



LAC-URBAN HEALTH  
Urban Health Network for  
Latin America and the Caribbean



# Innovation from the air to build sustainable, inclusive, and healthy communities: The case of TransMiCable

17th ICUH

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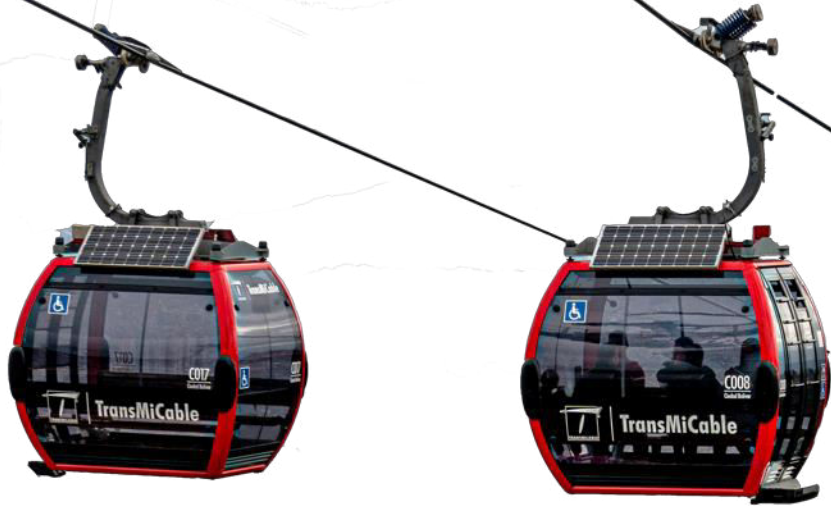
# TrUST



El conocimiento es de todos

Minciencias

# TransMiCable

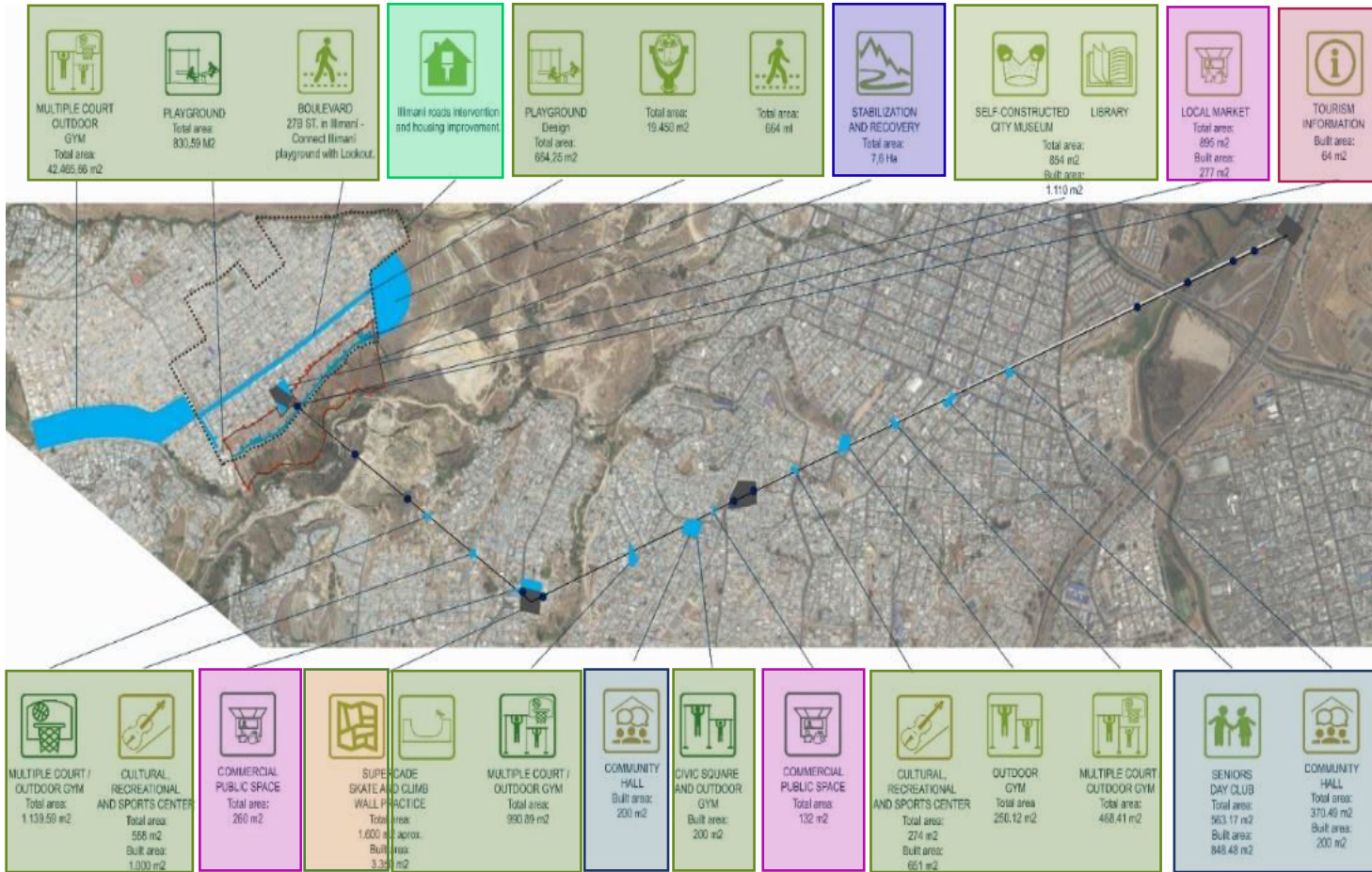


Inauguration	Length	Booths	Stations	Passengers/day	Passengers' 1 <sup>st</sup> year (2019)
<b>December 2018</b>	<b>3.43 km</b>	<b>163</b>	<b>4</b>	<b>21,000</b>	<b>7.501.250</b>



# Social Urbanism

16 urban projects



- Local markets
- Program to support physical improvements to homes
- Project to reduce geomorphological hazards
- Community centers
- Citizen service office (Super CADE)
- Facilities for recreation and cultural activities
- Tourism Office

# Aims

To assess the effects of TransMiCable's implementation on:



**Environmental and social determinants of health** (micro-environment pollution, transport)



**Physical activity**



**Health outcomes** (health-related quality of life, homicides)



To use **citizen science by the people** and **ripple effects mapping** to engage community members and stakeholders to identify, prioritize, and communicate facilitators and barriers impacting the livability in the TransMiCable area.

# Natural Experiment

Intervention:  
**Ciudad Bolívar**

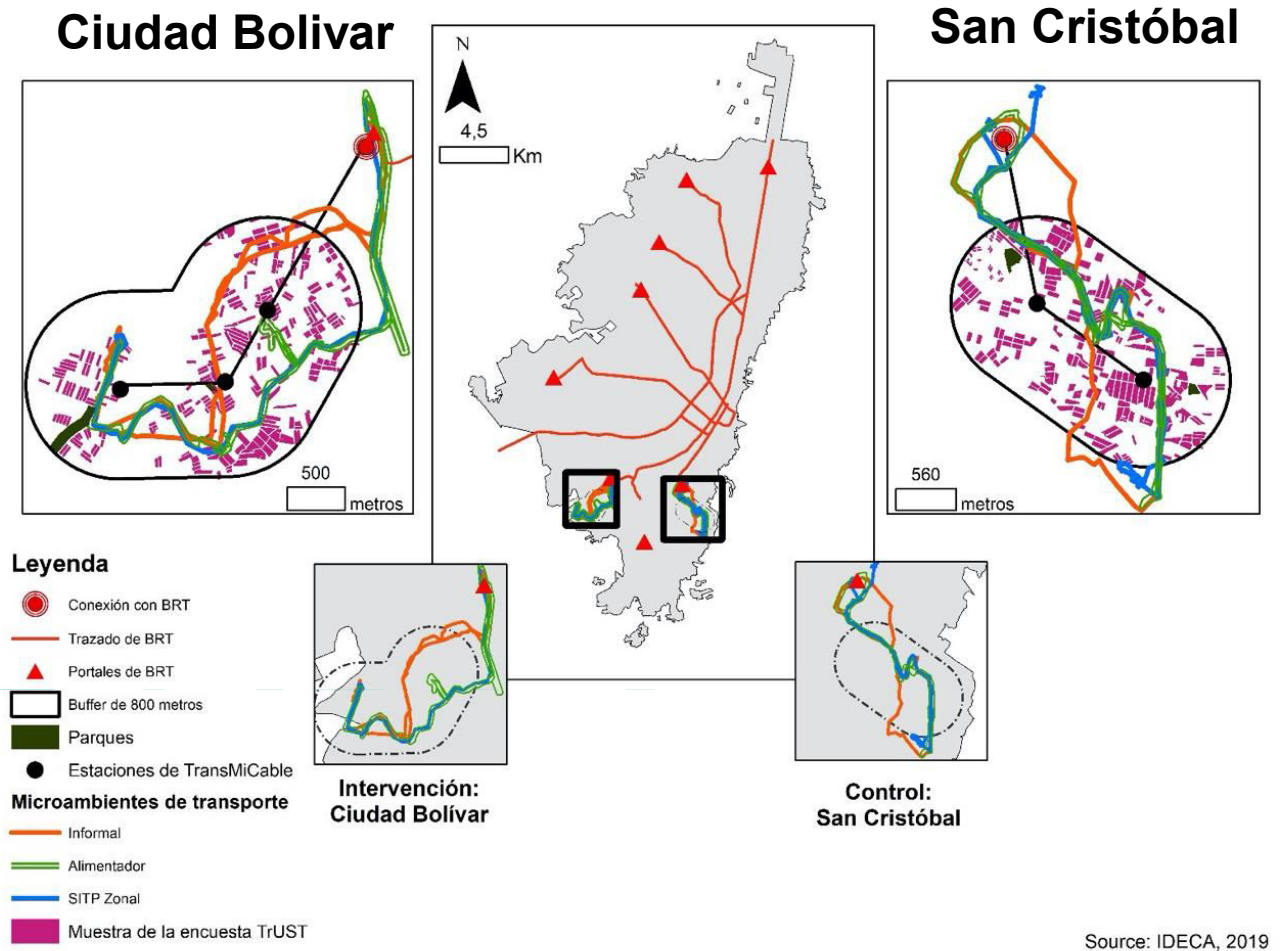
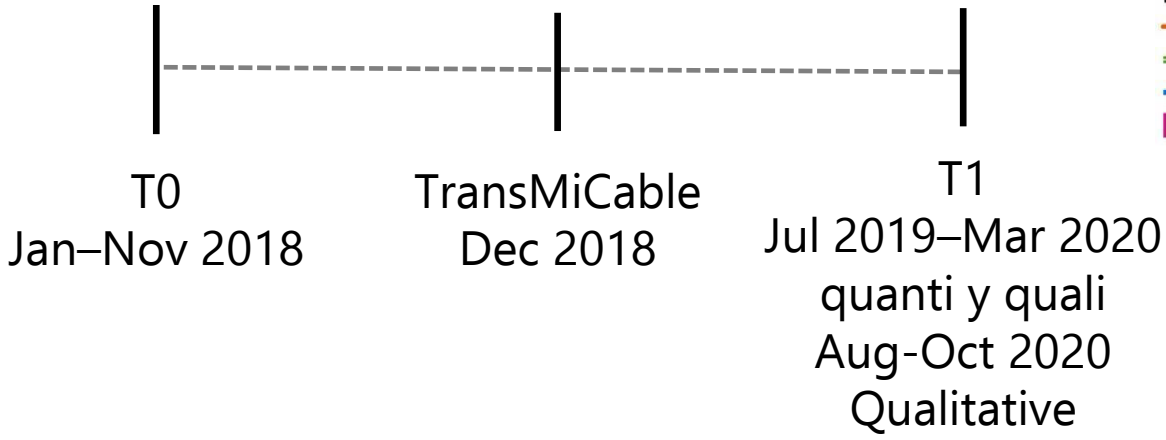
Neighborhoods: **27**  
Blocks: **225**

Population: **229,216**

Control:  
**San Cristóbal**

Neighborhoods: **27**  
Blocks: **228**

Population: **108,645**



Source: IDECA, 2019  
ArcGIS 10.5





Results

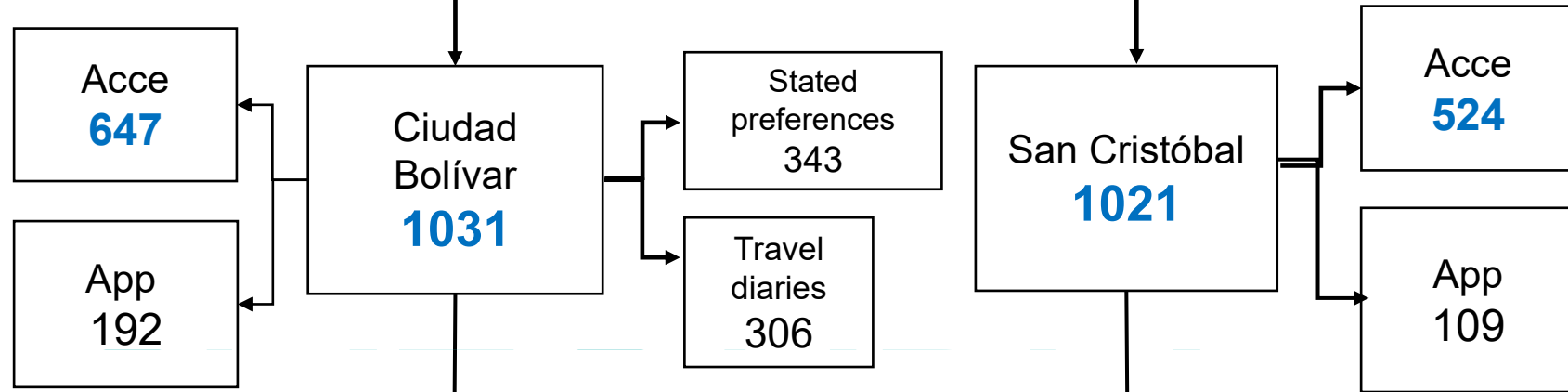


# Sample

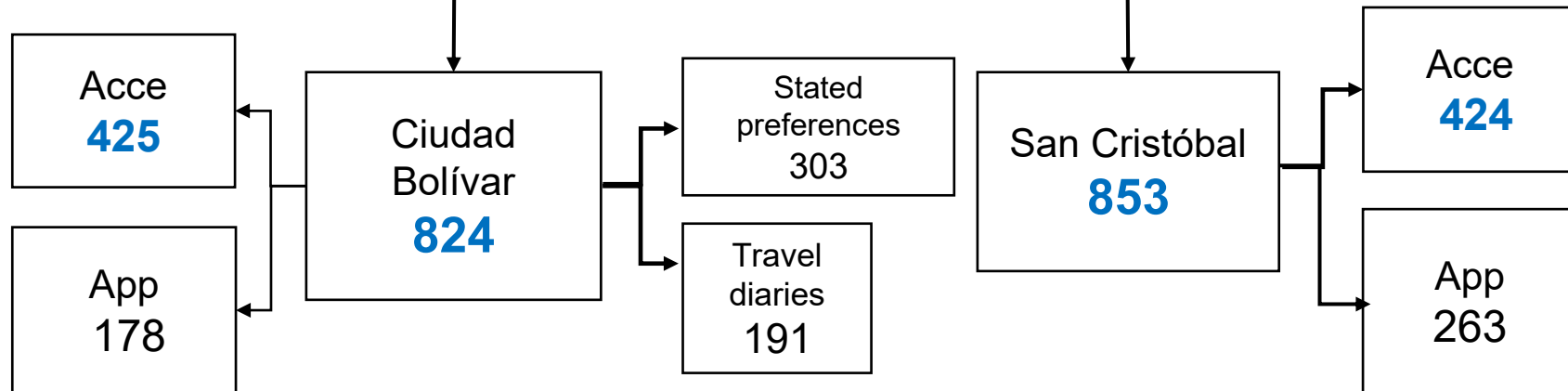
Response rate 82%

Households-Adults  
2052/7571

Baseline



Follow-up



# Characteristics of the Study Population

	Characteristics	Intervention	Control	<i>p</i>
<b>Age</b>	Age	45.9 (18.1)	44.4 (17.4)	0.095
<b>Sex</b>	Male	34.7%	38.5%	0.098
	Female	65.3%	61.5%	
<b>Education</b>	Elementary school or less	40.6%	28.3%	<0.001
	High school	43.4%	52.4%	
	College	15.7%	24.4%	
	Post-graduate	0.2%	0.2%	
<b>Income</b>	≤ 1 minimum wage	52.9%	35.9%	<0.001
	> 1 minimum wage	47.1%	64.1%	



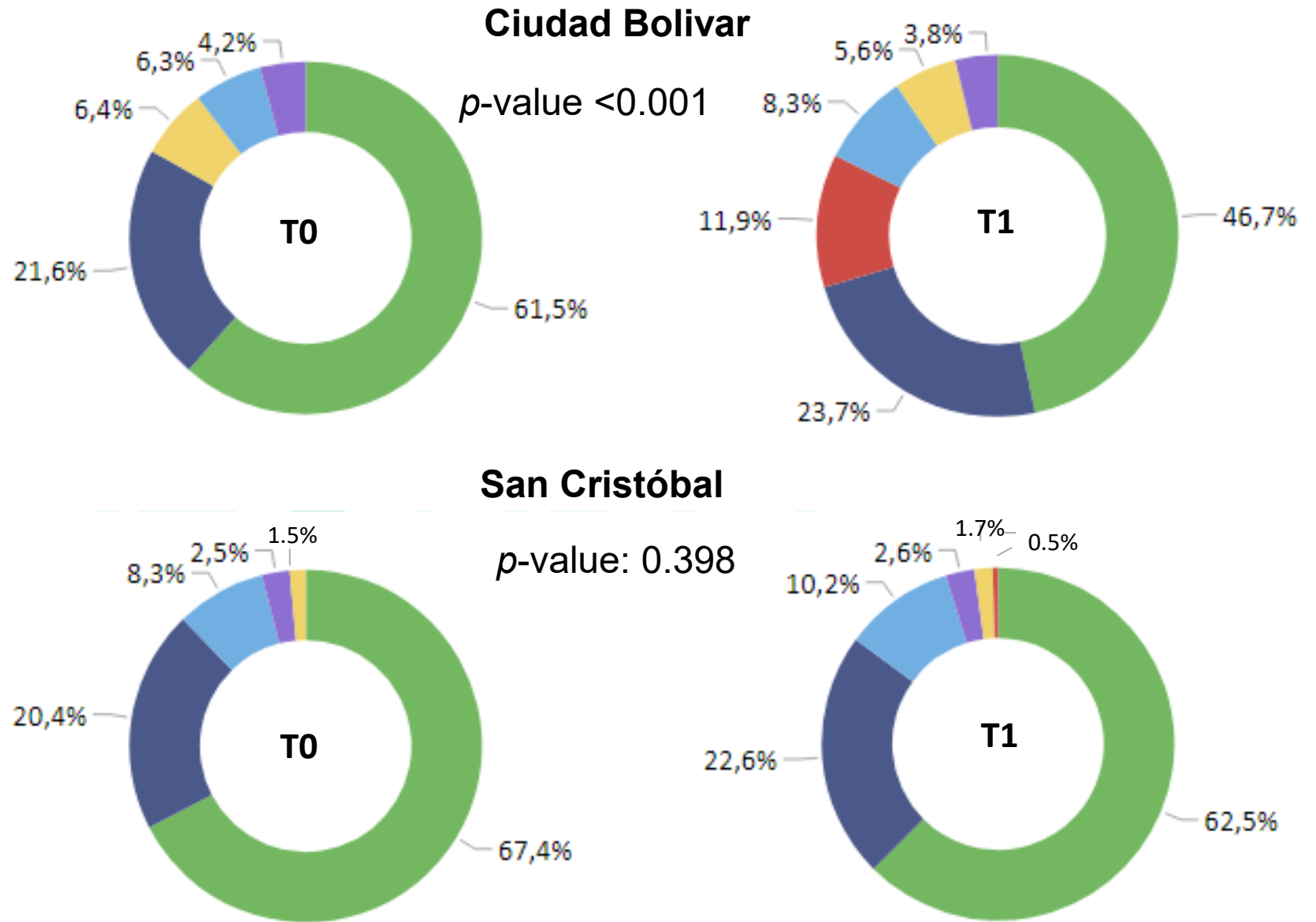


# Mobility

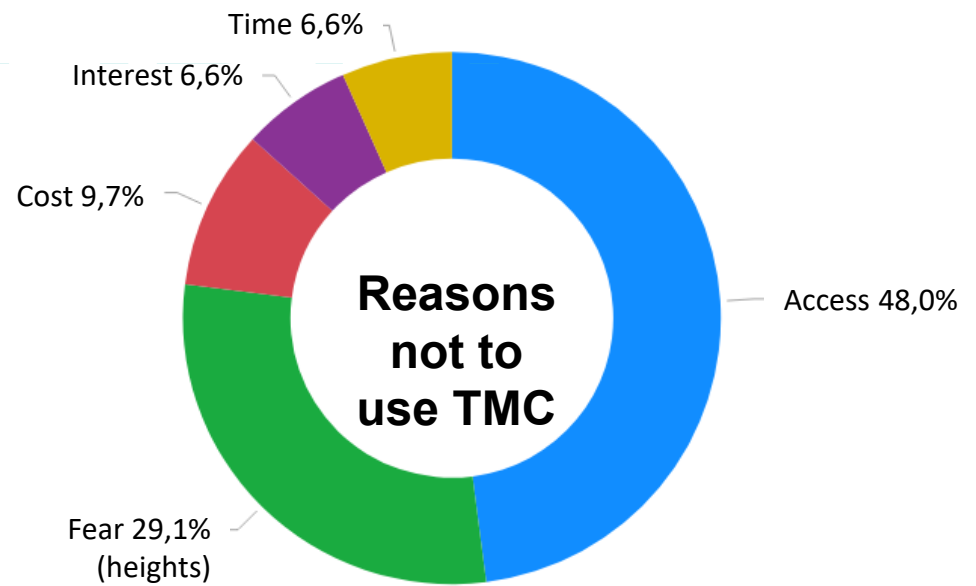
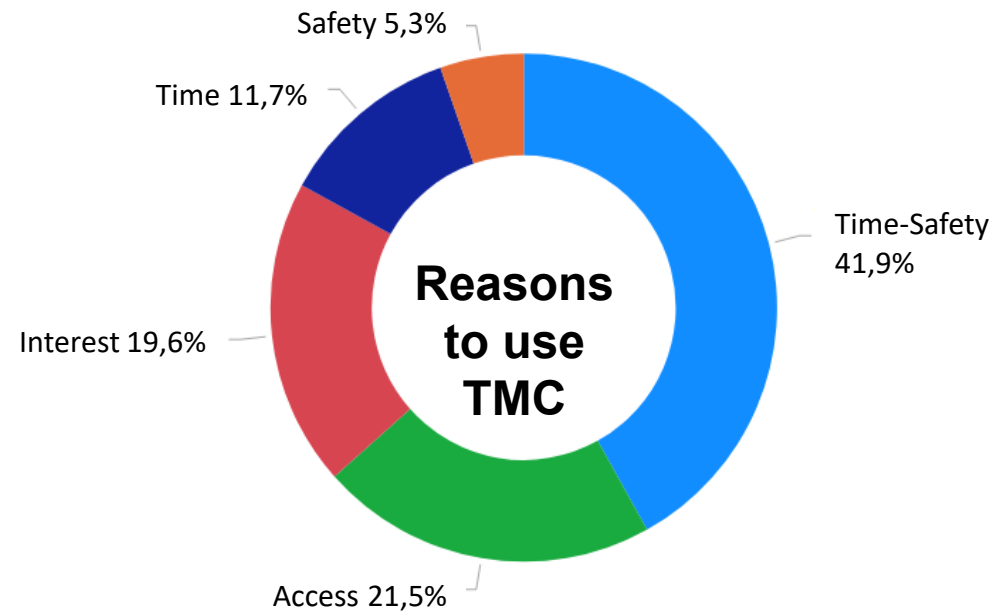
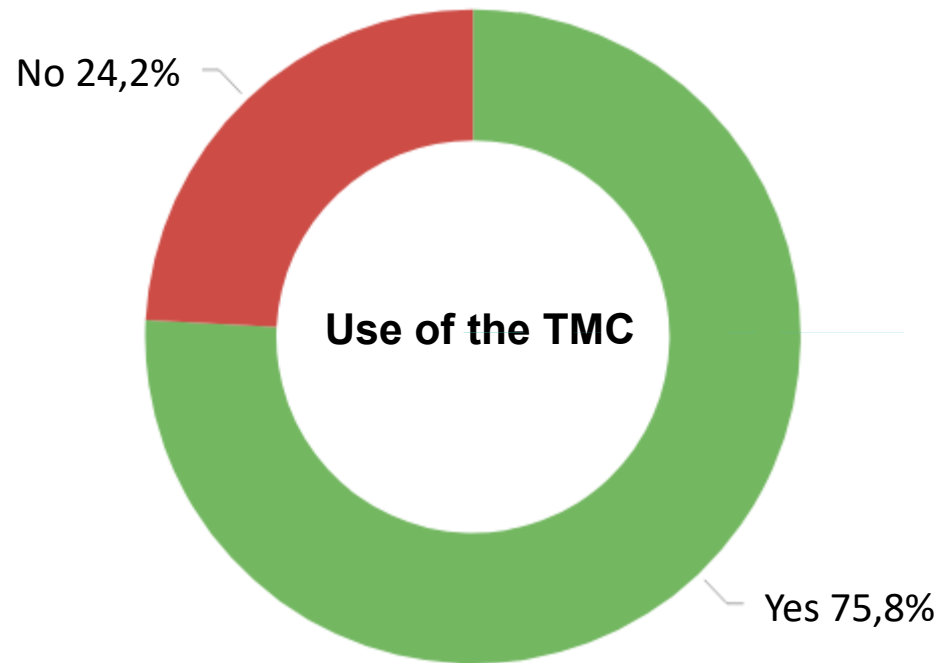
# Transportation

## Modal share of trips

- Public transport
- TransMiCable
- Active-public
- Informal-public
- Private-public
- Private

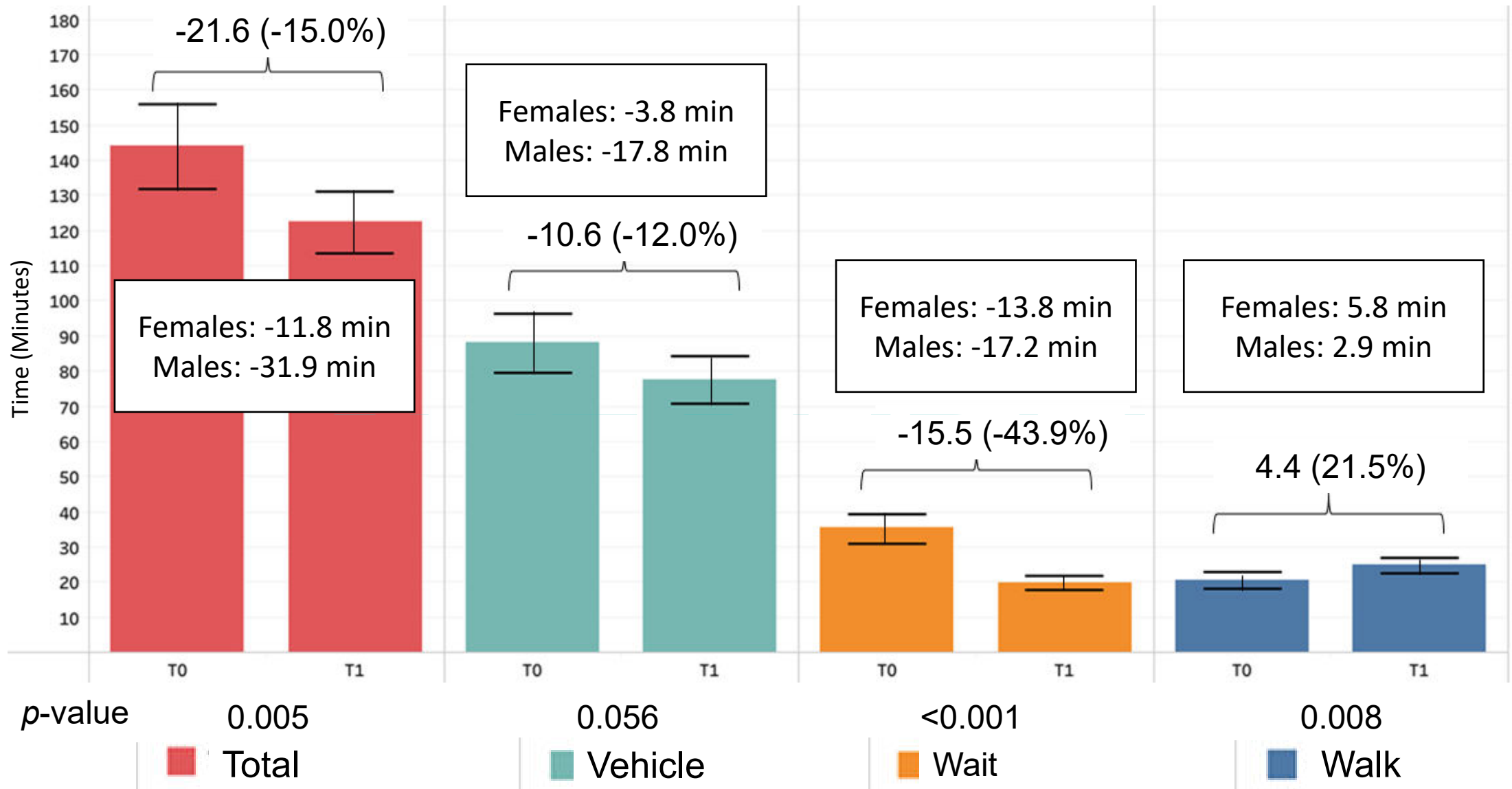


# Reasons for using or not using TransMiCable in Ciudad Bolivar

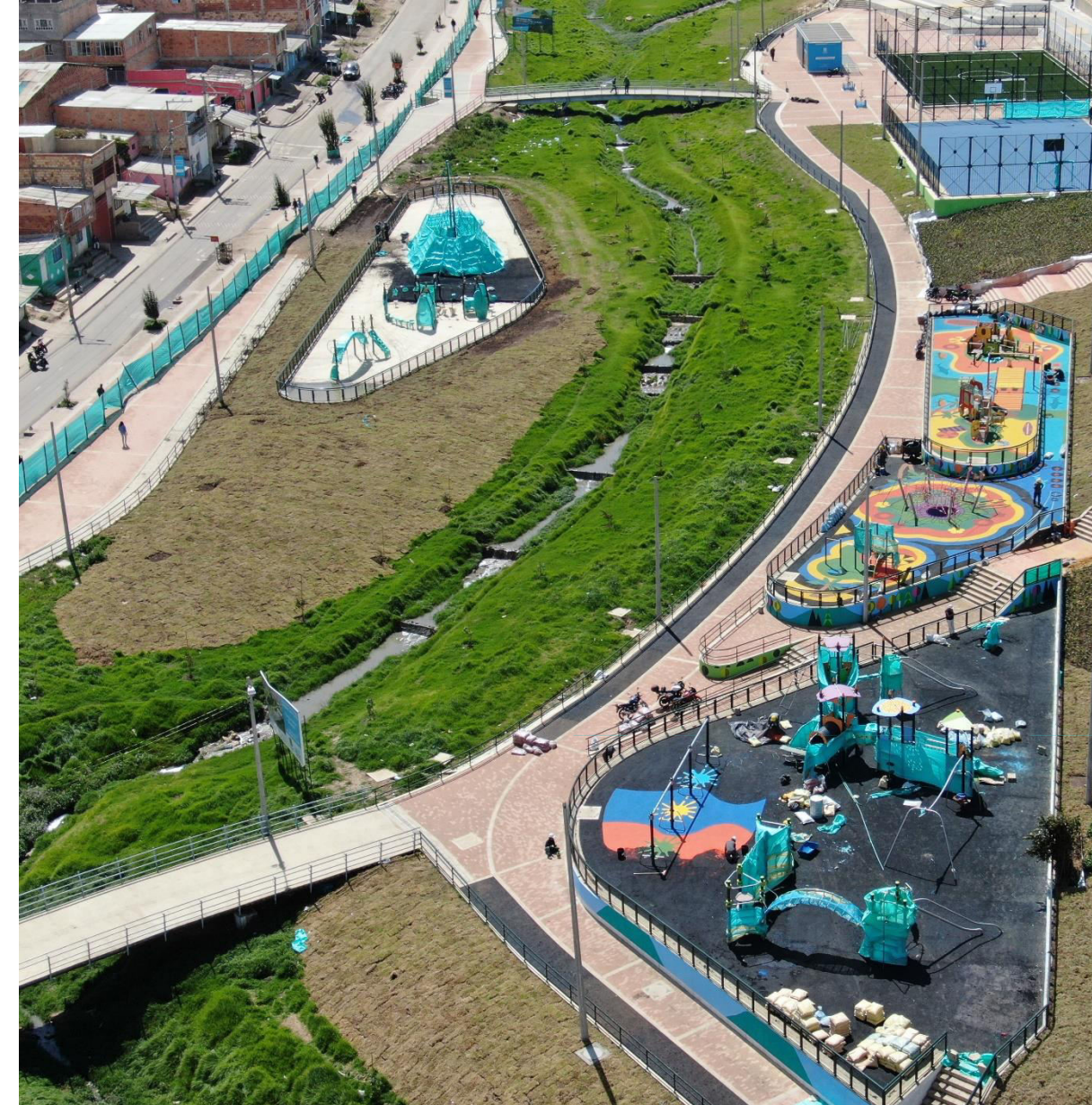




# Average travel time for TransMiCable users decreased







**Physical Activity**



# Methods

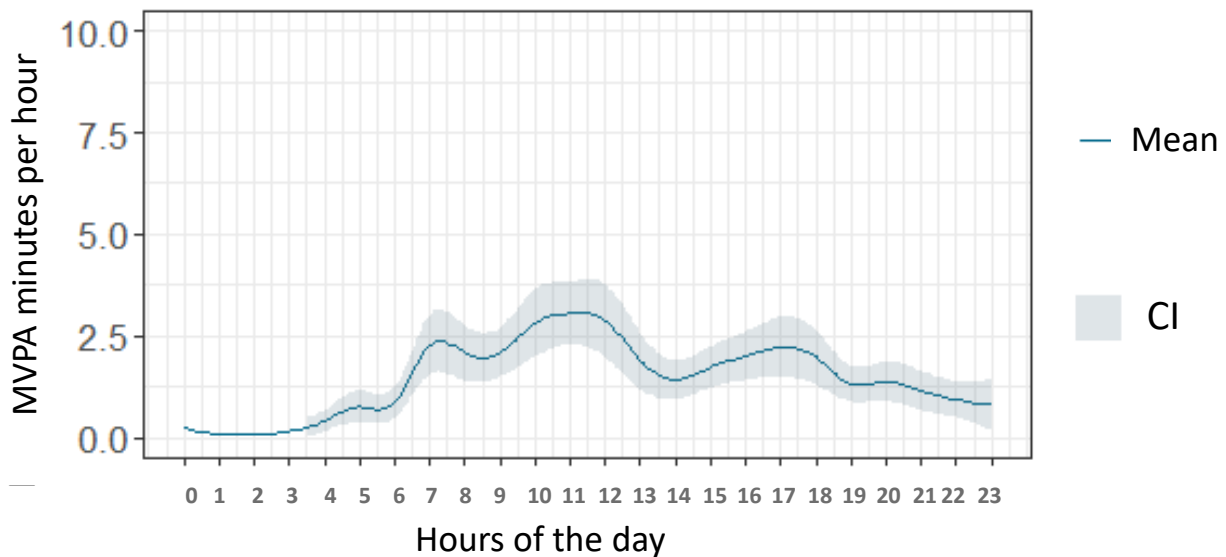
- Accelerometry GT3 X, GT3X+
- SOPARC
- Difference-in-difference method with an inverse probability of treatment weighting



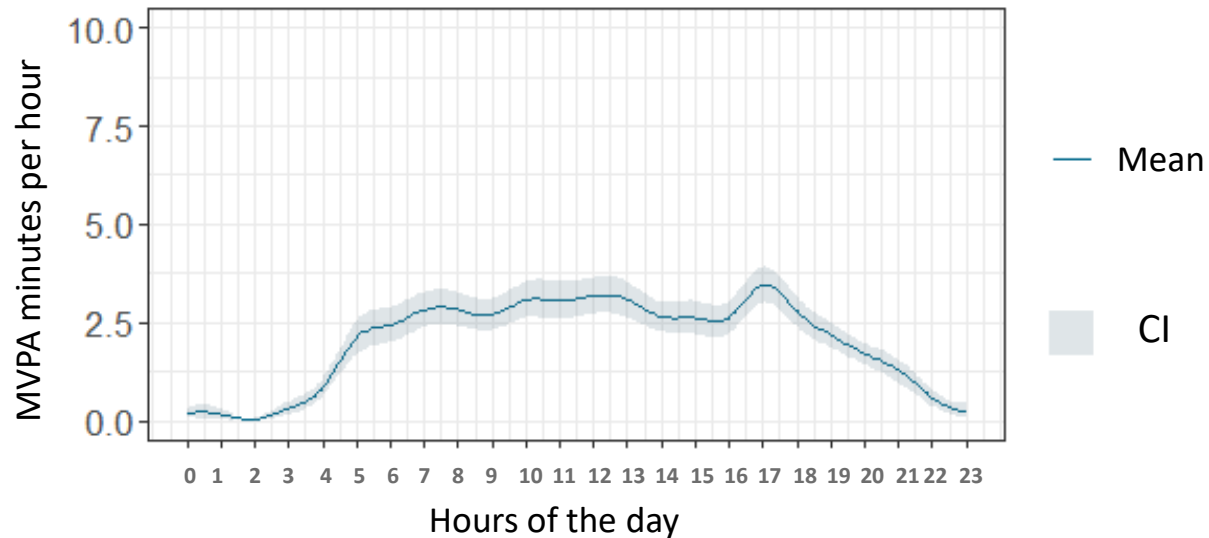


# Moderate and vigorous physical activity levels according to the transportation mode

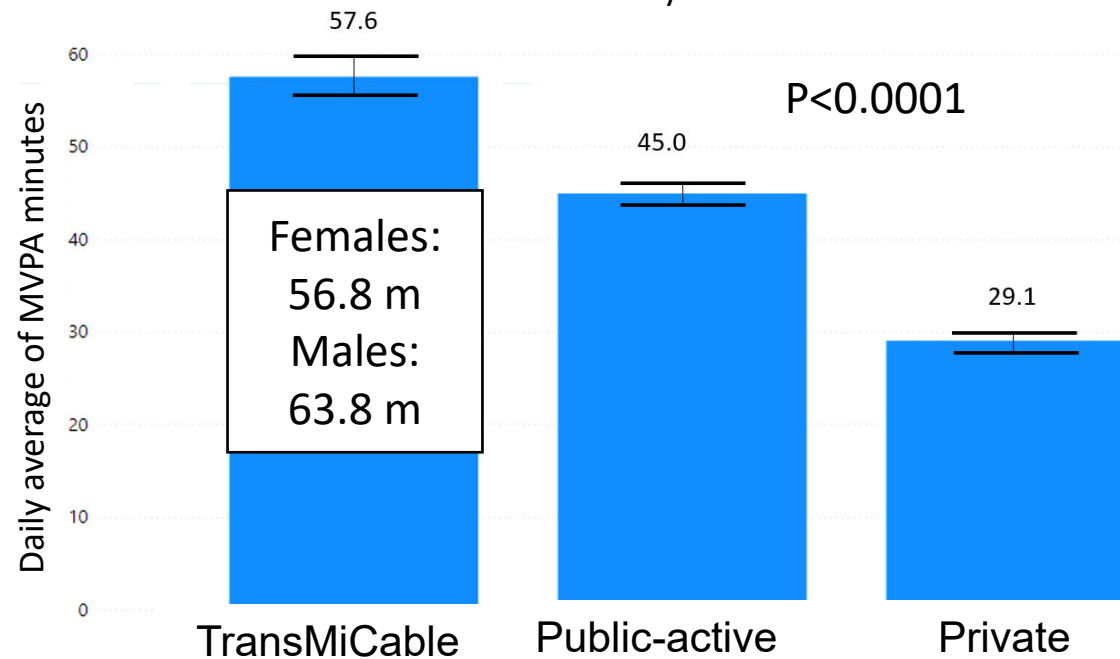
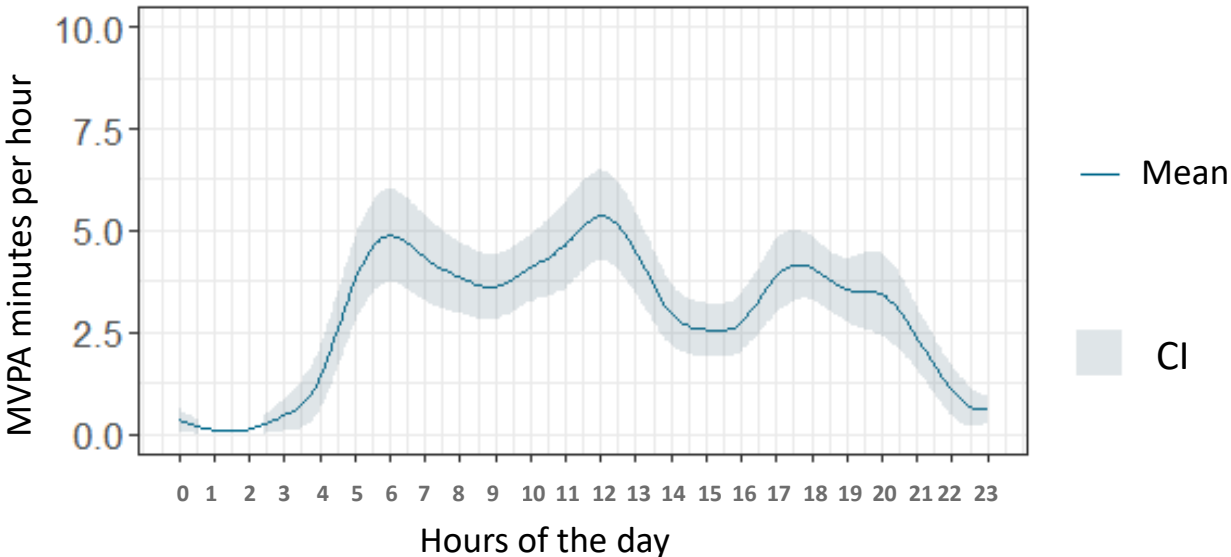
Public and active transportation



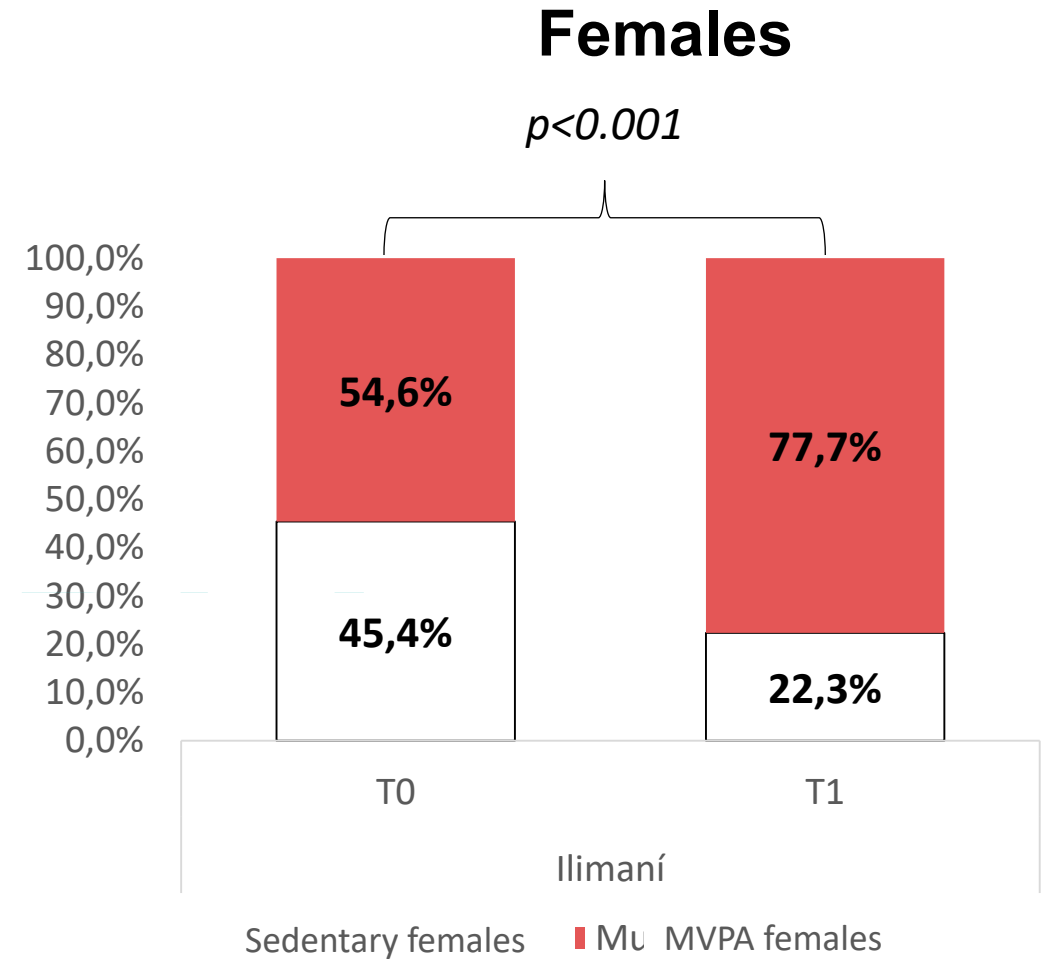
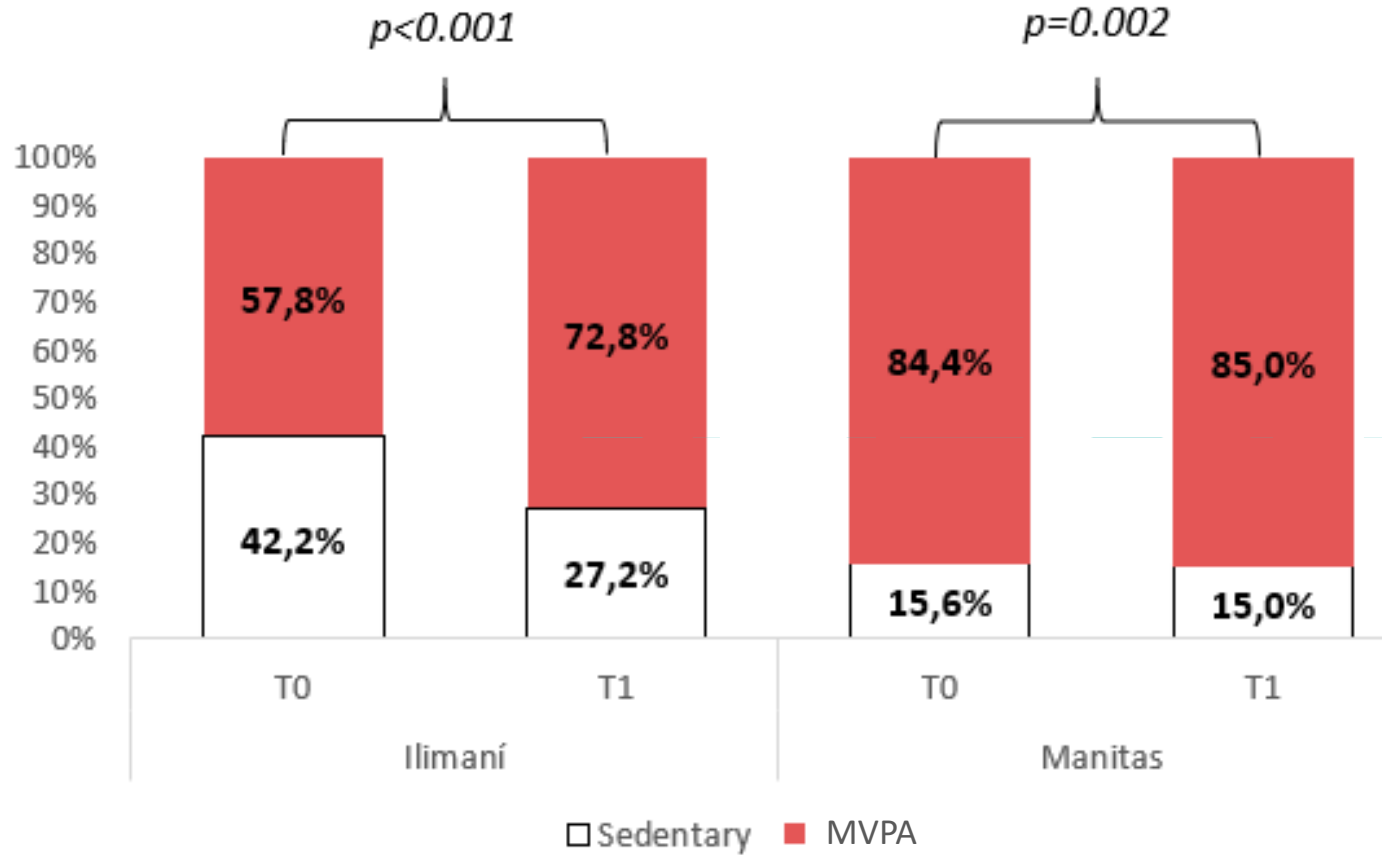
Private transportation



TransMiCable



# Physical activity levels observed in parks





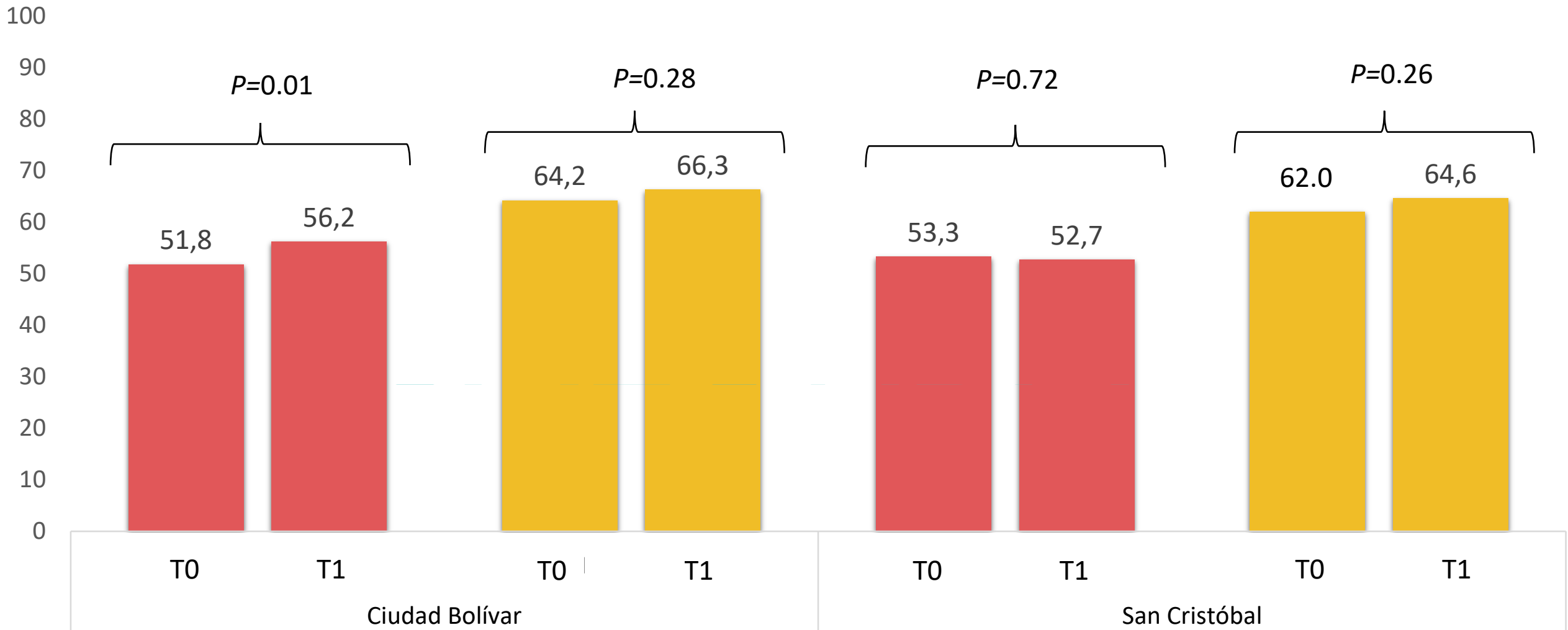
Health-related quality of life



# Methods

- WHO – QOL BREF Questionnaire
- Difference-in-difference method with an inverse probability of treatment weighting

# Health-related quality of life increased in the female population of Ciudad Bolívar



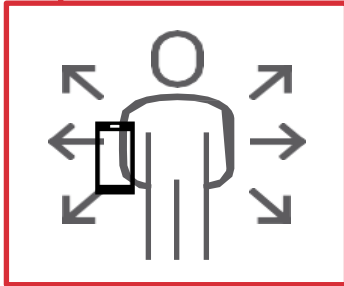
■ Females Diff-Diff + PS\* Females 5.29 p=0.02  
■ Males Diff-Diff + PS\* Males -2.79 p=0.33

\* Analysis adjusted for marital status, education and income for age, occupation, distance to BRT and slope



# Our Voice in TransMiCable

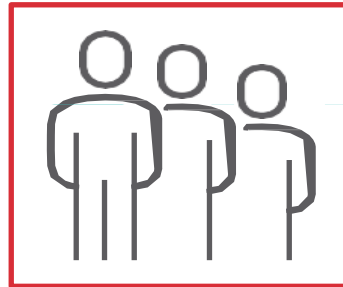
**1** Collecting environment perceptions of citizen scientists: Stanford Discovery Tool App



**2** Discussion of findings with community members



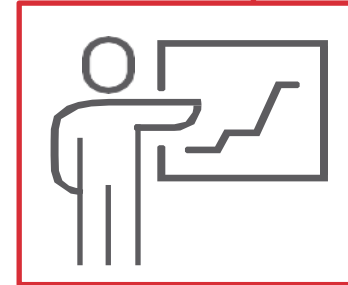
**3** Prioritization of the most important issues for the community

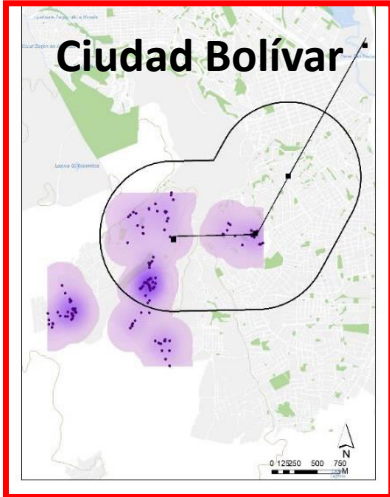


**4** Sharing priorities and finding solutions among stakeholders



**5** Monitoring of change actions and ripple effects





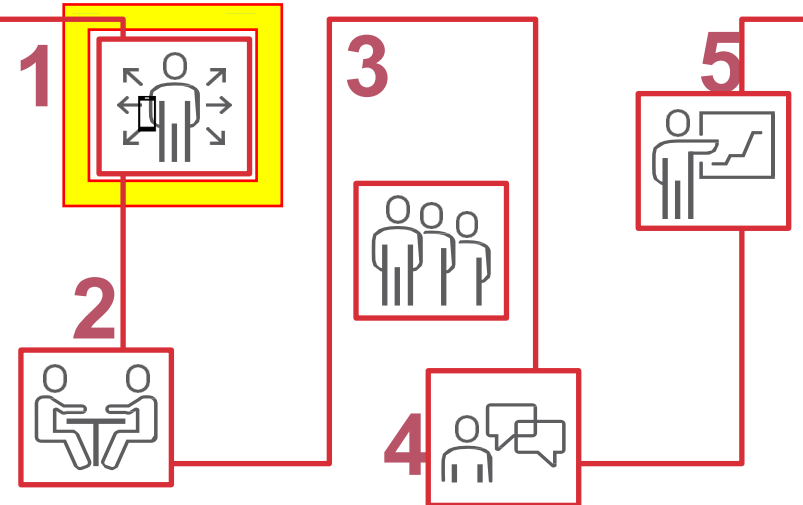
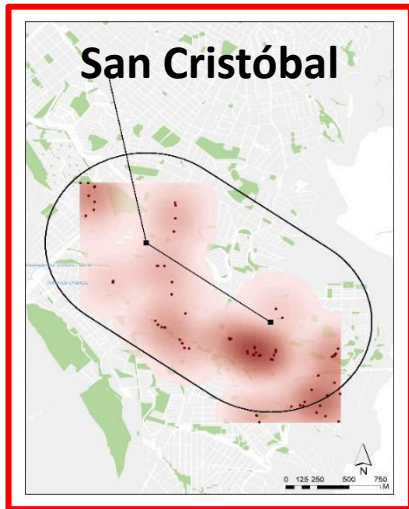
# Our Voice in *TransMiCable*

## Collection

**45** residents registered their neighborhood perceptions in accompanied walks (55% women )

**600** photographs

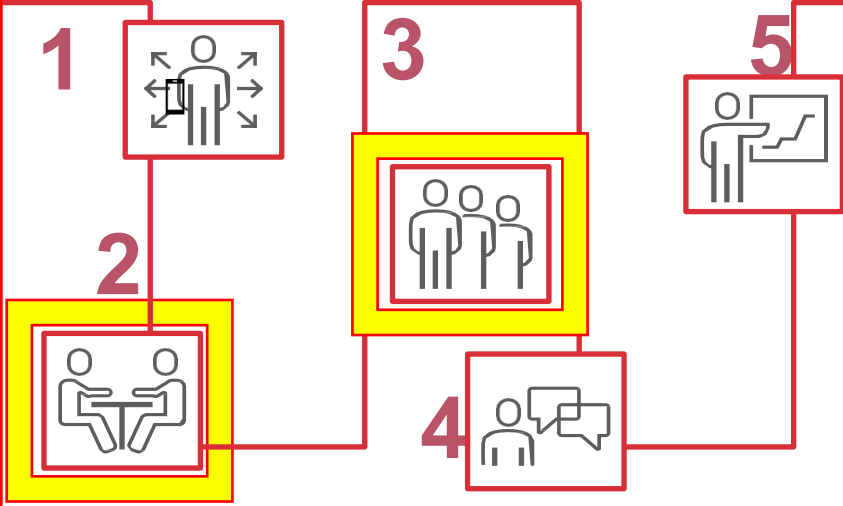
**920** audio recordings





# Discussion and prioritization

Grounded theory for ranking sub-themes  
Content analysis approach



Community meetings to discuss residents' barriers and facilitators of livability

### Before

- Safety
- Community networks
- Park's quality and drug use

### After

- Neighborhood aesthetics
- TransMiCable (Travel time)
- Increase use of parks,
- Concern about safety and drug use in parks

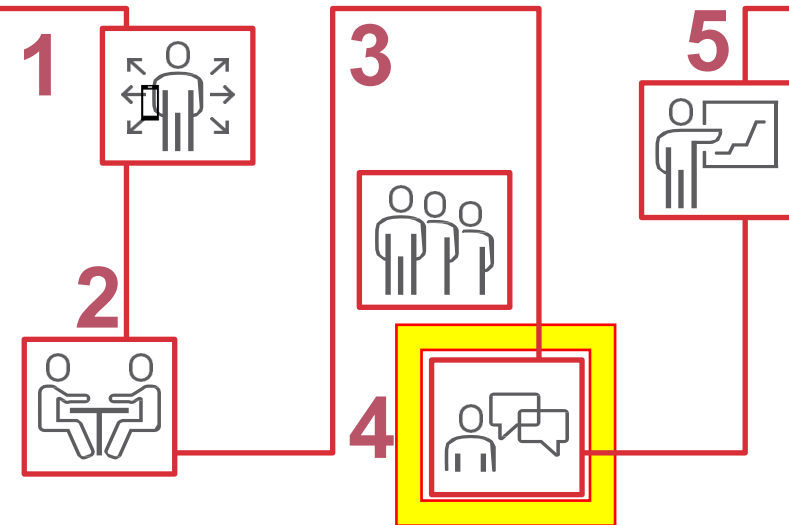
*“Safety has to improve. Things can't continue as they are”*

*“With TransMiCable we've seen a lot of progress in our neighborhood”*



# Intersectoral work—meetings with decision makers and community leaders

- Urban development institute
- Health ministry
- TransMilenio
- Sports and recreation institute
- Ciudad Bolívar's residents
- San Cristóbal's residents



-District Institute of Recreation and Sports representatives– programs to promote physical activity for community (dance classes, biking programs)

-Dialogue intervention and control group leaders

*"Those meetings with the community seem very valuable to me. there is where we realize the perception that people have"*

*"To thank the Universidad de los Andes because it has been a very nice work with these projects, these meetings and the work with the accelerometer"*



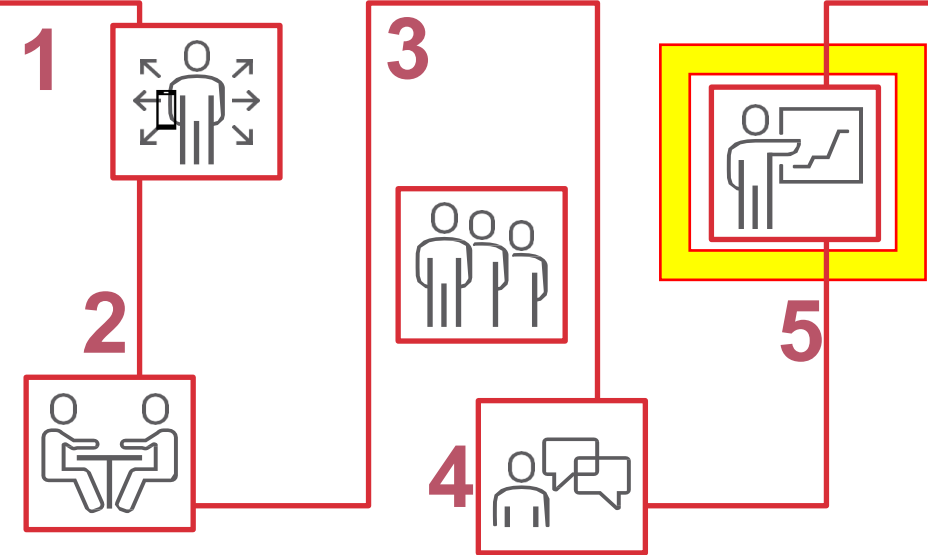


## Follow up and ripple effects

Ripple effects mapping methodology with community leaders

We monitor the transformation of residents' perceptions, unintended effects and new challenges following the intervention. These were the most recurrent themes:

- Transforming the social stigma
- Travel time
- Free time
- Limited efficiency of public transport system



*"Before, they used to say: "No, I'm not going to Ciudad Bolivar" but now anyone wants to come to Ciudad Bolivar, even if it's only to ride the TransMiCable. They will have another way of thinking when they come."*

*"We need a hospital, another police station. There is only one public service's office in one of the stations for all the people we are here"*



# Conclusions

- Interventions in public transportation generate benefits that go beyond mobility.
- TransMiCable had short-term effects on:
  - Reduction in **travel time** and more satisfaction with **transport**
  - The levels of **physical activity** in cable car users are higher than in other modes of transport
  - Females observed performing **moderate or vigorous physical activity** increased in the Illimani park
  - Increased **health-related quality of life** in females

# Conclusions

TransMiCable and its urban transformations is an example of a potential inclusive, sustainable and healthy intervention

- **Our Voice by the people and REM**

- Elucidates barriers and facilitators of livability in the community and the importance of the cable car and the urban transformation to reduce stigma of the locality
- Facilitates a dialogue with stakeholders and intervention and control groups
- Stakeholders highlighted that the advocacy process revealed the potential impact of transport and urban interventions on livability and health and identified potential solutions.
- Applying mixed methods with participatory and cross-sectoral approach, TrUST offered insights into further implementations and evaluations of transport interventions within underserved urban areas.





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Urban Health Network for Latin America and the Caribbean



Universidad de  
los Andes  
Colombia

Aprendizajes  
Latinoamericanos  
Resumen de resultados no. 1  
Septiembre de 2020

# TRANSFORMACIONES URBANAS Y SALUD:

## Resultados de la evaluación del TransMiCable



[Video: https://www.youtube.com/watch?v=4dvQ2NPikU4&feature=emb\\_logo](https://www.youtube.com/watch?v=4dvQ2NPikU4&feature=emb_logo)

**Protocol paper: Urban Transformations and Health: Methods for TrUST—a Natural Experiment Evaluating the Impacts of a Mass Transit Cable Car in Bogotá, Colombia.**

Front. Public Health, 10 March 2020 | <https://doi.org/10.3389/fpubh.2020.00064>

SALURBAL project: <https://drexel.edu/lac/salurbal/overview/>