

Public Transportation in Bogotá: Life after BRT

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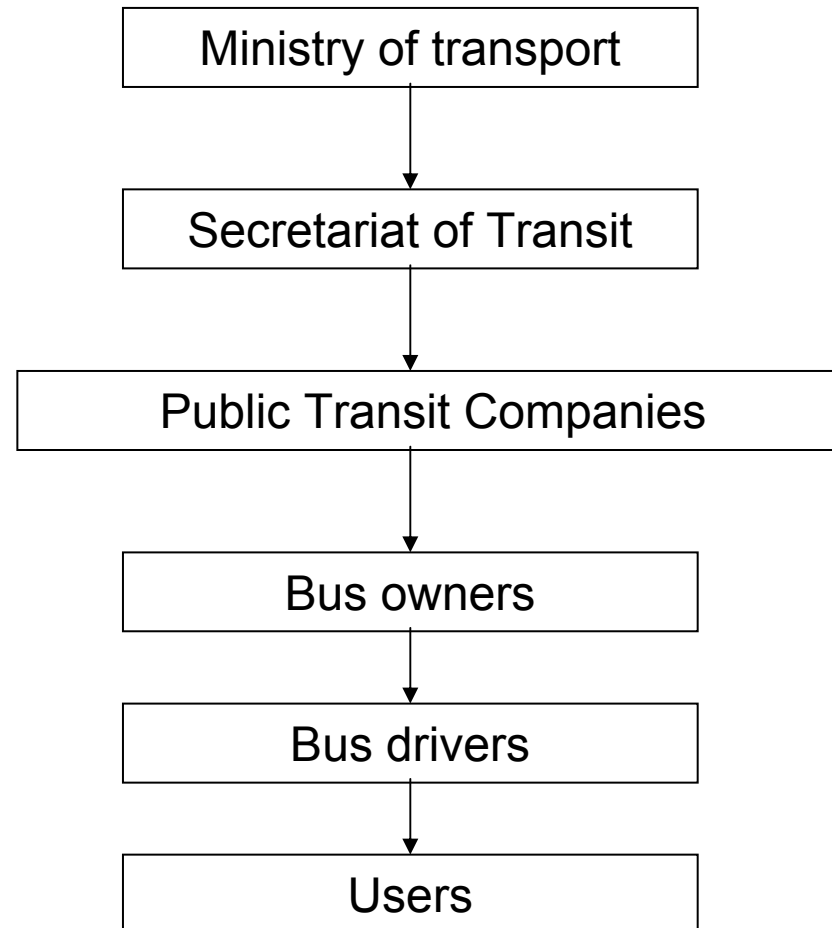
Sources of information

- Research for World Bank's public transit toolkit
- Research for Transmilenio S.A.
- Research for Inter-American Development Bank on public transit in Central America
- Other research by author

1. The conventional transit mode



1. The conventional transit mode



1. The conventional transit mode

- Structure leads to competition in the market
- “penny war”
- Economy theory predicts:
 - Inflated fare
 - Oversupply
 - Low quality, except in terms of frequency

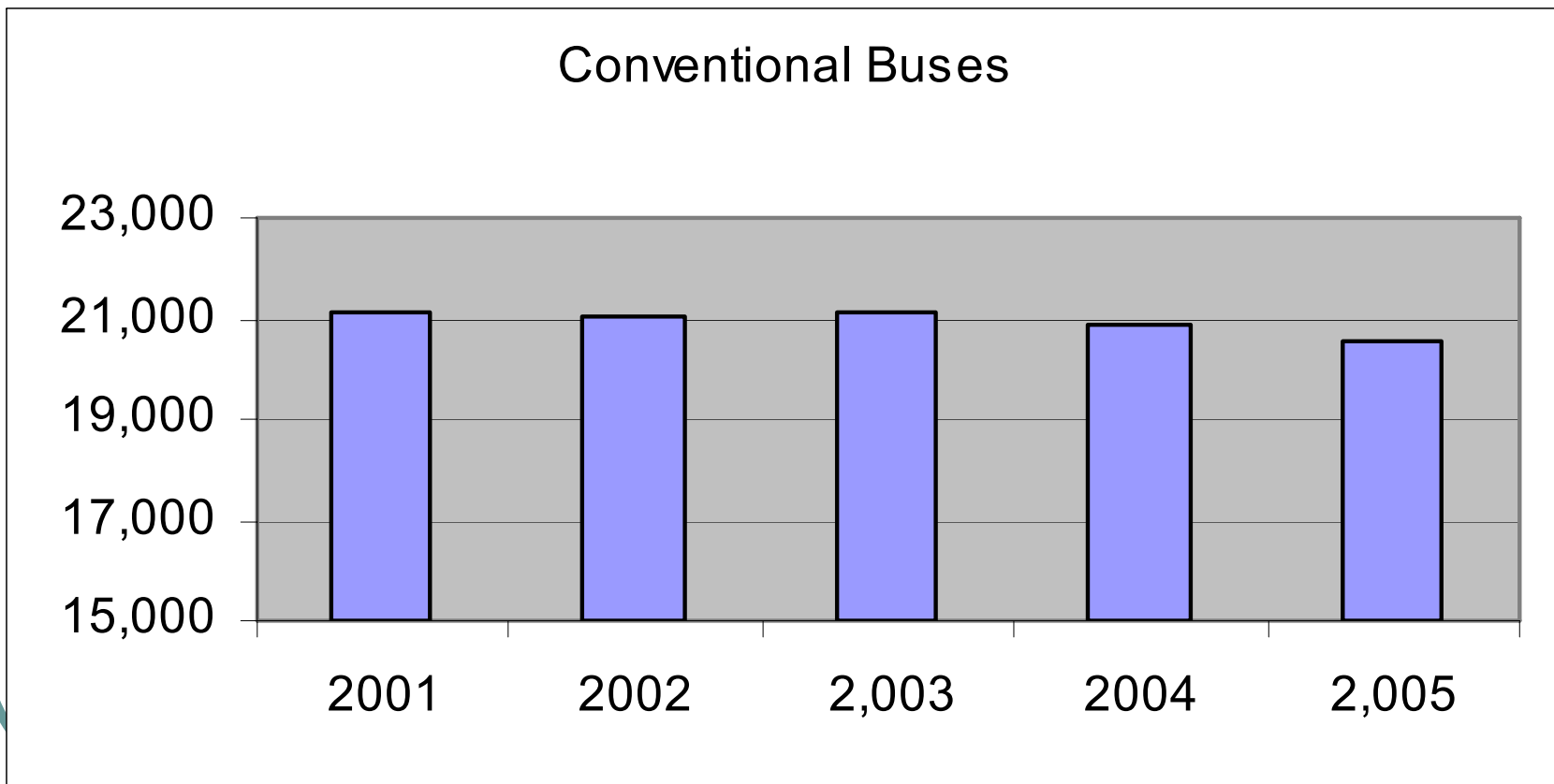
1. The conventional transit mode

Fare increases in real terms:

	<u>1995-2000</u>	<u>2000-2005</u>	<u>1995-2005</u>
Bus less than 6 yrs	7.03%	11.68%	19.83%
Bus more than 6 yrs	52.91%	18.44%	81.55%
Buseta less than 6 yrs	45.95%	11.68%	63.40%
Buseta more than 6 yrs	129.36%	30.29%	199.56%
Bus ejecutivo	4.85%	6.60%	12.04%
Bus superejecutivo	-0.82%	6.60%	5.99%
Microbus	22.32%	6.60%	30.72%
TransMilenio	0.00%	0.33%	0.00%

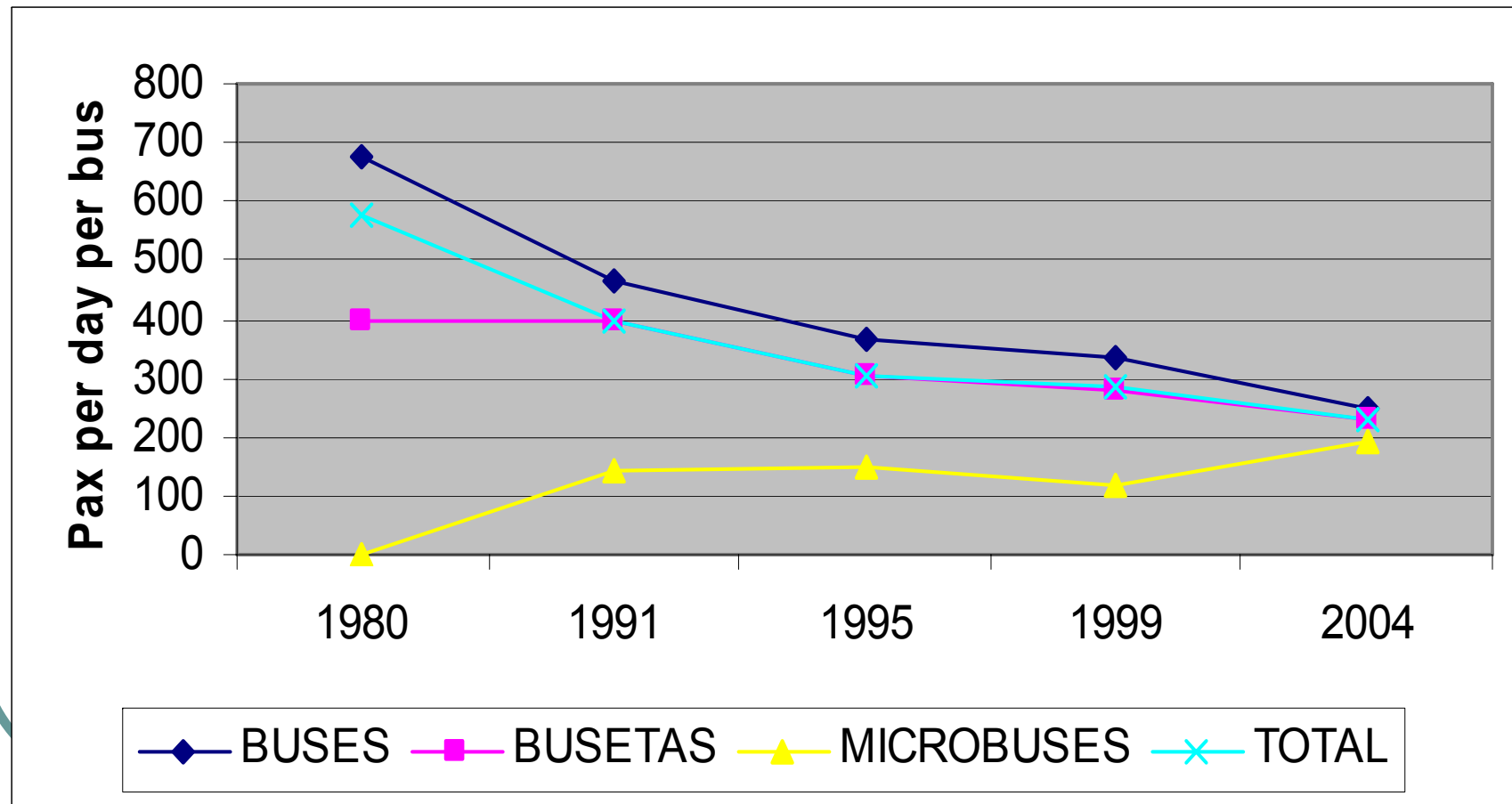
1. The conventional transit mode

Oversupply: bus fleet above ideal of 10,000 to 13,000 buses



1. The conventional transit mode

Oversupply: Pax per day per bus



1. The conventional transit mode

- Bus fleet is old: 15 yrs
- Scant maintenance
- Unsafe
- Low productivity
- Unprofitable
- Why in business?

Pax per KM logged

	Year				
	01	02	03	04	05
P/K	1.67	1.50	1.45	1.39	1.36

1. The conventional transit mode

- Operators do not compete with price
- Operators compete through frequency
- This leads to oversupply
- And the rider?...

1. The conventional transit mode

Willingness to pay for saving a minute (2003)

	Value of time (\$/min)
Walking in time	709.58
Waiting time	615.89
Travel time	150.05
Walking out time	576.14

1. The conventional transit mode

- National legislation leaves little margin for action to municipal governments
- Example: way to calculate fare promotes oversupply (assigns demand risk to pax.)

$$\text{Fare} = \frac{\sum \text{fixed and variable costs}}{\text{Pax per bus}}$$

1. The conventional transit mode

- Ministry of Transport regulates conventional mode with:
 - One size fits all approach
 - Captured by transit companies
 - Legal structure is to protect current arrangement
- Capture when regulation favors disproportionately one agent

1. The conventional transit mode

- Secretariat of Transit (STT) as regulator:
 - Small range of action
 - Transit companies file law suits (rumor of million dollar bribe to Supreme Administrative Court Justice)
 - STT has low institutional capacity
 - Corruption is endemic
 - Ex. Transcard's rotation scheme that introduced 1800 buses with only 180 authorized

1. The conventional transit mode

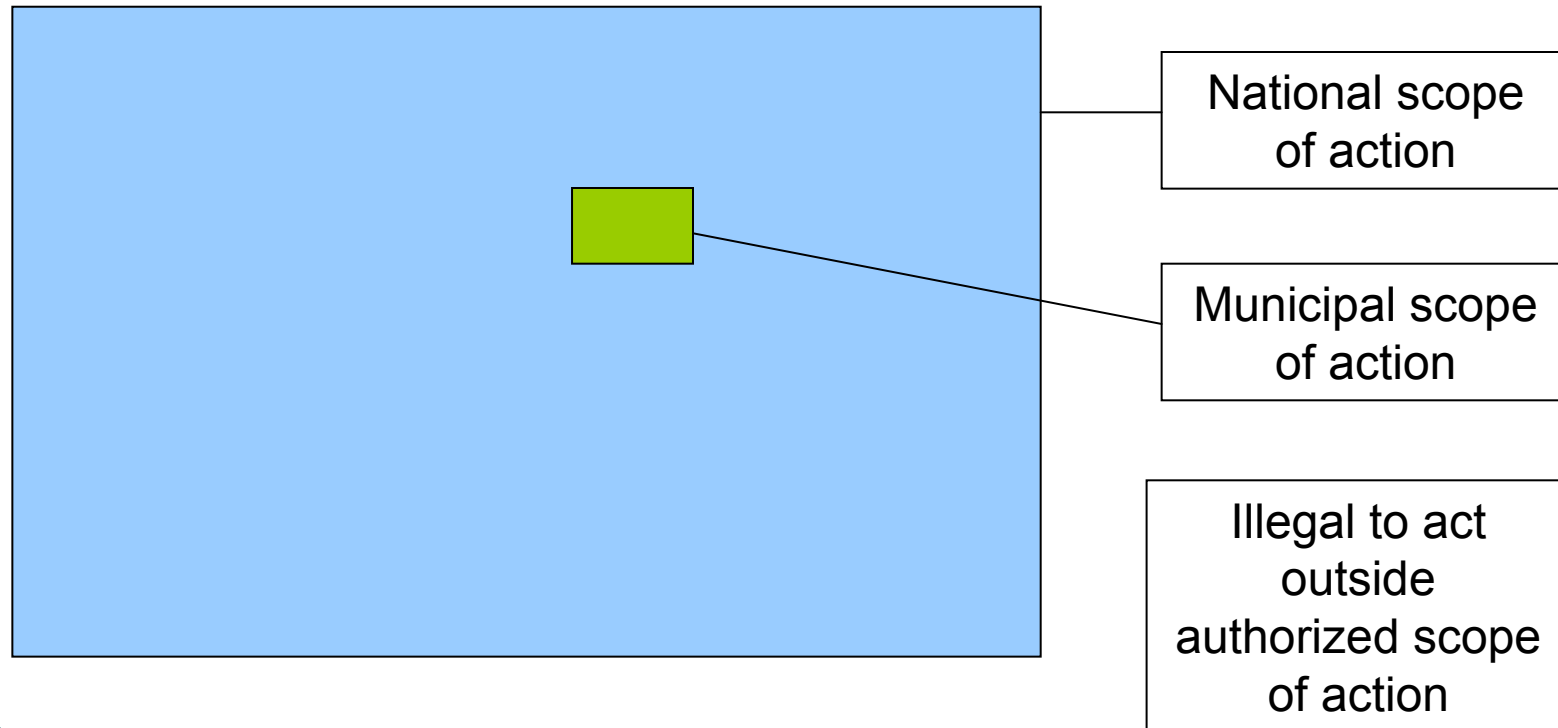
- Example that illustrates: Decrees 112 – 116 by Mayor Mockus sought to:
 - Better supervision
 - Unify fare collection at the bus company level
 - Reduce bus fleet by 5749.2 equivalent buses
 - Raise funds for compensations for scrapping buses and removing them from service

1. The conventional transit mode

- City government scrapped only 250 buses out of 5749.2 because
 - STT did not have capacity to issue all complementary measures required by law
 - Decrees had vast opposition, which translated in law suits
 - Courts found decrees illegal because they exceeded city's authority
- “Transportation is a political problem and not technical.” E. Peñalosa.

1. The conventional transit mode

- City government lacks space to maneuver



1. The conventional transit mode

- Synthesis for conventional mode:
 - Competition in the market
 - National authority captured
 - Local authority weak and lacks room to maneuver
 - Power imbalance with bus companies
 - Bus companies win; everybody else loses
- There are bus companies that want to change
- But they fail because of negative incentives in the system (E.g. Sistema Express)

2. Transmilenio transit mode



2. Transmilenio transit mode

- Transmilenio's essence is competition for the market
 - Competitive bids to define operators
 - Contracts expire
 - Barriers to entry: left door, high floor, smart ticket

2. Transmilenio transit mode

- **Strong Agency: Transmilenio S.A. (TM)**
 - High level of technical and political capacity
 - As mass transit, TM uses a better legal framework
 - Nonetheless, legally vulnerable
 - But political support has countered this vulnerability

2. Transmilenio transit mode

- Transmilenio S.A. also:
 - Plans and supervises service
 - Collects fares through a third party
 - Pays operators per km logged and not per passenger transported
 - Fare covers system costs
 - Concessions end when fleet logged 850,000 km on average per bus

2. Transmilenio transit mode

- TM concessionaires have:
 - Right incentives for the most part
 - Interested in offering good service because contracts assigned them demand risk
 - Highly profitable: 80% of TranSantiago belongs to two TM concessionaires
 - Highly productive: 5.5 – 5-7 Pax/km

2. Transmilenio transit mode

- Costs of TM's infrastructure
 - 37%: busways, stations, pedestrian overpasses, sidewalks
 - 40%: exclusive lanes for cars
 - 11%: property purchases
 - 12%: mitigation
- Stage II: US\$ 13.47'/Km.

2. Transmilenio transit mode



2. Transmilenio transit mode

- 44.5% of cost is transit related
- 55.5% of cost is car related
- Project financed with funds earmarked for transit
- Recent study: car does not pay its way, highly subsidized, high deficit

3. A bimodal transit mode

- Bogotá has a bimodal transit system with competition in the market among the two modes:
 - Conventional mode competes through price
 - Transmilenio mode competed through quality

3. A bimodal transit mode

Willingness to pay for saving a minute (2003)

	Value of time (\$/min)	
	Conventional	Transmilenio
Walking in time	709.58	205.15
Waiting time	615.89	50.89
Travel time	150.05	45.7
Walking out time	576.14	162.29

3. A bimodal transit mode

- Transmilenio is the superior mode because
 - Rider values differently the trip
 - Rider willing to wait more because it goes faster, among others
- Conventional mode is the inferior mode
 - Slow and high price

3. A bimodal transit mode

- Transmilenio and the Conventional mode compete in the market
 - Representatives of bus companies asked STT to keep fare constant in August 2005
 - STT agreed without consulting TM or other stakeholders
 - In addition, Conventional mode is legally shielded and full of negative incentives

3. A bimodal transit mode

- Scrapping to reduce oversupply
 - TM concessionaires have scrapped approx. 4,000 buses yet net reduction in fleet size is less than 1,000
 - Incentives in conventional mode sterilize any effort to reduce oversupply (i.e. bus companies)
 - Socially unfair because riders pay for other's mistakes
 - Bus owners undercapitalized

3. A bimodal transit mode

- TM concessionaires own bus companies in conventional mode
 - TM concession expires; permit for route in conventional mode, does not
 - “What are we going to leave to our children?”
 - “The conventional mode!”

3. A bimodal transit mode

- TM concessionaires:
 - TUYO terminal and bus system Cali has MIO (mine) and Bogotá TUYO (yours)



3. A bimodal transit mode

- TM concessionaires:
 - TUYO



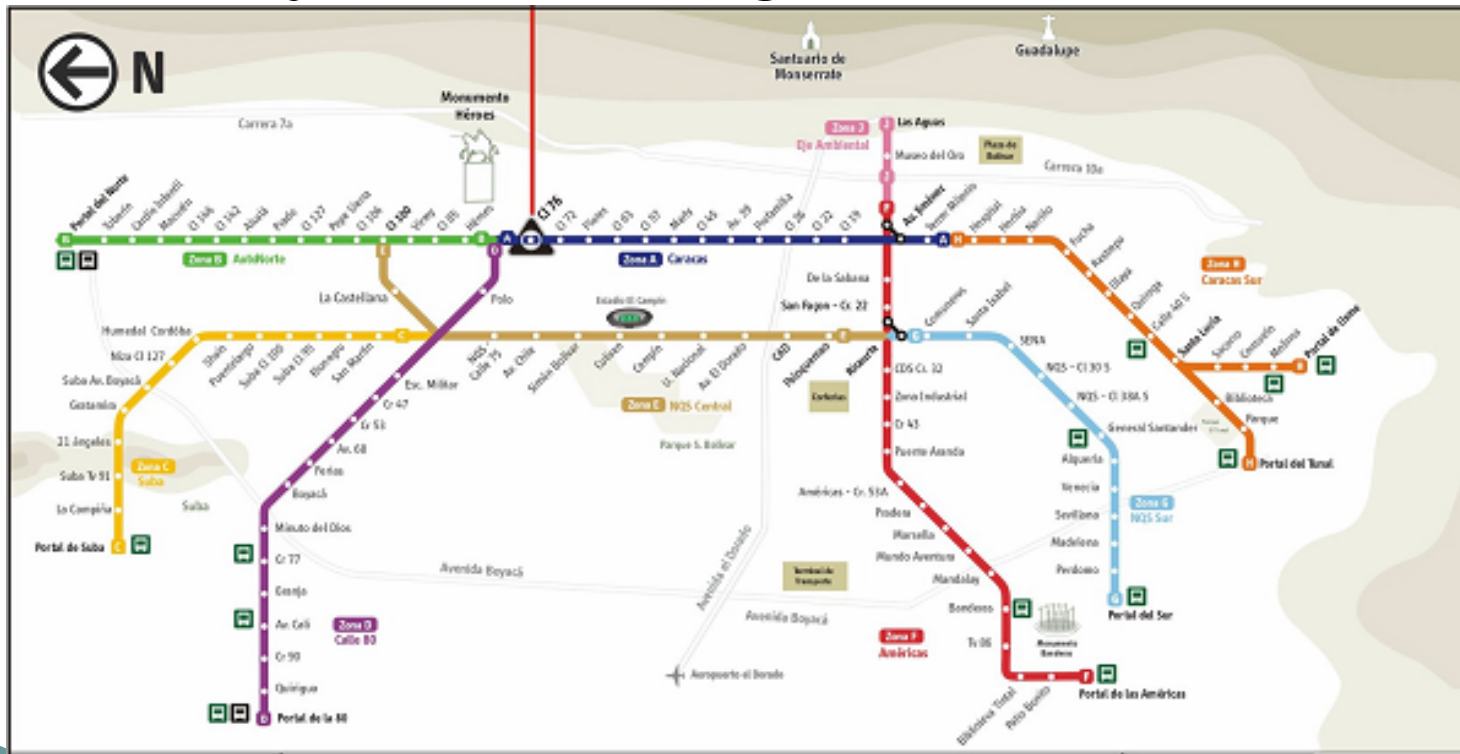
3. A bimodal transit mode

- TM concessionaires:
 - TUYO



3. A bimodal transit mode

- May 1/06: TM opens for service new busways and changes services:



3. A bimodal transit mode

- Conventional mode responded with a two-day strike
- Demands included to leave conventional buses in new TM corridors
- Mayor agreed and creating negotiating tables:
 - Master Plan, Environment, Scrapping, TM 3rd stage

3. A bimodal transit mode

- Strike coupled to new programming:
 - Demand lower by 80,000 pax/day than estimated
 - Large operational problems now subsiding
 - Pax/km down to 3.5 – 4.0
 - Average speed up: 29 KPH

4. The Mobility Master Plan

- Key proposal is to implement the Integrated Mass Transit System
 - Mass Transit (TM) is the backbone
 - Flexible component complements mass transit
 - Conventional mode is the flexible element (i.e. it is the conventional mode disguised as mass transit)

4. The Mobility Master Plan

- Centralized fare collection
- Control center (expanding TM's)
- Bus companies fully responsible for operation
- Fare covers system costs

4. The Mobility Master Plan

- In synthesis, proposal is to bring forward the best of TM without incurring all the costs:
 - Competition for the market
 - Costs: too high to implement entire network
 - When funds are available, the full BRT line is implemented
 - Before: only a pre-BRT

4. The Mobility Master Plan

- Proposal heads in the right direction:
 - Seeks to eliminate competition in the market
 - Seeks to generate competition for the market
 - Centralized fare collection
 - Seeks to capitalize bus owners and bus companies so they invest in TM stage 3

4. The Mobility Master Plan

- However:
 - Not clear when centralized fare collection is to be implemented
 - Big assumption: conventional model will disappear
 - Ignores huge political and legal backing conventional mode has
 - Might not be legally feasible
 - No plans for coexistence of conventional and mass modes

5. Conclusions

- Bogotá has a bimodal transit system with competition in the market between the two modes
- TM S.A. and STT do not coordinate their actions
- Conventional mode full of negative incentives
- Oversupply, high fare, low profitability

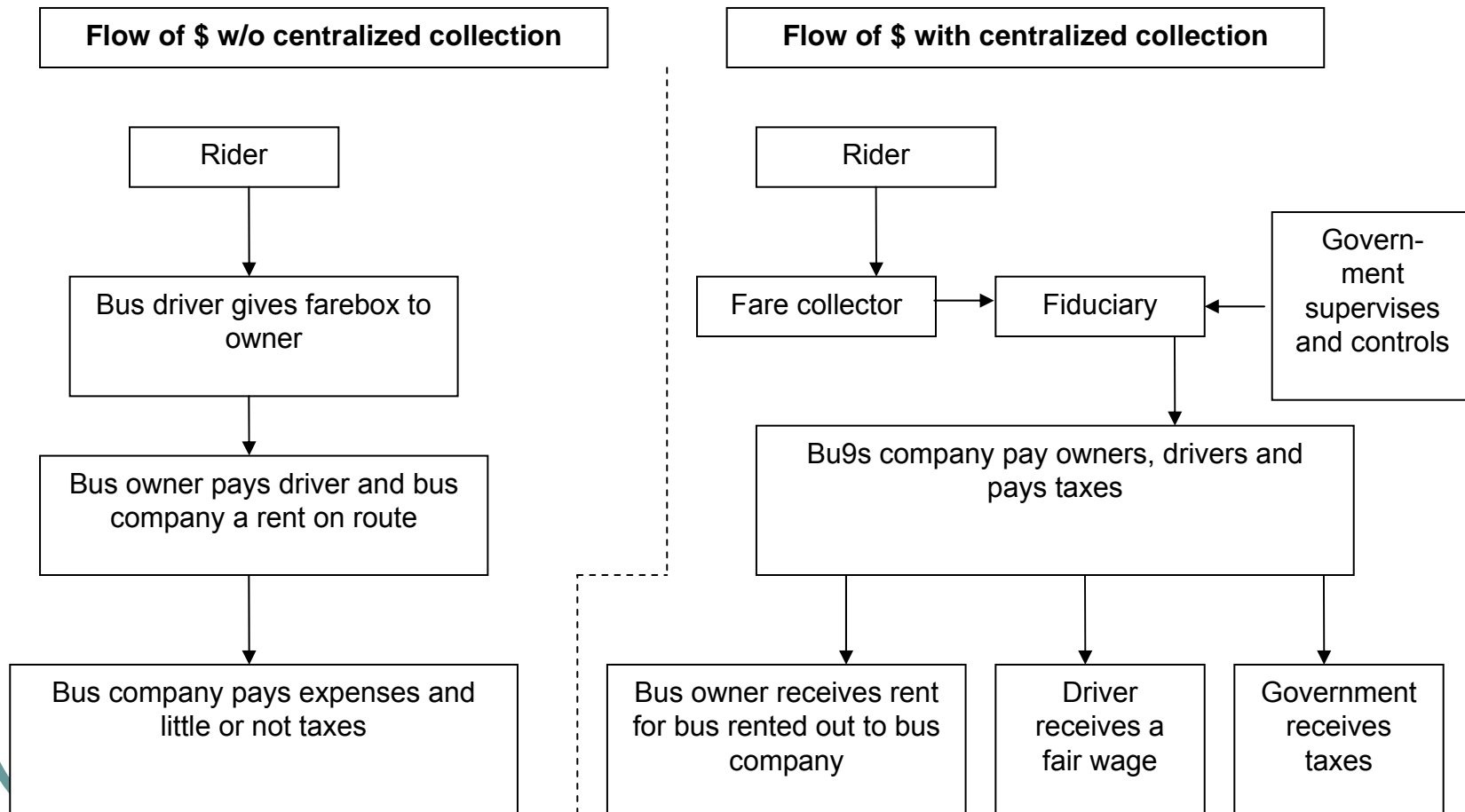
5. Conclusions

- Stage 3 of TM in danger of not being implemented because:
 - Opposition from small bus owners who lack capital
 - Bus owners unwillingness to leave TM's corridors—extreme competition in the market
 - Ineffective scrapping raises costs for TM
 - Risk goes up and profits down for would-be concessionaires

5. Conclusions

- Legal framework for conventional mode leaves little scope for action and Master Plan does not seem feasible.
- Solutions:
 - Generate entry barriers in conventional mode
 - Strengthen STT and TM
 - Strengthen coordination mechanism between TM and STT
 - Long term vision in TM concessionaires: 20 years concessions

5. Conclusions



5. Conclusions

- Centralized fare collection:
 - Generates barriers to entry to market
 - Generates incentives to reduce oversupply
 - Lines up bus owners and bus companies' interests
 - Conventional mode becomes profitable
 - Generates demand for more institutional capacity at STT and TM
 - Forces STT and TM to coordinate

5. Conclusions

- Lessons for other cities implementing BRT:
 - Create entry barriers before or in parallel to implementing BRT
 - Strengthen government agencies and improve institutional coordination
 - Generate long-term vision in BRT concessionaires
 - Look at León de Guanajuato's example