



Reclaiming the streets for people: Insights from Ciclovías Recreativas in Latin America



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ABSTRACT

The Ciclovías comprise worldwide programs in which streets are closed to motor-vehicles and open to individuals for leisure activities. Currently, 93% of the regular programs are in Latin American countries (LAC). The aims of this study were to describe the characteristics of regular Ciclovías in 7 LAC and to analyze the factors that influence the sustainability and scaling-up of five case studies. We conducted a survey of 67 Ciclovías in 2014–2015. In addition, we conducted semi-structured interviews with current and former program coordinators and reviewed policy documents from Ciclovías in 5 LAC. The greatest expansion of Ciclovías has occurred since 2000. The number of participants per event ranged from 40 to 1,500,000 (mean $41,399 \pm 193,330$; median 1600), and the length ranged from 1 to 113.6 km (mean 9.1 ± 16.4 ; median 3). Ciclovía routes connect low-middle and high income neighborhoods (89.3%), and include the participation of minority populations (61.2%). The main complementary activity offered was physical activity (PA) classes (94.0%), and 80.0% of the programs included strategies to promote biking. All five case studies met definitions for sustainability and scaling-up. All programs shared some level of government support, alliances, community appropriation, champions, compatibility with the mission of the host organization, organizational capacity, flexibility, perceived benefits, and funding stability. However, they differed in operational conditions, political favorability, sources of funding, and number of alliances. The Ciclovías of LAC showed heterogeneity within their design and sustainability factors. Both their heterogeneity and flexibility to adjust to changes make them promising examples of socially inclusive programs to promote PA.

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1. Introduction

The worldwide expansion of Ciclovías resembles a healthy epidemic of a promising community intervention that may counter the global pandemic of physical inactivity (Kohl et al., 2012) and obesity (Sarmiento et al., 2010a; GBD 2013 Risk Factors Collaborators et al., 2015). Ciclovías are multi-sectoral programs in which streets are closed to motorized vehicles and open exclusively for individuals to enjoy safe, free spaces for leisure activities (Meisel et al., 2014).

Ciclovía program benefits extend beyond leisure physical activity (PA) promotion by providing a suitable environment to decrease unequal access to recreational opportunities (Teunissen et al., 2015), promote social capital (Torres et al., 2013), improve the population's quality of life (Sarmiento et al., 2010b), advocate for cycling for transport (Torres et al., 2013), reduce particulate pollution and street noise (Sarmiento et al., 2010a; Shu et al., 2015) and increase business activity (Chaudhuri and Zieff, 2015).

For approximately 16 years, we have observed the scaling up of Ciclovías around the world (del Castillo A et al., 2013). Currently, Ciclovías with events at least twice per year are implemented in at least 496 cities in 27 countries on all continents (del Castillo A et al., 2013). These programs occur in a wide variety of cities, from metropolises to relatively small towns. The fastest expansion has occurred in Latin America countries (LAC) which account for 93% of all regular programs. Among these programs, approximately 90% were inaugurated since 2000. The large-scale expansion of Ciclovías represents

Abbreviations: PA, physical activity; CRA, Ciclovías Recreativas of the Americas Network.

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an example of practice-based evidence driving new programs and policy faster than research-based evidence (Sarmiento et al., 2010a).

In this context, studies of regular Ciclovías from LAC with different approaches and trajectories may provide useful insights into why these programs have grown. These findings, in turn, will inform global and country specific efforts, such as the Robert Wood Johnson Foundation initiative towards the creation of a culture of health (Robert Wood Johnson Foundation, 2013), the World Health Organization Global Strategy on Diet, Physical Activity and Health (Who, 2004), the United Nations political declaration on non-communicable diseases (United Nations, 2011) and the Plan of Action for the Prevention of Obesity in Children and Adolescents from the Pan-American Health Organization (Organización Panamericana de la Salud, 2015).

Therefore, the aims of our study are twofold: 1) to describe the characteristics of regular Ciclovías in 7 LAC, and 2) to analyze the factors that influence the sustainability and scaling-up of five case studies.

2. Methods

This study used a mixed methods approach with a convergent parallel design in which quantitative and qualitative methodologies were prioritized equally and were applied concurrently.

2.1. Survey of Ciclovías in Latin America

The survey used the programs registered in the Ciclovías Recreativas of the Americas Network (CRA) as a sampling frame (Ciclovías Recreativas de las Américas, 2015). According to the CRA, 390 programs were registered in April 2014. Of these programs, 374 programs were implemented in 17 LAC (Fig. 1). Program coordinators received an invitation to complete an on-line questionnaire from August 2014 to February 2015 (Appendix A).

The questions included the following dimensions: 1) length and duration, 2) access and attractiveness, 3) social inclusion, 4) users, 5)

services and 6) safety (Appendices A–C). The questions were developed based on expert consultations conducted in 2011 and 2014 (Sarmiento et al., 2013). The experts included program coordinators ($N = 3$), Ciclovía-Recreativa/transport consultants ($N = 5$), one public health practitioner, and one researcher (Sarmiento et al., 2013). Questionnaires were conducted in Spanish.

The programs were classified into 8 typologies based on all combinations of the following 3 factors 1) frequency: weekly vs. monthly/bi-monthly/seasonal, 2) urban scale: city/metropolitan vs. neighborhood/district and 3) length (≤ 10 vs. > 10 km) (Appendix C). We used a chisq-test to assess differences in typologies between programs using SAS version 9.4.

2.2. Qualitative component

From the surveyed programs, we selected four Ciclovía programs using a purposive sampling approach based on the following criteria: trajectories between 5 and 15 years, and different funding and organization schemes (public vs. private partnerships). The programs from Cuautitlán Izcalli and Mexico City (México), Quito (Ecuador), and Santiago de Chile (Chile) were selected. In addition, we included Bogotá's program (Colombia) because it has been the inspirational model for other Ciclovías worldwide (Sarmiento et al., 2010a; Díaz Del Castillo et al., 2011).

We conducted semi-structured interviews with current and former program coordinators based on a guide that focused on origins, structure, policy, funding, regularity, growth, allies, perceived benefits, challenges and citizen participation. The interviews were audio-recorded and transcribed verbatim. We also reviewed available reports and policy documents from these programs.

We defined sustainability as a dynamic set of processes that enable the continued delivery of program activities and policies in an identifiable form even if modified or adapted (Shediak-Rizkallah and Bone, 1998; Scheirer and Dearing, 2011). Ciclovías were considered sustained

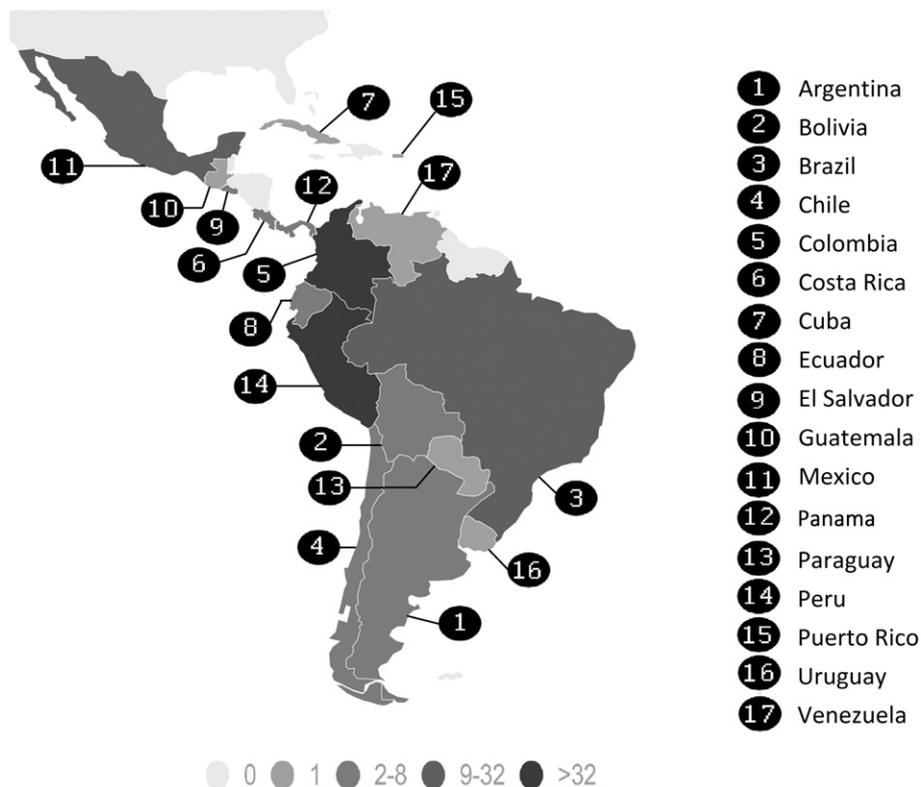


Fig. 1. Countries with Ciclovía programs in Latin America during the period of 1974–2016. The gray scale corresponds to the number of programs per country. Only programs that occur at least two times per year are included.

if they met the definition and main activities of the program. We considered that the program had locally scaled up if it increased the length of its route, number of circuits, activities/services or frequency. We analyzed the factors previously identified by Shediach-Rizkallah and Bone (1998), Scheirer (2005) and Savaya et al. (2008) that influence sustainability, and we adapted the given definitions. Such factors that affect sustainability were: stable sources of funding, diverse sources of funding, flexibility, perceived benefits vs. demonstrable effectiveness, champions present, compatibility with mission of host organization, organizational capacity, government support, inclusion in policies and regulations, compatibility with local government goals, allies and community appropriation-support.

We developed charts grouped by each theme across all respondents that included summaries and verbatim texts. All information was independently analyzed by two of the authors and cross-compared. The program coordinators subsequently assessed the importance of the identified factors in the sustainability of their programs using a Likert scale (1–5, with 1 not important and 5 very important). To visualize the weights assigned by program coordinators to the factors, we created networks of each program using the R software (version 3.2.3).

All protocols and questionnaires were approved by the Institutional Review Board of the Universidad de los Andes in Bogotá.

3. Results

3.1. Characteristics of the Ciclovías related to organization, design and services

Overall, 67 of the 374 eligible programs from 7 LAC completed the questionnaires. These countries (Argentina, Brazil, Chile, Colombia, Ecuador, Mexico and Peru) differed in population, urban area, and socio-economic indicators (Fig. 1, Appendix B–C). Most programs occurred in Colombia (38.8%) and Peru (37.3%), followed by Mexico (16.4%). Fewer than 10% of the programs occurred in Ecuador, Argentina, Brazil, and Chile. The first program began in 1974, and the greatest expansion in the number of programs has taken place since 2000.

The number of participants per event and the counting methods reported by coordinators varied significantly (range: 40–1,500,000, mean $41,399 \pm 193,330$; median 1600). Regarding the social inclusion that characterizes Ciclovías, 53.7% of the program routes included low-income areas, 89.3% connected different income areas, and 6.0% included routes in areas with a predominance of minority populations (ethnic groups, internally displaced populations, other minorities).

In most programs, regularity provided opportunities for meeting the weekly PA recommendation for adults and the daily PA recommendation for children (U.S. Department of Health and Human Services, 2008). Program frequency ranged from 8 to 169 events per year (mean 40.4 ± 31.9 ; median 42), with 56.7% of the programs operating weekly. The duration of the events ranged from 2 to 12 h (mean 5.2 ± 1.6 ; median 5).

The length of the Ciclovías varied from 1 to 113.6 km (mean 9.1 ± 16.4 ; median 3), and 74.6% were <10 km. Most programs had connectivity with attractive sites (95.5%), including parks, plazas, sports venues, touristic places, beaches and others places of interest. Moreover, 73.1% of the programs had access to public transport within 500 m of the route perimeter.

Consistent with the design recommendations for Ciclovías, 94.0% of the program routes included iconic streets (streets widely known for distinctive cultural, historic or architectonic characteristics), main streets (streets with high traffic flow and public transportation) or commercial streets (streets located in zones in which the primary land use is commercial activities). All programs offered at least one complementary activity, with the main activity being PA classes (94.0%).

Approximately 80% of the programs included strategies for promoting biking for transport. These activities included bike-riding classes (49.1%), bike exhibitions (45.8%), awareness-raising activities for

cycling for transportation (35.8%), bike rental (41.5%), bike repair classes (24.5%), critical mass gatherings and biking trips (5.7%). In addition, in 19.4% of the programs bikes can be carried on the public transport system.

The Ciclovía program funding is mainly public (82.1%). Most programs (79.1%) are led by public entities from the government (38.5%) and sports sectors (32.3%). Reflecting the multi-sectoral nature of the Ciclovías, all programs report alliances with a wide range of private and public entities, including sports and recreation (67.2%), health (65.7%), security (55.2%), education (47.8%), culture (41.8%), transport (38.8%), environment (23.9%), services (22.4%) and tourism (16.4%). Coordinators classified the entities according to sectors. For example, the sports and recreation entity of Guadalajara in Mexico was the Municipal Council on Sports. The security entity of Bagua in Peru was the Police department. The services entities of Bogota in Colombia were logistics companies and media.

According to the typologies used to classify Ciclovías (Appendix C), 34.3% of the programs occurred with a monthly/bi monthly/seasonal frequency, at the district/neighborhood scale and have a length of <10 km.

After the year 2010, the new programs were more likely to extend <10 km (80% vs. 23.5%, respectively, p -value <0.0001) and were less likely to be weekly (96.6% vs. 42.1%, respectively, p -value <0.0001). According to the complementary activities for the promotion of PA, we did not identify differences in the PA classes or sports by typology, extension, scale or frequency.

We found that the programs of >10 km, compared with the programs of ≤10 km, were more likely to have routes that included low income (88.2% vs. 42%, respectively, p -value 0.0010) and high income (82.4% vs. 34%, respectively, p -value 0.0006) neighborhoods. We did not identify differences in the routes that included middle income neighborhoods.

3.2. Study of five cases

All five programs met sustainability and scaling-up definitions (Table 1). Nevertheless, the conditions in which they operated differed substantially, especially regarding political favorability, funding (distribution and sources), and number/quality of alliances (Table 1). Fig. 2 also illustrates the diversity of the weights assigned to each sustainability factor, which, in turn, exemplifies how some strong features may balance other weaknesses.

All programs also shared some degree of the following factors: government support, alliances, appropriation/support from citizens, committed champions, compatibility with the mission of the host organization, organizational capacity, flexibility, perceived benefits by citizens/users/staff, and funding stability. Specifically, the programs of Mexico City and Bogotá are led by government entities and are mainly publicly funded, but the programs of Cuatitlán Izcalli, Quito and Santiago are led by private entities and are funded by either private funds or a combination of public-private funds.

3.3. Cuatitlán Izcalli: Bici-Izcalli

Bici-Izcalli is a privately funded program inaugurated in 2010. It is organized by the non-profit organization *Biciverde* with the purpose of recovering public space for individuals. At the beginning, the program had governmental support in the form of permits; however, there was no allocation of funds. Since then, local authorities have provided irregular in-kind funding for street closure, security and materials. In 2011, *Biciverde* secured private funding through the non-profit organization “*Conoce México en Bicicleta*”, which raises funds for Ciclovías in Mexico; it secured two sponsors in the previous four years. The leader organization was the key to secure basic funds and services and advocate for the program. The participation of high school students who serve their social service in *Bici-Izcalli* has contributed to reduce personnel costs.

Table 1
Comparison of sustainability factors from five Ciclovía programs.

Factors	Cuautitlán Izcalli	Ciudad de México	Quito	Santiago de Chile	Bogotá
Meets sustainability definition ^a	Yes	Yes	Yes	Yes	Yes
Meets scaling-up definition ^a	Increased services and frequency	Increased length and services	Increased length, frequency and services	Increased number of circuits, length, and services	Increased length, services and frequency
<i>Program setting</i>					
Funding distribution	100% private	75% public/25% private	60% public/30% private	60% public/40% private	63% public/37% private
Stable sources of funding ^{a,b}	Yes	Yes	Public funding tied to periodically renewable agreements. Private funding is not stable	Public funding tied to bidding processes. Private funding is not stable	Yes
Diverse sources of funding ^c :	No	Yes	Yes	Yes	Yes
Flexibility ^{a,d} :	Yes	Yes	Yes	Yes	Yes
Perceived benefits vs. demonstrable effectiveness ^{a,e} :	Perceived benefits	Perceived benefits, evidence on goal attainment.	Perceived benefits	Perceived benefits	Perceived benefits, evidence on contribution to specific goals.
<i>Organization setting</i>					
Champions present ^{a,f} :	Yes	Yes	Yes	Yes	Yes
Compatible with mission of host organization ^{a,g} :	Yes	Yes	Yes	Yes	Yes
Organizational capacity ^{a,h} :	Yes	Yes	Yes	Limited	Yes
<i>Context setting</i>					
Political favorability					
Government support ^a : a. Permits. b. In-cash resources from governmental institutions. c. In-kind resources from governmental institutions	a, c	a, b, c	a, b, c (irregular)	a, b	a, b, c
Inclusion in policies and regulations ⁱ :	No	Yes	No	No	Yes
Compatible with local government goals ^j :	No	Yes	No	No	Yes
Allies ^{a,k}	Cooperation with civil society organizations and government departments (irregular)	Partnerships with local government departments and non-profit organizations	Cooperation with local government departments (irregular) and civil society organizations	Some cooperation with civil society organizations (irregular)	Communication/Co-llaboration/Cooperation with government departments
Community appropriation-support ^{a,l}	Yes	Yes	Yes	Yes	Yes

^a Features met by all programs at some degree/level.

^b Stable sources of funding: the budget is a fixed item in annual financial planning from funders and/or survives annual budget cycles.

^c Diverse sources of funding: multiple sources of funding that allocate in-cash funding.

^d Flexibility: the ability of a program to adapt to changing circumstances.

^e Perceived benefits vs. demonstrable effectiveness: perception of benefits from citizens/users/staff vs. availability of effectiveness evaluations.

^f Champions present: leader with access to upper management, as well as an influence on, or control over, day-to-day program operations.

^g Compatible with mission of host organization: the “fit” of the program within the existing organizational mission and/or its standard operating procedures.

^h Organizational capacity, according to interviewees: the organization has the resources, skills, and/or stability and strength necessary to effectively manage the program and its activities.

ⁱ Inclusion in policies and regulations: adaptation of programs to policies and regulations or amendment or design of policies that incorporate the program.

^j Compatible with local government goals: consistency/alignment between the program and local government goals.

^k Types of allies: collaboration, cooperation or partnerships with other institutions for in-kind funding, services, communications, or other support. Includes: communication (share information only when necessary); cooperation (share information and work together when any opportunity arises); collaboration (pursue opportunities to work together, without establishing a formal agreement); partnership (work together as a formal team with specified responsibilities to achieve common goals across multiple projects); Meisel et al. (2014).

^l Community appropriation-support: via demonstrations, signed petitions, letters, or social networks. Appropriation of streets when the program or circuits are suspended.

The program expanded from a monthly to weekly implementation in 2011; however, there was no increase in the initial length of 5 km. The complementary activities increased as a result of cooperation with civil society organizations. Weekly participation by citizens has been crucial to maintain the motivation of organizers and support from allies. There are no evaluation studies of the effect of the program on public health indicators; however, the program performs regular counts of participants.

3.4. México City: Paseo Dominical Muévete en Bici

Muévete en Bici is a publicly-privately funded program led by the Secretariat of Environment since 2007. As part of a citywide policy to

promote sustainable transportation, its main purpose is to promote cycling for transport. In 9 years, the program has progressively grown in length (5 to 55 km), complementary activities, and resources. Its funding is 75% public and 25% private. Private sponsorship is regulated by an Administrative Act issued in 2012 and modified in 2015 (*Gaceta oficial del Distrito Federal, 2015*); its progressive increase has been decisive to acquire materials and services. Non-profit organizations offer complementary activities for free, and approximately 15 public institutions collaborate through support/in-kind funding regulated by the same Act. During the initial events, neighbors opposed the closure of streets; however, experiencing the program transformed these initial perceptions. Citizens currently demand the program's continuation and request innovations through social networks. Surveys indicate

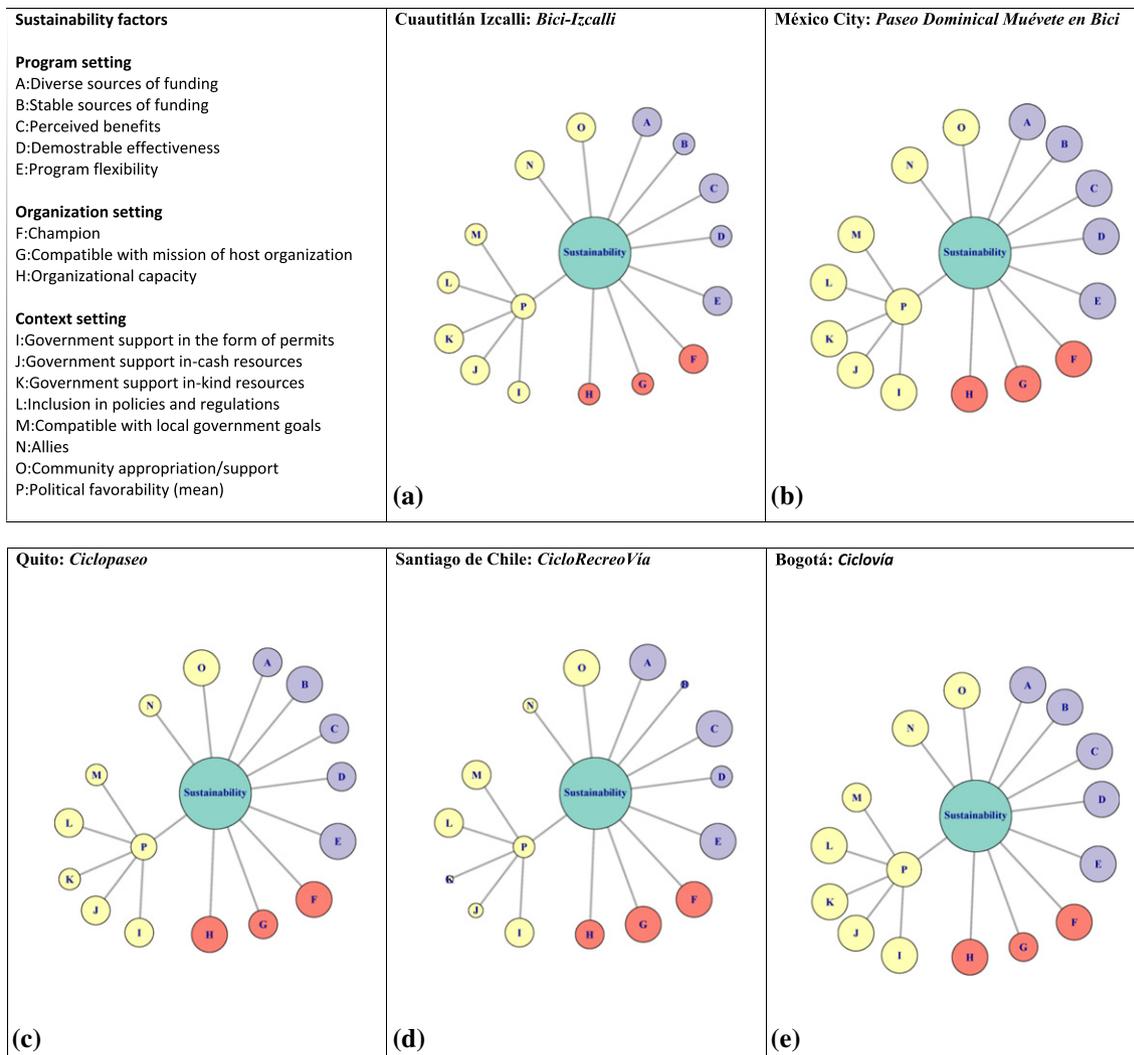


Fig. 2. Network of factors associated with the sustainability of Ciclovía programs from (a) Cuautilán Izcalli, (b) Mexico City, (c) Quito, (d) Santiago de Chile and (e) Bogotá. The size of the node represents the weight of the factor assigned by the program coordinator.

that, on average, participants spend 3.04 h in the program and expend 12–17 USD in local businesses per event; 20.0% reported biking for transport following participation in “*Paseo dominical*” (Secretaría del Medio Ambiente, Centro de Estudios Mexicanos y Centroamericanos, 2012).

3.5. Quito: *Ciclopaseo*

Ciclopaseo is a publicly-privately funded program led by the non-profit *Ciclópolis* partnered with the city's Transport Department. Its main purpose is to promote cycling for transport. The program was initiated in 2003 with a monthly frequency and one circuit of 9.5 km. It currently comprises a weekly program of 30 km. The program has experienced moderate and irregular support from local governments. Initially, the major office supported the project allocation of funds (75%) and facilitated collaboration with the Transit Department. Subsequent administrations with different agendas reduced funding/support. Currently, funding is 60% public and 30% includes private sponsorship, loans, volunteer work and fundraising; the remaining 10% is not covered. The lack of local regulation on private funding has limited the capacity of *Ciclópolis* to acquire new and stable sponsors. Local government departments provide irregular in-kind support. During its initial years, *Ciclópolis* made special efforts to strengthen the organization to be able to run independently. It dealt with funding limitations and

irregular government support through diverse sources of funding, advocacy, cost-cutting measures, and petition signing. Massive participation was initially essential to gain government support. Citizens have subsequently demanded extensions and signed petitions to support the increase in frequency. There are no evaluation studies; however, *Ciclópolis* conducts surveys and participant counts.

3.6. Santiago de Chile: *CicloRecreoVía*

CicloRecreoVía is a program run by the private company *Geomás* with the purpose of recovering public space for social encounters. It was initiated in 2006 with one circuit of 5 km and expanded to 11 circuits of 60 km. Since the beginning, the program faced low and irregular support from local governments. It is funded by a combination of national public funds (55%), local public funds (5%) and private sponsorships. However, *Geomás* did not have sufficient mechanisms/infrastructure to develop a marketing strategy from the start. Thus, private funding is irregular and typically insufficient, which results in high turnover of personnel and limited capacity to cover the expenses of all circuits. Its founders' persistence has been vital to sustain and scale the program and maintain circuits that are not financially sustainable in low-income neighborhoods. This has been achieved at great personal and financial costs through continuous fundraising efforts, cost-cutting measures, and the acquisition of loans/debts. *CicloRecreoVía* has informal

collaborations with a small number of civil society organizations. Citizens have demanded the continuation of circuits that have been closed and, in some occasions, have appropriated the streets when the program was suspended. There are no evaluation studies; however, *Geomás* performs regular participant counts and previously conducted participant surveys.

3.7. Bogotá: Ciclovía

Ciclovía is a publicly–privately funded program run by the District Institute of Recreation and Sports. Its main purpose is to provide a space for recreation, leisure time, social interaction and PA. *Ciclovía* was initiated as isolated events in 1974 and progressively grew to a weekly program of 113 km. During its 42-years, government support for *Ciclovía* has changed according to the agendas and priorities of different administrations, with consequent changes in the budget, length, services, and quality of multisectoral relationships (Díaz Del Castillo et al., 2011; Sarmiento et al., 2014). Budget reductions have been addressed by increasing private sponsorship and cost-cutting measures. As in 2015, funding was 63% public and 37% private. Private companies provide in-kind services in exchange for brand-positioning activities regulated by an Administrative Act of 2005 (Alcaldía Mayor de Bogotá, 2005; Alcaldía Mayor de Bogotá, 2008). The program has been specifically included in four national and city development plans in the previous 20 years. The functioning of the *Ciclovía* is supported by multisectoral collaboration/cooperation with approximately 25 institutions (Meisel et al., 2014). The program has had the support of citizens in different occasions, through petitions, social networks activism and appropriation of streets during the 1980s when the circuit was reduced (Díaz Del Castillo et al., 2011; Sarmiento et al., 2014). Available studies include the program's association with social capital (Torres et al., 2013), prevalence of meeting PA recommendations (Sarmiento et al., 2010a; Torres et al., 2013; Gómez et al., 2004; Gómez et al., 2010), cycling for transportation (del Castillo A et al., 2013), health-related quality of life (Sarmiento et al., 2010b), perception of safety (Torres et al., 2013), particulate matter pollution and street noise (Sarmiento & Behrentz, n.d.). Additionally, *Ciclovías'* cost-benefit analysis for health (Montes et al., 2012), social network analysis (Meisel et al., 2014), and policy processes (Díaz Del Castillo et al., 2011; Sarmiento et al., 2014).

4. Discussion

This study used a mixed methods approach to describe the characteristics of *Ciclovías* in seven LAC, and analyzed the factors that influence the sustainability and scaling-up of these programs in five cities. Our findings illustrate the heterogeneity within and among countries of both the programs and factors associated with sustainability. Thus, this study provides examples of diverse *Ciclovía* programs that may be adapted in other settings to promote PA and wellbeing.

The quantitative survey extended a previous systematic review of 27 *Ciclovías* in LAC conducted in 2008 (Sarmiento et al., 2010a). After 7 years, our survey continues to indicate a significant increment of *Ciclovías* in urban settings, which resembles a healthy epidemic. Furthermore, it indicates the development of these programs at various scales, including the neighborhood, district, metropolitan and city levels. Recently inaugurated programs were more likely to have routes <10 km in length and were less likely to be weekly events. These characteristics are indicative of the early stages of *Ciclovías*, and it represents the pattern identified in many Open Street programs in the United States (Díaz Del Castillo et al., 2011; Kuhlberg et al., 2013). Reflecting the potential of *Ciclovías* to promote PA while decreasing inequalities in access to recreational facilities, >80% of the programs were connected with different income areas, parks, and promote sustainable modes of transportation, such as biking.

The qualitative analysis complements previous studies that have only assessed the case of Bogotá's *Ciclovía* (Díaz Del Castillo et al.,

2011; Sarmiento et al., 2014). This analysis showed that the programs may be considered successful and sustainable despite the difficulties they face throughout their life cycles. Importantly, sustainability and growth are ongoing processes, and the features relevant for them are dynamic. There is no stable set of key, discreet factors for all programs: they interact in diverse complex ways, present different degrees, and balance each other throughout the history of a program. All investigated factors are relevant at one particular point in time; however, no single factor is sufficient on its own, and it does not remain fixed. Specifically, Cautilán Izcalli, Quito and Santiago have grown and maintained functioning for 5–13 years. Faced with limited/irregular political favorability and in the absence of stable funding and/or sufficient funding to cover all expenses, the committed and strategic work of champions, community appropriation/support, and program flexibility have been key for these programs. In contrast, the programs in México City and Bogotá meet all analyzed factors. Nevertheless, their sustainability is not secured. At times of opposition, users/citizens have defended Bogotá's program, and their champions have successfully dealt with budget reductions. Both programs are progressively increasing private in-kind funding and allies to adapt to administration cycles and/or financial difficulties. They also have a degree of innovation; otherwise, they risk losing attractiveness for citizens and decision-makers. To better understand barriers of sustainability, future studies should include inactive programs. For example in the CRA Network there are at least 16 inactive programs from Chile, Panama and Ecuador.

In contrast to the progress from research-based development to program scale-up of some programs that promote PA in high income countries and Brazil (Parra et al., 2013; Norton and Mittman, 2010), the scalability process illustrated in the current analysis of the *Ciclovías*, as well as other programs that use public spaces to promote PA in Colombia, has predominately been practice-based (del Díaz et al., 2017). For example, the factors that have been identified to be related to the scalability of the program of Bogotá into the world are as follows: 1) local officials from Bogotá travel the world to speak about the *Ciclovía* program, 2) a transnational network of public health and sustainable transportation experts, 3) a network of *Ciclovía* experts that share the technical details necessary to develop an event and 4) digital technologies with viralization of videos of Bogotá (Montero, 2017).

4.1. Limitations and strengths

Our findings should be interpreted with consideration of the following limitations. First, only 67 program coordinators responded to the survey. However, they represent >40% of the LAC with *Ciclovías*. Second, the interviews for the case studies were limited to program coordinators, but other actors may well have provided different perspectives. Therefore, future studies need to continue to evaluate *Ciclovías* using mixed methods through natural experiments that take into account programs within different lifecycles and organizational schemes with a systems approach (United Nations University, n.d.). Such studies could also include sustainability as an indicator as it has been proposed by the *Ciclovía* criteria from *Bikes of Quality and Best Practices awards* (del Díaz et al., 2015).

5. Conclusions

This study of *Ciclovías* in LAC shows their heterogeneity in regard to organization, design, services and sustainability. In the case studies, sustainability was a matter of balancing factors along ever changing conditions. Especially, compensating irregular/limited political favorability and funding difficulties with flexibility, champions, alliances, and community support. The heterogeneity and flexibility *Ciclovías* make them a uniquely promising example of a scalable strategy for promoting PA and simultaneously addressing inequality.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.ypmed.2016.07.028>.

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