



Am stressed, must travel: The relationship between mode choice and commuting stress



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ABSTRACT

The stress of commuting has serious public health and social implications. By comparing stress across different modes it is possible to determine which modes are more heavily contributing to this potential health and social issue. This study uses a large-scale university travel survey to compare commuter stress across three modes of transportation (walking, driving, and using public transit). It also investigates the specific factors that contribute to stress using these modes. Using ordered logistic regressions, the study develops a general model of stress and three mode-specific models. Results show that driving is the most stressful mode of transportation when compared to others. We also find that stressors for some modes are not stressors for others. Knowing which specific factors make certain modes stressful will help transportation and public health professionals make commuting a safer, more enjoyable, and less stressful activity; in turn this could mitigate the potentially serious health outcomes of a stressful commute.

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1. Introduction

Many recent studies in transportation have focused on the personal experience of commuters. A person's satisfaction with their trip, overall life satisfaction, and stress experienced while commuting have become increasingly crucial parts of our understanding of travel behavior, especially regarding mode-choice. Mode-switching may be inhibited because certain physical and mental health implications are associated with a mode (Abou-Zeid, Witter, Bierlaire, Kaufmann, & Ben-Akiva, 2012). Findings from studies that focus on the personal experiences of commuters can have real policy implications by suggesting that factors that may inhibit the uptake of more sustainable modes of transportation should be minimized, while factors that make these modes more attractive to users should be explored.

Stress is one of the most serious physical and mental health implications of commuting. Almost all commuting can be stressful—rushing to get to work or school in the morning is often an unpleasant experience—and some modes may be causing more stress than others. Discovering the mode-specific factors that contribute to a stressful commute highlights where policy focused on increasing sustainable mode-share can be effective. Sustainable mode use can be made more attractive by minimizing the factors that make sustainable modes stressful. Perhaps more importantly, commuting is almost ubiquitous: a hefty share of any population travels daily and, correspondingly, the stress experienced while commuting affects a large number of people.

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Factors contributing to stress during a commute can be broadly grouped into two categories (Novaco, Stokols, & Milanese, 1990). First, there are objective or environmental stressors. These stressors negatively impact a person's control or comfort while commuting. Second, there is the subjective experience of these stressors, which are influenced by (for example) the satisfaction a person has with a mode. These personal subjective factors act as a filter through which objective stressors are experienced. This interaction between personal experience and objective stressors is derived from the work of Novaco et al. (1990) and Koslowsky (1997), and is shown in Fig. 1.

In order to better understand the factors leading to a stressful commute, this study uses a large-scale university travel survey to compare commuter stress across three modes of transportation (walking, driving, and using public transit) during a cold snowy day. By highlighting which factors lead to stress on different modes, transportation planners, engineers and policy makers can better understand the factors that can make the commute more enjoyable and provide a less stressful experience.

2. Literature review

What is stress? Lazarus and Launier (1978) define stress as a situation where the environment overwhelms the person: “these relationships refer neither to person nor environment as separate variables, but they describe a balance of forces such that environmental demands tax or exceed the resources of the person.” Other seminal work on stress echo this definition (see, for instance, Fink, 2000; Selye, 1976). Furthermore, commuting has been linked to stress numerous times (for a review see, Novaco & Gonzales, 2009). The experience of being stuck in traffic or waiting for a delayed train is understandably a hardship and quite common. These and other demands experienced while commuting often lead to stress. Yet, the relationship between commuting and stress is not clear. For example, just because a delay is experienced does not mean that the user experiencing that delay is necessarily stressed.

2.1. The effects of stress

Commuting stress (especially if it is unduly associated with specific modes) may inhibit people switching to a more sustainable mode of transportation. Certainly, this is a concern. Also of concern are the potential public health effects of stress, and, consequently, the serious health and life satisfaction implications of stressful commuting. Longer commutes by car, for instance, have been related to an increased risk of heart attack and obesity (Hoehner, Barlow, Allen, & Shootman, 2012). In particular, the stress of commuting has been linked to poor quality sleep, exhaustion, depression, and feelings of poor health (Gee & Takeuchi, 2004; Hansson, Mattisson, Björk, Östergren, & Jakobsson, 2011). Commuting stress has also been shown to negatively impact a person's ability to focus or complete tasks (Wener, Evans, & Boatley, 2005). Poor job performance and shortened job tenure, no doubt exacerbated by these health and mental effects, are also linked to commuting stress (Koslowsky, Kluger, & Reich, 1995; Novaco et al., 1990).

Nevertheless, the view that commuting, and travel in general, is an unavoidable burden has come under much criticism. Mokhtarian and Salomon (2001) have argued that travel is not always a derived demand. Rather, travel, including commuting, can be enjoyed for its own sake. A recent study showed that travel is linked to higher life satisfaction (Ory et al., 2004). Morris and Guerra (2014) have argued that those who are happy are more likely to travel. A recent Swedish study demonstrated that feelings while commuting are generally positive or neutral (Olsson, Garling, Ettema, Friman, & Fujii, 2013). Enjoying one's commute may be linked to notions of a desired minimum distance between a person's home and work locations. Commuting time may be enjoyed as a time to decompress or unwind, and as a necessary transition between home and work. Interestingly, this may have an effect on stress as well. Those who have no commute report being more stressed than

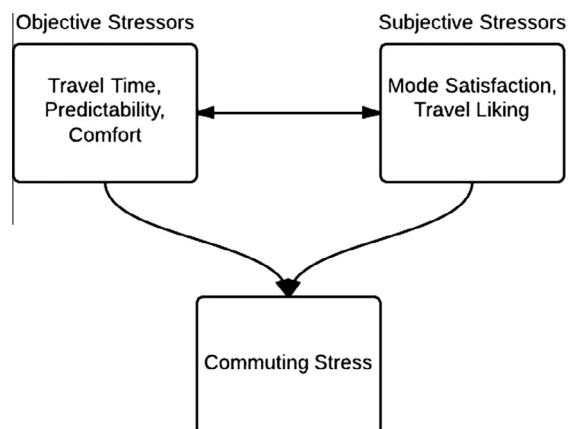


Fig. 1. Study framework.

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