

**Costs of Criminal Justice Involvement among Persons with Severe Mental Illness in
Connecticut**

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Duke University Medical Center

Jeffrey Swanson, PhD
Marvin Swartz, MD
Allison Gilbert, PhD, MPH

**University of Connecticut School of Social Work and
Connecticut Department of Mental Health
and Addiction Services**

Linda Frisman, PhD
Hsiu-Ju Lin, PhD
Eleni Rodis, MS
Kathryn Parr, MA

University of Connecticut Health Center

Robert Trestman, MD
Deborah Shelton, PhD

**Yale School of Medicine and
Connecticut Department of Mental Health
and Addiction Services**

Alec Buchanan, MD, PhD

University of North Carolina at Chapel Hill

Marisa Domino, PhD
Shirley Richards
Abel Henson

Corresponding author's contact information:

Jeffrey Swanson, Ph.D. (Principal Investigator)
Department of Psychiatry & Behavioral Sciences
Duke University School of Medicine
contact: jeffrey.swanson@duke.edu
phone: 919 682-4827

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The content of this report remain the responsibility of the authors.

Executive Summary

Between 1982 and 2007, the population of US prisons and jails nearly quadrupled, from 612,000 to 2.3 million.(1) Almost 1 in 5 incarcerated adults has a diagnosable serious mental illness (SMI), many with co-occurring alcohol and drug abuse problems.(2) Approximately 1.9 million persons with SMI enter U.S. jails annually; many continue to cycle repeatedly through the criminal justice system.(3) Justice-involved individuals with disabling psychiatric illnesses and addiction disorders face daunting barriers to recovery and reintegration. States' public mental health and substance abuse services departments, correction systems, and social welfare programs all face challenges in serving this population. *To what extent—how “deeply”—are people with SMI involved with the criminal justice system and how much does this cost states?* Solid information to answer this important question has been lacking.

This report presents the results of the first comprehensive study of the patterns and costs of criminal justice involvement among adults with schizophrenia or bipolar disorder served in a state's public mental health and addiction services agencies. Cross-agency records were matched and merged to identify a population of 25,133 service recipients with serious mental illness. Unit costs for all relevant criminal justice and behavioral health and addiction service categories were calculated and combined with utilization data to provide a complete picture of public costs, by state agency payer, for those with and without justice involvement.

Just over one quarter of the sample (n=6,904; 27.5%) had at least one type of involvement in the criminal justice system during state fiscal years 2006 and 2007. Prevalence of involvement with individual components of the justice system varied considerably, with

arrest and incarceration being the most prevalent (17% and 16%, respectively.) Forty-three percent of arrests were in a category of mostly minor offenses such as trespassing, breach of peace, prostitution, DWI, and technical violations of probation or parole.

The CJ-involved sample was significantly younger, more likely to be male, and more likely to be African American than their non-CJ-involved counterparts. The CJ-involved sample was also more likely than the non-CJ-involved sample to have a diagnosis of bipolar disorder and to have a co-occurring substance abuse disorder.

The CJ-involved sample incurred substantially higher overall costs than did the non-CJ-involved sample. The balance between CJ-related and other treatment costs depends substantially on whether or not forensic hospitalization is included as a CJ system cost. If forensic hospitalization is counted as a CJ-related cost, then the average CJ cost per person involved was about \$30,000 over the two years of the study, while the average cost for treatment of the CJ-involved sample *outside* the criminal justice system was about \$19,000 per person – for a total of about \$49,000. However, if forensic hospitalization is excluded from CJ costs, and is counted instead among other treatment costs outside the CJ system, then the average CJ-involved person incurred CJ-related costs of approximately \$18,000 and mental health treatment costs of about \$31,000, again for a total of about \$49,000. By comparison, the average total cost for individuals in the non-CJ-involved sample was about half as much – approximately \$25,000 per person – all for mental health treatment.

Regarding mental health treatment *outside the CJ system*, more specifically, the CJ-involved sample was more likely overall to experience psychiatric hospital admissions. However, among those hospitalized, the non-CJ-involved group had more days of inpatient

treatment. Thus, the *non-CJ-involved group tended to have fewer, but longer admissions, while the CJ-involved group had a greater number of acute admissions of short duration.*

It is important to note that our descriptive findings on the frequency of hospitalization are presented without adjustment for time at risk in the community. Clearly, a person with a long incarceration during the study window would have had less opportunity to be hospitalized in the community outside the CJ system. Similarly, our findings on the frequency of arrest and incarceration are presented without adjustment for time at risk for those events, i.e., days not spent in the hospital. These unadjusted findings are useful for describing the frequency and pattern of events as they occurred, and for taking account of associated costs to the state agencies involved, but should not be used to reach causal conclusions.

Considering outpatient services, the CJ-involved sample displayed higher rates of utilization of emergency department services, psychotropic medications, and substance abuse services, relative to the non-CJ-involved sample. However, the non-CJ-involved group had a slightly higher prevalence of utilization of outpatient mental health services and, in general, used DMHAS outpatient services more intensively (a greater average number of visits or days under treatment per person involved) than the CJ-involved sample did.

DOC medical records of a randomly-selected subsample of n=200 CJ-involved individuals were subjected to an intensive manual chart review of mental health services utilization while in DOC custody, or under DOC supervision. The Correctional Managed Health Care (CMHC) program provides capitated health services to persons in DOC custody. About 10% of this subsample of CJ-involved individuals with SMI experienced an acute psychiatric admission while incarcerated during the 2-year study window, while 33% were prescribed psychotropic

medications within DOC. It is important to note that a substantial proportion of the CJ-involved subsample comprised individuals who were *not incarcerated* and, for example, may only have been arrested or on probation. The percentages experiencing inpatient-level treatment and receiving prescribed psychotropic medications within DOC would probably have been much higher if the entire subsample had been incarcerated.

The not-CJ-involved sample incurred higher costs for psychotropic medications—nearly \$2,000 higher per treated individual, on average—than did the CJ-involved sample; this difference is partly explained by the fact that the CJ-involved sample had prescriptions in place for an average of only 10 months, compared to 15 months in the not-CJ-involved sample. The not-CJ-involved sample incurred higher average costs for overall outpatient mental health services than did the CJ-involved sample—about \$12,000 per person vs. about \$8,000 per person, respectively.

The CJ-involved sample was about 4 times more likely to receive any substance abuse treatment than the not-CJ-involved sample, in both the DMHAS and Medicaid-paid categories. Considering DMHAS-paid substance abuse services, the average costs per person involved were about \$4,000 higher for CJ-involved individuals than for not-CJ-involved individuals (about \$13,000 vs. about \$9,000 per person.) The average costs for Medicaid-paid substance abuse services were considerably lower, and the differences between sample groups were also less (about \$1,800 vs. about \$1,600 per person involved.)

In sum, the total system costs for the CJ-involved sample came to about \$49,000 per person involved, or roughly twice the \$25,000 average per-person cost incurred by the not-CJ-involved sample. Taking account of the numbers of persons in each sample, the total system

costs amounted to about \$446 million for the not-CJ-involved individuals (n=18,229), and about \$338 million for the CJ-involved individuals (n=6,904).

Of the state agencies involved, DMHAS bore the largest proportion of costs for the two samples combined—approximately \$476 million, or about 61% of the total of approximately \$786 million distributed across the four state agencies during the study period. By comparison, DSS/Medicaid covered nearly one quarter of total system costs, DOC covered about 11%, and the Judicial Department and law enforcement covered just over 4% of total costs. DMHAS bore about half the total costs for the CJ-involved sample, and about 70% of costs for the not-CJ-involved sample. By comparison, DOC covered about one quarter of the total costs for the CJ-involved sample alone. DSS/Medicaid covered about 15% of costs for the CJ-involved sample and about 30% of costs for the not-CJ-involved sample. About 10 percent of total costs for the CJ-involved sample were borne by the Judicial Department and law enforcement agencies. DMHAS spent approximately \$8,000 more per person on CJ-involved individuals than non-CJ-involved individuals; however, forensic hospitalization alone was responsible for a large share of the difference in costs. By comparison, DSS/Medicaid paid approximately the same amount per persons for the CJ-involved and not CJ-involved samples.

In summary, about 1 in 4 persons with schizophrenia or bipolar disorder in the public system of care in Connecticut were involved with the criminal justice system in some way within a 2-year period. These CJ-involved individuals were younger, more likely to be male, African American, to have bipolar disorder, and to have co-occurring substance abuse disorders. Among those who were not incarcerated, CJ-involved individuals with SMI were

more likely to experience acute psychiatric admissions, but for shorter periods of time—fewer days hospitalized—than their not-CJ-involved counterparts.

The addition of criminal justice costs doubled the total system costs per person for these service recipients with serious mental illness. Cost of jail diversion amounted to a small fraction of cost of arrest and incarceration; thus, there is potential for a large cost offset if jail diversion prevents further CJ involvement.

Introduction and Background

Between 1982 and 2007, the population of US prisons and jails nearly quadrupled, from 612,000 to 2.3 million.(1) Decades of increasing incarceration have created, in turn, the massive challenge of community reentry. Over 700,000 adults are being released from prison each year(4) and more than 5.1 million are currently on probation or parole in the US. The intersection of crime with substance abuse and mental illness—in an era of constrained resources for community-based treatment—has contributed to large numbers of people with major psychiatric impairments becoming involved with the criminal justice (CJ) system. Almost 1 in 5 incarcerated adults has a diagnosable serious mental illness (SMI), many with co-occurring alcohol and drug abuse problems.(2) Approximately 1.9 million persons with SMI enter U.S. jails annually; many continue to cycle repeatedly through the criminal justice system.(3)

Justice-involved individuals with disabling psychiatric illnesses and addiction disorders face daunting barriers to recovery and community reintegration. States' public mental health and substance abuse services departments, correction systems, and social welfare programs face parallel challenges in serving this population. A small but visible subgroup of SMI ex-offenders are frequently involved with the police, chronically unemployed, sometimes homeless, and may also revolve in and out of acute psychiatric hospitals. These individuals incur high public costs and may pose risks to public safety, but also pay an enormous human toll in terms of their own quality of life and lost productivity. A history of criminal justice involvement—especially with a

pattern of relapse and recidivism—affects long-term chances for employment, income, social capital, and general wellbeing over the life course.(5-13)

To what extent—how “deeply”—are people with SMI involved with the criminal justice system and how much does this cost states? While much is known about the general problem of criminal justice involvement in people with SMI, far less is known about the specific and complex patterns of public-sector services utilization in different system components, and of the characteristics of subgroups with different patterns of involvement. Also lacking are comprehensive estimates of the costs of criminal justice involvement among people with SMI, and the distribution of such costs across key state agencies that deliver human services.

This report presents the results of a comprehensive study of the patterns and costs of criminal justice involvement among adults with schizophrenia or bipolar disorder served in Connecticut’s public mental health and addiction services department. The cost perspective of this study is costs to state agencies. Cross-agency records were matched and merged to identify a population of 25,133 persons with SMI, including 6,904 who were involved with the criminal justice system in some way, and 18,229 who were not involved, during a two-year period, 2005-2007. Unit costs for all relevant criminal justice and behavioral health and addiction service categories were calculated and combined with utilization data to provide a fairly complete picture of public costs, by state agency payer, for those with and without justice involvement.

Human Subjects Research Reviews

All research activities involving the use of identified private health information for this study were reviewed and approved by the relevant jurisdictional Institutional Review Boards (IRBs) in Connecticut. These included the IRBs of the University of Connecticut Health Center, the University of Connecticut at Storrs, and the Connecticut Department of Mental Health and Addiction Services. Investigators at Duke University School of Medicine received only de-identified data and the Duke IRB declared the study exempt from Human Subjects Research Review with respect to the activities of the Duke Investigators. This falls under OHRP exemption 4, as it involves *“the collection and study of existing data recorded by the investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.”*

Research Questions

The study addressed the following main research questions:

1. *Criminal Justice Involvement*: What percentage of persons with SMI is involved in the CJ system, and what is the extent of their involvement?
2. *Characteristics*: What are the demographic and diagnostic profiles of persons with SMI involved with the CJ system compared to those not involved?
3. *Services Utilization*: What types of services are used by persons with SMI involved in the CJ system, as contrasted to those not involved in the CJ system?
4. *Cost*: What is the cost (to a state and to different divisions of a state) of criminal justice involvement by persons with SMI?

Study Design and Methods

State Selection. Connecticut offers several advantages for an informative cost study of criminal justice and public mental health services utilization using matched administrative records. First, while Connecticut is a geographically small state, it has a diverse population with a broad mix of racial-ethnic backgrounds, residing in both urban and rural areas. Second, the state has developed relatively progressive human service systems, with innovative programs for identifying and assisting justice-involved persons with mental illness; other states should be able to extrapolate results from this study to estimate their own costs and plan similar interventions for the targeted populations. Third, whereas many states have divided administrative systems for local jails and state prisons (making the collection of comprehensive justice data unwieldy and expensive), Connecticut has organized all its criminal detention and correction facilities under a single central authority with a common data system. Finally, the state maintains reliable information systems with common identifiers across the relevant state agencies, allowing valid matching of records across these different agencies' service systems.

Study Population. The study population was defined to include all adult clients of the Connecticut Department of Mental Health and Addiction Services (DMHAS) who met two conditions: (1) received services in the publically-operated or funded system of care during 2005-2007; and (2) had a chart diagnosis of schizophrenia-spectrum disorder or bipolar disorder. These inclusion diagnoses were chosen because they could be considered strong indicia of severe mental illness that is exogenous (i.e., independent of, or not caused by) the distressing circumstances of criminal justice involvement. A cross-agency search of matching records identified 25,133 individuals meeting study criteria.

Data Sources. Several state agencies' administrative databases were queried for matching records of the sample members in order to acquire the necessary data for the analysis. The DMHAS database provided administrative records of state-operated or -funded hospital and residential facility stays, halfway-house days, outpatient treatment encounters, case management services, and forensic services. The Department of Social Services (DSS) provided claims data for Medicaid and ConnPace—a state prescription medication program for the elderly and disabled—with service procedure codes and payment amounts. The Department of Public Safety (DPS) indirectly provided (via DMHAS) data on arrests for convicted offenses, including dates of arrest, statutory charges, and offense class. The Department of Correction (DOC) provided data on incarceration days, parole days, and halfway-house days, including dates of admission and discharge and movement from one facility or unit to another when that occurred. The Court Supported Services Division (CSSD) provided data on jail diversion participation, probation days, and civil commitment. Finally, the Correctional Managed Health Care (CMHC) program provided medical and mental health treatment data for a random sample of 200 justice-involved individuals, including detailed chart-abstracted information on behavioral health services and prescriptions for state-funded medications. These data were merged on unique identifiers, with a mix of exact and probabilistic matches, and configured in person-month format with multiple observations per person, i.e., a separate record or row of data for each month that the person was in the study window.

Measures of Services Utilization and System Involvement. Three types of measures were constructed for describing justice involvement and services utilization by person-month. First, dichotomous event indicators—i.e., whether a given type of event or contact occurred within a

month—allowed the calculation of monthly prevalence of arrests, incarceration, inpatient hospitalization, and other relevant categorical variables. Second, indicators of duration—e.g., number of days incarcerated, days hospitalized, days on probation—allowed us to characterize the episodic nature of involvement and utilization; calculate the number of days in the community; and adjust for time at risk for relapse and recidivism. Third, ordinal or continuous indicators of intensity and severity were included, such as the number of service visits and hierarchy of criminal offense.

Unit Costs Measures. Several different methods of estimating unit costs were used, depending on data sources, setting and payer. Per diem costs for incarceration, probation, and parole were supplied by the Department of Correction. Average cost of an arrest (including costs for police, booking, court, attorney, and sheriff transportation) was estimated from a previous relevant study in the literature on CJ involvement among people with SMI and substance abuse disorders, with inflation adjustment to 2007 dollars. (14)

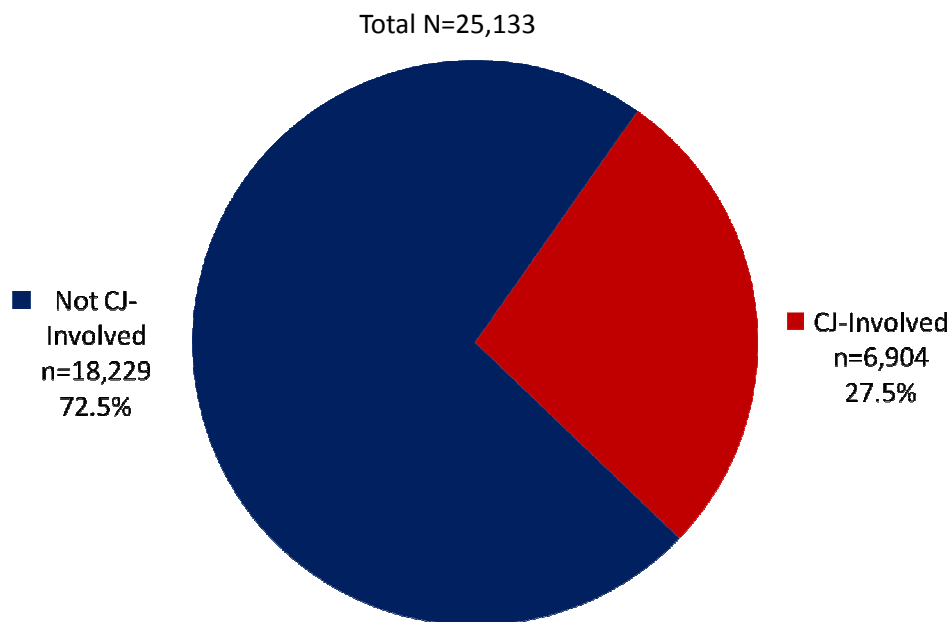
For inpatient and outpatient mental health treatment covered by Medicaid, the dollar amounts of each paid claim were used to indicate the cost of service; the fact that Medicaid reimbursement amounts may have underestimated providers' incurred costs is a limitation to this method. The specific amount of cost sharing with Medicare was not available, but we can make a general estimate of the impact of uncounted Medicare payments on the overall analysis. There is no reason to suspect a systematic bias from dual eligibility in the comparisons of mental health utilization and costs between justice-involved and not-justice-involved persons.

Mental health services costs not covered by Medicaid were funded by the state through the Department of Mental Health and Addiction Services. Unit costs of these services were calculated in detail using detailed budgetary information supplied by DMHAS.

Analysis. Descriptive statistics (event counts, frequency, duration, intensity) are presented both for criminal justice involvement and mental health services utilization. For our purposes, duration is measured in days and intensity is measured in visits or number of billed services. Utilization events and quantities measured during the study period are multiplied by corresponding unit costs for each category and then summed across people and categories to obtain total costs by study group. Comparisons in services utilization patterns and costs are made between the justice-involved and not involved groups, across service-sector and payer categories. Differences in patterns of utilization across the CJ-involved and not involved groups were tested for statistical significance using Chi-square test statistic to detect differences in proportions and t-tests for differences in means.

Nature and Extent of Criminal Justice Involvement

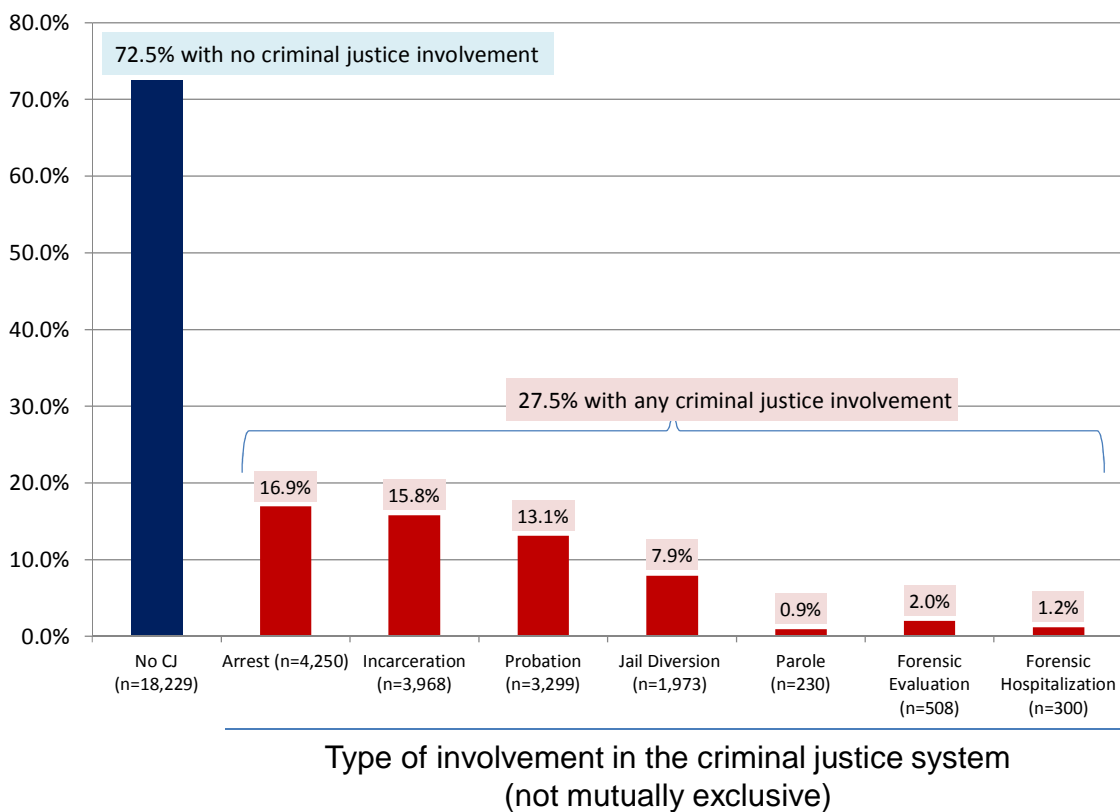
Exhibit 1. Proportion of SMI service recipients with any criminal justice involvement and no involvement in 2006-2007



Just over one quarter of the sample had at least one type of involvement in the criminal justice system during 2005-2007 (Exhibit 1). CJ involvement was defined as having at least one of the following events during the study period: *an arrest that resulted in a criminal conviction; any period of incarceration; time spent on probation or parole; participation in a jail diversion program; forensic mental health involvement such as an evaluation for competency to stand trial in a criminal matter, spending time in a forensic psychiatric hospital for restoration of competency to stand trial, or being found not guilty by reason of insanity.*

Prevalence of involvement with individual components of the justice system varied considerably. Arrest and incarceration were the most prevalent (17% and 16%, respectively) and forensic hospitalization was the least prevalent (1%), as shown in Exhibit 2. Considering the CJ group separately, 62% of the group had an arrest during study period; 57% had some jail

Exhibit 2. Percent with any criminal justice involvement, by category

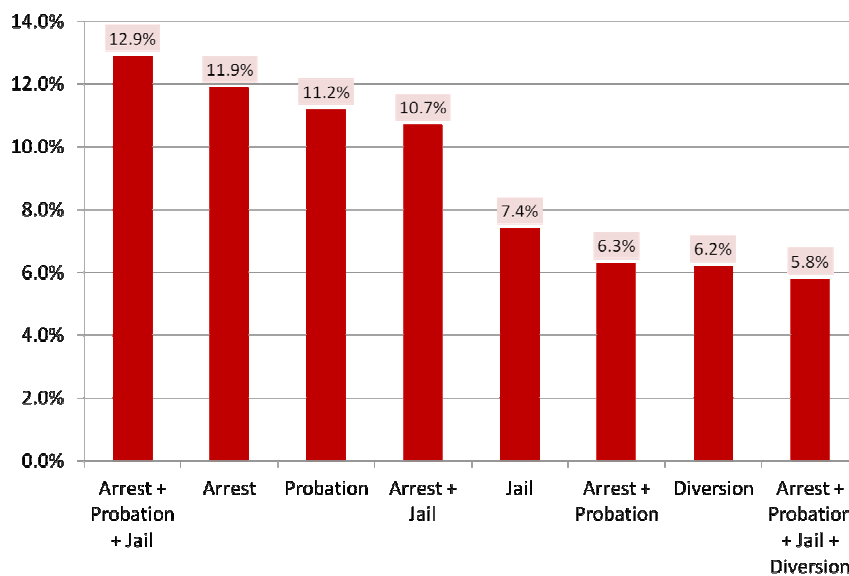


time; 4% had a forensic hospital. With respect to community corrections, it should be noted that probation is more common than parole partly because Connecticut uses probation as both an alternative to incarceration and as a post-incarceration disposition; sentences may be split between time incarcerated and time in the community under supervision.

A variety of patterns of involvement with different components of the criminal justice system was found in the sample during the study time period, as displayed in Exhibit 3.

Exhibit 3. Most frequent patterns of involvement with CJ system components within 2-year study period

Percent of CJ-involved sample with pattern



The most frequent specific pattern (about 13% of the CJ-involved sample) was having at least one arrest combined with some period of

incarceration as well as probation time during the study window. The most infrequent pattern of involvement (about 5% of the sample) was having an arrest combined with both incarceration, probation, and participation in a jail diversion program.

These data must be interpreted with some caution, bearing in mind that involvement in other events could have occurred either recently before or after the study window of 2005 – 2007. For instance, whereas incarceration was the only form of CJ involvement found for 7% percent of the CJ-involved sample, these individuals would have had an arrest record before the study window began. Thus, in the context of long “careers” of CJ involvement, these snapshots of specific combinations of involvement are somewhat arbitrary. Still, they are useful for seeing the underlying drivers of cost within the specified study window.

Moving from prevalence to *extent* of CJ involvement, we examined a number of indicators of frequency, intensity or duration associated with the different types of criminal

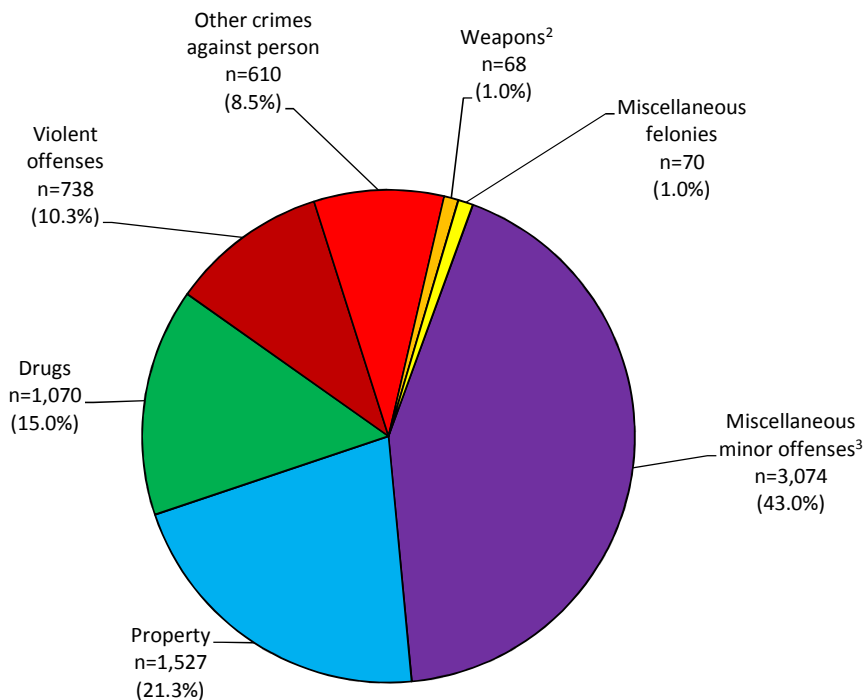
justice events and categories. As shown in Exhibit 4, among those with any arrests, the average person had about two (1.7) arrests. Among those who spent at least some time on probation, the average individual spent more than a year—more than half the study period—on probation (458 days.) The average number of forensic hospital days is affected by some individuals who spent virtually the entire study period in a forensic facility. However, the distribution also included some persons with very few forensic hospital days, which accounts for the large standard deviation of 285 days.

Exhibit 4. Average amount of criminal justice involvement over 2-year study period, per person with any involvement in category (CJ-involved sample; n=6,904)

CJ Category	Mean	St. Dev.
Arrests	1.7	1.1
Incarceration days	157.2	165.8
Probation days	458.2	209.0
Parole days	305.5	218.4
Forensic hospital days	249.1	264.4
Forensic evaluations	1.2	0.5

Exhibit 5 displays the distribution of arrests by type of offense. As the pie chart makes clear, the largest proportion of arrests (43%) was composed of mostly minor offenses such as trespassing, breach of peace, prostitution, and technical violations of probation or parole. However, it also includes driving while intoxicated (DWI), which varies in severity of offense. It is important to note that the unit of analysis here is arrests, not people, and that some individuals accounted for multiple arrests.

Exhibit 5. Types of offenses: Distribution of arrests by category (N=7,157 arrests¹)



¹ Does not include arrests where charges were dismissed.

² Includes weapons charges such as illegal possession, transfer, sale, or manufacture of weapons; does not include all possible instances of weapons involvement in the commission of other crimes

³ Includes trespassing, breach of peace, criminal mischief, prostitution, DWI, false statements, technical violations of probation/ parole, failure to appear, and others.

Exhibit 6 displays the demographic and diagnostic distributions of the CJ-involved and not CJ-involved groups. With respect to demographics, the results show that CJ-involved individuals in the sample were significantly younger (average age 36 vs. 44 years of age); more likely to be male (67% vs. 46%); and more likely to be African American (23% vs. 13%) compared to their not-CJ-involved counterparts. In terms of major qualifying psychiatric diagnosis, the CJ-involved sample was more likely to have bipolar disorder than schizophrenia (63% and 37%, respectively), whereas the pattern of major diagnoses was reversed for the non-CJ-involved sample (47% with schizophrenia and 53% with bipolar disorder.) The CJ-involved sample was also far more likely to have a co-occurring substance abuse disorder than the non-CJ-involved sample (65% compared to 28% with alcohol or other drug use disorder.)

Exhibit 6. Demographic and clinical characteristics of sample

	CJ-involved (n = 6,904; 27.47%)		Not CJ-involved (n = 18,229; 72.53%)		Total (n = 25,133)	
	Mean	SD	Mean	SD	Mean	SD
Age in years	35.7	(10.5)	43.5	(13.8)	41.4	(13.4)
	N	(%)	N	(%)	N	(%)
Sex						
Male	4,477	(66.8%)	8,447	(46.3%)	12,906	(51.4%)
Female	2,427	(35.2%)	9,782	(53.7%)	12,209	(48.6%)
Race						
White	3,926	(56.9%)	11,529	(63.2%)	15,455	(61.5%)
African American	1,556	(22.5%)	2,398	(13.2%)	3,954	(15.7%)
Hispanic	1,163	(16.8%)	2,708	(14.9%)	3,871	(15.4%)
Other	259	(3.8%)	1,594	(8.7%)	1,853	(7.4%)
Primary diagnosis						
Schizophrenia	2,582	(37.4%)	9,745	(53.5%)	12,327	(49.0%)
Bipolar	4,322	(62.6%)	8,484	(46.5%)	12,806	(51.0%)
Dual diagnosis						
Yes	4,512	(65.4%)	5,183	(28.4%)	9,695	(38.6%)
No	2,392	(34.6%)	13,046	(71.6%)	15,438	(61.4%)

Difference in proportions tested with Chi-square statistic; * p<.05, ** p<.01

Criminal Justice Costs

Exhibit 7 presents the total costs, and costs per person, for each category of CJ involvement and for the average CJ-involved person across all categories. The average CJ-involved person in the sample incurred criminal justice costs of approximately \$30,000 over the two years of the study.

Exhibit 7. Criminal justice involvement by service type among sub-sample with some criminal justice involvement (n = 6,904 individuals)

	n	Average cost per person involved ¹	Total costs by category ²
Arrests	4,250	\$4,492	\$19,137,818
Incarceration ³	3,968	\$20,913	\$82,984,153
Probation	3,299	\$4,692	\$15,478,323
Parole	230	\$4,209	\$968,114
Jail diversion	1,973	\$2,000	\$3,946,000
Competency evaluation ⁴	508	\$523	\$265,132
Forensic hospitalizations ⁴	300	\$287,062	\$86,118,505
Total	6,904	\$30,258	\$208,898,045

¹ Non-zero means.

² Total is calculated as the sum of costs of all individuals with costs over all categories.

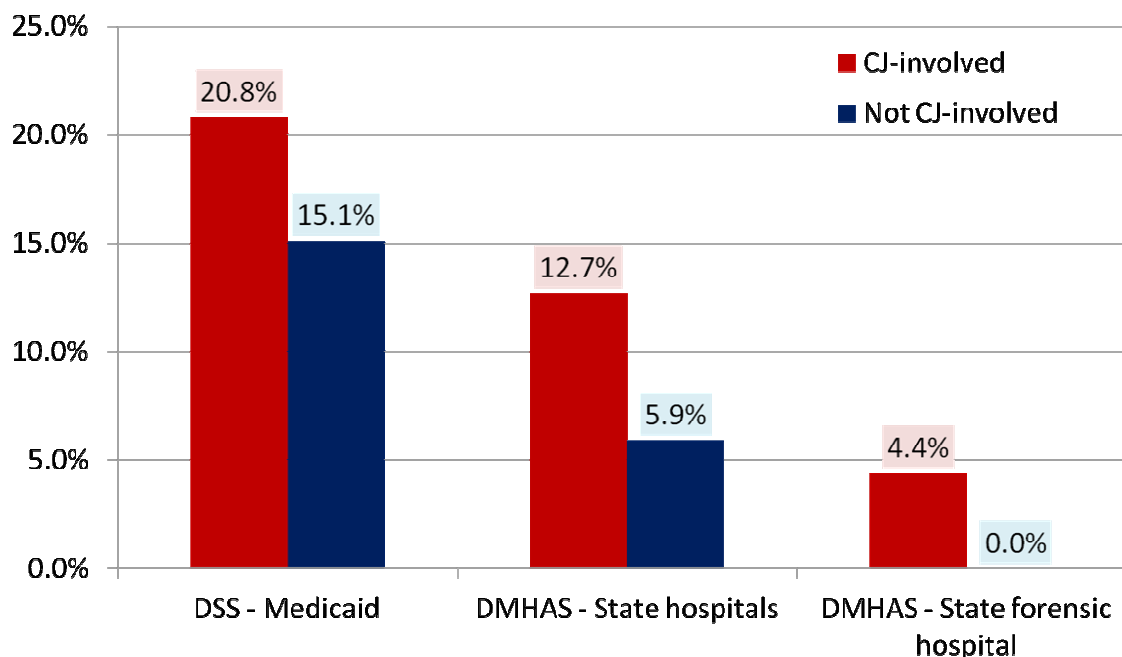
³ Incarceration per diem costs include an estimate of Correctional Managed Health Care treatment costs.

⁴ Costs for competency evaluations and forensic hospitalizations are paid by DMHAS.

Mental Health Services Utilization: Inpatient Treatment

Exhibit 8 displays a comparison of the proportions in each sample group with any inpatient psychiatric treatment during the study period, by payer. For each payer category, the CJ-involved sample was more likely to have at least some inpatient treatment. Rates of

Exhibit 8. Percent with any inpatient treatment for mental health or substance abuse during 2 year study period, by criminal justice involvement and state payer



utilization were highest in both groups for Medicaid-paid hospitalization. The relative difference in any utilization between the two groups was greatest for DMHAS state hospitals, where the CJ-involved sample was more than twice as likely to have at least some utilization. Only a small proportion (about 4%) of the CJ involved sample were treated in a state forensic

hospital. (The non-CJ-involved group had no forensic hospitalizations, by definition, since forensic hospital treatment would constitute criminal justice involvement.)

Exhibit 9 summarizes both the *prevalence* of any hospitalization and the *average amount* of inpatient treatment for the sample groups by payer category, and then shows the daily and per-person costs associated with these rates of hospitalization over two-year study period. The CJ-involved group was more likely than the non-CJ-involved group to have any Medicaid hospitalizations (21% vs. 15%) or any DMHAS hospitalizations (13% vs. 6%), despite the fact that many of the CJ-involved individuals were incarcerated during part of the study period and thus had shorter times at risk of hospitalization in the community. However, among those hospitalized, the non-CJ-involved group had more days of Medicaid-paid inpatient treatment (average 26 vs. 24 days), and a far greater number of DMHAS (non-Medicaid) inpatient treatment (average 125 vs. 38 days).

Exhibit 9. Mental health and substance abuse inpatient hospital treatment utilization and cost, by criminal justice involvement and state payer

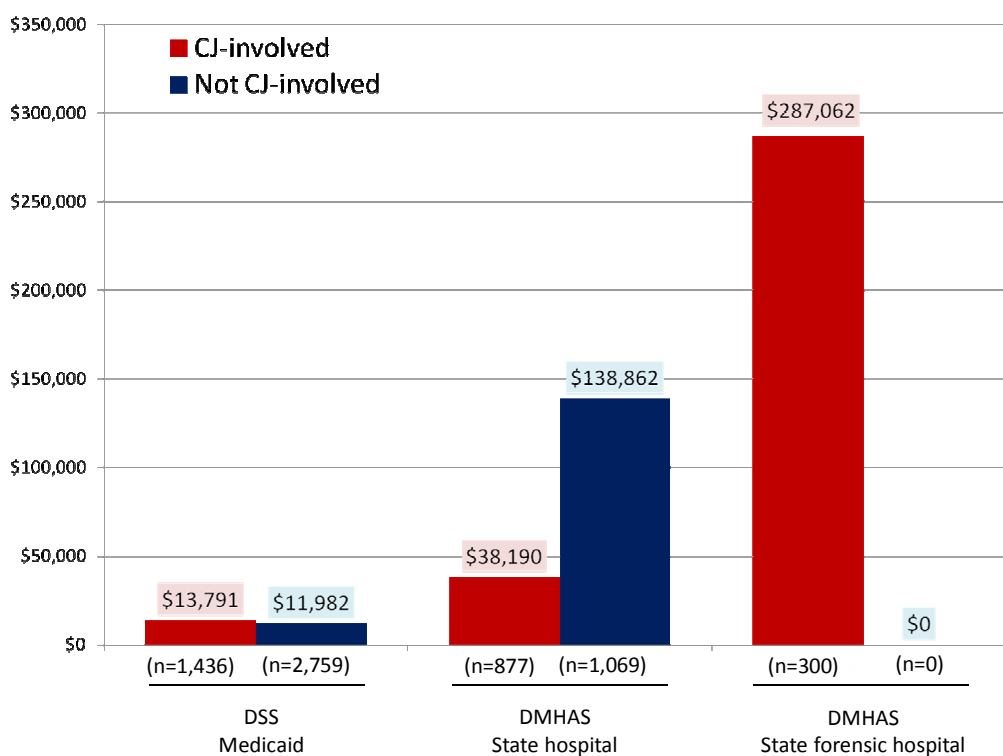
Sample group and payer	Utilization				Cost		
	N	Percent	Days		Per day	Per person	Total
Mean			SD				
CJ-involved (n = 6,904; 27.5%)							
Medicaid	1,436	20.8%	23.6	32.77	\$565	\$13,791	\$19,804,575
DMHAS - non-forensic	877	12.7%	37.8	94.24	\$823	\$38,190	\$33,492,786
DMHAS - forensic	300	4.3%	249.0	264.44	\$1,128	\$287,062	\$86,118,505
Not CJ-involved (n = 18,229; 72.5%)							
Medicaid	2,759	15.1%	26.1	45.14	\$482	\$11,982	\$33,058,349
DMHAS	1,069	5.9%	124.7	223.82	\$878	\$138,862	\$148,442,953

This could have been due partly to the fact that schizophrenia was more common in the not-CJ-involved group, and may also reflect the fact that people with Medicaid coverage were more likely to have schizophrenia than bipolar disorder as a primary diagnosis, regardless of CJ-involvement.

Inpatient Treatment Costs

The data suggest that the not-CJ-involved group tended to have fewer, but longer admissions, while the CJ-involved group had a greater number of acute admissions of short duration. To reiterate, this finding that may be associated with clinical and diagnostic differences between the groups, such as the greater preponderance of bipolar disorder and

Exhibit 10. Average per-person cost of MH/SA inpatient treatment over 2-year study period, by criminal justice involvement and state payer



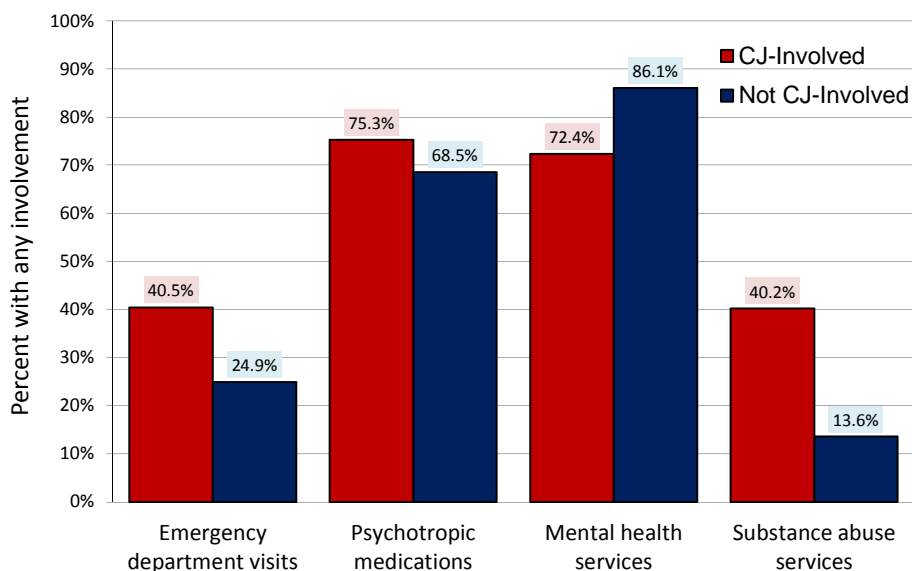
substance abuse comorbidity in the CJ-involved group, compared to the greater preponderance of non-comorbid schizophrenia among those without CJ involvement. In any event, these

patterns of utilization translated into much higher average DMHAS inpatient costs for those *without* CJ involvement than those with CJ involvement (about \$139,000 per person vs. \$38,000 per person, respectively.) A notable exception was seen in the category of forensic hospital patients—typically those awaiting restoration of competency to stand trial, or having been found not guilty by reason of insanity—where the average involved patient had a very high number of days hospitalized (average 249 days), and correspondingly high costs to DMHAS (average about \$287,000), as shown in Exhibit 10.

Outpatient Services Utilization

Regarding outpatient services, Exhibit 11 shows that the CJ-involved sample had higher rates of utilization of emergency department services, psychotropic medications, and substance abuse services, relative to the non-CJ-involved sample. However, the non-CJ-involved group had a slightly higher prevalence of utilization of other outpatient mental health services.

Exhibit 11. Percent with any utilization of outpatient services, by CJ involvement and service type



Outpatient Services Costs

Exhibit 12 displays in more detail the study's findings on outpatient services: prevalence of any utilization, average number of services used per involved individual, and associated costs, by sample group and payer category (Medicaid and DMHAS.) Results show generally that the non-CJ-involved sample used DMHAS outpatient services more intensively than the CJ-involved sample did. However, this pattern was not seen for substance abuse treatment, where involved individuals in both sample groups used services at similar levels of intensity. Sample differences in service intensity for Medicaid-paid outpatient services were also generally less pronounced.

Average outpatient costs per involved individual were similar in both groups. However, a notable exception was seen for outpatient services delivered in residential treatment facilities, where not-CJ-involved individuals had much higher average costs than CJ-involved individuals: about \$58,000 per person vs. about \$28,000 per person, respectively, for DMHAS outpatient services in residential treatment facilities; and about \$24,000 per person vs. about \$14,000 per person, respectively, for Medicaid-paid services in residential treatment facilities.

Exhibit 12. Mental health and substance abuse outpatient treatment utilization and cost, by criminal justice involvement and state payer

Payer and service category	CJ-involved (n = 6,904; 27.5%)						Not CJ-involved (n = 18,229; 72.5%)					
	Number	Percent	Mean	SD	Mean cost per person	Total cost for category	Number	Percent	Mean	SD	Mean cost per person	Total cost for category
DMHAS: MH and SA services												
Residential treatment	690	10.0%	95.2	151.7	\$28,063	\$19,363,511	995	5.5%	319.5	282.1	\$58,068	\$57,777,661
Case management	1,610	23.3%	70.2	100.2	\$5,666	\$9,122,761	4,708	25.8%	94.0	131.8	\$6,632	\$31,222,178
Other outpatient services/therapies	4,013	58.1%	64.5	157.7	\$3,662	\$14,695,016	13,380	73.4%	123.0	247.0	\$5,600	\$74,914,008
Any mental health services	4,157	60.2%	96.2	198.4	\$7,449	\$30,966,593	14,566	79.9%	163.5	291.3	\$10,855	\$158,109,637
Any substance abuse services	1,007	14.6%	37.2	58.3	\$12,130	\$12,214,695	706	3.9%	35.6	60.1	\$8,221	\$5,804,211
Any MH or SA services ²	4,695	68.0%	93.2	190.4	\$9,197	\$43,181,288	14,934	81.9%	161.1	288.6	\$10,977	\$163,913,848
Medicaid: MH and SA services												
Residential treatment ¹	83	1.2%	7.8	6.6	\$14,036	\$1,164,949	197	1.1%	13.2	9.0	\$23,794	\$4,687,414
Case management	1,178	17.1%	8.4	7.4	\$2,772	\$3,265,072	4,322	23.7%	11.5	9.0	\$3,801	\$16,427,778
Other outpatient services/therapies	3,803	55.1%	26.6	37.4	\$2,025	\$7,699,431	10,208	56.0%	25.2	33.6	\$1,074	\$10,962,822
Any mental health services	3,218	46.6%	23.1	27.8	\$2,655	\$8,545,276	10,347	56.8%	26.3	29.9	\$2,810	\$29,070,086
Any substance abuse services	2,246	32.5%	16.7	29.3	\$1,596	\$3,584,177	2,018	11.1%	18.3	35.9	\$1,491	\$3,007,928
Any MH or SA services ²	3,909	56.6%	28.6	38.1	\$3,103	\$12,129,453	10,764	59.0%	28.8	34.8	\$2,980	\$32,079,133
Medicaid: ED visits and medications												
Emergency Department visits	2,794	40.5%	5.8	8.0	\$575	\$1,606,950	4,542	24.9%	4.0	6.4	\$421	\$1,911,746
Psychotropic medications ³	5,197	75.3%	312.4	215.5	\$3,539	\$18,393,440	12,493	68.5%	455.6	235.2	\$5,344	\$66,761,291
Psychotropic medications (ConnPace)	94	1.4%	217.1	163.8	\$2,195	\$206,353	963	13.9%	266.9	200.7	\$2,393	\$2,304,702

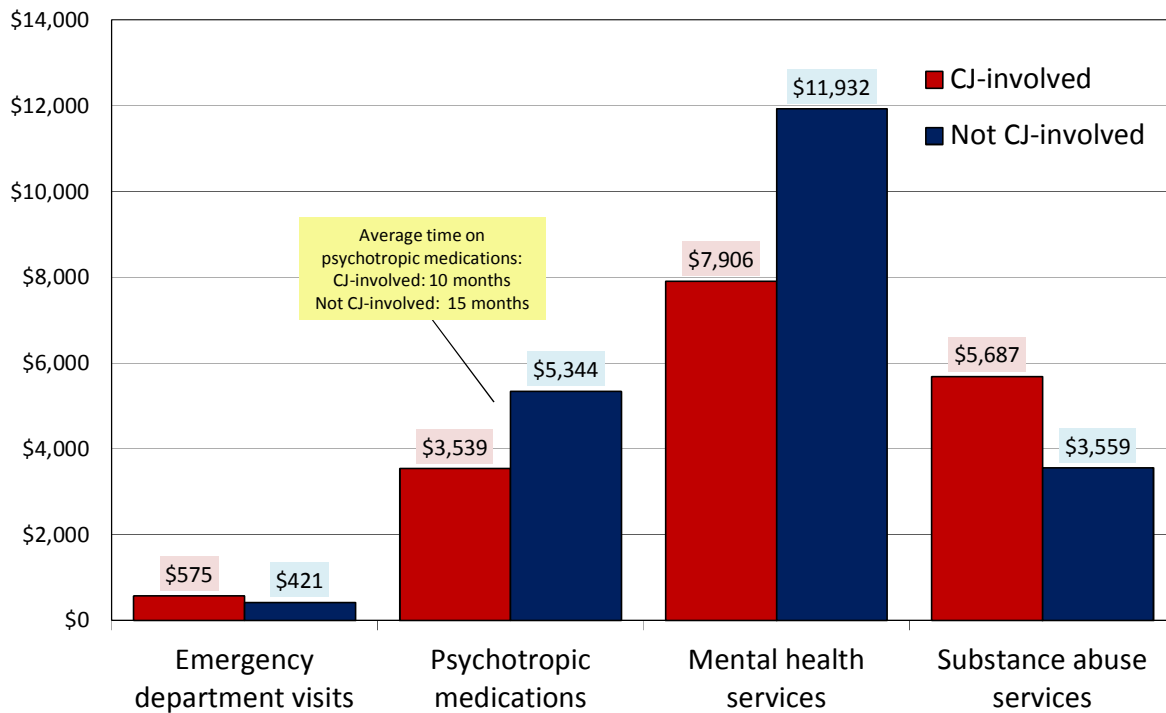
¹Outpatient costs for residential treatment are mostly for evaluations performed at residential treatment facilities.

²Costs for "any MH or SA services" represent the sum of costs for residential treatment, case management, and other outpatient services and therapies. However, numbers of individuals utilizing each type of service cannot be summed because some individuals used more than one type of service.

³Medicaid psychotropic medications include both outpatient and inpatient prescribed medications.

Exhibit 13 summarizes sample differences in outpatient service costs across all service categories, combining DMHAS and Medicaid-paid treatment. Of note, the not-CJ-involved sample incurred higher costs for psychotropic medications—nearly \$2,000 higher per treated individual, on average—than did the CJ-involved sample; this difference may be explained largely by the fact that the CJ-involved sample had prescriptions in place for an average of only 10 months, compared to 15 months in the not-CJ-involved sample.

Exhibit 13. Average cost of select outpatient services, by CJ involvement and service type (average per-person with any utilization)



Also of note, the not-CJ-involved sample incurred higher average costs for overall mental health services than did the CJ-involved sample—about \$12,000 per person vs. about \$8,000 per person, respectively.

Substance Abuse Services Utilization and Costs

Exhibit 14 displays rates of utilization, intensity, and costs for any inpatient, outpatient, or prescription drug treatment for substance abuse, by payer category. The data show that the CJ-involved sample was about 4 times more likely to receive any substance abuse treatment than the not-CJ-involved sample, in both the DMHAS and Medicaid-paid categories. Considering DMHAS-paid substance abuse services, the average costs per person involved were about \$4,000 higher for CJ-involved individuals than for not-CJ-involved individuals (about \$13,000 vs. about \$9,000 per person.) The average costs for Medicaid-paid substance abuse services were considerably lower overall, and the differences between sample groups were also less pronounced than with DMHAS services (about \$1,800 vs. about \$1,600 per person involved.)

Exhibit 14. Any substance abuse services and costs

Payer and service category	CJ-involved (n = 6,904; 27.5%)				Not CJ-involved (n = 18,229; 72.5%)			
	Number	Percent	Mean cost per person	Total cost for category	Number	Percent	Mean cost per person	Total cost for category
Any Medicaid SA services	2,524	35.6%	\$1,823	\$4,601,820	2,329	12.8%	\$1,583	\$3,687,193
Any DMHAS SA services	1,185	17.2%	\$12,583	\$14,910,902	794	4.36%	\$8,699	\$6,907,282

Subsample Study of Mental Health Treatment with the Department of Correction

A randomly-selected subsample of n=200 CJ-involved individuals was selected for a more intensive review of mental health services utilization within DOC. In Connecticut, the Correctional Managed Health Care (CMHC) program provides capitated health services to persons in DOC custody. Manual reviews of medical charts were conducted to assess the frequency of services delivered, including acute inpatient-level care, i.e., 24-hour medical care

delivered in an infirmary or specialized residential treatment setting within the prison, and prescribed psychotropic medications.

About 1 in 10 (n=19; 9.5%) of the subsample of CJ-involved individuals with SMI experienced an acute psychiatric admission while incarcerated during the 2-year study window. Among those admitted, the average number of admissions was 2.1 admissions (standard deviation, 2.5), and the average number of days of inpatient-level care was 67.8 days (standard deviation, 135.1). Within the same CJ-involved subsample, 66 people (33%) had at least 1 day on prescribed psychotropic medications within DOC during study period. Among those with any medications prescribed, the average number of psychotropic medication prescriptions was 8 prescriptions, representing an average of 216 days' supply per person on medication during the 2-year study period. For purposes of cost analysis, the costs of these services are folded into the correctional institutions' per diem estimates, i.e., as a "surcharge" shared by all incarcerated individuals.

Total System Costs

A big-picture summary of costs across all categories of mental health and criminal justice services is shown in Exhibit 15. Average inpatient and outpatient treatment costs were slightly higher for the CJ-involved sample than for the not-CJ-involved sample—about \$31,000 vs. about \$24,000 per person, respectively, over the study period. However, when the costs of criminal justice services were added in, the total system costs for the CJ-involved sample came to about \$49,000 per person involved, or roughly twice the costs per person in the not-CJ-involved sample. Taking account of the numbers of persons in each sample, the total system

costs were about \$446 million for the not-CJ-involved individuals (n=18,229), and about \$338 million for the much small number of CJ-involved individuals (n=6,904).

Exhibit 15. Summary of all categorical costs for treatment and criminal justice services for the CJ-involved and not-CJ involved samples

Service Category	CJ involved (n = 6,904)			Not CJ involved (n = 18,229)		
	n	Total cost for category	Cost per person involved	n	Total cost for category	Cost per person involved
Inpatient MH/SA (Medicaid)	1,436	\$19,804,575	\$13,791	2,759	\$33,058,349	\$11,982
Inpatient MH/SA (DMHAS)	877	\$33,492,786	\$38,190	1,069	\$148,442,953	\$138,862
Inpatient forensic (DMHAS)	300	\$86,118,505	\$287,062	0	0	0
Emergency department visits	2,794	\$1,606,950	\$575	4,542	\$1,911,746	\$421
Medications	5,197	\$18,393,440	\$3,539	12,493	\$66,761,291	\$5,344
Outpatient MH	4,998	\$39,511,869	\$7,906	15,687	\$187,179,722	\$11,932
Outpatient SA	2,778	\$15,798,872	\$5,687	2,476	\$8,812,140	\$3,559
Treatment subtotal	6,904	\$214,726,997	\$31,102	18,229	\$446,166,202	\$24,476
Arrests	4,250	\$19,137,818	\$4,503.02	0	0	0
Incarceration	3,968	\$82,984,153	\$20,913.35	0	0	0
Probation	3,299	\$15,478,323	\$4,691.82	0	0	0
Parole	230	\$968,114	\$4,209.19	0	0	0
Jail diversion (excluding treatment costs)	1,973	\$3,946,000	\$2,000.00	0	0	0
Forensic evaluations	509	\$265,132	\$520.89	0	0	0
Criminal justice subtotal	6,904	\$122,779,540	\$17,784	\$0	\$0	\$0
Total across categories	6,904	\$337,506,537	\$48,886	18,229	\$446,166,202	\$24,476

Exhibit 16 displays the total system costs by state payer, with subtotals for treatment costs and criminal justice services in the two samples.

Exhibit 16. Mental health and criminal justice costs for CT SMI sample by state payer

Service sector/type	STATE PAYER				TOTAL
	DMHAS	DSS/ Medicaid	DOC	Judicial/ Police ¹	
CJ-INVOLVED SAMPLE					
<u>Criminal justice services</u>					
arrest				\$19,137,188	\$19,137,188
incarceration			\$82,984,153		\$82,984,153
parole			\$968,114		\$968,114
probation				\$15,478,323	\$15,478,323
competency evaluations	\$265,132				\$265,132
competency restoration (forensic hosp)	\$86,118,505				\$86,118,505
jail diversion			\$3,946,000		\$3,946,000
Subtotal CJ services	\$86,383,637		\$87,898,267	\$34,615,511	\$208,897,415
<u>Mental health and substance abuse services²</u>					
inpatient	\$33,492,786	\$19,804,575			\$53,297,360
civil commitment	\$47,940				\$47,940
emergency department visits		\$1,606,950			\$1,606,950
community residential programs	\$19,363,511	\$1,164,949			\$20,528,460
case management	\$9,122,761	\$3,265,072			\$12,387,834
other outpatient services/therapies	\$14,695,016	\$7,699,431			\$22,394,447
medications		\$18,599,793			\$18,599,793
Subtotal MH and SA services	\$76,722,014	\$52,140,771			\$128,862,784
Subtotal CJ-involved sample	\$163,105,651	\$52,140,771	\$87,898,267	\$34,615,511	\$337,760,199
NOT CJ-INVOLVED SAMPLE					
<u>Mental health and substance abuse services</u>					
inpatient	\$148,442,953	\$33,058,349			\$181,501,302
civil commitment	\$95,880				\$95,880
community residential programs	\$57,777,661	\$4,687,414			\$62,465,076
emergency department		\$1,911,746			\$1,911,746
case management	\$31,222,178	\$16,427,778			\$47,649,956
other outpatient services/therapies	\$74,914,008	\$10,962,822			\$85,876,830
medications		\$69,065,993			\$69,065,993
Subtotal non-CJ involved sample	\$312,452,681	\$136,114,103			\$448,566,783
TOTAL	\$475,558,331	\$188,254,873	\$87,898,267	\$34,615,511	\$786,326,983

¹ Includes state and municipal law enforcement. Court involvement for non-CJ involved sample means civil procedures only.

² Costs of behavioral health services provided within DOC facilities are included in per-diem costs for incarceration.

Summarized graphically in Exhibit 17, these data show that DMHAS bore the largest proportion of costs for the two samples combined—approximately \$476 million, or about 61% of the total of approximately \$786 million distributed across the four state agencies during the study period. By comparison, DSS/Medicaid covered nearly one quarter of total system costs, DOC covered about 11%, and the Judicial Department and law enforcement covered just over 4% of total costs.

Exhibit 17. Mental health and criminal justice total costs for Connecticut SMI sample, combined CJ-involved and not CJ-involved samples, by state payer, SFY 2006-2007

Total 2-year cost=\$786,326,983 for N=25,133 individuals

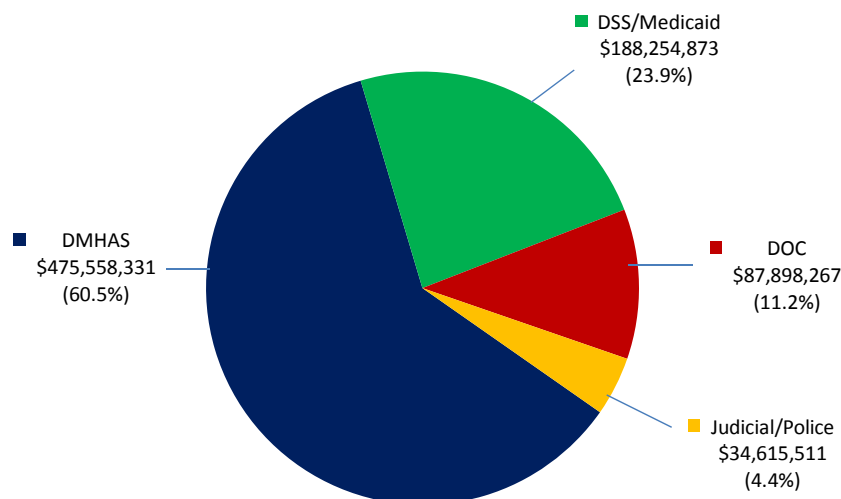
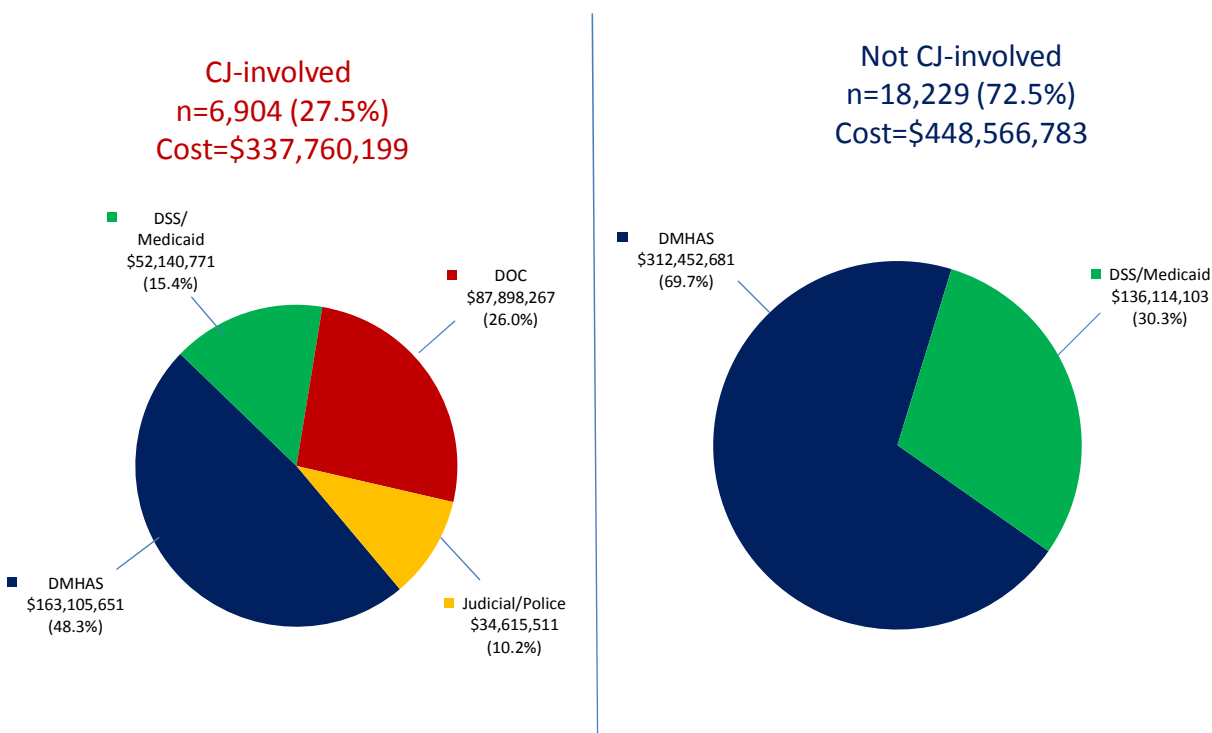


Exhibit 18 displays the breakdown of total costs by state agency payer for the two samples. Of note, DMHAS bore about half the total costs for the CJ-involved sample, and about 70% of costs for the not-CJ-involved sample. By comparison, DOC covered about one quarter of the total costs for the CJ-involved sample alone. DSS/Medicaid covered about 15% of costs for the CJ-involved sample and about 30% of costs for the not-CJ-involved sample. About 10 percent of total costs for the CJ-involved sample were borne by the Judicial Department and law enforcement agencies.

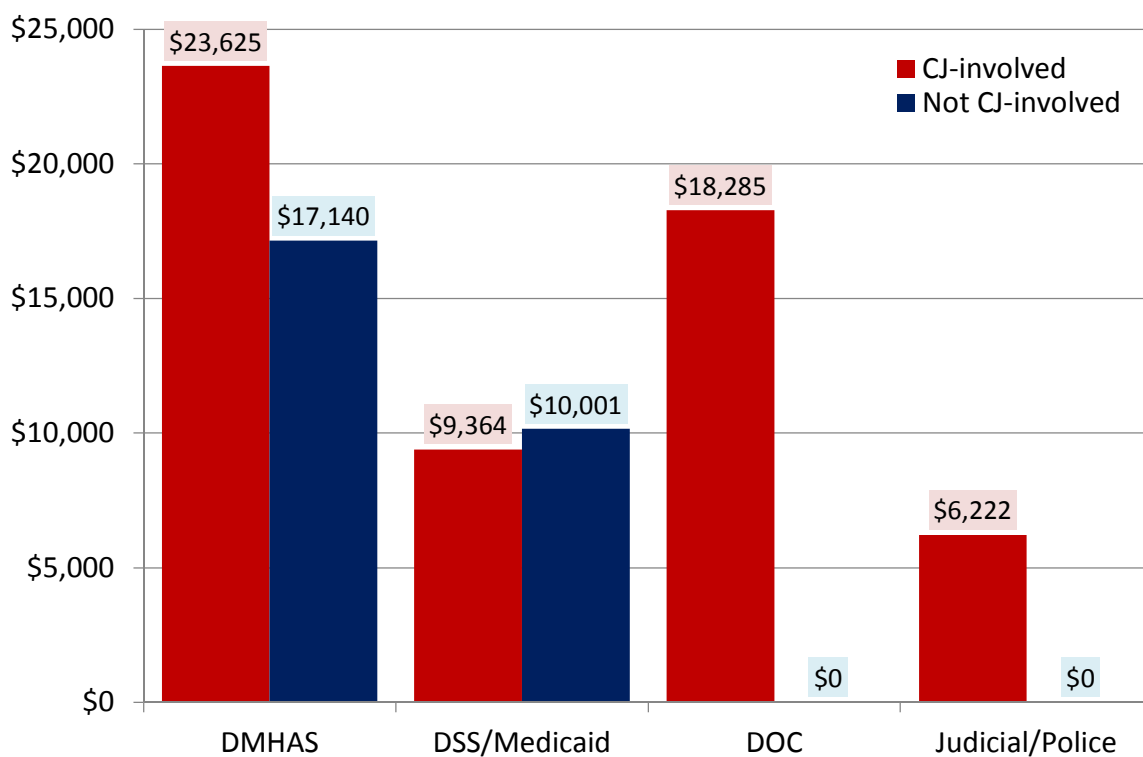
Exhibit 18. Summary of mental health and criminal justice costs for Connecticut SMI sample, by criminal justice involvement and state payer, SFY 2006-2007



Note: These figures are for total costs, unadjusted for number of people served.

Finally, Exhibit 19 summarizes these data on a per-person basis. Of note, DMHAS spent approximately \$8,000 more per person on CJ-involved individuals than not-CJ-involved individuals; however, forensic hospitalization alone was responsible for a large share of the difference in costs. By comparison, DSS/Medicaid paid approximately the same amount per person for the CJ-involved and not CJ-involved samples.

Exhibit 19. State agency costs per person involved, for CJ-involved and not CJ-involved groups



Summary and Conclusions

This report presents the results of the first comprehensive study of the patterns and costs of criminal justice involvement among adults with schizophrenia or bipolar disorder served in a state's public mental health and addiction services agencies. Cross-agency records were matched and merged to identify a population of 25,133 service recipients with serious mental illness. Unit costs for all relevant criminal justice and behavioral health and addiction service categories were calculated and combined with utilization data to provide a complete picture of public costs, by state agency payer, for those with and without justice involvement.

Just over one quarter of the sample had at least one type of involvement in the criminal justice system during 2005-2007. Prevalence of involvement with individual components of the justice system varied considerably, with arrest and incarceration being the most prevalent (17% and 16%, respectively.) Forty-three percent of arrests were in a category of mostly minor offenses such as trespassing, breach of peace, prostitution, DWI, and technical violations of probation or parole.

The CJ-involved sample was significantly younger, more likely to be male, and more likely to be African American than their non-CJ-involved counterparts. The CJ-involved sample was also more likely than the non-CJ-involved sample to have a diagnosis of bipolar disorder and to have a co-occurring substance abuse disorder. The average CJ-involved person in the sample incurred criminal justice-related costs of approximately \$30,000 over the two years of the study, with the highest cost being for incarceration and forensic hospitalization. If forensic costs are excluded, the cost is about \$18,000 per person involved.

Regarding mental health treatment outside the CJ system, the CJ-involved sample was more likely to have at least some inpatient hospitalization. However, among those hospitalized, the non-CJ-involved group had more days of inpatient treatment. Thus, the non-CJ-involved group tended to have fewer, but longer admissions, while the CJ-involved group had a greater number of acute admissions of short duration.

Considering outpatient services, the CJ-involved sample displayed higher rates of utilization of emergency department services, psychotropic medications, and substance abuse services, relative to the non-CJ-involved sample. However, the non-CJ-involved group had a slightly higher prevalence of utilization of outpatient mental health services and, in general, used DMHAS outpatient services more intensively (a greater average number of visits or days under treatment per person involved) than the CJ-involved sample did.

DOC medical records of a randomly-selected subsample of n=200 CJ-involved individuals were subjected to an intensive manual chart review of mental health services utilization while in DOC custody, or under DOC supervision. The Correctional Managed Health Care (CMHC) program provides capitated health services to persons in DOC custody. About 10% of this subsample of CJ-involved individuals with SMI experienced an acute psychiatric admission while incarcerated during the 2-year study window, while 33% were prescribed psychotropic medications within DOC.

The not-CJ-involved sample incurred higher costs for psychotropic medications—nearly \$2,000 higher per treated individual, on average—than did the CJ-involved sample; this difference is partly explained by the fact that the CJ-involved sample had prescriptions in place for an average of only 10 months, compared to 15 months in the not-CJ-involved sample. The

not-CJ-involved sample incurred higher average costs for overall outpatient mental health services than did the CJ-involved sample—about \$12,000 per person vs. about \$8,000 per person, respectively.

The CJ-involved sample was about 4 times more likely to receive any substance abuse treatment than the non-CJ-involved sample, in both the DMHAS and Medicaid-paid categories. Considering DMHAS-paid substance abuse services, the average costs per person involved were about \$4,000 higher for CJ-involved individuals than for non-CJ-involved individuals (about \$13,000 vs. about \$9,000 per person.) The average costs for Medicaid-paid substance abuse services were considerably lower, and the differences between sample groups were also less (about \$1,800 vs. about \$1,600 per person involved.)

The total system costs for the CJ-involved sample came to about \$49,000 per person involved, or roughly twice the costs per person incurred by the not-CJ-involved sample. Taking account of the numbers of persons in each sample, the total system costs amounted to about \$446 million for the not-CJ-involved individuals (n=18,229), and about \$338 million for the CJ-involved individuals (n=6,904).

Of the state agencies involved, DMHAS bore the largest proportion of costs for the two samples combined—approximately \$476 million, or about 61% of the total of approximately \$786 million distributed across the four state agencies during the study period. By comparison, DSS/Medicaid covered nearly one quarter of total system costs, DOC covered about 11%, and the Judicial Department and law enforcement covered just over 4% of total costs. DMHAS bore about half the total costs for the CJ-involved sample, and about 70% of costs for the not-CJ-involved sample. By comparison, DOC covered about one quarter of the total costs for the CJ-

involved sample alone. DSS/Medicaid covered about 15% of costs for the CJ-involved sample and about 30% of costs for the not-CJ-involved sample. About 10 percent of total costs for the CJ-involved sample were borne by the Judicial Department and law enforcement agencies. DMHAS spent approximately \$8,000 more per person on CJ-involved individuals than non-CJ-involved individuals; however, forensic hospitalization alone was responsible for a large share of the difference in costs. By comparison, DSS/Medicaid paid approximately the same amount per persons for the CJ-involved and not CJ-involved samples.

In summary, about 1 in 4 persons with schizophrenia or bipolar disorder in the public system of care in Connecticut were involved with the criminal justice system in some way within a 2-year period. These CJ-involved individuals were younger, more likely to be male, African American, to have bipolar disorder, and to have co-occurring substance abuse disorders. When they were not incarcerated, CJ-involved individuals with SMI were more likely to experience acute psychiatric admissions, but for shorter periods of time—fewer days hospitalized—than their not-CJ-involved counterparts.

The addition of criminal justice costs doubled the total system costs per person for these service recipients with serious mental illness. Cost of jail diversion amounted to a small fraction of cost of arrest and incarceration; thus, there is potential for a large cost offset if jail diversion prevents further CJ involvement.

It is important to note that our descriptive findings on the frequency of hospitalization are presented without adjustment for time at risk in the community. Clearly, a person with a long incarceration during the study window would have had less opportunity to be hospitalized in the community outside the CJ system. Similarly, our findings on the frequency of arrest and

incarceration are presented without adjustment for time at risk for those events, i.e., days not spent in the hospital.

Our results are useful for describing frequency and patterns of events as they occurred, and for taking account of associated costs to the state agencies involved, but are not intended to suggest simple causal relationships between criminal justice involvement and services utilization and costs. To explore the underlying causal connections would require examining risk- and opportunity-adjusted effects with multivariable statistical models—a next step with the assembled data, but beyond the scope of this descriptive inquiry. The present report provides the best answers to date for the “what,” “how much,” and “who pays” questions about criminal justice involvement among people with mental illness; it stops short of answering the “why” question. That is the next challenge.

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