

# Creating neighborhood recreational space for youth and children in the urban environment: Play(ing in the) Streets in San Francisco

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## ABSTRACT

In 2013, San Francisco was one of eight sites funded by Partnership for a Healthier America to implement Play Streets, a smaller-scale Open Streets-type initiative, aimed at increasing physical activity (PA) among children and youth by closing neighborhood streets for recreational activities. This paper evaluates the pilot Play Streets events held in summer of 2013 in San Francisco with a focus on examining the characteristics of users of such events, the impact on youth and children's physical activities, use of open space and level of community engagement. The study uses survey data, observational data, existing secondary data as well as GIS mapping to measure the space created by Play Streets. Demographic characteristics, levels/types of PA and level of community engagement for a sample of 1364 participants were examined. Engagement in vigorous PA increased three-fold (11.5% to 35%) during PS and 93.3% of participants agreed that "PS strengthens our community." Open space for PA and recreation added through Play Streets ranged from 47%–100% of available space depending on the site. Play Streets offers a significant opportunity for neighborhoods and small communities to implement a health-benefiting recreational event for its youth and families. However, specific programming is an important key to the success of Play Streets implementation and for attracting the targeted participants.

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## 1. Introduction

Physical activity (PA) has been identified as a significant determinant of physical, mental and emotional health across the lifespan (USDHHS, 2008). Insufficient PA is associated with higher prevalence of overweight and obesity as well as increased risk for diabetes and other chronic diseases (Ogden, Lamb, Carroll, & Flegal, 2010). Despite the benefits of PA, many adults and children—particularly ethnic minority and low-income populations—do not meet the minimum national recommendations (Troiano et al., 2008; CDC, 2012). In urban areas particularly, space limitations, inadequate financial resources and low prioritizing of health-benefiting recreation, have diminished the opportunities for increasing PA among the broader population (Van Cauwenberg et al., 2015).

Park use has been associated with PA among children and youth and later PA among adults (Jongeneel-Grimen et al., 2014), though access and proximity to parks (Brodersen, Steptoe, Williamson, & Wardle, 2005; Timperio et al., 2006), as well as playgrounds and open space (Kaczynski, Potwarka, & Saelens, 2013; Vaughan et al., 2013; Oreskovic et al., 2015), impacts usage among children and adults.

Among children, distances greater than one-half mile negatively impact PA (Cohen et al., 2006); for youth and adults, proximity combined with park quality increases likelihood of PA recommendations being met (Van Cauwenberg et al., 2015). Where parks and playgrounds are available in low-income areas, they tend to have fewer, and lower quality, amenities (Coughenour, Coker, & Bungum, 2014). Renovating school playgrounds increases PA among elementary students and reduces sedentary behavior (Brink et al., 2010).

Elements of the social environment such as organized activities (Bailey, Hillman, Arent, & Petitpas, 2012) and connecting with friends and family (Baskin, Dulin-Keita, Thind, & Godsey, 2015) also influence PA. Parental co-activity, in addition to parental support and encouragement, increases PA, especially among younger children (Rhodes et al., 2015). Such evidence suggests that there are ways to improve PA behavior using existing urban infrastructure.

Even where there is political will (Goins et al., 2013), the limited space of many urban areas can be a barrier to the development of parks and open spaces, and many communities are searching for innovative strategies to use existing space and resources. Joint-use agreements are one effective strategy increasingly being used by communities to support PA by encouraging shared facility use between schools and local organizations or by opening school resources to the local community (Slater, Chriqui, Chaloupka, & Johnston, 2014). Open Streets initiatives, in which miles of streets are closed to vehicle traffic,

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are another promising mechanism for increasing PA and offering broad-range community health benefits (Sarmiento et al., 2010).

>80 U.S. cities have implemented Open Streets to provide low-served communities with temporary parks (Alliance for Walking and Biking). Sunday Streets San Francisco, an Open Streets initiative in place since 2008, has demonstrated health benefits such as increased PA levels among residents of low-income areas (Zieff, Kim, Wilson, & Tierney, 2014). The success of Open Streets led the national organization, Partnership for a Healthier America (PHA), to fund a pilot program—Play Streets—with the goal of temporarily closing urban streets to vehicular traffic to provide open space for children and youth to play. The first Play Streets in the US was held in New York City in 2012, where 64% of participants aged 10 years and older reported that without Play Streets they would have been engaged in sedentary activities and >80% felt that Play Streets increased neighborhood safety and friendliness (So Godzeno, Lopez, Owens, Freij, & Holisko, n.d.). Play Streets type events have already proven successful in various international settings. In Belgium, elementary schoolchildren in neighborhoods with Play Streets decreased the amount of time spent in sedentary activities in comparison to children in non-Play Streets neighborhoods (D'Haese, Van Dyck, De Bourdeaudhuij, Deforche, & Cardon, 2015). Community-based PA mega-events in Brazil have also been successful in fostering both improvements in PA behavior and the use of existing infrastructure to expand available recreational resources (Matsudo et al., 2003). In addition, evidence from a range of international settings suggests that initiatives to promote PA are more effective when conducted as partnerships between organizations such as schools and government agencies, when specific communities and neighborhoods are targeted, and through street-scale land use, among other recommendations (Heath et al., 2012).

San Francisco was one of eight pilot sites funded by PHA in June–August 2013 to develop and implement Play Streets programming nationwide to increase youth activity time on weekends (Rodriguez et al., 2012). The popularity of Sunday Streets in San Francisco and high demand by neighborhoods to host Sunday Streets influenced the decision to implement Play Streets (King, 2016a). Play Streets was to be implemented on a smaller-scale (1–2 car-free city blocks) with lower staff requirements and was designed to provide flexibility for each neighborhood in determining their unique needs, cultural preferences and utilization of resources. The simplified structure of Play Streets with its possibility of more frequent events adds significantly to the amount of open space available for recreational and social activities (King, 2016a) for the city's youth and children.

The city sponsors of the Play Streets events identified four neighborhoods to pilot Play Streets (King, 2016a) based on the following criteria:

low-income (e.g., minimum 16% below poverty line); higher rates than the city average of chronic diseases including childhood obesity; and areas low-served for recreational resources (e.g., less than one acre of open space per 1000 residents, toxic land). Communities were encouraged to offer spontaneous and unofficial activities along the route in addition to the organized ones provided by the SF Recreation and Parks Department.

Once the neighborhoods of Western Addition, Excelsior, Bayview and Tenderloin were selected, additional criteria were developed that: excluded streets with public transportation to minimize disruption to service; gave preference to residential streets; and considered features such as steep slopes and availability of facilities (King, 2016b). Although the Bayview Play Streets occurred on a street with a slight slope, the site was considered favorable because of its proximity to a small plaza earmarked for revitalization, a recreation center with restrooms and the sponsoring organization - a local opera house. Connection with other neighborhood resources (e.g., community centers) was also a determining factor (King, 2016a). The Excelsior event was situated alongside an elementary school and was organized with the school's Parent-Teacher Association (PTA). The Tenderloin event was located in front of a community center with an adjacent playground, and the Bayview event was placed in front of a recreation center. Although the intended population of Play Streets according to PHA was pre-teen youth, SS organizers used the term "Play Streets for All" to indicate the lifespan approach and family-friendliness of the local version of the initiative (King, 2016a). Play Streets in San Francisco was organized and implemented through a partnership between non-profit organizations (i.e. Livable City, the umbrella organization of Sunday Streets and San Francisco Beautiful, a local advocacy organization) and the fiscal sponsorship of the San Francisco Municipal Transportation Agency (SFMTA).

The purpose of this paper is to evaluate the pilot Play Streets events held in summer of 2013 in San Francisco with a focus on examining the characteristics of users of such events, the impact on youth and children's physical activities, use of open space and level of community engagement.

## 2. Methods

There are two parts to the evaluation conducted in this study. First, a process evaluation of Play Streets was conducted to understand the design and operations of this pilot program. The goal was to identify strengths, weaknesses, program reach and sustainability of this youth-centric program. This was done using a multi-method evaluation design that had four components. First, data was collected using a survey

**Table 1**  
Demographics by neighborhood (SOPARC).

		Excelsior		Bayview		Tenderloin		Overall	
		Comparison n = 37	Treatment n = 313	Comparison n = 83	Treatment n = 267	Comparison n = 128	Treatment n = 536	Comparison n = 248	Treatment n = 1116
Gender*									
	Male	60%	49.45%	61.5%	80%	80%	66.8%	69.7%	62.7%
	Female	40%	50.55%	38.5%	20%	20%	33.2%	30.3%	37.3%
Age									
	Child								
	M	2.7%	26.8%	2.4%	22.5%	4.1%	20.7%	4.9%	38.4%
	F	0	24.6%	2.4%	12%	1.6%	11.9%		
	Teen								
	M	5.4%	1.9%	7.2%	4.5%	5.7%	4.5%	8.6%	7.1%
	F	5.4%	4.8%	3.6%	6.7%	0.01%	0.6%		
	Adults	86.5%	41.9%	84.3%	54.3%	90.2%	61.9%	87.7%	54.5%
Ethnicity									
	White	24.3%	36.1%	3.6%	15.2%	13%	20.3%	11.5%	23.5%
	Black	2.7%	2.6%	71%	58.1%	64.2%	28.5%	57.2%	28.1%
	Latino	37.8%	44.7%	20%	17.5%	6.5%	28.4%	16.0%	30.3%
	Others	35.1%	16.6%	4.8%	9.1%	14.3%	22.8%	12.3%	18.0%

Note: \* Does not include adults.

questionnaire that was developed by PHA for this purpose. The survey included the following types of questions: demographics; PA behavior; experience with Play Streets; and recommendations for Play Streets. We added questions investigating community development, sustainability, and social networking, for a total of 30 questions for the treatment survey. The comparison survey had 15 questions that excluded questions about Play Streets. Second, we used a validated tool called System for Observing Play and Recreation in Communities to observe participant activities during the first 15 min of each of the 4 h of Play Streets (SOPARC; McKenzie, Cohen, Sehgal, Williamson, & Golinelli, 2006). Third, we used Google Earth Pro to calculate the additional area added by Play Streets as recreational space. Finally, using City of San Francisco website ([sfgov.org](http://sfgov.org)) reporting all available open space and recreational resources, we measured a quarter-mile radius around the street closed for Play Streets and identified existing open space resources within that radius, to determine the added space that Play Streets created.

Second, an outcome evaluation of Play Streets was done to understand the participation at the Play Streets events, participants' attitudes towards these events and recommendations for future events. To understand the impact of Play Streets on recreational use of a specific space, we compared the use of the space before (baseline) and during (treatment) the Play Streets event. Play Streets being implemented in park-starved neighborhoods might upwardly bias the true participation by the neighborhood community. Hence, we selected a comparison site by matching the Play Streets sites with a neighborhood based on demographic measures (e.g., race/ethnicity data), availability of recreation facilities and high health disparities (San Francisco Health Improvement Partnership, 2016). We collected baseline, comparison and treatment data using both survey and SOPARC tools from individuals at the Play Streets and comparison sites on Saturdays during the months that Play Streets were held. Data were collected in three of the four selected Play Streets sites (Bayview, Excelsior and Tenderloin). Comparison data was collected from the neighborhood of Little Hollywood.

Initially we hoped to use a random sampling technique of inviting every third youth participant at Play Streets, however, the small sample of targeted (youth) participants, led us to invite all adults and children/youth present at the events to complete the survey. Since there were very few pre-teen or youths with parents at these sites, we were unable to collect data from this group without parental consents. Therefore, all responses to the survey were from adults, while SOPARC data were collected on all participants.

We did not collect data from the first event at Western Addition as it was held prior to our involvement in this evaluation. We had no involvement in the development and implementation of Play Streets. Our role was to solely observe and evaluate its impact on participants. As part of Livable City's development and implementation of Play Streets, they held town-hall meetings with neighborhoods to determine needs and interest. To understand that component of the process, we attended and observed one town hall meeting.

The SOPARC and survey data collected were analyzed using SPSS 22.0 and Stata 12.1. Open space created by Play Streets was measured using Google Earth Pro. Polygons were generated measuring added space in square meters from each event in each neighborhood. Approval to conduct this study was received from the Institutional Review Board of San Francisco State University.

### 3. Results

#### 3.1. SOPARC

Demographic characteristics of each neighborhood are shown in Table 1. The results are shown for comparison (includes baseline from Play Streets sites and comparison site) and treatment (during the event at a Play Streets site) by each neighborhood as well as the total

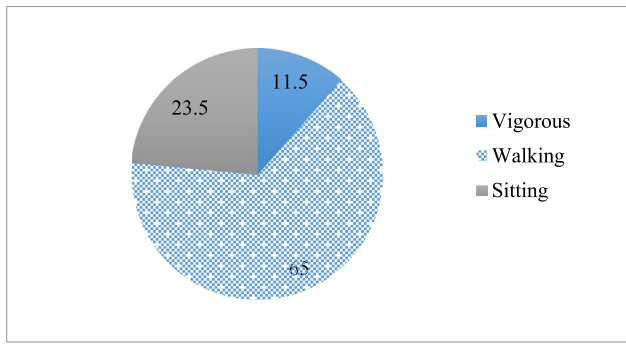
sample. On a non-Play Streets day, individuals using the street space where Play Streets was held were predominately adults over the age of 24 years (87.7%) and black (57.2%). Whereas during Play Streets, 54.5% of participants were adults and there was a more even ethnic mix among Black (28.1%), White (23.5%) and Latino (30.3%) participants. Although more than half the Play Streets participants were adults, the percentage of children below 14 years of age out on the streets increased from 4.9% on the comparison day to 38.4% during Play Streets. Youth and child participants were predominantly male (62.7%). The diversity of various neighborhoods in San Francisco was reflected in the proportion of adults and children, male and females as well as the various ethnic groups present at these events.

PA of participants during Play Streets varied by neighborhood, age and gender. (See Table 2). During Play Streets, the majority of children <14 years of age engaged in some non-sedentary activity, especially in the Bayview and Tenderloin. In all three neighborhoods, children were engaged in vigorous activity more than other age groups while accompanying adults were engaged primarily in sedentary behavior. Many female teens were sedentary as well. Even though there were more people who were sedentary during Play Streets, it increased the proportion of those who were engaged in vigorous activities by almost 23%. The increase in sedentary activities among adults was mainly because of accompanying parents who sat and watched their children (Figs. 1 and 2).

San Francisco Recreation and Parks Department provided climbing wall and bicycle ramps at each site. The spontaneous activities differed by site because of community decision-making around offered programs and included magic show, basketball, soccer, tag, bean bag throw, sidewalk chalk drawing, Zumba, and hula hoops. Table 3 provides a list of activities offered by each Play Streets site. This variation in activities offered influenced the levels of moderate or vigorous activities at each site.

**Table 2**  
Level of Activity: Comparison vs. Treatment by Neighborhood (SOPARC).

	Sedentary %		Walking %		Vigorous %	
	Female	Male	Female	Male	Female	Male
<b>Excelsior</b>						
Comparison (n = 37)						
Child	0	0	0	0	0	2.7
Teen	0	0	5.4	5.4	0	0
Adult	0	8.1	8.1	56.8	2.7	10.8
Treatment (n = 313)						
Child	10.5	15.0	0	0	14.1	11.8
Teen	2.6	1.9	1.0	0	1.6	0
Adult	23.6	10.9	2.0	0.003	2.2	2.9
<b>Bayview</b>						
Comparison (n = 83)						
Child	0	0	2.4	2.4	0	0
Teen	0	0	3.6	6.0	0	1.2
Adult	0	0	30.1	53.0	0	1.2
Treatment (n = 267)						
Child	4.5	5.2	2.2	2.6	5.2	14.6
Teen	2.2	0.04	2.6	1.1	1.9	3.0
Adult	27.7	21.0	0.04	2.2	0.04	2.6
<b>Tenderloin</b>						
Comparison (n = 123)						
Child	0	0	0	0	1.6	4.1
Teen	0	0	0.8	0	0	5.7
Adult	7.3	26.8	11.4	36.6	3.3	2.4
Treatment (n = 536)						
Child	0.19	0.37	0.37	1.1	11.8	18.5
Teen	0	0.19	0	0	0.56	5.0
Adult	17.7	13.8	14.6	12.5	1.5	1.9
<b>Overall</b>						
Comparison (n = 243)						
	23.5		65.0		11.5	
Treatment (n = 1116)						
	48.2		17.2		34.6	



Note: Vigorous includes: bicycling, jogging through the neighborhood.

Fig. 1. Comparison groups-combined level and types of PA (% participants). Note: Vigorous includes: bicycling, jogging through the neighborhood.

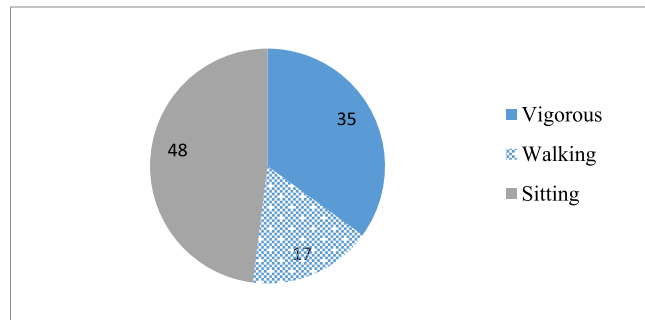
3.2. Play streets survey

The survey questions and responses are shown in Table 4. Surveys completed in the neighborhoods prior to Play Streets (n = 48) indicated over three-quarters of surveyed residents perceive San Francisco as walking and biking friendly. Although the majority of respondents (68.8%) had not heard of Play Streets, 87.5% intended to participate after learning about it.

The majority of participants completing surveys during Play Streets indicated they found out about the event through word of mouth or their children's school. Others learned about it by walking/driving past. Most respondents invited friends and family to attend Play Streets with them (51.3%), attended to be physically active (36%), and planned on spending 1–2 h at the event (37.3%). Of the many activities available, over 50% of survey respondents reported the climbing wall as their favorite activity. Almost all respondents reported they would attend Play Streets again (97%), would recommend it to friends and family (95%), and agreed or strongly agreed that Play Streets strengthens their community (94%).

3.3. Creating open space through play streets

Measurements of open space created using Google Earth Pro showed that added space was primarily a result of streets closed to motorized vehicles, but also included, in the case of Bayview, a closed parking lot. Using a City of San Francisco map, a ¼ mile radius was drawn around each Play Streets location to determine percent impact of added open space in relation to existing open space. This method was chosen based on literature indicating walkability distance of the youngest potential participants (Dunton, Almanza, Jerrett, Wolch, & Pentz, 2015).



Note: Vigorous includes: Rock climbing (4%), bicycling (10%), free play (13%), skateboarding (3%), organized sport & games (5%)

Fig. 2. Treatment groups-combined level and types of PA (% participants). Note: Vigorous includes: Rock climbing (4%), bicycling (10%), free play (13%), skateboarding (3%), organized sport & games (5%).

In all cases, Play Streets added significantly to open space usable for recreation in close proximity to the resident participants. About 47% of open space was added in Tenderloin, 50% in Bay view, and 100% in Excelsior (Table 5).

3.4. Community engagement

We asked additional survey questions to gauge level of engagement among the Play Streets participants. Adult survey respondents most liked: free place to exercise (34%); convenient location (32%); and a place for social interaction (24%). When asked if Play Streets strengthened the community, there was strong agreement (Bayview, 52%; Excelsior, 53%; and Tenderloin, 71%). Respondents answered positively when asked if they would attend Play Streets (comparison group: 87.5%) or attend again (treatment: 98.7%).

4. Discussion and recommendations

In 2013, San Francisco Play Streets for All was pilot-tested in four locations identified as “Communities of Concern” by the Metropolitan Transportation Commission based on eight disadvantage factors (San Francisco Metropolitan Transportation Commission, 2012). We found that Play Streets in SF attracted families with young children in neighborhoods under-resourced for recreational facilities, but did not bring out the targeted youth. A large group of older parents attended (30% age 35–44) of whom 60% of the adults reported to have some college. This reflects the general population of San Francisco, but does not achieve the aim of attracting lower socio-economic groups. The adults attended Play Streets with their children, but rather than engage in PA, interacted with their adult neighbors. Cities interested in exploring the potential of Play Streets would benefit from considering how to best engage the adults as well.

In addition to providing an important recreational opportunity, Play Streets offered neighborhood residents an opportunity for social interaction and community building. The communities identified for Play

Table 3  
Activities available by neighborhood.

	Excelsior	Bayview	Tenderloin
Balloons	X		X
Balls	X		X
Basketball	X		X
Bean bag basket	X		
Bicycling	X	X	X
Bowling	X		
Bubbles	X		X
Climb/sliding			X
Dancing	X		
Face painting			X
Frisbee			X
Football		X	
Golf			X
Hopscotch	X		
Horseshoes	X		
Hula hoops	X		
Jump rope	X		
Ping pong	X		
Playground		X	X
Ring toss	X		
Rock climbing	X	X	X
Roller skating		X	
Show		X	
Scooters	X		
Skateboarding		X	X
Sidewalk Chalk	X	X	
Slack Line			X
Soccer	X		X
Toys	X		
Tree Planting		X	
Zumba/Dancing	X	X	

**Table 4**  
Survey results: Comparison vs. Treatment by Neighborhood -% participants.

Question	Categories	Comparison n = 48	Treatment n = 75	Excelsior n = 33	Bayview n = 25	Tenderloin n = 17	
Age	18–24	12.5	10.7				
	25–34	27.1	21.3				
	35–44	29.2	30.7				
	45–54	18.8	24.0				
	55–64	6.3	8.0				
	65 or older	4.2	5.3				
What is the highest grade in school you have completed?	Don't know/refused	2.1	0				
	6th grade or less	0	2.7				
	7–11th grade	4.2	2.7				
	High school graduate	18.8	18.7				
	Some college	27.1	21.3				
	College graduate	25.0	18.7				
	Some graduate school	4.2	4.0				
	Graduate school	16.7	20.0				
	Doctoral or professional degree	4.2	9.3				
	Refused/do not wish to answer	0	0				
Ethnicity	White	29.2	34.7				
	Black	33.3	25.3				
	Hispanic	12.5	14.7				
	Asian	16.7	8.0				
	Mixed	8.3	2.7				
	Other	0	2.7				
What was your primary reason for visiting the Play Streets event today?*	Don't know/Refused to answer	0	1.3				
	PA by self		1.3	0	7.1	5.0	
	PA with other adults		2.7	0	7.1	10.0	
	PA with child(ren)		22.7	38.2	7.1	25.0	
	Observe child doing PA		29.3	41.2	21.4	25.0	
	Learn more about PS		12.0	11.8	17.9	15.0	
	Other		24.0	8.8	39.3	20.0	
	Don't know/not sure		0	0	0	0	
	How did you found out about the Play Streets today? (Only one answer)	Word of mouth		21.3	21.2	20.0	27.8
		Roadside signage		8.0	12.1	4.0	11.1
Driving past			6.7	3.0	16.0	5.6	
Newspaper			1.3	0	4.0	0	
Child(s) school			16	36.4	0	5.6	
City's park/rec dept			2.7	0	4.0	5.6	
Internet			9.3	21.2	0	0	
Brochure			5.3	3.0	8.0	5.6	
Convention/visitor's bureau			0	0	0	0	
Other			0	0	44.0	38.9	
Refused/do not wish to answer			0	0	0	0	
How much time do you plan to spend at the Play Streets event today?		<15 min		1.3	0	0	0
		15–29 min		12.0	6.1	16.0	17.6
	30–44 min		6.7	0	12.0	11.8	
	45–59 min		5.3	9.1	4.0	0	
	1–2 h		37.3	48.5	24.0	35.3	
	2–3 h		17.3	21.2	12.0	17.6	
	3–5 h		12.0	6.1	16.0	17.6	
	>5 h		6.7	3.0	16.0	0	
Would you consider attending another Play Streets event?^	Yes	87.5	97.3	93.9	100	100	
	No	12.5	1.3	3.0	0	0	
	Refused/do not wish to answer	0	0	0	0	0	
Would you recommend Play Streets to a friend?	Yes		94.7	90.9	100	100	
	No		0	0	0	0	
As a result of attending PS, will you seek out more opportunities to be physically active?	Not sure		1.3	3.0	0	0	
	Yes		53.3	33.3	60.0	82.4	
	No		28.0	51.5	12.0	5.9	
How would you rate your City regarding providing friendly environments to walk or bike?	Don't know		14.7	12.1	28.0	0	
	Very good	29.2	28.0	24.2	32.0	29.4	
	Good	47.9	44.0	51.5	28.0	52.9	
	Average	16.6	16.0	18.2	20.0	5.9	
	Poor	2.1	0	0	0	0	
	Very poor	0	1.3	0	4.0	0	
How much do you agree or disagree with the following statement: Play Streets strengthens our community.	Strongly agree		56.0	51.5	52.0	70.6	
	Agree		37.3	45.5	32.0	29.4	
	Neutral		2.7	3.0	4.0	0	
	Disagree		1.3	0	4.0	0	
	Strongly disagree		0	0	0	0	

Note: Comparison includes Little Hollywood (non-PS site) as well as Excelsior, Bayview and Tenderloin (on non-PS days). Not all total 100% due to missing values for some variables. \* Total more than 100% due to multiple answers Comparison survey question: Would you attend Play Streets?

Streets implementation participated in the development, programming, and implementation process in varying degrees. On average, 150 residents attended “town hall meetings” scheduled by the staff of Sunday Streets San Francisco, and voiced both support and concerns about the process, which is an indication of engagement with the project. Community response to the invitation to self-advocate ranged from organization of an additional event by the school parent-teacher association (PTA) in the Excelsior a month after the initial event, to the relative absence of community involvement in the Bayview.

The varied level of community involvement by neighborhood suggests the need for different levels of participation and at different phases in the process by city agencies. For example, the Bayview and Tenderloin would have benefitted from stronger partnerships and collaborations with city agencies to achieve successful outcomes.

At each site, Play Streets added significant open space to neighborhood users. In general, participants requested greater numbers of programmed activities, more frequent implementation and more opportunity for recreation in their communities, suggesting that Play Streets offers a potentially useful model for implementing low-cost, regular recreation opportunities in low-resourced communities. Considering the scholarly literature demonstrating the potential PA benefits of joint-use agreements (Slater et al., 2014) and the relatively low-maintenance and minimal infrastructure and equipment requirements of Play Streets, these events offer communities the opportunity to support the physical and social health of residents. In addition, studies demonstrating the increase in PA among adolescents after renovations to schoolyard recreation facilities suggest that with minimal added facilities, PA levels could be improved with Play Streets.

The strength of this study is the use of multiple methodologies to assess a natural experiment. Despite the relatively small sample size and limited conditions, Play Streets offers a strategy for increasing community recreation capacity while capitalizing on existing infrastructure and community engagement. The small size and simple design also allow for flexibility in programming and community involvement. A limitation of this study is that the brief season of Play Streets prevented long-term comparisons and assessment. In addition, the relatively few pre-teen participants limited data collection from youth who were the main population targeted by Play Streets leading to subsequent survey data of the adults only. The survey questions that we used in our analysis (i.e. community development and recommendations for Play Streets) were subject to self-report bias.

We recommend that the city permitting process is streamlined and the sponsoring city agency offers more technical support to improve implementation. Some communities need more technical support in the earlier stages than others to increase sustainability. Providing more clarity in the training and implementation process for residents will support each community as it takes responsibility for the event.

Play Streets organizers should make a clear determination of the targeted population and adjust activities accordingly perhaps by focusing on a specific population of interest within the community. The lead city agency should work in conjunction with the communities to determine need, thereby supporting the possibility of offering age-appropriate activities. This part of the process could be strengthened through partnerships with CBOs and school districts (such as through joint-use policies) who understand and know the needs of the community. Joint-use policies appear to be successful in other national and

international contexts and should be considered in the development, implementation and sustainability of Play Streets.

## 5. Conclusion

Although Play Streets was implemented to provide more recreational space for youth and children, the life-course perspective in San Francisco to include the entire community and make it a family friendly event ended up with greatly diminished youth involvement. The main participants ended up being young children (below 10 years) accompanied by their parents. The kind of programming and play equipment offered also influenced who stayed at these events. However, the fact that these street closures brought out so many children and their families suggests a need for more of such events in these neighborhoods. The researchers observed that drug and gang activity were noticeably absent and groups of idle adults had disappeared from street corners during Play Streets compared to the comparison days. Providing a safe space for neighborhood children to play suggests a positive change in the neighborhood dynamic during the implementation of Play Streets.

Communities seeking to implement Play Streets or similar events should carefully consider interest by the targeted population. The founding goal of a program targeting “pre-teen” youth proved unrealistic in San Francisco due to inadequate marketing and the use of activities more appealing to younger children. Play equipment was made available at the Excelsior site through a partnership with the adjacent elementary school’s physical education teacher and PTA. All three sites evaluated here showed the benefits of siting near schools and recreation centers and the tremendous potential for joint-use agreements.

The Play Streets pilot initiative of 2013 and its proposed re-implementation in 2017 (<http://www.sundaystreetsf.com/play-streets/>), support two objectives of the 2014 Recreation & Open Space Element of the General Plan of the City and County of San Francisco to: “Pursue the use of schoolyards as publicly-accessible open space during non-school hours” (Policy 2.9) and to “Creatively develop existing publicly-owned rights of way and streets into open space” (Policy 3.1) (San Francisco Planning Department, 2014). To better inform communities considering Play Streets, future research should look into the cost-effectiveness and sustainability of such events.

## Conflict of interest

The authors have no personal financial relationships with commercial interests relevant to this paper to disclose.

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**Table 5**  
Square meters/acreage and impact from added space during PS.

	Bayview	Excelsior	Tenderloin
Added square meters/acreage	5600/1.38	2107/0.52	1859/0.46
Percent addition of acres within ¼ mile radius	Adam Rogers Park (closest park is 0.3 miles away) = 2.74 acres. Added 50.36% open space	No nearby parks 0.52 added 100% open space in ¼ mile radius	Boeddiker Park (0.2 miles away) = 0.97 acres 0.46 added 47% open space to ¼ mile radius

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