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16. Abstract <p>The objective of this report was to assess the effectiveness, if any, of remedial driver education in reducing subsequent traffic crashes and violations in a sample of Texas drivers who took a driver safety course in 2001 (the DSC group), as compared to a control group of drivers who had a violation but did not take a course (the CON group). The 194,314 drivers examined were a convenience sample of 18-20-year-old Texans obtained for another study.</p> <p>For every age group, and for the combined group of 18-, 19-, 20-year-old Texas drivers, the DSC group had statistically significantly ($p \leq .05$) better post-qualifying-event driving records than did the CON group. Total events were significantly better. Crashes were significantly better. Convictions were significantly better. The findings are generally inconsistent with the research literature, so possible explanations, such as demographic differences between the two groups, were explored, to no avail.</p>					
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Remedial Driver Education in Texas: Does It Do Any Good?

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Executive Summary

The objective of this report was to assess the effectiveness, if any, of remedial driver education in reducing subsequent traffic crashes and violations in a sample of Texas drivers who took a driver safety course in 2001 (the DSC group), as compared to a control group of drivers who had a violation but did not take a course (the CON group). The 194,314 drivers examined were a convenience sample of 18-20- year-old Texans obtained for another study.

For every age group, and for the combined group of 18-, 19-, 20-year-old Texas drivers, the DSC group had statistically significantly ($p \leq .05$) better post-qualifying-event driving records than did the CON group. Total events were significantly better. Crashes were significantly better. Convictions were significantly better.

The findings of this research are generally inconsistent with the research literature on the effectiveness of remedial driver education in reducing crashes after the course. Despite efforts to discredit the findings by noting demographic differences between the DSC and CON groups, course taking in both the pre- and post-periods was statistically significantly associated with better crash records. In the post-period, the DSC group had a statistically significantly better crash record during the two years after taking a driving safety course than did the CON group. In the pre-period, the CON group took more courses, percentage-wise, than did the DSC group and had statistically significantly fewer crashes.

Whether these findings have any practical consequences is arguable, however, given the small numerical differences in crashes between the CON and DSC groups in the two-year post-period. DSC drivers had only .233 crashes per driver in the post-period, while the CON drivers had an average of .250 crashes per driver. Also, both groups had fewer crashes in the post-period than in the pre-period, perhaps due simply to maturation, though the DSC group did have a slightly greater reduction (.49 fewer crashes per driver on average) than did the CON group (.44).

Introduction

The objective of this project was to assess the effectiveness, if any, of remedial driver education in reducing subsequent traffic crashes and violations in a sample of Texas drivers who took a driver safety course in 2001, as compared to a control group of drivers who had a violation but did not take a course. The drivers examined were a convenience sample of 18-, 19-, and 20- year-old Texans obtained for another study. A total of 194,314 drivers were included in the study.

For each driver in the study, crash and violation histories were examined for a two year period before and after the “qualifying event” in 2001 – the date of the citation that led either to the taking of a driving safety course (the study group, referred to below as the DSC group, with 83,532 drivers) or to a conviction (the control group, referred to below as the CON group, with 110,782 drivers).¹ The “pre/post” records for both groups were examined in toto and by age (18, 19, or 20) for “total events” (i.e., crashes, convictions, or subsequent courses combined), crashes only, and convictions and courses only. Of the 194,314 drivers with a qualifying event in 2001, 178,508 had another driving record transaction (course or conviction) in the two-year period before or after the qualifying event, or in both periods.

The results of the analysis are presented below, following a brief review of what the research literature has to say about the effectiveness of remedial driver education.

Background

The research literature is generally skeptical about the value of remedial driver education in reducing subsequent crashes. Effects on subsequent violations are less clear. For example, a meta-analysis of studies on the subject by Ker *et al.* (2005) concluded that there is no evidence that post-licensure driver education of any kind reduces subsequent crashes or injuries, though the research did find a small reduction in subsequent traffic offenses (which the study discounted as possibly being just some kind of statistical artifice). In another meta-analysis of the research literature, Masten and Peck (2004) concluded that court-ordered courses of the type being addressed in this report resulted in a small, but statistically significant, reduction in subsequent violations, but not in crashes. Stuckman-Johnson *et al.* (1989) similarly found a reduction in violations, but mixed results with respect to crashes. A fourth literature review, by Lund and Williams (1985), also found a reduction in subsequent violations, but not in crashes.

¹ In the U.S., drivers cited for less serious traffic offenses (misdemeanors) are often given the option of attending “traffic school,” a “ticket dismissal course,” a “driver improvement course,” or, in Texas, a “driving safety course.” Upon successful completion of the course, the fine for the violation is waived. Texas drivers are limited in their ability to take ticket dismissal courses, with the law limiting the use of the course option to no more often than once every twelve months. In Texas, the Justice of the Peace or Municipal Court judge with jurisdiction over the case has the discretion to permit the course option or to not allow it and levy a fine. Justices of the Peace and Municipal Court judges are elected officials in Texas, with the concomitant pressures to accommodate constituents’ wishes.

Results

For every age group, and for the combined group of 18-, 19-, 20-year-old Texas drivers, the DSC group had statistically significantly ($p \leq .05$) better post-qualifying-event driving records than did the CON group. Total events were significantly better. Crashes were significantly better. Convictions were significantly better. See Figures 1 – 4.

Figure 1: Means in the Post-Period, Combined Group

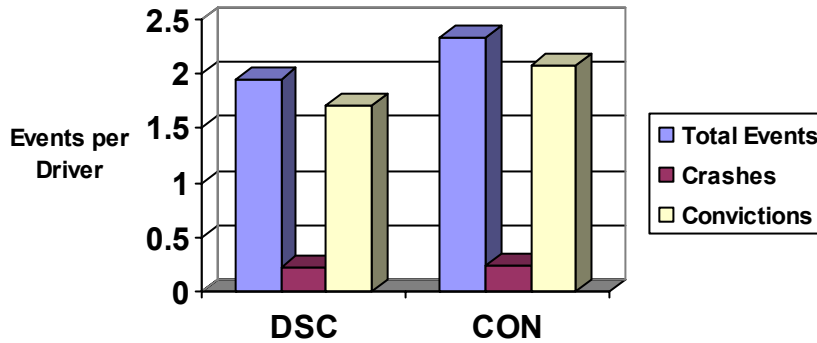


Figure 2: Means in the Post-Period, 18-Year-Old Drivers

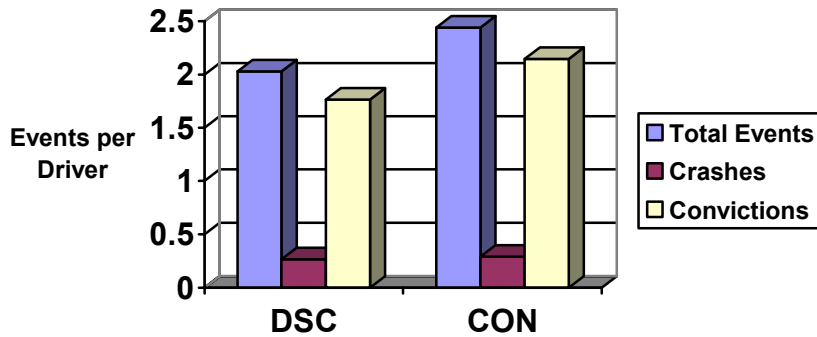


Figure 3: Means in the Post-Period, 19-Year-Old Drivers

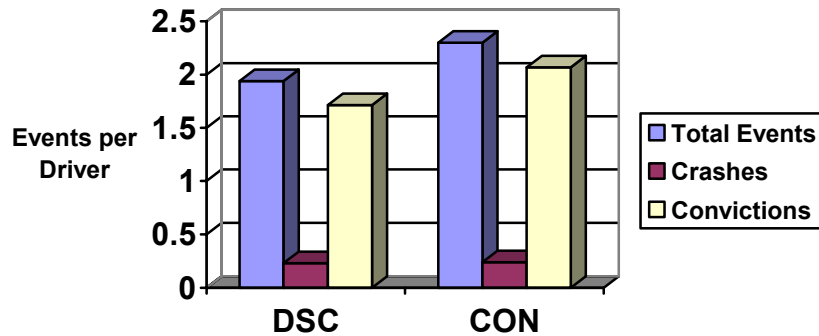
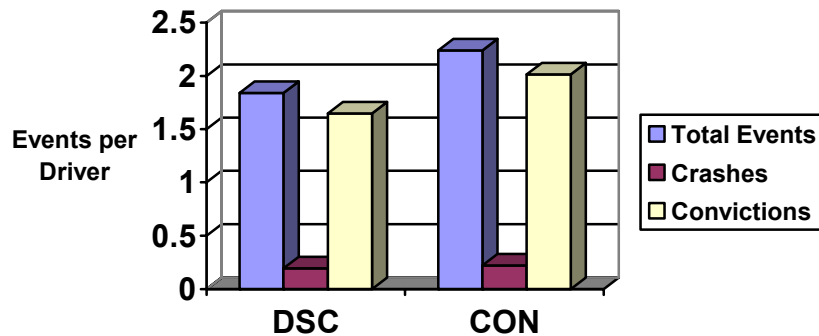


Figure 4: Means in the Post-Period, 20-Year-Old Drivers



For differences in means and confidence intervals, see Table 1.

While it would be tempting at this point to conclude that remedial driver education is working in Texas, by producing statistically significant reductions in crashes, convictions, and subsequent courses taken for ticket dismissal, such a conclusion may be premature, as will be seen shortly.

It should also be noted, as is evident in Table 1, that some of the differences in means, while statistically significant, are essentially meaningless in terms of real world consequences. The large numbers of subjects in each DSC and CON group – ranging from 6,706 to 70,338 – means that even very small differences in means are statistically significant at the .05 level (see the Appendix for the numbers of subjects in each DSC and CON group for total transactions – convictions and courses, or overall record – and for crashes only).

This observation applies particularly to crashes, where the differences in means are minuscule. Take the combined group for example. The difference in mean number of crashes per individual between the DSC group and the CON group was .017 over the two year post-period, and the means themselves were only .233 and .250, respectively. So, even though the average CON group member had 7.3% more crashes during the two year post-period than did the average DSC member, only one in 4 of the DSC group had a crash as compared to one in 4.28 of the DSC group.

Thus far, this analysis, like many previous evaluations of the efficacy of remedial driver education, ignores an important issue – the driving records of the DSC and CON groups prior to their first qualifying event in 2001. Looking at the two year pre-event period is most illuminating, for it shows that, for the most part, the DSC group had better driving records than the CON group then, too.

For total events and convictions, the DSC groups (total combined and 18-, 19-, and 20-year-olds separately) all had statistically significantly ($p \leq .05$) fewer pre-period events than did the CON groups. However, for crashes, the combined DSC group had a higher average number of crashes per member during the pre-period than did the CON group ($p \leq .05$), as did the 18-year-old DSC group (just barely $p \leq .05$). There was no statistically significant difference between the crash means of the 19- and 20-year-old pre-period DSC and CON groups. See Figures 5-8 and Table 2. As was true for the post-period groups, for all practical purposes the differences in means for pre-period crashes are meaningless.

Figure 5: Means in the Pre-Period, Combined Groups

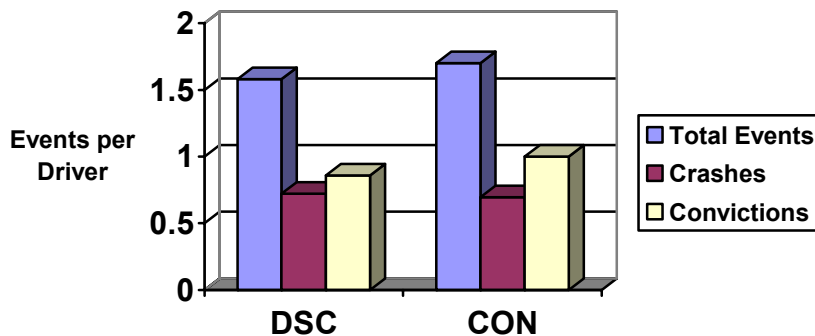


Figure 6: Means in the Pre-Period, 18-Year-Old Drivers

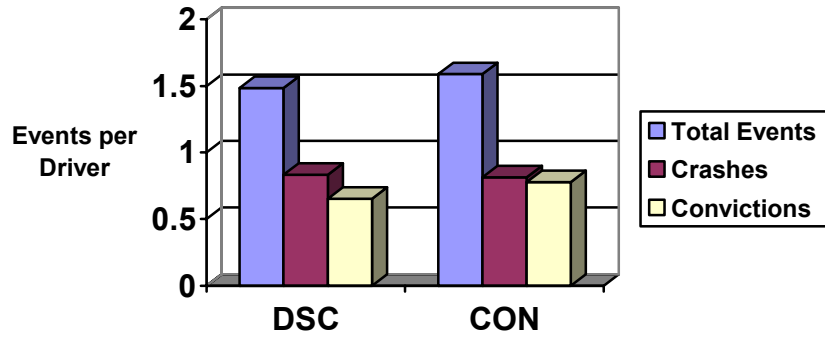


Figure 7: Means in the Pre-Period, 19-Year-Old Drivers

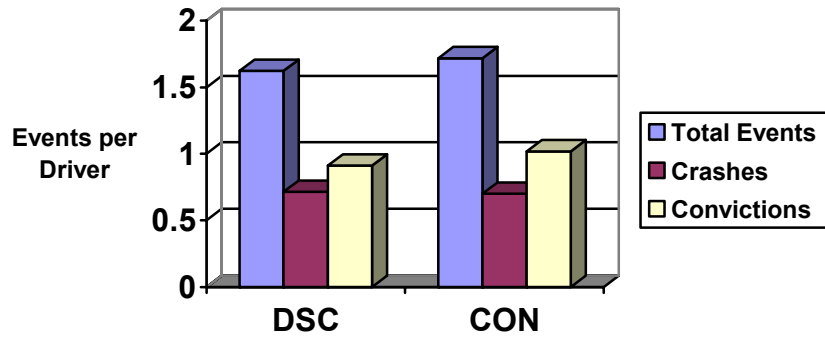


Figure 8: Means in the Pre-Period, 20-Year-Old Drivers

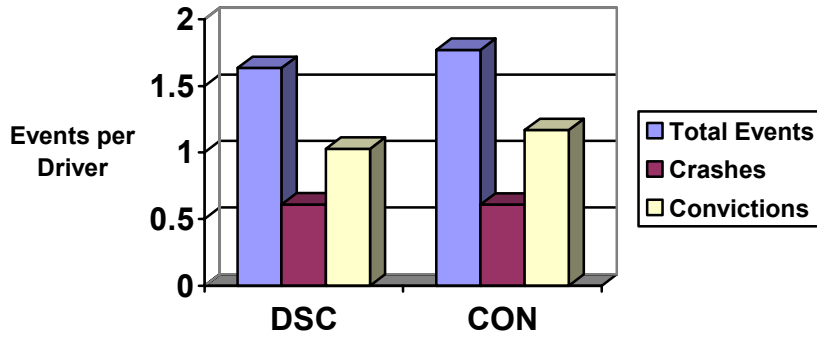


Table 1: Differences in Means and 95% Confidence Intervals for CON Post Versus DSC Post

	Difference in Means	95% Confidence Interval for Difference
Combined Group Total Events – CON Post versus DSC Post	0.375	.359 - .391
Combined Group Crashes – CON Post versus DSC Post	0.017	.011 - .023
Combined Group Convictions – CON Post versus DSC Post	0.359	.344 - .373
18-Year-Old Drivers Total Events – CON Post versus DSC Post	0.408	.377 - .439
18-Year-Old Drivers Crashes – CON Post versus DSC Post	0.027	.016 - .037
18-Year-Old Drivers Convictions – CON Post versus DSC Post	0.383	.356 - .410
19-Year-Old Drivers Total Events – CON Post versus DSC Post	0.362	.335 - .389
19-Year-Old Drivers Crashes – CON Post versus DSC Post	0.011	.001 - .021
19-Year-Old Drivers Convictions – CON Post versus DSC Post	0.896	.873 - .919
20-Year-Old Drivers Total Events – CON Post versus DSC Post	0.394	.367 - .421
20-Year-Old Drivers Crashes – CON Post versus DSC Post	0.027	.018 - .037
20-Year-Old Drivers Convictions – CON Post versus DSC Post	0.367	.343 - .391

Table 2: Differences in Means and 95% Confidence Intervals for CON Pre Versus DSC Pre

	Difference in Means	95% Confidence Interval for Difference
Combined Group Total Events – CON Pre versus DSC Pre	0.125	.108 - .142
Combined Group Crashes – CON Pre versus DSC Pre*	-0.026	-.015 - -.037
Combined Group Convictions – CON Pre versus DSC Pre	0.151	.134 - .167
18-Year-Old Drivers Total Events – CON Pre versus DSC Pre	0.104	.076 - .132
18-Year-Old Drivers Crashes – CON Pre versus DSC Pre*	-0.020	-.0004 - -.0398
18-Year-Old Drivers Convictions – CON Pre versus DSC Pre	0.124	.097 - .151
19-Year-Old Drivers Total Events – CON Pre versus DSC Pre	0.094	.064 - .123
19-Year-Old Drivers Crashes – CON Pre versus DSC Pre**	-0.014	-.033 - .005
19-Year-Old Drivers Convictions – CON Pre versus DSC Pre	0.108	.079 - .136
20-Year-Old Drivers Total Events – CON Pre versus DSC Pre	0.135	.097 - .173
20-Year-Old Drivers Crashes – CON Pre versus DSC Pre**	-0.002	-.021 - .018
20-Year-Old Drivers Convictions – CON Pre versus DSC Pre	0.141	.111 - .171

* DSC worse than CON

** No statistically significant difference between DSC and CON

Discussion

The results show that for both the pre- and post-periods all the DSC groups had better overall driving records (total events) and few convictions per member than did the CON group. This important finding suggests that it may be the demographic characteristics of the DSC and the CON groups that influenced their driving records, rather than the fact that the DSC group took a remedial driver education course. There is some evidence that suggests this possibility may indeed be true.

Figures 9 and 10 illustrate the fact that the more urbanized the area, the more likely that the subject took a course rather than paid a fine as the first qualifying event in 2001. Intuitively this observation makes sense, especially in a state like Texas where there are vast areas with little or no population west of the Balcones Escarpment (roughly west of Interstate 35). A certain population density is required to create the critical mass of potential students necessary to offer a driver improvement course.

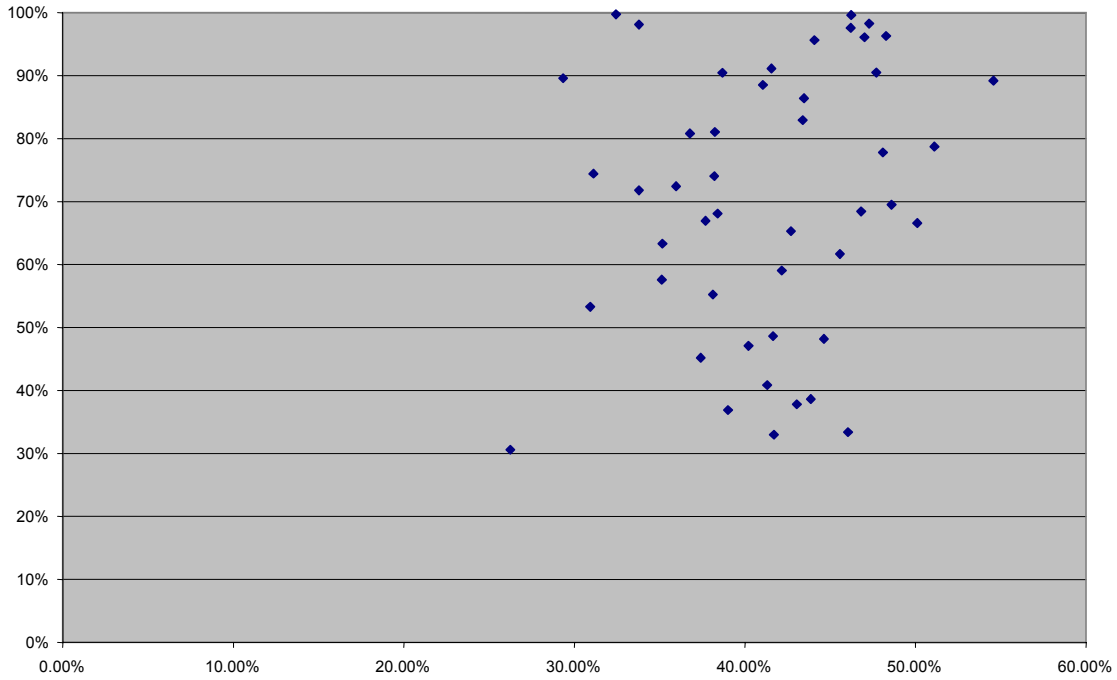
In 2001, there were 40 different driving safety courses offered in Texas and 738,396 individuals took a course.² Thirty-five of the offerings were classroom courses, with the

² Source: Texas Education Agency data available at <http://www.tea.state.tx.us/drive/allcount2001.html>

remaining five being videotape/DVD or online offerings. Two-thirds of the DSC participants took a classroom course.

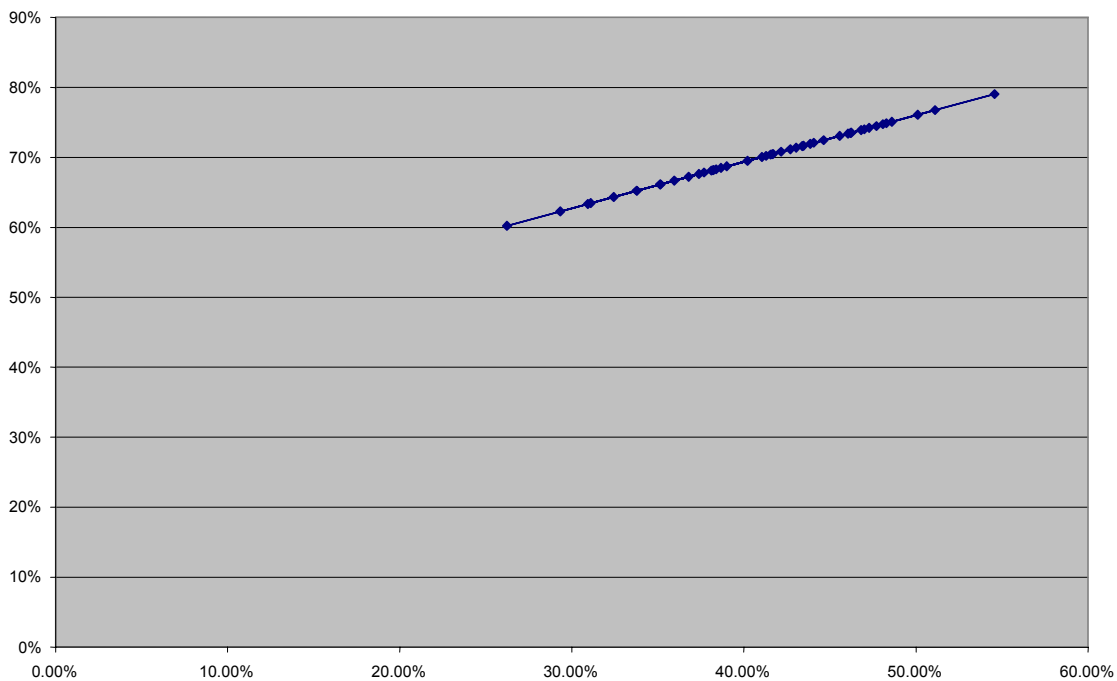
Of the 35 classroom courses, 73% were offered in the 5 most populous metropolitan areas (Houston, Dallas, Fort Worth, San Antonio, and Austin) and these courses accommodated 78% of all the DSC classroom students in 2001.

Figure 9: % DSC vs. % Urban



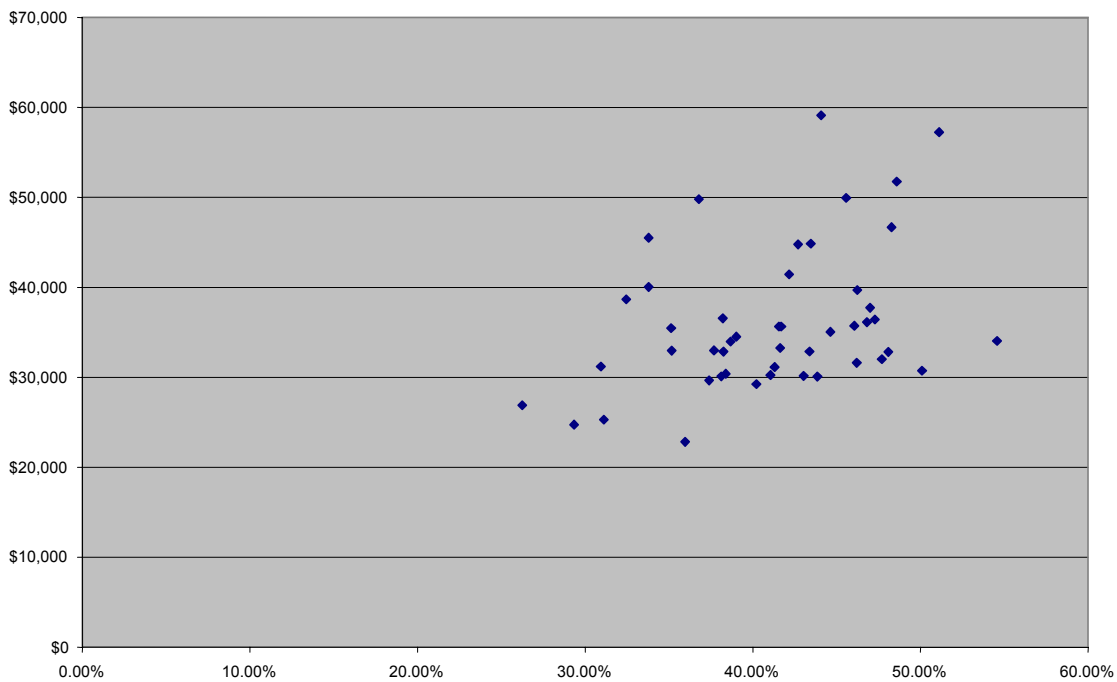
Source: Urbanization from U.S. Census, 2002, Texas 3-digit ZIP codes; % of subjects taking a course (DSC) versus paying fine by 3-digit ZIP code

Figure 10: % DSC vs. % Urban - Trend



DSC participants also generally lived in wealthier 3-digit ZIP codes in Texas. See Figures 11 and 12.

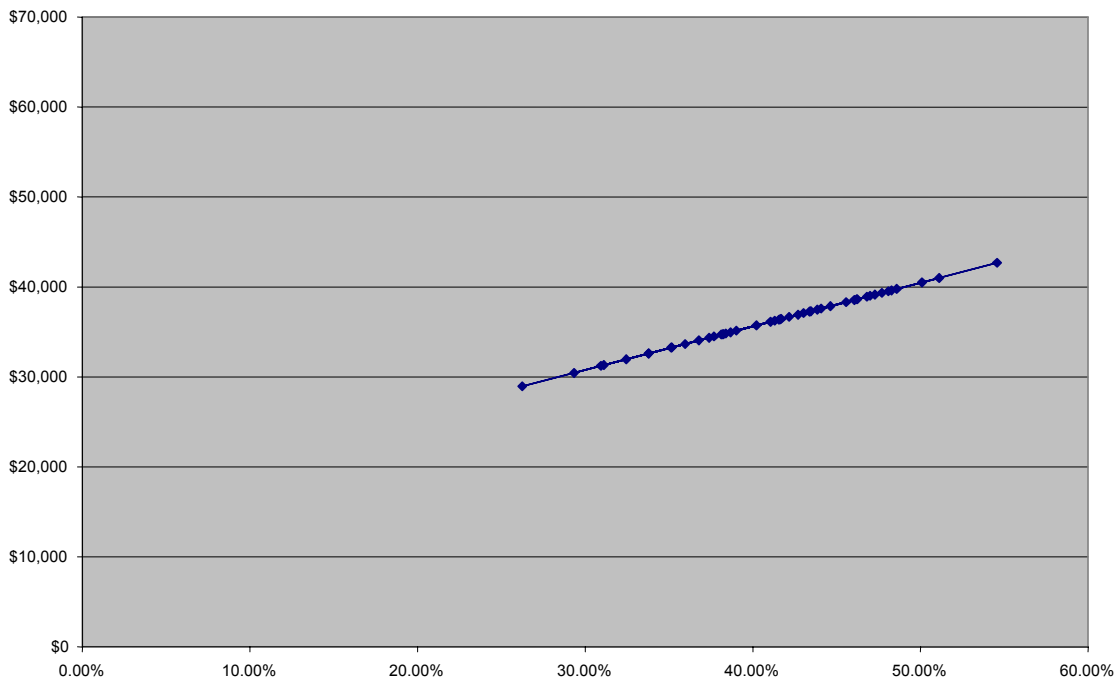
Figure 11: % DSC vs. Income



Source:

Median Household Income from U.S. Census, 2000, Texas 3-digit ZIP codes; % of subjects taking a course (DSC) versus paying fine by 3-digit ZIP code

Figure 12: % DSC vs. Income - Trend

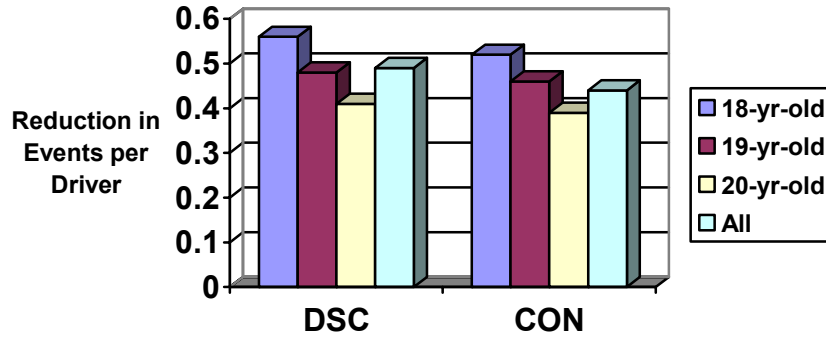


Other demographic factors did not distinguish DSC subjects from CON subjects. For example, Hispanic origin and poor English language skills, as identified through the 2000 Census by 3-digit ZIP code, did not correlate with DSC participation.

What might urbanization and income have to do with pre- and post-period driving records? Could they help explain the anomalous finding that 18-year-old DSC drivers and DSC drivers overall had worse crash record in the pre-period than CON drivers?

The 18-year-old drivers in this study would have been 16 or 17 during the pre-period. Arguably, drivers that age from wealthier areas are more likely to have access to a vehicle, thereby increasing their opportunities to be in a crash. Also urbanized areas have much more traffic than rural areas in Texas, again increasing exposure to crash risk. But this does not explain why, for each age group and the overall group, the DSC drivers improved more in the post period than did the CON drivers, as illustrated in Figure 13.

Figure 13: Improvement in Crash Records in the Post Period as Compared to the Pre-Period



For example, in the post-period 18-year-old DSC drivers had .56 fewer crashes on average than they did in the pre-period, while 18-year-old CON drivers had .52 fewer crashes. Overall, the DSC drivers had .49 fewer crashes, while the CON drivers had .44 fewer crashes.

Changes in driving environment are a possible explanation for less improvement by CON drivers in the post-period. These drivers would have been anywhere from two to four years older in the post-period, with some having left school for the job market. Since jobs in Texas are mostly in the cities, the more rural CON drivers may have increased their crash risk by commuting to jobs in urban areas. DSC drivers, being more urban in the first place, may not have experienced this increased exposure to crash risk.

However the possible demographic factors may be countered by the following fact: in the pre-period CON drivers took more courses, proportionately, than did the DSC drivers. In the pre-period, 15.3% of CON drivers took a course and CON drivers, overall, had a statistically significantly better crash record than DSC drivers. Also in the pre-period only 14.0% of the DSC drivers took a course and DSC drivers had a worse crash record than CON drivers. This difference in proportions is statistically significant at the .05 level of significance. Thus, in both the pre- and the post-periods course taking was associated with better crash records.

Conclusions

The findings of this research are generally inconsistent with the research literature on the effectiveness of remedial driver education in reducing crashes after the course. Despite efforts to discredit the findings by noting demographic differences between the DSC and CON groups, course taking in both the pre- and post-periods was statistically significantly associated with better crash records. In the post-period, the DSC group had a statistically significantly better crash record during the two years after taking a

driving safety course than did the CON group. In the pre-period, the CON group took more courses, percentage-wise, than did the DSC group and had statistically significantly fewer crashes.

Whether these findings have any practical consequences is arguable, however, given the small numerical differences in crashes between the CON and DSC groups in the two-year post-period. DSC drivers had only .233 crashes per driver in the post-period, while the CON drivers had an average of .250 crashes per driver. Also, both groups had fewer crashes in the post-period than in the pre-period, perhaps due simply to maturation, though the DSC group did have a slightly greater reduction (.49 fewer crashes per driver on average) than did the CON group (.44).

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Appendix

	People	Transactions		People	Transactions
18 pre CON	9731	15465	18 pre DSC	7284	10820
19 pre CON	13628	23396	19 pre DSC	7789	12642
20 pre CON	13761	24424	20 pre DSC	6706	10967
Total pre CON	37120	63285	Total pre DSC	21779	34429

	People	Transacts		People	Transacts
18 post CON	19999	57939	18 post DSC	17412	35379
19 post CON	25305	58406	19 post DSC	17145	33365
20 post CON	25034	55968	20 post DSC	14714	27119
Total post CON	70338	172313	Total post DSC	49271	95863

Average Number of Transactions per Person

18 pre CON	1.59	18 pre DSC	1.49
19 pre CON	1.72	19 pre DSC	1.62
20 pre CON	1.77	20 pre DSC	1.64
Total pre CON	1.70	Total pre DSC	1.58
18 post CON	2.90	18 post DSC	2.03
19 post CON	2.31	19 post DSC	1.95
20 post CON	2.24	20 post DSC	1.84
Total post CON	2.45	Total post DSC	1.95

	People	Crashes		People	Crashes
18 pre CON	9731	7905	18 pre DSC	7284	6059
19 pre CON	13628	9529	19 pre DSC	7789	5552
20 pre CON	13761	8357	20 pre DSC	6706	4086
Total pre CON	37120	25791	Total pre DSC	21779	15697

	People	Crashes		People	Crashes
18 post CON	19999	5893	18 post DSC	17412	4664
19 post CON	25305	6130	19 post DSC	17145	3961
20 post CON	25034	5576	20 post DSC	14714	2874
Total post CON	70338	17599	Total post DSC	49271	11499

Average Number of
Crashes per Person

18 pre CON	0.81	18 pre DSC	0.83
19 pre CON	0.70	19 pre DSC	0.71
20 pre CON	0.61	20 pre DSC	0.61
Total pre CON	0.69	Total pre DSC	0.72

18 post CON	0.29	18 post DSC	0.27
19 post CON	0.24	19 post DSC	0.23
20 post CON	0.22	20 post DSC	0.20
Total post CON	0.25	Total post DSC	0.23