The Challenges of Study Design, Implementation and Data Collection for Physical Activity Evaluation tools and instruments

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OUTLINE

- IPEN module for PA in Latin America
- Evaluation of Open Streets programs
- Conclusions & lessons learned
CHOICE VS. NON-CHOICE FRAMEWORK

Any walking during Leisure time

Any walking for transport
Transport
MULTIMODAL TRANSPORTATION AMONG ADULTS OF BOGOTA

- Bus: 68.1%
- Car: 33.2%
- TransMilenio: 29.3%
- Taxi: 29%
- Feeder: 10.4%
- Moto: 5.3%
- Multiple: 53.1%
MVPA AND USE OF BUS RAPID TRANSIT SYSTEM AMONG ADULTS OF BOGOTA

![Graph showing predicted MVPA minutes per hour among TM and Non-TM users with 95% confidence intervals.](image-url)
Parks/plazas/cicloviãas/Curitiba ativa
OPEN STREET PROGRAM

A day in the Ciclovía Recreativa (Open Street)
Carrera 15, Calle 87 (Bogota, Colombia)

Week day traffic
Carrera 15, Calle 87 (Bogota, Colombia)
WHAT WOULD YOU DO IF BOGOTA DID NOT HAVE THE CICLOVIA?

![Bar chart showing the preferences of what people would do if Bogota did not have the Ciclovia.

- Watch T.V: 10.7%
- Be at home: 15%
- Play video games: 3.9%
- Do another sports or exercise: 11.8%
- Another recreational activity: 51.7%]
NATURAL EXPERIMENT WITH COMPLEMENTARY ACTIVITIES OF THE CICLOVIA

Intervention parks

Control parks

Recreovia parks

Baseline

T1

T2
NATURAL EXPERIMENT WITH COMPLEMENTARY ACTIVITIES OF THE CICLOVIA

Before

After
QUALITY Open Streets

Evaluation Criteria for Ciclovías Recreativas
THE COMPARISON PROBLEM AMONG PROGRAMS

Minutes per week

Complementary activities

- Medellín (COL)
- Bogotá (COL)
- Vía Recreativa (MEX)
- Quito (ECU)
- Lima (PER)
- San Pedro Garza García (MEX)
- Cúcuta (COL)
- Dar la vuelta (MEX)
- Ciudad de México (MEX)
- Santiago de Chile (CHI)
- Saltillo (MEX)
- Sorocaba (BRA)
- Cuautitlan Izcalli (MEX)
- Querétaro (MEX)
- Ciudad de Guatemala (GUA)
- Cali (COL)
- Mexicali (MEX)
- Cuenca (ECU)
- Cabo San Lucas Los Cabos (MEX)
- San Francisco (USA)
- Chihuahua (MEX)
- Portland (USA)
- Waterloo (CAN)

- Recomendado (150 min)
- Minutos por semana

Actividades complementarias
What are the evaluation criteria?

The analysis includes the following criteria, which are considered relevant for the realization of the OS’s benefits. The values for each criterion were provided by the programs. For further information on the measuring and cut-off points, see the Evaluation Criteria Manual for Ciclovías Recreativas.

**Target population**
- **Definition:** Number of persons living less than 1 km from the OS route.
- **Unit:** Persons

**Social inclusion**
- **Definition:** The OS route includes low-socioeconomic areas or areas with residents belonging to ethnic/racial minorities.
- **Unit:** Yes or no

**Participants per event**
- **Definition:** Average number of persons who attend each event of the OS adjusted for the city’s or town’s population.
- **Unit:** Percentage

**Participants per specific activities**
- **Definition:** Average number of persons who participate in complementary activities that promote physical activity, art, culture or training, adjusted for the city’s or town’s population.
- **Unit:** Percentage

**Minutes per week**
- **Definition:** Time in minutes per week during which the OS takes place.
- **Unit:** Minutes

**Time spent by participants at each event**
- **Definition:** Average time per event spent by participants in the OS.
- **Unit:** Minutes

**Length of route**
- **Definition:** Number of kilometers used during each OS event.
- **Unit:** Kilometers

**Geographical risk areas**
- **Definition:** Number of kilometers of the OS route in which there is risk of accidents of a geographical nature (e.g. flooding, fog, landslide, falling trees, collapse of streets) adjusted for the total number of kilometers of the program.
- **Unit:** Percentage

**Connectivity to parks or beaches**
- **Definition:** The OS route is connected to at least one park, square or beach.
- **Unit:** Yes or no

**Connectivity to touristic sites**
- **Definition:** The OS route is connected to at least one tourist or historic site.
- **Unit:** Yes or no
In DEA each program is compared relative to similar programs.
Larger programs are not given an advantage over smaller ones (or vice versa).
The results of the evaluation are relative and dynamic and may vary each year according to the programs evaluated and values reported.

Some of the advantages of using DEA are:

- Allows an evaluation with multiple criteria.
- Does not require the assignment of weights (subjectively) to each criteria.
- Identifies benchmarks (role models) for the programs.
- Recommends specific goals for the continuous improvement of programs.
Example:

- Only 3 ciclovías (DMUs)
- One input: Extension of the circuit
- One output: Participants per event

\[
\begin{align*}
O & \text{ (participants per event)} \\
C & \text{ (route length of)} \\
\end{align*}
\]

Efficiency = 100%

Efficiency < 100%
Bikes of Quality
As a result of the evaluation of multiple criteria, OS programs are awarded the following grades:

THREE Bikes of Quality
The best OS in the Americas. All criteria in the model are fulfilled and will be evaluated by an expert committee. According to the 2011 evaluation, there are no recommendations for improvement. However, the efficiency score could decrease in the next evaluation, which will include a larger number of OS programs and different performances.

TWO Bikes of Quality
OS that stand out for their operational conditions and services offered to users. They do not comply with all the criteria and will be evaluated by an expert committee. According to the 2011 evaluation, there are specific recommendations for improvement, given that the efficiency score is less than 100%.

ONE Bikes of Quality
Programs that cannot be evaluated because they did not report on all the measured criteria. The recommendation is to measure the criteria according to the Evaluation Criteria Manual.
Awarding of prizes

In 2011, 15 OS programs in the Americas were awarded THREE Bikes of Quality:

- Portland, United States
- San Francisco, United States
- Los Angeles, United States
- Mexicali, Mexico
- Chihuahua, Mexico
- San Pedro Garza García, Mexico
- Santiago de Querétaro, Mexico
- Cuautitlán, Mexico
- Ciudad de Guatemala, Guatemala
- Bogotá, Colombia
- Medellín, Colombia
- Cali, Colombia
- Lima, Peru

Programs awarded ONE Bike of Quality
- London, Canada
- Ottawa, Canada
- Guayaquil, Ecuador
- Pichincha, Ecuador
- Morelia, Mexico
- Montevideo, Uruguay
- Eugene, United States
- Oakland, United States
- Redding and Shasta County, United States
- Lee County-City of Fort Myers, United States
- Wilsonville, United States

Programs awarded TWO Bikes of Quality
- Sorocaba, Brazil
- Santiago de Chile, Chile
- Cúcuta, Colombia
- Cuenca, Ecuador
- Quito, Ecuador
- Ciudad de México, Distrito Federal
- Guadalajara, Zapopan, Tlaquepaque, Tonalá, Tlajomulco, El Salto y Jalisco, Mexico
- Saltillo, Mexico
Instruments to assess multimodal transportation should be considered in Latin American cities. These instruments could be useful in studies comparing residents in Latin America and Latino populations from the US.

OS programs are an example where practice-based evidence accelerates more quickly than evidence-based practice. In this context, natural experiments are an efficient alternative.

Instruments to assess Open Street programs could be useful in the evaluation of studies of OS programs in the US.

Data Envelopment Analysis is useful for the evaluation and comparison of OS programs which includes multiple criteria.
GRACIAS