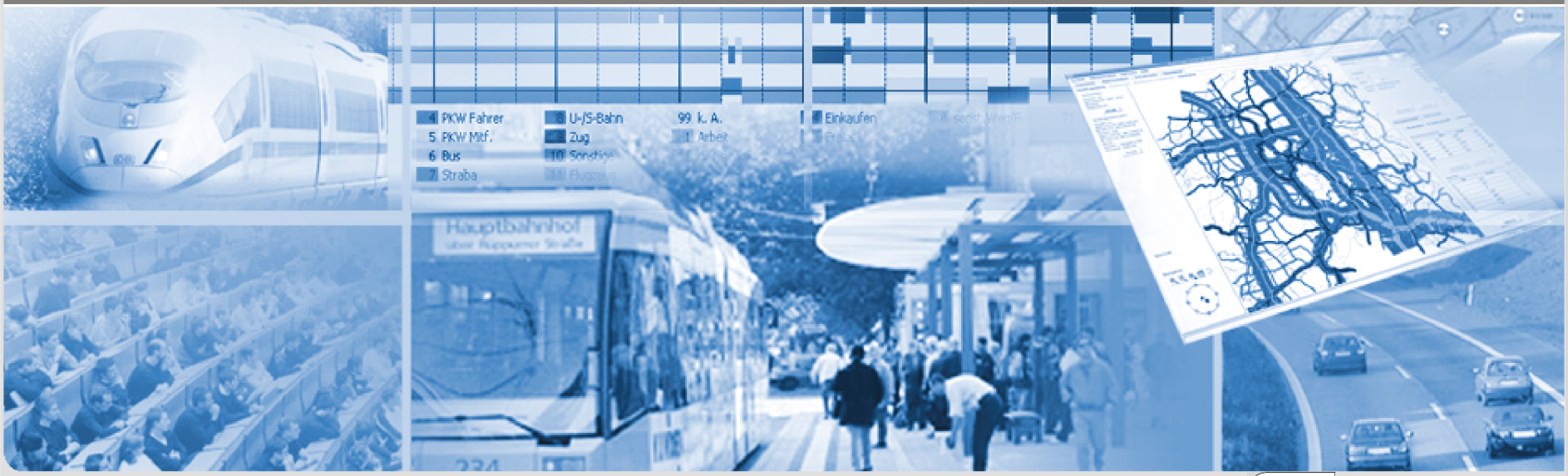
How Cyclists become Cyclists – Dynamics and the Potential of Bicycle Use in Germany

Bastian Chlond, Christine Weiss

INSTITUTE FOR TRANSPORT STUDIES, KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)

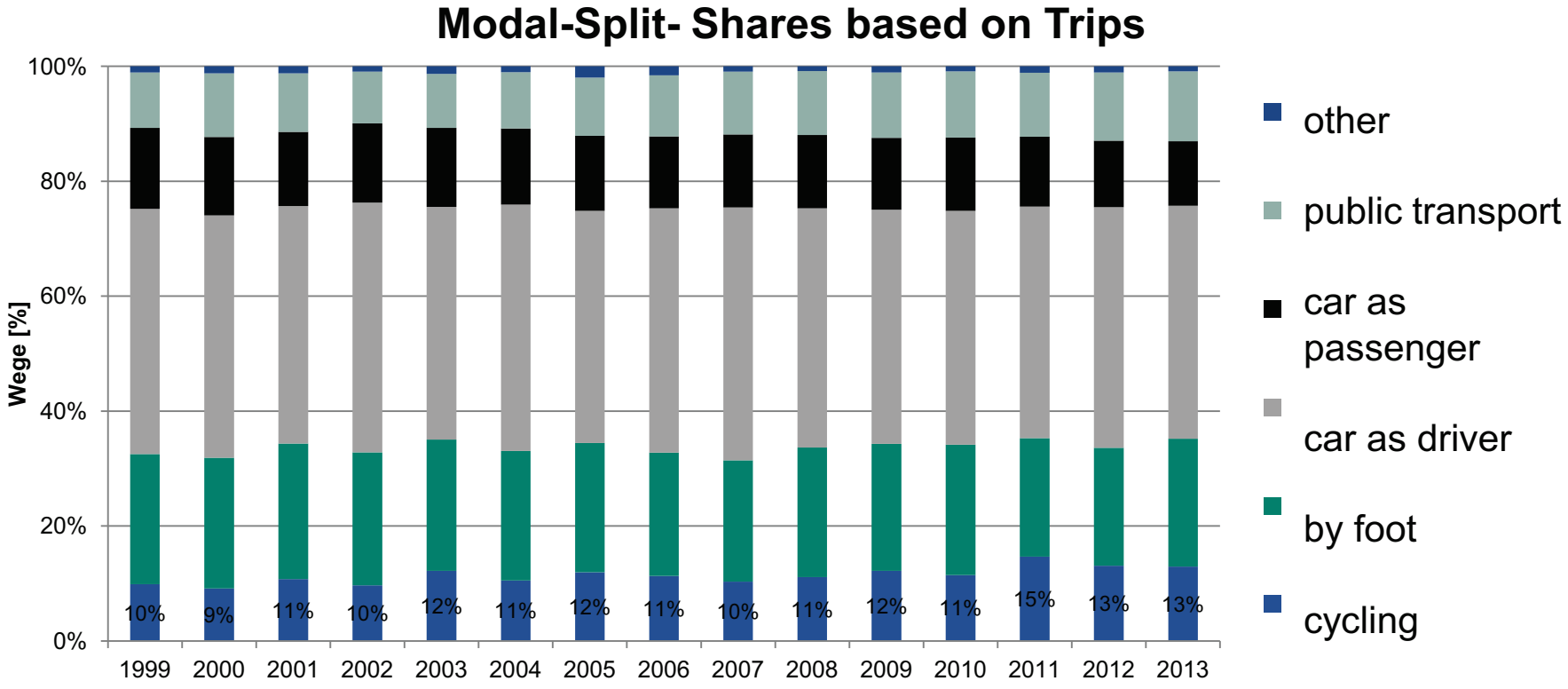


Agenda

- Motivation
  - To show the utility and usability of a panel survey about travel behaviour
- Trends in Modal use
- The MOP – somehow related to the Dutch Longitudinal Travel surveys
  - In which way the characteristics of the MOP-survey are used ..
- Some results about cycling and cyclists in Germany
- Some results and ideas about the processes behind
- Some conclusions

Trends in Modal Shares

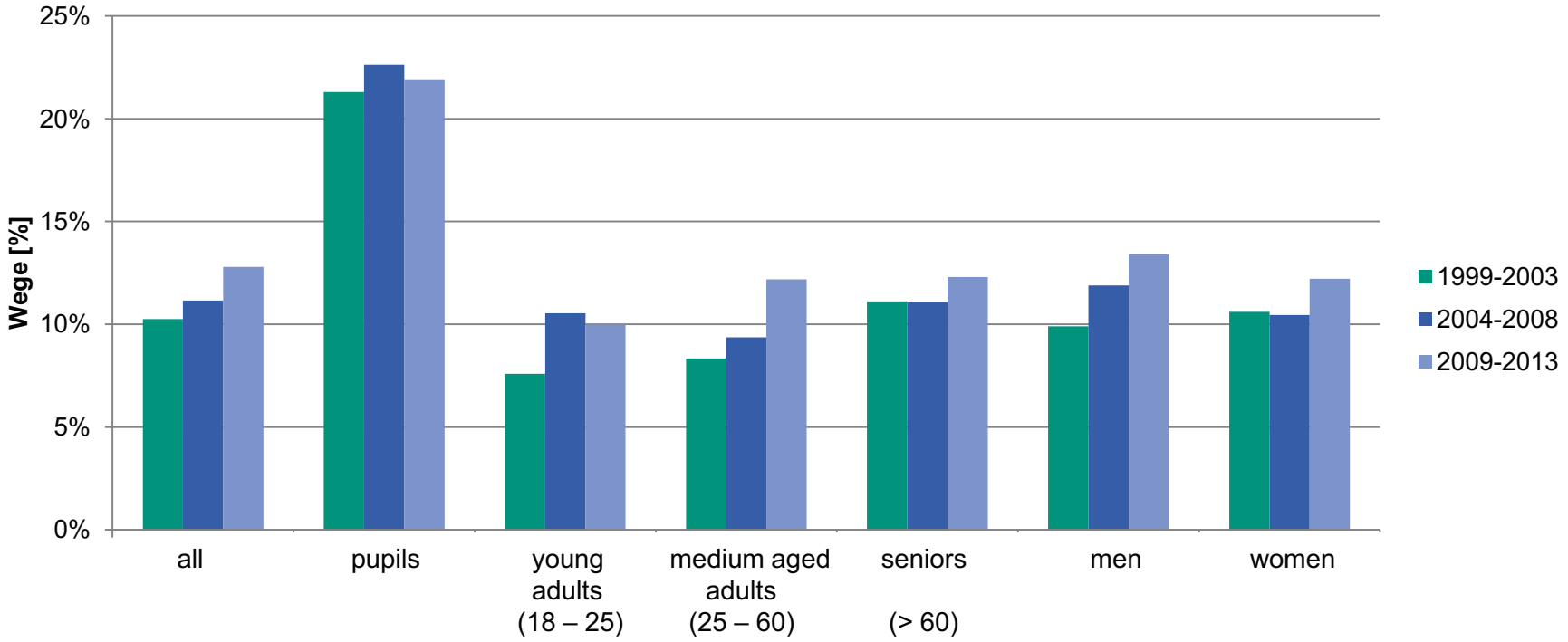
- Increasing shares of the bicycle in modal terms…



- High variation due to weather-condition
  ➔ Aggregation of time-slices of 5 years each 1999 - 2003 / 2004 -2008 / 2009 -2013

Development of the bicycles modal shares by different person groups

- Modal Split of the bicycle by socio-demographic characteristics



- Increase of modal shares in nearly all person-groups ? Why we observe exceptions? What does happen and why?
- Does more cycling mean more cyclists or an intensification of cycle use by existing cyclists or both?

What do the modal-splits figure mean at all?

- **What does 10 % modal split mean?**
  - 10 % of the population always use the bicycle ➔ 10 % cyclists
    or
  - 100 % of the population use the bicycle for 10 % of trips! ➔ 100 % cyclists

- **Concerning the growth?**
  - Is is more the growth that few people use the bicycle more intensively
    or
  - do more people cycle at all? ➔ More cycling or more cyclists?
  - Which persons groups are responsible for this?

- **What about the intensity of cycling?**
  - Is the demand increase more in terms of the number of trips
    or
  - can an increase in cycle use also be observed for distances?

- **In which way the MOP survey can help to answer this question?**

For answering these kind of questions „longitudinal“ data can help…

➔ German Mobility Panel (MOP)

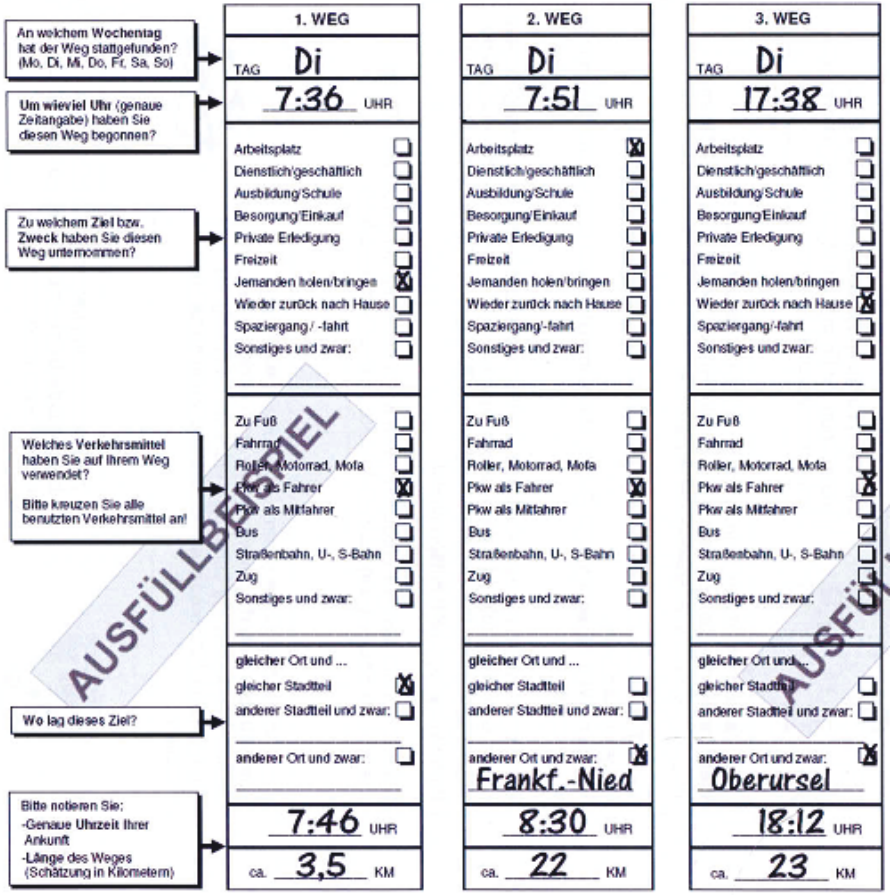
Federal Ministry of Transport, Building and Urban Development

MOBILITÄTS-PANEL

A survey about travel behavior which combines 3 “longitudinal” elements

1. Since 1994 survey of about 1.000 -1500 households **(“unbroken time series”)**
2. Participants report…
   - …up to 3 times in 3 consecutive years **(“intra-individual repetition” ➔ multiperiod)**
   - … for a period of one week **(“7 consecutive days” ➔ multiday)**
3. **“Travel diary”** plus socio-economics

- (Additionally: Survey about fuel consumption and car use)



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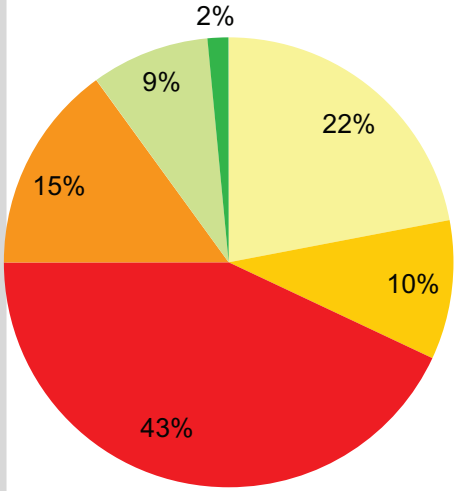
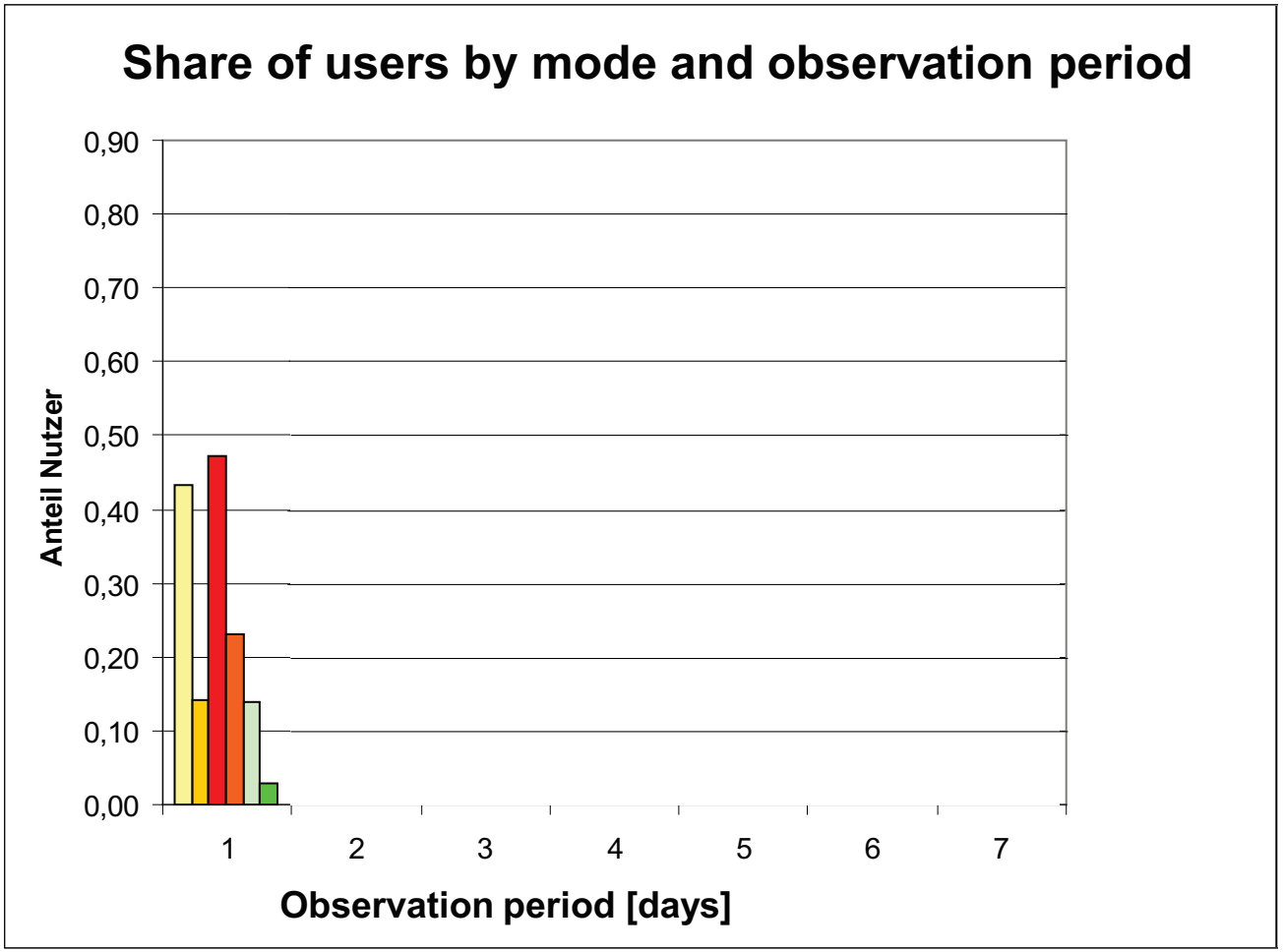
Measurability: Longitudinal data for the definition of the clienteles of modes

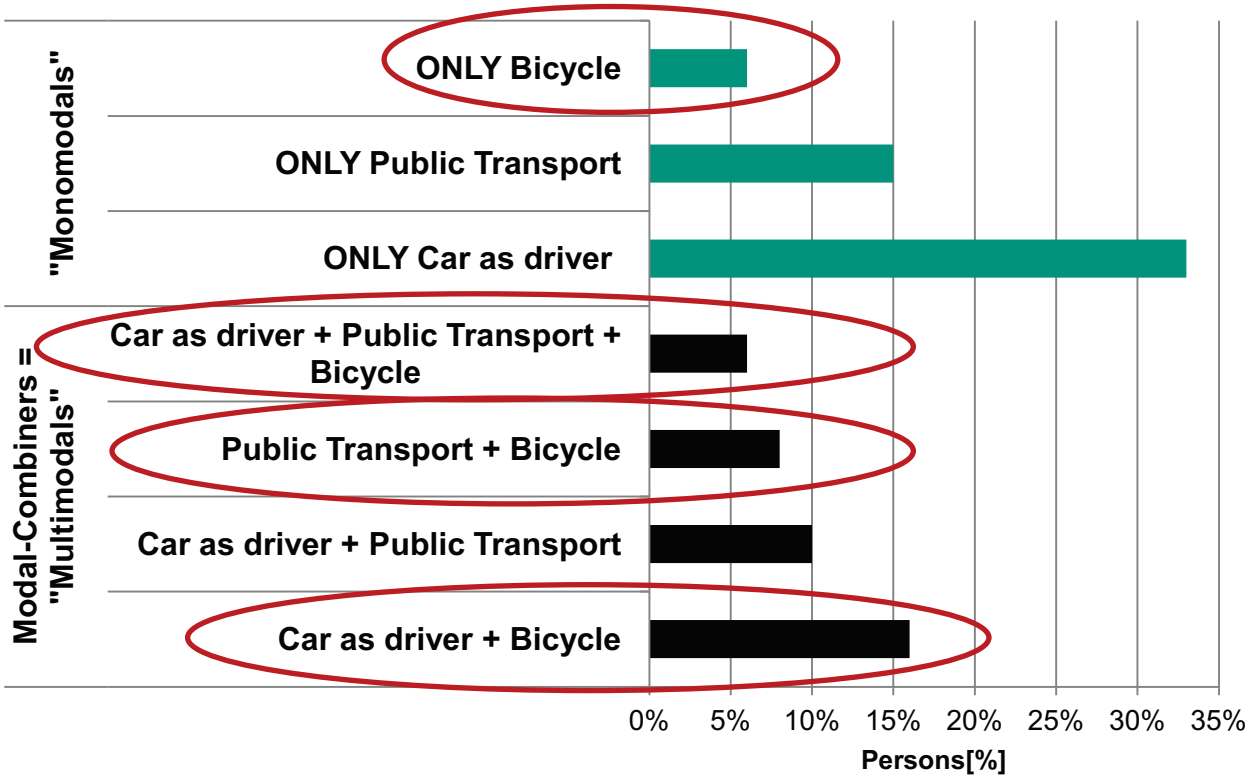
Modal Split (Trips) – Clientele of modes (Individuals)



- Foot
- Bicycle
- Car as driver
- Car as passenger
- Public Transport
- Rail



Classification of the population by modal use - distinction in „monomodals“ and „multimodals“



Monomodality und Multimodality in terms of behaviour

Classification by modal use within one week

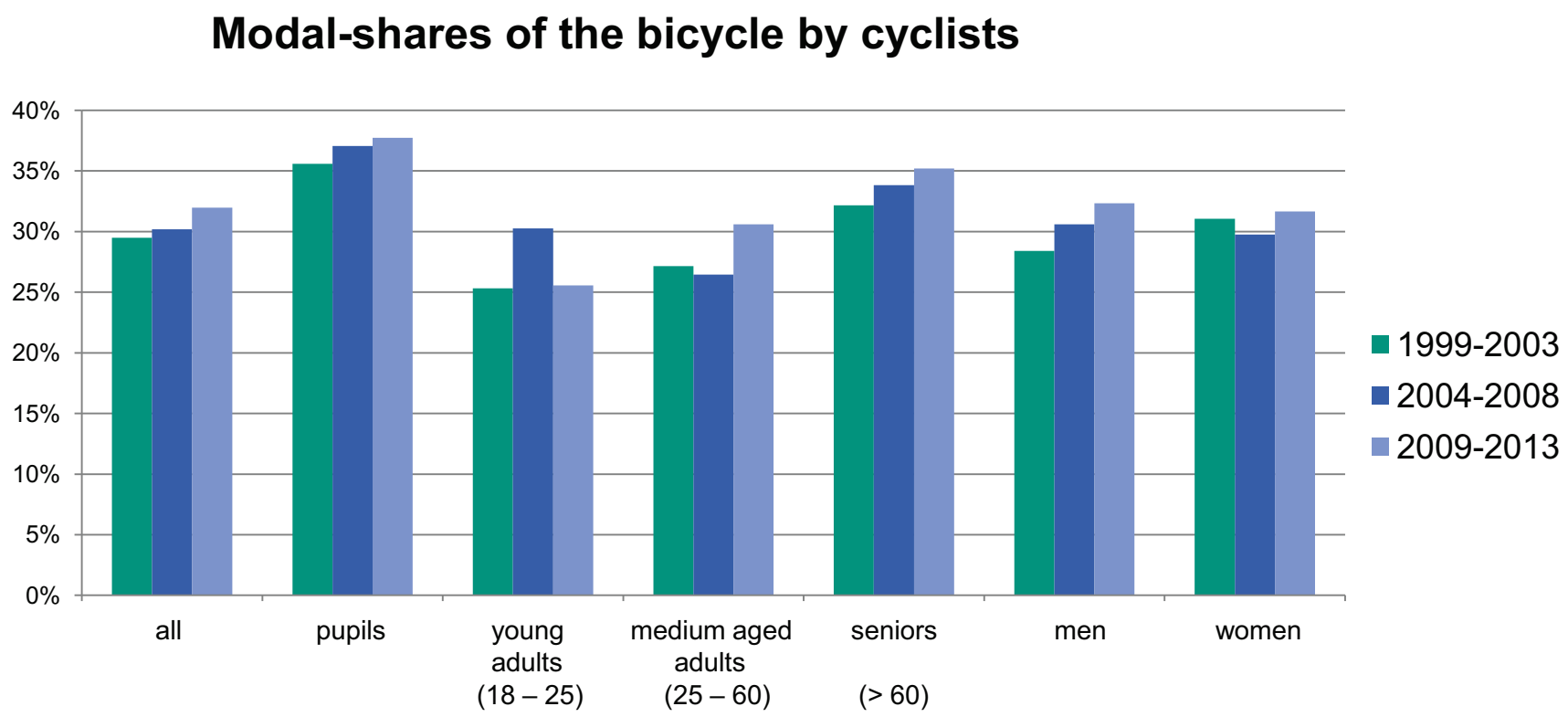
~ 55 % always use only one mode in one week = monomodal!

~ 40 % are multimodal, i.e. use and combine different modes within the period of one week!

- Combining modes is a common practice: Multimodality ⇔ for optimisation of daily behaviour ?
- **The bicycle is likely to be used in combination (and competition!) with other modes…**
- Bicycle and Public Transport seem to be specialists, the car is rather a „universal“ mode

➔ Roughly 1/3 of the German population knows in principle about the avantages of cycling!

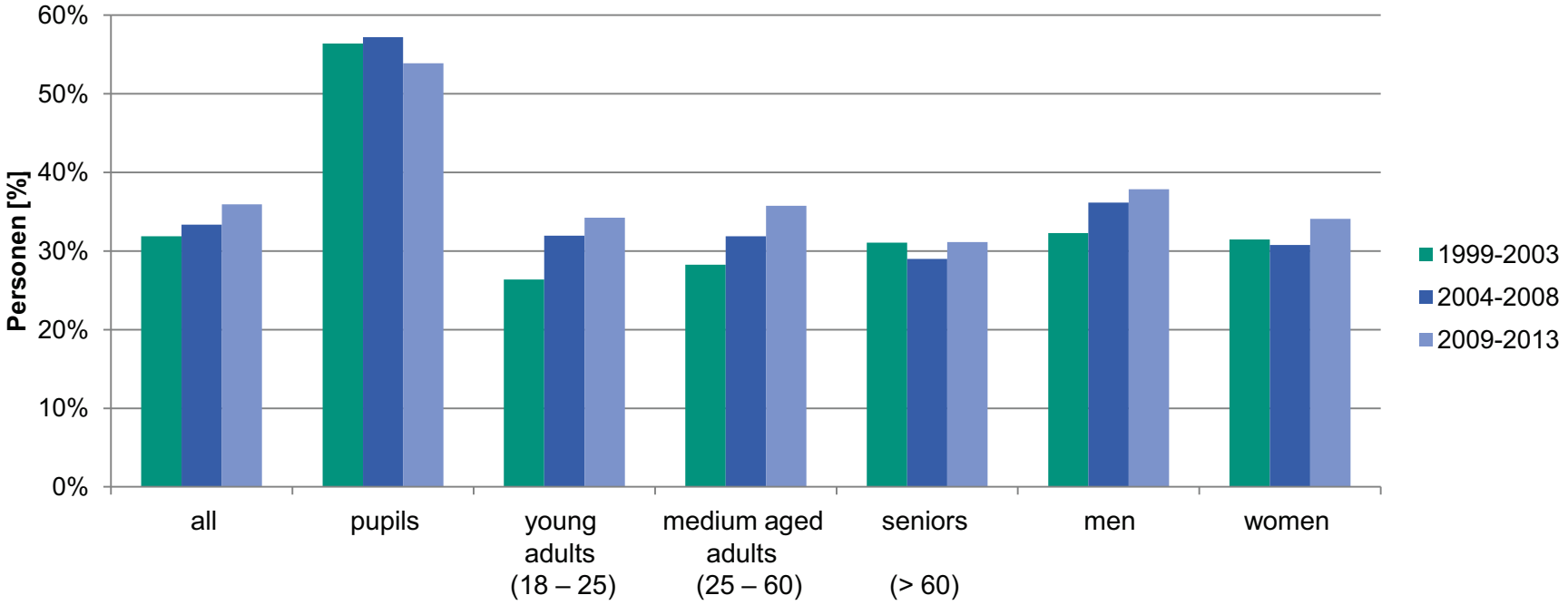
Intensity of cycle use



- Also for cyclists the bicycle is only a mode amongst others though
  Increase of cycle use by those who cycle anyway
  ➔ Intensification of cycle use by trained cyclists

Share of cyclists within the population?

- Cycle users by age professional status



- We observe increases in the share of cycle users in nearly all groups with some exceptions…
  - Declines why?
  - Increases why?

Can we distinguish “types” of cyclists?

Assignment of individuals to clusters by cycling intensities

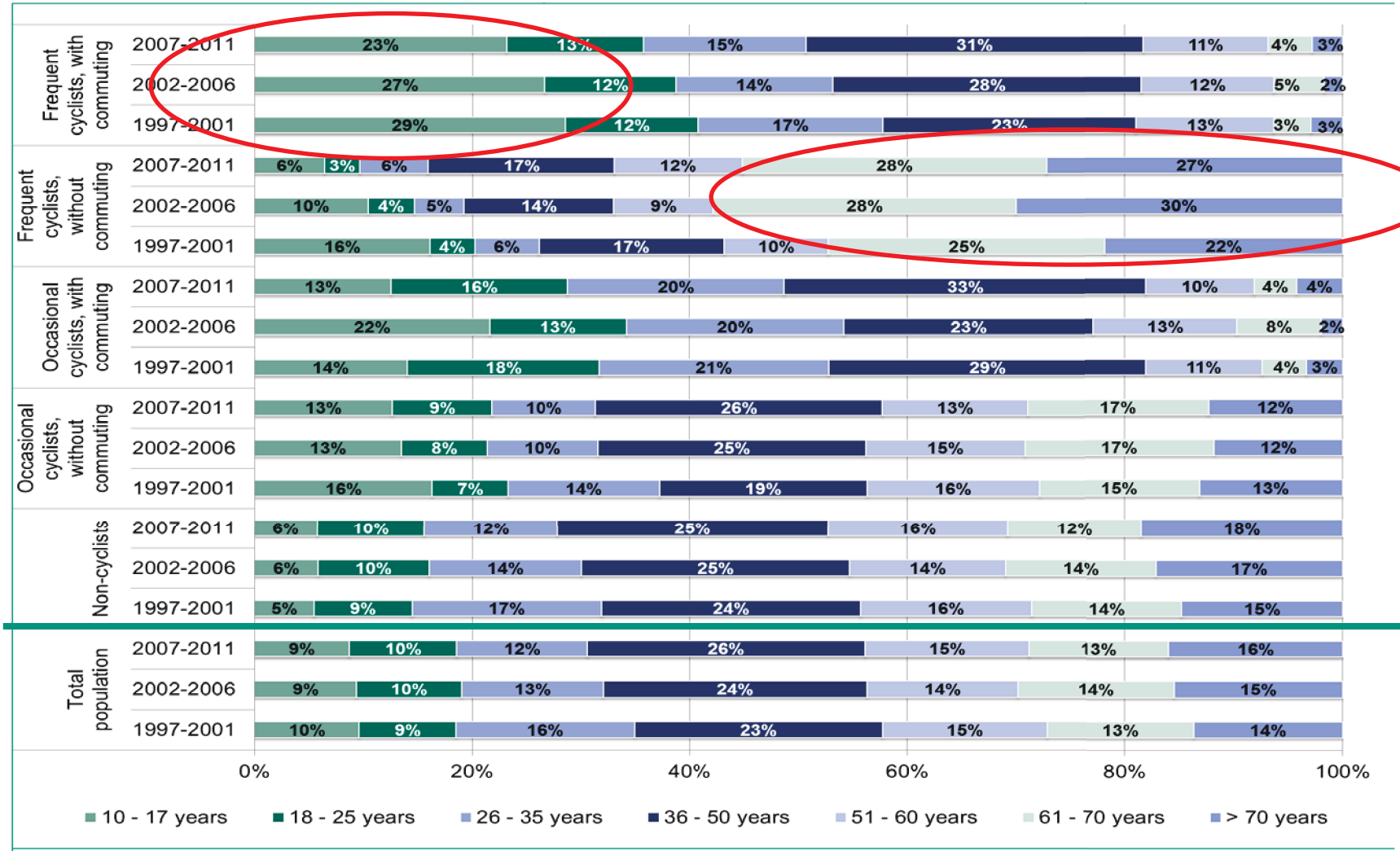
- A cyclist ⇔ at least one trip with by bicycle per week!
  - Pre-clustering of persons based on the number of days with at least one bi-cycle trip and whether commuting trips are made by bicycle during the week.

	1997-2001	2002-2006	2007-2011
Non-cyclists	69%	67%	65%
Occasional cyclists (1-3 days), without commuting	17%	17%	17%
Occasional cyclists (1-3 days), with commuting	3%	3%	4%
Frequent cyclists (4-7 days), without commuting	4%	6%	5%
Frequent cyclists (4-7 days), with commuting	7%	7%	9%

Share of bicycle users in each cluster in three time slices

- The overall number of individuals who can be regarded as “cyclist” has increased!
- The most relevant increases in the share of frequent cyclists!

Dynamics in the Socio-demographic Structure of Bicycle Use Clusters



Age class distributions of bicycle clusters

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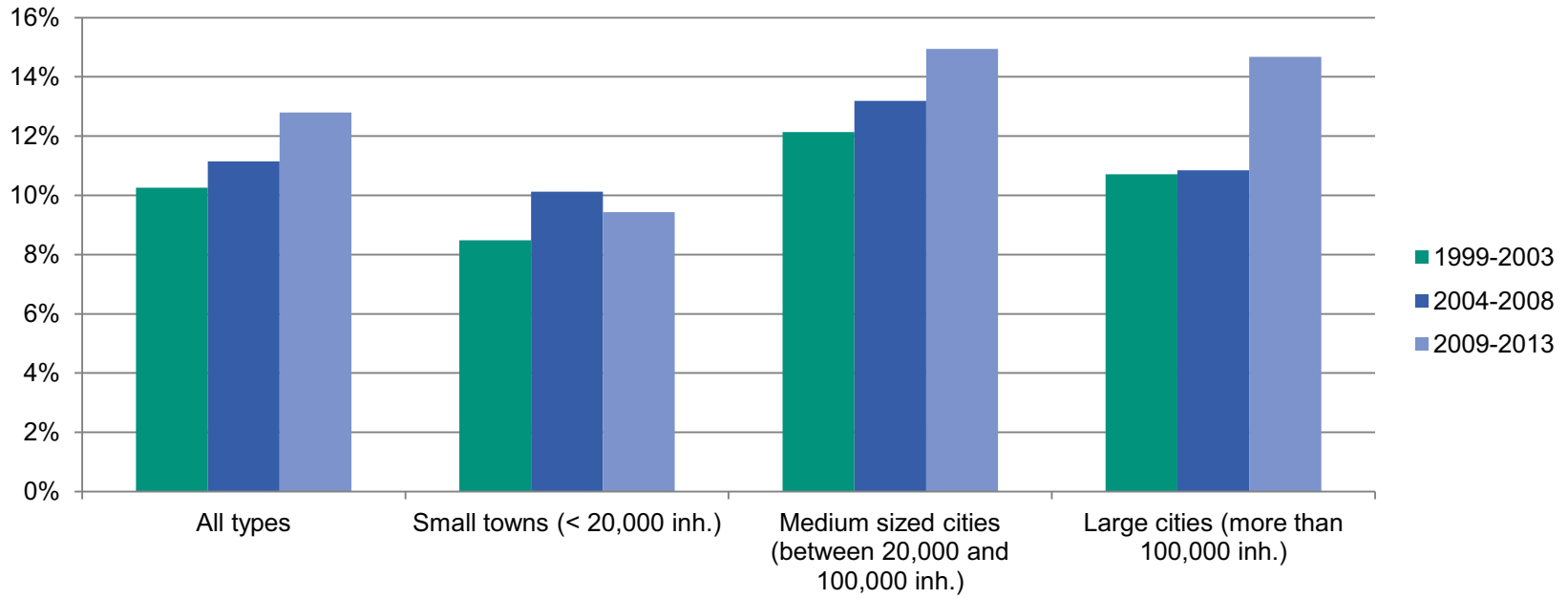
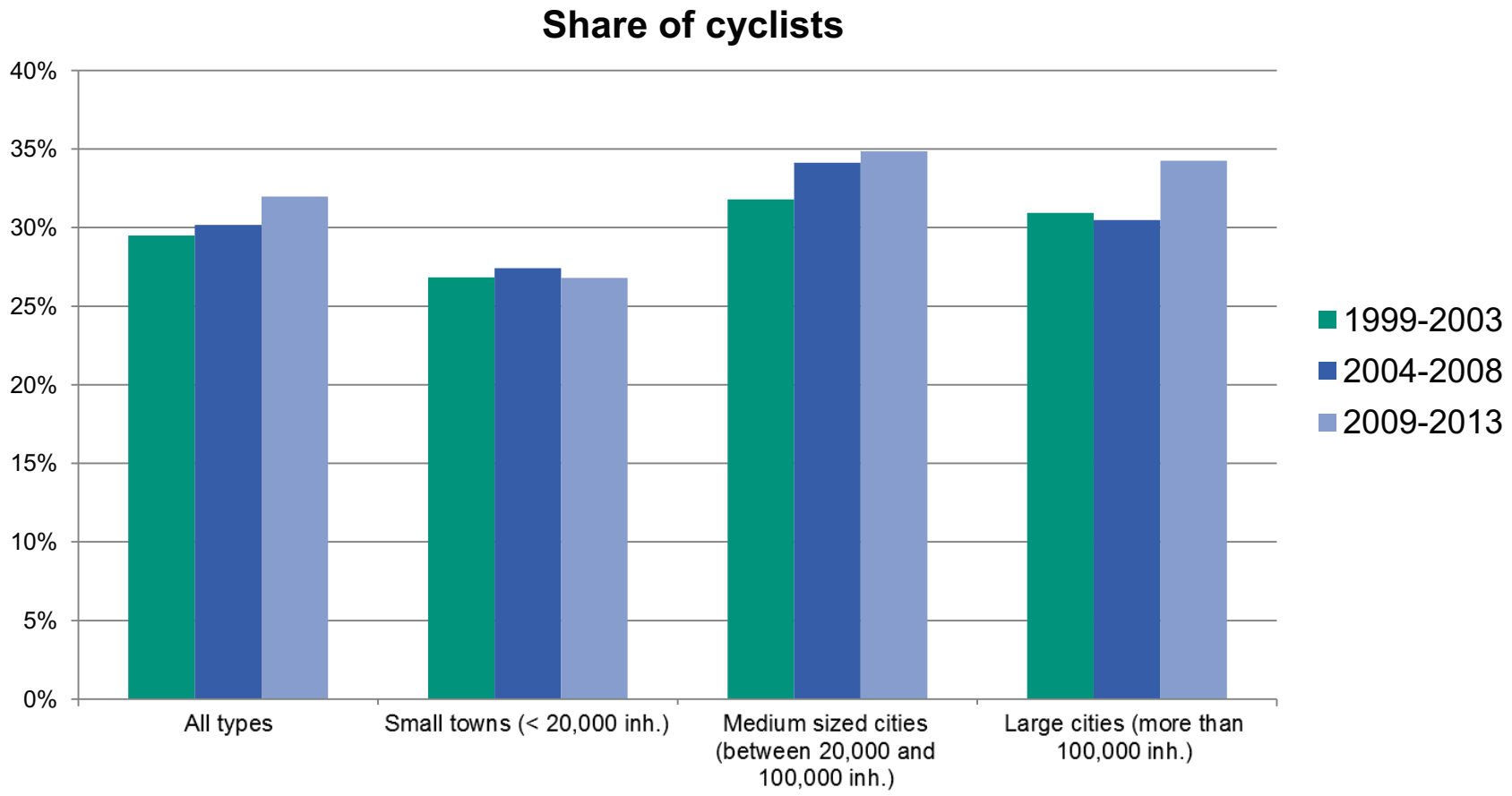
In which spatial contexts the cycle is used?

- Modal Split of cycling by spatial types



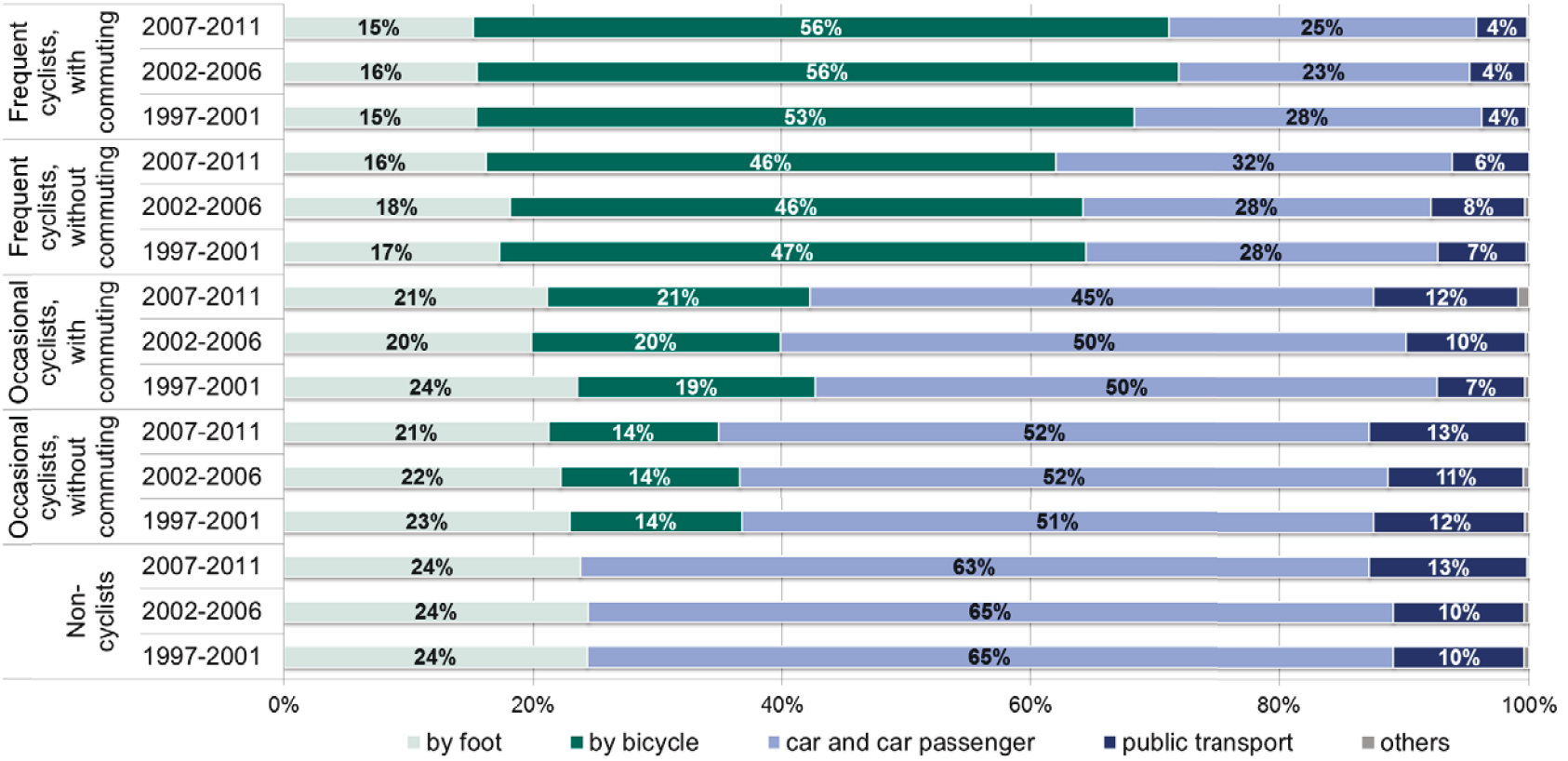
- The use of cyling has increased in all spatial types, but most in large cities
- Struktural influences and policies for different levels but also increases

Cycling by spatial types



- The increases in demand in large towns are comprehensible…
- Are potentials yet exploited in small towns? Why we don‘t observe increases in demand as well?

Dynamics in the Intensity of Bicycle Usage



Modal split of bicycle clusters in three time slices

- Increase is caused mainly by an intensification of cycle-use of intensive and less by a rather stable behaviour of occasional cyclists

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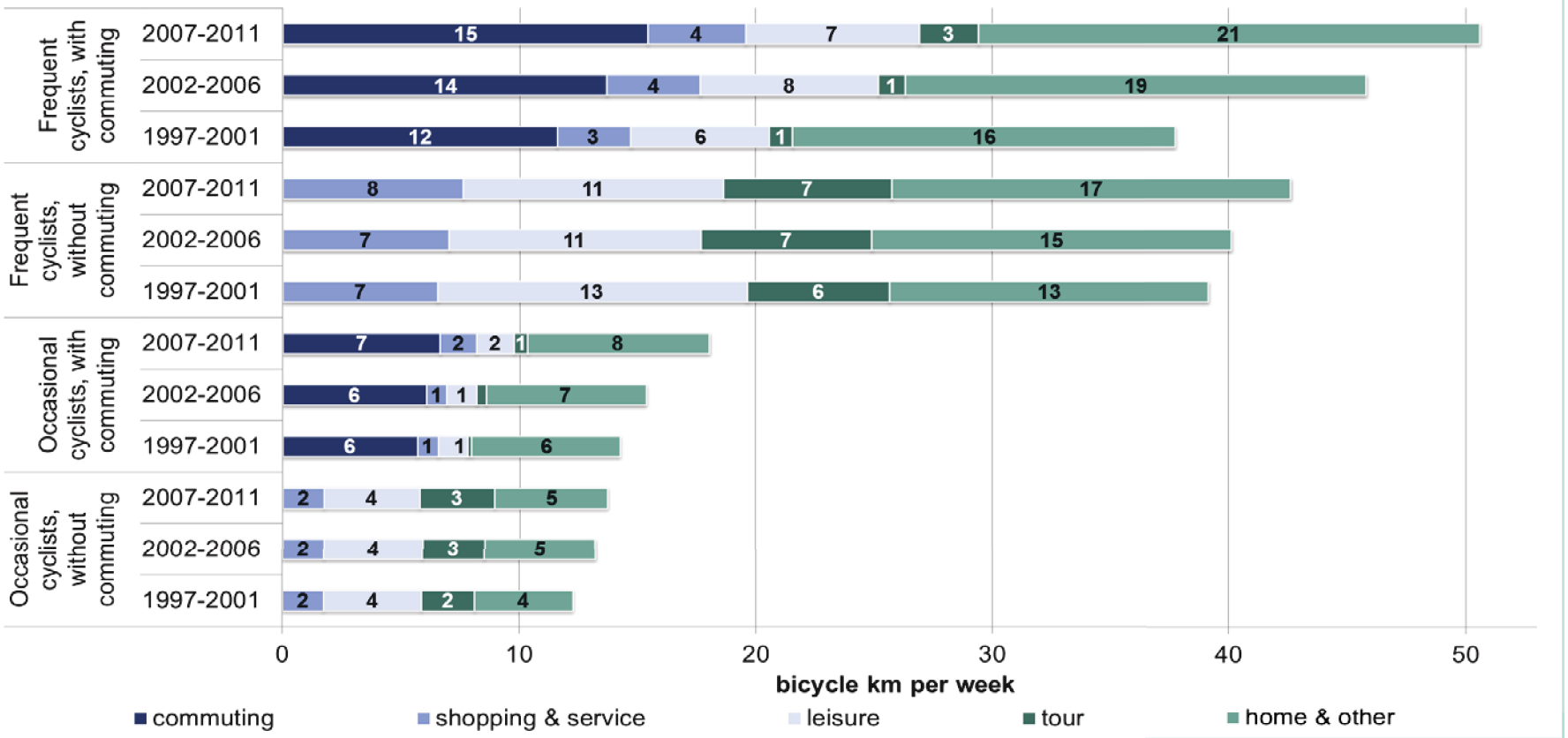
Cycling intensities



Bicycle trip purposes of bicycle clusters in three time slices

- Increase in demand mainly by the intenisfcation of the group of **frequent cyclists with commuting.**

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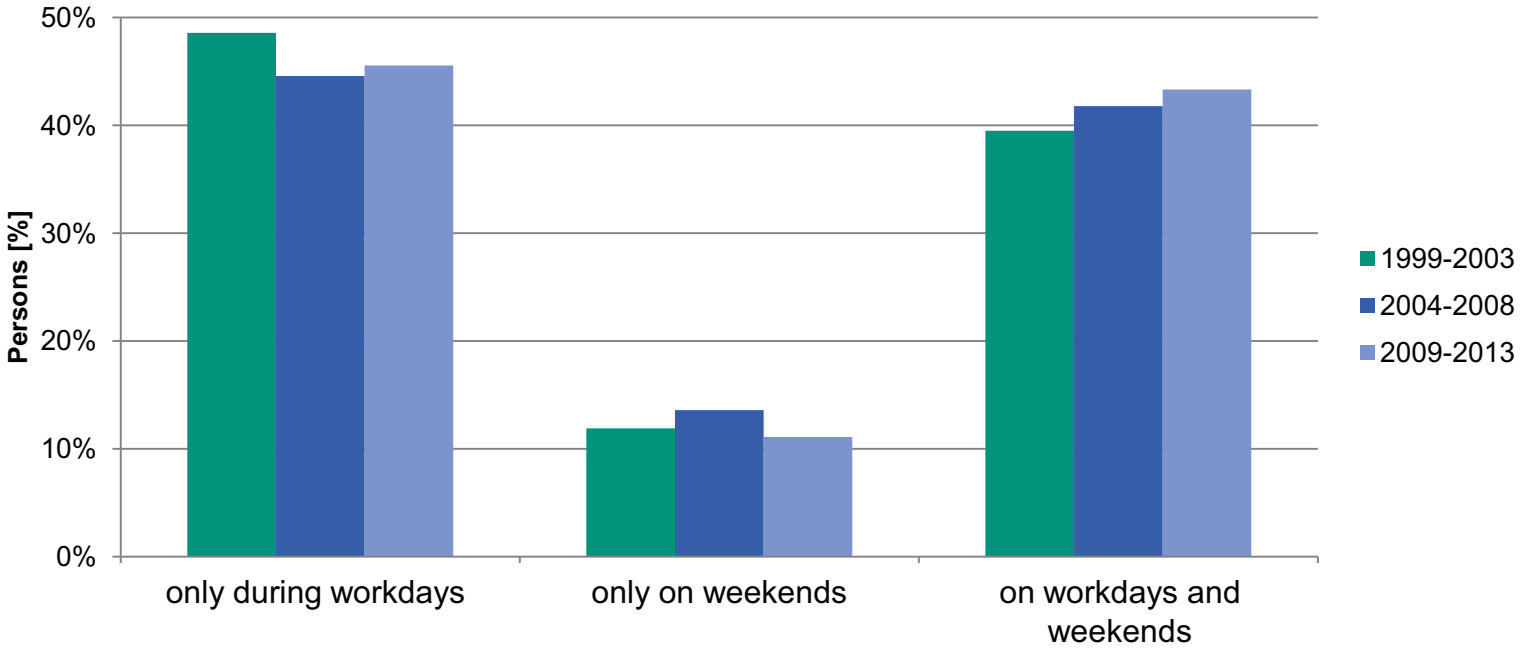
The bicycle – „Is it more a leisure item or a mode?

- Classification of cyclists by use periods in the week



- Increases in the number of individuals who use the bicycle both on weekdays and the weekend ➔ people „learn“ the advantages of using a bicycle …
- The bicycle becomes for more and more cyclist a universal mode
- However: Can the leisure use potentially be regarded as an gateway for everyday‘s use? How occasional cyclists become regular cyclists?

How cyclists become cyclists: Analyses of the survey for the repetition of same individuals

Transitions between clusters of bicycle use between two years within the last decade

Matrix of transitions between clusters of cycle use		year n +1			
		Non cyclists	Occasional cyclists	Frequent cyclists	Break down in year n
year n	Non cyclists	58,5%	7,5%	1,4%	67,4%
	Occasional cyclists	7,1%	9,6%	3,8%	20,5%
	Frequent cyclists	1,3%	3,1%	7,8%	12,2%
Break down in year n +1		66,8%	20,2%	13,0%	100,0%

Source: Streit, Weiß, Chlond, Vortisch: More Cycling or more cyclists, TRB 2014

Eases the understanding in which way behavioral changes towards e.g. cycling takes place!

Conclusions - Resume

- Cycling friendly policies, cycling infrastructure improvements and motivation campaigns show first effects in Germany.
- Cyclists exists everywhere and in all socio-economic groups: Cycling is therfore more an issue of a general attitude (and this is closely linked to image)

- We see more cycling and more cyclists: The cycling intensity has increased as well: cyclists use their bicycle more frequently and/or for larger distances.
- Structural processes (e.g. higher education levels) and spatial trends (e.g. higher urban population shares) push the cycling trend
- The share of “potential bicycle users” is higher when not only one representative week in one year but in two years is analyzed

- We see a lot of dynamics towards higher demand levels, however dynamics can be positevl infleuendced but a “fast “
- The longitiudinal approch of the inse

Conclusions II

- It can be assumed that cycling is undertaken by cyclists in most cases deliberately, cyclists are aware of the advantages
- Cycling has to be regarded as a specialized mode. Cyclists are in 80 % multimodals and thus optional and elective: They can choose between many modes (and frequently also the car) .
- The measured growth of bicycle use is obviously more the effect of cyclists who use the bicycle more intensively and less a higher share of cyclists
- The cycling boom is mainly an intesification of cycle use by those who are trained and aware of the advantages of the bicycle
  - Conclusions for politics and planning
    - Most Germans have learned to cycle in any period of their life; the majority of young persons do cycle during their adolescence or university years
    - The low users form a form of potential, which can be attracted by appropriate cycling conditions ➔ The intensification of cycling by the heavy users underlines this effect
    - Acceptance in thep opulation is growing: cycling is accepetd more and more by a commuting mode. Emploxyers canm help to redress and giving appropriate parking facilities for cycles (Which is not the case everywhere uo to now)

Thank you for your attention!

Institut für Verkehrswesen
Kaiserstraße 12,
D-76131 Karlsruhe

Bastian Chlond
+49 (721) 608 - 42257
Bastian.chlond@kit.edu