# BUILDING GEOSPATIAL INDICATORS TO MONITOR PROGRESS IN REGIONS AND CITIES TOWARDS SUSTAINABLE DEVELOPMENT AND CIRCULAR ECONOMY

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Rudiger Ahrend, Head of the Economic Analysis, Data and Statistics Division

OECD
BETTER POLICIES FOR BETTER LIVES

# Outline

- How the OECD helps governments in their localised data work?
- Using geospatial data to define cities
- Geospatial tools to bridge data gaps
- Measuring the distance to the SDGs in regions and cities
- The OECD Laboratory for Geospatial Analysis

# Using geospatial data for monitoring progress with SDGs and the circular economy

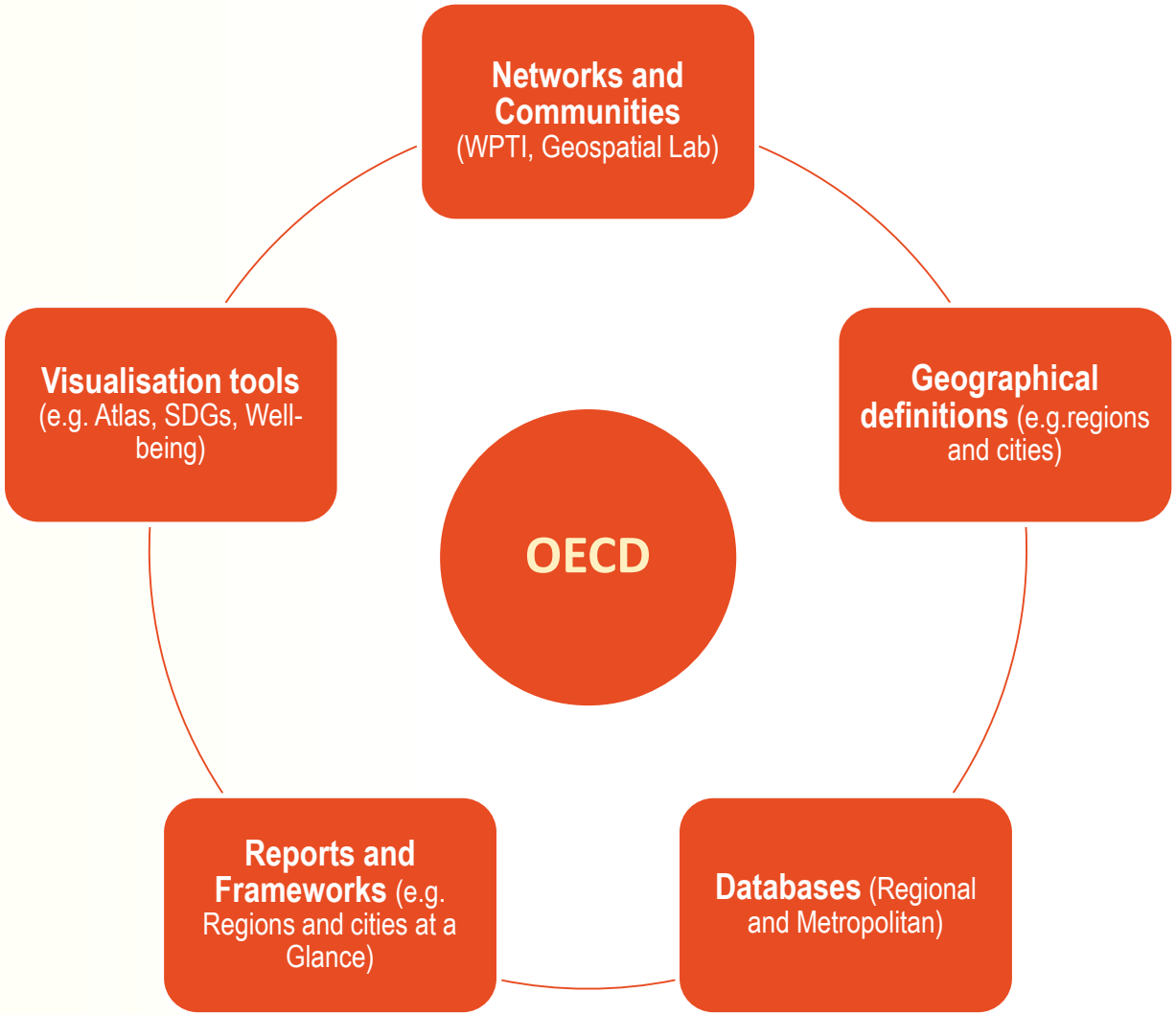
To adequately inform policy making, data need to:

1. Capture the scale of people's everyday lives

2. Help to assess results of policies and monitor progress across places and over time

3. Support an evidence-based dialogue across levels of government and sectors of society

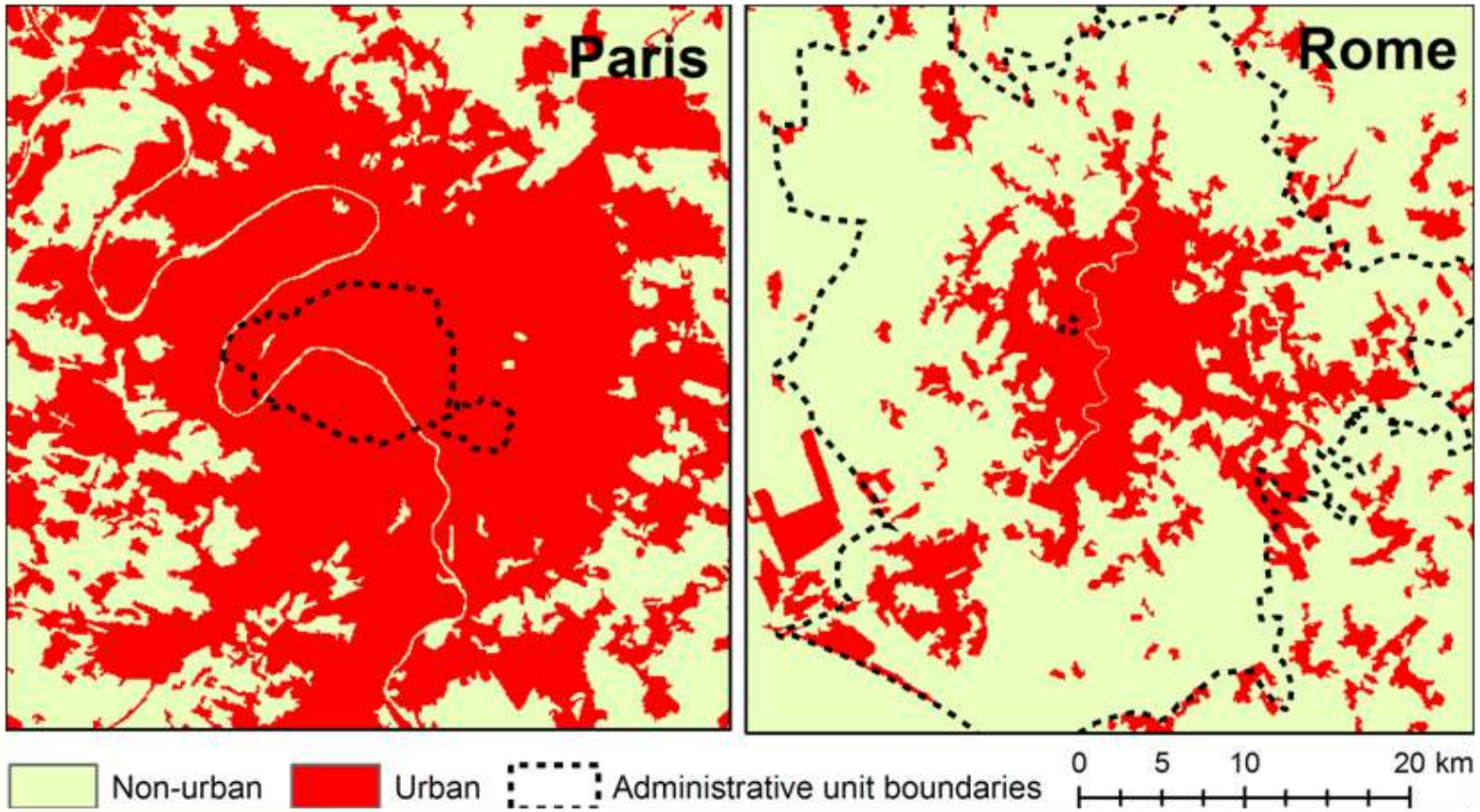
# How the OECD helps governments in their localised data work?



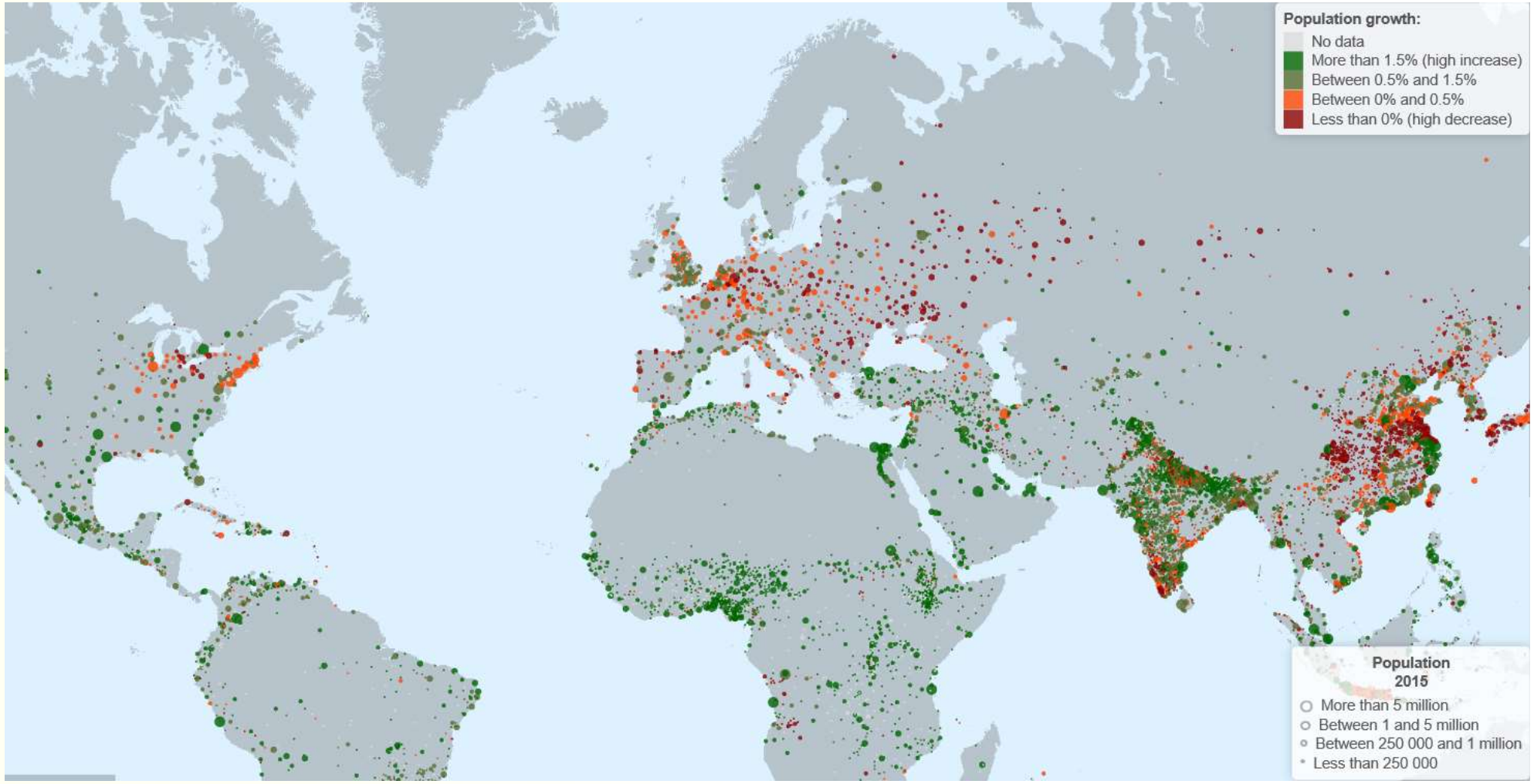
# What is a city? Using geospatial data to define cities

## Administrative boundaries vs. Functional urban areas

Many cities do not match their respective administrative boundaries



# One-fifth of metropolitan areas in the world are shrinking




**Currently**

**20%** ↓

decline since 2005

**Looking forward**

**30%** ↓

decline by 2050

Source: OECD (2020), *Cities in the World: A new perspective to urbanisation*. OECD Publishing, Paris.

# Geospatial sources to bridge data gaps

## Examples of modelled indicators

- Global Burden of Disease (GBD):

  Exposure to air pollution, PM2.5

- Global Human Settlement Layer (GHSL grids):

  Built-up area growth relative to population growth

- Climate Change Initiative Land Cover (CCI-LC):

  Change in tree cover

- Global Database of Power Plants (geo-localised data):

  Percent of electricity that comes from coal

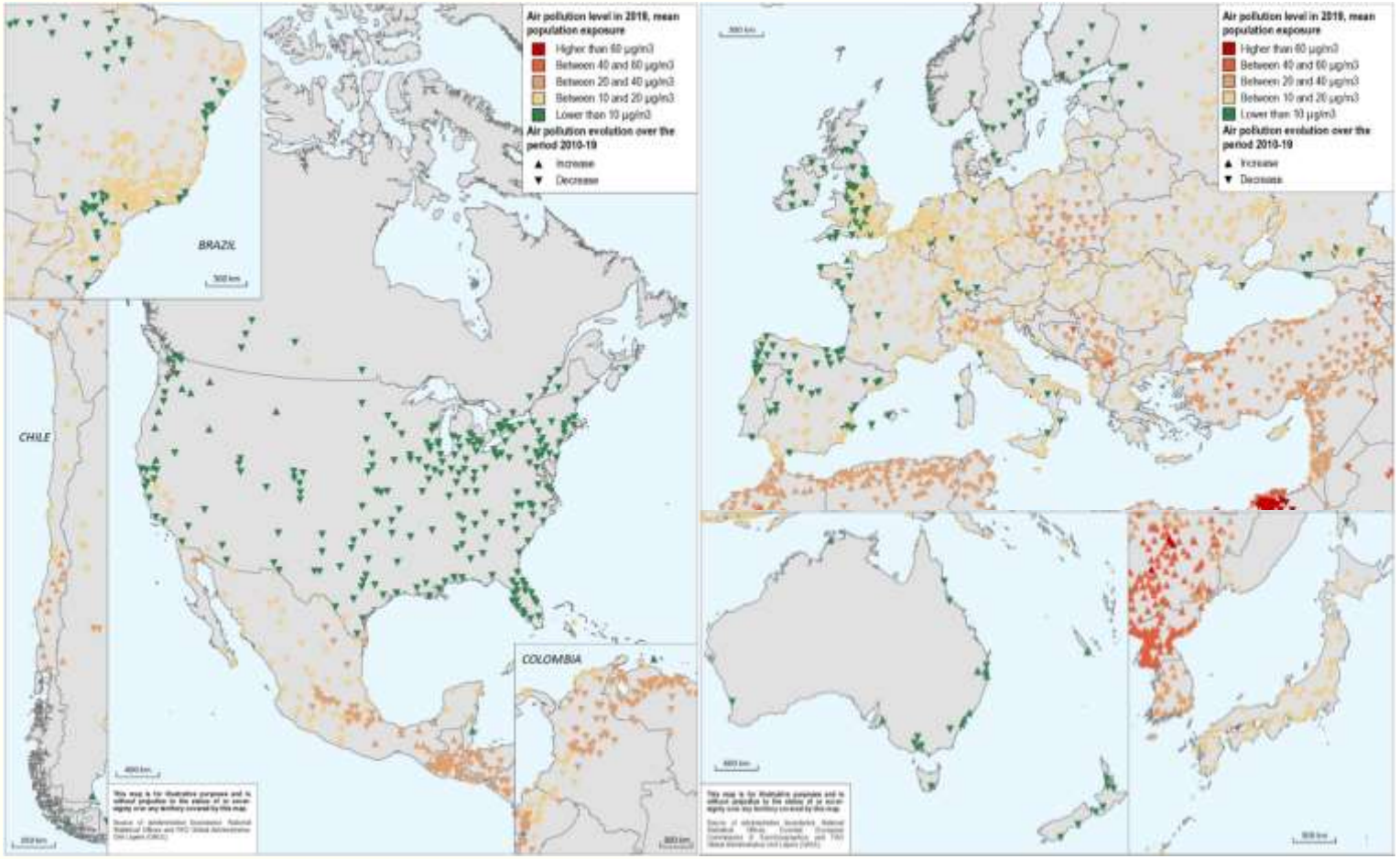
- Emission Database for Global Atmospheric Research (EDGAR grid):

  GHG emissions by sector

# Despite improvements in the last decade, air pollution in cities remains high

## Air pollution levels in functional urban areas

Levels of PM2.5 in µ/m$^3$, 2019, with change between 2010 and 2019




**World trends in air pollution, 2010-19:**

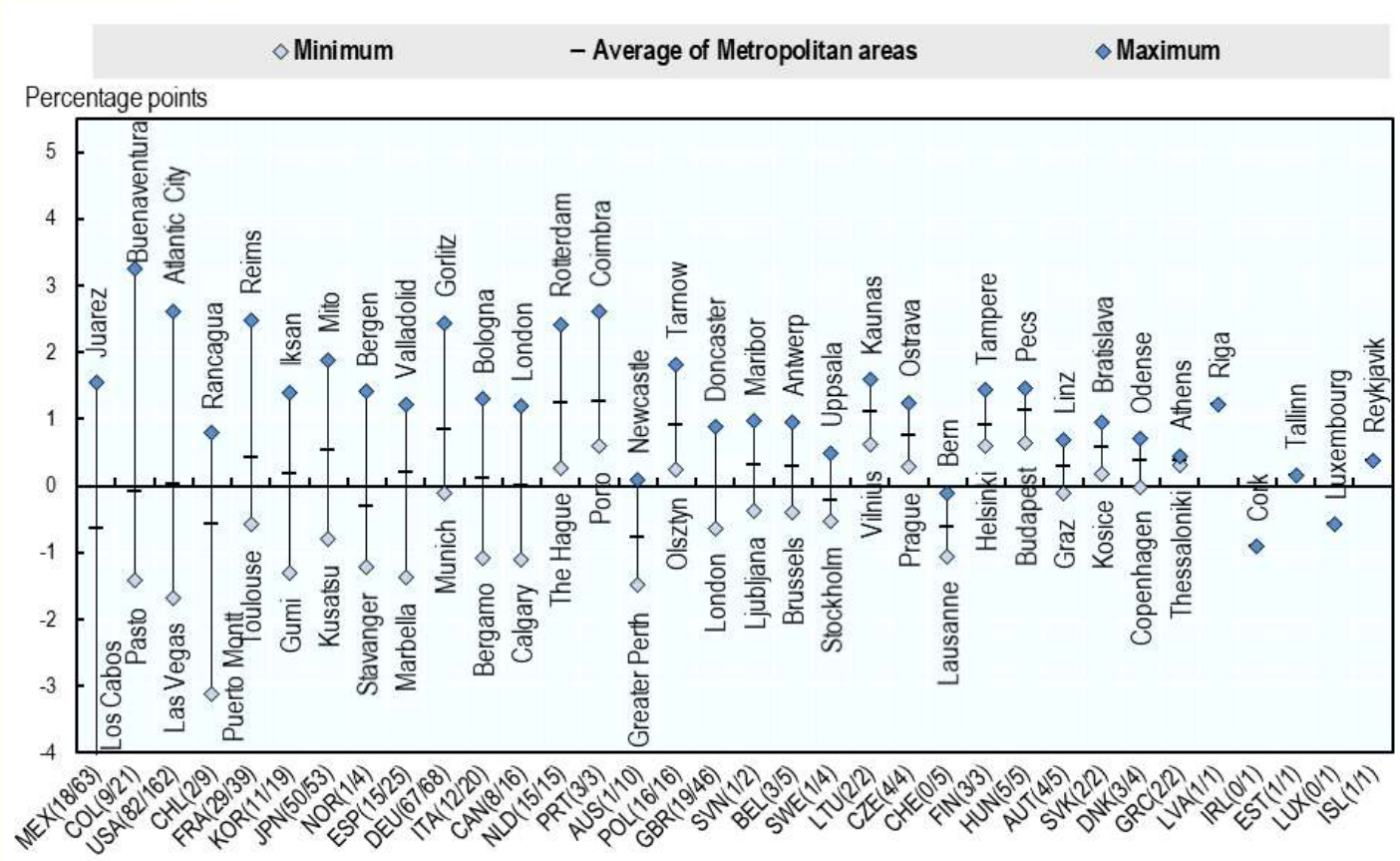
- In 30 OECD countries at least one city with air pollution above WHO recommended levels
- Air pollution levels have decreased since 2010, except in low- and lower-middle income countries
- Highest concentration of PM2.5 in lower-middle income countries' cities (66 µ/m3 of PM2.5)

Recommended WHO limit: 10 µ/m3 of PM2.5

# In one-third of cities with high levels of built-up area per capita, land consumption keeps increasing faster than population

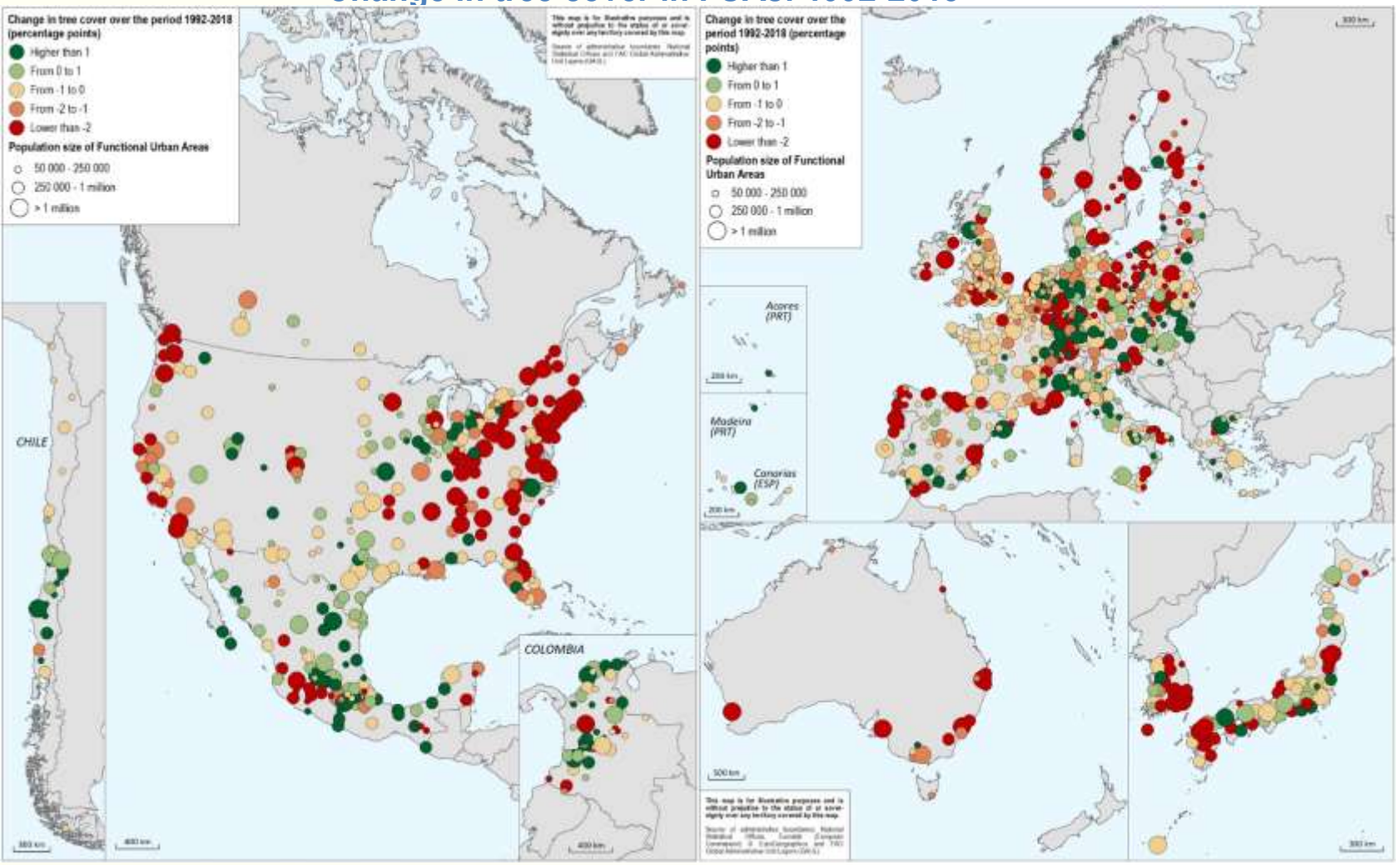
## Land consumption relative to population growth in FUAs

Growth rate of built-up area minus growth rate of population, 2000-15



# Large metropolitan areas are experiencing higher tree cover loss than other areas, particularly in North America and Australia

## Change in tree cover in FUAs: 1992-2018

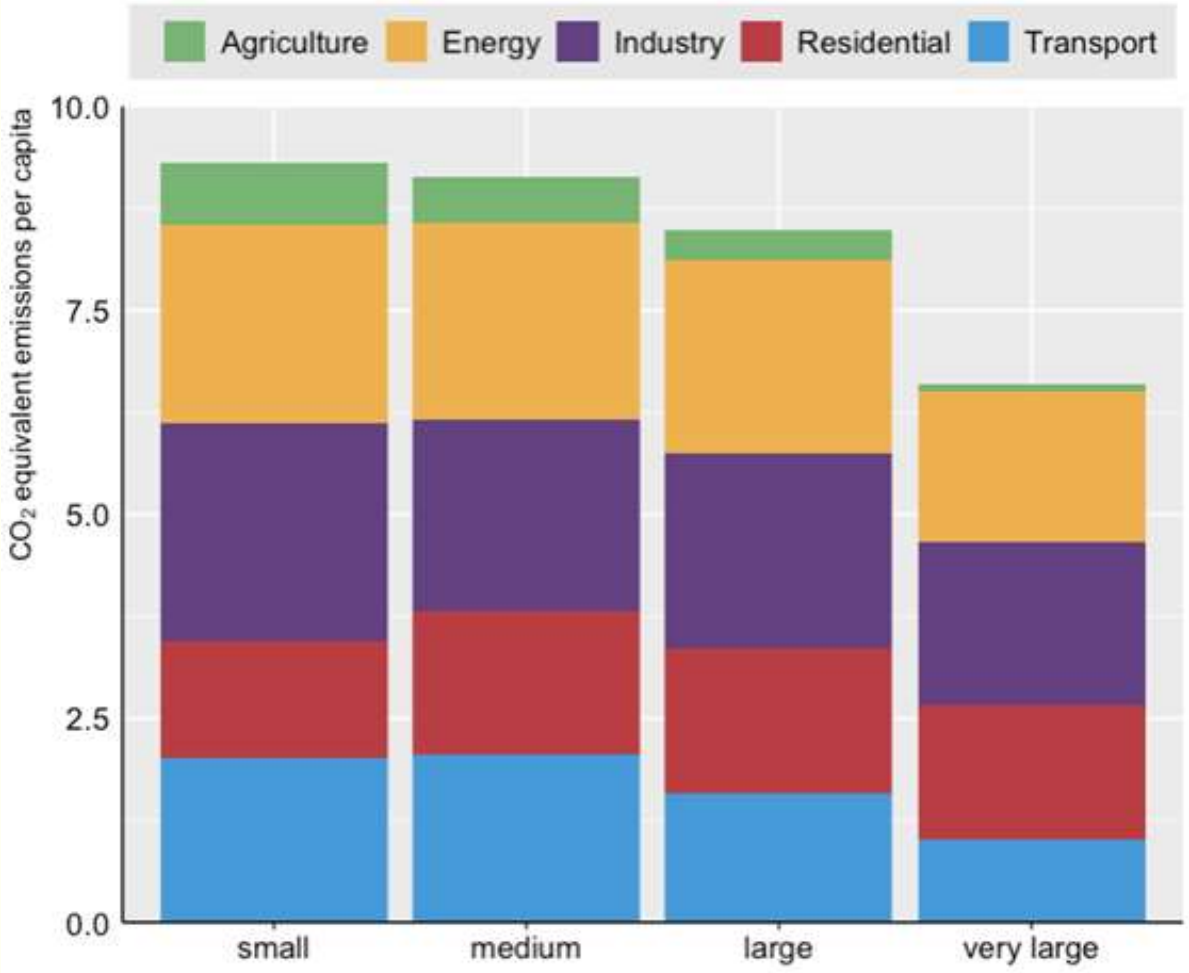



- Tree cover area has declined in more than half of functional urban areas between 1992 and 2018 (3pp reduction on average)
- Decline in tree cover happened for almost three quarters of the metropolitan areas over one million inhabitants.

# Emissions per capita vary significantly across cities

## Estimated GHG emissions per capita by metropolitan area size

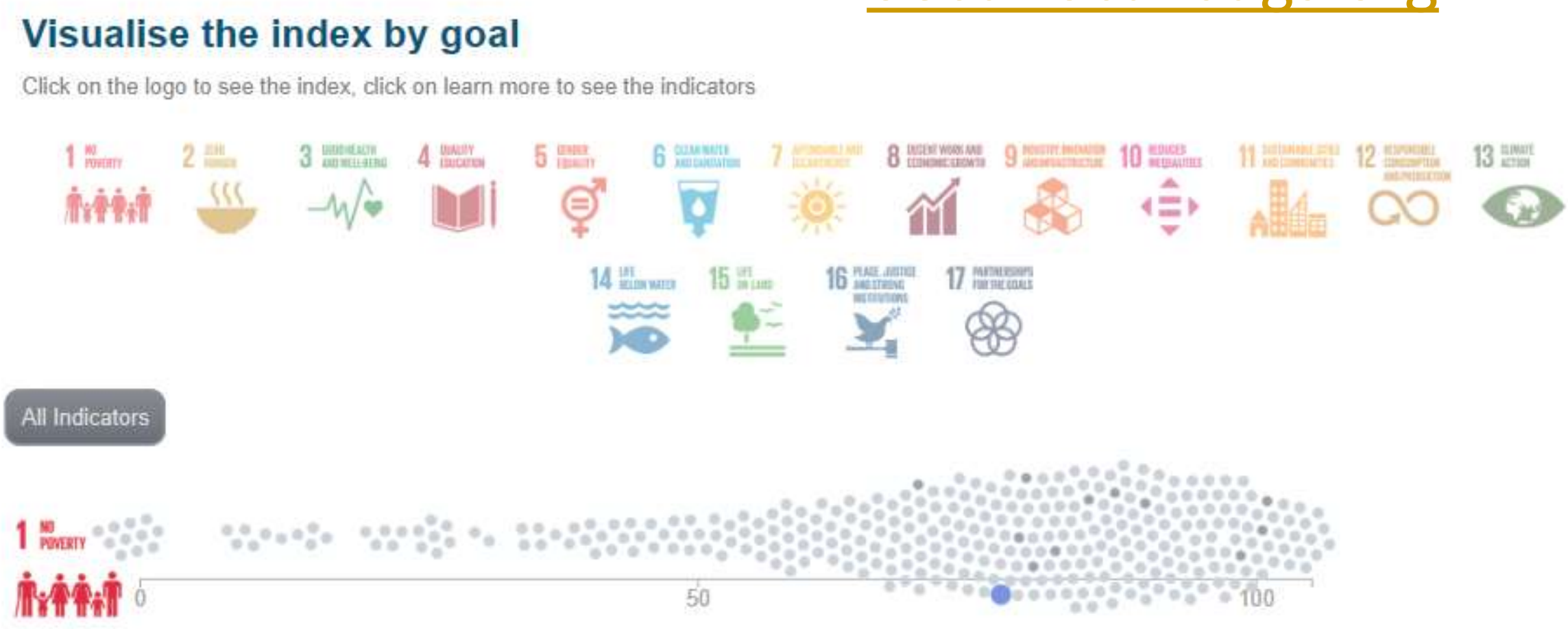
Tonnes of CO2-equivalent emissions per capita, functional urban areas, 2018




- Large metropolitan areas tend to have lower production-based emissions per capita than other cities, mainly due to efficiency gains in the transport sector

# OECD Visualisation tool to measure the distance to the SDGs in regions and cities

oecd-local-sdgs.org



# The OECD Laboratory for Geospatial Analysis

- The OECD Laboratory for Geospatial Analysis (aka Geospatial Lab) is a platform that proposes to connect people from different organisations, including academia, government agencies, the private sector, and Statistical Offices to develop and disseminate policy-relevant analyses based on geospatial information

https://www.oecd.org/regional/regional-statistics/geospatial-lab.htm

# Thank you!

Rudiger.AHREND@oecd.org

Twitter: @OECD_local
LinkedIn: www.linkedin.com/company/oecd-local
Website: www.oecd.org/cfe

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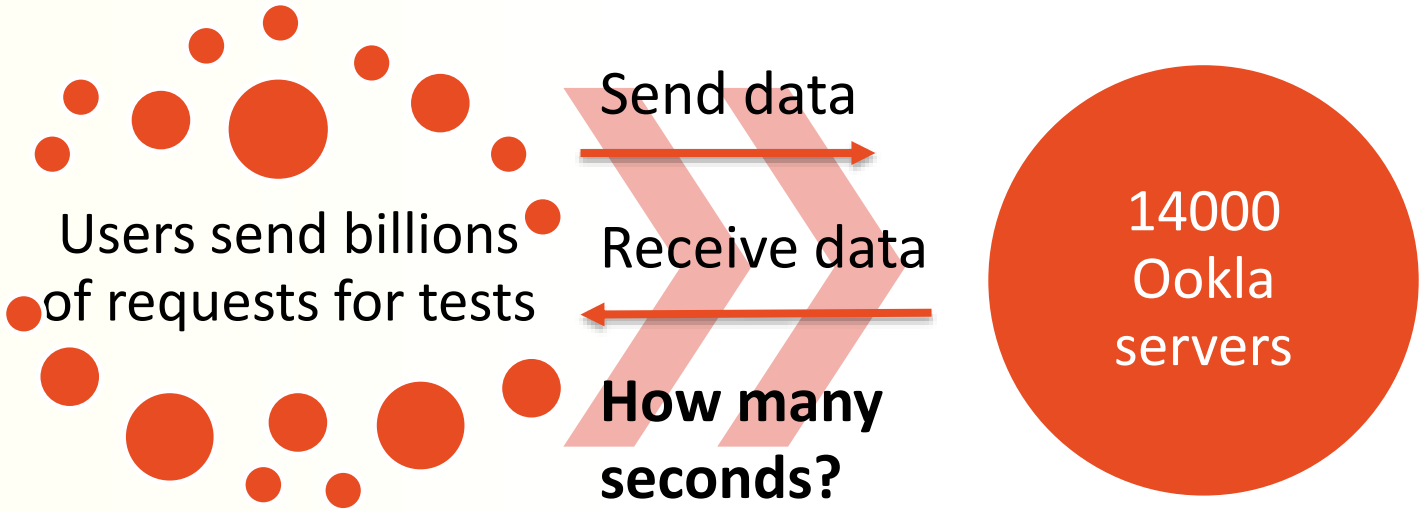
Visit the OECD Statistical Atlas for Regions and Cities
https://regions-cities-atlas.oecd.org/

Website: www.oecd.org/regional/rural-development/rural-service-delivery.htm

# Leveraging open data from Ookla

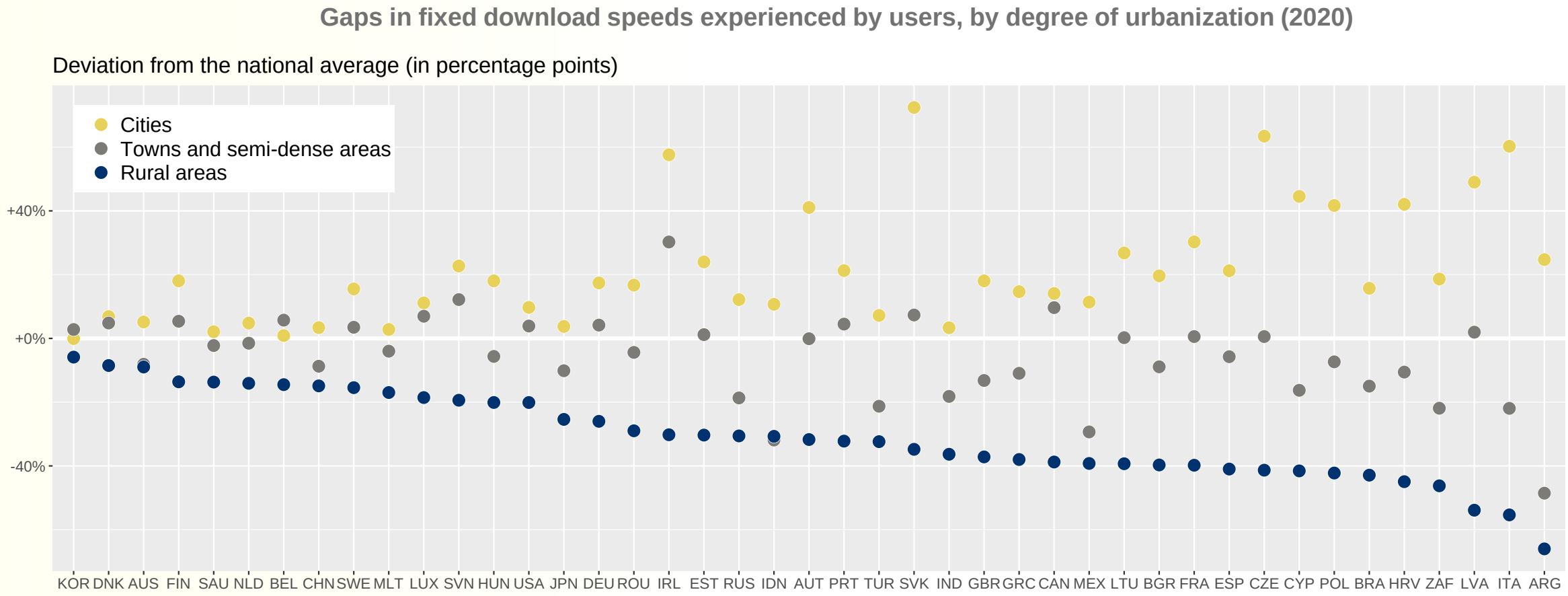



Users conduct speed tests automatically or deliberately

(speedtest.com)

- Aggregated to web Mercator tiles at zoom level 16 (approximately 610 by 610 meters at the equator).
- GHS Settlement Model grids (1 by 1 km cells) according to the degree of urbanisation

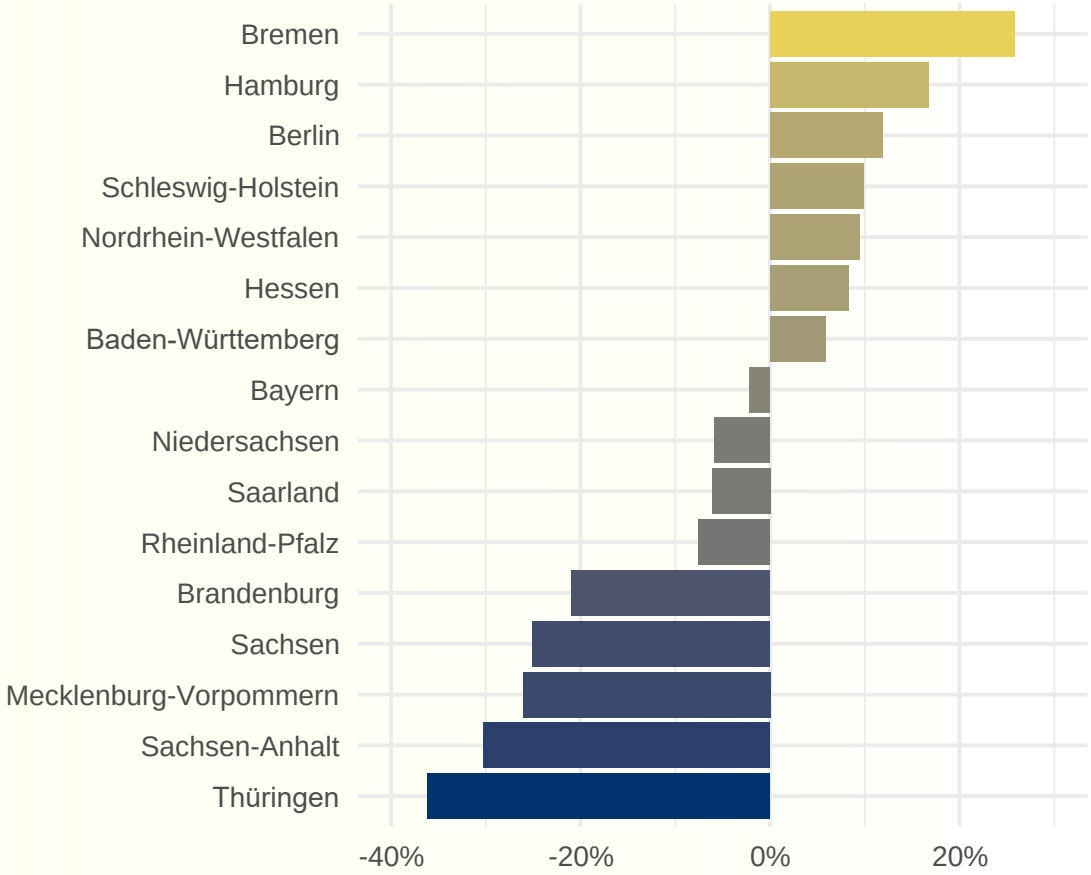
# Rural areas consistently lag behind in terms of download speed, though urban-rural gap different across countries



# Fine-granular data allows zooming-in within countries

## (at different scales)

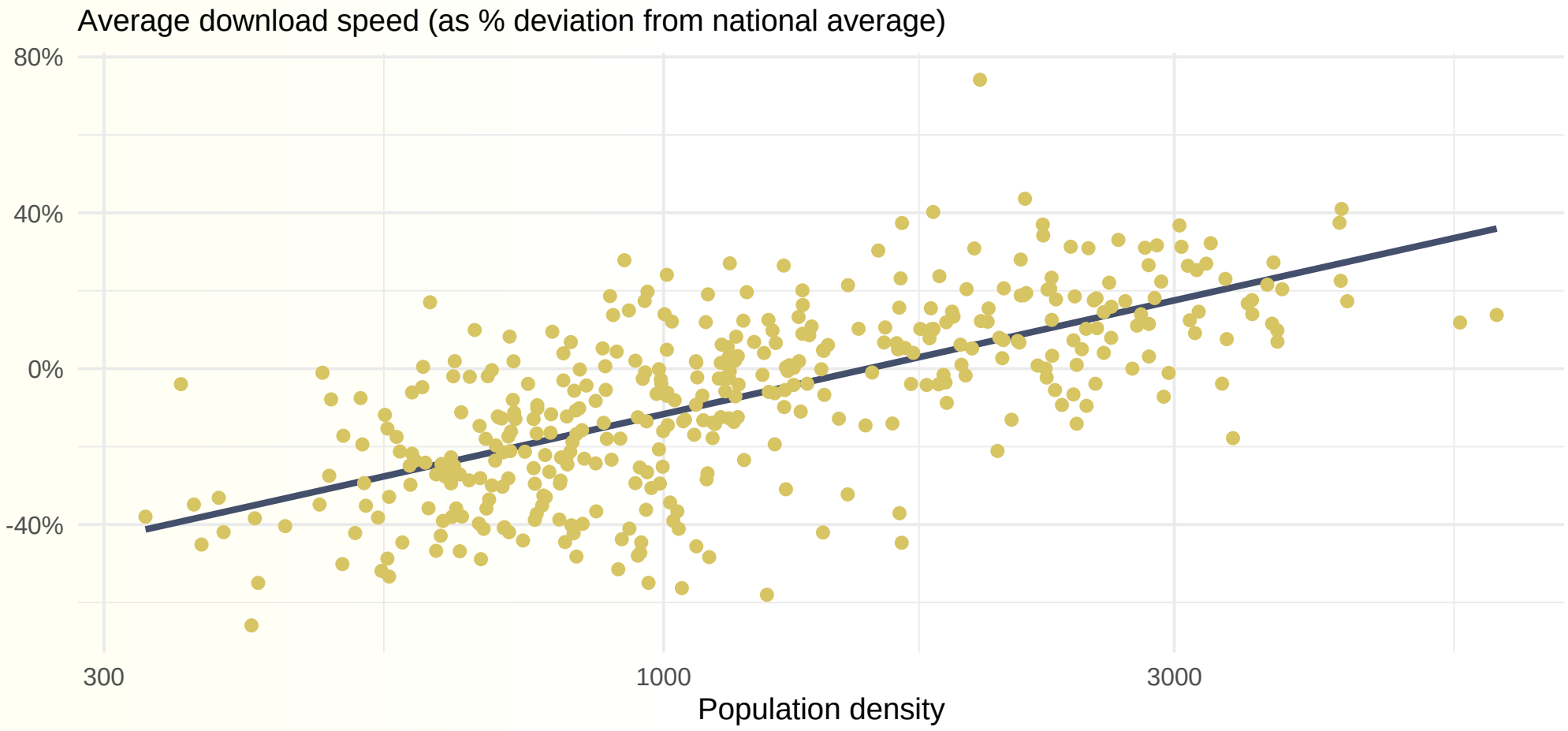
Ookla tests on fixed download speed, 2020, Q4




- Hamburg and Bremen 15% higher speed than national average
- Thuringia and Saxony-Anhalt more than 30% lower speed than national average

OECD calculations based on Speedtest® by Ookla® Global Fixed and Mobile Network Performance Maps. Based on analysis by Ookla of Speedtest Intelligence® data for 2020Q4.

# Download speeds are higher in denser places




OECD calculations based on Speedtest® by Ookla® Global Fixed and Mobile Network Performance Maps. Based on analysis by Ookla of Speedtest Intelligence® data for 2020Q4.

# How do we feed our databases?

## The Regional and Metropolitan databases

Indicators are compiled primarily from official statistics. In cases where the information is not available, the **indicators are modelled using a variety of techniques**


Demographic


Labour market


Economic


Territorial organisation


Innovation


Social / Environment

Official Statistics
- Obtained from National Statistical Agencies

Modelling techniques
- Estimated based on unconventional sources (e.g. GIS techniques, big data, satellite imagery, raster files, etc.)