A New Generation: Travel Trends among Young Germans and Britons

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ABSTRACT

As other industrialized countries Germany and Great Britain experienced increasing motorization over the last five decades. However, results from national travel surveys, vehicle registration statistics, and driver licensing databases suggest that young Germans and Britons today are less auto-oriented than their parent’s generation. The paper sheds light on this trend with focus on the age group 20 to 29. The analysis finds decreasing car availability, a significant reduction of automobile mileage, increases in the use of other modes, and growing multimodal behavior among the young, with men reducing their automobile travel more than women. Even though the development is more pronounced in Germany, the similarity of the changes in young people’s mobility patterns in the two countries is striking. This suggests that the observed changes in travel behavior are not an idiosyncratic development taking place in one country. Instead it may indicate a structural change in travel behavior which may be found in other Western countries as well. The paper substantiates findings of changes in trends of mobility patterns among young adults and identifies important storylines of this development based on a harmonized international comparison. Finally, the paper intends to stimulate a discussion and further research about reasons for these changes in mobility trends.
INTRODUCTION

Like other industrialized societies Germany and Great Britain have experienced increasing automobile ownership and use over the last decades. Starting from a lower level in the post WWII years, growth rates of motorization were higher in Europe than in the USA. Between 1970 and 2005, the number of cars per 1,000 persons increased in Germany from 230 to 550 and from 210 to 500 in Great Britain (1,2).

For decades, young Germans and Britons have dreamed of getting a driver’s license and owning their first car as soon as they reached driving age. Each new generation was more motorized and car oriented than the preceding generation. Most youth experienced the automobile as the “normal mode” of transport since they were increasingly chauffeured around by their parents. The generation of Germans that grew up in the 70s and 80s was even named “Generation Golf” since it was perceived as the most car oriented generation yet.

However, after decades of growth in travel demand and automobile orientation, per capita growth of mobility has stagnated in both countries since the mid 1990s (3, 4). This overall stagnation is composed of heterogeneous trends for different age groups. Per capita travel demand - specifically automobile travel - of elderly travelers is still on the rise. This largely conforms to expectation as the last representatives of generations who had lived a life without car are being replaced by more auto-oriented generations (5).

At the other side of the age spectrum, the trend of travel demand for young travelers in Germany and in Great Britain shows a different picture. The automobile orientation of young travelers is not as pronounced as it used to be in the past. The purpose of the paper is to substantiate these indications of trend changes and to identify important facets of this development based on a harmonized international comparison. Therefore, the paper commences with presenting the data sources and a brief presentation of the approach for harmonized comparison.

Subsequently, the paper illustrates the changes in travel trends and specifically discusses different storylines which form this new trend: decreasing car availability, shifts of mode use for everyday and long distance travel, increasing multimodal travel behavior, and the development of gender differences with respect to automobile use. The paper concludes with a brief discussion of possible reasons for these developments. The purpose of this discussion is not the quantification of the explanatory contribution of the various influential factors. Instead the paper intends to stimulate discussion and further research into the observed trends.
DATA AND METHODOLOGY

Most results in this paper are based on microdata analysis of National Travel Surveys in Germany and Great Britain from the 1970s to today. These data sources and our approach for a harmonized comparison are briefly presented in the following.

German Kontiv / MiD Survey Series

German travel data for the time period prior to 1990 originate from the German Kontiv (“Kontinuierliche Verkehrserhebung”) survey series. It started in 1976 (Kontiv 76) and was renamed in MiD (“Mobilität in Deutschland”) after 2000. The survey consists of a 24 hour trip and activity diary which is representative of the entire year and the country as a whole. Follow-up surveys were conducted in 1982 (Kontiv 82), 1989 (Kontiv 89), 2002 (MiD 2002) and 2007 (MiD 2008). Sample sizes are about 40,000 persons for the Kontiv surveys before 2000 and about 60,000 persons for the MiD surveys after 2000.

Unfortunately, changes in survey design inhibit comparability of results for different Kontiv / MiD surveys (6, 7). Specifically, the Kontiv 89 produced questionable results. It is therefore excluded from the results presented in this paper. The 2002 and 2008 MiD surveys are comparable. However, the 2008 micro data was only publicly released for analysis during the time that the presented study was undertaken. Therefore, only supplementary analysis was carried out using the MiD 2002/2008 data.

German Mobility Panel MOP

Travel data for the time period after 1990 originate from the German Mobility Panel (MOP). The MOP is a multi-day and multi-period travel survey that has been conducted annually every fall since 1994. It comprises a 7-day trip diary and repeated participation of the same respondents in three consecutive years. The sample size of the MOP is about 750 households or 1,800 individuals per year.

In contrast to the 24 hour survey design of Kontiv/MiD, the MOP collects data about one travel week leading to an annual trip database with about 45,000 trips (8). Due to the multiday design the MOP can be used to analyze individual mode usage over one week and identify multimodal travelers (9). Moreover, the MOP has been conducted without changes in methodology since 1994. Hence, the MOP data can be used to generate comparable time series since the mid 1990s (8).

The small sample size of the MOP suffices to make estimates about travel at the national level but it hinders meaningful disaggregate analysis of subgroups of the population. In order to overcome this shortcoming for the presented analyses the MOP data of five consecutive years was pooled. Most MOP-analyses in this paper present results for 1997 (comprising data from 1995-1999), 2002 (2000-2004) and 2007 (2005-2009).
Comparisons of travel data across different surveys are often hampered by differences in survey methods and definitions of published data (13, 14, 15). For example: Kontiv 1982 reports a share of trip makers of 75% compared to a share of trip makers of 92% according to the 1997 MOP. This large difference cannot solely be attributed to behavioral changes but differences in survey methods play a significant role.

Against this background, the study in this paper is based on harmonized analyses of survey micro data. The objective of the analysis was to obtain key mobility figures as harmonized and comparable as possible, not only internationally but also over time. Therefore, differences in definitions had to be overcome and heterogeneous impacts of survey methodology on survey outcome had to be minimized. In order to achieve this, the following steps were important:

1. **Selection of travel indicators least affected by survey methodology**: Survey-methodology impacts on the share of trip makers (15) affect key mobility indicators per person and day. In order to work around this problem results of this study are based on individuals who made at least one trip per day. 

   Short trips are more likely underreported in surveys due to recall error (16). However, omission of short trips leaves reported total daily travel distances largely unaffected. Therefore, most of the presented analyses of travel behavior are based on travel distances and focus on car and public transport travel.

   Hence, relatively rough proxies were selected for the purpose of this study even though a greater degree of detail is often desired in order to understand travel behavior. Even though the selected indicators are not ideal, they are the best comparable data.
2. Definition of least common denominators:

Car availability was defined as coincidence of a person having a driver’s license and the existence of at least one car in the household. Travel modes were categorized into: foot, bicycle, motorcycle, car driver, car passenger and public transport including long distance rail, coach and air travel. In the GB NTS 1976 there is no distinction between car driver and car passenger. Therefore some of the presented analyses don’t differentiate these two categories of car users.

Traveled distances for both countries were cut off at 500 km in order to take account of the fact that the GB NTS includes only journeys within Great Britain. If a trip was longer than this distance it was counted only as 500 km.

A focus was set on the age group 20 to 29. This is because for data privacy reasons the age is only available in age groups in the GB NTS. Under this limitation the common age group definition 20 to 29 proved to show the most significant changes in the travel behavior trends.

TRENDS AMONG YOUNG TRAVELERS

Looking at the entire population in Germany and Great Britain the average distance traveled per mobile person per day rose from around 30 km in the 1970s to over 40 km in the 1990s. This was mainly related to an increase in the number of trips and distance traveled by automobile. Figures 1 and 2 illustrate how per capita travel demand by car increased significantly for all age groups in both countries during this time period. In Germany, there was an additional increase in the mileage traveled by public transport which cannot be observed in Great Britain to a similar extend.

In addition, demographic shifts partially explain the overall growth in per capita travel demand: Between 1975 and 1995 the baby boom generation reached driving age, started their professional careers, had increasing incomes, and lead increasingly active lifestyles—thus contributing to an increase in overall travel demand, but particularly by automobile (17).

Since the mid 1990s overall per capita travel stagnated in both countries at about 40 km per day (3). However, aggregate measures hide heterogeneous trends for different age groups and modes of travel. Automobile travel more or less stagnated in both countries for the population between 30 and 60 and increased slightly for individuals older than 60. This suggests that today’s elderly maintain their more auto-oriented mobility patterns into old age and lead more active lifestyles than prior elderly generations.

In sharp contrast, for travelers between 20 and 29 automobile travel demand has declined significantly in Germany as well as in Great Britain since the mid 1990s. In Germany, 2007 levels of car travel for this age group were almost at the level of 1976 again. On the other hand, distance traveled by public transport has almost doubled for this age group in both countries. Today, the mode share of public transport among trips by travelers between 20 and 29 in both countries is about 18%.

The upper part of Figure 3 depicts the trend of car travel by age in Germany in the past decades distinguishing different generations by year of birth: At age ten, the generation which
was born around 1960 traveled less than ten kilometers by car per day. They increased their car
travel with age until reaching about 40 km in their late 20s. Since then there has not been much
change in car travel for this cohort.

The generations born 10 and 20 years later display a slightly higher level of car travel in
younger years and steeper increases than the generation born in the 1960s. The 1970 and 1980
generations reached 40 car km per trip maker and day in their early 20s and also sustained this
level ever since.

The generation born around 1990 can so far not be observed for more than 20 years.
However, there is indication that this younger generation increases their car travel not as dynam-ically as the two preceding ones: Having started at the same level as the generations before, the
1990 generation lags behind by more than 5 km at the age of 19 compared to their counterparts’
car travel ten years before.

There are different storylines which underlie this overall change in travel behavior by
young Germans and Britons. These trends will be discussed in the following. Not all of them
occur in both countries to the same extent. In addition, not all of the discussed trends are phe-
nomena of the last decade only. However, during the last decade changes in key mobility indica-
tors became evident.

Decreasing Car Availability

There are two prerequisites for driving: having a driver’s license and access to a car. With
respect to the first, the share of licensed drivers in the age group 21 to 29 in Britain has decreased
from 75% in 1993 to 64% in 2008. This decline was greater for men (from 80% to 67%) than for
women (from 67% to 61%)(18, 19). For Germany, official statistics for license holding by young
people exist only since 2006 (20). Since then, the share of women between 18 and 24 with driv-
er’s license has stagnated at 69% while that for men in this age group has decreased from 69% to
66%.

Vehicle registration statistics have been indicating a decrease in car ownership by young
men in Germany for a long time (Figure 4). Young women who were still catching up regarding
motorization in the 1980s and 1990s have joined in this decrease after the year 2000 (21). Never-
theless, these vehicle registration statistics only allow for limited insight into the car availability
of young adults since automobiles are often registered in the parent’s name to avoid high insur-
ance rates. Also a study by the German ministry of education showing that in 2009 only 34% of
students had expenses for a car compared to 54% in 1991 might be misleading if parents finance
auto related expenditures (22).

However, analyses of the NTS surveys in Germany and Great Britain strongly confirm
the hypothesis that car availability is indeed decreasing for young age groups: in both countries,
NTS surveys indicate a significant decline of the share of persons with car access in the age
group 20 to 29 (Figure 5). While in Germany motorization levels of this age group were higher
than in Britain the decline during the recent years was also much stronger.
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Again, Figure 3 decomposes this trend for different generations in Germany: when reaching the age of driving (18 in Germany), the 1960 generation could not easily use their parent’s car - if they had one. Car ownership levels were lower and many households had no or only one car. Young adults bought their first car during their 20s. This generation reached a level of motorization of 90% at the age of 30. In contrast, the 1970 and 1980 generations had a very high level of car availability as soon as they reached the age of driving. Many of them were able to use cars, which were present in their parents’ household. Later, they sustained this high level of motorization.

The 1990 generation appears to be the first one that shows decreasing levels of motorization after the first years of driving. Most likely, drivers in this generation first use their parents’ cars but don’t acquire their own automobile when moving out of the parents’ household. Accordingly, in Germany the group of young travelers which shows the highest decrease of car availability between 1997 (77%) and 2007 (53%) are those who have left their parents’ household but have not yet started their own families.

Decreasing car use and shifts to other modes

Decreasing car availability leads to a decline in the use of the car. Differentiating the modes in more detail indicates that the car driver mode and the car passenger mode have declined to a similar extent. For Germany, the decrease of car use is also confirmed by a finding based on the MiD survey series: In 2002, 88% of travelers aged 18 to 24 stated that they use the car at least once a week (not differentiating between driver and passenger). In six years this figure declined to only 82% measured in 2008.

On the one hand, there have been significant shifts to public transport in Germany and in Great Britain (see Figures 1 and 2). However, despite possible biases due to different recall error selectivity influencing the representation of short trips, there is also strong indication that non-motorized modes have benefited from the recent development:

There is a return to walking for persons aged 20 to 29 in both countries. For Germany, the mode share of walking in this age group was 23% in 1976. It declined to 16% in 1997 and returned to 20% in 2007. Young Britons made 20% of their trips on foot in 1975. In 1999 this figure was down to 16% and in 2005 18%.

In Germany, cycling appears to have continuously grown in this age group since the 1970s. In 1975 the bicycle mode share was barely 4%. In 2007 it was almost 10%. In Great Britain, changes in cycling levels (about 2% of the mode share in this age group) are too small to identify a significant trend.

Motorcycling has not profited from the decrease in car travel: It represented about 2% to 3% of the mode share in both countries in the 1970s and has now almost disappeared.
Increasing multimodality

The decrease in car travel, however, is not only caused by declining car availability. Even car owners make fewer trips by automobile as shown in Figure 5. This indicates that drivers have increasingly taken on using other modes as well. Hence, multimodal behavior increased, i.e. a mode use pattern where travelers use different modes of transport over the course of time (23, 24). This is illustrated in Figure 6 which shows how often persons aged 20 to 29 with access to a car drive and use public transport. In Germany, about 90% of those with car availability drive at least once a week, decreasing slightly since the 1990s. The decline in the share of those who drive everyday was more pronounced: from around 60% in the 1990s to under 50% today. During the same time, the share of occasional public transport users (at least once a week) has increased from 25% to around 40%. The share of frequent public transport users is around 10% and has not changed much. In Great Britain, the development points in the same direction but is not as pronounced as in Germany.

Mode shifts in long distance travel

In addition to the modal shifts discussed so far—which mostly affect every day travel—mode usage for long distance travel has changed significantly as well. To trace behavioral changes in long distance travel in Britain the GB NTS long distance travel record was analyzed. According to this analysis, the number of car journeys over 50 miles per person per year by travelers aged 16 to 29 decreased from 14 in 1996 to 10 in 2005. The number of rail and coach journeys has more or less stagnated. Since the GB NTS does only cover travel within Great Britain, air travel, which has presumably seen a significant increase, is unfortunately not adequately represented in this data. It seems likely that an increasing share of long distance travel destinations is outside Great Britain which leads to demand shifts from the car to air travel.

For Germany a tourism survey (25) covering holiday journeys with multiple overnight stays was used to establish the development in long distance travel demand. A similar development as in Britain can be seen in Germany: While in 1997 16% of tourism destinations were outside Europe this figures has increased to 20% in 2007 indicating a significant shift towards longer journeys. Accordingly the mode share of the car for this type of journey has decreased from 50% to 47% during the same time. Air travel is the main beneficiary of this development with an increase from 36% to 45%.

The decision to invest in a car is presumably often influenced by the perspective of using it for long distance travel. Against this background, the decreasing importance of the car as a mode for long distance travel most likely has repercussions on car ownership and consequently car use in daily travel.
Men are losing their advantage over women

Over the last 40 years, western societies have seen a decline in lifestyle differences of men and women, e.g. because the share of women working has increased (26). At the same time the age for starting a family rose significantly (27) leading to a longer period during which gender lifestyle differences for young people are not very pronounced. Against this background, diminishing gender differences with respect to travel behavior were mostly interpreted as a process of the women catching up with men.

However, in the last few years a new facet of this development is becoming more apparent: Men – who have traditionally been more auto oriented with higher levels of motorization and longer auto distances traveled – seem to give up this advantage and develop a mobility style which is more similar to that of women with a lower level of automobile orientation. For Germany, vehicle registration statistics (Figure 4) suggest this trend. Both Germany and Great Britain have seen the license holding rate of young men drop under that of young women in recent years (see above). Moreover, this development is confirmed by the trend in car kilometers per capita by men and women in Germany and Great Britain (Figure 7): Since the 1970s, car travel by women has increased until the 1990s in both countries. But the male advantage prevailed. Thereafter, both men and women reduced their driving with the male decline in car travel being much steeper. This nearly resulted in the disappearance of gender differences regarding driving in both countries today.

The availability of alternative transport options to the car and affordability of automobiles appear to have influenced car travel by men and women in the last decade. It is possible that these different factors affect men and women alike. This might have been compensated by women who still caught up in terms of motorization and car use. However, in the preceding two decades women experienced significant increases in car travel without the gender gap closing. Hence, it seems more likely that the changes regarding automobile travel during the last decade indeed affect men more than women.

DISCUSSION OF POSSIBLE EXPLANATIONS

There are a number of possible explanations for the observed changes in mobility patterns by young travelers in Germany and Great Britain. Some important ones will be briefly presented in the following. The purpose is not to quantify the explanatory contribution of influential factors, but to discuss possible explanations for the observed trends and to provide basis for further research on this issue. The explanatory contribution of some of these following explanations – specifically some relevant structural changes of the population – might be quantifiable using available data. However, the influence of other factors – specifically those that cause young adults today to behave differently from young adults under similar circumstances ten years ago – might not be quantifiable without extensive additional data.
Structural changes of the population

Both countries are undergoing structural changes leading to an increasing share of young people belonging to a segment of society which is less auto-orientated. This leads to decreasing average car availability and car travel. Probably the most important development here is the increasing level of education. This has contributed to a larger share of young people living in urban agglomerations (28), a decreasing workforce participation among young adults and an increasing age for starting a family (2). Moreover, multimodal behavior has been observed more often among travelers with a higher level of education (29). One possible explanation is that graduates are more familiar with alternative modes because they have experienced using them during their time at university or college.

With the exception of short fluctuations, Germany and Great Britain experienced stable economic growth since 1990 (2). Nevertheless, it is possible that the share of young people for whom auto-mobility is not affordable has increased. However, the economic situation of young travelers is very difficult to assess, partly because important sources of their income are inadequately covered in surveys. The unemployment rate of youth aged 15 to 24 might serve a proxy for the economic situation of young people. However, this figure has developed in two different directions in Germany (1993: 8%; 2005: 15%) and Great Britain (1993: 17%; 2005: 12%) (2). In short, the contribution of trends in the economic situation of young people to changes in their travel behavior remains murky.

Possible causes for behavioral changes

There are also factors which contribute to young Germans and Britons showing less auto-oriented travel behavior compared to individuals in comparable life circumstances ten years before. Both countries have seen steep fuel price increases: the gasoline price at the pump increased from $1.10 in 1995 to $1.50 in 2005 in Germany and from $0.90 to $1.60 in Great Britain respectively (2). These increases exceed those of public transport fares and have made public transport a more economical transport option.

At the same time, driving in urban areas is discouraged by parking policies, traffic calming, pedestrianized downtowns and other measures. The London congestion charging scheme is probably the most famous example. Public transport on the other hand has improved its service in many urban areas—e.g. through the introduction of integrated ticketing and monthly and annual tickets.

In Germany, many universities have implemented so-called “semesterticket” schemes where a six-month public transport pass is included in the tuition fee. This “semesterticket” lets students ride for free in areas sometimes as large as the federal state like in the case of North Rhine-Westphalia. Correspondingly, according to the MOP the share of Germans aged 20 to 29 with a monthly or annual public transport ticket has more than doubled from 25% in 1996 to 52% in 2008. This might help to explain why the shift in travel demand toward public transport is more pronounced in Germany than in Great Britain.
Moreover, in Germany car sharing schemes have developed enormously. Their membership rates have increased fourfold since 2000. But with less than two car sharers among 1,000 persons this still is a niche (30). However, the success of car sharing might also indicate a decreasing importance of the private car as a status symbol (see also 31).

At the same time, ICT has developed dynamically. Gadgets, such as i-phones or i-pads, and virtual activities might withdraw budgets, specifically time, and attention from physical travel. In addition, it is possible that ITS - ranging from real time traveler information at bus stops or the possibility to purchase tickets via mobile phone - has influenced travel habits and mode choice behavior. There has been much speculation about the impact of ICT on travel behavior with little concrete finding (32, 33). Possibly, this issue should be revisited with focus on the digital natives - a generation that grew up with ICT and developed their mobility habits in the presence of such technology.

CONCLUSIONS AND OUTLOOK

This paper substantiates findings that the historic trend towards increasing motorization and automobile usage may have come to an end for young Germans and Britons. According to data from NTS in Germany and Great Britain young travelers have decreased their automobile travel within the last decade. These trends in travel behavior are mirrored by decreasing vehicle registration statistics and declining shares of licensed drivers in this age group.

The overall trend is composed of the following developments: private car availability is decreasing among young travelers. There is a significant reduction of automobile mileage in daily travel with increases in other modes, predominantly public transport. This is not only caused by the decline in car availability but also by the increasing multimodal behavior of car owners. Moreover, as long distance travel journeys get longer there is also a shift from the automobile to air travel in long distance travel. Finally, men have reduced their automobile travel more significantly than women.

Some of the trends in travel and explanatory factors are not phenomena of only the last decade. However, since the end of the 1990s these different developments reinforce each other so that the change in travel behavior resulting in a decreasing auto-orientation has become more visible. The paper illustrated that there are remarkable similarities between travel behavior changes in Germany and Great Britain. This suggests that the observed changes in travel behavior may not be an idiosyncratic development taking place in a specific environment. Instead this indicates a structural change of travel behavior which is likely to occur in other societies as well.

Aside from the issue as to what are the decisive causes for this development, this raises other interesting questions: Are young travelers in selected highly industrialized countries forerunners with respect to a new travel behavior? Will this behavior penetrate through societies as this new generation ages or will young travelers finally adopt similar mobility patterns as their predecessors? The coming years will show if this evolution of travel behavior continues and how it spreads to other age groups or across cultural and national borders.
The findings in this paper and the questions which arise are relevant for policy makers and providers of all transport services and products. Results indicate that a large share of the next generation of travelers might have other needs, attitudes or experiences and may be more flexible and pragmatic than previous generations. Given suitable infrastructure, services and products, this generation might cultivate a mobility which is more efficient as each mode of travel is employed where it is most useful.

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