



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



William Riggs

Department of City and Regional Planning, College of Architecture and Environmental Design, California Polytechnic State University, 1 Grand Ave., San Luis Obispo, CA 93405, United States

## ARTICLE INFO

### Article history:

Received 18 April 2016

Received in revised form 19 November 2016

Accepted 22 November 2016

### Keywords:

Travel behavior

Economics

Social norms

Behavioral psychology

Transportation demand management

## 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.

© 2016 Hong Kong Society for Transportation Studies. Published by Elsevier Ltd. All rights reserved.

## 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 been trying 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 inflection, 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-

E-mail address: [wriggs@calpoly.edu](mailto:wriggs@calpoly.edu)

est in the relationship of social norms to economic trade-offs and financial market pricing decisions. This is followed by a discussion of results focusing on the behavioral psychology that drives choices when travelers are presented a certain type of randomly assigned incentive. Conclusions and broader implications focus on the theoretical and practical implications for transportation policy and travel behavior research.

## 2. Literature

Research has shown that the economic trade-offs of travel choices are tied to both financial and socio-cultural norms. This relates to active modes like walking and biking, as well as driving and parking a vehicle. Such behavior is personal and relates to attitudes and beliefs related to individual health, environmental sustainability and the social capital of communities. Studies have shown the health benefits of active transportation for residents of dense, urban and connected environments; connected meaning that they have many intersections to allow for the flow of travelers via active modes such as cycling and walking (Cervero and Duncan, 2003; Cervero and Kockelman, 1997; Ewing, 2005; Ewing et al., 2003; Frank et al., 2004, 2005; Glazier et al., 2014; Handy et al., 2005, 2006; Saelens et al., 2003; Sallis and Glanz, 2006; Sturm and Cohen, 2004). These connected environments can also create economically resilient communities (Gilderbloom et al., 2014; Glaeser, 2008). However, this type of environment is not found in many communities across the US, particularly in locations that are rural or poor (Sallis et al., 2004).

Given the fact communities differ in how they support active modes like walking and biking (McCann, 2008; Riggs and McDade, 2016), many have suggested 'complete streets', policies as a means to reshape urban streetscapes, which include designs to accommodate and prioritize pedestrians and cyclists (de Zeeuw and Flusche, 2011). Yet, this trend is not pervasive. Larger cities, like San Francisco and New York, have implemented policies that promote active transportation, in contrast to smaller, poorer communities without similar policies (Lillis, 2013; Peters, 2012; Seskin and McCann, 2012). California, for example, recently passed California's Complete Streets Act (2008); however, its implementation is limited to new projects and plans. It does not require a baseline Level of Service (LOS) for bicycles and pedestrians in plans and designs, and does not control land use decisions necessary for success.

Integrating facilities for bicycling and walking is not easy or straightforward in smaller and poorer communities, where there is less funding and fewer projects. In some of these locations, installing sidewalks near a local school would do little to promote walking since there is no housing within the proximity due to land use and zoning. Schools and businesses are often isolated from residential areas, presenting a structural constraint to environmental and behavioral health interventions. Studies have shown that environmental design alone is not the 'silver bullet' in influencing healthy behaviors (Forsyth et al., 2008).

Limited work has studied financial market vs. social market norms as well as complete economic interactions related to personal travel. Stanford University piloted a social nudge program that uses prizes, to encourage off-peak travel and reduce congestion (Green, 2007; Mandayam and Prabhakar, 2014; Merugu et al., 2009). Preliminary results indicate substantial influence on congestion and parking supply dynamics (Hu et al., 2014); however it is unclear if any individuals changed to non-automotive or active transportation modes as a result of the program (Zhu et al., 2015).

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 sharing (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 cannot maintain adequate parking supply. Employers cannot meet access demands of their respective communities 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-Rivadeneira 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; Claisse 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

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات