Big Data: How do we meet the expectations?

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The telecommunication/ICT sector as a major source of big data

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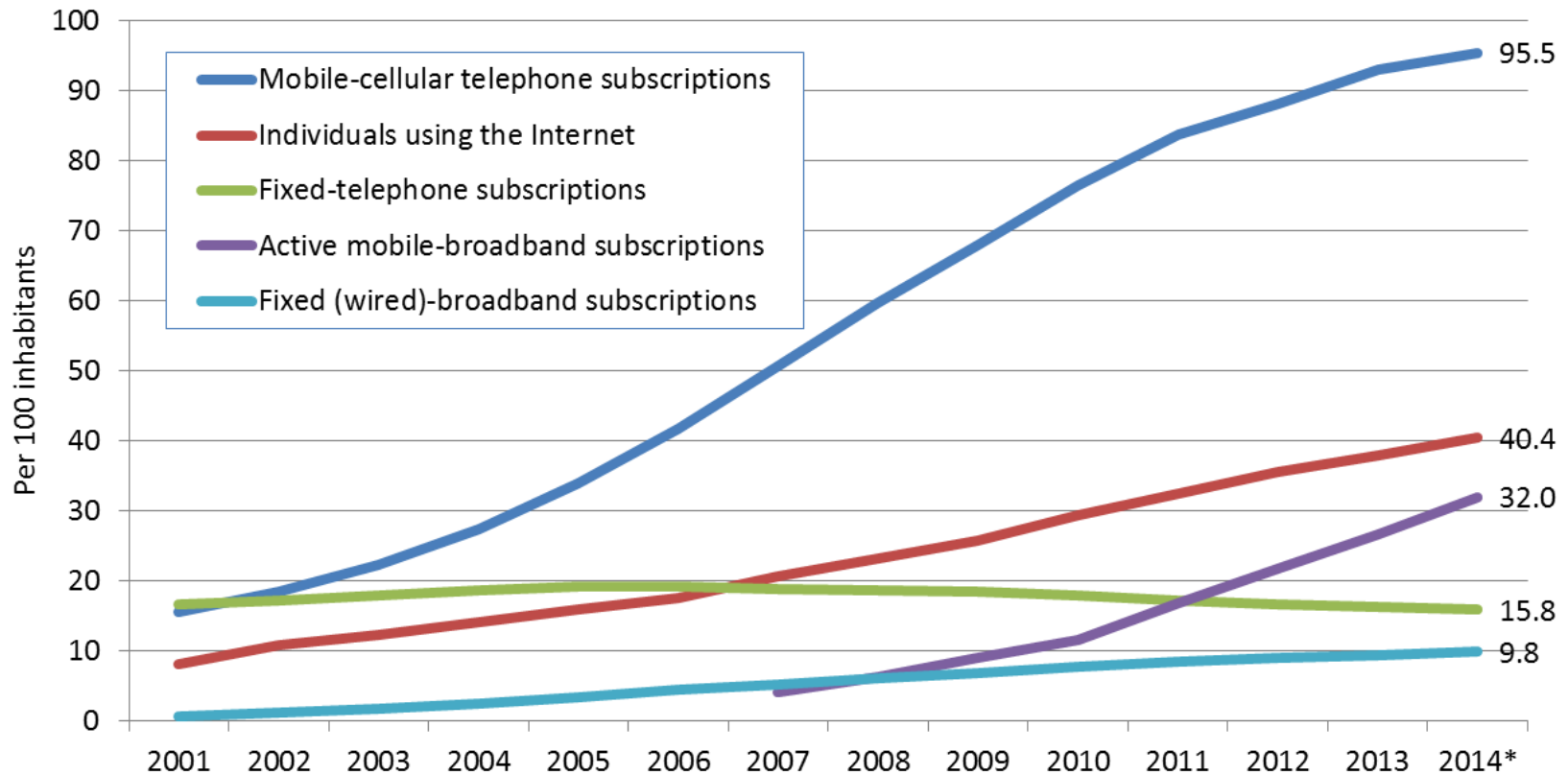
Big data and the ICT sector
Why important

- ICT sector is a **major source** of big data

- **Amount of data** generated as a result of the spread of ICTs

- **Access** to mobile communication services is **nearly ubiquitous**

- Mobile devices allow **collection of new data** (on all types of information)

- **Gaps** in official (ICT) statistics – need to look for alternative data sources

Global ICT developments
Key indicators

Global ICT developments, 2001-2014

Legend:
- Mobile-cellular telephone subscriptions
- Individuals using the Internet
- Fixed-telephone subscriptions
- Active mobile-broadband subscriptions
- Fixed (wired)-broadband subscriptions

Y-axis: Per 100 inhabitants

End values (2014*): 95.5, 40.4, 32.0, 15.8, 9.8

X-axis: 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014*

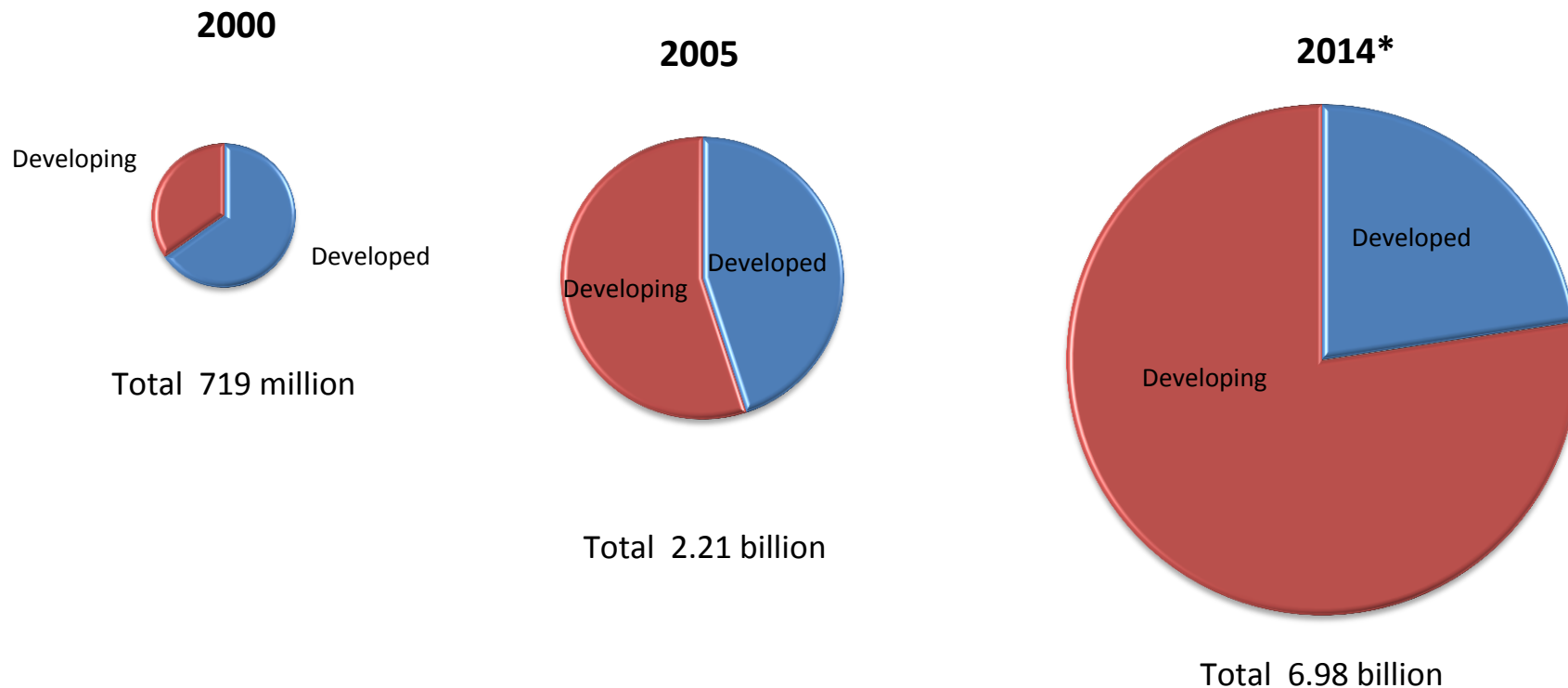Note: * Estimate
Source: ITU World Telecommunication /ICT Indicators database

Mobile revolution
Unprecedented growth in developing countries

2000

Developing

Developed

Total 719 million

2005

Developing

Developed

Total 2.21 billion

2014*

Developed

Developing

Total 6.98 billion

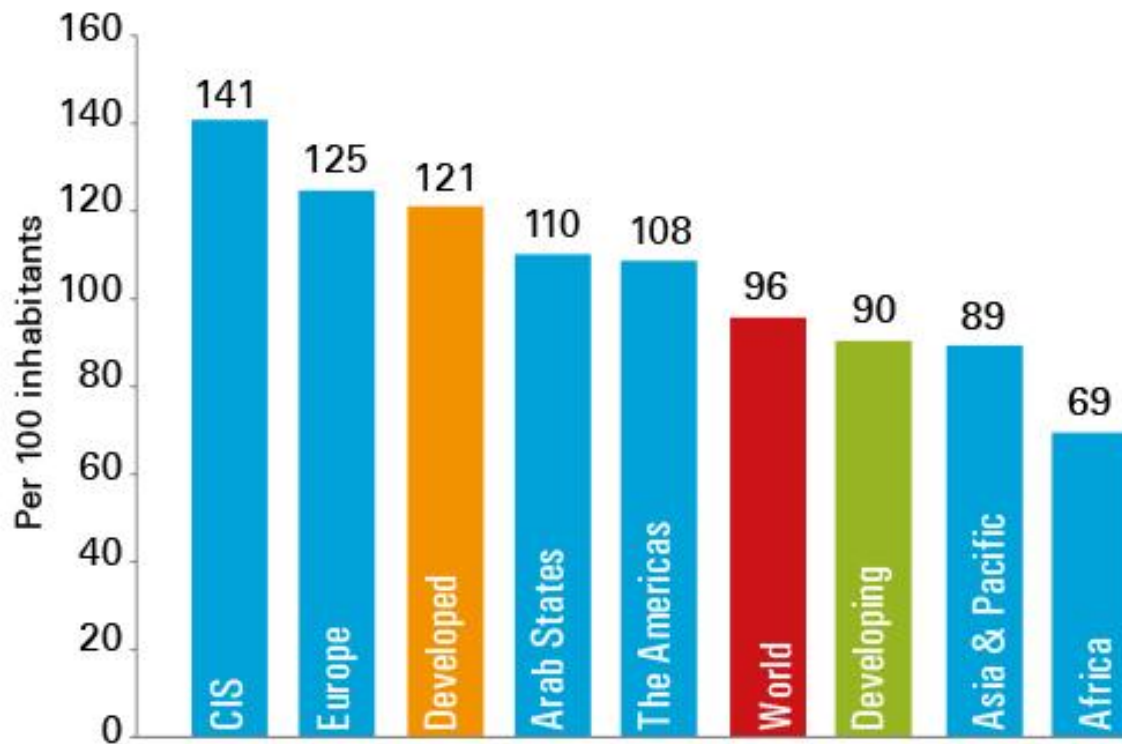Total number of mobile-cellular subscriptions is close to total world population

Source: ITU WTI Database

* Estimate

Mobile revolution
Across all regions

Mobile penetration by region, 2014*
(number of mobile cellular subscriptions per 100 inhabitants)

Source: ITU

* Estimate

Mobile revolution
Around 95% of the population covered by a mobile network

- Much-faster-than-anticipated growth in mobile-cellular services and **near ubiquity** in telephony

- 90% of the world's **rural inhabitants** covered by a 2G mobile cellular signal

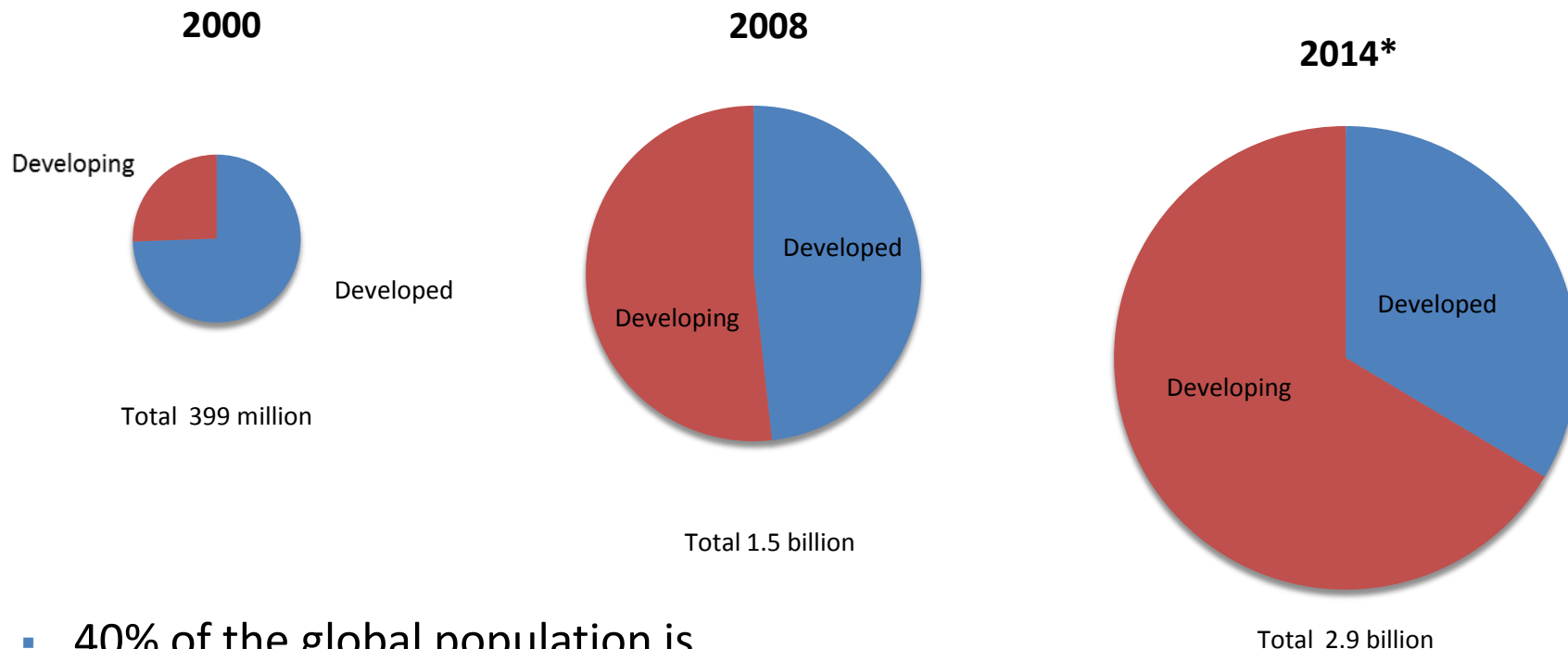- **Mobile broadband** is fastest growing segment, in particular in developing countries

The Economist

FEBRUARY 28TH-MARCH 6TH 2015   Economist.com

Brazil's economic quagmire
The theology of jihad
America's oversold manufacturing boom
Venezuela's slow-motion coup
Mosquito sex and malaria

Planet of the phones

By 2020
80% of adults will
have a supercomputer
in their pocket

Source: The Economist, 28 February 2015

Internet uptake
2/3 of Internet users are in the developing world

2000

2008

2014*

Developing

Developed

Total 399 million

Developed

Developing

Total 1.5 billion

Developed

Developing

Total 2.9 billion

- 40% of the global population is using the Internet
- **But:** 90% of those not yet online are in the developing world
- Mobile broadband growth is key

Source: ITU WTI Database

* Estimate

ICT sector big data sources
Potential partners in official statistics

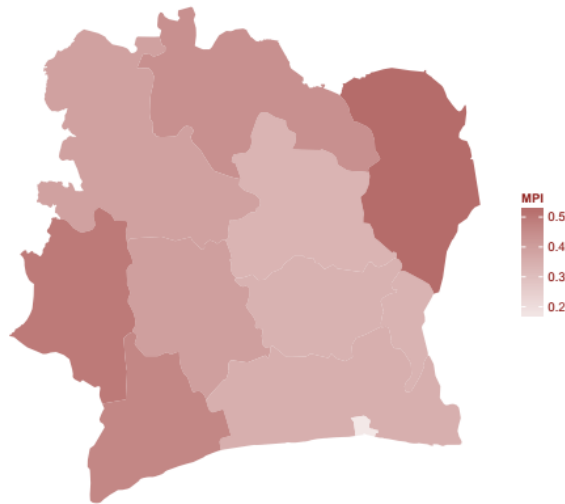|	
Telecommunication service providers	Fixed operators Mobile operators Internet service providers (ISPs)
Internet and mobile content providers	Over-the-top service providers (OTTs) Social network providers Mobile apps market/providers
Others	Software providers Content distribution network (CDN) providers Equipment providers

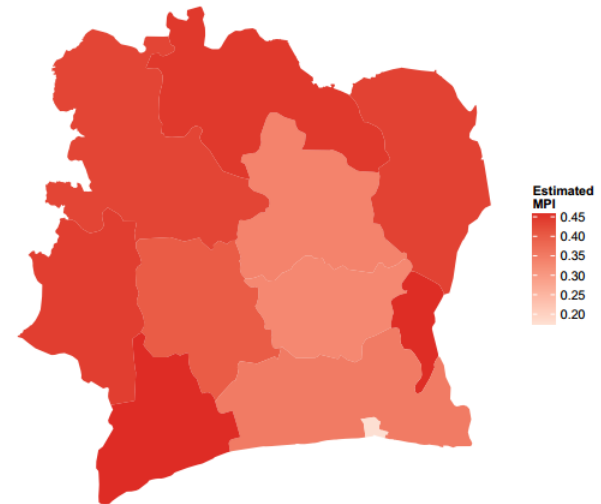# Examples of use of big data from **mobile** telecommunications

Poverty mapping in Cote d'Ivoire

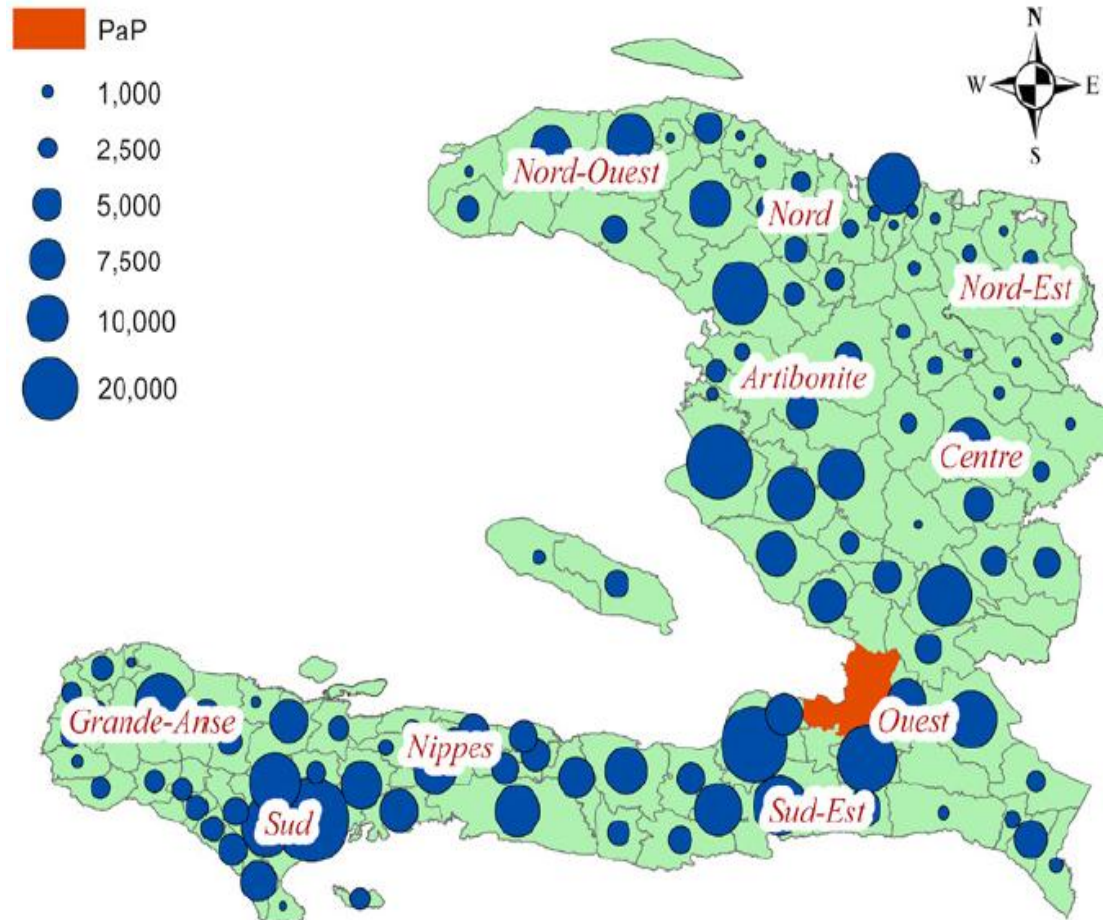**Based on official statistics**

Map of 11 regions showing Multidimensional Poverty Index
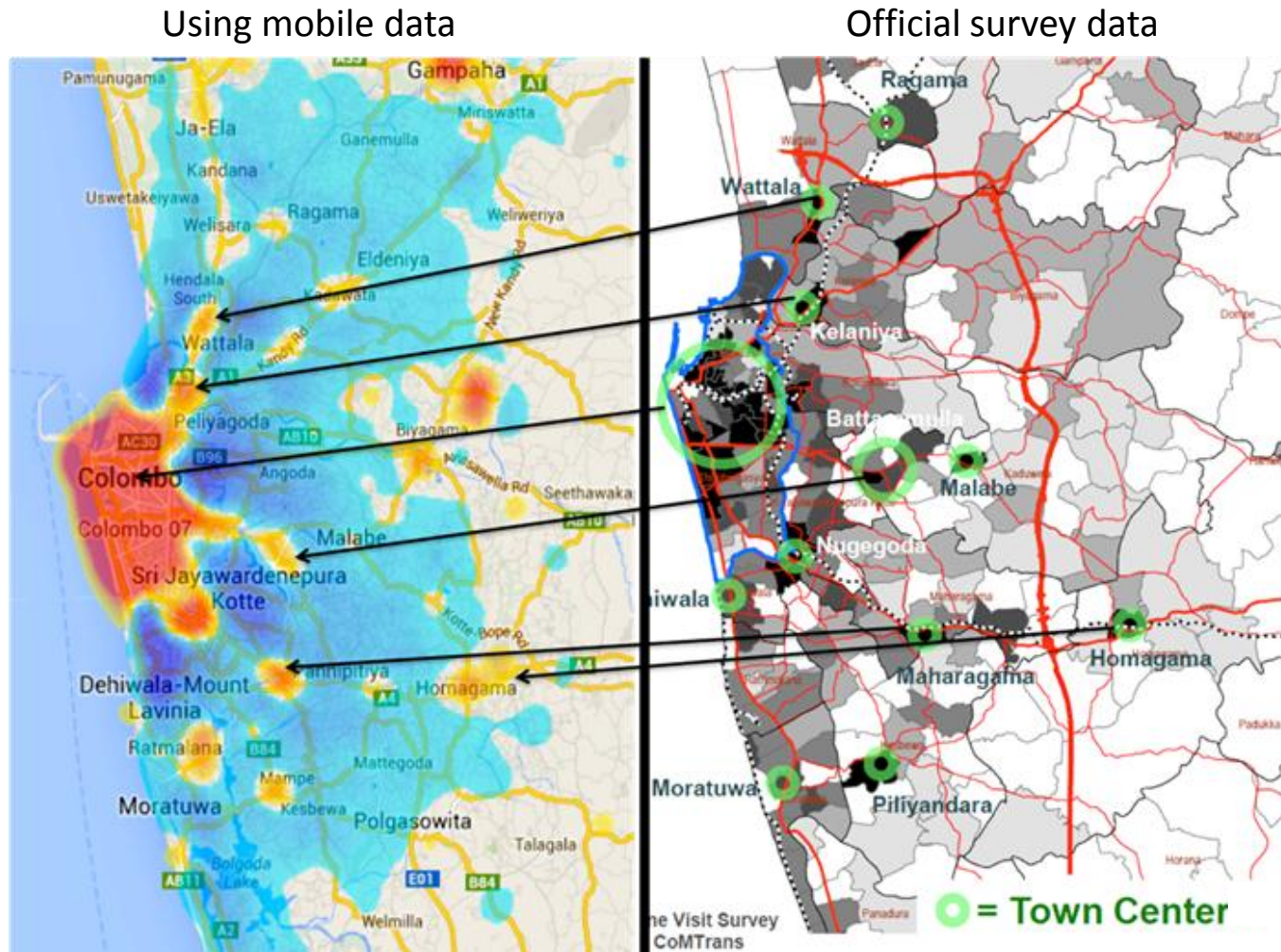
Model based on mobile operators data

Poverty map of 11 regions estimated based on data from antennas

Source: Smith C,, Mashadi A,, and Capra L (2013).

Tracking population displacements after 2010 Haiti earthquake

Source: Bengtsson et al., 2011

Transportation and urban planning in Colombo, Sri Lanka

Using mobile data

Official survey data

Source: Lokanathan et al. (2014)

Big data from the ICT sector
Development potential and challenges

Development potential

- Rich source for big data, real-time and low-cost

- Data from mobile operators are available in developing countries

- Reveal new insights across sectors helping policy makers

- The use of alternative data sources may have bigger impact – «statistical leapfrogging»?
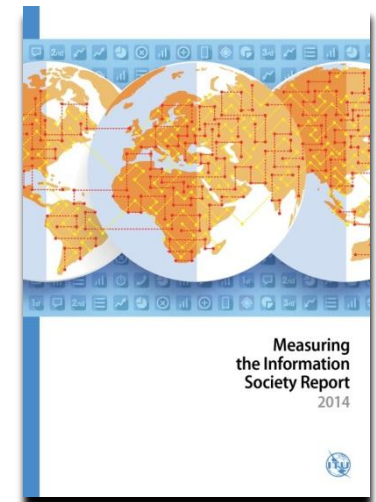
Challenges

- Data access

- Privacy and data protection

- Storing and analysing data; required skills

- Veracity (quality, representativeness, interpretation of results)

Public-private partnerships
Cooperation among different stakeholders
Proof-of-concept studies to be scaled up

Big data at ITU
Focus on big data from telecommunication/ICT industry

- Forum for discussion with member states (WTIS 2013/14/15, ITU statistical Expert Groups)

- Measuring the Information Society Report 2014 – "The role of big data for ICT monitoring and for development"

- Member of UN Global Working Group (GWG) on Big Data for Official Statistics

- Big Data Strategy developed in 2014

Big data at ITU
Strategy considerations

- Step-wise approach: start with pilots and scale up
- Awareness raising and best practice dissemination
- Bringing partners together and building partnerships
  - ITU sector members (more than 700 private Sector Members and Associates, as well as Academia)
  - ICT sector companies, including many telecommunication operators and satellite companies
- Role of UN agency: third/neutral/trusted party - clearing house?
- Capacity building (developing countries)

Thank you

For more information and data:
www.itu.int/en/ITU-D/statistics