

Integrated Data Models Outperform Direct Claims Only Models in Predicting New Mental Health Cases

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Purpose

- To use integrated medical, prescription, and employer-based data to predict future new mental health cases.

Background

- US employee benefits include:
 - Sick Leave (SL) for paid time off, generally without a specific reason.
 - Short- and Long-term Disability (STD and LTD, respectively) for non-work-related injuries/illnesses.
 - Workers' Compensation (WC) for work-related injuries/illnesses.
 - Family medical leaves.
- Absences due to SL, STD, LTD, and WC can have significant impact on business performance.
- Employers are intensifying efforts to:
 - Manage these benefits.
 - Make connections with employee health.
 - Manage events likely to precede costly health events.

Study Population

- US employees within the Workpartners (formerly HCMS) Research Reference Database (RRDb) between January 2017 and December 2019.
- Workpartners RRDb contains:
 - Medical and pharmaceutical claims for over 3 million employees and dependents from multiple US private sector employers in the medical, retail, service, manufacturing, transportation, energy, technology, financial, and utility industries.
 - Enhanced employee demographics (including self-reported race).
 - Job-related employee information (salary, job type, full/part-time status, exempt/non-exempt status).
 - Information on family medical leaves [FMLA] and self-reported survey data.
 - Employees in all states.
 - Claims with absence durations and payments for employee populations eligible for STD=1.2 million, LTD=1.1 million, WC=1.4 million, SL=710,000.

Study Population (continued)

- The Workpartners RRDb has been used for research in:
 - Diabetes,¹⁻³ diabetic macular edema, and diabetic retinopathy.²
 - Mental disorders including bipolar disorders^{4,5} and major depressive disorders with and without suicidal ideation.⁶
 - Cardiovascular conditions such as cardiac arrhythmias,^{7,8} atrial fibrillation,⁹ and hypertension.⁹
 - The impact of persistence and adherence on absenteeism and costs.^{3,9,10}
 - The impact of COVID-19 on claims utilization and absence.
 - Optimal Benefit Design.
 - Risk-adjusted benchmarks (Workpartners' HUI - Health Utilization Index).
 - Various other conditions.

Methods

- Retrospective analysis of US employees with medical claims in the Workpartners RRDb between January 2017 and December 2019.
- Employees were classified as having new mental health claims if they had:
 - Medical claims with International Classification of Disease 10th edition (ICD-10) codes assigned to the US Agency for Healthcare Research and Quality (AHRQ) mental health Major Diagnostic Category (MDC)¹¹
 - OR
 - Pharmacy claims within the HIC3 grouping for mental health claims.
- If the employees with mental health claims had no mental health (medical or pharmacy) claims in the prior year, they were classified as having a new mental health claim.
- Employees were identified as not having mental health claims if they had:
 - No medical claims within the AHRQ mental health category AND
 - No pharmacy claims within the HIC3 grouping.
- Multivariate models were used to compare employees with new mental health claims with those without any mental health claims.
 - The purposes of the models were to examine the likelihood of a future mental health case and to understand the:
 - Events preceding new mental health claims.
 - Impact of absences on new mental health claims.
- All medical costs based on AHRQ major or specific categories.
- Findings were considered significant at $P \leq 0.05$.

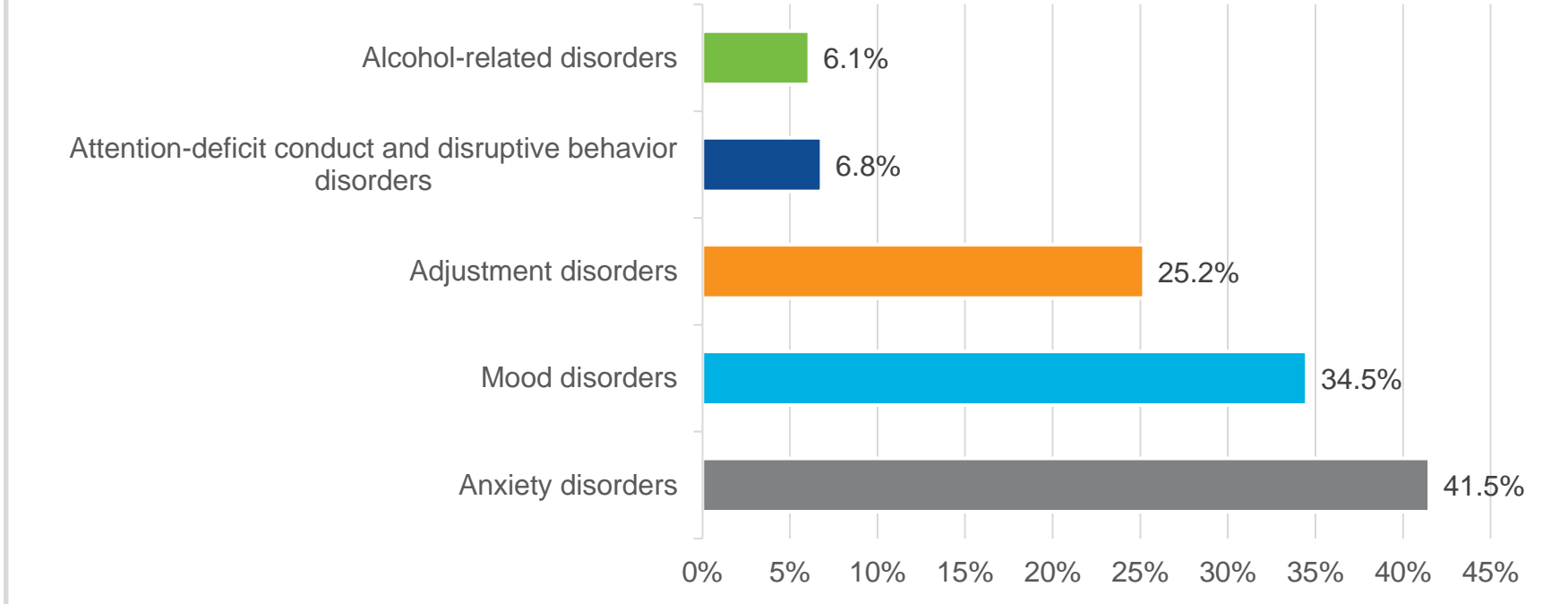
Results

Demographics of the 2019 Population

	Employees	
	without Mental Health Claims	with New Mental Health Claims
Age	45.6	44.9
Percent Male ($P \leq 0.0001$)	77.8%	64.1%
Annual Salary	\$123,321	\$118,010
Tenure	13.9	13.2
At least 1 chronic condition	52.5%	64.3%
Annual Medical Costs ($P \leq 0.0001$)	\$4,110	\$11,704

- Employees with mental health claims represent 8.5% of the employee population.
- Top mental health AHRQ specific categories¹¹ accounted for 6% of direct (medical claims).

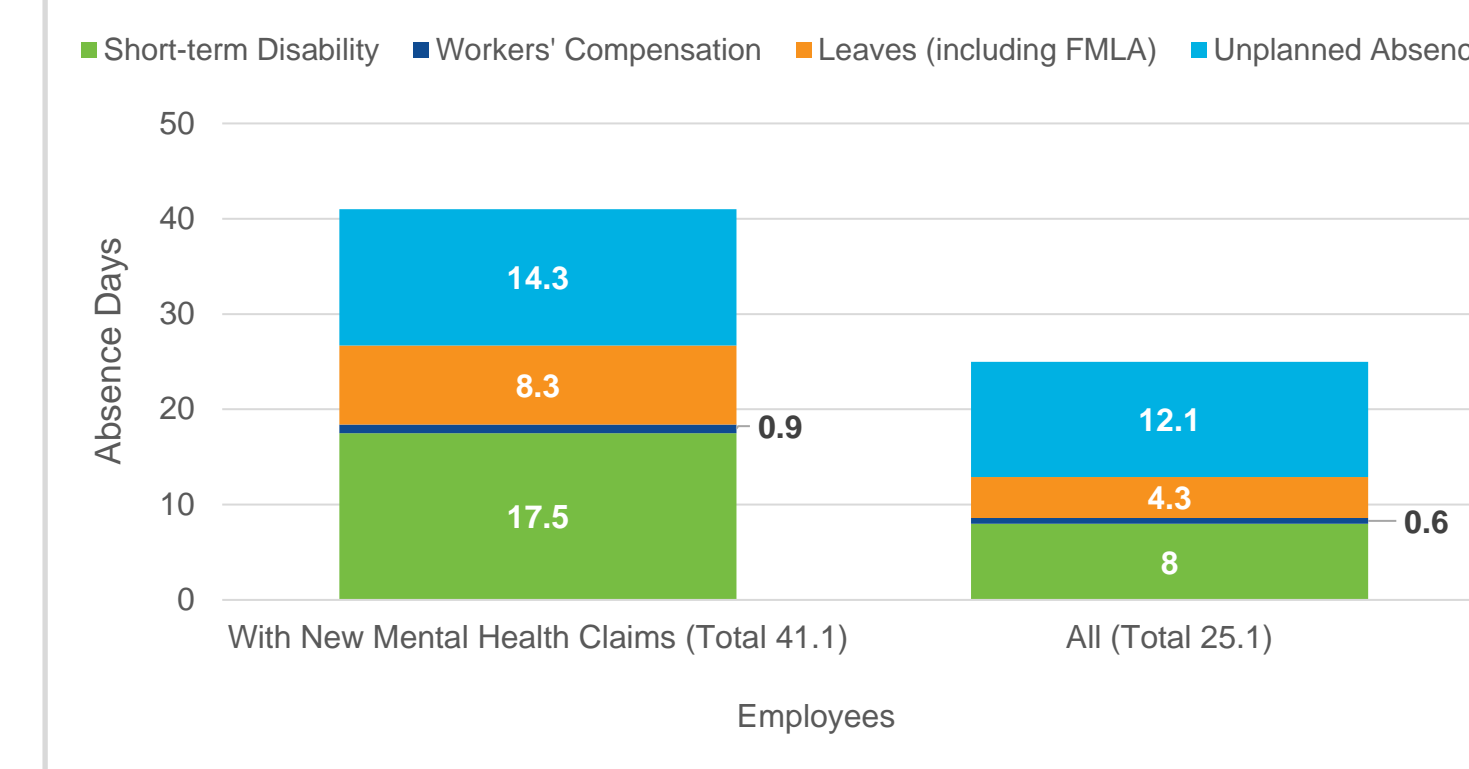
Disorders Impacting the Employee Population



Mental Health Specific Costs in 2019

Costs Due to	Program Costs	Identified Only with Given Data	% of All Costs	% of All Covered Employees
Medical	\$6,751,449	1,006	4.7%	11.9%
Pharmacy	\$1,352,180	2,149	4.8%	16.4%
Short-term Disability	\$5,415,504	124	14.4%	2.4%
Workers' Compensation	\$131,063	8	0.6%	0.2%
Leaves (unpaid)	\$0.00	0	0.0%	0.0%
Total above	\$13,650,196		5.9%	21.7%
Indirect (absence) costs	\$11,872,065		2.9%	0.0%
Total direct and indirect costs	\$25,522,261		6.3%	21.7%

Overall Absence Days for Identified Employees



Cohort Absence Comparisons in 2019 (Model Inputs)

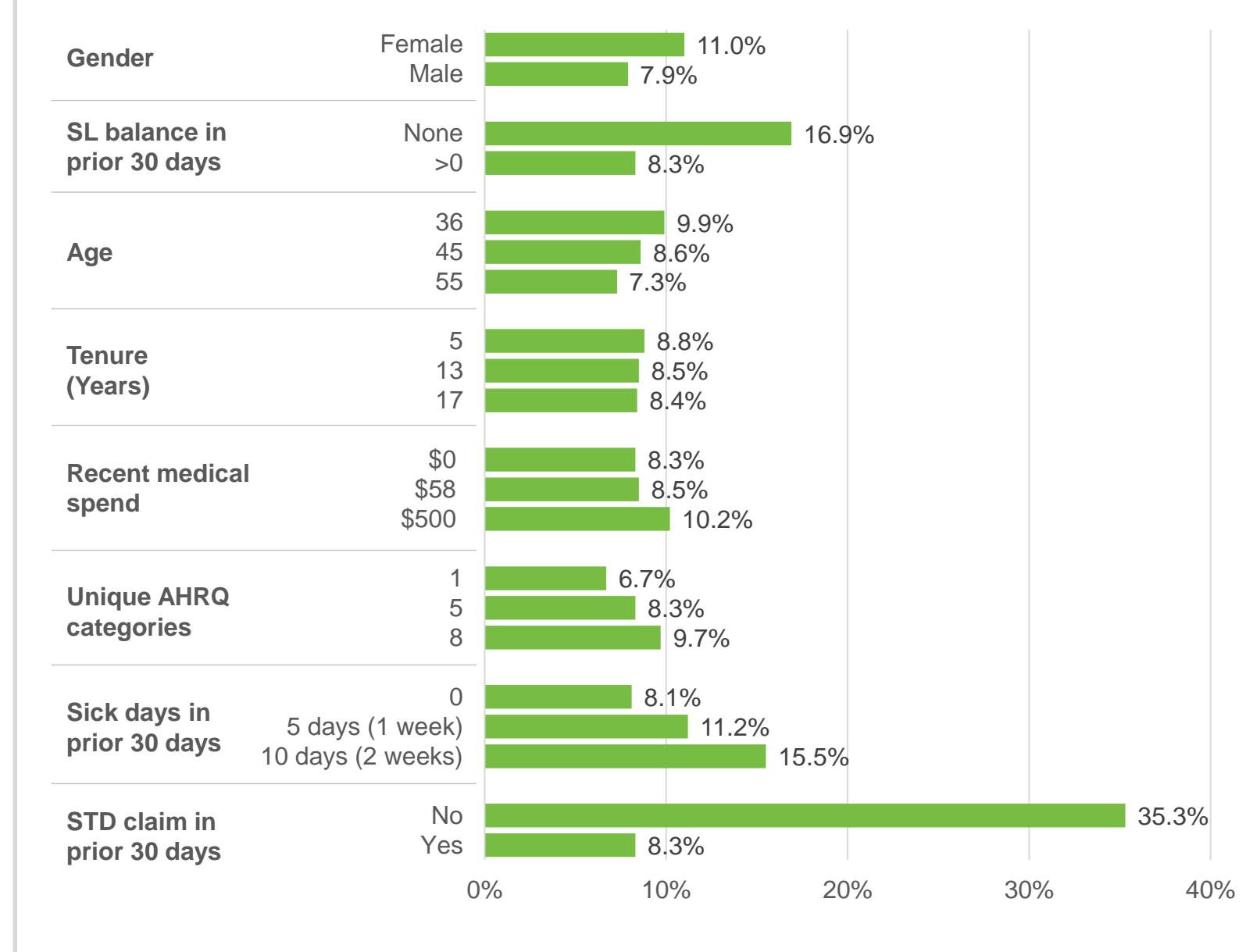
Metric	Employees	
	without Mental Health claims	with New Mental Health claims
Percent with 0 sick balance in last 30 days*	2.3%	8.6%
Workers' compensation claim in last year	5.0%	9.4%
Short-term disability claim in last year	11.9%	29.4%
Short-term disability claim in last 30 days*	1.0%	11.4%
Taking company medical time in last year	1.2%	5.6%
Taking family medical leave (FMLA) in last year	5.3%	17.2%
Taking family medical leave (FMLA) in last 30 days	1.5%	10.7%
Taking time off without pay in last year	11.2%	18.5%
Taking unpaid leave of absence in the last year	2.5%	7.3%
Taking sick time in last 30 days*	47.8%	58.3%

* $P \leq 0.0001$

Mental Health Specific Costs as a Percent of Total Costs

Data Source	% of All Costs
Medical ($P \leq 0.0001$)	48.2%
Pharmacy	43.7%
Short-term Disability ($P \leq 0.0001$)	46.1%
Worker's Compensation	30.8%
Total with absence benefits	44.5%

Likelihood of New Mental Health Claim



Conclusions

- Employees with mental health claims incurred a low percent of direct-costs and a large percent of total-costs.
- Identifying events that precede an initial mental health claim might yield significant savings.

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