A photograph of a person's arm in a blue sleeve resting on a white bedsheet. The background is a soft-focus white fabric.

Sleep—

A Rising Star in Well-Being

by | **Jeffrey S. Durmer, M.D., Ph.D.**

Managing sleep may be one of the most effective strategies for supporting short-term and long-term well-being.

benefits

MAGAZINE

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Amid a continuing evolution in U.S. business to improve efficiencies, remove waste from production and make workplaces safer and more humane, employers are beginning to recognize the importance of another influence on productivity and well-being: sleep.

Ensuring adequate sleep and rest not only improves employee productivity, loyalty and longevity, but it also lowers health care costs, workplace accidents, absenteeism and presenteeism.

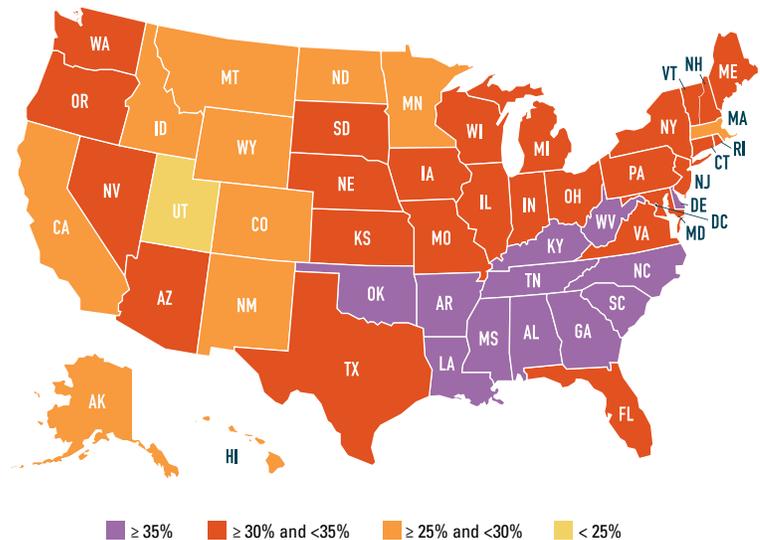
The Changing Human Landscape in the Workplace

U.S. productivity indexes doubled from the mid-1970s to today.¹ Coincidentally, the number of adults with chronic diseases such as hypertension (Figure 1), diabetes (Figure 2) and obesity (Figure 3) has increased dramatically. Commensurate with the growth of these diseases across the working adult population is the rise in health care costs for employers and out-of-pocket expenses for employees (Figure 4).

Another key metric that has emerged from Centers for Disease Control and Prevention (CDC) health and health behavior surveillance efforts is the growing and widespread problem of adult sleep deprivation (Figure 5). Geographical differences exist among states with high and low levels of sleep deprivation, and it is clear that regions with the highest rates of chronic diseases are also those with the highest levels of inadequate sleep. The relationship between these maps has roots in the physiology of sleep-deprived workers.

FIGURE 1

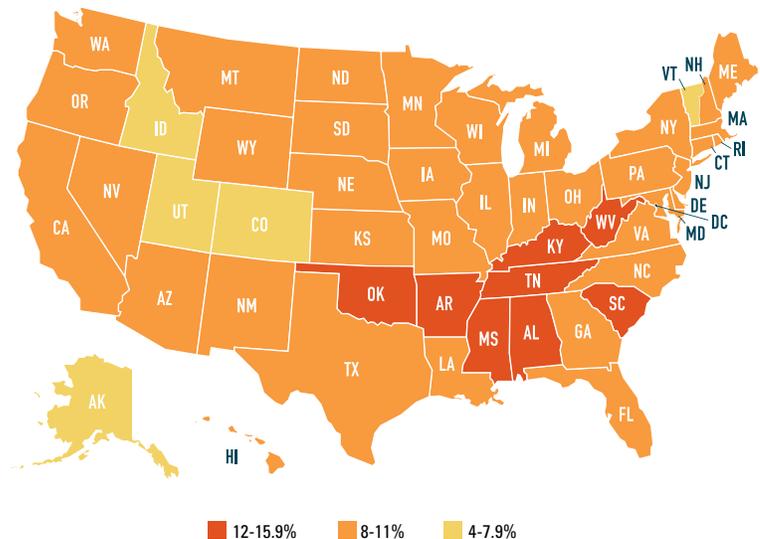
The Incidence of Hypertension Across the U.S.



Note: The highest rate of hypertension in the U.S. is in West Virginia (41%). It is estimated that as many as 60% of men under the age of 45 have hypertension.
Sources: *The State of Obesity*, Trust for America's Health and the Robert Wood Johnson Foundation, 2015; U.S. Department of Health and Human Services, National Institutes of Health (NIH) and Centers for Disease Control and Prevention (CDC).

FIGURE 2

The Incidence of Diabetes Across the U.S.



Note: Diabetes rates have nearly doubled from the 1990s to 2015 (from 5.5% to nearly 10%). The highest rate of diabetes is in West Virginia (14.1%). In the U.S., 29 million people have diabetes (90+% with type 2), and 86 million are noted to be prediabetic.
Sources: *The State of Obesity*, Trust for America's Health and the Robert Wood Johnson Foundation, 2015; U.S. Department of Health and Human Services, NIH and CDC.

How Sleep Deprivation Drives Human Cost in the Workplace

When a machine is used on a production line, it requires regular maintenance and care to perform at its best over time. While humans are not machines, our cognitive, physical and emotional abilities are directly related to the amount, quality and timing of our sleep.

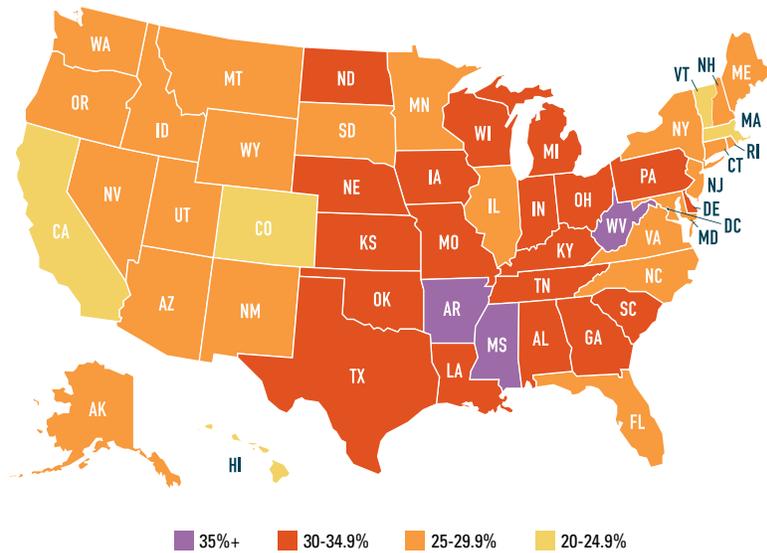
Waking up “refreshed” from a good night’s sleep is not just a feeling; it is a signal from our central nervous system. When we have restored our cognitive function by repackaging neurochemicals, repaired our organ systems through hormonal and cellular signaling pathways, eliminated waste products that accumulate in the brain and body, and reset our circadian rhythm for wakefulness, we are prepared to tackle another day. All of these activities are dependent on the natural cycles of sleep, which by all counts have been compressed from an average of eight hours in the 1940s to 6.8 hours today.²

The short-term gain associated with less sleep and more work takes a toll on the long-term health, safety, resilience, productivity and longevity of workers. Multiple studies demonstrate the significant impact of reduced sleep quality and quantity on the physical and mental health of adults with insomnia and obstructive sleep apnea.³

It is no surprise to most that the cost of health care for people with poor sleep is two to three times higher than for others due to the high rate of chronic disease that it drives in this population.⁴ Recent evidence shows that these same individuals not only are costing employers more in health care, but they also have 2.4 times more lost workdays and 2.9 times as many workplace ac-

FIGURE 3

The Incidence of Obesity Across the U.S.

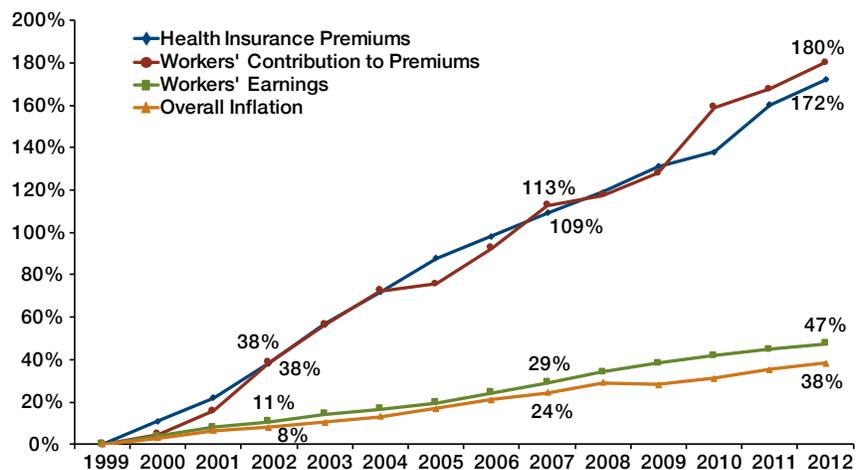


Note: According to the National Institutes of Health, 35.7% of American adults are considered obese. Three-quarters of men are considered obese or overweight. The highest rate of obesity is in Arkansas (35.9%).

Sources: *The State of Obesity*, Trust for America’s Health and the Robert Wood Johnson Foundation, 2015; U.S. Department of Health and Human Services, NIH and CDC.

FIGURE 4

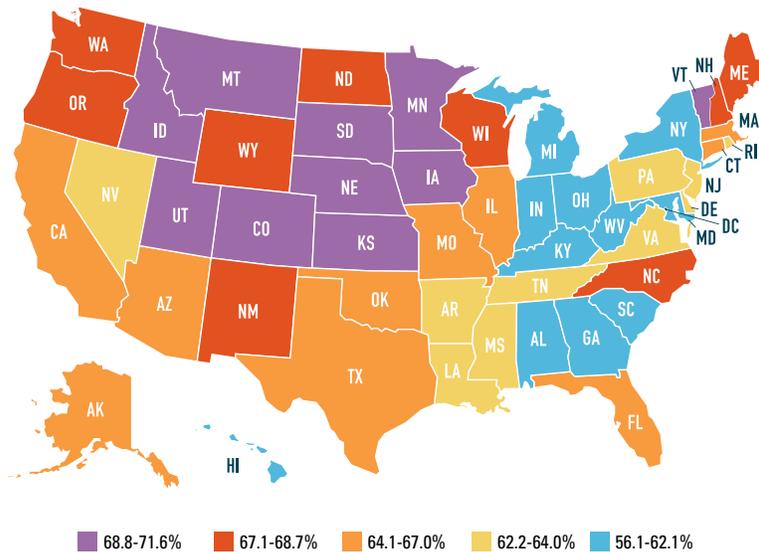
The Trend in Health Insurance Premiums and Worker Contributions, 1999-2012



Source: Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999-2012; Bureau of Labor Statistics, Consumer Price Index, U.S. City Average of Annual Inflation (April to April), 1999-2012; Bureau of Labor Statistics, Seasonally Adjusted Data from the Current Employment Statistics Survey, 1999-2012 (April to April).

FIGURE 5

The Incidence of Sleep Adequacy Across the U.S.



Note: On average, 65.2% of U.S. adults report sleeping more than seven hours per night. More than one-third of American adults reported sleeping less than seven hours per night, which is associated with the onset of multiple chronic diseases, increased mortality, workplace and transportation accidents, human errors and productivity loss. The Southwest and Appalachian Mountain regions had the lowest percentage of people getting seven or more hours of sleep per night.

Sources: Liu Y. et al., "Prevalence of healthy sleep duration among adults—U.S. 2014," *Morbidity and Mortality Weekly Report* 2016; 65:131-141, Centers for Disease Control and Prevention.

accidents, as well as 2.2 times as many extended disability claims and 50% less productivity than their counterparts.⁵

Beyond the cost of poor sleep quality and quantity is the well-described high-risk population of night workers who routinely sleep at times that are in opposition to their own biological circadian rhythm for wake and sleep. Workers who are awake at night incur much higher rates of obesity, chronic diseases, mood disorders and physical ailments compared with their day-working colleagues.⁶ In addition, this population is responsible for a disproportionate number of workplace accidents and productivity problems. Indeed, the medical community not only

recognizes that these workers are more impaired, but they have even named a sleep disorder after them, the *shift-work disorder*.

Still more evidence suggests that these direct and indirect costs of poor sleep are just the tip of the iceberg when it comes to considering the long-term effects of poor sleep on decision making, moral judgment, the quality of life for employees and the resulting workplace culture.⁷

How Companies Respond With Wellness

On the heels of the "lean" process revolution, employers began to introduce more imaginative wellness, well-

being and disease management programs. Ostensibly, this amounted to an attempt to improve efficiencies around human capital for retention and quality of life. In fact, these programs grew throughout the 2000s to include behavioral modification focused on smoking cessation, weight/diet management, exercise/fitness, alcohol/drug abuse and stress management. Disease management programs were designed to address a few of the most well-known chronic conditions, specifically, diabetes, asthma, coronary artery disease, heart failure, depression and cancer.

Despite the growing number of wellness options, engagement consistently is problematic, which underscores the difficulty associated with behavioral lifestyle changes. In a 2013 RAND Health study, the characteristics, adoption and effectiveness of workplace wellness programs were evaluated. The research demonstrated that although roughly 80% of U.S. employers provide some form of wellness or well-being-based programs, fewer than half of employees ever complete a health risk assessment and less than 20% participate in a program designed to improve wellness or well-being.⁸

More to the point, despite roughly half of wellness program participants reporting positive lifestyle changes, only 2% of employers have reported any actual savings from these programs. The inability to measure the business value of wellness, well-being and disease management programs has created uncertainty regarding the expansion of these programs, especially in the disease management space.⁹

The deployment of meaningful wellness and well-being programs has never been more vital to the current

and future success of companies, yet objective outcomes from these programs suggest that the traditional approaches of curbing poor eating, stimulating healthy diets and exercise, smoking cessation and disease prevention need to be reconsidered. Statistical analyses performed by RAND show that after five years, companies with wellness/well-being programs see a nonsignificant trend toward savings in people who participate in these programs. Whether it is challenges initiating and maintaining participant engagement or a lack of meaningful outcome measures, it is difficult for employers to see the return on their increasing wellness investment.

How Companies Are Redefining Wellness as Well-Being

For two-thirds of employers, maintaining affordable health coverage for their employees suffering from poor health remains one of the top three challenges they face.¹⁰ These concerns have pushed companies in the direction of adopting preventive options to combat the steady rise in disease and potential productivity loss. Previous programs designed to slow the progression of diseases such as type 2 diabetes, hypertension and obesity have shown limited benefit. A new emphasis on sustaining health rather than waiting for disease to settle in has taken hold in many U.S. companies. This shift in focus from wellness to well-being underscores the value of sustaining health in multiple spheres including physical, mental, emotional, social, financial and overall quality/purpose of life. In addition, businesses increasingly have realized that in order to attract, engage and retain the best and brightest, they need to invest in their “business culture.” Research by Deloitte shows that 50% of business leaders now identify culture as the single most important aspect of talent management, where just two years ago 80% of them did not even register culture as a topic of concern.¹¹

Supporting the well-being agenda is a revolution in wearable technology and data analytics coupled with cloud-based platforms. Driven by the wrist-worn accelerometer industry, wearable technology is projected to grow from \$25 billion in 2015 to \$70 billion by 2025.¹² The new accountability created by real-time data for exercise and weight management has fostered workplace engagement, especially in Millennials, in a way that no previous wellness initiatives have been able to do.

In association with exercise-based technology, there also has been a growth in the wearable and more passive forms of data capture for objective sleep measurements. Sleep devices are

now able to register not just movement but also environmental conditions, breathing, heart function, body temperature and position. They even approximate the stages of sleep itself.

With the knowledge that sleep performs the brain and body maintenance we require every day, it is encouraging that forward-thinking companies are now instituting sleep well-being programs for their employees. Using passive data collection, individuals get a glimpse into the effectiveness of their sleep. Some programs integrate professional sleep coaching with actual sleep physiologists and sleep medical professionals at the ready to assist and uncover sleep disorders that can silently impair health and well-being for years before they are addressed (e.g., on average, people with obstructive sleep apnea suffer for ten years before bringing symptoms to medical attention).

Rest: The New Metric for Business Success

Companies and business leaders now recognize that sleep is fundamental for the well-being of their associates and also their organizations. Individuals like Arianna Huffington, who recently published a book entitled *The Sleep Revolution*, speak to the broad impact of sleep and its role as a determinant of success and failure in life.

“It really changes the cultural delusion that most businesses have been operating under, which has been . . . the more exhausted and burned out the employees are, the more productive they are,” Huffington said in an interview about her book.

Aetna Chairman and CEO Mark Bertolini announced this year that employees would be paid \$25 per night (up to \$500 per year) for sleeping a minimum of seven hours a night for 20 nights in a row. In an interview with CNBC,

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Laura Putnam. Wiley. 2015.

Visit www.ifebp.org/books.asp?9058 for more details.

TABLE

The Cognitive and Leadership Value of Proper Sleep

Mental Capacities Affected by Sleep	Types of Leadership Behavior Associated With High-Quality Leadership
<ul style="list-style-type: none"> • Attention • Concentration 	Results-oriented
<ul style="list-style-type: none"> • Creativity • Developing of insight • Pattern recognition 	Solving problems
<ul style="list-style-type: none"> • Learning and memory • Decision making 	Seeking different perspectives
<ul style="list-style-type: none"> • Emotional reactions • Socioemotional processing • Developing trusted relationships 	Supporting others

Note: Executive leadership functions depend on the recovery and restoration of specific brain regions that are particularly vulnerable to sleep loss. Multiple human sleep deprivation studies demonstrate consistent impairments.

takeaways

- The growing and widespread problem of adult sleep deprivation appears to be linked with the dramatic increase in chronic diseases.
- Cognitive, physical and emotional abilities are directly related to the amount, quality and timing of sleep.
- Although wellness programs have grown, engagement consistently remains a problem, and changing behavior is difficult.
- Some companies have instituted sleep well-being programs for employees, often taking advantage of technology and sometimes using professional sleep coaching.
- Managing sleep and the reasons for sleep deprivation in the work-life balance have become major topics for business leaders.

Bertolini made his case for this business decision, saying that “being present in the workplace and making better decisions has a lot to do with our business fundamentals. You can’t be prepared if you’re half-asleep.”

Many other leaders including economist Mohamed El-Erian, Hootsuite CEO Ryan Holmes, Microsoft CEO Satya Nadella, Amazon CEO Jeff Bezos, venture capitalist Marc Andreessen and Eric Schmidt, chairman of Google parent Alphabet, have personally ex-

pressed that sleep and rest are key to their success as well as the companies they help to lead.

In February 2016, McKinsey & Company published in its *McKinsey Quarterly* a poignant survey of 196 business leaders called “The organizational cost of insufficient sleep.” In the report, McKinsey underscored the foundational role of sleep in producing the cognitive, social and emotional abilities that business leaders rely on to function at their best (see the table).

Executive cognitive function, which depends on brain systems supported by the frontal lobes, is exquisitely sensitive to even partial sleep deprivation.¹³ According to the McKinsey report, “70% of leaders surveyed identify that sleep management should be taught in organizations, just as time management and communication skills are now. Ideally, such programs should be part of a unified learning program that includes a number of components, such as online assessments, in-person workshops and a performance-support app offering reminders, short inspirational videos or animations, additional assessments and opportunities to connect with online communities.” What business leaders now recognize is that managing sleep, or the rest required to optimize performance, may be the single most effective strategy for supporting short-term and long-term well-being.

Conclusion

While many companies have actively pursued wellness programs, the focus is now changing to the broader concept of well-being. The primary goal of well-being programs is to consider the health of an individual across multiple spheres and promote not only the prevention of chronic diseases but also the evolution of workplace culture to support the fundamentals of human performance.

The science of sleep physiology tells us that the physical, mental and emotional balance of individuals depends on adequate sleep. Managing sleep and the reasons for sleep deprivation in the work-life balance have become major topics for business leaders looking to attract, engage and optimize their work-

force. Former CIO.com writer James A. Martin recently made the statement, “Sleep is essential to health,” and many CEOs, human resource directors and executives now agree.¹⁴

Over time, businesses that integrate sleep health programming into existing wellness and well-being plans are likely to realize reductions in the cost of their health care, increases in employee engagement, enhanced productivity and the tangible cultural benefits that only healthy sleep can provide. 🍎

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bio



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