International Scale

- Developed countries vs. emerging markets
  - Stagnation of travel demand and car ownership
  - Increasing travel demand and growing motorization

![Graph showing number of new vehicles registered for various countries from 2000 to 2011.](image)

Source: Korea Automobile Manufacturers Association: Motor Vehicles Worldwide, 2012
Developed Countries

Travel demand on a stable level – minor increases only

Source: T. Kuhnimhof - Are Young Men Responsible for Peak Car? (Peak Travel Round Table, IFSTTAR, Paris, 19.6.2012)
Understanding Composition of the Population

- Age structure has changed massively
- Decline in the share of young persons
- Increasing share of urban population

→ Mobility affected?

Source: B. Chlond – Who are the ‘Drivers’ of Peak Car?
Young Adults in Germany

- Less young people, but a different opportunities …
- … More students
- … Longer period of education
- … Experiences abroad
- … Later start of career
- … Later start of family
- … More couples without children

→ Independent with flexible activities and mobility

Source: media1.schwarzaelder-bote.de
Young Adults – Changing Attitudes

Pragmatic mode choice instead of the car as status symbol

<table>
<thead>
<tr>
<th>I cannot imagine life without …</th>
<th>14-29 years</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone</td>
<td>56.09%</td>
<td>97%</td>
</tr>
<tr>
<td>Internet</td>
<td>54.53%</td>
<td>84%</td>
</tr>
<tr>
<td>Car</td>
<td>64%</td>
<td>69.03%</td>
</tr>
<tr>
<td>Partner in life</td>
<td>43%</td>
<td>73.94%</td>
</tr>
</tbody>
</table>

For young adults smartphone and internet are more important than the car and the partner

Source: BITKOM, 2010

Source: www.digitalinformationworld.com

Source: www.welt.de
Research on Mobility Behaviour in Germany

- German Mobility Panel (MOP) since 1994
- Annual survey on travel demand in German households
- Trip diary for a whole week and for three years
- Analysis of mobility key values and the variety of personal travel behaviour
- Identification of trends in mode choice

Source: German Mobility Panel
German Surveys on Travel Demand

- Time series of kilometers per person and day in Germany since 1976
- Stagnation in travel demand

![Graph showing time series of kilometers per person and day in Germany since 1976. The graph includes data points labeled KONTIV 1976, BMV 1992, MOP annually since 1994, and MID 2002, MID 2008. The graph indicates stagnation in travel demand.]
Mobility Key Values

■ Each person …
  ■ … 3.4 trips per day
  ■ … 41 kilometers per day
  ■ … 82 mobile minutes per day

■ Modal Split
  ■ Increasing shares for public transport and bicycle
  ■ Decreases for the car
  ■ Development differs for different person groups, e.g. by age

Source: German Mobility Panel 2012/2013
Car Availability

- Availability in the household as indicator for car use
- Share of persons with personal car availability is
  - Declining for young people
  - Rising for the elderly
- Young people tend to buy less new cars
  - Age of new car buyers increased to 52.2 years (2013)
  - Proportion of new car buyers younger than 45 years dropped to 27% in 2013 (1995: 48%)
Public Transport Use

- Different tendencies depending on age
- PT kilometers travelled increased for young adults, while their kilometers travelled by car decreased
Public Transport Today

- Highest levels of passengers transported (2012-2013: +0.8% (Source: Destatis))
- New long distance bus market with high acceptance (liberalization in 2013)
- Public transport companies develop electronic ticketing systems
- Define common standards of e-ticketing in Germany („Interoperability“)
Public Transport – Season Tickets

- Share of people having a season ticket increased
  - In core cities
  - For young adults
  - Semestertickets
- Share of season ticket holders having a car available increased

→ Multiple options for the personal mobility

Source: B. Chlond et al. „Mobility behavior of season ticket holders in Germany“, TRB 2014
Cycling

- Increased share of persons using the bicycle
- Increased use intensities, e.g. distances per bicycle day and weekly distances travelled by bicycle

→ Acceptance as mode

Source: T. Streit et al. „More cycling or mode cyclists – dynamics and potentials of bicycle use in Germany by a cluster based approach“, TRB 2014
Trend: Multimodal Behaviour

- Multimodal: different modes per day / per week
- Flexible way of using and combining modes
- Young adults
- Mode choice varies depending on the specific situation (trip purpose, availability, weather, …)
- Driven by the flexibility of new information and communication technologies (social media, apps, …)

→ Desire for multimodal and intermodal offers including public transport
What drives Multimodality?

- Semestertickets for students
  
  ![Train and Semesterticket](http://www.op-marburg.de)

  **Current split-ticket model**
  
  - **semester pass: 141 Euro**
    - voluntary
    - only available after solidarity fare is paid
    - permits to use entire MVV network 7 days a week, 24 hrs a day
  
  - **solidary fee: 59 Euro**
    - obligatory fare for all students; permits permanent transport as follows:
      - week days: 6 p.m. - 6 a.m.
      - weekends and public holidays: 24 hrs

  ![Semesterticket Muenchen](http://www.semesterticket-muenchen.de)

  *valid for 6 months in the entire MVV network*

- Price for parking spaces
  
  ![Parking Lot](http://www.rundschau-online.de)

- Low-fare airlines
  
  ![Ryanair Plane](http://imgcdn.airliners.de)

- Environmental awareness

  ![Bicycle](http://www.ip-oldenburg.de)

  Multiple options for short and long distances
Public Transport and Inter-/Multimodality

- New public transport offers and cooperations boost multimodal and intermodal behaviour even more!

- Mobility partnership of German Rail and General German Cycling Club

- Cooperations of long distance bus services and carsharing providers

- Partnerships of transport associations and carsharing providers (e-ticket serves as key (e.g. RMV))

Source: ADFC, Deutsche Bahn

Source: Rheinbahn

Source: Car2go

Source: www.carsharing-vergleich.eu

Source: Meinfernbus
Trend: Carsharing

- Boom in Germany
- Among the world leaders in the development of carsharing
- 757,000 customers and 150 providers of carsharing services
- Station based and free-floating (one-way) schemes

Source: http://worldstreets.wordpress.com/2014/03/13/carsharing-in-germany-2014-perspectives/
Carsharing – History and Future

- 25 years of carsharing in Germany
- Karlsruhe: “Carsharing Capital of Germany”
- Carsharing providers increase networking activities with public transport, taxis, bicycle infrastructure
- Private carsharing has started to develop (“next generation carsharing“)
Trend: E-Carsharing – Offers for “Green” Multimodal Mobility

- Some carsharing providers such as DriveNow and car2go have a nationwide offer of electric cars
- 20% of the German stock of electric cars are owned by carsharing providers
Electric Mobility in Germany

National Platform for Electric Mobility –
Drive the “National Development Plan for Electric Mobility”

- 2014: Market Preparation
  Research and Development
- 2017: Market Launch
  Setup Vehicle+Infrastructure
- 2020: „Mass Market“
  Sustainable Business Models
EVREST – Electric Vehicle with Range Extender as a Sustainable Technology

How could electric vehicles match different mobility use patterns?

- 1 day – 96% of all cars drive less than 150km
- 1 week – 82% of all cars drive less than 150km on each day
- 8 weeks – 41% of all cars drive less than 150km on each day
- 1 year – 20% of all cars* drive less than 150km on each day

(*large number of old cars with reduced usage)

Analysis based on MOP data

Source: B. Chlond et al. „A hybrid modeling approach of car uses in Germany based on empirical data with different granularities“, TRB 2014
In the Future?

- Mobility
  - “Use” rather than “own”
  - From universal modes to complementary modes
  - Multimodal instead of monomodal
  - Intermodal instead of monomodal

- Offers
  - Networked mobility
  - Carsharing and carpooling
  - “New” rental offers
  - Intermodal route planning and fare optimization
  - New ideas for mobility

- Increasing complexity and flexibility

Source: Moovel

Source: BMW
Public Transport and Mobility in Germany – Trends and Drivers

Dr. Tatjana Streit
Dr.-Ing. Martin Kagerbauer