# THE BUSINESS CASE FOR A CORPORATE WELLNESS PROGRAM: A CASE STUDY OF GENERAL MOTORS AND THE UNITED AUTO WORKERS UNION

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FIELD REPORT

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## EXECUTIVE SUMMARY

During the 1990s, the General Motors Corporation (GM) wanted to hold down rising health care costs by improving the health status of its workers and their dependents, and the United Auto Workers (UAW) made the development of a comprehensive preventive health program one of its bargaining demands. Working together, GM and UAW launched a corporate wellness program in April 1996—LifeSteps.

There is some evidence that the LifeSteps program has succeeded in slowing the rate of increase in health care costs. Our study found that LifeSteps interventions may save $42,355 per 1,000 active employees, or roughly $42 a person—sizable savings for a self-insured company responsible for the health care costs of 1.25 million employees, dependents, and retirees. About two-thirds of the people GM insures have indemnity or preferred provider organization coverage, and it is this group that presents the greatest opportunity for GM to control health care expenditures.

### Background

LifeSteps grew in part out of GM's concern over rising medical costs. While GM's worldwide production costs have fallen, health care costs have risen sharply, cutting into profitability. In 1994, GM projected a 25-percent increase in medical expenditures over 10 years based on the demographics of its employed population, without adjusting for inflation.

LifeSteps is operated in conjunction with the United Auto Workers Union. The UAW-GM Joint Training Fund finances one-third of the program costs. A substantial portion of active employees are UAW members, and the union has been supportive of the program because it is aimed at improving health, rather than simply reducing health care costs.

### Program Design

LifeSteps consists of a basic program that operates nationwide, as well as an intensive version available in two communities (Flint, Michigan, and Anderson, Indiana).

The basic program consists of several components: quarterly newsletters on health education topics, targeted mailings on select topics, and toll-free, 24-hour telephone access to nurses for health advice. The most important aspect is the Health Risk Appraisal (HRA). This multi-item questionnaire assigns participants a wellness score based on their responses. The HRA also groups people according to their likelihood of developing

diseases, based on factors such as a sedentary lifestyle, number of days sick, being overweight, smoking, drinking excessively, having high blood pressure or cholesterol levels, or being under stress.

Offered at GM production plants in Flint, Michigan, and Anderson, Indiana, the intensive version of LifeSteps includes on-site measurement of such data as weight, blood pressure, and cholesterol. High-risk employees—those showing three or more risk factors—are encouraged to enroll in counseling for behavioral change. High-risk individuals also are eligible for vouchers that pay for the cost of two visits to the doctor. Traditional fee-for-service insurance does not cover routine office visits, and these vouchers are meant to minimize cost as a barrier to seeking either preventative or follow-up care. However, only 29 percent of the vouchers distributed are used.

Successful corporate wellness programs like LifeSteps have several factors in common. Retired people prefer to participate in interventions at home, through printed material or telephone calls. Active employees are most receptive to programs at their worksite. Intensive intervention seems to be more effective than more basic interventions for promoting behavioral change.

**Health Benefits**

LifeSteps delivered a measurable impact on both risk status and wellness scores. Since its inception, the program has attracted 43 percent of households and 34 percent of individuals. Among all active employees and retirees under age 65, the number of people considered low risk has increased. Among people who participated in three or more LifeSteps components, 13 percent migrated to low risk from a higher-risk category.

**Potential Savings and Costs**

An important administrative component of LifeSteps is measurement and evaluation of the program itself. Both GM and the vendors that deliver intervention services receive quarterly reports on the program's performance, based on analyses conducted by an independent group at the University of Michigan. Program costs, including the delivery of services, administration, and program evaluation, were not revealed by GM.

In general, tracking the financial success of corporate wellness programs is challenging; benefits most often take the form of costs avoided rather than actual savings. GM's major return on investment came from a reduction in the rate of increase in medical costs for individuals with non-Medicare indemnity and PPO coverage. For this group, the company estimates it saves $226 per risk factor ($171 in health services costs, the rest in

drug costs). GM also estimates that its average plant can save nearly $350,000 annually in absenteeism costs through active participation in the intensive-level program.

**Policy Recommendations**

GM's investment in wellness can return potential long-term savings in health care costs. Each year a worker remains with GM past the break-even point of the wellness program, the greater the opportunity to reap savings or avoid risings costs. This is a significant finding for other self-insured employers—particularly those with a large fee-for-service population. However, this many be limited to those employers whose workforce has a long tenure with the company. Moreover, labor unions should include wellness programs in their future collective bargaining negotiations.

# THE BUSINESS CASE FOR A CORPORATE WELLNESS PROGRAM: A CASE STUDY OF GENERAL MOTORS AND THE UNITED AUTO WORKERS UNION

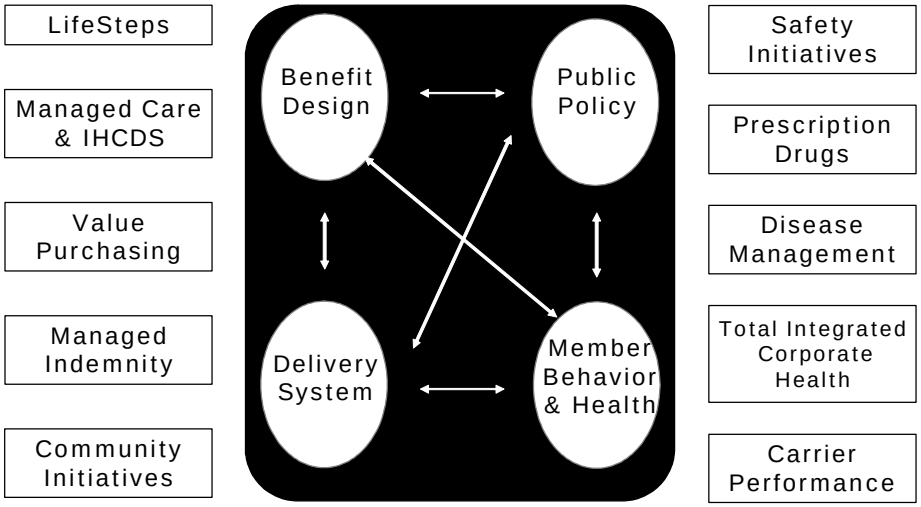
## BACKGROUND

During the 1980s and early 1990s, the United Auto Workers (UAW) made the development of a comprehensive preventive health program one of its bargaining demands. Efforts to meet the contractual obligations led to numerous programs focused on single preventive measures, including blood pressure screening, smoking cessation, cholesterol screening, and HIV/AIDS awareness. In 1994, General Motors (GM) created the Health Care Initiatives (HCI) Group as its administrative section responsible for, among other things, developing proactive programs to address the health needs of the GM population. The director of HCI, Jim Cubbin, examined the patterns of utilization among GM employees and projected a 25-percent increase in medical expenditures over 10 years based strictly on the demographics of the employed population (that is, he did not include potential increases in prices and advances in technology).* Cubbin proposed to GM management that a program be created to improve the health status of the population. In this manner, the interests of GM and the UAW converged, and the two parties together created a corporate wellness program—LifeSteps.

HCI uses a conceptual framework to assess the drivers of cost and quality within the organization: benefit design, public policy, delivery systems, and member behavior and health (Figure 1). The corporate wellness intervention was designed to address the drivers related to modifiable aspects of member health-related behaviors and health. But the intervention operates within the context of the other drivers, all of which interact with each other. Other programs within the purview of HCI are designed to address or influence the other three drivers of cost and quality.

* See Figure 2 for an example of the type of diagram used to make this point.

Figure 1. GM's Key Health Care Initiatives, Quality & Cost Drivers




Source: General Motors Health Care Initiatives Group

**PROGRAM DESIGN**

LifeSteps is a wellness program designed to improve the health and well-being of all persons over age 19 for whom GM provides health benefits, including active employees, retirees, and dependents of active or retired employees. The program concept was approved in 1994. In 1995, the program was designed and requests for proposals (RFPs) from vendors to operate different components of the program were developed. Vendor contracts were awarded in early 1996. The program began operation on April 1, 1996, and continues to the present. One-third of program costs are paid by the UAW-GM Joint Training Fund and the remaining two-thirds are financed by GM. A steering committee comprised of representatives from the UAW and GM's Health and Safety Groups and the UAW, GM Department Benefits Section and GM's Health Care Initiatives is responsible for managing the program.

LifeSteps has two levels (basic and intensive) and each level has multiple components. The basic LifeSteps program has been implemented nationwide and the intensive program has been implemented in two communities (Flint, Michigan, and Anderson, Indiana).

The basic program components are:

- *Health Risk Appraisal (HRA) and Profile:* The HRA is a questionnaire that can be completed by mail, online on GM's intranet or the Internet, or at health screenings routinely conducted at plants participating in the intensive program. The content of the HRA is shown in Table 1. Participants receive a tailored profile of their health based on their responses (Appendix Exhibits A and B). The profile gives a Wellness Score (50–100), identifies areas in which the participant is doing well and areas in need of improvement, and highlights three risk factors for the participant to address.

- *Quarterly Newsletters*: These provide health education across a range of topics and are mailed to the homes of all employees and retirees (Appendix Exhibit C).

- *Targeted Mailings*: Much of the LifeSteps program operates through mailed materials. Initially, these were addressed only to active or retired employees. GM discovered that addressing mailings to dependents increased their awareness of and participation in the LifeSteps program. Though specific topics may be addressed in mailings, the materials go to all members of a group (e.g., active employees, dependents, retirees) rather than only to those with a particular health problem. Special mailings are sent to people who have participated in LifeSteps for multiple years and have requested information on a particular topic.

- *800 Number*: Employees and retirees have around-the-clock access to nurses for health information and advice. The advice line is not linked to the design of the benefit package (e.g., calling the advice line is not a condition of coverage, and reduced copayments are not offered for using the advice line).

- *Self-Care Book*: When the LifeSteps program began, all households of potential participants were sent an introductory package that included the Vickery and Fries book, *Take Care of Yourself* (Vickery and Fries). The introductory package has been revamped recently and a modified version is being sent to employees hired since the initial mailing.

The intensive program is operated at the plants in the two pilot communities as well as in storefront locations, called LifeSteps Centers, accessible to community members who are not active employees (dependents and retirees). The intensive program includes all of the components in the basic program, plus:

1. *HRAs with Biometric Screening*: Offered at the plants in Flint and Anderson, the HRA is filled out on site along with measurements of height and weight, blood pressure, total cholesterol, and high density lipoprotein (HDL). Blood glucose

levels are also obtained and the results are maintained in a database but are not analyzed due to the unreliable nature of the test. An eight-page results profile is presented to participants immediately after the screening, and a counselor then meets with participants to discuss what they might do to address the highest-risk areas.

2. *Lifestyle Management*: This program is available to persons who are identified as being in the high-risk group (with three or more risk factors) and who consent to follow-up interventions. A vendor, Harris Health Trends, contacts these individuals and attempts to enroll them in a telephone-based program. Over the course of four to six annual telephone calls, participants receive counseling on self-identified priorities for behavioral change.
3. *Wellness Support*: Traditional wellness programs are conducted at the intensive sites and include awareness programs, educational classes, and interventions (e.g., aerobics or conditioning classes).
4. *Office Visit Vouchers*: Persons who are identified as being in the high-risk group are eligible for vouchers that pay for the cost of two visits to the individual's personal physician. This is designed to offset cost as a potential barrier to seeking preventive care services or following up on potential problems identified in the HRA and biometric screenings. The benefit design for non-illness care among persons with traditional fee-for-service insurance does not cover routine office visits, though specific services such as mammograms, pap smears, or prostate specific antigen tests, to detect prostate cancer, are covered. For enrollees in a preferred provider organization, 70 percent of the cost of office visits is covered. Office visits are fully covered for enrollees in health maintenance organizations (HMOs).

In addition to the specific intervention programs, a measurement and evaluation component has been included as a central part of LifeSteps since its beginning. A contract was awarded to the University of Michigan Health Management Research Center during the design phase of the project. Data were made available to the center on medical utilization prior to the implementation of the program (1993–1995). The center produces quarterly reports for GM and the vendors who deliver the intervention services. Rick Wagoner, who was president of GM North America at the time of the program's implementation and is now president and CEO of GM, made it clear that he would not support a program that did not include an active evaluation component. The company wanted to understand how well the program was performing and wanted that evaluation to be done by an independent group.

## Scientific Evidence

During the last 20 years, a body of literature devoted to the investigation of worksite health promotion programs has developed (Pelletier, 2001). These programs have evolved from a central idea—that lifestyle choices profoundly affect health and health care costs. As such, interventions that modify lifestyle, or more specifically behavior, in positive ways are likely to have beneficial effects on clinical and financial outcomes. Health promotion programs employ several tools to facilitate healthy lifestyles among program participants. These include broad health education and awareness programs, health risk appraisals, targeted educational materials, and customized interpersonal counseling (Heaney and Goetzel, 1997). Each of these tools is focused on either maintaining healthy behaviors or encouraging those who engage in unhealthy behaviors to adopt healthier ones (Yen, Edington, et al., 1994).

This case study summarizes the scientific evidence in support of worksite health promotion efforts and some of the methods such programs use to achieve their ends. We examine the characteristics of the health risk appraisal, the association between certain risks and cost outcomes, and whether health promotion programs can modify behavior and thereby decrease risk and cost. We also compare GM's basic and intensive LifeSteps programs by analyzing the evidence from the literature of the relative strengths and weaknesses of the programs' components. Finally, we discuss some of the conclusions drawn from comprehensive reviews of the health promotion program literature.

## Health Risk Appraisal

Both the basic and intensive LifeSteps programs rely on a health risk appraisal (HRA), which is a centerpiece of many comprehensive health promotion programs (Anderson and Staufacker, 1996). The HRA provides guidance for targeting interventions while also functioning as a measurement and evaluation tool. The HRA gained widespread use and acceptance after it was introduced into the public domain by the Centers for Disease Control and Prevention in 1980. It consists of three components: a questionnaire, a risk projection calculation, and an educational report. The HRA is used to stratify individuals according to their likelihood of developing disease and predicted future health care costs (Smith, McKinlay, et al., 1987; Yen, Edington, et al., 1994). This information is then fed back to individuals, along with suggestions regarding risk modification. Both the reliability and validity of the HRA have been established (Anderson and Staufacker, 1996). While some see the HRA as simply a measurement tool, others speculated that completing the HRA itself produced a positive impact on health outcomes, i.e., risk improvement. A review of the scientific literature concluded that the evidence does not strongly support this view (Anderson and Staufacker, 1996).

The risks that the HRA assesses can be divided into four groups: behavioral, biometric, attitudinal, and descriptive. Behavioral risks include low physical activity, being overweight, smoking tobacco, excessive alcohol consumption, and not using seatbelts. Longitudinal studies have established that these risks are associated with poor health outcomes (U.S. Preventive Services Task Force, 1996). Further, with the exception of not using seatbelts, these behaviors have all been associated with higher health care costs based on employer insurance claims (Yen, Edington, et al., 1994; Goetzel, Anderson, et al., 1998; Aldana, 2001; Yen, Edington, et al., 1991). It has also been established that education and counseling programs are effective in increasing physical activity levels and encouraging smoking cessation, limited alcohol consumption, and the use of seat belts (Heaney and Goetzel, 1997; Wilson and Holman, 1996). The effectiveness of interventions aimed at weight loss, however, has not been established.

Biometric risks assessed include high blood pressure, high cholesterol, and low HDL. Again, these physiologic parameters have well-documented adverse influences on morbidity and mortality (U.S. Preventive Services Task Force, 1996). In terms of financial outcomes, hypertension has been associated with higher costs, while there is less evidence implicating high total cholesterol and low HDL (Goetzel, Anderson, et al., 1998; Aldana, 2001). ("Financial outcomes" in this discussion refers only to those costs captured by employer-based health insurance claims.) Several health promotion programs have proven effective in reducing high blood pressure and high total cholesterol (Wilson, Holman, et al., 1996).

The attitudinal risks assessed include self-reported high stress, self-reported low life satisfaction, and self-reported fair or poor physical health. One study has documented the increased costs associated with stress, and another has reported the ability of health promotion programs to decrease stress (Anderson, Whitmer, et al., 2000; Ozminkowki, Dunn, et al., 1999).

Descriptive risks in the HRA include existing medical problems and greater than five work absences per year. Studies have shown that the existence of chronic medical conditions confers higher risk for adverse health and financial outcomes, and that absenteeism tends to predict higher health care costs and increased health risk (Yen, Edington, et al., 1994). Several studies have clearly shown that comprehensive health promotion programs often lead to decreased rates of absenteeism (Yen, Edington, et al., 1991).

**Basic and Intensive Program Strategies**

How effective are the different types of strategies employed in the basic and intensive LifeSteps programs? According to the literature, programs that disseminate educational messages to large populations via awareness programs may be less expensive, but they are likely not as effective as customized messages at engendering behavioral change (Pelletier, 2001). Approaches that incorporate individual counseling and periodic support related to individually identified risks are likely to be more successful (Heaney and Goetzel, 1997). Unfortunately, there is currently no literature that directly addresses the effect of the addition of biometric screening to the HRA, a step that was added by GM. Programs that use tiered interventions of increasing intensity for high-risk individuals appear to be most successful at decreasing risks among those individuals (Pelletier, 1997). The LifeSteps intensive program uses such an approach.

Worksite health promotion programs have evolved over the last two decades, and numerous comprehensive reviews have evaluated specific components of these programs. However, it is also useful to understand if the reviews point to any basic principles that appear common to successful programs. Heaney and Goetzel provide us with valuable guidelines for implementing future health promotion programs:

- Multi-component programs appear to be more effective because they allow employees to choose which program components they want to use, and thereby customize the program to their individual needs.
- Programs must usually be of a minimum duration, roughly one year, to achieve results.
- Programs that continually reinforce messages, provide support, and have an ongoing maintenance component have more durable outcomes.
- Better outcomes are associated with senior management buy-in and with work environments where employee health is seen as a priority for the corporation.

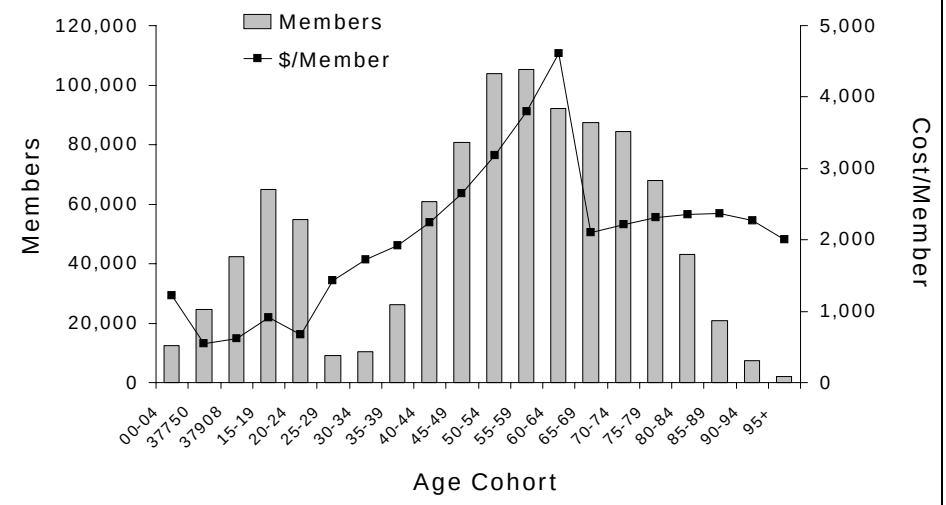
The design of the LifeSteps program is consistent with these principles, which leads us to expect (1) positive outcomes from the intervention and (2) greater effects in the more intensive program.

**Populations Potentially Affected by LifeSteps**

General Motors is responsible for 1.25 million covered lives nationally. Active employees constitute 16 percent of the population, retirees constitute 33 percent, and dependents over age 19 constitute the remaining 51 percent. The age distribution of the population is

bimodal (0–3 years and 35–90 years); 75 percent of active employees are between the ages of 40 and 64 (Figure 2). The program applies to all adults for whom GM pays health benefits—a larger scope than any other program run by GM.

Figure 2. General Motors Age Distribution




Source: GM Health Care Initiatives.

In designing the program, GM and the UAW originally planned to target only active employees. As the design evolved, however, dependents were added because of the important role spouses play in making health care decisions and the belief that engaging spouses might increase the likelihood of engaging employees. (Eighty percent of GM active employees are men, and there is some evidence that women tend to make the health care decisions in a household.) The next expansions during planning were first to the pre-Medicare population (retirees under age 65) and then to Medicare-eligible retirees. These groups were included because they tend to incur relatively high expenditures and experience a high degree of pain and suffering due to disease and the precursor risk factors. The program was originally intended to be available only to those with traditional fee-for-service or preferred provider organization coverage (TRAD/PPO), because GM pays medical care costs directly for these individuals, but it was ultimately extended to include those enrolled in HMOs as well.

**Metrics for Measuring Improvement**

The University of Michigan Health Management Research Center tracks a number of indicators of program impact:

- *Participation*: Rates of participation by eligible individuals and households are tracked by component. The intensity of participation is also tracked (number of program components in which an individual participates). Participation rates are an indicator of how many people the program is reaching and intensity is a good predictor of the likelihood that low-risk maintenance or changes in risk status will occur. Annual as well as cumulative participation rates are tracked.

- *Risk Status*: The metric used is the proportion of the population that is at low risk (defined as zero to two risk factors). Disease management programs tend to focus only on managing or improving the health of those at highest risk (defined as five or more risk factors). However, University of Michigan researchers have found that it is also critical to keep those who are at low risk from migrating to higher-risk status (Edington). In the absence of programs designed to maintain people in low-risk status, an upward risk migration has been observed. The Health Management Research Center has labeled this "the natural flow of risk," which is particularly important among those ages 35 to 55. This is because studies show that people add risk factors during those years.

- *Wellness Score*: The wellness score is intended to capture overall health status in a single number. This is calculated from the Health Risk Appraisal and has three components: the number of health risks, an interaction function related to the appraised age calculations from the Centers for Disease Control and Prevention and the Carter Center, and a function related to the use of preventive services. The wellness score has a range from 50 to 100, a mean of 80, and a standard deviation of 10. Higher wellness scores are associated with lower health care costs and changes in wellness scores are associated with changes in health care costs.

- *Change in Risk Status Classification*: This refers to the change in risk status over time. A positive program outcome occurs when people either maintain their risk status (especially if that status is low) or when their risk status improves. Ideally, one would like to compare these changes over time to what would have happened in the absence of the program, but the risk status classification requires an HRA to be completed and that constitutes a part of the intervention. Absent a true control group, one might compare the experience of those in the intensive versus basic interventions, although these comparisons will be affected by selection bias.

- *Reductions in Overall Health Care Costs and Rates of Increase*: The total costs and rates of increase in costs among those in each age/risk group as well as non-participants are routinely tracked.

- *Days Absent From Work*: Although not a major focus of the program evaluation, estimates have been made about whether the program has affected absenteeism. This metric only applies to active employees (about 20 percent of participants).
- *Satisfaction with LifeSteps*: Two surveys have been undertaken to assess the target population's satisfaction with the program.

All of these metrics are confounded by the problem of selection—those who choose to participate in the LifeSteps program may be different from those who do not participate, and there are no observations made of those who do not participate.

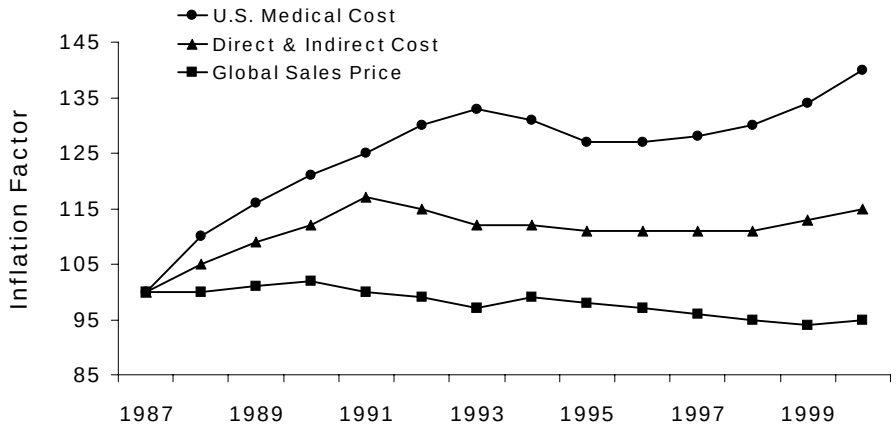
## PROGRAM SAVINGS AND COSTS

General Motors is the world's largest vehicle manufacturer. GM has manufacturing operations in more than 30 countries, and about 55 percent of the active workforce is located in the United States. Within the United States, GM has employees or retirees in most states, although the company's largest presence is in the Midwest.

The LifeSteps intervention occurs at the corporate level, rather than within a health care organization or delivery system. Since GM is self-insured, it directly incurs the costs of health care services, either through direct payments in the case of the traditional indemnity plan (TRAD) or preferred provider organizations (PPOs), or through premiums in the case of health maintenance organizations (HMOs). Because the LifeSteps program is important to the UAW, the cost of the intervention itself is partially financed by union-negotiated joint funds (in proportion to the number of active union members and their families who were eligible for the program at its inception).

The pressure to reduce medical care costs is considerable within GM because these are the only component of production costs that are steadily rising (Figure 3). Global sales prices for vehicles are declining and the costs of all other production components have been reduced. Rising health care costs thus affect the profitability of the company. This trend has been observed across a number of large United States–based employers.

Figure 3. The Medical Cost Gap:
Why Purchasers Care About Health Care Costs
Inflation Index (1987 = 100)




Source: GM Health Care Initiatives.

About one-third of GM covered lives are enrolled in managed care organizations; the remaining two-thirds are in TRADs or PPOs. Although programs to reduce health risks and in turn health costs will affect the costs of care for those in either type of program, GM can only directly realize the savings on the non-Medicare, TRAD/PPO side. Estimating the exact size of the cost/risk reduction for those enrolled in the HMO and translating that into reductions in premiums has heretofore proven to be a difficult position to sell to the HMOs.

The benefit package differs for salaried and hourly employees. Salaried employees make a direct contribution to the premium price of a health plan. GM calculates the price for each health plan by taking into account the cost of the plan and its quality ranking; higher-quality plans may cost the employee less. In southeast Michigan, the annual employee contributions range from zero for the basic medical plan to $852 for one of the PPOs. Other highlights of coverage are shown in Table 2.

Hourly employees make an indirect contribution to health costs through negotiated offsets, so that they do not directly pay any portion of the health insurance premium price for any health plan option. Under TRAD, routine office visits and some preventive services (e.g., childhood immunizations) are not covered (the employee must pay the full cost); all covered services have first-dollar coverage. Under PPO coverage, hourly employees pay up to a 70 percent coinsurance rate for routine office visits (rate ranges from 30 to 50 percent, depending on the geographic location).

In the initial design of the LifeSteps intensive intervention, the planning team examined potential barriers to access for preventive services. In Flint, 70 percent of active employees are men and most do not have an established relationship with a physician. GM worked with Blue Cross Blue Shield of Michigan to develop a panel of physicians in the area willing to take new patients. Another barrier was the lack of coverage for routine office visits. The voucher program was designed to offset the potential barrier of the cost of an office visit for those with a high risk (e.g., total cholesterol level of 240 or greater).

The total cost of the LifeSteps program was not made available for this project. The costs include the direct delivery of services (which are provided by vendors), administrative costs, and the costs associated with the measurement and evaluation activities. The University of Michigan Health Management Research Center provides the measurement and evaluation services; the cost of this activity is about 10 percent of total program costs.

GM contracts for most of the services included in LifeSteps using four main vendors: Health Solutions, McKesson-HBOC-Access Health Group, Campbell-Ewald, and the University of Michigan's Health Management Research Center (UMHMRC). Health Solutions is responsible for managing the on-site services at the two intensive sites. Health Solutions is paid a fixed amount annually (about 80 percent of its total contract) and a variable amount if services exceed certain thresholds; the variable amount is paid on the basis of additional hours worked. The lifestyle management telephone program is run by Harris Health Trends through a subcontract arrangement with Health Solutions and the fixed and variable cost approach is used for that contract as well. The toll-free number is run by Access Health under a fee-for-service contract. The contract was initially awarded on a capitated basis but analysis of low rates of utilization led to a change in the contract terms. The newsletter is produced by Campbell-Ewald, a public relations firm; the contract provides a fixed amount for each unit of production (e.g., a newsletter). The contract with the University of Michigan is a combination of fee-for-service (e.g., processing the HRAs) and a fixed annual contract for measurement and evaluation services. The UAW, GM, and University of Michigan Health Management Resource Center have developed a close working relationship with the vendors, providing feedback reports that have helped them tailor their services over the course of the program.

The costs of the program are incurred on an annual basis within a relatively fixed budget. Start-up costs, which were substantial, were amortized over the first three years of the program; in subsequent years, only the ongoing operational costs of the program are incurred. The benefits occur over a period of time. Some occur in the year in which

expenditures are made and others occur over time. One of the challenges with health promotion programs is that the benefits are most often in the form of costs *avoided,* rather than in cost savings. Because it is difficult to calculate or see costs avoided, estimating the financial benefits of the program is complex and may be difficult to sell within the organization. GM has set a high standard for the calculation of return-on-investment (ROI). The costs of the program are "assigned" to persons who participate in a component of the LifeSteps program that can be tracked (e.g., completing a health risk appraisal, attending an in-plant screening, or taking an aerobics class at the plant). Persons who read the newsletter or look at the website but do not take part in a component that can be tracked are not counted as participants. Further, only participants who have TRAD or PPO coverage are included in the ROI calculations because these participants are the ones for whom GM can directly benefit from reduced expenditures. HMO and Medicare covered persons are excluded from these calculations. The original estimates from the University of Michigan were that the program might expect to break even in its seventh or eighth year. Some efficiencies in program operations have been implemented that may make the break-even point occur earlier, but it has not yet been reached. The program has a different ROI calculation for each of the populations (active employees, retirees, dependents) and for each of the components, but these numbers were not made available for this case study. The ROI was characterized as most favorable for active employees, especially those in the intensive sites.

There are a number of non-economic benefits related to successful implementation of worksite wellness programs. These include improved morale, improved health status, improved health consumer knowledge, and reduced prevalence of modifiable health risks, among others. Satisfaction ratings are evidence of the importance of these non-economic benefits.

The major economic gain to GM for this program is a reduction in the rate of increase in health care costs incurred by persons in the non-Medicare, TRAD/PPO coverage groups. There are potential gains to GM in the form of reduced absenteeism. GM estimates that the average plant could save nearly $350,000 annually in absenteeism costs through active participation in the LifeSteps intensive program. There are gains to physicians who treat individuals who might otherwise not have sought care. This is likely to be greatest in the pilot communities where the voucher program operates, although the rate of use of vouchers is quite low—about 29 percent of those who receive the vouchers actually use them. There may be gains to those who provide pharmaceuticals through an increased number of persons taking medication for such health problems as hypertension and hypercholesterolemia, though this is a loss to GM in the form of increased health care

costs in the short term. There are potential losses to hospitals for health problems avoided (e.g., heart attacks, cardiac surgeries). There are potential "gains" to GM in the form of reduced premiums to the HMOs. The HMO premiums are based on experience rating with a lag—premiums in year 2002 are based on the experience in 2000. Because the GM population tends to have higher costs than many other HMO enrollees, it is challenging to link participation in LifeSteps to reduced costs and thus reduced premiums. There may be initial losses to participants in the program in the form of higher out-of-pocket payments for physician visits that they might not otherwise have made.

A 1999 survey of participants found that 85 percent wanted the LifeSteps program to continue and 74 percent indicated that it had improved their opinion of both GM and the UAW. The program by this time had reached 78 percent of the target audience with at least one component. Individuals do not have to pay to participate in the program and no assessments of willingness to pay have been made because of the negotiated use of joint funds.

**Regulatory, Public Financing, and Labor Environment**

GM is a self-insured company subject to the Employee Retirement Income Security Act (ERISA), which to some extent shapes the health benefits environment. GM has a health benefit program for retirees, which is affected directly and indirectly by the policies of the Medicare program (i.e., benefits not provided under Medicare are likely to be paid by GM under wrap-around coverage). GM is also affected by the rules and regulations of the Occupational Safety and Health Administration with respect to workplace health and safety issues.

A substantial portion of active employees are hourly employees represented by the UAW. Health benefits for this group are part of the contract bargaining cycle (currently four years) between the UAW and GM. Thus, GM cannot act unilaterally in changing the benefit package to accomplish policy goals such as reductions in health care expenditures or changes in the patterns of utilization. The UAW is also actively involved in approving the programs that will be offered to GM hourly workers. The UAW was supportive of a program aimed at improving the health and well-being of the population; the union would not have been as enthusiastic a supporter of a program aimed strictly at reducing health care costs for GM through benefit reductions. The collective bargaining environment that exists between GM and the UAW is a key driver of the ongoing development and evaluation of health benefits policies and special programs such as LifeSteps.

## POTENTIAL CAUSES OF SUCCESS OR FAILURE

From the perspective of those interviewed for this study, four factors operated together to make the implementation of LifeSteps successful. First, there were champions of the program at high levels in the corporation (Cubbin, Kevin Butler, former general director of GM Health Care Initiatives, and Mark White, former GM codirector of UAW-GM Center for Health and Safety) and in the UAW (Vice President Richard Shoemaker). Senior management buy-in is one of the principles of successful programs identified from the literature. Second, the UAW enthusiastically supported the initiative and was willing to use joint funds to pay a part of the costs. The literature also suggests that a culture that values the health of employees provides the best environment for health promotion programs. Third, there was a model that placed this initiative within the larger context of other cost and quality drivers. The model provided a common conceptual framework for the GM and UAW staff involved in design and implementation activities. Finally, there are dedicated GM staff and UAW International representatives with considerable experience. Thus, high-level leadership support from both GM and UAW, on-the-ground experience, and a common frame of reference are markers for likely program success. In addition, the team at the University of Michigan's Health Management Research Center had considerable experience with corporate wellness programs and brought expertise to the design, implementation, and evaluation activities. Having information from the measurement and evaluation portion of the initiative has been critical for redesigning and fine-tuning the program over time.

Different target groups are reached by different elements of the LifeSteps program. For example, the retired population is most likely to participate in interventions that are available in their homes (e.g., printed materials, telephone calls); this group is much less receptive to interventions that require leaving home. Active employees are most responsive to interventions available at the plant site. Dependents are the hardest group to reach. By having different types of interventions, LifeSteps has been able to attract different groups. However, it is clear that the program has been much less successful among dependents and retirees.

It appears that the intensive intervention is somewhat more successful than the basic intervention in promoting behavior change. However, the company has not expanded the number of intensive sites. There appear to be a couple of reasons for this. First, the expansion of the program has been linked to the union contract bargaining cycle. Second, because the focus in the pilot sites is on active employees, GM would likely seek a larger share in costs from the UAW joint funds. This may not be feasible because there are competing uses for these funds—particularly in the current economic climate.

This may limit the magnitude of program's potential success. It is sufficiently popular, however, that it is unlikely to be scaled back in the near future.

## KNOWLEDGE GAPS AND STUDY LIMITATIONS

A remarkable amount of information has been collected and analyzed by the University of Michigan Health Management Research Center regarding the effect of LifeSteps on the health status and expenditures of the target population. However, substantially more information has been made available about the impact of the program on health than on costs, primarily because of the decision to focus on risk reduction and health improvement. Thus, this study is limited by a lack of data made available on program costs.

Another potential limitation of the study is that the data presented here were not independently analyzed. Although there is no reason to believe that the results are inaccurate, the reader should be aware that no separate examination of the data was undertaken.

A number of questions could not be answered within the context of the current study. The following might be important for those considering whether to implement such a program:

- How well do different components of the program work? The assessments that were made available treat the individual interventions as a set and do not disclose the value of each component (e.g., through a cost-benefit calculation). These analyses have been done but were not shared for this case study. Although it has been established that participating in more program components is better, it is unclear whether a hierarchy of effectiveness exists among the components.
- What is the timing of benefits relative to costs? While some benefits are realized within the same year that costs are incurred, some are likely to pay off in later years (e.g., reductions in blood pressure or cholesterol). The evaluation design allows for the testing of a latent period, but this information was not made available for this study. This may affect the relevance of the findings to employers whose employees' average tenures are shorter than those experienced by GM. It is likely that Medicare would be one of the major beneficiaries of the LifeSteps program because of health care costs prevented or delayed in that population.
- How well are behavior changes maintained? The data are presented in aggregate form in order to protect confidentiality, limiting our ability to understand how

individuals fare over time and whether some behavior changes are more likely to be maintained than others. Presumably, if a return to poor health habits can be delayed, the costs associated with the poor behavior are also delayed, but such issues are complex. Even though individual data are tracked by the UMHMRC, including information on risks, program costs, and savings in medical care expenditures, these results are shared in aggregate form only.

- How would changes in the benefit package (e.g., improved coverage of routine office visits) accelerate the benefits of or substitute for the LifeSteps program? There was little opportunity to consider alternatives to LifeSteps but, given the extensive work done in planning the program, it seems unlikely that significant established alternatives exist.

- How would the implementation of this program nationally affect the health status and health expenditures of the U.S. population? No estimates were made of whether large-scale adoption of a similar program by many large employers would have significant effects on the health of the U.S. population.

## HEALTH IMPACT OF LIFESTEPS

The metrics used to assess the impact of LifeSteps are described above. This section presents the results with respect to participation, risk status, wellness score, and change in risk status.

Rates of participation by program component are shown in Table 3. Since the program's inception, 43 percent of households and 34 percent of individuals have participated in at least one trackable component of LifeSteps. As of June 30, 2001, 24 percent of households had participated for at least two years and 13 percent had participated for at least three years. The intensive program has reached a higher proportion of the target group than the basic program, in large part because it is operated at the worksite and is thus convenient for employees. Half of the active employees in the pilot plants have been screened, nearly half have participated in the wellness support program, and 29 percent of those receiving vouchers (those at highest risk) use the vouchers.

The proportion of persons in low-risk status is shown in Table 4. Overall, 61 percent of GM participants are in the low-risk group. Maintaining or improving this proportion over time is one of the objectives of the program (Yen, Edington, et al., 2001). Table 5 shows the change in low-risk status among persons who have completed at least two HRAs. Among all active employees and retirees under age 65, the proportion of persons with low-risk status has increased by the downward migration of the moderate-

and high-risk groups. Among retirees age 65 and older, there have been small percentage point decreases in the proportion of persons with low-risk status. Among dependents, no consistent overall pattern emerges; there has been an increase in the proportion of persons with low-risk status in the pilot sites and a small decrease in the non-pilot sites.

Although intensity of participation is associated with the likelihood that a person will change risk groups, in multivariate analyses (controlling for the number of baseline risks and eligibility for high-risk programs) this effect is not significant (Yen, Edington, et al., 2001). Among persons participating in three or more LifeSteps components, 13 percent migrated to low risk from a higher-risk category. Persons who had the biometric screening in addition to completing the HRA and received personal counseling about the results reduced risks by 30 percent more than those who only completed the HRA by mail and received written feedback. The cost-effectiveness of this additional risk reduction is still being measured.

Table 6 shows the Wellness Score overall and by type of participant and location. The average score for populations participating in the HRA is 78.6. In Table 7, changes in the Wellness Score among participants with at least two HRAs are shown. As with changes in the proportion of persons in low-risk status, a positive direction is desirable. Overall, there has been a positive change in Wellness Scores among active employees and retirees under age 65. There has been a negative change among retirees age 65 and older and dependents, leading to an overall negative change among all participants, although the magnitude is quite small. In the pilot sites, where the more intensive intervention is available, the positive changes in Wellness Scores are larger in magnitude.

Table 8 provides more detail about the types of health risks experienced by participants in the LifeSteps program. The University of Michigan group has examined the extent to which these risk factors are correlated with one another among different age, gender, and health status groups (Braunstein, Li, Hirschland, McDonald, and Edington, 2001). The purpose of the study was to examine whether packages of interventions could be developed to target the needs of subgroups in the population. One of the strongest single predictors of the number of risk factors across the groups was an individual's perception of their own health status, which the authors found to be an accurate measure of risk status. The study found four different groups of risk factors:

- Risk-taking behaviors group: high prevalence of smoking, high levels of alcohol use, low levels of physical activity, and low rates of seatbelt use;

- Low-risk group: body mass index is most prevalent risk among this group, along with high total cholesterol and low HDL;
- Biometric risk group: high prevalence of body mass index risk, high blood pressure, high cholesterol, low HDL;
- Psychological risk group: high prevalence of life dissatisfaction and stress, low ratings on self-perceived health; this group had the highest average number of risk factors (4.4).

The analysis did discover differences in the age and gender profiles of these risk factor clusters. For example, the biometric risks were more common among men and salaried employees. For men, risks related to heart disease were the most common. Risks related to illness days and stress were the most common for women.

**ECONOMIC IMPACT**

The association between risk status and the cost of health care by age group is shown in Table 9. For example, in the 45–54 age group, persons in the low-risk group have an average annual health expenditure of $1,713, compared with $4,828 among those in the high-risk group. It is interesting to note that in all age groups, non-participants in the program have costs that are higher on average than those in the low-risk participant group but lower than those in the medium-risk group. This underscores the importance of rates of participation on overall financial impact. GM calculates excess costs as the difference between the low-risk groups and the nonparticipant and moderate and higher-risk groups. The proportion of total costs that are attributable to excess risks is 25.7 percent.

Among those with TRAD or PPO coverage, GM estimates that it saves $226 per risk factor reduced in the non-Medicare population and $106 per risk factor reduced in the Medicare population. For the non-Medicare population, 76 percent of the savings is in health services costs and 24 percent is in pharmaceutical costs. For the Medicare population, 54 percent of the savings is in medical services costs and 46 percent is in pharmaceutical costs.

Program participation also has an effect on the rate of health cost increases. An analysis comparing the cost increases among active employees in the pilot program in the pre-program years (1993–96) with cost increases in the program years (1996–99) found that the difference in the annual increased dollar amount spent per person on health care was $99. The cost increases were $160 per program participant annually, compared with $219 for non-program participants, or a 37 percent higher rate of increase. In other words,

during the program years, health costs of participants increased less than those of non-participants, with an annual savings of $99 in medical costs.

Table 10 demonstrates how the information on changes in health risk levels can be brought together with information on the relationship between health risks and health care costs to estimate the potential impact on health spending for a population of 1,000 active employees. According to this example, the program could save $42,355 per 1,000 active employees (or about $42 per person). Net savings would take into account the costs of providing the intervention to 1,000 employees and consider the fact that other people in this group are likely gaining risk (data not available for this case study).

Absence days were also examined before and after implementation of the program among male hourly active employees in the two pilot sites. Before the LifeSteps program began, there were no differences between eventual participants and non-participants in the number of disability absences; about half of the population had zero disability absence days over the six years of the study (1995–2000). The proportion of employees who had any absence days increased less for those who participated in LifeSteps than for non-participants (105 percent increase in absence days for participants versus a 141 percent increase for non-participants). Those who participated in the LifeSteps program in multiple years experienced a decrease in absence days, while non-participants increased their absences by 0.7 days per year, single-year participants decreased absences by 0.3 days, two-year participants decreased absence days by 0.4 days, and three-year participants decreased absences by 0.6 days.

Critics of the results suggest that they are driven by selection effects—those who are already interested in maintaining or improving their health or who are motivated to change are more likely to join the program than those without such motivations. In fact, one would prefer to see those at high risk participate in the program, since they could potentially realize the greatest gains in health status and cost reductions. The UMHMRC reports that there is a slight trend in the most recent year toward new participants having higher risks.

No analysis was made available for this study that specifically identifies economic winners and losers, although such analyses have been completed and are available for review by program managers.

## POLICY RECOMMENDATIONS

Four recommendations emerge from this study:

- Medicare should evaluate whether a health promotion program such as the one described here should be implemented nationally. Medicare, like GM, may be able to realize savings from an investment in better health. A creative approach would be for Medicare to intervene before people age into the Medicare population. This "risk profile enhancement" strategy would likely require new legislative authority. (RAND is currently conducting a study for the Centers for Medicare and Medicaid Services, called the "Healthy Aging" project, to examine evidence-based interventions to promote the health and well-being of the Medicare population. This policy recommendation is consistent with the content of that project but offers some insights into potential cost savings for Medicare from making such investments.)
- In the case of self-insured employers, particularly those with a large fee-for-service component, the incentives to implement programs such as the one described here are reasonably well aligned with the opportunity to realize savings. A critical element for consideration is the length of time between implementing a program and realizing cost savings. For example, if the break-even point is four years, companies that have average tenures of four or more years may be able to incur savings (or avoid cost increases). This has implications for regulations governing such employers. If ERISA changed in a way that made it less attractive for employers to self-insure, this would also reduce incentives for employers to invest in health promotion or prevention programs, because they would not be able to directly reap the benefits of any cost savings.
- UAW and GM are invested in a community-wide approach to improving health status. They believe that this approach will ensure the long-term success of the program and create a healthier pool of potential employees for all employers in a community.
- Labor unions should consider programs such as the one described here as part of future bargaining. There appear to be advantages to the health and well-being of the population represented and, if the business case can be made to the employer, both sides may incur a benefit.

- Measurement and evaluation should be a required program element for all quality improvement interventions. The ability to demonstrate a business case for quality hinges on having credible data that speak to the interests of the various stakeholders affected by the intervention. The LifeSteps program is unusual in terms of the richness of health status and financial data that have been available to GM and the UAW throughout the program. The availability of such information has enabled the Steering Committee to make improvements throughout the course of the program to enhance its effectiveness. The independence of the evaluators has also been important given the different stakeholder perspectives (that is, the evaluation comes from a source that is trusted by both GM and the UAW). Another key has been the commitment to confidentiality, which is regularly communicated to the target population.

Table 1. Content of the LifeSteps Health Risk Appraisal

| Topic | Description |
|---|---|
| Personal Characteristics | Age |
| | Height and weight |
| | Gender |
| | Body frame size |
| Health-Related Behaviors | Frequency of aerobic exercise |
| | Cigarette smoking |
| | Hours of sleep |
| | Daily servings of high-fiber foods |
| | Daily servings of high-cholesterol foods |
| | Weekly consumption of alcoholic beverages |
| | Annual miles riding or driving in motor vehicles |
| | Frequency of seatbelt use |
| | Average driving at speed limit |
| | Usual type of vehicle |
| Quality of Life | Life satisfaction |
| | Social ties |
| | Overall physical health |
| | Significant personal loss in past year |
| | Illness days in past year |
| Medical History/Self Care | Annual use of self-care book |
| | Annual use of the 800-number for health information |
| | Annual reading of LifeSteps newsletter |
| | Presence of specific chronic conditions (heart disease, diabetes, cancer, hypertension, asthma, chronic bronchitis or emphysema, stroke, arthritis, allergies, back pain) |
| | Use of specific preventive services |
| | Use of medication for high blood pressure |
| | Current blood pressure |
| | Total cholesterol level |
| | HDL cholesterol |
| | Breast cancer risk factors |
| | Self-exam of testicles |
| | Planning changes to improve/maintain health |
| | Interest in receiving follow-up information |

Source: Authors' summary of LifeSteps HRA.

Table 2. Comparison of Health Plan Benefits for GM Salaried Employees Under Traditional and PPO Coverage (Southeast Michigan)

| Benefit Type | Basic Medical Plan | Enhanced Medical Plan | PPO-1 | PPO-2 |
|---|---|---|---|---|
| Annual deductible Individual/family | $900/$1800 | $300/$600 | $300/$600 out of network | None |
| Out-of-pocket maximum Individual/family | $2500/$5000 | $1300/$2600 | $1300/$2600 out of network | $1300/$2600 in network/none out |
| Hospital services | 25% copay after deductible | 20% copay after deductible | 0% copay in network, 30% out of network | 10% copay in network, 30% out of network |
| Outpatient services | 25% copay after deductible | 20% copay after deductible | $15 copay in network, 20% out of network | 10% copay in network, 30% out of network |
| Emergency care | 25% copay after deductible | 20% copay after deductible | $50 copay | 10% copay in network, 30% out of network |
| Prescription drugs | Generic-$5, Brand-25% ($15 min, $25 max) | Generic-$5, Brand-25% ($15 min, $25 max) | Generic-$5, Brand-25% ($15 min, $25 max) | Generic-$5, Brand-25% ($15 min, $25 max) |
| Mental health/ substance abuse | Covered | Covered | Covered | Covered |

Source: General Motors Health Care Initiatives.

Table 3. Participation Rates in LifeSteps Program Components by Year

| Program Component | Year 1 6/30/97 | Year 2 6/30/98 | Year 3 12/31/99 | Year 4 12/31/00 | Year 5 6/30/01 |
|---|---|---|---|---|---|
| HRA Participation | | | | | |
| Average among individuals | 14% | 21% | 25% | 29% | 31% |
| Average among households | 17% | 27% | 33% | 37% | 39% |
| Screening (in-plant participation, pilot sites) | 27% | 41% | 47% | 50% | 51% |
| 1-800# Nurse lines inbound calls (by household) | 4% | 7% | 9% | 10% | 11% |
| Lifestyle Management | | | | | |
| Enrollment of contacts | 81% | 73% | 73% | 76% | 78% |
| Enrollment of total consenters | 56% | 52% | 51% | 51% | 50% |
| Significant Risk Follow-Up | | | | | |
| Access Health (toll-free Number) Participation | NA | NA | NA | 54% | 46% |
| Harris Health Trends (telephone-based lifestyle management) Participation | NA | NA | NA | 39% | 54% |
| Voucher use among eligibles | 25% | 26% | 27% | 29% | 29% |
| Self-reported use of other program components | | | | | |
| Survey response rate | 24% | NA | 18% | NA | NA |
| Read newsletter | 78% | NA | 73% | NA | NA |
| Used *Take Care* book | 56% | NA | 39% | NA | NA |
| Overall LifeSteps participation | NA | NA | 78% | NA | NA |

Source: University of Michigan Health Management Research Center, 2001

Table 4. Proportion of Participants in the Low-Risk Group Overall and by Group and Location

| Group | All HRA Participants | | Pilot Sites | | Non-Pilot | |
|---|---|---|---|---|---|---|
| | N | % Low Risk | N | % Low Risk | N | % Low Risk |
| Active | 58,851 | 64.4% | 12,517 | 56.9% | 46,334 | 66.4% |
| Retired < 65 | 52,832 | 56.1% | 11,712 | 50.5% | 41,120 | 57.7% |
| Retired 65+ | 122,757 | 59.5% | 19,906 | 58.3% | 102,851 | 59.8% |
| Dependents | 92,919 | 64.5% | 14,734 | 62.9% | 78,185 | 64.8% |
| Total | 327,359 | 61.3% | 58,869 | 57.6% | 268,490 | 62.1% |

Source: University of Michigan Health Management Research Center, 2001

Table 5. Change in the Proportion of Persons in Low-Risk Status Among Those with at Least Two Health Risk Appraisals

| | Active | Retired < 65 | Retired 65+ | Dependents | Total |
|---|---|---|---|---|---|
| All HRA | | | | | |
| N | 21,471 | 20,698 | 62,009 | 33,967 | 138,145 |
| Baseline % | 64.5% | 58.4% | 63.8 | 66.6% | 63.8% |
| %age-point change | +4.0 | +2.9 | -0.9 | 0.0 | +0.6 |
| Pilot Sites | | | | | |
| N | 6,499 | 4,912 | 9,347 | 5,271 | 26,029 |
| Baseline % | 55.0% | 53.6% | 62.2% | 64.9% | 59.3% |
| %age-point change | +7.5 | +5.0 | -0.2 | +1.8 | +3.1 |
| Non-Pilot Sites | | | | | |
| N | 14,972 | 15,786 | 52,662 | 28,696 | 112,116 |
| Baseline % | 68.7% | 59.9% | 64.0% | 66.9% | 64.8% |
| %age-point change | +2.5 | +2.3 | -1.0 | -0.4 | +0.1 |

Source: University of Michigan Health Management Research Center, 2001

Table 6. Current Wellness Scores Among Health Risk Appraisal Participants Overall and in Pilot and Non-Pilot Sites by Group

| Group | All Health Risk Appraisal Participants (Cumulative) | Pilot Sites (Cumulative) | Non-Pilot Sites (Cumulative) |
|---|---|---|---|
| Active | 79.5 | 76.8 | 80.2 |
| Retired < 65 | 76.4 | 74.7 | 76.9 |
| Retired 65+ | 78.2 | 77.8 | 78.2 |
| Dependents | 79.8 | 79.6 | 79.8 |
| Total | 78.6 | 77.4 | 78.8 |

Source: University of Michigan Health Management Research Center, 2001

Table 7. Change in the Wellness Score Among Those with at Least Two Health Risk Appraisals

| | Active | Retired < 65 | Retired 65+ | Dependents | Total |
|---|---|---|---|---|---|
| All Health Risk Appraisals | | | | | |
| N | 21,471 | 20,698 | 62,009 | 33,967 | 138,145 |
| Baseline score | 80.6 | 78.0 | 80.2 | 81.0 | 80.1 |
| Change in score | +0.5 | +0.7 | -0.7 | -0.3 | -0.2 |
| Pilot Sites | | | | | |
| N | 6,499 | 4,912 | 9,347 | 5,271 | 26,029 |
| Baseline score | 77.1 | 76.1 | 79.8 | 81.0 | 78.7 |
| Change in score | +1.8 | +1.7 | -0.4 | -0.1 | +0.6 |
| Non-Pilot Sites | | | | | |
| N | 14,972 | 15,786 | 52,662 | 28,696 | 112,116 |
| Baseline score | 82.1 | 78.6 | 80.3 | 81.0 | 80.5 |
| Change in score | -0.1 | +0.4 | -0.7 | -0.3 | -0.4 |

Source: University of Michigan Health Management Research Center, 2001

Table 8. Risk Profiles Among Health Risk Appraisal Participants at GM
(As of June 30, 2001)

| Risk Factor | Active Employees | Retired < age 65 | Retired age 65+ | All dependents |
|---|---|---|---|---|
| Number of participants | 58,851 | 52,832 | 122,757 | 92,919 |
| Active < once a week | 21.2% | 20.2% | 20.3% | 23.2% |
| Smoker | 16.9% | 18.0% | 6.9% | 10.3% |
| Safety belt use < 90% | 16.7% | 19.8% | 13.8% | 10.3% |
| >10% over healthy weight | 37.2% | 43.2% | 29.9% | 37.8% |
| Alcohol > 14 drinks/week | 5.2% | 6.1% | 3.2% | 1.4% |
| High blood pressure* | 17.5% | 24.9% | 33.4% | 24.0% |
| Cholesterol > 239** | 18.1% | 17.5% | 13.0% | 18.9% |
| HDL < 35** | 21.7% | 22.2% | 13.7% | 5.6% |
| Stress | 22.3% | 22.1% | 16.8% | 15.3% |
| Low life satisfaction | 20.4% | 19.0% | 14.2% | 15.4% |
| Fair or poor physical health | 11.8% | 17.7% | 19.0% | 16.2% |
| Existing medical problem | 12.0% | 28.3% | 43.5% | 25.1% |
| > 5 illness days/year | 14.7% | 24.9% | 29.4% | 28.7% |

*Percent who report high blood pressure values, high blood pressure condition, or who have been prescribed medication for high blood pressure

**Percent of those who report a value; HDL is high density lipoprotein level.

Source: University of Michigan Health Management Research Center, 2001

Table 9. Annual Medical Costs for GM by Age, Risk Level, and Health Risk Appraisal Participation

| Age Group | Low Risk | Non-participant | Medium Risk | High Risk |
|---|---|---|---|---|
| 19–34 | $908 | $1,087 | $1,559 | $2,305 |
| 35–44 | $1,368 | $1,844 | $2,106 | $3,502 |
| 45–64 | $1,713 | $2,333 | $2,794 | $4,828 |
| 65–74 | $2,231 | $3,028 | $3,839 | $5,770 |
| 75+ | $1,095 | $1,553 | $1,633 | $2,167 |

Source: University of Michigan Health Management Research Center, 2001

Table 10. Estimate of the Link Between Improved Health and the Costs of Medical Care for 1,000 Active Employees

| | Ages 19–34 | 35–44 | 45–64 |
|---|---|---|---|
| (1) Average cost difference between those at medium and low risk | $651 | $738 | $1091 |
| (2) Average cost difference between those at high and low risk | $1397 | $2134 | $3115 |
| (3) Assumed age distribution (n=1000) | 350 | 325 | 325 |
| (4) Number of persons migrating from medium to low risk* | 10 | 10 | 10 |
| (5) Number of persons migrating from high to low risk* | 5 | 5 | 0 |
| (1) * (4) | $6,510 | $7,380 | $10,810 |
| (2) * (5) | $6,985 | $10,670 | $0 |
| Gross cost savings by age group | $24,700 | $17,655 | $10,810 |

*Based on distributing a four-percentage point increase in the proportion of persons in the low-risk group across the age groups.

Source: Authors' analysis.

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