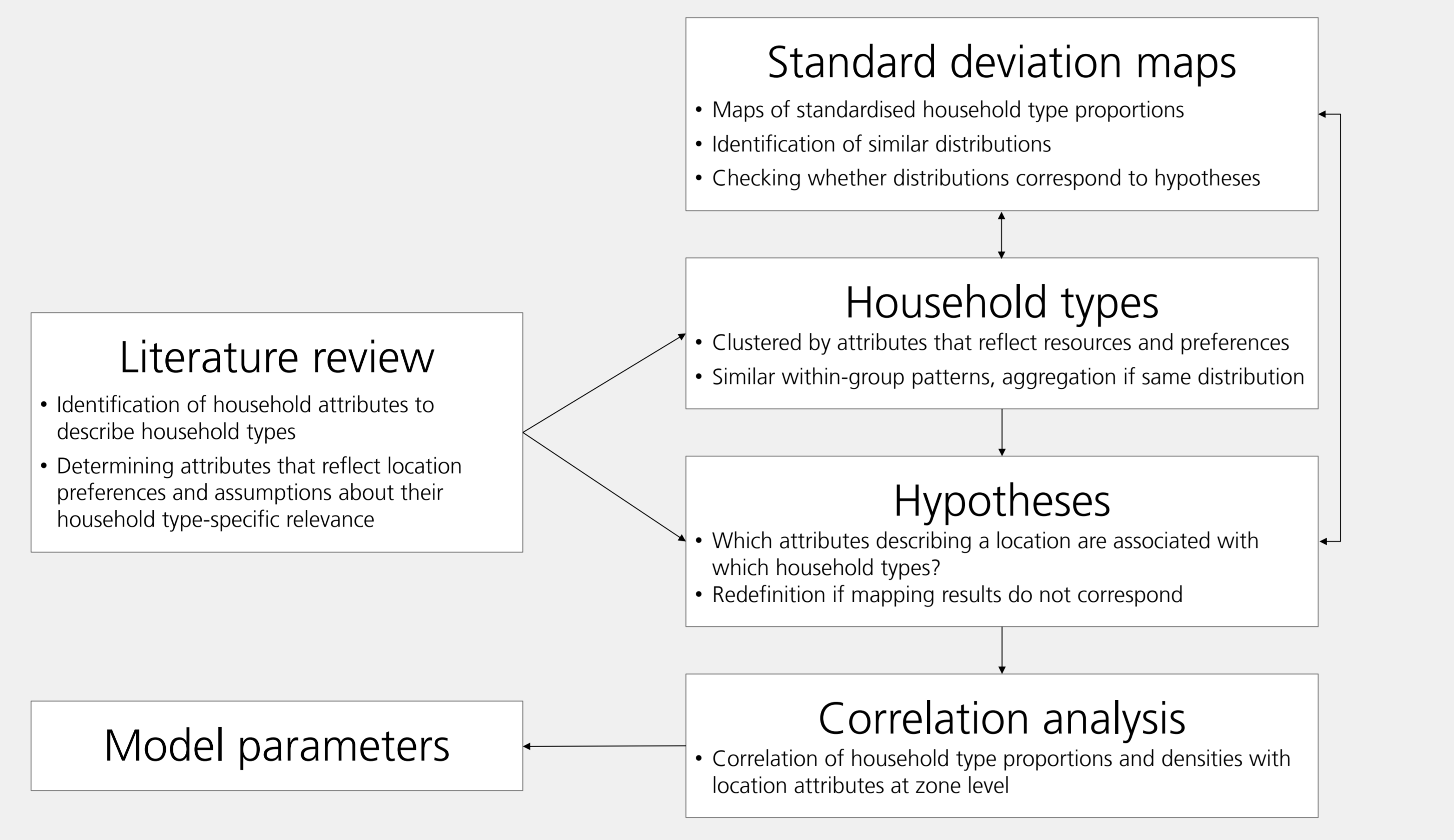


Predetermination of attributes reflecting household preferences in location choice models

Motivation and overview

- Residential locations determine origin and destination of daily trips
- Modelling residential location choice by discrete choice models is state of the art to simulate such locations in scenarios
- Specifying such models requires the definition of household groups and related attributes that describe location preferences
- Methods to predetermine these attributes help to reduce the complexity of specifying such models

Methodology



Data

- Microdata from Zensus 2011 Germany for Berlin geocoded at 1,223 traffic analysis zones containing dwellings and households
- Aggregation of person-level characteristics to household level
- Geodata from SenStadtUm (POI, land use) aggregated to 1,223 zones
- Accessibilities:
 - based on Open Street Map network
 - fastest routes to activity locations
 - average value across zone
 - cumulative opportunities measures (parks, grocery retail facilities)

Case study Berlin

Hypotheses

- Rossi (1955): preferences differ according to life cycle and thus to composition, size of households and age of its members
 - Alonso (1960): households face a tradeoff between dwelling size and location
1. Young / single-person-households tend to be located in central areas, families rather live on the outskirts of the city
 2. The location pattern of young / single-person-households is associated with high accessibility, while for family households it is associated with lower accessibility

Operationalisation and methodology

- Classification of households according to
 - Age (younger than 31, 31 to 64, 65 and older)
 - Size and composition: number of persons (1, 2, 3, 4 and more), number of children (1, 2, 3 and more)
 - Employment: number of employed persons (0, 1, 2, 3, 4 and more)
- Standard deviation maps of group proportions at zone level
- Correlation analysis of group proportions and access measures

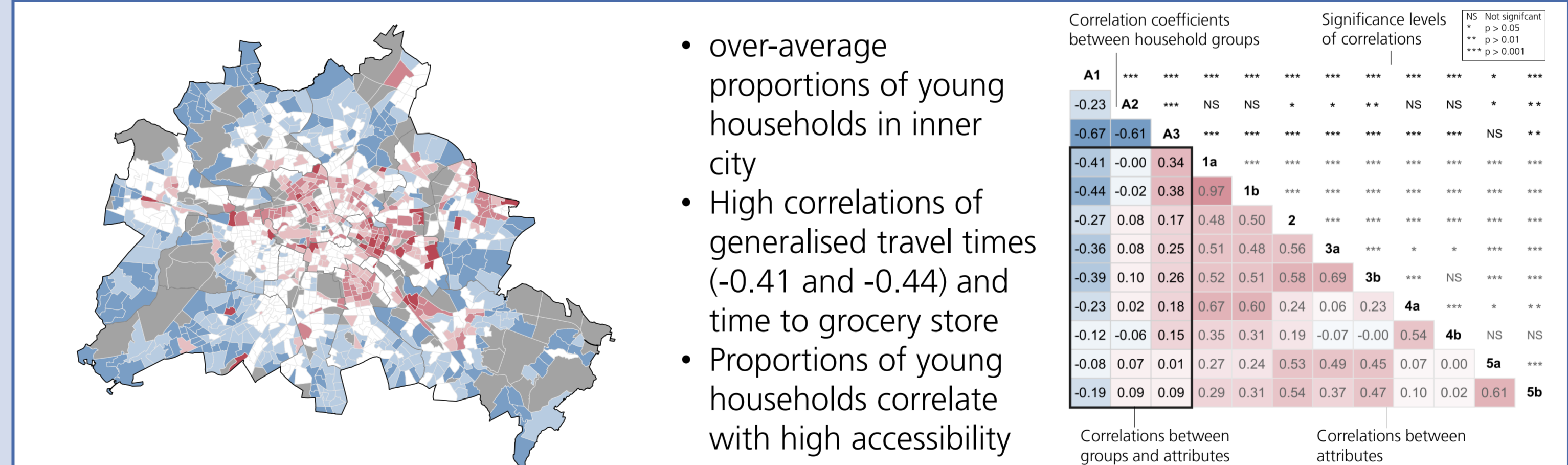
Household types (selection)

A1	Households whose head is 30 or younger
A2	Households whose head is between 31 and 64
A3	Households whose head is older than 64
C1	Single-person-households
C2	Two-person-households without children
C3	Three-person-households with one child
C4	Households with four or more persons without children

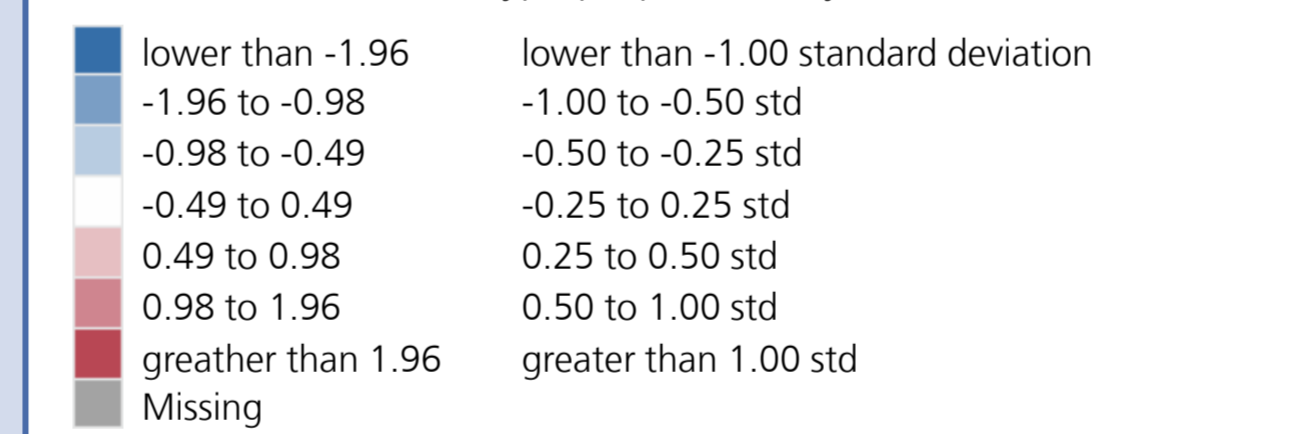
Attributes

1a	Travel time (average / generalized) to other zones (car)
1b	Travel time (average / generalized) to other zones (foot)
2	Travel time to closest commercial center (foot)
3a	Travel time to closest grocery store ($\geq 1,000 \text{ m}^2$) (car)
3b	Travel time to closest grocery store ($\geq 200 \text{ m}^2$) (foot)
4a	Average floorspace of grocery stores within 10 min (car)
4b	Average floorspace of grocery stores within 10 min (foot)
5a	Travel time to closest large park ($\geq 50,000 \text{ m}^2$) (car)
5b	Travel time to closest small park ($\geq 10,000 \text{ m}^2$) (foot)

Berlin: Distribution of households with head younger than 31



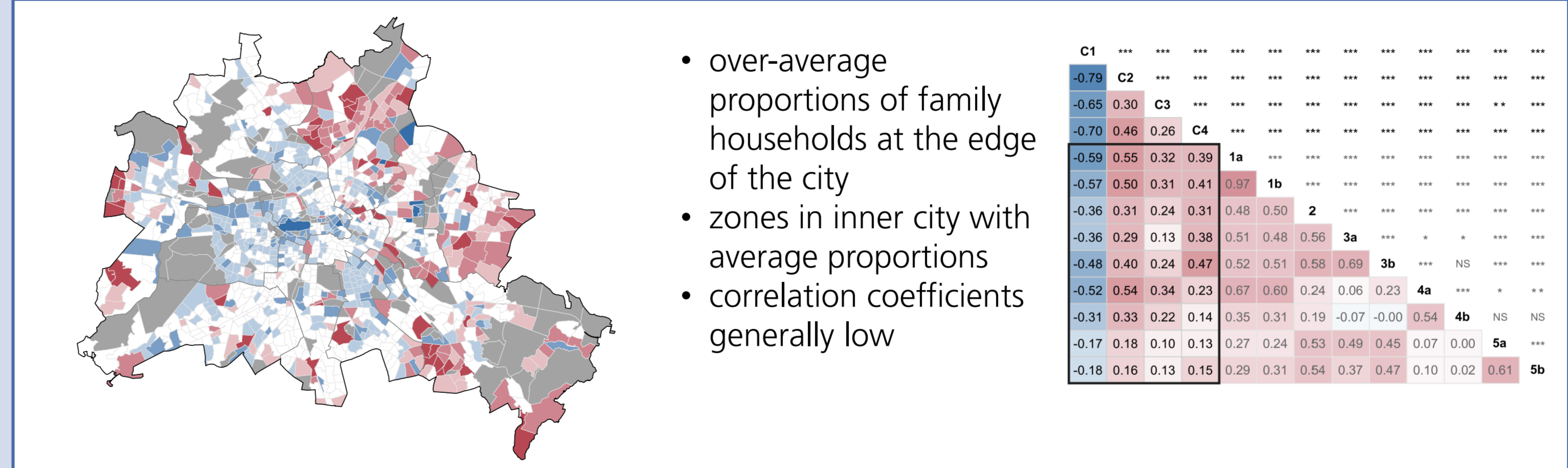
Standardised household type proportions by zone



Sources

Data	Zensus 2011 Retail shops Berlin 2013	Amt für Statistik Berlin-Brandenburg (2016) Einzelhandelsbestandsdaten SenStadtUm Berlin (2014)
Geodata	Traffic analysis zones 2014 Open Street Map network Parks	Amt für Statistik Berlin-Brandenburg (2014) © OpenStreetMap contributors, CC-BY-SA (2015) Geoportal Berlin / Grünanlagenbestand Berlin (2016)
Literature	Rossi (1955) Alonso (1960)	Rossi, P.H. 1955: Why Families Move. Alonso, W. 1960: A Theory of the Urban Land Market.

Berlin: Distribution of three-person-households with one child



Discussion

- The methodology provides instruments to identify household groups, their location patterns and variables explaining them
- Results of the corresponding analyses, particularly special location patterns need to be considered in location model estimation

