Harry Schulman 24.10.2013

The development of urban form in metropolitan regions: Examples from Helsinki and Stockholm

"Urban form, metropolitan region" and other main concepts

Project questions and tasks

Main theoretical concepts

Case study: The city-regions of Helsinki and Stockholm

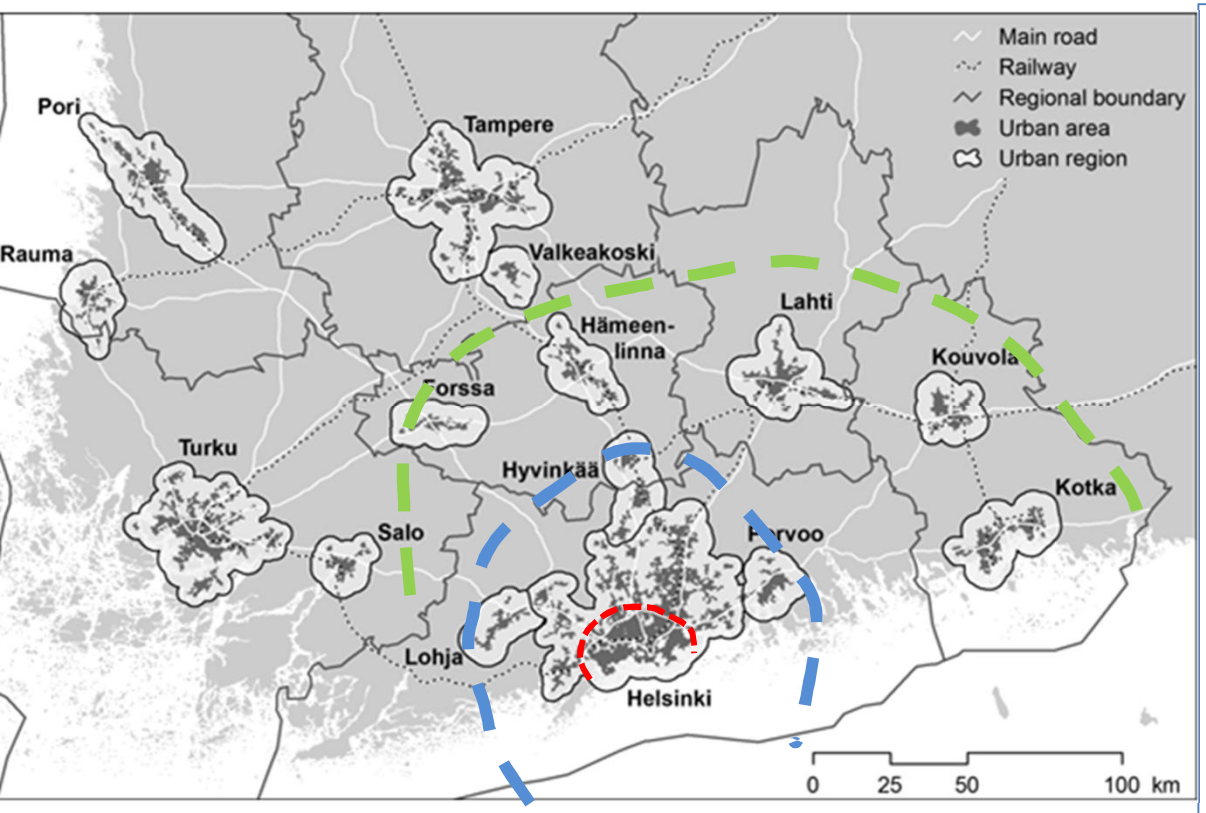
- City-region identifications and divisions to core and peri-urban areas
- Identification of centers and polycentricity
- Analyses of urban core areas and peri-urban areas
- Linking them to mobility zones (walking and cycling, public transport, use of private car)

Some results

Conclusions (draft)

“Urban form in metropolitan region”

Studies of urban form aims to understand the morphology and functionality of urban fabric and the structures & actors behind urban growth and development.



Vasanen 2013

A metropolitan region ties together the contiguous urban built-up areas bound to the main center or to a large polycentric system by employment, commerce etc. – often known as a commuter zone. It may include not only a city, but the city-system with surrounding suburban, peri-urban and rural areas, all which it is presumed to influence.

The term is understood differently when studied at different scales!

Case study: The city-regions of Helsinki and Stockholm

Project stakeholders and group members:
University of Helsinki, Department of Geosciences and Geography / Harry Schulman
Finnish Environment Institute SYKE, Environmental Policy Centre ,
Built Environment Unit / Mika Ristimäki

Panu Söderström, Martina Jerima, Kristina Salomaa, Petteri Kosonen, Juha Niemelä, Maija Tiitu

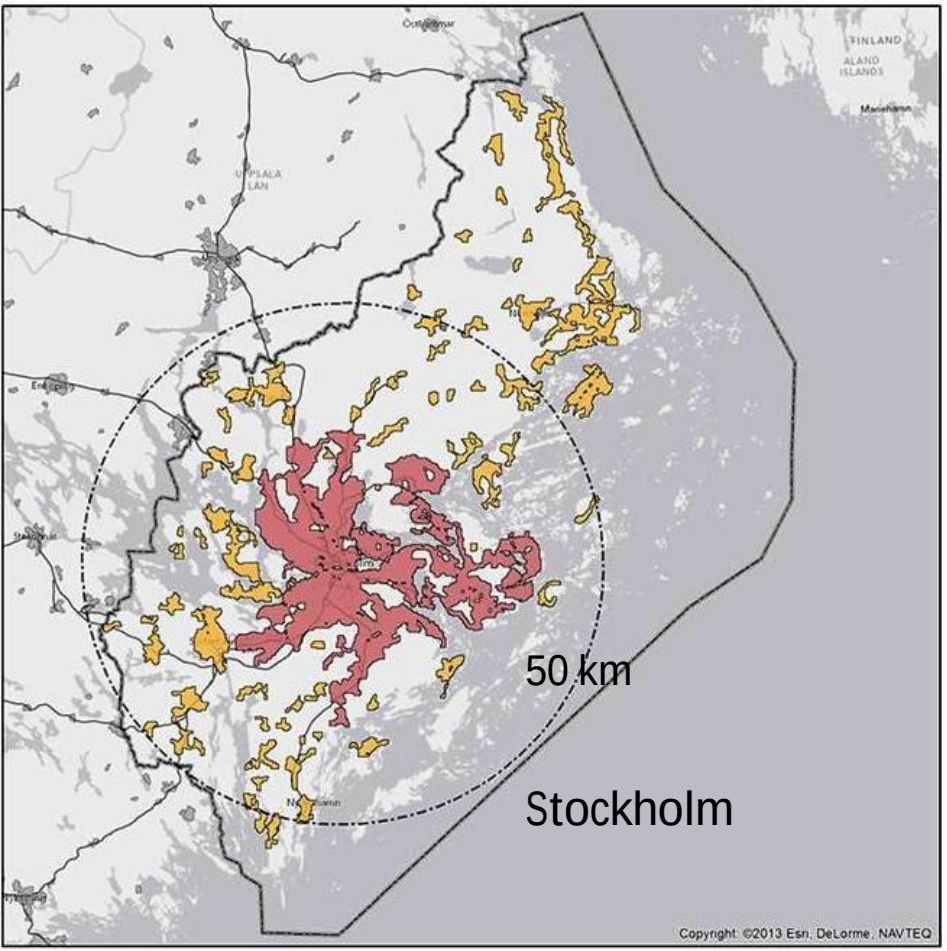
Learning from sharing experiences - Collaboration with planners and other experts – KARA research network on large urban regions in Finland. Network for research-practice collaboration on urban & regional planning issues.

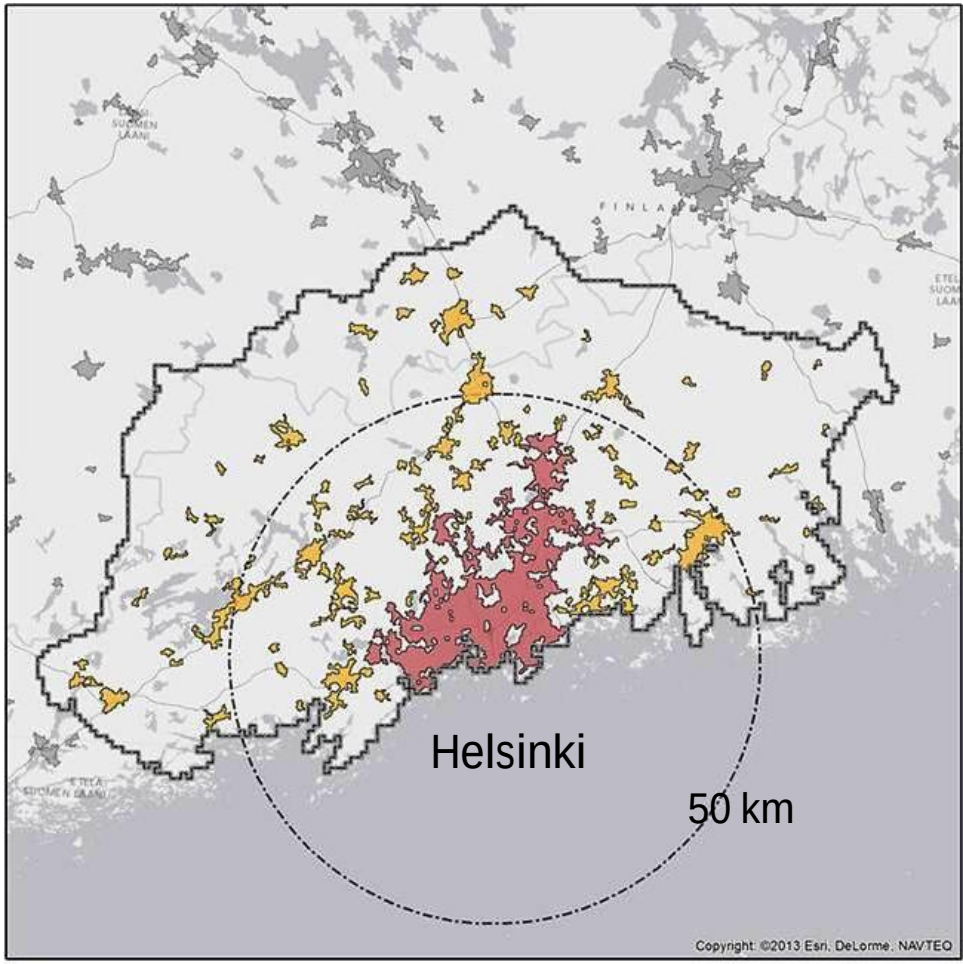
Publication, Website, including examples of the use of interactive web tools in scale-sensitive planning.

- Ways to synthetise results from different stakeholders
- Ways to build interdisciplinary understanding
- Ways to provide useful outputs for strategic urban & regional planning

Understanding of urban development and network city framework
Duration: April 2012 –January 2014

Stockholm and Helsinki: Urban Areas and City-Regions



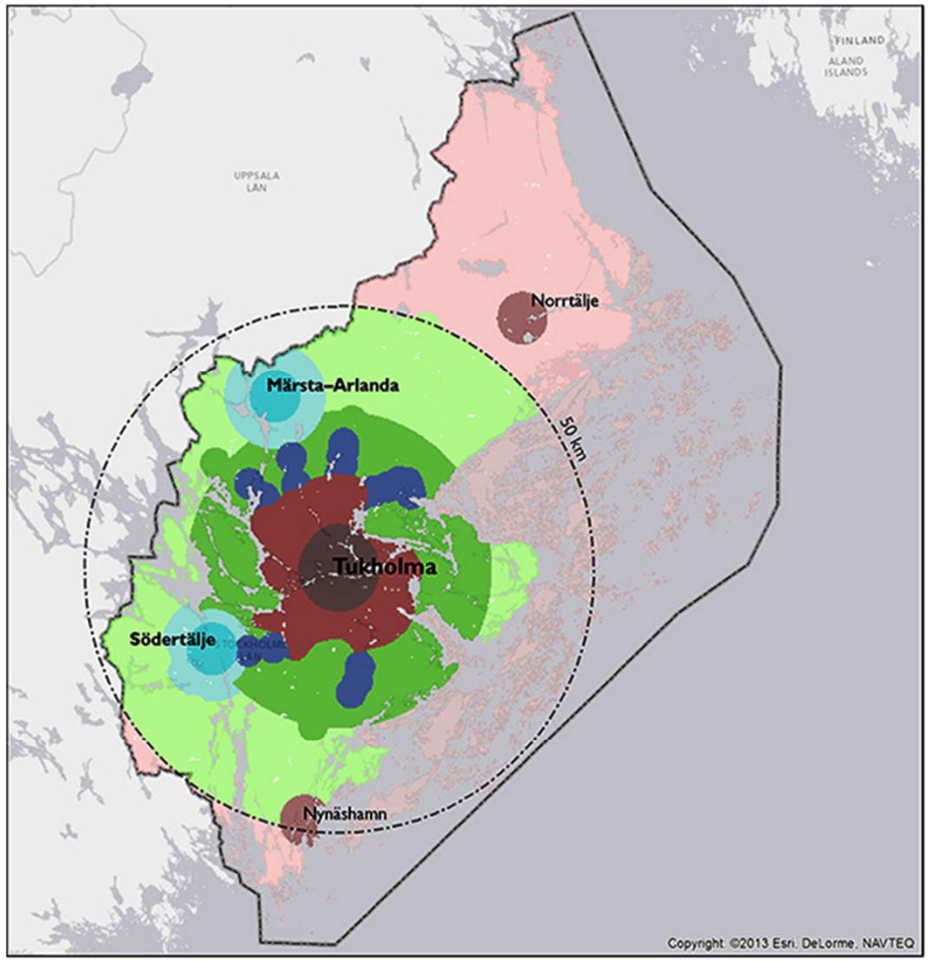


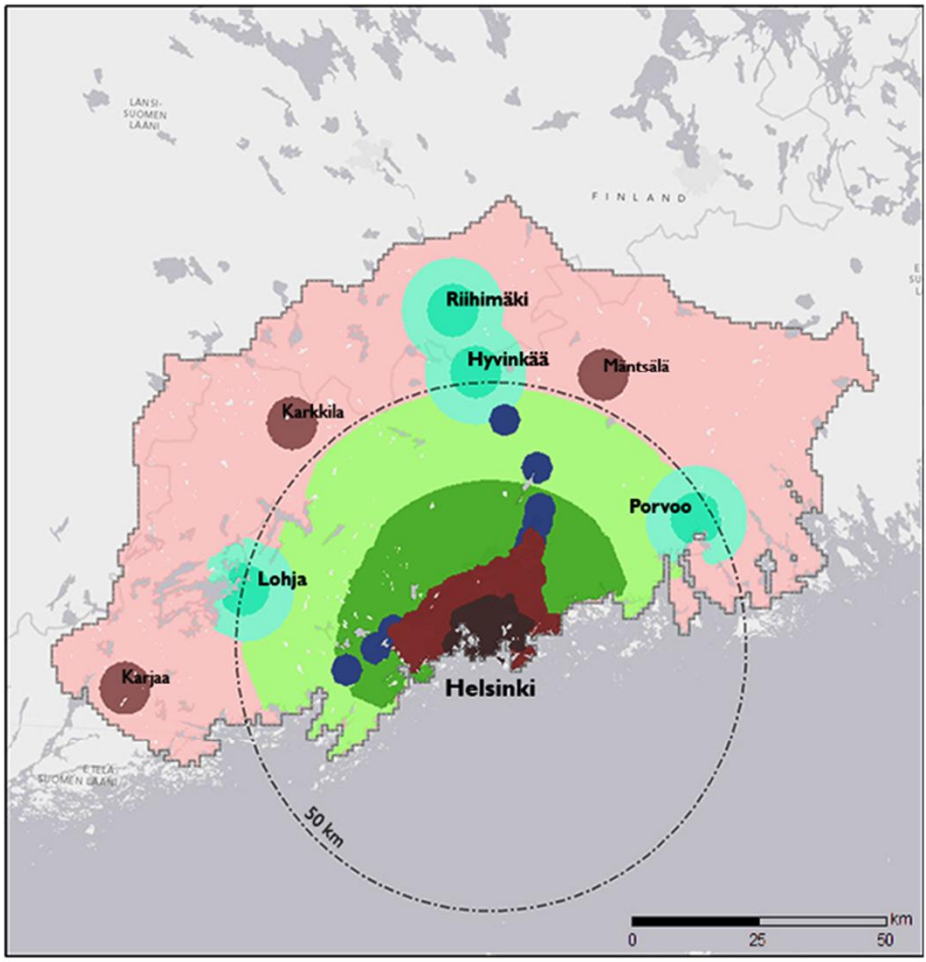
Stockholm urban area, 1 720 000 inhabitants

Helsinki urban area, 1 143 000 inhabitants

Other built-up areas in the city-regions of Stockholm or Helsinki

The city-regions and areal types of Helsinki and Stockholm





Inner core area
Outer core area

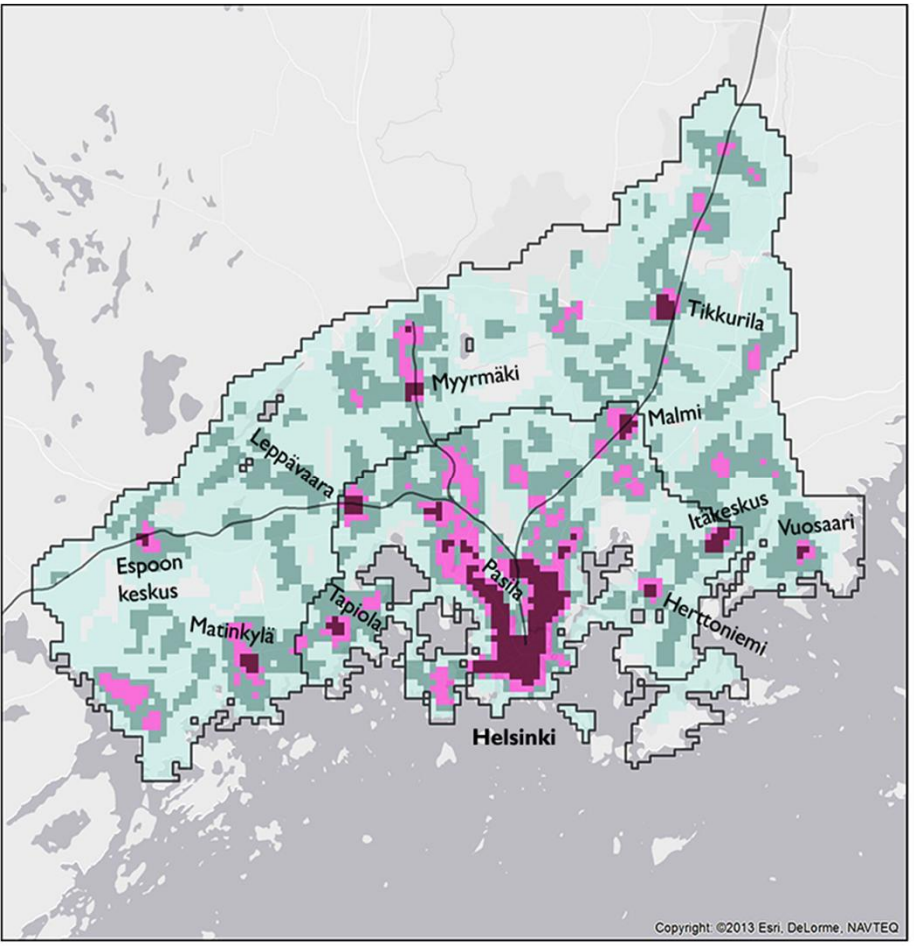
Peri-urban rail oriented
Inter peri-urban area
Outer peri-urban area

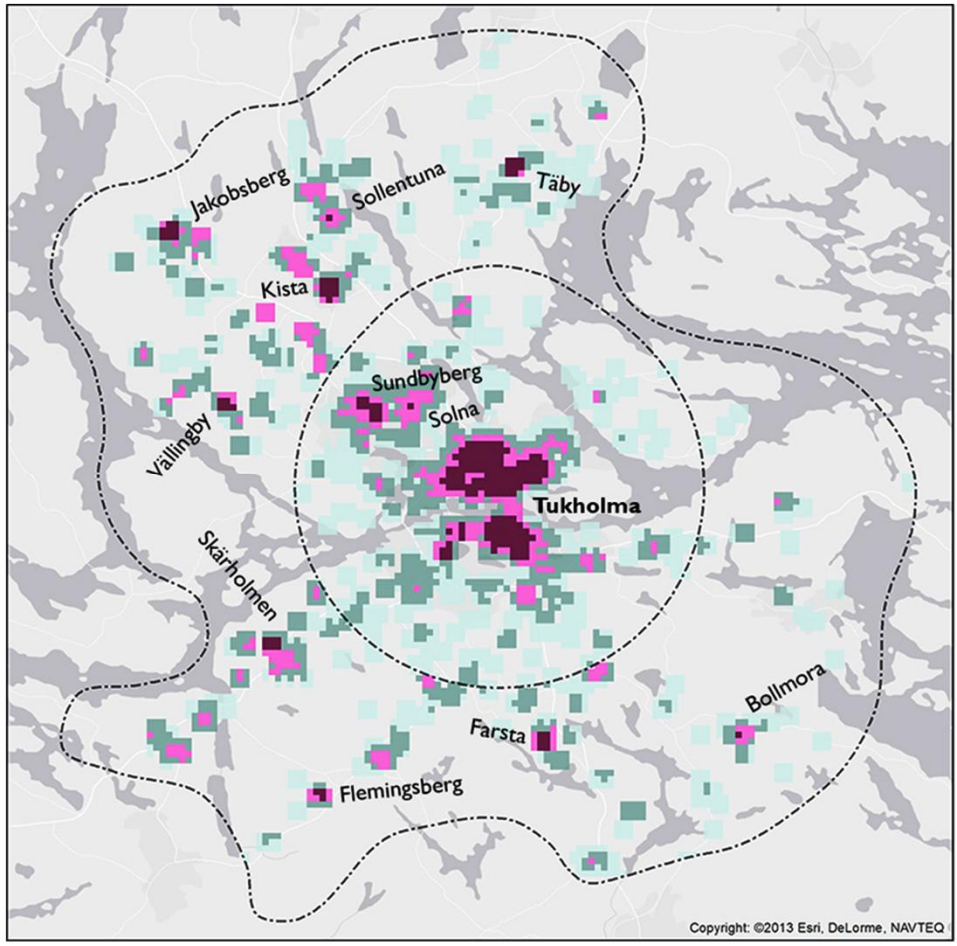
Mid-sized towns, core
Mid-sized towns, edge
Small towns

Rural area
Archipelago

Study areas in Stockholm and Helsinki are divided into 9 sub-areas. Criteria for the division are based on distances from the main city center, centrality of the sub-centres and on closeness to railway stations.

Identification of centers in Helsinki & Stockholm

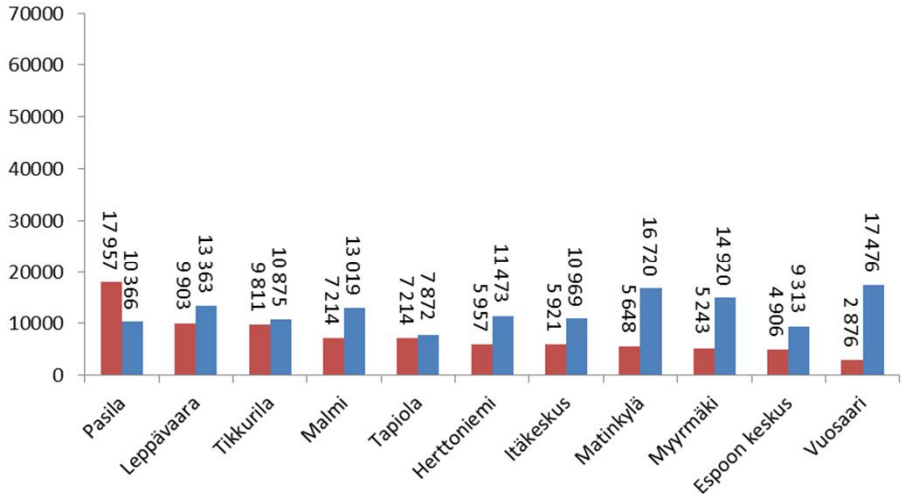




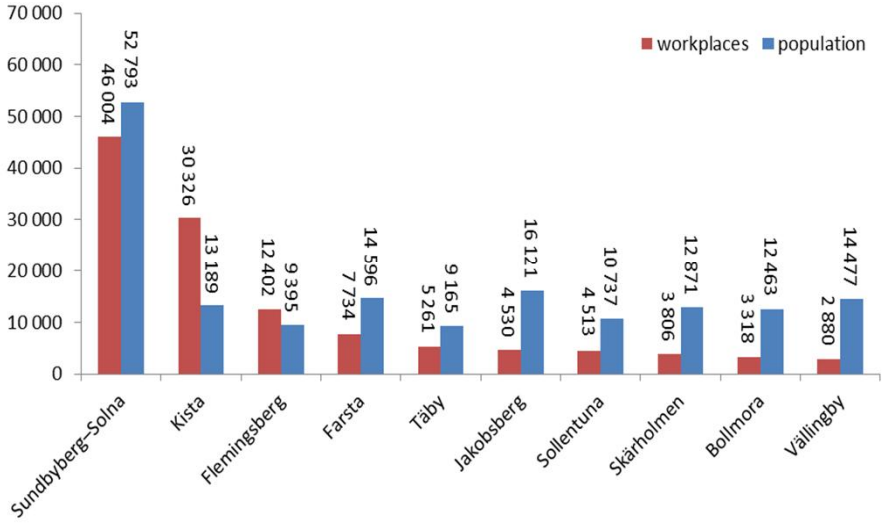
The centrality is based on the summarization of population, employment and workplaces in retail sales. Centres in the highest class are strong and diverse clusters.

The eastern part of the urban area does not have that strong and diverse sub-centers.

Subcenters in Helsinki



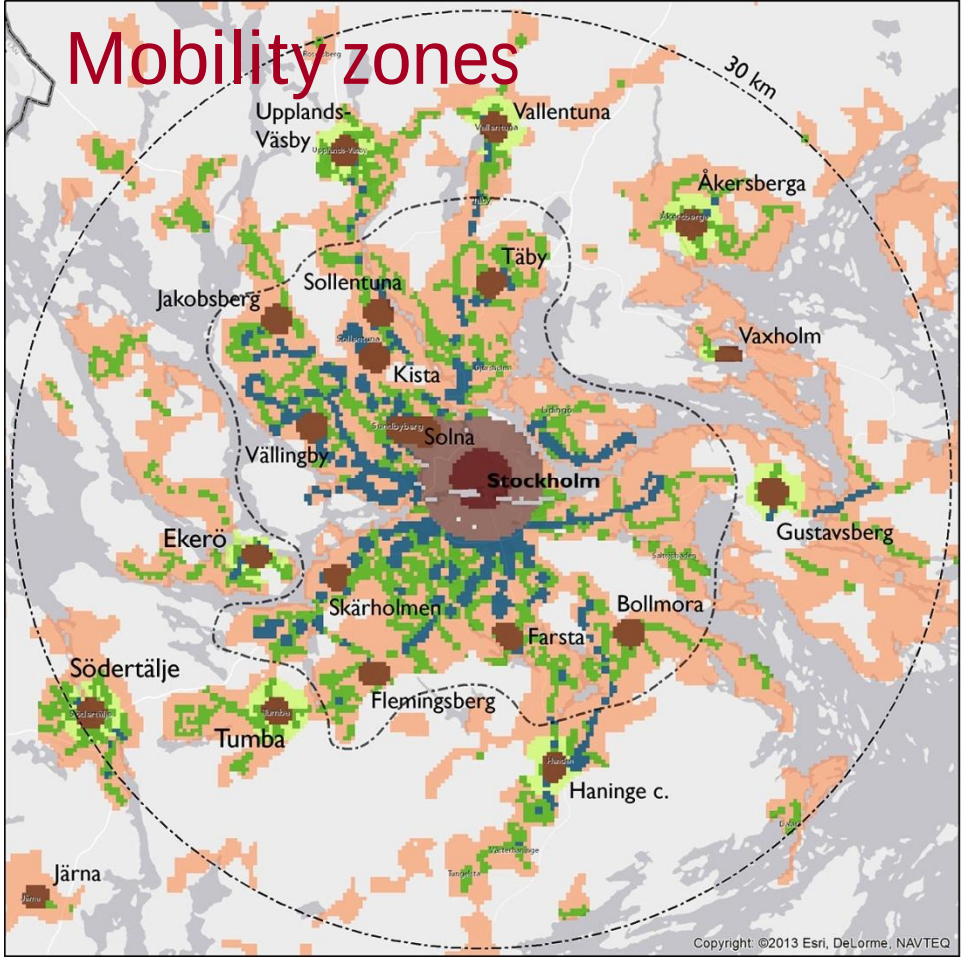
Subcenters in Stockholm

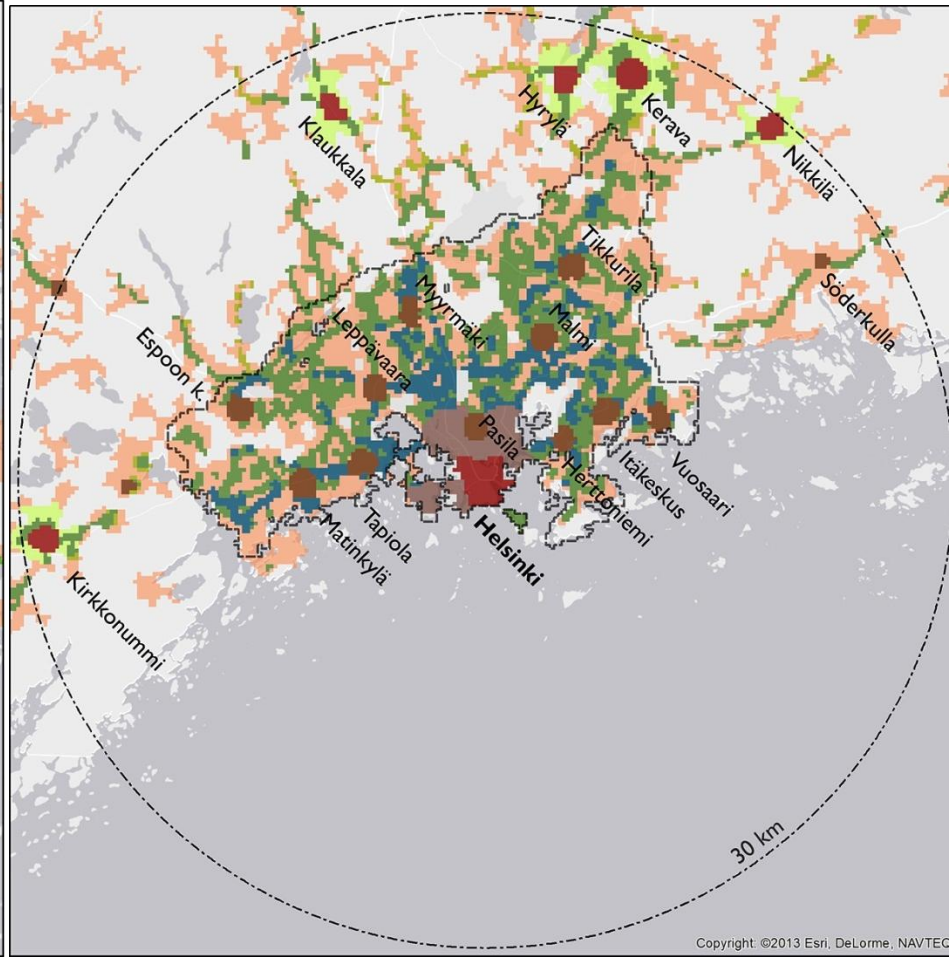


Subcenters , inner and outer core area

- Sundbyberg-Solna & Kista are in their own class as workplaces concentrations. Also population densities are very high especially in Sundbyberg-Solna, which is the traditional, urban area.
- In Helsinki Pasila is the most important sub-center, and is expected to develope strongly in the future. Also Leppävaara in Espoo is growing.

Mobility zones





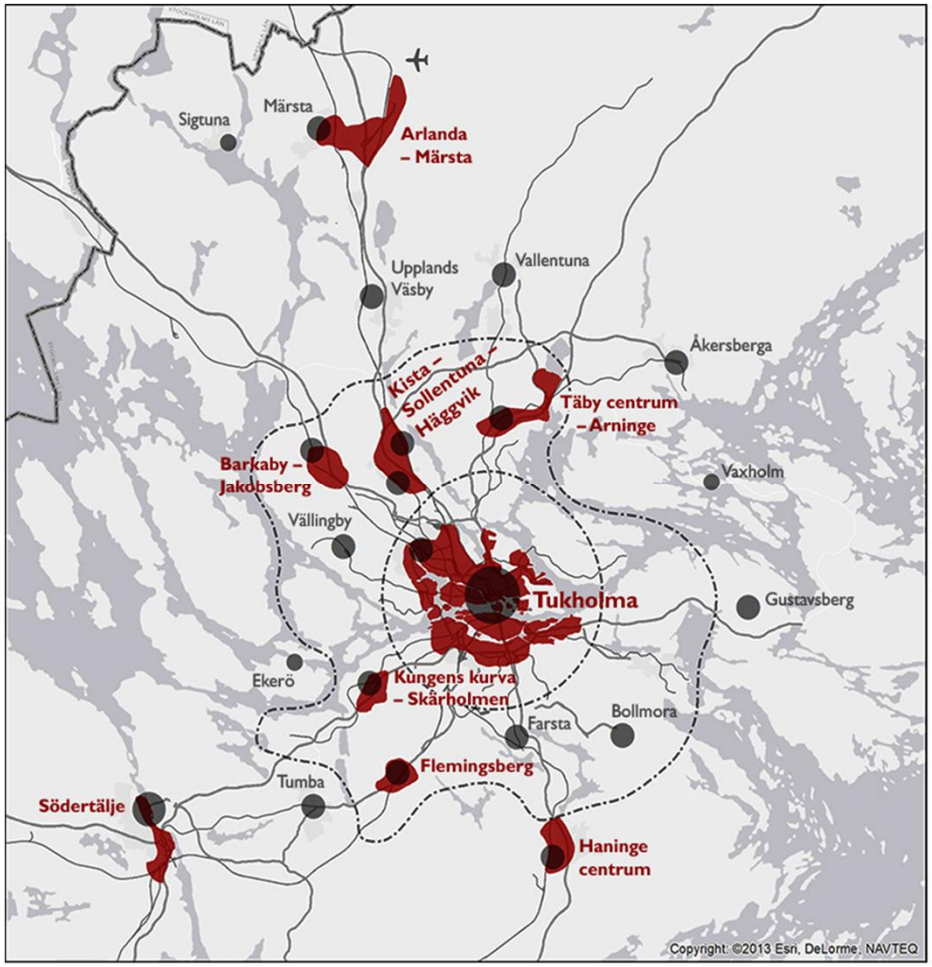
Stockholm

Helsinki

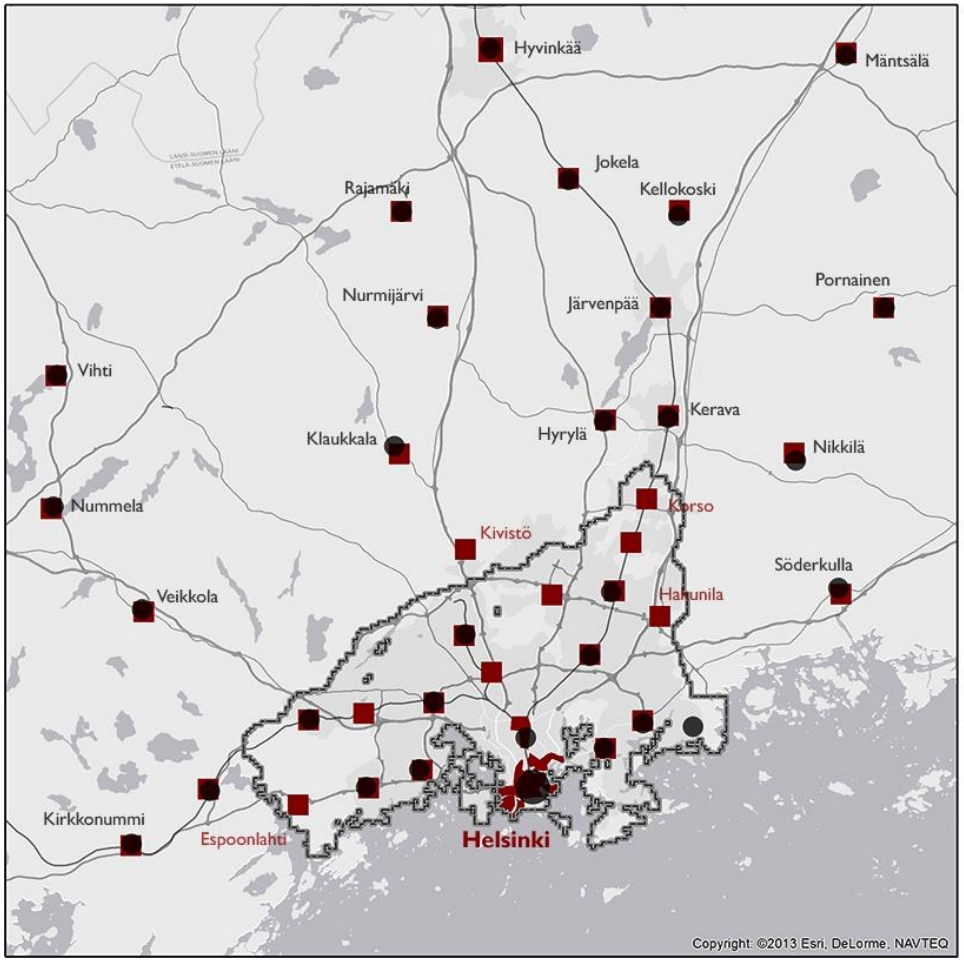
Both city-regions are divided into pedestrian, public transport, and car-oriented zones on the basis of urban form, land use, and public transport services. The zone division is carried out on a statistical grid of 250 x 250 metres.

- Pedestrian zone
- Fringe of pedestrian zone
- Subcenter
- Intensive public transport zone
- Public transport zone
- Car-oriented zone

Comparison between the regional center/sub-center network in our analyses and the core areas in the RUFS –plan and the Uusimaa -plan

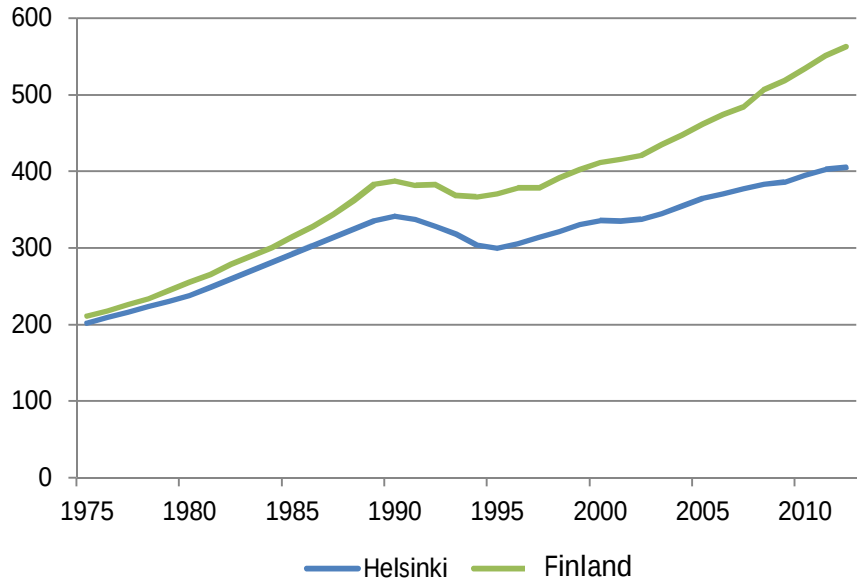


Stockholm: identified Walking-City cores and the Urban Cores of RUFS 2010 -plan

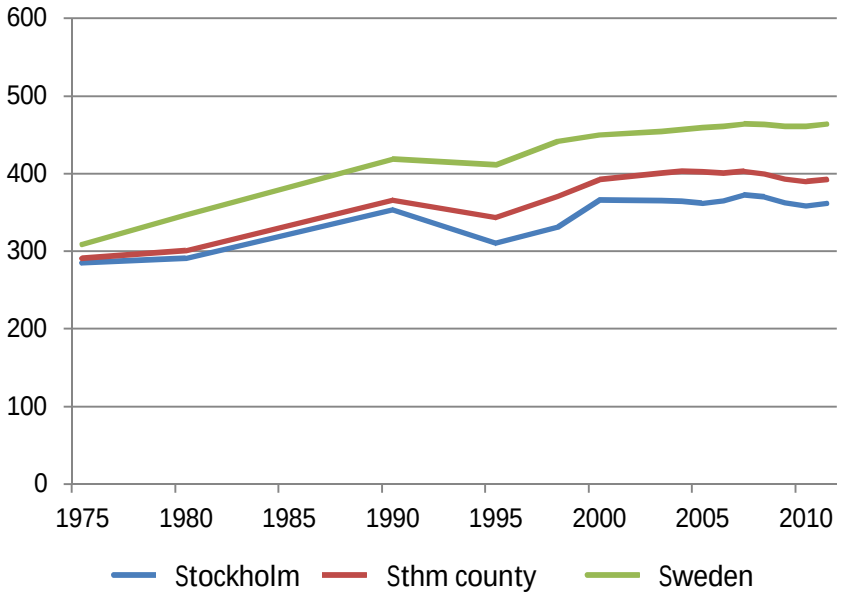


Helsinki: identified Walking-City cores and the regional sub-centres of Uusimaa -plan

Car-ownership in Helsinki / Finland



Car-ownership in Stockholm / Sweden



Development of car-ownership

- The growth of car-ownership rate stopped in Stockholm & Sthlm region around millennium, also in Sweden generally the rise of car-ownership has been very slow during the last 10-15 years.
- In Helsinki and Finland the car-ownership rate is still growing.
- What could the reason behind these differences?
- Congestion charging in Stockholm from 2006, other (maybe national) strategies or policies?

Conclusion 1/3 (first draft)

The growth of the core-areas and peri-urban areas

- The main feature: Helsinki has grown outward in the outskirts --Stocholm more inward in the core-areas.
- In the inner core area the population density is much higher in Stockholm compared to Helsinki.
- In the Stockholm region a dense population structure is mostly following the subway and urban rail lines as development corridors or ”fingers”.
- In the Helsinki region the growth of peri-urban areas has been strong. Relatively there is clearly more population and workplaces outside the main urban area than in the Stockholm region.
- Population is not as concentrated as workplaces and retail. Retail sales are concentrated more and more to car-oriented shopping areas.

The development of the mobility zones

- In Stockholm the central pedestrian zone and intensive public transport zone are stronger than in Helsinki.
- Pedestrian zones are strong in areas with efficient public transport services and do not exist in car-oriented peri-urban areas.
- A high quality public transport services affect clearly the travel behaviour in peri-urban areas, as the car dependency is smaller in rail-based peri-urban areas. The pedestrian zone is stronger there as well.
- There is a strong interdependence between low population density and car oriented zones in both city-regions.

Conclusion 2/3 (first draft)

Polycentric structure

- Commuter and customer flows are increasingly moving towards sub-centers and locations other than the old center in both city-regions.
- There are 10-11 regional sub-centers in both city-regions. They are becoming stronger – however the historic main centers are still dominating clearly.
- Many sub-centers are highly specialised (ITC, Life Science & Technolgy, Media clusters).
- There are major differences in the diversity and quality of the urban environment in sub-centers, both between the centers and between parts of the centers.
- Urban potential in peri-urban areas: The rail-based peri-urban region has been successful in creating more polycentric urban form with less car dependent lifestyles.

Accessibility or travel behaviour in different mobility zones / Urban sprawl

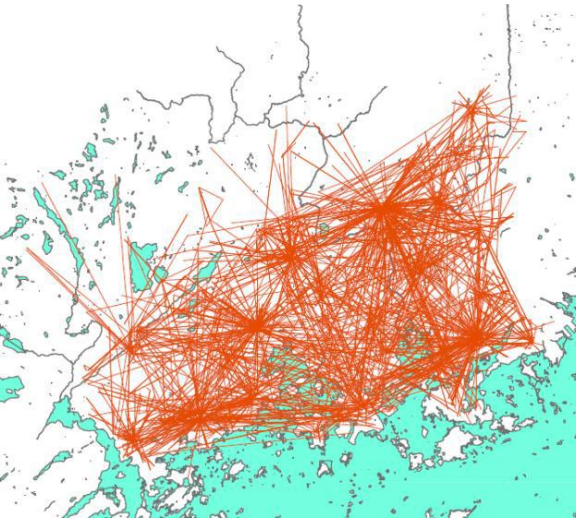
- The pedestrian zones of the centres are functionally diverse and their areal efficiency is much higher than in other mobility zones. The intensity of land use in public transport zone is also clearly bigger than in car-oriented zone.
- The distance travelled daily by inhabitants differs by area type and mobility zone . In Helsinki for example, the car mileage per person in the peri-urban areas is 3–4 times that of those living within the public transport zone. Those living in the car oriented zone use public transport approximately one third less than those living in the pedestrian and intensive public transport zones. In peri-urban areas without intensive rail connections, the daily car mileage is around 50% greater than in peri-urban areas with rail connections.
- The rail-based peri-urban region has been successful in creating more polycentric urban form with less car dependent lifestyle. Thus rail-based polycentricity has been an important way to achieve more sustainable urban form. Inner and outer peri-urban areas without intensive rail connections face difficulties in terms of climate change, energy-efficiency, and accessibility.

Conclusion 3/3 (first draft)

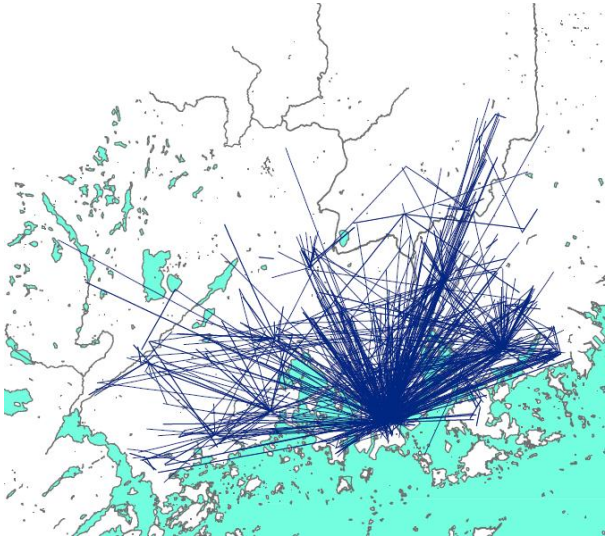
Urban & regional development planning / Policy recommendations

- The impacts of urban sprawl need more awarness – crucial to more sustainable future in both city-regions but especially in Helsinki.
- How to recognize & measure urban sprawl and relate its impacts on environmental quality issues (e.g. traffic – transportation and land use related problems)?
- More integration and better collaboration in regional development between the municipalities and ”policy silos” (land use – housing – transport - services).
- Increased development of low-density detached housing in sparsely built areas has resulted wide car-oriented zones with multi-car households. Increased population density is essential for the development of a more varied travel behaviour.
- At the regional scale, increased residential density has the potential to diminish car dependency, which in turn can help protect air quality and reduce traffic fatalities, while increasing the share of commuters who use transit or walk.
- To reduce the impacts of sprawl, reinvest in neglected communities and housing areas / programs.
- Growth focusing – fostering regional sub-centers, existing public transport corridors and redevelopment in sparsely built-up areas (brownfields, greyfields, efficient usage of existing infrastructure).
- New growth management strategies (e.g. urban growth boundaries, road tolls, metropolitan plans like RUFS in Stockholm…). “The transit city” as the key factor of change!?

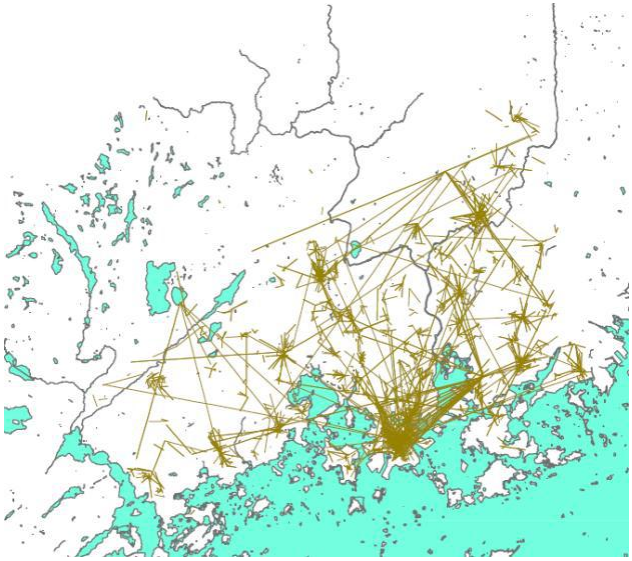
Three different mobility patterns from Helsinki-region



Shopping trips with car



Shopping trips: public transport



Shopping trips on foot or bicycle

Thank you!

Data: Travel diaries collected by local public transport administration YTV (current HSL) in 2007-2008