TCRP

SYNTHESIS 52

TRANSIT
COOPERATIVE
RESEARCH
PROGRAM

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Transit Operator Health and Wellness Programs

A Synthesis of Transit Practice

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TCRP SYNTHESIS 52

Transit Operator Health and Wellness Programs

A Synthesis of Transit Practice

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TRANSIT COOPERATIVE RESEARCH PROGRAM

The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213—Research for Public Transit: New Directions*, published in 1987 and based on a study sponsored by the Federal Transit Administration (FTA). A report by the American Public Transportation Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of vice configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, the National Academy of Sciences, acting through the Transportation Research Board (TRB), and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

Research problem statements for TCRP are solicited periodically but may be submitted to TRB by anyone at anytime. It is the responsibility of the TOPS Committee to formulate the research program by identifying the highest priority projects. As part of the evaluation, the TOPS Committee defines funding levels and expected products.

Once selected, each project is assigned to an expert panel, appointed by the Transportation Research Board. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, TCRP project panels serve voluntarily without compensation.

Because research cannot have the desired impact if products fail to reach the intended audience, special emphasis is placed on disseminating TCRP results to the intended end-users of the research: transit agencies, service providers, and suppliers. TRB provides a series of research reports, syntheses of transit practice, and other supporting material developed by TCRP research. APTA will arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by urban and rural transit industry practitioners.

The TCRP provides a forum where transit agencies can cooperatively address common operational problems. TCRP results support and complement other ongoing transit research and training programs.

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The members of the technical advisory panel selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and while they have been accepted as appropriate by the technical panel, they are not necessarily those of the Transportation Research Board, the Transit Development Corporation, the National Research Council, or the Federal Transit Administration of the U.S. Department of Transportation.

Each report is reviewed and accepted for publication by the technical panel according to procedures established and monitored by the Transportation Research Board Executive Committee and the Governing Board of the National Research Council.

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FOREWORD

By Staff
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Transit administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the transit industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire transit community, the Transit Cooperative Research Program Oversight and Project Selection (TOPS) Committee authorized the Transportation Research Board to undertake a continuing study. This study, TCRP Project J-7, "Synthesis of Information Related to Transit Problems," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute a TCRP report series, *Synthesis of Transit Practice*.

The synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

This synthesis will be of interest to transit staff concerned with proactively addressing operator health and wellness issues at their agencies. The report documents current information on prevention and intervention strategies and resources that can be used by transit agencies. It offers survey information obtained from individuals with the responsibility for managing health and wellness programs. This synthesis covers the state of the practice at 14 U.S. transit agencies of various sizes, operating different modes, in diverse locales around the nation.

This report from the Transportation Research Board provides insight into the health and wellness issues faced by bus and rail operators, the impacts of these issues on operators' ability to be productive employees, and programs that transit agencies have implemented to improve the health status of operators. It integrates information from an extensive literature review with survey responses, as well as from follow-up telephone calls and e-mail contacts. Case study information was collected from six agencies.

A panel of experts in the subject area guided the work of organizing and evaluating the collected data and reviewed the final synthesis report. A consultant was engaged to collect and synthesize the information and to write the report. Both the consultant and the members of the oversight panel are acknowledged on the title page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

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This study was managed by Donna L. Vlasak, Senior Program Officer, who worked with the consultant, the Topic Panel, and the J-7 project committee in the development and review of the report. Assistance in project scope development was provided by Jon Williams, Manager, Synthesis Studies. Don Tippman was responsible for editing and production. Cheryl Keith assisted in meeting logistics and distribution of the questionnaire and draft reports.

Christopher W. Jenks, Manager, Transit Cooperative Research Program, assisted TCRP staff in project review.

Information on current practice was provided by many transit agencies. Their cooperation and assistance was most helpful.

TRANSIT OPERATOR HEALTH AND WELLNESS PROGRAMS

SUMMARY

For many people, the bus or rail operator is the heart of the transit agency—the first and most lasting contact with the organization. Operators serve many roles other than simply transporting passengers to their destinations. They are often the primary goodwill ambassadors and masters of communication responsible for maintaining a loyal, diverse clientele. Operators who are healthy and have a solid sense of well-being are best equipped to fill these varied roles. Operator health and wellness issues that are not addressed or acted on can affect safety, service, absenteeism, employee turnover, and workers' compensation in costly and negative ways. Conditions of concern include stress, hypertension, heart disease, mental health issues, stroke, back- and neck-related injuries, obesity, diabetes, tobacco use, and alcohol and other drug-related problems. In addition, family-centered issues may affect an operator's overall health and wellness.

This synthesis provides a glimpse into the health and wellness issues faced by this group of employees, the impact of these issues on operators' ability to be productive employees, and programs that transit agencies have implemented to improve the health and wellness of operators. The objective of this synthesis is to document current information on prevention and intervention strategies, and the resources that can be used by transit agencies to proactively address operator health and wellness issues.

The synthesis surveyed transit agency experience with employee health and wellness programs. A questionnaire was developed and distributed to those transit agencies that, during telephone contacts, indicated that they operate health and wellness programs. Surveys were mailed to 33 transit agencies. In addition, contacts with transit agency health and wellness professionals, developed while completing previous TCRP studies, were used. Particular attention was paid to ensuring that the research pool represented various sizes of transit agencies, operating different transit modes, in diverse locations around the nation. For the purpose of this synthesis, a health and wellness program is defined as "a planned series of ongoing activities designed to improve the health and well-being of transit operators."

The synthesis effort also featured an extensive literature review. This review included research on how the nature of the job of operator affects health and well-being, health risk factors common to transit operators, regulatory mandates related to operator qualifications, specific health conditions common to operators that may prevent them from continuing their employment, health and wellness interventions in similar work situations, and health and wellness program successes in the transit industry.

The survey revealed that transit agencies are embracing the health and wellness of operators as a critical employee development and retention issue. Within the 14 responding agencies, there is evidence of proactive models of organizations seeking to improve operator physical and psychological health and well-being. These organizations have invested in, to varying degrees, health and wellness programs that focus on awareness-, education-, and

behavior change-oriented activities of different types. As the chapter on survey findings shows, these activities include health education, exercise, stress management, employee assistance, nutrition, smoking cessation, maintaining mental health, cardiovascular disease prevention, and disease management programs. The processes by which agencies have reached the program implementation stage vary and show the importance of creative and adaptive thinking in designing a program that fits the culture and needs of the individual organization.

The role that labor and management support plays in the successes of the 14 responding agencies is another area of variation. In some cases, support for health and wellness efforts is quite visible, and in others, less so. The degree of employee involvement in program design and implementation also differs. In some cases, health and wellness committees have a large part in shaping and operating the program. This is especially true in instances in which the person assigned to lead the program has additional work responsibilities. For example, in one agency the program coordinator is an employee relations coordinator who is only able to devote 20% of her time to wellness program coordination. In a second case, the coordinator is the assistant director of finance and can spend only approximately 15% of her time on the wellness program.

The majority of health and wellness programs have established internal organizational linkages with programs such as safety, benefits, and workers' compensation. This strategy allows health and wellness to maintain a higher profile than if the program operated as a totally separate entity within the organizational structure. In a number of instances, agencies use community health and wellness resources to enhance the value of funding and other resources allocated by the transit agency.

Although several agencies reported having annual operating plans with a clear mission, goals, and objectives statements, little attention is given to substantive program evaluation. The primary evaluation tool is the tracking of program participation, with some emphasis on participant satisfaction.

Six case study agencies were selected from the 14 survey responses. The case studies describe program content, processes, challenges, and lessons learned in developing and implementing health and wellness programs for transit operators. These case studies also explore how the agencies align health and wellness goals with overall organizational strategic direction and priorities.

Each case study tells a unique story, in part because health and wellness programs in these agencies have different origins. Some were started as a planned strategic approach by the agency's management team. Others started as a result of requests made by union leadership or by someone in the organization who had enough interest in health and wellness to voluntarily try a few wellness activities. Similarly, each case study has its own program model. Some have a comprehensive focus, in which annual program activities and measurement criteria are defined in the agency's annual budget, with as much as a six-figure allocation. In other cases, the program is shaped to fit an allocation of from $2,000 to $6,000. Even in cases with small budget allocations, the commitment to the program is strong and is articulated in a variety of ways by participants, senior management, and, in a number of cases, labor union leadership.

The case studies demonstrate that there is no single right way to begin, organize, or operate an operator health and wellness program. One thing these six agencies have in common is an organizational awareness of the types of health risk factors operators have in common,

with many risks owing to the nature of the job. Lack of physical activity, obesity, unhealthful diet, uncontrolled diabetes, and uncontrolled hypertension all rank close to the top of the list of these costly risk factors. Program activities focus on ways to prevent or reduce the effects of these risk factors, while also making employees responsible for their own health and well-being. The many ways in which this is accomplished is refreshing and likely to be thought provoking to other agencies considering health and wellness programs as an employee development and organizational improvement strategy.

CHAPTER ONE

INTRODUCTION

BACKGROUND AND OBJECTIVES

Health and wellness issues that affect transit operators that are not addressed or acted on may negatively affect transit agency safety, service, absenteeism, employee turnover, and workers' compensation and medical costs. Conditions of concern include stress, hypertension, heart disease, mental health issues, stroke, back- and neck-related injuries, obesity, diabetes, tobacco use, and alcohol and other drug-related problems. The use of prescription or over-the-counter medication to treat various conditions may also negatively affect the operator and the agency. In addition, family-centered issues may affect an operator's overall health and wellness.

There are proactive models of organizations seeking to improve operator physical and psychological health and well-being. These models include wellness programs, fitness-for-duty evaluations, exercise programs, critical incident stress management, employee assistance programs (EAPs), labor–management health and safety committees, nutrition and diet programs, mentoring programs, and smoking cessation programs.

The objective of this synthesis is to document current information on prevention and intervention strategies and resources that can be used by transit agencies to proactively address operator health and wellness issues.

PURPOSE AND SCOPE

This synthesis surveyed transit agency and other applicable industry experience with employee health and wellness programs. The primary goal of the project was to gather data from transit agencies on their current practices related to the use of transit operator health and wellness programs. To obtain these data, a questionnaire was developed and sent to 33 transit agencies that had been previously determined to operate health and wellness programs. The research pool was developed to represent transit agencies of various sizes, operating different modes of transit, and located around the nation. In addition, transit agency health and wellness contacts, developed while completing previous TCRP studies, were used. For the purpose of this synthesis, a health and wellness program was defined as "a planned series of ongoing activities designed to improve the health and well-being of transit operators." The survey was directed to individuals with responsibility for managing health and wellness programs.

The effort also included a literature review and case study information about innovative and successful practices, as well as lessons learned and gaps in information. The six case studies were drawn from the 14 transit agencies that responded to the synthesis survey. They cover a number of topics, including how some of these agencies aligned health and wellness goals with overall organizational strategic direction and priorities.

ORGANIZATION OF RESEARCH AND METHODOLOGY

Preparation of the draft questionnaire survey was aided by a preliminary review of relevant literature and research. Comments received from topic panel members about the questionnaire were integrated into the survey distributed in March 2003 to health and wellness staff at 33 transit agencies. Follow-up telephone calls to nonresponders were made to encourage completion and submission of the questionnaire.

The survey was designed to gather information on the following topics:

- Transit agency characteristics,
- Demographics related to the wellness program targeted audience,
- Placement of a health and wellness program in the organizational structure,
- Management support for the health and wellness program,
- Union support for the health and wellness program,
- Program data gathering and analysis,
- Health and wellness program budget,
- Integration of the health and wellness program with other organizational functions,
- Incentives to encourage participation,
- Annual operating plan,
- Program communication processes and activities,
- Supportive organizational environment,
- Scope of health and wellness activities (disease management, prevention, etc.),
- Specific health and wellness activities offered,
- Policies supportive of the health and wellness program,
- Family participation in program activities, and
- Evaluation of the program outcome.

Furthermore, an extensive review of relevant literature was summarized. The review included research on how the

nature of the job of operator affects health and well-being, health risk factors common among transit operators, regulatory mandates related to operator qualifications, specific health conditions common to operators that may prevent them from continuing their employment, health and wellness interventions in similar work situations, and health and wellness program successes in the transit industry. An on-line search of transit industry, university, and government databases, and other sources, provided valuable resources for analyzing synthesis survey data. Results of the literature review are summarized by subject area.

Survey responses were submitted by 16 transit agencies, 14 of which met the criteria set forth for the definition of health and wellness programs in the letter of introduction. Responses were tabulated and summarized, and data were organized by survey subject areas. Supporting documents submitted by respondents were reviewed and categorized. Follow-up contacts were made to transit agencies as needed.

Six of the 14 agencies were selected for case studies. The case studies describe program content, processes, challenges, and lessons learned in developing and implementing health and wellness programs for transit operators. These case studies also explore how the agencies align health and wellness goals with overall organizational strategic direction and priorities. Case study agencies—different sized organizations, in many regions, some with bus operators only and others with bus and rail operators—use varied and innovative approaches to addressing health and wellness issues of operators. In two cases, data were collected during site visits to the agency's wellness facilities.

This synthesis report documents current information on prevention and intervention strategies and resources that can be used by transit agencies to proactively address operator health and wellness issues. The summary of successful practices and innovations reflects a combination of data collected from questionnaires, case studies, and the literature review.

ORGANIZATION OF THE REPORT

The synthesis report is presented in five chapters, with supporting references, a bibliography, a glossary of terms, and three appendixes. Chapter one describes the project background and scope, as well as the methodology used to complete the project. Chapter two focuses on the literature review. Chapter three summarizes survey data. Chapter four summarizes six case studies. Chapter five presents synthesis conclusions and recommendations for future research. The three appendixes consist of survey questionnaires (Appendix A), a roster of responding agencies (Appendix B), and supplemental information provided by case study agencies (Appendix C).

CHAPTER TWO

REVIEW OF LITERATURE

This chapter summarizes the current literature on the topic of health and wellness issues facing transit operators and the interventions used to address these issues. The literature review revealed a limited number of transit-specific studies. Much of the research about transit operator health and well-being has been completed by teams of researchers at the University of California at Berkeley, with operators at the San Francisco Municipal Railway as the primary research subjects. The review integrates an examination of health risk factors for operators, workplace issues for workers in similar situations as transit operators, and challenges and success stories about how employers have addressed specific workplace health and wellness issues to the benefit of the employee and employer.

The first portion of the literature review focuses on the nature of the job and how job requirements set forth by federal regulations determine who gets to operate commercial vehicles in the United States. This is followed by a review of health risk factors that influence the operator's ability to perform and retain his or her job. Success stories of employers that have taken on the challenge of improving their employees' health and wellness, several in union environments, are highlighted in the final section of the review.

The literature on health and wellness contains numerous specialized terms. Although brief definitions of many terms are included in the text, definitions of others can be found in the Glossary of this report.

NATURE OF THE OPERATOR JOB

Previous TCRP reports cited examples of how various aspects of the transit operator position compromises the perceived quality of employee health. In one report, *TCRP Synthesis of Transit Practice 33*: *Practices in Assuring Employee Availability* (*1*), the impact of tight schedules on driver health behaviors was noted as an area of paramount concern by bus operators. For instance, operators noted that the lack of time for breaks at layover points contributed to poor eating habits. The report stated that given only a few minutes to eat, operators often resort to eating junk food rather than nutritious alternatives.

TCRP Report 81: Toolbox for Transit Operator Fatigue (*2*) provides a view as to why operator fatigue is such a health and safety issue. The report acknowledges that transportation organizations have always needed employees to work long and unusual hours. These long and unusual hours, often uncertain from day to day, create the need for operators to work when their bodies tell them they should be sleeping. The report points out that shift workers, those who work outside of the typical 8 a.m. to 5 p.m. workday, are especially prone to health problems, the most common of which are upset stomach, constipation, and ulcers. According to that report, shift work is also known to aggravate other health problems such as cardiovascular disorders and diabetes. A third TCRP study, *TCRP Report 77: Managing Transit's Workforce in the New Millennium* (*3*), cites how the stress of uncertain work schedules contributes to a lessened sense of well-being for operators. The tendency of transit agencies to hire operators initially as part-time employees whose schedules are very unpredictable, many times in a split-shift configuration, often for many years, creates a stressful situation for these employees).

In the 1997 National Institute for Occupational Safety and Health (NIOSH) publication, *Plain Language About Shiftwork,* the authors reported that because shift workers are often tired as a result of their work schedules, they have an increased possibility for errors and accidents, and therefore present a risk to themselves and the public. According to the authors, body functions slow down during the nighttime and early morning hours; therefore, a combination of sleep loss and working at the body's low point can cause excessive fatigue and sleepiness. They go on to state that although some people believe that permanent night-shift workers adapt to their schedules, research shows that most permanent night-shift workers do not. In other words, there are many nights when these employees work when they feel tired and sleepy. Some research has shown that specific health problems, such as heart and gastrointestinal diseases, are more prevalent in shift workers than in day workers (*4*).

Rotating shifts is another problem for workers, especially if shift changes occur rapidly and the worker does not have a chance to adjust to the schedule. In addition, backward or counterclockwise rotations (where the employee is scheduled to report earlier) appear to be more difficult for the worker than forward or clockwise rotations (where the employee is scheduled to report later). Backward rotations tend to work against the body rhythm by forcing the employee to go to sleep earlier and earlier (*4*).

One research team with extensive experience in studying the health and well-being of urban transit operators concluded that urban transit operators' medical symptoms

and conditions exceed those of other occupational groups, partly as a result of working conditions. The researchers further concluded that a cycle of poor working environments, reduced health and well-being, and lowered efficiency result in greater costs to employees and employers (*5*).

FEDERAL REGULATIONS

The Federal Motor Carrier Safety Regulations of the U.S. Department of Transportation, Title 49 of the Code of Federal Regulations, Part 391, Subpart B 391.15, outlines physical requirements for drivers. The list of requirements includes, but is not limited to, the following: "A person shall not drive a commercial motor vehicle unless he/she is physically qualified to do so . . . " The regulations go on to specify when a person is qualified, including:

- No established medical history or clinical diagnosis of diabetes currently requiring insulin for control.
- No current clinical diagnosis of any cardiovascular disease of any variety known to be accompanied by dizziness, shortness of breath, collapse, or congestive heart failure.
- No current clinical diagnosis of high blood pressure likely to interfere with his or her ability to operate a vehicle safely.
- No mental, nervous, organic, or functional disease or psychiatric disorder likely to interfere with his or her ability to drive safely (*6*).

RISK FACTORS AND THEIR IMPACTS

The following discussion gives insight into the nature and severity of health risk factors and personal and business impacts of illnesses highlighted in the federal regulations, as well as other disabling conditions.

Musculoskeletal Problems

Statistics provided by the federal Occupational Safety and Health Administration (OSHA) and the U.S. Bureau of Labor Statistics (BLS) show that each year 1.8 million employees experience injuries resulting from overexertion or repetitive motion. Of these, 600,000 require time off from work (*7*). Musculoskeletal problems such as carpal tunnel syndrome and back strains make up one-third of all workplace injuries. Musculoskeletal injuries are estimated to cost between $15 billion and $20 billion per year in workers' compensation claims, making them among the most costly workplace problems. The cost of these injuries to the employer and to affected employees has given rise to increased interest in ergonomics, which can be defined as the science of fitting the job to the worker (*7*).

In a study of 195 participants, with two-thirds being operators selected from the membership of an urban transit union in California, 80.5% were found to be experiencing back or neck pain at the time of physical examination, in contrast to a group of nonoperators, of whom 50.7% had such pain. Operators were most distinctive for movement-related pain in the cervical spine area (*8*).

Stress

Research shows that common tensions—whether the result of 50-h workweeks, demanding supervisors, or personal concerns—can create a sense of unease or stress. Continuous high levels of stress can and do cause illness, poor judgment, nonproductive relationships, and substandard performance. Many times a day, a person can experience stress-causing events that signal the body to produce numerous biochemical changes, mainly the hormones adrenaline and cortosol. Experts in the stress management field point out that a given circumstance, however, may be stressful to some people and not to others. Their position is that it is not the event that causes stress; rather, the person's reaction to the event causes stress. Stress reactions vary, but they often include headaches, muscle tension, fatigue, insomnia, fuzzy thinking, and emotional and other problems. Also, stress can increase the severity of already existing illnesses (*9*).

According to the NIOSH report, *Stress . . . At Work*, job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the employee. The report goes on to say that now more than ever, job stress poses a threat to employees' health and, in turn, to the health of organizations (*10*). One stress management expert states that stress levels in the workplace are getting worse as a result of a number of factors, including poor management training and practices, feelings of a lack of control over the work environment, and corporate cultures that value equipment over people (*11*).

According to the American Institute of Stress, a nonprofit organization established to serve as a clearinghouse for information on all stress-related subjects, the costs of stress to the economy can be seen most vividly in rapidly increasing health care costs. This organization estimates that up to 90% of physician visits are stress-related. The latest available statistics from the BLS show that the median work absence owing to stress was 23 days in 1997, more than four times the median absence for all occupational injuries and absences (*9*).

The American Institute of Stress also reports that stress costs U.S. businesses between $200 billion and $300 billion annually in lost productivity, increased workers' com-

pensation claims, turnover, and health care costs. Furthermore, some stress may be inherent in the nature of the job and how the individual perceives events that could be stressful on the job. Although it is commonly believed that stress often stems from a person's reaction to a situation, research conducted by NIOSH reveals six aspects of work that, handled poorly, can generate stress.

- Task design, including heavy work loads, infrequent rest breaks, long work hours, shift work, and hectic or routine tasks;
- Management style, including poor communication, lack of family-friendly policies, and workers' lack of participation in decision making;
- Personal relationships, including poor social environment and inadequate support from coworkers and supervisors;
- Work roles, including conflicting and uncertain job expectations, and too much responsibility;
- Career concerns such as inadequate job security and a lack of opportunity for growth and advancement; and
- Environmental conditions, including unpleasant or dangerous physical conditions (*10*).

One author asserted that employees in safety-sensitive jobs are particularly vulnerable to cumulative stress and psychological trauma as a result of the frequency and severity of stressful situations they encounter in these occupations (*12*). Researchers from the University of California, Berkeley, Department of Epidemiology conducted 81 observational work analyses to measure stressors experienced by operators at the San Francisco Municipal Railway transit system. This group defined stress factors as hindrances to task performance owing to poor work organization or technological design. Stressors included work barriers, defined as obstacles that cause extra work or unsafe behavior; time pressure; monotonous conditions; and time binding, defined as control over timing (*13*).

Researchers from the University of California Irvine's School of Social Ecology found a high degree of association between exposure to peak traffic conditions and abnormal on-the-job levels of certain chemical compounds in the urine of urban bus operators. Those relationships remain even after incorporating controls for other possible factors such as job seniority, age, and smoking. In addition, perceived reductions in control on the job partially account for the linkages between traffic congestion and stress (*14*).

Some individuals find healthful ways to cope with stressful events; others tend to self-medicate with drugs and alcohol. Often workers do not realize when a stressful situation is becoming a problem. An expert in the field states that, even with awareness, some workers are reluctant to seek assistance for two reasons: a macho culture that pervades many occupations and a general bias against mental health counseling (*15*).

Workplace Violence

Homicide is the third leading cause of fatal occupational injury. According to the BLS, there were 677 workplace homicides in 2000, accounting for 11% of the 5,915 fatal work injuries in the country. Also, from 1993 to 1999, an average of 1.7 million nonfatal violent acts were reported at workplaces. According to NIOSH, workers most at risk are those whose jobs involve routine contact with the public or require an exchange of money. Also at increased risk are those working alone or in small numbers, working very late or very early hours, or working in high-crime areas. Another risk factor is having a mobile workplace. Each of these circumstances is characteristic of the transit operator position. Workplace violence is now being seen not as just a crime issue but also a public health issue for which employers need to prepare. Benefits of this preparation include

- Risk reduction,
- Improved employee morale,
- Increased feelings of security,
- Enhanced supervisory skills,
- Early identification of issues,
- Business cost reduction,
- Improved conflict resolution capability, and
- Reduced legal liability (*16*).

Smoking

There is a growing body of research showing that employees who smoke affect businesses negatively. In 1992, the U.S. Environmental Protection Agency (EPA) classified environmental tobacco smoke as a Group A carcinogen, ranking smoke among the most dangerous cancer-causing agents in humans. The Centers for Disease Control estimates that smoking causes up to 40,000 heart disease deaths among nonsmokers. Environmental tobacco smoke is also known to aggravate the symptoms of diseases such as asthma, bronchitis, and various allergic conditions. Expenditures in the United States directly associated with smoking are estimated at $72 billion annually (*17*).

An employee who smokes costs the employer at least $1,000 extra per year in total excess direct and indirect health care costs. This amount includes $75 billion in direct health care costs and $82 billion in lost productivity costs. Furthermore, smoking-related diseases claim an estimated 430,700 American lives each year. It is directly responsible for 87% of all instances of lung cancer and causes most cases of emphysema and chronic bronchitis (*18*).

The EPA has concluded that the widespread exposure to secondhand smoke in the United States presents serious and substantial public health problems. The toxins in tobacco smoke kill more than 440,000 people per year in the United States. Nonsmokers exposed to secondhand cigarette smoke inhale those same toxins, with harmful health effects. Secondhand smoke causes more than 3,000 lung cancer deaths annually, as well as exacerbation of lung disease in nonsmoking adults and respiratory problems in children. Secondhand smoke also causes 35,000 heart disease deaths in nonsmokers each year (*18*).

One research study conducted at 44 worksites explored the concept that a number of social influences may account for at least some of the differences in smoking prevalence and smoking cessation among blue-collar workers compared with the experiences of other workers. The study report cites NIOSH data and other statistics indicating that blue-collar workers, including transportation operators, are more likely to be smokers (37% for men and 33% for women) than are white-collar workers (21% for men and 20% for women). Four variables were measured: (1) social support for quitting, (2) pressure to quit smoking, (3) rewards for quitting, and (4) nonacceptability of smoking. The results appear to indicate that social influences that promote quitting smoking are less prevalent among blue-collar workers than among other workers. The researchers theorize that social norms or standards for behaviors may help to shape behavior. Worksite culture has been shown to influence the amount that workers smoke. Coworker discouragement of quitting has been shown to lower one's confidence in his or her ability to quit smoking. The researchers point out that building social support for quitting may be especially important in promoting smoking cessation among blue-collar workers. They also suggest that developing smoking policies and programs may help to create an environment of coworker support for quitting (*19*).

Drug and Alcohol Abuse

The misuse of drugs and alcohol in the United States is considered by many to be at the epidemic level. Each year, more than 1 million persons are arrested on drug and alcohol charges, and more than 10,000 die as a result of using illegal drugs. The White House has a drug czar, an individual appointed to lead the nation's national war on drugs. Several states and cities have appointed their own drug war leaders in an effort to stem the tide of prohibited drugs and excessive alcohol use. The realities of drug and alcohol abuse are evident through the media and through personal experiences of coworkers, family, and friends. In the transportation industry, drug and alcohol abuse is both a public safety and personal health concern. The number and devastating effects of accidents and incidents triggered by the abuse of such substances illustrate that this is a health and wellness issue requiring significant attention and resources (*20*).

With the passage of the Omnibus Transportation Employee Testing Act by Congress in 1991, transit agencies have paid increasing attention to substance abuse by employees in safety sensitive positions. The vehicle operator position is designated safety sensitive. In compliance with the act, the FTA established regulations that require recipients of specific FTA funds to implement an antidrug and alcohol program to deter and detect the use of prohibited drugs and alcohol by transit employees. Required drug testing falls into 6 categories: (1) pre-employment, (2) random, (3) post-accident, (4) reasonable suspicion, (5) return-to-duty, and (6) follow-up. Required alcohol testing falls into five categories: (1) random, (2) post-accident, (3) reasonable suspicion, (4) return-to-duty, and (5) follow-up (*21*).

Each transit agency's drug and alcohol program must include a policy that is communicated to all employees. One transit agency's 2003 drug and alcohol policy states

> Drug and alcohol use can have profound effects on the health, work, and personal life not only of the abuser but also on the abuser's family, friends, and the public at large. Employees should be aware of the signs and symptoms of drug and alcohol problems, and of available methods of intervening when a substance abuse program is suspected (*22*).

Fatigue

Sleep deprivation is reportedly widespread in the United States. Since 1900, the average amount of sleep has decreased from 9 h to approximately 6.4 h, even though the average adult needs approximately 8 h. The National Sleep Foundation statistics indicate that sleep-deprived adults are likely to fall asleep while on the job or doze off while driving. Inadequate sleep can result in health and safety risks, decreased productivity, and disruptions in relationships owing to irritability. Reduced sleep negatively affects cognitive abilities, critical thinking, and problem-solving abilities. Shift workers are particularly at risk for driving accidents. One author cites recent research from Great Britain, which suggests that sleepiness and fatigue surpass alcohol and drugs as the most identifiable and preventable cause of transportation accidents. Education is the most important tool for combating fatigue and sleep deprivation. Few people understand the long-term negative effects on health and well-being. Education can provide employees with the knowledge they need to plan for getting sufficient rest (*23*).

According to a study conducted by Circadian Technologies, Inc.—a research and consulting firm specializing in assisting organizations with around-the clock operations—one-fifth of North American employees, some 24 million workers, work outside of the standard 9-to-5 business day.

The extended hours of operation have increased the health problems among shift workers, which translates into elevated accident rates, absenteeism, turnover, and insurance premiums (*24*).

The National Commission on Sleep Disorders estimates that 70 million Americans suffer from sleep deprivation. Work-related problems such as increased stress, inattentiveness, and reduced productivity are often caused by a lack of or the poor quality of sleep. According to the head of the Mayo Clinic's Sleep Disorders Center in Rochester, Minnesota, if a person relies on an alarm clock to wake up, he or she is not getting enough sleep. The clinic defines adequate sleep as ". . . that amount which, when you attain it on a steady basis, produces a full degree of daytime alertness and a feeling of well-being the following day." The clinic asserts that sleep deprivation is cumulative and over time results in "sleep debt." In other words, a person who needs 8 h of sleep and only gets 7 h has at the end of the workweek a debt of 5 h. However, it is much more effective to maintain a consistent pattern of sleep than to try a catch up strategy on days off. A British sleep research center found that sleep deprivation noticeably impairs one's ability to comprehend rapidly changing situations, increases the likelihood of distractions, contributes to rigid thinking, and reduces creative problem solving. Providing nap rooms for workers may be helpful, but employers must still educate employees and managers about the dangers and signs of sleep deprivation, and monitor and adjust work scheduling practices (*25*).

TCRP Report 81, which focuses on fatigue in the transit industry, states that when faced with long service hours and a limited pool of operators, many transit agencies rely heavily on overtime to provide service. Extended periods of overtime increase the likelihood that operators may not be fully alert. Researchers in Australia determined that after a person has had 17 h of sustained wakefulness, hand–eye coordination decreased to a level equivalent to that of someone with a blood alcohol level of 0.05%, and after 24 h to a level equivalent to 0.1%, a level that exceeds the limit for presumed intoxication in most of the United States. The consequences for operator fatigue can be significant for operators, passengers, and the transit agency. In 1995, two subway trains collided when a train operator failed to respond to a stop signal and collided with a train standing ahead of him on the same track. The operator was killed, and 69 other people were treated for injuries sustained in the accident. National Transportation Safety Board (NTSB) investigators found that the operator in this accident, which brought damages that exceeded $2.3 million, had fallen asleep at the controls (*2*).

In some cases, operator fatigue stems from factors other than a lack of sleep. The NTSB found other fatigue-related causes for two light-rail accidents with injuries. In one case, the operator was found to have undiagnosed sleep apnea. In the second case, the NTSB concluded that the effects of prescription pain-relieving medications and/or recent cocaine use impaired the performance of the train operator. The transit system estimated that the cost of each accident exceeded $900,000. Operator fatigue, whatever the cause, is clearly a health, safety, and economic issue for transit operators, their agencies, and the public (*2*).

Obesity

Obesity, an excess of body fat relative to lean body mass, is a growing health concern for both women and men. Obesity, often determined by the body mass index (BMI), is defined as a BMI of greater than 27.3 in women and greater than 27.8 in men. One of the strongest reasons for treating obesity as a disease is that it is a risk factor for many other diseases, including diabetes, hypertension, cardiovascular disease, sleep apnea, and possibly some cancers. Studies have shown that obese individuals are three to eight times more likely to have hypertension than are nonobese individuals. Nearly 50% of people with hypertension are obese (*26*).

Diabetes

Approximately 16 million Americans, about 6% of the population, have diabetes, a chronic disease in which the body does not produce or properly use insulin, a hormone that is needed to convert sugar, starches, and other food into energy. It is estimated that approximately 5.4 million of these people do not know they have the disease. Diabetes is the sixth leading cause of death in this country. In addition, complications of diabetes such as kidney failure, blindness, loss of limbs, and strokes in turn lead to many disabilities that restrict the employment choices of working adults. Total health care and related costs for the treatment of diabetes reaches approximately $100 billion annually. Some $55 billion of that amount covers costs such as disability payments, time lost from work, and premature death (*27*). As stated earlier, federal regulations prohibit individuals whose diabetes cannot be controlled without insulin injections from operating interstate commercial vehicles.

Depression

Statistics show that depression is on the rise in the workplace. In a 1999 report by the Society for Human Resource Management (SHRM), in collaboration with the National Foundation on Brain Research, *Depression in the Workplace Survey*, 8 of 10 human resources (HR) professionals reported that depression had been a problem for one or more employees during the past 3 years (*28,29*). Costs as-

sociated with depressive disorders—illnesses experienced more by women than men—are on the rise (*30*). The SHRM researchers estimated that depression costs employers from $30 billion to $40 billion each year. Although the costs of treating depression are high, the costs of untreated depression are much higher. When depression is not managed, employees may complain about a variety of physical problems. The SHRM report estimates that up to 50% of all visits to primary care doctors are made in regard to conditions caused by or exacerbated by mental problems. The National Mental Health Association reports that people with depression are four times more likely to suffer heart attacks than are those with no history of depression. According to the director of the American Institute for Cognitive Therapy—a group of psychologists and psychotherapists who treat depression and other disorders—depressed employees tend to have higher absenteeism, be less creative, and be more argumentative (*29*).

Cardiovascular Disease

Medical researchers estimate that one-quarter of Americans have some form of cardiovascular disease. Hypertension is at the top, with coronary heart disease (CHD) second. These conditions account for approximately 250,000 deaths each year (*31*). Hypertension, or high blood pressure, a condition in which the force with which blood flows through the walls of blood vessels remains elevated above normal levels over time, can be a risk factor for heart and kidney disease. Left untreated, hypertension leads to damage and weakening of the walls of the arteries, making them vulnerable to collection of materials that can cause life-threatening clots. The prevalence of hypertension in African–Americans is among the highest in the world. According to the American Heart Association, as many as 30% of all deaths in African–American men and 20% of all deaths among African–American women can be attributed to hypertension. Contributing factors to hypertension include high cholesterol, obesity, and lack of exercise (*32*).

Furthermore, uncontrolled hypertension is the primary diagnosis for approximately 25% of individuals with chronic kidney disease, accounting for 26% of all new cases of kidney failure each year. Hypertension can also be a major cause of strokes. The American Stroke Association reports that African–American men are twice as likely as Caucasians to have a stroke. The 1998 National Center for Health Statistics data related to total deaths in various minority male groups in the United States (i.e., deaths caused by diseases of the heart) reveal the danger of uncontrolled hypertension:

- Asian Pacific Islander, 36.1%,
- African–American, 34.2%,
- American Indian/Alaska Native, 27.9%, and
- Hispanic, 25.3% (*32*).

However, some risk factors for CHD are preventable, including high cholesterol, hypertension, smoking, uncontrolled diabetes, and obesity. The more risk factors an individual has, the more likely he or she will develop CHD. Opportunities to prevent CHD include eating healthfully, increasing physical activity, not smoking, and weight control (*33*).

HEALTH PROMOTION PROGRAMS: BENEFIT FOR EMPLOYEE OR EMPLOYER?

The rising costs of health care today mirror those of the late 1980s and early 1990s, before managed care clamped down on health costs for a short time. In 2002, HR consultancy Hewitt Associates estimated large employer (normally not fewer than 100 employees) costs at $4,026 per employee, three-fourths of the cost of premiums; employees were estimated to pay an average of $1,401 more in costs in 2002 than in 2001 (*34*). One recent workplace health promotion author reported that at most companies 10% of all employees consume 80% of the health-care costs. These are individuals at highest risk for conditions such as diabetes, high cholesterol, and heart disease, and they are the least likely to change unhealthful behaviors. The author states that the primary goal of any wellness program should be to return the highest-risk people to low-risk status while helping the other 90% maintain a low-health-risk lifestyle. Getting that 10% of the employees to participate in managing their health and well-being, however, can be a particularly challenging task (*35*).

The Wellness Council of America, a nonprofit health promotion organization, emphasizes that although an employer cannot force employees to participate in a health and wellness program, the employer can tie such participation to an employee's being able to participate in the employee benefits package. The organization estimates that the typical benefits package costs a company roughly $4,000 per person per year. Considering that outlay of expenditures, the council believes that a company has the right to ask that individual to, at a minimum, participate in a series of commonly provided health screenings or health risk appraisals. In addition, the company can implement targeted wellness programs, which are more likely to be used because people are more aware of their conditions following these screenings or appraisals (*36*).

A survey of 1,035 major employers found that 85% of responding employers offered some form of health promotion, and 75% use health risk assessments. The survey also found that incentives for employees making healthful lifestyle changes and the penalties for those engaging in high-risk behaviors, such as smoking, are becoming more prevalent.

A variety of factors associated with unhealthy employees can contribute to costs including

- Absenteeism,
- Medical expenses,
- Distress to other employees during absence, and
- Cost of replacement (*36*).

Health promotion is typically approached in two ways: (1) decrease external risks, such as carcinogens and provide adequate on-the-job safety measures; and (2) reverse risk behaviors, such as smoking and physical inactivity. Such efforts can matter a great deal. For example, DuPont found absenteeism 10% to 32% higher among its employees who had any of seven health risks: smoking, obesity, high cholesterol, high blood pressure, excessive alcohol use, lack of exercise, and not using seat belts. After implementing a wellness program at 41 of its sites, DuPont had a 14% decrease in absenteeism. Similarly, the Union Pacific Railroad's health promotion program was instituted when the company determined that its medical costs per employee were almost twice the national average. With a medical self-care program the company experienced a savings of $1.26 million annually (*36*).

From 1999 to 2001, the DaimlerChrysler/UAW Wellness Program realized a savings of $4.2 million among bargaining union employees who participated. Since the program was piloted in 1985, 44,298 employees have participated. There were 32,752 active participants in 2001 (*37*). The company contracts with health and fitness businesses to administer the wellness program, which is voluntary and confidential. Four goals underpin program activities.

- Empower employees to be wise health care consumers and improve their health,
- Keep low-risk employees in the low-risk category,
- Target high-risk employees with focused interventions, and
- Provide cost-effective wellness activities designed to contain health costs.

The DaimlerChrysler program employs the following various incentives and techniques to increase and maintain employees' participation in the program:

- Gifts distributed at health screenings;
- *WELLBUCK$,* "money" earned for participating in activities that can be redeemed for prizes such as gym bags, sweatpants, first aid kits, and polo shirts;
- Targeted marketing based on prior participation;
- Incentives for participating employees who bring in new participants;
- Convenient access to screenings in the worksite; and
- Interactive, fun, and nonthreatening activities.

A study conducted for Johnson & Johnson that evaluated long-term financial and health effects of large-scale wellness programs showed positive results. The study reviewed medical claims for 18,333 domestic wellness program participants from 1995 to 1999. Medical expenditures were evaluated for up to 5 years before and 4 years after the wellness program began. Employees participating in wellness activities had significantly lower medical costs and achieved improvements in several health risk categories: high cholesterol, hypertension, and smoking. Johnson & Johnson averaged $8.5 million annually in savings for the first 4 years of the program. Savings came primarily from lower administrative and health care utilization costs.

As a result of linking the program to health care benefits and financial incentives, the company saw participation rise from 26% in 1995 to 90% during the study period. Financial incentives included a $500 medical plan discount for employees who completed a health risk assessment and enrolled in a high-risk intervention program, if recommended. Another Johnson & Johnson study showed health risk factor reductions in 6 of 13 risk categories within the first year of the program: tobacco use, sedentary lifestyle, hypertension, high cholesterol, low dietary fiber intake, and poor motor vehicle safety practices (*38*).

Steelcase Inc., a manufacturer of custom office furniture, combines long- and short-term disability, workers' compensation, medical case management, and Family and Medical Leave Act administration in a way that helps to keep health and wellness costs in check. Comerica, a financial services provider, has a corporate health management department that oversees workers' compensation, short- and long-term disability, wellness and health, employee assistance, and violence-in-the-workplace programs. The health management department also oversees compliance with the Family and Medical Leave Act and the Americans with Disabilities Act. The company takes a view of employee health as a continuum—believing that every aspect, from employee wellness to return-to-work, is better managed through such a view (*39*).

TRANSIT INDUSTRY HEALTH AND WELLNESS PROGRAMS

TCRP Report 77: Managing Transit's Workforce in the New Millennium, published in 2002, highlighted a number of health and wellness programs at transit agencies (*3*).

- The *Healthy UTA* program is a quality-of-life program at the Utah Transit Authority (UTA) in Salt Lake City, Utah, that has been operational since 1990. The 10-page booklet about the comprehensive health and wellness program includes a letter of introduction signed by the HR director, the Amalga-

mated Transit Union (ATU) president, and the wellness program administrator. Activities include sports programs, health evaluations for all employees and their spouses, a fitness facility at each worksite, health education, and discount tickets to recreational events in the community. In 2000, a total of 1,017 employees participated in one or more of the wellness activities.

- The health and wellness program at the Metropolitan Area Rapid Transit Authority, in Atlanta, Georgia, is a comprehensive effort aimed at addressing employee well-being as a personal and bottom-line issue. Twice-a-year health fairs at facilities, as well as monthly massages, brown-bag health education classes, and monthly health promotion newsletters sent to each employee are all well received. With fitness facilities available at each location, employees can maintain healthful levels of physical activity at their own pace.
- By integrating community involvement, employee wellness, and employee-recognition activities into a program titled *Champions of Transit,* the Regional Transportation District in Denver, Colorado, communicated its commitment to being a positive force in the community and to its employee health, well-being, and development.
- *Health Express*, an employee-committee program at Pierce Transit in Tacoma, Washington, sponsors health education and support aimed at helping employees make healthful lifestyle choices.

Blue-Collar Workers

Studies reveal that blue-collar workers are less likely to participate in worksite health promotion programs than are white-collar workers. One study focused on the perceptions of the worksite health climate held by blue-collar workers compared with perceptions held by other workers. The goal was to gain knowledge that may be helpful in tailoring worksite wellness programs to better serve blue-collar workers and determine how to modify the work environment to promote worker health. The workers were employed in a manufacturing setting, were members of the United Auto Workers, and were engaged in welding, assembly, machine operation, maintenance, and painting (*40*).

A random sample of 497 workers (330 blue-collar and 167 white-collar), with an average age of 44.5 years, were surveyed using the Worksite Health Climate Scales instrument, with a 51% response rate. The company did not offer a formal health promotion program, but was designated a smoke-free workplace. Results showed that blue- and white-collar workers viewed the worksite health climate quite differently, with blue-collar workers perceiving the climate less positively. White-collar workers perceived more flexibility to exercise, a more healthful norm for nutrition, and more support from supervisors and coworkers for healthful behavior. In contrast, blue-collar workers had a higher score on only one factor, smoking norms. Twenty-eight percent of blue-collar workers were smokers compared with 18% of white-collar workers. Perceptions of an antismoking sentiment were stronger among blue-collar workers (*40*).

The city of Birmingham, Alabama, as part of its health promotion program (*Good Health Program*) for 4,000 city employees, developed a comprehensive antihypertensive educational intervention. Fifty percent of all employees were African–Americans and 20% of all employees were women. The goal of the program was to reduce risk factors for cardiovascular disease among these workers. After identifying barriers to hypertension control—low literacy, difficulty in understanding the need for treatment in the absence of symptoms, and various health beliefs and priorities—a tailored educational program was designed and introduced. Education focused on lifestyle changes and the need for medical care. Although the program was offered to all employees with hypertension, 130 chose to enroll, with 81 completing the program. Those 81 participants were matched by age, sex, race, and baseline blood pressure with 81 nonparticipating patients with hypertension. The program was evaluated by pre- and post-education changes in blood pressure. The greatest benefit was seen in African–American workers, with a reduction of 7.4 mm Hg (millimeters of Mercury), the measure of blood pressure, and unskilled workers at 7.7 mm Hg. The program evaluation concluded that a culturally appropriate, educational program tailored to the needs of minority and low-income populations may increase control of hypertension (*41*).

Ergonomics

The University of Michigan Center for Ergonomics reported that an ergonomics program is useful because it promotes the health and well-being of the work force—that is, many cumulative trauma disorders (CTDs) are preventable. Therefore, workplace adjustments and education can contribute to lowering employee injury claims (*7*). Ergonomic specialists focus on finding ways to ensure that the design of equipment and work processes takes into consideration the capabilities and limitations of employees. They attempt to eliminate or at least minimize as many repetitive motions as possible, even when the motion does not directly cause injury. An effective ergonomics program can significantly reduce the number and types of musculoskeletal injuries. Best practices in ergonomics share some elements: upper management support, employee participation, an early reporting system, and proactive hazard evaluation (*42*).

After 1 year of ergonomic training, an Illinois-based Mitsubishi automotive manufacturing plant saw a 25% drop in CTDs over the previous year. The Stationery and Office Supplies division of 3M experienced a drop in claims of approximately 60% over previous years following the introduction of an ergonomics program. The city of San Jose reported a drastic reduction in its workers' compensation claims. In addition to the benefit of knowing how to manage their health, employees tend to see an employer that has an ergonomics training program as caring about employees. According to the chief executive officer (CEO) of the Injured Workers Insurance Fund, the largest workers' compensation insurer in the state of Maryland, workers' compensation claims are often filed out of anger or frustration at the employers' lack of attention to employee's well-being. An official of USAA, an insurance and financial services firm, stated that one employee came up and hugged him, stating that her life was completely changed because she did not have to hurt anymore at the end of the day (*7*).

Ergonomic experts report that the greatest value comes from ergonomics training that is job specific. NIOSH provides an 11-question "Workstation Ergonomics Checklist," which can serve as a starting point for identifying potential problem areas that should receive further investigation and attention. One strategy found effective in ergonomics management is to establish programs for solving problems identified by employees. Some employers with multiple sites have ergonomic committees at each site. Their employees are encouraged to look for potential issues, to listen to their bodies, and to work with management to resolve issues (*7*).

TCRP Report 25: Bus Operator Workstation Evaluation and Design Guidelines, published in 1997, focused on the ergonomic design of the bus operator workstation (*43*). According to the report, a number of operator injuries can result from poor design or vibration: CTDs, soft tissue injuries, and musculoskeletal injuries. The study authors assert that to reduce the number of injuries the operator workstation should be ergonomically compatible with the range of physical dimensions and capabilities of operators. Areas addressed in this research included the design and location of the operator seat, steering assembly, pedals, farebox, radio, transfer tray, public address system, sun visor, modesty panel, stanchions, controls, gauges, and other displays.

After reviewing previous design efforts in bus operator workstations, conducting a task analysis of bus operators to define how they interact with the workstation, and conducting a survey to obtain recommendations from bus operators, the researchers prepared, constructed, and evaluated a mock-up workstation. The evaluation was conducted with 100 individuals—grouped according to stature and gender—on the basis of several factors, including visibility, reach, and comfort. In addition, the researchers held workshops with representatives of bus manufacturers, workplace components manufacturers, and suppliers to get additional input on workstation design. Project outcomes include workstation design guidelines that present essential features that should be in a workstation: an 18-in. steering wheel, hanging pedals, and instrument panels divided into three areas according to function (*43*).

Stress Management

The personal costs of stress have been documented in a number of research studies. In one study, employees who participated in a stress management program took fewer sick days than nonparticipating coworkers. Those who received stress management assistance saw doctors 34% less often than their fellow employees who did not get assistance. One conclusion from the study was that a worksite program focusing on stress management, along with education for small groups, can reduce illness and the use of health care benefits. Teaching employees how to recognize stress reactions, and the dangers and damaging effects of stress, can be a powerful incentive for them to change their responses to the stress triggers in their lives. Practical tools that employees can use before, during, and after a potentially stressful situation can be particularly beneficial. Experts emphasize that the best stress management programs are those that teach techniques that can be used on the job, such as deep-breathing exercises, guided imagery, and music therapy (*12*).

Stress management programs offered at the time when employees are most tense can be very effective. For example, San Francisco Bay Area Rapid Transit (BART) provided 1-day stress management workshops at a time when the system was stressed by an increase in the number of passengers. BART's manager of performance and learning reported that breakdowns in aging equipment and incidents of workplace violence were increasing. Many employees responded to the training by stating, for example, that "It was the best thing they had ever experienced at BART" (*11*).

Experts caution that stress management programs have to be marketed so that they show a link to the bottom line. There is still a stigma attached to getting assistance for what are considered emotional disorders. Positioning stress management as a performance enhancement strategy and tracking results such as changes in productivity, absenteeism, turnover, and adverse incidents can strengthen the credibility of stress management programs (*9*). Individuals in the stress management field also report that teaching employees self-management skills, and teaching supervisors and managers to reduce as many sources of stress as

possible, are two approaches found to be beneficial in reducing stress (*11*).

Exercise Programs

Research conducted by Principal Financial Group—a global financial institution—found that regular exercisers at the company's on-site fitness center achieved higher job performance ratings, stayed longer with the company, had lower medical and prescription claim expenses, and had lower absenteeism rates than those who did not exercise. The study compared an exercise group with employees in the nonexercise control group. Participants were classified as "exercisers" if they reported exercising at least 30 min, 5 or more days a week. "Nonexercisers" were those exercising once a week or less. Key findings of the study included the following:

- Medical claims were considerably lower for exercisers versus nonexercisers.
- Losses from absenteeism were lower for exercisers, who lost an average of 20.9 h compared with 36.6 h for nonexercisers (*44*).

Data collected by researchers from worksite wellness programs throughout the nation used a combination of self-reported health risk assessment as well as blood pressure, weight, height, and blood chemistry profile data collected over a 2-year period. From a database of 4,751 women ages 17 to 72, 1,412 met requirements of being either an exerciser or nonexerciser from 30 to 59 years of age. This age range was selected because women in this age group are generally not viewed as having a high risk for heart disease and thus are overlooked (*30*).

Overall, women who exercised showed more positive results than did nonexercisers in the following categories:

- Less weight,
- Lower BMI,
- Lower blood pressure,
- Lower-risk blood profiles (exception: the range of 40 to 49 years old for total cholesterol and LDL cholesterol),
- Perception of their health and sense of well-being as being higher,
- Higher level of energy to accomplish daily tasks, and
- Fewer days of work missed.

Exercise has long been associated with improved mood. In this study, exercisers reported healthier outlooks on life and an improved sense of well-being, indicating a potentially positive impact on women (*30*).

Furthermore, exercise is highly recommended in any weight management program owing to its many benefits, including

- Increased expenditure of energy,
- Improved cardiovascular fitness,
- Toned muscles, and
- Improved sense of well-being (*26*).

Drug-Free Workplaces

Drug and alcohol policies implemented as a result of FTA regulations, which went into effect in 1995, have had a positive impact on the ability of transit agencies to have drug- and alcohol-free operators driving transit vehicles. Drugs tested for under the FTA regulations are marijuana, cocaine, amphetamines, opiates (morphine and codeine), and phencyclidine (known as PCP). In 2000, transit employers reported that a total of 249,733 employees were performing safety-sensitive functions, with 70% engaged in revenue vehicle operation. Of the 226,679 specimens collected for all types of drug testing, 3,583 tested positive for one or more drug type. The highest percentage was for reasonable suspicion testing, at 5.5%. The most frequently found drug was marijuana, followed by cocaine. The most common combination of drugs was marijuana and cocaine. As with drug testing, the highest percentage of positive alcohol tests was for reasonable suspicion at 7.8%. Overall, from 1996 to 2000, the percentage of positive drug and alcohol test results decreased each year over the 5-year period, which may reflect the degree of the amount of attention that transit agencies have been giving to this health and safety issue (*21*).

EAPs have played a major role in assisting employees with alcohol and drug dependencies rid themselves of these and other personal and work-related problems. In addition to being of benefit to employees and their families, EAPs provide a valuable adjunct to the employer's benefit plan. For instance, a study conducted at Abbott Laboratories' internal EAP found that employees with mental health problems and substance abuse diagnoses who received EAP services had significantly less in total inpatient and outpatient benefit costs than did those who did not receive EAP services (*36*).

Key to the success of many EAP interventions is the employee's willingness to voluntarily seek assistance. EAPs typically have a process by which a self- or family-referred employee can receive confidential assistance for a variety of work-impairing problems. Other services complementary to an EAP, such as work and family services and critical incident debriefings, are important for enhancing problem awareness and treatment (*14*).

One strategy used successfully by the aviation industry, the Human Intervention Motivation Study (HIMS) program, relies heavily on peer intervention. In the early 1970s, HIMS grew out of a grant from the National Institute for Alcohol Abuse and Alcoholism. Results show that with

proper treatment for airline pilots, the pilot rehabilitation rate was successful (92% to 95%) and cost-effective. Pilots are assured that their treatment information is held in strictest confidence. In 2002, 1,415 pilots received treatment for alcoholism, and 79 for illicit drug dependence. According to the Aviation Medicine Advisory Service, of those participating in the HIMS program, the relapse rate was approximately 10% over a 3-year period (*45*).

Smoke-Free Workplaces

Workplaces nationwide are going smoke free. According to a Gallup poll, 95% of Americans, smokers and nonsmokers, now believe companies should either ban smoking totally in the workplace or restrict it to separately ventilated areas (*18*). In 1999, nearly 70% of the U.S. work force worked under a smoke-free policy. A 1998 study by the National Cancer Institute found that 65% of the employees who responded reported that their workplaces banned smoking. This percentage is up from 47% in 1993 (*17*).

Disease Management

Employers are increasingly turning to disease management (DM) programs as part of a health and wellness strategy to address the rising costs of treatment associated with chronic health conditions. Employers embrace DM as a way to improve the health of their employees, boost productivity, and reduce medical insurance premiums. According to the Pharmacy Benefit Management Institute, in 2001, 44% of employees offered DM for chronic medical conditions, up from 14% in 1995 (*46,47*).

Asthma, diabetes, and cardiovascular disease are the three major illnesses most commonly addressed by DM programs. The goal of DM is to ensure that employees receive the best care possible and avoid complications. DM involves employees in their care, ensures proper treatment by physicians, and helps to make sense of medical information. Often a contracted service, many DM programs focus not only on cutting health care costs, but also improving employee attendance and ability to contribute at work. DM programs encourage employees to sign up with a provider that educates them about their diseases—how to manage them and the importance of proper medical care. Also, DM programs hold down costs by providing employees and their caregivers with information on how to monitor and treat conditions and coordinate communication among the various stakeholders in the employee's health care coverage (*46,47*).

The most effective DM programs are those that are relatively inexpensive to manage or that would otherwise require high-cost treatment, such as surgery or emergency room visits. Because comprehensive DM programs can be expensive, many employers target their programs based on insurance claims and prescription plan data. Elements in an effective DM program include the following:

- Educational mailings to employees;
- Access to nurses who provide information and track progress; and
- Information systems that keep track of patient data, care plans, and outcomes (*45*).

Self-care and education efforts that focus on helping the employee understand his or her illness and treatment are important aspects of effective DM programs. Such programs are sometimes separated into three categories of service: high-risk individuals who receive frequent telephone calls, as well as home visits or medical monitoring; medium-risk individuals who require frequent telephone contact; and low-risk individuals who can get by with frequent mailings and occasional telephone contact (*47*).

Massage Therapy: Example of a Complementary Health Initiative

Health and wellness programs now include a number of complementary or alternative health approaches in their offerings. For instance, massage therapy has become a part of many programs. In some cases, employees pay the cost, which is frequently a 10- to 15-min chair massage. A number of advantages are cited for offering massage.

- Reduces stress-related illness,
- Reduces direct and indirect health maintenance costs,
- Reduces workers' compensation and disability insurance payments,
- Reduces absenteeism, and
- Requires no capital investment to initiate or no overhead to maintain (*48*).

One study found that adults who received two 15-min massages weekly showed signs of marked relaxation and increased speed in completing mathematical computation than peers who did not have massages. Those receiving massages also reported less depression and reduced anxiety. Having massage therapists come to the worksite motivates employees who do not have time to take off for relaxation to receive therapy at a time convenient to them. Employers offering massages reported that often all available appointments are filled each time the massage therapist is scheduled (*48*).

EMPLOYEE EMPOWERMENT

Two examples of employee empowerment illustrate the role that employees without formal preparation as health and wellness specialists can take to improve their health

and well-being in the workplace. The first looks at the enhancement of the role of natural employee helpers, people to whom others turn to "naturally" for information, support, and guidance. This inclination is the basis for a model that uses lay people to coordinate worksite health promotion programs. The Natural Helper model of social change identifies these people and strengthens their role and existing networks through education and resources. In one project, researchers recruited and trained more than 100 natural helpers in 4 workplaces in rural locations in North Carolina (*49*). The goal was to develop a workplace wellness program for small- to medium-sized workplaces or manufacturing workplaces to accomplish the following eight objectives:

1. Address employee interests and barriers to behavior change;
2. Empower and teach new information and skills;
3. Have interesting and fun activities;
4. Have theory-based activities with a strong evaluation component;
5. Be flexible and possibly adapted for many health behaviors;
6. Be able to be used alone or with other health promotion programs;
7. Be able to be implemented without disrupting production schedules; and
8. Be affordable and possibly implemented without a large investment of staff time, resources, or reliance on health professionals.

The program evaluation revealed that the natural helpers did indeed spread the word about fitness, nutrition, and cancer prevention to coworkers, and they provided support to employees who wanted to make behavior changes. These helpers also initiated workplace changes by starting walking groups, making changes in vending machine selections, and sharing healthful lunches (*49*).

A second example of employee empowerment involved 345 employees at three locations of the Puritan–Bennett Corporation, a leading producer of ventilator systems, oxygen therapy, sleep diagnostics, and other respiratory products. A team of employees embarked on a pilot 3-year employee-driven health and wellness program, *Perfect Health,* in which they used a health risk appraisal instrument and health screening to establish baseline data by which to measure employee health risks. The Perfect Health Council, a volunteer group of employees, designed and implemented the program. That group represented employees on issues related to health and safety at work and home. Employees joined one of four subcouncils to address specific issues: promotion, health education, fitness and recreation, and safety and environment. Promotion workers marketed all events. Health education workers sponsored events such as lunchtime lectures, nutrition planning, and a newsletter. Similarly, fitness and recreation workers sponsored sports leagues, tournaments, and fitness clubs. Also, safety and environment workers sponsored a seat-belt awareness campaign, lectures, and recycling programs. The program included a year-round incentive program in which participating employees could earn prizes and up to $150 toward payment of costs of off-site health promotion activities each year. However, the study had some limitations. For example, because participation was voluntary, the issue of a biased sample of employees arises; that is, these employees may have been more interested in their health and well-being than the general population. Even so, data from this effort suggest that participation in the program may have modified participants' behaviors associated with the risk for death from both heart attack and lung cancer. Strengths included employee involvement in designing and implementing the program, support from executive management from its inception, and incentives to encourage and maintain employee health and wellness programs (*50*).

CHAPTER THREE

SYNTHESIS SURVEY RESULTS

SUMMARY OF AGENCIES SURVEYED

A critical element of this synthesis was the survey, which gathered data from transit agencies on their current practices related to transit operator health and wellness programs. To get a representative sample, more than 50 telephone calls were made to transit agencies of various sizes, modes of operation, and geographic locations. In addition, the consultant made use of contacts established while conducting other TCRP studies. Ultimately, the survey was sent to 33 transit agencies. Follow-up calls were made to agencies that did not respond. A total of 16 agencies responded; however, 2 respondents indicated that their programs were in preliminary stages of development and therefore were not able to provide enough substantive data to be used in this study. Responding agencies ranged from two of the largest in the nation to medium and small agencies in each region of the nation. A roster of the 14 agencies is provided in Appendix B.

DESCRIPTION OF SURVEY RESULTS

This section outlines the results of the survey and discusses responses to each category of questions. The first part of the survey requested general background information to provide a sense of the types of organizational structures and operations represented in the survey sample. Most survey respondents were employed in special transit authorities or districts. Two indicated that their organization is a city or county agency. One responded that its agency is a joint-powers agency.

Agencies ranged in size from one with 10,056 bus operators and 3,384 rail operators to one with a total of 83 bus operators. Six of the agencies employ bus and rail operators. Operator work forces are predominantly male, ranging from 50% to 89%. Operators are ethnically diverse, with the percentage reported by responding agencies differing from locale to locale. Of the 10 agencies that provided data on the ethnic backgrounds of operators, seven reported that more than 50% of are minorities, ranging from 53% to 76%. In the 10 agencies, operators of African–American descent make up the largest minority group, followed by Hispanics. The length of time that health and wellness programs have been in place ranges from 2 to 14 years. Nine agencies locate the health and wellness program in HR, with two in medical/occupational health, two in safety, and one in finance.

As shown in Figure 1, agencies reported a variety of health risk factors. Health risk factors are those circumstances or conditions that can predispose a person to serious health problems. Lack of physical activity (10 agencies), uncontrolled hypertension (9), obesity (9), and unhealthful diet (9) top the list of factors contributing to health and wellness problems for transit operators. Other risk factors frequently mentioned were stress and uncontrolled diabetes, each mentioned six times. Less frequently identified risk factors are smoking (3), drug and alcohol use (2), high cholesterol (1), and fatigue (1).

Allocation of Resources

A common approach to worksite health and wellness program design is to allocate resources to three categories of activities: (1) awareness activities that encourage healthful lifestyle changes, (2) education that teaches employees how to make changes to reduce risk factors or address specific conditions, and (3) behavior changes that focus on giving employees the tools and support needed to improve health and wellness for the long term. Several respondents were able to identify how they allocated program resources. The results vary in the following ways: three agencies reported that they allocated 33% of resources to each category; six agencies reported that they allocated the majority of resources, between 60% and 80%, to the awareness category; and one agency reported allocation of the largest amount of resources (40%) to behavior change activities. Others, especially those where programs were part of other organizational units such as EAP, were not able to identify specific percentages of resources allocated to the three categories.

One of the challenges that health and wellness program leaders encounter is how to link program goals with organizational business results. Transit health and wellness programs reported that they collect and analyze supporting data from a variety of sources. The largest number of agencies reported collecting data from workers' compensation claims and costs (10 agencies), followed by ergonomic analysis and EAP utilization reports (9 each). The next most frequent response was eight agencies reporting on the use of each of the following: passenger-related incident reports, passenger satisfaction surveys, health screenings, health care claims, and disability claims. Cited to a lesser extent were programs to collect and analyze employee demographic data (7 agencies) and turnover records and fitness-for-duty assessments (6 each). These results are shown in Figure 2.

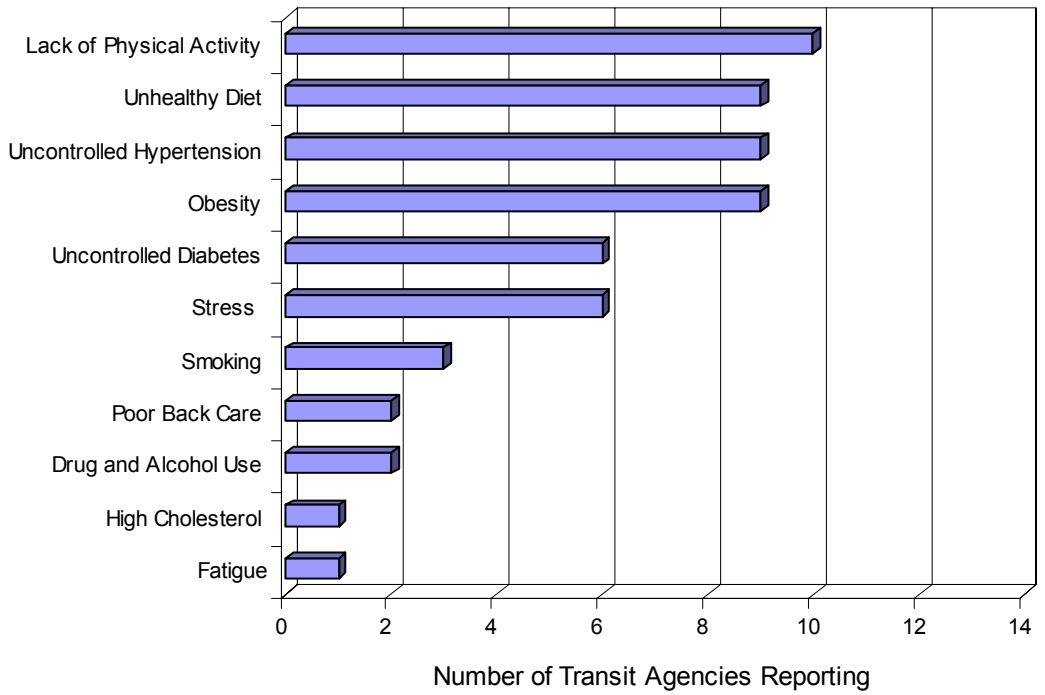


FIGURE 1 Primary health risk factors.

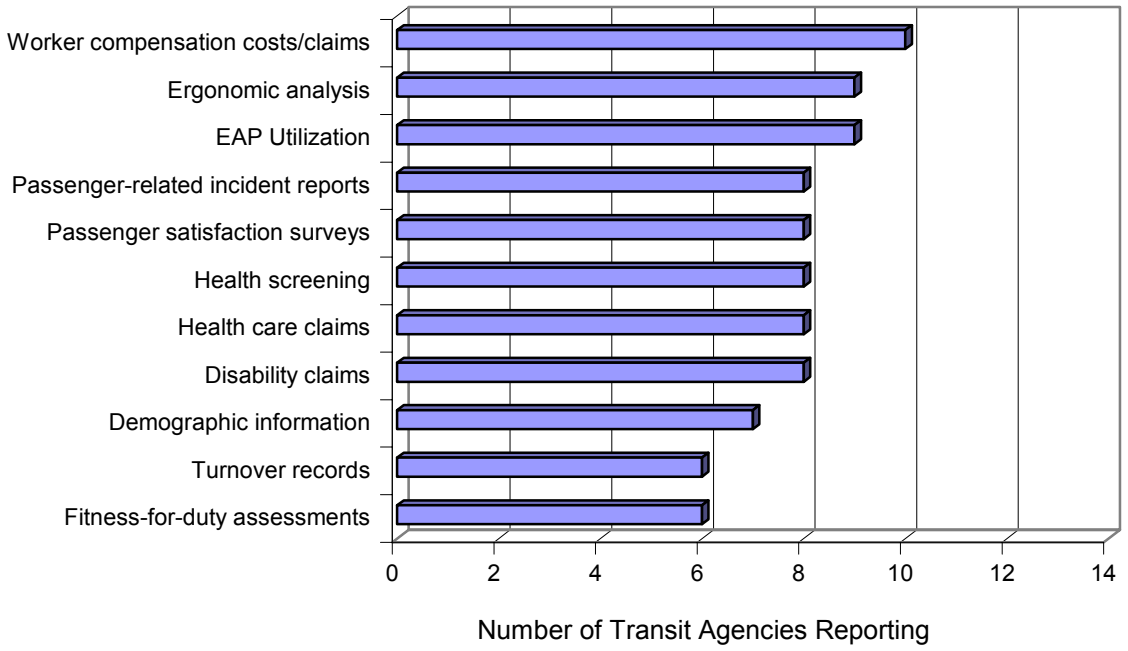


FIGURE 2 Data collection and analysis.

Reasons for Starting Health and Wellness Programs

The survey revealed that transit agencies started health and wellness programs for a number of reasons. Respondents were given the option of selecting from among nine stated reasons, with the option to identify reasons other than those listed on the survey. More than one response could be selected. The most frequently selected reasons for starting health and wellness programs were to reduce health care costs (11 agencies), reduce absenteeism (10), reduce occupational injury (8), enhance productivity (8), improve morale (7), and respond to operator requests (5).

Fitness-for-Duty Evaluations

Eleven agencies answered the question "Are fitness-for-duty evaluations included in the operator health and wellness program? If so, how and when are they conducted and how and where are records kept regarding outcomes of these evaluations?" Most of those responding (7), reported that fitness-for-duty examinations are conducted in organizational units other than the health and wellness program. Four agencies conduct the examinations as part of the health and wellness program. In three instances, records are kept in HR and one in another department.

Budget

Budget data for health and wellness programs often were not provided by survey respondents. However, from those agencies responding, budget allocations for health and wellness programs showed broad variations, some of which might be the result of the size of the organization as well as from other organizational nuances. Some programs are budgeted as part of other programs and respondents do not have access to accurate data. In two cases, economic downturns in their regions resulted in vast budget reductions over previous years. In another case, the program is coordinated in large part by employee volunteers; therefore, the budget allocation is quite small. It is clear that budget allocation responses in some cases did not include employee compensation costs.

Program Participation Rates

Twelve agencies reported on participation rates in health and wellness programs over the past 2 years. They noted that participation has increased substantially (6 agencies), remained about the same (5), or increased modestly (1).

Management and Union Support

Although formal health and wellness programs have existed in other industries for many years, they are still not the norm in the transit industry. Table 1 shows the strongest management support in three areas: managers actively promote participation in health and wellness activities (10 agencies), have allocated adequate resources (10), and have appointed individuals to lead the health and wellness program (10). Six agencies responded that the CEO has communicated the importance of the health and wellness program through such mechanisms as formal memos and bulletins, employee orientation presentations, and public addresses. In four cases, a specific individual was hired to lead the program, whereas in four other cases a committee to lead or support the program was appointed. Three agencies included language in their organizational vision or mission statements about employee health and wellness.

Of the 14 agencies responding, 7 (50%) reported that unions support health and wellness activities by proposing health and wellness provisions during collective bargaining (Table 2). In five cases, union leaders have signed off on joint labor–management documents encouraging participation in health and wellness activities. In three agencies, union leaders regularly participate in these activities. Similarly, in three agencies, union leaders communicate the importance of health and wellness to members through vehicles such as written bulletins, newsletters, or public addresses.

Health and Wellness Team

Broad-based involvement by representatives of various employee constituencies helps to ensure that the health and wellness program is appropriately linked with other organizational priorities. Such involvement can also increase the sense of ownership for the quality and viability of the program throughout the organization. The teams assigned responsibility for health and wellness activities vary among agencies. As shown in Table 3, in nine agencies health and wellness information is integrated into orientation and/or training programs(s) for new operators. In nine agencies, activities are coordinated with the EAP. An equal number of agencies (7) reported that health and wellness activities are coordinated with employee benefits, workers' compensation, and safety programs. Three agencies reported coordination with the drug and alcohol testing program and two coordinate with food services.

TABLE 1
MANAGEMENT SUPPORT FOR HEALTH AND WELLNESS PROGRAMS

Methods by Which Management Demonstrates Support	No. of Agencies
Managers actively promote participation in health and wellness activities	10
Management allocates adequate resources	10
Individual(s) appointed to lead program	10
CEO communicates importance of employee health and wellness	6
Employee hired to lead program	4
Committee appointed to lead or support program	4
Health and wellness statement in agency mission/vision statements	3

TABLE 2
UNION SUPPORT FOR HEALTH AND WELLNESS PROGRAMS

Methods by Which Unions Demonstrate Support	No. of Agencies
Union leaders propose health and wellness provisions during collective bargaining	7
Union leaders signed off on joint labor–management documents encouraging participation	5
Union leaders regularly participate in health and wellness activities	3
Union leaders communicate support to members	3

TABLE 3
HEALTH AND WELLNESS TEAM

Team Characteristics	No. of Agencies
Health and wellness information integrated in new operator orientation and/or training programs	9
Health and wellness activities coordinated with EAP	9
Health and wellness activities coordinated with employee benefit program	7
Health and wellness activities coordinated with workers' compensation program	7
Health and wellness activities coordinated with safety programs	7
Committee members serve as health and wellness advocates at worksites	6
Committee developed mission statement, priorities, defined roles and responsibilities	5
Committee with membership other than in positions as listed meets regularly	4
Health and wellness committee that includes operators, union leaders, managers, and representatives of other departments meets regularly	4
Health and wellness activities coordinated with drug and alcohol testing program	3
Proceedings of committee meetings communicated to operators and managers	3
Health and wellness activities coordinated with food services	2

In six agencies, health and wellness committee members serve as health and wellness advocates at worksites. Committees in five agencies have developed mission statements, priorities, and defined roles and responsibilities for members. In four agencies, committees that include operators, union leaders, managers, and representatives of other departments meet regularly. Committees in four agencies with other mixes of representatives reported that they also meet regularly. Three agencies communicate the proceedings of committee meetings to both operators and managers.

Program Communication

Effective health and wellness programs include a clear communication plan by which to keep target audiences informed of program activities and results. Regular and visible communication can also serve as a motivator for employees who have not yet made a decision to make healthful lifestyle changes. Regular communication can also keep the program in the forefront of senior management attention. Health and wellness programs use a variety of communication's strategies to keep operators and management informed. Figure 3 shows responses related to program communication. Reminders are supplements to information sent earlier to employees about program activities or their commitments. Changes refer to notices of any changes in policy or benefit options. Updates keep employees informed of program activities and may be in the form of progress reports. Formal mechanisms include established communication tools such as suggestion boxes, e-mail messages, or surveys that allow employees to provide feedback and input to wellness staff. Information related to the community refers to giving employees information provided by community agencies about services they provide. Operator input about line activities refers to operators being encouraged to participate in ongoing dialogue about activities such as work assignments and schedule design, and accident and incident prevention. Timely feedback refers to whether operators receive timely feedback about whether and how their input is used.

Annual Operating Plan

A well-designed annual operating plan can serve a number of purposes. Having to prepare the plan makes those accountable for the program define program priorities and how these priorities are expected to contribute to employee health and well-being. Clear mission and vision statements, as well as goals, objectives, and tactics can provide a road map for how the program will achieve planned activities. Being able to communicate details of the annual plan with employees can provide a sense of program stability and create a sense of excitement among employees about upcoming activities. The operating plan can also communicate to employees that their health and well-being are a priority of the organization.

Agencies reported the following about annual operating plans for health and wellness programs: eight have prepared an operating plan that addresses the needs and interests of operators, linked program goals and objectives with strategic organizational priorities, and specified time lines for when activities and tasks are to be completed. Seven agencies reported having a budget sufficient to carry out

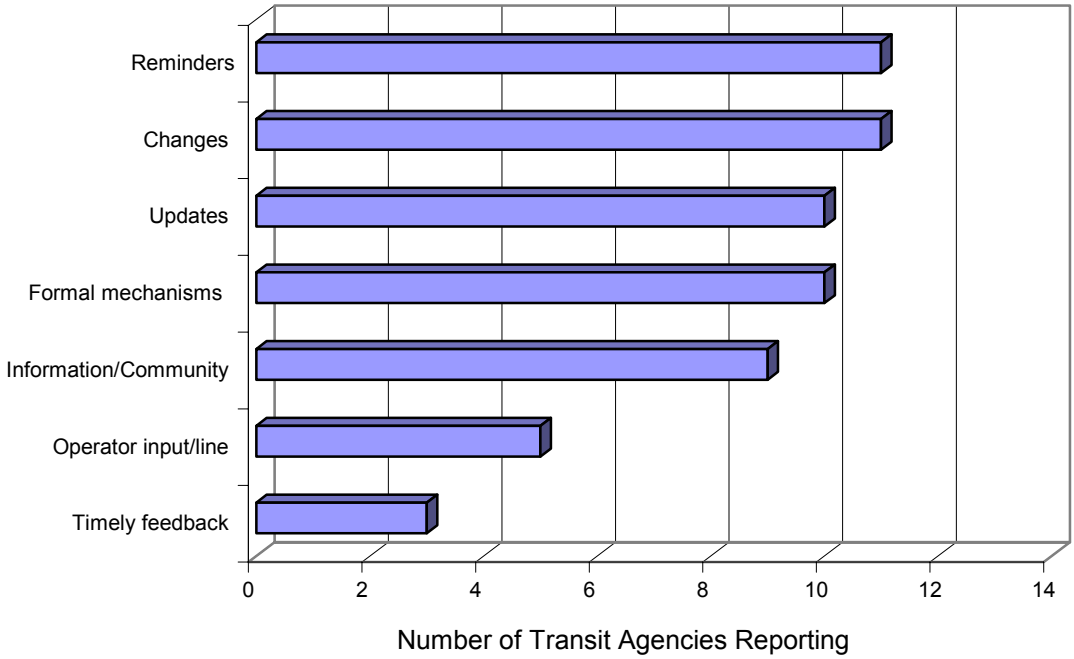


FIGURE 3 Communication strategies.

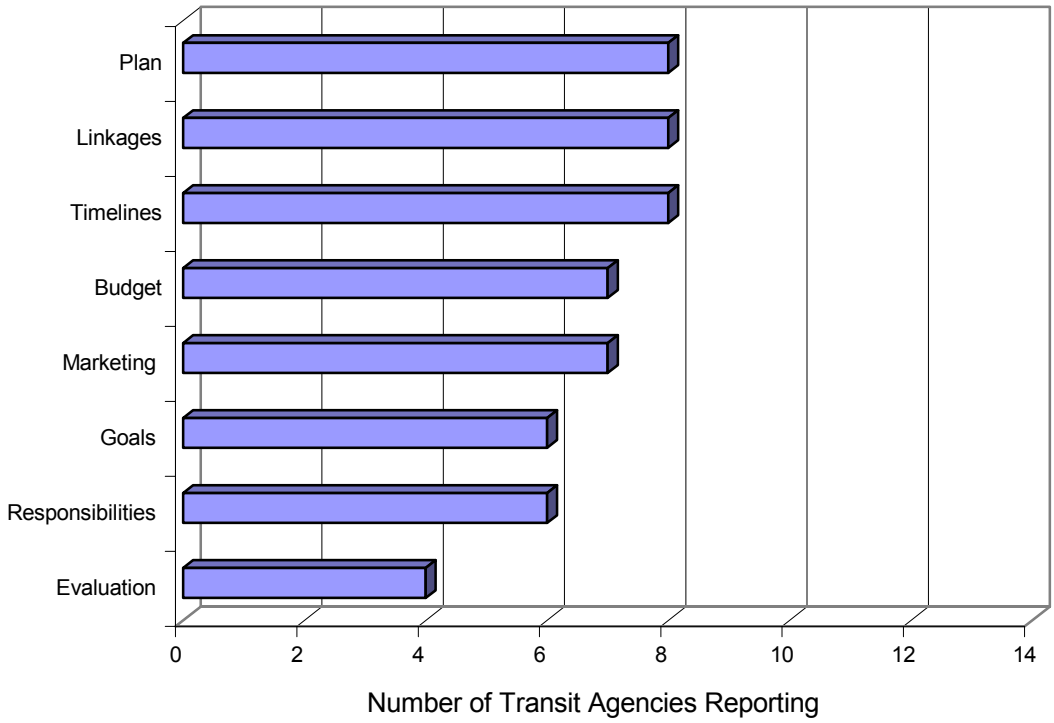


FIGURE 4 Annual operating plan.

the plan, and seven that they have incorporated appropriate marketing strategies to effectively promote and communicate programs to operators. Six agencies reported having established clear, measurable goals and objectives and six assigned specific responsibilities for the completion of plan tasks. Four agencies have developed a plan for evaluating the accomplishment of goals and objectives. These results are illustrated in Figure 4.

TABLE 4
ORGANIZATIONAL ENVIRONMENT

Environmental Factors	No. of Agencies
Assistance with work/life balance	10
Monitoring of facility lighting, heating, ventilation, and overall safety	10
Promotion of disability prevention and management	9
Recognition and rewarding of operator successes	8
Accessible health and wellness library	8
Peer support and mentoring activities	7
Incentives for participation	7
Vehicles maintained in ergonomically sound condition	6
Healthful food options/vending machines/cafeteria	6
Reimbursement for health club/health activities	1
Release time for health and wellness activities	1

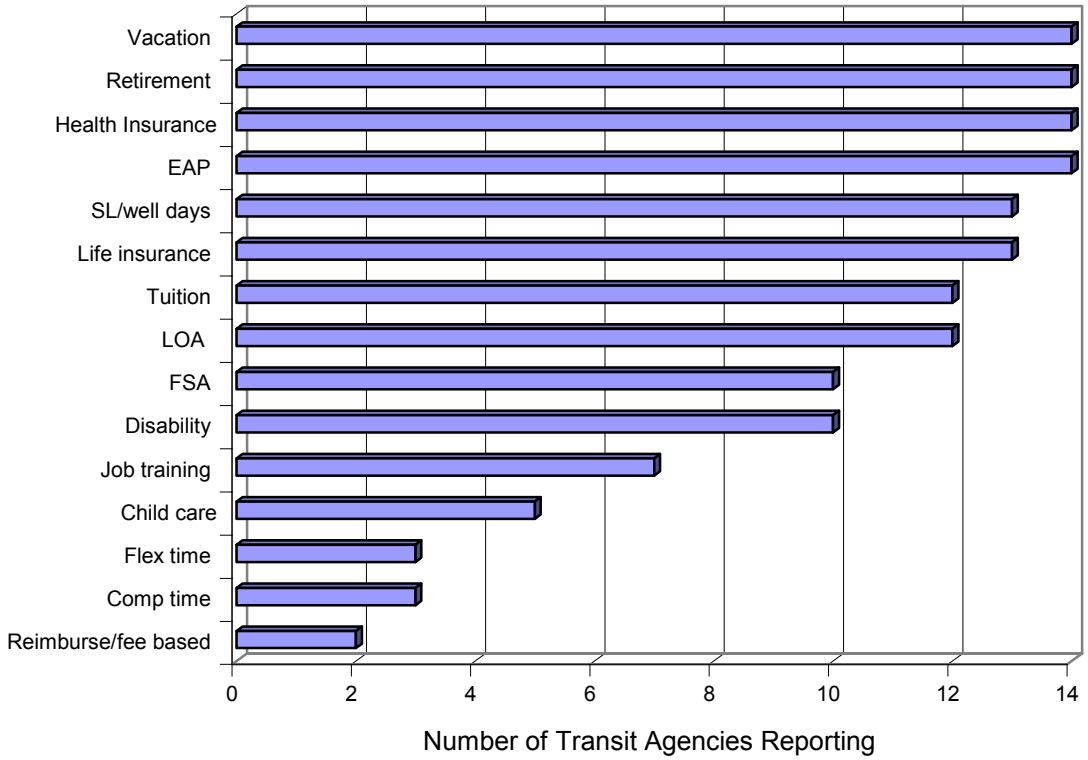


FIGURE 5 Benefit options. EAP = employee assistance programs; SL = sick leave; LOA = leave of absence; FSA = flexible spending account.

Organizational Environment

The success of health and wellness programs is in large part a product of the overall organizational environment. Workplaces in which employee health and well-being are seen as organizational assets tend to have tangible and visible evidence that employees are valued. Transit agencies with a commitment to having a healthy work force implement strategies designed to make such a work force a reality. A health and wellness program is one initiative seen more commonly in such organizations. As Table 4 shows, diverse activities among the responding transit agencies support a healthy work environment. Ten agencies provide assistance with work–life balance and 10 also reported processes for maintaining a healthy work environment through monitoring facility heating, lighting, ventilation, and overall safety. Nine agencies reported that their organizations promote responsible disability prevention and management through programs such as early return to work and restricted duty assignments. Other supports provided included an accessible health and wellness library (8) and recognition of operator successes (8). One-half of the agencies (7) provide peer support and mentoring opportunities as well as incentives for participating in health and wellness activities. Six agencies ensure that transit vehicles are maintained in ergonomically sound

condition and that healthful food options are available in vending machines and/or cafeterias.

Figure 5 provides a view of how another aspect of organizational support, employee benefits, is represented in responding agencies. All agencies reported offering health insurance, vacation, retirement, and EAP benefits. Thirteen also offer life insurance and sick leave coverage. Twelve agencies allow leaves of absence and make tuition reimbursement available. Ten agencies provide disability coverage and flexible spending accounts. One-half (7) provide job training or reimbursement, while five offer child care assistance. Benefits such as compensatory time and flex time are offered by three agencies. Two agencies provide reimbursement for fee-based health and wellness program activities.

A third view of a supportive organizational environment is shown by policies that are complementary to health and wellness efforts. Figure 6 shows the types and frequency of policies that fall into that category. All 14 agencies reported having drug and alcohol polices, while 13 reported having policies related to emergency procedures and seat belt use and safe driving. Ten agencies have smoke-free work environment policies. Two agencies responded that they have policies on the availability of healthful food options.

Program Activities

The survey requested information on the types of health and wellness activities that each transit agency offers and in what format these activities are offered. Agencies were given six activity formats from which to select: health information, group education, self-study, computer-based/Internet/intranet, individual counseling, and ongoing behavior change. The survey listed 20 activity options (e.g., physical activity, smoking cessation, disease management, and fatigue awareness) from which agencies could select; they could add others as needed. For each activity, the agency was asked which formats are used; more than one format per activity could be selected. Figure 7 shows the number of times that each format was used for the list of program activities selected. The health information format was selected 141 times, group education 77, individual counseling 36, and behavior change 21. Selected least frequently were computer-based (17) and self-study (15) formats. These responses are consistent with responses given to the earlier survey question about resource allocations to three categories of health and wellness activities: awareness, education, and behavior change. Awareness-focused activities in responding agencies far outrank those activities in other categories.

The health information format tends to be very useful when the program focus is on creating awareness. This format is used most frequently to give information about stress management (10 agencies), with nine agencies reporting on the use of this format to impart information about weight management, nutrition, and disease management. More than one-half of the respondents (8) use the health information format to create awareness about responsible alcohol use, mental health, ergonomics, and car-

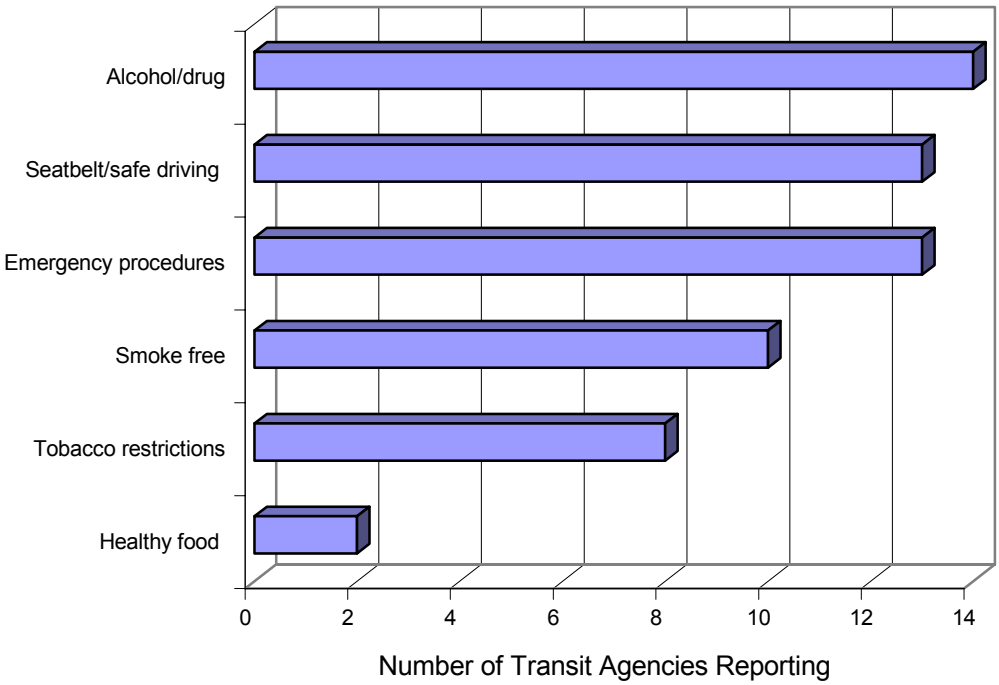


FIGURE 6 Policies supportive of health and wellness programs.

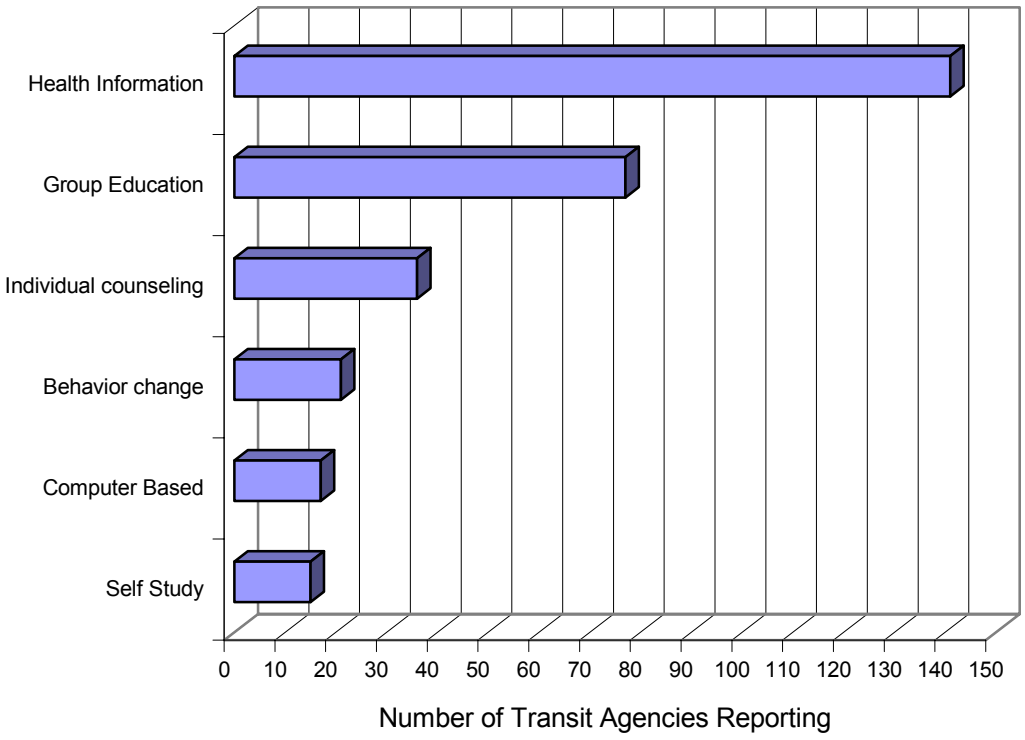


FIGURE 7 Activity formats by frequency of use.

diovascular disease prevention. One-half reported using this format to provide information about smoking cessation, physical activity, medical self-care, flu shots, and fatigue awareness.

Group education, which focuses on teaching employees how to make changes to reduce risk factors or to address specific conditions, is used most frequently to teach about disease management (8 agencies), weight management (7), and nutrition (6). Five agencies reported using group education to teach employees about smoking cessation, stress management, flu shots, ergonomics, and fatigue awareness.

In addition to group education, individual counseling is an alternative that can be used to teach employees about how to make health behavior changes. Depending on an employee's readiness for change, counseling can also be a tool for the employee to make the transition to behavior change and for supporting him or her through the period of transition. Although cited by only a small number of respondents, counseling is used to address specific health risks and issues.

The ultimate goal in worksite health and wellness programs is to help employees develop healthful work and lifestyle practices that they can sustain over time. In many cases, once employees are aware of the need for change and they have received appropriate education on how to make the changes, behavior change becomes more likely. This behavior change format is typically more intensive than the others and in many cases it requires a longer-term commitment on the part of the employee and the health and wellness professional. Responding agencies tend to devote very little attention to the behavior change format. Three agencies reported using behavior change to address physical activity, nutrition, and weight management, while two reported using it for smoking cessation, cardiovascular disease prevention, and DM.

To get a snapshot of which activities receive the most attention in health and wellness programs, an analysis was performed to determine the activities most frequently offered through all formats. Figure 8 shows the results of that analysis. DM (25), weight management (24), nutrition (22), stress management (20), and mental health care (20) are the most frequent activities. This list of activities was followed closely by ergonomics (19), flu shots (19), smoking cessation (18), cardiovascular disease prevention (18), and physical activity (17). This analysis suggests that transit agencies are focusing on risk factors that are most relevant to their target populations. The review of literature and survey results indicate that each of the aforementioned frequencies make good business sense.

The survey requested information from a list of 18 activities often included in worksite health and wellness programs about whether transit agencies offered certain activities or used various resources. Figure 9 shows the frequency with which the most often used activities were selected. Each of the 14 agencies reported using wellness

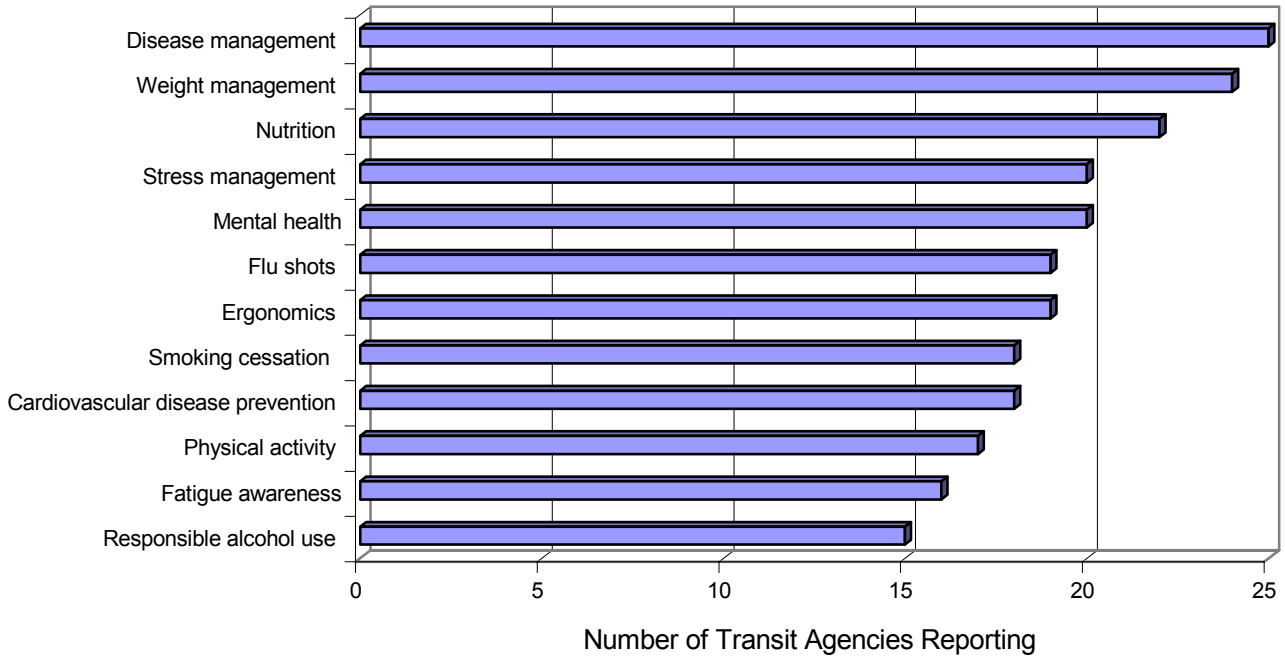


FIGURE 8 Activities most frequently offered through health and wellness formats.

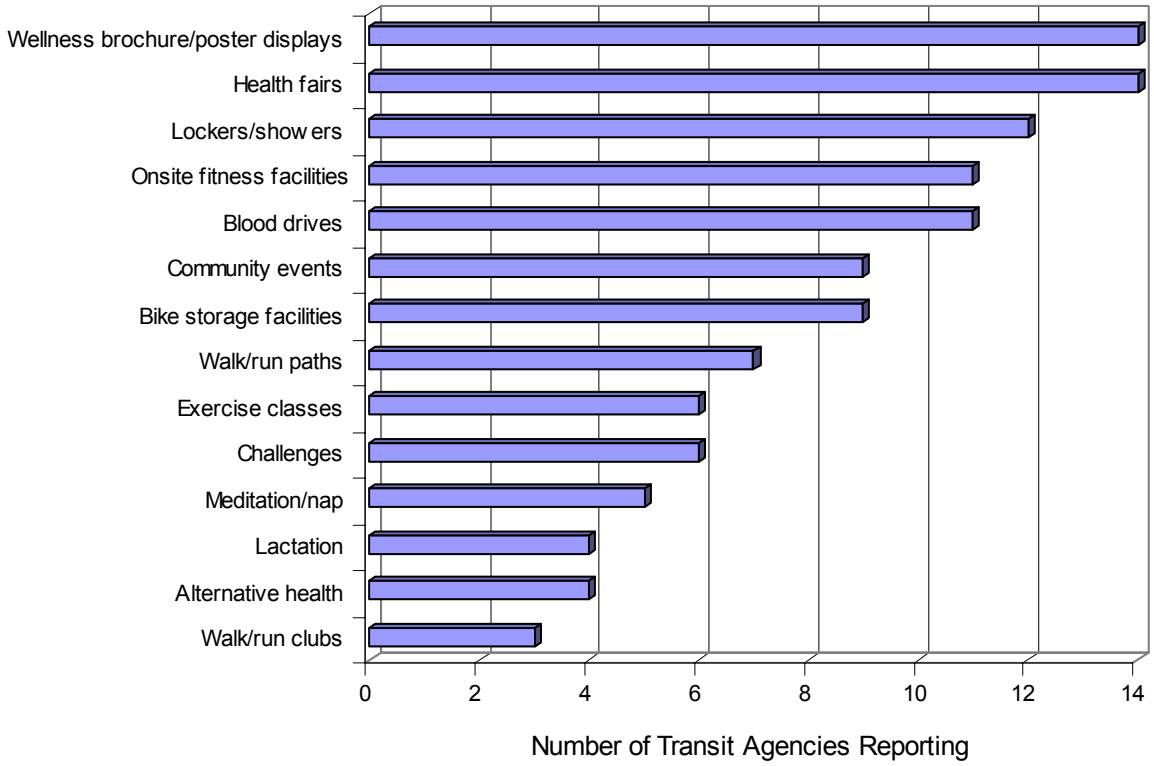


FIGURE 9 Frequency of health and wellness activities and resources.

brochures, poster displays, and health fairs. Twelve agencies provide showers and/or lockers for program participants. Eleven agencies participate in blood drives and an equal number offer on-site fitness facilities. Nine agencies provide bike storage facilities, and nine participate in community events such as runs, walk-a-thons, and bicycling. One-half of the agencies (7) provide walking or running paths for employees, 6 offer exercise classes, and

6 offer health and wellness competitions or challenges. Fewer agencies offer such options as meditation or nap rooms (5), lactation rooms for new mothers (4), alternative health approaches (4), and walking or running clubs (3).

Program Evaluation

A solid program evaluation is critical to the survival of any organizationally supported program. Transit agency health and wellness program leaders must be able to show that public funds are being used in a way that contributes to the bottom line of the organization. Typically, program evaluation is tied to program mission, goals, and objectives. Table 5 outlines the types of program evaluation methods used to measure the achievement of health and wellness program goals. Eleven (79%) of respondents stated that they track employee participation in program activities, a key measure of employee interest. Other evaluation measures include monitoring employee satisfaction (6 agencies); assessment of changes in biometric measures such as body weight, strength, flexibility, cholesterol levels, and blood pressure (6); and assessment and monitoring health status of high-risk operators (6). Fewer agencies analyze cost-effectiveness, savings, and return on investment (5); monitor the impact of productivity indicators such as absenteeism, turnover, and morale on the health and wellness of operators (4); and measure changes in cultural and physical environments such as policy, benefits, and changes in working condition (3). One agency reported documenting improvements in operator knowledge, attitudes, skills, and behaviors as a program evaluation activity.

TABLE 5
PROGRAM EVALUATION

Evaluation Activities	No. of Agencies
Regularly track participation	11
Monitor participant satisfaction	6
Assess changes in measures	6
Assess and monitor high-risk operators	6
Analyze cost-effectiveness, savings, and return on investment	5
Monitor key productivity indicators	4
Measure changes in cultural and physical environment	3
Document improvements in knowledge, attitudes, skills, and behaviors	1

CHAPTER FOUR

CASE STUDIES

This chapter provides case studies of six transit agencies that have successfully implemented operator health and wellness programs.

In developing the case studies, telephone interviews were conducted with wellness program managers and other appropriate staff at four agencies. In two instances—Utah Transit Authority and Regional Transportation District—data collection occurred during on-site visits to the agencies. In each case, the agency's survey responses was the starting point for gathering additional data on the organization's health and wellness program practices and experiences. In the case of telephone interviews, data were recorded through audiotapes and note taking, which was then analyzed and summarized into appropriate categories. During site visits, data collection was conducted through note taking and observations. A brief overview of the mix of case study agencies follows.

Pierce Transit, Lakewood, Washington—a 15-year program in a medium-sized agency, largely self-supporting through employee fund-raisers. The program is an example of how employee empowerment can be converted into sustained commitment and action.

MetroLINK, Rock Island, Illinois—a 2-year program in a 57-bus operator agency that has strong labor–management support and an active health and wellness committee.

Central Florida Transportation Authority, Orlando, Florida—a 5-year program with participation that has increased substantially in the past 2 years; strong coordination with other programs such as EAP, drug and alcohol testing, workers' compensation, benefits, and orientation and training for new operators.

Utah Transit Authority, Salt Lake City, Utah—a 19-year comprehensive health and wellness program with strong labor–management support. The agency allows spouses to participate in all program activities offered to employees. Operating in a supportive organizational environment; the program is coordinated with safety, EAP, benefits, orientation and training for new operators, and workers' compensation programs.

Orange County Transportation Authority, Orange, California—a 12-year program with strong survey responses regarding integration of health and wellness into other organizational activities, and operating and communication plans, as well as into the organizational environment.

Regional Transportation District, Denver, Colorado—a 14-year comprehensive health and wellness program that includes an on-the-job-injury rehabilitation clinic located in the wellness center.

PIERCE TRANSIT

Background

Pierce Transit (PT), located in Tacoma Washington, is the state's second largest public transit agency. Serving a 450 mi^2 urban and rural area of Pierce County, it has a staff of approximately 835 employees, including 474 bus operators. Because of its concern for the health and well-being of its employees, the agency has sponsored a health and wellness program for at least 15 years to address a number of health risk factors. Primary among these for bus operators are the lack of physical activity, unhealthful diet, and smoking. The health and wellness program activities at PT are part of a corporate strategy of high involvement by employees. Employees from a number of departments, including bus operators, work collaboratively to make health and wellness an organizational priority with the support of a management team that fosters a culture of inclusion. The agency's Strategic Business Plan for 2004–2009 demonstrates a continued commitment to employee involvement and the health and well-being of its employees. Under the plan's Objective 5: "Maintain a dedicated and professional workforce," two strategies key to the operation of the wellness program are outlined:

- Involve employees in decision making.
- Promote employee wellness and a balance between work and other life activities.

Health and wellness activities at PT focus primarily on creating and maintaining awareness of healthful lifestyles (60%), educating employees about specific health and wellness issues (20%), and behavior change support (20%). An estimated 20% to 25% of bus operators participate in program activities.

Management Support

For the past 11 years, PT has assigned responsibility for leading its health and wellness program, *Health Express*, to the same employee relations coordinator. The program co-

ordinator annually spends approximately 20% of her time managing the program. In addition, PT's leadership team supports the involvement of a wellness advisory committee to help plan and staff program activities. A contingent of six bus operators is part of the committee. In the past, advisory committee membership has been based primarily on employees expressing an interest. In 2003, because membership had declined, the coordinator posted a recruitment notice for members. So many operators expressed interest that interviews were conducted to select three new operator members. In addition to the six operators, the committee is composed of three maintenance employees, one customer service employee, one parts room employee, one administrative employee, and the program coordinator.

Funding for program activities is split among allocations made by the agency, $4,000 annually; commissions received from vending machines in employee lounges; and $2,000 earned through employee fund-raisers, events that emphasize healthy lifestyles. For instance, the Summer Salad Sale was announced on a flyer that stated, in part, "Bring a salad to share and eat free. Come away with some new recipes."

Agency funds are used to pay 50% of the costs of a number of program activities: flu and pneumonia shots, incentives for the walking program, and screening tests at health fairs. In addition, the agency sponsors the attendance by all operations department field supervisors at the two-day Critical Incident Stress Management training, which allows these individuals to support PT's Critical Incident Peer Support Team. The team is an employee crisis assistance group that is separate from, but complementary to, the wellness advisory committee.

Union Support

In addition to having operators serve on the advisory committee, ATU leadership actively supports the program. The union pays registration fees for its members who participate in the Relay for Life, an annual team run/walk event sponsored nationally by the American Cancer Society. The union also sends members of its executive committee to the 2-day training that the agency's Critical Incident Peer Support Team completes.

Health Express Program Management

As mentioned, overall program coordination is the responsibility of the employee relations coordinator. Other employees spend varying amounts of time on advisory committee activities; some being release time and other being voluntary, on their own time. Four to six times a year, the program coordinator provides the Operations Department dispatch office with a list of operators needed to staff program activities, receiving consistently excellent cooperation. In some cases, an operator may be released for as much as 1 full day or as little as 2 h. In either case, his or her run is filled by another operator.

The following information is provided to PT employees about the role of the *Health Express* advisory committee:

> You will find the Mission Statement and Goals developed by your committee to guide us in our planning on the reverse side of this document. In carrying out these goals, your committee sponsors a diversity of programs and activities.
>
> Annually we have held a spring and fall health fair focusing on a variety of health and wellness issues. At these fairs we have provided not only information but also opportunities for health screenings such as blood pressure, cholesterol, glucose, body fat, and health risk assessments. For several years we have sponsored the *Walking Club* from May 1 through Halloween that provides incentives for completing certain walking, running, or biking goals. We maintain the fitness facilities in the Administration and Maintenance Buildings and are responsible for the 0.6 mile track and exercise stations around the bus parking lot. We coordinate the annual flu shot program and volunteer to prepare and serve breakfast or lunch for the Agency's annual roadeo. In addition, we support team participation in the annual American Cancer Society *Relay for Life* held at Stadium Bowl and the American Heart Association *Heart Walk* held in the fall.
>
> Because we are essentially self-supporting, we conduct a number of fundraisers throughout the year to raise money for the purchase of exercise equipment, incentives, and snacks and supplies for promotional events. Also annually we have put on the *Holiday Stress Break* as a way of thanking employees for your support. The fund raisers serve a dual purpose by also promoting healthy lifestyle choices: the *Salmon/Chicken Barbecue* is a very low-fat meal, the *Summer Salad Sale* promotes adding more vegetables to our diets, the soup sales encourage considering fast food alternatives for lunch, the raffles generally have wellness related prizes.
>
> Pierce Transit supports this program by providing time for employees to serve on the committee, space for exercise facilities and wellness events, assisting with the cost of incentives, subsidizing the flu shots, and purchasing books and newsletters for the wellness library located in Human Resources.

Health Express Program

MISSION STATEMENT

The mission of the Health Express *program is to provide opportunities to the employees of Pierce Transit to learn about ways in which they can take control of their own health and well-being and to encourage them to incorporate this information into their daily lifestyle choices.*

The *Health Express* program has five goals:

- To provide information to PT employees regarding lifestyle choices that affect health and well-being.
- To provide opportunities for employees to evaluate their current health status through periodic screenings and risk assessment tools.

- To provide facilities equipped to enable employees to incorporate aerobic and other exercise into their daily lives.
- To encourage employees to take charge of their health and well-being through the use of incentives and rewards for healthful behavior.
- To foster an atmosphere of acceptance that encourages participation in lifestyle changes at whatever level the employee chooses.

Activities Specifically Related to Primary Risk Factors: Physical Fitness

Through the following PT newsletter article, employees learned about a *Health Express* physical fitness initiative:

GET ON BOARD THE *HEALTH EXPRESS*

The one constant in health living advice is—EXERCISE, EXERCISE, EXERCISE. To maintain a healthy heart, to prevent cancer, to stave off osteoporosis—exercise is the key ingredient. Your *Health Express* Committee encourages you to join in its annual exercise program by committing to walking, running, or biking between May Day (May 1) and Halloween (October 31). Not only will you reap the benefits associated with regular exercise but you will also earn incentives as you go. See the posters for miles needed for each incentive. It's a very flexible program. You can do this here at work, at home, or at a gym. The track around the bus lot is 0.6 of a mile long. Time on the elliptical or stair climber machines in the fitness penthouse can be expressed in miles too. Get your exercise calendars from HR and start recording your miles. *Begin now to invest in yourself and be a healthier you.*

The program consisted of five milestones at which incentives could be earned. To qualify for incentives, employees logged mileage on a calendar log provided by HR, which they turned in at the end of each month, at which time they received the incentive they earned. Program incentives ranged from a hat for walking 25 mi, or running or biking 100 mi, to a sports bag for walking 300 mi, running 500 mi, or biking 600 mi. Other incentives included hand weights and a short-sleeved golf shirt for mileage goals reached between these limits. Employees who walked at least 25 mi, or ran or biked 50 mi, were eligible for a certificate recognizing their participation. Mileage could be gained through walking or running on a treadmill, as well as by riding a stationary bike.

Another way that PT encourages physical activities among the staff is to provide 12 bike lockers for employees who ride bikes to work.

Weight Management

Health Express has approached the risk of unhealthful diets through a number of activities. On one occasion, the program retained the services of a dietitian who provided group education on nutrition and weight management strategies. The 2003 fall health fair had diet and nutrition as its primary focus, a theme that took advantage of the current national interest in obesity and its impact on health. The program has also offered the 16-week *Weight Watchers at Work* program, for which PT provided space and employees paid the fee for participation.

Smoking Cessation

The third primary health risk factor for operators identified by the PT health and wellness program coordinator was smoking. One approach the agency uses to assist in reducing the prevalence of this risk factor is a smoking cessation reimbursement program. In a bulletin about the program, its purpose is explained.

When an employee quits smoking, both the employee and employer gain substantial benefit. The employee who stops smoking will feel better, live a longer, healthier life, be proud of the accomplishment, and gain financial savings. The employer will see increased productivity, decreased absenteeism, and decreased health care expenses. In the hope that everyone will benefit, Pierce Transit has adopted a Smoking Cessation Reimbursement Program for all employees. Through this program, an employee may be reimbursed 50% of the cost of smoking cessation class, prescription program, or other alternative methods to a maximum of $75, after three (3) months of non-smoking. Participation is voluntary.

A listing of smoking cessation programs in Pierce County is available in Human Resources. Periodic in-house smoking cessation programs will be offered at minimal cost to the employee. Sign-up sheets will be posted on Agency bulletin boards.

Program Guidelines

- Prior to the start of the class, prescription program, or alternative method, a smoking cessation reimbursement request form must be completed by the employee and submitted to the VP, Human Resources & Labor Relations, or designee for approval and to ensure that the request complies with these guidelines.
- The smoking cessation course, prescription program, or alternative method for which reimbursement is requested will be verified by the Human Resources Department.
- The smoking cessation course must be taken on the employee's own time.
- Reimbursement will be limited to 50% of the cost of the course, prescriptions, or alternative methods up to a maximum of $75, to be paid after three (3) months of non-smoking.
- To be eligible for reimbursement, the employee must complete the approved program and present proof of payment. Reimbursement will be paid no earlier than three (3) months, following successful smoking cessation.

- Employees may receive reimbursement for a maximum of two (2) smoking cessation programs during their employment with Pierce Transit.

On-Site Fitness Resources

The primary fitness center at PT, a space of approximately 15 ft × 16 ft, is located on the roof of the agency's administration building. The facility, known as the Fitness Penthouse, contains a mirrored wall, padded flooring, chin-up bar, slant board (for sit-ups), Stairmaster, elliptical cross-training machine, cross-country skiing machine, and a bicycle, as well as a television/videocassette recorder and radio/audiotape player. Most Fitness Penthouse equipment was purchased with funds raised by advisory committee activities. Operators also have access to a fitness facility in the maintenance building, which is equipped with a ping-pong table, weight machine, and rowing machine.

Integration of Health and Wellness with Other Quality of Work Life Programs

Operator health and wellness activities at PT are coordinated with a number of other programs that affect operator well-being. Operators serve on the Safety Committee and therefore have a voice in matters affecting their ability to perform their jobs. Their input is sought on issues related to bus stops, seats, and mirrors. The *Health Express* coordinator serves in an ex-officio capacity on the committee and reports that comments and suggestions made by operator members are forwarded to the manager responsible for addressing the issue.

Another employee-driven program of vital importance to the health and well-being of PT operators is the Critical Incident Peer Support Team. This group, a team of employees trained in workplace crisis management, is available by pager 24 h a day to help fellow employees cope with stressful situations. Team members refer employees requiring additional post-crisis support to the contracted EAP provider.

An elder care contract that the wellness coordinator manages, separate from the *Health Express* program, provides information about resources available nationwide to employees with elderly family members. The transit agency pays for the first telephone contact with the elder care resource provider, which has a database of resources available nationwide. During the first call, employees are asked a series of questions to help steer them in the direction of resources likely to meet their needs. If the employee needs subsequent contact with the provider, he or she pays for those calls. Similar resources are provided through a contract with a local child care resource provider.

The operations department training staff includes information about *Health Express* orientation and training for new operators. During orientation new operators tour the administration building, including the Fitness Penthouse.

Another program related to wellness, but separate from the activities of the wellness advisory committee, is PT's *JUMP* Team. Several years ago, PT purchased two automatic external defibrillators (AED), in recognition of the importance of minimizing the time between sudden cardiac arrest and access to defibrillation. One AED is located in the operations dispatch office, and the other in the maintenance supervisor's area. A group of employees, known as the *JUMP* Team, has been trained to respond to medical emergencies where external defibrillation may be required. The machines are compatible with those used by the local emergency responders, so that the pads can be unplugged from PT's equipment and attached to that of emergency personnel. In addition, two employees have qualified as trainers and have incorporated training on the AEDs in their first aid/cardiopulmonary resuscitation classes. The agency has developed an emergency response protocol that is posted at the reception desk, dispatch area, and maintenance supervisor's area.

PT has a program that allows employees to make suggestions for improving their work life and productivity at the agency. Suggestions resulting in cost savings can net the employee an award of $25 to $500. The operations department publishes a newsletter each payday. That publication is one mechanism used to provide ongoing information about health and wellness issues and programs.

Integration with External Resources

PT makes use of a variety of community occupational health resources to achieve its health and wellness goals. One such event is twice-a-year employee health fair. During the spring 2003 health fair, Multicare HealthWorks, a local occupational health services firm, conducted total cholesterol and blood pressure screenings. The cost of the screenings was $10 per employee, with one-half of the cost paid by the agency and one-half by the employee. Employees who had not had tetanus shots in the previous 10 years could receive them at the health fair at a cost of $15, shared equally by the agency and the employee. Information displays were available on breast, prostate, and other cancers. In addition, the PT Critical Incident Peer Support Team staffed a table and provided information about that employee resource.

Employee participation in community events, such as the Relay for Life sponsored by the American Cancer Society and the Heart Walk sponsored by the American Heart Association, has been quite high. In 2003, through a vari-

ety of fund-raisers, employees raised more than $7,000 for Relay for Life and more than $12,000 for the Heart Walk.

The following is a representative calendar of the program's wide variety of projects.

2003 *HEALTH EXPRESS* Activities Calendar

January	Planning "Retreat" to set calendar of activities for the year. Identified captains for participation in Cancer Relay for Life event in May.
February	Developed plans for Spring Health Fair.
March	Conducted process for adding members to committee—selected 4 additional operators out of 16 who expressed an interest; added one administration and two maintenance representatives. Health Fair & Soup Sale—provided for cholesterol and blood pressure checks (cost shared 50/50 employee and PT). 1st Quarter Blood Drive.
April	Fund-raisers for Cancer Relay for Life Team. Department basket raffle, car wash, cookie sales, ice cream sundaes sale, 50/50 raffle; raised over $7000. Annual Walking Club Start Date—April 1 (runs through Halloween).
May	Tacoma American Cancer Society Relay for Life—about 15 employees and family members participated; 3 employee survivors (participated in survivors' lap). Volunteered to coordinate annual Bus Roadeo Luncheon; ensured lower fat options available.
June	Planned Summer Activities. 2nd Quarter Blood Drive.
July	Summer Salad Sale—Salad bar and salad potluck (donations).
August	13th Annual Salmon/Chicken Barbecue—low-fat meal served under tent in bus parking lot: choice of barbecued salmon or chicken breast, calico beans, rice, fruit, roll, and lemonade.
September	Planning for Fall Health Fair. 3rd Quarter Blood Drive.
October	Fall Health Fair & Soup Sale—Emphasis on healthy diet; cholesterol, glucose and blood pressure checks; cost shared 50/50 agency/employee; seated massage; registered dieticians; childhood diet info provided by child care resource provider; seniors and diet information provided by elder care resource provider; EAP provider; information from American Diabetes Association and American Heart Association.
November	Annual Flu Shot Program—cost shared 50/50 agency/employee.
December	Holiday Stress Break—Serving hot cider, fruit, popcorn, and pretzels, and show relaxation videos in dimly lit board room; encouraging employees to take a few minutes to let go of the stresses associated with this busy time of the year.

Program Challenges

The current Human Resources Information System is not able to provide data needed to evaluate results on productivity measures, such as comparing the absenteeism rates of employees who receive flu shots with those who have not. A new information system, currently in the planning stages, is expected to allow for better program data collection and analysis.

METROLINK

Background

The Rock Island County Metropolitan Mass Transit District, known as MetroLINK, operates public transit services for eight Illinois municipalities: East Moline, Moline, Rock Island, Silvis, Milan, Carbon Cliff, Colona, and Hampton. The agency's service area is referred to as the Quad City (East Moline and Rock Island, Illinois, and Bettendorf and Davenport, Iowa) area. Located in Rock Island, with a fleet of 57 accessible buses, four 15-passenger vans, two accessible vans, and two trolleys, MetroLINK has approximately 120 employees, of which 82 are bus operators. On the synthesis survey, MetroLINK identified obesity, lack of physical activity, unhealthful diet, and stress as primary health risk factors for operators.

Management Support

After 5 years of seeing health care costs increase dramatically—by 35% in 2002—MetroLINK's assistant director of finance, the employee benefits coordinator, spoke to employees about this issue at an annual all-staff training session in early 2002. She talked about a concept that she described as *Wise Living*, one in which employees could make lifestyle changes that might be helpful in reversing the trend of escalating health insurance premiums. To her surprise, 10 to 15 operators immediately expressed interest in being a part of this new initiative.

As an initiative that "took off on its own momentum" after the initial discussion, the *Wise Living* program had no budget in its first year of operation (2002). In 2003, however, $2,000 was allocated to cover the cost of incentives and supplies. The coordinator estimated that, on average, she spends approximately 10% to 15% of her time on health and wellness activities. She acknowledged spending a number of off-duty hours on program activities.

Although she has no formal background in health and wellness, for years she has been the driving force behind MetroLINK's observance of the Great American Smokeout, the annual American Cancer Society's program in

which volunteers and staff encourage employees to quit smoking for at least 1 day, in hopes that they will quit forever. Each year on this day, she has put on a giant cigarette costume and appeared at MetroLINK facilities. Therefore, her role as a health advocate was already well known within the agency. The employee benefits coordinator, the program coordinator for *Wise Living,* related that the general manager's support of the program is 100%. He has served on one of the agency's nine *Active for Life* teams and as part of the 10-week American Cancer Society workplace wellness program, which encourages employees to be more active on a regular basis by setting individual goals and forming teams for motivation and support.

Union Support

In addition to participation by bus operators, the past president of the ATU, Local 313, is an active member of the *Wise Living* committee.

Program Features

The agency has a 19-member wellness committee consisting of volunteers from the original all-staff training group and four administrative staff, including a representative from HR. Employees from Quad City Garage, the entity that maintains MetroLINK's transit vehicles, also participate in the *Wise Living* program. The committee meets monthly to educate itself on healthful lifestyle options and in alternate months sponsors health education for other MetroLINK employees. Notices of meetings and presentations are included as payroll stuffers with employees' paychecks. Minutes of committee activities are prepared and disseminated to keep other employees informed of program activities.

One of the wellness committee's first efforts was a weight loss challenge in which employees set goals and took healthful actions to lose weight. Of the 52 participants, 50% lost weight. Collectively, the group lost 500 lb, data that were documented in weekly weigh-ins at a MetroLINK office. The weight loss effort was bolstered by twice-weekly training sessions conducted by the EAP provider, which focused on body fat and weight loss strategies. At one session, the trainer brought in 5 lb of animal fat from a local grocer to dramatize that obesity is a significant health risk.

The success of this weight loss effort was the beginning of a coordinated program that boasted the following first year accomplishments:

- Joined as a group to promote *Wise Living*,
- Completed a successful weight loss program,
- Added fitness equipment,
- Walked into second place in the Employee Fitness Walk (sponsored by John Deere Health and Quad City YMCAs),
- Created a monthly newsletter,
- Shared healthful foods and recipes,
- Established fitness activities,
- Promoted healthful initiatives, and
- Gave free flu shots (an employee's wife, a nurse, volunteered to give the shots).

In 2003, program activities were expanded to include

- Pneumonia shots ($25);
- Stroke risk assessment for 44 employees: cholesterol screening, blood pressure check, and diabetes testing;
- Wise Walkers—a 9-week competition with the CityLink (the Peoria, Illinois, transit agency) in which employees are provided free pedometers (72 issued on the first day of the competition) to measure their daily steps—with a goal of 10,000 steps per day;
- Colon cancer presentations and screening kits made available to employees;
- Blood drive in which employees contributed 15 pints of blood;
- Safety fair that focused on home safety and health screenings (a renovated bus served as a command station);
- Scheduled fruit days at facilities—apples, oranges, and bananas given away;
- Summer softball games (three teams with 100% participation in one department);
- *Active Living*—an extension of *Wise Living* that focuses on regular activity (e.g., walking, yard work, swimming, running);
- *Maintain, Don't Gain*—a motivational program that runs from November 28 to January 3, designed to encourage employees to stay fit over the winter holidays;
- Health and wellness books (employee-donated book rack);
- Recognition cards for employees who commit to *Active Living* and other programs;
- Employee-donated refrigerator and air popper for pop corn; and
- Employee-donated stair climbing machine and exercise bikes.

Communication

Ongoing communication about health and wellness activities has been the key to the 2-year program's success. The program's *Wise Living* logo, designed by the agency's executive secretary, who also prepares the program's monthly

newsletter, is featured on every communication about the program and its activities. Communications range from healthful recipes to weigh-in dates and times to the *Wise Living* program results (see Appendix C for examples). Employees who achieve goals are recognized and congratulated through colorfully illustrated *Wise Living* bulletins. A spiral-bound 2003 calendar featuring multicolored graphics, news about MetroLINK employees involved in healthful lifestyle activities, health and safety tips, recipes, and dates of national health awareness observances helps employees see themselves and coworkers making behavior changes.

The wellness committee has developed an informational brochure that gives fellow employees the following information:

> Who We Are
> Wise Living was formed by a group of MetroLINK and Quad City Garage Employees who joined together in January 2002 to voluntarily promote the development of fitness through a program of health, nutrition, and exercise intended to assist employees (and their family members) in making changes that will reduce health risk and improve wellness.
>
> Our Mission Is
> To promote "Wise Living" by "Living Wise." Our goal is to improve and enhance our lives and the lives of others. We encourage learning about and participating in wise choices in health, fitness, and nutrition.
>
> Our Motto Is
> "Living Wise Enhances Lives"
>
> What We Do
> Promote a healthier lifestyle through the workplace
>
> Where We're Going
> - We're traveling the road to a healthier lifestyle.
> - We're picking up speed on health and fitness.
> - We're gearing towards wiser living through personal choice, education, and family participation.
> - We're promoting family involvement: Setting goals to fit your lifestyle.
> - We're working towards camaraderie and teamwork.
> - We're seeking a healthy balance of health and happiness.

Coordination with External Groups

The program coordinator, as "Lifestyle Wellness Warrior" and MetroLINK representative in the Quad Cities Health Initiative—a community partnership of more than 300 community members focusing on improving physical, mental, economic, social, and environmental health in the Quad City region—is able to make a number of community resources available to the agency and its employees. Projects that the group has sponsored or is affiliated with include Dental Care Smiles for All Team, Lifestyle Wellness Warriors, Heat Emergency Task Force, Kids Healthnet, Tobacco-Free QC, and the Quad Cities Coalition on Adolescent Sexuality and Pregnancy.

Program Evaluation

From a qualitative perspective, the program coordinator described the experience of initiating the health and wellness program at MetroLINK.

> *Wise Living* has been the highlight of my 20-year career at MetroLINK. It has been a rebirth of my desire to help our employees achieve a healthy lifestyle. I can truly say that chairing this committee is a true joy for me. The enthusiasm and ideas that flow from this committee are fantastic. One of the most important accomplishments our group has achieved is the camaraderie that has excelled from this committee.

Data from individual program activities indicate that the program is experiencing success in increasing employee enthusiasm for maintaining healthful lifestyles. Much of the feedback about the program's impact is anecdotal: "I don't have to take my medication anymore. I couldn't do it without the program;" or "I bought exercise equipment for my home and my wife and children use it too." With the impetus for the program being ways to slow down or reverse the rising health care costs, analysis of data in this area will be important as the program matures.

CENTRAL FLORIDA REGIONAL TRANSPORTATION AUTHORITY

Background

The Central Florida Regional Transportation Authority, doing business as LYNX since 1992, provides regularly scheduled bus service to Orange, Seminole, and Osceola counties with a staff of 908 employees; 544 (60%) are bus operators. Eighty-two percent of the bus operators are male. Primary risk factors for operators at LYNX are reported to be obesity, hypertension, stress, smoking, lack of physical activity, and unhealthful diets.

Management Support

The wellness program at LYNX, located in the HR department, was started approximately 8 years ago at the request of bargaining unit employees (represented by the ATU), who wanted an exercise facility at work. Initially, part-time employees, with high turnover rates, staffed the program. Six years ago the agency hired a wellness professional with a master's degree in exercise physiology. His expertise in corporate wellness programming has brought the agency a level of knowledge, skill, and stability that

has allowed it to design and operate a program that is much used by LYNX employees. The program coordinator, under the supervision of the LYNX employee relations coordinator, plans program activities as part of the HR planning and budgeting process. In response to employee requests, the agency converted a former loading dock at one of the bus operating facilities, a 30- by 40-ft space, into the current wellness center. Equipped with a treadmill, modular training equipment, elliptical trainer, Stairmaster, weight resistance equipment, free weights, a videotape player, and aerobic training videotapes, the center is the focal point of LYNX health and wellness activities.

Union Support

"The union president works out here each morning," was the response to a question about whether the union supports the wellness program. The program coordinator also reported that the union official, a bus operator, encourages other operators to follow his lead in developing and maintaining a consistent exercise regimen.

Health and Wellness Program Activities

Activities that create awareness about healthful lifestyles constitute one-third of the program effort, those designed to educate employees about ways to address specific health and wellness issues make up another one-third, and specific behavior (lifestyle) change strategies constitute the final one-third of the effort. Table 6 summarizes the types of activities available at LYNX.

Employees interested in using the wellness center must first complete a physical activity readiness questionnaire, health history questionnaire, consent/release form, fitness test, and equipment orientation. Employees with certain medical conditions or health risk factors must secure permission from their physicians before exercising in the LYNX facility. Open Monday through Friday from 7:00 a.m. to 5:00 p.m., the wellness center offers the following services:

- Wellness counseling—Counselors offer information and advice about exercise performance and routines, nutrition, and other health issues. A broad range of wellness brochures and posters are displayed.
- Fitness testing—In addition to undergoing an initial screening, employees can also receive body fat, height, weight, blood pressure, girth, flexibility, muscle endurance, and target heart rate measurements.
- Heart rate monitors—Employees can use these free during workouts to keep track of heart beats per minute and compare the readings to their target heart rate.
- Fitness training—This is conducted by a certified fitness trainer who sets up exercise plans and individually coaches employees during workouts.
- Blood pressure monitoring—Confidential blood pressure checks are available at any time.
- Body fat measurement and weight loss advising—Employees desiring to lose weight can come in for body fat measurement and receive advice on natural and practical steps toward health and permanent weight loss.
- Showers and lockers—Employees desiring locker space provide their own locks for use only during the workout period. The center has one shower for male employees and one for female employees. In addition, bike storage facilities are available.

The LYNX staff records employee wellness center utilization data by two categories: bargaining unit and administrative. Bus operators make up the largest occupational group of bargaining unit employees. The wellness coordinator reported that although exact statistics are not available, operators far exceed other employees in the use of the wellness center. A recent survey of bargaining unit employees revealed the following about why they use the wellness center:

- Annual physicals (preparation), 30%;
- Weight loss, 25%;
- To reduce blood pressure, 20%;
- To reduce stress, 15%;

TABLE 6
SUMMARY OF LYNX WELLNESS ACTIVITIES

Activities	Health Information (awareness)	Group Education	Individual Counseling
Physical activity	X		X
Smoking cessation	X	X	
Nutrition	X	X	
Weight management	X	X	
Cardiovascular disease prevention		X	
Responsible alcohol use		X	
Stress management		X	
Disease management	X	X	
Flu shots		X	

- To maintain physical fitness, 5%; and
- Other, 5%.

Data for the past several years show that use of wellness program activities has increased annually.

- In 2000—305 employees used the facility; 259 bargaining-unit employees;
- In 2001—320 employees used the facility; 272 bargaining unit employees;
- In 2002—380 employees used the facility; 330 bargaining unit employees; and
- In 2003 through October 31, 2003—378 employees used the facility; 332 bargaining unit employees.

Health Fairs

Twice-a-year health fairs are conducted at the agency's two bus operating facilities. The wellness staff invite a broad range of free community resources to give employees as comprehensive an exposure to health and wellness information and screenings as possible. Two health fairs were conducted, one in 2001 and one in 2002: total participation in 2001 was 255 and in 2002 was 368, for a 44% increase in annual participation. A sampling of health fair activities and community resources includes the following:

- Health screenings—hearing, glucose and cholesterol, blood pressure, vision, and lower back strength;
- Information booths—HIV/AIDS prevention, proper and safe handling of food, and child care resources;
- Health insurance plan providers;
- EAP;
- Acupuncture and alternative medicine providers;
  - Public and nonprofit agency representatives,
  - Orange County Parks and Recreation Department,
  - Orange County Health Department,
  - Epilepsy Association of Central Florida, and
  - Preventive Blindness of Florida.

Program Evaluation

Other than utilization data that show increases in the use of the wellness center annually over the past 4 years, there is an evaluation of program activities that has been individual and anecdotal in nature. For instance, employees request evaluations of progress toward wellness goals, such as weekly body fat measurements. The coordinator reported instances in which employees report that they have been off antihypertensive medications as a result of exercising and participating in wellness program activities. He estimated that approximately 75% to 80% of bus operators who start a wellness program continue it long term.

Program Challenges

Because of staff cuts in 2003, a part-time staff member assigned to the wellness program was terminated, leaving the wellness coordinator with the responsibility to maintain the program as outlined above. Also, space constraints limit the amount of health and wellness activity that can be made available to employees at one time. A new wellness center, planned for the new LYNX building that is under construction, will have approximately twice the space as that of the current facility.

ORANGE COUNTY TRANSPORTATION AUTHORITY

Background

Formed in 1991 by the consolidation of seven California transportation agencies, the Orange County Transportation Authority's (OCTA) mission is to create, coordinate, finance, and deliver an easy-to-use transportation network to keep Orange County moving and meet the public's needs. Headquartered in Orange, California, the agency has a staff of approximately 2,000. The approximately 1,200 bus operators make up 58% of the work force**.** The operator work force is 71% male, with 66% of the operators more than 40 years old. In response to the synthesis survey, the agency identified primary health risk factors among the operators as lack of physical activity, unhealthful diet, obesity, uncontrolled hypertension, uncontrolled Type 2 diabetes, ergonomics and back health, and stress.

Management Support

The OCTA health and wellness program was started in 1991. Located in the Human Resources and Risk Management Division, the program operates with a budget of $220,500. The current administrator, who has a master's degree in exercise science and 12 years in workplace wellness, has managed a health and wellness program for the past 5 years that emphasizes awareness activities (70%), education (20%), and behavior change (10%). An appointed wellness committee, which includes six coach operators, helps to plan and serve as advocates of program activities. Committee members are appointed by their managers and must be dynamic supporters of the program to be considered for this assignment.

Managers at OCTA actively promote participation in health and wellness activities, such as the *Learn While Lunching* health education series and stretching classes, by encouraging operators to participate and by attending sessions themselves. Some managers give employees gift certificates for participating in stretching and walking classes.

The Wellness Program

Employee Needs Assessment Survey

In an effort to design and maintain a wellness program that is relevant to employees, the wellness program conducts surveys to get input about health needs and interests. The introduction to the "OCTA Wellness: Employee Needs Assessment Survey," which is distributed agency-wide, states that:

> Your help is needed in planning our health promotion program. We need to be sure the program meets the needs of all of the employees and the expectations of management. This is just one step in our ongoing evaluation of the Wellness program. We want to provide you with information you need and the program's implementation and outcomes.

The survey includes a potential list of program topics for which employees are asked to state their preferences. Also included are lists of preferred presentation techniques and lengths for education activities, best times of day for activities, health screening in which employees would have an interest, activities in which they would most likely participate, whether they would be willing to share costs for some programs, and types of incentives that would prompt them to make healthful behavior changes. Surveys distributed to supervisors and managers also ask them to list OCTA strengths that would help make the wellness program successful, as well as challenges that should be considered in implementing the wellness program (see Appendix C).

Annual Operating Plan

The 13-page OCTA 2003 annual operating plan outlined the overall focus of the program, its goals, objectives, and activities. Program goals were to

- Assist employees and their families in making lifestyle changes to reduce health risks;
- Enhance employees' well-being and productivity through reduction in workers' compensation claims and expenses;
- Develop new and innovative strategies to reach the groups and individuals through education and information; and
- Establish a leadership role for the wellness program among the company leaders, academic institutions, and other public and professional organizations. (See Appendix C for the full 2003 operating plan.)

Health Screenings

Employees have access to a number of health screenings through the wellness program, which can help them identify risk factors for degenerative diseases, behaviors, and current physiologic measurements that may require physician referral.

Screenings include

- Chart Your Progress: measurements of height and weight as part of weight loss and exercise programs;
- Resting heart rate and blood pressure;
- Low back health screen;
- Cholesterol screening; and
- High-risk audiometric testing, performed by a specialist from the safety department.

Education Programs

Learn While Lunching *Group Education* Group health education sessions are an integral part of the OCTA program. As shown in Table 7, attendance at *Learn While Lunching* averaged 14 to 19 employees per session between 1999 and 2002. The program administrator explains that a number of factors appear to determine employee interest in a given topic, including redundancy from previous presentations on the same topic, and cancellations and rescheduling of sessions. *Learn While Lunching* sessions cover a variety of topics, ranging from those that focus on specific diseases to those on complementary health practices.

TABLE 7
SUMMARY OF OCTA *LEARN WHILE LUNCHING* ACTIVITY

Year	No. of Presentations	Total Attendance	Average per Session
2002	14	192	14
2001	13	325	19
2000	18	342	17
1999	17	291	17

Evaluations completed following the sessions held in 2002 showed that the highest-rated topics were aromatherapy, heart health, stress and anxiety, understanding allergies, skin health, and understanding diets.

Back Education Classes The wellness program offers back education classes to coach operators designed to teach them the relationships between the spine, abdomen, hips, and lower extremities. Those classes also include information on back exercises. An OCTA-produced videotape shows operators the proper techniques for managing both acute and chronic low back problems while working within the bus.

Wellness Library The wellness library is a repository of magazines, books, video- and audiotapes, brochures, and other wellness-related literature that employees can check out for a specified period of time.

Wellness Information Centers The wellness information centers provide health information monthly in a locked

display case at each OCTA site. Monthly themes include information from national health organizations such as the American Heart Association, American Cancer Society, and American Lung Association. The information centers also feature the Wellness Champion of the Quarter/Year, monthly wellness posters, and event announcements.

On-Site Fitness Facilities

Three on-site fitness facilities of approximately 850 ft^2 each are managed by contract-certified fitness professionals who staff each facility 3 to 4 h daily. These individuals must have a bachelor's degree in exercise physiology and be certified by one of the national certifying bodies, such as the American Council on Exercise or the American College of Sports Medicine.

Incentive-Based Programs

Incentives designed to encourage employee participation and to recognize efforts toward behavior change are integrated into a number of OCTA's health and wellness activities:

- Shoes and Wheels Club—This is a program designed to promote cardiovascular fitness and improve overall employee health. Using a point-reward system, the program requires employees to record their own activities—such as a physical activity, *Learn While Lunching* session, or annual bike ride—and submit log sheets to the wellness administrator each month. Employees earn Aerobucks, which can be exchanged for incentives that are included in a catalog of rewards.
- Smoking Cessation Program—Employees can participate in an approved commercial program or one that is medically supervised and receive reimbursement of up to $500 upon completion of the program.
- Weight Loss Program—Employees who participate in an approved nutritional or behavior-based program can receive a reimbursement of up to $500, with 50% of the reimbursement upon completion of the first half of the program. If weight loss, reduction in BMI, and waist-to-hip ratio are maintained after 6 months, the remainder of the reimbursement is paid.
- Wellness Champion of the Quarter—Criteria for the selection as champion of the quarter are that the employee makes a major lifestyle change—such as losing weight, implementing dietary changes, quitting smoking, and/or starting an exercise program; maintains a healthful lifestyle, which includes regular exercise and proper diet; motivates fellow employees through example or personal assistance; and participates in any of the health and wellness programs offered. Employees selected as a champion for a quarter are eligible for consideration as the Wellness Champion of the Year.

Annual Health Fair

The annual health fair, held at each OCTA worksite, features a series of self-testing stations for employees who have not undergone formal wellness testing. In addition, stations featuring health and wellness vendors focus on topics such as exercise, cardiovascular disease, sports injury prevention, smoking and tobacco cessation, a healthful eating restaurant guide, nutrition and menu planning, weight control and eating disorders, cancer, and consumer awareness. Evaluation of each health fair occurs every 2 years. Employees are asked to select the vendors they found to be most valuable and to suggest vendors they would like to see at future health fairs. Incentives are given to employees who complete evaluation surveys.

Coordination with Other OCTA Programs

The wellness program has well-established linkages with other OCTA programs that focus on employee well-being. Ergonomic issues are addressed in collaboration with safety captains who are members of the safety committee. During the OCTA health fairs, these employees demonstrate procedures, such as the proper techniques for loading and unloading a wheelchair on a transit bus. The EAP, which is managed by the benefits division, is linked through activities such as *Free & Clear*, a commercially offered smoking cessation program, and *Learn While Lunching* presentations, such as managing holiday stress and how to choose a doctor. Benefits staff also participates in health fairs. Wellness and workers' compensation staffs are linked, in part, because they are a part of the same division. Furthermore, the back education training program is of mutual interest and benefit to both functions. The transit operations department includes information about the wellness program during orientation and training classes for new operators. Employees receive brochures that describe the specifics of different program activities, benefits to the employee, and how they can participate.

Program Evaluation

External Audit of Wellness Program, 2002

In 2002, the program administrator requested an external audit of the wellness program to evaluate the status of the program in a number of key areas: overall awareness, satisfaction, and integration of program activities. The audit, which included program documentation review, site visits to each wellness facility, and 20 interviews with coach operators, and maintenance and administrative staff—as well as benchmarking of wellness programs at four other public transportation organizations with similar employee populations—produced a report of findings and recommenda-

tions. The consulting firm that conducted the audit focused on the following 10 areas:

- Management commitment,
- Program management,
- Health assessment,
- Programming,
- Exercise opportunities,
- Collaboration with other departments,
- Data and evaluation,
- Environmental support,
- Program marketing, and
- Integration.

In 1999, the audit report pointed out that the OCTA program had earned the bronze level recognition in 1999 from the Wellness Councils of America (The Bronze Award recognizes those companies that have obtained strong senior-level support, created integrated wellness teams, collected strategic organizational health data, and are delivering tailored programs to meet their company's needs)—considered by many as North America's premier resource for worksite wellness. The achievement recognizes employers that have enlisted strong senior-level support, created integrated wellness teams, collected strategic organizational health data, and are delivering tailored programs to meet the need of their company. The report also noted that the OCTA program received the 2001 Business and Industry Award from the nonprofit professional organization, Association for Worksite Health Promotion.

The audit summary identified five areas of program strength: management commitment to the program, enthusiasm and responsiveness of the program administrator, diversity and quality of wellness programs and health and fitness screenings offered, incentive and recognition programs, and organization and planning. The summary identified program challenges in three areas: the mobile work force, cultural factors—a generalized attitude toward exercise and nutrition having low priority—and the sedentary lifestyle of an aging work force.

Among audit recommendations was one to move to a more results-oriented approach with clearly stated goals and measurable objectives, based on the needs assessment of the employee population. Accompanying this recommendation was a reference to the need for quantification and tracking of data to identify program impact.

UTAH TRANSIT AUTHORITY

Background

The Utah Transit Authority (UTA) provides bus, light-rail, and paratransit services to municipalities in the Wasatch Front area of Utah. UTA has 1,700 employees; 750 are bus operators and 80 are light-rail operators. Eighty-one percent of operators are male. Synthesis survey data revealed that UTA operators have a number of primary health concerns including

- Obesity,
- Lack of physical activity,
- High cholesterol,
- Uncontrolled diabetes, and
- Uncontrolled hypertension.

Management and Union Support: Partnership in Wellness

The wellness program, located within the HR department, has been in operation since 1984, with an equal amount of focus on creating awareness of healthful lifestyles, educating employees and their families about specific health issues and approaches for addressing them, and supporting healthful behavior changes. Operating on a budget of $200,000 (excluding salaries), the program has seen participation increase substantially over the past 2 years. Throughout the program's existence, senior management has supported it through a variety of means, including formal written documents and public addresses and by providing adequate resources of budget, space, and staff to operate the program. Each department director contributes funds ($7.00 per employee) to the wellness program each month. Managers also actively promote participation in health and wellness activities.

Union support of the wellness program comes in a number of forms. For instance, union leadership has done the following:

- Communicated the importance of the program to its membership,
- Signed off on joint labor–management documents encouraging participation, and
- Participated regularly in health and wellness activities.

The joint labor–management partnership, evident in the support of the wellness program, reflects a culture of partnership outlined in *TCRP Report 77* (*3*). That report gave an account of how a strategic direction set by the UTA board of directors in 1997 has made partnering a way of doing business at the agency. A letter on the first page of the wellness program's resource guide provides an example of how partnering is a core value at UTA. The letter from UTA's chief performance officer, the local ATU president, and the wellness program administrator reads:

> Dear UTA Employee,
>
> At UTA we believe that an overall sense of well-being and a positive outlook are very important to physical and

> mental health. Prevention of illness and/or injury is important to you, your family, and our organization. We know that the challenging demands of daily life can be overwhelming and can make achieving better health a difficult task. Because we value you as an employee and person, we have developed programs and resources to help you and your family choose healthy alternatives.
>
> This booklet is designed to give you some insight into the different programs we offer in order to help you improve your physical and mental health. The UTA Wellness Program promotes preventive measures as a way to achieve this goal.
>
> We invite you to take full advantage of the variety of wellness services we offer. Our qualified and motivated staff is available to you and ready to assist you in achieving your personal wellness goals. Make a commitment to good health today; it is the best health insurance you can get.

Wellness Team

Health and wellness activities at UTA are coordinated with a number of other agency programs: EAPs, workers' compensation, employee benefits, orientation and training for new operators, ongoing training, staff meetings, division celebrations, and other activities. A joint labor–management insurance committee allows employee input into employee health insurance plans.

Operating Plan

The annual operating plan for the wellness program specifies time lines for activities, incorporates marketing strategies for effective promotion of the program, and includes a plan for evaluating stated goals and objectives. To develop a program that is relevant to UTA employee needs, program staff collects data from a number of sources.

- Health risk appraisals;
- Health screenings—blood pressure, height, weight, and cholesterol;
- Employee interest and needs survey;
- Fitness-for-duty assessments;
- Workplace facility assessment;
- Work and family needs assessment;
- Work schedule and shift assessment;
- Health care claims and utilization;
- EAP utilization;
- Absenteeism;
- Disability claims;
- Workers' compensation claims and costs;
- Operator assault records;
- Passenger-related incidents;
- Passenger satisfaction survey reports;
- Turnover records;
- Union support; and
- Organizational policy assessment.

Communication

Operators learn about program activities through program activity updates, information circulated by program staff concerning the availability of community resources, information provided about policy changes, and information sent to employees' homes. Operators have opportunities by which to communicate feedback about program activities through formal communication channels such as suggestion boxes and interest surveys.

The Wellness Program

Throughout the year, the UTA provides numerous health and wellness services to employees and their spouses, several of which are listed here:

- *Take Care of Yourself* book—this illustrated medical self-help book is given to each employee when hired.
- *Vitality* magazine—this commercially prepared magazine that includes tips on how to stay healthy, nutritious recipes, and other health promotion information is distributed monthly to all divisions.
- *Healthy UTA* Incentive Program—the *Healthy UTA* 2003 incentive brochure states that the program is designed to give employees and their spouses added incentives to improve and maintain good health and fitness habits. The program requires a free fitness evaluation upfront and is described as a

> . . . program that measures your present physical fitness and rewards you for your good health. You will receive $25.00 of each target area that you pass. If you pass all five target areas you will receive $250.00. The target areas are: Blood pressure, cholesterol, body fat percent, cardiovascular fitness and smoking status.

The brochure goes on to state that all employees are eligible to participate in the program, as well as spouses of employees who are covered by UTA-paid insurance. As a means of encouraging employees who did not receive bonus money in 2002 because they failed to meet target area standards, the program allows those individuals to qualify for a bonus for each target area in which they improve, to meet year-end goals. The brochure encourages employees who need accommodation to be able to participate to contact UTA's Americans with Disability Act compliance officer. One strategy that has increased participation in *Healthy UTA* is mailing program information to employees' homes.

- Smoking cessation contract—Employees who remain smoke free for 1 year can earn a $100 bonus. At the

beginning of the year, employees submit a written application to enter the program. At the end of the year, to receive the bonus, the employee must provide certification from a coworker that he or she has quit smoking for the required period.

- Weight loss contract—Employees who reach their recommended weight and stay within 5% of that weight for 180 days earn a $100 bonus. Employees may also receive the cost of an approved weight control program, up to $100 as well. *Weight Watchers at Work* is offered on-site at UTA at a cost of $121 per employee.
- Fit Factories—A Fit Factory, a workout area, is located at each of UTA's six facilities and is open to all employees and spouses. Although aerobic classes are offered at only one facility, employees can choose their own times to work out. Each Fit Factory is equipped with weight-training equipment, including free weights and weight machines, treadmill, stair-climbing machine, stationary bicycle, and various fitness magazines. All but one facility also has a television/videocassette recorder and cassette/radio system.
- Personal exercise program—Employees desiring a personal exercise program can have one created to meet their individual needs by one of the professional wellness staff members at one of the fitness facilities.
- Nutritional analysis and weight management—Qualified staff provides nutritional analysis and weight loss counseling to employees who want to improve the quality of their diet. Project "0" is one aspect of this program, in which employees weigh in during Thanksgiving week to determine their baseline weight. Employees who do not gain any weight during the holiday period, from Thanksgiving to New Year's Day, receive awards.
- Annual health fair—The UTA annual health fair provides health screenings such as blood pressure, vision, blood cholesterol, blood glucose levels, and prostate-specific antigen, as well as information in many other areas related to health promotion. Employees found to have an elevated blood pressure are directed to see their own physicians. If those employees have not reported back to the wellness staff about the referral outcome within 1 month, the blood pressure results are reported to management.
- Injury rehabilitation—The wellness program provides assistance to employees who need support with rehabilitation from work-related or personal injuries.
- Resource library—The wellness program provides a lending library of exercise videotapes, recipe books, and motivational tapes. Employees can check out these materials on a short-term basis.
- Sports program—UTA-sponsored sports tournaments, offered throughout the year, are an integral part of the wellness program. Employees participate in tournaments in the following sports: golf, ping-pong, volleyball, horseshoes, and mountain biking. Employees also participate in sports programs offered within the community. The agency sponsors memberships in county recreation sports teams and leagues by paying one-half of the registration fee and uniform cost for each employee. There are teams in five sports: basketball, softball, flag football, volleyball, and bowling.
- Health education—Throughout the year, the UTA offers employees health education classes. Most classes are free and include topics as varied as sleep disorders, depression, smoking cessation, and nutritional cooking.
- Discount ticket sales—Employees can purchase tickets to various productions, special events, and vacation attractions at discount prices at one UTA facility.

Program Evaluation

Evaluation of the *Healthy UTA* program outcomes is conducted annually, using data from the goals set and achieved by program participants. In 2001, a total of 891 employees participated in at least some part of the personal fitness program evaluation. Of these 325 were operators; 231 men and 94 women. Of the 891 employees, 234 had also participated in the 1997 evaluation, including 83 operators, allowing for some analysis of 5-year results. Evaluations focused on targets set in the following areas: blood pressure, body fat, cholesterol, and smoking. The most relevant measurement of the effectiveness of the program consisted of the observed changes during the 5 years. The most significant program result was that more than one-half of participants at risk for tobacco use had quit smoking.

REGIONAL TRANSPORTATION DISTRICT

Background

The Regional Transportation District (RTD) in Denver, Colorado, provides bus, light-rail, and paratransit services to a 2,410-mi^2, seven-county service area of 38 municipalities. Established as a special district by the Colorado General Assembly, RTD has approximately 2,400 employees, including 1,100 bus operators and 63 rail operators. Eighty-one percent of bus operators are male, whereas 91% of rail operators are male. Bus and rail operators at RTD experience a number of health risk factors common to operators at other transit agencies.

- Lack of physical activity,
- Unhealthful diet,
- Stress,
- Obesity, and
- Uncontrolled hypertension.

Wellness and Rehabilitation Program

The primary impetus for the health and wellness program at RTD—in operation since 1989—was a proposal made to the RTD board of directors in 1988 by the ATU local leadership. That proposal was to fund an annual physical and drug test for all employees, which local union membership referred to as a "wellness program." Research of options for implementing the board-approved program resulted in the RTD senior management team's proposing and receiving approval for an alternative, cost-effective approach to improving employee health and well-being—a comprehensive health promotion program. The current program, grounded in the framework established in 1989, has some noticeable enhancements.

Located within the HR division at RTD, with a 2003 budget of $382,239 (including salaries and benefits), the program has two complementary components: health promotion ($240,000) and on-the-job injury rehabilitation ($142,239). Staff for the program includes the program manager, who is a doctor of physical therapy; a registered physical therapist, who works in occupational injury rehabilitation; and a wellness rehabilitation technician, with a specialty in corporate wellness, and a health promotion specialist, both of whom work in the prevention and health promotion aspects of the program, known as *Hooked on Health*.

Hooked on Health

At RTD's five locations, on-site wellness centers, equipped with a variety of exercise machines, showers, and lockers, provide a centralized location for health and wellness activities. Each location has a security system that allows 24-h access through the use of an assigned access code for each employee.

Employees must submit a physician's release and RTD waiver to be eligible to use the wellness centers. The wellness staff is available by appointment to provide assistance to employees in reaching fitness goals. The centers provide services in the areas of nutrition; weight loss counseling; cholesterol, glucose, and blood pressure screening; body composition analysis; and general exercise prescription and rehabilitation.

The program's resource library is located at the Employee Development Center, the agency's largest wellness center, which also houses the rehabilitation program. This lending library of books, videotapes, audiocassettes, manuals, and magazines provides information about health, behavior, personal development, and professional development.

Summary of Hooked on Health *Services and Activities*

Hooked on Health offers a wide variety of features as follows:

- EAP—contracted no-cost counseling for all RTD employees and their families.
- Employee recreational tournaments—softball, tennis, volleyball, and golf.
- Blood drives—opportunity to donate blood at the worksite. Family members are permitted to participate.
- Health fairs—each year, various health care providers and health agents provide screenings and health counseling to employees. Flu shots are also provided at no cost to employees. Family members are permitted to participate.
- Blood pressure testing/monitoring on-site—follow-up education and counseling is available.
- Preparation for department of transportation/commercial driver's license physical—help with problems related to retaining the license.
- Blood lipid testing—cholesterol (high-density lipoprotein and low-density lipoprotein), glucose, and triglyceride levels. Education and counseling is available.
- Body composition analysis—percentage of body fat and hydration level measurements; individual cardiovascular and/or strength-training programs.
- Health education programs—healthy backs, stress management, Healthy Weighs (nutrition education program), nutrition and weight maintenance, and smoking cessation.
- Bike program—bicycles and helmets are available at each RTD facility for employee checkout and use during breaks and lunch hour.
- Post-occupational injury rehabilitation—individual programs designed to continue and/or reinforce progress gained through RTD's rehabilitation program.

All *Hooked on Health* activities and events are announced by way of posters and flyers posted at all RTD facilities throughout the year and on the RTD intranet.

Rehabilitation Program: Coordination with Legal Department

Collaborative efforts between RTD's Administration Department (HR Division) and Legal Department (Risk Management Division) have resulted in a comprehensive strategy that has reduced workers' compensation claims by nearly 50% over 3 years, representing a cost reduction of about $5.5 million.

In 2000, a software upgrade to RTD's information technology allowed the agency to better capture reliable aggregate cost data on workers' compensation. That year's data

became the baseline for improvement and indicated an aggregate workers' compensation cost of $7.7 million, with 538 claims. The per claim equivalent was $14,350.

In 2002, RTD formulated a more focused, multifaceted plan to address the workers' compensation challenge, as illustrated in Figure 10. A description of each phase of the coordinated strategy follows.

Phase 1: Fee scheduling—Medical treatment and associated physical therapy is performed, by Colorado law, under predetermined rates by a process referred to as "fee scheduling." Formerly, RTD paid a third-party administrator (TPA) to audit bills to ensure conformance with the fee schedule. Fees paid to the TPA were a percentage of the savings. An analysis of fee data determined that RTD would save further by in-sourcing the fee schedule audits. Without adding staff to risk management, the TPA function was brought in-house in February 2002. First year savings, February through December 2002, amounted to $687,000. In 2003, January through August, savings were $421,000. The former TPA would have discovered these same "savings"; however, it would have charged a 20% fee for services or $228,000 for these two yearly amounts. It cost RTD $32,000 (database access fees to a third party) to recover these savings, for a net cost reduction of $196,000.

Phase 2: In-house physical therapy—In February 2002, the RTD brought the physical therapy function in-house to better monitor and personalize prescribed treatment for workers' compensation therapy. By filling two positions with existing vacancies, RTD performed this function without increasing budgeted head count and the attendant labor costs. In the inaugural year for physical therapy, 180 patients (245 cases) were treated, at a savings of $126,000. (Billing rates to determine the savings from the in-house physical therapy are extrapolated from the fee schedule; that is, what RTD would have otherwise been charged by the external therapists.) Further savings are derived by more effective accountability of employee time for scheduled treatments. Rehabilitation visits can be verified, and employees receiving treatment while still permitted to work can return with less lost time.

Phase 3: Pre-employment medical review—The RTD funded a series of human performance evaluations, by a clinical specialist, on three positions with the most recurrent injuries, one of which was for a bus operator. This action was taken to develop a template for assessing an employee's ability to perform essential functions of the job. Such assessment, which follows the sequence of the federal department of transportation pre-employment examination, has been incorporated in the pre-employment (post-offer) process. Savings from this phase is conjectural, but it is expected that the agency is mitigating to some degree its future liability in workers' compensation. This assessment is particularly designed to identify job candidates

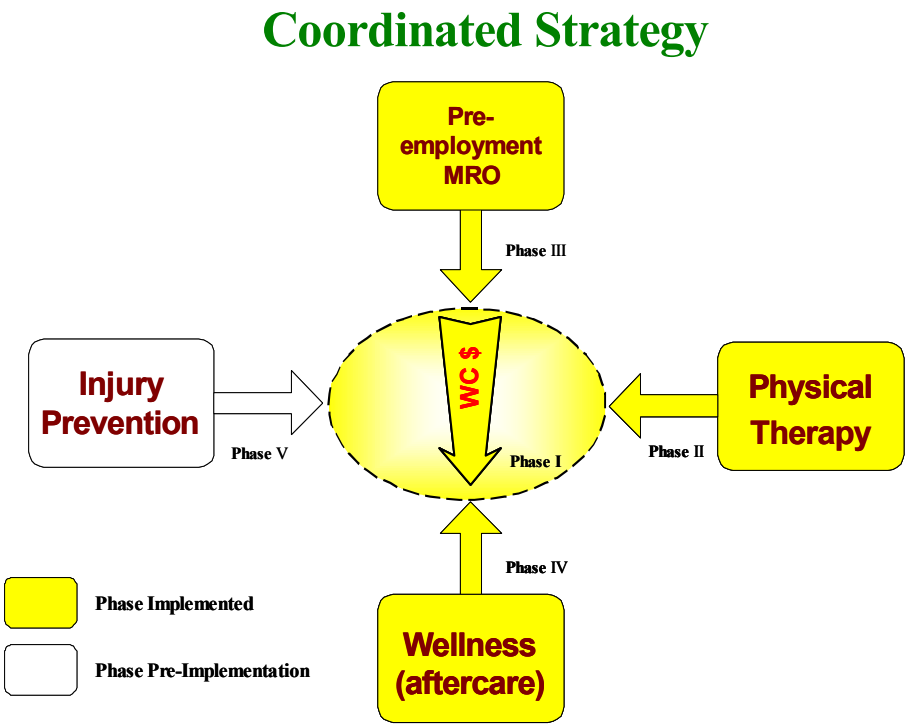


FIGURE 10 RTD coordinated strategy for reducing workers' compensation costs.
WC = workers' compensation; MRO = medical review office.

who may have pre-existing conditions which, unless thoroughly reviewed, could have an impact on one's ability to perform essential functions and potentially result in future workers' compensation claims.

Phase 4: Wellness and aftercare regimens—Data on a number of regimens targeted to the health and well-being of RTD employees, including rehabilitation aftercare, are reflected in Figure 11.

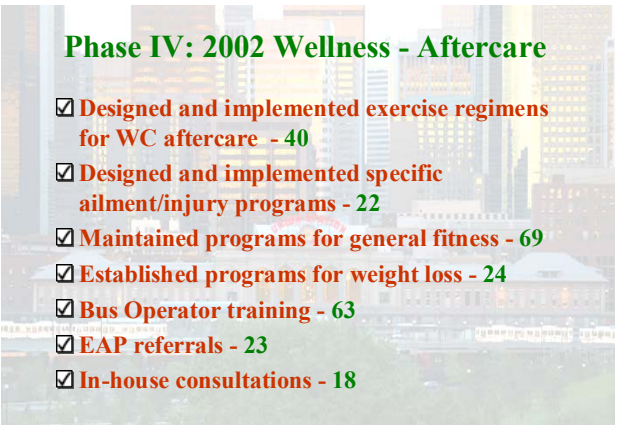


FIGURE 11 RTD wellness and aftercare data. WC = workers' compensation.

Phase 5: Injury prevention program—This program augments the safety function with a specifically tailored regimen on preventing worker injury. It is a proactive awareness and training campaign for injury prevention.

Although some measures in the combined strategy are directly quantifiable, such as the savings identified in physical therapy and fee scheduling, the combined benefits from the actions taken in each phase are positive. The per claim cost has been progressively reduced to the present level, representing a 46% reduction in workers' compensation costs, although the overall RTD employee headcount has remained the same. Cost savings are illustrated in Figure 12.

Other Program Coordination

Hooked on Health staff work with a number of other RTD units to maximize the return on investment of agency resources. The safety division coordinates ergonomic and environmental health activities with the health promotion activities. *Hooked on Health* staff teaches a portion of the training for new operators and orients those employees to the various elements and benefits of the program, including requirements for gaining access to the wellness facilities and activities.

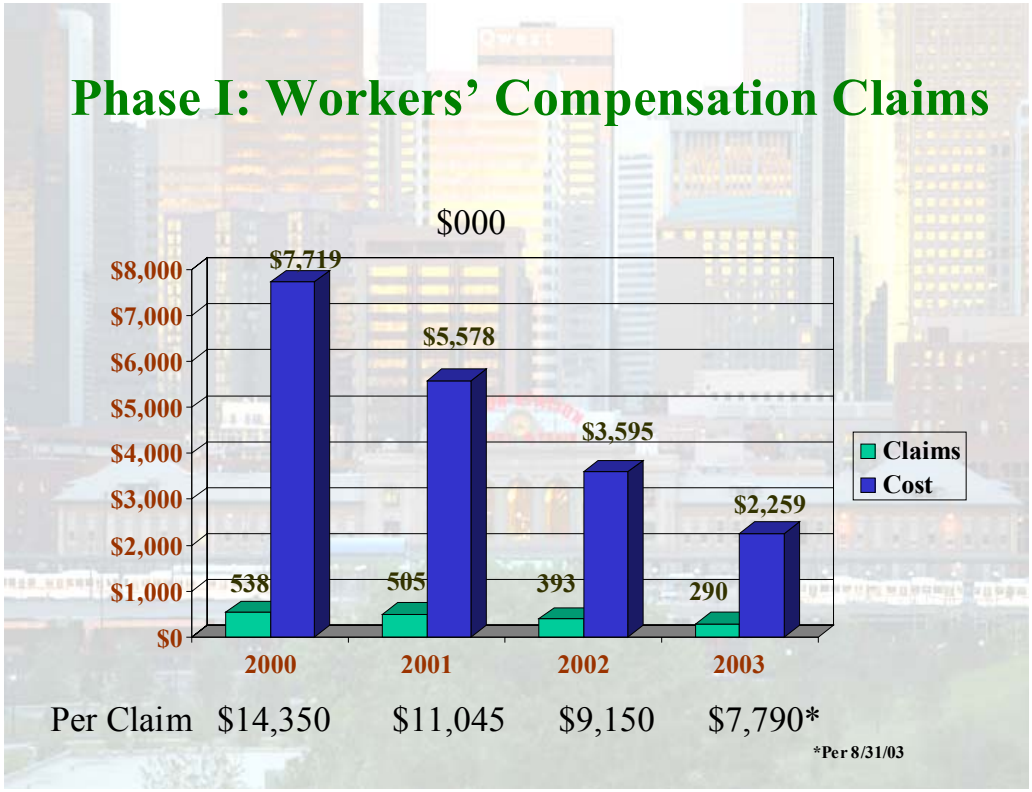


FIGURE 12 RTD workers' compensation claims cost data, 2000–2003.

Program Evaluation

The evaluation of the rehabilitation component of the program as outlined is ongoing. Evaluation of *Hooked on Health* program aspects is not active at this time.

Program Challenges

Budget constraints resulted in the discontinuance of funding of a comprehensive incentive program in 2002 that had been a core component of the *Hooked on Health* strategy since its inception. Incentives for participation in the program were outlined in the *Champions of Transit* program, which integrated employee health and wellness activities with employee community involvement. Featured as a best practice in *TCRP Report 77* (*3*), the program was highlighted as an effective means of bringing together two employee development and recognition activities as a strategic employee empowerment approach. The same budgetary impacts have also reduced administrative support for the program, which has played a major role in the reduction of program utilization data collection and analysis.

CHAPTER FIVE

CONCLUSIONS

The increasing documentation of the positive impacts of quality worksite health and wellness programs has motivated more and more employers to adopt such programs. Workplace health and wellness programs have been producing tangible and intangible benefits for some time. Some of the most frequently listed tangible benefits include reduced use of the health care system, and lower rates of injuries, absenteeism, and turnover. Some of the intangible benefits are increased productivity, elevated employee morale, and enhanced loyalty.

Health risk factors for operators have been well documented. Most, including the lack of physical activity, obesity, hypertension, stress, poor nutrition, and fatigue, are modifiable through proactive measures. Employer-sponsored health and wellness programs are one strategy for helping employees make the most effective changes. As determined from synthesis survey responses, a number of transit agencies have used health and wellness programs for more than a decade. Quite a few appear to be models that other agencies could adapt to their organizational needs. The different approaches used to design and operate these programs can provide other transit agencies with an array of options for how they might achieve their goals of having a healthier operator work force.

In most of the 14 reporting agencies, the largest percentages of resources go toward activities that create an awareness of health risks and opportunities for making long-term lifestyle changes. Often these are the least expensive resources available: brochures, posters, large group information sessions, videotapes, audiotapes and the like. Although these activities are a good starting point, once employees are at a certain level of awareness, more attention needs to be paid to moving them to activities that help them to take action to reduce their risks of illness and disability. These activities fall into the education and behavior change categories.

Most of these programs have established linkages with other departments in their organizations—a strategy that has strengthened their position and staying power. Having programs such as workers' compensation, health promotion, disability, employee assistance, and safety work collaboratively for the common purpose of maintaining a healthy work force can be a successful business strategy in transit and other industries. In one case study agency, a 14-year wellness program has evolved during the past 2 years into a health and rehabilitation program, through a coordinated strategy adopted between the human resources department and the legal department, which manages the workers' compensation function.

Transit agencies use a combination of internal and external resources to structure cost-effective health and wellness programs. One wellness coordinator of a small agency participates in a local wellness cooperative that gives employees access to programs offered by health and wellness experts in the area. Two agencies use contractors to administer the physical fitness aspects of their programs. Other agencies use a combination of vendors and nonprofit agencies to staff their health fairs. Some transit agencies provide incentives and information about external resources to encourage employees to improve physical fitness.

The six case studies demonstrated the importance of the program coordinator's enthusiasm and commitment to improving employee health and wellness. In each case, these individuals, some with formal preparation as health promotion professionals, and others without such preparation, show true zeal and passion for their mission—creating an environment in which employees can make more healthful lifestyle choices. In those cases where the coordinator has primary responsibilities in other disciplines, these individuals partner with wellness committee members, including operators, to ensure that the program message remains in the forefront. In a number of cases, active wellness committees are the lifeblood of the program. Their members serve as health and wellness advocates who energize fellow employees to begin and continue to work toward being part of a healthier work force.

Chief executive officers in a number of responding agencies have taken the lead in creating a healthy and healthful workplace culture. In these organizations, the health and wellness program is an essential component of the organizational strategy. Actions taken to communicate commitment to employee health and wellness include making reference to the need for a healthy work force in vision statements and strategic business plans. In some cases, chief executive officers are active participants in the program. Some organizations have been successful in forging labor–management partnerships that encourage employee participation and empowerment toward healthful behavior. Given the heavily unionized nature of the transit operator work force, research on the motivating and sustaining forces that make such partnerships work could be beneficial to the transit industry, especially as each group is tack-

ling the issues of rising health care costs of an aging operator population.

Although some responding agencies have made a good start at being able to quantify the results of investing in employee health and wellness, the evaluation component of the health and wellness program operation appears to be the least developed aspect of these programs. As one agency's external program audit recommended, wellness programs need to move toward a clearly articulated, results-oriented focus. If these programs have the clearly defined missions, goals, and objectives that they have indicated in their survey responses, they probably possess the framework for generating qualitative and quantitative data that can help them evaluate and communicate the value of these programs to their organization. Defining such metrics is a possible area for future research. Without strong performance indicators, health and wellness programs may become vulnerable to significant downsizing or elimination during times of diminished financial resources or leadership changes.

Future research that determines the core components for a cost-effective wellness program at any size organization might also be valuable. Research that develops a transit agency health and wellness program tool kit could be especially helpful to those agencies that need and want to know how to start and sustain a viable program.

REFERENCES

1. Volinski, J., *TCRP Synthesis of Transit Practice 33: Practices in Assuring Employee Availability,* Transportation Research Board, National Research Council, Washington, D.C., 1999, 69 pp.
2. Gertler, J., S. Popkin, D. Nelson, and K. O'Neil, *TCRP Report 81: Toolbox for Transit Operator Fatigue*, Transportation Research Board, National Research Council, Washington, D.C., 2002, 240 pp.
3. McGlothin Davis, Inc., *TCRP Report 77: Managing Transit's Workforce in the New Millennium*, Transportation Research Board, National Research Council, Washington, D.C., 2002, 154 pp.
4. Rosa, R.R. and M.J. Colligan, *Plain Language About Shiftwork,* U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Cincinnati, Ohio, July 1997.
5. Ragland, D.R., N. Krause, B.A. Greiner, and J.M. Fisher, "Studies of Health Outcomes in Transit Operators: Policy Implications of the Current Scientific Database," *Journal of Occupational Health Psychology*, Vol. 3, No. 2, April 1998, pp. 172–187.
6. *Code of Federal Regulations, Title 49CFR 391.1,* Department of Transportation, Washington, D.C. [Online]. Available: http://www.access.gpo.gov/nara/cfr/waisidx_00/49cfr391_00.html [2003, Nov. 12].
7. Tyler, K., "Sit Up Straight," *HR Magazine,* Vol. 43, No. 10, 1998, pp. 122–128.
8. Anderson, R., "The Back Pain of Bus Drivers: Prevalence in an Urban Area of California," *Spine,* Vol. 12, 1992, pp. 1481–1488.
9. Tyler, K., "Cut the Stress," *HR Magazine,* Vol. 48, No. 5, 2003, pp. 101–106.
10. NIOSH Working Group, *Stress . . . At Work,* Publication No. 99-101, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Cincinnati, Ohio, 1999.
11. Mayer, M., "Breaking Point," *HR Magazine,* Vol. 46, No. 10, 2001, pp. 111–116.
12. Atkinson, W., "When Stress Won't Go Away," *HR Magazine,* Vol. 45, No. 12, 2000, pp. 105–110.
13. Greiner, B.A., D.R. Ragland, N. Krause, S.L. Syme, and J.M. Fisher, "Objective Measurement of Occupational Stress Factors—An Example with San Francisco Urban Transit Operators," *Journal of Occupational Health Psychology,* Oct. 1997, Vol. 2, No. 4, pp. 325–342.
14. Evans, G.W. and S. Carrere, "Traffic Congestion, Perceived Control, and Psychophysiological Stress Among Urban Bus Drivers," *Journal of Applied Psychology*, Oct. 1991, Vol. 76, No. 5, pp. 658–663.
15. Yandrick, R.M., "When Getting Help Hurts," *HR Magazine,* Vol. 45, No. 4, 2000, pp. 64–72.
16. Scott, B.S., "Breaking New Ground: Public Health Takes on Workplace Violence," *Closing the Gap* (*Office of Minority Health*), Department of Health and Human Services, Rockville, Md., Jan./Feb. 2002, pp. 4–5.
17. Grensing-Pophal, L., "Smokin' in the Workplace," *HR Magazine,* Vol. 44, No. 5, 1999, pp. 58–66.
18. "Tobacco Control," American Lung Association, New York, N.Y. [Online]. Available: http://www.lungusa.org/tobacco [2003, June 19].
19. Sorensen, G., K. Emmons, A. Stoddard, L. Linnan, and J. Avrunin, "Do Social Influences Contribute to Occupational Differences in Quitting Smoking and Attitudes Toward Smoking?" *American Journal of Health Promotion,* Vol. 16, No. 3, 2002, pp. 135–141.
20. Stacy, N.C., *Americans for a Drug-Free America*, American Crisis Publishing, Austin, Tex., 2000.
21. Anderson, R., et al., *Drug and Alcohol Testing Results 2000 Annual Report,* Federal Transit Administration, U.S. Department of Transportation, Washington, D.C., 2001.
22. "Regional Transportation District Drug and Alcohol Policy," Regional Transportation District—Denver, Colo., 2003, pp. 1–16.
23. Holland, D.W., "Fatigue in America: Too Busy to Sleep?" *Wellness Management*, Vol. 18, No. 4, 2002–2003, pp. 1–3.
24. Aguirre, A., *Health & Extended Hours: Understanding the Problems, Implementing the Solutions,* Circadian Technologies, Inc., Lexington, Mass. [Online]. Available: http://www.circadian.com/catalog/product_info.php?products_id = 72 [2003, June 19].
25. Overman, S., "Rise and Sigh," *HR Magazine,* Vol. 44, No. 5, 1999, pp. 68–74.
26. Harp, J.B., "Hypertension and Heart Disease in Women: The Treatment of Obesity as a Disease," *Ethnicity and Disease,* Vol. 6, No. 3/4, 1996, pp. 315–320.
27. "Snapshot of Diabetes Fact Sheet, National Diabetes Education Program," National Business Group on Health, Washington, D.C. [Online]. Available: http://diabetesatwork.org/factsheets.htm [2003, July 3].
28. *Depression in the Workplace Survey,* Society for Human Resource Management, Alexandria, Va., 1999.
29. Tyler, K., "Happiness from a Bottle," *HR Magazine,* Vol. 47, No. 5, 2002, pp. 30–37.

30. Anspaugh, D.J., S. Hunter, and M. Dignan, "Risk Factors for Cardiovascular Disease Among Exercising Versus Nonexercising Women," *American Journal of Health Promotion,* Vol. 10, No. 3, 1996, pp. 171–174.
31. Yunis, C., "Hypertension and Heart Disease in Women," *Ethnicity and Disease,* Vol. 6, No. 3/4, 1996, pp. 311–314.
32. West, J.I., "Hypertension a Silent, Deadly Killer," *Closing the Gap* (*U.S. Office of Minority Health*), Department of Health and Human Services, Rockville, Md., Sep./Oct. 2001, pp. 10–11.
33. Higgins, M., *Coronary Heart Disease in Women: Epidemiology and Prevention, National Wellness Conference Program Resource Manual*, Stevens Point, Wisc., 1995, pp. 250–251.
34. *Workplace Visions: Health Care*, No. 2-2002, Society for Human Resource Management, Alexandria, Va., 2002.
35. Gale, S.F., "Selling Health to High-Risk Workers," *Workforce*, Vol. 81, No. 12, 2002, pp. 74–76.
36. *Worksite Wellness Cost/Benefit 1996 Report*, Vol. 8, The University of Michigan Health Management Research Center, Ann Arbor, Mich., 1997, pp. 1–3.
37. "Award-Winning DaimlerChrysler/UAW Worksite Wellness Program Reduces Health Care Costs," *Wellness Management,* Vol. 17, No. 1, 2001, pp. 11–13.
38. "Study Confirms Wellness Program Value," *Health Promotion Practitioner,* Vol. 11, No. 3, 2002, p. 12.
39. "Benefit Integration Boosts Productivity and Profits," Workforce.Com, Nov. 2002 [Online]. Available: http://www.workforce.com/section/02/feature/23/36/89/index.html [2003, Jan. 16].
40. Morris, W.R., K.M. Conrad, R.J. Marcantonio, B.A. Marks, and K.M. Ribisl, "Do Blue-Collar Workers Perceive the Worksite Health Climate Differently Than White-Collar Workers?" *American Journal of Health Promotion,* Vol. 13, No. 6, 1999, pp. 319–324.
41. Fouad, M.N., C. Kiefe, A.A. Bartolucci, N.M. Burst, V. Ulene, and M.R. Harvey, "A Hypertension Control Program Tailored to Unskilled and Minority Workers," *Ethnicity and Disease,* Vol. 7, No. 3, 1997, pp. 191–199.
42. Grossman, R.J., "Make Ergonomics Go," *HR Magazine,* Vol. 45, No. 4, 2000, pp. 36–42.
43. You, H., B. Osterling, J. Bucciaglia, B. Lowe, B. Gilmore, and A. Freivalds, *TCRP Report 25: Bus Operator Workstation Evaluation and Design Guidelines*, Transportation Research Board, National Research Council, Washington, D.C., 1997, 27 pp.
44. Halvorson, K., "Exercise Boosts Employee Job Performance," *Health Promotion Practitioner,* Vol. 11, No. 3, 2002, p. 8.
45. Borillo, D.J., "The HIMS Program—Tools for Recovery from Alcoholism," *The Federal Air Surgeon's Medical Bulletin,* Spring 2003 [Online]. Available: http://www.cami.jccbi.gov/AAM-400A/FASMB/Editorials/2003_1.htm [2003, Nov. 4].
46. Atkinson, W., "Disease Management: A Win–Win Game Plan," *HR Magazine,* Vol. 46, No. 12, 2001, pp. 58–63.
47. Atkinson, W., "Making Disease Management Work," *HR Magazine,* Vol. 47, No. 1, 2002, pp. 42–45.
48. Woodward, M.H., "Add a Refreshing Touch to Benefit Programs," *HR Magazine,* Vol. 43, No. 11, 1998, pp. 106–110.
49. Benedict, S. and I. Tessaro, "Health Works for Women: Using Natural (Lay) Helper Program in the Workplace," *Wellness Management,* Vol. 15, No. 2, 1999, pp. 6–7.
50. Stevens, M.M., A. Paine-Andrews, and V.T. Francisco, "Improving Employee Health and Wellness: A Pilot Study of the Employee-Driven Perfect Health Program," *American Journal of Health Promotion,* Vol. 11, No. 1, 1996, pp. 12–14.

BIBLIOGRAPHY

Abresch, C., C. Johnson, and B. Abresch, *The Well Workplace Field Manual—A Step-by-Step Guide for the Busy Wellness Practitioner*, Wellness Councils of America, Omaha, Neb., 2000.

"A Healthier Bottom Line . . . Now at Your Fingertips," American Heart Association, Dallas, Tex. [Online]. Available: http://216.185.102.50/haw/ [2003, June 29].

Andersen, R.E., T.A. Wadden, S.J. Bartlett, B. Zemel, T.J. Verde, and S.C. Franckowiak, "Effects of Lifestyle Activity vs. Structured Aerobic Exercise in Obese Women: A Randomized Trial," *Journal of the American Medical Association,* Vol. 281, No. 4, 1999, pp. 335–340.

Davis, M., "Wellness Programming for Working Women: Partnerships That Pay," *Wellness Management,* Vol. 16, No. 4, 2000, pp. 3–4.

Davis, M., "Using the Spiral Model of Change to Gain Multicultural Competency," *Wellness Management,* Vol. 15, No. 1, 2000, p. 7.

Dunn, A.L., B.H. Marcus, J.B. Kampert, M.E. Garcia, H.W. Kohl III, and S.N. Blairet, "Comparison of Lifestyle and Structured Interventions to Increase Physical Activity and Cardiorespiratory Fitness: A Randomized Trial," *Journal of the American Medical Association,* Vol. 281, No. 4, 1999, pp. 327–334.

Eddy, J.M., et al., "The Impact of Worksite-Based Safety Belt Programs: A Review of Literature," *American Journal of Health Promotion,* Vol. 11, No. 4, 1997, pp. 281–289.

Elam-Floyd, C., "Dealing with the 'Head Shed' Mentality: Physical and Mental Barriers to Blue Collar Wellness Programming," *Wellness Management,* Vol. 13, No. 1, 1997, pp. 8–9.

Environmental and Occupational Risk Management, "(OCTA) Health and Wellness Program Quality Audit Findings," EORM Document No. 602024-1, Newport Beach, Calif., May 10, 2002.

Elements of Ergonomics Programs: A Primer Based On Workplace Evaluations of Musculoskeletal Disorders, National Institute for Occupational Safety and Health, Washington, D.C., 2003.

"Health Care," *Workplace Visions,* No. 2, 2002, pp. 1–8.

Jaffee, L., J.M. Lutter, J. Rex, C. Hawkes, and P. Bucaccio, "Incentives and Barriers to Physical Activity for Working Women," *American Journal of Health Promotion,* Vol. 13, No. 4, 1999, pp. 215–218.

Kobliner, B., "A New Health Plan Works, at Least for the Healthy," *The New York Times,* Mar. 2, 2003 [Online]. Available: http://www.nytimes.com/2003/03/02/business/yourmoney/02MEDS.html?pagewanted=prin [2003, Mar. 3].

O'Donnell, M.P., C.A. Bishop, and K.L. Kaplan, "Benchmarking Best Practices in Workplace Health Promotion," *The Art of Health Promotion*, Vol. 1, No. 1, 1997, pp. 1–8.

Ragland, D.R., et al., "Prevalence of Hypertension in Bus Drivers," *International Journal of Epidemiology,* Vol. 16, No. 2, 1987, p. 214.

Riedel, J.E., W. Lynch, C. Baase, P. Hymel, and K.W. Peterson, "The Effect of Disease Prevention and Health Promotion on Workplace Productivity: A Literature Review," *American Journal of Health Promotion,* Vol. 15, No. 3, 2001, pp. 167–191.

WELCOA, "A Workplace Wellness Checklist," Workforce.com, Wellness Councils of America, Omaha, Neb. [Online]. Available: http://www.workforce.com/section/02/feature/23/37/05/233710.html [2002, Dec. 22].

Wilson, M.G., et al., "Health Promotion Programs in Small Worksites: Results of a National Survey," *American Journal of Health Promotion,* Vol. 13, No. 6, 1999, pp. 358–365.

Winkleby, M.A., "Excess Risk of Sickness and Disease in Bus Drivers: A Review and Synthesis of Epidemiological Studies," *International Journal of Epidemiology,* Vol. 17, No. 2, 1988, pp. 255–262.

GLOSSARY

Cardiovascular diseases—Diseases pertaining to the heart and blood vessels.

Diabetes (mellitus)—Chronic metabolic disease in which the body does not produce or properly use insulin, the hormone that is needed to convert sugar, starches, and other food into energy.

Disease management—According to the Disease Management Association of America, disease management is a system of coordinated healthcare interventions and communications for populations with conditions in which patient self-care efforts are significant. Disease management supports the physician–patient relationship and plan of care, emphasizes prevention of reoccurrences and complications, and evaluates treatment outcomes on an ongoing basis.

Health—According to the World Health Organization, health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Health and wellness program—For the purposes of this synthesis, a planned series of ongoing activities to improve the health and well-being of transit operations.

Health risk—A factor that can cause the progression of a disease to be more or less rapid. Risk factors do not cause diseases. They affect the rate of development of the disease.

Health risk appraisal/assessment—Measurement of a person's health risks at a given time.

Health screenings—Activities that include measurement of blood pressure, blood lipid levels, height and weight, and body fat.

Wellness—According to the National Wellness Institute (NWI), wellness is an active process of becoming aware and making choices toward a more successful existence. The NWI definition of wellness includes six dimensions: (1) physical, fitness, nutrition; (2) spiritual, values, ethics; (3) intellectual; (4) social, family, community, environmental; (5) emotional; and (6) occupational, vocational.

APPENDIX A

Survey Questionnaire

TRANSIT COOPERATIVE RESEARCH PROGRAM

Synthesis Project J-7, Topic SF-11

TRANSIT OPERATOR HEALTH AND WELLNESS PROGRAMS

Survey Questionnaire: Health and Wellness Program Manager

Purpose: The objective of this synthesis is to document current information on prevention and intervention strategies and resources that can be used by transit agencies to proactively address operator health and wellness issues. The synthesis will survey transit agency and other applicable industry experience with employee health and wellness programs. For the purpose of this study, a health and wellness program is defined as *a series of ongoing planned activities designed to improve the health and well-being of transit operators.*

Special Note: Some responses may require consultation with other departments in your agency. All survey responses will be kept confidential and will be presented in an aggregate format. Please call the number provided at the bottom of this page if you have any questions concerning either the survey questions or the confidentiality of your responses. The final results will be summarized in a report that will be available from the Transportation Research Board (TRB).

Submission Instructions

Please complete this survey by Friday, March 14, 2003 and fax (303.371.4776) or mail to:

Mary J. Davis, Ph.D.
McGlothin Davis, Inc.
P.O. Box 390774
Denver, CO 80239

Telephone Survey Interview: If you would prefer to complete the survey by telephone interview, call 303.371.4192.

Name of Agency: _____

Address: _____

Person Completing Survey: _____

Title/Department: _____

Phone: _____ Fax: _____ E-mail: _____

Agency Website: _____

GENERAL INFORMATION

1. What type of legal structure best describes your agency?

   a. City/county agency
   b. Special transit authority/district
   c. Private firm
   d. Other (please specify) _____

2. How many transit operators does your agency employ, by type?

   a. Bus _____
   b. Rail _____

3. Demographic make-up of operator workforce:

Vehicle type	Gender (% male/female)	Ethnic breakdown (% by EEO codes)	Average length of service
Bus			
Rail			

4. How long has your health and wellness program been in place? _____

5. In what department(s) is your health and wellness program located?

   a. Operations _____
   b. Human resources _____
   c. Medical/occupational health _____
   d. Health promotion _____
   e. Safety _____
   f. Other (please specify) _____

6. List below the primary health risk factors for operators at your agency, in order of priority (e.g., obesity, lack of physical activity, drug/alcohol use, unhealthy diet, stress, uncontrolled hypertension, etc.). _____

   _____

7. To the left of each category of health and wellness activity listed below, estimate the percentage of your total resources you allocate to each.

   a. _____ Awareness: Encourage operators to consider healthy lifestyle changes.
   b. _____ Education: Teach operators how to make changes to reduce risk factors or to address specific conditions.
   c. _____ Behavior change: Give operators the tools and support needed to improve health and wellness for the long term.

8. Which statement(s) best describe(s) the reason your organization started a health and wellness program? (circle all that apply)

   a. To reduce health care costs
   b. To reduce occupational injury
   c. To respond to operators' requests
   d. To improve morale
   e. To meet operators' requests
   f. To improve recruitment/retention
   g. To enhance productivity
   h. To reduce absenteeism
   i. To comply with statutory requirements
   j. Other (please explain) _____

   _____

9. Are fitness-for-duty evaluations included in the operator health and wellness program? If so, how and when are they conducted and how and where are records kept regarding the outcomes of these evaluations? _____

   _____

10. What is the approximate budget for your health and wellness program? _____

11. Overall, how have participation rates in your health and wellness program changed over the past two years?

    a. Remained about the same _____
    b. Increased modestly _____
    c. Increased substantially _____
    d. Decreased modestly _____
    e. Decreased substantially _____
    f. Does not apply, we are just getting started _____

MANAGEMENT SUPPORT FOR HEALTH AND WELLNESS PROGRAM

12. Support for our health and wellness program is demonstrated by the fact that (circle all that apply): Feel free to comment on any of these items or add additional ones.

    a. Our CEO has communicated the importance of employee health and wellness to all employees (e.g., formal written memo/bulletin, incorporated into employee orientation, public addresses).
    b. A statement concerning employee health and wellness has been incorporated into the agency's mission/vision statement(s).
    c. The agency has employed an individual to lead the program.
    d. The agency has formally appointed an individual or individuals to lead the program.
    e. The agency has formally appointed a committee(s) to lead or support the program.
    f. Management allocates adequate resources for the program (budget, space, etc.).
    g. Managers actively promote participation in health and wellness activities.

UNION SUPPORT FOR HEALTH AND WELLNESS PROGRAM

13. Union support for our health and wellness program is demonstrated by the fact that (circle all that apply): Feel free to comment on any of these items or add additional ones.

    a. Union leaders have communicated the importance of employee health and wellness to its (their) membership (e.g., formal written memo/bulletin, incorporated into newsletters, public addresses).

    b. Union leaders are members of the committee that leads or supports the health and wellness program.
    c. Union leaders have signed off on joint labor–management documents encouraging members to participate in health and wellness activities.
    d. Union leaders have proposed specific health and wellness provisions during collective bargaining.
    e. Union leaders regularly participate in health and wellness activities.
    f. Union leaders have identified or contributed resources for enhancing the health and wellness activities.

HEALTH AND WELLNESS TEAM

14. Integration of the health and wellness program in our agency is demonstrated by the fact that (circle all that apply):

    a. A health and wellness committee that includes transit operators, union leaders, managers, and representatives from other key departments meets regularly.
    b. A health and wellness committee with membership other than positions listed in item "a" meets regularly.
    c. The health and wellness committee has developed a mission/vision statement, established strategic priorities, and defined individual roles and responsibilities.
    d. Proceedings of the health and wellness committee meetings are communicated to operators and their managers.
    e. Health and wellness committee members serve as health and wellness advocates at their worksites.
    f. Health and wellness activities are coordinated with safety programs.
    g. Health and wellness activities are coordinated with the employee assistance program.
    h. Health and wellness activities are coordinated with the drug and alcohol testing program.
    i. Health and wellness activities are coordinated with the workers' compensation program.
    j. Health and wellness activities are coordinated with food services.
    k. Health and wellness activities are coordinated with the employee benefits program.
    l. Health and wellness information is integrated into new operator orientation and/or training program(s).
    m. Other (please specify other ways that integration occurs in your agency): _____

    _____

    _____

DATA GATHERING AND ANALYSIS

15. The following data have been collected and analyzed within the last (place checks in the appropriate columns):

	Number of months				Have not collected
DATA SOURCE	12	24	36	48	
Health risk appraisal					
Health screening: e.g., • blood pressure • height • weight • cholesterol testing, etc.					
Employee health and wellness needs/interest surveys					
Demographic information of operators/ dependents					
Fitness-for-duty assessments					
Work/family needs assessment					
Ergonomic/workstation analysis					
Workplace facility assessment					
Line restroom facility assessment					
Work schedule/shift assignment assessments					
Health care claims and utilization					
Employee assistance program utilization					
Absenteeism records					
Disability claims/costs					
Worker compensation claims/costs					
Operator assault records					
Passenger-related incident reports					
Passenger satisfaction survey reports					
Turnover records					
Job satisfaction audit/survey					
Union support					
Organizational policy assessment					
Other:					
Other:					
Other:					

ANNUAL OPERATING PLAN

16. In order to provide focus and clarity to our health and wellness program we (circle all that apply):

a. Prepared an operating plan that addresses health and wellness needs and interests of operators.
b. Established clear, measurable program goals and objectives.
c. Linked our health and wellness goals and objectives to the organization's strategic priorities.
d. Specified time lines in the plan for when activities/tasks are to be completed.
e. Assigned specific responsibilities to an individual or group for the completion of tasks.
f. Allocated an itemized budget sufficient to carry out the plan.
g. Incorporated appropriate marketing strategies to effectively promote and communicate programs to transit operators.
h. Developed a plan for evaluating the stated goals and objectives.

COMMUNICATION

17. To keep all operators informed we regularly (circle all that apply):

    a. Provide program activity updates.
    b. Circulate information concerning the availability of community resources (e.g., child care, elder care, parks, etc.).
    c. Communicate changes in policy and benefit options.
    d. Distribute reminders to operators and their families concerning upcoming activities and events.
    e. Encourage ongoing dialogue by providing opportunities for operator input into line activities such as work assignment/schedule design, accident and incident prevention, etc.
    f. Provide timely feedback to operators on how their input is used.
    g. Give operators opportunities to communicate feedback through formal communication channels (e.g., suggestion boxes, e-mail, surveys, etc.).

ORGANIZATIONAL ENVIRONMENT

18. In order to provide a supportive organizational environment we (circle all that apply):

    a. Provide operators with release time to participate in health and wellness activities.
    b. Promote responsible disability prevention and management (e.g., early return to work, restricted duty, etc.).
    c. Reimburse operators for health club memberships and/or other wellness activities.
    d. Provide incentives to encourage operators to participate in health and wellness activities.
    e. Offer operators peer support groups and mentoring opportunities.
    f. Make healthy food options available in our vending machines, snack shops, and cafeterias.
    g. Ensure that all vehicles are maintained in ergonomically sound condition.
    h. Monitor our facilities' heating, lighting, ventilation, and overall safety.
    i. Maintain an easily accessible health and wellness library.
    j. Offer assistance to help operators address issues of work/life balance.
    k. Recognize and reward operator successes.
    l. Provide operators the following benefit options:
        1) Health insurance
        2) Disability
        3) Life insurance
        4) Sick leave/well days off
        5) Leave of absence
        6) Compensatory time off
        7) Vacation
        8) Flex time
        9) Child care
        10) Dependent care flexible spending accounts
        11) Reimbursement for fee-based health and wellness program activities
        12) Retirement/investment plan
        13) Tuition reimbursement
        14) Job training or reimbursement
        15) Employee assistance program
        16) Others (please list): _____

        _____

19. In order to provide a supportive organizational environment we have the following policies (check all that apply):

    a. Smoke-free workplace
    b. Tobacco restrictions
    c. Seatbelt/safe driving practices
    d. Alcohol/drug use
    e. Healthy food options

f. Emergency procedures
Others (please list_____

_____

20. To address the health and wellness needs and interests of transit operators, our agency has offered the following activities in the last 24 months (check all columns that apply):

Activity Formats:						
Activities Offered	Health Information	Group Education	Self-Study	Computer Based/Inter/ Intranet	Individual Counseling	Ongoing Behavior Change
Physical activity						
Smoking cessation						
Nutrition						
Weight management						
Cardiovascular disease prevention						
Medication management (prescription & OTC)						
Responsible alcohol use						
Stress management						
Medical self-care						
Work & family education						
Threat assessment and management						
Infectious disease exposure precautions						
Fatigue awareness						
Mental health						
Personal financial management						
Ergonomics (e.g., adjustments, devices, posture and body mechanics)						
Disease management; e.g., • Diabetes • Hypertension • Musculoskeletal disorders • Cancer						
Flu shots						
Allergy shots						
Nicotine prescriptions						
Other						

21. We include the following activities/resources in our health and wellness program (circle all that apply):

a. Health fairs
b. Blood drives
c. Walking/running paths
d. Walking/running clubs
e. Community runs/bike and walk-a-thons
f. Onsite fitness facilities
g. Volunteer activities
h. Wellness brochures/poster displays
i. Health and wellness challenges/competition

j. Exercise classes
k. Alternative/complementary health classes/demonstrations
l. Chair massages
m. Spiritual counseling
n. Meditation/nap rooms
o. Lactation rooms
p. Bike storage facilities
q. Lockers/showers
r. Linkages with community resources (heart, diabetes, cancer associations, fire departments, health departments, fitness clubs, health food stores, etc.)

22. Of the activities listed in 20 and 21, place an "F" to the right of those in which the operators' family members can participate.

PROGRAM EVALUATION

23. We evaluate health and wellness program activities in the following ways (circle all that apply):

a. Regularly tracking participation
b. Monitoring participant satisfaction
c. Documenting improvements in operator knowledge, attitudes, skills, and behaviors
d. Assessing changes in biometric measures (e.g., body weight, strength, flexibility, cholesterol levels, blood pressure, etc.)
e. Assessing and monitoring the health status of "at-risk" operators
f. Measuring changes in both the physical and cultural environment (e.g., policies, benefits, working conditions, etc.)
g. Monitoring the impact of wellness on key productivity indicators (e.g., absenteeism, turnover, morale, etc.)
h. Analyzing cost-effectiveness, cost savings, and return on investment

CONTACT REQUEST

Please provide the names, titles, and telephone numbers of individuals in your organization whom you would suggest we contact about any aspect of this questionnaire (identify area of expertise/information).

_____

_____

_____

DOCUMENT REQUEST

Please provide the following with your completed survey:

1. Document(s) that describe(s) your program mission and annual health and wellness program activities.
2. Organization chart that shows the placement of the health and wellness program in your agency.
3. Staffing pattern for the health and wellness program; i.e., types and numbers of staff positions (health educators, nurses, doctors, safety experts, exercise physiologists, etc.).
4. Two examples of communications sent to employees about health and wellness activities.
5. Recent evaluation reports related to health and wellness program.
6. Reports of research studies your agency has conducted or participated in, related to transit operator health and wellness (or contact information for principal investigators of these studies).

APPENDIX B

Roster of Responding Agencies

No.	Name of Transit Agency	Location
1.	Metropolitan Transportation Authority (MTA) New York	Brooklyn, NY
2.	Utah Transit Authority (UTA)	Salt Lake City, UT
3.	San Francisco Bay Area Rapid Transit (BART)	Oakland, CA
4.	Regional Transportation District (RTD)	Denver, CO
5.	Orange County Transportation Authority (OCTA)	Orange, CA
6.	Metro	St. Louis, MO
7.	Omnitrans	San Bernardino, CA
8.	Pierce Transit (PT)	Lakewood, WA
9.	Rock Island County Metropolitan Mass Transit District/MetroLINK	Rock Island, IL
10.	Valley Transportation Authority	San Jose, CA
11.	Los Angeles County Metropolitan Transportation Authority (MTA)	Los Angeles, CA
12.	Central Florida Transportation Authority (LYNX)	Orlando, FL
13.	San Francisco Municipal Railway (Muni)	San Francisco, CA
14.	Central Contra Costa Transit	Concord, CA

APPENDIX C

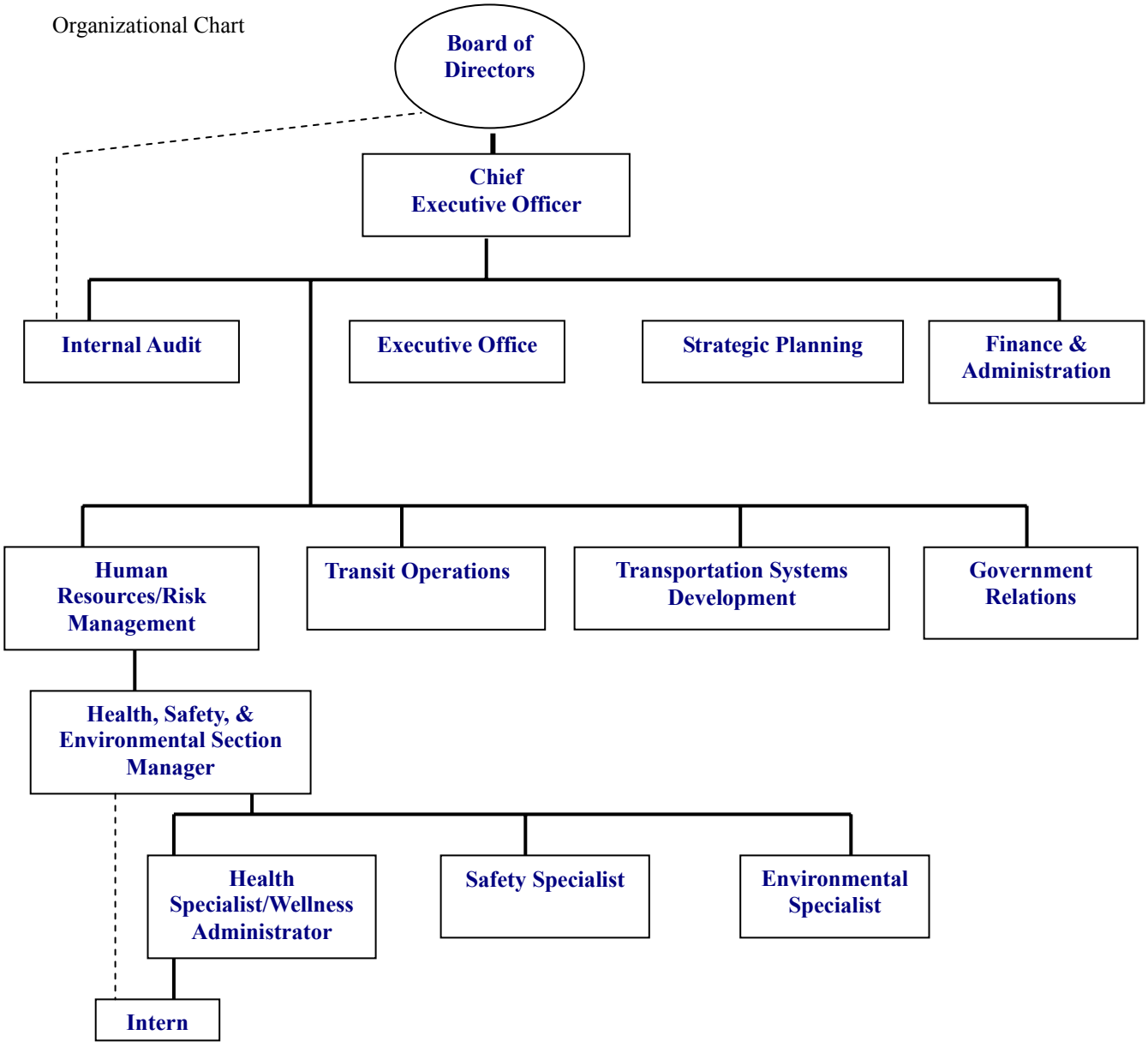
Documents Submitted by Case Study Agencies

ORANGE COUNTY TRANSPORTATION AUTHORITY (OCTA) WELLNESS PROGRAM OPERATING PLAN—2003

OCTA Mission is to create, coordinate, finance, and deliver an easy-to-use transportation network that keeps Orange County moving and meets the public's need.

OCTA Wellness Program Mission is to create an environment of preventative health-related activities to motivate and assist the employees in their efforts to maintain good health, enhance their quality of life both at home and on the job in an effort to help OCTA meet its leadership vision to the County.

Organizational Chart



OPERATING PLAN

Healthy employees are essential to the success of the Orange County Transportation Authority (OCTA). Healthy and productive employees can help us to achieve a competitive edge and offer excellent customer service through higher productivity, fewer absences, and lower health care costs. Employees are responsible for their own health. OCTA's Wellness Program assists the employees in attaining optimum levels of physical and mental well-being. OCTA's Wellness Program provides employees with the tools and resources to assist in improving their total well-being. The Wellness Program is designed to motivate the employee to practice healthier lifestyles. The Wellness Program has a heavy emphasis on primary prevention while focusing on exercise, nutrition, weight management, tobacco use, and cardiovascular disease detection and prevention. It is the goal of the Wellness Program to provide innovative and cost-effective wellness programming using an integrated multi-behavioral approach. The Program strives to provide health care systems and service that are state-of-the-art and that are specifically designed to meet the needs of the employees of the OCTA. We are committed to the concept of wellness in the workplace and have the flexibility and desire to work with employees with unusual needs. Within OCTA the Wellness Program strives to create a wellness philosophy and not just offer a series of wellness services. It recognizes management's belief in wellness in the workplace and attempts to institute an ongoing plan to create an environment that is supportive of the worker's health, wellness, and safety.

The Program uses group education for workshops, support groups in the forms of lunchtime brown bag workshops, and wellness seminars such as stress management and personal safety. The current model of the Wellness Program stands alone; as such it is not linked to other employee health-related functions. Evaluations of the program are conducted after incentive programs, year end for all of the topics presented for the Learn While Lunching in addition to randomly evaluating an individual session.

Program Goals and Objectives

- Assist employees and their families in making lifestyle behavior changes to reduce health risks.

  1. Promote blood pressure awareness in the month of February, in conjunction with American Heart Month. Conduct blood pressure screenings at each location and provide health education materials to borderline hypertensives and at-risk individuals on an ongoing basis.
  2. Promote men's health issues during the month of June. The educational series and promotional materials will focus on PSA screening, testicular cancer, and the importance of yearly health exams for all ages.
  3. Promote cholesterol awareness through educational materials and screenings during the month of September. Conduct Cholestech screening on a quarterly basis in the Fit for Life Centers.
  4. Promote diabetes awareness and screening through educational materials in the month of November.
  5. Offer stress management seminars to promote the link between managing your lifestyle and health.
  6. Publish and distribute monthly informational newsletters emphasizing Healthy Employee of the Quarter, Shoes and Wheels, and fitness center operations.

- Enhance employee's well-being and productivity through reduction of workers' compensation claims and expenses.

  1. Inform the employee of healthy lifestyles, nutrition, and back health education during Annual Required Training (ART) and/or Student Coach Operator Training (SCOT) of the coach operators.
  2. Implement and maintain the back education program
     a. OCTA will contract initial screening of new hires for coach operators to determine baseline low back strength.
     b. Backsafe/Sitting Safe—back stretching and strengthening program and education program presented in a two-hour format emphasizing the importance of stretching, stress management, and proper body mechanics. This program will be offered in three stages, 2001–02 all Coach Operators trained during ART, 2002–03 SCOT training, 2004 SCOT training, and 2005 ART.
     c. Back health education—a one-hour training session designed to inform individuals of the importance of exercise and nutrition to help maintain a healthy back and discuss the pros and cons regarding back belts. All individuals desiring to wear a back belt to perform their duties within the maintenance operations must attend the program.
     d. Conduct workstation evaluations at all levels of operations.
     e. Perform fitness center screenings, equipment orientations, and design exercise programs. A contract vendor will provide the service.

- Develop new and innovative strategies to reach the groups and individuals identified with health education information.

  1. Conduct yearly health fairs at each company location.
  2. Provide a newsletter geared specifically to OCTA Wellness Programs on a monthly basis.

3. Provide a newsletter/information magazine that will address a variety of health, stress, work/family life, and money strategies via the intranet.
4. Develop educational materials and brochures that will update and advertise the programs offered by Wellness.

- Establish a leadership role for the OCTA Wellness Program among the company leaders, academic institutions, and other public and professional organizations.

1. Participate as a member in organizations that develop worksite health promotion such as Orange County Wellness Coalition, Wellness Council of America (WELCOA), and other local worksite organizations.
2. Identify opportunities to combine company products and services with health promotion projects such as ART training, Employee Recreation Association (ERA) functions, and safety training.

WELLNESS PROGRAM ELEMENTS—PROMOTION AND AWARENESS

Wellness Information Center

The Wellness Information Center provides health information in a highly visible, professional format that is maintained on a monthly basis and placed in special, locked glass-encased display cases at each site. Monthly themes are featured using information from national health organizations such as the American Heart Association, American Lung Association, American Cancer Society, etc. The Wellness Information Center features recognition for the Healthy Employee of the Quarter/Year, monthly Wellness poster, event announcements, Shoes and Wheels Points bulletin.

Monthly Wellness Posters

One full-color Health and Wellness poster is provided each month for each site for a period of one year. Every effort is made to follow existing national calendar events. National health organizations and professional publishers will be used as the source for all posters. The poster is located in the Wellness Information Center.

Wellness Brochures

A series of full-color, Health and Wellness brochures, created by Krames/Staywell Communications, Hope Publications, American Heart Association, etc., are displayed in the location of each Wellness Information Center. The following is a partial list of the topics available:

- Alcoholism, Job Safety, and Performance
- Skin Health
- New Habits for Health
- Is Your Home Safe for You
- Aerobic Exercise
- Nutrition
- Blood Pressure Control
- End the Smoking Affair
- Cholesterol Control
- Diabetes
- Weight Control/Healthy Dining
- Managing Stress
- Colorectal Health
- Testicular/Breast Self-Examination

Healthy Employee of the Quarter/Year

Employees from Administration, Operations, and Maintenance are recognized on a quarterly basis as Healthy Employee of the Quarter. The criteria for Healthy Employee of the Quarter are:

- A major health/fitness lifestyle change such as losing weight, dietary changes, quitting smoking, and/or starting an exercise program.
- Maintaining a healthy lifestyle that includes regular exercise and proper diet.
- Motivating other employees through example or personal assistance to make healthy lifestyle changes.
- Participating in any of the numerous programs offered through OCTA Wellness.

These employees are recognized by their base management and Wellness with their name placed on a plaque located in the Wellness Information Center. At the end of the fiscal year, a banquet is held honoring the 12 healthy employees. From the 12 yearly recipients, the healthy employee for the year is selected for each division. These individuals are recognized with a suitable gift and names and photos are posted on the intranet, Wellness Information Center, and *Between the Lines* (company newsletter).

Annual Health Fair

An annual Health Fair is held at each OCTA site. The staff of Wellness and the Wellness Team leaders staff the fair. Displays and information will be designed to recapture the interest of employees and to provide additional motivation to become involved in a healthier lifestyle. A series of self-testing stations are provided for those employees who to date have avoided more formal Wellness testing.

Exercise	Low Back Syndrome
Risk Factors for Disease	Cancer
Cardiovascular Disease	Smoking/Tobacco Product Cessation
Sports Injury Prevention	Healthy Eating Restaurant Guide
Hypertension	Nutrition/Menu Planning
Breast/Prostate/Testicular Cancer	Weight Control/Eating Disorders

Consumer Awareness/ Accidents

Every two years each location's health fair is evaluated. Employees are asked to select what vendors were most favorable, as well as what vendors they would like to see at future health fairs. To help ensure participation, incentives are awarded for completed and returned evaluations.

EDUCATIONAL PROGRAMS

A series of educational programs and services, some with unique reward systems, are provided to create motivation and to give the necessary information for those employees who wish to improve their lifestyle and reduce their risk of future disease. The majority of these programs are directed at the monthly wellness awareness campaigns.

Central Wellness Library/Video Loaner Library

The library is designed to be a depository of magazines, books, tapes, brochures, and other wellness-related literature. Books, monthly journals, and newsletters are available for employees to "check-out" for a limited period of time.

The video library contains health and fitness videos addressing:

Health and Work	General Wellness
Nutrition and Fitness	Parenting and Pregnancy

Monthly Educational Series

Lecture series are provided before, during, or immediately after work or an agreed upon time convenient to the majority of employees. Speakers from Health Organization Speakers' Bureaus, wellness vendors, etc., will provide the majority of the hour presentations (45 minutes for contents, 15 minutes for questions and answers). Handouts will complement each presentation.

One lecture per quarter will be given to coach operators, maintenance, and/or administrative employees. Lecture times will be rotated among bases in order optimize employee availability. The final list of presentations is determined by the summary of the Health Risk Appraisal results, national monthly wellness campaigns, yearly *Learn While Lunching* evaluations, and employee interest. The following is a partial list of topics:

Wellness/Degenerative Disease	Weight Control
Role of Exercise in Wellness	Work–Family Balance
Stress Management	Coronary Artery Disease

General Health and Wellness

Randomly selected seminars are evaluated for program content, format, and speaker likeability. At year end, feedback is requested on all the topics as a rating scale for the top five topics. Evaluators are asked to share personal feelings for what was most informative, least informative, and what was the most significant fact learned. At the time of the evaluation, time, location, and day of week is evaluated.

Back Education Classes

The Wellness Program offers special classes to selected coach operators and maintenance workers. The training is designed and built to show the working relationship of the muscles of the spine, abdomen, hips, and lower extremities and is conducted by Future Industrial Technologies. A video developed by OCTA is presented to show employees the proper techniques to manage both an acute and chronic low back problem and working within the Coach. An illustrated exercise booklet and card is given to all employees attending the training. The Low Back class is mandatory for all Coach Operators and optional for Maintenance and Administrative employees.

Fit for Life Fitness Centers

The program is designed to promote cardiovascular fitness and to improve strength and muscle conditioning. Fit for Life Fitness Centers are incorporated as part of the program to help reduce and lower workplace injuries and medical costs by increasing employees' fitness levels. Each base will house a fitness center. Areas designated house cardiovascular fitness equipment and strength training equipment. The equipment shall include a minimum of a treadmill and a stationary exercise bicycle, upper and lower body strength training equipment, and 4-40 pound dumbbell rack system and incline to flat bench.

Each center shall be staffed by a contractor. The staffing focuses on informing and instructing the employees screened and approved for exercise about personal health and fitness. The programs designed for the employees target health risk factors and improve fitness levels. All employees are eligible to participate in the Fit for Life Pro-

gram. Eligible employees must complete a fitness screening to obtain access to the program. Individuals with identified risk factors must seek medical approval to participate. The fitness center is staffed part-time. The medical approval is necessary since the "at-risk" employee may utilize the fitness center in an unsupervised environment.

Shoes and Wheels Club

The Shoes and Wheels incentive program is designed to promote cardiovascular fitness and to improve overall employee health. The club is available to all employees. A registration form must be completed and returned in order to begin the program. The club is a point reward system for participating in physical activity.

Participants record their activity session in 15-minute increments, 15 minutes minimum/day, up to 60 minutes maximum/day. Bonus points are awarded for participation in selected activities. Employees complete a monthly log, which is input into a computer database by the Wellness Administrator or Wellness Intern. One Aerobobuck is awarded for each minute of physical activity. The employee may "cash-in" their Aerobobucks for selected gifts/prizes. Catalog items include but are not limited to Shoes and Wheels logo t-shirts, shorts, sweatshirts, polo shirts, fitness/health magazine subscriptions, sporting good store gift certificates, and/or heart rate monitors.

TESTING AND EVALUATION

Health Needs and Interest Survey

Company-wide needs assessments are conducted every two years. This tool is directed at two levels: one to staff-level employees and one to the manager–supervisor level. The tools outline health concerns of interest for educational materials and seminars along with times, locations, program opportunities needed, media for marketing, and demographics of responding parties, along with barriers or obstacles needed to be overcome to help assure program and event success. This information is presented on flyers to be returned to the Wellness Administrator and via the intranet. The manager–supervisor level of assessment addresses strategies for healthy work environment and health education programs. This information helps the Wellness Team approach programming from a direction that would work for both the employees and their supervisors. This survey is distributed by a global e-mail addressed directly to the manager/supervisor followed with a mailed hard copy.

Annual Wellness Evaluation

Minimal non-invasive testing is designed to determine individual and group lifestyle profiles, identify risk factors for future degenerative diseases, identify negative health behaviors, determine any employees who are high risk or who have specific risks, determine the need for additional wellness testing, and identify any current physiological measurements or medical symptoms that may require a physician referral. Feedback will include individual reports explaining how to reduce risk factors and individual counseling for employees at high risk or with symptoms requiring medical referral and a follow-up system for employees recommended for physician referral. The scope shall be limited primarily to those tests that are directly associated with measuring Health and Wellness and not disease. The screening will be initiated by the employee.

Additional data are evaluated every two years. Individuals with authority to operate a bus are required to receive a health assessment from a qualified medical provider. OCTA contracts a clinic to ascertain all information. The records are accessed and confidentiality is maintained. The data are recorded for height, weight, blood pressure, diabetes, age, and gender. Data will be compared to determine the status of the health and wellness of the employees and the change in percentage of the demographics over a two-year period. This evaluation encompasses 70% of the worker population. After collection by the medical provider, the data are charted and evaluated by the Wellness Administrator and Wellness Intern.

Height/Weight

Measurements of height and weight can be used as an indicator of excess weight when validated by anthropometric observation. Chart Your Progress (CYP) is a program where circumference measurements are taken to help individuals chart progress with weight loss and exercise programs. These measurements are taken at the time of evaluation when joining the Fit for Life Fitness Center. Employees participating in the center may elect to have their progress documented. Documentation is stored with the employees' Fit for Life packet. Employees wanting to participate in the Chart Your Progress program that do not wish to be part of the fitness center may have their measurements taken by the Wellness Administrator or Wellness Intern. Such documents will be housed within Wellness.

Resting Heart Rate/Resting Blood Pressure

Resting heart rate can give a general indication of cardiovascular status regarding state of health and wellness. Blood pressure screenings are available in the office of the Wellness Administrator by appointment and at each of the bases. The screenings are conducted by the contract fitness

center personnel during their hours of operation. Additional blood pressure screening opportunities are provided as a result of *Learn While Lunching* presentations or during specific incentive programs.

Low Back Health Screen

A series of tests will be given to identify any employees with current low back problems or who might be at risk for future problems. This program will be initiated in fiscal 2000. A contract firm will conduct the tests. Tests will be performed on each new hire to establish a baseline of low back strength.

Because these measurements also involve most of the major joints in the body, the test will also serve as a *general indicator* of overall musculoskeletal readiness. Any employee with a significant musculoskeletal deficiency would be identified and referred for additional musculoskeletal testing. Low back *strength* testing is usually not recommended as a screening procedure by most physiologists due to the potential risk for injury in an asymptomatic population. Additional exercise sessions will be established to help strengthen the lower back musculature. The exercise sessions are conducted by the Fit for Life Fitness Center contractors.

Cholesterol Screening

There is no really effective way to select which employees are at risk for elevated lipoproteins since 80% of the body's cholesterol is manufactured by the liver (endogenous) and only 20% is the result of dietary intake (endogenous). Therefore, the total serum cholesterol *should* be measured on all employees as a screening program for abnormal lipids. The American Heart Association is *now* recommending that all adults over the age of 20 be tested for their serum cholesterol level as part of a regular evaluation for risk factors.

The Cholestech system will be used to measure cholesterol levels. The procedure will provide Total Cholesterol, HDL levels, HDL/LDL ratio, and has been programmed to provide risk factor of developing cardiovascular disease based on the Framingham study. The testing is administered by the Fit for Life Fitness Center contractors or the Wellness Administrator. Promotional cholesterol testing drives will be held at a minimum quarterly. Data collected by the staff will be reported to the employee and tracked in an aggregated form to recognize and respect privacy.

High-Risk Employee Counseling

Employees who are identified as high risk during the annual wellness evaluation or through some other structured health test will be considered eligible for counseling. The Wellness Administrator or fitness center contract staff will provide counseling, service, or program. These consultations usually end with specific action items for the employee to follow and maintain. Referrals to the Employee Assistance Program or the medical community will be provided if appropriate. Data collected by the staff will be reported to the employee and tracked in an aggregated form to recognize and respect privacy.

Monthly Blood Pressure Screening

Each fitness center will have a B/P Recording Book where all values are kept along with other information that might impact the level of blood pressure (age, weight, salt intake, stress levels, etc.). One day a month, blood pressure screenings will be conducted at each site. These records will be reviewed once/month by the Wellness Administrator. Data collected by the staff will be reported to the employee and tracked in an aggregated form to recognize and respect privacy.

Workstation Evaluation

The corporate and personal workspace where an employee spends the majority of the day can influence attitude and overall work performance. This questionnaire evaluates the corporate work area, personal workspace, and the corporate environment.

Symptomatic employees or high-risk employees will be evaluated at their workplace for mechanical misalignment. Recommendations for improving their workplace will be provided, as well as exercises to relax tense muscle groups, exercises to relieve eyestrain, and referrals for vision testing if required. The need to provide an NT program that would cue employees when it is time to "take a vision break" or to perform vision exercises will be reviewed.

High-Risk Hearing Testing

Employees who are in high-risk areas at work for auditory abuse should have a screening audiogram. Employees will be given a specific questionnaire to determine if they fall in a high-risk category. This service will be provided on-site for all such employees. An OCTA Safety Specialist will oversee the contract service associated with audiometric screening.

OCTA WELLNESS: Employee Needs Assessment Survey 2000

1. Which of the following health concerns would you like to know more about? (Circle all that apply.)
a.) Nutrition
b.) Physical activity and exercise
c.) Blood pressure
d.) Blood cholesterol
e.) Stress management
f.) Weight management
g.) Tobacco
h.) Heart attacks/strokes
i.) Smoking

2. From which of the following sources do you currently get most of your health information? (Circle up to 3 sources.)
a.) Television, radio
b.) Newspapers, magazines
c.) Reference books
d.) Doctors
e.) Other health professionals
f.) Voluntary health organizations
g.) Health programs sponsored by work
h.) Friends, family, and other sources
i.) Internet

3. There are many ways to get health information at the worksite. Which of the following ways would you prefer? (Circle all that apply.)
a.) Pamphlets and other written materials
b.) Films and videos
c.) Talks by experts (seminars)
d.) Discussion groups
e.) Classes
f.) Screenings/health fairs
g.) Incentive programs
h.) Employee assistance programs
i.) Intranet
j.) Newsletters

4. How long should a health promotion activity last? (Circle only one answer.)
a.) Less than 30 minutes
b.) 30–45 minutes
c.) 45–60 minutes

5. What time of day would be best for you to participate in a health promotion activity? (Circle all that apply.)
a.) In the morning before work
b.) Noontime
c.) Evening after work
d.) Would not participate
e.) Other

6. In which of the following group activities would you be likely to participate? (Check all that apply.)
a.) Walking group
b.) Weight control group
c.) Smoking cessation group

7. Which confidential health screening tests would you have an interest and would likely participate?
a.) Blood pressure
b.) Blood cholesterol
c.) Blood glucose
d.) Colon/rectal cancer
e.) Skin cancer
f.) Cancers (male/female)
g.) Body fat
h.) Fitness assessments (cardiovascular fitness, flexibility, strength)
i.) Bone density

8. Circle all the activities in which you would be likely to participate.
a.) Pick up educational materials on health topics
b.) Check out health/fitness video to watch at home
c.) Participate in an incentive program
d.) Read a health and fitness newsletter
e.) Share health information with family members
f.) Invite family members to participate in worksite health promotion activities
g.) Help plan and promote health promotion activities at work
h.) Attend a health promotion seminar or talk (single session)
i.) Attend a health promotion course (multiple sessions)

9. Would you be willing to cost-share with OCTA for some health promotion activities? (Circle only one answer.)
   a.) Not interested in any health promotion activities
   b.) Interested, but unwilling to contribute to cost
   c.) Interested, and willing to contribute a reasonable amount

10. Please share some information about your work location administration BOPS maintenance.

    AGE RANGE
    20–29
    30–39
    40–49
    50–59
    60 and older

11. Please give any suggestions or recommendations for specific activities to include.

12. Are there aspects of our work environment that should be changed to be more supportive of healthy lifesyles among our employees? If yes, please explain.

13. What kind of incentives would prompt you to make healthy behavior changes?

Upon completion of the Needs Assessment, please return by March 31 to:

Franet Hazard
Wellness Administrator
550 South Main St.
Orange

OCTA WELLNESS: Supervisor–Manager Needs Assessment Survey 2000

Your help is needed in planning our health promotion program. We want to be sure the program meets the needs of all of the employees and the expectations of ongoing evaluation of the wellness program. We want to provide you with information you need and the program's implementation and outcomes.

---

1. Please check all the topics that you believe should be included in an employee health promotion program.

_Tobacco use
_Blood pressure control
_Stress management
_Physical activity/exercise
_Medications/drug use
_Preventive exams
_Eating habits and nutrition
_Weight management
_Warning signs and actions for heart attack and stroke

2. Please check all the strategies of activities that you would favor for an employee health promotion program.

_ Educational materials–videos (shown at work and to take home)
_ Talks by experts
_ Health and fitness screenings, classes or courses, incentive programs
_ Activities for families
_ Other:

3. Please check all the strategies that you would favor to provide a supportive and healthy work environment.

_Policies that support healthy lifestyles
_Managers as healthy role models
_Food service, vending machine programs
_Activities provided free or at a low cost
_Healthy newsletter generated by staff
_Healthy newsletter generated by consultant
_Other:

4. Please rank importance (1 to 5) of the following statements (1 being most important to 5 being least important).

_ The company should provide a work environment that is supportive of healthy lifestyles among its employees.
_ The majority of health promotion programs should be available at no cost or low cost.
_ Family members and employees should be encouraged to participate in health promotion activities.
_ Managers should be supportive to the health promotion activities.
_ The OCTA Wellness Program should be highly visible within the company.

5. OCTA should provide funding for the health promotion program at a minimum level of:

___$25 per employee per year
___$50 per employee per year
___$100 per employee per year
___More than $100 per employee per year
___Other:

Please tell us about your work location administration BOPS maintenance.

AGE RANGE
20–29
30–39
40–49
50–59
60 and Older

Please list three strengths that exist within this company that will help to make the Wellness Program successful.

1.

2.

3.

Please list three challenges that exist that should be considered when implementing the Wellness Program.

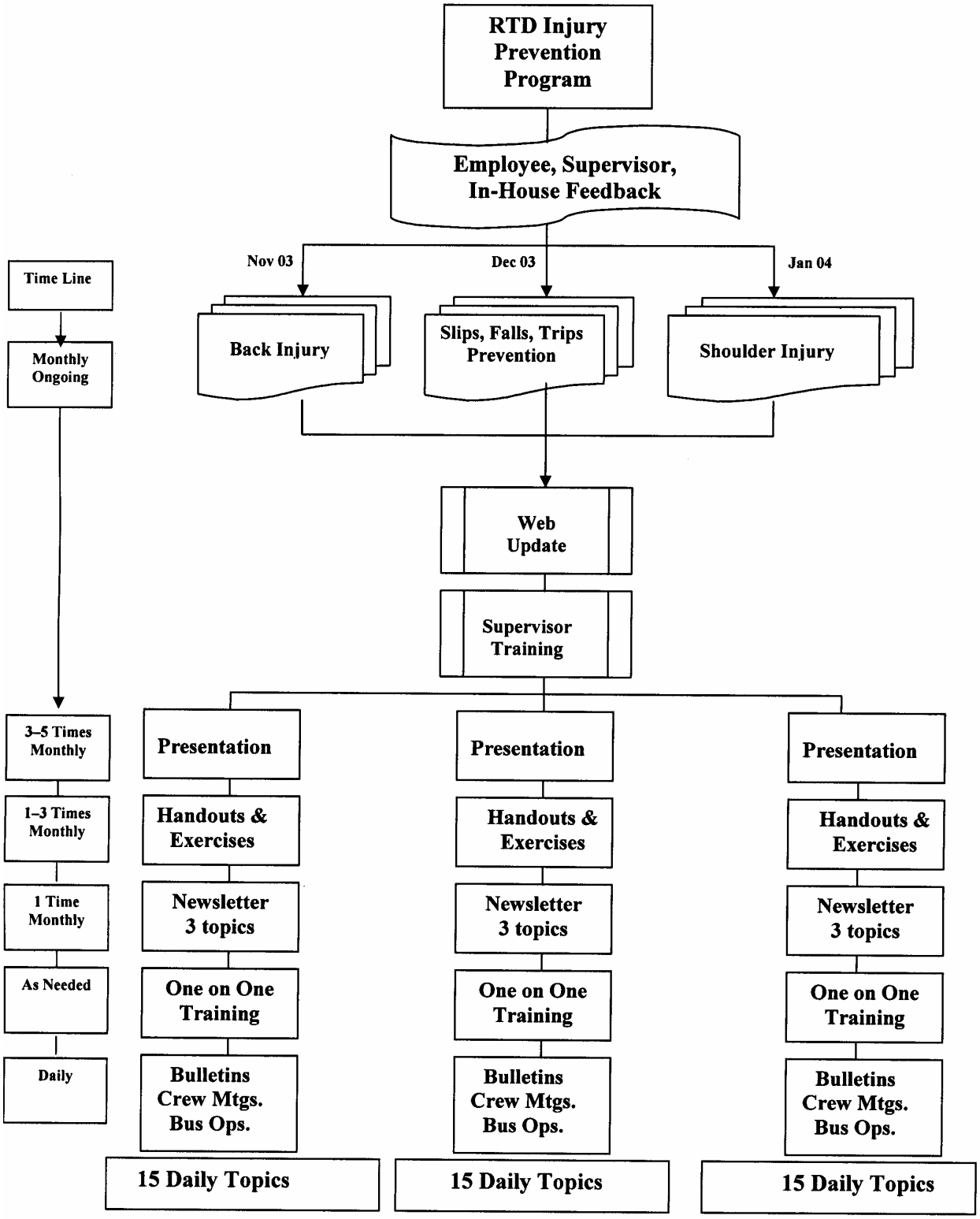
1.

2.

3.

Please make any comments that might help us plan or improve the health promotion.

Please return by March 31 to:
Franet Hazard
Wellness Administrator
550 S. Main St.
Orange


RTD Injury Prevention Program
Employee, Supervisor, In-House Feedback
Nov 03
Dec 03
Jan 04
Time Line
Monthly Ongoing
Back Injury
Slips, Falls, Trips Prevention
Shoulder Injury
Web Update
Supervisor Training
3–5 Times Monthly
1–3 Times Monthly
1 Time Monthly
As Needed
Daily
Presentation
Handouts & Exercises
Newsletter 3 topics
One on One Training
Bulletins Crew Mtgs. Bus Ops.
Presentation
Handouts & Exercises
Newsletter 3 topics
One on One Training
Bulletins Crew Mtgs. Bus Ops.
Presentation
Handouts & Exercises
Newsletter 3 topics
One on One Training
Bulletins Crew Mtgs. Bus Ops.
15 Daily Topics
15 Daily Topics
15 Daily Topics

RTD INJURY PREVENTION PROGRAM NEWSLETTER

November 2003 *Back Injury Prevention*

RTD Injury Prevention Program

By Jim Jacobsen

BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS

The RTD Wellness and Rehabilitation departments currently provide aftercare and physical therapy services, respectively, to employees of the district when they are injured on the job. These groups are part of a multi-faceted approach to assist employees in trying to recover from accidents and injuries. The Wellness group works with employees to keep them fit enough to perform their daily job tasks by offering health screenings and all types of self-improvement programs. The Wellness group also works with the Workers' Compensation physicians and the physical therapists to provide employees with post-therapy exercises and strengthening. The physical therapists provide the employees with rehabilitation after an injury has occurred, helping to control costs. The Wellness and Rehabilitation groups track and analyze data related to on-the-job injuries. As valuable and cost-effective as these activities are to the district, they are predominately after-the-fact, post-injury services.

It was deemed that a strategy designed to avoid the injury, a proactive approach, seemed to be missing from the program. This approach had to include educating supervisors and employees in proper techniques, raising awareness of the common injuries, creating a method of information disbursement, data gathering and analysis, and promoting a company- and employee-supported environment that takes injury prevention very seriously. This was the thought behind the design and implementation of an injury prevention program at RTD.

The Wellness group, using the data gathered by those previously mentioned groups, identified the most common injuries and the tasks associated with those injuries. This information was then used to design a program that utilizes group and individual training, printed materials, daily accident avoidance updates, and intranet and newsletter information to try to avoid that next injury before it happens. The idea of the program is to use past performance data to direct a proactive prevention campaign that creates a "win-win" environment for all RTD employees as it relates to on-the-job injuries.

In pursuit of that goal, starting in November of 2003, the Wellness staff will begin implementing the first phases of a pilot injury prevention program using the Boulder Operating Division as a model.

Statistically, the Boulder Division is an accurate representation of the entire district and the relatively smaller population of the division makes it more manageable. The Wellness staff will be able to change or modify the program as needed based on employee feedback. Once successful in Boulder, the Injury Prevention Program will then be expanded to include all employees of the RTD.

BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS

Back Injury Prevention

By DeAnna Mathis

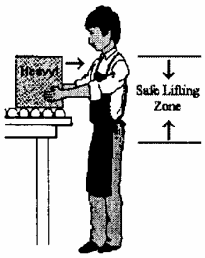
According to the Bureau of Labor Statistics, more than one million workers suffer back injuries each year, and back injuries account for one of every five workplace injuries or illnesses. RTD injury statistics indicate the same.

Healthy Back TIPS

Avoid carrying heavy objects: be sure to get help if the load is too heavy or too awkward to handle. Use appropriate equipment to move object.

Avoid awkward or unbalanced postures: keep work in the safety zone between the shoulders and waist. When carrying luggage balance the load equally, use legs to lift the weight, keep proper posture.

Work area ergonomics: adjust work area to fit your personal needs to work in your safety zone.



Maintain proper posture: improper sitting, standing, or lying down can lead to back problems because of abnormal stresses placed on all curves of the spine.

Your Role In Prevention

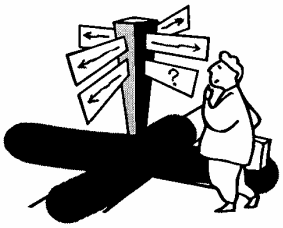
Stay healthy and maintain the best possible mental and physical condition.

Exercise to strengthen and stretch back muscles.

WE VALUE YOUR FEEDBACK!

Please take some time to fill out the following survey and attend the Back Injury Prevention Presentations being offered by the Wellness staff this month (dates and times will be posted). Handouts with exercises and stretches are available on all monthly prevention topics for bus operators, maintenance, service and cleaning, and office workers. All injury prevention information is also posted on the Wellness and Rehabilitation intranet website.

RTD Wellness
Jim Jacobsen x3148
DeAnna Mathis x3145
Mail code: PLT-
Staff Hours: 8am-4:30pm



RTD Rehabilitation
Suzanne Cummings x3144
Glenys Henderson x 3149
Wellness
7am-4:00pm M-F

BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS

RTD Injury Prevention Survey

1. Do you feel most injuries are preventable?
   a. Yes b. Somewhat c. No

2. Have you experienced an on the job injury? a. Y b. N

   If yes, did you experience?
   a. Loss of income
   b. Emotional stress
   c. Decreased social activity
   d. Other_____
   e. All of the above.

3. Are you aware of the reporting process for an on the job injury?
   a. Y b. N

4. Please mark the following injury prevention topics based on interest.
   (1 = least interested 5 = most interested)

a. Back injury	1	2	3	4	5
b. Shoulder injury	1	2	3	4	5
c. Slips, trips, falls	1	2	3	4	5
d. Foot injury	1	2	3	4	5
e. Proper lifting technique	1	2	3	4	5
f. Hand/wrist injury	1	2	3	4	5
g. Elbow injury	1	2	3	4	5
h. Knee injury	1	2	3	4	5
i. Stress management	1	2	3	4	5
j. Time management	1	2	3	4	5
k. Weight management	1	2	3	4	5
l. Proper nutrition	1	2	3	4	5
m. Fitness topics	1	2	3	4	5

Comments:

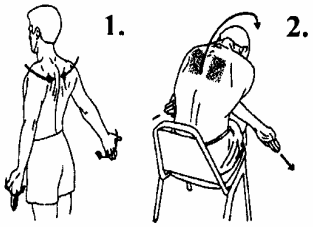
Thank You for your input. Please return to: PLT-Wellness or return directly to Wellness Staff. Contact us directly with your questions or comments.

INJURY PREVENTION
MONTHLY TOPICS TO COME!
SLIPS, TRIPS AND FALLS – DEC 03
SHOULDER INJURY PREVENTION – JAN 04

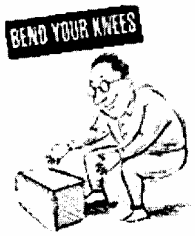
BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS

RTD Injury Prevention Program
Daily Bulletins
Back Injury Prevention

Make good decisions—prevent back injuries at home and at work. Know your limits... Avoid carrying heavy objects, and be sure to get help if the load is too heavy or too awkward to handle. Use appropriate equipment to move object. Be careful moving heavy things when you are tired—fatigue can cause you to move more awkwardly. Heavy loads pose the greatest risk, so know your limitations. Don't attempt to lift something you feel is beyond your ability. Ask a co-worker to help.



Seated upper back and neck stretch: 1.Warm up muscles for stretching by placing arms to your side and rolling shoulders back and squeezing shoulder blades together 10 times slowly. 2. Stretch to a point of slight discomfort. **Seated Stretch—**Slowly lean forward, crossing your arms, and dropping your chin to your chest. Relax and hold for 15 seconds.

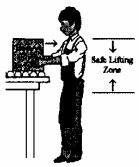


Learn proper lifting techniques: There is a right way and a wrong way to lift and carry a load. Bend at your knees, not your back, so that your legs do the lifting. Carry objects close to your body at about waist level. If possible, set the object down on a surface between shoulder and knee height to avoid lifting objects over your head or bending over too far. Don't twist at your waist. Instead, turn by pivoting your feet.

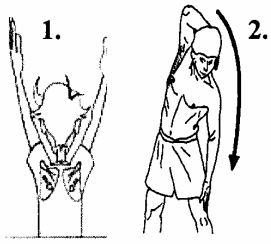
When carrying luggage, balance the load equally, use legs to lift and lower the weight, keep proper posture while lifting and moving luggage. Ask the customer the weight of the luggage before attempting to transfer it. Do not twist at the waist. Instead, turn by pivoting your feet! Keep the load close to your body.

Cockpit ergonomics: Adjust seat to your personal body type. Seat height needs to allow for knees to be even with hips and hands on the steering wheel even or below shoulder level. Lumbar support should be utilized to maintain postural alignment. Set seat distance from pedals so you are not reaching or stretching out your leg; knees should remain slightly bent. Utilize arm rests whenever possible and keep ears directly over shoulders to prevent neck (cervical) tension.

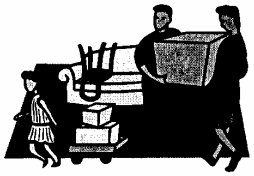
BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS



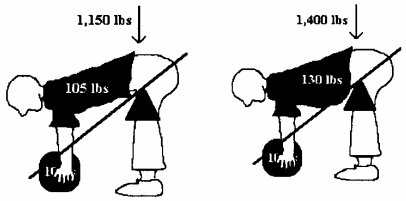
Safety Zone—The safety zone is located between your shoulders and your waist. Be aware of your safety zone. Try to conduct the majority of your work in your safety zone.



Reach for the sky with a side stretch. 1.Warm up muscles for stretching by reaching for the sky 10 times. 2. Stretch to a point of slight discomfort. Stretch—Slowly lean to your left with left arm support on left hip, reach up overhead with your palm up and gently lean to your left. Do not move or rotate hips. Hold for 15 seconds. Now, slowly lean to your right with right arm support on right hip, reach overhead and gently lean to your right. Do not move or rotate hips. Relax and hold for 15 seconds.



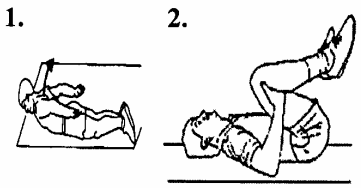
Balance the load you are carrying in your safety zone. Get help when a load is awkward or too heavy. Use equipment to make the job easier on your back. Make sure to keep eyes on path.



Pressure on the spine. Bending at the waist causes added stress on the spine. Here is an example how much stress is put on the spine when lifting 10 lb, plus your upper body weight. 10 lb = 100 lb of stress on the spine.

Neck exercise and stretch. Do not put pressure on the neck if you have an injury. 1. Start with ears over shoulders. Tuck chin and pull head to rear and upwards 10 times slowly. 2. Slowly lean ear towards each shoulder. Relax and hold for 15 seconds. Switch sides and repeat.

Correct posture. Work on correcting posture throughout your day while standing or sitting. Standing posture involves maintaining a natural curve of the spine. Keep ears over your shoulders, shoulders back and chest out, stomach in, with knees slightly bent. Sitting posture is similar. Maintain a natural curve in the spine. Back is supported against chair or lumbar support. Feet are flat on the floor. Knees are slightly higher than the hips.

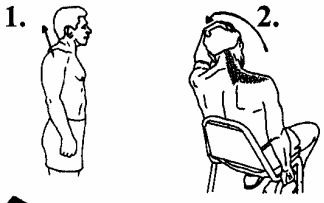


Stress reliever back stretch. 1. Warm up your back with this exercise. Lie on your stomach on a comfortable surface and slowly lift upper torso with

BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS

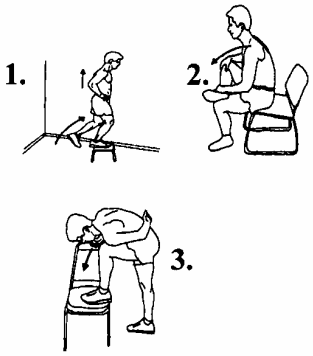
arms at your sides. In the upper portion of the movement squeeze shoulder blades together. Complete this movement 10 times. Keep hips on floor. 2. Stretch to a point of slight discomfort. Lie on back and bring knees slowly into chest with hands behind knees. Relax head and back and hold stretch for 15 seconds.

Well-cushioned footwear helps protect your back. The cushioning in your shoes helps protect the spine from everyday forces of movement. Working on hard surfaces is hard on your body. Make the investment in properly cushioned shoes or change out insoles regularly. Stand on work mats when available.



Neck and shoulder stretch. 1. Warm up muscles for stretching by shrugging shoulders to rear 10 times slowly. 2. Do not put pressure on the neck if you have an injury. Stretch to a point of slight discomfort. Stretch: gently pull ear to shoulder while holding chair with opposite hand. Relax and hold for 15 seconds.

Make good decisions. Prevent back injuries at home and at work. Know your limits…avoid awkward or unbalanced posters, keep work in the safety zone between the shoulders and knees.



Seated and Standing Buttocks stretch. 1. Warm up muscles for stretching by stepping up onto a stable step 10 times slowly on each leg. 2. Stretch to a point of slight discomfort. **Seated:** cross leg over support leg and lean forward slowly, keeping spine neutral. Relax and hold for 15 seconds. Switch legs and repeat. 3. **Standing**: Place one leg at a 90-degree angle on a stable chair and lean forward slowly, keeping spine neutral. Keep a slight bend in the knee of the support leg. Relax and hold for 15 seconds. Switch legs and repeat.

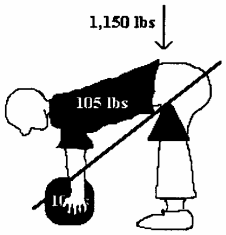
BACK INJURY PREVENTION
TIPS & EXERCISES FOR BUS OPERATORS

Cockpit Ergonomics: Adjust seat to fit your personal body type. Utilize lumbar support, move seat up or down so knees are even or slightly above waist. Adjust seat forward so you do not have to reach for the pedals or steering wheel.

Posture: Maintain proper posture while driving—ears over shoulders, shoulders against seat, belly button pulled in.
Stay Healthy: Maintain physical and mental health.

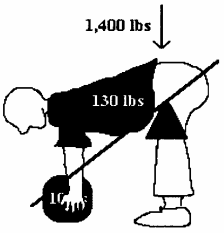
What are the "rules" of safe lifting?

1. Keep your back straight in neutral position with belly button pulled inward.
2. Your feet should be about shoulder width with the weight of your body over your feet.
3. Test the weight of the load.
4. Bend your legs and tighten stomach muscles so legs carry the weight.
5. Keep your head and shoulders level; don't look up or down.
6. Hold the load close to your body.
7. Move the feet (pivot) to change directions.
8. Communicate if more than one person is involved.



Avoid bending at your waist!

Spinal pressure with a load.



Abbreviations used without definition in TRB Publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
U.S.DOT	United States Department of Transportation