



Parking supply and parking policies in european cities

An assesment based on public data

Space consumption of parking = ?

How much parking spaces exist in different cities?

How much space is used for parking?

What are the influencing factors on parking space supply?

How does parking supply influence mobility behavior?

Literature

- Colder et. al 2016:
few municipalities have a clear picture of their inventory of on- and off-street parking
- European parking association 2013:
The European average is 30.5 spaces per 1000 inhabitants for regulated public use spaces, 22.9 for resident only, 2.1 for loading and unloading, 2.5 for motorbike spaces and 3.5 for other reserved spaces (handicapped, police, etc.)
- Palmier 2012:
0,34-1,73 parking stands/inhabitant in different Quarters of Lille, 2-10% of the area
- Pijanowski 2007:
approximately three non-residential parking spaces per vehicle Tippecanoe County, a typical rural county.
- Scharnhorst 2018:
developed comprehensive parking inventories and cost estimates for New York, Philadelphia, Seattle, Des Moines, and Jackson, Wyoming. □
- Davis et al. 2010:
Illinois, Indiana, Michigan, and Wisconsin: 43 million parking spaces in these four states, 2.5 to 3.0 off-street, non-residential parking spaces per vehicle, 1260 km² of land to parking lots, 4.97% of urban land, with higher rates in more sprawled areas.
- Colder et. al 2016:
total percentage of land area used for on and off street parking is 5.0% in Boston
- Hulme-Moir 2010:
in Porirua, New Zealand, 24% of the central city land area is devoted to parking facilities, 7% to green space and 4% to recreation, using GIS datasets

Method

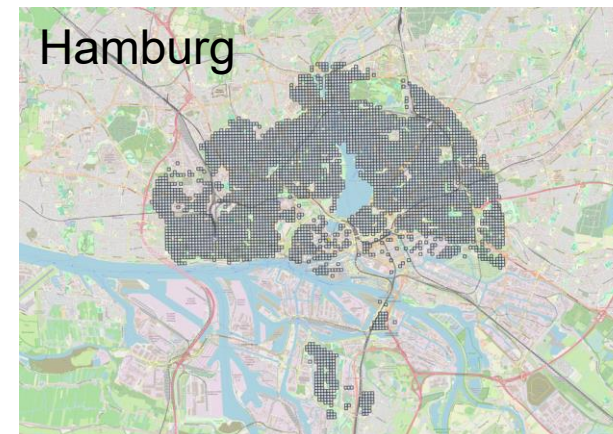
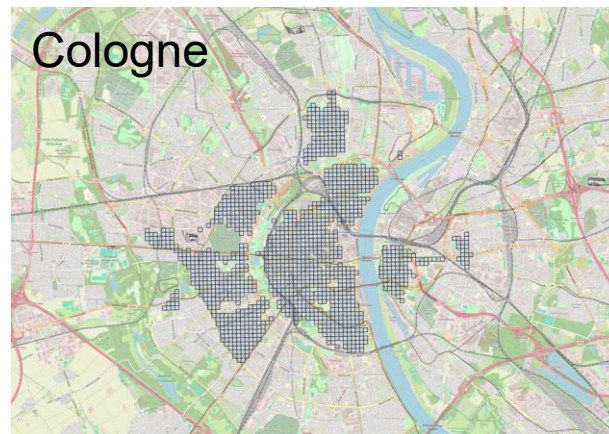
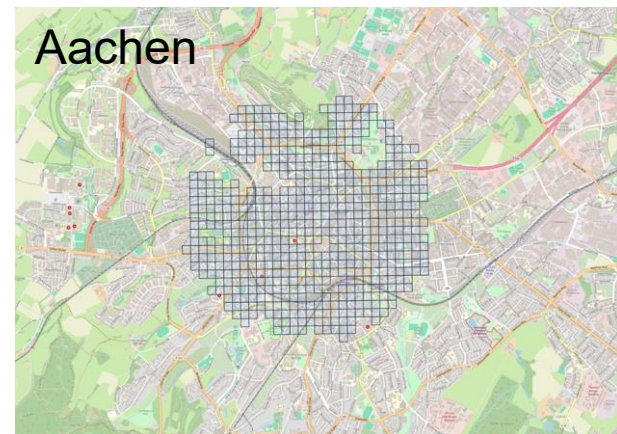
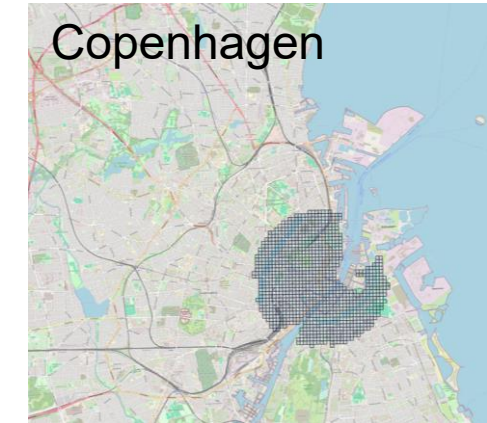
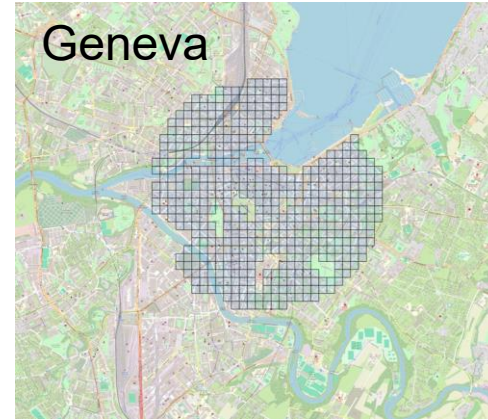
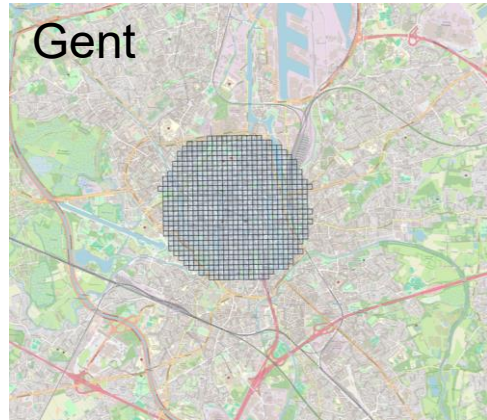
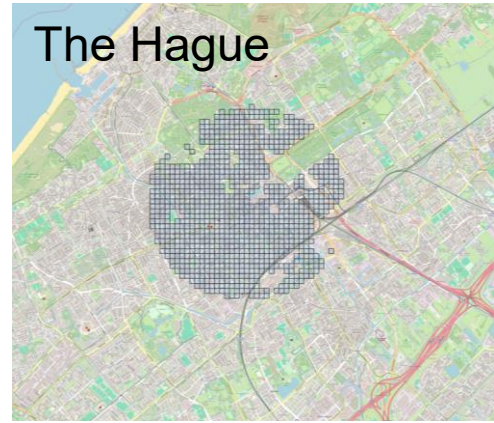
Data base

- Aachen
- Cologne
- Copenhagen
- Geneva
- Gent
- Groningen
- Hamburg
- The Hague
- Zurich



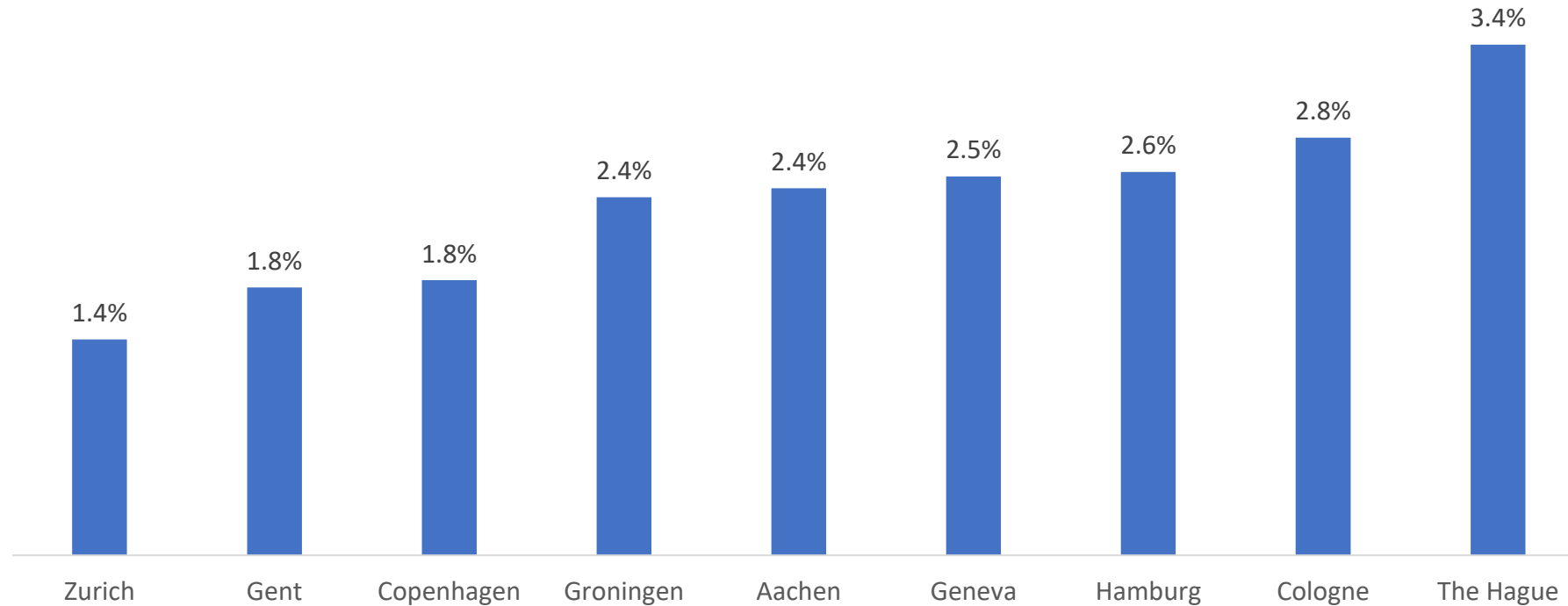
Method

Data base



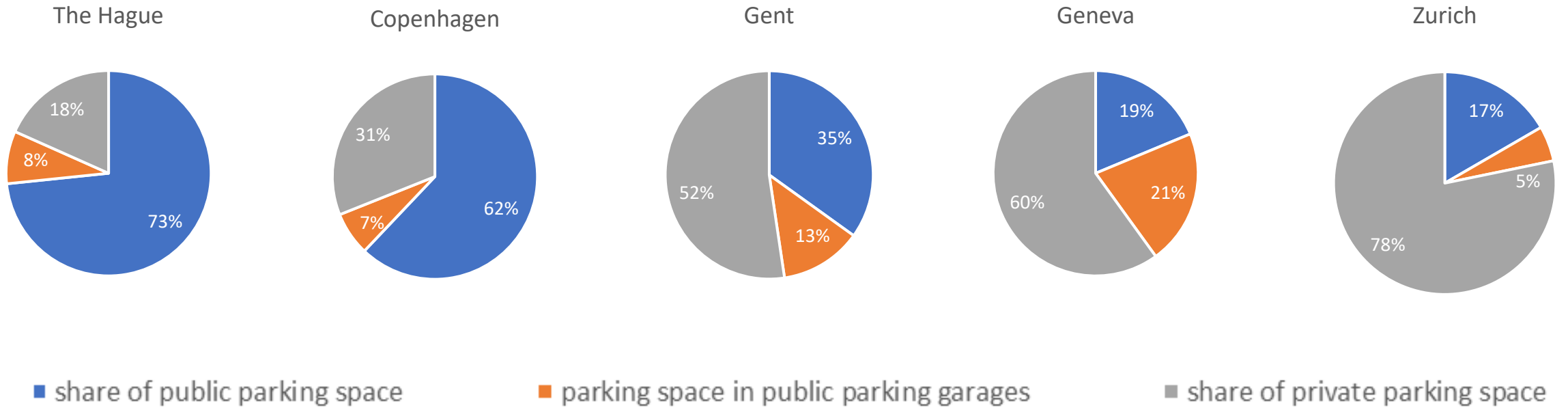
Space consumption of public parking spaces

Share of surface area occupied by public parking spaces [%]



Results – parking supply

Private parking space



*own evaluation based on Canton de Genève, 2012; City of Basel et al., 2017; City of Den Haag, 2021; City of Gent, 2018; Rambøll, 2019; Willi, 2016

Restrictivness of parking policies

Hamburg

The Hague

- Ensuring Accessibility equilibrium demand-supply

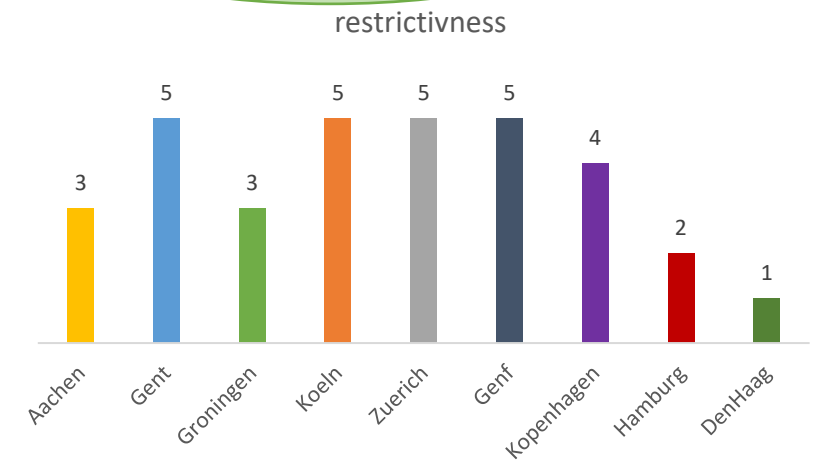
Copenhagen

Aachen, Groningen

- Improve the parking situation but reduce roadside parking
- Restrictive measures are intensely discussed but not yet politically decided on

Zurich, Gent, Geneva, Cologne

- Restricting new private parking spaces
- parking management as a tool for sustainable transport development



Parking supply and restrictiveness of parking policies

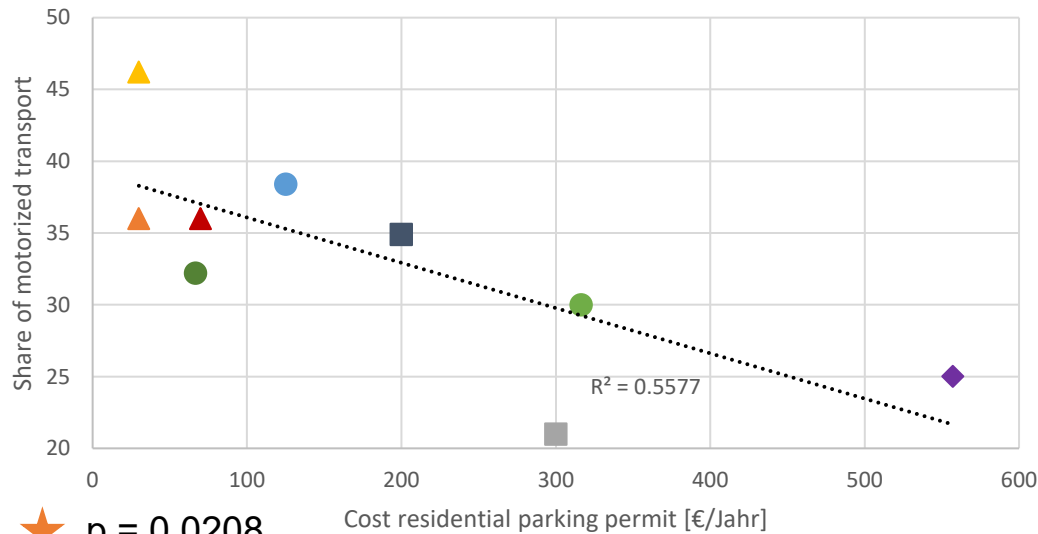
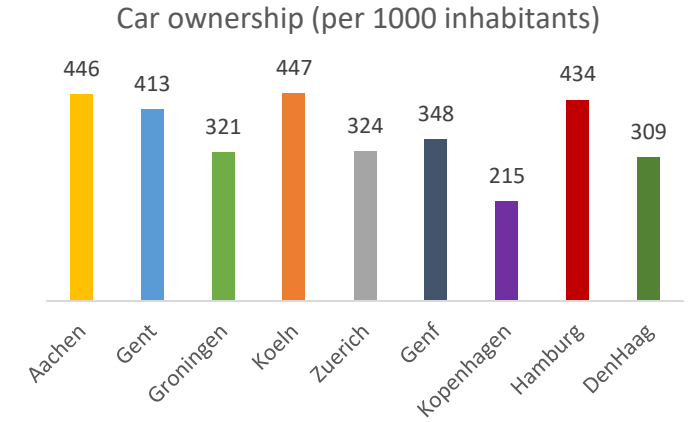
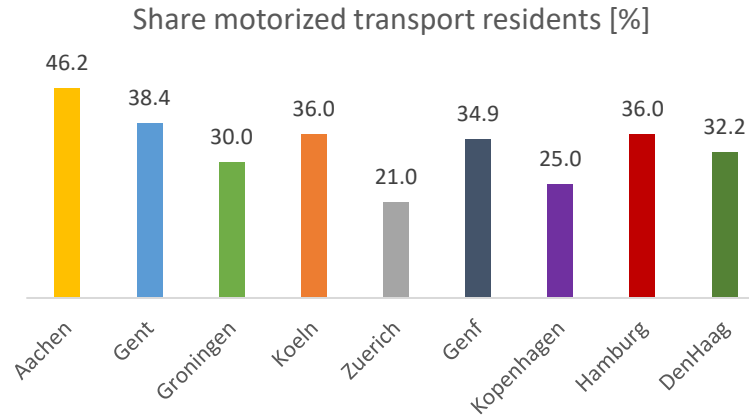
the more restrictive the parking policy is, the less public parking capacity is available



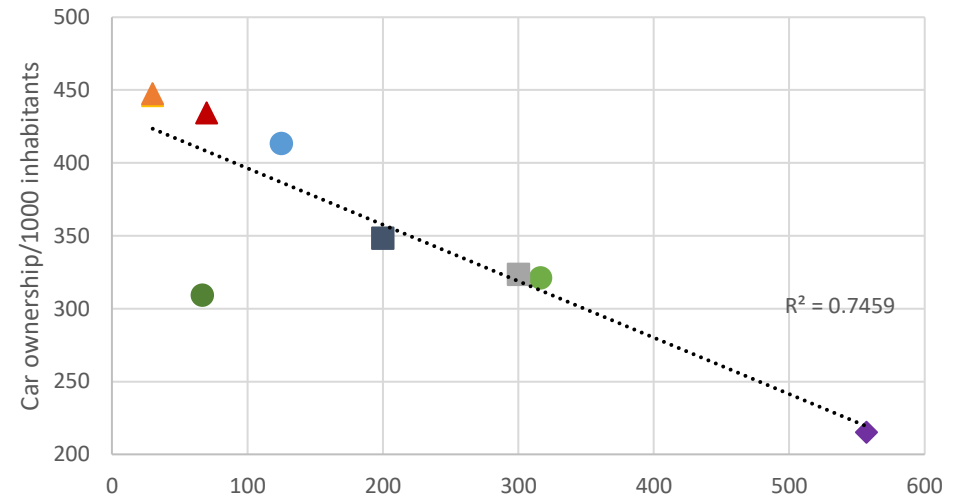
Parking cost and car use

Parking cost ~ share of motorized transport

- The share of motorized transport is higher, ...
 - With low costs for residential parking permits



★ $p = 0,0208$

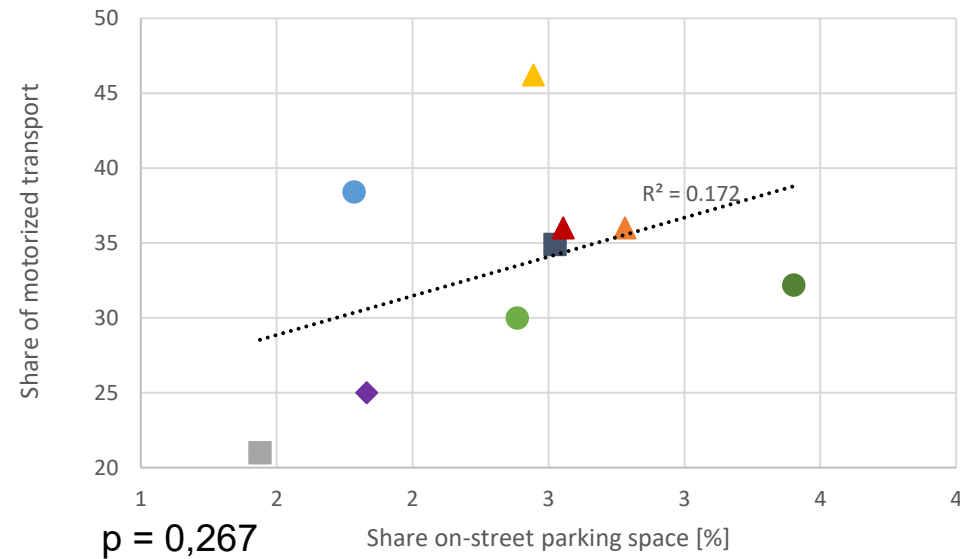
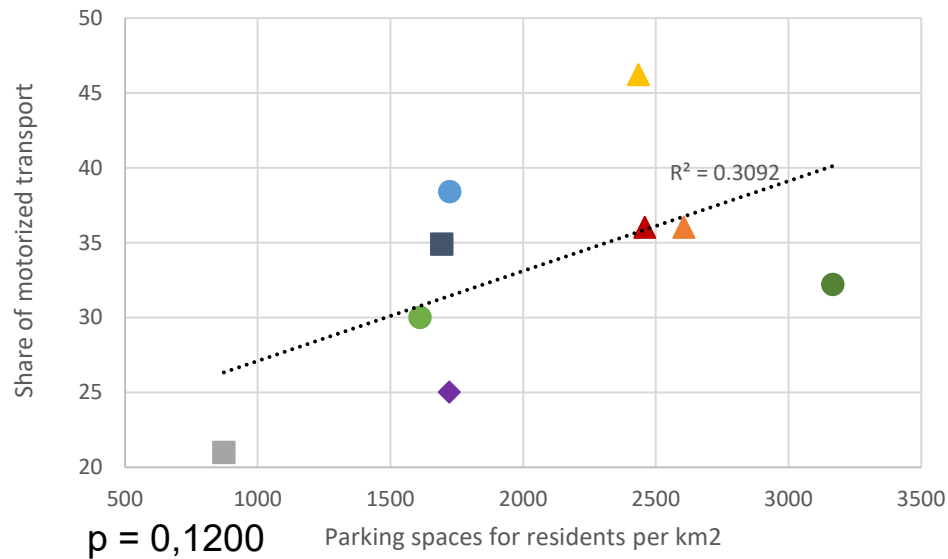
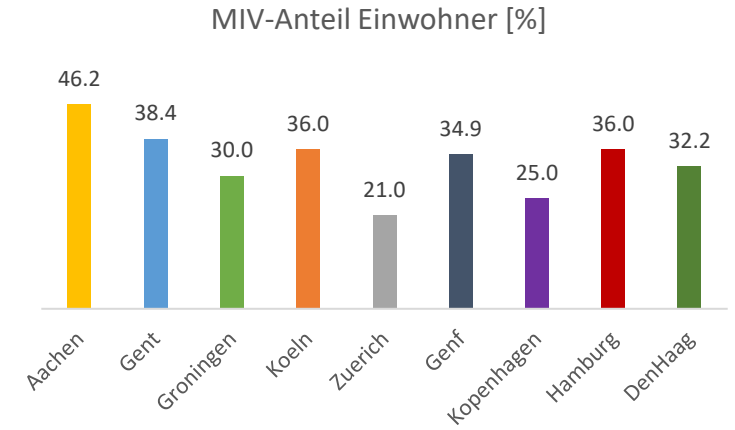


★ ★ $p = 0,0027$

Space consumption of parking and car use

Parking supply ~ motorized transport

- No clear correlation between motorized transport use and parking supply



Conclusion

conclusion

- First step analysing parking spaces land consumption
- Small city sample
- Not representative
- Analysed cities possibly pioneers for parking strategies?

To do

- Criteria-based categorization of restrictivness
- Better data on private parking spaces

Thank you for your attention

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References

- Canton de Genève (2012) Plan Directeur du Stationnement [Online]. Available at <https://www.ge.ch/document/plan-directeur-du-stationnement> (Accessed 9 October 2023).
- City of Basel, City of Bern, City of Luzern, City of St. Gallen, City of Winterthur and City of Zurich (2017) Städtevergleich Mobilität: Vergleichende Betrachtung der Städte basel, Bern, Luzern, St. Gallen, Winterthur und Zürich im Jahr 2015 [Online]. Available at https://www.stadt-zuerich.ch/ted/de/index/taz/publikationen_u_broschueren/staedtevergleich_mobilitaet_2015.html (Accessed 9 October 2023).
- City of Den Haag (2021) Parkeren in een leefbare en bereikbare stad: Parkeerstrategie Den Haag 2021-2030 [Online]. Available at https://denhaag.raadsinformatie.nl/document/10165482/1/RIS308711_Bijlage_Parkeerstrategie_Den_Haag_2021-2030 (Accessed 9 October 2023).
- City of Gent (2018) Evaluatie Parkeerplan Gent [Online]. Available at https://stad.gent/sites/default/files/page/documents/20180302_EvaluatieParkeerplan.pdf (Accessed 9 October 2023).
- Gössling, S., Schröder, M., Späth, P. and Freytag, T. (2016) 'Urban Space Distribution and Sustainable Transport', *Transport Reviews*, vol. 36, no. 5, pp. 659–679.
- Guo, Z. (2013) 'Does residential parking supply affect household car ownership? The case of New York City', *Journal of Transport Geography*, vol. 26, pp. 18–28.
- Rambøll (2019) Kortlægning af Ikke-kommunal parkering i Københavns Kommune [Online]. Available at <https://www.kk.dk/sites/default/files/2022-02/14.02.22%20-%20svar%20til%20Marcus%20Vesterager%20%28A%29%20om%20parkeringspladser%2C%20prisf%C3%B8lsomhed%20og%20bilejerskab.pdf> (Accessed 9 October 2023).
- Stadt Zürich (2023) Stadtverkehr 2025: Bericht 2022 [Online]. Available at https://www.stadt-zuerich.ch/ted/de/index/taz/publikationen_u_broschueren/stadtverkehr_2025_bericht_2022.html (Accessed 10 October 2023).
- Willi, E. (2016) Verdichtung und Parkplatzplanung: Potenziale am Beispiel der Stadt Zürich: SKM-Veranstaltung vom 28. November 2016, Aarau, Stadt Zürich, Tiefbauamt, Verkehr + Stadtraum [Online]. Available at https://skm-cvm.ch/cmsfiles/3_willi_stadt_zurich_1_1.pdf (Accessed 9 October 2023).