Commentary

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ROI RESEARCH AND WORKSITE HEALTH PROMOTION

This issue includes a landmark study focused on the return on investment (ROI) from a worksite-based health management program (HMP) conducted at Citibank. Why is this article so important?

Business leaders have continually challenged our industry to produce "bottom line" savings.[1,2] Part of the problem is ours. We have developed programs on the premise that they not only improve worker health but that they also produce health care, absenteeism, and productivity savings that far outweigh program costs. This search for the "Holy Grail" in health promotion evaluations—i.e., documenting ROI savings—has been difficult if not impossible to attain. We have all long awaited credible ROI outcomes that could quantify cost savings using state-of-the-art research methods that economists would accept. This has been the 20+-year challenge for our industry.

Now, the ROI analysis performed for Citibank utilizes some of the most sophisticated analytic methods developed by health economists. Actually, the genesis for this study came from the bank's management, who challenged the corporate medical director to produce ROI results—which is how the value of every other investment at Citibank is judged. For the study, the MEDSTAT group was hired because of its experience in performing and publishing high level research that passes the scrutiny of both economists and research scientists.

This landmark study, concluded in 1998, was presented to Citibank management with an overall conclusion that the HMP produced impressive ROI results. Curiously, Citibank management was equally interested in the program's ability to improve employee health and to affect the health and cost experience of employees with existing chronic health conditions. A series of follow-up studies were commissioned following the presentation of ROI findings. The initial ROI results, as well as the health impact results that followed, further reinforced the findings that the HMP not only improved the financial health of the institution but also its employees' health and well-being. These follow-up results are forthcoming.

What makes the Citibank study unique? First, the analysis relied on a sophisticated two-step regression model first developed by health economists at Rand Corporation in the early 1980s. Since then, the model has been used widely in other econometric research because it can accurately calculate cost savings attributable to participation in interventions of interest when simpler models break down. Such breakdowns often occur because of the deviations from normality in the distribution of health care expenditures; this is a key feature that must be accounted for to obtain accurate program impact estimates. To do this, the model separately estimates the likelihood of incurring any medical expenditures and the magnitude of these expenditures for those with medical claims. This multiplicative value of both factors results in a far more accurate estimate of true medical cost savings than simpler descriptive or single-equation regression approaches.[3,4]

Second, the study employed a "quasiexperimental" research design whereby the health care cost experience of program participants was compared to that of nonparticipants over time. As with nearly all implementations of corporate wellness programs, it was not possible to randomize participation into the Citibank program. Thus, multivariate statistics were used to "subtract out" or adjust for the effects of potential confounders in the data that might lead researchers to erroneous conclusions. These included variations between participants and nonparticipants in their demographics, job types, hourly/salaried status, and length of follow-up.

Third, and most importantly, >50% of Citibank employees or 23,000 were involved in the study. Approximately half of the workers participated in the program, while the other half was considered a "reference group" or control group, whose experience was tracked to answer the following question: "What would have happened if we did nothing?" Differences in the cost experience of participants and nonparticipants were based on the growth in medical expenditures over time rather than on a "snapshot" view at any one given time. Finally, the differences in the medical costs of participants and nonparticipants were compared to their differences at the study's outset to calculate net savings.

Other factors contributing to the uniqueness of this study included the researchers' ability to collect and use person-level claims data from a very large employer for whom an integrated data warehouse was created and maintained. Next, the experience of Citibank workers was followed for a relatively long time (on average, 37 months) to detect longer term program impact. Follow-up investigations allowed for a further clarification of health outcomes related to cost outcomes. Finally, the sponsoring company was willing to risk investment in a rigorous and objective evaluation of program outcomes without knowing ahead of time whether that evaluation would turn out positively.

One final and important note is

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that these results have been subjected to extensive external scrutiny and peer review. Initial findings reported a significant 6.7 to 1.0 ROI—or, for every dollar invested, Citibank realized a $6.70 savings. For the final analysis as reported in the *American Journal of Health Promotion,* savings were somewhat more modest but were still highly significant. This analysis found between a 4.5 and 4.7 to 1.0 ROI for the program. Why the difference?

Two major critiques were offered by peer reviewers that resulted in modifications to previous methods. First, reviewers recommended a separation between health- and absenteeism-related savings (the study reported here focuses only on health care cost savings). That diminished the ROI estimates somewhat.

A second critique was the recommendation that all subjects who died during the course of the study be eliminated from the analysis. This was an unusual request and one that probably would not have been made had the authors not submitted extensive support data with their findings that contained mortality statistics. As it turned out, the 95 employees who died during the course of the study were indeed very high cost individuals, probably because they were suffering from expensive acute or chronic illnesses. Interestingly, about one-third of these subjects were participants in the HMP. Nonetheless, when these cases were removed from the database, costs associated with their care were eliminated, and the dramatic differences between participants and nonparticipants were attenuated.

This research underscores the value of ROI evaluations and the extraordinary complexities involved in performing econometric studies. Surely, the present Citibank analysis represents a milestone in our efforts to cost-justify increased corporate investment in health promotion programs. While many more studies will need to be conducted using even more rigorous methods, such as those that offer even more control for "self-selection bias," this study should provide us and corporate decision makers with added assurance that health promotion programs are not only the "right thing to do" but are also the "right business decision."

References

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