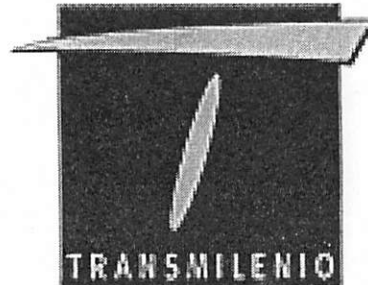


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Reshaping the Future:  
Bogotá's New Transit System  
**Transmilenio**



Germán C. Lleras

Pilar Rodríguez

VII Encuentro UPR/MIT/TU

San Juan, Puerto Rico

January 16th, 2001

# Outline

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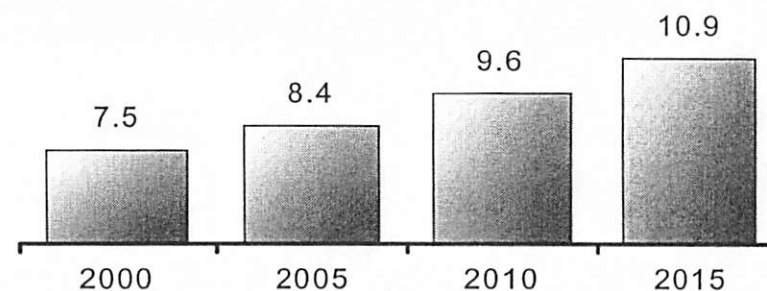
- Bogotá
- Current Transportation Conditions
- The Change: A new mobility paradigm
- Challenges
- Transmilenio
- Future Steps

# Bogotá

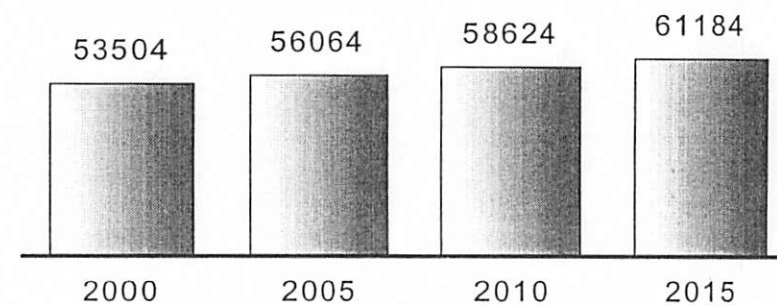


8000 ft above sea level  
50 – 66 °F

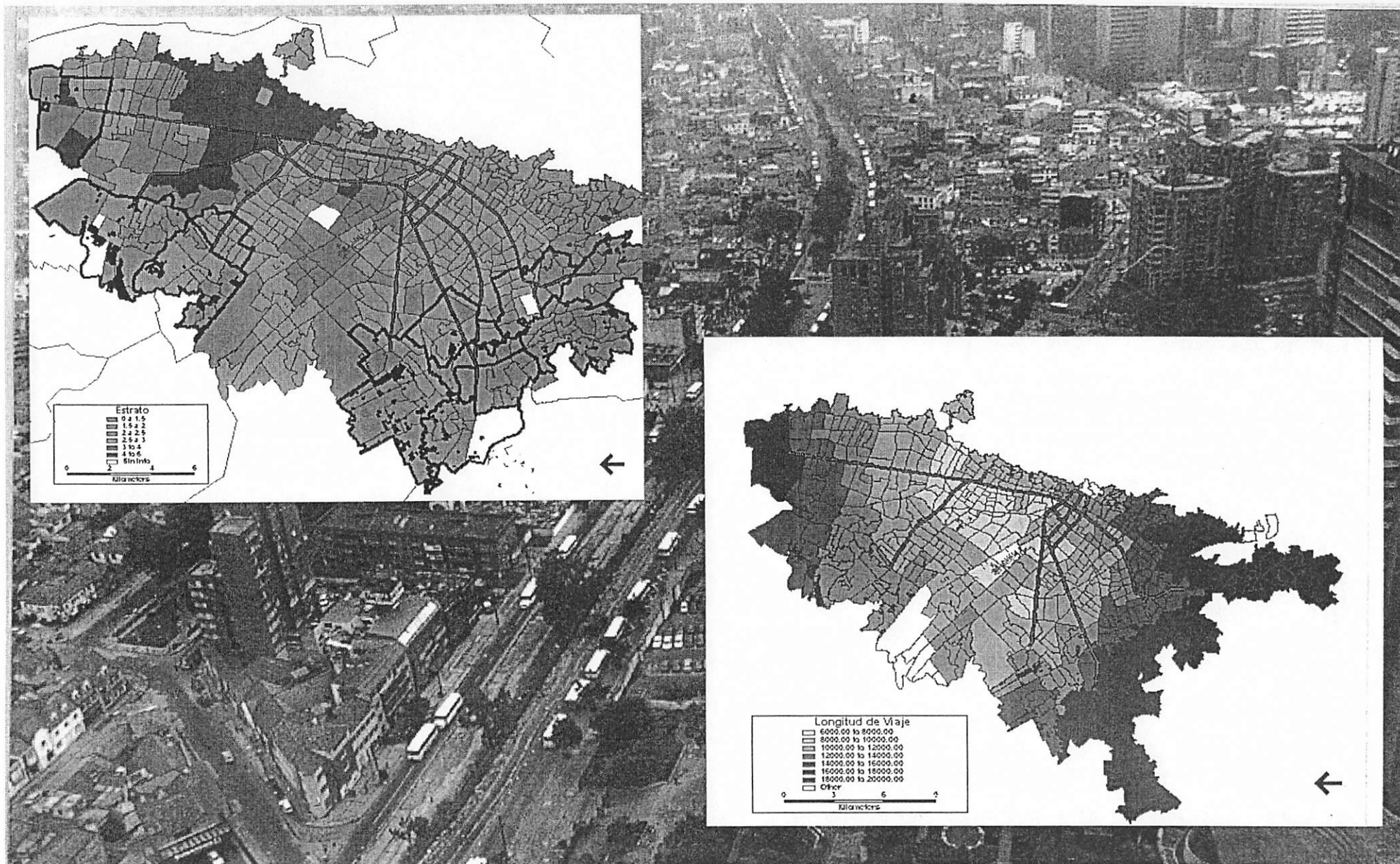
Population (million inhab.)



Density (inhab. per mile<sup>2</sup>)



# Bogotá



# Current Transportation Conditions

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Origins



Destinations



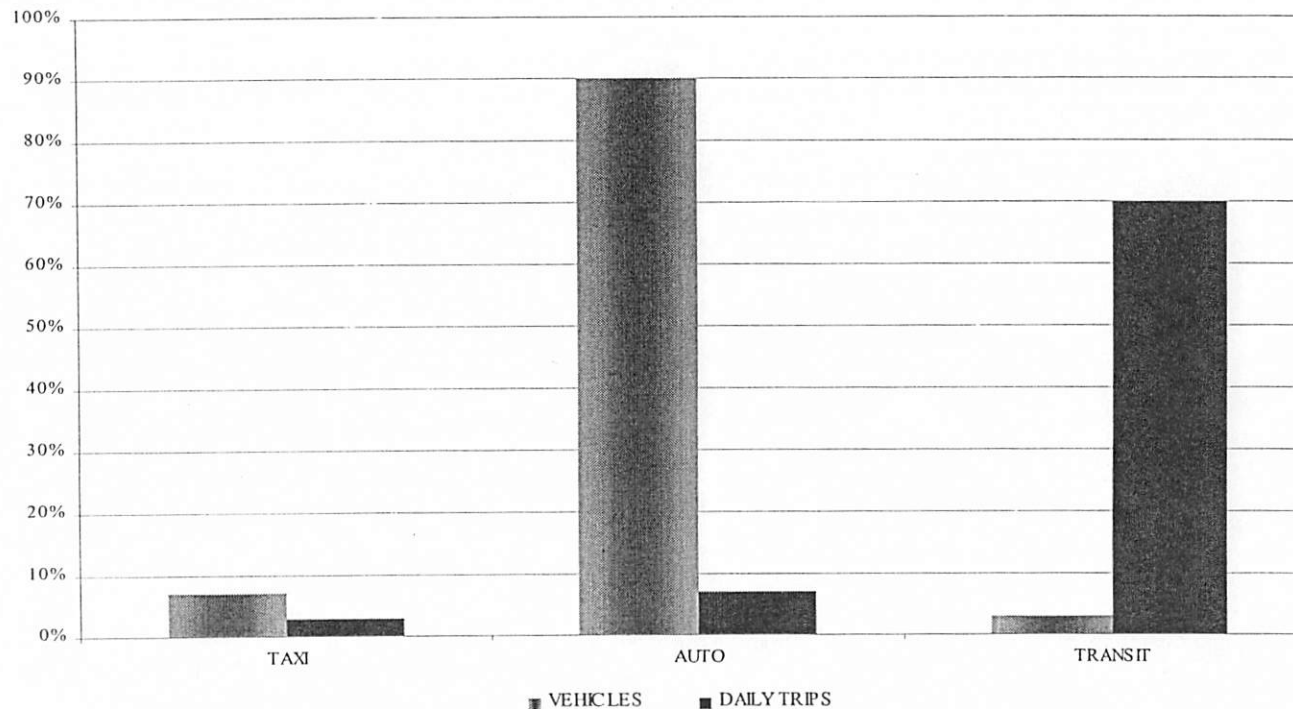
Peak Hour a.m.



# Current Transportation Conditions

- Daily trips: 14,000,000
- Daily motorized trips: 10,000,000
- Daily transit trips: 7,000,000
- Congestion: avg. daily time spent by person on trips using transit 2.2 hr.

Corridor	Pax/hr/dir.
Avenida Caracas	36,000
Calle 80	25,100
Autopista Norte	16,700
Norte Quito Sur	25,400
Avenida Suba	24,800
Av. Américas	28,800



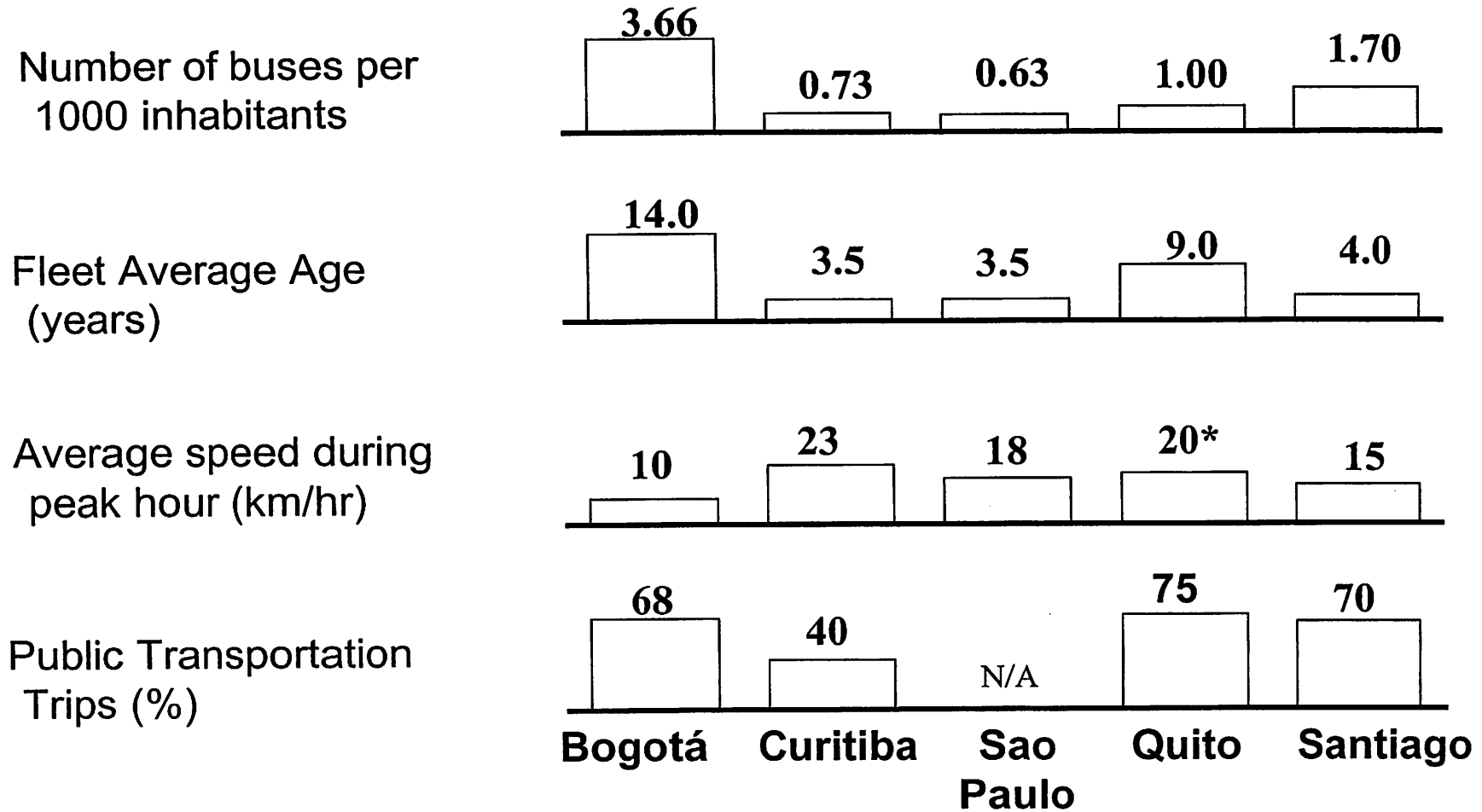
# Current Transportation Conditions

- Transit industry incentives promote:
  - “Guerra del Centavo”
  - Surplus, increasing operating cost per passenger.
  - Labor exploitation
  - Low bus maintenance
- No Customer Service
- No Accountability
- Very Long Trips
- Corruption
- Many Routes
- Ample Coverage
- 69 % of trips are unliked





# Current Transportation Conditions



\* For the Trolley system

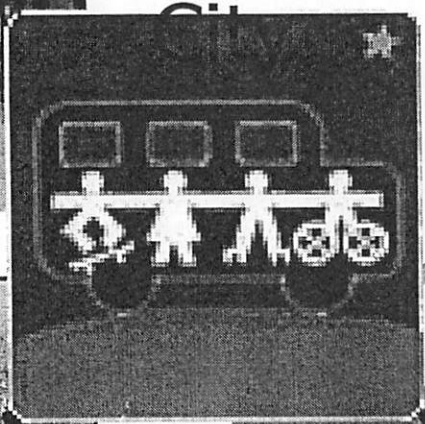
Source: Jica study 1996; STT; BCEOM 1996; Interviews; McKinsey & Co Analysis.; UPGT; UOST; URES; SPTrans

# The Change: New Mobility Policy

Sidewalks and Promenades



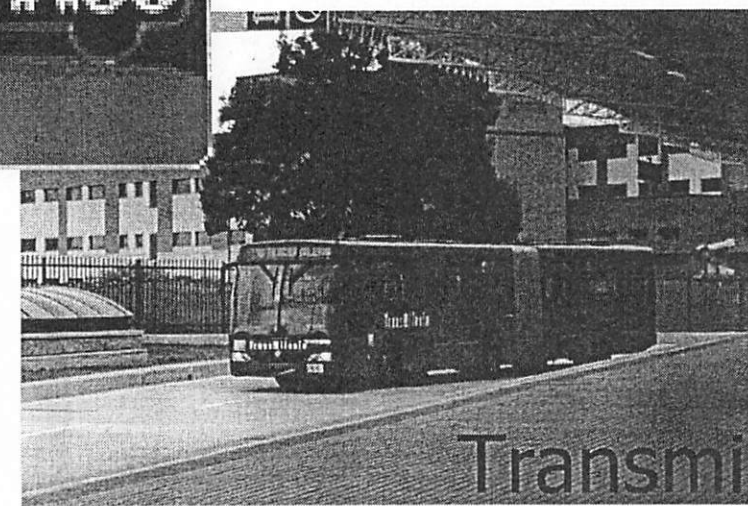
Car Free

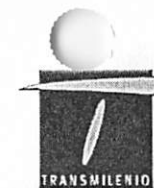


Metro



Transmilenio





# Transmilenio – Challenges/Opportunities

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## **Technical**

- Move 40,000 pax/hr direction
- Reduce travel time

## **Political**

- Gain support from the City Council
- Gain support from the community
- Gain support from current operators

## **Institutional**

- Create a New Agency

**Create a  
sustainable  
and self-  
supporting  
system**

## **Organizational**

- Promote and create new operators

## **Environmental**

- Reduce emissions and noise

## **Social Development**

- Generar empleo y mejorar las condiciones laborales
- Mejorar la calidad de vida de los bogotanos

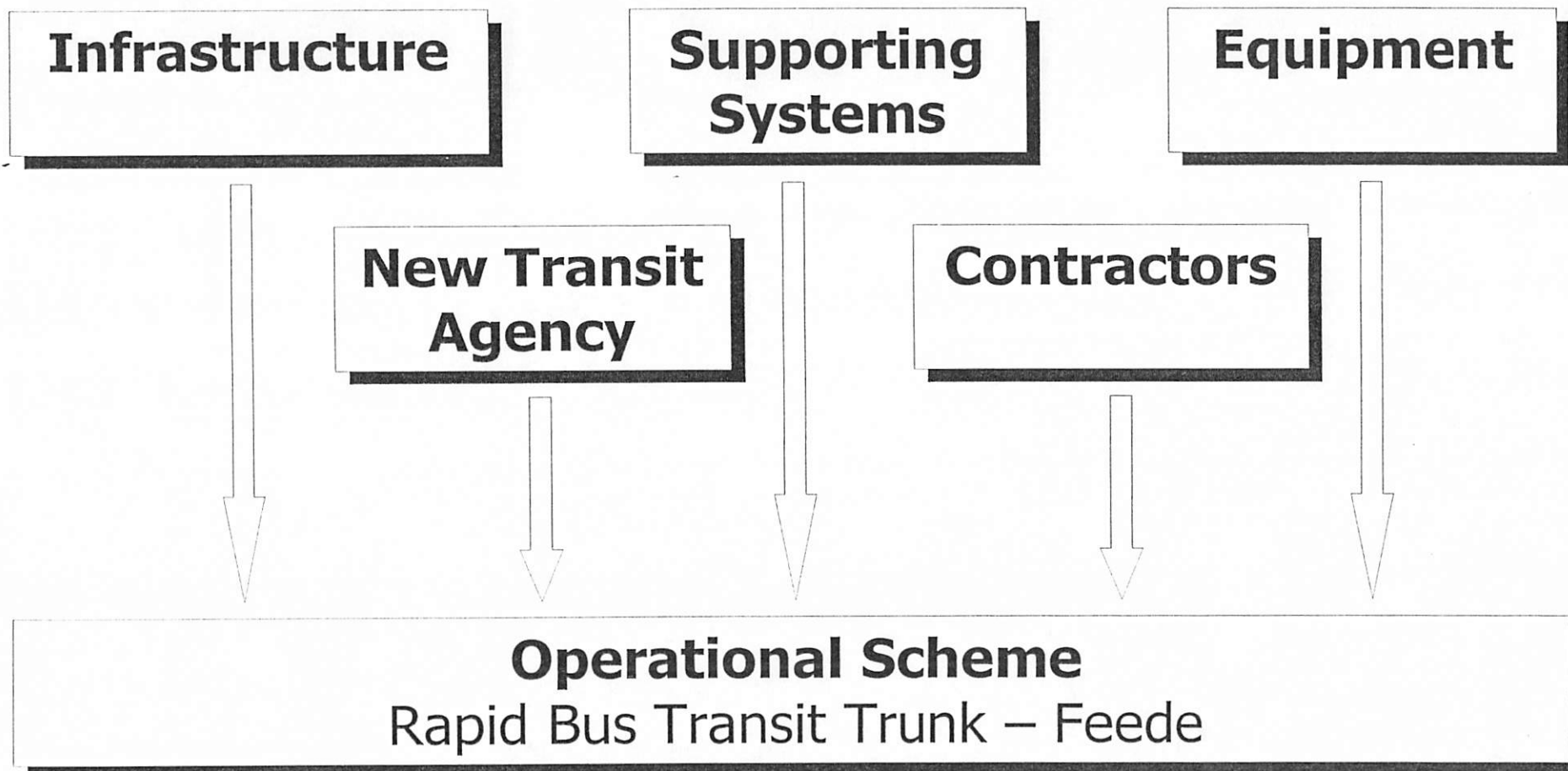
## **Economical**

- No national Funding
- Budget: US\$ 186 M
- Attract foreign investment

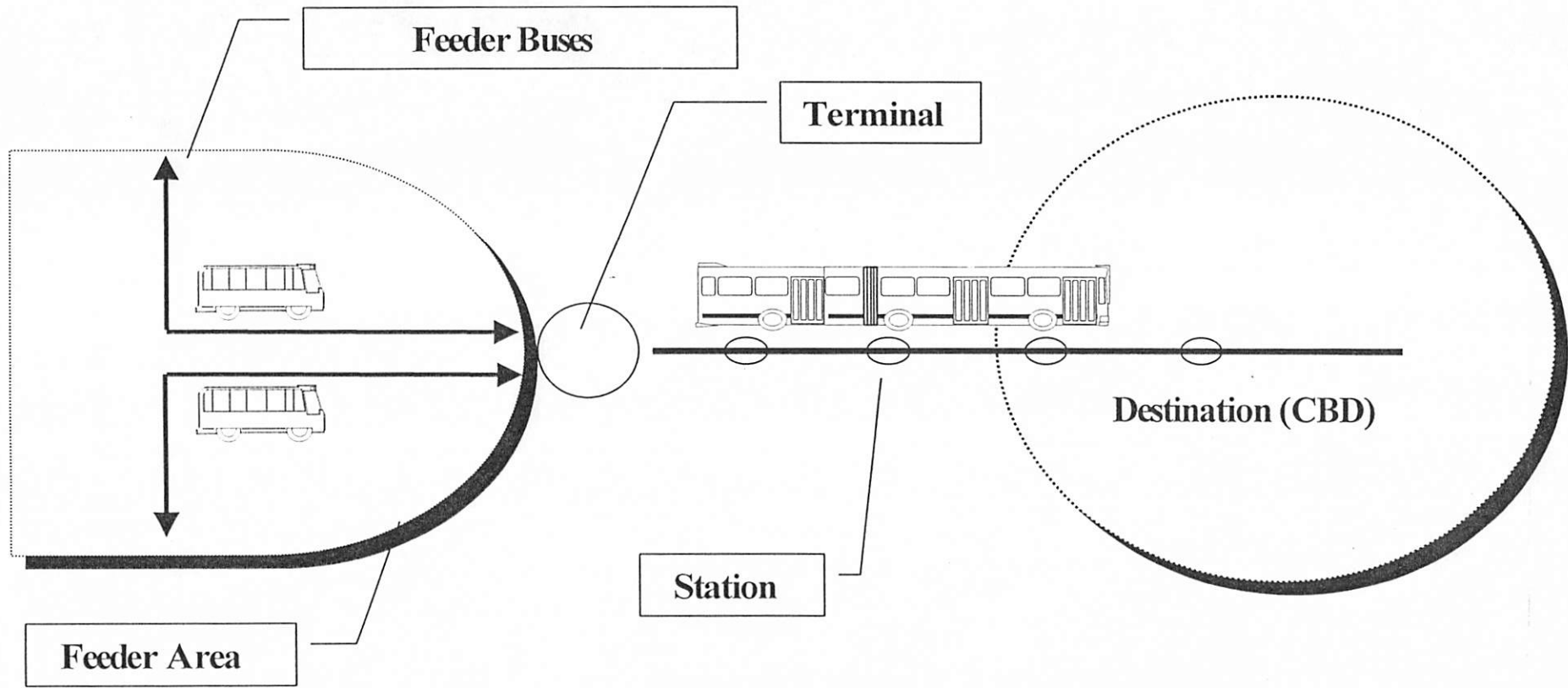


# Transmilenio – Overview

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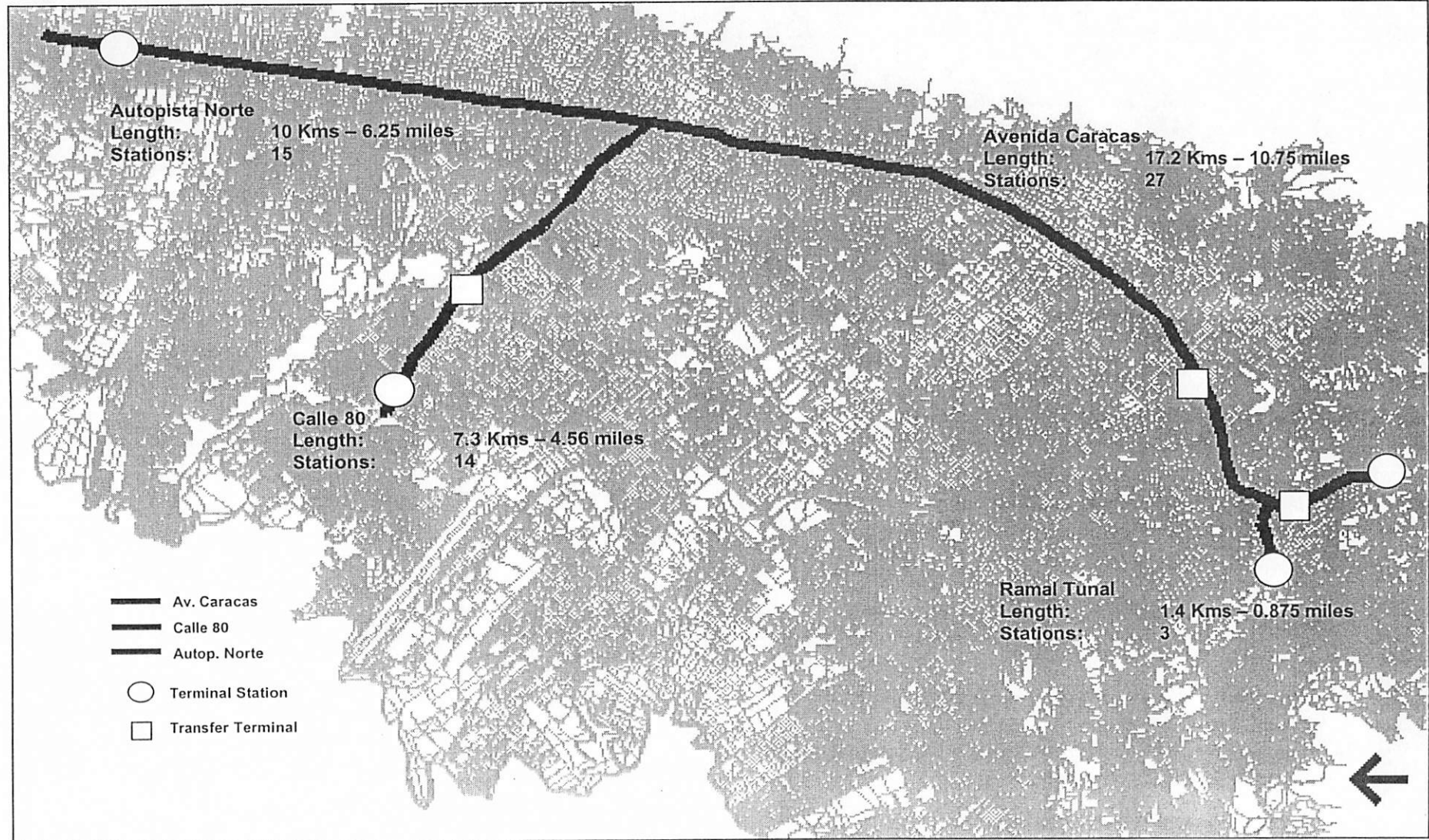


# Operation – Operational Scheme



**Trunk - Feeder**

# Operation – Operational Scheme



# Operation – Trunk Routes

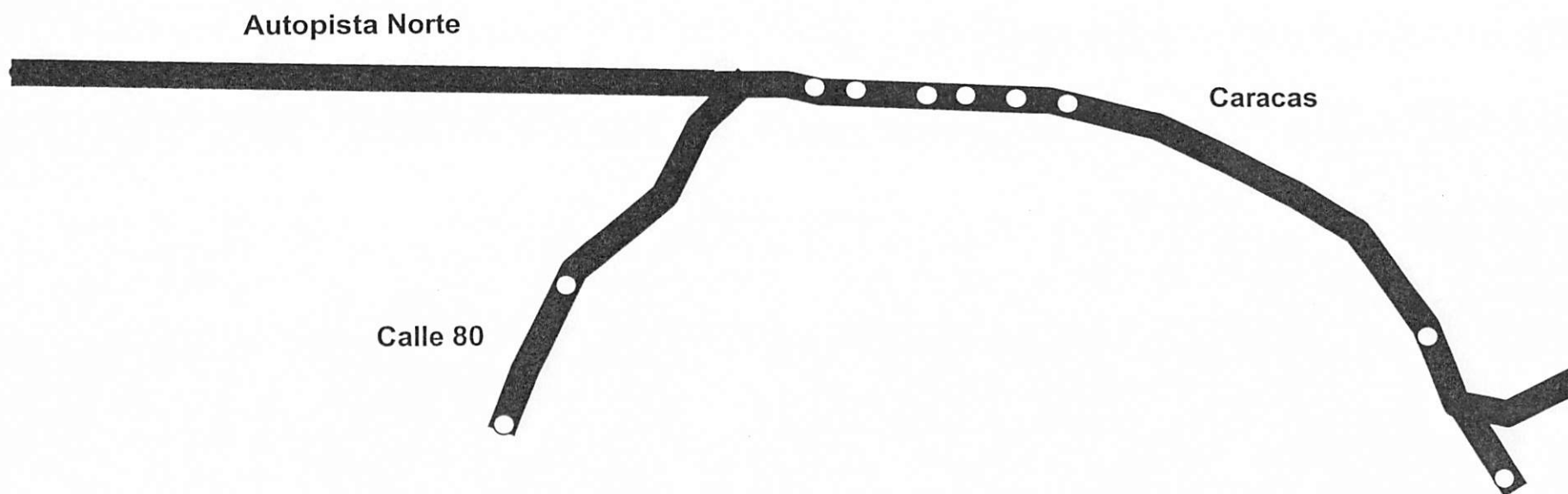
## Routes

### Local Service

Stop at every station on the route

### Express

Serve specific origin and destination areas



**660,000 pax/day**

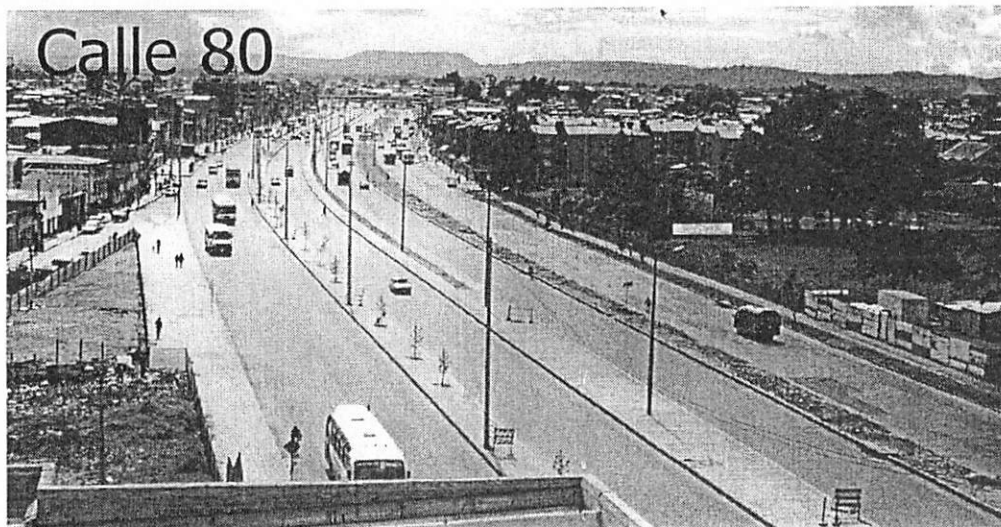
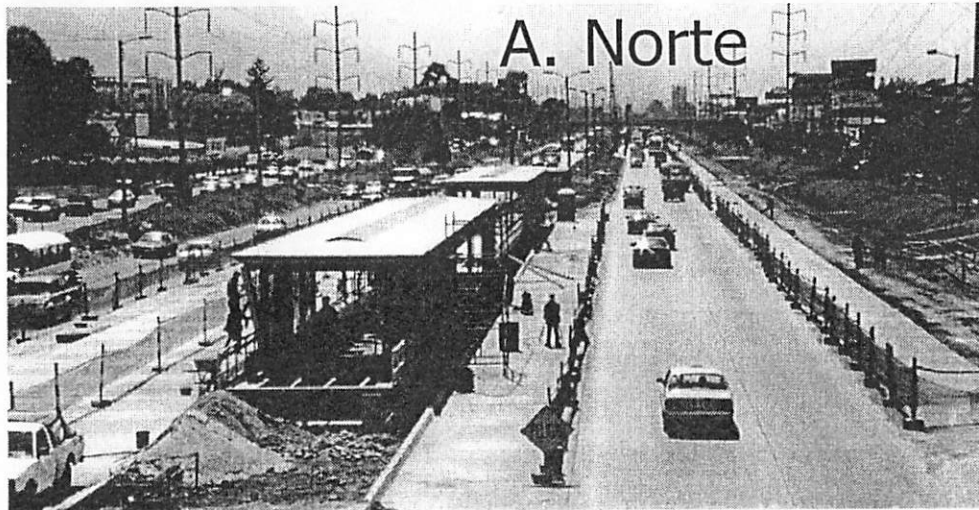
**470 buses**

# Infrastructure



## Corridors: Exclusive lanes

- Phase I: 3 main corridors, 35.9 kms (22.4 mi)
- Opportunity for urban renovation and creation of public spaces: each station was designed with a public plaza and sidewalks were rebuilt

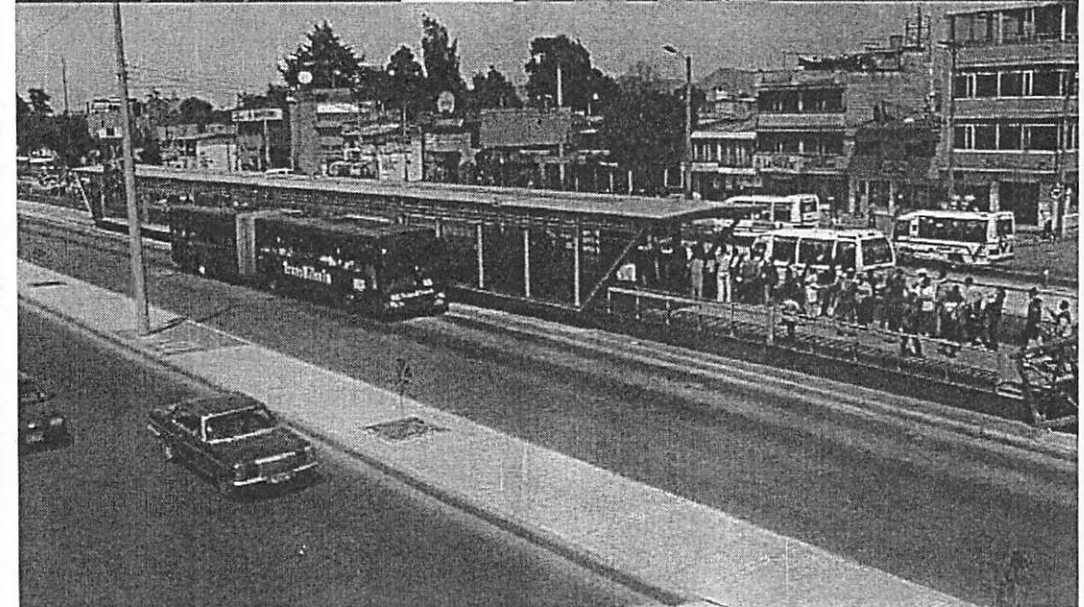


# Infrastructure



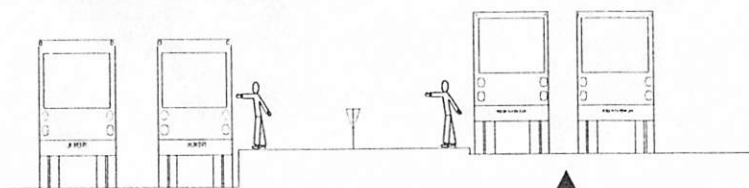
## Stations

- 55 stations, separated 600 m (0.38 mile) aprox.
- Stations stand in the median
- Access through pedestrian bridges or traffic lights
- 5 m wide, 25 – 200 m long



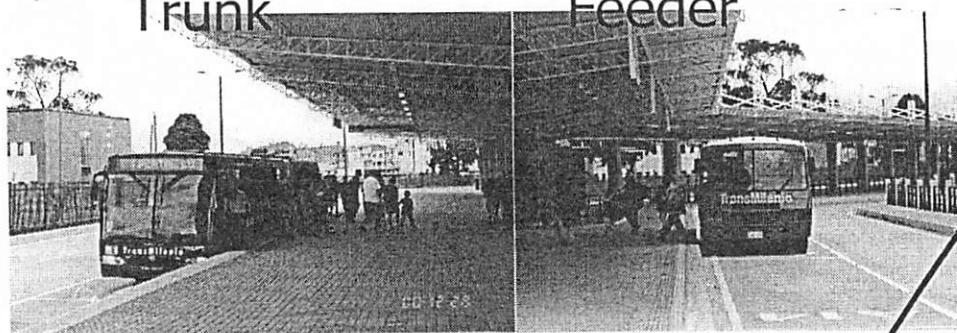
# Infrastructure

## Terminals

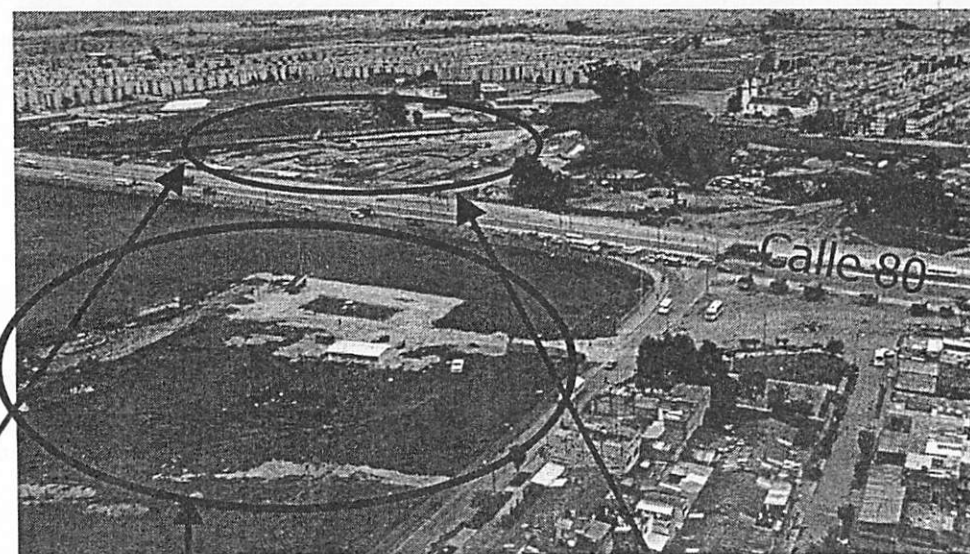


↑  
Trunk

↑  
Feeder



## Depots



Depot

Terminal

Calle 80	100 buses
Caracas	205 buses
A. Norte	80 buses
Tunal	85 buses

# Infrastructure

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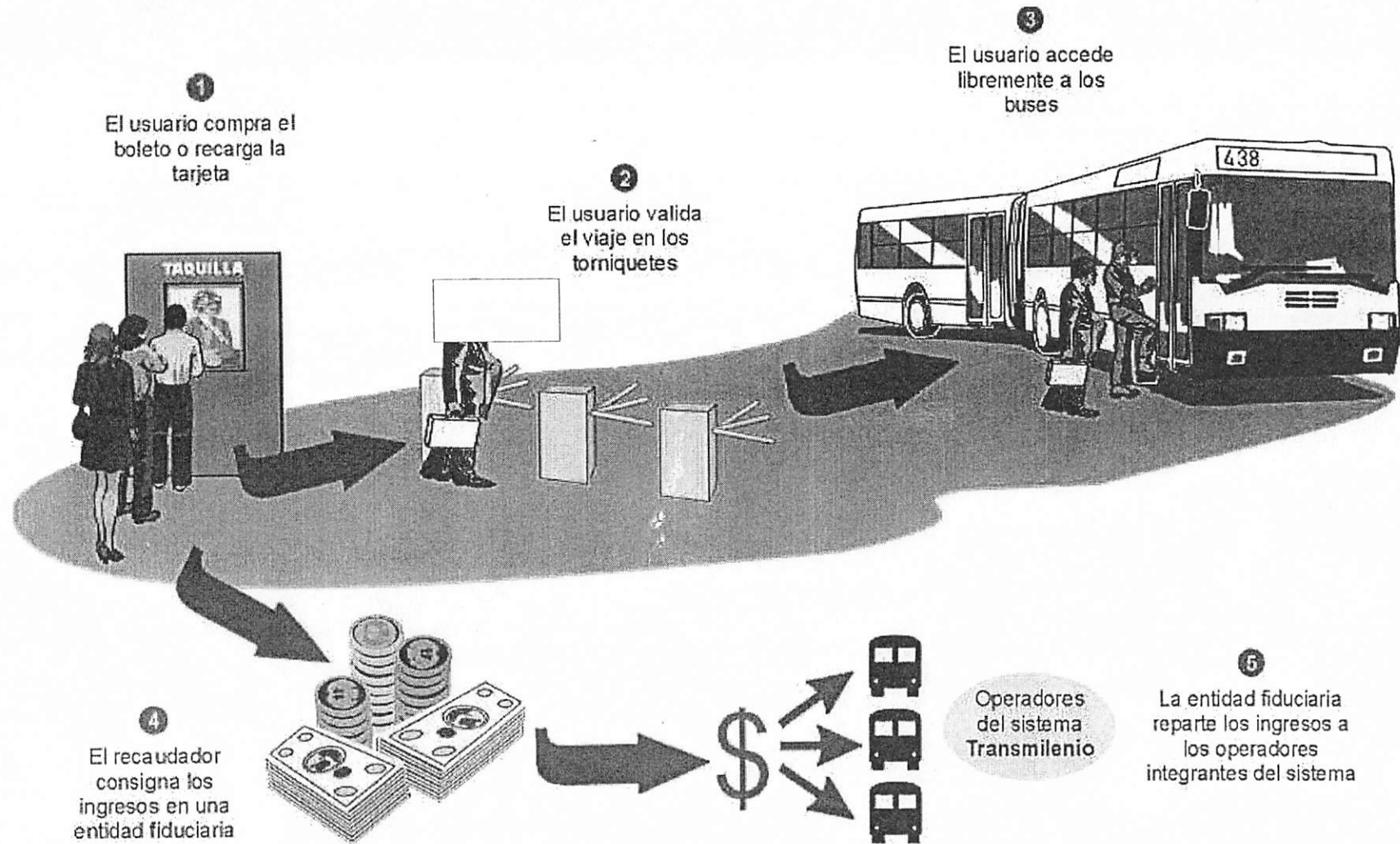
## BUDGET

- Avenida Caracas U\$ 56.44 M
- Calle 80 U\$ 36.06 M
- Autopista Norte U\$ 28.95 M
- Total U\$ 121. 45 M
- Cost per mile U\$ 5.41 M
- Cost per mile U\$ 8.33 M  
(including buses)
  
- Tren Urbano U\$ 160 M/mile
- Caracas (Venezuela) U\$ 316 M/mile
- Medellin (Colombia) U\$ 100 M/mile

# Supporting Systems – Fare Collection

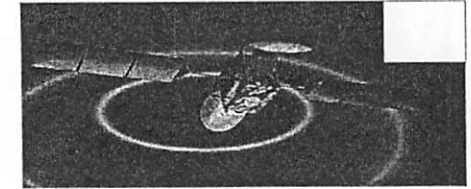


Fare recovery contracted out – Fiduciary  
Daily farebox: U\$ 1.86 M

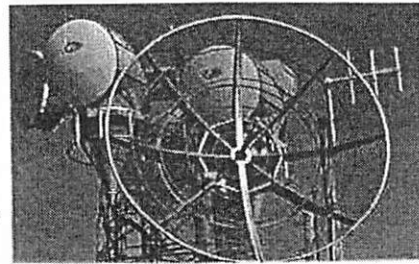


# Supporting Systems – AVL

## Automated Vehicle Location

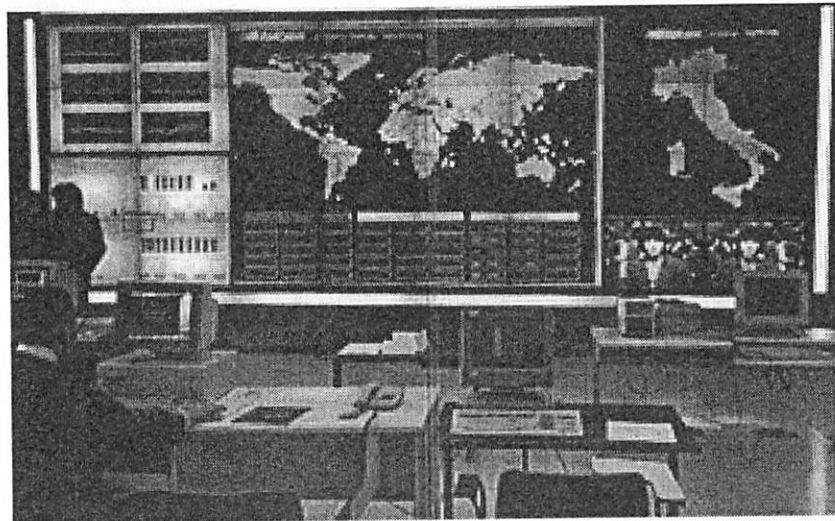


Fleet Location



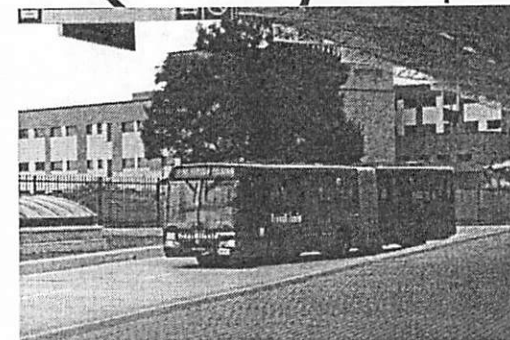
Monitoring the system

Operations Information



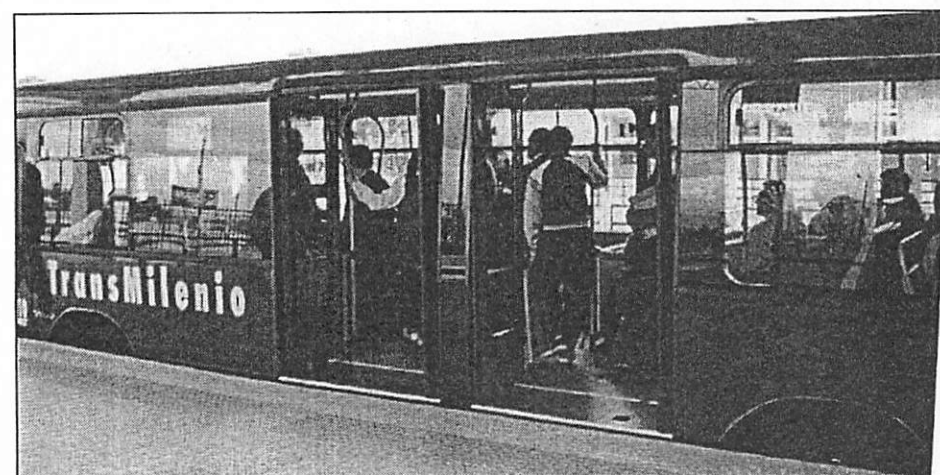
Control Center

Operations



# Equipment – Trunk Buses

- Articulated – 4 doors
- 160 pax
- Diesel Euro II or GNC
- High Platform



# Equipment – Feeder Buses

- Use current vehicles
- Service provided by current firms
- Revenue based on passenger trips
- Operation regulated through service contract with Transmilenio S.A.





# New agency – Transmilenio S.A.

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- Oversees the operation
- Contracts out services – **Does not own buses neither hires drivers, mechanics...**
- Set frequencies
- Set fares
- Set vehicle specifications
- Customer information
- Marketing and Public Outreach
- Controls schedule adherence
- 130 employees



# Contractors – Service Providers

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- 4 companies conformed by:
  - current local operators
  - international operators
  - bus-manufacturers
- Transmilenio leases depots to service providers
- Buses are owned by the providers
- Providers set the timetables
- Revenue based on mileage and performance



# Contractors - Others

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- Fare Collectors
- Fiduciary
- Cleaning and Maintenance
- Control System (AVL)
- Call Center
- Security: Police



# Timeline

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**1998**

Political decision – Project Definition and Conceptualization  
Definition of required consultants and write RFP  
Hiring Consultants (Strategic, Transportation Engineering, Civil Works design, Architectural Design, Legal Assistance, Investment Bank, High Quality Planning Team)

**1999**

Legal creation of new agency  
Designs  
Contracting Civil Works  
Gaining support from current operators  
Marketing  
Agency staffing

**2000**

Procurement of Service providers and Supporting Systems  
Construction – Buses production  
Agency Staffing  
Lobby for national funds  
Advertising and public outreach  
Operational Tests and Opening Day

# Future Steps - Network 2000

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- Miles : 22.4 miles
- Passengers/day : 1.5 million
- Total investment : US\$ 153 million



# Future Steps - Network 2015

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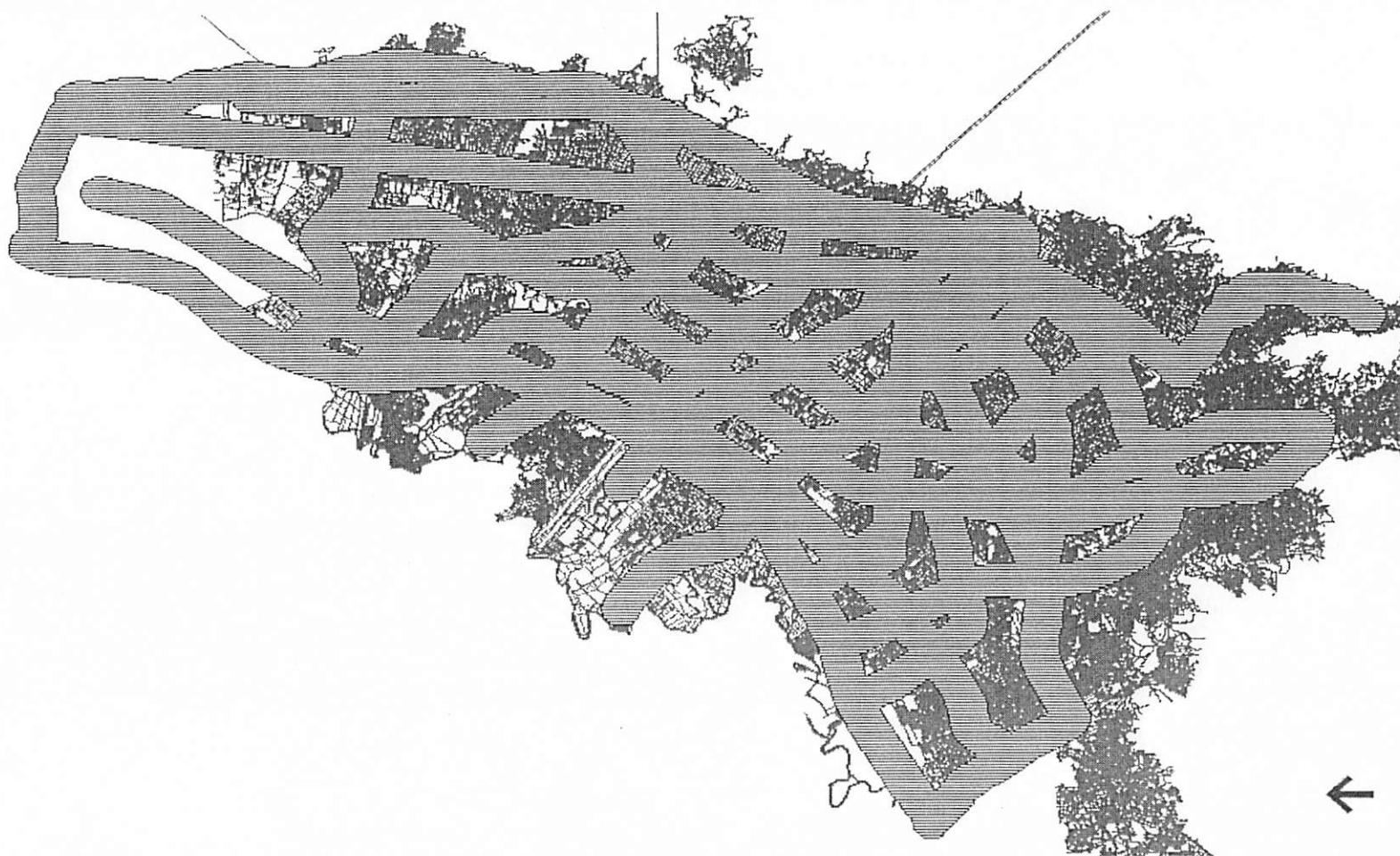
- Miles : 242 miles.
- Passengers/day : 5.0 million
- Total investment : US\$ 2.387 million



# Future Steps – Coverage 2015

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- Coverage: 500 mts. (0.3125 miles)
- Does not include feeder system





# Update

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- Operational tests and Public Outreach
  - December 5<sup>th</sup> – January 6<sup>th</sup>
  - Operations on 16 km (10 mi)
  - 52 buses
  - Daily ridership: 100,000 – 150,000 pax
- Revenue Operation
  - Started January 7<sup>th</sup>
  - Daily ridership: 73,000 pax
  - High support from communities
- Problems
  - Fare collection system and AVL are still under testing stages
  - Demand is higher than supply
  - Long lines

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# **Transmilenio: The Outsider View**

**Arturo Ardila**

**VII Encuentro UPR/MIT/TU  
San Juan, January 16<sup>th</sup> 2001**

# Busways

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Busways can move many people

Bogota, Av. Caracas: 36,000 pphpd

Porto Alegre, Asis Brasil: 28,000 pphpd

Speed: 10-12 mph

Cost: 2-16 million dollars per mile

Busways can move more passengers than a metro, but at a lower speed

## **Transmilenio: an excellent idea**

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Bogota needed to expand the busway network

- Lack of economic growth made the metro option impossible
- Transmilenio is modern, comfortable, and affordable
- Possible to build a large network of busways with expansive coverage at a lower cost
- By 2015 **no cars during six hours a day --**  
**Public transport is key**

# **Transmilenio: the jury is still out**

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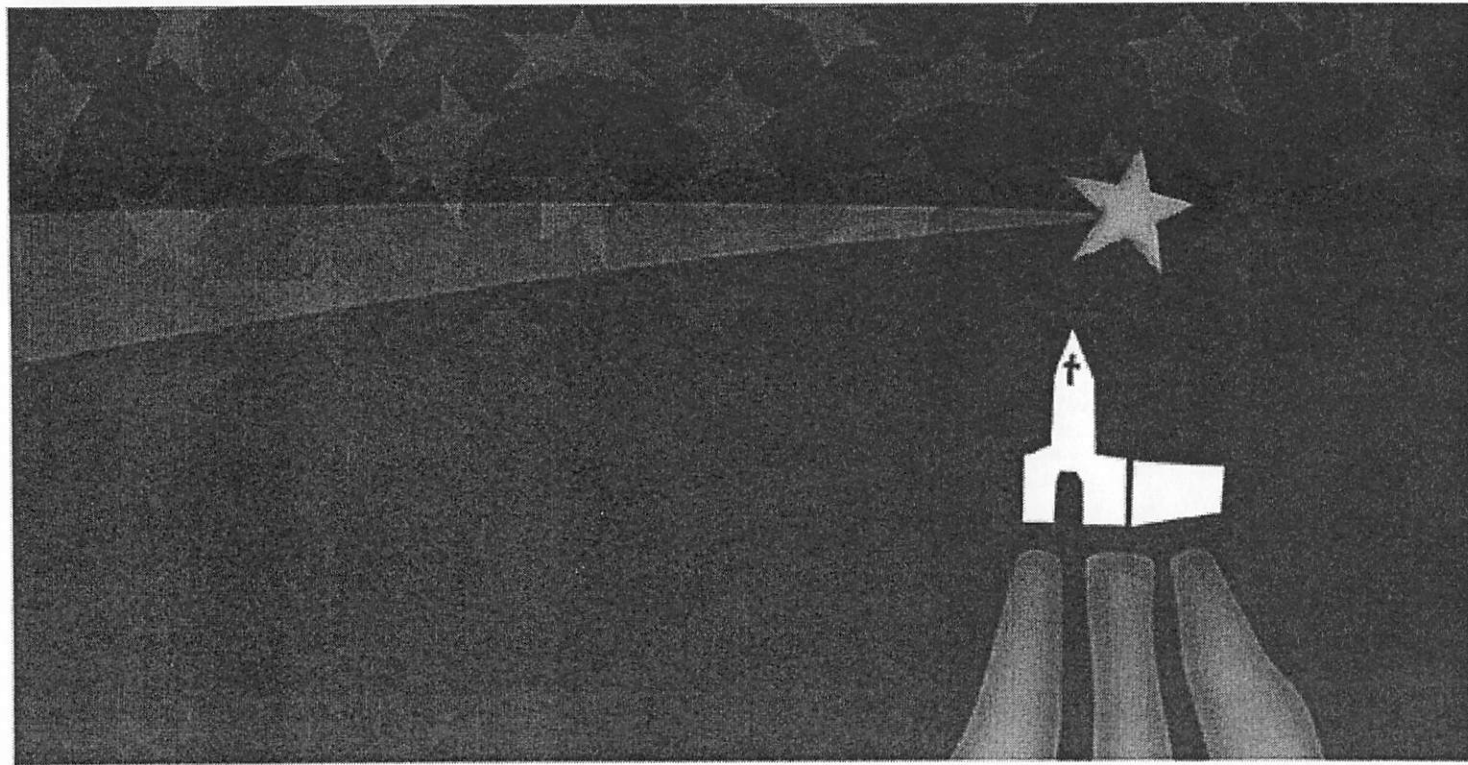
Will Transmilenio be able to move so many passengers?

- Lack of institutional capacity at the city level
- Political opposition from current small and medium operators
- What is fair treatment?
- Political support from new users
- Financial sustainability

## Questions - Comments

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# Destino Bogotá



2.600 metros más cerca de las estrellas