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# Transportation Research Part A

journal homepage: [www.elsevier.com/locate/tra](http://www.elsevier.com/locate/tra)

## Why experience changes attitudes to congestion pricing: The case of Gothenburg



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### ARTICLE INFO

#### Article history:

Received 11 August 2014

Received in revised form 5 December 2015

Accepted 15 December 2015

Available online 12 January 2016

#### Keywords:

Congestion pricing

Acceptability

Attitudes

Gothenburg

### ABSTRACT

Many cities have seen public support for congestion charges increase substantially after charges have been introduced. Several alternative explanations of this phenomenon have been suggested, but so far little evidence has been available to assess the relative importance of these explanations. We study attitudes to congestion pricing in Gothenburg before and after congestion charges were introduced in January 2013. Attitudes to the charges did indeed become more positive after the introduction, just as in previous cities. Using a two-wave postal survey, we separate contributions to the attitude change from a number of sources: benefits and costs being different than anticipated, use of hypothesized revenues, reframing processes, and changes in related attitudes such as attitudes to environment, equity, taxation and pricing measures in general. We conclude that the dominant reason for the attitude change is status quo bias, rather than any substantial changes in beliefs or related attitudes, although some of these factors also contribute. Contrary to a common belief, nothing of the attitude change is due to benefits being larger than anticipated.

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## 1. Introduction

The main obstacle for introducing congestion pricing is often public resistance. However, several cities have reported that public support for congestion pricing has increased substantially after congestion charges have been introduced. Examples include London (Schade and Baum, 2007), Stockholm (Eliasson, 2014; Eliasson and Jonsson, 2011), Trondheim, Bergen and Oslo (Tretvik, 2003), United States (Zmud (2008) quoted in Anas and Lindsey (2011)), and Milan (Ozer et al., 2012). There is also some evidence for the phenomenon in Singapore (Gopinath Menon and Kian-Keong, 2004). Several explanations for this phenomenon have been hypothesized, but so far there has been little conclusive evidence as to which of the potential explanations are the most important. The suggested explanations are not mutually exclusive, so they may all contribute to some extent. The purpose of this paper is to determine their relative importance in a specific case, namely the introduction of congestion pricing in January 2013 in Gothenburg, Sweden's second largest city. Just as in the cases cited above, public attitudes in Gothenburg did indeed become substantially more positive after the introduction.

Based on an extensive before/after survey of public attitudes, we estimate models where respondents' attitudes to congestion charges are explained by variables such as expected toll payments, value of time, socioeconomic factors, beliefs about effects, and attitudes to related issues such as environment, equity, taxation, government and pricing policies in general. By comparing models and variables before and after the introduction, the contribution of each variable to the attitude

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change can be determined. As a side result, we can also identify which groups have changed their attitude. To our knowledge, this is the first survey of its kind.

In the public debate, the most common explanation of the increased public support after the introduction is that benefits turn out to be larger than anticipated. But several other mechanisms have been hypothesized, such as hypothecation of revenues, changes in related attitudes, reframing, and various forms of status quo bias. We test seven hypotheses that may explain the increased public support, which have all been suggested in the public debate or in the scientific literature:

- (H1) *Larger benefits than expected.* The support for charges may increase after introduction because benefits such as reduced congestion and improved urban environment turn out to be larger than expected. This is by far the most common explanation, put forward for example in a prescient paper by [Goodwin \(2006\)](#).
- (H2) *Smaller downsides than expected.* Several authors have pointed out that adverse effects tend to be exaggerated before the introduction. Resistance may decrease after introduction if problems such as increased public transport crowding and decreased inner-city retail turn out to be less serious than anticipated. In addition, adapting to the charges may seem more costly beforehand than it actually turns out to be ([Eliasson, 2008, 2014](#); [Henriksson, 2009](#)).
- (H3) *Benefits of accompanying measures.* Introduction of congestion charges is often accompanied by improvements in the transport system, for example in alternative modes or routes. These improvements are often paid for by (hypothecated) charge revenues, or at least marketed as part of a charges/infrastructure package. An increased satisfaction with for example the public transport system might spill over to an increased support for the charges. Several authors have argued that a “package approach” with accompanying measures is key for achieving acceptance for congestion pricing ([Gopinath Menon and Kian-Keong, 2004](#); [Jones, 1991](#)).
- (H4) *Changes in related attitudes.* Attitudes to congestion charges tend to be influenced by other attitudes and values, such as environmental concerns, concerns about social equity, trust in government, and acceptability of general pricing principles such as user pricing, polluter pricing and scarcity pricing ([Eliasson and Jonsson, 2011](#); [Frey, 2003](#); [Hamilton et al., 2014](#); [Raux and Souche, 2004](#)). The debates and campaigns surrounding the introduction of congestion charges, and possibly the experience of them, may affect these other attitudes, which may then influence the attitude to congestion charges as a second-order effect. For example, it has been suggested that part of the increased support in Stockholm was caused by an increased acceptance of pricing policies in general ([Börjesson et al., 2012](#)).
- (H5) *Reframing.* The strength with which various attitudes and values are associated with, and hence influence, the attitude to congestion charges may change over time, in particular if congestion charges are *reframed*, i.e. interpreted or marketed in a different way. For example, if congestion pricing is reframed from a fiscal policy to an environmental policy, it would be expected that the influence of self-interest and attitudes to taxation becomes relatively weaker compared to the influence of environmental concerns. How policies are framed often has a crucial effect on public support; [Heberlein \(2012\)](#) provides several examples.
- (H6) *Loss aversion.* It is well established that losses are valued proportionally higher than gains in situations where there is a clear point of reference ([Tversky and Kahneman, 1991](#)). Hence, one might expect that increases in travel costs are valued higher before congestion pricing is introduced than afterwards, and improved travel times are valued higher after the introduction than before. Both phenomena would imply that car drivers would become more positive after the introduction than before. Note that this is different from benefits being larger (H1) or adverse effects smaller (H2) than expected; loss aversion refers to the phenomenon when effects are *valued* differently after a change, even when their *objective* size is correctly assessed.
- (H7) *Status quo bias.* Status quo bias refers to situations when preferences for a policy are asymmetric – lower beforehand than afterwards. It may be caused by loss aversion, but can also be caused by cognitive dissonance (resistance tends to decrease if a change seems inescapable beforehand or irreversible afterwards) or resistance to changes as such, regardless of tangible losses or gains. Status quo bias of various kinds have been suggested to be a contributing factor to the increased support once congestion pricing is introduced ([Brundell-Freij et al., 2009](#); [Eliasson, 2014](#)) or seems inevitable ([Schade and Baum, 2007](#)).

The paper proceeds as follows. Section 2 briefly summarises the story of the Gothenburg congestion charges, and Section 3 describes the survey data collection. The attitude to the congestion charges was measured as the stated voting intention in a referendum about the congestion charges, on a 5-grade scale from “most likely yes” to “most likely no”. The survey also measured respondents’ attitudes to a large number of potentially related issues, such as environment, social equity, taxes and the fairness of pricing in different contexts.

Section 4 describes the changes in attitudes and beliefs. We show that the attitude to the charges did indeed become more positive, and by describing the changes in beliefs and potentially related attitudes, we get a first indication of whether such changes may have contributed to the more positive attitude to the charges (mechanisms H1–H4).

In Section 5, we estimate econometric models where respondents’ attitudes to congestion charges are explained by their beliefs about the effects, how they are affected by the charges (for example how much tolls they pay or expect to pay), and potentially related attitudes (e.g. environmental concerns). Using factor analysis, we first identify how a number of attitude questions in the survey can be combined into four more general attitude factors, and these are then included in the econometric models. Through the models, we can measure how much changes in attitudes and beliefs contribute to the change in the attitude to the charges, and hence test (H1)–(H4). By comparing models before and after the introduction of the charges,

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