

# **Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36

## **A New Generation: Travel Trends among Young Germans and Britons**

Tobias Kuhnimhof  
Institute for Transport Studies, University of Karlsruhe  
Kaiserstr. 12  
76131 Karlsruhe, Germany  
Tel: +49 721 608 4119  
Email: Kuhnimhof@ifv.uni-karlsruhe.de

Ralph Buehler  
Urban Affairs and Planning, Virginia Tech  
School of Public and International Affairs  
1021 Prince Street Suite 200  
Alexandria, VA, 22301, USA  
Tel: 001 703 706 8104  
Email: ralphbu@vt.edu

Joyce Dargay  
Institute for Transport Studies  
University of Leeds  
Leeds LS2 9JT, Great Britain  
Tel: +44 113 343 1795  
Email: j.m.dargay@leeds.ac.uk

Paper prepared for presentation at the  
90th Annual Meeting of the Transportation Research Board

5,960 words (including references)  
7 figures (6 \* 250 words = 1,500 words)  
Total: 7,460 words (including abstract, text, cover page, and figures)

## **Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

### **1 ABSTRACT**

2           As other industrialized countries Germany and Great Britain experienced increasing mo-  
3 torization over the last five decades. However, results from national travel surveys, vehicle regis-  
4 tration statistics, and driver licensing databases suggest that young Germans and Britons today  
5 are less auto-oriented than their parent's generation. The paper sheds light on this trend with fo-  
6 cus on the age group 20 to 29. The analysis finds decreasing car availability, a significant reduc-  
7 tion of automobile mileage, increases in the use of other modes, and growing multimodal beha-  
8 vior among the young, with men reducing their automobile travel more than women. Even  
9 though the development is more pronounced in Germany, the similarity of the changes in young  
10 people's mobility patterns in the two countries is striking. This suggests that the observed  
11 changes in travel behavior are not an idiosyncratic development taking place in one country. In-  
12 stead it may indicate a structural change in travel behavior which may be found in other Western  
13 countries as well. The paper substantiates findings of changes in trends of mobility patterns  
14 among young adults and identifies important storylines of this development based on a harmo-  
15 nized international comparison. Finally, the paper intends to stimulate a discussion and further  
16 research about reasons for these changes in mobility trends.

17  
18  
19

1 **INTRODUCTION**

2 Like other industrialized societies Germany and Great Britain have experienced increas-  
3 ing automobile ownership and use over the last decades. Starting from a lower level in the post  
4 WWII years, growth rates of motorization were higher in Europe than in the USA. Between 1970  
5 and 2005, the number of cars per 1,000 persons increased in Germany from 230 to 550 and from  
6 210 to 500 in Great Britain (1,2).

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

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

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

25 Subsequently, the paper illustrates the changes in travel trends and specifically discusses  
26 different storylines which form this new trend: decreasing car availability, shifts of mode use for  
27 everyday and long distance travel, increasing multimodal travel behavior, and the development  
28 of gender differences with respect to automobile use. The paper concludes with a brief discus-  
29 sion of possible reasons for these developments. The purpose of this discussion is not the quanti-  
30 fication of the explanatory contribution of the various influential factors. Instead the paper in-  
31 tends to stimulate discussion and further research into the observed trends.

32

1 **DATA AND METHODOLOGY**

2 Most results in this paper are based on microdata analysis of National Travel Surveys in  
3 Germany and Great Britain from the 1970s to today. These data sources and our approach for a  
4 harmonized comparison are briefly presented in the following.  
5

6 **German Kontiv / MiD Survey Series**

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

14 Unfortunately, changes in survey design inhibit comparability of results for different  
15 Kontiv / MiD surveys (6, 7). Specifically, the Kontiv 89 produced questionable results. It is  
16 therefore excluded from the results presented in this paper. The 2002 and 2008 MiD surveys are  
17 comparable. However, the 2008 micro data was only publicly released for analysis during the  
18 time that the presented study was undertaken. Therefore, only supplementary analysis was car-  
19 ried out using the MiD 2002/2008 data.  
20

21 **German Mobility Panel MOP**

22 Travel data for the time period after 1990 originate from the German Mobility Panel  
23 (MOP). The MOP is a multi-day and multi-period travel survey that has been conducted annually  
24 every fall since 1994. It comprises a 7-day trip diary and repeated participation of the same res-  
25 pondents in three consecutive years. The sample size of the MOP is about 750 households or  
26 1,800 individuals per year. Participants report their trips for an entire week. As a consequence  
27 the annual data base contains about 45,000 trips (8).

28 In contrast to the 24 hour survey design of Kontiv/MiD, the MOP collects data about one  
29 travel week. It can hence be used to analyze individual mode usage over one week and identify  
30 multimodal travelers (9). Moreover, the MOP has been conducted without changes in methodol-  
31 ogy since 1994. Hence, the MOP data can be used to generate comparable time series since the  
32 mid 1990s (8).

33 The small sample size of the MOP suffices to make estimates about travel at the national  
34 level but it hinders meaningful disaggregate analysis of subgroups of the population. In order to  
35 overcome this shortcoming for the presented analyses the MOP data of five consecutive years  
36 was pooled. Most MOP-analyses in this paper present results for 1997 (comprising data from  
37 1995-1999), 2002 (2000-2004) and 2007 (2005-2009).  
38

## Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons

### 1 **British National Travel Survey**

2 Like the MOP, the British National Travel Survey (GB NTS) captures travel behavior  
3 during an entire week employing a mobility diary design (10,11). However, unlike in the MOP,  
4 respondents in the GB NTS are asked to report on short walking trips only on day seven of the  
5 reporting week, resulting in a bias which is corrected by weighting.

6 This study uses GB NTS data that was collected in 1975 (person sample size: 34,000),  
7 1985 (person sample size: 26,000) and from 1995 onward on an annual basis (annual person  
8 sample size approx. 8,500 before 2002 and 21,000 after 2002).

9 During these four decades methodological changes to the GB NTS have been such that  
10 comparability of survey results is largely ensured. In order to achieve a better statistical represen-  
11 tation, GB NTS data of consecutive years was also pooled. Here, three consecutive years were  
12 chosen in each case: 1996 (1995-1997), 1999 (1998-2000), 2002 (2001-2003) and 2005 (2004-  
13 2006). Since 1995, respondents to the GB NTS are asked to record retrospectively their long  
14 distance travel activities. These data were utilized in our study. The long distance travel record  
15 and the daily travel record cover only travel within Great Britain.

16

### 17 **Approach for harmonization of data analysis**

18 Comparisons of travel data across different surveys are often hampered by differences in  
19 survey methods and definitions of published data (13, 14, 15). For example: Kontiv 1982 reports  
20 a share of trip makers of 75% compared to a share of trip makers of 92% according to the 1997  
21 MOP. This large difference cannot solely be attributed to behavioral changes but differences in  
22 survey methods play a significant role.

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

28

#### 29 *1. Selection of travel indicators least affected by survey methodology:*

30 Survey-methodology impacts on the *share of trip makers* (15) affect key mobility indicators per  
31 person and day. In order to work around this problem results of this study are based on individu-  
32 als who made at least one trip per day.

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

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

## Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16

### 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.

1 **TRENDS AMONG YOUNG TRAVELERS**

2 Looking at the entire population in Germany and Great Britain the average distance tra-  
3 veled per mobile person per day rose from around 30 km in the 1970s to over 40 km in the  
4 1990s. This was mainly related to an increase in the number of trips and distance traveled by  
5 automobile. Figures 1 and 2 illustrate how per capita travel demand by car increased significant-  
6 ly for all age groups in both countries during this time period. In Germany, there was an addi-  
7 tional increase in the mileage traveled by public transport which cannot be observed in Great  
8 Britain to a similar extend.

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

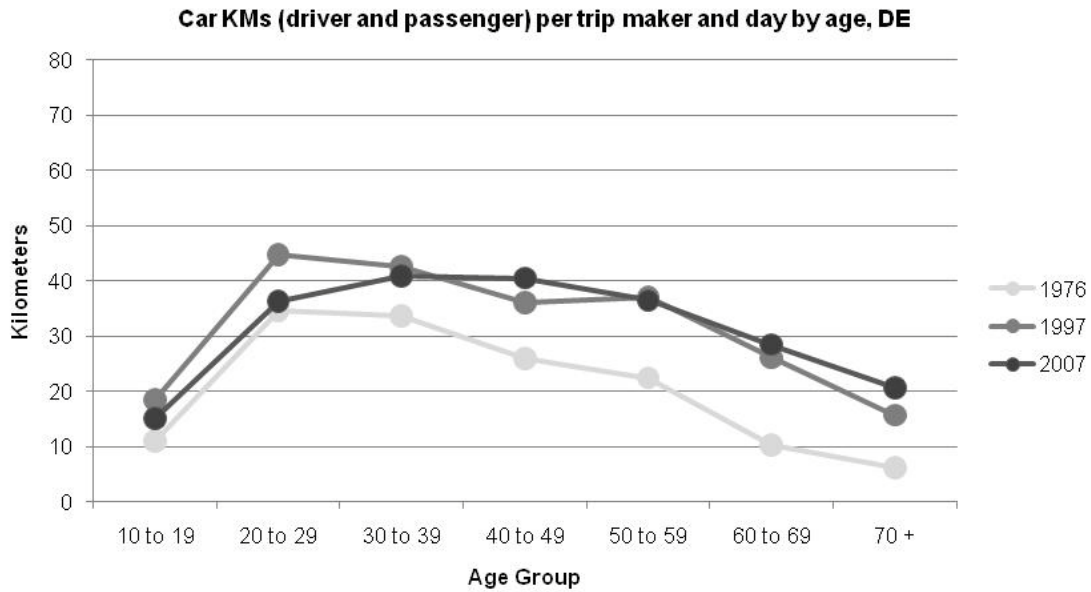
13 Since the mid 1990s overall per capita travel stagnated in both countries at about 40 km  
14 per day (3). However, aggregate measures hide heterogeneous trends for different age groups  
15 and modes of travel. Automobile travel more or less stagnated in both countries for the popula-  
16 tion between 30 and 60 and increased slightly for individuals older than 60. This suggests that  
17 today's elderly maintain their more auto-oriented mobility patterns into old age and lead more  
18 active lifestyles than prior elderly generations. In sharp contrast, for travelers between 20 and 29  
19 automobile travel demand has declined significantly in Germany as well as in Great Britain since  
20 the mid 1990s. In Germany, 2007 levels of car travel for this age group were almost at the level  
21 of 1976 again. On the other hand, distance traveled by public transport has almost doubled for  
22 this age group in both countries. Today, the mode share of public transport among trips by trav-  
23 elers between 20 and 29 in both countries is about 18%.

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

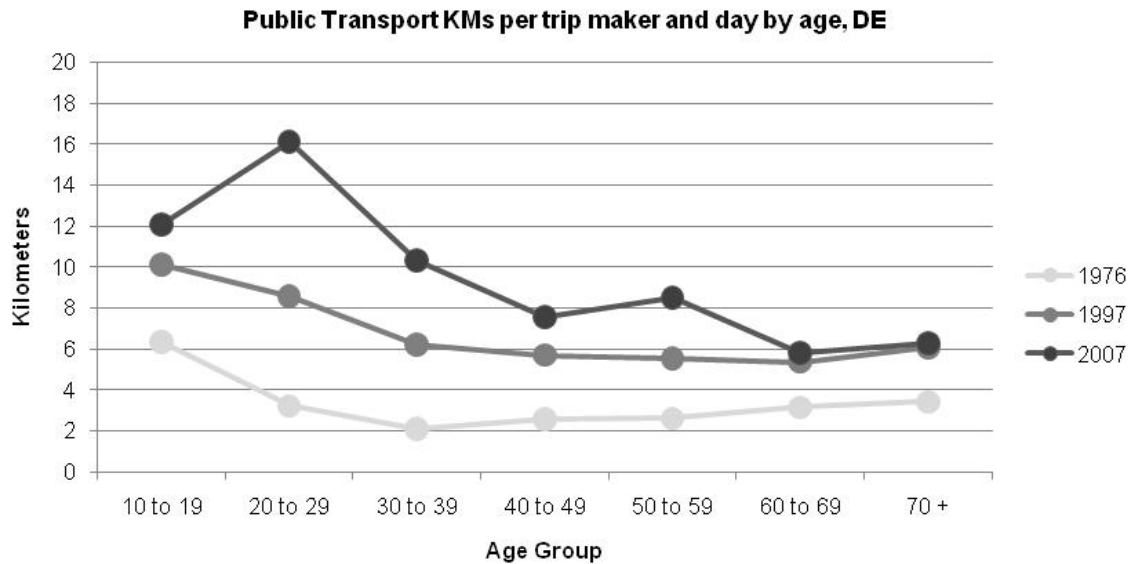
29 The generations born 10 and 20 years later display a slightly higher level of car travel in  
30 younger years and steeper increases than the generation born in the 1960s. The 1970 and 1980  
31 generations reached 40 car km per trip maker and day in their early 20s and also sustained this  
32 level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

33 The generation born around 1990 can so far not be observed for more than 20 years.  
34 However, there is indication that this younger generation increases their car travel not as dynam-  
35 ically as the two preceding ones: Having started at the same level as the generations before, the  
36 1990 generation lags behind by more than 5 km at the age of 19 compared to their counterparts'  
37 car travel ten years before.

1



2



3

4 **FIGURE 1 Kilometers with motorized modes per trip maker and day by age 1976 to 2007,**  
 5 **Germany**

6

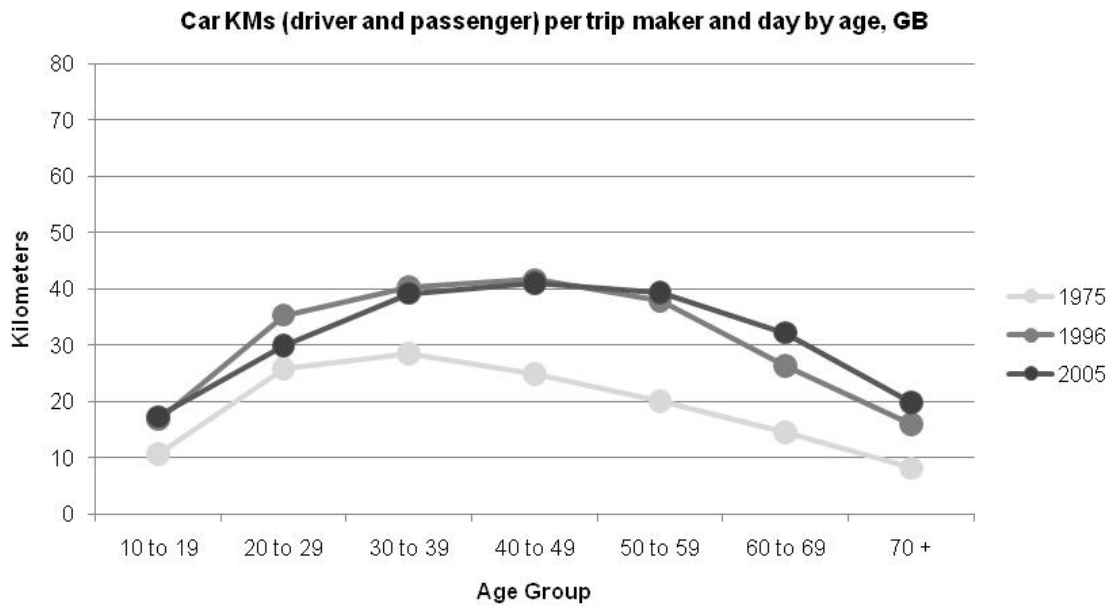
7

8

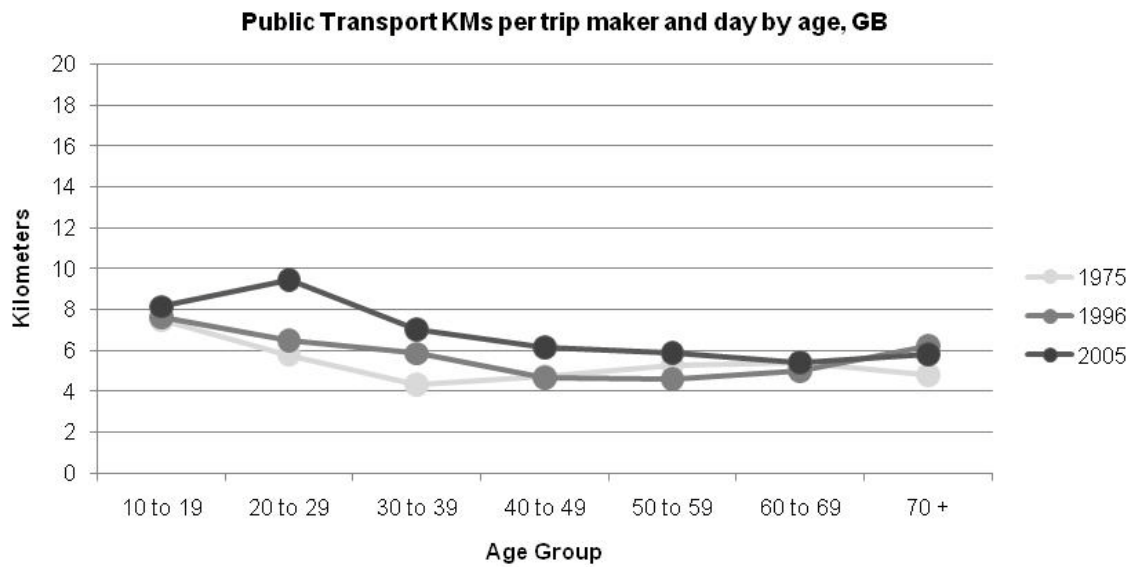


# Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons

1



2

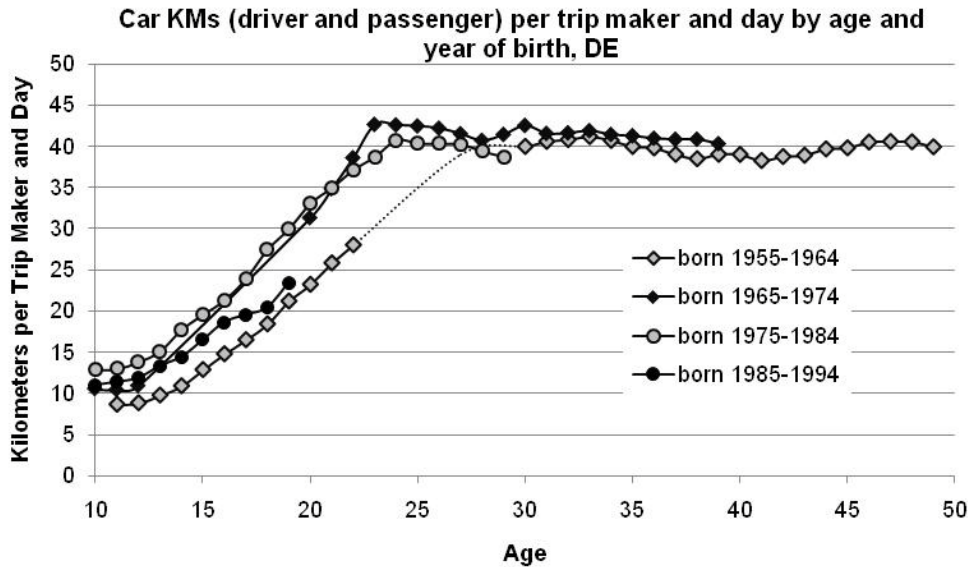


3

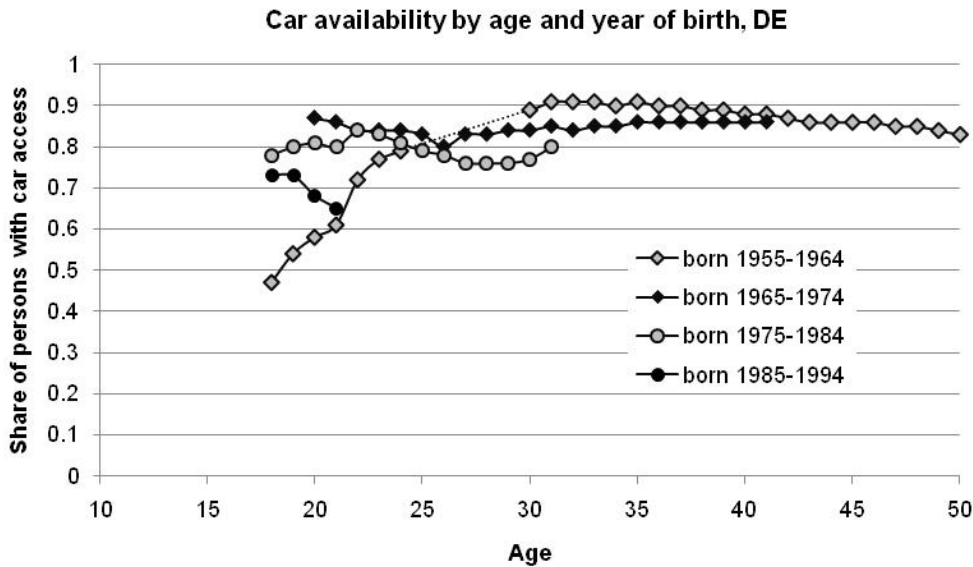
4 **FIGURE 2 Kilometers with motorized modes per trip maker and day by age 1976 to 2007,**  
5 **Great Britain**

6

1



2



3

4 **FIGURE 3 Car availability and car kilometers per trip maker and day by age and year of**  
 5 **birth, Germany** (No suitable data was available for the generation born between 1955 and 1964  
 6 to describe their mileage between the age of 23 and 30. Missing data points are indicated by a  
 7 dotted line)

8

## **Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

1           There are different storylines which underlie this overall change in travel behavior by  
2 young Germans and Britons. These trends will be discussed in the following. Not all of them  
3 occur in both countries to the same extent. In addition, not all of the discussed trends are pheno-  
4 mena of the last decade only. However, during the last decade changes in key mobility indicators  
5 became evident.  
6

### **7 Decreasing Car Availability**

8           There are two prerequisites for driving: having a driver's license and access to a car. With  
9 respect to the first, the share of licensed drivers in the age group 21 to 29 in Britain has decreased  
10 from 75% in 1993 to 64% in 2008. This decline was greater for men (from 80% to 67%) than for  
11 women (from 67% to 61%)(18, 19). For Germany, official statistics for license holding by young  
12 people exist only since 2006 (20). Since then, the share of women between 18 and 24 with driv-  
13 er's license has stagnated at 69% while that for men in this age group has decreased from 69% to  
14 66%.

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

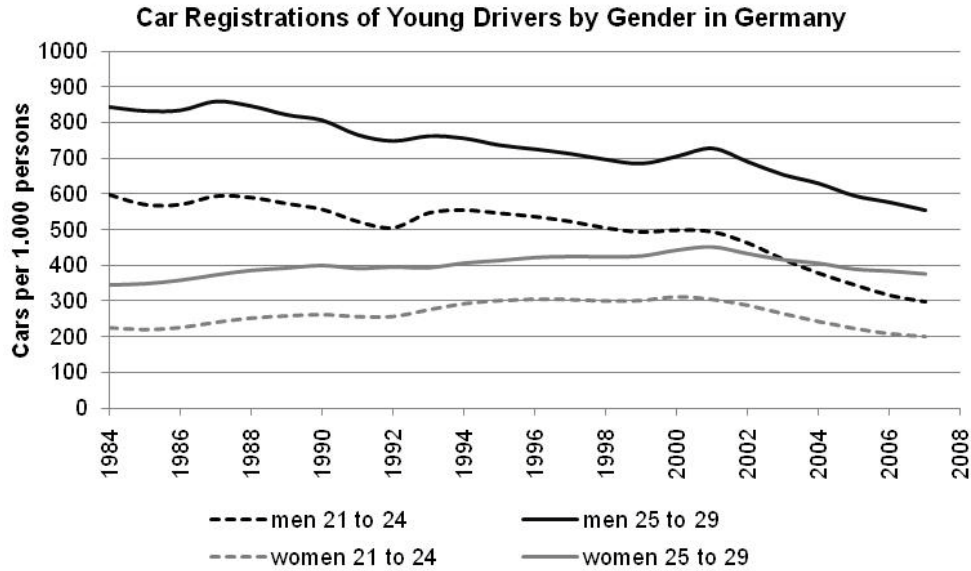
23           However, analyses of the NTS surveys in Germany and Great Britain strongly confirm  
24 the hypothesis that car availability is indeed decreasing for young age groups: in both countries,  
25 NTS surveys indicate a significant decline of the share of persons with car access in the age  
26 group 20 to 29 (Figure 5). While in Germany motorization levels of this age group were higher  
27 than in Britain the decline during the recent years was also much stronger.

28           Again, Figure 3 decomposes this trend for different generations in Germany: when reach-  
29 ing the age of driving (18 in Germany), the 1960 generation could not easily use their parent's  
30 car - if they had one. Car ownership levels were lower and many households had no or only one  
31 car. Young adults bought their first car during their 20s. This generation reached a level of mo-  
32 torization of 90% at the age of 30. In contrast, the 1970 and 1980 generations had a very high  
33 level of car availability as soon as they reached the age of driving. Many of them were able to  
34 use cars, which were present in their parents' household. Later, they sustained this high level of  
35 motorization.

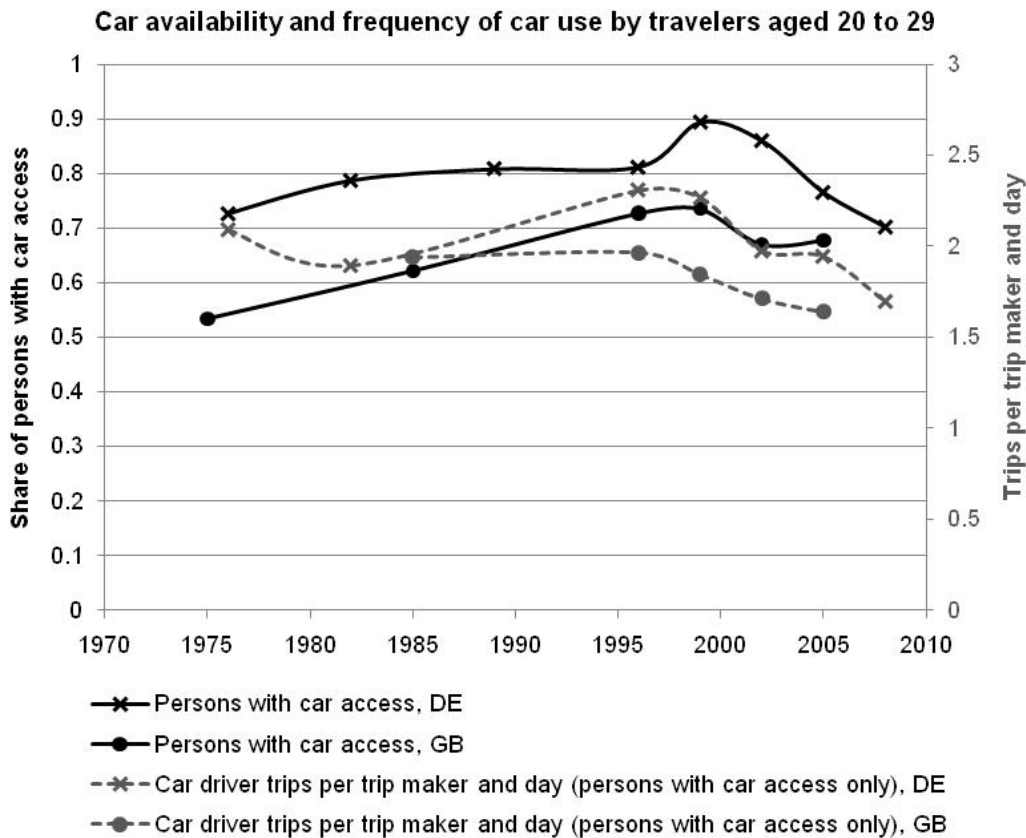
36           The 1990 generation appears to be the first one that shows decreasing levels of motoriza-  
37 tion after the first years of driving. Most likely, drivers in this generation first use their parents'  
38 cars but don't acquire their own automobile when moving out of the parents' household. Accord-  
39 ingly, in Germany the group of young travelers which shows the highest decrease of car availa-

## Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons

1 bility between 1997 (77%) and 2007 (53%) are those who have left their parents' household but  
 2 have not yet started their own families.



3  
 4 **FIGURE 4 Car registrations of young drivers by gender in Germany (21)**



5  
 6 **FIGURE 5 Car availability and car driver trips per day in Germany and Great Britain**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38

**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 only 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%.

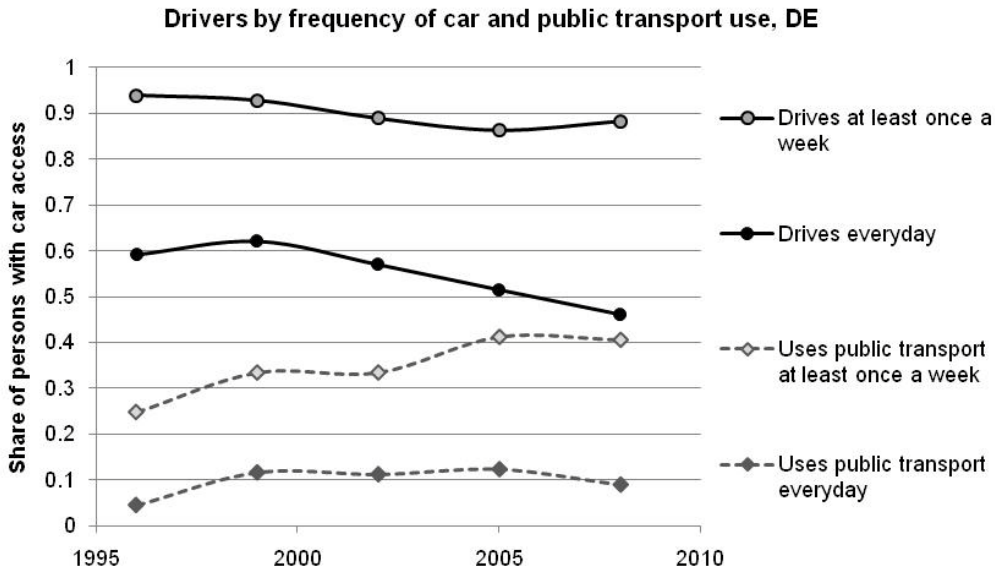
In Germany, cycling appears to have continuously grown in this age group since the 1970s. In 1975 the bicycle mode share was barely 4%. In 2007 it was almost 10%. In Great Britain, changes in cycling levels (about 2% of the mode share in this age group) are too small to identify a significant trend.

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.

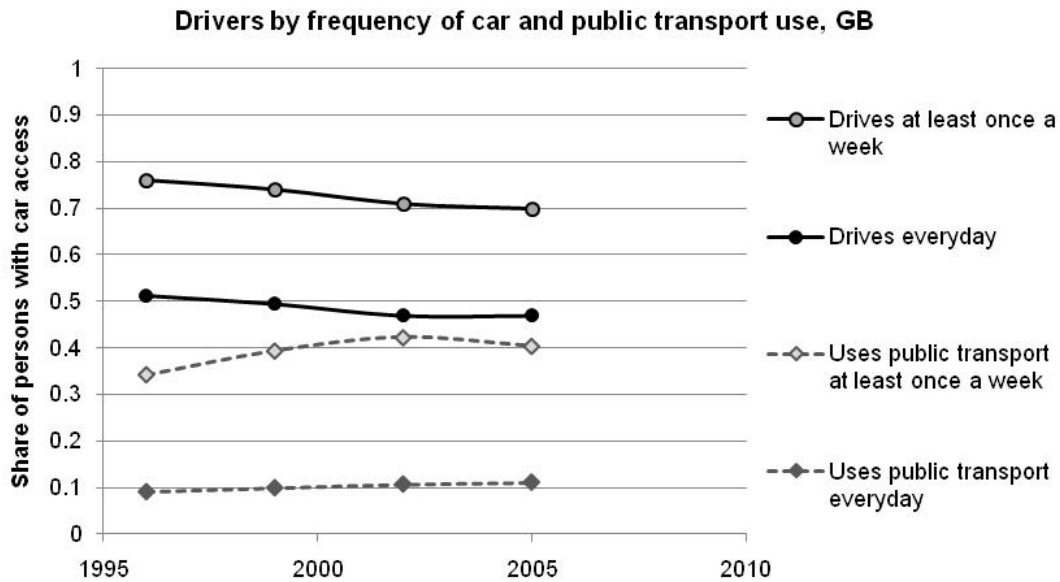
**Increasing multimodality**

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.

1



2



3

4 **FIGURE 6** Frequency of car and public transport use by young car owners in Germany  
 5 and Great Britain (age 20 to 29)

6

7

1 **Mode shifts in long distance travel**

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

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

18 The decision to invest in a car is presumably often influenced by the perspective of using  
19 it for long distance travel. Against this background, the decreasing importance of the car as a  
20 mode for long distance travel most likely has repercussions on car ownership and consequently  
21 car use in daily travel.

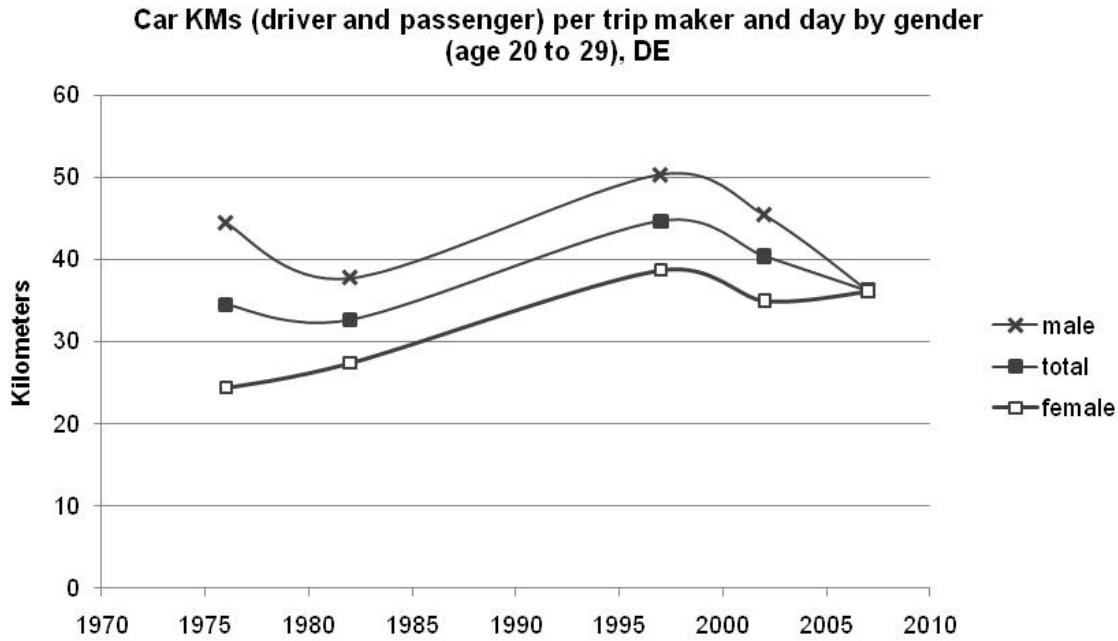
22  
23 **Men are losing their advantage over women**

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

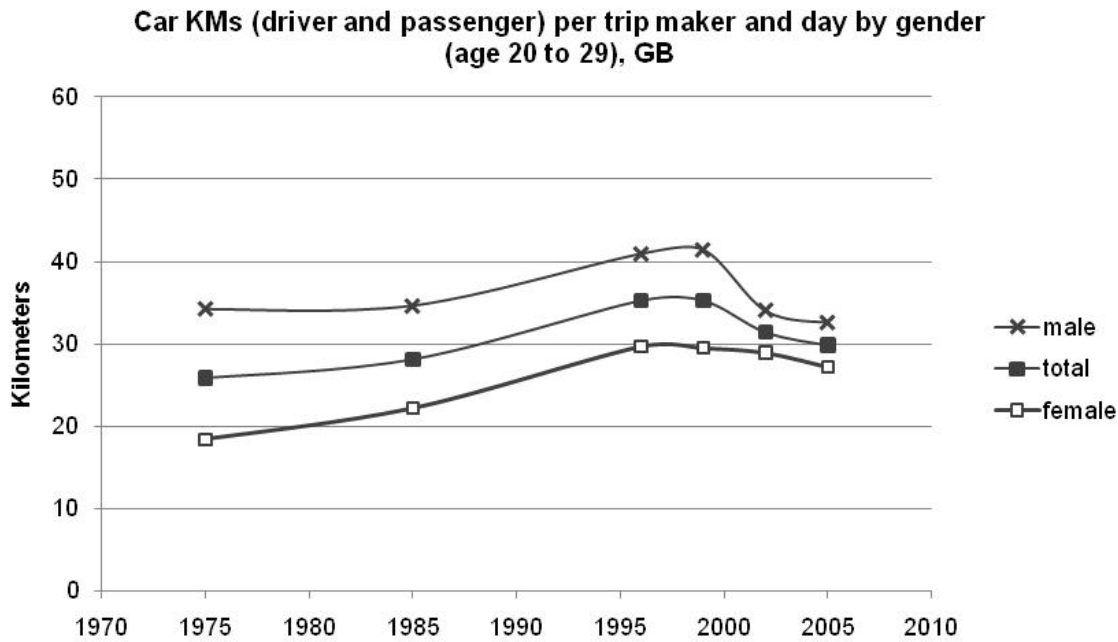
30 However, in the last few years a new facet of this development is becoming more appar-  
31 ent: Men – who have traditionally been more auto oriented with higher levels of motorization  
32 and longer auto distances traveled – seem to give up this advantage and develop a mobility style  
33 which is more similar to that of women with a lower level of automobile orientation. For Germa-  
34 ny, vehicle registration statistics (Figure 4) suggest this trend. Both Germany and Great Britain  
35 have seen the license holding rate of young men drop under that of young women in recent years  
36 (see above). Moreover, this development is confirmed by the trend in car kilometers per capita  
37 by men and women in Germany and Great Britain (Figure 7): Since the 1970s, car travel by  
38 women has increased until the 1990s in both countries. But the male advantage prevailed. The-  
39 reafter, both men and women reduced their driving with the male decline in car travel being

**Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

1 much steeper. This nearly resulted in the disappearance of gender differences regarding driving  
 2 in both countries today.  
 3



4



5

6 **FIGURE 7 Car kilometers per trip maker and day by gender in Germany and Great Brit-**  
 7 **ain (age 20 to 29)**

8

9



## **Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

1 The availability of alternative transport options to the car and affordability of automobiles appear  
2 to have influenced car travel by men and women in the last decade. It is possible that these dif-  
3 ferent factors affect men and women alike. This might have been compensated by women who  
4 still caught up in terms of motorization and car use. However, in the preceding two decades  
5 women experienced significant increases in car travel without the gender gap closing. Hence, it  
6 seems more likely that the changes regarding automobile travel during the last decade indeed  
7 affect men more than women.  
8

### **9 DISCUSSION OF POSSIBLE EXPLANATIONS**

10 There are a number of possible explanations for the observed changes in mobility patterns  
11 by young travelers in Germany and Great Britain. Some important ones will be briefly presented  
12 in the following. The purpose is not to quantify the explanatory contribution of influential fac-  
13 tors, but to discuss possible explanations for the observed trends and to provide basis for further  
14 research on this issue. The explanatory contribution of some of these following explanations –  
15 specifically some relevant structural changes of the population – might be quantifiable using  
16 available data. However, the influence of other factors – specifically those that cause young  
17 adults today to behave differently from young adults under similar circumstances ten years ago –  
18 might not be quantifiable without extensive additional data.  
19

#### **20 Structural changes of the population**

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

30 With the exception of short fluctuations, Germany and Great Britain experienced stable  
31 economic growth since 1990 (2). Nevertheless, it is possible that the share of young people for  
32 whom auto-mobility is not affordable has increased. However, the economic situation of young  
33 travelers is very difficult to assess, partly because important sources of their income are inade-  
34 quately covered in surveys. The unemployment rate of youth aged 15 to 24 might serve a proxy  
35 for the economic situation of young people . However, this figure has developed in two different  
36 directions in Germany (1993: 8%; 2005: 15%) and Great Britain (1993: 17%; 2005: 12%) (2). In  
37 short, the contribution of trends in the economic situation of young people to changes in their  
38 travel behavior remains murky.  
39

## **Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

### **1 Possible causes for behavioral changes**

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

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

13 In Germany, many universities have implemented so-called “semesterticket” schemes  
14 where a six-month public transport pass is included in the tuition fee. This “semesterticket” lets  
15 students ride for free in areas sometimes as large as the federal state like in the case of North  
16 Rhine-Westphalia. Correspondingly, according to the MOP the share of Germans aged 20 to 29  
17 with a monthly or annual public transport ticket has more than doubled from 25% in 1996 to  
18 52% in 2008. This might help to explain why the shift in travel demand toward public transport  
19 is more pronounced in Germany than in Great Britain.

20 Moreover, in Germany car sharing schemes have developed enormously. Their member-  
21 ship rates have increased fourfold since 2000. But with less than two car sharers among 1.000  
22 persons this still is a niche (30). However, the success of car sharing might also indicate a de-  
23 creasing importance of the private car as a status symbol (see also 31).

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

### **33 CONCLUSIONS AND OUTLOOK**

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

39 The overall trend is composed of the following developments: private car availability is  
40 decreasing among young travelers. There is a significant reduction of automobile mileage in dai-

## **Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons**

1 ly travel with increases in other modes, predominantly public transport. This is not only caused  
2 by the decline in car availability, but also by the increasing multimodal behavior of car owners.  
3 Moreover, as long distance travel journeys get longer there is also a shift from the automobile to  
4 air travel in long distance travel. Finally, men have reduced their automobile travel more signifi-  
5 cantly than women.

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

13 Aside from the issue as to what are the decisive causes for this development, this raises  
14 other interesting questions: Are young travelers in selected highly industrialized countries fore-  
15 runners with respect to a new travel behavior? Will this behavior penetrate through societies as  
16 this new generation ages or will young travelers finally adopt similar mobility patterns as their  
17 predecessors? The coming years will show if this evolution of travel behavior continues and how  
18 it spreads to other age groups or across cultural and national borders.

19 The findings in this paper and the questions which arise are relevant for policy makers  
20 and providers of all transport services and products. Results indicate that a large share of the next  
21 generation of travelers might have other needs, attitudes or experiences and may be more flexible  
22 and pragmatic than previous generations. Given suitable infrastructure, services and products,  
23 this generation might cultivate a mobility which is more efficient as each mode of travel is em-  
24 ployed where it is most useful.

### **ACKNOWLEDGEMENTS**

25  
26  
27 This paper presents excerpts of work by an international consortium on “Changes in  
28 young people’s mobility patterns”. This work is sponsored by the Institute for Mobility Research  
29 (ifmo), Munich.  
30

## Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38

### REFERENCES

1. World Bank. *World Development Indicators (WDI)*. <http://data.worldbank.org/indicator>. Accessed July 30 2010.
2. *World Bank World Development Indicators (WDI)*. <http://data.worldbank.org/data-catalog>.
3. Zumkeller D.; Chlond, B. and Manz W. Infrastructure Development in Germany under Stagnating Demand Conditions: A new Paradigm? *Transportation Research Record: Journal of the Transportation Research Board*, Transportation Research Board (TRB), National Research Council, Washington D.C., 2004. pp. 121-128.
4. Le Vine, S. E.; Jones, P. M. and Polak, J. W. Has the historical growth in car ownership come to an end in Great Britain? Proceedings of European Transport Conference 2009.
5. infas and DiW. *Mobilität in Deutschland 2008 - Ergebnisbericht*. Projekt im Auftrag des Bundesministeriums für Verkehr, Bau- und Wohnungswesen. Bonn, Berlin, Germany, 2009.
6. Holz-Rau, C. and Scheiner, J. Die KONTIVs im Zeitvergleich: Möglichkeiten und Schwierigkeiten beim Vergleich der Erhebungswellen. *Internationales Verkehrswesen*, Vol. 58, 2006. pp. 519-525.
7. DIW. *Vergleichende Auswertung von Haushaltsbefragungen zum Personennahverkehr, KONTIV 1976, 1982 und 1989*. German Institute for Economic Research (DIW), Berlin, 1993.
8. MOP. *Website of the German Mobility Panel*. [www.mobilitaetspanel.de](http://www.mobilitaetspanel.de). Accessed July 30 2010.
9. Kuhnimhof, T.; Chlond, B. and von der Ruhren, S. The Users of Transport Modes And Multimodal Travel Behavior: Steps Towards Understanding Travelers' Options and Choices. *Transportation Research Record: Journal of the Transportation Research Board*, Vol. No. 1885, Washington D.C., 2006. pp. 40-48.
10. Wilmot, A. *National Travel Survey Technical Report, July 1988 - December 1991*. Office of Population Censuses and Surveys. Norwich, UK, 1993.
11. Simmonds, N.; Stratford, N.; Nicolaas, G. and Costigan, P. *National Travel Survey 2002 Technical Report*. National Centre for Social Research. Norwich, UK 2003.
12. National Statistics and Department for Transport (DfT). *Focus on Personal Travel, 2005 Edition, Including the Report of the National Travel Survey 2002/2003*. Norwich, UK, April 2005.
13. Timmermanns, H.; von der Waerden, P.; Alves Mario; Polak, J. W.; Ellis, S.; Harvey, A. S.; Kurose, S. and Zandee, R. Spatial context and the complexity of daily travel patterns: an international comparison. *Journal of Transport Geography*, Vol. 11, 2003. pp. 37-46.
14. Hubert, J.-P. and Toint, P. L. From Average Travel Time Budgets to Daily Travel Time Distributions, Appraisal of Two Conjectures by Kölbl and Helbing and Some Consequences. *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 1885, Transportation Research Board of the National Academies, Washington, D.C., 2006. pp. 135-143.
15. Armoogum, J.; Axhausen, K. W. and Madre, J.-L. Immobility and mobility seen through trip based versus time use surveys. Proceedings of the ISCTSC Conference in Costa-Rica, 2004.
16. Kuhnimhof, T.; Collet, R.; Armoogum, J. and Madre, J.-L. Generating Internationally Comparable Figures on Long Distance Travel for Europe . 88th Annual Meeting of the Transportation Research Board. 2009.

## Kuhnimhof, Buehler, Dargay: Travel Trends among Young Germans and Britons

- 1 17. Forschungsgesellschaft für Strassen- und Verkehrswesen ( FGSV ). *Hinweise zu verkehrlichen Konsequenzen*  
2 *des demographischen Wandels*. Forschungsgesellschaft für Straßen- und Verkehrswesen, Köln, Germany, 2006.
- 3 18. Barbara Noble. Why are some young people choosing not to drive? Proceedings of European Transport Confe-  
4 rence 2005.
- 5 19. Department for Transport. *Transport Statistics*. <http://www.dft.gov.uk/pgr/statistics/>. Accessed July 30 2010.
- 6 20. KBA. *Statistik zum Bestand an Fahrerlaubnissen (Statistics on holding of driver's licenses)*. Kraftfahrbundes-  
7 amt (KBA), Flensburg, Germany, 2010.
- 8 21. KBA. *Fahrzeugstatistik. Bestand am 1. Januar 2010 nach Haltern*. Kraftfahrbundesamt (KBA), Flensburg,  
9 Germany, 2010.
- 10 22. Isserstedt, W.; Middendorff, E.; Kandulla, M.; Borchert, L. and Leszczensky, M. Die wirtschaftliche und sozia-  
11 le Lage der Studierenden in der Bundesrepublik Deutschland 2009. 19. Sozialerhebung des Deutschen Studen-  
12 tenwerks durchgeführt durch HIS Hochschul-Informationen-System, Bundesministerium für Bildung und For-  
13 schung (BMBF), Berlin, Germany, 2010.
- 14 23. Petersen, M. *Multimodale Mobilisations und Privat-Pkw. Ein Vergleich auf Basis von Transaktions- und mone-*  
15 *tären Kosten. Bericht 4 der choice-Forschung*. Vol. Discussion Paper SP III 2003-108, Wissenschaftszentrum  
16 Berlin für Sozialforschung, Berlin, 2003.
- 17 24. Beckmann, K.; Chlond, B.; Kuhnimhof, T.; von der Ruhren, S. and Zumkeller D. Multimodale Verkehrsmittel-  
18 nutzer im Alltagsverkehr. *Internationales Verkehrswesen*, Vol. 58, 2006. pp. 138-145.
- 19 25. *Die Reiseanalyse RA 98 Urlaub + Reisen*. Zentralarchiv für empirische Sozialforschung. Köln, Germany, 1998.
- 20 26. World Bank. *World Development Indicators*. World Bank, Washington D.C., 2010.
- 21 27. Destatis. Statistik zum durchschnittlichen Alter der Mütter bei der Geburt ihrer ehelichen lebendgeborenen  
22 Kinder. Statistisches Bundesamt, Wiesbaden, Germany, 2010.
- 23 28. Destatis. *Regionaldatenbank 2010*. Statistisches Bundesamt, Wiesbaden, Germany, 2010.
- 24 29. Kuhnimhof, T.; Chlond, B. and von der Ruhren, S. Users of Transport Modes and Multimodal Travel Beha-  
25 vior: Steps toward Understanding Traveler's Options and Choices. *Journal of the Transportation Research*  
26 *Board of the National Academies of Sciences*, Transportation Research Board (TRB), Washington, 2006. pp.  
27 40-48.
- 28 30. Bundesverband CarSharing. 15-prozentiger Kundenzuwachs im deutschen CarSharing in 2009.  
29 <http://www.carsharing.de/>, Bundesverband CarSharing (bcs), Hannover, Germany, February 18 2010.
- 30 31. Stefan Bratzel. Automotive MARKETS - Jugend und Automobil 2010. FHDW Center of Automotive, Berg-  
31 isch Gladbach, Germany, March 15 2010.
- 32 32. Mokhtarian, P. L.; Salomon, I. and Handy, S. L. The impacts of ict on leisure activities and travel: A concep-  
33 tual exploration. *Transportation*, Vol. 33, 2006. pp. 263-289.
- 34 33. Institut für Mobilitätsforschung (ifmo) (Hrsg.). *Auswirkungen der Virtuellen Mobilität*. Berlin, Heidelberg,  
35 New York, December 2003.  
36  
37