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Moving targets: Promoting physical activity in public spaces via open streets in the US

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ABSTRACT

Popularity of Open Streets, temporarily opening streets to communities and closing streets to vehicles, in the US has recently surged. As of January 2016, 122 cities have hosted an Open Streets program. Even with this great expansion, the sustainability of Open Streets remains a challenge in many cities and overall Open Streets in the US differ from their successful counterparts in Central and South America.

Between summer 2015 and winter 2016, we reviewed the websites and social media of the 122 identified programs and interviewed 32 unique Open Streets programs. Websites and social media were reviewed for program initiation, number of Open Streets days, length of routes, duration of program, and reported participation. Interview questions focused on barriers and facilitators of expanding Open Streets and specific questioning regarding local evaluation activities. All interviews were transcribed verbatim and analyzed with constant comparative methodology.

Over three-quarters of US Open Streets programs have been initiated since 2010, with median frequency of one time per year, 4 h per date, and 5000–9999 participants. Seventy-seven percent of program routes are under 5 km in length.

Success of programs was measured by enthusiasm, attendance, social media, survey metrics, and sustainability. Thirteen of 32 program organizers expressed interest in expanding their programs to 12 dates per year, but noted consistent barriers to expansion including funding, permitting, and branding.

Though many cities now host Open Streets programs, their ability to effect public health remains limited with few program dates per year. Coordinated efforts, especially around funding, permitting, and branding may assist in expanding program dates.

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1. Introduction

The United States Guide to Community Preventive Services recommends enhanced access to places for physical activity combined with informational outreach, social support interventions in the community setting, and community-scale and street-scale urban design to increase physical activity (Guide to Community Preventive Services, 2013). A program at the nexus of these recommendations and gaining popularity in the United States (US) is the Ciclovía, or Open Streets. Open Streets temporarily provide public space - city streets - for residents to use for physical activity and social interactions, and closes the streets to

motorized traffic (County Health Rankings, 2016; Hipp et al., 2012; Lugo, 2013; Mason et al., 2011). Though similar programs of closing public streets in parks existed prior to 1974, the prevailing model of Open Streets began that year in Bogota, Colombia (Sarmiento et al., 2010; Torres et al., 2009). This model of Open Streets offers routes in areas with mixed commercial and residential development, encouraging local residents to be physically active in *their streets*, as well as engaging neighbors, local businesses, and additional stakeholders in the process, promotion, and success of the programs (Eyler et al., 2014; Hipp et al., 2013; Kuhlberg et al., 2014; Zieff et al., 2013).

Open Streets programs are viewed by health, community, and bicycle/pedestrian advocates and policy makers as potentially beneficial to physical, social, environmental, community, and economic health (Engelberg et al., 2014; Eyler et al., 2014; Shu et al., 2016; Wolf et al., 2015). Open Streets not only support active living and health, but many purposefully showcase sustainable, active transportation

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alternatives and are routed through local business districts to highlight the ease of accessing services via active transportation. Recent evaluations of two programs in California have highlighted that Open Streets can improve local air quality (Shu et al., 2016) and increase sales of businesses along the route (Chaudhuri and Zieff, 2015). In combination with other programs (e.g., recreation and bike share), policies (e.g., complete streets and shared use), and built environment change (e.g., greenways and parks) Open Streets are a strategy to improve the culture of health in public space (Gomez-Feliciano et al., 2009; Pratt et al., 2015; Trowbridge and Schmid, 2013).

Though the number of cities establishing Open Streets programs has been growing rapidly, the majority of programs continue to be limited in scale; with short routes, only one or a few dates per year, and open for only four to five hours per date (Eyler et al., 2014; Kuhlberg et al., 2014). With a narrow scale the potential public health benefits associated with increased access to places for physical activity and information outreach and social support in community settings are limited.

As a follow-up to surveys and program descriptions completed in 2012 (Eyler et al., 2014; Kuhlberg et al., 2014) and in collaboration with colleagues in Bogota, Colombia (Sarmiento et al., *in press*), we have two aims with the current study. First, to update and expand the description of past and current US Open Streets; so as to be more comparable to one another and Latin American Ciclovias. Second, to better understand the barriers and facilitators to US Open Streets programs increasing in scale. Guided by 8 80 Cities (healthiestpracticeopenstreets.org), we specifically asked programs' interest and ability to expand to at least twelve Open Streets dates per year. Associated with the latter aim, we are also interested in the definitions of success and collective evidence base for US Open Streets, including comparable evaluation metrics used across programs that may better inform increasing the frequency of Open Streets.

2. Methods

Building on an earlier database of US Open Streets created by the Open Streets Project (<http://openstreetsproject.org/initiatives/>) and Eyler and Hipp (Kuhlberg et al., 2014), research assistants searched the Internet, Facebook, Twitter, and Instagram in April 2015, for additional Open Streets programs in the United States. Search terms included the most common names of programs: Open Streets, Ciclovía, Sunday Parkways, Sunday Streets, and Streets Alive. Open Streets were defined as any program temporarily opening public streets for physical activity, active transportation, and social interactions, and closing the streets to motorized vehicles. The program had to be free to participants and excluded foot and bicycle road races, charity events, fun runs, and festivals with a non-physical activity-related theme. Open Streets are defined as "programs" in this paper regardless of frequency of Open Streets per year. Although a single event may not impact public health over the long term, single events can serve as a baseline marker for future program expansion. The list and contact information of US Open Streets programs and their organizers was updated and opened to interested parties, including the Open Streets Project, 8 80 Cities, and all participants of the 2014 Open Streets Summit, via Google Drive (<http://tinyurl.com/usopenstreets>). A total of 122 programs were identified. It should be noted that we will use 'programs' to describe Open Streets regardless of frequency.

2.1. Descriptive statistics of US open streets

In February and March 2016, a research assistant visited each Open Streets program website and social media platform to update (Kuhlberg et al., 2014) and describe each of the 122 unique programs. Specifically, the research assistant searched for and recorded the following information (Appendix 1; please see (Sarmiento et al., *in press*) for similar tables of Latin American Ciclovias: 1) host city; 2) program name; 3) year of initiation; 4) is program ongoing; 5) participants per

program date; 6) day of the week and duration of program; 7) program dates per year in most recent year; 8) length of route (km); 9) connectivity to parks and/or places of cultural interest; 10) public transportation access to route; 11) complementary programs and activities; 12) availability of safety and first aid at program; 13) promotion and marketing strategies; and 14) sponsorship information.

2.2. Interview of open streets organizers in the United States

May through July 2015, research assistants attempted to contact an organizer of each of the 122 identified Open Streets programs. Two phone call attempts and one email attempt (if both modes available, otherwise three attempts of single mode) were completed for each program, netting an interview with 32 unique Open Streets programs. Each interview was guided by a Washington University in St. Louis IRB-approved list of 15 questions. Six of the 32 cities selected to write in responses to the interview guide, with the majority (26) completing a digitally recorded telephone interview.

Most of the survey questions were the same as those used in the related 2012 survey (Eyler et al., 2014). However, new questions were added regarding barriers and facilitators of expanding Open Streets frequency to twelve dates per year and specific questions regarding the definition of a successful program and evaluation activities. The current analyses focuses on these new questions. Interviews took approximately thirty minutes to complete and were transcribed verbatim by a third party vendor.

The authors twice independently reviewed each transcript. Between readings authors shared identified themes developed via constant comparative methodology (Glaser, 1965). Identified themes were searched and coded during the second reading. A second author meeting provided specific verbatim text and examples of themes with any disagreements or unique codes discussed and voted on by all authors. Analytic components of this study were approved by the North Carolina State University IRB.

3. Results

3.1. Descriptive results of US open streets programs

Full results can be found in Appendix 1 for the 122 unique programs identified in the US. The oldest Open Streets program we were able to identify was Car-Free Sundays in Golden Gate Park, San Francisco, CA, which began in 1967, by restricting vehicle access to park roads on Sundays, allowing the streets to be used by families, runners, cyclists, etc. In 1968, Seattle, WA, held its first Bicycle Sunday, closing Lake Washington Boulevard. The first US Open Streets to truly emulate Latin American Ciclovias (urban streets with residential and commercial properties) appears to be Cleveland, OH's, Walk + Roll Broadway Slavic Village in 2006. The eight programs identified prior to 2006 were all either solely within a park or parkway/boulevard with a lake or river on one side of the open street. Cleveland was the first to open streets to the community across mixed land uses. Fig. 1a shows the increase in new program development beginning in 2010, the year with the most new programs (19), followed by 2012 and 2014 with 17 new programs each year.

Annual dates of US Open Streets remains low, with 66 of 107 (61.7%) with data available found to occur on only one date per year (Fig. 1b). Only 16 programs occur six or more times per year (15.0%), with three park-based Open Streets occurring each Sunday throughout the year (2.8%). Sunday is the most prevalent day, with 85 (78.7%) programs occurring only on that day. Open Streets have a duration of 1.5 to 15 h per program date, with the longer durations occurring in parks. Four and five hours were the most common time lengths of the programs, occurring across 72 (67.3%) of the programs (Fig. 1c). The distance of Open Streets routes also greatly varies, with 21 (23.1%) programs under one mile (1.6 km; Fig. 1d) and all save one program

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