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Associations between advanced driver training, involvement in four-wheeled motor sport, and collisions on public roads: Report on a Survey Study.

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**Associations between advanced driver training,
involvement in four-wheeled motor sport,
and collisions on public roads:**

Report on a Survey Study

by

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School of Public Health and Social Work

to

Australian Institute of Motor Sport Safety (AIMSS)

Confederation of Australian Motor Sport (CAMS) and

Royal Automobile Club of Queensland (RACQ)

30 November, 2017

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EXECUTIVE SUMMARY

The role that specialised driver training activities and motor sport play in modifying driver behaviour on public roads is a highly emotional and politicised topic, about which there are many differing views. In the first stage of this project, we conducted a review of the literature on the association between both specialised driver training activities and motor sport participation with driver behaviour and safety on the road. The literature review was presented to AIMSS, CAMS and RACQ in May, 2017. For the second stage of the project, we collected and analysed self-report data to answer the question of whether there is an association between collisions on public roads and advanced driver training and/or motor sport participation. Data were collected via a cross-sectional online survey from Australian adults who regularly drive on public roads in Australia. The findings from this second stage of the project are presented in this report.

Report objectives and scope

The overall research question was: Is there an association between involvement in collisions on public roads and involvement in pre-licence and post-licence advanced driver training and/or motor sport?

The specific research questions were:

1. Are drivers who participate in four-wheeled motor sport more likely to be involved in collisions on public roads than their peers who do not participate in four-wheeled motor sport and have not undertaken any pre-licence or post-licence advanced driver training course?
2. Is a driver's attitude toward risky driving a significant confounder for the relationship between motor sport participation and road collisions? In other words, does attitude influence the relationship between motor sport participation and road collisions?
3. What other factors (e.g., exposure to driving, type of driver licences held, socio-demographic characteristics) confound (influence) the relationship between motor sport participation and road collisions?

4. Are there factors associated with four-wheeled motor sport that are associated with having road collisions? These factors could include type of motor sport training, age at which a driver first started competing in motor sport, number of events that the driver had participated in over their lifetime, types of motor sport that they had participated in, and level of motor sport licensure.
5. Are drivers who have undertaken pre- or post-licence advanced driver training more likely to be involved in collisions on public roads than their peers who have not undertaken such training and do not participate in four-wheeled motor sport?
6. Is a driver's attitude toward risky driving a significant confounder for the relationship between pre- or post-licence advanced driver training and road collisions? In other words, does attitude influence the relationship between motor sport participation and road collisions?
7. What other factors (e.g., distances driven in a year, hours typically driven, type of driver licences held, socio-demographic characteristics) confound (influence) the relationship between advanced driver training and road collisions?
8. Are there other factors associated with involvement in advanced driver training that are associated with having road collisions? These factors could include time since training was undertaken, hours of practice training and types of training.

Main findings for motor sport participants

In total, 3050 people who participated in four-wheeled motor sport as drivers or passengers completed the survey in 2017. Almost half of these respondents were middle-aged (45%). Most were male (91%), in full-time work (64%), and resided in a capital city (59%). Half (51%) drove, on average, at least 20,000 km/year, and most (79%) typically drove less than 20 hours/week on public roads.

On average, motor sport participants had slightly positive attitudes towards speeding but low levels of risky or aggressive driving behaviour, and low propensities towards risk-taking behaviour in general. Almost one-third (31%) reported a driving offence/ infringement in the previous 5 years, and 17% reported being a driver in a motor vehicle collision in this timeframe. The survey did not assess if they were at-fault in the collisions.

Over half of these motor sport participants (53%) had received driver training for a motor sport licence. Additionally, 18% of motor sport participants had received advanced driver training before getting an open licence, and 53% had received advanced driver training after getting an open licence.

Most motor sport participants (84%) reported that they had participated in more than 10 motor sport events during their lifetime, and most had started to compete in motor sport when they were under 25 years of age. About one-fourth (23%) had started to compete in these events when they were between 10 and 18 years of age, and another one-third (31%) had started to compete when they were 19 to 24 years of age. Most motor sport participants were competing in at least one type of motor sport in which they were the drivers (over 96%). The most common types of motor sport that participants were competing in were motorkhanas (49%), hillclimbs (54%), and circuit sprints (70%).

To address the research questions, the likelihood of being a driver in a motor vehicle collision in the previous 5 years was assessed for motor sport participants and drivers in two control groups. Comparisons of these groups indicated that the likelihood of having a collision was associated with average kilometres driven per year, a measure of driving 'exposure'. Further, the relationship between having a collision and average number of kilometres driven per year differed between the two control groups. As a result of these findings, analyses were conducted separately for respondents who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000 km/year, and those who drove at least 20,000 km/year.

Among respondents who drove the least (fewer than 10,000 km/year) and respondents who drove the most (at least 20,000 km/year), those who were motor sport participants had no increased or reduced likelihood of being a driver involved in a motor vehicle collision in the previous 5 years compared with other drivers. The same results held in comparisons with the two different control groups. No demographic factors (e.g., age, gender, education, employment status, area of residence), attitudinal or behaviour factors (e.g., having a competitive attitude towards driving or engaging in risk-taking behaviours) or licensing factors (e.g., holding an open licence, probationary licence or learner's permit) had a meaningful effect on this association.

Likewise, among respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, those who were motor sport participants had no increased or reduced likelihood of being a driver in a motor vehicle collision in the previous 5 years compared to a control group of RACQ members. However, when motor sport participants were compared to a control group of drivers who were members of an online marketing company panel and who were matched to motor sport participants on age, gender and place of residence, the results were different. Motor sport participants were significantly more likely than respondents in that control group to have been a driver in a motor vehicle collision in the previous 5 years.

These results did not change when the analysis was rerun to examine factors associated with being a driver in potentially at-fault collisions. These findings show a need for further investigation into why motor sports participants who drive between 10,000 and 20,000 km/year are more likely to be drivers in collisions compared with some groups of drivers but not compared with others.

The final analysis was conducted to learn about the factors that are associated with motor sport participation that could be related to being a driver in a motor vehicle collision in the previous 5 years. The analysis was limited to motor sport participants. A few factors directly related to motor sport training and competition were significantly associated with being a driver in a motor vehicle collision. First, motor sport participants who had received no motor sport training before the time of the collision were more likely to be involved in a collision as a driver compared with those who had received training at least 10 years prior to participation in the survey study. Second, motor sport participants were more likely to report being a driver in a collision if they had competed in stock car racing than if they had not. In contrast, those who had competed in tour car racing were less likely to report being a driver in a collision than those participants who had not competed in that type of event.

Main findings for graduates of advanced driver training (ADT) programs

In total, 663 respondents were graduates of ADT programs and were not participants in four-wheeled motor sport. About half of these respondents were middle-aged (48%) and in full-time work (48%). Most were male (87%), and resided in a capital city (56%). About one-third (37%) drove, on average, at least 20,000 km/year, and most (85%) typically drove less than 20 hours/week on public roads.

On average, these ADT graduates had negative attitudes towards speeding, low levels of risky or aggressive driving behaviour, and low propensities towards risk-taking behaviour more generally. About one-fourth of (27%) reported a driving offence/infringement in the previous 5 years, and 15% reported being a driver in a motor vehicle collision in this timeframe. The survey did not assess if they were at-fault in the collisions.

About one-third (35%) had received ADT before getting an open licence, and over half (57%) had received ADT after getting an open licence. Nine percent had received driver training for a motor sport licence but were not participating in a motor sport as a driver or a passenger.

To address the research questions, the ADT graduates were compared -- as were motor sport participants -- to two control groups of regular drivers in regard to their likelihood of being a driver in a motor vehicle collision in the previous 5 years. Analyses were conducted separately for respondents who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000 km/year, and those who drove at least 20,000 km/year.

Among respondents who drove the least (fewer than 10,000 km/year) and those who drove the most (at least 20,000 km/year), there was no increased or reduced likelihood, for ADT graduates compared with other drivers, of being a driver in a motor vehicle collision in the previous 5 years. These results held when the analysis was rerun with a different outcome: being a driver in a potentially at-fault collision. No demographic factors (e.g., age, gender, education, employment status, area of residence), attitudinal or behaviour factors (e.g., having a competitive attitude toward driving or engaging in risk-taking behaviours) or driving licencing factors (e.g., holding an open licence, probationary licence or learner's permit) had a meaningful effect on this association.

In the group of respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, there was also no association between being an ADT graduate and being a driver in a motor vehicle collision in the main analysis. Yet, when the outcome was limited to being a driver in a potentially at-fault collision, there was a different finding: the ADT graduates who drove this amount were more likely to be drivers in potentially at-fault collisions compared to the control group composed of members of the online marketing company panel. In contrast, ADT graduates who drove this amount were no more likely to be drivers in collisions than were drivers in the RACQ control group. As found in the analysis of motor sport participation and collisions, further investigation into why ADT graduates who drive between 10,000 and 20,000 km/year are more likely to be drivers in potentially at-fault collisions compared with some groups of drivers but not compared with others is warranted.

The last analysis was conducted to learn about the factors that are associated with ADT that could be related to being a driver in a motor vehicle collision in the previous 5 years. In an analysis limited to ADT graduates, there was only one significant finding related to ADT: there was a significantly reduced likelihood of being a driver in a motor vehicle collision among those who had had at least 8 hours of training behind the wheel of a motor vehicle during ADT taken before getting an open licence compared to those who had not.

Recommendations

Based on our key learnings, and to further this line of research, we offer the following recommendations for the type of data to collect and for study methods more generally.

DATA COLLECTION:

- Collect information about the immediate factors that can influence risk of collision (e.g., location and circumstances surrounding the collision) as they could be confounding the associations between likelihood of a collision and motor sport or ADT participation.
- Collect details about the types of collisions and in analysis, limit the types of collisions that are included as the outcome variable to those that are the most serious (e.g., cause serious injury and damages) and that are the fault of the study participant.
- Collect information about the dates (at least the year) of participation in different ADT and motor sport training programs to better assess how long ago the training occurred and ask for reasons for taking ADT or motor sport training.
- Collect information about the dates of recent collisions to allow determination of whether the most recent ADT and motor sport training was received before or after these collisions.
- To better classify individuals involved in motor sport, ask them whether they are currently drivers, participants and/or officials in motor sport events and, if they are not now but have been in the past, at what points in time.
- Given differences in policies and regulations about driving across states, ask respondents about the state within Australia where they reside/drive.

STUDY METHODOLOGY

- Carefully consider the choice of control group/s given that some of the findings in the current study were sensitive to variations in characteristics of the control groups selected.
- Consider following up with phone and, where possible, in-person interviews of individuals who contacted the research team about the survey. These individuals could provide more in-depth knowledge about the topics and direct the research team to other individuals as well who could do so.
- Consider partnering with ADT and motor sport training programs to investigate longitudinally the more immediate outcomes of such training on driving behaviour.
- Consider ways to gather collision data objectively rather than by self-report.

DEFINITIONS

Confidence interval: The interval around a statistical estimate (e.g., around an odds ratio) that we are fairly certain the true value falls within.

Collision: Any unplanned event on a road, reported to police, that involves a road vehicle and results in death, injury, or the necessity of towing a vehicle.

Driver: The person in control of a motor vehicle.

Motor sport: A competitive activity on a paved, gravel, or dirt road or track, either in a race or time-trial format. Examples of motor sport are kart racing, circuit racing, rallying, tour car racing, and stock car racing.

Motor sport participant: An individual who drives or is a passenger in motor sport events.

Motor sport spectator: An individual who attends a motor sport event.

Odds ratio: A statistical estimate of the association between predictor variables (e.g., age) and an outcome variable (e.g., collisions).

P-value: A measure of the statistical significance of a finding. In keeping with common practice, a p-value less than 0.05 represents a statistically significant finding.

Pre-licence driver training: An activity-based course or training program that involves teaching basic driving skills (procedural and/or cognitive) to drivers who possess a learner's permit. Activities can include professional driving instruction, school-based driver training, and simulator training.

Post-licence (advanced) driver training: An activity-based course or training program intended to enhance the driving skills of licenced drivers, including those who possess a probationary licence. Activities include learning defensive vehicle handling skills and higher-order cognitive skills.

LIST OF ABBREVIATIONS

ADT	Advanced driver training
AIMSS	Australian Institute of Motor Sport Safety
CAMS	Confederation of Australian Motor Sport
CI	Confidence Interval
OR	Odds ratio
RACQ	Royal Automobile Club of Queensland
SSI	Survey Sampling International

SECTION 1: BACKGROUND

This project was undertaken as a commercial research project funded by the Australian Institute of Motor Sport Safety (AIMSS) and the Royal Automobile Club of Queensland (RACQ). The overall aim was to determine whether there is an association between safe driving behaviour on public roads and (1) advanced driver training and/or (2) four-wheeled motor sport involvement.

The first stage of the project was a review of previous scientific studies that examined whether driver behaviour is influenced by involvement in driver training and motor sport. The findings of that review indicated that driver training programs that teach cognitive skills, encourage mastery of driving skills, and promote safe driving behaviours are more effective at reducing collision risk than driver training programs that only teach technical skills. However, we cautioned that the evaluations of driver training programs have typically suffered from methodological issues that weaken the validity of findings. The findings of the review also indicated that motor sport involvement is associated with engaging in risky on-road driving behaviours and reporting of driving offences, especially speeding, but we noted that too few studies been conducted to allow for reliable conclusions about associations between motor sport and road safety. We also noted that the studies suffered from methodological issues.

This report contains the findings from the second stage of the project. For this stage, key learnings from the literature review informed the development of a survey tool that was then used to collect data from Australian drivers. The overall aim of this study was to understand whether involvement in advanced driving training (ADT) or four-wheeled motor sport is associated with increased or decreased likelihood of having a road collision in Australia.

1.1 Scope of the survey study

The study required the creation of a survey tool, the administration of that tool, and the analysis of data collected. The components of the study included:

1. An online data collection tool was designed to collect data relevant to the research questions. This survey was designed to be self-administered and to collect sufficient information to allow for adjustment of known or suspected confounders (influencers) of the association between involvement in four-wheeled motor sport or advanced driver training (ADT) and road collisions.
2. The online survey was deployed. Data were collected using the self-administered online survey from consenting drivers aged ≥ 18 years. The sampling frame was initially the RACQ and Confederation of Australian Motor Sport (CAMS) memberships. Ethical clearance for the study was obtained from the QUT Human Ethics Committee. Only data de-linked from the identities of individuals were collected. The survey was open for a nominated period, after which the number of respondents in the three key groups (motor sport drivers and passengers, drivers who had taken ADT but were not involved in motor sport, and drivers with no ADT or motor sport involvement) was determined. The number of respondents in the latter category was found to be low.
3. The survey was subsequently deployed to a new cohort to increase the number of participants who had no ADT and were not involved in motor sport. The new cohort consisted of a panel of Australians who had agreed to complete online surveys for the marketing research company Survey Sampling International (SSI). SSI sent to panel members a personalised link to a copy of the online survey and offered them 'points' towards token rewards by SSI for survey completion. The survey was updated to allow the survey to go to SSI panellists who would be matched to the group of motor sport drivers and passengers by age, sex and residential location. A variance to the original ethical clearance was approved by the QUT ethics committee to allow for the inclusion of this cohort of participants.
4. Data were analysed and findings were reported.

1.2 Structure of the report

This report is divided into six sections, beginning with this Section 1, which provides background information about the study. Section 2 describes the development of the survey and the recruitment of respondents. Section 3 discusses the sequence of data analysis steps. The results of the analyses are presented in Sections 4, 5 and 6. Section 7 provides an overall summary of the findings. In short, the sections are:

- Background: Section 1
- Survey development and respondent recruitment: Section 2
- Data preparation: Section 3
- Description of survey respondents: Section 4
- Findings about motor sport participation and collisions: Section 5
- Findings about advanced driver training and collisions: Section 6
- Conclusions: Section 7

SECTION 2: SURVEY DEVELOPMENT

The survey was developed for online administration using QUT's Key Survey software.

The survey questions addressed participation in advanced driver training (ADT) and motor sport, possible outcomes of that participation (reduced or increased risk of collisions and motor vehicle offences/infringements), and potential confounders (influencers) of the associations between both ADT and motor sport participation with the outcomes. The survey considered key learnings from the literature review about these factors and ways to measure them.

This section details the survey design, ethics approval for the administration of the survey, and recruitment of participants.

2.1 Survey design

The survey was developed by the QUT research team in consultation with AIMSS and RACQ. The survey was composed of the following five sections.

2.1.1 Section A: Driving licences, driving exposure, and driver training

Section A included 28 questions. However, skip-patterns were used throughout the section, and no respondent was asked to complete all questions.

New questions were developed to assess participation in ADT, current motor vehicle licensing, and amount of driving done. Questions covered:

- Types of driver's licence/s currently held
- Participation in ADT, including training to participate in motor sport
- Activities included in the ADT
- Length of ADT
- Time since received ADT
- Name of the ADT program or course

To assess 'exposure' to the behaviour of driving, a question developed by Yildirim-Yenier et al. (2015) was adapted and used. The original question asks about the number of driving hours per week. For the purposes of this survey, the question was refined to ask specifically about hours driven per week on public roads, and a new question about kilometres driven per year was included to better capture driving exposure. Thus, the two exposure questions assessed were:

- Kilometres driven per year on average
- Hours typically driven per week on public roads

2.1.2 Section B: Risky driving behaviours, driver aggression, and negative outcomes

Risky driving behaviour was assessed with 12 questions adapted from the Driver Behaviour Questionnaire (Parker et al., 1998) used by Tranter and Warn (2008), Warn, Tranter and Kingham (2004), and Yildirim-Yenier et al. (2016). Driver aggression was measured with the 5-question Self-Report Driver Aggression Questionnaire (Hennessy & Wiesenthal, 2001) that was used recently by Yildirim-Yenier et al. (2015; 2016) in studies of motor sport participants and fans.

All risky driving behaviour and driver aggression questions began with, "How likely are you to...", and responses were on a 6-point Likert scale ranging from 'never' to 'nearly all the time'. Summary scores were created for each scale by calculating the mean score of the scale questions. The two scales were:

- Risky driving behaviour: 12 questions
- Driver aggression: 5 questions

Respondents were also asked to report previous collisions and offences/infringements, which were considered possible negative outcomes of participating (or not) in ADT or motor sport. A question by Yildirim-Yenier et al. (2015) that asks about involvement in a motor vehicle collision (single or multiple vehicle collision) was adapted to narrow the range of collisions to be reported to those 'that involved damage of more than \$1,000 or injury to a person'. New follow-up questions were created to learn about the number of motor vehicle collisions in which a respondent had been and the number of those collisions in which the respondent had been a driver.

Another question adapted from one used by Yildirim-Yenier et al. (2015) asked about traffic-related offences/infringements. The original question asked about offences in the previous year. In the current study, the timeframe was extended to 5 years to match the timeframe of the questions about collisions and to capture more information about a respondent's history of driving offences. A new question was added to gather data on the range of infringements charged by police. In short, the questions about collisions were:

- Number of motor vehicle collisions in previous 5 years
- Number of those collisions in which the respondent was the driver
- Number of traffic-related offences/infringements in the previous 5 years
- Types of offences/infringements charged by police in the previous 5 years

2.1.3 Section C: Attitudes towards speeding and driving and risk-taking propensity

Attitudes towards speeding were measured with Tranter and Warns's (2008) Attitudes Towards Speeding questionnaire that was developed for use in Australia. For analysis, one question was dropped because responses to it showed that it was not measuring the same concept as the other questions in the questionnaire. Having a competitive attitude toward driving was measured with a questionnaire developed by Patil et al. (2006) and used recently by Yildirim-Yenier et al. (2016) in a population of motor sport fans and participants. For both scales, respondents were asked their thoughts about several statements related to driving and to respond using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

The Risk-Taking Propensity scale was developed by Donovan (1993). Respondents were asked, 'How well do the following statements describe you?' and to respond using a 3-point Likert scale ranging from 'not like me' to 'a lot like me'.

Summary scores were created for each of the three questionnaires by taking the mean score of the questions in the questionnaire. The scales measured:

- Attitudes towards speeding: 3 questions
- Competitive attitude toward driving: 5 questions
- Risk-taking propensity: 4 questions

2.1.4 Section D: Motor sport involvement

Three questions developed by Warner, Tranter and Kingham (2004) were used to initially assess motor sport involvement. Two other questions in the original questionnaire were not used because they were specific to the context of the previous study. For one question that was used, respondents were asked whether they had been a motor sport driver or passenger in an official motor sport event. In the original question, respondents were asked only about involvement in the previous 12 months. Response options were expanded to also include being a driver or passenger earlier than the previous 12 months. For respondents who reported that they had been a driver or passenger in the past (either past 12 months or earlier), newly-developed follow-up questions were asked. In short, questions in this section covered interest and involvement in motor sport as follows:

- Number of motor sport events watched on TV in the previous 12 months
- Number of motor sport events attended in the previous 12 months
- Being a driver or passenger in a motor sport event in the previous 12 months or earlier

Respondents who reported that they had been a driver or passenger in a motor sport event were subsequently asked:

- Number of motor sport events participated in (new question)
- Age at which a respondent started competing in motor sport (new question)
- Type/s of motor sport licences (new question)
- Type/s of motor sport that participant does/do (new question)

2.1.5 Section E: Demographic characteristics

Respondents were asked about their:

- Year and month of birth, to calculate age
- Gender
- Living arrangements (e.g., living as a couple with children)
- Socio-economic status (educational attainment, employment status)
- Residential location (e.g., capital city)

2.2 Ethics approval

Approval from QUT's Human Research Ethics Committee was granted in January, 2017 (approval #1600001220), for submission of the survey to CAMS and RACQ members. Modifications were made in April, 2017, to allow the survey to be offered to a new cohort of drivers. These modifications were approved by QUT's Human Research Ethics Committee in May, 2017.

2.3 Recruitment

CAMS and RACQ members 18 years of age or older were recruited for the study. CAMS and RACQ both have Australian drivers as members. The recruitment of CAMS members allowed us to include in the study sufficient numbers of motor sport participants to address the first four research questions. Recruitment of RACQ members allowed us to include in the study drivers who were not motor sport participants, for comparison to motor sport participants. The recruitment of RACQ members also allowed us to recruit both drivers who had and had not had ADT, for addressing the last four research questions.

To recruit CAMS members, CAMS sent an email invitation to its members in early February, 2017. To recruit RACQ members, an invitation to participate in the study was placed in the February/March, 2017 issue of the organisation's bimonthly *Road Ahead* magazine that was emailed to members in early February, 2017. A second invitation was placed in the organisation's March, 2017 *Club eNews*, a monthly email newsletter that is sent to all RACQ members who have supplied an email address to the organisation. Copies of *Road Ahead* and *Club eNews* were also made available on the RACQ website. All invitations included links directly to the survey and to information about the study. RACQ also tweeted members about the study in April, 2017 and advertised it on their Facebook page.

To encourage participation, CAMS and RACQ members were given the opportunity to enter into a draw to win one of five prizes, each a \$500 VISA EFTPOS gift voucher. Members were initially alerted that the survey would close 31 March, 2017 and that the prize drawing would occur 1 May, 2017. However, to encourage participation, the survey remained open until 1 May, the date the prize draw was completed. In total, 3,302 respondents (79%) opted to participate in the prize draw, and five winners were selected at random.

An additional cohort of respondents was recruited in June, 2017, in order to increase the sample size of respondents who were not motor sport participants. The new cohort consisted of a panel of 1,226 Australians who had agreed to complete online surveys for the marketing research company Survey Sampling International (SSI) and who had indicated that they had never been involved in motor sport but were regular drivers on public roads in Australia. SSI recruited panel members from across Australia who were matched on age, gender and area of residence to the motor sport participants already in the study. SSI sent to these panel members a personalised link to a copy of the online survey. They were offered 'points' towards token rewards by SSI for survey completion, and therefore, were not entered into a prize draw for the current study.

SECTION 3: DATA PREPARATION

Excluded from analysis were respondents who reported that they were under 18 years of age (n=14), did not consent to participate in the study (n=11), did not currently hold a valid driver's licence (n=17), drove zero kilometres per year on average (n=3), did not drive on public roads during a typical week (n=7), or did not reside in Australia (n=34). Data from an additional 17 respondents were removed as their response patterns indicated 'bogus' responses (i.e., responding the same way to certain questions no matter how they were worded). After removing those respondents, data from 5,413 respondents were available for analysis.

3.1 Data analysis

1. Each respondent was assigned to one of four driving groups: (1) respondents who had been or were currently involved in motor sport as drivers or passengers, (2) respondents who had participated in ADT and were not motor sport participants, (3) RACQ members who had not been involved in motor sport and had not had ADT, and (4) SSI members who had not been involved in motor sport and had not had ADT.
2. Self-reported collision statistics were described for the overall cohort and then were described separately for driving groups.
3. Differences in characteristics between the different driving groups were described.
4. The bivariate relationships between driver groups and collisions in the past 5 years were examined.
5. The association between being a motor sport participant and being a driver in a motor vehicle collision in the past 5 years, after adjustment for significant confounders (influencers), was examined. Comparisons were made between the motor sport participants and both the RACQ driving group and the SSI driving group.
6. The association between being a graduate of an ADT program or course and being a driver in a motor vehicle collision in the past 5 years, after adjustment for significant confounders, was examined. Comparisons were made between the motor sport participants and both the RACQ driving group and the SSI driving group.

SECTION 4: DESCRIPTION OF RESPONDENTS

This section of the report describes the characteristics, behaviours, attitudes, driving training and motor sport involvement of the sample. It also describes the number of self-reported collisions of respondents and the types of motor vehicle offences/infringements they received in the previous 5 years. Findings are discussed for the sample as a whole (where applicable) and separately for the four exclusive driving groups of respondents. Comparisons were made between:

- Respondents who had participated as drivers or passengers in motor sport events (motor sport participant group);
- Respondents who had taken ADT and were not motor sport participants (ADT graduate group);
- Respondents who were members of RACQ and had not participated in motor sport or in ADT (RACQ control group); and
- Respondents who were members of the SSI panel and had not participated in motor sport or in ADT (SSI control group).

Further details, including for the whole sample, are provided in Appendix B.

4.1 Demographic characteristics of the sample

Most respondents in the sample were 45+ years of age (64%) and male (85%). One-third held bachelor's degrees (33%), and over half worked full-time (56%). Most lived as married or de facto couples (72%). Over half (58%) were living in capital cities. However, for each characteristic examined, there were statistically significant differences among groups ($p < 0.05$).

Notable differences between the groups included:

- The RACQ control group contained more young adults than did the other groups: 27% of the RACQ control group was aged 18-34 years vs 12-16% in the other groups.
- The percentage of respondents who were male was lower in the RACQ control group (56%) than in the motor sport participant (91%), the ADT graduate (87%), and the SSI (86%) groups.
- Respondents in the control groups tended to have attained lower levels of formal education compared with motor sport participants and ADT graduates. Notably, the percentage of respondents who had a secondary school education or less as their highest level of education was greater in the two control groups (RACQ: 31%; SSI: 34%) than in the motor sport participant (20%) or ADT graduate (24%) groups.
- The percentage of respondents who were working part-time or as casual workers was higher in the control groups (RACQ: 20%; SSI: 17%) than in the motor sport participant (11%) and ADT graduate (11%) groups.
- The percentage of respondents who were living as couples was greater in the motor sport participant group (77%) than in the ADT graduate group (72%) and the control groups (RACQ: 63%; SSI: 64%).

Table 4.1 provides further details about the characteristics for each group separately.

Table 4.1. Demographic characteristics of the sample.

	Motor sport participants n=3050	Advanced driver training graduates n=663	RACQ control group n=588	SSI control group n=806
	%	%	%	%
Age (years)				
18-34	16.3%	12.2%	26.5%	14.0%
35-44	15.8%	16.7%	17.9%	18.7%
45-54	20.7%	20.4%	21.4%	20.2%
55-64	24.3%	27.5%	19.7%	23.8%
65+	20.7%	22.9%	13.6%	23.0%
Gender				
Female	8.1%	11.9%	43.0%	12.8%
Male	90.8%	86.7%	56.3%	86.1%
Education attained				
Primary or some secondary school	4.4%	7.2%	9.0%	11.7%
Secondary school completed	15.6%	16.4%	21.6%	22.7%
Trade/business certificate	30.4%	29.7%	27.0%	23.9%
Associate diploma	16.4%	14.3%	12.6%	10.8%
Bachelor's degree or higher	33.2%	32.0%	29.4%	30.6%
Employment status				
Full-time work	64.1%	48.0%	45.9%	38.6%
Part-time work	6.7%	5.9%	11.1%	11.2%
Casual work	3.8%	5.1%	9.2%	5.3%
Retired	16.7%	25.0%	15.1%	26.7%
Other	8.6%	15.2%	18.5%	18.0%
Living situation				
Living alone	12.0%	15.5%	15.8%	20.3%
Single parent, living with children	2.5%	3.3%	4.8%	3.7%
Single, living with friends or relatives (of adult age)	5.4%	5.1%	11.4%	6.7%
Couple (married or de-facto), living with no children	41.2%	38.6%	33.0%	33.5%
Couple (married or de-facto) living with children	35.9%	33.2%	30.3%	30.5%
Other	2.5%	3.9%	4.6%	5.1%
Area of residence				
Capital city	59.2%	56.4%	47.8%	61.4%
Regional city/town	33.4%	35.9%	45.6%	30.9%
Remote area	7.4%	7.7%	6.6%	7.7%

4.2 Driving and licensing

Most respondents reported driving under 20,000 kilometres per year (58%) and driving less than 20 hours per week on public roads (83%). Most respondents had an open driver licence (87%) with just 2% having a probationary or learner driver licence. Some had rigid licences (4% light rigid, 7% medium rigid and 12% heavy rigid), and a few had a combination licence (5% had heavy combination and 2% had multi-combination). When asked to report on other licences held, 13% reported holding a motorcycle licence. Figures 4.1 and 4.2 show differences between groups in their driving.

Notable and statistically significant differences between the groups ($p < 0.05$) included:

- The percentage of respondents who drove 30,000+ km per year was higher in the motor sport participant group (26%) than in the ADT graduate group (16%) or the two control groups (RACQ: 10%; SSI: 7%).
- The percentage of respondents who drove 30+ hours per week was higher in the motor sport participant group (8%) and the ADT graduate group (7%) than in the two control groups (RACQ: 4%; SSI: 3%).
- The percentage of respondents who held a motorcycle licence was higher in the motor sport participant group (17%) than in the ADT graduate group (11%) and the two control groups (RACQ: 11%; SSI: 6%).

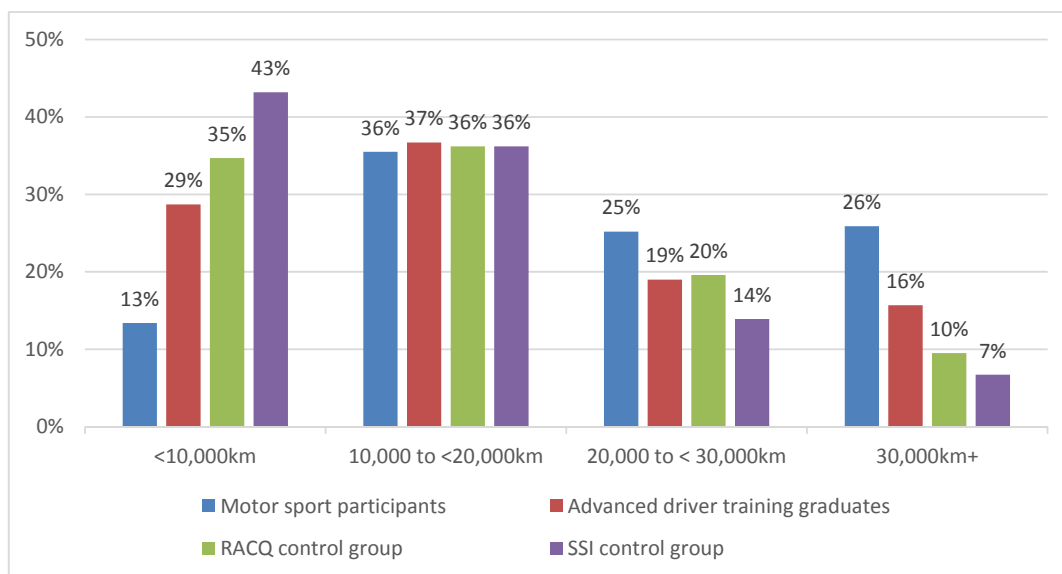


Figure 4.1. Kilometres driven per year on average, by group.

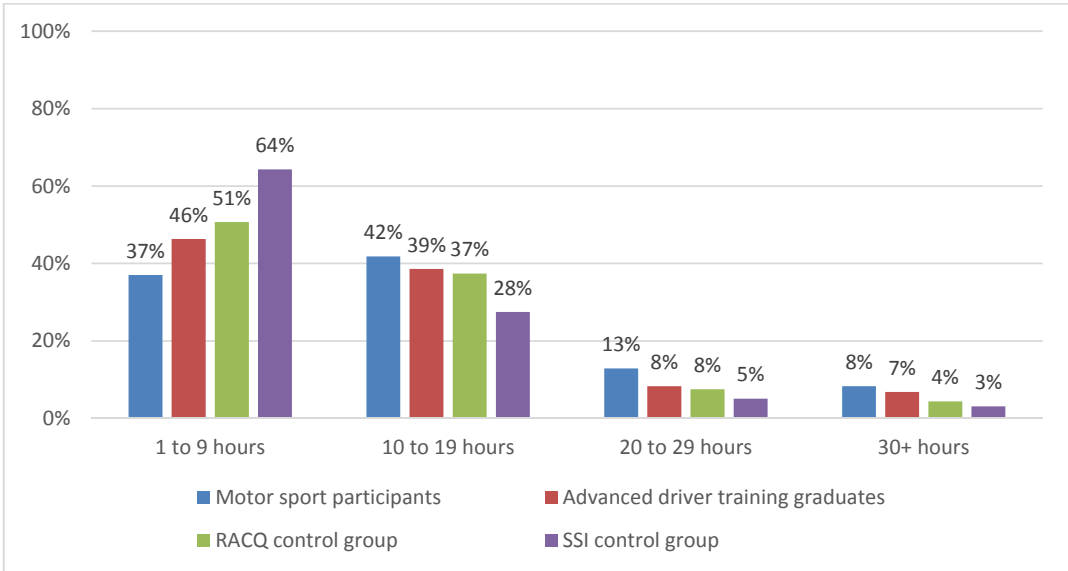


Figure 4.2. Hours typically driven per week on public roads, by group.

4.3 Risky driving behaviours, driving aggression and negative outcomes

Respondents were asked to complete two questionnaires that measured their driving behaviour. The Driver Behaviour Questionnaire asked about risky driving behaviour. For the total sample, respondents reported low risky driving behaviour (mean=1.69, standard deviation=0.49, on a scale from 1 to 6). As shown in Figure 4.3, scores did not differ significantly between groups ($p>0.05$) with mean (standard deviation) ranging from 1.74 (0.45) for the motor sport participant group, to 1.62 (0.50) for the ADT graduate group, 1.63 (0.43) for the RACQ control group, and 1.58 (0.55) for the SSI control group.

The Driver Aggression Questionnaire asked about driving in an aggressive way. The average score for the total sample was low, indicating low levels of aggressive driving behaviour (mean=1.70, standard deviation=0.63, on a scale from 1 to 6). However, the scores differed significantly across groups ($p<0.05$). As shown in Figure 4.3, the mean score [standard deviation] was highest for the ADT graduate group (1.72 [0.66]), followed the mean scores for the motor sport participant group (1.69 [0.60]) and the RACQ control group (1.69 [0.61]). The lowest mean score was for the SSI control group (1.64 [0.67]).

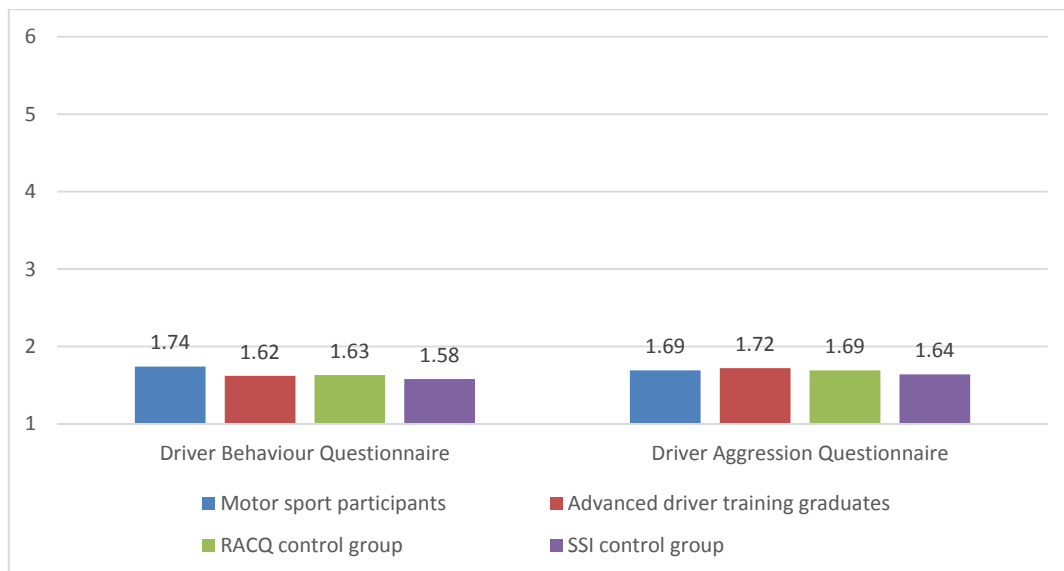


Figure 4.3. Mean scores on the Driver Behaviour and Driver Aggression Questionnaires, by group. Response options were: 1=Never to 6=Nearly all the time.

Respondents were asked whether they had been involved in a motor vehicle collision involving damages of more than \$1,000 or an injury to a person in the previous 5 years. In the sample as a whole, 19% of respondents reported being in a collision. The percentages were similar across three groups: 20% of respondents in the motor sport participant group, 18% of respondents in the ADT graduate group, and 18% of respondents in the RACQ control group reported being in a motor vehicle collision in the previous 5 years. The percentage was significantly lower (13%) in the SSI control group ($p < 0.05$).

The percentage of respondents who reported having been a driver at the time of a motor vehicle collision was 16% for the sample as a whole. The percentages were similar for the motor sport group (17%), the ADT group (15%), and the RACQ control group (17%), but lower for the SSI control group (11%), as shown in Figure 4.4. The difference in percentages across groups was statistically significant ($p < 0.05$).

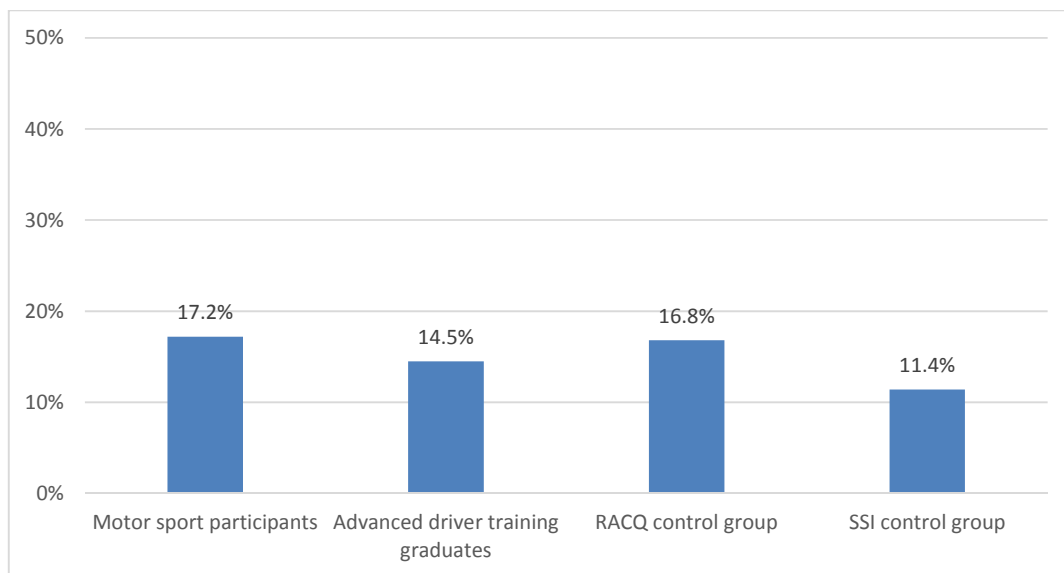


Figure 4.4. Percentage of respondents who were drivers in motor vehicle collisions in the previous 5 years, by group.

Figures 4.5 to 4.7 were created to see if any differences in the kilometres driven per year could explain differences between the four groups in the percentage of collisions that respondents experienced as drivers. Figure 4.5 shows, for each group, the number of respondents who drove less than 10,000 km/year and experienced at least one collision while driving. The highest percentages of collisions were in motor sport participants (13%) and the RACQ control group (14%), and the lowest were in ADT graduates (9%) and the SSI control group (10%).

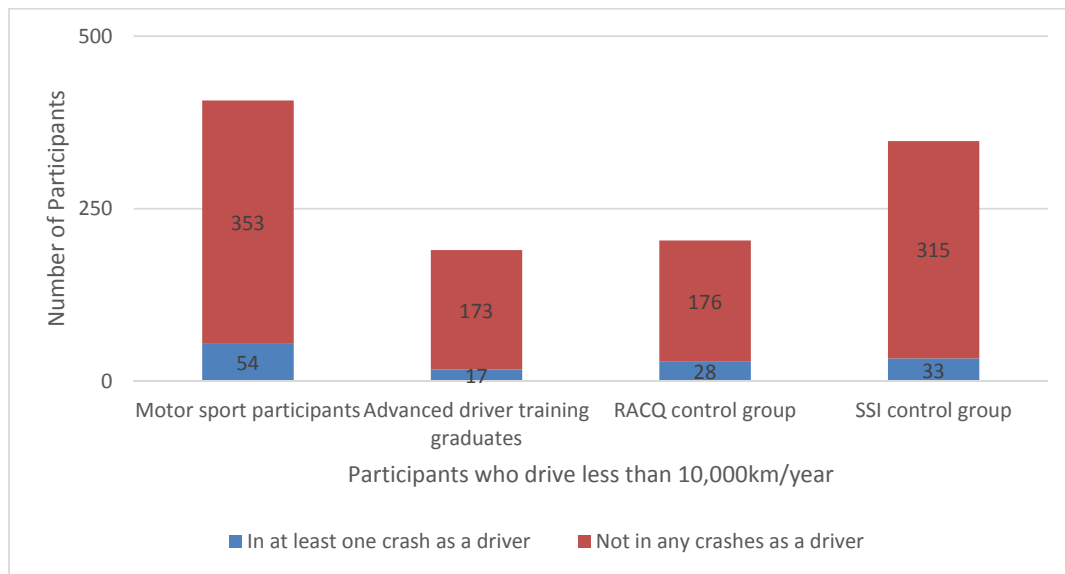


Figure 4.5. Among respondents who drove less than 10,000km/year, the number who had at least one motor vehicle collision as a driver in the previous 5 years, by group.

Figure 4.6 shows, for each group, the number of respondents who drove at least 10,000 km/year but fewer than 20,000 km/year and who experienced at least one collision while driving. The highest percentages were in motor sport participants (17%), the ADT graduates (15%) and the RACQ control group (19%), and the lowest was in the SSI control group (9%).

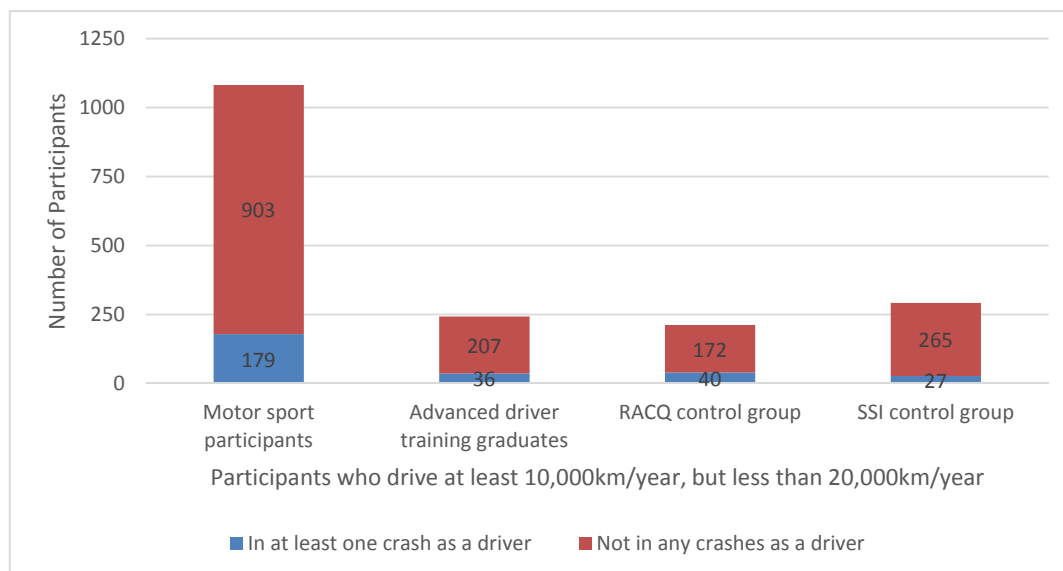


Figure 4.6. Among respondents who drove at least 10,000km/year but fewer than 20,000km/year, the number who had at least one motor vehicle collision as a driver in the previous 5 years, by group.

Figure 4.7 shows, for each group, the number of respondents who drove at least 20,000 km/year and who experienced at least one motor vehicle collision while driving. The percentages of respondents who fit this description is similar in motor sport participants (19%), ADT graduates (19%), the RACQ control group (18%), and the SSI control group (19%).

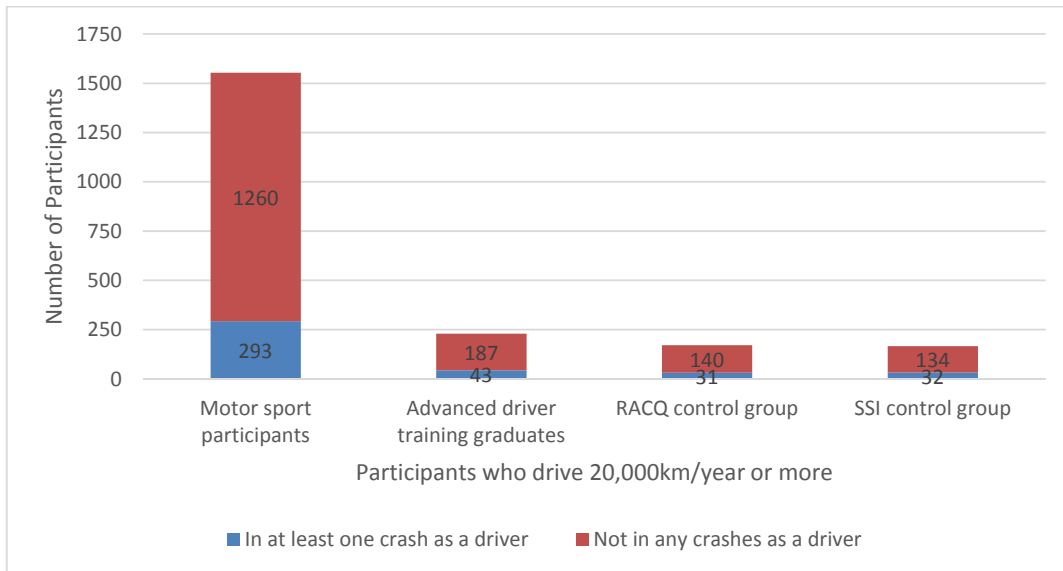


Figure 4.7 Among respondents who drove 20,000km/year or more, the number who had at least one motor vehicle collision as a driver in the previous 5 years, by group.

Respondents also reported whether they were cited for driving offences/infringements in the previous 5 years. In the sample as a whole, 28% of respondents were cited for at least one driving offence/infringement. As shown in Figure 4.8, the percentage of respondents reporting offences/infringements was highest among motor sport participants (32%) followed by ADT graduates (26%) and respondents in the RACQ control group (27%). The lowest percentage was seen in the SSI control group (16%). The difference in percentages across groups was statistically significant ($p < 0.05$).

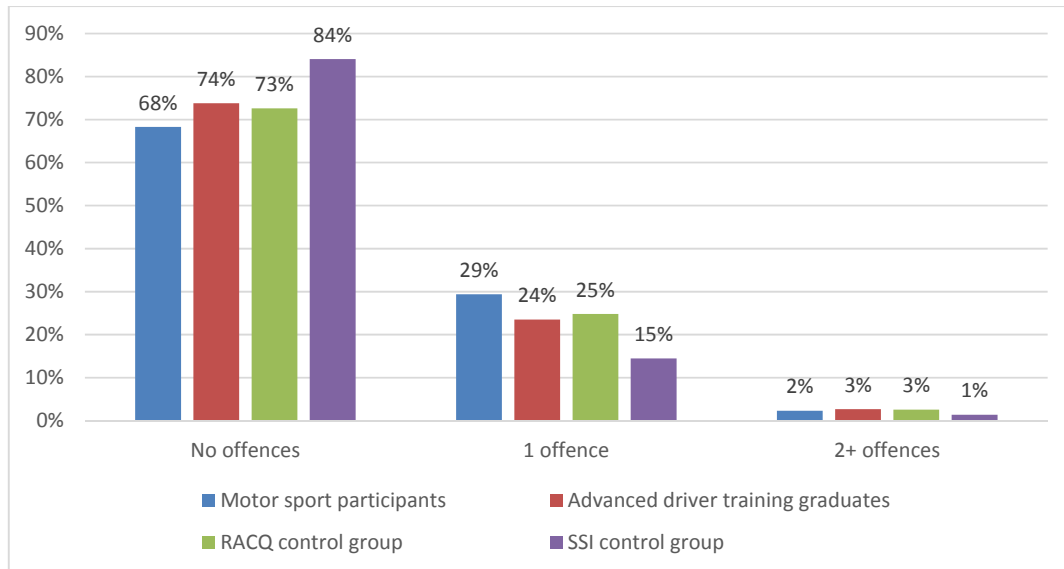


Figure 4.8. The percentage of respondents reporting driving offences/infringements in the previous 5 years, by group.

Respondents reported the types of driving offences/infringements that they were cited for in the previous 5 years. The most frequently reported in the sample was speeding (26%), followed by failing to stop at a red light (2%) and using a mobile phone while driving (1%). Speeding was also the most frequently reported by the motor sport participant group (29%), followed by the RACQ control group (26%), the ADT graduate group (24%), and the SSI control group (14%). The differences in percentages across groups were statistically significant for speeding ($p < 0.001$) and using a mobile phone while driving ($p < 0.05$).

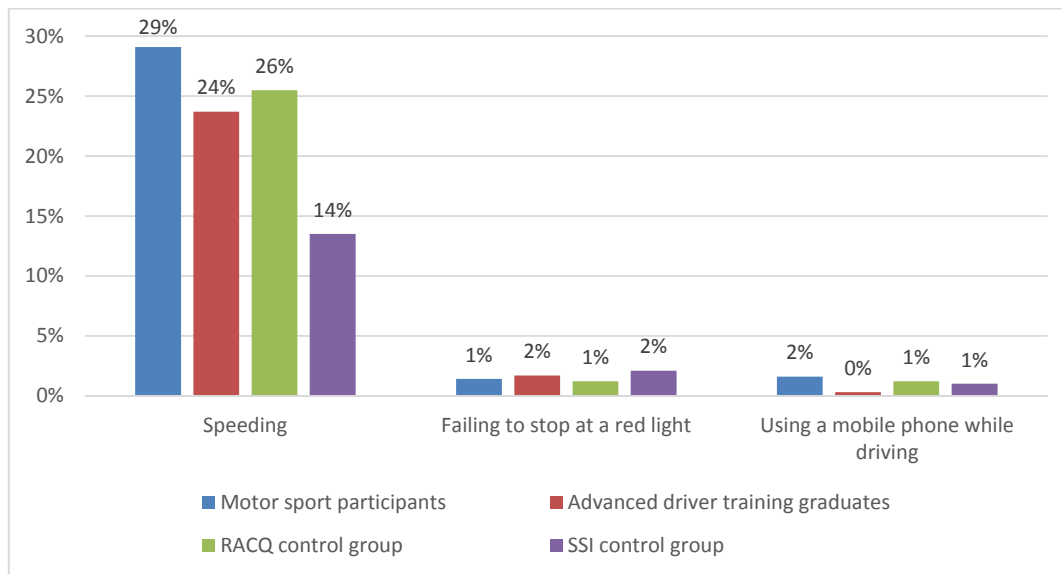


Figure 4.9. Percentages of the most common types of driving offences/infringements received in the previous 5 years, as reported by respondents within each group.

The correlation between number of driving offences/infringements (none, 1 or 2+) and being a driver in a motor vehicle collision (yes or no) was computed, to understand if there was a relationship between these two negative outcomes. The correlation was very low, close to zero (Spearman rho = 0.07), suggesting that there was not a meaningful association between these two variables. Note that correlations below 0.20 are considered low.

4.4 Attitudes towards speeding, competitive driving and risk-taking

On the Attitude Towards Speeding questionnaire, respondents, on average, indicated neither positive nor negative attitudes towards speeding (mean=3.06, standard deviation=0.97, on a scale from 1 to 5). However, as shown in Figure 4.10, the average score was slightly higher than 3.0 for the group of motor sport participants (mean=3.31, standard deviation=0.94), indicating a slightly positive attitude towards speeding. The mean score [standard deviation] was lower than 3.0 for the ADT graduate group (2.74 [0.95]) and the two control groups (RACQ: 2.76 [0.89]) and the SSI control group (2.61 [0.84]), indicating a slightly negative attitude towards speeding. The difference in scores across groups was statistically significant ($p < 0.05$).

The average score on the Competitive Attitude Toward Driving Scale was moderately low (mean=1.76, standard deviation=0.69, on a scale from 1 to 5), for the sample as a whole and for each subgroup as shown in Figure 4.10. There were no statistically significant differences between groups in scores ($p > 0.05$) with mean (standard deviation) scores ranging from 1.75 (0.66) for the motor sport participant group and 1.75 (0.68) for the ADT graduate group to 1.76 (0.69) for the RACQ control group and 1.76 (0.73) for the SSI control group. This finding indicates that respondents in each group, on average, had similar, negative attitudes towards risky driving behaviour.

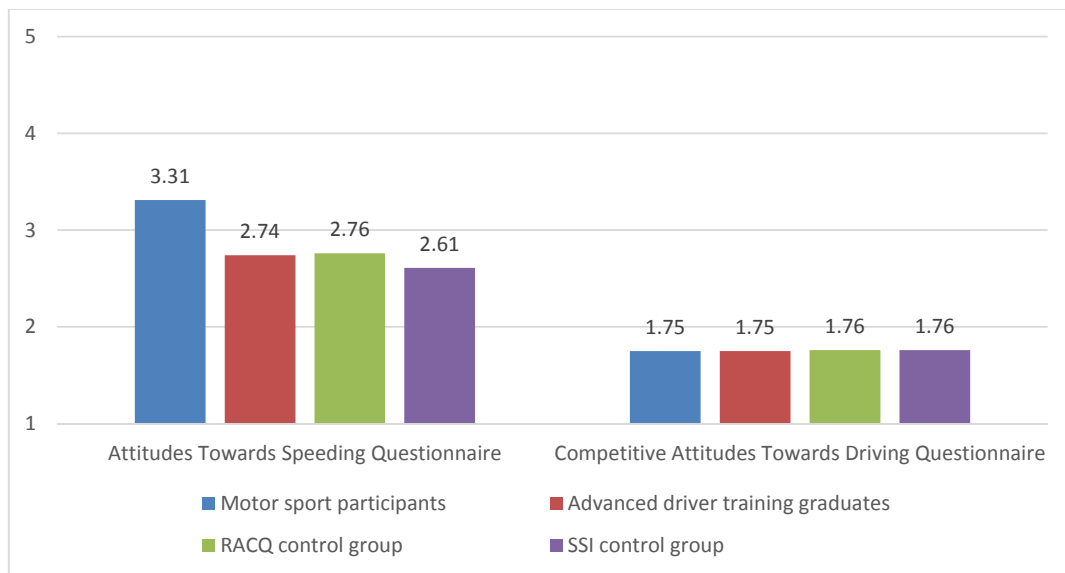


Figure 4.10. Mean scores on the Attitude Towards Speeding Questionnaire and the Competitive Attitudes Toward Driving Questionnaire, by group. Response options were: 1=Strongly Disagree to 5=Strongly Agree.

The average score on the Risk-Taking Propensity Scale was low as well (mean=1.16, standard deviation=0.30, on a scale from 1 to 3) for the total sample and low for each subgroup, as shown in Figure 4.11 below. The mean score [standard deviation] of motor sport participants (1.19 [0.32]) was significantly higher than the mean score of respondents in all other groups ($p < 0.001$). There were no significant differences in mean score between the advanced driver training graduate group (1.11 [0.26]), RACQ control group (1.09 [0.21]), and SSI control group (1.11 [0.29]). Although the scores suggest that on average, respondents in each group were not likely to engage in risk-taking activities, motor sport participants were slightly more likely than all other groups to take risks.

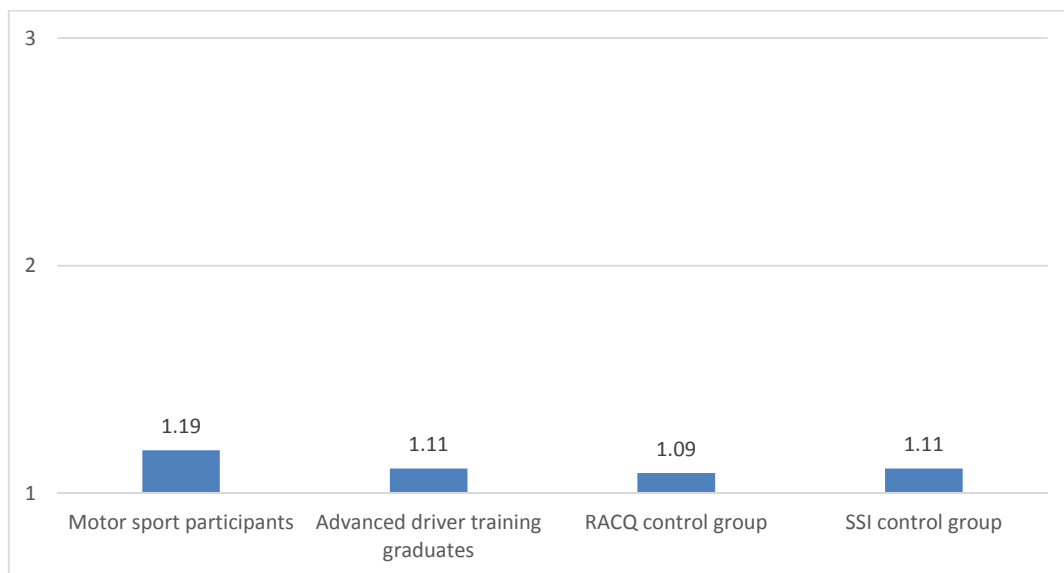


Figure 4.11. Mean scores on the Risk-Taking Propensity Scale, by group.
Response options were: 1=Not Like Me, 2=Somewhat Like Me, 3=A Lot Like Me.

4.5 Driver training overview

Most respondents reported that they had received training from a traditional driving school or from friends/family to get an open driver licence (76%). Higher percentages were seen for the motor sport participant group (79%), the ADT graduate group (80%) and the RACQ control group (78%); however, only 59% of the SSI control group had received this training. These differences among groups were statistically significant ($p=0.05$).

Although some respondents in the motor sport participant group and the ADT graduate group had received ADT, respondents in the control groups had not received this training because these groups were defined by their lack of having had such training (and not being motor sport participants).

As shown in Table 4.2, there were some statistically significant differences in the types of training received by the motor sport participants and the ADT graduates ($p<0.05$). Only 18% of the motor sport participants but 35% of the ADT graduates had received ADT before getting an open driver licence ($p<0.05$). A higher percentage of the ADT graduates (37%) than of the motor sport participants (22%) had received training for a business/industrial licence ($p<0.05$). As could be expected, a higher percentage of the motor sport participants (53%) than of the ADT graduates (9%) had received driver training for a motor sport licence ($p<0.05$). There was also a similarity between groups. Just over half of each group received ADT after getting an open driver licence (motor sport participants: 53%; ADT graduates: 57%; $p>0.05$).

Table 4.2. The percentages of motor sport participants and ADT graduates who had received advanced driving training.

	Motor sport participants n=3050	Advanced driver training graduates n=663
	%	%
Received advanced driver training BEFORE getting an open licence	18.0%	35.0%
Received advance driver training AFTER getting an open licence	53.2%	56.6%
Received driver training for a business/industrial licence	22.1%	36.7%
Received driver training for a motor sport licence	52.7%	8.6%

4.6 Advanced driver training before receiving an open driver licence to operate a vehicle that had four wheels

Most respondents who took ADT before obtaining an open driver licence had received ADT on-road skills training, with significantly more ADT graduates (81%) than motor sport participants (62%) receiving this training ($p < 0.05$), as shown in Table 4.3. However, significantly more ($p < 0.05$) motor sport participants than ADT graduates reported receiving off-road skills training (66% vs 40%), skid-pan training (57% vs 33%), classroom teaching with simulation skills training (32% vs 22%) and classroom teaching without simulation skills training (38% vs 29%).

Table 4.3. Advanced driver training received before obtaining an open driver licence.

	Motor sport participants n=550	Advanced driver training graduates n=232
	%	%
On-road skills training	62.2%	81.0%
Off-road skills training	66.0%	39.7%
Skid-pan training	56.9%	33.2%
Classroom teaching with simulation skills training	32.2%	22.0%
Classroom teaching without simulation skills training	37.6%	29.3%

Note: Respondents could select more than one type of training.

About one-third of respondents who took ADT courses before receiving an open driver licence received more than 8 hours of training behind the wheel of a motor vehicle (motor sport participants: 31%; ADT graduates: 35%), as shown in Table 4.4. More motor sport participants (60%) than ADT graduates (44%) reported receiving 2-8 hours training behind the wheel whereas more ADT graduates (18%) than motor sport participants (8%) reported receiving some, but fewer than 2 hours behind the wheel. Few respondents in the groups reported that they received no time behind the wheel (motor sport participants: <1%; ADT graduates: 2%). Differences between the two groups in the amount of training hours behind the wheel of a motor vehicle were statistically significant ($p < 0.05$).

Table 4.4. Length of time spent behind the wheel of a motor vehicle in advanced driver training taken before obtaining an open driver licence.

	Motor sport participants n=550	Advanced driver training graduates n=232
	%	%
No time spent behind the wheel of a car	0.9%	2.2%
Fewer than 2 hours	8.2%	18.1%
2-3 hours	18.4%	13.4%
4-5 hours	21.5%	14.7%
6-8 hours	19.8%	15.9%
More than 8 hours	30.5%	35.3%

As shown in Table 4.5, most respondents took their ADT course over 10 years before completing the survey for the current research project (motor sport participants: 67%; ADT graduates: 77%). About a quarter of motor sport participants and ADT graduates took their ADT course between 2 and 10 years ago (motor sport participants: 24%; ADT graduates: 23%). Differences between the two groups in the years since taking a pre-open driver licence ADT course were statistically significant ($p < 0.05$).

Table 4.5. Years since respondents took a pre-open driver licence ADT course or program.

	Motor sport participants n=550	Advanced driver training graduates n=232
	%	%
Within the last year	2.9%	0.0%
1 year to <2 years ago	5.3%	0.0%
2 years to <5 years ago	9.5%	1.7%
5 years to <10 years ago	14.5%	21.6%
10+ years ago	67.1%	76.7%

Table 4.6 provides the names of ADT programs and courses (including the names of the provider organisations) that respondents took prior to receiving an open driver licence. Most respondents could not remember the name of a provider (motor sport participants: 38%; ADT graduates: 47%) or reported that they took a course or program from a provider that was not listed on the survey (motor sport participants: 48%; ADT graduates: 32%). The most frequently completed ADT programs/courses reported by respondents were the Safe Drive Training Advanced Car Control Course (motor sport participants: 7%; ADT graduates: 5%), the Driver Skills International Defensive Driving Course (motor sport participants: 4%; ADT graduates: 3%), the Safe Drive Test Drive: Young Driver Safety Program (motor sport participants: 3%; ADT graduates: 3%), and the Driving Management Australia Defensive Driving Course (motor sport participants: 3%; ADT graduates: 3%).

Table 4.6. Providers of pre-open driver licence ADT courses and programs.

	Motor sport participants n=550		Advanced driver training graduates n=232	
	n	%	n	%
RACQ Driver Education Program	6	1.1%	5	2.2%
RACQ Recreation 4WD	1	0.2%	1	0.4%
RACQ Urban to Outback Course	0	0.0%	0	0.0%
RACQ 4WD 1 Day or 4WD 2 Day Program	1	0.2%	0	0.0%
RACQ Resource Industry 4WD Essentials	0	0.0%	0	0.0%
RACQ Driver Rehab	0	0.0%	0	0.0%
Driver Safety Australia DATA Program	7	1.3%	3	1.3%
Driver Safety Australia Supervised On-Road Instruction	8	1.5%	8	3.4%
Driver Safety Australia DSA Synergy – One Day Program	1	0.2%	1	0.4%
Driver Safety Australia DSA Driveability One Day Course	3	0.5%	1	0.4%
Driver Safety Australia DSA Advantage – 2 Day Program	5	0.9%	3	1.3%
Driver Safety Australia DSA 4X4 Synergy Program	1	0.2%	2	0.9%
Driving Management Australia Defensive Driving Course	15	2.7%	8	3.4%
Driving Management Australia 4WD Program	7	1.3%	2	0.9%
Driver Skills International Defensive Driving Course	20	3.6%	6	2.6%
Driver Skills International Advanced Driving Course	16	2.9%	3	1.3%
Driver Skills International 4WD Training	4	0.7%	2	0.9%
Safe Drive Test Drive: Young Driver Safety Program	17	3.1%	7	3.0%
Safe Drive Training Advanced Car Control Course	39	7.1%	12	5.2%
Safe Drive Training Low Range 4WD Off-Road Course	11	2.0%	6	2.6%
I do not remember	209	38.0%	109	47.0%
Other	262	47.6%	73	31.5%

Note: Respondents could select more than one provider.

4.7 Advanced driver training after receiving an open driver licence

Over half of motor sport participants (53%) and ADT graduates (57%) had received ADT after receiving an open driver licence. There were no statistically significant differences between the two groups in the percentages of respondents who had taken ADT after receiving an open driver licence ($p>0.05$).

As shown in Table 4.7, most respondents who received ADT after receiving an open driver licence obtained off-road skills training, with significantly more motor sport participants (81%) than ADT graduates (63%) reporting that they had received this training ($p<0.05$). Also significantly more motor sport participants (62%) than ADT graduates (55%) reported that they had received skid-pan training ($p>0.05$). However, significantly fewer motor sport participants (44%) than ADT graduates (58%) received on-road skills training ($p<0.05$).

There were no statistically significant differences between groups in the percentage of respondents who received classroom teaching with simulation skills training (motor sport participants: 30%; ADT graduates: 28%; $p>0.05$) or classroom teaching without simulation skills training (motor sport participants: 43%; ADT graduates: 45%; $p>0.05$).

Table 4.7. Advanced driver training received after obtaining an open driver licence.

	Motor sport participants n=1622	Advanced driver training graduates n=375
	%	%
On-road skills training	43.8%	57.9%
Off-road skills training	80.6%	62.7%
Skid-pan training	61.8%	55.2%
Classroom teaching with simulation skills training	30.0%	27.5%
Classroom teaching without simulation skills training	43.2%	45.1%

Note: Respondents could select more than one type of training.

As shown in Table 4.8, most respondents who took ADT after receiving an open driver licence received more than 8 hours of training behind the wheel of a motor vehicle, although more motor sport participants (28%) than ADT graduates (22%) reported spending this amount of time behind the wheel. Also, more motor sport participants (61%) than ADT graduates (55%) reported receiving 2-8 hours training behind the wheel, and more ADT graduates (18%) than motor sport participants (9%) reported spending some, but fewer than 2 hours, in training behind the wheel. A small percentage of respondents who took these courses/programs reported that they spent no time behind the wheel of a motor vehicle for their course/program (motor sport participants: <1%; ADT graduates: 3%). Differences between the two groups in the number of training hours behind the wheel of a motor vehicle were statistically significant ($p < 0.05$).

Table 4.8. Length of time spent behind the wheel of a motor vehicle in advanced driver training taken after obtaining an open driver licence.

	Motor sport participants n=1622	Advanced driver training graduates n=375
	%	%
No time spent behind the wheel of a car	0.4%	2.9%
Fewer than 2 hours	9.4%	18.4%
2-3 hours	20.2%	23.7%
4-5 hours	22.6%	16.0%
6-8 hours	18.4%	15.7%
More than 8 hours	28.4%	22.1%

Most ADT graduates and about half of motor sport participants took their post-open driver licence ADT course or program over 10 years before completing the current research project (ADT graduates: 64%; motor sport participants: 50%; see Table 4.9). About one-third of ADT graduates (34%) and over one-third of motor sport participants (38%) took their post-open driver licence ADT course or program between 2 and 10 years prior to completion of this survey. Differences between the two groups in the time since the ADT training was received were statistically significant ($p < 0.05$).

Table 4.9. Years since respondents took post-open driver licence ADT.

	Motor sport participants n=1622	Advanced driver training graduates n=375
	%	%
Within the last year	4.8%	0.8%
1 year to up to 2 years ago	6.3%	0.0%
2 years to up to 5 years ago	15.8%	3.7%
5 years to up to 10 years ago	22.1%	30.7%
10 or more years ago	50.4%	63.7%

Table 4.10 provides the names of ADT courses and programs (including the names of the provider organisations) that respondents took after receiving an open driver licence. Most respondents could not remember the name of the provider (motor sport participants: 27%; ADT graduates: 37%) or reported that they took a course/program from a provider that was not listed on the survey (motor sport participants: 64%; ADT graduates: 46%). Among the ADT courses/programs that were listed in the survey, the most frequently taken by respondents was the Safe Drive Training Advanced Car Control Course (motor sport participants: 6%; ADT graduates: 4%), followed by the Driver Skills International Advanced Driving Course (motor sport participants: 3%; ADT graduates: 2%), and the Driver Skills International Defensive Driving Course (motor sport participants: 2%; ADT graduates: 4%).

Table 4.10. Providers of post-open driver licence ADT courses and programs.

	Motor sport participants n=1622		Advanced driver training graduates n=375	
	n	%	n	%
RACQ Driver Education Program	12	0.7%	7	1.9%
RACQ Recreation 4WD	1	0.1%	1	0.3%
RACQ Urban to Outback Course	3	0.2%	1	0.3%
RACQ 4WD 1 Day or 4WD 2 Day Program	3	0.2%	2	0.5%
RACQ Resource Industry 4WD Essentials	1	0.1%	0	0.0%
RACQ Driver Rehab	0	0.0%	3	0.8%
Driver Safety Australia DATA Program	10	0.6%	6	1.6%
Driver Safety Australia Supervised On-Road Instruction	13	0.8%	5	1.3%
Driver Safety Australia DSA Synergy – One Day Program	4	0.2%	1	0.3%
Driver Safety Australia DSA Driveability One Day Course	4	0.2%	2	0.5%
Driver Safety Australia DSA Advantage – 2 Day Program	2	0.1%	2	0.5%
Driver Safety Australia DSA 4X4 Synergy Program	1	0.1%	1	0.3%
Driving Management Australia Defensive Driving Course	32	2.0%	16	4.3%
Driving Management Australia 4WD Program	4	0.2%	5	1.3%
Driver Skills International Defensive Driving Course	37	2.3%	14	3.7%
Driver Skills International Advanced Driving Course	48	3.0%	8	2.1%
Driver Skills International 4WD Training	8	0.5%	2	0.5%
Safe Drive Test Drive: Young Driver Safety Program	11	0.7%	5	1.3%
Safe Drive Training Advanced Car Control Course	98	6.0%	14	3.7%
Safe Drive Training Low Range 4WD Off-Road Course	33	2.0%	9	2.4%
I do not remember	432	26.6%	140	37.3%
Other	1034	63.7%	174	46.4%

Note: Respondents could select more than one provider.

4.8 Driver training for a business or industrial licence

Some respondents reported taking ADT for a business or industrial licence. Significantly more ADT graduates (37%) than motor sport participants (22%) reported taking this type of training ($p < 0.05$). As shown in Table 4.11, most respondents who had taken ADT for a business or industrial licence reported that the training included on-road skills training (motor sport participants: 63%; ADT graduates: 61%), but there were no significant differences between groups in the percentages reporting this type of training ($p > 0.05$). Large percentages of respondents in the two groups also reported that the training included off-road skills training with significantly more motor sport participants (53%) than ADT graduates (42%) reporting that they had received this training ($p < 0.05$).

There were no differences between groups in the percentages who reported that they had classroom teaching with simulation training (motor sport participants: 27%; ADT graduates: 21%, $p > 0.05$) or without simulation skills training (motor sport participants: 35%; ADT graduates: 33%, $p > 0.05$).

Skid-pan training was the least reported type of training, and there were no statistically significant differences between motor sport participants (19%) and ADT graduates (14%) in the percentages who took this training for a business or industrial licence ($p > 0.05$).

Table 4.11. Driver training received for a business or industrial licence.

	Motor sport participants n=675	Advanced driver training graduates n=243
	%	%
On-road skills training	62.5%	60.9%
Off-road skills training	52.7%	41.6%
Skid-pan training	18.8%	13.6%
Classroom teaching with simulation skills training	26.5%	20.6%
Classroom teaching without simulation skills training	35.4%	33.3%

Note: Respondents could select more than one type of training.

As shown in Table 4.12, slightly over one-fourth of respondents who had taken driver training for a business or industrial licence reported that they had spent more than 8 hours behind the wheel of a motor vehicle in their course/program (motor sport participants: 27%; ADT graduates: 28%). Almost half of respondents who had taken such a course/program had received 2-8 hours of training behind the wheel of a motor vehicle (motor sport participants: 48%; ADT graduates: 43%). Similar percentages of respondents in the two groups had spent some time behind the wheel of a motor vehicle but fewer than 2 hours (motor sport participants: 19%; ADT graduates: 17%). Few reported that they had spent no time behind the wheel of motor vehicle in the course/program, but over twice as many ADT graduates as motor sport participants reported no training behind the wheel of a motor vehicle (motor sport participants: 5%; ADT graduates: 11%). Differences between the two groups in the amount of training hours received were statistically significant ($p < 0.05$).

Table 4.12. Length of time spent behind the wheel of a motor vehicle in driver training taken for a business/industrial licence.

	Motor sport participants n=675	Advanced driver training graduates n=243
	%	%
No time spent behind the wheel of a car	4.9%	10.7%
Fewer than 2 hours	18.5%	17.3%
2-3 hours	16.1%	15.2%
4-5 hours	16.6%	17.3%
6-8 hours	15.3%	10.7%
More than 8 hours	27.4%	28.4%

As shown in Table 4.13, most respondents who reported that they had taken driver training for a business or industrial licence had taken their last course/program 10 or more years previously with more ADT graduates (70%) than motor sport participants (47%) reporting so. More motor sport participants (43%) than ADT graduates (29%) reported that they have taken an ADT course for a business or industrial licence between 2 and 10 years ago. Only 9% of motor sport participants and 1% of ADT graduates reported to have taken this type of training within the previous 2 years. Differences between the two groups in the time since the training for a business or industrial licence was received were statistically significant ($p < 0.05$).

Table 4.13. Years since respondents took driver training for a business/industrial licence.

	Motor sport participants n=675	Advanced driver training graduates n=243
	%	%
Within the last year	2.7%	0.8%
1 year to up to 2 years ago	6.5%	0.4%
2 years to up to 5 years ago	19.4%	4.1%
5 years to up to 10 years ago	24.0%	24.7%
10 or more years ago	47.0%	69.5%

As shown in Table 4.14, most respondents who had taken driver training for a business or industrial licence received their training from a provider that was not listed in the survey (motor sport participants: 14%; ADT graduates: 10%). The only providers specifically acknowledged were the Driver Management Australia Skid Pan Program and the Safe Drive Training Skid Pan Experience.

Table 4.14. Providers of driver training taken for obtaining a business/industrial licence.

	Motor sport participants n=675		Advanced driver training graduates n=243	
	n	%	n	%
Driver Management Australia Skid Pan Program	3	0.4%	3	1.2%
Safe Drive Training Skid Pan Experience	15	2.2%	4	1.6%
I do not remember	22	3.3%	5	2.1%
Other	94	13.9%	24	9.9%

Note: Respondents could select more than one provider.

4.9 Driver training for a motor sport licence

Slightly more than half of motor sport participants reported that they had taken driver training for a motor sport licence (53%). Significantly fewer ADT graduates reported that they had taken this training (9%; $p < 0.05$). As shown in Table 4.15, a few respondents who reported receiving driver training for a motor sport licence received on-road skills training in their training (motor sport participants: 10%; ADT graduates: 11%). Most respondents who took a driver training course or program in order to get a motor sport licence received off-road skills training (motor sport participants: 71%; ADT graduates: 68%). Fewer respondents in each group had received skid-pan training (motor sport participants: 32%; ADT graduates: 25%), classroom teaching with simulation skills training (motor sport participants: 18%; ADT graduates: 14%), or classroom teaching without simulation skills training (motor sport participants: 30%; ADT graduates: 23%). There were no differences between groups in the percentages reporting each of these types of training ($p > 0.05$).

There were significant differences between groups in the percentage who reported that they had participated in car club events with supervision or observation: more motor sport participants reporting this training (69%) compared with ADT graduates (46%; $p < 0.05$).

Table 4.15. Driver training received for obtaining a motor sport licence.

	Motor sport participants n=1607	Advanced driver training graduates n=57
	%	%
On-road skills training	10.3%	10.5%
Off-road skills training	70.8%	68.4%
Skid-pan training	31.7%	24.6%
Classroom teaching with simulation skills training	17.5%	14.0%
Classroom teaching without simulation skills training	29.6%	22.8%
Participating in car club events with supervision or observation	68.9%	45.6%

Note: Respondents could select more than one type of training.

As shown in Table 4.16, most motor sport participants and ADT graduates who had taken driver training for a motor sport licence reported to have spent between 2 and 8 hours behind the wheel of a motor vehicle as part of this training (motor sport participants: 52%; ADT graduates: 56%). One-third of motor sport participants (32%) spent more than 8 hours behind the wheel of a motor vehicle for their training compared with only 16% of ADT graduates. In contrast, 25% of ADT graduates reported to have spent some hours, but fewer than 2 hours, behind the wheel of a motor vehicle compared with 15% of motor sport participants. Only a few respondents spent no time behind the wheel of a motor vehicle (motor sport participants: 1%; ADT graduates: 2%). Differences between the two groups in the amount of training hours received were statistically significant ($p < 0.05$).

Table 4.16. Length of time spent behind the wheel of a car in motor sport training.

	Motor sport participants n=1607	Advanced driver training graduates n=57
	%	%
No time spent behind the wheel of a car	1.3%	1.8%
Fewer than 2 hours	14.8%	24.6%
2-3 hours	16.4%	21.1%
4-5 hours	18.7%	24.6%
6-8 hours	16.4%	10.5%
More than 8 hours	32.0%	15.8%

As shown in Table 4.17, similar percentages of motor sport participants and ADT graduates who had taken training for a motor sport licence reported to have taken the training 10 or more years earlier (motor sport participants: 38%, ADT graduates: 35%). Slightly more ADT graduates (25%) than motor sport participants (20%) reported that they had taken the training fewer than 2 years previously. There were no statistically significant differences between groups in the years since they had received training for a motor sport licence ($p > 0.05$).

Table 4.17. Years since respondents had taken motor sport training.

	Motor sport participants n=1607	Advanced driver training graduates n=57
	%	%
Within the last year	10.6%	14.0%
1 year to up to 2 years ago	9.6%	10.5%
2 years to up to 5 years ago	19.2%	14.0%
5 years to up to 10 years ago	22.0%	24.6%
10 or more years ago	37.8%	35.1%

As shown in Table 4.18, most respondents who reported that they had received training for a motor sport licence reported that they had received the training from a provider that was not listed in the survey (motor sport participants: 73%; ADT graduates: 58%). About 10% of motor sport participants and 9% of ADT graduates reported to have received their training from the Safe Driver Training Motor Sport Training and Licensing course.

Table 4.18. Providers of motor sport training.

	Motor sport participants n=1607		Advanced driver training graduates n=57	
	n	%	n	%
Safe Drive Training Motor Sport Training and Licensing	165	10.3%	5	8.8%
I do not remember	302	18.8%	20	35.1%
Other	1168	72.7%	33	57.9%

Note:

Respondents could select more than one provider.

4.10 Motor sport interest across the groups

All respondents were asked to report on their interest in motor sport. As shown in Table 4.19, they reported the number of motor sports events that they had watched on television in the previous 12 months. They were only to report events they had watched for at least 30 minutes.

Most motor sport participants (73%) had watched more than five motor sport events on television in the 12 months before completing the survey for this study. In contrast, most non-motor sport participants watched no more than five motor sport events (ADT graduates: 55%; RACQ controls: 57%; SSI controls: 72%). Of the four groups, the motor sport participants most frequently reported they had watched more than 40 motor sport events (14%), followed by RACQ controls (7%), ADT graduates (6%), and SSI controls (1%). Furthermore, the SSI controls most frequently reported they had not watched any motor sport events (46%). Differences between groups in the number of motor sport events watched on television were statistically significant ($p < 0.05$).

Table 4.19. Number of motor sport events watched on television in the previous year.

	Motor sport participants n=3050	Advanced driver training graduates n=663	RACQ control group n=588	SSI control group n=806
	%	%	%	%
0	3.2%	25.8%	28.9%	45.5%
1-5	23.0%	29.1%	28.1%	26.3%
6-10	17.2%	11.3%	12.4%	5.8%
11-15	11.4%	5.9%	6.0%	2.4%
16-20	12.0%	7.2%	8.0%	1.7%
21-30	11.5%	3.5%	6.3%	2.1%
31-40	6.8%	3.2%	3.7%	0.6%
>40	14.0%	6.1%	6.5%	1.0%

Respondents also reported on the number of motor sport events that they had attended as spectators in the previous 12 months. As shown in Table 4.20, slightly over half of the motor sport participants reported that they had attended one to five motor sport events as a spectator (54%) and another 25% had attended more than five events. In contrast, non-motor sport participants most frequently reported that they had not attended any motor sport events as a spectator (ADT graduates: 62%; RACQ controls: 68%; SSI controls: 86%). These differences between groups were statistically significant ($p < 0.05$).

Table 4.20. Number of motor sport events attended as a spectator in the previous year.

	Motor sport participants n=3050	Advanced driver training graduates n=663	RACQ control group n=588	SSI control group n=806
	%	%	%	%
0	18.4%	61.8%	68.2%	85.5%
1-5	53.9%	31.1%	31.8%	14.5%
6-10	15.0%	3.6%	0.0%	0.0%
>10	10.3%	2.3%	0.0%	0.0%

Respondents next reported on their interest in motor sport as a child and currently. As shown in Figure 4.12, the majority of motor sport participants reported that they had been interested in motor sport as a child (86%) and were currently interested in motor sport (98%). Fewer, but most, ADT graduates and RACQ controls reported an interest in motor sport as a child (ADT graduates: 58%; RACQ controls: 55%) and/or currently (ADT graduates: 60%; RACQ controls: 64%). In contrast, only about one-third of SSI controls reported an interest in motor sport as a child (32%) or currently (35%). These differences between groups were statistically significant ($p < 0.05$).

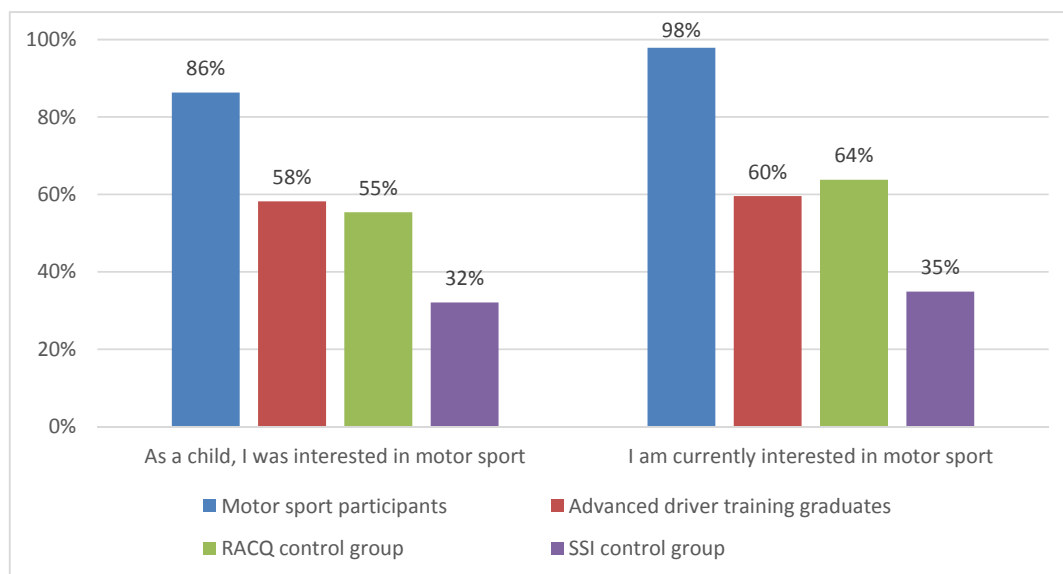


Figure 4.12. Interest in motor sport as a child and currently.

4.11 Motor sport participation

Motor sport participants were asked to report on their involvement in motor sport, starting with the number of motor sport events they had participated in over their lifetime. As shown in Figure 4.13, most (84%) had participated in more than 10 events. Another 8% participated in 6-10 events and 7% participated in one to five events.

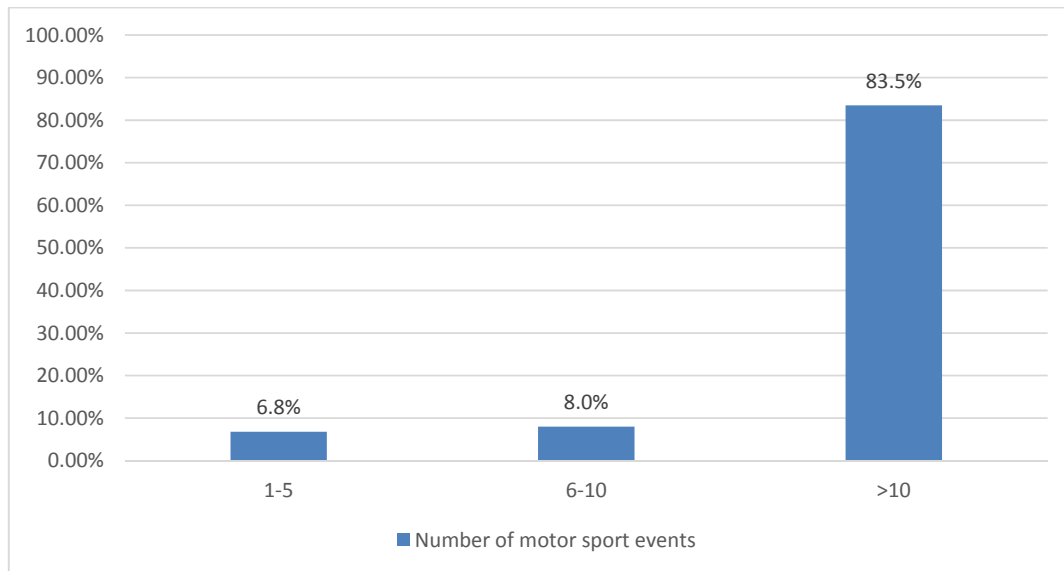


Figure 4.13. Percentages of motor sport participants who participated in 1-5, 6-10 and over 10 motor sport events in their lifetimes.

Very few motor sport participants started to compete in motor sport when they were under 10 years of age (3%) (see Figure 4.14). About one-fourth (23%) started when they were 10-18 years of age. Most (31%) started to compete when they were 19-24 years of age. Eighteen percent started when they were 25-34 years of age, and 18% started when they were 35-49 years of age. A few (7%) started when they were 50 years of age or older.

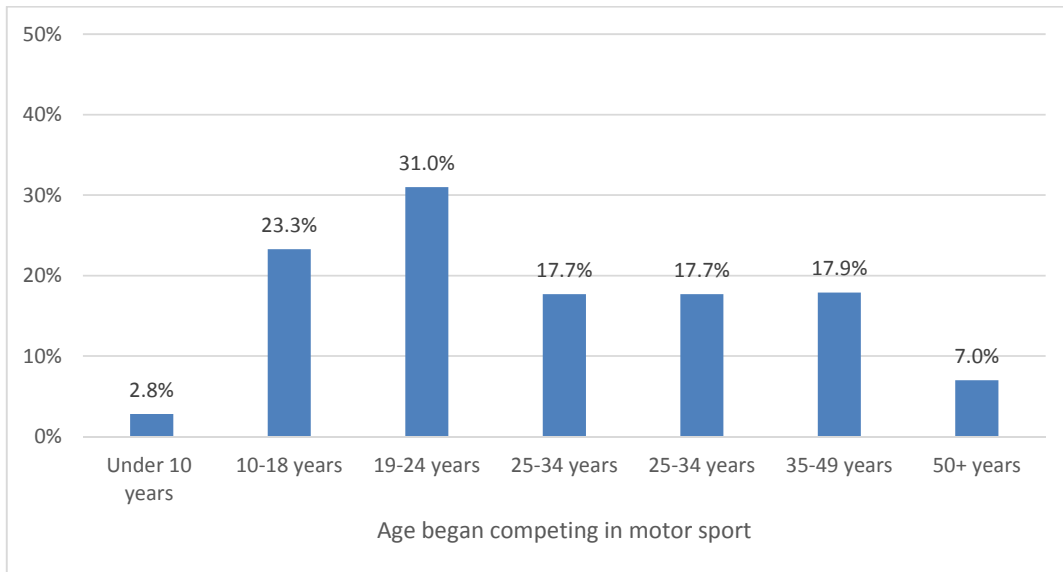


Figure 4.14. Age at which motor sport participants began to compete in motor sport.

Most of the motor sport participants held a CAMS licence (see Figure 4.15). Even so, 28% did not currently hold a CAMS licence. The most commonly-held licence was CAMS Level 2 (37%), followed by CAMS National (19%), CAMS Clubman (9%), CAMS Level 1 (6%), and CAMS International (1%).

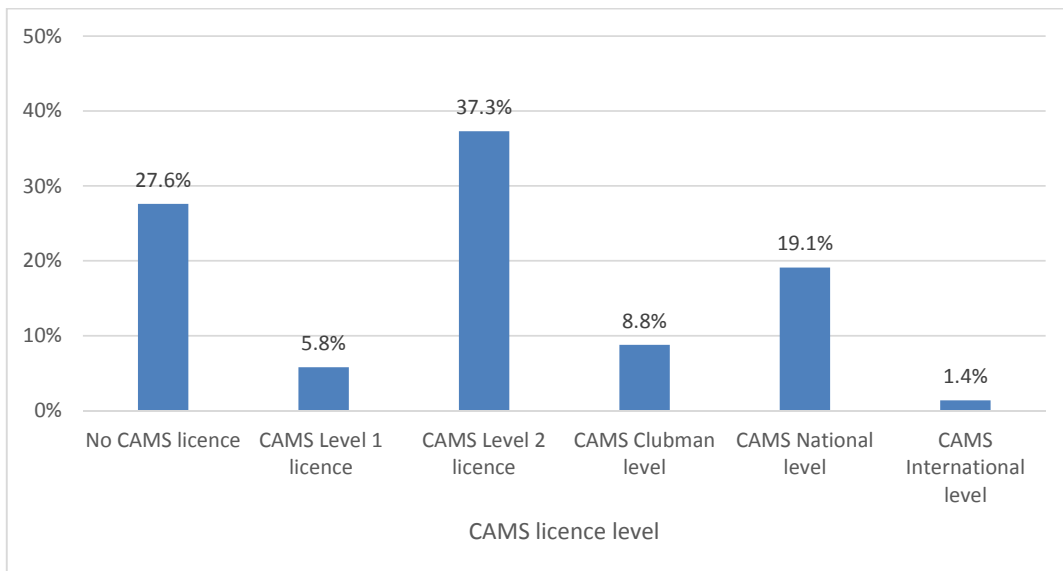


Figure 4.15. CAMS motor sport licence currently held.

As shown in Figure 4.16, the highest CAMS licence level ever held by most motor sport participants was a CAMS Level 2 (37%), followed by CAMS National level (28%) and CAMS Clubman level (10%). Few motor sport participants had ever held a CAMS International level licence (7%) as their highest level CAMS licence. Ten percent of motor sport participants reported that they had never held a CAMS licence.

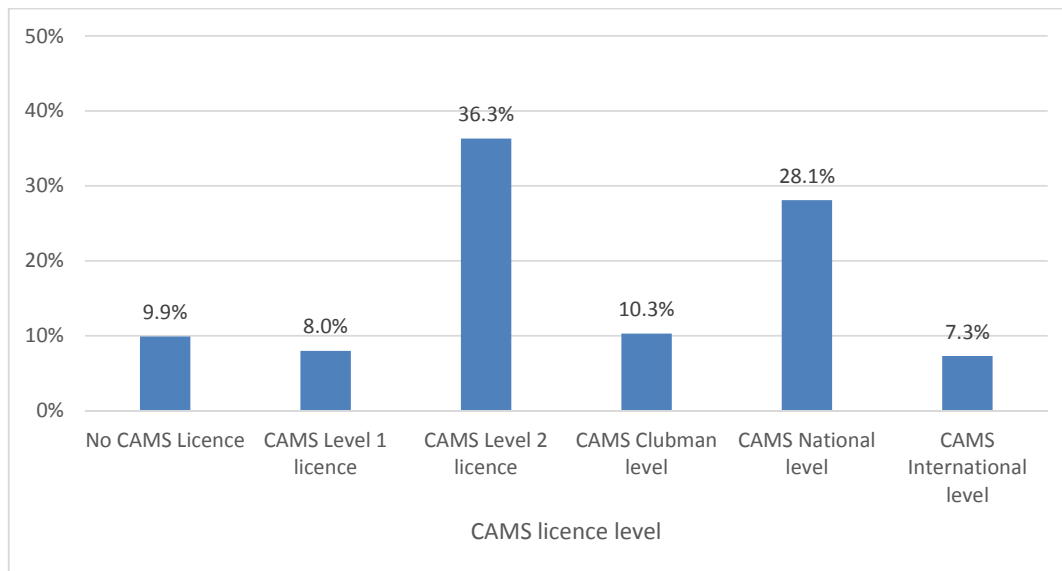


Figure 4.16. Highest category of CAMS motor sport licence ever held.

Few motor sport participants reported holding or previously holding a non-CAMS type of motor sport licence: just 13% were currently holding such a licence and 12% were not currently holding such a licence but previously had, as shown in Table 4.21.

Table 4.21. Possession of a non-CAMS type of motor sport licence.

	Motor sport participants n=1607
	%
Currently hold	13.4%
Have previously held, but no longer hold	12.3%

Motor sport participants reported the types of motor sport in which they competed, as either a passenger or a driver. As shown in Figure 4.17 on the next page, the most common types of motor sport reported were circuit sprints (70%), hillclimbs (53%), and motorkhanas (49%).

Only 4% of motor sport participants (117 participants) competed only in types of motor sport that include a passenger as well as a driver, and thus it is possible they were passengers, not drivers, in these events. These events were rallying, historic rallying, and time trials/regularity events. Therefore, the majority of motor sport participants (96%) competed in at least one motor sport in which they were drivers of the motor vehicle.

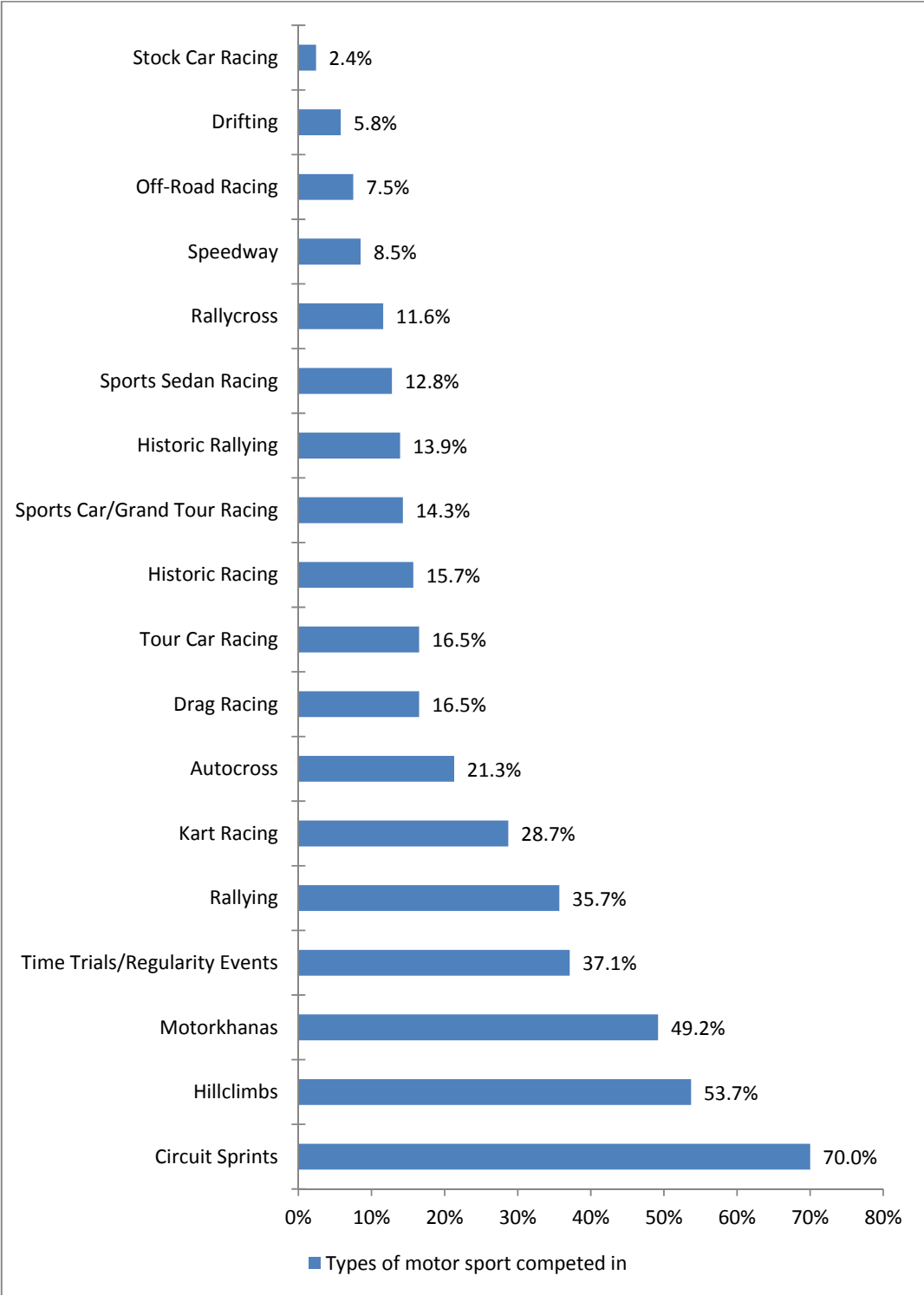


Figure 4.17. Types of motor sport competitions.

SECTION 5: FINDINGS ABOUT MOTOR SPORT PARTICIPATION AND MOTOR VEHICLE COLLISIONS

Research Questions 1-3 called for the analysis of the association between motor sport participation and being a driver in a motor vehicle collision on a public road in the previous 5 years. To address these questions, comparisons were made between motor sport participants and both (1) the RACQ control group and (2) the SSI control group.

Preliminary analysis (not shown) indicated that the likelihood of having a collision was associated with average kilometres driven per year, a measure of driving ‘exposure’, and that the relationship between having a collision and average kilometres driven per year differed between the two control groups. As a result of these findings, the analysis for addressing Research Questions 1 – 3 was conducted separately for participants who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000, and those who drove at least 20,000 km/year.

The analysis was conducted sequentially, from the simplest binary logistic regression models to more complex multivariable logistic regression models that included factors that could confound (influence) the association between motor sport and being a driver in a motor vehicle collision. In other words, we started with models that examined whether being a motor sport participant increased the likelihood of having a collision without accounting for any other factors that could influence that relationship. We then gradually added into the modelling other factors that could influence that relationship. By doing so, we could test how much of the variation in the likelihood of having a collision could be attributed to being a motor sport participant and how much could be attributed to other factors.

Research Question 4 required an examination of factors associated with motor sport training (e.g., types of training) and participation (e.g., types of motor sport competition) that could be related to being a driver in a motor vehicle collision in the previous 5 years. The analysis was limited to motor sport participants because the factors examined were only relevant to those participants.

This section presents the results of the analysis that was conducted to address each research question.

5.1 Research Question 1: Are participants in four-wheeled motor sport more likely to be involved in collisions on public roads than their peers who do not participate in four-wheeled motor sport and have not undertaken any pre-licence or post-licence advanced driver training course?

First, we examined the bivariate association (with no adjustment for other factors) between motor sport participation and being a driver in a collision on a public road in the previous 5 years. The motor sport group was compared to the RACQ and SSI controls groups in three separate models: one model for respondents who drove fewer than 10,000 km/year, another for those who drove at least 10,000 km/year but fewer than 20,000 km/year, and a third for those who drove at least 20,000 km/year.

For both respondents who drove fewer than 10,000 km/year and those who drove at least 20,000 km/year, there was no significant difference in likelihood of a collision between being a motor sport participant and being in a control group ($p > 0.05$). Among respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, there was also no significant difference between the motor sport group and the RACQ control group ($p > 0.05$). However, among respondents who drove at least 10,000 km/year but fewer than 20,000, SSI control group participants were significantly less likely than motor sport participants to have been a driver in a collision (OR=0.52, 95%CI=0.34-0.79, $p=0.003$).

Next, age and gender were added to the models as potential confounders, meaning that we tested whether their inclusion would influence the results we were seeing. The association between motor sport participant and being a driver in a collision did not change meaningfully, with the association remaining significant only among participants who drove at least 10,000 km/year but fewer than 20,000 km/year: as in the initial model, SSI control group participants who drove this amount were significantly less likely than motor sport participants who drove this amount to have been a driver in a collision (OR=0.50, 95%CI=0.33-0.77, $p=0.002$).

Neither age nor gender were significantly associated with having a collision ($p > 0.05$). Interactions between age and gender with motor sport participation were tested but were not significant ($p > 0.05$). These findings suggest that any association between motor sport participation and being a driver in a collision is not dependent upon either a respondent's gender or age. Thus, age and gender were not included in further analysis.

In summary, these initial findings showed that motor sport participants are as likely to be drivers in collisions in the previous 5 years as other drivers, at least among people who drive the least (fewer than 10,000 km/year) and among those who drive the most (at least 20,000 km/year).

Among respondents who drive at least 10,000 km/year but fewer than 20,000 km/year, the same finding holds true in comparisons with some other drivers (RACQ members). However, motor sport drivers and their passengers are more likely to be involved in collisions than another group of drivers (SSI panel members). The findings also indicate that age and gender do not affect these results (they are not confounders).

5.2 Research Question 2: Are driving behaviours and attitudes significant confounders for the relationship between motor sport participation and road collisions?

Scores on the five driving behaviour and attitude questionnaires were examined next as potential confounders (influencers), which is to say that we tested whether their inclusion in the modelling would change the results found in addressing Research Question 1. Scores were examined in three separate models as was done in addressing Research Question 1: one model for respondents who drove fewer than 10,000 km/year, another for those who drove at least 10,000 km/year but fewer than 20,000 km/year, and a third for those who drove at least 20,000 km/year. In each model, motor sport participation (being in the motor sport participant group versus the RACQ control group or the SSI control group) was included as a predictor of having a motor vehicle collision as well.

Results for motor sport participation were largely unchanged from the modelling performed for Research Question 1. Among respondents who drove fewer than 10,000 km/year and those who drove at least 20,000 km/year, motor sport participation was not significantly associated with being a driver in a collision in the previous 5 years ($p > 0.05$). Among respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, the SSI control group drivers, but not the RACQ control group drivers, were significantly less likely to be drivers in collisions than were motor sport participants (OR=0.52, 95%CI=0.34-0.80, $p=0.003$).

Higher scores on the Driver Behaviour Questionnaire, which measures risky driving behaviour, and the Competitive Attitude Toward Driving Scale were significantly associated with being a driver in a collision among respondents who drove fewer than 10,000 km/year ($p < 0.05$, see Table 5.1). Among respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, higher scores on the Driver Behaviour Questionnaire and *lower* scores on the Competitive Attitude Toward Driving Scale were significantly associated with being a driver in a collision ($p < 0.05$).

Scores on the Driver Aggression Questionnaire, Attitudes Towards Speeding, and Risk-Taking Propensity Scale were also not associated with being a driver in a collision in the models ($p > 0.05$). No scores were significantly associated with being a driver in a collision among respondents who drove at least 20,000 km/year ($p > 0.05$).

None of the interactions between a questionnaire score and motor sport participation were significant in any modelling ($p > 0.05$), which suggests that the association between motor sport participation and being a driver in a collision was not dependent upon a respondent's driving behaviours and attitudes.

Table 5.1. Significant associations between scores on behaviour and attitude questionnaires and being a driver in a motor vehicle collision in the previous 5 years.

	Mean Score (SD)	Odds ratio	95% Confidence Interval	p-value
Driver Behaviour Questionnaire ^a				
Drove < 10,000 km/year	1.59 (0.47)	1.52	1.02, 2.27	0.041
Drove 10,000 to < 20,000 km/year	1.70 (0.48)	1.71	1.27, 2.28	<0.001
Drove 20,000 km/year or more	1.74 (0.46)	1.19	0.91-1.56	not significant
Competitive Attitude Toward Driving Scale				
Drove < 10,000 km/year	1.75 (0.70)	1.54	1.16, 2.05	0.003
Drove 10,000 to < 20,000 km/year	1.76 (0.69)	0.79	0.63, 0.98	0.035
Drove 20,000 km/year or more	1.74 (0.66)	1.09	0.90-1.31	not significant

Each model included driver group (motor sport participant group, RACQ control group, SSI control group) as a predictor variable.

P-values in bold face indicate that the results are significant (p<0.05).

^a This questionnaire measures risky driving behaviour.

In summary, the findings about the association between motor sport and being a driver in a motor vehicle collision are the same as found in addressing Research Question 1.

Specifically, these findings showed that motor sport drivers and passengers are as likely to be drivers in collisions in the previous 5 years as other drivers, at least among people who drive the least (fewer than 10,000 km/year) and among those who drive the most (at least 20,000 km/year). Among respondents who drive at least 10,000 km/year but fewer than 20,000 km/year, the same findings holds true in comparisons with some other drivers (RACQ members). However, motor sport drivers and their passengers are more likely to be involved in collisions than some other drivers (SSI panel members).

There is no indication that the association between motor sport participation and being a driver in a collision is confounded (influenced) by attitudes and behaviours related to driving. However, the results suggest that among people who drive fewer than 20,000 km/year, competitive attitude toward driving and risky driving behaviour are associated with being a driver in a motor vehicle collision in the previous 5 years. Therefore, the Competitive Attitude Towards Driving Scale and the Driving Behaviour Questionnaire were included in the next analysis in models of respondents who drove fewer than 10,000 km per year and of respondents who drove more than 10,000 km/year but fewer than 20,000 km/year.

5.3 Research Question 3: What other factors confound the relationship between motor sport participation and road collisions?

Other factors that could potentially influence the relationship between motor sport participation and being a driver in a collision were examined next. They included socio-demographic characteristics (area of residence [capital city, regional town/city; small or remote community], educational level, and employment status), and type of driving licences held (e.g., open driver licence, probationary licence, or learner's permit).

The association between each factor and being a driver in a motor vehicle collision in the previous 5 years was examined separately for respondents who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000 km/year, and those who drove at least 20,000 km/year. In all models, motor sport participation (being in the motor sport participant group versus in the RACQ control group or SSI control group) was included as a predictor of being a driver in a motor vehicle collision. In the models of respondents who drove fewer than 10,000 km/year and of respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, scores on the Driver Behaviour Questionnaire and the Competitive Attitude Toward Driving Scale were included as predictor variables as well given they were found to be significant in addressing Research Question 2.

The factors that were significantly associated with being a driver in a motor vehicle collision ($p < 0.05$) were then included in a model of all the predictors of being a driver in a motor vehicle collision (and including being a motor sport participant or not). No interactions between any of the factors examined and motor sport participation were statistically significant ($p > 0.05$), and therefore, none were included in the final modelling. For the final modelling, a backward stepwise elimination process based on WALD statistics was used to create a parsimonious model with only factors that were significantly associated with having a collision ($p < 0.05$) maintained. Next, we present the final, parsimonious models.

Among respondents who drove fewer than 10,000 km/year, none of the additional factors examined were significantly associated with being a driver in a collision ($p > 0.05$). As found in addressing Research Question 2, motor sport participation was not associated with being a driver in a collision ($p = 0.23$), and higher scores on the Driver Behaviour Questionnaire and on the Competitive Attitude Toward Driving Scale were associated with greater likelihood of being a driver in a collision. Table 5.2 provides details of these results.

Table 5.2. Final modelling of factors associated with being a driver in a motor-vehicle collision on a public road in the previous 5 years: Results for respondents who drove fewer than 10,000 km per year.

	Odds ratio	95% Confidence Interval	p-value
Group			
Motor sport participant (referent)	1.00		
RACQ control	1.14	0.68, 1.90	0.62
SSI control	0.72	0.45-1.14	0.18
Driver Behaviour Questionnaire score ^a	1.52	1.02, 2.27	0.04
Competitive Attitude Toward Driving Scale score	1.54	1.16-2.05	0.003

P-values in bold face indicate that results are significant ($p < 0.05$).

The overall group effect was not significant ($p = 0.23$).

^a This questionnaire measures risky driving behaviour.

Among respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, living outside of a capital city reduced the likelihood of being a driver in collision (OR=0.74, 95%CI=0.55-0.99, $p = 0.04$) in the initial modelling to address Research Question 3. However, in the final modelling this variable was no longer significant (see Table 5.3). Significantly associated with being a driver in a collision in the initial and final model were higher scores on the Driver Behaviour Questionnaire ($p < 0.05$) and lower scores on the Competitive Attitude Toward Driving Scale ($p = 0.001$). Holding a medium rigid (MR) licence was associated with a reduced likelihood of being a driver in a collision ($p < 0.05$).

Table 5.3. Final modelling of factors associated with being a driver in a motor vehicle collision on a public road in the previous 5 years: Results for respondents who drove from 10,000 km to <20,000 km per year.

	Odds ratio	95% Confidence Interval	p-value
Group			
Motor sport participant (referent)	1.00		
RACQ control	1.25	0.85, 1.84	0.26
SSI control	0.51	0.33-0.79	0.003
Driver Behaviour Questionnaire score ^a	1.67	1.25, 2.24	0.04
Competitive Attitude Toward Driving Scale	0.79	0.63-0.99	0.001
Hold a medium rigid (MR) licence			
No (referent)	1.00		
Yes	0.48	0.24-0.97	0.04
Area of residence			
Living in a capital city (referent)	1.00		
Living outside a capital city	0.76	0.56-1.02	0.07

P-values in bold face indicate that results are significant ($p < 0.05$). The overall group effect was significant ($p = 0.003$). ^aThis questionnaire measures risky driving behaviour.

Among respondents who drove at least 20,000 km/year, motor sport participation was not associated with being a driver in a collision. In the final modelling (see Table 5.4), living outside of a capital city or holding a multi-combination (MC) licence reduced the likelihood of being a driver in a collision. Holding a probationary licence increased the likelihood of being a driver in a collision.

Table 5.4. Final modelling of factors associated with being a driver in a motor vehicle collision on a public road in the previous 5 years: Results for respondents who drove at least 20,000 km per year.

	Odds ratio	95% Confidence Interval	p-value
Group			
Motor sport participant (referent)	1.00		
RACQ control	0.94	0.62, 1.42	0.75
SSI control	1.01	0.67, 1.53	0.95
Area of residence			
Living in a capital city (referent)	1.00		
Living outside a capital city	0.72	0.57, 0.92	0.007
Hold a probationary licence			
No (referent)	1.00		
Yes	3.94	1.65, 9.38	0.002
Hold a multi combination (MC) licence			
No (referent)	1.00		
Yes	0.36	0.15-0.91	0.03

P-values in bold face indicate that results are significant ($p < 0.05$). The overall group effect was not significant ($p = 0.95$).

Overall, these findings are consistent with the findings for addressing Research Questions 1 and 2. Specifically, motor sport drivers and passengers are as likely to be drivers in collisions in the previous 5 years as other drivers, at least among people who drive the least (fewer than 10,000 km/year) and among those who drive the most (at least 20,000 km/year). Among respondents who drive at least 10,000 km/year but fewer than 20,000 km/year, the same finding holds true in the comparison with some other drivers (RACQ members). However, motor sport drivers and their passengers are more likely to be involved in collisions than some other drivers (SSI panel members).

The inclusion of the other factors that were examined does not appear to be confounding (influencing) any associations between motor sport participation and being a driver in a motor vehicle collision. Factors that were not examined in this project (e.g., context of collisions) may account for these differences.

5.4 Research Question 4: Are there factors associated with four-wheeled motor sport that are associated with having road collisions?

For the final question about the association between motor sport participation and collisions, the analysis was limited to motor sport participants. Potential factors associated with four-wheeled motor sport that could be associated with having a collision were each initially examined in their own model. These factors included aspects about the motor sport training received (e.g., type of training, when training received), age when a respondent started to compete in motor sport, number and types of motor sport events that the respondent participated in, and level of motor sport licensure. Also, the socio-demographic, attitude and behavioural questionnaire scores, driving exposure and motor vehicle licensing factors examined for Research Questions 1-3 were examined as well.

All factors that were found to be significantly associated with being a driver in a motor vehicle collision ($p < 0.05$) were then included in one model of the predictors of being a driver in a motor vehicle collision, and a backward stepwise elimination process based on WALD statistics was used to create a parsimonious final model with only factors that were significantly associated with having a collision ($p < 0.05$) maintained. The factors in this final model as well as the results of this modelling are located in Table 5.5.

The statistically significant factors in the final model were (1) score on the Driver Aggression Questionnaire, (2) area of residence, (3) currently holding a probationary licence; (4) time since took motor sport training; (5) competing in stock car racing, and (6) competing in tour car racing.

A few factors directly related to motor sport training and competition were significantly associated with the outcome in the model. First, motor sport participants who had received no motor sport training before the time of the collision (i.e., within the previous 5 years) were more likely to be involved in a collision as a driver compared with those who had received training at least 10 years prior to completing the survey for the current study ($p = 0.02$). Second, motor sport participants were more likely to report being a driver in a collision if they had competed in stock car racing than if they had not ($p < 0.001$). In contrast, motor sport participants were less likely to report being a driver in a collision if they had competed in tour car racing than those who had not ($p < 0.01$). It is unclear whether these last two findings reflect the personalities of the people who take up these two types of motor sport or the experience gained by participating in the respective motor sport.

Table 5.5. Among motor sport participants: Final modelling of factors associated with being a driver in a motor vehicle collision on a public road in the previous 5 years.

	Odds ratio	95% Confidence Interval	p-value
Driver Aggression Questionnaire score	1.80	1.35, 2.40	<0.001
Area of residence			
Capital city (referent)	1.00		
Outside a capital city	0.69	0.52, 0.93	0.01
Currently possess a probationary licence			
No (referent)	1.00		
Yes	2.55	1.12, 5.82	0.03
Time since took training for motor sport			
10 or more years ago (referent)	1.00		
5 years to up to 10 years ago	1.18	0.86, 1.61	0.32
No training over 5 years ago	1.50	1.06, 2.12	0.02
Participate in stock car racing			
No (referent)	1.00		
Yes	3.56	1.74, 7.29	0.001
Participate in tour car racing			
No (referent)	1.00		
Yes	0.60	0.40, 0.89	0.01

P-values in bold face indicate that results are significant ($p < 0.05$).

The overall effect for time since took training for motor sport was not significant ($p = 0.08$).

Other findings were that scoring higher on the Driver Aggression Questionnaire or holding a probationary driver's licence significantly increased the likelihood of being a driver in a collision ($p < 0.05$). Therefore, motor sport participants who were aggressive in their driving on public roads or still early in their un-supervised driving were at risk of having a collision. Motor sport participants who lived outside a capital city were significantly less likely to report being a driver in a collision than respondents who lived in a capital city ($p < 0.05$).

In summary, only three factors related to four-wheeled motor sport were associated with being a driver in a motor vehicle collision. Receiving no motor sport training before the time of the collision and participation in stock car racing increased the likelihood of being a driver in a collision. Participation in tour car racing decreased the likelihood of being a driver in a collision.

SECTION 6: FINDINGS ABOUT ADVANCED DRIVER TRAINING AND MOTOR VEHICLE COLLISION

Research Questions 5-7 called for the analysis of the association between being a graduate of an advanced driver training (ADT) course or program at least 5 years earlier and being a driver in a motor vehicle collision within the previous 5 years. To be included as an ADT graduate in these analyses, respondents had to have attended an ADT at least 5 years before completing the study so that participation in ADT occurred before a reported collision within the previous 5 years. Also, respondents could not be motor sport participants, so that participation in motor sport did not influence the findings.

To address these questions, comparisons were made between the group of ADT graduates and (1) the RACQ control group and (2) the SSI control group. The same procedures that were used to address Research Questions 1-3 (described in Section 5) were used to address Questions 5-7. Namely, the analysis was conducted separately for respondents who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000, and those who drove at least 20,000 km/year.

The analysis was conducted sequentially, from the simplest binary logistic regression models to more complex multivariable logistic regression models that included factors that could confound the association between ADT and being in a motor vehicle collision. In other words, we started with models that examined whether being an ADT graduate increased the likelihood of having a collision without accounting for any other factors that could influence that relationship. We then gradually added into the modelling other factors that could influence that relationship. By doing so, we could test how much of the variation in the likelihood of having a collision could be attributed to being an ADT graduate and how much could be attributed to other factors.

Research Question 8 required an examination of factors associated with ADT programs and courses that could be related to being a driver in a motor vehicle collision in the previous 5 years. The analysis was limited to ADT graduates because the factors examined were only relevant to them.

This section presents the results of the analyses that were conducted to address Research Questions 5-7.

6.1 Research Question 5: Are drivers who have undertaken pre- or post-licence advanced driver training more likely to be involved in collisions on public roads than their peers who have not undertaken any such training and do not participate in four-wheeled motor sport?

First, bivariate associations (with no adjustment for other factors) were examined. The ADT graduate group was compared to the RACQ and SSI controls groups in three separate models: one model for respondents who drove fewer than 10,000 km/year, another for those who drove at least 10,000 km/year but fewer than 20,000 km/year, and a third for those who drove at least 20,000 km/year.

For respondents who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000 km/year and those who drove at least 20,000 km/year, there was no significant difference in likelihood of a collision between being an ADT graduate and being in a control group ($p>0.05$). When age and gender were each added to the models, the association between being an ADT graduate and being a driver in a collision did not change meaningfully.

There was a significant association between age and having a collision ($p=0.03$) but only among respondents who drove fewer than 10,000 km/year. The results indicated that middle-aged adults (35-44 years of age) who drove fewer than 10,000 km/year were more likely to be in a collision than were older adults (aged 55+ years): $OR=2.42$, $95\%CI=1.32-4.45$, $p=0.004$. Because of this significant finding, age was included in subsequent modelling of respondents who drove fewer than 10,000 km/year. Gender was not significant in these models ($p>0.05$), and therefore, was not included in subsequent models.

Interactions between age and gender with being an ADT graduate were tested but were not significant ($p>0.05$). This finding suggests that any association between taking an ADT course or program and being a driver in a collision is not dependent upon either a respondent's gender or age.

Overall, these findings indicate that in these initial models, graduates of ADT courses and programs are as likely to be involved in collisions in the previous 5 years as are drivers who have not taken any ADT. Comparisons also showed no confounding of the association by age or gender. The findings further indicate that among people who drive fewer than 10,000 km/year, being middle-aged increases the likelihood of being involved in a collision on a public road in the previous 5 years.

6.2 Research Question 6: Is a driver's attitude toward risky driving a significant confounder for the relationship between pre- or post-licence advanced driver training and road collisions?

Scores on the five driving behaviour and attitude questionnaires were examined next as potential confounders of the association between being an ADT graduate and being a driver in a motor vehicle collision. In other words, we tested whether the inclusion of these scores in the modelling would change the results found in addressing Research Question 5. Scores were examined separately for respondents who drove fewer than 10,000 km/year, respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, and respondents who drove at least 20,000 km/year. In each model, being an ADT graduate group (versus the RACQ control group and the SSI control group) was included as predictor variables of being a driver in a collision as well. Given the findings discussed in Section 6.1, age was also included as a predictor variable in the modelling of respondents who drove fewer than 10,000 km/year.

Results were largely unchanged from the modelling performed for addressing Research Question 5. Specifically, there was no significant association between being an ADT graduate and being a driver in a collision in the previous 5 years when a score on one of the questionnaires was included in the analysis ($p>0.05$). There were also no significant interactions between being an ADT graduate and any of the scores on the questionnaires ($p>0.05$). Therefore, the lack of an association between being an ADT graduate and being a driver in a motor vehicle collision was not influenced by attitudes and behaviours related to driving.

Scores on the Driver Aggression Questionnaire, Driver Behaviour Questionnaire, Attitudes Towards Speeding, and Risk-Taking Propensity Scale were not associated with being a driver in a collision in the models ($p>0.05$). However, higher scores on the Competitive Attitude Toward Driving Scale were significantly associated with being a driver in a collision among respondents who drove fewer than 10,000 km/year: OR=1.47 (95%CI: 1.06, 2.05); $p=0.02$. This finding suggests that for these respondents, holding a competitive attitude towards driving increases the likelihood of being a driver in a collision. Therefore, scores on the Competitive Attitude Toward Driving Scale were included in the subsequent analysis for respondents who drove fewer than 10,000 km/year.

In short, there was no indication that the association between taking an ADT training course or program and being a driver in a collision is confounded by (influenced by) driver attitudes and behaviours as assessed by five questionnaires. As found in addressing Research Question 5, graduates of ADT courses and programs are as likely to be involved in collisions in the previous 5 years as are drivers who have not taken any ADT.

6.3 Research Question 7: What other factors confound the relationship between advanced driver training and road collisions?

Other factors that could potentially influence the relationship between ADT and being a driver in a collision were examined. The additional factors were socio-demographic characteristics (area of residence [capital city, regional town/city; small or remote community], educational level, and employment status), and type of driving licences held (e.g., open driver licence, probationary licence, or learner's permit). These factors were initially examined separately.

The association between each factor and being a driver in a motor vehicle collision in the previous 5 years was examined separately for respondents who drove fewer than 10,000 km/year, those who drove at least 10,000 km/year but fewer than 20,000 km/year, and those who drove at least 20,000 km/year. In all models, motor sport participation (being in the motor sport participant group versus in the RACQ control group or SSI control group) was included as a predictor of being a driver in a motor vehicle collision. In the model of respondents who drove fewer than 10,000 km/year, both age and score on the Competitive Attitude Toward Driving Scale were included as predictor variables as well because they were significant in models created to address Research Questions 5 and 6.

The factors that were significantly associated with being a driver in a motor vehicle collision ($p < 0.05$) were then included in a model of all the predictors of being a driver in a motor vehicle collision (and including being an ADT graduate or not). No interactions between any of the factors examined and being an ADT graduate were statistically significant ($p > 0.05$), and therefore, none were included in the final modelling. For the final modelling, a backward stepwise elimination process based on WALD statistics was used to create a parsimonious model with only factors that were significantly associated with having a collision ($p < 0.05$) maintained. Next, we present the final, parsimonious models.

Among respondents who drove fewer than 10,000 km/year, being an ADT graduate was not associated with being a driver in a collision ($p = 0.18$), as seen in previous modelling. Only one of the additional factors examined was significantly associated with being a driver in a collision: holding a motorcycle licence. Respondents who held a motorcycle licence were more likely than those who did not to be a driver in a collision. Also, higher scores on the Competitive Attitude Toward Driving Scale and being 35 to 44 years of age (compared with being aged 55+ years) were associated with greater likelihood of being a driver in a collision. Table 6.1 provides details of these results.

Table 6.1. Final modelling of factors associated with being a driver in a motor-vehicle collision on a public road in the previous 5 years: Results for respondents who drove fewer than 10,000 km per year.

	Odds ratio	95% Confidence Interval	p-value
Group			
ADT graduate (referent)	1.00		
RACQ control	1.70	0.86, 3.36	0.13
SSI control	1.06	0.56, 2.00	0.87
Age (years)			
18-34	0.97	0.45, 2.10	0.95
35-44	2.17	1.14, 4.11	0.02
45-54	1.08	0.54, 2.15	0.84
55+			
Competitive Attitude Toward Driving Scale	1.45	1.04, 2.02	0.03
Holding a motorcycle licence			
No (referent)	1.00		
Yes	2.44	1.06, 5.60	0.04

ADT=advanced driver training.

P-values in bold face indicate that results are significant ($p < 0.05$).

The overall group effect was not significant ($p = 0.18$), and the overall age effect was not significant ($p = 0.08$).

In short, among respondents who drove fewer than 10,000 km/year, ADT graduates were as likely to be drivers in collisions in the previous 5 years as were other drivers. Three factors, age, having a competitive attitude toward driving and holding a motorcycle licence influenced the likelihood of being a driver in a collision although none confounded (influenced) the association between being an ADT graduate and being a driver in a collision.

Table 6.2 shows the results for respondents who drove at least 10,000 km/year but fewer than 20,000 km/year. There were no factors that were significantly associated with being a driver in collision ($p > 0.05$). The final model, therefore, did not include these factors. The result was that there was no significant differences in the likelihood of being a driver in a collision between ADT graduates and either the RACQ or the SSI control group ($p > 0.05$).

Table 6.2. Final modelling of factors associated with being a driver in a motor-vehicle collision on a public road in the previous 5 years: Results for respondents who drove 10,000 km to <20,000 km per year.

	Odds ratio	95% Confidence Interval	p-value
Group			
Being an ADT graduate (referent)	1.00		
RACQ control	1.36	0.83, 2.24	0.22
SSI control	0.60	0.35, 1.03	0.06

No results are significant ($p < 0.05$) although the overall group effect was significant ($p = 0.009$).

In summary, among respondents who drove at least 10,000 km/year but fewer than 20,000 km/year, ADT graduates were as likely to be drivers in collisions in the previous 5 years as were other drivers. Also, no factors confounded (influenced) this association, and no other factors were found to be associated with this outcome.

Among respondents who drove at least 20,000 km/year, living outside of a capital city (versus in a capital city) decreased the likelihood of being a driver in a collision. Holding a multi-combination (MR) licence was also associated with a reduced likelihood of being a driver in a collision. These results are detailed in Table 6.3.

Table 6.3. Final modelling of factors associated with being a driver in a motor-vehicle collision on a public road in the previous 5 years: Results for respondents who drove at least 20,000 km per year.

	Odds ratio	95% Confidence Interval	p-value
Group			
Being an ADT graduate (referent)	1.00		
RACQ control	0.93	0.55, 1.57	0.80
SSI control	0.97	0.58, 1.62	0.90
Area of residence			
Living in a capital city (referent)	1.00		
Living outside a capital city	0.61	0.39-0.95	0.03
Hold a medium rigid (MR) licence			
No (referent)	1.00		
Yes	0.11	0.01-0.78	0.03

P-values in bold face indicate that results are significant ($p < 0.05$).

The overall group effect was not significant ($p = 0.97$).

In short, among respondents who drove at least 20,000 km/year, ADT graduates were as likely to be drivers in collisions in the previous 5 years as were other drivers. Also, no factors confounded (influenced) this association. The only two factors that were associated with being a driver in a collision were living outside of a capital city and holding a medium rigid (MR) licence, and both of these were associated with a reduced likelihood of being a driver in a motor vehicle collision in the previous 5 years.

Overall, the findings in Section 6.3 are consistent with the early findings for addressing Research Questions 5 and 6. The findings suggest that ADT graduates are as likely as other drivers to be drivers in motor vehicle collisions in the previous 5 years, and the inclusion of the other factors that were examined does not appear to be confounding (influencing) this relationship.

6.4 Research Question 8: Are there other factors associated with involvement in advanced driver training that are associated with having road collisions?

For the final question about the association between being a graduate of an ADT course or program and being a driver in a collision, the analysis was limited to ADT graduates. Potential factors associated with ADT training that could increase or decrease the likelihood of being a driver in a collision were each initially examined separately. These factors included aspects about the ADT received (e.g., types of training, amount of training behind the wheel, and when training was received). Also, the socio-demographic, attitude and behavioural questionnaire scores, kilometres driven in the previous year, and motor vehicle licencing factors examined for Research Questions 5-7 were examined as well.

All factors that were found to be associated with being a driver in a motor vehicle collision ($p < 0.05$) were then included in one model of the predictors of being a driver in a motor vehicle collision, and a backward stepwise elimination process based on WALD statistics was used to create a parsimonious final model with only factors that were significantly associated with having a collision ($p < 0.05$) maintained. The factors in this final model as well as the results of this modelling are located in Table 6.4.

Factors included in the final model were (1) area of residence (2), kilometres driven per year, (3) currently holding a motorcycle licence; and (4) time spent behind the wheel of a motor vehicle during ADT that was taken before getting an open licence.

The final analysis showed that among ADT graduates, there was only one factor related to ADT that was associated with being a driver in a motor vehicle collision in the previous 5 years: hours of training behind the wheel of a car in ADT that was completed before getting an open licence. Specifically, there was a significantly reduced likelihood of being a driver in a motor vehicle collision among those who had had at least 8 hours of training behind the wheel during ADT that was taken before getting an open licence, compared with those who spent fewer hours ($p < 0.05$).

There were a few other findings of note as well. There was a significantly reduced likelihood of being a driver in a motor vehicle collision among those who lived outside capital cities compared to those who lived in capital cities and among those who drove under 10,000 km/year compared to those who drove at least 20,000 km/year ($p < 0.05$). ADT graduates who held a motorcycle licence had a significantly increased likelihood of being a driver in a motor vehicle collision compared with those who did not ($p < 0.05$).

Table 6.4. Among ADT graduates: Final modelling of factors associated with being a driver in a motor-vehicle collision on a public road in the previous 5-years.

	Odds ratio	95% Confidence Interval	p-value
Area of residence			
Capital city (referent)	1.00		
Outside of a capital city	0.55	0.34, 0.87	0.01
Average km driven per year			
30,000(referent)	1.00		
10,000 up to 29,999	0.76	0.46, 1.24	0.27
<10,000	0.44	0.24, 0.82	0.01
Hours of training behind the wheel of a car during ADT taken pre-open licence			
8 or more hours (referent)	1.00		
<8 hours	2.65	1.04, 6.80	0.042
Holding motorcycle licence			
No (referent)	1.00		
Yes	1.86	1.01, 3.41	0.046

P-values in bold face indicate that results are significant at $p < 0.05$.

The overall effect for km driven in the previous year was significant ($p = 0.03$).

These findings suggest that only one aspect of ADT was associated with being a driver in a collision: the amount of time spent behind the wheel of a car during ADT that was taken before receiving an open licence. ADT graduates who had fewer than 8 hours of training behind the wheel of a motor vehicle during this training had over 2.5 times the likelihood of having a collision compared to those who had at least 8 hours of training behind the wheel.

SECTION 7: CONCLUSIONS

The study findings do not provide strong evidence that participation in motor sport or being an ADT graduate increases or decreases the likelihood of being a driver in a motor vehicle collision in the previous 5 years. The inclusion into the analyses of factors that could possibly influence these relationships did not meaningfully change the results.

The only association found was for respondents who drove between 10,000 and 20,000 km/year: in this population of drivers, motor sport participants were almost twice as likely to be drivers in motor vehicle collisions in the previous 5 years in comparison to drivers in one control group. That control group consisted of an online survey panel that was age-, gender- and area of residence-matched to the motor sport participants. This association did not hold when the control group was composed of members of RACQ. Accounting for other possible predictors of having a collision did not change this finding. Consequently, the group of drivers selected to serve as a control group in analysis can impact the results.

In the group of motor sport participants, only three factors related to motor sport were associated with being a driver in a motor vehicle collision in the previous 5 years. Having no training for motor sport before the time of the collision increased the likelihood of a collision by 50%. Participating in stock car racing was associated with a 3.6 times greater likelihood of a collision. Participating in tour car racing was associated with a 67% reduced likelihood. In the group of ADT graduates, only one factor related to the training was associated with being a driver in collisions: having had at least 8 hours behind the wheel of a motor vehicle during ADT taken before receiving an open licence was associated with a 2.6 times lower likelihood of having a collision.

A limitation of all the survey was that respondents were not asked to indicate whether they were at fault for any collisions that they were involved in. The rationale for not collecting this information was that asking about fault could be considered a sensitive topic that might cause stress for respondents who were at fault, particularly of a collision with severe outcomes, and could cause them to be unwilling to answer. To understand whether the results could have been different if the outcome variable had been more narrowly defined, the final models shown in tables in Chapters 5 and 6 to address Research Questions 3 and 7 were rerun with a new outcome variable representing 'potentially at-fault collisions'. The final models to address Research Questions 4 and 8 were not appropriate to rerun due to the greatly reduced numbers of individuals who were considered potentially at fault in those analyses. To create the new outcome variable, we recognised that if a respondent had been a driver in a collision, they would have received a police citation. Therefore, of respondents who reported being a driver in a collision, only those who had been charged by the police for at least one offence/infringement in the previous 5 years were labelled, 'potentially at fault'.

With this new variable as the outcome variable, the results for the association between motor sport participation and likelihood of a collision in the previous 5 years did not change in a meaningful way, no matter the amount of driving per year. As in the initial analysis, the only association found was for respondents who drove between 10,000 and 20,000 km/year: motor sport participants were more likely to be drivers in motor vehicle collisions in the previous 5 years compared with drivers in the control group composed of members of the online survey panel. In the analysis of the association between ADT participation and likelihood of a collision in the previous 5 years, most of the results were the same as in the initial modelling. However, there was one finding that was similar to a finding for motor sport participants: among respondents who drove between 10,000 and 20,000 km/year, ADT graduates were more likely to be drivers in potentially at-fault motor vehicle collisions in the previous 5 years compared with drivers in the control group composed of members of the online survey panel. Thus, as found with comparisons between motor sport participants and other drivers, the choice of control group influences some of the findings.

Another limitation is that the survey did not ask motor sport participants if they were drivers or passengers in motor sport events, and the risk of collision outside of events could differ between motor sport drivers and passengers. However, the survey results indicated that only a few motor sport participants (4%) engaged in only motor sport that requires a passenger along with a driver, and therefore, few motor sport participants in the study could have participated as only passengers. Consequently, it is not likely that the findings regarding likelihood of a collision in the previous 5 years would have differed significantly if the analysis had been limited to drivers in motor sport events.

Overall, the results show that for Australians who drive the least (fewer than 10,000 km/year) and those who drive the most (at least 20,000 km/year), there is no increased or decreased likelihood of being a driver in a motor vehicle collision in the previous 5 years for motor sport participants or for ADT graduates. For people who drive between 10,000 and 20,000 km/year, however, the results are not so clear. For those drivers, the increased likelihood of being a driver in a motor vehicle collision in the previous 5 years for motor sport participants and for ADT graduates needs further exploration as these findings only held in the comparison with one of two control groups.

Acknowledgements

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APPENDIX A. PARTICIPANT SURVEY TO MEMBERS OF CAMS AND RACQ

This document was revised slightly for administration to SSI panel members.

Examination of Drivers' Driver Training, Driving Experiences, and Attitudes about Driving: A Survey of Australian Drivers

QUT Ethics Approval Number 1600001220

RESEARCH TEAM

Principal Researcher: Dr Kristiann Heesch Senior Lecturer
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**School of Public Health and Social Work, Faculty of Health
Queensland University of Technology (QUT)**

DESCRIPTION

The aim of this study is to examine Australians' use of driver training programs, their driving experiences, and their attitudes towards driving.

You are invited to participate in this study because you are aged 18 years or over and a member of the Confederation of Motor Sport (CAMS) or RACQ. Your driving and driver training experiences will be very useful to this study.

PARTICIPATION

Participation will involve completing an anonymous online survey which should take approximately 20 minutes to complete.

In the survey you will be asked about any driver training that you have taken, your driving and motor sport experiences, and your attitudes towards driving. You will also be asked to provide your age, gender, and other basic information about yourself.

Your participation in this survey is completely voluntary. Your decision to participate or not will not impact your current or future relationship with QUT, CAMS or RACQ. If you agree to participate, you may withdraw from the study without any statement or penalty as long as you do not submit your survey. If you do submit it, you will no longer be able to withdraw from the study because your data is not identifiable and therefore the researchers will not be able to find and delete it.

EXPECTED BENEFITS

It is expected that this study will not directly benefit you. However, to recognise your contribution should you choose to participate the research team is offering you the opportunity to go into a prize drawing to win one of five \$500 VISA EFTPOS gift card.

Please note that the opening date for entries is 01 February 2017 and the closing date for entries is 31 March 2017. The Terms and Conditions of the prize draw are located at xxxx.

More generally, the research will help the researcher gain insight into the driving experiences of CAMS and RACQ members. The outcomes of this study will be beneficial to future researchers and to the advocacy work of CAMS and RACQ. The findings from this study may be used to assist future studies or make informed decisions about improving road safety.

RISKS

There are no risks beyond normal day-to-day living associated with your participation in this study. However, if you have experienced adverse events while driving (e.g. road accident, injury) or know someone who has experienced adverse events while driving and you feel that answering questions about driving could cause you distress, it is advised that you do not participate in this study.

QUT provides for limited free psychology, family therapy or counselling services (face-to-face only) for research participants of QUT projects who may experience discomfort or distress as a result of their participation in the research. Should you wish to access this service please call the Clinic Receptionist on **07 3138 0999** (Monday–Friday only 9am–5pm), QUT Psychology and Counselling Clinic, 44 Musk Avenue, Kelvin Grove, and indicate that you are a research participant.

Alternatively, Lifeline provides access to online, phone or face-to-face support, call **13 11 14** for 24 hour telephone crisis support. For young people aged between 18 and 25, you can also call the Kids Helpline on **1800 551 800**.

PRIVACY AND CONFIDENTIALITY

All comments and responses are anonymous and will be treated confidentially unless required by law. Any data collected as part of this project will be stored securely as per QUT's Management of Research Data Policy. Please note the non-identifiable data collected in this study may be used as comparative data in future projects stored on an open access database for secondary data analysis.

The project is funded by the Australian Institute of Motor Sport Safety and RACQ, and these organisations as well as the researchers will have access to the data obtained from the survey.

CONSENT TO PARTICIPATE

Submitting the completed online survey is accepted as an indication of your consent to participate in this study.

QUESTIONS / FURTHER INFORMATION ABOUT THE PROJECT

If you have any questions or require further information, please contact:

Dr Kristiann Heesch 07 3138 5460 k.heesch@qut.edu.au

CONCERNS / COMPLAINTS REGARDING THE CONDUCT OF THE PROJECT

QUT is committed to research integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project, you may contact the QUT Research Ethics Advisory Team on 07 3138 5123 or email humanethics@qut.edu.au. The QUT Research Ethics Advisory Team is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

THANK YOU FOR HELPING WITH THIS RESEARCH PROJECT.

PLEASE PRINT THIS SHEET FOR YOUR INFORMATION.

1. Are you aged 18 years or over?
 - Yes
 - No

2. Do you consent to participate in this survey study?
 - Yes
 - No

Respondents must answer YES to both questions 1 and 2 to proceed.

If not, the following message will appear:

Thank you for offering your time to participate in this survey.

However this study is only available for people aged 18 years or over and those who agree to provide informed and voluntary consent.

In this survey, you will be asked about any driver training and licensing that you have had, and your driving behaviour, experiences and attitudes. You will also be asked basic questions about yourself, such as your age and gender. Your participation in this study is entirely voluntary.

We greatly appreciate you taking part in this study. Please respond truthfully. Your answers are very important to us and they will be treated as strictly **PRIVATE** and **CONFIDENTIAL**.

There are 5 sections to this survey (A through E). We expect it will take you about 20 minutes to complete the survey.

SECTION A: In this section, we ask about your driver training and licencing.

3. Do you currently hold a valid driver's licence?
 - Yes(*go to question 4*)
 - No(*a message will display: "Thank you for your interest in this study. However, this study is about driving on public roads. Therefore, we want to hear from drivers who are regularly driving on public roads" and the survey will end immediately*)

4. Which valid driver's licence(s) do you currently hold? (tick all that apply)
 - Car Licence (Open)
 - Car Licence (Probationary)
 - Car Licence (Learner's Permit)
 - Light Rigid Licence (LR)
 - Medium Rigid Licence (MR)
 - Heavy Rigid Licence (HR)
 - Heavy-Combination Licence (HC)
 - Multi-Combination Licence (MC)
 - Specially Constructed Vehicle Licence (UD)
 - Other (please specify)

5. Do you hold a motor sport competition licence?
 - Yes
 - No

On average, about how many kilometres do you drive per year?

- 0km/year (*a message will display: "Thank you for your interest in this study. However, this study is about driving on public roads. Therefore, we want to hear from drivers who are regularly driving on public roads" and the survey will end immediately*)
- 1 – 4,999km/year
- 5000–9,999km/year
- 10,000–19,999km/year
- 20,000–29,999km/year
- 30,000km or more km/year

6. How many hours do you typically drive on public roads per week?

- no hours(*a message will display: "Thank you for your interest in this study. However, this study is about driving on public roads. Therefore, we want to hear from drivers who are regularly driving on public roads" and the survey will end immediately*)
- 1-9 hours
- 10-19 hours
- 20-29 hours
- 30 or more hours

7. Have you taken training to get an open licence (either with parents/friends or at a traditional driving school) for operating a vehicle that has 4 wheels?

- Yes
- No

8. Have you taken advanced driver training BEFORE getting an open licence for operating a vehicle that has 4 wheels?

- Yes(*go to question 9*)
- No(*go to question 14*)

9. You have responded YES to having taken advanced driver training BEFORE getting an open licence. What did the driver training include? (tick all that apply)

- On-road skills training (on public roads)
- Off-road skills training (i.e., not on public roads but on a circuit or similar)
- Skid pan training
- Classroom teaching with simulation skills training
- Classroom teaching without simulation skills training

10. How long did the training behind the wheel of a car last, in total?

- No time spent behind the wheel of a car
- Less than 2 hours
- 2-3 hours
- 4-5 hours
- 6-8 hours
- More than 8 hours

11. How long ago did you receive the training?

- Within the last year
- 1 year to up to 2 years ago
- 2 years up to 5 years ago
- 5 years up to 10 years ago
- 10 or more years ago

12. Where did you receive your advanced driver training (tick all that apply)

- RACQ Driver Education Program
- RACQ Recreational 4WD
- RACQ Urban to Outback Course
- RACQ 4WD 1 Day or 4WD 2 Day Program
- RACQ Resource Industry 4WD Essentials
- RACQ Driver Rehab
- Driver Safety Australia DATA Program
- Driver Safety Australia Supervised On-Road Instruction (one-on-one coaching)
- Driver Safety Australia DSA Synergy -- One Day Program
- Driver Safety Australia DSA Driveability One Day Course
- Driver Safety Australia DSA Advantage – 2 Day Program
- Driver Safety Australia DSA 4X4 Synergy Program
- Driving Management Australia Defensive Driving Course
- Driving Management Australia 4WD Program
- Driver Skills International Defensive Driving Course
- Driver Skills International Advanced Driving Course
- Driver Skills International 4WD Training
- Safe Drive Test: Young Drive Driver Safety Program
- Safe Drive Training Advanced Car Control Course
- Safe Drive Training Low-Range 4WD Off-Road Course
- I do not remember
- Other (please specify)

13. *If they check skid pan training in question 9, also ask:* Where did you receive your skid pan training (tick all that apply)
- Driving Management Australia Skid Pan Program
 - Safe Driver Training Skid Pan Experience
 - I do not remember
 - Other (please specify)
14. Have you taken advanced driver training AFTER getting an open licence for operating a vehicle that has 4 wheels?
- Yes(*go to question 15*)
 - No(*go to question 20*)
15. You have responded YES to having taken advanced driver training AFTER getting an open licence. What did the driver training include? (tick all that apply)
- On-road skills training (on public roads)
 - Off-road skills training (i.e., not on public roads but on a circuit or similar)
 - Skid pan training
 - Classroom teaching with simulation skills training
 - Classroom teaching without simulation skills training
16. How long did the training behind the wheel of a car last, in total?
- No time spent behind the wheel of a car
 - Less than 2 hours
 - 2-3 hours
 - 4-5 hours
 - 6-8 hours
 - More than 8 hours
17. How long ago did you receive the training?
- Within the last year
 - 1 year to up to 2 years ago
 - 2 years up to 5 years ago
 - 5 years up to 10 years ago
 - 10 or more years ago

18. Where did you receive your advanced driver training (tick all that apply)
- RACQ Driver Education Program
 - RACQ Recreational 4WD
 - RACQ Urban to Outback Course
 - RACQ 4WD 1 Day or 4WD 2 Day Program
 - RACQ Resource Industry 4WD Essentials
 - RACQ Driver Rehab
 - Driver Safety Australia DATA Program
 - Driver Safety Australia Supervised On-Road Instruction (one-on-one coaching)
 - Driver Safety Australia DSA Synergy -- One Day Program
 - Driver Safety Australia DSA Driveability One Day Course
 - Driver Safety Australia DSA Advantage – 2 Day Program
 - Driver Safety Australia DSA 4X4 Synergy Program
 - Driving Management Australia Defensive Driving Course
 - Driving Management Australia 4WD Program
 - Driver Skills International Defensive Driving Course
 - Driver Skills International Advanced Driving Course
 - Driver Skills International 4WD Training
 - Safe Drive Test: Young Drive Driver Safety Program
 - Safe Drive Training Advanced Car Control Course
 - Safe Drive Training Low-Range 4WD Off-Road Course
 - I do not remember
 - Other (please specify)
19. *If they check skid pan training in question 15, also ask:* Where did you receive your skid pan training (tick all that apply)
- Driving Management Australia Skid Pan Program
 - Safe Driver Training Skid Pan Experience
 - I do not remember
 - Other (please specify)
20. Have you taken training for a business/industrial licence for operating a vehicle that has 4 wheels?
- Yes(*go to question 21*)
 - No(*go to question 25*)

21. You have responded YES to having taken training for a business/industrial licence. What did the driver training include? (tick all that apply)

- On-road skills training (on public roads)
- Off-road skills training (i.e., not on public roads but on a circuit or similar)
- Skid pan training
- Classroom teaching with simulation skills training
- Classroom teaching without simulation skills training

22. How long did the training behind the wheel of a car last, in total?

- No time spent behind the wheel of a car
- Less than 2 hours
- 2-3 hours
- 4-5 hours
- 6-8 hours
- More than 8 hours

23. How long ago did you receive the training?

- Within the last year
- 1 year to up to 2 years ago
- 2 years up to 5 years ago
- 5 years up to 10 years ago
- 10 or more years ago

24. *If they check skid pan training in question 21, also ask:* Where did you receive your skid pan training (tick all that apply)

- Driving Management Australia Skid Pan Program
- Safe Driver Training Skid Pan Experience
- I do not remember
- Other (please specify)

25. Have you taken training to participate in motor sport for operating a vehicle that has 4 wheels?

- Yes(*go to question 26*)
- No(*go to question 31*)

26. You have responded YES to having taken training to participate in motor sport. What did the driver training include? (tick all that apply)

- On-road skills training (on public roads)
- Off-road skills training (i.e., not on public roads but on a circuit or similar)
- Skid pan training
- Classroom teaching with simulation skills training
- Classroom teaching without simulation skills training
- Participating in car club events with supervision or observation

27. How long did the training behind the wheel of a car last, in total?

- No time spent behind the wheel of a car
- Less than 2 hours
- 2-3 hours
- 4-5 hours
- 6-8 hours
- More than 8 hours

28. How long ago did you receive the training?

- Within the last year
- 1 year to up to 2 years ago
- 2 years up to 5 years ago
- 5 years up to 10 years ago
- 10 or more years ago

29. Where did you receive your motor sport training (tick all that apply)

- Safe Driver Training Motorsport Training and Licensing
- Other (please specify)
- I do not remember

30. *If they check skid pan training in question 26, also ask:* Where did you receive your skid pan training (tick all that apply)

- Driving Management Australia Skid Pan Program
- Safe Driver Training Skid Pan Experience
- I do not remember
- Other (please specify)

SECTION B: In this section, we ask about your driving behaviour and experiences.

31. How likely are you to: (0=never, 1=hardly ever, 2=occasionally; 3=quite often; 4=frequently; 5=nearly all the time)

- Drive especially close to the car in front as a signal to its driver to go faster or get out of the way?
- Disregard the speed limits late at night or early in the morning?
- Become impatient with a slow driver in the outer lane and overtake on the inside (left) lane?
- Get involved in unofficial 'races' with other drivers?
- Exceed the speed limit in built-up areas?
- Exceed the speed limit on open roads?
- Drive faster than the rest of the traffic around you?
- Cross a junction knowing that the traffic lights have already turned red?
- Drive even though you realise that you may be over the legal blood-alcohol limit?
- Give chase with the intention of giving another driver a piece of your mind after they have angered you by their behaviour?
- Drive without a seat belt in a built-up area?
- Drive without a seat belt on a highway?
- Honk your horn at other drivers out of frustration?
- Swear or yell at others while driving?
- Purposefully tailgate other drivers?
- Flash your high beams at another driver out of frustration?
- Use hand gestures at other drivers?

32. Either as a driver or as a passenger, have you been in a motor vehicle collision (single or multiple vehicle collision that involved damage of more than \$1000 or injury to a person) in the past 5 years?

- Yes(*go to question 33*)
- No(*go to question 35*)

33. How many motor vehicle collisions have you been in over the past 5 years?

- 1-5
- 6-10
- 11-15
- 16-20
- 20+

34. In how many of those collisions were you the driver?

- 0
- 1-5
- 6-10
- 11-15
- 16-20
- 20+

35. In the past 5 years, have you been charged by the police for any traffic related offences/infringements?

- Yes(*go to question 36*)
- No(*go to question 37*)

36. What were the offences/infringements? (tick all that apply)

- Speeding
- Not wearing a seatbelt properly
- Using a mobile phone
- Failing to stop at a red light
- Driver distraction
- Failing to give way
- Failing to indicate (e.g., when making a right turn)
- Making an improper right or left turn
- Improper overtaking (e.g., when unsafe to do so)
- Failing to maintain a safe distance (e.g., from the vehicle in front of you)
- Failing to keep left unless overtaking
- Disobeying road signs or lane markings
- Other (please specify)

SECTION C: In this section we ask about your attitudes towards driving and your interests more generally.

37. What are your thoughts about the following statements? (0=strongly disagree; 1=disagree; 2=uncertain/undecided; 3=agree; 4=strongly agree)
- Australian speed limits are so restrictive that it is understandable that they are disobeyed
 - Driving 5 km/h *above* the speed limit increases the risk of a serious accident
 - Driving more slowly than the speed limit (below the limit) is hazardous because it encourages other drivers to overtake
 - Driving a little above the speed limit is acceptable in a good car
 - It's fun to beat other drivers when the light changes
 - It's really satisfying to pass other cars on the highway
 - It's a thrill to out-manoeuve other drivers
 - It's fun to weave through slower traffic
 - Taking risks in traffic makes driving more fun
38. How well do the following statements describe you? (0=not like me; 1=somewhat like me; 2=a lot like me)
- I'd do almost anything on a dare
 - I enjoy the thrill I get when I take risks
 - I like to live dangerously
 - I like to take chances even when the odds are against me

SECTION D: In this section, we ask about your experiences with motor sports events.

39. How many motor sport events have you watched on television in the last 12 months for 30 minutes or longer?

- 0
- 1-5
- 6-10
- 11-15
- 16-20
- 21-30
- 31-40
- 41-50
- 50+

40. How many motor sport events have you attended as a spectator over the last 12 months?

- 0
- 1-5
- 6-10
- 11-15
- 15+

41. As a child, I was interested in motor sport.

- Yes
- No

42. I am currently interested in motor sport.

- Yes
- No

43. Have you ever been a driver (or passenger) in any official motor sport event?

- Yes, in the last 12 months(*go to question 44*)
- Yes, but not in the last 12 months(*go to question 44*)
- No(*go to question 48*)

44. How many motor sport events have you participated in over your lifetime?

- 1-5
- 6-10
- 11-15
- 15+

45. What age did you start competing in motor sport?

- Under 10 years of age
- 10-18 years of age
- 19-24 years of age
- 25-34 years of age
- 35-49 years of age
- 50 years of age or older

46. What type of motor sport licence do you have? (currently hold; have previously held but no longer hold; have never held)

- CAMS Level 1
- CAMS Level 2
- CAMS Clubman Level
- CAMS National Level
- CAMS International Level
- Other type of motor sport licence

47. What types of motor sport have you competed in? (tick all that apply)

- Autocross
- Rallycross
- Motorkhanas
- Circuit Sprints
- Hillclimbs
- Speedway
- Drag Racing
- Kart Racing
- Rallying
- Historic Rallying
- Time Trials/Regularity Events
- Sports Car/Grand Tour Racing
- Stock Car Racing
- Tour Car Racing
- Sports Sedan Racing
- Off-Road Racing
- Historic Racing
- Drifting
- Other (please specify)

SECTION E: In this section, we ask questions about you. We need to ask these questions so that we can check that a variety of people have completed the survey. This is the last section of the survey.

48. What is your year of birth? (4 digits required)

49. What is your month of birth?

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

50. What is your gender?

- Male
- Female
- Unspecified

51. What is the highest level of education that you have attained?

- Primary School
- Some Secondary School
- Secondary School Certificate
- Certificate (Trade or Business)
- Associate Diploma
- Bachelor's Degree
- Postgraduate Degree

52. Which one of the following best describes your current living situation?

- Living alone with no children
- Single parent living with one or more children
- Single and living with friends or relatives
- Couple (married or de-facto) living together with no children
- Couple (married or de-facto) living with one or more children
- Other (please specify)

53. Which one of the following best describes your current employment situation?

- Full time paid work in a job, business or profession
- Part time work in a job, business or profession
- Casual paid work in a job, business or profession
- Work without pay in a family or other business
- Home duties, not looking for work
- Unemployed, looking for work
- Retired
- Permanently unable to work
- Student
- Other (please specify)

54. Where do you live in Australia?

- In a capital city
- In a regional city
- In a town
- In a small community
- In a remote area
- Not living in Australia
- Other (please specify)

Thank you for taking the time to complete this survey. Your responses are greatly appreciated. On the next page you will be asked if you want to participate in the prize drawing.

**APPENDIX B. RESPONSES TO SURVEY QUESTIONS, BY ALL
RESPONDENTS AND SEPARATELY BY DRIVER GROUPINGS**

Table A1. Demographic characteristics of the sample (numbers and percentages).

	All drivers N=5413		Motor sport participants n=3050		Advanced driver training graduates n=663		RACQ control group n=588		SSI control group n=806	
	n	%	n	%	n	%	n	%	n	%
Age (years)										
18-34	970	17.9%	497	16.3%	81	12.2%	156	26.5%	113	14.0%
35-44	903	16.7%	482	15.8%	111	16.7%	105	17.9%	151	18.7%
45-54	1116	20.6%	630	20.7%	135	20.4%	126	21.4%	163	20.2%
55-64	1274	23.5%	740	24.3%	182	27.5%	116	19.7%	192	23.8%
65+	1071	19.8%	632	20.7%	152	22.9%	80	13.6%	185	23.0%
Gender										
Female	746	13.8%	247	8.1%	79	11.9%	253	43.0%	103	12.8%
Male	4608	85.1%	2769	90.8%	575	86.7%	331	56.3%	694	86.1%
Education attained										
Primary or some secondary school	355	6.6%	133	4.4%	48	7.2%	53	9.0%	94	11.7%
Secondary school completed	953	17.6%	475	15.6%	109	16.4%	127	21.6%	183	22.7%
Trade/business certificate	1553	28.7%	927	30.4%	197	29.7%	159	27.0%	193	23.9%
Associate diploma	785	14.5%	500	16.4%	95	14.3%	74	12.6%	87	10.8%
Bachelor's degree or higher	1757	32.5%	1012	33.2%	212	32.0%	173	29.4%	247	30.6%
Employment status										
Full-time work	3035	56.1%	1956	64.1%	318	48.0%	270	45.9%	311	38.6%
Part-time work	429	7.9%	203	6.7%	39	5.9%	65	11.1%	90	11.2%
Casual work	266	4.9%	116	3.8%	34	5.1%	54	9.2%	43	5.3%
Retired	1005	18.6%	510	16.7%	166	25.0%	89	15.1%	215	26.7%
Other ^a	667	12.3%	262	8.6%	101	15.2%	109	18.5%	145	18.0%
Living situation										
Living alone	776	14.3%	365	12.0%	103	15.5%	93	15.8%	164	20.3%
Single parent, living with children	173	3.2%	75	2.5%	22	3.3%	28	4.8%	30	3.7%
Single, living with friends or relatives (of adult age)	361	6.7%	166	5.4%	34	5.1%	67	11.4%	54	6.7%
Couple (married or de-facto), living with no children	2060	38.1%	1256	41.2%	256	38.6%	194	33.0%	270	33.5%
Couple (married or de-facto), living with children	1835	33.9%	1096	35.9%	220	33.2%	178	30.3%	246	30.5%
Other ^b	188	3.5%	76	2.5%	26	3.9%	27	4.6%	41	5.1%
Area of residence										
Capital city	3127	57.8%	1806	59.2%	374	56.4%	281	47.8%	495	61.4%
Regional city/town	1898	35.1%	1019	33.4%	238	35.9%	268	45.6%	249	30.9%
Remote area	388	7.2%	225	7.4%	51	7.7%	39	6.6%	62	7.7%

^a "Other" includes work without pay, home duties, unemployed, permanently unable to work, student, and other types of employment; ^b "Other" includes most respondents who reported that they were temporarily travelling

Table A2. Driving exposure and licensing (numbers and percentages).

	All drivers N=5413		Motor sport participants n=3050		Advanced driver training graduates n=663		RACQ control group n=588		SSI control group n=806	
	n	%	n	%	n	%	n	%	n	%
Average kilometres (km) driven per year										
1 to <10,000	1221	22.6%	408	13.4%	190	28.7%	204	34.7%	348	43.2%
10,000 to <20,000	1930	35.7%	1083	35.5%	243	36.7%	213	36.2%	292	36.2%
20,000 to <30,000	1191	22.0%	769	25.2%	126	19.0%	115	19.6%	112	13.9%
30,000+	1071	19.8%	790	25.9%	104	15.7%	56	9.5%	54	6.7%
Average hours driven per week										
1-9	2382	44.0%	1130	37.0%	307	46.3%	298	50.7%	518	64.3%
10-19	2090	38.6%	1274	41.8%	256	38.6%	220	37.4%	222	27.5%
20-29	567	10.5%	394	12.9%	55	8.3%	44	7.5%	41	5.1%
30+	374	6.9%	252	8.3%	45	6.8%	26	4.4%	25	3.1%
Licensing^a										
Car Licence (Open)	4693	86.7%	2586	84.8%	585	88.2%	523	88.9%	744	92.3%
Car Licence (Probationary)	106	2.0%	48	1.6%	3	0.5%	22	3.7%	12	1.5%
Car Licence (Learner)	23	0.4%	2	0.1%	2	0.3%	4	0.7%	10	1.2%
Light Rigid (LR)	226	4.2%	142	4.7%	33	5.0%	16	2.7%	24	3.0%
Medium Rigid (MR)	377	7.0%	252	8.3%	66	10.0%	21	3.6%	22	2.7%
Heavy Rigid (HR)	631	11.7%	414	13.6%	102	15.4%	37	6.3%	54	6.7%
Heavy Combination (HC)	289	5.3%	215	7.0%	50	7.5%	8	1.4%	9	1.1%
Multi-Combination (MC)	121	2.2%	84	2.8%	17	2.6%	8	1.4%	5	0.6%
Specially Constructed Vehicle (UD)	30	0.6%	17	0.6%	6	0.9%	5	0.9%	0	0.0%
Other	876	16.2%	598	19.6%	99	14.9%	81	13.8%	53	6.6%
Motorcycle licence^b										
	714	13.2%	505	16.6%	73	11.0%	64	10.9%	44	5.5%

^a The question is a multiple response set, meaning that respondents could tick more than one response.

^b Respondents were not asked about motorcycle licences. Responses here are from respondents who reported having a motorcycle licence when asked to report 'other' licences.

Table A3. Behaviours & attitudes toward driving (score means and standard deviations).

	All drivers N=5413		Motor sport participants n=3050		Advanced driver training graduates n=663		RACQ control group n=588		SSI control group n=806	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Driver Behaviour Questionnaire ^a	1.69	0.49	1.74	0.45	1.62	0.50	1.63	0.43	1.58	0.55
Driver Aggression Questionnaire ^b	1.70	0.63	1.69	0.60	1.72	0.66	1.69	0.61	1.64	0.67
Attitudes Towards Speeding Scale ^c	3.06	0.97	3.31	0.94	2.74	0.89	2.76	0.95	2.61	0.84
Competitive Attitude Toward Driving Scale ^d	1.76	0.69	1.75	0.66	1.75	0.68	1.76	0.69	1.76	0.73
Risk-Taking Propensity Scale ^e	1.16	0.30	1.19	0.32	1.11	0.26	1.09	0.21	1.11	0.29

^a Response options were: 1=Never to 6=Nearly all the time; higher scores represent more risky driving behaviours.

^b Response options were: 1=Never to 6=Nearly all the time; higher scores represent more aggressive driving.

^c Response options were: 1=Strongly Disagree to 5=Strongly Agree; higher scores represent more positive attitudes towards speeding.

^d Response options were: 1=Strongly Disagree to 5=Strongly Agree; higher scores represent more competitive attitudes.

^e Response options were: 1=Not Like me, 2=Somewhat Like Me, 3=A Lot Like Me; higher scores represent a greater propensity to engage in risk-taking behaviours.

Table A4. Road collisions and driving offences (numbers and percentages).

	All drivers N=5413		Motor sport participants n=3050		Advanced driver training graduates n=663		RACQ control group n=588		SSI control group n=806	
	n	%	n	%	n	%	n	%	n	%
Number of motor vehicle collisions involved in, in the past 5 years										
0	4363	80.6%	2409	79.0%	541	81.6%	476	81.0%	700	86.8%
1-5	1001	18.5%	605	19.8%	119	17.9%	105	17.9%	106	13.2%
6-10	2	<0.1%	0	0.0%	0	0.0%	1	0.2%	0	0.0%
11-15	3	0.1%	2	0.1%	1	0.2%	0	0.0%	0	0.0%
Driving status when involved in collisions										
Not in any collisions as driver	4535	83.8%	2516	82.5%	567	85.5%	488	83.0%	714	88.6%
In a collision as a driver	869	16.1%	526	17.2%	96	14.5%	99	16.8%	92	11.4%
Number of driving offences/infringements										
2+	122	2.3%	70	2.3%	18	2.7%	15	2.6%	11	1.4%
1	1402	25.9%	898	29.4%	156	23.5%	146	24.8%	117	14.5%
0	3889	71.8%	2082	68.3%	489	73.8%	427	72.6%	678	84.1%

Table A5. Most common driving offences/infringements in the previous 5 years (numbers and percentages).

	All drivers N=5413		Motor sport participants n=3050		Advanced driver training graduates n=663		RACQ control group n=588		SSI control group n=806	
	n	%	n	%	n	%	n	%	n	%
Speeding										
	1389	25.7%	888	29.1%	157	23.7%	150	25.5%	109	13.5%
Other type of driving infringement not listed										
	145	2.7%	95	3.1%	10	1.5%	18	3.1%	16	2.0%
Failing to stop at a red light										
	84	1.6%	44	1.4%	11	1.7%	7	1.2%	17	2.1%
Using a mobile phone while driving										
	70	1.3%	49	1.6%	2	0.3%	7	1.2%	8	1.0%

Table A6. Advanced driver training among motor sport participants and ADT graduates (numbers and percentages).

	Motor sport participants n=3050		Advanced driver training graduates n=663	
	n	%	n	%
Received advanced driver training BEFORE getting an open licence	550	18.0%	232	35.0%
Received advance driver training AFTER getting an open licence	1622	53.2%	375	56.6%
Received driver training for a business/industrial licence	675	22.1%	243	36.7%
Received driver training for a motor sport licence	1607	52.7%	57	8.6%

Table A7. Respondents who took advanced driver training BEFORE getting an open licence to operate a four-wheel vehicle (numbers and percentages).

	Motor sport participants n=550		Advanced driver training graduates n=232	
	n	%	n	%
What did the training include?^a				
On-road skills training	342	62.2%	188	81.0%
Off-road skills training	363	66.0%	92	39.7%
Skid-pan training	313	56.9%	77	33.2%
Classroom teaching with simulation skills training	177	32.2%	51	22.0%
Classroom teaching without simulation skills training	207	37.6%	68	29.3%
How long did the training behind the wheel of a car last?				
No time spent behind the wheel of a car	5	0.9%	5	2.2%
Fewer than 2 hours	45	8.2%	42	18.1%
2-3 hours	101	18.4%	31	13.4%
4-5 hours	118	21.5%	34	14.7%
6-8 hours	109	19.8%	37	15.9%
More than 8 hours	168	30.5%	82	35.3%
How long ago did you receive the training?				
Within the last year	16	2.9%	0	0.0%
1 year to up to 2 years ago	29	5.3%	0	0.0%
2 years to up to 5 years ago	52	9.5%	4	1.7%
5 years to up to 10 years ago	80	14.5%	50	21.6%
10 or more years ago	369	67.1%	178	76.7%
Where did you receive you advanced driver training?^a				
RACQ Driver Education Program	6	1.1%	5	2.2%
RACQ Recreation 4WD	1	0.2%	1	0.4%
RACQ Urban to Outback Course	0	0.0%	0	0.0%
RACQ 4WD 1 Day or 4WD 2 Day Program	1	0.2%	0	0.0%
RACQ Resource Industry 4WD Essentials	0	0.0%	0	0.0%
RACQ Driver Rehab	0	0.0%	0	0.0%
Driver Safety Australia DATA Program	7	1.3%	3	1.3%
Driver Safety Australia Supervised On-Road Instruction	8	1.5%	8	3.4%
Driver Safety Australia DSA Synergy – One Day Program	1	0.2%	1	0.4%
Driver Safety Australia DSA Driveability One Day Course	3	0.5%	1	0.4%
Driver Safety Australia DSA Advantage – 2 Day Program	5	0.9%	3	1.3%
Driver Safety Australia DSA 4X4 Synergy Program	1	0.2%	2	0.9%
Driving Management Australia Defensive Driving Course	15	2.7%	8	3.4%
Driving Management Australia 4WD Program	7	1.3%	2	0.9%
Driver Skills International Defensive Driving Course	20	3.6%	6	2.6%
Driver Skills International Advanced Driving Course	16	2.9%	3	1.3%
Driver Skills International 4WD Training	4	0.7%	2	0.9%
Safe Drive Test Drive: Young Driver Safety Program	17	3.1%	7	3.0%
Safe Drive Training Advanced Car Control Course	39	7.1%	12	5.2%
Safe Drive Training Low Range 4WD Off-Road Course	11	2.0%	6	2.6%
I do not remember	209	38.0%	109	47.0%
Other	262	47.6%	73	31.5%

^a The question is a multiple response set, meaning that respondents could tick more than one response.

Table A8. Respondents who took advanced driver training AFTER getting an open licence to operate a four-wheel vehicle (numbers and percentages).

	Motor sport participants n=1622		Advanced driver training graduates n=375	
	n	%	n	%
What did the training include?^a				
On-road skills training	710	43.8%	217	57.9%
Off-road skills training	1307	80.6%	235	62.7%
Skid-pan training	1002	61.8%	207	55.2%
Classroom teaching with simulation skills training	487	30.0%	103	27.5%
Classroom teaching without simulation skills training	700	43.2%	169	45.1%
How long did the training behind the wheel of a car last?				
No time spent behind the wheel of a car	6	0.4%	11	2.9%
Fewer than 2 hours	152	9.4%	69	18.4%
2-3 hours	328	20.2%	89	23.7%
4-5 hours	367	22.6%	60	16.0%
6-8 hours	298	18.4%	59	15.7%
More than 8 hours	461	28.4%	83	22.1%
How long ago did you receive the training?				
Within the last year	78	4.8%	3	0.8%
1 year to up to 2 years ago	102	6.3%	0	0.0%
2 years to up to 5 years ago	256	15.8%	14	3.7%
5 years to up to 10 years ago	359	22.1%	115	30.7%
10 or more years ago	818	50.4%	239	63.7%
Where did you receive you advanced driver training?^a				
RACQ Driver Education Program	12	0.7%	7	1.9%
RACQ Recreation 4WD	1	0.1%	1	0.3%
RACQ Urban to Outback Course	3	0.2%	1	0.3%
RACQ 4WD 1 Day or 4WD 2 Day Program	3	0.2%	2	0.5%
RACQ Resource Industry 4WD Essentials	1	0.1%	0	0.0%
RACQ Driver Rehab	0	0.0%	3	0.8%
Driver Safety Australia DATA Program	10	0.6%	6	1.6%
Driver Safety Australia Supervised On-Road Instruction	13	0.8%	5	1.3%
Driver Safety Australia DSA Synergy – One Day Program	4	0.2%	1	0.3%
Driver Safety Australia DSA Driveability One Day Course	4	0.2%	2	0.5%
Driver Safety Australia DSA Advantage – 2 Day Program	2	0.1%	2	0.5%
Driver Safety Australia DSA 4X4 Synergy Program	1	0.1%	1	0.3%
Driving Management Australia Defensive Driving Course	32	2.0%	16	4.3%
Driving Management Australia 4WD Program	4	0.2%	5	1.3%
Driver Skills International Defensive Driving Course	37	2.3%	14	3.7%
Driver Skills International Advanced Driving Course	48	3.0%	8	2.1%
Driver Skills International 4WD Training	8	0.5%	2	0.5%
Safe Drive Test Drive: Young Driver Safety Program	11	0.7%	5	1.3%
Safe Drive Training Advanced Car Control Course	98	6.0%	14	3.7%
Safe Drive Training Low Range 4WD Off-Road Course	33	2.0%	9	2.4%
I do not remember	432	26.6%	140	37.3%
Other	1034	63.7%	174	46.4%

^a The question is a multiple response set, meaning that respondents could tick more than one response.

Table A9. Respondents who took training for a business or industrial licence (numbers and percentages).

	Motor sport participants n=675		Advanced driver training graduates n=243	
	n	%	n	%
What did the training include?^a				
On-road skills training	422	62.5%	148	60.9%
Off-road skills training	356	52.7%	101	41.6%
Skid-pan training	127	18.8%	33	13.6%
Classroom teaching with simulation skills training	179	26.5%	50	20.6%
Classroom teaching without simulation skills training	239	35.4%	81	33.3%
How long did the training behind the wheel of a car last?				
No time spent behind the wheel of a car	33	4.9%	26	10.7%
Fewer than 2 hours	125	18.5%	42	17.3%
2-3 hours	109	16.1%	37	15.2%
4-5 hours	112	16.6%	42	17.3%
6-8 hours	103	15.3%	26	10.7%
More than 8 hours	185	27.4%	69	28.4%
How long ago did you receive the training?				
Within the last year	18	2.7%	2	0.8%
1 year to up to 2 years ago	44	6.5%	1	0.4%
2 years to up to 5 years ago	131	19.4%	10	4.1%
5 years to up to 10 years ago	162	24.0%	60	24.7%
10 or more years ago	317	47.0%	169	69.5%
Where did you receive your advanced driver training?^a				
Driver Management Australia Skid Pan Program	3	0.4%	3	1.2%
Safe Drive Training Skid Pan Experience	15	2.2%	4	1.6%
I do not remember	22	3.3%	5	2.1%
Other	94	13.9%	24	9.9%

^a The question is a multiple response set, meaning that respondents could tick more than one response.

Table A10. Respondents who took training for a motor sport licence (numbers and percentages).

	Motor sport participants n=1607		Advanced driver training graduates n=57	
	n	%	n	%
What did the training include?^a				
On-road skills training	166	10.3%	6	10.5%
Off-road skills training	1138	70.8%	39	68.4%
Skid-pan training	509	31.7%	14	24.6%
Classroom teaching with simulation skills training	282	17.5%	8	14.0%
Classroom teaching without simulation skills training	475	29.6%	13	22.8%
Participating in car club events with supervision or observation	1108	68.9%	26	45.6%
How long did the training behind the wheel of a car last?				
No time spent behind the wheel of a car	21	1.3%	1	1.8%
Fewer than 2 hours	238	14.8%	14	24.6%
2-3 hours	263	16.4%	12	21.1%
4-5 hours	301	18.7%	14	24.6%
6-8 hours	263	16.4%	6	10.5%
More than 8 hours	515	32.0%	9	15.8%
How long ago did you receive the training?				
Within the last year	171	10.6%	8	14.0%
1 year to up to 2 years ago	154	9.6%	6	10.5%
2 years to up to 5 years ago	308	19.2%	8	14.0%
5 years to up to 10 years ago	353	22.0%	14	24.6%
10 or more years ago	607	37.8%	20	35.1%
Where did you receive you motor sport training?^a				
Safe Drive Training Motor Sport Training and Licensing	165	10.3%	5	8.8%
I do not remember	302	18.8%	20	35.1%
Other	1168	72.7%	33	57.9%

^a The question is a multiple response set, meaning that respondents could tick more than one response.

Table A11. Level of interest in motor sport.

	All drivers N=5413		Motor sport participants n=3050		Advanced driver training graduates n=663		RACQ control group n=588		SSI control group n=806	
	n	%	N	%	n	%	n	%	n	%
Possession of a motor sport competition licence										
	2281	42.1%	2205	72.3%	26	3.9	17	2.9%	2	0.2%
Number of motor sport events watched on television in the last 12 months for 30 minutes or longer										
0	858	15.9%	99	3.2%	171	25.8%	170	28.9%	367	45.5%
1-5	1357	25.1%	703	23.0%	193	29.1%	165	28.1%	212	26.3%
6-10	760	14.0%	525	17.2%	75	11.3%	73	12.4%	47	5.8%
11-15	458	8.5%	349	11.4%	39	5.9%	35	6.0%	19	2.4%
16-20	495	9.1%	365	12.0%	48	7.2%	47	8.0%	14	1.7%
21-30	450	8.3%	350	11.5%	23	3.5%	37	6.3%	17	2.1%
31-40	275	5.1%	208	6.8%	21	3.2%	22	3.7%	5	0.6%
>40	548	10.1%	425	14.0%	40	6.1%	38	6.5%	8	1.0%
Number of motor sport events attended as a spectator over the last 12 months										
0	2159	39.9%	562	18.4%	410	61.8%	401	68.2%	689	85.5%
1-5	2280	42.1%	1645	53.9%	206	31.1%	187	31.8%	117	14.5%
6-10	525	9.7%	459	15.0%	24	3.6%	0	0.0%	0	0.0%
>10	135	6.5%	313	10.3%	15	2.3%	0	0.0%	0	0.0%
As a child, I was interested in motor sport										
	3822	70.6%	2633	86.3%	386	58.2%	326	55.4%	259	32.1%
I am currently interested in motor sport										
	4277	79.0%	2987	97.9%	395	59.6%	375	63.8%	281	34.9%

Table A12. Level of participation in motor sport among motor sport participants.

	Motor sport participants n=1607	
	n	%
Number of motor sport events participated over lifetime		
1-5	109	6.8%
6-10	129	8.0%
>10	1358	83.5%
Age began competing in motor sport		
Under 10 years	45	2.8%
10-18 years	375	23.3%
19-24 years	498	31.0%
25-34 years	285	17.7%
35-49 years	287	17.9%
50+ years	112	7.0%
Highest CAMS licence level currently hold		
No CAMS Licence	443	27.6%
CAMS Level 1 licence	94	5.8%
CAMS Level 2 licence	599	37.3%
CAMS Clubman level	141	8.8%
CAMS National level	307	19.1%
CAMS International level	23	1.4%
Highest CAMS licence level ever held		
No CAMS Licence	159	9.9%
CAMS Level 1 licence	129	8.0%
CAMS Level 2 licence	584	36.3%
CAMS Clubman level	165	10.3%
CAMS National level	452	28.1%
CAMS International level	118	7.3%
Possession of an another type(s) of motor sport licence(s)		
Currently hold	216	13.4%
Have previously held, but no longer hold	197	12.3%
Type(s) of motor sport competed in^a		
Stock Car Racing	38	2.4%
Drifting	93	5.8%
Off-Road Racing	120	7.5%
Speedway	136	8.5%
Rallycross	187	11.6%
Sports Sedan Racing	205	12.8%
Historic Rallying	223	13.9%
Sports Car/Grand Tour Racing	230	14.3%
Historic Racing	252	15.7%
Tour Car Racing	265	16.5%
Drag Racing	265	16.5%
Autocross	343	21.3%
Kart Racing	461	28.7%
Rallying	574	35.7%
Time Trials/Regularity Events	597	37.1%
Motorkhanas	791	49.2%
Hillclimbs	863	53.7%
Circuit Sprints	1125	70.0%
Other	215	13.4%

^a The question is a multiple response set, meaning that respondents could tick more than one response.