

IAP-SPEC Conference
How Can Science and Technology Contribute to
the Reduction of Poverty and Inequality
Session 7: Tackling Poverty and Inequality

Knowledge related to urban mobility and a more just society

Romulo Orrico
COPPE/UFRJ – Transportation Engineering Program

March/2019
Rio de Janeiro, Brazil

Goals

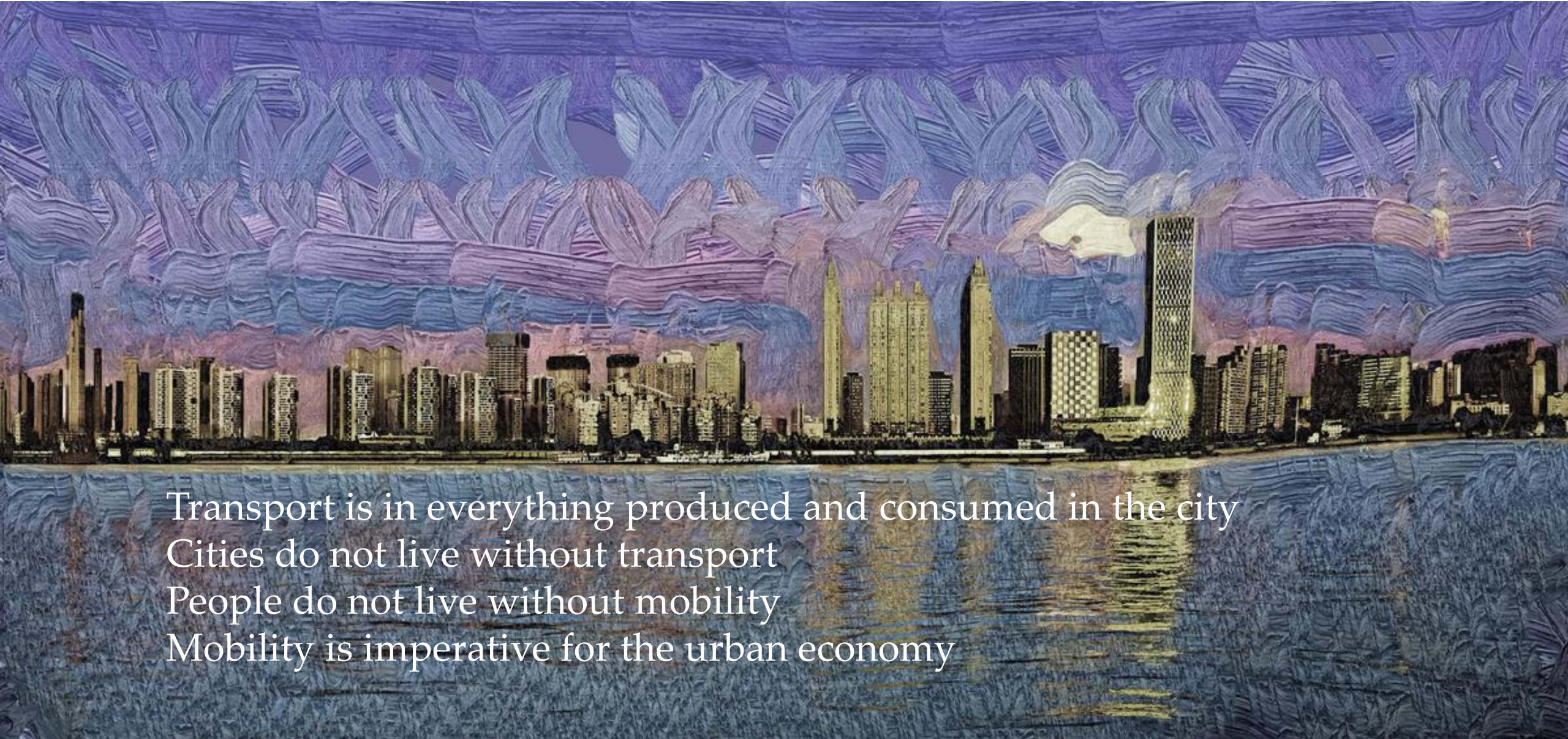
Show how knowledge related to urban mobility conditions is a powerful resource to promote a more equitable society, by means of three simple questions

Where are we?

Where are we going?

What can we do to change the current situation?

The city is the greatest human invention since the wheel.



Transport is in everything produced and consumed in the city
Cities do not live without transport
People do not live without mobility
Mobility is imperative for the urban economy

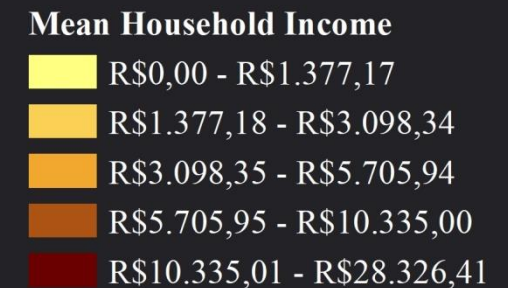
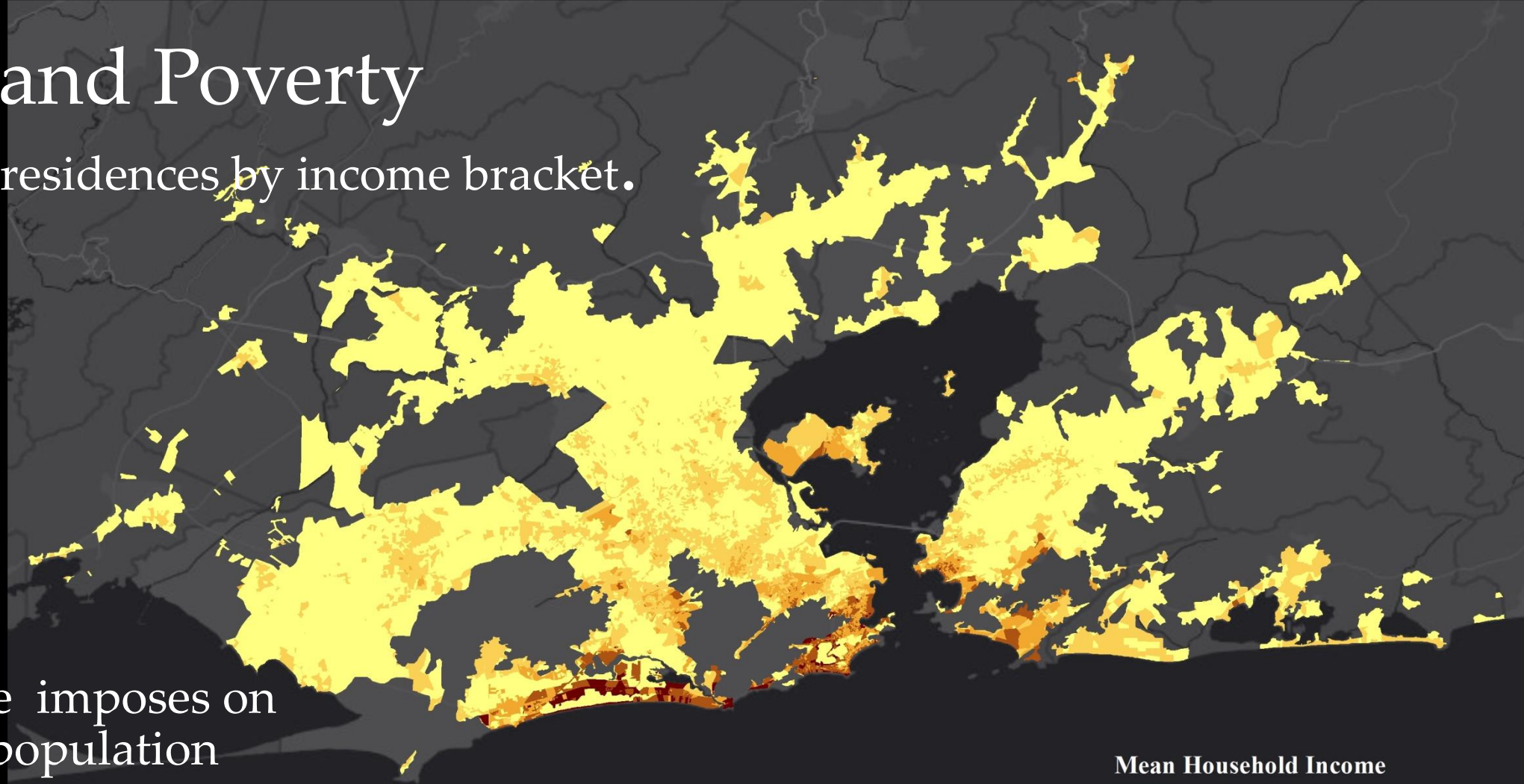
Where are we?

Mobility and Poverty

Distribution of residences by income bracket.

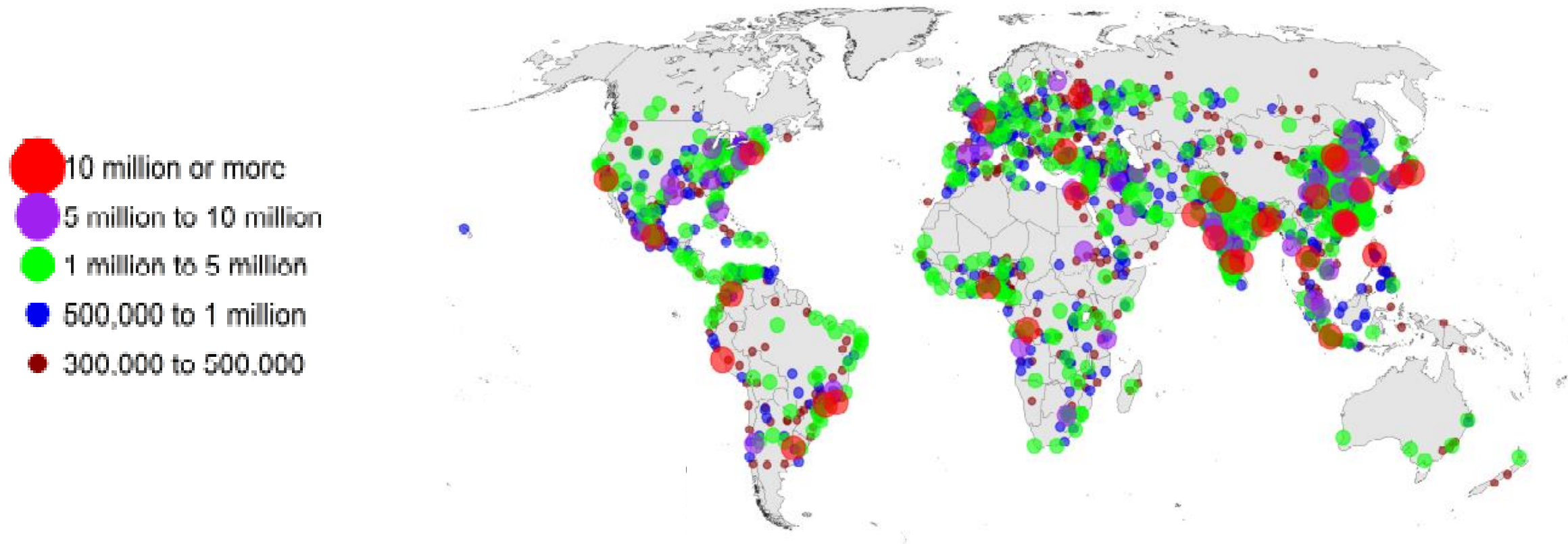
Adverse land use imposes on the low-income population

- Increased travel requirements
- Longer trips
- Longer journey times



Cities over 200,000 inhabitants, 2018

Map I. Population of cities by size class, 2018



Metropolises in Latin America with more than 1 million inhabitants

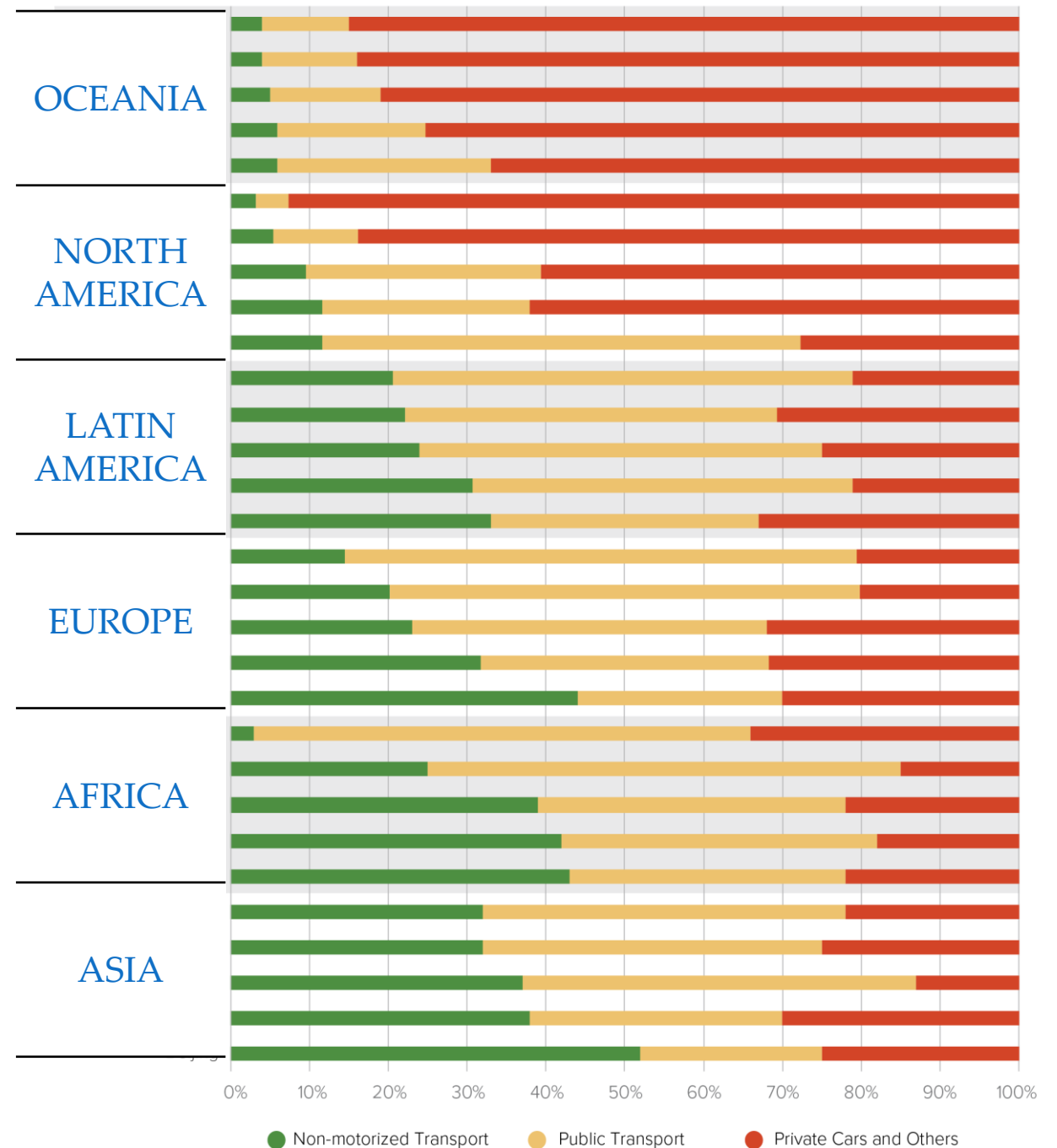
These 68 metropolises congregate 35% of the region's population

Country	Number of Metropolises	Population
Brazil	26	93,270,425
Mexico	12	44,955,208
Colombia	6	20,283,848
Venezuela	5	11,940,627
Argentina	4	17,723,657
Honduras	3	2,475,000
Bolivia	3	5,063,403
Ecuador	2	5,605,489
Peru	1	9,904,727
Paraguay	1	2,482,760
Chile	1	6,683,852
Guatemala	1	2,918,000
Uruguay	1	2,059,988
El Salvador	1	1,098,000
Costa Rica	1	1,324,000
Total	68	227,788,984

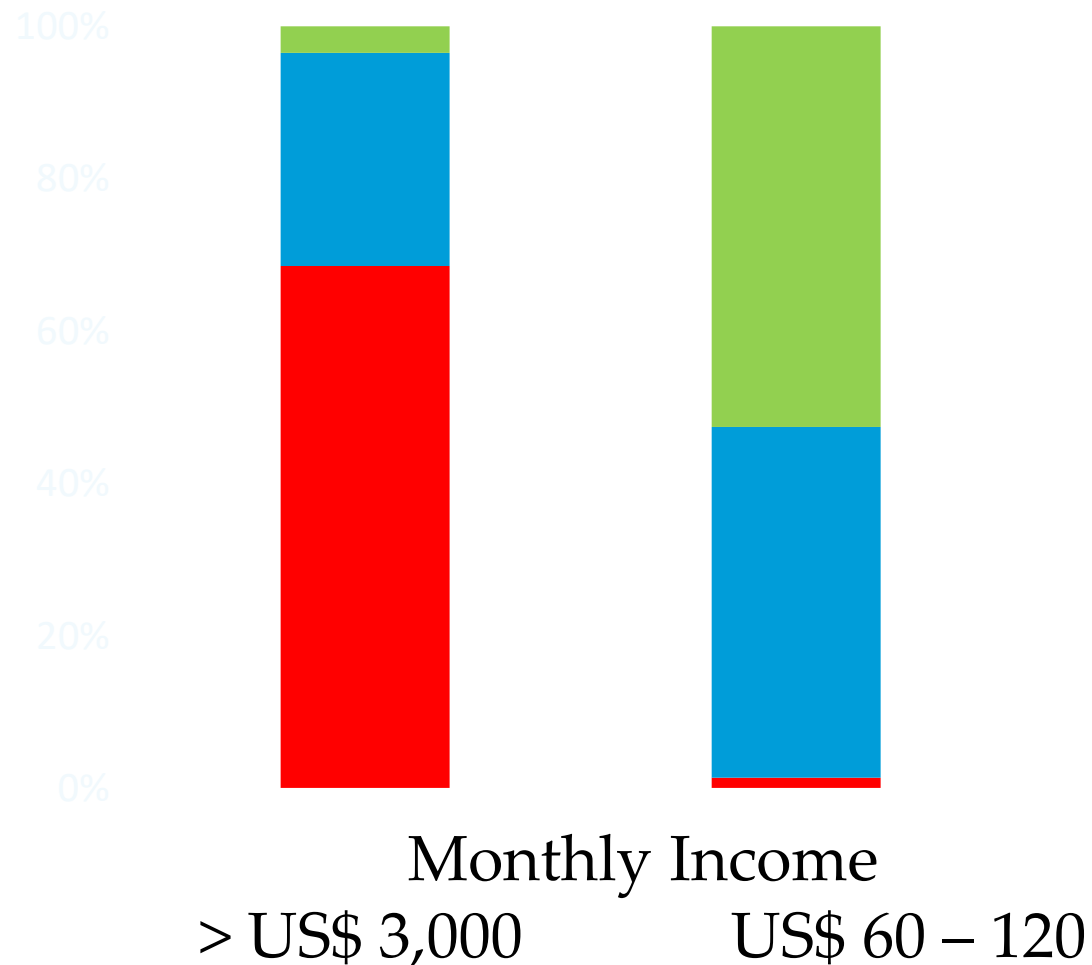
Modal Share around the world

The 5 biggest
agglomerations
in each continent

Non-motorized
Public Transport
Passenger cars



Mobility is also different inside the metropolis



Rio de Janeiro, 2003

Modal share on work commute for two groups of monthly income

- Rich: 96.5% of trips are motorized
- Poor: 52.6% are non-motorized trips

Non Motorized

Public Transport

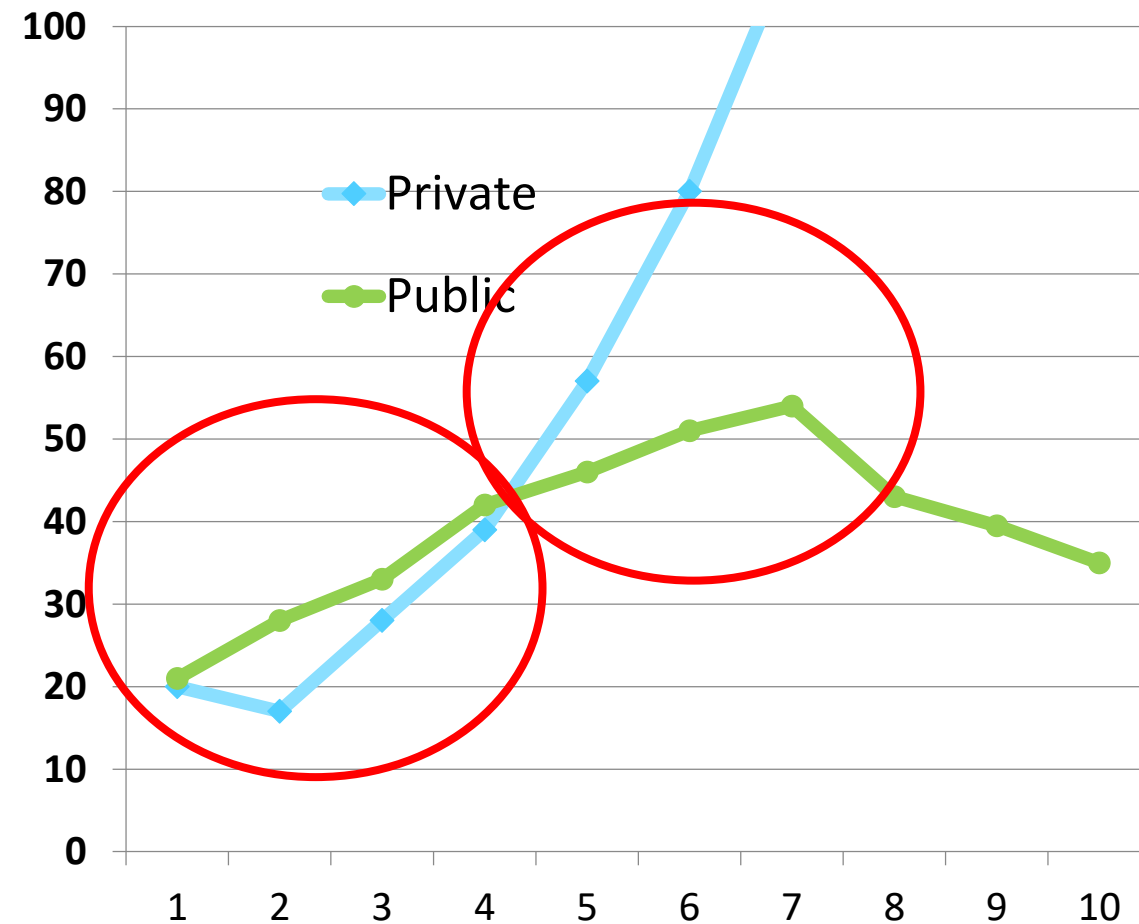
Cars and taxis

Lower income families increase expenses in private car trips

Urban Family Transport Expenses (R\$), by Income Decile Category (2009)

Zoom to poorest groups

Belém, Belo Horizonte, Curitiba, Fortaleza, Porto Alegre, Recife, Rio de Janeiro, Salvador and São Paulo.



Source: Carvalho & Pereira (2012), from the POF 2003 and POF 2009 surveys.

Issues Related to Transport Policies in Lat.Am.

Important Characteristics

1. Latin American metropolises are mostly spread out.
2. The sprawling process is largely supported by infrastructure investments in individual modes.
3. Even so, public transport is still the basis of people's mobility in these metropolises.
4. The growth of new urban nodes is as precarious as the observed suburbanization.
5. Despite important changes in the morphology, transport networks still maintain a perverse trend.
6. There is a major difference in the quality of general infrastructure in the central and peripheral areas.
7. Latin American metropolises are not rich.
8. Motorization indices are strongly correlated with family incomes.

Central pillars of the current urban mobility inequality

Planning	Sectorial planning and public transportation network concepts linked to this standard
Funding	Perverse mobility funding and fare policies
Management	Inefficient urban mobility systems management
Social Control	Lack of control and transparency
Environment	Mobility system disconnected from sustainable development

Where are we going?

Urban Mobility and Poverty

Main proposal arising from the theoretical debate

To increase the provision of services, with more moderate fares

This proposition does not lead to an actual transformation, but feeds a vicious circle:

- It reproduces the patterns of transport network organization and operation
- It reinforces inefficient urban growth: downtown hypertrophy & low income households in periphery
- Travel time and cost reductions are necessary, but insufficient to reduce Poverty and Inequality

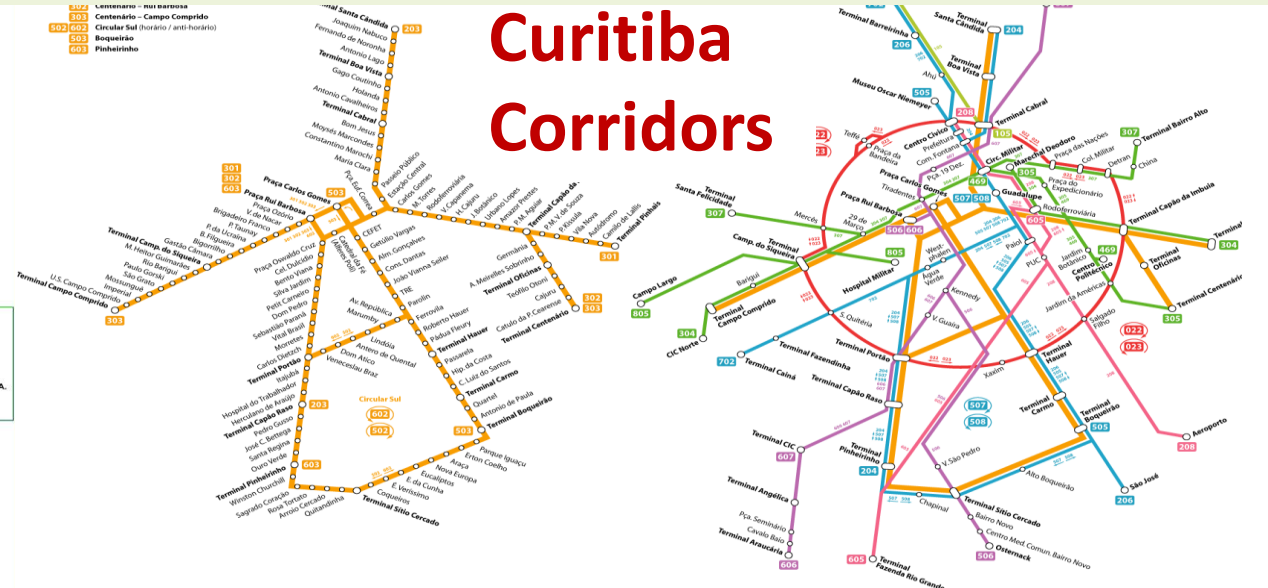
Radial transport networks are part of the old paradigm

Santiago

TranSantiago



Curitiba Corridors



Bogotá Transmilénio



Cali Mio



Urban sprawling east of Rio de Janeiro 1984 to 2016

Urban sprawling as a
result of car priority
public policies.

It increases urban size,
urban costs, travel
distances, travel times,
and so on.

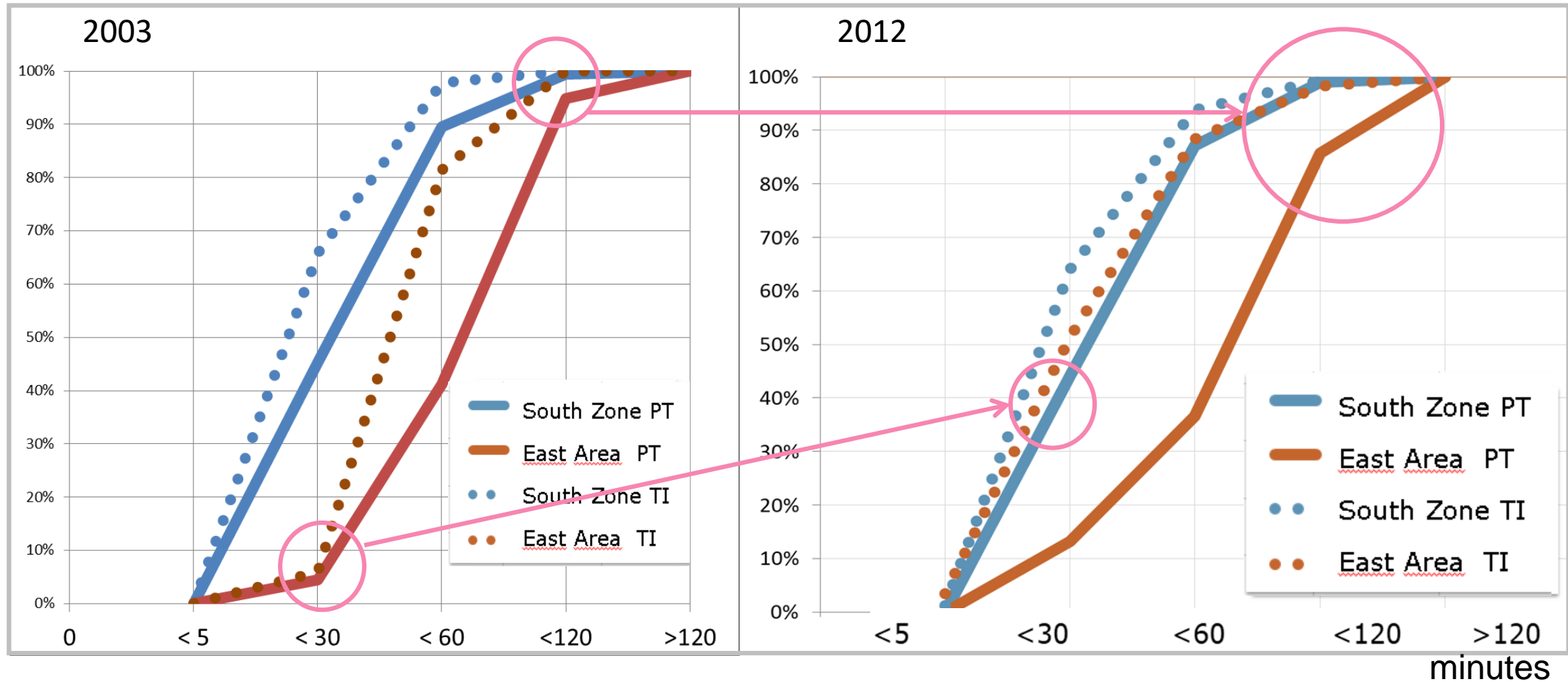
30 years waiting for a
train!

2016

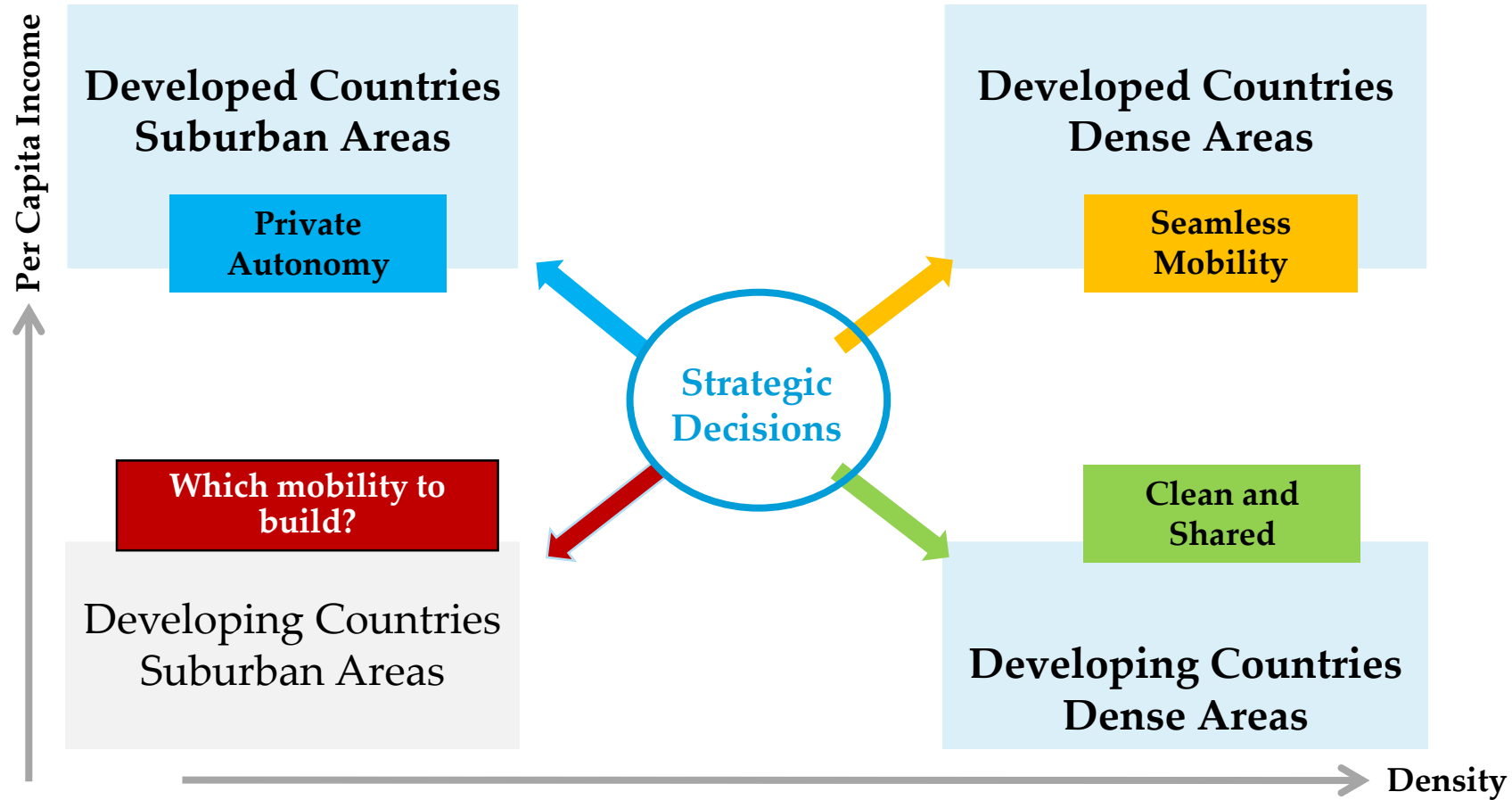


Rio de Janeiro

The cumulative percentage distribution of travel times between 2003 and 2012 shows a perverse tendency



Where to go?



McKerracher, Colin; Tryggestad, Christer *et al.* (2017) An integrated perspective of the future of mobility. McKinsey & Company, Inc. and Bloomberg New Energy Finance.

The challenges

The main challenge to a Metropolitan Area must be to change this process.

Main objectives of Metropolitan Area Strategic Development Plan

- To prevent sprawling
- To strengthen selected urban nodes and their interaction with their satellites
- To promote the economic and social development of the peripheral nodes

Transport Planning Challenges

- To reduce the radial structure of metropolitan trips
- To optimize mobility asset use and future investments
- To change attitudes towards passenger car use

Mobility inclusion as a developing policy for the Reduction of Poverty and Inequality

WHAT? To improve the productivity of mobility in cities

GOALS? To reduce the cost of production and consumption, increase job opportunities, choices and social interaction

FOR WHOM? Poorer segment; main users of public transportation

HOW? Integrating transit and mobility public policies for social inclusion and development

WHY? Extremely high travel times of the poorest group, reduces productivity, quality and family income.

What can we do to change the current situation?

Main Focus

To change and improve transit where we find:



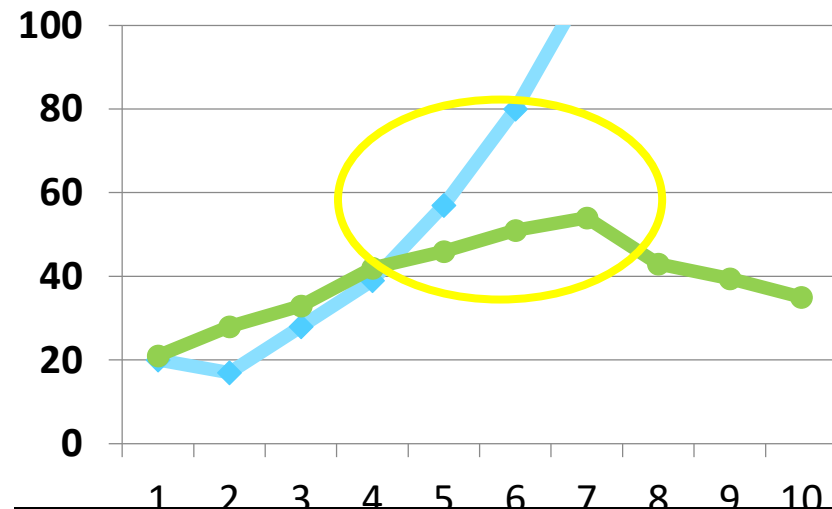
Adverse conditions for NMT



Insufficient use for low-income



Poor supply and quality of services



Car users' potential change

Finally

1. • Redesign the transport network to support the new multi-polar format of modern cities
2. • Increase public transport efficiency and reduce the cost to the population
3. • Take action to redirect the use of automobiles, so that they no longer make demands for more infrastructure
4. • Reorganize the basis of the financing for both infrastructure and operations

The din of the rich drowns the cries of
the poor!

Pope Francis

спасибо

شكرا

tak

谢谢

hvala

gracias

Շնորհակալություն

danke

obrigado

благодаря

ありがとう

thank you

감사합니다

תודה

ευχαριστώ

धन्यवाद

faleminderit

merci

ngiyabonga

grazie

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) and by the National Council for Scientific and Technological Development (CNPq), Brazil

Romulo Orrico

Coppe/UFRJ – Rio de Janeiro, Brazil
romulo@pet.coppe.ufrj.br