Report of the Illinois Treatment and Criminal Justice Data Linkage Project
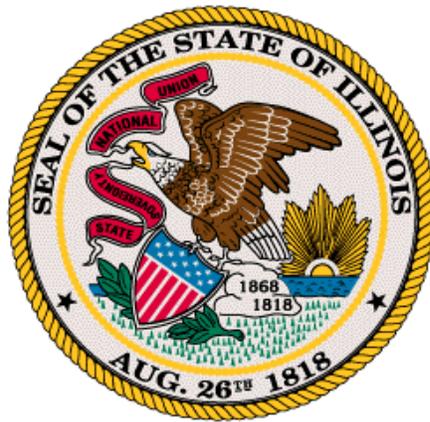
Rod R. Blagojevich
Governor

Report of the Illinois Treatment and Criminal Justice Data Linkage Project

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ACKNOWLEDGMENTS

EXECUTIVE SUMMARY

This study linked data from two sources: the Illinois Division of Alcohol and Substance Abuse (DASA) Automated Reporting and Tracking System (DARTS) and the Illinois Criminal Justice Information Authority (CJIA) Computerized Criminal History Record Data set. The purpose was to support DASA efforts to allocate treatment resources to the populations and geographic areas most in need of these services.

Key findings of these analyses include the following:

- Approximately 30% of arrestees in Illinois between 1996–2001 were estimated to have substance abuse treatment need.

- Of arrestees with treatment need, almost two-thirds (63.9%) were estimated to have unmet need.

- Arrestee and non-arrestee populations were also compared across several indicators of treatment efficacy. After statistically controlling for differences in the demographic composition of these samples, it was found that:

  - Arrestees were more likely than non-arrestees to complete treatment.

  - Arrestees who continued to use substances did so less frequently than non-arrestees.

  - There were no differences between arrestees and non-arrestees for two other efficacy indicators: employment status at discharge and abstinence from substance use at discharge.

We conclude that these differences in outcomes are nonetheless of insufficient magnitude to reflect important substantive differences between arrestee and non-arrestee populations. We thus conclude that arrestee populations receiving treatment are likely to have outcomes at least as positive as those of non-arrestee groups and may actually have a small advantage in terms of some outcomes. Whether these differences are a consequence of greater treatment effectiveness among arrestees or greater incentives to successfully complete treatment among persons being monitored by the criminal justice system remains unknown.

INTRODUCTION

The primary goal of this study was to support State of Illinois Division of Alcohol and Substance Abuse (DASA) efforts to allocate treatment resources to the populations and geographic areas most in need of these services by analyzing linked data from two State agency databases, which enable post-treatment outcomes (controlling for pre-treatment conditions) and levels of unmet need to be monitored.

Background

There is extensive literature concerned with the effectiveness of various substance abuse treatment programs (Prendergast, Podus, Chang, & Uranda, 2002; Prochaska, Delucchi, & Hall, 2004). Although there are some serious concerns about high rates of relapse among "revolving door" clientele, studies generally have reported positive treatment outcomes, including reduction in drug use and decreased depression and criminal behaviors after treatment (Hubbard, 1992; Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997; Institute of Medicine, 1990; Simpson, Joe, Fletcher, Hubbard, & Anglin, 1999; Tims, Fletcher, & Hubbard, 1991). Despite their proliferation, however, the treatment outcome evaluation studies have relied on one principal method: client interviews. Some of the problems associated with this method include the considerable expense involved in hiring and training interviewers and locating and recruiting clients, as well as the validity of information on self-reported substance abuse history (Cox, Witt, Traccarella, & Perez-Michael, 1992; Del Boca & Noll, 2000).

Interest in database linkage analyses—an alternative method to the client interview—has grown markedly. Coupled with advancement of computer technology and availability of large-scale data sets gathered and maintained by multiple agencies, the database linkage method has become a practical, valid, and cost-effective method for outcome evaluation research (Ellis, Price, Heilman, & Miner, 1999; Fellegi, 1997; Mackie & Bradburn, 2000; SAMHSA, 2001). Although examples of the application of this method are still limited, several states (i.e., Washington, New Mexico, Oregon, Oklahoma, and Alabama) have applied this method recently. As Ellis and his associates (1999) have noted, the treatment outcome studies in those states have well demonstrated the utility and cost-effectiveness of using database linkages. Some of the major findings of treatment effects from those studies include a higher rate of employment and an increase in earnings, a decrease in public-funded services, a decrease in arrests, and lower medical expenses.

Research Objectives

The Illinois database linkage project involves two types of data collected statewide: client admission data and criminal justice data. The combined database reported here includes state residents who have been treated for substance abuse in state during 2001 and 2002 and relevant events recorded in the criminal justice database. The objectives are to (1) estimate unmet alcohol and other drug treatment need and (2) analyze treatment system efficiency in serving those in need, based on before- and after-treatment outcomes.

To estimate unmet need among those arrested between 1996 and 2001, we attempted to identify the total number of persons who were arrested more than twice for drug-related crimes—illegal drug possession, drug selling, DUI, etc.—and who did not (according to the DASA Automated Reporting Treatment System [DARTS]) receive treatment between 1996 and 2002. Since the estimates are based only on the state-sponsored treatment system records (i.e.,

DARTS), the estimated unmet treatment need, as defined here, might be an overestimation, considering the possibility that some of these arrestees might have been served outside of the DARTS network. These figures, however, would give us a sense of the total population of arrestees in Illinois who could have received services during those years.

We also explored differences between arrestees and non-arrestees in their treatment completion rates and treatment outcomes: frequency of primary drug use, severity of abuse, and employment status at the point of discharge from treatment.

METHODOLOGY

Data

The following two data sets were linked and used for this efficacy study.

Automated Reporting and Tracking System (DARTS). This is the client-level treatment data system that has been designated the official repository of provider demographic and statistical treatment and prevention information for DASA. DARTS has been updated several times specifically to incorporate the U.S. Center for Substance Abuse Treatment (CSAT) Treatment Episode Data Set (TEDS) Client Data System core data elements. DARTS uses decentralized PC-based software; providers forward data to DASA monthly by either mailing formatted discs or transmitting data by modem. DARTS includes all clients receiving treatment in DASA-funded facilities in Illinois, each identified via Social Security number, enabling tracking of individual client admission histories since approximately 1992. The system also includes client demographics and treatment-related variables that can be used to classify clients by gender, race/ethnicity, other background variables, primary substance of abuse, and treatment modality. As of 2001, client discharge information was added to the system. In this study, we use treatment records collected during 2001 and 2002 to measure treatment outcome variables.

For these analyses, the State was divided into eight geographic areas: Chicago, suburban Cook County, northwest Illinois, south collar counties, north collar counties, west

central Illinois, east central Illinois, and southern Illinois. A map of these areas can be found in Figure 1. Appendix A lists the census tracts included in the Chicago and suburban Cook County areas and the counties included in the other six areas.

Computerized Criminal History Record Data Set. Developed by the Illinois Criminal Justice Information Authority (CJIA) and the Illinois State Police, this data set contains information on criminal offenses and arrests in Illinois, information that is much more detailed than traditional Uniform Crime Report Data.

Figure 1. Geographic Areas of Illinois
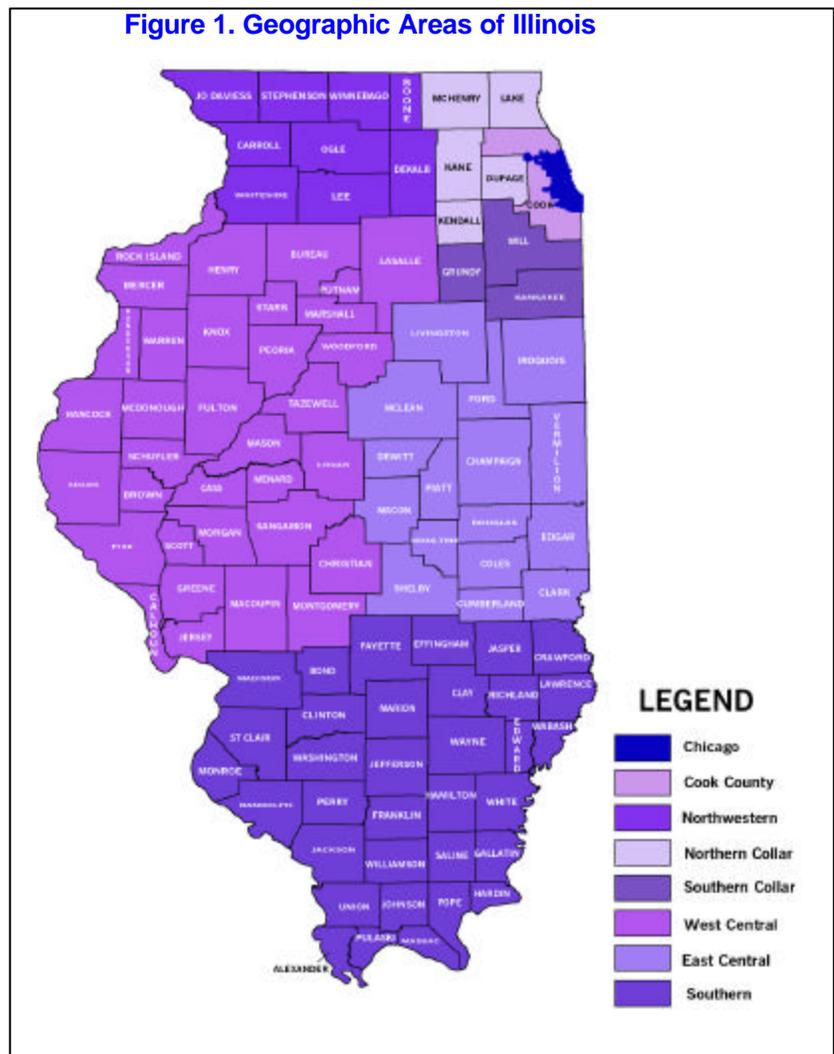
Data Linkage and Statistical Analysis

The administrative treatment data collected between 1996 and 2002 were matched with the criminal history records of persons arrested between 1996 and 2001. We identified both matched and unmatched individuals by using a deterministic record linking method with a perfect match on decoded Social Security number, gender, and date of birth. Before the matching procedure, decoding of Social Security numbers was necessary to minimize the exposure of identifiable information. This was done on both cases from DARTS and the criminal justice data separately using computer-generated unique numbers that cannot be coded back to the original number.

Descriptive and multivariate analyses of unmet need and pre- and post-treatment efficacy were accomplished using the SAS statistical software package (SAS Institute, 2000). In our efficacy analyses, types of substance use, severity of use, treatment modality, length of treatment (retention), and socioeconomic factors were included as independent or control variables.

The study protocol was reviewed and approved by the University of Illinois at Chicago Institutional Review Board.

FINDINGS

Unmet Need Estimation

Out of more than a million persons arrested during the six-year period, 123,204 uniquely matched individuals were identified as having received treatment from DASA-funded treatment facilities (see Table 1.) Among the remaining individuals (989,406) unmatched within the DASA-funded facilities treatment records, 217,845 individuals were identified who met the definition of treatment need (any repeated arrests for alcohol or drug related charges). Therefore, approximately 341,000 persons were estimated to be in need of treatment among the arrestee population (30.7%). Of all individuals estimated to be in need of treatment, only 36% were identified as having received treatment in a DASA-funded facility. Rates of unmet treatment need were higher among males, Whites, persons age 19–24, and those age 65 and older. (While arrestees age 65+ make up only a small percentage of this population, 75% of them did not receive treatment from DASA-funded facilities.)

Efficacy of Treatment

To explore the relative efficacy of treatment, we next analyzed treatment admissions among arrestees and non-arrestees who were admitted and discharged from treatment during the years 2001 and 2002. We selected those matched arrestee admission records that were referred to treatment facilities by criminal justice agencies. A comparison group of those without any criminal record and not referred by criminal justice agencies also was selected. As mentioned earlier, since 2001, the DARTS data system has collected information on several discharge status indicators, including employment status, frequency of drug or alcohol use, and severity of substance use at discharge.

As summarized in Table 2, we selected 24,913 treatment admissions (13,534 non-arrestees and 11,379 arrestees) for this analysis. Arrestees were disproportionately male, White, had less than a high school degree, and lacked medical insurance.

Table 1. Estimated Unmet Treatment Need Among Arrestees, by Demographics (1996–2001)

	A Total N of Arrestees	B Total N of Arrestees Ever Treated	C Total N of Arrestees Never Treated (A-B)	D Estimated Number with Unmet Treatment Need	E Percent Unmet Treatment Need (D/(B+D) *100)
TOTAL	1,112,611	123,204	989,407	217,845	63.9%
Gender					
Male	856,645	94,854	761,791	189,204	66.6
Female	255,966	28,350	227,616	28,641	50.3
Race					
White	657,566	52,104	605,462	123,012	70.2
African American	416,639	58,218	358,421	91,083	61.0
Other	38,406	12,882	25,524	3,750	22.6
Age (in years)					
<16	137,315	12,043	125,272	22,585	65.2
16–18	138,214	13,815	124,399	30,202	68.6
19–24	224,220	20,877	203,343	53,987	72.1
25–34	286,666	40,386	246,280	58,210	59.0
35–44	204,948	28,847	176,101	38,213	57.0
45–64	91,573	6,945	84,628	13,786	66.5
65+	11,711	290	11,421	862	74.8

Table 2. Treatment Admissions Among Arrestees and Non-arrestees, 2001–2002 (%)

	Total N	Total %	Non-arrestees	Arrestees
TOTAL	24,913	100.0%	13,534	11,379
Gender				
Male	16,389	65.8	56.6%	76.8%
Female	8,524	34.2	43.4	23.2
Race/Ethnicity				
White	12,569	50.4	49.7	51.4
African American	10,216	41.0	42.0	39.8
Hispanic	1,503	6.0	5.9	6.2
Other	625	2.5	2.5	2.6
Age (in years)				
16–18	1,408	5.6	—	5.2
19–24	4,607	18.5	11.1	27.2
25–34	6,810	27.3	25.9	29.1
35–44	8,340	33.5	38.1	28.0
45–64	3,633	14.6	18.2	10.3
65+	107	0.4	0.6	0.2
Employment Status at Initial Admission				
Unemployed	18,841	75.6	78.6	72.1
Part-time	4,155	16.7	14.9	18.8
Full-time	1,917	7.7	6.5	9.2
Educational Attainment				
Less than high school	9,929	39.8	35.7	44.8
High school graduate	10,116	40.6	39.9	41.4
More than high school	4,868	19.5	24.4	13.8
Insurance Status				
No insurance	17,600	70.6	61.4	81.6
Public	1,267	5.1	6.1	3.8
Private	6,046	24.2	32.4	14.5
Living Arrangement at Initial Admission				
Independent	7,992	32.1	36.2	27.2
Dependent	13,280	53.3	47.8	59.9
Homeless	1,945	7.8	11.6	3.4
Institution	1,693	6.8	4.5	9.5
Marital Status				
Never married	15,220	61.1	56.3	66.8
Married	3,292	13.2	14.2	12.1
Divorced/Separated/Widowed	6,392	25.7	29.5	21.1
Area of Residence				
Chicago	7,900	32.0	35.6	27.7
Suburban Cook County	2,992	12.1	12.6	11.5
Northwest Illinois	1,561	6.3	4.4	8.6
South collar counties	845	3.4	3.3	3.6
North collar counties	2,028	8.2	8.2	8.3
West central Illinois	3,539	14.3	14.3	14.4
East central Illinois	2,232	9.0	6.6	11.9
Southern Illinois	3,587	14.5	14.9	14.1

Table 3. Treatment Completion Rate (%)

		Non-arrestees	Arrestees
Total N of Admissions		13,534	11,379
	TOTAL	44.6%	47.0%
Gender			
Male		47.8	47.5
Female		40.3	45.2
Race/Ethnicity			
White		49.4	50.3
African American		38.2	41.6
Hispanic		48.1	51.6
Other		46.7	52.2
Age (in years)			
16–18		41.8	44.0
19–24		43.7	43.8
25–34		43.7	47.6
35–44		45.1	46.4
45–64		45.4	56.0
65+		63.1	91.3
Employment Status at Initial Admission			
Unemployed		42.5	45.0
Part-time		54.7	53.7
Full-time		46.6	49.0
Educational Attainment			
Less than high school		41.3	43.6
High school graduate		45.6	49.0
More than high school		47.6	51.8
Insurance Status			
No insurance		44.6	46.8
Public		53.7	56.4
Private		42.8	45.3
Living Arrangement at Initial Admission			
Independent		48.4	50.4
Dependent		43.0	43.9
Homeless		40.8	40.6
Institution		40.5	59.2
Marital Status			
Never married		42.4	45.2
Married		52.6	52.4
Divorced/Separated/Widowed		44.9	49.6
Area of Residence			
Chicago		34.4	47.1
Suburban Cook County		46.2	36.9
Northwest Illinois		48.1	46.3
South collar counties		37.1	34.2
North collar counties		50.8	45.6
West central Illinois		62.3	55.1
East central Illinois		36.2	42.7
Southern Illinois		51.0	54.1
Ever Used as Primary Substance			
Alcohol		50.2	52.5
Marijuana		40.4	42.7
Cocaine		42.5	40.1
Heroin		29.9	41.9
Other		49.2	49.1

Treatment Completion Rate

At each point of discharge from the treatment system, reasons for why each client was discharged from the facility were recorded. These included completion of treatment, incomplete treatment, and release against provider's advice. We operationalized "treatment completion" as being discharged after completing treatment. Almost 45% of the non-arrestees and 47.0% of arrestees were discharged after completing scheduled service. As compared in Table 3, arrestees were more likely to complete treatment across all comparison categories with a few exceptions. Perhaps most interesting of these was the finding that non-arrestees outside of Chicago, east central Illinois, and southern Illinois were more likely to complete treatment than were arrestees in these areas.

A logistic regression model (see Table 4) identified independent correlates of treatment completion between these two groups, after controlling for other background characteristics. As the table shows, males were more likely than females to complete treatment, and African Americans were *less* likely but Hispanics were *more* likely than Whites to complete treatment. The likelihood of treatment completion was higher for older individuals (i.e., 35–44, 45–64, 65+), part-time workers, those with at least a high school diploma, and carriers of public insurance than for the youngest, unemployed, least educated, and uninsured recipients of treatment, respectively. With regard to living arrangements, institutionalized persons were more likely and homeless individuals were less likely than those living independently to complete treatment, and compared to the never-married, currently married individuals had a higher likelihood of completing treatment. Area of residence was significantly associated with treatment completion as well; compared to residents of Chicago, those living in the north collar counties and in northwest, west central, and southern Illinois had a higher likelihood of completing treatment. In contrast, residents of the south collar counties and east central Illinois were less likely to achieve this outcome. Alcohol as the primary substance used (vs. marijuana, cocaine, and heroin) also was positively related with the likelihood of treatment completion, while frequency of use exhibited a negative relationship with completion, as did being characterized as substance "dependent" at admission. Finally, some treatment modes were significantly related to completion. Compared to those receiving outpatient services only, persons treated in recovery homes and residential rehab were more likely to complete treatment; individuals receiving services in a halfway house setting were less likely.

Table 4. Logistic Regression Model for Treatment Completion

	Odds Ratio	95% Confidence Interval	*p*
Criminal Justice Population			
No	1.00	—	—
Yes	1.07	1.01–1.14	0.029
Gender			
Male	1.14	1.07–1.21	**<0.001**
Female	1.00	—	—
Race/Ethnicity			
White	1.00	—	—
African American	0.88	0.82–0.95	**0.001**
Hispanic	1.22	1.08–1.37	**0.002**
Other	1.12	0.94–1.32	0.206
Age (in years)			
16–18	1.00	—	—
19–24	0.95	0.83–1.08	0.424
25–34	1.14	0.99–1.31	0.065
35–44	1.23	1.07–1.42	**0.004**
45–64	1.41	1.20–1.64	**<0.001**
65+	2.96	1.89–4.62	**<0.001**
Employment Status at Initial Admission			
Unemployed	1.00	—	—
Part-time	1.23	1.14–1.32	**<0.001**
Full-time	1.08	0.98–1.19	0.138
Educational Attainment			
Less than high school	1.00	—	—
High school graduate	1.15	1.08–1.22	**<0.001**
More than high school	1.27	1.18–1.37	**<0.001**
Insurance Status			
No insurance	1.00	—	—
Public	1.19	1.05–1.35	**0.007**
Private	0.94	0.88–1.01	0.083
Living Arrangement at Initial Admission			
Independent	1.00	—	—
Dependent	0.94	0.88–1.00	0.060
Homeless	0.86	0.77–0.96	**0.008**
Institution	1.53	1.37–1.72	**<0.001**
Marital Status			
Never married	1.00	—	—
Married	1.14	1.05–1.24	**0.002**
Divorced/Separated/Widowed	0.92	0.86–0.99	0.019
Area of Residence			
Chicago	1.00	—	—
Suburban Cook County	1.06	0.97–1.17	0.190
Northwest Illinois	1.21	1.07–1.37	**0.002**
South collar counties	0.74	0.64–0.87	**<0.001**
North collar counties	1.26	1.12–1.40	**<0.001**
West central Illinois	1.91	1.73–2.11	**<0.001**
East central Illinois	0.86	0.77–0.96	**0.006**
Southern Illinois	1.35	1.23–1.49	**<0.001**
Primary Substance			
Alcohol	1.00	—	—
Marijuana	0.83	0.77–0.90	**<0.001**
Cocaine	0.82	0.76–0.88	**<0.001**
Heroin	0.71	0.64–0.79	**<0.001**
Other	1.00	0.89–1.14	0.962
Level of Use at Admission			
Frequency of use	0.90	0.89–0.92	**<0.001**
Severity of Abuse at Admission			
No reported problem	1.00	—	—
Abuse	0.84	0.69–1.01	0.062
Dependence	0.55	0.46–0.66	**<0.001**
Treatment Mode			
Outpatient	1.00	—	—
Intensive outpatient	0.97	0.90–1.04	0.409
Halfway home	0.72	0.60–0.86	**<0.001**
Recovery home	2.86	2.42–3.37	**<0.001**
Residential rehab	2.02	1.87–2.18	**<0.001**

Treatment Outcomes

Three treatment outcomes at discharge were compared between arrestee and non-arrestee groups: job status, frequency of primary substance use, and severity (absence) of substance abuse problem at discharge. As Table 5 shows, about 35% of non-arrestees and 29% of arrestees were employed at the point of discharge. Eighty percent of non-arrestees were classified as not having a substance problem, while arrestees consumed substances less frequently than non-arrestees at discharge from treatment. The independent predictors of treatment outcomes were examined next.

Table 5. Treatment Outcome at Discharge (%, Mean)

	Non-arrestees	Arrestees
Job Status at Discharge		
Employment (part-time or full-time), %	34.6%	28.8%
Level of Use at Discharge (5-level)*		
Frequency of use, mean	2.6	2.0
Absence of Substance Abuse at Discharge		
No problem, %	79.8%	77.4%

*The 5-point scale used to measure the frequency of use outcome measure is as follows: (1) "not used in the past month," (2) "1–3 times in the past month," (3) "1–2 times in the past week," (4) "3–6 times in the past week," and (5) "daily."

Employment status at discharge

A multivariate logistic regression analysis, presented in Table 6, shows that the difference in employment status (part-time or full-time employment) at discharge was not found to be significant between arrestees and non-arrestees, after controlling background and other selected characteristics, including treatment completion status at discharge. **Treatment completion itself had a significant positive effect on employment at discharge.**

Compared to their respective reference groups, males, Hispanics, those who had at least a high school diploma, and individuals who had been in a halfway home had a higher likelihood of being employed when they left treatment. Those less likely to be employed at discharge than their respective reference groups included African Americans, private insurance carriers, and those who received treatment in a residential rehabilitation setting.

Chicago residents had a lower likelihood of being employed than did residents of any other area of the state except suburban Cook County; the odds ratio for those residents was significantly lower than that of Chicago residents.

Not surprisingly, those who reported any type of employment at admission were at least 24 times more likely than their unemployed peers to have employment at discharge.

Table 6. Logistic Model for Discharge Outcome: Job Status (Employment)

	Odds Ratio	95% Confidence Interval	p
Criminal Justice Population			
No	1.00	—	—
Yes	0.94	0.86–1.02	0.132
Gender			
Male	1.16	1.06–1.27	**0.001**
Female	1.00	—	—
Race/Ethnicity			
White	1.00	—	—
African American	0.86	0.78–0.953	**0.004**
Hispanic	1.70	1.44–2.01	**<0.001**
Other	1.16	0.92–1.46	0.223
Age (in years)			
16–18	1.00	—	—
19–24	1.19	0.98–1.45	0.078
25–34	1.29	1.05–1.58	0.014
35–44	1.18	0.96–1.46	0.123
45–64	0.96	0.76–1.20	0.715
65+	0.63	0.34–1.18	0.152
Job Status at Initial Admission			
Unemployed	1.00	—	—
Part-time	25.55	23.05–28.32	**<0.001**
Full-time	24.66	21.63–28.12	**<0.001**
Educational Attainment			
Less than high school	1.00	—	—
High school graduate	1.32	1.21–1.44	**<0.001**
More than high school	1.38	1.24–1.54	**<0.001**
Insurance Status			
No insurance	1.00	—	—
Public	1.20	1.01–1.42	0.040
Private	0.51	0.46–0.56	**<0.001**
Living Arrangement at Initial Admission			
Independent	1.00	—	—
Dependent	0.89	0.82–0.97	0.011
Homeless	1.21	1.03–1.41	0.018
Institution	1.20	0.87–1.20	0.816
Marital Status			
Never married	1.00	—	—
Married	1.07	0.95–1.20	0.264
Divorced/Separated/Widowed	1.06	0.96–1.17	0.238
Area of Residence			
Chicago	1.00	—	—
Suburban Cook County	0.91	0.79–1.05	0.203
Northwest Illinois	1.35	1.14–1.60	**<0.001**
South collar counties	1.49	1.21–1.85	**<0.001**
North collar counties	1.80	1.55–2.10	**<0.001**
West central Illinois	1.69	1.47–1.94	**<0.001**
East central Illinois	1.65	1.42–1.91	**<0.001**
Southern Illinois	1.23	1.07–1.42	**0.003**
Primary Substance			
Alcohol	1.00	—	—
Marijuana	0.99	0.88–1.10	0.819
Cocaine	0.99	0.89–1.10	0.801
Heroin	0.83	0.71–0.96	0.014
Other	0.90	0.76–1.08	0.261
Level of Use at Admission			
Frequency of use	0.98	0.96–1.00	0.121
Severity of Abuse at Admission			
No reported problem	1.00	—	—
Abuse	1.14	0.89–1.48	0.297
Dependence	1.09	0.85–1.40	0.479
Treatment Mode			
Outpatient	1.00	—	—
Intensive outpatient	1.07	0.97–1.19	0.169
Halfway home	4.85	3.99–5.90	**<0.001**
Recovery home	1.24	1.01–1.52	0.044
Residential rehab	0.38	0.33–0.43	**<0.001**
Treatment Completion			
No	1.00	—	—
Yes	1.82	1.68–1.96	**<0.001**

Table 7. OLS Regression Model for Discharge Outcome: Frequency of Use at Discharge

	b	se	p
Criminal Justice Population			
No	Ref		
Yes	-0.26	0.02	**<0.001**
Gender			
Male	-0.01	0.02	0.607
Female	Ref		
Race/Ethnicity			
White	Ref		
African American	-0.08	0.03	**0.005**
Hispanic	-0.12	0.05	**0.009**
Other	0.02	0.07	0.766
Age (in years)			
16–18	Ref		
19–24	-0.05	0.05	0.353
25–34	0.00	0.05	0.995
35–44	0.07	0.06	0.230
45–64	0.15	0.06	0.016
65+	-0.34	0.16	0.040
Employment Status at Initial Admission			
Unemployed	Ref		
Part-time	0.06	0.03	0.054
Full-time	-0.07	0.04	0.078
Educational Attainment			
Less than high school	Ref		
High school graduate	-0.01	0.02	0.741
More than high school	-0.02	0.03	0.450
Insurance Status			
No insurance	Ref		
Public	0.30	0.05	**<0.001**
Private	0.08	0.03	**0.002**
Living Arrangement at Initial Admission			
Independent	Ref		
Dependent	-0.09	0.02	**<0.001**
Homeless	-0.23	0.04	**<0.001**
Institution	-0.22	0.04	**<0.001**
Marital Status			
Never married	Ref		
Married	-0.04	0.03	0.178
Divorced/Separated/Widowed	-0.11	0.03	**<0.001**
Area of Residence			
Chicago	Ref		
Suburban Cook County	-0.31	0.04	**<0.001**
Northwest Illinois	-0.38	0.05	**<0.001**
South collar counties	-0.29	0.06	**<0.001**
North collar counties	0.03	0.04	0.527
West central Illinois	0.10	0.04	0.012
East central Illinois	0.06	0.04	0.190
Southern Illinois	-0.13	0.04	**0.001**
Primary Substance			
Alcohol	Ref		
Marijuana	0.03	0.03	0.321
Cocaine	-0.07	0.03	0.016
Heroin	0.13	0.04	**0.001**
Other	0.10	0.05	0.038
Level of Use at Admission			
Frequency of use	0.42	0.01	**<0.001**
Severity of Abuse at Admission			
No reported problem	Ref		
Abuse	0.04	0.07	0.560
Dependence	0.07	0.07	0.321
Treatment Mode			
Outpatient	Ref		
Intensive outpatient	0.00	0.03	0.988
Halfway home	-0.78	0.07	**<0.001**
Recovery home	-0.86	0.06	**<0.001**
Residential rehab	-0.22	0.03	**<0.001**
Treatment Completion			
No	Ref		
Yes	-0.23	0.02	**<0.001**
Intercept	1.29	0.10	**<0.001**

Frequency of substance use at discharge

In Table 7, frequency of substance use at discharge was modeled. In this analysis, frequency of substance use was coded as 1 through 5: "not used in the past month" (1), "1–3 times in the past month" (2), "1–2 times in the past week" (3), "3–6 times in the past week" (4), and "daily" (5). When the frequency of use of the primary substance for which treatment was sought was modeled as an outcome of treatment and other background variables were controlled, arrestees were found to less frequently consume substances at discharge. African Americans and Hispanics and those with dependent, homeless, or institutional living arrangements reported less frequent use of alcohol or drugs, as did residents of suburban Cook County, the south collar counties, and northwest and southern Illinois. Clients with medical insurance, the never-married, and individuals who primarily used heroin were found to more frequently consume alcohol or drugs at discharge.

Again, long-term treatment modes (i.e., halfway homes, recovery homes, and residential rehabilitation) all were associated with reduced frequency of substance use at discharge, compared to outpatient services alone. Treatment completion also was negatively associated with frequency of use at discharge, meaning that those who completed treatment consumed substances less frequently than those discharged with incomplete treatments.

As might be expected, there was a significant positive association between frequency of use at admission and at discharge.

Absence of drug problem at discharge

After controlling for other factors, including severity of abuse at admission, there was no difference between arrestees and non-arrestees in terms of absence of a drug problem at discharge (see Table 8).

Compared to female clients, males were less likely to be free of a drug problem at treatment's end, and those with private medical insurance were more likely than the uninsured to have problems upon discharge from treatment. Groups that had a higher likelihood of being problem-free included African Americans, those age 65+, and those living closest to but not in Chicago (i.e., residents of suburban Cook County and the north and south collar counties). With regard to clients living in the remaining areas of the state, all were more likely than Chicago residents to have a problem. When living arrangements were considered, people living independently were more likely to have a drug problem at discharge than those who were in dependent housing, homeless, or living in institutions. Others with a higher likelihood of having a drug problem at the end of treatment included users of "other" drugs and those categorized as having an abuse or dependence problem at admission.

Long-term care treatment modes were more successful in achieving problem-free status at discharge. Clients treated in halfway homes, recovery homes, and residential rehab were at least twice as likely to report absence of a substance problem at the end of treatment. Treatment completion also had a significant positive effect on achieving a drug independent status at the point of discharge.

Table 8. Logistic Model for Discharge Outcome: Absence of Drug Problem at Discharge

	Odds Ratio	95% Confidence Interval	p
Criminal Justice Population			
No	1.00	—	—
Yes	1.03	0.95–1.11	0.497
Gender			
Male	0.86	0.79–0.93	**<0.001**
Female	1.00	—	—
Race/Ethnicity			
White	1.00	—	—
African American	1.41	1.29–1.55	**<0.001**
Hispanic	1.21	1.04–1.41	0.015
Other	0.98	0.78–1.22	0.827
Age (in years)			
16–18	1.00	—	—
19–24	1.13	0.93–1.36	0.211
25–34	1.23	1.01–1.49	0.039
35–44	1.20	0.98–1.46	0.077
45–64	1.18	0.95–1.46	0.126
65+	2.75	1.67–4.52	**<0.001**
Employment Status at Initial Admission			
Unemployed	1.00	—	—
Part-time	1.12	1.01–1.24	0.038
Full-time	1.05	0.91–1.20	0.522
Educational Attainment			
Less than high school	1.00	—	—
High school graduate	1.09	1.01–1.18	0.036
More than high school	1.01	0.91–1.11	0.897
Insurance Status			
No insurance	1.00	—	—
Public	1.22	1.04–1.43	0.018
Private	0.80	0.72–0.87	**<0.001**
Living Arrangement			
Independent	1.00	—	—
Dependent	1.18	1.08–1.29	**<0.001**
Homeless	1.29	1.13–1.48	**<0.001**
Institution	1.43	1.23–1.65	**<0.001**
Marital Status			
Never married	1.00	—	—
Married	1.07	0.96–1.20	0.235
Divorced/Separated/Widowed	1.03	0.94–1.13	0.545
Area of Residence			
Chicago	1.00	—	—
Suburban Cook County	2.98	2.68–3.30	**<0.001**
Northwest Illinois	0.10	0.07–0.14	**<0.001**
South collar counties	3.32	2.81–3.91	**<0.001**
North collar counties	1.37	1.20–1.56	**<0.001**
West central Illinois	0.30	0.26–0.35	**<0.001**
East central Illinois	0.65	0.56–0.75	**<0.001**
Southern Illinois	0.52	0.45–0.60	**<0.001**
Primary Substance			
Alcohol	1.00	—	—
Marijuana	0.87	0.77–0.97	0.013
Cocaine	0.92	0.84–1.01	0.082
Heroin	0.86	0.76–0.97	0.015
Other	0.77	0.64–0.92	**0.004**
Level of Use at Admission			
Frequency of use	0.98	0.95–1.00	0.046
Severity of Abuse at Admission			
No reported problem	1.00	—	—
Abuse	0.16	0.13–0.20	**<0.001**
Dependence	0.14	0.11–0.17	**<0.001**
Treatment Mode			
Outpatient	1.00	—	—
Intensive outpatient	0.86	0.77–0.96	**0.007**
Halfway home	2.04	1.65–2.52	**<0.001**
Recovery home	3.05	2.54–3.66	**<0.001**
Residential rehab	2.53	2.30–2.78	**<0.001**
Treatment Completion			
No	1.00	—	—
Yes	2.19	2.04–2.35	**<0.001**

DISCUSSION

Estimates from this analysis suggest that approximately 30% of all Illinois arrestees between 1996–2001 were in need of substance abuse treatment. This assessment is based on a proxy definition of treatment need that interprets repeat arrests for alcohol and/or drug-related charges as sufficient evidence of treatment need. Of those arrestees with such need, almost two-thirds (63.9%) were estimated to have *unmet* treatment need, having never previously received treatment services (defined as not being identified within the DASA-funded treatment system during the analysis time frame). This may well be an underestimate of unmet treatment need, given that it relies on the weak assumption that persons ever having received substance abuse treatment do not *currently* need treatment. Nonetheless, these findings are important, as they provide a lower-bound estimate of the likely treatment service need and unmet need of this high-risk population.

Comparisons of treatment efficacy for arrestees vs. non-arrestees revealed that arrestees were more likely to complete treatment, even after statistical controls were introduced for a number of other characteristics that varied between these two populations. Arrestees were also less frequent substance users at discharge. No differences were found between arrestees and non-arrestees, however, in the likelihood that they were employed at discharge and were not substance users at discharge. These findings indicate that arrestee populations may be more likely to have positive treatment outcomes. A review of the statistical tables presented in this report, however, suggests that these differences in outcomes, although some are statistically significant, may not reflect important substantive differences between these groups. We thus conclude that arrestee populations receiving treatment are likely to have outcomes at least as positive as

those of non-arrestee groups and may actually have a small advantage in terms of some outcomes. Whether these differences are a consequence of greater treatment effectiveness among arrestees or greater incentives to successfully complete treatment among persons being monitored by the criminal justice system remains a question for future research.

Several limitations of these analyses should be recognized. Using data from different agencies that are collected in the pursuit of different objectives in different environments generally limits the scope of analysis because of their often-limited provision of variables that are relevant to the research objectives. This study is no exception. Also, the variables available to measure some constructs are only rough indicators. For example, the measure of severity of abuse at admission used in this study is based on patient reports to providers who report to DASA and is an unverifiable indicator of actual client status. Poor measurement contributes to attenuated relationships and may call into question the accuracy of the statistical models being presented. Further, we are cautious about possible selection bias in our treatment data set (the primary database to which other databases are linked). Many factors affect a person's decision to seek treatment and hence influence membership in the population of substance abusers susceptible to treatment. There also are system-related influences affecting the size and makeup of this population. Because of limited resources, DASA has targeted specific populations and areas, concentrating resources in some areas (e.g., West side of Chicago) and on some populations (e.g., pregnant women, female TANF recipients, criminal justice referrals). Because targeted populations have a priority status so they can access services readily, they are more likely to be admitted to the system than are others. For these reasons, we must be cautious in generalizing these findings.

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APPENDIX
Counties or Tracts Within Each Geographic Area

	Sample Areas	Counties/Tracts
1	Chicago	All census tracts less than 7702 and 7705–7709, 8104, 8106, 8116, 811701, 8209.02, 8233.04
2	Suburban Cook County	Census tracts greater or equal to 7702 (with the exception of those mentioned above)
3	Northwest Illinois	Counties: Boone, Carroll, DeKalb, Jo Daviess, Lee, Ogle, Stephenson, Whiteside, Winnebago
4	South Collar Counties	Counties: Grundy, Kankakee, Will
5	North Collar Counties	Counties: DuPage, Kane, Kendall, Lake, McHenry
6	West Central Illinois	Counties: Adams, Brown, Bureau, Calhoun, Cass, Christian, Fulton, Greene, Hancock, Henderson, Henry, Jersey, Knox, LaSalle, Logan, Macoupin, Marshall, Mason, McDonough, Menard, Mercer, Montgomery, Morgan, Peoria, Pike, Putnam, Rock Island, Sangamon, Schuyler, Scott, Stark, Tazewell, Warren, Woodford
7	East Central Illinois	Counties: Champaign, Clark, Coles, Cumberland, DeWitt, Douglas, Edgar, Ford, Iroquois, Livingston, Macon, McLean, Moultrie, Piatt, Shelby, Vermilion
8	Southern Illinois	Counties: Alexander, Bond, Clay, Clinton, Crawford, Edwards, Effingham, Fayette, Franklin, Gallatin, Hamilton, Hardin, Jackson, Jasper, Jefferson, Johnson, Lawrence, Madison, Marion, Massac, Monroe, Perry, Pope, Pulaski, Randolph, Richland, Saline, St. Clair, Union, Wabash, Washington, Wayne, White, Williamson