

An examination of what the currently available data can tell us about the effects on offence and crash history of two driver education programs.

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## ABSTRACT

Practice and ProDrive are driver education programmes aimed at novice drivers in New Zealand. The target audience of Practice is learner licence holders. The program encourages them to gain 120 hours supervised driving and provides them with training materials including CD-Drives, a multimedia tool designed to improve hazard perception skills. ProDrive is open to all licence holders and concentrates on in-car skills training in an off-road environment. This paper examines the offence and crash history of individuals who registered for Practice or who attended ProDrive. In the analysis these individuals were matched to a licence database of restricted and full licence holders and then compared, where possible, to offence and crash data at 6 month intervals after obtaining their restricted or full licence. This revealed that those who had registered for or attended one of these educational programs had significantly ( $p < 0.001$ ) fewer demerit offences, disqualifications and suspensions than the comparison population. In addition no significant differences were observed for crash involvement. While these results are promising, it is not possible to ascertain if the programs analysed were the major contributors to the differences noted, due to problems of self selection and the lack of information on risk exposure.

## INTRODUCTION

This study looked at two driver education programs which are available to novice drivers in New Zealand. This was done by comparing the offence and crash history of those who registered for or attended these programs with those in the general licensed driver population who did not.

The two programs examined were Practice (<http://www.practice.co.nz/>) and ProDrive (<http://www.prodrive.org.nz/>). These programs are quite different from each other; ProDrive is a short in-car course which aims to enhance 'car control' through training in an off-road environment. Conversely Practice is a long term program encouraging learner licence holders to gain 120 hours of supervised driving through the use of a guide which lays out types of driving practice and a logbook style check sheet. Practice also works to develop driver's hazard perception skills through the use of a multimedia CD-ROM called CD-Drives. In addition Practice is only open to those who currently hold a New Zealand learner licence whereas the ProDrive course, while aimed at novices, is open to all licence holders.

Practice has been previously examined in 2005 by the Ministry of Transport (Patterson, 2005). This previous analysis looked at the individuals aged 15-19 in the Practice 03 data set and examined their offence and crash information over the first 6 months of restricted licensure against those aged 15-19 in the general population. The results of this analysis showed that those who had registered for practice had significantly less demerits, suspensions and disqualifications and that there was no significant difference in the number of drivers involved in fatal and injury crashes when compared to the rest of the licensed population aged 15-19. Practice was also examined by the Accident Compensation Corporation (ACC) by examining the claims information of those who had registered for Practice with the general population. The results of this analysis showed that those who had registered for Practice had less claims and smaller claims than the comparison population (ACC, 2005). There is no known record of any peer reviewed academic published examinations of the Practice program.

There is no record of any similar examinations for the ProDrive program though previous reviews of the driver education have suggested that skill-focused off-road programs do not necessarily improve road safety, and in some cases can even be detrimental in terms of crash involvement (Christie, 2001; Engstrom, Gregerson, Hernetkoski, Kekinen, & Nyberg, 2003; Willams & Ferguson, 2004).

## METHOD

The datasets used for this study were: the licence database containing all individuals who obtained a restricted licence between 01/03/1999 and 25/03/06; the Practice 03 database containing individuals who registered for Practice between 12/05/03 and 04/11/04; the Practice 04 database containing individuals who registered for Practice between 01/11/04 and 30/05/05; the ProDrive database which was split into those individuals who attended ProDrive while they held a learner licence ProDrive (Learner)) between 01/03/1999 and 14/07/05 and those individuals who attended ProDrive during their restricted licence and then graduated to a full licence (ProDrive (Restricted with Full)) over the same time period; the offence database which contained all demerit, disqualification and suspension offences committed by those who obtained a restricted licence between 01/03/1999 and 25/03/06; and finally a crash database generated from the Crash Analysis System (CAS) at the Ministry of Transport and contained all those drivers involved in at least one police-reported fatal or injury crash between 01/01/1999 and 31/12/05.

Its worth noting that those individuals in the Practice dataset had only registered for Practice and therefore how much of the course, if any they completed is unknown. In comparison all of those individuals in the ProDrive datasets were in attendance at a ProDrive course. Also at the time of registration or attendance all individuals signed a form indicating consent for the information they provided to be used for research purposes.

In order to carry out the examination a master database was created by matching the licence database with the Practice 03, Practice 04, and ProDrive databases. Individuals were matched from the smaller databases by licence number, first name, last name and date of birth (where available) in an additive fashion.

After the demographic analysis, the master database was then matched with the offence and crash databases by licence numbers for offences and crashes that occurred within a timeframe appropriate for analysis, for example 01/11/04 – 25/03/06 for Practice 04. In addition when examining one Practice group the other was excluded from the comparison population. Similarly when a particular ProDrive group (Learner or Restricted with Full) was analysed all those in that particular group who had attended a ProDrive course at some time were excluded from the comparison dataset.

The offence and crash history for Practice 03 individuals were examined 6 and 12 months after restricted licensure and the Practice 04 individuals were examined 6 months after restricted licensure. ProDrive individuals were examined 6 and 12 months after restricted licensure for ProDrive (Learner) and 6, 12 and 18 months after full licensure for ProDrive (Restricted with Full) individuals. It is worth mentioning that there were a small number of individuals who registered for Practice and attended ProDrive, but due to the low numbers these individuals were not examined as a separate group. Due to the large sample sizes and low probability events involved probability analysis was performed using a z-test.

There were a significantly higher proportion of young drivers who had registered for Practice and attended ProDrive when compared to the rest of the licensed population. Because of this potential bias, the analysis of Practice 03/04 and ProDrive (Learner) was restricted to those aged 15-20 at the time of restricted licensure were included. In the case of ProDrive (Restricted with Full) only those aged 15-20 at the time of full licensure were included.

## RESULTS

### Demographics

#### *Gender*

There were a slightly higher proportion of females in the Practice groups than in the non-practice groups. Conversely the ProDrive groups tended to have larger proportions of males than those who did not attend a ProDrive course.

#### *Progression to Full licence*

Significantly more ( $p < 0.001$ ) individuals who registered for Practice 03 (44.33%) ( $z = 38.89$ ) or attended ProDrive during their learner licence (63.28%) ( $z = 23.99$ ) had graduated to their full licence in the timeframes used than their comparison groups with rates of 22.49% and 44.68% respectively. Whereas significantly less ( $p < 0.001$ ) of those who registered for Practice 04 (0.90%) ( $z = -23.09$ ) have graduated to their full licence in the timeframe used than those in the comparison population (5.18%). This could be because there has not been sufficient time for many of those who registered for Practice 04 to gain their full licence.

### Demerit Offences

#### *Number of Demerit Offences*

Those who registered for Practice 03 and 04 had significantly ( $p < 0.001$ ) less demerit offences 6 ( $z = 12.22$  for Practice 03 and  $z = 8.02$  for Practice 04) and 12 months ( $z = 10.82$ )(in the case of Practice 03) after restricted licensure than the comparison population. The exact proportions are shown on table 1.

*Table 1. Proportion of those aged 15-20 at restricted licensure who committed one or more demerit offence in the first 6 or 12 months of restricted licensure by Practice registration.*

Educational Program	One or more demerit offence	
	After 6 months	After 12 months
Restricted licence holders with no Practice registration 12/05/03 – 25/03/06	15.34% (16845)	23.32% (25597)
Practice 03	10.84% (846)	18.38% (1434)
Restricted licence holders with no Practice registration 01/11/04 – 25/03/06	13.43% (7223)	-
Practice 04	9.06% (271)	-

Those who attended ProDrive (Learner) had significantly ( $p < 0.001$ ) less demerit offences in the first 6 ( $z = 4.34$ ) and 12 months ( $z = 3.35$ ) of restricted licensure than the comparison population and no significant difference ( $p > 0.2$ ) at the 18 month point ( $z = 1.22$ ). Similarly those who attended ProDrive (Restricted with Full) had significantly ( $p < 0.001$ ) less demerit offences in the first 6 ( $z = 3.81$ ) and 12 months ( $z = 4.69$ ) of full licensure. Exact proportions are shown in table 2.

*Table 2. Proportion of those aged 15-20 at the time of licensure who committed one or more demerit offence in the first 6, 12 or 18 months of restricted ProDrive (Learner) or full (ProDrive (Restricted with Full)) licensure by ProDrive attendance.*

Educational Program	One or more demerit offence		
	After 6 months	After 12 months	After 18 months
No Prodrive	12.72% (36426)	21.39% (61241)	26.55% (76026)
ProDrive (Learner)	10.56% (406)	19.24% (740)	25.96% (988)
Full licence holders with no ProDrive	13.48% (16004)	22.11% (26258)	-
ProDrive (Restricted with Full)	11.94% (820)	19.78% (1359)	-

### *Reasons for Demerit Offences*

The most common reason for demerits during the first 6 and 12 months of restricted licensure across all datasets was the breaking of conditions of their restricted licence, followed by speeding. For the 18 month time period speeding begins to become more common than the breaking of conditions on their restricted licence. It seems likely that this is due to these individuals moving to a full licence at this point which may explain the drop in those breaking conditions.

The most common reason for demerits during the first 6 or 12 months of full licensure for those who attended ProDrive (Restricted with Full) and the comparison population is by far speeding. Since those who attended ProDrive (Restricted with Full) were being examined after full licensure this is to be expected.

### Disqualifications

#### *Number of Disqualifications*

As shown in table 3 those who registered for Practice 03 and 04 had significantly ( $p < 0.001$ ) less disqualifications 6 ( $z = 9.81$  for Practice 03 and  $z = 8.29$  for Practice 04) and 12 months ( $z = 8.71$ ) (in the case of Practice 03) after restricted licensure than the comparison population.

*Table 3. Proportion of those aged 15-20 at restricted licensure who have been disqualified at least once in the first 6 or 12 months of restricted licensure by Practice registration.*

Educational Program	One or more disqualification	
	After 6 months	After 12 months
Restricted licence holders with no Practice registration 12/05/03 – 25/03/06	1.21% (1332)	2.30% (2520)
Practice 03	0.42% (33)	1.17% (91)
Restricted licence holders with no Practice registration 01/11/04 – 25/03/06	1.05% (566)	-
Practice 04	0.23% (7)	-

Those who attended ProDrive (Learner) had significantly ( $p < 0.001$ ) less disqualifications in the first 6 ( $z = 6.38$ ), 12 ( $z = 6.28$ ) and 18 months ( $z = 6.42$ ) of restricted licensure than the comparison population. Similarly those who attended ProDrive (Restricted with Full) had significantly ( $p < 0.001$ ) less disqualifications in the first 6 ( $z = 8.89$ ) and 12 months ( $z = 8.70$ ) of full licensure. The exact proportions are shown in table 4.

*Table 4. Proportion of those aged 15-20 at the time of licensure who have been disqualified at least once in the first 6, 12 or 18 months of restricted ProDrive (Learner) or full (ProDrive (Restricted with Full)) licensure by ProDrive attendance.*

Educational Program	One or more disqualification		
	After 6 months	After 12 months	After 18 months
No Prodrive	1.18% (3384)	2.39% (6835)	3.68% (10532)
ProDrive (Learner)	0.47% (18)	1.25% (48)	2.16% (83)
Full licence holders with no ProDrive	1.60% (1903)	3.03% (3597)	-
ProDrive (Restricted with Full)	0.67%(46)	1.63% (112)	-

### *Reasons for Disqualification*

The main reason for disqualification amongst all the comparison populations and the Practice 04 group was Alcohol-related offences. Practice 03, and the two ProDrive groups featured dangerous driving as the most common cause for disqualification, although on several occasions the proportion alcohol and dangerous driving offences was equal.

### Suspensions for Demerit Offences

#### *Number of Suspensions*

Those who registered for Practice 03 and 04 had significantly ( $p < 0.001$ ) less suspensions 6 ( $z = 9.63$  for Practice 03 and  $z = 7.43$  for Practice 04) and 12 months ( $z = 7.43$ ) (in the case of Practice 03) after restricted licensure than the comparison population. The exact proportions are given in table 5.

*Table 5. Proportion of those aged 15-20 at restricted licensure who have been suspended at least once in the first 6 or 12 months of restricted licensure by Practice registration.*

Educational Program	One or more suspension	
	After 6 months	After 12 months
Restricted licence holders with no Practice registration 12/05/03 – 25/03/06	1.05% (1154)	2.33% (2559)
Practice 03	0.35% (27)	0.94% (73)
Restricted licence holders with no Practice registration 01/11/04 – 25/03/06	1.04% (560)	-
Practice 04	0.27% (8)	-

As shown in table 6, those who attended ProDrive (Learner) had significantly ( $p < 0.001$ ) less suspensions in the first 6 ( $z = 3.81$ ), 12 ( $z = 7.20$ ) and 18 months ( $z = 5.27$ ) of restricted licensure than the comparison population. Similarly those who attended ProDrive (Restricted with Full) had significantly ( $p < 0.001$ ) less suspensions in the first 6 ( $z = 8.80$ ) and 12 ( $z = 11.04$ ) months of full licensure.

*Table 6. Proportion of those aged 15-20 at the time of licensure who have been suspended at least once in the first 6, 12 or 18 months of restricted ProDrive (Learner) or full (ProDrive (Restricted with Full)) licensure by ProDrive attendance.*

Educational Program	One or more suspension		
	After 6 months	After 12 months	After 18 months
No Prodrive	0.62% (1773)	1.55% (4447)	2.66% (7614)
ProDrive (Learner)	0.29% (11)	0.62% (24)	1.59% (61)
Full licence holders with no ProDrive	1.57% (1864)	2.73% (4447)	-
ProDrive (Restricted with Full)	0.66% (45)	1.19% (82)	-

### Drivers involved in Crashes

Those who registered for Practice 03 and 04 had no significant ( $p > 0.3$ ) difference in the number of drivers involved in crashes 6 ( $z = -0.85$  for Practice 03 and  $z = 0.15$  for Practice 04) and 12 months ( $z = -0.46$ ) (in the case of Practice 03) after restricted licensure than the comparison population. The exact proportions are given in table 7.

*Table 7. Proportion of those aged 15-20 at restricted licensure who have been drivers involved in a fatal or injury crash at least once in the first 6 or 12 months of restricted licensure by Practice registration.*

Educational Program	Drivers involved in one or more fatal or injury crashes	
	After 6 months	After 12 months
Restricted licence holders with no Practice registration 12/05/03 – 25/03/06 Practice 03	0.74 (813)	1.21% (1332)
Restricted licence holders with no Practice registration 01/11/04 – 25/03/06 Practice 04	0.83% (65)	1.27% (99)
	0.55% (298)	-
	0.53% (16)	-

As shown in table 8 those who attended ProDrive (Learner) had no significant difference in crash rates where they were the driver than the comparison population 6 ( $z = 0.97$ ), 12 ( $z = 0.82$ ) and 18 months ( $z = 0.19$ ) after restricted licensure ( $p > 0.3$ ). Similarly who attended ProDrive (Restricted with Full) also had no significant difference in crash involvement rate than the comparison population 6 ( $z = -0.91$ ) and 12 months ( $z = 0.15$ ) after full licensure ( $P > 0.4$ )

*Table 8. Proportion of those aged 15-20 at the time of licensure who have been drivers involved in a fatal or injury crash at least once in the first 6, 12 or 18 months of restricted ProDrive (Learner) or full (ProDrive (Restricted with Full)) licensure by ProDrive attendance.*

Educational Program	Drivers involved in one or more fatal or injury crashes		
	After 6 months	After 12 months	After 18 months
No Prodrive	0.34% (969)	1.26% (3610)	1.78% (5088)
ProDrive (Learner)	0.26% (10)	1.12% (43)	1.74% (67)
Full licence holders with no ProDrive	0.70% (829)	1.24% (1470)	-
ProDrive (Restricted with Full)	0.80% (55)	1.22% (84)	-

### DISCUSSION

It is clear that those who registered for Practice (03 or 04) or attended ProDrive (Learner or Restricted with full) have significantly less demerit offences, suspensions and disqualifications than the rest of the licensed population aged 15-20 at the time of restricted (Practice, ProDrive (Learner)) or full (ProDrive (Restricted with full) licensure across all time periods examined. The only exception being for 18 months after restricted licensure for those that attended ProDrive (Learner) where there was no significant difference in the number of demerit offences. In addition there was no significant difference in the number of drivers involved in crashes between those that registered for or attended one of these courses and the comparison populations.

One factor that could have affected these results is that those who had registered for/attended one of these educational programs may have a higher level of driving exposure than those who have not. This is supported by the significantly higher proportion of Practice (03 or 04) and ProDrive (Learner) individuals who have gone on to gain their full licence when compared with the general population. The higher proportion of full licences implies a motivation to drive which may increase their exposure on the road.

If those who registered for Practice (03 or 04) or attended ProDrive (Learner or Restricted with full) do have a higher level of driving exposure than those who did not, then a future study could attempt to compensate for this. If this occurred the difference in offences may be even larger than reported in this current studies and the crash rate could also decrease, perhaps significantly so. It is possible however that any increase in exposure found could have been caused by attending the course itself. Research in the United States has shown that some educational programs can encourage those who have attended to gain their licence earlier than comparison populations and therefore increase the exposure of these individuals (Woolley, 2000). If this was the case with Practice or ProDrive then this is a potentially negative impact caused by the programs themselves and would need to be countered.

It is interesting to note that those who registered for Practice (03 or 04) or attended ProDrive (Learner or Restricted with full) have a much higher proportion of disqualifications due to “dangerous driving” than the comparison groups. Without going into the detail of what offences each individual committed, it is hard to know the significance of this result. This is beyond the scope of the current study but could be examined in future research.

A similar problem arises in that disqualifications and suspensions reduce driving exposure because they remove an individual’s legal ability to drive and commit further offences during the disqualification or suspension. The greater level of offending in the comparison population would therefore be expected to somewhat reduce exposure to risk by removing from the road those who choose to comply with their suspension or disqualification.

Another issue is that it is possible that due to the voluntary nature of Practice (03 or 04) or ProDrive (Learner or Restricted with full) registration/attendance that self-selection bias is occurring. Those who registered for/attended these programs may already be predisposed towards behaviour which results in fewer offences. This behaviour may manifest as more conscientious driving or just driving in a manner that avoids police attention.

One final factor that could affect the crash rate results for both Practice (03 or 04) or ProDrive (Learner or Restricted with full) is that the number of those involved may not be high enough for differences in crash rates to be detected. Furthermore since the CAS system is a police reported crash database accidents where there were no police attending are not recorded and therefore any difference in these types of accidents is not available for examination.

There are several other factors to consider when examining the Practice program specifically. The first is that the information available for this analysis was for those that registered for Practice and while this means that they received the Practice material it does not mean they completed the program.

Secondly the time that those who registered for Practice 04 have less time to appear in the crash statistics as current crash statistics are only available up to the 31/12/05. This gives some of those who registered for Practice 04 only 7 months to have gained their restricted licence and been a driver involved in a fatal or injury crash. This limitation is less serious for the offence data as that is available for offences committed up until 25/03/06.

A final factor for Practice is that there were a higher proportion of females who registered for practice compared to the comparison population. Give that females have a lower risk and also tend to have lower levels of driving exposure this may be a further confounding issue (Land Transport Safety Authority, 2000).

The only confound that is limited to ProDrive (Learner or Restricted with Full) is that that there was a higher proportion of males who registered for ProDrive (Learner or Restricted with Full) compared to the comparison population. Since males have a higher risk and also tend to have higher levels of driving exposure this may influence the results (Land Transport Safety Authority, 2000).

## CONCLUSIONS

This analysis shows that those that have registered for Practice (03 or 04) or attended a ProDrive (Learner or Restricted with Full) course have significantly fewer offences and are not more or less likely to be the driver involved in a fatal or injury crash than similarly aged members of the licensed driver population who did not attend a program. These findings are especially significant in that these changes are apparent at least in the first 6 months of restricted licensure a time period which is seen as high risk for novice drivers. Furthermore this difference does not seem to be a short term effect as it is still apparent 12 months and, in the case of those who attended ProDrive while on their learner licence, 18 months after licensure.

While these results are promising, it is not possible to ascertain if the educational programs analysed here were the major contributors to the differences noted above, due to problems of self selection and the lack of information on risk exposure. However if, as suggested above, those attending these courses do tend to have a higher level of driving exposure, and if it is not caused by any encouragement for early licensure by the program, then it is possible that these differences may become even clearer and more pronounced if exposure were to be controlled for. Ultimately however this current study is unable to say why the differences mentioned above for those who registered for or attended these programs have occurred. In order to answer this question fully a more controlled experiment would have to be undertaken where individuals would be randomly and proportionally assigned to a particular educational program, their performance monitored and their driving exposure recorded.

The findings of this particular analysis reinforce the earlier Ministry of Transport study which found significant reductions in demerits, disqualifications and suspensions, and lack of a significant difference in crashes in those who had registered for Practice (Patterson, 2005). They are also similar to the results reported by Lund and Williams (1985) of experimental evaluations of defensive driving courses in the United States of America where those who had been assigned to these particular courses had significant reductions in offences but no significant difference in crash rates than the comparison populations.

## REFERENCES

- ACC. (2005). *Young Driver Practice*, Accident Compensation Corporation, New Zealand.
- Christie, R. (2001). *The Effectiveness of Driver Training as a Road Safety Measure: A Review of the Literature*. Royal Automobile Club of Victoria, Australia.
- Engstrom, I., Gregersen, N.P., Hernetkoski, K., Kekinen, E., & Nyberg, A. (2003). *Young novice drivers, driver education and training – literature review*, Swedish National Road and Transport Research Institute, Sweden.
- Land Transport Safety Authority. (2000). *Travel survey report – increasing our understanding of New Zealanders' travel behaviour – 1997/1998*. Land Transport Safety Authority, Wellington, New Zealand.
- Lund, A.K. & Williams, A.F. (1985). A Review of the Literature Evaluating the Defensive Driving Course. *Accident, Analysis and Prevention*, 17(6), 449-460.
- Patterson, T. (2005). *The Association between Practice Registration and Offences*. Ministry of Transport, Wellington, New Zealand.
- Williams, A.F. & Ferguson, S.A. (2004). Driver education renaissance? *Injury Prevention*, 10, 4-7.



Woolley, J. (2000). *In-Car Driver Training at High Schools: A Literature Review*. Safety Strategy, Transport South Australia.

This paper does not necessarily represent the views of the Ministry of Transport.