ASSESSMENT OF THE PREVALENCE OF SMOKE-FREE ENVIRONMENT POLICIES THROUGHOUT THE COMMONWEALTH OF VIRGINIA AT WORKSITES EMPLOYING FIFTY OR MORE WORKERS

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(ABSTRACT)

The purpose of this study was to investigate the prevalence of smoke-free environment polices throughout the Commonwealth of Virginia at worksites employing fifty or more workers. Specifically, this study assessed policy prevalence, development, implementation, and enforcement. In addition, this study assessed smoke-free environment policy effectiveness. The population for this investigation consisted of telephone surveys of 374 worksites located throughout the Commonwealth of Virginia. Of these worksites, 340 (91%) completed the telephone survey. The population (n = 340) was spread throughout five health regions, Northern, Northwest, Central, Southwest, and East. Descriptive analysis and One-way Analysis of Variance (ANOVA) were applied to investigate differences between these five health regions. An alpha of .05 was selected for this study.

Based on the findings, the following conclusions were drawn: (1) Fifty-percent of the worksites located throughout the Commonwealth of Virginia have some form of smoke-free environment policies; (2) The smoke-free environment policy constructs used in the telephone survey guide were statistically significant in identifying differences between the five health regions; (3) Smoke-free

environment policies at the worksite are dependent upon health region; (4) Implementation of smoke-free environment policies is dependent upon health region; (5) Enforcement of smoke-free environment policies is dependent upon health region, and (6) Effectiveness of smoke-free environment policies is dependent upon health region. The following recommendations were suggested: (1) Further studies assessing smoke-free environment policy enforcement should be conducted annually; (2) Studies incorporating a qualitative research methodology regarding smoke-free environment policy prevalence should be conducted; (3) Studies involving common smoke-free environment policies at different states should be investigated, and (4) Additional in-depth surveys should be conducted to evaluate health outcomes associated with the implementation of smoke-free environment policies.

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INTRODUCTION

The public health impact of environmental tobacco smoke (ETS) is thought to be considerable. "Of the estimated 480,000 smoking-related deaths that occur every year in the United States, 53,000 have been attributed to ETS, making passive smoke the third leading preventable cause of death, after active smoking and alcohol use" (Werner & Pearson, 1998, p. 157). Parmet, Daynard, and Gottlieb (1996) argue that

> Numerous studies have clearly shown that environmental tobacco smoke (ETS) is a potent public health risk. Recent data have indicated that nearly 9 out of every 10 non-smokers in the United States are exposed to ETS at detectable levels. (p. 909)

The Environmental Protection Agency produced an in-depth report in 1993 that classified ETS as hazardous and a group A carcinogen. Both the U.S. Surgeon General and the National Research Council of the National Academy of Sciences produced reports with substantially the same conclusions in 1986, (that exposure to ETS is hazardous). In 1991, the National Institute of Occupational Safety and Health reviewed the evidence and concluded that not only was ETS a "potential occupational carcinogen" but it could possibly cause heart disease as well (Bayard & Jinot, 1993, p. 20).

Environmental tobacco smoke is a leading health concern for today's employee. Second-hand smoke affects not only the employee who smokes, but the non-smoking employee as well. "Exposure to environmental tobacco smoke (ETS) causes annoyance and irritation to non-smokers, and frequent exposure may cause cardiovascular disease, respiratory disease, or lung cancer in healthy non-smokers" (Willemsen, Brug, Uges, & Vos de Wael, 1997, p. 1111). "While most epidemiologic studies have focused on household ETS," Eisner, Smith, and Blanc (1998) argue, "the workplace is now recognized as a major site of exposure" (p. 1909). "The workplace is the greatest source of ETS exposure for non-smokers who work outside the home and live in households in which no one smokes" (Moskowitz, Lin, & Hudes, 1999, p. 278).

In an effort to protect non-smokers from exposure to environmental tobacco smoke, employers have been implementing smoke-free environment policies. "The accumulating evidence that environmental tobacco smoke (ETS) injures non-smokers has led to a growing number of policies in the workplace that eliminate or restrict smoking" (Woodruff, Rosbrook, Pierce, & Glantz, 1993, p. 1485). "In fact, over the last 15 years, the greatest advances in controlling tobacco use and in protecting the non-smoker from adverse effects of secondhand smoke have occurred in the workplace" (Eriksen & Gottlieb, 1998, p. 83).

Numerous studies indicate that current worksite smoke-free environment policies adhere to either a complete ban on tobacco use or limiting tobacco use to

designated areas. Predictors and estimators of smoke-free environment policies have been primarily developed for policy prevalence. The first study to investigate the prevalence of smoking policies at the worksite was conducted in 1989 by Gottlieb, Hedl, Eriksen, and Chan. The results from their study suggest that the majority of surveyed worksites had a smoke-free environment policy. Gottlieb, Eriksen, and Chan (1989) argue, "This study has shown remarkable similarities between private employers and public agencies in regard to the prevalence of policies, reasons for their implementation, and their perceived benefit" (p. 204). Considering the increasing number of worksites implementing smoke-free environment policies, a need emerges for the assessment of worksite smoke-free environment policy.

Statement of the Problem

Parmet, Daynard, and Gottlieb (1996) reported, "there is no nationwide limitation on smoking in either the workplace or public places" (p. 909). "Efforts to minimize public exposure to ETS have primarily focused on development and implementation of restrictive smoking policies" (Emmons, Kawachi, & Barclay, 1997, p. 185). There is little research available on worksite smoke-free environment policy as it relates to secondhand smoke and clean indoor air policies. Limited research is available that addresses worksite smoke-free environment policies in areas where state laws do not prohibit smoking in such

facilities. Rigotti and Pashos (1991) however, warned that "despite their potential importance, little is known about the extent of laws restricting smoking or the effects of these laws, particularly at the local government level" (p. 3162). Furthermore, there has not been a statewide assessment of such policies in the Commonwealth of Virginia, warranting additional research to determine the prevalence of policies among worksites.

Purpose of the Study

The purpose of this study was to determine the prevalence of smoke-free environment policies at worksites in the Commonwealth of Virginia. Specifically, this study assessed policy prevalence, development, implementation, enforcement, and policy effectiveness. In addition, this study assessed differences among health regions in regards to smoke-free environment policies.

Research Questions

1. How prevalent are smoke-free environment policies at the worksite?
2. Are there significant differences among policy development between the five health regions?
3. Are there significant differences among policy implementation between the five health regions?

4. Are there significant differences among enforcement between the five health regions?

5. Are there significant differences among policy effectiveness between the five health regions?

Significance

Non-smokers who work in an environment that exposes them to environmental tobacco smoke place their health at risk. Establishing total ban or limited tobacco use smoke-free environment policies can eliminate this risk. Smoke-free environment policies at the worksite can assist in reducing or eliminating non-smokers exposure to environmental tobacco smoke and reduce tobacco product consumption. Hudzinski and Frohlich (1990) argue that worksite smoke-free environment policies "increase general knowledge of health risks about smoking and may promote non-smoking as a more normative behavior" (p. 1202). And finally, smoke-free environment policies may assist in promoting a healthier working population.

In addition, the Tobacco Use Control Program of the Virginia Department of Health, funded by the National Tobacco Control Program (NTCP) of the Centers for Disease Control and Prevention, was interested in gathering smoke-free environment policy information. The suggested strategy for the state program is to gather data on public places that have smoke-free environment

policies. The Tobacco Use Control Program of the Virginia Department of Health, in order to more appropriately focus its efforts with regard to secondhand smoke education and clean indoor air policies, will use these data. In doing so, the Virginia Department of Health may become more accurate when addressing the needs of the population of the Commonwealth.

Policy makers, business managers, and health educators can reduce or prevent employee ETS exposure, thus greatly reducing the employees risk for developing cardiovascular disease, lung cancer, reduction in pulmonary function, and asthma. If the prevalence of environmental tobacco smoke at worksites can be reduced, it can be assumed that health care costs to both employee and the general public will be reduced.

Delimitations

This study was delimited to the following:

1. Participants of the investigation were selected from the Dunn and Bradstreet's list of worksites located within the Commonwealth of Virginia.

Limitations

The study was limited by the following factors:

1. The study was limited to worksites located in the Commonwealth of Virginia employing fifty or more workers.

2. Measurement of smoke-free environment policy development, implementation, and enforcement was based on self-reports.

3. Only worksites having telephones participated in the study.

Assumptions

The study was based on the following assumptions:

1. The population represented worksites located throughout the Commonwealth of Virginia.

2. The participants in the study were knowledgeable of the development, implementation, and enforcement of smoke-free environment policies at their worksite.

3. Participants in the study answered the telephone survey questions honestly.

4. The telephone survey is a valid measure of smoke-free environment policy development, implementation, and enforcement.

Hypotheses

The study was designed to test the following null hypotheses:

1. Smoke-free environment policy at the worksite did not differ from the estimated prevalence.

2. The prevalence of smoke-free environment policies at the worksite and health regions is independent.

3. Smoke-free environment policy development and health regions are independent.

4. Smoke-free environment policy implementation and health regions are independent.

5. Smoke-free environment policy enforcement and health regions are independent.

6. Smoke-free environment policy effectiveness and health regions are independent.

Operational Definitions

The following definitions clarify the terms used in this study:

1. Environmental tobacco smoke (ETS). Smoke from tobacco products, including side-stream and mainstream smoke.

2. Non-smoker. One who does not smoke tobacco products.

3. Non-response. After five failed attempts to contact the worksite by telephone or refusal to participate in telephone survey, the worksite is listed as a non-response.

4. Smoke-free environment policy. A policy, written or verbal, that limits or prohibits the use of tobacco products.

Chapter 2

REVIEW OF THE RELATED LITERATURE

This chapter includes a review of topics related to environmental tobacco smoke, the challenges associated with smoke-free environment policy and the role management maintains in smoke-free environment policy.

Introduction

Worksite smoke-free environment policies are associated with a decrease in environmental tobacco smoke exposure to non-smoking workers, although research of the effects of smoke-free environment policies has been minimal (Moskowitz, Lin, & Hudes, 1999). In fact, minimal research focusing on the levels of exposure of ETS on the general adult population has been conducted (Emmons, Hammond, & Abrams, 1994). Adults comprise the majority of the workforce in the United States, with many working outside the home. Accepting employment at a worksite or restaurant that lacks an effective smoke-free environment policy may place these workers at additional risk to their health due to the potential for exposure to environmental tobacco smoke. Health related problems may develop or current health conditions may worsen due to environmental tobacco smoke exposure.

By 1992, 543 cities and counties nationwide had adopted smoking laws that limited tobacco use. "More than 400 city and local ordinances have been adopted that mandate implementation of restrictive smoking policies in workplaces" (Emmons, Kawachi, & Barclay, 1997, p. 185). Martin (2000) reported that the national trend to reduce ETS exposure at the worksite is gaining momentum, with nearly 80% of worksites employing fifty or more workers reporting having a smoke-free environment policy. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) mandated what is recognized as the "first and only industry-wide ban" to prohibit the smoking of tobacco products in the hospital setting (Longo et al., p. 1252, 1996). As concerns associated with the dangers of exposure to environmental tobacco smoke escalate, policies such as this one may find their way into other industries, both public and private.

To ascertain the prevalence of smoke-free environment policies at restaurants, Baffi, Housenick, and Martin (2000) conducted a statewide survey of 278 restaurants. They identified a formal total ban or limited tobacco use smoke-free environment policy prevalence of (55%, n =154). Twenty-two percent (n = 61) of the respondents reported that smoking was not allowed anywhere in the restaurant. Thirty-one percent (n = 68) of the respondents reported that they felt that they did not have all the information they need regarding smoking policies in restaurants. The Department of Health and Human Services Healthy People 2010

objectives estimated in 1998-1999 that approximately four-fifths of worksites with 50 or more employees had a formal total ban or limited tobacco use smoke-free environment policy. The goal for 2010 is to increase that prevalence to 100%.

In another study to assess the prevalence of smoke-free environment policies, Baffi, Martin and Housenick (2000) conducted a statewide study in the Commonwealth of Virginia of 608 family home day providers. This study revealed that the majority (95%) of family home day providers have some method of a smoke-free environment policy. Twenty-six percent (n = 168) reported that smoking was not allowed indoors or outdoors at any time. Furthermore, they found that the majority (61%, n = 393) of family home day providers' policies have been in affect since the owners began offering residential childcare services. It is interesting to note the high prevalence of smoke-free environment policies at residential childcare providers considering the fact that current Virginia laws prohibiting smoking in childcare settings applies only to non-residential settings.

Environmental Tobacco Smoke

Individuals may be exposed to environmental tobacco smoke at their worksite, residence, and public settings. "Virtually everyone in the United States," Davis (1998) argues, "is at risk of harm from exposure to secondhand smoke" (p. 1947). Secondhand smoke or environmental tobacco smoke may be

defined as side-stream smoke that arises from exhaled smoke as well as the lighted end of a tobacco product such as a cigarette, cigar, or pipe.

Davis, Boyd, and Schoenborn (1990) noted that non-smokers are in danger of serious health risks due to exposure to secondhand smoke. They compared data from the 1987 National Health Interview Survey of Cancer Epidemiology and Control with data from a 1987 Roper Organization report on a study of smoking. The study concluded that "four-fifths of adults—including two-thirds of current smokers—believed that passive smoking is harmful to health and that smokers should not smoke in indoor places where their smoking might disturb others" (p. 2211).

Environmental tobacco smoke appears to impact the health of smokers as well as non-smokers, adults as well as children. Research performed by DiFranza and Lew (1996) reported the impact of tobacco use on the health of children. Their findings included the following associations regarding environmental tobacco smoke: 1) 354,00 to 2.2 million episodes of otitis media annually; 2) increase in prevalence of asthma accounting for 307,00 to 522,000 cases; and 3) an estimated 136 to 212 deaths from lower respiratory infections, 260,00 to 436,00 cases of bronchitis, and between 115,00 to 190,000 cases of pneumonia in children younger than 5 years of age annually. As a result of this exposure to ETS, Martin (2000) points out, the Environmental Protection Agency (EPA) estimates that exposure to environmental tobacco smoke is attributed to

respiratory infections in infants and young children, and that children exposed to ETS report other symptoms associated with respiratory inflammation.

Werner and Pearson (1998) state current data suggest that individuals who do not smoke tobacco products but are subject to secondhand smoke are placed at greater risk of lung cancer and cardiovascular disease. Howard et al. (1998) conducted what they believe was the first "large population-based study to report on the impact of smoking and exposure to ETS on the progression of atherosclerosis" (p. 124). The study concluded that exposure to ETS placed the non-smoker at risk of increased atherosclerosis progression by 20%. Zanetti, et al. (1998) argue that exposure to ETS attributes not only to cardiovascular and respiratory disease, but other diseases may be attributed as well such as eye, intestinal tract, and reproductive disorders.

White, Froeb, and Kulik (1991) found that non-smokers working in environments where the smoking of tobacco products is allowed are frequently exposed to the same levels of tobacco smoke as that of smokers. Passive smokers reported significantly more symptoms such as coughing, eye irritation, shortness of breath, and chest colds as compared to the non-smokers not exposed to ETS. This study revealed that continual exposure at the worksite to ETS places the worker at risk for eye and respiratory irritations. Additionally, their findings suggest that exposure to worksite environmental tobacco smoke may place the non-smoking worker at greater risk for health related illness and disease.

Policy Challenges

Nowhere is the concern about the health and economic impact of smoking greater than it is in the workplace. Additionally, the settings that place individuals at the greatest risk for exposure to environmental tobacco smoke are worksites and restaurants (Chapman, 1996). One economical approach employers may take to reduce their healthcare expenditures and to enhance employee safety and productivity is to implement smoke-free environment policies (Longo, et al., 1998).

Hennrikus, Jeffery, and Lando (1996) reported that smoke-free environment policies might assist the smoking cessation efforts of the occasional smoker. Limited research has been conducted that investigates the predictors linked with worksite adoption of smoke-free environment policies (Sorensen, Glasgow, Topor, & Corbett, 1997). For their study, Sorensen, et al. (1997) conducted a telephone survey that addressed smoking policy, cessation resources, incentives, and worksite characteristics. The study resulted in "the first description of predictors for adoption of worksite smoking policies and smoking cessation service offerings" (p. 523). Sorensen, et al. (1997) recommended that "future research on worksite-level characteristics associated with adoption of smoking policies and provision of cessation resources" (p. 525) be explored.

In an earlier study, Sorensen, Rigotti, Rosen, Pinney, and Prible (1991) reported that worksite non-smoking policies might affect employee smoking

cessation. Findings from their study suggest "cessation was associated with working in areas of good policy compliance" (p. 203). The study concluded that forty-two percent of employees who quit smoking did so because of the worksite smoking policies that limited tobacco use.

Legal Action

"Many social and political issues in America are litigated in the workplace: and now employers," Fleming and Leon (1998) write, "should add smoking to the litigation litany which should be considered in making workplace decisions" (p. 65). Lewit, Botsko, and Shapiro (1993) found that employees exposed to environmental tobacco smoke at the worksite are suing their employers and winning many of these lawsuits.

As Allen (1997) points out, "The Occupational Safety and Health Act imposes on employers a general duty to provide each employee a safe workplace, free from recognized hazards causing or likely to cause death or serious physical harm" (p. 412). Enacted legislation holds management accountable; therefore, management must assume responsibility for their employee's safety and well-being when at the worksite.

Moskowitz, Lin, and Hudes (1999) conducted a study to ascertain "the effects of California smoking ordinances on the existence of worksite smoking policies and on non-smokers' ETS exposure at the worksite" (p. 278). Statistical data from their study suggest that smoke-free environment policies at the local

level influence the prevalence of worksites' having a smoke-free environment policy. The authors note that further research is needed to investigate whether smoke-free policies enacted at the state level are preferable to local ordinances for shielding society from exposure to environmental tobacco smoke.

Mangurian and Bero (2000) evaluated tobacco industry documents to determine the strategies and efforts of the tobacco industry to prevent the Maryland workplace smoking regulation. They reported that "proposed in November 1993, the Maryland regulation was one of the earliest workplace smoking regulations in the United States" (p. 1926). The tobacco industry's efforts may have influenced the legislatures' decision to exclude the hospitality industry from workplace smoking regulation, the Maryland Occupational Safety and Health regulation "would have been the nations most comprehensive workplace smoking regulation" (Patrick, 1995, cited in Mangurian & Bero, 2000, p. 1926).

The Tobacco Control Resource Center, Inc. (1999) analysis of the Multistate Master Settlement Agreement of November 23, 1998 suggested that the tobacco industry is most effective at influencing smoke-free environment regulation at the federal and state levels. They argue that at the local level the tobacco industry is less effective and that the "tobacco industry hates local action in tobacco control, precisely because it is so effective" (p. 61). The Tobacco Control Resource Center, Inc. concluded that the Multistate Master Tobacco

Settlement Agreement "contains few tangible public health benefits, and does little, therefore, by itself, to reduce the continuing harmful impact of tobacco use on the U.S. economy or the health of its citizens" (p. 86). They suggested that the "best way, therefore, to effectuate the public health purposes of the Tobacco Settlement . . . would be to dedicate a substantial portion of the funds generated by the Tobacco Settlement to tobacco control in each Settling State" (The Tobacco Control Resource Center, Inc., p. 86).

Worksite Size

A study examining and comparing smoking control strategies of worksites with small work force populations (<25 employees), medium work force populations (26-50 employees), and large work force populations (>50) was conducted by Flynn, Gurdon, and Secker-Walker (1995). Their study examined the characteristics of the firms, smoking policy communications, smoking policy restrictiveness, employee adherence to policies, and smoking cessation activities. They found that worksites with large employee populations have more restrictive policies as compared to worksites with smaller employee populations, but the worksites with larger employee populations had lower levels of policy adherence.

Total Ban vs. Restrictive Policy

Gottlieb, Eriksen, Lovato, Weinstein, and Green (1990) found in their descriptive data of worksite smoking policy that "few differences in impact between a restrictive policy and total ban on smoking" existed (p. 22). They

attributed their results to possible sample error and worksite size. Gottlieb et al. recommended that further research is needed to detect differences between the impact of total ban and restricted policy.

Kinne, Kristal, White, and Hunt (1993) conducted a population based telephone study of 1228 adults employed in Washington State to investigate the impact of smoking restriction policy and smoking habits at the worksite. In their study, participants at 80% of the worksites identified smoke-free environment policies. Recognized in the study was that the "findings show that the great majority of employed Washingtonians are subject to restrictive smoking policies of the type that typically reduce exposure to environmental tobacco smoke" (p. 1033). This study also indicated that, if smoke-free environment policies are implemented, tobacco consumption among smokers might be reduced at worksites that have policies.

Farkas, Gilpin, Distefan, and Pierce (1999) conducted a study assessing the association of household and worksite smoking restriction with smoking cessation. They found that total ban and partial ban household smoking restrictions "were more strongly associated with smoking and quitting behaviors than were workplace restrictions" (p. 265). Upon investigation of worksite smoking restrictions, Farkas et al. found that "only smoke-free workplaces were associated with higher rates of cessation attempts, successful cessation, and light smoking" (p. 265). Farkas et al. concluded that these differences found between

household and workplace may have resulted from stronger social pressure at the home to quit and to the greater prevalence of impediments to smoking found at the home that may weaken the environmental cues to smoke.

Employee Reaction

Biener, Abrams, Follick, and Dean (1989) conducted a study of two healthcare organizations (one with a policy and one without a policy) in an attempt to assess the impact of a restrictive smoking policy. Responses from smokers and non-smokers measuring awareness and approval of the policy and perceived effects of the policy were collected and compared. Employee reaction to the restrictive smoking policy was evaluated one month prior to the policy implementation, 6 months after the policy implementation, and 12 months after the policy implementation. The data revealed smoke-free environment policies that limit tobacco use can be implemented at the worksite without dissension or discontent among employees and employers (Biener, et al., 1989).

Employee Productivity

"Annually, employers lose $50 billion in productivity due to smoking in the United States, and the additional expense to employers for each one-pack-a-day smoker is $624 annually" (Longo, et al., 1998, p. 47). One example of lost productivity is time related to the act of smoking. Depending on the employees' smoking habit, a one-pack-a-day smoker can feasibly take ten or more smoking breaks during their working shift. If the average time to consume a cigarette were

four to five minutes, forty to fifty minutes of paid working time would be lost due to non-productivity. These unscheduled breaks can de-motivate other employees who consume less tobacco thus take fewer breaks, or non-smokers who do not take smoking breaks at all. The literature suggests that employees who smoke take more sick time off than do their non-smoking counterparts resulting in a less productive employee. Finally, employees suffering from smoking related illness, whether chronic or acute, may not be able to perform at the pace and level of workers who do not smoke.

Employee Health

In their report, Oliver and Shackleton (1998) present health problems associated with indoor air quality. They report that in the past, indoor clean air policies have been focused at the worksite setting to reduce the employee's exposure to harmful airborne pollutants. Additionally, Oliver and Shackleton point out that this public health problem recently has been recognized as spanning a wider scope, to include school and home environments. They argue that outdoor environmental pollutants, such as "tobacco smoke from smokers standing outside building entrances" may find it's way indoors and result in poor indoor air quality (p. 405).

Terry (1983) writes, "In 1928 Lombard and Doering reported a relationship between smoking and health" (p. 1254). Negative health outcomes associated with tobacco use such as emphysema, lung cancer, and heart disease

have been reported more than 50 years ago. A study conducted by Eisner, Smith, and Blanc (1998) evaluated respiratory health of workers after implementation of a smoke-free environment policy. This study revealed "reduced ETS exposure, occurring after implementation of smoke-free workplace legislation, was associated with improved adult respiratory health during a short observation period" (p. 1914). Eisner et al. argue that worksite smoke-free environment policies may result in a rapid improvement of workers' respiratory health.

Tager (1989) conducted a review of available data on health effects associated with ETS exposure at the worksite. This review revealed that environmental tobacco smoke may cause lung cancer, acute respiratory illness, chronic cough, reduced level of lung function, and irritating effects to the eyes, nose, and throat. Due to the limited studies that have been conducted, Tager (1989) recommended that additional research in the area of environmental tobacco smoke exposure and adverse health outcomes be explored.

Costs to Business

The Environmental Protection Agency (EPA) estimates that an outright ban on workplace smoking in the United States would yield about a $72 billion savings. For example, potential cost savings may arise from decreased insurance premiums, reduced employee sick leave, decrease in cleaning and maintenance costs, decrease in medical costs associated with tobacco use and exposure, and a decrease in tobacco use related fires. Thompson and McNamee (1995) predicted

"If 40% of smokers stopped their habit by the year 2000, the extra spending power could create up to 150,000 new jobs" (p. 1360). The authors suggest that the money people saved from quitting smoking would be spent on other products and services such as recreation, entertainment, and communications.

Organizational image and fire safety are two issues that business and industry may view as financial concerns (Longo, et al., 1998). The organizational image may be improved or looked upon favorably due to smoke-free environment restrictions. Employees and the public sector may view the organization as one that is genuinely concerned about the health of its employees and customers. With the restriction of open flame products such as cigarettes, the risk for accidental fire should be reduced creating a safer environment.

Loss of revenue due to pending smoke-free environment policy has been a concern for the restaurant industry. Dunham and Marlow (2000) write that many supporters of smoke-free environment policies and ordinances take the stance that tobacco use restrictions may not negatively affect the profits of proprietors of bars and eating establishments, but may actually assist them in increasing their profits. Glantz and Smith (1994), conducted a comprehensive study of the impact of smoking restrictions on bar and restaurant sales and found no significant effect of local non-smoking ordinances on bar and restaurant sales.

Philpot et al. (1999), found in their study that smoke-free restrictions enacted at workplaces such as bars and nightclubs did not result in reduced

revenues. The majority of patrons interviewed who smoked stated that they would continue to patronize these establishments even if they became smoke-free. Not surprisingly, the non-smokers who were interviewed in this study stated that they would increase their patronage at these establishments if they became smoke-free. Philpot et al. argue that any revenue lost by smoker non-patronage may be offset by an increase in non-smoker patronage.

Smoke-free environment policies might assist in reducing expenses related to equipment maintenance cleaning and upkeep (Weinstein, 1993). Kristein (1989) argues, "One may be able to obtain substantial savings in terms of reducing cleaning costs (already reported by smoke-free hotels), fire risk, accidents, damage to furnishings, harm to non-smokers, time wasted by smoking rituals, etc." (p. 45). Costs associated with cleaning of drapes, carpets, and walls could be reduced significantly. Heating, ventilation and air conditioning (HVAC) costs may be reduced due to less cleaning maintenance required or due to the elimination or need of separate ventilation systems for smoke-free worksites.

Smoke-free environment policies enacted at the worksite can assist in reducing insurance costs to the employer and the employee through risk-rating health insurance premiums. Schauffler (1993) states that risk-rating health insurance premiums based on an individuals smoking status was proposed in the surgeon general's report on smoking released in the late 1970's.

Management's Role

The public health impact of ETS is thought to be considerable. The Environmental Protection Agency produced an in-depth report in 1993 that classified ETS as hazardous and a group A carcinogen. Both the U.S. Surgeon General and the National Research Council of the National Academy of Sciences produced reports with substantially the same conclusions in 1986, [that exposure to ETS is hazardous]. In 1991, the National Institute of Occupational Safety and Health (NIOSH) reviewed the evidence and concluded that not only was ETS a "potential occupational carcinogen" but it could possibly cause heart disease as well (Bayard & Jinot, 1993, p. 20). Mathis and Jackson (1997) report that concern of the potential health risks associated with exposure to environmental tobacco smoke has initiated OSHA to investigate and research environmental tobacco smoke. Regulations enacted by OSHA require employers to assume the responsibility to assure that non-smoking employees' exposure to environmental tobacco smoke is reduced while workers are at the worksite setting.

Smoking cessation activities and resources can assist in reducing the negative health outcomes associated with smoking, but additional strategies are warranted (Longo et al., 1996). Two key strategies or efforts that can be used by management and administration are education and regulation. Employers can provide educational resources for employees. Some types of educational resources that may be provided are smoking cessation programs, literature,

videos, and posters. Davis (1998) argues, "Education alone is usually not effective in protecting non-smokers" (p. 1951). Smoke-free environment regulations can be used along with educational resources.

Summary

The potential harmful effects of exposure to environmental tobacco smoke at the worksite are a concern for both employees and employers. Borland, Pierce, Burns, Gilpin, Johnson, & Bal (1992) argue, "Smoking in the workplace has become an important public health issue in recent years as the health effects of exposure to environmental tobacco smoke (ETS) have been increasingly documented" (p. 750). Research suggests that non-smokers, who work in environments where smoking is allowed, may be exposed to levels of ETS similar to that of smokers (White, Froeb, & Kulik, 1991). Additionally, exposure to environmental tobacco smoke at the worksite may promote the onset of illness, exacerbate existing health conditions, and cause death.

The prevalence of smoke-free environment policies has increased significantly during the past decade. Forces driving smoke-free environment policies are legislation, litigation, cost benefits, and employee health concerns. The Occupational Safety and Health Act as well as state and local smoking ordinances have set the pace for worksite smoke-free environment policies. Hammond, Sorensen, Youngstrom, and Ockene (1995) presented a view that

smoke-free environment polices significantly decrease the workers' exposure to environmental tobacco smoke. Risk of potential litigation has motivated many employers to initiate restricted or total ban smoking policies at the worksite. Management may base their decision of enacting a smoke-free environment policy as a cost savings measure. The research suggests that employee health may improve significantly after smoke-free environment measures are placed at the worksite.

After investigating smoke-free environment policy key areas, it is obvious that policies differ regarding restrictive and total ban coverage. Moreover, the reasons for policy implementation vary significantly concerning legal, economical, and health related issues. A study designed specifically for the assessment of the prevalence of smoke-free environment policies in the Commonwealth of Virginia is not available. A study focusing on these issues may be of substantial benefit to policy makers, business managers, and health educators located throughout the Commonwealth of Virginia to assist them in their smoke-free environment efforts.

Chapter 3

METHODOLOGY

Introduction

This chapter includes a description of the sample frame, stratification of the sample by health regions, sample size estimation, instrumentation, telephone surveying, pilot test, telephone survey team, and procedures for data collection and method for data analysis. The rationale for initiating the measures are also presented and described.

Sampling Frame

The Tobacco Use Control Program of the Virginia Department of Health contracted with the Health Promotion area at Virginia Polytechnic Institute and State University to conduct an assessment of worksite smoke-free environment policy prevalence in the Commonwealth of Virginia. The Tobacco Use Control Program provided Virginia Polytechnic Institute and State University with a list of 2,500 current worksites employing 50 or more employees in Virginia. The sampling frame for the study was this list. It contained the business names, telephone numbers, addresses, and contact person of worksites located throughout the Commonwealth of Virginia. This list was derived using the Dun and Bradstreet's database.

Stratification

The Virginia Tobacco Use Control Program divided the Commonwealth of Virginia into five health regions—Northern, Northwest, Central, Southwest, and East (Table 1). These health regions were established to ensure that each region contained approximately the same number of health districts, based on population in those areas.

Table 1

Sampling Frame By Health Region

Region	Health Districts
Northern	Alexandria, Arlington, Fairfax, Loudoun, Prince William,
Northwest	Central Shenandoah, Lord Fairfax, Rappahannock, Rappahannock Rapidan, Thomas Jefferson
Central	Central Virginia, Chesterfield, Crater, Hanover, Henrico, Piedmont, Richmond, Southside
Southwest	Alleghany, Cumberland Plateau, Danville, Lenowisco, Mount Rogers, New River, Roanoke, West Piedmont
East	Chesapeake, Eastern Shore, Hampton, Norfolk, Peninsula, Portsmouth, Three Rivers, Virginia Beach, Western Tidewater

"The ultimate function of stratification," Babbie (1990) writes, "is to organize the population into homogeneous subsets (with heterogeneity between subsets) and to select the appropriate number of elements from each subset" (p. 86). Stratified random sampling has been selected for the study for a number of reasons. It is assumed this method would provide data that have a higher degree of representativeness. The sampling method selected would also assist in reducing the sampling error. A sampling frame that contains all the members of the populations that the sample was intended to represent already exists and was available for the purpose of this study.

Sample Size Estimation

The Virginia Tobacco Use Control Program was consulted to determine the prevalence of smoke-free environment policy at the worksite setting in Virginia. Representatives of this program estimated that approximately 75% of worksites located throughout Virginia had some type of smoke-free environment policy. Using this prevalence, the sample size was calculated.

The following formula, $n = Z^2pq / d^2$, as recommended by Lohr (1999), was used to calculate the sample size for this study. In this formula, the Z score ($Z = 1.96$) was determined based on the alpha set at .05 level and the level of confidence set at 95%, $p = .75$ represents prevalence, $q = 1-p$, and $d = .05$ represents the margin of error. Thus, using this formula, a sample size of 288 was determined. The formula used to calculate sample size is presented in Table 2.

Table 2

Formula for sample size estimation

Worksites			
$n= \frac{(\alpha)^2(p)(q)}{(d)^2}$	$n= \frac{(1.96)^2 (.75) (.25)}{(.05)^2}$	$n= \frac{.7203}{.0025}$	n= 288.12

Note. n = sample size; p = probability 75%; q = 1-p = 25%;

α = confidence level 95%; d = margin of error 5%.

In regards to sample size estimation, Sudman (1976) argues,

> It may be seen that national studies, regardless of subject matter, typically have samples of 1000 or more. Regional studies vary considerably, depending on the topic, but, as expected, usually have smaller samples (p. 87).

The sample size that was determined for this study falls within the guidelines that Sudman suggests.

Non-response Rate Adjustment

The next step was to calculate the effect of non-response rate. The non-response rate was determined through a review of the literature and the findings of the pilot test. Assuming a 30% non-response rate due to refusal to participate or inability to contact after five attempts, the sample size was estimated.

The sample size adjustment was calculated as follows, n = n + (n · non-response). Thus, using this formula, the sample of 288.12 was multiplied by the estimated non-response rate of 30% (288.12 · .30) resulting in a sample adjustment of 86.44. The sample adjustment of 86.44 was added to the original sample of 288.12 resulting in a final sample size of 374.56. The formula used to calculate the non-response adjustment is presented in Table 3.

Table 3

Formula for 30% Non-response Rate Adjustment

Worksites		
n=288.12 + (288.12 x 0.30)	n= 288.12 + 86.44	n= 374.56
n + (n · non-response)		

Proportional Allocation

The Tobacco Use Control Program of the Virginia Department of Health estimated that of the 2,500 worksites identified as meeting the criteria of the study, approximately 33.5% of the worksites (n=837) were located in the Northern region, 11.8% (n=296) in the Northwest region, 21.2% (n=530) in the Central region, 13.2% (n=331) in the Southwest region, and 20.2% (n=506) in the East region. The list was divided according to each of the strata. In each stratum, worksites were numbered and using a computer derived random selection process, numbers for each worksite were drawn. "In proportional stratified sampling"

write Gall, Borg, and Gall (1996) “the proportion of each subgroup in the sample is the same as their proportion in the population” (p. 226). Each worksite to be included in the study was drawn proportional to worksites in each health region. The proportional allocation resulted in the five regions across the strata as follows: Northern n=126, Northwest n=44, Central n=79, Southwest n=49, and East n=76 for a total sample of 374 worksites.

Instrumentation

A panel of experts assisted in the development of the survey instrument. The panel consisted of a health promotion professor from Virginia Polytechnic Institute and State University, a doctoral candidate and public health faculty member from East Tennessee State University, a tobacco control expert from the Tobacco Use Control Program at the Virginia Department of Health, and two directors from the Tobacco Use Control Program at the Virginia Department of Health. The breadth and depth of content coverage were evaluated to capture information from the survey participants in three subject areas: background information, specific policy information, and the policy’s effects.

A list of 129 questions was developed. These questions were derived from a review of the literature and the goals of the survey contract. The questions were presented to the Tobacco Use Control Program directors for their review. They determined which questions were appropriate for the study and were permissible

to ask. Several revisions were made based on their suggestions. This continued until the directors of the Tobacco Use Control Program and the questionnaire development team felt that the questions reflected the goal of the study. This process resulted in a final instrument consisting of 53 questions that address policy development, policy implementation, policy enforcement, union involvement, effectiveness of policy, and worksite information. The final instrument, the Worksite Smoking Policy Questionnaire can be found in (Appendix A).

Telephone Surveying

The method that was selected for data gathering was telephone surveying. The decision to use telephone surveys was based on issues such as time and financial constraints. Oppenheim (1992) presented a view that telephone surveying has multiple advantages. Some advantages identified are low cost, fast completion times, and lower refusal rates. The study was designed and conducted within a set financial budget. The budgetary funds were allocated to cover the cost of print material, telephone cards, and telephone surveying personnel. The data were collected over a period of sixteen weeks.

The telephone survey procedure was conducted using Dillman's (1978) Total Design Method as a guide. The response rates associated with telephone surveying were reviewed. Dillman (1978) argues, "The highest response rates,

those over 90 percent, have only been obtained when respondents received a prior letter informing them that they would be called at a later time" (p. 51). In an attempt to attain a high response rate for this study, a letter of introduction was sent to each worksite contact person prior to the telephone survey introducing the research study topic, reason that the worksite was selected to participate and how they may be of assistance, length of telephone survey, and notification that a telephone surveyor will contact them within two weeks. The letter also suggested that if the recipient was not the most suitable individual at the worksite to answer questions regarding smoke-free environment policies, that they forward the letter to the appropriate individual and direct the telephone surveyor to this individual when contact was made (see Appendix B). Letters were addressed to the individuals listed in the Dunn and Bradstreet database.

Pilot Test

A sample of 20 worksites, randomly drawn, from the five health regions Northern, Northwest, East, Central, and Southwest participated in the pilot study (see Appendix C). The survey pilot test instrument was conducted in a two-week period, mid-June 2000 to determine the following:

1. Instrument clarity based on telephone surveyor perception and participant feedback
2. Survey completion time

3. Data recording time

4. Response rate

In addition, reliability measures of the seven constructs within the scale were calculated using Cronbach's Alpha, (Table 4).

Table 4

Reliability Coefficients for Pilot Test Instrument

Scale	Cronbach's Alpha
Policy Development	.5433
Policy Implementation	.4101
Policy Enforcement	.7097
Unionization	.8844
Health Outcomes	.5125
Cost Benefit	.6660
Smoking Cessation Activities and Resources	.5210

The second goal of the pilot test was to determine if the participants at the worksite had reported any problems understanding the questions on the instrument. This was determined based on telephone surveyor perception and participant feedback. The pilot test attempted to detect any ambiguous or difficult to understand, questions, or questions that for some reason had to be repeated.

Any comments, concerns, or observations were recorded by the telephone surveyor and discussed with the expert panel.

The third pilot test goal was to determine the length of time participants required to complete the telephone survey. In addition, telephone surveyors conducting the survey could plan their schedules appropriately, and inform the participants survey time requirements of approximately twenty minutes.

The forth pilot test goal was to determine the questionnaire data recording time. Telephone surveyors recorded data on optiscans simultaneously during the survey process. Additional participant comments were recorded on a log sheet.

Response rate was also accessed during the pilot test. Prior to the pilot, it was determined that five telephone attempts to contact the business would be conducted. The non-responses consisted of refusal and worksites contacted five times and the contact person was not reached. The pilot test non-response rate was used in the definitive study.

A total of 47 telephone calls or attempts were made to twenty worksites yielding 15 completed telephone surveys. A 30% non-response rate resulted due to failure to establish contact at two worksites based on telephone contact protocol consisting of five attempts to make contact and three worksites that refused to participate. Respondents were eliminated from selection for the final sample. The results from the pilot test can be found in Appendix D. Following the pilot study, the instrument was reviewed, revised, and submitted to the Tobacco Use

Control Program panel of experts for final review. Comments were incorporated, final revision made, and the Tobacco Use Control Program and the panel of experts deemed the instrument valid and appropriate for the study.

Telephone Survey Team

A team of telephone surveyors comprised of twenty individuals was assembled and trained. In selecting the telephone surveyors, individuals having prior telephone survey or telemarketing experience had priority. To recruit individuals to meet telephone survey team size, individuals with limited telephone surveying experience, undergraduate and graduate students, were recruited and trained. Two training sessions were conducted, one for a Tennessee based team and one for a Virginia based team. A health promotion professor from Virginia Polytechnic Institute and State University and a doctoral candidate and public health faculty member from East Tennessee State University conducted the training sessions. Detailed training in telephone survey methodology, data entry, responding to participant questions, completed questionnaire editing and follow-up telephone calls, and non-response procedures were provided. Telephone surveyors were instructed to conduct the surveys during weekdays between the hours of 9:00a.m and 6:00p.m. Telephone surveyors received prepaid telephone cards, a list of worksite contact names, and telephone numbers, optiscans, telephone log sheets (see Appendix E), and pencils. Telephone surveyors were contacted on a weekly schedule during the survey period to answer any questions,

evaluate their progress, and to collect completed questionnaire data. The data collection period ended on October 1, 2000 with any telephone surveys not completed eliminated from the study.

Data Analysis

The purpose of this study was to determine the prevalence of smoke-free environment policies at worksites in the Commonwealth of Virginia. Specifically, this study assessed policy prevalence, development, implementation, enforcement, and effectiveness.

All data were collected, transcribed from telephone survey logs and optiscans, and entered into the Statistical Package for the Social Sciences 10.0 for Windows (SPSS). Descriptive statistics and one-way analysis of variance (ANOVA) were conducted to investigate any differences between regions based on policy development, policy implementation, policy enforcement, unionized employees, policy effectiveness, and worksite information scales. An alpha level of .05 for significance was selected for this study. Post hoc comparisons, Scheffe's tests, were used when the omnibus F was significant because it is conservative and holds the alpha level consistently across all variables (Hinkle, Wiersma, & Jurs, 1994).

Chapter 4

RESULTS AND DISCUSSION

Introduction

In this chapter the results, data analysis, and interpretation of the findings are presented. Data for this study were secured from telephone surveys conducted between July-October 2000. The purpose of this study was to investigate smoke-free environment policies at worksites in the Commonwealth of Virginia and to identify specific indicators leading to policy development, implementation, and enforcement. This study attempted to determine the prevalence of smoke-free environment policy, specifically, the prevalence of how many worksites reported having a smoke-free environment policy. One thousand seven hundred and eighty six telephone calls were made in an attempt to contact the 374 worksites in this study. Three hundred and forty telephone surveys were completed resulting in a 91% response rate. The data collection period ended on October 1, 2000 with any telephone surveys not completed eliminated from the study.

Instrument Evaluation

Smoke-free environment policy was measured with a 53-item questionnaire assessing policy development (7 questions), policy implementation (12 questions), policy enforcement (5 questions), unionized employees (4 questions), policy

effectiveness (17 questions), and worksite information (8 questions). The reliability of the instrument was assessed using Cronbach's Alpha and the results are shown in Table 5.

Table 5

Reliability Coefficients for Definitive Study Instrument

Scale	Cronbach's Alpha
Policy Development	.0672
Policy Implementation	.7867
Policy Enforcement	.1699
Unionization	.5347
Health Outcomes	.4639
Cost Benefit	.4680
Smoking Cessation Activities and Resources	.1866

Descriptive Statistics

Worksite Information

Respondents were asked a series of questions pertaining to size of employee workforce, organization classification, and minority ownership. As for employee population, 22% (n= 74) of worksites reported having 50-99 employees, 24% (n= 80) reported having 100-249 employees, 27% (n= 91)

reported having 250-749 employees, and 14% (n= 48) reported having 750 or more employees (Figure 1). Of the 340 respondents, 42% (n= 144) reported that their worksite was not a part of a larger organization or corporation and 26% (n= 89) reported that worksite was a part of a larger organization or corporation. Respondents at 28% (n= 97) of the worksites reported that their company is a minority owned or run business. Minority owned businesses reported a higher prevalence of smoke-free environment policies (61% n = 59) as compared to non-minority owned businesses (45% n = 111).

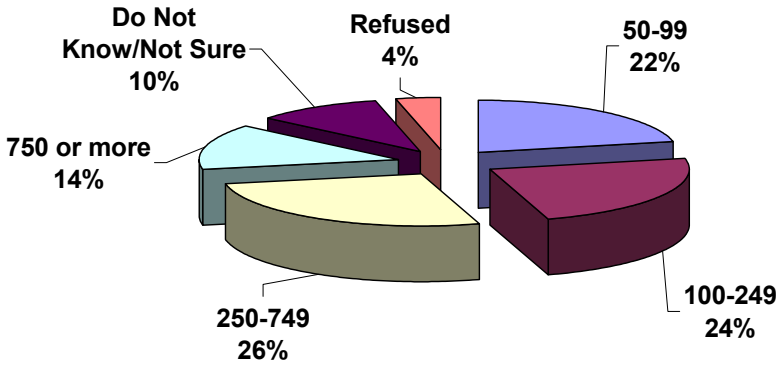

Figure 1. Workforce size 50-99 employees, 100-249 employees, 250-749 employees, and 750 or more employees.

Smoke-Free Environment Policy Development

Fifty-percent (n=170) of the worksites reported they had a smoke-free environment policy (Figure 2). Smoking allowed in designated areas only was reported by 34% (n= 57) of the respondents. Policy development was reported as being the responsibility of the director-vice president at 28% (n= 47) of the worksites, and the safety manager at 21% (n= 35) of the worksites.

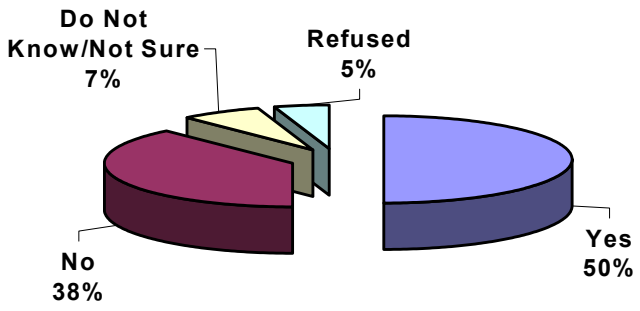

Figure 2. Does your worksite have a smoking policy?

Smoke-Free Environment Policy Implementation

The survey revealed that one half of worksites (n=84) having a smoke-free environment policy notified all employees about the smoking policy prior to the policy implementation and 33% (n= 57) reported written notification. Thirty-four percent (n= 57) of worksites surveyed having a smoke-free environment policy reported that the policy has been communicated to all employees at least annually since its adoption. Twenty-eight percent of worksites (n=48) having a smoke-free environment policy reported that their smoking policy has been in effect 13-24 months with 39% (n=67) reporting no policy changes. The safety managers (29%) n=50, the division managers (24%) n= 41, and the human resources managers (18%) n=31were identified the most likely to be assigned to oversee the policy implementation (Figure 3). The safety managers (24%) n= 41, the division managers (20%) n= 34, and the director-vice presidents (17%) n= 29 were identified as most likely responsible for answering questions about the smoking policy.

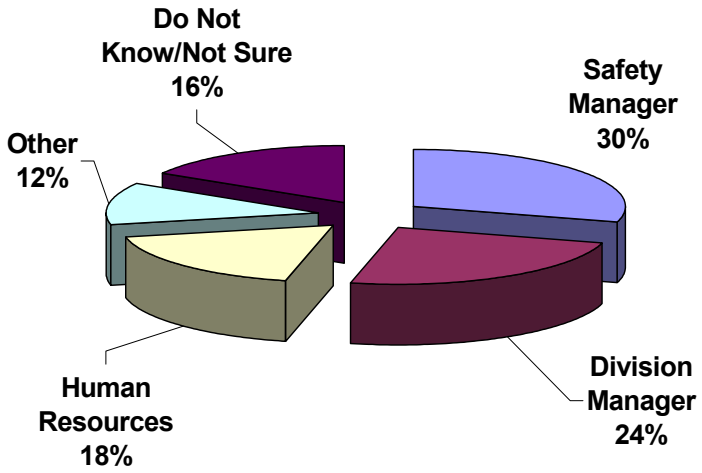

Figure 3. Staff to oversee the smoking policy implementation.

Smoke-Free Environment Policy Enforcement

Thirty-five percent (n= 59) of the surveyed worksites reported enforcement clauses in their smoking policy with (41%, n= 69) reporting policy enforcement. As shown in Figure 4, (42%, n= 71) of the worksites reported that they had smoking policy signs posted with (45%, n= 32) of worksites reported having printed "No Smoking" signs posted.

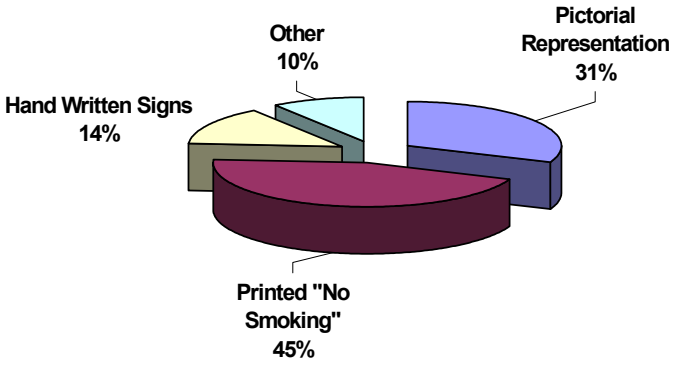

Figure 4. Types of smoke-free environment policy signage.

Employees of a Union

Forty-percent (n= 136) of worksites reported unionization. Of the worksites reporting having a smoke-free environment policy, thirty-eight percent (n= 24) reported that the union was not involved in the development, implementation, and enforcement of the policy (Figure 5). Twenty-eight percent (n= 18) of the worksites reported that the union did support the enforcement of the policy and of those worksites receiving union support, 61% (n = 11) reported that the support was easily gained.

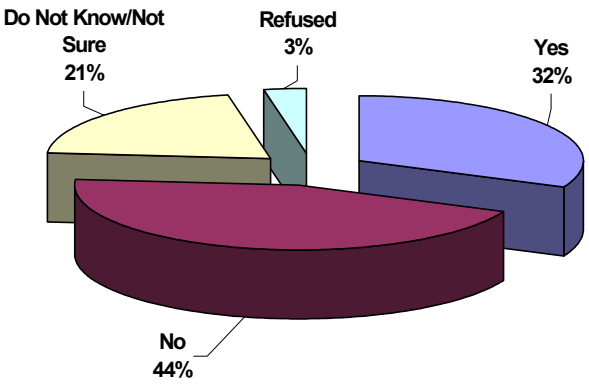

Figure 5. Union influence in development, implementation, or enforcement of the policy.

Health Outcomes

Thirty-eight percent (n=64) of the worksites reported attempting to determine whether their employee's health has improved since implementation of the smoking policy. Twenty-four percent (n= 40) of worksites reported a decrease in lung problems such as asthma or bronchitis among employees who use tobacco products since the worksite smoking policy began.

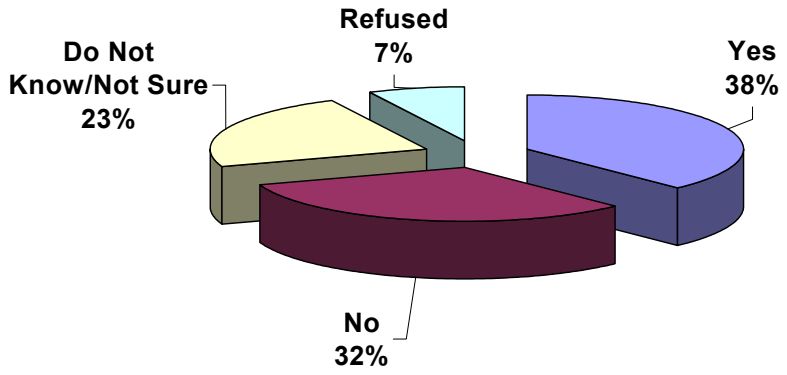

Figure 6. Attempted to determine if employees' health has improved since implementation of the smoking policy.

Cost Benefit

Health care costs declined at 37% (n= 62) of the worksites and the number of sick days taken by employees declined at 26% (n= 44) of the worksites since the smoking policy was implemented (Figure 7). Employee productivity at 40% (n= 68) of the worksites has reportedly increased since the smoke-free environment policy went into effect.

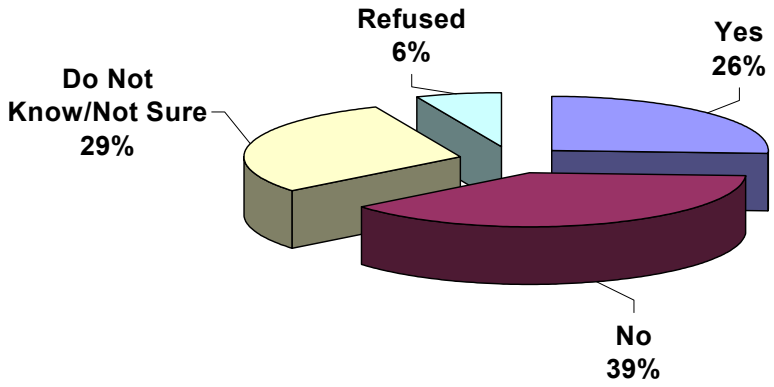

Figure 7. Decrease in employee sick days.

Smoking Cessation Activities and Resources

Respondents were asked whether individual assistance or counseling, group classes, workshops, lectures, special events, and informational materials were made available to employees over the past 12 months. Twenty-nine percent (n= 98) of worksites reported smoking cessation activities and resources to their employees. As shown in Figure 8, resources and activities most frequently identified by the worksites were (40%, n= 39) informational materials, (29%, n= 28) workshops and lectures, and (26%, n= 25) individual assistance or counseling.

Of those worksites offering smoking cessation resources and activities, (36%, n= 35) reported that they were offered to employees on company time. Employees participating in smoking cessation programs offered outside of the worksite were reimbursed the costs by (23%, n= 78) of the worksites. The survey revealed that (26%, n= 87) of the worksites offer an incentive for employees to stop using tobacco over a long period of time.

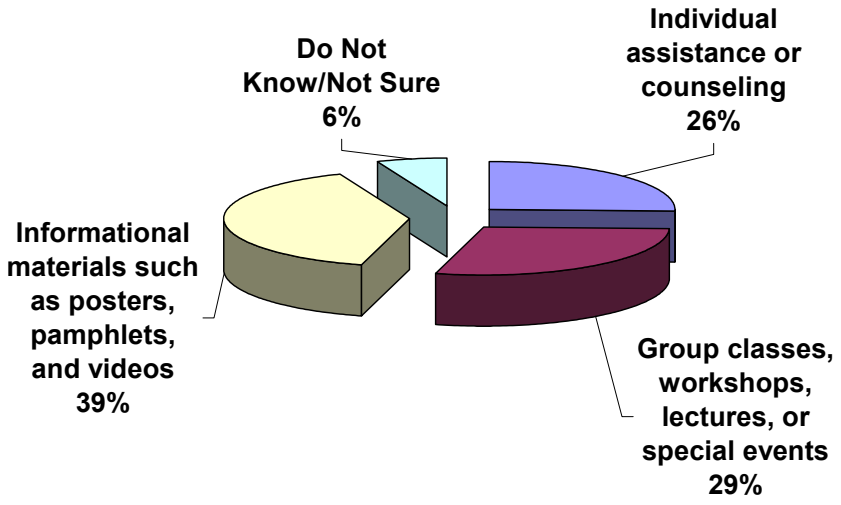

Figure 8. Types of activities or resources offered.

Hypothesis Testing

One-way analysis of variance (ANOVA) was used to test each of the hypotheses on each of the five related dependent variables (e.g., policy prevalence, policy development, policy implementation, policy enforcement, and policy effectiveness). If significance was detected between two or more variables, then Scheffe's test was used to determine the location of the differences between the means. Alpha was set at .05.

To determine prevalence of smoke-free environment policies at the worksite, the null hypotheses formulated for this study were that:

1. Smoke-free environment policy at the worksite did not differ from the estimated prevalence.
2. The prevalence of smoke-free environment policies at the worksite and health regions is independent.
3. Smoke-free environment policy development and health regions are independent.
4. Smoke-free environment policy implementation and health regions are independent.
5. Smoke-free environment policy enforcement and health regions are independent.
6. Tobacco policy effectiveness and health regions are independent.

All variables were analyzed to determine smoke-free environment policy prevalence and to identify factors associated with policy development, implementation, enforcement, and effectiveness. Results testing the following null hypotheses were as follows:

Null Hypothesis #1

The prevalence of smoke-free environment policies at the worksite did not differ between the health regions.

Policy Prevalence. One-way analysis of variance (ANOVA) was used to compare smoke-free environment policy prevalence among the five health regions. Participants surveyed were asked if their worksite had a smoke-free environment policy. Respondents reporting having a worksite smoke-free environment policy in effect determined policy prevalence. Results are shown in Table 6. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the five health regions.

Table 6

One-way ANOVA Results for Policy Prevalence by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	38.428	4	9.607	17.747	.000*
Within	181.348	335	.541		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's post hoc comparison test indicated that the Northern Region was significantly different from all four other regions. The Northwest Region was found to be significantly different from the Northern and Southwest Regions. The East and Central Regions were found to be significantly different from the Northern Region. The Southwest Region was significantly different from the Northern and Northwestern Regions. The mean differences were significant at the .05 level.

Length of Policy Prevalence. One-way analysis of variance (ANOVA) was used to compare length of policy prevalence among the five health regions. Results are shown in Table 7. The analysis yielded a statistically significant difference

between means. This finding shows that there was a significant difference (alpha .05) between the five health regions.

Table 7

One-way ANOVA Results for Length of Policy Prevalence by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	24.168	4	6.042	3.581	.008*
Within	278.426	165	1.687		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test (alpha .05) indicated a significant difference between the Northwest and the Central Regions.

Smoking Activity. One-way analysis of variance (ANOVA) results comparing smoking activity among the five health regions are shown in Table 8. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and the East Health Regions.

Table 8

One-way ANOVA Results for Smoking Activity by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	126.230	4	31.557	11.638	.000*
Within	447.394	165	2.711		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's post hoc comparison test (alpha .05) indicated a significant difference between the Northern and Central and Southwest Regions. The Northwest Region was significantly different from the Southwest Region. The East and Southwest Regions were found to be significantly different. The Central Region was significantly different from the Northern and Southwest Regions. The Southwest Region was significantly different from all four other groups.

Null Hypothesis #2

No significant differences in smoke-free environment policy development occurred between worksite health regions.

Establishing Policy. One-way analysis of variance (ANOVA) was used to compare individuals involved in establishing a smoking policy (Table 9). The analysis yielded a statistically significant difference between means. A significant difference between the Northern, Northwest, Central, Southwest, and East Health Regions was identified.

Table 9

One-way ANOVA Results for Establishing Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	62.675	4	15.669	6.302	.000*
Within	410.272	165	2.486		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was significantly different from the Central Region.

Null Hypothesis #3

No significant differences in smoke-free environment policy implementation occurred between worksite health regions.

Policy Implementation. One-way analysis of variance (ANOVA) was used to compare who was assigned to oversee the smoke-free environment policy implementation among the five health regions. Results are shown in Table 10. The analysis yielded statistically significant difference (alpha .05) between means. A significant difference between the five health regions was identified.

Table 10

One-way ANOVA Results for Policy Implementation by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	31.223	4	7.806	4.064	.004*
Within	316.924	165	1.921		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated the Northern Region to be significantly different from the Northwest Region.

Changes to the Policy. One-way analysis of variance (ANOVA) was used to compare policy changes since implementation among the five health regions. Results are shown in Table 11. The analysis did not yield any statistically significant differences between the means at a probability level of .05. This finding illustrates no significant difference in policy changes among the five health regions.

Table 11

One-way ANOVA Results for Changes to Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	2.683	4	.671	.798	.528
Within	138.728	165	.841		

Answering Questions. One-way analysis of variance (ANOVA) was used to compare who was responsible for answering questions about the policy since policy implementation among the five health regions. Results are shown in Table 12. The analysis yielded statistically significant differences (alpha .05) between

means with a significant difference between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 12

One-way ANOVA Results for Answering Questions by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	48.946	4	12.236	4.922	.001*
Within	397.757	160	2.486		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated a significant difference between the Northern and East Regions. The East Region was significantly different (alpha .05) from the Central Region.

Policy Feedback. One-way analysis of variance (ANOVA) was used to compare who provides employees with feedback regarding policy concerns among the five health regions (Table 13). The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in policy feedback and health regions.

Table 13

One-way ANOVA Results for Policy Feedback by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	6.630	4	1.658	2.021	.094
Within	135.346	165	.820		

Surveys. One-way analysis of variance (ANOVA) was used to compare employee's viewpoint regarding the policy among the five health regions (Table 14). The analysis yielded a statistically significant difference (alpha .05) between means of the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 14

One-way ANOVA Results for Surveys by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	27.370	4	6.843	7.717	.000*
Within	146.306	165	.887		

*$p < .05$.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern, Northwest, and East Regions were significantly different from the Central Region.

Communication of Policy. One-way analysis of variance (ANOVA) compared when the smoke-free environment policy was communicated to all employees among the five health regions. Results are shown in Table 15. The analysis yielded a statistically significant difference (alpha .05) between means between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 15

One-way ANOVA Results for Communication of Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	44.391	4	11.098	9.930	.000*
Within	184.409	165	1.118		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Central and Southwest Regions.

The Northwest Region was found to be significantly different from the Southwest Region. The East Region was found to be significantly different from the Southwest Region. The Central Region was found to be significantly different from the Northern and Southwest Regions. The Southwest Region was found to be significantly different from all four regions. The mean differences were significant at the .05 level.

Annual Communication of Policy. One-way analysis of variance (ANOVA) was used to compare if the smoke-free environment policy was communicated annually to all employees among the five health regions. Results are shown in Table 16. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 16

One-way ANOVA Results for Annual Communication of Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	18.597	4	4.649	4.460	.002*
Within	171.997	165	1.042		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Northwest Regions. The mean differences were significant at the .05 level.

Employees Given a Copy of Policy. One-way analysis of variance (ANOVA) was used to compare if all employees were given a written copy of the smoke-free environment policy among the five health regions. Results are shown in Table 17. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 17

One-way ANOVA Results for Employees Given a Written Copy of Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	12.995	4	3.249	3.328	.012*
Within	161.058	165	.976		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Northwest Region. The mean differences were significant at the .05 level.

Null Hypothesis #4

No significant differences in smoke-free environment policy enforcement occurred between worksite health regions.

Enforcement Clause of Policy. One-way analysis of variance (ANOVA) was used to compare if the policy included an enforcement clause that provides consequences for violation of the smoke-free environment policy among the five health regions. Results are shown in Table 18.

Table 18

One-way ANOVA Results for Enforcement Clause of Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	7.913	4	1.978	1.754	.141
Within	186.140	165	1.128		

The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in enforcement clause of policy and health regions.

Enforcement of Policy. One-way analysis of variance (ANOVA) was used to compare smoke-free environment policy enforced among the five health regions. Results are shown in Table 19. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 19

One-way ANOVA Results for Enforcement of Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	31.249	4	7.812	9.935	.000*
Within	129.745	165	.786		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region

was found to be significantly different from the East and Southwest Regions. The Northwest Region was found to be significantly different from the Southwest Region. The Central Region was found to be significantly different from the Southwest Region. The mean differences were significant at the .05 level.

Other Tobacco Products. One-way analysis of variance (ANOVA) was used to compare policy restriction of the use of other tobacco products among the five health regions. Results are shown in Table 20. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 20

One-way ANOVA Results for Use of Other Tobacco Products by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	15.184	4	3.796	4.799	.001*
Within	130.516	165	.791		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the East Region was

found to be significantly different from the Southwest Region. The Central Region was found to be significantly different from the Southwest Region. The mean differences were significant at the .05 level.

Smoking Signage. One-way analysis of variance (ANOVA) was used to compare if smoking signs were posted at the worksite among the five health regions. Results are shown in Table 21. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 21

One-way ANOVA Results for Smoking Signage by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	20.861	4	5.215	7.652	.000*
Within	112.462	165	.682		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region

was found to be significantly different from the Northwest and Central Regions. The mean differences were significant at the .05 level.

Null Hypothesis #5

No significant differences in effectiveness occurred between worksite health regions.

Employee Health. One-way analysis of variance (ANOVA) was used to compare if attempts were made to determine whether the employees' health has improved since implementation of the policy among the five health regions. Results are shown in Table 22. The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in employee health and health regions.

Table 22

One-way ANOVA Results for Employee Health by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	6.371	4	1.593	1.806	.130
Within	144.623	164	.882		

Decrease in Lung Problems. One-way analysis of variance (ANOVA) was used to compare if employers noticed a decrease in lung problems since implementation of the policy among the five health regions. Results are shown in Table 23. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 23

One-way ANOVA Results for Decrease in Lung Problems by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	17.571	4	4.393	5.992	.000*
Within	120.953	165	.733		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the East Region. The Northwest Region was found to be significantly different from the Southwest Region. The East Region was found to be significantly different from the Southwest Region. The mean differences were significant at the .05 level.

Decrease in Health Care Costs. One-way analysis of variance (ANOVA) was used to compare whether the organization seen a decline in healthcare costs since implementation of the policy among the five health regions. Results are shown in Table 24. The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in decline in healthcare costs and health regions.

Table 24

One-way ANOVA Results for Decline in Health Care Costs by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	8.884	4	2.221	2.775	.029*
Within	132.063	165	.800		

*p < .05.

Employee Productivity. One-way analysis of variance (ANOVA) was used to compare if employers seen an increase in employee productivity since implementation of the policy among the five health regions. Results are shown in Table 25. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 25

One-way ANOVA Results for Employee Productivity by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	27.223	4	6.806	8.075	.000*
Within	139.065	165	.843		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Southwest Region. The Northwest Region was found to be significantly different from the East Region. The East Region was found to be significantly different from the Northwest and Southwest Regions. The Central Region was found to be significantly different from the Southwest Region. The mean differences were significant at the .05 level.

Employee Sick Days. One-way analysis of variance (ANOVA) was used to compare if organizations seen a decrease in employee sick days since implementation of the policy among the five health regions. Results are shown in

Table 26. The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in employee sick days and health regions.

Table 26

One-way ANOVA Results for Employee Sick Days by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	7.139	4	1.785	2.333	.058
Within	126.249	165	.765		

Smoking Breaks. One-way analysis of variance (ANOVA) was used to compare if the company allowed smoking breaks among the five health regions. Results are shown in Table 27. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 27

One-way ANOVA Results for Smoking Breaks by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	23.316	4	5.829	6.250	.000*
Within	153.884	165	.933		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Southwest Region. The East Region was found to be significantly different from the Central Region. The Central Region was found to be significantly different from the East and Southwest Regions. The mean differences were significant at the .05 level.

Employee Smoking Behaviors. One-way analysis of variance (ANOVA) was used to compare if the company inquired about the smoking behaviors of potential employees among the five health regions. Results are shown in Table 28. The analysis yielded a statistically significant difference between means. This finding

shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 28

One-way ANOVA Results for Employee Smoking Behaviors by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	11.565	4	2.891	4.569	.002*
Within	104.412	165	.633		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Southwest Region. The Northwest Region was found to be significantly different from the Southwest Region. The East Region was found to be significantly different from the Southwest Region. The Central Region was found to be significantly different from the Southwest Region. The mean differences were significant at the .05 level.

Sale of Tobacco Products. One-way analysis of variance (ANOVA) was used to compare if tobacco products are sold at the worksite among the five health regions. Results are shown in Table 29. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 29

One-way ANOVA Results for Sale of Tobacco Products by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	6.462	4	1.616	3.625	.007*
Within	73.544	165	.446		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the East Region. The mean differences were significant at the .05 level.

Insurance Policy. One-way analysis of variance (ANOVA) was used to compare if the company offered employees an insurance policy with a rate structured based on smoking status among the five health regions. Results are shown in Table 30. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 30

One-way ANOVA Results for Insurance Policy by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	25.378	4	6.344	7.825	.000*
Within	133.775	165	.811		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Southwest Region. The Northwest Region was found to be significantly different from the East Region.

The East Region was found to be significantly different from the Northwest and Southwest Regions. The mean differences were significant at the .05 level.

Smoking Cessation. One-way analysis of variance (ANOVA) was used to compare if organizations offered employees smoking cessation activities and resources among the five health regions. Results are shown in Table 31. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 31

One-way ANOVA Results for Smoking Cessation by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	16.948	4	4.237	6.515	.000*
Within	105.999	163	.650		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region

was found to be significantly different from the Northwest and East Regions. The mean differences were significant at the .05 level.

Smoking Cessation Reimbursement. One-way analysis of variance (ANOVA) was used to compare if organizations reimbursed their employees the costs associated with smoking cessation activities and resources among the five health regions. Results are shown in Table 32.

Table 32

One-way ANOVA Results for Reimbursement of Smoking Cessation by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	13.590	4	3.398	2.351	.056
Within	228.348	158	1.445		

The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in reimbursement of smoking cessation and health regions.

Incentives to Quit. One-way analysis of variance (ANOVA) was used to compare if organizations offered an incentive for employees who quit using tobacco over a long period of time among the five health regions. Results are shown in Table 33.

Table 33

One-way ANOVA Results for Incentives to Quit by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	4.430	4	1.107	1.658	.162
Within	105.533	158	.668		

The analysis did not yield a statistically significant difference between the means at a probability level of .05. This finding illustrates no significant difference in incentives to quit and health regions.

Health Insurance. One-way analysis of variance (ANOVA) was used to compare if organizations offered health insurance plans that partially or fully cover costs of smoking cessation or nicotine replacement therapy among the five health regions. Results are shown in Table 34. The analysis yielded a statistically significant difference between means. This finding shows that there was a significant difference (alpha .05) between the Northern, Northwest, Central, Southwest, and East Health Regions.

Table 34

One-way ANOVA Results for Health Insurance Coverage of Smoking Cessation by Health Region

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	29.104	4	7.276	11.512	.000*
Within	104.284	165	.632		

*p < .05.

A post hoc comparison test was performed because the omnibus F was significant. The Scheffe's comparison test indicated that the Northern Region was found to be significantly different from the Southwest Region. The Northwest Region was found to be significantly different from the Southwest Region. The East Region was found to be significantly different from the Southwest Region. The Central Region was found to be significantly different from the Southwest Region. The mean differences were significant at the .05 level.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMENDATIONS FOR FUTURE RESEARCH

Summary

The Tobacco Use Control Program of the Virginia Department of Health, funded by the National Tobacco Control Program (NTCP) of the Centers for Disease Control and Prevention, contracted with the Health Promotion area at Virginia Polytechnic Institute and State University to conduct an assessment of worksite smoke-free environment policy prevalence in the Commonwealth of Virginia. This study was conducted between July-October 2000. The Tobacco Use Control Program provided Virginia Polytechnic Institute and State University with a list of 2,500 current worksites employing 50 or more employees in Virginia. This list was used as the sampling frame for this study and was stratified according to the health regions established by the Tobacco Use Control Program of Virginia. These regions were: Northern, Northwest, Central, Southwest, and East.

Information used in the assessment of smoke-free environment policy was obtained from worksites that employee 50 or more employees located throughout the Commonwealth of Virginia. Statistically significant differences were found between each of the health regions with regards to the way the policy was

developed, implemented, and enforced. Policy development constructs were identified as reported policy prevalence, total ban policy vs. limited tobacco use policy, and individuals recognized as being responsible for developing the policy. Policy implementation constructs were identified as notification of employees regarding policy, annual communication of policy, changes made to the policy, employees receiving a written copy of the policy, and individuals recognized as being responsible for the implementation of the policy. Policy enforcement constructs were identified as policy enforcement clause, active policy enforcement protocol, and policy signage.

The results of this study provide insight into the prevalence of smoke-free environment policies of worksites employing fifty or more employees in the Commonwealth of Virginia. The overall prevalence of smoke-free environment policies throughout the Commonwealth of Virginia of 50% falls significantly below the estimated 75% by the Tobacco Use Control Program of the Virginia Department of Health and the national trend of approximately 80%. Policy prevalence may be associated with health region location and agricultural crop production. Tobacco farming in the state may play a role in the prevalence of smoke-free environment policy prevalence. The Northwest health region was identified as having the highest policy prevalence of the five health regions. The Southwest health region, located in the tobacco belt, reported the lowest prevalence of policy and differed significantly from the four other health regions.

A notable finding is the fact that 47% of the respondents from the Southwest health region reported that the policy has been in effect 6 months or less. Considering the fact that the Southwest health region had reported the lowest prevalence of policy of all five-health regions, this may indicate a trend in new policy development and implementation in this region. The other regions in the state rely less on tobacco farming as a cash crop as compared to the Southwest region. Tobacco farmers, regional economics, and community members may potentially influence whether smoke-free environment policies are enacted in these regions. Furthermore, individuals who derive their income from tobacco production may view smoke-free environment policies as a potential threat to their livelihood.

Although smoke-free environment policies exist, there tends to be a wide variation in the amount of time that employers notified their employees in regard to smoke-free environment policy implementation. Notification of the policy ranged from more than three weeks prior to adoption to no prior notice. Employees at one-half of the worksites were notified within 3 weeks prior of the smoke-free environment policy implementation. Policy adherence and support may be low at the worksites reporting no prior notice due to the limited time allowed for the employee to ask questions about the policy. Additionally, employees may not receive enough notice to prepare for the tobacco use limitations associated with the policy. Many of the models of smoke-free

environment policy development and implementation, such as the American Cancer Society's, suggest that the employee be given the opportunity to be actively involved in the policy process and be offered resources and training in smoking cessation. Employees should receive a written copy of the policy that they can use as a reference with respect to operation and compliance of a smoke-free environment policy. The Southwest health region reported the highest prevalence of worksites providing the employee a written copy of the policy. This may be associated with the trend in this region of reporting the highest prevalence of recently implemented policies, 6 months or less. Recently developed and implemented policies may follow the recommendation to include notification to the employees in written format.

It appears that union support employers and employees in varying degrees. For example, the greatest prevalence of employees belonging to a union was highest in the Northern health regions of the state, the same regions that the highest prevalence of smoke-free environment policies was found. This may very well be a result of the influence of the unions. It is likely that the union supports employers and employees in smoke-free environment policies. The union can act as a liaison between the two groups and may assist in policy development and implementation. The union may be able to investigate smoke-free environment policies at other organizations that employ unionized workers in an effort to

evaluate how successful policies were implemented in similar worksite settings. Additionally, the union may assist in the enforcement of the policy.

Policies that limit smoking to designated areas only may not be as strong as a deterrent to smoking as a total ban policy. A policy that bans smoking activity on the worksite premises sends a message that the organization does not support the habit of smoking at all whereas limiting the use of tobacco products to designated areas restricts the use of tobacco products but at the same time condones the use of tobacco products. Smoking cessation resources and activities should be offered along with total ban policies in an effort for the employee to discontinue tobacco use. Since the organization is taking the stance that the smoking of tobacco products is not supported, they should assume the responsibility of assisting their employees in smoking cessation efforts.

The findings must be interpreted with caution since smoke-free environment policy was not specifically defined or the organizations surveyed received a great deal of breadth in their definition of policy. Despite this limitation, policy prevalence of smoke-free environment policies fell below the estimated prevalence of 75%-79%. There is limited research available on worksite smoke-free environment policy as it relates to secondhand smoke and clean indoor air policies.

Despite this research, much remains unknown. For example, smoke-free environment policy enforcement issues are still vague. The study was based on

self-reported data that may not clearly represent the actual policy enforcement or lack thereof. Additionally, the scope of this study did not include an in-depth investigation of constructs associated with smoke-free environment policy effectiveness. Notwithstanding this fact, a "snap-shot" of these constructs was gained providing minimal and limited information. Health outcomes of employees and the impact it might have on employee productivity, employee health care costs and discounts offered by insurance companies was marginally investigated. More detail could be gained by additional studies that more thoroughly investigate these constructs that are specific to smoke-free environment policy effectiveness.

Furthermore, the information gathered regarding smoke-free environment policies was limited in information and detail due in part to the method used to collect the data for this study. The telephone survey incorporated a structured interview guide, as opposed to face-to-face interviewing using an open or semi-structured interview guide. Methods using face-to-face interviewing could provide the opportunity to ask more in-depth questions and to expand on the answers that the participant provides. A different method such as this may shed light on areas of smoke-free environment policies that are currently vague or unexplored, therefore providing a better understanding in regards to worksite smoke-free environment policies.

This study provides a springboard for other research related to smoke-free environment policies. Hopefully, research focused on smoke-free environment policy will be stimulated by the findings of this study. Research examining the impact of smoke-free environment policies on health and well-being appear warranted, specifically research that is influenced by how the respondents define policy. Therefore, with these concerns and methodological issues in mind, more research regarding smoke-free environment policy in this area is warranted.

Conclusions

Based upon the findings of this study, the following conclusions are drawn:

1. The majority of the worksites located in the Commonwealth of Virginia have some level of smoke-free environment policies. Policies that ban smoking tobacco products or limit the smoking of tobacco products to designated areas were identified. The Southwest (47%) and the Northwest (49%) health reported that smoking activity was limited to designated areas only as compared to the Northern (21%) and East (27%) health regions.
2. Smoke-free environment policies at the worksite are dependent upon health region. The Northwest health region reported the highest prevalence of smoke-free environment policies (95%) as compared to the Southwest health region (36%) that reported the lowest prevalence.

3. Implementation of smoke-free environment policies is dependent upon health region. The Southwest health region (47%) reported that the policy has been implemented less than 6 months ago as compared to the Northern health region (39%) reporting the policy has been implemented 25-36 months ago. The Southwest health region (47%) reported that all employees received a written copy of the policy as compared to the Northern health region (26%) that reported employees receiving a writing copy of the policy.
4. Enforcement of smoke-free environment policies is dependent upon health region. The Southwest health region reported the highest prevalence of policy enforcement (100%) as compared to the Northern health region (19%) that reported the lowest prevalence of policy enforcement. The Northwest health region (73%) reported that smoking signs were posted as compared to the Northern health region (28%) reporting smoking signs posted.
5. Effectiveness of smoke-free environment policies is dependent upon health regions. The East health region (49%) reported having attempted to determine if their employees' health has improved since implementation of the policy as compared to the Northern health region (30%) reporting having attempted to determine if their employees' health has improved.

Recommendations for Future Research

Based upon the data derived from this study, the following recommendations are made:

1. Further studies investigating policy enforcement should be conducted on a yearly basis.
2. Studies incorporating a qualitative research methodology regarding smoke-free environment policy prevalence should be conducted.
3. Studies involving common smoke-free environment policies at different states should be investigated.
4. Additional in-depth surveys should be conducted to evaluate health outcomes associated with implementation of smoke-free environment policies.
5. The Department of Health could promote and implement workshops focusing on policy development in an effort to assist worksites that do not have a smoke-free environment policy.
6. Workshops focusing on the topics of policy implementation and enforcement could be offered. These workshops may be of benefit to worksites that currently do not have a smoke-free environment policy and to worksites that have a policy but need assistance with specific aspects of smoke-free environment policies such as effective implementation, enforcement, and legal issues.

7. The Department of Health could implement an educational campaign for worksite employees to increase their awareness of the harmful effects of environmental tobacco smoke and the potential benefits of smoking cessation.

8. The Tobacco Use Control Program may use this data to assist in acquiring grant funding targeted at smoke-free environment policy development and secondhand smoke awareness education.

9. Other factors such as attitudes of employees and employers, health outcomes and worksite exposure to ETS, and decreased tobacco consumption should be examined regarding smoke-free environment policies.

10. Research that addresses worksite smoke-free environment policies in areas where state laws do not prohibit smoking in such facilities should be conducted.

11. Funds from the Tobacco Settlement Agreement should be directed towards tobacco control issues such as smoke-free environment policies at the worksite.

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APPENDIX A

Worksite Smoking Policy Definitive Study Questionnaire

1. Does your worksite have a smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

<u>If no, skip to question #27</u>

2. If yes, may we have a copy of the policy?

<a> Yes – please fax to: 540-231-9075
Attn: Dr. Baffi

OR mail to:

Dr. C. Baffi
Virginia Tech
205 War Memorial Hall
Blacksburg, VA 24061-0313

<b> No

3. Which of the following statements best describes the smoking activity on your premises?

<a> Smoking is allowed in all areas
<b> Smoking is allowed in designated areas only
<c> Smoking is not allowed indoors, but is allowed outdoors
<d> Smoking is not allowed indoors, but is allowed outdoors only in a designated area
<e> Smoking is not allowed indoors or outdoors
<f> Do not know / not sure
<g> Refused
<h> Other_____

4. Does the smoking policy at your worksite also cover the use of other tobacco products like chewing tobacco, using snuff, or dipping?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

5. How long has your smoking policy been in effect?

<a> 0-6 months
<b> 7-12 months
<c> 13-24 months
<d> 25-36 months
<e> More than 36 months

6. When was the smoking policy communicated to all employees?

<a> Within 3 weeks prior to adoption
<b> More than 3 weeks prior to adoption
<c> Not communicated before adoption
<d> Do not know / not sure
<e> Refused

7. Has the policy been communicated to all employees at least annually since its adoption?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

8. Did all employees receive a written copy of the smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

9. Is there an enforcement clause in your smoking policy, which provides consequences for violation of the policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

10. Is your smoking policy enforced?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

11. Who was assigned from your staff to oversee the smoking policy implementation?

<a> Safety manager
<b> Division manager
<c> Human resources
<d> Other _____
<e> Do not know / not sure
<f> Refused

12. Who was involved in establishing your policy?

<a> CEO
<b> Director-Vice President
<c> Safety manager
<d> Division manager
<e> Employee representatives and groups
<f> Human resources
<g> Other_____

13. Have changes been made to the policy since it was implemented?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

If no, skip to question #16

14. What changes were made?

<a> Increase nonsmoking area
<b> decrease nonsmoking area
<c> Other_____

15. Who made the changes to the policy?

<a> CEO
<b> Director-Vice President
<c> Safety manager
<d> Division manager
<e> Employee representatives and groups
<f> Human resources
<g> Other_____

16. Who is responsible for answering questions about the policy?

<a> CEO
<b> Director-Vice President
<c> Safety manager
<d> Division manager
<e> Employee representatives and groups
<f> Human resources
<g> Other_____

17. Do you provide employees with feedback regarding their concerns about the smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

18. Have you conducted any surveys to determine how employees feel about the policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

<u>If no, skip to question #20</u>

19. **If yes**, may we have a copy of the survey and data?

<a> Yes – please mail or fax to the #'s on page 2
<b> No

20. Have you attempted to determine whether or not your employees' health has improved since implementation of the smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refuse

21. Have you noticed a decrease in lung problems, like asthma or bronchitis, among employees who use tobacco products since the implementation of your smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

22. Since implementing the smoking policy, has your organization seen a decline in healthcare costs?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refuse

23. Since implementing the smoking policy, has your organization seen an increase in employee productivity?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

24. Since implementing the smoking policy, has your organization seen a decrease in the number of sick days taken by employees?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

25. Do you have smoking policy signs posted?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

<u>If no, skip to question #27</u>

26. **If yes**, what types of sign(s) are posted?

<a> Pictorial representation
<b> Printed "NO Smoking"
<c> Hand Written signs
<d> Other_____

27. Are your employees members of a union?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

<u>If no, skip to question #31</u>

28. Did the union have a say in the development, implementation, or enforcement of the policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

29. Does the union support the enforcement of the policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

30. Was union support easy to obtain?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

31. Does your company allow smoking breaks?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

32. Can employees who smoke take as many breaks as they wish?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

33. Do you inquire about the smoking behaviors of potential employees?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

34. Does your work site offer employees an insurance policy with a rate structure based on smoking status?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

35. During the past 12 months, were the employees at your worksite offered any kind of activities or resources to help them quit smoking?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

If no, skip to question #39

36. **If yes**, which of the following were offered?

<a> Individual assistance or counseling
<b> Group classes, workshops, lectures, or special events
<c> Informational materials such as posters, pamphlets, videos?
<d> Do not know / not sure
<e> Refused

37. Were the activities or resources offered on company time?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

38. About how many employees participated in the activities?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

39. Does your organization pay for employee participation in smoking cessation outside of the workplace?

<a> Employer-management
<b> Employee-worker
<c> Insurance coverage
<d> Do not know / not sure
<e> Refused
<f> Other_____

40. Does your organization offer an incentive for employees who quit using tobacco over a long period of time?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

41. Does the employee health insurance plan(s) partially or fully cover smoking cessation or nicotine replacement therapy?

<a> Yes – Circle one or both:
smoking cessation
nicotine replacement therapy (NRT)
<b> No
<c> Do not know / not sure
<d> Refused

42. Are tobacco products sold at your site of business?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

43. Which of the following categories describes the number of permanent full-time and part-time employees at your worksite?

<a> 50-99
<b> 100-249
<c> 250-749
<d> 750 or more
<e> Do not know / not sure
<f> Refused

44. Is your organization a part of a larger company or corporation?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

45. About how many of the employees at your worksite are female?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

46. About how many of the employees at your worksite are male?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

47. About how many of the employees at your worksite are minorities?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

48. Is your company a minority owned or run business?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

49. About how many of the employees at your worksite are under 35 years of age?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

50. About how many of the employees at your worksite are over 35 years of age?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

51. Do you have all of the information you need regarding smoking policies at the worksite?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

If yes, skip to question #53

52. **If no,** can we send you some information regarding smoking policies?

<a> Yes – fill in address _____
<b> No
<c> Do not know / not sure
<d> Refused

53. Would your company be interested in additional training regarding worksite tobacco use policies?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

Appendix B

Letter of Introduction

June 1, 2000

Anyone
Anywhere
Virginia

Dear Worksite Representative,

The Health Promotion Program in the College of Human Resources and Education at Virginia Tech is currently conducting a study of tobacco use policies among worksites throughout the Commonwealth.

Your worksite has been randomly selected to participate in this study from a list of worksites in Virginia provided to us from the Tobacco Use Control Program of the Commonwealth.

Within the next two weeks, you will receive a telephone call from a project interviewer. This person will ask you questions regarding tobacco use and tobacco policies at your worksite. The telephone survey will take around ten minutes. Should it not be a convenient time for you to participate in the telephone survey when the interviewer calls you, please make every effort to establish a more convenient time to speak with this person. Also, if you are not the person with whom the interviewer should speak, your forwarding this letter to and directing the interviewer to the correct person is appreciated.

Your worksite's participation in the study is vital, so please make every effort to complete the telephone survey.

Your responses will be confidential and used for research purposes only. Again, no one but the researchers will know how you responded to any questions.

We appreciate your cooperation and look forward to gaining new insight into the tobacco use policies among worksites in Virginia.

If you have any questions or concerns about the questionnaire, please call me at (540) 231-8284 or send me a message by e-mail to baffic@vt.edu.

Sincerely,

Charles R. Baffi, Ph. D.
Project Director

Appendix C

Worksite Smoking Policy Pilot Test Questionnaire

1. Does your work site have a policy regarding on the premises smoking?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

   If no, skip to question # 25

2. If yes, does the smoking policy at your work site also cover the use of other tobacco products like chewing tobacco, using snuff, or dipping?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

3. How long has your policy been in effect?
   <a> 0-6 months
   <b> 7-12 months
   <c> 13-24 months
   <d> 25-36 months
   <e> More than 36 months

4. Was the smoking policy communicated to all employees within three weeks of its adoption, and at least annually thereafter?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

5. Did all employees receive a written copy of the smoking policy?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

6. To what degree is your tobacco policy enforced?
   <a> Very much
   <b> Moderately
   <c> Very little
   <d> None
   <e> Did not know / not sure

7. Is there an enforcement clause in your smoking policy, which provides consequences for violation of the policy?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

8. Was a staff person hired to oversee the smoking policy implementation and program development?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

9. Was an existing staff person selected to oversee the smoking policy implementation and program development?
   <a> Yes
   <b> No
   <c> Do not know / not sure
   <d> Refused

10. Who was involved in establishing your policy?
    <a> CEO
    <b> Director-Vice President
    <c> Safety manager
    <d> Division manager
    <e> Employee representatives and groups
    <f> Other_____

11. Have you made changes to the policy since it was implemented?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

12. If yes, who made the changes to the policy since it was implemented?
    <a> CEO
    <b> Director-Vice President
    <c> Safety manager
    <d> Division manager
    <e> Employee representatives and groups
    <f> Other_____

13. Who is responsible for answering questions about the policy?
    <a> CEO
    <b> Director-Vice President
    <c> Safety manager
    <d> Division manager
    <e> Employee representatives and groups
    <f> Other_____

14. Have you made changes to the policy since it was implemented?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

15. Do you provide employees with feedback regarding your smoking policy?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

16. Have you conducted any surveys to determine how employees feel about the policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

17. If yes, may we have a copy of the survey and the results?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

18. Have you attempted to determine whether or not your employee's health has improved since implementation of the smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

19. Have you noticed a decrease in lung problems: asthma, bronchitis, among employees who use tobacco products since implementation of your smoking policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

20. Are your employees members of a union?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

21. Did the union have a say in the development, implementation, or enforcement of the policy?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

22. Does the union support the enforcement of the policy?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

23. Was union support easy to obtain?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

24. Since implementing a smoking policy, has your organization seen a decline in healthcare costs?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

25. Which of the following statements best describes your policy about on the premises smoking?
    <a> Each area in the work site decides its own policy
    <b> Smoking is permitted everywhere
    <c> Smoking is permitted everywhere except for a few "no smoking areas"
    <d> Smoking is permitted indoors in designated areas only
    <e> Smoking is not permitted anywhere at the work site, indoors or outdoors
    <f> Smoking is permitted outdoors only
    <g> Do not know / not sure
    <h> Refused
    <I> Other_____

26. Can smokers take as many breaks as they wish?
    <a> Yes
    <b> No
    <c> Do not know / not sure
    <d> Refused

27. Does your company policy allow for scheduled smoking breaks, or are the employees not allowed to leave the facilities to smoke during working hours?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

28. As an employer, do you offer your employees several options for smoking cessation?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

29. Which of the following methods did you employ?

<a> Signs
<b> Video Presentations
<c> Articles in employee newsletter
<d> Handouts from American Lung Society, American Heart Association, or Cancer Society

30. Does your work site have a smoking cessation support group?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

31. Has your company ever collected data to evaluate what happens when employees stop smoking?

<a> Yes, the results are_____
<b> Yes, do not know the results
<c> Yes, will not give results
<d> No
<e> Do not know / not sure
<f> Refused

32. Does your work site offer any insurance policies with a rate structure based on smoking status?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

33. Do you inquire about the smoking behaviors of potential employees?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

34. Are cigarette vending machines located at your site of business?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

35. Which of the following categories describes the number of permanent full-time and part-time employees at your work site?

<a> 50-99
<b> 100-249
<c> 250-749
<d> 750 or more
<f> Do not know / not sure
<g> Refused

36. Is your work site a part of a larger company or corporation?

<a> Yes
<b> No
<c> Do not know / not sure
<d> Refused

37. About how many of the employees at your work site are female?

<a> _____#
<b> _____%
<c> Do not know / not sure
<d> Refused

Appendix D

PILOT TEST Frequencies

Does your worksite have a policy regarding smoking on the premises?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	15	100.0	100.0	100.0

Does the smoking policy at your worksite also covr the use of other tobacco products like cheing tobacco, using snuff, or dipping?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	8	53.3	53.3	53.3
	no	7	46.7	46.7	100.0
	Total	15	100.0	100.0	

How long has your smoking policy been in effect?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-6months	3	20.0	20.0	20.0
	7-12months	4	26.7	26.7	46.7
	13-24months	2	13.3	13.3	60.0
	25-36months	2	13.3	13.3	73.3
	more than 36 months	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Was the smoking policy communicated to all employees within three weeks of its adoption?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	6	40.0	40.0	40.0
	no	6	40.0	40.0	80.0
	dkn	2	13.3	13.3	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

If yes, is the policy communicated to all employees at least annually thereafter?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	3	50.0	50.0	50.0
	no	2	33.3	33.3	83.3
	dkn	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

Did all employees receive a written copy of the smoking policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	6	40.0	40.0	40.0
	no	7	46.7	46.7	86.7
	dkn	1	6.7	6.7	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Is your smoking policy enforced?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	9	60.0	60.0	60.0
	no	2	13.3	13.3	73.3
	dkn	3	20.0	20.0	93.3
	5.00	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Is there enforcement clause in your smoking policy, which provides consequences for violation of the policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	9	60.0	60.0	60.0
	no	4	26.7	26.7	86.7
	dkn	1	6.7	6.7	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Was a staff person hired to oversee the smoking policy implementation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	33.3	33.3	33.3
	no	9	60.0	60.0	93.3
	5.00	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

If o, was an existing staff person selected to oversee the smoking policy implementation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	4	80.0	80.0	80.0
	dkn	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Who was involved in establishing your policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CEO	7	46.7	46.7	46.7
	Director-Vice President	6	40.0	40.0	86.7
	Safety Manager	1	6.7	6.7	93.3
	Employee representatives and groups	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Have you made changes to the policy since it was implemented?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	6	40.0	40.0	40.0
	no	9	60.0	60.0	100.0
	Total	15	100.0	100.0	

If so, what changes were made?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Increase nonsmoking area	4	66.7	66.7	66.7
	Decreasse nonsmoking area	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

If yes, who made the changes to the policy since it was implemented?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CEO	2	33.3	33.3	33.3
	Director-Vice President	1	16.7	16.7	50.0
	Safety Manager	2	33.3	33.3	83.3
	Employee representatives and groups	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

Who is responsible for asking questions about the policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CEO	4	26.7	26.7	26.7
	Director-Voce President	6	40.0	40.0	66.7
	Safety Mnager	1	6.7	6.7	73.3
	Division Manager	3	20.0	20.0	93.3
	Employee representatives and groups	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Do you provide employees with feedback regarding your smoking policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	33.3	33.3	33.3
	no	7	46.7	46.7	80.0
	dkn	2	13.3	13.3	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Hve you conducted and surveys to determine how the employees feel about the policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	3	20.0	20.0	20.0
	no	9	60.0	60.0	80.0
	dkn	2	13.3	13.3	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Have you attempted to determine whether ot not your employee's health has improved since implementation of the smoking policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	33.3	33.3	33.3
	no	9	60.0	60.0	93.3
	dkn	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Have you noticed a decrease in lung problems: asthma, bronchitis, among employees who use tobacco products since implementation of your smoing policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	1	6.7	6.7	6.7
	no	2	13.3	13.3	20.0
	dkn	10	66.7	66.7	86.7
	refused	1	6.7	6.7	93.3
	5.00	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Since implementing a smoking policy, has your organization seen a decline in healthcare costs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	2	13.3	13.3	13.3
	no	5	33.3	33.3	46.7
	dkn	7	46.7	46.7	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Has your company ever colllected data to evaluate what happens when employees stop smoking?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes the results are_	4	26.7	26.7	26.7
	Yes, will not give the results	2	13.3	13.3	40.0
	no	4	26.7	26.7	66.7
	dkn	5	33.3	33.3	100.0
	Total	15	100.0	100.0	

Does your worksite offer any insurance policies with a rate structure based on smoking status?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	6	40.0	40.0	40.0
	dkn	8	53.3	53.3	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Do you have smoking policy signs posted?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	7	46.7	46.7	46.7
	no	7	46.7	46.7	93.3
	dkn	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

If yes, what types of sign(s) are posted?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pictorial representation	2	28.6	28.6	28.6
	Printed "NO Smoking"	4	57.1	57.1	85.7
	none	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Are your employees members of a union?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	33.3	33.3	33.3
	no	7	46.7	46.7	80.0
	dkn	3	20.0	20.0	100.0
	Total	15	100.0	100.0	

Did the union have a say in the development, implementation. or enforcement of the policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	3	60.0	60.0	60.0
	dkn	1	20.0	20.0	80.0
	refused	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Does the union support the enforcement of the policy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	2	40.0	40.0	40.0
	no	2	40.0	40.0	80.0
	6.00	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Was union support easy to obtain?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	1	20.0	20.0	20.0
	no	1	20.0	20.0	40.0
	dkn	1	20.0	20.0	60.0
	refused	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

Do you have all of the information you need regarding smoking policies in worksite?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	9	60.0	60.0	60.0
	no	5	33.3	33.3	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Which of the following statements best describes the smoking activity on your premises?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	each area in the worksite decides its own policy	2	13.3	13.3	13.3
	Smoking is permitted everywhere	4	26.7	26.7	40.0
	Smoking is permitted everywhere except for "no smoking areas	4	26.7	26.7	66.7
	Smoking is permitted indoors in desginated areas only	3	20.0	20.0	86.7
	Smoking is permitted outdoors only	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

Does your company allow smoking breaks?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	33.3	33.3	33.3
	no	6	40.0	40.0	73.3
	dkn	2	13.3	13.3	86.7
	5.00	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

Can employees who smoke take as many breaks as they wish?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	8	53.3	53.3	53.3
	no	4	26.7	26.7	80.0
	dkn	3	20.0	20.0	100.0
	Total	15	100.0	100.0	

Do you inquire about the smoking behaviors of potential employees?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	3	20.0	20.0	20.0
	no	9	60.0	60.0	80.0
	dkn	3	20.0	20.0	100.0
	Total	15	100.0	100.0	

During the past 12 months, were the employees at your worksite offered any kind of activities or resources to help them quit smoking?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	6	40.0	40.0	40.0
	no	5	33.3	33.3	73.3
	dkn	3	20.0	20.0	93.3
	5.00	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Which of the following were offered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Individual assistance or counseling	3	50.0	50.0	50.0
	group classes, workshops, lectures, oe special events	1	16.7	16.7	66.7
	Informational materials such as posters, pamphlets, videos?	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

Were the activities or resources offered on company time?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	5	83.3	83.3	83.3
	NO	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

About how many employees participated in the activities?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	_%	1	16.7	16.7	16.7
	dkn	4	66.7	66.7	83.3
	refused	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

HJas your company collected data regarding employee absenteeism?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes, the results are-	3	20.0	20.0	20.0
	Yes, do not know the resulte	4	26.7	26.7	46.7
	no	4	26.7	26.7	73.3
	dkn	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Has your company reviewed or analyzed healthcare costs for itself or it's employees?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	4	26.7	26.7	26.7
	no	4	26.7	26.7	53.3
	dkn	7	46.7	46.7	100.0
	Total	15	100.0	100.0	

Has your company collected dataa regarding employee productivity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes the rsults are_	2	13.3	13.3	13.3
	Yes, do not know the results	3	20.0	20.0	33.3
	Yes, will not give the results	3	20.0	20.0	53.3
	no	3	20.0	20.0	73.3
	dkn	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Has your company collected data regarding employee healthcare costs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes the results are_	4	26.7	26.7	26.7
	Yes, do not know the results	1	6.7	6.7	33.3
	Yes, will not give the results	3	20.0	20.0	53.3
	no	5	33.3	33.3	86.7
	dkn	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

In general, who pays for health-related acivities or services at your worksite, such as those we have been talking about?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employer-management	1	6.7	6.7	6.7
	Employee-worker	7	46.7	46.7	53.3
	Insurance coverage	4	26.7	26.7	80.0
	DKN	3	20.0	20.0	100.0
	Total	15	100.0	100.0	

Does the employee health insurance plan(s) partially or fully cover smoking cessation or nicotine replacement therapy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	1	6.7	6.7	6.7
	no	6	40.0	40.0	46.7
	dkn	5	33.3	33.3	80.0
	refused	3	20.0	20.0	100.0
	Total	15	100.0	100.0	

Are cigarettes sold at your site of business?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	4	26.7	26.7	26.7
	no	8	53.3	53.3	80.0
	dkn	2	13.3	13.3	93.3
	refused	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Which of the following categories describe the number of permanent full-time and part-time employess at your worksite?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	50-99	3	20.0	20.0	20.0
	100-249	4	26.7	26.7	46.7
	250-749	4	26.7	26.7	73.3
	750 or more	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Is your worksite a part of a larger company or corporation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	6	40.0	40.0	40.0
	no	5	33.3	33.3	73.3
	dkn	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

About how many employees at your worksit are female?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	_#	3	20.0	21.4	21.4
	_%	2	13.3	14.3	35.7
	dkn	3	20.0	21.4	57.1
	refused	1	6.7	7.1	64.3
	99.00	5	33.3	35.7	100.0
	Total	14	93.3	100.0	
Missing	System	1	6.7		
Total		15	100.0		

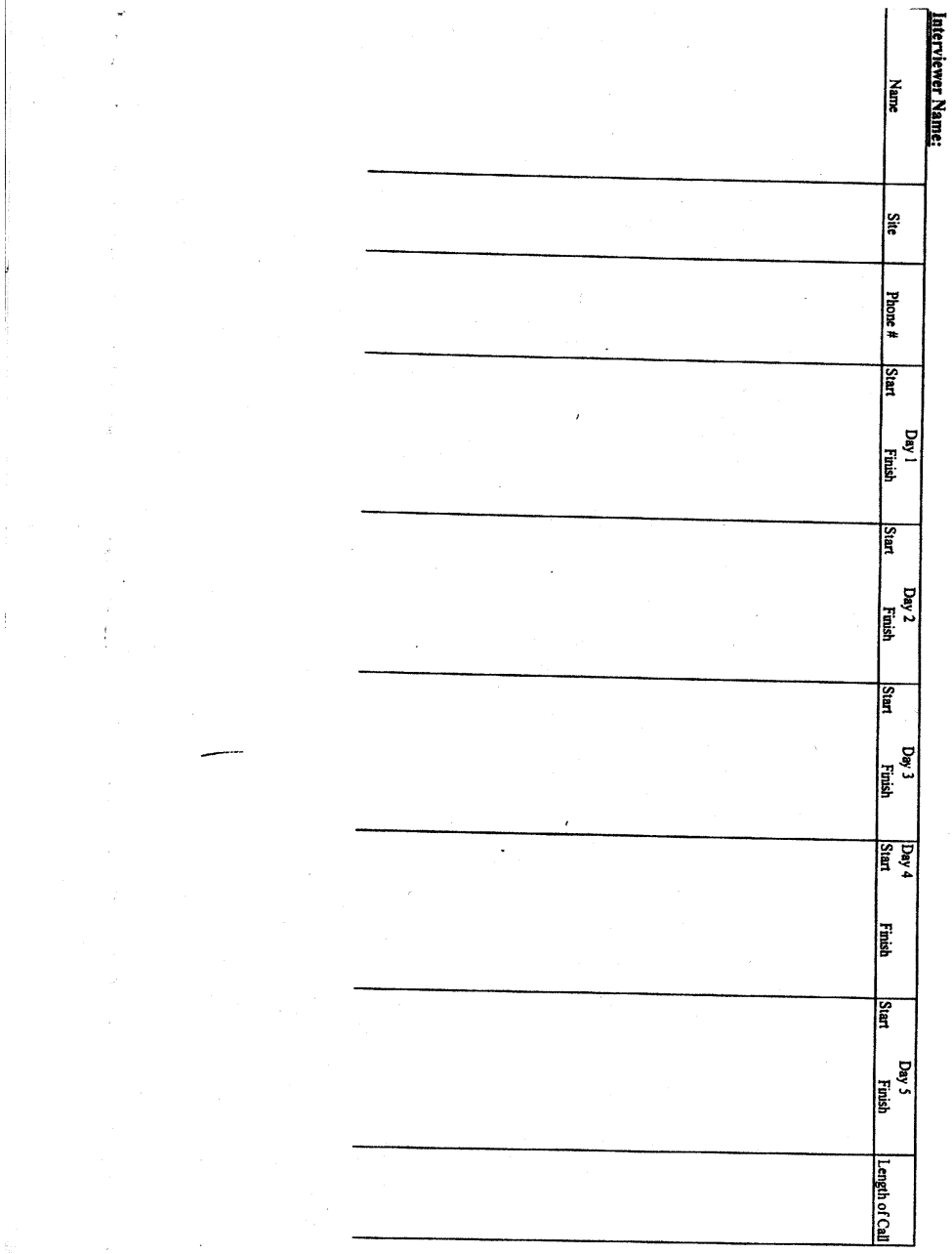
About how many of the employees at your worksite are minorities?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	_#	2	13.3	14.3	14.3
	_%	2	13.3	14.3	28.6
	dkn	5	33.3	35.7	64.3
	99.00	5	33.3	35.7	100.0
	Total	14	93.3	100.0	
Missing	System	1	6.7		
Total		15	100.0		

About how many of the employees at your worksite are under the age of 35 years of age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	_#	4	26.7	26.7	26.7
	_%	5	33.3	33.3	60.0
	dkn	6	40.0	40.0	100.0
	Total	15	100.0	100.0	

Appendix E



Interviewer Name:									
Name	Site	Phone #	Day 1 Start	Day 1 Finish	Day 2 Start	Day 2 Finish	Day 3 Start	Day 3 Finish	Day 4 Start	Day 4 Finish	Day 5 Start	Day 5 Finish	Length of Call

MITCHELL A. HOUSENICK

Personal Information

Married Julie Patricia Kimball February 9, 1982 and children Sarah Lynne, Megan Elizabeth, and Eric Mitchell

Education

Doctor of Philosophy, Curriculum and Instruction, Virginia Polytechnic Institute and State University, Blacksburg, Virginia. Specialization: Health Promotion. Dissertation topic: Assessment of the prevalence of smoke-free environment policies throughout the Commonwealth of Virginia at worksites employing fifty or more workers, 2001.

Master of Public Health, Health Administration, East Tennessee State University, Johnson City, Tennessee, 1998.

Bachelor of General Studies, East Tennessee State University, Johnson City, Tennessee, 1997.

Associate of Applied Science, East Tennessee State University, Johnson City, Tennessee, 1996.

Professional Experience

Assistant Instructor. 1998-2001. College of Public and Allied Health, East Tennessee State University, Johnson City, Tennessee.

Graduate Assistant. 1999-2000. Department of Teaching and Learning, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Graduate Assistant. 1997-1998. Department of Public Health, East Tennessee State University, Johnson City, Tennessee.

Intern. May–August 2000. James H. Quillen Veterans Affairs Medical Center, Mountain Home, Tennessee

Intern. 1997-1998. James H. Quillen Veterans Affairs Medical Center, Mountain Home, Tennessee.