

# **Accessibility assessment of the Seoul Metropolitan Area through an equity lens**

9<sup>th</sup> ITF Transport Statistics Meeting

April 3 2023

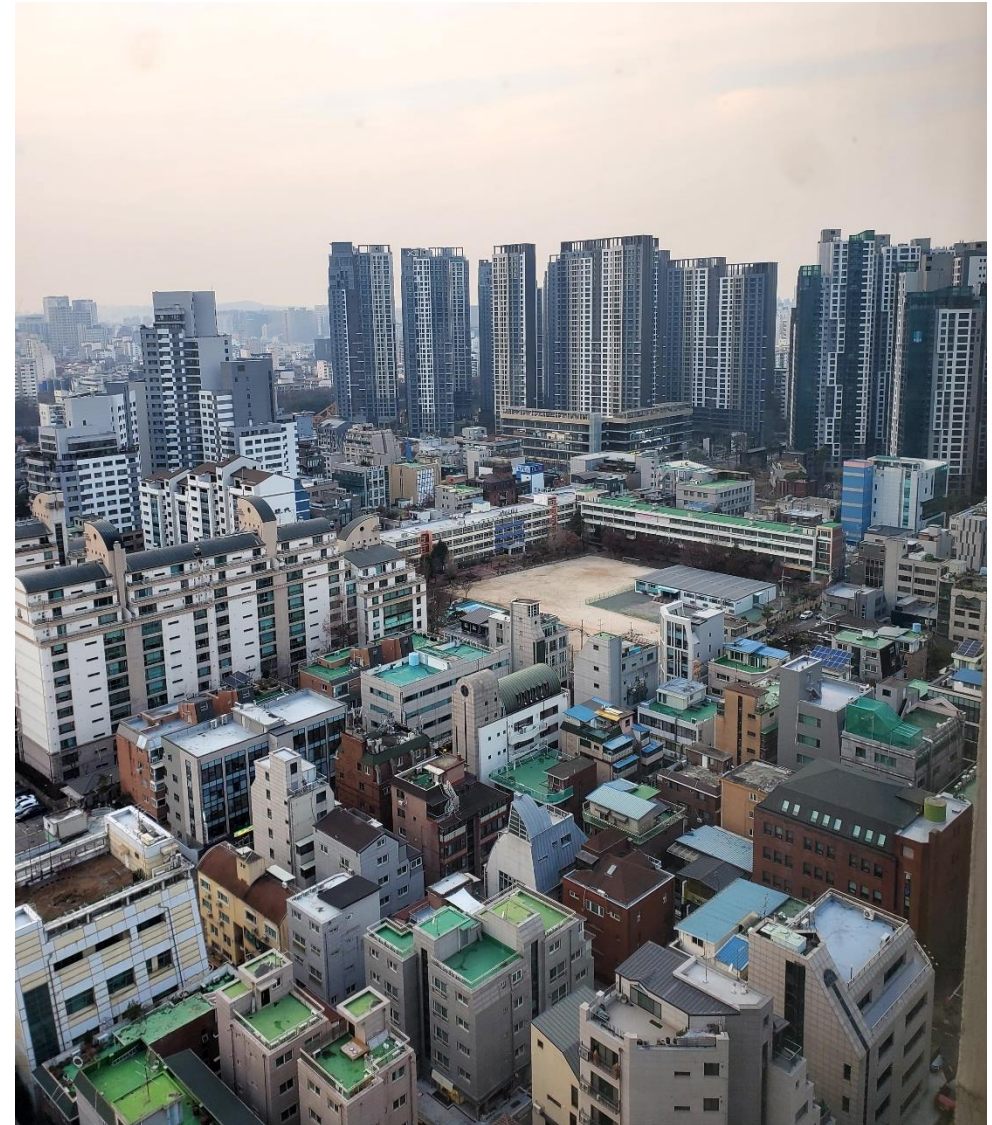
# Outline

- Study background
- What we found
- Key challenges
- Additional considerations

# Study background

Focusing on **accessibility** in the planning and design of transportation systems adds **social and economic value** to communities, improves **quality of life** and helps address externalities like carbon emissions

This study builds on past work at the ITF, including **Benchmarking Accessibility in Cities** (2019), an outcome of the Access and Safety in European Cities project

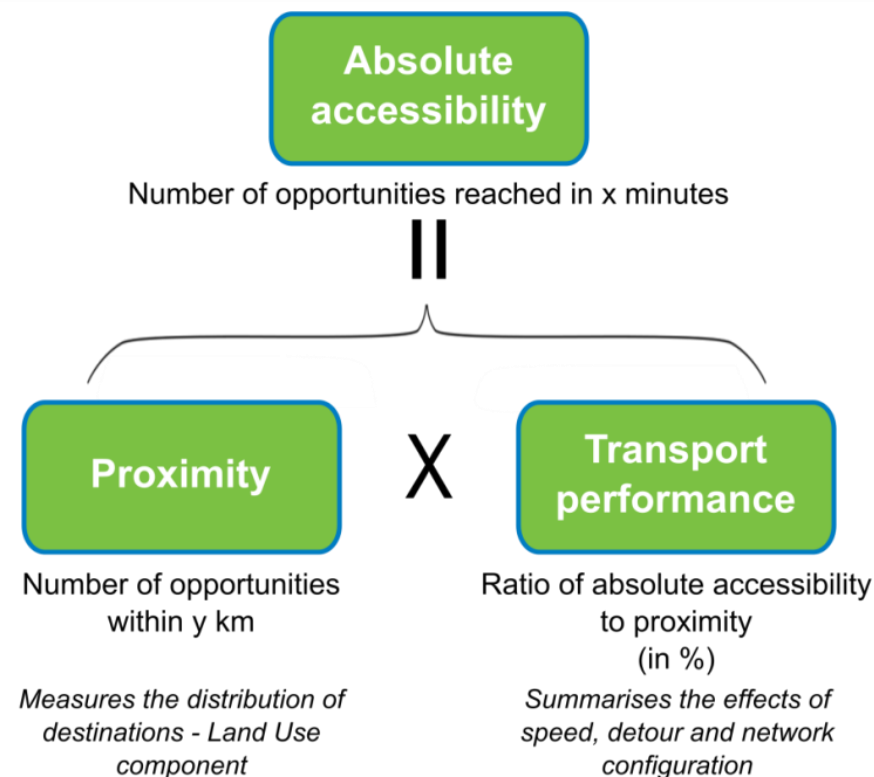


# ITF Accessibility Framework

**Top-down approach**, suitable for benchmarking and comparison across contexts

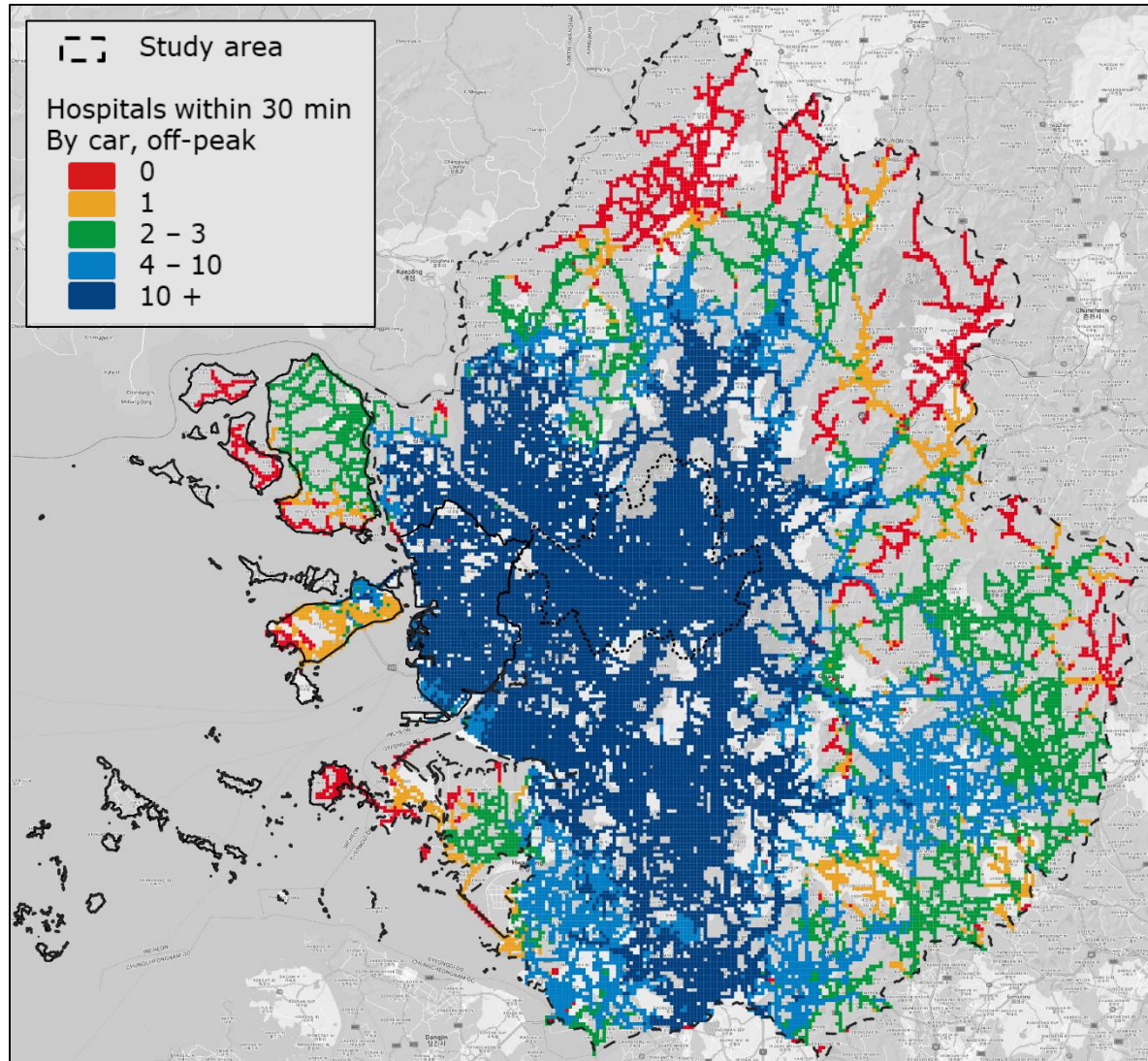
- Conceptually simple
- Comparable globally
- Focuses on access to opportunities
- Multimodal

## Three main indicators





# How do we compute it?



The study area is split into 500m X 500m grid cells, each associated with population and destinations.

## Main indicator:

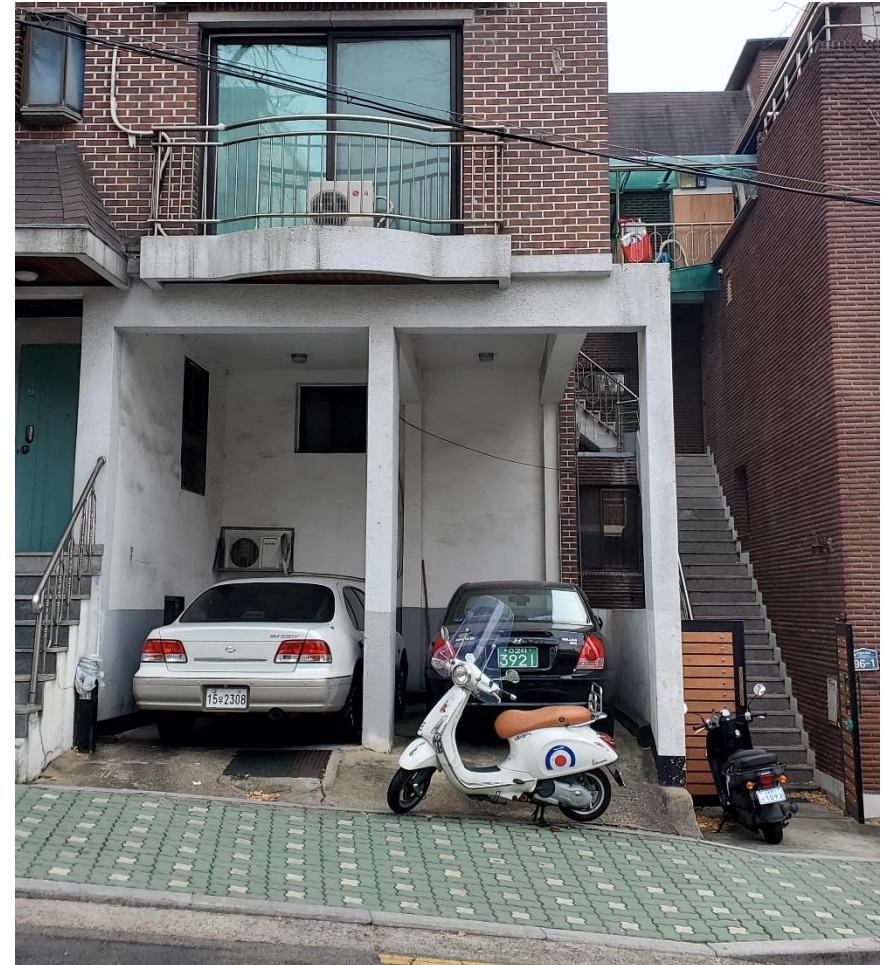
- How many services or destinations can be accessed (number or %) in a given time period with a certain mode?
- How long does it take to access a minimum bundle of services?

# Why does applying an equity lens matter?

Transport choices (mode, destinations, time of travel) are constrained by personal and contextual factors (age, income, needs and preferences)

Accessibility through an equity lens considers the spatial distribution of access for different groups to understand whether transport policies and networks allow freedom to do things that are essential for survival and development.

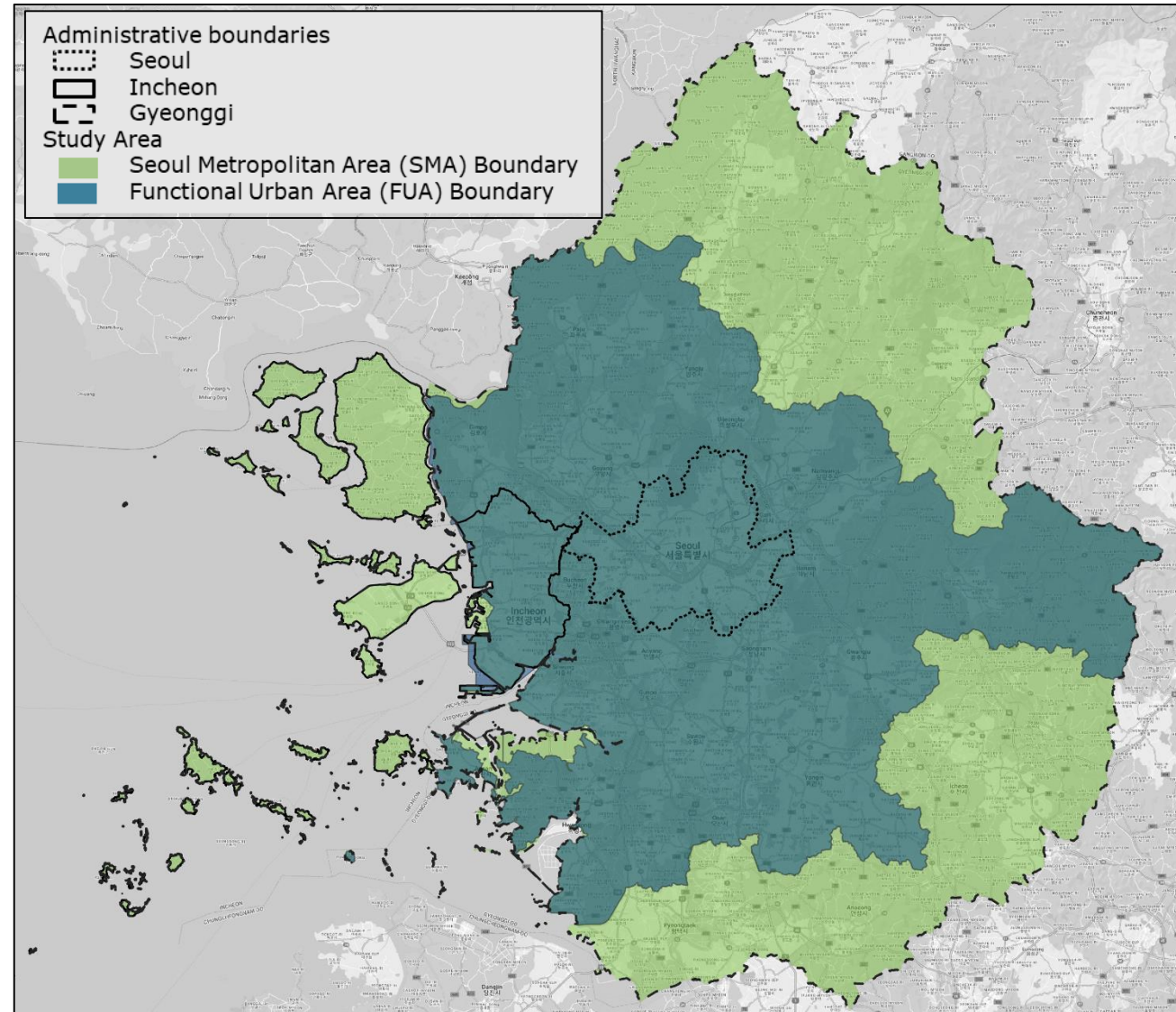
**How can transport policy approaches minimize inequality of opportunities?**





## Study context – Seoul Metropolitan Area

- **Over half** of Korea's total population lives in **the Seoul Metropolitan Area** (Seoul, Incheon and Gyeonggi)
- The capital area has a **variety of destination types and demographics factors** that can illustrate patterns in accessibility and equity
- Study focuses on the SMA, but for benchmarking purposes, indicators are typically computed for a Functional Urban Area



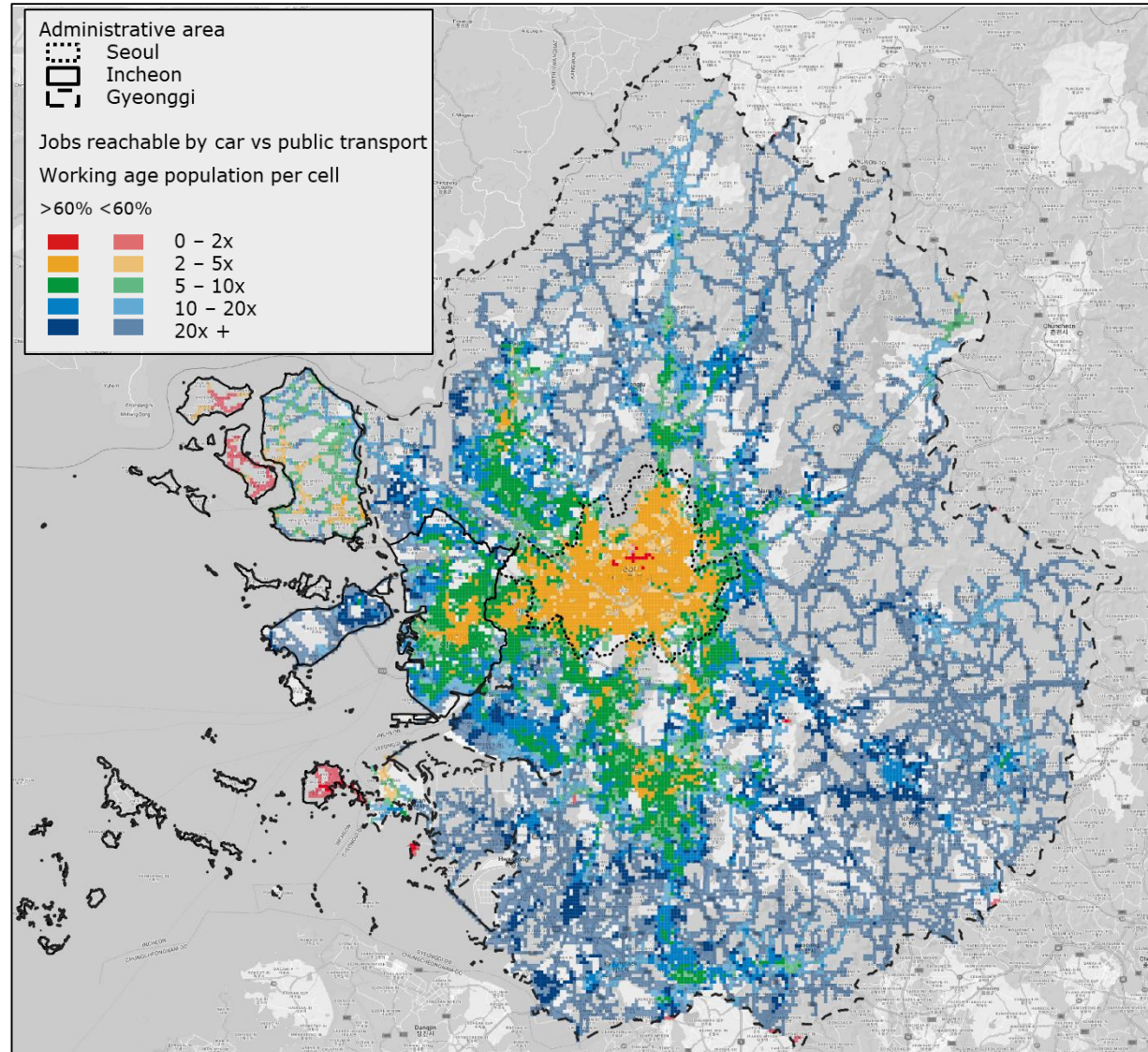
# What can we measure?

Modes	Points of Interest	Socio-economic factors	Time of day	Time or distance thresholds
Walk	Healthcare facilities	Income	AM peak	15 minutes (1km to walk, 4km for other modes)
Bike	Schools	Car ownership	Off peak	30 minutes (2km to walk, 8km for other modes)
Public transport	Services (retail, banks, post)	Gender		60 minutes (4km to walk, 16km for other modes)
Car	Leisure	Age		90 minutes (6km to walk, 24km for other modes)
	Green space			
	Jobs			
	Population			

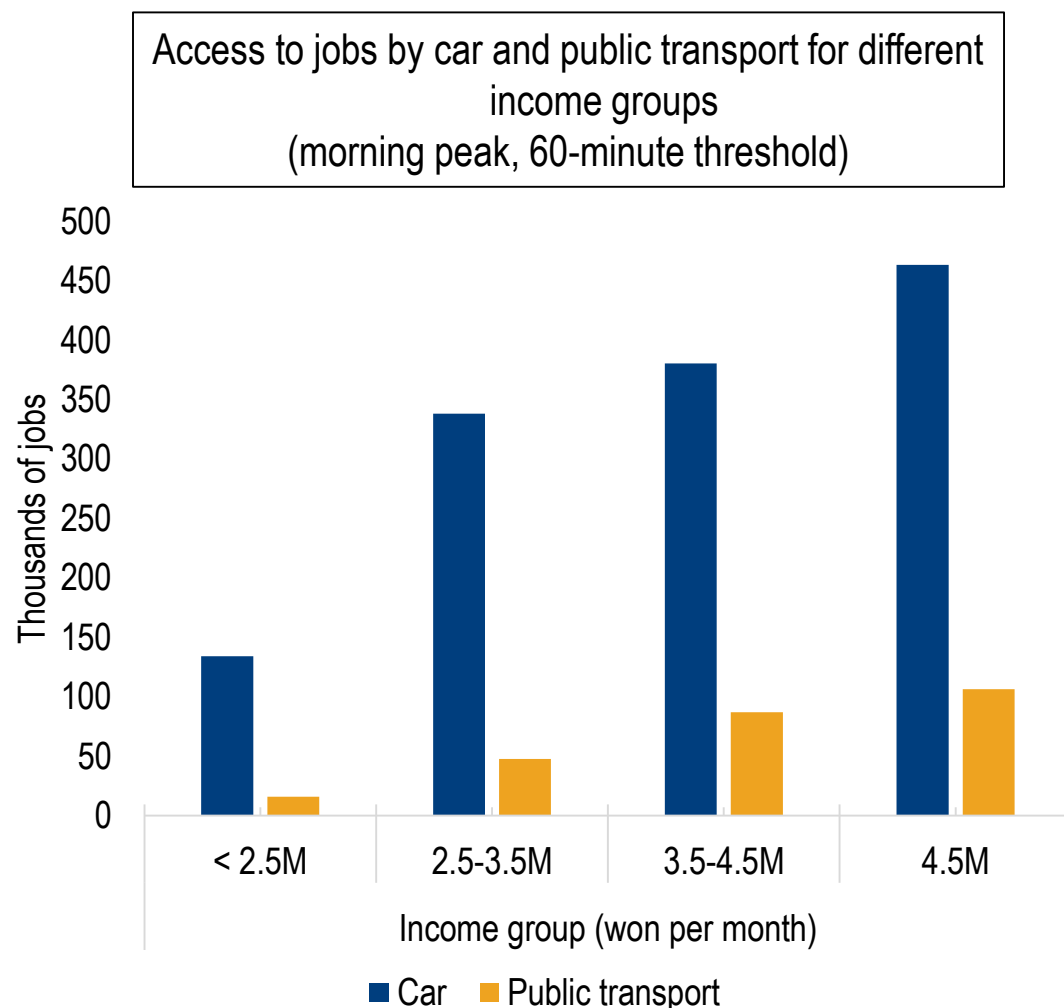


# Car owners have better access to jobs

- New towns provide opportunities for work outside of Seoul
- Car ownership in the SMA is increased and average occupancy per commute decreased over the last decade
- Car users can reach at least **twice as many jobs** as public transport users
- **Orbital trips are underserved** by the public transport network



# Higher income, higher access

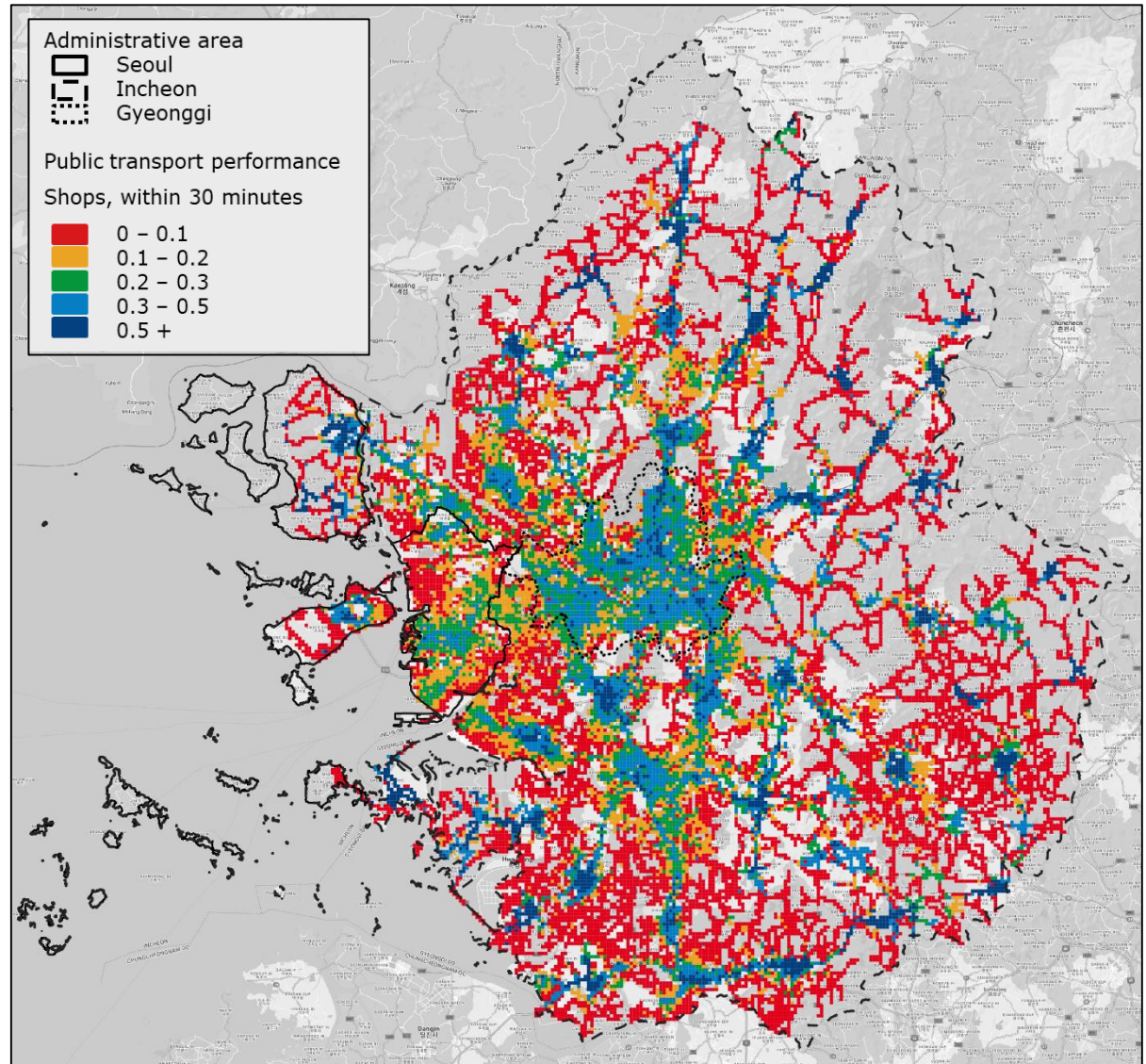


- Lower income households in the SMA spend more money on housing and transportation
- Individuals priced out of the core live in areas that provide better access by car
- Public transport **access to jobs is higher in high income areas**
- Prioritising public transport improvements based only on mobility (e.g. bus lanes in highly congested areas) **benefits already well-off areas**



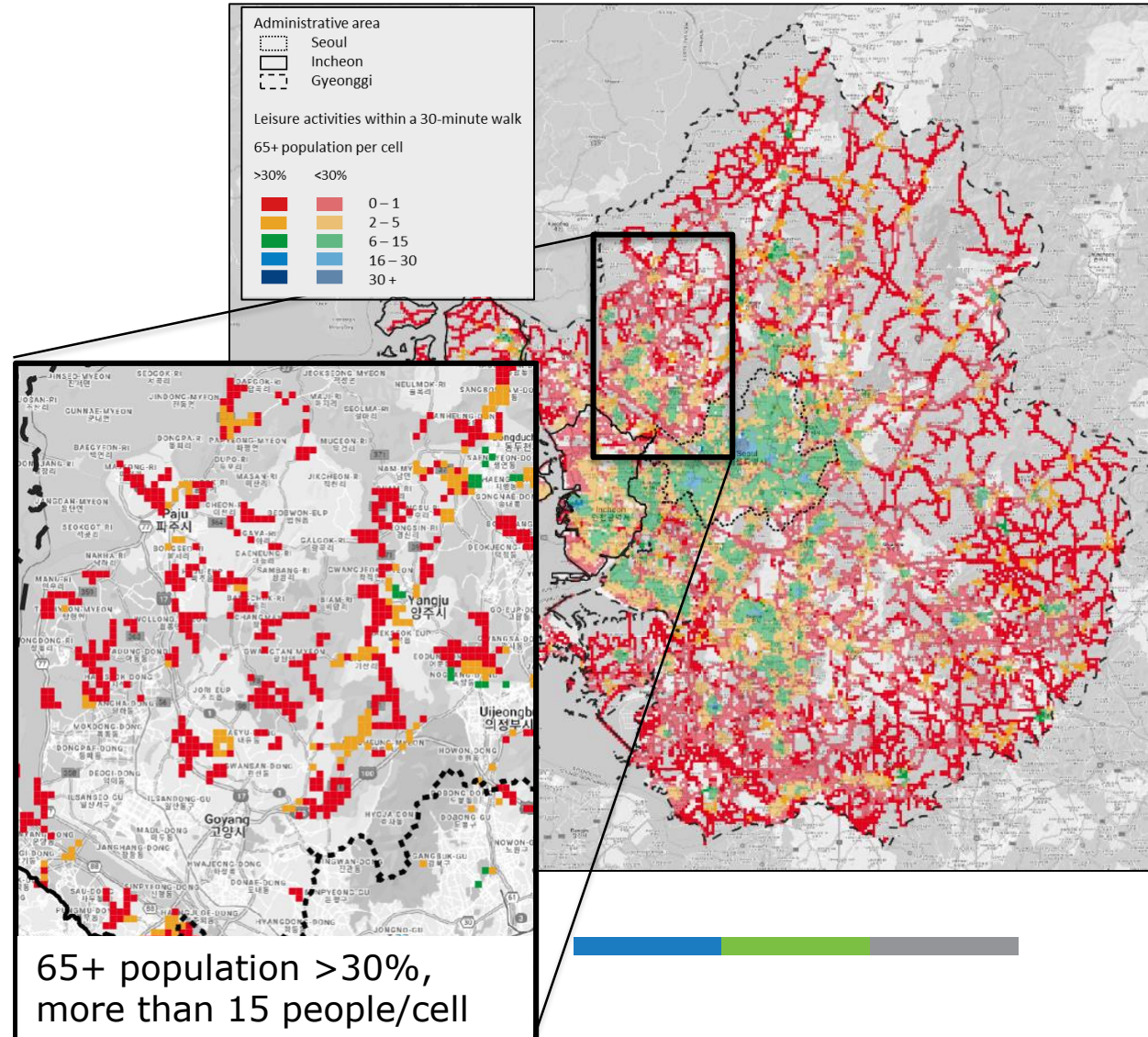
# Mixed land uses reduce time-poverty

- A higher share of care work requires complex travel patterns (trip-chains) and can result in time-poverty
- Complex trip-chains are more likely to be made using spatially and temporally flexible modes (walk, car)
- Care-related travel activity tends to be localised
- Transit-oriented development results in **better public transport performance around major station areas**



# Alternatives to driving support ageing in place

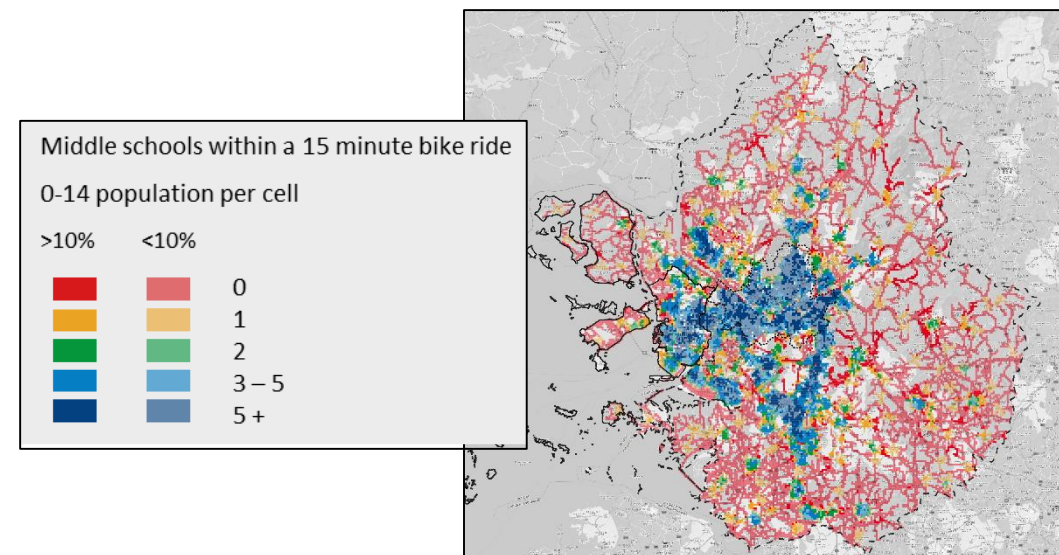
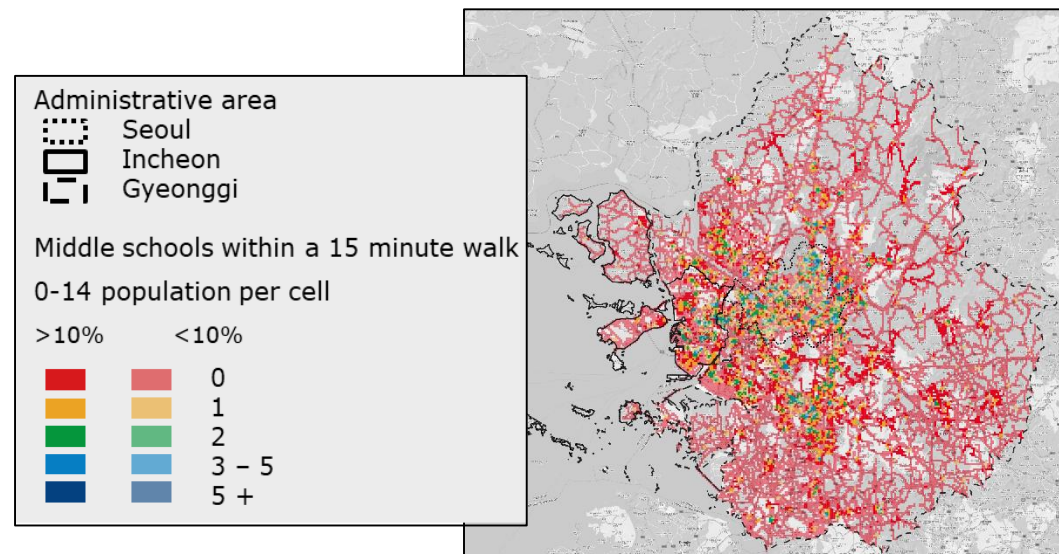
- Walking is the main transport mode among the elderly (65+), and leisure is the main trip purpose
- Outside the core, **few elderly people are within walking distance of leisure activities**
- High-coverage or demand responsive public transport can provide **basic mobility for the elderly** and **encourage driving cessation**





# Potential latent demand for active travel near schools


- Quality of school districts influences parents' residential location choice
- As they grow older, **many children are out of walking distance from middle schools**
- Improving pedestrian and bike safety near schools can encourage active travel, independence, and reduce time-poverty for caregivers



# Key challenges

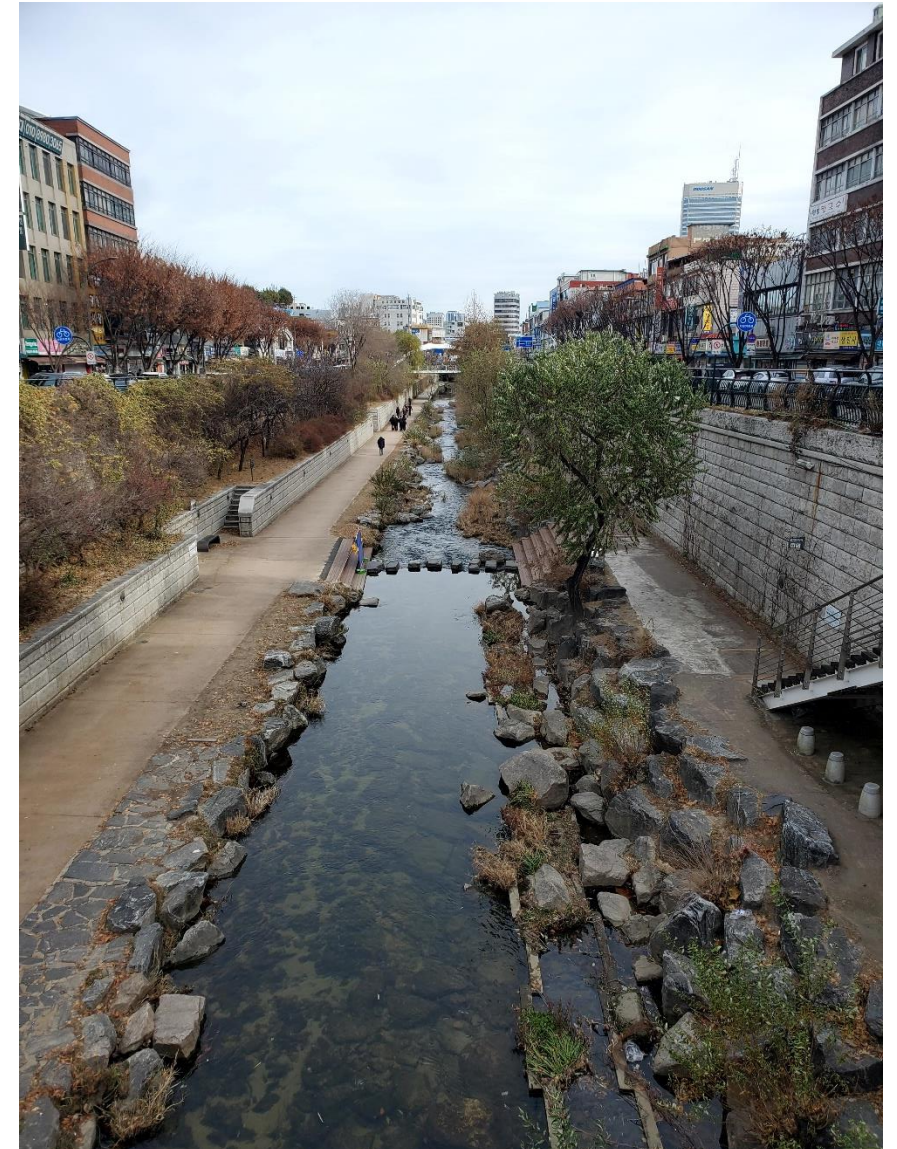
- Not all destinations are equally attractive to all individuals, different location attributes and individual preferences influence access
  - e.g. hours of operation for retail, types of jobs, educational attainment
- Selecting travel time thresholds can obscure some nuance in actual travel behaviour
  - e.g. a destination 35 minutes away would be excluded from a 30-minute threshold measure, and a destination 5 minutes away is considered as accessible as one 15 minutes away
- Trip-based accessibility measures cannot account for trip-chains, which introduce additional constraints due to scheduling, modes available, etc.

Including these considerations in analysis should be based on policy objectives, as they can increase computational complexity, and can make benchmarking results more difficult



## Additional considerations

- Policy priorities can be based on desired outcomes
  - e.g. at minimum, transport should enable a basic level of accessibility for all users in most contexts
- Accessibility analyses can help evaluate effectiveness of policies, provided data is available
  - e.g. disaggregated socio-economic data, transport performance data (incl. emerging modes), travel surveys (improve understanding of travel behaviour)



# Thank you!

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