The Link Between Workforce Health and Safety and the Health of the Bottom Line

Tracking Market Performance of Companies That Nurture a "Culture of Health"

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Objective: To test the hypothesis that comprehensive efforts to reduce a workforce's health and safety risks can be associated with a company's stock market performance. **Methods:** Stock market performance of Corporate Health Achievement Award winners was tracked under four different scenarios using simulation and past market performance. **Results:** A portfolio of companies recognized as award winning for their approach to the health and safety of their workforce outperformed the market. Evidence seems to support that building cultures of health and safety provides a competitive advantage in the marketplace. This research may have also identified an association between companies that focus on health and safety and companies that manage other aspects of their business equally well. **Conclusions:** Companies that build a culture of health by focusing on the well-being and safety of their workforce yield greater value for their investors.

A growing body of evidence supports the concept that focusing on the health and safety of a workforce is good business. Engaging in a comprehensive effort to promote wellness, reduce the health risks of a workforce, and mitigate the complications of chronic illness within these populations can produce remarkable effects on health care costs, productivity, and performance. The literature is replete with examples demonstrating that the health of employees impacts their performance and productivity. In addition, for the majority of the employers who pay for the cost of health care provided to their employees, there is a direct impact on the bottom line.

Recent statistics have revealed the following:

- More than 22% of working age adults surveyed reported health-related work impairment from chronic illness in the previous 30 days. Those with impairment averaged 6.7 lost days. This is equivalent to 2.5 billion impaired days per year.[1]
- A 2003 study found that illness and disability reduced total work hours by approximately 8.6% in 1996, with nearly 8.7 million Americans between the ages of 18 and 64 years being unable to work. This represented a loss of approximately $468 billion to the US economy.[2] In 2006, more than $2 trillion was spent on health care with three fourths of that amount focused on treating chronic conditions.[3]
- Recently, an article by Loeppke and colleagues,[4] reported that for every dollar of medical and pharmaceutical costs spent, an employer lost an additional $2.30 of health-related productivity costs. Health-related presenteeism (health risks and medical conditions impacting work performance) was shown to have a larger impact on lost productivity than absenteeism, with executives and managers suffering higher losses. Comorbidities demonstrated the largest effects on productivity loss.[4]

These facts led to a hypothesis: Companies that create an environment for their employees and dependents that reinforces both conscious and unconscious safer and healthier lifestyle choices as well as provides more effective accessing of appropriate health care (ie, surround them with a "culture of health") should be more productive and that productivity should drive business performance and be reflected in the price of their stock.

To more objectively test this hypothesis, we tracked the stock market performance of companies with proven health, safety, and environmental programs under four different scenarios. To find such companies, we turned to the recipients of the American College of Occupational Medicine's (ACOEM's) Corporate Health Achievement Award (CHAA). Using simulation and past market performance, a theoretical initial $10,000 investment in publicly traded award winners was followed from 1997 to 2012 under one scenario and from 1999 to 2012 in three scenarios.

Because these award-winning companies are recognized for their exemplary efforts in creating a healthy workforce, and a healthy workforce generates less health care costs and improved productivity, we tested the hypothesis that a financial portfolio of these companies would outperform the marketplace.

BACKGROUND

The organization known today as the American College of Occupational and Environmental Medicine began in 1916 as the American Association of Industrial Physicians and Surgeons. As the country moved from industrial manufacturing to knowledge-based industries, the American Association of Industrial Physicians and Surgeons adapted itself to meet the changing needs of workers, eventually changing its name to the American College of Occupational and Environmental Medicine to more accurately convey its work. Today, the ACOEM continues to embody the principles set forth in 1916, but with a wider scope and mission that responds to the health and safety needs of the twenty-first century workplace—from industrial medicine to occupational medicine to occupational health and most recently to corporate health (including international operations).[5] Corporate health is defined as the overall integration of safety and health in the workplace, enhancing employee well-being and satisfaction and the company's overall productivity. The quality of the work environment has become increasingly important and is a central factor in the lives of most Americans. In an era of downsizing and increased stress and pressures on employees, America's best companies strive to improve employee health and safety. Having

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safer, healthier workplaces results in increased productivity and job satisfaction, stronger bottom-line results, less harmful environmental impact, and enhanced community relationships.

To further advance the mission and vision of the ACOEM, its Board of Directors created the CHAA to recognize the healthiest, safest companies and organizations in North America and raise awareness of best practices in workplace health and safety programs.[6] American corporations have long participated in competitions for quality and excellence, such as the Malcolm Baldrige National Quality Award and C. Everett Koop National Health Award.[7,8] Nevertheless, in evaluating these awards, the ACOEM concluded that a new award program was needed—a prospective one that focused more specifically on reviewing both the *safety* and *health* programs of corporations. The CHAA was designed to recognize the "healthiest companies in America." This supported the ACOEM's goal of encouraging employers to invest in the health of workers and to promote quality health, safety, and environmental management programs.

In developing the award, the main challenge was to create appropriate scoring guidelines and rating criteria that would identify companies that have exemplary occupational, environmental, and health programs. In addition, it was determined that the application process should educate company leadership about excellence of occupational and environmental health services whether or not they received the award. Excellence was defined as reducing health and safety risks and demonstrating positive impacts on the business.[9]

Using the Malcolm Baldrige National Quality Award as its model, along with the ACOEM guidance document on *Scope of Occupational and Environmental Health Programs and Practice*, the initial CHAA program development committee identified 22 standards of practice in four separate categories to be achieved if a program was to be deemed excellent.[10] In 2010, overlapping standards were consolidated, resulting in a total of 17 standards. These standards remained grouped into four distinct key categories: (1) leadership and management, (2) healthy workers, (3) healthy environment, and (4) healthy organizations. The scoring for each standard is based on a four-tiered system as follows:

Level 1 (program description–scope and quality): The organization has evidence that appropriate programs exist for each standard. The application should clearly delineate what programs implemented by the organization are relevant and enable it to meet the standard.

Level 2 (program dissemination): The organization has evidence that the programs are well deployed in all appropriate locations and departments within the organization.

Level 3 (outcome measures): The organization has developed metrics for its programs and provides clear data on what it has measured.

Level 4 (trend data): The organization presents trend data showing a reduction of health risk, health cost savings, or other impact on the business. Trend data demonstrate the success of progress over time.

For each scoring category, illustrative "outcome indicators" were developed, similar to those used by the Health Evaluation Data Information Set 3.0 criteria.[11]

The CHAA Committee made every effort to develop an application that allowed for a thorough and comprehensive evaluation of each applicant's occupational and environmental health and safety programs as measured against the ACOEM standards. Participating organizations submit a comprehensive application regarding their program and undergo a rigorous review by an expert panel to assess the four key categories. An independent panel of trained examiners reviews each application. Examiners look for comprehensive and innovative programs with measurable results. In addition to looking for comprehensive programs, the examiners want to understand how these programs are deployed across the organization and how they are promoting the health of the organization's employees. Points are awarded for each of the 17 standards within the four categories. Table 1 provides a comprehensive view of CHAA categories, standards, and scoring.

TABLE 1. Corporate Health Excellence Checklist

	Program Exists	Well Deployed	Measured Showing Trends	Trends Tracked Over Time	Maximum Points
1.1 Organization and management					75
1.2 Health information systems					75
1.3 Evaluation and quality improvement					75
1.4 Innovation—expanding the envelope					25
1.0 Leadership and management (total points)					*250*
2.1 Health evaluation of workers					75
2.2 Occupational injury and illness management					75
2.3 Traveler's health					30
2.4 Mental and behavioral health and misuse of substances					70
2.0 Healthy workers (total points)					*250*
3.1 Workplace health hazard evaluations, inspection, and abatement					60
3.2 Education regarding worksite hazards					60
3.3 Personal protective equipment					55
3.4 Toxicological assessment and planning					25
3.5 Emergency preparedness, continuity planning, and disruption prevention					50
3.0 Healthy environment (total points)					*250*
4.1 Health promotion and wellness, including nonoccupational illness and injury					70
4.2 Absence and disability management					60
4.3 Health benefits management					50
4.4 Integrated health and productivity management					70
4.0 Healthy organization (total points)					*250*

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Once applications are scored, they are reviewed by a judges' panel, which selects those warranting further review. For those judged by responses on the applications to be possibly exemplary, a site visit is required to verify any and all information submitted. After site visits, applications are rescored and presented to the judges' panel for the final decision. *Each applicant is judged independently on the basis of its achievements in terms of programs, dissemination, outcome measures, and trends.* Each applicant receives formal feedback from the examiners' panel regarding its program's strengths, weaknesses, and suggested areas of improvement.

Receipt, review, and evaluation of applications and selection of award recipients are conducted in such a manner as to preclude any conflict of interest. Safeguards have been built into the process to avoid any conflict of interest on the part of any employee or member of the examiners' and judges' panels or the ACOEM Board of Directors.

Since the presentation of the first awards in 1996, 29 companies have achieved distinction as CHAA recipients (Table 2). These companies have demonstrated outstanding achievement and excellence in employee health, safety and environmental management, outcomes, and trends. Awards have been presented to organizations in manufacturing and service sectors, including city health departments, federal agencies, and health care systems. In most years, there has been at least one award recipient. The majority of the recipients have been publicly traded companies.

CHAA recipients have demonstrably lower workplace illnesses and injuries and provide effective health and lifestyle programs to their employees. Nevertheless, the impact of these programs on a company's financial performance has not been a component of CHAA analysis—in contrast with studies of past winners of the National Institute of Standards and Technology's Baldrige Performance Excellence Program. Brown reported, "Most studies acknowledge that the Baldrige winners tend to outperform their peers in financial and market performance by a significant margin."[12] In the past year, a study was undertaken to analyze the recipients of the CHAA program to determine whether they have been more financially successful than companies that have not achieved this distinction.

TABLE 2. Award Winners

Year	Recipient
1996–1997	Hughes Electronics
	Lockheed Martin
1997–1998	Boeing
	IBM
	Johnson & Johnson
	First Chicago
1998–1999	Glaxo Wellcome
	AlliedSignal
	Baltimore Gas & Electric
	City of Indianapolis
1999–2000	Sherman Health
	Dow Chemical
	GE Power
2000–2001	National Security Agency
2001–2002	Bristol-Myers Squibb
	Eli Lilly
	IBM
	Kerr-McGee
2002–2003	BAE Systems
	Marathon Oil
	Union Pacific
2003–2004	Cianbro Corporation
2004–2005	Daimler Chrysler
	QuadGraphics
2005–2006	No recipients
2006–2007	Caterpillar
2007–2008	No recipients
2008–2009	Southeastern Transportation Authority
2009–2010	Baptist Health System
2010–2011	EG&G-URS
2011–2012	Johnson & Johnson
	Smithsonian Institutions
2012–2013	American Express

METHODS

Using the list of the ACOEM winners (Table 2), an investment portfolio was created to track the stock price performance of each winner and log the results. Using simulation and past market performance, we followed an initial $10,000 investment from 1997 to 2012 in one scenario and from 1999 to 2012 in three scenarios. Because the CHAA is announced each May, we elected to simulate the purchase of stock in those companies that were publicly traded on July 1 of each year.

In addition, we elected to follow the fund's performance in several different ways. The first approach was to purchase stock in the award winner each year starting with the first recipient. The second approach was to begin our investment after five publicly traded recipients were identified in order to not be overly influenced by the performance of an individual company. This was our featured portfolio. The third method weighted the investment into each award winner on the basis of their final CHAA award winning score, recognizing that some achieved higher total assessment points than others. The fourth approach eliminated both the best and worst performing companies from the portfolio review to eliminate their potential bias.

As there are two publicly traded companies that have won the award twice—Johnson & Johnson and IBM—our methodology would double our investment in those companies with two separate purchases. Nevertheless, because Johnson & Johnson is a very recent recipient, having won the award in May 2012, we did not have a full year's worth of data to include in the results at the time this article was written. In addition, because of the significant complexity this would add, we did not reinvest dividends. Lastly, some recipients were not included either because they were not publicly traded companies or because they had changed ownership. We elected to end the investment when award winners were purchased and did not carry the investment forward to the acquirer (see Appendix).

In analyzing the data and establishing our theoretical investment portfolios, we made what we thought were logical assumptions as explained here.

Timing of Investments

Because the ACOEM typically announces its winners in May, we decided that the logical initial investment date should be July 1, which is the beginning of the next business financial quarter. Therefore, an investment year in our model spans from July 1 to June 30 of the next year rather than the typical calendar year investment. We felt that waiting until January to make the initial investment was too long of a time given the May announcement. Conversely, because the ACOEM does not have a set announcement date, any investment made earlier than July 1 could cause tracking problems in those years when the announcement may have been delayed.

Holdings

As previously noted, portfolios could not be created for every CHAA winner because some of the organizations were private

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companies or municipalities such as Baptist Health System and the City of Indianapolis (Table 3). Therefore, for our investment portfolio, we only use those winners that were publicly traded companies on the major stock exchanges. In addition, there were 2 years in which the ACOEM did not have an award recipient (2005 and 2007).

Holding Constraints

A few holdings created some complexity in that the companies were acquired during the course of the investment. For example, Hughes Electronics was one of the first recipients of the CHAA. In the fall of 1997, the company was split into thirds with a portion being sold to Raytheon, a portion to Delphi, and the remainder held under the parent company General Motors (GM). This created many issues when valuing the company's stock. Therefore, it was not included in our hypothetical portfolio.

If a company changed ownership during the course of being held in our hypothetical investment portfolio, we used the closing value of the stock on the last day when it was publicly traded. This was done because we did not know whether the new company had the same characteristics as the CHAA winner.

Rebalancing

Given that our investment year was July 1 to June 30, we assumed that each rebalance of the portfolio was at the close of business on June 30.

TABLE 3. CHAA Award Winners Excluded from the Portfolio

Year	Company	Reason for Exclusion
1997	Hughes Electronics	Wholly owned subsidiary of GM later split and sold
1998	First Chicago	Acquired by Bank One
1999	Baltimore Gas & Electric	Regulatory changes resulted in becoming a CEG subsidiary
1999	City of Indianapolis	Municipality with no public equity
1999	AlliedSignal	Merged with Honeywell
2000	Sherman Health	Privately held hospital
2001	National Security Agency	Government agency with no public equity
2002	Vanderbilt University	Private university
2004	Cianbro Corporation	100% employee-owned company
2005	QuadGraphics	Private company at the time with no public equity
2009	Southeastern Transportation Authority	Part of the City of Philadelphia municipality
2010	Baptist Health System	Privately held organization
2012	Smithsonian Institutions	Government agency/ award too recent
2012	Johnson & Johnson	Award too recent
2013	American Express	Award too recent

CEG, Constellation Energy Group; CHAA, Corporate Health Achievement Award.

Portfolio Creation

Once we compiled the data of stock returns for each award recipient, we created several different portfolios, each with different assumptions to test our hypothesis that CHAA winning companies would outperform the marketplace.

In portfolio 1, for example, starting in 1999, we invested $10,000 equally in Lockheed Martin, Boeing, IBM, Johnson & Johnson, and Glaxo Wellcome (now Glaxo-Smith-Kline). In 2000, we equally redistributed the total investment that had appreciated above the initial $10,000 investment to include the latest recipients—Dow Chemical and General Electric. In each year thereafter, we added all the publicly traded award winners and equally redistributed the original $10,000 investment and the appreciated value of the total portfolio.

In addition, we looked at alternative investment strategies. For example, in portfolio 2, we rebalanced the portfolio each year on the basis of the total score of the award winners. We constructed a methodology that did not wait until there were five stocks to start the portfolio, but rather began investing $10,000 with the first recipient Lockheed Martin—portfolio 3. Lastly, we also followed portfolio 4, which eliminated the highest and lowest performers as outliers.

VALIDATION

Our methodology was tested by a well-known financial institution's wealth management division using well-recognized financial tools (Thomson-Reuters and Bloomberg), historical pricing, and geometrically linked price returns. Although deemed accurate, these tools have not been audited.

RESULTS

Portfolio 1: Five Securities to Start Portfolio

A stock portfolio normally contains more than one or two equities. Therefore, for portfolio 1, we did not start the hypothetical investment portfolio until there were a minimum of five publicly traded CHAA winning companies. This did not occur until 1999.

The first portfolio initially consisted of the first five publicly traded award-winning company securities and began on July 1, 1999. Therefore, the annualized returns for the results of the study begin on July 1 and end June 30 of the next year. Subsequent equities were added as of July 1 after the year in which they were recognized as award winners and were publicly traded. Each holding was equally rebalanced at the beginning of the period on the basis of the number of securities and the yearend market value. The results of the period from July 1, 1999, through June 30, 2012, are as follows:

- The initial $10,000 investment grew to $17,871.52, a cumulative return of 78.72% for the research portfolio. During the same period, the S&P 500 had a cumulative return of −0.77% and the final investment value of $9923.14 (Fig. 1).

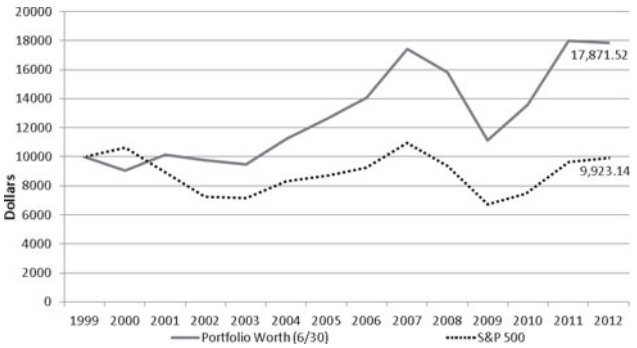

FIGURE 1. Portfolio starting at five winners versus S&P 500.

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- The annualized return for the portfolio was 4.57% versus the S&P 500 annualized return of −0.06%.
- The portfolio outperformed the S&P 500 in 9 of the 13 annual periods included in the analysis.
- The arithmetic average annual excess return of the portfolio over the S&P 500 was 4.67%.

Portfolio 2: Weighted Portfolio

The ACOEM has a documented scoring process when determining which company, if any, will receive the CHAA. Some award winners scored higher than others. For portfolio 2, we decided to test how the hypothetical investment portfolio would do if we were to weight the holdings on the basis of their companies score in the year when they won.

The second portfolio also initially consisted of the first five publicly traded award winning company securities and began on July 1, 1999. Therefore, the annualized returns for the results of the study begin on July 1 and end June 30 of the next year. Subsequent winners were added as of July 1 after the year in which they were award winners. The portfolio was rebalanced in each July 1 *by* calculating the arithmetic weighted average of the CHAA score when the company was an award winner. The results of the period from July 1, 1999, through June 30, 2012, are as follows:

- The initial $10,000 investment grew to $17,569.21, a cumulative return of 75.69% for the research portfolio. During the same period, the S&P 500 had a cumulative return of −0.77% and the final investment value of $9923.14 (Fig. 2).
- The annualized return for the portfolio was 4.43% versus the S&P 500 annualized return of −0.06%.
- The portfolio outperformed the S&P 500 in 10 of the 13 annual periods included in the analysis.
- The arithmetic average annual excess return of the portfolio over the S&P 500 was 4.47%.

Portfolio 3: Portfolio Starting With the First Winner

Portfolio 3 is the most basic portfolio. It takes the award winners for each year and tracks the performance. Because there is no minimum number of holdings, it starts in 1997 when the first award was announced.

The third portfolio initially consisted of one publicly traded security (Lockheed Martin) and began on July 1, 1997. Therefore, the annualized returns for the results of the study begin on July 1 and end June 30 of the next year. Subsequent winners were added as of July 1 after the year in which they were award winners. Each holding was equally rebalanced at the beginning of the period on the basis of the number of securities and the year-end market value. The results of the period from July 1, 1999, through June 30, 2012, are as follows:

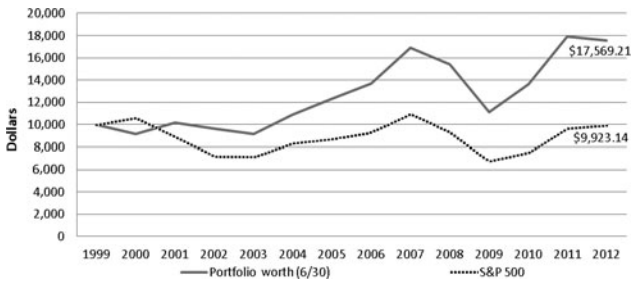

FIGURE 2. Portfolio weighted by winners' score versus S&P 500.

- The initial $10,000 investment grew to $24,058.29, a cumulative return of 140.58% for the research portfolio. During the same period, the S&P 500 had a cumulative return of 53.89% and the final investment value of $15,389.20 (Fig. 3).
- The annualized return for the portfolio was 6.03% versus the S&P 500 annualized return of 2.92%.
- The portfolio outperformed the S&P 500 in 10 of the 15 annual periods included in the analysis.
- The arithmetic average annual excess return of the portfolio over the S&P 500 was 3.03%.

Portfolio 4: Excluding Outliers

When analyzing the stock performance of the CHAA winners, we were concerned about outlier influence. In particular, we did not want one holding to deter or overstate performance. To help alleviate the potential skew of one holding, we deleted the best and worst performers from portfolio 1, which started the investment once there were five holdings. The two securities excluded were GE and UNP (see Appendix for full results).

This portfolio is built upon portfolio 1. The first portfolio consisted of five publicly traded securities and began on July 1, 1999. Therefore, the annualized returns for the results of the study begin on July 1 and end June 30 of the next year. Subsequent winners were added as of July 1 after the year in which they were award winners. *Because GE and Union Pacific were large outliers, they are excluded from this portfolio*. Excluding them, each holding was equally rebalanced at the beginning of the period on the basis of the number of securities and the year-end market value. The results of the period from July 1, 1999, through June 30, 2012, are as follows:

- The initial $10,000 investment grew to $19,404.12, a cumulative return of 94.04% for the research portfolio. During the same period, the S&P 500 had a cumulative return of −0.77% and the final investment value of $9923.14 (Fig. 4).
- The annualized return for the portfolio was 5.23% versus the S&P 500 annualized return of −0.06%.

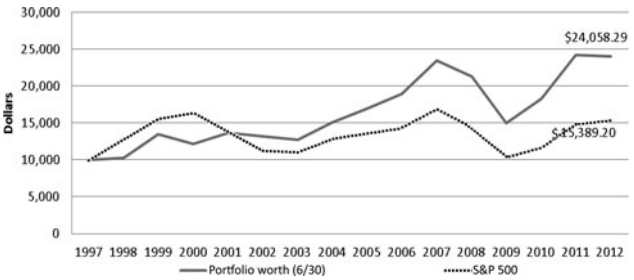

FIGURE 3. Portfolio starting with the first winner versus S&P 500.

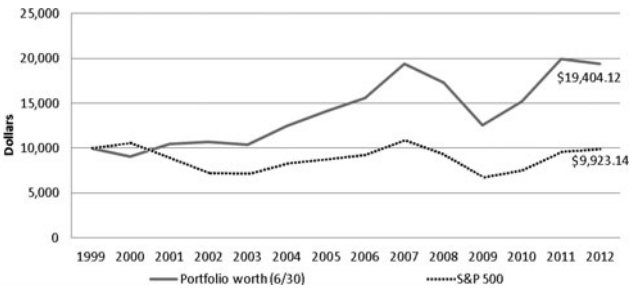

FIGURE 4. Portfolio excluding outliers versus S&P 500.

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- The portfolio outperformed the S&P 500 in 10 of the 13 annual periods included in the analysis.
- The arithmetic average annual excess return of the portfolio over the S&P 500 was 5.27%.

Regardless of our approach, the market performance of the ACOEM's CHAA winners bested the stock market S&P 500 average. The portfolio that was structured by waiting for five publicly traded award recipients, and which began tracking in 1999, outperformed the S&P 500 with a total return of 78.72% during a period when there was no growth in the S&P 500 ($17,871.52 vs $9923.14). The fund that started in 1997 with an investment into Lockheed Martin also outperformed the market ($24,058.29 vs $15,389.20). Lastly, the portfolio that eliminated the outliers also outperformed the S&P 500 ($19,404.12 vs $9923.14). Nevertheless, weighting the investments on the basis of the award-winning companies' actual score did not enhance the portfolio.

DISCUSSION

Our results strongly support the view that focusing on the health and safety of a workforce is good business. Engaging in a comprehensive effort to promote wellness, reduce the health risks of a workforce, and mitigate the complications of chronic illness within these populations can produce remarkable impacts on health care costs, productivity, and performance.

This portfolio of publicly traded award-winning companies clearly outperformed the market. Although correlation is not the same as causation, results consistently and significantly suggest that companies focusing on the health and safety of their workforce are yielding greater value for their investors as well. More research needs to be done to better understand the value of building these "cultures of health" in the workplace. Perhaps such efforts as this simply identify "smart" companies that outperform, but the evidence seems to be building that healthier workforces provide a competitive advantage in ways that benefit their investors.

Edington[13] has demonstrated that companies who do not pay attention to elevating the health status of their workforce will see their employees develop increasing health risks and health care costs. His results show that nonmanaged workforces acquire increased health risks and conditions, resulting in increased costs over time. In fact, Edington's research has found that within nonmanaged populations, the low-risk cohort diminishes by approximately 5% whereas the moderate- and high-risk segments increase by approximately 8% and 11%, respectively, over a 3-year period. Edington[14] has also demonstrated that it is possible to markedly reduce this trend through the execution of worksite risk-reduction programs.

Preventive services can stem the progression of health risks, chronic conditions, and medical costs. RAND Corporation estimates that by 2020, one fifth of all health care expenditures will be devoted to treating consequences of obesity. Lowering obesity rates to 1998 levels could lead to annual productivity gains of $254 billion as well as the avoidance of $60 billion in annual treatment expenditures.

Seven chronic conditions alone (cancer, heart disease, hypertension, mental disorders, diabetes, pulmonary conditions, and stroke) currently cost the US economy more than $1 trillion per year. Assuming that the current trend continues to 2023, this would result in a 42% increase in cases of the seven diseases for a total of 230.7 million cases with $4.2 trillion in treatment costs and lost economic output.

Plausible estimates of potential gains in 2023 associated with reasonable improvements in prevention, detection, and treatment of just those seven conditions include the following:

- Preventing 40 million fewer cases of illness
- Cutting annual treatment costs in the United States by $217 billion
- Reducing annual health-related productivity losses by $905 billion
- Yielding more than $1 trillion in labor supply and efficiency[15]

Employers can realize similar results by implementing the best efforts in prevention, early detection, and evidence-based treatment for their workforce and covered lives. A 2010 critical meta-analysis of 22 research studies in the scientific literature has found that medical and pharmacy costs fall by about $3.27 and absenteeism costs fall by about $2.73 for every $1 invested in wellness.[16] This results in a return on investment of 6 to 1.

Long recognizing the merits of a healthy workforce, the ACOEM believes that the marketplace has underestimated the full impact of poor health in the workplace and on the economy. Employers would benefit by having a better understanding of the diseases and conditions that impact their employees and should implement programs to mitigate their consequences. There is a connection between the health and safety and the productivity of workforces. Health care costs should be viewed as an investment in their employees rather than an expense. Health improvement strategies have proven to produce excellent returns. Comprehensive programs focus on primary, secondary, and tertiary prevention.[17]

The workplace offers unique advantages for the implementation of health improvement initiatives. Roughly one quarter of our population is employed. When including retirees and family members, this reach includes the majority of Americans. The workplace environment and the corporate culture can reinforce healthy behaviors. Powerful communication and educational assets can be leveraged. Incentives, penalties, and mandates can be built into compensation and health benefits. Tenured employee relationships can promote sustainability. Finally, employers possess the capability to measure the impact of health improvements on performance, productivity, and business results.

The logic behind investing in workplace health is straightforward. A large proportion of illness is preventable by reducing health risks.[18–22] Health risks can be improved through workplace health programs.[23–27] Reductions of health risks can lead to reductions in health costs.[13] Worksite health programs produce a positive return on investment and value on investment.[16,23,28–30]

Moreover, research supports a corporate-wide impact. Towers Watson has demonstrated that employers with highly effective health and productivity programs generate 20% more revenue per employee, realize a 16.1% higher market value, and deliver 57% higher shareholder return.[31]

The results of this study support the evidence in the literature discussed earlier. CHAA-winning companies have made considerable investment into the health, safety, and productivity of their workforces. These benchmark organizations should benefit in remarkable ways from this pursuit. By keeping employees safe and well, they are able to be more productive and perform at the height of their potential. This, in turn, should translate into providing a competitive advantage in the marketplace.

LIMITATIONS

This article features the performance of only a small collection of companies on the stock market for a limited number of years. To strengthen or challenge the evidence presented here, the authors recommend that this study be repeated every 5 to 10 years. It should also be reiterated that this study was limited to those award-winning companies that were publicly traded. Nearly one quarter of the CHAA winners were privately held institutions and thus were not included in this portfolio. We also elected to remove award-winning companies from the portfolio after they were purchased by others. We selected this approach because we could not ensure that the investment in the health and productivity of the workforce would be maintained by the acquiring organization. In two cases (Hughes Electronics and First Chicago), this approach was detrimental to the portfolios' performance because the purchase of the CHAA-winning company occurred shortly after the award and they were not included in the portfolio. If the methodology had included them, the portfolios

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could have performed even better because of the equity boost that occurred with their sale. Lastly, we were unable to include dividend reinvestment into our methodology. This too could have provided an enhancement to the portfolios' results.

CONCLUSION

A portfolio of companies recognized as award winning for their approach to the health and safety of their workforce outperformed the market. This may have identified an association without a causal relationship, or it may reflect the idea that companies that focus on the health and safety of their workforce manage other aspects of their business equally well. Nevertheless, the literature increasingly links the health of a workforce to its safety and performance. More research needs to be done to better understand the value of building "cultures of health" at the workplace. Although "smart" companies may simply outperform, the evidence seems to be building that healthy workforces provide a competitive financial advantage in the marketplace.

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APPENDIX

Hughes Electronics, the first recipient of the CHAA, received the award in spring 1997. At the time, Hughes was a subsidiary of GM and consisted of several divisions including Hughes Space and Communications, DirectTV, Delco Electronics, and Hughes Aircraft. In 1997, Delco was merged into GM's Delphi Automotive Systems and Hughes Aircraft was sold to Raytheon Corporation although the remaining assets were held at GM. The Space and Communications and DirectTV divisions were subsequently sold to Boeing and News Corp, respectively. Given that Hughes Electronics won the award, it would not be practical to use GM' stock or attempt to value the price of all the subsidiaries that were sold off.

First Chicago was one of four 1998 CHAA winners. In April of that year, the bank was acquired by Bank One in a $30 billion merger that created the fifth largest bank in the country. We did not use the newly merged bank's stock history (Bank One) because we did not know whether the corporate culture of health that led to the award was retained. In 2004, Bank One was purchased by JP Morgan Chase for $58 billion.

In 1999, Baltimore Gas and Electric was one of the CHAA winners. At the time, there were many changes in the regulatory environment of utility companies. Baltimore Gas and Electric had recently called off a merger with Pepco and was in the process of a major reorganization. Through the corporate actions, Baltimore Gas and Electric became the regulated utility of Constellation Energy Group. Because the company was going through many changes, we could not justify using the historical pricing of its parent company. Constellation was subsequently purchased by Excelon Corporation in 2012.

Another 1999 award winner was AlliedSignal. Shortly after winning the award, AlliedSignal merged with Honeywell and adopted its name.

Also in 1999, the City of Indianapolis was an award winner. As a municipality, the City does not have a publicly owned stock to track.

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In 2000, Sherman Health was one of three award winners. Sherman Health is a privately held hospital located in Elgin, Illinois.

In 2001, the National Security Agency was the sole winner of the CHAA. As a government agency, the National Security Agency does not have publicly owned security.

In 2002, Vanderbilt University was one of several award winners. The university is not publicly traded.

In 2004, Cianbro Corporation was the sole winner of the CHAA award. The 64-year-old company is 100% employee owned.

In 2005, QuadGraphics was one of two award winners. At the time of the award, it was a privately held company. (In 2010, the company purchased publicly traded Worldcolor and became a $4.8 billion publicly traded company under their name with the symbol QUAD.)

In 2009, the Southeastern Transportation Authority was the recipient of the CHAA award. The Southeastern Transportation Authority is not a publicly traded company.

In 2010, the sole recipient of the CHAA award was Baptist Health System. It is also not publicly traded.

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