Painting the fence: Social norms as economic incentives to non-automotive travel behavior

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Abstract

Research exploring the behavioral economic dimensions that drive travel has shown that social and psychological forces often play a role equal to price and economic levers. Yet, more work is needed to evaluate how financial versus social market norms influence economic decisions with regard to transportation. For this study, roughly 500 participants were offered differing incentives in four identical trials. These randomly assigned incentives included various monetary amounts, a free gift, or a social nudge tapping into altruistic values (in this case, benefits to the environment). After tests for homogeneity, the results showed the social nudge had a high degree of effectiveness, when compared to both the financial incentives and gifts. Furthermore, the results indicated that mixing financial and social norms caused both to be less effective. These findings suggest that fiscal incentive programs used to influence travel decisions may be lacking. In fact, this research suggests a new focus on behavioral economics in travel programs, and more emphasis on social norms and values as tools to facilitate changes in travel behaviors and nudge individuals to more healthy and climate-sensitive forms of travel.

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1. Introduction

In the classic Mark Twain tale Tom Sawyer, Tom convinces his friends to paint his fence for the sheer joy of it, illustrating a key principle of modern behavioral economic theory—that social forces and self-interest also play a role in market decisions. A significant body of work illustrates that traditional, market pricing economics often fail to represent the complexity of decisions. As a result, planners who study transportation have tried to understand this complexity (Batty, 2007; Batty and Torrens, 2001). Nevertheless, little work has focused on how these complex transportation decisions as they relate to social markets. This is particularly acute with regard to transportation demand management (TDM) programs, which work to encourage people to decide to walk, bike or take transit, and could conceivably tap into social norms to encourage this kind of travel.

The ability to nudge these “active” forms transportation behavior offers an opportunity to address societal issues of infection, such as congestion and air quality, public health and obesity. In response, this study focuses on market or social nudges to influence transportation decisions and behavior. There is a significant gap in the literature on the interplay between financial and social factors in the economics of travel behavior. Some research suggests that social forces may play a role in travel decisions (Riggs and Kuo, 2014, 2015; Riggs, 2014, 2015), and that socio-cultural beliefs can even shape perception of financial pricing policy (Schade and Schlag, 2003). Other work suggests that route-related built environment issues may trump many of these factors (Cervero and Duncan, 2003; Ewing and Cervero, 2010, 2001; Forsyth et al., 2008).

Recent work attempts to take into account how some of these design elements such as quality of sidewalks, zoning, or aspects of the streetscape or parking shape travel behavior outside of traditional origin-destination framework (Appleyard, 2012, 2015; Ewing et al., 2015). Yet despite this research, more evaluation is needed to expand and validate both the understanding of pricing impacts and the potential environmental benefit of behavioral nudge programs, as they relate to documented correlations between the built environment, active travel behavior and health outcomes (Ewing, 2005; Frank et al., 2004, 2005; Saelens et al., 2003).

This research evaluates the success of various economic norms—specifically the impact of financial vs. social incentives on changes in active transportation habits (e.g. those taken via biking, walking and transit). The researcher evaluates the literature spanning the fields of transportation and behavioral economics, then lays out the methodological approach, with a particular inter-
This work is important, because while built environment factors play a role in active travel behavior policy, pricing and incentives play a key role in transportation decisions. Research has shown that transportation choice is tied to financial and social factors, as well as to public policies (Brock and Durlauf, 2003; Dugundji and Walker, 2005; Marchal and Nagel, 2005); yet, the interrelationship between these forces remains under-explored, along with other influencers like competition and gaming, especially in the face of new technology and mobile proliferation. Policies and incentives can encourage or deter driving behaviors and influence auto ownership (Guo, 2013; Shoup, 2005; Weinberger et al., 2008). Some communities use a ‘carrot’ approach, offering incentives such as free transit passes, cash back (‘cash-out’) programs and informational marketing to reward alternatives to driving (Carrel et al., 2012; Riggs and Kuo, 2015). Other communities prefer to use the ‘stick’ approach, charging high prices for parking, tolls, and roadway usage fees.

The appropriate balance between ‘carrot’ and ‘stick’ approaches is when the optimal consumption of the resource (e.g. roads, parking, etc.) makes the price equal to the marginal cost (P = MC). Some research suggests that the ‘stick’ approach is economically inefficient (McShane and Meyer, 1982; Peters and Gordon, 2009). Other work shows that mixing market norms— the ‘stick’ financial norms (like parking pricing) with social-cultural norms or values (like gifts or asking someone to do something out of courtesy for others), can cause confusion. In these cases economic messages become mixed. Individuals are likely to question whether the transaction is a financial transaction or a social one and to default to financial norms and their respective price anchors (Amir et al., 2005; Ariely, 2008; Heyman and Ariely, 2004). This theory that social economic norms become clouded by the entry of a highly-rational, monetary pricing construct, is underscored by work in behavioral psychology (Fiske’s relational theory), which establishes four dimensions of social relationships: communal sharing or “we-ness” (CS); authority ranking (AR); equality matching (EM); and, market pricing (MP) (Aggarwal, 2004; Fiske, 1992).

Many residential and downtown areas, and university and corporate campuses, face exaggerated challenges as employment hubs because they focus on car travel rather than non-automotive travel. The failure to encourage non-automotive or active transportation, while supporting auto-mobility works in opposition to public health efforts to increase activity through travel and generates high fiscal and environmental costs (Deakin, 2001; Deakin et al., 2004). Expanding urban campuses in particular, must balance the adequate provision of parking with land constraints and increased vehicle trips to campus (Tudela-Rivadeneyra et al., 2015). Major public institutions must find ways to balance parking supply with sustainability goals and rising budget constraints.

Travel behavior is complex. Knowledge and attitudes toward transit and driving, self-image and travel alternatives play a role in transportation behavior. Prior experience and habit also affect transportation mode choice decisions, and shape the responses to travel alternatives (Akerlof, 1997; Claixse and Rowe, 1993; Helbing and Molnár, 1995; Schlich and Axhausen, 2003). For many travelers, the trip to work is not a straightforward home-work-home round trip, but linked to other activities—running errands, dropping off or picking up household members and shopping.

The complexity of transportation behaviors often makes simple mode choice models misleading. For example, a choice that looks feasible—the home to work trip—may be impractical when one considers the overall pattern of behavior. A trans-Theoretical Model of behavior recognizes that individual behavior is in a state of change (DiClemente and Prochaska, 1998). In addition, recent work has suggested that financial and social incentives, such as those via mobile frameworks, may have greater effects on some individuals. (Carrel et al., 2012; Dugundji and Walker, 2005). One
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