Older drivers' perceptions and acceptance of vehicle safety technology

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Abstract

Older drivers have a higher risk of injury in a crash than the general driving population due to increased frailty. Vehicle safety is therefore particularly important for older drivers. This research explored how older drivers perceive new and emerging vehicle safety technologies, and investigated the current understanding they have of these technologies and their likely uptake of these technologies. A qualitative phase of the research consisted of eight 45-minute in-depth interviews, while a quantitative phase included an online survey of 1,070 older drivers. Participants were required to be aged 60+, live in Victoria, and have either purchased a vehicle in the last 12 months or intended to do so in the next 12 months. The results found that older drivers perceived vehicle safety technologies as a primary factor impacting overall vehicle safety. However, participants had very little knowledge and awareness of some of the newer safety technologies that are emerging on the market (e.g. blind spot warning, autonomous emergency breaking, lane departure warning). Older drivers were less concerned with the intricate working details of these technologies, and instead wanted to be reassured that they would help keep themselves and their passengers safe. Participants were open to adopting newer vehicle safety technology, but believed the role should be to act as a 'just in case' measure, rather than replace driver skill. It was therefore considered that communication messages should tap into the emotional aspects of safety, by providing reassurance and peace of mind that the technology will provide protection to the driver and passengers, rather than focus on the mechanics of how the technologies operate.

Introduction

It is well established that Victoria has an ageing population, with the proportion of Victoria's population aged 65 and above expected to grow from 14 per cent to around 21 per cent by 2051 (Department of Transport, Planning and Local Infrastructure, 2014). Although older drivers do not currently represent a large road safety problem when compared to younger drivers, an ageing population naturally suggests there will be an increase of older drivers on the road and that the safety of these drivers will become a critical issue.

A major concern for older drivers is their capacity to survive a crash. Frailty increases with age meaning older drivers have a higher risk of sustaining a serious injury in a crash (Evans, 2001). For example, people aged 80 years are five times more likely to sustain a seriously injury resulting in death in a crash compared to people aged 50 years (Li, Braver & Chen, 2003). This renders vehicle safety particularly important for older drivers.

Previous research commissioned by RACV explored the issues relating to older people and their knowledge and awareness of vehicle safety features, finding that features related to comfort, ease of driving, and vehicle handling were the most important to older drivers (Charlton et al, 2002). Specific safety features that improve occupant protection in a crash were poorly understood and misconceptions about features such as airbags were common.

There have been significant advancements in vehicle safety technologies emerging on the market since the earlier RACV research was conducted (e.g. Autonomous Emergency Braking, Adaptive Cruise Control). Very little is known about how older drivers perceive these new technologies.

There is a need to better understand the uptake of vehicle safety technologies among older drivers and their knowledge of the safety benefits these technologies can provide.

The current research will investigate older drivers' perceptions and acceptance of new vehicle safety technology, to determine what understanding they have of the technologies available. The research also aims to gain an understanding of the decision making process undertaken by older drivers when purchasing a newer vehicle, with a specific focus on knowledge of, and consideration given, to vehicle safety technology.

Methodology

A qualitative and quantitative phase of the project was designed. Participants for both phases were required to be 60+; live in Victoria; have a current Victorian drivers licence; have not recently worked in the road safety or related industry; had either purchased a vehicle in the past 12 months or intend to purchase a purchase a vehicle in the next 12 months; be the main or joint decision maker; and have purchased a vehicle that was no more than three years old at the time of purchase (i.e. 2011 or later model).

The qualitative research phase included eight depth interviews that were conducted with older Victorian drivers: four with older drivers who had purchased a vehicle in the past 12 months and four with older drivers who intended to purchase a vehicle in the next 12 months. The interviews were conducted by telephone and were approximately 45 minutes in length. Interviews were spread to ensure reach across gender, age and location even though true representation was not feasible across eight interviews.

The quantitative research phase included an online survey of 1,070 older drivers. Table 1 outlines the demographics of the participants. Participants were sourced from the RACV membership email database and RACV enews subscriptions. The results in the report are representative of the RACV membership database aged 60 and above. Data was weighted based on all older drivers who accessed the survey and completed the screening criteria, taking into account age, location (metro vs regional Victoria), and gender.

Table 1. Demographics of participants

Gender		**Location**	
Male	**Female**	**Metro**	**Rural**
610	460	695	375
Age Groups				
60 – 64	**65 – 69**	**70 – 74**	**75 – 79**	**80+**
289	278	182	150	171

Results

Older drivers' car use

Older drivers reported a high frequency of car use. Almost half of all older drivers reported using their cars every day, and 80% reported using their cars at least 5 times a week. While a variety of reasons for using a car was reported, it was the convenience of being able to do every day errands (e.g. trips to the supermarket or attending appointments), travelling to nearby areas, and attending social activities that cars were mostly used for.

Despite qualitative insight that travelling longer distances by car may decrease with age, the quantitative phase did not find that age played a factor in how older people used their cars, other than for travelling to work, which significantly decreased as age increased. This was not an unexpected finding given people retire as they age.

What prompts older people to consider purchasing a newer vehicle?

As shown in Table 2, a high proportion of older drivers reported that needing a more practical and/or reliable car was a factor that triggered the need to purchase a newer vehicle.

Table 2. Factors that trigger the need to purchase a vehicle

	Total mentions	Main mentions
Practical		
Car getting too old / reaching end of its run	43%	19%
Had current car for too long	35%	9%
Not wanting to lose too much value on re-sale / trade in	18%	7%
Wanting a more practical car	18%	3%
Reliability		
Avoiding high cost of repairs / maintenance / things going wrong	33%	9%
Wanting a car that is more economical to run	29%	6%
Wanting a more reliable car	14%	2%
Change of Lifestyle		
Approaching retirement / just entered retirement	18%	4%
Addressing health issues (e.g. ease of getting in/ out of car)	16%	6%
Changes in the way I use a car (frequency, or distance travelled)	6%	1%
Safety		
Wanting a safer car	26%	6%
Indulgence		
Fun and excitement about driving something new or different	13%	2%
To indulge or treat myself	12%	3%
Wanting a more expensive or luxurious car	6%	1%
Fulfilling wish of having my dream car	4%	1%
The status or prestige of having a new car	3%	0%
To be envied or admired by others	1%	0%
Other		
Wanting a smaller car	20%	5%
Reducing number of cars owned within household	4%	1%
Wanting a bigger car	6%	2%
Other (e.g. towing requirements, car written off / damaged etc		12%

Purchasing a newer vehicle appeared to be a way for older drivers to mitigate future vehicle expenses, by avoiding the high cost of repairs and maintenance, and also by avoiding any potential issues the car might have in the future. In particular, the qualitative phase noted a perception that if anything goes wrong with a vehicle that is over 10 years old it will require significant investment.

Purchasing a newer car was also an opportunity to obtain a vehicle that runs more efficiently and economically than the current vehicle.

The qualitative discussions found that in instances where a car was not approaching the end of its running life, there was a need to seek a vehicle that better accommodated driver requirements. For example, a new vehicle may be purchased as it provided the opportunity to consolidate existing vehicles which then allowed couples to share. Vehicle consolidation was generally associated to lesser car use or infrequently travelling alone. A physical or mobility issue that may be impacting the ease of getting in and out of a vehicle for either drivers or passengers was also a reason for vehicle purchase. Other reasons reported included upsizing to accommodate grandchildren or downsizing to make it easier to get around (e.g. parking).

The research explored whether planning or preparing for retirement influenced purchasing decisions, which was found to be a factor for only a small proportion of older drivers. Additionally, qualitative insight suggested many of these purchases may also be considered as a treat or present to themselves, rather than filling a specific transport need.

Some participants also reported that although they had planned or considered purchasing at retirement or shortly thereafter, waiting a bit longer enabled them to consider how their car use might change during retirement, in terms of frequency of use or the number of vehicles required for the household. Those that purchased at retirement also did not necessarily indicate that it would be their last car, and were generally open to purchasing another car if the need arose.

A small proportion of older drivers (6%) reported that wanting a safer car was a reason that triggered their need to purchase a newer car. Of those, people aged 70-74 (9%) were significantly more likely to report safety as their main reason for purchasing a car when compared to the rest of the participants (6%). The overall results suggest that wanting or needing a safer car was not necessarily a prominent reason why older people considered purchasing a newer vehicle. Rather, ‘safety’ became a more important factor when the thought process shifted to considering specific vehicles that could be purchased.

Factors that influence purchasing decisions

Decision criteria

The qualitative interviews identified that a range of decision criteria were used to assist in evaluating potential vehicles for purchase. Rather than giving weight to all criteria to provide an overall evaluation, the criteria was used as a process of elimination of potential vehicles that may be suitable to assist in narrowing down to a final choice. Failure of a vehicle to meet particular criteria resulted in it being removed from consideration. For instance, if the price was out of budget, or if there were any negative reports about the car, such as safety issues or other problems with reliability, then the car would no longer be considered.

Table 3 shows how older drivers rated decision criteria in the quantitative phase as part of their purchase and also which criteria they reported was their main and most important factor when considering vehicle purchase. As can be seen, older drivers considered the ‘safety of a vehicle’ and the ‘driving experience’ as the main criteria when considering specific vehicles that could be purchased.

Interestingly, the research found that the 60–64 year olds (15%) were significantly more likely to focus on cars that are modern (and consequently have newer technology) than the 75+ age group (6%).

Table 3. Criteria older drivers considered when purchasing a vehicle.

Criteria for car selection	% consideration as part of purchase	% consideration as main factor
Drive (comfort / easy to drive / quiet / reliable)	83%	26%
Safety (technology / design / ANCAP)	71%	27%
Economical (fuel economy / running costs / warranty / included servicing)	66%	11%
Modern (overall design & style / features, e.g. heated seats, aircon, parking sensors, GPS)	64%	11%
Price	54%	14%
Size of car	36%	9%
Indulgence (luxury or prestige / enjoyment / belonging to or joining a club)	8%	2%
Experience of visiting a car dealership	5%	0%

New vehicles vs used vehicles

The majority of older drivers (79%) indicated an overwhelming preference for purchasing new cars over used cars. This was because purchasing a new car provided a number of benefits such as being more reliable (81%), and newer cars have the latest features, which makes driving more comfortable (64%). Those that reported they would prefer to purchase used cars (13%) did so because they are more economical/affordable/not decrease in value as much (82%), and because they considered a near new car as almost as good as new (77%).

A high proportion of older drivers (43%) also reported that they prefer new cars because they are safer than used cars. Of the older drivers that reported they preferred used cars, only 1% believed that purchasing a used car would be safer than a new car. However, it should be noted that these results may have been influenced by the selection criteria of having purchased or intending to purchase a vehicle that was no more than three years old.

Resources used to inform purchasing decision

A combination of printed and online information sources were consulted as a key reference to obtain information on the vehicle. The main sources included internet websites (e.g. car, motoring, RoyalAuto website; 75%), printed publications (e.g. RoyalAuto, newspapers, classifieds; 69%), experience during test drives (47%) and car dealerships (46%). However, it is important to note that these results may have been biased towards RACV resources and internet based resources given the participants of the quantitative phase were RACV members sourced through email invitation and RACV enews subscriptions.

Qualitative insight revealed that while obtaining information directly from manufacturers was useful in providing vehicle specifications, information from manufacturers was perceived as being designed to market the vehicle and show it in its best light. Independent reviews and word of mouth were considered as more trustworthy and reliable sources of information.

Generally older drivers wanted an informed and impartial viewpoint to gain honest feedback on a car's strengths and weaknesses before purchase. This also included awards and endorsements that a car performed well, which would result in a vehicle being worthy of consideration. However, it was not always necessary for a review to be glowing – older drivers simply wanted an honest review to enable them to consider the vehicle in light of their own requirements and criteria. It should also be noted that while positive reviews from trusted sources would provide assurance, any negative reviews or feedback would immediately exclude the vehicle from consideration.

Visiting a dealer was also an important way for older drivers to gather information about a vehicle, although, this was usually the final part of the decision making process. For example, going for a test drive had the potential to 'make or break' the decision, while at the same time more information could be gained at this stage which may result in the purchaser reconsidering or researching new information.

Perceptions of vehicle safety

Qualitative findings found that many older drivers viewed the overall car design a good indicator of vehicle safety. In particular, cars that are bigger, have a solid and sturdy design, and appear 'stronger than a tin can' provided a sense that a car was safer than others.

This was somewhat supported by the quantitative findings, as can be seen in Table 4, which shows these factors were rated in the middle of the range as factors that impact on safety. Table 4 also shows that older drivers reported vehicle 'safety features and technologies' as the main factor that they believed impacted overall vehicle safety. However, it is important to note, that when asked to recall safety features the participants defaulted to 'standard inclusions' such as airbags, ABS braking, and five star safety ratings. Therefore it is unlikely that older drivers were considering some of the newer vehicle safety technologies (e.g. AEB, adaptive cruise control etc.) when responding to this question.

Table 4. Factors that older drivers perceive impact overall car safety: 10 – High impact; 0 – No impact.

Factor that impacts car safety	Perceived impact
Features / technologies within the car specs (e.g. ABS braking, airbags etc)	9.1
Skill of driver behind the wheel	8.3
Safety info from independent orgs (e.g. safety ratings, crash test reports)	8.0
Reputation of manufacturer	8.0
A solid or sturdy design	7.9

Safety info from the manufacturer	7.2
Buying the latest model	6.4
Car size (bigger cars safer than small cars)	6.0
The price paid for the car	5.9
Awards won by a car	5.7
Buying a top of the range car model	5.1

The qualitative interviews identified a fine line between the importance of having a 'safe' car and the appropriate skill as a driver to deliver safety while on the road. Attitudes towards safety features appeared impacted by a lack of understanding and cynicism toward new technology. The quantitative findings somewhat supported the qualitative findings, with many highly rating the 'skill of the driver' as an important part of a vehicles overall safety. The general perception was that it was the drivers' responsibility to remain alert and aware of impending danger and have the appropriate skills to handle situations that arose, without assistance from technology. The technology should only be there as a 'backup'.

Table 4 also shows that safety information from independent organisations and good reputation of a manufacturer had a high impact on perceptions of overall vehicle safety. Once older drivers were assured from a reputable and trusted source that a car was safe, it effectively negated the need to investigate specific safety technologies in further detail. Safety features were considered as a 'hygiene factor' list that must be ticked before a buyer moves on to the economic and status considerations. The extent of any further consideration into what technologies a car has might involve double checking standard inclusions off a list of criteria, or potentially considering the number of airbags available.

Instead of being concerned about the specific safety technologies that a car might have, older drivers appeared to be more concerned with the highly functional aspects of safety, in terms of ensuring their personal safety and the safety of loved ones when passengers. In addition, health related issues such as being fit to drive, getting around when no longer driving, and vision impairment were important to older drivers. There was also a general trend for older drivers to report higher concerns with these factors as they aged, which suggests ageing is associated with greater awareness or experience of these issues. These findings suggest that although there is an important need for cars to be safe, there is a stronger need for older drivers to feel safe when travelling in a car to minimise the impact of these concerns.

Older drivers' awareness, knowledge and understanding of vehicle safety technologies

Older drivers did not have a high level of knowledge or awareness about some of the newer vehicle safety technologies emerging in the market. Trying to recall vehicle safety technologies was difficult, and was generally limited to familiar features and standard inclusions that are readily available. Those able to recall newer technologies mentioned things such as parking sensors and cameras, adaptive cruise control, fatigue warning, anti-crash or anti-collision technologies, and stability control.

When prompted with a list of specific newer technologies awareness somewhat improved. Specifically, the key technologies older drivers reported being aware of included blind spot warning (68%), driverless cars (66%), adaptive cruise control (65%), autonomous emergency breaking (65%), and lane departure warning (63%). Interestingly, driver age did not impact on awareness of specific safety technologies, except for AEB, where the 70+ age group was found to be significantly more aware than the rest of the participants.

Participants reported being aware of these technologies through direct experience when travelling in a friend's car, which not only provided a first-hand demonstration of features available but was also a way of receiving feedback about the technology from an independent and trusted source. Although experiencing technologies in this way increased the risk of technologies being perceived as a novelty or a gadget, there was also a way for the technology to be perceived as a practical or smart function that related to one's own driving experiences. Positively, it also created interest and desire for intended purchases.

Media coverage was also effective in bringing attention to some technologies (e.g. anti-crash technology/driverless cars), although somewhat ineffective in creating memorability around the detail. For example, there was generally very little understanding about what many of these technologies were designed to do. Prompting participants with the names of some technologies proved intuitive in enabling them to provide an assumed interpretation of what the feature or function was designed to do. This was particularly relevant for those that were variations or enhancements of current features (e.g. adaptive cruise control).

In other instances, names were ambiguous leaving participants unsure as to what may be offered (e.g. vehicle to vehicle/vehicle to infrastructure). This suggests technologies with technical terms may be perceived as too complicated and ambiguous, leading to avoidance rather than further investigation.

Resources used by older drivers to gather information about vehicle safety technology

Older drivers reported a preference to gain information about vehicle safety technology from independent sources. In particular, RACV's Royal Auto magazine and online content combined to be the preferred information source for 83% of the participants (magazine only – 73%; online only 58%). However, it is important to note that these results may have been skewed given the participants of the quantitative phase were RACV members. Regardless, these results suggest RACV is well placed to further communicate and to educate its older members about vehicle safety.

Other preferred information sources were the internet (67%), while some preferred to get their information directly from vehicle manufactures websites (61%) and crash test results (50%). There was also evidence of aged based differences in these sources, in particular a prevalence of online sources for the 60-64 year olds, and family/friends for 75+ year olds.

Overcoming the barriers to older drivers adopting vehicle safety technology

Generally, older drivers were open to vehicle safety technology helping them to stay safe on the road, and reported that they would feel safer behind the wheel if they had safety features and technology in their car. However, engagement with older drivers is more likely to be effective if communication messages focus on the direct safety benefit of the technology, and also if there has been some form of real world experience with the technology (e.g. during a test drive or passenger in a friend's car) rather than trying to explain how the safety features work from a technical point of view.

As older drivers are unlikely to investigate individual safety technologies as a part of their decision making process and are more likely to focus on independent reviews of a cars overall safety, a potential barrier to uptake of newer safety technology is likely to be if the technology does not form part of the vehicles standard inclusions. This barrier may be enhanced by the common perception that technologies that are not standard inclusions would result in an additional cost, which runs the risk of exceeding the budget allocated to vehicle purchase. In this scenario, it is most likely that the purchaser would either consider another vehicle or settle for a more basic model, meaning the technology would not be adopted. Beyond the initial costs of obtaining a vehicle with the technology, older drivers were also concerned and mindful of the potential expense of repairs or maintenance of safety features.

Awareness of available technologies and their associated benefits is also considered critical. If there is no awareness, then there is no knowledge of the safety benefits the technology can provide. There are many online and printed independent resources that are used by older drivers to obtain more information about vehicles and technology, which suggests these resources are well placed to increase awareness, knowledge and understanding about the benefits of safety technologies available. Purchasers need to understand the benefit technologies provide in order to be necessary and justified for inclusion – essentially a justification for "Why do I need this?" or "Why should I have this in my car?"

The research also found that direct experience with safety technology was important in how people perceive and understand safety technology. Visiting a car dealer was generally identified as one of the final parts of the decision making process and is an opportunity for more information to be provided. However, the risk with this information being provided by the manufacturer or salesman may result in the information being perceived as a sales pitch or gadget rather than something that can provide an important safety benefit.

Therefore, promotions or communications about vehicle safety technology may also benefit by encouraging older drivers to test drive a vehicle and experience the benefits of the technology themselves. Alternatively, promotional campaigns around specific technologies, such as AEB, may find it beneficial for attendees to experience the effect of the technology through a driving simulator or other 'real world' demonstrations.

Although older drivers found vehicle safety technologies interesting, there was a fine line about whether the technology is designed to assist drivers or compensate for lack of skill, which impacted perceived reliance and need for features against driving experience. This appears to reflect a common perception that too much technology may result in reliance on technology to do the job that the driver has previously been required to perform. As a result people may become less aware of impending danger around them and also subsequently become more distracted. This possibility appears to make people more reluctant to accept that this type of technology may become more common. While this may be a common concern, the importance of driving experience should be consistently reinforced with the focus being on how the safety technology is designed to assist drivers for those 'just in case' situations.

Conclusion

The findings of this research were consistent with earlier RACV research that found vehicle features relating to comfort, ease of driving, and handling were important to older drivers.

Older drivers also reported limited knowledge and understanding of specific vehicle safety technologies. While this may suggest there is a good opportunity to address gaps in the current knowledge and understanding older drivers have of vehicle safety technologies, there is a clear lack

of interest in learning about how vehicle safety technologies work. Rather, older drivers simply want to be reassured that the vehicle they are considering purchasing will keep themselves and their passengers safe.

Older drivers consider the standard safety features of a vehicle (e.g. airbags, ESC) as an excellent guide to the vehicles overall level of safety. Therefore, if some of the most promising newer safety technologies (e.g. AEB) were to become 'standard safety inclusions' for all new cars, this would improve perceptions of vehicle safety as well as facilitate uptake of these features. On the other hand, if technologies such as AEB are only available as an optional extra with an additional cost, then this technology is unlikely to influence perceptions of safety, and uptake will be less likely.

The current research found that third party resources, such as RACV's Royal Auto and general motoring internet sites and magazines, are the most trusted sources of information. Reassuring and educating older drivers about vehicle safety is likely to be most effective if it is facilitated through these resources. Effective communication within these resources should tap into the emotional aspects of safety by providing reassurance and peace of mind that the vehicle will keep themselves and their passengers safe in those 'just in case' situations.

Additionally, information that focuses on people being at a higher risk because they are older is likely to be ineffective. Rather, older drivers are mindful that certain health and medical conditions increase with age, hence communications are more likely to be effective if they focus on how health and medical conditions can increase crash risk, and how safety technologies can help to reduce such risk on the road.

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