

***Changing Labor Markets and Mental Illness: Impacts on Work and  
Disability***

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## Introduction

A number of the most prevalent mental illnesses lead to significant cognitive dysfunction. A recent review summarized the evidence on cognitive dysfunction for 7 categories of mental illness (Millan et al. 2012) . The reviewers conclude that for many people with mental illness, “cognitive dysfunction is broad based and seriously affects real-world functioning.” More specifically they show important impacts on attention, working memory, executive function, processing speed, and social cognition. These dysfunctions along with some of the motivational and affective features of mental illnesses translate into impairments in skills that are known to affect productivity. These include concentration, problem solving, communication, organization, adaptability and collaboration. These challenges are exacerbated by the fact that the onset of a number of these illnesses is in late adolescents and early adulthood. This early onset means the conditions can also compromise the accumulation of human capital in the forms of education, training and job experience, leaving people with these diagnoses at a lifelong disadvantage (Breslau et al. 2008).

For many people with a mental illness, active participation in the workforce is a critical aspect of community integration and of recovery. The challenge of integrating people with serious mental illness into the community and workforce has long been recognized. But there is good reason to believe that, despite improved treatment, the challenge is becoming more difficult. Even as access to care has improved, the economy itself has changed. The 21<sup>st</sup> century labor market demands a different set of skills from the workforce. Automation of routine tasks has been accelerating; technological improvements in information and communications technology demand a

workforce that has the capacity to engage in non-routine cognitive-intensive work (Gaggl and Wright 2017) . These technological trends displace low-wage jobs and those that require the ability to perform routine cognitive and non-cognitive tasks. This pattern of changes in workforce needs may have profound effects on the employment prospects for people with mental illnesses.

In this paper we address three issues: the trends in labor force participation for people with mental illnesses for the years 1997-2017; the skill mix of jobs held by people with mental illnesses and some hypotheses about what that means for employment of people with these illnesses in the coming decades.

## Data and Approach

The analyses presented here are primarily descriptive. They rely on three sets of data: the National Household Survey and Drug Use and Health (NHDUH), the National Health Interview Survey (NHIS) and the O\*NET database on occupational skills. The data presented here relies primarily on data from the NHIS. The NHIS is a large national household survey that collects information on about 87,000 that are members of roughly 35,000 households. The NHIS collects detailed data on household demographics, income, employment, occupations and indicators of mental health status. Specifically they collect information on symptoms of mental illnesses focusing on psychological distress using the so-called K-6 measurement scale (Kessler et al, 2002). While the scale does not yield specific diagnoses it has been found to be a reliable measure of the overall population prevalence of mental illnesses as well as the prevalence of serious mental illnesses (e.g. bipolar disorder, schizophrenia and major depression). In particular, it has been found to produce consistent estimates across surveys and

populations and has shown little bias in estimated rates of illness by education and gender. The K-6 estimates of psychological distress and serious psychological distress are available in the NHIS for the years 1997-2017.

We use the NHSDUH to test for endogeneity of our indicators of mental illness and labor supply. This is because the NHSDUH has information on each individual's history of mental health symptoms. Our instruments were indicators of childhood mental health problems. Our analysis shows that the instruments were not weak but we could not reject the hypothesis that our measures of current mental illness are exogenous to labor force participation.

## Findings

Table 1 shows results for the relationship between indicators of mental illness and labor force participation.

*Table 1: Labor Force Participation in the Adult (18 to 64) Population by Level of Psychological Distress*

		<b>K6 Score</b>	<b>1997-99</b>	<b>2006-08</b>	<b>2015-17</b>	<b>Δ 97-17</b>
<b>Gender</b>	<b>Women</b>	None (0-4)	71.07%	70.95%	70.87%	-0.20%
		Mild (5-9)	64.26%	62.33%	63.83%	-0.42%
		Moderate (10-12)	54.84%	49.17%	54.03%	-0.82%
		Severe (13-24)	43.67%	35.73%	37.82%	-5.85%
	<b>Men</b>	None (0-4)	85.75%	84.39%	82.05%	-3.70%
		Mild (5-9)	76.44%	71.76%	70.41%	-6.03%
		Moderate (10-12)	62.69%	52.85%	56.40%	-6.29%
		Severe (13-24)	45.95%	38.91%	37.69%	-8.25%

The table shows that for females with no significant symptoms of psychological distress there was little change in labor force participation (LFP) between 1997-1999 and 2015-2017. Women with severe psychological distress had labor force participation rates that

were only 61% of those women with no indications of mental illness in 1997—1999. The rate of LFP fell 5.85 percentage points for women with severe psychological distress by 2015-2017. For men, LFP was affected by all levels of symptoms of mental illness. Reductions in LFP occurred at between 1.62 and 2.22 times the rate of men with no indications of a mental illness.

We decomposed the changes in labor force participation according to whether the observed changes occurred due to changes in LFP within a demographic-illness cell or because of changes in the composition of the population. Table 2 displays those results.

*Table 2: Labor Force Participation*

		1997-99	2006-08	2015-17
<b>Aggregate of Demographic Groups</b>	$\sum_i \ell_{i,t} \times w_{i,1997}$	78.02%	77.33%	78.86%
	$\sum_i \ell_{i,t} \times w_{i,2017}$	75.49%	75.26%	77.05%

Where  $l$  is LFP and  $w$  are the demography-illness cells weighted at either the beginning of the 20 year period or the end. The results show that when one holds the demographic and illness mix of the population constant, the LFP rates for people with mental illnesses are lower than for the general population and thus drive LFP down for the overall population. The results also show that LFP is not declining over time overall and for people with mental illnesses and if anything displays a slight increase.

Examining of the changing population composition reveals that the shares of the population experiencing various levels of mental distress (and the overall prevalence of illness) are increasing. For example, the rates of severe psychological distress increased from 1997 to 2017 by 30% for males and 16% for females. Increased rates of

illness appear across all level of indicators of psychological distress for both men and women. Other recent reports on mental illnesses in college students and young adults also show increases in the rates of anxiety disorders and depression. Our analysis of the K-6 responses shows that the increases in distress are driven largely by symptoms of depression and anxiety. Much of the decline in LFP associated with mental illness took the form of early retirement. People with severe psychological distress had a 114% increase in early retirement compared to a 31% increase for people without any indications of a mental illness.

## Future Prospects

Building on the working of Autor (2019), Nedelkoska and Quintini (2018) and Manyika et al (2017) we consider the skill mix of the jobs held by people with mental illnesses.

Table 3 provides estimates from having merged O\*NET and NHIS.

*Table 3: Average Task Skill Decomposition and Offshorability by Gender and Level of Psychological Distress in Adults (18-64), 2004-17*

		Nonroutine Cognitive: Analytical		Nonroutine Cognitive: Interpersonal		Routine Cognitive		Nonroutine Manual: Physical		Routine Manual	
		1997	2017	1997	2017	1997	2017	1997	2017	1997	2017
<b>Women</b>	None (0-4)	0.18	0.10	0.26	0.16	0.13	0.02	-0.30	-0.35	-0.16	-0.28
	Mild (5-9)	0.04	-0.09	0.15	-0.03	0.14	0.13	-0.20	-0.26	-0.08	-0.16
	Moderate (10-12)	-0.20	-0.20	-0.09	-0.13	0.20	0.12	-0.05	-0.08	0.20	0.02
	Severe (13-24)	-0.25	-0.30	-0.09	-0.16	-0.04	0.19	-0.03	-0.13	0.12	0.00
<b>Men</b>	None (0-4)	-0.08	0.00	-0.16	-0.08	-0.09	-0.06	0.21	0.32	0.10	0.21
	Mild (5-9)	-0.21	-0.12	-0.25	-0.17	-0.08	0.00	0.28	0.35	0.16	0.28
	Moderate (10-12)	-0.48	-0.33	-0.45	-0.24	-0.13	0.03	0.52	0.52	0.43	0.47
	Severe (13-24)	-0.43	-0.51	-0.41	-0.41	-0.16	0.09	0.36	0.68	0.38	0.63

The table entries represent the average standard deviations above or below the mean density of a given set of job skills in that year. It is scaled so that the standard deviation ranges in value from -1 to 1 with a mean of zero. A negative value indicates that people with a particular set of characteristics are under-represented in occupations with the identified skill characteristics (e.g. Non-Routine Cognitive) relative to the overall employed population. We report on 2004 data as a type of baseline. The table shows that people with moderate to severe psychological distress are consistently under-represented in occupations with skill demands involving Non-Routine Cognitive Analytical and Non-Routine Cognitive Interpersonal skills. Research by Autor, Levy and Murnane (2003) and Autor and Salomons (2018) shows that skill demand has been growing for exactly the jobs where people with mental illnesses are under-represented and declining for jobs that people with mental illnesses are over-represented (Non

Routine Manual and Routine Manual). The projections for demand for skills suggest that further declines can be expected in routine manual and routine cognitive skill set jobs. We hypothesize that illness and demographic changes are key drivers of trends in reduced LFP and higher disability claims among people with mental illnesses and the evolution of the labor market would continue to push labor demand trends in those directions.

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