KANTAR

What influences feelings of safety and overall journey satisfaction among disabled drivers?

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transportfocus

Contents

Executive Summary

Kantar was commissioned by Transport Focus to conduct a 'deep dive' analysis to explore aspects of disabled road users' journeys that are associated with feelings of safety and journey satisfaction. The analysis was based on data from the Strategic Roads User Survey (SRUS) for journeys undertaken on the Strategic Road Network (SRN) between April 2018 and January 2020. This is the motorway and major 'A' road network in England, managed by Highways England on behalf of the Department for Transport. The objectives of this deep dive analysis were to discover:

- How does the profile of disabled drivers differ from non-disabled drivers in terms of their age, driver characteristics and the types of journey they make?
- What is the relationship between feeling very safe on the road and disability? What experiences on the road are associated with reduced ratings of feeling very safe and does this vary between disabled and non-disabled drivers?
- Is there any evidence of a significant difference in factors which explain overall satisfaction for disabled drivers when compared with non-disabled drivers?

Headline results

- Compared with non-disabled drivers, disabled drivers were older, had a lower annual mileage, and were slightly less confident when driving on motorways. In terms of the types of journeys they took, disabled drivers were more likely to drive for leisure as opposed to commuting or business and were less likely to travel during weekday peak hours.
- The large majority of all drivers (93%) felt safe when travelling and 51% felt very safe; there was no difference between disabled and non-disabled drivers on this measure.
- Disabled drivers, and more specifically those with reduced movement and cognitive impairment, had an increased propensity to mention instances of observing poor driving behaviour, which might imply that disabled drivers are more sensitive to poor driving compared with other groups.
- Based on the total sample, drivers were less likely to feel very safe when they had encountered poor driving on their journey and most types of poor driving behaviour were associated with reduced feelings of safety. Multivariate analysis was used to identify the types of poor driving behaviours which were most likely to predict feelings of not being very safe. These were: driving too close; driving into the hard shoulder; poor overtaking; and pulling out dangerously.
- Further analysis revealed no difference in the relationship between driving behaviours and safety for disabled drivers compared with non-disabled drivers; in other words, the impact of each driving behaviour on feeling very safe is no different between disabled and non-disabled drivers.
- Furthermore, there is little evidence to suggest that disabled drivers are satisfied with their journey for any different reasons when compared with non-disabled drivers.

1. Introduction

1.1 About the SRUS

The Strategic Roads User Survey (SRUS), conducted by Kantar until 31 March 2020 on behalf of Transport Focus, asks questions about a range of aspects of journey experience on the Strategic Road Network (SRN). This is the motorway and major 'A' road network in England, managed by Highways England on behalf of the Department for Transport. The topics the survey covers include overall journey experience, journey time, surface quality, roadworks management, permanent and electronic information, and feelings of safety.

The SRUS provides a detailed picture of the experience of all drivers, whether in cars, vans, lorries or coaches, or as motorcyclists. It generates data, which is made available to those who manage specific roads, to help them understand road users' views and prioritise where to make improvements.

The survey is based on an annual sample of around 8500 road users who have driven on the road network managed by Highways England in the past four weeks. Each driver is asked questions about a single road (referred to as 'one road') based on a portion of their last journey if they used more than one SRN road on the same journey.

1.2 Objectives and methodology

In addition to conducting the main survey, Kantar was commissioned to conduct a 'deep dive' analysis to explore aspects of disabled road users' journeys with respect to feelings of safety and journey satisfaction.

In the survey, respondents self-identify as disabled, defined as having a long-term physical or mental impairment which limits daily activities or the work that you can do. Disability was classified into three main types of impairment:

- Movement (disability related to mobility, dexterity, stamina/breathing, wheelchair use)
- Sensory (vision or hearing difficulties)
- Cognitive (learning difficulties, memory, mental health, anxiety, social or behavioural disability such as autism)

The objectives of this deep dive analysis were to discover:

- How the profile of disabled drivers differs from non-disabled drivers in terms of their age, driver characteristics and the types of journey they make.
- The relationship between feeling very safe on the road and disability: what experiences on the road are associated with reduced ratings of feeling very safe and does this vary between disabled and non-disabled drivers?

- Whether there is any evidence of a significant difference in factors which explain overall satisfaction for disabled drivers when compared with non-disabled drivers.

A mixture of bivariate analysis and multivariate analysis (logistic regression) was used to address the above objectives.

The data used in these analyses are based on all road users who made journeys between April 2018 and January 2020, a total sample of 15,903 respondents, of which 4.9% (n=767) identified as disabled. Overall, 2.9% (n=469) cited an impairment related to movement, 0.6% (n=103) cited a sensory disability and 1.0% (n=162) cited a cognitive impairment

All findings in this report are based on unweighted data.

This report is structured as follows:

- Section 2 describes the profile of disabled drivers and the types of journey they make;
- Section 3 considers the relationship between disability and safety as well as the relationship between experiences of poor driving and feelings of safety;
- Section 4 explores whether there is any evidence that the factors which explain overall satisfaction are different between disabled drivers and non-disabled drivers.

Tables containing more detailed statistics are provided in the Appendix.

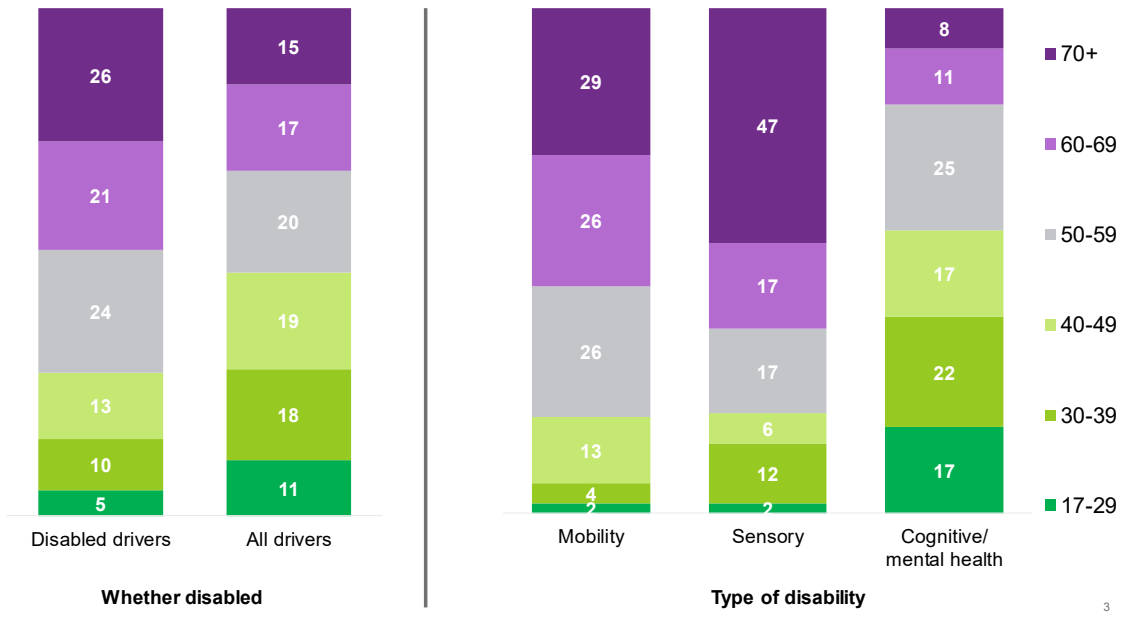
2. Profile of disabled drivers and types of journeys made

2.1 Age profile of disabled drivers

As might be expected, disabled drivers were much older in profile than drivers in general. Nearly half (47%) of disabled drivers were aged 60 or over compared with 32% of drivers in general. However, this varied by disability type. Two-thirds (64%) of drivers with a sensory impairment and half (54%) with movement impairment were in the 60+ age category, while drivers with a cognitive impairment were younger in profile: only 19% of this group were aged 60+.

(Figure 2A, below)

Figure 2A: Age profile of disabled drivers



Bases: All drivers (15903); All disabled drivers (767); Drivers with movement impairment (469); sensory impairment (103); cognitive or mental health impairment (162)

2.2 Driver characteristics of disabled drivers

Disabled drivers were more likely than non-disabled drivers to have a low annual mileage, that is driving less than 7,500 miles per year (50% compared with 35% of non-disabled drivers). Disabled drivers were also less likely to have a high level of confidence when driving on motorways (74% compared with 84% of non-disabled drivers gave a confidence rating of 8 or more out of 10).

(Table 2B, Appendix)

2.3 Characteristics of journeys made by disabled drivers

Disabled drivers tended to make different types of journeys compared with non-disabled drivers. Disabled drivers were more likely than non-disabled drivers to:

- make journeys in heavy or congested traffic (24% compared with 20%);
- drive during weekday off-peak hours (48% compared with 43%) rather than weekday peak hours (20% compared with 25%);
- drive for leisure (75% compared with 65%) as opposed to commuting/business/professional purposes (17% compared with 31%).

(Table 2C, Appendix)

3. Disability and feelings of safety

3.1 Disability and safety

A large majority of all drivers felt safe when travelling on the selected road. Overall, 93% of drivers felt safe (51% 'very safe' and 43% 'fairly safe) while only 3% of drivers felt unsafe. Feelings of safety among disabled drivers was very similar to that of disabled drivers. Overall 51% of both non-disabled and disabled drivers felt 'very safe', although disabled drivers were slightly more likely than non-disabled drivers to feel unsafe (5% compared with 2%) and this was especially apparent among drivers with a cognitive or mental impairment (10% of this group felt unsafe).

Disabled drivers, and more specifically those with reduced movement and cognitive impairment, had an increased propensity to mention instances of observing poor driving behaviour. It is important to note that judgements about poor driving are subjective. Given that we would not necessarily *expect* disabled drivers to encounter more poor driving than non-disabled drivers, this suggests that disabled drivers may be more sensitive to, or more observant of, poor driving compared with other groups.

Overall, 59% of disabled drivers (rising to 68% of cognitively impaired drivers) witnessed at least one instance of what they perceived as poor driving; this compares with 45% of non-disabled drivers. Disabled drivers were also more likely to be dissatisfied with the safety of joining the road (14% compared with 10%) and this dissatisfaction was highest among those with a sensory impairment (19%).

(Table 3A, Appendix)

3.2 Safety and driving behaviour

Based on the total sample, drivers were less likely to feel very safe when they had encountered poor driving on their journey and most types of poor driving behaviour were associated with reduced feelings of safety. A very similar profile of responses was found among disabled drivers when compared with all drivers, although small sample sizes of disabled drivers experiencing these behaviours meant that – in the most part – these differences could not be detected.

Overall, 55% of drivers who witnessed no poor driving felt 'very safe', this figure declining with the number of poor driving behaviours witnessed such that only 38% of those who witnessed at least 6 such behaviours felt 'very safe'. A similar pattern of responses was found among both disabled and non-disabled drivers. Given small base sizes of disabled drivers who encountered poor driving, Table 3B only shows the association between poor driving and feelings of safety for the full sample.

(Table 3B, Appendix)

As most types of poor driving behaviour were associated with a reduced feeling of safety and there was a reasonable level of overlap in the poor driving behaviours witnessed, a binary logistic regression model was run to identify which instances of driving behaviour most strongly predicted feelings of feeling 'very safe' (full details of the model are provided in the appendix). Four behaviours were found to be significant in this

model: driving too close; driving into the hard shoulder; poor overtaking; and pulling out dangerously. We then proceeded to add the *number* of poor driving behaviours into the model and this was also found to significantly predict feelings of being very safe. This indicates that witnessing two or more instances of poor driving has a multiplicative effect on feelings of safety, rather than just an additive effect.

A further model investigated whether there was any interaction between each of these covariates with disability; in other words, is there a stronger or weaker relationship between driving behaviours and safety for disabled drivers compared to non-disabled drivers? The results indicate that there is no difference; the impact of each driving behaviour on feeling very safe is no different between disabled and non-disabled drivers.

(Table 3C, Appendix)

4. Disability and overall satisfaction with journey

Previous analysis conducted for Transport Focus[1] determined the 'key drivers' of overall satisfaction with road users' journeys on the selected 'one road'. From this previous analysis, 17 factors were identified as drivers of overall satisfaction with road users' journeys. The top five out of the 17 factors – in other words those which have the strongest relationship with road users' overall satisfaction with journeys were:

- Satisfaction with journey time;
- Whether other delays experienced;
- Actual journey time compared to expectation;
- Level of traffic on selected road;
- Satisfaction with roadworks management.

We wanted to examine whether there was any evidence that the key drivers for overall satisfaction with users' journeys differed for disabled road users when compared with non-disabled road users. For this we used an '**ordinal logistic regression'**. Regression analysis is a statistical tool used for the investigation of relationships between variables and is used to estimate the strength and the direction of the relationship between an outcome variable and multiple explanatory variables. An ordinal logistic regression is a specific type of regression that is applied when the outcome variable has an ordinal scale (as in this case where the outcome variable is a 5 point satisfaction scale[2]) rather than a binary scale (e.g. yes/no). For each of the 17 factors assessed, the analysis determined whether there was a statistically significant interaction between that key driver and disability.

The results of this exercise found virtually no significant interactions between disability and factors associated with overall satisfaction. The only differences were in relation to two out of the 17 factors:

- Actual journey vs expected: in the original model it was found that the longer the actual journey time compared to expectation the lower the level of satisfaction. For disabled users this relationship still held although it was weaker (ranked 3rd most impactful factor among all drivers dropping to 5th for disabled drivers).
- Satisfaction with road markings: in the original model this was found to be positively associated with journey satisfaction. As above, this relationship still held though the relationship was weaker (dropping from a ranking of 5th among all drivers to 7th among disabled users).

Overall, this indicates that there is little evidence to suggest that disabled users are satisfied with their journey for any different reasons when compared with non-disabled users.

[1] Strategic Road Users Survey: Analysis of key drivers of overall satisfaction (May 2020)

[2] Very satisfied, Fairly satisfied, Neither satisfied nor dissatisfied, Fairly dissatisfied, Very dissatisfied

Appendix: Data tables

Tables for Chapter 2: Profile of disabled drivers and types of journeys made

Table 2B: Driver characteristics: disabled vs. non-disabled drivers

All differences between disabled and non-disabled drivers are statistically significant

	Non-disabled drivers	Disabled drivers
Base sizes:	*14948*	*767*
	%	%
Annual mileage		
Less than 5,000	15	27
5,000-7,499	20	24
7,500-9,999	18	15
10,000-19,999	29	22
20,000+	14	9
Confidence driving on motorways (10 point scale)		
Low (1-3)	2	4
Medium (4-7)	14	22
High (8-10)	84	74

Table 2C: Journey types: disabled vs. non-disabled drivers

All differences between disabled and non-disabled drivers are statistically significant

	Non-disabled drivers	Disabled drivers
Base sizes:	*14948*	*767*
	%	%
Traffic level		
Congested/heavy	20	24
Moderate	48	47
Light	32	29
Journey time		
Weekday peak	25	20
Weekday off peak	43	48
Weekend/bank holiday	31	32
Journey purpose		
Commuting	18	8
On business/professional	14	9
Leisure	65	75
Other	4	8

Tables for Chapter 3: Bivariate analysis

Table 3A: Proportion of drivers who felt safe and who witnessed poor driving behaviours by disability status

Bold blue text *indicates a significant difference for each disability group when compared with respondents not in this group (p<0.05)*

	Non-disabled	Any disability	Disability type		
			Movement	Sensory	Cognitive
Base sizes:	*14948*	*767*	*469*	*103*	*162*
	%	%	%	%	%
Feelings of safety					
Very safe	51	51	49	53	46
Fairly safe	43	39	42	35	40
Neither safe nor unsafe	4	5	4	9	4
Unsafe	2	**5**	4	3	**10**
Poor driving witnessed					
Speeding	20	**29**	**31**	22	**31**
Driving too close	14	**18**	17	14	**28**
Not signalling	14	**20**	**18**	17	**28**
Middle lane hogging	14	**17**	15	12	**21**
Poor overtaking	14	**23**	**23**	16	**31**
Drivers cutting me up	11	**18**	**18**	14	**24**
Undertaking	10	**13**	10	12	**20**
Vehicles pulling out dangerously	7	**12**	**12**	8	**20**
Driver using mobile phone	6	**10**	**9**	7	**15**
Not paying attention	6	**10**	**9**	6	**13**
Very slow driving for type of road	5	**7**	6	4	**10**
Driving without lights	1	1	1	1	**2**
Sudden braking	5	7	6	6	**11**
Road rage	2	4	4	2	**7**
Jumping traffic lights	2	3	3	1	2
Verbal or other abuse	1	1	2	1	**4**
Badly loaded vehicle	1	1	1	1	**3**
Number of behaviours witnessed					
None	55	**41**	**42**	42	**32**
1	15	**17**	**17**	17	**13**
2	10	**12**	**13**	13	**13**
3	8	**10**	**10**	9	**9**
4	5	**6**	**5**	5	**9**
5	3	**4**	**4**	4	**6**
6+	5	**10**	**10**	9	**17**
Satisfaction with joining junction safely					
Not satisfied	10	**14**	**13**	**19**	13

Table 3B: Driving behaviours significantly associated with feeling less safe (all drivers)

Table indicates all driving behaviours where there was a significant difference in feelings of safety among those witnessing this behaviour and those not witnessing it (p<0.05)

	% who feel very safe	*Base: all drivers witnessing each behaviour)*
(n)		
	%	
% of all drivers who feel very safe	51	*15903*
% who feel very safe when witnessing….		
Driving into hard shoulder	31	*105*
Verbal or other abuse	32	*114*
Jumping traffic lights	37	*319*
Sudden braking	38	*886*
Vehicles pulling out dangerously	39	*1118*
Road rage	40	*340*
Driving too close	41	*2241*
Poor overtaking	41	*2361*
Driver using mobile phone	41	*1065*
Not paying attention	40	*973*
Drivers cutting me up	43	*1754*
Speeding	43	*3244*
Not signalling	44	*2264*
Undertaking	44	*1570*
Very slow driving for type of road	45	*797*
Middle lane hogging	46	*2285*
% who feel very safe by no. of behaviours witnessed		
None	55	*8515*
1 poor driving behaviour	48	*2431*
2	42	*1600*
3	42	*1227*
4	41	*746*
5	41	*467*
6+ poor driving behaviours	38	*897*

Tables for Chapter 3: Logistic regression

For each of the poor driving behaviours listed in Table 3B, a binary logistic regression was used to identify the most significant predictors of feeling safe when driving. The binary variable which the model prediction was based on was feeling ‘very safe’ as opposed to any other response at the safety question (feeling either ‘fairly safe’, ‘neither safe nor unsafe’, or ‘unsafe’). This analysis was conducted based on all drivers.

In order to find the types and numbers of driving behaviours that have a significant relationship with feeling very safe, we used a ‘backwards stepwise’ variable selection technique. This technique drops one explanatory variable (behaviour) at a time if the influence of that behaviour on feeling safe falls below an acceptable significance level, and it stops when the influence of all the remaining explanatory variables are above the acceptable significance level. Essentially, it finds a trimmer model that fits the data as well as a model with *all* explanatory behaviours entered, by removing redundant behaviours.

The modelling process involved three stages. At the first stage, we included all poor driving behaviours in the model and used the 'backwards stepwise process' to drop behaviours that were not significant when controlling for all other behaviours in the model. This process stopped when only four behaviours remained: driving too close; driving into the hard shoulder; poor overtaking; and pulling out dangerously.

At the second stage, we proceeded to add the *number* of poor driving behaviours into the model and this was also found to significantly predict feelings of being very safe on top of these four driving behaviours. This showed that feeling very safe was not only related to the *type* of poor driving behaviours witnessed while driving, but it was also related to *the number* of driving behaviours witnessed. This indicates that witnessing two or more instances of poor driving has a multiplicative effect on feelings of safety, rather than just an additive effect.

Finally, as a third stage, we looked to see if the impact of these driving behaviours on safety differed significantly between disabled and non-disabled drivers. We did this by adding in disability as a main effect and then as an interaction term with each of the predictors already found to be significant. We found no evidence of a significant interaction between any of the poor driving behaviours/number of poor driving behaviours and disability. This indicates that having a disability does not have any impact on the relationship between these types of behaviours and feeling safe when driving.

Table 3C: Predictors of feeling 'very' safe when driving (logistic regression)

Parameter		Beta coefficient	Std. Error	Wald	Odds ratio: Exp (Beta)	95% Confidence Interval for Exp(Beta)	
						Lower	Upper
Poor driving observed: Driving too close behind me (vs. Not observed)	Yes	-0.160**	0.0564	8.093	0.852	0.763	0.951
Poor driving observed: Driving into hard shoulder (vs. Not observed)	Yes	-0.484*	0.2149	5.070	0.616	0.404	0.939
Poor driving observed: Poor overtaking (vs. Not observed)	Yes	-0.168**	0.0583	8.331	0.845	0.754	0.947
Poor driving observed: Vehicles pulling out dangerously (vs. Not observed)	Yes	-0.155*	0.0739	4.401	0.856	0.741	0.990
Number of poor driving behaviours seen (vs. None)	6+	-0.171	0.1257	1.854	0.843	0.659	1.078
	5	-0.223	0.1199	3.447	0.800	0.633	1.012
	4	-0.272**	0.0966	7.939	0.762	0.630	0.920
	3	-0.314**	0.0776	16.383	0.731	0.628	0.851
	2	-0.192**	0.0644	8.833	0.826	0.728	0.937
	1	-0.206**	0.0497	17.252	0.814	0.738	0.897
Note: Statistical significance: ** = significant at the 1% level, * = significant at the 5% level							