International Transport Forum

BENCHMARKING ACCESSIBILITY TO SERVICES ACROSS CITIES

Workshop on “Improving planning and appraisal through the use of accessibiltiy indices”

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Aimée Aguilar Jaber
Nicolas Wagner
Dimitrios Papaioannou

International Transport Forum

ITF approach

Different but complementary approaches

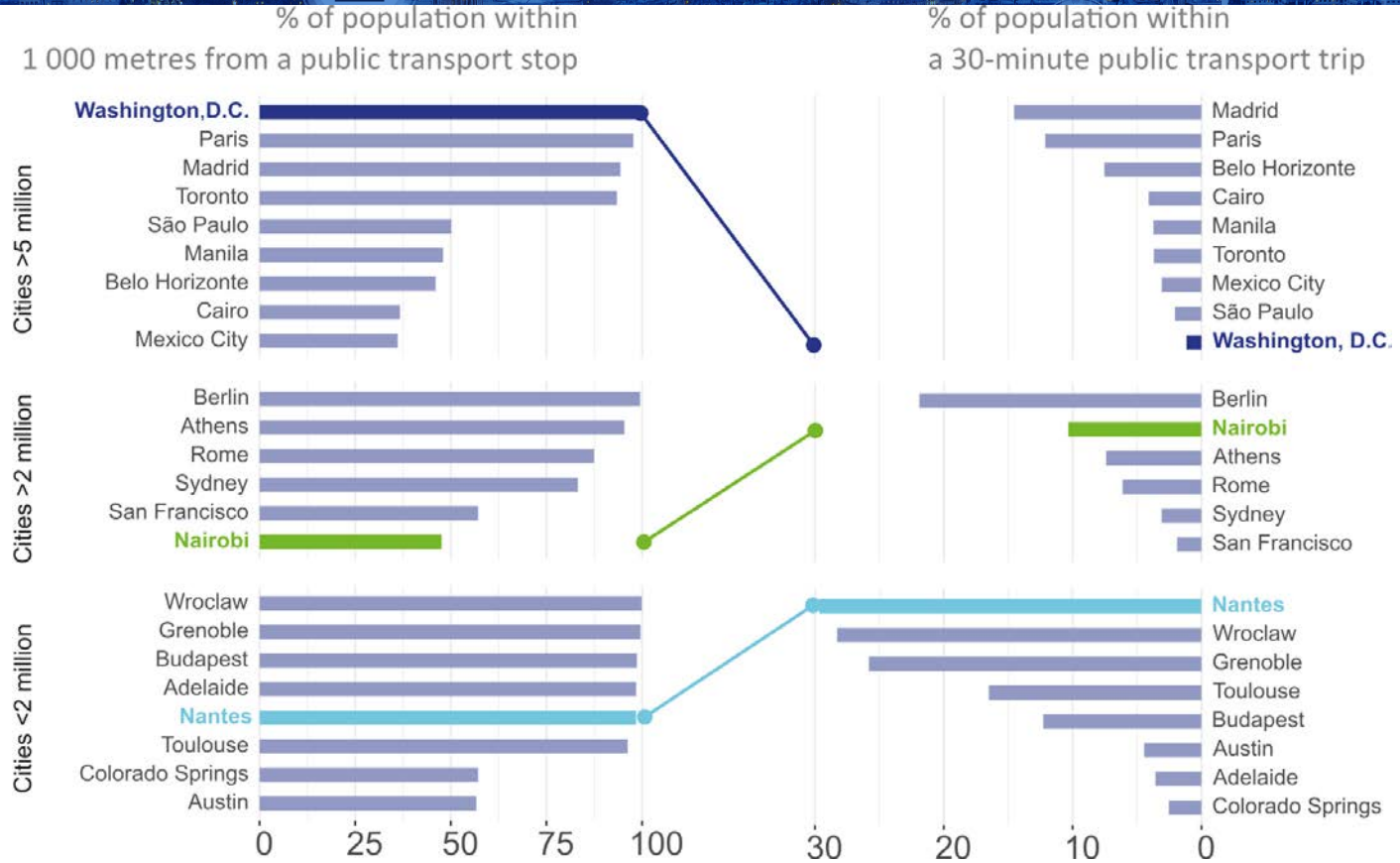
Bottom-up: case by case –high detail but harder to expand to large number of cities

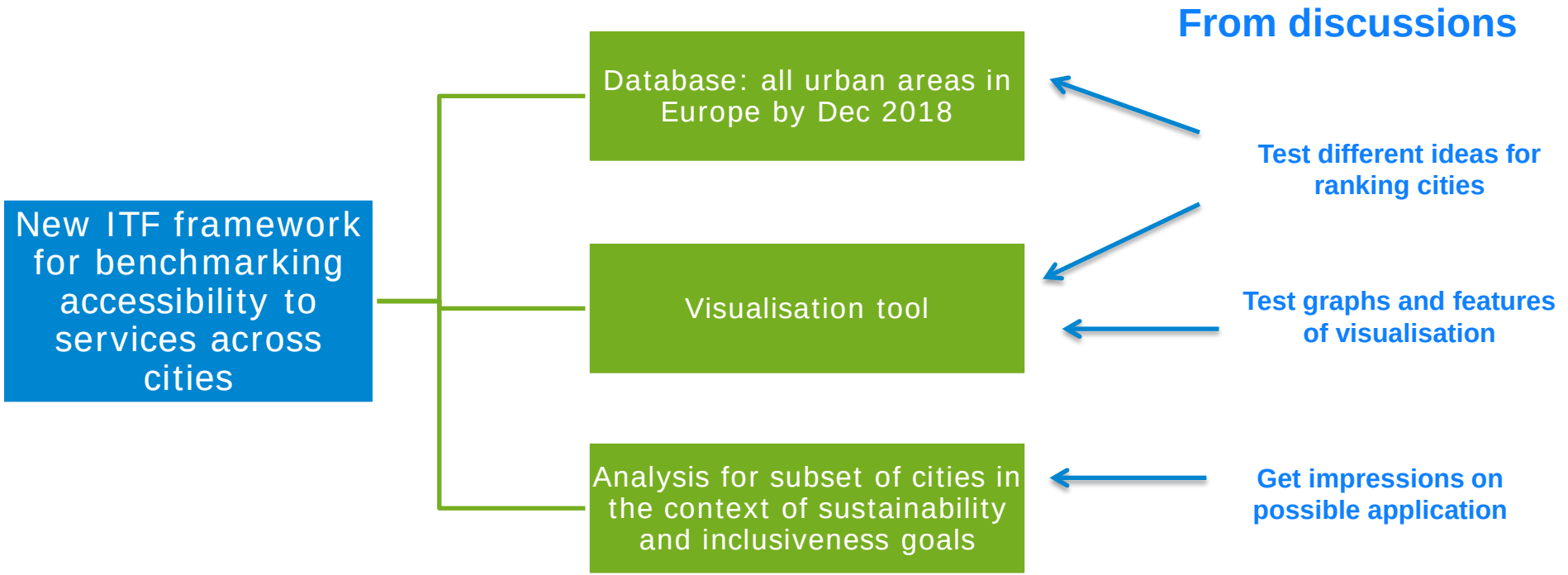
Top-down: directly on a larger number of cities- more limited on detail but better suited for global frameworks

ITF has been developing a top-down approach tool for global benchmarking of accessibility in cities since 2016

Development of global frameworks are particularly relevant with “affordable and equitable access for all ”as SDG and NUA goals

Measuring access to opportunities




From discussions
New ITF framework for benchmarking accessibility to services across cities
Database: all urban areas in Europe by Dec 2018
Visualisation tool
Analysis for subset of cities in the context of sustainability and inclusiveness goals
Test different ideas for ranking cities
Test graphs and features of visualisation
Get impressions on possible application

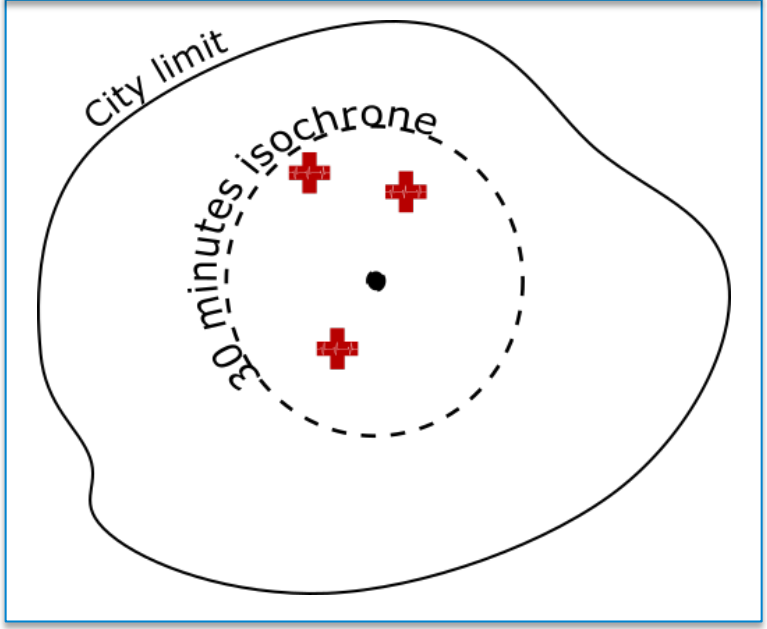
What are we looking for?

Design accessibility metrics that :

- Focuses on access to opportunities
- Are comparable at a global level
- Are simple but scalable
- Are multimodal

Methodological choices

Contour-based metrics



Large coverage

EU Cities > half a million inhab.
4 modes of transport
9 services
3 time thresholds

Global databases and formats

Ex: OpenStreetMaps

Comparable approaches

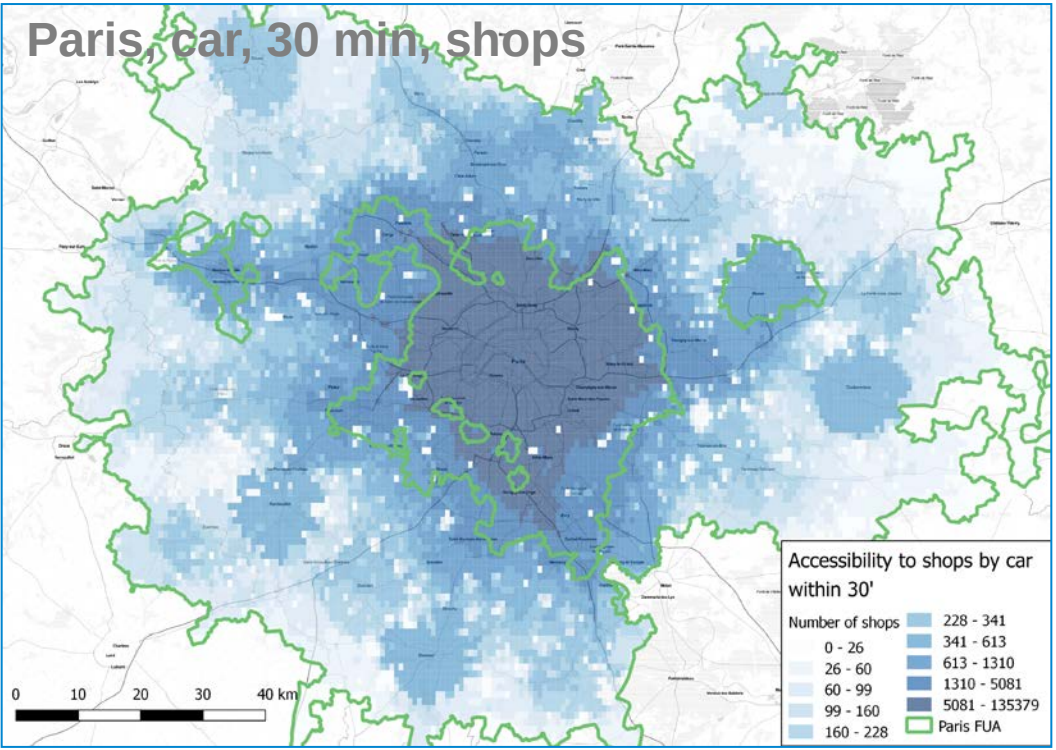
Same methodology
Comparable perimeters (FUA)
No behavioural parameters

Methodological choices

Type	Services included
Basic Services	Bank, Post Office, Pharmacy
Consumption	Department Store, Market, Shopping Centre, Shop
Education	All types of schools
Emergency Services	Fire Station
Health	Doctor, Dentist, Health Care Service
Hospital	Hospital/Polyclinic
Recreational	Museum, Theater, cinema, zoo, stadium, important tourist attraction
Restaurants	Restaurants, bar, nightclub
University	Post high-school education facilities

Source: TomTom provided by EC/JRC (except universities, SCOPUS)

How do we compute it?



The contour-based indicator is computed:

- For each city on a 1km by 1km grid
- For each service
- For each mode

It is then aggregated at the city level using an average:

- One value per service, mode and threshold for each city

How do we compute it?

Assumptions and data to compute travel times by car:

1. From actual speed observations (INRIX)
2. At peak-hour
3. Assume 10 minutes extra for access and parking time

Assumptions and data to compute travel times by public transport:

1. Door to door
2. Based on schedules (not real time) produced by local authorities or pt operators
3. Take in account access, waiting and transfer times

How do we compute it?

Obviously it is rather BIG DATA analysis…

- 115 Functionnal Urban Areas > 500 000 inhab.
- Over 1 million grids, 100 million OD pairs to compute, 28 million road links

… which comes with challenges:

- Data quality (common sense is not enough !)
- Result analysis is not straightforward

What can it be used for?

Comparing cities [in the following only 9 cities to illustrate / temporary results]

Two different perspectives:

1) *how many services can you access (in absolute value or in % of the total services offered by the city) in a given amount of time?*
2) *how many people can access a minimum basket of services?*

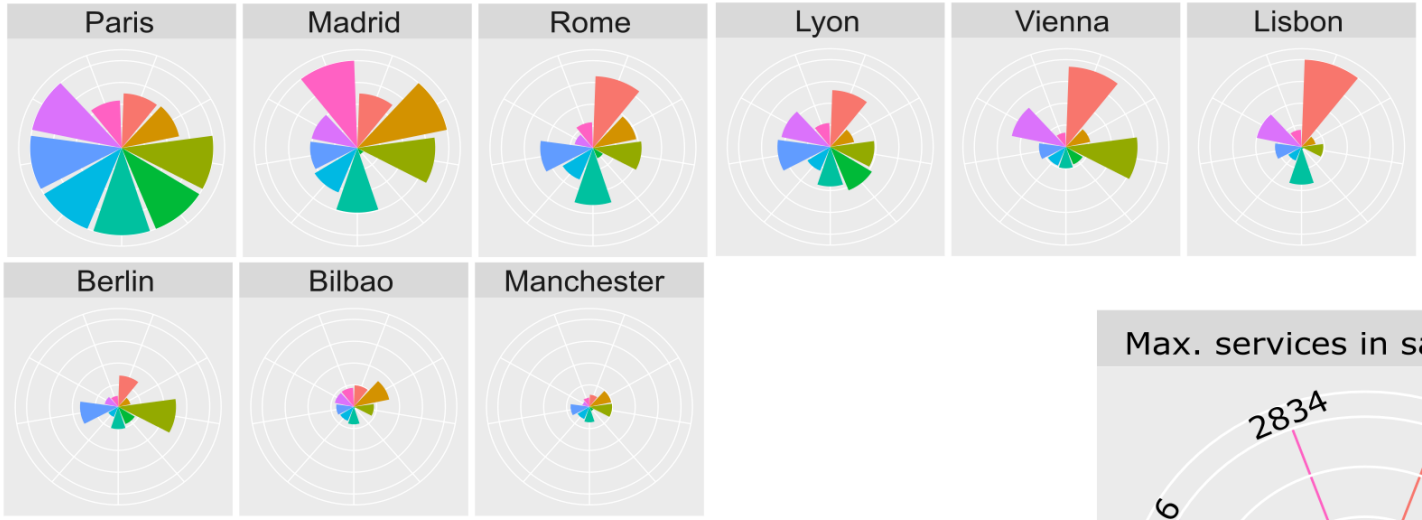
More detailled analysis on a limited number of cities

In a city is income and accessibility correlated? Does this vary between cities?

Other examples: compare mode performances in providing access,

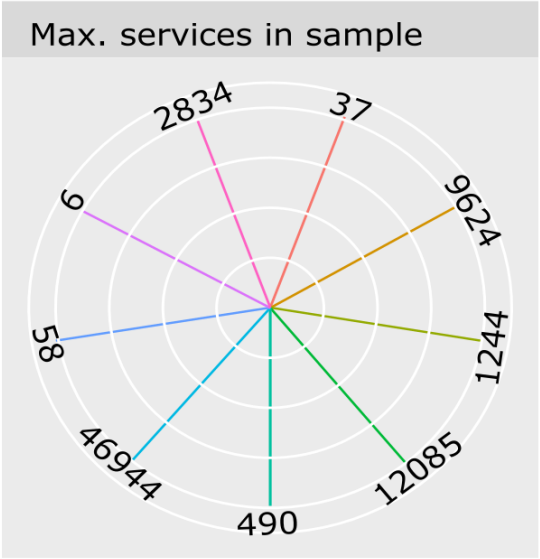
Variation of access within the city…

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

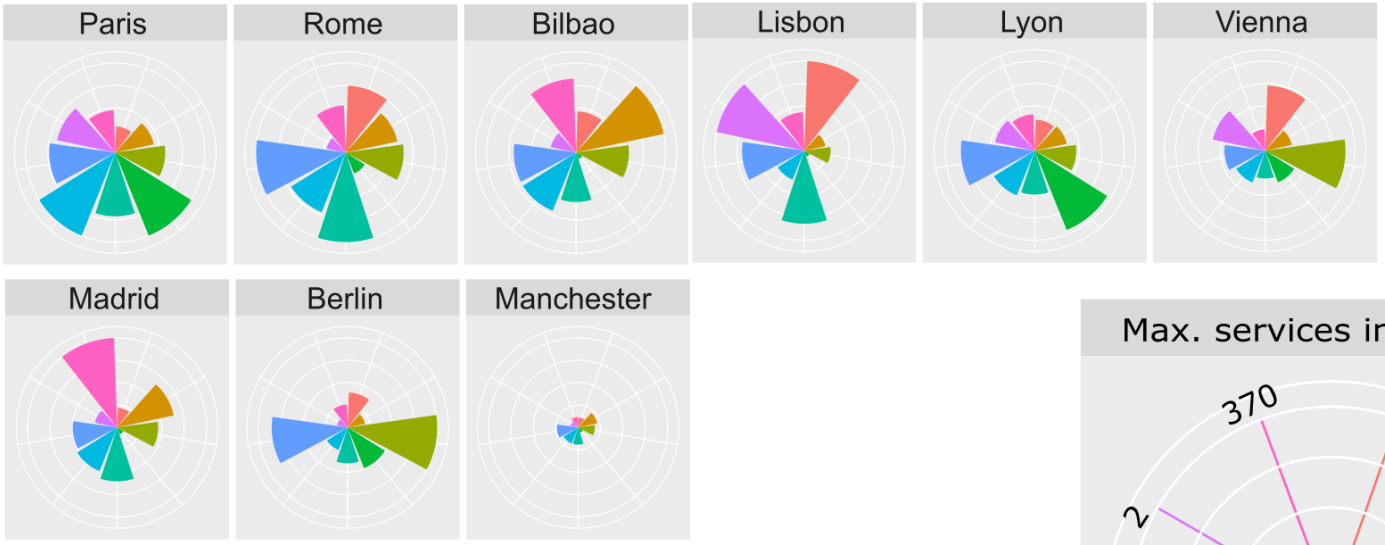


Services type

- emergency
- restaurants
- education
- health
- recreation
- consumption
- hospital
- university
- basic services



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



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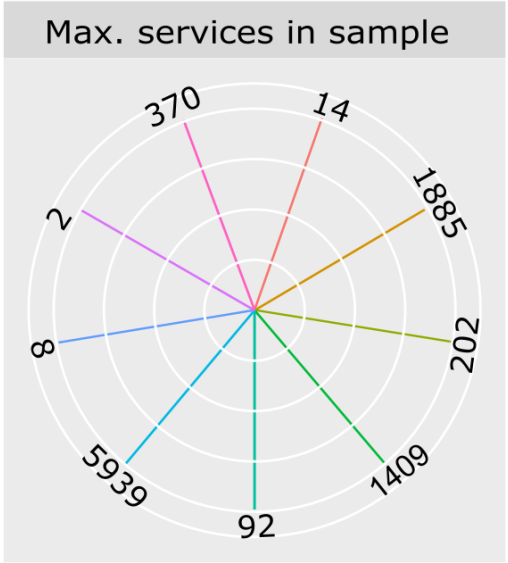
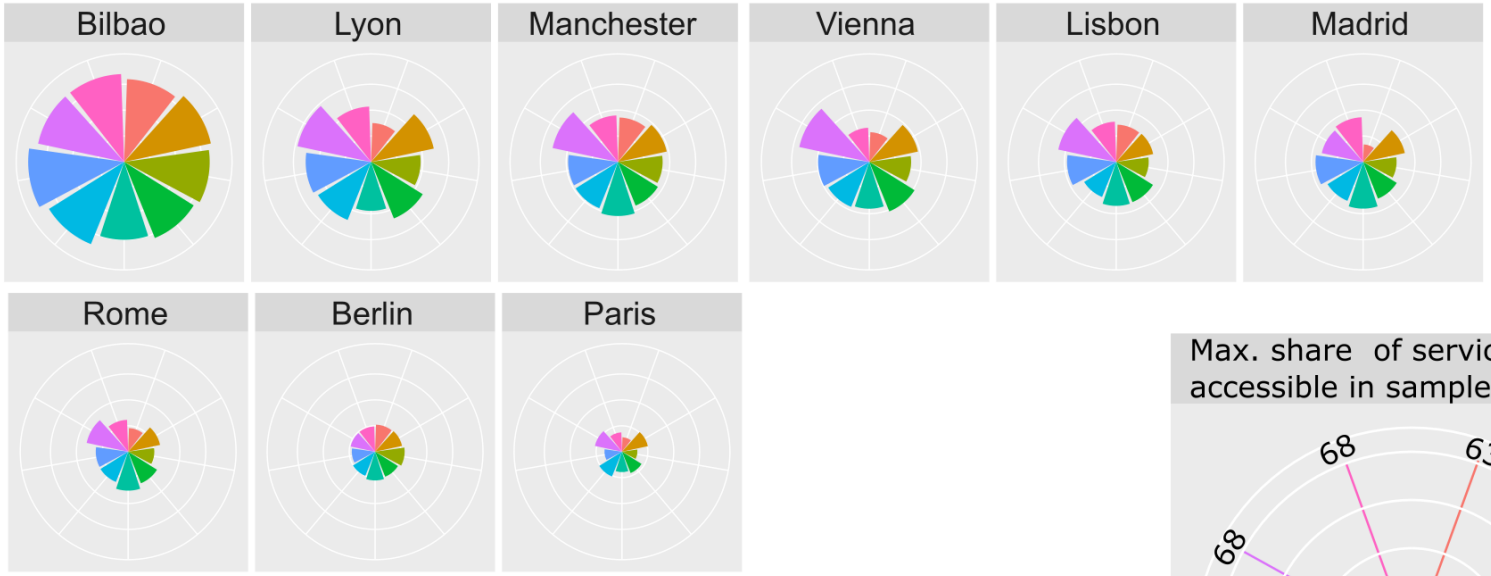


What % of the services offered by his city can an inhabitant access in 30 minutes by car?



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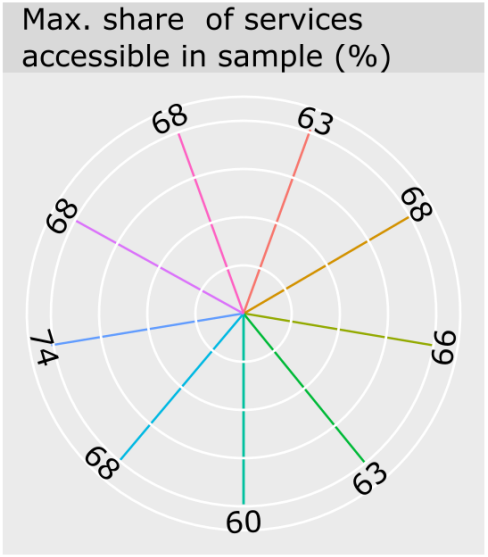
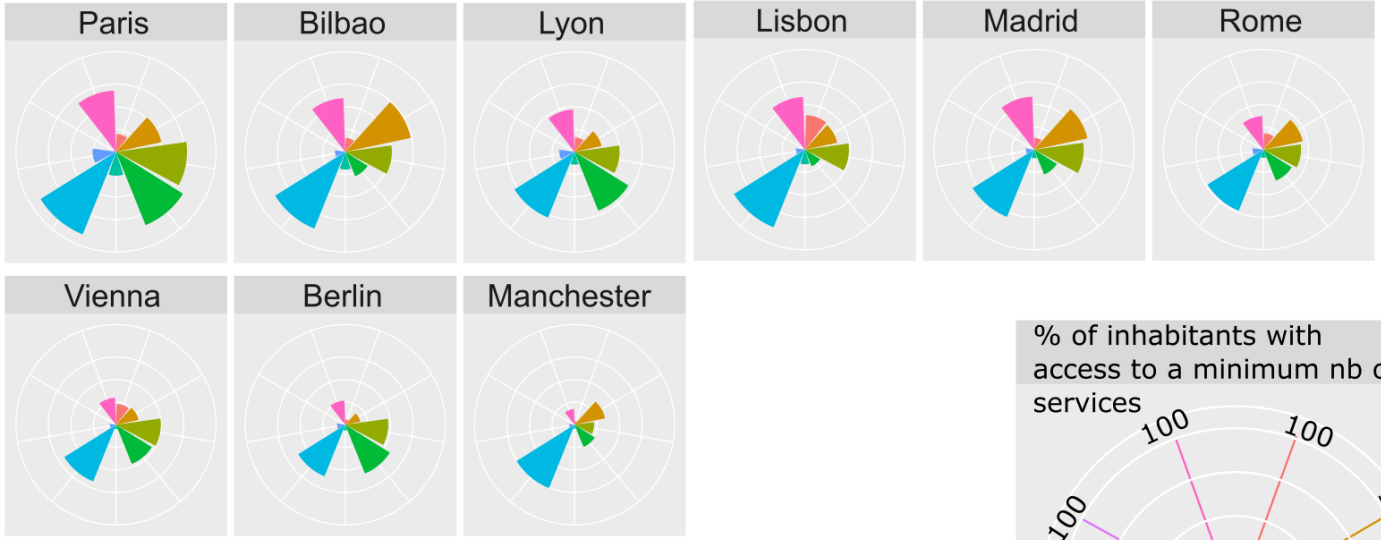
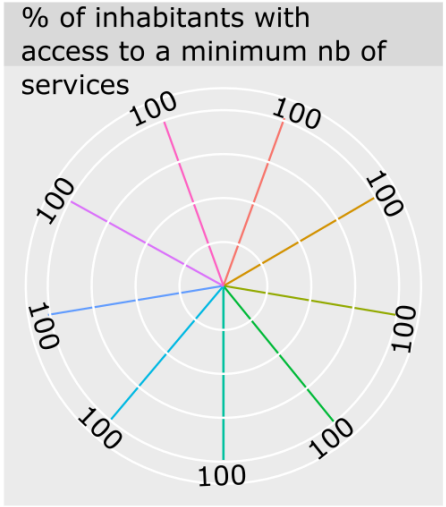


What % of the inhabitants can access X services within walking distance?

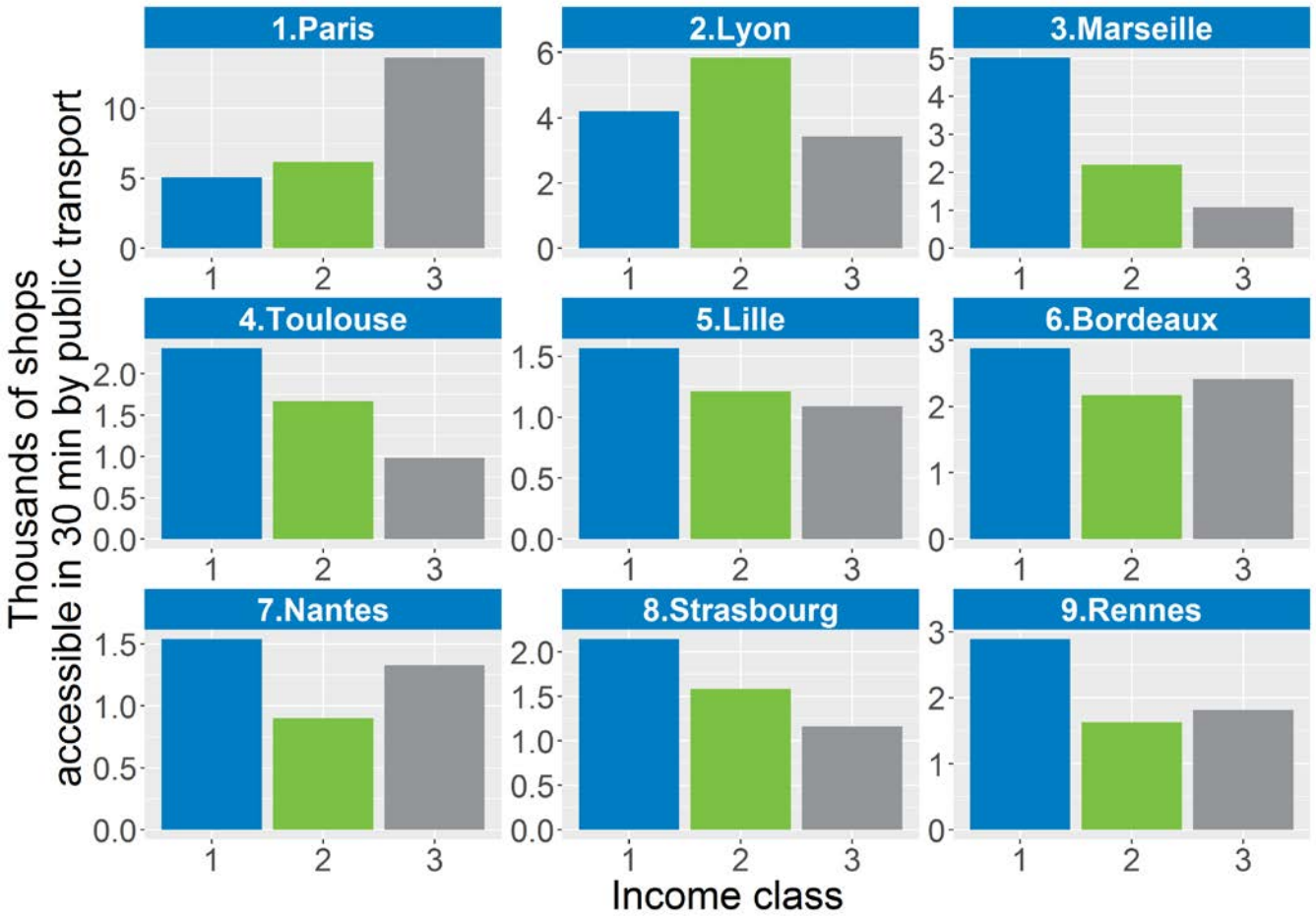




Services type
Mininimum in parenthesis

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

Income and accessibility
French cities



Income class:

1- lower third

2- middle third

3- upper third

Discussions

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