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The employment status of people with mental illness: National survey data from 2009 and 2010

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Abstract

Objective—The aim of this study was to describe employment by mental illness severity in the U.S. during 2009-2010.

Methods—The sample included all working-age participants (age 18 to 64) from the 2009 and 2010 National Survey on Drug Use and Health (N = 77,326). Two well-established scales of mental health distinguished participants with none, mild, moderate, and serious mental illness. Analyses compared employment rate and income by mental illness severity and estimated logistic regression models of employment status controlling for demographic characteristics and substance use disorders. In secondary analyses, we assessed how the relationship between mental illness and employment varied by age and education status.

Results—Employment rates decreased with increasing mental illness severity (none = 75.9%, mild = 68.8%, moderate = 62.7%, serious = 54.5%, p<0.001). Over a third of people with serious mental illness, 39%, had incomes below $10,000 (compared to 23% among people without mental illness p<0.001). The gap in adjusted employment rates comparing serious to no mental illness was 1% among people 18-25 years old versus 21% among people 50-64 (p < .001).

Conclusions—More severe mental illness was associated with lower employment rates in 2009-2010. People with serious mental illness are less likely to be employed after age 49 than people with no, mild, or moderate mental illness.

INTRODUCTION

Mental disorders are associated with diminished labor market activity: people with mental illness are less likely to work (1-10), and those who do work earn less than workers without mental illness (1, 9). In studies of the general population, work has been associated with improvements in health and socioeconomic domains (11-14). Among people with mental illness, work has a positive association with economic (15), psychosocial (16-21), and clinical (22, 23) improvements. In many studies, employment also correlates with short-term

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reductions in mental health costs (24-30). Thus, monitoring disparities in employment by mental health status is a public health priority.

Three recent national phenomena are likely to have influenced labor participation in the U.S.: the large influx of people with mental illness enrolling onto disability (31); high unemployment rates associated with the recent recession (32); and evidence-based psychosocial services that support the employment goals of people with more severe mental illness (e.g., schizophrenia) (32-34).

Disability Enrollment

Economists estimate that $276 billion federal and state dollars were spent on working age beneficiaries of Social Security programs in 2002 (35). Mental illness is now the primary diagnosis for one in three persons receiving disabled worker benefits under the age of 50 (36). Beneficiaries with psychiatric impairments are often younger than other SSDI beneficiaries and therefore incur costs over a longer period of time (37, 38). As the number of disability beneficiaries with mental illness grows exponentially, policy makers have an increased interest in monitoring employment rates by mental health status.

Economic Recession

The most recent national recession in the United States was a period of substantially reduced economic activity. Unemployment changed dramatically, from an historic low of 4.4% before the recession in 2006, to a peak of 9.5% in 2009, with a slow recovery (32). Unemployment rates in 2010 remained well above 9%, even though the recession ended officially in June of 2009 (32, 39). The youth labor force (16- to 24-year-olds) and minorities were particularly vulnerable to unemployment during this period (40). Previous epidemiological studies describing associations between mental health and labor market outcomes may not generalize to the current period of high unemployment.

Evidence-based Interventions

Employment rates among individuals with severe mental disorders such as schizophrenia, major depressive disorder, or bipolar disorder more than double when they receive evidence-based supported employment services (i.e., Individual Placement and Support) (34). Evidence-based supported employment increases labor force participation among people with severe psychiatric illnesses through individualized services that focus on integrating vocational specialists into the mental health team and rapid job placement (41). This model represents a paradigmatic shift from previous employment interventions (e.g., day treatment) that offered sheltered experiences in preparation for work; these segregating models of care are slowly being defunded in the United States (43). Services that support integrated jobs may make employment more likely among people with severe mental illness than in the past.

Using data from the 2009 and 2010 National Surveys on Drug Use and Health (NSDUH), this paper describes a comprehensive overview of the current employment situation of people in the United States by mental health status.

METHODS

Data source and study population

To study the link between employment and mental illness severity since the 2007-2009 recession, survey responses of all 77,326 working age adults (18-64 years old) from the 2009 and 2010 NSDUH public use files were analyzed (See: http://www.icpsr.umich.edu/icpsrweb/SAMHDA/browse). The NSDUH is an annual survey of the civilian, non-institutionalized U.S. population aged 12 or older based on an independent, multistage area probability sample. The weighted response rate for all ages was 75.68% in 2009 and and 74.66% in 2010 (44).

Measures

Employment status and related outcomes—Employment served as the primary outcome variable. Respondents were asked whether they worked in the week prior to the interview and, among those who worked, whether they usually worked 35 or more hours per week. Following the practice used by the U.S. Bureau of Labor Statistics, “Full-time” refers to respondents who usually worked 35 or more hours per week, and “part-time” refers to other working respondents. “Unemployed” respondents did not have a job, were looking for a job, or were laid off. “Out of labor force” respondents were not in the labor force, which included students, persons caring for children full time, retired or disabled persons, or other persons not in the labor force. Additionally, the NSDUH collected information on each respondent’s total income in increments of $10,000, absenteeism (which we define as missed or skipped at least one day of work in the past year), occupation categories (using 2003 U.S. Census codes), and benefits status (family member received Social Security or Rail Road payments in past year and family member received Supplemental Security Income payment in past year). Less than 0.3% of Social Security payments are Rail Road payments (45). Hereafter we describe them as just “Social Security” payments, which, among this sample of adults aged 18-64 describes the population receiving disability payments.

Past-year mental illness severity—This paper focuses on four categories of mental illness severity: people with no mental illness; people with mild mental illness; people with moderate mental illness; and people with serious mental illness based on two assessments available in the NSDUH. The Substance Abuse and Mental Health Services Administration developed models to predict mental illness severity based on responses to two short self-assessments, the K6 assessment of non-specific psychological distress (46, 47), and a shortened, eight-item version of the WHODAS assessment of functional impairment (48, 49). In 2008, 1,506 adults were administered the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV; SCID) via telephone by mental health clinicians. In years since, NSDUH reported four categories of mental illness severity based on parameter estimates from a model of scores on the clinician administered SCID as a function of the K6 and WHODAS scores (50, 51).

Selection of Adjustment Factors—We elected potential adjustment factors based on past labor supply studies. A meta-analysis of 62 studies of employment among people with

schizophrenia found that cognitive functioning, education, negative symptoms, social support and skills, age, work history, and rehabilitation services predicted better employment outcomes, while positive symptoms, substance abuse, gender and hospitalization history did not; martial status was marginally significant (52). Relevant covariates among people with none or mild to moderate mental disorders were determined by referring to a review of studies conducted in industrialized nations (1) and census data. Among people with mild mental illness, gender (10, 53), age (10, 53, 54), education (10, 53, 54), marital status (55), race/ethnicity (10, 54), substance use (56), general health (10), children in household (53), criminal justice involvement (57), and a measure of the local community context (53) (urbanicity) were associated with work status.

Past-year substance use disorder—The NSDUH provides measures of substance abuse or dependence based on criteria in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV). Alcohol, marijuana, hallucinogens, inhalants, tranquilizers, cocaine, heroin, pain relievers, stimulants (including methamphetamine), and sedatives were all directly covered by questions in the survey. Participants were categorized as having no substance use disorder, alcohol abuse only, alcohol dependence only, drug abuse only, drug dependence only, or abuse or dependence of both alcohol and drugs.

Health status—Self-reported general health was captured by asking, “Would you say your health in general is excellent, very good, good, fair, or poor?” Due to the low frequency of responses indicating poor health, “fair” and “poor” categories were collapsed.

Sociodemographic characteristics—This study also included the following sociodemographic variables: age categories (18-25, 26-34, 35-49, 50-64), sex (female, male), race (White, Black, Hispanic, Other), educational attainment (less than high school, high school graduate, some college, college graduate or higher), marital status (never married, ever married), number of children less than 18 years of age in the household (zero, one, two, or at least three), number of times arrested and booked in the past year (none, once, twice or at least three times), and county type of residence (large metropolitan area, small metropolitan area, or nonmetropolitan area).

Analytic strategy

Descriptive analyses were conducted to compute employment rates, sociodemographic characteristics, and the remaining employment outcomes across mental illness severity categories. Multivariate logistic regression was used to identify factors associated with any employment stratified by mental illness severity. We ran all models twice: using the validated mental illness severity for the NSDUH based on WHODAS, K6, and a clinically-validated subsample, and again with just the K6 symptom score based on approximate mental illness percentile cutoffs (none versus mild/80th, mild versus moderate/90th, moderate versus serious/95th). The models based on only the K6 measure tested the sensitivity of our results to items in the WHODAS that may be too close to our outcome variables describing employment.

Given differences in the association between mental illness severity and education, and those between mental illness and age, we tested interactions of age and education by mental illness status in the final multivariate logistic regression model. All proportions and other estimates were computed using sample weights to reflect the target population of the study, working age adults in the US. In addition, variance estimates account for the complex stratified sampling design in the NSDUH using standard approaches (i.e. Taylor series approximations). STATA SE version 12 was used to conduct all analyses. The Dartmouth College Committee for the Protection of Human Subjects deemed these analyses, using publicly available, de-identified secondary data, exempt from review.

RESULTS

Demographics

Table 1 displays demographic information for 77,326 working-age adults by mental illness severity. The age distribution of respondents was similar across categories, with most of the population falling between ages 26 and 49. In contrast, more educated respondents were concentrated among the group without mental illness (30.7% versus 20.6% graduated from college in the “no mental illness” and “serious mental illness” categories, respectively)., The share of individuals without a substance use disorder was highest among respondents without mental illness (92.8%) compared with the serious mental illness group (75.6%). Self-reported fair or poor general health was also much more common in the group with serious mental illness (27.8%) relative to the group without mental illness (8.7%). Over 8% of the sample with serious mental illness reported an arrest in the past year, compared with only 2.6% in the group without mental illness. All differences above were statistically significant ($p < .001$).

Employment Rates

Table 2 presents (and Figure 1 highlights) nationally representative employment rates among working age adults by mental health status. Employment falls sharply as mental illness severity increases. Full time employment in 2009-2010 was 61.7% among people with no mental illness versus 38.1% among people with serious mental illness. Rates of part-time employment and unemployment were similar across severity categories. Rates of being out of the labor force were twice as high comparing adults with serious mental illness (35.1%) to adults without mental illness (17.1%). Differences in employment across mental illness severity groups were statistically significant ($p < .001$).

Other Employment Outcomes

Table 2 also provides detail about occupation, income, and absenteeism among workers by mental illness severity. Employment rates by occupation were largely consistent across mental illness severity categories, although individuals with mental illness were slightly more likely to be in sales or service occupations. In spite of these similarities, people with serious mental illness who work earned far less than employed people without a serious mental illness. For example, 38.5% of individuals with moderate or serious mental illness earned under $10,000, compared with only 23.1% of those without mental illness. Among families of respondents with serious mental illness, 20.8% received Social Security, and

13.2% received Supplemental Security Income in the past year. People with serious mental illness were more likely to miss or skip a day of work (40.7%) than people with no mental illness (21.5%), mild mental illness (30.5%), or moderate mental illness (37.9%). All differences shown in Table 3 across mental illness severity groups were statistically significant ($p < .001$).

Associations with Full- or Part-Time Employment

Table 3 provides estimates from logistic regression analyses that identified variables associated with employment status. The likelihood of employment generally increased from young adulthood (18-25) to middle age (26-34), except among individuals with serious mental illness. After reaching age 50, people with moderate and serious mental illness were far less likely to work than those with mild or no mental illness ($p < 0.001$ for a test of joint significance of age interacted with mental illness severity). Education status was strongly associated with employment, within all categories of mental illness severity. (Appendix Figure 2).

Overall models where mental illness severity was defined using the validated NSDUH model versus the symptom-only classification (K6) showed strikingly similar patterns (Appendix Table 1).

DISCUSSION

In a nationally representative sample of working age adults in 2009-2010, people with moderate and serious mental illness were employed less often than adults with no reported mental illness. Like national data from the 1990s, we found that people with mental illness are represented in all occupation categories (10). Yet, income disparities remained. Nearly 40% of people with serious mental illness had income under $10,000 per year, well below substantial gainful activity thresholds that determine eligibility for federal disability payments. Mental illness had a much weaker relationship to employment among people under 50 years of age.

People with more serious mental illness were less likely to report full time employment than people without, although this estimate is nearly double the full-time employment rates reported in an earlier study (38% in the current study versus 24% in a previous study) (10). The previous study analyzed data from the 1994-1995 National Health Interview Survey on Disability, which used a more stringent definition of serious mental illness that excludes undiagnosed individuals (self-reported diagnosis of schizophrenia, paranoid states, mood disorders, other nonorganic psychoses, or psychosis with origins specific to childhood in the past twelve months). One possible explanation is that undiagnosed individuals may not access services that would result in diagnostic assessment because they have fewer functional limitations.

Compared with the large differences in full-time work by mental illness severity, differences in unemployment and part-time employment were much smaller in magnitude. Rather than working part-time or seeking work, people with mental illness who are not working full-time appear to be displaced from the labor force entirely (out of the labor force). Most

people with mental illness, even the most severely disabled, are capable of part-time work when provided appropriate supports (58). There are several explanations for why so many individuals with mental illness are out of the labor force entirely. People with more serious mental health issues have fewer incentives to seek work because disability policies often restrict eligibility to those not working in any significant capacity (59); employers are reluctant to hire individuals with psychiatric disabilities (60); and people with serious mental illness may be unaware of or unable to access job supports (34).

Variation in the age-employment relationship across mental illness severity groups was substantial. Among older adults, half with moderate or serious mental illness worked part-time or full-time, substantially less than their peers with mild or no mental illness, replicating an earlier study (10).Many older non-working adults with moderate to serious mental illness were out of the labor force, rather than unemployed, a comparison not examined in prior research. Adults over 50 years of age with moderate and serious mental illness may be more likely to drop out of the workforce due to social acceptability (supply), but discrimination against older workers with mental illness (demand) is a more likely explanation because many older people with serious mental illness want to work (61). In contrast, younger workers living with mental illness do not experience the same decrement to labor force participation, suggesting opportunities to prevent exits from the labor force in younger populations.

Education status, known to facilitate employment opportunities (62), was the strongest predictor of employment even among people with serious mental illness. This finding is consistent with previous research in clinical and community samples (10, 63, 64), and suggests that facilitating educational achievement may facilitate job placement. Longitudinal research is needed to test alternative explanations: educational achievement may be a proxy for later illness onset, less serious illness, or more intensive service use.

Several limitations warrant consideration. This cross-sectional, descriptive study does not permit causal interpretation of any association between mental illness and employment outcomes. Even without the ability to draw causal inference from the results, these descriptive data fill a gap in evidence. Most psychiatric epidemiological studies of workforce participation focus on a single diagnostic group, use simplistic vocational outcomes (e.g., employment versus no employment), or fail to compare samples with mental illness to mentally well controls. Mechanic et al. (2002) provided a richer overview, describing employment rates by work intensity and occupational category among people with none, any, or serious mental illness, though this study presented data from the 1990s when the economic circumstances differed considerably from those since the most recent recession lasting from 2007 to 2009 (10).

Additionally, the study sample did not include people in institutional settings (prisons, hospitals, treatment centers), where individuals with the greatest illness burden are likely to reside, although institutionalized individuals are not generally participating in the labor force. Third, short-form diagnostic surveys commonly used in the NSDUH are limited in their ability to distinguish between individuals with moderate affective illness and individuals with serious mental illness (typically defined as psychotic disorders with at least

2 years of illness burden).Although steps were taken to validate these self-reported measures of illness (50, 51), self-report bias may have over or under estimated the prevalence of mild, moderate, or serious mental illness. Lack of information on date of illness onset significantly limited possible inferences (1). Finally, participation in the national survey was high, but incomplete, which may have resulted in an under-or over-estimation of mental illness.

CONCLUSION

Employment rates varied substantially by mental illness severity in 2009-2010. Even during times of high unemployment seriously mentally ill college graduates had relatively strong employment outcomes. Unemployment rates spike among people with serious mental illness over age 50, even compared to age-matched peers.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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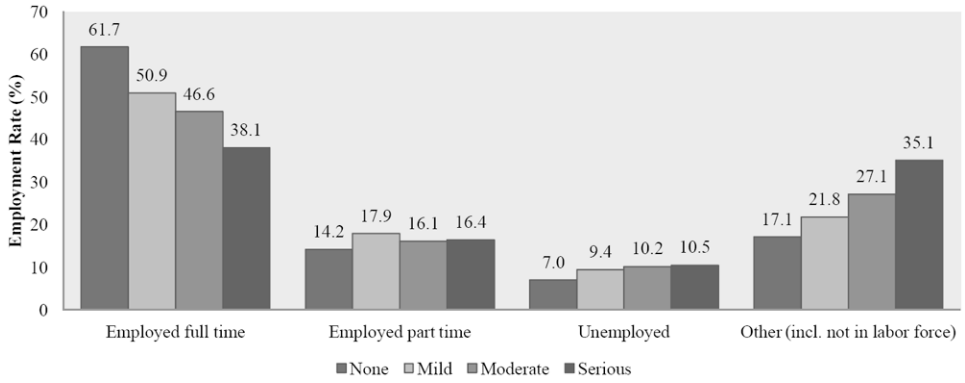

Figure 1.

Employment rates among adults 18-64 by mental health status

*Note:*Figure 1 presents estimated rates of employment outcomes. Employment rates based on logistic regression models that adjust for confounding are presented in table 3, with full model results shown in Appendix 1.

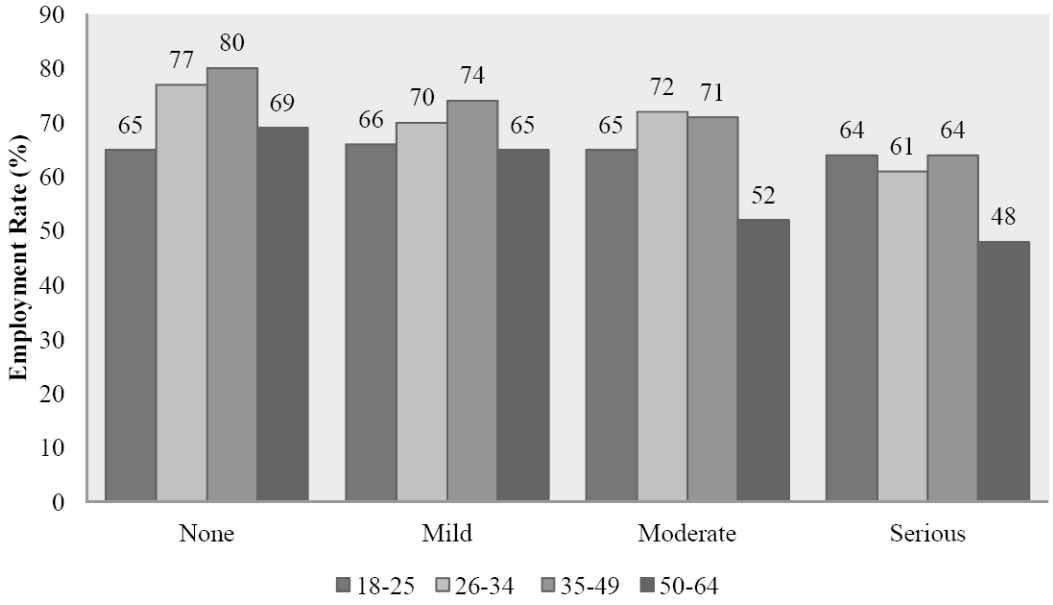

Figure 2.

Full- or part-time employment rates among adults 18-64 by age within mental health status groups

*Note:*Figure 2 presents employment rates adjusted for age, gender, education, marital status, race/ethnicity, substance use disorders, self-reported general health, number of children in household, arrests in last year, and county type. The decrement to employment for older workers with serious mental illness is significantly larger compared with younger workers with serious mental illness, based on an interaction term between mental illness severity and age in a logistic regression model predicting full- or part-time employment.

Table 1

Demographic characteristics of adults 18-64 by mental health status, 2009-2010

	Past Year							
	No Mental Illness		Mild Mental Illness		Moderate Mental Illness		Serious Mental Illness	
	57,283		*10,643*		*4,170*		*5,230*	
	N	%	N	%	N	%	N	%
Gender								
Female	26647	48.1	6069	57.0	2524	58.9	3589	66.7
Age								
18-25	26604	15.9	6229	25.0	2474	24.4	3013	23.8
26-34	8506	18.5	1587	21.4	634	22.0	807	21.3
35-49	12655	33.8	1847	32.1	718	29.5	1019	32.6
50-64	5749	31.7	642	21.4	262	24.1	331	22.4
Education								
Less than high school	8384	13.3	1745	14.1	775	17.1	909	15.5
High school graduate	17496	30.0	3308	29.6	1358	28.7	1758	33
Some college	15508	26.0	3166	28.2	1262	29.4	1709	30.9
College graduate	12126	30.7	2086	28.1	713	24.8	794	20.6
Ever Been Married								
Yes	24960	28.8	3669	40.7	1453	41.8	2031	38.5
Race/Ethnicity								
White	33120	64.8	6629	68.7	2652	68.3	3532	73.0
Black	6882	12.5	1270	12.0	468	11.3	470	9.5
Hispanic	8961	15.9	1433	12.4	593	14.4	684	12.1
Other	4551	6.8	973	6.9	375	6.1	484	5.5
Substance Use								
No Substance Use Disorder	47851	92.8	7880	82.5	2942	78.4	3487	75.6
Abuse Alcohol Only	2727	3.7	771	6.0	312	5.2	343	4.9
Alcohol Dependent Only	1374	2.2	748	6.3	340	8.1	525	9.8
Abuse Drugs Only	304	.3	121	.9	66	1.6	72	1.1
Drug Dependent Only	624	.7	368	2.4	172	4.0	316	5.3

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	Past Year							
	No Mental Illness		**Mild Mental Illness**		**Moderate Mental Illness**		**Serious Mental Illness**	
	57,283		***10,643***		***4,170***		***5,230***	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Abuse or Dependent Alcohol & Drugs	357	.3	250	1.8	149	2.7	277	3.4
General Health								
Excellent	15952	27.7	2188	19.3	699	14.0	741	11.6
Very Good	21365	38.5	4037	35.8	1521	32.7	1759	30.1
Good	12717	25.1	2905	29.3	1269	32.0	1614	30.5
Fair/Poor	3474	8.7	1175	15.6	598	21.3	1056	27.8
N Children < 18 in Household								
0	35028	62.0	7210	63.8	2868	68.0	3590	66.9
1	8272	15.9	1445	15.0	611	14.8	753	14.6
2	6477	14.0	1041	13.5	382	10.9	500	11.2
3+	3680	8.1	603	7.7	224	6.3	325	7.3
N Times Arrested and Booked in Past Year								
None	50594	97.4	9470	95.1	3688	94.5	4626	91.9
1	1712	2.0	523	3.7	223	3.7	338	5.8
2	337	.4	108	.7	74	1.1	88	1.4
3+	192	.2	68	.4	37	.8	60	.9
County Type								
Large Metro	23860	54.7	4557	53.2	1759	53.1	2096	48.9
Small Metro	18526	29.9	3651	31.3	1479	32.5	1922	31.9
Nonmetro	11128	15.4	2097	15.5	850	14.3	1152	19.2

Source: National Survey of Drug Use and Health, 2009-2010.

Notes: Persons ages 18-64; crude N's and adjusted percentages. All p-values for X^2 test of differences across mental illness severity groups were statistically significant with p-values <.001

Table 2

Employment and income of adults 18-64 by mental health status, 2009-2010

	Past Year							
	No Mental Illness		**Mild Mental Illness**		**Moderate Mental Illness**		**Serious Mental Illness**	
	57,283		***10,643***		***4,170***		***5,230***	
Observations	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Employment Rate								
Employed full time	28100	61.7	4394	50.9	1576	46.6	1777	38.1
Employed part time	10300	14.2	2428	17.9	944	16.1	1149	16.4
Unemployed	5149	7.0	1211	9.4	548	10.2	660	10.5
Other (including not in labor force)	9965	17.1	2272	21.8	1020	27.1	1584	35.1
Respondent's Total Income								
Less than $10,000 (Including Loss)	19812	23.1	4778	32.0	2014	35.5	2596	38.5
$10,000 - $19,999	10625	16.3	2207	18.9	913	21.1	1230	23.2
$20,000 - $29,999	6912	13.6	1223	13.4	451	12.4	546	12.1
$30,000 - $39,999	5013	11.9	761	10.8	298	10.1	299	8.2
$40,000 - $49,999	3489	9.2	456	6.7	157	7.6	194	5.8
$50,000 - $74,999	4295	13.2	554	10.3	151	6.9	190	7.5
$75,000 or more	3368	12.8	326	7.8	104	6.3	115	4.8
Past Year Family Receive Social Security	5050	12.8	1186	14.7	531	18.2	786	20.8
Past Year Family Receive SSI Payments	2925	5.8	818	8.6	380	11.5	567	13.2
Respondent's Total Income*								
Less than $10,000 (Including Loss)	9130	12.3	2241	19.1	874	20.1	1017	21.4
$10,000 - $19,999	8296	15.7	1655	18.7	654	20.2	816	23.0
$20,000 - $29,999	5989	15.0	1035	15.6	358	15.5	429	16.3
$30,000 - $39,999	4488	13.8	666	13.5	256	14.0	242	11.8
$40,000 - $49,999	3222	11.0	419	8.9	142	10.7	166	8.3
$50,000 - $74,999	4062	16.2	503	13.9	138	9.9	153	11.1
$75,000 or more	3213	16.0	303	10.4	98	9.6	103	8.1
Missed or Skipped Work (1+ Day in Past Week)*	9559	21.5	2304	30.5	997	37.9	1239	40.7
Occupation Category*								

	Past Year							
	No Mental Illness		Mild Mental Illness		Moderate Mental Illness		Serious Mental Illness	
	57,283		*10,643*		*4,170*		*5,230*	
Observations	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Executive/Administrative/Managerial/Financial	4053	14.5	578	13.6	199	12	5062	11.4
Professional (not Education/Entertainment/Media)	3696	12.8	586	11.4	194	11.9	4688	10.3
Education and Related Occupations	2166	6.2	401	7.1	154	6.5	2886	8.1
Entertainers, Sports, Media, and Communications	805	2.2	196	3.1	60	2.2	1141	3.6
Technicians and Related Support Occupations	2216	5.2	457	5.9	173	5.3	3075	6.9
Sales Occupations	4574	9.9	953	11.6	392	14.3	6352	11.4
Office & Administrative Support Workers	4937	12.4	973	14.2	369	14.3	6722	14.5
Protective Service Occupations	930	2.5	125	1.9	43	2.5	1143	2.2
Service Occupations, Except Protective	6648	11.7	1485	15.5	547	14.3	9368	18.1
Farming, Fishing, & Forestry Occupations	375	.7	45	.3	15	.2	447	.3
Installation, Maintenance & Repair Workers	1386	4	154	2.5	53	2.5	1653	1.5
Construction Trades & Extraction Workers	2426	5.9	319	4.4	101	4.7	2925	2.5
Production, Machinery Setters/Operators/Tenders	2199	5.9	286	4.0	117	5.4	2734	4.9
Transportation & Material Moving Workers	2283	6.0	334	4.7	131	3.9	2883	4.2

Source: National Survey of Drug Use and Health, 2009-2010.

Notes:

* among persons employed full- or part-time in the past year; crude N's and adjusted percentages reports; All p-values for X^2 test of differences across mental illness severity groups were statistically significant with p-values <.001

Table 3

Employment rates among adults 18-64 by mental illness severity, 2009-2010

	Model 1			***Model 2***			***Model 3***			***Model 4***		
Observations	**No Mental Illness**			**Mild Mental Illness**			**Moderate Mental Illness**			**Serious Mental Illness**		
	%	**OR**	**CI**	**%**	**OR**	**CI**	**%**	**OR**	**CI**	**%**	**OR**	**CI**
Age												
18-25	65	---	---	66	---	---	65	---	---	64	---	---
26-34	77	1.92	1.75-2.12	70	1.23	.99-1.52	72	1.41	1.04-1.92	61	.90	.69-1.16
35-49	80	2.25	2.04-2.48	74	1.47	1.15-1.87	71	1.36	.95-1.94	64	1.00	.76-1.33
50-64	69	1.22	1.08-1.38	65	.93	.69-1.27	52	.56	.36-.86	48	.50	.34-.72
Race												
White	71	---	---	70	---	---	70	---	---	62	---	---
Black	69	.87	.78-.97	61	.66	.51-.85	57	.59	.43-.81	58	.83	.56-1.22
Hispanic	71	1.00	.87-1.14	70	1.02	.81-1.29	71	1.16	.83-1.62	63	1.04	.75-1.43
Other	68	.84	.71-.98	64	.76	.56-1.04	61	.71	.42-1.20	66	1.22	.62-2.41
Education												
Less than high school	58	---	---	54	---	---	46	---	---	46	---	---
High school graduate	69	1.64	1.46-1.83	65	1.61	1.29-2.00	64	2.17	1.58-3.00	59	1.67	1.20-2.33
Some college	75	2.26	2.02-2.52	73	2.48	1.94-3.18	70	2.88	2.00-4.15	65	2.26	1.69-3.03
College graduate	77	2.60	2.25-3.01	78	3.17	2.45-4.09	79	4.69	3.02-7.28	74	3.44	2.28-5.18
Sex												
Male	76	---	---	72	---	---	76	---	---	76	---	---
Female	65	.55	.52-.59	65	.73	.61-.87	65	.97	.77-1.22	65	.82	.64-1.05
Ever Been Married												
No	69	---	---	66	---	---	65	---	---	58	---	---
Yes	73	1.22	1.10-1.34	71	1.31	1.05-1.63	67	1.09	.78-1.52	67	1.52	1.10-2.09
General Health												
Excellent	73	---	---	71	---	---	71	---	---	68	---	---
Very Good	74	1.07	.97-1.18	72	1.03	.87-1.22	67	.82	.57-1.17	65	.90	.67-1.20
Good	69	.82	.74-.91	67	.83	.70-.99	67	.82	.54-1.24	59	.67	.51-.88
Fair/Poor	51	.34	.30-.39	48	.35	.26-.45	45	.30	.19-.46	36	.25	.18-.34

	Model 1			*Model 2*			*Model 3*			*Model 4*		
Observations	**No Mental Illness**			**Mild Mental Illness**			**Moderate Mental Illness**			**Serious Mental Illness**		
	%	**OR**	**CI**	**%**	**OR**	**CI**	**%**	**OR**	**CI**	**%**	**OR**	**CI**
N Children < 18 in Household												
0	71	---	---	69	---	---	65	---	---	62	---	---
1	74	1.20	1.10-1.31	69	1.02	.81-1.27	70	1.28	.87-1.88	59	.85	.63-1.16
2	71	1.03	.94-1.13	69	1.04	.81-1.34	72	1.43	.95-2.16	62	1.00	.71-1.42
3+	63	.67	.60-.76	62	.73	.55-.98	60	.80	.46-1.37	61	.92	.61-1.39
N Times Arrested and Booked in Past Year												
None	71	---	---	69	---	---	67	---	---	62	---	---
1	62	.65	.52-.80	60	.67	.50-.89	62	.78	.51-1.21	51	.59	.38-.92
2	55	.46	.29-.72	46	.34	.20-.60	56	.59	.31-1.12	59	.87	.42-1.82
3+	59	.55	.31-.95	55	.52	.24-1.14	50	.45	.14-1.44	53	.66	.27-1.65
County Type												
Large Metro	71	---	---	68	---	---	68	---	---	63	---	---
Small Metro	70	.98	.91-1.06	69	1.03	.88-1.21	64	.79	.62-1.02	62	.94	.77-1.14
Nonmetro	70	.97	.87-1.08	68	1.02	.83-1.25	66	.92	.68-1.23	59	.84	.61-1.15
Substance Use												
No Substance Use Disorder	70	---	---	68	---	---	66	---	---	61	---	---
Abuse Alcohol Only	74	1.23	1.01-1.49	72	1.20	.87-1.65	69	1.17	.73-1.88	65	1.19	.77-1.82
Alcohol Dependent Only	71	1.01	.83-1.24	69	1.04	.72-1.49	72	1.33	.93-1.90	68	1.37	1.01-1.86
Abuse Drugs Only	72	1.07	.75-1.51	61	.70	.41-1.20	63	.86	.41-1.80	59	.92	.34-2.45
Drug Dependent Only	71	1.04	.75-1.44	59	.63	.44-.89	52	.52	.31-.87	57	.83	.57-1.21
Abuse or Dependent Alcohol & Drugs	64	.74	.45-1.21	60	.67	.42-1.06	60	.74	.44-1.23	68	1.4	.92-2.19

Source: National Survey of Drug Use and Health, 2009-2010.

Notes: Persons ages 18-64; rates (%) are adjusted predicted probabilities based on logistic regression models stratified by mental illness severity groups; CI = 95 percent confidence intervals; Odds ratios and confidence intervals for the adjusted relationship between mental illness severity and employment status are reported in Appendix 1.