THE IMPACT OF COMPANY CARS ON TRAVEL BEHAVIOUR

Katrien Ramaekers & Geert Wets

Universiteit Hasselt, Instituut voor Mobiliteit (IMOB)

Katrien.Ramaekers@uhasselt.be; Geert.Wets@uhasselt.be

Astrid De Witte & Cathy Macharis

Vrije Universiteit Brussel, MOSI - Transport & Logistiek

Astrid.De.Witte@vub.ac.be; Cathy.Macharis@vub.ac.be

Eric Cornelis, Marie Castaigne & Xavier Pauly

Université de Namur, Groupe de Recherche sur les Transports (GRT)

eric.cornelis@math.fundp.ac.be; marie.castaigne@math.fundp.ac.be; xavier.pauly@math.fundp.ac.be

ABSTRACT

The last two decades, the phenomenon of company cars has become very popular in Belgium due to their favourable fiscal treatment. Given the high number of registrations and the current use of company cars in the wage policies of the companies, the impact of company cars on our daily mobility can no longer be ignored. Up to now, researches on mobility and travel behaviour in Belgium did not focus in particular on the phenomenon of company cars. But as they actually are a form of nearly free transport that can be used not only for professional, but also for private trips, it can not be ignored that they influence our mobility landscape. Findings from a recent study (Cornelis et al., 2007) indicate that the annual amount of kilometres covered by company cars is higher than that of private cars. However, no distinction between professional and private kilometres could be made. The main objective of this research is to provide more insight in the impact of company cars on travel behaviour.

Since existing data sets were not available, a survey was organised to collect the necessary data (Castaigne et al., 2009). Both employees with and without a company car were asked to fill in a questionnaire, asking for their mobility behaviour in general and their mobility behaviour on a reference day in particular.
Based on the collected data, comparisons are made between employees with a company car and employees without a company car. First, the usual mobility behaviour for both groups of employees, such as the annual mileage, the frequency of professional trips and the usual transportation mode for home-work trips, is compared. Next, the trips made on the reference day are analysed: e.g. the number of trips, the mode of transportation and the purpose of the trips are compared for employees with a company car and employees without a company car. Finally, the substitution effect is modelled: it is analysed how people would behave without a company car, and what the effect of gender, age and education on this change of behaviour is.

Keywords: company cars, travel behaviour

1. INTRODUCTION

The last two decades, the phenomenon of company cars has become very popular in Belgium. The use of company cars has evolved from being a status symbol for board members and a necessary means for employees who have to make a lot of professional displacements, to a common practice in the composition of the salary package and a popular incentive to attract motivated personnel in specialized functions where adequately trained personnel is scarce (e.g. Information Technology (IT) sector). This evolution has mainly been triggered by the fiscal advantageous treatment of company cars and the heavy tax burden on labour forces, making it often more interesting for the employer to grant a company car instead of a salary increase leading to the same monetary benefit for the employee (Neale, 1997).

Company cars, as we consider them, are not only attributed exclusively for the purpose of making professional trips, but can also be used for private displacements. On top of that, company cars are usually accompanied by a fuel card, which reduces the costs of using this transport mode to nearly zero from the viewpoint of the employee who receives a company car. As such, it can be expected that the availability of this ‘free’ transport mode has an influence on these people’s travel behaviour and modal choice.

Despite the increasing popularity of company cars, up to now, researches on mobility and travel behaviour in Belgium (e.g. Zwerts and Nuyts, 2004) did not focus in particular on the phenomenon of company cars and almost no data was available to gain insight in the travel behaviour of persons with a company car. Findings from a recent study (Cornelis et al., 2007) indicate that the annual amount of kilometres covered by company cars is higher than that of private cars. However, no distinction between professional and private kilometres could be made. Therefore, the main objective of this research is to provide more insight in the impact of company cars on travel behaviour.

The results presented in this paper are based on a research project (Professional Mobility and Car Ownership) conducted by the Université de Namur (GRT), the Universiteit Hasselt (IMOB) and the Vrije Universiteit Brussel (MOSI-T), and financed by the Federal Science Policy. The outline of this paper is as follows: first of all, in section 2, it will be clarified what is meant exactly by a company car. In the following section (section 3), the methodology used for drawing the sample and recruiting the respondents will be explained. In section 4, the main results of the research concerning the impact of company cars on travel behaviour will be presented. Finally, conclusions will be formulated in section 5.

2. COMPANY CAR DEFINITION

In this paper, company cars are defined according to the definition proposed by Cornelis et al. (2007) in their report on Company Car Analysis (COCA project). They define a company car as: 'A vehicle whose initial cost is supported by the employer, which is awarded to an employee for his personal, professional and/or private trips, and which can be used by the employee without the authorization of his employer'. With this definition vehicles registered in the name of the company which are exclusively being used for professional purposes, such as transport and service vehicles, are being excluded.

3. METHODOLOGY

The intention of this research on company cars was to gain insight in the use of company cars at national level. As there were three research teams involved, it was decided that each team would focus on data collection within its own Region. As such, the Université de Namur would collect data on companies and employees in the Walloon Region, the Universiteit Hasselt would focus on the Flemish Region, and the Vrije Universiteit Brussel would gather data through contacting companies located in the Brussels-Capital Region. It was predetermined to focus in particular on surveying people with a company car. However, firms and people without company cars were not excluded from filling out the questionnaire as they constitute a control group and their answers will make it possible to make comparisons between their mobility behaviours and the ones of company car users.

One of the difficulties within this research was to find a way to get in touch with respondents corresponding to the population of interest, namely employees with a company car. As each company car user is submitted to taxation, exhaustive databases on company car users exist, but unfortunately, they are not accessible to the wider audience, not even for research purposes. Therefore it was necessary to rely on other available means to contact the respondents. As there was no database on employees available, it was decided to start from a database on companies and to get in touch with the employees through their employers. The database used for the selection of companies is the BEL-FIRST database. This database contains detailed financial information on 390.000 Belgian companies, including

contact information, location, company size and activity sector. This information allowed to stratify a random selected sample of firms by region (Brussels-Capital Region, Flemish Region and Walloon Region), size (5 to 49 employees, 50 to 99 employees and 100 or more employees) and activity sector. The classification according to activity sector was focused on sectors where the likeliness of encountering company cars is higher (Cornelis et al., 2007): the financial sector (J), the sector dealing with real estate, hiring and services to companies (K), the wholesale and detail sector (G), the manufacturing industry (D) and finally, the public administrations (L). This last sector was not included because of its higher company car rate, but because it allows to sketch the use of company cars within the public sector.

Two questionnaires were drawn up for the data collection: one for a company's representative and one for the employees of that company. The questionnaire dedicated to companies contained general questions about their current mobility management (including accessibility, location choice, supporting sustainable transport modes, etc.), and more specific questions related to the company car policy of the firm (attribution criteria, etc.). The survey intended for the employees included questions on socio-demographic factors (education, gender, age, etc.), on travel related characteristics (home-work distance, annual mileage, etc.). It was decided to work with a web-based survey, as this method offers the possibility to survey a larger group when being confronted with time and budget limitations. Among its advantages are the fact that the data from an online survey is immediately usable and that the respondent can be guided through the questions in function of his/her previous answers. Also, taking into account the loaded schedules of our population of interest, the use of a web-based survey would give the respondents the opportunity to fill out the questionnaire at their own convenience.

The contact with a representative of the company was a crucial step in the respondent recruiting process. Therefore, the burden for the company representative was minimized and several surveying alternatives (face-to-face, by phone, or by web) were proposed, giving the respondent the opportunity to choose the preferred procedure. We started by sending by postal mail an invitation to every firm to answer to the questionnaire available on internet. In this letter, explanations were provided on the objectives of the project as well as on the ways proposed to participate to the survey. After the postal sendings, the research teams began to contact the firms located in their region by phone. To get data from employees, it was decided to conduct a web-based survey. In order to be able to perform a disaggregated analysis, the aim was to reach two hundred respondents having a company car in each region. By the end of February 2008, the recruiting process started and by the end of May 2008 all companies being part of the sample were contacted at least once and no additional responses to the web based survey could be registered. In the field, it turned out to be very difficult to convince the companies to participate to the survey. Only 181 companies, of the more than 1500 that were contacted, agreed to participate in the survey. In smaller companies, the reason for not being willing to collaborate was often time-related. In bigger companies, the collaboration was mainly hindered by administrative rigidity, legal issues and also the delicateness of the company car subject, especially in the context of social elections (5 to 8 May 2008). These obstacles made the recruiting of companies very effort-consuming and are very likely to have had a negative impact on the response rate as employees could

only be contacted with the collaboration of the company. However, as there is no exhaustive database on company car users available, and as it was desired to contact the respondents following a random sample scheme, starting from a database on Belgian companies seemed a good (and possibly the only) solution.

Eventually, this approach resulted in the participation of 181 companies and of 450 employees. As the sampling of the firms is based on a random sample drawn from a large company database, the data could be weighted according to Region and company size, which improves the representativeness of the results. As far as the employees' database is concerned, it consists partly of employees with a company car (53%) and partly of employees without a company car (47%).

We also added an "isolated" questionnaire aimed at employees for which it was not possible to establish a link with the firm employing them since they were contacted directly and not through their employers. This has allowed a market research company to contact an additional sample of persons, with an extra budget provided by the Flemish Government. This resulted in 600 additional respondents living in the Flemish part of the country. In this additional survey, some questions about the firm of the respondents were added to remedy for the fact that there is no link with data provided by the firm itself.

Given that it was available, this survey has also been administrated to other contacts, to increase the amount of responses. All the people directly contacted by the research teams were asked to forward the invitation to participate to the survey to their "social network". Hence this additional survey can be described as a "viral disseminated" survey and resulted in about 440 additional respondents.

All these additional responses (both from the sample funded by the Flemish Government and from the viral dissemination action) have been kept apart from the original sample to avoid mixing different samples.

Given the different approaches used to recruit the respondents, we actually have 4 samples of employees that we used to derive results from:

- a first one that we can call "original noCC" with people without a company car who have been contacted through their employers;
- a second one that we can call "original CC" with respondents having a company car and who were also contacted through their employers;
- a third one that we can call "additional-TNS" with respondents having a company car and being recruited by a market research company within its existing panel (TNS – Dimarso) and;
- a fourth one that we can call "additional-contacts" with respondents having a company car and being recruited from the researchers' contacts through a viral dissemination process.

4. RESULTS

In this section, the results are discussed. First, the usual mobility behaviour for both groups of employees, such as the annual mileage, the frequency of professional trips and the usual transportation mode for home-work trips, is compared. Next, the trips made on the reference day are analysed: e.g. the number of trips, the mode of transportation and the purpose of the trips are compared for employees with a company car and employees without a company car. Finally, the substitution effect is modelled: it is analysed how people would behave without a company car, and what the effect of gender, age and education on this change of behaviour is.

4.1 Usual mobility behaviour

In this section, the usual mobility behaviour of the respondents, with and without a company car, are discussed and compared. First, the annual mileage is considered. Next, the frequency of professional trips is discussed. Finally, the usual transportation mode for home-work trips is compared.

Existing empirical research (e.g. Hubert & Toint, 2002; Zwerts & Nuyts, 2004) suggests that the annual mileage covered by company cars is very significantly above that of private cars. Our analysis confirms that company cars have higher annual mileages than private cars (Figure 1). The average annual mileage is close to 19700 km for the original survey without company cars, whereas it is around 32500 km for the three samples with respondents having a company car. Only a fourth of the company car user respondents drive less than 20000 km per year. For private cars 2 out of 3 are below this annual mileage. The figures are quite similar for the additional surveys with almost 70% of the company cars driving more than 20000 km each year.

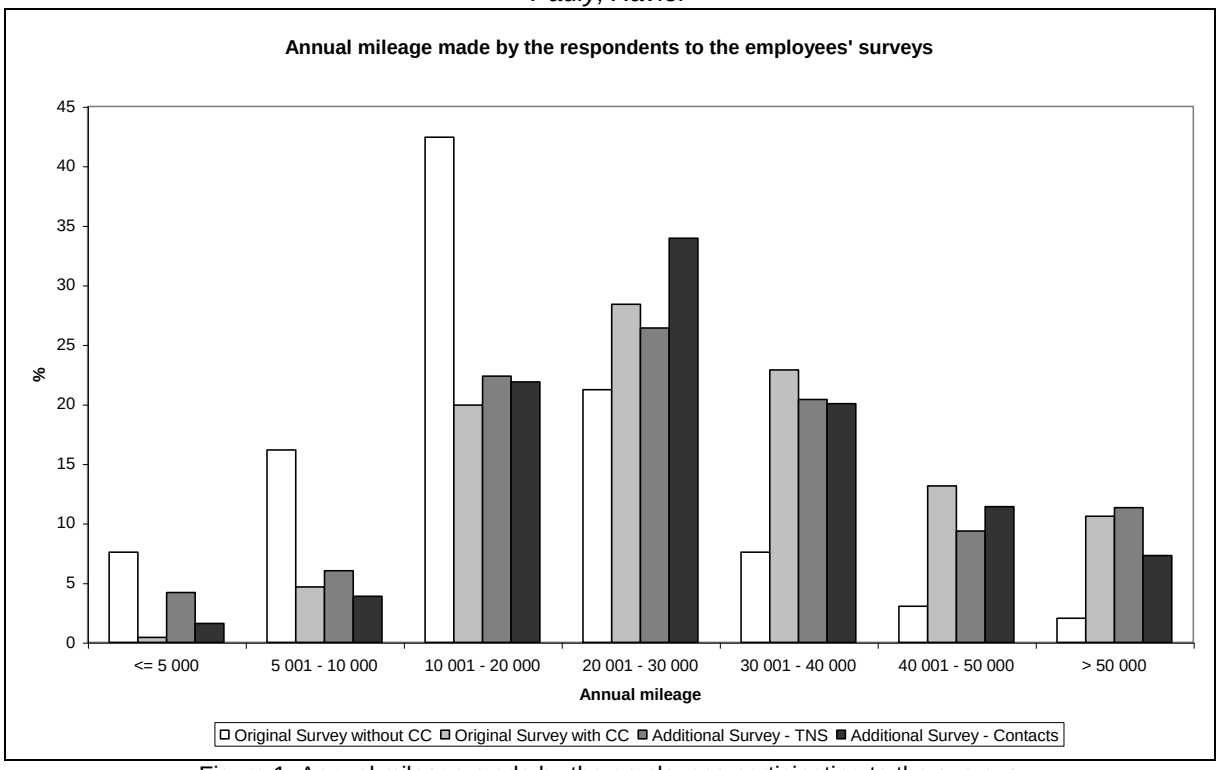

Figure 1: Annual mileage made by the employees participating to the surveys

Next, the respondents (with company cars) were asked to split their annual mileage into three categories of displacements: home-work displacements, professional journeys and private ones.

One could think that workers need a company car at their disposal if they often have to make professional displacements. The survey confirms this idea (Figure 2). We can observe that there is no respondent of the original survey with company car who declares never having to make professional displacements. If we aggregate the responses "rarely" and "never", these have been indicated by 64.7% of the respondents in the original sample without company cars, whereas in the original sample with company car, only 10.7% has indicated that they never or rarely have to make professional trips, 9.5% in the additional survey funded by the Flemish Region and 24.9% among the researchers' contacts. If we consider the respondents having to travel for their work "every day" and "very often", these are much more numerous within the samples of respondents having a company car at their disposal: it concerns 2 out of 3 respondents in the additional survey funded by the Flemish Government (65%), 1 out of 2 in both the other samples with company car (52.6% for the original one and 49.7% in the second additional one), whereas they are only 1 out of 8 in the sample without company car (12.3%).

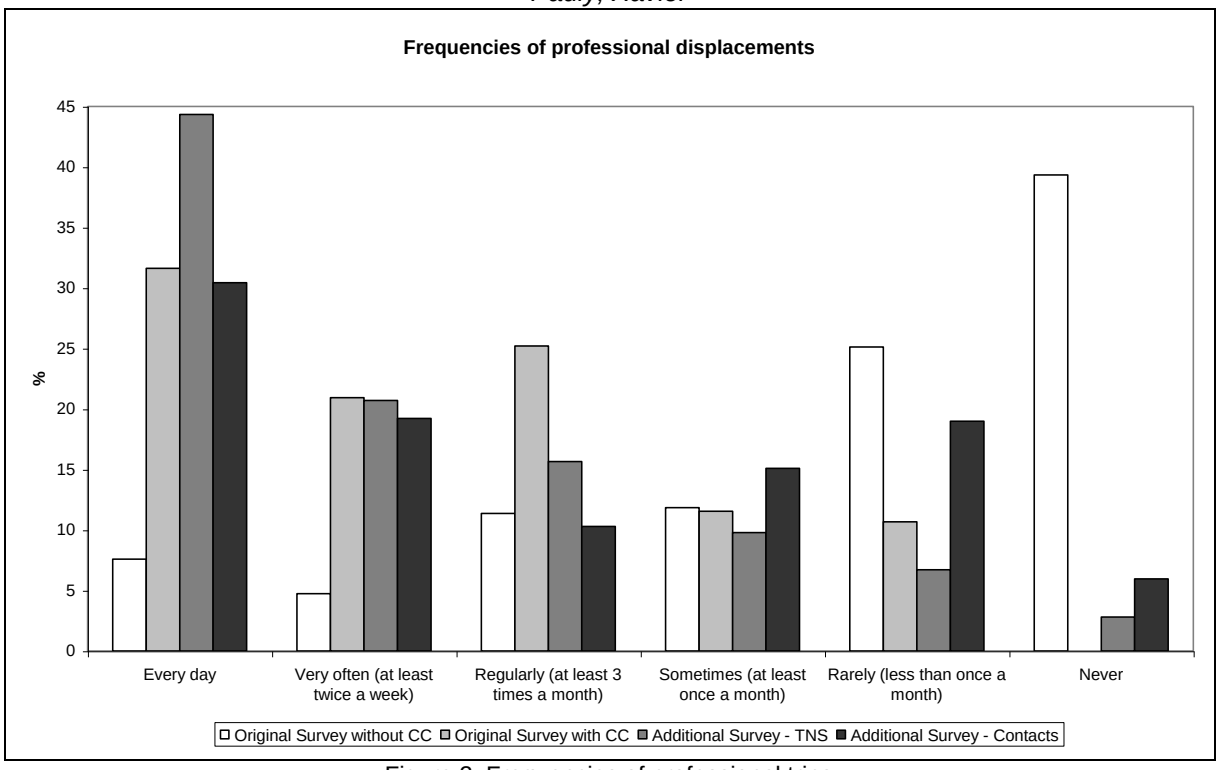

Figure 2: Frequencies of professional trips

Concerning the usual mode to go to work, a great majority of the respondents with company car actually use their company car to go to work (Figure 3): 93.4% in the original sample, 85.7% among the people recruited by the research market company and 84% among the researchers' contacts. A few of them in the additional survey “contacts” use their own private car despite having a company car. People without company car mainly go to work with their private car (59.2%). For these people, the train is used by more than 1 respondent out of 4, while this mode is rarely used by people having a company car.

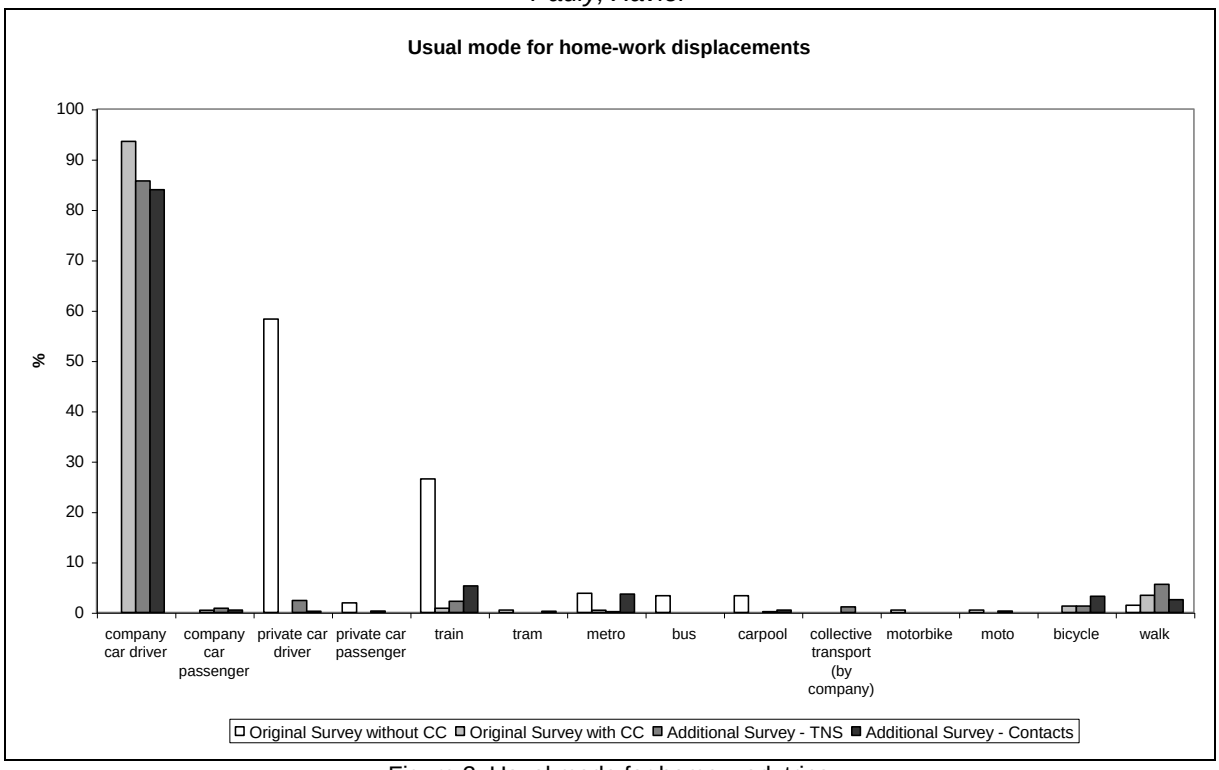

Figure 3: Usual mode for home-work trips

4.2 Analysis of trips on a reference day

In this part, the trips that were reported by the respondents on a reference day are analysed.

First, the number of trips is analysed (Figure 4). The most frequent number of trips is 2 (first, I go to work, then I return back home). Around 70% of persons without a company car report to have made 2 or less trips on the reference day. For persons with a company car in the original survey this percentage is only 54% so persons in this group are more likely to make more than 2 trips on a day. The additional surveys confirm this result.

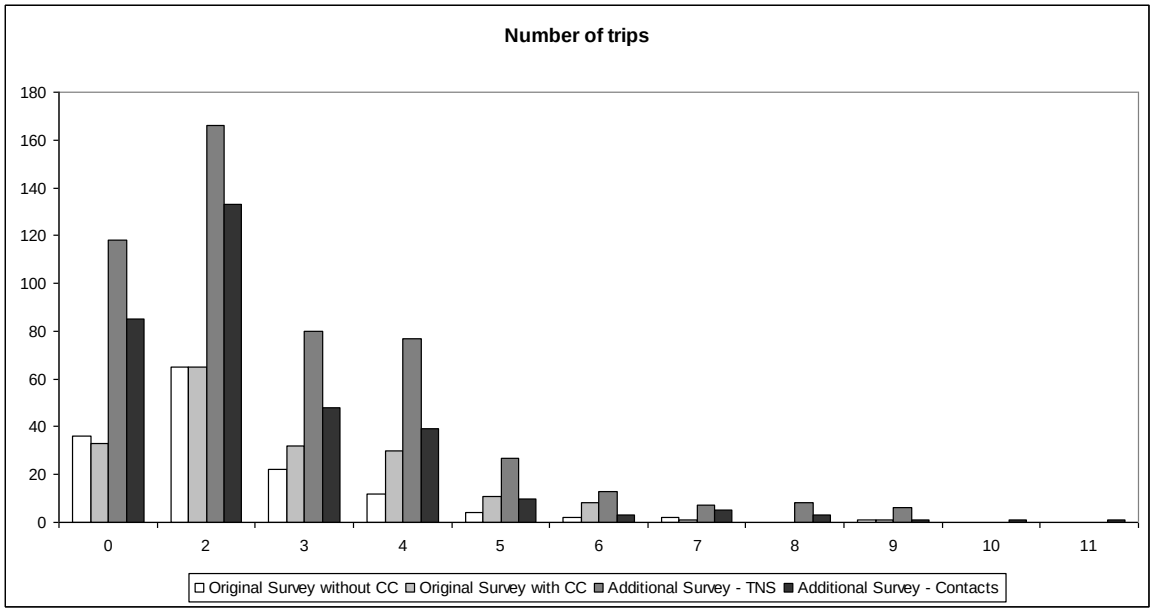

Figure 4: Number of trips recorded for the reference day

Next, we have a look at the average number of trips made on the reference day (Figure 5). For persons without a company car, the average number of trips per day is 2,07; for persons with a company car in the original survey, this number equals 2,57. In the additional survey TNS the average number of trips is 2,49 and in the additional survey with personal contacts the average number is 2,2. Based on these results, we can conclude that the average number of trips is higher for people with a company car than for those without.

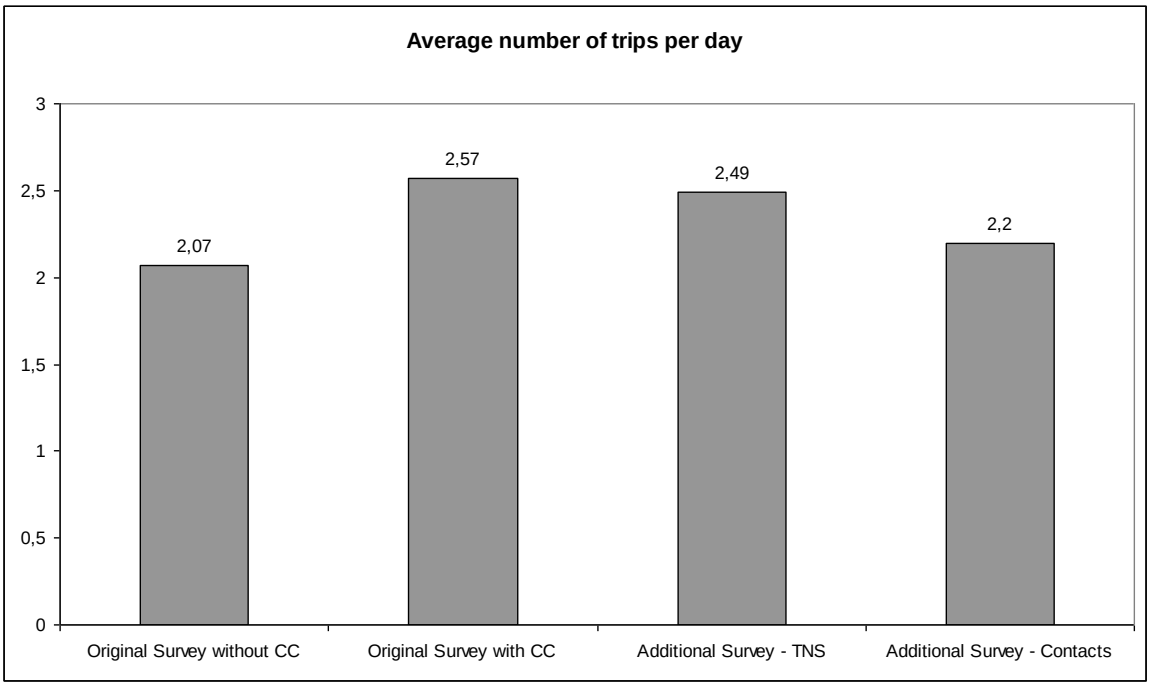

Figure 5: Average number of trips per day according to the survey

When investigating the mode of transport used for the reported displacements (Figure 6), the most important finding is the difference in use of public transport. Respondents without a company car use public transport in 14% of all trips. Respondents with a company car in the original survey only take public transport in 1,3% of their trips. The additional surveys show comparable results: 1% public transport in the TNS survey and 3,6% public transport in the personal contact survey. Respondents without a company car use the car in 80% of their trips, persons with a company car in the original survey use the car in 94% of all trips. The additional surveys (TNS and personal contacts) confirm these findings: respectively 95% en 92% of all trips are done by car.

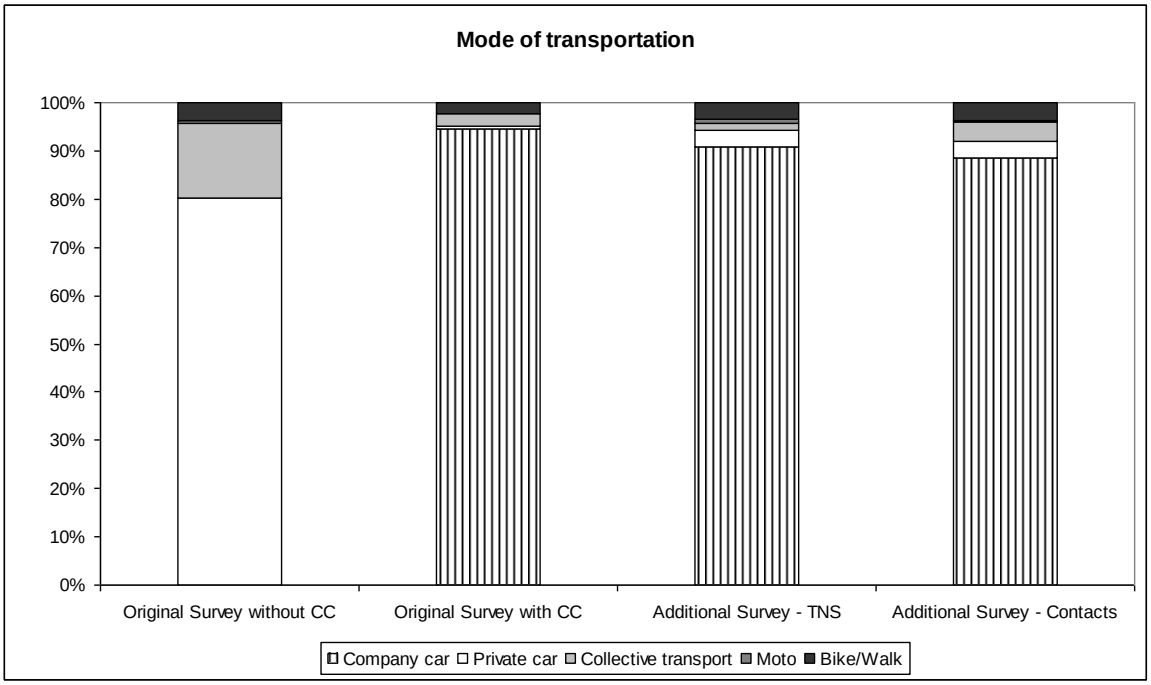

Figure 6: Modes used for the recorded trips (percentages)

Finally, the purpose of the trips is analysed (Figure 7). Persons without a company car make only 2,68% professional trips while for persons with a company car one trip out of ten is a professional trip. For the additional surveys (TNS and personal contacts) the percentages are respectively 7,41 and 6,78. Private trips are 20% of all trips for persons with a company car and 23,41% of all trips for persons without a company car. For the additional surveys (TNS and personal contacts) the percentages are respectively 23,82 and 29,88.

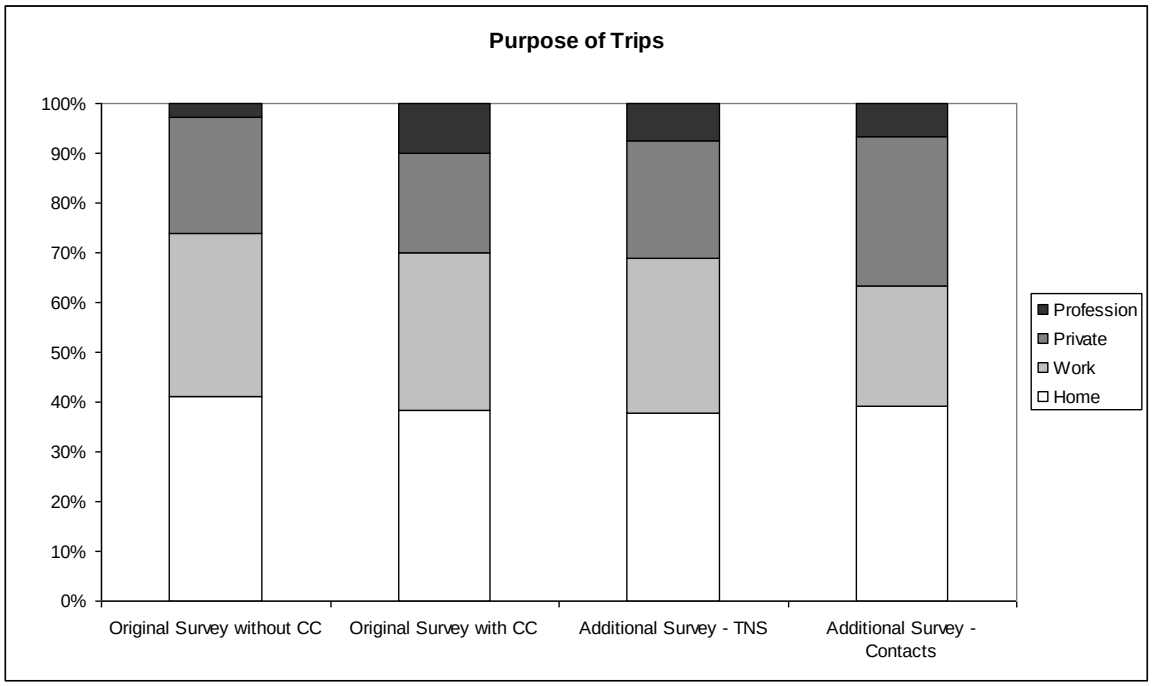

Figure 7: Purpose of the trips recorded

When only looking at the trips that were made with a company car (Figure 8), 20% of these trips are for private purpose in the original survey. In the additional survey, the percentage of private trips is 22,61% for TNS and 29,22% for the personal contacts. Professional trips make out 10,71% of all trips in the original survey and 7,98% and 7,19 in the additional surveys (TNS and personal contacts respectively).

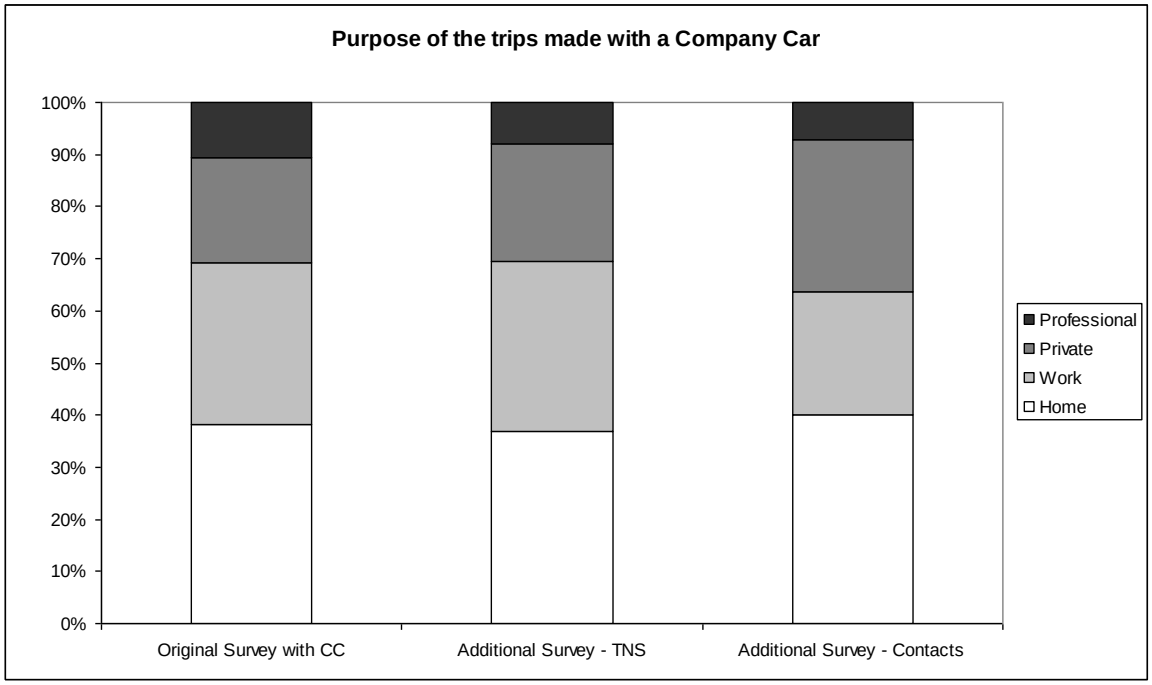

Figure 8: Purpose of the trips made with a company car

4.3 Substitution effect

In this section, we will have a look at the substitution effect.

An important question of our survey is the mode people would use for their home-work displacements if they had no company car (Figure 9). Most of them would use a private car (74% in the original survey and 71% in the additional one of TNS and 66% in the additional one of personal contacts). The proportion of people who would go to work by train (10 to 17%) is only half of the proportion for people without company car (more than 26%) taking the train to go to work. Especially for the additional contacts of TNS, bicycle is a popular alternative mode of transportation.

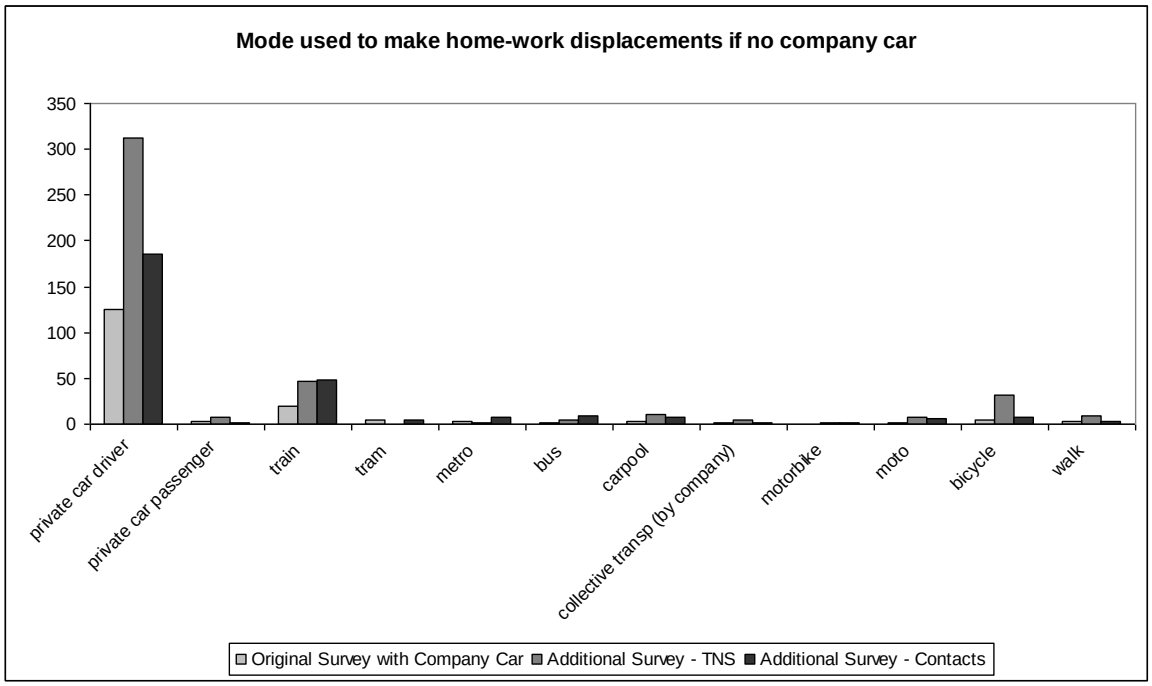

Figure 9: Mode used for home-work trips if no company car

To further investigate the substitution effect, persons with the same socio-demographic characteristics with and without a company car are compared. Only the original survey is used here since we only have a control group without company car in the original survey. The average number of trips per day (Table 1), the mode of transportation used (Table 2 and 3) and the purpose of the trips (Table 4 and 5) is analysed.

For persons without a company car, the average number of trips per day is 2,07; for persons with a company car, this number equals 2,57. When looking at the influence of the age, the average number of trips per day is highest in the age class 30-39 and lowest in the age class 50+ for persons without a company car. For persons with a company car, most trips per day are registrated for persons above 50 and the least trips for persons in the age class 40-49. An analysis of the influence of the gender indicates that, with or without company car, females make on average more trips per day than males. The analysis of the influence of the diploma shows some interesting results: when not having a company car, persons with a

higher education make on average more trips (2,21) than persons with a lower education (1,77). However, when assigned a company car, persons with a lower education make on average more trips (2,89) than persons with a higher education (2.51). Based on these results we can say that diploma and age are the most important socio-demographic characteristics to have an effect on the substitution effect.

Table 1: Average number of trips per day

	Original Survey (without CC)	Original Survey (with CC)
Total	2.07	2.57
Male	1.99	2.49
Female	2.19	2.76
20-29	1.93	2.65
30-39	2.58	2.62
40-49	2	2.23
50+	1.68	2.83
Lower education	1.77	2.89
Higher education	2.21	2.51

When comparing the mode of transportation used for all trips, persons without a company car take collective transport in 15% of all trips. Persons with a company car take public transport in only 2,5% of all trips. This difference in taking public transport is compensated in the use of a car. For the vulnerable road users only very small differences between company car drivers and non-company car drivers are detected. When making a distinction for age, gender and diploma, the most important result is found for the company car drivers: no female company car driver is taking collective transport for a trip and no company car driver with a lower education is taking collective transport for a trip.

Table 2: Mode of transportation used for persons without a company car

	Company car	Private car	Collective transport	Moto	Vulnerable road user
Total	1.67%	78.93%	15.05%	0.67%	3.68%
Male	3.11%	80.12%	13.66%	0.00%	3.11%
Female	0.00%	77.54%	16.67%	1.45%	4.35%
20-29	0.00%	79.31%	17.24%	0.00%	3.45%
30-39	2.70%	72.97%	16.22%	0.00%	8.11%
40-49	0.00%	82.35%	14.71%	2.94%	0.00%
50+	3.23%	85.48%	11.29%	0.00%	0.00%
Lower education	6.41%	80.77%	7.69%	0.00%	5.13%
Higher education	0.00%	78.28%	17.65%	0.90%	3.17%

Table 3: Mode of transportation used for persons with a company car

	Company car	Private car	Collective transport	Moto	Vulnerable road user
Total	94.62%	0.43%	2.58%	0.00%	2.37%
Male	93.83%	0.62%	2.16%	0.00%	3.40%
Female	96.45%	0.00%	3.55%	0.00%	0.00%
20-29	90.35%	0.00%	1.75%	0.00%	7.89%
30-39	95.36%	1.03%	2.58%	0.00%	1.03%
40-49	94.38%	0.00%	5.62%	0.00%	0.00%
50+	100.00%	0.00%	0.00%	0.00%	0.00%
Lower education	97.44%	0.00%	0.00%	0.00%	2.56%
Higher education	94.06%	0.52%	3.10%	0.00%	2.33%

In the last part of this section, the purpose of the trips is analysed. Persons without a company car make only 2,68% professional trips while for persons with a company car one trip out of ten is a professional trip. For the additional surveys (TNS and personal contacts) the percentages are respectively 7,41 and 6,78. Private trips are 20% of all trips for persons with a company car and 23,41% of all trips for persons without a company car. For the additional surveys (TNS and personal contacts) the percentages are respectively 23,82 and 29,88. For the persons without a company car, persons with a higher education make more private trips than persons with a lower education. For age and gender, the distribution among purposes is quite equal. For persons with a company car, gender shows the most interesting results: females make 22,7% private trips, while males make only 18,8% private trips. Professional trips only make up 4,96% of the trips made by a female and 12,35% of the trips made by a male. The additional surveys confirm these findings. The only exception is in the survey of personal contacts where male and female have almost the same percentage of professional trips.

Table 4: Purpose of the trips for persons without a company car

	Home	Work	Private	Professional
Total	41.14%	32.78%	23.41%	2.68%
Male	41.61%	32.92%	22.36%	3.11%
Female	40.58%	32.61%	24.64%	2.17%
20-29	46.55%	36.21%	17.24%	0.00%
30-39	38.74%	29.73%	28.83%	2.70%
40-49	41.18%	30.88%	23.53%	4.41%
50+	40.32%	37.10%	19.35%	3.23%
Lower education	43.59%	32.05%	15.38%	8.97%
Higher education	40.27%	33.03%	26.24%	0.45%

Table 5: Purpose of the trips for persons with a company car

	Home	Work	Private	Professional
Total	38.28%	31.61%	20.00%	10.11%
Male	38.27%	30.56%	18.83%	12.35%
Female	38.30%	34.04%	22.70%	4.96%
20-29	42.98%	32.46%	18.42%	6.14%
30-39	38.66%	31.96%	22.68%	6.70%
40-49	35.96%	29.21%	26.97%	7.87%
50+	32.35%	32.35%	5.88%	29.41%
Lower education	33.33%	29.49%	20.51%	16.67%
Higher education	39.28%	32.04%	19.90%	8.79%

5. CONCLUSIONS

The main objective of this research is to provide more insight in the impact of company cars on travel behaviour.

Since existing data sets were not available, a survey was organised to collect the necessary data. Both employees with and without a company car were asked to fill in a questionnaire, asking for their mobility behaviour in general and their mobility behaviour on a reference day in particular. Based on the collected data, comparisons were made between employees with a company car and employees without a company car.

First, the usual mobility behaviour for both groups of employees was compared. The survey clearly indicates that company cars have higher annual mileages than private cars. However, as one could expect, workers that have a company car at their disposal often have to make professional displacements. Concerning the usual mode to go to work, a great majority of the respondents with a company car actually use their company car to go to work. People without a company car mainly go to work with their private car. But the share of this group using public transport is significantly higher than for the respondents with a company car.

Next, the trips made on the reference day were analysed. The average number of trips is higher for persons with a company car than for those without a company car. When investigating the mode of transport used for the reported displacements, the most important finding is the difference in use of public transport. Respondents without a company car use public transport significantly more than respondents with a company car. When looking at the purpose of the trips, persons without a company car make less professional trips than persons with a company car. When only looking at the trips that were made with a company car, 20% of these trips are for private purposes.

Finally, the substitution effect is modelled: it is analysed how people would behave without a company car, and what the effect of gender, age and education on this change of behaviour is. In the survey, respondents are asked which mode of transportation they would use for their home-work displacements if they had no company car. Most of them indicate they would use a private car. To further investigate the substitution effect, persons with the same socio-

demographic characteristics with and without a company car are compared. First the number of trips is compared. Based on the results we can say that diploma and age are the most important socio-demographic characteristics to have an effect on the number of trips. Next, the mode of transportation is looked at. When making a distinction for age, gender and diploma, the most important result is found for the company car drivers: no female company car driver is taking collective transport for a trip and no company car driver with a lower education is taking collective transport for a trip. Finally, the purpose of the trips is analysed. For the persons without a company car, persons with a higher education make more private trips than persons with a lower education. For persons with a company car, gender shows the most interesting results: females make more private trips than males, professional trips are less frequently made by females than by males.

REFERENCES

Castaigne, M., E. Cornelis, A. De Witte, C. Macharis, X. Pauly, K. Ramaekers, Ph. Toint and G. Wets (2009). PROMOCO: Professional Mobility and Company Car Ownership, Final report Science for a sustainable development of the federal authorities. June 2009.

Cornelis, E., Malchair, A., Asperges, T. & K. Ramaekers (2007) COCA (COmpany Cars Analysis) Impact, Final report Actions in support of strategical priorities of the federal authorities. 76 p. April 2007.

Hubert, J.P. & P. Toint (2002) La Mobilité Quotidienne des Belges, *Presses Universitaires de Namur*, Coll. Mobilité and transports, Namur, 352p.

Neale, A. (1997) Extending the scope of environmental management: the case of company assisted travel in Britain, *Business Strategy and the Environment*, 6, 9-17.

Zwerts, E. & E. Nuyts (2004) 'Onderzoek verplaatsingsgedrag Vlaanderen (januari 2000-januari 2001). Deel 2: Analayse huishoudenvragenlijst', Diepenbeek: Provinciale Hogeschool Limburg, Departement Architectuur, Diepenbeek, 42 p.