

The DRIVE Study: the Pilot Phase

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Biography

Dr Rebecca Ivers is a senior research fellow in epidemiology in the Injury Prevention and Trauma Care Division at the Institute for International Health. She holds a postdoctoral fellowship from the University of Sydney to work on the DRIVE study, and is also conducting a series of systematic reviews on interventions to reduce injury in motorcyclists.

Abstract

The DRIVE Study is an NHMRC funded longitudinal study examining risk factors for injury in 20 000 NSW drivers aged 17-24 years holding their first provisional driver's licence. The baseline questionnaire includes questions on road and driving exposure/experience; driver training; road risk perceptions and mental health. Baseline data will be linked to driver records and data on crash and injury involvement two years after recruitment. The MAA funded pilot study compared two methods of participant recruitment. Over a one-week period in November 2002, 1512 new P-plate licensees in NSW, aged 17-24 years, were identified. The first method involved mailing potential participants an invitation to either log in to the study web-site where the questionnaire and consent forms could be completed online, or else phone a free-call number for a mailed questionnaire. The second method involved mailing all study material directly to potential participants. Resulting response rates were low: 7% for the on-line method and 12% for the print version, both after 2 mail-outs. A second pilot was then carried out on 3 groups of 100 participants. Similar methodology was utilised to the first pilot but including a third group who were sent a postcard directing them to the website. All three groups were offered payment by means of a movie ticket. The response rate achieved in this manner after 1 mail-out was 20% for both print packages and web invitation, but only 2% for the postcards. Although numbers in the second pilot were too small to make meaningful comparisons, there appeared to be a tendency for online participants to be male, urban dwellers as opposed to female rural dwellers completing the print questionnaire. The results from this pilot study demonstrate the challenges of recruiting this important driver population and the use of a novel method (the internet) for data collection.

1. INTRODUCTION

Injuries impose a substantial burden on young people, both in Australia and internationally. In 1998, 73% of all deaths among young men, and 57% of deaths among young women, aged 15-24 years in Australia were due to injuries. The single largest cause of injury-related fatalities, hospital admissions, and emergency department presentations among this age group is transport-related incidents. Of injury deaths, 44% of male deaths, and 45% of female deaths, were due to motor vehicle traffic crashes (AIHW 2002). Drivers aged 17-25 drivers are highly significant in total numbers of road crash injuries in Australia. In New South Wales, for example, young drivers aged 17-25 years accounted for 29% (n=4481) of road fatalities and car crash injuries in 2000 (RTA 2000), yet this age group comprised only 13% of the total population in NSW (ABS 2000).

Although technological advances in motor vehicle engineering and road design, and the

implementation of various road safety measures have led to an overall decline in the incidence of motor vehicle-related injuries in Australia in the past three decades, young people still have substantially higher rates of motor vehicle-related mortality than older age groups. This suggests that if the burden of injuries among young drivers is to be reduced to levels that are at least comparable with those in other age groups, then the identification of factors that are specifically associated with an increased risk of motor vehicle injury among young people must be a priority.

The DRIVE study is a large-scale NSW cohort study that has been established in order to identify and more closely examine risk factors for injury in young drivers. Funded by the National Health and Medical Research Council, the study began recruiting in March 2003. Briefly, the study is a prospective cohort study that aims to recruit 20,000 drivers aged 17-24 years at the time they hold their first NSW provisional driver's licence (red p plates). At the time of recruitment, participants complete a baseline questionnaire, which includes questions about driver demographics, driver training, driving exposure and experience, road risk perceptions and behaviours, mental health and sleep related factors. The principal outcomes of interest in the study are deaths and injuries sustained in motor vehicle crashes. Two years after recruitment, personal identifiers will be used to link questionnaire data to the participant's driver record, and to crash, injury and death data held by the RTA and NSW Health, as well as to the National Death Index.

The pilot study, funded by the Motor Accidents Authority of NSW, was established to compare different recruitment methodologies.

The specific objectives of the pilot study were to determine the response rates and costs for two different methods of recruitment and determine completion rates for the questionnaire for the two methods.

2. METHODS

Pilot 1

In the first pilot study, 1512 people aged 17-24 who received their provisional licence during a one-week period in October 2002 were identified from the RTA licensing database by staff of the Road User Research Section of the RTA. Contact names and addresses were obtained and forwarded to an independent mailing agency (Norcross Pty Ltd), who undertook the mailing for the study. Individuals thus identified were randomly assigned to one of two methods of recruitment.

Method 1– The first group of eligible individuals (755 people) were sent a **letter of invitation** from the study investigators along with a covering letter from the RTA encouraging them to join the study but emphasising that their driver's licence was not conditional upon participation. The letter of invitation asked individuals to contact study staff using a free-call 1800 number, or to log in into a website. For individuals who contacted the study team by telephone, a package was sent to the nominated address. This included a letter of invitation to participate in the study from the study investigators, information about the study, a consent form, a standardised self-administered questionnaire and a stamped, pre-addressed envelope for return of the consent form and the questionnaire to the Institute for International Health. **The information posted on the website** was similar to the printed version. Participants viewed the letter of invitation, the information sheet, consent forms and questionnaire.

Method 2– The second group of eligible individuals (756 people) were sent a **package of materials**, including the questionnaire, along with a covering letter from the RTA encouraging them to join the study but emphasising that their driver's licence was not conditional upon participation. This material also identified the study website so that potential

participants could log directly on to the website, rather than completing the paper based questionnaire.

For both methods, people who did not respond within 3 weeks to the initial mail out were resent identical information.

Focus group

Following pilot 1, a focus group was carried out with 6 provisional licence-holders aged 17-24 to discuss modification of recruitment techniques.

Considering the results of the focus group, and after further consultation with our advisory committees, two methods of boosting recruitment rates were agreed on:

- (1) Development of a colour postcard to send to eligible individuals
- (2) Offering participants a movie ticket voucher as payment for their time.

Pilot 2

To assess the impact of participant payment on response rates, a group of 300 newly licensed young drivers were identified from the RTA licensing database by staff of the Road User Research Section of the RTA and randomly allocated into 3 groups of 100 young drivers. As in the first pilot study, one group was sent the letter of invitation, one group sent the package of study materials, and the third group was sent a colour postcard containing similar information to the letter of invitation. In each case it was clearly stated that participants would be reimbursed for their time with a movie ticket. People who returned a completed questionnaire to the study team and who fitted the entry criteria for the study were mailed a voucher for a movie ticket. As the primary objective of pilot 2 was to determine the effect of the payment with movie ticket and the postcard, non-responders were not resent information in the second pilot study.

Driver's licence numbers reported by all study participants in both pilot studies were submitted to staff at the Road User Research Section of the RTA who verified validity.

3. RESULTS

By February 17 there were 185 respondents from both pilot studies. After data were analysed, 4 additional print questionnaires were returned: 2 from the first pilot, and 2 from the second. Licence numbers were submitted to the RTA for validation, and it was found that all participants except one were legitimate licensees who were eligible to participate in the study.

Of the 189 respondents, 6 were not actively recruited. Of these 6, all were valid licensees but 2 held their P2 rather than P1 licence and hence were not eligible to participate in the study. Of the other legitimate study respondents in the pilot study, 3 held renewed P1 licences.

Response rates for pilot study one were disappointing. A response rate of approximately 25% had been anticipated, however the response rate for pilot 1 after two mailings to each potential participant was 12% for those mailed questionnaires, 6.5% for the internet responses (table 1) and 9% overall.

In the first pilot study, the response rate was significantly better for the print questionnaire (Method 2) than for the letter of invitation (Method 1). For the print version, 93 out of 756 people responded, a response rate of 12%, compared to 49 out of 755, or 7%, for the letter of invitation (chi-squared test $p < 0.001$).

For the second pilot study, there was also a significant difference in the response rates obtained from the three methods of recruitment. Of the 100 people sent the printed version, 20 (20%) responded; of the 100 sent a letter of invitation, 19 (19%) responded; and of the

100 sent a postcard, 2 (2%) responded (chi-squared test $p < 0.001$). The main difference in this analysis came from the postcard (2/100 vs. 39/200; $p < 0.001$). It should be noted that there was only one mail-out for the second pilot study compared to two for the first, so the expected response rate for the second pilot study could potentially be even higher with a repeat effort.

The internet response rate of 19% in the second pilot study (with payment) was significantly better than the internet response rate of 6.5% in the first pilot study (chi-squared test $p < 0.001$). For respondents invited to participate via the website, 81% of respondents in the first pilot did so, with 19% requesting and completing printed questionnaires via the 1800 phone number. In the second pilot study 95% of respondents invited to participate via the website completed the questionnaire online. Of the people who were invited to participate via a print questionnaire, almost all completed the printed version in the first pilot (2% were completed online). All of the people invited to participate via a print questionnaire in the second pilot completed the print version.

Differences in demographic and other variables are shown in table 1, although statistical comparisons between groups were not made due to small numbers of respondents in pilot 2. There appeared to be more males responding to the internet recruitment method. In the first pilot, 33% of those recruited via the internet methodology were male compared to 29% for the print method. In the second pilot, 47% of those recruited via the internet methodology were male, compared to 28% for the print method (table 1). The internet method of recruitment also appeared to recruit a higher proportion of people from non-English speaking backgrounds and a higher proportion of those not resident in urban Sydney (table 1).

The print questionnaires for both pilot studies had good completion. All print questionnaires were complete with the exception of a few where it seemed one or two questions had been inadvertently missed. For all methods of recruitment, the level of missing data in Sections A, B, and C (containing questions about contact details, demographics, and driver exposure/training respectively), was mostly less than 10%. Section D (containing questions about risk taking behaviour) had higher levels of missing data. Of the 19 respondents in the internet/movie ticket combination, four had missing data in section D. Investigations revealed that amongst these respondents, three had problems with submitting online forms, although it seemed likely that two respondents had problems with their local connection rather than the study website. The fourth person did not complete the survey due to lack of interest.

4. DISCUSSION

The pilot phase has been useful in determining several important aspects of the methodology for the main study. The results of the first pilot study indicate that use of either method of recruitment without offering payment results in response rates that are too low to achieve the required sample size for the main study within our budget. This was confirmed by the focus group conducted following the first pilot study, where participants indicated that they would be much more likely to participate if offered payment. For the first pilot study, the best response rate (12%) was achieved using the print method, which is also the most expensive. The second pilot study demonstrates that use of a movie ticket voucher as payment for participant's time not only improves the response rate overall, but also increases use of the internet to complete the questionnaire. The internet method is significantly cheaper than the print method as less printing and postage costs are involved, making this a more feasible method of recruitment for the main study despite the need to pay participants for their time. The cost of purchasing the movie ticket will also be offset by the internet version not requiring the employment of data entry staff, as internet participants enter their data directly into the IH secure database. An added benefit of using internet recruitment is that eligible friends or family who hear about the study may readily access the website to participate.

Examination of the completeness of the questionnaires has been another important outcome of the pilot phase. The level of missing data for all methods of recruitment was low for most participants. However, the final part of the questionnaire had higher levels of missing data. Section D contains more sensitive questions (for example, on drug and alcohol use, risk taking behaviour and mental health), as well as being the last section, and therefore might be expected to have higher rates of non-completion. However, contacting the 4 people who did not complete section D on the internet in the second pilot indicated that 3 out of 4 did not complete it due to computer problems. In the main study, the internet site will be modified to assist participants with use of the site, establishing clear instructions about re-entering the site to complete the questionnaire as well as mechanisms to report technical problems.

Although the numbers of respondents in the pilot phase were not sufficient to allow statistical tests of differences in proportions, examination of the frequencies of characteristics of interest was informative.

Recruiting participants via an invitation to complete the study online appeared to result in adequate numbers of males, people from non-English speaking backgrounds and those resident in rural/urban areas. Online data collection means that characteristics of participants may be readily examined in a timely manner so that recruitment may selectively target those underrepresented in the study.

5. CONCLUSIONS

The pilot phase of the DRIVE study has demonstrated that the highest and most cost-effective response rate can be achieved by sending eligible individuals a letter of invitation to complete the study online, with the offer of payment for their time. Although numbers in the pilot study were too small to make meaningful comparisons, it seems likely that use of this recruitment method in the main study, in combination with targeted recruitment strategies, is likely to produce a study population that is appropriately balanced in characteristics of interest to allow meaningful comparisons to be made between groups. Completeness of data obtained by this method in the pilot was acceptable, and there is potential for this to be improved further in the main study. The pilot phase has made an important contribution to the methodology and facilitated the outcomes of the main phase of the DRIVE study.

References

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Table 1: Demographic characteristics of participants, by recruitment method.

| | No payment | | Movie ticket payment | | | No group |
|--|-------------------|------------------|----------------------|-------------------|-----------------|----------|
| | Print | Internet | Print | Internet | Postcard | |
| Responders/invited% | 91/756 (12.0%) | 49/755 (6.5%) | 18/100 (18.0%) | 19/100 (19.0%) | 2/100 (2.0%) | 6 (n/a) |
| Demographics | | | | | | |
| N male (%) | 26 (29) | 16 (33) | 5 (28) | 9 (47) | 1 (50) | 2 (33) |
| N missing data (%) | 1 | 7 | 0 (0) | 1 | 0 (0) | 2 |
| Aboriginal/Torres Strait Islander (%) | 1 (1) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| N missing data (%) | 2 | 8 | 0 | 2 | 0 (0) | 2 |
| Language other than English spoken at home | 17 (19) | 2 (4) | 5 (28) | 8 (42) | 1 (50) | 1 (17) |
| N missing data (%) | 1 (1) | 8 (16) | 0 (0) | 1 (5) | 0 (0) | 2 (33) |
| Attend high school (%) | 48 (53) | 31 (63) | 8 (44) | 12 (63) | 1 (50) | 0 (0) |
| On government benefits | 13 (14) | 4 (8) | 2 (11) | 2 (11) | 0 (0) | 1 (17) |
| Live in Sydney urban (%) | 43 (47) | 22 (46) | 7 (39) | 13 (68) | 2 (100) | 3 (50) |
| N missing data (%) | 0 (0) | 2 (4) | 0 (0) | 1 (5) | 0 (0) | 2 (33) |