

***Recommendations for Improvements
in Texas Workers' Compensation
Safety and Return-to-Work Programs***

A Report to the 77th Texas Legislature

**Research and Oversight Council
on Workers' Compensation
and
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Introduction

In response to rising workers' compensation insurance rates for Texas employers and perceived inadequacies and inequities in benefits for injured workers, the 70th Texas Legislature in 1987 appointed the Joint Select Committee on Workers' Compensation Insurance to conduct an extensive two-year study on problems with the system.¹ Its recommendations formed the basis of the significant legislative and regulatory reforms passed by the 71st Texas Legislature in 1989.

Although most system participants regarded the reforms as a success, some continue to raise concerns about the cost and quality of medical care, safety in the workplace, and efforts to return injured workers to safe and productive employment. These concerns led to the passage of House Bill (HB) 3697 by the 76th Texas Legislature in 1999, which required the Research and Oversight Council on Workers' Compensation (ROC), in a joint project with the Texas Workers' Compensation Insurance Fund, to conduct a series of studies to examine these issues and to make recommendations for improvements in the workers' compensation system.

There are three main goals of the HB 3697 studies. They are:

- 1) to investigate the quality and cost-effectiveness of the current workers' compensation health care delivery system, compared to other health care delivery systems used in this state and workers' compensation health care delivery systems used in other states;
- 2) to examine workers' compensation medical provider treatment patterns and insurance carrier utilization review practices; and
- 3) to analyze methods to improve worker safety and facilitate an injured worker's ability to return to productive employment following an injury.

This report addresses part of the third legislative goal by examining current safety and return-to-work programs. Research and Planning Consultants, L.P. of Austin, Texas (RPC) conducted the research for this report. The educational initiatives and policy options were largely developed by ROC staff. Two other reports from the ROC, entitled *Striking the Balance: An Analysis of the Cost and Quality of Medical Care in the Texas Workers' Compensation System*, and *Returning to Work: An Examination of Existing Disability Duration Guidelines and Their Application in the Texas Workers' Compensation System*, address the remaining components of the legislative goals. In addition, a Technical Appendix to the present volume provides greater detail on survey results and methodologies used.

Background

This study addresses issues relating to workplace safety and returning injured workers to safe and productive employment in Texas. Perspectives vary on safety and return-to-work trends in the state. For example, Texas has for the past 10 years consistently maintained non-fatal

¹ See Joint Select Committee on Workers' Compensation Insurance, *A Report to the 71st Texas Legislature* (Summary). Research Papers of the Joint Select Committee on Workers' Compensation Insurance, December 1988.

occupational injury rates below the national average. In 1999, the non-fatal occupational injury rate for Texas was 5 percent (i.e., five injuries per 100 full-time workers), compared to the national average of 6.3 percent.² These injury rates reflect system safety efforts such as premium incentive programs, insurance carrier accident prevention services, Texas Workers' Compensation Commission (TWCC)-sponsored accident prevention outreach efforts, and independent activities by employers to reduce hazardous workplace conditions.

However, the amount of lost time sustained by injured workers in Texas still represents a significant burden on the state's employers and employees. Injured workers in Texas lost a median of seven workdays in 1998, compared to the national median of five days. Considering this information, work-related injuries in Texas resulted in approximately 1.3 million workdays lost in 1998, which is further estimated to have cost Texas more than \$107 million in lost production.³

Moreover, it is estimated that injured workers who do not return to work within six months after their injuries account for more than 75 percent of disability costs, and experience an increasingly slim chance of ever returning to gainful employment.⁴

The study goals in HB 3697 recognize that:

- considerable opportunities exist for improvements in workplace safety and return-to-work efforts; and
- safety and return-to-work programs must work together to minimize lost work time and the resulting loss of productivity for both employer and employee.

The primary goal of this study, then, is to identify current safety and return-to-work "best practices." The definition of best practices for this study is the collection of programs, process mechanisms, and activities that promote accident-prevention in the workplace and the return of injured workers to safe and productive employment.

A secondary goal is to identify the top industrial and occupational sectors in Texas that would most benefit from application of these best practices over the next ten years. The study further aims to develop educational strategies that would elevate employer and employee participation in implementing safety and return-to-work best practices in Texas' targeted sectors.

² See Texas Workers' Compensation Commission and the U.S. Department of Labor, Bureau of Labor Statistics (BLS), *Annual Survey of Occupational Injuries and Illnesses*, 2000

³ This estimate is derived using TWCC's 1998 average weekly wage of \$412 for Texas workers, which projects to \$82.40 per workday. This figure does not include indirect costs, such as hiring and training of replacement workers or overtime paid to other workers to cover for the injured worker. The estimated lost production is equal to total lost days (1.3 million) multiplied by the average daily wage (\$82.40).

⁴ See Abenham L., and S. Suissa, "Importance and Economic Burden of Occupational Back Pain: A Study of 2,500 Cases Representative of Quebec," *Journal of Occupational Medicine*, 1987: 29. Also Frymoyer, J.W., and W.L. Cats-Baril, "An Overview of the Incidence and Costs of Low Back Pain," *Orthopedic Clinics of North America*, 1991: 22.

SECTION I: RESEARCH METHODOLOGY

Explanations of the methodology used in this study are broken down by the three study objectives. The first methods section covers both Objectives I and II, since these used the same methodology.

Methods for Objectives I and II

Objective I: Identify current safety and return-to-work programs adopted by employers, unions, and insurance carriers that constitute “best practices” for their industries and occupations. Collect available data on the effectiveness of these programs, and determine the applicability of these programs to key Texas industries and occupations.

Objective II: Recommend educational initiatives that could be directed towards Texas employers. Determine any changes in current Texas law that would be required to implement improved programs.

Methods used included the following:

Literature Review⁵

A literature search was conducted in an effort to:

- identify current safety and return-to-work “best practices” among Texas employers;
- identify peer-reviewed literature that highlights factors affecting the development and implementation of effective safety and return-to-work programs;
- identify studies that point to reasons why employers do not adopt the best-regarded safety and return-to-work programs; and
- identify educational initiatives that will improve employer adoption of safety and return-to-work programs.

⁵ Examples of journals, libraries and websites searched include the *Journal of Workers' Compensation*, the *Journal of Occupational Medicine*, the *American Association of Occupational Health Nurses Journal*, the Occupational Safety and Health Administration, the National Library of Medicine, the U.S. Department of Labor: Bureau of Labor Statistics and the Center for the Advanced Study of Public Safety and Injury Prevention.

Surveys

Telephone and mail surveys of employers and other system stakeholders were conducted, in an effort to:

- collect information from Texas employers concerning the current status of their efforts to adopt workplace safety and return-to-work programs; and
- identify the programs that employers and system stakeholders have determined to be effective (i.e. “best practices”), as well as the barriers and disincentives to the adoption of best practices.

Surveys of Texas Employers. There were two telephone interviews of employers: one pertaining to safety programs, the other to return-to-work programs. The final survey results come from telephone interviews with 150 randomly-selected employers for each of the two surveys, representing different industries and various employment sizes throughout Texas. Fifty of the 150 employers interviewed were in the top industry sectors identified in Objective III.

Considerations. Since the number of employer interviews represented only about 3 percent of the 4,700 eligible employers (i.e., those employers with 25 or more employees) in Texas, the results cannot be generalized to all Texas businesses. In addition, while the goal of the interviews is to identify general perceptions and practices regarding safety and return to work, the sample size was too small to allow for meaningful comparisons between industries, and the numbers have not been tested for statistical significance or non-response bias. Finally, these results are based only on the respondents’ self-reports, which have not been independently validated as accurate representations of the programs in practice. However, the results from these surveys do provide useful observations regarding the types of safety and return-to-work programs employers currently maintain. Combined with the “best practices” identified in the literature review, these findings help direct the implementation of safety and return-to-work programs.

The final interview response rate among eligible employers was 64.9 percent (150 completed surveys, 81 refusals) for the safety interviews, and 58.6 percent (150 completed surveys, 106 refusals) for the return-to-work interviews.

Respondents (i.e., employer representatives) held a number of different job titles. More than 50 percent of the respondents were either safety directors, risk managers, plant managers, or human resource directors. This is consistent with the type of safety and return-to-work personnel found at most medium-sized and larger employers.

Previous research indicates that small employers are less likely to have safety and return-to-work programs.⁶ Since the purpose of this survey was to better understand the types of safety and return-to-work programs currently in place and to identify the types of programs employers considered effective, employer participants for the survey were selected randomly from facilities with no fewer than 25 employees. The educational initiatives described later in this report, however, are aimed at all Texas employers, especially small employers.

Results. Of the 150 employer interviews on safety issues, 127 (85 percent) came from three primary industrial sectors – services and public administration, wholesale and retail trade, and mining and construction (see Table 1). Only one employer from agriculture, forestry or fishing participated in the interviews. Of the 150 interviews on return-to-work issues, 121 employers (82 percent) came from services and public administration, wholesale and retail trade, or manufacturing.

Table 1
Industrial Sectors of the Employers that Participated in the Interviews

<i>Industrial Sectors</i>	<i>Safety - Number of Interviews</i>	<i>Safety - Percent</i>	<i>Return to Work - Number of Interviews</i>	<i>Return to Work - Percent</i>
Services and Public Administration	57	38	57	38
Wholesale and Retail Trade	56	37	40	27
Mining and Construction	15	10	22	15
Manufacturing	13	9	24	16
Transportation, Communications, and Utilities	8	5	7	5
Agriculture, Forestry and Fishing	1	1	0	0
Total	150	100	150	100

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000.

⁶ See Research and Oversight Council on Workers' Compensation, *Enhancing Workers' Compensation for Small Employers in Texas*, 1996.

Most of the facilities that participated in the employer interviews on safety (80 percent) and return-to-work (73 percent) programs employed between 25 and 500 workers (generally, these are considered medium-sized employers). (See Table 2.)

Table 2
Number of Employees at Facilities that Participated in the Interviews

Number of Employees At Facility	Safety: Number of Interviews	Safety: Percent	Return to Work: Number of Interviews	Return to Work: Percent
25-99	60	40	48	32
100-499	60	40	61	41
>500	30	20	38	25
Missing			3	2
Total	150	100	150	100

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000.

The facilities that participated in the employer interviews were well distributed throughout the state (see Table 3). Dallas-Ft. Worth had the most employers participate in the interviews (33 for safety and 35 for return to work), while Amarillo and El Paso (6 total each) had the fewest. Certainly, city size is an influencing factor in the number of employers from each location. In addition, a significant number of the participating employers were in rural locations (53 for safety and 40 for return to work). Those in the “missing” category had no identifiable zip code location.

Table 3
Location of Employers that Participated in Interviews

<i>Geographic Location</i>	<i>Safety: Frequency</i>	<i>Safety: Percent</i>	<i>Return To Work: Frequency</i>	<i>Return To Work: Percent</i>
Dallas - Ft. Worth	33	23	35	24
Houston	26	18	36	25
San Antonio	10	7	10	7
El Paso	5	4	1	1
Lubbock	4	3	3	2
Brownsville	4	3	6	4
Austin	3	2	5	3
Corpus Christi	3	2	6	4
Amarillo	3	2	3	2
Not Applicable (rural)	53	37	40	28
Total	144	100	145	100
Missing	6		5	

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000.

Survey of Other System Stakeholders. A second survey targeted organizations other than employers (referred to as non-employers) for their input and perspectives on the characteristics of effective safety and return-to-work programs and their current efforts in those areas. During the course of the study, 107 surveys were mailed to representatives in nine categories (see Table 4).

The organizations and contact individuals were identified by RPC and ROC staff. In addition, RPC staff placed follow-up calls to determine the name and title of the most appropriate individual to complete the survey.

Considerations. After repeated calls and follow-up letters to potential respondents identified for this survey, RPC received only 38 responses (a 36 percent response rate). Given the low response rate (see Table 4) among certain types of organizations, the summary responses cannot be generalized; however, the responses from these surveys are helpful to better understand safety and return-to-work issues from a non-employer perspective. State agencies had the highest response rate (69 percent) while health care institutions had the lowest (13 percent).

Table 4
Other System Stakeholder Interview Response Rates

<i>Type of Organization</i>	<i>Number Contacted</i>	<i>Number Responded</i>	<i>Response Rate</i>
State agencies	16	11	69%
Workers' compensation insurance carriers	13	7	54%
Foundations, universities, non-profit organizations	18	7	39%
Professional organizations	8	3	38%
Federal agencies	6	2	33%
Labor unions and employee associations	14	3	21%
Consumer groups	5	1	20%
Employer trade associations	12	2	17%
Health care institutions	15	2	13%
Total	107	38	36%

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000.

Methods for Objective III

Objective III: Determine the top industrial and occupational sectors that should be the focus of Texas' safety and return-to-work efforts over the next ten years.

Data sources:

- Bureau of Labor Statistics (BLS) 1998 median days away from work for Texas;⁷
- Employment projections from the Texas Workforce Commission (TWC) for 1996 to 2006 timeframe;⁸ and
- Worker wage and income levels.⁹

Criteria used in selecting top industrial and occupational sectors:

- Occupational injury and illness incidence rates;¹⁰
- Worker wage and income levels;¹¹
- Median days away from work; and
- Actual and projected number of employees by industry and occupation, 1996-2010.¹²

Assumptions:

- Injury rates of the sectors would remain stable over time;¹³ and
- Employment growth rates of the sectors would remain stable over time.

⁷ See the U.S. Department of Labor's Bureau of Labor Statistics (BLS) *Survey of Occupational Injuries and Illnesses*, 2000.

⁸ From Texas Workforce Commission 1996-2006 employment projections; available at the TWC website, <http://www.twc.state.tx.us>.

⁹ Industry Wage Rates in 1998, Bureau of Labor Statistics, U.S. Department of Labor, Covered Employment Wages (ES-202) data files, <ftp://146.142.4.23/pub/special.request/cew>.

¹⁰ Research and Planning Consultants, L.P. used the Texas Workforce Commission's 1998 employment figures and number of cases with lost days to calculate an estimated injury rate by SIC codes by the following method: [(100 x number of cases)/1998 employment per SIC code].

¹¹ The use of wage and income in the selection criteria, while effective in capturing lost production due to injuries, also could weight the selection toward high-wage sectors. Additional analyses proved that this wage bias effectively excluded two industrial and occupational sectors. These sectors were subsequently included in the top twelve to eliminate any high-wage bias in the targeted sectors.

¹² Research and Planning Consultants, L.P. used the Texas Workforce Commission's 1996-2006 employment projections to project employment growth per industry and occupation to the year 2010.

¹³ Given the current declining trend in Texas injury rates, the projected lost days by sectors may be overestimated.

SECTION II: CURRENT BARRIERS TO SAFETY AND RETURN-TO-WORK PROGRAMS

Barriers – real or perceived – impede efforts to implement effective safety and return-to-work programs. This section identifies some of these barriers.

Safety Program Barriers

Perceptions of Texas Employers. Although Texas employers did not identify specific safety program barriers in the survey, there is anecdotal evidence that some employers lack information about the effectiveness of proposed safety programs, and have concerns that requesting a TWCC safety consultation may trigger a regulatory worksite safety inspection. Smaller employers, in particular, have expressed concern about resource constraints for safety training and safety equipment.

Perceptions from Other System Stakeholders. More than any other single response, non-employers identified a lack of knowledge about safety programs as the greatest impediment to an effective program (see Table 5). Other barriers frequently cited by the non-employers included a lack of time, expense, and a lack of legal requirements for programs.

Table 5
Non-Employers Perceptions on the
Greatest Impediments to Safety Programs in Texas

<i>Impediments To Safety Programs</i>	<i>Percentage of Respondents</i>
Lack of knowledge about safety programs	42
Safety programs were too time consuming	29
Safety programs were too expensive	26
Safety programs were not required by law	24
Reliance on other safety programs	21
Employees don't want safety programs	13
Safety programs were not effective in preventing accidents	3

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000.

Literature Review. The literature identified several potential barriers to implementing effective safety programs. Due to the lack of knowledge of optimal safety practices and a minimum of available guidance, many employers feel unprepared to implement accident prevention measures in the workplace.¹⁴ Another obstacle to the implementation of an effective safety program is the difficult task of performing an unbiased self-inspection.¹⁵

Further, while general safety training is an essential element of most company initiatives, the curriculum and quality of safety programs vary widely.¹⁶ Human behaviors and attitudes are difficult to change, which may make behavioral safety training programs hard to implement successfully.¹⁷

Return-To-Work Program Barriers

Perceptions of Texas Employers and System Stakeholders. Employers and non-employers interviewed for this survey did not identify any specific return-to-work barriers in the system. However, in a recent ROC report entitled *Returning to Work: An Examination of Existing Disability Duration Guidelines and Their Application to the Texas Workers' Compensation System*, a separate survey of Texas employers, health care providers, and insurance carriers identified a variety of return-to-work barriers, including:

- lack of employer/doctor communication;
- requirements of workers' compensation regulations;
- lack of employer/injured worker communication;
- labor issues;
- employee motivation/depression;
- lack of available light duty options;
- lack of appropriate medical care;
- fear of re-injury; and
- lack of available job retraining.

¹⁴ See Fletcher, Sam, "Safety pays both for oil companies, workers by reducing 'squish factor.'" *The Oil Daily* 46, no. 231 (1996): pp. 3-4.

¹⁵ See Hager, William D., "The Best 'Cure' for Costly Workplace Injuries: Commitment to Loss Control." *The Journal of Workers' Compensation* 5, no. 3 (1996): 79-85. Also Petersen, Dan, "Safety Management 2000: Our Strengths & Weaknesses." *Professional Safety Journal of the American Society of Safety Engineers* (2000): pp. 16-19. Also Shrey, Donald E., "Disability management in industry: The new paradigm in injured worker rehabilitation." *Disability Rehabilitation* 18, no. 8 (1996): pp. 408-14.

¹⁶ See the National Institute of Environmental and Health Science's *Guidelines for Training in Support of Workplace Safety and Health Programs*, National Institutes of Environmental Health Sciences, 1998.

¹⁷ See Vincent II, J.W., "When Safety Training Isn't Enough: Research Points to a Better Way" *The Journal of Workers' Compensation* (1995) 4(3): pp. 47-53.

Literature Review. The literature review yielded studies on employer, employee, health care provider, and job-related barriers to return-to-work programs. These included:

Attitude Factors. Attitudes held by both management and employees can exert significant influence on the outcome of return-to-work efforts.¹⁸ In turn, employee motivation for the success of return-to-work efforts is essential. An atmosphere of trust and cooperation between the injured worker, employer and the health care provider is necessary to a sustainable effort for rejoining the workforce.¹⁹

Employer Factors. Factors such as fragmented communication between employers, workers, and health care providers, poorly-informed or trained company decision makers judging work readiness, poor return-to-work planning, lack of appropriate transitional or modified duty options, and fear of fraud or re-injury all contribute to employer resistance to return-to-work programs.²⁰ Indeed, the process of developing and implementing a return-to-work program can be daunting. Comprehensive policies must be developed, jobs and worksites must be evaluated, management and employee education must be undertaken, and cooperation achieved.²¹

Employee Factors. There are two key factors working against timely return-to-work for employees – economic disincentives and the degree of job dissatisfaction:

- *Economic Disincentives:* The financial benefits of workers' compensation can sometimes act as a disincentive to return to work.²² Some studies indicate that the amount of lost-time sustained by an injured worker may be, in part, statistically associated with the level of income benefits the worker receives; as income replacement approaches or exceeds the worker's net pre-injury income, the length of absence also increases.²³
- *Job Dissatisfaction:* A study of 3,000 employees in the airline industry indicates that a worker's satisfaction with his or her job is important to recovery and return to work. An employee who perceives negative personnel policies or unfair performance evaluations,

¹⁸ See Galizzi, Monica and Leslie I. Boden, "What Are the Most Important Factors Shaping Return to Work? Evidence from Wisconsin," Workers' Compensation Research Institute, 1998; Hood, Layne E, and John D Downs. "Return-to-Work: A Literature Review." Topeka, KS: The Menninger Foundation Vocational Rehabilitation Research and Training Center, 1985, Johnson, Dave, "Bringing the Injured Back to Work" [website]. *Industrial Safety and Hygiene News Magazine*, 1998.

¹⁹ See Bowling, Maddy, "The 'Halo Effect': Measuring the Power of Intangibles in Workers' Compensation." *The Journal of Workers' Compensation* 7, no. 1 (1997): pp. 9-22. Also Hendler, Nelson, "Return-to-Work Barriers: How to Overcome Them." *The Journal of Workers' Compensation* 4, no. 4 (1995): pp. 9-20.

²⁰ See Hunt, H. Allan, "Disability Prevention and Management of Occupational Trauma and Disease: A North American Perspective." *Safety Science Monitor* 1, no. 2 (1997): pp. 1-17. Also Masengarb, Linda, "Formulating an In-House Disability Management Program." *Employment Relations Today* 21, no. 3 (1994): pp. 307-317.

²¹ See Di Guida, Anthony W., "Negotiating a Successful Return to Work Program." *American Association of Occupational Health Nurses (AAOHN) Journal* 43, no. 2 (1995): pp. 101-106.

²² See Gardner, H. H., B. D. Gardner, and R. J. Butler, "Benefits management beyond the adding machine: using integrated, worker-specific analysis." *Benefits Quarterly* 15, no. 3 (1999): pp. 30-9. Also Rainville, J., J. B. Sobel, C. Hartigan, and A. Wright, "The effect of compensation involvement on the reporting of pain and disability by patients referred for rehabilitation of chronic low back pain." *Spine* 22, no. 17 (1997): pp. 2016-24.

²³ Hirsch, B.T., "Incentive Effects of Workers' Compensation," *Clinical Orthopedics*, 1997.

or has interpersonal problems with coworkers or supervisors, is less likely to want to return to work.²⁴

Health Care Provider Factors. Disability duration can be extended if medical treatment is delayed, treatment plans are not defined, or evidence-based disability determination guidelines are not utilized. Additionally, some health care providers prescribe rest and inactivity to promote recovery in cases where inactivity can actually contribute to an injured worker's deconditioning (which may result in extended disability).²⁵ Health care providers may also impede the return-to-work process by not fully complying with the sometimes formidable amount of paperwork and other communications necessary to meet system requirements.²⁶

Job-Related Factors. These include absence of modified-duty options, particularly in small firms with limited resources and positions. Negative work environments that restrict injured workers' control over working conditions, exert excessive psychological demands, and provide a lack of job security present significant obstacles to return-to-work programs.²⁷

It is clear that potential barriers and resistance to safety and return-to-work programs exist with employers, injured workers, and health care providers. Section III and IV of this report outline "best practices" that may be used to overcome barriers in the workers' compensation environment.

²⁴ See Hendler, Nelson, "Return-to-Work Barriers: How to Overcome Them." *The Journal of Workers' Compensation*, (1995) 4(4): pp. 9-20.

²⁵ See Corbet, Kenneth J, Dianne E. Brox, Jim I. Cheng, and Rubin M. Feldman, *Early Return to Work After Illness or Injury* [website]. Ad Hoc Committee on Return to Work After Illness or Injury of the Health Issues Council, 1994. Also Howe, Margaret Lynn, "Keeping Injured Employees Working" *American Association of Occupational Health Nurses (AAOHN) Journal* 44, no. 10 (1996): pp. 500-504. and Upfal, Mark, "Managing Musculoskeletal Injuries: What Every Employer Should Know." *The Journal of Workers' Compensation* 4, no. 4 (1995): pp. 21-31.

²⁶ See Lomax, J.D., "Workers' Comp Care, Pt. 1." *N J Medicine* 96, no. 10 (1999): pp. 37-40.

²⁷ See Baldwin, M.L., W.G. Johnson, and R.J. Butler, "The error of using return-to-work to measure the outcomes of health care." *American Journal of Industrial Medicine*, 1996: 29: pp. 632-41. Also Cheadle, A., G. Franklin, C. Wolfhagen, et al, "Factors Influencing the Duration of Work-Related Disability: A Population-based Study of Washington State Workers' Compensation." *American Journal of Public Health*, 1994; 84(2): pp. 190-6. Also Ekberg, K., and I. Wildhagen, "Long term sickness absence due to musculoskeletal disorders: the necessary intervention of work conditions." *Scandinavian Journal of Rehabilitation Medicine* 1996: 28(1): pp. 39-44.

SECTION III: BEST PRACTICES — SAFETY

Safety programs are strategies to improve unsafe environmental and human working conditions. Most safety initiatives focus on identifying preventable hazards, such as repetitive motions, unsafe behaviors, faulty equipment, or poor housekeeping. By mitigating or eliminating these hazards, successful safety programs prevent or minimize accidents.

Safety Best Practices

A literature review and interviews were conducted to identify the strategies that Texas employers and system stakeholders considered “best practices” (i.e. most effective) in preventing accidents in Texas. The best practices identified by each method are as follows:

Literature Review. A review of current and recent research finds a number of approaches to improving workplace safety:

Management Leadership. Several studies have indicated that management leadership and accountability are important foundations of effective safety programs.²⁸ In order to establish ownership of a safety program, specific requirements regarding safety performance can be included in management job descriptions. Incorporating safety performance into management performance reviews can also elevate the importance of safety. However, too much pressure or incentives to meet specific safety-performance goals can encourage under-reporting of injuries.²⁹

Ergonomics. Ergonomics is the study of how the human body performs tasks and how those tasks can result in injuries to the body. The redesign of tasks can eliminate injury-producing elements and therefore prevent accidents. Many ergonomics programs described in the literature focus on adaptation of the physical environment to accommodate workers.³⁰ Such programs seek to reduce the incidence of musculoskeletal disorders resulting from improper body

²⁸ See Hansen, Larry L., “The Architecture of Safety Excellence.” *Professional Safety* (2000). Also Manuele, Fred A., “A Causation Model for Hazardous Incidents.” *Occupational Hazards* 59, no. 10 (1997): pp. 160-165; Moore, Steven J., “Office Ergonomics Programs: A Case Study of North American Corporations.” *Journal of Occupational and Environmental Medicine* 39, no. 12 (1997): pp. 1203-1211. See also National Institute of Environmental Health Sciences, “Guidelines for Training in Support of Workplace Safety and Health Programs,” NIEHS, 1998; Sollinger, Christine, “Watch Your Back.” *Contemporary Longterm Care* 11, no. 1 (1999); and Weddock, J. C., and R. K. Sokas, “Medical surveillance in work-site safety and health programs.” *American Family Physician* 61, no. 9 (2000): pp. 2785-90.

²⁹ See Nash, James L., “Rewarding the safety process.” *Occupational Hazards* 62 (3) 2000: pp. 29-34. Also Prickett, Judi. “Incentive Programs Reflect Management’s Attitude: Your Incentive Program is Only as Good as Your Safety Culture” [website]. *Industrial Safety and Hygiene News*, 1998 [Available from <http://www.ishn.com>.]

³⁰ See Bone, Jane, “Refineries pump up ergonomics.” *Safety & Health* 147 (1), 1993: pp. 60-64; Bradley, Wendy, “Management and Prevention of on the Job Injuries.” *AAOHN Journal* 44 (8) 1996: pp. 402-405; Carson, Roberta, “Reducing Cumulative Trauma Disorders: Use of Proper Workplace Design.” *AAOHN Journal* 42 (6), 1994: pp. 270-276; Janizewski, Alexine, MSN and Linda M. Caley, PhD., “Preventing Back Injury in Home Care.” *Caring* 14 (1) 1995: pp.54-8; Sollinger, Christine, “Watch Your Back.” *Contemporary Longterm Care* 11 (1) 1999; Steinbrecher, S. M., “Building a successful ergonomics team case report in a manufacturing environment.” *AAOHN Journal* 47 (7) 1999: pp. 310-5.

mechanics. Comprehensive ergonomics programs have resulted in as much as a 49 percent reduction in lost workdays for some employers.³¹

Behavior-Based Safety. A safety-oriented work culture is important to the success of any safety program. One strategy to raise employees' awareness of hazards and safety procedures is to offer incentives for the avoidance of accidents and for knowledge of safety practices. Most of the current professional literature attests to the efficacy of behavioral safety programs, based on a psychological approach to identify and correct unsafe behaviors.³² These programs emphasize basic safety training, management commitment, employee involvement, observation and feedback sessions, accident investigation, and near-miss incident reporting in order to isolate unsafe acts.³³ Some behavioral safety programs also include incentives intended as a positive reinforcement for employees.³⁴ Researchers found behavior modification or behavioral safety programs to be very effective, in some cases accounting for more than a one-third decrease in the accident rate following interventions.³⁵

Critics of the behavior modification approach have suggested that human behaviors are simply too difficult to change, and that the impersonal nature of most incentives fails to motivate most individuals.³⁶ Traditional cash incentives are transitory, leaving nothing to serve as a reminder of the achievement. It is also possible for incentives to reward unsafe behaviors, as some employees may be discouraged to report near-miss or minor incidents by their peers or supervisors in order to maintain a prize-winning safety record.³⁷

Inspections. Workplace inspections to detect unsafe conditions and to check for implementation of a safety program are an essential part of the basic safety process. There is general agreement that a self-inspection checklist should include criteria such as job-specific training, written

³¹ See Guastello, Stephen J., "Do We Really Know How Well Our Occupational Accident Prevention Programs Work?" *Safety Science* 16, 1993: pp. 445-463.

³² See Cooper, Dominic, "The Psychology of Behavioural Safety" [website]. Safety Online, 1999 [available at www.safetyonline.com]; Also Hansen, Larry L., "The Architecture of Safety Excellence." *Professional Safety*, 2000; Nash, James L., "Rewarding the safety process." *Occupational Hazards* 62 (3) 2000: pp. 29-34; Roughton, James E. and David Crowley, "Zero incidents: Achieving a new safety culture." *Plant Engineering* 53 (7) 1999: pp. 100-2; Snyder, Gail, Betty Loafmann, and Elizabeth Fleming, "Safety provides a 'PLUS' at Shell Western." *Occupational Hazards* 58 (9) 1996: pp. 25-28.

³³ See Cooper, Dominic, "What is behavioural safety?" 1999b, from website www.behavioural-safety.com. Also Mathis, Terry, "Motivating Employees to Accept a Behavioral Safety Process" *Industrial Safety and Hygiene News*, 1998, from website <http://www.ishn.com>. Also Nash, J.L. "Rewarding the Safety Process." *Occupational Hazards* 2000: 62 (3): pp. 29-34.

³⁴ See Yeager, L. Dayle, "Integrating Safety Incentives into Your Mix of Strategies: Industrial Safety and Hygiene News." *Performance Magazine*, 1998.

³⁵ See Guastello, Stephen J. "Do We Really Know How Well Our Occupational Accident Prevention Programs Work?" *Safety Science* 16, 1993: pp. 445-463.

³⁶ See Daniels, Aubrey, "Incentives, Safety and Performance Management," [website: www.p-management.com].

³⁷ Nash, James L., "Rewarding the safety process." *Occupational Hazards* 62 (3): pp. 29-34, Prickett, Judi. "Incentive Programs Reflect Management's Attitude: Your Incentive Program is Only as Good as Your Safety Culture" [website]. *Industrial Safety and Hygiene News*, 1998 [website: <http://www.ishn.com/>]

organizational rules, accurate and comprehensive record keeping, the proper use of personal protective equipment, and timely incident investigations.³⁸

Training and Communication. While general safety training is an essential element of any safety program, there are wide variations in the strategies and techniques used. In an effort to address this diversity of methods, the National Institute of Environmental Health Sciences (NIEHS) held a workshop in which recipients of grants for training initiatives met to identify the most effective training strategies. Participants indicated that needs assessments should be conducted in order to tailor training to the specific hazards of each facility. Several techniques should be used to teach materials, especially those that encourage participatory learning. Training should be provided to new employees during orientation, prior to job reassignment or procedural changes, and as a program of ongoing education for all employees. The program should also be regularly evaluated.³⁹

Some researchers studying safety programs conclude that current training programs are only marginally or not at all effective in the prevention of accidents.⁴⁰ However, the Michigan Disability Prevention Study reported that employers with diligent and aggressive safety training programs realized a 6.5 percent reduction in lost workdays.⁴¹ Additionally, programs that provide training in modules and in which “participants [are] required to pass both knowledge tests and skills demonstrations before they [are] competent” are particularly effective.⁴² Safety knowledge and ability must be verified before introducing an employee to the workplace or assigning an experienced worker to a new task.⁴³

Accident Investigation. Determining how – not just whether – accidents are investigated is an important safety strategy. When an accident does occur, management commitment to a timely investigation demonstrates the employer’s concern for employee safety. Prompt investigation also encourages immediate contact with the employee, health care provider, and insurance carrier.⁴⁴

³⁸ See Hager, William D., "The Best "Cure" for Costly Workplace Injuries: Commitment to Loss Control." *The Journal of Workers' Compensation* 5, 1996: (3): pp. 79-85.

³⁹ See NIEHS *Guidelines for Training in Support of Workplace Safety and Health Programs*: National Institutes of Environmental Health Sciences, 1998.

⁴⁰ See Daltroy, L.H., M.D. Iversen, M.G. Larson, J. Ryan, C. Zwerling, A.H. Fossel, and M.H. Liang, "Teaching and social support: effects on knowledge, attitudes, and behaviors to prevent low back injuries in industry." *Health Education Quarterly* 20, 1993, (1): pp. 43-62. Also Sparrell, Charles F., A. Wayne Skwarlo, Maryanne P Burke, and Kenneth Schwab, "What Makes Industrial Safety Programs Effective." *Risk Management*, October 1983.

⁴¹ See Hunt, H. Allan, Rochelle V Habeck, Brett VanTol, and Susan M. Scully, "Disability Prevention Among Michigan Employers," Upjohn Institute, 1993.

⁴² See Vincent II, John W., "When Safety Training Isn't Enough: Research Points to a Better Way." *The Journal of Workers' Compensation* 4, 1995, (3): pp. 47-53.

⁴³ See Ford, J. Kevin, and Sandra Fisher, "The Transfer of Safety Training in Work Organizations: A Systems Perspective to Continuous Learning." *Occupational Medicine* 9, 1994, (2): pp. 241-259. Also Hager, William D., "The Best 'Cure' for Costly Workplace Injuries: Commitment to Loss Control." *The Journal of Workers' Compensation* 5, 1996 (3): pp.79-85. Also Odell, Byron, "Imprinting Safety Training - A Method of Reducing Back Injury Costs." *DOE The Safety Connection* (Winter 1993/1994).

⁴⁴ See Comstock, M. L., "A strategic approach to occupational injuries." *Occupational Medicine* 13, 1998, (4): pp. 823-40.

Development of an effective safety program is not accomplished solely by management. Instead, both employees and management must have input in the design and implementation of programs. This cooperation also establishes a pattern of communication about safety issues that will be key to accurate and timely reporting of accidents and hazards.

Elements of an Effective Safety Program

The literature used in the review also pointed to the following elements as key to the successful application of the best practices identified in the above section:

Assignment of Responsibility

- Senior management should accept responsibility for safety;
- An assigned person should be responsible for each element of the safety program;
- The responsible person should have the necessary authority to implement the program; and
- Safety outcomes should be linked to the performance evaluation measures of those responsible for the safety program.

Identification of Hazards

- Hazards currently existing in the organization should be systematically identified;
- Employee suggestions or complaints should be solicited and studied;
- Environmental conditions and exposure levels should be measured using accepted techniques; and
- Violations of existing company safety rules, government regulations or industry standards should be identified and corrected.

Setting Priorities

- Imminent threats to health and safety should be prioritized for immediate attention; and
- Appropriate resources should be directed to prioritized hazards.

Action Plans

- An assigned person should be responsible for the implementation of the company's accident prevention plan; and
- Specific actions needed to control hazards or prevent injuries should be included in the plan.

Written Safety Rules

- Should be designed to govern the safety conduct of all personnel in the workplace; and
- Should be communicated and reinforced through safety training and workplace communications.

Periodic Inspections

- Conducted to assure that safety rules are being followed;
- Conducted to check if accident-prevention strategies, preventive measures, and safety devices are working properly; and
- Conducted to identify new workplace hazards.

Accident Investigation

- All lost-time accidents should be investigated, as well as serious medical-only accidents and “near misses.”⁴⁵

Accident Record-Keeping

- All accidents should be properly recorded and coded in conformity with state and federal requirements;
- Records of accident investigations and any corrective actions should be maintained;
- Periodic statistical analyses should be conducted to determine the most frequent sources of accidents and illnesses; and
- This information should be made readily available to all employees.

Emergency Preparedness

- Plans for emergencies such as fire, tornadoes and hurricanes, floods, and leakage of toxic materials should be available, as well as:
- Plans for employees to protect themselves;
- Life safety measures; and
- Plans for an orderly evacuation of the workplace.

Safety Training and Communication

- Both management and employees should have a say in the design of programs and should cooperate on investigations;
- Plans, rules, data, and strategies must be communicated to all personnel, including management;
- Training should occur at the time of hire, and at least annually thereafter; and
- Reliable arrangements should be in place for rapid communication of safety-related information to employees as the need arises.

⁴⁵ Medical-only claims are those claims in which the injured worker has not lost at least seven days from work. In Texas, an injury is required to be reported if the worker misses at least one day due to an on-the-job injury. See Section 409.005, *Texas Labor Code*.

Current Employer Safety Practices in Texas

When asked about their safety practices in Texas, more than 97 percent of the surveyed employers said that they had written safety policies and procedures, kept accident records, and had active management support for safety (see Table 6). It should be noted, however, that most of the respondents were larger employers – no employers with fewer than 25 employees were included – and that these respondents would be somewhat more likely to have such programs than the employers in the state as a whole.

Table 6
Percentage of Employers Reporting that
They Perform the Following Safety Functions

<i>Use of Best Practices</i>	<i>Percent</i>
Conduct thorough accident record keeping	99%
Have a written statement of safety policies and procedures	97%
Have active top management support for safety	97%
Have written safety rules	97%
Conduct accident investigations and follow-up	97%
Encourage employee participation in safety efforts	95%
Conduct safety training for new workers	94%
Provide on-site first aid	93%
Conduct regular safety inspections	92%
Have a process to identify and control hazards	90%
Assign safety responsibilities to specific individuals	87%
Conduct safety retraining for experienced workers	82%
Perform medical surveillance and monitoring	57%

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000.

Note: The statements included in Table 6 reflect employer perceptions about their own safety programs; audits would be required to validate these perceptions.

Best Practices at Work: Employer Practices and Safety Records

Some associations were evident between a facility's safety record (as measured by injuries reported to the federal Occupational Safety and Health Administration, or OSHA) and safety program features, such as:

- There was a strong association between size of the facility and safety performance, with smaller facilities having consistently higher accident and injury rates;

- Facilities in which the present owner was responsible for safety had considerably higher injury rates than those in which other persons were responsible (i.e., a risk manager, human resource manager, etc.), possibly reflecting the smaller size of the former establishments;
- The lowest accident rates were in facilities in which a risk or insurance manager had primary safety responsibility;
- Facilities with or without safety committees had virtually identical accident rates. However, facilities with safety committees had significantly lower lost-time rates, as well as fewer total days lost;
- Injury rates were slightly higher at facilities without assigned safety functions to specific individuals;
- Injury rates were generally higher at facilities without on-site first aid; and
- The highest incidence and severity rates were at facilities in which machine or vehicle operations were the primary sources of accidents.

There were no observable trends in the sample based on geographical region or urban or rural characteristics.

Current TWCC Safety Programs for Employers

Several premium incentive programs — including experience rating and deductibles — are currently offered in the Texas workers' compensation system to encourage employers to create safe workplaces.⁴⁶ Another incentive for Texas employers is the option to self-insure through the Texas Workers' Compensation Commission's (TWCC) Certified Self-Insurance Program.⁴⁷

In addition to premium incentives and self-insurance, employers have access to several TWCC-sponsored health and safety programs. TWCC offers free safety materials and video loans and provides employers with a comprehensive "how to" guide for creating an effective accident-prevention plan.⁴⁸ TWCC also provides several safety training and consultation programs (such as the Rejected Risk, Hazardous Employer, and Occupational Safety and Health Consultation, or OSHCON, programs)⁴⁹ which help employers identify hazardous workplace conditions and

⁴⁶ Experience rating is a method of adjusting an employer's premium based on that employer's own claim and loss experience compared to the claim and loss experience of other employers in the same industry. Experience rating thus allows employers who have fewer injuries and losses to pay lower premiums than employers with numerous work-related injuries. Deductibles offer lower premiums to employers who are willing to assume part of the workers' compensation loss risk.

⁴⁷ Self-insurance encourages employers to implement injury prevention and disability management programs by allowing them to be responsible for paying for their own losses and claims administration.

⁴⁸ In 1999, TWCC distributed 80,168 safety publications, 6,529 safety videos and 1,455 drug-free workplace guides to Texas employers. See Texas Workers' Compensation Commission, *System Data Report*, June 2000.

⁴⁹ A Rejected Risk is an employer unable to find coverage in the voluntary market; a Hazardous Employer is one whose injury experience exceeds that of similar industries; OSHCON is a voluntary inspection program conducted by TWCC under federal regulatory guidelines.

recommend possible solutions (see Table 7).⁵⁰ TWCC also offers a toll-free safety hotline to encourage the reporting of unsafe working conditions. In addition to TWCC's efforts, all insurance carriers, including the Texas Workers' Compensation Insurance Fund, are required to offer accident prevention services to their policyholders.

Table 7
Impact of TWCC's Safety and Consultation Programs on Injury Rates

<i>On-site Consultations and Inspection Programs</i>	<i>Number of Employers</i>	<i>Percent Decrease In Injury Rate</i>
OSHCON Consultations	3,014	16%
Accident Prevention Services/ Policyholder Inspections	432	13%
Rejected Risk Inspections	109	42%
Hazardous Employer Inspections	69	55%

Source: Texas Workers' Compensation Commission, Workers' Health and Safety Division Performance Measures, 2000.

Note: In July 1996, the Third Court of Appeals ruled that TWCC's Extra-Hazardous Employer Program was duplicative of federal legislation already in place – the Occupational Safety and Health Act (OSHA). In response to the ruling, HB 2514 (76th Texas Legislature) changed the name of the program to the "Hazardous Employer Program" and changed the requirements to include only public employers (i.e., cities, counties, etc.).

TWCC also offers a toll-free safety hotline to encourage the reporting of unsafe working conditions.⁵¹

The findings from the literature review, employer interviews, and system stakeholder surveys highlight "best practice" strategies and elements of successful safety programs. TWCC's central role in disseminating training, educational, and consultative services and in reducing the injury rates of some employers demonstrates the value of implementing accident-prevention plans. Effective safety strategies can overcome barriers and reduce injuries.

The following section reviews the literature and interviews to identify "best practices" in successful return-to-work programs.

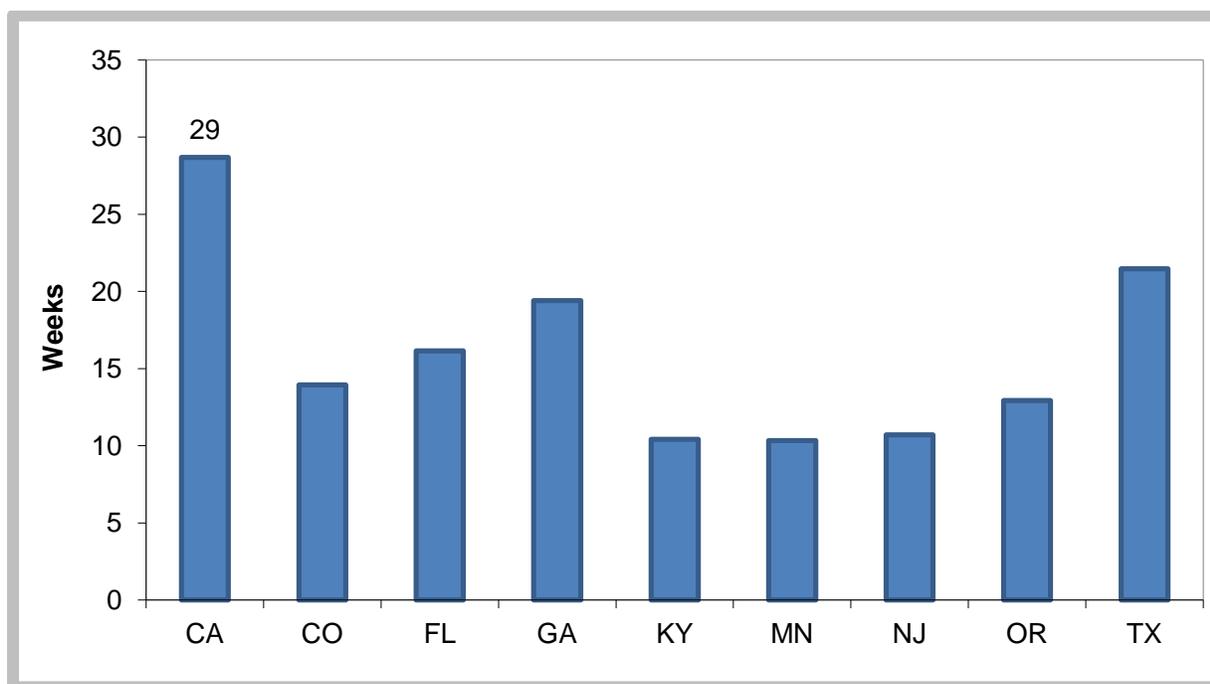
⁵⁰ TWCC determines the success of its inspections and consultations programs by comparing an employer's injury rate 12 months after intervention by the agency to the injury rate the employer had for the 12 months before the intervention. Table 7 indicates the number of employers provided inspections and consultations in FY 1999 and the resulting decrease in injury rates for those available for comparison.

⁵¹ In 1999, TWCC received 700 health and safety complaints on the safety hotline and corrected 162 safety hazards. See Texas Workers' Compensation Commission, *System Data Report*, June 2000.

SECTION IV: BEST PRACTICES — RETURN-TO-WORK

As safety programs seek to prevent injuries, the goal of successful return-to-work programs is to return injured workers to safe and productive employment in the shortest possible timeframe. Part of the impetus for the HB 3697 studies was recognition that Texas lagged behind other comparison states in optimal return-to-work outcomes. Recent findings in a companion HB 3697 study show that for lost-time cases, the average time away from work was more than 20 weeks for a Texas worker with an injury included in the ten most frequent diagnostic groups (see Figure 1).⁵²

Figure 1
Average Weeks of Absence from Work, Texas and Other States
(Top 10 Diagnostic Groups)



Source: Med-Fx, LLC. and Research and Oversight Council on Workers' Compensation, 2000.

⁵² See Med-Fx/Research and Oversight Council on Workers' Compensation, *Returning to Work: An Examination of Existing Disability Duration Guidelines and Their Application to the Texas Workers' Compensation System*, 2000.

Benefits of Successful Return-To-Work Programs

Successful return-to-work programs offer benefits to both injured workers and employers.

Benefits to Injured Workers. The longer an injured worker is away from work, the less likely it is that the worker will be reintegrated into the work force. Various studies indicate that injured workers benefit from early return to work in the following ways:

- Returning to work within 15 days after a cumulative trauma injury was the most important factor in determining whether an injured worker would be employed two years after the reported injury;⁵³
- Return-to-work programs leave injured employees financially better off than vocational rehabilitation or job retraining;⁵⁴
- Employees who return to work earlier are happier because of reduced financial, social, and psychological strains;⁵⁵ and
- Early return to work is associated with better medical outcomes and less overall physical impairment.⁵⁶

Benefits to Employers. Employers experience increased costs and reduced productivity when injured workers lose time from work. While developing and implementing return-to-work programs may be costly to employers, the savings are evident. Disability costs can absorb as much as 6 to 12 percent of a company's payroll, while estimates of direct and indirect savings for companies with return-to-work programs range from 3 to 4 percent of payroll.⁵⁷

Return-To-Work Best Practices

Literature Review. The literature review identified the following practices as important to successful return-to-work programs:

Employer Policies. Clear policy statements explaining the company's commitment to a safety and return-to-work philosophy are necessary. Written steps should guide employees,

⁵³ See Melhorn, Mark J. M.D., "The Benefits of Returning the Injured Worker to Work Early: A Review of the Research," *The Journal of Workers' Compensation*, Vol. 10, No. 1 (Fall 2000): p. 8.

⁵⁴ See Mayer, T.G., R.J. Gatchel, N.D. Kishino, et. al., "A Prospective Short-Term Study of Chronic Low Back Pain Patients Utilizing Novel Objective Functional Measurement," *Pain* 25 (1986): pp. 53-68.

⁵⁵ See Roehl, W.K., "Return-to-Work – Clearing the Liability and Productivity Hurdles that Trip up Even the Most Savvy Employers," *Workers' Comp Update* (Council on Education in Management, 1998): pp. 13-30.

⁵⁶ See Gilbert, S., A. Kerley, A. Lowdermilk, and P.C. Panus, "Nontreatment Variables Affecting Return-to-Work in Tennessee-Based Employees with Complaints of Low Back Pain," *Tennessee Medicine* 93 (2000): pp. 167-171.

⁵⁷ See Johnson, Dave, "Bringing the Injured Back to Work." *Industrial Safety and Hygiene News Magazine*, 1998. See also Chelius, J., D. Galvin, and P. Owens, "Disability: It's More Expensive Than You Think." *Business and Health* 11, 1992 (4). Also Griffith, Victoria, "Both Sides Now." *CFO*, June 1997, pp. 73-78. Also Evangelista-Uhl, G. A, and S. Loomis, "Transitional Duty." *AAOHN Journal* 47 (7), 1999: pp. 324-332.

management, the health care provider, and insurance carrier in case of an injury.⁵⁸ Consistent application of these policies to all injured employees helps prevent charges of discrimination or retaliation.

Education and Training. While successful return-to-work programs benefit both employers and workers, some experts advise companies to present the program as another employee benefit.⁵⁹ These experts also recommend that employers provide assurances that the employee's treating doctor will be consulted before assigning modified job duties.⁶⁰ Employers also have been cautioned against forcing employees to accept unwanted alternative work duties, as such cases may develop into contentious situations or even lawsuits.⁶¹ Employee orientation and safety training sessions are ideal opportunities to educate employees on the purpose and importance of the employer's return-to-work program.⁶²

Disability Case Management Program. An effective case-management process is systematic. The first step is for the employer to make the initial contact with an employee as soon after an injury as possible to demonstrate that the employer cares about the injury.⁶³

Transitional Work Opportunities. Formal, general or categorical job descriptions should be prepared and available to doctors to aid in their recommendations to return an injured worker to transitional duty.⁶⁴ To be acceptable to the injured worker, supervisors, and other employees, transitional jobs should be significant to operations, not menial or fabricated for the purposes of

⁵⁸ See Cal/OSHA *Guide to Developing Your Workplace Injury and Illness Prevention Model Program With Checklists for Self-Inspection* [website]. Cal/OSHA, 1998. See also Texas Workers' Compensation Insurance Fund, Return to Work Kit, 1998.

⁵⁹ See Bradford, Michael, "Dispelling Preconceived Notions About IDM Programs." *Business Insurance*, May 4, 1998; see also Victor, Richard A. *Workers' Compensation Success Stories*, Workers' Compensation Research Institute, 1993.

⁶⁰ See Corbet, Kenneth J, Dianne E. Brox, Jim I. Cheng, and Rubin M Feldman. *Early Return to Work After Illness or Injury* [website]. Ad Hoc Committee on Return to Work After Illness or Injury of the Health Issues Council, 1994. Also Howe, Margaret Lynn, "Keeping Injured Employees Working." *AAOHN Journal* 44, 1996 (10): pp. 500-504. Also Upfal, Mark., "Managing Musculoskeletal Injuries: What Every Employer Should Know." *The Journal of Workers' Compensation* 4, 1995, (4): pp. 21-31.

⁶¹ See Gilbert, Bruce J., "Provider and Treatment Choice Limitations: Be Prepared for Secondary Limitations." *The Journal of Workers' Compensation* 4, 1995 (3): pp. 25-34. Also Victor, Richard A., *Workers' Compensation Success Stories*: Workers' Compensation Research Institute.

⁶² See Texas Workers' Compensation Insurance Fund, Return To Work Kit, 1998.

⁶³ See Hester, Edward J., Michelle L. Kenagy, and Paul G. Decelles, "Ideal Disability Management Practices: A Survey of Disability Management Advocates and Practitioners." *American Rehabilitation* 18, 1992, (4): 11-16, 43. Also Shrey, Donald E., "Disability management in industry: the new paradigm in injured worker rehabilitation." *Disability Rehabilitation* 18, 1996, (8): 408-14. Also Thompson, Marcella R. *Containing Your Workers' Comp Costs Three Keys for a "Caring" Program* [website]. *Industrial Safety and Hygiene News*, 1999. See also Hender, Nelson, "Return-to-Work Barriers: How to Overcome Them." *The Journal of Workers' Compensation* 4, 1995 (4):9-20. Also Shannon, Harry S., Janet Mayr and Ted Haines, "Overview of the Relationship Between Organizational and Workplace Factors and Injury Rates." *Safety Science* 26, 1997 (3):201-217.

⁶⁴ See Comstock, M. L., "A strategic approach to occupational injuries." *Occupational Medicine* 13, 1998 (4):823-40. Also Di Guida, Anthony W., "Negotiating a Successful Return to Work Program." *AAOHN Journal* 43, 1995 (2): pp. 101-106. Also Masengarb, Linda, "Formulating an In-House Disability Management Program." *Employment Relations Today* 21, 1994 (3):307-317.

bringing the employee back to work and removing him or her from workers' compensation.⁶⁵ The employer should also prepare to offer a transitional job to an employee at an agreed-upon return-to-work date. Poor planning by the employer can prolong disability duration and increase costs.⁶⁶

Structure of a Return-to-Work Program. To be effective, best practices have to be translated into a workable structure. Employers, insurance carriers, health care providers, and employees all must contribute to a safe workplace and play a role in the successful implementation of a suitable return-to-work program. Table 8 summarizes these roles.

⁶⁵ See Barry, Susan, "Workers' Compensation Managed Care: Costs, Controls, Outcomes." *The Journal of Workers' Compensation* 6, 1997 (3): pp. 9-21. Also Hester, Edward J., Michelle L. Kenagy, and Paul G. Decelles, "Ideal Disability Management Practices: A Survey of Disability Management Advocates and Practitioners." *American Rehabilitation* 18, 1992 (4):11-16, 43. Also Howe, Margaret Lynn. "Keeping Injured Employees Working." *AAOHN Journal* 44 (10), 1996: 500-504. Also Evangelista, Uhl, G. A., and S. C. Loomis, "Transitional duty" An overview of program management and placement process." *AAOHN Journal* 47, 1999 (7):324-34. Also Norgan, G. H., A. M. Ettipio, and C. E. Lasome. "A program plan addressing carpal tunnel syndrome: The utility of King's goal attainment theory." *AAOHN Journal* 43 (8), 1995: 407-11. Also Perry, M. C., "REACH: an alternative early return to work program." *AAOHN Journal* 44 (6), 1996:294-8. Also Child, Libby, "The Steelcase Story: Meeting the Integrated Disability Management Challenge." *The Self-Insurer*, June 1998, 6-8. Also Upfal, Mark, "Managing Musculoskeletal Injuries: What Every Employer Should Know." *The Journal of Workers' Compensation* 4, 1995 (4):21-31.

⁶⁶ Masengarb, Linda, "Formulating an In-House Disability Management Program," *Employment Relations Today* 21 (3) 1994:307-317.

Table 8
Return-to-Work Program Participants and their
Pre- and Post-Injury Roles and Responsibilities

PRE-INJURY	POST-INJURY
<p>Employer</p> <ul style="list-style-type: none"> • Implement the return-to-work program • Prepare/distribute a return-to-work policy statement • Identify injury coordinator • Select medical panel • Establish first-aid program • Identify modified work tasks • Communicate return-to-work program to supervisors, employees and medical providers • Maintain a safe workplace 	<p>Employer</p> <ul style="list-style-type: none"> • Provide first aid • Report injuries within 24 hours to carrier • Actively communicate with Treating Doctor, Employee, Carrier • Provide essential job functions to treating doctor • Accommodate work restrictions (i.e. modified duty) when possible • Monitor disability status until full-duty return to work
<p>Employee</p> <ul style="list-style-type: none"> • Know to whom to report an injury • Know where to obtain medical treatment • Be familiar with the employer's return-to-work program • Follow all job safety procedures, and use required protective material • Report unsafe conditions 	<p>Employee</p> <ul style="list-style-type: none"> • Report injury promptly • Choose treating doctor (Texas) • Follow prescribed medical treatment plan • Comply with work restrictions • Communicate medical/disability status with employer/carrier/doctor
<p>Health Care Provider</p> <ul style="list-style-type: none"> • Meet with employer • Tour the work site • Understand employer modified duty/return-to-work commitment 	<p>Health Care Provider</p> <ul style="list-style-type: none"> • Provide appropriate medical treatment • Promptly and continually evaluate whether employee can return to work • Establish target return-to-work date (modified/full duty) • Communicate with Employee, Employer, Carrier
<p>Insurance Carrier</p> <ul style="list-style-type: none"> • Communicate any recommended return-to-work programs or policies • Communicate claim reporting procedures • Assist in the development of a medical panel 	<p>Insurance Carrier</p> <ul style="list-style-type: none"> • Investigate claim promptly • Determine compensability • Pay medical/disability benefits promptly • Actively manage claim disposition to conclusion

Source: Research and Planning Consultants, L.P. and Research and Oversight Council on Workers' Compensation.

The literature review identified practices that are significant to the development and implementation of effective return-to-work programs. The employer survey results that follow highlight current practices in Texas.

Current Employer Return-to-Work Practices

The telephone interviews with 150 employers provided information concerning return-to-work programs at their facilities. Many of these employers reported practices that were clearly identified in the literature review as important elements of a successful return-to-work program. For example, 93 percent of the employers interviewed said that they offered transitional duty assignments to their injured workers; however, only 64 percent said that they had written return-to-work programs (see Table 9).

Table 9
Most Common Affirmative Responses about the use of “Best Practices”

Use of Best Practices	Percent
Encouraging workers to get appropriate medical treatment	99%
Contacting injured workers as soon as possible after a workplace accident	96%
Maintaining communications with the injured employee’s doctor	95%
Making efforts to help injured employees return to work safely and quickly after an industrial accident	95%
Offering transitional or light duty assignments to injured workers	92%
Redesigning jobs and/or providing assistive devices to facilitate return to work	92%
Keeping an injured workers’ job available until he or she returns	91%
Keeping in contact with injured employees at least once a week while they are out of work	89%
Maintaining the injured workers’ wages and medical benefits until their return	89%
Making physical and/or occupational therapy available for injured workers	75%
Having written programs, providing a copy of the program to employees	74%
Changing injured employees’ work methods or job requirements	73%
Having written return-to-work programs	64%

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers’ Compensation, 2000.

Note: The statements included in Table 9 reflect employer perceptions about their own return-to-work programs; audits would be required to validate these perceptions.

The interview results identified some significant associations affecting return to work:

- There was a strong association observed between the size of a facility's workforce and the number of lost-time injuries, with smaller facilities having consistently higher rates of lost-time injuries, and a higher average number of days lost per 100 full-time employees;
- Facilities in rural areas had a significantly higher average number of lost workdays per 100 full-time employees than urban locations, with the highest rates recorded in the western and high plains regions of the state; and
- Facilities that had safety directors and/or insurance risk managers with return-to-work responsibilities — rather than supervisors and plant managers — had the lowest lost-workday rates.

Further, a consistent pattern was observed of better lost workday rates at those facilities that perform return-to-work program functions. Specifically, fewer average lost days per 100 full-time employees were reported by facilities performing the functions listed below:

- Maintaining communication with the injured worker's doctor: 45% fewer days lost
- Providing assistive devices⁶⁷: 34% fewer days lost
- Making changes in work methods and job requirements: 85% fewer days lost
- Providing nurse case management: 36% fewer days lost
- Providing physical therapy or occupational therapy: 69% fewer days lost
- Providing counseling: 71% fewer days lost
- Providing job retraining: 80% fewer days lost
- Maintaining the injured worker's wage level until return: 40% fewer days lost

Current TWCC Return-To-Work Programs for Employers

Generally, past efforts to provide guidance to employers, health care providers, carriers, and injured workers on return-to-work issues have been lacking. However, TWCC recognizes the importance of return-to-work programs for injured workers in Texas and has begun a series of outreach projects to educate employers and employees, such as:

- Employer education seminars;
- A return-to-work program development guide for employers (currently in its final approval stage);
- Outreach efforts with the Texas Association of Small Businesses (TASB) and several other large employer organizations; and

⁶⁷ An assistive device is a physical or software modification to a work station that compensates for a disability (e.g., voice recognition software and headset in lieu of keyboard input).

- A medical advisory committee (MAC) task force on return-to-work recommendations concerning guidelines and provider education.

TWCC does not currently collect data on return-to-work programs and outcomes in Texas to determine the effectiveness of these efforts. However, recent legislative actions and regulatory rulings have encouraged TWCC to undertake meaningful return-to-work initiatives. The requirement (HB 2513, 76th Legislature) that TWCC develop return-to-work guidelines is an important first step in that regard.⁶⁸ Additionally, HB 2513 requires treating or referral doctors to conduct functional capacity examinations (FCEs) upon the request of the insurance carrier or employer and provide work status reports to the injured worker, employer and the insurance carrier. However, no centralized mechanism currently exists for TWCC to collect and analyze this data.

The previous discussions identified “best practices” for both safety and return-to-work programs. The successful implementation of these strategies could result in significant reductions in injury rates and injured workers’ lost time from work. Both employers and employees would benefit from these outcomes.

To maximize the positive effects of best-practice strategies, the next section identifies the top industrial and occupational sectors in Texas most likely to benefit from the implementation of safety and return-to-work strategies over the next ten years.

⁶⁸ It is important to note that although Section 413.018 of the *Texas Labor Code* has required the Texas Workers’ Compensation Commission (TWCC) to develop “lost-time” guidelines since 1991, no guidelines to date have been adopted. TWCC attributes the inability to adopt a guideline to a lack of agreement on the proper role or use of the guideline in managing disability and return to work. In order to facilitate the adoption of a disability duration/return-to-work guideline, HB 2513, enacted by the 76th Texas Legislature (1999), changed the name “lost-time guidelines” to “return-to-work guidelines” to clarify misconceptions about the intent of the guideline, and charged TWCC directly with promoting modified-duty options.

SECTION V: SELECTION OF THE TOP INDUSTRIAL AND OCCUPATIONAL SECTORS

A third important objective of this study is to identify the industrial and occupational sectors that should be the focus of safety and return-to-work efforts over the next ten years.

Industrial Sectors

These industrial sectors were selected by the number of expected lost days they would be expected to add to the current total number of lost days in Texas by 2010 (see Methodology Section). Table 10 shows the 12 industrial sectors identified for focused efforts of safety and return-to-work programs in Texas. Six of these are among the top ten largest industries in the state.⁶⁹ In 1998, these targeted industries employed 3.2 million workers – 31 percent of the Texas workforce – but experienced almost 600,000 lost days – 46 percent of lost workdays in Texas – to workplace injuries. The projected growth of these industries (assuming fixed injury rates and median lost-days) is expected to add more than 100,000 lost days to the current lost-day level by 2010.

⁶⁹ Based on Texas Workforce Commission statistics for 1998, these sectors are: Health services, Eating and Drinking places; Wholesale Trade-durable goods; Special trade contractors; Food stores; and General Merchandise Stores.

Table 10
Expected Increase in Lost Days - Top 12 Selected Industrial Sectors in Texas

SIC Code	Industry	Number of Occupations within Industry	Total Employment in 1998	Expected Increase in Employment by 2010	Texas Injury Rate	Median Lost Days	Expected Increase in Lost Days by 2010
45	Transportation by air	76	108,550	14,885	10.24	11	16,766
58	Eating and drinking places	31	582,350	188,712	1.09	7	14,384
80	Health services	193	747,500	248,871	1.11	5	13,816
42	Trucking and warehousing	83	131,600	29,274	3.69	12	12,955
17	Special trade contractors	89	284,350	87,866	1.85	5	8,141
13	Oil and gas extraction	131	151,150	09,221	1.53	53	7,465
50	Wholesale trade-durable goods	131	325,300	51,200	1.75	7	6,282
35	Industrial machinery and equipment	138	150,000	32,167	2.57	7	5,787
54	Food stores	56	248,700	30,176	1.68	9	4,571
53	General merchandise stores	51	207,350	34,633	2.49	5	4,318
16	Heavy construction, except building	126	117,300	21,679	1.95	10	4,227
51	Wholesale trade-nondurable goods	106	180,700	26,028	2.69	6	4,200
	TOTALS		3,234,850	774,712			102,912

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000; Texas Workforce Commission employment projections for 1996-2006; and Bureau of Labor Statistics, U.S. Department of Labor, 2001.

Note: Expected increase in lost days may reflect rounding of the injury rates.

The selection criteria for the targeted sectors took into account factors such as projected industry growth rates, injury rates, and median days away from work. Some industrial sectors – such as private households – could not be included in this analysis although they have a large number of total employees, because their injury rates are not available. Further, the agricultural sector could not be considered since the Bureau of Labor Statistics excludes farms with less than 11 employees from its reporting. When all available factors are considered, the 12 selected industrial sectors represent the most critical targets for effective safety and return-to-work programs in Texas for the next ten years.

Occupational Sectors

The 12 selected occupational sectors in Texas also reflect high injury rates, projected growth rates, and median days away from work. For example, by the year 2010, truck drivers in Texas are projected to lose an additional 46,575 days of work due to work-related injuries (see Table 11).

Table 11
Expected Increase in Lost Days
Top 12 Selected Occupational Sectors

<i>DOT Code</i>	<i>Occupation</i>	<i>Expected Increase in Employment by 2010</i>	<i>Texas Injury Rate</i>	<i>Median Lost Days</i>	<i>Expected Increase in Lost Days by 2010</i>
804	Truck drivers	48,790	5.30	18	46,575
889	Laborers, non-construction	58,898	4.83	5	14,223
444	Miscellaneous food preparation occ.	5,996	15.21	12	10,945
447	Nursing aides, orderlies, and attendants	51,453	2.66	7	9,573
274	Sales workers, other commodities	68,319	0.68	19	8,790
617	Mining occupations	1,668	7.54	54	6,793
785	Assemblers	15,673	3.78	11	6,515
327	Order clerks	26,633	1.34	16	5,727
777	Miscellaneous machine operators	4,669	11.91	10	5,562
017	Managers, food serving and lodging est.	21,667	0.96	25	5,200
575	Electricians	11,876	0.69	59	4,834
463	Public transportation attendants	3,998	10.90	6	2,614
	TOTAL	319,640			127,359

Source: Research and Planning Consultants, L.P. and the Research and Oversight Council on Workers' Compensation, 2000, and Bureau of Labor Statistics, 2001.

Note: Expected increase in lost days may reflect rounding of the injury rates.

This study has so far identified best practices for safety and return-to-work programs for Texas employers. In addition, it has identified the top occupational and industrial sectors for focused efforts to reduce injuries and lost workdays.

The final goal of this study is to formulate a mechanism to transfer these strategies to employers and employees through educational initiatives. The next section addresses this educational objective for Texas employers, particularly those in the targeted industrial and occupational sectors.

SECTION VI: EDUCATIONAL INITIATIVES AND POLICY OPTIONS

Along with education efforts made by TWCC, employers, unions, insurance carriers and health care providers should all participate in the identification of workplace hazards and the promotion of safe and speedy return-to-work opportunities. To accomplish this, each system participant should re-examine its own safety and return-to work outreach efforts and consider the following issues:

- *Consider integrating safety and return-to-work outreach efforts.* Accident prevention not only includes preventing new injuries, but also re-injuries. Integrating issues such as identification of workplace hazards and injury reporting, as well as worksite, job duty, or activity modifications can help educate participants about how to prevent new injuries and avoid aggravating old injuries.
- *Consider the shifting industry and employment trends in Texas.* Although this report highlights the specific industrial and occupational sectors that should be the focus of safety and return-to-work efforts over the next ten years, there are other major industrial and employment trends. One of these trends includes the continuing move in Texas from a manufacturing industrial base to a service economy. This shift impacts the types of injury risks that will exist in the future and the types of accident prevention programs necessary to combat them. Additionally, preliminary data from the previous and current census indicates that the working population of Texas is expected to grow by approximately 4-6 million people from 2001-2010. Although injury rates continue to decrease, the population continues to increase, requiring additional education outreach resources.

Another trend is the growing number of workers who “telecommute” from home rather than work at a central office. Although little research exists on the number or types of injuries that occur from telecommuters, it’s clear that future safety and return-to-work outreach efforts will need to consider issues such as improving home ergonomics; providing modified duty options; conducting accident investigations; reporting injuries; and improving record keeping.

- *Consider the shifting demographics in Texas.* The ethnicity mix of the state’s population and therefore the state’s workforce is changing. By 2010, the State Demographer predicts that 35.5 percent of the state’s population will be Hispanic compared to 30.7 percent in 2001.⁷⁰ With the increasing ethnic diversity of the state, language barriers must be considered in order to maximize outreach efforts. One study shows that when compared to other injured workers, Hispanic construction workers had a higher proportion of serious injuries and were disadvantaged in terms of training, among other factors.⁷¹

⁷⁰ See the Comptroller of Public Accounts, *Population Forecast* (www.cpa.state.tx.us).

⁷¹ See Anderson, J.T., Hunting, K.L., Welsh, L.S., “Injury and employment patterns among Hispanic construction workers.” *The Journal of Environmental Medicine*, Feb, 2000; 42(2): pp 176-86.

Further, as female participation in the workforce increases (projected by the Bureau of Labor Statistics to be 47 percent by 2006) issues related to women should be considered. Women, compared to men, suffer from more job injuries due to repetitive motion, assaults, and inhalation of harmful substances.⁷² Studies by the National Institute for Occupational Safety and Health (NIOSH) and the U.S. Department of the Army found that most tools, equipment, and clothing are not designed for a woman's physique.⁷³

- *Educate system participants on their roles in preventing injuries and improving return to work outcomes.* Often miscommunication or lack of communication breeds misinformation about safety and return to work issues. Understanding the roles presented earlier in the report will help system participants improve communications regarding safety and return to work and ensure that each participant is fulfilling its responsibilities.
- *Consider incorporating medical issues into outreach efforts.* Often, safety and return-to-work training focuses on the mechanics of how to prevent an injury or how to design a return to work plan. There are a variety of medical issues that are rarely discussed, including signs/ symptoms of frequently seen on-the-job injuries; the types of treatments and recovery expectations that are common for these injuries; and the types of activity modifications that can be expected once an injury occurs.
- *Consider special outreach efforts for small employers.* As seen in this report, most large employers have safety and return-to-work programs that are specifically designed for their needs. Small employers, on the other hand, don't have the resources or personnel to attend seminars and develop formal injury prevention and management programs.

⁷² U.S. Department of Labor, Bureau of Labor Statistics (BLS), *Compensation and Working Conditions*, Summer 1998.

⁷³ See "Personal Protective Clothing/Equipment Sizing and Fit Practices." Unpublished Report Submitted to NIOSH by International Personnel Protection, June 15, 1996; Gordon, C.C., "Accommodation of Females in Protective Clothing and Equipment Systems Used Primarily by Men." Presented at the Annual Scientific Meeting of the Aerospace Medical Association, Atlanta, May 1996.

Policy Options for Improving Safety and Return-to-Work in Texas

Policy Option: *In accordance with Section 413.018 of the Texas Labor Code, integrate TWCC's Safety and Return-to-Work outreach efforts to employers.*

TWCC is currently in the process of integrating their safety and return-to-work outreach efforts; however, additional resources and attention should be allocated to improve and expand the scope of return-to-work consultations and educational seminars, especially for small employers and health care provider groups. In addition, TWCC should consider developing local, community based train-the-trainer programs to serve as resources to small employers interested in safety and return-to-work initiatives. TWCC should also consider focusing outreach efforts on the industrial and occupational sectors identified in this report and re-evaluating its presentation materials to account for language barriers and telecommuting trends.

This option does not require legislative change.

Policy Option: *In accordance with Section 413.018 of the Texas Labor Code, TWCC should develop and implement a data collection strategy to track, analyze and report on injuries by:*

- *Injured worker;*
- *Occupation;*
- *Industry;*
- *Employer;*
- *Health care provider; and*
- *Return-to-work date.*

Additional data such as medical diagnosis, cause of injury, and medical treatment would allow TWCC and system participants to access valuable data on workplace safety trends. Most of these data elements are collected but not stored as part of an integrated model to support safety and return-to-work analyses. An integrated data model for safety and return-to-work programs could be an important component of TWCC's Business Process Improvement (BPI) plan. This data could serve as an early warning system that would allow TWCC to recommend workplace solutions before an employer or industry's safety performance reaches crisis proportions. Return-to-work data could help benchmark medical treatment "best practices."

This option does not require legislative change.

Policy Option: TWCC should consider employing interactive technology to expand its safety and return-to-work outreach efforts.

TWCC should consider using virtual on-site training sessions and/or two-way video and audio links using interactive television technology so that TWCC instructors can provide information to multiple job sites or field offices simultaneously. Also consider utilizing the Internet so that employers can download safety/return to work materials or view safety videos on-line without having to order materials or videos from TWCC's library.

This option does not require legislative change.

Policy Option: TWCC should consider providing funding and resources to assist in the development of community outlets that could serve as safety and return-to-work educational channels.

TWCC could provide resources or expertise to assist community centers and educational institutions (e.g., trade schools, business schools, etc.) to develop and integrate a risk management curriculum in their training programs. TWCC could monitor and adjust the application of these resources to ensure maximum exposure. This will help reinforce "best practice" risk management techniques for future Texas employers and employees.

This option does not require legislative change.

Policy Option: TWCC should develop education and program delivery channels with other state and federal agencies, and non-profit organizations.

TWCC could coordinate with other state agencies and non-profit entities to maximize outreach efforts:

- TWCC could coordinate with agencies such as the Texas Education Agency to help design risk management curriculums for educational institutions;
- TWCC could coordinate with the Texas Rehabilitation Commission to shepherd injured workers through available vocational rehabilitation services;
- TWCC could also coordinate safety and return-to-work outreach efforts with state agencies already involved in community outreach such as the Texas Department of Health, Texas Workforce Commission, and Comptroller's Office.
- TWCC could also coordinate outreach efforts with non-profit entities such as the Texas Safety Association, a not-for-profit educational institute specializing in safety training and education; and the Texas Commission on Volunteerism and Community Service (to make available temporary volunteer positions when small employers are unable to offer compatible modified duty).

This option does not require legislative change.

Policy Option: Encourage insurance carriers to develop return-to-work programs for their policyholders, with particular emphasis on smaller policyholders.

Currently, insurance carriers are required to offer accident prevention programs to their policyholders. While many carriers also provide assistance on how to develop an effective return-to-work plan for their policyholders, this assistance varies considerably. Some carriers, although required, do not provide adequate assistance to their smaller policyholders. As the earlier findings indicate, it is smaller employers who often have higher injury rates and lost-time cases because they tend not to have safety and return-to-work programs in place. Economics plays a role in this. Often small employers pay minimum premiums, which are break-even propositions for insurance carriers at best.

The system should either require carriers to provide accident prevention and return-to-work resources for their smaller policyholders or address the needs of small employers directly.

This option may require legislative change.

**Recommendations for Improvements
in Texas Workers' Compensation
Safety and Return-to-Work Programs**

TECHNICAL APPENDIX

A Report to the 77th Texas Legislature

**Research and Oversight Council on Workers' Compensation
and Research and Planning Consultants, L.P.**

January 2001

Research and Oversight Council on Workers' Compensation

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Introduction

This is a technical appendix to the full report entitled *Recommendations for Improvements in Texas Workers' Compensation Safety and Return-to-Work Programs*. This report and two additional reports from the Research and Oversight Council on Workers' Compensation (ROC), entitled *Striking the Balance: An Analysis of the Cost and Quality of Medical Care in the Texas Workers' Compensation System*, and *Returning to Work: An Examination of Existing Disability Duration Guidelines and Their Application in the Texas Workers' Compensation System*, comprise the published reports based on findings from research mandated by House Bill 3697 (76th Texas Legislature, 1999).

This study addresses issues relating to workplace safety and returning injured workers to safe and productive employment in Texas. The amount of lost time sustained by injured workers in Texas represents a significant burden on the state's employers and employees. Injured workers in Texas lost a median of seven workdays in 1998, compared to the national average of five days. The estimated 1.3 million total workdays lost in 1998 in Texas is further estimated to be more than \$114 million in lost production.⁷⁴

The primary goal of this study is to identify current safety and return-to-work "best practices." The definition of best practices for this study is that collection of programs, process mechanisms, and activities that promote accident-prevention in the workplace and/or the return of injured workers to safe and productive employment.

A secondary goal is to identify the top industrial and occupational sectors in Texas that could most benefit from application of these best practices over the next ten years. The study further aims to develop educational strategies that would elevate employer and employee participation in implementing safety and return-to-work best practices in Texas' targeted sectors.

⁷⁴ This estimate is derived using Texas Workers' Compensation Commission's (TWCC) 1998 average weekly wage of \$412 for Texas workers, which projects to \$82.40 per workday. This figure does not include indirect costs such as hiring and training of replacement workers or overtime paid to other workers to cover for the injured worker. The estimated lost production is equal to total lost days times average daily wage.

I. RESEARCH METHODOLOGY

Canvas of Texas Employers and Non-employers

A: Texas Employers and Safety and Return-To-Work Programs

A group of Texas employers was canvassed by telephone to obtain information regarding their current safety program efforts, their perceptions concerning best practices in this area, and their opinions about ways to improve safety and return-to-work program effectiveness. Specifically, this telephone canvass was designed to collect information from an assortment of Texas employers concerning:

- Current status of employer efforts to adopt workplace safety and return-to-work programs;
- Best practices for employer-based workplace safety and return-to-work programs;
- Identify barriers and disincentives to the adoption of best practices;
- Safety and return-to-work programs at the targeted sectors; and
- Identify opportunities for improving state efforts in support of safety programs.

The final survey results are based on 150 telephone interviews each for the safety and the return-to-work questionnaires. Some employers participated in both interviews so the actual number of facilities is less than 300. These represented a number of different industries of different size and locations in Texas. For each questionnaire, fifty of the 150 sites were chosen from among the top targeted sectors identified in Section IV. Because of the limited number of interviews conducted, the results are not necessarily representative of all Texas businesses.

For the safety interviews, focus was placed on safety programs that consist of workplace-based efforts to prevent the occurrence of occupational injuries and illnesses, or to minimize the impact of those incidents on injured workers. For the return-to-work interviews, focus was placed on return-to-work programs that consist of workplace-based efforts to minimize work disability resulting from occupational injuries and illnesses and approaches to help injured workers return to their jobs quickly and safely. Many of these programs are designed and implemented by employers themselves, although information on program activities conducted by insurance carriers and other groups was also obtained.

Methods

Trained telephone interviewers from Consumer Research International (CRI) conducted the telephone canvass from their offices in Austin, Texas. A structured interview questionnaire was used with interview questions generally adapted from questions previously used and validated in similar studies. A panel of leading occupational safety health researchers reviewed the interview questionnaire before implementation. It was further pre-tested among

a small group of employers to evaluate clarity and understanding. The average length of each completed interview was approximately 12 minutes.

Interviewers attempted to locate and speak with the person at the employer facility who was most knowledgeable with the facility's programs. The canvass covered individual places of employment ("facilities") in Texas, irrespective of whether the facility's headquarters was in Texas or out-of-state. Questions focused on safety and accident-prevention programs conducted at the facility.

Separate questionnaires were developed for safety programs and return-to-work programs. Facilities were contacted until 100 completed interviews were obtained for each of the two programs. Additional facilities were randomly selected from among those in the top "targeted industries" group identified to collect an additional 50 completed interviews for each program. The total number of completions was 150 for the safety interviews and 150 for the return-to-work interviews.

Safety Questions

Each respondent was asked to report on four measures of actual safety performance at the facility:

- The number of OSHA recordable injuries and illnesses that occurred at the facility during the past 12 months;
- How many of the recordable cases involved lost time away from work (so called "lost-time cases");
- The total number of lost workdays experienced due to the recordable injuries and illnesses; and
- The number of OSHA citations received at the facility during the past three years.

Each response was then converted into a rate per 100 employees, based upon employment figures for the facility provided by the respondent. The mean reported rates for all 150 facilities were:

OSHA recordable rate per 100 employees per year:	3.19
OSHA lost days cases rate per 100 employees per year:	2.04
Number of lost days per 100 employees per year:	43.47
Number of OSHA citations per 100 employees per three years :	0.08

Employer Telephone Survey - Safety Programs

1. Interviewer: _____
2. Interview date: ____/____/____
3. Worksite Name [WSNAME] _____
4. Company Name [CONAME] _____

Script:

[PROMPT#1]: Hello, my name is _____ and I'm calling regarding a research study that is being conducted by the Texas Research and Oversight Council on Workers' Compensation. May I please speak to the person at your facility who is responsible for workplace safety and health? [when connected, go to PROMPT#2]

[PROMPT#2]: Hello, my name is _____ and I'm calling regarding a research study that is being conducted by the Texas Research and Oversight Council on Workers' Compensation. Are you responsible for workplace safety and health at your facility? [If Yes, go to PROMPT#4] If No, go to PROMPT#3]

[PROMPT#3]: May I please speak to the person at your facility who is responsible for workplace safety and health? [repeat PROMPT#2]

[PROMPT#4]: Your company has been randomly selected to provide input for this important statewide effort to collect information about effective safety programs. I would like to ask you a few questions regarding your company's program. The survey will take less than ten minutes to complete. Your responses will be kept strictly confidential. State law guarantees that your company's name will not be revealed to anyone and will not be identified in our final study report.

5. My records indicate that your company's name is [CONAME]. Is that correct?

(1) Yes [If Yes, go to Q6]

(2). No [If No, go to Q5A]

5A. What is your company's name? _____

6. What is your primary job responsibility at [CONAME]? [indicate answer below]

- (1) safety director
- (2) risk manager/insurance manager
- (3) plant/production manager
- (4) supervisor
- (5) human relations/personnel manager
- (6) financial officer/treasurer/controller
- (7) president/owner
- (8) other:

7. What kind of business or service is conducted at your facility?

8. How many full and part-time employees currently work at your facility?

9. What is the ZIP code of your facility? _____

10. How many other locations does [CONAME] have besides yours? _____

[if none, go to Q11]

10A Where is [CONAME]'s headquarters? _____

[If this is the headquarters location, go to Q11]

10B. Does [CONAME]'s headquarters play an active role in your facility's safety program?

- (1) Yes
- (2). No
- (3) Not applicable

Other: _____

11. What is the job title of the person at your facility with ultimate responsibility for safety and accident prevention?

- (1) safety director
- (2) risk manager/insurance manager

- (3) plant/production manager
- (4) supervisor
- (5) human relations/personnel manager
- (6) financial officer/treasurer/controller
- (7) president/owner
- (8) mine [refer to Q6 for answer]
- (9) other: _____

12. Does your facility have a safety committee?

- (1) Yes
- (2). No [If No, go to Q13]

12A How many people are on the committee? ___

12B What are the job titles of the people who serve on your safety committee?

12C How often does the safety committee meet? [once every _____]

13. I am going to read a list of several possible components of a workplace safety and accident prevention program. As I read each one, please respond “yes” or “no.” depending on whether or not this function currently exists at your facility:

13A Written statement of safety policies and procedures

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13B Assignment of specific responsibilities for workplace safety to particular people at the facility.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13C Written safety rules.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13D Safety training for all newly hired workers.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13E Safety retraining for experienced workers.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13F Regular safety inspections.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13G On-site first aid.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13H Medical surveillance and monitoring.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13I Process to identify and evaluate hazards

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13K Investigation and follow-up for all accidents

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13L Active top management support and involvement in the program?

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13M Active employee participation in the safety program?

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

13N Thorough accident recordkeeping

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

14. [if all answers were "yes, go to Q15] I'm interested in knowing more about the reasons why your company does not perform some of these functions. Would you please indicate the primary reason why your company does not perform:

[read each function above which received a "no" response. Code the respondent's answer according to this list]

- (1) Too expensive
- (2) Too time consuming
- (3) It's not effective in preventing accidents
- (4) We are not required to do it by law
- (5) Our employees didn't want this done
- (6) We don't know how to do this
- (7) We rely on [name of some other organization] to do this
- (8) Other _____
- (9) Other _____

Function Number	Response
14a _____	_____
14b _____	_____
14c _____	_____
14d _____	_____
14e _____	_____
14f _____	_____
14g _____	_____
14h _____	_____

14i _____
14j _____
14k _____

15A. Do you receive assistance from your workers' compensation insurance carrier in helping to prevent accidents and run an effective safety program?

- (1) Yes
- (2). No [If no, go to Q16]
- (3) Not applicable [If no, go to Q16]
- (4) Other: _____

15B What kind of assistance does your workers' compensation insurance carrier currently provide? [check all responses applicable and write in others] [Read list]

- (1) Help in setting up and running a safety program
- (2) Loss reports and trend analyses
- (3) Safety training
- (4) Hazard identification and control recommendations
- (5) Exposure assessment and industrial hygiene testing
- (6) Help with first aid and medical programs
- (7) Accident investigation
- (8) OSHA compliance
- (9) Other _____
- (10) Other _____

15C What kind of assistance would your company like to see provided by workers' compensation insurance carriers in the future? [check all responses applicable and write in others] [Read list]

- (1) Help in setting up and running a safety program
- (2) Loss reports and trend analyses
- (3) Safety training
- (4) Hazard identification and control recommendations
- (5) Exposure assessment and industrial hygiene testing
- (6) Help with first aid and medical programs

- (7) Accident investigation
- (8) OSHA compliance
- (9) Other _____

Now I'd like to ask you a few final questions about your facility's actual accident record.

16. About how many OSHA recordable injuries and illnesses have occurred at your facility during the past 12 months? _ _ _ _

17. About how many of these recordable cases involved lost time? _ _ _ _

18. Approximately how many total lost workdays were experienced due to OSHA recordable injuries and illnesses at your facility during the past 12 months? _ _ _ _

19. Which of the following six phrases best describes the leading source of OSHA recordable cases at your facility during the past 12 months? [Read List]

- (1) manual materials handling
- (2). machine operations
- (3) slips and falls
- (4) vehicle operation
- (5) repetitive motion
- (6) exposure to hazardous chemicals
- (7) other _____

20. In your opinion, which of the following six phrases best describes the most significant hazard at your facility?

- (1) manual materials handling [Read List]
- (2). machine operations
- (3) slips and falls
- (4) vehicle operation
- (5) repetitive motion
- (6) exposure to hazardous chemicals
- (7) other _____

21 Approximately how many OSHA citations have your facility received during the past 3 years?

That is the end of the survey.

22. Could I please have your name in case we need to contact you again to verify your responses?

Respondent name [RNAME] _____

Table 1
Final Disposition of Telephone Calls
In Canvass of Employer Safety Programs

Final Disposition	Safety Programs: Number of Calls	Safety Programs: Percentage of Calls
No Answer	69	2.47%
Busy	9	0.32%
Disconnected	77	2.75%
Residence	10	0.36%
Respondent not available	37	1.32%
Refusal	81	2.90%
Computer Tone	9	0.32%
Language Problem	8	0.29%
Schedule Callback	170	6.08%
Call Substitute Phone Number	1	0.04%
Mid-Interview Terminate	3	0.11%
Terminate -- No Worker's Comp	0	0.00%
Terminate – Business Size	22	0.79%
Voice Mail	64	2.29%
Duplicate Contact	3	0.11%
Completes	150	5.37%
TOTAL	713	25.51%

Return-to-Work Questions

Each respondent was asked to report on three measures of actual accident and return-to-work experience at the facility:

- The number of OSHA recordable injuries and illnesses that occurred at the facility during the past 12 months;
- How many of the recordable cases involved time away from work (so called “lost-time cases”); and
- The total number of lost workdays experienced due to the recordable injuries and illnesses (“lost-work-days rate”).

Each response was then converted into a rate per 100 employees, based upon employment figures for the facility provided by the respondent. The mean reported rates for all 150 facilities were:

OSHA recordable rate per 100 employees per year:	3.83
OSHA lost days cases rate per 100 employees per year:	2.02
Number of lost days per 100 employees per year:	45.52

The first two measures are indicators of the incidence of accidents, and the third measure is an indicator of the duration of work disability. For the purposes of this survey, we have considered the mean number of lost days per 100 employees at the facility to be the most directly relevant measure for assessing the potential impact of return-to-work programs.

Employer Telephone Survey – Return-to-Work Programs

1. Interviewer: _____
2. Interview date: ___/___/___
3. Worksite Name [WSNAME] _____
4. Company Name [CONAME] _____

Script:

[PROMPT#1]: Hello, my name is _____ and I'm calling regarding a research study that is being conducted by the Texas Research and Oversight Council on Workers' Compensation concerning return-to-work programs for injured workers. May I please speak to the person at your facility who is responsible for workers' compensation? [when connected, go to PROMPT#2]

[PROMPT#2]: Hello, my name is _____ and I'm calling regarding a research study that is being conducted by the Texas Research and Oversight Council on Workers' Compensation. Are you responsible for workers' compensation programs at your facility? [If Yes, go to PROMPT#4] If No, go to PROMPT#3]

[PROMPT#3]: May I please speak to the person at your facility who is responsible for workers' compensation programs? [repeat PROMPT#2]

[PROMPT#4]: Your company has been randomly selected to provide input for this important statewide effort to collect information about effective return-to-work programs for injured workers. I would like to ask you a few questions regarding your company's efforts in this area. The survey will take less than ten minutes to complete. Your responses will be kept strictly confidential. State law guarantees that your company's name will not be revealed to anyone and will not be identified in our final study report.

5. My records indicate that your company's name is [CONAME]. Is that correct?
- (1) Yes [If Yes, go to Q6]
 - (2). No [If No, go to Q5A]
- 5A. What is your company's name? _____
6. What is your primary job responsibility at [CONAME]? [indicate answer below]
- (1) safety director
 - (2) risk manager/insurance manager
 - (3) plant/production manager
 - (4) supervisor
 - (5) human relations/personnel manager
 - (6) financial officer/treasurer/controller
 - (7) president/owner
 - (8) other: _____
7. What kind of business or service is conducted at your facility?

8. How many full and part-time employees currently work at your facility?

9. What is the ZIP code of your facility? _____
10. How many other locations does [CONAME] have besides yours? _____
[if none, go to Q11]
- 10A Where is [CONAME]'s headquarters? _____
[If this is the headquarters location, go to Q11]
- 10B. Does [CONAME]'s headquarters play an active role in your facility's return-to-work program for injured workers?
- (1) Yes
 - (2) No
 - (3) Not applicable
 - (4) Other: _____

11. What is the job title of the person at your facility with ultimate responsibility for return-to-work programs?

- (1) safety director
- (2) risk manager/insurance manager
- (3) plant/production manager
- (4) supervisor
- (5) human relations/personnel manager
- (6) financial officer/treasurer/controller
- (7) president/owner
- (8) mine [refer to Q6 for answer]
- (9) other: _____

12 Does your facility have a written program regarding techniques for helping injured workers to return to work?

- (1) Yes [if yes, go to Q12A]
- (2) No {if no, go to Q13}

12A Does each of your employees receive a copy of your written return-to-work program?

- (1) Yes
- (2). No

13. During the past three years, have any employees at your facility missed time away from work because of an occupational injury or illness?

- (1) Yes {if Yes, go to Q 14A}
- (2) No [If No, go to Q14B]

14A. When an injured employee misses time away from work, are efforts made by your management to help the employee safely and quickly return to work?

- (1) Yes [if Yes, go to Q15]
- (2) No [If No, go to Q16]

14B If an injured employee were to miss time away from work, would any efforts be made to help the employee safely and quickly return to work?

- (1) Yes [if Yes, go to Q15]
- (2) No [If No, go to Q16]

15. I am going to read a list of several possible components of a return-to-work program. As I read each one, please respond “yes” or “no.” depending on whether or not this function is currently performed at your facility:

15A Contacting injured employees as soon as possible to provide help and assistance in responding to their injury.

- (1) Yes
- (2). No
- (3) Not applicable
- (4) Other: _____

15B Encouraging the injured worker to get timely and appropriate medical treatment.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15C Maintaining communication with the injured worker at least once per week.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

16D. Maintaining communication with the injured worker’s doctor

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15E Providing transitional duty or light-duty jobs for the injured worker.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15F Redesigning jobs or providing assistive devices to help the injured worker return to work safely.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15G Making changes in the worker's work methods and job requirements.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15H Nurse case management.

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15I Physical therapy or occupational therapy

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15J Counseling for the worker

- (1) Yes
- (2) No
- (3) Not applicable
- (4) Other: _____

15K Retraining

- (1) Yes
- (2) No
- (3) Not applicable

(4) Other: _____

15L Keeping the worker's job available until he or she returns.

(1) Yes

(2) No

(3) Not applicable

(4) Other: _____

15M Maintaining the worker's wage level (through salary continuation or salary supplementation) and medical benefits until return

(1) Yes

(2) No

(3) Not applicable

(4) Other: _____

16. [if all answers were "yes, go to Q17] I'm interested in knowing more about the reasons why your company does not perform some of these functions. Would you please indicate the primary reason why your company does not perform:

[read each function above which received a "no" response. Code the respondent's answer according to this list]

(1) Too expensive

(2) Too time consuming

(3) It's not effective in preventing accidents

(4) We are not required to do it by law

(5) Our employees didn't want this done

(6) We don't know how to do this

(7) We rely on (some other organization) to do this

(8) Other _____

(9) Other _____

Function Number	Response
16a _____	_____
16b _____	_____

- 16c _____
- 16d _____
- 16e _____
- 16f _____
- 16g _____
- 16h _____
- 16i _____
- 16j _____
- 16k _____

17. Do you receive assistance from your workers' compensation insurance carrier in helping injured workers return quickly and safely? [Read list]

- (1) Yes
- (2).No [If no, go to Q19]
- (3) Not applicable [If no, go to Q19]
- (4)

Other: _____

18A. What kind of assistance does your workers' compensation insurance carrier currently provide? [check all responses applicable and write in others] [Read list]

- (1) early intervention
- (2) aggressive medical care
- (3) frequent communication with injured worker
- (4) transitional duty or light-duty jobs
- (5). job modification or job accommodation
- (6) changes in job requirements and work methods
- (7) nurse case management
- (8) physical therapy or occupational therapy
- (9) counseling
- (10) retraining
- (11) keeping the worker's job available until he or she returns
- (12) maintaining wage and medical benefits until return

- (13) other _____
- (14) other _____
- (15) other _____

18B What kind of assistance would your company like to see provided by workers' compensation insurance carriers in the future? [check all responses applicable and write in others] [Read list]

- (1) early intervention
- (2) aggressive medical care
- (3) frequent communication with injured worker
- (4) transitional duty or light-duty jobs
- (5) job modification or job accommodation
- (6) changes in job requirements and work methods
- (7) nurse case management
- (8) physical therapy or occupational therapy
- (9) counseling
- (10) retraining
- (11) keeping the worker's job available until he or she returns
- (12) maintaining wage and medical benefits until return
- (13) other _____
- (14) other _____
- (15) other _____

Now I'd like to ask you a few final questions about your facility's actual accident record.

- 19. About how many OSHA recordable injuries and illnesses have occurred at your facility during the past 12 months? _ _ _ _
- 20. About how many of these recordable cases involved lost time? _ _ _ _
- 21. Approximately how many total lost workdays were experienced due to OSHA recordable injuries and illnesses at your facility during the past 12 months? _ _ _ _

22. Which of the following six phrases best describes the leading source of OSHA recordable cases at your facility during the past 12 months?

- (1) manual materials handling
- (2). machine operations
- (3) slips and falls
- (4) vehicle operation
- (5) repetitive motion
- (6) exposure to hazardous chemicals
- (7) other _____

23. Could I please have your name in case we need to contact you again to verify your responses?

Respondent name [RNAME] _____

Table 2
Final Disposition of Telephone Calls
in Canvass of Employer Return-to-Work Programs

Final Disposition	Return To Work: Number of Calls Made	Return To Work: Percentage of Calls Made
No Answer	13	1.87%
Busy	2	0.06%
Disconnected	113	3.57%
Residence	6	0.19%
Respondent not available	8	0.25%
Refusal	106	3.35%
Computer Tone	20	0.63%
Language Problem	6	0.19%
Schedule Callback	156	4.93%
Call Substitute Phone Number	2	0.06%
Mid-Interview Terminate	10	0.32%
Terminate -- No Worker's Comp	63	1.99%
Terminate -- Business Size	17	0.54%
Voice Mail	20	0.63%
Duplicate Contact	5	0.16%
Completes	150	4.74%
TOTAL	697	22.04%

B: Non-Employer Questionnaire

Methods

Research and Planning Consultants (RPC) mailed out a questionnaire to 107 organizations for the non-employer questionnaire. The purpose of this questionnaire was to gain their input and perspectives on the characteristics of effective safety and return-to-work programs and their current efforts in those areas. These organizations were categorized within one of nine groups (see Table 3).

Table 3
Number of Mailed Surveys by Type of Organizations

Type of Organization	Number Contacted
Employer Trade Associations	12
Workers' Compensation Insurance Carriers	13
Labor Unions and Employee Associations	14
Federal Agencies	6
State Agencies	16
Foundations, universities and non-profit organizations	18
Health care institutions	15
Professional organizations	8
Consumer groups	5
Total	107

The organizations and contact individuals were identified by Internet searches, telephone books, RPC consultants, subcontractors, and ROC. If necessary, the organizations were contacted to determine the name and title of the most appropriate individual to complete the questionnaire. For those organizations with a national presence, a Texas branch or office was contacted if one was available.

Extra effort was made to obtain responses from labor unions, employee associations, foundations, universities, nonprofit organizations, and consumer groups. This was deemed appropriate given the volume of information collected from the perspective of employers. RPC called all of these organizations to verify they had received the questionnaire, and sent

each organization a follow-up letter stressing the importance of their organizations' contribution to the project.

Given the low number of questionnaires sent out, and the low response rate (see Table 4) for certain types of organizations, the summary responses are inconclusive and cannot be generalized.

Table 4
Non-employer Response Rates

Type of Organization	Number Responded	Response Rate
Employer Trade Associations	2	16.7%
Workers' Compensation Insurance Carriers	7	53.8%
Labor Unions and Employee Associations	3	21.4%
Federal Agencies	2	33.3%
State Agencies	11	68.8%
Foundations, universities and non-profit organizations	7	38.9%
Health care institutions	2	13.3%
Professional organizations	3	37.5%
Consumer groups	1	20.0%
Total	38	35.5%

II. Employment Sector Selection Criteria

Task 1 of Safety Study #2 calls for the selection of the top-ten industrial sectors (Table 5) and top-ten occupational sectors (Table 6) that should be the focus of Texas' safety and return-to-work efforts over the next ten years.

To compare injury statistics between different occupations and industries, a common unit of measurement is needed. Some injuries are more serious than others, so simply using the total number of injuries in each industry and occupation will not suffice. This problem can be solved by applying weighting factors when comparing injury statistics.

By using the number of days away from work and the wage rate as the weighting factors, we can compare the change over the next ten years in the total dollar value of the number of days away from work between industries and occupations. It is a fundamental principle of economics that the wage rate represents the value of a worker's marginal product, i.e., his or her contribution to a company's total production. The industrial sectors with the greatest value of lost production would receive the greatest amount of attention. The same principle applies to occupational sectors.

The change in the value of lost production in each industrial and occupational sector is calculated using the following equation:

$$\text{Change in Value of Lost Production From 2000 to 2010} = (\text{Expected Number of Employees in 2010} - \text{Expected Number of Employees in 2000}) \times (\text{Injury Rate}) \times (\text{Median Number of Days Away From Work per Incident}) \times (\text{Wage Rate}).$$

The injury rate is the number of incidents involving days away from work divided by the number of employees in the sector. The median number of days away from work is used in the calculation instead of the mean number of days. For some data series, such as house prices, the median is considered a better descriptive statistic than is the mean or average. In most industries and occupations the modal number of days away from work per incident is one. In other words, more incidents of injuries result in a single day away from work than any other number of days. That means that for most sectors injuries that result in long periods away from work are very infrequent. A small increase in the number of lengthy absences in a given year can have a sizeable impact on the mean number of days in a particular sector. This makes the mean value unstable over time, and in a single year that value can give the wrong impression. For statistical series such as these, the median value is considered more stable over time and thus is a more representative statistic. Another reason for using the median instead of the mean is that the mean statistic is not reported by the Bureau of Labor Statistics (BLS) or TWCC.

The expected number of employees from 2000 to 2010 is derived from employment projections provided by the Texas Workforce Commission (TWC). Their projection was for 2006 and their base year was 1996. Projections were extended to 2010 by assuming the growth rate per sector from 1996 to 2006 continues to 2010. TWC employment data and projections represent the standard to researchers and agencies requiring this data. All statistics derived use only data for the state of Texas.

Because the focus is on those sectors that will have the greatest increase in need for safety and return-to-work programs in Texas over the next ten years, the change in employment from 2000 to 2010 is used instead of total current employment.

Safety vs. Return-to-Work

Safety and return-to-work refer to two separate types of programs. Safety programs concentrate on preventive measures whereas return-to-work programs concentrate on remedial measures for workers who have lost days at work due to injuries.

Although safety and return-to-work are separate programs, the lists of targeted industries and occupations are applicable to both. There are not enough industry and occupation statistics available to compile separate lists for the two different kinds of programs. Occupations and industries that lose a great deal of production due to injuries would benefit from both safety and return-to-work programs.

Additional Information

To address interest in additional factors that could be used as selection criteria, several lists in addition to the lists produced by the above selection criteria were prepared. These additional lists are as follows:

Wage rate. As stated above, the wage rate is a measure of the value of a worker's contribution to production. That is why it is included in the selection criteria. However, there was some concern that inclusion of the wage rate could give the appearance that injuries to high-income workers deserve more attention than injuries to low-income workers. By compiling different lists, both with and without the wage rate as a selection factor, extra information for policy-makers is provided. (See Table 7 and Table 8)

Race and Ethnicity. Although neither race nor ethnicity were considered in the selection of the profiled industries and occupations, interest in analyzing the future injury trends of different ethnic and racial groups is addressed. Separate lists of the change in value of lost production by occupations for Hispanics, White Non-Hispanics, Black Non-Hispanics and Other Races were compiled. This was done using data from the 1990 U.S. Census and is provided for descriptive purposes only (see Tables 9-12).

Selected Sectors vs. Other Sectors

To give the reader a better idea of the significance of some of the statistics used in this study, several tables and graphs are provided (see Tables 13-22). Table 13 shows the number of employees in 1996 for each one of the ten selected industries. The figures range from 64,350 for Transportation By Air to 678,550 for Health Services. These figures can be compared to the ones presented in Table 14, industries with the most employees in 1996. Notice that four of the selected industries are also among the ten largest employers.

A similar comparison of number of employees by occupation in 1996 can be done using Tables 17 and 18. The range for the selected occupations is from 6,900 for Mining Occupations, NEC to 279,400 for Sales Workers, Other Commodities. Notice that two of the selected occupations are included in the list of the largest ten occupations.

Table 15 shows the projected employment growth from 2000 to 2010 for the selected industries. The figures range from 9,221 for Oil and Gas Extraction to 248,871 for Health Services. Table 16 shows the industries with the largest projected employment growth from 2000 to 2010. Notice that four of the selected industries are also in the list of the industries with the greatest projected growth rates.

A similar comparison of the projected growth of employees from 2000 to 2010 can be done using Tables 19 and 20. The range of the selected occupations is from 1,668 for Mining Occupations, NEC to 68,319 for Sales Workers, Other Commodities. Notice that two of the selected occupations are included in the list of the ten fastest growing occupations.

Assumptions

To compile the two lists of selected employment sectors, several assumptions were made pertaining to the statistics used:

1. Injury rates are assumed to be static over time. The study uses injury rates from 1998, the latest statistics available. Injury rates can change over time, however modeling for such a change is outside the scope of this study. Unless there is some systematic change in relative injury rates, modeling of the change in injury rates is not needed.
2. Growth rates are assumed to be static over time. The study uses employment sector employment projects produced by the Texas Workforce Commission. These projections are for the year 2006 using 1996 as the base year. The estimated growth rates from the TWC are used to project employment by sector from the year 2000 to 2010. Creating a separate forecasting model that projects employment by sector to the year 2000 is well outside the scope of this study. Borrowing the projected growth rates from the TWC study is deemed a practical solution.

Table 5
Industry List with Wage Rates

SIC Code	Industry	Expected Employment Change	Injury Rate	Median Days Away From Work	Wage Rate	Expected Change In Lost Production 2000-2010
45	Transportation by air	14,885	10.24%	11	\$160.14	\$2,685,058
13	Oil and gas extraction	9,221	1.53%	53	\$253.18	\$1,890,062
80	Health services	248,871	1.11%	5	\$115.74	\$1,599,164
42	Trucking and warehousing	29,274	3.69%	12	\$111.54	\$1,445,091
35	Industrial machinery and equipment	32,167	2.57%	7	\$209.59	\$1,212,829
50	Wholesale trade-durable goods	51,200	1.75%	7	\$183.00	\$1,149,620
17	Special trade contractors	87,866	1.85%	5	\$107.97	\$879,110
58	Eating and drinking places	188,712	1.09%	7	\$44.33	\$637,706
51	Wholesale trade-nondurable goods	26,028	2.69%	6	\$146.15	\$613,105
16	Heavy construction, except building	21,679	1.95%	10	\$134.34	\$568,544

Table 6
Occupation List with Wage Rates

DOT Code	Occupation	Employment Change	Injury Rate*	Median Days Away From Work	Wage Rate	Expected Change In Lost Production 2000-2010
804	Truck drivers	48,790	5.30%	18	\$89.84	\$4,184,396
274	Sales workers, other commodities	68,319	0.68%	19	\$74.08	\$651,313
463	Public transportation attendants	3,998	10.95%	6	\$243.48	\$639,518
17	Managers, food serving and lodging est.	21,667	0.96%	25	\$120.80	\$629,350
617	Mining occupations, n.e.c.	1,668	7.54%	54	\$89.99	\$611,308
444	Miscellaneous food preparation occ.	5,996	15.21%	12	\$54.92	\$601,134
575	Electricians	11,876	0.69%	59	\$119.53	\$576,235
447	Nursing aides, orderlies, and attendants	51,453	2.66%	7	\$57.70	\$552,460
327	Order clerks	26,633	1.34%	16	\$86.76	\$496,929
777	Miscellaneous machine operators, n.e.c.	4,669	11.91%	10	\$88.87	\$494,279

Table 7
Industry List without Wage Rates

SIC Code	Industry	Expected Employment Change	Injury Rate	Median Days Away From Work	Expected Change In Lost Production 2000-2010
45	Transportation by air	14,885	10.24%	11	16,766
58	Eating and drinking places	188,712	1.09%	7	14,385
80	Health services	248,871	1.11%	5	13,817
42	Trucking and warehousing	29,274	3.69%	12	12,955
17	Special trade contractors	87,866	1.85%	5	8,142
13	Oil and gas extraction	9,221	1.53%	53	7,465
50	Wholesale trade-durable goods	51,200	1.75%	7	6,282
35	Industrial machinery and equipment	32,167	2.57%	7	5,787
54	Food stores	30,176	1.68%	9	4,571
53	General merchandise stores	34,633	2.49%	5	4,318

Table 8
Occupation List without Wage Rates

DOT Code	Occupation	Expected Employment Change	Injury Rate	Median Days Away From Work	Expected Change In Lost Production 2000-2010
804	Truc kdrivers	48,790	5.30%	18	46,574
444	Miscellaneous food preparation occ.	5,996	15.21%	12	10,945
447	Nursing aides, orderlies, and attendants	51,453	2.66%	7	9,573
274	Sales workers, other commodities	68,319	0.68%	19	8,792
889	Laborers, non-construction	28,898	4.83%	5	6,984
617	Mining occupations, n.e.c.	1,668	7.54%	54	6,793
785	Assemblers	15,673	3.78%	11	6,515
327	Order clerks	26,633	1.34%	16	5,728
777	Miscellaneous machine operators, n.e.c.	4,669	11.91%	10	5,562
017	Managers, food serving and lodging est.	21,667	0.96%	25	5,210

Table 9
Occupational Statistics by Black Non-Hispanic

DOT Code	Occupation	Employee Change 2000-2010	Injury Rate per 10,000 Employees	Median Days Away From Work	Average Wage per Day	Percent Black	Expected Lost Production Value 2000-2010
804	Truck drivers	7924.03	5.30%	18	\$89.84	16.24%	\$679,591
447	Nursing aides, orderlies, and attendants	17738.73	2.66%	7	\$57.71	34.48%	\$190,464
444	Miscellaneous food preparation occupations	1020.91	15.21%	12	\$54.92	17.03%	\$102,353
327	Order clerks	4915.15	1.34%	16	\$86.76	18.46%	\$91,709
777	Miscellaneous machine operators, n.e.c.	820.81	11.91%	10	\$88.87	17.58%	\$86,894
785	Assemblers	2768.04	3.78%	11	\$72.40	17.66%	\$83,303
889	Laborers, non-construction	5036.10	4.83%	5	\$65.54	17.43%	\$79,768
017	Managers, food serving and lodging establishments	2131.16	0.96%	25	\$120.81	9.84%	\$61,903
274	Sales workers, other commodities	5805.25	0.68%	19	\$74.08	8.50%	\$55,344
364	Traffic, shipping, and receiving clerks	2227.48	3.51%	8	\$87.58	18.14%	\$54,816

Table 10
Occupational Statistics by White Non-Hispanic

DOT Code	Occupation	Employee Change 2000-2010	Injury Rate per 10,000 Employees	Median Days Away From Work	Average Wage per Day	Percent White	Expected Lost Production Value 2000-2010
804	Truckdrivers	27930.17	5.30%	18	\$89.84	57.25%	\$2,395,386
463	Public transportation attendants	3290.08	10.95%	6	\$243.49	82.29%	\$526,280
274	Sales workers, other commodities	47451.16	0.68%	19	\$74.08	69.46%	\$452,372
575	Electricians	8951.58	0.69%	59	\$119.54	75.38%	\$434,339
017	Managers, food serving and lodging establishments	13961.39	0.96%	25	\$120.81	64.44%	\$405,529
617	Mining occupations, n.e.c.	959.95	7.54%	54	\$89.99	57.55%	\$351,814
327	Orderclerks	16262.36	1.34%	16	\$86.76	61.06%	\$303,429
549	Not specified mechanics and repairers	1245.75	17.71%	12	\$104.81	64.48%	\$277,522
376	Investigators and adjusters, exc. Insurance	9970.77	2.51%	13	\$82.57	70.35%	\$269,154
777	Miscellaneous machine operators, n.e.c.	2190.33	11.91%	10	\$88.87	46.91%	\$231,877

Table 11
Occupational Statistics by Hispanic Ethnicity

DOT Code	Occupation	Employee Change 2000-2010	Injury Rate per 10,000 Employees	Median Days Away From Work	Average Wage per Day	Percent Hispanic	Expected Lost Production Value 2000-2010
804	Truckdrivers	12453.19	5.30%	18	\$89.84	25.52%	\$1,068,028
444	Miscellaneous food preparation occupations	2736.97	15.21%	12	\$54.92	45.65%	\$274,398
617	Mining occupations, n.e.c.	629.99	7.54%	54	\$89.99	37.77%	\$230,886
889	Laborers, nonconstruction	13897.47	4.83%	5	\$65.54	48.09%	\$220,126
785	Assemblers	5467.11	3.78%	11	\$72.40	34.88%	\$164,530
777	Miscellaneous machine operators, n.e.c.	1508.21	11.91%	10	\$88.87	32.30%	\$159,665
869	Construction laborers	13957.55	2.66%	6	\$65.54	48.30%	\$146,075
447	Nursing aides, orderlies, and attendants	11850.32	2.66%	7	\$57.71	23.03%	\$127,239
274	Sales workers, other commodities	13290.85	0.68%	19	\$74.08	19.45%	\$126,707
017	Managers, food serving and lodging establishments	4309.13	0.96%	25	\$120.81	19.89%	\$125,165

Table 12
Occupational Statistics by Other Non-Hispanic

Code	Occupation	Employee Change 2000-2010	Injury Rate per 10,000 Employees	Median Days Away From Work	Average Wage per Day	Percent Other	Expected Lost Production Value 2000-2010
804	Truckdrivers	482.61	5.30%	18	\$89.84	0.99%	\$41,390
17	Managers, food serving and lodging establishments	1265.33	0.96%	25	\$120.81	5.84%	\$36,753
785	Assemblers	803.75	3.78%	11	\$72.40	5.13%	\$24,188
444	Miscellaneous food preparation occupations	191.27	15.21%	12	\$54.92	3.19%	\$19,176
463	Public transportation attendants	108.18	10.95%	6	\$243.49	2.71%	\$17,305
274	Sales workers, other commodities	1771.75	0.68%	19	\$74.08	2.59%	\$16,891
777	Miscellaneous machine operators, n.e.c.	149.65	11.91%	10	\$88.87	3.21%	\$15,843
95	Registered nurses	1809.27	0.97%	4	\$159.08	5.63%	\$11,138
235	Technicians, n.e.c.	1461.78	0.96%	5	\$156.94	6.83%	\$10,958
433	Supervisors, food preparation and service occupations	718.60	0.42%	42	\$80.41	4.69%	\$10,214

Table 13
Number of Employees by Selected Industry

SIC	Industry	Employees
13	Oil and gas extraction	134,800
16	Heavy construction, except building	104,700
17	Special trade contractors	217,650
35	Industrial machinery and equipment	114,850
42	Trucking and warehousing	132,700
45	Transportation by air	64,350
50	Wholesale trade—durable goods	270,900
51	Wholesale trade—nondurable goods	157,750
58	Eating and drinking places	532,450
80	Health services	678,550

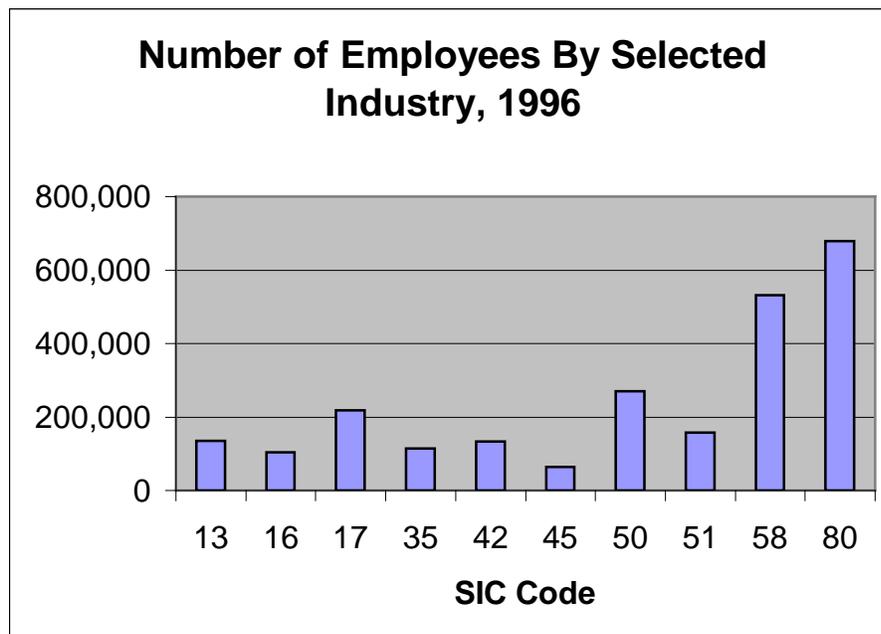


Table 14
Industries with the Most Employees in Texas, 1996

SIC	Industry	Employees
17 ⁺	Special trade contractors	217,650
50 ⁺	Wholesale trade-durable goods	270,900
53	General merchandise stores	178,450
54	Food stores	206,950
58 ⁺	Eating and drinking places	532,450
73 [*]	Business Services	466,300
80 ⁺	Health services	678,550
82 [*]	Educational services	802,950
87	Engineering and management services	178,050
88 [*]	Private households	839,000

⁺Profiled industry

^{*}An injury rate is not available for this industry.

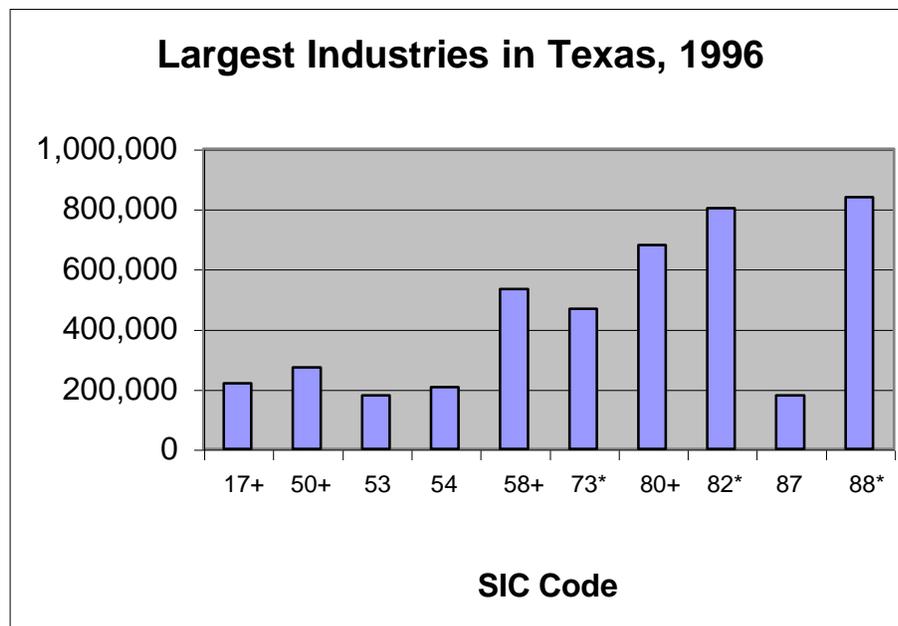


Table 15
Growth in Number of Employees by Selected Industry, 2000-2010

SIC	Industry	Employment Change 2000-2010
13	Oil and gas extraction	9,221
16	Heavy construction, except building	21,679
17	Special trade contractors	87,866
35	Industrial machinery and equipment	32,167
42	Trucking and warehousing	29,274
45	Transportation by air	14,885
50	Wholesale trade--durable goods	51,200
51	Wholesale trade--nondurable goods	26,028
58	Eating and drinking places	188,712
80	Health services	248,871

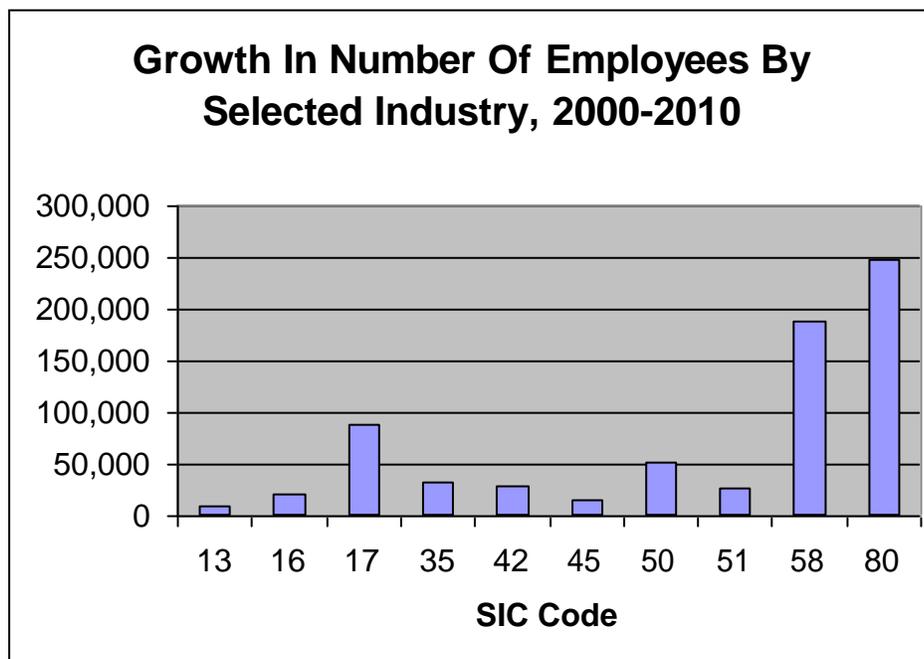


Table 16
Industries with Largest Projected Growth, 2000-2010

SIC	Name	Employment Change 2000-2010
17 +	Special trade contractors	87,866
50	Wholesale trade--durable goods	51,200
53	General merchandise stores	34,633
58	Eating and drinking places	188,712
73*	Business Services	234,383
80	Health services	248,871
82*	Educational Services	144,341
83	Social services	43,404
87	Engineering and management services	67,235
88*	Private Households	156,461

+Profiled industry

* An injury rate is not available for this industry.

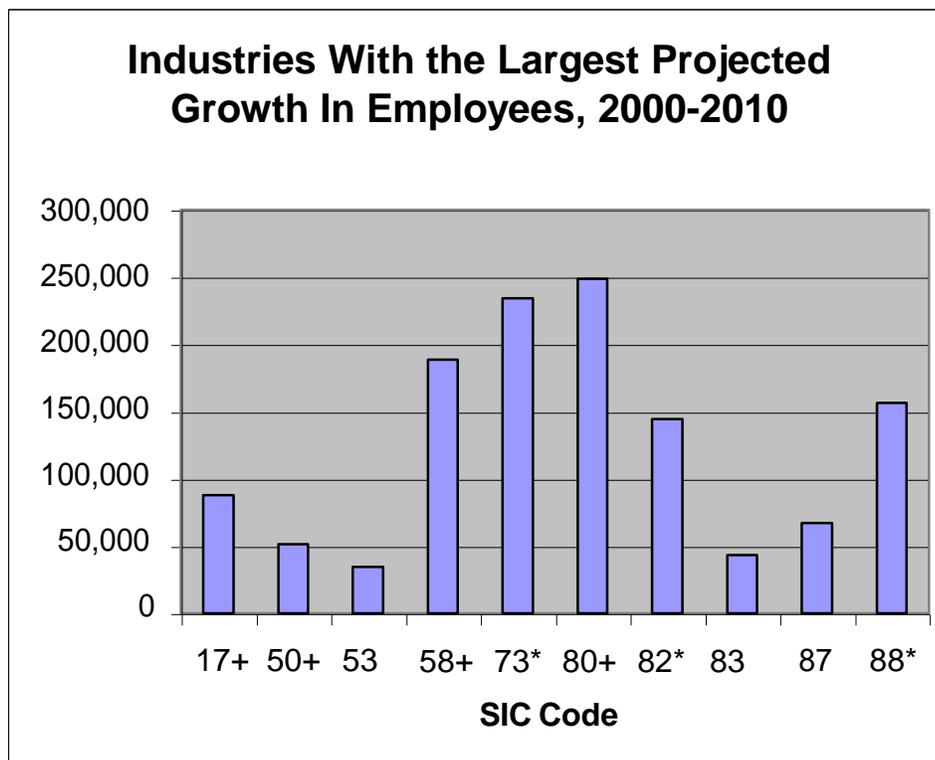


Table 17
Number of Employees by Selected Occupation, 1996

Census	Occupation	Employees
017	Managers, food serving and lodging establishments	44,100
274	Sales workers, other commodities	279,400
327	Orderclerks	50,150
444	Miscellaneous food preparation occupations	13,000
447	Nursing aides, orderlies, and attendants	117,800
463	Public transportation attendants	10,350
575	Electricians	33,800
617	Mining occupations, n.e.c.	6,900
777	Miscellaneous machine operators, n.e.c.	25,050
804	Truckdrivers	179,400

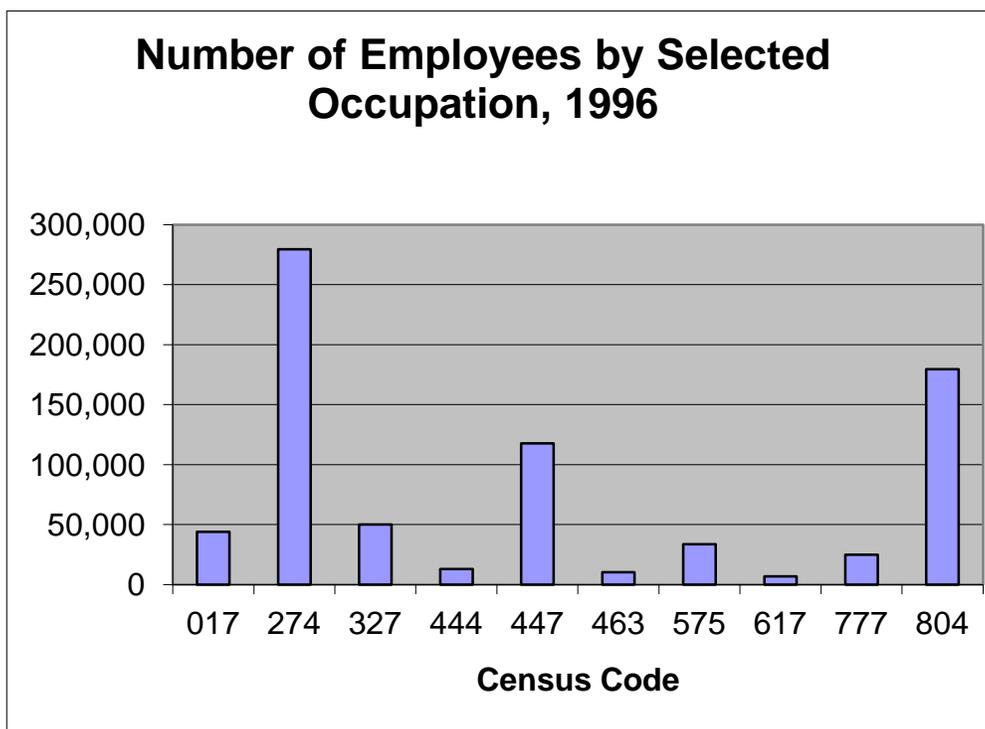


Table 18
Occupations With the Largest Number Of Employees, 1996

Census	Occupation	Employees
263	Sales workers, motor vehicles and boats	274,750
264	Sales workers, apparel	274,750
266	Sales workers, furniture and home furnishings	274,750
268	Sales workers, hardware and building supplies	274,750
274	Sales workers, other commodities	279,400
276	Cashiers	236,000
313	Secretaries	222,100
379	General office clerks	229,800
439	Kitchen workers, food preparation	177,650
804	Truck drivers	179,400

*Profiled occupation

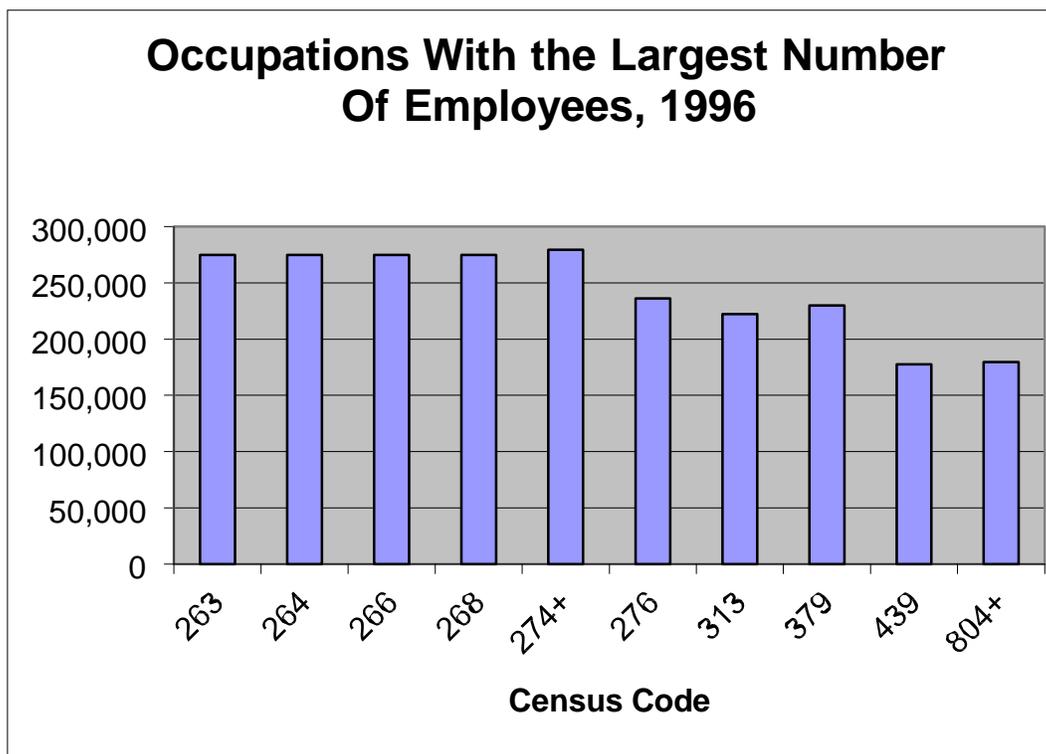


Table 19
Change in Employment by Selected Occupation, 2000-2010

Census	Occupation	Employment Change 2000-2010
017	Managers, food serving and lodging establishments	21,667
274	Sales workers, other commodities	68,319
327	Orderclerks	26,633
444	Miscellaneous food preparation occupations	5,996
447	Nursing aides, orderlies, and attendants	51,453
463	Public transportation attendants	3,998
575	Electricians	11,876
617	Mining occupations, n.e.c.	1,668
777	Miscellaneous machine operators, n.e.c.	4,669
804	Truck drivers	48,790

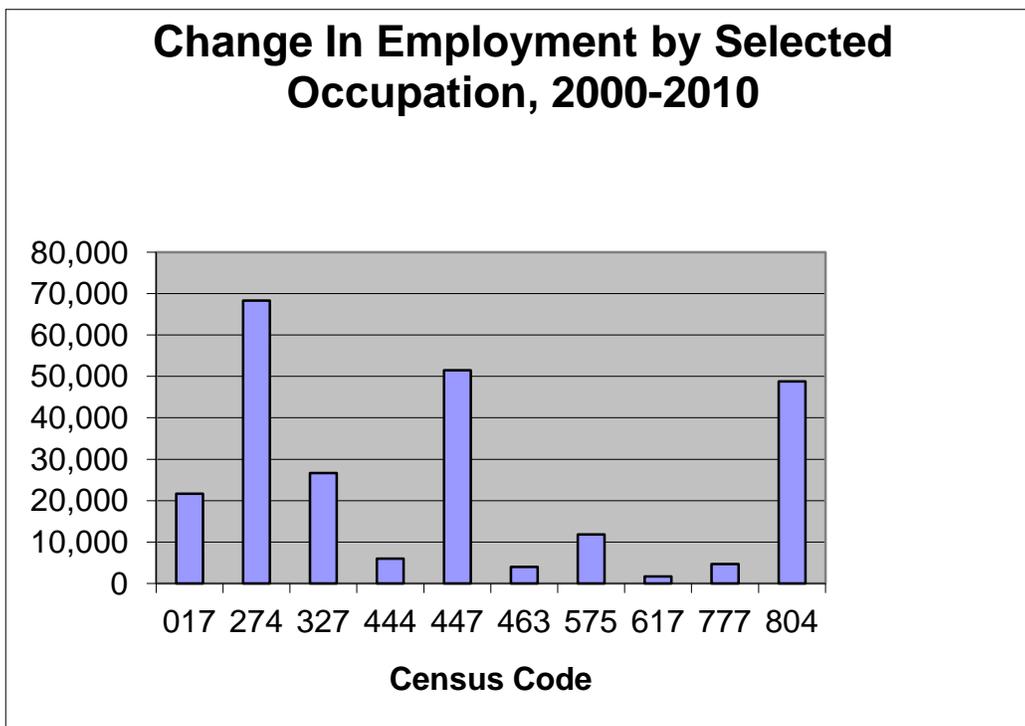


Table 20
Occupations with the Largest Projected Employment Growth, 2000-2010

Census Code	Occupation	Employment Change 2000-2010
022	Managers and administrators, n.e.c.	51,354
064	Computer systems analysts and scientists	60,174
263	Sales workers, motor vehicles and boats	65,961
264	Sales workers, apparel	65,961
266	Sales workers, furniture and home furnishings	65,961
268	Sales workers, hardware and building supplies	65,961
274	Sales workers, other commodities	68,319
276	Cashiers	66,785
439	Kitchen workers, food preparation	59,952
447	Nursing aides, orderlies, and attendants	51,453

