

## CHAPTER 7. TREATMENT ENTRY AND COMPLETION

This chapter describes the models of treatment entry as well as the models of treatment entry *and* completion. We present separate models for men and women. Our literature review in Chapter 3 suggested that among drug users women have a greater number of life problems than men. In addition, researchers agree that there is insufficient information on treatment process differences between men and women. Our separate models of men and women can be used to assess whether the predictors of treatment entry and retention for incarcerated men differ from those for incarcerated women.

We begin the chapter with a description of the methodological approach necessitated by the complexity of our data. This is followed by a description of the predictor variables included in our models. We present the results which highlight gender differences in background characteristics followed by the results of two models. The first is a model of treatment entry and the second is a model of treatment entry *and* completion. The results from this latter model are used in our analyses where we address the methodological problem of selection bias (*see* our discussion of the instrumental variable and Heckman analytic approaches in Chapter 8).

### The Design

Residential substance abuse treatment was offered to all eligible inmates in selected prison facilities during specified periods. Those periods varied across the prison facilities because facilities started their programs at different times. As mentioned in Chapter 5, we collected data on inmates with a history of drug use, some of whom volunteered for and entered treatment – the treatment group – and some of whom did not receive treatment – the comparison group. Furthermore, the comparison group comprised two subgroups:

- Inmates who declined treatment when offered – referred to as DAP comparison (DAP COMP); and
- Inmates who were never housed in a facility that offered treatment at a time in their sentence when they could volunteer for treatment – referred to as non-DAP control (NON-DAP COMP).<sup>1</sup>

When sampling the comparison group, we did not know the subgroup membership of the

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<sup>1</sup> Federal prisoners frequently transfer from one prison to another for various reasons. Many members of the *non-DAP control group* were housed in one of the 20 BOP prisons offering treatment sometime during the last year of their incarceration, but some of those in this control group were ineligible for treatment (when housed in a treatment facility) because they had insufficient time remaining in their sentence to satisfy entry requirements. Likewise, some of the *DAP comparison group* were not housed in a prison offering treatment during their last year of incarceration, but they had been at a facility earlier during their sentence and could have volunteered for treatment.

comparison group members. The non-DAP control group of inmates is not important for this discussion because this group did not have treatment available (except as noted later). We ignore that control group for the present.

Using these data, we seek to learn what factors account for inmates entering treatment. That is, we seek to estimate a functional relationship:

$$P_i = F(X_i) \quad (1)$$

Where:

- $P_i$  the probability of accepting treatment when offered, known as the probability of entering treatment coefficient. The subscript denotes an individual inmate.
- $X_i$  factors, such as a variable reflecting readiness for treatment, that we believe differentiate people who enter treatment from those who do not.

The same functional relationship in equation (1) will be referred to as  $P_i'$  when we talk about the probability of entering *and* completing treatment.

Estimating  $P$  is complicated by two problems. The first problem is that inmates received different exposure to treatment opportunities. As mentioned, some inmates were never offered treatment (non-DAP control), but they are not of interest to us because they can provide no useful information about the volunteering and entering treatment coefficient. Inmates spent varying periods in institutions that offered treatment, and it seems likely that the probability of volunteering is a function of "exposure." This suggests that the probability of volunteering and entering treatment coefficient should be specified as:

$$P_i = F(X_i, Z_i) \quad (2)$$

Where:

- $Z_i$  represents the inmate's exposure to treatment, and perhaps, other control variables.

The second problem that complicates estimation of  $P$  arises because of the way that we selected our sample. We recruited members of the treatment sample at the time that inmates volunteered for and entered treatment, but recruited much of the comparison (and control) sample at a later date. To explain this problem, we need to briefly summarize the sampling plan already discussed in Chapter 5.

The DAP programs began at different times in 20 prisons. Although we sought to include everyone who entered treatment in this evaluation study, some of the treatment group members

declined to participate in the study, and a small number of others were lost for administrative reasons.

Inmates transfer from prison to prison for various reasons, however, few transferred to a prison in order to receive treatment.<sup>2</sup> Provided an eligible inmate was at a prison that operated a treatment program, that inmate could have entered the program if he or she otherwise met the eligibility requirements.

Recruitment of treatment study subjects occurred when the inmate entered treatment, or soon thereafter. However, we recruited a random sample of comparison subjects at each of the 20 prisons offering treatment at a later point in time. Researchers visited each of the 20 prisons on a specified date and identified all inmates who:

- Had a history of regular drug use, meaning that they would have been eligible for the DAP treatment program.
- Had not volunteered for treatment, including those who had not been offered treatment.
- Had less than 15 months remaining on their sentence and therefore could not volunteer for treatment due to time constraints.

To estimate the probability of treatment entry, we have to compare those who volunteered for and entered treatment with those who declined treatment, but there is no straightforward way of making this comparison. Those who entered treatment differ from those who declined treatment for reasons that are not captured in the X vector. This is not to say that we cannot make useful estimates.

Let:

- $i$  represent an individual, as above
- $j$  represent each of the 20 prisons.

Then we can determine the following:

- $N_j$  The number of inmates who were at the  $j^{\text{th}}$  facility when the comparison sample was drawn and met the following conditions:
  - The inmate had a history of regular drug use.
  - The inmate had 15 months or less remaining on his or her sentence.
  - The inmate had either volunteered for treatment, refused treatment, or not been offered treatment.
- $T_j$  The number of inmates, included in  $N_j$ , who entered treatment, and who agreed to participate in the study.
- $C_j$  The number of inmates, included in  $N_j$ , who were offered but did not accept treatment,

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<sup>2</sup> We note, however, that transfers are no longer uncommon, since the passage of the Violence Crime Control Law Enforcement Act of 1994.

and who were sampled for the study.

$D_j$  The number of inmates, included in  $N_j$ , who were never offered treatment, but were nevertheless sampled for the study.

Note that:

$$N_j = \frac{T_j}{q_j} + \frac{C_j + D_j}{Q_j} \quad (3)$$

where  $q_j$  and  $Q_j$  are the sampling probabilities for the comparison and treatment subjects.

Data regarding the inmates included in subset D are not informative when estimating P, since they had no chance to enter treatment. We need them, however, to determine the sampling rates. To explain, we seek to estimate  $Q_j$ , where:

$Q_j$  the sampling probability for inmates comprising  $C_j$ .

If we assume that members of C and D were equally likely to participate in the study when asked then there is no difference in participation rate because when the sample was selected we did not know if the individual was a DAP comparison or a non-DAP comparison subject. This was only determined retrospectively (*see* Chapter 5), then we can estimate  $Q_j$  as:

$$Q_j = \frac{D_j - C_j}{N_j - \frac{T_j}{q_j}} \quad (4)$$

Where:

$q_j$  is the probability that an inmate who enters treatment agrees to participate in the study.

The key here is to get an estimate of Q, because we need this to estimate P (the discussion of how we measured q and Q follows).

Now we are in a position to estimate P. We have a statistical problem known as endogenous stratification. That is, the sampling probabilities depend on the outcome – entered treatment or did not enter treatment. We cannot ignore that fact in the estimation. The likelihood function for estimating P can be written:

$$L = \prod_i \prod_j \frac{(q \cdot P_{ij})^{Y_{ij}} \cdot [Q_j \cdot (1 - P_{ij})]^{1 - Y_{ij}}}{q \cdot P_{ij} + Q_j \cdot (1 - P_{ij})} \quad (5)$$

Where:

- L represents the likelihood of observing an inmate accept or decline treatment conditional on that inmate being included in the sample.
- $P_{ij}$  as before, the probability of volunteering and entering treatment, with a second subscript added to distinguish between inmates and prisons.<sup>3</sup>
- $Y_{ij}$  a dummy variable coded one when the inmate entered treatment and coded zero when he or she did not enter treatment.

The parameters of this likelihood function (all of which are included in the  $F(X,Z)$  function) should be estimated using just part of the data.<sup>4</sup> First, we can only use data for treatment subjects who had the same characteristics as the comparison group subjects. That is, at the time that the comparison group was selected, those treatment subjects had to have been housed in the same facility as the comparison group subjects and had to have less than 15 months to serve in prison. Once you have estimated the  $P$  equation for the subset of data, you can predict  $P$  for all the data that enter into the outcome analysis by using the parameters derived from the maximum likelihood equation.

A final note on estimation of  $P$ . The function  $F(X,Z)$  will probably look something like equation (6) when estimating the probability of entering treatment and like equation (7) when estimating the probability of entering *and* completing treatment. The only difference in the equations is that  $P'_{ij}$  will be a smaller value than  $P_{ij}$  because we estimate the joint probability of entering *and* completing treatment rather than simply the probability of entering treatment.

$$P_{ij} = \phi(\alpha + \beta \cdot X + \delta \cdot Z) \quad (6)$$

$$P'_{ij} = \phi(\alpha + \beta \cdot X + \delta \cdot Z) \quad (7)$$

Where  $\alpha$ ,  $\beta$  and  $\delta$  are parameter vectors and  $\phi$  denotes some function – perhaps a normal cdf or

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<sup>3</sup> When we are estimating the likelihood function for probability of entering *and* completing treatment, we will substitute  $P'_{ij}$  for  $P_{ij}$  in equation (5).

<sup>4</sup> We note that the analysis file for the probability of entering treatment or entering and completing treatment and the analysis file for the outcome study overlap, but otherwise they are different. Being released is a requirement for the outcome analyses but it is irrelevant for the probability of entering and completing treatment.

a logistic equivalent.

The measure of  $q$  was relatively straightforward. It was the percent of treatment subjects with Intake1 data. Except for one treatment site – FCI La Tuna – which was an outlier with a value of .39, the range of the  $q$  values was between .61 and .86.

The measurement of  $Q$  was more complicated. For each cohort of comparison subjects we identified the number of available subjects for treatment at that point in time (i.e., eligible for treatment). The total number eligible was adjusted to account for eligibles who were released since the last cohort was selected - some cohorts were selected within 2 months of a previous cohort. We accomplished this by prorating the number of individuals eligible for treatment, assuming that an equal percentage left in each of the 12 months (we assumed an average of a 3-month halfway house placement). We then assigned each treatment subject to the cohort of comparison subjects closest to the time and location where the treatment subject was housed at 15 months before release. Thus,  $Q$  for an individual was based on the  $Q$  value for the cohort using the following formula:  $Q$  is equal to the ratio of the number in the sample (with Intake1) — numerator — to the number of comparison subjects eligible at that point in time — denominator. The number of eligible subjects was the total number eligible for treatment minus the number of treatment subjects.<sup>5</sup> For the sites which did not offer treatment, the number of eligible subjects was simply equal to the total number of subjects eligible for treatment.

As noted earlier some subjects would add no information and were not included in the maximum likelihood estimation of  $P$ . There were 387 treatment subjects who were not included because they were housed at a DAP site 15 months from release at a time *after* any comparison subjects were selected ( $n=252$ ) from that site or because they were not at a DAP site 15 months from release ( $n=135$ ). Therefore, these treatment subjects, did not provide any information about the sampling of comparison subjects.

In addition, 183 DAP comparison subjects who were selected at a non-DAP site and 32 selected during their halfway house placement were not used in the maximum likelihood estimation. They could not be assigned a value for  $Q$  since they were not at a DAP site. Consequently, they would not add any information about the probability of being selected into the comparison sample. Thus, a total of 602 subjects were not used to develop the maximum likelihood estimates.

Our sample comprised 1604 subjects.<sup>6</sup> The sample of 1169 men comprised 354 DAP comparison subjects and 815 treatment subjects. The sample of 435 women comprised 161 DAP comparison subjects and 274 treatment subjects. After the maximum likelihood estimates were developed for the 1604 subjects for whom sampling estimates were available, these estimates were subsequently applied to the 602 subjects for whom sampling estimates were not available.

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<sup>5</sup> We note that the value of  $Q$  is generally lower for the first cohorts selected.

<sup>6</sup> Thirteen treatment subjects were excluded from the analyses because of missing information on treatment availability.

In summary, we used maximum likelihood probit estimation to provide us with estimated probabilities for two outcomes of interest: 1) the probability of volunteering for and entering treatment and 2) the probability of entering and completing treatment. Because the sampling probabilities depended upon whether an individual entered or did not enter treatment we faced the problem of endogenous stratification. Therefore, the likelihood function incorporated these sampling estimates.

## **Predictor Variables**

There are very few studies of help-seeking behavior – treatment entry – among drug abusers. Furthermore, these limited studies do not include incarcerated individuals. Rather, the studies include adolescent heroin users (Graeven and Graeven, 1983), cocaine abusers (Carroll and Rounsaville, 1991; Chitwood and Morningstar, 1985; Rounsaville and Kleber, 1985), injecting drug users seeking detoxification or methadone maintenance (Schutz et al., 1994) or indicating willingness to seek treatment (Kleyn and Lake, 1990) and drug abusers seeking referral to treatment (Hser et al., 1998). These studies have examined different predictors of treatment entry and have generally found that problem severity, both in terms of drug use and other dimensions of social and psychological functioning, is related to treatment volunteerism. Individuals with more severe problems have frequently, although not consistently, been found to be more likely to enter treatment.

It is not expected that the factors motivating incarcerated individuals would be identical to those which motivate non-incarcerated individuals. Nonetheless, the previous research does suggest factors that may influence incarcerated individuals to enter treatment. Hser et al. (1998) hypothesized that seeking help is a function of four domains: 1) severity of an individual's problematic drug use, 2) severity of other problems (e.g., psychological problems, medical problems), 3) social enabling factors such as employment, stable marital relationships, and health insurance, and 4) prior treatment experiences.

We used this line of research to identify factors to be included in our model of treatment entry. In addition, since we modeled treatment entry *and* retention, we also examined previous literature on treatment retention. While the body of literature on treatment retention is larger than that of treatment entry, we also note that there is very little consistency in the factors studied and the findings do not allow us to draw firm conclusions. As with the literature on treatment entry, studies are not available for incarcerated populations. The studies include a wide range of programs for non-incarcerated individuals including methadone maintenance, outpatient and residential (Chou, Hser, and Anglin, 1998; DeLeon and Jainchill, 1986; Fishman and Reynolds, 1999; Hser et al., 1998; Hiller, Knight, and Simpson, 1999; Hubbard et al., 1988; Joshi et al., 1999; Knight and Hiller, 1997; Simpson and Joe, 1993; Simpson et al., 1997).

A few of our predictors, namely several attitudinal measures, were included because of their theoretical relevance to the underpinnings of the Bureau of Prisons' drug treatment programs.

Our description of the measures below discusses the theoretical rationale for their selection.

### ***Background Characteristics***

Demographic characteristics included in our models of entering or entering and completing treatment included race, ethnicity, years of education, and ever having been legally married. Race and ethnicity were obtained from the automated SENTRY database and the other two items – years of education and ever having been legally married – from the self-report Intake 1 interview data. We included several indicators of criminal history: severity of current offense, history of violence, age at time of most recent commitment, age when first arrested (self-report) and sentence length (months). All items except age when first arrested were from the automated SENTRY data base which contains information on all BOP offenders. Age when first arrested was obtained from the Intake 1 interview data.

We created several categories of employment status in the month before incarceration as reported by the research subjects in their Intake 1 interview. These categories were: employed, looking for work, unemployed but not looking for work (illegal income, other reason, never worked), and not in labor force.

We used a variety of items characterizing family background. With the exception of information on family ties (average/good versus none or minimal) which was obtained from the SENTRY database, all other items were obtained from the Intake 1 interview. These items included: spouse ever had a drug or alcohol problem, planning to live with children under 18 after release, and physical abuse before the age of 18. For women, we also included a history of sexual abuse.

### ***Drug Use and Drug Treatment History***

Drug use history was categorized by type of drug(s) used daily in the year before the most recent arrest. We classified individuals as follows: no drug use, alcohol use only, illegal drug use limited to marijuana, and use of one or more illegal drugs other than marijuana. Other items included history of drug treatment and attempts to stop using illegal drugs for 30 days or more.

### ***Psychiatric Diagnoses***

We included measures of two psychiatric diagnoses – depression and antisocial personality – both of which are disorders frequently found among drug users. The lifetime diagnoses for these two DSM-III-R disorders were obtained through the automated Diagnostic Interview Schedule (DIS) (*see* our discussion of psychiatric diagnoses in Chapter 5).

### ***Attitudinal Measures***

Our first attitudinal predictor was a measure of internal motivation. We used the 32 item Change Assessment Scale (Prochaska and DiClemente, 1986) which measures an individual's level of

recognition of a problem and motivation to do something to change the problem. It was selected for this analysis due to the previously established association between motivation and both treatment volunteerism and treatment retention (De Leon and Jainchill, 1986; De Leon et al., 2000; Joe, Simpson and Broome, 1999; Kolden et al., 1997; Simpson and Joe, 1993;).

Confirmatory factor analyses were done to verify the four factors identified by Prochaska and DiClemente.<sup>7</sup> These four factors — each composed of eight items — include:

Precontemplation — when the individual is unaware of his or her problem.

Contemplation — when the individual is aware that a problem exists and is contemplating taking some action.

Action — when the individual has not only considered taking action, but is taking steps to remedy the problem.

Maintenance — when an individual who has taken action works to maintain the gains attained during the action phase and thus prevent relapse.

We used the sum of all items to create a score for each of the four factors. When the items were missing, we plugged in the arbitrary value of 1 and added a dummy variable which identified the observations as missing. This procedure for quantitative scale data allowed us to use all cases and tested whether the missing data are missing at random. The advantage of this procedure is that the cases with the plugged arbitrary constant value do not affect the estimate of the effect of the predictor on the outcome of interest: only those cases with data present are used in this estimate (Cohen and Cohen, 1975).<sup>8</sup>

A second attitudinal measure used as a predictor was the Hope Scale developed by C. R. Snyder (Snyder, 1989). It is a twelve-item questionnaire with eight items comprising two subscales and an additional four items serving as filler items. The two subscales designed to measure hope are agency and pathways. Agency refers to a person's sense of successful determination in relationship to reaching one's general goals. Pathway refers to a person's sense of being able to plan to meet one's goals.

Hope goes beyond optimism by incorporating both outcome expectancies and efficacy expectancies in predicting beneficial outcomes and goal-directed behavior (Snyder et al., 1991). Efficacy expectancy is defined as one's confidence in the ability to engage in a particular behavior to produce a desired outcome, and is central to Bandura's (1977) theory of self-efficacy (and parallels the agency subscale of the Hope Scale). The theory behind why optimistic people tend to overcome adversity suggests that having general beliefs that positive outcomes will occur promotes continued effort toward goal attainment, even during trying times (Strack, Carver, and

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<sup>7</sup>Results are available from the author.

<sup>8</sup>This dummy variable also indicated those individuals missing Hope Scale data. Most of the individuals missing the Change Assessment Scale data were also missing the Hope Scale data and one dummy variable rather than two was necessary in order to prevent quasi-complete separation.

Blaney, 1987). The hopeful person should also have a persistence of effort derived from being able to develop pathways (e.g., means) to meet the desired outcome, coupled by a general sense of being able to achieve desired goals. When dealing with a stressful situation, such as trying to overcome a substance abuse problem, the less hopeful person may be more prone to giving up or disengaging from the problem when times become tough. Because hope is intrinsically related to goal attainment, it is possible that it plays a role in the endeavor of setting personal goals such as entering and completing treatment. This idea is, in general, supported by previous research. Individuals with higher levels of hope have been found to set and attain more difficult goals, approach goals with more confidence, and appraise their goals in a more positive light than lower hope subjects (Snyder et al., 1991). Strack, Carver, and Blaney (1987) found that optimism predicted successful completion of an aftercare program following treatment for alcoholism.

Our last attitudinal measure consisted of the planful problem-solving subscale of The Ways of Coping Questionnaire (Lazarus and Folkman, 1984). Planful problem-solving as a coping style occurs more frequently among individuals with higher hope and optimism, and avoidant coping styles appear to be more prevalent among lower hope, less optimistic subjects (Aspinwall and Taylor, 1992; Friedman et al., 1992; Scheier, Weintraub, and Carver, 1986; Snyder et al., 1991). Thus, using problem-solving coping skills can be seen as helpful to goal attainment.

A modified version of the revised Ways of Coping Checklist (Lazarus and Folkman, 1984) was administered to measure the degree to which inmates used certain strategies to cope with their most stressful situations in prison. This instrument is a 66-item self-report questionnaire designed to measure a broad range of different coping strategies. Only 50 of the 66 items are scored to comprise eight subscales of different coping styles.<sup>9</sup>

### *Availability of Treatment*

We included two measures of availability of treatment: a coefficient of individual probability-of-volunteering and time spent at a treatment facility. These measures were important to prevent bias in the  $\beta$  parameters in equation (2) for  $P$  – probability of entering treatment – above. The potential bias is evident when we consider the following problem: We want to know the correlation between readiness for treatment and the probability of entering treatment, so we put motivation for change (the Change Assessment Scale measure of internal motivation previously discussed) into the  $X$  vector (*see* equation (2) for  $P$ ). Suppose that internal motivation is, in fact, an important determinate of entering treatment. When treatment was actually available, those who were deemed “ready for treatment” would be highly likely to enter treatment, but for many people, treatment was not readily available. Regardless of whether or not they were ready for treatment, they would not (could not) have gone to treatment. This illustrates why we include measures of the availability of treatment in the  $Z$  vector.

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<sup>9</sup>Ratings were made on a 5-point scale (0=does not apply/never, 1=rarely, 2=sometimes, 3=often, 4=very often) which differs from the Lazarus and Folkman scale which was a 4-point scale (0=does not apply or not used, 1=used quite a bit, 2=used somewhat, and 3=used a great deal).

Our first measure of treatment availability is the individual level probability-of-volunteering coefficient. This coefficient was calculated for each research subject who was at a DAP institution, regardless of whether he or she actually entered treatment. The calculation involved a two-step process.

The first step in the process was to calculate a probability-of-volunteering coefficient for each *institution*. Because of the differing security levels of the institutions and differing emphases on treatment programs (which change as programs became established within these institutions where our research subjects were housed), we presumed that the rate of volunteering would differ between institutions and across time. Creation of this institution coefficient required obtaining estimates of the percentage of the population eligible for treatment and the percentage actually volunteering at various points in time. The percent of the population eligible serves as the denominator of the coefficient, and the percentage actually volunteering serves as the numerator.

The percentage eligible was estimated using the 1991 Inmate Survey Data. This survey contained questions on drug use analogous to those contained in the History of Drug Use (HDU) questionnaire used to screen DAP comparison and non-DAP control subjects. Some of the research DAP sites were not included in the survey (or had changed security level or gender of population housed), so for some of these sites we used data from the 1996 administrations of the (HDU) survey, with a downward adjustment of 12.5 percent.<sup>10</sup> For several additional sites where neither the 1991 Inmate Survey Data nor 1996 HDU data were available, the percent eligible was estimated using the average for the other sites of a similar security level. When the 1997 Inmate Survey data became available, the calculation of this coefficient was reviewed by comparing these results to the 1991 results used in calculations for the preliminary report.

Given the expectation that the probability of volunteering had changed over time with the passage of the 1994 Violent Crime Control and Law Enforcement Act, which allows for early release upon successful completion of a residential DAP, estimates were created for eight points in time. The estimates were made for the beginning of each quarter for fiscal years 1994 and 1995. Calculations for earlier times were not made, due to incomplete and unreliable information concerning volunteering rates.

Because all individuals identified as DAP comparison or non-DAP control subjects were within 15 months of release (including halfway house placement time), both the denominator and numerator of each institution-level coefficient were limited to estimates based on individuals within 15 months of release. The percent eligible for treatment described above was thus multiplied by the population within 15 months of release housed at the particular institution. The numerator — the number actually volunteering — for each site was obtained from automated databases and included all individuals who (1) were housed at that site, (2) were within 15

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<sup>10</sup> This represents the average difference in percent eligible for treatment between 1991 and 1996 as indicated by the results of surveys administered at two sites: FCI's Marianna and Fairton.

months of release, and (3) were either on the DAP waiting list, actively participating in the DAP, or DAP discharges.

The institution coefficients were used to calculate individual-level coefficients in the second step of the process in the following manner: the history of an individual's institutional transfers was examined to flag those inmates who spent time at a DAP site and who had enough time to participate in the DAP at such a site. To be more specific, an individual's stay at a DAP institution had to have been for at least 30 days and had to have occurred at a time in his or her incarceration for which there was sufficient time before release to volunteer and complete treatment.

The coefficient for each individual was the weighted average of the probability-of-volunteering coefficient for each stay that the inmate had at a DAP site where he or she could have entered DAP treatment (*i.e.*, meeting the specifications just mentioned). The coefficient for each institution at the particular time the individual was housed there was assigned for each month, and then divided by the total number of months spent at any DAP site.<sup>11</sup>

Our second indicator of treatment availability was length of time housed at a treatment site. We limited this to the time housed at one or more treatment facilities before the time point when it would have been too late to volunteer for treatment.

### ***Treatment Incentives***

Although inmates may be motivated to enter treatment because they recognize they have a substance abuse problem and want to change, some also may be motivated by external factors. The passage of the Violent Crime Control and Law Enforcement Act (VCCLEA) in 1994 provided such an external motivation, the possibility of up to a one-year sentence reduction for successful completion of drug treatment.

The sentence reduction of one year was not made available until May 1995. While the Violent Crime Control and Law Enforcement Act (VCCLEA) was passed in late 1994, the Bureau of Prisons issued its revised policy in May 1995. We classified individuals as having the year-off provision available as of July 1994 because inmates were volunteering for treatment based upon the rumor of the possible passage of VCCLEA. This was evidenced by the doubling in size of the waiting list several months before the passage of VCCLEA. Furthermore, the implementation of the law did not require the inmate to have completed drug treatment before passage of the law. If

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<sup>11</sup> For stays at an institution prior to January 1994, the coefficient value of January 1994 was assigned. It is presumed that the coefficients are most likely to have been stable prior to that point in time — that is, before rumors of the possibility of the incarceration-reducing provisions of the Violent Crime Control and Law Enforcement Act of 1994. The waiting lists for the DAP's provide good indicators of when these rumors began to affect participation rates. The size of the waiting lists began to rise in the summer of 1994 and showed a dramatic rise in November and December 1994.

the inmate could have benefitted from VCCLEA, determined by length of time left to be served in prison after completion of DAP, then he or she was considered as volunteering after the year-off provision was made available.

We categorized individuals into those who were in prison at a DAP site at a time before the year-off provision became available, those who were there after the provision but who could not benefit because of an insufficient amount of time left to serve to benefit from the provision and those who could have benefitted. We further divided this latter group into two groups based upon the maximum amount of time the individual could have benefitted: less than 5 ½ months or more than 5 ½ months.

### **Results: Gender Differences in Background Characteristics**

Table 29 contains descriptive statistics for the items used in our models of treatment entry and retention. The results in this table show that women in the sample were more likely than men to be African American. Women had a less serious criminal history. They were less likely to have a prior commitment or a history of serious violence. When they did offend it was for a less serious offense. As for family background and relationships, women demonstrated a greater number of problems. Women were less likely to have “good” family ties upon incarceration and more likely to have a spouse with a drug problem. They were also more likely to have a history of sexual abuse and physical abuse. A previous history of mental health treatment was also more common among women. Although women were not any more likely than men to have a diagnosis of antisocial personality, they were more likely to have a diagnosis of depression. Drug use history differed between men and women. In the year before arrest, women were more likely to have used a hard drug on a daily basis while men were more likely to have used alcohol only. Similarly, women were somewhat more likely than men to have a history of drug treatment.

### **Results: Entering Treatment**

The following presents the factors found to be predictive of entering in-prison residential drug abuse treatment (*see* Equation (6) above). We focus our discussion upon comparing the results for men to those for women. The results are contained in Table 30. The goodness-of-fit measures using likelihood ratio statistics indicated that the coefficients for predicting treatment entry for men and women were significant.

We used effects vector coding for many of the factors which were not continuous variables. The only factor where we used dummy variable coding was for our categories of pre-incarceration drug use. Our interest was in the contrast between each category and the referent category of not having any drug or alcohol use in the year before incarceration. We do not discuss the two dummy variable items used to represent a missing survey score – missing Change Assessment Scale, Hope Scale or Ways of Coping data. These variables serve simply as control variables.

### ***Background Characteristics***

We found that neither race nor ethnicity was related to the likelihood of treatment entry. However, both men and women of higher education levels were less likely to enter treatment.

In looking at the instant offense we found an effect for having one of moderate severity but the direction of the effect for men was opposite of the effect for women. Women who had an offense of moderate severity were less likely than women on average to enter treatment. However, among men, those with an offense of moderate severity were more likely to enter treatment. In addition, the criminal history variable “age at time of first arrest” was associated with treatment entry for women but not men (the coefficient was marginally significant for men ( $p=.06$ ) and in the same direction). Women who were older the first time ever arrested were more likely to enter treatment.

We also found opposite effects for family ties when comparing women to men. Women with “average” or “good” family ties were more likely to volunteer for treatment but not so for men.

Not being in the labor force at the time of incarceration was also associated with a greater likelihood of treatment entry among women. None of the items pertaining to employment history were predictors of treatment entry for men.

### ***Drug Use and Drug Treatment History***

There were no significant effects for men for any of the categories of drug use in the year before arrest. Among women, however, we found two categories of drug use related to treatment volunteerism. Women who used marijuana only (e.g., no other illicit drug) on a daily basis before arrest were less likely to volunteer for treatment than women who had no daily alcohol or illicit drug use in the year before arrest<sup>12</sup>. In contrast women who used alcohol only on a daily basis were more likely to enter treatment.

### ***Psychiatric Diagnoses***

Lifetime diagnoses of antisocial personality and depression were related to treatment entry for women but not men. Women who did not have either diagnosis were more likely to enter treatment. In addition, women who had a diagnosis of depression, either with or without a diagnosis of antisocial personality, were less likely to enter treatment. This finding suggests that women with the more serious mental health problems were not entering treatment, which is inconsistent with the notion that those in greater distress are more likely to present for treatment.

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<sup>12</sup> Drug use was dummy coded with no drug or alcohol use serving as the referent category.

### ***Exposure to Treatment***

As discussed earlier, we measured the individual probability-of-volunteering. This reflects the specific institutional context of treatment volunteerism rates at specific points in time. We also measured how long an individual was housed at a treatment site (before the time point when it would have been too late to volunteer for treatment). Among men, the probability-of-volunteering coefficient and its squared value were related to treatment entry. This indicated that men who had greater probability-of-volunteering levels were more likely to enter treatment but that the relationship was not linear. For women neither of these coefficients was significant. However, among women, a longer amount of time housed at a DAP site was associated with a lesser likelihood of treatment entry. Furthermore, among women, the interaction between time housed at a DAP site and the probability-of-volunteering coefficient was significant.

### ***Family Characteristics***

Among women, those who had been physically abused before the age of 18 were more likely to enter treatment as well as those who said they planned to live with children under the age of 18 after release. Among men we did not find a relationship between a history of abuse and treatment entry. However, we did find that men, like women, who planned to live with minor children after release, were more likely to enter treatment. A history of legal marriage was not related to the likelihood of treatment entry for either men or women.

### ***Internal Motivation***

As mentioned earlier we used the 32 items Change Assessment Scale (Prochaska and DiClemente, 1986) to measure the individual's motivation to change, that is, internal motivation. We used scores for four factors: precontemplation, contemplation, action, and maintenance.

The results for internal motivation for women were similar to those for men. Not surprisingly, men and women with high precontemplation scores were less likely to enter treatment whereas individuals with high maintenance scores were more likely to enter treatment. In addition, men with high contemplation scores were more likely to enter treatment. The coefficient for contemplation among women was marginally significant (at the conventional .05 level), and in the same direction as men.

### ***External Motivation: Treatment Incentives***

As discussed earlier we categorized individuals into those who were in prison at a DAP site at a time before the year-off provision became available and those who were there after the provision. This latter group further differentiated between those who could not benefit because of the short amount of time left to serve, those who could have benefitted less than 5 ½ months, and those who could have benefitted 5 ½ months or more.

Among men, we found two of the groups which had treatment available after the year-off provision was enacted had a lesser likelihood of entering treatment than subjects on average. Those who could not have received a sentence reduction and those who could only have received the lower amount of sentence reduction (less than 5.5 of the maximum allowable of 12 months) were less likely to enter treatment. After controlling for other factors, including internal motivation (Change Assessment Scale), it is possible that individuals who could not receive the full benefit were aware of this and were dissatisfied with their situation. Among women we did not find any effects for sentence reduction after controlling for other factors.

### **Results: Entering and Completing Treatment**

The results for treatment entry and completion are reported in Table 31 (*see* equation (7) above). Similar to the results for treatment entry, the goodness-of-fit measures using likelihood ratio statistics showed that the coefficients for predicting treatment entry and retention for men and women were significant.

#### ***Background Characteristics***

Similar to our results for treatment entry, race, and ethnicity were not related to the likelihood of entering and completing treatment. In looking at instant offense, we found an effect for those of moderate severity among women only. Women with an offense of moderate severity were less likely than women on average to enter and complete treatment. Unlike our results for treatment entry, we found that having an offense rated greatest severity was associated with treatment entry and completion among both men and women, such that those with an offense of greatest severity were more likely to enter and complete treatment.

We also found gender differences when looking at other aspects of criminal history. Among men, those with a recent violent history (less than 5 years ago) were less likely to complete treatment. Among women, those who were older at the age of first arrest were more likely to enter and complete treatment. In contrast, among men, the age at time of current commitment was predictive of treatment completion: those who were older when committed were more likely to complete treatment. Men who had longer sentence lengths were less likely to complete treatment. We did not find an effect for time served among women.

The nature of family ties was related to treatment completion among men but not women. Men with average or good family ties were less likely to volunteer for treatment and complete treatment. Among women only, those who were older at age of first arrest were likely to enter and complete treatment.

We found effects of employment history on treatment entry and completion for women but not men. Among women, those who were not in the work force just prior to incarceration were more likely to volunteer for and complete treatment.

### ***Drug Use and Drug Treatment History***

There were no significant coefficients for men or women for any of the drug use categories. However, a surprising finding was that among men, those who had a history of previous drug treatment were less likely to enter and complete treatment.

### ***Psychiatric Diagnoses***

Lifetime diagnoses of antisocial personality and depression were related to treatment entry and completion for both men and women. The pattern of results, however, differed between men and women. Both men and women who did not have either diagnosis were more likely to enter and complete treatment. However, among women a diagnosis of antisocial personality was related to treatment completion. Women who had a lifetime diagnosis of antisocial personality but not depression were more likely to enter and complete treatment. In contrast, women who had both diagnoses — antisocial personality and depression — were less likely to enter and complete treatment.

### ***Exposure to Treatment***

Among both men and women, higher values for the probability-of-volunteering coefficient were associated with a greater likelihood of treatment entry and completion. In addition, among women only, this relationship was not linear but rather was found to be concave in nature. Thus, among men, those with a higher probability of volunteering were more likely to complete treatment. Among women, this relationship increases but levels off. The probability of volunteering increased the likelihood of completing treatment up to some level of volunteering, then the likelihood of completing treatment declined at higher levels of treatment volunteerism. Men who were housed longer amounts of time at a DAP site were more likely to enter and complete treatment. Among women only there was an interaction between the probability-of-volunteering and the amount of time housed at a DAP site.

### ***Family Characteristics***

When predicting treatment entry and completion we found only one family characteristic to be significant. Men who planned to live with minor children after release were more likely to complete treatment. We found no such effect for women.

### ***Internal Motivation***

As with our models of treatment entry, both sexes had similar effects of internal motivation. Men and women with high precontemplation scores were less likely to enter and complete treatment whereas individuals with high maintenance scores were more likely to enter and complete treatment. Similar to our results for treatment entry, men with higher contemplation scores were also more likely to enter treatment and complete treatment.

### ***External Motivation: Treatment Incentives***

Among men, we found only one of the categories of availability of sentence reduction related to treatment entry and completion. Men who had treatment available after the law allowing a sentence reduction was passed but who could not have received a sentence reduction were less likely to enter and complete treatment. We did not find any effects for possible sentence reduction among women.

### **Summary**

Our models predicting treatment entry showed gender similarities and differences. Both men and women who had lower educational levels and those who were motivated to change were more likely to enter treatment. In addition, both men and women who reported that they planned to live with minor children after release were more likely to enter treatment. We found little evidence that type of prior drug use was related to treatment entry. After controlling for other factors, men who entered treatment after passage of the law allowing up to a one-year sentence reduction for treatment completion but who could not personally have benefitted from this law were less likely to enter treatment. We found no effects of sentence reduction for women. A history of physical abuse was related to treatment entry for women but not for men: women physically abused before the age of 18 were more likely to enter treatment than women on average. Among women only, we found that those with evidence of more serious mental health problems were less likely to enter treatment. Women who had a diagnosis of depression, either with or without a diagnosis of antisocial personality, were less likely to enter treatment. We found no effects of mental health diagnoses for men.

In looking at the models predicting treatment entry and completion, we continued to find many gender differences, even more than in our models of treatment entry. Criminal history variables such as sentence length and recency of violence were related to treatment entry and completion for men but not women. Although both men and women with neither diagnosis of depression nor antisocial personality were more likely to enter and complete treatment, we found effects for antisocial personality only among women. Women with a diagnosis of antisocial personality but not depression were more likely to enter and complete treatment whereas the likelihood of completing treatment was lower for women who had both diagnoses. Among men only, those who planned to live with minor children after release were more likely to enter and remain in treatment.

Despite these differences we also found similarities, some of which mirrored those found for our models of treatment entry. When comparing our models of treatment entry to those of treatment entry and completion, we found that among both men and women, motivation to change (e.g., internal motivation) was positively related to both treatment entry and treatment entry and completion.

Our results indicate that after controlling for a variety of background factors, motivation to change is an important predictor of both treatment entry as well as treatment entry and completion. We found evidence that external motivations such as sentence reduction were important for men but not women. We note, however, that our ability to detect effects for sentence reduction among women was limited by the size of our sample

There was no evidence that particular types of drug users, as measured by the type of drugs used on a daily basis, was predictive of treatment entry and completion. In contrast, we found that mental health problems were associated with treatment retention. Men and women who did not have a diagnosis of either antisocial personality or depression were more likely to enter and complete treatment. Although, among women only, we found that individuals with antisocial personality, were also more likely to complete treatment, the results suggest that individuals without other mental health problems are more likely to succeed in entering and completing treatment.

Our findings differ from previous findings on treatment-seeking behavior in non-incarcerated populations in one important aspect. We did not find evidence that individuals with more serious drug problems or other types of problems were more likely to enter treatment. This may be a statistical artifact that is due to a greater level and narrower range of drug and related problems among our incarcerated population. Rather, among women, we found that those with less serious psychological problems (that is, diagnosis of neither depression or antisocial personality) were more likely to enter treatment. We did confirm, however, the importance of motivational factors as measured by Prochaska and DeClemente's (1986) Change Assessment Scale.