

Gender Differences in the Behaviour of Older Drivers:

Maintaining mobility and safety

C G B (Kit) Mitchell
September 2018



Acknowledgements

The author would like to thank Transport Statistics at the Department of Transport for the tabulations from National Travel Survey and STATS19 police reports of collisions, without which this report could not have been written. He would also like to thank Graham Mylward for releasing anonymous appraisal reports from the Hampshire County Council Driver Skills 60+ scheme, and Wessex DriveAbility and Driving Mobility for data on the Fitness to Drive assessments at Wessex DriveAbility.

Disclaimer

Any errors or omissions are the author's sole responsibility. The report content reflects the views of the author and not necessarily those of the RAC Foundation.

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Abstract

Older woman drivers, aged over 70, are involved in fewer collisions than older men per driver per year, but have a higher collision rate than older men per mile driven. For female drivers of all ages, a higher percentage of serious collisions occur during right turns across traffic or at T-junctions than is the case for male drivers. Studies of self-regulation find that older women are more likely than men to find some aspects of driving unpleasant and to try to avoid some situations. Women drive lower mileages than men, and studies have shown that drivers with a mileage of less than 2,000 to 3,000 miles a year have a higher collision involvement rate per mile.

This report uses National Travel Survey data for 2014–16 to show that older women drive less in darkness than do older men. The survey is also used to examine how activities influence the amount of driving women need to do, and how this is affected by their area of residence. Reports of appraisals from the Hampshire County Council Driving Skills 60+ scheme are used to compare the risk events noted against older male and female drivers, with any associated comments. The outcomes of five years of Fitness to Drive assessments by the Wessex DriveAbility driving mobility centre show that of the participants aged over 70 women are more likely than men to be assessed as 'unsafe'. The reasons for unsafe assessments for the women are likely to be impaired perception; for the men, impaired decision-making/judgement. Of the clients assessed as 'unsafe – review', almost half were assessed as 'safe' after a course of driving tuition.

The evidence collected in the report is used to propose measures to help improve the safety and maintain the driving competence and confidence of older drivers, with particular attention to the issues faced by women drivers.

1. Introduction

A number of indicators such as collisions per mile driven and outcomes of mobility centre assessments suggest that after age 70 female car drivers are less safe than male drivers. One factor influencing this may be the distance that women drive: in Britain this reduces steadily from about 5,200 miles per year at the age of 50, and by 70 has fallen to about 2,000 miles per year.

In addition to the per-mile crash rate for older women exceeding that for older men, a study of the outcomes of Fitness to Drive assessments at Wessex DriveAbility driving mobility centre suggests that on average women were likely to be rated unsafe to drive or in need of tuition and re-assessment at an earlier age than men. Also, an analysis of responsibility for car driver crashes by Lang (2011), based on reported contributory factors, shows that the highest responsibility ratios¹ occurred for younger male drivers and older female drivers.

This report uses National Travel Survey data (DfT, annual (a)) to explore how the number of car driver trips and the distance driven vary with age for men and for women. It also considers the reduction in driving during hours of darkness by both men and women as they age, and the extent to which this limits the activities in which they participate. It examines how the sharing of activities between men and women, as indicated by the numbers of trips by all means of transport and as car drivers, may lead to older women reducing the total distances they drive.

Collision patterns for older male and female car drivers are examined from police reports of injury collisions; small but consistent differences are found between the patterns for men and for women.

The final section discusses ways in which the confidence and driving skills of older car drivers can be maintained, with particular attention to concerns such as the low mileages driven by women. Short courses of refresher driving tuition with specialist instructors has been shown to enable almost half of those clients of a driving mobility centre rated as needing tuition and re-assessment to be rated as 'safe' drivers after tuition.

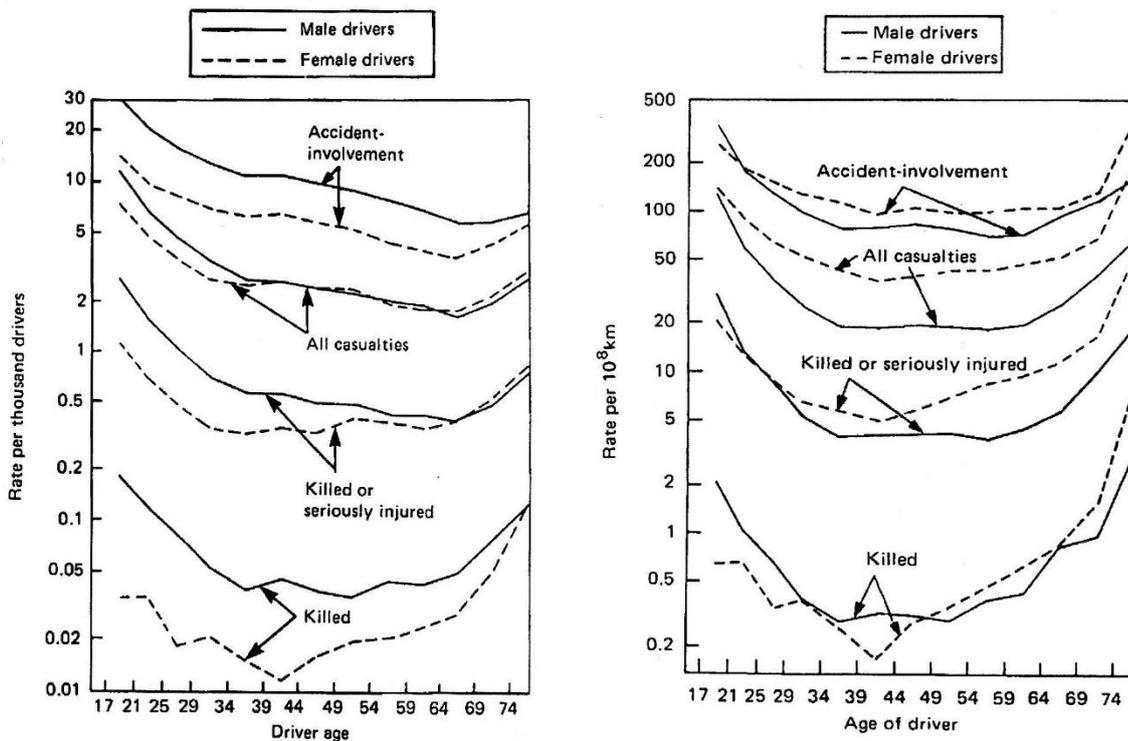
¹ The ratio of the number of drivers with factors assigned which suggest they contributed to the crash, divided by the number of drivers without factors assigned.

2. Literature Review

2.1 Relative collision risk, men and women

As early as 1988, Broughton (1988) showed that in Britain (that is, the UK excluding Northern Ireland) car driver collision involvement per driver in 1985 was lower for women than men at all ages, and that the rate for car driver casualties was lower for women up to age 40, but slightly higher after age 60. For fatal or serious collisions, the rate per driver was lower for women up to age 60 but very slightly higher for older women (Figure 2.1). However, for rates per distance driven, women had higher rates than men for collisions of all severities for all ages, and for serious collisions, for all ages over 30. In the USA, Evans (1991) showed that for car drivers the rate of severe crashes per distance travelled was higher for men than women up to age 40, and higher for women than men after age 50. Neither Broughton nor Evans, however, gave any explanation for these differences, and there does not appear to have been any subsequent study of the reasons for the relative risk of collision involvement by women to rise in older age.

Figure 2.1 Accident involvement and casualty rates per thousand car drivers and per 108km travelled, respectively, Britain 1985



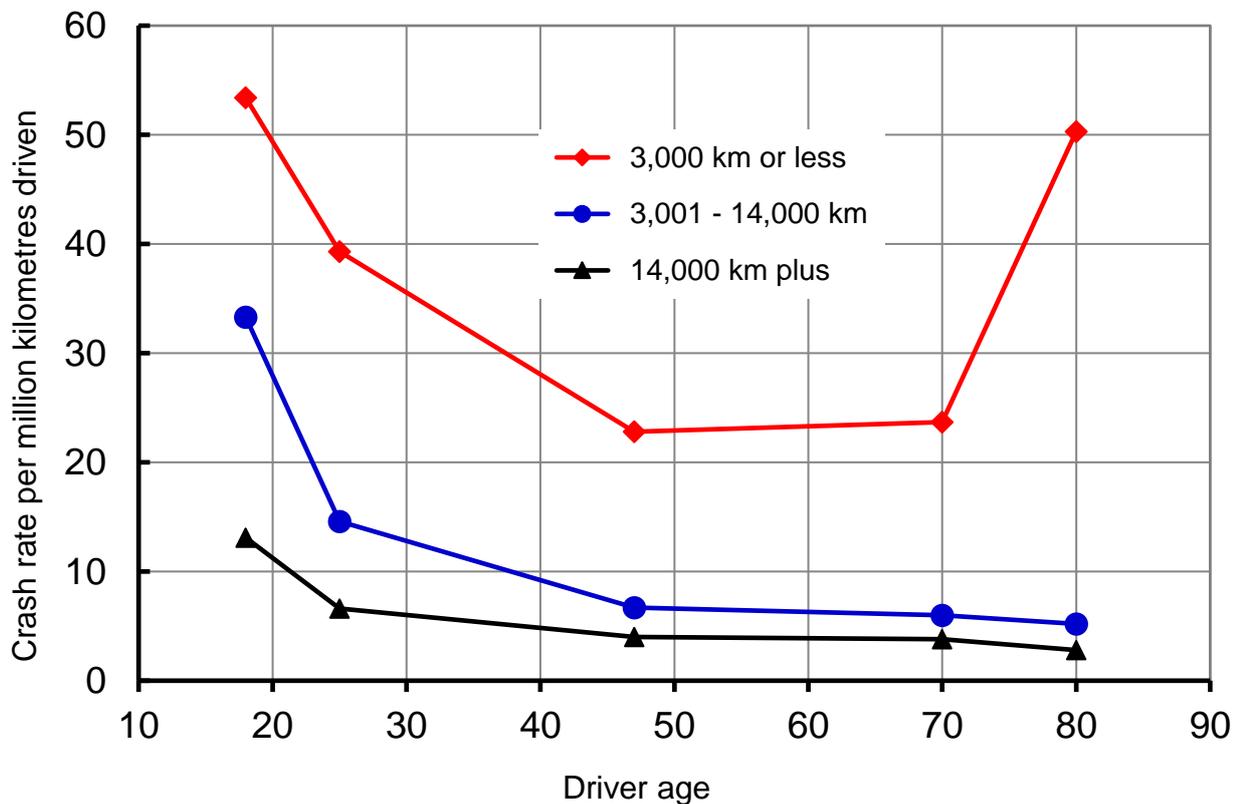
Source: Broughton (1988)

Oxley et al. (2004) show the hospitalisation and fatality rates per distance driven for Australian drivers in 1996 by age and gender. The report comments that fatality rates for younger women drivers are lower than for males of similar ages, but that rates for older

women drivers are similar to those of older men. The Australian Transport Safety Board, formerly known as the Federal Office of Road Safety, noted that female drivers were at greater risk per kilometre of being seriously injured in a crash than male drivers, and argued that if the amount of travel by female drivers continued to increase, the number of female drivers killed or seriously injured would also continue to rise (ATSB, 1996). A study in New Zealand found that the rate of fatal and serious injury crashes involving female drivers aged over 75 years per kilometre driven was substantially greater than for male drivers in the same age group (LTSA, 2000).

Langford et al. (2006) showed, for a sample of Dutch car drivers, that it is only those who drive less than 3,000 km (about 2,000 miles) per year whose crash rate per mile increases after age 75 (Figure 2.2). For those driving higher mileages, the crash rate per mile reduces after age 75.

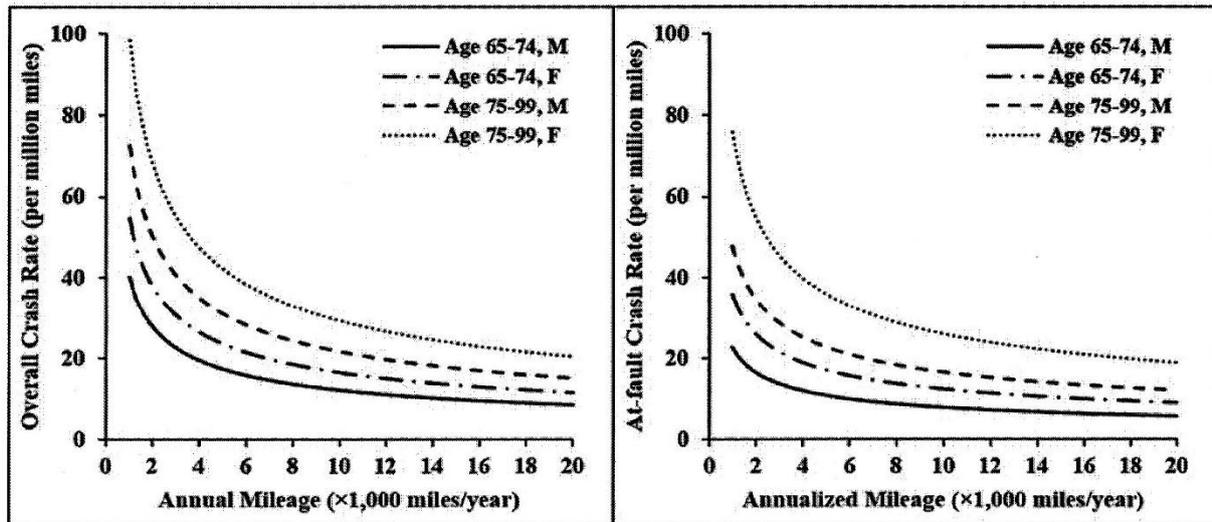
Figure 2.2 Car driver crash rate per distance driven in the Netherlands



Source: Langford et al. (2006)

Antin et al. (2017) have shown from the American SHRP 2 data (Strategic Highway Research Programme 2; Campbell, 2012) that it is older drivers who drive less than 3,000 miles a year who experience an increase in crash involvement per mile. Curves fitted to these data show the low mileage bias, and also show that at a given mileage, female drivers have a higher rate of crash involvement per distance driven than male drivers (Figure 2.3).

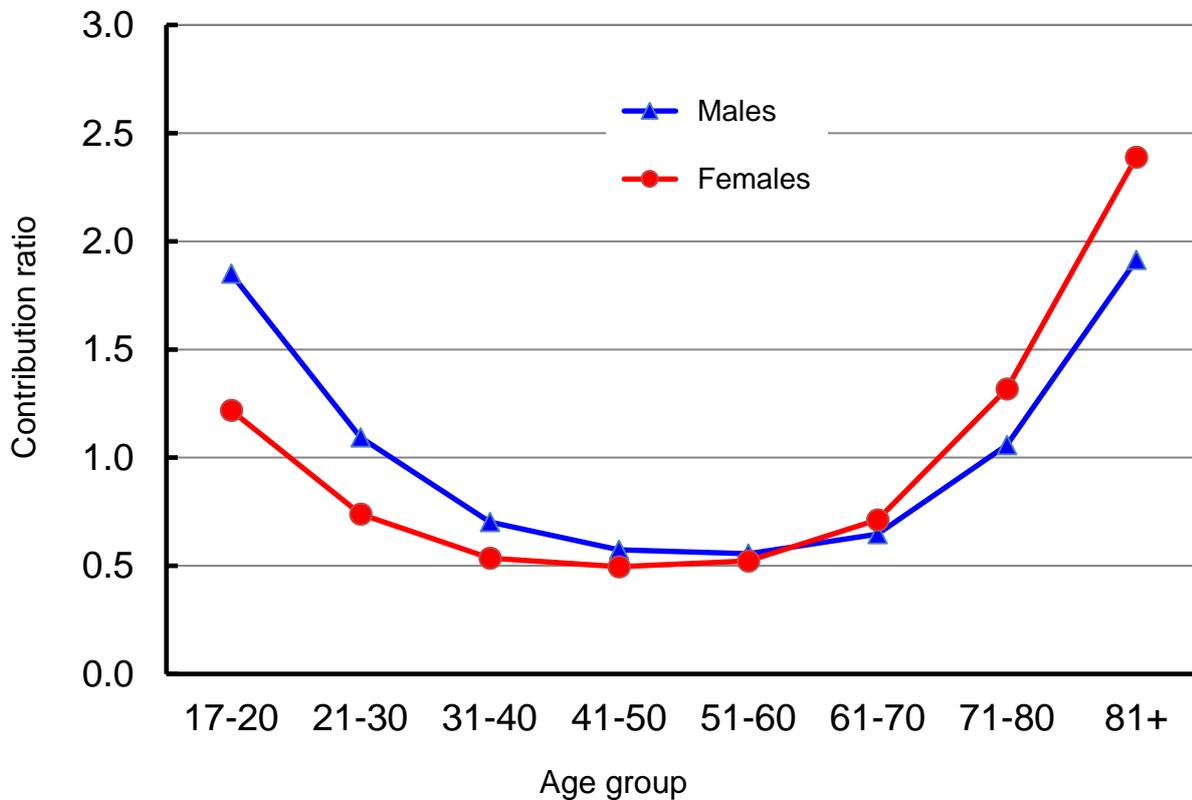
Figure 2.3 Fitted overall and at-fault crash rate by annualised mileage



Source: Antin et al. (2017)

An analysis of responsibility for car driver crashes in Britain by Lang (2011) based on reported contributory factors, Figure 2.4, shows that the highest responsibility ratios occurred for younger male drivers and older female drivers.

Figure 2.4 Car driver responsibility ratio, based on contributory factors 2005–06



Source: Lang (2011)

With regard to the risk to other road users, the research reports that support the Older Driver Task Force² show that although the number of pedestrians killed per car driver is lower for women than for men, the pedestrian fatality rate per mile driven is higher for women than for men after age 70 (Road Safety Foundation 2016 Appendix A.3 Casualties).

Oxley et al. (2006) considered 92 older female drivers in the Australian Capital Territory, consisting of two groups: 48 'cases' (those who reported having had a crash in the last five years) and 44 'controls' (those who reported having not had a crash in the last five years). The report found that the most 'at-risk' older female drivers who responded to the survey were those who:

- were the principal driver;
- were moderately or not at all confident that they were a safe driver;
- shared driving on long-distance trips;
- had problems with the driving style of other drivers; and
- experienced problems driving on unfamiliar roads.

In particular, those who considered themselves to be the principal driver in the household were 5.97 times more likely to have been crash-involved than those who were not the principal driver.

These findings, which may appear counter-intuitive, demonstrate the difference between risk per driver per year and risk per mile driven. Although driving a greater mileage reduces the risk per mile driven, it is usually not enough to counter the effect of greater exposure, and thus the risk per year is increased.

2.2 Self-regulation

There have been many studies of how older drivers regulate their driving to avoid stressful situations, but only a few of these consider the behaviour of male and female drivers separately. One such report is Charlton et al. (2006) which obtained survey responses from 1,697 current drivers and 108 former drivers, all aged 60 and older, in Australia.

Results are given for the percentage of drivers who say they find various situations difficult, and for the odds ratio for female drivers having difficulty relative to male drivers. Table 2.1 shows the situations that were most difficult for drivers. It gives the percentages of drivers,

² The Older Driver Task Force was set up in 2015 by the Road Safety Foundation, with the support of Ageas UK. The aim of the Task Force was to find ways of helping older drivers to continue to drive safely for longer. Its report, *Supporting safe driving into old age*, was published in 2016, supported by a number of research reports detailing the scientific evidence used by the Task Force (Road Safety Foundation, 2016).

all aged 60 and over, who report finding certain situations a little, or very, difficult, and the odds ratios F:M for each situation (the percentage of women involved divided by the percentage of men). The differences shown by the odds ratio are significant, at $p < 0.05$.

Table 2.1 Difficulty ratings for all driving situations

Driving situation	Difficulty experienced percent			Odds ratio* F:M	
	Not	A little	Very	ACT	NSW
Merging into traffic	73.5	25.5	1.0	2.3	2.9
Rain	53.8	45.6	0.8	1.5	2.0
Busy traffic	57.0	41.6	1.4	1.5	1.6
Intersections no traffic lights	73.0	26.0	1.0	1.6	1.6
Night	48.6	47.4	4.0	2.2	2.2
Night when wet	30.2	60.2	9.6	2.5	2.3
Changing lanes	74.2	25.2	0.8	1.9	1.9

Source: MUARC Report 254 (Charlton et al., 2006)

Note: * Odds Ratios are defined as Odds of first group divided by Odds of second group

It is clear that women are between 1.5 and 2.5 times more likely than men to find many driving situations difficult: women are also more likely to find difficulties with merging into traffic, changing lanes, and night driving. It is clear, however, that night driving, rain and busy traffic are particularly likely to cause difficulties for all drivers..

The report also gives the percentages of drivers who try to avoid particular situations. The situations most likely to be avoided were Night when wet (22% of drivers), Night (18%), Busy traffic (15%), Rain (10%) and Merging into traffic (6%). The report also gives the odds ratios F:M for avoiding situations (Table 2.2).

Table 2.2 Odds ratios for driving avoidance by gender and age, drivers from Australian Capital Territory (ACT) and New South Wales (NSW)

Driving situation	Odds ratio F:M	
	ACT	NSW
Merging into traffic	2.6**	2.4**
Rain	1.6*	1.8*
Busy traffic	1.2	2.0**
Intersections no traffic lights	1.8	2.5
Night	1.4*	2.5**
Night when wet	1.7	2.2**
Changing lanes	1.0	2.7

Source: MUARC Report 254 Tables 46 and 47 (Charlton et al, 2006)

Notes: Differences are not significant unless otherwise indicated (** $p < 0.01$, * $p < 0.05$)
Odds Ratios are defined as Odds of first group divided by Odds of second group

Of those who indicated that their driving had decreased over the last five years, about one third reported that this was due to changes in employment situations (32%) or changes in lifestyle such as moving house (42%). Nineteen per cent identified health or age-related issues, which the report indicates is suggestive of appropriate self-regulation, while only 2% reduced their driving because of lack of confidence or avoidance of specific driving situations.

Charlton et al. (2006) analyse whether drivers are driving: more than they would like, about as much as they would like, or less than they would like. They found that 2% to 4% of drivers said they were driving more than they would like; 7% to 15% less than they would like; and 80% to 87% about as much as they would like. Women were lower on both driving too little and too much, and higher on about right.

It is not clear from the report whether those who said they were driving less than they would like did so because they were unable to drive to desired activities, or because they no longer enjoyed the act of driving in itself. The increase with age of this response, from 7% of those aged 60–64 to 15% of those aged 75+, suggests that it implies an increase in activities forgone as older drivers increase the degree to which they restrict their driving.

Oxley et al. (2004) give the following reasons for women stopping driving: Table 2.3.

Table 2.3 Main contributing reasons for Australian women stopping driving

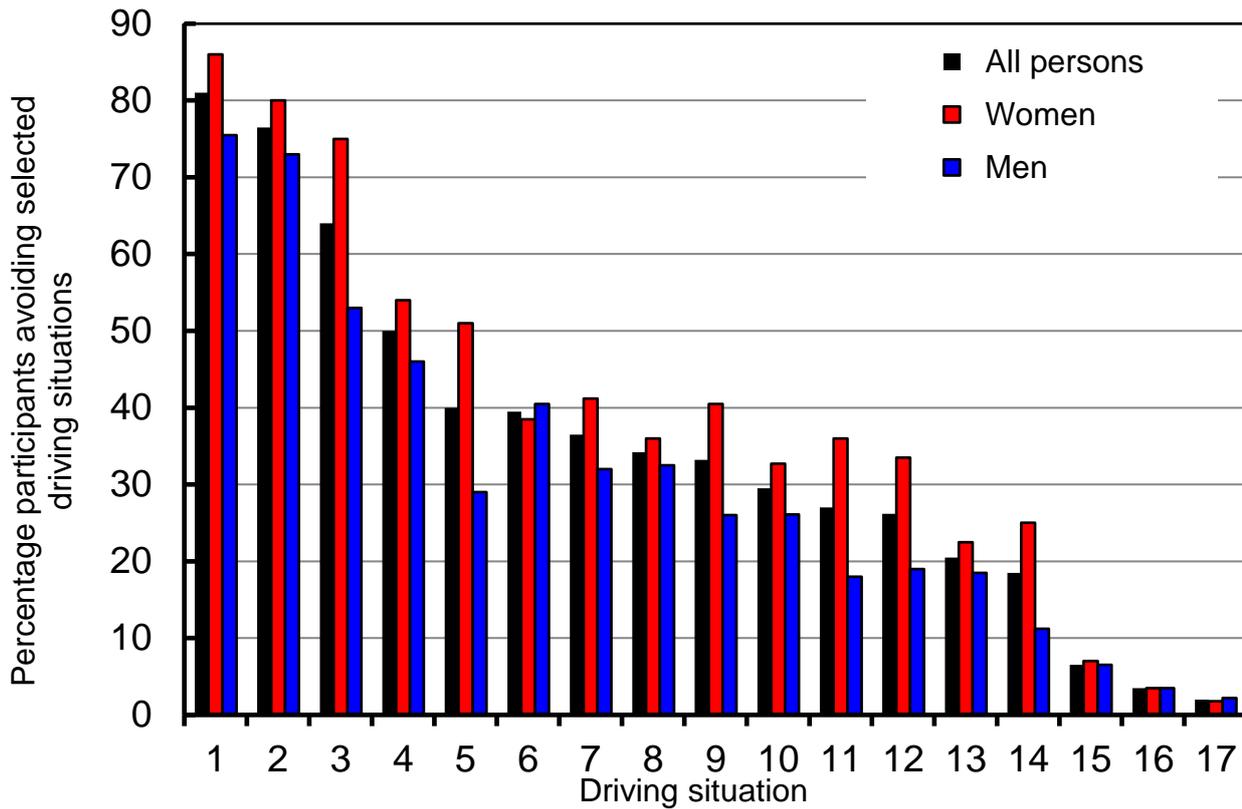
Reasons	Proportion percent
Alternative transport available	59.5%
Decreased confidence in driving skills	55.9%
Someone else available to drive	48.6%
Not comfortable while driving	48.4%
High cost of running a car	47.4%
Decreased confidence in traffic situations	45.5%
No longer enjoyed driving	39.4%
Major health or medical reasons	33.3%
Experienced physical problems	30.3%
Concern about licence testing	18.8%
Doctor or others advised not to drive	18.2%
Retired from work and did not need to drive	18.2%
A crash or 'close call'	17.6%
Licence not renewed	12.5%

Note: Multiple response question – total may exceed 100%

Source: Monash Report 226 (Oxley et al., 2004)

A more recent study is Siren and Meng (2013), which reports a survey of older drivers' self-assessed driving skills, driving-related stress and self-regulation in traffic. This survey obtained useful results from 888 drivers in Denmark in age groups 75–79, 80–84 and 85+.

Figure 2.5 Percentage of people in Denmark who avoid certain driving situations



1	When feeling unwell	10	Overtaking
2	When tired	11	Unknown places
3	When it is slippery	12	Unknown routes
4	Listening to the radio while driving	13	Times and places with many cyclists
5	When it is dark	14	Motorway/highway driving
6	Driving fast	15	Junctions without traffic lights
7	Times and places with dense traffic	16	Left turns
8	Having conversations while driving	17	Roundabouts
9	Long trips		

Source: Siren and Meng (2013)

Figure 2.5 shows the percentages of women and men who avoid certain driving situations. The situations most drivers find unpleasant are when it is slippery, when feeling tired or unwell, and when it is dark. More women than men find most driving situations unpleasant, the exceptions being "Right turns when there are cyclists", "Long trips", "Listening to the radio while driving" and "Driving fast". The situations most drivers avoid are when they are feeling unwell or tired, when it is slippery, and listening to the radio while driving. Figure 2.5 shows that more women than men avoid all the driving situations listed except driving fast. The situations with the biggest differences between the percentages of women and men avoiding them are when it is slippery and when it is dark, and also long journeys, unknown places, unknown routes and motorways. About 40% of

drivers find junctions without traffic lights unpleasant, and about 23% find left turns (across traffic: equivalent to right turns in the UK) unpleasant. However, only about 6% avoid junctions without traffic lights and 4% avoid left turns, slightly higher than the percentages of drivers avoiding these situations in Table 11 of MUARC Report 245 (Oxley et al., 2006).

Another study by Meng and Siren (2012a) used the same Danish drivers sample as the previous study, in order to determine the reasons for driving less, and then divided the sample into four groups by self-rated cognitive functioning. The first two reasons that their respondents gave for driving less are: "I have fewer activities I drive to" (69.8%), and: "I no longer drive just for the drive" (44.8%). These were cited by much the largest percentages of respondents. The authors suggest that the reduction in driving largely appears to relate to a reduced need for mobility, whereas the avoidance of driving situations is associated with not liking to drive in the situation and feeling insecure about driving in the situation, and may thus to a larger extent reflect strategies to continue to drive safely.

Of the twenty-one reasons given in that study, the first, second, fifth, sixth and tenth are concerned with lifestyle changes and a reduced need or desire to travel. The remainder concern difficulties or discomforts with driving, or advice from others to reduce or stop driving. A larger percentage of women than men stated that they have fewer activities they drive to, and for both men and women the groups with lower cognitive functioning have fewer activities to drive to than the higher functioning groups.

Overall, 51% of women and 29% of men said they avoided driving when it is dark. More women than men stated that they do not like driving when it is dark, that they have no need to drive when it is dark, and that they feel insecure about driving when it is dark. Of the higher functioning groups, twice as many women as men were scared of having a collision.

Twenty-five per cent of women and 11% of men avoided driving on motorways. Of the higher functioning groups, more women than men had no need to drive on motorways, felt insecure on motorways, were not confident in their own ability, felt other drivers were reckless, and were scared of having a collision. But fewer women than men did not like to drive on motorways, were concerned about the speed, or felt it took too much concentration. Merging and changing lanes were not mentioned as reasons not to drive on motorways.

The authors concluded that the results suggest that the reduction in driving and the avoidance of particular driving situations are best treated as separate types of self-regulatory behaviour; the reduction in driving seems primarily to be a consequence of a reduced need for mobility, whereas the avoidance of driving situations largely appears to

be motivated by negative feelings associated with driving in unpleasant situations. The authors conclude that reduction in driving is not likely to increase the safety of the older road users because it may lead to an increased use of less safe means of transport such as walking or cycling, and thus should not be encouraged.

Moreover, the results showed that even though older drivers recognise visual and cognitive problems, only a minority indicated functional decline as a reason for avoiding driving situations, indicating that their self-regulation of driving is largely an automatic process in which they are not aware that they are compensating for functional loss.

Finally, the results lend further support to the suggestion that older women's greater vulnerability to premature driving cessation and unwarranted mobility loss are linked to their lack of confidence in their own driving. This finding stresses the importance of acknowledging gender differences when designing interventions aimed at enhancing safe mobility.

2.3 Self-confidence and driving skills

Charlton et al. (2006) obtained information from older Australian drivers on confidence in, difficulty with, and avoidance of particular driving situations. The report also analysed correlation between confidence and self-regulation.

Most drivers responded with Very confident for most driving situations. The percentages of drivers with this rating ranged from 89% for right-hand turns at traffic lights with a right-turn arrow, through 64% for roundabouts and 38% for night to 25% for night when wet. Only a few were Not at all confident: none for right-hand turns at traffic lights with a right-turn arrow, 1% for a number of situations, but 6% for night and 12% for night when wet. The odds ratios for drivers being very confident show that for all situations except right-hand turns at traffic lights with a right-turn arrow, men are more likely than women to be very confident: 2.9 times as likely for Night when wet, 2.4 times for Merging into traffic; 2.3 times for Night; 2.2 times for Rain and 1.9 times for Busy traffic, Intersections without traffic lights and Right turns at intersections without traffic lights.

Strong correlation was found between lower levels of confidence and self-regulatory behaviour. Women drivers were less likely to say they were very confident in their driving, and more likely to say they would avoid situations and self-regulate.

Although they do not separate results for men and women, Wood et al. (2013) examine the correlation between self-confidence, self-assessed driving skills and objective on-road driving performance in Australian drivers. Overall, participants reported relatively few difficulties with driving, but these self-perceptions were at odds with objective measures of

their on-road driving performance. Drivers who had the poorest correlation between the rating of their own driving ability and actual driving performance were, unsurprisingly, those most likely to report a crash in the previous five years. The association between lack of insight and lower scores in the Mini-Mental State Examination (or Folstein test) highlights the potential risk presented by older drivers with cognitive impairment or preclinical dementia.

Siren and Meng (2013) found that after age 75 women are more likely than men to self-report a decline in driving skills.

3. Driving and activity patterns, and the variation with age

The British National Travel Survey (NTS) provides data on how many car driver trips are reported by men and women of different ages, how long the trips are, when they occur, and the purposes for which they are made (DfT, annual (a)). The NTS also provides data on the percentage of people who hold full car driving licences by age and gender. The NTS travel data are averaged over the whole population; to determine travel patterns for car drivers such as the number of car driver trips per licence holder, the data for the whole population is divided by the fraction of the population who hold a driving licence. The NTS also allows an estimate to be made of the percentage of licence holders who are still driving regularly and the mileage they drove in the week of the survey. But it does not provide any information on the types of roads used.

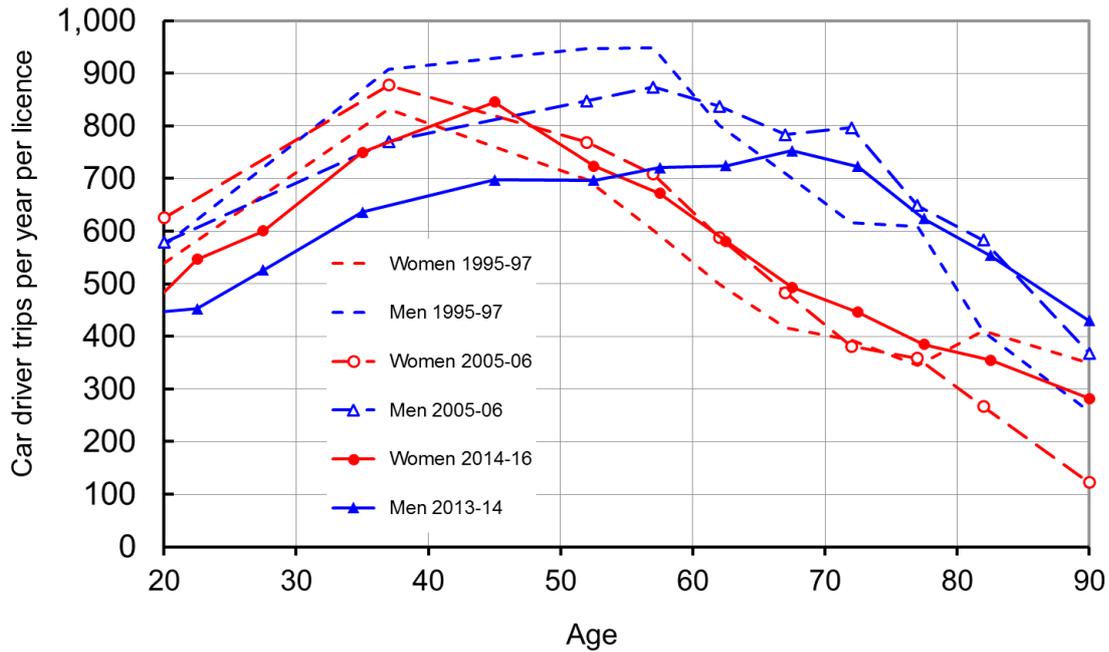
Another factor that NTS can illuminate is the characteristics, such as size and age, of cars used by men and women of different ages. Information on licence holders who drive very little, and the sizes of cars used by drivers of different ages, are given in the research reports that support the report of the Older Driver Task Force (Road Safety Foundation, 2016).

3.1 Car driver trips and distance driven per licence holder

The National Travel Survey has since 1996 provided information on how car driver trips have varied with age and gender. Car driver trip numbers and the distance driven come from tables NTS0601 and 0605, with licence data from NTS0201 to allow the trips and distance per licence holder to be calculated. The published tables are for people in 10-year age groups to age 70 and all older people grouped as 70+. The graphs in this section are drawn from special tabulations with five-year age groups from age 50 to 85, and with older people in a group aged 85+. For both men and women, the number of car driver trips reduces with increasing age: for women after about 40 to 50 years old, for men after about 60 to 70 years old (Figure 3.1). For women aged less than 40 there was a slight increase in the number of car driver trips between 1995–97 and 2005–06, followed by a larger decrease until 2014–16; for men up to age 65 there was a substantial reduction in trips over the whole period. For older men and women there was little change in the trend.

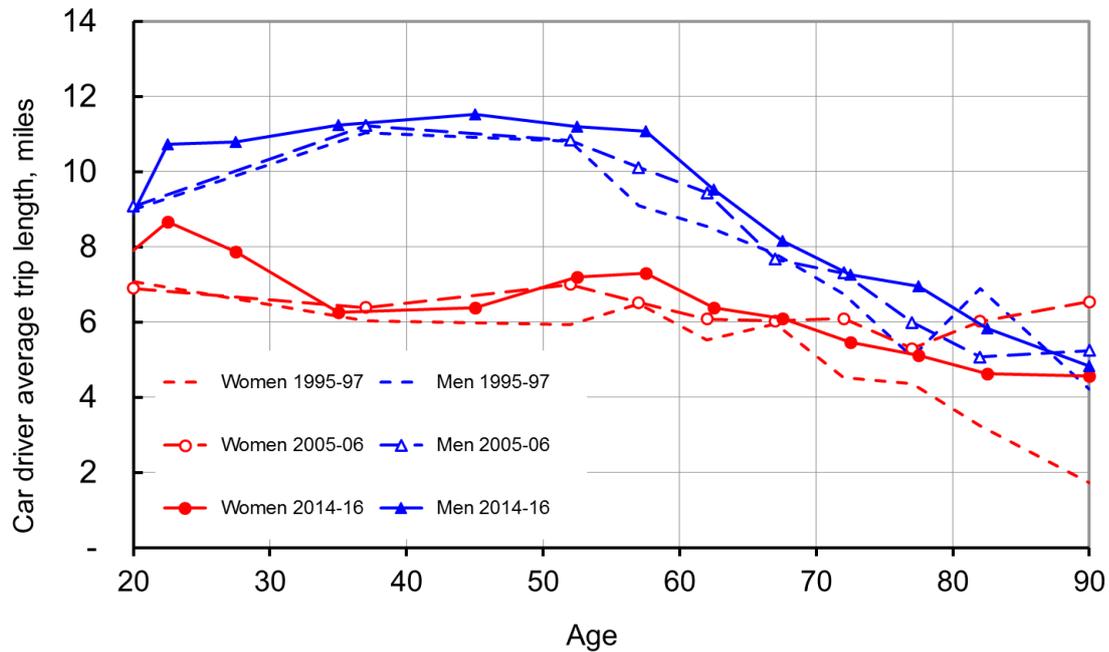
For both women and men, the average length of car driver trips reduces after age 55 (Figure 3.2). Up to age 80, trips by men are longer than those by women. For men, trip lengths did not change after 1995–97, but for women after age 70, trip lengths reduced much less rapidly in 2014–16 than they had in 1995–97, and in 2005–06 their trip lengths actually increased.

Figure 3.1 Car driver trips per driving licence per year



Source: Special tabulations of NTS tables 0605 (distance) and 0201 (licences)

Figure 3.2 Car driver average trip lengths

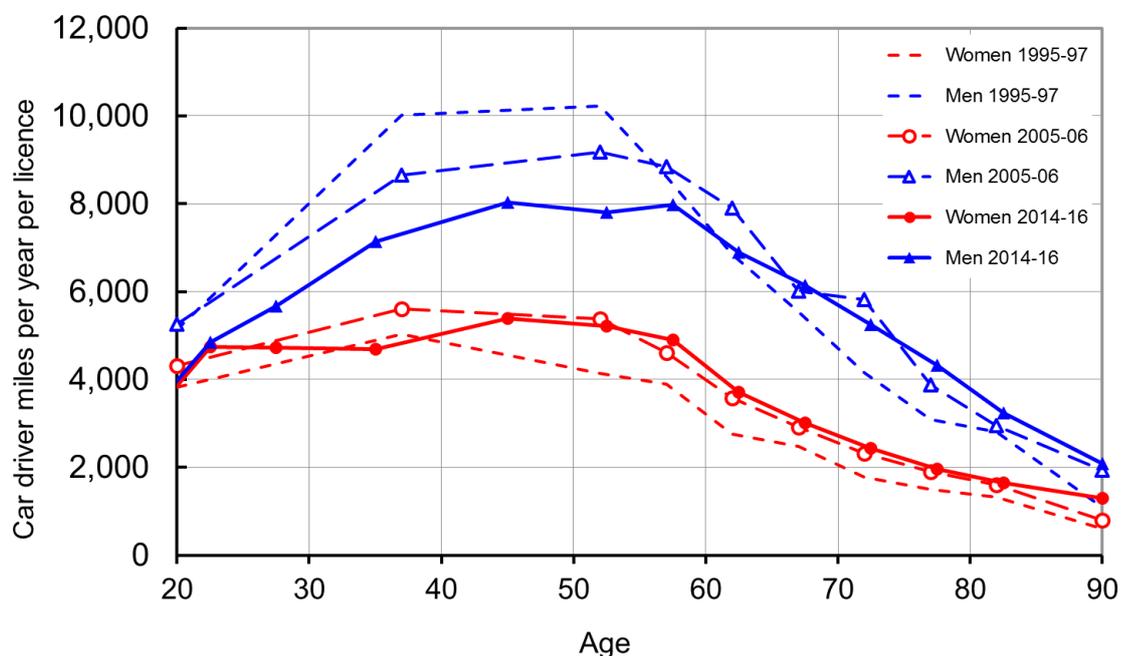


Source: Special tabulations of NTS tables 0605 (distance) and 0201 (licences)

The reductions in trip numbers and trip lengths mean that the distance driven by car drivers declines with increasing age after age 55 (Figure 3.3). At all ages, men drive further than women on average. The distances women drive increased between 1995–97 and 2005–06, but then remained steady. For men up to age 55, the distance driven fell steadily

from 1995–97. After age 60, the average distance driven increased between 1995–97 and 2005–06, but subsequently remained steady.

Figure 3.3 Distance driven as a car driver per driving licence per year



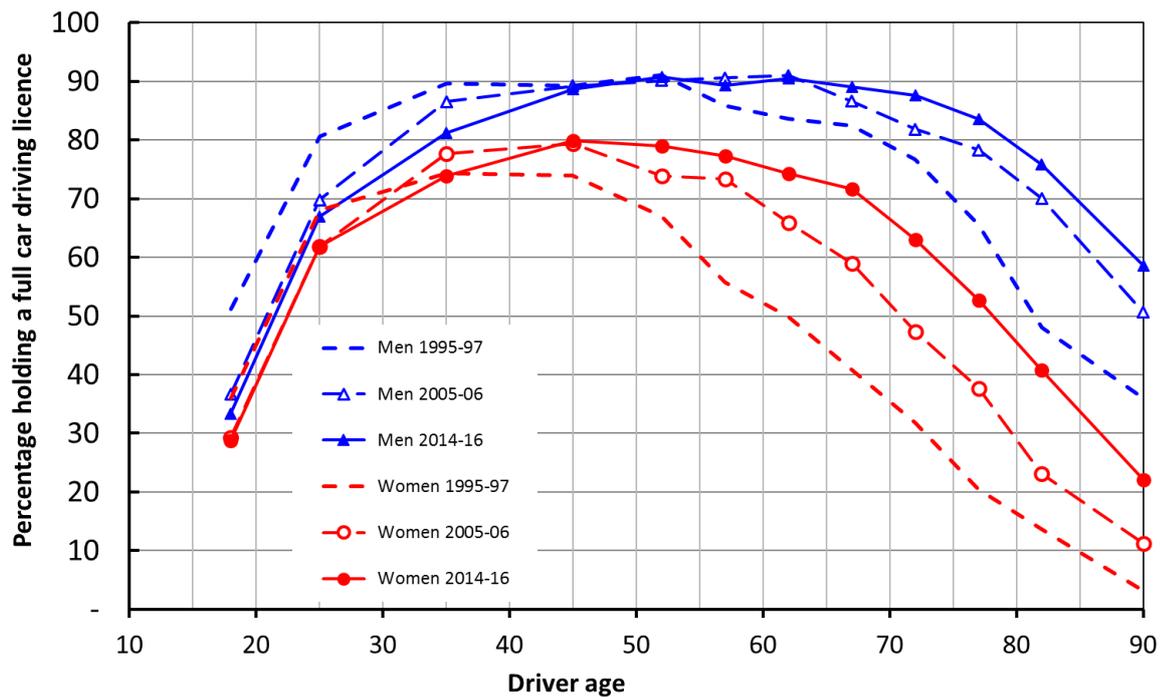
Source: Special tabulations of NTS tables 0605 (distance) and 0201 (licences)

The average annual distance driven by women falls to 2,000 miles by age 75 to 80. This is important, because Langford et al. (2006) have shown that in the Netherlands it is only those who drive less than 3,000 km per year (approximately 2,000 miles) whose collision involvement rate per mile driven increases after age 75. More recently, Antin et al. (2017) have shown from American SHRP 2³ data that it is the older drivers who drive less than 3,000 miles a year who experience an increase in crash involvement per mile. Note that in Britain, on average, women aged 65 and over drive less than 3,000 miles per year.

The figures for car driver trips and for miles driven depend on the percentage of people who hold driving licences. Figure 3.4 shows these percentages for men and women in England in 1995–97, 2005–06 and 2014–16. The lower percentage licence holding by women is clear, as are the fall-off in percentage licence holding in older age and the increase in holding at a given age over the years by older people, both men and women.

³ Strategic Highway Research Programme 2, a project in which 3,247 volunteer drivers aged 16 to 98 used their own cars, specially instrumented, to provide data on naturalistic driving over a period of at least several months (Campbell, 2012).

Figure 3.4 Car driving licence holding. 1995–97 and 2005–06 for Great Britain, 2014–16 for England only



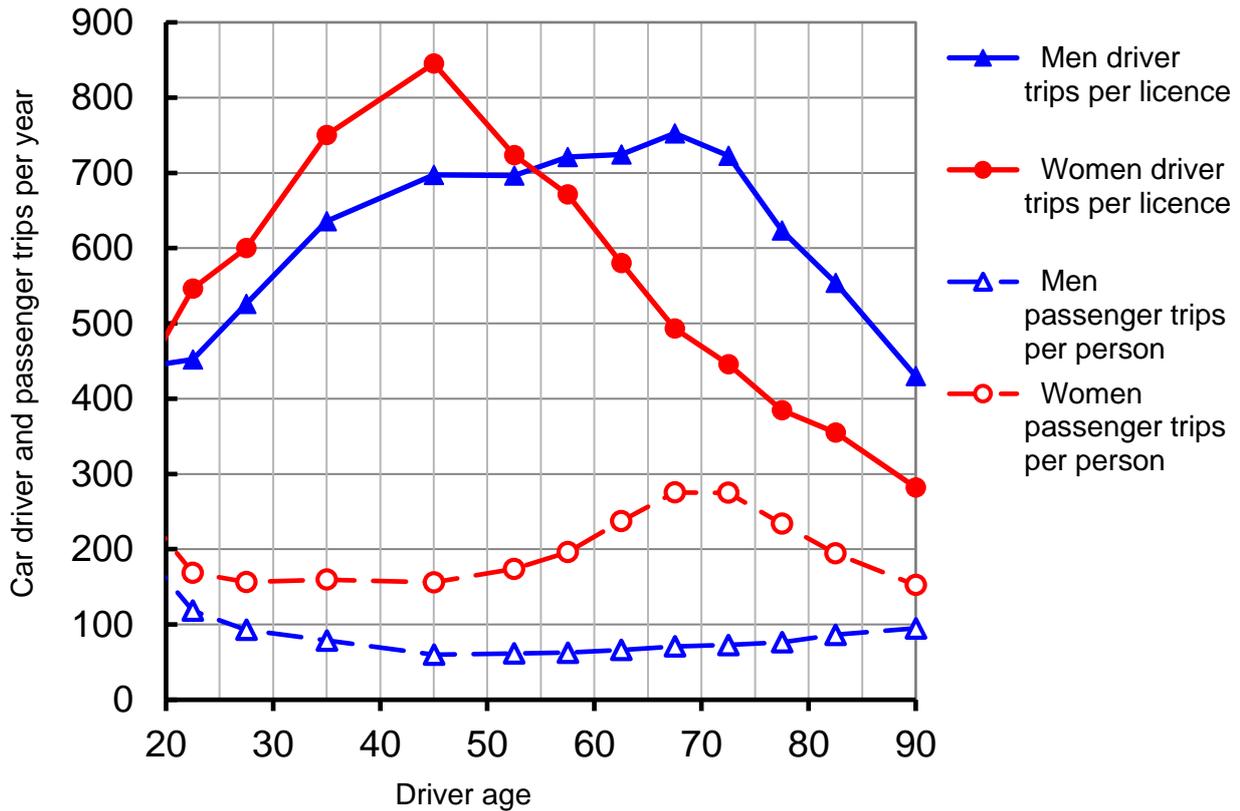
Source: Special tabulations of NTS table 0201

Note: 1995-97 and 2005-06 are Great Britain; 2014-16 is England only

3.1.1 Car drivers and car passengers

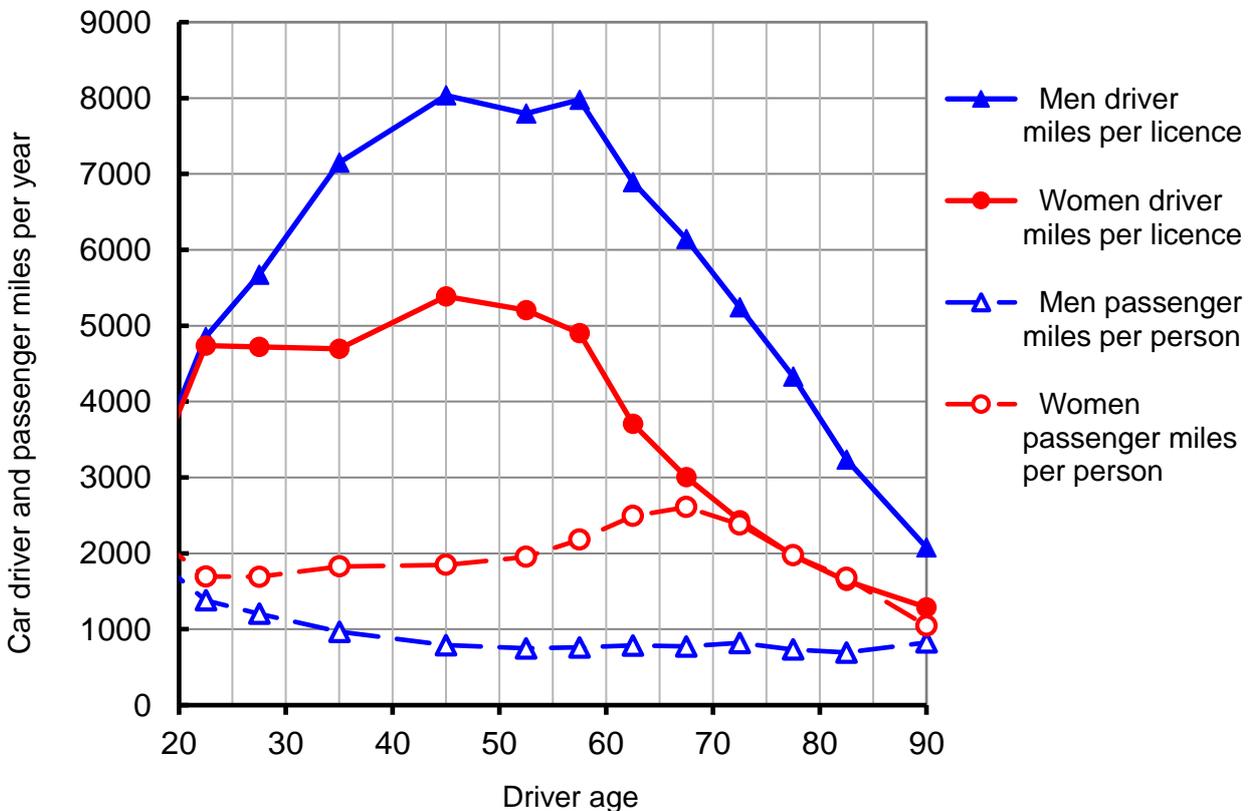
At any age, women are more likely than men to travel as a car passenger. However, the NTS data show that this tendency increases as women age. Figures 3.5a and 3.5b show the number of car driver and passenger trips, and the distance travelled by men and women, in 2014–16.

Figure 3.5a Car driver and passenger trips per year 2014–16



Source: NTS tables 0601 (trips) and 0201 (licences)

Figure 3.5b Car driver and passenger miles per year 2014–16



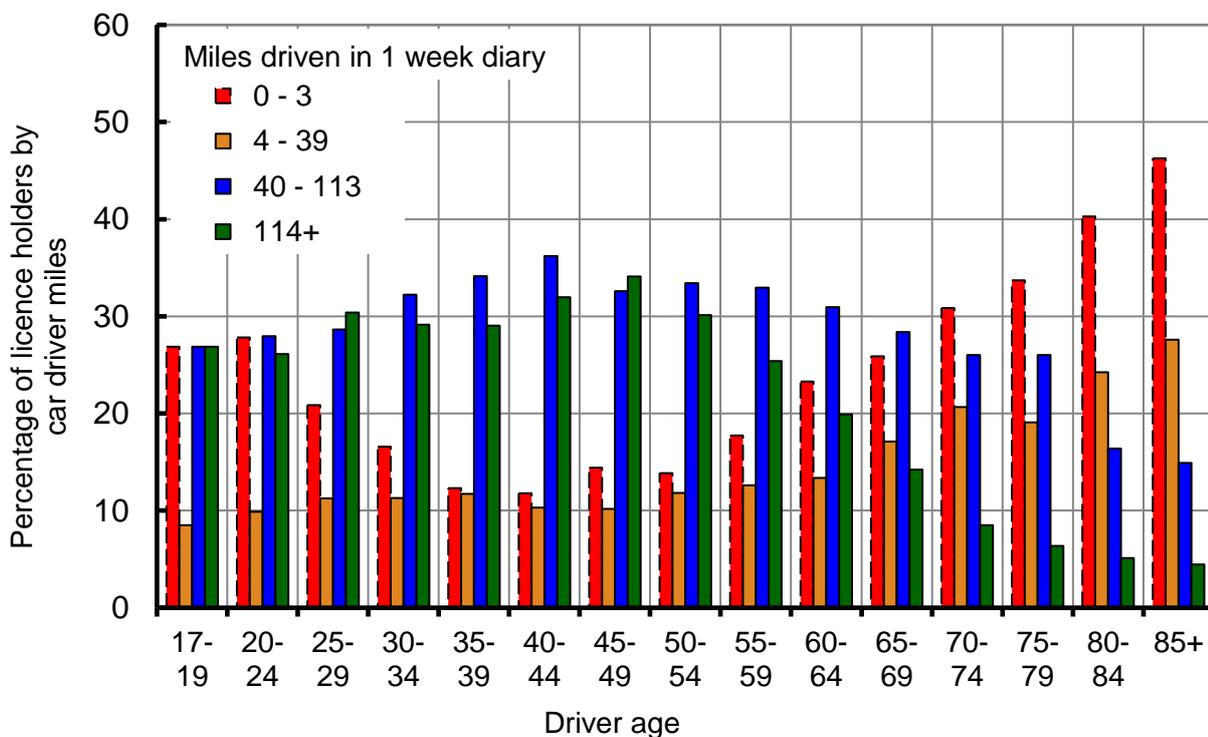
Source: NTS tables 0605 (miles) and 0201 (licences)

The increase in women’s passenger trips after age 50 occurs at the age when women reduce their car driver trips, although the increase in passenger trips is not as large as the reduction in driver trips. The reduction in women’s passenger trips after age 75 occurs at the point when men start to reduce their car driver trips. The pattern for miles travelled as driver or passenger is similar to that for trips.

Not everyone who holds a car driving licence drives regularly. The National Travel Survey has provided data on how many car driver trips were made and miles driven during the weeks of the 2013 and 2014 surveys. Figures 3.6a and b show the percentages of women and men drivers who recorded 0 to 3 miles, 4 to 39 miles, 40 to 113 miles and 114 and over miles driving during the one-week survey period. The 40-mile distance is important because it corresponds to the 2,000 miles per year which Langford et al. (2006) have shown to be the threshold below which the collision rate per mile increases in older age. More than 50% of women drivers of all ages over 65 recorded less than 40 miles driving per week, while for men it was only drivers aged 85 and over for whom over 50% recorded such a low mileage. The percentage of woman driving licence holders who recorded no car driver trips in the week of the survey increased from 26% for age 65 to 69 to 46% for age 85 and over, whereas for men driving licence holders those percentages were 12% to 30%.

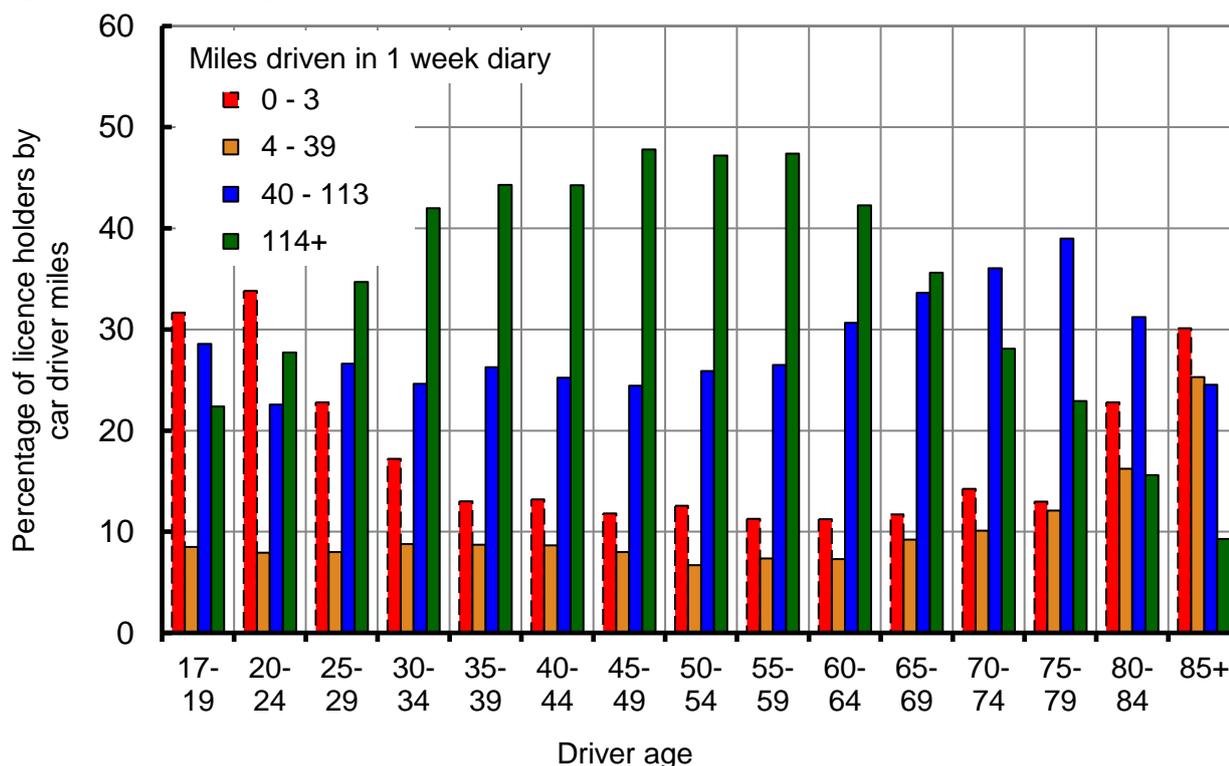
Not all of these licence holders will have stopped driving completely; some will have done so, and many of the rest will be doing very little driving.

Figure 3.6a Percentage of female licence holders by number of car driver miles in one-week diary



Source: NTS 2011–2013 special tabulation

Figure 3.6b Percentage of male licence holders by number of car driver miles in one-week diary



Source: NTS 2011–2013 special tabulation

3.2 Distance driven for different purposes

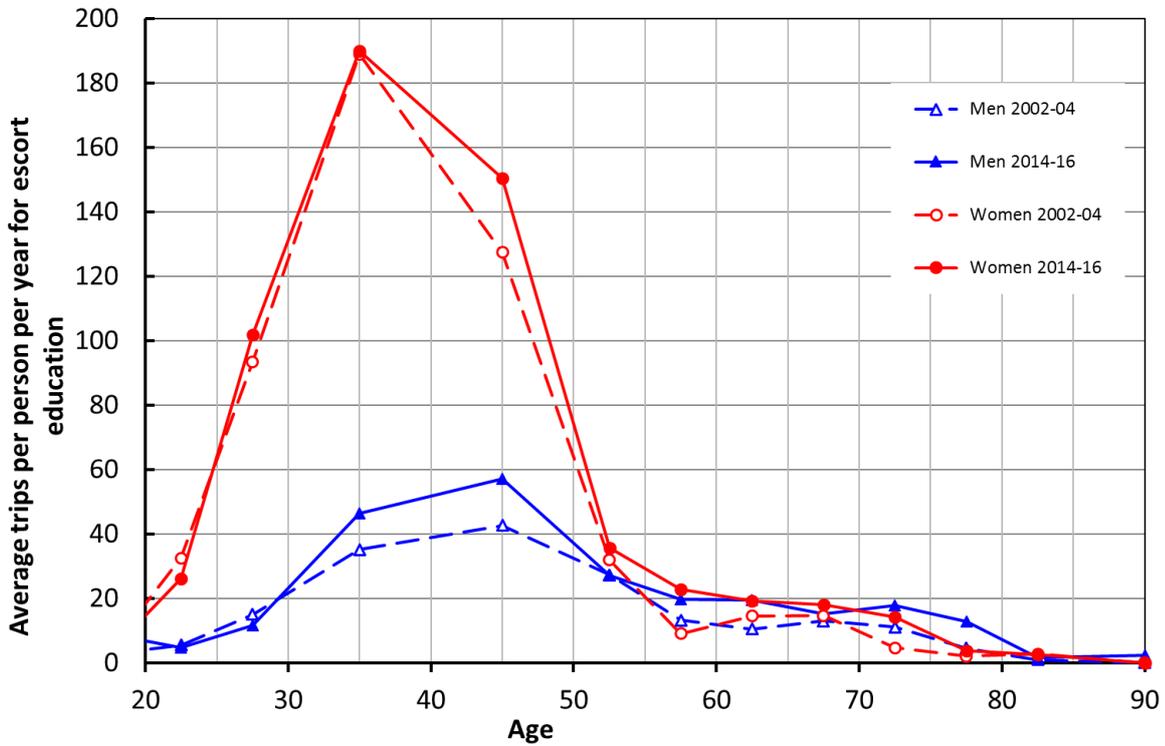
The National Travel Survey provides tabulations on trips and distance travelled by age and gender for a number of purposes, but special tabulations are required to obtain the trips and distance driven as a car driver by purpose, age and gender. These tables indicate the activities in which men and women participate at different ages, and the extent to which the participants are required to drive. This section analyses some of the trips made by women and men for different activities, the car driver trips for those activities, and the distance driven for the activities, to discover how gender differences influence the amount women drive. The trip rates are per person, both by all means of transport and as a car driver; the distance driven is per licence.

3.2.1 Escort education

These are journeys to take someone (normally a child) to or from a school or college. The total number of journeys per year made for the purpose 'Escort education' are shown in Figure 3.7a, and the number of journeys as a car driver in Figure 3.7b. It is clear that the large majority of trips to escort children to or from school are made by women, particularly in the age range 30 to 50. The number of trips by women aged 40–49 increased from 2002–04, and the number by men aged 30–49 increased rather more. Comparison of Figures 3.7a and 3.7b shows that about half the trips by women are made as a car driver, as

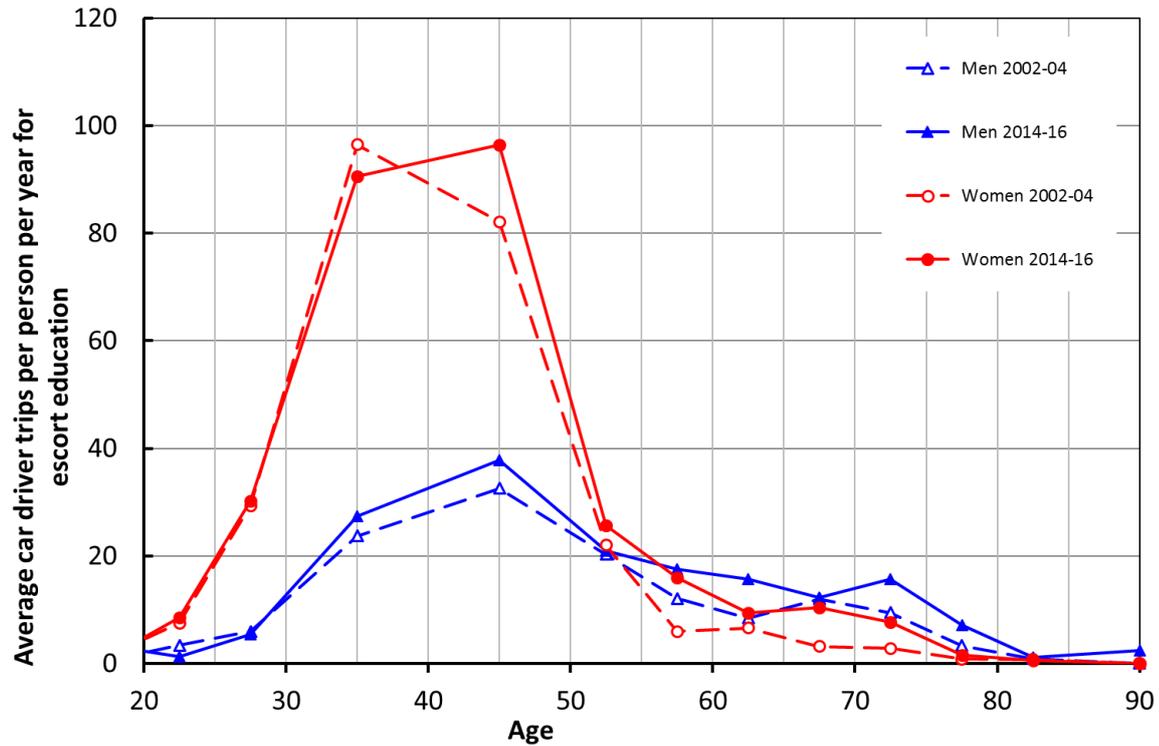
are 60–70% of trips by men. Until age 55, far more women than men make car driver trips for Escort education, but after age 55, men make more such trips than do women.

Figure 3.7a Trips per person per year for escort education



Source: NTS table 0611 special tabulation

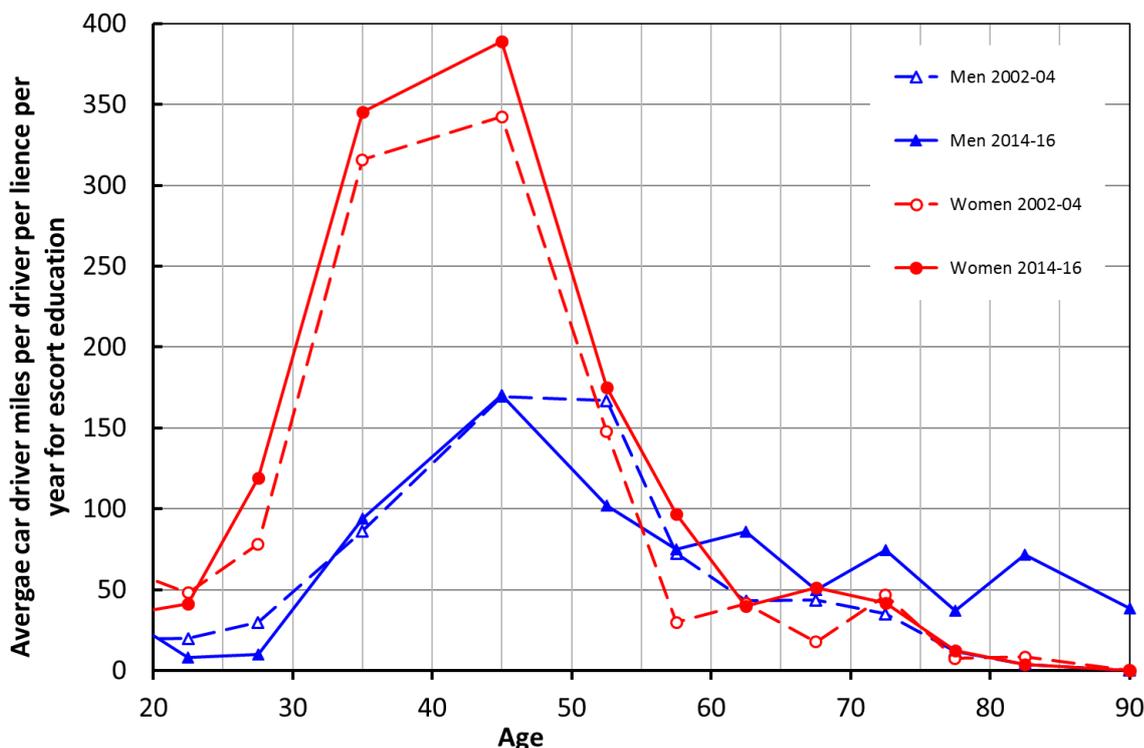
Figure 3.7b Car driver trips per person per year for escort education



Source: NTS table 0611 special tabulation

Figure 3.7c shows the distance driven per licence holder for Escort education, confirming that the great majority of these car driver journeys are made by women aged 30 to 50. The distance driven increased from 2002–04 for women, but not for men. In 2014–16, there was an increase in Escort education mileage driven by men aged over 70 in comparison to 2002–04, presumably mainly for grandchildren.

Figure 3. 7c Distance per year per licence as a car driver for escort education



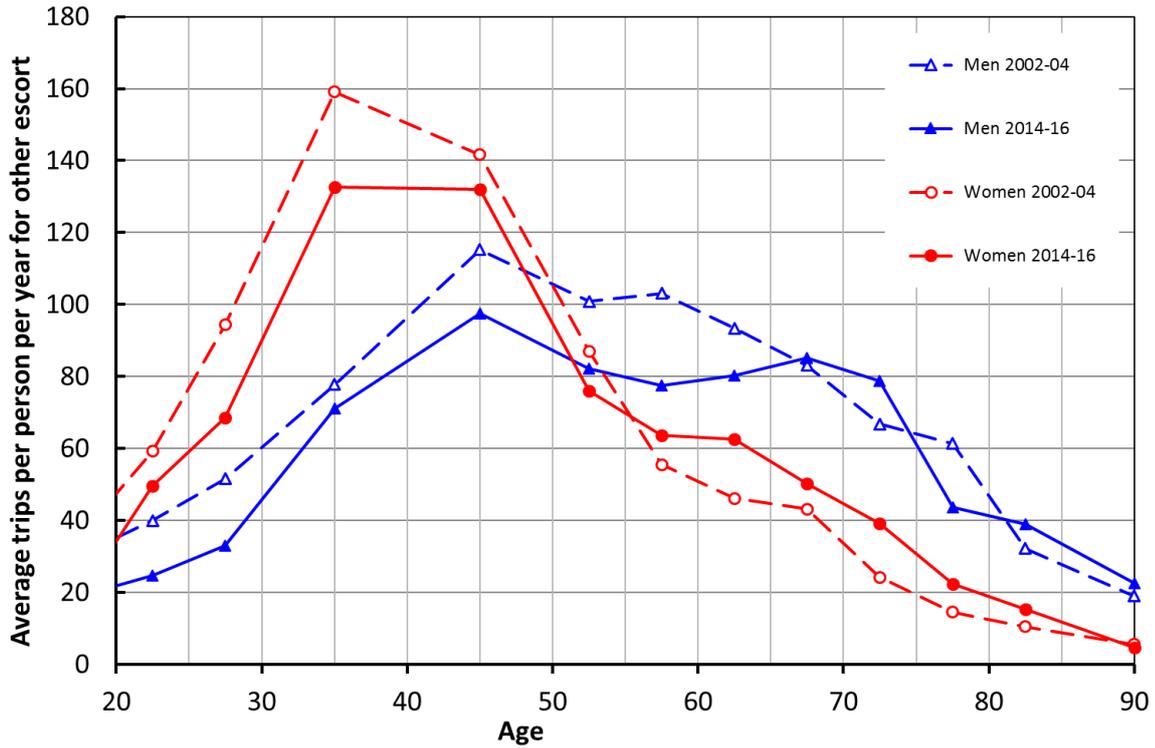
Source: NTS table 0612 special tabulation

3.2.2 Other escort

These are journeys to take someone to activities other than a school or college, such as sport, youth clubs, entertainment or visiting friends. As in the Escort education section, the total number of journeys per year made for the purpose 'Other escort' is shown in Figure 3.8a, and the number of journeys as a car driver in Figure 3.8b. Up to age 50, women make more trips than men for Other escort, but after age 50 the reverse is true. Comparison of Figures 3.8a and 3.8b shows that almost all the trips by men were as car drivers, as were about 75–85% of trips by women. For both men and women aged less than 55 the number of journeys was lower in 2014–16 than in 2002–04. Figure 3.8c shows the mileage travelled for Other escort.

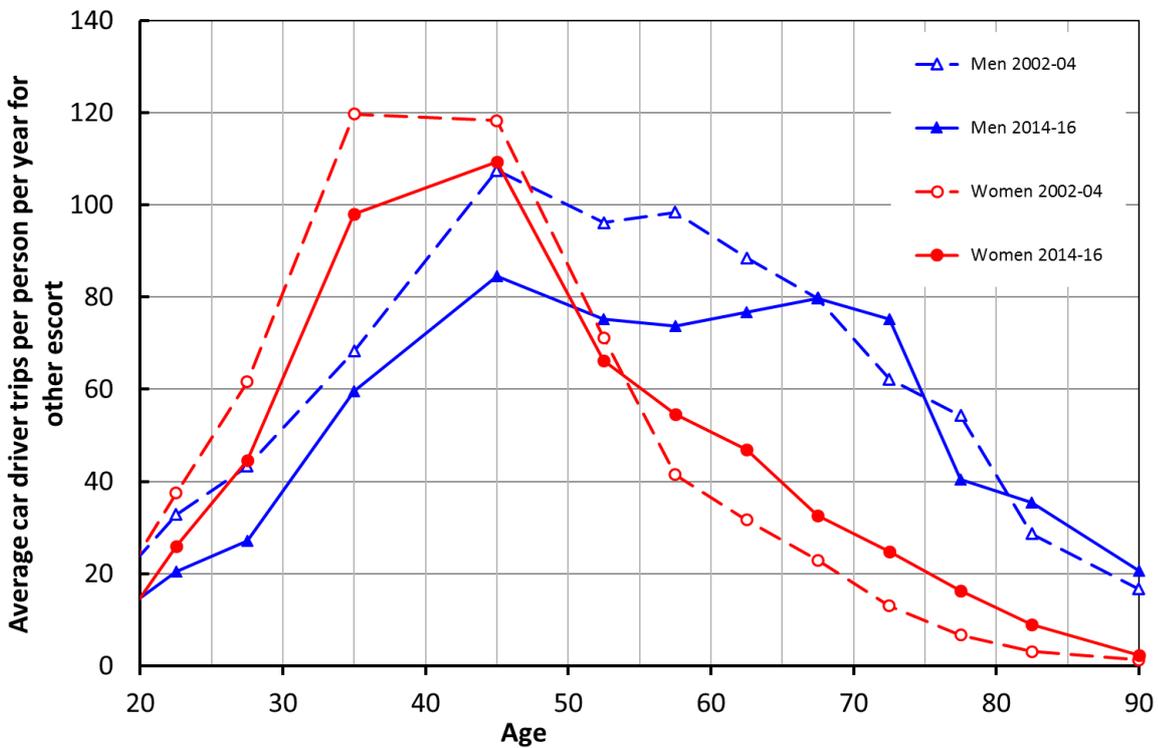
The number of journeys for Other escort reduced from 2002–04 for men aged less than 65 and women less than 55.

Figure 3.8a Trips per person per year for other escort



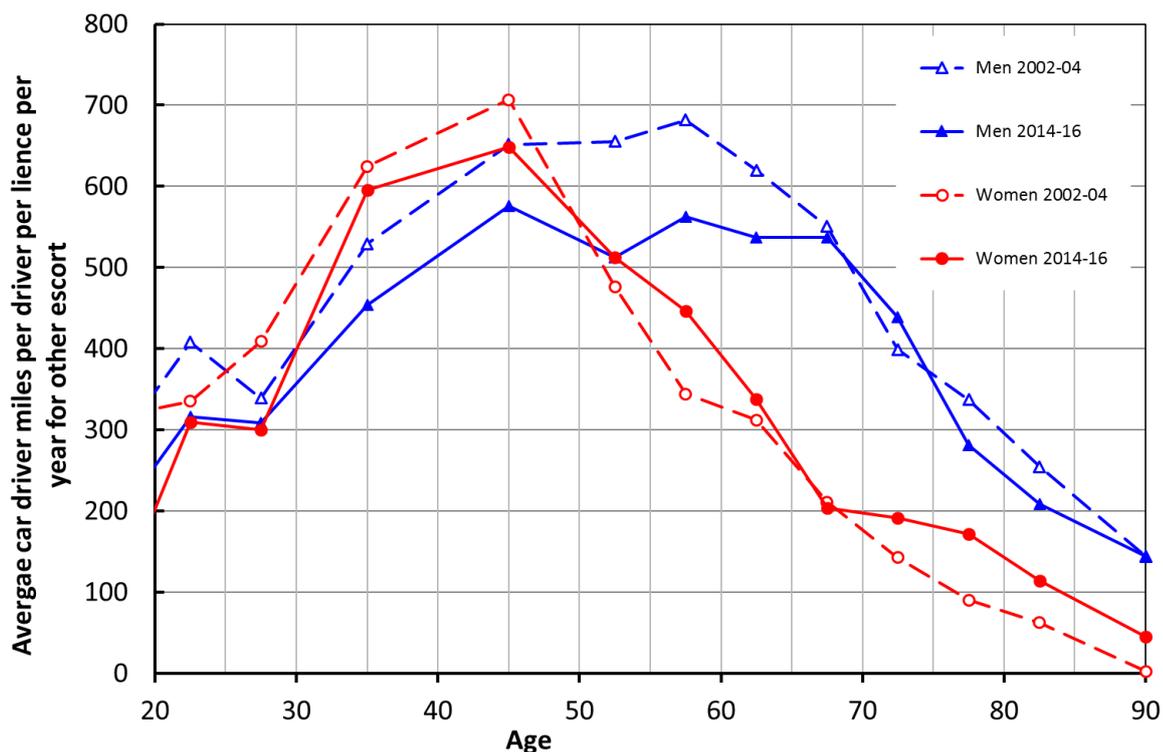
Source: NTS table 0611 special tabulation

Figure 3.8b Car driver trips per person per year for other escort



Source: NTS table 0611 special tabulation

Figure 3.8c Distance per year per licence as a car driver for other escort



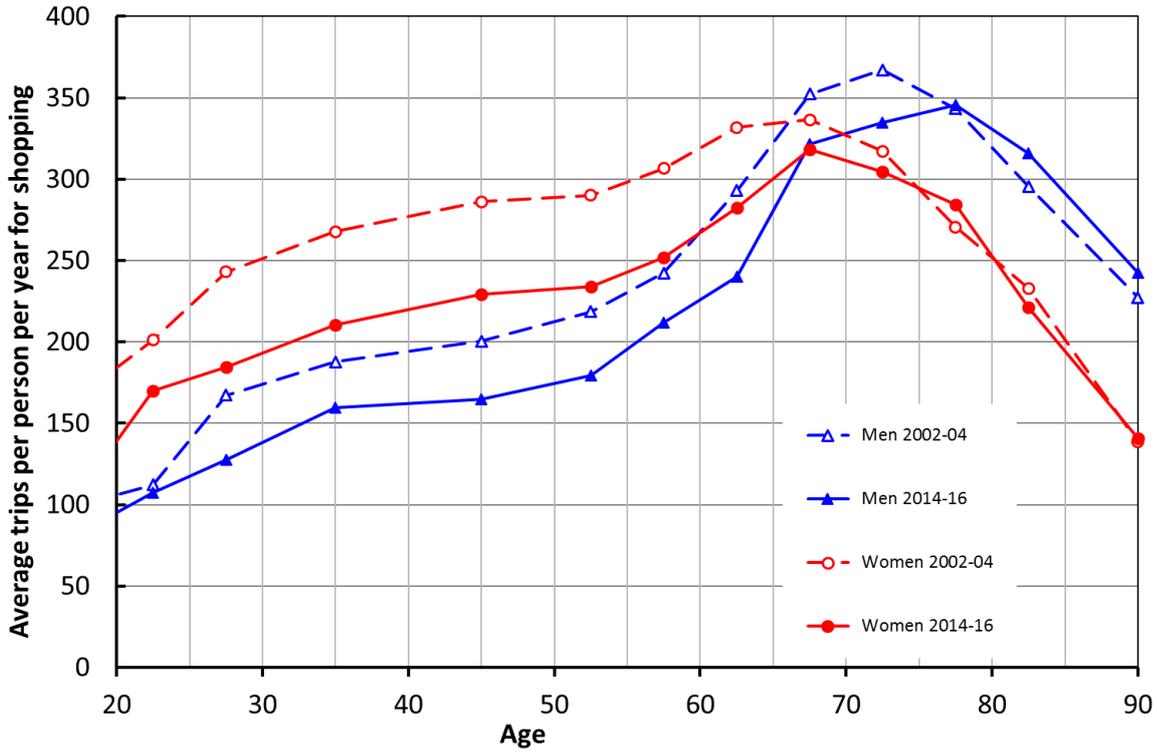
Source: NTS table 0612 special tabulation

3.2.3 Shopping

The total number of journeys per year made for the purpose 'Shopping' is shown in Figure 3.9a, and the number of journeys as a car driver in Figure 3.9b. Up to age 65, women make more shopping journeys than men, and the number of journeys increases with increasing age. The number of shopping trips reduces after age 70 for women and 75 for men. For women aged up to 50, about half of shopping trips are made as car drivers; for men, the proportion is about 70%. The number of car driver trips made for shopping by women falls after age 60, while for men it rises more steeply, peaking between the ages of 65 and 75. For both men and women up to age 75, the number of journeys was lower in 2014–16 than in 2002–04. Car driver trips for shopping increased from 2002–04 for women aged over 55 and for men aged over 75.

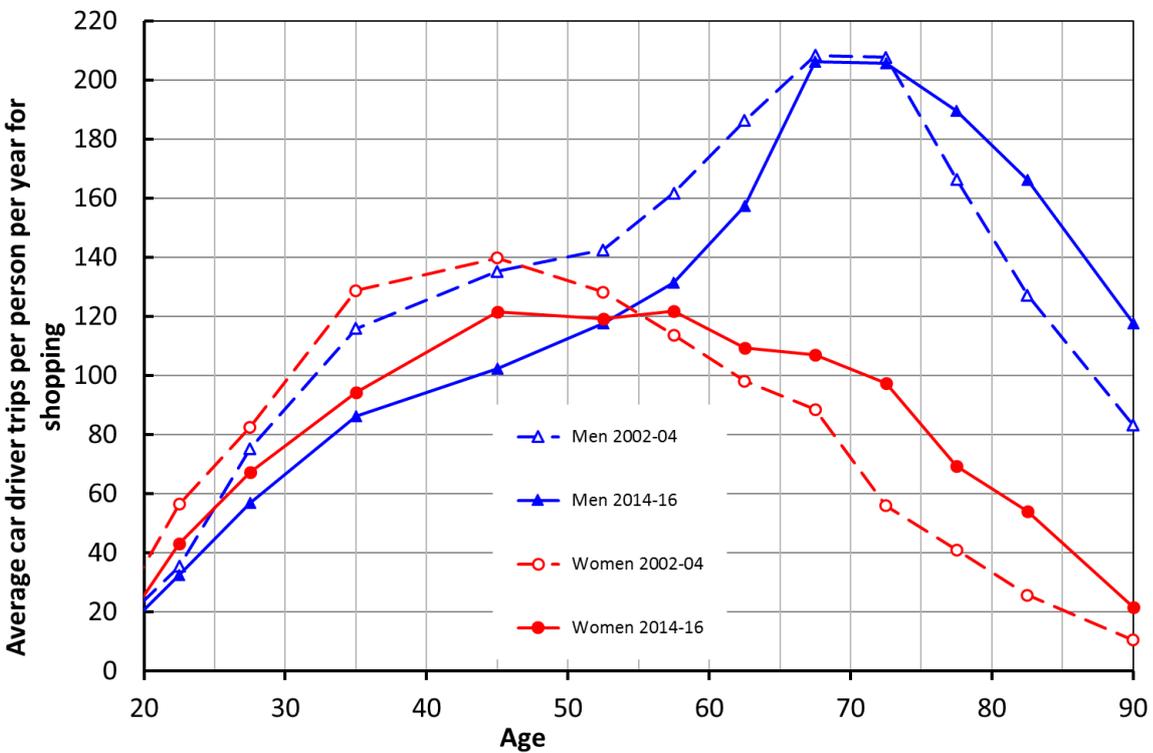
Figure 3.9c shows that in 2014–16, men and women up to age 55 drove about the same distances for shopping. In both periods, after age 55, the distance driven by women falls steadily, while that driven by men increases, to a maximum for ages 65 to 80. This may be an example of men taking on the driving, with women travelling as passengers.

Figure 3.9a Trips per person per year for shopping



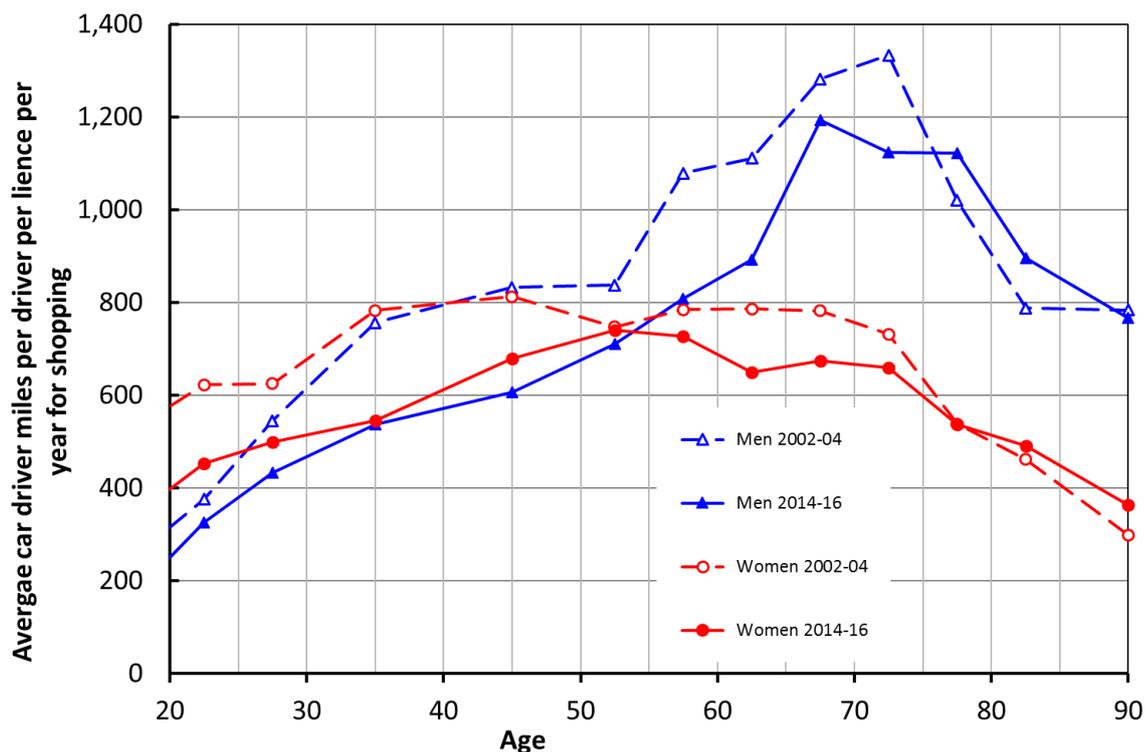
Source: NTS table 0611 special tabulation

Figure 3.9b Car driver trips per person per year for shopping



Source: NTS table 0611 special tabulation

Figure 3.9c Car driver miles per licence holder per year for shopping



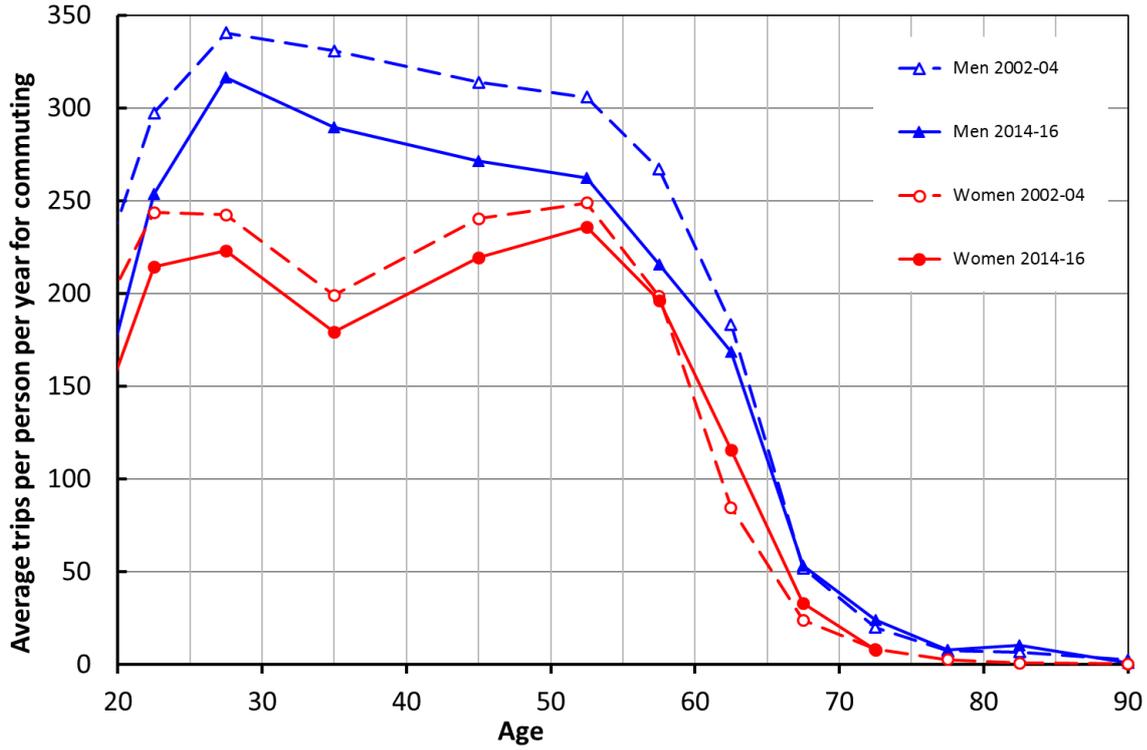
Source: NTS table 0612 special tabulation

3.2.4 Commuting

Commuting journeys are to and from work, but do not include travel in the course of work. Again, the total number of journeys per year made for the purpose 'Commuting' is shown in Figure 3.10a, and the number of journeys per year as a car driver in Figure 3.10b. At all ages, men make more commuting trips than women, reflecting the higher percentage of men in full-time employment. The reduction in the number of trips for women in their 30s relative to younger and older women probably reflects career breaks for child rearing and part-time working. About 60% of commuting trips are made as car drivers. Below age 60, the number of trips reduced from 2002–04 to 2014–16, possibly reflecting the increase in flexitime and working from home, at least occasionally.

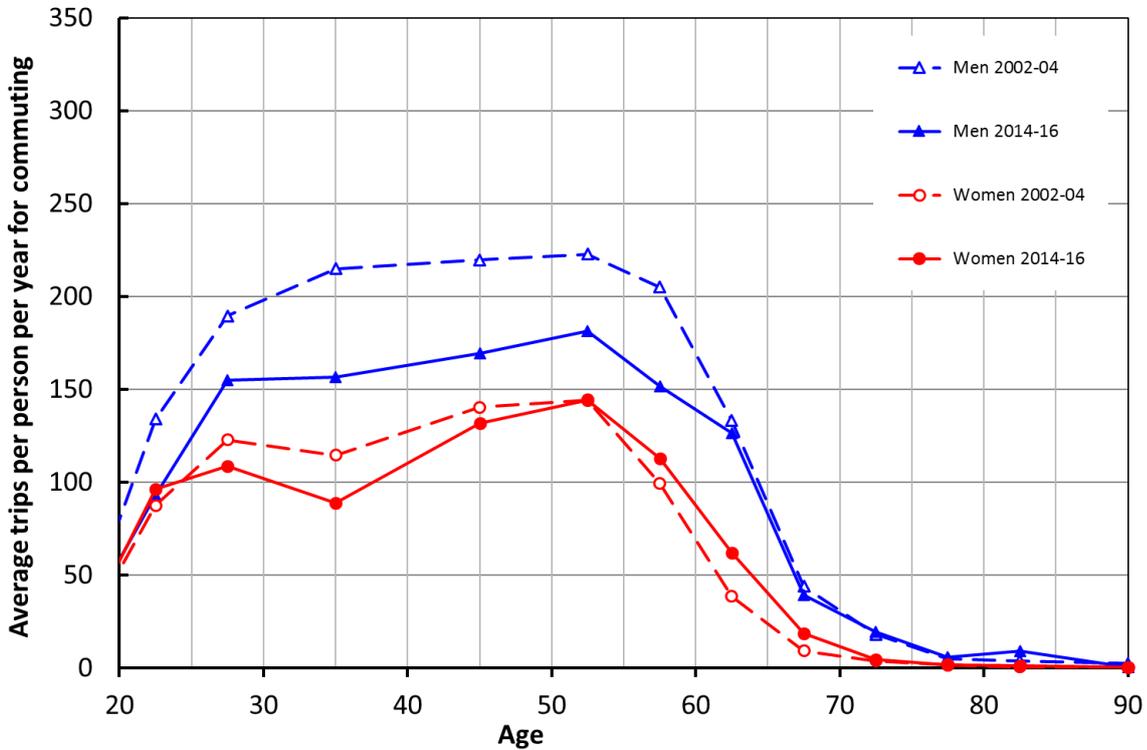
Men drive considerably greater distances for commuting than do women, with a maximum in 2014–16 for men aged 40 to 60 (Figure 3.10c). After age 50 the number of trips by women increases to more than that for women in their 20s, but the distance women drive for commuting does not increase to the level for women aged less than 40, suggesting that some older women may be finding work closer to home than when they were younger.

Figure 3.10a Trips per person per year for commuting



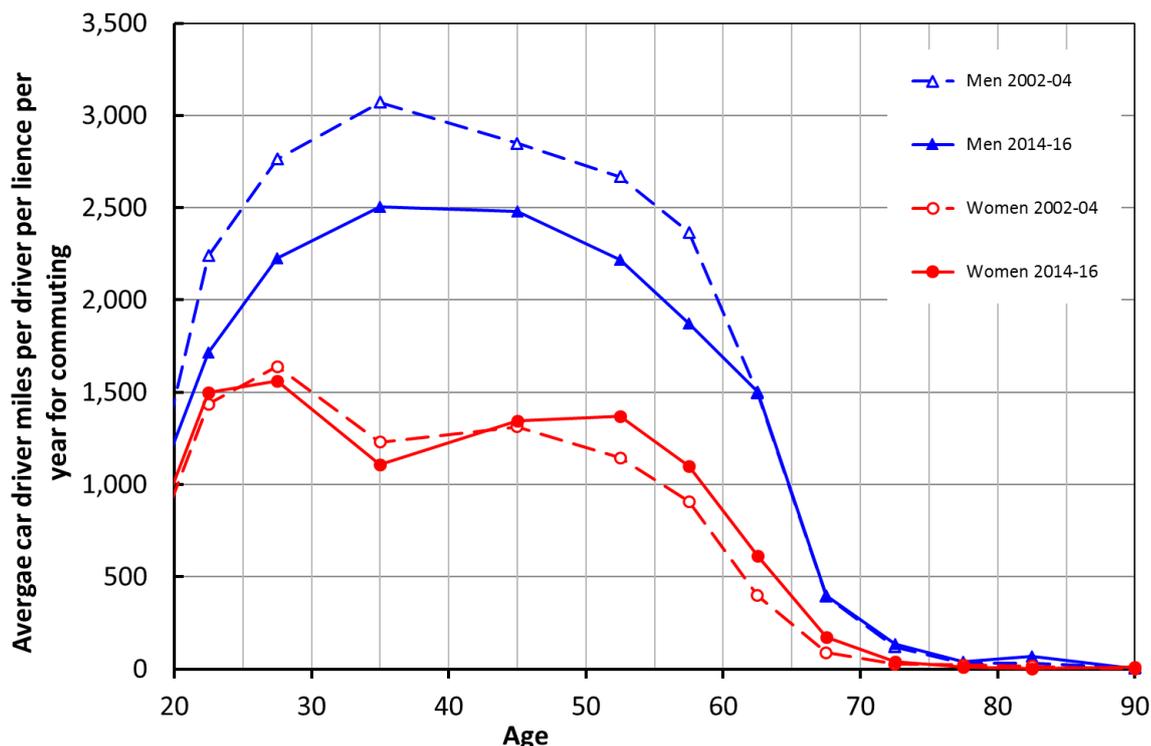
Source: NTS table 0611 special tabulation

Figure 3.10b Car driver trips per person per year for commuting



Source: NTS table 0611 special tabulation

Figure 3.10c Car driver miles per licence holder per year for commuting



Source: NTS table 0612 special tabulation

3.2.5 Gender differences

The activity patterns shown above illustrate the effect of gender for different activities. For example, escort education is an activity performed very largely by women up to age 50. But the driver miles for escort education show a certain amount of escort education activities by older men, presumably grandfathers. Other escort trips are much more equally shared between men and women, particularly trips made by car. But for ages over 50, men drive many more other escort trips than do women.

Shopping is interesting in that it shows that up to age 65 women make more shopping trips than men, although over age 55 more car driver trips and miles driven are made by men than women. This appears to be an example of older men taking on an activity that in younger age is mainly performed by women.

Travel patterns for commuting show differences in employment for men and women. The larger number of commuter trips a year for men reflects the larger percentage of women who either do not go to work or who work part time. The drop in trips for women in their 30s may reflect career breaks for maternity or greater part-term employment at this life stage. Women make fewer car driver trips overall for commuting than men, and older women drive substantially fewer miles, showing that they tend to work closer to home. The average length of car trips for commuting by those in their 50s was 14–15 miles for men

and 10 miles for women. Even if some older women switch from driving to work to using other means such as train or bus, the average commuting trip length by all means of travel reduces a little for women aged over 35, and more for women aged over 55. Average commuting trip lengths for women in 2016 were 8.1 miles for women aged 30 to 39, 6.4 miles for women aged 55 to 59, and 5.2 miles for women aged 65 to 69 (National Travel Survey; DfT (annual (a))).

4. Area of residence

The type of area in which somebody lives affects both the probability that they will hold a driving licence, and their pattern of travel, as shown in sections 4.1 and 4.2. To a large extent, this is probably a result of the distance to destinations for day-to-day activities such as work, school, shopping and so on, and the availability of public transport such as bus services.

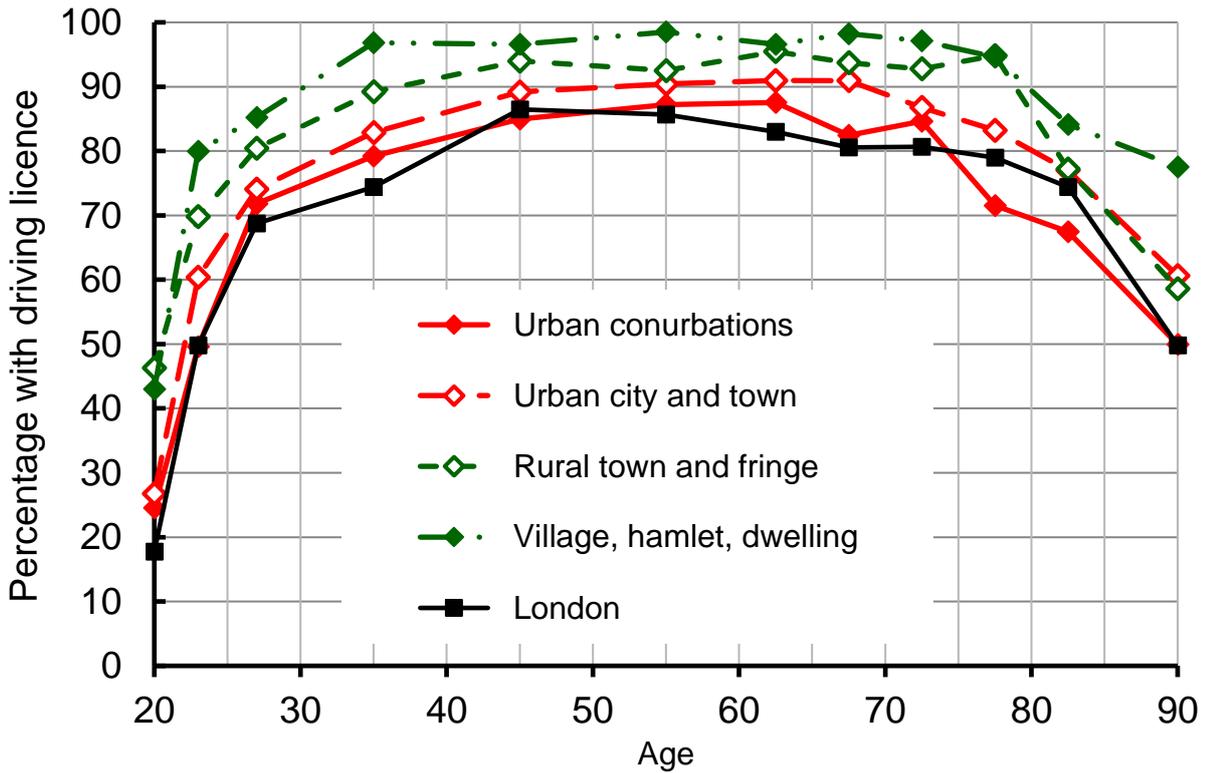
The National Travel Survey analyses responses in terms of the type of area in which the respondent lives. These are grouped as London, Urban Conurbation, Urban City and Town, Rural Town and Fringe, and Rural Village, Hamlet and Isolated Dwelling.

4.1 Driving licences

The more rural the area of residence, the higher the car licence holding, and this remains high to older ages, particularly for women (Figures 4.1a and 4.1b). In rural areas for ages 30 to 65, levels of licence holding by men and women are similar, at around 95%. Differences in licence holding between areas are greater for women than men. In all types of area after age 70, licence holding by women reduces more rapidly with increasing age than it does for men. So for older women in areas without good alternative transport, this may indicate an increasing restriction on their mobility.

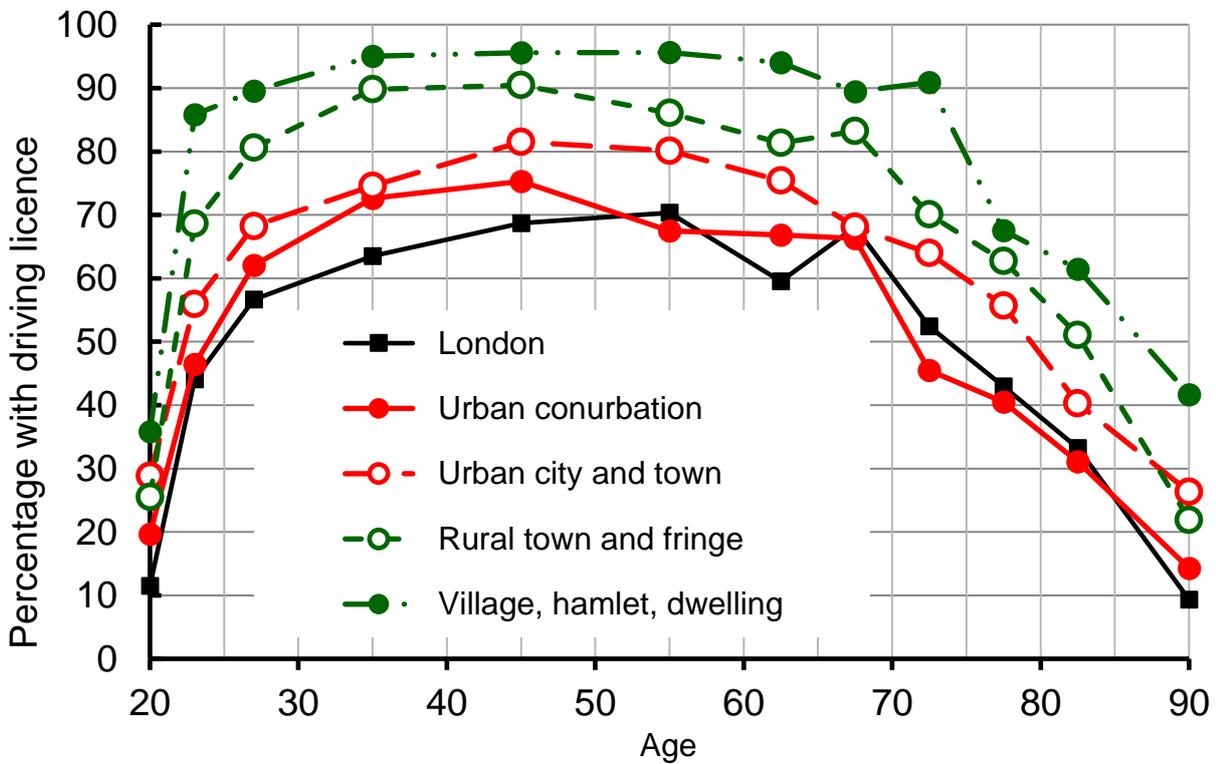
Not all licence holders still drive. Section 3.1.1 showed that 46% of women car driving licence holders aged 85 and over, and 30% of men, recorded no car driving trips in the week of the National Travel Survey. These percentages are increases from 26% of women aged 65 to 69, and 12% of men of the same age.

Figure 4.1a Car driving licences by age, gender and type of area – men 2014–16



Source: NTS special tabulation

Figure 4.1b Car driving licences by age, gender and type of area – women 2014–16



Source: NTS special tabulation

4.2 Activity and travel patterns

One issue is whether the activity patterns that people report differ between different types of area. The NTS allows this to be examined, plus people's means of travel for different activities, how far they travel and whether men and women are sharing their driving differently in different areas. Four activities are examined as examples of requirements in any area: escorting people to activities other than education; shopping; visiting friends; and travelling to sporting or entertainment centres. These activities are indicators of aspects of an individual's lifestyle.

The analysis shows that for many of the activities the number of journeys made by all means of travel for a particular activity does not differ much between types of area. This similarity of activity patterns suggests that lifestyles are now much more similar in rural and urban areas than they used to be. As expected, in more rural areas more journeys tend to be made by car, and the total distance driven for the activity is greater. The greater use of cars in more rural areas shows that driving is one of the factors enabling the similarity of lifestyles in different areas, and emphasises the problems that people face if they have to stop driving.

As in section 3.2, trip rates, including trip rates as a car driver, are per person, regardless of licence holding. The distance driven for an activity is per licence holder.

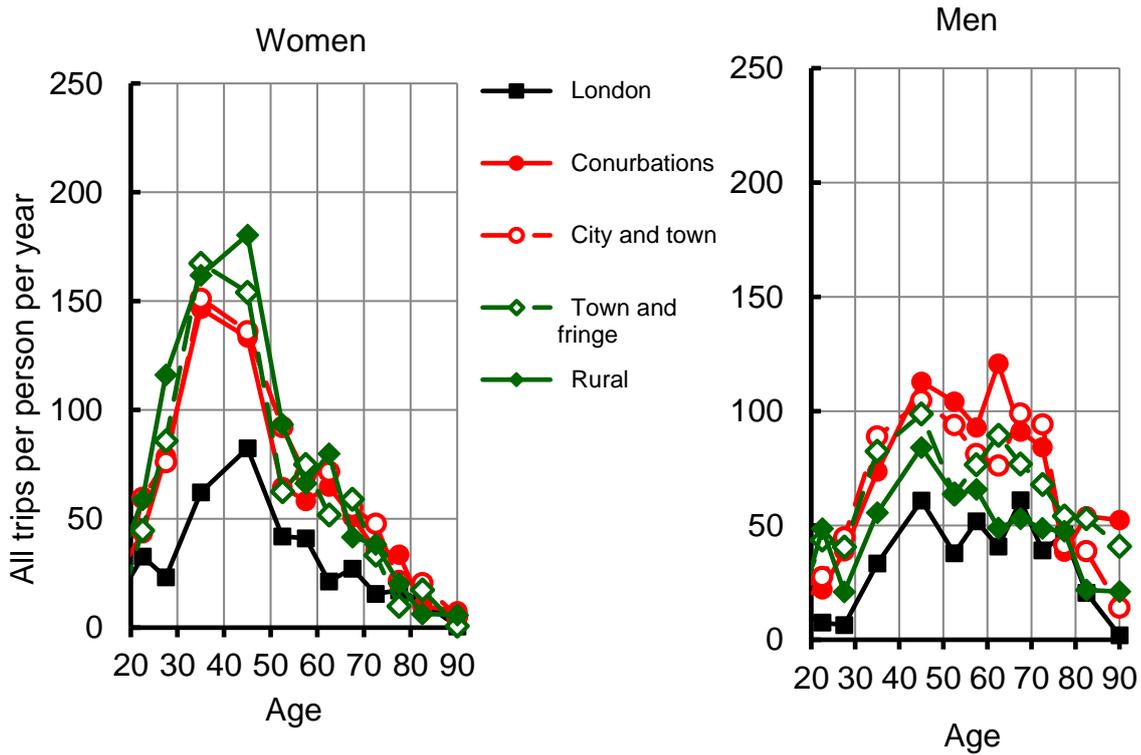
4.2.1 Other escort

For women, the number of trips for 'Other escort' by all means of travel, including walking, is somewhat less in urban than rural areas, and much less in London, where there are only about half as many trips (Figure 4.2a). For men there is rather more difference between areas, with more trips in urban than rural areas. Somewhat surprisingly, for men aged 60 to 80, there are no more Other escort trips in rural areas than in London.

Women aged 30 to 50 make more car driver trips per person for Other escort in rural and fringe areas than elsewhere (Figure 4.2b). At all ages, men make fewer Other escort car driver trips in rural and fringe areas than in urban areas – the reverse of the pattern for women. It appears that in rural areas the responsibility for Other escort duties falls largely on women.

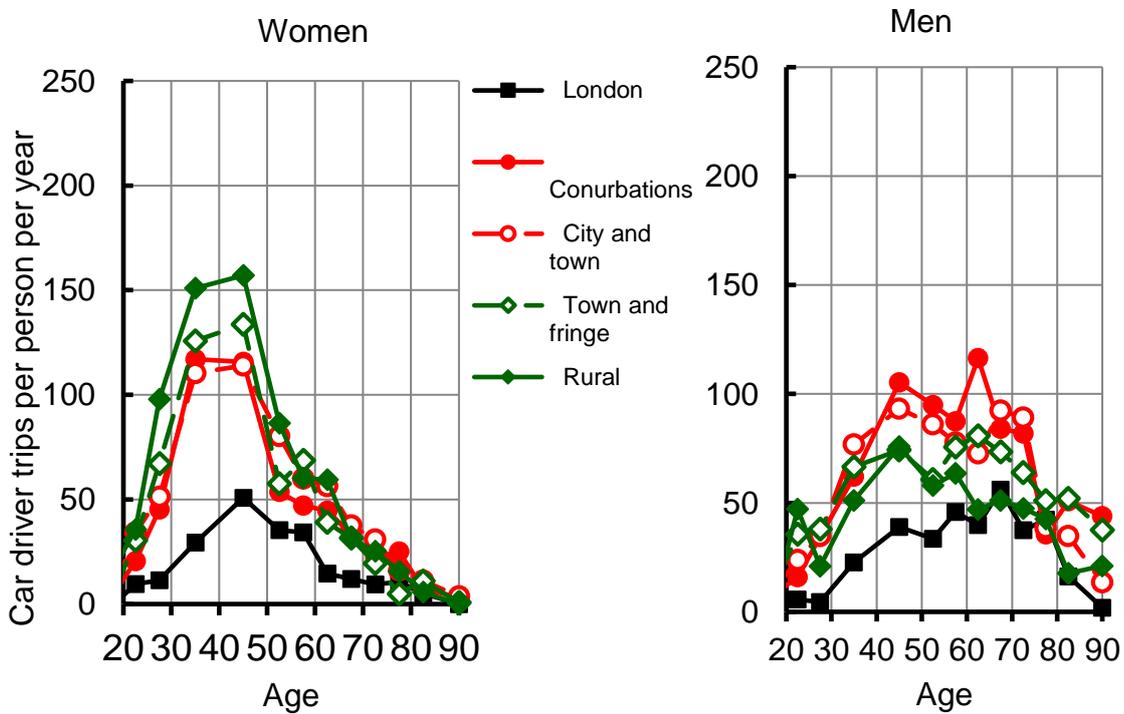
Women drive much greater distances per licence for Other escort in rural and fringe areas than they do in urban areas, Figure 4.2c. Men drive less for this purpose than do women up to age 55 to 60. The distances driven by men and women in rural and urban areas are generally similar, but both substantially more than in London.

Figure 4.2a Trips for other escort per person, all means of travel, including walking 2014–16



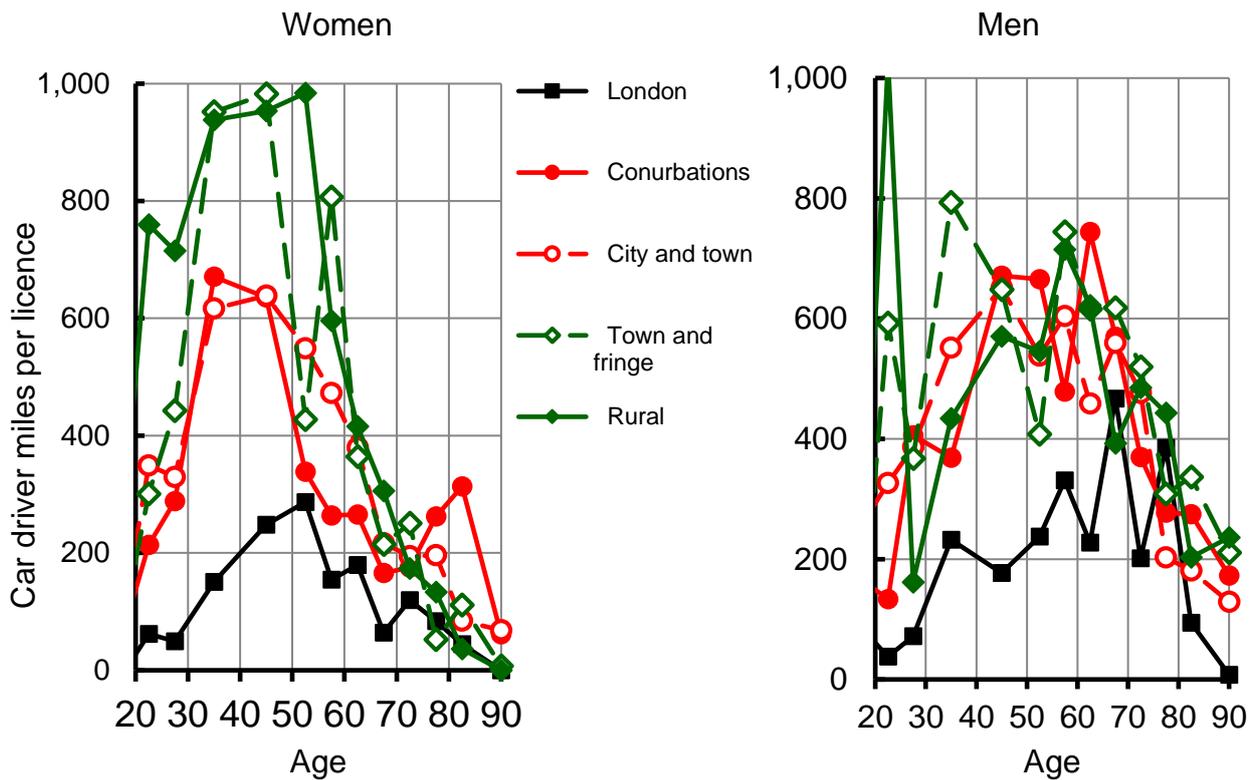
Source: NTS special tabulation

Figure 4.2b Car driver trips per person per year for other escort 2014–16



Source: NTS special tabulation

Figure 4.2c Car driver miles per licence for other escort 2014–16



Source: NTS special tabulation

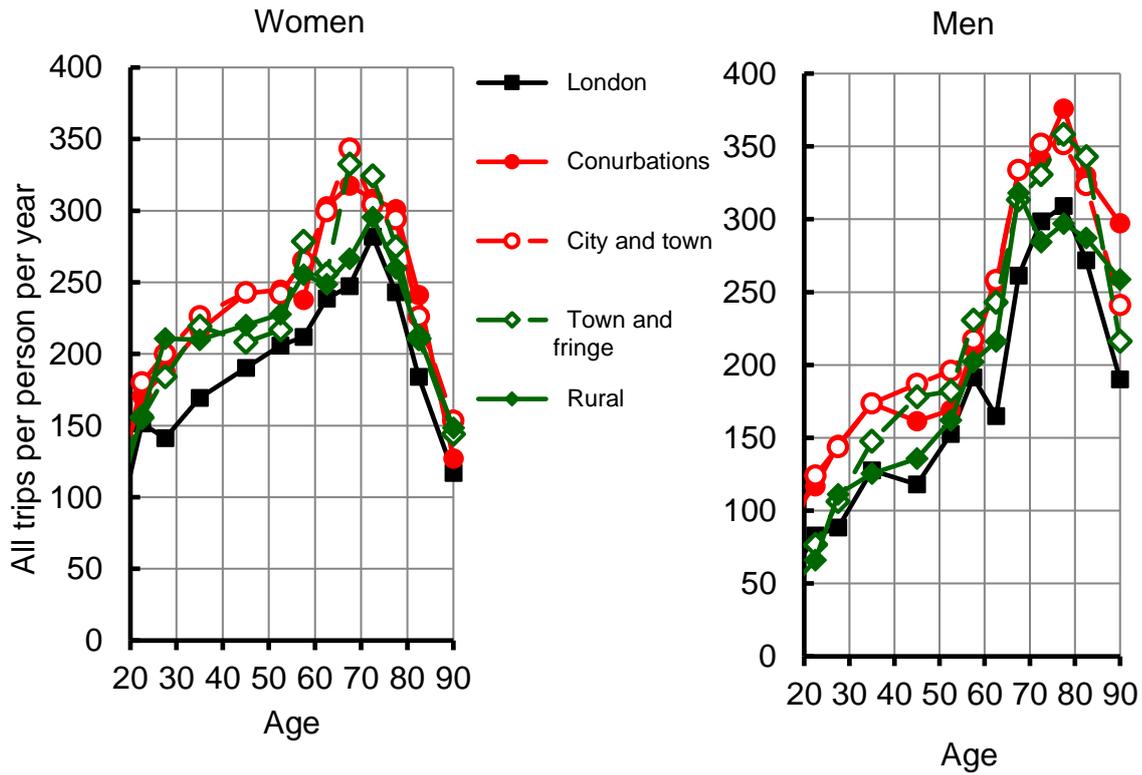
4.2.2 Shopping

The number of shopping trips women make by all means of travel, including walking, does not vary much between types of area, although there are rather fewer in London (Figure 4.3a). Up to age 65 women make more shopping trips than men, but after age 65 the reverse is the case.

In the case of car driver trips per person for shopping, Figure 4.3b, there are many fewer trips in London than elsewhere, and for women there are rather more in rural areas. For men, the numbers of trips for shopping outside of London are similar in the different types of area. After age 60 car driver trips by men exceed those by women.

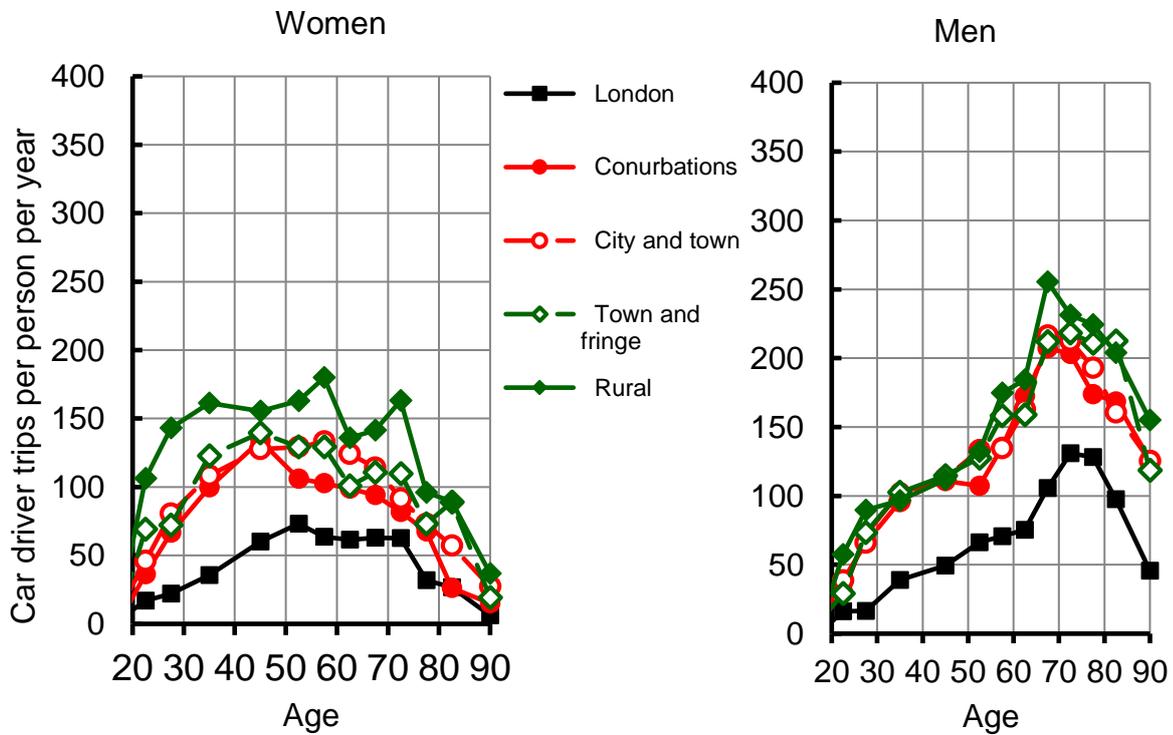
The miles driven per licence for shopping are shown in Figure 4.3c. Both men and women drive much greater distances in rural and fringe areas than in urban areas. After ages of around 50 to 55 the distances driven by men exceed those driven by women.

Figure 4.3a Trips for shopping per person, all means of travel, including walking 2014–16



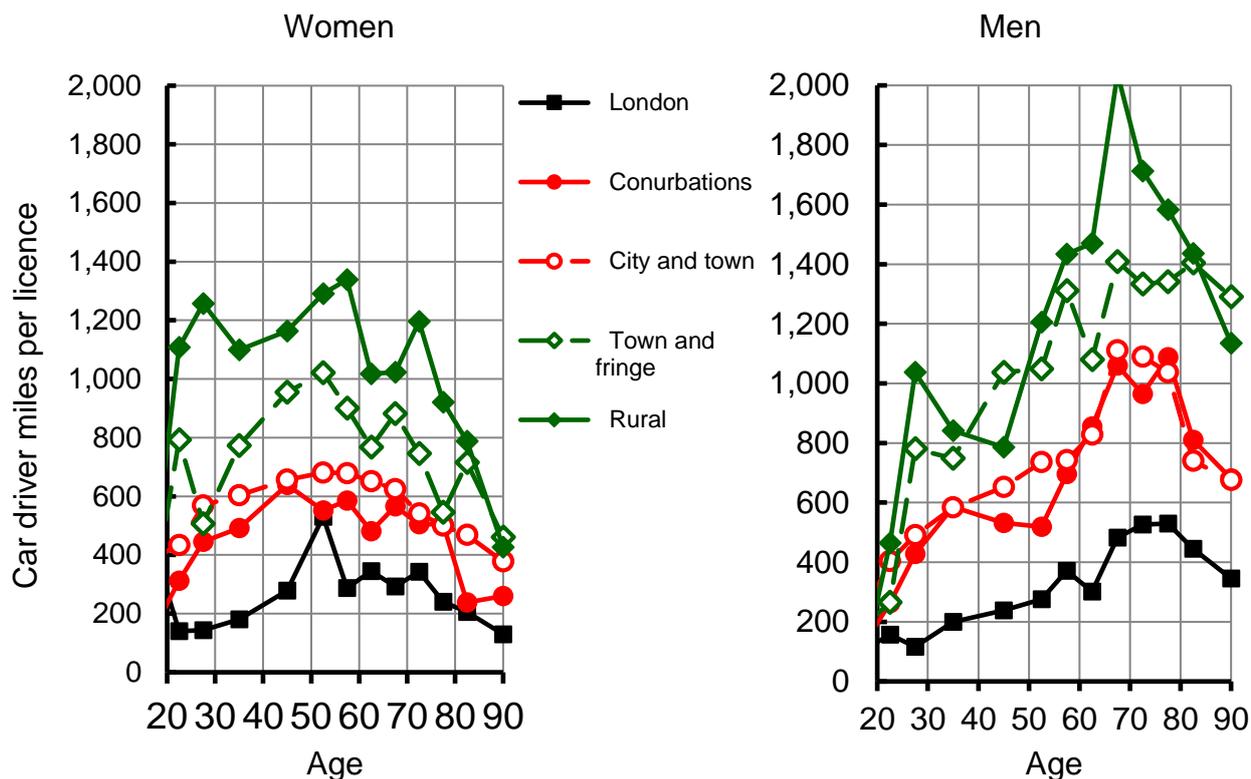
Source: NTS special tabulation

Figure 4.3b Car driver trips per person per year for shopping 2014–16



Source: NTS special tabulation

Figure 4.3c Car driver miles per licence for shopping 2014–16



Source: NTS special tabulation

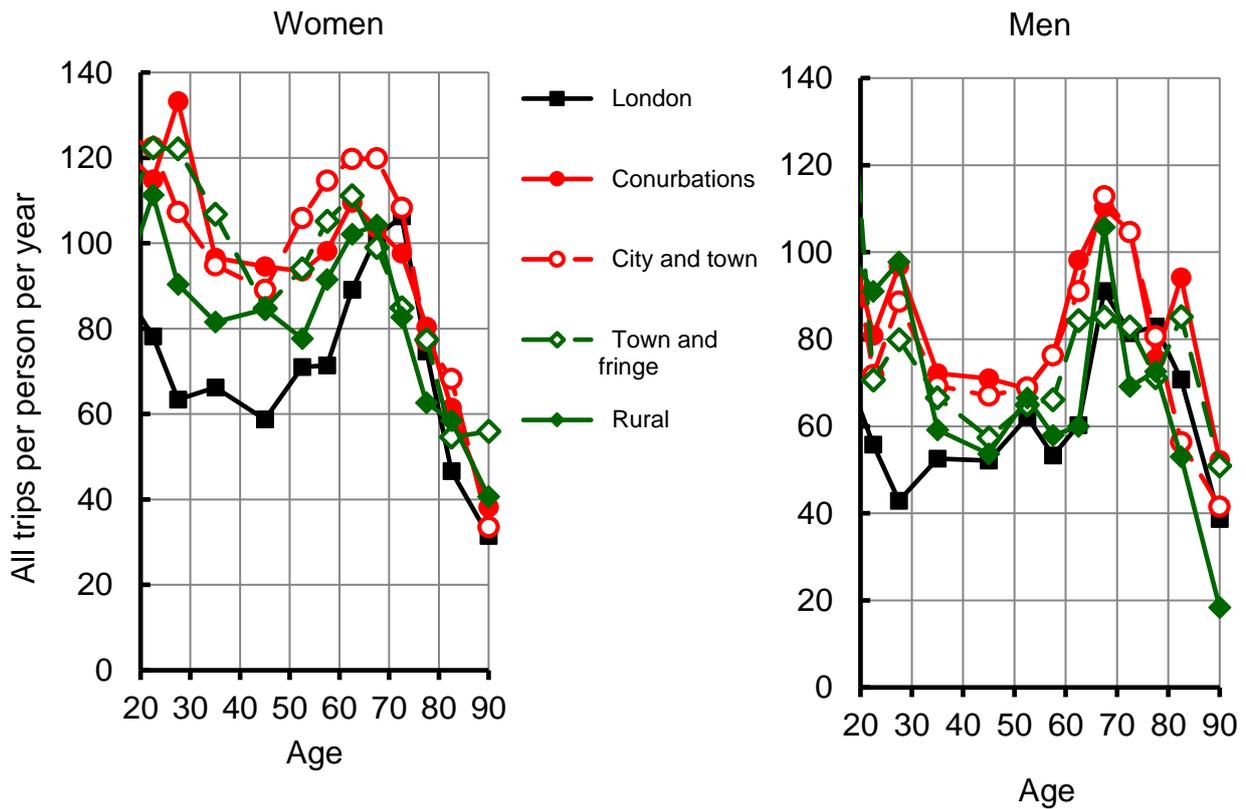
4.2.3 Visiting friends at home

The number of trips to visit friends at home made by both women and men by all means of travel, including walking, is rather higher in urban than rural areas, and even lower in London (Figure 4.4a). This is an activity for which the frequency of occurrence differs between areas, suggesting some differences of lifestyle. Although not shown here, up to age 40 men and women in London make more trips to meet friends outside their homes than do residents of other areas. Up to age 80, women make more trips than men to visit friends at home.

In the case of car driver trips per person to visit friends at home, Figure 4.4b, there are many fewer trips in London than elsewhere. For both men and women, the numbers of trips for areas outside of London are similar in the different types of area. After age 60, car driver trips by men exceed those by women.

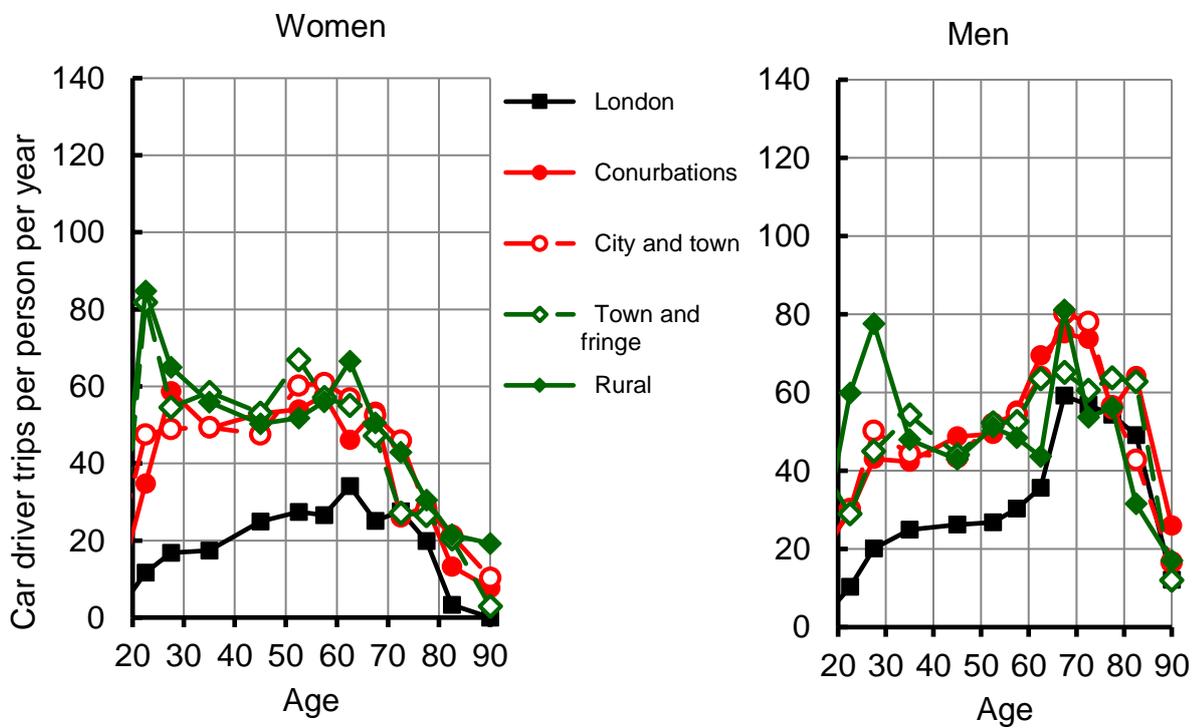
The miles driven per licence to visit friends at home are shown in Figure 4.4c. Women in particular drive much greater distances in rural and fringe areas than in urban areas. At almost all ages in rural and fringe areas the distances driven by men exceed those driven by women.

Figure 4.4a Trips for visiting friends at home per person, all means of travel 2014–16



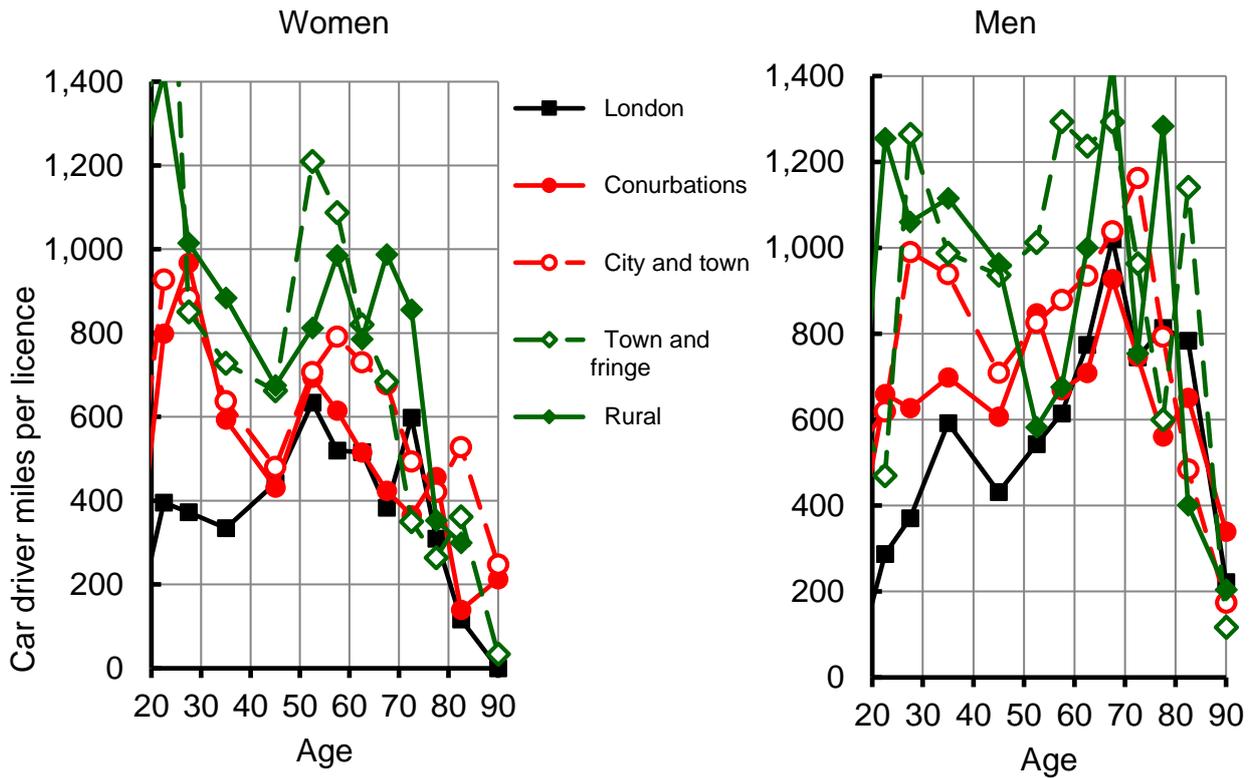
Source: NTS special tabulation

Figure 4.4b Car driver trips per person per year for visiting friends at home 2014–16



Source: NTS special tabulation

Figure 4.4c Car driver miles per licence for visiting friends at home 2014–16



Source: NTS special tabulation

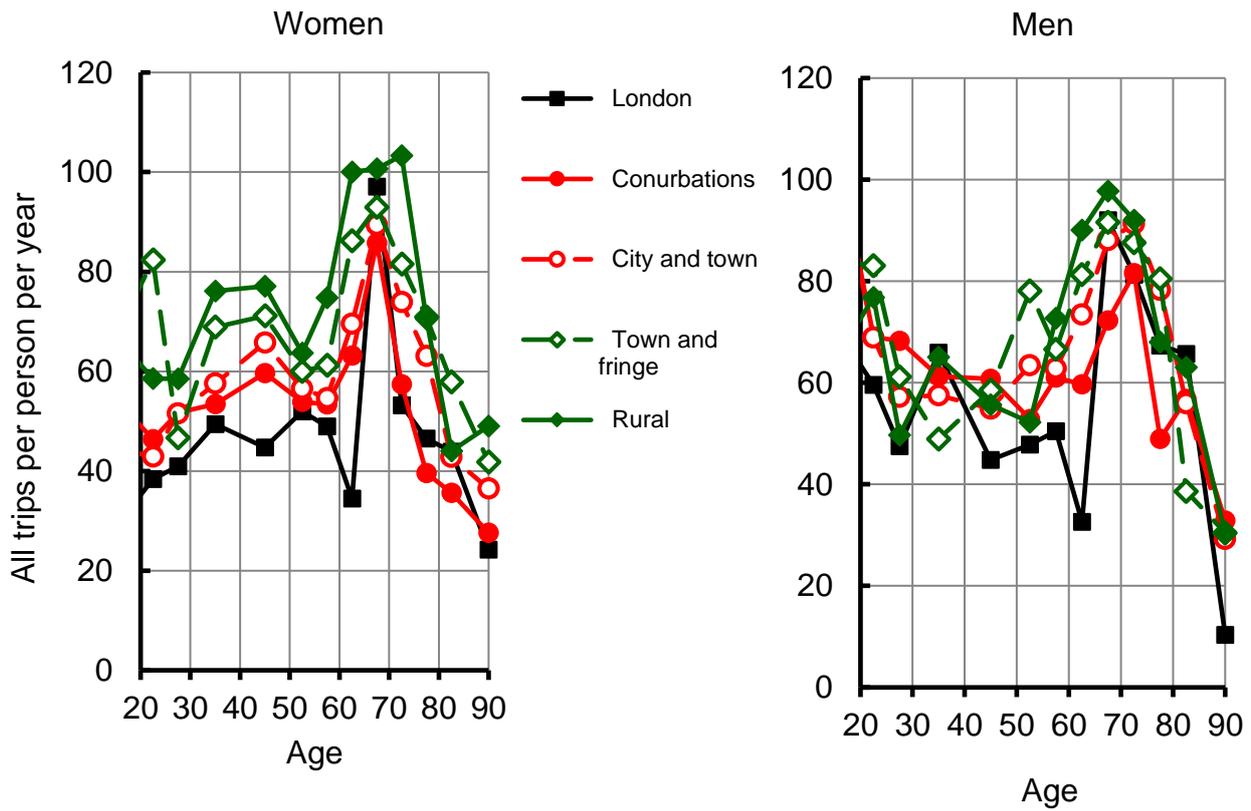
4.2.4 Sport/Entertainment

The number of trips for sport/entertainment made by both women and men by all means of travel, including walking, is rather higher in rural than urban areas, but slightly lower in London (Figure 4.5a). Women aged 30 to 50 in rural and fringe areas make more trips than men for sport/entertainment.

In the case of car driver trips per person for sport/entertainment, Figure 4.5b, there are many fewer trips in London than elsewhere. For men, and even more for women, the numbers of trips in rural and fringe areas are more than in urban areas. After age 65 car driver trips by men exceed those by women.

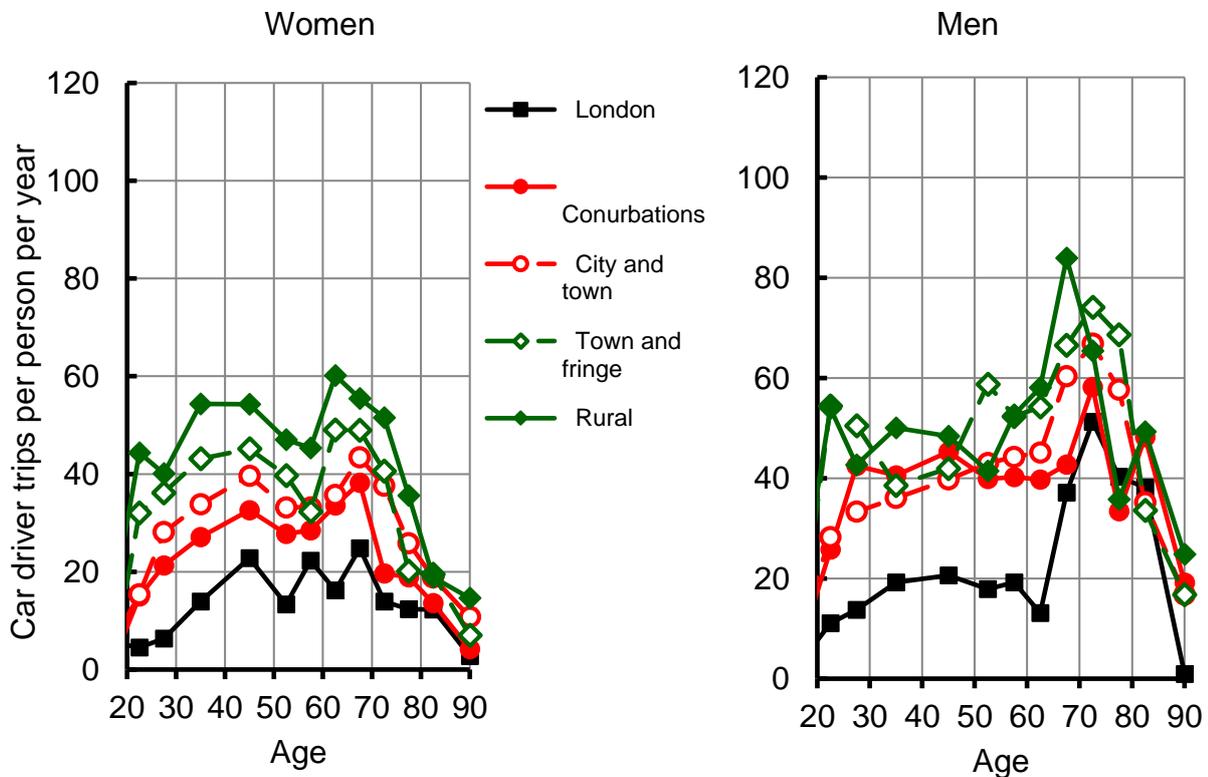
The miles driven per licence for sport/entertainment are shown in Figure 4.5c. For both men and women, the distances driven are much greater in rural and fringe areas than in urban areas, which in turn are much greater than in London. At almost all ages the distances driven by men exceed those driven by women in all areas.

Figure 4.5a Trips for sport/entertainment per person, all means of travel, 2014–16



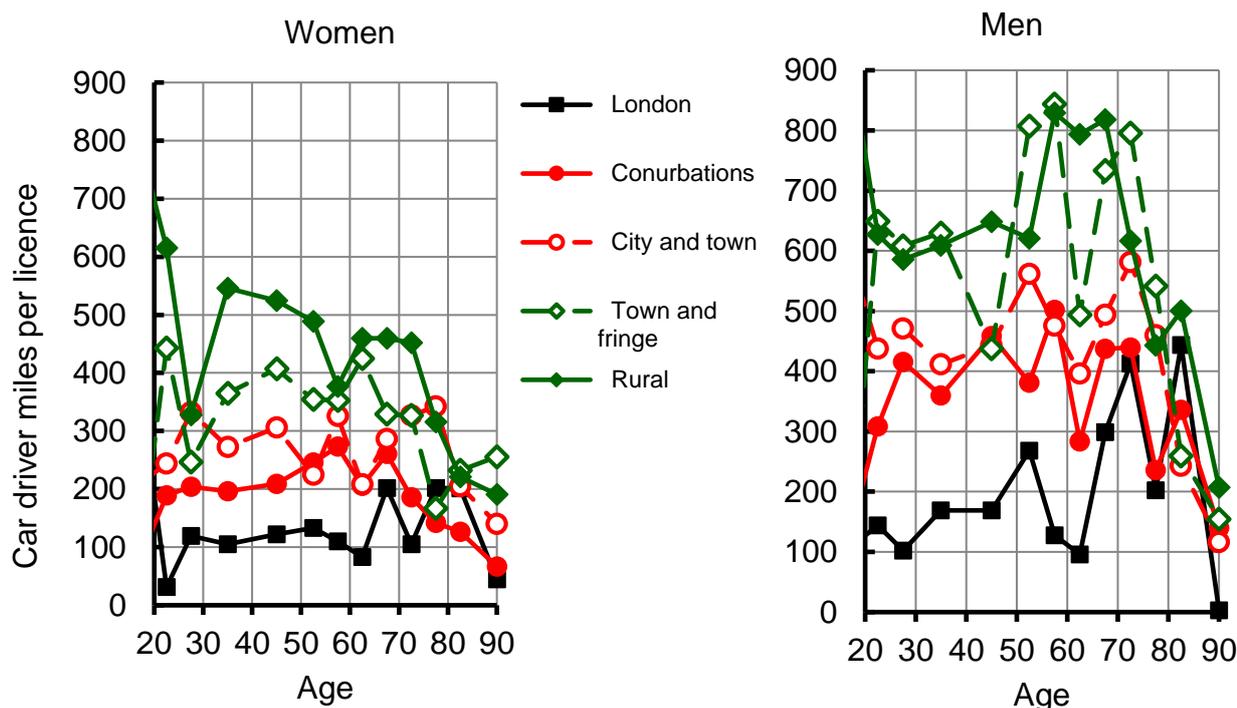
Source: NTS special tabulation

Figure 4.5b Car driver trips for sport/entertainment 2014–16



Source: NTS special tabulation

Figure 4.5c Car driver miles per licence for sport/entertainment 2014–16



Source: NTS special tabulation

4.2.5 The effect of area of residence on activities

On the basis of trips by all means of travel for various activities, there are relatively small differences in the activities that make up the lifestyles of residents of areas ranging from large cities to hamlets and isolated rural dwellings. The patterns in those areas are particularly similar for other escort, shopping and visiting friends for older women, and for sport/entertainment for older men. But for residents in London the patterns are rather different. This is particularly the case for shopping, where the number of trips is much the same for people of a given age for all areas outside London. But there is, surprisingly, no consistent pattern of greater use of cars in more rural areas. This is the case for women but not men for other escort trips; for women and older men for shopping trips by residents of the most rural areas; there is no greater use of cars for visiting friends at home in rural areas, and rather greater use of cars by residents of rural areas for trips to sport or entertainment. The distances driven are almost always greater in rural areas, except for men for other escort trips. However, the majority of other escort trips in rural areas are performed by women.

Trips by women for other escort peak for ages 30 to 50; but outside London, for shopping and visiting friends, trips by women do not vary much between ages 30 and 70. For men for all the activities listed, and for women for sport/entertainment, trip numbers peak for people in their 60s. The decline in trip numbers for older people is generally similar for men and women.

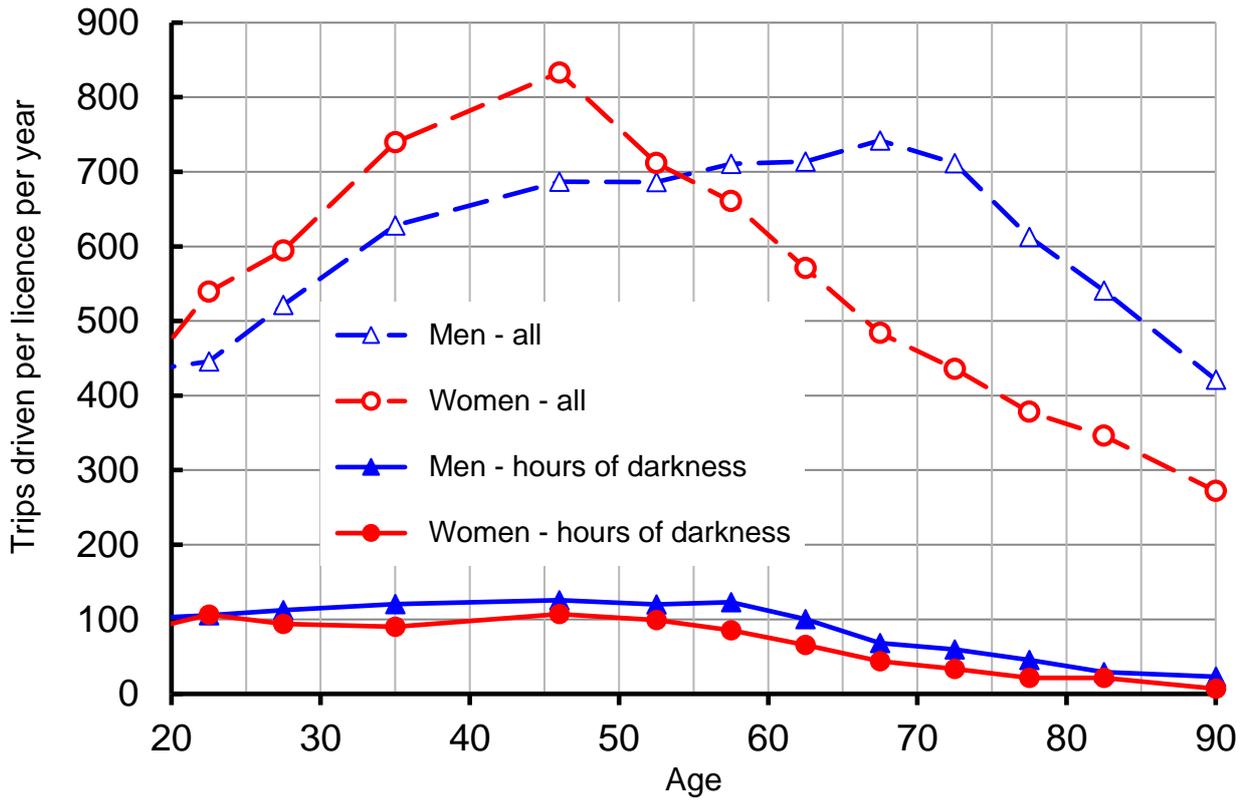
5. Driving at night

Studies of self-regulation show that older drivers, particularly older women, are likely to reduce the amount they drive in darkness. Some of this is because they feel stressed by driving in the dark, but some may be because older people have fewer activities to which they need to drive in the dark (see, for example, Meng and Siren (2012a and b), Charlton et al. (2006)).

The National Travel Survey is able to classify journeys as being made during the hours of darkness, defined on the basis of the times of sunrise and sunset. The footnote to these NTS tables reads: "Trips have been classified as during the hours of darkness based on their start time and times for the hours of darkness for Leicester in 2016 from HM Nautical Almanac Office. They are based on the rising and setting of the sun and do not account for local weather conditions at the time of the trip."

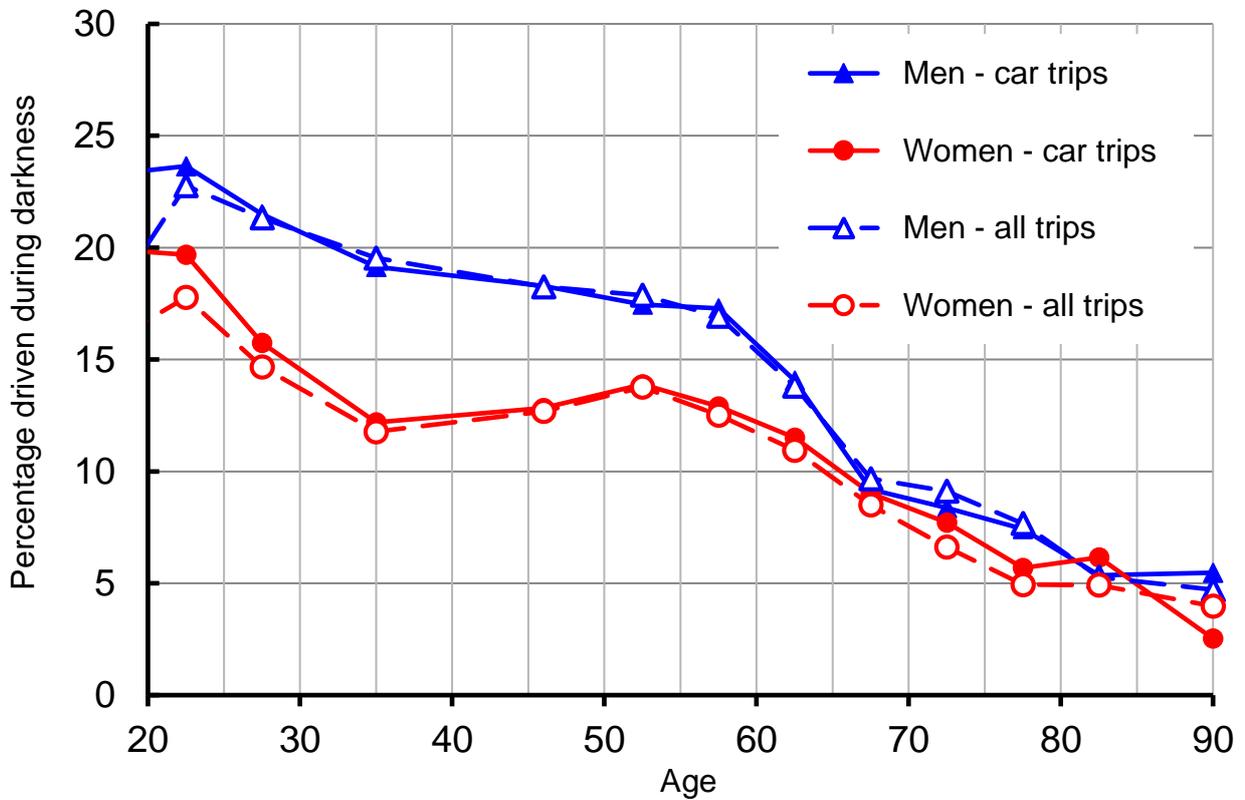
Figure 5.1 shows that relatively few journeys are driven during the hours of darkness. The number per licence remains steady at 100–120 per year up to age 60, after which it drops steadily with increasing age. Perhaps more importantly, Figure 5.2 shows the percentage of car driver trips that are made during the hours of darkness. The percentage reduces steadily with increasing age, with women up to the age of 70 making a smaller proportion of their journeys in darkness than men of that age range. Figure 5.2 also shows the percentages of trips by all means of transport made in darkness; these are virtually identical to the percentages for car driver trips.

Figure 5.1 Car driver trips per licence per year in total and during the hours of darkness 2014–16



Source: NTS special tabulation

Figure 5.2 Percentage of car driver trips during hours of darkness 2014–16

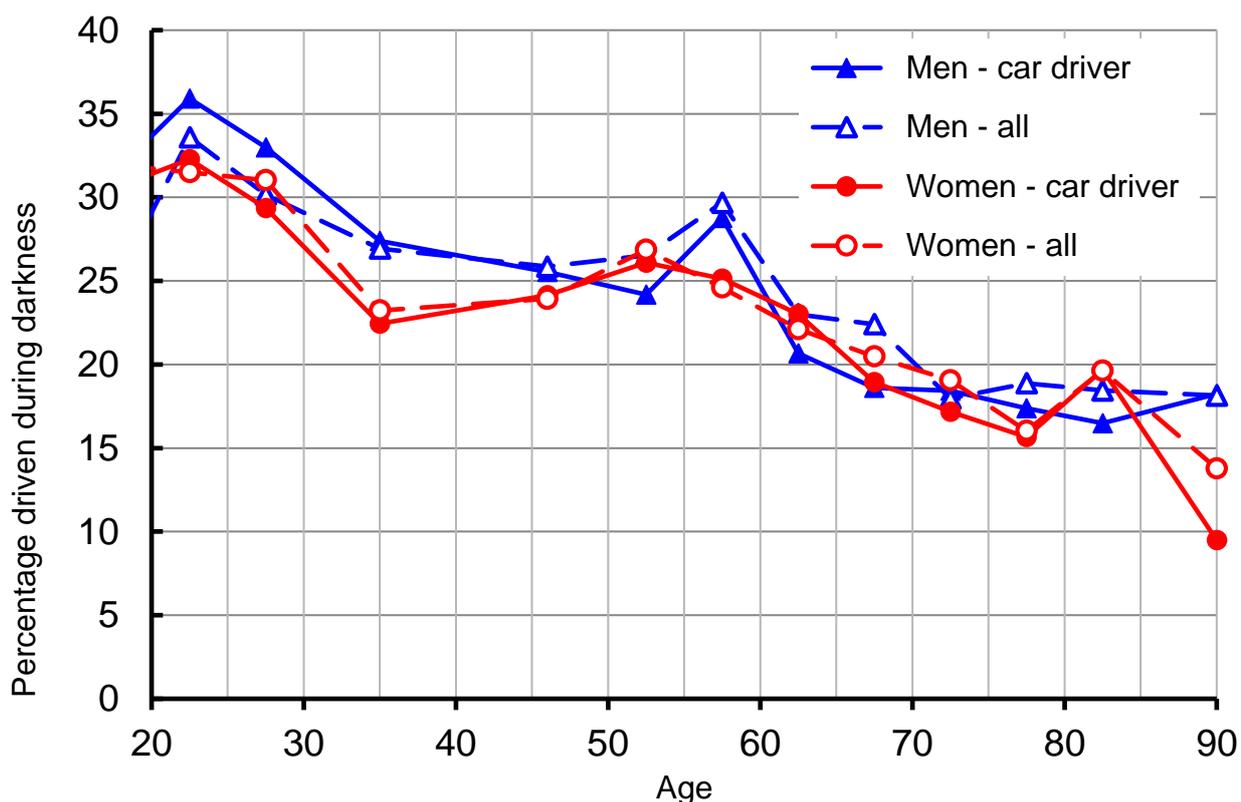


Source: NTS special tabulation

Figure 5.3 shows the percentage of car driver trips for sport and entertainment that are made in darkness, and Figure 5.4 the percentage of trips to visit friends at home. In each case, the percentage drops steadily with increasing age, and for visiting friends, the percentage of trips for women is lower than that for men at all ages. As with Figure 5.2, the percentages of trips by all means of travel for sport/entertainment and to visit friends at home are very similar to the percentages of car driver trips.

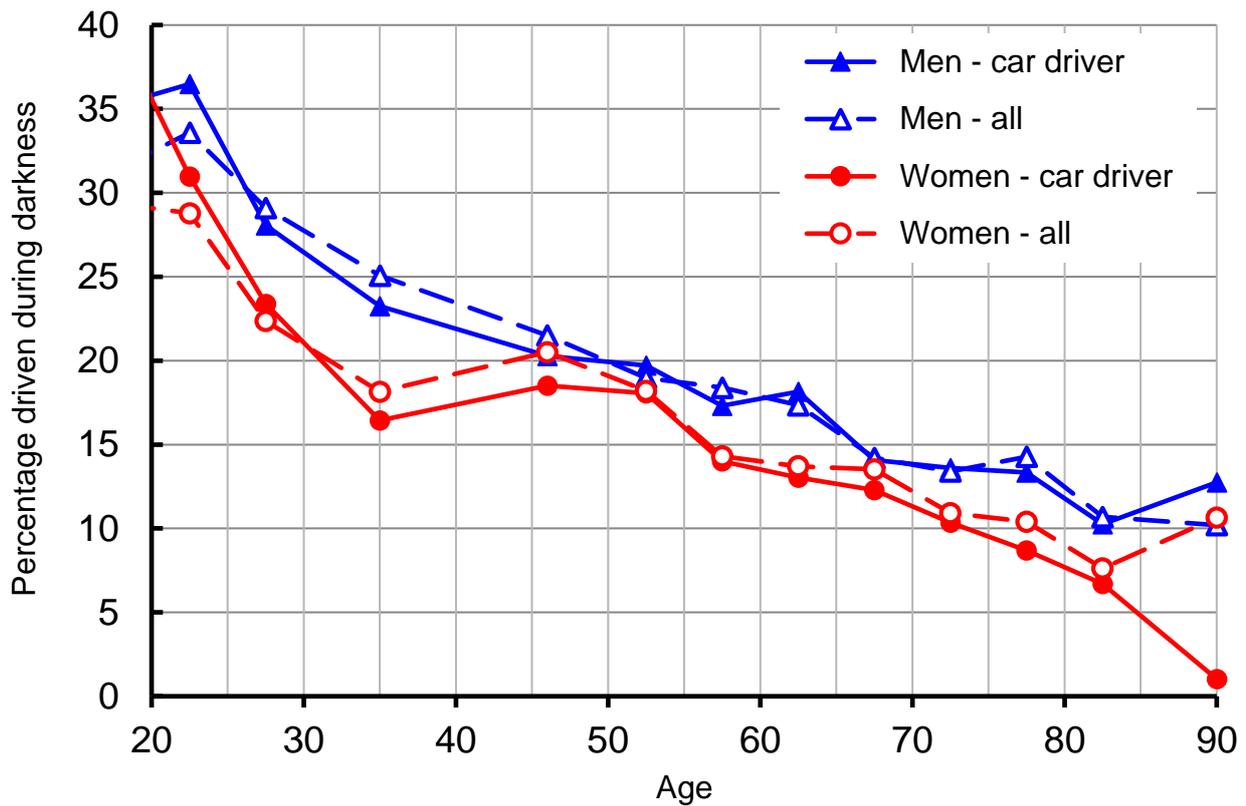
The similarity of the percentages for car driver trips and for trips by all means of transport shows that older people are not using alternative forms of transport to avoid having to drive at night. The reduction in the percentages of trips made during darkness by older drivers does not distinguish between trips not made because older people have fewer activities at night that require them to travel, and older people not going out at night, forgoing activities because they do not want to drive or travel at night.

Figure 5.3 Percentage of car driver trips and all trips during hours of darkness for sport/entertainment 2014–16



Source: NTS special tabulation

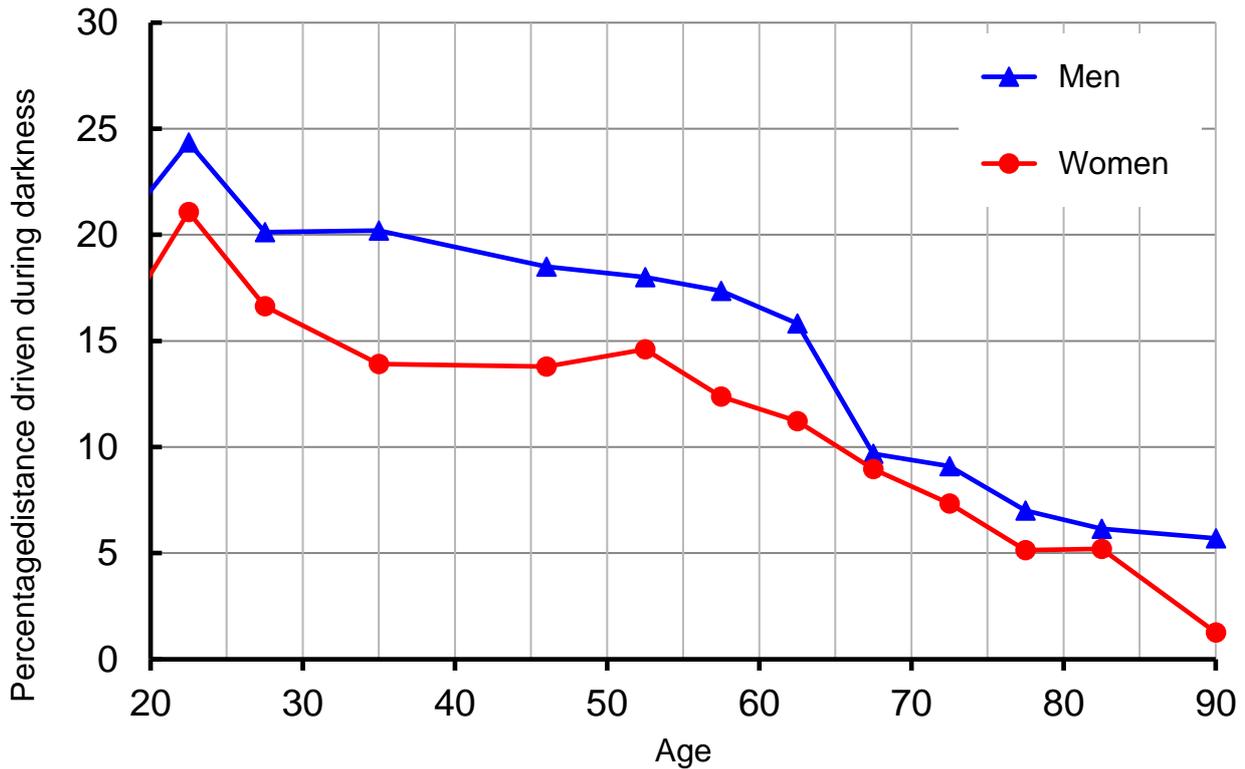
Figure 5.4 Percentage of car driver trips and all trips during hours of darkness to visit friends at home 2014–16



Source: NTS special tabulation

The percentage of distance driven in darkness (Figure 5.5) is similar to the percentage of trips shown in Figure 5.2. There is some indication that the percentage of distance for women begins to fall after age 55, whereas for men it falls after age 65.

Figure 5.5 Percentage of distance driven during hours of darkness for all purposes 2014–16



Source: NTS special tabulation

In summary, on all measures of travelling during the hours of darkness, as both men and women age they reduce the percentage of trips by all means of transport travelled during darkness and the percentage of trips and of distance driven in the dark. They also reduce the absolute number of trips and distance driven or travelled. There is no evidence of older people using alternative means of travel to avoid driving in the dark.

Unfortunately, there is no way of telling from this data how much of the reduction in travelling in the dark by older people is because they have less need to travel at night and how much is to avoid the stress of travelling in the dark, at the cost of forgoing activities that happen at night.

6. Relative collision risk, men and women

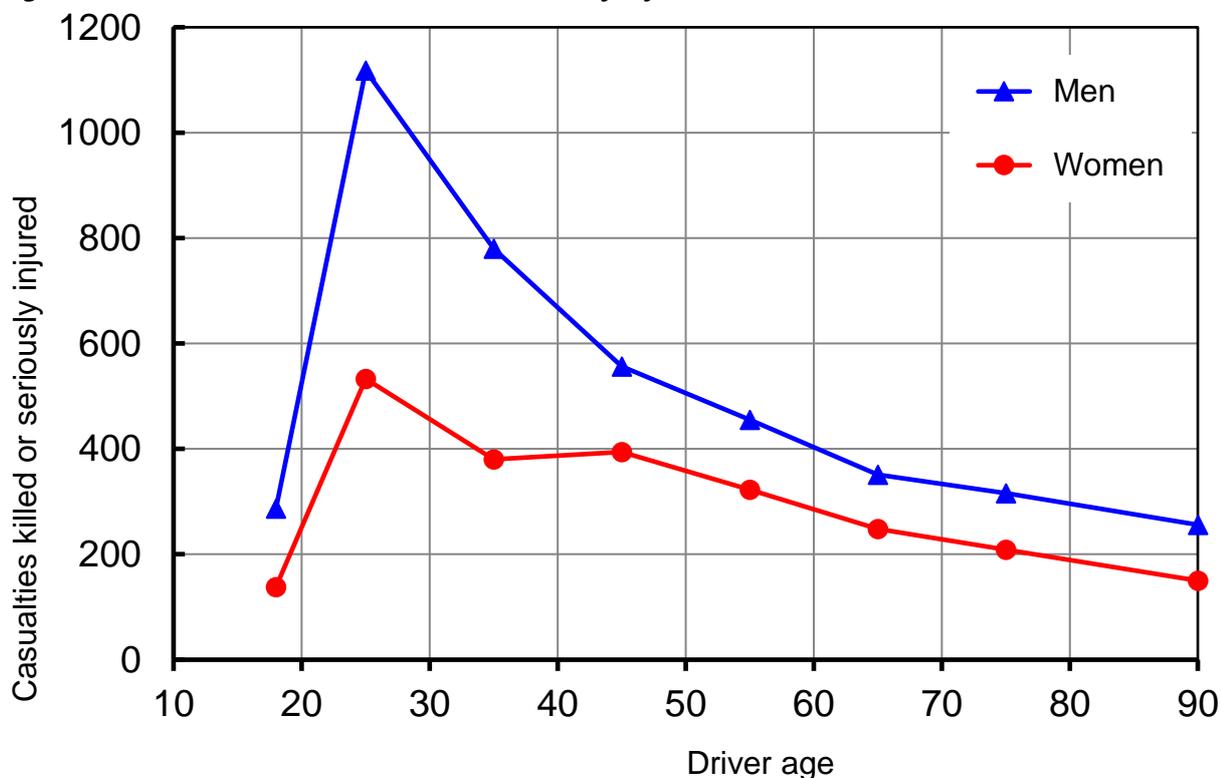
6.1 Statistical risk

The data for Great Britain in this section comes from police reports of collisions in which someone, not necessarily a vehicle occupant, is injured. Details of the collision are recorded using a form STATS19, either at the scene by the officer attending or at a police station to which the collision has been reported (DfT, annual (b)). The data includes the types (including make and model) of vehicles involved and the consequential casualties. The statistics relate only to personal injury collisions on public roads that are reported to the police.

6.1.1 Risk to car drivers

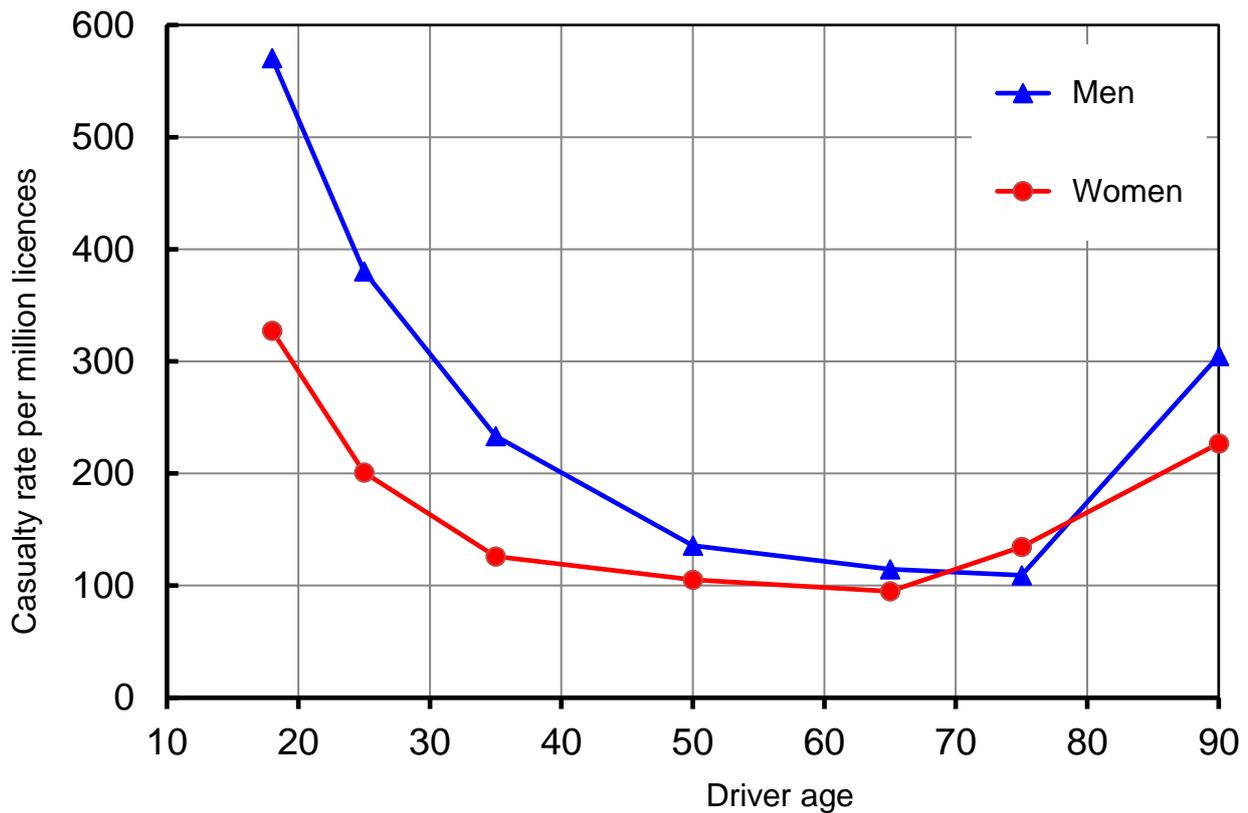
At all ages there are fewer women than men killed or seriously injured as car drivers (Figure 6.1), but of course there are also fewer licensed women drivers, as shown in Figure 3.4. Figure 6.2 shows the casualty rate per driving licence: up to age 50, the casualty rate per licence is much lower for women than for men, whereas above age 60, the rates are quite similar.

Figure 6.1 Car driver casualties killed or seriously injured (KSI) 2016



Source: Reported Road Casualties Great Britain 2016 Table 30011 (split between casualties aged 40–49 and 50–59 arbitrary)

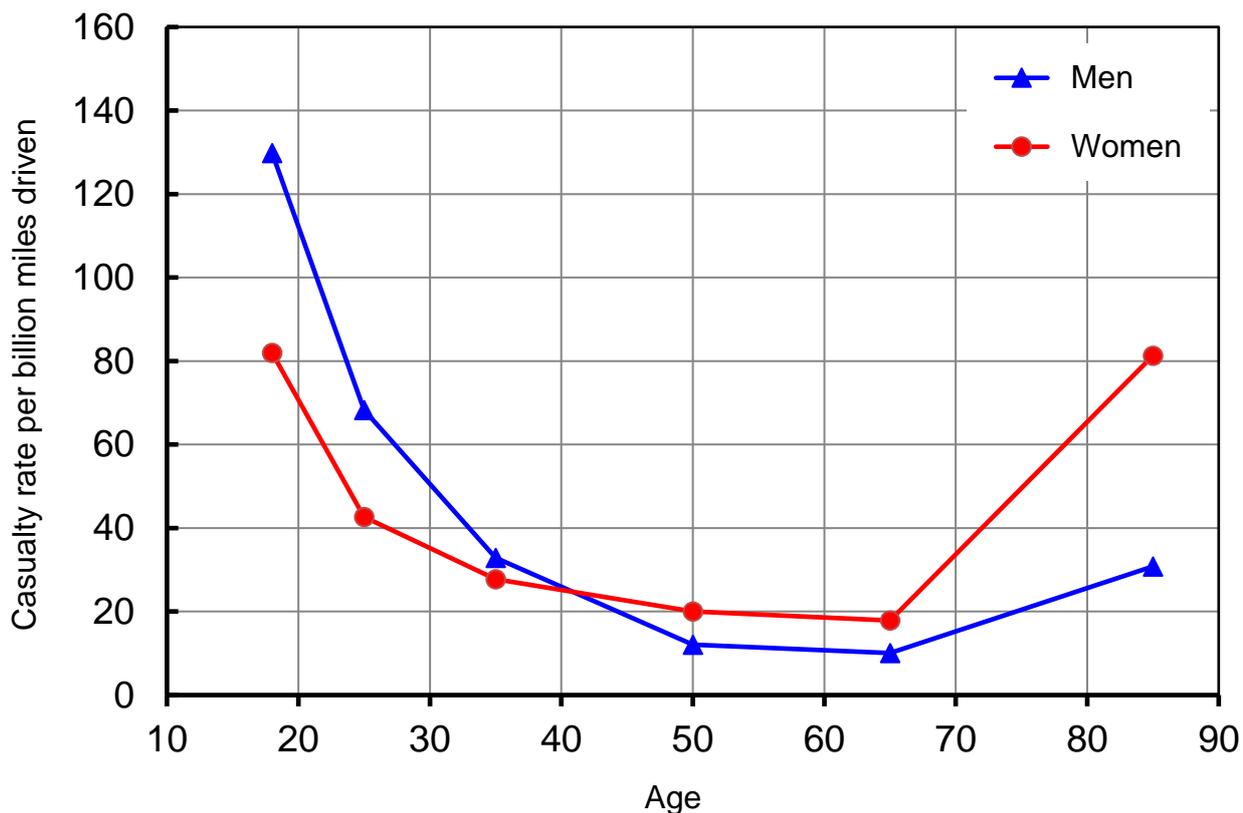
Figure 6.2 Car driver casualties killed or seriously injured per driving licence 2016. Reported Road Casualties Great Britain 2016 table ras30011 (casualties)



Source: National Travel Survey table nts0201 (licences)

This is very similar to the result found by Broughton (1988), left side of Figure 2.1. However, women drive fewer miles than men, so if the casualty rate is expressed as casualties per mile driven (Figure 6.3), it is found that the casualty rate per mile driven is lower for women than men up to age 40; but above age 40, the rate for women is noticeably higher than that for men. This again agrees with Broughton 1988 (Figure 2.1), except that he found that the crossover occurred at age 30.

Figure 6.3 Car driver casualties killed or seriously injured per mile driven 2016. Reported Road Casualties Great Britain 2016 table ras30011 (casualties)



Source: National Travel Survey table nts0201 (licences), nts0605 miles

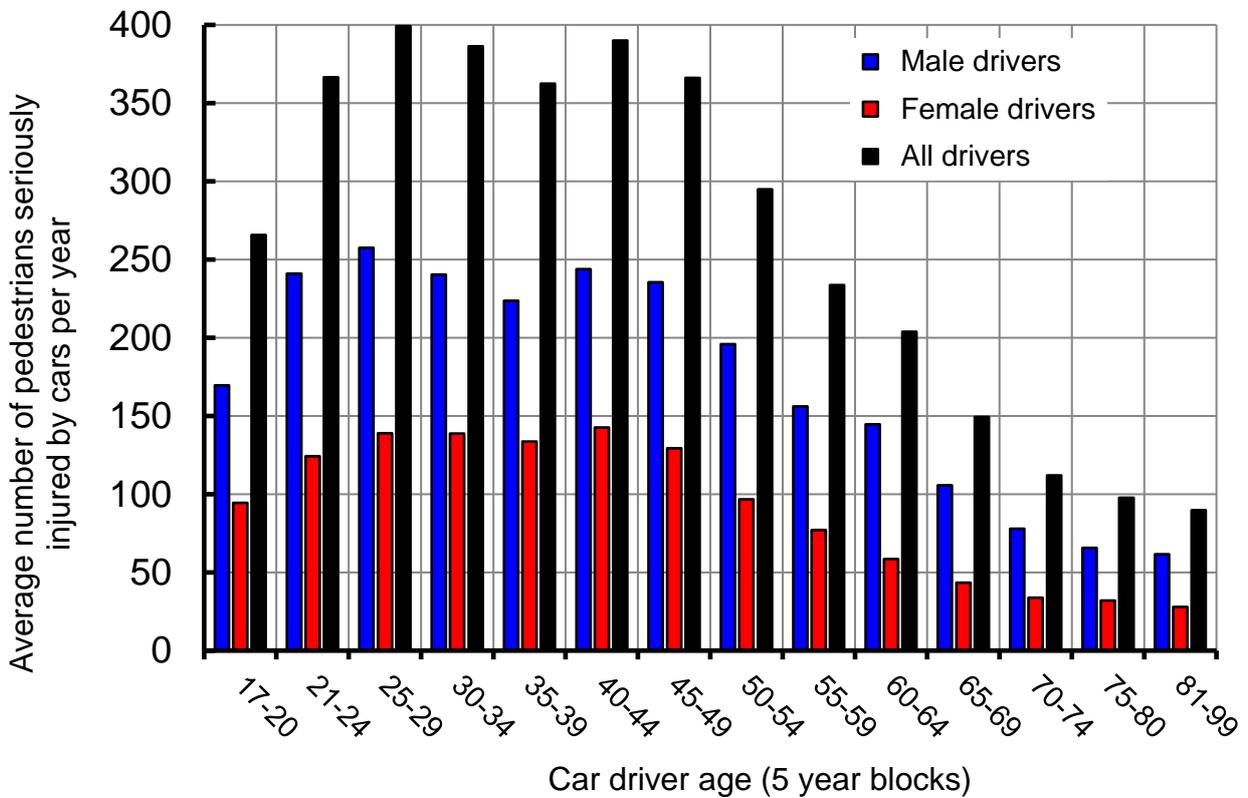
An issue for older road user casualties is the greater fragility of older people, as a consequence of their physical frailty. If an older person is involved in a collision they are more likely to be injured; if injured, they are more likely to die. This applies to all types of road user, but there is evidence in the report of the Older Driver Task Force (Road Safety Foundation 2016, Appendix A.2) that shows that the occupant protection systems in modern cars are working less well for older people than middle-aged ones, and relatively less well for older women than older men. This is amplified by the tendency of older drivers, and particularly older women, to drive small cars, which provide less occupant protection for a given NCAP star rating.

6.1.2 Risk to other road users

An important measure of the safety of drivers is the risk they pose to other road users, particularly pedestrians, pedal cyclists and motorcyclists. As with injuries to car drivers, in 2010–14 at all ages women drivers seriously injured fewer pedestrians than did men (Figure 6.4). The same is true when the risk of injuring a pedestrian is expressed as pedestrian casualties per licence per year (Figure 6.5). But when the risk is expressed as per mile driven (Figure 6.6), women have a lower risk rate than men up to age 40; but between

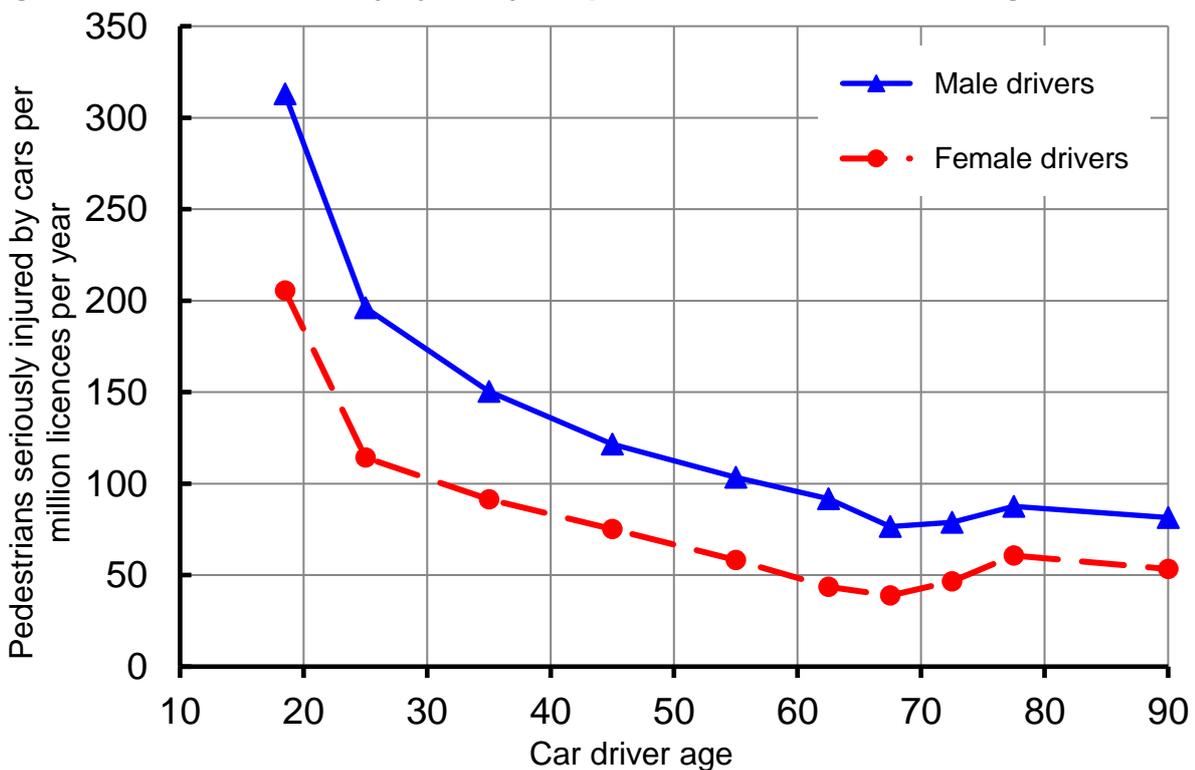
ages 40 and 70 the risk is similar for male and female drivers, and above age 70 the rate for women is noticeably higher than that for men.

Figure 6.4 Pedestrians seriously injured by cars 2010–14 annual average



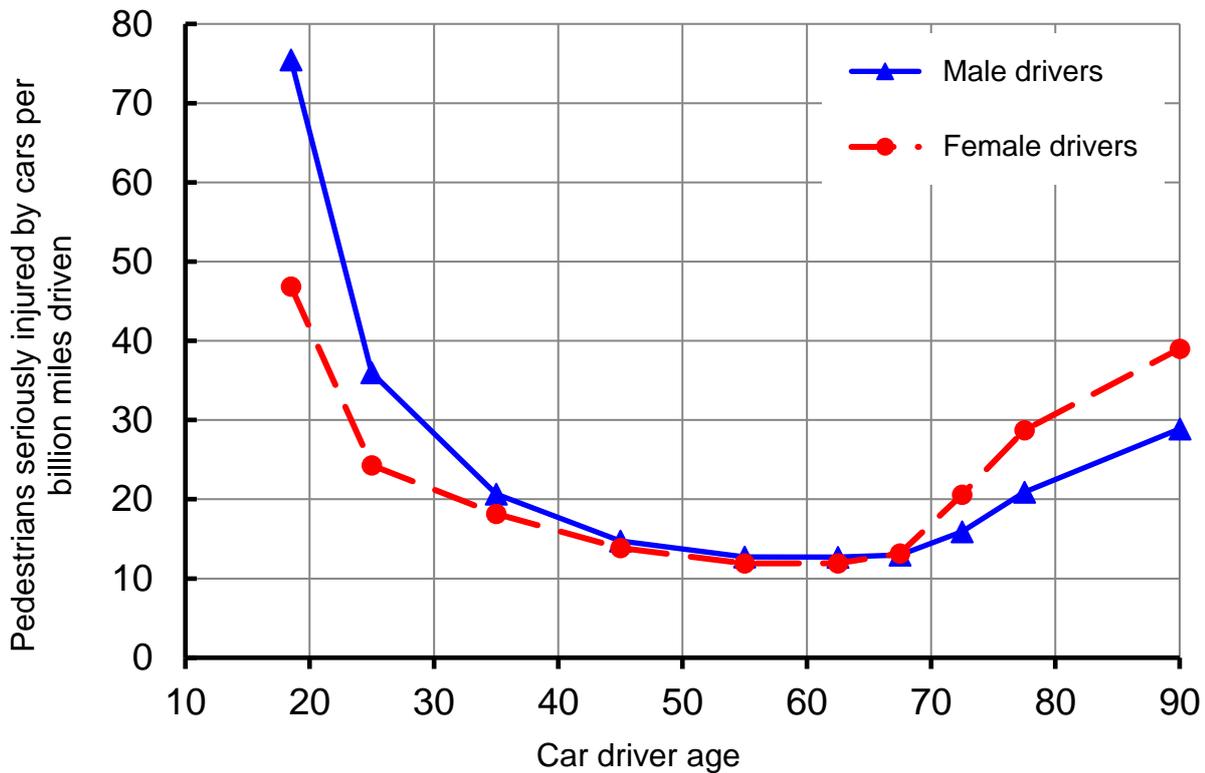
Source: Special tabulation from STATS19 data

Figure 6.5 Pedestrians seriously injured by cars per licence 2010–14 annual average



Source: Special tabulation from STATS19 data (casualties), nts0201 (licences)

Figure 6.6 Pedestrians seriously injured by cars per mile driven 2010–14



Source: Special tabulation from STATS19 data (casualties), nts0201 (licences), nts0605 (miles)

Thus, in terms of risk both of injury to themselves as a car driver, and of injuring a pedestrian, there is evidence that in Britain and on the basis of risk per mile driven, when comparing women to men of a similar age, younger women are safer than men, but older women are less safe.

6.2 Types of collision, men and women

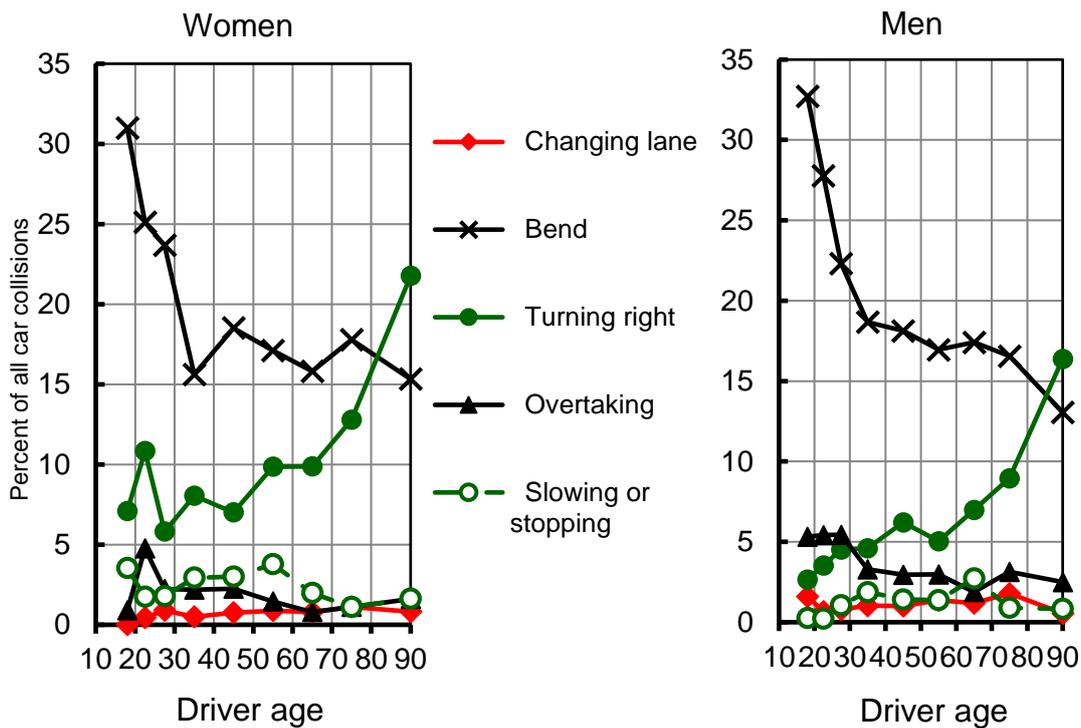
The Older Driver Task Force (Road Safety Foundation, 2016) established that the type of collision car drivers experience varies with driver age. In particular, a higher proportion of serious and fatal collisions for older drivers involve turning right, or occur at or within 20 metres of a T- or staggered junction, while younger drivers have more collisions on bends or when overtaking. The Older Driver Task Force did not consider whether this pattern is the same for male and female car drivers. This section looks at car collision locations, manoeuvres and times of day by the gender as well as the age of the driver. The tabulations were performed by Department for Transport, using STATS19 data for the five years 2012–16.

6.2.1 Manoeuvres

Figure 6.7 shows the percentages of car collisions causing a fatal injury (not necessarily to the car driver) that involve a number of different manoeuvres. Collisions have been analysed for the five-year period 2012–16, to increase the size of the sample and reduce random scatter. Figure 6.7 shows that men have a higher percentage of collisions than women for both overtaking and changing lane, and that women have a higher percentage of collisions than men for turning right across traffic or slowing or stopping. In absolute terms, apart from collisions while proceeding ahead (not shown), the highest percentages of collisions for both men and women are on bends for younger drivers and when turning right for older drivers.

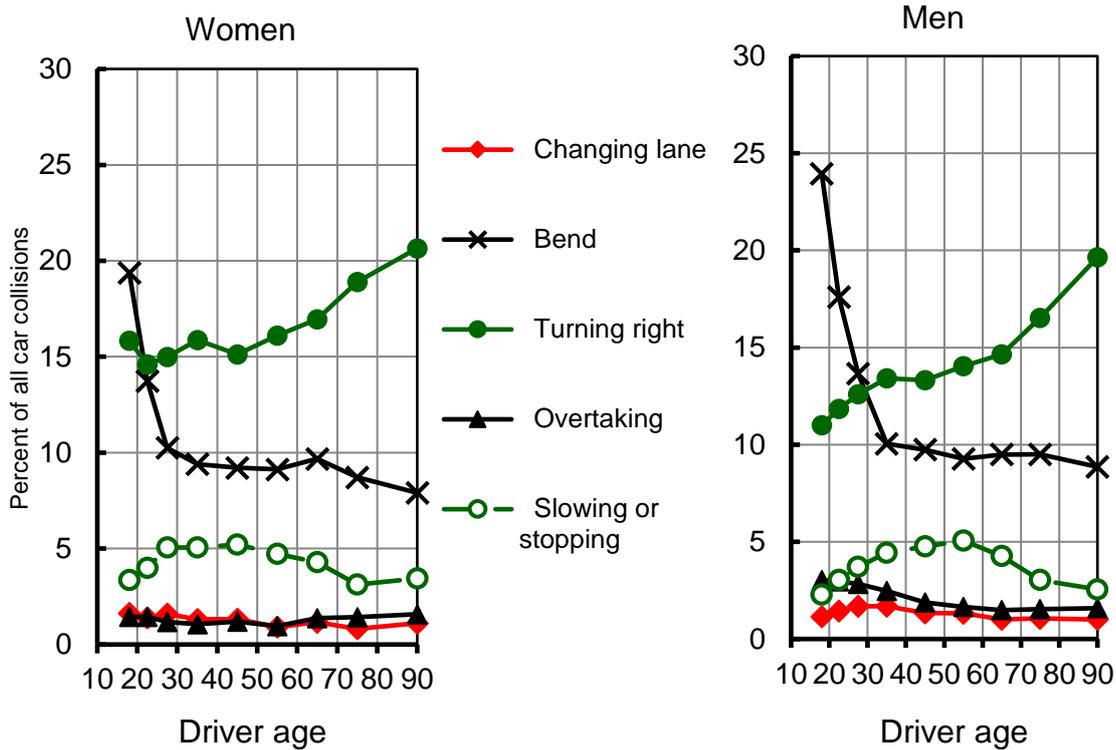
Figure 6.8 shows similar results for serious injury collisions. In this case, a higher percentage of collisions for men than women involves bends and overtaking, while a higher percentage for women than men involves turning right across traffic.

Figure 6.7 Percentages of all fatal car collisions that involve particular manoeuvres



Source: DfT tabulation of STATS19 collision data for 2012–16

Figure 6.8 Percentages of all serious injury car collisions that involve particular manoeuvres

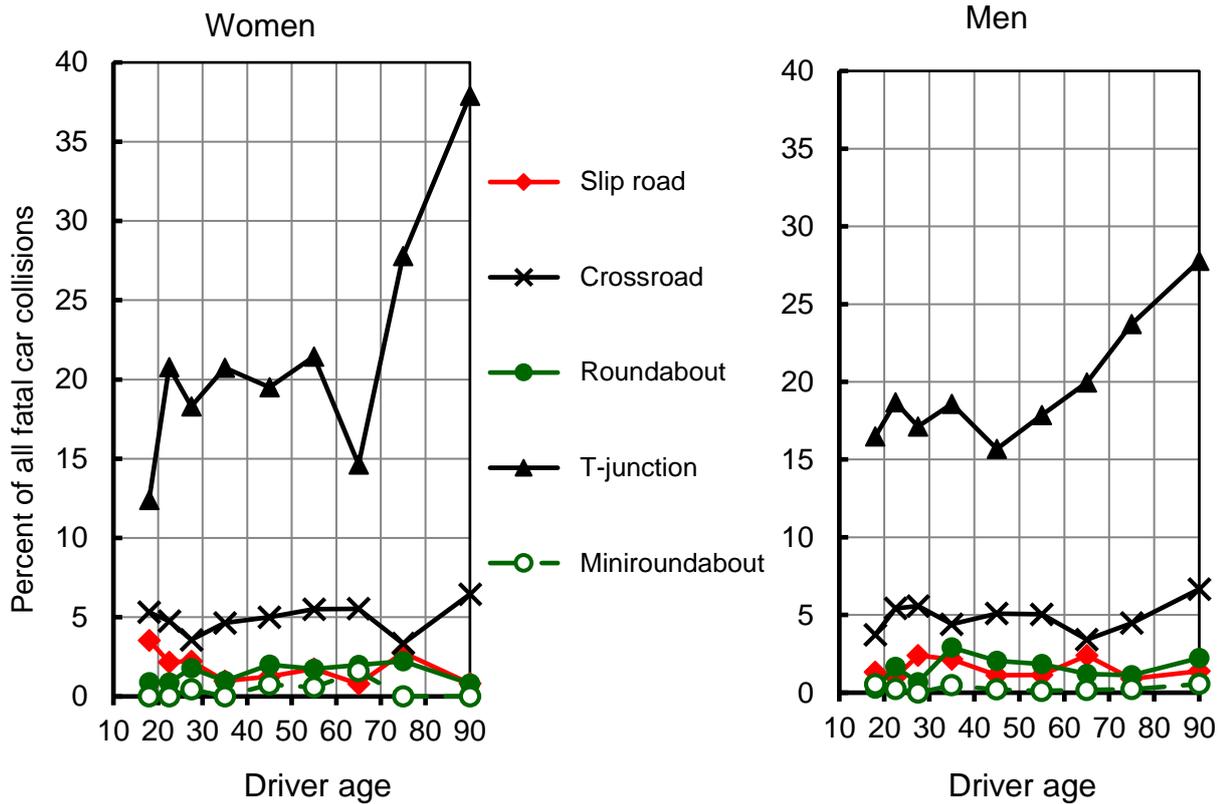


Source: DfT tabulation of STATS19 collision data for 2012–16

6.2.2 Junctions

Figure 6.9 shows the percentages of car collisions causing a fatal injury (not necessarily to the car driver) that occur at or within 20 metres of a number of different types of junction. Women have a higher percentage of collisions than men at T-junctions, except for the age groups 16–19 and 60–69. The latter may be a random variation, because there are so few fatal collisions (37 women and 117 men drivers aged 60–69 at T-junctions in the five years), but the departure from the trend curve for women is about two standard deviations. For the other junction types, there is no systematic difference in the percentages for men and women.

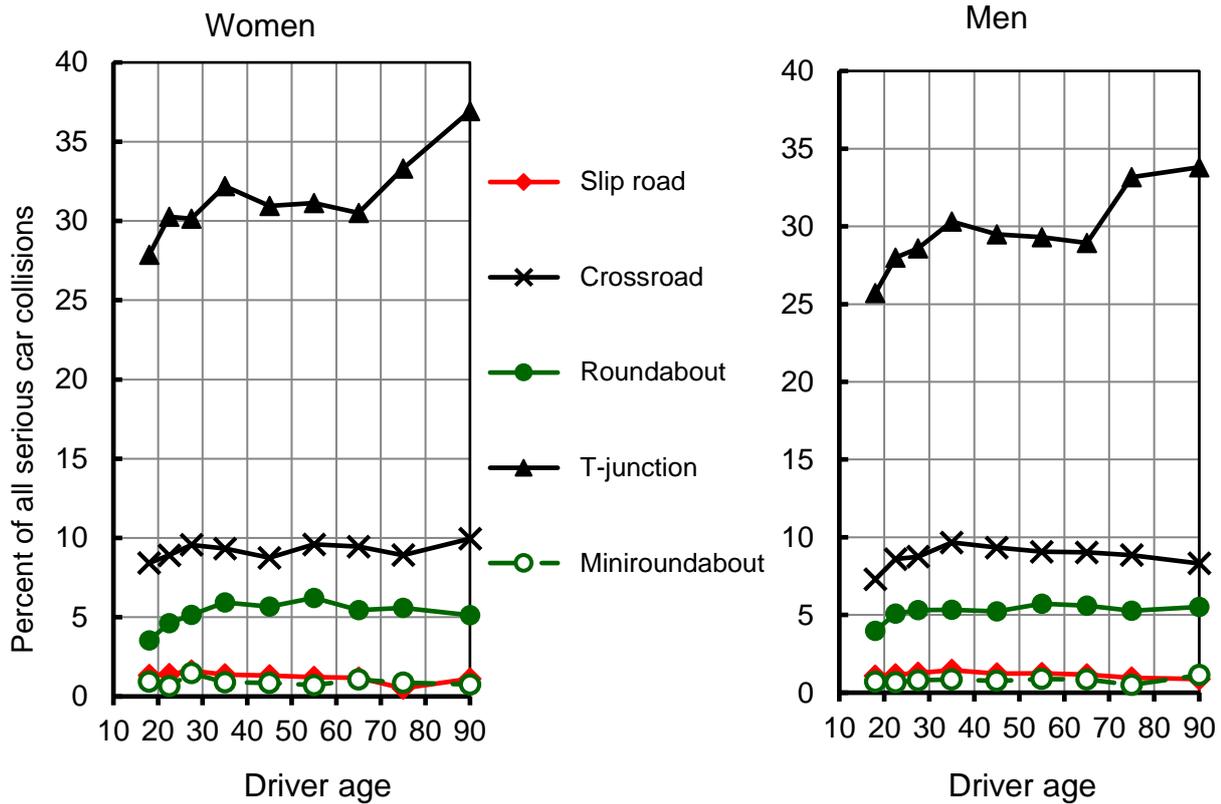
Figure 6.9 Percentages of all fatal car collisions that occur at junctions



Source: DfT tabulation of STATS19 collision data for 2012–16

Figure 6.10 shows similar information for serious injury collisions. Women have a slightly higher percentage of their collisions at T-junctions than men. Over the full age range, 31.2% of serious collisions for women are at T-junctions, compared with 29.5% for men. There were 10,529 serious collisions for women as against 19,184 for men, so the difference between the percentages represents two standard deviations and is statistically significant. There are no systematic differences for the other types of junction.

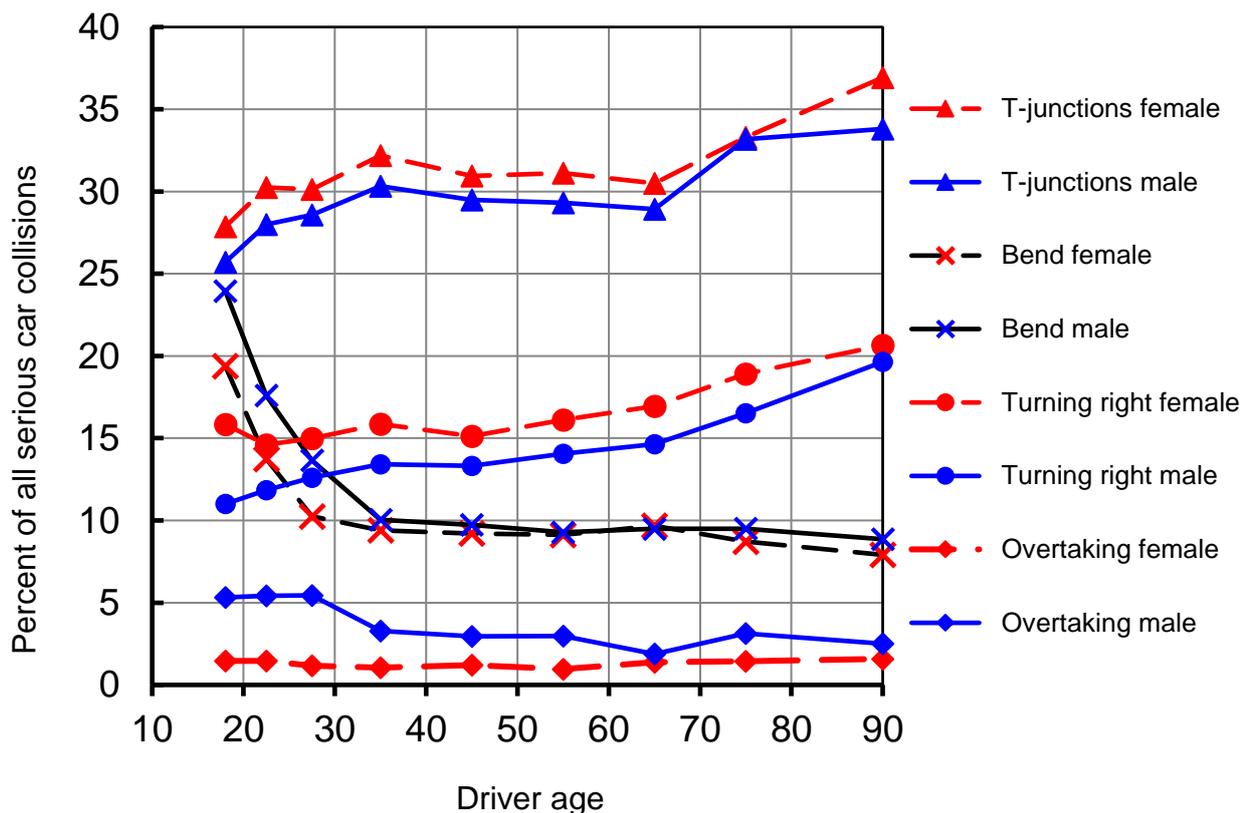
Figure 6.10 Percentages of all serious injury car collisions that occur at junctions



Source: DfT tabulation of STATS19 collision data for 2012–16

The differences in the percentages of collision types for men and women are best illustrated by direct comparison, such as Figure 6.11 for serious car collisions. Women have a higher percentage of their serious car collisions than do men at T-junctions and when turning right, and a lower percentage when overtaking (overtaking on the offside of a moving vehicle) and, for women aged up to 40, on a bend. For fatal collisions the differences are generally similar but larger (Figure 6.12), except that the percentages for bends are the same for men and women.

Figure 6.11 Percentages of all serious injury car collisions that occur at T-junctions or involve certain manoeuvres

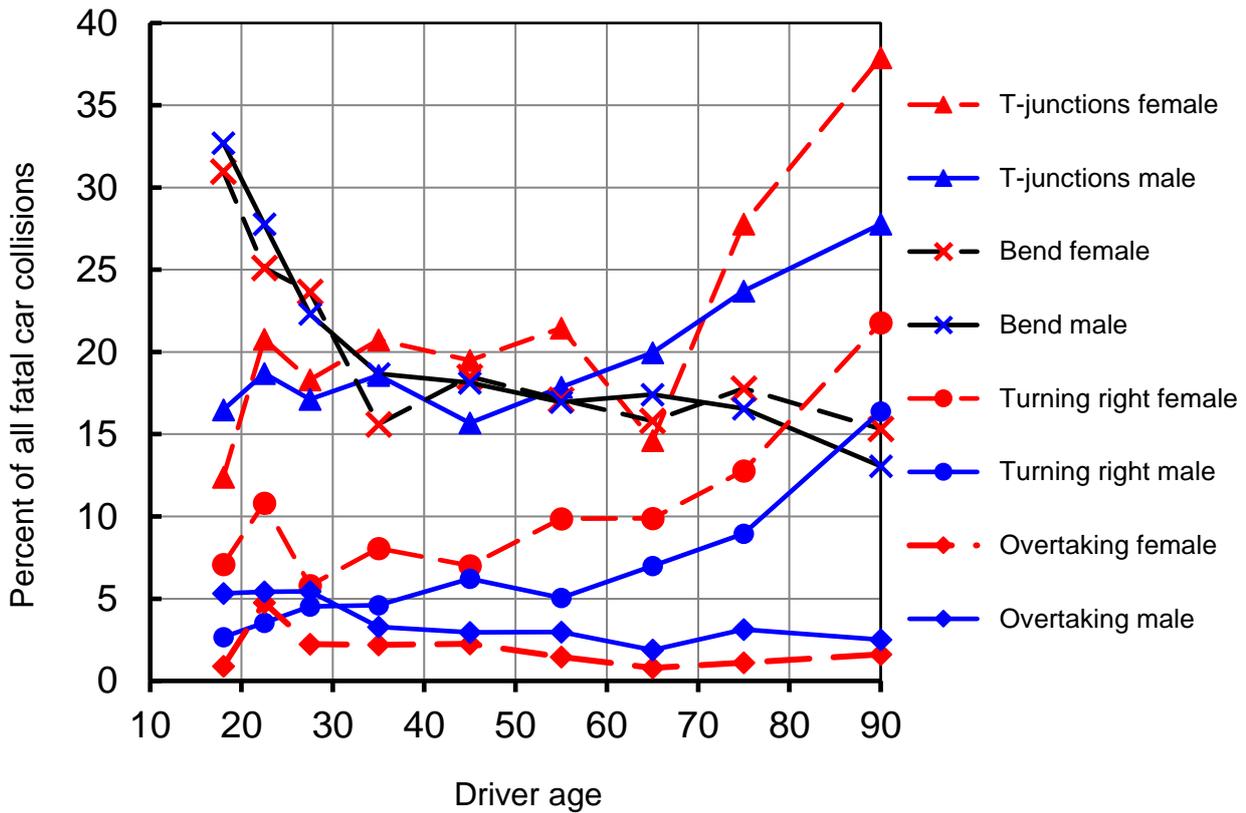


Source: DfT tabulation of STATS19 collision data for 2012–16

The collision data in these graphs suggest that older drivers, particularly older women drivers may have more problems than men with T-junctions and turning right across traffic, and that these problems are greatest in the most serious collisions. If this is the case, it must be connected with some aspects of detecting potentially conflicting traffic, assessing speeds and judging gaps for safe manoeuvres. This hypothesis could be tested using a driving simulator. If proven, there may be possibilities of developing targeted training programmes to overcome these problems. There should also be potential for redesigning junctions to improve their safety, such as by installing roundabouts at T-junctions, where space permits.

This finding on collision involvement may well be one of the factors, along with the lower mileage driven, that explain why older women have more collisions per mile driven than do men.

Figure 6.12 Percentages of all fatal car collisions that occur at T-junctions or involve certain manoeuvres



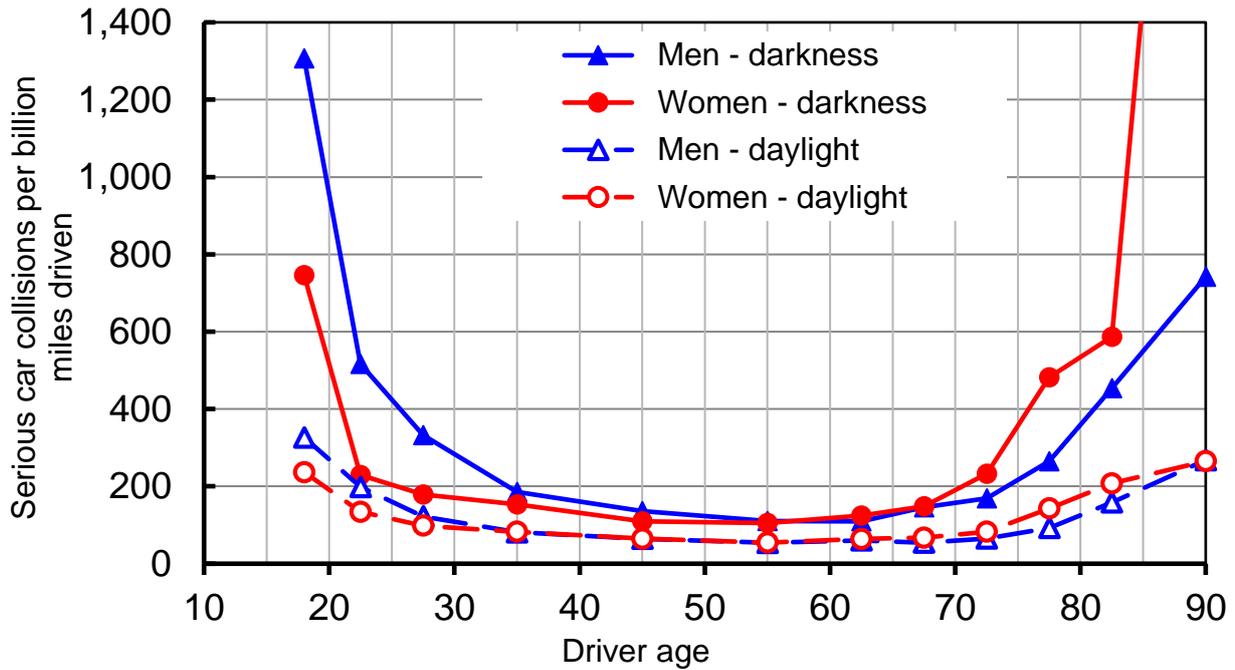
Source: DfT tabulation of STATS19 collision data for 2012–16

6.2.3 Driving in darkness

As was shown in section 5, men drive rather more trips in darkness than do women, and men drive a slightly higher percentage of their trips in darkness. The overall collision statistics show that the percentage of collisions that happen in darkness is higher than the percentage of miles driven, so driving in the dark is more dangerous than driving in daylight.

Figure 6.13 shows the car driver serious injury collision rates per mile driven in darkness and in daylight. For both daylight and darkness, younger women have a lower rate per mile than men; up to age 35 for daylight and 55 for darkness. Older women have a higher collision rate per mile than men; above age 60 in each case. The rate for women aged 85 and over in darkness is very high, but this is based on only 56 serious and two fatal collisions, so the statistical significance of this data point is not high. This pattern agrees with the results in section 6.1.1 on relative collision rate. For both men and women, the rate for daylight is lower than the rate for darkness.

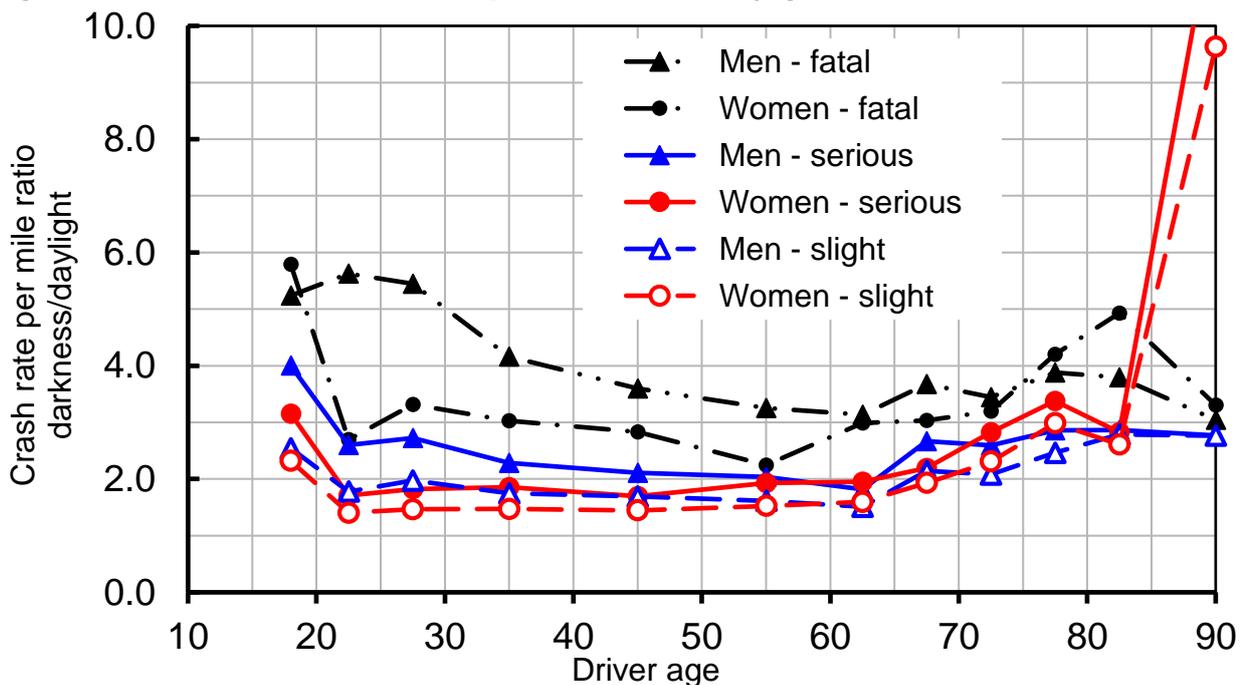
Figure 6.13 Car driver serious injury collisions per mile driven in darkness and in daylight, 2012–16



Source: DfT tabulation of STATS19 collision data for 2012–16

Figure 6.14 shows the ratios of the collision rate for darkness divided by that for daylight. Over the age range 25 to 65 the rate in darkness is about twice that in daylight, and slightly higher for men than women. The ratio is significantly higher for young drivers, and for older drivers the ratio starts to creep up after age 65, then sharply for women drivers aged over 85. The ratio for fatal collisions is larger, around 3–4, and is larger for men than women up to age 75.

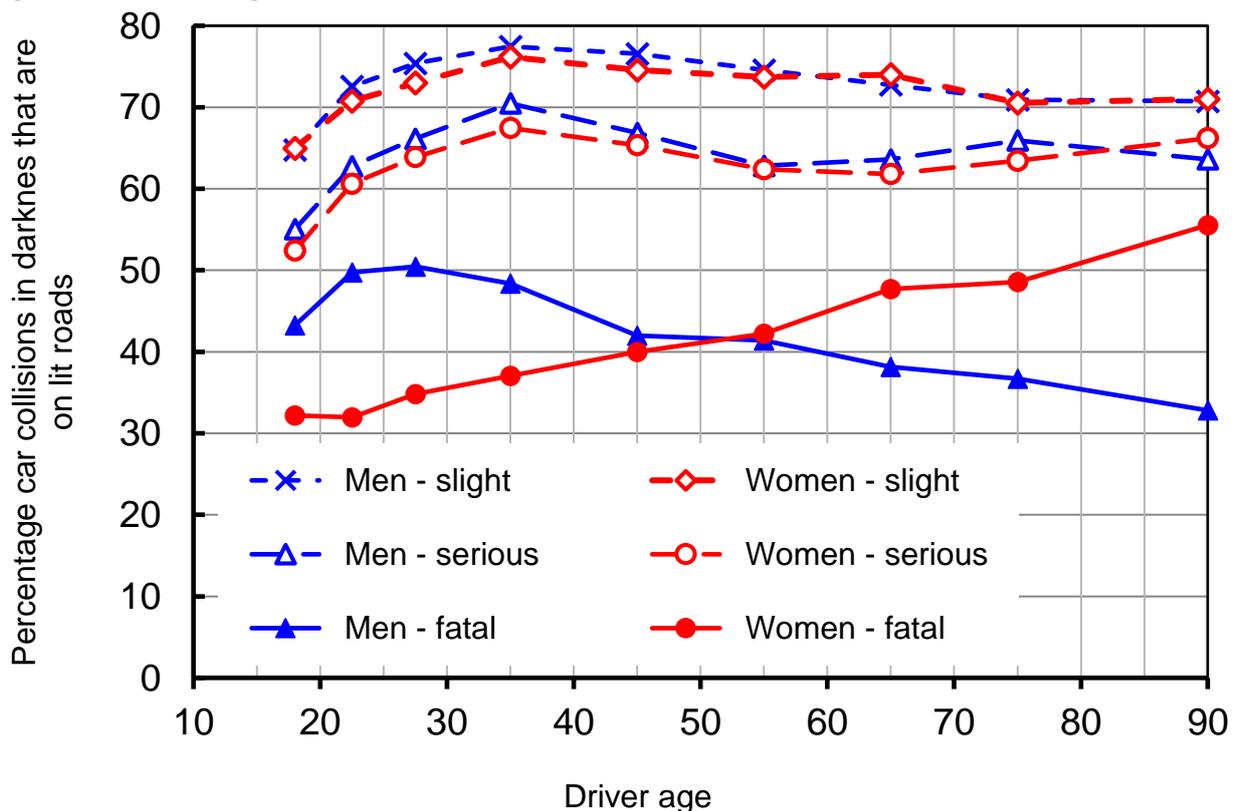
Figure 6.14 Ratio of the car crash rates per mile darkness/daylight, 2012–16



Source: DfT tabulation of STATS19 collision data for 2012–16

There are no data on how much people drive in darkness on lit as against unlit roads, but there are data on how many of the collisions in darkness are on lit roads as against unlit ones; see Figure 6.15. For slight and serious collisions, the distributions for men and women are similar and do not vary much with the age of the driver, though up to age 60 or 70 the percentages for women are slightly lower than for men. For slight collisions in darkness, some 70 to 77% are on lit roads. For serious collisions, the percentage is 62 to 70%. For fatal collisions, the percentage on lit roads for men falls from 50% for younger drivers to 30% for older drivers. For women, the reverse is the case, with the percentage on lit roads rising from 30% for younger drivers to 55% for older drivers. This might be a reflection of the parts of the road network on which different ages and genders decide to drive or are required to do so. For women aged 60 to 79 there were 100 fatal collisions in darkness during the five-year period, so the figures for this age group are statistically reasonably robust, but for women aged 80 and over there were only 18 fatal collisions in darkness, so little can be said about that age group. For women in their 20s there were 186 fatal collisions in darkness.

Figure 6.15 Percentage of car crashes in darkness that occurred on lit roads, 2012–16



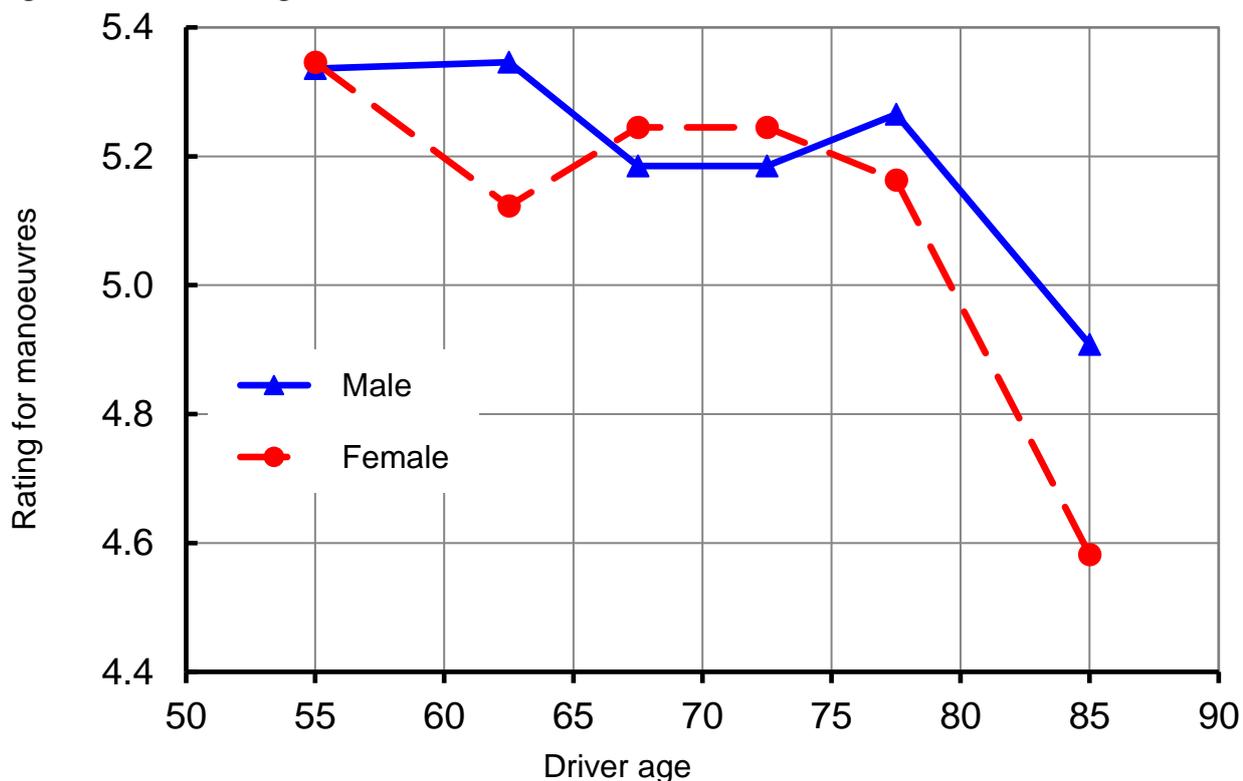
Source: DfT tabulation of STATS19 collision data for 2012–16

7. Driving problems, men and women

The literature reviewed in section 2 gives examples of driving situations that older drivers find stressful or try to avoid. For example, Siren and Meng (2013) find that in Denmark women are much more likely than men to try to avoid driving situations such as when it is slippery, when it is dark, long trips, unknown places, unknown routes and motorways. In Australia, Charlton et al. (2006) found that the situations which women were more than twice as likely as men to try and avoid included: merging into traffic; roundabouts; night when wet; and turning right, either with no traffic lights or with lights but no right turn arrow to provide a protected turn phase.

Another source of evidence on situations that cause problems for female drivers is the results of driver assessments or laboratory tests. Rabbitt and Parker (2002) report the rating of drivers performing various driving tasks as part of a research programme. Figure 7.1 shows the scores for manoeuvring for male and female drivers. This shows that female drivers score about the same as men up to age 75; but after that their scores drop more rapidly with increasing age than do the scores for male drivers.

Figure 7.1 Driver rating for manoeuvres



Source: DfT Road Safety Research Report 29, Rabbitt et al., 2002

A different approach to the safety of older drivers is to review the outcomes of driving assessments. This has been done for 100 driver appraisals during 2017 in the Hampshire County Council Driving Skills 60+ scheme, analysed to identify aspects of driving that

cause problems, and also for 354 clients of Fitness to Drive assessments at the Wessex DriveAbility driving mobility centre over the five-year period 2013–18.

7.1 The Hampshire County Council 60+ Skills scheme

The Driving Skills 60+ scheme of voluntary and confidential driving appraisals for older drivers has been running since 1999. In the ten months from August 2017 it appraised 559 older drivers: 239 female and 320 male. The appraisals consist of a drive lasting about an hour in the client's own car using roads typical of the ones they use daily, accompanied by a specially trained Approved Driving Instructor (ADI). The ADI rates twelve aspects of the client's driving at risk level low, medium or high, and provides comments on each aspect of the appraisal drive (see Table 7.1 for an example of an appraisal report).

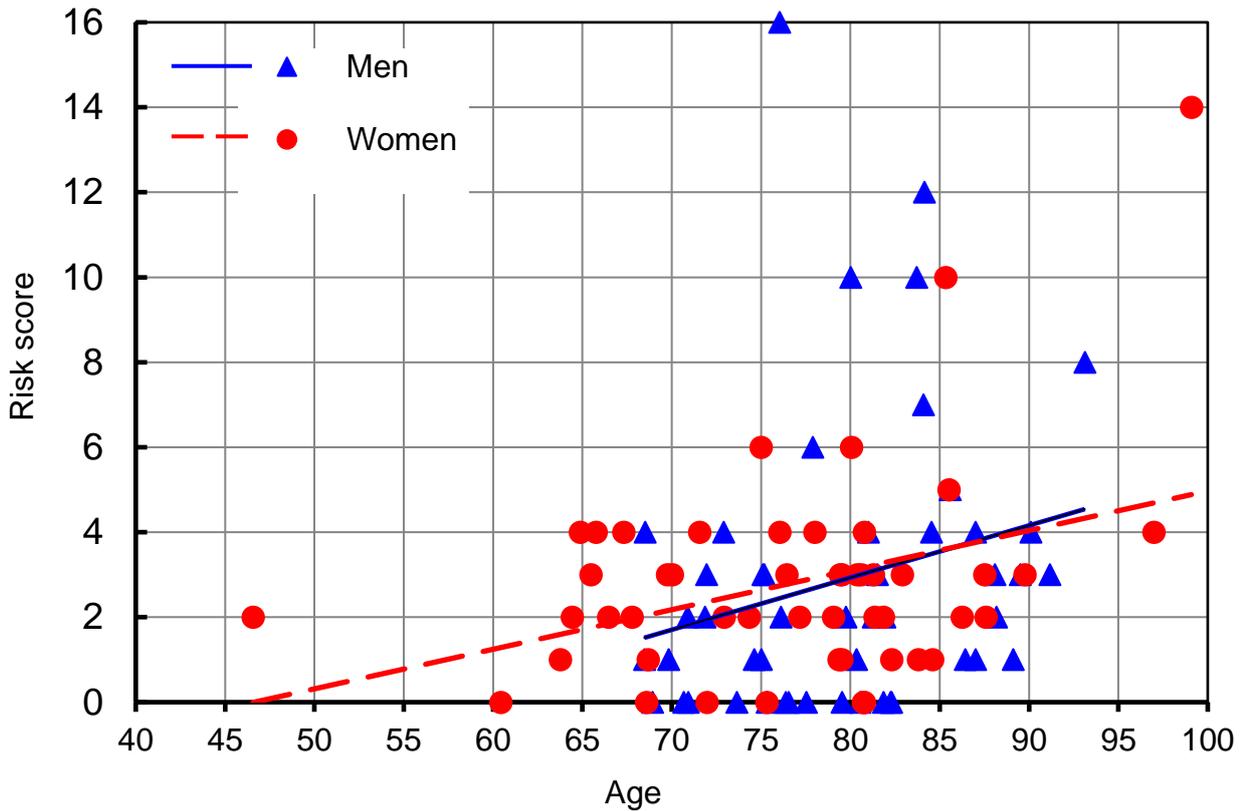
The Driving Skills 60+ scheme has provided anonymous examples of appraisal reports for 50 male and 50 female car drivers, dating from March to December 2017. These drivers' ages ranged from 46 to 99, with the great majority between 65 and 90 years old (the youngest drivers of the full age range were appraised as volunteers for various community driver schemes). The reports have been analysed statistically, scoring a medium-risk entry as 1 and a high-risk entry as 2. For this sample of 100 clients, the average risk scores for male and female drivers were almost identical; 2.88 for men and 2.80 for women. When risk scores are plotted against age (Figure 7.3), the trend lines for these men and women are almost identical, but there is a great deal of scatter in the individual results so the precise positions of the trend lines cannot be certain. The correlation coefficients R^2 are very low: 0.06 for men and 0.13 for women. The correlation coefficient measures the strength of the linear relationship between two variables on a scatterplot. The low value means that there is a lot of scatter, and only a small part of the differences in risk scores vary directly with driver age.

The risk score does increase for drivers who report a relatively low mileage driven; see Figure 7.4, which corresponds with the crash rates measured in the US SHRP 2 Project and shown in Figure 1.2 (Antin et al., 2017). The increase in risk scores for the fitted lines for mileages of less than 2,000 to 3,000 per year is noticeable. In the Driving Skills 60+ scheme, women have a lower risk score than men at a given mileage, although the difference is not statistically significant, whereas in SHRP 2, women have a higher crash rate per mile than men.

Table 7.1 Example of a Hampshire County Council 60+ Skills appraisal report

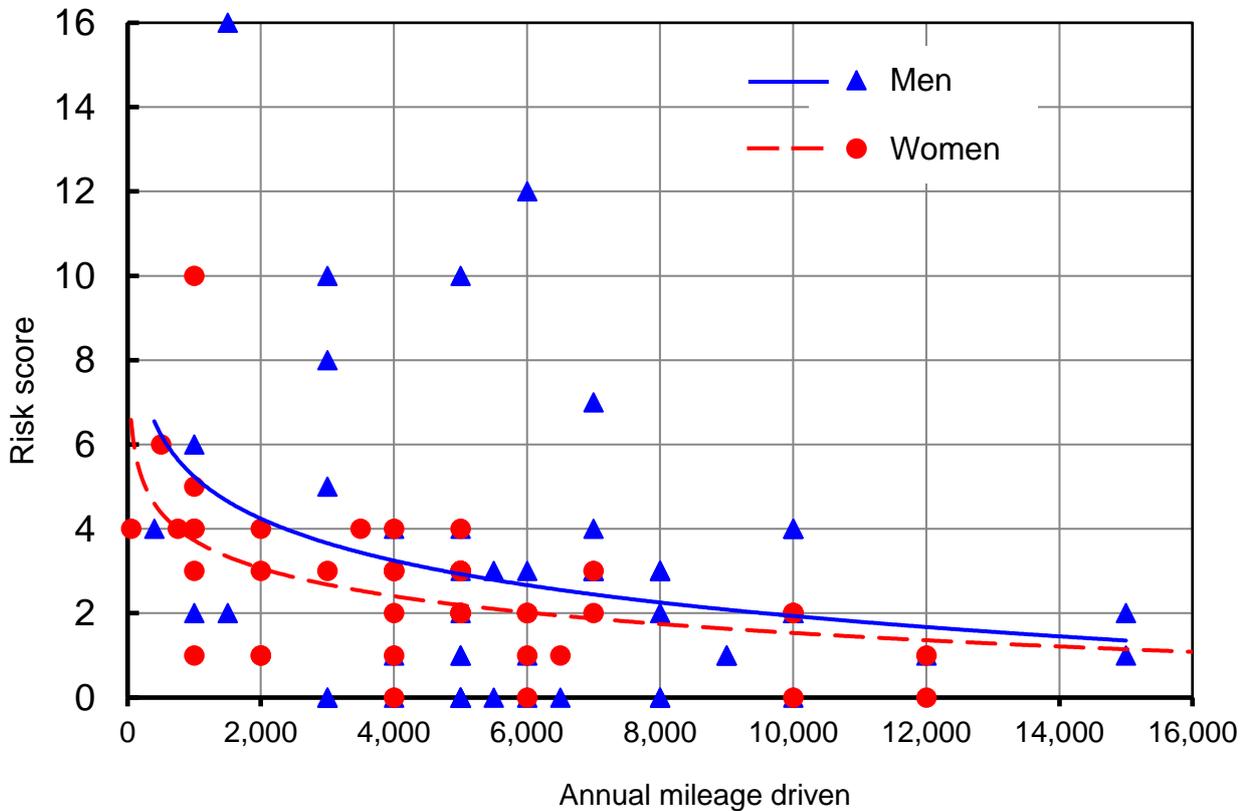
Risk Level	L	M	H	Comments
Vehicle control	✓			Steering, gears, brake and accelerator were all used in a controlled manner. On faster approaches, try to ensure sufficient braking has been achieved before dipping the clutch for a gear change.
Passenger comfort	✓			As you delivered a well thought out drive I felt very comfortable as a passenger at almost all times, with the exception of the couple of points mentioned below.
Communication	✓			Signalling was used where required and without confusion.
Use of speed	✓			Your approach to speed is sensible with a good balance between progress and safe, legal speed. With this balance comes some difficulty in always staying within the 30 mph limit and on a couple of occasions you allowed the car to build up to nearly 40mph for a short time before correcting this.
Safety margins	✓			Safety margins in most cases were very good but there is need to be aware of the affect excessive safety margins can have when passing parked cars. An example would have been when you passed by some parked cars on a slight right hand bend. A position further left would have enabled you to see and be seen by oncoming vehicles earlier. At one point you followed a bus too closely for a while which restricts your forward planning.
Planning and awareness		✓		Minimum risk under this category would require a slightly more structured approach to mirror checks as discussed. As an example, some of you mirror checks tend to be at the same time as your signal rather than well before. However, you have a good general awareness of following vehicles.
Decision-making		✓		At nearly all times your decision-making was efficient and accurate. However, you need to take into account how situations can change when entering faster traffic situations and, where safe, monitor that change as you join a new road. This allows an emergency reaction if a misjudgement has been made at first.
Observation before emerging	✓			Observations before emerging were good but please see above comment about ongoing observation.
Roundabouts	✓			You showed a good, safe approach to using roundabouts.
Positioning		✓		This was only a problem when passing parked cars where you needed to give them sufficient clearance. Sometimes a slight compromise needs to be made so that other safety considerations can be made.
Manoeuvres	✓			Your reversing was accurate and carefully carried out. You use your blind spot 'bubble' mirrors instead of a shoulder check which you have set up to cover all areas behind,
Attitude / Courtesy/ Concentration	✓			You showed an excellent attitude to safety with good maintenance of concentration levels throughout.

Figure 7.3 Risk score and age for 50 male and 50 female driver appraisals



Source: Hampshire County Council Driving Skills 60+ scheme 2017

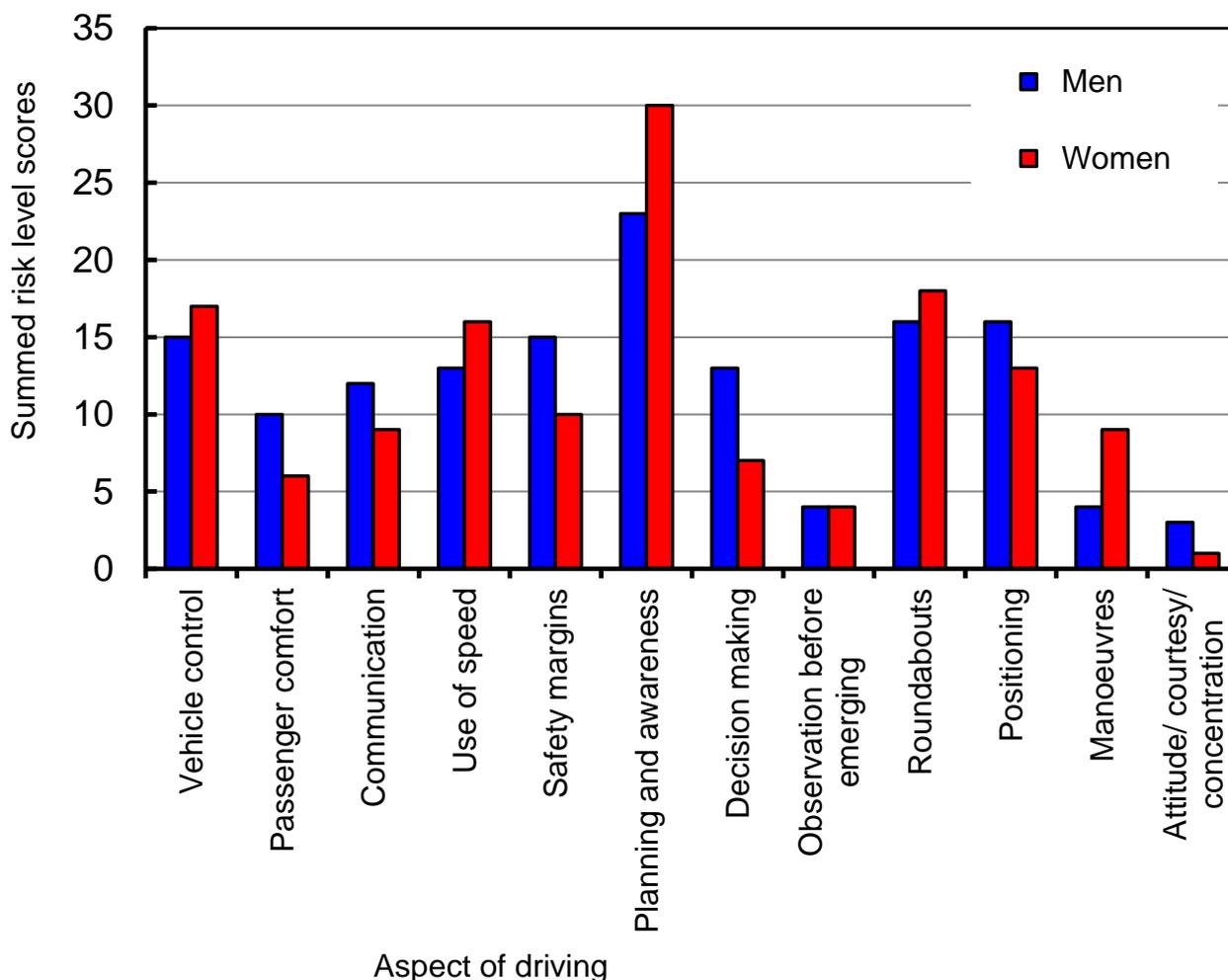
Figure 7.4 Annual mileage and risk score for elderly car drivers (NB logarithmic trend curves)



Source: Hampshire County Council Driving Skills 60+ scheme 2017

Figure 7.5 shows the total risk scores of the 100 drivers for each of the twelve aspects of driving covered by the appraisal report. The largest total risk score is for 'Planning and awareness', where women have a higher average score than men, although the difference is not significant. For several aspects of driving, such as 'Vehicle control', 'Use of speed', 'Roundabouts' and 'Positioning', the average scores for men and women are very similar. The only statistically significant difference in scores is for 'Manoeuvres', where women have a higher average risk score than men. The difference for 'Decision-making' is almost significant, with men having a higher risk score than women.

Figure 7. 5 Appraisal risk scores – totals for 50 male and 50 female car drivers



Source: Hampshire County Council Driving Skills 60+ scheme 2017

One intention of the study has been to use the ADI's comments to determine if different issues are raised. This has been done for comments on 'Planning and awareness' for 30 women and 30 men. What emerges from the 19 comments to female drivers and 15 to male is that some comments are used frequently, and only a few differ much between drivers. Thus almost all the comments include "Make more use of door mirrors" and many variants of "Use mirrors before signalling / changing speed / changing direction / moving off".

More individual comments include

- "Review mirror settings" (1 woman);
- "Plan to overtake in good time" (1 woman);
- "Plan to avoid unnecessary stops" (1 woman, 1 man);
- "Come off accelerator as soon as car ahead brakes" (1 woman);
- "Not reacting in good time for hazards and drivers slowing" (1 man);
- "If you leave a larger gap between you and the vehicle in front you will be able to read the road ahead earlier. You will be able to react sooner" (1 woman);
- "Aim to look further ahead when joining new roads so you can anticipate potential hazards early" (1 woman);
- "Look right earlier when approaching roundabouts" (1 woman);
- "Excellent merge onto dual carriageway" (1 woman);
- "You misjudged a slip road join onto the dual carriageway and I had to help verbally" (1 man);
- "At the Milford turn off at Everton, which is a slip road, we could have kept going. The car behind thought so too as they sounded their horn." (1 man);
- "When 'giving way' at junctions use 'creep and peep' – a term you liked" (1 man); and
- "When an ambulance approached from behind you should have carried on to the wider part of the road before stopping" (1 man).

Comments on 'Manoeuvres' include, for male drivers

- "You stated that you had concerns in this area. We did 2 x bay parking and both were safe and reasonably accurate – Vigo recreation ground car park";
- "Ensure adequate observation. You reversed well into a parking bay but this needs far more all round observation";
- "Safe and accurate. Reverse very slowly. Ensure adequate observation. Reverse in, drive out. Although you had done it many times before, you had difficulty in controlling the car and steering accurately down your narrow drive in reverse. You made several attempts"; and
- "Reverse in, drive out. As you drove the car forwards into your garage after the assessment, you just contacted a pillar with the front nearside wing of the car. No damage seen".

Comments for female drivers were

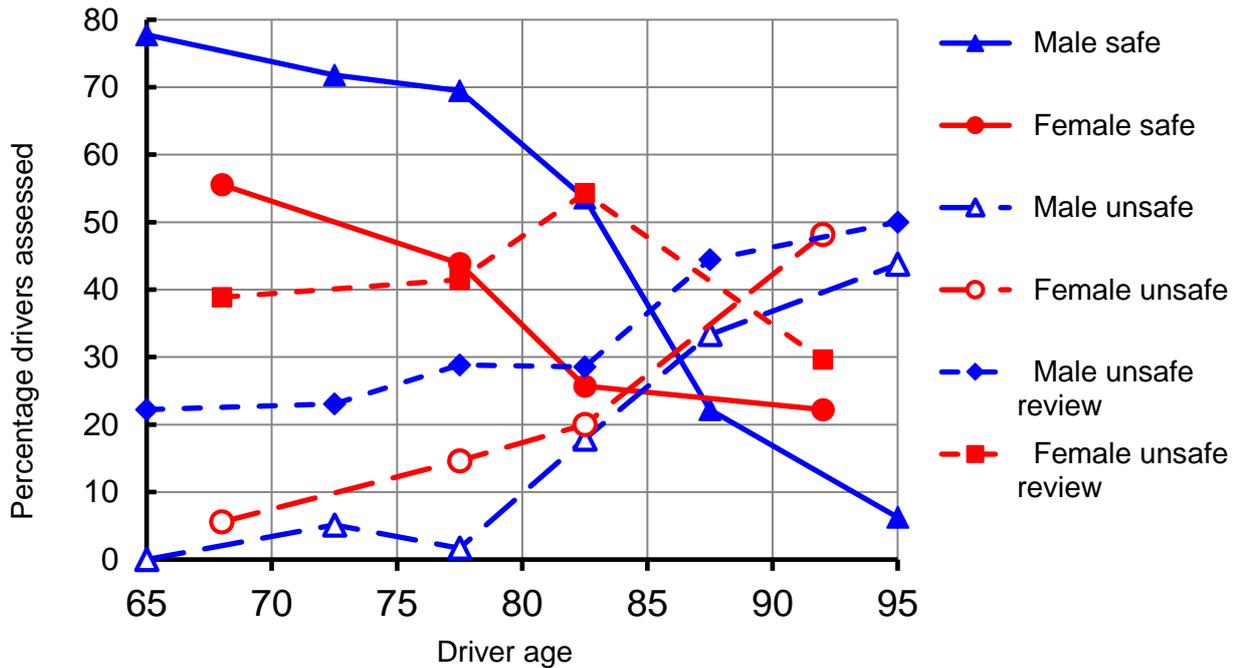
- "Although you reversed slowly you showed some difficulty with accuracy";
- "Reverse very slowly. Ensure adequate observation. We worked on bay parking today but you now need plenty of practice to become accustomed to the sight markers as seen in the two external mirrors";
- "Ensure adequate observation. Reverse in, drive out";
- "Safe and accurate. Ensure adequate observation. Reverse in, drive out. You reversed carefully into a gap at Floral Way but needed to shunt once to avoid a car on your right. Don't be afraid to correct your position";
- "Reverse very slowly. Ensure adequate observation. Reverse in, drive out as per Rule 201. We spent some time learning how to set and use left and right mirrors to reverse into a bay at Tesco and then your driveway";
- "Keep practising reversing with appropriate steering";
- "Good safe speed. Needs more initial observations";
- "Slow speed but needs improved all round observation"; and
- "Keep looking all around".

There are comments about slow speed while manoeuvring for many of the women drivers, but for only one of the men. This may reflect lack of confidence by women drivers.

7.2 Driving Mobility Centre assessments of Fitness to Drive

Since 2013 the police in Hampshire have been offering older and disabled drivers who have committed an offence of driving without due care the option of taking a Fitness to Drive assessment at the Wessex DriveAbility driving mobility centre as an alternative to prosecution. Between June 2013 and May 2018, 354 drivers (342 aged 71 and over), 215 men and 139 women, accepted this option and proceeded to an assessment (some others opted for prosecution or surrendered their licence without assessment). Of those assessed, 115 men (53%) and 53 women (38%) were assessed as 'safe', 32 men (15%) and 28 women (20%) were assessed as 'unsafe', and 68 men (32%) and 58 women (42%) were assessed as 'unsafe – review', meaning that they should take some lessons to improve their driving and return for a second assessment after about three months (Figure 7.6). Because there are very few women in the 17 to 70 and 91+ age groups, for women these have been combined with the adjacent groups, as ages 17 to 75 and 86+. Figure 7.6 shows that a substantially lower percentage of women than men drivers were initially assessed as safe, and substantially more women were assessed as 'unsafe – review'. The age distributions of male and female clients were very similar, with a slightly higher percentage of women than men in the 71 to 75 age group.

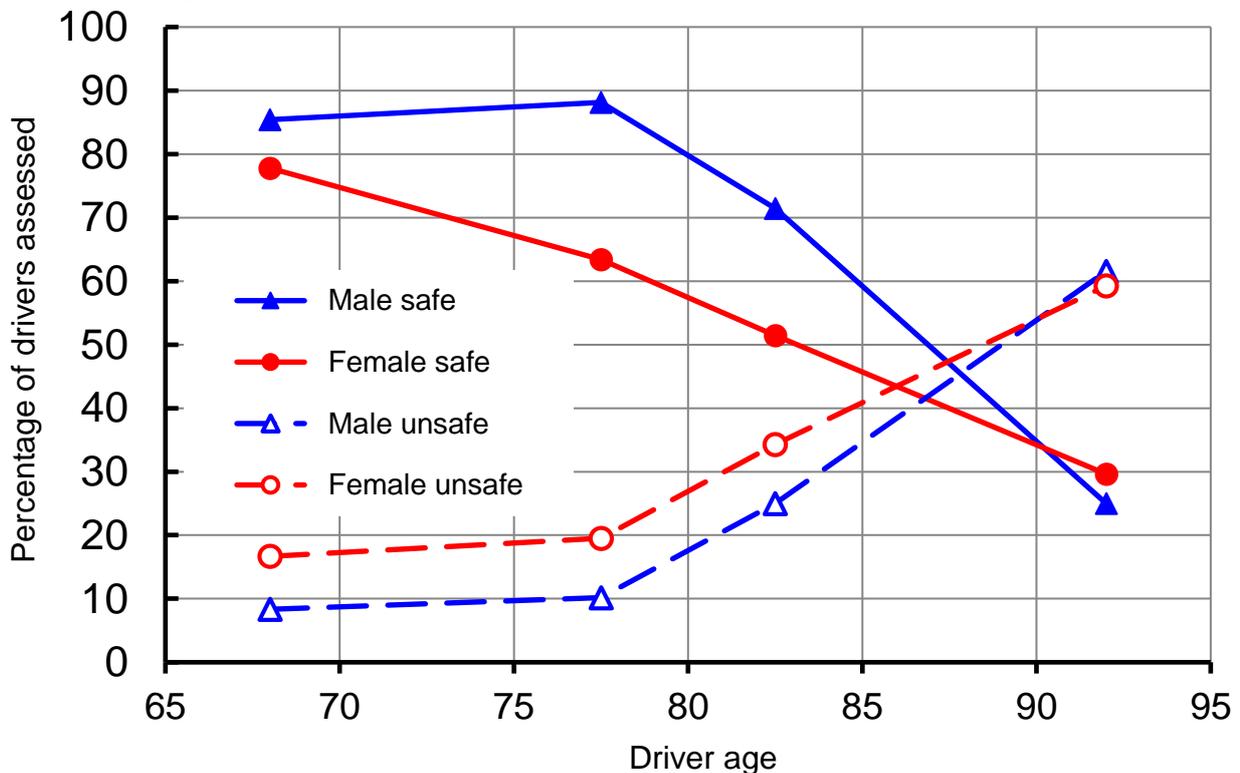
Figure 7.6 Fitness to Drive – percentage outcomes of initial assessments



Source: Wessex DriveAbility Fitness to Drive assessments 2013–18

After the second assessments, the final overall outcomes were men 68% 'safe', 26% 'unsafe' and 6% dropped out without a second assessment; women 58% 'safe', 30% 'unsafe' and 12% dropped out (Figure 7.7).

Figure 7.7 Fitness to Drive assessments – percentage drivers 'safe' and 'unsafe' 2013–18 after an initial and, if necessary, second assessment

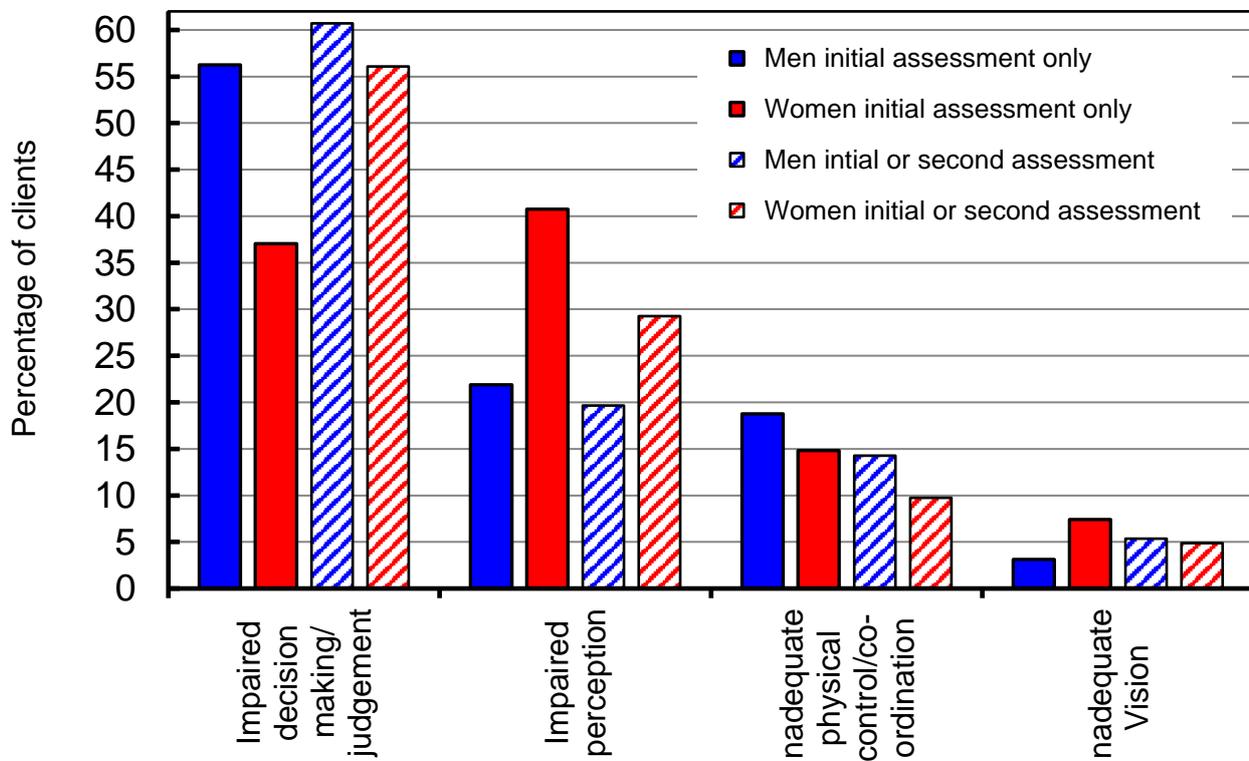


Source: Wessex DriveAbility Driving Mobility Centre data. Sample 215 men, 139 women

The reasons given for assessing clients as 'unsafe' are shown in Figure 7.8. This shows that in the initial assessments, women were more likely to be at risk because of impaired perception, while men were more likely to be at risk because of impaired decision-making/judgement. This is consistent with women having more of their serious collisions at T-junctions and when turning right. Reasons for clients being rated 'unsafe – review' were not recorded, so clients who were assessed as 'unsafe' after 'unsafe – review' were given only one reason for this assessment.

The reasons for clients being rated 'unsafe' on their second assessment, after being initially rated 'unsafe – review', are different from the reasons for the first assessment. For women, 13 (93%) were rated 'unsafe' because of impaired decision-making/judgement, with only one (7%) because of impaired perception. For men, 16 (67%) were rated 'unsafe' because of impaired decision-making / judgement, 4 (17%) because of impaired perception, and 2 each (8%) because of inadequate physical control/co-ordination and inadequate vision. Figure 7.8 shows that if the reasons for the first or second assessments are summed, the differences between men and women are smaller, with impaired decision-making being the most common reason for being rated 'unsafe' for both men and women. Women are still more likely than men to be faulted for impaired perception.

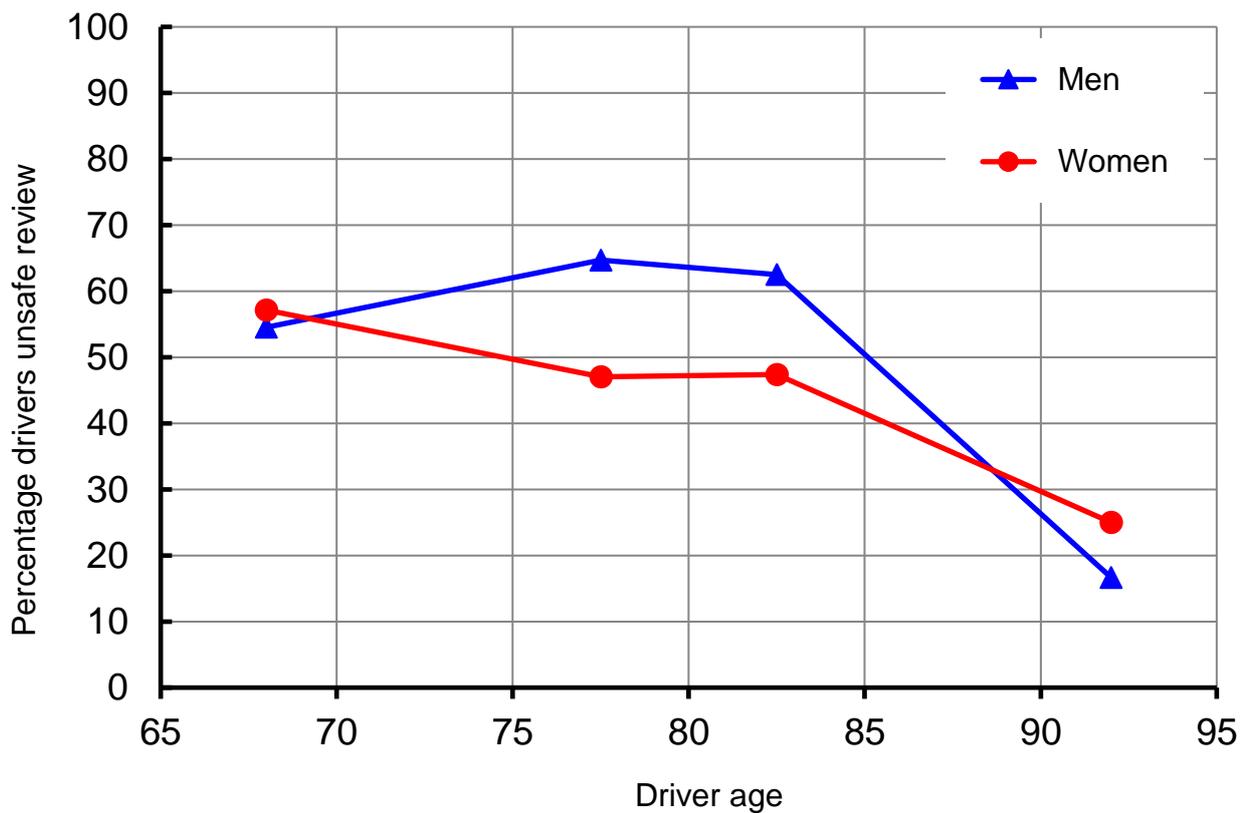
Figure 7.8 Reasons for 'unsafe' initial or second assessment



Source: Wessex DriveAbility Fitness to Drive assessments 2013–18

The effectiveness of refresher driving tuition for older drivers is indicated by the percentage of those initially rated 'unsafe – review' who were subsequently rated 'safe' on a second assessment following some driving tuition. This is shown in Figure 7.9, by age and gender, for the 68 men and 58 women initially graded 'unsafe – review'. It can be seen that for this small sample of clients, up to age 85 the success rate is around 60% for men and 50% for women. Some of this difference is due to the higher percentage of women dropping out of the assessment process without a second assessment: 12% of women and 6% of men. For both men and women, the success rate drops after age 85.

Figure 7.9 Fitness to Drive assessments – percentage success in unsafe – review



Source: Wessex DriveAbility Fitness to Drive assessments 2013–18

8. Self-regulation

Self-regulation has been covered in some detail in the literature review in section 2. There are many indicators that women regulate their driving more than men do, yet there are surprisingly few studies of self-regulation that distinguish between results for men and women. Apart from these studies, there is statistical evidence from the National Travel Survey (DfT, annual (a)) that women drive a lower mileage each year than men, drive less at night, are more likely to travel in a car as a passenger, and are known to be more likely to surrender their driving licence at a given age.

The two main studies of self-regulation that separate results for men and women are a series of reports by Monash University Accident Research Centre 2003–06 (Charlton et al., 2003; Oxley et al., 2004; Oxley et al., 2006; Charlton et al., 2006) and a series of studies in Denmark by Meng and Siren (2012a; 2012b; Siren and Meng, 2013). These have been reviewed in section 2 of this report, and give results that are in general agreement. Women were more likely than men to say that they find some aspects of driving unpleasant; are more likely to try to avoid some aspects such as heavy traffic, motorways and driving at night; and are less confident in their driving skills.

The reduction in the amount of driving by older drivers is at least in part due to changes in lifestyle that have reduced the need to drive. Examples of the reasons for driving less from Charlton et al. (2006), not specifically for women, were "Cut back on activities / less need", "Moved house", "Retired" and "Changed job". Reasons given by Meng and Siren (2012b) include "I have fewer activities I drive to", "I no longer drive just for the drive", "Family members or friends have moved closer", "I have moved house" and "I now have better access to public transport". Reductions in the amount someone drives should be considered as separate to their avoidance of stressful driving situations.

The degree to which voluntary reductions in driving make it impossible to access desired activities is not known. Charlton et al. (2006) report that 7% of drivers aged 60 to 64 and 15% of drivers aged 75 and over say that they are driving less than they would like.

Wood et al. (2013) provide a warning that older drivers cannot be relied on to self-regulate by avoiding stressful driving situations that are also potentially high risk. This is because of the lack of correlation between self-confidence, self-assessed driving skills and objective on-road driving performance. Some older drivers, particularly those with a low score on the Mini-Mental State Examination, lack insight into their driving skills. This highlights the potential risk of older drivers with cognitive impairment or preclinical dementia.

9. Measures to help older drivers

In the light of the evidence documented in this report, what measures might help older drivers, both men and women, remain competent and safe, and maintain their confidence in their ability to drive safely?

One matter is that a number of older women are driving very low mileages in a year. There is clear evidence that drivers with lower mileages have higher crash rates per mile driven, although probably lower crash rates per year (Langford et al., 2006; Antin et al., 2017). There is no evidence on whether it is drivers who know their driving skills are declining who choose to minimise the amount they drive, or drivers who become rusty through driving low mileages who have collisions because of lack of driving practice. Possibly both are happening, but there is no evidence as to which is more common.

The low mileage driven by some women correlates with a higher rate of collisions per mile driven, but a lower rate of collisions per driver per year. Any policy to encourage women to drive more should be tested by further research before being considered for widespread adoption. Such a policy would be counter-productive for those who would rather not drive while doing a small amount for essential daily activities.

Another aspect of this is that for most drivers who are only driving 500 or even 1,000 miles a year, it is cheaper to use alternatives to car ownership, such as taxis. For those who are driving a minimal mileage only to serve some essential daily tasks such as shopping or health care, it possibly makes sense to give up driving, which can be more difficult in rural locations. However, there is evidence that giving up driving is linked to adverse health and psychological effects, such as depression, so this is not a step to take lightly. Oxley et al. (2004) report that stopping driving by Australian women led to loss of independence, and dependence on others for transport (29%), difficulty and inconvenience in getting to places (20%), sadness and depression (9%), and the need to change lifestyle, particularly to allow the time needed to use public transport (11%). Some of the responses included:

"Frustration at inability to go where I wanted and when I wanted."

"I had to re-evaluate my lifestyle."

"It took away my confidence, not able to do my own shopping and social outings stopped. Now live a confined life within my home and garden. Felt I have lost at least 10 years of my happy outlook."

Similar points are made in section 6.5 of Lucas and Jones (2009). But there were also positive responses. One quarter of participants were not worried about giving up driving

and felt comfortable with the decision, and others (6%) indicated that it was a relief not to be driving any more.

For those who continue to drive, there are benefits benefit in taking regular older driver appraisal, such as is offered by Hampshire County Council through the Driver Skills 60+ scheme and by IAM and RoSPA. These appraisals can boost confidence and point to aspects of driving that can be improved.

A further measure for those who are having problems with driving would be to encourage drivers to take driving lessons with an instructor who has specialised experience in teaching older drivers. This can both boost self-confidence when justified, and improve driving skills such as use of mirrors, signalling and observation at junctions. Evidence from Wessex DriveAbility cited below shows that about half of drivers initially rated 'Unsafe – review' were rated 'Safe' after a short course of driving tuition. There may be a case for developing a specialised course that focuses on the situations where older drivers are most likely to have a collision, and on pedal confusion in automatic cars which appear to be a cause of a particular pattern of collisions. If further work confirms the suggestion that older drivers, and particularly older women drivers, have more difficulties with detecting conflicting vehicles at junctions, with judging the speed of other vehicles and with assessing gaps for manoeuvres, these are aspects of driving on which tuition should concentrate. Lists of Approved Driving Instructors with specialised experience with older drivers are already available from Driving Mobility centres, but consideration could be given to establishing a national list of such ADIs, possibly linked to specialised training for this work.

Wessex DriveAbility has been running a Fitness to Drive assessment scheme on behalf of Hampshire Police, offered to older and disabled drivers as an alternative to prosecution for the offence of driving without due care. Up to May 2018, of those assessed, 32% of men and 42% of women were rated as 'Unsafe – review', meaning that while they were not safe on the first assessment, they could be re-assessed after about three months, after taking a course of driving tuition. Of those aged up to 85 and rated 'Unsafe – review', about 60% of men and 50% of women were rated 'Safe' on their second assessment.

All drivers can be helped by guidance on choosing the best car for them. Many aspects of cars affect ease of access and comfort while seated. A high sitting position raises the driver above the worst of the glare from oncoming headlights and helps when entering and leaving the vehicle; a wide door with good headroom also helps when entering and leaving. With the increase in electronic displays and touchscreens, some cars are easier than others to operate and to drive without distractions. A worthwhile measure would be to find ways to inform older drivers about the advice on choosing a car that is already

available from bodies such as RICA (2018), and also from Driving Mobility centres. And when an older driver purchases a new (or second-hand) car, they should expect a short training session on how to operate it and its electronic systems.

In addition, car manufacturers should improve the protection that vehicles provide for older occupants, particularly older females. This requires, first, research to establish how to do this technically, and second, revised vehicle regulations to require improved occupant protection.

10. Conclusions

There is evidence from police reports of traffic collisions going back to 1985 in Britain that while woman drivers have a lower collision involvement rate per driver per year than men, older women have a higher rate per mile driven than men. The same pattern is reported in USA and New Zealand for collisions, and in Australia for hospitalisation rates.

In Britain, the risk that older drivers pose to other road users, as measured by the pedestrians killed or injured by cars per mile driven, is lower for women than men up to age 50 and higher for women than men for ages over 70. At all ages it is lower for women than men per licence per year.

There is evidence that in Britain a larger percentage of women's than men's serious and fatal collisions at all ages involves turning right and T-junctions. The more serious the collision, the larger the difference between the percentages for women and men. Further research is needed to establish whether training would be useful for older drivers, both male and female, to overcome junction problems and to establish how junction designs should be improved to reduce risks for older drivers.

Fitness to Drive assessments by Wessex DriveAbility driving mobility centre show that of participants aged 70 to 85, a lower percentage of women than men were rated 'Safe' either in an initial assessment or in a second assessment (after a period of refresher driving tuition). About half of the drivers, both men and women, who took a second assessment after being rated 'Unsafe – review' were then rated 'Safe'.

An analysis of reports of clients appraised in the Hampshire County Council Driving Skills 60+ scheme does not show any significant difference in the level or type of risks demonstrated by men and women during appraisal drives. The level of risk demonstrated by 100 clients does increase with increasing age, and also with reducing reported annual mileage.

Although up to age 50 women make more car driver trips than men, they drive a lower mileage than men. In 2011–13, of drivers aged 70 to 74, 51% of women and 24% of men drove less than 40 miles a week, equivalent to 2,000 miles a year, the mileage threshold below which collisions per mile driven increase with age after 75 (see Figure 2.2). By age 85+, the percentages driving less than 40 miles a week had increased to 74% of women and 56% of men.

The number of car passenger trips made by women starts to increase after age 50, when the number of car driver trips starts to fall sharply. Car passenger trips by women start to fall after age 75, when car driver trips by men start to reduce.

An analysis of activities in terms of journeys for the activity by all means of transport including walking, by car driver trips and by distance driven, shows gender differences. For example, the great majority of escort education trips are performed by women aged 30 to 50, with just over half being made by car.

More trips for shopping are made by women than men up to age 70, but more by men for ages over 70. Car driver trips for shopping by women start to reduce from age 50, while trips by men increase sharply from that age. This may be an example of men taking on the driving for shared activities, which reduces the amount women drive.

Driving licence holding and retention into old age are higher in rural and fringe areas for both men and women.

For most activities there is rather little difference in the number of journeys for the activity in different types of area, but for all activities there are fewer car driver trips in London. However, the lengths of the car driver trips, and hence the mileage driven, are greater in the rural and fringe areas than in conurbations and urban areas.

The literature survey of self-regulation shows that women are more likely to say that they find some driving situations unpleasant, and to try to avoid them. One study distinguishes between reducing the amount of driving, which for many older people is a result of a reduced need to travel, and trying to avoid stressful or unpleasant driving situations.

At all ages men report making slightly more car driver trips during the hours of darkness than do women. For both men and women, the number of trips in the dark drops in older age: from about 120 for men and 100 for women at the age of 60, down to 30 for men and 20 for women at age 80 to 85. The collision involvement rate per mile driven is higher during darkness than during daylight. For both slight and serious collisions, the ratio of rates darkness to daylight is about 2:1 for both men and women aged 25 to 65 and rather higher for the youngest and oldest drivers.

For men or women who are driving a minimal mileage only to serve some essential daily tasks such as shopping or health care, it could make sense to give up driving and use alternatives. For all those who continue to drive, there can be benefit in periodically taking an older driver appraisal. For those who are having problems with driving, it would be of benefit to encourage them to take driving lessons with an instructor who has specialised in teaching older drivers.

As the percentages of serious collisions that happen at T-junctions and when turning right increase for all drivers after the age of 60, consideration should be given to improving the design of T-junctions to reduce risk, for example by introducing roundabouts where space permits. Efforts could be made to develop special training for older drivers to overcome problems in these situations.

All drivers can be helped by guidance on choosing the best car for them. A worthwhile measure would be to find ways to inform older drivers about the advice on choosing a car that is already available from bodies such as RICA or at Driving Mobility centres.

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