



# Understanding the effects of transit benefits on employees' travel behavior: Evidence from the New York-New Jersey region



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## ABSTRACT

Implementing effective travel demand management measures provides an opportunity to reduce transport dependence on the private car. There is growing acknowledgement that the strategy of implementing transit benefits may boost transit ridership and reduce personal vehicle use. This research contributes to the understanding of this issue by examining the relationship between commuter benefits and mode choice for commuting trips in the states of New York and New Jersey (US). Based on individual data from the Regional Household Travel Survey conducted by the New York Metropolitan Transportation Council and North Jersey Transportation Planning Authority, we adopted a multinomial logit model to identify the extent to which transport benefits to employees – including public transport-related, private transport-related and benefits for walking and cycling – promote changes in commuters' modal split. The analysis shows that commuter benefits play a significant role in explaining observed travel patterns. Benefit programs that pay for auto expenses (e.g. toll payments, mileage reimbursement, free parking) are negatively correlated with transit, biking, and walking, while employer-funded benefit programs for transit passes and bike reimbursements increase their respective mode shares. This result confirms that promoting these types of measures is an effective policy to encourage the use of public transport modes, thus increasing efficiency and sustainability in daily mobility patterns.

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## 1. Introduction

Since their first implementation in the 1970s, transportation demand management (TDM) programs have been used as policy mechanisms to tackle transportation-related problems such as air pollution or traffic congestion. In its broadest sense, they include a wide range of measures that are geared towards improving the efficiency of travel demand. As pointed out by Meyer (1999), TDM programs can be regarded as either actions that are implemented at specific sites, or strategies that are implemented at an area-wide level. In this paper, we focus on the first dimension of these policy tools: TDM programs at employer worksites.

Employer benefits programs—often referred to as ‘commuter benefits’—are aimed at reducing the share of employees driving to work alone through various incentives, disincentives, or marketing tools (Dill and Wardell, 2007). In its broader

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sense, commuter benefits can be defined as any option or set of options which employers provided to employees aimed at influencing their travel behavior, including benefits for driving (e.g., toll payments, subsidized parking), using public transportation (e.g., monthly passes, universal passes, or vouchers), and walking or cycling (e.g., financial incentives for bicycling or walking, or secure bike parking).

Ever since these benefits were put into effect, there has been an increasing recognition that these options may effectively persuade and induce workers to change their transportation habits. Consequently, several evaluations have sought to explain the effect of employer-paid benefits such as free parking (Hess, 2001; Shoup and Willson, 1992) and free and discounted transit pricing on commute mode choice (Boyle, 2010; Zhou and Schweitzer, 2011).

However, as pointed out by the [Transit Cooperative Research Program \(2005\)](#), “the impacts on employee travel behavior are not as well understood and little rigorous research has been conducted on the topic at a national scale”. In addition, although commuter benefit packages are supposed to influence mode choice decisions, some authors have acknowledged that only few contributions on commuter mode choice concurrently include variables measuring benefits for driving, public transportation, walking, and cycling (Hamre and Buehler, 2014). Furthermore, according to the authors themselves, the relationship between commuter benefits and the likelihood to walk and cycle has been scarcely explored until very recently.

By recognizing the potential of commuter benefits to promote more sustainable transportation habits, this paper investigates the links between them and modal selection for commuting trips in the states of New York (NY) and New Jersey (NJ) in the US. Particularly, this research is aimed at determining to what extent employee benefits can incentivize changes in daily travel behavior. This study contributes to the literature in three ways. First, it covers an interesting case in the international context given that it is among the most populated and transit-intensive areas in the US, not studied in great detail before. In this respect, the results of this paper come up with useful policy implications regarding the promotion of sustainable transport behavior. Second, to our knowledge, this is among the few works concurrently exploring commuter benefits for driving as well as walking, cycling and public transportation, as factors influencing individual decisions to commute by using revealed preference data via a household travel survey. Finally, it comparatively analyses the effect of the benefits with other research previously conducted. This is particularly useful to contrast our results with the existing literature.

The document is structured as follows. Section 2 provides a literature review on the topic, concluding with some research gaps, and outlines also the expected contributions of the present work. Section 3 briefly summarizes the main socioeconomic characteristics and mobility patterns for the states of NY and NJ. Section 4 describes the methodology adopted to model individuals' choices for commuting trips, and shows the RHTS survey and the explanatory variables considered for the analysis. Finally, Section 5 presents and discusses the results, and establishes a set of conclusions and recommendations for additional research in this field.

## 2. Literature review

Ever since sustainability emerged as a key priority in transportation planning, there has been growing interest in promoting sustainable transportation policies. Consequently, several travel demand management measures have been proposed in many different contexts—a complete overview at this point can be found in Loukopoulos (2007). Some of these strategies are sure means of changing travel related choices. As acknowledged by Garling et al. (2002), they lie from those measures that discourage car use to those policies encouraging the use of alternative modes. The latter are often called pull measures—i.e. improving public transport, improving infrastructure for cycling and walking or increasing the level of public transport subsidies—while the former are generally referred to as push measures—i.e. restricting parking availability, taxation on cars and fuel, decreasing speed limits, implementing road pricing mechanisms.

An important TDM strategy has been providing transportation subsidies and benefits to employees including toll/mileage reimbursements, public transport payments, free car parking and incentives for walking and cycling such as the provision of showers, lockers and bike parking. The literature review in this section will be mainly focused on these benefits as potential determinants of transport mode choice. Furthermore, we point out some useful insights of recent developments and mention some gaps found in the literature.

Employer TDM programs are sometimes difficult to evaluate because they are diverse in scope and involve individual behavior patterns, which are complex and difficult to model (Dill and Wardell, 2007). Overall, commuter benefits have been examined by using surveys as part of programs evaluation and a variety of statistics reported after or before introducing commuter benefits. For example, Herzog et al. (2006) conducted a survey of firms acknowledged as best workplaces for commuters in the metropolitan areas of Denver (Colorado), Houston (Texas), San Francisco (California) and Washington, DC. The study was aimed at determining the differences between the commuting patterns of individuals who receive employee commuter benefits and those who do not. This relevant research concluded that employees being offered public transportation benefits are significantly less likely to drive alone.

Another important contribution exploring the influence of transit benefits offered to employees was conducted under the [Transit Cooperative Research Program \(2005\)](#). The study was based on surveys focused solely on people who receive a transit benefit, surveys applied before and after the implementation of transit benefits or surveys to commuters in general. Overall, the results from this study suggested that transportation benefits for employees can produce an increase in transit use in some circumstances as well as an increase in new transit riders.

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