

# **Design, Development and Evaluation of Driver Wellness Programs**

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## **Technical Memorandum Number One: Wellness Literature and Programs Review**

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## **Introduction**

The initial step in designing a successful wellness program for commercial vehicle drivers is to review the current literature and practice with regards to the health status of the population and wellness programs in operation.

As the literature and practice review are presented it must be noted, that even though there are almost three million commercial motor vehicle drivers in the United States, little research has been done specifically to examine the health status of these workers. Likewise they are not a population that has had frequent opportunity to participate in company sponsored wellness programs. This is quite ironic and of significant importance considering the results of this review.

The following sections provide an overview of the driver health literature and a review of existing wellness programs and practices—both within and outside of the trucking industry. The results of the first two driver focus groups are also included in this document to provide a summary of research progress to date. A summary of this effort's research implications and next steps are also provided.

## **Overview of Driver Health Literature**

A review of the academic and trade literature was conducted to determine the state of health, health behavior, and health care costs of commercial vehicle drivers. The results of this review are reported by risk factor, which is a clearly defined episode pattern or characteristic that has been associated with the increased rate of a subsequently occurring disease.<sup>1</sup> For each risk factor, the following paragraphs first establish its importance and/or correlation with subsequent recurring diseases. Second, the observed prevalence of that factor among commercial vehicle drivers is reported. Third its prevalence among the general population is cited. A summary of the direct (i.e., health care) and indirect (i.e., turnover and job satisfaction) costs associated with these risk factors is then reported.

## **Smoking**

The use of tobacco products is the leading preventable cause of death in the United States and accounts for more than 400,000 deaths each year (e.g., about one out of every five deaths). Smoking substantially increases the risk of cardiovascular disease, is attributable to about 30 percent of all cancer deaths, and is the leading cause of chronic lung disease.<sup>2</sup>

The observed prevalence of smoking among truck drivers is noted below.

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<sup>1</sup> *Multilingual Glossary of Technical and Popular Medical Terms in Nine European Languages.* Austin Nutrition Research. The Virtual Nutrition Center. (<http://sun2.lib.uci.edu/HSG/Nutrition.html#DICTION>)

<sup>2</sup> *Healthy People 2000*

- A 1993 study of 2,945 truck drivers attending an industry trade show reported that 54 percent of the respondents reported smoking cigarettes or cigars.<sup>3</sup>
- A 1993 study of 125 truck drivers working for one company noted reported that 49 percent of population were smokers.<sup>4</sup>

**General Prevalence:** National statistics show 27.7 percent of all males and 25 percent of all men and women are smokers.<sup>5</sup>

## Obesity

In scientific literature, the term obesity is defined as excess storage of energy in the body in the form of fat. It is a term often used interchangeably with the word overweight, which implies weighing more than a standard level for a given height and gender. Definitions of excess vary, but the overall result is too much body fat. Obesity is a well-established risk factor for many diseases such as stroke, cardiovascular disease, hypertension and diabetes. It also exacerbates problems with conditions such as arthritis or back pain. Evidence also suggests that obesity, in conjunction with other risk factors (such as menopausal status, low activity level and predisposition to insulin resistance), places men and women at a higher risk of cancer.<sup>6</sup>

The observed prevalence of obesity among truck drivers is summarized below.

- A 1993 study of 2,945 truck drivers attending a trade show noted that 73 percent of all respondents to a survey were either overweight or obese. Of these drivers, 33 percent were classified as obese (i.e., Body Mass Index Greater than 30) and 40 percent were classified as overweight (i.e., Body Mass Index between 25 and 30).<sup>7</sup>
- A 1993 study examining the prevalence of Sleep Apnea in 125 drivers working for one company revealed that 71 percent of the drivers were classified as obese (i.e., Body Mass Index greater than 28).<sup>8</sup>
- A 1994 study of a cross-sectional population of 90 long haul commercial truck drivers revealed that obese drivers with a BMI greater than or equal to 30 presented a two-fold higher accident involvement rate than non-obese drivers.<sup>9</sup>

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<sup>3</sup> James Korelitz et. Al “Health Habits and Risk Factors Among Truck Drivers Visiting A Health Booth During A Trucker Trade Show.” American Journal of Health Promotion. Vol 8. No. 2. (November/December, 1993). Pp. 117-123.

<sup>4</sup> Riccardo Stoohs, Christian Guilleminault, and William Dement. “Sleep Apnea and Hypertension in Commercial Truck Drivers.” Sleep. Vol. 16 No. 8. (1993). American Sleep Disorders Association and Sleep Research Society. Pp. S11–S14, 1993.

<sup>5</sup> The State Tobacco Control Highlights 1996. U.S. Department of Health and Human Services. Washington, D.C. 1997.

<sup>6</sup> *Harvard Report on Cancer Prevention. Vol. 7: Causes of Human Cancer.* Official Journal of the International Association of Cancer Registries. Vol 7 (Supplement). November, 1996.

<sup>7</sup> Korelitz Et Al. P120

<sup>8</sup> Stoohs Et Al. S-12.

<sup>9</sup> Ricardo A. Stoohs, Et Al. “Traffic Accidents in Commercial Long Haul Truck Drivers: The Influence of Sleep - Disordered Breathing and Obesity.” Sleep. Vol. 17 No. 7. 1994. Pp. 619–623.

- A 1993 study examining the prevalence of back pain among 40 bus and 40 truck drivers noted that 55 percent of the truck drivers were overweight (i.e., as defined by a Brocas Index greater than 1.1).<sup>10</sup>

**General Prevalence:** Nationally, it is estimated 31.3 percent of men in the U.S are classified as overweight (i.e., greater than 130 percent of ideal body weight) and that 33 percent of men and women combined are classified as overweight.<sup>11</sup>

### **Hypertension (High Blood Pressure)**

High blood pressure is a chronic disease in the United States, affecting over 50 million people. High blood pressure increases an individual's risk of heart disease, renal failure and stroke.<sup>12</sup> Excess body weight correlates closely with increased blood pressure. In fact, almost every prospective study of factors that influence blood pressure regulation has identified weight as the strongest predictor of blood pressure. It is estimated that in up to 50 percent of the adults in the United States whose hypertension is managed through pharmaceuticals, the need for drug therapy could be alleviated with only modest reductions in body weight.<sup>13</sup>

Part 391 of the Code of Federal Regulations prescribes the maximum blood pressure level of commercial vehicle drivers as 160/90 mm Hg. As a result, we would expect a lower prevalence of hypertension because of these requirements. However as noted below, studies revealed a high prevalence of hypertension in truck drivers.

- A 1993 study of 2,945 truckers attending a trade show noted through measurement that 33 percent of the respondents had blood pressure greater than 140/90 mm Hg and that 11 percent of the respondents had blood pressure greater than 160/95 mm Hg.<sup>14</sup>
- A recent insurance industry study noted that 20 percent of the drivers in one test group had high blood pressure.<sup>15</sup>
- A large cross-sectional study of black and white male bus drivers in San Francisco revealed elevated rates of hypertension compared to a national sample of similar individuals. This study also noted that the prevalence of hypertension increased with length of employment.<sup>16</sup>

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<sup>10</sup> Mary Ann Magnusson. Et. Al. "Are Occupational Drivers at an Increased Risk For Developing Musculoskeletal Disorders." *Spine* Vol. 21, No. 6 1996. Pp 710-717.

<sup>11</sup> Robert J. Kuczmarski. Et Al. "Increasing Prevalence of Overweight Among U.S. Adults". *Journal of American Medical Association (JAMA)* Vol. 272 No. 3. 1994. Pp. 205.

<sup>12</sup> David Et Al. "Body Weight And Blood Pressure Regulation." *American Journal of Clinical Nutrition*. Vol. 63 (supplement). 1996. Pp.423-455.

<sup>13</sup> David Et Al. Pp. 431.

<sup>14</sup> Korelitz Et Al.

<sup>15</sup> Lisa Harrington, "To Your Driver's Health." *Private Carrier* Vol. 32, No. 2 (February, 1995). The National Private Truck Council. P 22-24.

<sup>16</sup> Gary Evans. "Working on the Hot Seat: Urban Bus Operators." *Accident Analysis and Prevention*. Vol. 26, No. 2. 1994. Elsevier Science Ltd. Pp 181-193.

- A Norwegian study comparing male bus and truck drivers to industrial workers noted a stronger correlation between length of employment and elevated blood pressure among commercial vehicle drivers.<sup>17</sup>
- Seventeen percent of the truck drivers in a 1993 Sleep Apnea study had blood pressure greater than 160/95 mm Hg.<sup>18</sup>

**General Prevalence:** Nationally, 26.3 percent of males and 25.0 percent males and females have blood pressure greater than 140/90 mm Hg.<sup>19</sup>

### Alcohol and Drug Abuse

Alcohol and drug abuse undermines citizen's health directly and indirectly. Substance abuse is estimated to be the actual cause of some 120,000 deaths per year with 100,000 attributed to alcohol and 20,000 to other drug use.<sup>20</sup> Alcohol and other drugs contribute to unintentional injury (i.e., motor vehicle accidents), suicide, and other violent deaths as well as being factors in a high percentage of chronic diseases.<sup>21</sup>

Amphetamines produce strong central nervous system stimulation therefore increasing physical and mental alertness. The Physician's Desk Reference lists elevated blood pressure, restlessness, dizziness, euphoria, and headaches as side effects of amphetamine usage and warns that it may impair the ability of a person to engage in potentially hazardous activities such as operating machinery or vehicles.<sup>22</sup>

Besides the side effects, dependence on Amphetamines can cause irrational behavior, restlessness, anorexia, insomnia, agitation, tremors, increased motor activity, hallucinations, and some individuals may even be hostile and aggressive.<sup>23</sup>

The prevalence of drug and alcohol abuse among commercial drivers noted in the literature is summarized below:

- A 1993 study of the prevalence of drugs and alcohol in 168 fatally-injured truck drivers noted that *alcohol* was present in 12.5 percent of all these drivers. Additionally, this study noted that *alcohol impairment* was (BAC >0.04%) present in one percent of these drivers.<sup>24</sup>

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<sup>17</sup> Gary Evans. P. 183.

<sup>18</sup> Ricardo Stoohs, Et Al. S12.

<sup>19</sup> Heart and Stroke Facts: 1996 Statistical Supplement. American Heart Association. 1996.

<sup>20</sup> *Healthy People 2000: Midcourse Review and 1995 Revisions*. U.S. Department of Health and Human Services Public Health Service. Washington, D.C.

<sup>21</sup> Healthy People 2000.

<sup>22</sup> *Physicians Desk Reference*. Medical Economics Company. Oradell, NJ. 1987.

<sup>23</sup> Phanee Pidetcha et. Al. "Screening for Urinary Amphetamine in Truck Drivers and Drug Addicts." *Journal of Medical Association in Thailand*. Vol 78 No 10. (October, 1995). Pp. 554-558.

<sup>24</sup> Dennis J. Crouch, Et Al. "The Prevalence of Drugs and Alcohol in Fatally Injured Truck Drivers." *Journal of Forensic Sciences*. Vol. 38, No. 6. (November, 1993). Pp. 1342-1353.

- A 1994 Finnish study of 168 fatal-to-the-truck driver accidents from 1984–1989 noted that less than one percent of these drivers were found to be driving while *intoxicated*.<sup>25</sup>
- A 1986 study of 317 truck drivers randomly-screened for drugs and alcohol in Tennessee revealed that *alcohol* was present in less than 1 percent of these drivers.<sup>26</sup>
- A 1993 study of 2,945 truck drivers attending a trade show revealed that 23 percent of all the drivers may have a *drinking problem* as defined by responses to defined questions regarding personal drinking perceptions.<sup>27</sup>
- A 1993 Australian study of 268 cited truck drivers revealed between 15 and 18 percent of these drivers had been *convicted for driving while under the influence of drugs and alcohol*.<sup>28</sup>
- A 1989 survey revealed that 26 percent of drivers were *perceived by their peers to be driving under the influence of drugs*.<sup>29</sup>
- The above cited 1993 study of fatally-injured truck drivers revealed that *Marijuana* was detected in 13 percent, *Cocaine* was detected in 8 percent, and *Stimulants* were detected in 11.3 percent of these cases.<sup>30</sup>
- The above-cited 1986 study of randomly screened truck drivers revealed that 15 percent had evidence of *Marijuana*, 2 percent had evidence of *Cocaine* and 15 percent had evidence of stimulants in their blood systems.<sup>31</sup>

**General Prevalence:** The most recent highway crash statistics indicate alcohol was a factor in 41 percent of all traffic fatalities.<sup>32</sup> The national average of reported binge drinking (e.g., more than five drinks at a time) is 21 percent.<sup>33</sup>

## Stress

Stress is defined as a condition harmful to an individual which results from the inability to maintain a constant internal environment.<sup>34</sup> Each year, more than 51 million Americans are diagnosed with a mental disorder that includes such factors as stress or depression.<sup>35</sup> Stress can

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<sup>25</sup> Heikki Summal and Timo Mikkola. "Fatal Accidents Among Car and Truck Drivers: Effects of Fatigue, Age, and Alcohol Consumption." *Human Factors*. Vol. 36, No. 2. (June, 1994). Human Factors and Ergonomics Society. Pp. 315-326.

<sup>26</sup> Adrian K. Lund, Et Al. "Drug Use by Tractor-Trailer Drivers." *Journal of Forensic Sciences*. Vol. 33, No. 3. (May, 1988). Pp. 648–661.

<sup>27</sup> Korelitz Et Al. P. 120.

<sup>28</sup> L.R. Hartley and J. El Hassani. "Stress, Violations, and Accidents." *Applied Ergonomics*. Vol. 25 (4). 1994. Pp. 221-230.

<sup>29</sup> Dennis Crouch. Et Al. "The Prevalence of Drugs and Alcohol in Fatally Injured Truck Drivers." *The Journal of Forensic Sciences*. Vol. 38, No. 6. (November, 1993). Pp. 1342-1353.

<sup>30</sup> Dennis J. Crouch, Et Al. Pp. 1347–1349.

<sup>31</sup> Adrian K. Lund. Et Al. Pp. 652–655.

<sup>32</sup> *Accident Facts: 1996 Edition*. National Safety Council. Itasca, IL. 1996. Pp. 86–87.

<sup>33</sup> Pat Busick, BRFSS Coordinator, Iowa Department of Public Health. 1996 Data obtained from Iowa's Behavioral Risk Factor Surveillance System via conversation.

<sup>34</sup> *Tabor's Cyclopedic Medical Dictionary, Edition 10*. F.A. Davis Co. 1965.

<sup>35</sup> *Mental Health Statistics*. Mental Health Organization. (The World Wide Web Home Page). November 5, 1996.

also be defined as a mentally or emotionally disruptive or disquieting influence causing distress.<sup>36</sup> This influence, or stressor, stimulates the sympathetic nervous system's fight or flight response, neuroendocrine secretion of corticosteroids, and consequent cardiovascular, hypertensive, gastrointestinal, and immune system impairments. Stress-mediated immune system dysfunction may predispose the individual to types of arthritis, cancer, and diseases with autoimmune components.<sup>37</sup>

Generally stress is associated with other risk factors through an interaction in which these risk factors become a coping mechanism.

A Study examining stress among truck drivers is summarized below.

- A 1997 study examining psychological stress among 303 parcel delivery drivers revealed these drivers scored significantly higher than the U.S. population in four common measures of job stress. Additionally, this study noted these drivers had higher stress levels than 91 percent of the U.S population on the best single scale of psychological stress.<sup>38</sup>

### **Poor Eating Habits**

C Everett Koop, former Surgeon General of the United States, noted that eight of the ten leading causes of death are related to what people eat. From heart disease to cancer, the food people put in their mouths has an influence on whether many chronic diseases develop. It is probably one of the most important influences in an individual's health, one of the greatest in need of change, and one of the hardest to change.

Studies noting the prevalence of poor eating habits among truck drivers are summarized below.

- A 1993 study of 2,945 truck drivers attending a trade show revealed over 80 percent of these drivers ate only one or two meals per day and 36 percent had three or more snacks per day.<sup>39</sup>
- A 1996 study of 30 drivers in a prototypical wellness program revealed that these drivers' favorite meal item while on the road was steak (1) and burgers (2).<sup>40</sup>
- The typical snacks of the drivers in the above 1996 study were:
  - 1) Chips
  - 2) Fruit
  - 3) Candy

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<sup>36</sup> *The American Heritage Dictionary, Second College Edition.* Houghton Mifflin Company, 1985.

<sup>37</sup> Dr. Peter Orris Et Al., "Stress Among Package Truck Drivers." *American Journal of Industrial Medicine.* Vol.31. 1997, Pp. 202-210.

<sup>38</sup> Dr. Peter Orris, Et Al. Pp. 205–206.

<sup>39</sup> Korelitz Et Al. P 119.

<sup>40</sup> Susan M. Holmes, Mark L. Power, and Clyde Kenneth Walker. "A Motor Carrier Wellness Program: Development and Testing." *Transportation Journal.* (Winter 1996). American Society of Transportation Logistics. Pp. 31–48.



- 4) Donuts
- 5) Cookies
- Only 15 percent of these drivers ate five or more servings of fruits and vegetables per day.

**General Prevalence:** National statistics show 80.9 percent of all males do not eat five or more servings of fruits and vegetables per day.<sup>41</sup>

### Physical Activity

Both epidemiological evidence and medical research demonstrate the ability of physical activity to reduce the risk of many physiological diseases, including heart disease, high blood pressure, osteoporosis, diabetes, and breast and colon cancer, as well as reduce the risk of psychological illnesses such as depression, anxiety, and stress.<sup>42 43</sup>

Literature noting the prevalence of sedentary lifestyles among commercial vehicle drivers is shown below.

- Fifty percent of the truck drivers in a 1993 study never participated in “aerobic” exercises and only 8 percent of these drivers “regularly” participated in “aerobic” exercise.<sup>44</sup>

**General Prevalence:** Overall U.S., 57.2 percent of U.S men and 57.4 percent of men and women have sedentary lifestyles.<sup>45</sup>

### Direct Medical Costs of Risk Factors

Table One provides a summary of the direct medical costs of specific risk factors as studied in a large manufacturing population.

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<sup>41</sup> Pat Busick BRFSS Coordinator, Iowa Dept . of Public Health “conversation” Data from Behavioral Risk Factor Surveillance System (1996 data).

<sup>42</sup> *Exercise and Heart Disease*. American Heart Association. March 3, 1997

<sup>43</sup> *Healthy People 2000: Midcourse Review and 1995 Revisions*. U.S. Dept. of Health and Human Services. Washington, D.C. 1995.

<sup>44</sup> Korelitz Et Al. P. 121.

<sup>45</sup> Pat Busick. conversation

**Table One: Direct Costs of Health Risks**

<b>Health Risk</b>	<b>Annual Excess Claim Costs</b>
Poor eating habits	\$498
Overweight (greater than 20 percent)	\$529
Sedentary (exercise less than once per week)	\$124
Hypertension (bp greater than 140/90)	\$109
Smoking	\$451
Stress	\$342
Mental Health	\$187

Source: S.D. Brink et. Al.. Health Risks and Their Impact on Health Costs. Milliman and Robertson. 1995. Data from The Chrysler Corporation—6000 life years 1989–1991. Note, costs do not include drug, vision, foot care, mental health, substance abuse, and outpatient pathology. Adjusted for inflation to 1994.

Table Two provides a summary of the absenteeism costs of these risk factors.

**Table Two: Absenteeism Costs of Health Risks**

<b>Health Risk</b>	<b>Excess Illness Days</b>
Smoking	0.90
Overweight (greater than 20 percent)	0.36
Sedentary (exercise less than once per week)	0.11
Hypertension (bp greater than 140/90)	0.32
Alcohol excess	0.37
Poor driving	0.30

Source: R.L. Berea. “The Effects of Behavioral Risks on Absenteeism and Health Care Costs in the Workplace.” *Journal of Occupational Medicine* Vol. 33, No. 11 1991. Pp 11–19. Dupont Company—46,000 Employee lives from 1984 to 1988.

### **Indirect Costs Of Driver Health Associated Areas**

Motor carrier managers and academicians have recently exhibited a high level of interest in driver retention strategies because the industry is experiencing excessive turnover rates. Turnover is very costly to a company in both employee morale and direct employee replacement costs. Driver turnover has been estimated to cost \$1,000 per incident and the cost of recruiting, hiring, and training a new driver has been estimated at \$5,000.<sup>46</sup> As a result, literature that examined driver behavior and perceptions that lead to turnover was reviewed and summarized below.

<sup>46</sup> James C. McElroy, Et Al. “Career Stage, Time Spent on the Road, and Truckload Driver Attributes.” *Transportation Journal*. Vol. 33. No. 1. (Fall, 1993). The American Society of Transportation Logistics. Pp. 5–13.

- A 1994 study of 57 for-hire truckload carriers revealed the following driver turnover rates by segment.<sup>47</sup>
  - » Dry Van carriers: Average = 67 percent, Range = 30–110 percent
  - » Flatbed carriers: Average = 66 percent, Range = 37–117 percent
  - » Refrigerated carriers: Average = 69 percent, Range = 22–105 percent
  - » Tank carriers: Average = 49 percent, Range = 10–140 percent
- A recent study examining job satisfaction of 3,174 commercial vehicle drivers working for 13 truckload carriers throughout the U.S. noted 44.3 percent of drivers working for these companies expected better benefits packages.<sup>48</sup>
- A 1993 study of 3,379 drivers working for 13 truckload motor carriers revealed that drivers perceived diminishing “benefits adequacy” as their career stage progressed. In fact, career stage (e.g., early = 2 years or less, mid = 2–10 years, and late = more than 10 years experience) explained as much as 8.3 percent of the variation in these drivers’ perceptions of benefits adequacy.<sup>49</sup>
- The above study also noted drivers’ perceived attitude of the company towards their employees decreased with career stage and that career stage explained 3.1 percent of the variation in these drivers’ perceived attitudes
- A 1994 study of 1,464 drivers employed by 57 truckload carriers revealed that “Better benefits” and “Increased pride in my trucking company” were the second and third-most important (“Increased annual pay” was ranked most important) of 37 reasons why drivers were likely to continue working for their present employer.<sup>50</sup>

**General Prevalence:** The median turnover rate of employees for all U.S. businesses in 1988 was 12 percent and the average national turnover rate of employees for all U.S. businesses in 1992 was 8.4 percent.<sup>51 52</sup>

### **Review of Wellness Programs and Practices**

Wellness programs in corporate America have come into existence in the last quarter of the century primarily to slow down the ever-escalating costs of medical care provided by employers. Improved recruitment, increased productivity, improved morale are among other wellness program benefits. This section provides a summary of wellness programs within the trucking and other industries.

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<sup>47</sup> Frederick J. Stephenson and Richard J. Fox. “Driver Retention Solutions: Strategies for For-Hire Truckload Employee Drivers.” *Transportation Journal*. Vol. 35, No 4 (Summer, 1996). American Society of Transportation Logistics. Pp. 12-24.

<sup>48</sup> Gene C. Griffin, Julene M. Rodriguez, and Brenda M. Lantz. *Job Satisfaction of U.S. Commercial Drivers*. UPTGI Report No. 90. The Upper Great Plains Transportation Institute, North Dakota State University. 1993. Pp. 49–51.

<sup>49</sup> James C. McElroy, Et. Al. Pp. 9–11.

<sup>50</sup> Stephenson and Fox. P. 20.

<sup>51</sup> Stephen A. LeMay, G. Stephen Taylor, and Gregory B. Hunter. “Driver Turnover and Management Policy, A Survey of Truckload Irregular Route Carriers.” *Transportation Journal*. Vol. 33, No. 2. (Winter, 1993). The American Society of Transportation and Logistics. Pp. 15–24.

<sup>52</sup> Stephenson and Fox. P. 12.

## Wellness Programs Within the Trucking Industry

A compilation of wellness programs within the trucking industry was developed through a review of the academic and trade literature.

### *Programs Documented in the Academic and Trade Literature*

A review of the literature revealed only one documented wellness program that was designed for commercial truck drivers. This program was implemented by a firm with 3,000 employees which provides commercial vehicle and employee leasing services for private and for-hire trucking operations in 38 states.<sup>53</sup> The program was designed as part of a management team initiative to control rising health care costs. The subject company's health care claims experience showed heart problems were the largest cost category for two out of three observed years and costs associated with heart disease represented more than 10 percent of total health care costs.

In consultation with a wellness specialist, the company first identified the following factors which contribute to heart problems:

- Elevated blood cholesterol
- Elevated blood pressure
- Overweight
- Lack of exercise
- Smoking

Since the first three of the above risk factors are affected by nutrition, the company decided to first survey a sample population of 300 of the firm's truck drivers to determine their health and nutrition habits. Survey recipients were asked questions regarding meal and snack frequency and selection choices while on the road.

This survey revealed dinner as the most frequent meal eaten and "burgers and steaks" as the most common meal of choice. Additionally, 48 percent of the survey respondents indicated "snacking while on-the-road with potato chips" as the most frequent snack choice.

Using results of this survey, the management team next designed a nutrition intervention program and compared effectiveness of this program using a test and control group of drivers. The goal of the test was to determine if a wellness program emphasizing driver nutrition could significantly affect the risk factors attributable to heart problems.

The nutrition program consisted of nutrition and wellness counseling with the wellness consultant, printed information designed to educate drivers about healthy meal choices, and "healthy snack" bags containing such items as:

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<sup>53</sup> Susan M. Holmes, Mark L. Power, and Clyde Kenneth Walker. "A Motor Carrier Wellness Program: Development and Testing." *Transportation Journal*. Vol. 35, No. 3. (Spring, 1996). American Society of Transportation Logistics. Pp. 33-48.

- Fresh fruit
- Juices
- Raisins
- Pretzels
- Fig cookies

Prior to implementing the test, health screening assessments were given to both the test and control group of drivers which measured:

- Weight
- Body composition
- Blood pressure
- Fitness level (e.g., Techumseh step test)
- Blood Glucose
- Smoking
- Blood Total and HDL Cholesterol

The test was conducted for a period of six months and drivers were again given health screening assessments to determine effectiveness of the program. The results of this indicated that the nutrition intervention program achieved *statistically significant* differences among the test and control group of drivers in the areas of:

- Weight reduction
- Improved fitness level
- Smoking cessation

The test also revealed somewhat improved scores in the areas of blood cholesterol levels, body fat, and blood glucose. Follow-up interviews with the drivers also noted improved feelings about the company. This result is consistent with other industries which have shown that wellness programs can improve health behavior, lower turnover rates, and improve job satisfaction.

#### *Programs Documented Through On-Site and Telephonic Interviews*

Since only one driver wellness program was cited in the literature, a cross section of the motor carrier industry was surveyed via on-site and telephone interviews to determine the nature and extent of wellness programs within the industry.

#### **Motor Carrier Operation One**

This Midwest based trucking company is the largest truckload carrier in the United States with approximately 14,000 drivers, 2,500 corporate support staff, and 2,000 other staff members based in 15 operations centers around the United States. This company provides a variety of trucking services including dry-van, flatbed, specialized, and dedicated operations. Corporate staff views driver turnover, increased shipper demands, and increased operating costs as the most significant challenges in the near future.

The company has a wellness program because of upper management interest and support. Based on the results of the phone interview, the most extensive employee program participation occurs at the corporate offices where wellness programming is administered.

Seventy five percent of the operations centers are equipped with fitness rooms and employee cafeterias. During a visit to one of these operations centers, there was no evidence of the usage of the fitness room even though approximately 800 drivers pass through this facility each day. The majority of the cafeteria food provided typical high-fat menu choices such as bacon and eggs and hamburgers and cheeseburgers. However, it was noted that some selection of deli sandwiches and prepackaged salads are available. This operations center did not have a local wellness coordinator.

According to the corporate wellness coordinator, cardiovascular claims are the number one medical cost for truck drivers. The interviewee stated that the company is implementing a disease management program, although specifics were not known. Other programs include a \$30 reimbursement for smoking cessation, an employee health assessment program, stress management and aerobics classes. The interviewee noted that the program weakness was not reaching drivers or having wellness program representatives at local operations centers.

#### Motor Carrier Operation Two

This company is a regional for-hire flatbed operation with approximately 800 trucks based in the Midwest. The interviewee perceived the greatest challenge of the company as finding and keeping good drivers. The company began a wellness program to keep health care costs down even though the wellness coordinator has no concept of the company's health care costs and has not analyzed any data other than to know their costs are increasing.

The company's program has primarily reached office staff and not drivers. It is estimated by the interviewee that over \$100 per office staff employee is spent on wellness, while almost nothing is spent on drivers. There is a large, beautiful fitness facility at the corporate headquarters along with a cafeteria and motel. Lunch seminars, health assessments and a newsletter are provided although it appears there is almost no driver participation. The fitness center had one member of the office staff working out over the lunch hour. The featured luncheon special in the employee cafeteria was a 16-ounce T-bone steak although they did have a salad bar with a very few healthy choice options.

The interviewee stated that the program strengths are employee interest (i.e., corporate office staff), modern facilities, and top management commitment. Weaknesses are inability to reach drivers, newness of program, and lack of personnel to administer the program.

### Motor Carrier Operation Three

This refrigerated carrier is a large national operation based in the mid-south with 2,400 total employees. The workforce consists of 2,100 drivers and a staff of 300 operations/support staff. Driver turnover rates at this company were quoted to be in excess of 200 percent. This company is very interested in wellness programs as the recently appointed president believes health affects every part of the business. They have not, however, figured out how to reach the driver with wellness programs. They do provide a \$200 wellness benefit for all employees and do develop and distribute a newsletter.

### Motor Carrier Operation Four

This Midwest-based refrigerated carrier operates in all 50 states with an irregular route truckload operation. The company has approximately 2,000 independent owner-operators and 400 in-house corporate staff and shop support. They are in the beginning stages of developing a wellness program and currently provide limited health information through a company newsletter. Flu shots, health screenings and fitness membership reimbursements are available to all employees and operators. They are in the process of building a fitness center at the corporate headquarters. As with other trucking companies, reaching drivers is their biggest concern. This is reflected in their participation rates since nearly 20 percent of corporate staff and only one percent of drivers participate in their wellness programs.

### Motor Carrier Operation Five

Four years ago, this private fleet operation consisting of 500 over-the-road refrigerated trucks implemented a fatigue/health education program designed for its truck drivers. The program included classroom instruction on fatigue and other health issues and a manual which provided information on exercise, diet, stress and fatigue. The program demonstrated very positive results with a 40 percent reduction in accidents and large program acceptance by the drivers.<sup>54</sup>

As often happens, the individual that developed, implemented, and championed the program left the company to take another position in a related field. Since that individual's departure, the corporation reorganized the fleet safety function and placed it under the control of corporate risk management. According to the interviewee, the program is no longer supported by the company and all program activities have been put on hold.

### Motor Carrier Operation Six

This western based trucking company has approximately 300-500 corporate employees and over 3,000 truck drivers. Their current turnover percentage rate is in the high 90's; mainly attributed to the length of time truckers are away from their families. "Truck drivers do not realize that trucking is a lifestyle, not a job." The company is in the process of building a new facility for their drivers that will include sleeping quarters, a cafeteria, a theater, and a brand new fitness center. Currently, their fitness center is located in a trailer at the same facility as their headquarters. The interviewee feels that employee health is a high priority for the company as they desire to keep health care costs down.

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<sup>54</sup> Lisa Harrington. "Fighting Driver Fatigue." Private Carrier. Vol. 32 . No. 7. (July,1995). The National Private Truck Council. Pp 24-28.

The wellness program was initiated as a benefit for the employees. They offer a variety of programs for their employees including health fairs, weight maintenance programs, exercise incentive programs, lunch and learns, etc. Outside professionals are brought in for the “lunch and learns,” talking on subjects such as diabetes, healthy food choices, starting a fitness program, etc. Other activities offered are golf, basketball and volleyball tournaments and aerobics. A bulletin board with tips and facts on improving health is also maintained. Truck drivers are told of the program during their orientation and are given a manual with information about stress management, healthy eating and exercise tips. Nutrition packets are also available for the drivers which include facts on healthy snacking and calories.

The program’s participation rate, based on a six month period, averaged 20-25 percent of office employees and 10 percent of drivers. The interviewee feels a strength of the program is the aim to target different populations (i.e. truck drivers vs. office employees). However, the interviewee perceives the resources are not available to reach the targeted populations.

Even though interviewee doesn’t look at health care costs, she believes costs have come down or the company would not have kept the program.

It should be noted that 23 trucking companies were contacted during this research phase. Of those companies, only the above six firms said they had or were willing to discuss their wellness program.

### **Wellness Programs within Other Industries**

#### **Company One**

This employee-owned Midwestern grocery retail company has 35,000 employees which includes approximately 175 truck drivers. The company is decentralized with nearly 250 locations in seven states. The company places much emphasis on employee health and started their wellness program as a benefit for the employees. The wellness program is available to all employees, spouses, and retirees. Although the program activities vary from location to location, often included are programs such as seminars, recreational activities, and yearly health risk assessments.

A popular component of the program, the health risk assessments, includes testing for blood total and HDL cholesterol, blood sugar, blood pressure, body fat, and fitness levels. After the employee finishes testing, a counselor explains the results and gives information on how to improve their overall health. The company is beginning to assess other factors affecting health (e.g., mind, work culture, relationships) and readiness to change health behavior. This information is used in the counseling session. Follow-up contacts are made with high risk employees within three to four months to help in the behavior change process.

The corporate office has “lunch and learns” covering topics from osteoporosis and arthritis to healthy eating and safety issues. Every employee is provided a monthly health newsletter published by the company.

The wellness program is staffed with a wellness coordinator, a consultant as needed, and five consultants for the health assessments and follow-ups.



Participation in the wellness program has increased substantially in the last few years. Currently, 78 percent of their full-time and regular-time employees participate in the health risk assessments. The company has experienced a reduction in health care costs since the initiation of the wellness program. Employees have also realized health care savings. Seven years have passed with no increase in premiums and, in two of the past ten years, employees have received a health insurance premium rebate (The employer is self-insured).

#### Company Two

This eastern-based manufacturing company employs approximately 1,100 employees. Due to the nature of the company, most of the employees are shift workers. This creates a challenge for the wellness program because the workforce is not readily available to participate in programs regularly offered during the day.

The wellness program consists of a fitness center, education on back safety, stress relief, heart disease, and heat exhaustion. There is a minimal monthly fee to employees for use of the fitness center. Physicals are performed every three years, free-of-charge, to the employee and family. Mandatory surveillance testing is also provided by the health/wellness department.

The wellness program staff includes a doctor, nurse, and emergency medical technician. The interviewee said that, at this time, not all programs are available due to the physical and surveillance testing that is currently being conducted.

The participation rate was estimated at approximately 40 percent of all employees. The use of the fitness center is measured electronically with employee gate passes. Health care costs or health statistics were not reviewed by the wellness staff, however, the interviewee hoped corporate staff were examining those costs.

#### **Criteria for Successful Wellness Programs**

The following fundamental elements are those generally considered necessary for successful wellness programing.<sup>55 56 57</sup>

##### *Fundamental Program Elements*

- Commitment from senior management
  - » Monetary and personnel support
  - » Philosophical support
  - » Participation in programs
- Clear statement of philosophy, purpose, and goals

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<sup>55</sup> Michael O'Donnel. "Characteristics of the Best Workplace Health Promotion Programs." *Wellness Management*. Summer, 1997. Pp. 3-4.

<sup>56</sup> *Guidelines for Employee Health Promotion Programs*. Association for Fitness in Business. Human Kinetics Books. Champaign, Ill. 1992.

<sup>57</sup> Sue Roberts, President, Sue Roberts Health Concepts. Des Moines, Iowa.

- Needs assessment
- Strong program leadership
- Use of effective and qualified professionals
- Accurate, up-to-date, research-based information made available to participants
- Effective communication
  - » High visibility
  - » Successful marketing
  - » Motivating to employees
- Accessible and convenient for employees
- Realistic budget
- Fun, motivating, and challenging program philosophy
- Supportive work/cultural environment
  - » Company policies
  - » Company attitude toward employee
- Supportive physical environment
  - » Cafeteria and vending with healthy options
  - » Available fitness facility
  - » Windows/lighting/truck cab
- Individualized to meet the needs of each employee
- Defined evaluation system
- Shows results

### *Wellness Program Development Process*

The development of successful wellness programs generally follows the process illustrated in Figure One and detailed in the following paragraphs.

**Needs assessment:** The first element of a needs assessment is to survey the employee base. This can be done with a written survey, focus groups, and/or one-on-one conversations. The second element includes a management survey. This is best done one-on-one to determine management goals and support. The third element of needs assessment is an in-depth analysis of employee health care costs, workers compensation costs, and absenteeism data. The fourth element is to examine the health status of the work force. This can be done with a survey, but the data collected must be interpreted as survey data. A better way to determine the health status of the population is to perform physical, biochemical, and written assessments on site. The fifth element of the needs assessment is a culture survey to determine if the underlying beliefs of the organization support a healthy lifestyle. When the workplace consists of a culture where worker health and psychological needs are important and met, the potential for increased productivity and improved well-being is enhanced.<sup>58</sup>

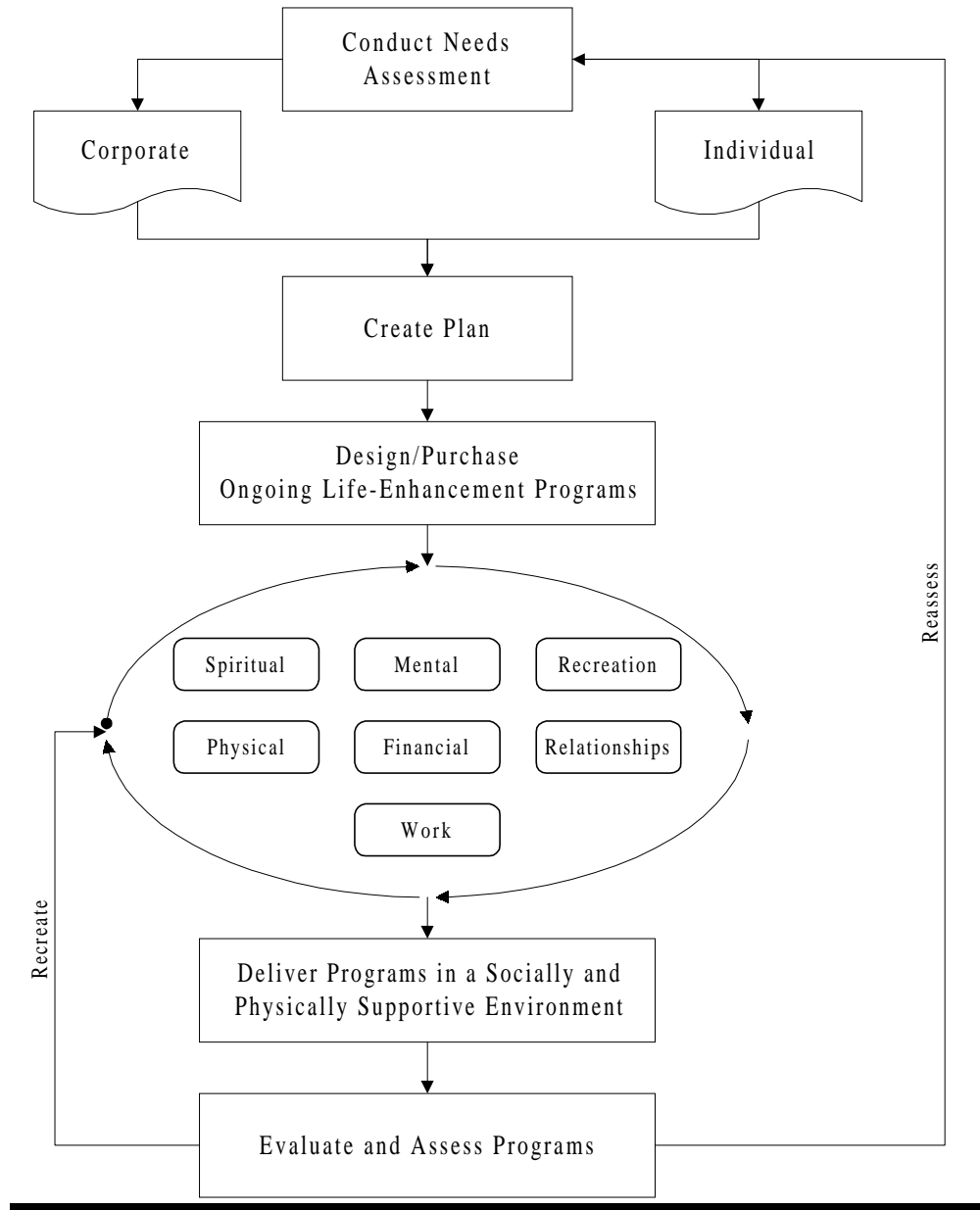
**Creating the Plan:** The plan is created including a mission statement and objectives. Steps and time line to accomplish the objectives are also part of the plan.

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<sup>58</sup> Michael Peterson. "Work, Corporate Culture and Stress: Implications for Worksite Health Promotion." American Journal of Health Behavior Vol. 21 No.4. 1997. Pp. 243-252.

**Design/Purchase Ongoing Life Enhancement Programs:** Programs are used (whether designed in-house or purchased) to help individuals change behaviors. Emphasis is placed on caring and determination of the underlying issues in employees' lives that cause them to use

**Figure One: Wellness Program Development Process**



Source: Sue Roberts Health Concepts

coping mechanisms which are a detriment to their health (e.g., alcohol, tobacco, food). Less emphasis is placed on actual physical data and scare tactics (e.g., lose weight or else). Areas that

are covered in a well balanced program relate to the physical, relationship, financial, work, recreational, mental, and spiritual aspects of the employees' lives.

**Deliver Programs in a Socially and Physically Supportive Environment:** Program delivery is extremely important. Helping employees who are ready to change their behavior needs to be done in a compassionate manner. In addition, if employees are to make true behavior change which they can maintain, the work and home environment must also be developed to support the change. For example, if drivers are to eat better, the selections at the restaurants where they eat while working must provide healthy alternatives. It is also important to involve the spouse in wellness programming to assure better menu alternatives at home.

**Evaluate and Assess Programs:** Evaluation of each program to determine effectiveness in achieving goals and objectives is essential. This provides the opportunity for continuation, redesigning, or elimination of individual components.

### **Behavior Change Process**

The design phase of the total program development is generally the most complex and time consuming component of the process. An integral element of this process is the study of how individuals change behavior.

Behavior change models are important because they can help explain the nature and dynamics of health behavior as well as possible effects of external influences on behavior. Additionally, they can help identify the best methods for accomplishing change and provide situation outcomes that can be used in the change process.<sup>59</sup> The behavior change process has been modeled in several ways as explained below.

#### *Transtheoretical Model*

The Transtheoretical Model (Stages of Change Model) grew out of research focusing on how people change behaviors in smoking cessation and treatment of drug and alcohol addictions.<sup>60</sup> The basic premise is that behavior change is a process, not an event and that individuals are at varying levels of readiness to change. As a result, individuals at different points in the process receive the most benefit from interventions matched to their behavior stage.<sup>61</sup> Movement through the stages of change is considered a mark of success. Changes for some behaviors (e.g., eating healthier) are more complex than for others (e.g., smoking cessation) because the behavior is not ceased and because more cognitive and preparation skills are necessary. The five stages of behavior change are summarized in Table Three and detailed below:

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<sup>59</sup> K. Glanz and B.K. Rimer. *Theory at a Glance: A Guide for Health Promotion Practice*. National Cancer Institute. Washington, D.C. 1995.

<sup>60</sup> James O. Prochaska, Carlo C. DiClemente, and John C. Norcross. "In Search of How People Change: Applications to Addictive Behaviors." *American Psychologist*. Vol. 47, No. 9. (September, 1992). American Psychological Association. Pp. 1102-1114

<sup>61</sup> Glanz and Rimer.

**Table Three: Summary of the Stages of Change**<sup>62</sup>

<b>Behavior Change State</b>	<b>General Characteristic or Behavior</b>
Precontemplation	Unaware of problem, has not thought about change
Contemplation	Thinking about change in the near future
Preparation	Making a plan to change
Action	Implementation of specific action plans
Maintenance	Continuation of desirable actions

- **Pre-contemplation stage:** “I enjoy eating my double cheeseburgers and fries and have no intention of eating low fat.”  
 Individuals in this stage have no intention of changing their behavior in the next six months and may be unaware of a need to change, resist efforts to do so or, may be discouraged because of suffered relapses. Treatment strategies for this stage should focus on increasing awareness and concerns. No action tips would be provided in this stage because individuals are not yet ready for action.<sup>63</sup>
- **Contemplation stage:** “Maybe I could try a chicken sandwich instead of a double cheeseburger—if it tastes good and doesn’t cost too much.”  
 Individuals are considering behavior change but are still ambivalent towards the considered change. They are aware of the need to change but not yet committed to action. In addition, individuals in this stage have doubts that the benefits of the change outweigh the short-term costs (e.g., convenience).
- **Preparation Stage:** “I try to use lower-fat versions of foods, like salad dressing, when I can, but I’d like to do more, I’m not exactly sure how to do it.”  
 Although this “decision-making” stage is characterized by actively planning to change within a nearby time period (e.g., the next 30 days), individuals are not actively making change yet. However, individuals in this stage believe that the benefits of the planned change outweigh the costs.<sup>64</sup>
- **Action Stage:** “I try to eat low fat food by not stopping at fast food restaurants, not using butter on potatoes and other low fat tricks. But sometimes it’s hard when I eat out or travel.”  
 Change is initiated in this and has been sustained for a period of one-day–six-months.<sup>65</sup> This stage requires a commitment of time and energy and relapse is very possible.<sup>66</sup>
- **Maintenance Stage:** “I feel great since I follow my low fat eating plan. I enjoy the weight loss I have experienced and the knowledge that I have really improved my health.”  
 This stage is characterized by the continuation—not absence— of change. Generally,

<sup>62</sup> *Project LEAN Resource Kit: Tips, Tools, and Techniques for Promoting Low-Fat Lifestyles.* Project LEAN and The American Dietetics Association. 1995. Pp. 142–170.

<sup>63</sup> G. W. Greene, Et Al. “Transtheoretical Model for Redcing Dietary Fat to 30 Percent of Energy or Less.” *Journal of American Dietetics Association.* 1994. Pp. 1105–1110.

<sup>64</sup> L. Ruggerio and James Prochaska. Introduction. *Diabetics Spectrum.* Vol. 6. Pp. 22–24.

<sup>65</sup> Rugerio and Prochaska. Pp. 22–24.

<sup>66</sup> W. M. Sondoal Et Al. “Transtheoretical Model: A Model for Nutritional Counselling.” *Topics in Clinical Nutrition.* Vol. 9. 1994. Pp. 64-69.

this stage is not entered until change has been sustained for six months or more. Individuals in this stage must continuously work to avoid relapses.<sup>67</sup>

### *Assessing Readiness to Change*

Assessing a person’s readiness to change is a critical step in changing behavior. This assessment should be part of the employee’s initial health screening.

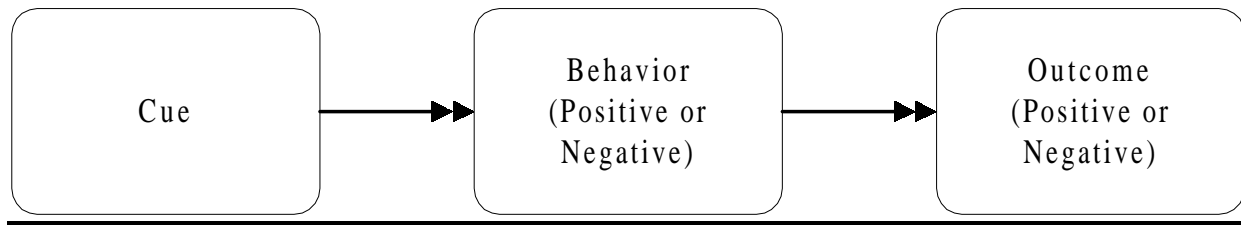
### *Strategies for Behavior Change*

Depending on a person’s health behavior stage, certain strategies are more likely to “spark” a shift in their behavior. The Social Cognitive Theory (SCT) is a basis for examining and classifying behavior change strategies. For each of the previously identified health behavior stages, Table Four provides a summary of strategies that can be applied following the Social Cognitive Theory.<sup>68</sup>

SCT is based on the premise that people learn not only through their own experiences, but also by observing the actions of others and the results of their actions. It uses concepts from cognitive, behavioristic, and emotional models of behavior change.

SCT assumes that people and their environments interact continuously and that many behaviors and outcomes are possibly based on the influence of different factors in the situation. As shown in Figure Two, SCT posits that outcomes, whether positive or negative, are the result of a linear process that is triggered by cues and subsequent positive or negative behaviors and then outcomes.

**Figure Two: Social Cognitive Theory Process**



<sup>67</sup> Ruggerio and Prochaska. Pp. 22–24.

<sup>68</sup> *Project LEAN Resource Kit*. Pp. 130–131.

**Table Four: Summary of Behavior Change Strategies**

<b>Stage</b>	<b>Goal</b>	<b>Counseling Focus</b>	<b>Change Strategy</b>
Precontemplation	Personalize risk	<ul style="list-style-type: none"> <li>• Create a supportive climate for change</li> <li>• Discuss personal aspects of poor eating behavior</li> <li>• Assess nutrition knowledge and beliefs in myths</li> </ul>	<ul style="list-style-type: none"> <li>• Increase awareness of the need to change</li> <li>• Assess a person’s current knowledge of and attitude toward health changes and work to increase the need or change as necessary</li> </ul>
Contemplation	Increase self-confidence	<ul style="list-style-type: none"> <li>• Identify problematic behaviors and barriers to change</li> <li>• Prioritize behaviors to change</li> <li>• Discuss coping strategies and solutions to barriers</li> <li>• Help motivate person to change</li> <li>• Encourage development of a specific plan for change</li> <li>• Enlist support from family and friends</li> </ul>	<ul style="list-style-type: none"> <li>• Self-monitoring</li> <li>• Goal setting</li> <li>• Contracting</li> <li>• Cue management</li> <li>• Cognitive restructuring</li> <li>• Reinforcement</li> <li>• Social support</li> <li>• Barriers counseling</li> <li>• Self-efficacy</li> </ul>
Preparation	Initiate change	<ul style="list-style-type: none"> <li>• Encourage small initial steps to change and set gradual goals</li> <li>• Discuss any earlier attempts to change and ways to succeed this time around</li> <li>• Help develop concrete plans</li> </ul>	<ul style="list-style-type: none"> <li>• Goal setting</li> <li>• Contracting</li> <li>• Barriers counseling</li> <li>• Cue management</li> <li>• Cognitive restructuring</li> </ul>
Action	Commit to change	<ul style="list-style-type: none"> <li>• Reinforce decision</li> <li>• Provide feedback and problem-solving advice</li> <li>• Encourage social support</li> <li>• Encourage self-rewarding behavior</li> <li>• Discuss relapse and coping</li> <li>• Reinforce self-confidence</li> </ul>	<ul style="list-style-type: none"> <li>• Self-efficacy</li> <li>• Cue management</li> <li>• Contracting</li> <li>• Social Support</li> <li>• Reinforcement</li> </ul>
Maintenance	Continue commitment	<ul style="list-style-type: none"> <li>• Plan follow-up support changes</li> <li>• Reinforce self-rewarding behaviors</li> <li>• Increase coping skills</li> <li>• Discuss relapse techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforcement</li> <li>• Cue management</li> <li>• Cognitive restructuring</li> <li>• Relapse prevention</li> </ul>
Relapse	Reinforce commitment	<ul style="list-style-type: none"> <li>• Reassess motivation and barriers</li> <li>• Discuss importance of maintaining change</li> <li>• Explore new coping strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Barriers counseling</li> <li>• Relapse prevention</li> <li>• Cue management</li> <li>• Cognitive restructuring</li> </ul>

SCT strategies help individuals control, plan for, and manage thoughts, feelings, and other situations that trigger unhealthy behavior. Examples of Social Cognitive Theory Strategies are provided below:<sup>69</sup>

- **Self Efficacy:** A Person's belief in the ability to perform a new behavior in a given situation. The importance of skill sets are reduced in individuals with self-efficacy. Strategies to increase self efficacy are:<sup>70</sup>
  - » Behavioral contracting
  - » Monitoring
  - » Reinforcement
  - » Skills mastery: Breaking down skills into manageable steps
  - » Modeling: Observation of another person accomplishing a goal (e.g., videos featuring coworkers)
- **Self-Monitoring:** Keeping records of health behavior.
- **Barriers Counseling:** Examines previous change attempts and reviews possible problem to develop alternative solutions.
- **Goal Setting:** Creates ownership in the change through setting realistic short and long-term goals and follow-up counseling.
- **Cue Management:** Identifying and changing environmental, social, and cognitive cues that trigger individual healthy habits by altering the learned association between a cue and learned behavior.<sup>71</sup>
- **Contracting:** Combines goal setting with positive reinforcement. This strategy establishes a *signed written agreement* that clearly describes the expected behavior to be achieved within a definite time period.<sup>72</sup>
- **Social Support:** Family, friends, and coworkers promote behavior change by offering praise and encouragement, and helping to eliminate cues.
- **Reinforcement:** Rewards are used to increase positive long-term healthy habits. At first, these rewards are provided more frequently than in later stages.
- **Cognitive Restructuring:** Process of altering "faulty thinking" habits by replacing them with positive coping thoughts.
- **Relapse Prevention:** It is critical to provide relapse prevention strategies during the action and maintenance stages. Relapses are "perceived lack of control" situations which can be minimized by using the model shown in Figure Three.

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<sup>69</sup> Glanz and Rimer.

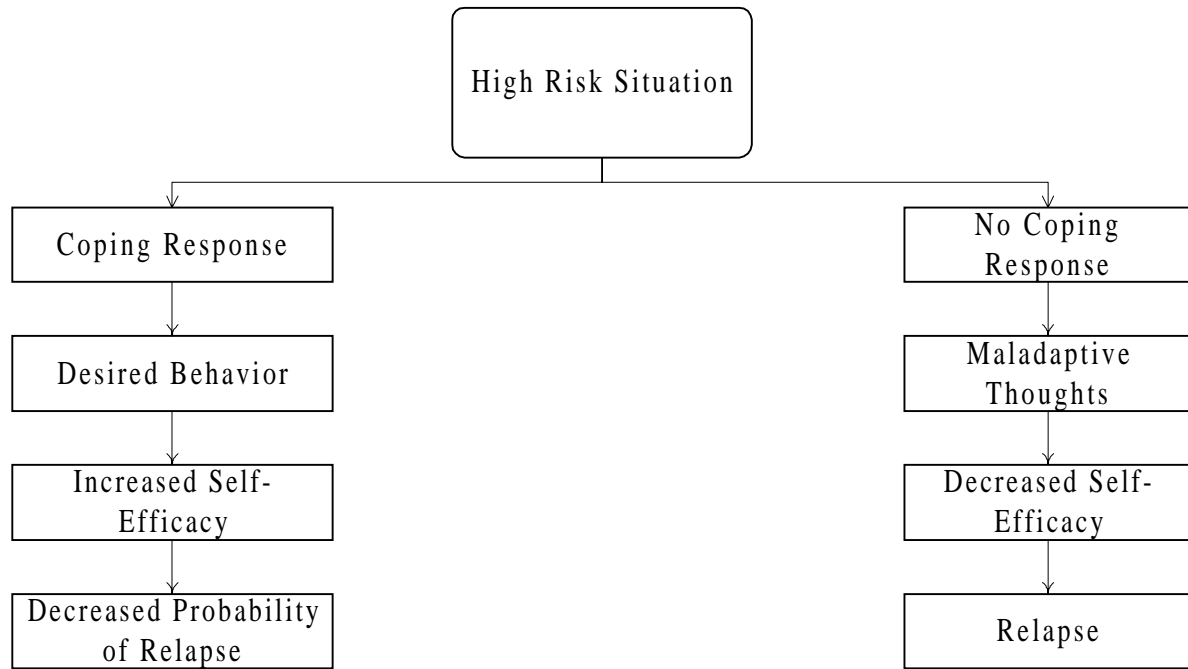
<sup>70</sup> A. Bandura. "Self-Efficacy Mechanism in Human Agency." *American Journal of Psychology*. Vol. 37. 1982. Pp. 122-147.

<sup>71</sup> K. Glanz. "Nutritional Intervention: A Behavioral and Educational Perspective." *Prevention of Coronary Heart Disease*. Little and Brown Company. Boston, MA. 1992. Pp. 231-265.

<sup>72</sup> B. B. Holli and R. J. Calabrese. *Communication and Education Skills: The Dietician's Guide, Second Edition*. Lea and Febiger. Philadelphia, PA. 1991.



**Figure Three: Relapse Prevention Model**



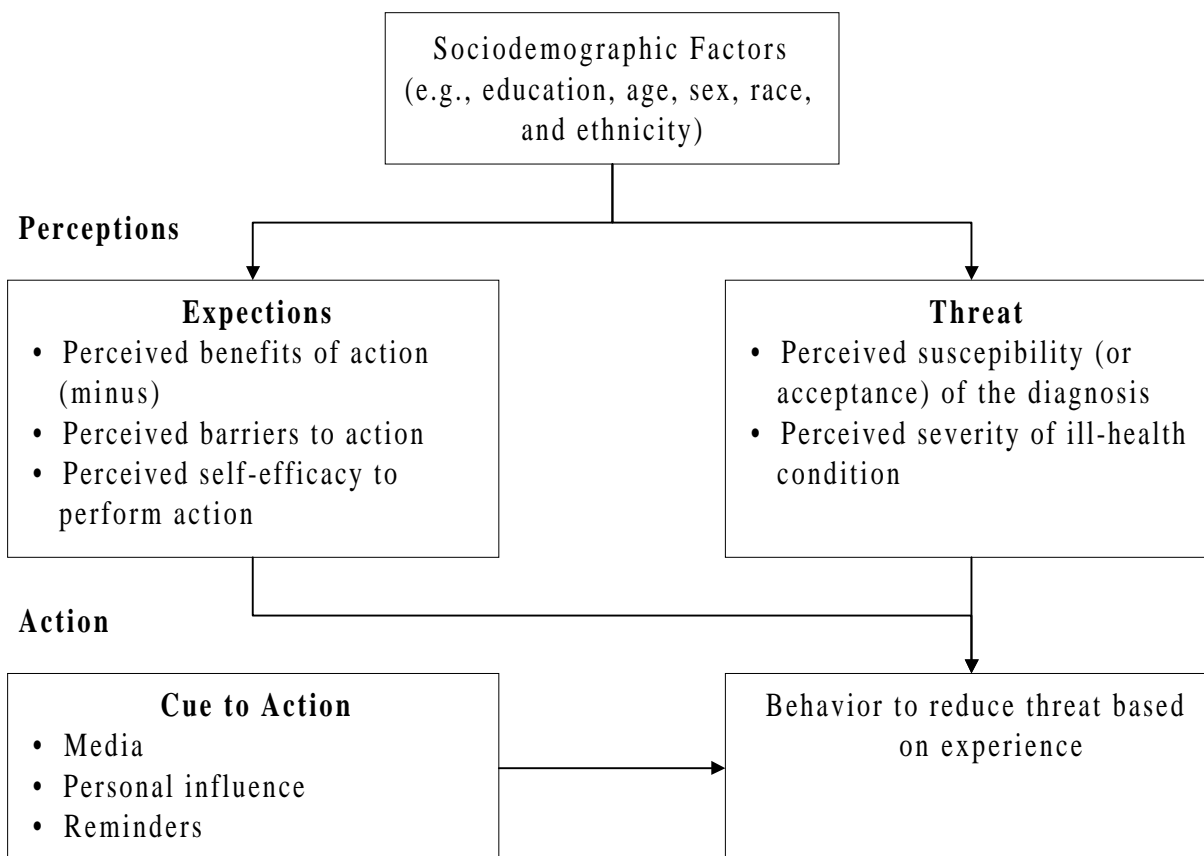
*Health Beliefs Model*

This model attempts to describe health behavior by focusing on the attitudes and beliefs of individuals. The model was first developed in the 1950's by psychologists to explain the lack of participation in prevention and health promotion programs and has since been expanded to test and examine short and long-term health behaviors in areas such as sexually-transmitted diseases. The model is illustrated in Figure Four and the key behavior variables included in the model are shown below.<sup>73</sup>

<sup>73</sup> Julie Dennison. Behavior Change: A Summary of the Four Major Theories. The Aids Control and Prevention Project, Family Health International, Behavioral Research Unit. Arlington, VA. 1997. Pp.1-18.

**Figure Four: Health Beliefs Model**

**Background**



- **Perceived threat:** Individuals’ assessment of a disease or conditions’ threat consisting of:
  - » Susceptibility: One’s subjective assessment of contracting a health condition
  - » Severity: One’s subjective evaluation of the seriousness on contracting an illness and/or the ramifications of leaving it untreated.
- **Perceived benefits:** Individuals’ believed effectiveness of the strategy proposed to reduce the illness threat.
- **Perceived barriers:** Potential negative consequences that may arise from taking a proposed course of action.
- **Cues to Action:** Bodily or environmental events that motivate people to take action.
- **Self Efficacy:** Belief in being able to successfully execute the behavior required to produce the outcome(s).

This model has been used effectively in smoking cessation and cardiovascular risk factor reduction programs because of the perceived susceptibility and severity associated with lung cancer and heart disease. However, most health beliefs model research suggests that there may

be more to individual motivation in sustaining long-term behavior change than can be explained by health beliefs alone.<sup>74</sup>

### Driver Focus Groups

As described in the project workplan, driver focus groups are being conducted to gain an understanding of drivers attitudes and perceptions of their health and how they currently achieve the best health. Two focus group sessions, shown in Table Five, have been held as of this date.

**Table Five: Driver Focus Group Descriptions**

Session	Date	Location	Number of Drivers	Number of Spouses
One	June 18, 1997	Iowa Truck Driving Championships Ames, Iowa	16	9
Two	August 17, 1997	Collins and Aikman Corp. Albamarle, North Carolina	15	8

As planned, each of the above sessions was approximately one and one-half hours in length. It began with a 10-15 minute overview of the project, and addressed a predetermined list of questions. The drivers and their spouses were compensated for their attendance. Extensive notes were taken by individuals not part of the group discussions.

For each of the focus groups held to date, the following section provides an overview of the focus group attendees and a list of their responses to each of the questions.

### Driver Wellness Focus Group One

#### *Overview of Attendees*

The group of 16 drivers and nine spouses was comprised of nine for-hire company drivers, five permanently-leased owner-operators, and two private company drivers. The companies represented by these drivers included a 100-truck for-hire flatbed truckload operation, a 750-truck for-hire less-than-truckload operation, several mid-sized refrigerated for-hire truckload fleets, and a 250 truck private fleet operated by a major mid-western grocery chain. The drivers were all men with an average age of 42 years. Most of these individuals in this group had been drivers for a number of years and all were contestants in the Iowa State Truck Driving Championships.

Generally, the group was keenly interested in the Wellness program and felt that just attending the focus group provided them with information to better-manage their health behaviors.

<sup>74</sup> Julie Fluery. "The Application of Motivational Theory to Cardiovascular Risk Reduction. IMAGE: Journal of Nursing Scholarship. Volume 24. No. 3. (Fall, 1992). Pp. 229-239.

## *Question Responses*

### **Health Beliefs**

1. What are your concerns as they relate to your health?

- To live longer
- Being overweight
- High cholesterol level
- High blood pressure
- Live a productive life
- Getting regular sleep
- Bending over to tie shoes
- Lowering stress
- Getting enough exercise

2. Do you have any health behaviors you would like to improve? What?

- Eating healthier
- Consuming less caffeine
- Increasing exercise
- Having enough energy
- Stop eating when full
- Lower stress

3. What keeps you from improving your health behaviors?

- Lack of time
- Motivation
- Too tired/ decreased energy
- Too many things to do
- Job duties are excessive
- Lack of availability of healthy foods
- Restaurants don't provide healthy foods/too expensive in restaurants
- Lack of exercise facilities at truck stops
- Unsafe neighborhood/ don't want to walk around in unfamiliar place and/or at night
- Sitting and waiting to unload truck - waste time; think it's only going to be 20 min, ends up being 7 hours
- In the time wasted (loading or unloading), we could have gone walking, but didn't know it was going to take so long
- Can't leave the truck - might get robbed
- On a different work cycle - get off work at 3am

4. Do you practice any self care? What?

- YMCA -1-1 ½ hr. exercise
- Lifting weights
- Walking ½ -1 hr
- Weights in room
- Watch fat grams, not kcal (makes me feel better mentally)
- Take vitamins
- Drink a lot of water
- Obtain enough sleep (so job can be safe)
- Relax after work (unwind by taking warm bath)
- Turn off television
- Hot tub at home or hotel
- Dentist
- Wear glasses
- Practicing hobbies

5. How would you rate the overall health of individuals in your profession?

<u>Poor</u>	<u>Fair</u>	<u>Good</u>
majority	II	I

How do you compare?

- A little bit better

6. Do you believe how you eat, exercise, manage stress and take care of your self affects your health on a daily basis? Why? Why not?

- Yes - absolutely

7. Are you concerned about developing a serious illness in the next five years? Why? Why not?

<u>Yes</u>	<u>No</u>
hereditary	keep improving
smoking	can't afford to (payments on truck)

8. Do you believe you can influence your chances of developing cancer, heart disease, diabetes, etc? Why? Why not?

- Yes, absolutely through changing lifestyle and living healthier

9. Do you believe you can afford to be healthy? Why? Why not?

Yes

How can you afford not to be?

Our grocery bill has gone down since we've started eating healthier  
Produce is cheaper

No

Bottled water is more expensive than soda  
Healthy foods at restaurants are more expensive and not as tasty  
The portions are smaller, not healthier, and more expensive

**Health Habits**

1. Do you believe exercise affects your health, energy level, mood, stress, etc? Why? Why not?

- Yes

2. Do you exercise? Why? Why not?

Yes

Walking

I try to

No

Tired

Lack of energy

Poor time management

Lack of facilities

Location (dangerous, unfamiliar city)

Cold season

Done with work 10pm- too late to exercise

3. If not, would you ever exercise? Why? Why not?

- Yes, absolutely

4. What can be done to help you exercise?

- Exercise facilities at truck stop
- Paved walking stops at rest stops
- Healthy and inexpensive meals at restaurants
- More information given to truckers about exercise (wellness)
- Nutritional analysis given at restaurants
- Terminals (home base) exercise facilities
- Change the trucker log book to not work so many hours to have time to exercise
- Provide truckers with more time

5. Do you believe what you eat affects your mood, motivation, energy level, ability to fight disease, overall health? Why? Why not?

- Yes - feel better mentally and physically

6. What are typical foods you eat?

- Turkey, chicken
- Lettuce with low or nonfat dressing (if available - usually not at restaurants)
- Popcorn cakes
- Milk
- Vending machine foods
- Broiled chicken at restaurant
- Subway (6 g. Fat or less sandwiches)
- Eat once a day - Chinese food/deli
- Tired of eating same food
- Salad bars, maybe, but the produce looks bad

7. Where do you eat? Why? What are your options?

- Restaurants/coffee shops/fast food
- Options are high fat greasy food
- Again, healthier is more expensive
- Pack a lunch but found that snacking a lot from boredom
- Healthy items at fast food (Subway, McDonald's has a lot of low fat foods)
- Quick trip has bananas

8. What can be done to help you eat better?

- Reasonable pricing (orange juice is expensive compared to soda or coffee)
- Fresh fruit at terminals (home base)
- Nutritional analysis at restaurant/fast food
- National coupons for restaurants- healthy foods
- Trucking company to pay for exercise membership
- Have a wellness program or trucking company make lunches for you
- Descriptive, colorful pamphlets on healthy eating

9. Does your job create stress in your life? How?

- Yes
- Dealing with 4-wheelers (reg. Cars) on the road pulling out in front, and coming to a stop
- Weather, snow -harsh driving conditions
- Dispatcher has an attitude
- Management/supervisors have poor people skills - need to be more sensitive
- Managers see us as "dumb truckers"
- Pressure to make deliveries on time
- Waiting around for 10 hrs to have delivery checked
- Working approximately 70 hours per week

- Don't get paid by hour, but instead by mile - so lose money just sitting there
- Driving into unknown territory - the ghetto/bad neighborhood
- Feeling unsafe, going to get robbed
- The 16 individuals in this focus group have known seven truckers in the last 12 months who have been robbed

10. How do you deal with your stress?

- Drink alcohol
- Self-talk
- Never argue with a fool - he may think he's doing the same
- Sometimes talking to the dispatcher
- Listen to CB to avoid traffic
- Listen to music on radio or CD system
- Watching nonviolent "positive" movies at home - set good example for children
- Listen to Christian music
- Drink decaf coffee
- Going to church
- Work sometimes lowers stress because home life is stressful
- Hobbies
- Getting massage from spouse
- Just walking away

Program/Design/Delivery

1. What motivates you?

- Losing weight is a reinforcement
- Magic pill
- Rewarded with money for not using sick days
- Maintaining weight
- Takes more than money to motivate - need info and support

2. What kind of programs appeal to you?

- Eating programs - packing a lunch for the truckers
- Coupons for restaurants for healthy foods
- Fitness programs - pay for membership
- Annual/6 mos. physical/assessment of health
- Exercise facilities at truck stop or terminal
- Program to help quit smoking



3. How do we get programs to you?

- Mail
- Trucking magazines “Transport Topics” or “Overdrive” or “Truckers News”
- Billboards
- Cassettes
- Newsletter (that comes along with paycheck)

4. How much do you and your family spend on your health care/month?

- Not sure/ or weren’t willing to discuss
- Not a lot of responses on this question
- Company is willing to pay for cancer treatment, but not the “nicotine patch”

5. If we sent out a wellness survey to you, would you send it back if we didn’t send money?

- If there was a stamped envelope
- 5 people raised their hand

## **Driver Focus Group Two**

### *Overview of Attendees*

This focus group was comprised of 23 individuals consisting of 15 drivers (i.e., 14 men and one woman) and eight spouses. The drivers were all regular employees of a private fleet operation for a major automotive textile products manufacturer located in the Southeast. The average driver age was  $54.5 \pm 3$  years. Generally, the drivers were long-tenured employees with an average length of employment in excess of 10 years (Range of employment: 1–25 years). Most of the drivers were solo operators although one husband and wife team was also present. Several of the drivers were on regular/short haul runs because of medical restrictions or job preferences.

### *Question Responses*

#### **Health Beliefs**

1. What are your personal health concerns?

- Diet
- Cholesterol
- Weight
- Blood Pressure
- Proper Rest
- Blood Sugar
- Heart
- Obesity
- Over eating
- Lack of proper exercise
- Adequate time to exercise

- Dedication to a health program
- Back injuries
- Behavior issues
- Neck injuries
- Want to feel fit and healthy so they can do the job
- Feeling good
- Healthy living after retirement
- Responsibility to job, self and family

2. What are your greatest fears concerning your health?

- Heart Attack (One driver stated that a previous heart attack had strengthened his commitment to better health)
- Stroke
- Not being able to care for one's self and becoming a burden to the family
- Becoming disabled, not being able to provide for the family
- Phlebitis

3. How would you rate your profession on a health scale, with 10 being very healthy and one being the worst?

- 8, 5, 4, 3 (The answer of eight later became a two or three, as the question was misunderstood)
- Below the national average due to so many drivers being overweight, lack of exercise static posture, bad food on the road, high blood pressure, and tendency to smoke more.

4. Who influences how healthy you are?

- Family (positive)
- Job (both positive and negative)
- Time and schedules
- A constant exhausted state of being

5. Overall, who is responsible for your health?

- We (drivers) are.

6. What responsibilities do you feel the company has toward your being healthy?

- None, but our company is trying to do something
- Our company takes the initiative but we don't respond.

7. Why do you think your company is so concerned?

- So we can work and do the job.
- Safety
- We are self-insured
- It's our responsibility.

8. What if you had to pay for your own health care?

- We'd all be healthier.

9. What if the company offered you money in return for taking a \$5,000 deductible for health care?

- No. We wouldn't take it.

10. What do you think keeps you from being the healthiest you can be? In other words what gets in your way?

- Time
- Neglect (put it off until tomorrow)
- Lack of discipline
- Procrastination
- Self invincibility
- Wife's cooking (She cooks what the family likes, which is not necessarily healthy)
- Lack of health food available on the road -- minimal options.
- Stress

11. Do you believe you have control or are there other forces that control your health?

- Yes - we have the control.

12. Do you think you can afford to be healthy?

- Can't afford not to be
- Costs less to be healthy
- People need support and higher self esteem to want to be healthier,

### **Health Habits**

1. If you could improve one behavior what would it be?

- Commitment to exercise
- Eating better

2. If we developed a program based within the company, what would it be and how could we help you exercise more?

- Develop a program to exercise in truck
- We have no access to showering if we exercise on the road—such as walking while waiting on loads. If we're gone two and a half days, we may not get to shower and working up a sweat adds to the problem.
- More time
- We don't want to do anything until we're ready to do it ourselves (self-motivated). We have to want to do it.

3. List your stressors.

- People, personalities
- Traffic
- Weather conditions
- Road construction
- Waiting in general
- Lack of information to do he job
- Lack or communication
- Family
- Living conditions
- Financial situation
- Customers
- Company equipment
- Holidays
- Lack of time in the day
- Self-imposed stress - trying to be perfect

4. What would help you deal with stress better?

- Exercise
- Eating better
- Proper rest

### **Program Design/Delivery**

1. Would you participate if the company offered you a program?

- Don't have the time
- Company has tried but we don't have the time.
- No: too many things to do around the house.

2. What could your company do to make you think they care about you?

- Build exercise room with shower on the property (fitness center)
- Spouse involvement -allow them to accompany them on a trip
- A spouse rider program would improve family relations
- A raise (But when asked if they would trade their health for \$10 million, they all answered 'No')

3. Do you experience problems with fatigue?

- Yes!

4. How do you deal with it?

- Sing
- Stop and walk
- Gum
- Listening to a radio talk show
- Speeding .. makes you look around for the law
- Start an argument on the CE then sit back and listen to the argues
- Cold soft drink - not necessarily with caffeine
- Stop and take 30 minute nap. Need more pull-off areas for this purpose. Many rest areas are not safe.

5. What motivates you to do things?

- Living
- Spouse
- Pride
- Money
- Incentives
- Looking towards retirement

6. What is your passion?

- |            |                      |             |
|------------|----------------------|-------------|
| • Spouse   | • Fishing            | • Weekends  |
| • Children | • Working in general | • Clowning  |
| • Family   | • Vacation           | • Outdoors  |
| • Travel   | • Shopping           | • Crafts    |
| • Beach    | • TV surfing         | • Yard Work |
| • Hunting  | • Grandchildren      | • Gardening |
| • Pets     | • Farming            | • Boating   |

7. What would be the best way to deliver a health program if one were developed?

- Videos
- Audio tapes (motivational)
- Seminars
- Phone calls
- Buddy system

- Entire family involvement

8. Would you be willing to pay for a service to improve yourself?

- Yes

### Summary and Research Implications

The purpose of this document was to provide a summary of the literature examining driver health, review existing driver wellness programs, and determine the essential elements and processes of effective wellness programs. The results of this summary revealed:

- There is a scarcity of research into the health and health behaviors of commercial vehicle drivers.
- Existing data shows a generally poor state of health of commercial drivers.
- There is sparse implementation of driver wellness programs and very low program participation rates where in existence.
- The effectiveness of any driver wellness program depends on how well that program can reach these individuals.
- Literature and behavior change theories exist to design and implement quality wellness programs
- It is important that management commit to driver wellness

### Scarcity of Research

Compared to other populations such as airline pilots, this review revealed a dearth of information regarding the health and health behaviors of truck drivers. This may be partly attributable to differences in public perceptions concerning the responsibilities (i.e., in terms of human lives) of airline pilots versus truck drivers.

### Poor State of Health

As shown in Table Five, the information located shows a poor state of health in these individuals.

**Table Five: Health Statistics of Commercial Vehicle Drivers**

<b>Risk Factor</b>	<b>Driver Prevalence</b>	<b>U.S. Population Prevalence</b>
Smoking	49–54 percent	25–28 percent
Obesity	70–73 percent	31–33 percent
Hypertension	33 percent	25 percent
Stress	Higher stress levels than 91 percent of the U.S. population	

This poor health was confirmed in the two driver focus groups. Drivers in these groups perceived their profession as less-healthy than the average U.S. population. However, many of these drivers would like to change their health behavior given information and motivation.

### **Sparse Program Implementation**

Less than optimal health, defined as occurrence of at least one of the risk factors described in this paper, is very expensive both in terms of direct medical costs and indirect costs. This is an area which is costing the motor carrier industry much in terms of financial and human resources. The industry has been very successful in the truck safety arena by reducing accident involvement and improving performance during recent years and has realized paybacks for the resources invested. Assuming that companies understand and/or realize the positive benefits-to-costs ratios of a driver wellness program, a similar payback could be achieved.

Wellness programs in the industry are beginning, but still are not the norm. When they do exist, they often are used only by corporate staff, and not the drivers. In addition, the programs tend to be generic and not at all geared toward the drivers. The bottom line is that currently there are very few drivers participating in any wellness programs to improve their health.

### **Reaching the Drivers**

The driver population has very specific needs based on their very demanding job. This makes the development of programs even more challenging. This is confirmed by the experience of the programs in existence which have very low driver participation—even though they need the help greatly. The focus groups showed, however, that these drivers were interested, but no one has figured out how to reach them. To make the project successful, the program must be appealing to drivers and provide assistance they can use.

### **Program Design**

Behavior change theories need to be considered in the design of programs for commercial vehicle drivers. Not using the theories would likely result in programs which do not produce a very large behavior change or success rate.

### **Importance of Management Commitment**

Several programs designed specifically for drivers, are not currently being delivered even though they showed positive results. It will be very important to determine and report the attitude of upper management from the management surveys (see Appendix Two) to be done this fall. It is hoped that the project team can learn whether the reason there are no programs is because of lack of support, lack of information on the need, or lack of methodology to implement these programs.

# Appendix



## Appendix One: Current Wellness Programs and Practices Survey

1. Can you give me some demographics on your company?
  - Number of employees:
  - Number of drivers:
  - Major work area:
2. Where do health care costs and the importance of keeping the workforce healthy fall in your company's list of priorities?
3. Does your company have a wellness program?
  - Why?
  - Why not?(Stop if there is no program)
3. Do you believe employees take ownership and responsibility for their own health?
  - Why?
  - How do you think this could be improved?
4. Are healthy people rewarded?
5. How would you rate the health of your employees? (scale 1-10)
6. What benefits are provided for your employees?
7. What is available to spouses and retirees?
8. Do you look at health care costs?
9. Have you looked at spouses and retiree health care cost?
  - What did you find?
10. Have you seen costs come down since starting a wellness program?
11. What are worker's compensation costs per employee?
12. Do you have a budget?
13. What is your staffing?

14. Are your health promotion dollars divided equally as a benefit to all employees or are programs developed that work in areas where greatest impact can be made?
15. Are employees allowed to take work time to participate in health activities?
16. What programs do you have?
17. What would you like to do to improve your program?
18. Did you survey your drivers on what they need for wellness?
  - Did you do a health behavior and attitudes survey?
19. What is your driver turnover rate?
20. How would you rate your wellness program? (scale 1-10)
21. What do you see as strengths of your program?
22. What do you see as weaknesses of your program?
23. How is the participation in you programs?
  - How do you measure it?
  - Is it different for corporate employees vs. drivers?
24. Do you have health data statistics on your truck drivers?
24. Have you reached your trucking population and how do you think you could better reach them?

## **Appendix Two: Draft Trucking/Bus Industry Executive Wellness Questionnaire**

1. What does your company do?
2. What are the greatest challenges facing your industry today?
3. Where does the importance of your work force's health and health care costs fall in your list of priorities for your company?

4. Does your company have a wellness program?  
Why?

Why not?

5. If you have a wellness program, how would you rate its effectiveness (scale 1-10)?
6. Do you believe your employees take ownership and responsibility for their own health?  
Why?

How could this be improved?

7. Do you believe in rewarding healthy people? How would you or do you do it?

8. What benefits do you provide your employees?

What about spouses?

Retirees?

9. Do you know how much your company spends on health care costs per employee per year?

Or workers compensation?

10. Do you analyze your health care costs? Do you know your major cost areas?

11. What percentage of the health care dollars do you believe should be spent on wellness?

What do you spend?

12. Do you survey your drivers about their needs? If yes, what do you find?

13. What is your driver turnover? How do you think you can decrease this?

14. Research has defined the following characteristics of a 'healthy' organization. How does your company rate in these areas on a scale of 1 (lowest) to 5 (highest)?

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| a) A clear stated mission, purpose, and reason for being                           | 1 | 2 | 3 | 4 | 5 |
| b) Employee involvement in decision-making and control over job responsibilities   | 1 | 2 | 3 | 4 | 5 |
| c) Effective performance evaluation system with goal-setting and feedback          | 1 | 2 | 3 | 4 | 5 |
| d) Employee health promotion and services program                                  | 1 | 2 | 3 | 4 | 5 |
| e) An accessible EAP   | 1 | 2 | 3 | 4 | 5 |
| f) Corporate non-smoking and other positive health policies                        | 1 | 2 | 3 | 4 | 5 |
| g) Active social support networks  | 1 | 2 | 3 | 4 | 5 |
| h) Effective communication channels  | 1 | 2 | 3 | 4 | 5 |
| i) Career and skill development programs   | 1 | 2 | 3 | 4 | 5 |
| j) Effective supervisor and leadership training skills                             | 1 | 2 | 3 | 4 | 5 |
| k) An attitude that it's employees are appreciated and noticed for a job well done | 1 | 2 | 3 | 4 | 5 |
| l) Attention to quality products and services                                      | 1 | 2 | 3 | 4 | 5 |