EXPERIMENTS IN TRANSPORT RELATED CHOICES: THE INFLUENCE OF RISK AND UNCERTAINTY IN DETERMINING WORKERS' BEHAVIOUR WITH RESPECT TO PARKING ALTERNATIVES.

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ABSTRACT

Over recent years, parking policy has become a key element of urban transport policy and planning in many countries. The need of urban mobility, mostly guaranteed by private cars, in facts, impacts on the policy and regulations of parking areas. The issue is particularly relevant for work related regular trips. Workers, in fact, have a very rigid demand for parking spaces and, often, limited alternatives to private transport. Often working places have a car parking area to satisfy workers needs but when this is not provided, it implicitly conditions workers' (consumers) behaviours. The aim of this research is to analyse the trade-off between parking space availability and cost, in terms of time savings (considering time in terms of foregone earnings). This information is pivotal when designing parking policies in terms of fares, investments and regulation. The cost-opportunity of saving time, having information on the availability of slots closer to the working place, is conditioned by the worker's income and earnings. Since the pivotal work of Axhausen and Polak (1991), a relevant body of literature has focused on parking behaviour, measuring many different dimensions in terms of travellers' choice of parking type and location. However, the little attention has been devoted to understand how risk and uncertainty influence drivers' behaviours in parking decision. This paper presents two studies addressing this issue. Both aims to collect disaggregate data on travellers' responses to changes in parking attributes and related information. Different components of the parking activity (e.g., general in-vehicle time, parking search time, egress time) are controlled for, in relation to the characteristics of

the respondent. In order to avoid heterogeneity in relation to journey purposes we focus on workers' mobility. The first study is carried out using a standard stated preference approach; the second is carried out in a laboratory through the set up of an experiment. The collected data is used to build simple model of consumer's choice related to parking decision, taking explicitly into consideration both risk and uncertainty. Experiment's results are compared to the quasi-experiment's outcome in order to identify potential significant differences and, where possible, with existing revealed and stated preference results.

Keywords: commuters' behaviour, parking choice, risk and uncertainty.

INTRODUCTION

The importance of parking areas has always attracted the interests of urban mobility policies but recently academic researches point their attention on the drivers' behaviour approaching the decision of parking. Literature's interest is on the value of travel-time saving, an important element which reduction is seen as a benefit, and on the value drivers give to the possibility of having a definite information on the availability of parking slots.

In this paper, different aspects that can influence drivers' behaviour are analysed. Restricting the study only to one transport mode, own private vehicle (car), the research question, at which we would like to give a deep explanation, regards the definition of the price of parking for workers in terms of willingness to pay in order to have information that neutralizes any form of risk or uncertainty.

The aim is to understand how individuals behave when they have to face a decision on where to park, the value that they give to the time-saving and to the information on the availability of parking areas nearby the working place.

The willingness to pay for certain information on the availability of parking opportunities is here pointed out throughout an experiment.

The paper is divided into five sections, the following section will briefly introduce the research question of the paper, then a literature review of past papers on this topic is carried on. In the third section, the questionnaire I is described, then the data collection and the methodology is anlysed togheter with the preliminar results. And the last section will report the final remarks and conclusions.

RESEARCH QUESTION.

This paper argues on the commuter's parking decision that is made under risky and uncertain situation. In order to explain how commuters behave and which factors can influence their choice we conducted two experiments, the first one is based on a stated preference questionnaire administered to drivers that commute from home to work and vice-versa, the second is carried out in a laboratory through the set up of an experiment. The results are then compared in order to identify the difference between the outcome obtained from the two different situations.

The aim of this work is to point out the attitude of commuters towards risky and uncertain situation. Their conduct can be explicitly revealed through a survey, thanks to which we collect socioeconomic information and the propensity for risky or uncertain outcome, as respondents are asked to choose among different hypothetical scenarios that include slight variations of what is present in reality. A secondary, but not less relevant, outcome is that of being able to compare the results from a quasi-experimental setting and a laboratory experiment.

Before modeling the set of choices to propose the respondent, it is important to clarify the alternatives and the attribute we use in order to obtain different degrees of certainty and uncertainty. We focus on the decision about the parking mode, so it is necessary to explain the type of parking that can be chosen and their characteristics, that determine the choice despite another one.

The parking slots are identified according to their nature (metered, garage P&R, parking booked by sms) and the attributes that better identify them are: the parking ticket, the time-related variables such as the in-vehicle time, searching time and walking time to the working place.

The purpose of the paper is to understand the role that certain-uncertain information has on respondents and to do that we introduce a new parking mode (actually not in use in the area we are considering), an SMS booking system for the parking slot that is an easy procedure that allows commuters to book in advance the slot in a particular parking area, avoiding the searching time for it and removing any uncertainty about its availability.

The trade-off between parking ticket and time-variant variables (as the walking time or the searching time) emphasizes the different degrees of uncertainty and risk. It is known that certain information, as long as the travel time variation, is perceived as a cost for commuters. Comparing their combinations we are able to define different degrees of knowledge, from known certainty to unknowable uncertainty, essentially moving from a slot booked by a sms to a metered slot the ticket price will decrease and simultaneously the risk of not finding an available parking will increase.

Commuters' behaviour under risky situation can be revealed using a survey as the guaranteed degree of knowledge is the same among the respondents, even if the hypothetical scenarios might not realistically represent the daily conditions.

The survey we developed is divided into three parts: the first section collects the socioeconomic information about respondents as the age, gender, income, number of cars in the household; the second section is related to the trip information, basically in this part we investigate on the reason of the trip, the duration of the trip (including the in-vehicle time,

searching time for the parking and the egress time), the number of trips per week and the parking mode usually used.

The last section essentially describes the hypothetical scenarios that the respondent could face. We model five different scenarios for a set of five different parking duration. The alternatives between the parking modes are: metered parking, garage, P&R, a park that can be booked by sms and at last the possibility of rejecting the alternatives proposed. The attributes that change across these five cards are the ticket price (according to the different parking mode), the searching time and the walking time to the working place. Once the respondent makes her choice we can realize how the change in the ticket cost, jointly with the time-variant variables, had affected the final decision.

The results of this survey are useful to segment commuters into: risk adverse - commuters who prefer to pay a higher ticket with the certainty to find a slot closer to the working place - or risk neutral - when they prefer to pay a lower ticket incurring in higher searching and walking time (usually considered as costly). This underlines the propensity of commuters to rely on certain versus uncertain knowledge about the slot availability.

In the literature it has been noticed that achieving results on the propensity of respondents making decisions under uncertainty levels through a stated preference approach, it is not always an easy task.

The on-line booking system is usually known as a service characterized by different levels of uncertainties of risk knowledge. The uncertainty can be of different types as: known uncertainty, when the risk probability is precise and specified; unknowable uncertainty, where the risk probability is unknown to everyone or we can face an unknown uncertainty in the case the risky probability is an information not available to one but may be possessed by others.

Academics underlined that certain information (known certainty) is costly (willingness to pay), and issues relate to the risk accepted by consumers are usually considererd in works focused on line booking purchase. Taking into account these works, the second part of the research, focused on the uncertainty, is conducted through a laboratory experiment.

The reason why we introduce a laboratory experiment is due to the fact that the natural experiment (the survey) is not always able to capture the degree of uncertainty and of risk propension of respondents, while if we simulate in a laboratory a context that prescinds from the real contex of the parking choice, we are sure to get the level of risk the respondent can stand. The quasi-experiment, has so far the peculiarity that the situation described is decontextualised from the reality. We set up an aseptic environment that is not correlated to the situation of the parking mode choice reported in the survey and if this aspect can be seen as an issue, at the same time it is possible to look at it as a way to complete the results of our study. Respondet are given a fixed amount in order to partecipate to the experiment and to test their propensity to risk we can evaluate the expected payoff they gain, as it is an index of their wealth, as in the survey it is the income. In the laboratory experiment the waiting time (time that goes from the start of the game to the exact moment in which the player decides to enter in the game) expresses the respondent's risk adversion and enable us to understand also how the decisions under uncertainty about the outcome of the game are takne.

There two approaches give us two complementary resutls, the one obtained by the survery points out the behaviour of commuters under risk, as when we vary the attribute of the parking mode in the five different scenarios proposed, we model for different degrees of

risks, while the results obtained with the lab-experiment enable us to focus on the decisions made under uncertainties.

LITERATURE REVIEW.

The impact of a parking area has an important role in the urban planning and mostly in drivers' benefits, for this reason policy makers usually take advantage of different instruments to predict travel demand segment and at the same time to improve the service guaranteed to consumers.

Understanding the elements able to influence travellers' behaviour is always been one of the aims of different authors in literature. The first author, who focuses on the allocation of time issuess across different activities, is Becker (1965). He evaluates the cost of time,in the particular among workers that commute from home to the workplace, underlining their preferences through the maximization of their utility function, Striclty realted to trasport costs.

To collect and interpret information about travellers' behaviour, different methodologies are used in literature. Usually, studies are based on observed preferences (revealed preference RP) or stated preferences (SP) experiments, where the main difference between the two relies on the way the information is captured. The former approach is based on observed traveller's choice, so mainly on statistics about consumers' preferences that not always are available. The observations obtained through a RP approach show a statistical correlation between the level of the attributes present in a choice, making impossible to distinguish which attribute really affects respondent's decision. For this reason it is often preferred a stated preference experiment that enables to measure respondents' preferences under hypothetical scenarios (some of them may not be present in the market) so the problem of the availability of data does not exist, but a risk of systematic bias can rise, as the alternative proposed to respondents may not reflect exactly their preferences.

In this section of the paper we will focus the literature review of some works that examined a particular aspect of the urban transport: the parking activity. Considering the urban transport usually we take into account the trip from a starting point (usually home or work) to a final destination.

Commuters, deciding the way to reach the final destination and the starting time of the trip, usually take into account the duration of travel time and the transport mode. In this paper we will focus on workers that use to commute from home to the workingplace by car.

Before undertaking the literature review on the parking mode choices it is necessary to remark the difference between the risky and uncertain decisions. As reported in Hey (2002) people can take decisions under risk and/or uncertainty in a static or dynamic scenario. He lists the different theories usually used when the risky decisions are taken, as for example the expected utility theory, or when decisions are made under uncertainty, as the Ellsberg paradox. The risky decisions have been more explored in literature than the decisions taken under uncertainty in both dynamic and static situations. The former theory underlines that decisions under risks are driven by inconsistent percertions, belief and emotions and they do not consider different degrees of uncertainties when the decision is made (Wang 2011). For this reason, in this literature review, we'll point out that very few has been done in the field of

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uncertainty about the parking activities, while a wilde literature is present when considering decisions taken under risk, as it will follow.

In parking activity (search, decision of where to park, fee, duration of parking time etc) a key role is played by the time, which has been investigated under three different aspects: the time spent travelling (usually divided into in-vehicle time and out of vehicle-time), time spent in the parking activity (as searching time[1] and egress time[2]) and the travel time saving.

As result from a review previous works, most of them analyse the value of travel time saving, as for example Cherlow (1981), where it is showed that this information, extrapolated both by stated choice survey and by revealed preference, it is necessary to demonstrate the tradeoffs between the willingness to pay and the reduction of time travelled (time-cost trade off). To monetary quantify the value that respondent gives to the travel time saving; academic inferred it from the average wage rate (Moses and Williamson 1963) or from the average family income of the sample considered.

The aim of the research and it results change considering the different type of subjects we are considering, as for example new urban policy implementations are addressed to commuters, non-commuters and residential parking (Marsden 2006). This paper reports the results of different works present in literature where data are collected through stated preference experiments, with a particular focus on commuters' behaviour and their perception of time. From the results we can infer that the out-of-vehicle cost has the highest influence on travellers rather than the in-vehicle cost (Feeney 1989). This result that is confirmed, later on, by Axhausen and Polak (1991) where respondents evaluate walk egress time two or three times more than in car searching time for a parking slot.

A brief description of driver's perception of parking availability is reported in Polak et al (1990), where drivers base their expectations on their knowledge of spatial and temporal distribution of parking opportunities and on the relative parking cost. Apparently, the nature of parking choice relies on the information and knowledge the driver has. It is predictable that no parking space would be selected before a round search has been conducted to test the availability of slots (free parking or parking slots that have a fee) in the area of interest.

The organisation of the parking search process is stressed through the importance given to the searching time, the walking time to the final destination and the role of information. Some further interrogations on the nature of knowledge or information that could influence driver's choice are made. Results highlight that drivers give more importance to searching time and walking time than other parking activities components.

A different research question is carried out in Axhausen and Polak (1991) work, where the aim is to test driver's behavior when she has to face a choice between three alternative parking types: free on-street parking, different types of off-street parking (lots and garages) and also the illegal parking. This differentiation resulted useful in a second moment of the survey, as the that information is used to segment the sample according to their willingness to pay. This experiment has been conducted through a computer based survey, composed by three choice situations and has been tested in two different countries (German and UK) and a logit model, to estimate the value of time in its different aspect (in-vehicle and out of

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[1]
     Search time is the time spent searching and queuing for the parking space.

[2]
     Egress time is the time spent walking to the final destination.

vehicle time), has been conducted. Most of the results are consistent with the literature, as for example the valuation of the egress time and access time and drivers' decision of never illegally park has on average a lower value of time. In particular with regard to the walking time, drivers that consider also the illegal park are more impatient during search and do tolerate less long walks. In conclusion respondents consider illegal parking as an acceptable alternative that reduces the time spent searching for sub sequentially the egress time.

Also Thompson et al (1998) and Golias at al (2002) have a similar approach as Axhausen and Polak (1991) but they restrict the parking choice options. Both papers present: a focus on the choice between off-street and on-street parking slots, data are collected through a questionnaire-based survey distributed in Central Business District (CBD) and a logit (nested to distinguish between the types of car parks in the first study) model has been used to estimate the variables. The main difference is that, in the former paper authors consider the evaluation of the parking space, which is based on previous experience and network knowledge, in particular regarding the off-street parking where it is assumed to be already known. Golias' s paper on the other hand, adds one more scenario to the two main ones (on-street and off-street), that basically is the refuse of the two type of car parking (es. the respondent will not use his car), and if this alternative is chosen, this value is not included in the analysis. The survey proposes three choices and four sets of different scenarios characterised by different levels of searching time, walking time and cost of the parking space per hour. As expected also this experiment shows that an increase in off-street cost leads to a decrease of its share, the time saving results more attractive if the on-street search time increases; the less important factor seems to be the duration on off-street parking, as its attraction increases as the parking duration does and finally based on the cost an off-street parking is preferred to an on-street one for a longer duration.

Other interesting investigations have been conducted on the sensitivity of pricing regime and the supply of parking slots by the time of the day using a stated preference approach (Hensher and King 2001; Anderson et al 2006). Papers differ in the sample trip purpose: in the first paper the sample is composed by commuters, employees which parking fee is partially, totally or not guaranteed by the employers and individuals who travel to the Central Business District, while the second paper respondents are only tourists. The econometric model used is a nested logit model as different transport mode a part from car are taken into account in order to reach the final destination. It is quite remarkable that both tourists and travellers to the CBD for different purpose have similar behaviours, in fact tourists, as long as commuters, prefer cheaper transit alternatives and dislike spending long time in transit as long as congestion. More recent studies of Clinch and Kelly (2004, 2006, 2009) and Simicevic et al (2012) tried to explain parking pricing throughout user's attitudes (from user's behaviour it is possible to understand the effect that changes in parking price has on the travel demand, but this requires a wide range of information that not always is available and easy to obtain). Here the distribution of traveller's, according to parking type choice, and their attitude towards the parking price is determined by a face-to-face interview, in which the goal was to find out the price at which they would give up parking and to which other transport mode they would likely shift. A higher percentage of them prefer to travel by car until a certain modal connection point (e.g. park and ride) than switch directly to public transport, or to carpool. To conclude this work points out the expected parking price per hour (0.80€)

between 7 am and 9 pm of the day that commuter would like to accept before giving up for another transport mode.

The knowledge and information on the travel and on the availability of parking space assume an important role on the decision process of travellers. This problematic has been tackled by Polak and Jones (1993) work, in which they infer travellers' behaviour considering pre-trip information, based on a computer-based procedure that presented a credible simulation of an in-home pre-trip information system. Respondent can interrogate the system, obtain the information on the trip planned and finally rank the options obtained. This scenario gives an idea of the weight assigned to the pre-trip information by respondents, engaged in a work or non-work journey. As reported: "these findings emphasises to travellers of the timeliness and relevance of provided information and suggests that may be beneficial for pre-trip information system to be able to actively signal the occurrence of relevant network incidents as well as passively deliver descriptive information". Nowadays, we cannot ignore the added value given by this pre-trip information and the other factor influencing travellers' behaviour.

The possibility of benefit from parking subsidies is another aspect that can influence the commuters' decision (Feeney 1989, Willson 1992 and Shoup 1997). Feeney results (based on a literature review of academic papers) support the intuition that parking subsidies influence the transport mode choice, while both the last two works have analysed the sensitivity of worker's choice on the employer-paid parking. Willson (1992) interviewed both employers (118) and employees (5060) to point out how (mode choice) employees decide to reach the workplace (drive alone, carpool or transit) if the employer guarantees a free parking or a daily parking cost. The logit analysis shows how the number of solo drivers decreases as soon as the free park is not guaranteed anymore and consequentially the number carpooling increases. When commuters pay for the parking lot, then the transit increases more than carpooling, because carpooling still means that there is a fee to be shared. Different situation is pointed out in Shoup' paper (1997), in which as a consequence of a Californian law, the author studies the shift of employee to different mode (drive alone, carpooling, transit, walking, bicycling) to reach the workplace if a cashing out program is implemented by the employer. The idea of the act is that employer has to offer commuters the option to choose a cashing out park subsidy. Eight case-study firms were analysed and results show that to an decrease of solo driver corresponds an increase of carpooling, transit and not surprising also of the number of worker that prefer to walk or to use the bike in order to obtain in cash the value of the subsidy. This new form of subsidy reduced the number of solo driver by the 17%, increases the carpooling by the 64% the transit of resident by the 50% and the number of walkers or riders by the 39%.

A recent paper of Habib et al (2012), on the other hand, focuses on a different starting point, analysing how the activity-travel scheduling process can be influenced by the parking choice. The type of activities are distinguished by the purpose of the trip (work, study, leisure and shopping) and based on this activities the start-time, the duration and the type of park preferred are collected. Using an origin-destination (OD) survey with parking inventory and choice information authors show that the start-time of activities (during a normal day) is influenced by the parking search and the duration of these activities themselves. As expected workers, for instance, prove how the final destination of a trip influences of the two variables (duration and parking choice) in particular in the situation of subsidized employer-parks, as this alternative is attractive for employees because determine a different schedule

of the travel activities during the day; while people who travel for study activities prefer to park in free-charge parking areas or if not possible can choose between park&ride or Kiss&ride options. A proper segmentation of the respondents was necessary to understand how characteristics strictly related to the purpose of the trip could influence respondent's behaviour. Obviously other factors determine respondent's choice as the income, in fact people with higher wages prefer to park in places closer to the workplace and more expensive then who perceives a lower income. At the end the lack of interest, from this prospective, is pointed out by authors as very few works focused on the way people can schedule activities that involve a transport segment, in particular the parking part that seems to be one of them key elements when it comes to decide the starting time of any activity.

Very few works stressed their interest on issues strictly related to the relationship between the driver and other passengers in the car (Henser 2008) or the households (two spouses) commuting behaviours (Plaut 2006). Henser noticed that in literature the role of passengers in a vehicle had relatively small attention due to the fewness of available data, so results do not properly quantify how passengers' presence can affect the travel time saving of a driver. In order to obtain an idea of this phenomenon, the respondents of the computer based survey were non-commuting drivers that had a set of 16 (different level of travel time savings and different rood tools) of choices. To determine the influence of passenger presence a mixed logit model was used in order to capture the heterogeneity of preferences across the respondents, such that results showed that an increase in the number of passengers decreases the value of travel time saving from $19.99 to 13.22$ per hour, although the paper does not define the travel time saving for each passenger or for the vehicle but gives just an idea of how the change in the perception. Another interesting paper that regards the commuting decision of spouses related to the location of the house is reported in Plaut (2006) where the investigation not only compares the different attitudes of man and women when they have to commute, but the situation of renters or of homeowners is taken into account. Here to understand commuters work behaviour the only car trip is considered and as regard the length of the trip has been noticed that workers who rent the house prefer to drive less while who is homeowner prefers to have a longer trip in order to gain a higher salary. Both these academic contribution help to realise that other factors can be considered, but they did not explain if these are also able to influence the parking activities.

Another research question that has not been scrutinised is about the role of the information during the trip. Commuters usually rely on the knowlwdge they have about the knid of slot they would be albe to find, but there is no definition on the degree of certainty or of uncertainty about it. There is no evidence from the literature, in the urban transport sector, about the decisions taken under risk in an real time purcheasing service.

Here we touch on the online booking service paper simply to understand how previous academics studied the reaction of consumers when they have to book in advance a service, as we consider the possibility to implement a new parking mode, an SMS booking system that allows drivers to "reserve" in advance the parking slot. Previous literature focused its attention on the online hotel booking (Koulayev 2009), where the logic behind respondents' behaviour is similar to the one of commuters. Searching for a hotel is costly (this underlines the willingness to pay for a certain and immediate information), and at the same time it is based on previous knowledge or on the perception consumer has about this service. In our case study, however, there is no need to take into account the reviews or the impressions

that other consumers had about the service, bascially because this is not part of our study, but it can be seen as a further research topic. The existence of different degrees of uncertainty, related to the basic knowledge of consumers, is reported in Wang (2010) anlyses, where decisions of online purchasing, under uncertain risk of phishing are showed. In our case we are not arguing about the quality of the service but we simply want to see and predict drivers reaction to this new option. Other contributions show that the propensity of people to buy such a kind of service, in the online booking sector, strongly depends on their innate personal innovativeness (Lee et al 2007), and so this explain why the attitudes of some consumers may lead them to make a choice, a more risky and innovative in its nature, than to a more traditional one, that related in our case study may be the metered slot.

Further studies can start from these open questions: how the presence of other passengers influences parking decisions? Would be more likely that passengers prefer to choose a particular parking type in order to reach earlier the workplace or they prefer to endure a longer travel time (in-vehicle and out of vehicle) in order to find a free parking space? Is it possible that the personal innovativeness leads commuters to a more risky choice? Can the parking sector guarantee an online service as for the other transport modes e.g airlne booking system?

THE QUESTIONNAIRE.

The instrument used in this study to collect data about commuters' behaviour is face to face questionnaire, designed for this survey. We set up a survey that allows us to realize how commuter's behavior changes when she has to face a risky or uncertain decision.

The questionnaire is structured as follows: the first section's aim is to collect socieconomic information about abitual drivers that use the parking slots, and   apart from the generic questions about age, gender, job, income and education we are also interested in knowing the number of cars in the household, as it seems to be an important socioeconomic factor together with job. The second section aims to investigate the reason of the trip (in this case we focus our attention only on workers) the frequency of the trip during the week, the travel time (including the in-vehicle and the out of vehicle time, such as the walking time), the parking duration and the type of parking mode usually choosen. These information are necessary to pick out the typology of commuters and enables us to have a preliminar idea on their revealed preferences. The last section captures commurter's behaviour under well designed hypothetial scenarios. We define a set of scenarios according to the parking duration and we ask each worker to choose which parking mode they would preferably take into account among the four alternatives we suggest. The alternatives are defined as follows: metered parking, garage, Park and Ride and then, in order to model the certain versus uncertain, we introduce a new option, the possibility to book the parking slot by sms. The introduction of this new parking mode, according to the spread of the technology, seems to be a simple and fast way to have a certain information on parking avaliability. The respondent has to tick the parking mode she would choose in each of the five card the questionnaire proposes. The scenarios proposed have been modeled on the basis of three

key parameters (ticket price, searching time and walking time) which have been carefully choosen, as their variation enalbe us to capture how the cost for certainty (in terms of ticket price) is accepted against a less coslty ticket (information) that conversly requires a higher searching or walking time.

DATA, METHODOLOGY AND PRELIMINARY RESULTS.

The pilot survey has been conducted in the city centre of Bari, an important city in the South-East part of Italy. The sample was choosen randomly among parking area users of the city centre where different activities are located, such as University, shopping centre and Istitutional authorities.

The collection of data started in the month of September 2012, with a 2 days collection data from 7.00 am to 8.30 pm, in order to have a complete and heterogeniuous sample. The results of the pilot survey underlined our expectations about the influence of some variables as income, age and job on respondents' preferences. As most of the leterature results showed also in our case the income had a crucial effect on the decision of where to park, but also the age played an important role. Younger respondets prefer to choose the park and ride or parking slots that require a higher walking time, in order to save more money. As regard the job we find a strict correaltion between the job and income, because employees prefer to park closer to the working place only if the parking ticket is partially or totally reimbursed by the employer.

From an econometric point of view, in literature models widely used are the logit models, for more accurate results, multinomial logit (in the case where multiple scenarios or choices are available) or mixed logit model are taken into account. Hess et al (2005) and Hensher (2001) discussed about the goodness of estimation results obtained by a multinomial or a mixed logit model when the travel time saving has to be estimated. They both convene that a multinomial model underestimates the value of time saving and that this model is somehow not preferred to the mixed logit, which on the other hand is more flexible as defines the taste coefficients to be randomly distributed across respondents. In our cse we used a multinomial logit model, but now we are collecting more data in order to obtain a more precise estimation of commuters behavior.

At this point of our research, we are still collecting more data, the results obtained with the survey will be then compared with the one gained by the lab-experiment, as this represents the second step for our analyses.

The survey resutls will underline the decisions taken under risky situation, while the laboratory outcome will give us an idea of the behaviour under uncertainty even if it will be conduct in an environment that doesn't recal the parking slot enviromnent but a generic lottery specification that will allow us to see these behaviours.

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