



World-Class Bus Rapid Transit: New Foundations for Transit Oriented Development and Job Access

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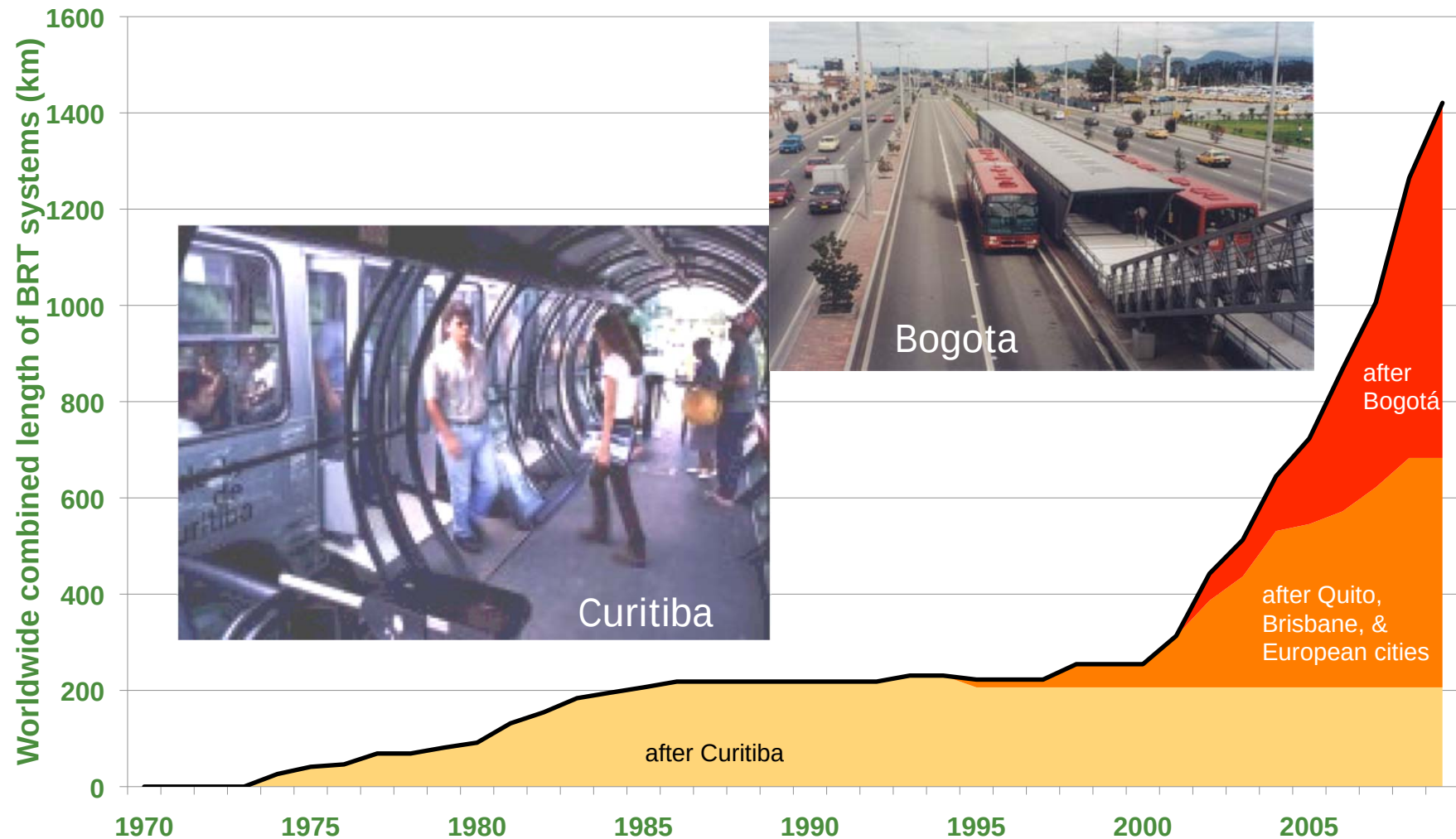
**Poor quality bus lanes,
express buses and a few
queue jumper lanes aren't
'BRT' and won't support TOD**



Critical Elements for BRT



BRT growing fast, spurred by “Gold Standard” BRT Projects



Guangzhou: BRT Corridor Pre-BRT



After BRT: moving people like a Metro 27,000 passengers per hour per direction



World-Class BRT: Guangzhou



Clockwise from top right (stations under construction):

- Gangding BRT station: a metro tunnel connection, and 4,000 boarding passengers per hour in evening peak;
- Shidajida BRT station: with Gangding, the world's longest;
- Shipaiqiao BRT station: connecting tunnel to metro;
- Tangxia BRT station: more than 4,000 boardings per hour.

Please join us for the Guangzhou BRT system opening on 28-Jan-2010. See www.itdp-china.org/launch.aspx

- 26 km initial corridor
- 800,000 passengers/day
- 300 buses/hr/direction.
- 985 buses in BRT
- +18% peak riders 1st 4 months after 11/2009 opening
- longest BRT station in world
- bus speeds 18-21 km/hr



‘BRT Light’
1,200 passengers per
hour per direction
with
lower frequency

***Amsterdam
Zuidtangent***



Nantes, France

Credit: Sam Zimmerman, AECOM

BRT SYSTEMS GLOBALLY AND THEIR CHARACTERISTICS												
CITY	2-way dedicated lanes, central verge	Local & Express	Off-board fare collection	BRT network	Platform-level boarding	High service frequency	Turn restrictions at junctions	Unique branding	Private/Quality of service contracting	Safe, wide, weather-protected stations	Station spacing	On highest-demand corridors
Bogotá	H	H	H	H	H	H	H	H	H	H	H	H
Guangzhou	H	H	H	H	H	H	H	H	H	H	H	H
Cali	H	M	H	M	H	H	L	H	H	H	H	H
Pereira	H	L	H	H	H	H	L	H	H	H	H	H
Guayaquil	H	L	H	M	H	H	L	H	H	H	H	H
Ahmedabad	H	L	H	M	H	M	M	H	H	H	H	M
Mexico City	H	L	H	M	H	H	H	M	M	H	H	H
León	H	L	H	H	H	H	H	H	M	H	H	H
Johannesburg	H	M	H	H	H	H	H	H	H	H	H	H
Guadalajara	H	M	H	M	H	H	H	H	H	H	H	H
Cleveland	M	L	H	L	H	M	M	H	L	M	L	H
Eugene	M	L	H	M	H	L	M	H	L	M	H	H
Las Vegas	M	L	H	M	M	L	M	H	M	L	H	H
Los Angeles	H	L	H	L	L	M	H	H	L	M	H	L
Boston	L	L	H	L	L	M	L	M	L	L	M	H
New York City	L	L	H	M	L	H	L	M	L	L	M	H
Nantes	M	L	H	L	H	M	L	H	M	M	M	L
Amsterdam	H	L	L	L	M	M	M	M	H	M	M	L

America has some BRT systems, but not the *best*

Bus Rapid Transit

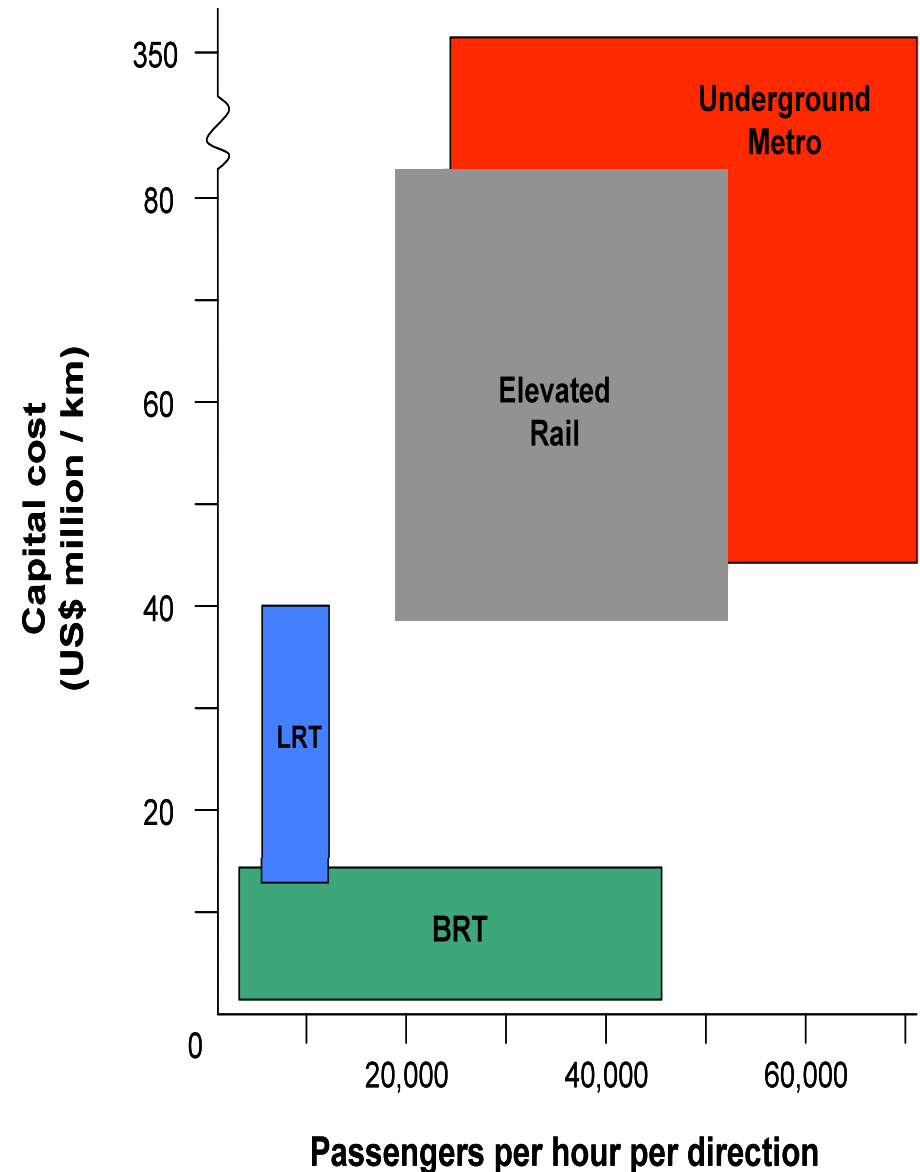
High cost-effectiveness

Quick to deploy

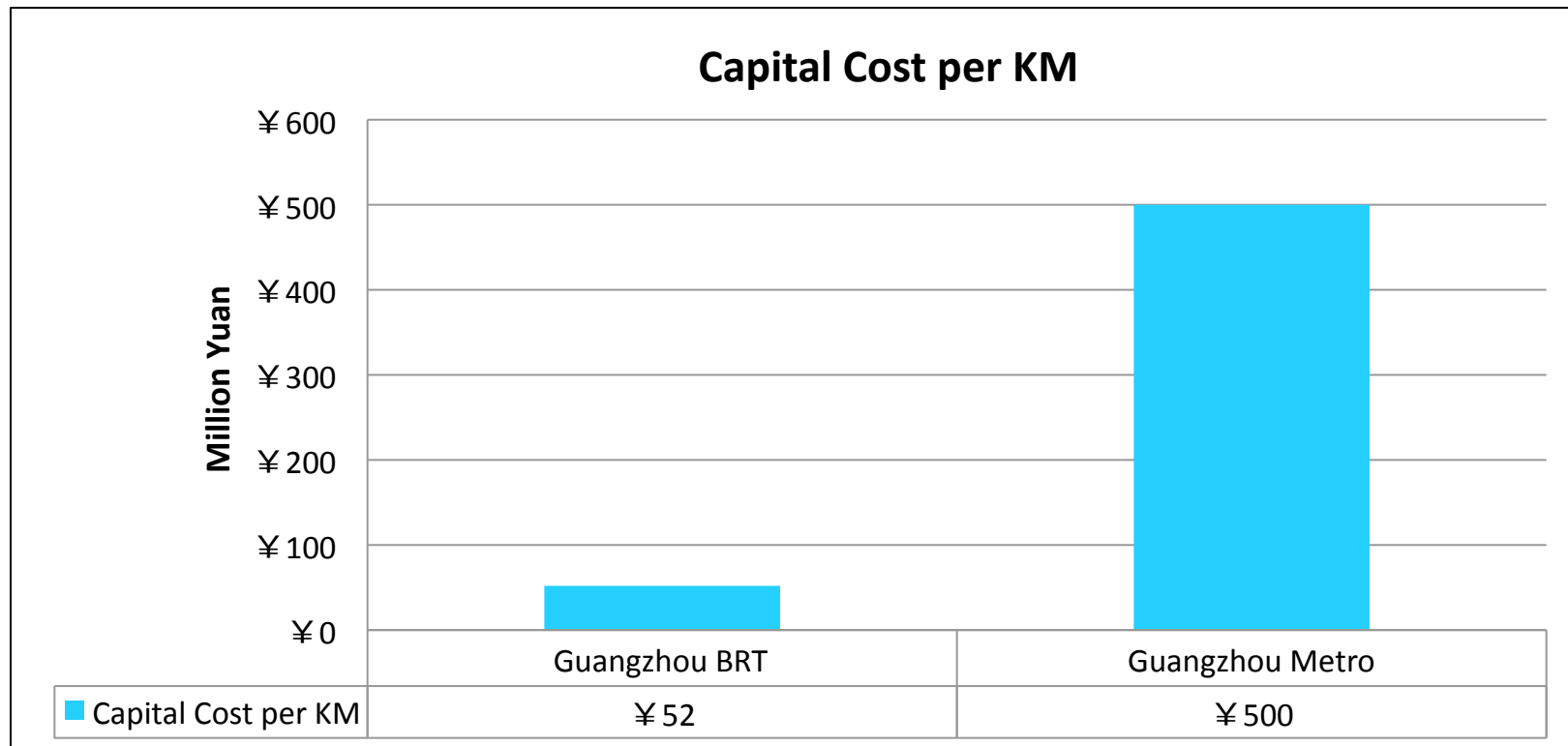
Strong support for transit oriented development

Requires political support

- Street space allocation
- Enforcement
- Operations plan at time of system design & planning



BRT Construction Costs Much Cheaper Than Rail



52 M Yuan = US\$7.9 M ; 500 M Yuan = US\$76.3 M

Guangzhou BRT vs. Guangzhou Metro Line 5

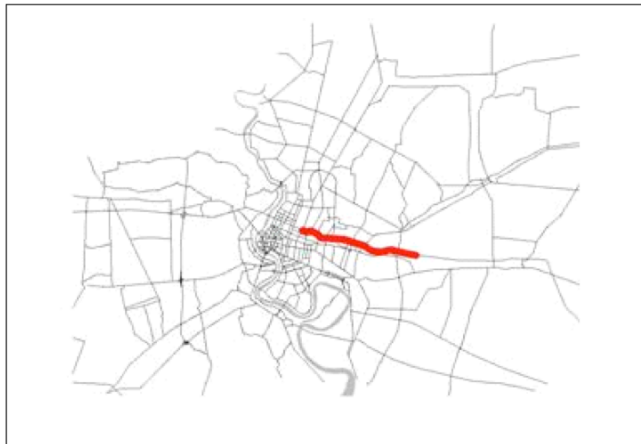
Four systems, same cost: How much new TOD? How much improved access to jobs from each?



426 kilometres of BRT



40 kilometres of LRT

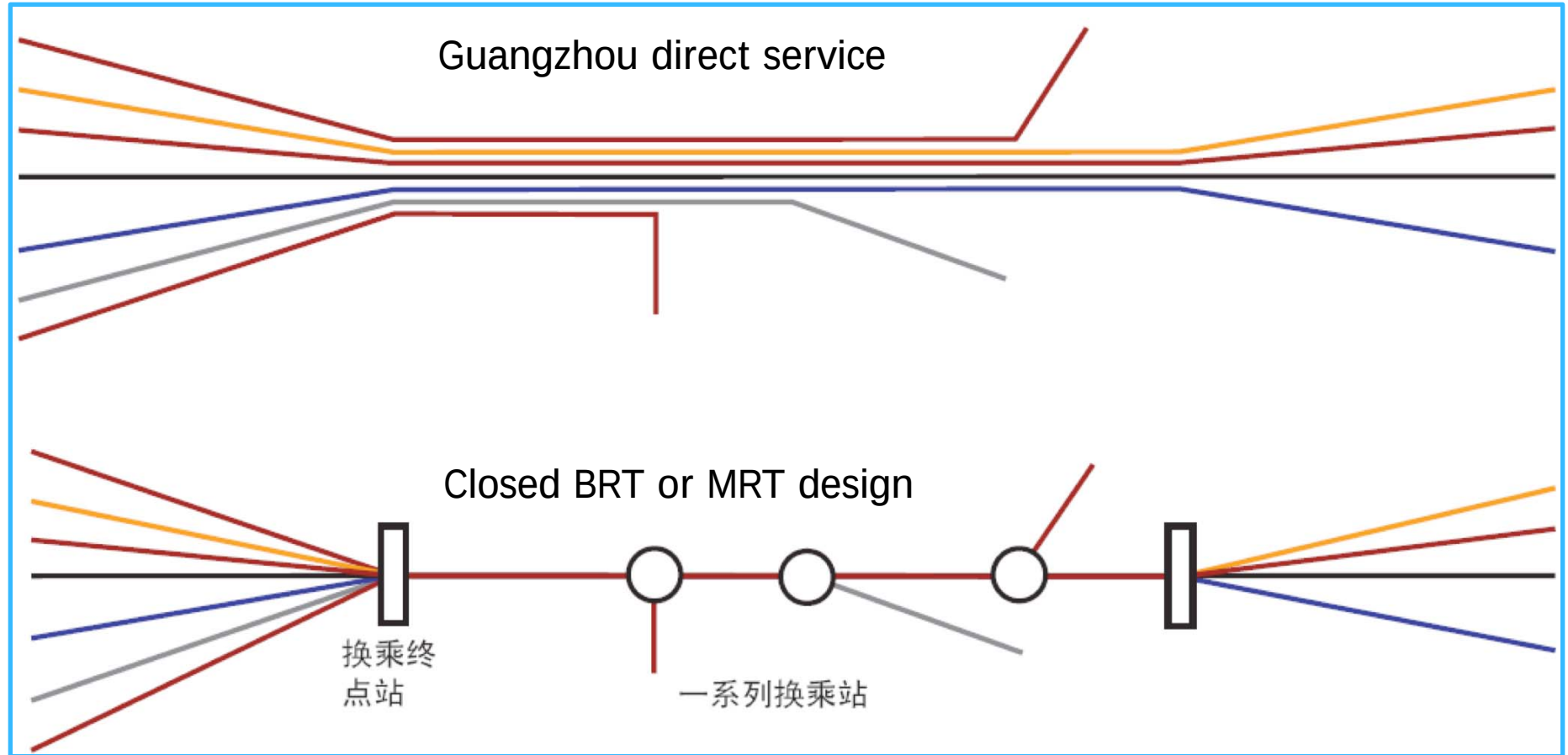


14 kilometres of elevated rail

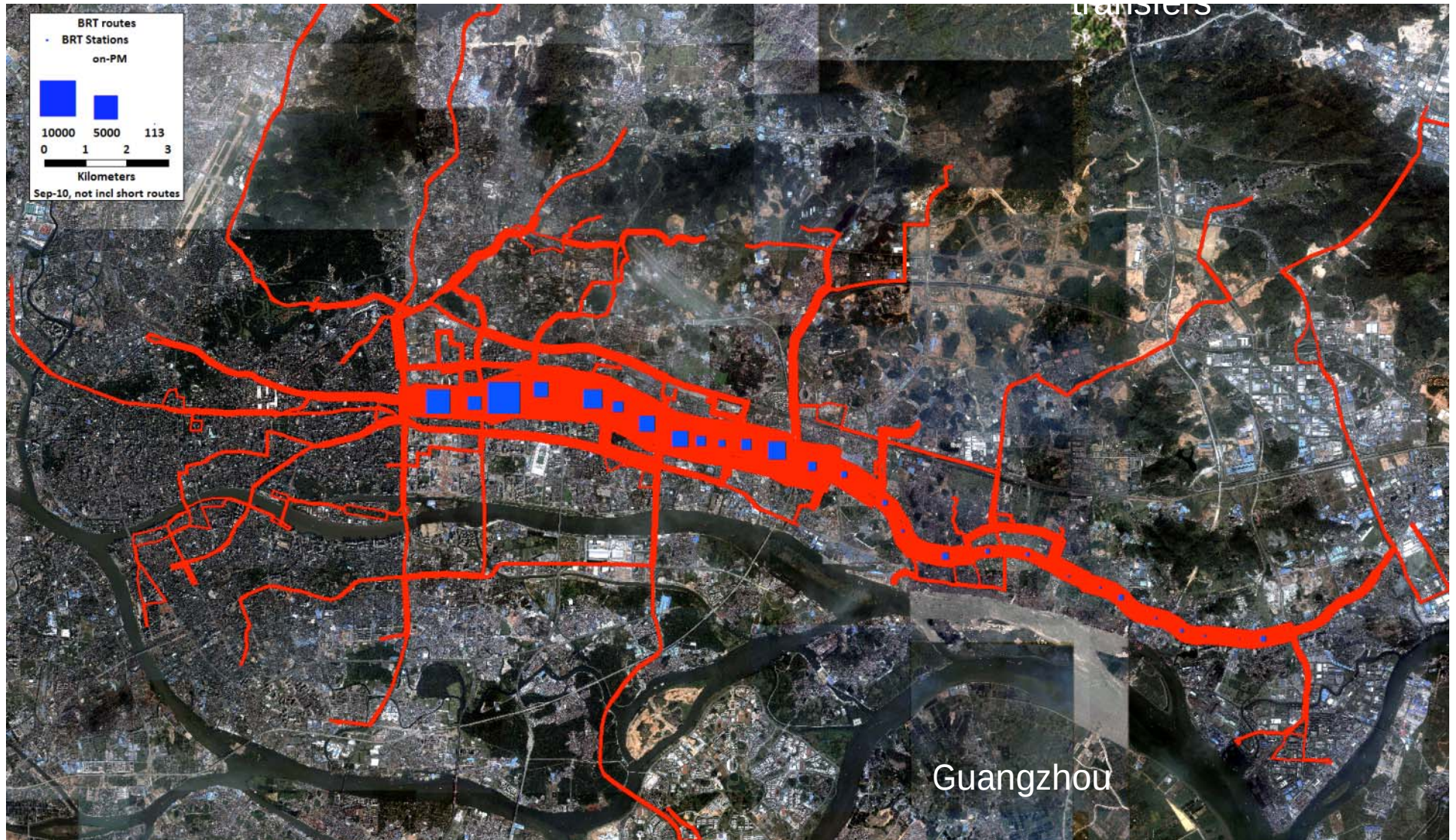


7 kilometres of subway

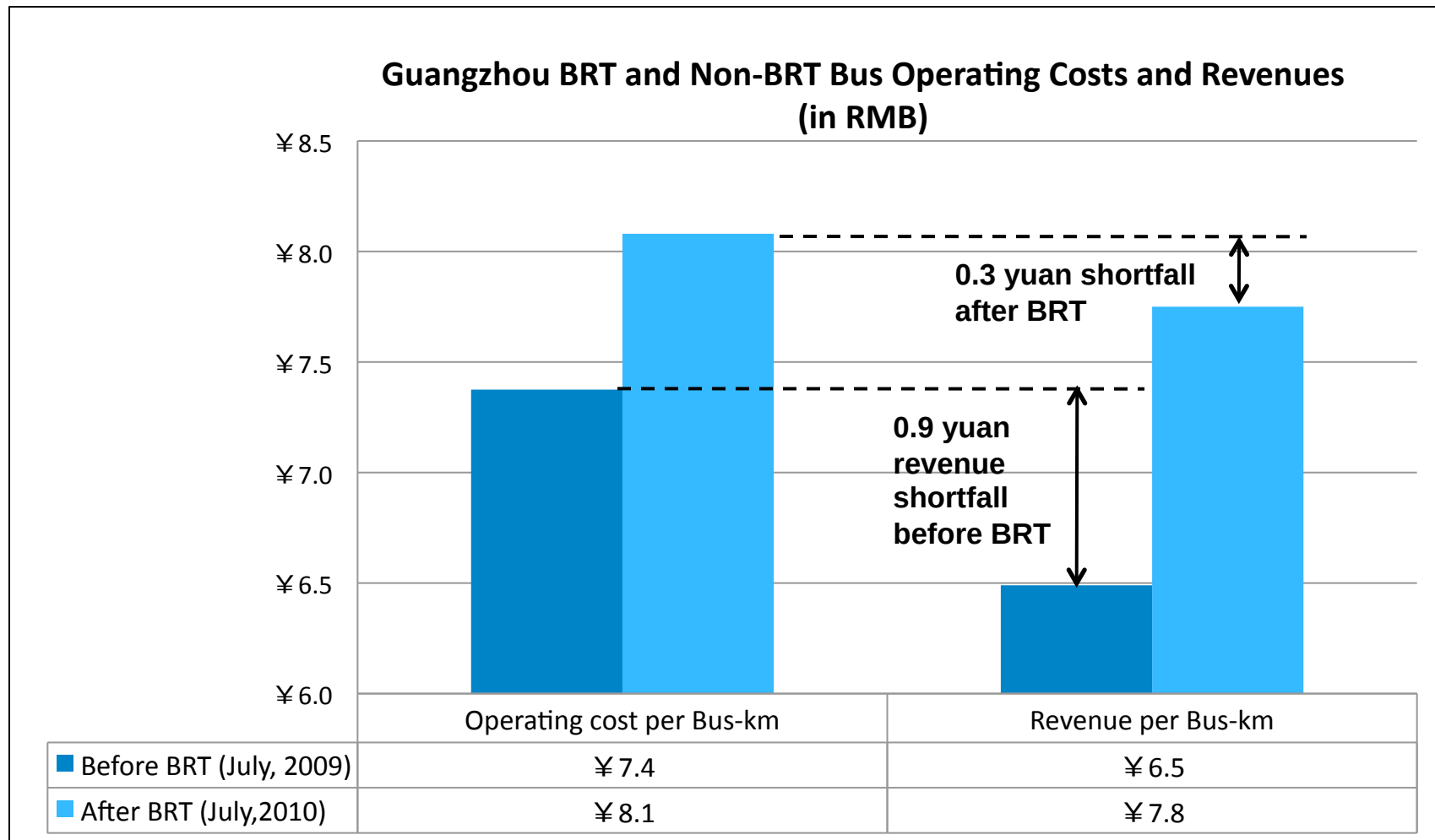
Guangzhou: 'direct service' means more one-seat rides than closed BRT or Mass Rapid Transit (MRT)



BRT routes & evening peak hourly boarding at BRT stations

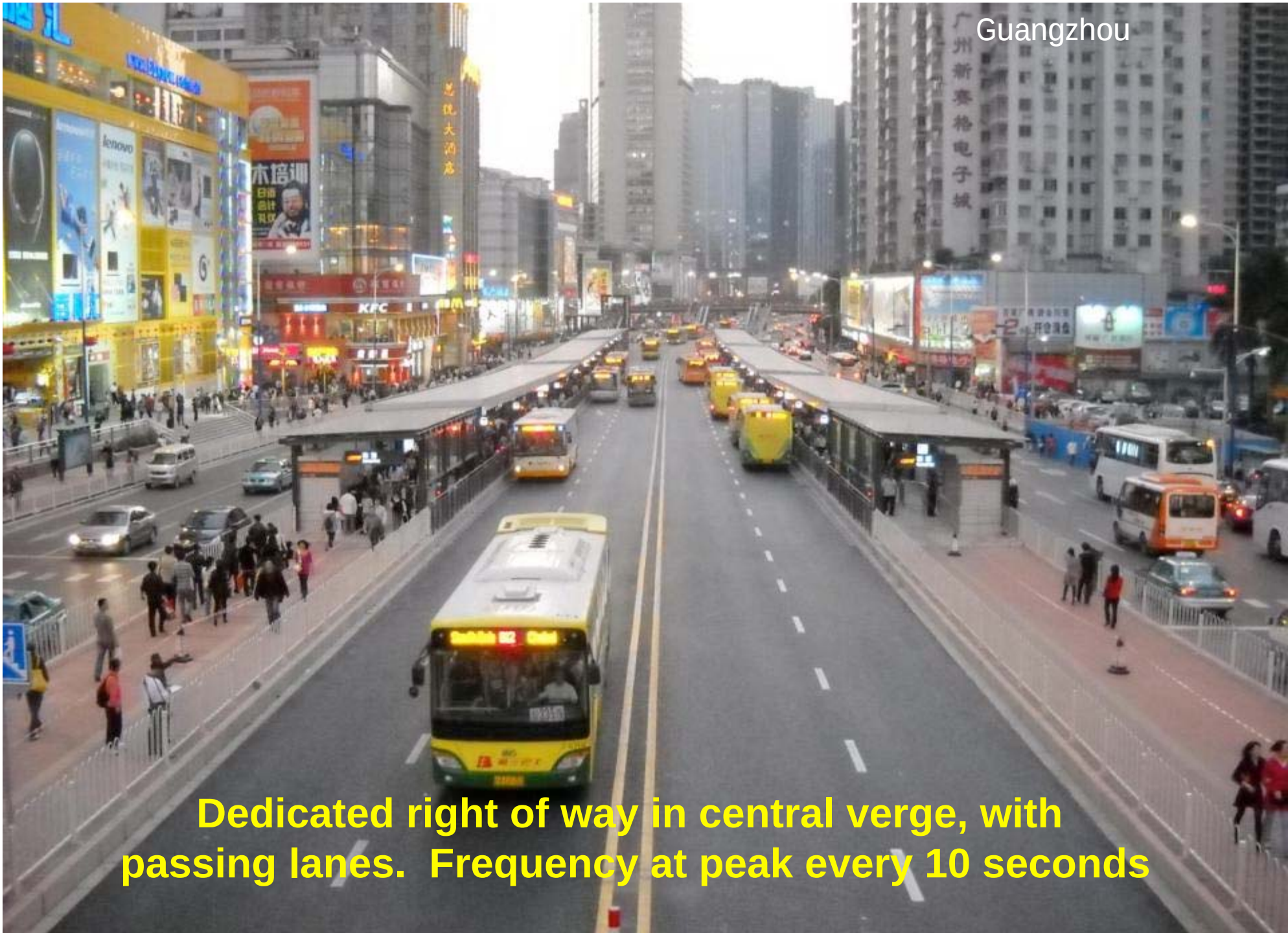


High Quality BRT Often Requires Less or No Operating Subsidy



Guangzhou

Dedicated right of way in central verge, with passing lanes. Frequency at peak every 10 seconds





Guangzhou

Off board fare collection, security personnel at stations



Guangzhou

At level boarding speeds entry & exits



**Wide, well illuminated, weather protected
stations with passenger information**

Wide multiple doors speed boarding & alighting





Guangzhou



Guangzhou

**Operational control
system to prevent bus
bunching**



Guangzhou BRT Corridor Bike Lanes and Sidewalks

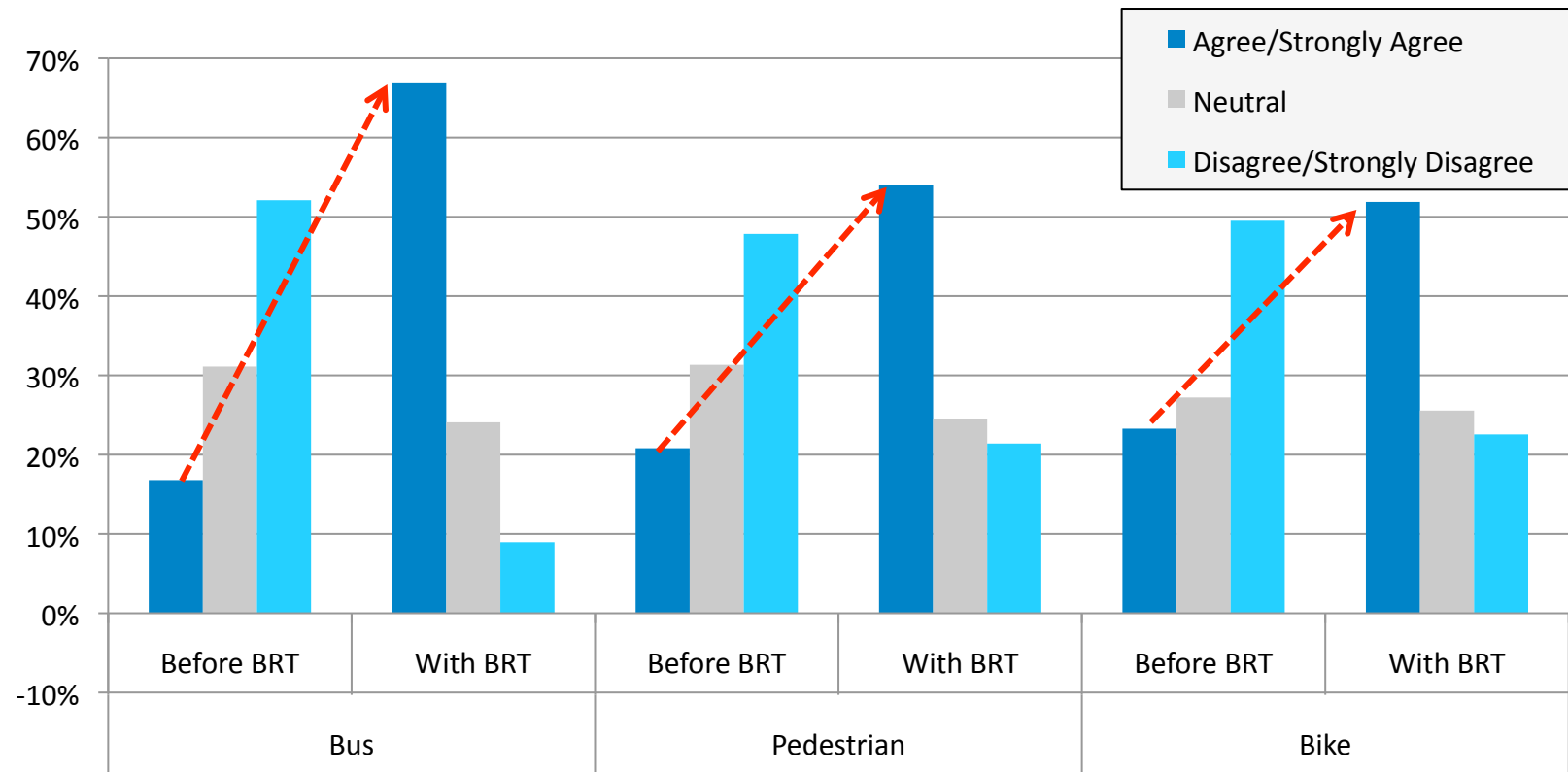
Guangzhou



Guangzhou

Bike parking and bike sharing available adjacent to stations

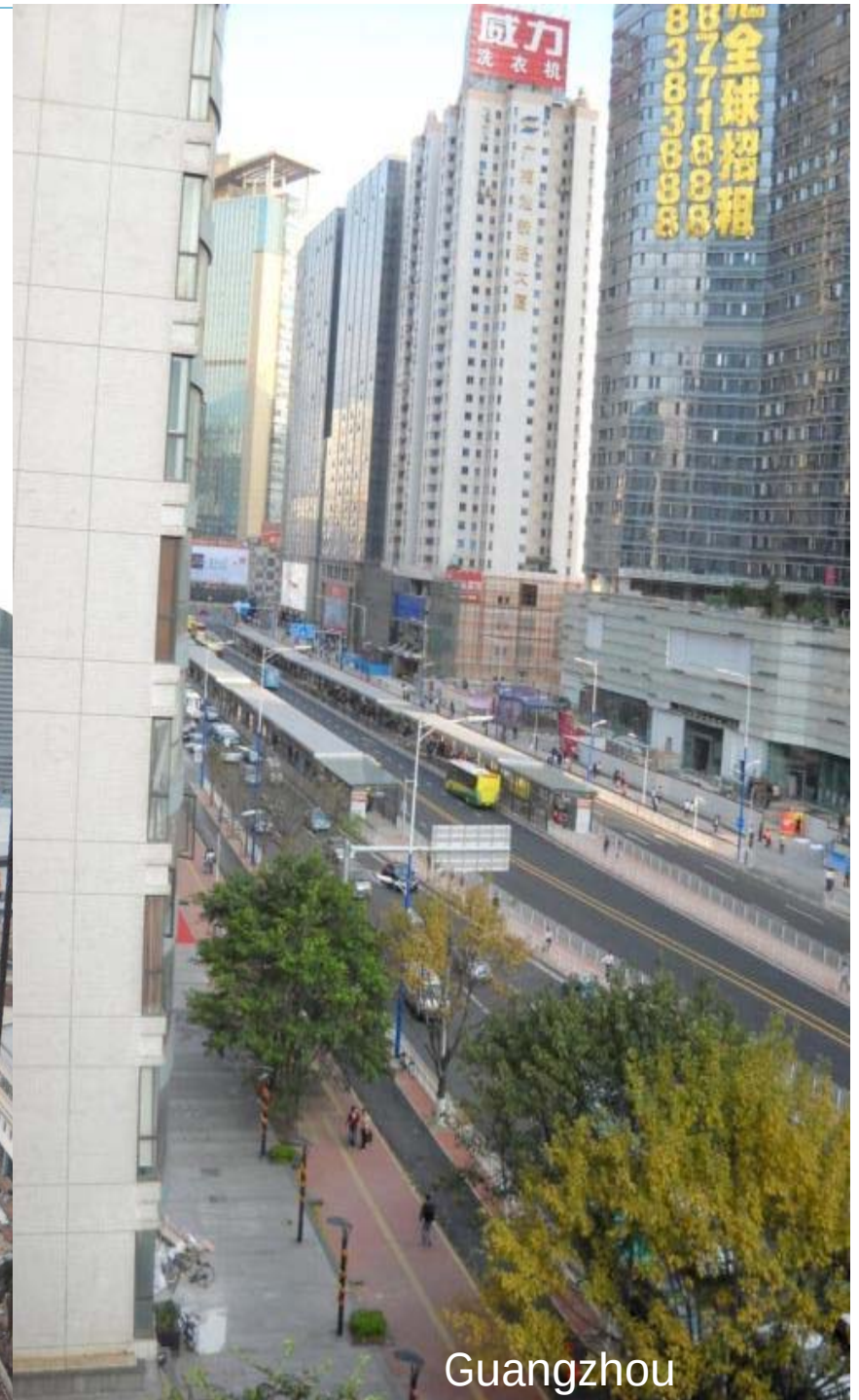
“The environment along Zhongshan Avenue is good” -----Responses from Zhongshan Avenue.



Before BRT : December 2009

With BRT: August 2010

TOD Near Guangzhou BRT Stations



BRT Impacts on Land Values

Rodriguez and Targa (2004) before/after comparison with control

- rental prices decrease 1.3 % for every added minute of walking time from Bogota BRT
- additional US\$439 to \$653 property value for each 0.1 kilometer of distance to Bogota BRT stations

Mendieta and Perdomo (2007) spatial hedonic pricing model

- within 0.5 km of Bogota BRT stations: price premium 5-17 %.



TOD Around BRT in Curitiba



Credit: Sam Zimmerman, AECOM

Brisbane SE Busway



Credit: Sam Zimmerman, AECOM

BRT Urban Design Integration



Brisbane SE Busway

Credit: Sam Zimmerman, AECOM

“Brisbane Courier Mail,” 1/26/02

Busway boosts house values

Joel Gutroy

PROPERTY values along Brisbane's South-East Busway have jumped as much as 20 per cent as buyers take advantage of train-free travel to the city.

Prices in the southern suburbs of Holland Park West, Upper Mount Gravatt and Eight Mile Plains have increased since the \$350 million busway opened in March 2001, providing an escape from South East Freeway traffic snails.

Real Estate Institute of

Queensland research shows suburbs with direct access to the busway's stations had solid growth over the recent quarter.

"Most other suburbs next door to these busway suburbs also performed well, however they did record percentage changes slightly below those near the busway," REIQ president Mark Brimble said.

The most outstanding jump was in Holland Park West, where values rose 20.86 per cent.

The neighbouring suburb of Holland Park, which does

not have direct busway access, rose 6.23 per cent.

The comparisons showed busway suburbs were performing above city-wide increases which have seen nearly all areas within 10km of the CBD improve in value.

Other neighbouring suburbs that did not perform as well include Mount Gravatt East, which recorded 4.28 per cent compared with 8.29 per cent in the busway suburb of Mount Gravatt, and Kewster, which increased by 1.56 per cent

compared with a jump of 1.93 per cent in busway suburb Eight Mile Plains.

"This research supports the trend that more people are moving to areas within five to 10km of the CBD which are close to convenient public transport such as the busway," Mr Brimble said.

Queensland Transport recorded a "patronage boom" on the busway, with a 40 per cent growth in passenger figures in its first six months, or about 58,000 passenger trips a day.

The figures also showed approximately 375,000 private vehicle trips were converted to public transport along the busway, which straddles the South East Freeway.

Property values also would increase if proposed extensions of the busway along northern and eastern routes went ahead, analysts said.

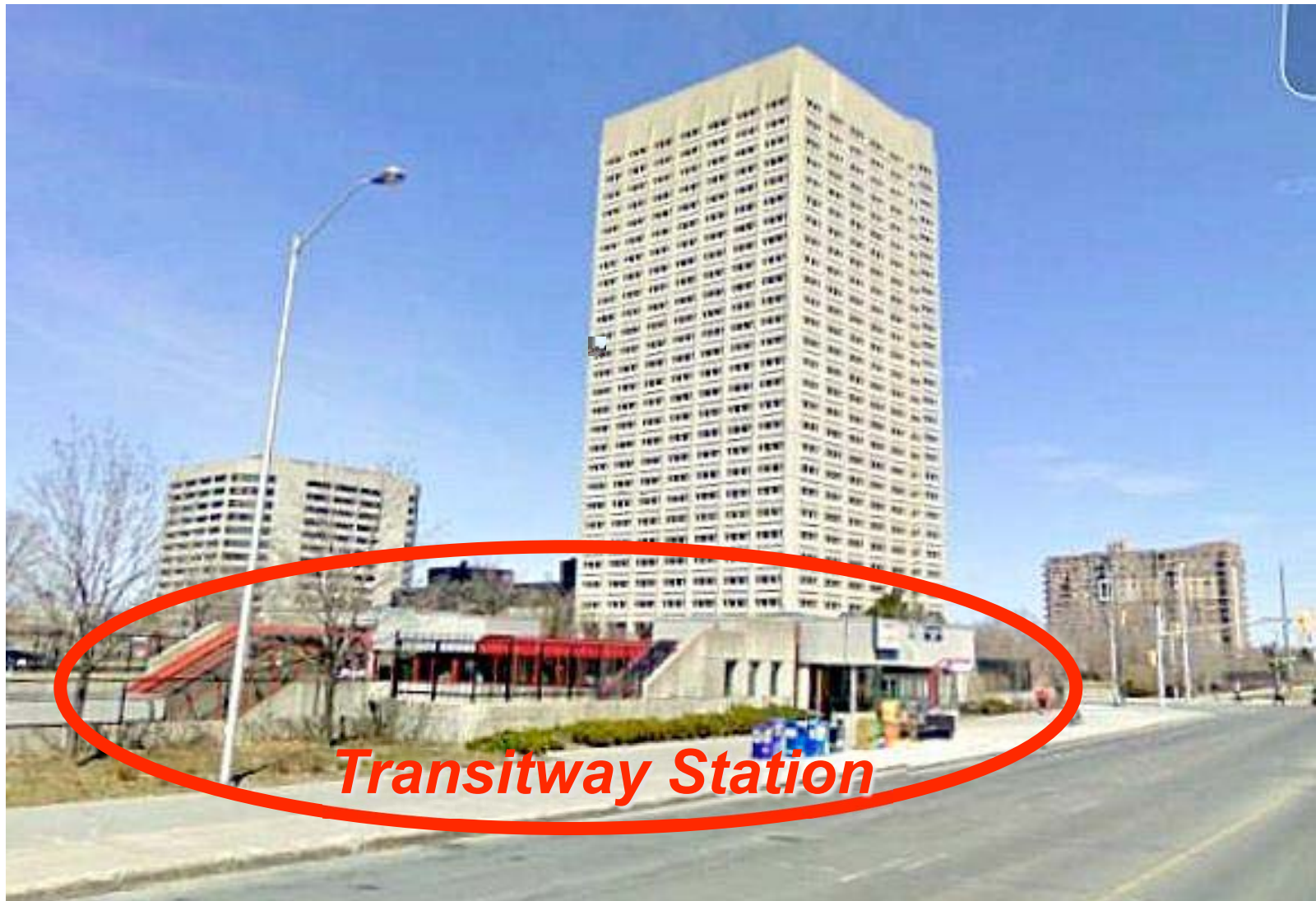
National Property Research analyst Matthew Gross said areas near public transport nodes would nearly always rise in value.

"Historically, housing has always followed public transport nodes. Those closer to transport generally have high values," Mr Gross said.

"A lot of investor stock in rental properties are considered worth more if they are close to public transport because they are easier to rent."

The \$135 million Inner Northern Busway is nearing completion, and the planned dedicated bus lanes will give passengers uninterrupted travel as far as Kedron.

Ottawa Transitways: \$1 B in development around BRT stations in system's first decade



Credit: Sam Zimmerman, AECOM

Ottawa



St Laurent: Ottawa's Most Successful Mall



Necessary Ingredients for TOD Around Stations and Terminals

Irrespective of Mode

Transportation Value

- Fast, frequent, reliable wide connections
- Significant people flows

Permanent, attractive facilities

- Stations/terminals
- Running ways

Quality image, unique identity



Necessary Ingredients for TOD: Other Factors

Good development climate

Other supportive public policies and actions

- **Macro land planning, zoning / floor space ratios**
- **Site plan review criteria**
- **Tax abatements**
- **Other Public Investments**



Necessary Ingredients for BRT: Site Planning

Public gathering places in scale
with surroundings, stations

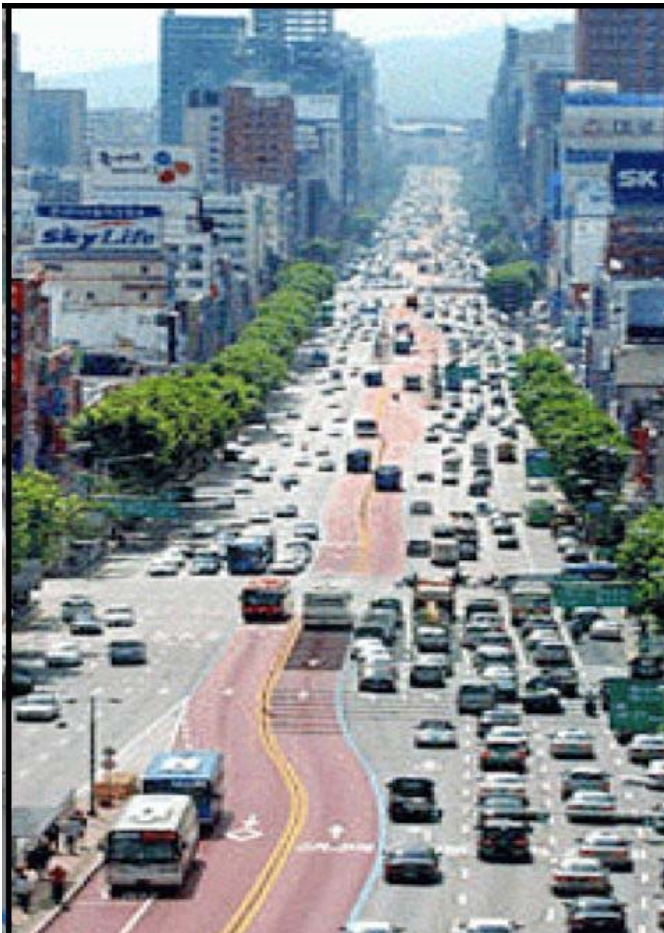
Pedestrian environment

- Safe and secure
- Short, direct connections
- Environment friendly
- Active, interesting



Conclusions

- High quality transit - rail or BRT - supports TOD
- High quality BRT likely to support TOD and job access in more places, faster than rail, given a limited budget



For More Information



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for more specifics on Guangzhou BRT and comparison of BRT systems

