Co-benefits of mass transit for land value uplift and transit-oriented development in emerging economies: Lessons from Jakarta

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CSIS Indonesia

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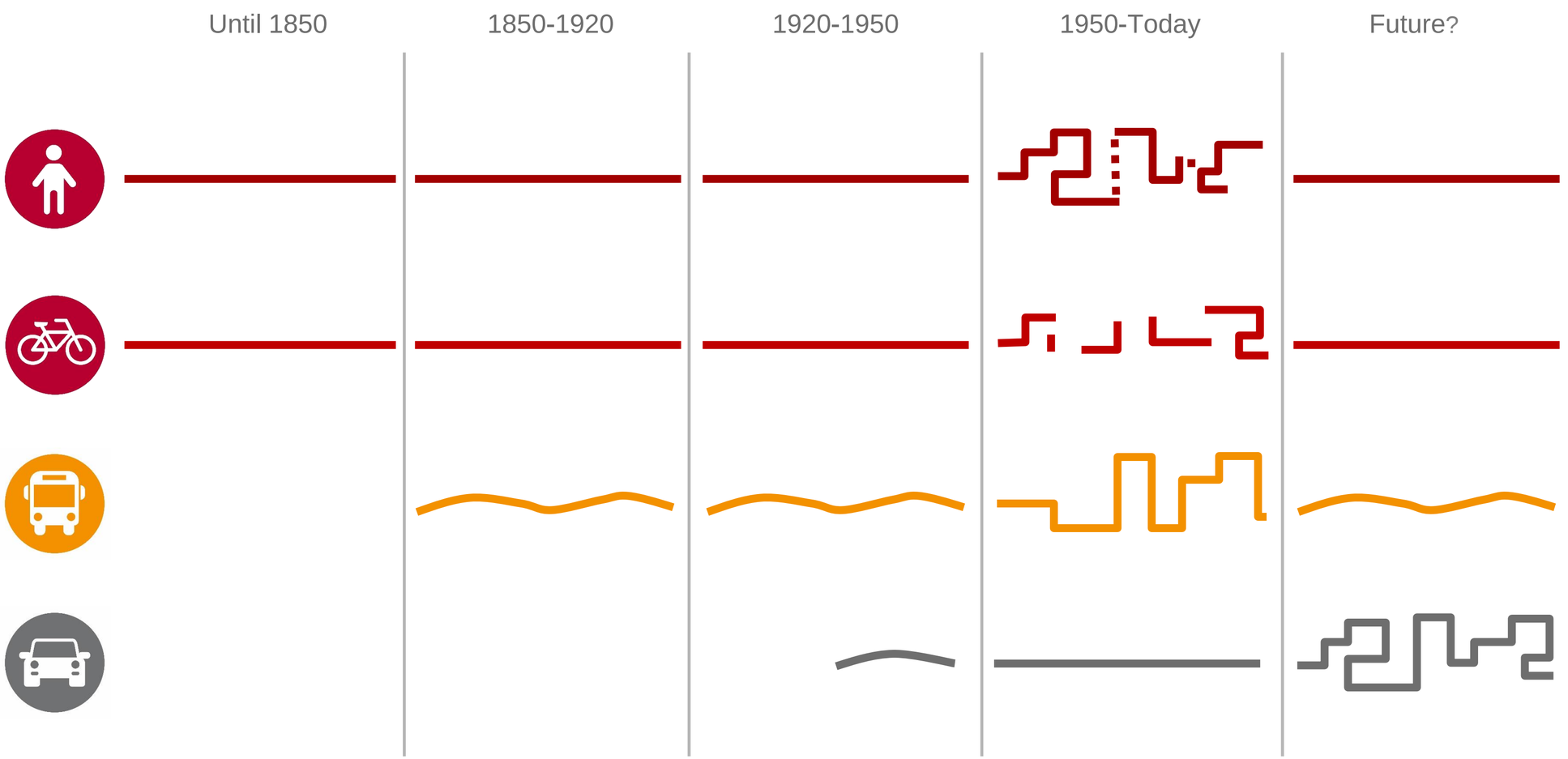
Structure

- Introduction to topic
- Methodology and preliminary results
- Planned activities for the second month
- Questions and comments

The evolution of urban mobility

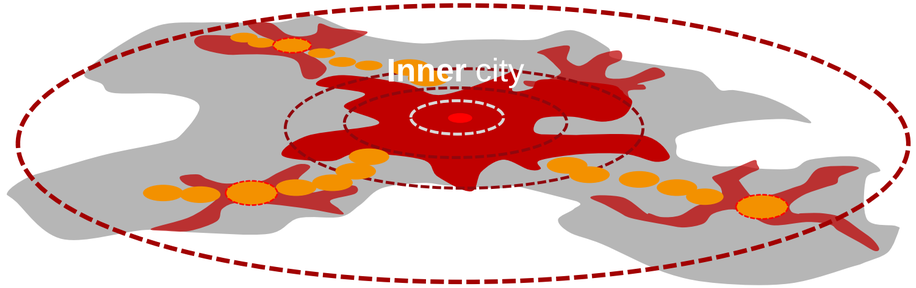


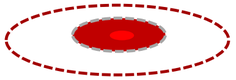
Source: Colville-Andersen (2018); TUMI (2020). Figure by Author

The impact of transport modes on cities

Cities for people

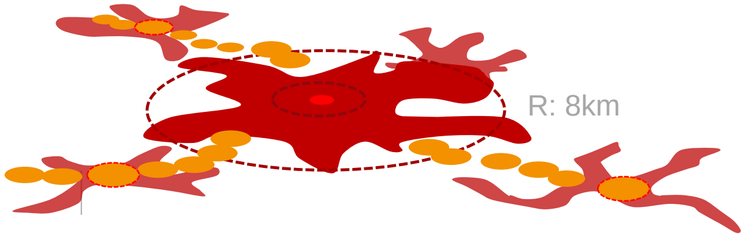
Outer city



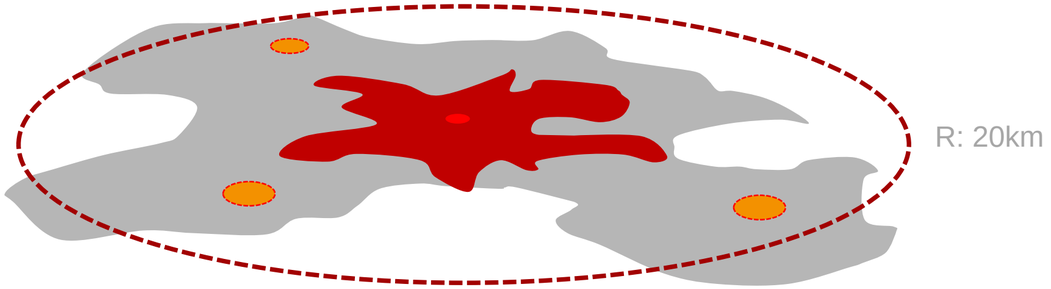


Walking fabric

Cities for cars



Transit fabric

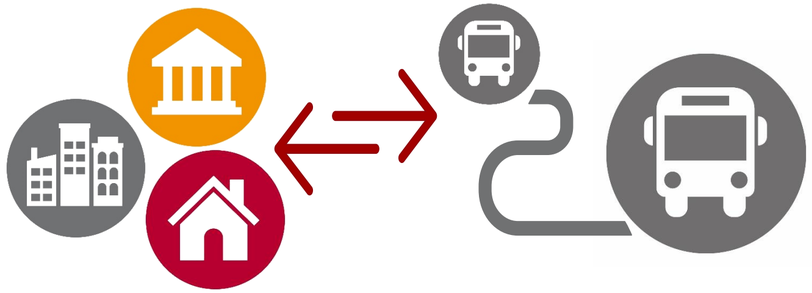


Car fabric

Source: Newman, Kosonen & Kenworthy (2016). Figure by Author

The integration of land-use and transit planning

We have been doing this…



…Instead of this

Result:

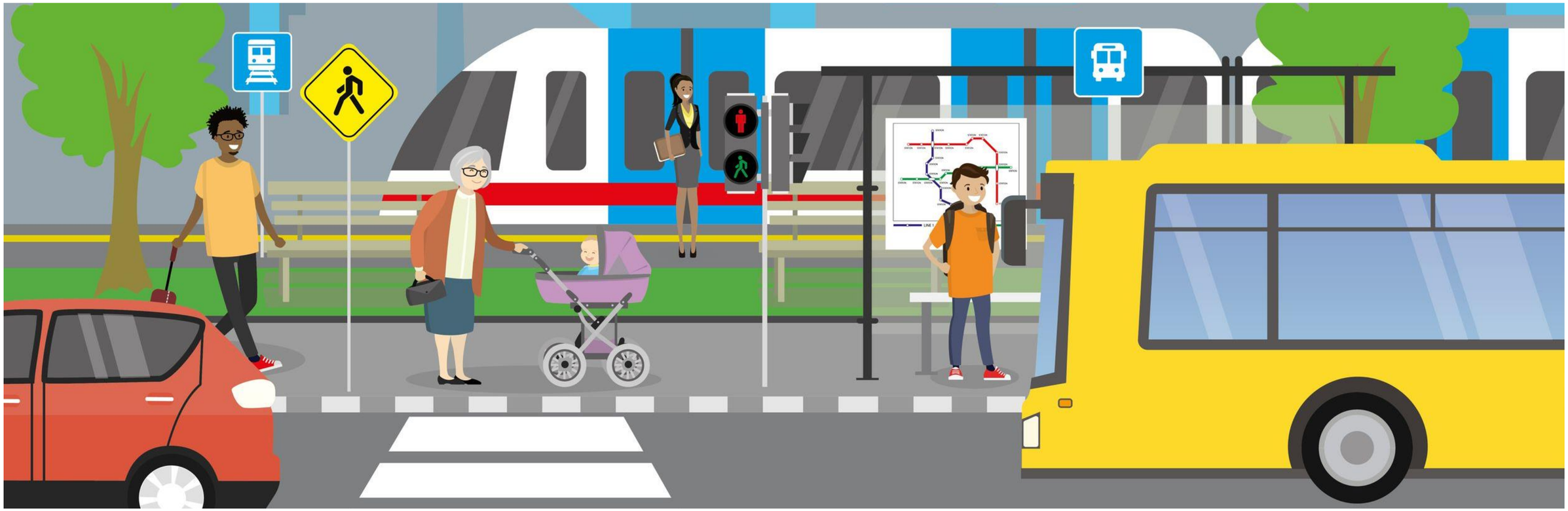
Land-use patterns as consequences of transport infrastructure…

…instead of paired co-determinants

Figure by Author

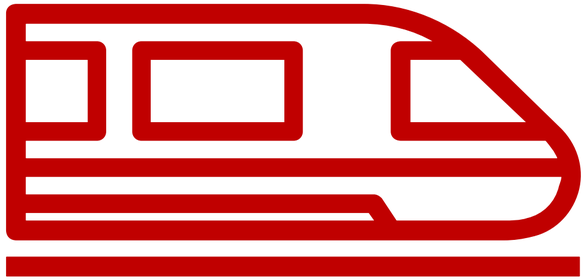
Mass transit is great

- Fast running speed
- Large passenger capacity
- Exclusive right-of-way infrastructure
- High-quality service
- Lower energy requirements
- Safer



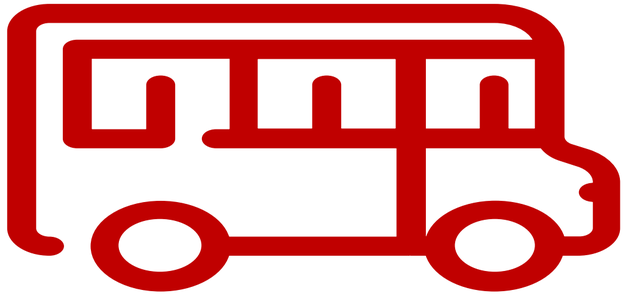
Mass transit is great… but at what cost?

RAILWAY SYSTEMS



Up to 80 thousand passengers
per hour per direction of travel
(Phpdt)
30-160 million USD per km

BUS RAPID TRANSIT (BRT)



20-40 thousand passengers
per hour per direction of travel
(Phpdt)
5-20 million USD per km

Source: Hensher & Golob (2008). Figure by Author.

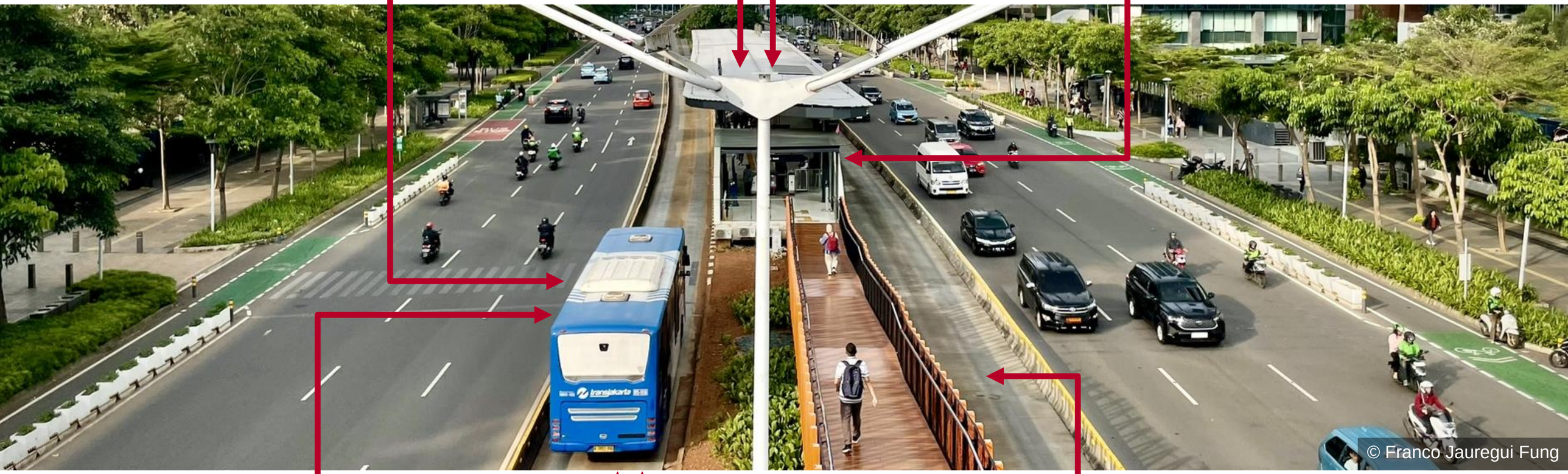
Why BRT?

Operators with social benefits

Sheltered stations

Pre-boarding digital payment

Regulated by the government



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Reliable, safe system with established frequencies

High-capacity buses with multi-door boarding

Buses with greater comfort and less pollution

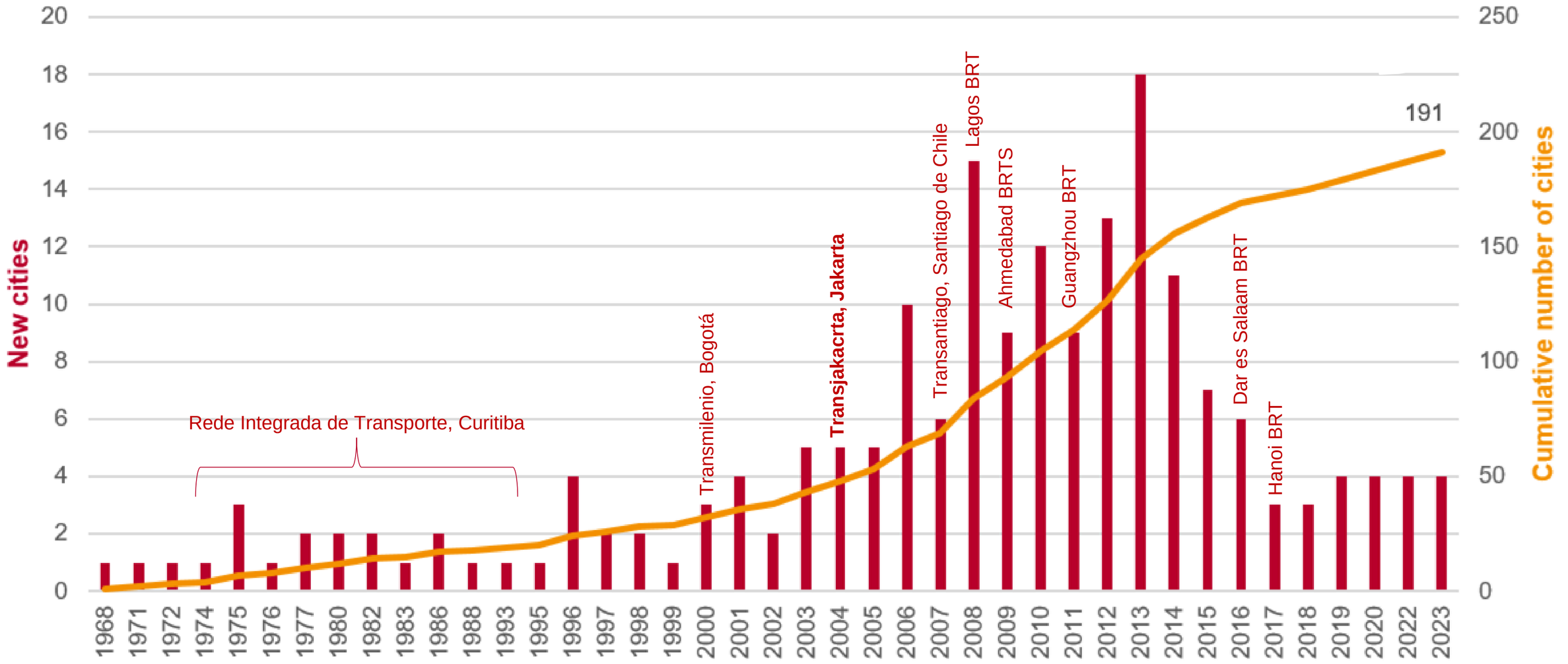
Segregated lanes

Why BRT?

Component	Paratransit characteristics	BRT characteristics
Level of regulation	**Self-regulated** transport by union/association/ company	Regulated by **transport authority**, formation of bus operating company (BOC)
Running ways	Fixed or semi-fixed service on **mixed traffic** roads with no scheduled operation	Exclusively **dedicated bus lanes** and scheduled operations
Stations/stops	**Improvised bus stops** without shelter from inclement weather	Stations with sufficient shelter from inclement weather (**shelters and/or transit centres**)
Vehicle type	**Small** capacity, uncomfortable, old and **polluting**, mainly **individually owned**	**High** capacity, comfortable, **non-polluting, owned/leased** by operating company(ies)
	No direct removal of old paratransit fleet	Some/all existing paratransit fleet may be **removed or relocated** from the BRT corridor
Service type	**No distinctive operations** of trunk and feeder arrangement	Variety of alternatives (**all stop route(s), limited-stop service, trunk-feeder arrangement**)
	Work on **daily profit** and no social protection, fierce **competition among operators**,	**Social protection benefits** for operators, no competition among operators
Fare collection	Revenue based on the **number of collected passengers**, **cash-based** collection	Revenue based on **travelled distance**, **prepaid, digital fare collection** system
System type	**Lack of gov. support**, male-dominated, reckless driving, insecure and unsafe	Intelligent system with technology to enhance **safety, comfort and reliability**

Source: Asimeng & Jauregui-Fung, forthcoming

Evolution of BRT worldwide



Source: BRTData, 2024

Why has the BRT momentum decreased?

Many local governments have struggled to face 4 main challenges to phase-in (and also perform and expand) BRT in their cities:

Design of BRT components

Institutional and legislative restructuring

Management of competing modes

Funding

This is particularly the case in cities with **low transit regulations.**

One co-benefit: transit-oriented development

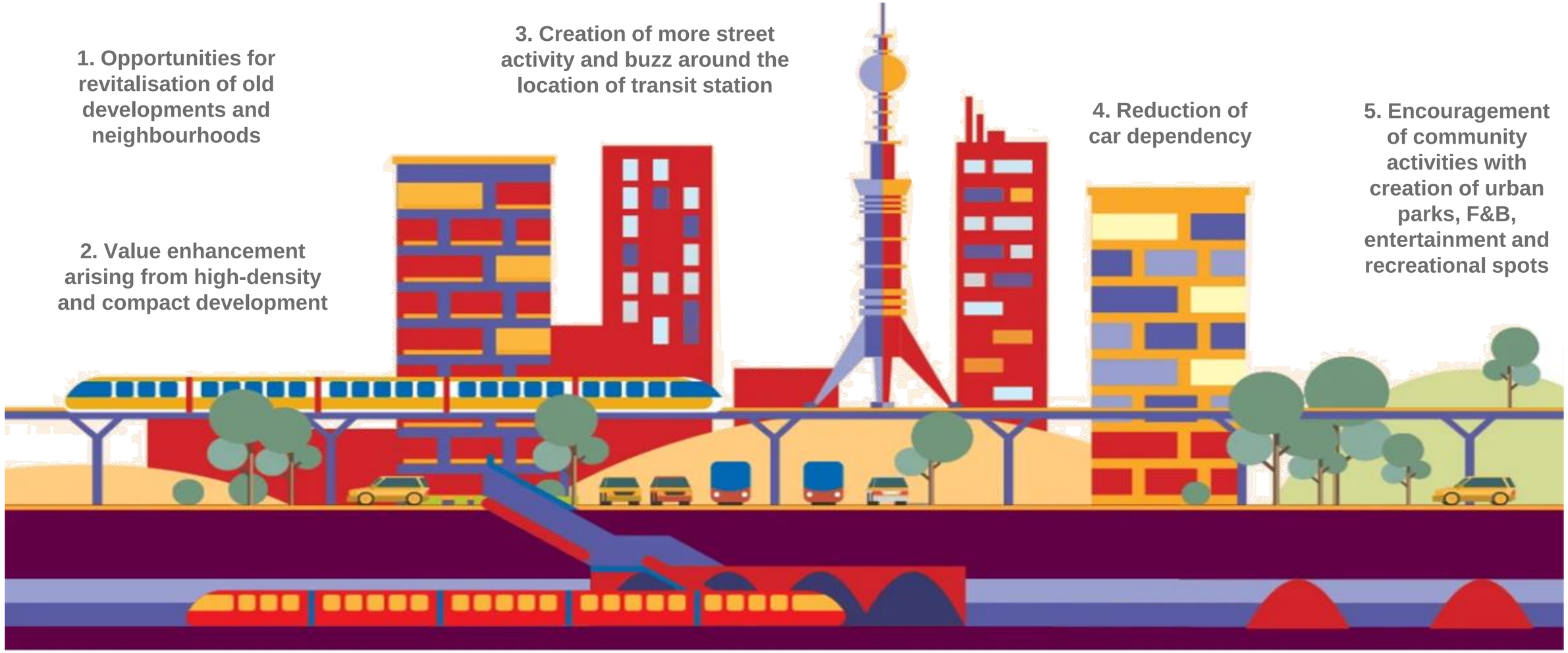
1. Opportunities for revitalisation of old developments and neighbourhoods

2. Value enhancement arising from high-density and compact development

3. Creation of more street activity and buzz around the location of transit station

4. Reduction of car dependency

5. Encouragement of community activities with creation of urban parks, F&B, entertainment and recreational spots



Source: Chew (2018).

BRT systems: A more affordable solution?

It is proven that rail-based systems generate land value uplift around stations and shape city growth, especially when combined with TOD policies…

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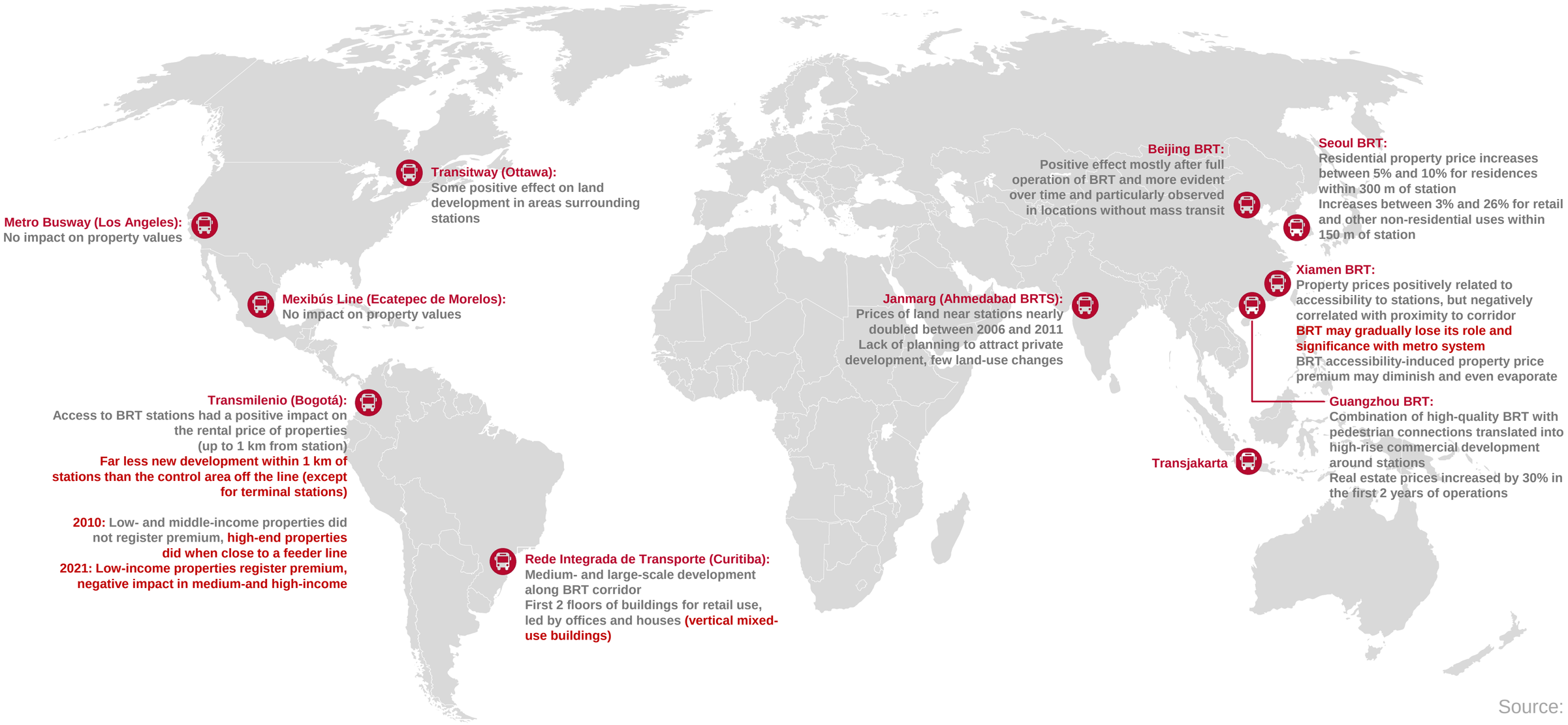
…but is it also possible that BRT systems can generate a similar land value uplift?

Experiences in BRT-related value uplift



Transitway (Ottawa):
Some positive effect on land development in areas surrounding stations

Metro Busway (Los Angeles):
No impact on property values

Mexibús Line (Ecatepec de Morelos):
No impact on property values

Transmilenio (Bogotá):
Access to BRT stations had a positive impact on the rental price of properties (up to 1 km from station)
Far less new development within 1 km of stations than the control area off the line (except for terminal stations)

2010: Low- and middle-income properties did not register premium, **high-end properties did when close to a feeder line**
2021: Low-income properties register premium, negative impact in medium-and high-income

Rede Integrada de Transporte (Curitiba):
Medium- and large-scale development along BRT corridor
First 2 floors of buildings for retail use, led by offices and houses **(vertical mixed-use buildings)**

Janmarg (Ahmedabad BRTS):
Prices of land near stations nearly doubled between 2006 and 2011
Lack of planning to attract private development, few land-use changes

Beijing BRT:
Positive effect mostly after full operation of BRT and more evident over time and particularly observed in locations without mass transit

Seoul BRT:
Residential property price increases between 5% and 10% for residences within 300 m of station
Increases between 3% and 26% for retail and other non-residential uses within 150 m of station

Xiamen BRT:
Property prices positively related to accessibility to stations, but negatively correlated with proximity to corridor
BRT may gradually lose its role and significance with metro system
BRT accessibility-induced property price premium may diminish and even evaporate

Guangzhou BRT:
Combination of high-quality BRT with pedestrian connections translated into high-rise commercial development around stations
Real estate prices increased by 30% in the first 2 years of operations

Transjakarta

Source: Author

DKI Jakarta as a case study

10.56 million people. 14,464 people per km2

Greater Jakarta: 31.5 million people

Transjakarta: 251.2 km (2004)

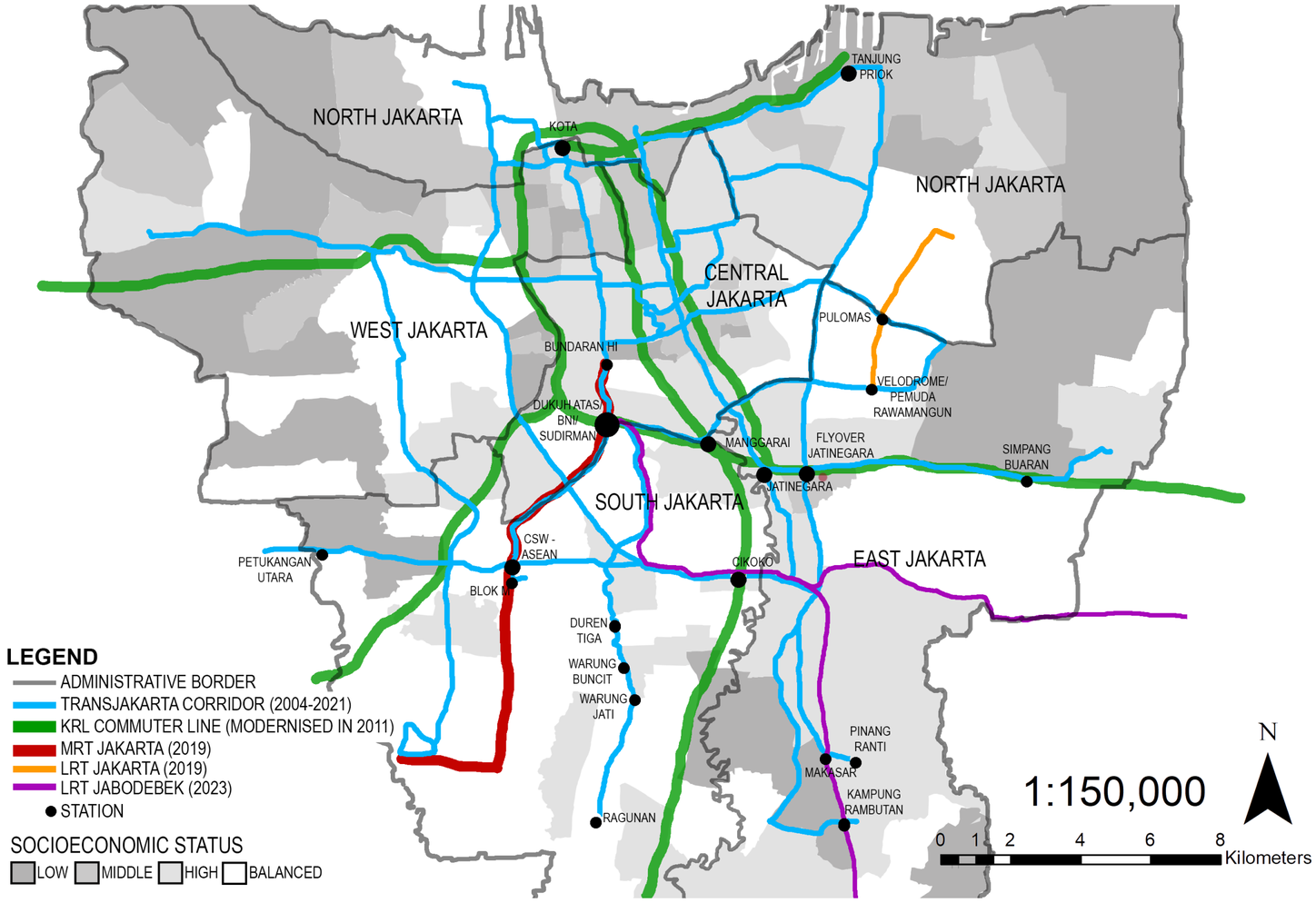
MRT: 1 line 15.7 km (2019) out of 159.7

LRT: 5.8 km (2019) out of 143 km

LRT Jabodebek: 44.5 km (2023)

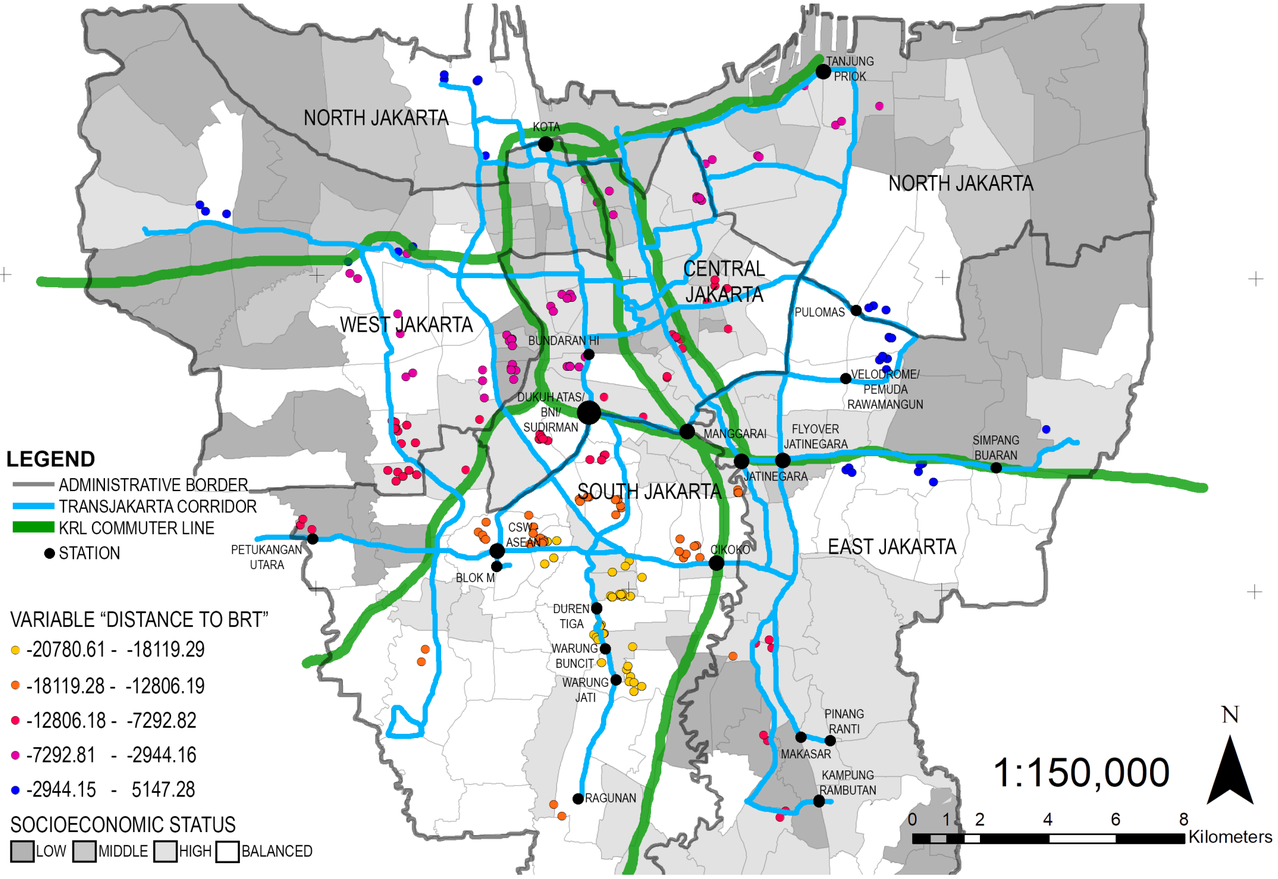
KRL Commuter line: 418 km (6 lines)
Modernised since 2011

776 motorcycles and 267 cars per 1000 people



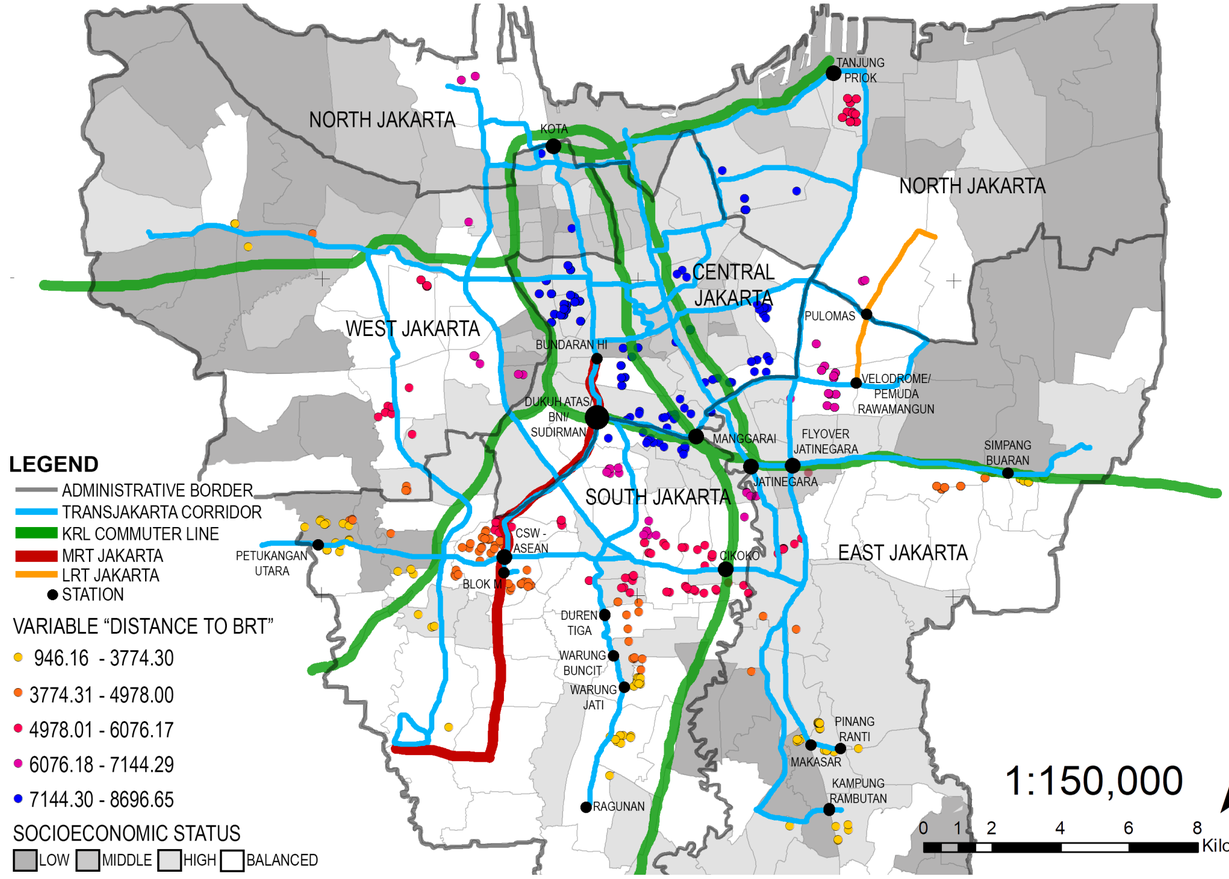
Impact of Transjakarta on residential land values

Transjakarta: 2017



The closer distance of a property to a Transjakarta station, the higher the transaction value

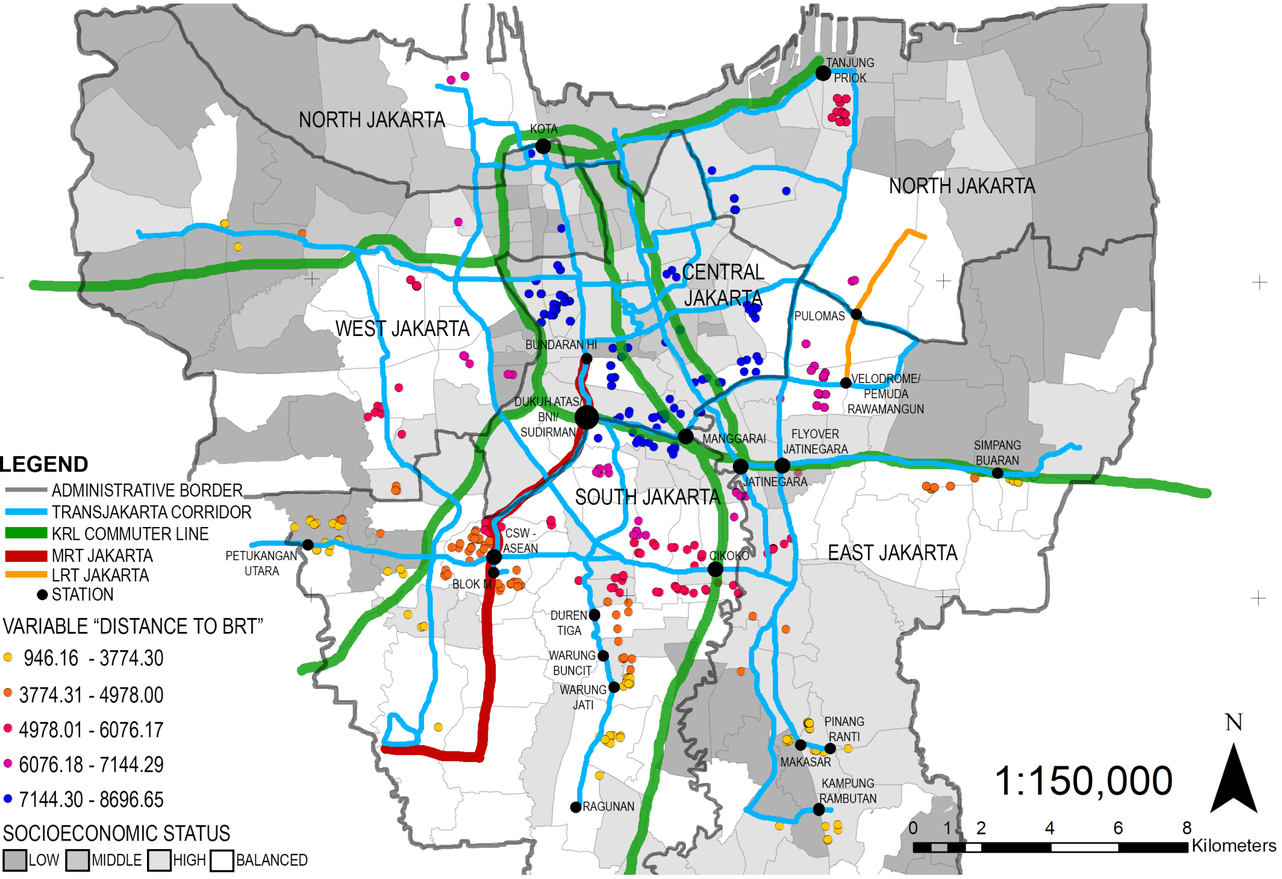
Transjakarta: 2021



The closer the distance of a property to a Transjakarta station, the lower the transaction value

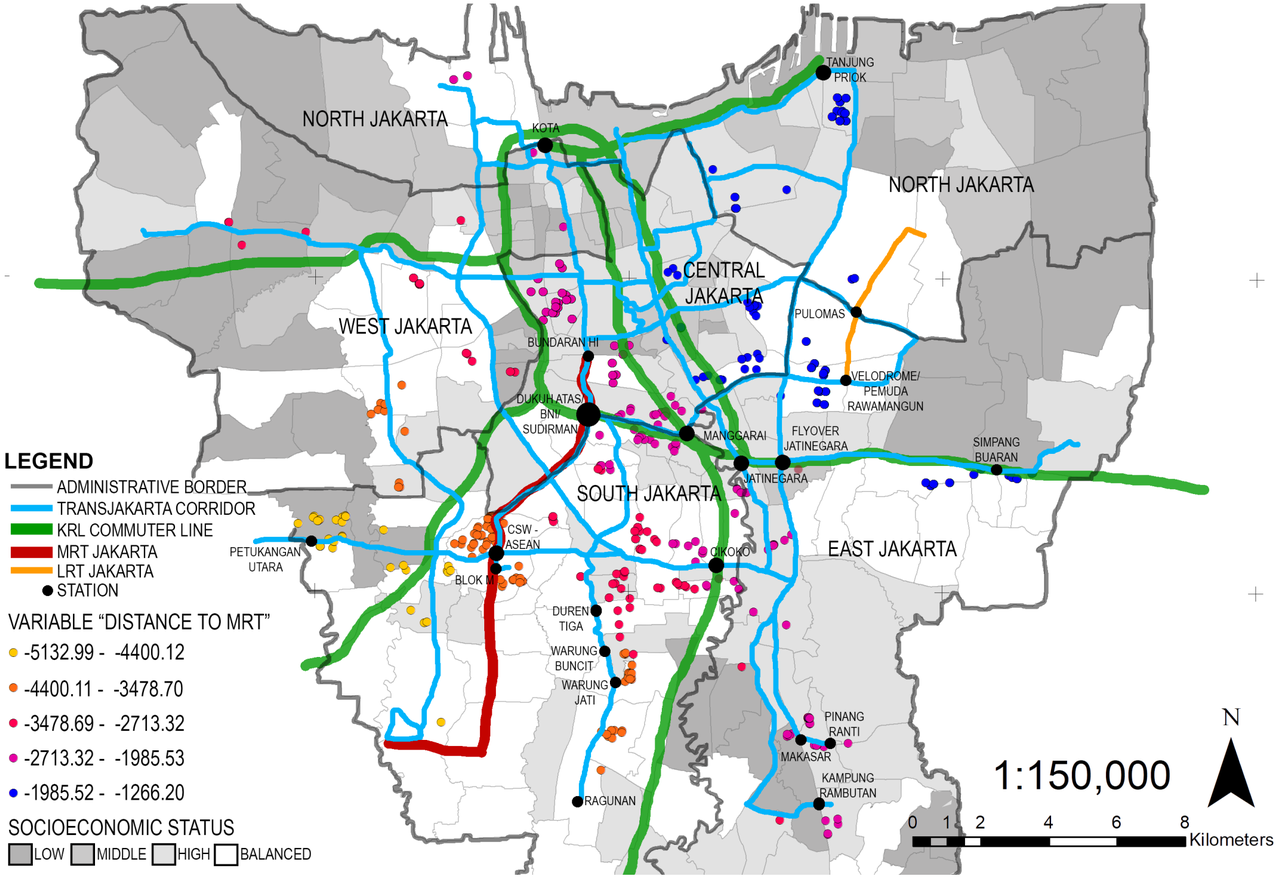
Impact of Transjakarta vs MRT Jakarta

Transjakarta: 2021



The closer the distance of a property to a Transjakarta station, the lower the transaction value

MRT Jakarta: 2021



The closer the distance of a property to a MRT Jakarta, the higher the transaction value

Research question

Previous study: similar to existing literature in other regions, Transjakarta stations are less attractive for land value uplift compared to rail stations

RQ: In cities with more than one mass transit system, can multimodal integration generate greater co-benefits on the urban environment and create more active and lively areas for sustainable urban development?

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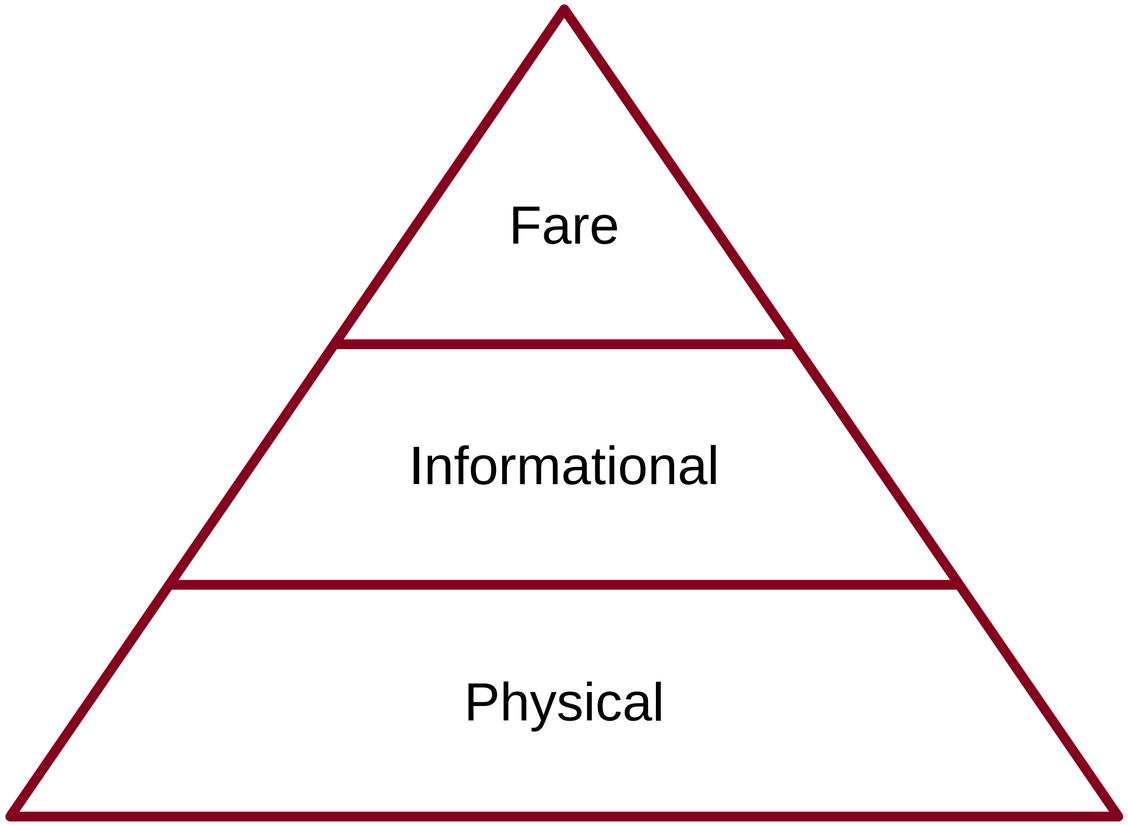
Relevance of multimodal integration



Methodology

(1) Semi-structured interviews with experts to gather their views on the importance of intermodal integration, transit-oriented development and the role of Transjakarta within the city's transformation towards mass transit

(2) Analysis of six stations to provide examples of intermodal integration and the relationship between Transjakarta with the railway services and the urban environment

Semi-structured interviews with local experts

1. **Intermodal integration of mass transit services**
   a. Competition vs complement?
   b. Good examples vs missed opportunities
   c. Prospects vs challenges

2. **Opportunities for TOD**
   a. Only for rail services?
   b. Areas with greater potential
   c. Regulations and challenges

3. **The role of digital technologies and platforms**
   a. Importance for mass transit integration
   b. Future innovations to enhance intermodal integration

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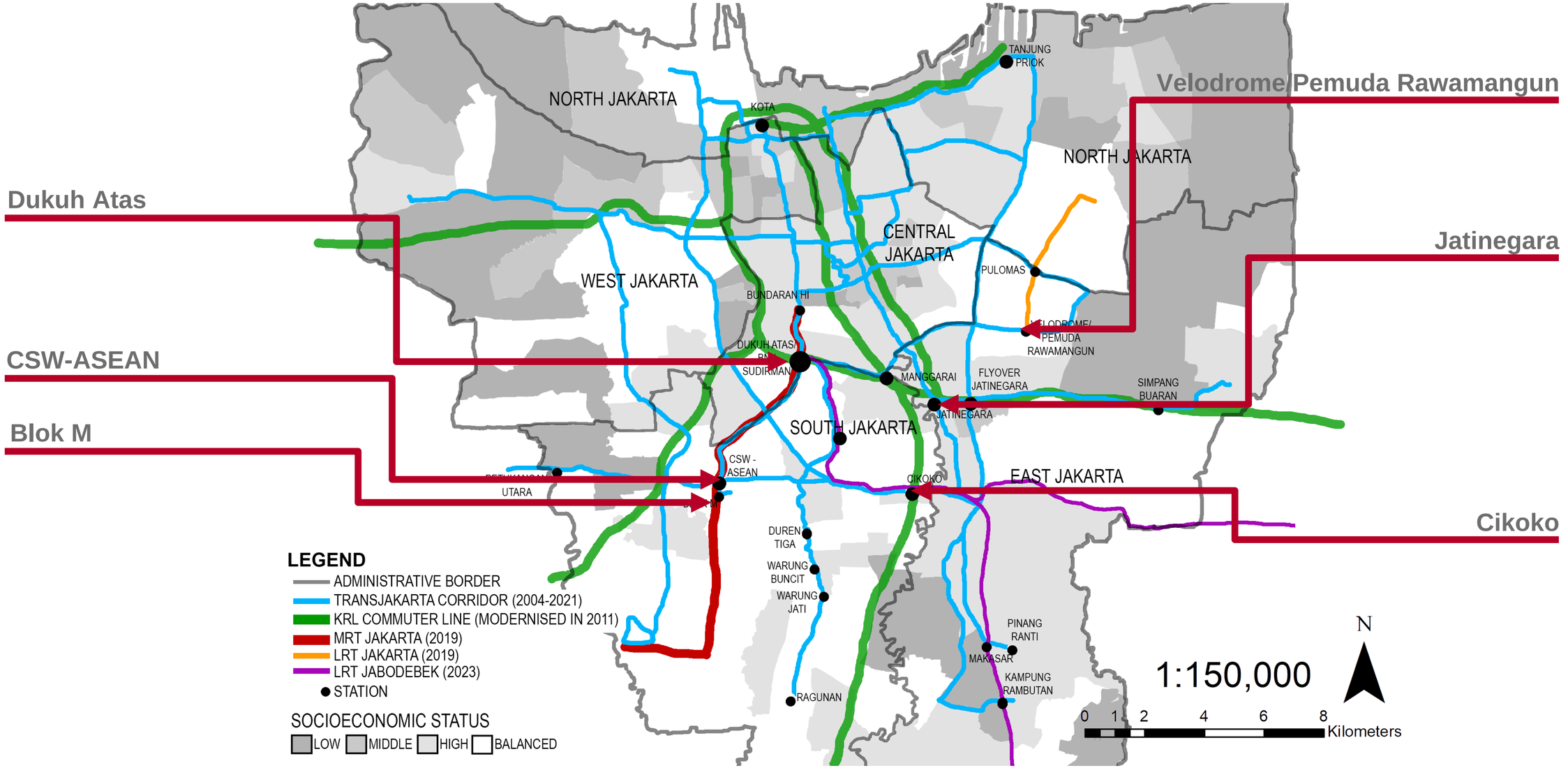
Semi-structured interviews with local experts

Experts interviewed (5 interviews, 7 experts)

Scheduled interviews (5 interviews, 10 experts)

Analysis of selected intermodal stations



Analysis of selected intermodal stations

1. Land uses within a radius of 800 metres
2. Access to the station from the street and surrounding buildings
3. Presence of sidewalks
4. Walking distance for transfer
5. Street design, public space and amenities
6. Activities and flow of passengers
7. Legibility and wayfinding

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Preliminary results

- Jakarta is heavily investing in mass transit and changing the urban mobility system from a tire-based system to a rail-based oriented
- There has been a change in the implementation of multiple mass transit systems towards intermodal integration
- Transjakarta is understood as a connector service to increase the accessibility to the rail services
- The future of Jakarta will focus on improving the integration of the current and future mass transit systems

Preliminary results

- There are still several challenges for a seamless physical integration
- Stations in South Jakarta (MRT Jakarta, LRT Jabodebek) have a achieved a better integration in comparison with stations in the North and East (Commuter line, LRT Jakarta)
- Different users profiles for Transjakarta vs rail services, lack of interest in developing around Transjakarta stations
- TOD is still understood as station-based only, lack of impact around station areas and surroundings
- Too many digital platforms and cards, lack of seamless informational integration

Planned activities

- Continue with scheduled interviews
- Contact additional experts
- Review transcripts and start coding
- Collect data for selected stations
- Map and analyse selected stations

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Thank you for listening!
Questions? Comments?

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