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# A multiple case study of local & creative financing of bicycle and pedestrian infrastructure

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## ABSTRACT

Despite recognition that improving bicycle and pedestrian infrastructure is complimentary to the goals of health and sustainability, it is expected that dwindling federal support for this infrastructure will cause most proposed bicycle and pedestrian projects to go unfunded, and therefore unrealized, in the US. This study examines a number of local mechanisms that cities have used to finance bike/ped infrastructure and some of the implications in doing so. Case studies of crowdfunding, Tax Increment Financing, bonds, donations, and sales tax are discussed in four U.S. cities.

## 1. Introduction

Creating and improving infrastructure that encourages walking and biking has been recognized as critical to the complementary goals of health and sustainability (Weber, 2014). Despite this recognition spurring the creation of many bicycle and pedestrian master plans, it is expected that most proposed bicycle and pedestrian projects in the US will remain unfunded and therefore unrealized (Moe et al., 1997; Walsh, 2012). Bicycle and pedestrian (bike/ped) infrastructure projects often go unfunded as these projects are put up against real-life trade-offs and resistance to the status quo (Walsh, 2012).

Federal and state funds have historically been used to support most transportation projects, including bike/ped infrastructure. The federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 increased the number of bike/ped projects built, but the Moving Ahead for Progress in the 21st Century Act (MAP-21), passed in 2012, reduced funding from these previous levels (Weber, 2014; Handy and McCann, 2011). The reduction in the already sparse resources for bike/ped infrastructure has placed pressure on local municipalities to self-fund this infrastructure, and some cities have turned to non-traditional sources of funding such as donations, dedicated city fees, and crowdfunding (Advocacy Advance, 2014; Oregon Transportation and Growth Management Program, 2015). The Fixing America's Surface Transportation (FAST) Act of 2015 reestablished a federal funding mechanism for bike/ped projects over a five-year period (FHWA, 2016). While this could be viewed as a win for bicycles and pedestrians, the level of funding needed for bike/ped infrastructure often goes beyond the levels allowed in FAST. This study, therefore, examines a number of the ways cities are making up this gap to finance bike/ped infrastructure at the

local level and some of the implications of doing so.

## 2. Bike/Ped infrastructure in city planning

### 2.1. Recreational and transportation bike/ped integration

Growing interest in how bike/ped behavior influences health has contributed greatly to the literature on multi-modal transportation. These studies typically separate the purpose of bike/ped activity into two categories: active transportation and recreation (Coombes et al., 2010; Coto-Millán and Inglada, 2007; Dill, 2009; Giles-Corti et al., 2005; Gise, 2006; Lu, 2014). Studies usually separate active transportation and recreation because the infrastructure supporting each is often viewed as distinct (Saelens and Handy, 2008). The infrastructure that supports active transportation includes bike lanes and sidewalks along roads that connect origins and destinations, and the infrastructure that supports recreation may include sidewalks and trails that are circuitous or unconnected (Jones et al., 2010; Pucher et al., 1999; Walmsley, 2006). While studies often separate these different types of bike/ped infrastructure because the behavior associated with commuting and recreation is different, both support physical activity, and therefore, both influence health outcomes.

Approaching bike/ped infrastructure through the lens of health is one way that cities have integrated the use of this infrastructure for both transportation and recreation. One example is Boston which incorporated adding green space to their Complete Streets guidelines that was meant to improve multi-modal design (Walsh, 2012). Sugar Land, TX, one of this study's cases, also incorporated on-street bicycle infrastructure with off-street recreational infrastructure in its mobility plan,

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recognizing that these elements overlap in their usage and are best when integrated. Because of this overlap, cities and projects vary in regards to who is responsible for their creation and maintenance. In some cases, as with Sugar Land, trails fall within the realm of parks and recreation. In other cases, trails are seen as part of city mobility and transportation and are managed within those departments. In the case of sidewalks, many, if not most, fall on private property. This makes for a complex situation for building infrastructure that does not neatly fit in one category. This study takes a broader view of bicycle and pedestrian infrastructure, considering all bike/ped infrastructure regardless, for example, of whether it falls within a recreational trail or a transportation oriented plan or is claimed to be supporting active transportation or recreation.

## 2.2. Finding ways to fund bike/ped infrastructure

There is a trend for more innovative financing for transportation that can respond to regional needs (Chauncey and Wilkinson, 2003; Sciara and Wachs, 2007). Funding beyond traditional federal and state sources may include sponsorships, donors, dedicated fee structures, special events, and bonding measures (Advocacy Advance, 2014; Portland Parks and Recreation, 2006). One of the newest funding sources is crowdfunding. What started as a way to provide start-up money for new businesses has been expanded to civic projects (Davies, 2014). In 2013, Memphis was the first city that appears to have used crowdfunding to construct a protected bike path, raising almost \$75,000 of a \$4.5 million project (Andersen, 2013).

Sometimes advocacy groups can help in finding alternative funding when federal or state funding cannot be secured (Eyler et al., 2008). This could be a key component moving forward since state-wide bicycle or pedestrian advocacy groups were identified in all 50 states in the 2016 Benchmarking Report published by The Alliance for Biking and Walking. It has also become evident in Europe, in cases such as the European Cyclists' Federation appealing for local authorities to apply for more EU funds for cycle infrastructure (Bodor, 2014). In addition, parks and greenways that serve as connectors have been able to gain more funding through both federal funding and grant-making agencies, so it is possible that trails which serve both the purposes of recreation and transportation may help increase funding opportunities (Coutts, 2010; Walker et al., 2011). Another option suggested is that if a long-term revenue stream is found, such as in a bike share program, there could possibly be investment from pension funds as transport infrastructure has shown to be an attractive investment (Siemiatycki, 2015).

Our review of comprehensive plans and the suggested tools for implementing new or maintaining existing bike/ped infrastructure reveals the persistent importance of different state and federal programs, but, increasingly, more comprehensive plans are outlining possible alternatives. For example, Houston's 2016 bicycle plan outlines the use of current funds—including the Capital Improvement Program (CIP), bonds, Municipal Management districts (MMDs), Transportation Investment Generating Economic Recovery (TIGER) grants, philanthropic donations—and outlines possible future resources. Future resources that Houston has identified include federal funds available through the 2015 FAST Act, Transportation Infrastructure Finance and Innovation Act (TIFIA), Center for Disease Control and Prevention grants, and Community Development Block Grants (CDBG), but the Houston plan also considers additional local possibilities that have been used by other cities such as creating partnerships with developers, hospitals, and universities (Houston Bike Plan, 2016). The Implementation Strategies section of the plan recommends that sales tax be considered if the current rate cap could legally be raised. Tax Incremental Reinvestment Zones and impact fees could be extended to also include bike/ped projects, and there is a possibility of establishing parking benefit districts. Although there are other types of financing strategies not mentioned here, it is clear that looking for alternative financing is one of the keys to improving bike/ped infrastructure and

achieving planning goals.

While this research could not feasibly cover all types of financing, a broad range of strategies were examined in the following case cities. These cases uncover the processes that made cities successful in applying these alternative financing strategies and the unique elements might keep others from seeking this funding. In addition, the role of partners and advocates is addressed along with how project prioritization can influence the equitable distribution of bike/ped infrastructure.

## 3. Methodology

This study employs a multiple case study design. The four cases were chosen to represent projects in cities that currently, or have recently, funded bike/ped infrastructure using local funding sources or other novel financing mechanisms. The choice of cases was further influenced by information obtained from news stories and by conversations with state bike/ped coordinators and planning practitioners who are members of American Planning Association. News coverage and previous research were used to identify Denver, Colorado's experiment with crowdfunding a bike lane as a case. The Oregon Department of Transportation, along with Oregon's League of Cities, maintains a list of federal and state funding opportunities, along with others that have been used within the state. This document was helpful in identifying Salem, Oregon—and its use of Tax Increment Financing—as a case. The Sugar Land, Texas bonded trail system and the Tallahassee, Florida sales tax funded bike lanes were chosen due to the researcher's personal experience and intimate knowledge of them. Evidence from each case was collected through a total of eleven interviews, on average lasting 1 h, and through the review of city comprehensive or mobility plans; bike/ped project documents (including committee reports, memos, public presentation files, and preliminary and construction documents); city websites; and news articles. Interviews were conducted with the directors of the projects or persons in charge of obtaining funding for the bike/ped infrastructure, and, where appropriate, partners on the project. In some cases, there were also email exchanges with follow-up questions directed to other city staff or donor partners to confirm details. In the case of Sugar Land, the researcher was also a participant-observer of the bonding process, having served on the parks and recreation advisory board at the time of the project. The case documents were analyzed in NVivo content analysis software using coding that was informed by the literature and then by the cases themselves. Due to the differences in funding mechanism, the themes that emerged across cases were broad, including policy advocates, difficulties of grants, stakeholder reaction/involvement, and obstacles of implementation.

The paucity of research exploring how bike/ped infrastructure is financed in the US is partly the result of every municipal context being unique. In fact, the difficulty in drawing comparisons and making generalizations was recognized by many of the interview participants in this study who continually expressed that, "it is difficult to make comparisons." The lack of local reporting is another challenge for research in this area. Unlike federal or state funded projects, there is no collective repository for information on local funding mechanisms. Taking both of these constraints (and others) into account, qualitative case study research was employed to begin to answer the question of how cities are identifying and adopting context-specific solutions to fill the funding gap for bike/ped infrastructure.

Also influencing case selection was the deliberate avoidance of "exceptional" cases where a bike/ped culture already exists and support for bike/ped infrastructure is generally high. None of the chosen cases fall in the US Census's top 20 cycling cities by commute, although Denver is now number 11 on Bicycling magazine's 2016 ranking of "bike friendly" cities. Denver's ranking was positively influenced by the creation of the bike lanes discussed in this study. The validity of this approach was confirmed during interviews when "exceptional" cases,

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