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## The happy commuter: A comparison of commuter satisfaction across modes



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### ABSTRACT

Understanding how levels of satisfaction differ across transportation modes can be helpful to encourage the use of active as well as public modes of transportation over the use of the automobile. This study uses a large-scale travel survey to compare commuter satisfaction across six modes of transportation (walking, bicycle, automobile, bus, metro, commuter train) and investigates how the determinants of commuter satisfaction differ across modes. The framework guiding this research assumes that external and internal factors influence satisfaction: personal, social, and attitudinal variables must be considered in addition to objective trip characteristics. Using ordinary least square regression technique, we develop six mode-specific models of trip satisfaction that include the same independent variables (trip and travel characteristics, personal characteristics, and travel and mode preferences). We find that pedestrians, train commuters and cyclists are significantly more satisfied than drivers, metro and bus users. We also establish that determinants of satisfaction vary considerably by mode, with modes that are more affected by external factors generally displaying lower levels of satisfaction. Mode preference (need/desire to use other modes) affects satisfaction, particularly for transit users. Perceptions that the commute has value other than arriving at a destination significantly increases satisfaction for all modes. Findings from this study provide a better understanding of determinants of trip satisfaction to transport professionals who are interested in this topic and working on increasing satisfaction among different mode users.

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## 1. Introduction

In recent years, the study of commuter perceptions and satisfaction has become increasingly prevalent in the field of transportation. As researchers and policy makers seek to encourage the widespread use of active and public transportation, it is essential to understand the multifaceted issue of trip satisfaction, and its implications for travel behaviour.

This research compares commuter satisfaction with six different modes of transportation (walking, bicycle, automobile, bus, metro, commuter train), and investigates how the determinants of satisfaction differ across modes. This objective is based on the premise that trip satisfaction is affected not only by external trip characteristics, but also influenced by less

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tangible, internal factors such as attitudinal and personal variables related to the commuter him/herself. The research framework adopted in this study is illustrated in Fig. 1. It shows that personal characteristics, travel and mode preferences, as well as trip and travel time characteristics can be placed on a continuum from internal to external, and all have influences on trip satisfaction. This framework is inspired by previous work which conceptualizes travel behaviour as being influenced by three factors: the spatial component, the socio-economic component and the personality component (lifestyle and attitude) (van Acker, van Wee, & Witlox, 2010; Willis, Manaugh, & El-Geneidy, 2013).

This study is based on a university-wide commuter survey conducted in Montreal, Canada, in the spring of 2013, and uses a sample of 3377 single-mode commuters. Pedestrians and cyclists are considered as separate active transportation users, and bus, metro, and train commuters as separate public transit users. Although these modes have previously been grouped together – or even ignored – in travel behaviour studies, their inclusion as distinct modes is expected to yield more nuanced findings about their differences with regard to commute satisfaction. Alternatively, certain factors may be associated to higher levels of satisfaction for various sustainable modes, in which case policy makers can more easily promote the uptake of these forms of transport.

To better understand how commuter satisfaction varies between the six modes, we ask how satisfaction is influenced by various external and internal determinants, and how this varies across modes. The paper starts with a review of the literature on trip satisfaction, focusing on factors affecting satisfaction that have been discussed in previous studies. Then we present the data used, and discuss the statistical methods – ANOVA and OLS regression – applied to analyse the data. Then we present the six mode-specific models of trip satisfaction developed to compare the significance and the effect of different external and internal variables across modes. The paper concludes with a discussion of the results and makes suggestions for future transportation studies and policy-relevant interventions.

## 2. Literature review

The increased attention recently given to trip satisfaction as an integral step to the promotion of sustainable modes of transport has been part of a larger shift in the field of transportation towards the study of travel behaviour. Conceptual and empirical studies have progressively combined theories of transport geography and social psychology. For example, van Acker et al. (2010) make clear that travel decisions and perceptions depend on individual opportunities and constraints, which are embedded in social and spatial environments that hold their own set of opportunities and constraints. Additionally, other social psychology theories have been incorporated in transportation research, such as social value orientations (van Vugt, Meertens, & van Lange, 1995), and the theory of planned behaviour (Anable, 2005). Travel behaviour, therefore, is influenced by factors external and internal to the individual. While the attention paid to external factors in travel behaviour studies comes from traditional transport geography theory (activity-based, built environment), the additional inclusion of internal variables i.e. socio-demographics, personality, attitudes, preferences, and habits – results from the incorporation of social psychology theories (van Acker et al., 2010). With this research framework in mind (see Fig. 1), we review the literature in three areas: first, we briefly define satisfaction and discuss how it can be measured; second, we examine how satisfaction can vary across modes and how these modes rank in relation to each other; and third, we review variables previously studied and found to influence trip satisfaction.

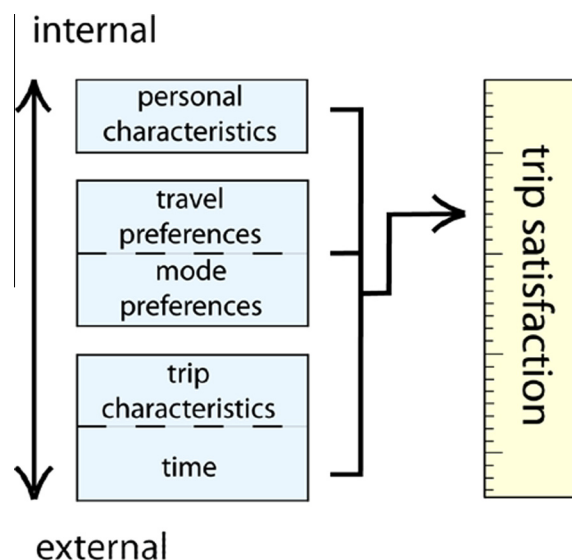


Fig. 1. Research framework.

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