



Editor's Notes

What Is the ROI for Workplace Health Promotion? It Really Does Depend, and That's the Point

A recent systematic review of the literature on the financial impact of workplace health promotion found that 46 of 47 programs saved money, 41 saved more than they cost, and that the returns on investment varied greatly based on the quality of the study methodology, year of publication, sample size, scope of the program, direct or indirect measurement of savings and costs, and several other factors. A close examination of the methodology of the single study that reported net financial loss illustrates the complexity of drawing conclusions from summaries of the literature without also examining the details. Next steps in advancing studies of the financial impact of workplace health promotion programs include developing a scale to measure methodology quality that is appropriate for workplace health promotion programs, and engaging independent third parties to evaluate programs.

Baxter and colleagues recently published a systematic review of the literature on the return on investment (ROI) of workplace health promotion programs.¹ I described their review as “the most thorough and rigorous systematic review of the literature conducted to date.”²

In summary, their final analysis included 51 studies with 61 intervention arms, 261,901 participants, and 122,242 controls from nine industry types in 12 nations, with studies published between 1984 and 2012. The overall weighted ROI was \$2.38 returned for every dollar invested, using the business method common in the United States (ROI = benefits ÷ costs). The 12 studies with randomized controlled trials (RCTs) had mean ROIs of \$1.79, whereas the 5 studies with the highest related methodology scores had the lowest ROIs, with a mean weighted value of .78. The 30 studies using quasi-experimental design had a mean weighted ROI of 2.12, whereas those with nonexperimental design had a mean weighted ROI of 2.61. The highest mean weighted ROI (3.74) was found in the 25 studies that directly

measured claims costs, rather than imputing them based on normal and customary charges or other methods. The authors reported 68 different mean ROIs to reflect weighting or unweighting of the sample, methodology quality rating, study design, location of the employer, year of publication, sample size, intervention focus, scope of the program, method to measure differences, source of the ROI calculation, direct or indirect measure of savings and costs, and method used to determine costs.

The responses to the article were widely divergent but not surprising. Scientists recognized its thoughtful structure and thorough nature. Critics of the field were delighted to see that the ROI among the highest-quality RCTs was less than 1.0 (.78), adding fuel to the flames of their claims that workplace health promotion programs do not save money. Blind loyalists to the field were distressed that any of the reported ROIs were lower than the ROI (3.27 from medical costs and 2.73 from absenteeism) in the widely cited meta-analysis performed by Baicker et al.³

Most practitioners were confused. Indeed, the review was complex; the authors scored the rigor of each study using three methodology checklists: *British Medical Journal* Economic Evaluation Working Party,⁴ the Consensus Health Economic Criteria list,⁵ and the National Institute for Health and Clinical Excellence (NICE) study economic evaluations limitations checklist.⁶ They also extracted study design, sample size, program length, economic perspective, authors' home organization type, organization size and industry type, and target group, as well as program scope and focus. Additional economic metrics catalogued included time perspective and study duration, discount rate, method of measuring costs and benefits, and method of calculating ROI. Mean ROI estimates, weighted by target population size, were reported for groupings of many of those dimensions. Also, ROI was calculated two ways, representing the methods used by Western businesses (ROI = benefits ÷ costs) and the method used by economists, many European nations and Australia (ROI = [benefits – costs] ÷ costs). The economist calculation method produces an ROI estimate that is 1.0 less than the Western business method. The authors are based in Australia, so their reference perspective throughout the article was the economist method. . . which further confused people.

One colleague asked me why I praised this review so highly when I knew it would cause confusion because of its complexity. He pointed out that any 10-word sound bite drawn from the study would be misleading. In reality, that was the point. There is no one ROI from health promotion. It really does depend! More importantly, we need to refine the way we define the gold standard for measuring the health and financial impact of workplace health promotion programs and we need to refine the way we critique studies of these efforts. People who advocate RCTs as the gold standard for evaluating the financial impact of workplace health promotion programs do not have an advanced level of understanding of (1) workplace health promotion or (2) research methodology, and, more importantly, (3) do not understand the purpose of program evaluation or why employers evaluate their programs.

On the third point, employers evaluate their programs to determine if the resources they are investing are well spent. They do not use RCTs to evaluate the impact of other human resource investments, especially investments of the small magnitude of a health promotion program, and they are not going to start anytime soon. Despite the wishes of people who live for statistics (including me), employers are not interested in conducting experiments; they are interested in improving the health of their employees in the most cost-effective way, and saving money if possible.

On the second point, study design (RCT, quasi-experimental design, or nonexperimental design) is not the only important element in a rigorous study methodology. **Sampling** is also important. Having a sample that is representative of the study population, and is sufficiently large to detect differences that are real and reject those that are not, is important, as is having treatment and comparison populations that are similar to each other regarding the variables that might impact the outcome being studied. Having an RCT does not guarantee the latter. Propensity score matching of the treatment and comparison groups is a more effective method to ensure this. **Measures** are also important. Measures of dependent and independent variables need to be validated and reliable, i.e., they need to be consistently accurate in measuring what you really want to measure. **Analysis** is also important. The statistics need to be appropriate to the study question and the distribution of the data. Finally, and most importantly, the many elements of the health promotion **program** need to be effective. Program elements need to be based on methods that are established through rigorous scientific analysis when possible, and on the wisdom of experienced practitioners when not. Why are critics of workplace health promotion programs focusing solely on study design, i.e., RCT vs. not RCT? Is it because they do not understand these other elements of research methodology? Interestingly, many of the critics design and manage workplace health promotion programs, but none of them has ever published a study of an RCT he or she has implemented. Why is that true?

On the first point, it is virtually impossible to design or execute a study that effectively controls for or randomizes the factors that are most important in a comprehensive workplace health promotion program. Based on my

experience managing programs in three large organizations over a decade of time, helping to design or service several dozen programs over two decades, and reading about thousands of programs over three decades, I have learned that the elements most important for a successful program, the elements most important in enhancing the health of employees, reducing medical costs, and enhancing productivity, include the following: (1) the wisdom with which they are designed to address the strategic and operational goals of the program and the unique circumstances of the organization; (2) the level and nature of support from top management, including articulation of the importance of the program to the core values and long-term goals of the organization and providing a sufficient budget; (3) the way in which midlevel executives and supervisors are engaged as program advocates; (4) the personality, passion, sense of caring, and clinical or management training of the program leaders; (5) the strategies utilized to involve employees in the development, promotion, and delivery of programs; (6) the ubiquity and clarity of communication efforts; (7) the scientific integrity and fidelity of execution of specific skill-building programs; (8) the integration of program goals into the benefits structure and management protocols; (9) the level of access to nutritious foods and safe, fun places to be physically active; (10) the evolution of cultural norms to embrace positive lifestyle habits; (11) refinements to the program based on successes, failures, and changes in leadership and the employee population; and (12) good old-fashioned luck. Other veterans of the field might come up with shorter, longer, or slightly different lists, but they would all agree that many, if not all, of the factors most important for success cannot be controlled for or randomized in a study design.

Back to the Baxter et al.¹ systematic review and the estimates on savings and ROI calculations. This review reported findings from 61 intervention arms in 51 separate studies; 47 study arms were studies of traditional workplace health promotion programs and 14 were studies of medical and dental programs. I will limit my comments below to the 47 traditional health promotion programs. All of the studies were rated for quality based on the 36 elements of study methodology quality drawn from the *British Medical Journal* Economic Evaluation Working Party Checklist.⁴ One of those 23 elements was study design. Based on this assessment, studies were categorized into three quality groups: high (11 studies), moderate (9 studies), and low (27 studies) quality; five of the nine RCTs were in the high-quality group and four were in the low-quality group. Of the 47 studies, 46 saved money, and 41 saved money in excess of the program costs.

The single program that lost money was an RCT by McEachan et al.⁷ and was 1 of the 11 studies rated as high quality from a methodology perspective. It had an ROI of -3.3 . This program was intended to increase physical activity among 1266 employees in 44 worksites based in the United Kingdom. The financial outcome measured was cost-effectiveness of the intervention. Including that -3.3 ROI value resulted in an average ROI of $.50$ for the five RCTs rated in the highest category and 1.79 for the nine

RCTs focusing on traditional workplace health promotion programs.

Although this study was very rigorous from many perspectives, it was also quite unusual from several other perspectives. First, the authors used the societal perspective to measure the costs of the intervention. This means they counted the time spent by the designers to review the scientific literature, identify the most important principles from a behavioral perspective, conceive the program, and design all the program materials, as well as the time they spent developing the program evaluation plan, collecting and analyzing the data, and writing the report. They also included the cost of a computer to manage data and other work supplies. Additionally, they counted the time participants spent exercising based on the wages they would have earned if they were working instead of exercising, even if they were exercising on nonwork time or walking to and from meetings at work. None of these costs would be included if the perspective were the employer perspective. They also included the cost of the staff responsible for delivering the program at the various sites, even if they were not paid for their time, and for the materials handed out to employees. These later costs, the employer's out-of-pocket costs for program staff time and supplies, would normally be the only costs included when the employer perspective is used. In summary, using the societal perspective increased the costs used in the calculations several fold.

Another unusual approach was the method of used to measure the medical cost savings, i.e., the benefit. The authors made no attempt to measure actual medical costs. Instead, they asked participants to complete a 16 item perception of health questionnaire called the EQ-5D⁸ before and after the intervention, calculated the changes in these scores, estimated the impact of those changes on quality-adjusted life years (QALYs), then translated those changes into "monetary benefit" based on how much society is normally willing to pay to achieve the same level of change in QALYs, and used these values to calculate cost-effectiveness of the intervention. The net monetary benefit was the difference between the monetary benefit of the intervention and control groups. These protocols are used commonly by health economists,^{9,10} but would not be considered acceptable in workplace health promotion circles. Baxter et al.¹ calculated the ROI for this study by dividing the reported monetary benefit by the reported costs.

Finally, the program itself would not be expected to have much impact on physical activity, blood pressure, or weight. Although it was based on relevant principles of health psychology, it was too superficial to be expected to have much impact. It consisted primarily of leaflets, refrigerator magnets, posters, newsletters, and team challenges, but did not include the program elements normally expected to improve fitness levels, including fitness assessments, structured goal setting, organized fitness activities, facilitation of activity groups, access to facilities, or skills training. Most seasoned health promotion professionals would recognize this program as a basic awareness

program, the kind we stopped offering several decades ago because we discovered they did not work.

Not surprisingly, the program had little impact on the participants. Compared to the control group, participants did reduce blood pressure and resting heart rate, but not increase physical activity, and they gained weight compared to the control group. From a health perspective, it is hard to know which group benefited the most, but the objectively measured health benefits were not considered in the calculation of health benefits, only to self-reported perception of health, and participants were judged to have less improvement in QALYs, than nonparticipants, thus producing a negative net monetary benefit. The negative value of the net monetary benefit was used as the benefit in the ROI calculation by Baxter et al.,¹ thus creating a negative ROI of -3.30 for this study.

If this particular study had been excluded from the review because the intervention was too superficial to be expected to have an impact, because medical costs were never measured, or because the societal perspective on costs was used instead of the employer perspective, then 100% of the programs, 46 of the 46 programs, would have been shown to save money, the mean ROI of the four high-quality RCTs would have been 1.45, and the mean ROI of the 10 high-quality studies would have been 2.28. Will the critics of workplace health promotion broadcast that finding? We will see.

I described the study above in great detail to illustrate that there is no simple sound bite to express the ROI from workplace health promotion programs. It really does depend! To paraphrase a common phrase, "the truth is in the details."

Despite the inclusion of the McEachen et al.⁷ study, I still think the Baxter et al.¹ review is the best review to date on ROI for workplace health promotion programs, not because it provokes a useful 10-word sound bite of the findings, but because it shows how such a review should be conducted, including the level of detail it should report. For example, it provided the level of detail I needed to identify the outlier study that did not save money and find a copy so I could examine it in detail. Their review was conducted not with the goal of illustrating that workplace health promotion programs do or do not work, but to provide an objective review of what the literature reports.

It is important that readers recognize that systematic reviews of the literature are just that, review of the literature. They are not summaries of practice. The vast majority of workplace health promotion programs do not have a rigorous process to measure the health impact of their programs, and very few attempt to measure the financial impact for the reasons I discussed at the beginning of this article. Among those who do use a rigorous process to evaluate their programs, only a portion submit their findings to peer review journals because the employer gains little from having their program featured in a scientific journal. Scientists benefit, program vendors benefit, not employers. If a well conducted systematic review of the scientific literature reports that the ROI from workplace health promotion is 3 or 2 to 1, that does

not mean all programs will achieve that level of savings, it just means that some have achieved that level of savings.

Scientists can build on the Baxter et al.¹ review in several ways. First, we need to create a scale to measure methodology quality that is more appropriate for workplace health promotion programs. This scale should include measures of the qualities of the program itself. Baxter et al.¹ also recognized this need in their discussion of limitations of their review. If the program is not well designed, we should not expect it to improve health or save money. Second, we should have more discussion about the validity of including studies that do not measure monetary benefits directly. From my perspective, estimating savings or losses from changes in QALYs is a stretch I am not willing to take.

Second, and this is an area in which I agree with the critics, we need to be cognizant of the real or perceived bias of the team conducting the evaluation. When the evaluation is conducted by the external vendor getting paid to design or manage the program, or by the internal program manager whose job depends on it being successful, it is difficult to avoid the perception of bias, even when the integrity of the people is beyond reproach. Most peer-reviewed journals require authors to acknowledge these kinds of conflicts of interest in formal documents submitted when the manuscript is submitted for review, and the editors making decisions about accepting or rejecting the manuscripts are aware of these conflicts, even when the reader is not. However, we also need to recognize that employers and vendors are the ones who care about outcomes. Research funders, including major foundations, and the federal government have little interest in funding these types of studies that benefit individual employers, so attracting outside funding is difficult. One feasible solution is for employers and/or vendors to hire independent third-party organizations to

evaluate their program. Good idea? I look forward to hearing other perspectives.

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