

Disability and workers' compensation trends for employees with mental disorders and SUDs in the United States

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Abstract

Introduction: US employee absence benefits may include workers' compensation (WC) for work-related injuries/illnesses, short- and long-term disability (STD and LTD, respectively) for non-work-related injuries/illnesses, and discretionary sick leave (SL). Absences can significantly impact business performance, and employers are intensifying efforts to manage benefits and connections with employee health. This research compares all-cause STD/LTD/WC/SL use and variation from baseline (2002) for eligible employees (EMPs) with mental disorders (MDs) and SUDs to determine if use/payments varied over time.

Methods: Employees incurring medical claims with Agency for Healthcare Research and Quality MD and SUD ICD-9/10 codes were identified in the WorkPartners database (January 1, 2002 to December 31, 2019). Retrospective analysis was performed on annual prevalence, benefit use, mean days of leave, and median payments as a percent of salary (including lump-sum distributions and potentially extending beyond initiation year). WC claims without work absences were excluded. For each benefit, annual outcomes were calculated as a percent of baseline to show variability.

Results: Use was 48.1% to 202.2% (median, 102.8%) of baseline rates for SL (SUD-EMPs), and 87.3% to 108.4% (median, 97.3%) for STD (MD-EMPs). Days of LTD leaves were 21.5% to 657.8% (median, 359.2%) of baseline days (MD-EMPs), and 122.7% to 1042.2% (median, 460.0%) of baseline days for (SUD-EMPs). Median payments for WC were 78.6% to 253.6% (median, 114.6%) of baseline (MD-EMPs) and 97.9% to 481.6% (median, 104.0%) for SUD-EMPs.

Discussion: Employees with MD/SUD used absence benefits at differing rates over time with varying days of leave and payments as a percent of salary. Using a constant cost or salary replacement factor over time for all benefits is not accurate or appropriate.

Keywords: disability, workers' compensation, employee health, employee benefits, retrospective analysis, indirect costs, mental illness, opioid disorders, substance use disorders, SUD, work absence

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Introduction

Employers in the United States often provide benefits to their employees that pay a portion of the costs of employee and dependent medical services and prescriptions.¹ Some US employers also provide a benefit, generally called sick leave (SL), that replaces an employee's salary during absences due to illness typically lasting less than 2 weeks. Some employers provide additional coverage to their employees for longer illnesses. Short-term disability (STD) usually pays 60% to 100% of salary for illnesses that last between 2 weeks and 6 months. If the illness lasts longer than 6 months, the employee begins long-term disability (LTD) and usually receives 50% to 70% of salary.² Medical costs and partial salary replacement (typically 66%-80%)³ for workplace illnesses and accidents are provided through workers' compensation (WC) coverage.

Absences can have a significant impact on business performance. Employers are intensifying efforts to manage these benefits, while still allowing employees time to regain health. Many absence studies estimate absence days using subjective survey data or proxies based on location of medical care (eg, office visits = 0.5 days, emergency department visits = 1 full day, hospitalizations = 1 day of absence for each day in the hospital). Absence costs are often estimated using the average salary in the United States rather than the actual amount paid, and studies often assume that the percent of salary received is the same, regardless of benefit. These estimates often combine STD and LTD and may not include WC. Some researchers develop extensive models of absence predictors and then multiply the estimated absence time by constant dollars and fixed salary replacement percentages to estimate absence costs across benefits and diseases.

Both mental disorders (MDs) and SUDs are common in the United States. Mental and behavioral health problems are prevalent among adults, with mood and SUDs having peak incidence occurring around 20 to 30 years of age,⁴ as many enter the workforce. Nearly 1 in 5 US adults live with a mental illness (51.5 million in 2019),⁵ and the US prevalence of SUDs has been increasing, partially due to the opioid crisis and opioid use disorders, which increased for persons with commercial insurance (provided by employers) from an estimated 3.49 per 1000 people in 2015 to 4.52 per 1000 people in 2019.⁶

A range of studies^{4,7,8} report between 30% and 50% of all US adults experience MD at some point in their lives. The US National Survey on Drug Use and Health estimated 20.2 million (8.4% of adults) have a SUD and 7.9 million report coexisting SUDs and any mental illness.⁹ The societal financial cost of poor mental health for the United

States was estimated to exceed \$210 billion in 2010.¹⁰ By 2030, the global societal financial cost is expected to rise to \$6 trillion.¹¹

Published research^{7-10,12-14} on work absences often inappropriately uses proxies and subjective survey data to estimate lost time. These are subject to recall bias, and may report absences that did not occur during work hours. Furthermore, published research often applies a constant payment for one or more absences benefits,¹²⁻¹⁴ which may or may not be accurate.

This research focuses on two US Agency for Healthcare Research and Quality¹⁵ condition categories. The MD category for this study includes: adjustment disorders; anxiety disorders; attention-deficit, conduct, and disruptive behavior disorders; delirium; dementia and amnestic and other cognitive disorders; developmental disorders; impulse control disorders; mood disorders; personality disorders; schizophrenia and other psychotic disorders; suicide and intentional self-inflicted injury; and miscellaneous mental health disorders. The SUD category includes alcohol- and substance-related disorders. This retrospective research examines all-cause disability (STD and LTD), WC and SL use, days of leave, and payments as a percentage of salary, and explores these outcomes' variation from baseline (2002) in the 2003-2019 time frame for annual cohorts of eligible employees (EMPs) with MD or SUD, and determines if use/payments varied over time.

Methods

To better understand the impact of MD and SUD on an employed population and on work absenteeism, the Workpartners (formerly known as HCMS) Research Reference database was analyzed. This proprietary database of de-identified employee medical and prescription claims including site of care (with information on 4.6 million lives, including 3 million US employees, from multiple insurers). The database represents private sector employers in the medical, retail, service, manufacturing, transportation, energy, technology, financial, and utility industries.

In addition to the medical and prescription data, the database also has information on payments and absence days (including STD and LTD, WC, and SL claims) from January 2001 to the present. During this period, 1.2 million employees in the database were eligible for (were offered coverage for) STD, 1.1 million for LTD, 1.4 million for WC, and 710 000 for SL.

The database has been used for published research in mental disorders, including bipolar disorders,^{16,17} MDDs,¹⁸ and various other conditions.¹⁹⁻²⁴

Each year, patients were retrospectively identified in the Workpartners database, based on claims with ICD-9/10 codes for the Agency for Healthcare Research and Quality MD and SUD categories.

In this observational descriptive research, all claims data were analyzed during fixed calendar year time periods. Because of concerns with ongoing claims at the beginning and end of the database, the analysis focused on 2002 through 2019, and claims from 2001 and 2020 were excluded.

Each year, the prevalence of MD and SUD was calculated. For each year's prevalent cohort, the Charlson Comorbidity Index (CCI) score²⁵ (a risk-adjusting score built from claims data indicators of serious comorbid conditions that are predictive of mortality) was calculated. For each benefit, the population was restricted to those employees with eligibility for the benefit, and the percent using the benefit was calculated. Additionally, for STD/LTD and WC, the mean days of leave and the median payment (MedianPayment) as a percent of salary were calculated. Because SL payments are equal to salary, median SL payments were not reported and the analysis focused on use and mean days of leave. These primary outcomes (days of leave and MedianPayment) from 2003-2019 were compared with baseline (2002) and expressed as percentages of the baseline use, days of leave, and payments. The research was designed to identify changes in use for patients with MD and SUD, but not to compare these 2 mental-disorder conditions. The analytic approach included summary statistics only, without formal hypothesis testing.

All absences were aggregated based on the year the leave began. STD/LTD and WC payments included lump-sum distributions and potentially extended beyond the year initiated. Workplace accidents were paid under the WC benefit. WC claims without absence from work (medical only) were excluded.

Results

After an initial decrease from baseline, the prevalence of both MD and SUD (Table) increased beginning in 2004, with slight decreases for mental disorders from 2012-2015 and a decrease for SUDs in 2014. Severity, based on the CCI, for the MD cohort decreased in 2004 before trending higher, plateauing in 2010, and then remaining fairly constant until the end of the study. Severity for the SUD cohort initially decreased then trended higher beginning in 2003, remained steady from 2008 to 2014, and then increased.

Annual percent of employees using each of the different absence benefits relative to baseline is shown in Figure 1,

TABLE: Prevalence, severity,^a and benefit eligibility of the annual employee cohorts with mental disorders and SUDs

Year	Mental Disorders ^b		SUDs ^c	
	Prevalence, %	CCI ^a	Prevalence, %	CCI ^a
2002	7.59	0.322	0.40	0.391
2003	4.91	0.329	0.32	0.251
2004	4.82	0.278	0.29	0.280
2005	5.91	0.304	0.32	0.413
2006	7.09	0.324	0.35	0.464
2007	7.26	0.353	0.42	0.488
2008	7.32	0.375	0.48	0.453
2009	7.82	0.370	0.52	0.402
2010	8.36	0.387	0.52	0.514
2011	8.65	0.385	0.54	0.462
2012	8.63	0.383	0.54	0.482
2013	8.47	0.390	0.55	0.480
2014	7.78	0.380	0.53	0.483
2015	8.40	0.392	0.72	0.565
2016	9.51	0.384	0.93	0.667
2017	10.01	0.391	1.06	0.659
2018	10.60	0.393	1.10	0.729
2019	10.89	0.379	1.04	0.650

AHRQ=Agency for Healthcare Research and Quality; CCI=Charlson Comorbidity Index Score.

^aSeverity assessed by CCI scores.

^bThe AHRQ Mental Disorders category includes adjustment disorders; anxiety disorders; attention-deficit, conduct, and disruptive behavior disorders; delirium; dementia and amnesic and other cognitive disorders; developmental disorders and impulse control disorders; mood disorders; personality disorders; schizophrenia and other psychotic disorders; suicide and intentional self-inflicted injury; and miscellaneous mental health disorders. SUDs are normally included but have been removed from the category for this research.

^cThe AHRQ Substance Use Disorders includes: alcohol- and substance-related disorders.

with baseline values noted in the legend. In 2002 (baseline), 13.7% of MD-EMPs used STD (ranging 87.3%-108.4% of baseline, during 2003-2019; median, 97.3%), 1.2% of MD-EMPs used LTD (51.5%-94.1%; median, 72.7%), 1.3% of MD-EMPs used WC (35.1%-76.6%; median, 61.2%), and 56.0% of MD-EMPs took SLs (72.3%-117.6%; median, 101.0%). In 2002, 23.3% of SUD-EMPs used STD (76.8%-145.0% of baseline during 2003-2019; median, 106.9%), 2.5% of SUD-EMPs used LTD (20.9%-119.9%; median, 55.5%), 1.9% of SUD-EMPs used WC (34.3%-193.7%; median, 51.6%), and 47.9% of SUD-EMPs took SLs (48.1%-202.2%; median, 102.8%).

Annual days of leave relative to baseline by benefit are shown in Figure 2. For eligible MD employees, during the 17-year period (from 2003 through 2019) relative mean days of STD leaves were 78.0% to 114.4% of baseline (median, 92.9%); 121.5% to 657.8% of baseline for LTD

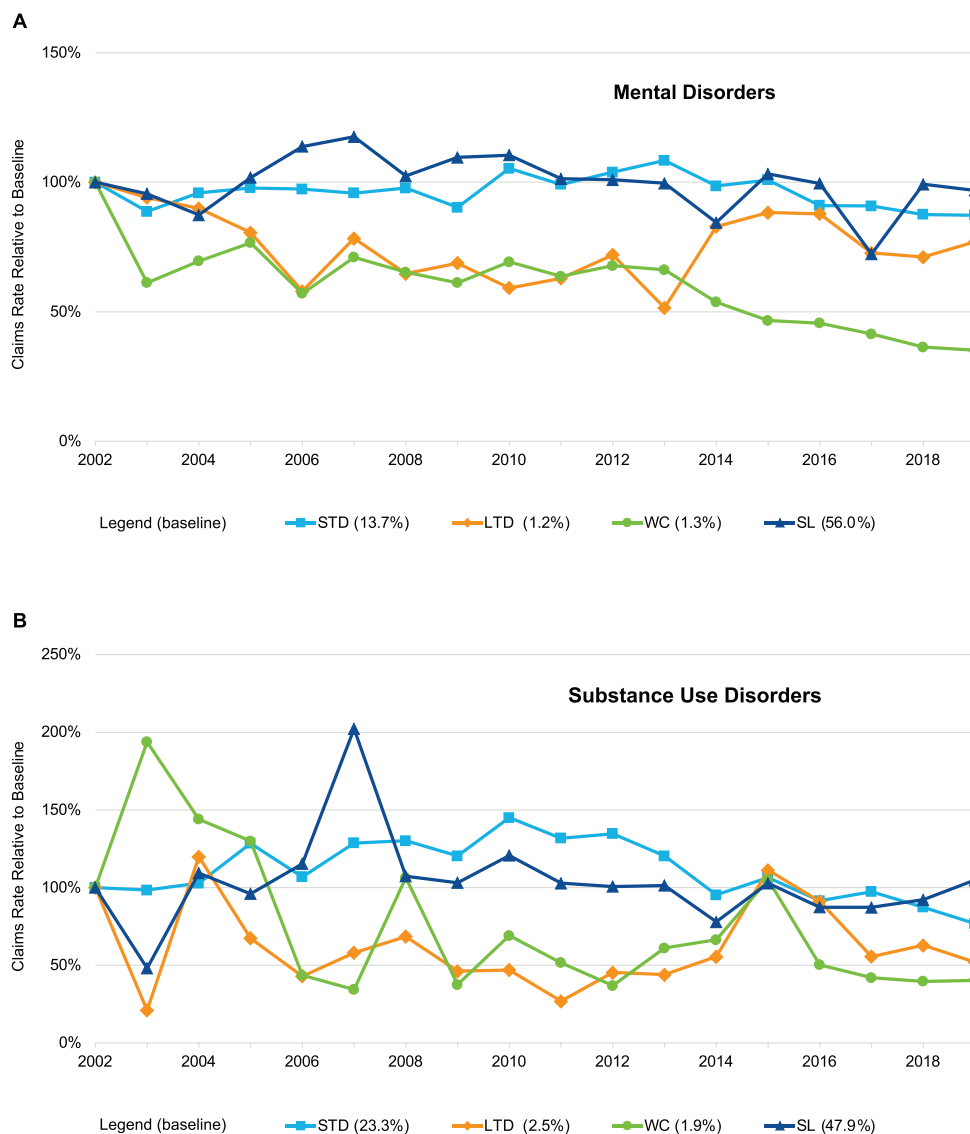


FIGURE 1: Relative percent of employees filing claims by condition and benefit (as a percent of 2002 baseline; LTD = long-term disability; SL = sick leave; STD = short-term disability; WC = workers' compensation)

leaves (median, 359.2%); 111.0% to 295.1% for WC leaves (median, 195.9%); and 77.0% to 196.3% for SLs (median, 101.3%). For eligible SUD employees, relative mean days of STD leaves were 83.3% to 140.3% of baseline (median, 99.0%); 122.7% to 1042.2% for LTD (median, 460.0%); 47.0% to 444.8% for WC (median, 123.3%); and 70.9% to 252.9% for SLs (median, 95.3%).

(median, 73.8%), and 78.6% to 253.6% for WC (median, 114.6%). Relative SUD payments were 68.4% to 125.6% of baseline for STD (median, 106.0%), 27.5% to 91.0% for LTD (median, 63.3%), and 97.9% to 481.6% for WC (median, 104.0%).

At baseline eligible MD employees received MedianPayments of 74.8%, 54.6%, and 68.0% for STD, LTD, and WC, respectively, whereas SUD employees received 73.2%, 69.3%, and 67.4% of salary for STD, LTD, and WC, respectively. Trends in MedianPayment relative to baseline are shown in Figure 3. Because SL payments are equal to salary, they are omitted. From 2003 to 2019 MD-EMPs MedianPayments for STD were 66.3% to 122.0% of baseline (median, 113.4%), 40.5% to 95.7% for LTD

Discussion

Although many studies^{6-14,16-24,26-28} report using real-world data, few studies^{16-24,26-28} in the literature use real-world person-specific absence cost and lost time data from comprehensive employee benefits and payroll systems. Most^{7,8,12-14} focus only on disability data and use proxies, survey data, or constant dollars to estimate the real-world impact of absences. Few studies cover

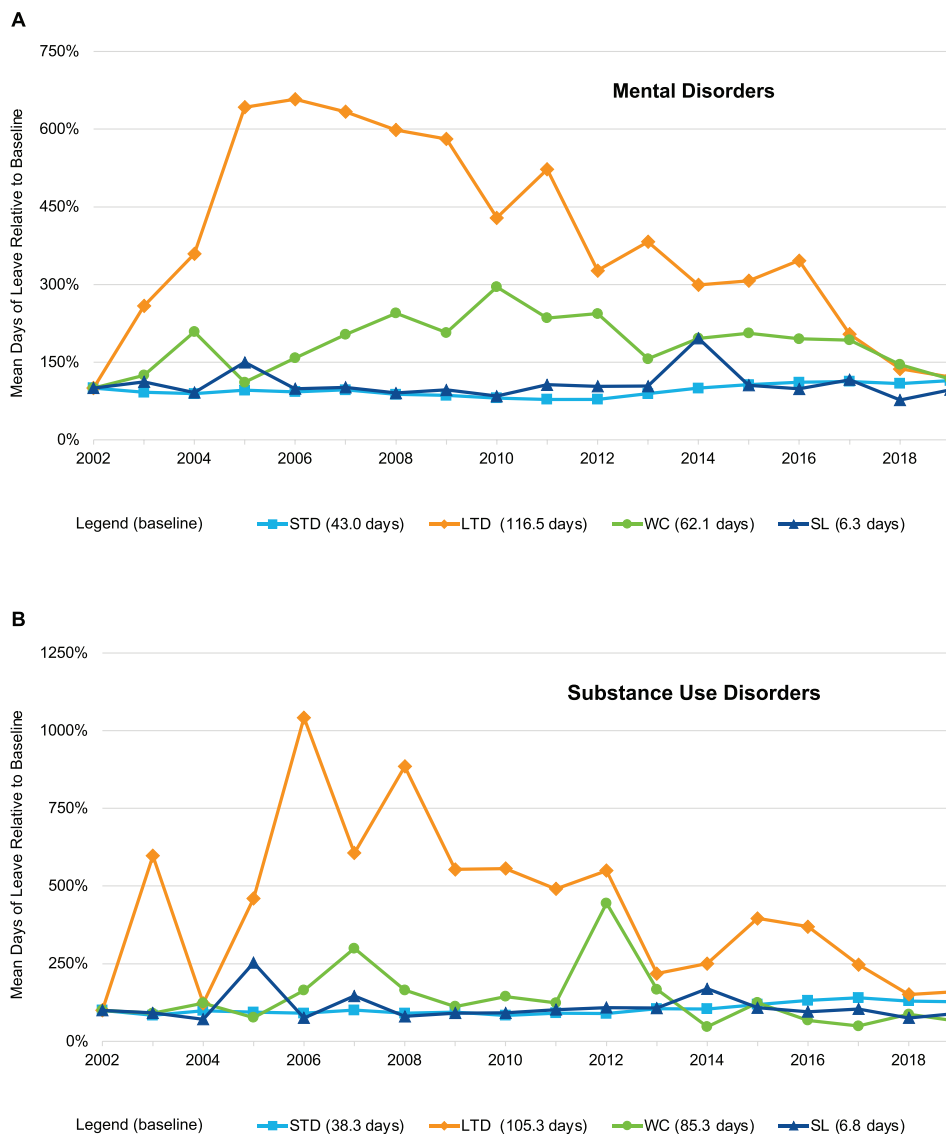


FIGURE 2: Relative average days of leave by condition and benefit (as a percent of 2002 baseline; LTD = long-term disability; SL = sick leave; STD = short-term disability; WC = workers' compensation)

multiple benefits. Those that do often either focus on STD only,¹³ combine STD and LTD, and exclude WC.^{12,14}

Since its inception in 2001, the Workpartners database has consistently published data^{16,17,19-24,27,28} from all 4 absence benefits using real-world data based on claims and payroll data. In the present study, annual cohort inclusion, prevalence, and CCI were based on medical claims, with the remaining outcomes based on absence benefits.

Consistent for both conditions, relative SL use was highest in 2007, relative LTD days of leave were highest in 2006, and relative LTD MedianPayments were highest at baseline. Other benefits varied: for MD-EMP, the relative rate of use was highest in 2013 for STD, whereas LTD and WC were highest at baseline. For SUD-EMP, highest relative use was in 2010 for STD, 2004 for LTD, and 2003

for WC. The days of leave were relatively highest for MD-EMP in 2019, 2005, and 2014 for STD, WC, and SL, respectively, and highest for SUD-EMP in 2017, 2012, and 2005 for STD, WC, and SL, respectively. The highest relative MedianPayments for MD-EMP were in 2013 for STD and 2004 for WC. For SUD-EMP, the highest relative MedianPayments occurred in 2012 for STD and 2006 for WC.

Changes in the employer groups and benefit plan designs may have resulted in some of the variation in the data. Because some disability and WC claims are paid as lump sum distributions, caution should be exercised interpreting these peaks. Lastly, the higher variance in LTD and WC days of leave and payments may be due to the nature of these benefits, which can potentially be much longer than STD and SL.

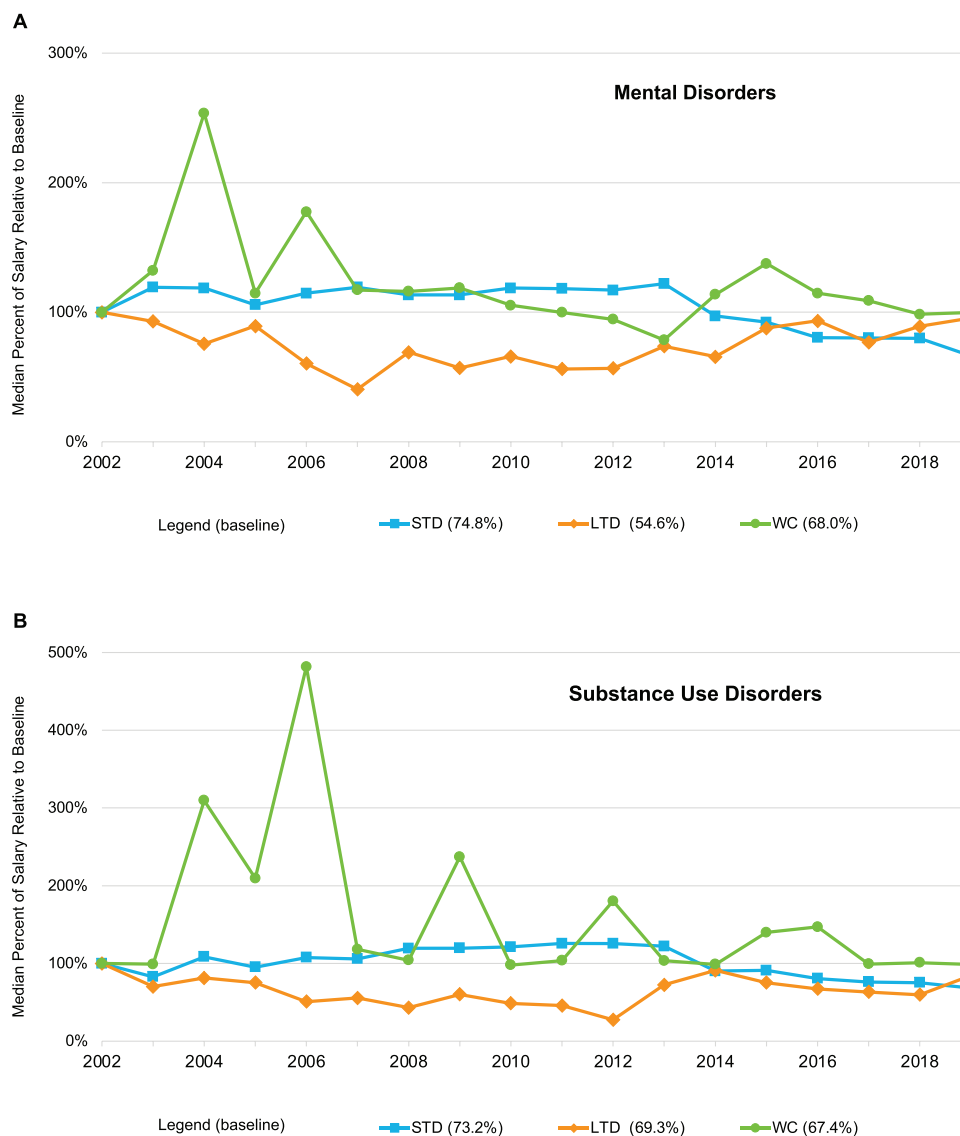


FIGURE 3: Relative median payment as a percent of salary by condition and benefit (as a percent of 2002 baseline); because sick leave payments are equal to salary, they are omitted from this chart (LTD = long-term disability; STD = short-term disability; WC = workers' compensation)

The present study has several strengths. This study used real-world, objective data from employer disability/WC claims and payroll systems and was conducted in a diverse, commercial workplace-centric database, which includes patients dispersed throughout the United States. The database also includes job-related information (salary, exempt status, and part-time/full-time status) and self-reported racial information not contained in other databases. The employers in the database represent a wide range of industries in the private sector.

This study has several limitations. These administrative claims data are derived from annual cohorts of US employees with commercial health insurance during the study period and may not be generalizable to patients who do not have employer-sponsored health insurance,

who are covered by Affordable Care Act plans, who are unemployed, or who are based outside of the United States. The study did not assess the ramifications of treatment types on patient quality of life, direct health care costs, or employee productivity, and did not ascertain disease control of the patients. Although comparisons with baseline allow a measure of control, the study did not include specific control groups. The Workpartners database provided a convenience-based sample, and the population expanded or contracted by employers joining or leaving the database. Even though the study was conducted during an 18-year period, each year/condition was a different cohort. Finally, cost data associated with paid leaves are generally not normally distributed and may benefit from a regression-based approach.

Future research should consider control cohorts (without the conditions), adjusting inclusion/exclusion criteria to require multiple medical or prescription claims, and using 2-part regression models controlling for employee job-related information (eg, salary, full-time/part-time status, etc) to estimate absences and costs, which might allow the impact to be projected to the US private sector-employed population. Research may also be considered among federal, state, and local employees with different benefit structures.

Conclusion

In this real-world study, the percent of employees with mental disorders and substance use mental disorders generally increased during the 18 years of the study. The percent of these employees using the different absence benefits (STD and LTD, WC, and SL) in a given year varied greatly. Additionally, these employees had widely varying days of leave and payments as a percent of salary over time that also differed by benefit type. Using a constant cost or salary replacement factor over time, or for all benefits, is not accurate or appropriate in health benefit absence research. Every effort should be made to use actual person-level or claim-level absence and payment data from employer disability, WC, and payroll data systems so absence time and cost estimates are more accurate, ultimately leading to better-managed benefits.

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