Case Studies on Transport Policy xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Case Studies on Transport Policy

journal homepage: www.elsevier.com/locate/cstp

Identification of the determinants of fare evasion

Mario Cools[a,b,c,*], Yannick Fabbro[d], Tom Bellemans[d]

[a] University of Liège – ArGEnCo/UEE – Local Environment Management & Analysis (LEMA), Quartier Polytech 1, Allée de la Découverte 9, BE-4000 Liège, Belgium
[b] KULeuven Campus Brussels, Department of Informatics, Simulation and Modeling, Warmoesberg 26, BE-1000 Brussels, Belgium
[c] Hasselt University, Faculty of Business Economics, Agoralaan Gebouw D, BE-3590 Diepenbeek, Belgium
[d] Hasselt University, Transportation Research Institute (IMOB), Martelarenlaan 42, BE-3500 Hasselt, Belgium

ARTICLE INFO

Keywords:
Fare evasion
Flanders
Price perception
Risk perception

ABSTRACT

Fare evasion occurs when passengers gain access to public transport by interacting with fare controls in manners that are inconsistent with tariff. Given the considerable economic impact of fare evasion, this study aims at identifying the factors that explain fare evasion. To investigate the socio-demographic correlates and motivations of fare evasion, a stated preference survey was conducted in Flanders, the northern part of Belgium. In total, the survey collected valuable information of 636 respondents. The result of two logistic regression models, i.e. a model predicting personal fare evasion, and a model predicting acquaintances' fare evasion, indicate that only a very limited number of factors help in profiling the typical fare evader. In terms of socio-demographics, age and gender are uncontested predictors for fare evasion: younger travellers and male travellers have the highest likelihood to evade fares. For public transport operators this implies that marketing campaigns against fare evasion should be especially tailored to this subgroup for maximal impact. Besides socio-demographics, perceptions of ticket prices and perceptions with respect to the control probability are directly impacting evasion rates. To further unravel the motivations of fare evasion a shift towards a more psychological approach or the use of qualitative techniques seems promising.

1. Introduction

Although large scale corporate frauds catch the headlines of newspapers and the attention of the public opinion, it is the small scale cheating of ordinary people like cheating on taxes, stealing from the workplace and using public transportation (PT) without paying fares, that has the largest social and economic consequences (Bucciol et al., 2013). Fare evasion has become a component of society, in the same way as shoplifting or fraud at gas stations (Bonfanti and Wagenknecht, 2010). Fare evasion occurs when passengers gain access to public transport by interacting with fare controls in manners that are inconsistent with the tariff (Reddy et al., 2011). When transit customers pay fares, they contribute their fair share to help fund the service. But when these fares are evaded, financial resources available to operate comprehensive and reliable transit are reduced.

Bonfanti and Wagenknecht (2010) examined fare evasion in a sample of 800 million passengers around the world and measured an average of 4.2\% fare evaders. Furthermore Bonfanti and Wagenknecht (2010) underlined that on average, 43\% of fare controls by inspectors lead to a collection of fines. Although financial consequences are not estimated by Bonfanti and Wagenknecht (2010), it is evident that financial losses are not negligible. Lee (2011) indicated that for the San Francisco Municipal Transportation Agency these losses amount to an estimated $19 million annually in uncaptured revenue on the basis of 2009 fares. Similarly, Currie and Delbosc (2017) highlighted that in Melbourne Australia losses amounted to €35 million annually (average 2005–2011), corresponding to 11.6% of the ridership (in May 2012).

Given the considerable economic impact of fare evasion, this study aims at identifying the factors that explain fare evasion. With these determinants a profile can be sketched of a typical evader, which is essential for tailoring remedial policy measures. To sketch this profile, in addition to socio-demographic characteristics and transportation characteristics, this study incorporates perceptions of the tariffs of public transport, fare evasion checks, and fines on fare evasion. Besides the incorporation of these perceptions, this paper contributes to the state-of-the-art by integrating the motivations/reasons to evade fares and by analysing not only the personal fare evasion behaviour, but also the fare evasion behaviour of acquaintances.

The remainder of the text is organized as follows. In the next section, a literature review is provided. Consequently, the data that was

* Corresponding author at: University of Liège – ArGEnCo/UEE – Local Environment Management & Analysis (LEMA), Quartier Polytech 1, Allée de la Découverte 9, BE-4000 Liège, Belgium.
E-mail address: mario.cools@ulg.ac.be (M. Cools).

http://dx.doi.org/10.1016/j.cstp.2017.10.007
Received 27 September 2016; Received in revised form 8 October 2017; Accepted 11 October 2017
2213-624X/ © 2017 World Conference on Transport Research Society. Published by Elsevier Ltd. All rights reserved.

collected to identify the determinants of fare evasion are described and the methodology to perform the analysis is highlighted. Next, the results are presented and discussed. Finally, the main conclusions and policy implications are underlined and some avenues for further research are indicated.

2. Literature review

In Europe, fares cover on average 50% of the operating costs (Brueckner, 2005). There are a multitude of reasons explaining this relatively low share. One of the reasons is fare evasion. Bijleveld (2007) indicated that fare evasion pulls down the incomes of the public transportation companies. Consequently passengers should be inspected, which constitutes another large cost. Inspection implicates delays, which decreases reliability, and when fare evaders are prosecuted, additional costs fall on the police and the criminal justice system (Clarke et al., 2010).

Bonfanti and Wagenknecht (2010) determined the most efficient tools to fight fare evasion. These tools are the employing of inspectors, police partnerships, increasing the duties and level of power given to the ticket inspectors and innovative types of tickets. Thus, human tools exhibit a high level of effectiveness in preventing fare evasion, whereas technical tools are considered to have a medium level of effectiveness. In this context, Guarda et al. (2016) demonstrated that inspection strategies can be cost-effective even when fare evaders are not given a fine.

To determine the required level of inspection, the relationship between the public transport revenues and inspection rates need to be investigated. Boyd et al. (1989) constructed a simple model that allowed the determination of the profit-maximising inspection level. Barabino et al. (2013) calibrated a profit maximization model for estimating the optimum level of inspection using data available from an Italian transit operator, resulting from 98 days of checks and 3659 completed on-board interviews and found an optimal value of the total inspection rate of 4.5%. Using a more elaborate test data set, comprising of 27,514 stop-level inspections and 10,586 on-board personal interviews, Barabino et al. (2014) refined their analysis and showed that the optimum inspection level is 3.8%. Finally, the determination of the optimal inspection level could be analysed using a bi-level programming problem, in which the leader (the public transport operator) determines the probabilities for inspecting passengers at different locations, while in the second level, the followers (the fare-evading passengers) respond by optimizing their routes given the inspection probabilities and travel times (Correa et al., 2017).

Fare evasion evokes anti-social and criminal behaviour related with attempts to avoid enforcement. According to Dauby and Kovac (2007), the attitude to evade fares is distributed in three groups: five percent of the population is persistently dishonest, ten percent is persistently honest and the other eighty five are opportunistic fare evaders, which means that they will try to evade fares when the perceived chance of being caught is smaller than the perceived chance of getting away with it. Similar to Dauby and Kovac, Delbosc and Currie (2016a) found three groups of fare evaders, using a web-based survey administered to residents of Melbourne, Australia. Adopting a two-step cluster analysis the following three clusters were obtained: deliberate evaders, unintentional evaders and never-evaders. Besides differences in public transit use, the clusters also had distinct personality differences; deliberate evaders were more likely to be sensation-seekers and believed it was acceptable to evade fares for money saving purposes. Using qualitative research (i.e. focus groups), Delbosc and Currie (2016b), found four groups of fare evaders. In comparison to their quantitative analysis (Delbosc and Currie, 2016a), in the qualitative analysis the deliberate evaders have been further subdivided into calculated risk-takers and career evaders, exhibiting differences in terms of frequency of fare evasion, intentions and feelings about fare evasion and their personal view of fare evaders.

Several studies tried to sketch the profile of a fare evader, i.e. determining the personal characteristics that are associated with an increased likelihood to evade fares. Lee (2011) concluded that in San Francisco, California there we no typical fare evaders. In contrast, Bucciol et al. (2013) found in their study in Reggio Emilia (Italy) that teenagers are 9.1% more likely to evade fares than an adult person. Moreover, they found that males are 16.5% more likely than females to evade fares, and non-European immigrants are 15.6% more likely than natives and European immigrants. Similar to Bucciol et al. (2013), Barabino et al. (2015) found that young people are more likely to evade fares, and that fare evasion is more common among males. The gender effect is further acknowledged by DeAndrea et al. (2009), who revealed that gender and sensation-seeking are strong determinants of cheating behaviour: men tend to engage in cheating more frequently than females and sensation-seeking was found to be positively related to cheating. Additional evidence for the gender effect is provided by Eddy (2010), who concluded that males are 36% more likely to commit fare evasion than females. Concerning the age effect, Eddy (2010) found a contrasting view and concluded that adults are more likely to commit fare evasion in comparison to youth. Besides age and gender, Barabino et al. (2015), indicated that low levels of education and unemployed and students are more likely to evade fares.

Next to the socio-demographic factors, there are also other factors that influence fare evasion. Bucciol et al. (2013) for instance found that clothing and weather also impact fare evasion: passengers who are poorly dressed are 26.5% more likely to evade fares than passengers with regular dressing, and fare evasion is 16.1% more likely on a warm day. Bucciol et al. (2013) also addressed the social dimension of fare evasion: fare evasion is 20.1% less likely when travelling with relatives. Besides, also travel characteristics are important. Bucciol et al. (2013) reported that fare evasion was found to be more likely for shorter trips. A similar conclusion was formulated by Barabino et al. (2015) who found that people who make trips of less than 15 min are more likely to evade fares.

In terms of perceptions on fare evasion, Bucciol et al. (2013) found no correlation between fare evasion and the beliefs regarding either the fine amount, or the percentage of other people fined. In contrast, holding no ticket is more likely when the passenger perceives the ticket inspections are in more than 50% of the rides. The latter is in contrast with Barabino et al. (2015) who found that a low level of inspection makes people more probable to evade fares. Besides, Barabino et al. (2015) indicate that the level of satisfaction with the public transport service, the knowledge of the fines, and previous ticket violations are determinants of fare evasion. Finally, the some trip details and enforcement characteristics play are role, as indicated by Lee (2011). Lee (2011) showed that fare evasion varies greatly by route and location, time period, level of enforcement and door of entry. The study highlighted that fare evasion increased as the day progressed. The amount of fare evasion changes disproportionally with the level of enforcement. Furthermore, back-door boarding appears to facilitate fare evasion.

3. Data

To investigate the socio-demographic correlates and motivations for fare evasion, a web-based survey was administered in Flanders, the northern part of Belgium. The total population of this region amounted to 6.4 million inhabitants in 2013, which made on average 2.76 trips a day (Declercq et al., 2014). From these 2.76 trips per day, 3.49% was realized by bus/tram/metro and 1.74% by train (Declercq et al., 2014). The questionnaire was introduced as a stated preference study about the effect of free public transport (Cools et al., 2016). To counter socially desirable responses, the survey was established on an anonymous base.

The survey was administered from mid-November 2012 to late January 2013 and was completed by random individuals, which are assumed to make their own transport decisions (over 17 years of age).

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
✓ امکان دانلود نسخه ترجمه شده مقالات
✓ پذیرش سفارش ترجمه تخصصی
✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
✓ دانلود فوری مقاله پس از پرداخت آنلاین
✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات