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BERNIECE BURKHARDT

RE YOUR RECENT REQUEST

In response to your recent request, enclosed is a copy of the Insurance Institute for Highway Safety's analysis of the National Safety Council's Defensive Driving Course Evaluation.

If you have any questions about this, do let me know.

Sincerely,

A. B. Kelley

ABK:ds

INSURANCE INSTITUTE FOR HIGHWAY SAFETY INTER-OFFICE CORRESPONDENCE

DATE:

March 8, 1973

MEMO TO:

Dr. Haddon

FROM:

Mr. Kelley

SUBJECT:

"An Evaluation Of The National Safety Council's Defensive Driving Course In Selected States," by Thomas W. Planek, Stuart A. Schupack, Richard C. Fowler

A copy of Brian O'Neill's detailed analysis of the National Safety Council's recent "evaluation" of the Defensive Driving Course, a driver education package marketed by NSC, is attached.

A reading of the NSC research report — in its full version rather than the "summary" versions being more generally publicized by NSC — and the O'Neill memorandum compels the conclusion that the evaluation was fatally and irreversibly flawed in a number of key aspects.

This is particularly sad, since it means that there still has been no competent evaluation of this nationally-promoted "driver education" package. According to NSC's own figures, millions of subjects have been exposed to this still-unevaluated program, yet insurers and the public at large do not know whether these people have been hindered or helped by it.

Some of the major ways in which NSC's "evaluation" is flawed are these:

1. As O'Neill points out, "All drivers who had been directed into the course by traffic judges or driver license officials were excluded from the groups." Thus, the evaluation completely avoids looking at the very drivers whose crashes or violations bring them to the attention of public authorities. This omission alone would limit the evaluation's general utility, even if it were otherwise a competent job. (Page 11)

2. Many DDC course takers failed to answer the survey questionnaire. Of the 8,000-odd members of the "study group" of DDC course takers, 2,261 failed to respond to the "year two" follow-up questionnaire that sought data concerning their crash and violation experience subsequent to taking the course.

Investigating differences between those who responded and those who did not, the NSC staff found that the group failing to respond contained relatively more males, more young drivers, more drivers with lower educational achievement, fewer volunteers, more drivers with less driving experience, and more drivers reporting higher mileages driven each year --characteristics, that is, traditionally associated with poor driving -- than did those who responded to the follow-up questionnaire.

Moreover, the 2,261 non-respondents had had a significantly greater number of self-reported accidents and violations in the first year of the study than had the respondents. Consequently, it is entirely possible that numbers of those who answered the questionnaire did so because they had good driving records, and that numbers of those who failed to answer did so because their post-DDC driving records were as poor as, or worse than, their earlier records. (Pages 26-30)

3. "The reductions in state-recorded accidents and violations after DDC for the study group were not significantly different from those of the comparison group," the authors of the report themselves state in the full version. (From Abstract)

O'Neill's memorandum sums it up best:

"In the Introduction of this report the authors state that: 'Previous efforts to evaluate DDC have been inconclusive.' However, they temselves have produced yet another inconclusive evaluation of the National Safety Council's Defensive Driving Course."

INSURANCE INSTITUTE FOR HIGHWAY SAFETY INTER-OFFICE CORRESPONDENCE

DATE: February 20, 1973

MEMO TO: Dr. Haddon (cc: Dr. Robertson, Mr. Kelley)

FROM: Mr. O'Neill (mak)

SUBJECT: "An Evaluation of the National Safety Council's Defensive Driving Course in Selected States," by T. W. Planek, S. A. Schupack and R. C. Fowler, National Safety Council, Research Department, October 1972

In the Introduction of this report the authors state that "Previous efforts to evaluate DDC have been inconclusive." However, they themselves have produced yet another inconclusive evaluation of the National Safety Council's Defensive Driving Course.

In their overview the authors point out that a design that randomly assigns students would be the most desirable; they then give some very weak reasons for their design not having this feature. Although observational studies, if carefully designed, can be almost as powerful as randomized experiments, the design used in this study has deficiencies, that cast serious doubts on the validity and generality of the conclusions.

The basic design is shown in the attached figure. driving records, both crashes and violations, of two groups of drivers, the study group and the comparison group, were compared. The study group consisted of drivers who graduated from DDC courses throughout the country from October 1, 1969 until October 1, 1970. This group was asked to fill out questionnaires reporting their accident and violation experience for the 12 months prior to the course. Completed forms were returned from 17,820 drivers, of these, 8,182 were considered to be usable; the usable responses constituted the study group in year one. The authors state that "Anonymity was implied by requiring students to write a file code number rather than their name on the questionnaire." This is not true anonymous reporting. Twelve months after they graduated from DDC, these 8,182 drivers were requested to respond to an identical questionnaire. There were two mailings of this follow-up questionnaire. 5,921 (72%) responded to the follow-up questionnaire; these constituted the study group respondents in year two.

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From October 1, 1970 to October 1, 1971, the same time period that the study group was being recontacted, the same question-naires were sent to each agency that had trained study group students, asking that they be given to DDC students whose training was to end on the date closest to the graduation date of the study group from that agency approximately one year earlier. There were 2,397 responses from these questionnaires and these constituted the comparison group in year two. In addition, in February and March of 1972, official state records of accidents and violation experience were gathered for a sample of both the study and comparison groups. All drivers who had been directed into the course by traffic judges or driver license officials were excluded from the groups.

Using the self-reported data, the following relationships were investigated:

- "1. Do the study group accident or violation rates in the year after DDC differ significantly from rates reported by the same group in the year before DDC?
- 2. Does accident type, severity, or cost change significantly for the study group in the year after DDC as compared with the year before DDC?
- 3. Do the study group accident or violation rates in the year after DDC differ significantly from rates reported by a comparison group of drivers in the year before DDC?"

Using the official state records, the following relationships were investigated:

- "1. Do the state-recorded accident or violation rates of the study group in the year after DDC differ significantly from the rates compiled for the same group in the year before DDC?
 - 2. Do the state-recorded accident or violation rates of the comparison group in the year immediately before DDC differ significantly from the rates compiled for the same group in the 12-month period beginning two years before DDC?

- 3. Does the amount of change in study group accident or violation rates from before to after DDC differ significantly from the amount of change recorded for the comparison group from year two to year one before DDC?
 - 4. How well do the state records match the self reports in terms of number of accidents and violations recorded for the study and comparison groups?"

The major conclusions of the report are based on these comparisons, despite the fact that most of them have several obvious sources of potentially serious bias. For example, in the comparisons between the study group in year one and the study group in year two, there is a probable awareness on the part of the respondents that they are expected to have been involved in fewer accidents and violations following DDC and, consequently, they may have reported fewer. In addition, the non-respondents (27.6% of the study group) must prevent any generalizations being made from these comparisons, even though at one point the authors compare only the 5,921 respondents in both years.

In comparing the study group respondents in year two with the comparison group in year two, the possible sources of bias are even more obvious. The major one being the differences between the study respondents group in year two and the comparison group in year two (this latter group is really only comparable with the total study group). The authors investigated the differences between the study group respondents and non-respondents and found among the respondents more females, older drivers, higher educational achievements, more volunteers, longer driving experience, and fewer reported miles driven each year, than among the non-respondents; all of these differences were statistically significant. In addition, the respondents had significantly fewer self-reported accidents and violations than the non-respondents in year one. Furthermore, there were major regional differences between the agencies from which the comparison and study groups were obtained. Clearly, with all of these differences, any comparison between the study group respondents in year two and the comparison group in year two must be very inconclusive.

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In an attempt to compensate for some of the biases that could be caused by these differences, the authors repeated many of the analyses by adding the accident and violation rates of the study group non-respondents in year one to those of the study group respondents in year two (the assumption in this case being that the course had no effect on the study group nonrespondents); in these comparisons their conclusions did not It is equally likely, however, that the study group non-respondents had a worse experience in year two than in The fact that the state records indicated the study group non-respondents had a better experience in year two than in year one does not eliminate this possibility. A frequent reason for non-response in surveys is because the person has moved, thus if some of the study group non-respondents had moved out of the state in year two, their records could appear accident and violation free following the move. interesting to note that in those states from which official records were obtained, 78% of the respondents' records were found but only 62% of the non-respondents' records could be located.

Even though "The reductions in state-recorded accidents and violations after DDC for the study group were not significantly different from those of the comparison group," it should be noted that these comparisons could also be biased. For example, the official state records were obtained in February and March 1972, between five and 17 months after the comparison group, and 29 and 17 months after the study group, entered a DDC. Thus, the likelihood of moving to another state before the official records were obtained was higher for the study group than the comparison group.

Although on first reading the report appears to be objective and thorough, given the inherent weakness of the design, a more careful reading suggests that it is in fact less than objective. For example, when discussing previous research on Page 4, some of the O'Day (1970) results showing worse experience following DDC are dismissed because "the respondents as a whole had extremely good experience in the year before they took DDC and, because of the regression to the mean phenomenon, might be expected to do far worse than their reports show in the year following DDC." However, later on the same page when discussing the Menzies (1971) results from a group of drivers "referred to DDC by traffic authorities" (presumably because of poor driving records) in Manitoba, the

REFERENCES

- Menzies, M. W. Group Ltd. Impact of the defensive driving course. Traffic Safety, 1971. 7(8), 22-23, 38-40.
- O'Day, J. A before and after analysis of accidents involving students of the defensive driving course. Accident Analysis and Prevention, 1970, 2, 175-188.

DESIGN OF NSC EVALUATION OF DDC

1	STUDY GROUP	COMPARISON GROUP
Year One		
Oct. 1, 1969	8,182 usable	
to Oct. 1, 1970	questionnaires	
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	DDC Training	
Year Two		
Oct. 1, 1970	5,921 respondents	2,397 usable
to Oct. 1, 1971	2,261 non-respondents	questionnaires
		DDC Training
Feb & Mar 1972	Official records obtained	Official records obtained