Effectiveness of alcohol treatment programs in reducing recidivism: Findings from the United Kingdom

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**Abstract**

**Objectives:** To evaluate the efficacy of three different alcohol treatment programs in reducing reoffending rates.

**Design:** A matched case-control study. Survival analysis.

**Participants:** 564 male offenders with an alcohol problem.

**Interventions:** Participants were assigned to one of three alcohol treatment programs (141 offenders per treatment): Low Intensity Alcohol Program (LIAP), Alcohol Specified Activity Requirement (ASAR), and Addressing Substance-Related Offending (ASRO). A fourth match group (*n* = 141) was not assigned to a program and served as a control group.

**Main outcome measures: Participants’ charged and reconviction rates over four time periods (**0- to 3-months, 3- to 6-months, 6- to 9-months, and 9- to12-months **after completion of program or order).**

**Results**: The estimated odds ratio of 2.26 revealed that offenders who did not participate in a program were more than twice as likely to be charged compared to offenders who participated in a program. The estimated odds ratio of 2.70 revealed that offenders not in a program were over 2.5 times more likely to be reconvicted than those in a program. Overall, our data showed that offenders who did not participate in an alcohol treatment program were more than twice as likely to be charged with or reconvicted of a crime as offenders who did participate.

**Conclusion:** Offenders enrolled in an alcohol treatment program showed a significant reduction in the probability of being charged with or reconvicted of a crime. The data, in addition, revealed that among the three alcohol treatment programs evaluated, the LIAP is the most cost-effective.

**What is already known on this topic.**

A large corpus of data suggests a link between alcohol and criminal behaviour. There is also enough evidence to argue that psychological treatments—such as cognitive behavioural therapies—are an effective method to treat alcohol misuse.

**What this study adds.**

Offenders who are enrolled in alcohol treatment programs exhibit a marked reduction in charged and reconvicted rates.

Among the different alcohol treatment programs examined, LIAP is the most cost effective.

We are aware of no parallel studies (in the U.K. or elsewhere) that have examined the effectiveness of alcohol treatment programs in reducing criminal behaviour among offenders.

**Introduction**

Alcohol misuse accounts for about 50% of all violent crimes and 73% of all domestic violence incidents in the United Kingdom (U.K.) and the United States1—or nearly 1 million violent attacks every year in the U.K. alone. The link between alcohol and criminal behaviour has reached such proportions that the World Health Organisation (WHO) now considers it a public health issue2. It is estimated that alcohol-related crime has a price tag of £8–13 billion a year3 and has serious health and social ramifications. Severing the link between alcohol misuse and crime has thus become a pressing priority for governments across the globe4.

A large corpus of studies exists on the connection between alcohol and crime, focussing on a wide spectrum of issues such as age, environment, type of crime, and socioeconomic status5. In contrast, there is a dearth of data on the effectiveness of different alcohol treatment programs in reducing criminal behaviour. This is surprising, given the extensive evidence on alcohol treatment programs in non-offending populations. Indeed, numerous studies2, 6 around the world have reported the utility of enrolling individuals in different alcohol treatment programs. Based on one of the most extensive non-pharmacological alcohol treatment trials in the U.K., the U.K. Alcohol Treatment Trial (UKATT)7 research team demonstrated the positive financial, social, and health benefits associated with participating in motivational enhancement therapy for alcohol misuse in a sample of non-offenders. A meta-analysis of brief motivational interventions with heavy drinkers, likewise, reported positive outcomes. Heavy drinkers who engaged in the program were twice as likely to reduce their drinking 6 to 12 months following the intervention8. We are aware of no parallel studies (in the U.K. or elsewhere) that have examined the effectiveness of alcohol treatment programs in reducing criminal behaviour among offenders.

Cognitive behavioural therapy (CBT) has been one of the most used methods to reduce alcohol use7, 9-12. The judicial systems in the U.K. and the United States, for example, have specifically identified CBT alcohol treatment programs as the chief method to break the link between alcohol and crime. It is rather difficult, however, to find supportive evidence for the assumption that participating in alcohol treatment programs reduces offending; and there is an even greater paucity of data about which program—among those currently employed—works best. This study was designed to bridge this gap and provide much needed data about the effectiveness of alcohol treatment programs in reducing recidivism in the U.K. Drawing on data from the probation service and the police in the southwest region of the U.K., we tested the hypothesis that offenders who participate in alcohol treatment programs show lower rates of being charged and reconvicted. As alcohol misuse has been particularly implicated in violent crime, the data also allowed us to examine if violent offenders would show lower reconviction rates compared to non-violent offenders after participating in an alcohol treatment program. Finally, as offenders were assigned to one of three possible alcohol treatment programs, the data allowed us to compare the effectiveness of the programs.

**Methods**

A matched case-control study was conducted based on data collected by the southwest region of the U.K. probation service and police. A total of 564 male offenders were included in the study. Of these, 423 were assigned to participate in one of three different alcohol treatment programs (141 offenders per treatment program). An additional 141 male offenders who met the criteria for inclusion but had not yet participated in an alcohol treatment program served as a control group. The four groups (three treatment programs and one control) were matched (see Table 1) along key factors associated with offending: age, offence type, and score on the Offender Group Reconviction Scale (OGRS)—a measure used by the U.K. judicial system to predict the probability of reoffending. As earlier studies indicated a strong link between alcohol misuse and violent behaviour1 we collapsed offenders into two categories: those who committed crimes “against persons” and those who committed crimes “not against persons.”

**Interventions**

At present, U.K. courts have the right to impose an alcohol treatment program as part of a community order or a suspended sentence order for offenders who misuse or are dependent upon alcohol, with their consent. Offenders in the southwest region were assigned to one of three alcohol treatment programs. The first was the Low Intensity Alcohol Program (LIAP), a group structured cognitive approach designed for those who engage in problematic drinking or ‘binge’ drinking. The program consisted of 14 two-hour sessions. The second program was the Alcohol Specified Activity Requirement (ASAR), a one-on-one CBT program lasting up to 14 two-hour sessions. The third, the Addressing Substance-Related Offending (ASRO) program, is a nationally approved CBT consisting of 20 two-hour sessions for offenders whose crimes are related to alcohol and drug use. This program uses a group-work design and targets those at significant risk of reoffending. Admission to the programs is based on a rigorous assessment process.

**Outcome Measures**

Primary outcome measures were whether offenders had been charged with or reconvicted of a crime over four different time periods, 0- to 3-months, 3- to 6-months, 6- to 9-months, and 9- to12-months following completion of one of the three alcohol treatment programs or, in the case of the control group, after the completion of a community or suspended sentence order.

**Statistical Analysis**

Discrete-time survival analysis was used to investigate participants’ likelihood of being charged with or reconvicted of a crime over a 12-month period depending on whether they had participated in a program and their previous offence, age, and OGRS score. We present our results in several formats: Firstly, the probability of being charged or reconvicted at four time points (survival) showed offenders’ charged or reconviction rates measured at 3, 6, 9, and 12 months after successful completion of one of the alcohol treatment programs or sentence. Each time period, 0- to 3-months, 3- to 6-months, 6- to 9-months, and 9- to12- months —constituted a separate observation. We recorded if a participant was charged, was reconvicted, or ‘survived’ in each time period.

Secondly, to display the event occurrence (i.e., being charged with or reconvicted of an offence), we employed a logit transformation of the discrete-time hazard model13. The relationship between the event of interest (charged/reconviction) and the selected predictors of program/no program (hereafter, program), age, offence type, and OGRS score were modelled, and logistic regressions were performed to find the significance of the predictors and calculate the risk of being charged or reconvicted. Finally, median lifetimes were calculated to demonstrate the time at which half of all participants were charged or reconvicted. These were presented as being between 0 and 1for the 0- to 3-month period, 1and 2 for the 3- to 6-month period, between 2 and 3 for the 6- to 9-month period, and between 3 and 4 for the 9- to 12-month period. For example, a median lifetime of 1.53 indicates that 50% of that offender group was charged in the 3- to 6-month period.

**Results**

**Charges**

 To examine if participation in an alcohol preventive program reduced the probability of being charged with a crime, we calculated the hazard function, survival function, and median lifetime for the charged events. Seven logistic-regression analyses were performed (see Table 2), all with event (being charged with a crime) as the dependent variable. The seven models (A to G) differed in the number of parameters included. Model A was the most parsimonious and included only the measured time periods and therefore investigated whether the probability of being charged with a crime changed over the four time periods. Model G was the most inclusive and included all the parameters (measured time periods, program/no program, offence type, OGRS score, and age). Model G, which included all substantive predictors, had the best fit. However, Model D had the next best fit according to the Akaike Information Criteria14 and the Bayesian Information Criteria15 and did not differ significantly from Model G. Model D included the parameter estimates for program, offence type, and the four time periods. All parameters were negative and highly significant, whilst offence type was still significant at the α = .05 level (Table 2).

According to Model D, survival drops steadily, but especially in the 9- to 12-month period (Table 2). With Model D we could test the hypothesis that offenders who participated in an alcohol treatment program and had committed an offence not against persons were less likely to be charged with a crime than offenders who did not participate in a program and had committed similar offences. We present the fitted survival function in Figure 1, where it is evident that the survival rate for those not in a program falls much more quickly than for those in a program for both offence types—against and not against persons. The median lifetimes for those offenders not in a program were 2.55 (offence against persons) and 1.91 (offence not against persons). This indicates that half of those offenders not in a program were charged within the second two time periods. In contrast, the median lifetimes for those offenders in a program (regardless of the type of crime) could not be calculated as 50% were not charged within the 12-month period. The parameter estimate of program in Model D (Table 2) was used to calculate the estimated odds ratio (2.26), which reveals that offenders who did not participate in a program were more than twice as likely to be charged compared to offenders who participated in a program.

**Reconvictions**

Next, we evaluated if participation in an alcohol preventive program wasassociated with lower reconviction rates. To examine this question, hazard function, survival function, and the median lifetime for the dependent variable of being reconvicted of a crime were calculated.

 Seven logistic-regression analyses were performed (Table 3), all with event (being reconvicted of a crime) as the dependent variable. Models A to G contained the same predictors as those in the analyses for charges. Model G had the best fit as it contained all the predictors. Model B had the next best fit. Model B indicates that the probability of not being reconvicted of a crime decreased steadily across the 12-month period, and particularly between 9- to 12-months after completion of a program or order. In Model B the parameter estimate for program was negative and highly significant. This result revealed that participating in an alcohol treatment program reduced the likelihood of being reconvicted within the 12-month period. Model B was accepted as the model that fits both the data and (partly) our theoretical predictions.

 In Model B the coefficient of program was negative, indicating that those offenders who did not participate in a program were at greater risk of being reconvicted. In other words, participating in a program reduced the likelihood of being reconvicted. Figure 2 demonstrates that the survival rate for those not in a program fell much more quickly than for those in a program. The median lifetimes were calculated from the survival figures by means of interpolation. The median lifetime for those offenders not in a program was 2.2, meaning that at just over 6 months half of the offenders had been reconvicted. In comparison, the median lifetime for those who participated in a program cannot be calculated given that by the end of the 12-month period, less than half of the cohort had been reconvicted. The parameter estimates (Table 3) for program in Model B were used to calculate the odds ratio of 2.70, meaning that offenders not in a program were over 2.5 times more likely to be reconvicted than those in a program.

Taken together, the data show that alcohol treatment programs significantly reduce the likelihood of being reconvicted. Indeed, at the end of the 12-month period, less than 50% of the offenders in a program had been reconvicted, in contrast to 50% of the offenders not in a program being reconvicted within 9 months of completing a community or suspended sentence order.

**Comparing Three Alcohol Preventive Programs**

 Finally, we were interested in comparing the efficacy of the three alcohol treatment programs. All three programs were more successful in reducing the rates of being charged or reconvicted compared to not being in a program (Figures 3 and 4). To examine which of the three programs was most effective discrete-time survival analysis was used to calculate the fitted logit hazards, the fitted hazard, and survival probabilities of the three programs (ASAR, ASRO, and LIAP) by means of inverse transformation (Table 4). For being charged, the ASAR was the most effective and the ASRO was the least effective program (Figure 3). From Figure 3 it can also be seen that those offenders not in a program reached the 50% median lifetime between 3- to 6-months (median lifetime 1.79) and those offenders who completed the ASRO program reached the 50% median lifetime between 6- to 9-months (median lifetime 2.31), meaning that 50% of offenders were charged after the beginning of the 6- to 9-month period; offenders in the ASAR group did not reach this level within the 12-month study and those offenders in the LIAP had a median lifetime of 3.84, meaning 50% of the participants were charged towards the end of the fourth period (9- to 12 -months).

 Next, to examine the reconviction rates, a discrete-time survival analysis was applied (Table 4). Results show that the LIAP was the most effective in reducing reconviction rates and the ASRO program was the least effective (Figure 4). It should be noted, however, that the 50% median lifetime for the ASRO program was not reached until towards the end of the fourth period (9- to 12-months; median lifetime 3.94), meaning that even the least effective program was more effective than not participating in a program (no program median lifetime was 2.19). The LIAP and the ASAR program did not reach the 50% median at the end of the 12-month study, meaning that over 50% of the participants of those programs were not reconvicted by 12 months after completion. Finally, as the cost of the three programs per offender was known—ASAR: £2008, ASRO: £1516 and LIAP: £924—the data allowed us to conduct a preliminary cost-effectiveness analysis. The results question the utility of using ASRO from both a financial and efficacy perspective, given that it produced significantly worse results. With regard to the LIAP and the ASAR program, the two produced similar rates of reconvictions and charges. However, the ASAR program is over double the cost of the LIAP.

**Discussion**

According to the U.K. Ministry of Justice,4 the cost of placing one person in prison is £37,163 per year, a price tag that is over £10,000 higher than the median gross annual earnings for a full-time employee—standing at £27,000 in 2013.16 With roughly 90,000 people in prison and recidivism rates close to 50%, the U.K. government has set the goal of breaking the link between alcohol and crime. Our results provide, therefore, important evidence about the effectiveness of alcohol treatment programs in reducing criminal behaviour. Indeed, while criminal justice systems across the globe have routinely assigned offenders to alcohol treatment interventions, little data existed to support and substantiate this practice. Our results show that assigning offenders to one of three possible programs—ASAR, ASRO, and LIAP—was associated with a significant reduction in the likelihood of being charged or reconvicted. Stated simply, alcohol treatment programs are effective in reducing recidivism rates. As such, our results resonate well with UKATT7 and other research showing the utility of alcohol treatment programs among the non-offending population. Our data, however, deviate from previous work in that participation in the ASRO program did not produce a reduction in reconviction rates among offenders with substance abuse17. One possible explanation for the difference in results could be that participants in the current analysis had alcohol problems only, while participants in the earlier study had both alcohol and drug misuse issues. It is also worth noting that our analysis revealed that the three alcohol treatment programs were effective for both those offenders convicted for crimes against persons and those convicted for crimes not against persons.

 Evaluating the merit of alcohol treatment programs is, needless to say, an important endeavour. At the same time, it is also crucial to compare the costs and effectiveness of each program. While the present study was not specifically designed to address this issue, knowing both the costs and efficacy of each program allowed us to draw preliminary, albeit cautious, conclusions. First, as the price tag4 of placing one person in prison is roughly 19–37 times higher than assigning that person to a community-based alcohol treatment program, our results provide a strong financial rationale for the continued utilisation of these interventions. Given the hundreds if not thousands of offenders who might be eligible to attend an alcohol treatment program each year, this could amount to substantial public savings. Beyond financial gains, committing fewer offences and staying out of prison have strong and continued benefits for the offenders, their families, and the community.

 While this is the first study, to our knowledge, that compares existing alcohol treatment programs and their effect on recidivism, it is important to note a number of limiting factors. Firstly, the study was not a randomised controlled trial. As such, other variables not included in the data set could have unduly affected the results. Despite the logistics (i.e., financial and ethical concerns associated with conducting a randomised controlled trial with offenders), the need for undertaking this kind of rigorous analysis is significant. That being said, the control group and the three ‘experimental’ groups in the current study were matched on several, if not all, of the most important factors associated with reoffending5: age, offence type, and OGRS score. Secondly, the probation service did not provide data on attrition rates, which could have played an important role. Indeed, earlier studies have reported that offenders who do not complete interventions such as these programs have higher reconviction rates than those who do complete9, 17, 18. In addition, the offenders in our study were mostly classified as having low to medium OGRS scores, or were at low to medium risk of reoffending. Whether our results are robust enough to be applicable to high-risk offenders is an open, and critical, empirical question. As some researchers10 have argued, high-risk offenders might derive an even greater benefit from participating in alcohol treatment programs. Finally, the data allowed us to examine reconviction and charged rates over a period of 12 months only. While earlier studies, such as the UKATT7, considered an even shorter time horizon (6 months), knowing the long-term consequences of alcohol preventive programs would be of great benefit to the criminal justice system and policymakers alike19.

 Criminal justice systems across the globe have been assigning offenders to alcohol treatment interventions for many years. Our findings provide essential and valuable evidence to support this practice, as they show a strong indication that alcohol treatment programs helps reduce recidivism. In addition, the data highlight the possible cost-effectiveness of using alcohol treatment to reduce recidivism. Given the financial, health and social ramifications associated with crime, assigning offenders to comparatively low-cost alcohol treatment programs would seem to be the right step in the right direction to reduce recidivism.

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Table 1. Frequencies (and percentages) of sample characteristics by program.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristic | LIAP (*N*=141) | ASAR (*N*=141) | ASRO (*N*=141) | No program (*N*=141) |
| Age (years) |
| 18–24 | 25 (17.7%) | 25 (17.7%) | 25 (17.7%) | 25 (17.7%) |
| 25–34 | 56 (39.7%) | 56 (39.7%) | 56 (39.7%) | 56 (39.7%) |
| 35–44 | 39 (27.7%) | 39 (27.7%) | 39 (27.7%) | 39 (27.7%) |
| 45–54 | 17 (12.1%) | 17 (12.1%) | 17 (12.1%) | 17 (12.1%) |
| 55+ | 4 (2.8%) | 4 (2.8%) | 4 (2.8%) | 4 (2.8%) |
| OGRS scorea |
| Low | 71 (50.4%) | 71 (50.4%) | 71 (50.4%) | 71 (50.4%) |
| Medium | 58 (41.1%) | 58 (41.1%) | 58 (41.1%) | 58 (41.1%) |
| High | 4 (0.7%) | 4 (0.7%) | 4 (0.7%) | 4 (0.7%) |
| Type of offence |
| Against person | 89 (63.1%) | 89 (63.1%) | 89 (63.1%) | 89 (63.1%) |
| Not against person | 52 (36.9%) | 52 (36.9%) | 52 (36.9%) | 52 (36.9%) |

*Note.* ASAR = Alcohol Specified Activity Requirement; ASRO = Addressing Substance-Related Offending; LIAP = Low Intensity Alcohol Program; OGRS = Offender Group Reconviction Scale.

a Missing = 8

Table 2. Parameter estimates (and asymptotic standard errors) obtained by fitting discrete-time hazard models for substantive predictors for the event of being charged with a crime.

| Substantive Predictors  | Model A (Predictors: Four time periods) | Model B (Predictors: Four time periods, program) | Model C (Predictors: Four time periods, offence type) | Model D (Predictors: Four time periods, program, offence type) | Model E (Predictors: Four time periods, OGRS score) | Model F (Predictors: Four time periods, age) | Model G (Predictors: Four time periods, program, offence type, age, OGRS score) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Time period |
|  0–3 months | -1.26\*\*\* (0.10) | -0.67\*\*\* (0.14) | -1.37\*\*\* (0.11) | -0.77\*\*\* (0.15) | -1.41\*\*\* (0.12) | -0.74\*\*\* (0.18) | -0.35 (0.23) |
|  3–6 months | -1.20\*\*\* (0.11) | -0.56\*\*\* (0.15) | -1.30\*\*\* (0.12) | -0.67\*\*\* (0.16) | -1.35\*\*\* (0.13) | -0.67\*\*\* (0.19) | -0.22 (0.24) |
|  6–9 months | -1.66\*\*\* (0.15) | -1.00\*\*\* (0.18) | -1.76\*\*\* (0.16) | -1.11\*\*\* (0.19) | -1.81\*\*\* (0.16) | -1.12\*\*\* (0.21) | -0.66\*\* (0.26) |
|  9–12 months | -1.54\*\*\* (0.16) | -0.88\*\*\* (0.18) | -1.64\*\*\* (0.16) | -0.98\*\*\* (0.20) | -1.67\*\*\* (0.17) | -0.99\*\*\* (0.22) | -0.52 (0.26) |
| Program |  | -0.83\*\*\* (0.14) |  | -0.83\*\*\* (0.14) |  |  | -0.86\*\*\* (0.14) |
| Offence type |  |  | 0.28\*\* (0.13) | 0.27\*\* (0.13) |  |  | 0.25 (0.13) |
| OGRS score |  |  |  |  | 0.07\*\* (0.03) |  | 0.07 (0.03) |
| Age  |  |  |  |  |  | -0.22\*\* (0.06) | -0.22\*\* (0.07) |
| Fit indices |  |  |  |  |  |  |  |
| AIC | 1,641.17 | 1,608.38 | 1,728.30 | 1,606.05 | 1,636.75 | 1,630.91 | 1,591.42 |
| BIC | 1,657.48 | 1,599.60 | 1,629.51 | 1,595.06 | 1,627.97 | 1,622.13 | 1,576.18 |

*Note:* OGRS = Offender Group Reconviction Scale; AIC = Akaike Information Criteria; BIC =Bayesian Information Criteria.

\*\*\**p* < .001. \*\**p* < .05. \**p* < .10.

Table 3. Parameter estimates (and asymptotic standard errors) obtained by fitting discrete-time hazard models for substantive predictors for the event of being reconvicted of a crime.

| Substantive Predictors | Model A (Predictors: Four time periods) | Model B (Predictors: Four time periods, program) | Model C (Predictors: Four time periods, offence type) | Model D (Predictors: Four time periods, program, offence type) | Model E (Predictors: Four time periods, OGRS score) | Model F (Predictors: Four time periods, age) | Model G (Predictors: Four time periods, program, offence type, age, OGRS score) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Time period |
|  0–3 months | -1.757\*\*\* (.119) | -1.081\*\*\* (.150) | -1.502\*\*\* (.209) | -.765\*\* (.234) | -1.921\*\*\* (.137) | -1.230\*\*\* (.200) | -.492 (.299) |
|  3–6 months | -1.539\*\*\* (.120) | -.828\*\*\* (.155) | -1.282\*\*\* (.211) | -.508\*\* (.240) | -1.695\*\*\* (.136) | -1.00\*\*\* (.203) | -.214 (.305) |
|  6–9 months | -2.303\*\*\* (.175) | -1.564\*\*\* (.202) | -2.045\*\*\* (.247) | -1.241\*\*\* (.273) | -2.463\*\*\* (.188) | -1.764\*\*\* (.239) | -.950\*\* (.333) |
|  9–12 months | -1.848\*\*\* (.154) | -1.092\*\*\* (.186) | -1.591\*\*\* (.232) | -.769\*\* (262) | -1.999\*\*\* (.166) | -1.302\*\*\* (.226) | -.461 (.324) |
| Program |  | -.992\*\*\* (.146) |  | -1.004\*\*\* (.146) |  |  | -1.032\*\*\* (.147) |
| Offence type |  |  | -.007 (.005) | -.008\* (.005) |  |  | -.005 (.005) |
| OGRS |  |  |  |  | .075\*\* (.029) |  | .067\*\* (.031) |
| Age  |  |  |  |  |  | -.224\*\* (.071) | -.228\*\* (.073) |
| Fit indices |  |  |  |  |  |  |  |
| AIC | 1,455.60 | 1,413.80 | 1,455.55 | 1,412.90 | 1,451.57 | 1,447.16 | 1,401.56 |
| BIC | 1,472.94 | 1,445.48 | 1,476.17 | 1,439.13 | 1,473.26 | 1,468.84 | 1,435.300 |

*Note:* OGRS = Offender Group Reconviction Scale; AIC = Akaike Information Criteria; BIC =Bayesian Information Criteria.

\*\*\**p* < .001. \*\**p* < .05. \**p* < .10.

Table 4. Parameter estimates (and asymptotic standard errors) obtained by a discrete-time hazard model for substantive predictors of four time periods and three programs for the events of being charged with and being reconvicted of a crime.

|  |  |
| --- | --- |
| Parameter | Dependent variable |
|  | Being charged with a crime | Being reconvicted of a crime |
|  |  (Predictors:Four time periods, three programs) |  (Predictors:Four time periods, three programs) |
| Time period |
| 0–3 months | -.684\*\*\* (.14) | -1.1\*\*\* (15) |
| 3–6 months | -.569\*\*\* (.15) | -.838\*\*\* (.15) |
| 6–9 months | -.988\*\*\* (.18) | -1.59\*\*\* (.20) |
| 9–12 months | -.835 (.19) | -1.08\*\*\* (.19) |
| Program |  |  |
| ASAR  | -.95\*\*\* (.18) | -1.106\*\*\* (.19) |
| ASRO  | -.35\*\* (.17) | -.552\*\* (.18) |
| LIAP  | -1.24\*\*\* (.18) | -1.36\*\*\* (.21) |

*Note.* ASAR = Alcohol Specified Activity Requirement; ASRO = Addressing Substance-Related Offending; LIAP = Low Intensity Alcohol Programme

\*\*\**p* < .001. \*\**p* < .05.

Figure Captions

Figure 1. Fitted survival function for being charged with a crime with program and offence type as substantive predictors (Model D). Estimated parameters in Model D were expressed in both odds and hazard scales, which were then used to estimate survival probabilities. The median lifetime is presented by a line at the 0.5 value displaying where the survival probability of 50% is reached in each group.

Figure 2.Fitted survival function for being reconvicted of a crime with program as a substantive predictor (Model B). Estimated parameters in Model B were expressed in both odds and hazard scales, which were then used to estimate survival probabilities. The median lifetime is presented by a line at 0.5 value displaying where the survival probability of 50% is reached in each group.

Figure 3. Fitted survival function for 3 programs and no program for charges. Inverse transformation was used to transform fitted logit hazards into fitted hazards, which were then used to estimate fitted survival probabilities. ASAR = Alcohol Specified Activity Requirement; ASRO = Addressing Substance-Related Offending; LIAP = Low Intensity Alcohol Programme. The median lifetime is presented by a line at 0.5 value displaying where the survival probability of 50% is reached in each treatment program.

Figure 4. Fitted survival function for 3 programs and no program for reconvictions. Inverse transformation was used to transform fitted logit hazards into fitted hazards, which were then used to estimate fitted survival probabilities. ASAR = Alcohol Specified Activity Requirement; ASRO = Addressing Substance-Related Offending; LIAP = Low Intensity Alcohol Program. The median lifetime is presented by a line at 0.5 value displaying where the survival probability of 50% is reached in each treatment program.

Figure 1.

Figure 2.

Figure 3.

Figure 4.

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Transparency declaration: I (YH) can affirm that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained

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