

GENERAL INTRODUCTION

WELCOME + INTRODUCTIONS

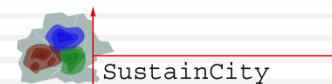
K.W. AXHAUSEN, ETHZ, ADMINISTRATIVE COORDINATOR

A. DE PALMA, ENSC, SCIENTIFIC COORDINATOR

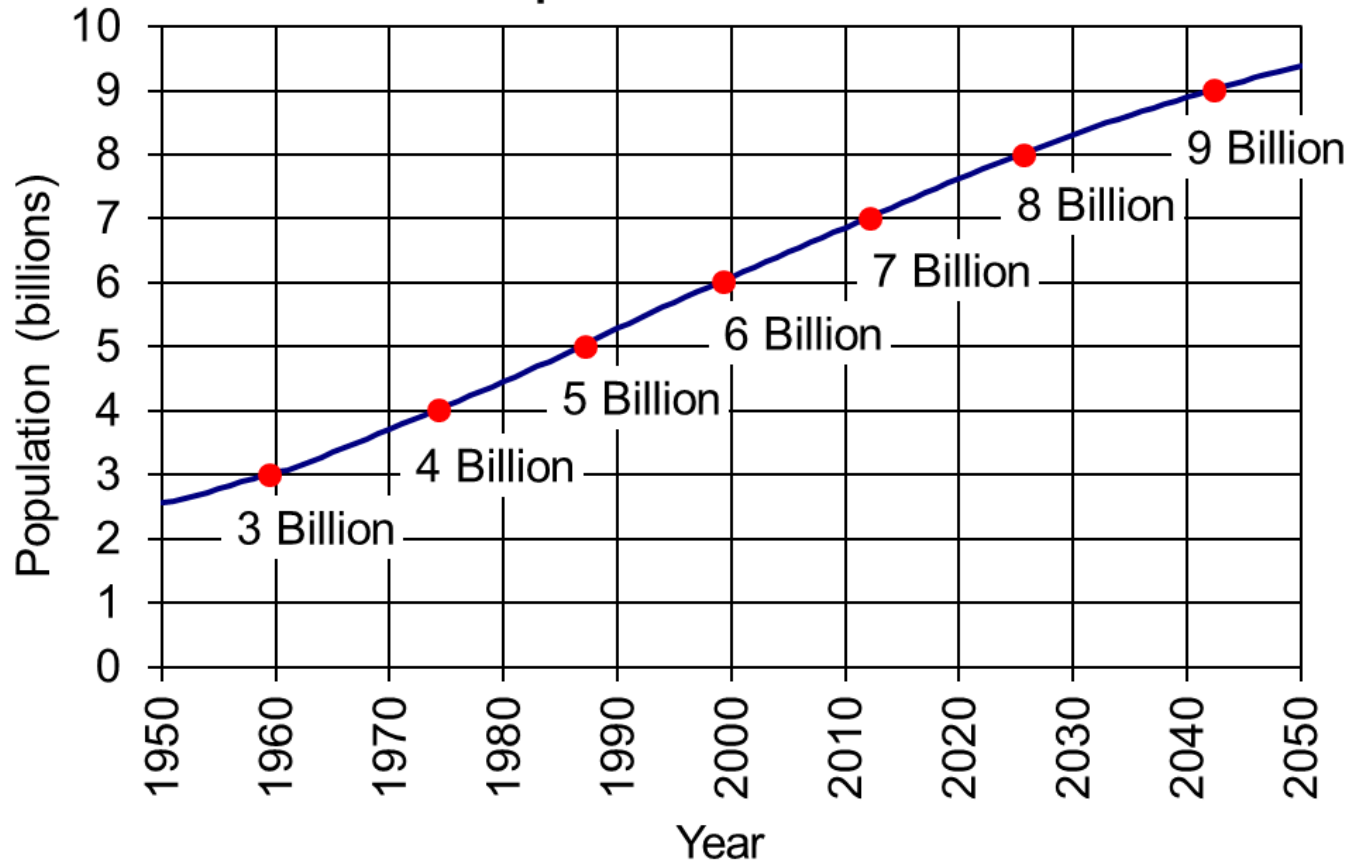
Zurich, ETHZ, April 17, 2013

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Growth in the world

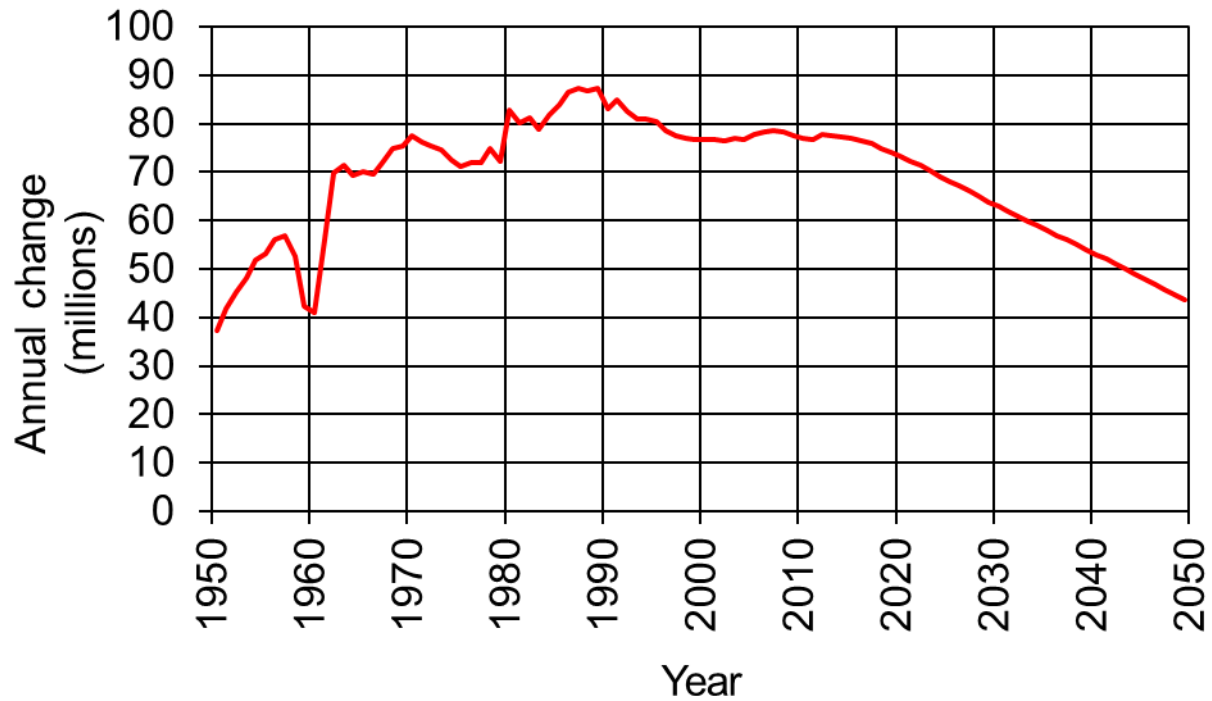


World Population: 1950-2050



Source: U.S. Census Bureau, International Data Base, June 2012 Update.

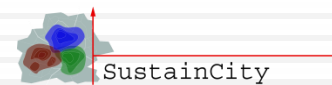
Annual World Population Change: 1950-2050



Source: U.S. Census Bureau, International Data Base, June 2012 Update.

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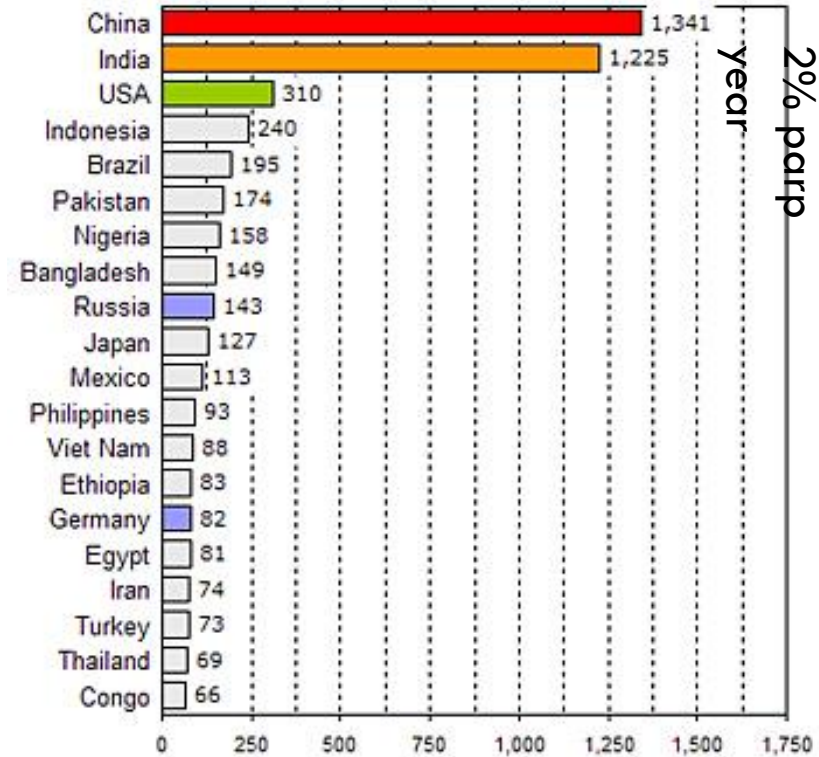
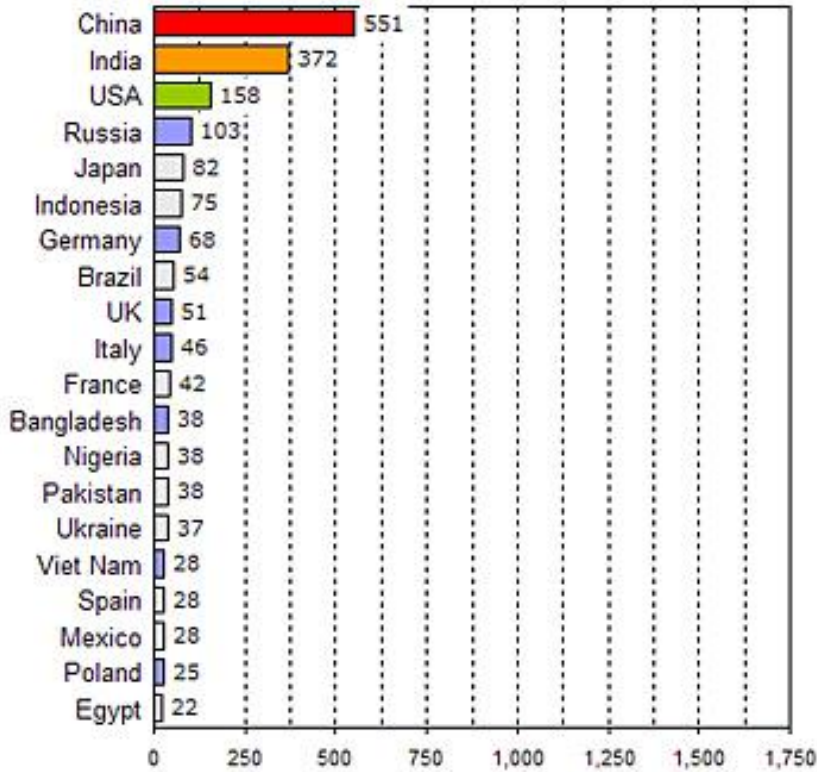
Rankings



Population of most populated regions

1950

2010

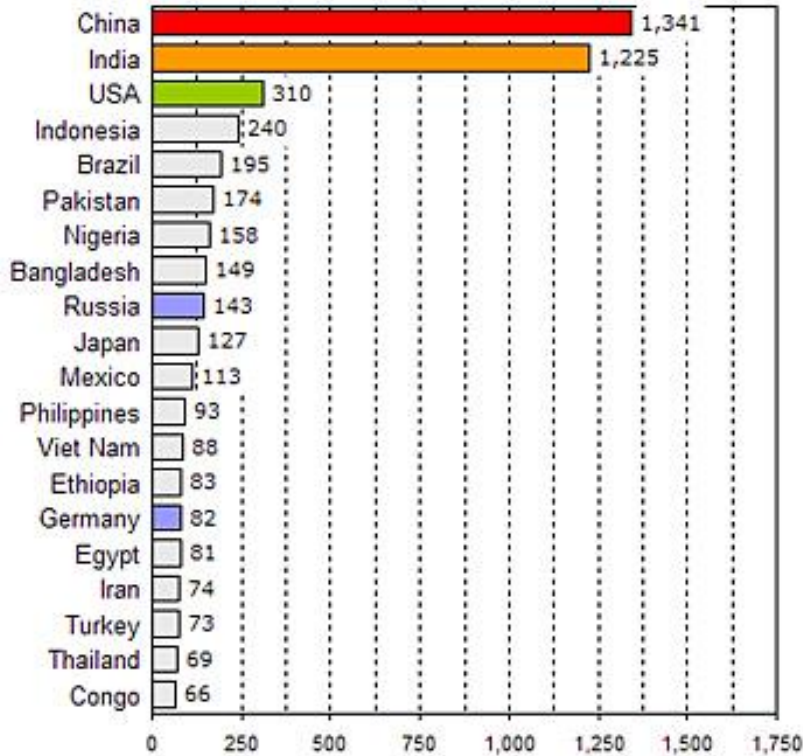


Source: United Nations, Department of Economic and Social Affairs, Population Division 2011 source:

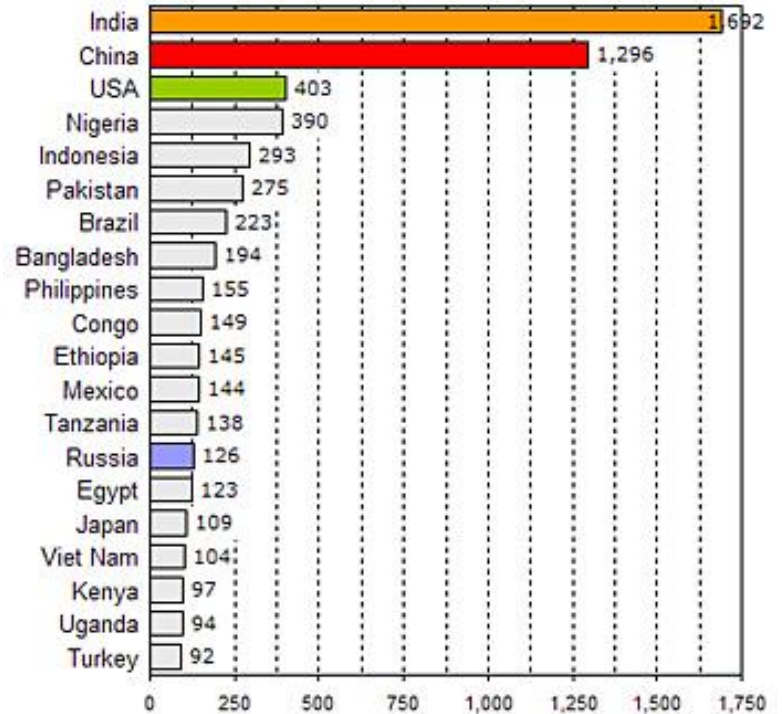
China and India up

Population of most populated regions

2010



2050



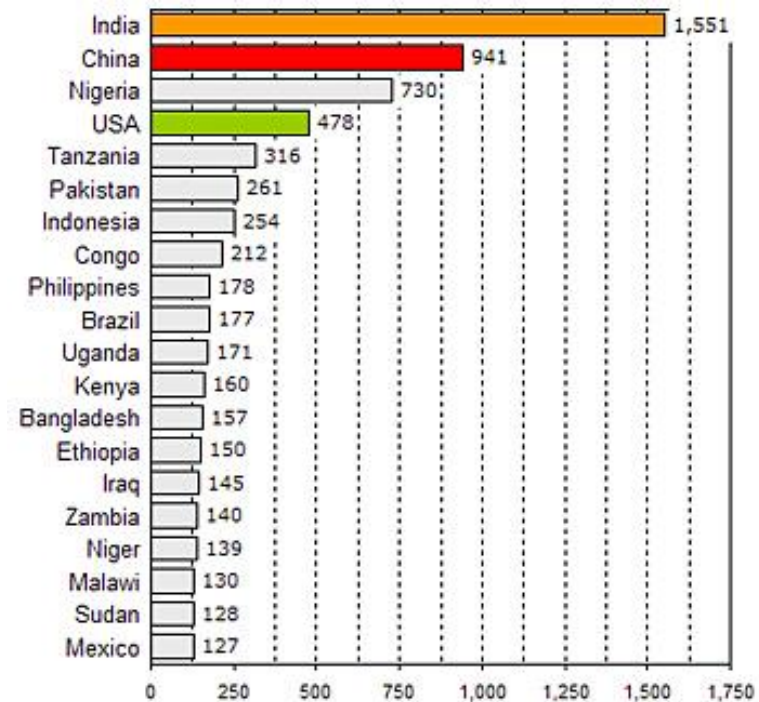
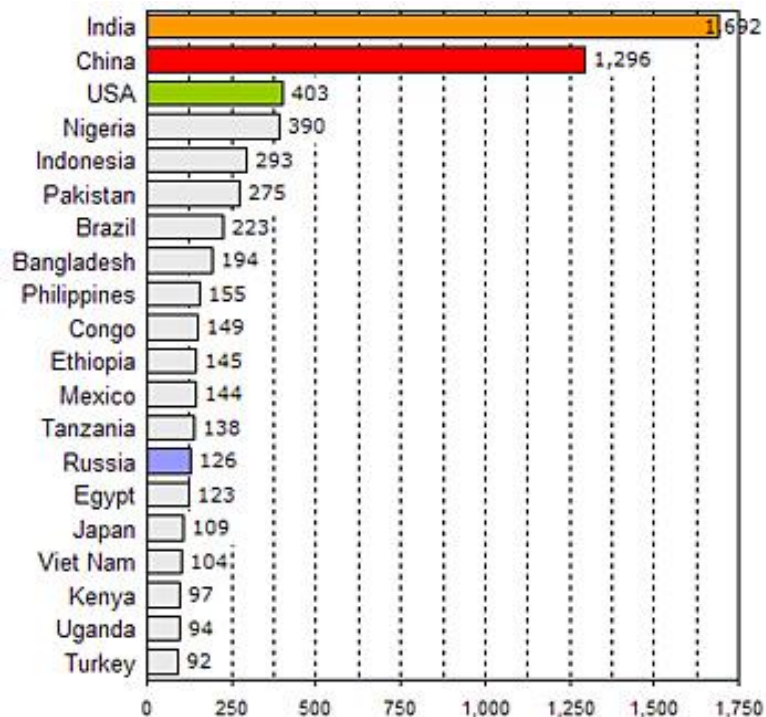
Source: United Nations, Department of Economic and Social Affairs, Population Division, 2011

China **stable**, india **up**, Africa **up** (e.g; Nigeria)

Population of most populated regions

2050

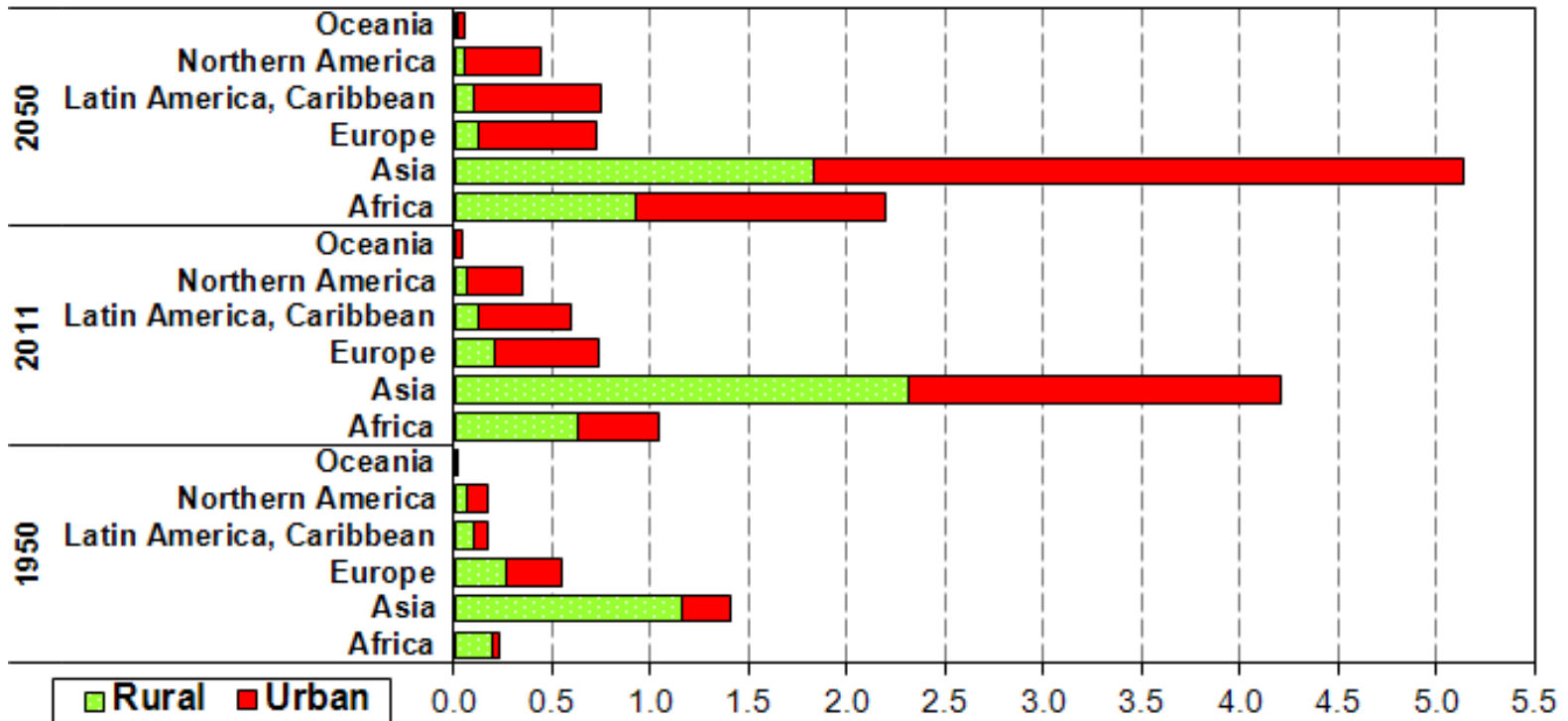
2100



Source: United Nations, Department of Economic and Social Affairs,
Population Division, 2011

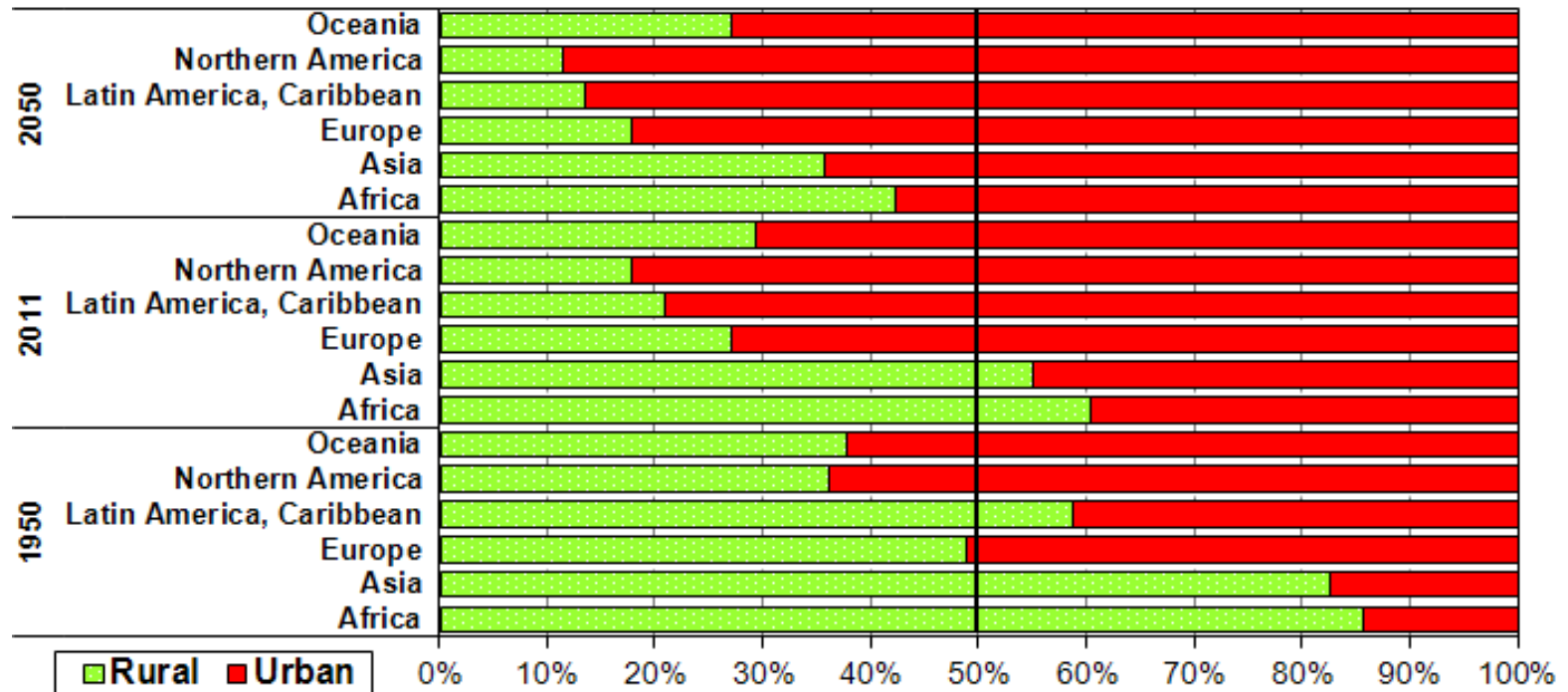
India and China **down**, Africa **up** (Nigeria, Tanzania, Congo...)

Urban (billion)



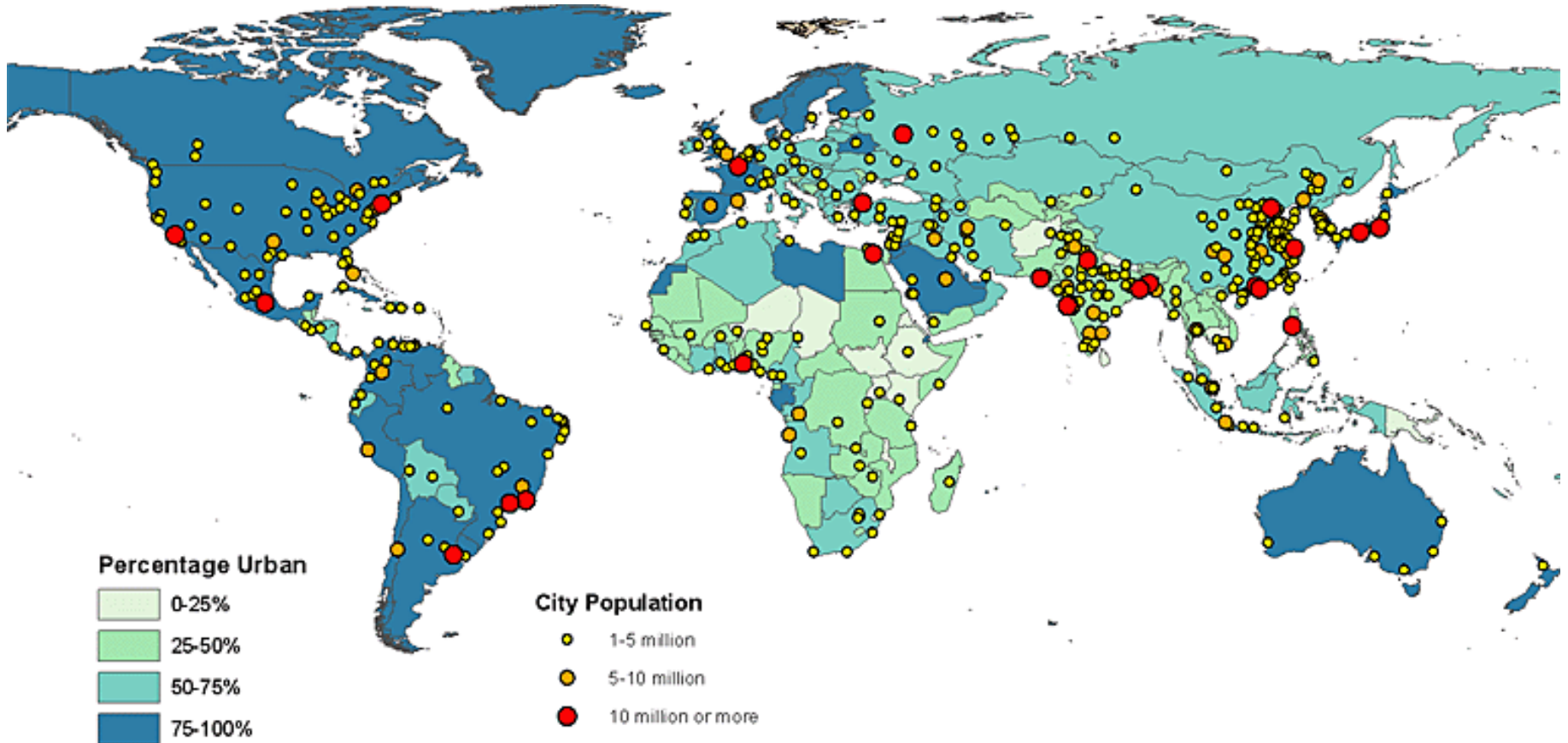
Source: UN 2011

Fraction urban



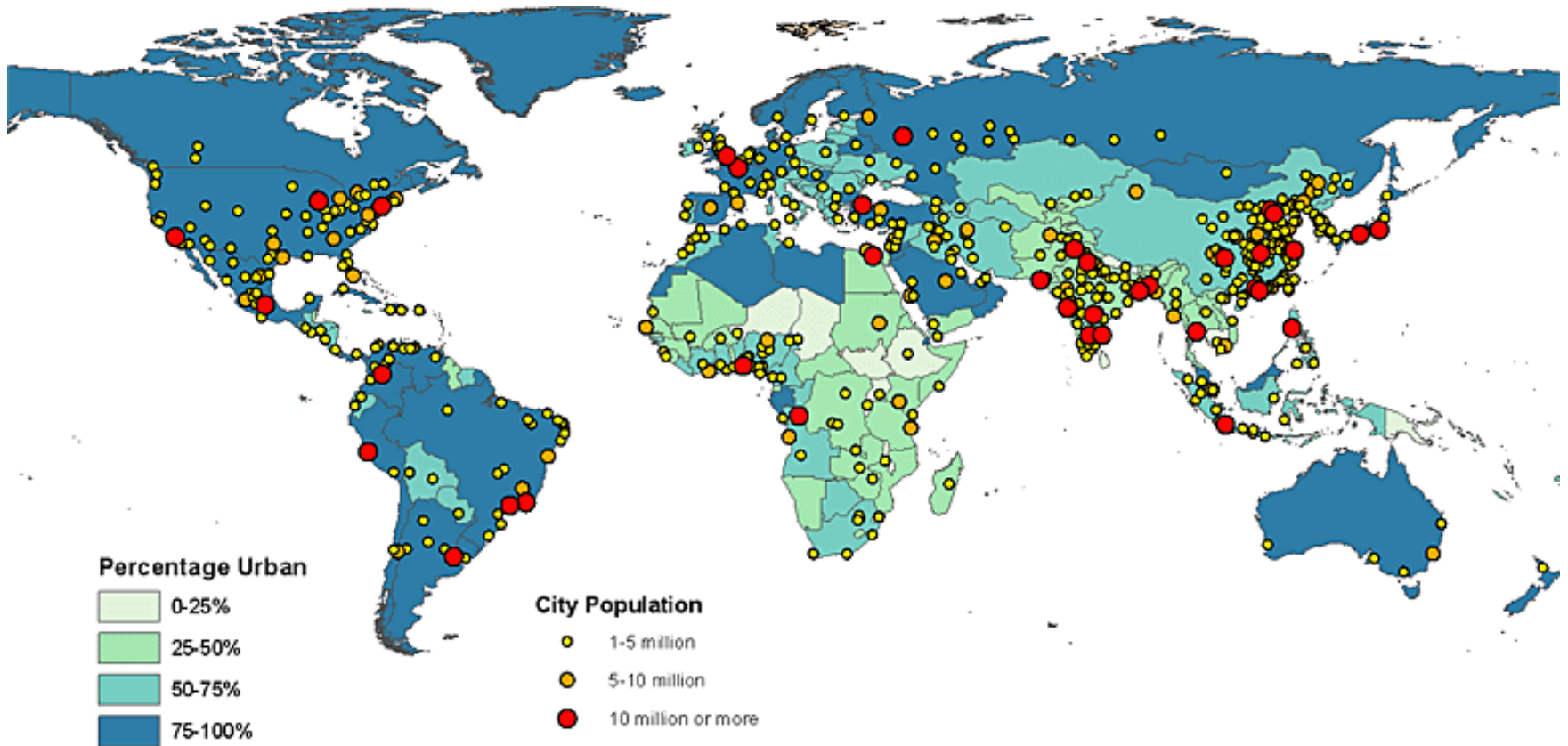
Source: UN 2011

% of urban population and size of cities in 2011




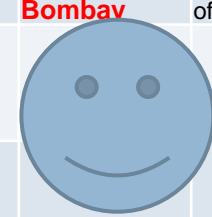

Source: UN, 2011

% of urban population and size of cities in 2025



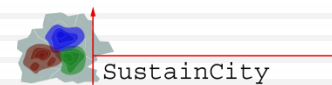
Source: UN 2011

The 10 largest cities for 1950, 2000 and for 2015 et 2050

Rangs	Pays	1950	Pays	2000	Pays	2015	Pays	2050
1	United States of America	New York-Newark	Japan	Tokyo	Japan	Tokyo		Tokyo
2	Japan	Tokyo	Mexico	Mexico City	India	Delhi		Delhi
3	United Kingdom	London	United States of America	New York-Newark	China	Shanghai	China	Shanghai
4	France	Paris	Brazil	São Paulo	Mexico	Mexico City	India	Bombay
5	Russian Federation	Moscow	India	Bombay	United States of America	New York-Newark	Mexico	Mexico City
6	Argentina	Buenos Aires	India		India	Bombay	United States of America	New York-Newark
7	United States of America	Chicago	China		Shanghai	Brazil	São Paulo	Brazil
8	India		India	Calcutta	China	Beijing	Bangladesh	Dhaka
9	China		Shanghai	Argentina	Buenos Aires	Bangladesh	Dhaka	China

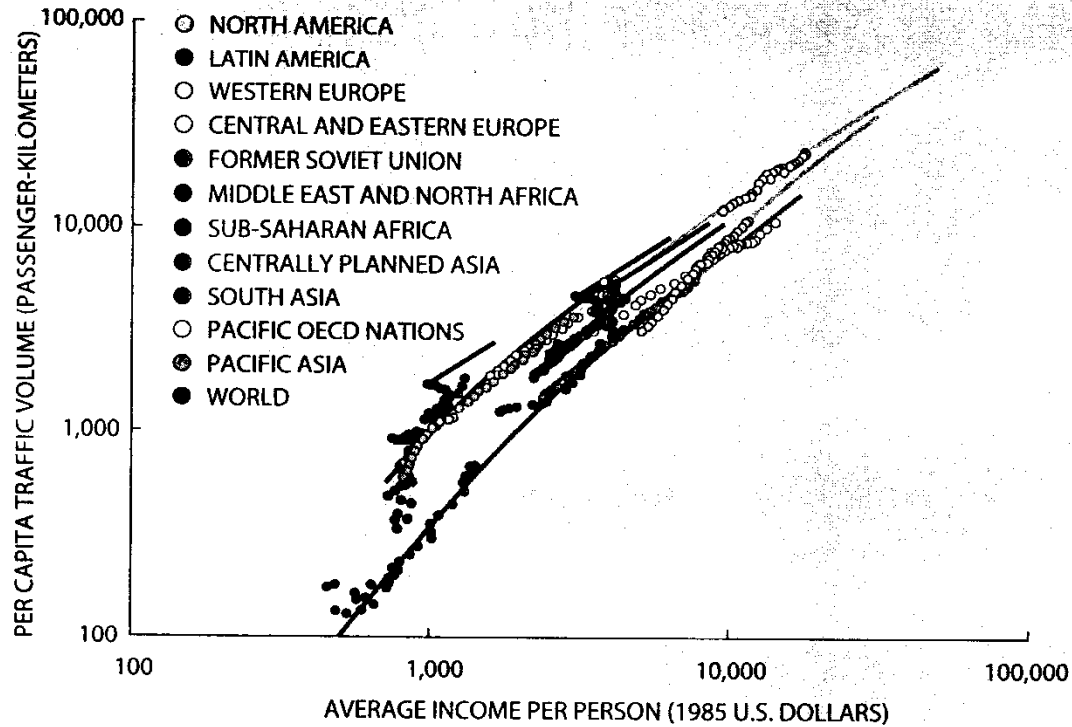
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Mobility



Distance annuelle moyenne per capita vs. Revenu moyen per capita

Source: Schafer and Victor (1997)



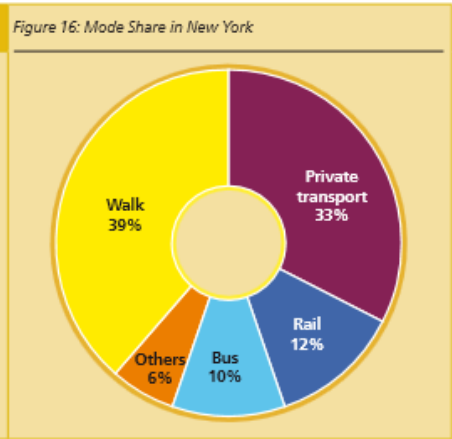
SOURCE: Andreas Schafer and David Victor

NEW YORK

Population: 8.2 million
Land area: 790 km²

Mode share
Based on the number of journeys by main mode of transport. It includes all modes for all purposes. Mass transit constitutes 23% of all journeys.

Data Sources:
Census 2010, U.S. Census Bureau
National Household Travel Survey 2009, New York City

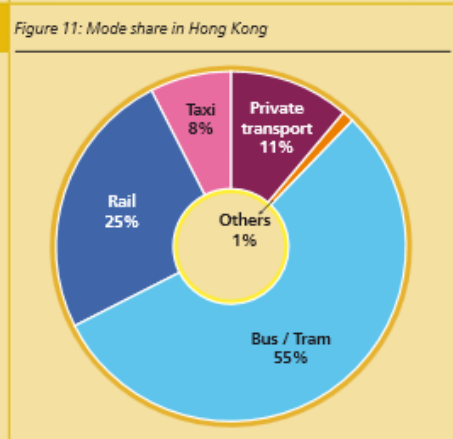


HONG KONG

Population: 7.1 million
Land area: 1,104 km²

Mode share
Based on the number of boardings by mode of transport. It includes *only motorised modes* for all purposes. Mass transit constitutes 80% of all boardings.

Data Sources:
Hong Kong in Figures 2011
Travel Characteristics Survey 2002, Transport Department, Hong Kong

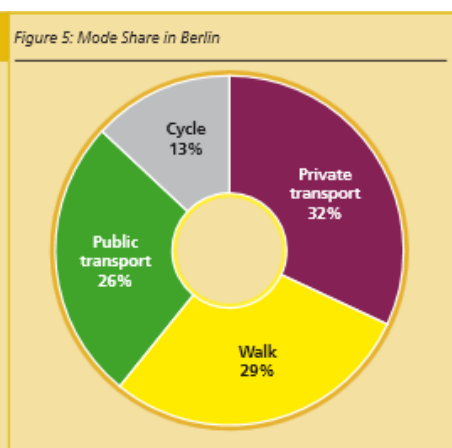


BERLIN

Population: 3.4 million
Land area: 892 km²

Mode share
Based on the number of journeys by main mode of transport. It includes all modes for all purposes. Mass transit constitutes 26% of all journeys.

Data Sources:
Berlin Traffic in Figures 2010

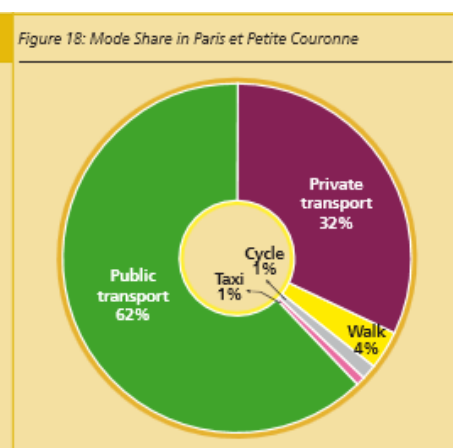


PARIS (Paris et Petite Couronne)³

Population: 6.5 million
Land area: 762 km²

Mode share
Based on the number of journeys by main mode of transport. It includes all modes for all purposes. Mass transit constitutes 62% of all journeys.

Data Sources:
National Transport Survey 2008 (in French only, Enquête Nationale Transports et Déplacements)

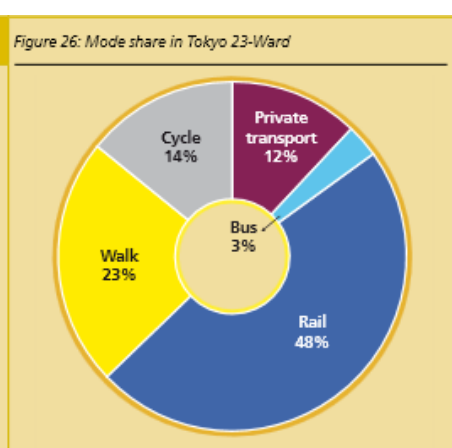


TOKYO (23-Ward)⁵

Population: 8.8 million
Land area: 622 km²

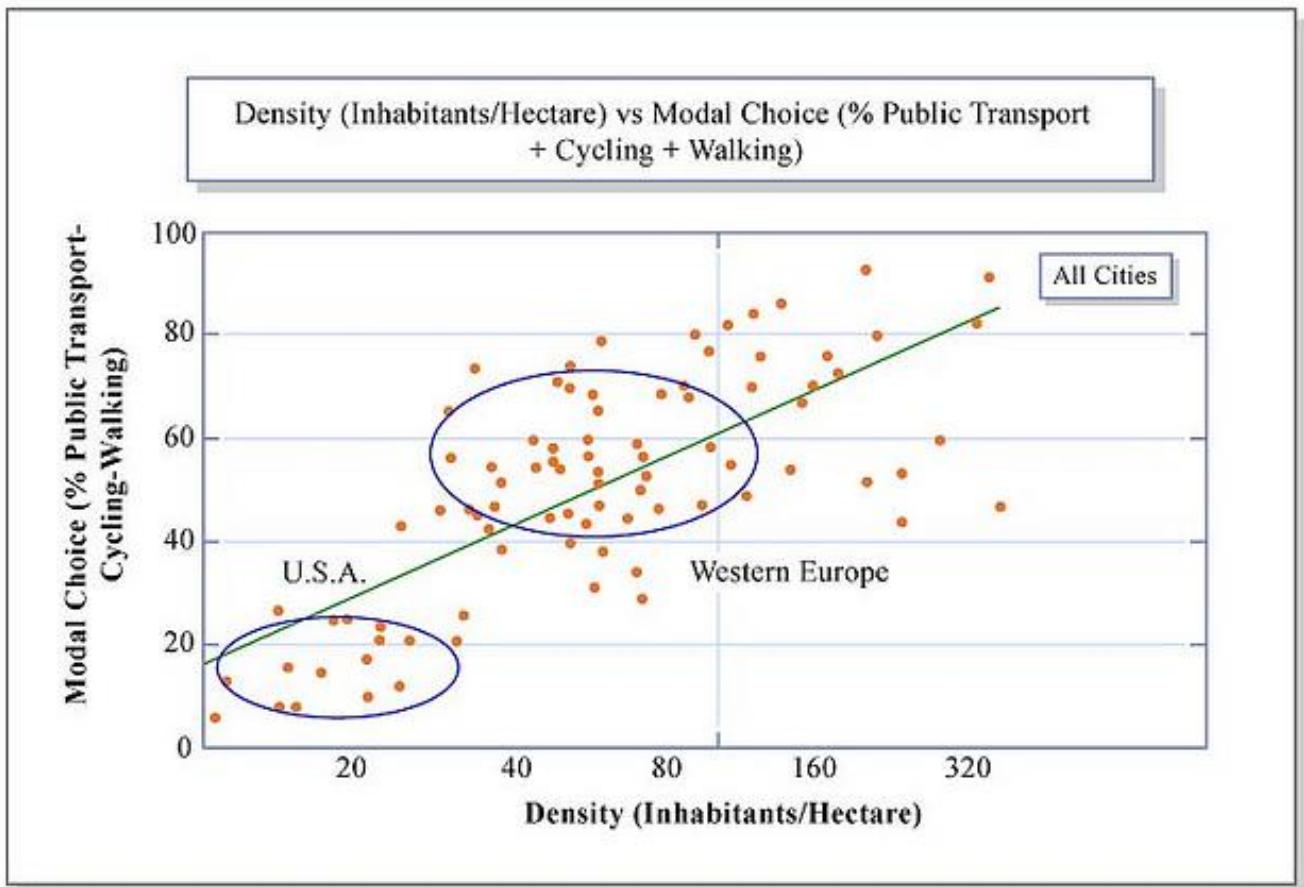
Mode share
Based on the number of journeys by main mode of transport. It includes all modes for all purposes. Mass transit constitutes 51% of all journeys.

Data Sources:
Tokyo Statistical Yearbook 2009, Japan
Tokyo Metropolitan Area Travel Survey 2008 (in Japanese only, 東京都圏パーソントリップ調査 (交通実態調査) 平成20年, Japan)



Parisian do not walk !

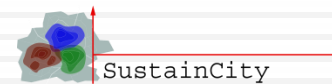
Urban density and modal choice



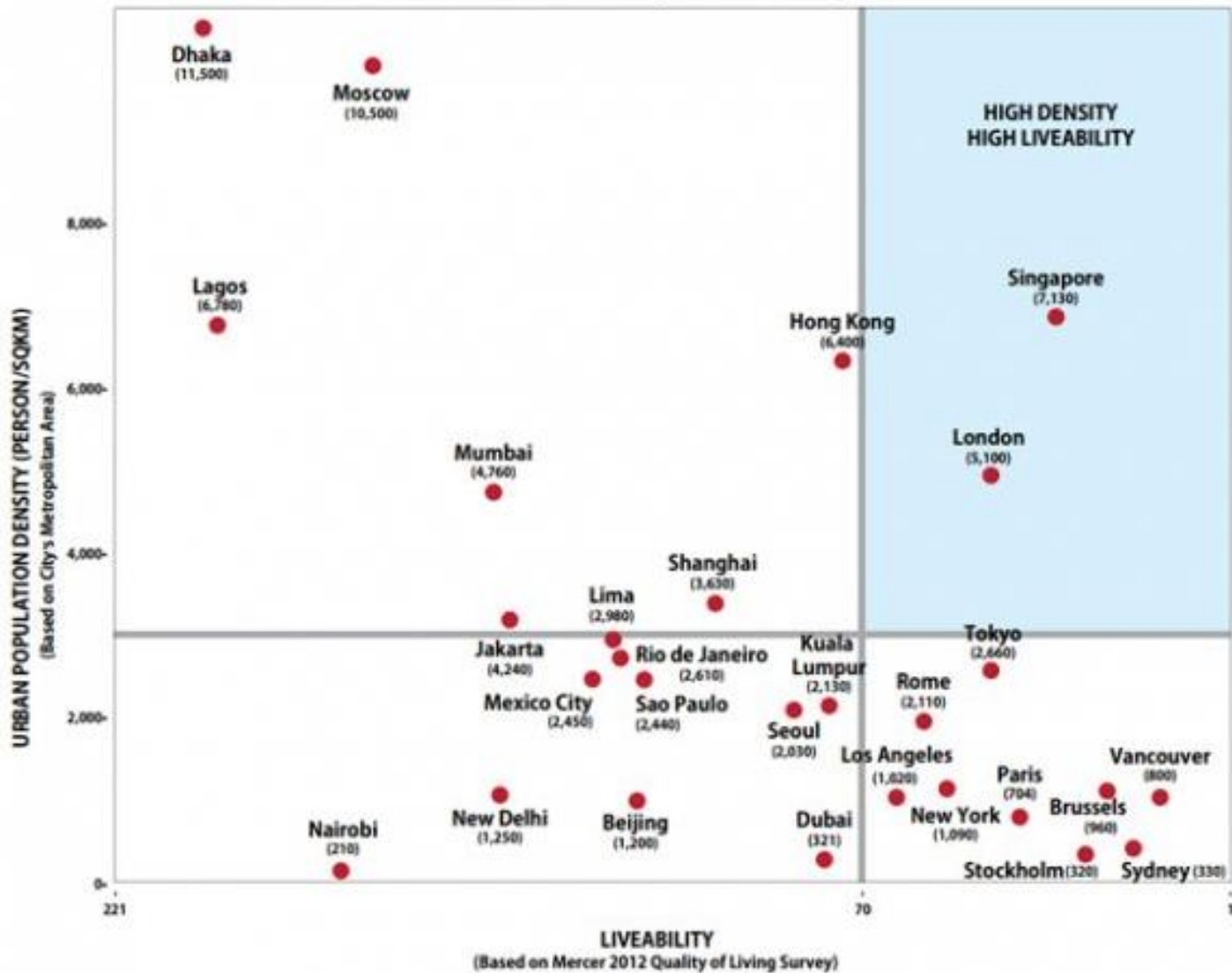
Source: MIT course 2006

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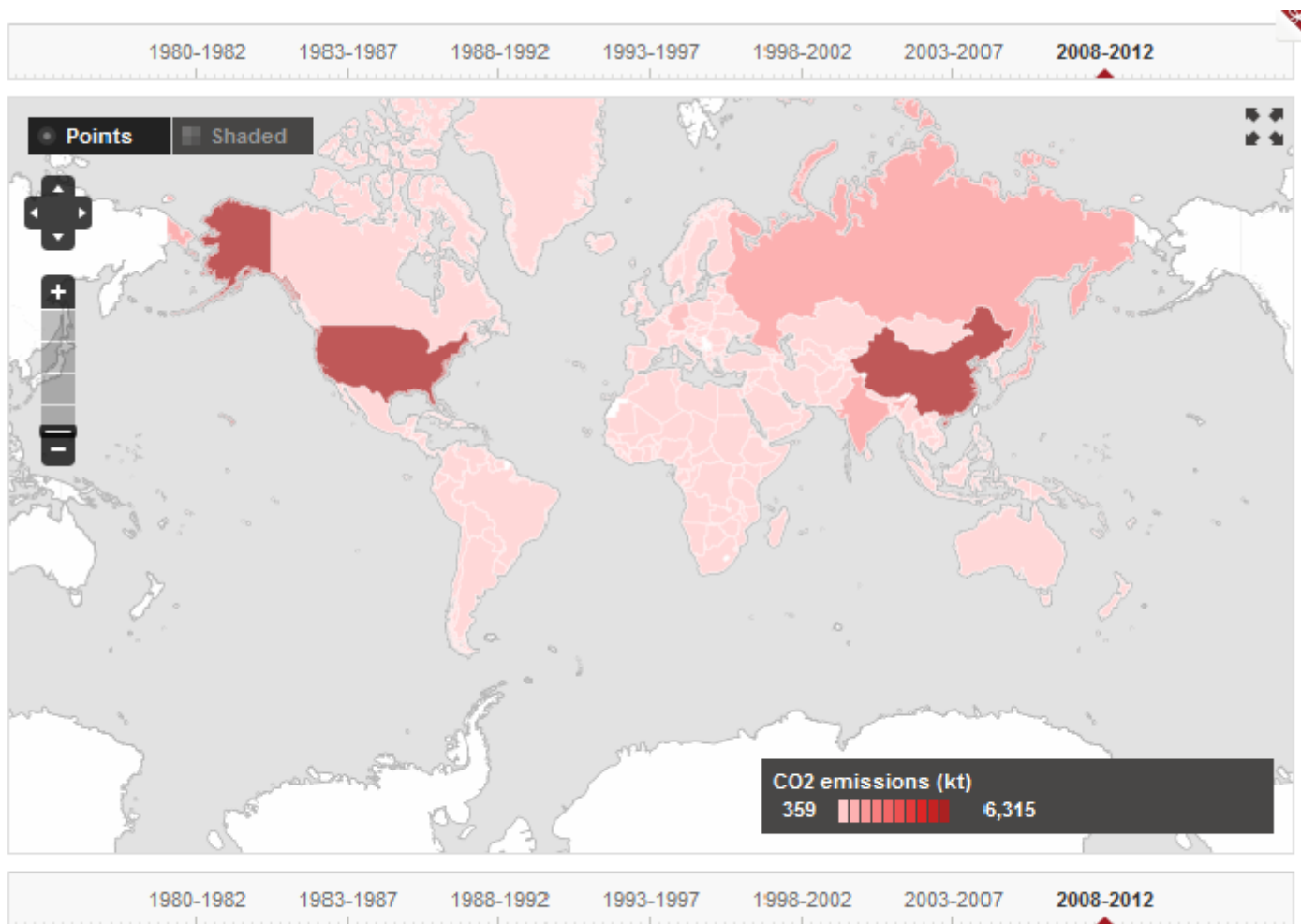
Externalities



The CLC Liveability Matrix Diagram



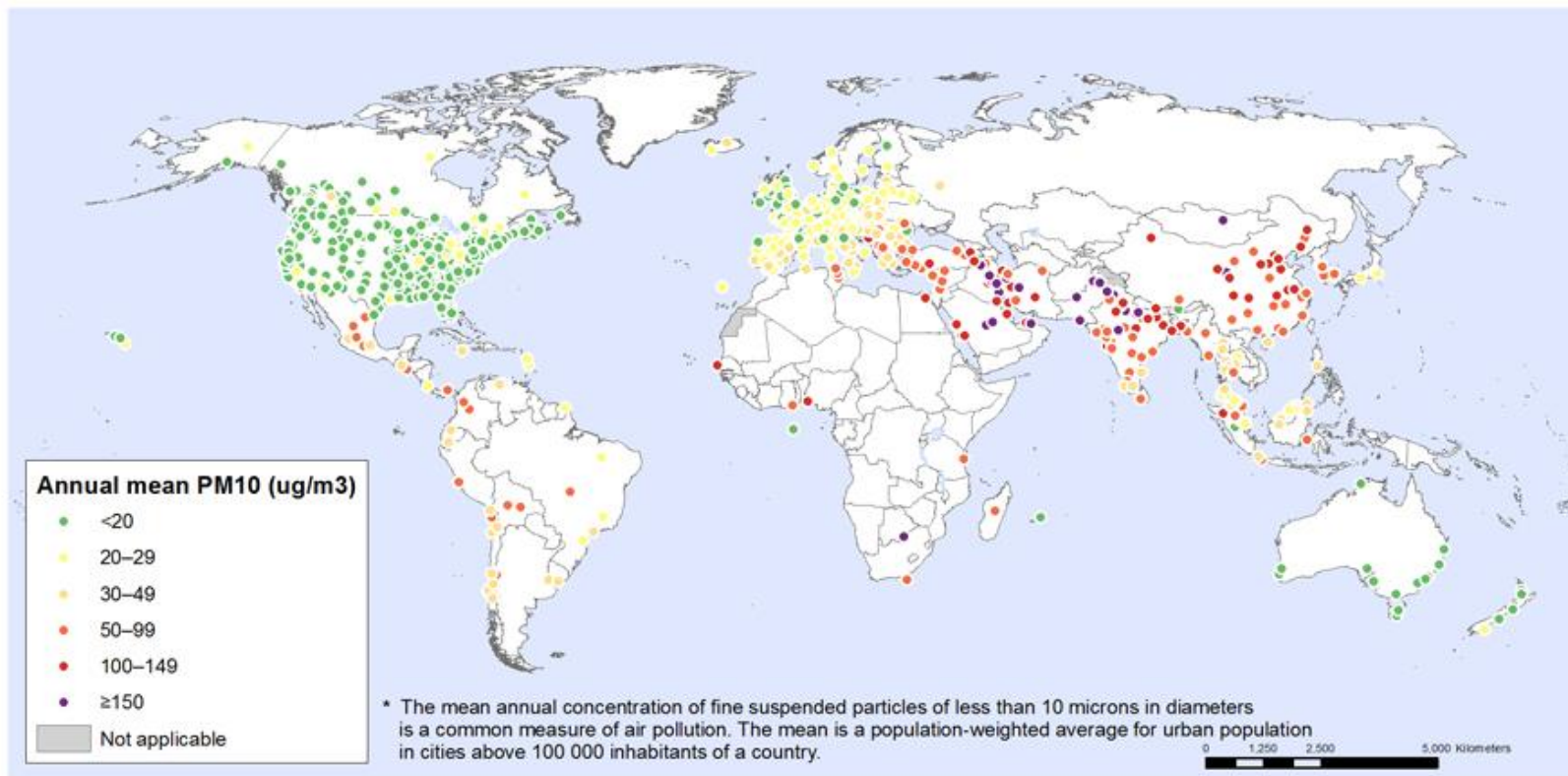
CO2 now in the world



The maps displayed on the World Bank web site are for reference only and do not imply any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

Source: Banque Mondiale, 2012

Exposure to particulate matter with an aerodynamic diameter of 10 µm or less (PM10) in 1100 urban areas*, 2003–2010



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Public Health Information and Geographic Information Systems (GIS)
World Health Organization



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PM10, country level (micrograms per cubic meter)

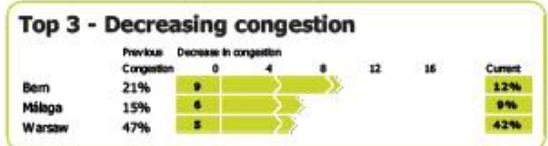
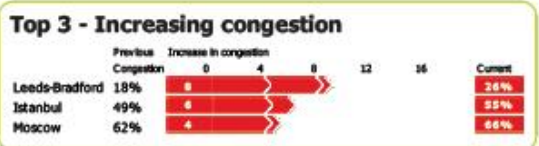
Particulate matter concentrations refer to fine suspended particulates less than 10 microns in diameter (PM10) that are capable of penetrating deep into the respiratory tract and causing significant health damage. Data for countries and aggregates for regions and income groups are urban-population weighted PM10 levels in residential areas of cities with more than 100,000 residents. The estimates represent the average annual exposure level of the average urban resident to outdoor particulate matter. The state of a country's technology and pollution controls is an important determinant of particulate matter concentrations.

Europe



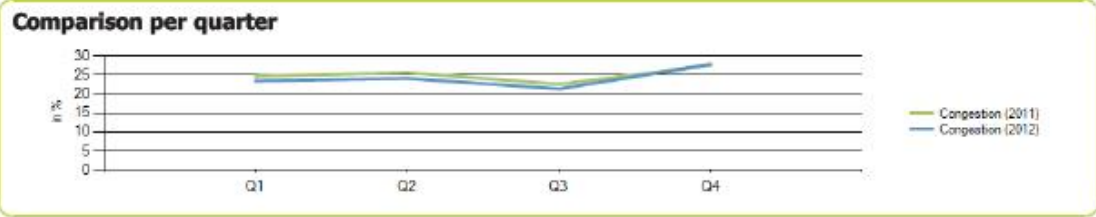
The most congestion cities in Europe

Source : tomtom report, 2013



Top 10 cities

Rank	CI change	City	Country	Congestion	Morning peak	Evening peak	Highways	Non-Highways
1	▲	Moscow	Russia	66%	106%	138%	62%	68%
2	▲	Istanbul	Turkey	55%	80%	125%	58%	51%
3	▼	Warsaw	Poland	42%	84%	88%	39%	46%
4	▲	Marseille	France	40%	77%	77%	24%	50%
5	▼	Palermo	Italy	39%	64%	64%	27%	49%
6	▲	Stuttgart	Germany	33%	59%	67%	32%	34%
7	---	Paris	France	33%	70%	65%	32%	34%
8	▼	Rome	Italy	33%	76%	63%	25%	37%
9	▼	Hamburg	Germany	32%	49%	55%	27%	36%
10	▼	Brussels	Belgium	32%	75%	81%	26%	37%



Why ?

Which intervention?

□ Engineering, economic, econometrics, data mining,



□ Sociology, history, demography, political science,

THANK YOU FOR YOUR ATTENTION