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Who are the eco-bicyclists?

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ABSTRACT

This study presents insights into the profile of eco-bicyclists. The empirical analysis is based on the estimation of binary logistic regression models. Four subsets of independent variables were used in this empirical analysis, namely: (i) demographic factors, (ii) economic variables, (iii) variables regarding environmental awareness and (iv) perceived advantages of biking. Empirical results suggest that younger people are probably more willing to cycle for environmental reasons. In general, women are more likely to be eco-bicyclists than men. However, the results suggest that marital status and educational level are not statistically significant factors. Rather, environmentally-conscious and low income consumers are more probable to be eco-bicyclists than others. Our analysis is focused on the usage of bicycle for environmental reasons because we expect that those people not being characterized as eco-bicyclists are a potentially relevant market segment for developing an efficient sustainable mobility strategy in Greece.

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Introduction

Policy interest in promoting sustainable development has increased within Europe. Contrary to car usage, the intensive use of bicycle for consumers' transportation needs is inextricably linked to zero greenhouse gas emissions. Thus, a shift to sustainable mobility patterns can yield immediate environmental benefits. However, the appearance of sustainable mobility patterns is strongly related to consumers' acceptance of biking.

Several studies have been conducted on the issue of bicyclists' attitudes and the socioeconomic characteristics of the typical bicyclist. Age and gender are two of the basic factors over which, many studies concerning bicycle use have occurred (Donaldson, 1993; Peterson et al., 1995; Witlox and Tindemans, 2004; Heinen et al., 2010). Others have examined the effect of economic characteristics on bicycle use, such as personal income (Witlox and Tindemans, 2004), low cost of using a bicycle (Noland and Kunreuther, 1995; Peterson et al., 1995; Ibeas et al., 2011; Nkurunziza et al., 2012) and car ownership (Dill and Carr, 2003; Martens, 2004). A systematic review of studies confirmed that socioeconomic patterns affect physical activity, which in terns is associated with active commuting (Beenackers et al., 2012). Others studies have documented positive influences of active commuting on public health (Bassett et al., 2008; Shephard, 2008). Health and economic concerns were approved to be strong predictors of both walking and biking (Bopp et al., 2011; Kaczynski et al., 2012). Another review examined studies that examined interactions between active commuting and personal, social and environmental factors (Panter and Jones, 2010). In general, better economic well-being was negatively associated with active commuting to work but educational status was a positive influence (Fan et al., 2014). In fact, having fathers with a university degree is associated

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with the adolescents' higher positive cycling experience (Sigurdardottir et al., 2013). Older persons are generally less likely to walk or bike to campus (Kaczynski et al., 2012). Positive travel experience resulting from commuting using a bicycle is associated with adolescents' greater intentions to cycle to work as adults (Sigurdardottir et al., 2013).

However, along with the word "bicycle", also "comes" the environment. In this context, the environmental parameters of cycling have recently received increasing attention (Bopp et al., 2011, 2012; Kaczynski et al., 2012). Active commuting is positively associated with good weather conditions (Bopp et al., 2012) and eco-friendly attitudes of the commuters (Bopp et al., 2011). In fact, Bopp et al. (2011) concluded that a strong relationship exists between environmental friendly attitudes and the frequency of biking to or from work. Both walking and biking were higher among people concerned about the environment (Kaczynski et al., 2012). Similarly, Sigurdardottir et al. (2013) concluded that the willingness to accept limitations on car use depends on adolescents' environmental concern. The built environment is also increasingly being acknowledged as having the potential to encourage active commuting. Distance to school is the most important environmental factor on children's active commuting to school (Oliver et al., 2014).Greenness and proximity to parks are negatively associated with active commuting to work varying by degree of rurality (Fan et al., 2014). Several researchers based their studies on environmental effects over bicycle usage. There are several significant aspects as far as the environmental parameters are concerned. The most frequent advantage of bicycle use that was mentioned by light and heavy users of bicycle is that it is ecologically responsible (Peterson et al., 1995). As Gatersleben and Haddad (2010) claimed a lifestyle bicyclist, who is someone who likes bicycling and uses it for a range of trips, tends to cycle for environmental reasons among other motives. Natural amenities scale and proximity to national forests and park, being outside in the fresh air is considered a pleasant experience of cycling (Zahran et al., 2008; Gatersleben and Appleton, 2007). Respondents who have considered using a bike to go to work but have never tried, agreed that cycling has a positive effect on the environment (Gatersleben and Appleton, 2007). According to Li et al. (2013), travelers who have low willingness of using bicycle and, as a result, actual bicycle usage, seem to have low environmental awareness. Consequently, those with high desires of helping environment, also have high willingness to use bicycle and actual bicycle usage in commuting (Li et al., 2013).

The aim of this study is to examine the determinants that affect consumers' bicycle utilization because it is an eco-friendly mean of transportation. For this purpose, we employ cross-section data from the capital city of Greece, Athens. The structure of the paper is the following. The next section presents the data and the adopted methodology of the analysis. Then the empirical results occurred are presented and discussed. The last section concludes the paper and policy implications and limitations of the analysis are presented.

Methodological issues

Sampling and data collection

The research provides some insights into the determinants that affect consumers' positive attitude towards eco-biking. Unlike previous studies, we chose to estimate the socioeconomic profile of the eco-bicyclists because we expect non-eco-friendly bicyclists to be a potential market segment which can be important for the promotion of sustainable mobility patterns. Data for the current research was collected by a cross-section data set of 200 bicyclists. The research took place in Athens in 2012. The response rate was 72% and the survey resulted in a data set of 144 bicyclists. The survey was conducted using a structured questionnaire and personal interviews. As a prerequisite, the respondents were above 18 years old and income-earners. The questionnaire was constructed by taking into account related previously published studies.[1] In order to probe into the behavior of bicyclists using their bicycle because it is an eco-friendly mean of transportation, we interviewed bicyclists at central parks in the area of Athens, on both weekdays and weekends. We surveyed participants at the areas inside the parks used by bicyclists to take a break, rest and gather. Systematic sampling was carried out within twenty days. Each day was divided into four three-hour sample periods between 8 a.m. and 8 p.m. During each selected period, the researchers asked bicyclists whether they would agree to complete a questionnaire or not.

Model specification

Empirical results are based on the estimation of logistic regression models. Logistic regression is used for predicting the probability of an event occurring by fitting data to a logit function. Logistic regression is a useful way of describing the relationship between one or more independent variables and a dichotomous variable, expressed as a probability to prefer cycling because it is an eco-friendly transport of mean or not[2].

In our case, under the binary logistic model, the estimated value of the dependent variable is interpreted as the probability that a cyclist prefers to use bicycle because it is an eco-friendly transport of mean, as identified by the values of the explanatory independent variables. Thus, binary logistic analysis enables us to measure the impact of each variable on a

[1] For a detailed list of these studies please see on the last column of Table 1.

[2] In particular, the question format was: "Please tell us your opinion: I prefer to use my bicycle because it is an eco-friendly mean of transportation". Dichotomous choice answer: Yes or No.

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