

Preferred citation style

Axhausen, K.W. (2005) Geographies of social networks: The product of personal mobility biographies and generalised costs of contact?, 37th World Congress of the International Institute of Sociology, Stockholm, July 2005.

Geographies of social networks: The product of personal mobility biographies and generalised costs of contact

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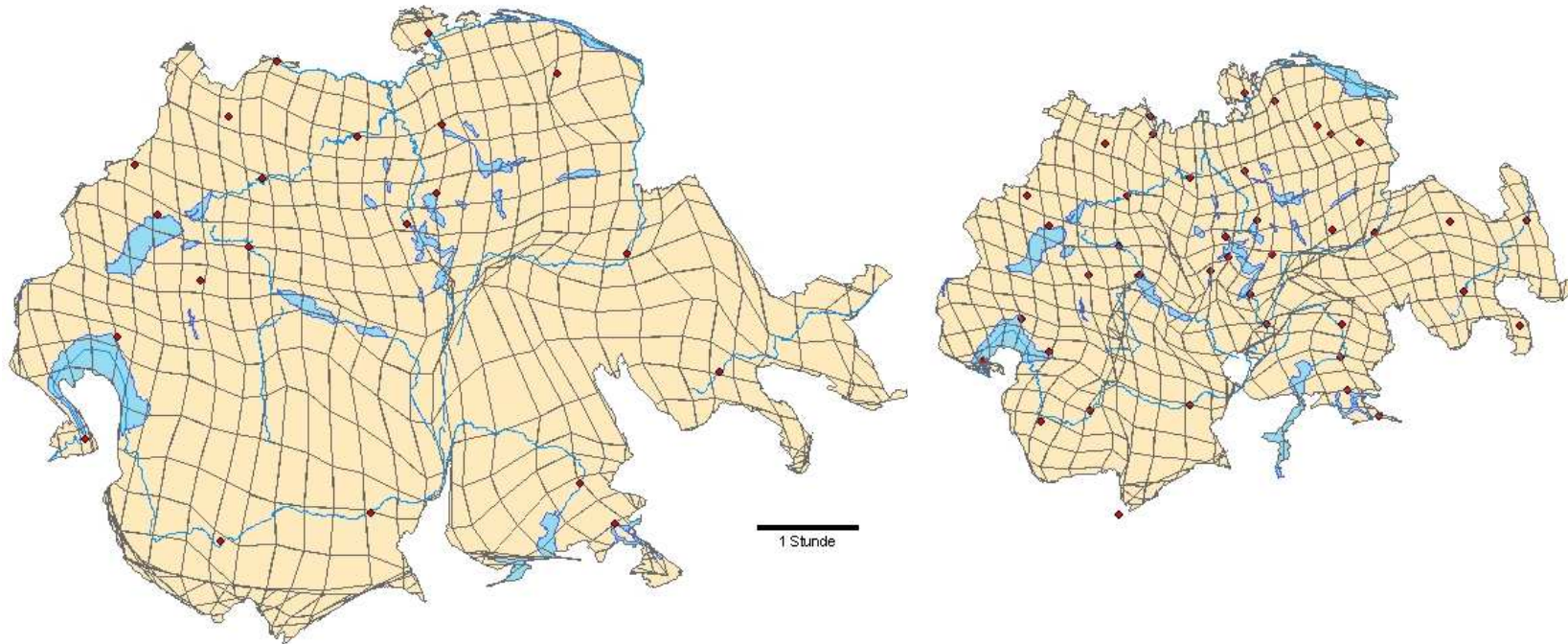
July 2005

 *Institut für Verkehrsplanung und Transportsysteme*
Institute for Transport Planning and Systems

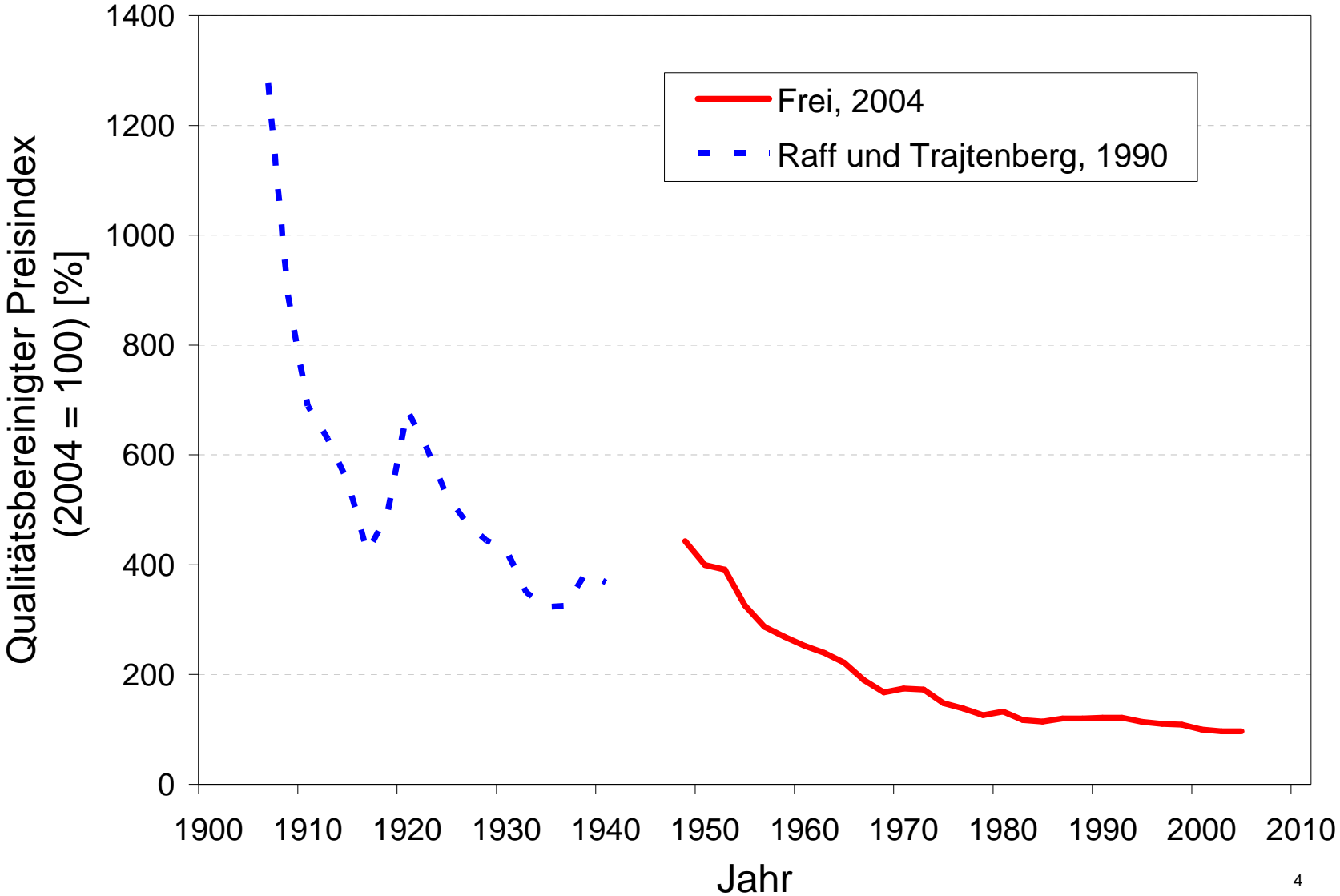
ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

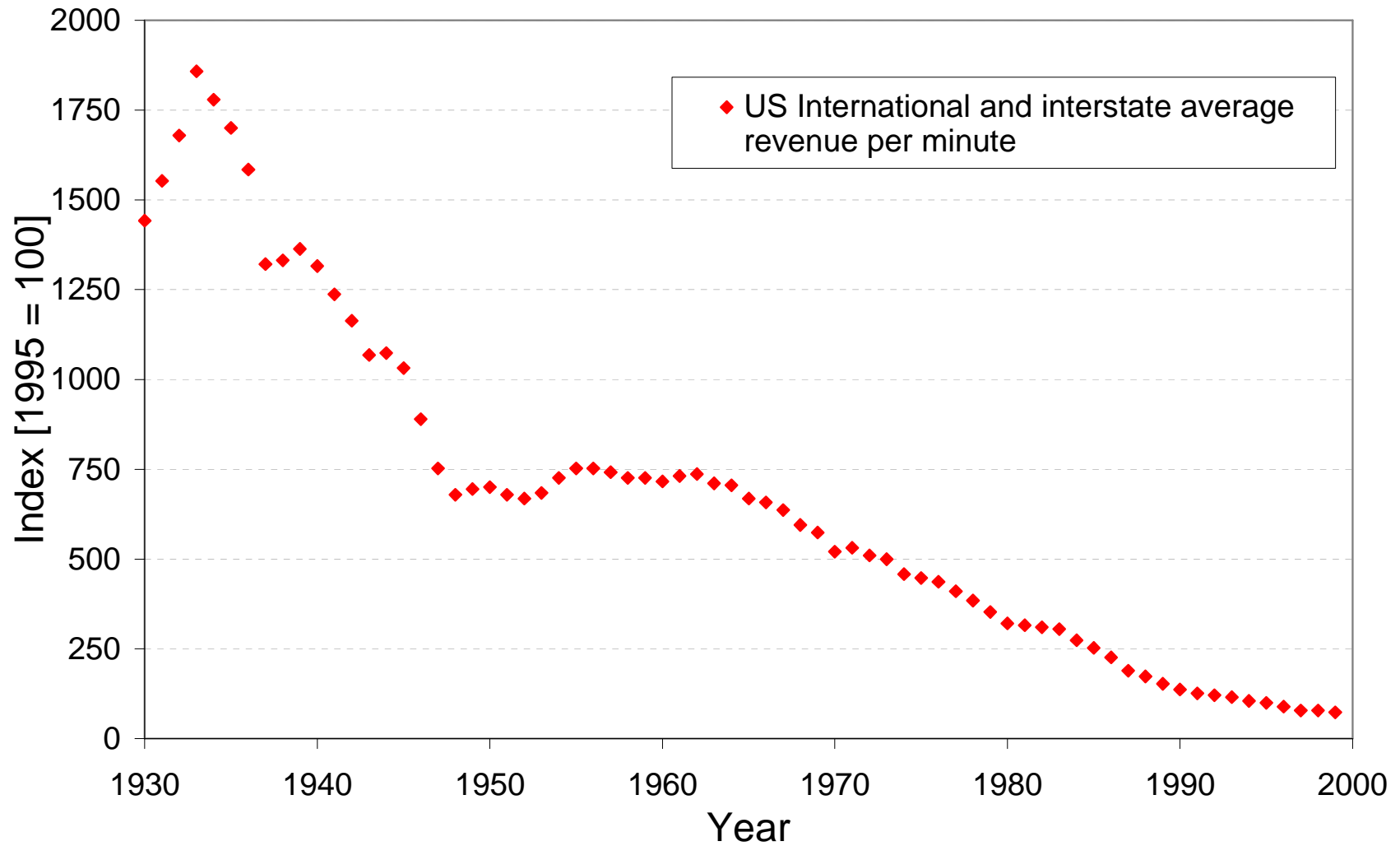
Time-scaled “road”-Switzerland (1950 and 2000)



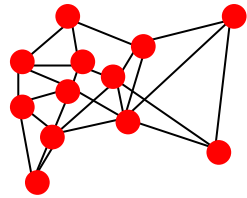
Quality – adjusted prices for cars



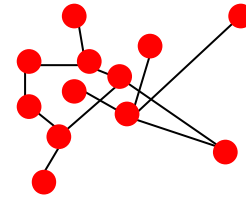
Price deflation for telecommunication



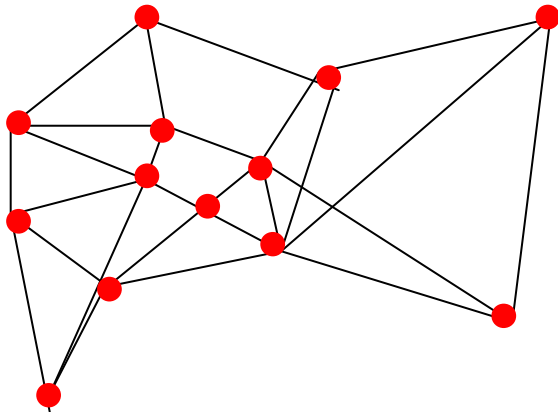
Spatial density and social connectivity



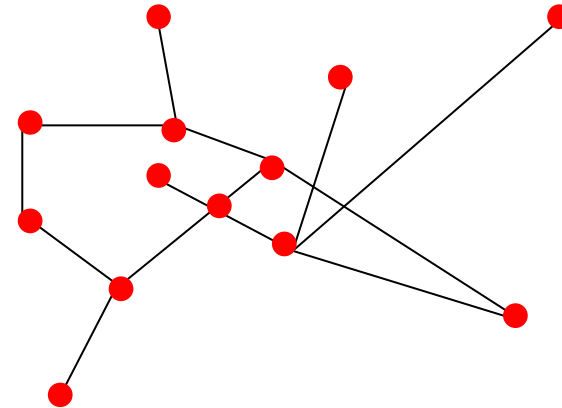
Dense/tight



Dense/loose



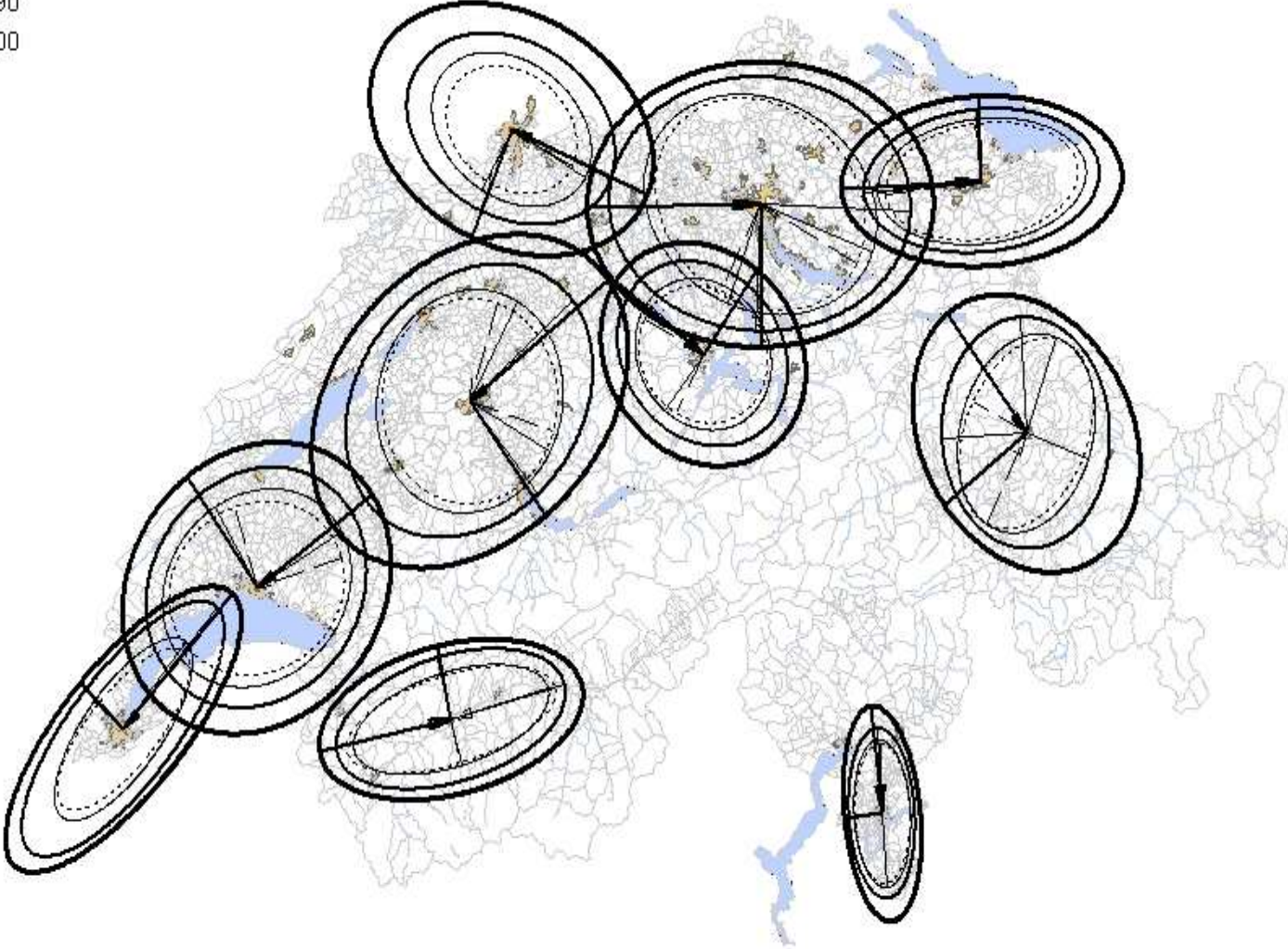
Sparse/tight



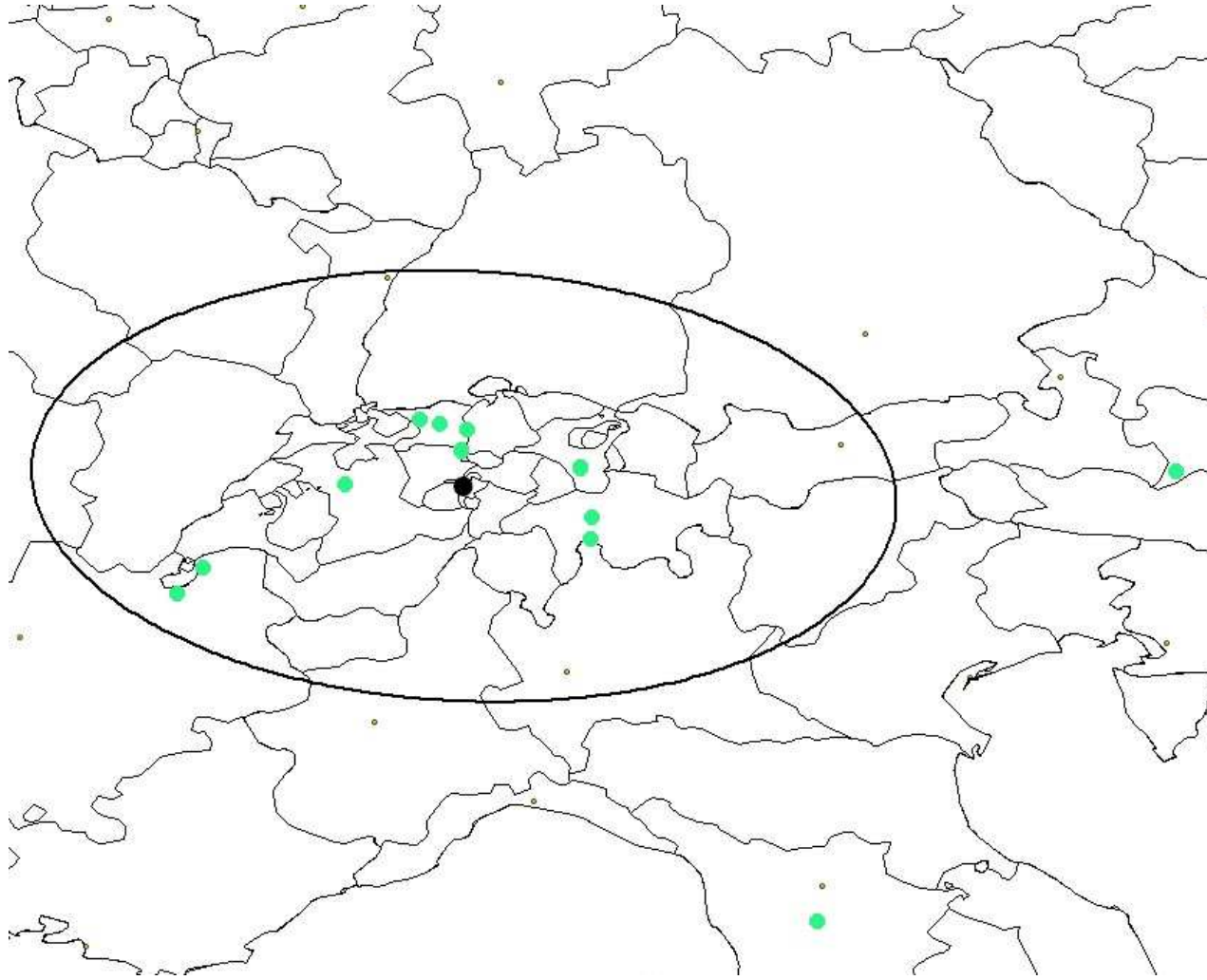
Sparse/loose

In-commuter sheds of the ten largest Swiss towns

- 1970
- 1980
- 1990
- 2000



Example of a social network geography



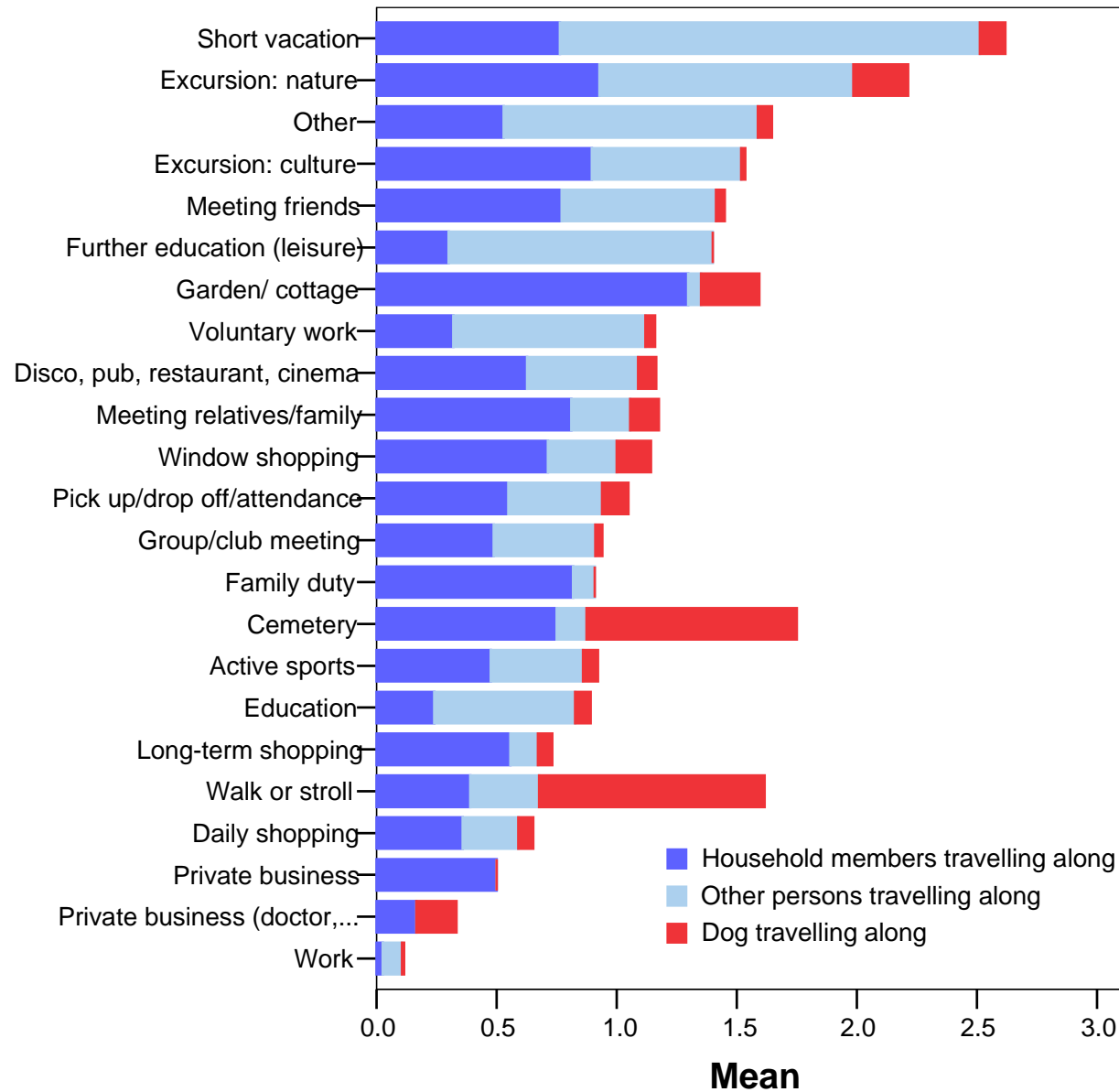
Female, 28,
4 moves,
Public
transport user

Travel and social networks

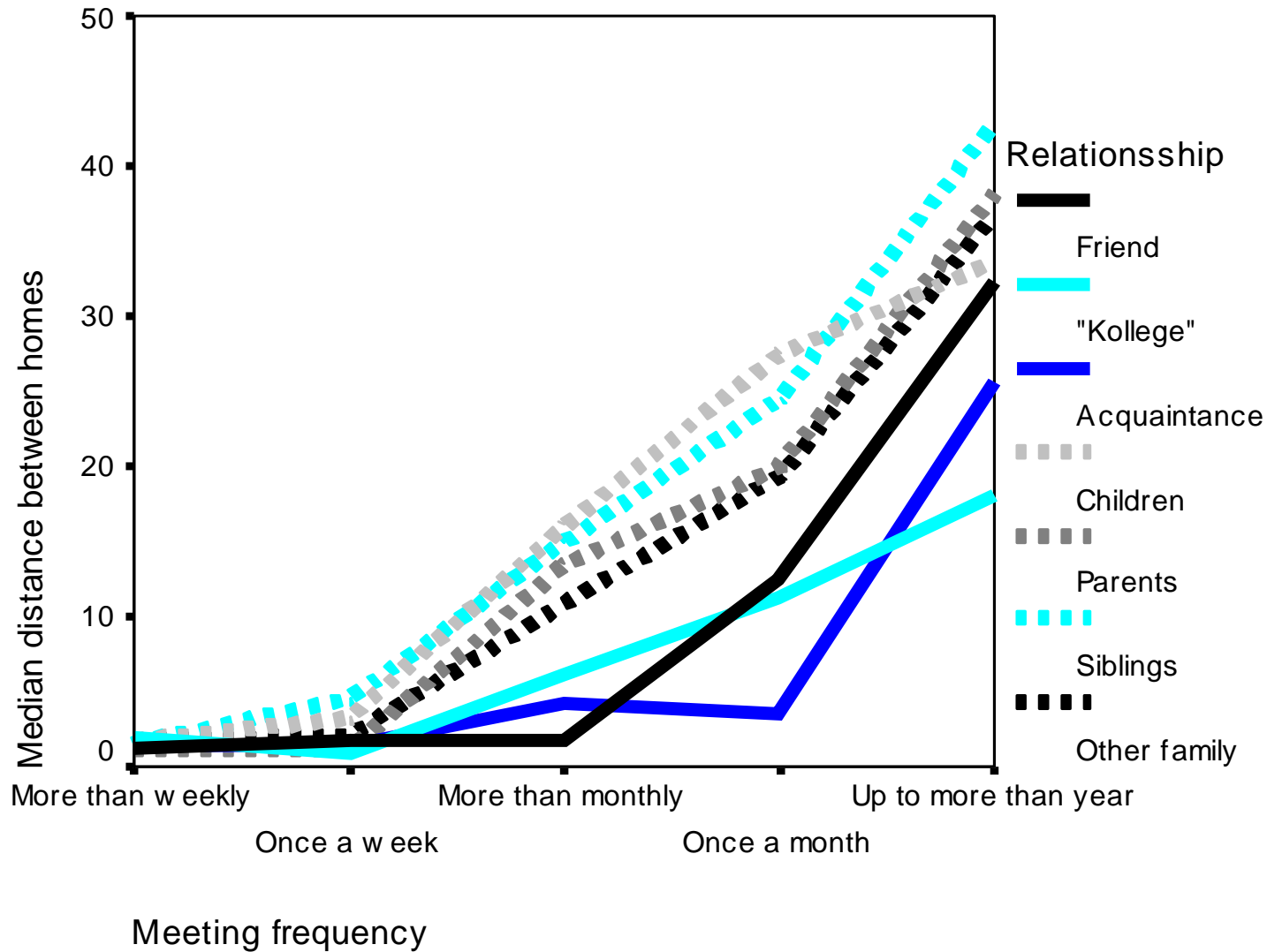
Maintenance of the networks requires:

- Face to face contacts
- Balanced by other forms of contacts
- Travel ~ Physical spread of the contacts
- Trade-off between loosing contacts and “social” capital and investing in new contacts closer to home

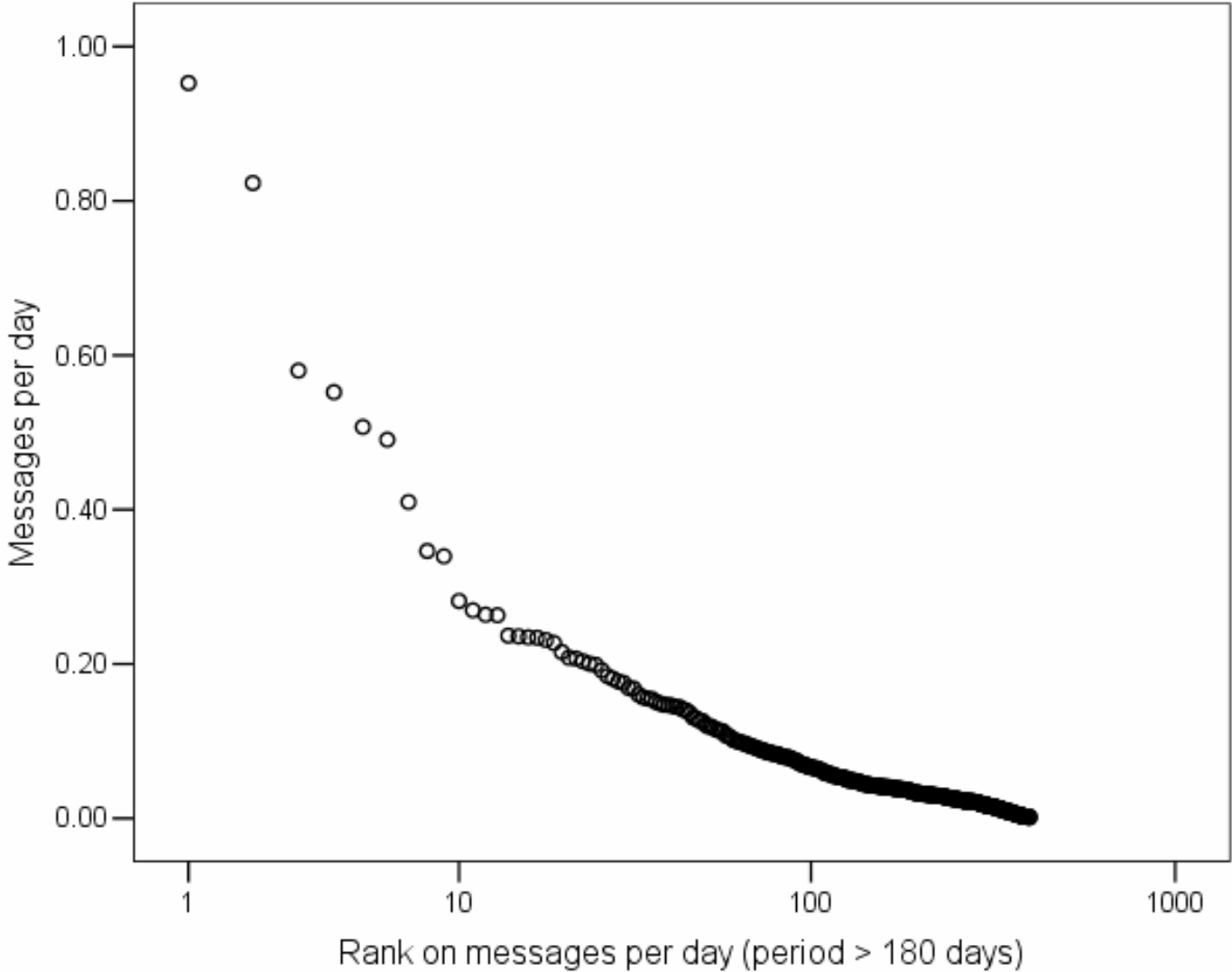
Average size of travel party (2003 Thurgau)



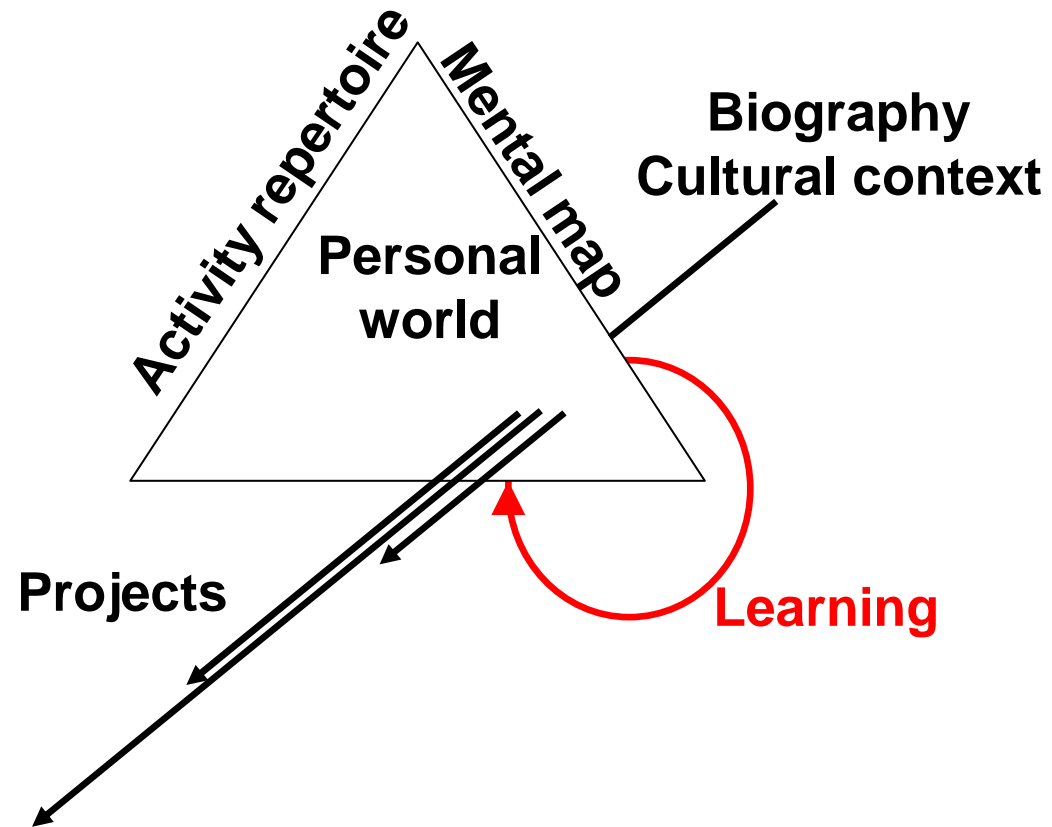
Contact costs: Distance and meeting frequency



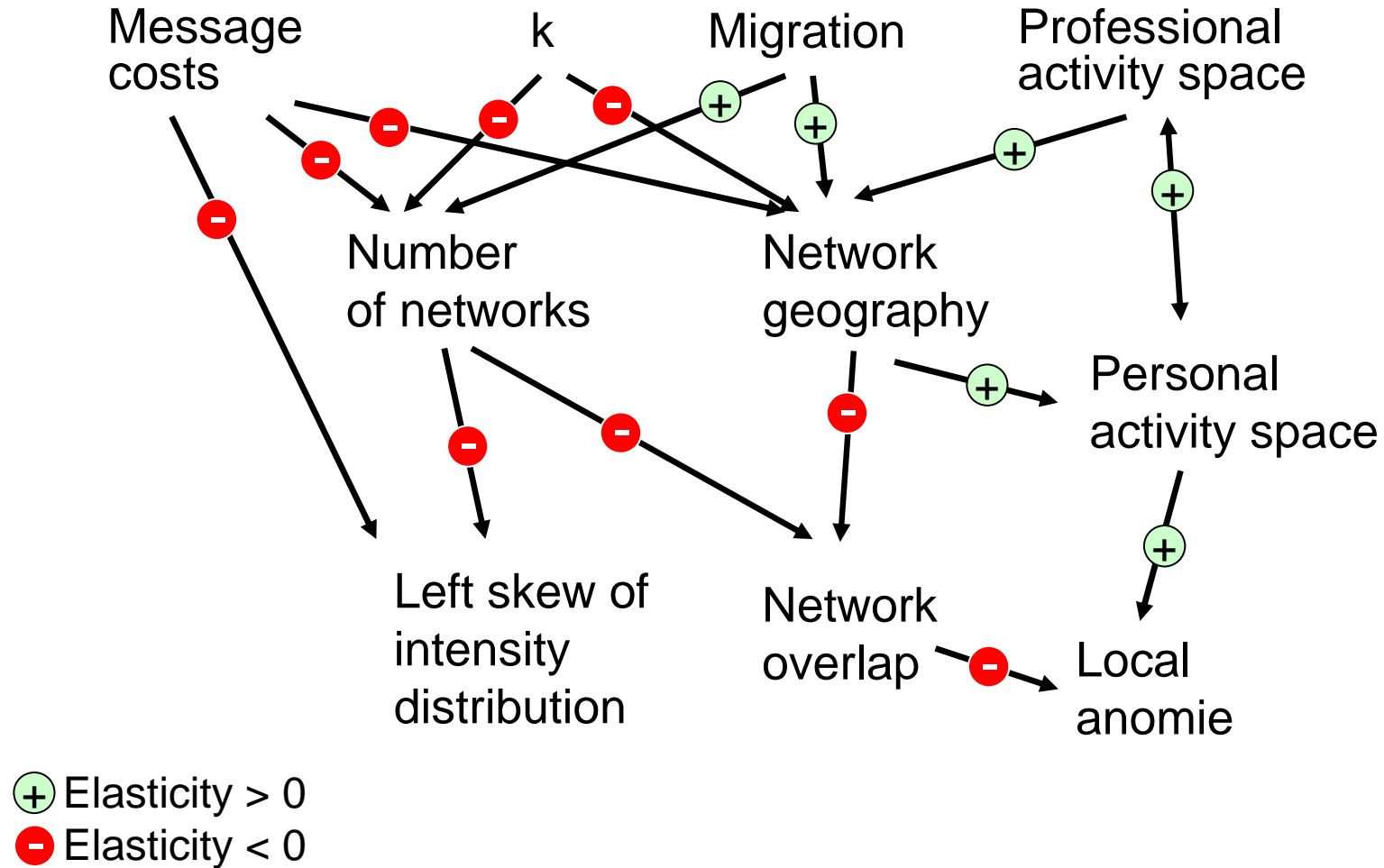
Contact frequencies: E-Mail messages to kwa



Impact of biographies: Hypotheses



Hypotheses



Expected impacts: Improved welfare

The social networks should be more homogeneous and therefore more productive for their members

But, the selectivity excludes the „less attractive“ persons who are disadvantaged through a reduced ability to travel or a reduced ability to participate in activities

But, the dependence on commercial or state-provided services for “care” increases

Research issues

- Measurement of the activity spaces (geographies, markets)
- Estimate of historical activity spaces ...

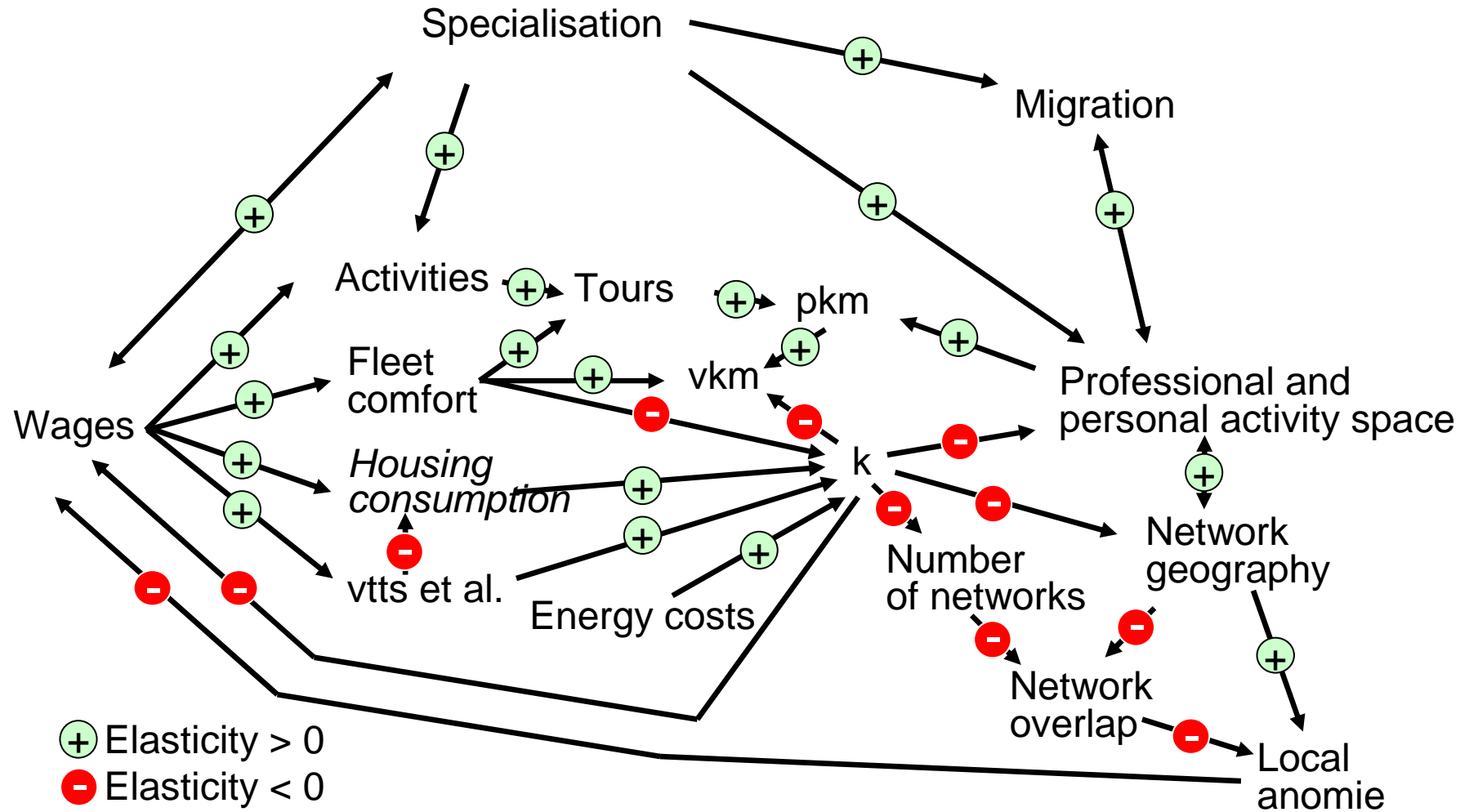
- Taste differences in network form and geography
- Social/cultural preferences for network form and geography

- Stability of the geographies under pressure
- Elasticities to policy (or environmental) change
- Time until trend change

Policy questions

- Is „happiness“ still growing ?
- How large are the social externalities ?
- How stable is the overall system under pressure ?

The hypotheses summarized



Literature and references

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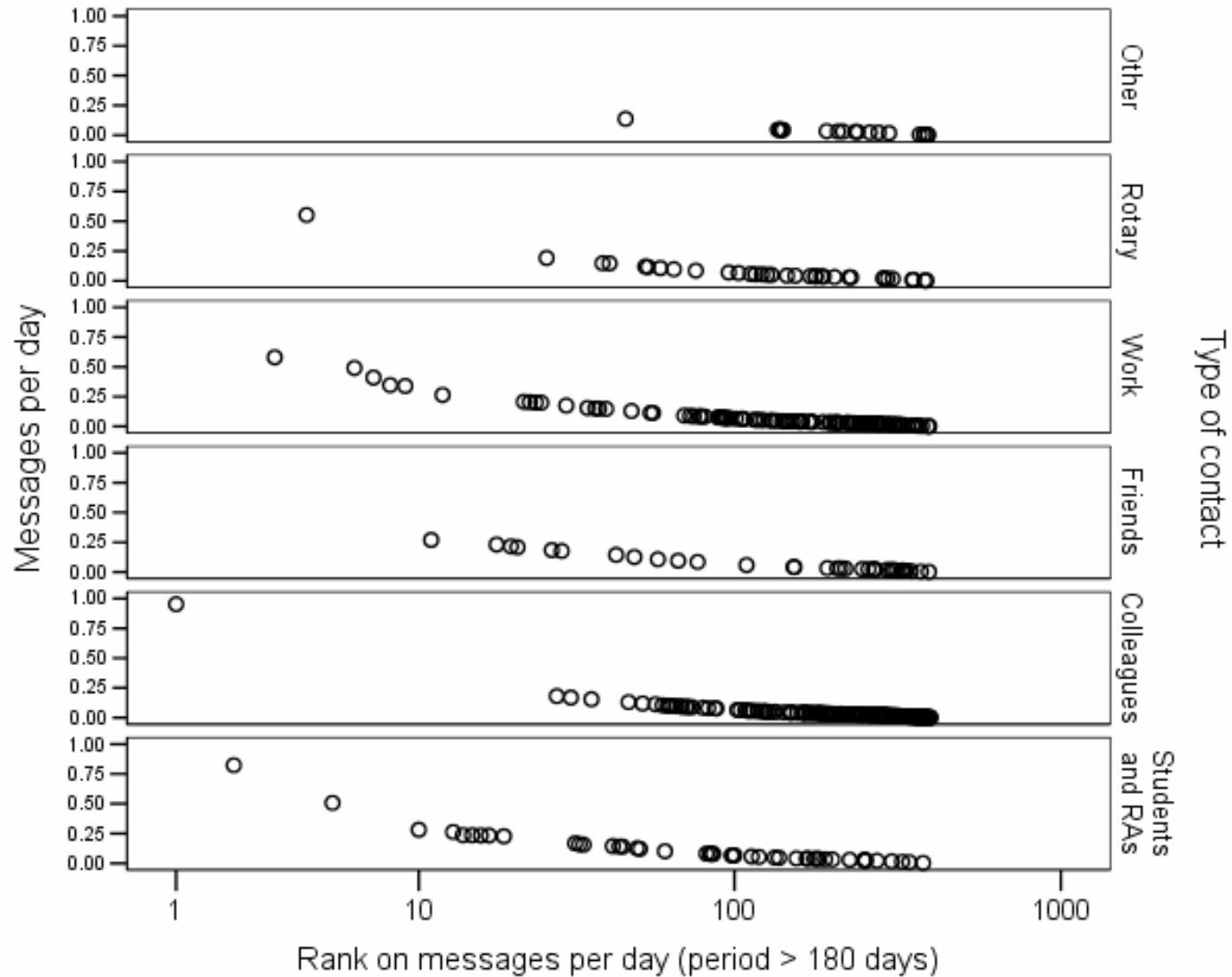
Social networks: Hypotheses

- [1] The size of the social network geography is inversely proportional to the generalised costs of travel and communication
- [2] The number of contacts individuals maintain is inversely proportional to the generalised costs of travel and communication
- [3] The probability of being linked to a member of one's network through multiple networks increases with the spatial density of one's contacts
- [4] The distribution of effort on non-household members will become more left skewed as the spatial social network tightness decreases
- [5] The knowledge about the contacts of contacts in a social network is proportional to the generalised costs of travel and communication

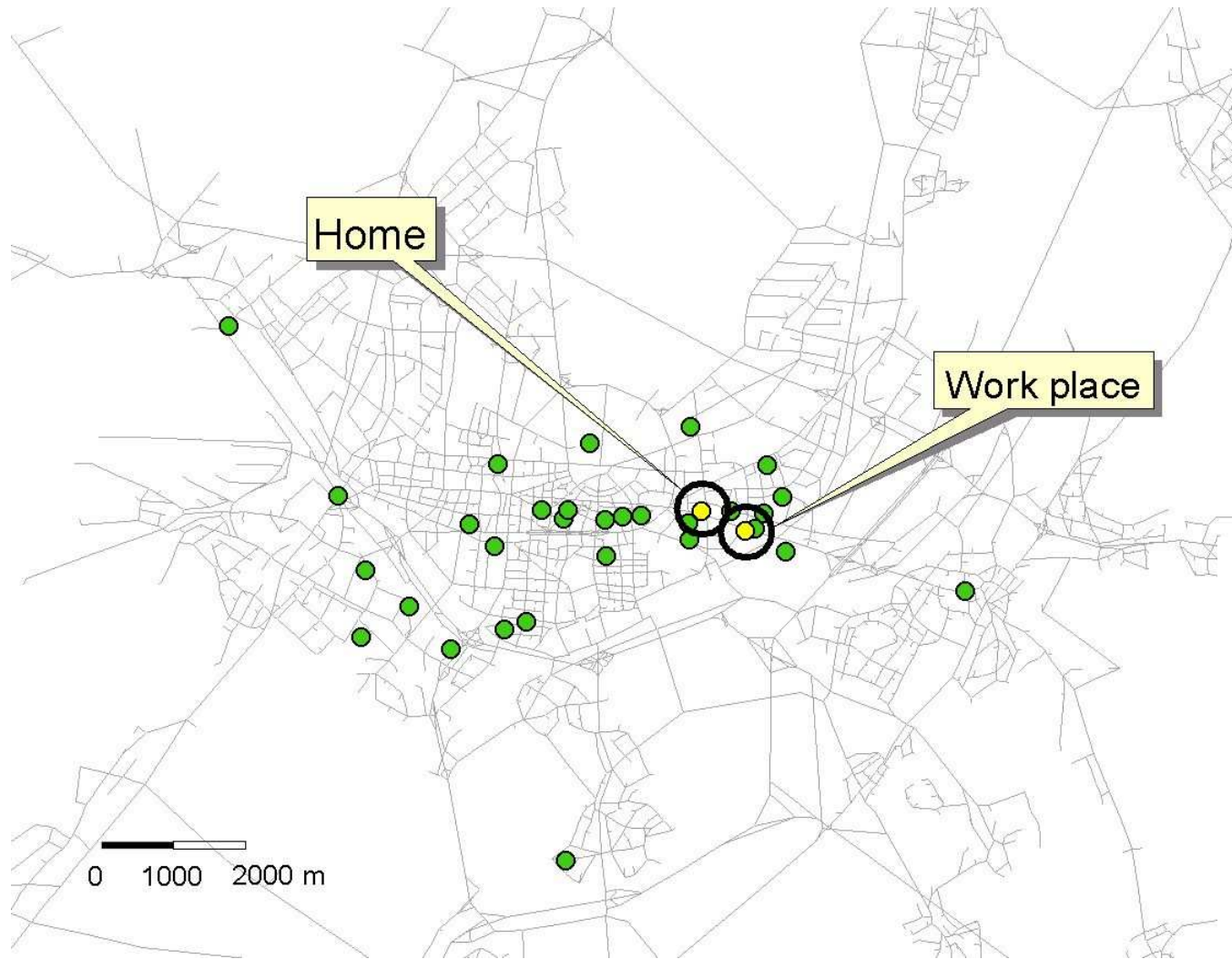
Social networks: Hypotheses (2)

- [6] The activity space of an individual is proportional to its social network geography
- [7a] The size of the local activity space of an individual stabilises after an initial exploration.
- [7b] The size of the total activity space will grow in line with the growth of social network geographies.
- [8] The reliance on commercial or publicly funded personal services increases proportionally with the geography of social networks
- [9] The welfare of the individuals should increase inversely proportional to the generalised costs of travel

Contact frequencies: E-Mail messages to kwa



Example of a local activity space

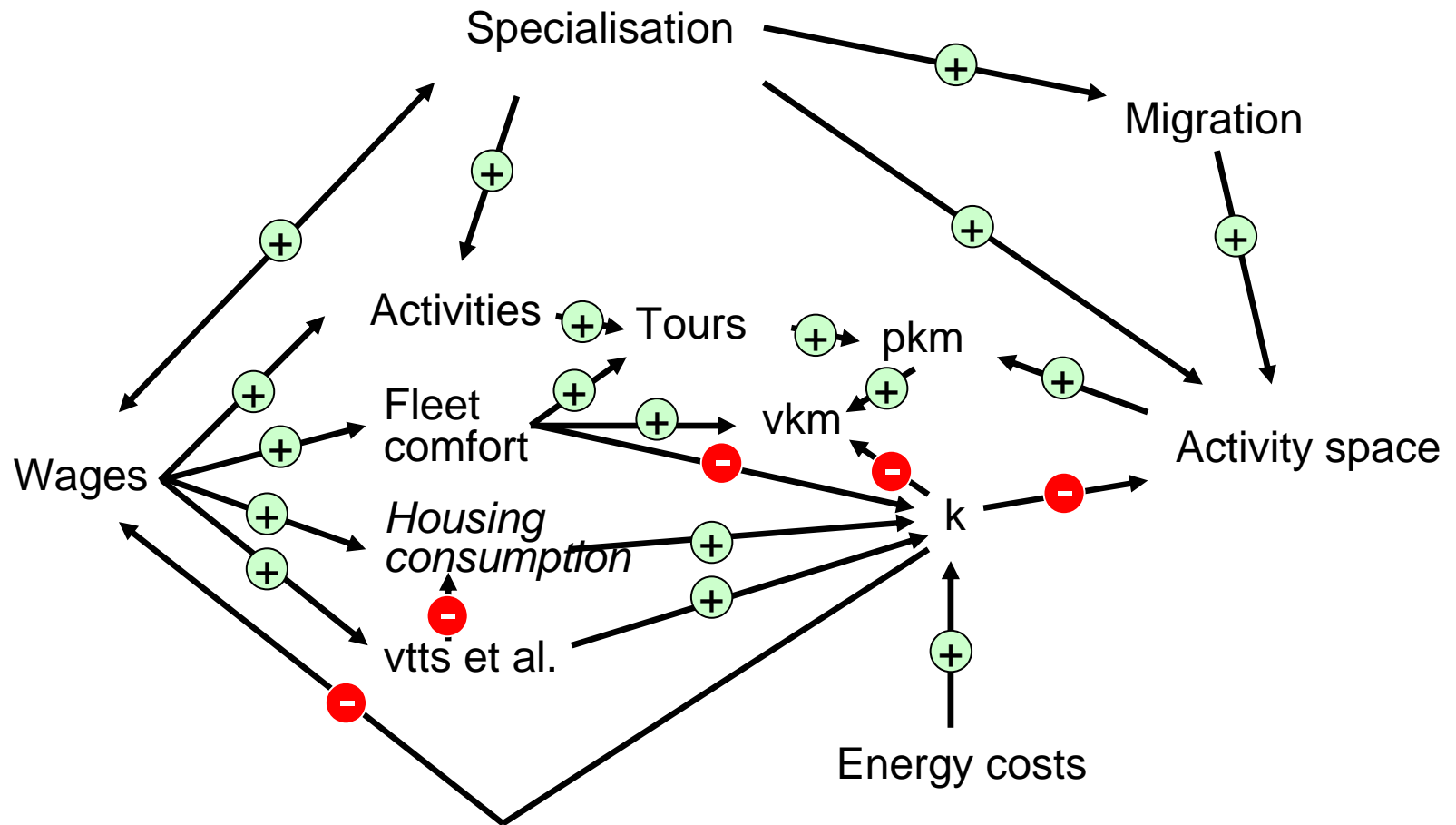


Female, 24
Full time
Single
216 trips / 6
weeks

Schönfelder

12000761

Size of activity spaces: A hypothesis



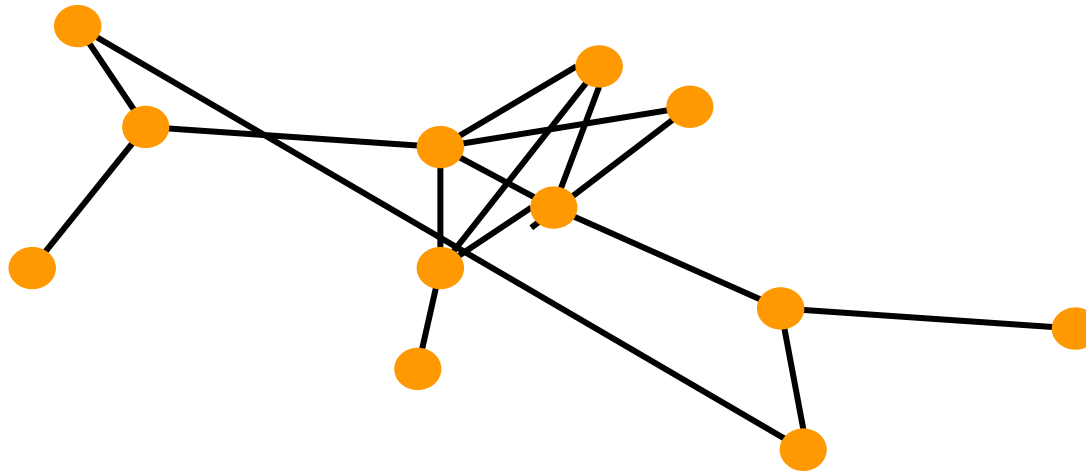
⊕ Elasticity > 0
 ⊖ Elasticity < 0

k: personal short term generalised costs of travel

Definition of a social network

The topology of a social network describes

- Which person/firm (node) is linked to which other persons/firms
- By contacts (links) of a certain quality (impedance or cost)



Closeness $\sim 1/\text{Impedance}$