

THE ECONOMIC IMPACT OF
mental health
IN NORTHERN VIRGINIA

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September 2023



executive summary

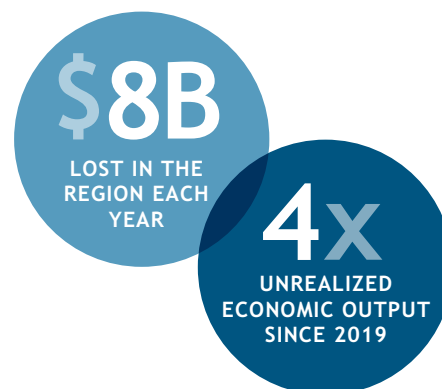
Widespread anxiety and depression have exerted a toll on workers, employers, and Northern Virginia's bottom line; since 2020, the region has lost \$8 billion each year in unrealized economic output due to worker mental health, an amount that has quadrupled since 2019.

In 2019, worker mental health represented a salient *but relatively uncommon* issue for Northern Virginia employers: approximately 11 percent of working adults were experiencing mild anxiety or depression, and 7 percent fell into a clinical range. During the pandemic, these rates spiked, and have remained high—as of May 2023, over half of the workforce was experiencing some level of anxiety or depression, and a quarter were in the clinical range.

To date, the *economic* impact of this phenomenon in Northern Virginia was implicitly understood but unmeasured. Through a partnership between the Community Foundation for Northern Virginia and the George Mason University Center for Regional Analysis, researchers teamed up to develop a novel method to estimate the impact of worker mental health on productivity and gross regional product (GRP).

This research estimates that since 2020, Northern Virginia has lost over \$8 billion *each year* in unrealized economic output due to the impaired mental health of its workforce—a quadrupling of the losses seen prior to the pandemic. The Commonwealth of Virginia lost \$22 billion in potential gross state product in 2022.

While not an easy task, helping workers minimize and manage stress—not just from occupational burnout, but from the strain of also being a parent, provider, student, and caregiver—could be key to enhancing the region's economic competitiveness.



estimating the impact of mental health on productivity

Over the last three years, millions of Americans have exited the labor force, with one in four attributing their departure to mental health.¹ This loss of employment is not only a hardship to the worker and their family—it also affects team members who must compensate for the lost output; employers who bear the cost of recruiting, hiring, and onboarding new staff; and the local economy in unrealized gross regional product (GRP).

But the majority of workers with anxiety or depression do not leave; they remain employed but perform below potential due to absenteeism (10 percent) and *presenteeism*—working but less engaged, such as through diminished interest (50 percent), procrastination (46 percent), social avoidance (31 percent), and missed deadlines (24 percent).² They may exhibit behavior that is troubling and disruptive to others; see **Figure 1**.

These behaviors can lead to a precipitous decline in productivity, at rates far higher than other conditions.³ As shown in **Figure 2**, while a worker with *no* anxiety or depression loses about 5 percent of productive time, those with mild levels lose 11 percent, moderate levels lose 17 percent, and severe levels lose 30 percent. Depending on the nature and size of the team, colleagues may step in to cover about half of this lost productive time. For more detail, see methods on page 3.

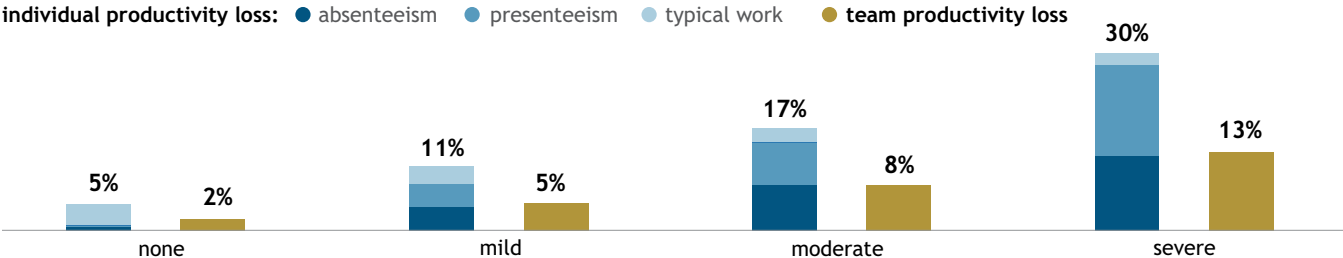
All told, for every worker with a mental health need, their team can expect total productivity to decline by 5 to 13 percent, or 2 to 5 hours lost in a 40-hour work week.

Figure 1.
APA Notice.Talk.Act.® Checklist

MY COLLEAGUE EXHIBITS...

- Constant, intrusive thoughts
- Difficulty concentrating, confused thinking
- Disappearing for an extended period
- Easily overwhelmed and unable to manage tasks
- Excessive weight gain or loss
- Excessive worrying and feeling anxious
- Excessively sleepy, low energy, or fatigued
- Extremely high and low moods
- Fidgety or nervous movements
- Flat affect, not expressing emotion
- Hopelessness
- Irritability with personal conflicts, aggressiveness
- Issues with deadlines, work quality, accountability
- Misuse of alcohol and/or drugs
- More withdrawn and avoiding social situations
- Not enjoying usual activities
- Persistent negative thoughts and beliefs
- Personalizing situations
- Physical health issues w/o a clear cause
- Poor personal hygiene or overly casual
- Showing up late or at odd hours
- Uncharacteristically interactive or demanding

Figure 2.
Effects of mental health needs on individual and team productivity



Source: Authors' calculations; see Methods on page 3

Methods

To estimate the economic impact of worker mental health in Northern Virginia, researchers began by defining three work statuses associated with different levels of daily productivity loss (DPL)⁴:

1. **Absent.** On days when a worker misses all scheduled work, the employer loses 100 percent of that worker's potential productivity.
2. **Impaired.** On days when a worker is at diminished capacity, the employer loses a *variable amount* of that worker's potential productivity depending on underlying health conditions.
3. **Typical.** On days when a worker is at normal capacity, the employer loses 4 percent of that worker's potential productivity.

For each work status, researchers multiplied the expected DPL by the frequency with which those days occurred for workers with no, mild, moderate, and severe mental health needs,⁵ and then summed these rates to estimate individual productivity loss (IPL). At the team level, research suggests that co-workers can cover as much as 56 percent of lost productivity;⁶ hence, team productivity loss (TPL) is estimated as the product of IPL and lost coverage for workers at each level of mental health need.

Team productivity loss due to mental health (TPL_{MH})—the metric used as the basis for calculating lost economic output—accounts for marginal productivity losses beyond typical daily distractions. See **Figure 3**.⁷

Researchers then applied TPL_{MH} estimates to select geographies and industries, based on the mental health composition of the workforce. Data on mental health needs within Northern Virginia and the Commonwealth are available through the U.S. Census Bureau's Household Pulse Survey, which researchers used to estimate the percent of the region's workforce⁸ with mild, moderate-clinical, and severe-clinical anxiety/ depression⁹ for calendar years 2020-2022 and for each BLS super sector in calendar year 2022.

To calculate rates for 2019, researchers adjusted national estimates from Panchal et al (2022) for Northern Virginia.¹⁰ Researchers then applied these annual estimates to the Gross Regional Product to estimate the loss in potential economic output due to mental health.¹¹

Figure 3.

Effects of mental health needs on productivity loss

DPL= Daily Productivity Loss / IPL=Individual Productivity Loss / TPL=Team Productivity Loss

WORK STATUS		LEVEL OF MENTAL HEALTH NEED (PHQ-9)					
		None	Mild	Moderate	Severe		
1 Absent		DPL	100%	100%	100%	100%	
	x	% of Days Impacted	0.6%	4.0%	7.6%	12.5%	
	=	IPL due to <i>Absenteeism</i>	0.6%	4.0%	7.6%	12.5%	
2 Typical		DPL	4.0%	15.0%	23.0%	44.0%	
	x	% of Days Impacted	7.4%	25.6%	30.4%	34.4%	
	=	IPL Loss due to <i>Presenteeism</i>	0.3%	3.8%	7.0%	15.1%	+
3 Typical		DPL	4.0%	4.0%	4.0%	4.0%	
	x	% of Days Impacted	92.0%	70.4%	62.0%	53.1%	
	=	IPL due to <i>Typical Work</i>	3.7%	2.8%	2.5%	2.1%	+
	Σ	Total IPL	4.5%	10.7%	17.1%	29.7%	=
	x	Lost Coverage	44.0%	44.0%	44.0%	44.0%	
	=	TPL	2.0%	4.7%	7.5%	13.1%	
	-	[TPL _n - (1-TPL _n) / (1-0.02)]	2.0%	1.9%	1.9%	1.8%	
	=	TPL _{MH}	0.0%	2.7%	5.6%	11.3%	

Source: Authors' calculations



ECONOMIC IMPACT

In 2019, the mental health of the workforce represented a salient *but relatively uncommon* issue to Northern Virginia employers: at the time, an estimated 11 percent of workers struggled with mild anxiety/depression, and just 7 percent fell into a clinical range.

During the pandemic, however, mental health needs spiked, with more than half of all workers reporting some level of anxiety or depression and about one in four workers experiencing clinical levels of anxiety or depression. See **Figure 4**. As of May 2023, 53 percent of the workforce was struggling with some level of anxiety or depression.

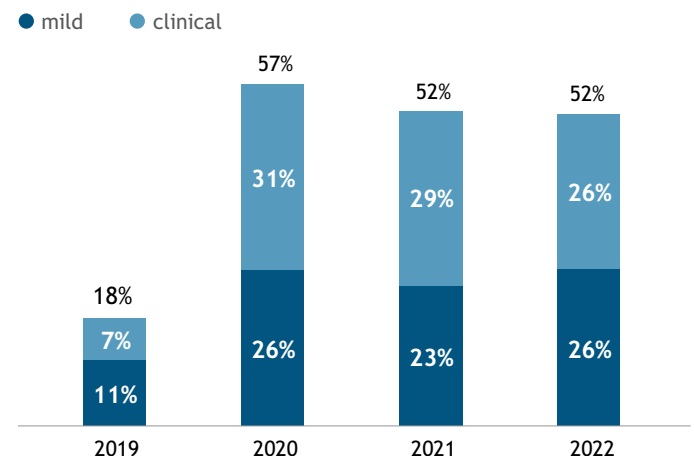
The increased rates of anxiety and depression have not just harmed the individuals and families coping with these feelings—they are taking a toll on the region’s economy. In 2019, though a fraction of workers was experiencing poor mental health and most cases were mild, worker mental health cost the region nearly 1 percent in productivity, the equivalent of \$2.1 billion in gross regional product (GRP).

For the last three years, with elevated levels of mental health need, productivity losses due to worker mental health increased by 2.1 percentage points—equivalent to over \$8 billion in potential GRP *each year*. See **Figure 5a**.

This regional loss in productivity has had an impact throughout the Commonwealth, which lost an estimated \$21.8 billion in potential output (3.6 percent of potential GRP) due to mental health-related absenteeism and presenteeism in 2022. In comparison, the state lost approximately \$4.5 billion (0.9 percent) in 2019. See **Figure 5b**.

Figure 4.

Rates of anxiety/depression among workers in Northern Virginia



Source: Authors’ calculations of Pulse Survey

At the local level, losses in potential GDP due to mental health were \$4.2 billion in Fairfax County, \$1.3 billion in Arlington, \$1 billion in Loudoun, \$600 million in Prince William, and \$500 million in Alexandria. See **Figure 5c**.

When examined by industry, the greatest losses occurred in Professional and Business Services, where 47 percent of workers are struggling with anxiety and depression that cost an estimated \$2.3 billion in unrealized output in 2022. The sectors with the highest level of need (workers in education and health; trade, transportation, and utilities; and finance had rates of anxiety and depression in excess of 60 percent) also witnessed heavy losses.

Figure 5.

Estimated economic impact of mental health (billions of dollars, Nominal \$)

● actual ● additional input with no worker anxiety/depression

a. Gross Regional Product for Northern Virginia



b. Gross Domestic Product for Virginia



c. Gross Regional Product for Northern Virginia jurisdictions and super sectors, 2022

	MENTAL HEALTH NEED		GROSS REGIONAL PRODUCT (billions)		
	any	clinical	actual	additional output	%
Northern Virginia	52%	26%	\$270	\$8.4	3.0%
Fairfax	52%	26%	\$133	\$4.2	.
Arlington	52%	26%	\$41	\$1.3	.
Loudoun	52%	26%	\$31	\$1.0	.
Prince William	52%	26%	\$19	\$0.6	.
Alexandria	52%	26%	\$15	\$0.5	.
Professional and Business Services	47%	25%	\$83	\$2.3	2.7%
Trade, Transportation, and Utilities	60%	38%	\$34	\$1.4	4.0%
Government	45%	28%	\$49	\$1.4	2.7%
Financial Activities	61%	34%	\$29	\$1.2	3.8%
Education and Health Services	61%	33%	\$18	\$0.7	3.8%
Information	47%	19%	\$21	\$0.5	2.4%
Leisure and Hospitality	48%	32%	\$10	\$0.4	3.9%
Construction	37%	16%	\$12	\$0.3	2.2%
Other Services	52%	19%	\$7	\$0.2	2.7%
Manufacturing	20%	6%	\$7	\$0.1	1.2%

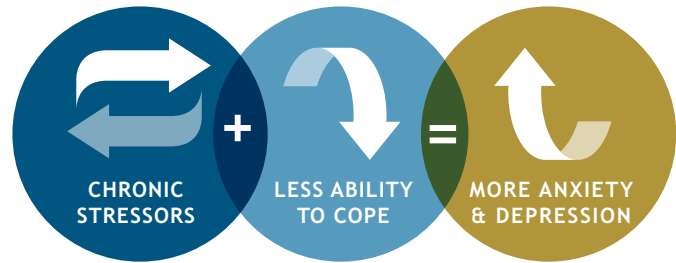
Source: Authors' calculations; see methods

responding effectively to worker mental health

To address the recent increase in anxiety and depression, we must understand its root causes

Historically, anxiety and depression have been the province of the individual—their immutable traits (genetic, biological, biochemical), their lived experiences, their ability to cope with stress, their ideal treatment and recovery plan.

Today, poor mental health is a community issue that impacts over half of the workforce. It requires a community-level response focused on the root cause of increased anxiety and depression: **chronic exposure to multiple stressors + diminished ability to cope**



CHRONIC EXPOSURE TO MULTIPLE STRESSORS

While *stress* is subjective, *stressors* are objective, representing a set of circumstances that tend to create tension and worry in those exposed to them. When stressors accumulate and endure, most people will see a decline in both mental health and productivity.¹² During the pandemic, for example, researchers found that Americans who were experiencing four or more major life stressors were five times as likely to experience episodic and chronic depression than those facing fewer objective stressors.¹³

When it comes to workplace mental health, both endemic (job-related) and exogenous (personal) burnout can impact productivity. See **Figure 6** for signs and symptoms by role.

- **Burn out at work.** In 2022, 43 percent of U.S. workers (including one in three executives) were experiencing “burnout”,¹⁴ a state of emotional exhaustion, low self-fulfillment, and depersonalization resulting from chronic exposure to emotionally draining environments and characterized by symptoms identical to depression.¹⁵ Occupational burnout is often associated with unsustainable workloads; lack of control, support, or fairness; insufficient rewards; and mismatched values and skills. Rates of chronic burnout tend to be higher among those working in K-12 education, followed by higher ed, professional services, government, retail, healthcare, and law.¹⁶ Workers in non-leadership roles also struggle at higher rates.¹⁷

- **Burn out at home.** Burnout can also occur when attempting to balance work with other major life roles, such as being a parent,¹⁸ caregiver, provider, and student.¹⁹ In particular, workers who face routine interruptions in childcare, who are attempting to work while being their child’s primary caregiver, and/or who support a sick, disabled, or aging family member may be particularly likely to experience non-occupational burnout/role fatigue.

Income insecurity—provider burnout—may be a particular salient source of stress that has its own impact on worker productivity.²⁰ In Northern Virginia, 42 percent of families with 1 working adult and 13 percent of families with 2 working adults do not earn enough money to pay for shelter, food, medical care, child care, and other essentials.²¹ The stress of not being able to meet one’s basic needs has a strong, bi-directional link to mental health; in fact, research suggests that programs designed to reduce poverty—such as cash transfers—can improve mental health *without* clinical treatment.²²

Figure 6.

Signs of Stress/Burnout by Role

All checklists have been edited for space, clarity, and coding consistency; see links for official versions

OCCUPATIONAL STRESS | [Maslach Occupational Burnout Inventory](#)

As an employee, I feel...

- | | |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <input type="checkbox"/> Afraid that I have become “emotionally harder” | <input type="checkbox"/> That colleagues blame me for their problems |
| <input type="checkbox"/> At my wits’ end | <input type="checkbox"/> That I am working too hard |
| <input type="checkbox"/> Burnt out | <input type="checkbox"/> That I treat clients/ colleagues impersonally |
| <input type="checkbox"/> Disinterested in what is going on with colleagues | <input type="checkbox"/> That my work is not rewarding |
| <input type="checkbox"/> Emotional exhaustion because of work | <input type="checkbox"/> Tired upon getting up in the morning |
| <input type="checkbox"/> Frustrated | <input type="checkbox"/> Unable to build a relaxed atmosphere at work |
| <input type="checkbox"/> Lack of energy | <input type="checkbox"/> Unable to deal with others’ problems |
| <input type="checkbox"/> More callous | <input type="checkbox"/> Unable to influence others positively |
| <input type="checkbox"/> Stress from dealing with emotional problems | <input type="checkbox"/> Unable to understand the actions of colleagues |
| <input type="checkbox"/> Stress from direct contact with people at work | <input type="checkbox"/> Unstimulated when working with colleagues |
| <input type="checkbox"/> Stress from working with others all day | <input type="checkbox"/> Worn out at the end of a working day |

PARENTAL STRESS | [Brief Parental Burnout Scale](#)

As a parent, I feel...

- | | |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Like I can’t take any more as a parent | <input type="checkbox"/> That I’m no longer able to show my child(ren) how much I love them |
| <input type="checkbox"/> So tired that sleeping doesn’t seem like enough. | <input type="checkbox"/> That I’m really worn out as a parent |
| <input type="checkbox"/> That I’m looking after my child(ren) on autopilot | |

CAREGIVER STRESS | [Zarit Caregiver Burden Assessment](#)

As a caregiver, I feel...

- | | |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------|
| <input type="checkbox"/> Angry when around the person in my care | <input type="checkbox"/> That I don’t have as much privacy as I would like |
| <input type="checkbox"/> Like I don’t have enough time for myself | <input type="checkbox"/> That I should be doing more for this person |
| <input type="checkbox"/> Loss of control over my life | <input type="checkbox"/> That my health has suffered |
| <input type="checkbox"/> Strained when around this person | <input type="checkbox"/> That my relationships with others has suffered |
| <input type="checkbox"/> Stress trying to meet other responsibilities | <input type="checkbox"/> That my social life has suffered |
| <input type="checkbox"/> That I could do a better job as a caregiver | <input type="checkbox"/> Uncertain about what to do about this person |

PROVIDER STRESS | [Consumer Financial Protection Bureau Financial Well-Being Scale](#)

As a provider, I feel...

- | | |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Behind with my finances | <input type="checkbox"/> That giving a wedding/birthday gift would put a strain on my finances for the month |
| <input type="checkbox"/> Concerned that the money I have/save won’t last | <input type="checkbox"/> That I cannot enjoy life because of the way I’m managing my money |
| <input type="checkbox"/> I have money left over at the end of the month | <input type="checkbox"/> That I could not handle a major unexpected expense |
| <input type="checkbox"/> Insecure about my financial future | <input type="checkbox"/> That my finances control my life |
| <input type="checkbox"/> Like I am just getting by financially | |
| <input type="checkbox"/> Like I’ll never be able to afford the things I want | |

STUDENT STRESS | [Copenhagen Burnout Inventory Student version \(CBI-S\)](#)

As a student, I feel...

- | | |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <input type="checkbox"/> Drained of energy around classmates/instructors | <input type="checkbox"/> Like I don’t have energy for family/friends |
| <input type="checkbox"/> Emotionally exhausted | <input type="checkbox"/> Physically exhausted |
| <input type="checkbox"/> Exhausted in the morning at the thought of classes | <input type="checkbox"/> That every waking hour is tiring |
| <input type="checkbox"/> Frustrated around classmates/instructors | <input type="checkbox"/> Tired of working with classmates/instructors |
| <input type="checkbox"/> Frustrated by my studies | <input type="checkbox"/> Tired/Worn out |
| <input type="checkbox"/> Like I cannot take it anymore | <input type="checkbox"/> Weak, susceptible to illness |
| | <input type="checkbox"/> Worn out at the end of a school day |



DIMINISHED ABILITY TO COPE

Not every individual who experiences intense stress develops anxiety or depression—and not everyone with active symptoms is under stress. An individual’s **ability to cope** with stressors plays a crucial role in their mental health, and is influenced in part by the strength and quality of their relationships (including those individuals’ ability to talk about and respond to a mental health challenges) and the individual’s ability to care for their own wellbeing.

- **Inadequate social-support.** The pandemic did not necessarily affect the quality of one’s relationships—for the past fifty years, Americans have increasingly felt more alone, disconnected, and disappointed with their social connections²³ — but it did create a world where the majority of interactions shifted from in-person and spontaneous to virtual and planned. The impact of this shift on mental health likely depended on the underlying quality/tone of existing relationships (including among family, friends, and coworkers) and the extent to which individuals prefer to work from home.

Coping effectively with anxiety and depression (both in oneself and others) also requires a certain level of comfort with identifying and talking about feelings. Individuals vary in the extent to which they have this skill and—in the case of worker mental health—whether they *know how to apply it in a professional environment*, which likely carries additional policies and repercussions for talking about employee mental health, particularly when issues are impacting performance.

- **Inadequate self-support.** To manage stress, individuals can engage in “self-care”, a broad term for activities that promote health, calm, and well-being without creating other health or behavioral issues. Examples can include clinical (therapy, medication) and non-clinical (physical activity, mindfulness exercises, hobbies) activities to manage symptoms.

Individuals already experiencing objective stressors—whether from work or home—may face a host of barriers to self-support, including logistical (lacking the time, physical space, or money to engage in care activities) and psychological (feeling selfish for prioritizing the needs of self over others / other demands).

Tackling employee mental health—through employee supports and changes to workplace culture/ policies—represents a first step toward improving performance

Even without considering underlying mental health, employers—and economic regions—vary in the underlying productivity of their workforce. Research suggests that employers able to effectively manage “the time, talent, and energy of their teams” grew five to eight percent more productive during the pandemic at a time when most employers saw net productivity losses due to inefficient collaboration, wasteful ways of working, and low employee engagement. “If the best were 40% more productive than the rest before the pandemic, then they may be greater than 50% more productive now. This boost should enable these organizations to out-team, out-innovate, outgrow, and outperform their competitors for many years.”²⁴

Employers able to cultivate good employee mental health—which translates to increased interest, initiative, participation, and punctuality—also have a tremendous opportunity to increase productivity as well as their own economic competitiveness. Similarly, a *region* that focuses on improved mental health and wellness can position itself as having a more competitive workforce.

Different strategies abound to improve employee mental health, including correcting for internal policies and procedures that foster burnout,²⁵ offering mental health literacy to staff and managers²⁶ supporting positive interactions with colleagues,²⁷ and enhancing employee benefits packages to provide mental health resources as well as broader wellness.²⁸ **Figure 7** presents a checklist for assessing the extent to which policies and procedures support worker mental health. Less common strategies might focus on addressing other forms of burnout—parental, caregiver, provider, and student—that impact employee mental health: for example, offering a childcare benefit to working parents, providing support / respite to those in active caregiver roles, expanding and marketing financial planning classes to workers, and allowing students to develop more flexible schedules that allow them to manage classes, homework, and employment. Some of these strategies may be relevant at a regional level, as leaders look across sectors to create policies and infrastructure that minimize exposure to chronic, multiple stressors and increase residents’ support systems.

Figure 7.

Pre-Assessment: Bell Seal For Workplace Mental Health

- Conduct a survey that evaluates employee mental health
- Consider DEI as part of mental health strategy
- Educate employees about their rights under the Americans with Disabilities Act (ADA)
- Have a clear, accessible procedure for employees to report unfair or unsafe practices
- Have a collaborative performance review process
- Have a team/individual that addresses workplace mental health
- Implement a policy/practice as a direct result of employee feedback
- Offer 20 or more days of paid time off per year
- Offer a physical health program
- Offer additional resources that support life outside of work
- Offer an Employee Assistance Program (EAP)
- Offer benefits to part-time employees or contractors
- Offer employees remote or flexible work arrangements
- Offer health insurance that covers mental health and substance use services
- Offer long-term disability insurance
- Offer paid family leave
- Offer short-term disability insurance
- Promote fair and effective management practices
- Provide employees with professional growth opportunities
- Provide mental health training to management or staff
- Strategize how to promote mental health awareness and resources

ENDNOTES

1. See Melore, C. (2022). [American breaking point: 1 in 4 workers have quit their job over mental health](#). Study Finds.; and Andreatta, B. (2021). [Why Are People Quitting Their Jobs? Burnout & The Great Resignation](#).
2. Grokker Innovation Labs. (2021). [2021 Working Americans' State of Stress Report](#).
3. Collins et al (2005) found that employees reporting depression, anxiety, or an emotional disorder had a functional work impairment of 36%, a higher productivity loss than asthma (24%), migraines (24%), back pain (22%), or stomach issues (22%). Similarly, Hemp (2004) found that depression reduced productivity by 8%, compared to most physical health issues hover around 4-5%. Esposito et al (2007) estimated that 75% of workers with co-morbid anxiety-depression reported impaired work, compared to around 13% without these conditions. See Collins, J.J., Baase, C.M., Sharda, C.E., Ozminkowski, R. J., Nicholson, S., Billotti, G.M., Turpin, R. S., Olsen, M.J., Berger, M.L. (2005). The Assessment of Chronic Health Conditions on Work Performance, Absence, and Total Economic Impact for Employers. *Journal of Occupational and Environmental Medicine*, 47(6); Hemp, P. (2004). [Presenteeism: At Work—But Out of It](#). *Harvard Business Review*.; and Esposito, E., Wang, J. L., Williams, J. V., & Patten, S. B. (2007). [Mood and anxiety disorders, the association with presenteeism in employed members of a general population sample](#). *Epidemiologia e psichiatria sociale*, 16(3).
4. Turpin, R. S., Ozminkowski, R. J., Sharda, C.E., Collins, J.J., Berger, M.L., Billotti, G.M., Baase, C.M., Olsen, M.J., Nicholson, S. (2004). Reliability and Validity of the Stanford Presenteeism Scale. *Journal of Occupational and Environmental Medicine*, 46(11).
5. This report's authors used estimates developed by Beck et al (2011), who quantified the productivity loss associated with a score of 7-9 (mild), 10-14 (moderate), and 15-19 (severe) on the PHQ-9, a diagnostically-validated screener for depression, to estimate productive time for individuals at different levels of depression. Absenteeism was imputed based on the range of 4% (mild) to 17% (extreme) reported by Beck et al (2011). Absenteeism rates for individuals with no mental health issue were calculated as 1%, based on the BLS (2019) - reported population average of 2.8%. See Beck, A., Crain, A.L., Solberg, L.I., Unutzer, J., Glasgow, R.E., Maciosek, M.V., & Whitebird, R. (2011) Severity of Depression and Magnitude of Productivity Loss. *Annals of Family Medicine*, 9(4); and Bureau of Labor Statistics. (2019). [Household Data Annual Averages 47. Absences from work of employed full-time wage and salary workers by occupation and industry](#). Note that research has found that depression and anxiety tend to exert similar effects on productivity; see Lee, D. W., Lee, J., Kim, H. R., & Kang, M. Y. (2021). [Health-Related Productivity Loss According to Health Conditions among Workers in South Korea](#). *International Journal of Environmental Research and Public Health*, 18(14); and Marciniak, M., Lage, M.J., Landbloom, R.P., Dunayevich, E., & Bowman, L. (2004). [Medical and productivity costs of anxiety disorders: Case control study](#). *Depression and Anxiety*, 19.
6. Estimates from Zhang, W., Sun, H., Woodcock, S., & Anis, A. H. (2017). [Valuing productivity loss due to absenteeism: firm-level evidence from a Canadian linked employer-employee survey](#). *Health Economics Review*, 7(1). Note that in the absence of data of the frequency with which multiple team members are simultaneously impaired, this report assumes other team members can cover for 56 percent of impaired worker losses. However, if multiple team members experience mental health challenges at the same time, compensatory output by other team members will drop. Some research suggests that anxiety and depression can “spread”, too: Pearson & Porath (2009) found that co-workers exposed to a single “burnt out” employee are more likely to report declining job commitment, decreased effort and time at work, and increased risk of quitting. See Pearson, C. & Porath, C. (2009). [The Cost of Bad Behavior: How Incivility Is Damaging Your Business and What to Do About It](#).
7. For example, a worker with severe mental health needs has a DPL of 100% (“absent”) on 13% of days, a DPL of 44% (“impaired”) on one-third of days, and a DPL of 4% (“typical”) on the remaining half of days. Their total productivity loss is 30%, with a 13% loss to the team. The total impact of their mental health on team productivity is estimated as 11%.
8. Researchers restricted the sample to all Pulse Survey respondents who (a) resided in Virginia and the DC metro area; were between the age 25 and 64; worked for pay or profit in the past 7 days; and answered 4 screening questions about the frequency with which they experienced symptoms of anxiety and/or depression.
9. “Mild” anxiety/ depression is indicated by a score of 2 on the diagnostically-validated GAD-2/PHQ-2, “moderate-clinical” a score of 3-4, and “severe-clinical” a score of 5-6. It is important to note that while the questions used to assess and classify MHN as severe-moderate-mild do not represent a diagnosis, they are considered a diagnostically-validated screen for anxiety and depression. See Arroll, B., Goodyear-Smith, F., Crengle, S., Gunn, J., Kerse, N., Fishman, T., Falloon, K., & Hatcher, S. (2010). Validation of PHQ-2 and PHQ-9 to screen for major depression in the primary care population. *Annals of Family Medicine*, 8(4) and Kroenke, K., Spitzer, R.L., Williams, J.B., Monahan, P.O., & Löwe, B. (2007). Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, 146.
10. To calculate rates for 2019, researchers used national estimates of MHN from Panchal et al (2022), adjusted for Northern Virginia; see Panchal, N., Rae, M., Saunders, H., Cox, C., and Rudowitz, R. (2022). [How does use of mental health care vary by demographics and health insurance coverage?](#) Kaiser Family Foundation.
11. This report's authors used data from Lightcast to estimate GRP, the sum of earnings, profits, and taxes, minus subsidies.

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