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Trade-off across privacy, security and surveillance in the case of metro travel in Europe

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Abstract

Privacy issues related to mass surveillance received unprecedented attention in 2013 and 2014. While the debate so far has focused on internet-based surveillance, the concerns raised by increased awareness of state surveillance capabilities have far reaching consequences for discussions on legislation relating to security, privacy and liberty in a range of domains.

Focusing on train/metro travel we investigate whether Europeans perceive similar security and privacy issues as have been raised in recent discussions about surveillance. This paper presents preliminary findings from the empirical phase of PACT, a three year pan-European project. PACT has as its centerpiece a large scale survey of privacy & security preferences. The survey is designed to elicit respondents' preferences related to various security and privacy aspects involved in three contexts, including train/metro travel. Using data from the pilot we demonstrate the application of stated preference methods in the context of security and privacy. The stated -preference exercise gathers preferences related to CCTV, CCTV data handling, type of security personnel, type of physical security check, delay due to security checks, and cost of security/surveillance. Using discrete choice models to estimate willingness to pay for different security/surveillance features we aim to provide the missing evidence on valuation of public security and surveillance.

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1. Background

With the ever evolving landscape of security concerns regarding transportation infrastructure, there has been an extensive public debate about how individual preferences can be incorporated into the process of policy–decision making. This is particularly important when it comes to investment decisions concerning security technologies, which aim to provide a greater level of security to travelers. This debate is especially pertinent where such security infrastructure has the potential to impinge upon privacy (Salter, 2008).

Mass transit systems can be both the means and the targets of terrorist attack. In recent years, public transport systems have been targets in several terrorist attacks worldwide due to their vulnerability and ease of access. This includes attacks in Madrid in 2004 and London in 2005. In addition, the attack on transport infrastructure can cause panic, disruption, and fear among the public. Safety and security issues have thus received more attention in recent years. In response to the security threats, travel authorities are adopting a wider range of security measures to try and mitigate the risk of such events occurring again.

However, increased security and surveillance measures – in many cases – require travelers to compromise their privacy. For example, CCTV cameras are increasingly becoming a ubiquitous feature on metro/train facilities. The recent mass surveillance related revelations have elevated the importance of discussion related to storage and sharing of CCTV data (Bigo et. al., 2013). This is especially critical as the CCTV cameras get sophisticated capabilities such as face recognition.

PACT – ‘Public perception of security and privacy: Assessing knowledge; Collecting evidence, Translating research into action’ a 7th European Framework Programme project[†] investigates the security and privacy issues in detail. PACT is a three year project aimed at understanding the public perception of security and privacy across 27 European Member States. A key part of this project is a pan-European survey. The findings from the survey will inform the debate on privacy and security. The survey uses stated -preference experiments to estimate people’s preferences and willingness to pay for security and surveillance measures. These findings can also provide a missing link on public valuation of security/surveillance measures to support decision-making regarding security infrastructure investment.

The aim of this paper is to share the preliminary findings of the PACT project focusing on individual preferences related to security and privacy issues in the context of train/metro travel. In particular, the objectives of this paper are to determine the key factors driving individuals’ choice between alternative scenarios of train/metro travel and to estimate willingness-to-pay (WTP) for specific aspects of security and surveillance.

The paper is organized as follows. Firstly, we discuss the development of the stated preference experiment followed by the description of pilot data. Next, we report the findings from the pilot data analysis including WTP estimations. The final section contains conclusions and describes the future work to be undertaken in the analysis of the main survey.

2. Survey instrument

We use a survey based around a stated -preference experiment in order to objectively measure respondents’ preferences to different levels of security and privacy characteristics in the context of train/metro transport. Stated -preference methods have been used extensively in the fields of marketing, transport demand analysis and environmental science (Louviere and Woodworth, 1983; Louviere, 1992; Louviere et al., 2000; Ryan et al., 2001). Using experimental design, the researcher constructs a series of hypothetical choice scenarios. In each choice scenario the respondent indicates the most preferred alternative (Fig. 1). Analysis of these preferences can yield information on the relative importance of the attributes used to describe the alternatives.

Potoglou et al. (2010) and Veisten et al. (2011) have recently used the stated preference experiments in the field of travel security and privacy. Veisten et al. (2011) focus on air travel and do not consider type of security measures

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