

# National Urban Transport Policy & Finance Best Practice Research:

## Comparative Analysis of Rapid Transit Growth, Investment & Access

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# 1 Comparative Analysis of Rapid Transit Growth, Investment, & Access



# 2 Bottom-Up Analysis of Financing for BRT, LRT, & Metro Projects



# 3 Top-Down Analysis of National Policies, Programs, and Regulations



# 1 Comparative Analysis of Rapid Transit Growth, Investment, & Access

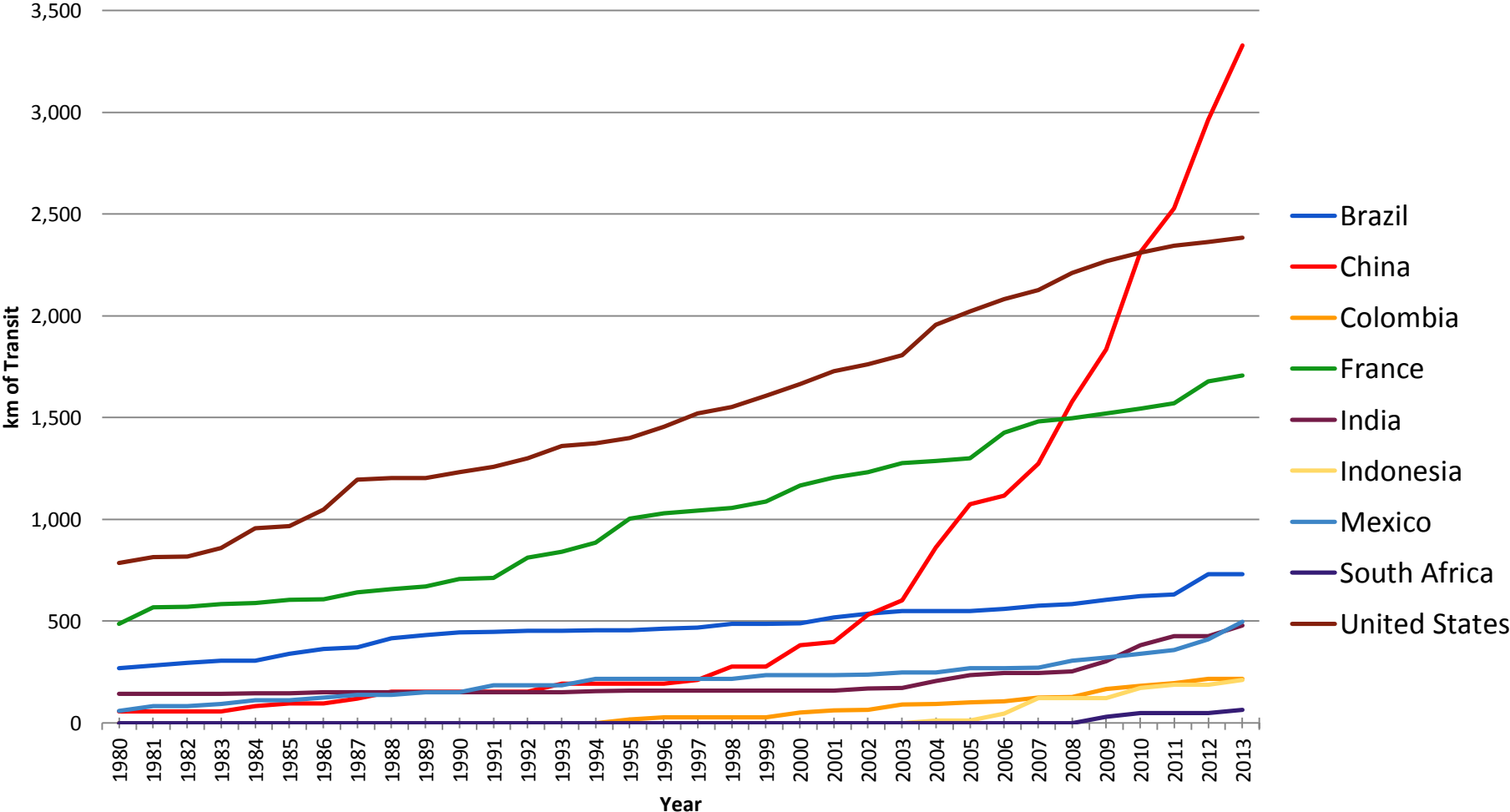


## Objective

- ◆ Create a common comparison of urban rapid transit access across very different contexts and countries
- ◆ Empirically evaluate when, where, and how countries have grown their urban rapid transit
- ◆ Determine the policies and investment strategies that made these successes possible and promote them everywhere.

# Growth of Rapid Transit in Kilometers, 1980-2013

Figure 1: Growth in Kilometers of Rapid Transit 1983-2013



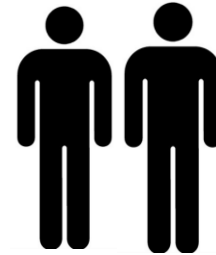
# Rapid Transit to Resident Ratio (RTR ratio)



Kilometers of  
Mass Rapid  
Transit



Urban  
Residents



$$\text{RTR} = \frac{\text{Kilometers of Mass Rapid Transit}}{\text{Millions of Urban Residents}}$$

*Example:*

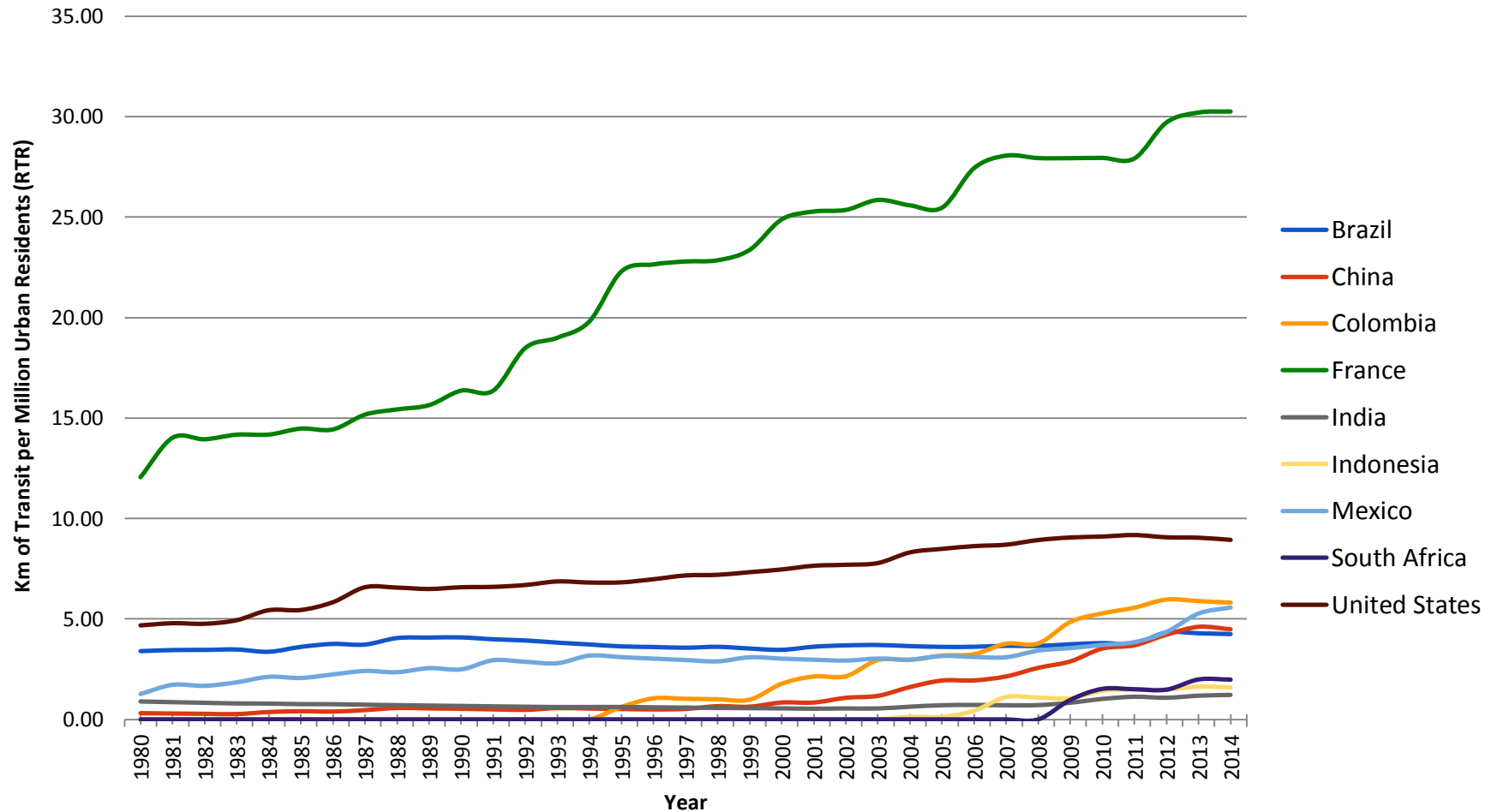
$$\text{BRAZIL RTR} = \frac{456 \text{ km Metro} + 275 \text{ km BRT}}{171 \text{ Million of Urban Residents}} = \text{RTR 4.3}$$

**2013**

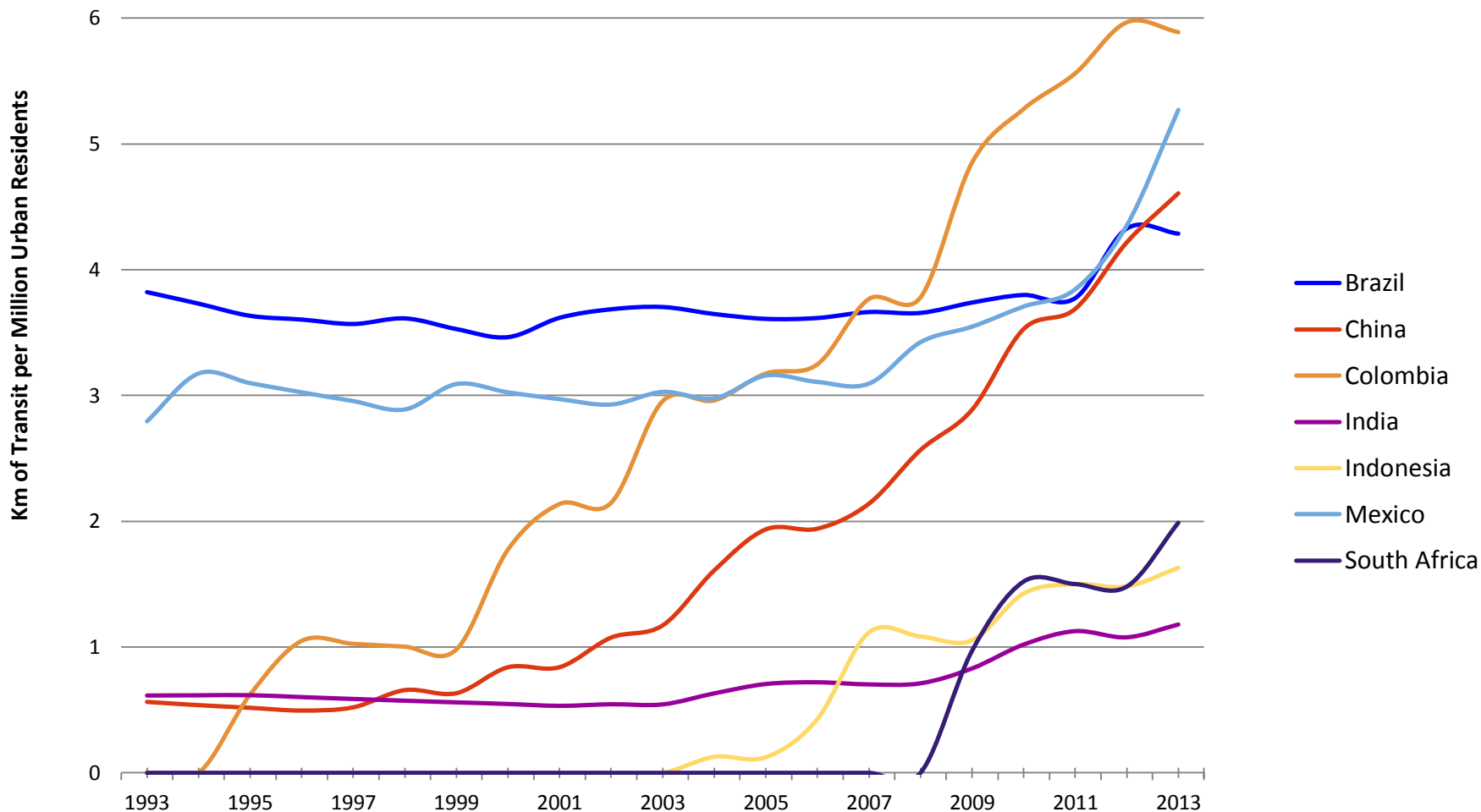
*That is to say, Brazil has 4.3 km of MRT for every million urban residents*

# Growth of Rapid Transit per Urban Resident, 1980-2013

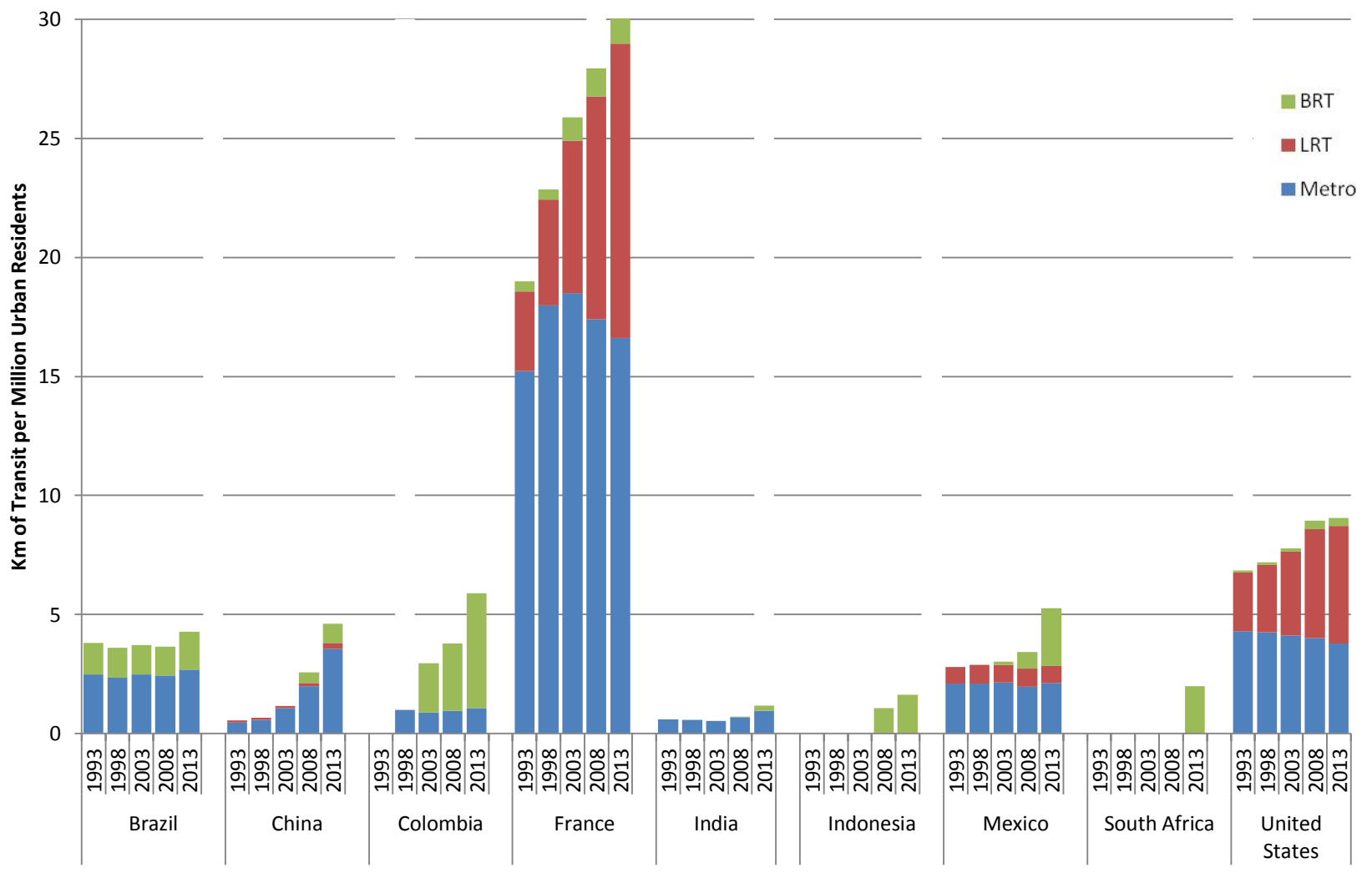
Figure 3: Growth in Kilometers of Rapid Transit per Urban Resident (RTR) 1983-2013



# Zoom In: Growth of Rapid Transit per Urban Resident for 7 developing countries, 1993-2013

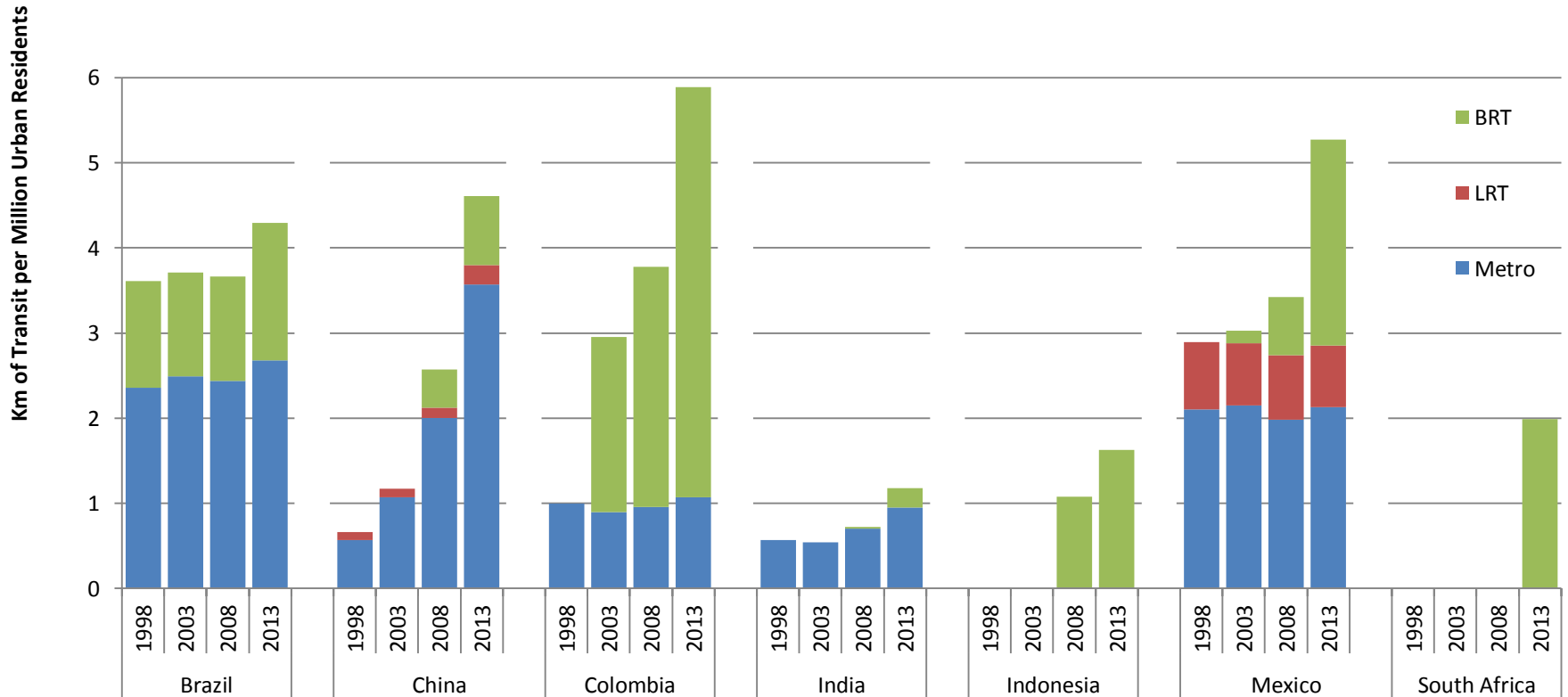


# Growth in RTR Ratio by Country and Mode, 1993 - 2013

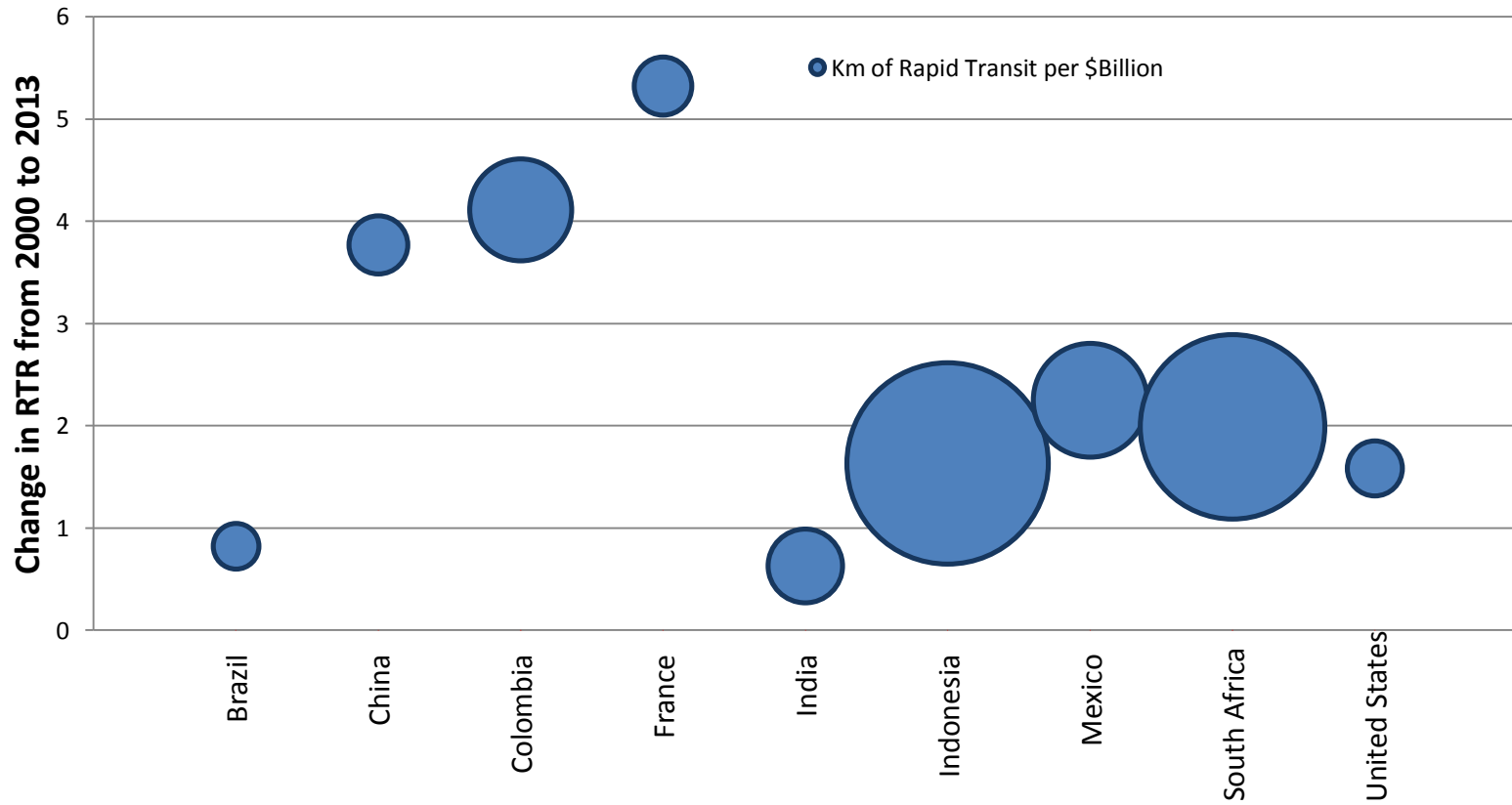




# Zoom In: Developing Countries' Growth in RTR by Mode, 1998-2013

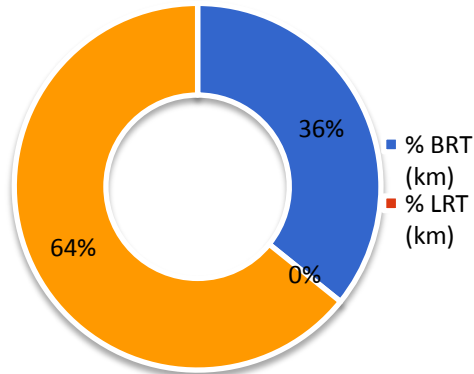


# Growth of Transit Compared to Investment Costs per Kilometer

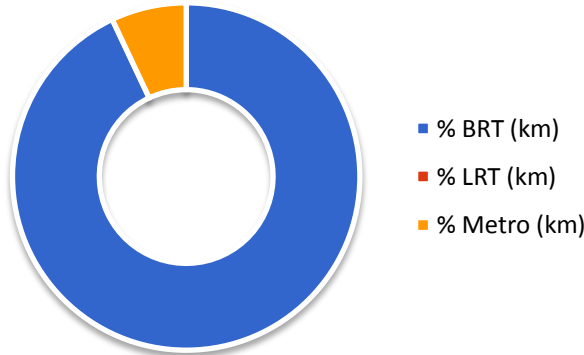


# Comparative Kilometers Built and Transit Spending by Mode, 2000-2010

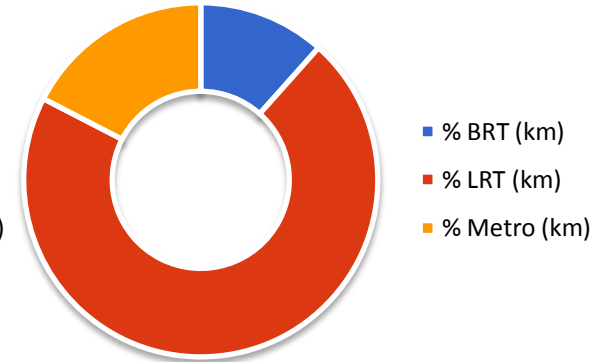
**Brazil: Kilometers of Urban Transit by Mode**



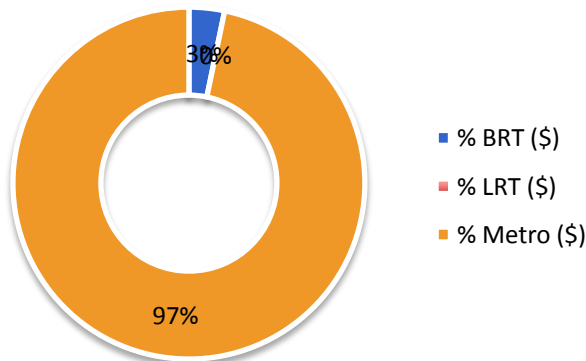
**Colombia: Kilometers of Urban Transit by Mode**



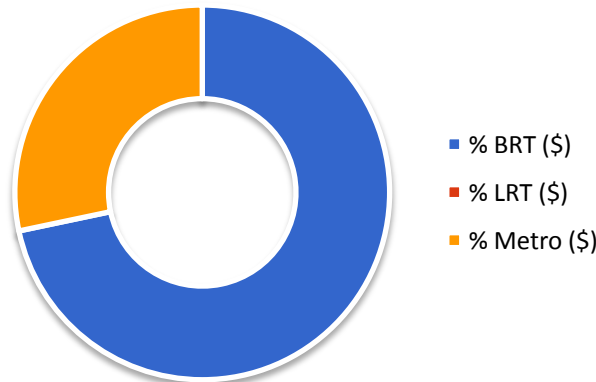
**France: Kilometers of Urban Transit by Mode**



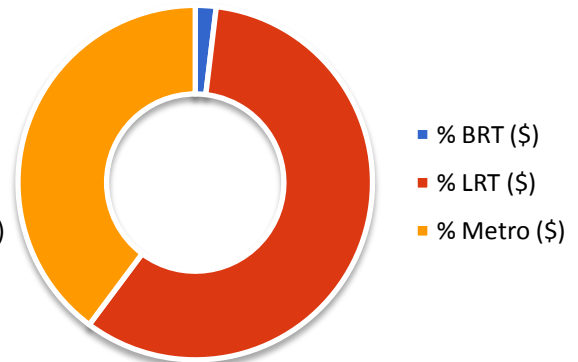
**Brazil: Urban Transit Spending by Mode**



**Colombia: Urban Transit Spending by Mode**



**France: Urban Transit Spending by Mode**



# Example of Implications: Brazil

**2013 RTR: 4.3 km** of rapid transit per million urban residents

**Benchmark Goal: 10 km** per million urban resident

This Requires:

**Building 1060 km of Rapid Transit** beyond 2013 levels.

- 100% BRT: **USD \$11 billion**
- 100% Metro: **USD \$176 billion**
- 35% BRT, 65% Metro: **USD \$118 billion**

Costs based on observed current average costs for constructing BRT and Metro currently in Brazil. BRT is less than 1/10<sup>th</sup> the cost of Metro in Brazil!

# CONCLUSIONS

## 1 Comparative Analysis of Rapid Transit Growth, Investment, & Access



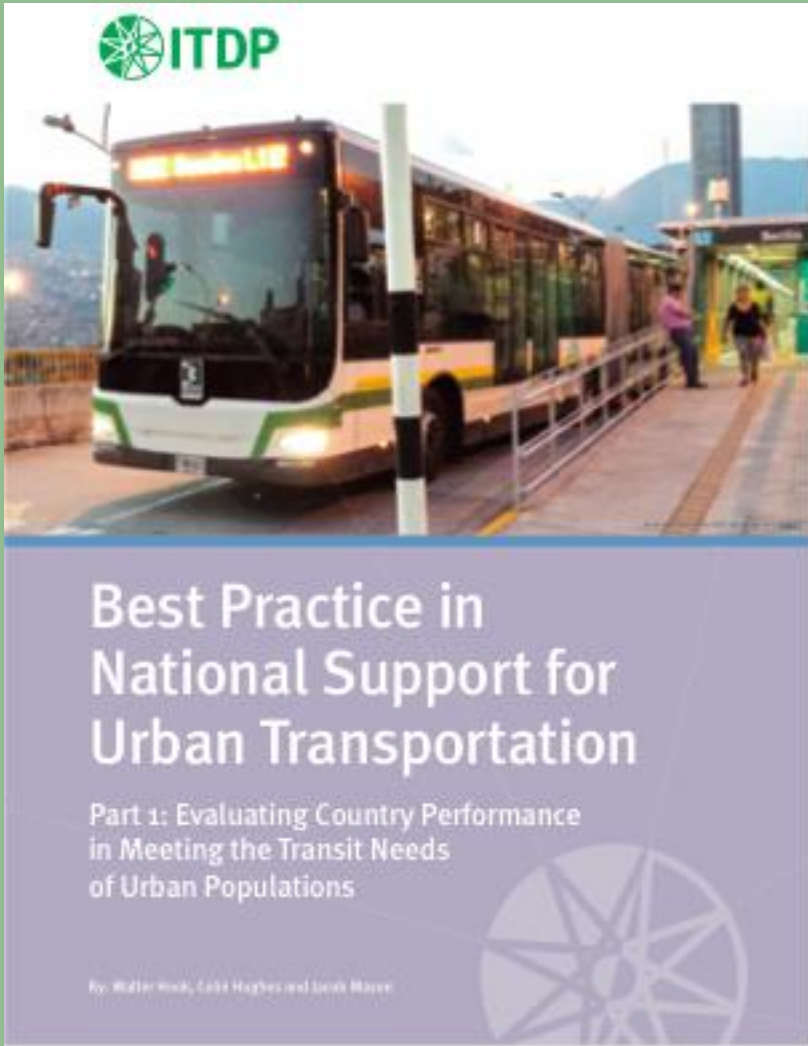
**Colombia** shows that a country can rapidly increase its amount of rapid transit per capita at reasonable cost with BRT and national policy support.

**India** shows that a country can spend billions on metros and not make a dent.

**China:** Rapid metro development possible...but very expensive.

**Brazil** follows Colombia's lead with national policy and rapid BRT expansion 2013-2016.

**France** has the highest RTR in sample with 30 due to continued investment over decades.



Full text of Section 1 available to download on [www.itdp.org](http://www.itdp.org)

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