

THE QUANTIFIABLE ROI FOR WORKPLACE WELLNESS INITIATIVES

*in partnership with
Dundalk Institute of Technology*

Abstract

Most employees now spend the majority of their day at work, and 60% of American employees get health insurance coverage through an employment-based plan. In this paper we consider the measurable cost savings from workplace wellness initiatives. The risks, costs and cost savings of smoking, obesity, lack of exercise, excessive alcohol use, high blood pressure, high cholesterol, asthma and diabetes are investigated to estimate ROI for wellness programs. Statistics from the Centre for Disease Control and Prevention, the U.S. Department of Health and Human Services Healthy People 2020 report, and data from the literature on workplace wellness programs are used to estimate costs as well as to discuss shortcomings of these costs.

Overview

American employees now spend the majority of their waking hours at work¹ [Fig.1]. The majority of this work involves only light activity, such as sitting at a desk. In fact, jobs involving minimal physical activity are increasingly becoming the norm^{2,3}. This sedentary lifestyle has a massive impact on health and well-being, with obesity being the most obvious presentation. As shown here [Fig. 2], the rise in obesity over the last three decades has been significant, leading to epidemic levels of obesity in the USA. Furthermore, obesity can lead to an increase in the prevalence of diabetes, coronary heart disease, hypertension, stroke, liver and gallbladder disease, sleep apnea and respiratory problems, osteoarthritis and gynecological problems⁴. Needless to say, this is a worrying trend.

Average work day for adults with children aged 25-54

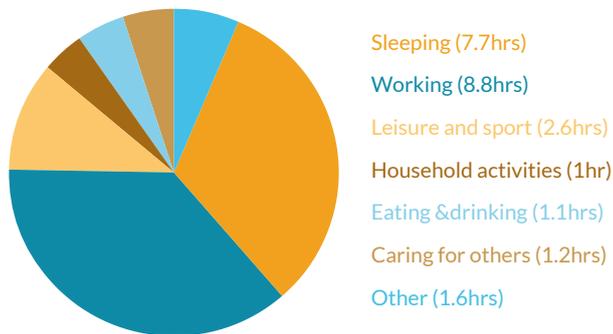


Figure 1: Employees spend most of their waking hours at work.

The fact that employees are spending the majority of their waking hours sitting down at sedentary work means that workplace wellness interventions are a perfect place to start in tackling the health of the nation. Making the workplace a place to improve health could reverse this worrying trend outlined above. As President Obama put it in his historical speech on health care reform back in June 2009, we need to “build a healthcare system that promotes prevention rather than just managing disease” and we must “invest more in preventative care so that we can avoid illness and disease in the first place”⁵.

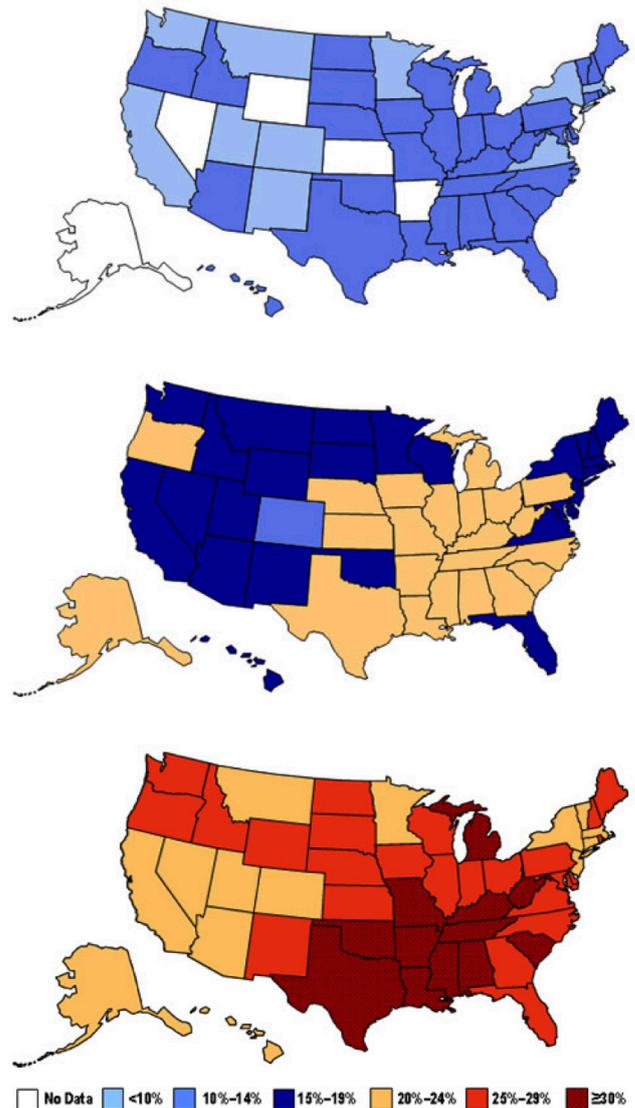


Figure 2: CDC, U.S. obesity charts 1990, 2000, 2010

What can a Workplace Wellness Program do?

There are four major reasons why an employer might invest in a workplace wellness program.

1. Reduced Medical Costs

The first, and most obvious reason, is reduced medical costs. A critical meta-analysis of the literature, carried out by Harvard’s Katherine Baicker, has found a medical costs fall of about \$3.27 for every dollar spent on wellness programs⁶. In this study they analyzed

22 carefully chosen studies published on workplace wellness ROI.

One of the problems with wellness programs is that many of them are voluntary and there is a possible self-selection bias where healthy people are potentially more likely to want to take part in the wellness program. Therefore, of the 22 studies 9 had random assignment to treatment and control groups in order to limit the bias of self-selection of healthier employees and with this group the ROI was \$3.36.

One limitation of these results is that 90% of the sample was implemented in large firms (those with more than 1000 workers). There may be economies of scale, which mean that larger employers can implement wellness programs in a more cost effective manner. Another issue with these costs is that they tracked changes over a three-year period. The costs in a wellness program are likely to be front-loaded and the benefits are likely to accumulate gradually so these costs may be underestimates.

2. Reduced Absenteeism

The second reason for investing in wellness is reduced absenteeism. The evidence for savings associated with reduced absenteeism is also found in the met-analysis carried out by Baicker⁶. Twenty two carefully selected studies which reported on costs associated with absenteeism were considered an ROI of \$2.73 was found. Again, there are some limitations in this calculation. The cost associated with absenteeism was calculated based in the average hourly wage rate of \$20.49. As pointed out in the research paper How to present the business case for healthcare quality to employers, from the Applied Health Policy and Health Economics journal, the assumption here is that when an employee is absent, they can be replaced like for like with another employee without any loss of productivity⁷. This does not take account of the fact that most people work as part of a team and as well as loss of productivity of the individual there is loss of productivity to the team. In this article, they suggest multipliers for the absenteeism costs that take account of the effect that absenteeism has for each occupation involved. For example, the multiplier for a restaurant cook is 1.48 reflecting the

fact that they are difficult to replace where as a fast food cook has a multiplier of 1.0. This means the higher the multiplier, the more that is lost from absenteeism.

Type of Job	Absence Multiplier
Paralegal	1.93
Mechanical Engineer	1.57
Motor vehicle salesperson	1.57
Carpenter, non-residential construction	1.51
Restaurant Cook	1.48
Flight attendant	1.43
Registered nurse, hospital	1.40
Inspector, aircraft manufacturer	1.34
General office, retail sales	1.30
Truck driver, trucking and courier	1.28
Medical records clerk, physician's office	1.23
Desk clerk, hotels and motels	1.19
Salesperson, retail sales	1.17
Bartender	1.14
Maids, hotels and motels	1.10
Construction worker, non-residential	1.09
Waiter, restaurant and bar	1.02
Fast food cook, restaurant and bar	1.00
Mean multiplier across 35 job types	1.61
Median multiplier	1.28

Table 1: Multipliers for absenteeism/presenteeism based on job type⁸.

3. Improved Productivity

The third reason for investing in wellness is improved on the job productivity and reduction in presenteeism. Presenteeism is where employees are at work, but not as productive as they should be due to illness, for example a hangover. Healthy workers are more productive and energized. There is not a lot of research on the costs associated with presenteeism, but initial findings indicate that it may cost even more than absenteeism. Table 2 below details a cost from a study of the Dow Chemical Company⁹. More studies are needed in order to come up with a reliable cost.

As can be seen in Table 2 the cost of presenteeism exceeds all other costs for the 9 conditions listed above in the

Medical Condition	Prevalence among DOW workforce	Medical	Absences	Presenteeism	Total Cost without multipliers	Total Cost with multipliers
		\$	\$	\$	\$	\$
Depression, anxiety, emotional disorder	4.3%	2,017	1,525	15,322	18,864	25,771
Stomach/bowel disorder	3.4%	2585	800	6790	10188	13287
Back or neck disorder	7.0%	2249	839	6879	9975	13131
Diabetes	2.4%	3663	514	5414	9620	12021
Heart/circulatory	7.1%	2531	613	6207	9359	12147
Migraine/chronic headaches	3.1%	1689	945	6603	9232	12332
Arthritis/joint pain	9.0%	2623	441	6095	9127	11839
Asthma	1.3%	1782	383	5661	7870	10304
Allergies	18.9%	1442	377	5129	6947	9205

Table 2: Estimated annual cost per worker with specific health conditions.

DOW Chemical Company. Further studies are needed on this before we can put a precise cost for presenteeism on conditions as it is difficult to get a precise quantified figure for productivity; what is needed is a control group, of similar skilled and motivated individuals, but that does not have access to a wellness program.

4. Reduced Employee Turnover

The final reason for investing in wellness is to reduce the turnover of employees due to increased job satisfaction based on the health package offered by the company. There are significant costs associated with hiring and training new staff. The median annual turnover cost per employee is estimated to be \$3,700 according to a study from the Journal of Occupational and Environmental Medicine¹⁰. The thinking is, employees that are satisfied with their wellness program and feel that work is good for their health, are more likely to stay. Again more studies and data are needed before we can estimate employee turnover and associated costs and the effect of wellness programs on this.

Our Model

In the following sections we will describe a model to estimate ROI of wellness programs based on costs associated with medical expenditure and absenteeism. As we have shown, this is likely to be an underestimate due to the lack of data available on presenteeism and employee turnover. We first discuss the nature of 8 different health risks (smoking, obesity, lack of exercise, drinking, high blood pressure and cholesterol, diabetes and asthma) in the population before considering their costs and potential savings if the wellness program can decrease the proportion of employees with these risks.

1. Risks

Aggregate data for the US nationwide has been used in the model. It should be noted that data is available on a per state basis from the Behaviour Risk Surveillance System (BRSS), and there are significant deviations between states in some categories. For example in the heavy drinkers category, values range from 8.5% in Montana and Wisconsin, to 3.5% in Utah and West Virginia. This can easily be built into the model once it is coded. We would first ask the user to select their state and then use

the appropriate risk factors for that state rather than the aggregated risk factors.

The second source of data for risks is Healthy People 2020 report by the U.S Department of Health and Human Services¹¹. This is an initiative from the government to set out 10 year, science based health goals for the population. This contains aggregated values for the whole of the US and largely agrees with the BRSS statistics for the categories that we are interested in. Table 3 gives a comparison of the risk values obtained from both sources. Where Healthy People 2020 does not have statistics for the number of people with diabetes and asthma these are gathered from the national authorities on these diseases. A further break down of obesity into overweight, obese and extremely obese is sourced from the Weight Control Information Network¹², an information service that provides scientific advice on controlling weight. Where there is a significant difference in the risk figures, for example high cholesterol, it is important to look at the exact questions being asked. The BRSS¹³ gives a figure for the number of people whose cholesterol is above 240mg/dL whereas Healthy People 2020 gives the percentage of people whose cholesterol is above 200mg/dL. In this case the latter figure is used, as that is the figure for which we have cost data.

Risk	BRSS (Risk Value)	HP2020 (Risk Value)
Smoking	19.6	20.6
Overweight	63.9	69.2
No exercise	23.1	36.2
Excessive Alcohol Use	23	28.2
High Blood Pressure	30.8	29.9
High Cholesterol	15	38.3
Asthma	9	8
Diabetes	8.7	11.3

Table 3: Risk values comparison

2. Cost Data

The cost data comes from a variety of sources (as listed in the Bibliography at the end of this report) that are detailed in Table 4. It is important to take note of the year the data was gathered, as we need to allow for health care cost

inflation in the model. The inflation figure for each cost will be considered separately.

Risk	Cost \$	Source
Diabetes	7900	24
Smoking	3,400	14, 15, 16
Asthma	3300	23
High Blood Pressure	1,396	21
Overweight	1,050	17, 18
Excessive Alcohol Use	703	20
No exercise	504	19
High Cholesterol	283	22

Table 4: Cost Data

The cost data for obesity is estimated as follows. The cost per unit increase in BMI is \$119.70 for medical care and \$82.60 for medications. So if an employee puts on a few pounds over the year and their BMI goes up just one unit, they could end up costing their employer an extra 202 dollars per year. The cost for overweight people (BMI 25-30) is estimated at the midrange value (27.5). Similarly for obese (BMI 30-40) the costs are estimated at the midrange value (35), and for extremely obese (BMI > 40) costs are estimated at a BMI of 40 as it is an open ended range after 40.

No exercise costs are calculated based on those who are active and they have a 4.7% lower health cost per active day per week. The calculations are done based on people exercising at least 3 days a week and based on a mean health care cost of \$3570.

High blood pressure costs are calculated from figures for the whole of the country divided by the number of people who have high blood pressure in the country to get a unit cost.

High cholesterol costs are reverse engineered from the Wellness Wizard²⁵. This is a calculator designed to predict the ROI from a wellness program. We took a sample calculation they had which has costs of \$21191.26 for 75 employees working out at a unit cost of \$282.55.

Risk	Savings	Source
Diabetes	10% improvement	32
Smoking	Reduce from 20.6 % to 12%	26
Asthma	33.3% of adults aged 18 to 64 missed work days in the past 12 months in 2008	31
High Blood Pressure	Reduce from 29.9 to 26.9	30
Overweight	Increase healthy from 30.8 to 33.9	27
Excessive Alcohol Use	Reduce from 28.2 to 25.4 those that drank excessively in the last 30 days	29
No exercise	Decrease no leisure time activity from 36.2 to 32.6	28
High Cholesterol	15% aged 20 and older > 240mg/L in 2005-2008	31

Table 5: Savings data

The cost data can be improved as new research on costs appears. The cost data on obesity is convenient as it allows for a calculation based on a per unit increase in BMI. However most of the costs, for example smoking, are based on whether someone smokes or not. It does not take into account how many cigarettes are smoked a day or graded bands based on how many a day someone smokes. This is an obvious place to seek out new and improved data.

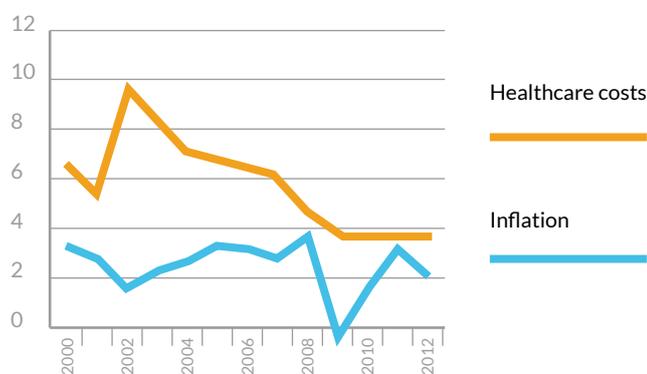


Figure 3: Healthcare Inflation Costs³³

3. Savings Data

All of the savings costs data come from the Healthy People 2020 report. All risks, other than smoking have a similar objective of a 10% reduction or a 10% improvement in the management of the disease. With smoking it is possible to aim for a reduction in the number of employees who smoke but with a condition like diabetes, the aim would be for an improvement in the management of the disease with the outcome being a decrease in the number of hospitalizations or days off work.

4. Inflation Rate for Healthcare Costs

An inflation rate of 4% is applied to costs according to the mentioned figures from Peter Ubel’s article “How Good is the Good News for Healthcare Inflation” in Forbes magazine [Fig. 3]. The formula for our cost calculation is: $Current\ cost = cost * (104\%)^{(current_year - costs\ year)}$ where costs year is the year that the costs were estimated and is chosen to be the year of the publication from which the costs were sourced. Four percent is a conservative estimate but is appropriate for our costs as most are sourced from 2009 onwards.

Conclusions

There is a broad base of literature suggesting that there is a significant payback to the employer by investing in a workplace wellness program. Up to now this research has mostly focused on savings in medical expenses and savings due to less absenteeism and there is strong evidence from the literature that these two areas will provide a significant ROI over a short time period and with the potential for greater ROI over a longer time period. The costs for ROI on absenteeism are probably underestimated as they make the assumption that the only cost in an employee being absent is that employee’s productivity. It does not take into account the effect on teams in which the employee works and makes the assumption that a perfect like-for-like replacement is available for the employee.

It is likely that these reports on ROI underestimate the true ROI due to a lack of knowledge about presenteeism and employee turnover. Initial studies in presenteeism suggest that it may be the biggest cost to an employer. Keeping valuable employees in whom considerable resources have been invested is also a cost that has not been fully researched and for which numbers are not available.

The model presented here uses documented risks from the CDC. It is also possible to do a health screening on the employee population and estimate costs more accurately due to knowing the exact risks in the population. The costs are the weakest part of the model and will constantly need to be updated based on the latest research. Some costs such as obesity are available on a per-unit BMI increase which is very useful but most costs are just estimated in a binary fashion with the employee having the disease/habit or not.

In conclusion, there is overwhelming evidence for the efficacy of workplace wellness programs and for the positive ROI associated with their implementation. In fact, it is likely that current estimates underestimate that ROI due to difficulties in measuring presenteeism and employee satisfaction and loyalty. ■

GetHealth increases employee engagement in wellness programs, which ultimately creates substantial reductions in the costs associated with an unhealthy employee population.

This paper was published in partnership with Casala & Dundalk Institute of Technology.



GetHealth

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