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Collaboration between physical activity researchers and transport planners: A qualitative study of attitudes to data driven approaches

Katie Crist[a,*], Khalisa Bolling[a], Jasper Schipperijn[b], Samantha Hurst[a], Michelle Takemoto[a], James F. Sallis[a], Hannah Badland[c], Jacqueline Kerr[a]

[a] University of California, San Diego (UCSD), 9500 Gilman Drive, La Jolla 92093, USA
[b] University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark
[c] RMIT University, GPO Box 2476, Melbourne, VIC 3001, Australia

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ABSTRACT

Collaboration between physical activity (PA) researchers and transport planners is a recommended strategy to combat the physical inactivity epidemic. Data collected by PA researchers could be used to identify, implement and evaluate active transport (AT) projects. However, despite aligned interests, researchers and transport planners rarely collaborate. This study utilized qualitative methods to 1) gain an in-depth understanding of the data utilized in AT planning, 2) explore the utility of Global Positioning Systems (GPS) and accelerometer data in supporting the planning process, 3) identify the benefits and barriers of researcher and transport agency collaboration, and 4) identify the facilitators to collaboration for these groups. Semi-structured interviews were conducted with 17 transport modeling, planning or engineering professionals, transport agency directors, and academics with relevant expertise in health or transport planning. A thematic analysis was conducted following structural coding by two researchers. The analysis revealed that geographic and physical activity data that are current, local, objective and specific to individual AT trips would improve upon currently available data sources. Informants believed that research collaboration could increase capacity by providing unbiased data and access to students to assist with targeted research. Collaboration could also increase the relevance of academic research in applied settings. Identified barriers included: setting up contracts, lack of policy and planning mandates that include health, a disconnect between research interests and agency needs, and competing priorities. Researchers may need to initiate discussions with AT practitioners until health is formally included in the planning process as the first step in understanding data needs and identifying mutual research interests. However, regulations that link health and physical activity metrics to funding, as well as training programs that incorporate public health and transport planning, are needed to encourage cross collaboration.

1. Introduction

Physical inactivity is a major public health concern as it is associated with obesity, increased risk of chronic diseases and premature mortality (Lee et al., 2012). Yet, less than twenty percent of adults in the U.S. meet the physical activity (PA) recommendations (Troiano et al., 2008). Those who commute by active forms of transport accumulate more PA overall and are more

* Correspondence to: Department of Family Medicine and Public Health, University of California, San Diego, 9500 Gilman Drive, MC 0811, La Jolla, CA 92093, USA.
E-mail address: kcrist@ucsd.edu (K. Crist).

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likely to meet the recommended guidelines than automobile commuters (Dill and Toulan, 2009; Lachapelle et al., 2011). Despite this, walking and cycling represent only 11% and 1% of trips, respectively, in the U.S. (Federal Highway Administration, 2011).

Metropolitan planning organizations (MPOs) are the primary regional transport agencies in the U.S., responsible for transport investment and planning in urbanized areas that, when combined, cover 80% of the population. MPOs have historically sought to mitigate public health issues such as traffic injuries and air pollution exposure, in response to regulations and funding. The focus on active transport (AT), however, is a relatively new strategy to address transport related issues like parking demand, traffic congestion, and greenhouse gas emissions, while also improving health. Safety concerns present a significant barrier to people engaging in AT (Cerin et al., 2017; Fowler et al., 2017; Kerr et al., 2016; Saelens and Handy, 2008), and studies have shown that the presence of high quality sidewalks and cycling infrastructure promotes PA (Active Living Research, 2009; Dill and McNeil, 2016). Thus, transport planning that supports AT infrastructure provides a key strategy in combating the physical inactivity epidemic.

Travel demand models utilized by transport agencies to guide infrastructure investments and decision making have traditionally focused on improving level of service for motorized vehicles (Aoun et al., 2015). Recently, models that accommodate AT trips have been implemented in select regions, however objective walking and cycling data to inform these models is lacking (Alliance for Biking and Walking, 2016; Aoun et al., 2015). Agencies are often reliant on national travel surveys that vary widely in methodology and the geographic scale of data aggregation. As a result, there are large discrepancies in AT estimates, which introduce error when applied at the local level (Mansfield and Gibson, 2016). Health researchers now increasingly use devices to capture location and activity data. Research grade Global Positioning Systems (GPS) sensors typically collect location information every 15 s, with a median accuracy of 3 m, and PA is objectively assessed using hip and wrist worn accelerometers (James et al., 2016; Schipperijn et al., 2014). These two data sources can be combined to identify transport trips and provide mode and route choice information.

Collaboration between PA researchers and transport agencies to combat physical inactivity through transport planning has been recommended for some time (Hoehner et al., 2003; Sallis et al., 2004; Schmid et al., 2006). Yet, little progress has been made toward integration of PA into planning goals. A recent review of regional transportation plans found few with stated PA goals and even fewer with specific performance metrics (Singleton and Clifton, 2016). MPOs in a recent national survey reported they lack suitable data to expand performance measures beyond those that are federally required, to include health and multi-modal transit (Davis, 2017). Despite this identified data need, the use of data not specifically collected for transport planning purposes and the process of collaborating with other sectors is not well understood. The impetus for this research was to understand how location and PA data, collected for health research purposes, might also inform AT planning and decision making, thereby expanding the applied utility of the data. This qualitative study capitalized on the existence of both research and transport experts in San Diego, CA and aimed to:

1) gain an in depth understanding of what data are utilized in AT planning,
2) explore the utility of GPS and accelerometer data in supporting the planning process,
3) identify the benefits and barriers of researcher and transport agency collaboration,
4) identify the facilitators to collaboration and to suggest areas for further exploration.

2. Materials and methods

The REACH group (Research in Environments, Active aging and Community Health), at the University of California, San Diego, conducts studies on the relationship between the built environment and health. The group has expertise in the collection and analysis of objective data on location and activity, including GPS and accelerometry. Likewise, the San Diego Association of Governments (SANDAG), the regional planning organization for San Diego County, has led efforts to include AT and health in planning (U.S. Department of Transportation, 2012). SANDAG funds projects that encourage AT through the state Active Transportation Program and has partnered with the County's health agency on two CDC funded grants; initiatives in which REACH researchers were involved (“SANDAG Active Transportation Program,” n.d., “SANDAG Public Health White Paper,” n.d.). Despite joint efforts, meaningful interdisciplinary collaboration has not been maintained.

This study followed a general inductive approach, using semi-structured interviews to identify themes related to the research aims. The Innovation-Decision Process, described in Rogers' Diffusion of Innovations Theory, guided the development of interview questions (Rogers, 2003). Rogers postulated that the adoption of an innovation, i.e. a new idea or technology, occurs though a 5-step process (see Fig. 1). Interview questions focused on the Knowledge and Persuasion stages, probing about previous practices, planning needs and perceived characteristics of research data and academic collaboration.

Interviews were conducted, either in person or by phone, between March 2015 and November 2016 by the first author (KC). A purposive, snowball sampling strategy was used to identify participants with in depth knowledge of AT modeling, planning, implementation or related research (Creswell, 2007). Recommendations for future interviewees were solicited at the end of each interview. All individuals contacted for an interview agreed to participate. Though the main focus of this study was on San Diego, participants were purposefully recruited from different geographic regions in the U.S. to provide broader experiences. The sample size was driven by the desire to have different perspectives within AT practice, and to reach sufficient saturation in responses. All interviews were conducted by the lead author. Key questions were emailed to participants prior to the interview to facilitate recall. A standard interview guide was utilized, though the semi-structured interview format allowed for flexibility given the varying roles of participants. See Appendix A for an example interview guide.

The study was reviewed by the UCSD Institutional Review Board and received a Certification of Exemption (protocol #150657XX). The interviews were audio recorded, and all participants provided verbal consent. To preserve confidentiality, participants did not state their name on the recording and any names mentioned in the interviews were anonymized during