

**TECHNICAL
NOTE N° 2**

PEAK-CAR PHENOMENON

**COMPONENTS,
DRIVERS,
PERSPECTIVES**

CREATE PROJECT

**Congestion Reduction in Europe,
Advancing Transport Efficiency**

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THE PEAK-CAR PHENOMENON

The Peak-Car debate emerged from a long history of research on car use and car ownership. Already in the 1950s, research predicted there would be a saturation level of car ownership.

STAGES OF CAR-USE TRANSPORT POLICY EVOLUTION CYCLE

STAGE 1

INCREASING CAR USE

Car orientated transport policies, road building, car parking, decentralisation

STAGE 2

SLOWING DOWN GROWTH RATES AND PEAK OF CAR USE

Respond to transport problems, investments in public transport, sustainable mobility city

STAGE 3

REDUCTIONS IN CAR USE

City of places, public realm, street activities, traffic restraint

STAGE 4

CAR USE IN THE FUTURE

Reduction, saturation, or re-increase?
Integrated technology city?

Retrospective Developments

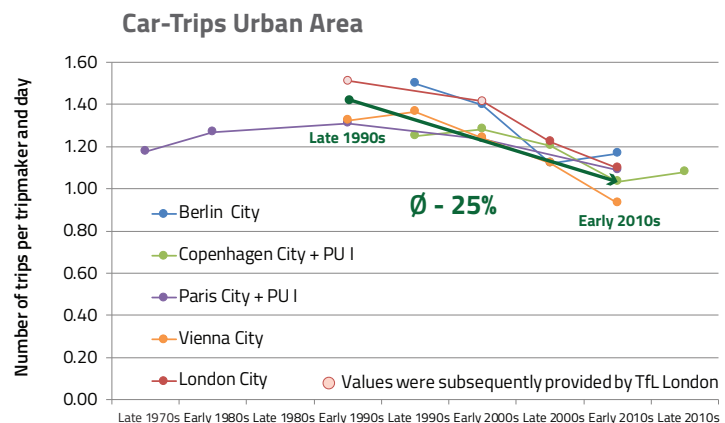
By the end of the first decade of the 21st century and often combined with the economic recession, slower rates of growth and levelling off or even decline of car use were observed in many countries. The phrase "Peak Car" is now an established term for describing this phenomenon.

Indicators

Vehicle kilometres are used mainly on the national level. Trip rates, also in combination with trip distances, are frequently applied for measuring car use in urban areas. Modal-split values are also used but should be interpreted with caution.

Dynamics and Complexities

Car use patterns are highly dynamic across cities and countries. The decline in car use that has been observed is currently developing towards more stable or even again increasing car use.



Clever & Smart Lessons learnt

Peak-Car phenomena result from city-specific mixtures of macro trends, changing framework conditions, public policies and transport planning, changes in population composition, travel behaviours and mind-sets.

Declining car use, and the benefits arising from it, must not be taken for granted. Ongoing efforts are necessary for continuing or stabilising these developments.

Continuous monitoring of travel behaviour and framework conditions are paramount.

What does Peak Car in travel behaviour actually mean?

- No commonly accepted definition of Peak Car exists.
- The general concept is that car use increases, peaks and declines afterwards

How can Peak Car be measured?

- Modal Split: Decreasing modal shares of car trips
- Trip Rates: Reduction of car trips per person per time interval
- Mileage: Decline of vehicle kilometres per time interval

Where is Peak Car observed?

- In the developed, highly industrialised economic nations
- Above all in Europe, but also in North America, Japan, and Australia
- Especially in large cities and urban areas

PEAK CAR: TRENDS AND COMPONENTS

Results from the five Stage 3 cities in CREATE: Car-Use Pattern, Trip Rates, Person Groups

Overall Trip Rates

- Overall number of trips and tours per tripmaker stabilise or fall.
- Car use highest for **'mandatory'** trip purposes (work, business, education) and **shopping / errands**
- Decline in car-driver trips for mandatory activities
- Developments for purposes shopping / errands and leisure less clear

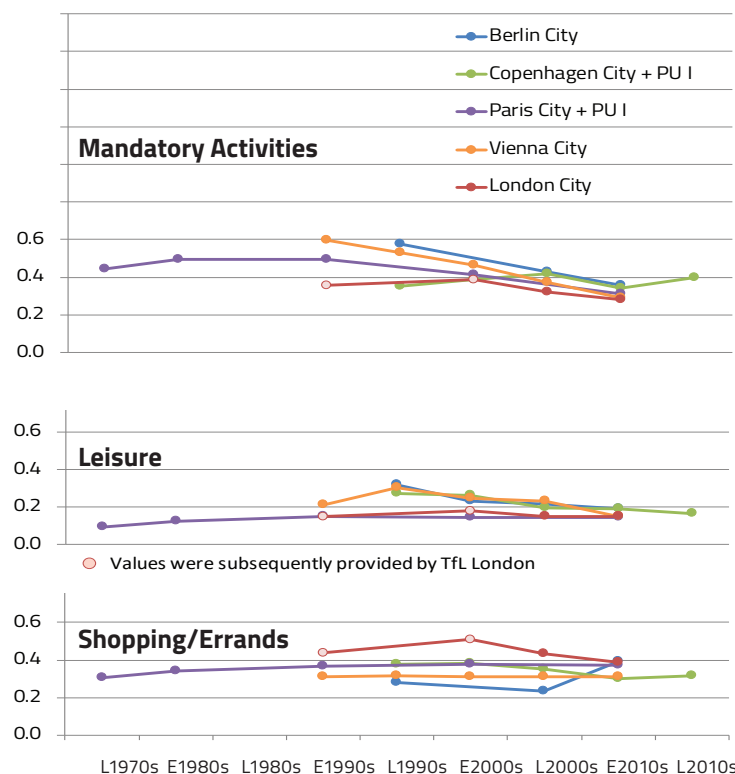
Travel Behaviour of Specific Person Groups

- Number of **car-driver trips** per tripmaker **highest for working people** (biggest person group)
 - Working people main generator of car travel
 - with substantial reductions over the analysed time period
- Working people main generator of Peak-Car effect
- Reductions of car use also for people of person group "Other 18-64 (not working, not retired)" but with high variation
- Substantial **increase for seniors**
 - Seniors (especially women) damp the Peak-Car effect
- Car-use reductions for working people caused by both reductions in the **overall trip numbers** and a **modal shift** to alternative modes

Changes in Car-Use Pattern

- Per capita car use in **urban environments** has peaked: in early 1990s (Paris), late 1990s (Berlin, London, Vienna) and early 2000s (Copenhagen)
- Strong per capita car-use reductions between late 1990s and early 2010s (mean reduction across all urban areas of 25 %)
- Magnitudes and temporal developments** of car use have been **surprisingly similar** in all urban areas but substantial differences exist in the use of alternative modes (Copenhagen mainly bicycle, Vienna mainly public transport, Paris and London with high walking and public transport shares, Berlin with bicycle and public transport)
- First indications of **reduced dynamics** of car-use decline **in recent years**

Car-Driver Trips



PEAK CAR: DRIVERS, OPPORTUNITIES AND CHALLENGES

Results from the five Stage 3 cities in CREATE: Macro Trends, Policies, Perspectives

Interventions and Policies

- **Substantial differences** in densities of population and work places
- **Substantial investments** into public transport infrastructure and services, also into walking and cycling infrastructure
- **Reallocation** of road space
- Changes to the relative **quality and reliability of travel options**
- More attractive **travel alternatives** (e.g. car sharing, Uber, E-Bikes)
- **Increased prices** for public transport (except Vienna) and for car use, increases in costs for car use comparatively higher
- **Intensified parking management** especially in inner-city areas (larger areas, higher parking fees)

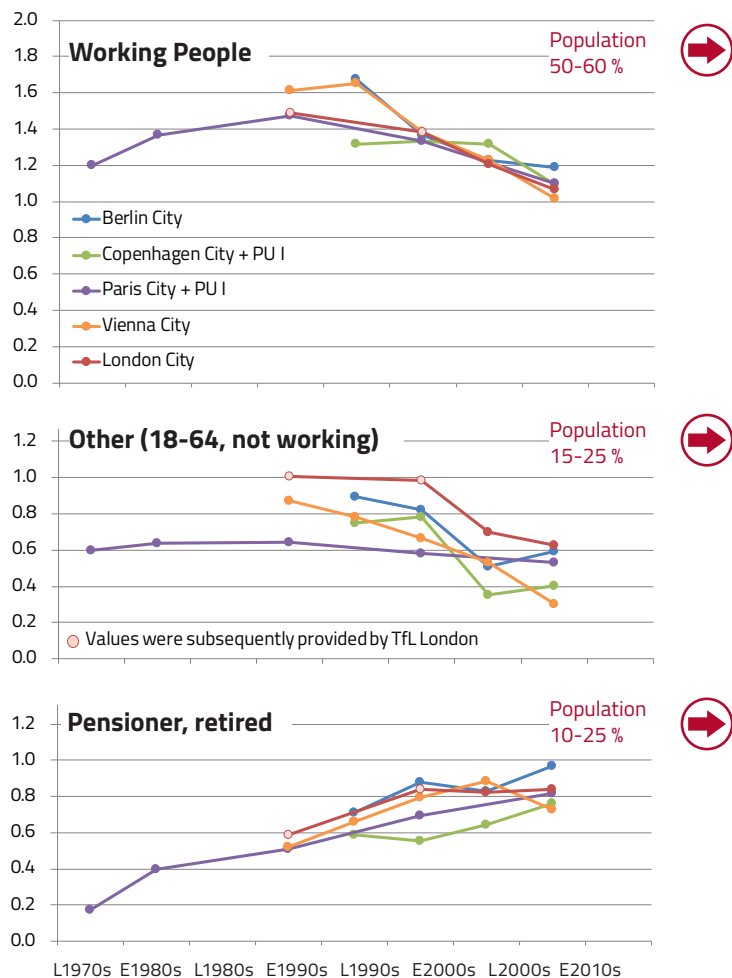
Opportunities for Supporting Car-Use Reduction

- Importance of coordinated **land use and transport planning** confirmed, see e.g. the "5 D": density, destinations, diversity, distance to transit, design
- Public transport in combination with innovative transport services as the **backbone** of sustainable **urban transport systems**, allows for policies reducing car use, allows for reallocation of road space
- Combination of **push and pull measures** paramount
- Specific policies needed for specific person groups
- **Young adults** and children of special relevance, they carry their behaviour onto later life stages
- Relevance of **commuting into/out of the cities** increased, intensified inter-municipal collaboration necessary

Macro Trends

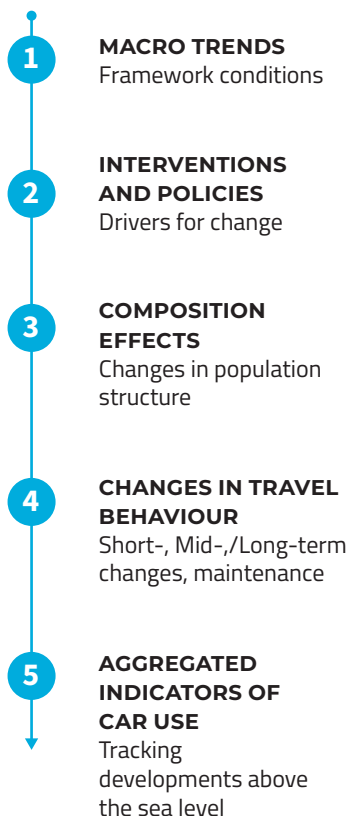
- **Population** and number of work places increasing
- More **temporary and part-time contracts** especially for younger people
- Increasing **GDP and education levels**, fuel prices peaked around 2012
- **Economic crisis** around 2008
- **Driving license** ownership and availability of public transport season passes increasing
- Developments of **car ownership** mixed at different absolute levels
- **Working people** are with around 50 % the largest population group

Car-Driver Trips



PEAK CAR: LESSONS LEARNT, FUTURE PERSPECTIVES

Keep on track – baseline for understanding transport developments



Lessons learnt: similarities and differences between cities

Working Persons as Main Generators of Car Travel and Peak-Car Effect

New patterns of work and mode choice are the main driver for Peak Car. Working persons dominate car travel and show the most distinct Peak-Car effect.

Social and Cultural Changes – Cohort-Specific Conditions

New activity patterns (work, shopping, entertainment), higher education and changed mind-sets influence travel behaviour. A main reason for changing travel behaviour in young generations is delayed life cycle stages.

Density Matters – High Densities Open Track for Active Mobility

High densities and mixed land use support short travel distances and modal shifts towards active modes.

Human Beings as Creatures of Habit – The Necessity of Push & Pull

Voluntary changes in travel behaviour are difficult to achieve. 'Push' measures (e.g. company car taxation, taxes on car purchase, car use and parking restraints) are effective but acceptance is low. Complementary 'pull' measures promote alternative transport modes and improve the acceptance of the whole packages.

Variety of Options, Digitalisation, and Decision Making

Information and Communication Technologies (ICT) support multi-modal travel behaviour and the usage of innovative transport services.

Opposing Forces: Population Composition and Economic Factors

Sociodemographic (gender, age) and socioeconomic variables (e.g. income) matter. Young generations tend to be less wealthy, seniors are wealthier and more active today.

Traffic and Congestion is More Than the Travel Behaviour of Residents

Regional commuting and freight affect the urban traffic loads. Residents are only one - but indeed important group - of travellers in urban areas.

Cycling versus Public Transport – Competitors or Mutual Supporters?

Substantial differences in the use of alternative modes with the "cycling city" Copenhagen, the "public transport city" Vienna, the "walking city" Paris but also "mixed cities" Berlin and London.

FUTURE PERSPECTIVES

- Future development of car use is uncertain and strongly dependent on policies
- "Low hanging fruits" already reaped?
- Higher automation of cars might induce car use, 'rebound effects' to be considered
- New technological developments such as ICT and digitalisation open various opportunities for increasing efficiency, safety and comfort of transport systems
- 'Habits' are one key driver of travel patterns, young persons are therefore of special relevance for transport policy making
- Cross-sectoral collaboration is a promising approach for fostering sustainable transport systems
- Macro factors such as economic developments as important determinant of car use can only partly be influenced by transport policies but need to be considered for policy making

This note reflects only the authors' view and the agency is not responsible for any use that may be made of the information it contains.

THIS SUMMARY IS BASED ON:

WITTWER & GERIKE (2018).
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