



Samuel Neaman Institute  
FOR ADVANCED STUDIES IN SCIENCE AND TECHNOLOGY

# Redefining "Urban" The OECD's New Way to Measure Metropolitan Areas

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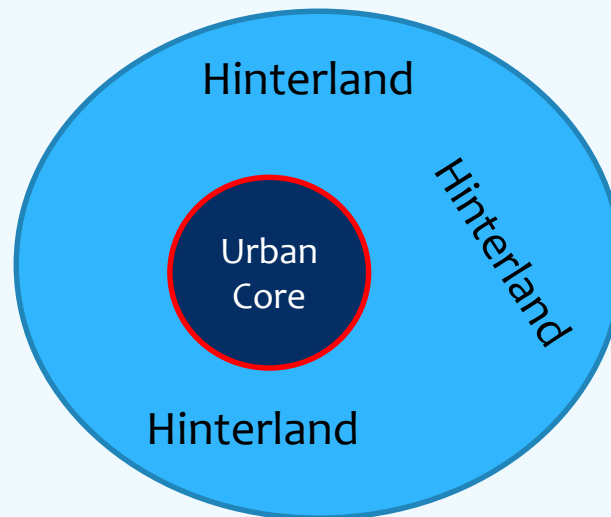
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# The Aim



## Universal definition of metropolitan areas (Functional Urban Areas, FUA)





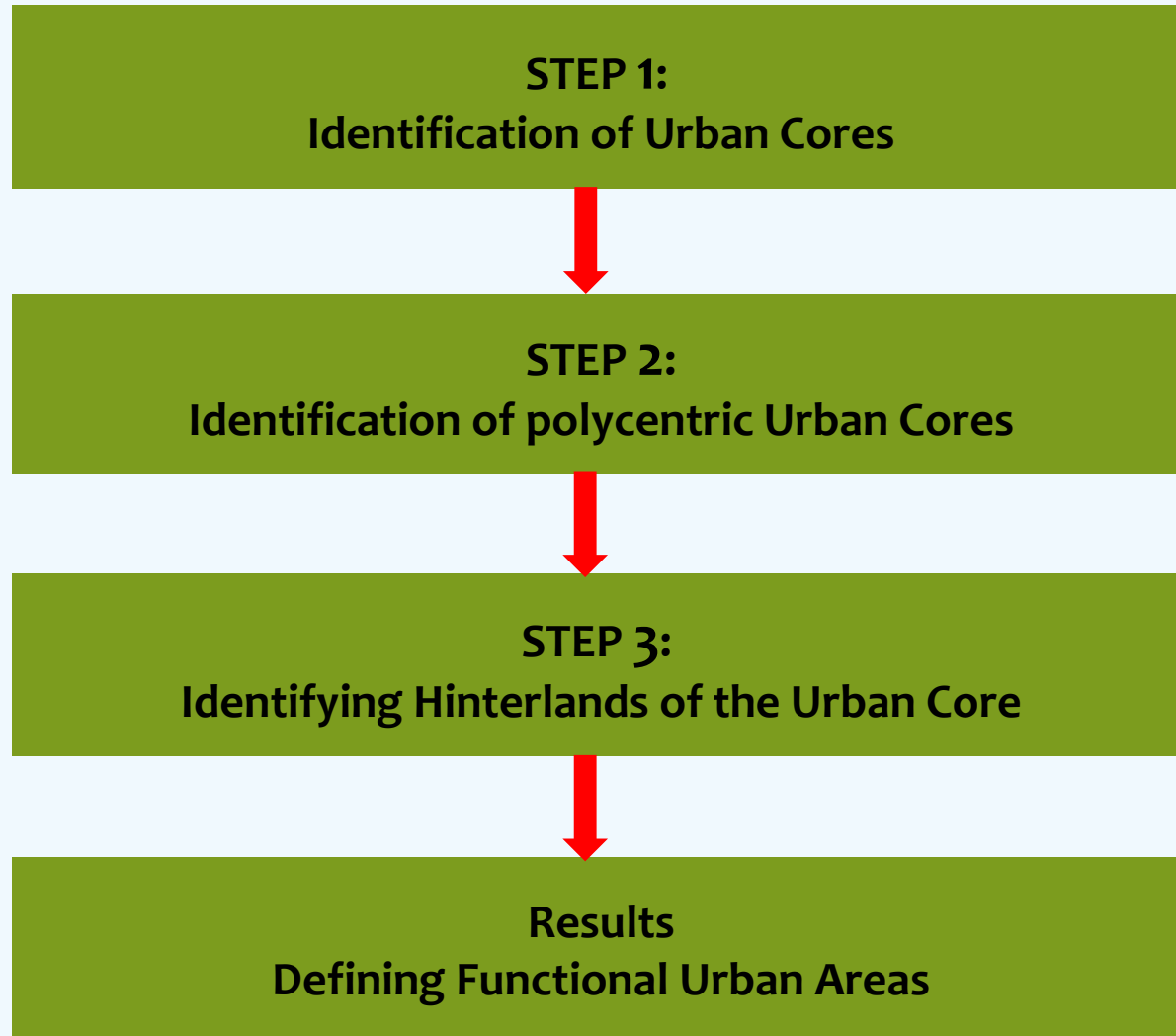
## **Basic unit of investigation:**

- **Europe:** Municipalities (LAU2, formally NUTS5)
- **Non-European Countries:** the smallest administrative units for which national commuting data is available

## **Basic indicators/variables:**

1. *Population size* of the relevant unit (historical data taken from National Population Censuses from 2000)
2. *Density* (the ratio between population and the total area of the administrative unit)
3. *Commuting flows* – journey to work (origin and destination of the people from home to work)
4. A national map in shapefile format (GIS) containing all the relevant administrative boundaries.

# Defining Functional Urban Areas in OECD countries The Roadmap





## Step 1

### Identifying core administrative units through gridded population data

1. Defining “high-density clusters”
2. Dividing space into a grid composed from 1 km<sup>2</sup> cells
3. Defining high-density clusters: aggregation of contiguous/adjacent high density cells.



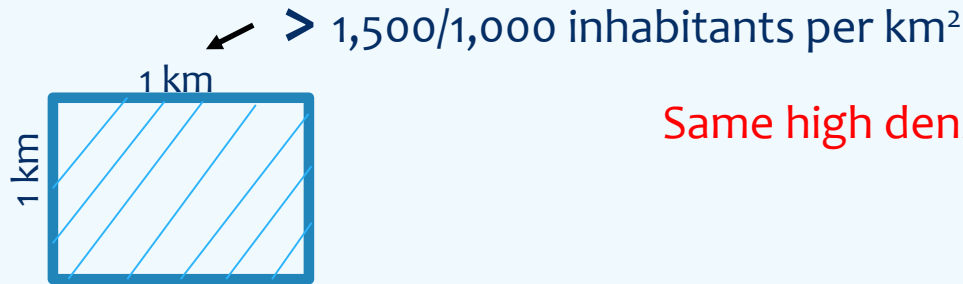
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# Methodology

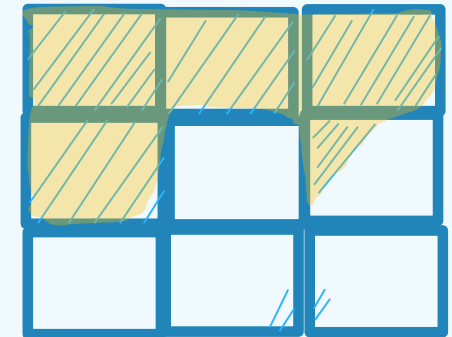
## Step 1



### Identifying core administrative units through gridded population data



Same high density cells that creates high density cluster



***Europe, Japan, Korea and Mexico threshold:***  
High-density cells are those with a population density of at least 1,500 inhabitants per  $\text{km}^2$

***Canada and the United States threshold:***  
High-density cells are those with a population density of at least 1,000 people per  $\text{km}^2$ .





## Step 1

### Identifying core administrative units through gridded population data

4. Defining 'Urban Core': aggregating contiguous densely inhabited cells, and creating meaningful 'Urban Clusters'.

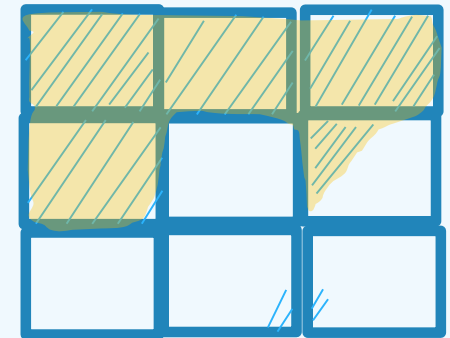
*Europe, Canada and the United States:* Meaningful clusters defined as hosting more than 50,000 people.

*Japan, Korea and Mexico:* Meaningful clusters defined as hosting more than 100,000 people.

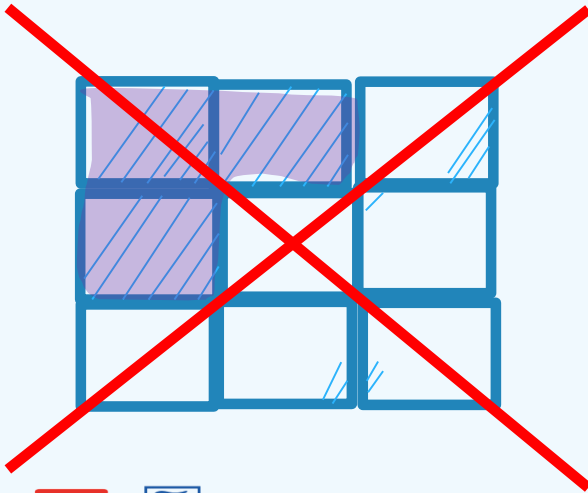
# Methodology



**Meaningful Cluster**  
(Above 50,000/100,000 inhabitants)



**Small Cluster**  
(Bellow 50,000/100,000 inhabitants)

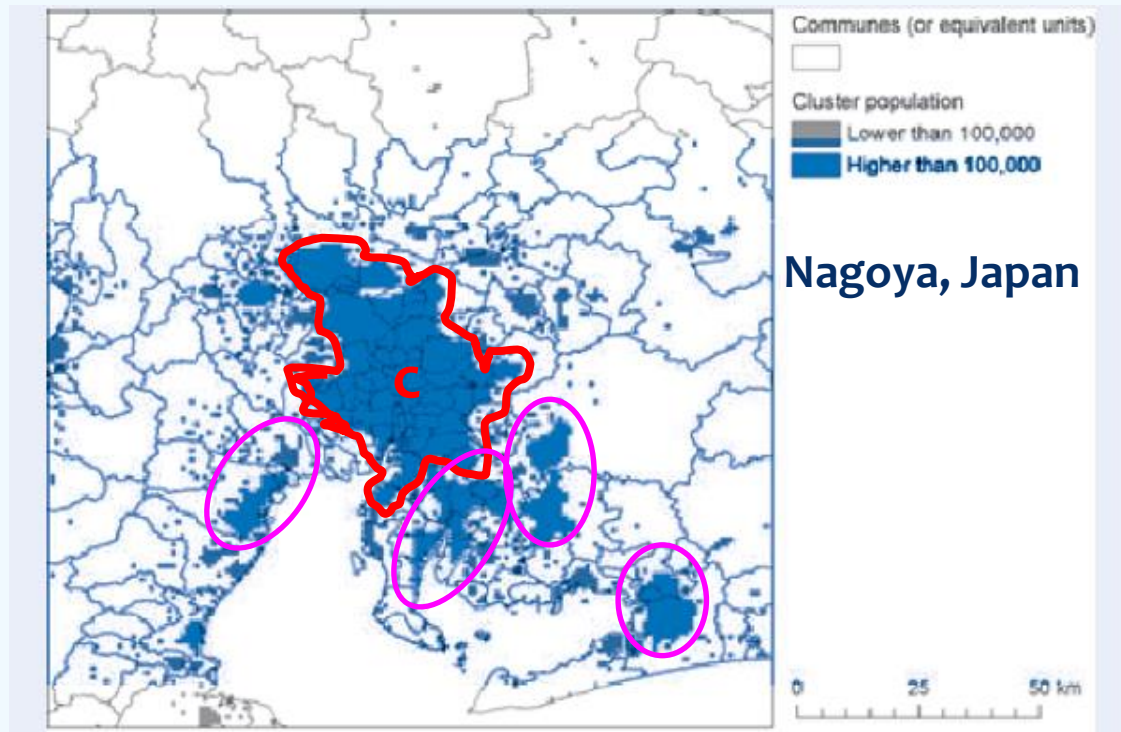






## Step 1

### Identifying core administrative units through gridded population data





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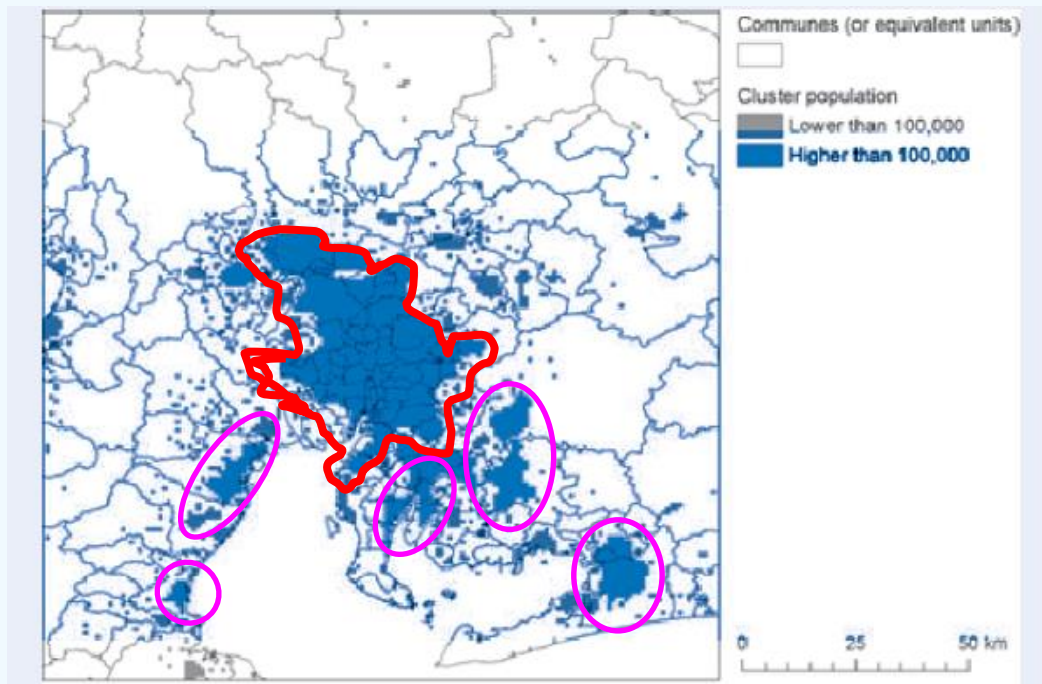
# Methodology

## Step 2

**Connecting non-contiguous cores belonging to the same functional area**



1. Identifying the relationships among the urban cores, using the information contained in commuting data.

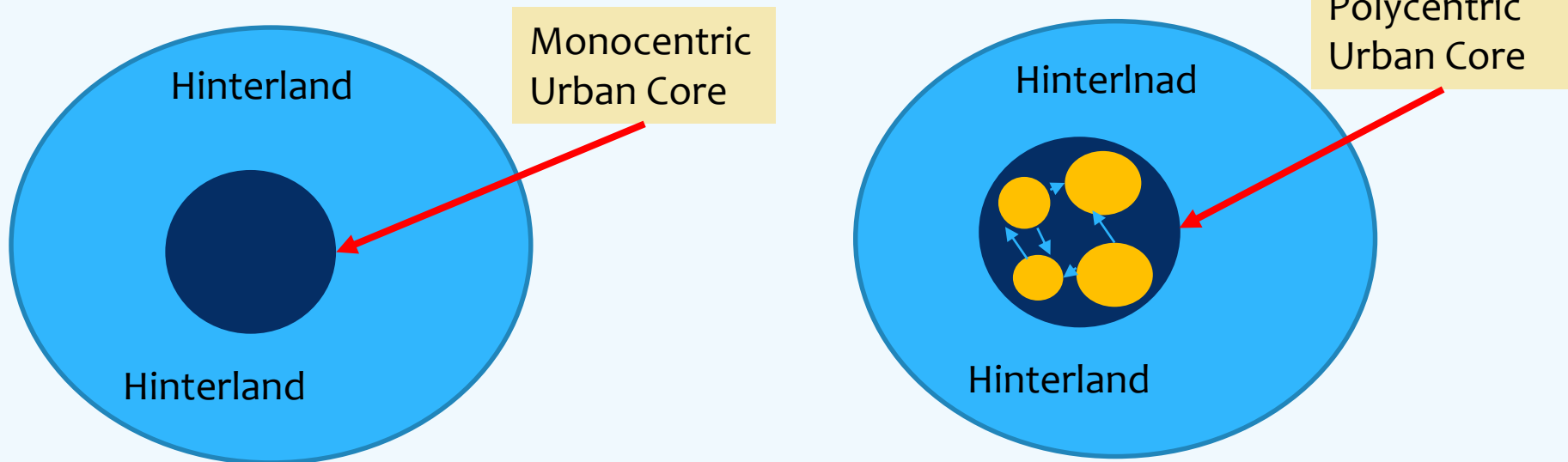




## Step 2

### Connecting non-contiguous cores belonging to the same functional area

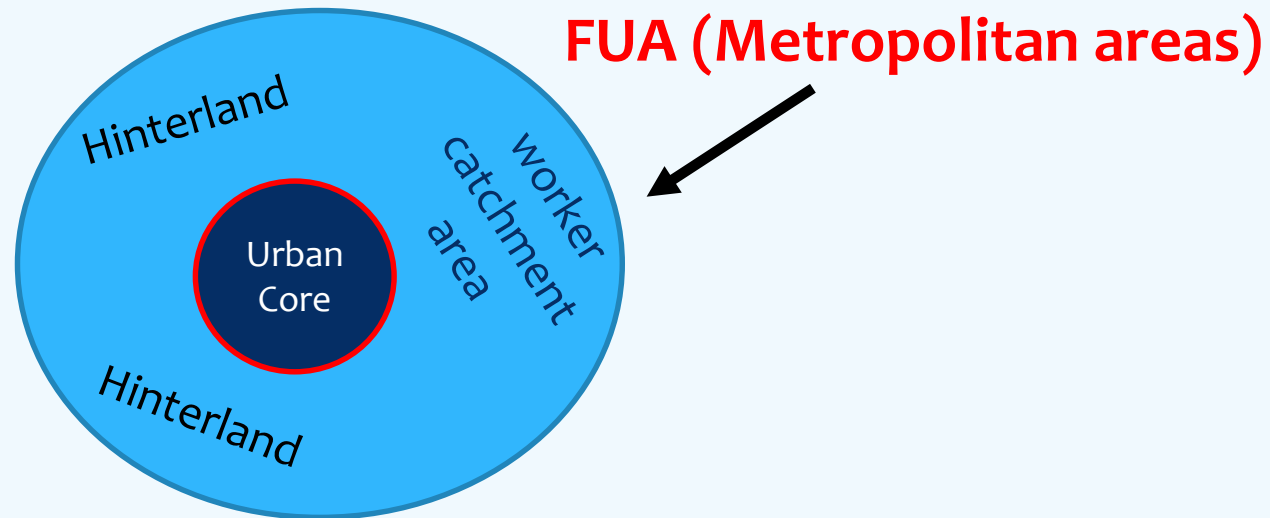
2. **Rule:** Two urban cores are considered integrated, and thus part of the same polycentric metropolitan system (i.e. the same Urban Core), if more than 15% of the residence population of one of the cores commutes to work to the other core.





## Step 3: Identifying the urban hinterlands

1. Hinterland - “worker catchment area” of the urban labor market, outside the densely inhabited core



2. **Rule:** 15%+ of the employed residents in a given administrative entity (e.g. municipality) commutes to the core (no reverse commuting is considered)



- Four types of functional urban areas (FUA):
  1. Small urban areas (<200,000 people)
  2. Medium-sized urban areas (200,000-500,000 people)
  3. Metropolitan areas (500,000-1.5 million people)
  4. Large Metropolitan Areas (>1.5 million people)

An accurate representation of each country's “urban system”

- 29 OECD countries
- Except Australia, Iceland, Israel, New Zealand and Turkey
- Identifying 1, 179 urban areas of different size (ranging from 50,000 inhabitants in Calera in Chile, to over 34 million in Tokyo, Japan).



## Advantages

- Vast applicability, including countries participating in WP9 (UPEM, POLIMI, VUA, NIFU and AIT)
- Overcoming previous limitations for international comparability linked to administrative boundaries
- Comparing metropolitan areas of similar size across countries
- The OECD intends to increase the set of available statistics for the metropolitan areas and provide annual updates
- Enlarging the coverage of the method to other countries.



## Shortcomings

- The geographical layer that defines FUA is not accessible
- Non-members countries are not included (e.g., India and China)
- Method not necessarily provides accurate delineation of specific domains of interests