

## Supplementary data

## Driving offences and risk of subsequent crash in novice drivers. The DRIVE cohort study 12 year follow up.

Table supplement 1: Variables in the analysis, data source, categories and reference. The DRIVE study, NSW, Australia, June 2003–December 2004.

Variable	Source	Category / unit in the analysis	Reference
Age	Baseline questionnaire	Single year derived from date of birth	
Sex	Baseline questionnaire	Male / female	
Country of birth	Baseline questionnaire	Australia & New Zealand Other	
Remoteness	Accessibility/Remoteness index of Australia, linked to study data by postcode of area of residence	Metro Inner regional Outer regional / remote	Trewin D. Australian Standard Geographical Classification (ASGC). ABS Catalogue No 12160: Australian Bureau of Statistics; 2004.
Socioeconomic status	Australian Bureau of Statistics 2001 area level index of education and occupation linked to study data by postcode of area of residence	Least disadvantaged 2nd quartile 3rd quartile Most disadvantaged	Trewin D. Socio-Economic Indexes for Areas. Census of population and housing. Canberra, ACT: Australian Bureau of Statistics; 2001.
Attempts on driver test	NSW driver licencing data linked with survey data	Number of attempts	
Crash before study	Transport for NSW crash data linked with survey data	Yes / No	
Time on learners' licence	NSW driver licencing data linked with survey data	< 1 year 1-1.5 years > 1.5 years	
Self-rated driving ability compared to other drivers	Baseline questionnaire	Five point Likert scale <ul style="list-style-type: none"> <li>• Much better</li> <li>• Better</li> <li>• Same</li> <li>• Worse</li> <li>• Much worse</li> </ul>	
Lessons with professional driving instructor (hours)	Baseline questionnaire	Number of lessons with professional driving instructor	Adapted from the Western Australian Young Driver Cohort Study and the University of Otago Young Driver Pilot Study. Stevenson MR, Palamara P. Behavioural factors as predictors of motor vehicle crashes: differentials between young urban and rural drivers, Aust N Z J Public Health 2001;25:245–9.  Begg D, Brookland R, Hope J, et al. New Zealand drivers study: developing a methodology for conducting a follow-up study of newly licensed drivers. J Safety Res 2003;34:329–36.
Marijuana smoking in last 12 months	Baseline questionnaire	<ul style="list-style-type: none"> <li>• Never</li> <li>• Once a month or less</li> <li>• 2-4 times a month</li> <li>• 2-3 times per week</li> <li>• 4plus per week</li> </ul>	Centers for Disease Control and Prevention. Methodology of the youth risk behaviour surveillance system, Morb Mortal Wkly Rep, 2004;53:1–14

Variable	Source	Category / unit in the analysis	Reference
Use of other drugs in last 12 months	Baseline questionnaire	<ul style="list-style-type: none"> <li>• Never</li> <li>• Once a month or less</li> <li>• 2-4 times a month</li> <li>• 2-3 times per week</li> <li>• 4plus per week</li> </ul>	Centers for Disease Control and Prevention. Methodology of the youth risk behaviour surveillance system, <i>Morb Mortal Wkly Rep</i> , 2004;53:1–14.
Alcohol audit summary score	Baseline questionnaire	<p>AUDIT-C, Alcohol Use Disorders Identification Test Consumption sub-scale. Summary score derived from the three alcohol audit questions grouped into 0-6 and &gt;6.</p> <p>1. How often do you have a drink containing alcohol?</p> <ul style="list-style-type: none"> <li>• Never</li> <li>• Once a month or less</li> <li>• 2-4 times a month</li> <li>• 2-3 times a week</li> <li>• 4 times a week or more</li> </ul> <p>2. How many drinks of alcohol would you have on a typical day when you are drinking?</p> <ul style="list-style-type: none"> <li>• 1 or 2</li> <li>• 3 or 4</li> <li>• 5 or 6</li> <li>• 7, 8 or 9</li> <li>• 10 or more</li> </ul> <p>3. How often would you have six or more drinks on one occasion?</p> <ul style="list-style-type: none"> <li>• Never</li> <li>• Once a month or less</li> <li>• 2-4 times a month</li> <li>• 2-3 times a week</li> <li>• 4 times a week or more</li> </ul>	<p>Babor TF, de la Fuente JR, Saunders J, et al. AUDIT: the Alcohol Use Disorders Identification Test, Guidelines for use in primary health care. Geneva: World Health Organization, 1992.</p> <p>Sayer GP, Britt H, Horn F, et al. Measures of health and health care delivery in general practice in Australia, AIHW catalogue number GEP-3. Canberra: The Australian Institute of Health and Welfare, 2000</p> <p>Bush K, Kivlahan DR, et al (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. <i>Ambulatory Care Quality Improvement Project (ACQUIP)</i>. <i>Arch Intern Med</i>. 158:1789-95.</p>
Self-harm	Baseline questionnaire	<p>Question related to self harm: "In the past 12 months have you ever deliberately hurt yourself or done anything that you knew might have harmed you or even killed you?"</p> <p>No Yes</p>	Patton GC, Hemphill SA, Beyers JM, et al. Pubertal stage and deliberate self-harm in adolescents. <i>J Am Acad Child Adolesc Psychiatry</i> 2007;46:508-14.
Risk perception	Baseline questionnaire	<p>Summary score derived from 10 item scale measures on 4 point Likert scale (Always safe, mostly safe, sometimes safe, rarely safe) grouped into population tertiles (low, medium and high) for analysis</p> <p>10 items:</p> <ul style="list-style-type: none"> <li>• Driving with 2 or more passengers</li> <li>• Driving between midnight and 6 AM</li> <li>• Driving at 110 km/h in a 100-km/h zone</li> <li>• Driving at 70 km/h in a 60-km/h zone</li> <li>• Driving while talking on a mobile phone</li> <li>• Driving a poorly maintained car</li> <li>• Driving with a blood alcohol level just over the legal limit</li> </ul>	<p>Begg DJ, Brookland R, Hope J, Langley J, Broughton J. New Zealand drivers study: developing a methodology for conducting a follow-up study of newly licensed drivers. <i>J Safety Res</i>. 2003;34:329–336.</p> <p>Donovan J, Jessor R. Young Adult Driving Questionnaire. Boulder: Colorado Institute of Behavioral Science; 1992</p>

Variable	Source	Category / unit in the analysis	Reference
		<ul style="list-style-type: none"> <li>• Driving while using SMS on a mobile phone</li> <li>• Driving after smoking marijuana</li> <li>• Going through a red light</li> </ul>	
Risk taking	Baseline questionnaire	<p>Summary score derived from 14 item scale measures on 5 point Likert scale (Never, hardly ever, sometimes, often and very often) grouped into population tertiles (low, medium and high) for analysis</p> <p>10 items:</p> <ul style="list-style-type: none"> <li>• Drive fast just for the thrill of it</li> <li>• Take some risks when driving</li> <li>• Drive 70km/h in a 60km/h zone</li> <li>• Do burnouts, donuts, or skids</li> <li>• Speed up if someone is trying to pass you</li> <li>• Follow very close behind slower drivers</li> <li>• Make rude gestures at other drivers</li> <li>• Honk your horn or flash your lights</li> <li>• Race or drag race</li> <li>• Drive while talking on a mobile phone</li> <li>• Drive while listening to loud music</li> <li>• Drive with 2 or more passengers</li> <li>• Drive while using SMS on a mobile phone</li> <li>• Drive without wearing a seatbelt</li> </ul>	Begg D, Brookland R, Hope J, Langley J, Broughton J. New Zealand drivers study: developing a methodology for conducting a follow-up study of newly licensed drivers. <i>Journal of safety research</i> 2003; 34(3): 329-36.
Sensation seeking	Baseline questionnaire	<p>Summary score derived from 20 item scale measures (Yes/No) grouped into population tertiles (low, medium and high) for analysis.</p> <ul style="list-style-type: none"> <li>• I tend to begin a new job without much advance</li> <li>• planning on how I will do it</li> <li>• I usually think about what I am going to do before I do it</li> <li>• I often do things on impulse</li> <li>• I very seldom spend much time on the details of planning ahead</li> <li>• I like to have new and exciting experiences and sensations even if they are a little frightening</li> <li>• Before I begin a complicated job, I make careful plans</li> <li>• I would like to take off on a trip with no pre-planned or definite routes or timetables</li> <li>• I enjoy getting into new situations where you can't predict how things will turn out</li> <li>• I like doing things just for the thrill of it</li> <li>• I tend to change interests frequently</li> <li>• I sometimes like to do things that are a little frightening</li> <li>• I'll try anything once</li> <li>• I would like the kind of life where one is on the move and travelling a lot, with lots of change and excitement</li> </ul>	<p>Impulsive Sensation Seeking Scale of the Zuckerman–Kuhlman Personality Questionnaire</p> <p>Zuckerman M, Kuhlman DM, Joireman J, et al. A comparison of the three structural models for personality: the big three, the big five, and the alternative five. <i>J Pers Soc Psychol</i> 1993;65:757–68.</p>

Variable	Source	Category / unit in the analysis	Reference
		<ul style="list-style-type: none"> <li>• I sometimes do 'crazy' things just for fun</li> <li>• I like to explore a strange city or section of town by myself, even if it means getting lost</li> <li>• I prefer friends who are excitingly unpredictable</li> <li>• I often get so carried away by new and exciting things that I never think of possible complications</li> <li>• I am an impulsive person</li> <li>• I like 'wild' uninhibited parties</li> </ul>	
Driving exposure	Baseline questionnaire	During an average week, about how long (to the nearest hour) do you spend driving a car?	Stevenson MR, Palamara P. Behavioural factors as predictors of motor vehicle crashes: differentials between young urban and rural drivers, Aust N Z J Public Health 2001;25:245–9. Begg D, Brookland R, Hope J, et al. New Zealand drivers study: developing a methodology for conducting a follow-up study of newly licensed drivers. J Safety Res 2003;34:329–36.

**Table supplement 2: Variables included in the different models to explore the relationship between driving offences (any offence, reckless driving, speeding, low speeding and others) during 2003/04-2006 and crash (any crash, crash resulting in hospital admission or death and single vehicle crash) during 2007-2016.**

Model	Variables included
M1*	age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence and average driving per week
M2*	age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence average driving per week, cannabis smoking, alcohol consumption, drug use and self-harm
M3*	age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence, average driving per week, risk perception score, risky driving score and sensation seeking score.
M4*	age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence, average driving per week, self-rated driving ability, number of attempts on driver test, crash before start of follow up not related to driving offence, lessons with professional driving instructor and time on learner licence.
M5*	age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence, average driving per week, cannabis smoking, alcohol consumption, drug use and self-harm, risk perception score, risky driving score, sensation seeking score, self-rated driving ability, number of attempts on driver test, crash before start of follow up not related to driving offence, lessons with professional driving instructor and time on learner licence

\*adjusted for all other driving offences (calculated as number of any offence minus offence under investigation)

^ Variables were entered into the model in the format shown in Table 1

**Table supplement 3: Cohort characteristics by number of driving reckless driving related offences.\***

		None	One	Total
		Number (%)	Number (%)	
<b>Sex</b>	Female	11005 (55.9)	344 (31.6)	11349 (54.6)
	Male	8689 (44.1)	743 (68.4)	9432 (45.4)
<b>Age (years)</b>	17	9480 (48.1)	638 (58.7)	10118 (48.7)
	18-19	7374 (37.4)	354 (32.6)	7728 (37.2)
	20-25	2840 (14.4)	95 (8.7)	2935 (14.1)
<b>Country of birth</b>	Australia / NZ	16879 (87.3)	982 (91.3)	17861 (87.5)
	Other	2456 (12.7)	94 (8.7)	2550 (12.5)
<b>Area level SES</b>	Least	4915 (25.0)	216 (19.9)	5131 (24.7)
	Second quartile	4896 (24.9)	237 (21.8)	5133 (24.7)
	Third quartile	5118 (26.0)	329 (30.3)	5447 (26.2)
	Most	4765 (24.2)	305 (28.1)	5070 (24.4)
<b>Remoteness</b>	Metro	14674 (74.5)	778 (71.6)	15452 (74.4)
	Inner regional	4136 (21.0)	252 (23.2)	4388 (21.1)
	Outer regional /	884 (4.5)	57 (5.2)	941 (4.5)
<b>Attempts driver test</b>	1	12800 (65.2)	672 (61.9)	13472 (65.0)
	2	4689 (23.9)	267 (24.6)	4956 (23.9)
	3 or more	2139 (10.9)	146 (13.5)	2285 (11.0)
<b>Time on I-Licence</b>	< 1 year	7436 (37.9)	490 (45.2)	7926 (38.3)
	1-1.5 years	7004 (35.7)	400 (36.9)	7404 (35.8)
	> 1.5 years	5176 (26.4)	194 (17.9)	5370 (25.9)
<b>Crash before study</b>	No	19168 (97.3)	999 (91.9)	20167 (97.0)
	Yes	526 (2.7)	88 (8.1)	614 (3.0)
<b>Self-rated driving ability compared to other drivers</b>	Much better	3467 (18.2)	261 (25.3)	3728 (18.6)
	Better	8333 (43.8)	425 (41.2)	8758 (43.6)
	Same	6910 (36.3)	332 (32.2)	7242 (36.1)
	Worse or much	328 (1.7)	14 (1.4)	342 (1.7)
<b>Marijuana smoking in last 12 months</b>	Never	16456 (86.5)	807 (78.1)	17263 (86.1)
	Once a month or	1945 (10.2)	146 (14.1)	2091 (10.4)
	2-4 times a	359 (1.9)	41 (4.0)	400 (2.0)
	2-3 or 4plus per	258 (1.4)	39 (3.8)	297 (1.5)
<b>Use of other drugs in last 12 months</b>	Never	17716 (93.3)	933 (90.8)	18649 (93.2)
	Once a month or	967 (5.1)	64 (6.2)	1031 (5.2)
	2-4 times a	212 (1.1)	24 (2.3)	236 (1.2)
	2-3 or 4plus per	89 (0.5)	6 (0.6)	95 (0.5)
<b>Alcohol audit summary score</b>	No	16620 (87.2)	818 (78.9)	17438 (86.8)
	Yes	2437 (12.8)	219 (21.1)	2656 (13.2)
<b>Self-harm</b>	No	17096 (92.4)	873 (87.4)	17969 (92.1)
	Yes	1414 (7.6)	126 (12.6)	1540 (7.9)
<b>Risk Taking</b>	Low	6645 (35.5)	205 (20.3)	6850 (34.7)
	Medium	6161 (32.9)	290 (28.8)	6451 (32.7)
	High	5938 (31.7)	513 (50.9)	6451 (32.7)
<b>Risk perception</b>	Low	5964 (32.0)	245 (24.4)	6209 (31.6)
	Medium	5876 (31.5)	271 (27.0)	6147 (31.3)
	High	6800 (36.5)	487 (48.6)	7287 (37.1)
<b>Sensation score</b>	Low	6059 (32.5)	198 (19.8)	6257 (31.9)
	Medium	6076 (32.6)	310 (30.9)	6386 (32.5)
	High	6501 (34.9)	494 (49.3)	6995 (35.6)
<b>Average weekly driving (hours)</b>	Mean (SD)	8.5 (13.0)	12.5 (25.6)	8.7 (13.9)
<b>Lessons with professional driving instructor (hours)</b>	0	3406 (17.3)	248 (22.8)	3654 (17.6)
	1-4	5584 (28.4)	325 (29.9)	5909 (28.4)
	5-8	4061 (20.6)	230 (21.2)	4291 (20.6)
	9+	6643 (33.7)	284 (26.1)	6927 (33.3)

\* Offences from joining DRIVE study in 2003/04 till end of 2006.

**Table supplement 4: Cohort characteristics by number of low speeding related offences.\***

		None Number (%)	One Number (%)	Total
<b>Sex</b>	Female	10170 (55.4)	1179 (48.4)	11349 (54.6)
	Male	8176 (44.6)	1256 (51.6)	9432 (45.4)
<b>Age (years)</b>	17	8840 (48.2)	1278 (52.5)	10118 (48.7)
	18-19	6852 (37.3)	876 (36.0)	7728 (37.2)
	20-25	2654 (14.5)	281 (11.5)	2935 (14.1)
<b>Country of birth</b>	Australia / NZ	15687 (87.1)	2174 (90.4)	17861 (87.5)
	Other	2319 (12.9)	231 (9.6)	2550 (12.5)
<b>Area level SES</b>	Least	4621 (25.2)	510 (20.9)	5131 (24.7)
	Second quartile	4517 (24.6)	616 (25.3)	5133 (24.7)
	Third quartile	4772 (26.0)	675 (27.7)	5447 (26.2)
	Most	4436 (24.2)	634 (26.0)	5070 (24.4)
<b>Remoteness</b>	Metro	13681 (74.6)	1771 (72.7)	15452 (74.4)
	Inner regional	3835 (20.9)	553 (22.7)	4388 (21.1)
	Outer regional /	830 (4.5)	111 (4.6)	941 (4.5)
<b>Attempts driver test</b>	1	11913 (65.2)	1559 (64.2)	13472 (65.0)
	2	4377 (23.9)	579 (23.8)	4956 (23.9)
	3 or more	1993 (10.9)	292 (12.0)	2285 (11.0)
<b>Time on I-Licence</b>	< 1 year	6899 (37.8)	1027 (42.3)	7926 (38.3)
	1-1.5 years	6536 (35.8)	868 (35.8)	7404 (35.8)
	> 1.5 years	4838 (26.5)	532 (21.9)	5370 (25.9)
<b>Crash before study</b>	No	17932 (97.7)	2235 (91.8)	20167 (97.0)
	Yes	414 (2.3)	200 (8.2)	614 (3.0)
<b>Self-rated driving ability compared to other drivers</b>	Much better	3258 (18.4)	470 (20.1)	3728 (18.6)
	Better	7720 (43.5)	1038 (44.5)	8758 (43.6)
	Same	6448 (36.4)	794 (34.0)	7242 (36.1)
	Worse or much	309 (1.7)	33 (1.4)	342 (1.7)
<b>Marijuana smoking in last 12 months</b>	Never	15383 (86.8)	1880 (80.6)	17263 (86.1)
	Once a month or	1781 (10.1)	310 (13.3)	2091 (10.4)
	2-4 times a	326 (1.8)	74 (3.2)	400 (2.0)
	2-3 or 4plus per	229 (1.3)	68 (2.9)	297 (1.5)
<b>Use of other drugs in last 12 months</b>	Never	16539 (93.5)	2110 (90.5)	18649 (93.2)
	Once a month or	876 (5.0)	155 (6.6)	1031 (5.2)
	2-4 times a	188 (1.1)	48 (2.1)	236 (1.2)
	2-3 or 4plus per	77 (0.4)	18 (0.8)	95 (0.5)
<b>Alcohol audit summary score</b>	No	15529 (87.4)	1909 (81.8)	17438 (86.8)
	Yes	2230 (12.6)	426 (18.2)	2656 (13.2)
<b>Self-harm</b>	No	15928 (92.3)	2041 (90.5)	17969 (92.1)
	Yes	1326 (7.7)	214 (9.5)	1540 (7.9)
<b>Risk Taking</b>	Low	6331 (36.2)	519 (22.7)	6850 (34.7)
	Medium	5718 (32.7)	733 (32.1)	6451 (32.7)
	High	5417 (31.0)	1034 (45.2)	6451 (32.7)
<b>Risk perception</b>	Low	5595 (32.2)	614 (27.0)	6209 (31.6)
	Medium	5470 (31.5)	677 (29.8)	6147 (31.3)
	High	6305 (36.3)	982 (43.2)	7287 (37.1)
<b>Sensation score</b>	Low	5726 (33.0)	531 (23.4)	6257 (31.9)
	Medium	5672 (32.7)	714 (31.4)	6386 (32.5)
	High	5969 (34.4)	1026 (45.2)	6995 (35.6)
<b>Average weekly driving (hours)</b>	Mean (SD)	8.5 (14.1)	10.7 (12.9)	8.7 (13.9)
<b>Lessons with professional driving instructor (hours)</b>	0	3184 (17.4)	470 (19.3)	3654 (17.6)
	1-4	5172 (28.2)	737 (30.3)	5909 (28.4)
	5-8	3778 (20.6)	513 (21.1)	4291 (20.6)
	9+	6212 (33.9)	715 (29.4)	6927 (33.3)

\* Offences from joining DRIVE study in 2003/04 till end of 2006.

**Table supplement 5: Cohort characteristics by number of speeding related offences.\***

		None	One	Two	Total
		Number (%)	Number (%)	Number (%)	
<b>Sex</b>	Female	9201 (58.7)	1703 (44.7)	445 (34.5)	11,349
	Male	6483 (41.3)	2103 (55.3)	846 (65.5)	9,432
<b>Age (years)</b>	17	7351 (46.9)	2064 (54.2)	703 (54.5)	10,118
	18-19	5905 (37.6)	1357 (35.7)	466 (36.1)	7,728
	20-25	2428 (15.5)	385 (10.1)	122 (9.5)	2,935
<b>Country of birth</b>	Australia / NZ	13347 (86.8)	3366 (89.6)	1148 (90.3)	17,861
	Other	2037 (13.2)	390 (10.4)	123 (9.7)	2,550
<b>Area level SES</b>	Least disadvantaged	4072 (26.0)	814 (21.4)	245 (19.0)	5,131
	Second quartile	3855 (24.6)	942 (24.8)	336 (26.0)	5,133
	Third quartile	4017 (25.6)	1049 (27.6)	381 (29.5)	5,447
	Most disadvantaged	3740 (23.8)	1001 (26.3)	329 (25.5)	5,070
<b>Remoteness</b>	Metro	11711 (74.7)	2782 (73.1)	959 (74.3)	15,452
	Inner regional	3263 (20.8)	844 (22.2)	281 (21.8)	4,388
	Outer regional / remote	710 (4.5)	180 (4.7)	51 (4.0)	941
<b>Attempts driver test</b>	1	10214 (65.4)	2473 (65.1)	785 (60.9)	13,472
	2	3714 (23.8)	907 (23.9)	335 (26.0)	4,956
	3 or more	1701 (10.9)	416 (11.0)	168 (13.0)	2,285
<b>Time on I-Licence</b>	< 1 year	5682 (36.4)	1666 (43.9)	578 (44.9)	7,926
	1-1.5 years	5586 (35.8)	1353 (35.7)	465 (36.2)	7,404
	> 1.5 years	4352 (27.9)	775 (20.4)	243 (18.9)	5,370
<b>Crash before study</b>	No	15464 (98.6)	3527 (92.7)	1176 (91.1)	20,167
	Yes	220 (1.4)	279 (7.3)	115 (8.9)	614
<b>Self-rated driving ability compared to other drivers</b>	Much better	2634 (17.3)	797 (21.8)	297 (24.0)	3,728
	Better	6614 (43.6)	1600 (43.8)	544 (44.0)	8,758
	Same	5657 (37.3)	1212 (33.2)	373 (30.2)	7,242
	worse or much worse	278 (1.8)	42 (1.2)	22 (1.8)	342
<b>Marijuana smoking in last 12 months</b>	Never	13310 (87.7)	3023 (82.9)	930 (75.5)	17,263
	Once a month or less	1434 (9.5)	455 (12.5)	202 (16.4)	2,091
	2-4 times a month	250 (1.6)	99 (2.7)	51 (4.1)	400
	2-3 or 4plus per week	178 (1.2)	70 (1.9)	49 (4.0)	297
<b>Use of other drugs in last 12 months</b>	Never	14231 (94.0)	3331 (91.6)	1087 (88.5)	18,649
	Once a month or less	706 (4.7)	232 (6.4)	93 (7.6)	1,031
	2-4 times a month	148 (1.0)	54 (1.5)	34 (2.8)	236
	2-3 or 4plus per week	61 (0.4)	20 (0.5)	14 (1.1)	95
<b>Alcohol audit summary score</b>	No	13456 (88.5)	3014 (82.5)	968 (78.3)	17,438
	Yes	1749 (11.5)	638 (17.5)	269 (21.7)	2,656
<b>Self-harm</b>	No	13718 (92.8)	3205 (90.3)	1046 (88.4)	17,969
	Yes	1060 (7.2)	343 (9.7)	137 (11.6)	1,540
<b>Risk Taking</b>	Low	5840 (39.0)	809 (22.6)	201 (16.6)	6,850
	Medium	4971 (33.2)	1154 (32.2)	326 (26.9)	6,451
	High	4146 (27.7)	1618 (45.2)	687 (56.6)	6,451
<b>Risk perception</b>	Low	5015 (33.7)	927 (26.0)	267 (22.2)	6,209
	Medium	4753 (32.0)	1085 (30.4)	309 (25.7)	6,147
	High	5105 (34.3)	1554 (43.6)	628 (52.2)	7,287
<b>Sensation score</b>	Low	5170 (34.7)	842 (23.7)	245 (20.4)	6,257
	Medium	4902 (32.9)	1142 (32.1)	342 (28.5)	6,386
	High	4810 (32.3)	1571 (44.2)	614 (51.1)	6,995
<b>Average weekly</b>	Mean (SD)	8.0 (13.0)	10.4 (16.8)	12.7 (14.3)	8.7 (13.9)
<b>Lessons with professional driving instructor (hours)</b>	0	2643 (16.9)	729 (19.2)	282 (21.8)	3,654
	1-4	4317 (27.5)	1191 (31.3)	401 (31.1)	5,909
	5-8	3224 (20.6)	833 (21.9)	234 (18.1)	4,291
	9+	5500 (35.1)	1053 (27.7)	374 (29.0)	6,927

\* Offences from joining DRIVE study in 2003/04 till end of 2006.

**Table supplement 6: Cohort characteristics by number of other driving offences.\***

		None Number (%)	One Number (%)	Total
<b>Sex</b>	Female	9812 (58.3)	1537 (38.8)	11349 (54.6)
	Male	7010 (41.7)	2422 (61.2)	9432 (45.4)
<b>Age (years)</b>	17	8137 (48.4)	1981 (50.0)	10118 (48.7)
	18-19	6265 (37.2)	1463 (37.0)	7728 (37.2)
	20-25	2420 (14.4)	515 (13.0)	2935 (14.1)
<b>Country of birth</b>	Australia / NZ	14428 (87.4)	3433 (88.2)	17861 (87.5)
	Other	2089 (12.6)	461 (11.8)	2550 (12.5)
<b>Area level SES</b>	Least	4294 (25.5)	837 (21.1)	5131 (24.7)
	Second quartile	4178 (24.8)	955 (24.1)	5133 (24.7)
	Third quartile	4310 (25.6)	1137 (28.7)	5447 (26.2)
	Most	4040 (24.0)	1030 (26.0)	5070 (24.4)
<b>Remoteness</b>	Metro	12513 (74.4)	2939 (74.2)	15452 (74.4)
	Inner regional	3542 (21.1)	846 (21.4)	4388 (21.1)
	Outer regional /	767 (4.6)	174 (4.4)	941 (4.5)
<b>Attempts driver test</b>	1	11023 (65.7)	2449 (62.0)	13472 (65.0)
	2	3967 (23.7)	989 (25.1)	4956 (23.9)
	3 or more	1776 (10.6)	509 (12.9)	2285 (11.0)
<b>Time on I-Licence</b>	< 1 year	6259 (37.4)	1667 (42.3)	7926 (38.3)
	1-1.5 years	6056 (36.1)	1348 (34.2)	7404 (35.8)
	> 1.5 years	4441 (26.5)	929 (23.6)	5370 (25.9)
<b>Crash before study</b>	No	16501 (98.1)	3666 (92.6)	20167 (97.0)
	Yes	321 (1.9)	293 (7.4)	614 (3.0)
<b>Self-rated driving ability compared to other drivers</b>	Much better	2805 (17.2)	923 (24.3)	3728 (18.6)
	Better	7099 (43.6)	1659 (43.8)	8758 (43.6)
	Same	6085 (37.4)	1157 (30.5)	7242 (36.1)
	Worse or much	289 (1.8)	53 (1.4)	342 (1.7)
<b>Marijuana smoking in last 12 months</b>	Never	14237 (87.5)	3026 (80.0)	17263 (86.1)
	Once a month or	1573 (9.7)	518 (13.7)	2091 (10.4)
	2-4 times a	274 (1.7)	126 (3.3)	400 (2.0)
	2-3 or 4plus per	185 (1.1)	112 (3.0)	297 (1.5)
<b>Use of other drugs in last 12 months</b>	Never	15277 (94.1)	3372 (89.4)	18649 (93.2)
	Once a month or	747 (4.6)	284 (7.5)	1031 (5.2)
	2-4 times a	152 (0.9)	84 (2.2)	236 (1.2)
	2-3 or 4plus per	63 (0.4)	32 (0.8)	95 (0.5)
<b>Alcohol audit summary score</b>	No	14341 (88.0)	3097 (81.6)	17438 (86.8)
	Yes	1956 (12.0)	700 (18.4)	2656 (13.2)
<b>Self-harm</b>	No	14663 (92.6)	3306 (89.9)	17969 (92.1)
	Yes	1168 (7.4)	372 (10.1)	1540 (7.9)
<b>Risk Taking</b>	Low	5997 (37.4)	853 (22.9)	6850 (34.7)
	Medium	5290 (33.0)	1161 (31.1)	6451 (32.7)
	High	4733 (29.5)	1718 (46.0)	6451 (32.7)
<b>Risk perception</b>	Low	5260 (33.0)	949 (25.7)	6209 (31.6)
	Medium	5071 (31.8)	1076 (29.1)	6147 (31.3)
	High	5617 (35.2)	1670 (45.2)	7287 (37.1)
<b>Sensation score</b>	Low	5425 (34.0)	832 (22.5)	6257 (31.9)
	Medium	5234 (32.8)	1152 (31.2)	6386 (32.5)
	High	5285 (33.1)	1710 (46.3)	6995 (35.6)
<b>Average weekly</b>	Mean (SD)	8.0 (12.5)	11.7 (18.6)	8.7 (13.9)
<b>Lessons with professional driving instructor (hours)</b>	0	2805 (16.7)	849 (21.4)	3654 (17.6)
	1-4	4719 (28.1)	1190 (30.1)	5909 (28.4)
	5-8	3539 (21.0)	752 (19.0)	4291 (20.6)
	9+	5759 (34.2)	1168 (29.5)	6927 (33.3)

\* Offences from joining DRIVE study in 2003/04 till end of 2006.



**Table supplement 7: Rate ratios<sup>#</sup> of any crash, hospitalised crash or death and single vehicle crash during 2007–2016 by type of driving offence 2003–2006.**

			M1 demographics and driving exposure RR (95% CI)	M2 M1 +drugs & self-harm RR (95% CI)	M3 M1+risk- taking RR (95% CI)	M4 M1+ Training / experience / previous crash RR (95% CI)	M5 Fully adjusted RR (95% CI)	
Any crash	Any offence	One	1.34 (1.22-1.48)	1.35 (1.23-1.49)	1.34 (1.22-1.48)	1.34 (1.22-1.48)	1.35 (1.22-1.49)	
		Two	1.48 (1.30-1.69)	1.50 (1.32-1.71)	1.49 (1.31-1.70)	1.48 (1.30-1.69)	1.50 (1.31-1.71)	
		Three or more	2.22 (1.96-2.52)	2.26 (1.99-2.57)	2.25 (1.98-2.56)	2.22 (1.95-2.52)	2.25 (1.98-2.57)	
	Reckless driving <sup>*</sup>	One or more	1.35 (1.18-1.56)	1.36 (1.18-1.56)	1.36 (1.18-1.57)	1.35 (1.18-1.56)	1.35 (1.17-1.56)	
	Speeding <sup>*</sup>	One	1.24 (1.12-1.36)	1.24 (1.13-1.37)	1.24 (1.12-1.37)	1.24 (1.12-1.36)	1.24 (1.13-1.37)	
		Two or more	1.57 (1.37-1.81)	1.59 (1.38-1.83)	1.59 (1.38-1.83)	1.57 (1.36-1.81)	1.59 (1.38-1.83)	
	Low speeding offence <sup>*</sup>	One or more	1.06 (0.95-1.19)	1.07 (0.95-1.20)	1.07 (0.95-1.20)	1.06 (0.95-1.19)	1.07 (0.95-1.20)	
	Other offences <sup>*</sup>	One or more	1.42 (1.27-1.60)	1.43 (1.27-1.60)	1.43 (1.27-1.60)	1.42 (1.27-1.59)	1.43 (1.28-1.61)	
	Hospitalised crash or death	Any offence	One	1.52 (0.99-2.34)	1.52 (0.99-2.35)	1.52 (0.98-2.36)	1.51 (0.98-2.34)	1.52 (0.97-2.36)
			Two	1.75 (0.98-3.11)	1.76 (0.98-3.14)	1.75 (0.98-3.14)	1.76 (0.98-3.16)	1.76 (0.98-3.18)
Three or more			2.83 (1.58-5.05)	2.88 (1.59-5.22)	2.85 (1.59-5.12)	2.81 (1.58-4.98)	2.87 (1.60-5.17)	
Reckless driving <sup>*</sup>		One or more	3.00 (1.81-4.95)	2.98 (1.80-4.93)	3.05 (1.85-5.03)	2.99 (1.82-4.92)	3.00 (1.83-4.92)	
Speeding <sup>*</sup>		One	1.07 (0.67-1.72)	1.08 (0.67-1.73)	1.08 (0.67-1.73)	1.08 (0.67-1.73)	1.09 (0.68-1.74)	
		Two or more	1.43 (0.75-2.71)	1.44 (0.75-2.76)	1.47 (0.77-2.78)	1.43 (0.76-2.72)	1.47 (0.77-2.79)	
Low speeding offence <sup>*</sup>		One or more	1.34 (0.82-2.18)	1.35 (0.83-2.20)	1.34 (0.83-2.17)	1.33 (0.82-2.15)	1.33 (0.82-2.16)	
Other offences <sup>*</sup>		One or more	1.71 (1.01-2.89)	1.72 (1.02-2.92)	1.71 (1.01-2.90)	1.70 (1.01-2.88)	1.77 (1.06-2.96)	
Single vehicle crash		Any offence	One	1.59 (1.17-2.17)	1.61 (1.18-2.19)	1.61 (1.18-2.20)	1.60 (1.17-2.19)	1.62 (1.18-2.23)
			Two	1.94 (1.32-2.86)	1.98 (1.34-2.92)	2.01 (1.36-2.97)	1.95 (1.32-2.88)	2.03 (1.36-3.01)
	Three or more		3.16 (2.22-4.52)	3.19 (2.21-4.59)	3.31 (2.31-4.76)	3.19 (2.24-4.53)	3.28 (2.28-4.72)	
	Reckless driving <sup>*</sup>	One or more	1.32 (0.88-1.99)	1.31 (0.87-1.97)	1.35 (0.90-2.03)	1.32 (0.88-1.99)	1.32 (0.88-1.99)	
	Speeding <sup>*</sup>	One	1.39 (1.03-1.86)	1.40 (1.04-1.88)	1.41 (1.04-1.90)	1.39 (1.03-1.88)	1.42 (1.05-1.92)	
		Two or more	1.86 (1.26-2.74)	1.87 (1.26-2.77)	1.91 (1.29-2.84)	1.87 (1.27-2.75)	1.92 (1.29-2.85)	
	Low speeding offence <sup>*</sup>	One or more	1.04 (0.74-1.46)	1.04 (0.74-1.46)	1.06 (0.75-1.48)	1.05 (0.75-1.47)	1.05 (0.75-1.48)	
	Other offences <sup>*</sup>	One or more	1.90 (1.37-2.64)	1.89 (1.35-2.63)	1.93 (1.38-2.69)	1.90 (1.36-2.64)	1.90 (1.36-2.66)	

<sup>#</sup>Model adjusted for<sup>\*</sup>

M1: age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence and average driving per week

M2: age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence average driving per week, cannabis smoking, alcohol consumption, drug use and self-harm

M3: age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence, average driving per week, risk perception score, risky driving score and sensation seeking score.

M4: age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence, average driving per week, self-rated driving ability, number of attempts on driver test, crash before start of follow up not related to driving offence, lessons with professional driving instructor and time on learner licence.

M5: age, sex, socioeconomic status of area of residence (SEIFA index), remoteness of area of residence, average driving per week, cannabis smoking, alcohol consumption, drug use and self-harm, risk perception score, risky driving score, sensation seeking score, self-rated driving ability, number of attempts on driver test, crash before start of follow up not related to driving offence, lessons with professional driving instructor and time on learner licence

<sup>\*</sup>adjusted for all other driving offences (calculated as number of any offence minus offence under investigation)

