

SOUTH AFRICAN BRT EXPERIENCES

WHAT CAN WE LEARN?



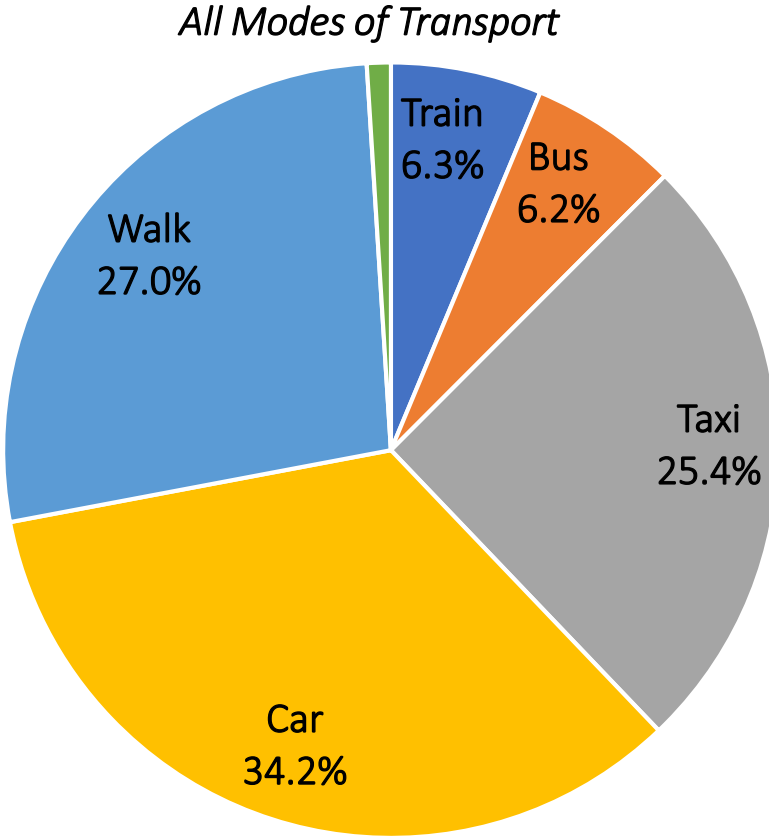
WORLD BANK GROUP

**Edward Beukes
Urban Transport Specialist**

**SSATP AGM, Abuja Nigeria
4 July 2018**

How do people travel in South Africa?

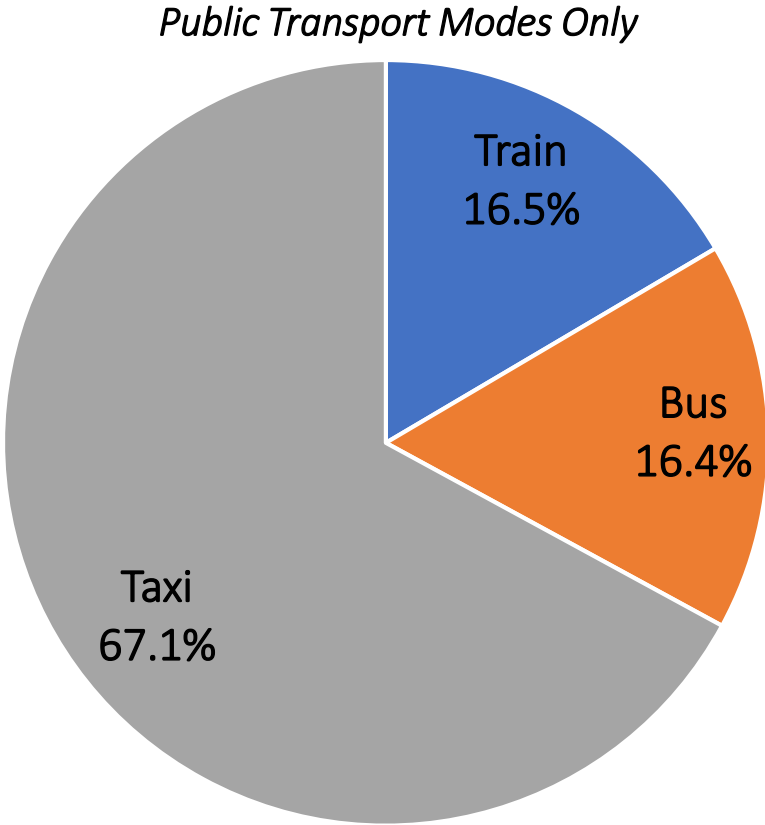
66% of people either walk or use public transport in the mornings.



2013 NHTS: Work and Educational Morning Trips

How do people travel in South Africa?

67% of public transport trips have taxi as main mode

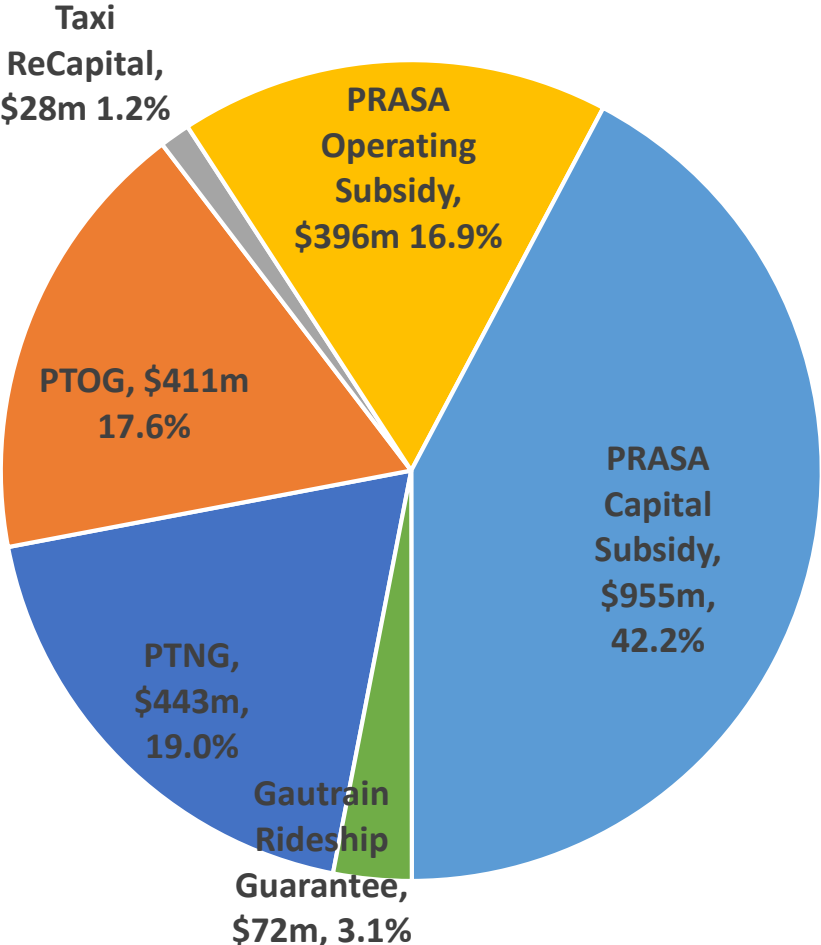


2013 NHTS: Work and Educational Morning Trips

How is Public Transport funded in South Africa?

Taxi's receive just over 1% of funding support (\$28m)

National Public Transport Funding



Total:
\$2.305bn in
FY17/18

INTEGRATED RAPID PUBLIC TRANSPORT NETWORK PROGRAMS

- BRT inspired by Latin American Cities' BRT model for dense cities
- Most CAPEX with National Funds.
- Expectations of no/reduced OPEX subsidies



Source: <https://coffeebeansroutes.com/wp-content/uploads/2014/12/Soweto-Futures-rea-vaya-web.jpg>



Source: MyCiti



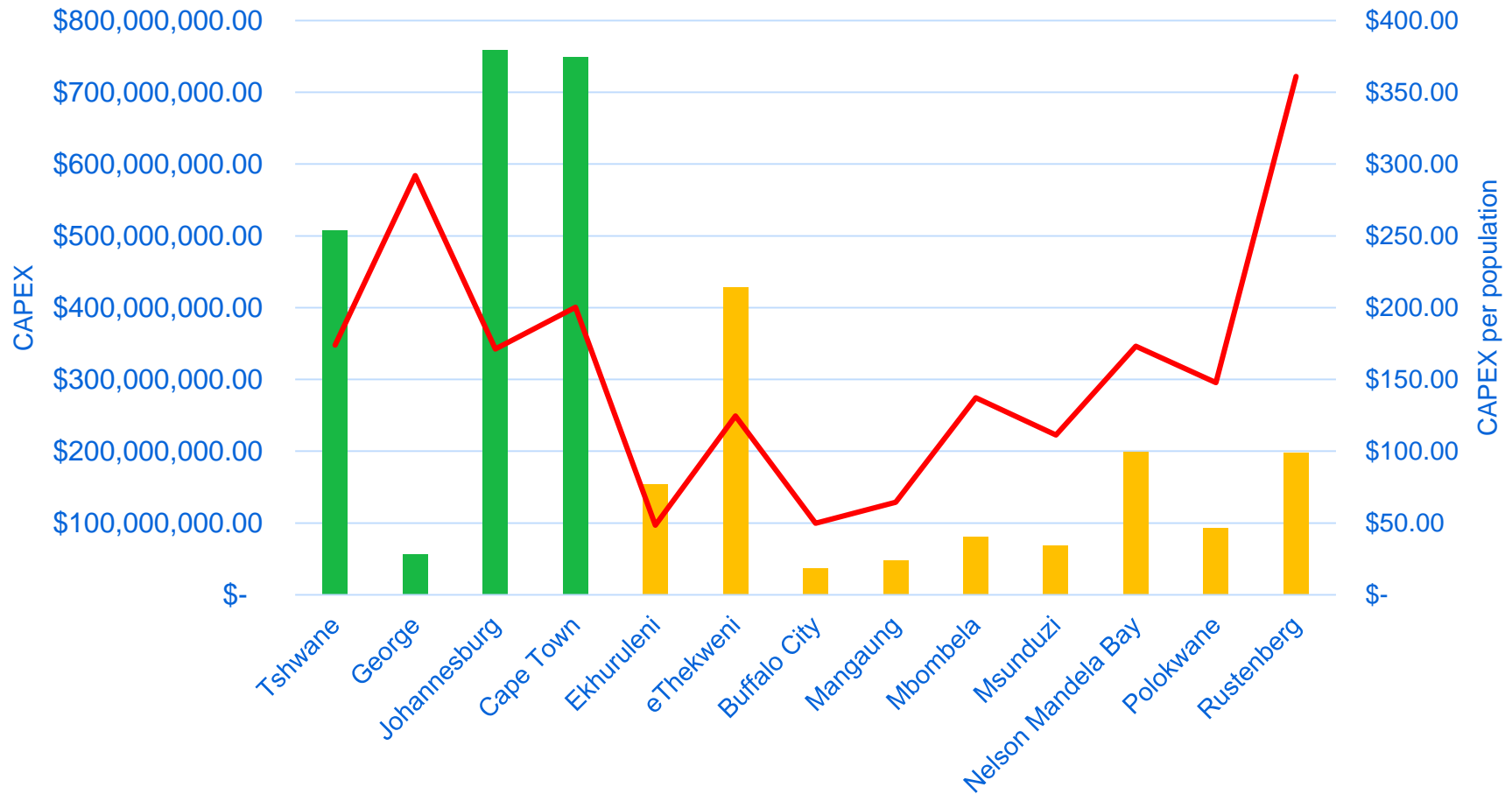
13 cities have IRPTN programs underway, 4 are already operational, 9 are either in construction or in planning



SOUTH AFRICAN BRT PROGRAMS

Costs to Date

Total costs for the whole program since 2009 has been \$3.4bn.



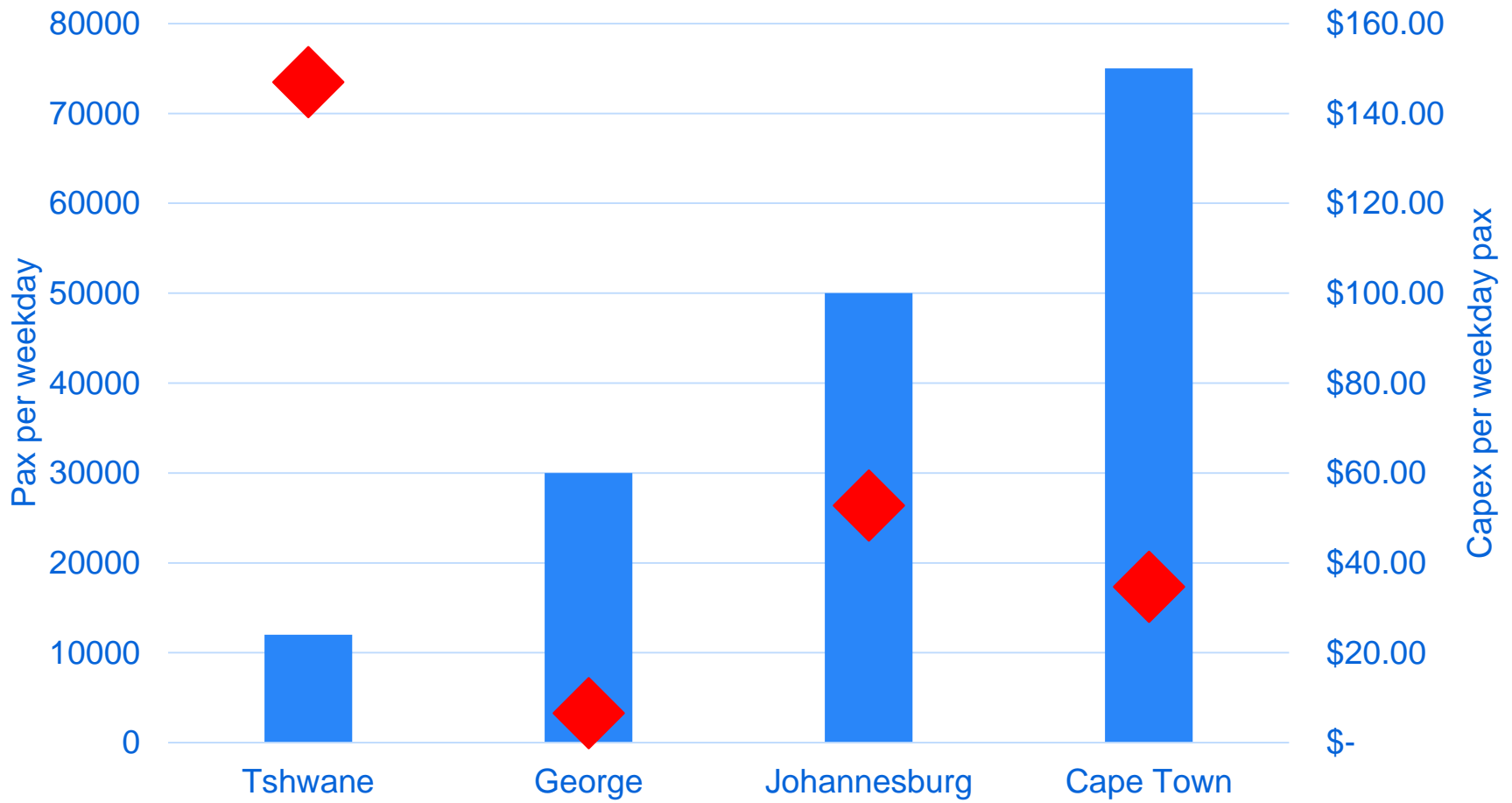
What have we bought with this money?

Average cost of \$15m per kilometer in operational cities

City	Ded. right of way (km)	Mixed traffic (km)	Closed station	Bus stops	Depots	Vehicles			
						18m	12m	9m	6m
Tshwane	16	23	12	0	1	0	119	0	0
George	0	110	1	454	1	0	69	0	15
Joburg	43	4	48	231	2	82	195	0	0
Cape Town	32	108	42	765	3	52	105	220	0
Total	91	245	103	1450	7	134	488	220	15

Performance: operational cities

~165000 weekday pax across the system



BRT Implementation approach

Predict and provide, replace and reform...



Feeder routes



Trunk

Source: D Bosch, City of Cape Town

Creation of Vehicle Operating Companies

- **Main points:**
 - Existing MBT operators must form nucleus of VOC's
 - Negotiated 12yr contracts with incumbent MBT operators
 - No loss of employment amongst drivers (or payouts as required)
 - Gross contracting model
- **Cities tied into impossible bargaining positions with MBT sector**
 - **Opex costs 25-40% higher than original estimates**

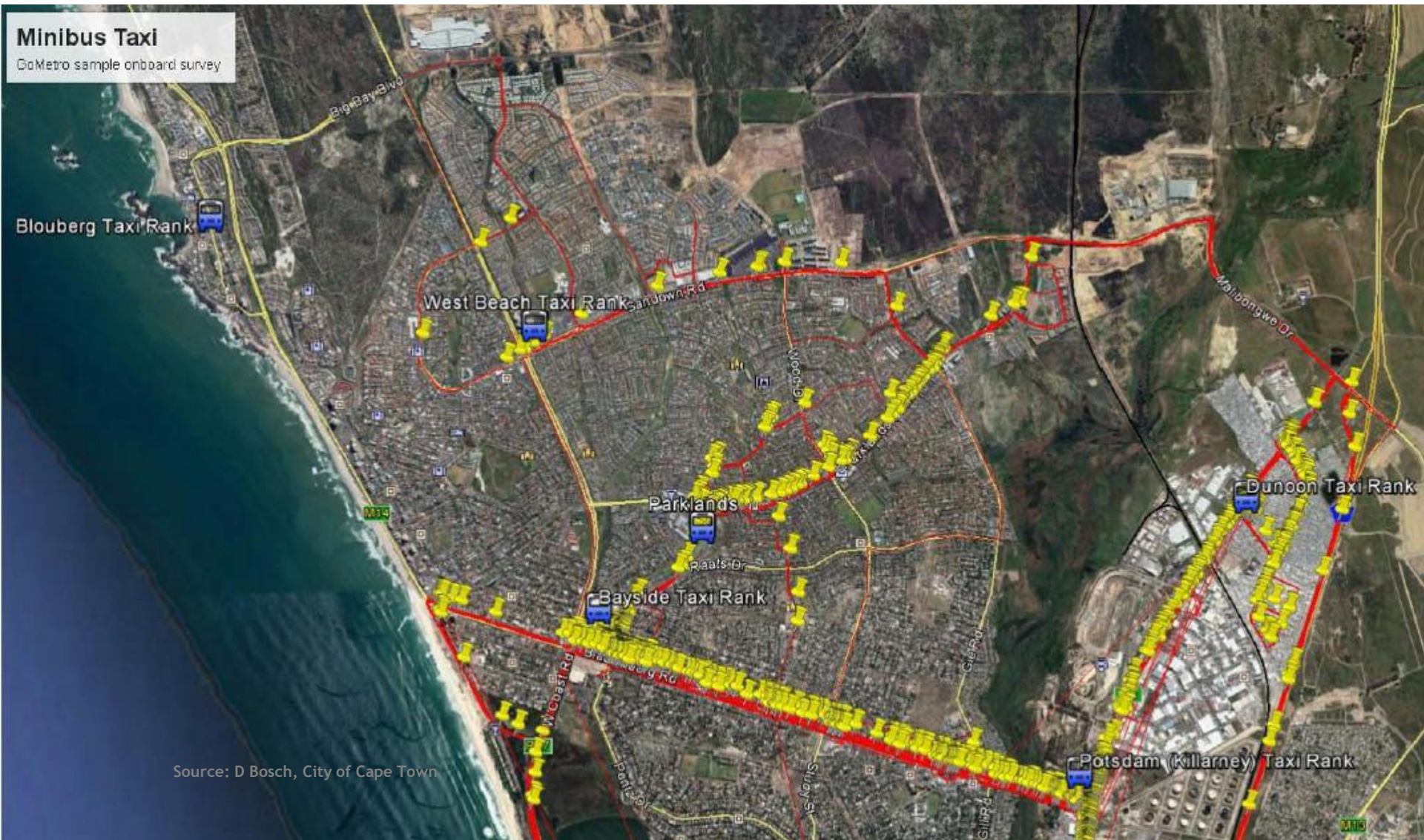
BRT Implementation approach

How successful has this been?

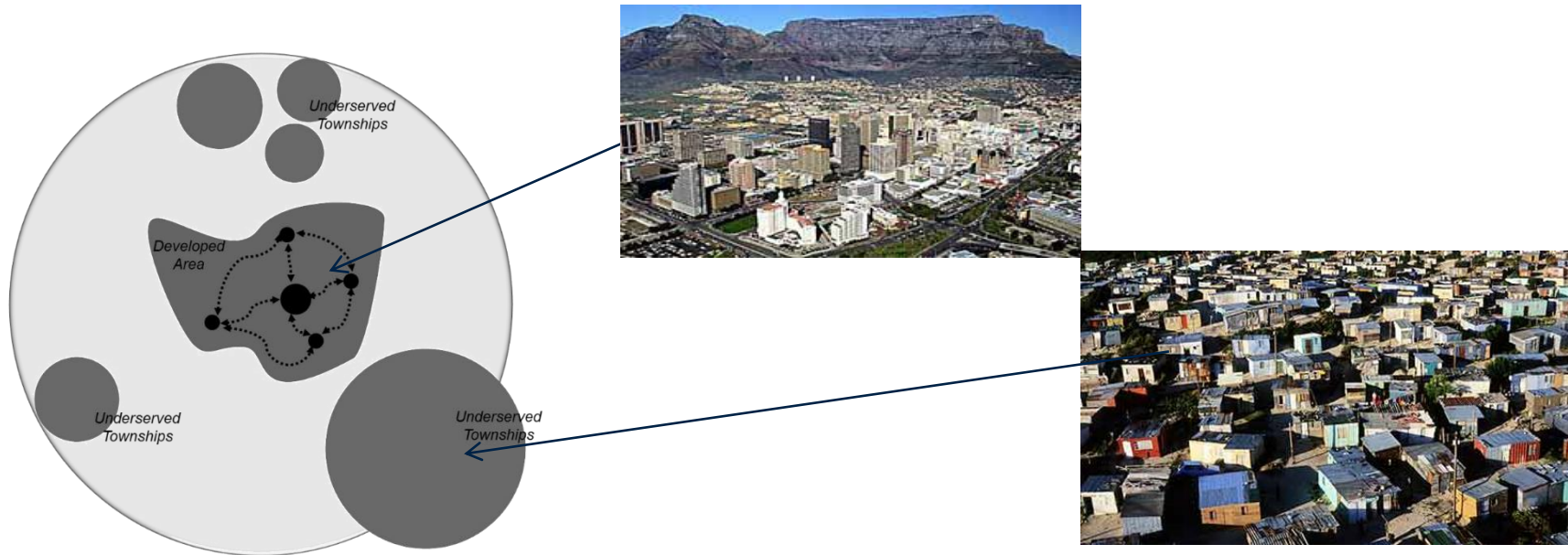


BRT Implementation approach

How successful has this been?



SOUTH AFRICA'S UNIQUE URBAN FORM



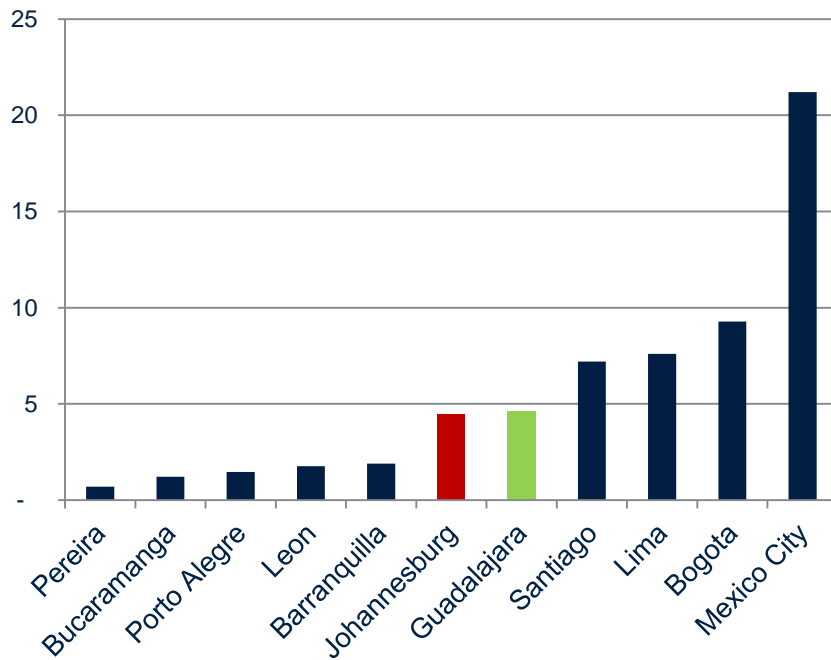
Apartheid-legacy urban form. Post-1994: spatial segregation has remained stark.

- City core with employment and opportunities
- High-density low-income “townships”
- Low density suburbs with single family detached housing

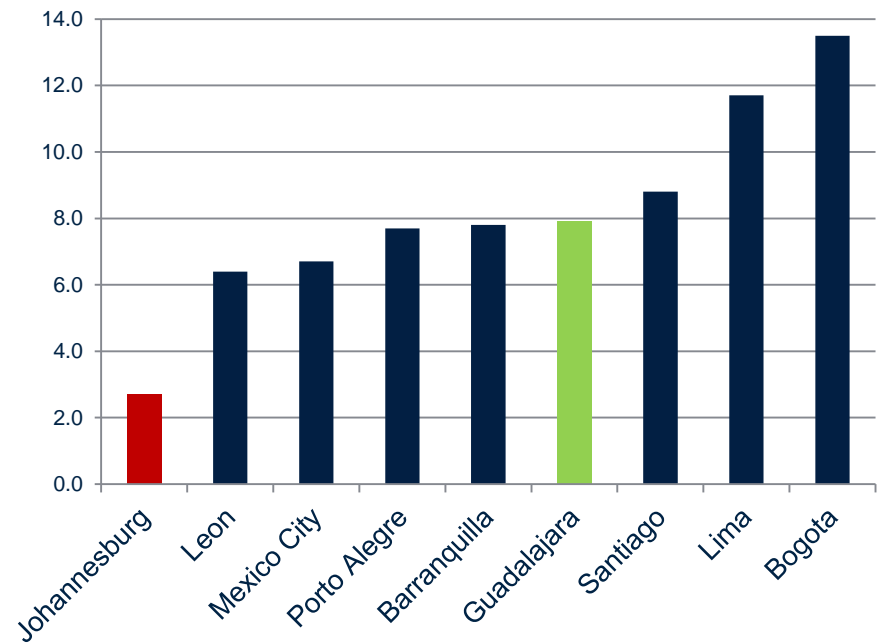


SOUTH AFRICAN CITIES, INCLUDING JOBURG, ARE NOT LIKE LATIN AMERICAN CITIES

POPULATION
(Million Inhabitants)



URBAN DENSITY
(Thousand inhabitants per Km²)

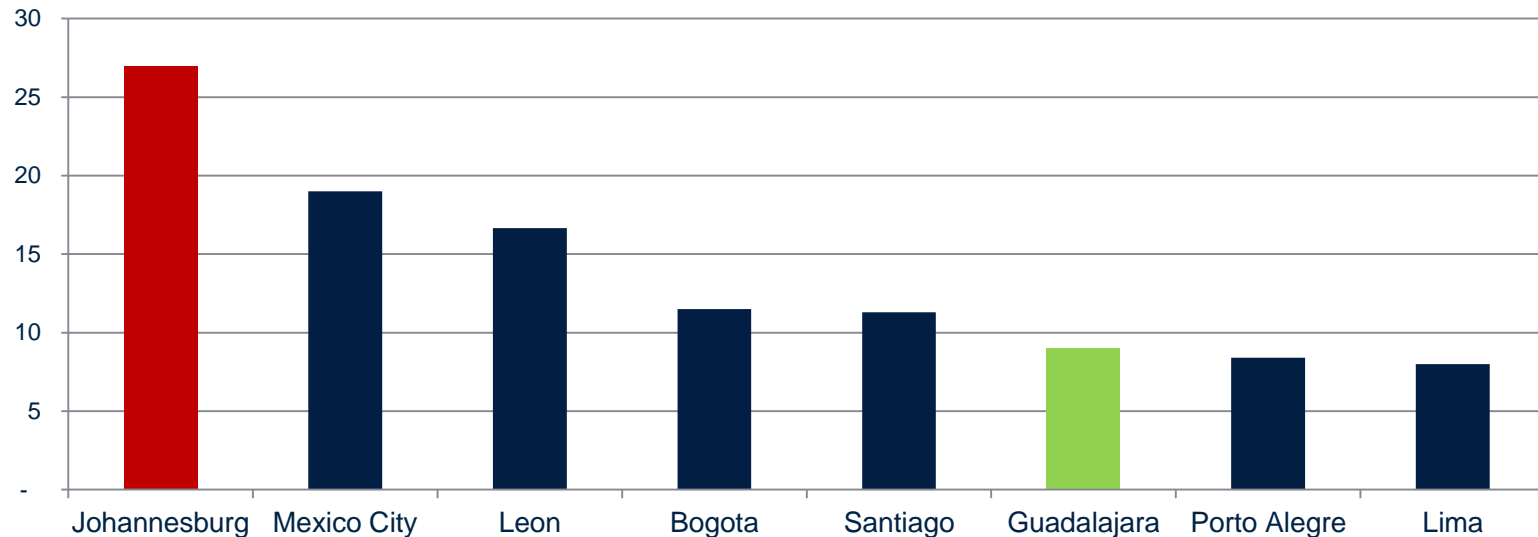


Latin American Cities are typically dense, South African cities are not.



SA TRIPS ARE NOT LIKE THOSE FOR LATIN AMERICAN CITIES

AVERAGE BRT TRIP LENGTH
(Km)



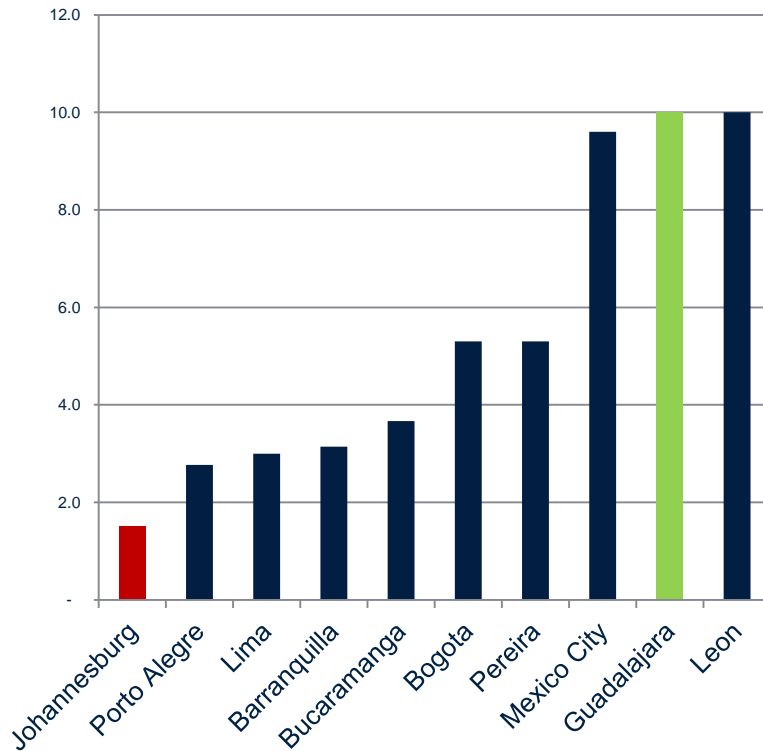
- South Africa metros: long, unidirectional, highly concentrated peak travel.
- South Africa paratransit: Mature vs. LAC. And very capable of providing long distance, one-seat rides quickly adapting to market and urban form.



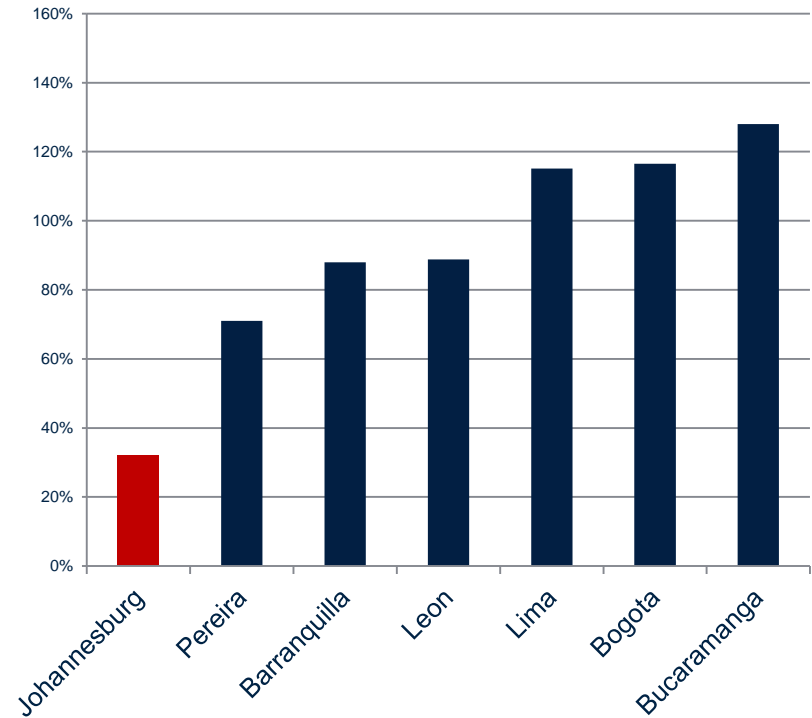
AND...

SA BRT IS NOT LIKE LAC SIBLINGS

PASSENGERS PER BUS-KM



FARE BOX RECOVERY/ BUS OPERATING COST*



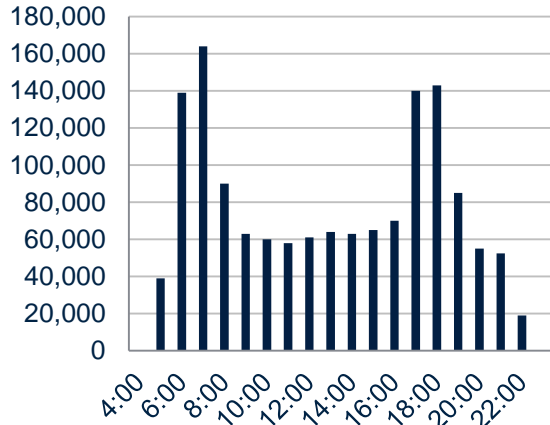
- Other indicators definitely are comparative outliers (iii)



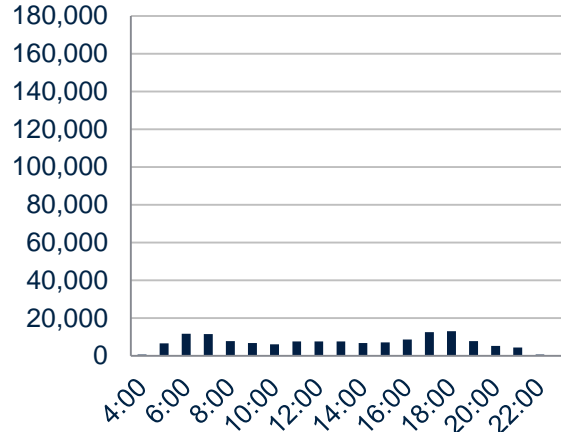
* Using bus operating cost as defined in South Africa: Payment to operators for all costs of contract, including overheads, labor, fuel, tires, and vehicle maintenance.

AND... SA BRT IS NOT LIKE LAC SIBLINGS

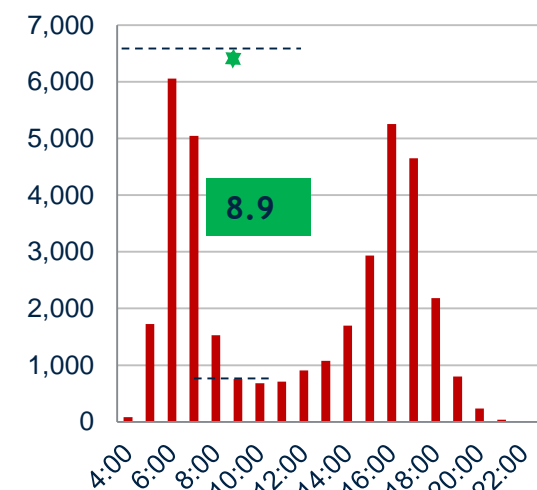
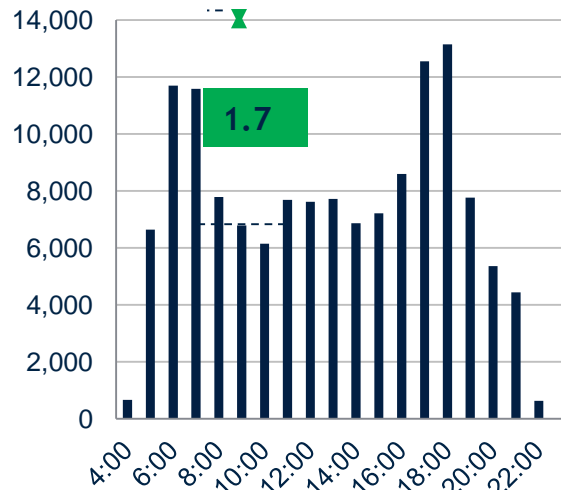
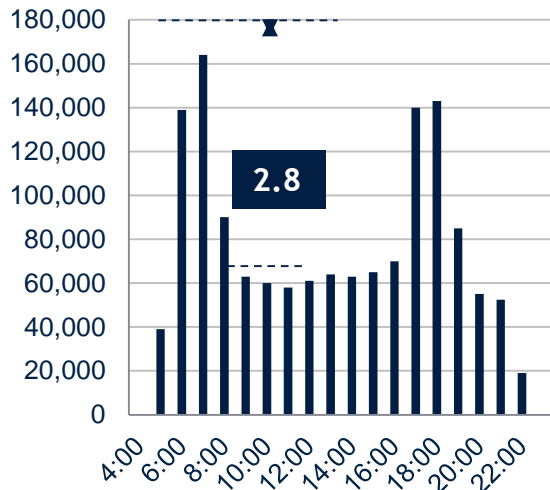
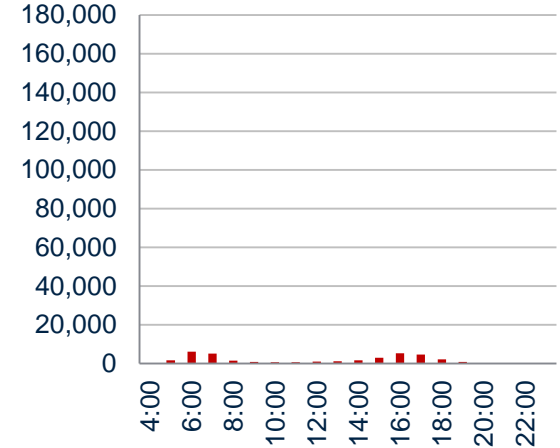
Transmilenio Bogotá, Colombia



Metrolínea Bucaramanga, Colombia



Rea Vaya (Joburg)- Data 2014



- Other indicators definitely are comparative outliers (iv)

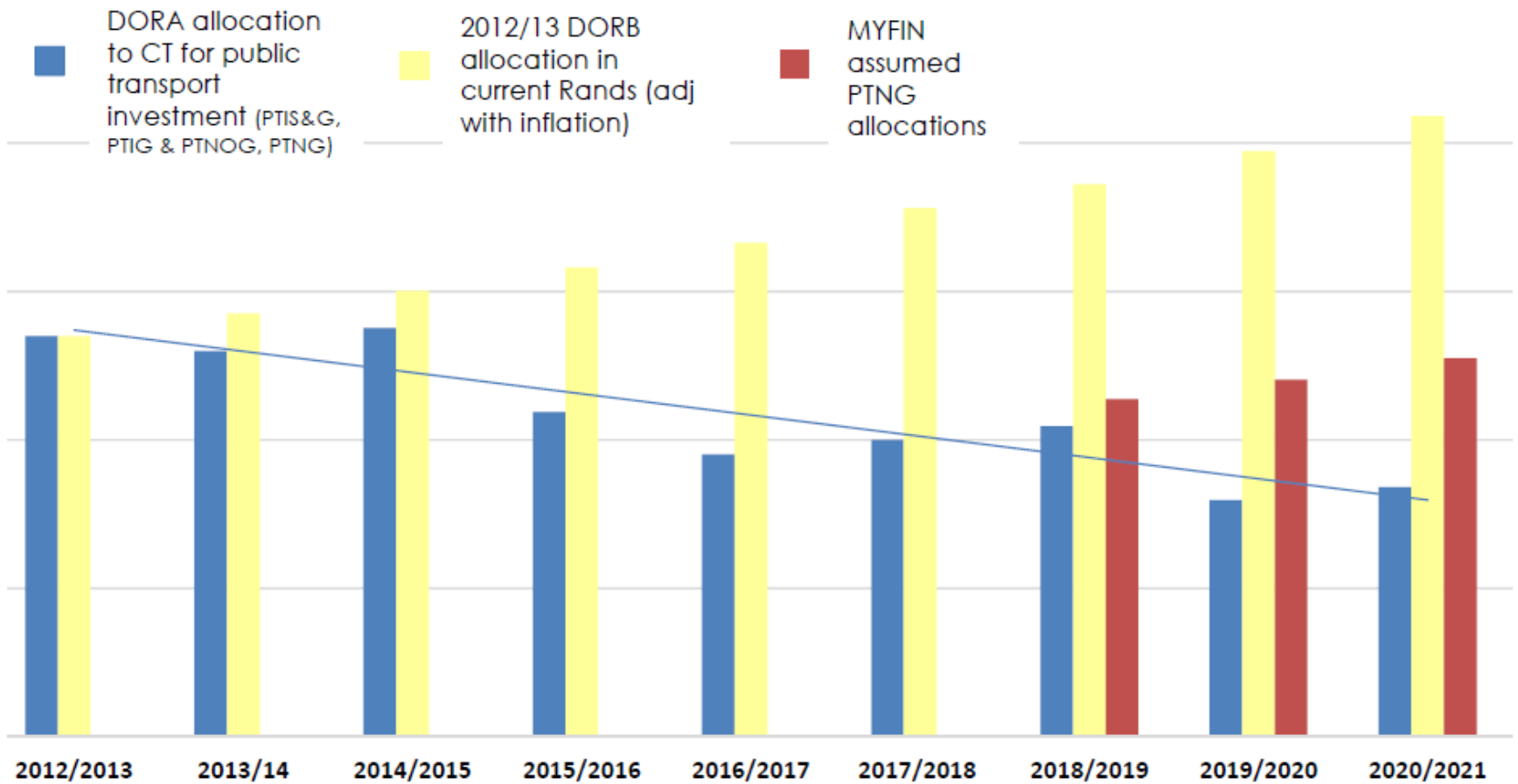


OPERATIONAL FUNDING IS A CHALLENGE

- **Opex funding for BRT systems is generated locally:**
 - Farebox revenue
 - Municipal funding (4-8 % of property taxes)
- **Operator contract model used gross-contract:**
 - Ridership risk lies entirely with municipality
- **Deficits have resulted in:**
 - **Good – cities forced to optimize schedules and cut costs as much as possible (lots of innovation)**
 - **Bad – off-peak frequencies often severely restricted, and differential peak/off-peak fares introduced to discourage peak hour travel**



CAPEX FUNDING SECURITY IS A CHALLENGE



Source: D Bosch, City of Cape Town



INSTITUTIONAL CAPACITY AND GOVERNANCE

- **Delivery has been impacted by:**
 - **Lack of capacity at local and national level**
 - Technical skills
 - Financial skills
 - Management skills
 - **Poor corporate governance**
 - Poor administrative capacity
 - Poor procurement practices and oversight
- **Significant delays in roll-out programs**
- **Inappropriately specified system plans**



HOW ARE CITIES RESPONDING TO THIS CHALLENGE?

1: Institutional strengthening

2: MBT Integration

3: Incremental roll-out

4: MBT sector formalization



INSTITUTIONAL STRENGTHENING

- **Driven from National Government:**
 - Funding for BRT tied to:
 - Clearly articulated and approved planning:
 - » Sensible specifications
 - » Financial viability
 - Demonstrated commitment at local level to:
 - » Resourcing line departments
 - » Training and capacitation
 - Increased oversight on procurement and contracting
 - » Benchmarked costing
 - » Performance monitoring and reporting

MBT INTEGRATION

- **Understand the competitive advantages of each mode of transport**
 - Taxis as feeder:
 - Flexibility, convenience, frequency, coverage
 - BRT as trunk:
 - Speed, capacity, reliability
- **Plan for integrated systems**
 - Electronic ticketing and Integrated Fare collection
 - Facilities designed for easy transfers
- **Formalize MBT sector**
 - Required for service-level agreements
 - Needed to support fleet diversification

INCREMENTAL ROLL-OUT



INCREMENTAL ROLL-OUT

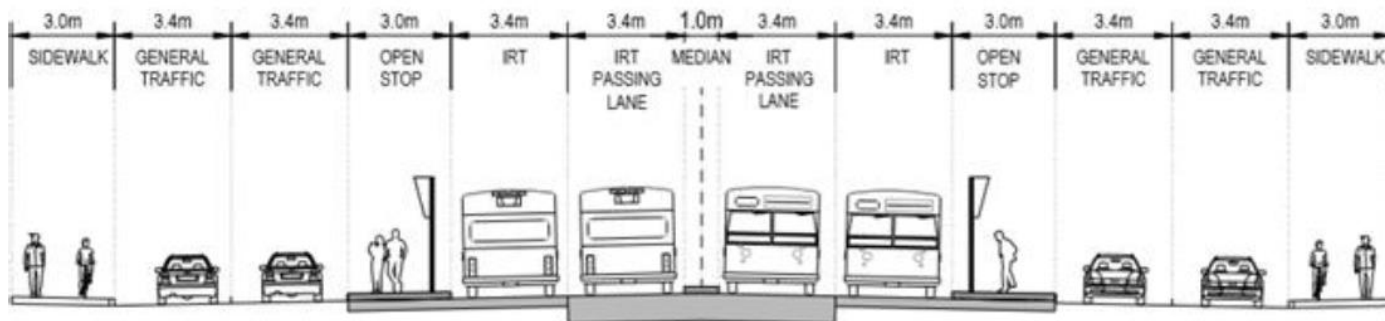


Figure 2: Left Aligned Median Stops (LAMS)

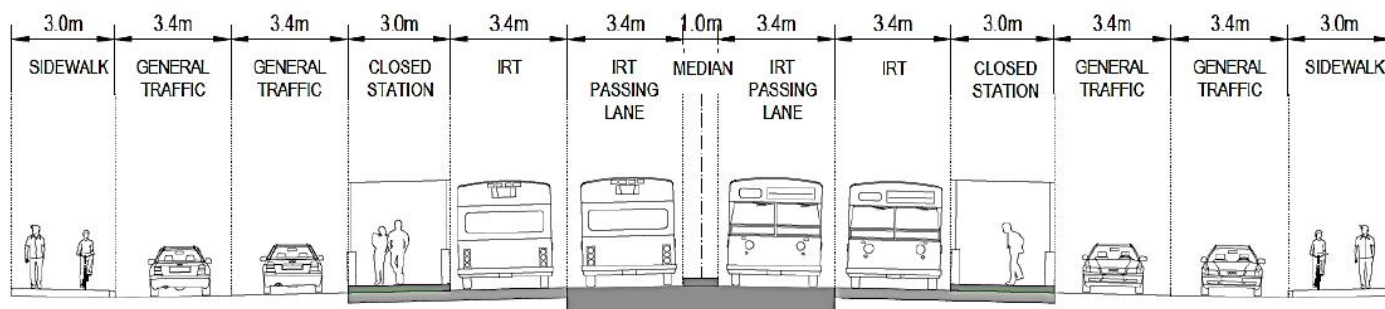


Figure 3: Low Floor Left Aligned Stations (LOFLA)

- Identify high impact investments city-wide
- Implement priority infrastructure to accommodate existing modes + future BRT

MBT SECTOR FORMALIZATION

- Incentivize transformation of MBT associations into cooperatives or companies.
- Use driver rewards programs + GPS monitoring to incentivize improved driver behavior
- Introduce electronic fare collection + GPS-equipped vehicles linked to APTMS systems through vehicle recapitalization program
- Explore options for demand-side subsidies to lower out-of-pocket costs for low-income commuters.

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WHAT CAN WE LEARN?

THANK YOU



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