

Literature Review: Bike Commuters

Selima Serna

San Jose State University

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Introduction

The topic of bike commuting is extensive in the academic transportation and health literature, covering various aspects from public policies and programs to health benefits. The information community and information seeking behaviors of bike commuters, however, has not been widely studied. Bike commuters have their own set of information needs, and they turn to their information community to help fulfill those needs.

One of the information needs of bike commuters, route planning, is similar to driving commuters. But because bike commuting is much more dynamic than driving, with cyclists “navigat[ing] a transportation network largely designed for another purpose (driving motor vehicles) and because they must do so under continually changing conditions (weather, motor traffic, construction, etc.)” (Priedhorsky, Jordon, & Terveen, 2007, p. 93), their information needs also include safety and security practices and cycling infrastructure, such as bike sharing systems, integration with public transit, and transit policies.

This paper is a review of scholarly and popular sources on the information seeking behaviors and the information community of bike commuters. It will examine sources describing the information seeking behavior of bike commuters as well as popular resources in the information community that play a role in fulfilling community members’ information needs. It will also examine sources that explore how the social aspects of the cycling community influence bike commuting behavior. Lastly, this paper will discuss aspects of bike commuting in relation to the Library and Information Science field that need further study.

Review of the Literature

Because the topic of bike commuting is extensive, especially in the academic transportation and health literature, there are many different angles from which researchers have studied it. In this review, the research on the information community and the information seeking behaviors of bike commuters is categorized in three groups. First, there are researchers who generally describe an information community, such as Fisher and Durrance, and information seeking behaviors, such as Savolainen. Second, other researchers address the information seeking behaviors of bike commuters specifically, such as Priedhorsky, Jordon, and Terveen and Bartle, Avineri, and Chatterjee. Lastly, the community-based resources serve as examples of places where members experience social support and can engage with each other, while the final group of scholarly articles focus on social factors of communities and how these influence cycling behavior.

According to Fisher and Durrance (2003), an information community has five characteristics: they exploit the information sharing qualities of technology, include diverse people and organizations, form around and meet specific needs of members, help overcome trust barriers, and cultivate a sense of belonging to the community. These characteristics help members access the information they need. As this paper will show, the information community of bike commuters exhibits all these characteristics.

Although bike commuters are an information community in their own right, their information seeking behaviors have not been widely studied. This may be because it falls under everyday life information seeking (ELIS), which is information seeking behavior that is outside

the context of academic or professional needs. Savolainen (1995, 2010) has studied ELIS in detail. In many ELIS situations, the information sources that are more familiar, particularly those that are immediately available, tend to be used more than sources that may be more relevant; in other words, just as in more formal information search processes, the principle of least effort is exhibited in ELIS (Savolainen, 1995, 2010). This means that sources found only in a library may not be considered, even if they represent the best information available (Savolainen, 1995, 2010).

Priedhorsky et al. (2007) has addressed the information seeking behavior of bike commuters. In testing a personalized geowiki for route planning, Priedhorsky et al. (2007) surveyed 73 cyclists on their route planning methods and further interviewed 19 on the geowiki's use and usability. They found that most cyclists ask each other for help and information, and in turn, they are also willing to share information (Priedhorsky et al., 2007), which supports findings from ELIS research that people tend to favor human sources because of easy access and immediate feedback (Savolainen, 2010). The researchers also found that cyclists are amenable to using technology: they "observe[d] cyclists using existing collaborative technology, however cumbersome, to share information" (Priedhorsky et al., 2007). The geowiki, which is an editable map, would amplify information seeking and sharing and allow it to occur more easily and broadly, as its route planning and traffic information would be up-to-date and reach a wider population (Priedhorsky et al., 2007).

The downside to a geowiki, however, is that cyclists must not only have the appropriate technology but they must also trust the information in the geowiki. Because mobile technologies are prevalent nowadays, their scarcity is not as much of a drawback as the noted concern of 6

interview subjects regarding the geowiki's vulnerability to vandalism and misinformation (Priedhorsky et al., 2007). The researchers address these concerns by pointing out examples of successful wikis, which work "because of the motivation of users to correct mistakes and vandalism, aided by mechanisms to help notice and fix the damage" (Priedhorsky et al., 2007). When people discover that shared information is relevant and useful, trust barriers tend to lower or fall away (Fisher and Durrance, 2003). Another aspect of the geowiki that raised concern in 10 subjects was regarding privacy (Priedhorsky et al., 2007). As with other wikis, it is possible to infer sensitive information, such as home or work locations, because the name or pseudonym of the person editing a feature is revealed in the editing history. Privacy concerns, such as what is and is not acceptable to users, specific information that can be inferred, and techniques to mitigate risks should definitely be explored.

Bartle, Avineri, and Chatterjee (2013) further expand on bike commuters' information seeking behavior as well as address social support in their research. They created a cycling-specific website, called *Cycology*, that included map and transit information as well as interactive social features, allowing participants to create routes and engage with each other (Bartle et al., 2013). The researchers used an innovative methodology in their study: they combined observing and recording participants' ($N = 23$) interactions on the website over a period of 6 weeks, using questionnaires, and conducting semi-structured interviews to obtain qualitative data (Bartle et al., 2013). They found that the social aspect of the website contributed greatly to increasing access to cycling information, meeting navigation needs, and identifying oneself as being part of the community (Bartle et al., 2013), further showing that bike commuters

tend to seek information from each other and their information community. The researchers also found that group identification and trust were found to be associated with strong positive attitudes towards cycling as a commuter mode among the participants, particularly among those who had started cycling to work within the previous two years (Bartle et al., 2013).

Interestingly and surprisingly, the researchers in this study did not mention any participant concerns about trust or privacy. Participants in this study seemed to trust each other easily, which may be because they knew that their fellow participants were also fellow cyclists. Self-categorization theory describes situations in which a person sees herself as part of a group (as cited in Bartle et al., 2013). This theory also posits that group identification contributes to cooperation (Bartle et al., 2013), which in turn lowers trust barriers and cultivates a sense of community (Fisher and Durrance, 2003). The researchers noted that “[i]nformation shared within the group was reported to have inspired greater trust amongst participants than ‘official’ cycling information, largely because it was seen as emanating from the experience of ‘real people’” (Bartle et al, 2013, p. 69). Privacy concerns about the *Cycology* website were not addressed at all and is a weakness of this study.

As evidenced from the two previous articles, bike commuters do not tend to engage in a formal information search process as Kuhlthau (1991) has described. Community members prefer to share information with each other, using each other as resources or going to more informal information organizations, both in person and online, to fulfill their information seeking needs, more akin to Fisher and Naumer’s (2006) idea of an Information Grounds. For example, SF2G (www.sf2g.com) is a bike club organized by an email list. The club uses the list to share

information regarding commuting routes or other bike rides members are doing and for letting members know which coffee shops are meetings points before and after rides (About SF2G, n.d.). It is during the social time on rides or afterwards while relaxing and getting coffee that information sharing occurs secondary to the primary purpose of coming together for the ride. Thus, the social atmosphere, whether in person or online, of the bike commuting community plays a large part in fulfilling the information needs of its members.

In addition to seeking information from each other, community members also go to information organizations where information is created by other members. In person, there are a variety of methods that fulfill bike commuters' information needs, such as asking bike technicians at bike shops or attending cycling classes, which cover topics that range from cycling skills to bike maintenance (Bambrick, 2015, p. 40; The League of American Bicyclists, Find and Take a Class page). Some of these information organizations are found solely online, which aligns with bike commuters' use of technology to share information with each other. Among these information organizations is The League of American Bicyclists (www.bikeleague.org). Their website provides many resources for bike commuters' information needs. Their online resources cover many topics, including a section on safety and security, bike laws, cycling classes, and other bike education topics, a section on cycling advocacy, and a section that serves as a blog and provides up-to-date news. Another online information organization is Streetsblog (www.streetsblog.org), which is a place where community members can 1) find up-to-date news and information on cycling and transportation issues in their geographical area and 2) share information and have a public discourse on the aforementioned issues. For example, in a recent

post regarding the addition of flex posts to the painted bike lanes on a specific New York City street, community members have commented and shared their experiences, providing pertinent evidence that city officials need to address with updates to cycling policies (Aaron, 2015).

One of the major differences between these community-based resources and scholarly sources is the social aspect, which, as discussed above, is very important for the bike commuting community. The community-based resources encourage and enable discussion and collaboration between community members; information flows in many directions. The scholarly sources are technical and based in research, and thus are great sources of information themselves, but they are a one-way street from the researchers to the reader, with a much more difficult pathway for the reader to have a discussion with the researchers and an almost impossible, untraceable pathway to connect with other readers. Both types of resources, however, are valuable to the information community because they complement each other: the scholarly sources provide history and a framework for informing future directions, which community-based resources, such as Streetsblog, can then report and disseminate to a wider audience of community members.

Besides being a place where community members can congregate despite geographical location, online information organizations also provide support. Titze, Stronegger, Janschitz, and Oja (2008) and de Geus, De Bourdeaudhuij, Jannes, and Meeusen (2008) have studied social support and its influence on bike commuters. Both groups of researchers found through interviews and questionnaires, respectively, that those who felt higher levels of social support from their cycling community used cycling more often as a travel behavior than those who felt little or no support (Tize et al., 2008; de Geus et al., 2008). Further supporting these results are

findings from Bartle et al. (2013): group identification is a strong motivator for choosing bike commuting as a travel behavior. Thus, information organizations provide not just information, but also social support; they foster social connectedness (Fisher and Durrance, 2003).

Group identification also affects decision-making through perceived social norms. Social norms can be defined as “[standards] that are held by a society, or by smaller groups, which influence and regulate behaviour by functioning as informal social controls” (Heinen, van Wee, and Maat, 2010, pp. 71-72). This means that people will adapt their behavior to fit in with a certain group. The public image of cycling as well as the general attitude towards and the culture of cycling within a particular country or region also influence individuals and their affinity with a certain group (Pucher, Buehler, and Seinen, 2011). For example, if cycling is seen as a normal way to get places in a community, people may be more inclined to cycle themselves, further reinforcing the community norm. When applied to bike commuting, researchers have found that if an individual’s co-workers bike commute, then it is more likely that the individual will cycle to work as well (as cited in Heinen et al., 2010; Handy, van Wee, and Kroesen, 2014). Furthermore, as stated above, cyclists perceive more social support for cycling ((Tize et al., 2008; de Geus et al., 2008)) and more often cycle with a partner (as cited in Heinen et al., 2010). These findings taken together mean that social support, group identification, and social norms play a synergistic role in people’s decision to bike commute. For example, Rose and Marfurt (2007) used surveys to find that after a 2004 Bike-to-Work event throughout Victoria, Australia, 27% of first-time cyclists and 67% of prior riders continued to bike commute 5 months after the event. Furthermore, 57% of first-time cyclists reported that the event influenced them to bike commute

because they found a cycling community and felt supported at the Bike-to-Work event (Rose and Marfurt, 2007). The event, however, did not seem to influence prior riders; this may be due to the lack of a choice on the survey corresponding to the reinforcement or maintenance of their cycling behavior (Rose and Marfurt, 2007). Because social support, group identification, and social norms are evidenced to be strong motivators for choosing cycling as a travel behavior, cycling advocacy groups and public policy makers should keep this in mind when trying to plan effective strategies to promote bike commuting and cycling in general.

Conclusion

The information community of bike commuters includes a diverse population, from individual members to information organizations. The research presented here on their information seeking behaviors reveal that this community favors accessing information through the Internet and using the social aspects of technology to seek and share information and feel a sense of belonging. The research also shows that the community has a strong effect on members, with social support, group identification, and social norms exerting a symbiotic influence to initiate or reinforce members' cycling behavior.

In order to help the information community of bike commuters with their information needs, libraries and other information organizations need to provide access to information in ways that bike commuters will actually use. While there is some research on the information seeking behaviors of bike commuters, these behaviors were not the main topic researched in those studies. Research specifically on bike commuters' information seeking behaviors needs to be conducted in order to design and create programs and resources that cater specifically to bike

commuters. Further research is also warranted on if and how bike commuters utilize library services to fulfill their information needs and how libraries can help this information community in their search for information. Lastly, more research is needed to find out how bike commuters implement the information they acquire, how they determine its usefulness and utility, and how they can benefit in new ways from information sharing within the community.

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