



IBM Economics – Get Smarter for a New Economy

Get Smarter for a New Economy: How cities are competing in the innovation economy

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Get Smarter for a New Economy: How cities are competing in the innovation economy

- In the years ahead, economic growth will increasingly rely on the merger of creativity, technology and innovation.
 - Cities will face increasing competition for human capital, entrepreneurship, and investment.

- Addressing this challenge will require cities to provide services that meet the needs and expectations of the highly skilled and diverse population.
 - Analytics and systems thinking will require new deployment of information and communication technology for cities to gain competitive advantage in this new economic age.

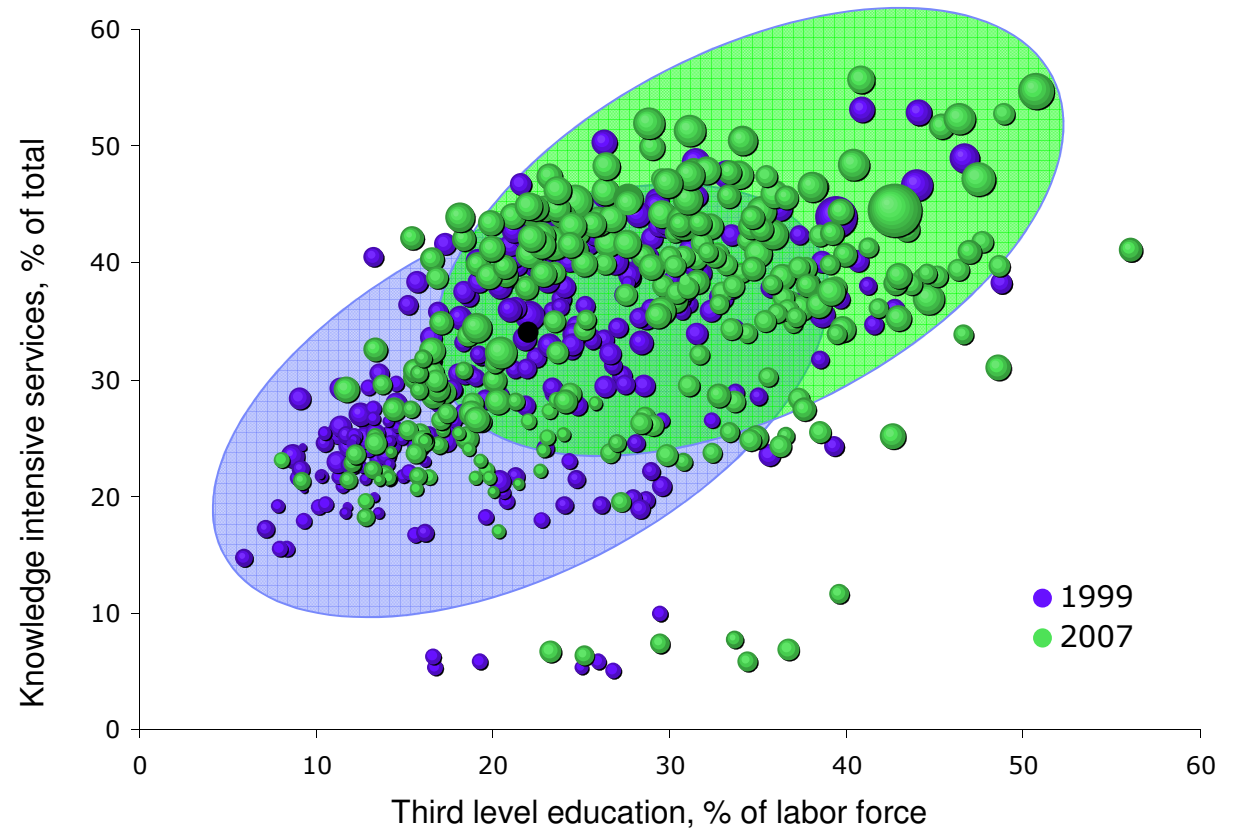
- Investing in city's to improve social and economic returns will help address pressing capital constraints.

Skills and knowledge are having an increasingly significant impact on economic growth and activity amongst cities and regions

- **Leading regional and urban economies combine**
 - a strong base of skills and talent, and
 - a high share of knowledge-intensive industries in the overall economy
- **Economies are becoming more skills and knowledge-intensive over time**

Skills and knowledge are driving growth in income

(Regional and urban data, 1999-2007, size of the bubble reflects income per capita, US\$ PPP)

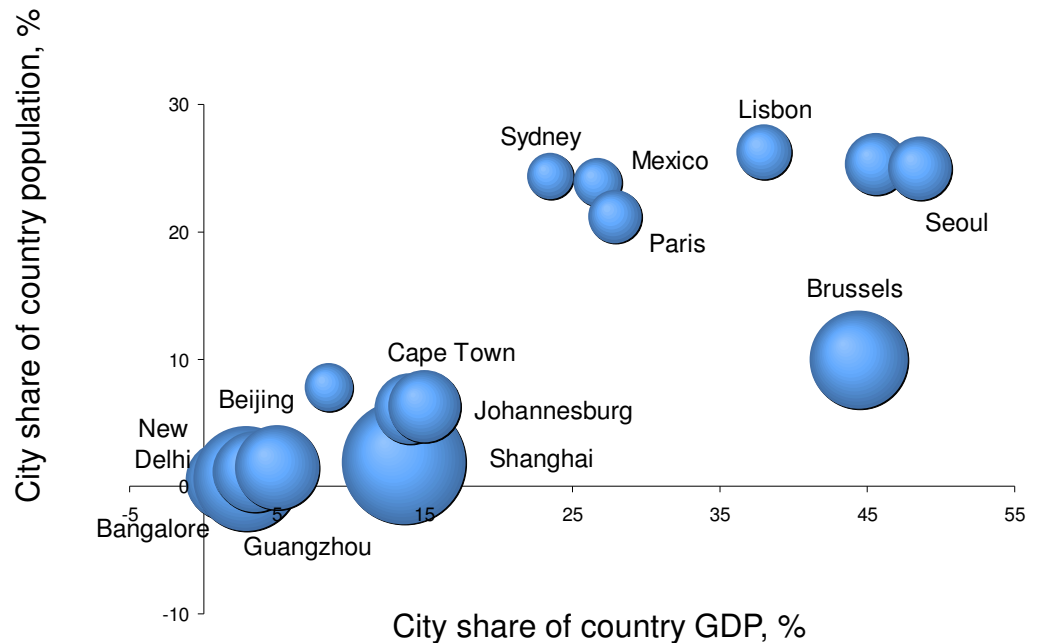


Source: OECD Regional Statistics database, 2010 and IBM Global Center for Economics Development analysis

As focal points of economic activity cities are strongly positioned to benefit from the new talent-intensive economic growth

- The top 100 cities worldwide accounted for roughly 25 percent of the world's GDP in 2005. By 2008 this had increased to over 30 percent
- The world is at an unprecedented level of urbanization.
- Cities contain an increasingly large share of the world's highly skilled, educated, creative and entrepreneurial population
- Cities support large-scale business networks that absorb and extend innovation

Top cities act as economic activity hubs
(Size of the bubble – ratio of city share of national GDP to its share of national population, 2009)

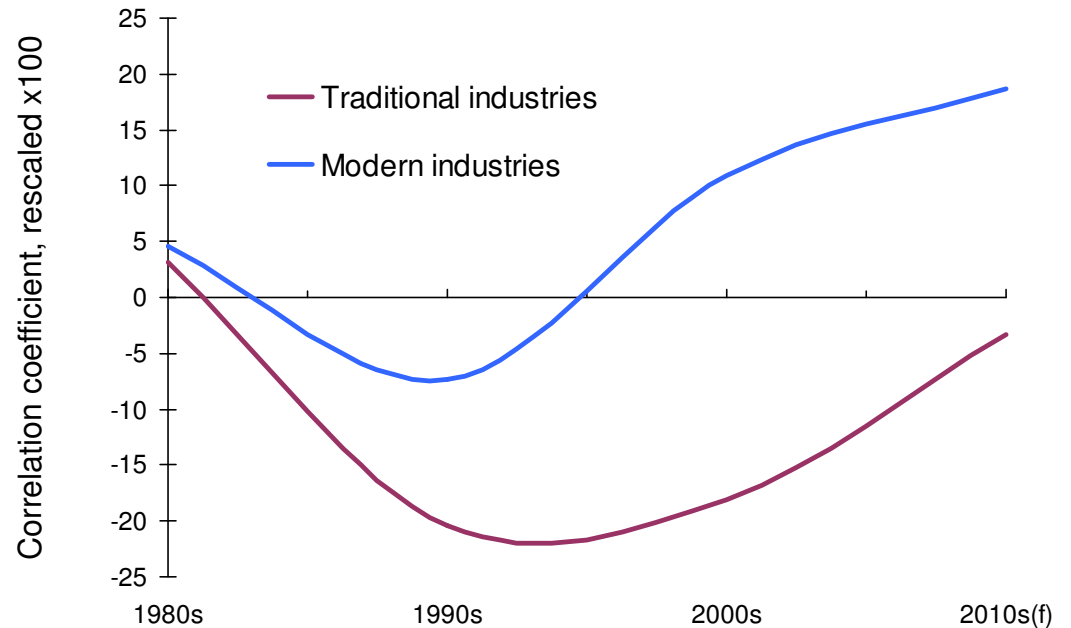


Source: UN Habitat 2010, and IBM Global Center for Economics Development analysis

The importance of the links between talent and innovation in jointly driving economic growth is rising across all industries

- The link between skills, knowledge and innovation is growing in modern industries
- Traditional industries are now at the inflection point of change from the old model of growth to the new, more talent and knowledge intensive reality

Links between skills, knowledge, creative and technological innovation contributions to growth
Annual average correlation

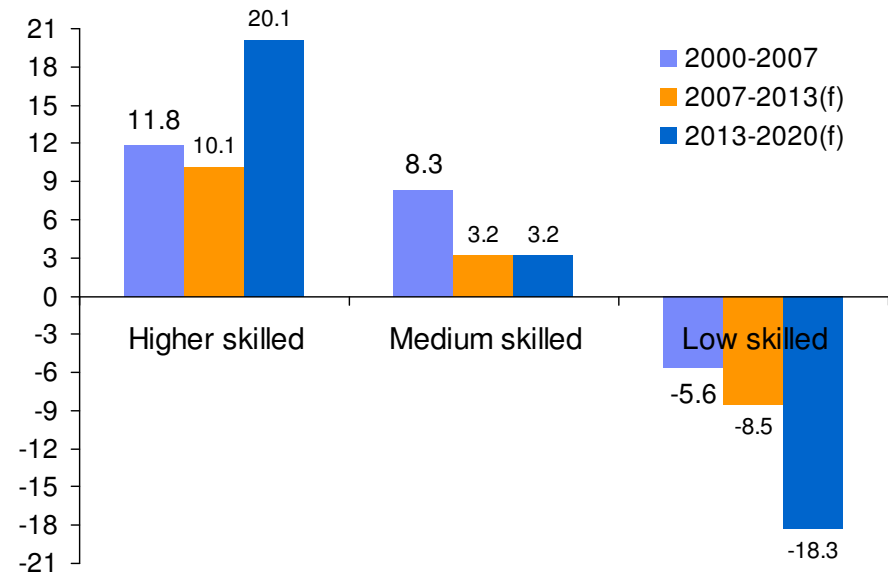


Source: KLEMS data base (2010) and IBM Global Center for Economics Development analysis

As skills, knowledge, creativity and innovation grow in importance, demand for higher quality workers is increasing

- Decline in the demand for low qualifications is accelerating since 2000
- Dramatic increase in demand for high qualifications is expected in the next decade
- Assuming current demographic trends, demand for international students in the OECD will rise from 6% in the mid-1990s to 30% by 2020
- Economies are increasingly competing for highly skilled workers

Change in demand for skills in EU27
Net increases in excess of demographic factors
Millions of Jobs

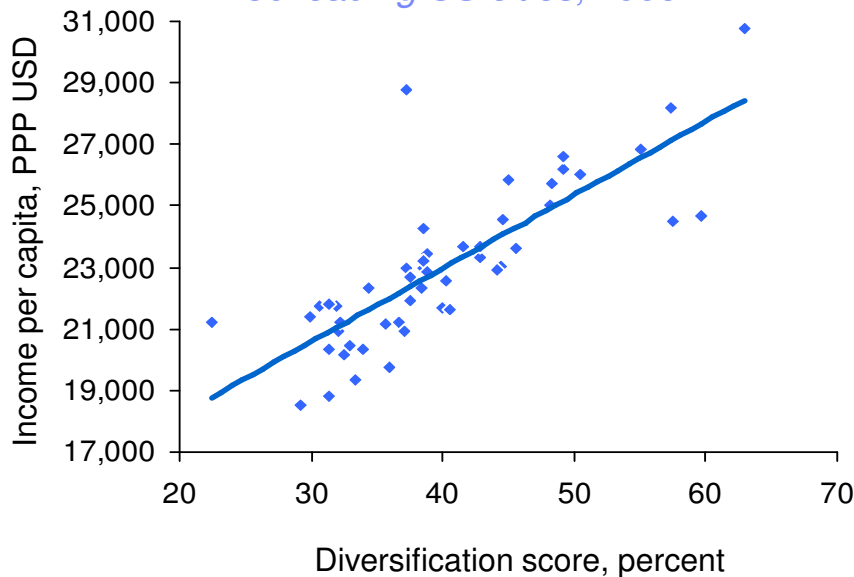


Source: CDEFOP, 2009 and 2010, and IBM Global Center for Economics Development analysis

Cities are competing globally for more diversified and internationally mobile talent

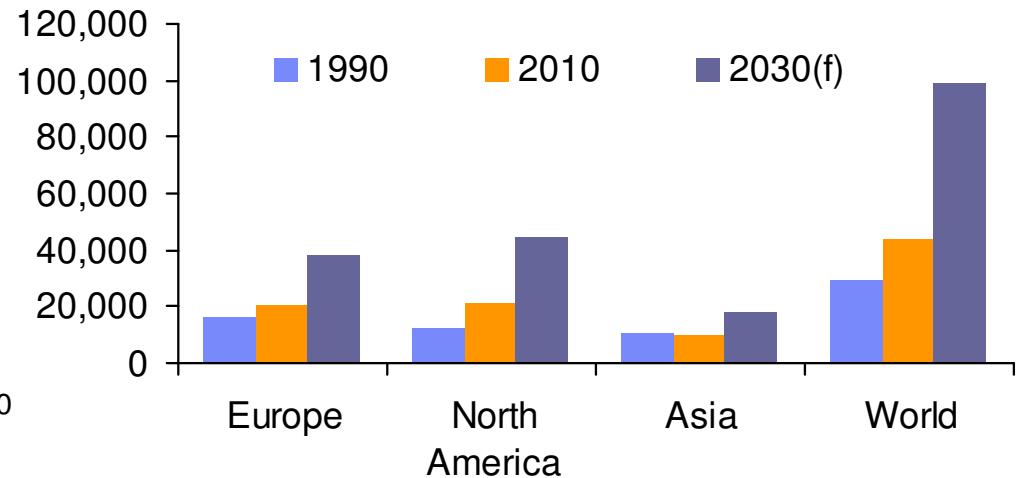
- Diversity of skills, creativity and knowledge has a positive effect on cities' income per capita
- By 2030, the stock of highly educated migrants will more than double on 2010
- Internationally, flows of skills and talent are also becoming more cities-centered

Diversity of skills, creativity and knowledge is positively linked with income
50 leading US cities, 2006



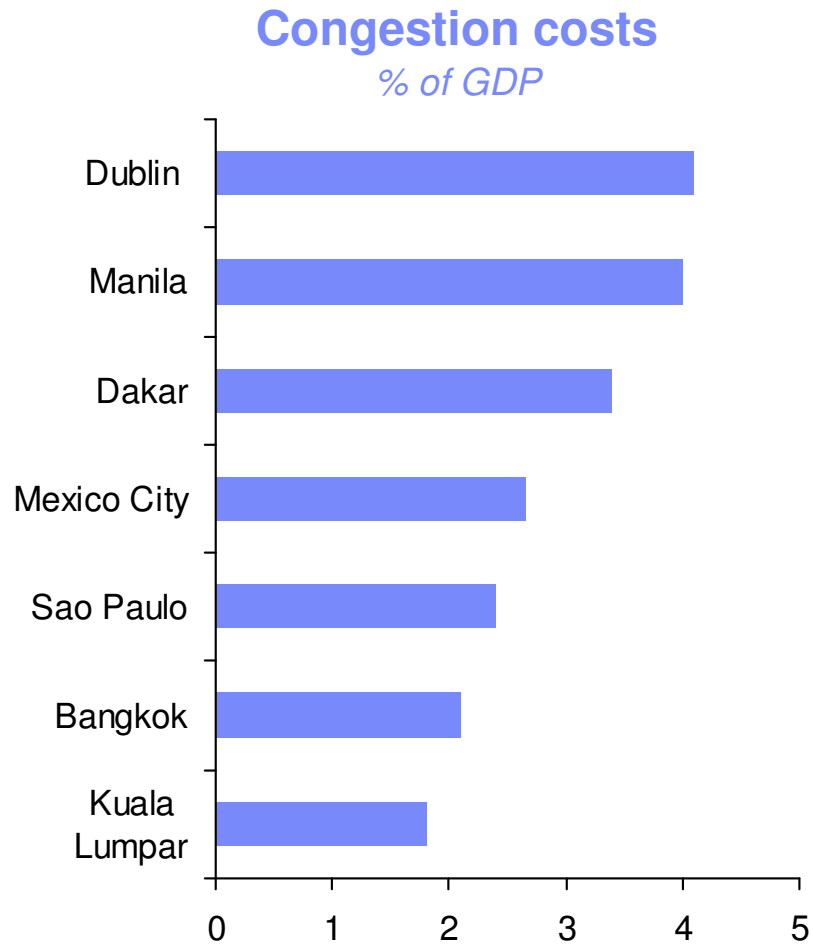
Source: UN Human Development Report, 2009, Diversification score is based on data from Impresa Consulting, 2006, and IBM Global Center for Economics Development analysis

Inflow of highly educated migrants
Thousands, 1990-2030



Source: UN Human Development Report, 2009, and IBM Global Center for Economics Development analysis

Congestion is one of the main urban transportation problems faced by almost all cities and incurs significant costs



Source: Ley and Boccardo, 2010; CSO, County Incomes and Regional GDP 2010

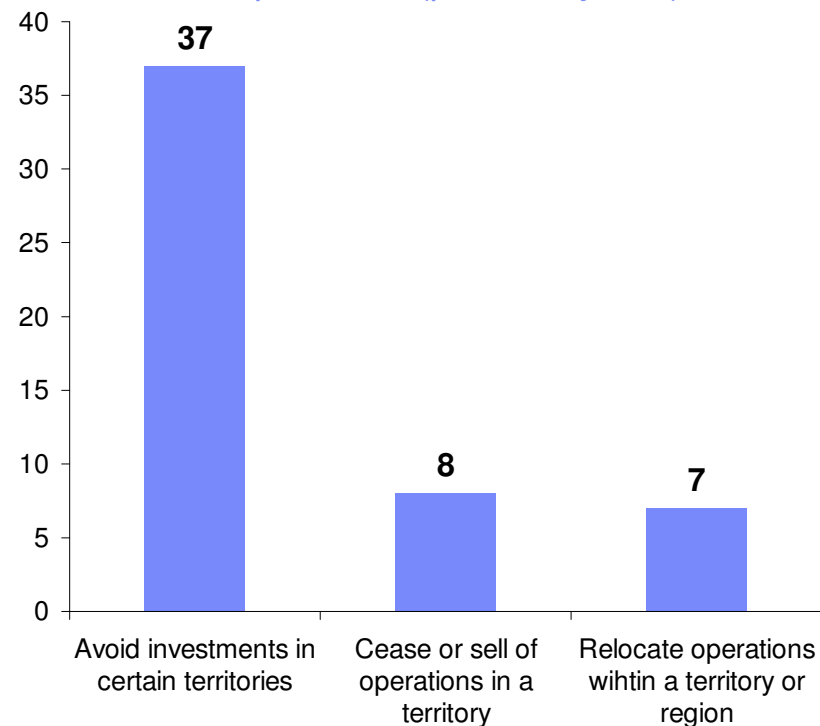
- **Congestion negatively impacts the quality of life in a city by**
 - decreasing personal and business productivity
 - lowering air quality
 - creating noise pollution.
- **Congestion pressures faced by cities will intensify going forward**
- **Car ownership in Sao Paulo is increasing at the rate of 1,000 cars a day**
- **Traffic is growing four times faster than the population in Mumbai, Delhi, Ahmedabad, Bangalore, Chennai and Hyderabad**

Poor public safety has a negative impact on skilled and innovative workers and businesses

- **Levels and quality of human capital are linked to overall levels of public safety**
 - Higher individual and average levels of education increase demand for public safety
- **How cities respond to threats to public safety, such as violence and terrorism, are of utmost importance for business location decisions**
 - Crime and poor public safety have a deterrent effect on foreign direct investment and domestic entrepreneurship, especially in highly skills-intensive sectors

Corporate location responses to political violence and terrorism

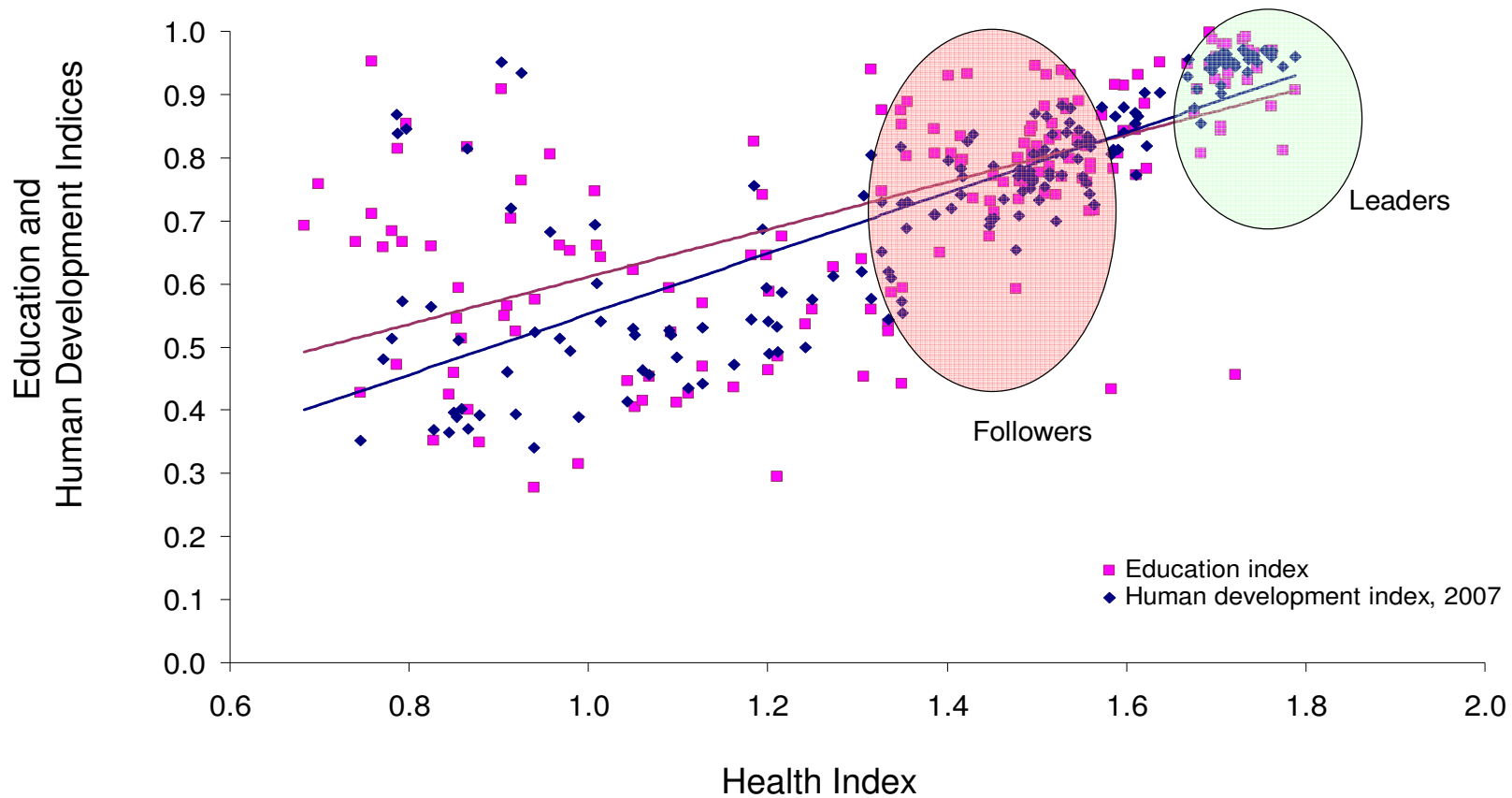
% respondents (past five years)



Source: Lloyds, Under attack? Global business and the threat of political violence

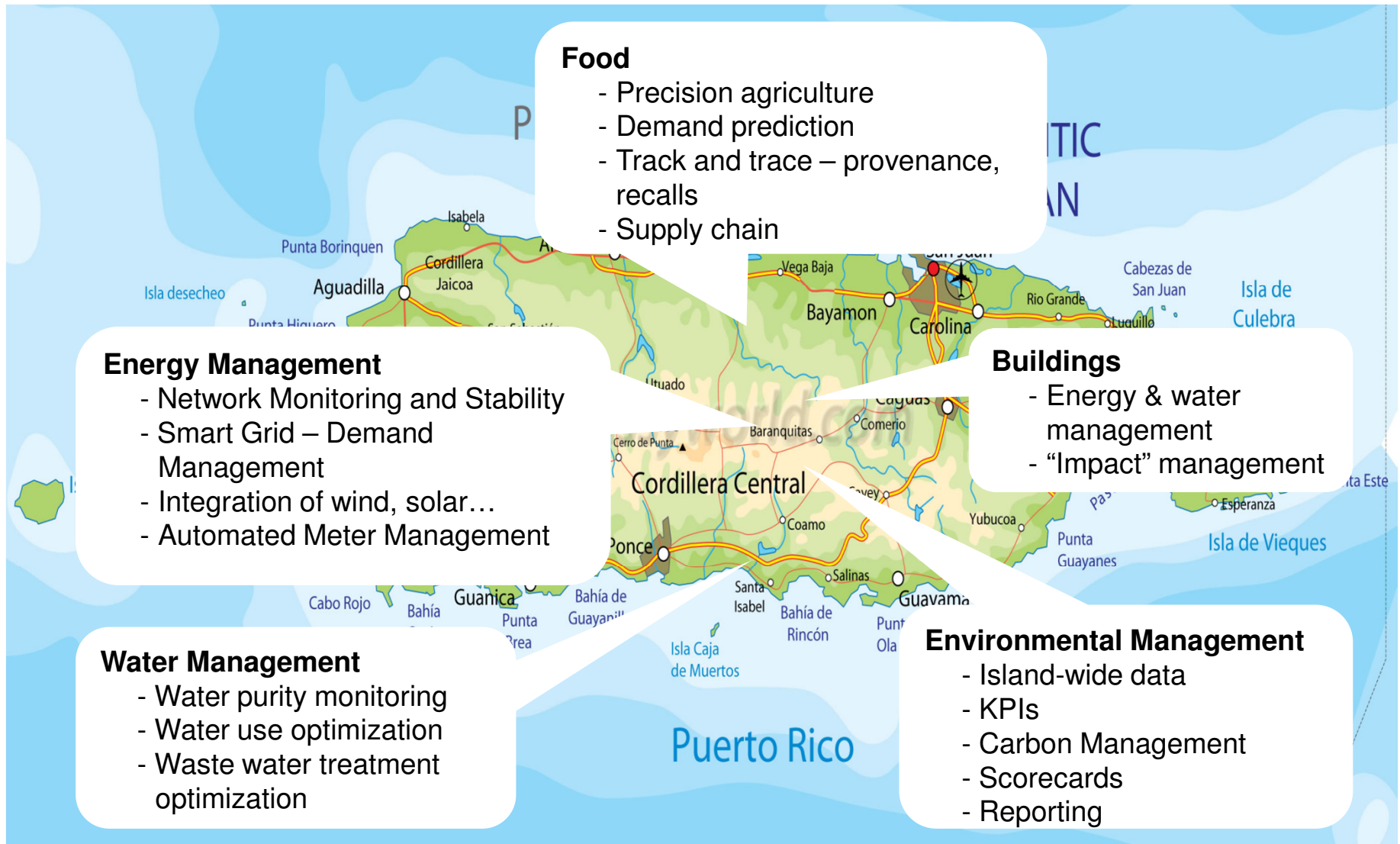
Health is fundamental to the quality and productivity of a workforce and is crucial for a city's overall survival and attractiveness

Better health is positively correlated with higher quality of skills and knowledge



Source: UN Human Development Report, 2010 database, <http://hdrstats.undp.org/en/indicators/> and IBM Global Center for Economics Development analysis

The idea also applies to other economic activity - island nations such as Puerto Rico, for example



Malta – A Smart Grid Island

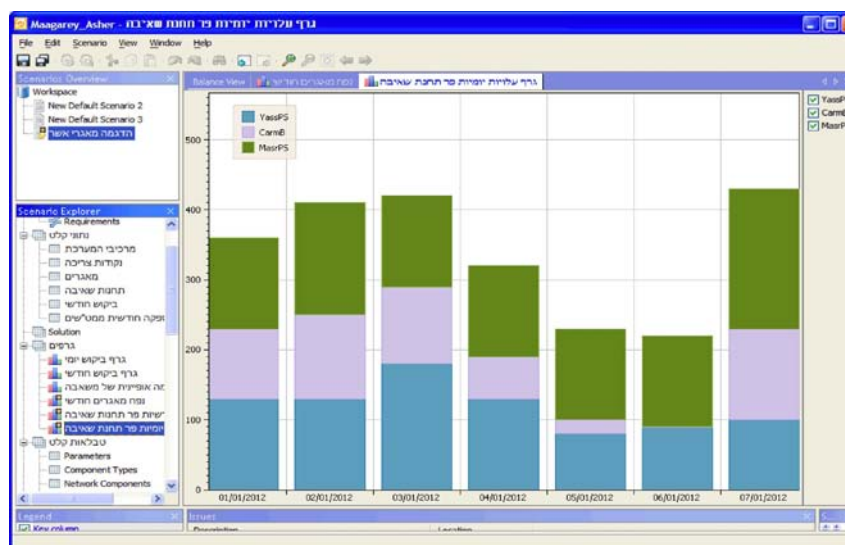
- Mediterranean island
 - Energy imported via undersea cable from Italy
 - expensive!!
 - Water desalination a major driver of energy usage

- Solution:
 - Focus on consumer behavior to maximize efficiency of energy (and water) use
 - 250,000 smart electricity and water meters
 - Residents track energy use online and change consumption habits



Israel - Integrated Water Resource Management

- Manage effectively and efficiently multiple different types of water sources - groundwater, desalination, rivers, reservoirs.
- Projects focused on:
 - Provision of recycled water for agriculture (accounting for different quality needs for different crops, pressure needs, pumping required)
 - Optimizing source blending
 - Energy cost management

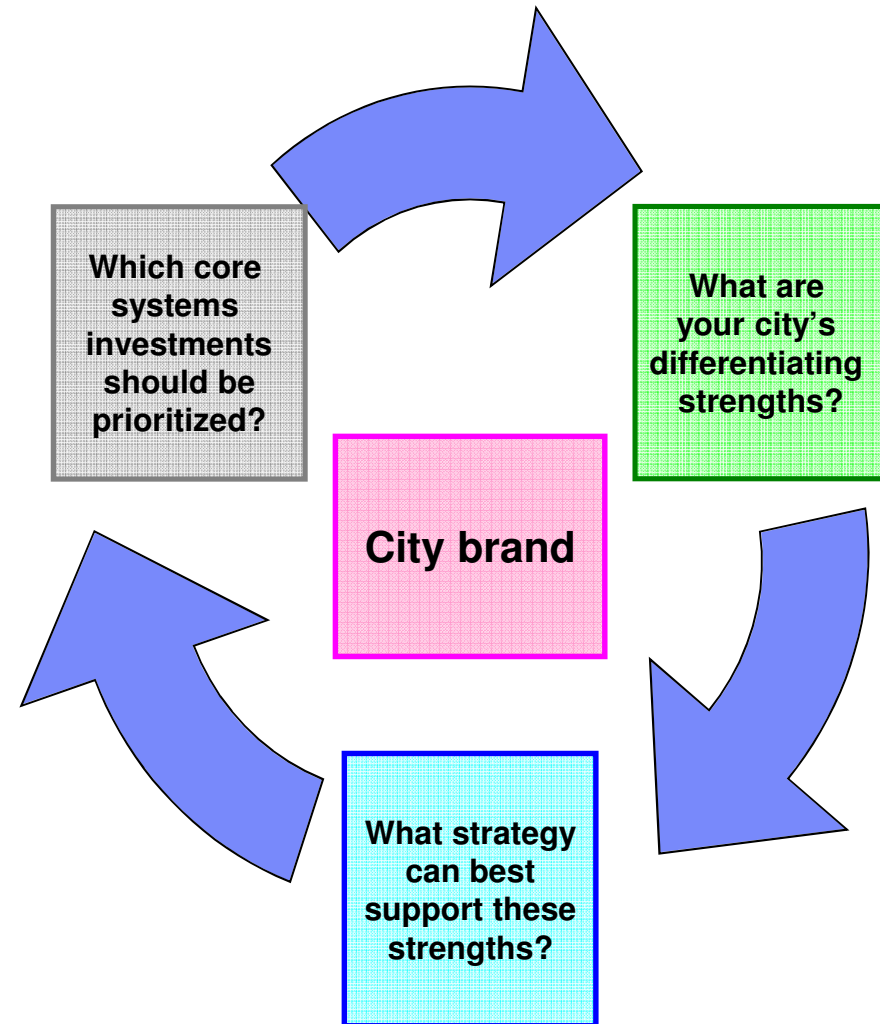


In spite of current financial constraints, there are some basic steps city leaders can and must take now

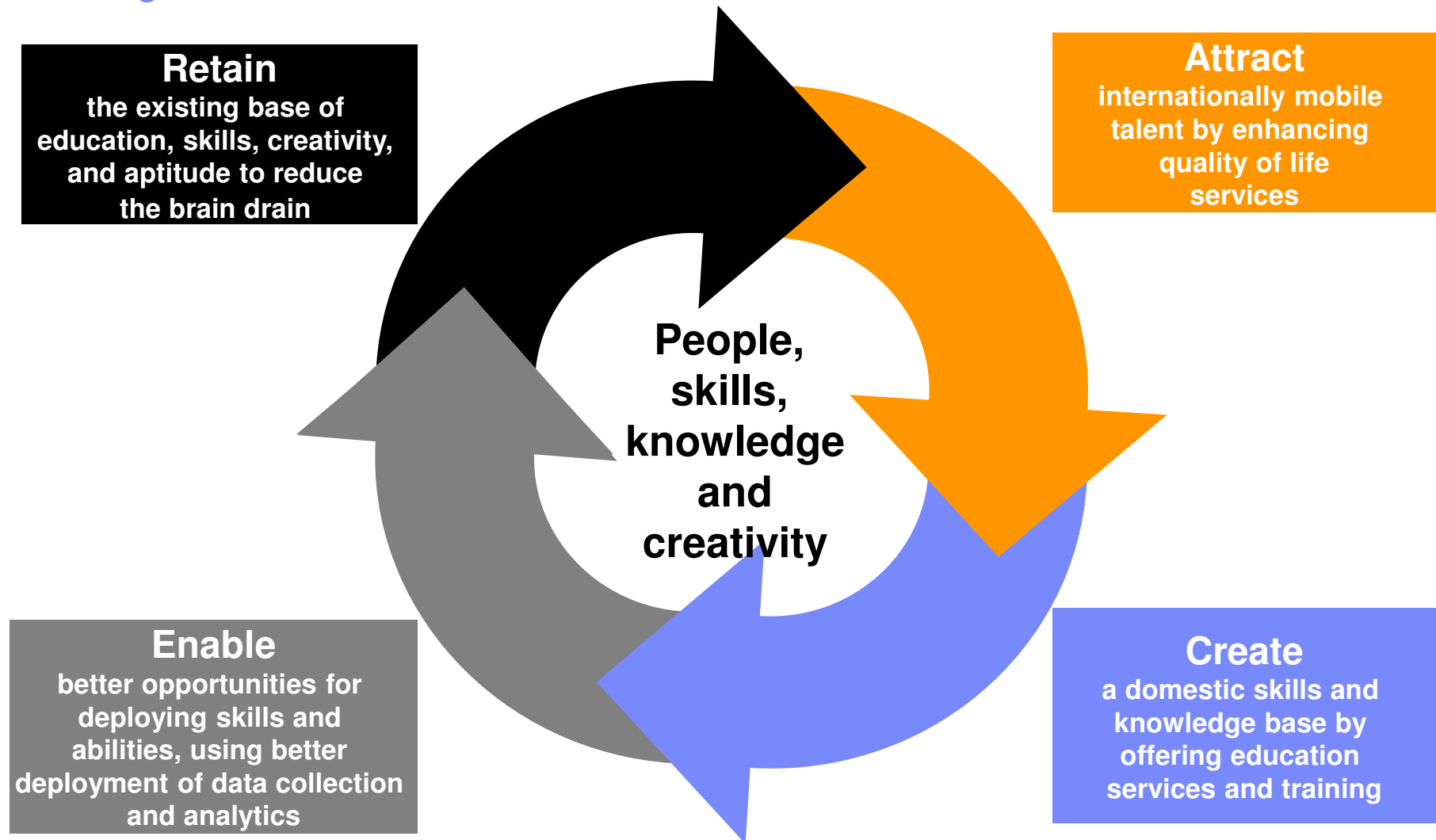
1. Decide what their city brand should be
2. Adopt policies conducive to skills, creativity and knowledge-driven growth
3. Optimize their services around the citizen
4. Employ systems thinking in all aspects of planning and management
5. Develop and apply the fundamental enabling information technologies to core city systems

1. Cities need to decide what their city brand should be

- Identify the city's differentiating strengths that will attract human talent
- Create a strategy that emphasizes them, building on existent basis of core services
- Prioritize investments in core systems: transport; government services and education; public safety and health; as well as energy, environmental sustainability, urban planning and design in line with the strategy



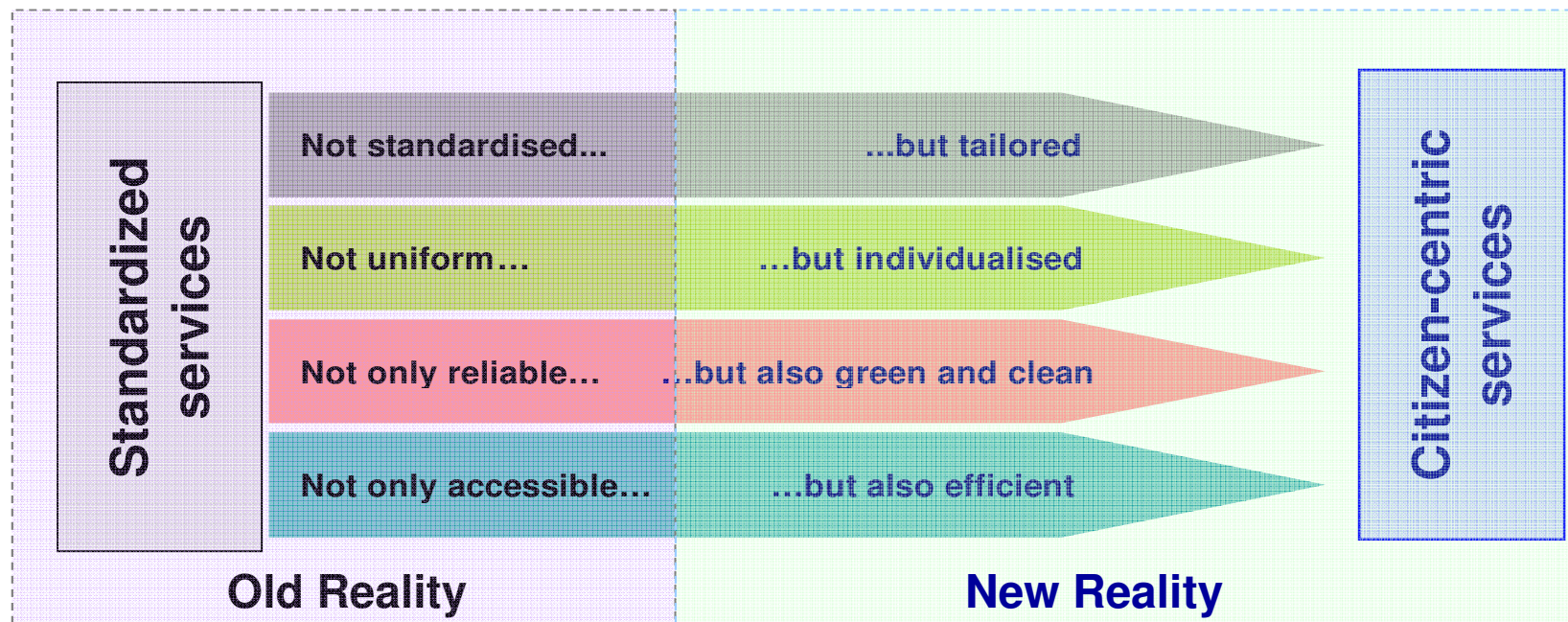
2. Cities need to adopt policies conducive to skills, creativity and knowledge-driven growth



Source: IBM Global Center for Economics Development analysis

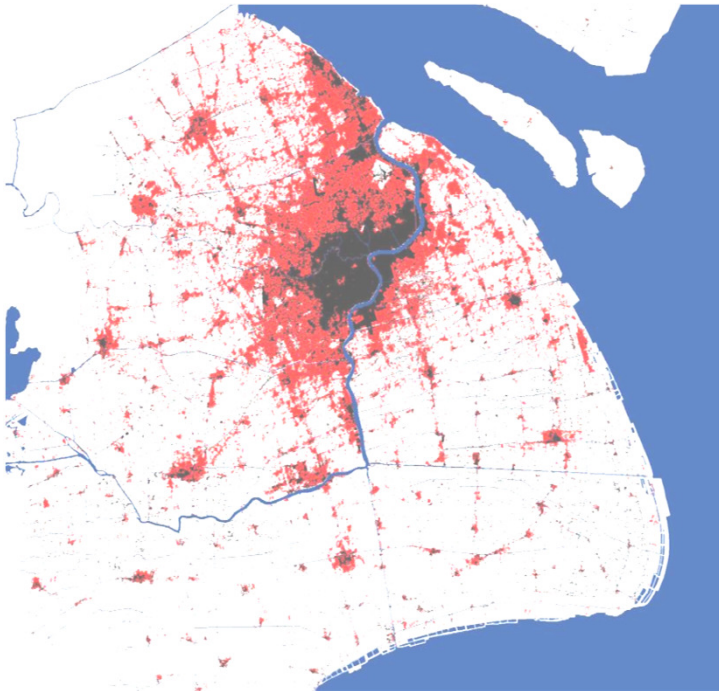
3. Cities need to optimize their services around the citizen

- Shift from standardized services to tailored services that meet individual needs
- Create digital linkage across core systems and the analysis and actions driven by data
- Develop a transparent system of charges that reflects the costs of citizen-centric services, encouraging direct engagement by the citizens, and lower costs burden on public finances
- *This city is what it is because our citizens are what they are (Plato)*



Source: IBM Global Center for Economics Development analysis

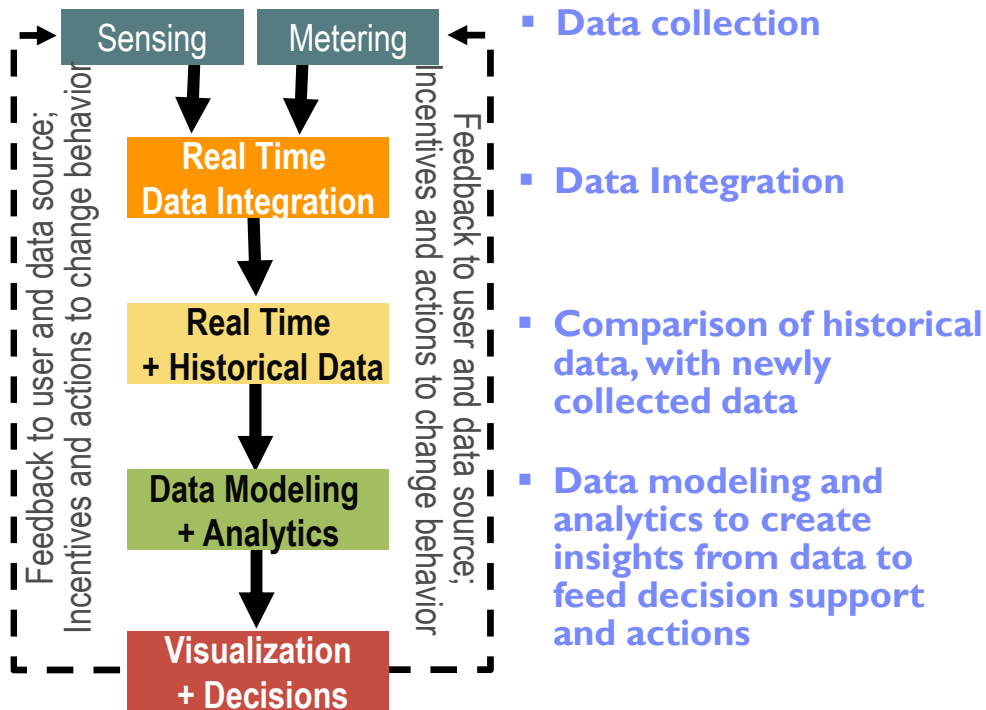
4. Cities must employ systems thinking in all aspects of planning and management



- Consider problems, solutions and the value that improvements will create in the context of related and interconnected city systems
- Identify, map and appeal to constituencies essential to the success of city improvements
- Focus on system behaviors instead of singular events, and examine multiple approaches to changing system behaviors
- Fully leverage the value of data across systems by making information widely accessible to citizens

5. Cities need to develop and apply the fundamental enabling information technologies to core city systems

Measuring, Monitoring, Modeling and Managing



▪ Cities need to deploy information technologies to core systems

- Collect and manage the right kind of data
- Integrate and analyze the data
- Based on advanced analysis, optimize the system to achieve desired system behaviors

Cities must act NOW to gain leadership in the new environment of skills and knowledge-intensive economic growth

- Recognize talent - skills, knowledge, creativity and innovation ability - as an ever more important driver of sustainable growth implies significant changes in how we think about managing and improving cities
- Shift the thinking from appealing to mass audiences to appealing to individual citizens *en masse*
- Leverage modern information technology to make this seemingly daunting challenge not only practicable, but also, over the long-term, cost-effective
- Cities that adopt this thinking and make such wise investments to build a smarter city now will thrive. Those that continue to invest in traditional infrastructure improvements designed for a mass population will inevitably struggle



Let's Build a Smarter Planet