

RESTAURANT AND BAR OWNERS AND MANAGERS RESPOND
TO NORTH CAROLINA'S SMOKE-FREE LAW,
ELECTRONIC CIGARETTE USE INSIDE THEIR BUSINESSES,
AND SMOKE-FREE OUTDOOR SEATING AREAS

By

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Abstract

This descriptive, cross-sectional study was used to collect and analyze data provided from a pencil and paper survey mailed to a randomly selected group of North Carolina restaurants and bars. The topic of the study was North Carolina's smoke-free restaurants and bars law. The two purposes of this study were: 1) to assess whether, after five years of implementation of the N.C. smoke-free law, restaurant and bar owners and managers receive complaints about the law, and whether they are experiencing the benefits promised when the law was first passed and 2) to explore their actions and interest related to policies that go beyond what is covered in the state law, specifically prohibiting the use of electronic cigarettes indoors and/or providing smoke-free seating areas for customers outside.

A 20-question survey was mailed to 663 restaurant and bar owners/managers. The overall response rate was 20.3% (23% for restaurants and 17% for bars). The total number of surveys analyzed was 135 (86 from restaurants and 49 from bars). All participants acknowledged knowing about the smoke-free law, and the two most frequently selected benefits for restaurants

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and bars were customers breathing less tobacco smoke (65.2%) and fewer complaints about secondhand smoke (58.5%). Another frequently selected benefit of the law was reduced maintenance and cleaning costs (45.9%). A total of 79.1% of restaurants and 73.5% of bars reported at least one benefit from the smoke-free law.

Further analysis showed that while restaurant and bar owners/managers receive few complaints about secondhand smoke, more than half of bars reported receiving complaints during the last 12 months from smoking customers and employees about not having a place indoors to smoke. Qualitative analysis of comments responding to an open-ended question showed that bar owners and managers tend to be less happy with the smoke-free law than restaurant owners and managers. Bar owners and managers also shared specific problems with the law and recommended solutions to those problems.

Restaurants were found to be significantly more likely than bars to restrict the use of electronic cigarettes inside their businesses, with more than two-thirds of restaurant participants either banning their use inside or limiting their use to designated areas. Restaurants and bars did not show a statistically significant difference in smoke-free outdoor customer areas, with 29% of all participants reporting some smoke-free policy for outdoor customer areas.

A moderate number of participants said they are interested in more information about restricting electronic cigarette use (14.3%) and more information about creating smoke-free outdoor customer areas (18.6%). Trends and interest in both of these policy areas create an opportunity for public health to respond with programs and policy efforts.

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Master of Arts in Health Education & Promotion

by

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DEDICATION

I would like to dedicate this work to the memory of my mother, Celia Overton Houston, and to my many colleagues and friends who have also lost loved ones to diseases caused by tobacco use or secondhand smoke exposure.

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CHAPTER I

Introduction

Cigarette smoking is the leading cause of death and disability in the United States and in North Carolina (U.S. Department of Health and Human Services [USDHHS], 2014). The first U.S. government report acknowledging the harms of cigarette smoking was released by Surgeon General Luther Terry in 1964. According to the 2014 U.S. Surgeon General's report on smoking and health, an estimated 14,000 North Carolinians die of smoking-related causes annually. One of five deaths that occur in the United States and in North Carolina is related to cigarette smoking (USDHHS, 2014).

The U.S. Surgeon General first warned of the dangers of breathing others' secondhand tobacco smoke in the 1986 report, *The Health Consequences of Involuntary Smoking* (USDHHS, 1986). In 1993, the U.S. Environmental Protection Agency (EPA) released a report on the dangers of secondhand smoke, declaring it is known to cause cancer in humans (EPA, 1993). In 2006, the U.S. Surgeon General released a second report on passive smoking entitled *The Health Consequences of Involuntary Exposure to Tobacco Smoke* (USDHHS, 2006a). At the release of the 2006 report Surgeon General Richard Carmona stated, "The debate is over. The science is clear: Secondhand smoke is not a mere annoyance, but a serious health hazard that causes premature death and disease in children and nonsmoking adults" (USDHHS, 2006b, p. 1). He also stated there is no safe level of exposure to secondhand smoke. The report concluded that a person exposed to secondhand smoke at home or work has a 20% to 30% increased risk of developing lung cancer and a 25% to 30% increased risk of developing heart disease (USDHHS, 2006a).

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In October 2009, the Institute of Medicine (IOM) released a report reviewing the existing literature on secondhand smoke and acute coronary events. The report noted that existing evidence supported secondhand smoke, even a short-term exposure, as a cause of heart attack. The report concluded that a comprehensive smoking ban (including all worksites) could reduce emergency department visits for heart attack by an estimated 17% the first year, and that similar reductions in heart attacks should follow annually (IOM, 2009). The 2010 Surgeon General's report on smoking and health went into greater detail about how cigarette smoke causes heart attacks, explaining how toxic chemicals in tobacco smoke cause inflammation and dysfunction of cells in the lining of blood vessels, which causes vessels to become blocked, leading to heart attack (USDHHS, 2010). The 2014 Surgeon General's Report added stroke to the list of health problems caused by breathing secondhand tobacco smoke (USDHHS, 2014).

The Community Preventive Services Task Force (2012), a body of experts assembled by the Centers for Disease Control and Prevention (CDC) to conduct systematic reviews of research on population health interventions, recommends smoke-free policies as effective interventions that 1) reduce exposure to secondhand smoke, 2) reduce smoking rates, 3) increase the number of tobacco users who quit, 4) reduce the initiation of tobacco use among young people, and 5) reduce tobacco-related morbidity and mortality, including heart attacks. The U.S. Surgeon General's Office also recommends smoke-free policies as highly effective strategies for reducing both the use of and the harms of tobacco (USDHHS, 2014).

On January 2, 2010, North Carolina implemented a smoke-free law that prohibits cigarette smoking (and other products that burn tobacco) inside all restaurants and bars and also inside hotels, lodges, inns, convenience stores, and other businesses that serve prepared food. Lodging establishments may designate up to 20% of their guest rooms for smoking. The only

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exceptions are for cigar bars, tobacco shops that do not sell food or drinks, and certain not-for-profit clubs, all of which need to meet specific requirements (*Smoking Prohibited in Certain Public Places and Certain Places of Employment*, 2009).

Since its passage, there have been differences between the ways restaurants and bars responded to the smoke-free law. In a telephone interview study, Linnan, Weiner, Bowling, and Bunger (2010) reported that 66% of the restaurants in its sample were smoke-free several months prior to the law's passage. The N.C. Restaurants and Lodging Association (NCRLA) lobbied for passage of the law and for the inclusion of bars in the law (Washington, Barnes, & Glantz, 2011). The NCRLA publically applauded the law, noting its benefits to its membership (NCRLA, 2012).

In contrast, North Carolina bars, which, by definition are private clubs under N.C. alcohol law, have not gone public in support of the smoke-free law. Early in implementation a number of bars fought and lost court battles to continue to allow smoking in their businesses (Washington et al., 2011). Despite the law's popularity with the public, the press, and many restaurant owners, there have been threats to the law in the courts and in the General Assembly (Hoban, 2013). Public health needs a better understanding of how bars – along with restaurants – have experienced the smoke-free law.

While the smoke-free law was being debated, health advocates shared various benefits to which newly smoke-free restaurants and bars could look forward. These included benefits such as improved employee health, more customers, decreased complaints about smoking, and decreased maintenance and cleaning costs. For example, Bell and Goff (2009) wrote:

Despite the fears of some – especially in the hospitality industry – that going smoke-free will hurt their businesses, volumes of sound research support the

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conclusion that there is no negative economic impact. In fact, businesses frequently see cleaning costs and absenteeism decline and worker productivity improve (para. 10).

In the years since the smoke-free law went into effect, there has been growing evidence that exposure to secondhand smoke outdoors may be a health hazard. While the smoke-free law requires some outdoor areas to be smoke-free, if they have a covering and are partially enclosed, many North Carolina restaurant and bar patrons and employees may be exposed to hazardous levels of secondhand tobacco smoke on patios, decks and other outdoor customer areas of restaurants and bars.

In addition, the use of electronic cigarettes is increasing rapidly. Adult 30-day use has been documented nationally at 2.6% (King, Patel, Nguyen, & Dube, 2014). The N.C. Youth Tobacco Survey documented a 352% increase in electronic cigarette use among N.C. high school students between 2011 and 2013, demonstrating their popularity (NCDHHS, 2014). While the health effects of using electronic cigarettes or breathing their secondhand aerosol (commonly called vapor) has not been fully documented, recent studies reveal concerning levels of hazardous contents in electronic cigarette aerosol (Bekki et al., 2014; Offerman, 2014; Schober et al., 2014; and Williams, Villarreal, Bozhilov, Lin, & Talbot, 2013).

Statement of the Problem

In 2015, restaurants and bars in North Carolina have been smoke-free indoors by law for five years. Despite the law's popularity, it continues to be under threat of repeal (Hoban, 2013). While restaurants' general support of the law has been clear through other evaluation activities, no previous study has looked specifically at restaurants' and bars' response to the law. Documenting restaurant and bar owners'/managers' receipt of complaints from customers and

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employees about the law, and their perception of whether the law has delivered its promised benefits, is important for public health in recommending future legislation and programming.

Since the law does not cover two possible threats to public health 1) secondhand tobacco smoke in outdoor customer areas and 2) use of electronic cigarettes indoors, determining restaurant and bar current actions and interest related to these problems are of great interest to public health. Whether the state law is expanded to include new products and other places of exposure, or whether programs are developed to support private policies, knowing restaurant and bar owners' and managers' positions on these issues is critical to shaping future public health programs and future smoke-free and vapor-free public and private regulations.

Research Questions

- 1) What proportion of N.C. restaurant/bar owners/managers surveyed receive:
 - a. Customer complaints about indoor secondhand smoke at their businesses?
 - b. Employee complaints about indoor secondhand smoke at their businesses?
- 2.) What proportion of N.C. restaurant/bar owners/managers surveyed receive:
 - a. Customer complaints about not being able to smoke inside their businesses?
 - b. Employee complaints about not being able to smoke inside their businesses?
- 3.) What proportion of N.C. restaurant/bar owners/managers surveyed receive:
 - a. Customer complaints about others' use of electronic cigarettes inside their businesses?
 - b. Employee complaints about others' use of electronic cigarettes inside their businesses?
- 4). What perceived benefits have N.C. restaurant and bar owners/managers surveyed experienced because of the N.C. smoke-free law?

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- 5). What proportion of owners/managers in the sample is interested in learning more about policies that restrict the use of electronic cigarettes inside restaurants and bars?
- 6). What are the current policies regarding smoking in outside seating areas of N.C. bars and restaurants?
- 7). What proportion of owners/managers in the sample is interested in learning more about policies that restrict smoking in outdoor areas of bars and restaurants?
- 8a). How do N.C. restaurants and bars differ in their policies on the use of electronic cigarettes indoors?
- 8b). How do N.C. restaurants and bars differ in their policies on outside seating areas for customers?
- 9). Are there any additional feedback participants shared that was not addressed in the survey?

Purpose of the Study

The purpose of this study is two-fold: 1) to assess whether, after five years of implementation of the N.C. smoke-free law, restaurant and bar owners and managers receive complaints about the law, and whether they are experiencing the benefits promised when the law was first passed and 2) to explore whether they are implementing or interested in learning about policies that go beyond what is covered in the current law, specifically prohibiting the use of electronic cigarettes indoors and/or providing smoke-free seating areas for customers outside.

The information gathered by this study can assist public health practitioners and advocates plan for future programs and policies on secondhand smoke at the state level and in local communities. It can add to the knowledge of support or lack of support for the current smoke-free law and the need for further education and technical assistance to restaurants and

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bars that wish or may wish to expand their policies to include outdoor customer seating areas and electronic nicotine products.

Limitations of the Study

The study may be subjected to the following limitations:

1. Data were obtained through self-report and no attempt will be made to validate the self-reports.
2. The survey used in this study was developed by the researcher and was not tested for external validity or reliability.
3. Due to the controversial nature of the topic, participants may not truthfully answer or refuse to answer questions on the survey, which will affect the generalizability of the study.

Theoretical Framework

According to the Social Ecological Model for health promotion, health behaviors are affected by many layers of influence, including intrapersonal, interpersonal, organizational, community and public policy (McLeroy, Steckler, & Bibeau, 1988). This view seeks to remove a “blame the victim” perspective that can be common when addressing health behaviors such as cigarette smoking. Over the last 20 years or more the tobacco control field has fully implemented a socio-ecological model that seeks to address smoking as more than an intrapersonal behavior, creating interventions that address smoking in the organizational, community, and public policy realms (USDHHS, 2014). Smoke-free policies have led to positive public health outcomes, such as reduced smoking and increased smoking cessation, that were unexpected when non-smoking policies first began to appear in the United States in the 1980s (Community Preventive Services Task Force, 2012). Public health practitioners understand that intervening at the community and public policy levels does much more than protect people from secondhand smoke. The

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Community Preventive Services Task Force (2012) recommends implementing such policies, because they encourage smoking cessation and reduce uptake of smoking by young people, as well as protecting people from secondhand smoke. Expanding smoke-free regulations or private policies to include outdoor customer areas of restaurants and bars can lead to less exposure to secondhand smoke and less smoking. Expanding policies to include electronic cigarettes can reduce smoking and vaping and reduce potentially hazardous exposure to electronic cigarette vapor.

CHAPTER II

Literature Review

Cigarette smoking and secondhand smoke are proven health hazards that can lead to chronic diseases and premature death. Smoke-free policies have been shown to be effective in eliminating exposure to secondhand tobacco smoke, reducing tobacco use by adults and youth, and improving health. Advocates who promoted North Carolina's smoke-free restaurants and bars law promised many benefits to the businesses that would come under its restrictions. These benefits were based on other communities' experiences with smoke-free policies. After five years of implementation, the law has suffered under court battles and legislative threats, as well as being applauded as successful.

The two purposes of this study are: 1) to assess whether, after five years of implementation of the N.C. smoke-free law, restaurant and bar owners and managers receive complaints about the law, and whether they are experiencing the benefits promised when the law was first passed and 2) to explore their actions and interest related to policies that go beyond what is covered in the state law, specifically prohibiting the use of electronic cigarettes indoors and/or providing smoke-free seating areas for customers outside.

A review of the literature reveals existing data related to the development and outcomes of the smoke-free restaurants and bars law in North Carolina, and compliance with the North Carolina law and similar laws in other places. Studies also reveal a growing scientific basis for smoking restrictions in outdoor customer areas, and an increasing scientific basis for restricting electronic cigarette use from indoor areas.

Development of Smoke-Free Legislation in North Carolina

According to Americans for Nonsmokers' Rights (ANR), 36 states and the District of Columbia have laws restricting smoking in worksites, and/or restaurants and/or bars (ANR, 2014b). In 2009, North Carolina's General Assembly passed the most stringent statewide smoke-free law in the tobacco south, entitled *An Act to Prohibit Smoking in Certain Public Places and Certain Places of Employment*. The law prohibits cigarette smoking inside all restaurants and bars and inside hotels, lodges, inns, convenience stores, and other businesses that serve prepared food. Lodging establishments may designate up to 20% of their guest rooms for smoking. The only exceptions are for cigar bars, tobacco shops that do not sell food or drink, and certain not-for-profit clubs, all of which need to meet specific requirements. The law went into effect on January 2, 2010 (*Smoking Prohibited in Public Places and Places of Employment*, 2009).

North Carolina's previous smoking legislation did not limit smoking indoors. In 1993, a statewide law that set a low ceiling for secondhand smoke protection and preempted local governments from having stronger regulations passed the General Assembly. Commonly called the "dirty air law," this legislation required government buildings to set aside 20% of interior space for smoking (Washington et al., 2011). When it was passed, there was a period of three months before the preemptive law took effect. During that three-month period, the number of North Carolina communities with local smoking regulations climbed from 16 to 105, although many were local board of health rules that were lost in the court battles that ensued (Washington et al., 2011).

Outcomes of North Carolina's Smoke-free Law

Prior to the passage of North Carolina's smoke-free law, two studies looked at North Carolina restaurant owner/manager opinions on smoke-free policies, with the aim of predicting

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success of such a law. In a qualitative study, Johnson, Becker, Webb, and Brady (2010) conducted telephone interviews with restaurants in Alamance County, N.C. to determine why they had gone smoke-free voluntarily. They found most smoke-free private policies were prompted by the following: 1) economic factors, 2) customer demands and considerations, and 3) environmental issues (Johnson et al., 2010).

Linnan et al. (2010) conducted telephone interviews of a representative sample of North Carolina restaurants. In their findings, 66% of the restaurants interviewed were already smoke-free indoors. The majority (60%) of the owners/managers interviewed supported a statewide smoke-free law. The owners/managers least likely to support a law were those who were current smokers, had more than 25% smoking employees, and who were in businesses that did not currently have smoke-free policies. Only having a smoking owner/manager was a significant independent predictor of the belief that a smoke-free policy would have a negative financial impact on the business (Linnan et al., 2010).

In the five years since the law was implemented, the North Carolina Tobacco Prevention and Control Branch (TPCB) has conducted a number of activities to evaluate its effectiveness. Air quality studies showed an 89% improvement in air quality in North Carolina restaurants and bars immediately after the law went into effect (NCTPCB, 2013). Data from the North Carolina Behavioral Risk Factor Surveillance Study (BRFSS) showed that between 2008 and 2010, the percentage of adults who said they were exposed to secondhand smoke at work during any of the past seven days dropped from 14.6% to 7.8%, a reduction of 46% (NCSCHS, 2014). The smoke-free law, which took a large number of worksites smoke-free, likely contributed to this reduction (NCTPCB, 2013).

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A study of emergency department data showed that, in the year following smoke-free law implementation, average weekly emergency room visits for heart attacks dropped by 21% (NC DHHS, 2013). The impact of smoke-free restaurants and bars on heart attack rates in North Carolina was similar to those found in other communities (IOM, 2009). This reduction represented a health care cost savings of between \$3.3 and \$4.8 million to North Carolina (NCDHHS, 2011).

Another study showed that the relative risk for visiting an emergency department for an asthma attack dropped by 7% for children and 4% for adults after the law went into effect (NCTPCB, 2013). The reduction in relative risk was greater for urban areas than rural areas (11% versus 4%). This study included four years of data, to control for seasonal and weather impacts on asthma (NCTPCB, 2013).

The smoke-free law has proven popular with North Carolinians. Opinion polls and surveys have shown great support for the law. A 2010 survey by the University of North Carolina (UNC) at Chapel Hill, Gillings School of Global Public Health's Department of Biostatistics reported that 72% of adults supported the law. A 2012 poll by Public Opinion Strategies found that support had grown, as 83% of participants reported supporting the law (Bolger, 2012). Among those responding to the UNC survey, 39% reported eating out more since the law went into effect, while 11% said they eat out less (UNC, 2010).

Public support for the law has also been reflected in editorial support from North Carolina's daily newspapers (NCTPCB, 2013). Nearly every daily newspaper supported the law during its debate in the legislature. Since the law's implementation many newspapers have chosen to publish editorials applauding the law's benefits to the state and its lack of economic detriment (NCTPCB, 2013). For example, an editorial appeared in the *Winston-Salem Journal* on

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December 31, 2010, which read, in part: “Has it really only been one year since the start of North Carolina's ban on smoking in restaurants? The clean air has been so refreshing that it seems like much longer” (*Winston-Salem Journal* Editorial Board, 2010, para. 1).

Two different economic studies, one that included North Carolina and eight other states, showed that the smoke-free law had no impact on either the revenues or the employment patterns of North Carolina restaurants and bars (Loomis, Schafer, & Hasslet, 2013; Schiro, 2012). In addition to the two formal studies, the North Carolina Restaurants and Lodging Association (NCRLA), which represents approximately 15% of the restaurants affected by the smoke-free law (Linnan et al., 2010), reported positive outcomes from the law. A letter sent to legislators in October 2012 read, in part, “the smoking ban has had a positive impact on restaurant sales in North Carolina since its implementation” (NCRLA, 2012, p. 1).

Compliance with Smoke-free Laws

The TPCB, within the North Carolina Division of Public Health, oversaw the smoke-free law's initial implementation in 2010, along with the N.C. Association of Local Health Directors, with funding from the American Nonsmokers' Rights Foundation the North Carolina Health and Wellness Trust Fund (NCTPCB, 2013; Washington et al., 2011). North Carolina's implementation plan for launch included developing and distributing educational materials concerning the law, educational media messages, and a website (www.smokefree.nc.gov) (NCTPCB, 2013). The website allows for online complaints of violations of the law, which are investigated and enforced by local health departments, of which there are 85, serving the state's 100 counties. During the first month the law was in effect, 537 complaints were filed, aimed at 318 businesses (NCTPCB, 2014). During the second month the number of complaints had dropped to 283. During the third month there were 137 complaints. There were only 39

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complaints filed in December, 2010. Currently, the average monthly number of complaints is less than one (NCTPCB, 2014).

There is evidence to support the idea that compliance with a smoke-free restaurant and bars law increases over time, and that as smokers adjust to not smoking indoors, owners/managers see fewer problems with non-compliance among customers. For example, a study of smokers in the U.S., Canada, the U.K. and Australia showed that smokers adjust to, accept, and comply with smoke-free restaurant and bar laws (Borland et al., 2006). In fact, support for smoke-free restaurant and bar laws was associated with living in a community with such laws. There was little difference in support for and compliance with smoke-free laws among smokers within the four nations covered in the study (Borland et al., 2006).

California bars first became smoke-free by law in 1998. Two studies demonstrate that California smokers adjusted to smoke-free bars. Satturland, Lee, and Moore (2013) found that within four to eight years after the law went into effect, smoking outside had added new social opportunities to bar visits. Researchers found the smoke-free law allowed singles to circulate, meet and even flirt with each other during trips outside to smoke. A qualitative study found that, as the social norms changed, bartenders had less difficulty enforcing the law (Satturland et al., 2013). Similarly, a quantitative telephone interview study done at three points in time – three months, eight months and 2.5 years after enactment of the law – found increasing approval of and compliance with the California smoke-free bars law among smokers as time passed (Tang et al., 2003).

These studies specifically asked smoking bar patrons about their experience with and approval of smoke-free bars laws over time, and asked bartenders about any difficulties they had with law compliance or enforcement. Economic studies combine results from both restaurants

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and bars and do not report on them separately. Most smoke-free law studies involving restaurants and bars have been done with employees or patrons. Missing from the literature are the experiences of bar owners/managers on issues beyond ease of smoke-free law enforcement and employee absenteeism before and after a smoke-free law.

Scientific Basis for Smoking Restrictions Outdoors

When the North Carolina smoke-free law passed in 2009, no effort was made to include outdoor customer areas, such as patios and decks. There is nothing in the law, however, that prevents a restaurant or bar from making outdoor areas smoke-free voluntarily (*Smoking Prohibited in Certain Public Places and Certain Places of Employment*, 2009). In 2009, there was little evidence that outdoor exposure to secondhand tobacco smoke might be hazardous. However, a body of evidence is accumulating on the potential health hazards of exposure to secondhand tobacco smoke in outdoor seating areas of restaurants and bars.

Neil Klepis was the lead investigator in some of the earliest studies on outdoor exposures. Klepis, Ott, and Switzer (2007) measured outdoor exposures to secondhand smoke in many California venues and demonstrated that in some weather and wind conditions, some outdoor areas that allowed smoking had dangerous levels of secondhand smoke. Some scenarios that might cause high exposures included eating dinner at a table next to someone smoking on a restaurant patio, sitting next to someone smoking on a park bench or standing near someone smoking on a sidewalk (Klepis et al., 2007). The authors expressed most concern for restaurant and bar workers who spend work shifts in outdoor areas with smoking because these workers are most likely to exceed the Environmental Protection Agency's 24-hour health standard for fine particles exposure (Klepis et al., 2007). Klepis, Gabel, Ott, and Switzer (2009) came to the same conclusions in a similar study using residential outdoor decks in California.

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In South Korea, Hwaong and Lee (2014) examined the drift of secondhand smoke and found that under certain wind and weather conditions significant levels of tobacco smoke could be detected nine meters from the source, even with only one person smoking. In a study conducted in Australia, Stafford, Daube, and Franklin (2010) found potentially hazardous levels of PM_{2.5} (the harmful particulate size common in tobacco smoke) on restaurant and bar patios, with as few as two people smoking. St. Helen et al. (2012) showed that study subjects who spent three hours exposed to smoking in open-air bars and restaurants in Athens, Georgia showed urine and saliva biomarkers for tobacco smoke exposure. This includes biomarkers for known carcinogens (St. Helen et al., 2012). A New Zealand study showed that measurable levels of tobacco smoke from outdoor smoking areas drift inside when doors leading outside are left open, as they often are in warm weather (Edwards & Wilson, 2011).

While the Community Preventive Services Task Force and the Centers for Disease Control and Prevention (CDC) do not yet recommend smoke-free policies in outdoor areas for the purpose of secondhand smoke protection, if the evidence continues to build, this may eventually occur. There are no available data on the percentage of North Carolina restaurants and bars that have or may be interested in voluntarily making outdoor customer areas smoke-free. According to Americans for Nonsmokers' Rights (2014B), Iowa and 322 municipalities in the U.S. ban smoking in outdoor customer areas of restaurants and bars. Data provided by this study may help inform decision-makers and public health on future educational and policy efforts.

Scientific Basis for Prohibiting Electronic cigarettes Use Indoors

Electronic cigarettes are products that provide nicotine to the user by heating a flavored nicotine liquid, producing an aerosol that is inhaled in a way that mimics cigarette smoking, but without combustion. Because there was little understanding of the product at the time the law

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was written, indoor electronic cigarette use is not prohibited by the North Carolina smoke-free restaurants and bars law. In 2009 electronic cigarettes were a very new product, and very little was known about them. Long-term health effects of their use were, and still are, unclear. Public health professionals had no idea in 2009 that electronic cigarettes would become the phenomenon they are today.

While electronic cigarette use is not prohibited from restaurants and bars under the state law, there is nothing in the law to interfere with a restaurant or bar owner who wants to prohibit electronic cigarette use within his or her own business (*Smoking Prohibited in Certain Public Places and Certain Places of Employment*, 2009). As the U.S. Federal Drug Administration (FDA) considers adopting regulations regarding these products (FDA, 2014), there are still no data available about the potential long-term health effects of the use of electronic cigarettes or breathing secondhand aerosol.

In April 2014, the FDA released proposed “deeming rules,” by which it could begin to regulate electronic cigarettes as tobacco products (FDA, 2014). Provisions of the proposed rule, as it applies to electronic cigarettes and similar products, include prohibition on sales to minors and free sampling. The proposed rule also includes warning labels and FDA review of new products. It is unclear when new FDA rules might be adopted (FDA, 2014).

As potential health risks of these products have been debated by advocates and researched by scientists around the world, increasing evidence has come to light suggesting secondhand exposure to electronic cigarette vapor may not be safe. Offerman (2014) examined chemical emissions of electronic cigarettes and concluded that these products emit harmful chemicals and should be regulated in the same manner as tobacco smoking. He found evidence of tobacco-specific carcinogens (such as nitrosamines) as well as aldehydes, such as

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formaldehyde, in electronic cigarette vapor (Offerman, 2014). Other researchers found hazardous chemical compounds such as formaldehyde, acetaldehyde, acrolein, and glyoxal in electronic cigarette aerosols. These compounds tended to be in higher concentrations when electronic cigarettes with higher voltage were used, in some cases with levels as high as or higher than those found in cigarette smoke (Bekki et al., 2014).

The FDA found similar results in the first studies they completed of nicotine cartridges used in electronic cigarettes (FDA, 2009). Williams et al. (2013) found electronic cigarette fluid – often called e-juice – that was cytotoxic. The same research also found the electronic cigarette aerosol they studied contained particles of tin, silver, iron, nickel, aluminum, and silicate, as well as nanoparticles, many of which are known to cause respiratory distress or disease (Williams et al., 2013). The concentrations of some of these ingredients were at least as high as the concentrations found in cigarettes smoke (Williams et al., 2013). Schober et al. (2013) found that electronic cigarette aerosol contains ultrafine particles that can inflame the lungs of both users and bystanders. This inflammation is known to have negative effects on the heart and to trigger heart attacks (Change Lab Solutions, 2014; USDHHS, 2010; USDHHS, 2014).

Two studies (Ballbe et al., 2014 & Flouris et al., 2013) found that nicotine biomarkers were elevated in the blood and urine of those breathing passive electronic cigarette vapor. The levels found were not statistically different from those of passive smokers (Ballbe et al., 2014). After one hour of exposure to electronic cigarette vapor, subjects did not have reduced lung function, but did have elevated levels of nicotine biomarkers (Flouris, et al., 2013).

Propylene glycol, which is used to make theater smoke, is commonly used in e-juice to make electronic cigarette aerosol. Propylene glycol has many uses in pharmaceuticals, paints, coolants and de-icing fluids (Wieslander, Norback, & Lindgren, 2001). While it is an approved

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food additive, propylene glycol has not been tested as a warmed inhalant, in the way it is used in electronic cigarettes. An experiment related to aviation training showed that exposure to high concentrations of propylene glycol mist could lead to acute ocular and upper respiratory irritation and possibly cough and airway obstruction (Wieslander et al., 2001).

Americans for Nonsmokers Rights (2014a) reports 108 municipalities and three states now include electronic cigarettes in their smoke-free regulations. One concern about the use of electronic cigarettes in public places is the danger of re-normalizing smoking, as young people and others witness an activity that, for all practical purposes, looks identical to smoking (ANR, 2014a; Change Lab Solutions, 2014; McAfee, 2015). The use of electronic cigarettes can confound and complicate enforcement of smoke-free regulations for the same reason (ANR, 2014a; Change Lab Solutions, 2014; McAfee, 2015).

The U.S. Department of Transportation has banned electronic cigarette use aboard airplanes (Change Lab Solutions, 2014). The U.S. Air Force and the U.S. Navy have extended their smoking regulations to include electronic cigarettes (Change Lab Solutions, 2014). Americans for Nonsmokers Rights and the Office of the U.S. Surgeon General recommend that electronic cigarette vapor be regulated in a similar manner as tobacco smoke to protect the health of non-vapers. In addition, the CDC Office on Smoking and Health notes that air with no smoke or aerosol from electronic cigarettes, is the public health standard (McAfee, 2015).

Two organizations that develop voluntary standards for indoor air quality – the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the American Industrial Hygiene Association (AIHA) – recommend that electronic cigarette use be banned indoors (AIHA, 2015 & ASHRAE, 2015). In fact ASHRAE now includes electronic cigarette vapor in its definition of environmental tobacco smoke (ASHRAE, 2015).

Conclusion

Evaluation activities provide evidence that North Carolina's smoke-free law has been successful in improving health outcomes and has not caused overall economic harm to the state. The law has also proven popular with the public as well as the press, although, to-date, the experiences of individual restaurants and bars has not been assessed.

A review of the literature around the potential health hazards of electronic cigarettes and of outdoor exposures to secondhand tobacco smoke shows that developing new policies in both these areas could be warranted. Concentrations of secondhand smoke in outdoor venues, such as restaurant or bar patios, could reach hazardous levels. Electronic cigarette aerosol has been shown to have ingredients that are known to be harmful for others nearby to breathe. While the current smoke-free law in North Carolina does not cover outdoor areas or electronic cigarettes, this may be an important new approach for voluntary or public policy.

As North Carolina public health leaders and state decision-makers consider policy options for the state, knowing the perceived success of the current law in the eyes of the businesses affected by it could be very useful. Knowing the actions and interests of restaurant and bar owners/managers around electronic cigarettes and outdoor areas could be useful in promoting voluntary smoke-free outdoor customer areas and aerosol-free indoor policies, as well as possible expansion of the current smoke-free law. All of these possibilities could expand the protection of public health, promote cessation and reduce smoking among young people (Community Preventive Services Task Force, 2012).

CHAPTER III

Methods

The two purposes of this study were: 1) to assess whether, after five years of implementation of the N.C. smoke-free law, restaurant and bar owners and managers receive complaints about the law, and whether they are experiencing the benefits promised when the law was first passed and 2) to explore their actions and interest related to policies that go beyond what is covered in the state law, specifically prohibiting the use of electronic cigarettes indoors and/or providing smoke-free seating areas for customers outside.

Design

A descriptive, cross-sectional design was used to assess complaints received and benefits perceived by North Carolina restaurant/bar owners/managers concerning North Carolina's smoke-free law, as well as current policies and interest around smoke-free outdoor areas for customers and use of electronic cigarettes indoors. Prior to data collection, approval for this study was granted by the Institutional Review Board of East Carolina University (See Appendix A).

Participants and Procedures

Data were gathered using two, 20-question pencil and paper surveys (one for restaurants and one for bars) (See Appendices D and E), which were mailed to random samples of 374 restaurant and 289 bar owners and managers (total of 663) across North Carolina. The researcher chose pencil and paper surveys rather than online surveys for a few reasons. First, response rates from paper surveys can be higher than that for online surveys, and pencil and paper response rates are not in decline as online response rates are (Dillman, Smyth & Christian, 2009; Hayslett & Wildemuth, 2004). Paper surveys may give better statewide coverage, allowing participation

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from those with limited or no access to the internet, and may be preferred by people with less internet experience. According to Dillman et al. (2009) paper surveys are more cost-effective than in-person or telephone surveys, although more costly than online surveys.

The study used two 20-question pencil and paper surveys, one each for restaurants and bars. The questions on the two surveys were nearly identical. Besides referencing “bars” instead of “restaurants,” the only question difference was on question 6, which asked each participant to identify benefits the business experienced from the smoke-free law. The restaurant version of question 6 included “Increase in number of families coming in,” as a response choice. This choice was not included on the bar survey, because bars are age-restricted businesses.

The purpose of designing two surveys was to increase participation from North Carolina bars. As reported in the literature review section, there has been a great deal of positive publicity about the smoke-free law, but practically all was based on anecdotal evidence, and focused on restaurants, rather than bars (NCTPCB, 2013). As also noted in the literature review, the two lawsuits filed against the law came from bars (Washington et al., 2011). Since bars had not been asked directly about their outcomes from the smoke-free law, the researcher wanted bar owners and managers to feel comfortable responding to questions directed to them as members of the bar business.

The researcher chose to self-fund the survey in order to make it more appealing to bar owners/managers. Not using sponsorship funds avoided inclusion of acknowledgements on the printed survey of government or agency funding that might have suggested a specific point of view. The survey was held to two pages, with simple questions, but still allowing written comments so participants could share their experience with and feelings about the law. As suggested by Dillman et al. (2006), the researcher expected that the brevity, simplicity and open-

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ended question would increase bar participation, giving more balanced number of responses from bars and restaurants.

The size of the drawn sample was determined by using Fluid Surveys online sample size calculator (Fluid surveys, 2014). Random samples were drawn using the random generator in Microsoft Excel, from two spreadsheets (one for restaurants and one for bars). The spreadsheets are part of the North Carolina online system used to track smoke-free law complaints. The information in the spreadsheets is public record and therefore accessible for research.

The restaurant database is updated quarterly, and in December, 2014 contained 14,044 restaurants that are regularly inspected for sanitation by their local health departments. Excluded from the sample were fast food restaurant chains, all of which were smoke-free before the law went into effect in 2010 (see Appendix F). Also excluded were school, college or business cafeterias; churches; food and convenience stores; take-out and delivery restaurants; ice cream shops; retirement or health care facilities; camps, prisons and catering businesses. Also excluded were restaurants with out-of-state mailing addresses. The final sampling frame included 8,799 records.

The bar database is also updated quarterly. In December 2014 it contained 1,165 bars classified by N.C. alcohol law as “private clubs,” meaning they both 1) hold a license to serve alcoholic beverages for consumption on-site and 2) do not serve prepared food (that would require health department restaurant inspections, qualifying them for the restaurant list). The sampling frame for bars was reduced from 1,165 to 803 after excluding the following: event venues, theaters, country clubs, fraternal organizations, airline airport membership clubs, and organizations holding only temporary alcohol licenses. Also excluded were bars with out-of-state mailing addresses and the eight cigar bars exempt from the law.

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Surveys were mailed to the “Owner or Manager” of each selected business. The survey did not ask for identifying information from the individual completing the survey or the business the person represents. It was estimated the surveys would take no more than 10 to 15 minutes to complete.

In order to save money on postage, the researcher used a mail sorting service that allowed the surveys to be mailed at a reduced postage rate. An unintended consequence of this choice was the lack of returned undeliverable mail. Because they were mailed at a bulk rate, no surveys in the first mailing were returned as undeliverable; however, when follow-up postcards were mailed using first class stamps, 21 of them were returned as undeliverable. If the surveys had been mailed using first class stamps, the researcher would have had the opportunity to find correct addresses and re-mail returned surveys. By the time the postcards were returned, there was no time to correct addresses and re-mail prior to the survey deadline. For future researchers this is an important consideration, as researching incorrect addresses is one way to increase the return rate, which was 20.3% in this study.

Participants were asked to return the completed surveys by mail. The self-addressed, stamped return envelopes were addressed to the researcher’s home. Envelopes were shredded after opening, in case identifying information, such as a return address, had been placed on the envelopes. If any identifying information was written on the paper surveys, it was blacked out prior to scanning. Data were entered into the IBM Statistical Package for the Social Sciences (SPSS) software, Version 21, onto the researcher’s encrypted, password protected laptop computer. Paper surveys were scanned and shredded once data were entered. All electronic files will be maintained on the laptop for two years, at which time they will be double-deleted.

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The envelope containing the survey also included a separate informed consent letter that could be retained by the participant. The informed consent letter (See Appendices B and C) explained 1) that the survey was voluntary and would cause no harm or cost to participants, 2) that there was no incentive for participation, and 3) the purpose of the study. It also provided contact information for the researcher and the university. Those who received the survey were asked not to complete it if they were under age 18 or did not work as owner and/or manager at a North Carolina restaurant or bar. A check-box on the survey asked each participant to “place an X here to show that you have been informed of and agree to participate in the survey.” The informed consent letter assured confidentiality of participants, informing them that data collected would not include information identifying the business or participant.

The researcher mailed a follow-up postcard approximately four weeks later to remind all recipients about the survey and request their participation (See Appendix G). Since there was no incentive being offered for participation, the second mailing was expected to increase participation. As mentioned earlier, 21 of the 663 postcards were returned as non-deliverable.

Instrumentation

The questions on the two pencil and paper surveys were divided into four sections: “Questions about the current law” (questions 1-6), “Questions about electronic cigarettes” (questions 7-11), “Questions about outside seating areas” (questions 12-14) and “Additional questions” (questions 15-20). Questions two through five were drawn from a telephone survey conducted by Linnan et al. (2010). These questions assessed the owners/managers’ receipt of complaints from employees and customers about current tobacco-related policies. Linnan’s team surveyed restaurants by telephone while the smoke-free law was being considered, but had not yet passed. Linnan referred the researcher to a colleague at the University of North Carolina at

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Chapel Hill, who shared their instrument and gave permission to use it. Documentation is available upon request.

“Questions about the current law” section included the following questions:

1. Are you aware of North Carolina’s law requiring restaurants, bars and other hospitality businesses to be smoke-free inside (yes or no)?
2. In the last 12 months are you aware of customer complaints about breathing secondhand smoke inside your restaurant or bar (yes or no)?
3. In the last 12 months are you aware of employee complaints about breathing secondhand smoke inside your restaurant or bar (yes or no)?
4. In the last 12 months are you aware of customer complaints about not having a place to smoke inside your restaurant or bar (yes or no)?
5. In the last 12 months are you aware of employee complaints about not having a place to smoke inside your restaurant or bar (yes or no)?

Question six allowed the participant to select all the benefits promised by the new law that the particular business has experienced. The researcher developed this question. Choices were refined by expert reviewers, as described below.

6. What has your restaurant or bar experienced because of the smoke-free law (please mark all that apply)? Choices included: customers breathe less secondhand smoke indoors, increase in number of customers, decrease in maintenance and cleaning costs, fewer complaints about smoke, improved staff health, increase in number of families coming in (only a choice for restaurants, not bars), increased staff productivity, and other (please describe).

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The questions in the electronic cigarette section (7-11) were written by the researcher, but questions 8 and 9 were worded in a similar fashion to the Linnan et al. (2010) questions used for questions 2-5. Questions 10 and 11, however, were created by the researcher.

7. Which of the following best describes your restaurant or bar's policy on the use of electronic or e-cigarettes (please mark the best answer)? Options included: use is not allowed inside, use is allowed in certain areas inside, or use is allowed anywhere inside.
8. Are you aware of complaints from customers about others' use of e-cigarettes inside (yes or no)?
9. Are you aware of complaints from employees about others' use of e-cigarettes inside (yes or no)?
10. Does use of e-cigarettes inside your restaurant or bar make enforcing the state's smoke-free law more difficult (yes or no)?
11. Are you interested in learning more about how to limit the use of e-cigarettes inside your restaurant or bar (yes or no)?

In the outside seating areas section questions 12 and 13, which asked about smoking policies in outdoor areas, were based on questions from Linnan et al. (2010).

12. Does your restaurant or bar have any outside seating for customers (yes or no)?
13. Which statement best describes your restaurant's or bar's policy on outside seating areas for customers (please mark the best answer)? Possible answers include: smoking allowed only in designated outdoor areas, smoking allowed anywhere outdoors, we don't have a policy or rules about smoking outdoors or outdoor area smoke-free.

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14. Are you interested in learning more about making outside seating areas for customers smoke-free (yes or no)?

The researcher developed question 14 and the “Additional questions” section (15-20), although questions 15-17 were quite similar to questions used in many similar studies, and are commonly used to define “current use” and “lifetime use” of tobacco products.

15. Have you smoked at least 100 cigarettes (five packs) in your entire life (yes or no)?

16. Have you smoked any cigarettes in the last 30 days (yes or no)?

17. Have you used an electronic cigarette in the past 30 days (yes or no)?

18. What is your current position in the restaurant (please mark the best answer).

Choices are: owner, manager, owner/manager, or other.

19. How many years and months do you estimate you have been involved with the hospitality industry in North Carolina (Years? Months)?

The final question was open-ended to allow participants to share any additional feedback not included on the survey. Lines were provided after the question for the participant to write his or her own words.

20. Do you have any additional feedback about your experience with or feelings about the smoke-free law you would like to share?

The survey’s content validity was determined by expert reviews. A number of N.C. Restaurant and Lodging Association (NCRLA) staff and members reviewed the survey for clarity and understanding. Two staff members of the TPCB, one staff member of Americans for Nonsmokers’ Rights (ANR), and the thesis committee for this study reviewed the survey for relevance, clarity, organization and completeness. Feedback from these individuals was used to

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improve the survey. For example, ANR and TPCB staff made suggestions on questions to remove and combine to reduce the number of questions from 31 to 20. NCRLA suggested combining a number of benefits of the smoke-free law (employees quitting smoking, employees taking less sick time and employees reducing smoking) into one category (improved staff health).

Data Analysis

IBM's Statistical Package for the Social Sciences (SPSS) software was used to analyze the responses from the first 19 questions on the surveys. Since nearly all the questions were categorical, descriptive statistics (including frequencies and percentages) were used to report the demographic characteristics of participants, such as job title, years in the N.C. hospitality industry, and smoking/electronic cigarette behavior, and the other survey questions. Chi-square tests were used to analyze research question eight (a and b) in order to determine statistical significance when comparing restaurants' and bars' current policies on the use of electronic cigarettes indoors and smoke-free customer areas outdoors.

Qualitative analysis was used to analyze data from the final open-ended survey question. The researcher used elements from grounded theory of qualitative evaluation to analyze written comments to question 20 by reading, analyzing, and coding the data. Codes were assigned to help group the comments by topic and point of view. After combining and refining codes, a total of 20 codes were used (see Appendix H). The comments were then printed out a number of times to allow comments that met multiple codes to be grouped by each code. The researcher used different colors of paper for restaurants and bars to make it easy to note the number of coded comments coming from each venue type. This allowed for comparison of comments among venues and across venues.

CHAPTER IV

Results

Five years after North Carolina's smoke-free restaurants and bars law went into effect, there have been several studies looking at the overall effectiveness of the law in terms of health improvement, public support, and economic impact (NCTPCB, 2013). Until now no study has asked if restaurants and bars experienced the promised benefits from the law. In addition, public health has program and policy development questions regarding new and popular electronic cigarettes as well as smoke-free outdoor customer areas of restaurants and bars. This study proposed to address these needs by: 1) assessing whether, after five years of implementation of the N.C. smoke-free law, North Carolina restaurant and bar owners and managers receive complaints about the law, and whether they are experiencing the benefits promised when the law was first passed and 2) exploring whether restaurant and bar owners and managers are implementing or willing to learn about policies that go beyond what is covered in the current law, such as prohibiting the use of electronic cigarettes indoors and providing smoke-free seating areas for customers outside.

Participants

A total of 663 surveys were mailed in early January, 2015 to 374 restaurants and 289 bars. Four weeks later, the researcher mailed a follow-up postcard to all the restaurants and bars in the sample to increase the response rate. At the cut-off date, 136 surveys had been returned. One survey was incomplete; therefore, it was not included in the analysis. The final sample was 135, which represents a return rate of 20.3% (23% for restaurants and 17% for bars). IBM's Statistical Package for the Social Sciences (SPSS) software, Version 21, was used to analyze the

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responses from the quantitative questions on the surveys. The researcher used qualitative methods to analyze data from the final open-ended question on the surveys.

The mean number of years the participants had worked in North Carolina's hospitality industry was 19, with a median of 16.5. Of those who completed the survey, 45.5% identified themselves as owners, 14.9% as managers, and 35.1% as owner/managers of their businesses. The remaining 3.7% reported their position as "other." The current cigarette smoking rate of the participants was 22.2%, with 25.2% former smokers and 52.6% never smokers. A total of 9.6% of the participants reported having used an electronic cigarette in the last 30 days. All participants answered survey question one as "yes," indicating they were familiar with North Carolina's smoke-free restaurants and bars law.

Quantitative Analysis

Questions about the current law. Survey questions one through six were related to North Carolina's smoke-free law. Answers to these questions were used to answer research questions 1 through 4:

- 1) What proportion of N.C. restaurant/bar owners/managers surveyed receive:
 - a. Customer complaints about indoor secondhand smoke at their businesses?
 - b. Employee complaints about indoor secondhand smoke at their businesses?
- 2.) What proportion of N.C. restaurant/bar owners/managers surveyed receive:
 - a. Customer complaints about not being able to smoke inside their businesses?
 - b. Employee complaints about not being able to smoke inside their businesses?
- 3.) What proportion of N.C. restaurant/bar owners/managers surveyed receive:
 - a. Customer complaints about others' use of electronic cigarettes inside their business?
 - b. Employee complaints about others' use of electronic cigarettes inside their business?

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4). What perceived benefits have N.C. restaurant and bar owners/managers surveyed experienced because of the N.C. smoke-free law?

As shown in Table 1, reported customer and employee complaints about secondhand smoke inside restaurants and bars overall were low (3.7% and 3.0%, respectively), but were higher for bars. Complaints about having no place to smoke were higher for bars than for restaurants. Over 65% of bars reported customer complaints and 53.1% reported employee complaints about not having a place to smoke inside, compared with only 5.8% each for customers and employees in restaurants. The proportions of customer complaints about electronic cigarette use indoors were identical for customers (16.3% for both bars and restaurants) and similar for employees (9.3% for restaurants and 6.1% for bars).

Table 1
Frequencies and Percentages of Customer and Employee Complaints Received in the Last 12 Months

Type of Complaint	Restaurants (N=86) N (%)	Bars (N=49) N (%)	Total (N=135) N (%)
Complaints about Secondhand Smoke			
From Customers	1 (1.2%)	4 (8.1%)	5 (3.7%)
From Employees	1 (1.2%)	3 (6.1%)	4 (3.0%)
Complaints about No Place to Smoke			
From Customers	5 (5.8%)	32 (65.3%)	37 (27.4%)
From Employees	5 (5.8%)	21 (53.1%)	26 (19.3%)
Complaints about Electronic Cigarettes			
From Customers	14 (16.3%)	8 (16.3%)	22 (16.3%)
From Employees	8 (9.3%)	3 (6.1%)	11 (8.1%)

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To address research question four, the researcher calculated the results of survey question six. For this question, restaurant participants had the option to select among seven preset benefits they had experienced because of the North Carolina smoke-free law; bar participants had six choices. The choices included: customers breathe less secondhand smoke, increased number of customers, decreased maintenance and cleaning costs, fewer complaints about smoke, improved staff health, increased staff productivity, and increased number of families coming in (choice only for restaurants, not bars). The researcher calculated the number and proportion of participants that endorsed each of the seven options for restaurants and six for bars (see Table 2).

Nearly eight of 10 restaurant owners/managers (79.1%) and nearly three of four bar owners/managers (73.5%) reported at least one benefit from the law. As shown in Table 2, the benefit most selected by both restaurants and bars was “customers breathe less tobacco smoke,” which was selected by 68.6% of restaurants and 59.2% of bars (65.2% total). The second most selected benefit by both restaurants and bars was “fewer complaints about secondhand smoke,” which was chosen by 62.8% of restaurants and 51% of bars (58.5% total). “Decrease in maintenance/cleaning cost” was selected by a higher percentage of bars (51%) than restaurants (43%), but was the third most selected benefit for both venues. About 30% of restaurants and 28.6% of bars reported improved staff health as a benefit of the smoke-free law, and was the fourth highest choice for bars and fifth for restaurants (29.6% total). “Increased staff productivity” was selected as a benefit by a similar proportion of restaurants and bars (20.9% of restaurants and 16.3% of bars), and was the fifth highest selection for bars and sixth for restaurants. “Increase in customers” was selected by a higher percentage of restaurants (19.8%) than bars (14.3%), but was the least frequently selected benefit for both. “More families coming in,” was only a choice for restaurants, as bars are age-restricted businesses. Over 31% of

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restaurants reported more families coming in to their businesses as a benefit, which made it the fourth most selected benefit for restaurants.

Table 2

Frequencies and Percentages of N.C. Restaurant/Bar Owners/Managers Responses to Selecting Benefits from the Smoke-free Law from a Preset List

Benefits	Restaurant (N=86) N (%)	Bars (N=49) N (%)	Total (N=135) N (%)
Customers Breathe Less Tobacco Smoke	59 (68.6%)	29 (59.2%)	88 (65.2%)
Fewer Complaints About Secondhand Smoke	54 (62.8%)	25 (51.0%)	79 (58.5%)
Decrease in Maintenance/Cleaning Cost	37 (43.0%)	25 (51.0%)	62 (45.9%)
Improved Staff Health	26 (30.2%)	14 (28.6%)	40 (29.6%)
Increased Staff Productivity	18 (20.9%)	08 (16.3%)	26 (19.3%)
Increase in Number of Customers	17 (19.8%)	07 (7.8%)	24 (17.7%)
More Families Coming In	27 (31.4%)		

Participants also had a space to write “other benefits” on the survey that were not included in the preset list. A total of 41 (30.4%) participants chose to add something else as a benefit besides the preset choices provided. Only three participants (two bars and one restaurant) actually shared additional benefits not included on the preset list of choices. The additional benefits they reported were: *“Patrons enjoy going out without returning home smelling of cigarette smoke;”* *“More people sit outside than before,”* and *“Everybody is happier. No smoke? No complaints.”* The remaining participants (92.6%) who responded to the “other benefits” option took the opportunity to explain why they felt they could report no benefits from the smoke-free law. These reasons included that they 1) were smoke-free before

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the law went into effect (36.6%), 2) opened their business since the law went into effect (17%) or 3) experienced problems caused by the law, and no benefits (39%) (see Table 3).

Table 3

Items and Information Added to Survey by N.C. Restaurant/Bar Owners/Managers as “Other Benefits” of Smoke-free Law Besides Preset Choices

Theme	Frequency	Percentage
More Customers sit outside	1	2.4
No complaints/everyone happy	1	2.4
Customers like not smelling like smoke	1	2.4
Smoke-free Before Law	15	36.6
Opened After Law	7	17.0
Problems Instead of Benefits	16	39.0
Total	41	100

In addition to listing “other” benefits, some respondents elected to list problems related to the policy in the space provided. Within the category of “Problems Instead of Benefits,” four main categories emerged: 1) loss of business and customers, 2) complaints from customers who want to smoke inside, 3) problems caused by not having access to an outdoor area for smokers, and 4) smoking employees who complain, take longer breaks, or are otherwise less productive. Many of these problems are explained in more detail in the qualitative analysis section of the results. It is important to note that only two negative additions to the benefits list came from restaurants. Most negative answers came from bar owners/managers, who wrote things like: “People want to smoke in a bar;” “I saw a significant decrease in the number of customers!!!;” and; “The law killed my business.”

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Questions about other policies. Research questions 5, 6, 7, and 8 are based on answers to survey questions seven through 14, which are about other policies besides the current smoke-free state law.

Research Question 5: What proportion of owners/managers in the sample is interested in learning more about policies that restrict the use of electronic cigarettes inside restaurants and bars? Of the 129 participants who responded to survey question 11, 18.6% said they are interested in learning more about how to limit the use of electronic cigarettes indoors.

Research Question 6: What are the current policies regarding smoking in outside seating areas of N.C. bars and restaurants? In survey question 13, participants were asked to select one of four policies that best describe their bar's or restaurant's current policy regarding smoking in outside seating areas (i.e., smoking allowed only in designated areas outdoors, smoking allowed anywhere outdoors, we don't have a policy or rules about smoking outdoors, outdoor area smoke-free). Because there seemed to be confusion on the difference between "smoking allowed anywhere outdoors" and "we don't have a policy or rules about smoking outdoors," the researcher collapsed the responses to those two choices together for analysis. As shown in Table 4, the majority (52.6%) of participants reported not having an outdoor smoking policy, or allowing smoking anywhere outdoors at their restaurant or bar. Another 25.9% of the businesses reported that they do not have an outdoor area for customers. Of the 21.5% of the businesses that reported having a smoke-free policy of some type outdoors, nearly 12% reported having designated smoking areas outside and 9.6% reported prohibiting smoking from their outdoor customer areas. Comparisons between bar and restaurant outdoor policies will be examined in subsequent research question 8b.

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Table 4

Frequencies and Percentages of Bars and Restaurants that Reported Information Related to Smoking Policies in Outdoor Customer Areas

Policy	Frequency	Percentage
No Policy Outdoors/Smoke Anywhere Outdoors	71	52.6
Smoking in Outdoor Designated Areas Only	16	11.9
Smoke-free Outdoors	13	09.6
No Outdoor Area	35	25.0
Total	135	100.0

Research Question 7: What proportion of owners/managers in the sample is interested in learning more about policies that restrict smoking in outdoor areas of bars and restaurants?

Ninety-eight participants answered survey question 14, since 35 of the 135 participants reported that they do not have outdoor areas. Of those who responded, 14.3% said they were interested in learning more about policies that restrict smoking in outdoor areas of bars and restaurants.

Research Question 8a: How do N.C. restaurants and bars differ in their policies on the use of electronic cigarettes indoors? Cross-tabulations and a Chi-square goodness of fit test were conducted to answer this question. As shown in Table 5, among the restaurant owners and managers who responded to the survey, 46.1% reported not allowing electronic cigarettes used inside their business, and 21.1% reported having inside designated areas for electronic cigarettes. Of the bars responding to the survey, 12% reported not allowing electronic cigarette use inside and 12% reported having indoor designated areas for electronic cigarettes. The Chi-square analysis results ($\chi^2 = 25.065, p < .001$) indicated that indoor electronic cigarette policies differ between bars and restaurants. The proportion of restaurants in North Carolina that restrict the

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use of electronic cigarettes indoors (46.1%) is higher than the proportion of bars restricting their use (10.2%).

Table 5

Cross-Tabulation of Frequencies and Percentages of Restaurant and Bar Policies on Indoor Use of Electronic Cigarettes, as Reported by Restaurant and Bar Owners/Managers

Policy	Restaurants (N=76)* N (%)	Bars (N=49) N (%)	Total (N=125) N (%)
Not Allowed Inside	35 (46.1%)	5 (10.2%)	40 (32.0%)
Allowed in Certain Areas Inside	16 (21.1%)	6 (12.2%)	22 (17.6%)
Allowed Anywhere Inside	25 (32.9%)	38 (77.6%)	63 (50.0%)
Total	76 (100%)	49 (100%)	125 (100%)

($\chi^2 = 25.065, p < .001$) *10 restaurants did not respond

Research Question 8b: How do N.C. restaurants and bars differ in their policies on outside seating areas for customers? For this analysis, the researcher combined all types of policies with no restriction on outdoor smoking (no policy, smoke anywhere) and combined the types of policies that do restrict outdoor smoking (designated outdoor areas, no outdoor smoking) into two categories called “Policy” and “No Policy.” As shown in Table 6, 33.9% of restaurants and 21.1% of bars had some sort of policy restricting smoking outdoors. Chi-square test results ($\chi^2 = 1.880, p < .170$) showed there is no statistically significant difference in smoking restrictions in outdoor seating areas between bars and restaurants in North Carolina.

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Table 6

*Cross-Tabulation of Smoking Policies for Outdoor Customer Areas, as Reported by Owners/Managers of N.C. Restaurants and Bars**

Policy	Restaurants (N=62) N (%)	Bars (N=38) N (%)	Total (N=100)* N (%)
Any Restrictive Outdoor Policy	21 (33.9%)	08 (21.1%)	29 (29.0%)
No Outdoor Policy	41 (66.1%)	30 (78.9%)	71 (71.0%)
Total	62 (100%)	38 (100%)	100 (100%)

($\chi^2 = 1.880, p < .170$) *35 reported no outdoor customer area

Qualitative Analysis

Research Question 9: Was there any additional feedback participants shared that was not addressed in the survey? This analysis was based on the responses to survey question 20, which asked if participants had any additional feedback about their experience with or feelings about the smoke-free law to share. Survey participants were provided space to write their additional comments at the end of the survey. A total of 68 survey participants (50.4%) made at least one comment. Comments ranged from just a few words to one participant who filled up the available space on the survey and then wrote additional comments on the back of the return envelope. The comments also varied widely in content and tone.

The qualitative analysis procedures described in the methods section uncovered two main themes and six subthemes that ran through the majority of the comments. As shown in Table 7, the main themes that emerged are: 1) positive comments about the law and 2) negative comments about the law. Positive comments were mostly brief and general, whereas negative comments about the law tended to be longer, more detailed, and specific to bars. Based on

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analysis of the negative comments, the researcher found three main subthemes of negative comments 1) specific problems for bars, 2) suggested solutions to these problems, and 3) government overreach. In addition, seven participants suggested additions to the smoke-free law, and two asked the researcher specific questions about the law.

Positive comments about the law. A total of 40 comments were supportive of the smoke-free law. As noted earlier, most of these comments tended to be brief and general. Supportive comments are categorized by the level of support (highest to lowest): loving the law (n=3), supporting the law (n=31), and not seeing a problem with the law (n=6).

Loving the law. A total of three participants (all restaurants) used the word “love” when talking about the law:

“Love smoke-free law!!!”

“Love it. Better for everyone,” and

“Love it. So glad for the non-smoking.”

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Table 7

Themes and Frequencies of Qualitative Comments Supporting Various Themes, as Shared by N.C. Restaurant and Bar Owners and Managers

Theme	Frequency
<hr/>	
Positive Comments	
“Love” the smoke-free law	3
Supportive of the smoke-free law	31
Law not a problem	6
Total	40
Negative Comments	
Shares problems specific to bars	15
Recommends ways to address problems for bars	13
Government overreach	16
Total	44
Other	
Suggests expanding the smoke-free law	7
Asks questions of the researcher	2
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Supporting the law. One of the most positive comments from a bar owner/manager, showing support for the smoke-free law, did not contain the word “love,” but did tell a story about impact on customers:

“People who visit bars across the border in South Carolina always come back saying, ‘I forgot how bad the smoke used to be when allowed in N.C.’ This law has been a success by all measures I’ve seen.”

Another positive comment from a bar respondent:

“Business has definitely improved. The property is cleaner and more inviting to all – huge improvement!”

Among other supportive comments were a number that mentioned the impact of smoke-free restaurants and bars on the health of employees and patrons. Again, all these comments were from restaurants. The only bars that mentioned improved health in their comments were two bar owners/managers who noted that the law had reduced the amount that they personally smoke.

Here are two typical quotes from restaurant owners/managers regarding health:

“I am happy that this law passed, the benefits are important to me – my staff and customers – clean air to breathe!”

“I believe that the N.C. smoke-free law helps improving people’s health.”

While bar owners/managers shared fewer supportive comments than did restaurant owners/managers, there were positive comments from both. One bar participant wrote, *“Smoke-free is the best environment for everyone!”* A restaurant participant wrote, *“Hopefully never have to see that cigarette smoking anymore. (Smoke-free is good. No other way to go. This way the best.)”*

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Finally, three positive comments – from two restaurants and one bar – were quite detailed and, in their detail, comparable to the longer negative bar comments. The restaurant and bar owner/managers explained some of the actions they took to make their businesses successful under the smoke-free law. Steps mentioned in these comments included: 1) Creating a nice outdoor area for smoking, 2) asking staff to smoke in an area outdoors where they are not seen by customers, and 3) creating an overall healthy atmosphere for the whole business (with healthy menu choices, for example).

Law not a problem. There were a number of bars and restaurants that found the smoke-free law to be “not a problem,” without noting anything specifically positive about the law.

Restaurant: *“This law was welcomed by the non-smoking customers. Has not had negative impact.”*

Bar: *“Smoke Free is fine, most of my patrons do not complain.”*

Negative comments about the law. There were 44 negative comments about the law; all but two came from bars. Negative comments were categorized into three subthemes: 1) problems specific to bars, 2) recommended remedies for problems bars are having and 3) government overreach.

Problems specific to bars. The researcher was able to identify a number of problems with the law expressed almost exclusively by bar owners/managers. These issues include losing business, lack of enforcement, not having outdoor areas, and noncompliance by customers.

One bar respondent wrote, *“A lot of time I have to let people still smoke just so I can make money to keep my doors open.”* While this commenter was the only one who confessed non-compliance with the law, several bars mentioned loss of customers and business, and several

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specifically wrote that since the law has reduced their income and the income of their businesses, it has reduced the amount of taxes received by the state. All of these comments are from bars:

“This law severely, severely, severely hurt this industry!! and my club. This was the worst law ever passed against us.”

“It is dumb, people should be allowed to smoke in bars, this law has made me lose customers.”

“I lost about 40% of my customer base.”

“This ban killed my business as a private club that was cigar friendly.”

A small number of bar owners/managers mentioned enforcement issues as an ongoing problem with the smoke-free law. These comments are both from bars:

“This law is not followed by competitors which results in unfair business competition. Law needs more enforcement.”

“Law is not enforced. Establishments are knowingly violating the law or paying fines by excepting donations from patrons to do so.”

Another problem that was exclusive to bar owners/managers' comments was the issue of outdoor areas. Approximately a quarter of survey participants reported not having an outdoor customer area. It appears that bars without access to outdoor space to designate as smoking areas may suffer losses related to the law more than other bars. Some comments in this category included references to legal struggles with local governments on building or providing outdoor smoking areas. Here is one of the most specific examples:

“We would like to accommodate them by having a nice designated covered area outside, which our city will not allow. So when we have rain or bad weather it kills my business!!!”

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Recommended remedies for bar problems. Some comments included a list of remedies suggested by bar participants. These included: 1) excluding bars (private clubs under N.C. alcohol law) from the smoke-free law, 2) allowing bars to decide if they are smoking or non-smoking and posting signs to inform the public, and 3) allowing bars to allow smoking after 11 p.m. Each of these ideas was mentioned by at least two participants.

Government Overreach. A number of comments from mostly bars called the N.C. smoke-free law “government intrusion” using that specific term or similar wording. There were a few comments that were surprisingly similar to one another, calling the law unfair to bars and calling for some specific remedies for them. Below are three quotes from bar participants related to government intrusion:

“If the government wants a smoke free bar they should own one!!”

“It is a stupid law, and unwanted by many. Should be decision of owner/not government. Too much Big Brother.”

“I am opposed to a law that disallows a business to permit the use of a Legal product by its customers.”

In contrast, seven participants suggested the smoke-free law be expanded. Four said that use of electronic cigarettes should not be allowed indoors, while the other three make these suggestions: 1) smoke-free outdoor areas, 2) 10-foot smoke-free areas outside doorways, and 3) smoke-free public places. Two participants used their comment space to ask very specific questions. One asked what the ingredients are in electronic cigarettes and whether the use of electronic cigarettes to use THC (the active ingredient in marijuana) would lead to any legal liability under alcohol law. The other questioner wanted to know specifically who is responsible for enforcing the smoke-free law.

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Summary

A hundred and thirty-five surveys were completed and returned by owner/managers in the restaurant and bar industry in North Carolina. The mean of years' experience in North Carolina's hospitality industry was 19. A little more than half (50.4%) of the participants included qualitative comments. The following are some key findings from the data analysis:

- All participants reported being familiar with the smoke-free law. The law has nearly eliminated cigarette smoke from restaurants and bars, with less than 4% of participants hearing complaints about secondhand smoke in the last 12 months.
- Five years after the law went into effect bar owners/managers reported receiving complaints in the last 12 months from smoking customers (65.3%) and employees (53.1%) about not having a place to smoke indoors. Only 5.8% of restaurant bars and managers reported hearing similar complaints from both customers and employees.
- Nearly eight of 10 restaurant bars/managers (79.1%) and nearly three of four bar owners/managers (73.5%) reported at least one benefit from the smoke-free law.
- The top three benefits of the smoke-free law identified by N.C. restaurant/bar owners/managers were: 1) customers breathe less secondhand smoke (65.2%), 2) fewer complaints about secondhand smoke (58.5%), and 3) reduced maintenance and cleaning costs (45.9%). In addition, 31.4% of restaurants reported having more families coming in to their businesses.
- The benefit selected by the lowest percentage of participants was "increase in customers," chosen by 19.8% of restaurants and 14.3% of bars.

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- More than half of the participants who did not report a benefit from the law said they had either opened since the law went into effect or went smoke-free before the law went into effect.
- Restaurants in N.C. are significantly more likely than bars to restrict the use of electronic cigarettes inside, with 46.1% of restaurants reporting restrictions, compared with 10.2% of bars.
- Approximately a quarter of restaurants and bars reported having some smoke-free outdoor areas for customers, with 29% of both groups (33.9% of restaurants and 21.1% of bars) having outdoor smoke-free policies.
- Half of the restaurant and bar owners/managers who responded to the survey chose to make a written comment about the smoke-free law. Comments from restaurants tended to be more favorable than comments from bars. The frequencies of comments were about half favorable and half unfavorable to the law overall.
- A small number of bars reported very specific issues with the law in terms of its negative impact on their businesses, and also shared specific remedies for these problems.
- Participants showed a moderate interest in more information on future policies, with 18.6% interested in learning more about restricting electronic cigarette use indoors and 14.3% expressing interest in more information about smoke-free outdoor policies.

CHAPTER V

Discussion

Is North Carolina's smoke-free restaurants and bars law a success five years into its implementation? Previous studies have shown that the law has improved indoor air quality, reduced exposure to secondhand smoke at work, and improved community health status (NCDHHS, 2013). Economic studies of smoke-free laws in North Carolina (and other states) have shown no impact – positive or negative – on restaurant and bar receipts or employment patterns (Loomis et al., 2013; & Schiro, 2012). While the news media has focused on restaurant and bar owners/managers who are happy about the smoke-free law, these articles present only anecdotal findings.

This study is the first to look at the benefits provided (or not provided) to restaurants and bars by the state's smoke-free law. Also included in the study was an assessment of complaints received in the last 12 months about 1) secondhand smoke, 2) not having a place to smoke indoors, and 3) electronic cigarette use inside. Finally, the survey gathered data about current policies and interest in receiving additional information about policies that restrict electronic cigarette use indoors and that make outdoor customer areas smoke-free. This section will cover overall key findings, limitations, and implications for future research and practice suggested by the results of this study.

Key Findings

Smoke-free laws are proposed primarily to reduce exposure to the known health hazards of secondhand smoke. All participants in this study reported being aware of the North Carolina smoke-free law and only 4% reported having received complaints about secondhand smoke in their businesses. In addition, reduced customer exposure to secondhand smoke was the smoke-

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free law benefit most frequently selected by survey participants (65.2%). Nearly 60% of participants selected as a benefit “fewer complaints by about secondhand smoke,” which suggests that the smoke-free law has been successful in reducing exposure to secondhand smoke. Nearly 30% of participants reported improved staff health (30.2% of restaurants and 28.6% of bars) as a benefit of the smoke-free law. These findings provide evidence that that the law has successfully reduced exposure to secondhand smoke to hospitality workers and patrons.

Poll data has shown high levels of public support for North Carolina’s smoke-free law (at 83%) (Bolger, 2012); however, this rate does not demonstrate complete satisfaction by bar patrons with the law. Even five years into smoke-free law implementation, bar owners and managers in the present study reported having received complaints in the last 12 months from smoking customers (65.3%) and employees (53.1%) about not having a place to smoke indoors. Findings included in the literature review suggest that bar patrons who smoke will adjust to the law as time passes; however, based on the findings of this study, it appears that some North Carolina smokers have not fully accepted the law yet (Borland et al., 2006; Satturlund et al., 2013; Tang et al., 2003).

North Carolina’s smoke-free law was launched in January 2010, in the midst of an economic set-back, which is still being felt across the state. Studies of the law’s economic impact reveal no effect on hospitality income or employment patterns, after controlling for seasonal changes and the recession’s impact on overall sales (Loomis et al., 2013; Schiro, 2012). The findings of this study support those economic findings, as only 7.8% of participants reported increased customers as a benefit of the smoke-free law. Some bar owners and managers reported loss of business as a problem for them in their qualitative comments about the law. Nearly a third

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of restaurants reported more family patrons as one of the law's benefits, but that benefit option was not available to bars, since bars are age-restricted businesses.

Interestingly, despite the fact that North Carolina restaurants and bars did not report large business gains from the law, they did report other benefits, such as reduced maintenance and cleaning costs (45.9%), improved staff health (29.6%), and improved staff productivity (19.3%). In fact, nearly eight of 10 restaurants (79.1%) and nearly three of four bars (73.5%) in this study reported at least one benefit from the law. Many bars that made negative comments about the law as reported in the qualitative analysis, also reported benefits, such as reduced maintenance and cleaning costs. Reduction in costs, including maintenance, cleaning, and staff absences can enhance overall profits, as can improved staff productivity.

Linnan et al. (2010) reported that 60% of the restaurants in their study were already smoke-free prior to the law. More than half of the participants in this study who did not report a benefit from the law either opened after the law went into effect or were smoke-free prior to the law. Restaurants and bars that adopted smoke-free policies ahead of the law may have actually lost a competitive edge once all restaurants and bars became smoke-free, as many smoke-free restaurants and bars advertised their smoke-free status and were listed on local, state and national smoke-free dining guide websites.

The qualitative analysis of this survey revealed that comments from restaurants tended to be more favorable to the law than comments from bars, with bars more often citing specific problems and recommending specific solutions. Restaurants more often mentioned health benefits, reported favorable results, and described customer support for the smoke-free law compared to bars. Overall, positive and negative comments were evenly split by frequency, with 40 positive comments and 44 negative. These results, however, do not suggest an even split

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between bars and restaurants, as only two restaurant owners/managers made negative comments about the law and many bar owners/managers made positive comments.

Qualitative analysis shows a group of North Carolina bars that continue to struggle with the smoke-free law, even five years after its launch. Many bars gave positive comments about the law, some even explaining some of the steps they took to prepare for the law, such as creating outdoor smoking areas, requiring employees to smoke in outdoor areas out-of-site to customers, and developing a healthier overall image. However, there appear to be some bars in North Carolina that have not made such a smooth transition, some of them because they do not have access to an outdoor area suitable for smokers, and others because they have not changed their smoker-friendly business model.

The researcher had some concern that bar owners and managers would be less likely to respond to the survey than those for restaurants. The reasons for this are that the restaurant association lobbied in support of the law, whereas the two lawsuits against the law were filed by bar owners (Washington et al, 2011). As noted in the methods section, the researcher took specific actions to make the survey more appealing to bar owners and managers. These efforts were made to increase bar participation and reduce nonresponse bias. This tactic seemed to work, because the response rate was similar between restaurants (23%) and bars (17%).

Limitations

There are several limitations to this study. As noted in Chapter I, data for this study were obtained through self-report and there was no attempt made to validate them. While the researcher had the survey questions reviewed by experts for content validity, they were not tested external validity or reliability.

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Efforts were made to increase participation and reduce nonresponse bias, but due to the controversial nature of the topic, participants may not have truthfully answered the questions on the survey, which affects the generalizability of the findings. Also, since North Carolina alcohol law is singular in the way it defines restaurants and bars, the results of this study might not be generalizable to any other state that may have different legal definitions of these businesses.

In a topic as controversial as smoking policies, there was certainly self-selection among participants. Those receiving the surveys with strong feelings about the smoke-free law – either positively or negatively – were probably more likely to complete the survey than those in the sample who had more neutral feelings about the law. Results of this self-selection are probably most evident in the strong content of many of the responses to the open-ended question, as presented in the qualitative analysis.

Also of interest is that many of the written comments from bar owners/managers describing negative outcomes from the smoke-free law covered the same set of topics, some with similar wording. In fact, four bar surveys arriving in the mail on the same day were quite similar to one another in their responses. While there is no way to confirm this, it is possible that this survey created an opportunity for some bar owners to work together in hopes of raising some specific concerns about the smoke-free law. Another possibility is that more than one bar owned by the same person may have been randomly selected for this study's sample, allowing one participant to complete more than one survey.

Implications for Research

This study just begins to scratch the surface on the impact of North Carolina's smoke-free law on the state's restaurants and bars. There are opportunities for researchers to do larger studies that increase understanding of how owners' and managers' knowledge of and attitudes

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toward cigarette smoking may have changed over time. The participants in this study had a lower percentage of smokers (22.2% versus 31.0%) than were found by Linnan et al. (2010) in their study prior to passage of the law. In fact the current smoking rate of survey participants was only slightly higher than the smoking prevalence among all North Carolina adults (20.2%) (NCSCHS, 2014). A follow-up study to determine whether the law has reduced smoking among North Carolina hospitality workers would provide useful data about the impact of the smoke-free law.

This study found current (30-day) use of electronic cigarettes among survey participants was 9.6%. While there are no available data for 30-day electronic cigarette use among North Carolina adults, the most recent national data show a much lower rate of adult current electronic cigarette use (2.6%) (King et al., 2014). Additional data are needed on all aspects of the use of these new products, including use among restaurant/bar employees and patrons.

The most interesting area for further research suggested by this study may be qualitative. Focus groups or in-depth open-ended interviews with bar and restaurants owners and managers could be very fruitful in understanding the specific issues the smoke-free law has raised, particularly for bars. This study found that some bar owners/managers noted increased business or no problems caused by the law, whereas others said the law killed their businesses. A qualitative research project could begin to shed understanding on what the differences are between bars that managed the change without suffering and those whose businesses suffered greatly.

Implications for Practice

Results of this research show an opportunity for North Carolina public health to develop educational programs that assist restaurants and bars with restricting the use of electronic cigarettes indoors and making outdoor customer areas smoke-free. According to Americans for

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Non-smokers' Rights, North Dakota, New Jersey and 300 municipalities around the U.S. restrict the use of electronic cigarettes inside restaurants and bars (ANR, 2014b). In addition, Iowa and 322 municipalities in the U.S. require outdoor customer areas of restaurants and bars to be smoke-free (ANR, 2014b). Survey participants showed moderate interest in learning more about these policy options. A total of 18.6% had interest in electronic cigarette policies and 14.3% had interest smoke-free outdoor policies. Current policies found in this study reveals some momentum towards addressing these health concerns with education and voluntary policy development, especially for electronic cigarette use inside restaurants. With 46.1% of restaurants already limiting electronic cigarette use indoors, and 33.9% of restaurants and 21.8% of bars already restricting smoking in some way outdoors, programs aimed at extending these voluntary policies to more restaurants and bars might be well-received.

A small number of bars reported low enforcement of the smoke-free law. The smoke-free law is enforced based on complaints filed by telephone or online by those who witness violations. The local health department then investigates then decides on any enforcement actions (NCTPCB, 2013). Where there is a perception of little enforcement effort, some bars may feel free to allow smoking, thereby attracting smoking patrons. Efforts to educate the public on how to report violations could help address these issues.

There may be an opportunity for public health to also reach out to local bars and see if there are remedies to other concerns raised by survey participants. Science makes it clear that secondhand smoke is too hazardous to allow indoors (USDHHS, 2006a), so allowing smoking in some bars or clubs or at certain hours would endanger the health of bar workers and patrons. There appears to be a specific problem for bars without access to an outdoor area to use as a smoking area. Approximately a quarter of businesses responding to the survey reported having

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no outdoor customer areas. Based on the qualitative findings, landlocked businesses that are not allowed or able to claim portions of their sidewalks or parking spaces for smoking areas, or formerly smoky bars that have failed to update their business models to allow for smoke-free success, are the ones that have suffered losses. Approaching bars that have successfully transitioned to smoke-free status to document their steps for success and developing a toolkit for success would be one way to support bars that are still struggling with the transition.

There may be a real opportunity for public health to partner with local government, community colleges, small business centers, or other business support organizations to assist local bars in developing creative solutions to barriers that have held them back from fully embracing the new smoke-free reality. Public health has an obligation to support healthy worksites that also provide important jobs for individuals in the community. Offering assistance to update business models for smoke-free bars is one way public health could partner with employers in North Carolina communities, so more local businesses provide the required smoke-free environment and thrive.

Conclusion

Results of this study show that in many ways North Carolina's smoke-free law has been successful. Specifically, restaurant and bar management are familiar with the law and almost all report compliance. More than half of the restaurants and bars in the study report reduced exposure to and complaints about secondhand smoke as benefits delivered by the law. Other benefits from the law were noted as well, particularly reduced cleaning and maintenance costs and improved staff health. While restaurants clearly perceive the impact of the law more positively, many bars also made positive comments and reported receiving benefits from the law.

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In fact nearly eight of ten restaurants and nearly three of four bars represented in the study reported at least one benefit from the smoke-free law.

The study uncovered a small group of bars that continue to experience problems caused by the smoke-free law, including customer and business loss. These losses appear to be strongest where bars do not have access to outdoor areas for smokers, where enforcement might be lax, and where their business-models may have been most smoker-friendly. Some restaurants and bars report complaints from a number of both customers and employees about not having a place to smoke indoors.

Some bars and restaurants in North Carolina, however, have proactively implemented stringent policies to protect the health of their patrons and employees, including smoke-free outdoor customer areas and restricting electronic cigarette use indoors. Public health and its partners should move forward with programs to educate and support these changes, especially as the science base continues to grow showing these more restrictive policies are protective of the public's health.

There are clear opportunities for further research in this area, such as exploring what specific actions and adjustments have helped restaurants and some bars move smoothly into operating smoke-free compared to businesses, bars in particular, that have struggled with the change. Learning more about bars' transitions and struggles can only help other states and communities deal with similar policy changes in the future, and perhaps discover ways to help more businesses make the transition to working smoke-free.

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APPENDIX A

NOTIFICATION OF EXEMPT CERTIFICATION



EAST CAROLINA UNIVERSITY

University & Medical Center Institutional Review Board Office

4N-70 Brody Medical Sciences Building • Mail Stop 682

600 Moye Boulevard • Greenville, NC 27834

Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/irb Notification of Exempt

Certification

From: Social/Behavioral IRB

To: Celia Staples

CC: Tara Gallien

Date: 11/21/2014

Re: UMCIRB 14-001677

North Carolina Restaurant and Bar Owners/Managers Respond to Smoke-free Issues

I am pleased to inform you that your research submission has been certified as exempt on 11/21/2014 . This study is eligible for Exempt Certification under category #2 .

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

N.C. RESTAURANTS/BARS RESPOND TO SMOKE-FREE ISSUES

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification request at least 30 days before the end of the five year period.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418

IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

Study.PI Name: Celia Staples

Study.Co-Investigators: Tara Gallien, Ryan Martin

APPENDIX B

RESTAURANT INFORMED CONSENT

DATE

Dear Restaurant Owner/Manager:

Researchers at East Carolina University (ECU) study problems in society that can lead to improving the lives of people like you and others. In January 2010 a law went into effect making the inside of all restaurants and bars in North Carolina smoke-free (N.C. General Statute 130A-497). Researchers have tried to learn how the law has impacted restaurants, but, until now, no studies have been done on how restaurant owners/managers like you have experienced the smoke-free law. I am conducting this study to learn how the law is impacting restaurant owners and their businesses and to find out how owners handle areas and products not covered by the smoke-free law, such as outside seating areas and electronic cigarettes.

Your restaurant has been chosen to have a representative complete the survey. Your completed, mailed survey shows that you have been informed about and have agreed to participate in the survey. You should not complete this survey if you are not an owner and/or manager of a North Carolina restaurant, or if you are under the age of 18.

Completing the survey should take no more than 10 – 15 minutes of your time. Once you have completed the survey, please place it into the pre-stamped envelope and return it to me by _____. There is no risk and no cost to your participation. Your information will be saved onto my encrypted, password protected laptop computer, and will be double deleted after two years. Neither you nor your restaurant will be identified in any writing or speaking I do about this research project. Please call East Carolina University's Office of Research Integrity & Compliance (ORIC) at 252-744-2914 for questions about your rights as a research participant.

Completing the survey will allow your voice to be heard on the important topics of North Carolina's smoke-free law, electronic cigarette use in restaurants and smoke-free outside seating areas for restaurant customers. **This study will rely on information that can only come from you and other restaurant owners/managers.** I am very grateful to you for your participation.

If you have any questions about this research either before or after completing the survey, you can contact me at 704-905-9677, 8 a.m. until 8 p.m., or anytime at staplesce12@students.ecu.edu. If you would like more information on North Carolina's smoke-free law or other tobacco issues, visit www.smokefree.nc.gov or call (919) 707-5400.

Sincerely yours,

Celia Houston Staples, Graduate Student, Department of Health Education & Promotion
East Carolina University
13539 Edgetree Drive
Pineville, N.C. 28134
Phone (704) 905-9677

APPENDIX C

BAR INFORMED CONSENT

DATE

Dear Bar Owner/Manager:

Researchers at East Carolina University (ECU) study problems in society that can lead to improving the lives of people like you and others. In January 2010 a law went into effect making the inside of all restaurants and bars in North Carolina smoke-free (N.C. General Statute 130A-497). Researchers have tried to learn how the law has impacted restaurants, but, until now, no studies have been done on how bar owners/managers like you have experienced the smoke-free law. I am conducting this study to learn how the law is impacting bar owners and their businesses and to find out how owners handle areas and products not covered by the smoke-free law, such as outside seating areas and electronic cigarettes.

Your bar has been chosen to have a representative complete the survey. Your completed, mailed survey shows that you have been informed about and have agreed to participate in the survey. You should not complete this survey if you are not an owner and/or manager of a North Carolina bar, or if you are under the age of 18.

Completing the survey should take no more than 10 – 15 minutes of your time. Once you have completed the survey, please place it into the pre-stamped envelope and return it to me by _____. There is no risk and no cost to your participation. Your information will be saved onto my encrypted, password protected laptop computer, and will be double deleted after two years. Neither you nor your bar will be identified in any writing or speaking I do about this research project. Please call East Carolina University's Office of Research Integrity & Compliance (ORIC) at 252-744-2914 for questions about your rights as a research participant.

Completing the survey will allow your voice to be heard on the important topics of North Carolina's smoke-free law, electronic cigarette use in bars and smoke-free outside seating areas for bar customers. **This study will rely on information that can only come from you and other bar owners/managers.** I am very grateful to you for your participation.

If you have any questions about this research either before or after completing the survey, you can contact me at 704-905-9677, 8 a.m. until 8 p.m., or anytime at staplesce12@students.ecu.edu. If you would like more information on North Carolina's smoke-free law or other tobacco issues, visit www.smokefree.nc.gov or call (919) 707-5400.

Sincerely yours,

Celia Houston Staples, Graduate student, Department of Health Education & Promotion
East Carolina University
13539 Edgetree Drive
Pineville, NC 28134
(704) 905-9677

APPENDIX D
RESTAURANT SURVEY

North Carolina Smoke-free Restaurant Survey

This survey should take no more than 10-15 minutes to complete. Please complete this survey and mail it back in the envelope provided by _____. Many thanks to you for your participation.

Please place an X here to show that you have been informed of and agree to participate in the survey.

Directions: Please mark your selected answers with an X.

QUESTIONS ABOUT THE CURRENT LAW

		Yes	No
1.	Are you aware of North Carolina’s law requiring restaurants, bars and other hospitality businesses to be smoke-free inside? <i>(Please mark the best answer)</i>		
2.	In the last 12 months are you aware of customer complaints about breathing secondhand smoke inside your restaurant? <i>(Please mark the best answer)</i>		
3.	In the last 12 months are you aware of employee complaints about breathing secondhand smoke inside your restaurant? <i>(Please mark the best answer)</i>		
4.	In the last 12 months are you aware of customer complaints about not having a place to smoke inside your restaurant? <i>(Please mark the best answer)</i>		
5.	In the last 12 months are you aware of employee complaints about not having a place to smoke inside your restaurant? <i>(Please mark the best answer)</i>		

6. When the smoke-free law was passed, there were a number of benefits expected for restaurants. Some of these benefits are listed below. **What has your restaurant experienced because of the smoke-free law?** *(Please mark all that apply)*

- | | |
|--|---|
| <input type="checkbox"/> Customers breathe less secondhand smoke indoors | <input type="checkbox"/> Improved Staff Health |
| <input type="checkbox"/> Increase in number of customers | <input type="checkbox"/> Increase in number of families coming in |
| <input type="checkbox"/> Decrease in maintenance and cleaning costs | <input type="checkbox"/> Increased staff productivity |
| <input type="checkbox"/> Fewer complaints about smoke | <input type="checkbox"/> Other <i>(please describe)</i> |

QUESTIONS ABOUT ELECTRONIC CIGARETTES

Electronic cigarettes, also called e-cigarettes, are not included under the smoke-free law, but restaurants are free to create their own policies about their use.

N.C. RESTAURANTS/BARS RESPOND TO SMOKE-FREE ISSUES

7. Which of the following best describes your restaurant’s policy on the use of electronic or e-cigarettes? (Please mark the best answer)

- Use is not allowed inside Use is allowed in certain areas inside
- Use is allowed anywhere inside

Yes No

8.	Are you aware of complaints from customers about others’ use of e-cigarettes inside? (Please mark the best answer)		
9.	Are you aware of complaints from employees about others’ use of e-cigarettes inside? (Please mark the best answer)		
10.	Does use of e-cigarettes inside your restaurant make enforcing the state’s smoke-free law more difficult? (Please mark the best answer)		
11.	Are you interested in learning more about how to limit the use of e-cigarettes inside your restaurant? (Please mark the best answer)		

QUESTIONS ABOUT OUTSIDE SEATING AREAS

12. Does your restaurant have any outside seating for customers? (Please mark the best answer)
(If “No” skip to question 15)

- Yes No

13. The current state smoke-free law prohibits smoking inside your restaurant (enclosed areas). Which statement best describes your restaurant’s policy on outside seating areas (unenclosed) for customers? (Please mark best answer)

- Smoking allowed only in designated areas outdoors Smoking allowed anywhere outdoors
- We don’t have a policy or rules about smoking outdoors Outdoor area smoke-free

14. Are you interested in learning more about making outside seating areas for customers smoke-free? (Please mark the best answer)

- Yes No

N.C. RESTAURANTS/BARS RESPOND TO SMOKE-FREE ISSUES

ADDITIONAL QUESTIONS

		Yes	No
15.	Have you smoked at least 100 cigarettes (five packs) in your entire life? <i>(Please mark the best answer)</i>		
16.	Have you smoked any cigarettes in the past 30 days? <i>(Please mark the best answer)</i>		
17.	Have you used an electronic cigarette in the past 30 days? <i>(Please mark the best answer)</i>		

18. What is your position in the restaurant? *(Please mark the best answer)*

Owner Manager Owner/Manager Other: _____

19. How many years and months do you estimate you have been involved with the hospitality industry in North Carolina?

___ Years ___ Months

20. Do you have any additional feedback about your experience with or feelings about the smoke-free law you would like to share?

APPENDIX E
BAR SURVEY

North Carolina Smoke-free Bar Survey

This survey should take no more than 10-15 minutes to complete. Please complete this survey and mail it back in the envelope provided by _____. Many thanks to you for your participation.

Please place an X here to show that you have been informed of and agree to participate in the survey.

Directions: Please mark your selected answers with an X.

QUESTIONS ABOUT THE CURRENT LAW

		Yes	No
1.	Are you aware of North Carolina's law requiring restaurants, bars and other hospitality businesses to be smoke-free inside? <i>(Please mark the best answer)</i>		
2.	In the last 12 months are you aware of customer complaints about breathing secondhand smoke inside your bar? <i>(Please mark the best answer)</i>		
3.	In the last 12 months are you aware of employee complaints about breathing secondhand smoke inside your bar? <i>(Please mark the best answer)</i>		
4.	In the last 12 months are you aware of customer complaints about not having a place to smoke inside your bar? <i>(Please mark the best answer)</i>		
5.	In the last 12 months are you aware of employee complaints about not having a place to smoke inside your bar? <i>(Please mark the best answer)</i>		

6. When the smoke-free law was passed, there were a number of benefits expected for bars. Some of these benefits are listed below. **What has your bar experienced because of the smoke-free law?** *(Please mark all that apply)*

- Customers breathe less secondhand smoke indoors
- Improved Staff Health
- Increase in number of customers
- Decrease in maintenance and cleaning costs
- Increased staff productivity
- Fewer complaints about smoke
- Other *(please describe)* _____

QUESTIONS ABOUT ELECTRONIC CIGARETTES

7. Electronic cigarettes, also called e-cigarettes, are not included under the smoke-free law, but restaurants are free to create their own policies about their use. **Which of the following best describes your bar's policy on the use of electronic or e-cigarettes?** *(Please mark the best answer)*

N.C. RESTAURANTS/BARS RESPOND TO SMOKE-FREE ISSUES

- Use is not allowed inside Use is allowed in certain areas inside
 Use is allowed anywhere inside

Yes No

8.	Are you aware of complaints from customers about others' use of e-cigarettes inside? <i>(Please mark the best answer)</i>		
9.	Are you aware of complaints from employees about others' use of e-cigarettes inside? <i>(Please mark the best answer)</i>		
10.	Does use of e-cigarettes inside your restaurant make enforcing the state's smoke-free law more difficult? <i>(Please mark the best answer)</i>		
11.	Are you interested in learning more about how to limit the use of e-cigarettes inside your bar? <i>(Please mark the best answer)</i>		

QUESTIONS ABOUT OUTSIDE SEATING AREAS

12. Does your bar have any outside seating for customers? *(Please mark the best answer) (If "No" skip to question 15)*

- Yes No

13. The current state smoke-free law prohibits smoking inside your bar (enclosed areas). Which statement best describes your bar's policy on outside seating areas (unenclosed) for customers? *(Please mark best answer)*

- Smoking allowed only in designated areas outdoors Smoking allowed anywhere outdoors
 We don't have a policy or rules about smoking outdoors Outdoor area smoke-free

14. Are you interested in learning more about making outside seating areas for customers smoke-free? *(Please mark the best answer)*

- Yes No

ADDITIONAL QUESTIONS

Yes No

15.	Have you smoked at least 100 cigarettes (five packs) in your entire life? <i>(Please mark the best answer)</i>		
16.	Have you smoked any cigarettes in the past 30 days? <i>(Please mark the best answer)</i>		

N.C. RESTAURANTS/BARS RESPOND TO SMOKE-FREE ISSUES

17.	Have you used an electronic cigarette in the past 30 days? <i>(Please mark the best answer)</i>		
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18. What is your position in the bar? *(Please mark the best answer)*

Owner Manager Owner/Manager Other: _____

19. How many years and months do you estimate you have been involved with the hospitality industry in North Carolina?

___ Years ___ Months

20. Do you have any additional feedback about your experience with or feelings about the smoke-free law you would like to share?

APPENDIX F

LIST OF FAST FOOD RESTAURANTS REMOVED FROM SAMPLING FRAME

Arby's	McAllister's Deli
Biscuitville	McDonald's
Bojangle's	Moe's Southwest Grill
Boston Market	Panda Express
Bruegler's Bagels	Panera Bread
Buffalo Wild Wings	Pizza Hut
Burger King	Pizza Inn
Captain D's	Popeye's
Caribou Coffee	Q'doba
Church's Chicken	Quizno's
Cook Out	Salsarita's
Cracker Barrel	Smithfield's
Dairy Queen	Sonic
Five Guys	Starbucks
Golden Corral	Subway
Hardee's	Taco Bell
IHOP	Tropical Smoothies and Cafe
Jack in the Box	Waffle House
Jason's Deli	Wendy's
Jersey Mike's	Which Wich?
Jimmy-Johns	Zoe's
KFC	
Long John Silver's	

APPENDIX G

FOLLOW-UP POSTCARD

Reminder: Smoke-Free Survey
Please complete and return by Feb. 13th

THANKS, if you have completed the survey.

Let your voice be heard. Please complete the survey and return as soon as possible.

If you need a **fresh copy** mailed, emailed or faxed to you, please let us know.

Contact: Celia Staples, graduate student, East Carolina University
(704) 905-9677 or staplesce12@students.ecu.edu

Celia Staples
13539 Edgetree Drive
Pineville, NC 28134

Dear Owner/Manager:

You should have received a brief survey during the last two weeks. It included questions about the smoke-free law, smoke-free outdoor areas and e-cigarettes.

Your participation is vital to the success of this research aimed at informing policy makers and public health of needed policy and program development.

Please respond soon so your voice can be heard on these important issues.

APPENDIX H

COMMENTS CODEBOOK

CODE	MEANING
CLN	Mentions impact on cleaner appearance/smell of restaurants
CUST+	Mentions positive customer reaction to law
CUST-	Mentions negative customer reaction to law
ECGS	Mentions e-cigs as a problem or possible problems
EMP	Mentions problems with employees who smoke
ENF	Mentions difficulties with enforcement
GVT	Mentions government intrusion
HLTH	Mentions health improvement
LOSS	Mentions loss of business or customers
LV	Loves the law
MORE	Wants to see additional laws passed on smoking or e-cigs
NONCOM	Mentions being noncompliant – allowing smoking
NOOUT	Issues with not having adequate outdoor space for smoking
NOPROB	No problems with the law as it is
OUT+	Mentions outdoor areas should be smoke-free
OUT-	Mentions outdoor areas should not be smoke-free
PRVT	Mentions private clubs should be exempt from law
SFBL	Was smoke-free before the law went into effect
SUPT	Supports the law
TAX	Mentions the state is losing tax funds because of loss of business
TIME	Need for time-exemption to allow smoking late at night