

Title: Gender differences in using digital mobility services and being mobile

Claudia Nobis

Institute of Transport Research, German Aerospace Center

Rutherfordstr. 2, 12489 Berlin, Germany

Tel: +49 30-67055-233 Fax: +49 30-67055-283; Email: claudia.nobis@dlr.de

Barbara Lenz

Institute of Transport Research, German Aerospace Center

Rutherfordstr. 2, 12489 Berlin, Germany

Tel: +49 30-67055-206 Fax: +49 30-67055-283; Email: barbara.lenz@dlr.de

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INTRODUCTION

Digitalization seems to be ‘gender-neutral’: Services that are based on digital information or communication are not considered offering different access for women or men respectively. Neither is gender specific impact expected on travel behavior stemming from digitalization of access. Accordingly there is only little research which is the more surprising, as differences in mobility behavior between women and men exist, and we may expect that digital applications and mobility services play a role in this context. So far, we know the following for the German case:

- Whereas in the very young age cohorts hardly any differences in mobility behavior exist, they occur in later stages of life. This is mainly due to different life circumstances (e.g. family phase). While the vast majority of men living in a multiperson household with children is fully employed, the status for women varies from working full-time and part-time to being homemaker. For women and men of the same household type and employment status, gender differences of travel patterns often ‘disappear’.
- For digital mobility applications (e.g. timetable information, purchase of tickets, route planning) there is a clear influence of age. The younger a person, the more likely mobility applications are used. Overall, these services are slightly more often used by men. Furthermore, digital mobility applications are especially used by highly mobile women and men who use more than one mode of transport for their daily mobility.
- Platform-based services are partly used more often by men – like carsharing – and are more or less gender-neutral – like ridesharing.

METHODOLOGY

Against this background we draw a picture of the gender-specific use of digital mobility services in the context of mobility behavior using data from the national travel survey “Mobility in Germany 2017” (MiD), and a dataset of 1,500 users and non-users of digital mobility services that was collected in 2017.

The MiD is one of the world’s largest travel surveys offering travel behavior data of about 320,000 respondents out of 156,000 households. In total the respondents reported almost one million trips for prescribed reporting days. The reporting days were spread over the year to cover different seasons. The survey included all persons of a household, which means that the trips of children are also registered. The study contains three questions concerning the use of digital mobility services: the use of timetable and delay information, the use of ticket purchase and the use of route planning and road navigation.

The survey of users and non-users of digital mobility services started with screening questions to determine whether the respondents were generally using digital information services for everyday mobility and how often five specific services were used (two for the car, two for public transport and one transport mode independent service). In view of the increasing diffusion and use of digital services and the difficulty to define use and non-use of digital mobility services, the exact definition was determined in the ongoing survey after 400 successful interviews. In the framework of the study, non-users of digital mobility services are persons who (almost) never or only occasionally access digital information services and who do not use any of the five specific services more than once every two months. Everything above this level is defined as use of digital mobility services. A total of 1,506 interviews were conducted, 754 interviews with users and 752 interviews with non-users.

As the life circumstances of women vary more than the one of men, the comparison of gender specific behaviors will be based on life-stage groups. The idea is to compare individuals with similar basic conditions in terms of age, employment status and household structure. As this analysis is still ongoing, the preliminary analyses will be presented in this abstracts.

FINDINGS

Findings of the study *Mobility in Germany*:

Of the three services 'timetable and delay information', 'ticket purchase' and 'route planning and road navigation', the latter in particular has widely spread. 61 percent of respondents aged 14 years and over say they use this service. Timetable and delay information is used by 44 percent. In contrast, only 17 percent of the respondents confirmed the purchase of tickets via mobile devices. All three services are mainly used by young and middle-aged people. The services are most widespread among the 20 to 29 year olds.

In line with the low share of public transport in rural areas, services for timetable and delay information as well as the purchase of tickets are mainly used in cities. However, route planning and road navigation services are also used primarily in metropolitan areas and large cities. The need for support in finding destinations and good routes is therefore more pronounced in areas with high density than in rural areas.

Men use the services slightly more often than women. At young age, the gender differences are small. Only from the age of 40 the differences become more pronounced. An exception is the use of timetable information (see figure 1). Women aged 20-29 use this service more often than men. However, women are more likely to use public transport. If only persons using public transport at least once a week are considered, the differences are eliminated. In contrast, the possibility of buying tickets via mobile devices is used slightly more often by men. This is true for all age groups and regardless of the frequency of use of public transport. In the case of route planning information, there are virtually no differences at young age, but they are clearly pronounced at later age (see figure 2).

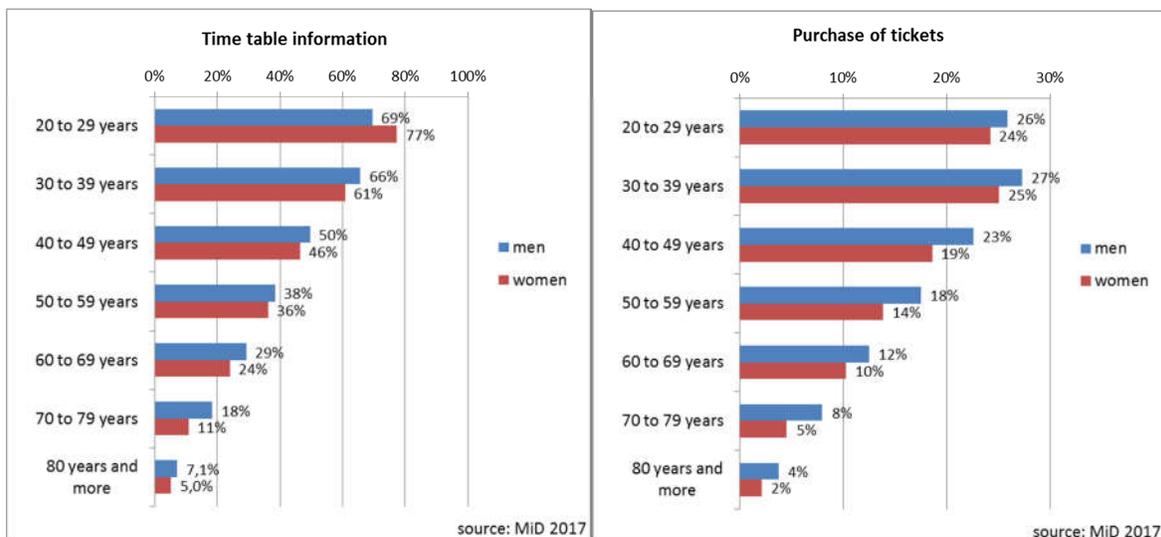


FIGURE 1 Use of digital mobility services for public transport

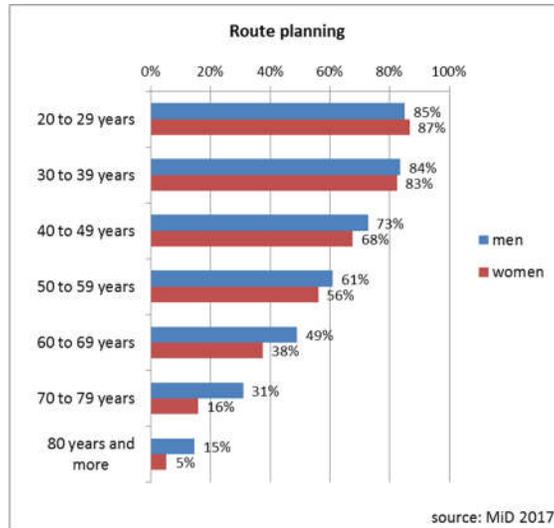


FIGURE 2 Use of digital devices for route planning

Findings of the survey on user and non-user of digital mobility services:

The results of regression models taking users (=1) and non-user of digital mobility services (=0) as variable to be explained (see e.g. table 1) shows: In comparison to the non-users of digital mobility services, the users are:

- more often male,
- younger,
- higher educated,
- more frequently working,
- less frequently pensioner or housewife,
- have a higher household income,
- cover more distances,
- are more multimodal,
- are better equipped with digital devices,
- and have a greater variety of uses for digital devices.

Furthermore, the higher the digital literacy and the more a person is affected by traffic problems such as congestion or delays in public transport, the more likely it is that a person will belong to the group of users of digital mobility services.

TABLE 1 binary logistic regression – Belonging to the group of users

Nagelkerkes R2: 0,335	Beta	significance
sex (1=women, 0=men)	-,513	,000
age	-,015	,002
location of place of residence (1=core towns, 0=rest)	,080	,566
education (1=high school diploma, 0=rest)	,555	,000
occupation (1=employed, 0=rest)	,413	,005
index multimodality	2,600	,000
index digital competence	,112	,000
index problem pressure	,096	,000
constant	-3,223	,000

In the following we will focus on female and male users of digital mobility services. The results of the comparative analysis is as follows: For both sexes, users of digital mobility services are on average younger, earn better and work more frequently than non-users. The female users of digital mobility services are on average younger (40 years, only persons aged 18 and over are included) than the male users (43 years).

Women are generally less employed. If they work, they are much more likely to be employed part-time. This general difference also exists between female and male users of digital services. At different levels, female and male users of digital mobility services are more likely to be employed than non-users. Finally, female users of digital mobility services are less likely to have a university degree (28%) than males (33%). If only full-time employed persons are taken into account, the values are identical for both sexes (39%).

Concerning the mobility behavior of female and male users of digital mobility services the findings are as follows: Men are more likely to use carsharing than women. This difference is also evident among users of digital mobility services. For both sexes, users of digital mobility services are much more likely to be car-sharing members.

Women are slightly more often in possession of a public transport pass than men. If only users of digital mobility services are considered, the difference between the sexes is larger. For both sexes the following applies: if you are a user of digital mobility services, you are more likely to have a public transport subscription.

If the users of digital mobility services are the main users of a car, the annual mileage of both sexes of this car is higher than that of non-users. This difference is more pronounced for men. In general, men are more multimodal than women, i.e. they use more means of transport than women for their everyday mobility. There is hardly any difference among the users of digital services. For both sexes, users of digital services are more multimodal than non-users. Furthermore, the user of digital mobility services – women as well as men – covers higher distances than non-users.

On average, men use slightly more services of the queried digital mobility services. There are hardly any gender differences in the type of services used and in attitudes towards digital mobility services.

Further analyses with consideration of the specific life stage of users and non-users of digital mobility services will be carried out. The hypothesis is that the differences between female and male users of digital mobility services decrease when life stages are taken into account.

CONCLUSIONS

The essential conclusion that we find in our results so far is that it is not the digital access itself that causes differences in the use of digital applications, but rather the combination of different factors like life circumstances and general mobility behavior. The differences between users and non-users of digital mobility services are higher than between female and male users of digital mobility services. The authors will show with their ongoing work to which extent the use of digital services is influenced by gender.