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## Evaluation of a community wayfinding signage project in Hawai'i: Perspectives of pedestrians and bicyclists



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### ABSTRACT

Wayfinding signs can support active transportation by guiding pedestrians and bicyclists onto safer routes to community destinations. The purpose of this study was to assess the perceptions of pedestrians and bicyclists related to a community-wide wayfinding signage project implemented in Kailua, a suburban community in Hawai'i and an increasingly popular tourist destination. Wayfinding signs consisted of standard bicycle route confirmation and decision signs showing direction or distance to popular community destinations, including beaches and parks. Intercept surveys (n = 244) were conducted immediately and five months after the wayfinding signs were installed. Overall, 50.5% of pedestrians and 63.3% of bicyclists reported seeing a wayfinding sign along their route. Among those who saw a sign, 41.9% reported that it helped with route decision making. Logistic regression models revealed that those walking and bicycling the route for the first time had higher odds of seeing a wayfinding sign [OR (95% CI): 2.59 (1.07–6.27)]. Being a bicyclist, female, and non-resident were significantly associated with using a wayfinding sign. One-third (33.1%) of surveyed community residents agreed that seeing the wayfinding signs encouraged them to walk or bicycle more often in their community. Lastly, the majority of residents (82.6%) and non-residents (86.5%) thought the wayfinding signs were beneficial to the community. These evaluation findings indicate that wayfinding signs are useful environmental supports for active transportation, especially for those who are traveling along new routes. Additional programs or promotional activities are needed to complement wayfinding signage interventions to further encourage walking and bicycling trips.

### 1. Introduction

The wide-ranging health benefits of physical activity are clearly established (2018 Physical Activity Guidelines Advisory Committee, 2018). One way to accrue the recommended levels of physical activity is through active transportation, such as walking and bicycling. In place of driving, walking or bicycling for short trips presents a major opportunity for improving population health (Sallis et al., 2012). Walking and bicycling have been linked to reduced risk of all-cause mortality, improved cardiovascular health, and potentially reduced risk of diabetes (Hamer and Chida, 2008; Kelly et al., 2014; Saunders et al., 2013). To increase population-

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levels of walking and bicycling, pedestrian and bicycling facilities that enhance safety from traffic are needed (Sallis et al., 2012). As more people walk and bicycle in an area, pedestrian and bicyclist safety also increases (Jacobsen, 2003).

### 1.1. Wayfinding signs as environmental supports

Safer built environments for pedestrians and bicyclists can be achieved through a combination of education, engineering, and enforcement. Wayfinding signage is one engineering tool that can inform people walking and bicycling about the availability of safer walking/bicycling routes. Wayfinding signs are point-of-decision cues and aids that convey information about orientation and distance to help with navigation and route decision making (Hunter et al., 2016). Wayfinding signs also can serve as physical activity prompts by encouraging people to take the stairs or walk (Hunter et al., 2016; Fulton et al., 2017). In addition to promoting physical activity, wayfinding interventions can also promote economic development and reduce the risk for getting lost or injured (Hunter et al., 2013).

A comprehensive wayfinding system may be particularly critical for pedestrians: “as opposed to drivers or transit users, pedestrians are more sensitive to distance and more vulnerable should they exceed their functional limits or become lost” (Vandenberg et al., 2016, p. 5). This may be similarly true for people who fall into the “interested but concerned” category of bicyclists and need safe, comfortable routes (Dill and McNeil, 2016). Despite the potential benefits of wayfinding interventions for people walking and bicycling, there is a lack of research and evaluation characterizing effective practices and assessing outcomes (Hunter et al., 2016; Vandenberg et al., 2016). Evidence on wayfinding intervention outcomes primarily exists in the grey literature (Vandenberg et al., 2016). We are only aware of one evaluation study published in a peer-reviewed journal that links wayfinding signs to increased walking (Fulton et al., 2017). There is also a lack of published studies assessing the impact of wayfinding signage on levels of bicycling (Pucher et al., 2010).

### 1.2. Project description and setting

A wayfinding signage demonstration project was initiated in 2015 for the Kailua community, a suburb of the city of Honolulu, located in O‘ahu, Hawai‘i. Kailua features a compact, walkable town center adjoined by popular public beaches, parks, commercial centers and neighborhoods within walking and bicycling distance. The terrain is primarily flat and the weather is amenable year-round to active transportation. Kailua is home to approximately 40,000 residents and has become an increasingly popular destination for tourists. A local ordinance prohibits tour buses from dropping off tourists at public beaches. Instead, tourists are dropped off in the town center where nearby shops offer bicycle rentals as a means to travel from the town center to the beach, about one mile away. Community residents have expressed traffic safety and congestion concerns related to tourists (Gutierrez, 2016).

The wayfinding signage project had several goals: (1) help to alleviate traffic congestion concerns that residents attributed to an increasing number of tourists walking and bicycling in the community; (2) promote safety by guiding pedestrians and bicyclists onto routes with fewer potential conflicts with vehicles; and (3) provide environmental cues that encourage people to walk or bicycle instead of driving. Project partners included the State Department of Health (provided funding and planning support), a Hawai‘i-based private sector planning and engineering firm (provided technical expertise in developing the wayfinding basis of design and signage plan), the City & County Department of Transportation Services (responsible for managing a contract to manufacture and install the wayfinding signs in public right of way), and the University of Hawai‘i (conducted evaluation study).

The wayfinding signage plan consisted of bicycle signs that followed guidelines in the U.S. Manual on Uniform Traffic Control Devices for size, font, symbols, and mounting height (U.S. Federal Highway Administration, 2009). The Urban Bikeway Design Guide (National Association of City Transportation Officials, 2012) also informed the plan. As opposed to pedestrian-specific wayfinding that is typically concentrated in an urban core, bicycle signs were selected for the opportunity to implement community-wide. Destination signs were used to mark the junction between two or more travel destinations and displayed destinations, directional arrows, and distances (in miles). Distances were used as opposed to travel time since the purpose of these signs was to inform people both on foot and bicycle. Turn signs were used at intersections where the preferred route turns from one street onto another and included destinations and directional arrows.

Signs were intended to guide both pedestrians and bicyclists along routes that were deemed safer for walking and bicycling based on local knowledge, observation of travel patterns, and consultation with resources such as the O‘ahu Bike Plan. Routes that had existing dedicated space for pedestrians and bicycles, availability of shoulders or other paved areas not in conflict with vehicles, and lower traffic volumes were prioritized. A total of 97 new signs displaying directional arrows or distances to key community destinations were added to Bike Route Guide signs (Fig. 1a) and Bike Lane signs (Fig. 1b). Similar signs devised for travel along a shared use path (Fig. 1c) were also added. Key community destinations included active living resources such as public parks and beaches.

### 1.3. Study objective

The overall purpose of this evaluation study was to assess the perceived impact of the wayfinding signs on people walking and bicycling. Specifically, we sought to answer the following questions: (1) do the wayfinding signs help people walking and bicycling navigate their way to key community destinations; (2) do the wayfinding signs serve as environmental cues that encourage people to walk or ride a bicycle more often in the community; and (3) are the wayfinding signs perceived as beneficial to the community?

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