	**667**	**100.0%**

Table 54

The previous chapters (mainly chapter 6) showed that the quality of cyclist facilities and parking policy could have a influence on mobility. It is impossible to determine the exact effect of improved facilities for cyclists or a change in the parking policies. What can be concluded from the previous analysis, is that the decision for transport means will be affected, if these variables are altered.

This is mainly relevant for the problem reviewed in chapter 6. A large part of the employees which live in a close proximity of the university, can be stimulated to use their car less. This can be achieved by making the alternatives more attractive, which in the case of this target group would be walking or commuting by bike. The analysis above suggests that this can be done by constructing shower facilities on campus and improving the bike lanes on and around the campus.

VIII Alternatives

After the analysis of why employees and students choose their transport modes, and how this affects the modal split, it is equally as important to look at the alternative policies. The alternative policies in this chapter are approached from two perspectives. From the perspective of the university and from the perspective of the respondent. The Erasmus Universiteit Rotterdam has a number of policy options which it can use to influence mobility. By reviewing some of the comments concerning mobility in general, the perspective of respondents can be estimated.

§ 8.1 Alternatives: from the university's perspective

In the survey for employees the following question has been stated:

[31/32] How do you consider the following policies?

Alternatives	Very Negative	Negative	Neutral	Positive	Very Positive	Total
Bike subsidy	3.5%	4.2%	27.6%	29.6%	35.2%	100.0%
Carpooling	9.9%	17.6%	40.1%	25.0%	7.4%	100.0%
Working at home	1.7%	4.1%	18.9%	38.9%	36.4%	100.0%
4x9	5.1%	10.2%	25.9%	28.9%	30.0%	100.0%
Public transport subscription	3.6%	5.0%	28.6%	32.7%	30.1%	100.0%
Individual travel budget	3.6%	7.4%	33.3%	36.6%	19.1%	100.0%
Paid parking	44.4%	21.6%	21.8%	6.8%	5.4%	100.0%

Table 55

With these results as a basis the individual policies will be discussed.

BIKE SUBSIDY

An additional financial compensation for commuting by bike.

The bike subsidy is valued as positive. Seeing as most of the respondents reacted to this question (not just cyclists), the policy is valued popular by the users of other modalities as well. A bike subsidy has great potential for the Erasmus Universiteit Rotterdam. In the first place because a large portion of employees already commutes by bike, and this group will be further motivated to keep doing this. Secondly, the previous analysis indicated that there are employees who would consider commuting by bike if certain variables change. Not all variables can be changed, but a financial compensation can make commuting by bike more attractive for this segment compared to other modes. Specifically in the sample group used in the postal code check, there is potential for stimulating employees. Finally, implementing a bike subsidy can be quite cost effective, considering the benefits reaped in terms of saved parking places, less congestion etc.

CARPOOLING

Your employer can organize groups of employees which live close to each other, so that they have the option to commute together by car.

Carpooling can be quite effective if there are several employees living in the same neighborhood. Carpooling is positively valued, but mainly neutral. This can be explained by the main reasons why people choose to travel by car (chapter 2 and 3). Two main factors in the motivation to commute by car, are flexibility and independence, which a employee sacrifices when carpooling. The carpooling policy can be effectively applied, even if the only effect is to gain insight in which employee can travel together and to inform people about this option. A large scale implementation of this policy will likely not be efficient.

WORKING AT HOME

A policy for working at home might not be an option at your employer currently, but if so, you could think of fiscal discounts on arranging your home workspace, working with a laptop instead of a desktop and replacing your work phone with a mobile work phone.

The alternative of working at home is appreciated by the respondents. For many employees the idea of working at home and the ability to purchase a home office with fiscal benefits, sound attractive.
The main issue with this policy is the target group. As was reviewed in chapter 2.1.4 table 10-12, the majority of employees already has the ability to work at home. The portion which does not have this option, only 19.3% would benefit from this policy. The remainder does not work at home because of the nature of his/her job, or just doesn't like working at home.

This makes the target group very limited. Nonetheless this policy is very attractive for reducing parking pressure at specific times (working hours).

4X9 (FLEXIBLE WORKING HOURS)

This flexible work arrangement means that you can choose between working 36 hours or 40 hours instead of the standard 38 hours a week (as a consequence you get more or less paid leave days.) With 4x9 the option is illustrated to working fours day with nine hours a day (in return you keep 144 paid leave hours.)

The flexible work arrangement is also valued positively. The differentiation of work hours can have the same effect as working at home. Because employees have more options for arriving/ leaving the university and are required to travel less often to the university, the number of cars in peak hours will decrease. This alternative seems fit for implementation.

PUBLIC TRANSPORT SUBSCRIPTION

As a consequence of the current traveling expenses compensation of the ERASMUS UNIVERSITY ROTTERDAM (€ 0.19 per kilometer, disregarding your choice of transport), the compensation is not always sufficient to cover the purchase of a subscription to the relevant public transportation. Your employer can consider to fully compensate you for your subscription for public transport.

The public transport subscription was positively valued by the respondents. The implementation of this policy could fit perfectly into the situation of the Erasmus Universiteit Rotterdam. By differentiating between the different modalities and by adapting the financial compensation accordingly, the preferences of the individual modalities can be better satisfied. The bike subsidy for example will have a different size and composition than the Public transport subscription for example, but it can be equally effective for both target groups. Moreover, the analysis of public transport has shown that a portion of the respondents find public transport to expensive. These employees might switch to commuting by public transport, when faced with a better suited compensation.

INDIVIDUAL TRAVEL BUDGET

Your employer can consider to change the current method of compensation for your home-work travel, by introducing an individual travel budget. With this budget, you can decide for yourself if you purchase a subscription to public transport, a parking card, arrange a home workspace or receive extra pay.

The individual travel budget can be considered an evolution of the public transport subscription. By differentiating even further, to also include other alternatives, an even larger target group can be reached. In the same logic as applied with a public transport subscription, the preferences of the individual groups can be better satisfied. This also partly solves the issue with working at home. The employees that do not have the option to work at home, still have the ability to benefit from changes in the mobility policy by opting for an public transport subscription or extra income.

BETAALD PARKEREN

Uw werkgever kan opteren voor de introductie van betaald parkeren, waarbij aan de medewerkers die per auto naar het werk reizen een bijdrage wordt gevraagd voor een parkeerkaart.

Paid parking is not valued positively, as might be expected. This policy is not based on stimulating an alternative, but on discouraging an alternative.
In chapter 5.2 it is shown that a large part of the employees will consider switch modality when faced with parking fees, so the policy will have an effect. The question is however, if this is the most efficient way of stimulating employees to make use of other modalities. Positive reinforcement may work better then discouragement. This policy will be most effective if combined with some of the other (stimulating) policies.
By not only taxing car usage, but stimulate viable alternatives, the employees can be reached in a more positive way.

§ 8.2 *Alternatives: from a respondents perspective*

Beside the policies that can be implemented by the Erasmus Universiteit Rotterdam, it might prove useful to review the open comments by respondents under question 22 and 32. (student and employee survey)

[32/32] Do you have any suggestions or comments to improve the accessibility of the campus?

A selection of some reoccurring suggestions:

- ***Improve the connection between subway station Kralingse Zoom and the campus.***
    - ***Expand the subway network***
    - ***Create a (shuttle) bus which travels between the subway station and the campus***
- ***Improve the safety on and around the campus***
    - ***Separate the sidewalks from the bike lanes so that students do not walk on the bike lanes***
- ***Higher frequency of trams in the rush hours.***
- ***A better connection from Rotterdam Central Station*** *(for train users)*
- ***Do NOT implement paid parking***

The connectivity to the public transport network and paid parking are reoccurring subjects in the open comments. The distance between the Erasmus Universiteit Rotterdam and the subway station and or/ train connection is often referred to as a negative aspect of the mobility of employees and students. Often it is suggested to improve connectivity, by adding extra connections of the public transport network or even moving the campus itself.
Although all comments are valued, not all are attainable. The costs and benefits for expanding the public transport network are not even close. The costs are enormous, and the actual benefits are yet to be determined.
More subtle solutions, such as adapting the travel schedules of public transport near the Erasmus Universiteit Rotterdam or improving the routes to and from the public transport connections, would be achievable and efficient policies.

Interesting is the strong opinions concerning paid parking. This itself is not surprising, but from the comments there is a lot of misunderstanding about the workings and the goal of paid parking. Better communication on the subject prior to implementation could reduce this resistance substantially.
Also, by combining this with attractive alternatives a large portion of employees can switch modalities if they ultimately do not agree with the applied parking fees.

IX Conclusions and recommendations

Based on the results of the survey and this research a number of conclusions can be made. After analysis of the results it has been found that there is plenty of opportunity to change and improve the mobility of the employees and students of the Erasmus University Rotterdam Universiteit Rotterdam.
The results of the NS Mobility Scan have indicated that 23% of car users have the alternative of traveling by public transport. In addition the experiment with the postal code check concluded that the car users among the employees had other travel options, except the employees with children, who mostly use the car for picking up/ dropping off children.

First the sub research question will be answered;

Sub Research question

"What are the main factors that influence the mobility of the employees and students of the Erasmus University Rotterdam University?

From the analysis of chapter 2 and 3 the main reasons for why respondents choose their mode of transport were formed. This is partly based on feelings and personal preferences, but can also be rationalized. Only the reasons based on the latter can be effectively influenced by the Erasmus Universiteit Rotterdam. Car users mainly choose their modality based on comfort, flexibility, speed and independence. These variables are largely bases on intangible factors, and part of it can be influenced by improving (the perception of) alternative modes of transport. Public transport and Bike usage are in general based on more rational aspects such as costs, health and travel time. These findings are supported by the Rudinger et.al. (2004). Mobility is largely influenced by social trends and irrational consumer behavior, and for a small portion on rational decision making

From the analysis it appeared that half the respondents will react on parking fees by reducing car usage. With regard to the cyclist facilities, the respondents expressed that the facilities are in need of improvement. These improvements would be a good motivation for employees to start traveling by bike.

The main factors that influence the mobility of employees and students of the Erasmus University Rotterdam are comprised of a set of intangible preferences and rational preferences. The most influential might be parking and the cyclists facilities. Even though the connectivity to the public transport network has the largest negative impact on the mobility of the employees and students of the Erasmus University Rotterdam, parking and bicycle facilities can be influence by the policies available for the Erasmus Universiteit Rotterdam

These basic understandings of the mobility of the employees and students of the Erasmus University Rotterdam employees and students have led to the following answer to our research question:

Research question

"How can the Erasmus University Rotterdam formulate an effective mobility policy for employees and students?"

Based on the current Modal Split and preference with regard to. mobility of the employees and students of the Erasmus University Rotterdam, the most efficient policies seem to be a combination of discouraging car usage, and simultaneously stimulating the other viable modalities. Although the quality and connectivity of public transport are hard to improve by the university, it should not be ignored. The results of the survey clearly show that a large portion of employees and students is willing to travel with other transport modes, if the alternatives are viable substitutions. This can be achieved by implementing the policy of the public transport subscription or the Individual travel budget, possibly in combination with paid parking. By letting the employees and student decide about their own mobility, a much larger target group can be reached when offering alternatives, and the effect of these alternatives will be much larger then when applying a single policy.

The key to improving the mobility of the employees and students of the Erasmus University Rotterdam seems to lie in "Soft Measures". This means mainly stimulating the other modalities (other than car usage), differentiating working hours and working at home. Hard measures are not a viable option for the university. The hard measures worth considering are rooted in cyclist facilities. Applying these methods individually might prove less effective, as was the conclusion when evaluating working at home. A policy will almost never please all the preferences of the different people in the target group.
The results of the case studies performed by Cairns (et.al) enforces the idea of using individually applied policies. The results, all be it small scale, are very cost effective in relation to their benefits.

In future researches it might prove use full to determine a accurate method to determine the actual amount of cars present and the parking pressure at any given time. With this information the costs and benefits of a new mobility policy can be estimated more accurately. Also it could prove use full to evaluate implemented policies, using the current standings as a basis.

The new mobility policy must combine alternatives, and focus mainly on public transport and cyclists. Although these modalities already have a large share in the modal split, there is still plenty of room to stimulate a higher use of these modalities.
Many facets of the approach of the Stanford university can be used as a prima example. The

Stanford mobility policy has many facets, giving complete information and services for cyclists, carpoolers and users of public transport. Stanford incentivizes by starting programs and Commute clubs, including the target groups (students) in the creation of new policies and instruments and used clever financial incentives to stimulate mobility.

By combining “soft measures” on a small scale and implement subtle changes such as improving the (safety of) bike lanes and access roads, improving and expanding current cyclist facilities, and discouraging car usage, namely on **short distances**, the Erasmus University can effectively improve their mobility.

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Appendix

Descriptive Statistics											
	Mean		Std. Deviation	Variance	1.96		Mean		Std. Deviation	Variance	1.96
	Statistic	Std. Error	Statistic	Statistic	Size						
Geslacht	1.506925	0.015199	0.500183	0.250183	1	Fietsfac	4.019391	0.053137	1.748671	3.057849	12
Leeftijd	2.795937	0.02734	0.899734	0.809521	3	Waardering_Mobility	3.194829	0.028829	0.948728	0.900084	3
Huishouden	2.004617	0.021085	0.693898	0.481494	2	Geslacht_Stud	1.50093	0.012453	0.500154	0.250154	1
Dienstverband	5.922438	0.048263	1.588279	2.522629	10	Leeftijd_Stud	1.283159	0.014086	0.567119	0.321624	1
Functie	1.515235	0.015582	0.512775	0.262938	1	Huishouden_Stud	1.746921	0.013196	0.53179	0.2828	1
Wekelijks_werken	4.189289	0.031493	1.036397	1.074118	4	Dagdeel_NL	1.244458	0.013634	0.549435	0.301879	1
Welke_dagen	8.705448	0.041898	1.37882	1.901144	7	Wekelijks_reizenNL	3.271833	0.028431	1.146459	1.314369	5
Gem_reistijdWU	3.804247	0.038562	1.269033	1.610444	6	Gem_reistijdWU_Stud	3.775046	0.03413	1.376679	1.895244	7
Gem_reistijdUW	3.838412	0.04019	1.322604	1.749281	7	Gem_reistijdUW_Stud	3.739988	0.035706	1.438478	2.06922	8
Arriveren_Uni	3.237304	0.025965	0.854483	0.730141	3	Auto_Stud	2.345421	0.019048	0.768328	0.590328	2
Vertrekken_Uni	3.019391	0.027506	0.905208	0.819402	3	Soort_auto_Stud	1.231169	0.020335	0.564272	0.318403	1
Flexwerken	1.180979	0.011704	0.385178	0.148362	1	Hoe_reis_Stud	7.782228	0.090981	3.636954	13.22744	51
Thuiswerken	1.350877	0.014509	0.477465	0.227973	1	Reden_vervoer_Stud	10.92431	0.143931	5.802034	33.6636	129
Niet_thuis	3.0317	0.060168	1.120811	1.256218	5	Waar_park_Stud	1.813475	0.030845	1.234954	1.525112	6
Dag_thuisw	7.886202	0.097391	2.582236	6.667943	26	Niet_auto_Stud	2.798109	0.084888	3.26681	10.67205	41
Auto	1.786704	0.026513	0.872526	0.761302	3	Fiets_niet_Stud	2.390877	0.06369	2.404245	5.780394	22
Soort_auto	1.208115	0.01986	0.548929	0.301323	1	Fietsfac_Stud	4.865314	0.050045	2.017997	4.07231	16
Hoe_reis	6.127599	0.13674	4.447717	19.78219	76	Fietsmaker_Stud	2.046769	0.021907	0.88308	0.779831	3
Reden_vervoer	13.15697	0.140754	4.632054	21.45593	82	Ov_niet_Stud	4.135286	0.116767	4.421744	19.55182	75
Waar_park	1.652174	0.017832	0.586276	0.34372	1	Waardering_Mobility_Stud	3.290025	0.022229	0.895803	0.802464	3
Niet_auto	5.367829	0.159862	4.766475	22.71928	87						
Parkeergeld	2.274238	0.039319	1.293933	1.674262	6						
Ov_niet	6.743848	0.177781	5.315609	28.2557	109						
Fiets_niet	2.841202	0.099663	3.042573	9.257248	36						
Fietsenmaker	1.987996	0.026851	0.883638	0.780817	3						

Bijlage 2

ERASMUS UNIVERSITEIT ROTTERDAM

Crosstab

Count

		Hoe_reis													
		Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Geslacht	Man	181	8	7	13	40	11	20	28	167	2	6	5	35	523
	Vrouw	185	15	1	18	32	14	25	34	164	1	6	0	40	535
	Total	366	23	8	31	72	25	45	62	331	3	12	5	75	1058

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.425[a]	12	.219
Likelihood Ratio	17.966	12	.117
Linear-by-Linear Association	.039	1	.844
N of Valid Cases	1058		

a. 6 cells (23.1%) have expected count less than 5. The minimum expected count is 1.48.

Crosstab

Cou Count

			Hoe_reis												
			Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Leef	Huishouden	Eenpersoonshuishouden	63	4	3	7	17	10	15	19	89	0	8	0	19	254
		Meerpersoonshuishouden	181	14	3	17	39	14	26	35	164	1	3	4	46	547
		Meerpersoonshuishouden met een of meer kinderen onder de 12 jaar	122	5	2	7	16	1	4	8	78	2	1	1	10	257
		Total	366	23	8	31	72	25	45	62	331	3	12	5	75	1058

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.428E2	48	.000
Likelihood Ratio	128.877	48	.000
Linear-by-Linear Association	25.653	1	.000
N of Valid Cases	1058		

a. 36 cells (55.4%) have expected count less than 5. The minimum expected count is .02.

ERASMUS UNIVERSITEIT ROTTERDAM

Crosstab

Count

		Hoe_reis													
		Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Dienstverband	0.0 FTE (gastvrijheidovereenkomst)	14	2	0	0	2	2	1	2	9	0	0	1	2	35
	0.1 - 0.2 FTE	3	1	0	0	2	1	2	2	10	0	0	0	2	23
	0.21 - 0.4 FTE	11	0	0	1	1	2	2	4	15	0	0	0	2	38
	0.41 - 0.6 FTE	34	3	0	2	4	2	5	3	24	1	0	0	4	82
	0.61 - 0.8 FTE	67	2	1	8	11	3	8	10	44	0	2	1	11	168
	0.81 - 1.0 FTE	37	1	0	4	12	0	2	4	26	0	0	1	6	93
	1.0 FTE (voltijds dienstverband)	200	14	7	16	40	15	25	37	203	2	10	2	48	619
	Total	366	23	8	31	72	25	45	62	331	3	12	5	75	1058

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	63.660[a]	24	.000
Likelihood Ratio	66.361	24	.000
Linear-by-Linear Association	21.795	1	.000
N of Valid Cases	1058		

a. 11 cells (28.2%) have expected count less than 5. The minimum expected count is .72.

ERASMUS UNIVERSITEIT ROTTERDAM

Chi-Square Tests

Crosstab

Count

		Hoe_reis												
		Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Functie	WP (Wetenschappelijk Personeel)	145	4	2	10	46	18	13	36	188	1	8	3	47	521
	OBP(Ondersteunend en beheerspersoneel)	217	18	6	21	25	6	32	26	143	2	4	2	28	530
	Anders, namelijk:	4	1	0	0	1	1	0	0	0	0	0	0	0	7
	Total	366	23	8	31	72	25	45	62	331	3	12	5	75	1058

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.682[a]	24	.000
Likelihood Ratio	78.404	24	.000
Linear-by-Linear Association	34.122	1	.000
N of Valid Cases	1058		

a. 19 cells (48.7%) have expected count less than 5. The minimum expected count is .02.

ERASMUS UNIVERSITEIT ROTTERDAM

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.985	.960		11.439	.000
	Geslacht	.021	.279	.002	.076	.939
	Leeftijd	-.578	.156	-.117	-3.719	.000
	Huishouden	-.827	.192	-.129	-4.303	.000
	Dienstverband	.058	.084	.021	.689	.491
	Functie	-1.297	.271	-.150	-4.779	.000

a. Dependent Variable: Hoe_reis

Bijlage 3

ERASMUS UNIVERSITEIT ROTTERDAM

Hoe_reis * Reden_vervoer Crosstabulation

Count

		Reden_vervoer																
		Comfort	Goedkoop	Betrouwbaar	Snel	Ophalen/weg brengen van kinderen	Veilig	Onafhankelijk	Flexibel	Goed voor mijn gezondheid	Goed voor het milieu	Snel/Onafhankelijk/Flexibel	Comfort/Snel/Onafhankelijk	Comfort/Snel/Flexibel	Goedkoop/gezondheid/milieu	Goedkoop/snel/gezonheid	Combinatie bovenstaande	Total
Hoe_reis	Auto (alleen reizend)	16	0	0	20	15	0	10	6	3	0	27	35	38	0	0	196	366
	Carpoolen	2	0	0	1	1	0	1	0	0	0	1	1	3	0	0	13	23
	Motor	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	7	8
	Bus	0	2	0	5	0	0	1	0	0	0	0	1	1	1	0	20	31
	Trein	5	0	2	2	0	1	1	4	0	3	0	0	1	0	0	53	72
	Tram	6	1	0	6	0	0	1	0	0	1	0	0	0	0	0	10	25
	Metro	1	6	3	8	0	0	1	1	0	5	0	1	0	0	0	19	45
	Trein+ tram/bus/metro	5	10	1	3	0	1	3	0	0	3	0	0	0	0	0	36	62
	Fiets	1	0	0	9	1	0	1	0	19	1	7	3	1	20	31	237	331
	Bromfiets/ scooter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	Te voet	0	0	0	0	0	0	0	0	2	0	0	0	1	2	1	6	12
	OV+ auto	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	1	5
	OV+ fiets	1	6	1	1	0	2	0	2	1	1	1	0	0	6	0	53	75
	Total	37	25	7	58	17	4	19	13	25	14	38	41	45	29	32	654	1058

Bijlage 4

ERASMUS UNIVERSITEIT ROTTERDAM

Flexwerken * Functie Crosstabulation

Count

		Functie			
		WP (Wetenschappelijk Personeel)	OBP (Ondersteunend en beheerspersoneel)	Anders, namelijk:	Total
Flexwerken	Ja	505	376	6	887
	Nee	27	168	1	196
	Total	532	544	7	1083

Thuiswerken * Functie Crosstabulation

Count

		Functie			
		WP (Wetenschappelijk Personeel)	OBP (Ondersteunend en beheerspersoneel)	Anders, namelijk:	Total
Thuiswerken	Ja	465	234	4	703
	Nee	67	310	3	380
	Total	532	544	7	1083

Bijlage 5

ERASMUS UNIVERSITEIT ROTTERDAM

Fietsfac * Hoe_reis Crosstabulation

Count

		Hoe_reis													
		Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Fietsfac	Slecht	9	1	0	0	1	0	0	0	11	0	0	0	3	25
	Matig	41	1	4	4	13	4	8	7	68	0	2	2	12	166
	Voldoende	102	10	2	10	32	11	19	22	114	2	1	0	30	355
	Redelijk	37	2	0	1	4	0	5	6	57	1	1	1	12	127
	Goed	58	2	1	6	3	4	3	6	79	0	3	2	15	182
	Uitstekend	0	0	0	0	0	0	0	0	2	0	0	0	0	2
	Niet relevant, ik reis niet met de fiets	119	7	1	10	19	6	10	21	0	0	5	0	3	201
	Total	366	23	8	31	72	25	45	62	331	3	12	5	75	1058

Fietsfac * Hoe_reis Crosstabulation

Count

		Hoe_reis													
		Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Fietsfac	Slecht	9	1	0	0	1	0	0	0	11	0	0	0	3	25
	Matig	41	1	4	4	13	4	8	7	68	0	2	2	12	166
	Voldoende	102	10	2	10	32	11	19	22	114	2	1	0	30	355
	Redelijk	37	2	0	1	4	0	5	6	57	1	1	1	12	127
	Goed	58	2	1	6	3	4	3	6	79	0	3	2	15	182
	Uitstekend	0	0	0	0	0	0	0	0	2	0	0	0	0	2
	Niet relevant, ik reis niet met de fiets	119	7	1	10	19	6	10	21	0	0	5	0	3	201
	Total	366	23	8	31	72	25	45	62	331	3	12	5	75	1058

Bijlage 6

Bijlage 7

ERASMUS UNIVERSITEIT ROTTERDAM

Dagdeel * Hoe_reis * Waar_park Crosstabulation

Count

Waar_park			Hoe_reis												
			Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Niet relevant, ik kom niet met de auto	Dagdeel	Overdag			2	22	40	12	26	40	129	1	4		34	310
		Middag en Avond			1	3	8	6	3	8	50	0	3		12	94
		Avond			0	0	0	0	0	1	4	0	0		0	5
		Total			3	25	48	18	29	49	183	1	7		46	409
Op het parkeerterrein van de universiteit	Dagdeel	Overdag	269	17	3	4	19	3	10	10	102	1	3	3	17	461
		Middag en Avond	90	5	2	1	5	0	6	1	29	0	2	2	8	151
		Avond	7	0	0	0	0	1	0	0	5	0	0	0	0	13
		Total	366	22	5	5	24	4	16	11	136	1	5	5	25	625
P+R Kralingse Zoom (metrostation)	Dagdeel	Overdag		1		1				0	4				2	8
		Middag en Avond		0		0				1	0				0	1
		Avond		0		0				0	1				0	1
		Total		1		1				1	5				2	10
In een woonwijk in de buurt van de universiteit	Dagdeel	Overdag						1		1	2				0	4
		Middag en Avond						0		0	4				0	4
		Avond						0		0	0				1	1
		Total						1		1	6				1	9
Brainpark (bedrijventerrein nabij EUR)	Dagdeel	Overdag										1				1
		Total										1				1
Anders, namelijk	Dagdeel	Overdag						1							1	2
		Total						1							1	2

Bijlage 8

ERASMUS UNIVERSITEIT ROTTERDAM

Hoe_reis_StudNL * Reden_vervoer_StudNL Crosstabulation

Count

		Reden_vervoer_StudNL															
		Comfort	Goedkoop	Betrouwbaar	Snel	Veilig	Onafhankelijk	Flexibel	Goed voor mijn gezondheid	Goed voor het milieu	Snel/onfhankelijk/flexibel	Comfort/snel/onafhankelijk	Comfort/snel/flexibel	Goedkoop/gezond/milieu	Goedkoop/snel/gezond	Combinatie bovenstaande	Total
Hoe_reis_StudNL	Auto (alleen reizend)	4	1	0	9	2	5	1	1	0	13	43	25	0	1	68	173
	Carpoolen	0	0	0	0	0	0	0	0	0	1	2	1	0	1	9	14
	Motor	0	0	0	0	0	1	0	0	0	2	0	0	0	0	2	5
	Bus	1	36	1	11	0	0	0	0	0	13	0	0	0	0	43	105
	Trein	1	51	0	8	1	3	1	2	1	13	1	0	2	0	33	117
	Tram	20	33	4	14	0	1	5	0	1	7	2	1	0	0	58	146
	Metro	5	35	2	27	0	0	1	0	0	22	6	1	0	0	45	144
	Trein+ tram/bus/metro	2	72	2	11	0	6	3	0	1	17	3	2	0	1	58	178
	Fiets	1	12	2	38	0	2	2	2	0	54	36	5	7	31	313	505
	Bromfiets/ scooter	0	0	0	3	0	0	0	0	0	0	1	0	0	0	1	5
	Te voet	0	3	1	1	0	0	2	1	0	0	0	0	0	0	18	26
	OV+ auto	1	4	0	2	0	0	0	0	0	4	5	0	0	0	12	28
	OV+ fiets	2	35	0	9	0	4	3	1	2	14	6	0	4	4	67	151
	Total	37	282	12	133	3	22	18	7	5	160	105	35	13	38	727	1597

Bijlage 9

Fietsfac_StudNL * Hoe_reis_StudNL Crosstabulation

Count

		Hoe_reis_StudNL													
		Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Fietsfac_StudNL	Slecht	3	0	0	1	1	4	6	2	18	1	2	1	6	45
	Matig	11	1	0	5	5	18	14	13	95	1	2	2	17	184
	Voldoende	13	0	0	15	8	43	25	8	172	1	5	1	33	324
	Redelijk	6	2	1	6	9	10	17	3	109	1	2	1	24	191
	Goed	6	0	0	9	3	11	11	8	102	0	8	0	17	175
	Uitstekend	0	0	0	0	0	2	1	1	7	0	1	0	2	14
	Niet relevant, ik reis niet met de fiets	134	11	4	69	91	58	70	143	2	1	7	23	52	665
	Total	173	14	5	105	117	146	144	178	505	5	27	28	151	1598

Bijlage 10

ERASMUS UNIVERSITEIT ROTTERDAM

Dagdeel_NL * Hoe_reis_StudNL * Waar_park_StudNL Crosstabulation

Count

Waar_park_StudNL		Dagdeel_NL	Hoe_reis_StudNL													
			Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Niet relevant, ik kom niet met de auto	Dagdeel_NL	Overdag	0		1	48	64	61	79	97	291	1	9	3	73	727
		Middag en Avond	1		0	2	3	9	16	9	29	0	1	0	8	78
		Avond	0		0	0	3	0	1	3	6	0	0	0	0	13
		Total	1		1	50	70	70	96	109	326	1	10	3	81	818
Op het parkeerterrein van de universiteit	Dagdeel_NL	Overdag	54	2	1	11	10	13	8	21	26	2	0	2	12	162
		Middag en Avond	20	1	0	1	1	1	0	5	10	0	1	1	3	44
		Avond	49	5	0	0	2	0	1	2	1	0	0	0	0	60
		Total	123	8	1	12	13	14	9	28	37	2	1	3	15	266
P+R Kralingse Zoom (metrostation)	Dagdeel_NL	Overdag	4			16	8	5	11	8	20			3	17	92
		Middag en Avond	2			2	2	0	2	4	1			0	1	14
		Total	6			18	10	5	13	12	21			3	18	106
In een woonwijk in de buurt van de universiteit	Dagdeel_NL	Overdag	18	0	0	2	10	11	8	9	29		2	6	12	107
		Middag en Avond	3	1	0	1	0	4	0	1	1		1	3	1	16
		Avond	1	0	1	0	0	1	1	1	0		0	0	0	5
		Total	22	1	1	3	10	16	9	11	30		3	9	13	128
Brainpark (bedrijventerrein nabij EUR)	Dagdeel_NL	Overdag	9	1	1	13	5	5	8	6	9			5	5	67
		Middag en Avond	1	0	0	2	1	0	0	1	4			0	3	12
		Avond	4	0	1	0	0	0	0	0	3			0	0	8
		Total	14	1	2	15	6	5	8	7	16			5	8	87

ERASMUS UNIVERSITEIT ROTTERDAM

Dagdeel_ENG * Hoe_reis_StudENG * Waar_park_StudENG Crosstabulation

Count

			Hoe_reis_StudENG														
Waar_park_StudENG			Auto (alleen reizend)	Carpoolen	Motor	Bus	Trein	Tram	Metro	Trein+ tram/bus/metro	Fast Ferry	Fiets	Bromfiets/ scooter	Te voet	OV+ auto	OV+ fiets	Total
Niet relevant, ik kom niet met de auto	Dagdeel_ENG	Overdag				4	3	43	12	13	66	47	0	9	0	13	210
		Middag en Avond				1	0	11	2	0	6	13	15	4	13	1	66
		Avond				0	0	0	0	0	0	2	0	1	0	0	3
		Total				5	3	54	14	13	72	62	15	14	13	14	279
Op het parkeerterrein van de universiteit	Dagdeel_ENG	Overdag	7	5	1	5		3		1		1			2		25
		Middag en Avond	1	0	0	0		0		0		0			0		1
		Avond	1	0	0	0		0		0		0			0		1
		Total	9	5	1	5		3		1		1			2		27
P+R Kralingse Zoom (metrostation)	Dagdeel_ENG	Overdag	1			4	2	1	1								9
		Middag en Avond	0			0	0	1	0								1
		Total	1			4	2	2	1								10
In een woonwijk in de buurt van de universiteit	Dagdeel_ENG	Overdag		1			3	10				4		1			19
		Middag en Avond		2			0	0				0		0			2
		Total		3			3	10				4		1			21
Brainpark (bedrijventerrein nabij EUR)	Dagdeel_ENG	Overdag						3	1	0		0					4
		Middag en Avond						0	0	0		1					1
		Avond						0	0	1		0					1
		Total						3	1	1		1					6
Anders, namelijk	Dagdeel_ENG	Overdag										1			0	1	2
		Middag en Avond										0			2	0	2
		Total										1			2	1	4

Results Mobility survey 2010

Employees

[1/32] **Wat is uw geslacht?**

Geslacht		
Man	533	49.6%
Vrouw	542	50.4%
Totaal	**1075**	**100.0%**

[2/32] **Wat is uw leeftijd?**

Leeftijd		
18 - 24 jaar	65	6.0%
25- 34 jaar	369	34.1%
35 - 49 jaar	378	34.9%
50 - 65 jaar	264	24.4%
65 of ouder	6	0.6%
Totaal	**1082**	**100.0%**

[3/32] **Wat is de samenstelling van uw huishouden?**

Huishouden		
Eenpersoonshuishouden	258	23.8%
Meerpersoonshuishouden	562	51.9%
Meerpersoonshuishouden met een of meer kinderen onder de 12 jaar	263	24.3%
Totaal	**1083**	**100.0%**

[4/32] **Wat is de omvang van uw dienstverband?**

Dienstverband		
0.0 FTE (gastvrijheidsovereenkomst)	35	3.2%
0.1 - 0.2 FTE	23	2.1%
0.21 - 0.4 FTE	39	3.6%
0.41 - 0.6 FTE	84	7.8%
0.61 - 0.8 FTE	169	15.6%
0.81 - 1.0 FTE	96	8.9%
1.0 FTE (voltijds dienstverband)	637	58.8%
Totaal	**1083**	**100.0%**

[5/32] **In welke categorie valt uw functie binnen de ERASMUS UNIVERSITY ROTTERDAM?**

Functie		
WP (Wetenschappelijk Personeel)	510	47.1%
OBP (Ondersteunend en beheerspersoneel)	565	52.2%
Anders, namelijk	7	0.6%
Totaal	**1082**	**100.0%**

[6/32] **Wat is uw postcode? *(invullen als 1111 AA)***

In deze sectie zullen diverse vragen worden gesteld m.b.t. uw werkdagen en werktijden

[7/32] **Hoeveel keer reist u (gemiddeld) wekelijks naar de universiteit?**

Reizen naar de universiteit		
1 keer	35	3.2%
2 keer	39	3.6%
3 keer	147	13.6%
4 keer	351	32.4%
5 keer	487	45.0%
meer dan 5 keer	24	2.2%
Totaal	**1083**	**100.0%**

[8/32] **Op welke dag(en) werkt u meestal?** ***(meerdere antwoorden mogelijk)***

Wekelijks reizen*		
Maandag	1028	20.8%
Dinsdag	1037	20.9%
Woensdag	929	18.8%
Donderdag	1001	20.2%
Vrijdag	886	17.9%
Zaterdag	51	1.0%
Zondag	18	0.4%
Totaal	**4950**	**100.0%**

*De respons is bij deze vraag op een andere wijze verwerkt. Gezien het grote aantal antwoorden met daarin een combinatie van dagen, is er voor gekozen om iedere respons individueel te tellen. Het antwoord “Maandag en Dinsdag” wordt geteld als een Maandag respons en een Dinsdag respons.

[9/32] Wat is uw gemiddelde reistijd van uw **woonplaats** naar de **universiteit**? **(in minuten)**

Reistijd Woonplaats - Universiteit		
< 5 minuten	2	0.2%
5 - 10 minuten	187	17.3%
11 - 30 minuten	398	36.7%
31 - 45 minuten	172	15.9%
46 - 60 minuten	142	13.1%
> 60 minuten	182	16.8%
Totaal	**1083**	**100.0%**

[10/32] **Wat is uw gemiddelde reistijd van de universiteit naar uw woonplaats? (in minuten)**

Reistijd Universiteit - Woonplaats		
< 5 minuten	19	1.8%
5 - 10 minuten	179	16.5%
11 - 30 minuten	366	33.8%
31 - 45 minuten	179	16.5%
46 - 60 minuten	138	12.7%
> 60 minuten	202	18.7%
Totaal	**1083**	**100.0%**

[11/32] **Hoe laat arriveert u gemiddeld op de universiteit in de ochtend?**

Aankomst op de universiteit		
voor 07.00 uur	21	1.9%
tussen 07.00 en 08.00	161	14.9%
tussen 08.00 en 09.00	514	47.5%
tussen 09.00 en 10.00	314	29.0%
na 10.00 uur	73	6.7%
Totaal	**1083**	**100.0%**

[12/32] **Hoe laat vertrekt u gemiddeld van de universiteit in de middag?**

Vetrekkken vanaf de universiteit		
voor 16.00 uur	55	5.1%
tussen 16.00 en 17.00	213	19.7%
tussen 17.00 en 18.00	526	48.6%
tussen 18.00 en 19.00	234	21.6%
na 19.00 uur	55	5.1%
Totaal	**1083**	**100.0%**

In deze sectie van de enquête worden vragen gesteld over flexibel werken en thuiswerken

[13/32] **Heeft u flexibele werktijden?**

Flexwerken		
Ja	887	81.9%
Nee	196	18.1%
Totaal	**1083**	**100.0%**

[14/32] **Werkt u weleens vanuit thuis?**

Thuiswerken		
Ja	703	64.9%
Nee	380	35.1%
Totaal	**1083**	**100.0%**

[15/32] **Ik maak geen gebruik van thuiswerken omdat:** ***(Max 3 antwoorden mogelijk)***

Reden geen thuiswerken*		
Geen antwoord	35	8.8%
Ik vind het niet fijn om thuis te werken	32	8.0%
Geen faciliteiten	19	4.8%
Aard van werkzaamheden	187	46.8%
Werkgever staat niet toe	58	14.5%
Aard van werkzaamheden+ Werkgever staat het niet toe	31	7.8%
Ik vind het niet fijn om thuis te werken+ Aard van werkzaamheden	9	2.3%
Geen faciliteiten+ Aard van werkzaamheden	8	2.0%
Overige combinaties	18	4.5%
Anders, namelijk:	3	0.8%
Totaal	**400**	**100.0%**

[16/32]] **Op welke dag(en) werkt u meestal thuis?** ***(meerdere antwoorden mogelijk)***

Welke dagen thuiswerken**		
Maandag	10	1.4%
Dinsdag	11	1.5%
Woensdag	51	7.0%
Donderdag	20	2.8%
Vrijdag	66	9.1%
Zaterdag	3	0.4%
Zondag	4	0.6%
Geen vaste werkdag	344	47.4%
Woensdag + vrijdag	25	3.4%
Dinsdag + Donderdag	11	1.5%
Overige combinaties	181	24.9%
Totaal	**726**	**100.0%**

* *Het betreft hier een conditionele vraag. Indien er op vraag [14/32] "Ja" wordt geantwoord krijgt de respondent deze vraag.*

** *Het betreft hier een conditionele vraag. Indien er op vraag [14/32] "Nee" wordt geantwoord krijgt de respondent deze vraag.*

In deze sectie zullen er vragen worden gesteld over uw gebruik van vervoermiddelen en uw woon-werk reis

[17/32] **Heeft u de beschikking over een auto?**

Beschikking over auto		
Ja	552	51.0%
Ja, af en toe	210	19.4%
Nee	321	29.6%
Totaal	**1083**	**100.0%**

[18/32] **Wat voor soort auto heeft u?**

Soort Auto *		
Benzine	643	84.2%
Diesel	97	12.7%
Hybride	10	1.3%
Anders, namelijk:	14	
Totaal	**764**	**100.0%**

* *Het betreft hier een conditionele vraag. Indien er op vraag [17/32] "Ja" of "Ja, af en toe" wordt geantwoord krijgt de respondent deze vraag.*

[19/32] **Hoe reist u meestal naar uw werk? (1 antwoord mogelijk)**

(Als u een reis maakt met meerdere vervoermiddelen, kies dan het vervoersmiddel (of de combinatie van) waarmee u de grootste afstand aflegt.)

Vervoersmiddelkeuze		
Auto (alleen reizend)	368	33.9%
Carpoolen	23	2.1%
Motor	8	0.7%
Bus	31	2.9%
Trein	72	6.6%
Tram	25	2.3%
Metro	46	4.2%
Trein+tram/bus/metro	62	5.7%
Fiets	331	30.5%
Bromfiets/scooter	3	0.3%
Te voet	12	1.1%
OV+ auto	5	0.5%
OV+ fiets	75	6.9%
Anders, namelijk:	23	2.1%
Totaal	**1084**	**100.0%**

[20/32] **Wat is/zijn de voornaamste reden(-en) dat u reist met uw huidige vervoermiddel?** ***(Max 3 antwoorden mogelijk)***

Reden Vervoersmiddelkeuze		
Comfort	44	4.1%
Goedkoop	28	2.6%
Betrouwbaar	9	0.8%
Snel	60	5.5%
Ophalen/wegbrengen van kinderen	17	1.6%
Veilig	4	0.4%
Onafhankelijk	21	1.9%
Flexibel	14	1.3%
Goed voor mijn gezondheid	26	2.4%
Goed voor het milieu	17	1.6%
Overige combinaties	843	77.8%
Totaal	**1083**	**100.0%**

[21/32] **Indien u met de auto komt, waar parkeert u meestal wanneer u bij de universiteit aankomt?**

Waar parkeren		
Op het parkeerterrein van de universiteit	640	96.1%
P+R Kralingse Zoom (metrostation)	10	1.5%
In een woonwijk in de buurt van de universiteit	9	1.4%
Brainpark (bedrijventerrein nabij ERASMUS UNIVERSITY ROTTERDAM)	1	0.2%
Anders, namelijk:	6	0.9%
Totaal	**666**	**100.0%**

[22/32] **Wat is/zijn voor u de belangrijkste reden(-en) om niet meer met de auto naar uw werk te gaan? *(Max 3 antwoorden mogelijk)***

Belangrijkste reden om niet meer met auto te reizen		
Geen reactie	197	18.2%
Niet relevant, ik kom niet met de auto	420	38.8%
Betaald parkeren	23	2.1%
Betere verbinding met het o.v	28	2.6%
Veilig (onveilig in o.v of op fiets)	5	0.5%
Kortere reistijd openbaar vervoer	61	5.6%
Betere faciliteiten voor fietsers	4	0.4%
Een alternatief voor de kinderen	19	1.8%
Geen, ik heb geen alternatief	83	7.7%
Anders, namelijk	5	0.5%
Betere verbinding + Kortere reistijd	81	7.5%
Betaald parkeren+ Betere verbinding + kortere reistijd	22	2.0%
Betere verbinding+kortere reisijd+ Alternatief voor kinderen	15	1.4%
Combinatie bovenstaande	120	11.1%
Totaal	**1083**	**100.0%**

[23/32] **Stel dat betaald parkeren voor medewerkers wordt ingevoerd, zou u de auto minder gebruiken om naar de universiteit te komen?**

Invoering Parkeergeld		
Niet van toepassing, ik kom niet met auto	459	42.4%
Ja	207	19.1%
Ja, als het meer dan 35e bedraagt	78	7.2%
Nee	339	31.3%
Totaal	**1083**	**100.0%**

[24/32] **Wat is/zijn de voornaamste reden(-en) dat u niet met het OV reist?** ***(Max 3 antwoorden mogelijk)***

Belangrijkste reden om niet met O.V te reizen		
Geen reactie	191	17.6%
Niet relevant, ik reis met het O.V	310	28.6%
Reistijd is te lang	82	7.6%
Kosten zijn te hoog	25	2.3%
Het eerste deel van mijn reis is te lang/ onpraktisch	5	0.5%
Het laatste deel van mijn reis is te lang/ onpraktisch	10	0.9%
Ophalen/ wegbrengen van de kinderen	18	1.7%
Anders, namelijk:	6	0.6%
Reistijd is te lang, verbinding te slecht, kosten zijn te hoog	49	4.5%
Reistijd is te lang, verbinding te slecht,eerste deel van reis is te lang	34	3.1%
Reistijd is te lang, verbinding te slecht,laatste deel van reis is te lang	30	2.8%
Reistijd is te lang, verbinding te slecht,ophalen/wegbrengen kinderen	24	2.2%
Combinatie bovenstaande	299	27.6%
Totaal	**1083**	**100.0%**

[25/32] **Wat is/zijn de voornaamste reden(-en) dat u niet met de fiets reist?**
(Max 3 antwoorden mogelijk)

Belangrijkste reden om niet met de fiets te reizen		
Geen reactie	155	14.3%
Niet relevant, ik reis met de fiets	408	37.7%
Afstand is te groot	354	32.7%
Fysieke inspanning	3	0.3%
Niet voldoende faciliteiten	6	0.6%
Onveilige/onprettige fietsroute	15	1.4%
Ophalen/wegbrengen kinderen	21	1.9%
Anders, namelijk:	5	0.5%
Afstand is te groot, fysieke inspanning	25	2.3%
Afstand is te groot, onveilige/ onprettige fietsroute	25	2.3%
Afstand is te groot, ophalen/wegbrengen kinderen	22	2.0%
Combinatie van bovenstaande	44	4.1%
Totaal	**1083**	**100.0%**

[26/32] **Wat is uw mening over de huidige fietsfaciliteiten van de universiteit?**

Waardering Fietsfaciliteiten		
Slecht	26	3.0%
Matig	170	19.3%
Voldoende	364	41.4%
Redelijk	130	14.8%
Goed	187	21.3%
Uitstekend	2	0.2%
Totaal	**879**	**100.0%**

[27/32] **Is er van uw kant een behoefte aan een fietsenmaker of reparatieservice op de universiteit?**

Fietsenmaker		
Ja	429	39.6%
Nee	238	22.0%
Niet relevant, ik reis niet met de fiets	416	38.4%
Totaal	**1083**	**100.0%**

[28/32] **Heeft u suggesties/ commentaar m.b.t. de fietsfaciliteiten op de universiteit?**

[29/32] **Wat vindt u belangrijker als u naar uw werk reist?** ***(kies telkens tussen 2 mogelijkheden)***

Belangrijker in reis		
Reistijd vs Reiscomfort		
	Reistijd	870
	Reiscomfort	215
Reiskosten vs Reiscomfort		
	Reiskosten	645
	Reiscomfort	426
Reistijd vs Reiskosten		
	Reistijd	817
	Reiskosten	244

Flexibiliteit vs Reistijd		
	Flexibiliteit	663
	Reistijd	409
Reiscomfort vs Flexibiliteit		
	Reiscomfort	265
	Flexibiliteit	796
Reiskosten vs Flexibiliteit		
	Reiskosten	360
	flexibiliteit	723

[30/32] **Hoe waardeert u de bereikbaarheid van de universiteit in het algemeen?**

Waardering Mobiliteit		
Slecht	49	4.5%
Matig	200	18.5%
Voldoende	380	35.1%
Goed	399	36.8%
Uitstekend	55	5.1%
Totaal	**1083**	**100.0%**

[31/32] **Geef aan hoe u tegenover gestelde alternatieven staat. Klik op de term voor een uitleg.**

	Zeer Negatief	Negatief	Neutraal	Positief	Zeer Positief	Totaal	
Fietssubsidie	3.5%	4.2%	27.6%	29.6%	35.2%	1078	100.0%
Carpoolen	9.9%	17.6%	40.1%	25.0%	7.4%	1074	100.0%
Thuiswerken	1.7%	4.1%	18.9%	38.9%	36.4%	1077	100.0%
4x9	5.1%	10.2%	25.9%	28.9%	30.0%	1083	100.0%
OV-Abonnement	3.6%	5.0%	28.6%	32.7%	30.1%	1083	100.0%
Individueel reisbudget	3.6%	7.4%	33.3%	36.6%	19.1%	1082	100.0%
Betaald parkeren	44.4%	21.6%	21.8%	6.8%	5.4%	1083	100.0%

[32/32] **Heeft u suggesties of commentaar om de bereikbaarheid van de universiteit te verbeteren?**

Reacties kunnen indien benodigd gecategoriseerd worden voor verder analyse.

Students

[1/22] **Wat is uw geslacht?**

Geslacht		
Man	810	49.9%
Vrouw	812	50.1%
Totaal	**1622**	**100.0%**

[2/22] **Wat is uw leeftijd?**

Leeftijd		
18 - 24 jaar	1255	76.9%
25- 34 jaar	307	18.8%
35 - 49 jaar	56	3.4%
50 - 65 jaar	13	0.8%
65 of ouder	0	0.0%
Totaal	**1631**	**100.0%**

[3/22] **Wat is de samenstelling van uw huishouden?**

Huishouden		
Eenpersoonshuishouden	492	30.1%
Meerpersoonshuishouden	1067	65.3%
Meerpersoonshuishouden met een of meer kinderen onder de 12 jaar	76	4.6%
Totaal	**1635**	**100.0%**

[4/22] **In welk dagdeel bent u meestal op de universiteit aanwezig?**

Dagdeel		
Overdag (09.00 t/m 17.00)	1329	81.3%
Middag en Avond (13.00 t/m 19.00)	211	12.9%
Avond (18.00 t/m 23.00)	95	5.8%
Totaal	**1635**	**100.0%**

[5/22] **Wat is uw postcode? *(invullen als 1111 AA)***

In deze sectie zullen diverse vragen worden gesteld m.b.t. collegetijden

[6/22] **Hoeveel keer reist u (gemiddeld) wekelijks naar de universiteit? (Refereer a.u.b. aan een gemiddeld collegeblok)**

Reizen naar de universiteit		
1 keer	123	7.5%
2 keer	239	14.6%
3 keer	608	37.3%
4 keer	426	26.1%
5 keer	202	12.4%
meer dan 5 keer	34	2.1%
Totaal	**1632**	**100.0%**

[7/22] **Wat is uw gemiddelde reistijd van uw woonplaats naar de universiteit? (in minuten)**

Reistijd Woonplaats - Universiteit		
< 5 minuten	0	0.0%
5 - 10 minuten	210	12.9%
11 - 30 minuten	671	41.3%
31 - 45 minuten	210	12.9%
46 - 60 minuten	219	13.5%
> 60 minuten	316	19.4%
Totaal	**1626**	**100.0%**

[8/22] **Wat is uw gemiddelde reistijd van de universiteit naar uw woonplaats? (in minuten)**

Reistijd Universiteit – Woonplaats		
< 5 minuten	0	0.0%
5 - 10 minuten	232	14.3%
11 - 30 minuten	657	40.4%
31 - 45 minuten	225	13.8%
46 - 60 minuten	188	11.6%
> 60 minuten	324	19.9%
Totaal	**1626**	**100.0%**

n deze sectie zullen er vragen worden gesteld over uw gebruik van vervoermiddelen en uw woon-werk reis

[9/22] **Heeft u de beschikking over een auto?**

Beschikking over auto		
Ja	296	18.1%
Ja, af en toe	473	29.0%
Nee	863	52.9%
Totaal	**1632**	**100.0%**

[10/22] **Wat voor soort auto heeft u?**

Soort Auto *		
Benzine	630	18.1%
Diesel	118	29.0%
Hybride	6	52.9%
Anders, namelijk:	16	2.1%
Totaal	**770**	**100.0%**

[11/22] **Hoe reist u meestal naar uw werk? (1 antwoord mogelijk)**
(Als u een reis maakt met meerdere vervoermiddelen, kies dan het vervoersmiddel (of de combinatie van) waarmee u de grootste afstand aflegt.)

Vervoersmiddelkeuze		
Auto (alleen reizend)	179	11.0%
Carpoolen	15	0.9%
Motor	6	0.4%
Bus	115	7.0%
Trein	117	7.2%
Tram	148	9.1%
Metro	151	9.2%
Trein+tram/bus/metro	179	11.0%
Fiets	508	31.1%
Bromfiets/scooter	5	0.3%
Te voet	29	1.8%
OV+ auto	28	1.7%
OV+ fiets	153	9.4%
Anders, namelijk:	0	0.0%
Totaal	**1084**	**100.0%**

[12/22] **Wat is/zijn de voornaamste reden(-en) dat u reist met uw huidige vervoermiddel?** ***(Max 3 antwoorden mogelijk)***

Reden Vervoersmiddelkeuze		
Comfort	257	7.4%
Goedkoop	864	25.0%
Betrouwbaar	237	6.8%
Snel	969	28.0%
Ophalen/wegbrengen van kinderen	1	0.0%
Veilig	38	1.1%
Onafhankelijk	396	11.4%
Flexibel	355	10.3%
Goed voor mijn gezondheid	240	6.9%
Goed voor het milieu	103	3.0%
Overige combinaties		
Totaal	**3460**	**100.0%**

[13/22] **Indien u met de auto komt, waar parkeert u meestal wanneer u bij de universiteit aankomt?**

Waar parkeren		
Op het parkeerterrein van de universiteit	284	43.7%
P+R Kralingse Zoom (metrostation)	111	17.1%
In een woonwijk in de buurt van de universiteit	144	22.2%
Brainpark (bedrijventerrein nabij ERASMUS UNIVERSITY ROTTERDAM)	90	13.8%
Anders, namelijk:	21	3.2%
Totaal	**650**	**100.0%**

[14/32] **Wat is/zijn voor u de belangrijkste reden(-en) om niet meer met de auto naar de universiteit te gaan?** ***(Max 3 antwoorden mogelijk)***

Belangrijkste reden om niet meer met auto te reizen		
Geen reactie	158	9.6%
Niet relevant, ik kom niet met de auto	840	51.2%
Betaald parkeren	211	12.9%
Betere verbinding met het o.v	26	1.6%
Veilig (onveilig in o.v of op fiets)	6	0.4%
Kortere reistijd openbaar vervoer	28	1.7%
Betere faciliteiten voor fietsers	5	0.3%
Een alternatief voor de kinderen	0	0.0%
Geen, ik heb geen alternatief	91	5.5%
Anders, namelijk	8	0.5%
Combinatie bovenstaande	269	16.4%
Totaal	**1642**	**100.0%**

[15/22] **Wat is/zijn de voornaamste reden(-en) dat u niet met de fiets reist?**
(Max 3 antwoorden mogelijk)

Belangrijkste reden om niet met de fiets te reizen		
Geen reactie	205	12.5%
Niet relevant, ik reis met de fiets	594	36.2%
Afstand is te groot	582	35.5 %
Fysieke inspanning	52	3.2%
Niet voldoende faciliteiten	19	0.6%
Onveilige/onprettige fietsroute	24	1.5%
Ophalen/wegbrengen kinderen	2	0.1%
Anders, namelijk:	8	0.5%
Combinatie van bovenstaande	155	9.4%
Totaal	**1641**	**100.0%**

[16/22] **Wat is uw mening over de huidige fietsfaciliteiten van de universiteit?**

Waardering Fietsfaciliteiten		
Slecht	45	4.7%
Matig	187	19.7%
Voldoende	332	35.0%
Redelijk	194	20.4%
Goed	177	18.7%
Uitstekend	14	1.5%
Totaal	**949**	**100.0%**

[17/22] **Is er van uw kant een behoefte aan een fietsenmaker of reparatieservice op de universiteit?**

Fietsenmaker		
Ja	356	33.6%
Nee	241	22.8%
Niet relevant, ik reis niet met de fiets	462	43.6%
Totaal	**1059**	**100.0%**

[18/22] **Heeft u suggesties/ commentaar m.b.t. de fietsfaciliteiten op de universiteit?**

[19/22] **Wat is/zijn de voornaamste reden(-en) dat u niet met het OV reist?** ***(Max 3 antwoorden mogelijk)***

Belangrijkste reden om niet met O.V te reizen		
Geen reactie	194	12.1%
Niet relevant, ik reis met het O.V	774	48.3%
Reistijd is te lang	124	7.7%
Kosten zijn te hoog	62	3.9%
Het eerste deel van mijn reis is te lang/ onpraktisch	17	1.1%
Het laatste deel van mijn reis is te lang/ onpraktisch	30	1.9%
Ophalen/ wegbrengen van de kinderen	1	0.1%
Anders, namelijk:	6	0.4%
Combinatie bovenstaande	395	24.6%
Totaal	**1603**	**100.0%**

[20/22] **Wat vindt u belangrijker als u naar de universiteit reist?**
(kies telkens tussen 2 mogelijkheden)

Belangrijker in reis		
Reistijd vs Reiscomfort		
	Reistijd	1498
	Reiscomfort	136
Reiskosten vs Reiscomfort		
	Reiskosten	1253
	Reiscomfort	374
Reistijd vs Reiskosten		
	Reistijd	954
	Reiskosten	684

Flexibiliteit vs Reistijd		
	Flexibiliteit	829
	Reistijd	797
Reiscomfort vs Flexibiliteit		
	Reiscomfort	316
	Flexibiliteit	1310
Reiskosten vs Flexibiliteit		
	Reiskosten	942
	flexibiliteit	685

[21/22] **Hoe waardeert u de bereikbaarheid van de universiteit in het algemeen?**

Waardering Mobiliteit		
Slecht	51	3.1%
Matig	235	14.5%
Voldoende	631	38.8%
Goed	613	37.7%
Uitstekend	96	5.9%
Totaal	**1626**	**100.0%**

[22/22] **Heeft u suggesties of commentaar om de bereikbaarheid van de universiteit te verbeteren?**