

ITF ACCESSIBILITY ASSESSMENT FRAMEWORK

Leveraging Data for Accessibility and
Equity Assessment: Case Studies from
Ghana and South Korea

8th ITF Statistics Meeting
19 September 2022, Paris

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Bottom-up VS Top-down

- **Bottom-up:** case by case – high detail but harder to expand to a large number of cities
- **Top-down:** directly on a larger number of cities - more limited on detail but better suited for global frameworks

Developing a global framework is particularly relevant with “affordable and equitable access for all” as SDG and NUA goals.

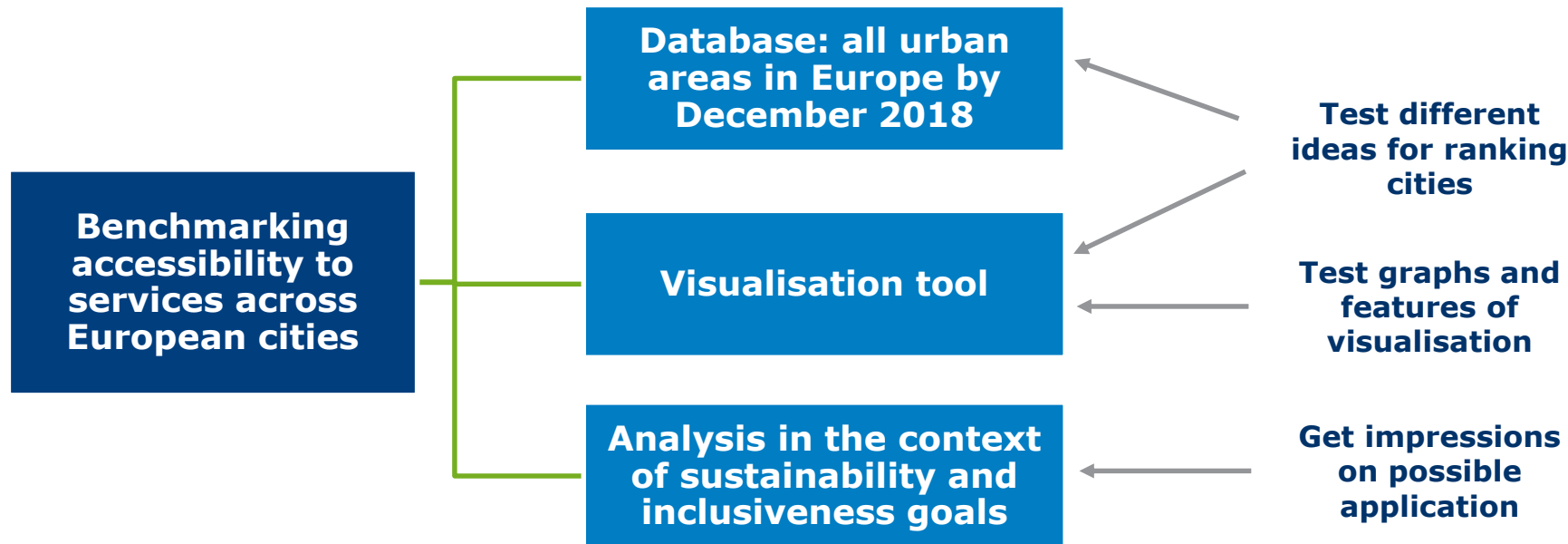
ITF developed a **top-down approach** for global [benchmarking of accessibility in cities](#) published in 2019.

Is conceptually simple

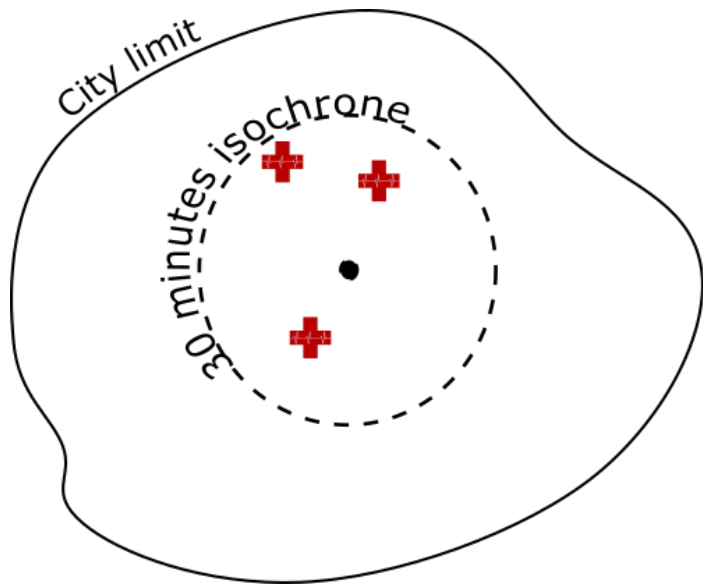
**Is comparable at a
global level**

**Focuses on access to
opportunities**

Multimodal



Contour based metrics



Large coverage

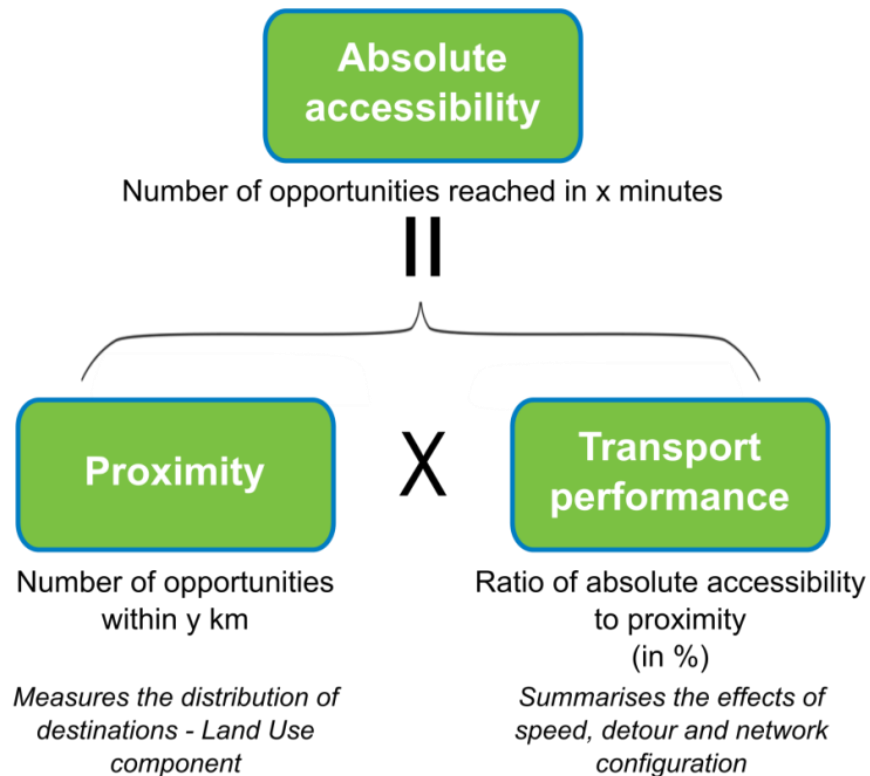
European cities > 0.5 million inhabitants
4 modes of transport

Comparable approaches

Same methodology
Comparable perimeters (FUA)
No behavioural parameters

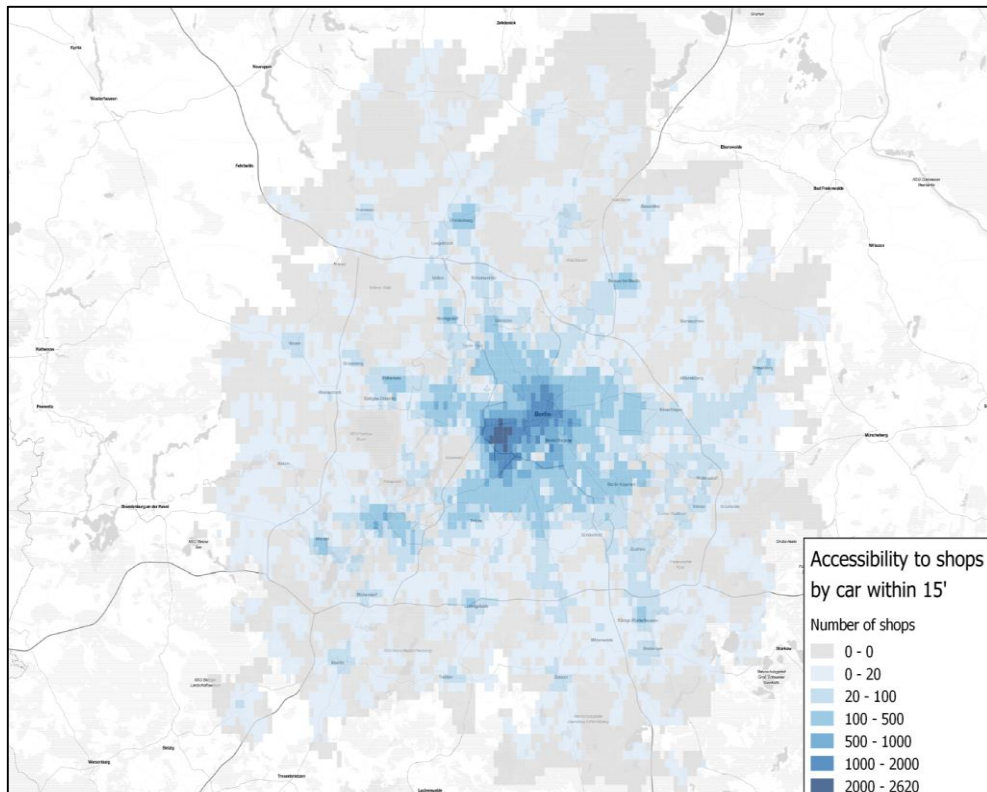
Global databases and formats

Example: OpenStreetMap



- **Functional urban area (FUA) or Metropolitan Area:** These terms refer to the entire urban continuum that includes the city and the commuting zone, as per the EU-OECD definition.
- **City:** One or more local administrative unit that have the majority of their population in an urban centre, which is a cluster of contiguous cells each with a density of at least 1,500 inhabitants and a total population of 50,000.
- **Commuting zone:** The local administrative units surrounding a city that have at least 15% of their employed residents commuting to the city.

Destination	Further description	Purpose	Main source
Other people		Proxy for opportunities	INSPIRE population grid -JRC
Schools	All pre-university education, primary and secondary	Education, daily trips	TomTom
Hospitals		Health care, emergencies	TomTom
Food shops	Super market, groceries, bakeries, butchers, specialty stores, etc.	Daily needs, economic activity	TomTom
Restaurants	All type of restaurants	Social interactions, economic activity	TomTom
Recreation	Theatres, museums, cinemas, stadiums, tourist and cultural attractions	Social interactions, hobbies, culture	TomTom
Green spaces	All green urban areas (parks) and forests.	Active lifestyle, quality of life	Copernicus Urban Atlas 2012 land cover/land use database



The contour-based indicator is computed

- 500m X 500m grid of each city
- For each service
- For each mode

Aggregated at the city level using an average

- One value per service and mode for each city

Assumptions and data to compute travel times by car

1. From actual speed observation (INRIX)
2. Peak-hour congestion factors for the city core and highways
3. Access and parking time depend on the population density

Assumptions and data to compute travel times by PT

1. Based on the schedule produced by a local authority or a PT operator
2. Door-to-door (access, waiting and transfer times, egress)
3. Transfer connections are inferred with a maximum transfer distance

Comparing cities

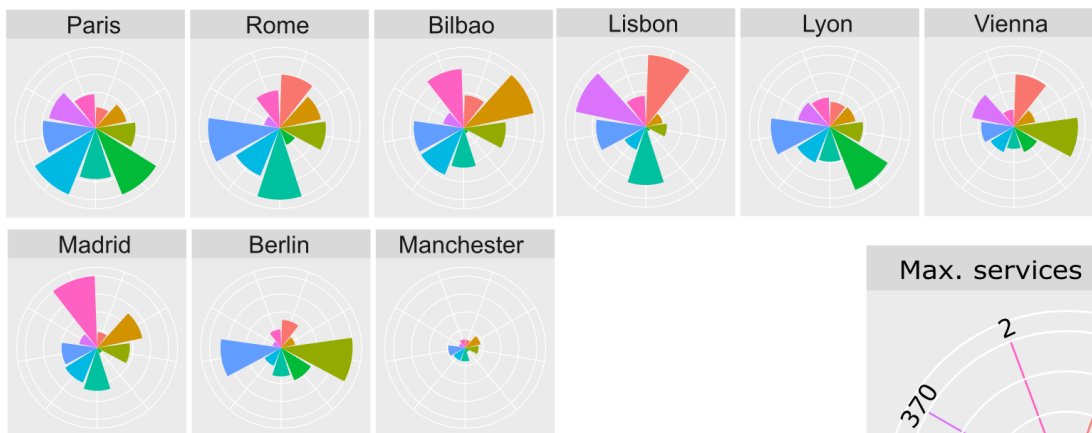
Two different perspectives:

- how many services can one access (in absolute value or %) in a given amount of time
- how many people can access a minimum basket of services / how much time it takes to access a minimum basket of services

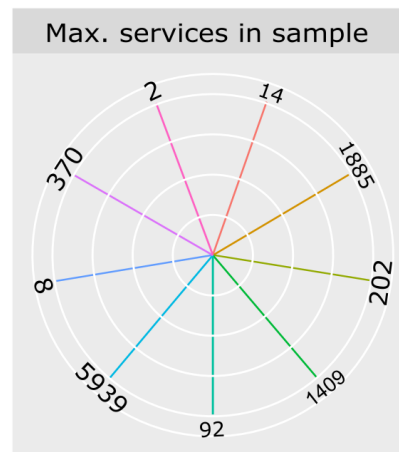
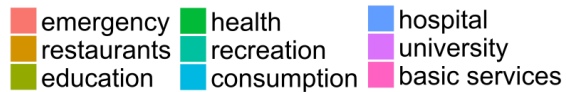
More detailed analysis of a limited number of cities

- In a city, are income and accessibility correlated? Does this vary between cities?
- Compare mode performances in providing access

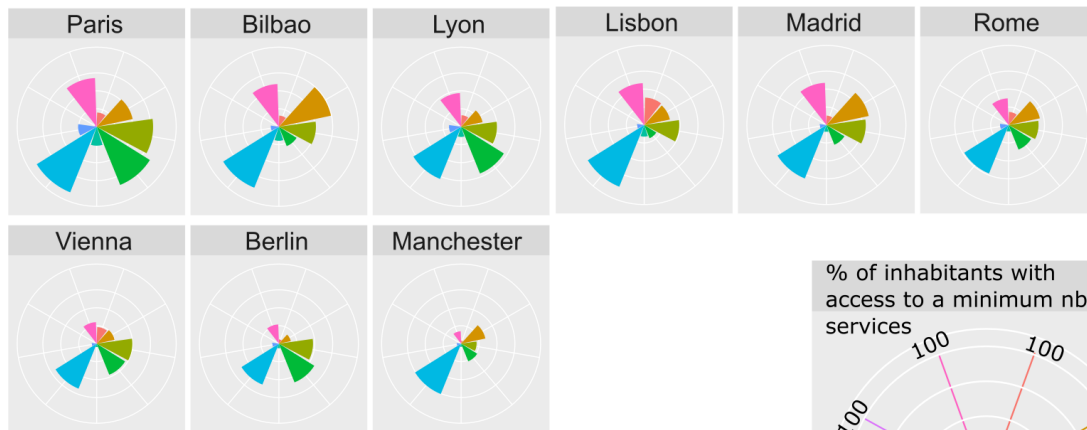
How many services can an inhabitant access in 30 minutes by public transport?



Services type

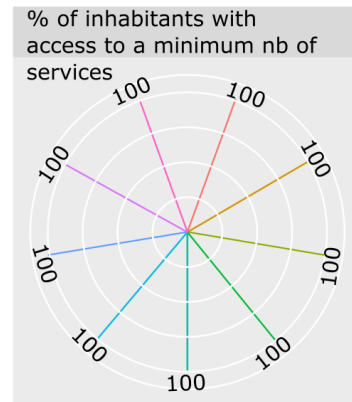


What % of the inhabitants
can access X services within walking distance?



Services type
Minimum in parenthesis

- emergency (1)
- health (5)
- hospital (1)
- restaurants (10)
- recreation (3)
- university (1)
- consumption (10)
- basic services (3)



Check our Visualisation Tool

<https://www.itf-oecd.org/urban-access-framework>

How accessible is your city?

What does this tool measure? 

Use this tool to choose from 121 cities to compare how easily citizens can reach schools, hospitals, shops, green spaces and population.

How does the visualisation tool work? 

Brussels



Paris



Budapest



Wien



Berlin



Bologna



Firenze

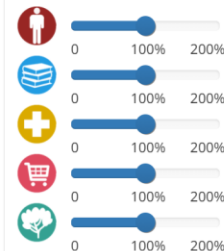


Antwerpen



Set your criteria

Weight importance of destinations



Pick your indicator

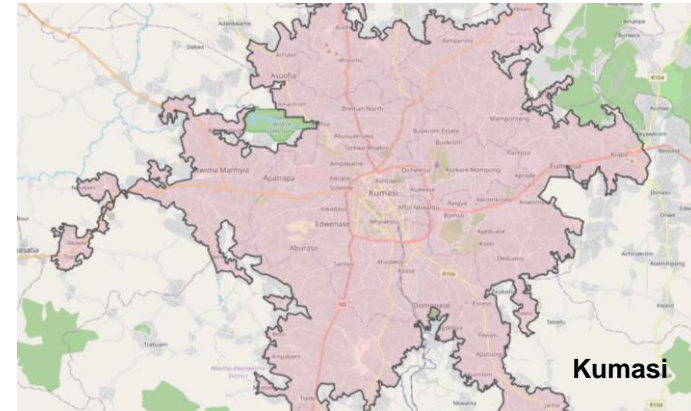
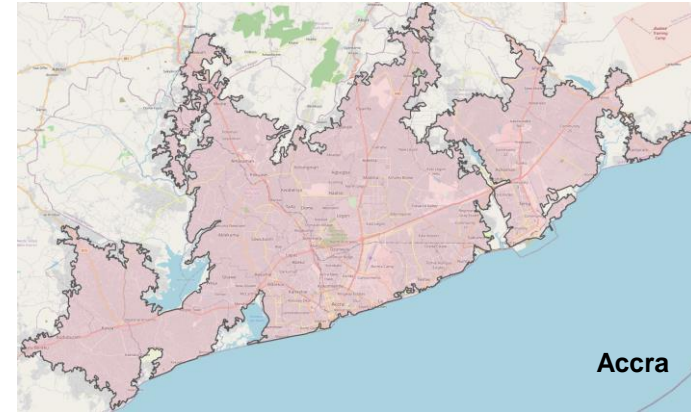
Access

Proximity

Performance

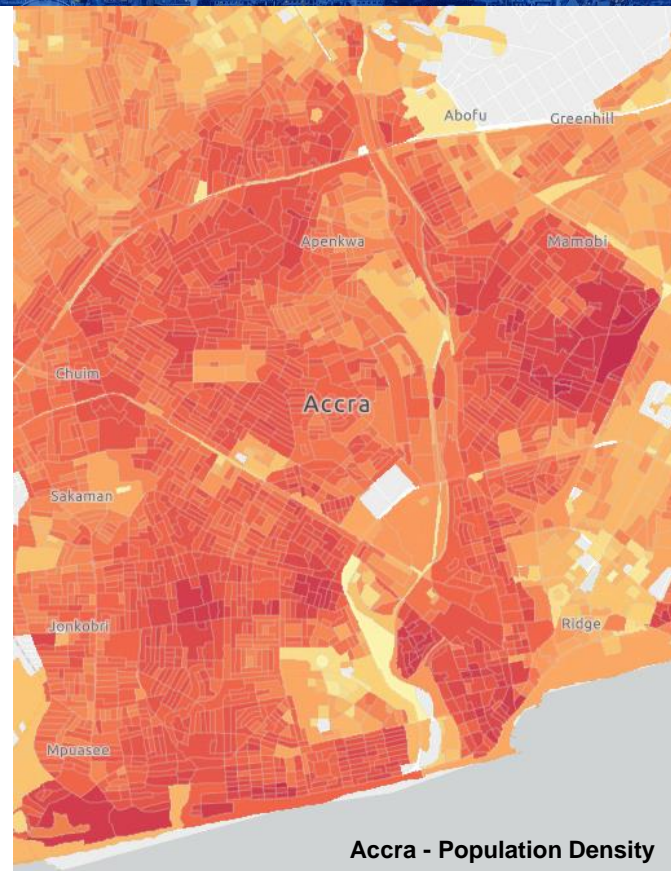
Background

- Collaboration with OECD's Sahel and West Africa Club (SWAC)
- Expanding ITF Accessibility Framework to the two biggest cities in Ghana:
 - **Accra** (5.5M, 1208 km²)
 - **Kumasi** (2.1M, 665 km²)
- Access to **facilities** by private transport, active modes, informal PT (tro-tro) and taxi, split by **gender**



Approach

- Challenges: different datasets than EU cities
 - FUAs → Africapolis “urban extents”
 - Population → GRID3 data from satellite imagery
 - Tro-tro network → GTFS mapped by DT4A
 - Roads + POIs → Private data aggregator
- Engaged **local experts** to validate travel behavior assumptions (e.g. parking time)
- Conducting a survey to describe **gender differences** in transport access in Ghana





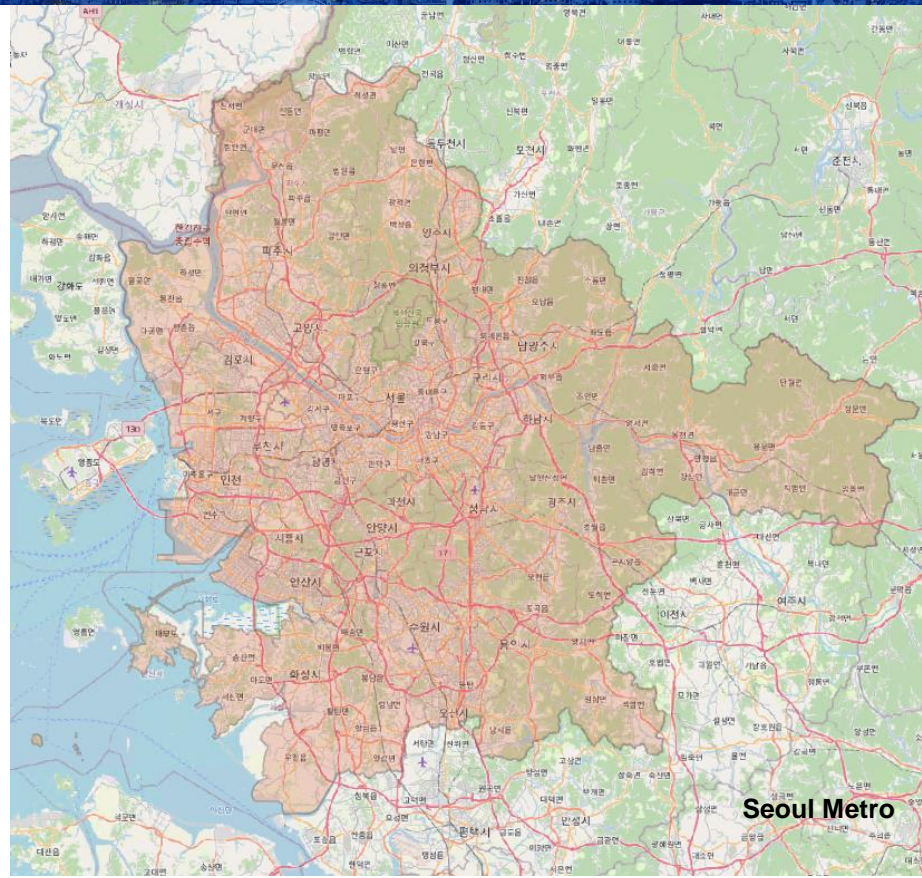
Expected Outcomes

- Create a **flexible** accessibility model that can be applied to a range of national contexts and **datasets**
- Visualize spatial patterns in the **gender-specific accessibility** of facilities across two major cities in Ghana
- Identify opportunities to improve accessibility through **land use** and **infrastructure** interventions



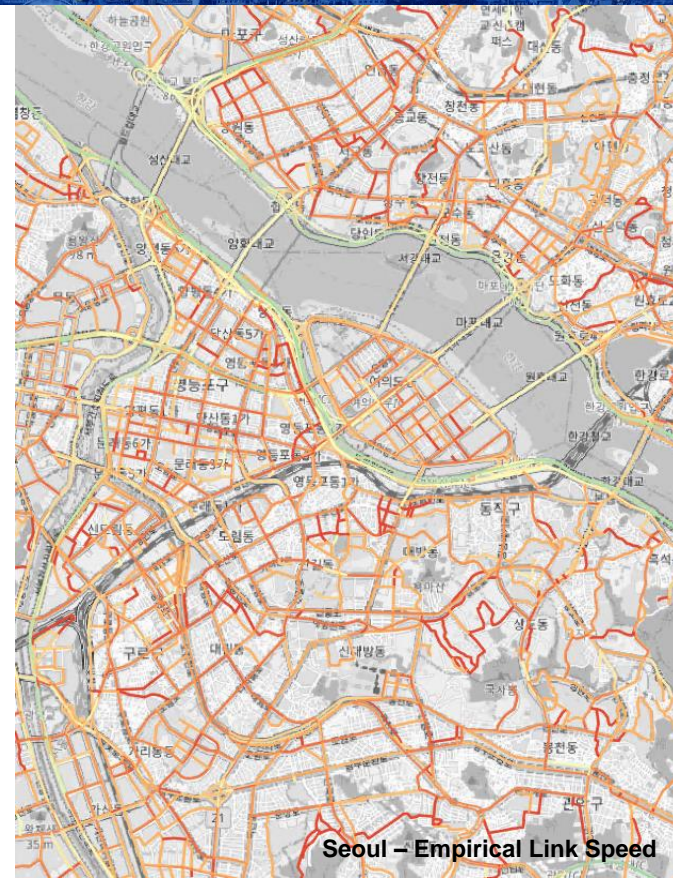
Background

- Collaboration with the South Korea Ministry of Land, Infrastructure and Transport (MOLIT) and Korea Transport Institute (KOTI)
- Expanding ITF Framework to the **Seoul Capital Area** (26M, 12600 km²)
- Access to **services** by private transport, walking, cycling and PT for different **socio-economic groups**



Approach

- Advantages: complete, disaggregate and empirical datasets
 - FUA → original OECD-estimated boundaries
 - Population → detailed split by age and gender
 - PT network → GTFS with real performance travel times and frequencies
 - Roads → Average speed on each link per hour
- Challenges with the network for active modes and data standards (locally produced, requires further processing and harmonisation)





Expected Outcomes

- **Expand** the current accessibility framework in Korea by adding new modes, destination types and demographic split
- Insights on the current state of accessibility for different socio-economic groups in the Seoul Capital Area through an **equity lens**
- Draw up **policy directions** for more equitable and accessible transport systems

What does it mean for the Stats Community?

- **Data is essential** to generate policy insights for the transport sector
- **More and better urban mobility data** needs to be collected:
 - Disaggregate population data (gender, mode availability and choice, trip chaining)
 - Empirical datasets for private and public transport
 - Availability and quality of infrastructure for pedestrians and cyclists
 - Data on new forms of urban mobility
- **Standardised data** underpins the harmonised benchmarking framework:
 - Uniform data and consistent methodologies
 - International standards for homogenised data sources

Thank you

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