

Problems in Freeway Use as Seen by Older Drivers

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Limited-access freeways, including the Interstate highway system, are among the safest types of roads; their use is important for achieving full driving mobility. Many features of these high-design roadways address certain age-related changes in physical ability and typical accident scenarios involving older drivers. Freeways are therefore important to the safety and mobility of aging motorists. Yet there is the widespread belief that older drivers as a group avoid freeways. The problem of freeway aversion among older motorists is considered. Existing data are reviewed to determine the extent to which elderly drivers avoid freeways, and new data from focus group discussions are presented that reveal some of the features of freeway driving that older motorists find particularly troublesome. Despite an extensive search of the literature, review of travel data bases, and contacts with many experts and organizations, no objective data on the freeway travel of older drivers were uncovered, and widespread freeway avoidance among older drivers could be neither supported nor refuted. There was evidence, however, that freeway use among the elderly may be increasing and that older drivers generally view themselves as competent drivers on freeways. These findings were supported and expanded by the focus group discussions, which included 65 participants aged 65 to 88. The groups revealed specific difficulties faced in freeway use, including large trucks, traffic speed variance, rudeness of others, signs, merging and weaving lanes, and personal safety. Possible countermeasures to foster greater freeway use were discussed.

Limited-access freeways, including the Interstate system, are important parts of the total highway system; their use is essential for enjoying full driving mobility and safety. The low per-mile accident rates on Interstates show them to be among the safest of all roadway types. Older as well as younger drivers should be able to take advantage of freeways. Yet there is the widespread belief that older drivers tend to avoid freeways. If this is so, the older driver may be limiting personal safety and mobility.

Many physical changes associated with aging can affect driving. Older drivers show patterns of accident involvement that differ from those of other age groups (1). Interestingly, freeways possess features that address many of these age-related changes and accident types that characterize older drivers. For example, controlled-access freeways minimize potential traffic conflicts and right-of-way problems, categories in which older drivers are greatly overrepresented in accident statistics. The excellent sight distance along the road ahead provides ample reaction time. The large and legible freeway signs are superior to street signing, which is especially important be-

cause of the visual limitations that often accompany aging. Wide, well-delineated lanes of good surface quality minimize tracking demands. The number of decision points and their complexity are minimized, and there is no "visual overload" from roadside signs, signals, stores, pedestrians, and the like. Thus, freeway design provides special safety benefits that may help older drivers in particular. At the same time, freeways have characteristics that may disturb older drivers and cause them to choose other routes.

The research described was intended to find out why older drivers might show an aversion to freeways. If the reasons are better understood, it may be possible to devise countermeasures that foster greater and safer use of these roads by drivers who may especially benefit from the superior design features.

Implicit in the question of why older drivers avoid freeways is the assumption that as a group they do. However, as work progressed, this stereotype began to appear questionable. Therefore, data were sought that would describe freeway use by various age groups. There is undoubtedly some avoidance of freeways by older individuals, but little objective data were found to support the stereotype of widespread aversion.

Recognizing that at least some freeway avoidance occurs and that fostering greater freeway use may be beneficial to many capable older drivers, it becomes important to determine which problems older drivers find with freeways. This was accomplished by using focus groups in which older people discussed their problems and perceptions.

This paper thus has two general components. First, it describes the effort to determine to what extent older drivers use or avoid freeways, on the basis of available data. Second, it presents new data from the focus groups about the problems of freeway driving seen by older drivers themselves.

OLDER DRIVERS AND FREEWAY TRAVEL

A number of common stereotypes of older people simply are not accurate. Most are active, healthy, and independent. Most of those over 65 live in suburban or rural, not urban, communities. Their preferred mode of travel, by far, remains the personal automobile (2). Is the stereotype of freeway avoidance another inaccurate characterization of the older population? Answers were sought in three sources in the literature: (a) information on travel patterns, (b) freeway accident statistics, and (c) driver perceptions of capabilities and risks. A brief overview of the findings is presented here; more detail can be found in Lerner et al. (3).

Travel Patterns

The amount and pattern of travel changes with age, and the number of miles traveled (though not necessarily the number of trips taken) drops as drivers become older (4,5). But, despite the available information on many travel characteristics, such as trip time, trip length, and trip purpose, there appears to be very little information on the type of roadway used. An extensive effort that included a search of literature, review of travel data bases, and contacts with many experts and organizations was unable to uncover even the most basic data on freeway use by age group. Yet even if such data were available, it would be difficult to interpret any reductions in freeway use as the result of an aversion to freeways and not some other reason. It would be necessary to find some way to account for age differences in confounding factors such as trip purpose, trip time, and residential locations. In summary, no travel data were uncovered that could support or refute the idea that older drivers avoid freeways.

Freeway Accidents

Because of the lack of direct information on freeway travel, another approach was to use accident data as an indirect means of revealing trends in older-driver use of freeways. The assumption is that year-to-year changes in the proportion of accidents on a given roadway type that are attributed to older drivers primarily reflect changes in the proportion of miles that these drivers travel. Table 1 presents data from the Fatal Accident Reporting System and shows the proportion of all fatal accidents attributed to drivers 65 and older, for Interstate and non-Interstate highways. Data are shown for successive 3-year periods. For Interstate and non-Interstate cases, older drivers account for an ever-increasing proportion of the accidents. However, the growth rate of this proportion is much faster for Interstate highways. From the period 1977 to 1979 to the period 1986 to 1988, the proportion of accidents attributed to older drivers on non-Interstate roadways increased by 53 percent (from 6.70 to 10.27). During the same time span, the proportion of accidents attributed to older drivers on Interstate highways grew at nearly twice this rate: it grew 99 percent, from 4.47 to 8.87. Assuming that these changes mainly reflect changes in exposure, the data indicate a dramatic growth in older-driver freeway travel from 1977 to 1988.

TABLE 1 PERCENTAGE OF DRIVERS IN FATAL ACCIDENTS WHO WERE 65 AND OLDER

Years	Interstate % Drivers 65+	Non-Interstate % Drivers 65+
1977 - 1979	4.47	6.70
1980 - 1982	6.17	7.57
1983 - 1985	8.20	9.47
1986 - 1988	8.87	10.27
(Increase from 77-79 to 86-88)	(99%)	(53%)

(Data from Fatal Accident Reporting System)

Similar findings are obtained if interest is confined to drivers 75 and older: the proportion of non-Interstate accidents increased 110 percent, but the proportion of Interstate accidents increased 200 percent. Thus, although they measure indirectly, the data suggest a trend toward substantially greater freeway use by older drivers even during one decade. The image of the older driver as one who avoids freeways may be becoming outdated, if it was ever true.

A review of freeway accident data from various sources (6-8) also suggests some interesting aspects of older driver collisions on these roads:

1. The overinvolvement rate of older drivers [based on an "innocent bystander" method of estimating expected involvement rate (6)] is not as substantial on Interstate highways as it is on other roadways.
2. Per-mile accident rates increase with driver age for all types of roads, but not as rapidly for Interstate highways as for other roadways.
3. Older drivers in freeway accidents do not appear to differ substantially from other drivers in terms of accident location (noninterchange, interchange, ramp) or intended maneuver (going straight, changing lanes, etc.).
4. Older drivers appear to have relatively more collisions with trucks.

However, it should be noted that the lack of good exposure data seriously hampers the interpretation of age trends in freeway accident findings.

Driver Perceptions of Capabilities and Risks

If older drivers as a group are averse to freeway driving, it should be reflected in their perceptions of their own abilities and in what they see as risky. The literature provided little information that applied specifically to freeways, but a few observations were noteworthy. Yee (9) found that only 9 percent of older drivers (which Yee defined as 55 and older) think that their freeway driving ability is worse than it was 5 years ago. Contrast this with the much higher percentage (19 to 25 percent) of older drivers who believe their abilities have deteriorated for driving in other situations, such as during rush hour, when tired, at night, or in glare. However, it should also be noted that only 6 percent said that their city street driving has deteriorated during the past 5 years. Yee also found that 64 percent of older drivers reported that they seldom or never experience difficulty entering or leaving high-speed freeways. However, this was nevertheless a smaller percentage than for younger drivers (84 percent).

In a study of how people perceive driving risk (10), subjects used a hand-held dial to continuously rate subjective risk while they were driven over a 26-mi rural route that included a variety of highway types. Generally, older subjects (mean age of 64.5) rated the risk as higher than did younger subjects (mean age of 20.0). However, the segments of the route that were Interstate highways revealed an exception: older subjects rated the risk as lower than did younger subjects. Both old and young subjects saw substantially less risk on Interstate highways than on other rural two-lane highways.

Overview of Literature Findings on Older Drivers and Freeways

There do not appear to be any objective data that adequately support or refute the claim that older drivers as a group avoid freeways in favor of other types of roads. The nearly total absence of data about this issue is perhaps the most striking finding. Some data do suggest that older drivers are increasing their use of freeways, that older drivers suffer less age-related risk on Interstates than on other roadway types, and that older drivers do not see their abilities as especially limited, or the risks as especially high, on Interstates. None of these assertions is based on particularly strong data.

FOCUS GROUPS

It is possible to speculate on many reasons an older motorist might avoid freeways: travel speed, difficulty with certain maneuvers (e.g., merging), traffic mix, conformity with the actions of surrounding traffic, direction finding, perceived hazards, and so forth. One way to find out is to ask the older drivers themselves. Focus group discussions provide a method for doing this.

Method

A total of 65 participants, ranging from 65 to 88 years old, took part in a series of 10 discussion groups held in suburban Washington, D.C. and in southeastern Wisconsin. To minimize any bias toward recruiting only the more active and adventuresome elderly, a variety of recruitment methods and study situations was employed. The final sample included 39 women and 26 men, all but one of whom held a current driver's license. All lived in urban or suburban areas. None worked full time; only four worked part time.

The focus group participants should not be considered a random sample or necessarily representative of all older drivers. The purpose of the focus groups was to bring a generally representative range of older people to the discussions to reveal their problems and perceptions. The findings should be treated qualitatively, not quantitatively.

The focus group technique uses small groups of similar people to discuss carefully defined issues in an informal and nonthreatening environment. Group interaction and exchange are part of the process. A moderator guides the discussion along a predefined question path but does not play an active role in the session. The question path for these focus groups began with a discussion of general feelings about driving and then moved to the roadway types and situations that influence feelings about driving. Freeway driving came up in this context generally. The discussion was then directed toward feelings about freeways in particular. Factors that influence the choice of routes were discussed, and problems and concerns with freeways were explicitly identified. Participants were also encouraged to describe specific freeway situations that they believed to be problems.

After the discussion, each participant completed a brief questionnaire. It requested information about certain driving practices and asked participants to rate their driving ability

for six driving situations. Finally, the participant ranked a set of 10 factors related to freeways in order of importance.

Findings

Older drivers represent an exceptionally diverse population, and the focus groups reflected this diversity. There was a wide range of opinion on many aspects of driving, including freeway use.

Freeway Avoidance and Self-Imposed Restrictions

Both the discussions and the questionnaires were in agreement that there is no overall avoidance of freeways by these participants but that attempts are made to avoid certain freeway situations. Many of these drivers restrict their driving, both freeway and nonfreeway, in various ways: they limit night travel, avoid rush hours, and stay away from unfamiliar areas. On the questionnaire, only 6 percent of the participants indicated that they generally avoid freeways, and several more indicated that they avoid them during rush hour (though the discussion session suggested there may be somewhat more restriction than the questionnaire results showed). The drivers in these groups are active freeway users: 31 percent indicated that they frequently use freeways, and only 15 percent seldom or never use them. In fact, in response to one questionnaire item, 70 percent of respondents indicated that they now use freeways as much or more than they did during the periods of their lives when they drove most extensively. Among those using freeways less, the majority were 75 and older, but limited freeway use was not predicted as well by age as it was by the current extent of driving in general (e.g., trips per week).

In summary, there is some selectiveness in the time and place of freeway driving, but for most people, freeway use can hardly be considered restricted. Restricted freeway users tend to be women and those who never used freeways much anyway. Because freeways are more ubiquitous than they were a generation ago, and because women as a group drive more extensively than they did a generation ago, a cohort effect that will reduce self-imposed restrictions on freeway driving can be anticipated.

Perceived Freeway Driving Capabilities

The discussion participants see themselves as very capable freeway users. Table 2 shows the results of one set of questionnaire items, in which the respondents were asked to compare their abilities with the abilities of most other drivers. These ratings were made for the six situations shown in Table 2. Consistent with other research literature on self-rating of driving skill (*II*), people are unlikely to rate themselves as below average. Even recognizing this, however, older drivers as a group see themselves as very capable of driving on freeways when traffic is not heavy. More than 60 percent rate themselves as excellent or above average, whereas only 5 percent rate themselves as below average. Even for rush-hour freeway driving, 40 percent rate themselves as better than average,

TABLE 2 PERCENTAGE OF RESPONDENTS RATING THEIR DRIVING ABILITY IN SIX SITUATIONS

Driving Situation	Excellent	Above Average	Average	Below Average	Poor	Total*
Streets	13	48	38	2	0	100%
Country	21	40	40	0	0	100%
Night	3	18	60	11	8	100%
Light Freeway	15	46	34	5	0	100%
Rush Hour Freeway	7	33	51	6	4	100%
Bad Weather	3	28	55	7	7	100%

* May not total exactly 100% due to rounding.

and only 10 percent as less than average. Self-perceived ability to drive on freeways during rush hours certainly appears to exceed self-perceived ability to drive at night or in bad weather. Self-judgments for driving on city streets are comparable to those for driving in light freeway traffic.

The focus group discussion supported the conclusion that most older drivers view themselves as capable freeway users. However, some people believe that some physical changes associated with aging cause certain difficulties for them in freeway driving. Some believe that it is difficult to maintain the vehicle headway required by slower reaction times. Others reported that visual deficits make it difficult to read freeway signs. Other factors mentioned include hearing loss, fatigue, medication effects, mobility limitations, tendency to panic or become disoriented, and loss of daring or confidence. Getting lost is a concern for many, and a wide variety of pretrip planning activities was described. However, these issues were not universally seen as problems, and other participants voiced the opinion that their abilities had not changed.

A number of participants also pointed out that older motorists must keep driving on freeways in order to retain ability and confidence. This "use it or lose it" belief seemed to be part of the general philosophy of keeping active and involved: if older people have not engaged in an activity such as driving for a while, they may "feel a little slower getting back at it."

Many believe that they possess virtues of patience, courtesy, and caution, which contribute to their safe driving on freeways as well as in other situations.

Important Factors or Problems in Freeway Use

Several factors related to problems of freeway use came up in the focus groups, and some were discussed with surprising emotional intensity. The discussions were supplemented by a questionnaire item that listed 10 factors and asked respondents to rank them in importance from 1—the factor that they dislike most—to 10—the factor that bothers them least. Table 3 shows the 10 factors and the group mean rank assigned to each. There was a statistically significant degree of agreement among the rankings given by the individual participants (Friedman statistic, $p < .001$).

As Table 3 indicates, the factor rated most important was large trucks. This was an especially prominent problem for

TABLE 3 GROUP MEAN RANKINGS OF FACTORS CONTRIBUTING TO DISLIKE OF FREEWAYS

	MEAN RANK
Large Trucks	3.3
Rudeness or Dangerous Actions of Others	3.6
High Speed of Travel	4.0
Difficult/Confusing Signs	4.3
Difficulty Merging	4.4
Difficulty Maneuvering in Traffic	6.4
Getting Lost	6.7
Things Happen Too Quickly	6.8
Exiting	6.9
Boring View	8.6

those 75 and older, who as a group gave the factor a mean ranking of 2.6. The focus group discussions confirmed the prominence of this issue. Large trucks came up as a major discussion point in virtually every group, and the intensity of feeling expressed left little doubt about the significance of this concern to the older driver. Several participants indicated this is a reason they avoid freeways, and some said they time trips to avoid periods of higher truck traffic. Among the specific complaints are the following: being tailgated by trucks; trucks blocking the driver's view of traffic and signs, both forward and to the side; blinding truck headlights, approaching or in the mirror; speeding, rudeness, and recklessness of truck drivers; spray and gusts from trucks; and the anxiety of feeling the nearness of large trucks.

Speed—more specifically, speed variance from other traffic—is also a concern. A few people are uncomfortable with freeway speeds. However, most judge themselves capable of driving at posted speeds but are uncomfortable with the higher speeds of much of the surrounding traffic, which makes them feel that people "want to push [them] out of the way." Some respond to this situation by taking the attitude that drivers should select their own speed and not worry about that of other drivers; others think that it is very important to "go with the flow."

The rudeness and recklessness of other drivers was a theme sounded throughout the focus groups, with a typical reference to younger drivers in little cars that go zipping in and out of traffic. Instances of rudeness or hostility were mentioned. Such incidents create problems for older drivers in two ways: they reduce the level of control older drivers believe they have over their driving (speed, headway, predicting the actions of others), and they represent social pressure and negative reaction from others. Each of these factors can contribute to discomfort about freeway use.

There were a variety of complaints about freeway and non-freeway signing, including failure to provide adequate advance warning and confusing or inappropriate sign content.

Merging onto the freeway was clearly the most difficult maneuver discussed; in contrast, there was little evidence that exiting, changing lanes, or passing other vehicles is much of

a problem on the freeway. However, many believe that merging is an equally serious difficulty for drivers of all ages, not an age-related issue.

There was a variety of opinion about the lane favored by older drivers. Some prefer the right lane as the slow lane, others prefer the middle lane to avoid conflicts with merging or exiting traffic and to keep options open, and some prefer the left lane because they must worry only about other cars on one side.

CONCLUSIONS

The literature was unable to provide any objective basis for determining the extent of freeway use and route choice by older people. As far as the focus group participants are representative, the conclusion must be that the degree of freeway aversion by older groups is unknown but that it does not appear to be "typical," even for those older than 75. The extent of freeway avoidance is probably overstated in popular opinion. Perhaps such a stereotype was accurate at one time, but it may no longer be accurate now, and it is likely to be even less so in the future.

At the same time, it should be recognized that even if a small proportion of older drivers avoid freeways, there are more than 30 million Americans aged 65 and older, so a small proportion can still be a great number of people. The need to address the problems of older drivers who do not take full advantage of these roads continues. The focus groups revealed a wide range of particular problems suffered by at least some individuals. Overall, the most frequent and emphatic concerns pertained to the traffic operational and social driving climates rather than the physical roadway or personal limitations in ability. A number of people think that the driving climate has changed dramatically over the years; there is now more traffic, more speed, more aggression, and less courtesy. The difficulties people mentioned may be related partly to aging and partly to having developed their driving habits in a less intense driving climate.

The focus groups identified needs and generated ideas for countermeasures that might foster greater, and safer use of freeways by older drivers. These include

1. Lane restrictions, time restrictions, separate truck roadways, and other methods to reduce interaction with heavy trucks;

2. Greater police enforcement, new enforcement technologies such as photo radar (12), new traffic-control technologies (13), and other methods to reduce speed variability in the traffic stream;

3. Better graphics, greater use of sign panels listing several upcoming exits, and other methods to improve advance signing so that it better meets the visual and information needs of the elderly;

4. Wide, high-quality shoulders; increased police patrol; brightly lit roadside emergency phones; promotion of citizens band radio use; better night lighting; more frequent path confirmation; and other methods to overcome the frequently expressed concerns about personal security;

5. More-legible maps, map-use training in older-driver education courses, in-vehicle guidance systems, and other pre-trip planning aids that are designed to be usable by older drivers (14);

6. Appreciation of the safety benefits, on-road "refresher" training for those who have not used high-speed roads recently, training in recovery from navigational errors, and other older-driver education specific to freeway use; and

7. Eliminating short merge areas and weaving sections and other methods to improve the interchange geometrics that the focus groups identified as contributing to anxiety.

The demographic changes projected for the United States will result in growing numbers of older drivers, who will increasingly reside in nonurban locales that depend on limited-access freeways for mobility. The needs and perceptions of this group of roadway users must be met if the highway system is to promote full mobility for all drivers.

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