The Effectiveness of Oregon's Ignition Interlock Program

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ABSTRACT

Oregon's ignition interlock program was established in 1988, in 11 of 36 counties. The program requires that suspended DWI offenders use an ignition interlock device (IID) in order to obtain a hardship license or an early reinstatement. This paper focuses on the early reinstatement phase of the program. The analysis focuses on drivers who reinstated, including 1541 drivers in the control region, 705 drivers in the pilot program who actually participated, and 773 drivers in the pilot region who opted not to participate by reinstating after the six-month IID period.

In general, results indicate that offenders in the pilot region had lower arrest rates than offenders in the control region. However, differences in arrest rates between the regions appear to be mainly due to a low arrest rate among non-participating offenders who postponed reinstatement until the IID requirement expired. The reduction in the rearrest rate for participating offenders is more moderate. Furthermore, evidence suggests that the beneficial effect of the IID disappears as soon as the device is removed. Finally, there is evidence of widespread circumvention, in the form of IID program participants illegally operating vehicles with no IID installed.

1. INTRODUCTION

The sixty-fourth and sixty-fifth sessions of the Oregon Legislature enacted and then revised and expanded Oregon's IID program. This paper attempts to determine the program's success in reducing recidivism (repeat offense) rates of the target populations of participating DWI offenders, by comparing rearrest rates for the target populations inside and outside an eleven-county pilot region. In 11 counties comprising approximately half the state's driver population, DMV requires an ignition interlock device (IID). The rest of this paper begins with a brief description of the IID program, and a short review of interlock research in other states. This is followed by a description of research methods, a presentation of results, and a short discussion of those results.
2. OREGON'S IGNITION INTERLOCK PROGRAM

The ignition interlock is a breath testing device with an electronic relay. When installed in a motor vehicle, it interrupts the starting circuit until the driver's breath is analyzed for alcohol content. In Oregon's program, the blood alcohol concentration (BAC) threshold is 0.03 percent. The device also includes a data recording system that logs test failures, as well as power interruptions and jump-starts, providing indirect evidence of tampering.

Oregon's program targets drivers convicted for DWI. Since Oregon usually waives prosecution for first offenders who enroll in treatment, the first conviction is usually the second offense, so the interlock program nearly always involves repeat offenders. The IID is required of hardship license applicants. In addition, at the end of the 1-3 year DWI suspension, offenders must use the IID for six months or face an additional six month suspension. Guardian Technologies, Inc. distributes the device, which is installed and serviced at centers in Clackamas and Salem Oregon.

3. OTHER RESEARCH

Although the IID is relatively new, several ongoing evaluation studies have produced preliminary results. Morse and Elliott (1990) tracked 273 matched pairs of offenders, in which one member of each pair was assigned to use an ignition interlock device, by Hamilton County (Cincinnati) Ohio courts. Subjects were court-selected and self-selected, in that offenders were selectively offered the opportunity to participate, but were free to choose suspension as an alternative. It is not clear whether matching neutralized bias selection bias. Findings show lower rearrest rates in the interlock group (3.4% vs. 9.8%) after 30 months.

A second study was an evaluation of California's program (EMT group, 1990) comparing 584 offenders who received an IID to a matched group of 506 other offenders. Despite attempts to match, the IID group were more likely to have prior DUUI offenses and less likely to have a BAC below 0.20 at the time of arrest. Results indicate a reconviction rate of 3.9 percent in the IID group and 5.9 percent in the matched control group (non-significant.)

4. METHODS

Originally it was hoped that counties would be assigned to participate either randomly or by a method that would lead to equivalence of key demographic and social characteristics between pilot and non-pilot counties. Instead, the pilot region was made contiguous by selecting the three counties comprising the Portland Metropolitan area, and eight others clustered around the original three.

This geographic arrangement is practical because it simplifies installation and service of interlock devices, but it is less than optimal from a research perspective because the pilot region is substantially more urban, DUUI enforcement is dominated by a small number of large law-enforcement agencies, and it incorporates all of the
state's only large metropolitan area. To address concerns about non-equivalence of the regions, it was necessary to rely extensively on multivariate methods including covariance analysis in the analysis and interpretation of results.

Subjects for this study were selected from Oregon driver record files. The initial sampling frame included drivers with an applicable DUII suspension ending date during the 365-day period after the bill was implemented. Drivers with suspensions for arrests occurring in another state were excluded. A few drivers crossed over by having convictions in both the control and pilot regions. In these cases, group membership was generally determined by the first conviction.

This initial sample, made up of drivers who had a DUII suspension ending during the sampling period, consisted of 4697 drivers in the pilot region, and 4272 in the control region. Of these, 1481 drivers (31.5 percent) in the pilot region actually reinstated, compared to 1543 (36.1 percent) in the control region.

Of the 5945 drivers who did not reinstate, many were ineligible because of an additional suspension. Also, 86 drivers were reported deceased prior to or within six months of their reinstatement date, and 7 others were determined to be transients with no address and no record activity except for the single DUII offense that led to their selection. These drivers were excluded, leaving 3362 total drivers in the control region and 3619 drivers in the pilot region.

In the pilot region, 2141 did not reinstate. Of the 1478 who did, 773 chose not to participate in the IID program and, instead, reinstated after serving an additional six-month suspension for failure to install an IID. An additional 57 obtained an exemption to operate an employer's vehicle on the job, and the remaining 648 obtained an ignition interlock device.

5. ANALYSIS

The first step in the analysis was to make comparisons of offenders prior to eligibility for reinstatement. There is a significant difference in participation (reinstatement) rates between the groups. But it is difficult to attribute the difference to the IID requirement, because the requirement delays but does not prevent reinstatement. It seems more likely that the difference in reinstatement rates is a result of social differences related to urban/rural differences.

As expected, the pilot region is significantly more urban than the control region. Also notable is a difference in prior accident rates. Finally, there are also significant differences in the numbers of prior DWS violations, and significantly more drivers in the treatment group refused to take a breath test on the DUII offense for which they were suspended.

Most of this analysis is based on several multivariate ANCOVA models. Because of severe space limitations the models are not presented here. These models considered up to six independent variables, including age, gender, reinstatement status, prior driver record, urban-rural location and group (pilot vs. control).
results ("F" ratios) for the effect of "group" are based on an optimized, hierarchical model in which all other statistically significant factors have been taken into account.

Table 1 presents rearrest rates for the pilot and control regions overall, and for several more specific subgroups. A series of comparisons were investigated by using multivariate ANCOVA models to determine the statistical significance of rate differences by group, reinstatement status, program participation and time period. Time period refers to the initial six months from the suspension ending date, during which the IID is required, and a later period, averaging 406 days, after the IID requirement expired but during which subjects records were monitored.

Table 1:
Rearrest Rates by Group, License Status, Participation and Time Period

<table>
<thead>
<tr>
<th>GROUP</th>
<th>REARREST RATES</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DURING</td>
<td>AFTER</td>
<td>OVERALL</td>
<td>NUMBER</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinstated</td>
<td>8.18</td>
<td>11.55</td>
<td>10.55</td>
<td>1541</td>
</tr>
<tr>
<td>Did not Reinstated</td>
<td>7.8</td>
<td>7.01</td>
<td>7.29</td>
<td>1821</td>
</tr>
<tr>
<td>All Control</td>
<td>7.98</td>
<td>9.08</td>
<td>8.78</td>
<td>3362</td>
</tr>
<tr>
<td>Pilot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinstated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After IID Req. Expired</td>
<td>0.78</td>
<td>7.91</td>
<td>5.72</td>
<td>773</td>
</tr>
<tr>
<td>IID Installed</td>
<td>4.63</td>
<td>10.82</td>
<td>8.94</td>
<td>648</td>
</tr>
<tr>
<td>Employer Exempt</td>
<td>3.5</td>
<td>7.88</td>
<td>6.56</td>
<td>57</td>
</tr>
<tr>
<td>Total Reinstated:</td>
<td>2.58</td>
<td>9.19</td>
<td>7.16</td>
<td>1478</td>
</tr>
<tr>
<td>Did Not Reinstate</td>
<td>8.96</td>
<td>7.09</td>
<td>7.71</td>
<td>2141</td>
</tr>
<tr>
<td>All Pilot</td>
<td>6.36</td>
<td>7.94</td>
<td>7.49</td>
<td>3619</td>
</tr>
</tbody>
</table>

The first model to be examined compares pilot and control groups without regard to time period or actual program participation. At this level, the pilot region has a significantly lower rearrest rate (F=4.527 @ 1df), but more interesting, there is an interaction of group with reinstatement, suggesting that the program effect depends on whether or not subjects reinstated. Note that rearrest rates for non-reinstating drivers are similar (7.29 vs. 7.71) but rates for reinstating drivers are lower in the pilot region (10.55 vs. 7.16).

Additional analysis confirms what the interaction effect suggests, which is that among drivers who reinstated, recidivism is significantly lower in the pilot region (F=14.11@ 1df.), but there is no significant difference between the groups among drivers who did not reinstate (F=0.022 @ 1 df).

Analysis to this point strongly indicates that the program is effective, but it does not identify the reasons for effectiveness. In the pilot region an offender can
choose between participation in the IID program, or an additional six-month suspension for failure to install an IID. Since the effectiveness of license suspension is well documented (see Hagen, 1978; Salzberg et al., 1982; Williams et al., 1984), it may be that the suspension, as well as the program, is primarily responsible for the differences observed above.

To pursue this issue further, two additional ANCOVA models were developed that look separately at **IID participants** and **reinstated non-participants** in the pilot region, comparing each to reinstated drivers in the control region. As is suggested in table 1, the difference between control subjects and non-participating pilot subjects is clearly significant \( F=20.92 \), but the rate difference for those drivers who obtained an ignition interlock device is not statistically significant \( F=2.30 \).

These results suggest that while the program may be effective overall, suspension, and not the IID, is mainly responsible. However, analysis to this point has been based on an average period of 586 days from the date of eligibility for reinstatement, but only the first six months of that involves an IID requirement. The next step looks at this initial period to determine whether the program is more effective when the device is actually in use.

According to the rates in table 1, during the first six months the rearrest rate is lower in the pilot region \( (7.98 \text{ vs. } 6.36 \text{ arrests per hundred drivers per year}) \) and the difference for those who (eventually) reinstated is even greater \( (8.18 \text{ vs. } 2.58) \). However, in the pilot region, the rate for those who obtained an IID, while low relative to the control group, is higher than for drivers who reinstated after waiting out the IID requirement \( (4.63 \text{ vs. } 0.78) \).

After the first six months both groups have higher rearrest rates. It is interesting that the difference between the control group and the IID installed group virtually disappears \( (11.55 \text{ vs. } 10.82) \) but the difference for the group waiting out the IID requirement remains substantial \( (11.55 \text{ vs. } 7.91) \).

Four additional ANCOVA models were developed to obtain tests of significance for these comparisons. For **participating** IID offenders, results indicate a significant difference \( (F=3.90) \) during the six-month IID period, and no difference \( F=0.48 \) after. For **non-participating** offenders results indicate significantly lower rearrest rates during \( (F=19.69) \) as well as after \( (F=7.37) \) the six-month IID period.

Much information concerning circumvention is being left for a separate study. However, one issue that can be investigated here is that of circumvention through operation of a non-IID equipped vehicle. To probe this issue, 83 drivers in the reinstatement group were identified who (1) had an IID installed for the duration of the six-month period and (2) had at least one traffic conviction or accident that occurred during that six-month period. Records were checked to determine whether the vehicle involved in the accident or conviction matched the one in which the IID was installed. Of the 83 drivers, 33 \( (40\%) \) were driving a different vehicle at the time of an accident or citation.
6. DISCUSSION

Generally, results indicate that the reinstatement stage of the program is effective, but the effect is due primarily to enhanced suspension and only secondarily with IID use, to the extent that the non-participating group had the lowest rearrest rate of all the groups examined. However, direct comparisons between the participating and non-participating subgroups are of doubtful value, because members are self-selected. It is just as arguable that IID participants are more motivated to continue driving because of job-related and other considerations. This would explain why the non-participating group continues to have lower rearrest rates after the six-month enhanced suspension is over. As such, IID participants may constitute a high risk group whose rearrest rate would be higher yet without the IID. To choose this interpretation it would be necessary to have available an "enhanced suspension only" group as a basis for comparison.

On the basis of these findings, three general conclusions seem permissible. First, it appears that the program is effective as a whole. Second, it was possible to show that the IID is effective in reducing rearrest rates as long as the device is present. Finally, it is clear that a serious limitation of the program involves circumvention by program participants driving non-IID vehicles. This result reveals a major flaw in the program which is related to the identification of IID program participants in the field by law enforcement officers.

REFERENCES

EMT Group

Hagen, R.E.
1978; The "Efficacy of Licensing Controls as a Countermeasure for Multiple DUI Offenders," Journal of Safety Research, 10: 115-22.

Morse, Barbara J., and Delbert S. Elliott,

Salzberg, P. M., R. Hauser and C. L. Klingberg.

Williams, R. L., R. E. Hagen and E. J. McConnell