

# URBAN TRANSFORMATIONS AND HEALTH: Results from the TransMiCable evaluation



The **TrUST** research project seeks to understand how TransMiCable and the urban transformations that accompany this intervention impact people's health. This study is part of the **SALURBAL** project, and emerges from a health in all policies approach to advocating for sustainable, active, safe, and inclusive mobility.

This policy brief presents results from the evaluation of the multi-dimensional transformations observed in the areas of influence of TransMiCable in Ciudad Bolívar, Bogotá. Research was carried out between 2018 and 2020 with residents of Ciudad Bolívar and San Cristóbal, with a multidisciplinary team and a mixed-methods approach.

Understanding these transformations and the way in which they are experienced by local residents allows for a timely assessment of the project and will guide future interventions.



# Health in all policies

## Transport: a basic service and social determinant of health

Health in All Policies is an approach that seeks to understand and transform the way in which urban environments affect health, in order to promote more inclusive and healthy cities (1).

Social determinants of health are the daily conditions in which people live, move, and work (2), as determined by the urban environment (3).

The case of TransMiCable in Ciudad Bolívar allows us to evaluate the impact of rapid urban expansion and the specific challenges faced by an unincorporated neighborhood on the social determinants of health (4, 5, 6).

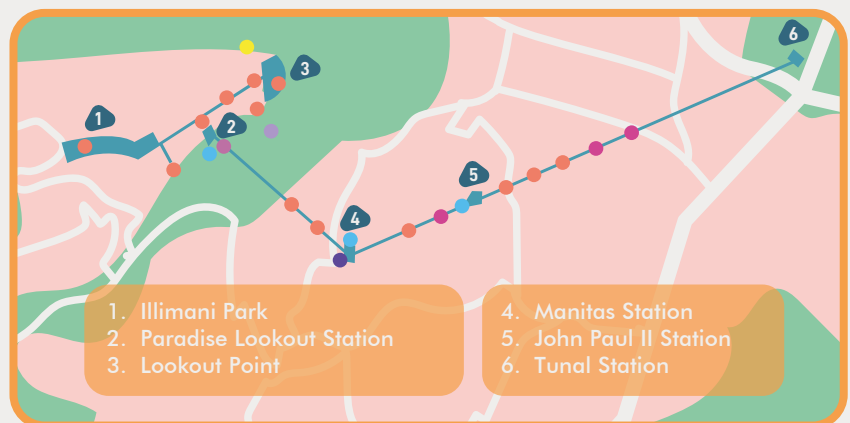


## Intersectoral governance: Transport and urban renewal

In 2007, community leaders in Ciudad Bolívar were inspired by Medellín and mobilized to demand the construction of a cable car system (7). This activism was fundamental to sustaining the project through multiple government administrations.

*The implementation of TransMiCable cable car system and accompanying urban renewal interventions reduce segregation by connecting this community with the rest of the city and increasing access to urban services.*

TransMiCable system and interventions in Ciudad Bolívar



- Physical improvements to homes
- Geomorphological hazard reduction
- Tourist office

- Local markets
- Community centers
- Citizen services office
- Recreational and cultural infrastructure

# TransMiCable makes mobility easier

Changes in travel time within the area of impact of TransMiCable



- 80% of trips made by Ciudad Bolívar residents are by public transport (8).
- The average travel time of Ciudad Bolívar residents by public transport is 59.3 minutes each way.
- The average time of compulsory and non-compulsory trips for TransMiCable users decreased by 22 minutes per trip.
- Time savings are greater in waiting time than in time spent in a vehicle.

## Satisfaction levels

12% of the adult population started using the TransMiCable regularly.

Satisfaction with public transport in Ciudad Bolívar rose from 4.4/10 to 5.4/10.

Satisfaction with the TransMiCable is 8.7/10.

The main expectations with the arrival of TransMiCable focused on reduced travel time, improved safety (in the vehicle), and travel comfort. After the cable car's implementation, these expectations were exceeded

"The time that my husband saves in going up from the Tunal station is 50 minutes compared to the feeder bus service. That is the best, that he has time to share with us as a family"

Resident



\* T0: Baseline measurement

\*\* T1: Follow up measurement after the intervention

# TransMiCable gave us more free time

*"Before, we had a 45-minute commute. With TransMiCable, we have a journey of 13 minutes. We have 30 minutes to rest. In my case, I would leave at 4am to catch transport, now I can easily leave at close to 5am"*

*Resident*



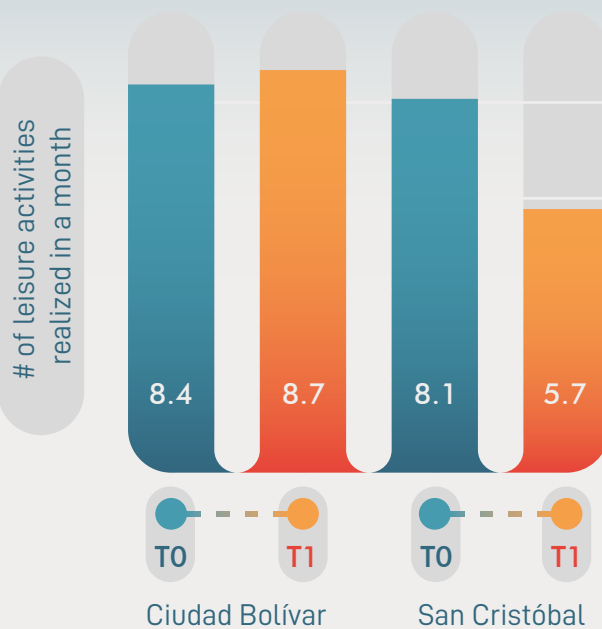
Participants from Ciudad Bolívar reported an increase in time spent on activities that are not work or household chores.

## TransMiCable transformed our neighborhood

**41%** of participants in Ciudad Bolívar increased their satisfaction with the neighborhood.

**19%** of participants in Ciudad Bolívar identified neighborhood parks that they had not previously identified, and they assigned these parks the highest rating.

Average free time leisure activities in the last month per person



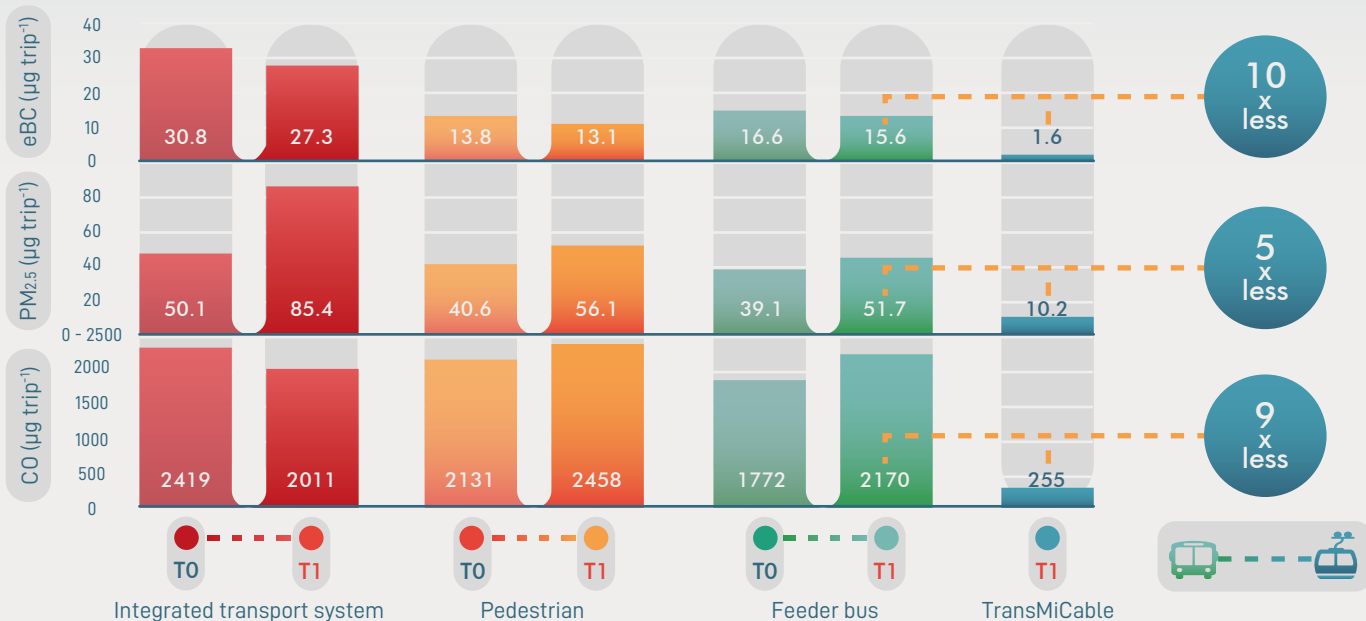
*"This project is being visited by the Secretariat of Housing and it will be finished soon. It gives a lot of joy; it gives good image, and it will change inhabitants' quality of life: they won't have to get dirty anymore, and it's very beautiful"*

*Resident*



# TransMiCable gave us cleaner air

Inhaled dose per trip in transport microenvironments

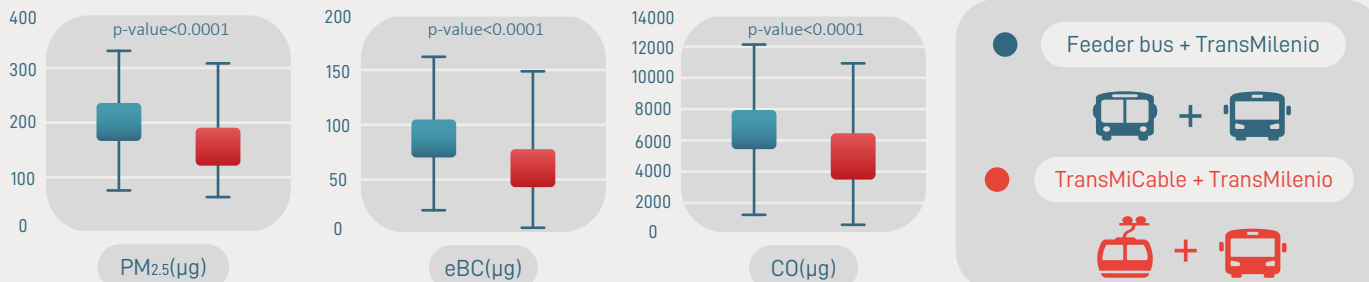


In 2018, the annual average concentrations of PM<sub>2.5</sub> (fine particulate matter) in Ciudad Bolívar were 20µg/m<sup>3</sup>, which exceeds the annual recommended maximum of the World Health Organization (9).

Exposure to PM<sub>2.5</sub>, eBC (soot) and CO (carbon monoxide) in TransMiCable cabins is lower than in other transport microenvironments (feeder bus, SITP, or informal vehicles).

The inhaled dose per trip is less for trips that include the cable car.

Simulated inhaled dose per trip



# With TransMiCable, we are more active

"This is our Ilimaní park where neighborhood kids come to enjoy recreational activities. We hope they get more involved in these activities because there are many who are getting involved in drugs"

Resident



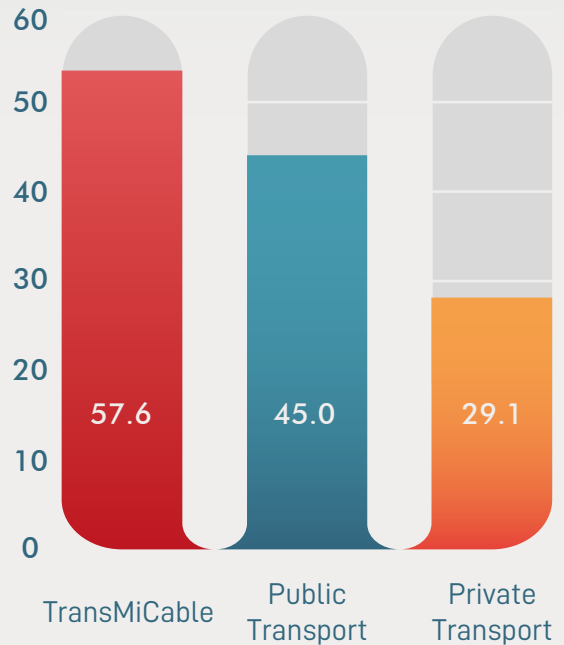
We observed an increase in moderate and vigorous physical activity in parks in Ciudad Bolívar.



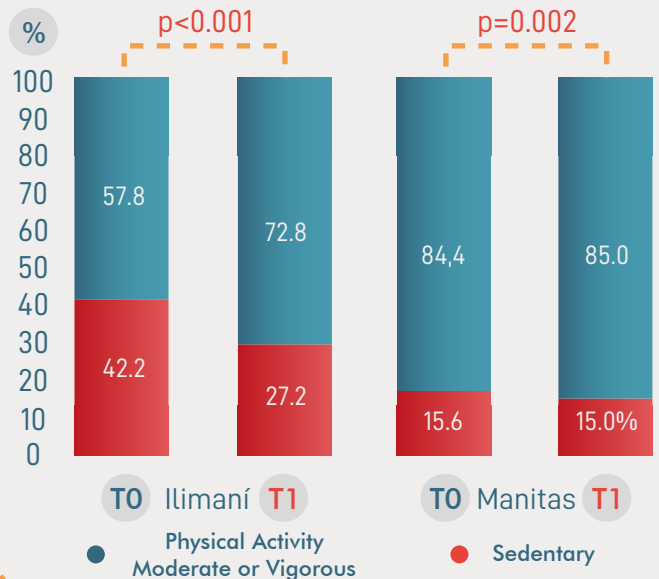
The park renovation (of Ilimaní and Manitas) created space for socializing and physical activity.

Levels of moderate and vigorous physical activity are higher among TransMiCable users

Average daily minutes of Moderate or Vigorous Physical Activity\*



SOPARC \*\*: Moderate or Vigorous Physical Activity observed in parks

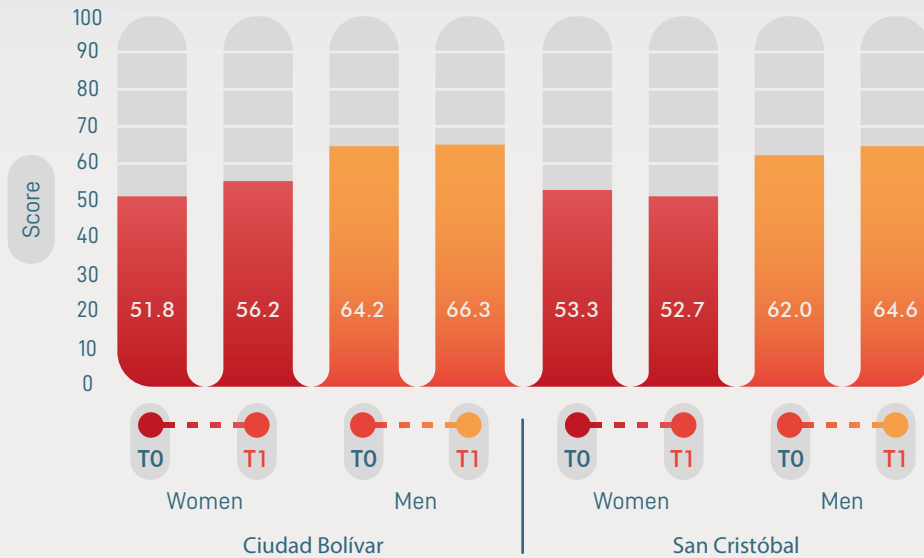


\*\* SOPARC is a direct observation instrument for evaluating parks and recreation areas, including levels of physical activity of park users.



# TransMiCable improved our quality of life

## Health-related quality of life



Health-related quality of life increased by 3.9 points among participants from Ciudad Bolívar.

Health-related quality of life increased among women in Ciudad Bolívar by 4.4 points; in men there was no change.

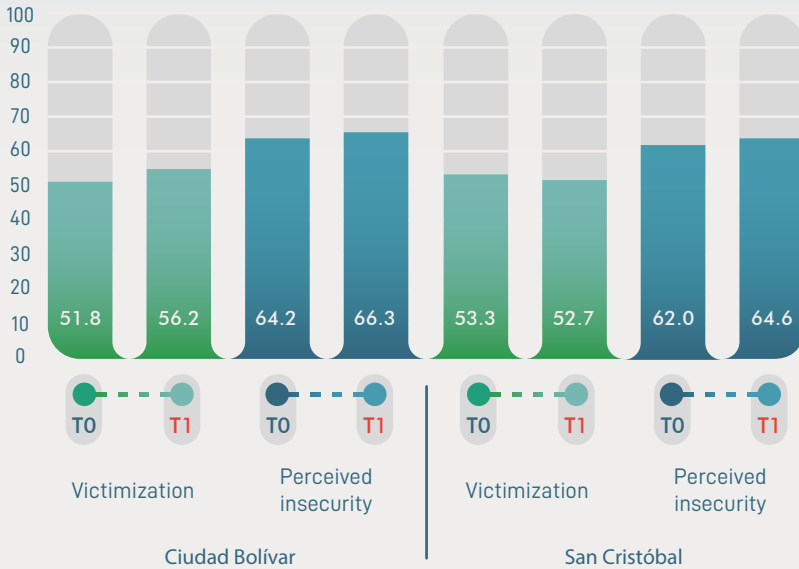
*"TransMiCable is critical because around here everything had been totally abandoned by the authorities. But right now, you can see another reality, and it is very nice to have a better quality of life"*

*Resident*



# TransMiCable increased our sense of security

## Victimization and perceived insecurity



"In terms of safety inside the cabins, that has improved a lot; one feels very safe, one is seated, calm. This system has many means of security: internal camera, each station has police officers, and there are applications where you report any incidents"

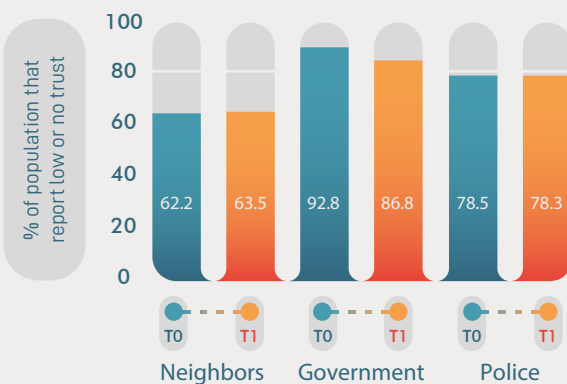
Resident

- In 2019, **18.5%** of homicides in Bogotá occurred in Ciudad Bolívar.
- The annual homicide rate in Ciudad Bolívar is **25.6** per **100,000** inhabitants.
- After the implementation of TransMiCable, perceived insecurity decreased among residents of Ciudad Bolívar.
- Residents of Ciudad Bolívar reported a decrease in the number of homes victims of theft and robbery.

# TransMiCable decreased our mistrust in public institutions

- The percentage of people reporting low or no trust in the government dropped from **93%** to **86%**.
- The percentage of change in the perception of mistrust among TransMiCable users was **10%**.

- Among TransMiCable users, levels of mistrust of neighbors dropped from **62%** to **58%**.
- TransMiCable has reduced mistrust in the local government.





# Intended and unintended effects of TransMiCable



## TRANSMICABLE RIPPLE EFFECTS



# TransMiCable and sustainable transport in urban renewal

## LESSONS LEARNED



The evaluation of TransMiCable and its urban transformation highlights the importance of public transport as a social determinant of health, and the importance of a health in all policies approach for building healthier cities.



Transportation interventions together with urban transformations are an opportunity to improve the health of communities. The TransMiCable experience has reduced residents' travel times; increased their free time; increased neighborhood satisfaction; reduced the inhaled dose of air pollutants; increased meeting places, socialization, and physical activity; and decreased victimization.



Providing sustainable transportation solutions to vulnerable populations is a way to improve multiple aspects of quality of life, demonstrates the government's willingness to serve the population from various angles, and helps reduce social inequities and, eventually, public spending.



Improved connectivity between modes of transport can improve travel experience and lead to better outcomes in sustainability, inclusion, and health.



Promoting community ownership of programs and infrastructure improves community participation (with decision makers, academia) throughout conceptualization, design, planning, and implementation stages.



The evaluation of TransMiCable highlights the importance of a gender perspective and community participation from the project's conceptualization.



Learning from the intended and unintended effects of interventions is critical for improving similar approaches, redirecting efforts, and improving transportation and urban transformation projects.



Undertaking this policy evaluation as part of the SALURBAL project provides a unique opportunity to evaluate the relationship between sustainable transport and health in Latin America.



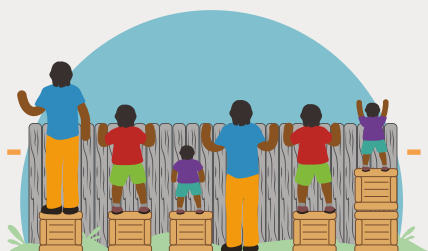
Joint efforts between academia, the community, and public institutions have the potential to achieve relevant, effective, and sustainable transformations.



# TransMiCable, public transportation, and COVID-19



Public transportation continues to be a **basic need** for the TransMiCable target population. Providing sustainable transportation is a way to improve quality of life through the direct delivery of public goods and services.



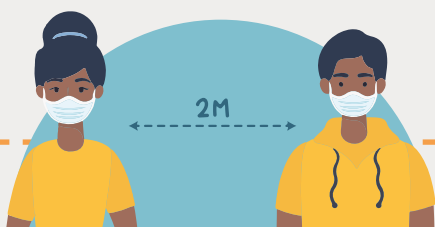
The pandemic has highlighted the **urgent need** to reduce social and economic inequities to improve population health (10).



Providing regulated transport services is a way of guaranteeing compliance with biosecurity standards, as demanded by the crisis generated by **COVID-19**.



The pandemic has created **opportunities** for research and innovative thinking about urban policies and improvements to living conditions for the most vulnerable populations.



Public transport is **essential** for building healthier and more equitable cities, but it must be made safer with physical distancing, ventilation, short travel times, use of face masks, hand washing, and hand sanitizer.



# Data Sources and Specifications (11):

----- TrUST

Urban Transformations and Health: the case of TransMiCable

## Study design:

- Quasi-experimental, longitudinal study
- Mixed methods approach
- Citizen Science and Ripple Effects Mapping
- Consultation with community members and decision makers

## Areas of study:

- Radial buffers of 800 meters surrounding each TransMiCable station
- Area of Intervention: Ciudad Bolívar
- Control area: San Cristóbal.

## Population studied:

Adults who had lived in Ciudad Bolívar or San Cristóbal for at least two years prior to 2018, who did not plan to change residence over the following two years.

## Sample:

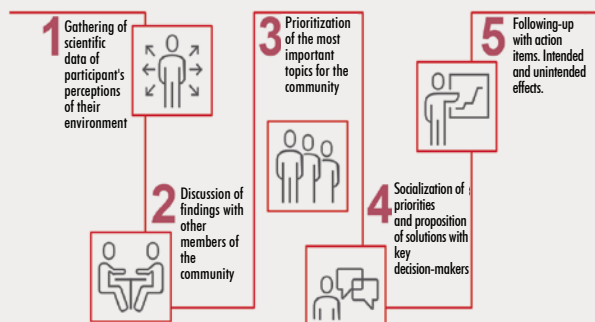
- Multi-stage sampling. First, blocks were selected with a probability proportional to the density of properties. Second, every third home was systematically selected. Third, selection of homes and participants was random.
- 2052 individuals were surveyed in 2018, with a follow-up rate of 81.7% in 2019.
- Subsamples were created for accelerometry measurements, declared preferences, travel diaries, focus groups, and mobile application installation.

## Environmental measurements:

- Trips were carried out on feeder buses, regular bus, and informal transport to measure environmental pollutants.
- Physical activity in Illimani, Manitas, Moralba and La Victoria parks was measured using SOPARC.

## Individual measurements:

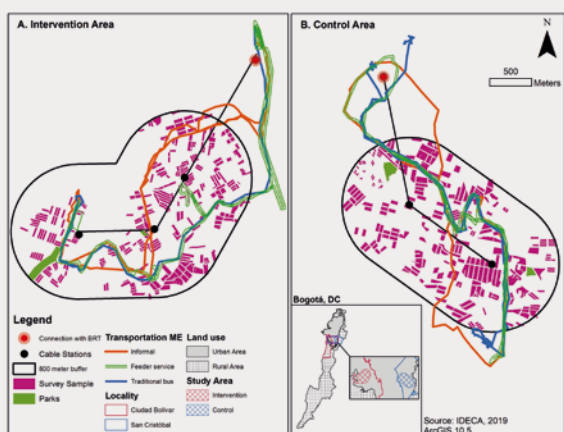
- Household surveys
- Accelerometry
- Installation of mobile application "Muévelo"
- Travel diaries
- Walks around the neighborhood using the *Stanford Healthy Neighborhood Discovery Tool*



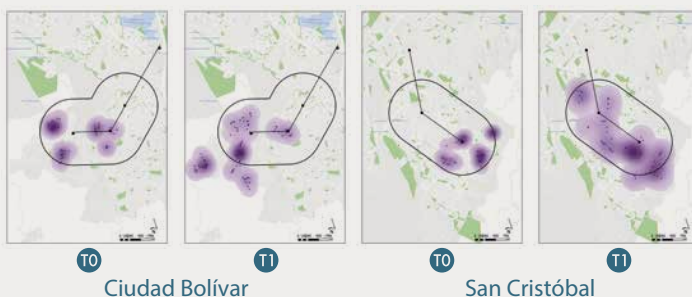
## Our Voice on TransMiCable

*Our Voice: Citizen Science for Health Equity*

Results were accompanied by testimonies from the residents of Ciudad Bolívar and San Cristóbal, who express in their own words the transformations created by TransMiCable.



*Geographic location of photographic record via Stanford Healthy Neighborhood Discovery Tool app*



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*TrUST was financed by the Wellcome Trust, the Universidad de los Andes, the Universidad del Norte, the District Planning Department of Bogotá, and Miniciencias.*

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*These results are part of one of the urban policy evaluations carried out by researchers from the Urban Health in Latin America (SALURBAL) project. This research seeks to understand the impact of policies and interventions from various sectors on the health and well-being of people living in Latin American cities. The SALURBAL project is funded by the Wellcome Trust.*

For more information, please see:

<https://drexel.edu/lac/data-evidence/policy-evaluations/>

