

World Urbanization Prospects

The 2007 Revision

United Nations

Department of Economic and Social Affairs (DESA)

Population Division - Population Estimates and Projections Section

www.unpopulation.org



Revision 1, 16 January 2008



World Urbanization Prospects: The 2007 Revision

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- 2 Regional trends in urbanization
- 3 City growth / urban agglomerations
- 4 Projection methods
- 5 Methodological challenges



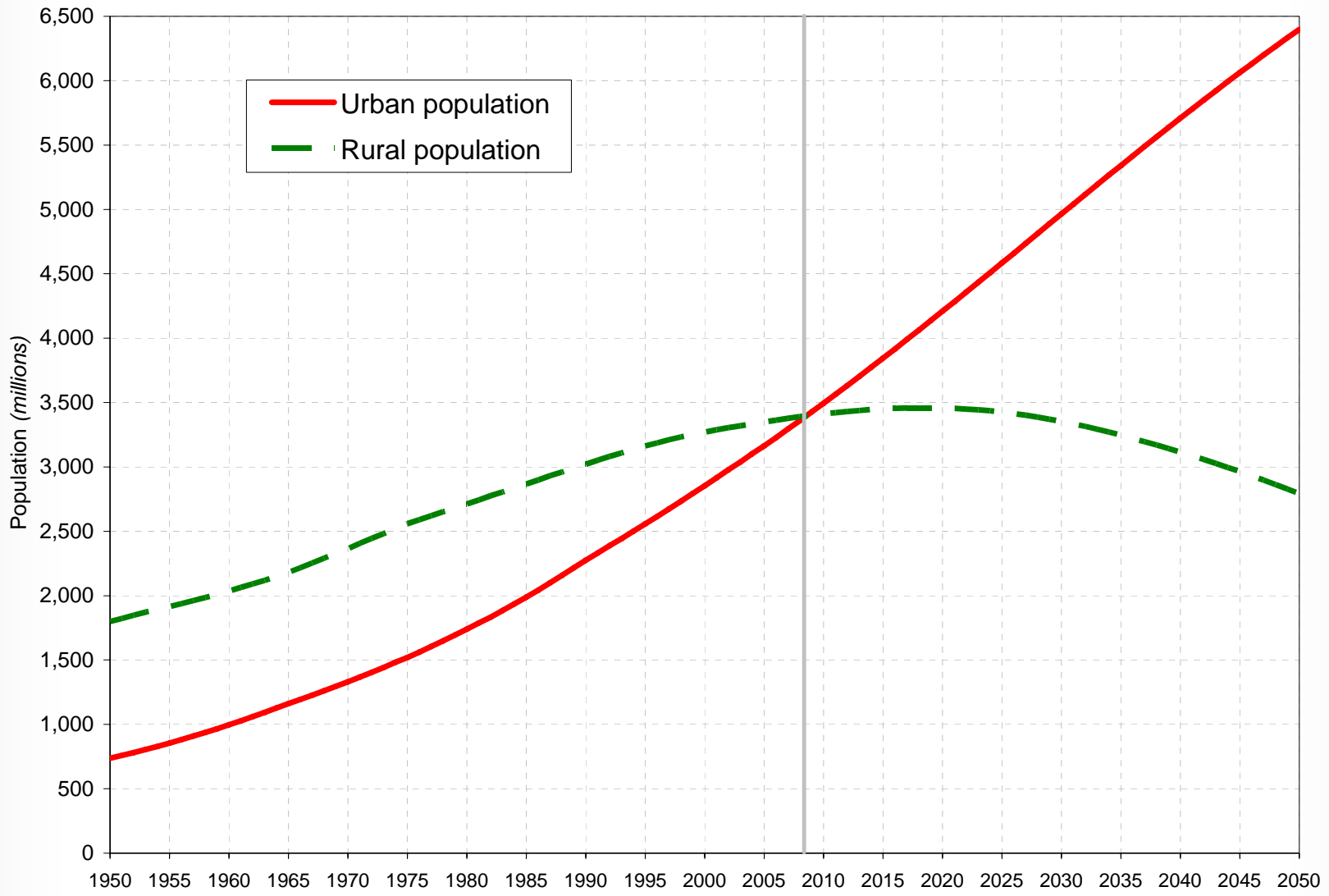
1

An Urbanizing World

By the end of 2008 half of the world's population will live in urban areas.



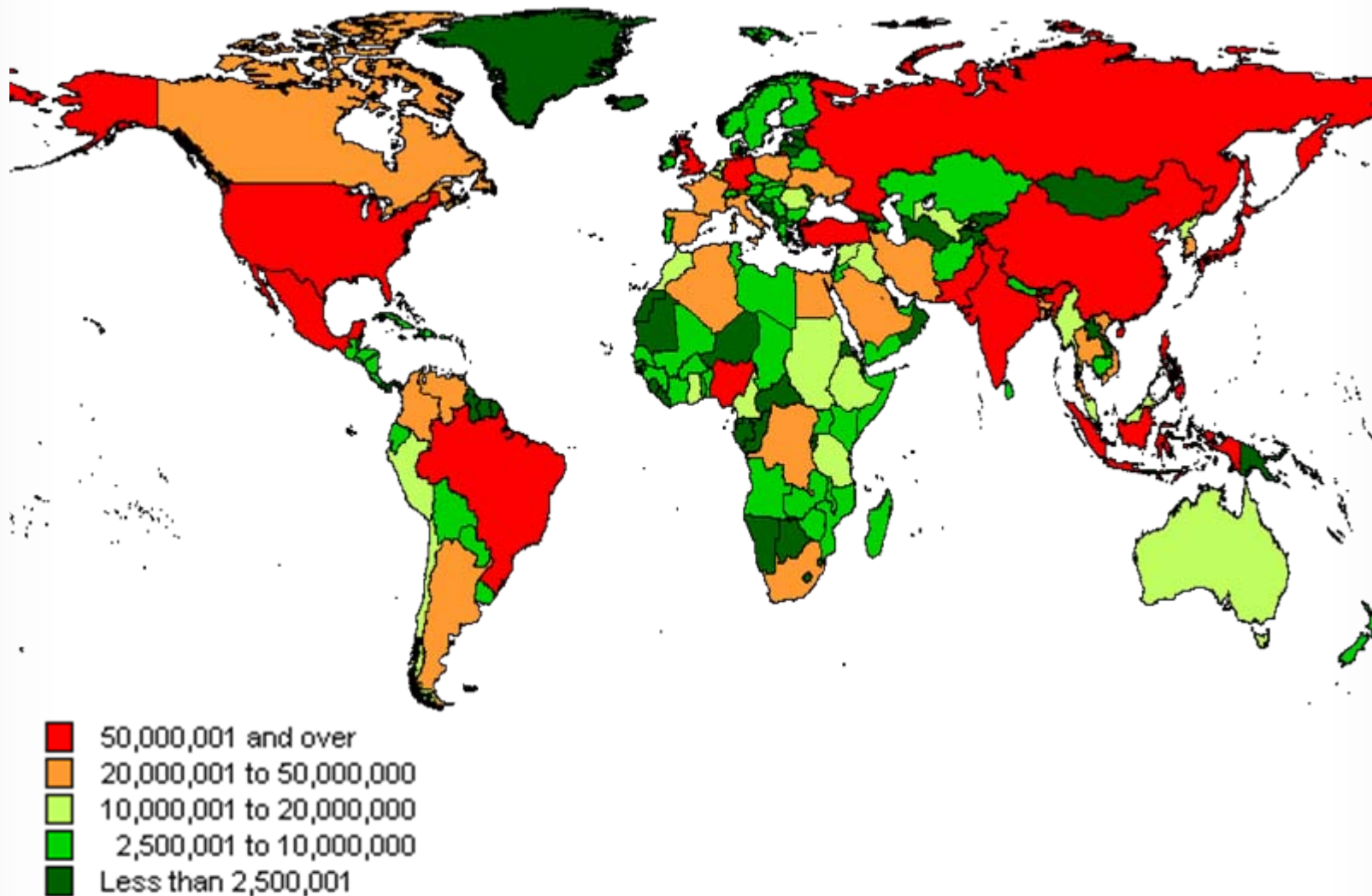
Global rural and urban population, 1950-2050



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



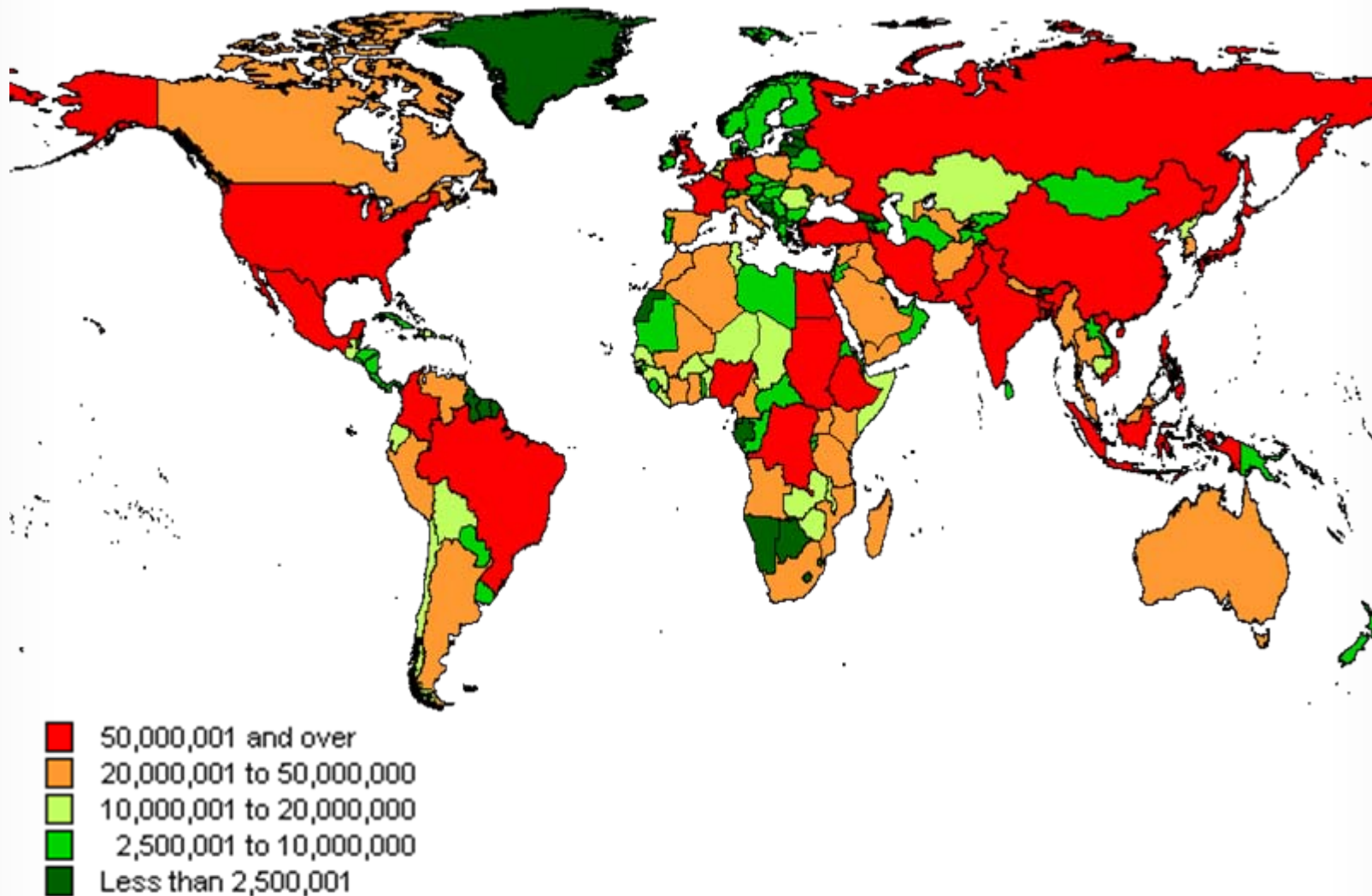
Population in urban areas, 2007



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



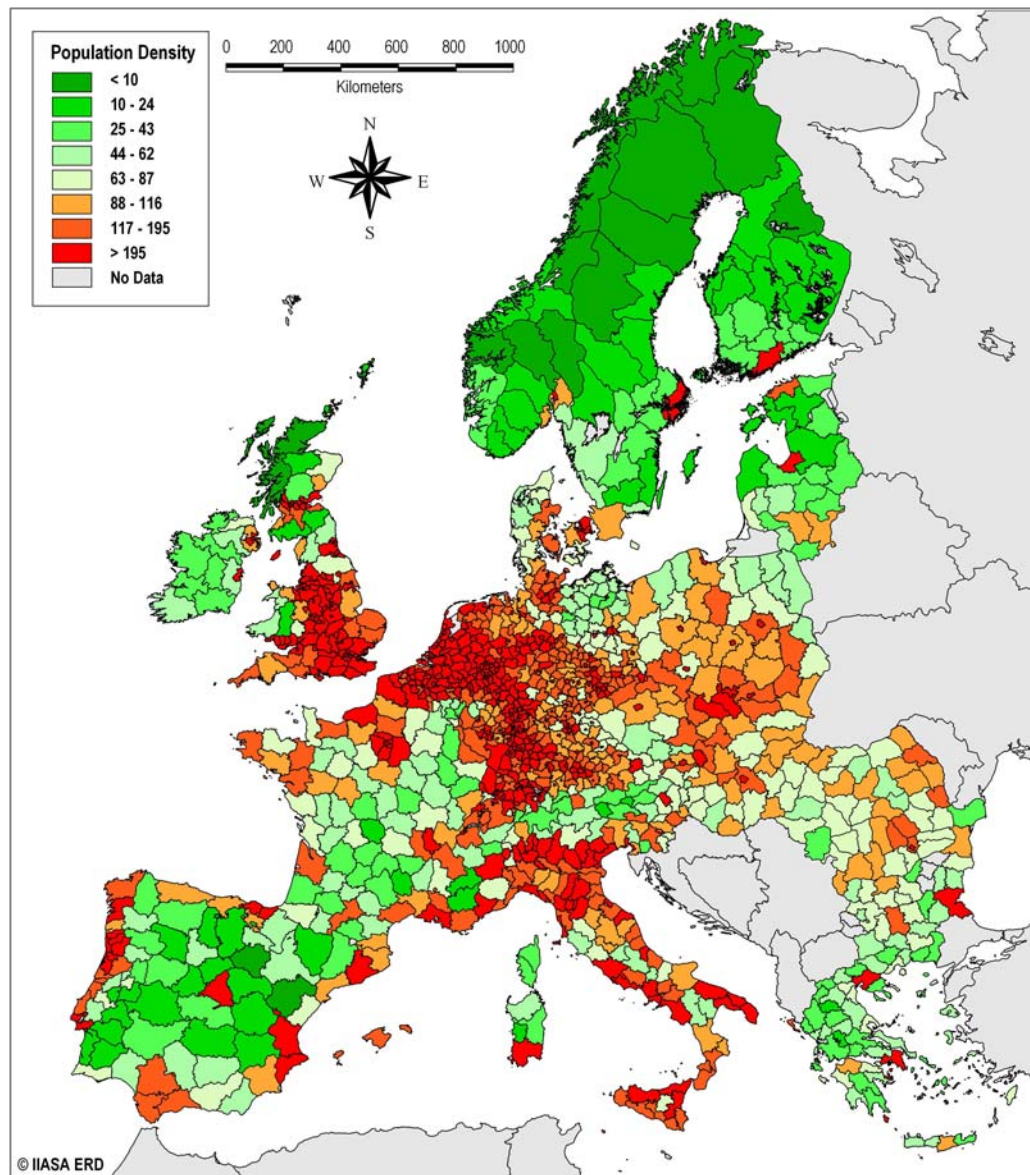
Population in urban areas, 2050



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



Population density in Europe, 2000



Source: IIASA, ERD Project



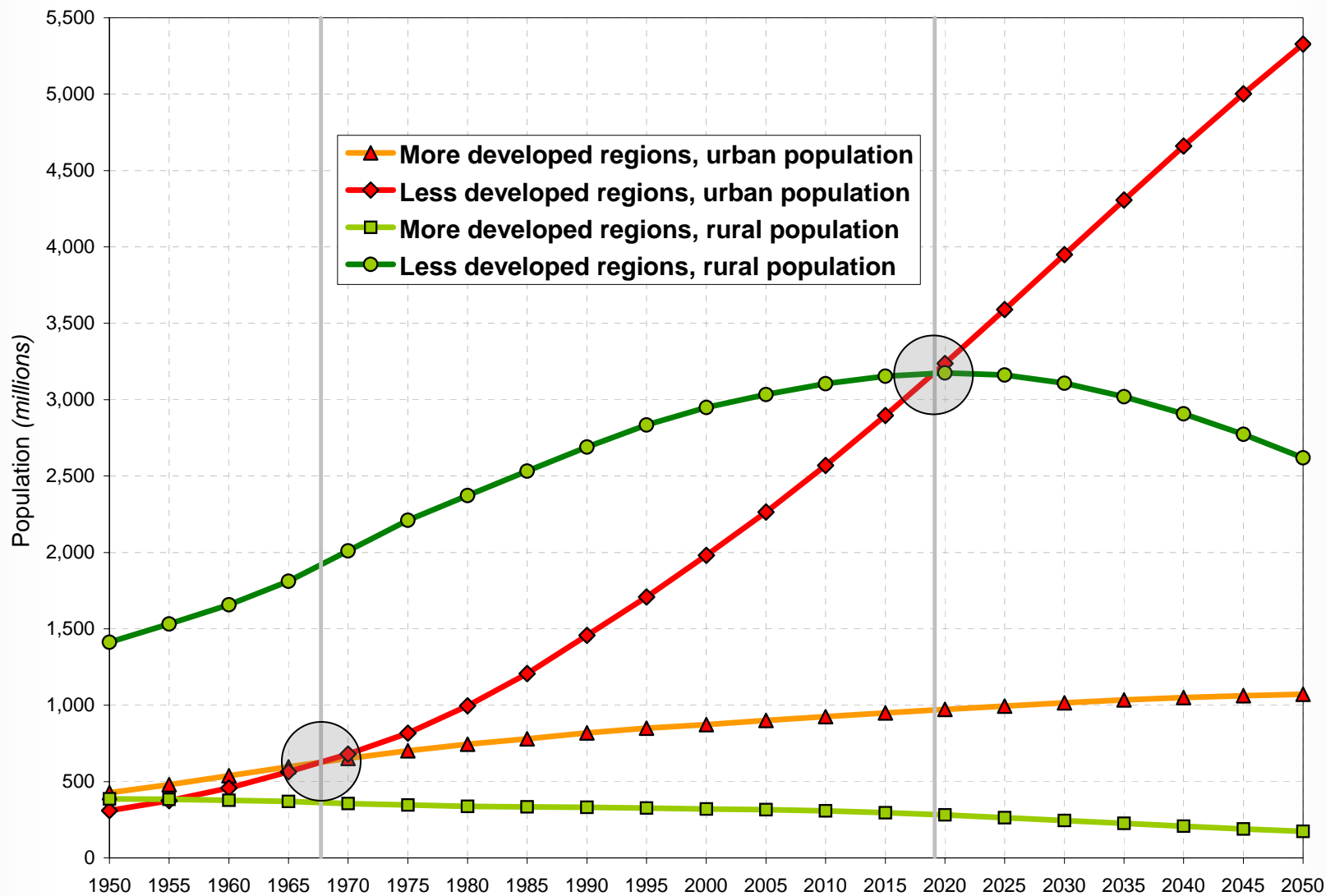
2

Regional Trends of Urbanization

Developing regions, particularly in Africa and Asia, will contribute the lion's share to the growth of the worldwide urban population.



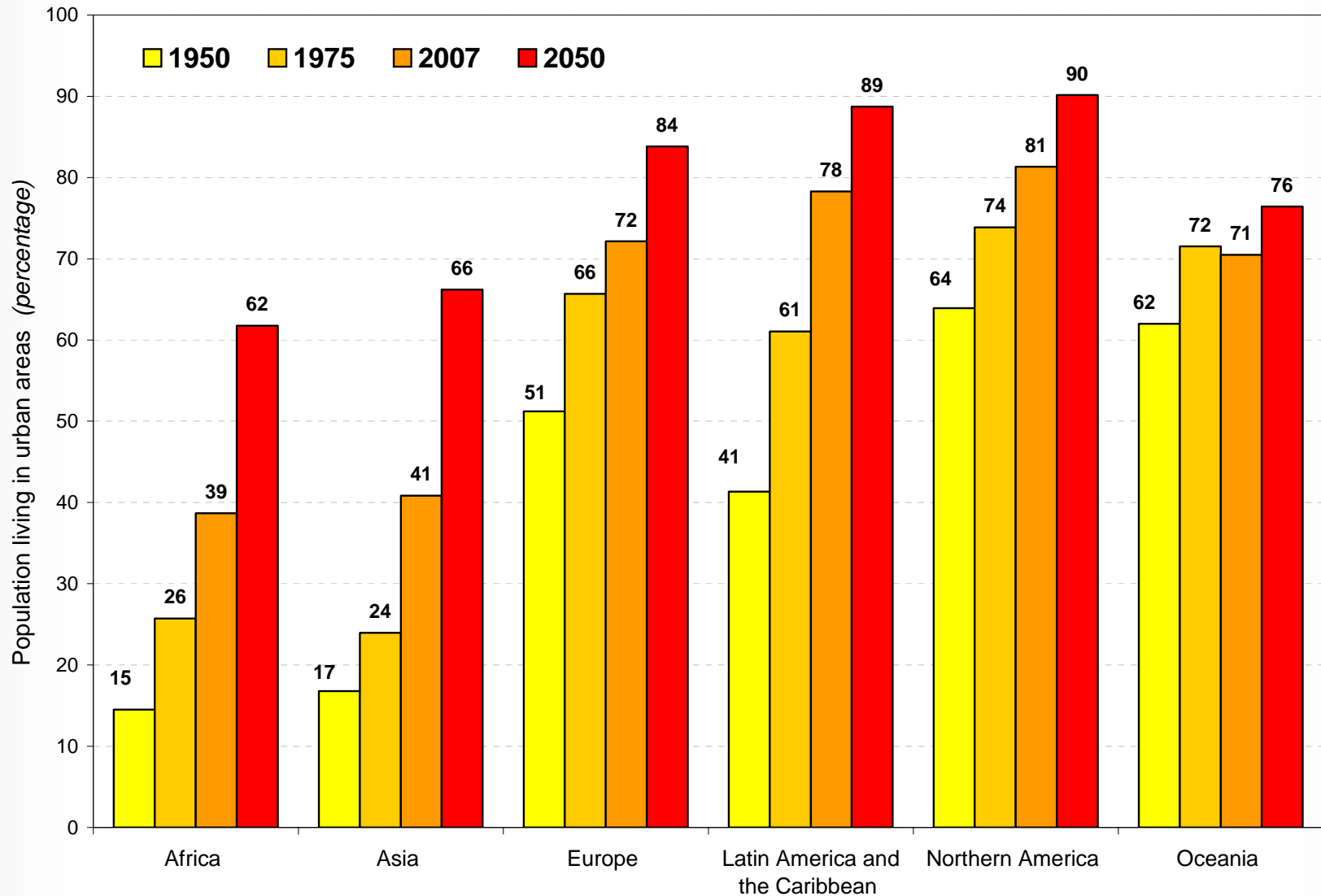
Rural and urban population by development region, 1950-2050



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



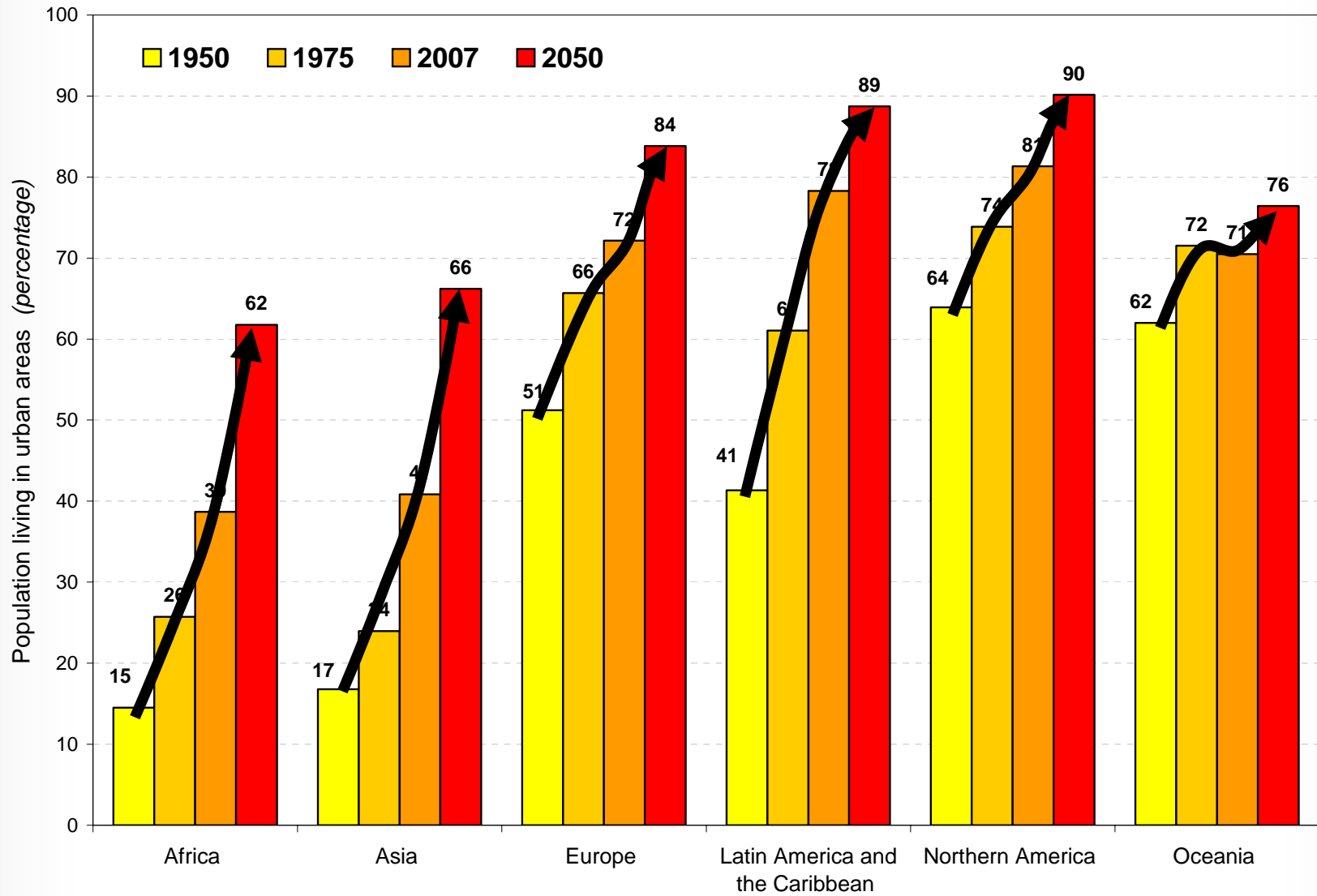
Percentage of population living in urban areas by geographical regions



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



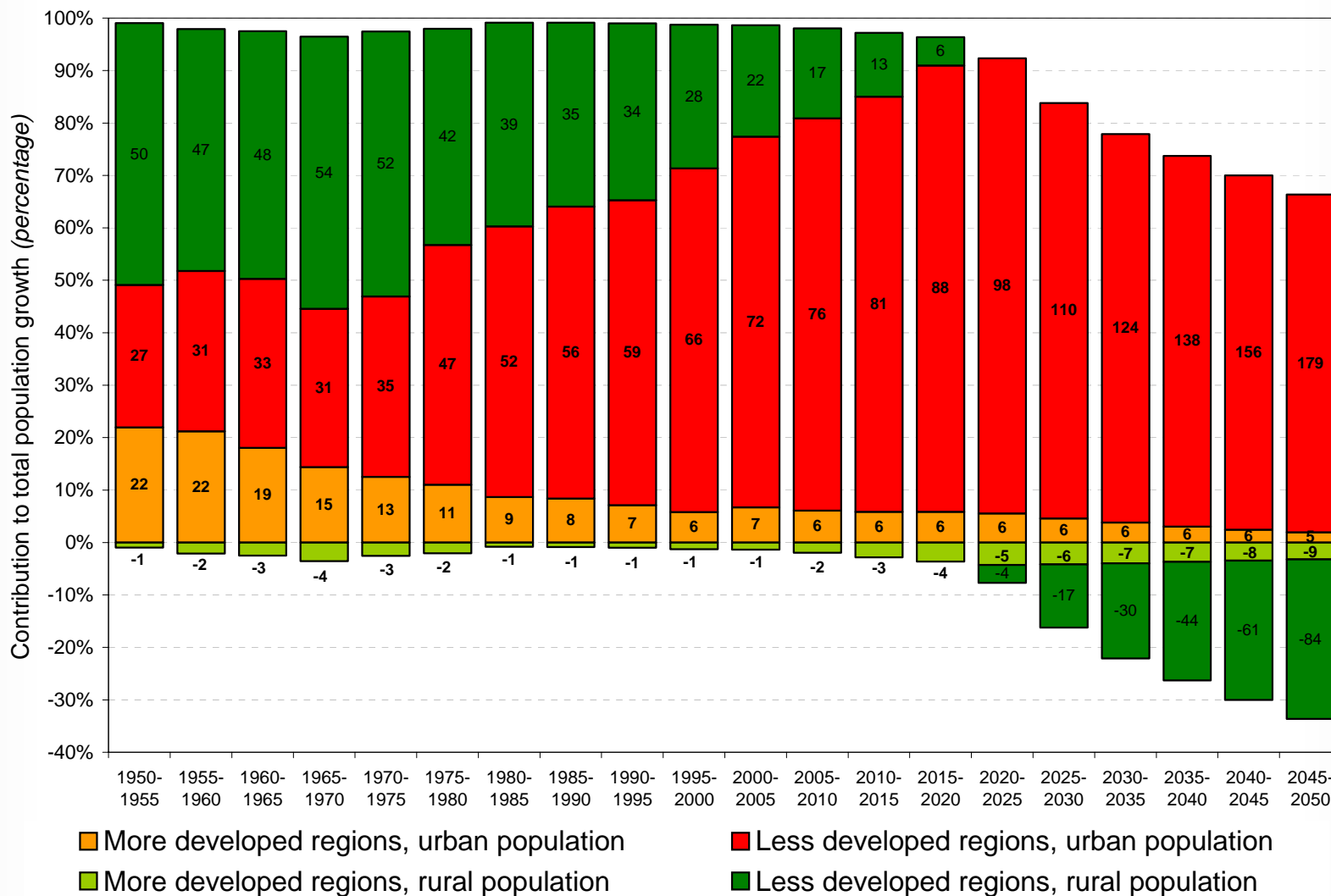
Percentage of population living in urban areas by geographical regions



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



Contribution of rural and urban population growth to total population growth by development region



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



Urban and rural populations by major area, selected periods, 1950-2050

Major area	Population (millions)					Average annual rate of change (percentage)			
	1950	1975	2007	2025	2050	1950-1975	1975-2007	2007-2025	2025-2050
Urban population									
Africa	33	107	373	658	1234	4.76	3.90	3.15	2.52
Asia	237	574	1645	2440	3486	3.54	3.29	2.19	1.43
Europe	281	444	528	545	557	1.84	0.54	0.18	0.08
Latin America and the Caribbean	69	198	448	575	683	4.21	2.55	1.38	0.69
Northern America	110	180	275	337	401	1.98	1.33	1.11	0.70
Oceania	8	15	24	30	37	2.60	1.44	1.17	0.89
Rural population									
Africa	192	309	592	736	764	1.92	2.03	1.21	0.15
Asia	1174	1820	2384	2339	1780	1.75	0.84	-0.11	-1.09
Europe	267	232	204	170	107	-0.57	-0.41	-1.00	-1.84
Latin America and the Caribbean	98	126	124	113	87	1.01	-0.06	-0.50	-1.08
Northern America	62	64	63	56	44	0.11	-0.02	-0.65	-1.00
Oceania	5	6	10	12	11	0.88	1.60	0.78	-0.04

Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.

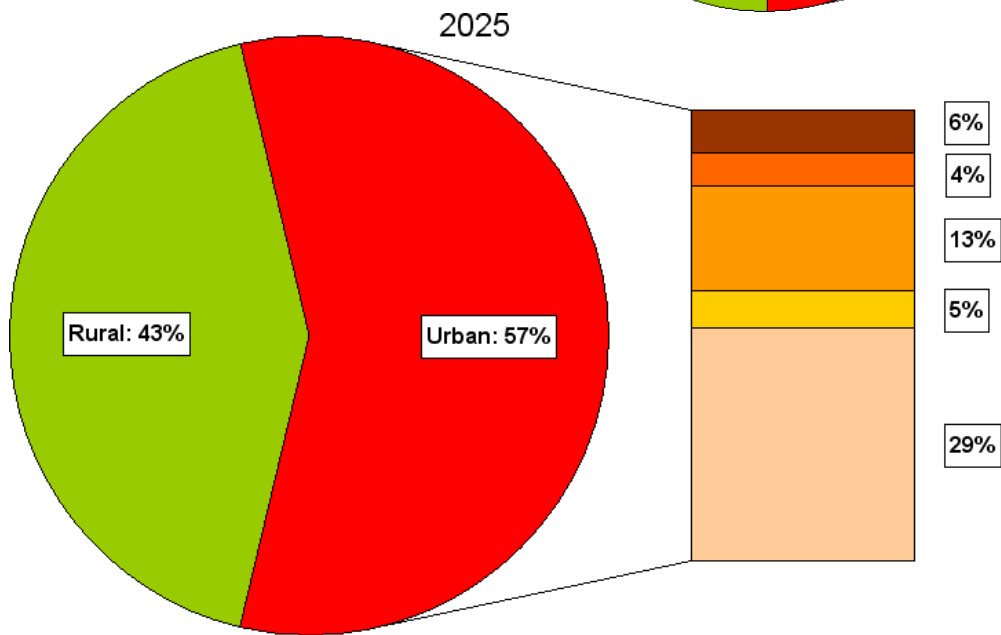
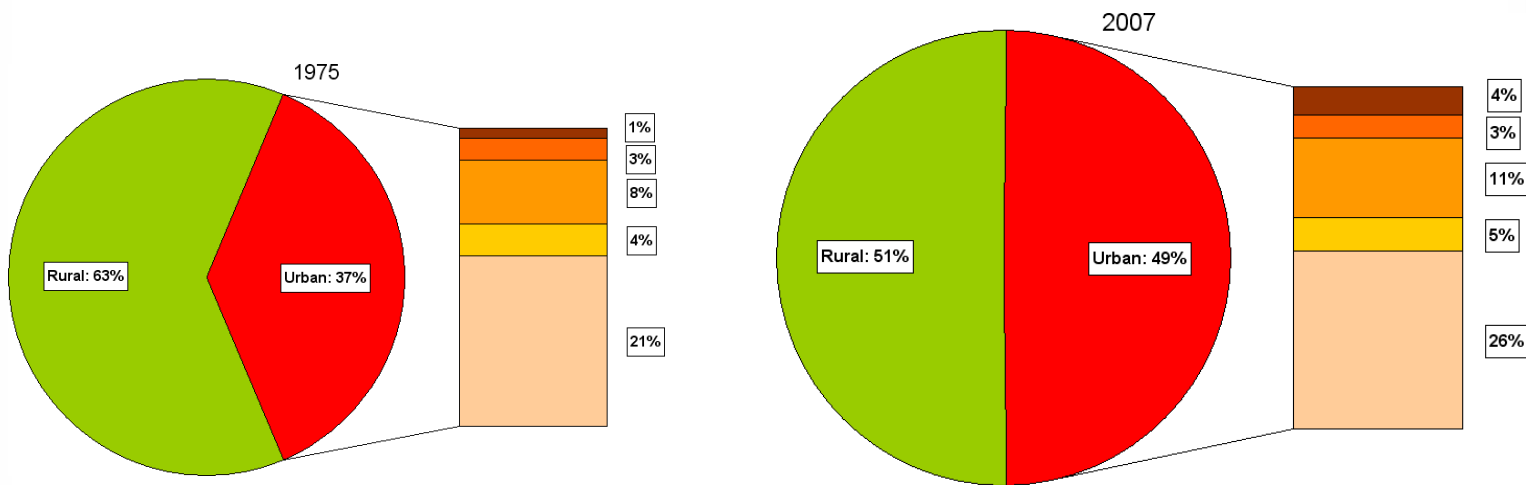


3

City Growth / Urban Agglomerations

Half of the world's urban population is living in urban settlements with fewer than 500,000 inhabitants.

Percentage of rural and urban population and urban population by size class of urban settlement, 1975, 2007 and 2025

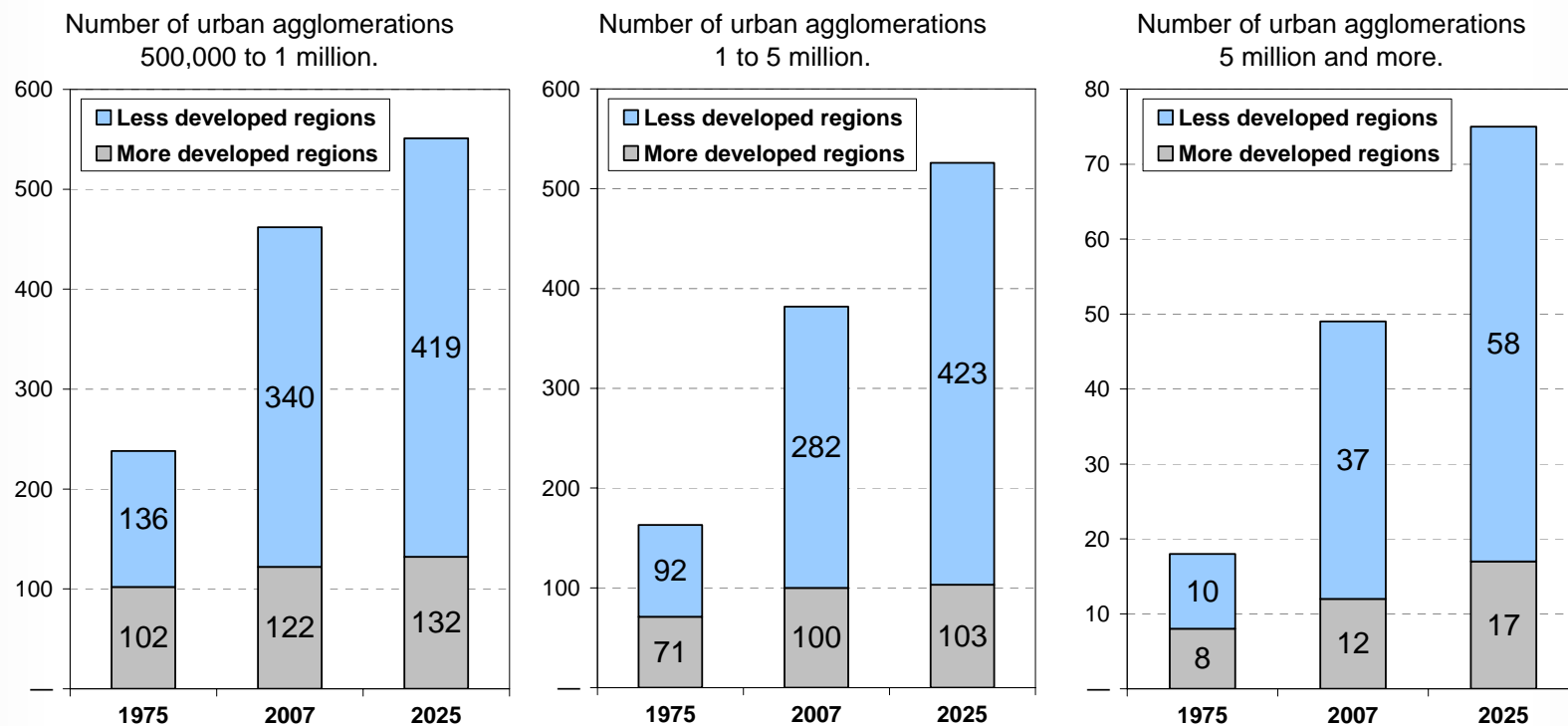


■ 10+ million
 ■ 5 to 10 million
 ■ 1 to 5 million
 ■ 500,000 to 1 million
 ■ Fewer than 500,000
 ■ Rural area

Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008. Population Estimates and Projections Section



Number of urban agglomerations by size class of settlement



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



Population of urban agglomerations with 10 million inhabitants or more

Urban agglomeration	Population (millions)			Average annual rate of change (percentage)	
	1975	2007	2025	1975-2007	2007-2025
Tokyo, Japan	26.6	35.7	36.4	0.92	0.11
New York-Newark, USA	15.9	19.0	20.6	0.57	0.44
Ciudad de México (Mexico City), Mexico	10.7	19.0	21.0	1.80	0.55
Mumbai (Bombay), India	7.1	19.0	26.4	3.08	1.83
São Paulo, Brazil	9.6	18.8	21.4	2.10	0.71
Delhi, India	4.4	15.9	22.5	4.00	1.92
Shanghai, China	7.3	15.0	19.4	2.24	1.44
Kolkata (Calcutta), India	7.9	14.8	20.6	1.96	1.83
Dhaka, Bangladesh	2.2	13.5	22.0	5.64	2.72
Buenos Aires, Argentina	8.7	12.8	13.8	1.19	0.41
Los Angeles-Long Beach-Santa Ana, USA	8.9	12.5	13.7	1.05	0.50
Karachi, Pakistan	4.0	12.1	19.1	3.48	2.52
Al-Qahirah (Cairo), Egypt	6.4	11.9	15.6	1.91	1.49
Rio de Janeiro, Brazil	7.6	11.7	13.4	1.38	0.74
Osaka-Kobe, Japan	9.8	11.3	11.4	0.43	0.04
Beijing, China	6.0	11.1	14.5	1.91	1.50
Manila, Philippines	5.0	11.1	14.8	2.49	1.60
Moskva (Moscow), Russian Federation	7.6	10.5	10.5	0.99	0.04
Istanbul, Turkey	3.6	10.1	12.1	3.21	1.03

Note: Urban agglomerations are ordered according to their population size in 2007.



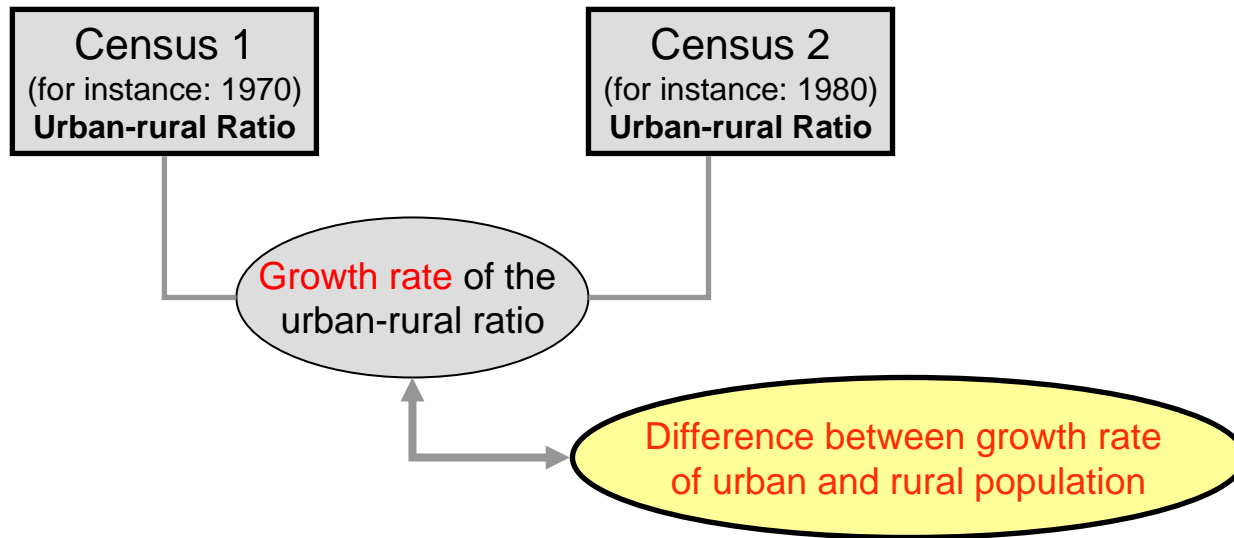
4

Projection Methods

Percentage Urban
Cities / Urban Agglomerations



Projection methods: Urban population (1)



Step 1: The URR is the basis for interpolation and extrapolation of the urban population. The projection uses the most recent **urban-rural growth difference** in a **logistic equation**. The proportion urban reaches its maximum growth rate when the proportion urban is 50% and declines to its asymptotic value of zero when the proportion urban is 100%.



Projection methods: Urban population (2)

Normally, an extrapolation based on a simple logistic curve would imply that the urban-rural growth difference remains constant over the projection period. Empirical evidence shows that this is unrealistic.

Step 2: “Global Norm”

A simple model is used to reduce the value of the urban-rural growth difference by calculating a hypothetical urban-rural growth difference (hrur) according to the following formula:

$H_{rur} = 0.037623 - 0.02604 P_U(t_0)$; $P_U(t_0)$ is the proportion urban at the time of the initial census

Essentially, this means that with *increasing* (initial) urbanization, the value of the hypothetical urban-rural growth difference (hrur) *decreases*.

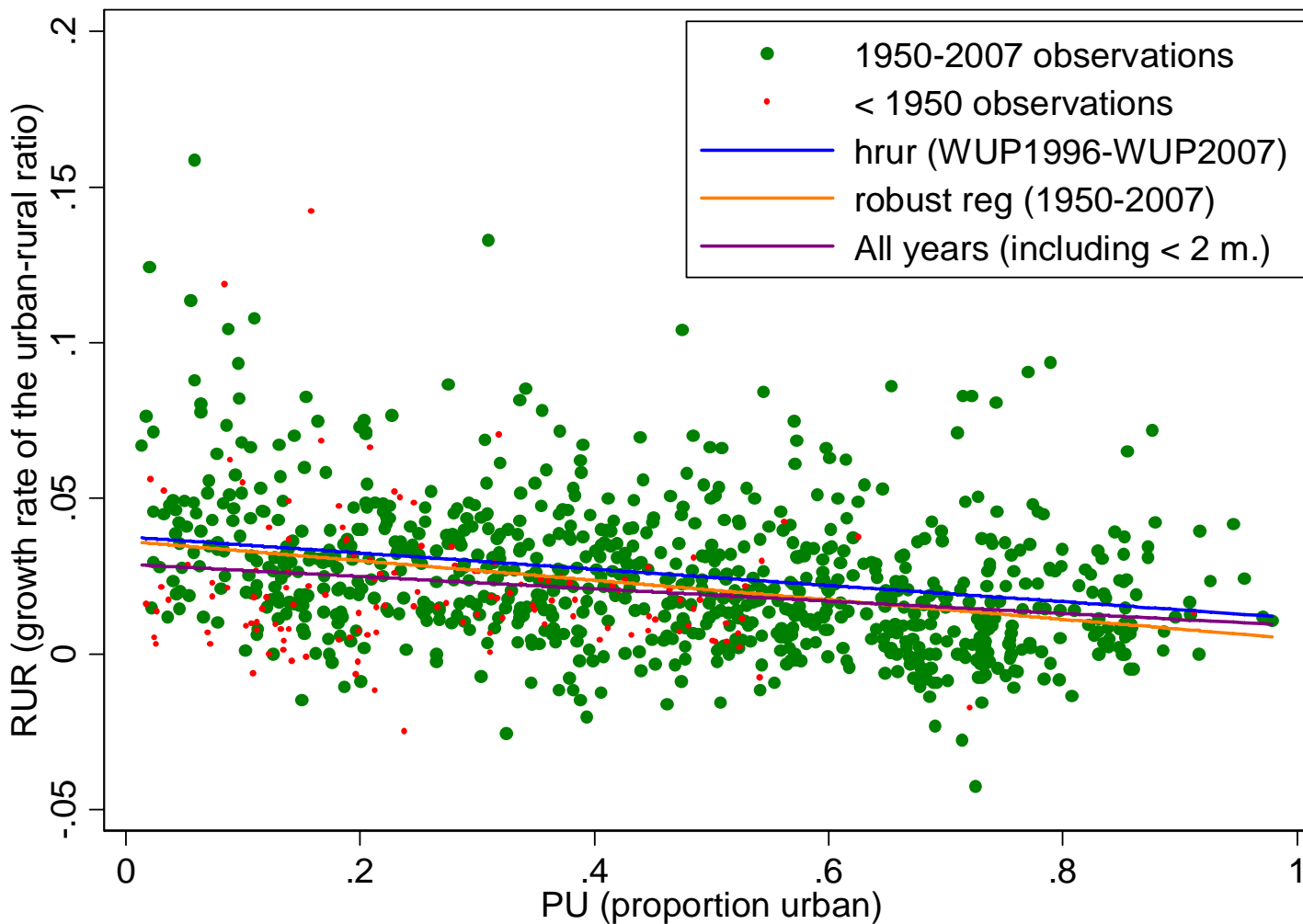
In other words:

With growing urbanization the urbanization process slows down!



Projection methods for urban population

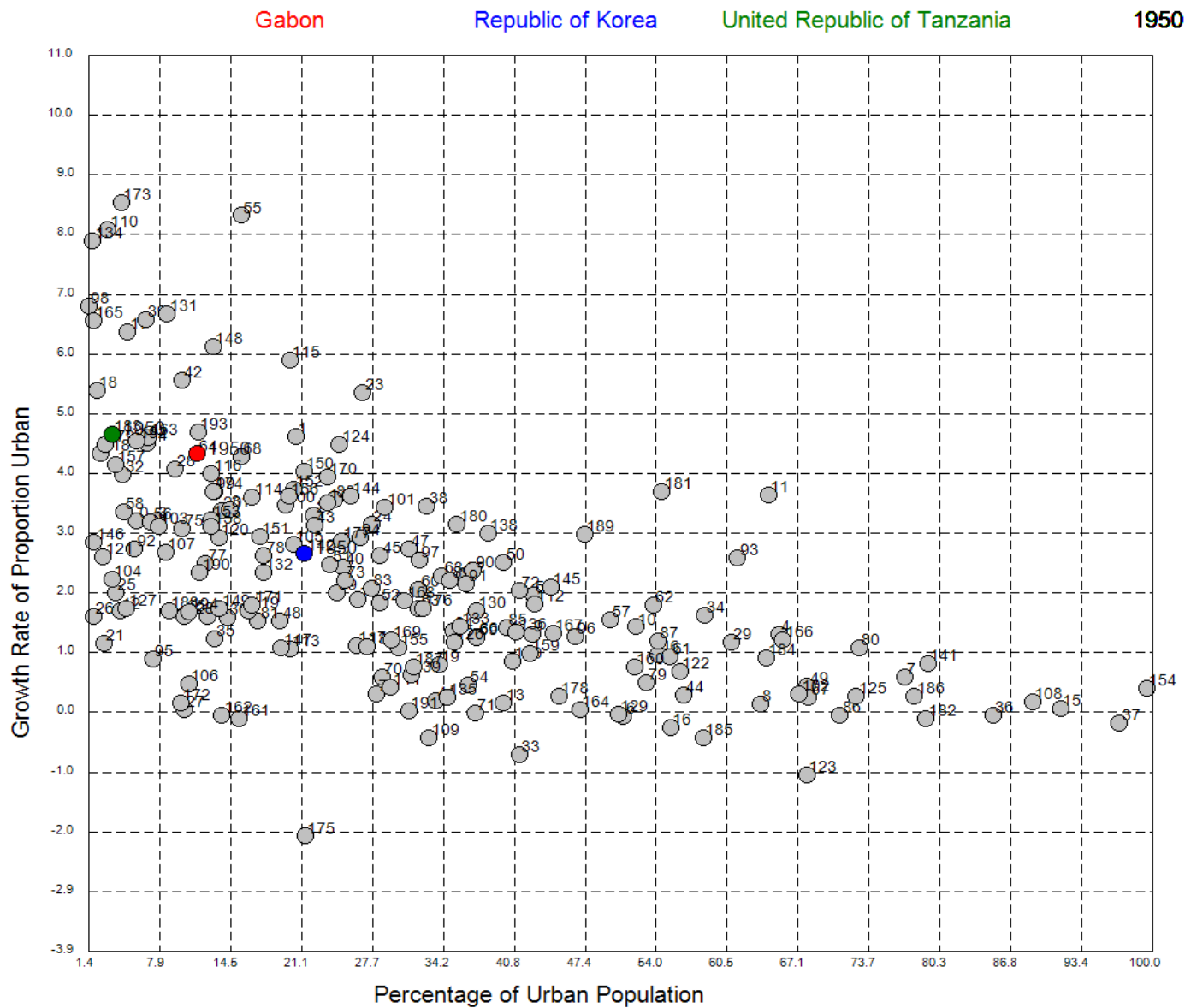
Using the “Global Norm”: Growth rate of the urban-rural ratio versus proportion urban for countries with a population of more than 2 million



Source: UN Population Division/DESA, *World Urbanization Prospects: The 2007 Revision*, CD-Rom, 2008.



Projection methods: Urban population





Estimation and projection tools: Lagos

Edit and project time series

World Urbanization Prospects

Time series: Lagos*, Nigeria

Select Location (* published city)

- Kaduna*
- Kano*
- Katsina
- Lagos*
- Maiduguri*
- Makurdi
- Minna
- Mubi
- Mushin
- Nnewi
- Ogbomosho*
- Okene
- Okpogho

Projections
Lagos*, Nigeria

Current Revision: 2007 Interval (years): 1

Latitude And Longitude Data :
Latitude: 6.45 °N Longitude: 3.4 °E

Source: <http://sedac.ciesin.columbia.edu/gpw/>

Country Status
 Not Started Working Ready

Session Name :
Nigeria_17_Jan_2008_1923

Observed Data Projected Data

TimeRef	Value	Exclude	Data Process	Statistical Concept	Data Status	Data Reliability	Institution
Jul 1, 1871	29,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Jul 1, 1881	37,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Jul 1, 1891	33,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Jul 1, 1901	42,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Jul 1, 1911	74,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Jul 1, 1921	100,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Apr 23, 1931	126,000	<input type="checkbox"/>	Census	City Proper	Final	Complete/ high quality	Jstor
Jan 15, 1953	368,754	<input type="checkbox"/>	Census	Urban Agglomeration	Unknown	Incomplete/ questionable quality	Unknown institution
Nov 5, 1963	1,056,156	<input type="checkbox"/>	Census	Urban Agglomeration	Unknown	Incomplete/ questionable quality	Unknown institution
Jul 1, 1971	1,476,837	<input type="checkbox"/>	Estimate	Urban Agglomeration	Unknown	Incomplete/ questionable quality	Dyb 1973
Jun 30, 1975	3,300,000	<input checked="" type="checkbox"/>	Estimate	Unknown	Unknown	Incomplete/ questionable quality	Wup 1999
Jul 1, 1975	1,060,848	<input checked="" type="checkbox"/>	Estimate	City Proper	Provisional	Incomplete/ questionable quality	Dyb 1979
Jul 1, 1982	1,404,000	<input checked="" type="checkbox"/>	Estimate	Urban Agglomeration	Unknown	Incomplete/ questionable quality	Jan Lahmeyer
Jun 30, 1983	5,200,000	<input checked="" type="checkbox"/>	Estimate	Urban Agglomeration	Unknown	Incomplete/ questionable quality	Wup 1999
Jul 1, 1983	1,097,000	<input checked="" type="checkbox"/>	Estimate	City Proper	Unknown	Incomplete/ questionable quality	Jan Lahmeyer
Nov 26, 1991	5,195,247	<input type="checkbox"/>	Census	Urban Agglomeration	Final	Complete/ high quality	Dyb 2001 and citypopulation.De
Jul 1, 1995	1,484,000	<input checked="" type="checkbox"/>	Estimate	City Proper	Provisional	Incomplete/ questionable quality	Jan Lahmeyer
Jul 1, 1999	8,000,000	<input checked="" type="checkbox"/>	Estimate	Urban Agglomeration	Provisional	Incomplete/ questionable quality	Gazetteer.De
Jul 1, 2005	10,886,072	<input checked="" type="checkbox"/>	Estimate	Unknown	Provisional	Incomplete/ questionable quality	Average of interp. Data from Gazetteer.De and Wup 2003 estimate
Jul 2, 2005	10,688,522	<input checked="" type="checkbox"/>	Estimate	Unknown	Provisional	Incomplete/ questionable quality	Gazetteer.De
Mar 21, 2006	9,013,534	<input type="checkbox"/>	Census	Urban Agglomeration	Provisional	Incomplete/ questionable quality	Nigeria Federal Statistics
Jul 1, 2006	11,153,863	<input checked="" type="checkbox"/>	Estimate	Unknown	Provisional	Incomplete/ questionable quality	Gazetteer.De

Sources Add Delete Save Run Print Excel Close

Action Status



5

Challenges



Challenges in estimating and projecting city populations

Practical challenges

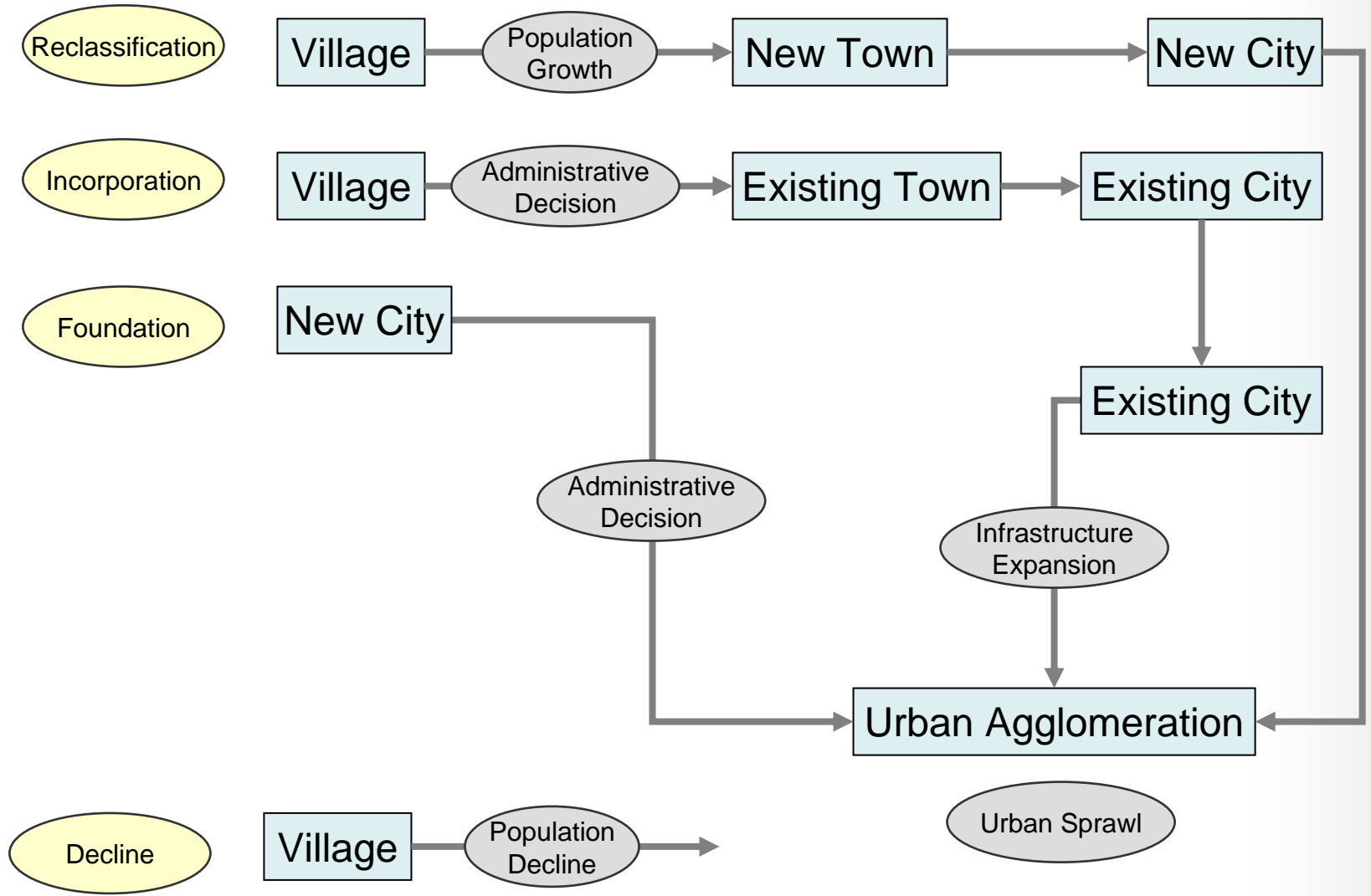
- City names in foreign languages can be easily mixed up (Chinese)
- Large amount of data (6000+ cities) in time-series

Methodological challenges

- Definitions change from country to country
- Definitions change over time (no consistency in time-series)
- City boundaries are not drawn consistently (some cities include large rural areas, others don't)
- Neighboring cities may merge into one urban agglomeration
- Small cities / villages may become huge cities due to special development measures (Shenzhen, “airport cities”)
- Reclassification of settlements (from village to town to city)



Human settlement - seen as a **process**





Challenges: Distribution of countries according to the criteria used in defining **urban areas** (2005 Revision)

Criterion	Sole use	Used in conjunction with other criteria	Percentage according to sole use	Percentage according to use in conjunction with other criteria
Administrative	81	126	35.5	55.3
Economic	-	29	-	12.7
Population size/density	59	112	25.9	49.1
Urban characteristics	4	26	1.8	11.4
Administrative and population	13	-	5.7	-
Administrative and urban characteristics	5	-	2.2	-
Economic and population	5	-	2.2	-
Population and urban characteristics	7	-	3.1	-
Administrative, economic and population size	18	-	7.9	-
Administrative, urban characteristics and population	4	-	1.8	-
Economic, population and urban characteristics	1	-	0.4	-
Administrative, economic, population size and urban characteristics	5	-	2.2	-
Entire population	6	6	2.6	2.6
No urban population	2	2	0.9	0.9
No definition	18	18	7.9	7.9
Total number of countries or areas	228	228	100.0	-



Challenges: Distribution of countries according to the criteria used in defining **city populations** (2005 Revision)

Criterion	Sole use	Used in conjunction with other criteria
City proper	109	123
Urban agglomeration	87	103
Metropolitan area	12	21
Capital is urban agglomeration; other cities are city proper, urban agglomerations or metropolitan areas	8	0
Capital is city proper; other cities are city proper, urban agglomerations or metropolitan areas	3	0
Capital is metropolitan area; other cities are city proper, urban agglomerations or metropolitan areas	7	0
Not defined	2	4
Total number of countries or areas	228	



World Urbanization Prospects: Publications

Report, including key findings, analytical chapters,
and data tables

CD-ROM with detailed data tables (EXCEL files)

Online-data on Web site (www.unpopulation.org)

Wall Charts



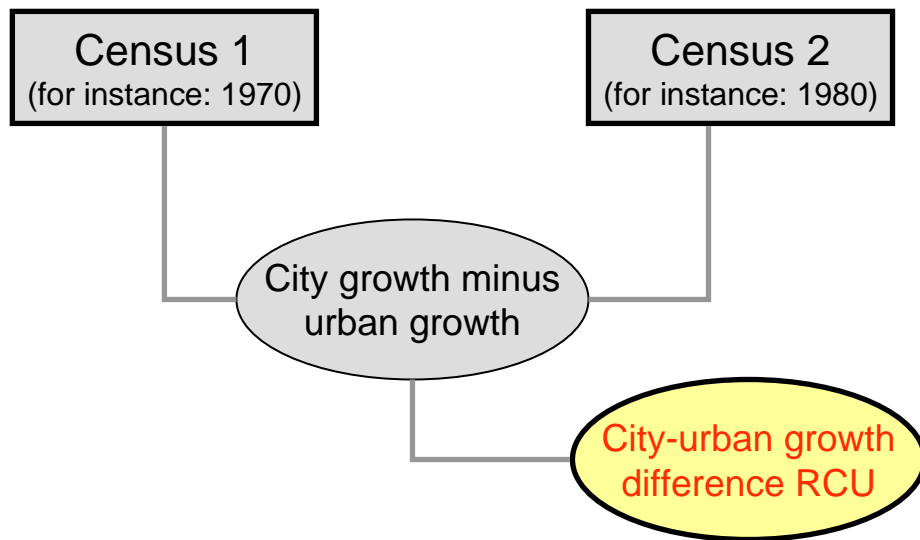
Thank You !

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Department of Economic and Social Affairs (DESA)
Population Division - Population and Estimates and Projection Section

www.unpopulation.org



Projection methods: City population (1)



The projection of city populations is similar to the projection of urban populations:

Step 1: The city-urban growth difference (RCU) is the difference between the rate of city population growth and the rate of total urban population growth. A **logistic regression** is used to project this city-urban growth difference.



Projection methods: City population (2)

Normally, an extrapolation based on a simple logistic curve would imply that the city-urban growth difference remains constant over the projection period. Empirical evidence shows that this is unrealistic.

Step 2: “Dampening of city growth”

A simple model is used to reduce the value of the city-urban growth difference by using a model that was calibrated on empirical data for dampening city growth.

Essentially, this means that with *increasing* (initial) city size, the value of the projected city-urban growth difference (hrcu) *decreases*.

In other words:

Larger cities grow slower!