

## Preferred citation style

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Axhausen, K.W. (2004) Personal biography, social networks and travel behaviour: Hypotheses and assumptions, Kolloquium Wissenschaftliche Mobilitätsforschung, Wissenschaftszentrum Berlin, Berlin, June 2004.

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## Personal biography, social networks and travel behaviour: Hypotheses and assumptions

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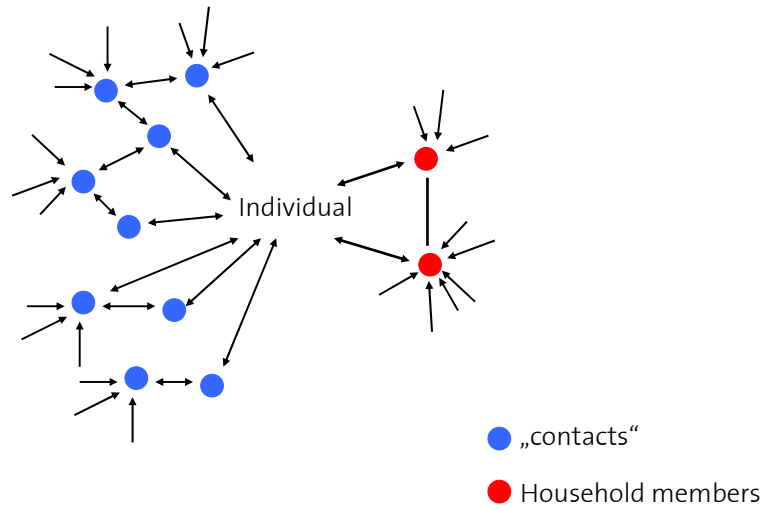
Juni 2004

 Institut für Verkehrsplanung und Transportsysteme  
Institute for Transport Planning and Systems

**ETH**  
Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

### Position: Person as a network member

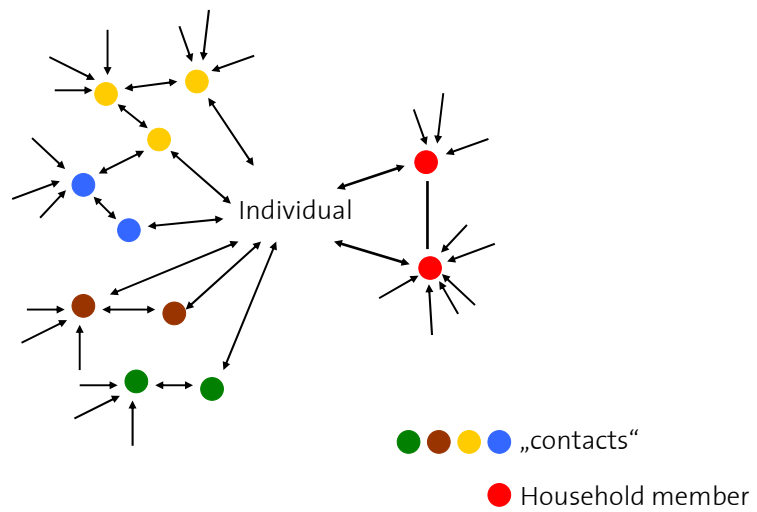
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### Position: Person as a member of networks

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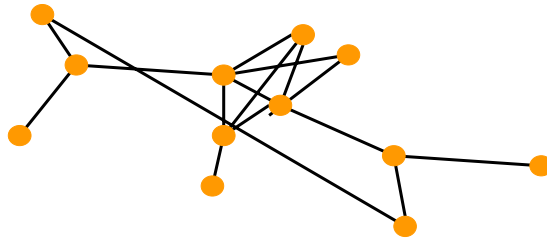
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## Definition of a social network

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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)

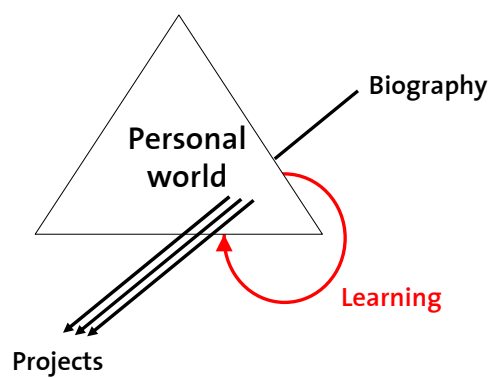


Closeness  $\sim 1/\text{Impedance}$

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## Position: Individual in the biographical context

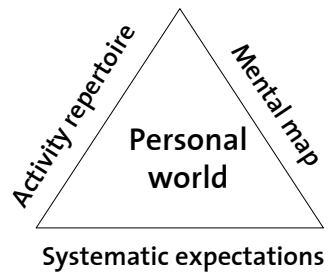
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## Position: Personal world

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Activity repertoire: What can be done where and how

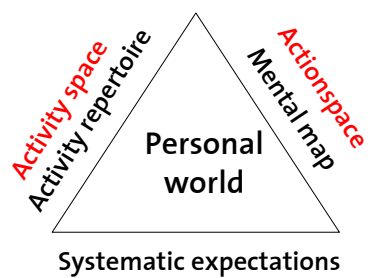
Mental map: links between locations and their generalised costs of travel

Systematic expectations about locations not yet visited

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## Position: Personal world

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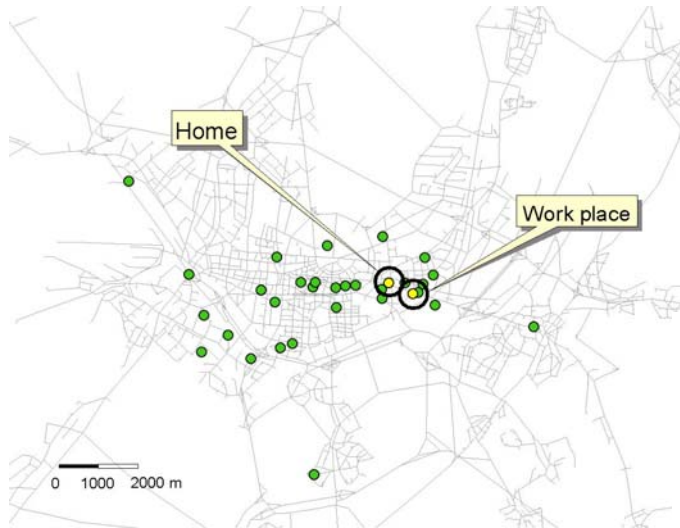


Activity space: Locations in current use

Action space: Extension of the mental map by locations known second hand via word-of-mouth or the media

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### Example of local activity space



Female, 24  
Full time  
Single  
216 trips / 6  
weeks

1200761

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### Example of a local activity space



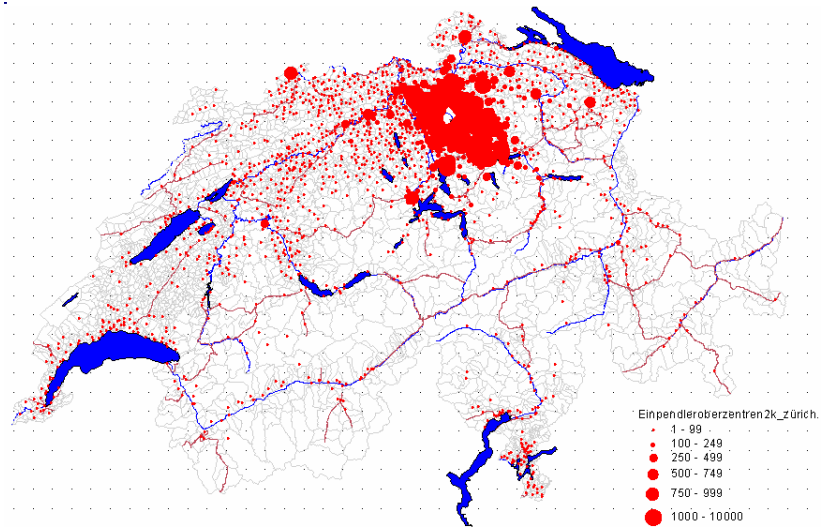
Male, 50  
Full time  
1 child  
120 trips / 6  
weeks

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## Activity spaces: Commuters to Zürich (2000)

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## Position: Impacts of industrialised modernity

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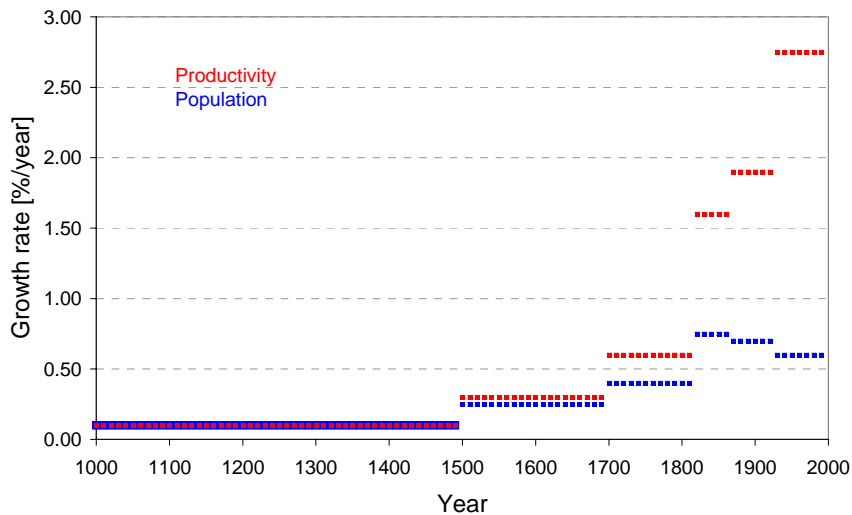
Participation of all in the productivity increases (real income growth)

Drastic reductions of the generalised costs of travel and telecommunication

(Substantial) replacement of local personalised links by anonymous instruments of social integration

### Modernity: Productivity growth in Western Europe

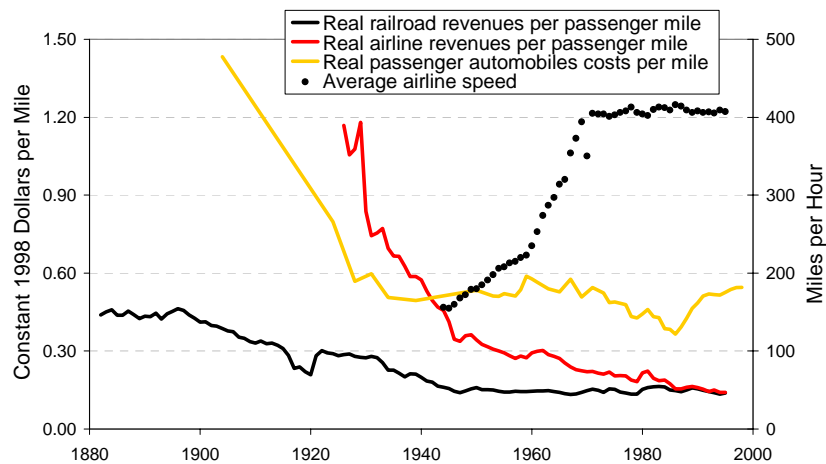
Adapted from Galor and Weil (2000)



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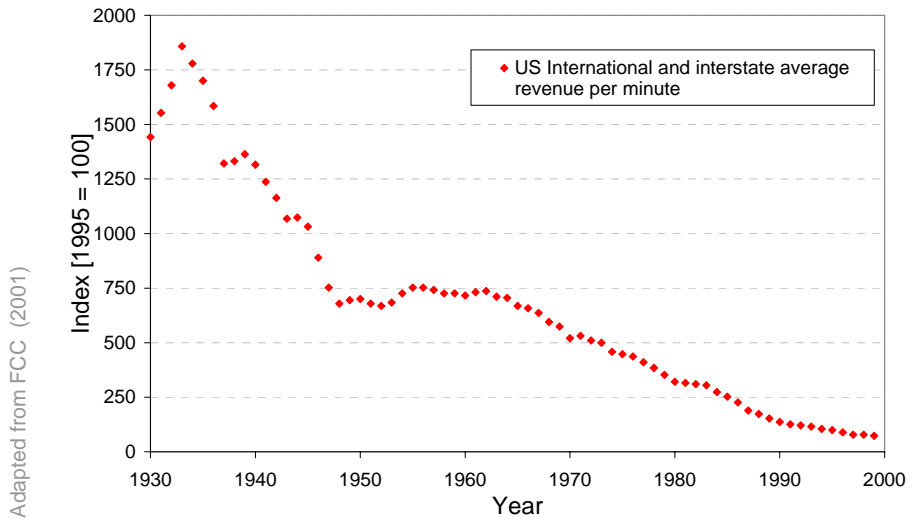
### Modernity: Reduction of transport costs (USA)

Adapted from Rhode and Strumpf (2003)



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## Modernity: Cost reduction in telecommunication (USA)



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## Feedbacks between the systems

Transport system	Suppliers	Customers
Lower (gen.) user costs	Larger markets	Better selections
More travel Higher load factors	Specialisation Higher wages	Better quality
	Productivity growth Bigger units of production	Lower prices
More funds for Investment/maintenance	Longer distances	Longer distances

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## Social networks: Hypothesis 1

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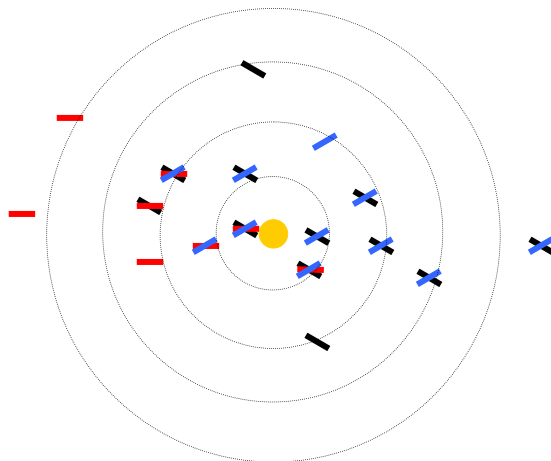
The size of spread (geography) of the social networks is inversely proportional to the generalised costs of communication (travel and telecommunication)

Additional result: Small geographies make it more likely that any two persons are linked through multiple networks

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## Locally coherent networks (of the past ?)

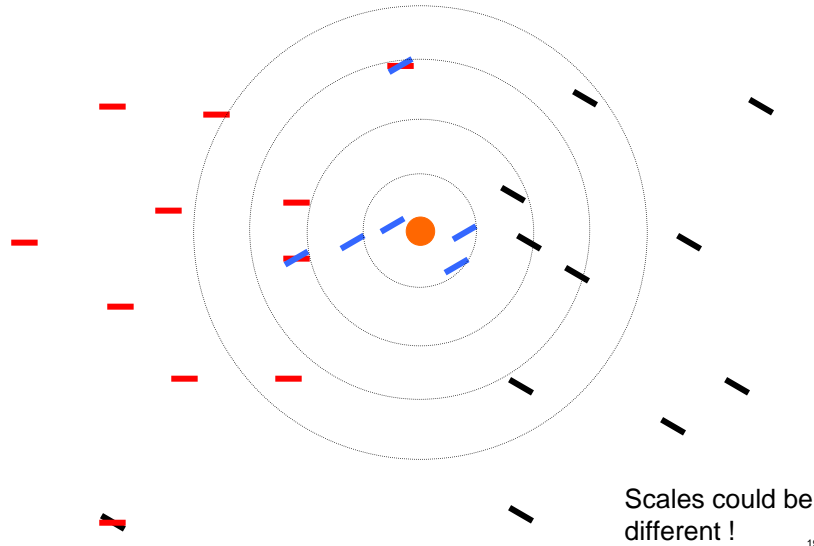
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## Spatially non-coherent networks (today ?)

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## Social networks: Hypotheses 2a and b

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Persons belong to more networks today  
Persons keep more contacts alive then earlier

- More leisure time over the life cycle
- Drastically reduced costs of communication
- Copying of messages has become nearly free

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### Social networks: Hypotheses 3

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Contacts have become more selective

- No need to make do with the „neighbours“

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### Social networks: Hypothesis 4

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The distribution of contacts intensity has become more left skewed

- Selectivity of contacts
- Time requirements for acquiring the background knowledge about the references of the other persons
- Less gossip
- Fewer random meetings

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## Social networks: Assumption

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The selectivity is being increased by the general availability of mobile phones:

- More spontaneous patterns of time use
- Fewer predictable availabilities at certain (time-space) locations

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## Biographies: Hypothesis 1

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The style of travelling during childhood and adolescence, i.e. of the parents, forms the style of the next generation

- The emotional response to (types of) locations is transferred
- The desire for variety seeking is transferred
- The attitude to travelling is transferred

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## Biographies: Hypothesis 2

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Action spaces grow over the duration of the life course

Assumption: They grow exponentially with the number of main locations (work places; home locations) via involvement with third parties

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## Biographies: Hypotheses 3a and b

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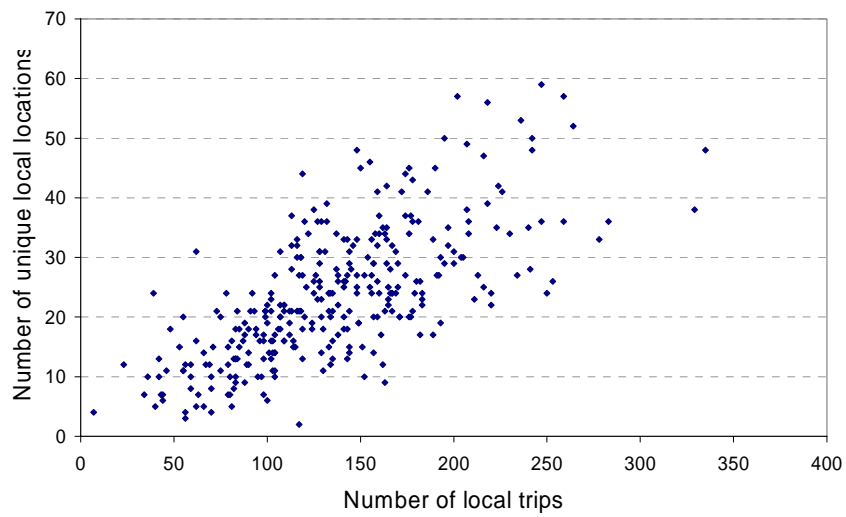
The elements of the activity repertoire age

The current size of the activity space remains constant through continuous innovations

- Locations and activity supply change over time
- Idealisation of locations/activities through memory processes and generalisation

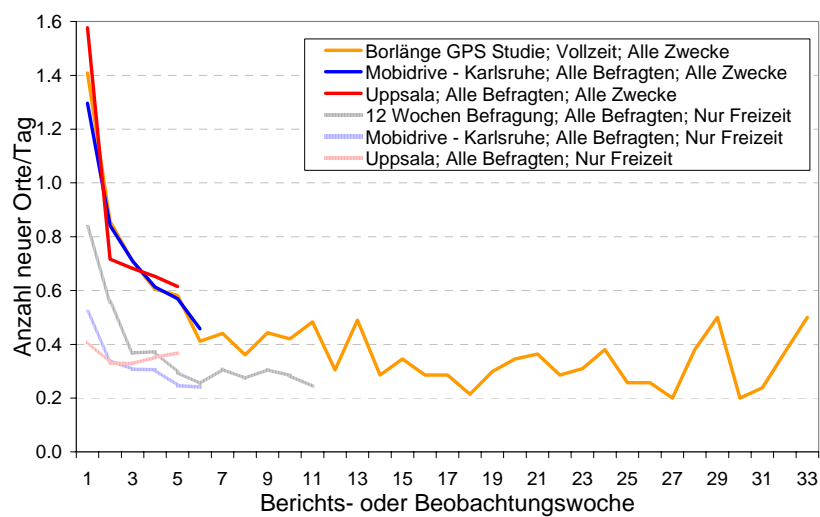
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### Mobidrive: Number of unique locations and trips



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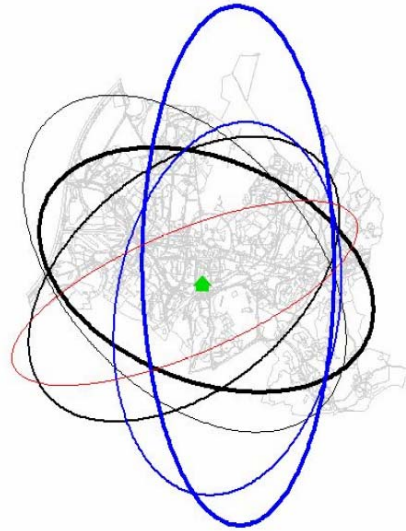
### Innovation in destination choice



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## Variance of activity spaces: A Mobidrive example

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Male, Full time

Black: Working days

Blue: Weekend

Line width:

Weeks 1+2; 3+4 and 5+6

Srivastava und Schönfelder, 2003

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## Expected impacts: Travel behaviour

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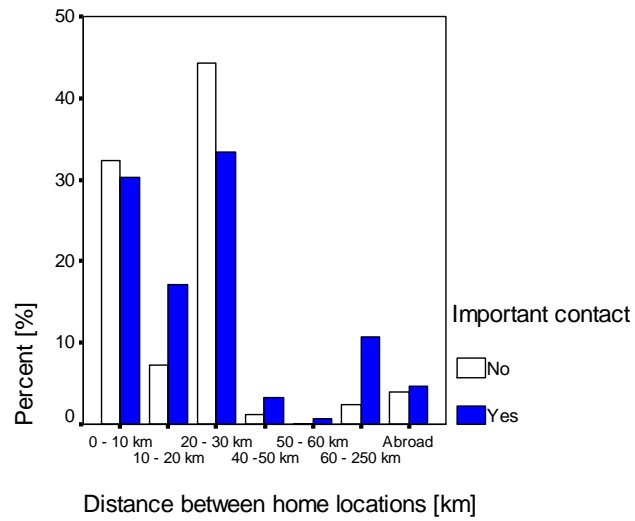
Activity spaces should be larger than earlier

Regular long distance travel is required

Fast modes will remain popular

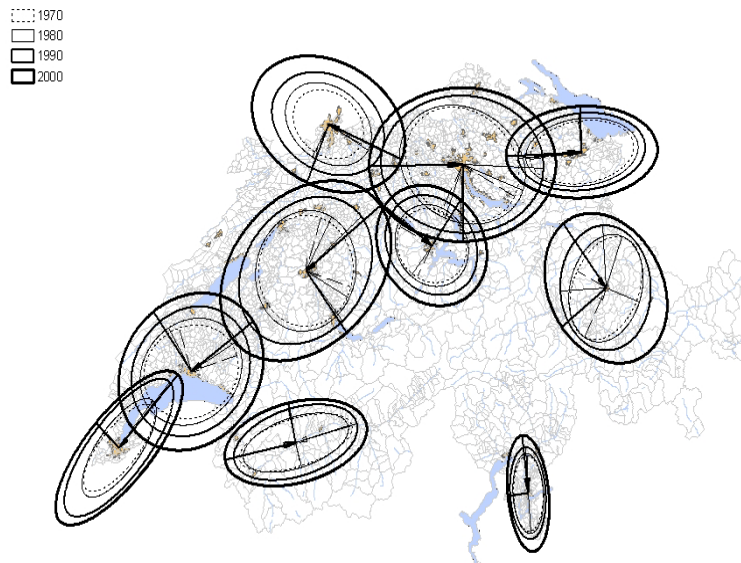
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### Mean distances between home locations of contacts



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### Activity spaces: commuter sheds since 1970



Nach Botte, 2003

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## Expected impacts: localised anomie

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Reduced number and intensity of local contacts should reduce the local level of trust:

- Growing investment into safeguarding the person and the home
- Reduced exposure to risk during travel, i.e. less travel by public transport, cycling and walking

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## Expected impacts: Improved welfare

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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

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## When will the marginal benefits become zero ?

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Localised anomie stresses the other mechanism of social inclusion too strongly

The costs of private protections could become too high

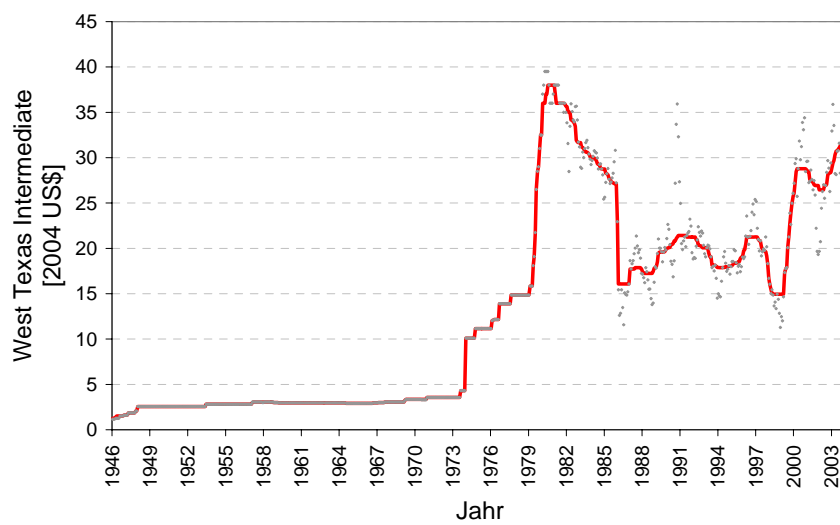
The environmental impacts could become threatening

The trend in the costs of travel changes

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## Petrol prices

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## Back to the future ?

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home.t-online.de/home/k-j.lebus/cdf-hgw.htm

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## Literature and references

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