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

Evaluation tools and instruments
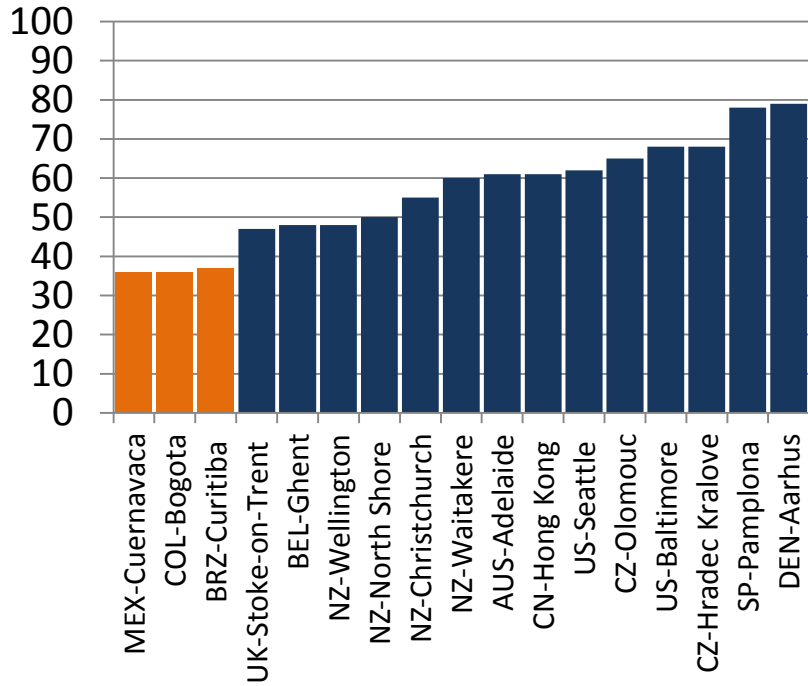
OLGA L. SARMIENTO

OUTLINE

- IPEN module for PA in Latin America

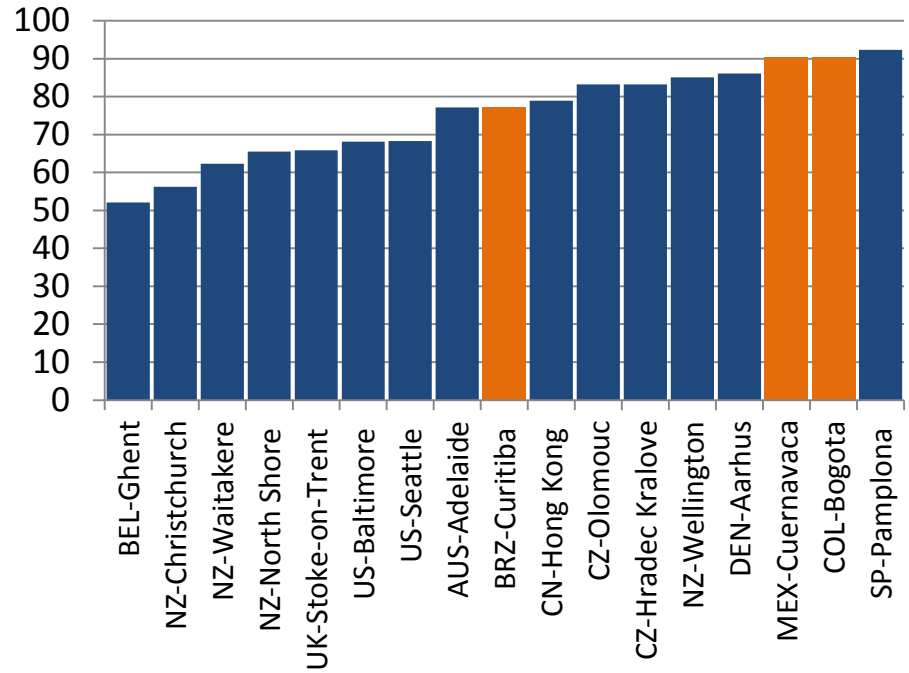- Evaluation of Open Streets programs

- Conclusions & lessons learned

CHOICE VS. NON-CHOICE FRAMEWORK

Any walking during Leisure time
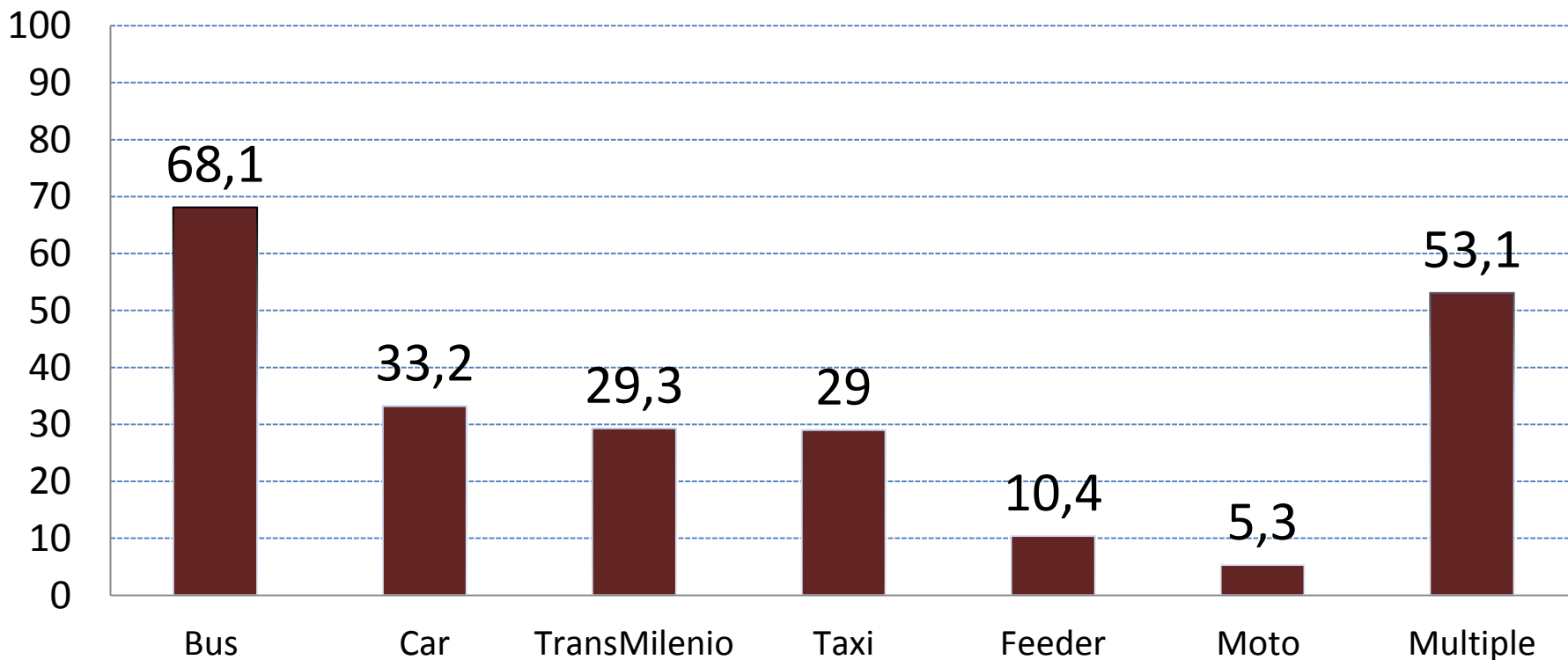
Any walking for transport

TRANSPORT

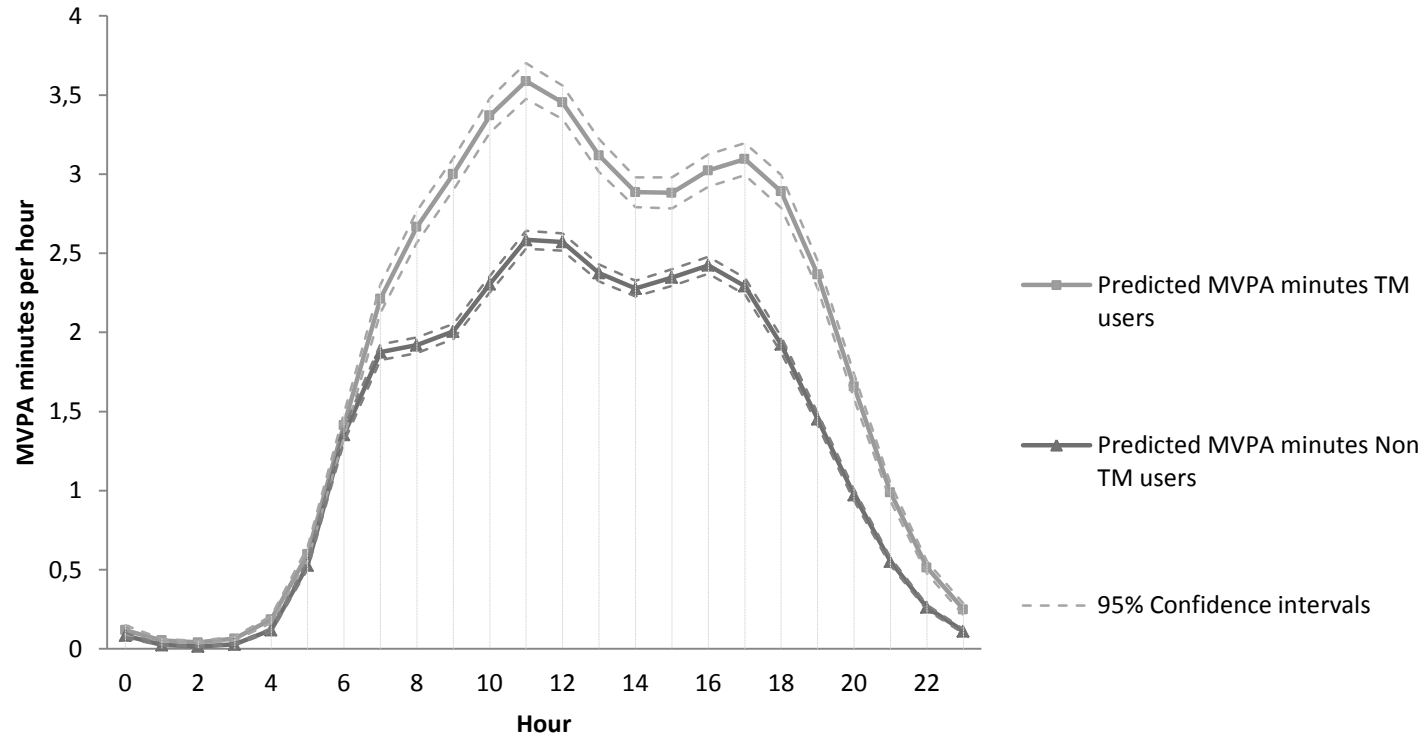MULTIMODAL TRANSPORTATION AMONG ADULTS OF BOGOTA

MVPA AND USE OF BUS RAPID TRANSIT SYSTEM AMONG ADULTS OF BOGOTA
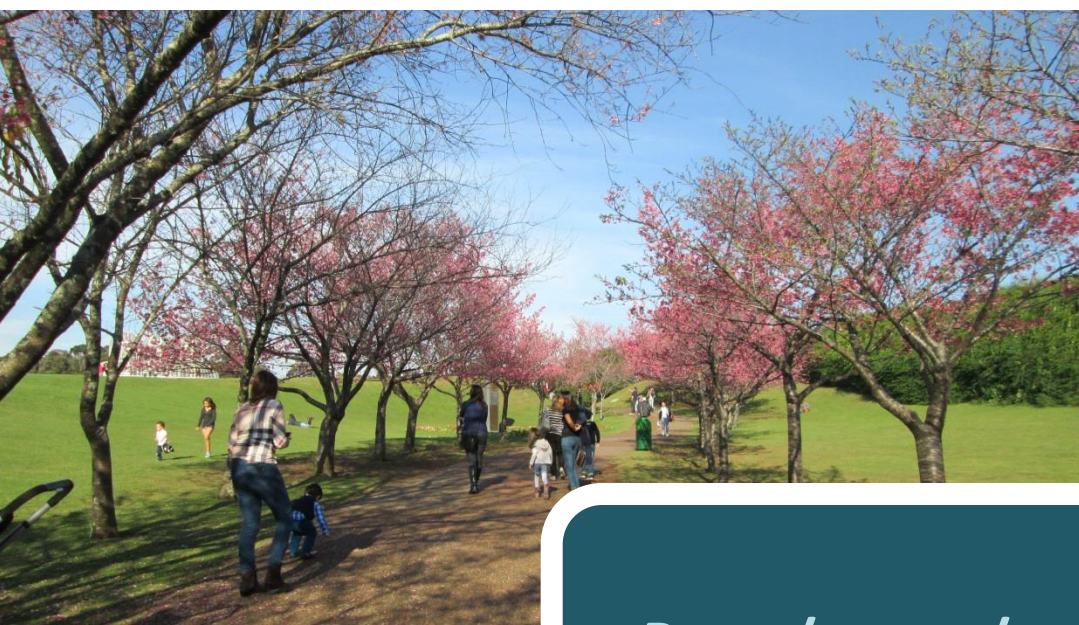
PARKS/PLAZAS/CICLOVIAS/ CURITIBA ATIVA

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

Week day traffic
Carrera 15, Calle 87 (Bogotá, Colombia)

OPEN STREET PROGRAM

TRANSITE POR SU DERECHA

WHAT WOULD YOU DO IF BOGOTA DID NOT HAVE THE CICLOVIA?
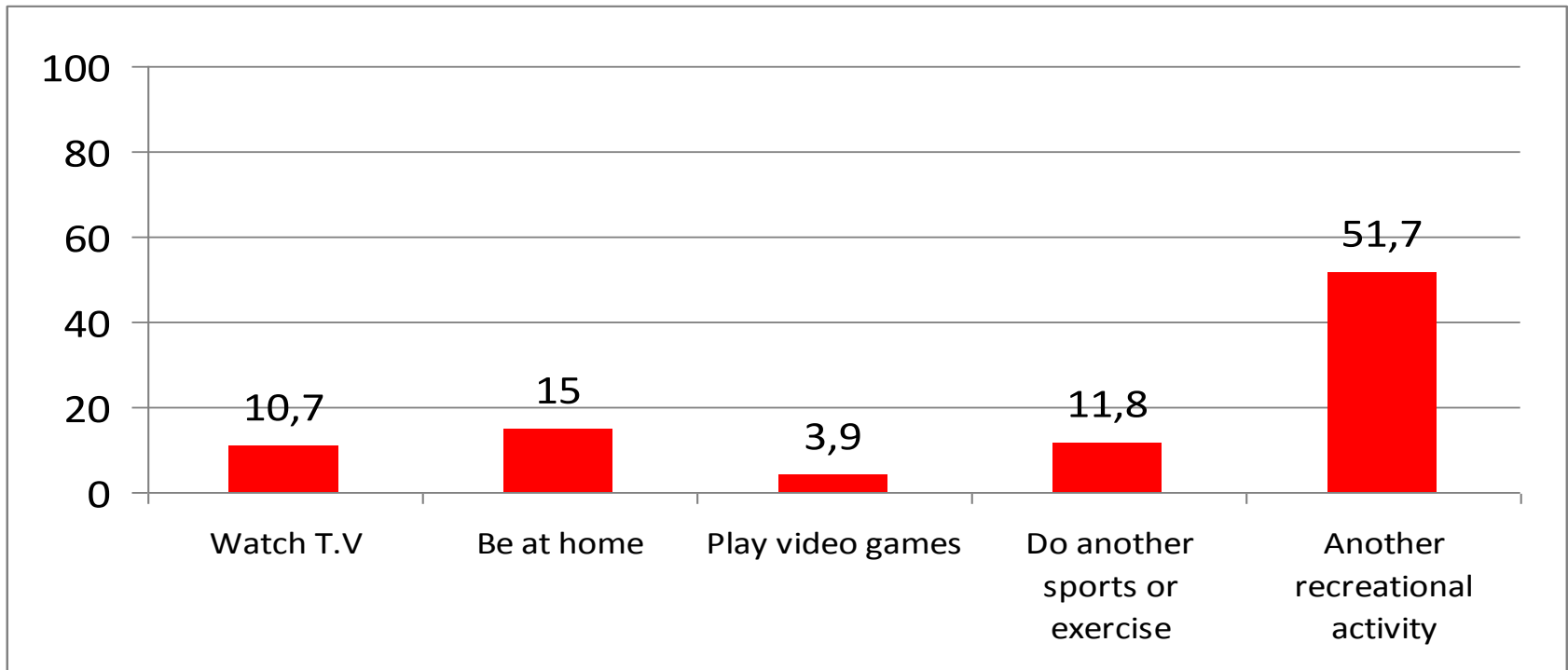
NATURAL EXPERIMENT WITH COMPLEMENTARY ACTIVITIES OF THE CICLOVIA

Intervention parks

Baseline | T1 | T2

Control parks

Baseline | T1 | T2

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

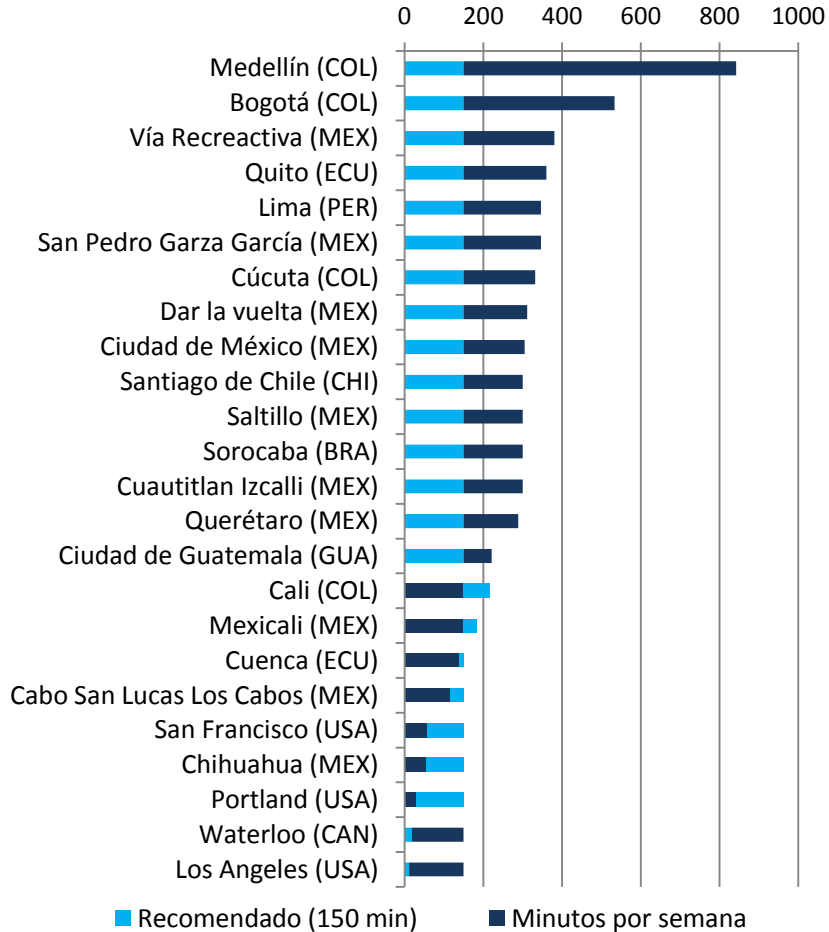| City	
Medellín (COL)	
Bogotá (COL)	
Vía Recreactiva (MEX)	
Quito (ECU)	
Lima (PER)	
San Pedro Garza García (MEX)	
Cúcuta (COL)	
Dar la vuelta (MEX)	
Ciudad de México (MEX)	
Santiago de Chile (CHI)	
Saltillo (MEX)	
Sorocaba (BRA)	
Cuautitlan Izcalli (MEX)	
Querétaro (MEX)	
Ciudad de Guatemala (GUA)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

■ Recomendado (150 min) ■ Minutos por semana

Complementary activities

City	
Sorocaba (BRA)	
San Francisco (USA)	
Portland (USA)	
Cúcuta (COL)	
Ciudad de…	
Vía Recreactiva…	
Quito (ECU)	
Dar la vuelta (MEX)	
Cabo San Lucas…	
Santiago de Chile…	
Los Angeles (USA)	
Chihuahua (MEX)	

■ 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 *Ciclovias 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
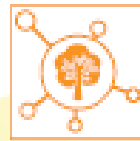Definition: Number of kilometers used during each OS event.
Unit: Kilometers

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

# MULTICRITERIA EVALUATION MODEL BASED ON DATA ENVELOPMENT ANALYSIS (DEA)

- 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

MULTICRITERIA EVALUATION MODEL BASED ON DATA ENVELOPMENT ANALYSIS (DEA)

Example:

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

O (participants per event)

B

C' **Efifciency = 100%**

C **Efficiency < 100%**

A

I (route lenght of)
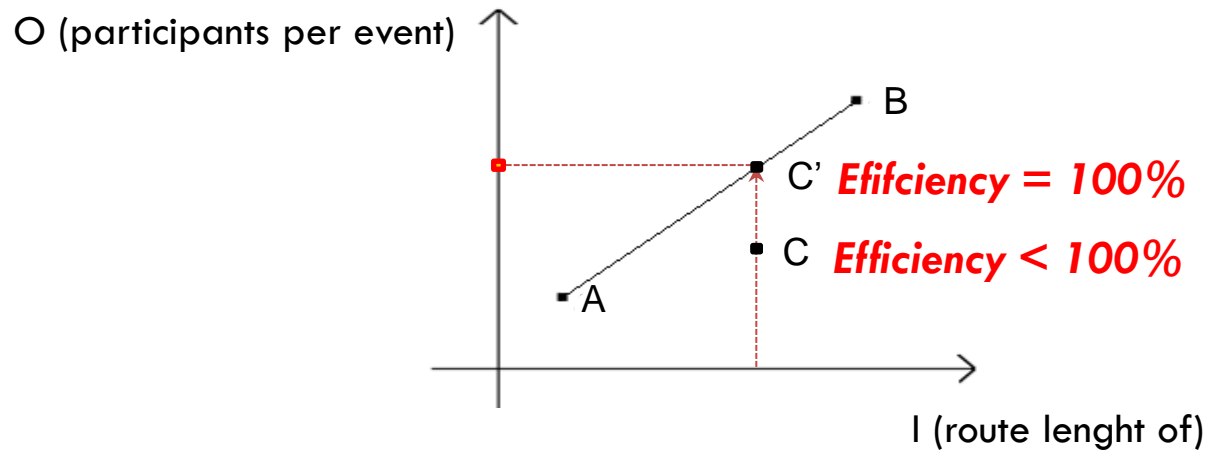
Bikes of Quality

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*:

Waterloo, Canada
Portland, United States
San Francisco, United States
Los Angeles, United States
Mexicali, Mexico
Chihuahua, Mexico
Cabo San Lucas, 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, Zapopán, Tlaquepaque, Tonalá, Tlajomulco, El Salto y Jalisco, Mexico
- Saltillo, Mexico

CONCLUSIONS & LESSONS LEARNED

- 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 and 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