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The process of crafting bicycle and pedestrian policy: A discussion of cost–benefit analysis and the multiple streams framework



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ABSTRACT

Existing literature on bicycling policies and infrastructure in the United States is still somewhat limited in number and scope, with the majority of research framed by a cost–benefit analysis (CBA) framework of decision making; this has led studies to focus on the potential benefits of bicycle and pedestrian facilities, factors affecting the use of bicycles as a mode of transit, and the improvement of CBA analysis with regards to bike/ped programs. While the CBA framework may be accurately matched to the practical process of specific policy implementation for some governing organizations, and provide valid evidence for application under other frameworks, it does not account for the role of policy windows and policy entrepreneurs in policy decision making, or for the role of effective advocacy. After a review of the existing literature, I suggest the multiple streams framework as a more suitable framework for understanding decision making with regard to non-motorized transportation policies, and provides a useful structure for future research (particularly on the role of advocacy groups and policy entrepreneurs in the planning and policy process).

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1. Introduction

Transportation decision-making is primarily conducted through the lens of the rational actor model (RAM), which assumes that individual decision-making is a rational (or boundedly rational) process of weighing options and trade-offs to maximize positive outcomes and minimize negative outcomes. This model of behavior has led to an emphasis on framing research in the language of cost–benefit analysis (CBA), an analytical tool that has over time become a sort of epistemological and theoretical framework for transportation research, one especially common in bicycle and pedestrian literature. This narrow focus on rational decision-making and costs/benefits has limited bicycle and pedestrian research from fully considering the range of possible factors at work in bicycling and walking behavior (Schneider, 2013), the implementation of policies and projects, and the conditions needed for policy change. In addition, the RAM suggests that similar levels of adoption of particular policies would occur across agencies and jurisdictions, particularly if the benefit-to-cost ratio is as high as some have demonstrated (Cavill et al., 2008). Yet the level of individual state commitment to bike and pedestrian programs since ISTEPA has varied greatly (Cradock et al., 2009). Similarly, MAP-21 has provided MPOs with an expanded role in bicycle and pedestrian programs,

but the variation in implementation of such programs across cities reveals that there are factors missing in this model of decision-making. As such, an alternative framework is called for.

The intent of this paper is not to challenge RAM, as has been done well by others (Kane and Del Mistro, 2003; Talvitie, 1997; Willson, 2001). Rather, the goal is to suggest an alternative direction for framing future bicycle and pedestrian research, in the belief that it more closely mirrors the policy process as it actually exists. Pulling from the public policy literature, the multiple streams framework provides a way to alternatively structure existing knowledge on bicycle and pedestrian planning and policy, and by doing so identify significant areas for future exploration and research. Though the multiple streams framework is one of many potentially applicable alternative perspectives, its focus on multiple simultaneous paths generating new arguments and information and then merging together under particular (conductive) circumstances provides an avenue which can make sense of the volume of CBA-framed work, but also incorporate more complex stories about advocacy organizations and critical policy entrepreneurs.

This project reconstructs the existing literature, with the aim of seeing how the research fits into a new overarching framework and what gaps in knowledge that new framework might reveal. While the intent of the paper is to suggest a superior framework for approaching both bicycle and pedestrian research, much of the literature referenced is bicycle-specific. Although there exist many important differences between the two modes, both are currently

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limited by their focus on CBA and would benefit from the consideration of alternative epistemological and conceptual frameworks, and so are grouped together here.

The first step is a brief discussion of the state of the field, and some important critiques of CBA as a guiding research framework, before moving into an alternative framing of the literature. Then, the introduction of the multiple streams framework (MSF), and the incorporation of a suite of the existing literature into what is proposed as the appropriate area of the framework. This re-framing of the issues may lead to some contention, but in the hopes that it will highlight some great opportunities for better understanding.

2. Limitations of CBA

CBA is prominent as an analytical tool in transportation research (Kane and Del Mistro, 2003; Talvitie, 1997; Willson, 2001), but it also frames the nature of what evidence is considered meaningful as a contribution to the field or as evidence for action (Krizek et al., 2007). Implicit within the use of CBA is a neo-positivist assumption about the role of such evidence as well as its validity. This particular epistemological foundation suggests that policy analysts and decision-makers evaluate potential evidence according to the falsifiability of its claims and content, as well as its generalizability across the intended population. By employing this narrow model of decision-making within the policy process, bike/ped scholarship limits its own ability to proffer a range of evidence and to expand its understanding of the role of non-economic factors in the policy process.

In this way, the focus on costs and benefits has led to increased focus on the quantification of complex concepts such as sustainability measures, public health improvements, and sprawl (Hatzopoulou and Miller, 2009; Wang et al., 2004; Saelensminde, 2004; Krizek et al., 2007; Komanoff et al., 1993; Wang, 2011; Johnson, 2001). The rational actor model and CBA focus of the literature is well demonstrated in the suite of research attempting to quantify the benefits of bicycling and walking. It is easy to see why the continued use of CBA is so compelling for the field: Cavill et al., in their extensive review of attempts to quantify the costs and benefits associated with cycling, found that cost–benefit analyses of bike/ped infrastructure generally produce positive ratios (greater benefits than costs), with their meta-analysis finding a median benefit–cost ratio of 5:1 (Cavill et al., 2008). Given the frequency of such work to reveal ratios in favor of bicycling, it should not be surprising that so much effort has been devoted to providing more accurate and specific quantification of benefits. However, there has been little awareness of how such a focus on rational economic arguments has limited the scope and strength of any arguments in favor of bicycling as a policy solution, and limited the range of viable explanations for policy and planning success that are explored. By incorporating CBA as one part of a larger policy process framework it may enable the provision of a wider range of evidence and its application to decision-making. CBA does still have a vital place in understanding what weights are given to different issues related to bicycle and pedestrian programs, but it must be employed alongside a policy process framework that can also account for the non-economic and non-quantitative variables that affect policy.

3. Multiple streams framework and underlying epistemology

The multiple streams framework (MSF) is an explanatory framework for the process of policy creation based on the concept of three completely independent streams – problems, policy

solutions, and politics – that are coupled together by policy entrepreneurs during short periods of opportunity (termed policy windows by Kingdon (1984)) to implement a policy (Zahariadis, 2007). The multiple streams approach assumes that there is a given level of ambiguity in policy-making, in other words, that there is no inherently more appropriate way of conceiving of an issue or event. This ambiguity is a constant feature of policy-making due to the subjective phenomenology of individual actors (Yanow, 2003). This is a clear contrast to the philosophy of science underlying CBA and the RAM, which assumes a higher degree of objective rationality. Instead, the MSF adopts an epistemological background that emphasizes the role of subjective knowledge.

Having made the case for the incompleteness of CBA for understanding the process of decision-making for bicycle/pedestrian policies, the next step is to use the multiple streams framework (Kingdon, 1984; Zahariadis, 2007) to frame the existing literature, with the hope that doing so will suggest further important factors that CBA did not include (and which might direct future efforts at bicycle and pedestrian policymaking). The first step is to consider the existing research in the terms of the independent streams, and then to consider what components of the framework are broadly missing within bike/ped literature.

3.1. Problems stream

The problems stream is envisioned as a channel composed of all the various issues facing actors at different points. Although the stream itself consists of a likely near-infinite sample of issues, actors will actually confront only select problems. These problems may be identified either through the appearance of an indicator, or by a dramatic change in an existing indicator (Kingdon, 1984). Since numerous institutional actors monitor activities and events (health conditions, economic variables, program outcomes and costs, etc.), an indicator of a problem may be identified at any time in the course of a systematic operation. What determines whether something is an indicator of a problem is highly interpretive, and is generally selected by one or a number of actors involved in the problem stream. Problems may also be identified by changes in existing indicators that suggest problematic potential or were identified as problems previously but were left to be monitored. While some of the negative effects of automobile use did become abruptly prominent in the 1970s, issues of obesity (Johnson, 2002), compounded traffic congestion (Texas Transportation Institute, 2010), commute time (U.S. Census Bureau, 2009), and high cost of transportation (AAA Exchange, 2007, 2010) have all seen relatively gradual increases over time.

This discrepancy between when a problem is noticed and when it reaches primacy may have to do with the aforementioned interpretive quality of problem identification; since indicators rely on value judgments and normative goals as the basis for evaluating a positive condition compared to a negative condition, they are not purely factual and instead highly interpretive. There may be conditions that are favorable for identification of a problem in one interpretive light, but under another fail to do so. As such, the problem identification process is highly contested. Sometimes, however, an event (which Kingdon labels the “Focusing Event”) will lead to a high degree of agreement on a problem. This may be a response to crisis, a disaster, an impending threat to something of shared value, or a symbol that comes to represent a more widespread issue. Such events may also simply be due to a shift in priorities resulting from a change in a hierarchical order, for example the appointment of a new committee chair, DOT Commissioner, or Secretary of Transportation.

In the case of the problem stream potentially associated with bicycling as a solution, there are numerous issues represented: obesity and cardiac illness, pollution emissions and fuel

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