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EXAMINING ATTITUDES, PERCEPTIONS, AND OBSERVATIONS OF TOBACCO USE AND COMPLIANCE AT A SMALL PRIVATE LIBERAL ARTS COLLEGE IN KENTUCKY WITH A DESIGNATED AREA TOBACCO POLICY

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EXAMINING ATTITUDES, PERCEPTIONS, AND OBSERVATIONS OF TOBACCO
USE AND COMPLIANCE AT A SMALL PRIVATE LIBERAL ARTS COLLEGE IN
KENTUCKY WITH A DESIGNATED AREA TOBACCO POLICY

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Education in the
College of Education
at the University of Kentucky

By
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Director: Dr. Melinda Ickes, Associate Professor of Kinesiology and Health Promotion
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2019

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ABSTRACT OF DISSERTATION

EXAMINING ATTITUDES, PERCEPTIONS, AND OBSERVATIONS OF TOBACCO USE AND COMPLIANCE AT A SMALL PRIVATE LIBERAL ARTS COLLEGE IN KENTUCKY WITH A DESIGNATED AREA TOBACCO POLICY

A multitude of higher education institutions have adopted comprehensive smoke- and tobacco-free policies to minimize tobacco use, increase quit attempts, and reduce exposure to secondhand smoke on campus. However, the majority of campuses across the U.S. still have non-comprehensive policies and/or designated tobacco use areas. Given the limited research in this area, the purpose of this dissertation was to assess the attitudes, perceptions, tobacco use behaviors, and actual observational compliance of students, faculty, and staff on a college campus that possesses a designated area tobacco policy.

This two-phased cross-sectional study included both direct observations and online survey data collection. For Phase I, to assess on-campus tobacco use behaviors and compliance with a designated tobacco area policy, during the Fall semester 2018 direct observations were made in 10-minute intervals throughout the typical work/class day during Mondays, Wednesdays, and Fridays for two consecutive weeks in the designated tobacco use areas on campus. Data were summarized using descriptive statistics and chi-squared tests for independence. For Phase II, a 36-item online survey was emailed to all staff, faculty, and students to assess their overall attitudes and perceptions regarding a designated tobacco area policy. Data were analyzed using descriptive statistics and individual chi-squared assessments for each item. Items were also combined to create relevant subscales; ANOVA was used for comparison purposes between demographic factors.

Phase I: A total of 239 tobacco observations were made on campus during the two-week period. Significant relationships were discovered between sex and location ($p < 0.01$), sex and compliance ($p < 0.01$), time and location ($p < 0.01$), as well as time and compliance ($p < 0.05$). Males were more likely to be found using tobacco in general, either in compliance with the designated tobacco area policy or in violation of the policy. Phase II: A total of 185 staff, 88 faculty, and 332 students completed the online survey. Response rate was 33% for employees and 20% for students. Significant differences emerged when looking at the appeal of the designated areas on campus when comparing staff, faculty, or student status ($p = 0.00$) as well as tobacco use status ($p = 0.00$). Social influences yielded significance when comparing campus status (staff, faculty, or student; $p = 0.00$) as well as

when comparing tobacco-users to non-users ($p = 0.001$). A significant difference was also found when comparing perceptions of designated tobacco areas (gazebos) and tobacco use between tobacco-users and non-users ($p = 0.03$).

Findings provide quantitative evidence that tobacco is being used on campus, in both designated and non-designated areas. Male students were observed more frequently, regardless of compliant status. In addition, there was a strong correlation with observations and certain times of day as well as the location of observations, reinforcing the need for compliance efforts and availability of tobacco treatment. Additional research on college campuses with designated tobacco areas is necessary in order to better understand the overall impact that such policies have on college campuses, including whether designated policies may make it difficult for individuals on campus to either quit using tobacco or to stay quit. In addition, given the number of individuals using tobacco on campus, it would be beneficial to collect air quality data on campuses with designated areas, in comparison to campuses with comprehensive tobacco-free policies.

KEYWORDS: community health, health policy, tobacco control policies, tobacco

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DEDICATION

To my wife. For all of your love, patience, and support that made this possible. Thank
you.

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CHAPTER 1. INTRODUCTION AND STATEMENT OF PROBLEM

1.1 Statement of Problem

Although the number of campuses adopting tobacco policies is increasing, tobacco use still remains a concern on college campuses nationwide (ANR, 2017; National Center for Education Statistics, 2016). As pointed out by Plaspohl et al. (2012), upon further review of the National Healthy Campus 2010 data, sufficient progress was not made on the four key tobacco health objectives for Healthy People 2010 (CDC, 2008; Plaspohl et al., 2012; USDHHS, 2000). Perhaps this is why Healthy People 2020, along with Healthy Campus 2020, reinforced the rapidly changing tobacco landscape, with the use of emerging tobacco products increasing among youth and an estimate of 58 million Americans remaining exposed to secondhand smoke each year (Office of Disease Prevention and Health Promotion, 2017). These trends reinforce the importance of comprehensive tobacco-free policies. While campus policies provide an opportunity to create supportive environments that prevent tobacco use and initiation, there is a need to gain insight regarding the attitudes toward, perceived effectiveness of, and compliance with campus tobacco policies. Considering the majority of campuses across the U.S. currently have designated tobacco policies, there is a need to gain further insight from those attending and working on campuses with these policies. This holds especially true when considering the positive effects of social interaction that students may receive while smoking (Lochbihler et al., 2014). The social interaction that occurs while smoking on campus in designated areas may significantly increase perceived rewards associated with smoking and increase the frequency of visits that individuals may then make to those areas (Lochbihler et al., 2014; Bennett et al., 2017). As college and university campus

tobacco policies impact both individual and environmental changes, a social ecological approach may serve as the best framework when it comes to understanding the perceptions and attitudes on campuses with designated tobacco area policies. Hall et al. (2015) pointed out that strong tobacco control policies (i.e., comprehensive policies) result in a shift of the social norms surrounding tobacco use, which may be significant enough to elicit decreased tobacco usage. While social norms have been linked to tobacco use (De Vries et al., 1995; Gryczynski & Ward, 2011; Lazuras et al., 2011), less is known regarding the impact campus designated area policies may have on social norms of tobacco use.

1.2 Theoretical Framework

When considering any scholarly research in the field of health promotion, it is key to understand what health promotion is. According to the Joint Committee on Health Education and Health Promotion Terminology, health promotion is “any planned combination of educational, political, environmental, regulatory, or organizational mechanisms that support actions and conditions of living conducive to the health of individuals, groups, and communities” (Joint Committee, 2001, p.101). Theoretical approaches should be utilized in devising any research within this field. As pointed out by Golden and Earp (2012), the field of health promotion focuses a lot on individual lifestyle change. However, it is valuable to look at the whole picture when it comes to public policy change that may impose a larger population impact, including the impact on individual behavior change. As Golden and Earp (2012) also pointed out, it is imperative to remember that individuals are a part of a larger whole, a social system where interactions with not

only other individuals but also the environment in which they live may lead to certain health outcomes (Sallis, Owen, & Fisher, 2008; Stokols, 1992; Golden & Earp, 2012). Interestingly, the social ecological model enables the recognition of individuals as being deeply rooted inside of the larger social systems while being able to describe interactive characteristics of individuals and the environments that they exist in that underlie their health outcomes (Golden & Earp, 2012; Sallis, Owen, & Fisher, 2008; Stokols, 1992). When a program is developed that seeks to make changes to either individuals or environments it becomes necessary to understand and identify which level of intervention is necessary in order to achieve the desired results. The social ecological model was broken down into a multilevel framework by McLeroy et al. (1988) that contains five levels of influence. These levels of influence are each specific to health behavior while interacting with each other and serve to reinforce behavior. These levels of influence are intrapersonal factors, interpersonal processes and primary groups, institutional factors, community factors, and public policy (Golden & Earp, 2012). Furthermore, within the health promotion field, social ecological approaches have been used as foundations to better understand determinants of behaviors such as smoking (Golden & Earp, 2012). As a result, ecological approaches have become more commonplace in the field of health promotion as a foundation for planning and evaluation models and to better understand determinants of behaviors such as smoking and tobacco use (Commit Research Group, 1991; De Vries et al., 2003).

Since college and university campus tobacco policies impact both individual and environmental changes, a social ecological approach may serve best to guide the proposed study. Ecological models assume not only that there are multiple levels of influence that

exist, but that these levels are interactive and reinforcing (Golden & Earp, 2012), and all aspects of the environment have a cumulative effect on health (Stokols, 1992, 1996). Individuals are potentially affected differently within the same environment, which may lead to differing health outcomes. There is a need to understand varying beliefs and perceptions of individuals attending and/or working on a college campus with a designated tobacco use area. Research exploring the intrapersonal and interpersonal factors that play a key role, as well as institutional factors and community factors that may promote or inhibit tobacco use behaviors is warranted and the social ecological theoretical framework guided the study reported here.

1.3 Purpose Statement

The purpose of this study was to assess the attitudes, perceptions, and social factors related to tobacco and designated tobacco areas concerning students, faculty, and staff on a college campus in Kentucky. Direct observational data were also collected to assess compliance with the designated tobacco area policy. Survey data were collected to investigate the appeal to the designated tobacco areas, social influences of tobacco and the designated tobacco areas, and perceptions of the designated tobacco area policy. Lessons learned may contribute to a better understanding of designated tobacco area policies on college and university campuses.

1.4 Research Questions

The resulting research manuscripts are described in detail in Chapter IV and V. The following research questions and associated hypotheses were explored.

R1. What is the overall perception of impact of the designated tobacco areas (gazebos) and tobacco use of students, faculty, and staff?

R.1.1: Are there significant differences in perception when comparing biological sex?

H1.1: No significant difference in perception of designated tobacco areas (gazebos) and tobacco use will be observed for biological sex.

R.1.2: Are there significant differences in perception when comparing staff, faculty, and students?

H1.2: No significantly difference in perception of designated tobacco areas (gazebos) and tobacco use will be observed for campus status (staff, faculty, or student).

R.1.3: Are there significant differences in perception when comparing tobacco use status?

H1.3: Tobacco users will not have a significantly different perception of designated tobacco areas (gazebos) and tobacco use in comparison to non-users.

R2. What is the general appeal of the designated tobacco use areas on campus when considering students, faculty, and staff?

R.2.1: Are there significant differences in the appeal of the designated tobacco use areas on campus when comparing biological sex?

H2.1: There will be no significant difference in perceived appeal of the designated tobacco use areas on campus by biological sex.

R.2.2: Are there significant differences in gazebo appeal when comparing students, faculty, and staff?

H2.2: Significantly different appeal to the designated tobacco use areas on campus will not be observed when comparing campus status.

R2.3: Are there significant differences in gazebo appeal when comparing tobacco use status?

H2.3: Tobacco users will not have a significantly different appeal to the designated tobacco use areas on campus when compared to non-users.

R3. What are the relationships to social influences of the designated tobacco area policy among students, faculty, and staff?

R3.1: Are there significant differences in social influences of the designated tobacco areas when comparing biological sex?

H3.1: There will be no significantly different responses to social influences of the designated tobacco areas when comparing biological sex.

R3.2: Are there significant differences in social influences of the designated tobacco areas when comparing students, faculty, and staff?

H3.2: Significantly different responses to social influences of the designated tobacco areas will not be observed when comparing campus status.

R3.3: Are there significant differences in social influences of the designated tobacco areas when comparing tobacco use status?

H3.3: Tobacco users will not have a significantly different response to social influences of designated tobacco areas compared to non-users.

R4. What is the observed compliance of the designated tobacco area policy?

R4.1: Are there significant differences in observed compliance of the designated tobacco area policy when comparing biological sex?

H4.1: There will not be a significantly higher number of male observations compared to females.

R4.2: Are there significant differences in observed tobacco products being used?

H4.2: There will not be a significantly higher number of cigarette observations than all other tobacco products.

R4.3: Are there significant differences in observations when considering observation time?

H4.3: There will not be a significant difference in tobacco observations when considering observation times.

R4.4: Are there significant differences in observations when considering designated area location?

H4.4: A significant difference in tobacco observations will not be observed between the designated area locations.

1.5 Significance of the Study to Health Promotion

Tobacco remains a serious threat to the health of our population in the United States (US Department of Health & Human Services, 2014). Increasing numbers of college and university campuses have been proactive in developing campus tobacco policies in an effort to help mitigate the negative health impacts of tobacco and improve the health of all individuals that are affected (Russette et al., 2014). The policy changes enacted on these campuses may serve as catalysts for positive health impacts, especially regarding tobacco-related issues (Jancey et al., 2014). However, there appears to be a lack of uniformity when it comes to strength of campus tobacco policies nationally. The fact that the majority of

campuses across the U.S. have designated tobacco policies is concerning, especially as the smoking rates continue to elevate. Policies that have exemptions in the form of designated areas are not as effective in decreasing tobacco use (Fallin, Roditis, Glantz, 2014; Lee, Ramney, Goldstein, 2013), may create confusion, which tends to make policies more difficult to implement and enforce, and still leave individuals exposed to secondhand smoke (Roditis et al., 2014). Researching policies with designated areas is necessary (Borders et al., 2005), particularly as health promotion professionals advocate for evidence-based comprehensive tobacco-free campus policies.

1.6 Delimitations

This study included all students, faculty, and staff members at one small private college campus in Kentucky. During Fall semester 2018 a survey was conducted. In addition, during that time period direct observational data were collected on campus regarding compliance with the existing tobacco policy.

1.7 Limitations

Individuals (i.e., students and employees) were recruited from the targeted campus, a private college consisting of a fairly small population. Therefore, results may not be generalizable to other campuses. Survey data were self-report in nature, and there is a possibility of receiving socially desirable and/or dishonest responses. Furthermore, direct observational measurements may have been affected by a variety of factors, including: weather, campus events, construction, and other unforeseen circumstances that may temporarily alter the typical patterns of tobacco users on campus.

1.8 Operational Definitions

Terms related to this study are defined in this section.

1. Smoke-free policy: a smoke-free policy is one that limits or eliminates the use of smoke-producing tobacco products, such as cigarettes, cigars, cigarillos, mini-cigars, and hookah. It may include new products that emit a smoke-like substance, like e-cigarettes. The primary concern of a smoke-free policy is exposure to secondhand smoke (Tobacco Free College Campus Initiative, 2016).
2. Tobacco-free policy: a tobacco-free policy limits or eliminates the use of any tobacco product, including, but not limited to, cigarettes, cigars, cigarillos, mini-cigars, hookah, spit tobacco, snus, and other smokeless products. It also oftentimes includes new products, such as electronic cigarettes. The primary concern of a tobacco-free policy is the overall health and well-being of all members of the campus community (Tobacco Free College Campus Initiative, 2016).
3. Designated tobacco areas and/or designated areas refer to restricted areas provided on campus where tobacco products are allowed to be used.

1.9 Conclusion

This chapter served to introduce the negative impact of tobacco on the population, and furthermore on college and university campuses. The health risks and social impacts associated with tobacco utilization were presented, as well as the clear need for additional research regarding the attitudes and perceptions toward designated tobacco area policies. Considering the lack of data that exist regarding such policies, it helps to shape the

purpose of this study and the research questions that follow. Also, important issues to consider regarding the delimitations and limitations for the study were provided.

CHAPTER 2. REVIEW OF THE LITERATURE

2.1 Introduction

In 1964 the very first Surgeon General's report was developed, creating a call for action to combat tobacco. However, tobacco utilization somehow remains as the top preventable cause of premature mortality in the United States (US Department of Health & Human Services, 2014). As a result, tobacco use still poses as a serious threat in the United States. An estimated 480,000 deaths annually are associated with tobacco use (US Department of Health & Human Services, 2014). Even more alarming is the harmful effects of smoking that affect nonsmokers due to secondhand smoke exposure. An estimated 88 million people in the United States are affected by secondhand smoke. The effects from this exposure include increased risk of chronic conditions such as heart disease, respiratory issues, and lung cancer (CDC, 2012).

The health effects of tobacco use are well documented, with cigarette smoking remaining as the most important risk factor linked to lung cancer (American Cancer Society, 2014; U.S. Department of Health & Human Services, 2014; U.S. Department of Health & Human Services, 2006). According to the USDHHS, smoking leads to disease and disability and harms nearly every organ in the body (USDHHS, 2014). These diseases and disabilities include: cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease, or COPD (USDHHS, 2014). More than 16 million Americans are reported to actually be living with a disease caused by smoking (USDHHS, 2014).

According to the CDC, 15.5% of all American adults (37.8 million people) aged eighteen years or older reported as being cigarette smokers, with 17.5% of the male and

13.5% of the female population reporting as being cigarette smokers (CDC, 2018). According to the Substance Abuse and Mental Health Services Administration, each day around 2,000 people younger than 18 years of age smoke their first cigarette while an estimated 300 people under the age of 18 become daily cigarette smokers (Substance Abuse and Mental Health Services Administration, 2017). As stated by the USDHHS, if smoking does continue at the current rate in the United States among its youth population, roughly 5.6 million Americans under the age of 18 are expected to die prematurely from smoking-related illnesses, which represents about one in every thirteen Americans aged 17 years or younger that are alive today (USDHHS, 2014). Many of these young adults will become college students and may be reached and positively impacted through campus tobacco policies and initiatives that aim to help minimize the exposure and risk of tobacco utilization.

2.2 Purpose of Current Review

In this chapter, the main investigator reviewed previous studies conducted regarding tobacco policies, highlighting those on college and university campuses. An emphasis in this literature review was placed on information regarding designated tobacco area policies as well as research concerning attitudes toward, perceived effectiveness, and perceived compliance of individuals on campuses with varying tobacco policies.

2.3 Methods

In order to locate the literature for this review, a variety of methods were utilized. PubMed, EBSCO, and Academic Search Premiere were utilized in an effort to find relevant peer-reviewed articles. Key terms that were used included: “tobacco”, “tobacco control”, “tobacco policy”, “tobacco control policies”, “tobacco free”, “smoke free”, and “college health”. General tobacco related information and statistics were also gathered from national organization websites such as the Centers for Disease Control and Prevention, American Nonsmokers’ Rights Foundation, American Cancer Society, and the American College Health Association. Dates included in this literature search were initially broad to capture all literature, starting with 2005 until 2019, but most tobacco policy research, particularly on college campuses was published after the year 2005.

2.4 Impact of Tobacco Use on College and University Campuses

It is no surprise that the same negative health and disease risk factors hold true for the population on college and university campuses nationwide. Tobacco utilization is a severe threat to the health of all individuals involved in the college and university campus setting, considering the numerous people that live on, attend, work on, and visit such a campus on a daily basis. Negative impacts associated with tobacco utilization for any student or employee on campus include increased medical care coverage costs attributable to smoking, increased absenteeism, decreased productivity, increased injuries, and increased rates for accidents (Batenburg & Reinken, 1990; Halpern, Rentz, Shikiar, Khan, 2001; Hocking, Grain, & Gordon, 1994; Kristein, 1983; MacKenzie, Bartecchi, & Schrier, 1994; Penner & Penner, 1990; Ryan, Zwerling, & Jones, 1996;

Ryan, Zwerling, & Orav, 1992). Findings from a nationally representative sample of adults in the U.S. revealed smoking and tobacco use continues to be of concern with reported prevalence of cigarette smoking 16.7% among 18-24 year olds., 20% among those 25-44 years, and 18.0% among those 45-64 years (Centers for Disease Control and Prevention, 2015). According to the American College Health Association National College Health Assessment Spring 2018 executive summary, 10.1% of male and 6.2% of female college students reported cigarette use in the past 30 days, 12.8% of male and 7.3% of female students reported e-cigarette use within the last 30 days, and 3.3% of male and 2.4% of female students reported hookah use within the past 30 days (ACHA, 2018). These statistics reinforce the risk for tobacco initiation and use on college campuses.

As pointed out by Halperin and Rigotti (2003), the college campus environment may contribute to tobacco initiation and use. This is due to a variety of factors that occur on campus, including visibility of tobacco products while on campus, tobacco advertising and promotion, easy access to purchasing tobacco, and a lack of tobacco restrictions. One way to prevent the encouragement to initiate or use tobacco is through tobacco control strategies, including tobacco-free campus policy implementation (Plaspohl, Parrillo, Vogel, Tedders, Epstein, 2012). Campus environments may also play a role when it comes to tobacco addiction and cessation or attempts to quit.

Tobacco addiction, especially that of smoking, is not easy to stop based on willpower alone (Roh, 2018). There are a variety of factors associated with human addiction to tobacco, addiction to nicotine being one of the more difficult parts to counteract. Nicotine is a major component of tobacco that reinforces smoking behaviors

(Stolerman & Jarvis, 1995). Interestingly, nicotine also acts as a reinforcer for the non-nicotine reinforcers themselves, which are related to smoking behaviors and relapses (Balfour & Fagerstrom, 1996). As pointed out by Lochbihler et al. (2014), one of those main non-nicotine reinforcers that makes it so hard to quit or positively change tobacco behaviors is when nicotine is coupled with social interaction. For humans social interaction appears as something that is necessary when it comes to healthy development and survival, and can be a rather powerful reinforcing agent (Einson et al., 1978; Trezza et al., 2010). Environmental cues may also influence nicotine consumption (Caggiula et al., 2001). Comprehensive tobacco-free policies on college campuses provide an opportunity to decrease the negative impacts of tobacco on the health of all campus community members by attempting to remove some of these negative reinforcers. However, further research is needed to assess the impact that designated tobacco area policies may have on tobacco usage.

2.5 Campus Tobacco Policies and Strength of Policy

Advocacy efforts have led to numerous college and university campuses adopting tobacco policies on campus, however there has been a lack of uniformity and consequently a variety of policy implementation interventions undertaken (Lee et al., 2012). As a result, this lack of uniformity may lead to differing effectiveness outcomes for each campus. Moreover, as pointed out by Lee et al. (2012), comparative data on tobacco-free campus policy development could facilitate accelerated diffusion of tobacco-free policies, particularly if they are easily replicated by advocacy organizations and health departments. By rating and determining the strength of the different policies that exist on college and university campuses, it makes it easier to see which policies are

most efficacious and which aspects of such policies should be considered best practice for all campuses to implement nationally as additional campuses seek aid in policy adoption (Lee et al., 2012; Lee et al., 2010).

What is clear is the position that the American College Health Association (ACHA) has maintained when it comes to college and university tobacco policies. As pointed out by the ACHA, the Surgeon General's findings that tobacco use in any form, active and/or passive, is a significant health hazard. Furthermore, the ACHA states that they recognize the importance of focusing on environmental tobacco smoke, as it is classified as a Class-A carcinogen with no safe level of exposure, being a toxic air contaminant. Because of the nature of the risks that the Surgeon General pointed out, the ACHA set the gold standard for college and university campus tobacco policies as being no tobacco use, or tobacco-free, policies (ACHA, 2011). As the Healthy Campus 2020 initiative aims to reduce the number of college students who smoke or use other forms of tobacco products by 2020, and ultimately help college students remain or become tobacco-free (ACHA, 2010), the ACHA's position statement on tobacco-free campuses becomes even more important. Tobacco-free policies promote a 100% indoor and outdoor campus-wide tobacco-free environment that is safer for all of its community members. As a result, tobacco-free campuses should be the pinnacle of what all college and university tobacco policies try to achieve. As more colleges and universities adopt tobacco policies, regardless of whether they are 100% tobacco-free, it is important to ensure that policies are designed to elicit the desired change. Simply adopting a tobacco-free or smoke-free policy is not enough. As pointed out by Lee et al. (2012), written campus policies do not always determine actual practice, especially when considering

policy enforcement on campus. It is clear that comprehensive policies should be implemented taking into consideration the challenges and barriers of such policies, especially including control and enforcement.

2.6 Smoke- and Tobacco-free Campus Policies

In an effort to have a positive impact and minimize tobacco use and exposure to secondhand smoke on college and university campuses, the American College Health Association recommends comprehensive tobacco-free policies that prohibit all indoor and outdoor use of tobacco on campuses (American College Health Association, 2011). Consequently, a multitude of higher education institutions have adopted policies to minimize tobacco use, increase quit attempts, and reduce exposure to secondhand smoke on college campuses (Russette, Harris, Schuldberg, & Green, 2014). As of October 1, 2019, the number of campuses that were one hundred percent smoke-free totaled 2,469, and of those campuses 2,044 were also one hundred percent tobacco-free (Americans for Nonsmokers Rights, 2019). In addition, 2,074 campuses prohibited the use of e-cigarettes and 1,089 campuses prohibit hookah use (Americans for Nonsmokers' Rights, 2017). The number of campuses implementing tobacco-free and smoke-free policies continues to increase, with just under 15% of the approximately 4,600 degree-granting institutions in the United States reporting a policy in 2012 (Lee, Goldstein, Klein, Ramey, & Carver, 2012) as compared to 32% in January 2017 (ANR, 2017). Well-developed tobacco-free campus policies pose as the greatest potential for widespread positive impact on tobacco-related issues (Jancey et al., 2014), particularly considering the reach of college campuses. Yet there are still lessons to be learned regarding the impact of

campus tobacco policies, particularly considering the varying strengths and implementation of such policies.

Smoke-free and tobacco-free policies appear to be an optimal public health strategy when it comes to reductions in secondhand smoke and outdoor tobacco exposure, which may aid in the reduction of tobacco-related adverse health outcomes (Americans for Nonsmokers' Rights 2012; Fallin, Murrey, Johnson, Riker, Rayens & Hahn, 2012; Fallin, Roditis, & Glantz, 2015; Lechner, Meier, Miller, Wiener, and Fils-Aime, 2012; Russette et al., 2014; Seo, Macy, Torabi, and Middlestadt, 2011). As found by Seo et al. (2001), when a college campus adopts a smoke-free policy compared to one that does not have a policy, the campus population will have an observable decrease in smoking behavior. In addition, a college campus with a smoke-free policy has a positive impact on peer smoking attitudes (Seo et al., 2001). Additionally, as pointed out by Hall et al. (2015), this may suggest that tobacco control policies may positively impact the social norm of the campus surrounding tobacco utilization, where smoking or utilizing tobacco may become more and more socially unacceptable. Hall et al. (2015) discovered that employees on college campuses are already more likely to agree with development and enforcement of policies than students.

Assessment of compliance with the American College Health Association guidelines is an effective measure of the comprehensiveness of policies (Lee, Goldstein, Klein, Ranney & Carver, 2012; Plaspohl, Parrillo, Vogel, Tedders, & Epstein, 2011; Roditis, Wang, Glantz & Fallin, 2014). However, not every campus adopts similar policies, let alone a tobacco-free policy. One such example would be a campus that has exemptions from tobacco regulation in areas that are designated for tobacco use. Fallin,

Roditis, and Glantz (2014) did find that campuses that possessed more comprehensive tobacco-free policies, as opposed to smoke-free or designated area policies, were associated with less smoking on campus. Although these researchers only utilized intercept surveys, they looked at intentions to smoke in the next six months, perceived exposure to secondhand smoke, perceived exposure to other individuals smoking on campus, and whether students support outdoor smoking restrictions. After reviewing the data, there was a clear indication that more comprehensive tobacco-free policies may lead towards greater impact. Although research continues to emerge regarding the impact of smoke- and tobacco-free campus policies, there is clearly a dearth of research on the many college and university campuses that have designated smoking and tobacco use policies.

Additional research is warranted to determine the support of this conclusion on campuses that already possess designated tobacco area use policies. Although the number of 100% smoke- and tobacco-free campuses continues to increase (ANR, 2017), the majority of campuses in the U.S. still have non-comprehensive tobacco policies (i.e., policies with designated areas). However, little is known about the effectiveness of such policies or the attitudes and perceptions of students, faculty, and staff regarding the designated smoking and tobacco use policies on their campus. It is important to capture these data as we advocate for comprehensive tobacco-free policies on college campuses (Borders et al., 2005).

2.7 Designated Tobacco Area Policies

While a multitude of higher education institutions have adopted tobacco-free policies to minimize tobacco use, increase quit attempts, and reduce exposure to secondhand smoke on college campuses (Fallin, Murrey, Johnson, Riker, Rayens & Hahn, 2012; Fallin, Reditis, & Glantz, 2015; Lechner, Meier, Miller, Wiener, & Fils-Aime, 2012; Russette, Harris, Schuldberg, & Green, 2014; Seo, Macy, Torabi, & Middlestadt, 2011), the majority of campuses in the U.S. still have non-comprehensive tobacco policies (i.e., policies with designated areas). Higher rates of smoking have been found on campuses with less comprehensive policies (Fallin et al., 2015; Borders et al., 2005; Lochbihler et al., 2014; Bennett et al., 2017), reinforcing the need for additional research on attitudes of employees and students on these campuses and social factors that may influence tobacco use and exposure.

Although less is known about campuses with designated area policies, Wallar et al. (2013) reported that smokers are more likely to oppose all smoking or tobacco control policies other than designated smoking areas. In addition, Hall et al. (2015) found that males are less likely to oppose the feasibility of designated smoking areas than females, which is consistent with other studies researching attitudinal differences in gender concerning tobacco policies (Loukas et al., 2010; Williams et al., 2011). It is important to develop research that addresses perceptions of designated tobacco areas and what may attract individuals to these locations on college campuses.

2.8 Social Influences

Hall et al. (2015) outlined the potential for a very large impact as many social learning theories consider social norms as a powerful construct in tobacco use (De Vries

et al., 1995, Gryczynski & Ward, 2011, Lazuras et al., 2011). Furthermore, this research pointed out that strong tobacco control policies (i.e., comprehensive policies) result in a shift of the social norms surrounding tobacco use, which may be significant enough to elicit decreased tobacco usage. While social norms have been linked to tobacco use (De Vries et al., 1995; Gryczynski & Ward, 2011; Lazuras et al., 2011), less is known regarding the impact campus designated area policies may have on social norms of tobacco use. As pointed out by Lochbihler et al. (2014), students using tobacco in designated areas were more likely to experience some sort of positive effects of social interaction while smoking. Social interaction while smoking on campus significantly increased perceived rewards associated with smoking and increased the frequency of visits to designated smoking areas (Lochbihler et al., 2014; Bennett et al., 2017).

As Golden and Earp (2012) also pointed out, it is imperative to remember that individuals are a part of a larger whole, a social system where interactions with not only other individuals but also the environment in which they live may lead to certain health outcomes (Sallis et al., 2008; Stokols, 1992; Golden & Earp, 2012). Interestingly, the social ecological model enables the recognition of individuals as being deeply rooted inside of the larger social systems while being able to describe interactive characteristics of individuals and the environments that they exist in that underlie their health outcomes (Golden & Earp, 2012; Sallis et al., 2008; Stokols, 1992). Social ecological models have been used to understand the determinants of behaviors such as smoking. Since social influences are at play when it comes to designated tobacco area policies, it is necessary to have an approach to researching such policies that account for these varying influences.

2.9 Compliance and Enforcement of Tobacco Free Policies on College Campuses

As pointed out by Fallin et al. (2013) and Anderson (1979), simply adopting tobacco campus policies is not a sufficient impetus to cause a change in health behaviors or outcomes, successful implementation of the policy is also necessary. In addition, Fallin et al. (2013) pointed out that judging policy implementation effectiveness cannot simply be judged on whether or not the outcomes achieve the policy makers' goals (Sabatier, 1986). The outcomes in this case refer to not necessarily just decreasing the number of tobacco-users, but increasing the number of tobacco users that are in compliance with the current tobacco policy on their campus. Although it is possible that more tobacco users will seek tobacco treatments services as a result of a campus-wide tobacco-free or smoke-free policy, such as the fourfold increase reported by Hahn et al. (2012), if there is a lack of enforcement perceived by the individuals involved in the campus community, the policy may not be strong enough to prevent the use of tobacco products on campus (Halperin and Rigotti, 2003; Plaspohl et al., 2012), thus rendering the policy ineffective.

As pointed out by Ickes et al. (2014), one common challenge for all of the potential benefits that all of these policies seek to achieve is compliance itself. Successful adoption and implementation of tobacco policies requires individuals to actually follow the policy (Fallin et al., 2012). If the goal of a campus policy is to change the behavior of its members, compliance is important for that behavior change to occur (Anderson, 1979). Unfortunately, Harris, Stearns, Kovach, and Harrar (2009) have reported that there seems to be a lack of compliance with current smoke-free and tobacco-free campus policies. In addition, Ickes et al. (2014) pointed out that the research conducted by Etter,

Ronchi, and Parneger (1999) showed the tendency of a lack of perceived enforcement on campuses with current tobacco policies. Perhaps there is a true lack of enforcement of tobacco policies on college campuses preventing the success of campus tobacco policies, or perhaps the perception of the community members towards the policy prevents the culture of the community to change, thus preventing the tobacco policy from being successful. Considering the limited research that exists regarding designated tobacco area policies, it is unclear what compliance or enforcement is observed on campuses that possess such policies. Additional research is required regarding designated tobacco area policies in order to determine actual compliance of such policies.

2.10 Attitudes Toward and Perceived Compliance with Tobacco Policies on College Campuses

Perception of attitudes toward and perceived effectiveness of policies on campuses with smoke-free and tobacco-free policies is somewhat limited. However, as pointed out by Russette, Harris, Schuldberg, and Green (2014), understanding such perspectives may guide universities when considering effective implementation and enforcement strategies. It is important to gain this knowledge for moving forward in an effort to create the most effective and comprehensive tobacco policies possible on college and university campuses.

2.10.1 Attitudes

In general, smokers are more likely to have negative attitudes toward tobacco control efforts (Apel et al., 1997; Chaloupka et al., 1997; Fichtenberg et al., 2002; Hahn et al., 2008; Hall et al., 2015; Heloma & Jaakkola, 2003; Seo et al., 2001). After

reviewing the research conducted by Ickes et al. (2017) concerning undergraduates on a tobacco free campus, there may be differences in attitudes or perception of tobacco policies based on gender, tobacco-use status, or year in school. Chaaya et al. (2013). Hall et al. (2015) reported similar findings considering tobacco-use status and responses of attitudes towards campus tobacco policies. Non-users were found to view tobacco control policies more favorably with strong support in comparison to smokers (Hall et al., 2015). However, Hall et al. (2015) did point out the importance of the consideration of attitudinal differences within the campus population toward tobacco policy, aiming to ensure that the needs of all involved in the community are adequately addressed

2.10.2 Perceived Effectiveness

It must be noted that student tobacco use behavior can be negatively influenced by their perceived inconsistencies of enforcement. Initially, most student smokers report that they are ready to comply with a tobacco policy, but witnessing others disregard the policy without negative consequences can alter their future practices (Baillie et al., 2011). When people in the community observe others violate the policy without consequences, their perception becomes that they will not receive any consequences either, and become more likely to violate the tobacco policy. Ickes et al. (2017) also found that males were less likely to believe the tobacco policy was effective in reducing secondhand smoke exposure or to encourage tobacco-users to quit. Furthermore, these researchers found that lower undergraduates were more likely to perceive tobacco policies as less effective in reducing secondhand smoke exposure. However, international students were more likely to perceive tobacco policies as effective. Overall, students that are more exposed

to secondhand smoke were found to be less likely to perceive tobacco policies as effective as tobacco users were less likely to perceive tobacco policies as effective in encouraging quitting (Ickes et al., 2017). Interestingly, as found by Hall et al. (2015), former smokers' attitudes were consistent with those who self-reported as never being a smoker. This may provide a unique opportunity on college campuses, where former smokers may become advocates or supporters of a campus tobacco policy.

2.10.3 Compliance

There is even more limited information regarding campuses with designated area policies. Hall et al. (2015) found that males are less likely to oppose the feasibility of designated smoking areas than females, which is consistent with other studies researching attitudinal differences in gender concerning tobacco policies (Loukas et al., 2010; Williams et al., 2011). In the same vein, Wallar et al. (2013) emphasized the importance of promoting comprehensive campus tobacco policy targeting those that use tobacco products as they are the most affected by such policies and represent the greatest opposition.

Once again, it must be noted that student tobacco use behavior can be negatively influenced by their perceived inconsistencies of enforcement. Initially, most student smokers report that they are ready to comply with a tobacco policy, but witnessing others disregard the policy without negative consequences can alter their future practices (Baillie et al., 2011). Further findings by Baillie et al. (2011) informed that there is a very tenuous link between policy and outcome, and students are influenced instead by what they see, hear, and experience on campus. Russette et al. (2014) also found the same

response when doing intercept-interviews with non-compliant and compliant tobacco-users on a one-hundred percent tobacco free college campus. This study found that only ten percent of participants in the intercept-interviews reported that the policy was enforced, which may have been why only one-quarter of the respondents “always” followed the campus tobacco policy while the noncompliant interviewees were more likely to report knowingly violating the campus tobacco policy (Russette et al., 2014). With a perception of an ineffective policy tobacco-users may be more likely to knowingly violate campus policies that lack any form of enforcement or negative repercussions.

Russette et al. (2014) pointed out that gaining the perspective of smokers may serve to help in guiding university officials when considering effective enforcement strategies for tobacco policies. Research conducted by Jancey et al. (2014) found that smokers were more likely to violate campus tobacco policies in an effort of defiance against the policy, especially when the policy is believed to be an infringement on human rights, or not being willing to walk to an off campus area or abstain from smoking while on campus. Smokers reported that the distance to walk off campus was a strong deterrent for policy compliance. Furthermore, being discrete and not being approached was another factor that lead to noncompliance. Jancey et al. (2014) reported that half of their survey sample reported as never having been approached or asked to stop smoking on campus, so they continued to do so. In addition, information gained from the research of Russette et al. (2014) concluded that compliance is low when individuals are not clear on the policy, if the perception of enforcement is low there will be more noncompliant behavior, and smokers reported that if there were consistently enforced consequences for

noncompliance, such as fines, smokers would be more likely to comply, as well as if they were to be incentivized for compliance (Russette et al., 2014). Baillie et al. (2011) discussed further evidence that when students perceived inconsistencies in enforcement, they are more likely not to comply with campus tobacco policies. Additional research is necessary to determine the attitudes and perceived effectiveness for individuals on campuses with designated tobacco area policies. Moving forward, the perspective of all members of a campus community must not be ignored, nor the consideration of the role that campus policies that provide designated areas for tobacco use may play. While it does appear in the literature that more stringent policies appear to indicate greater reductions in smoking rates on college and university campuses, there is a lack of conclusive research (Borders et al., 2005). As a result, an improved understanding of designated tobacco use area policies must be further investigated.

CHAPTER 3. METHODOLOGY

3.1 Purpose

This study was focused on the designated area tobacco policy that was current at the time of research at a small college campus in Kentucky. An online survey was used to collect information regarding the attitudes and perceptions of students, faculty, and staff considering the designated area tobacco policy. Direct observational data were also collected to determine overall observed tobacco use as well as compliance with the policy. This chapter was developed to outline the research design, target population, data collection procedures, and data analysis for the two phases of this study, which served to answer the research questions listed in chapter one.

3.2 Research Design

A non-experimental cross-sectional design was used for the student and employee survey and for collection of the observational compliance data. A cross-sectional design was selected as it is a method for testing many individuals simultaneously affording the ability to draw comparisons at a single and specific point in time (Baumgartner & Hensley, 2013). This design was selected as it is observational in nature, without manipulating the research environment, while serving to provide data to answer questions regarding the attitudes toward and perceived effectiveness of the designated tobacco area policy on a college campus. Furthermore, a major benefit of utilizing a cross-sectional design is that it provides the researcher with the ability to compare differing variables at the same time. As a result, it was possible to draw comparisons across groups at the specific point in which the research was conducted, considering numerous factors in a

less time-consuming and efficient manner (Baumgartner & Hensley, 2013). However, limitations included that these same relationships could not be used to analyze behavior over time, the data could not help to determine cause and effect, and the timing of this study may have resulted in an inaccurate representation of the campus.

3.3 Setting and Target Population

For this study, the population consisted of currently enrolled students at Berea College during the fall 2018 semester, as well as currently employed faculty and staff. Berea College is a small liberal arts school in Kentucky that offers a liberal arts education to students who have great promise but limited economic resources. Students come from lower socio-economic backgrounds, which may yield higher tobacco use rates (USDHHS, 2014; Substance Abuse & Mental Health Services Administration, 2017). Berea College was the first interracial and coeducational college in the south. All students at Berea College receive a full academic scholarship while also participating in the work-study program. An emphasis is placed on promoting understanding and kinship among all people, service to communities in Appalachia and beyond, and sustainable living (Berea College, 2017).

According to Berea College registrar data and Integrated Marketing and Communications data for the fall semester of 2019, there were 1,684 students enrolled, 975 female and 709 male students representing 43 states, the District of Columbia, two U.S. Territories, and 70 countries. The majority of students (74%) came from the Appalachian region and Kentucky. Similarly, the majority of students were White/Caucasian, with 25% classified as non-white, and 8% classified as international

students. Additionally, there were 182 faculty members (98 female, 84 male; includes all full-time and part-time faculty) and approximately 707 staff (456 female, 251 male; includes full-time and part-time staff).

Berea College had a designated area use policy for tobacco products. There was no documentation as to when the designated tobacco area policy was implemented or established. However, the gazebos were placed on campus 2002-2003 to replace park benches which previously signified the designated areas. At the time of this study, the use of tobacco products was permitted in seven gazebos located throughout the campus (see Appendix B). As the policy states, if anyone was observed violating the policy, anyone observing the person should politely inform them of the violation and inform them where the closest designated area was (Berea College Employee Handbook, 2015). No additional enforcement procedures were detailed.

3.4 Sampling

During phase one, required sample size was calculated during the Fall 2018 semester based on the overall student, faculty, and staff population size at Berea College at that time. It was necessary to calculate a sample size in order to determine what participation numbers would be necessary for the survey to have a realistic possibility of resulting in useful information with valid conclusions. During the start of the Fall 2018 semester, Berea College consisted of approximately 1665 students (949 female students and 716 male students) and 821 employees (430 female staff members and 223 male staff members; 81 female faculty and 87 male faculty members). Significance criterion was set at $\alpha=0.05$, 95% confidence level, and apriori (p) at 0.5. Using SPSS Statistics 25 (Armonk NY) with a confidence interval of +/- 5 and having a total of 1,665 students

resulted in a sample size of 313 students while having 821 total employees (faculty and staff) resulted in a sample size of 262 employees.

3.5 Description of Measures

3.5.1 Survey Instrument

For phase 1 of this study, the 36-item, self-administered, online survey was divided into seven parts: knowledge of campus tobacco policy, attitude towards the current campus tobacco policy, perceived effectiveness of the current tobacco policy, perceived compliance of the current tobacco policy, attitude towards a tobacco-free campus policy, current tobacco use, and demographics (See Appendix D).

3.5.2 Measures

Without having validated measures or instruments to use, almost all questions in the survey instrument were taken or altered from items in existing measures from previous research studies (See Appendix D). The manuscripts that follow further operationalized measures and sub-scales used for the purpose of analysis.

3.5.2.1 Appeal of Designated Tobacco Areas (Gazebos)

Items assessed the appeal of the gazebos on campus. A subscale score was created, with higher values indicating a more positive appeal to the gazebos on campus (individual survey item scores: 0-1-2-3; subscale minimum score of 0 and maximum score of 12; $\alpha = 0.91$). Questions asked in this subscale included: “The gazebos on

campus are an attractive place to gather with friends or co-workers or to meet new friends or co-workers”, “The gazebos on campus are a great place to relax”, “Whenever I am bored, I like to spend time at the gazebos on campus”, and “I enjoy spending time in the gazebos on campus”. Responses to these items included: strongly disagree, disagree, agree, and strongly agree. Strongly disagree and disagree responses were combined as were agree and strongly agree responses for chi-square analysis.

3.5.2.2 Social Influence of Designated Areas

Questions were developed in order to determine possible social norms/influences associated with designated tobacco areas on campus. These questions focused on interpersonal and intrapersonal factors. A subscale score was created, with higher values indicating greater influences toward visiting the gazebos (individual survey item scores: 0-1-2-3; subscale minimum score of 0 and maximum score of 15; $\alpha = 0.78$). The following items were included: “I am more likely to stop at the gazebos only if there are other people already there,” “I met many of my Berea College friends or co-workers in the gazebos on campus,” “I enjoy meeting and talking with other students and/or employees in the gazebos on campus,” “The only time I get to see or catch up with my friends, colleagues, or others is at the gazebos on campus,” and “I do not usually spend time in the gazebos, but it looks like the people in the gazebos are having a good time.” Responses to these items included: strongly disagree, disagree, agree, and strongly agree. Strongly disagree and disagree responses were combined as were agree and strongly agree responses for chi-squared analysis.

3.5.2.3 Perceptions of Designated Tobacco Areas (Gazebos) & Tobacco Use

Several items determined the overall perceptions of the designated tobacco areas (i.e., gazebos) and tobacco use on campus. A subscale score was created, with higher values indicating more positive attraction (survey item scores: 0-1-2-3) to the gazebos on campus (subscale minimum score of 0 and maximum of 12; $\alpha = 0.67$). Items included: “Everyone that spends time in the gazebos uses tobacco products,” “I started using tobacco products after visiting the gazebos on campus,” “The gazebos on campus make it hard to fight tobacco addiction,” and “The gazebos on campus increase the likelihood that someone will utilize more tobacco products than they otherwise would if they were not there.” Responses to these items included: strongly disagree, disagree, agree, and strongly agree. Strongly disagree and disagree responses were combined as were agree and strongly agree responses for chi-squared analysis.

3.5.2.4 Secondhand Smoke Exposure

Participants were asked to respond to one question regarding secondhand smoke exposure. The question “In the past 7 days, have you been exposed to other people’s smoke on campus at Berea College?” provided the options: Yes, I have been exposed while in the designated tobacco use areas on campus; Yes, I have been exposed on campus outside of the designated tobacco use areas only; Yes, I have been exposed both while in the designated tobacco use areas and outside of designated use areas on campus; and No, I have not been exposed on campus.

3.5.2.5 Tobacco use

These questions were geared towards assessing the survey participants' current tobacco use status. The tobacco use section includes two standardized questions to assess smoking status (ACHA, 2014; US Department of Health & Human Services, 1986). 'Have you smoked at least 100 cigarettes in your life?' was asked with responses as yes or no. 'Do you currently smoke cigarettes every day, some days, or not at all on campus?' utilized the following responses: every day, some days, not at all. 'Which of the following tobacco products have you used in the last 30 days? Check all that apply' provides a list of tobacco products with the following options: I have used, but not in the past 30 days; I have used in the past 30 days; no, I have not used in the past 30 days. Survey participants that responded to using any tobacco products in the last 30 days were coded as a tobacco user for comparisons made in this study.

3.5.2.6 Demographic characteristics

Participants were asked to respond to biological sex with response options as male, female, or transgender. Next, participants were asked to respond to Race/ethnicity with response options as white; black or African American; Asian; Pacific Islander; American Indian, Alaskan Native; 2 or more races; or other (please specify). In addition, if an employee, the survey participant was asked how many years they have worked at Berea College with an open response as a whole number and if a student they were asked what their classification was with response options as first-year, second-year, third-year, or fourth-year.

3.5.2.7 Direct observation of violators

As described and utilized by Ickes et al. (2014), for the purpose of this study direct observation was operationally defined as the number of violators of the designated area policy in a given time period. Furthermore, as found by Ickes et al. (2014), direct observations of violators is a valid measure of compliance compared to counting cigarette butts. Direct observations also allowed for observation of all tobacco products both inside and outside of designated area boundaries. Considering the fact that the gazebos on campus acted as the designated tobacco areas, any observation of tobacco use outside of these gazebos was recorded as a violation of the designated tobacco area policy. It was also important for any observation of tobacco use inside of the designated areas to be counted for all individuals considered to be in compliance with the tobacco policy. The main investigator observed and collected data on any violations that occurred outside of the designated areas, in a predetermined perimeter that was approximately a 30-ft diameter surrounding the corresponding gazebo location, as well as observations of compliant tobacco use inside of the gazebos. During a two-week period data collection occurred, with the designated tobacco area locations (See Appendix A) being randomly assigned during each observation time on Mondays, Wednesdays, and Fridays (Appendix B). Data points collected included: location of designated area, date, arrival time, departure time, total number of minutes spent at location, and number of violators (Hahn et al., 2012; Ickes et al., 2013; Ickes et al., 2014). The data collected was recorded onto individual location forms (See Appendix C) and transcribed into SPSS at the end of each day.

3.5.3 Procedures

3.5.3.1 Protection of human subjects

Approval from the University of Kentucky's Institutional Review Board was gained as well as completion of CITI training prior to collecting data in an effort to ensure compliance with all considerations in the handling of informed consent, data collection, and analysis. Although Berea College had agreed to expedite IRB approval based on the approval of the University of Kentucky's IRB, submission for approval from Berea College's IRB was also completed and approval obtained.

3.5.3.2 Data collection

For Phase 1 of the study, surveys were distributed and collected through a campus e-mail with an online survey link to the Qualtrics (Qualtrics, LLC, 2013) (See Appendix D) survey. The estimated time to complete the survey was 15 to 20 minutes. The e-mail was sent to all current students, faculty, and staff directly through the primary investigator's campus email. At the time of data collection, all members of the Berea College community that possessed an email address had permission to submit mass emails to all students, faculty, and staff by entering into the recipient address the following: #students #faculty #staff without requiring any special permissions. Voluntary participation was requested. The survey link was sent out in Fall 2018 and contained a generated anonymous link to the survey in Qualtrics. The survey was available during a one-month period. Estimated completion time for the survey was fifteen to twenty

minutes. After one week, a reminder e-mail was sent to all students, faculty, and staff through the procedures described above. The survey was closed after four weeks.

A waiver of documentation of informed consent was approved. Therefore, before the completion of the survey, participants were provided a cover letter which included the IRB required information, including but not limited to: statement regarding the purpose of the research study, invitation to participate and complete the survey, information regarding the anonymity of their responses, and contact information for concerns.

For Phase 2 of the study, observational data were collected during a two-week period during the fall semester, starting on November 5, 2018 and ending on November 16, 2018. The main investigator collected data from the five tobacco use areas located throughout campus adjacent to the following buildings: Alumni Building; Hutchins Library, Phelps Stokes Chapel, and Bingam Residence Hall; James, Seabury, and Kettering residence halls; Kentucky and Talcott residence halls; Science Building, Draper Classroom Building, and Seabury Center.

As described and utilized by Ickes et al. (2014), for the purpose of this study direct observation were operationally defined as the number of violators of the designated area policy in a given time period. Furthermore, as found by Ickes et al. (2014), direct observations of violators is a valid measure of compliance compared to counting cigarette butts. With designated areas being considered only as inside of the provided gazebos at each designated location, any observation of tobacco usage outside of a gazebo at the specific location was recorded as a violation of the designated area policy. Also, it was important for observations to be counted for all individuals in compliance with the policy that were either smoking or using tobacco products inside of the designated areas.

The main investigator observed and collected data on any violations occurring outside of the designated areas as well as those that were in compliance. Observation times were during the ten minute increments between the hours of 8:00am – 5:00pm (See Appendix A). Each location was observed on Monday, Wednesday, and Friday for a minimum of three times during a two-week period. Data collected by the primary investigator (See Appendix C) included: location, date, time of arrival and departure, biological sex of those observed complying or not complying, type of tobacco product used, number in compliance, and number of violators (Hahn et al., 2012; Ickes et al., 2013; Ickes et al., 2014). At the end of each day observations were entered into SPSS. Only the primary investigator of this study and their advisor had access to these data. Survey data and observational data were stored on a secured computer with an encryption key and password protection, and were also maintained in the main investigator's locked office.

3.5.3.3 Data analysis

Descriptive data were reported as means and percentages, which served to better understand the population groups considered. Data were assessed for normality and alterations to proposed data analysis were made accordingly. The following table (3.1) outlines the data analysis utilized for each research question. Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 23 (Chicago, IL).

For direct observational data, data were summarized using descriptive statistics and graphical methods. All study variables were summarized using frequency

distributions. This allowed estimation of total observed tobacco use as well as percent compliance with the designated tobacco use area policy. In addition, to evaluate the observed demographic-and setting-level factors associated with compliance, a chi-square test of association was used. This enabled assessment of whether compliance status (i.e., within or outside the designated use area when tobacco products are being consumed) was associated with biological sex, time of day, campus location, and type of tobacco product used.

For the survey, data were summarized using descriptive statistics and graphical methods using SPSS Statistics 25 (Armonk, NY) with $\alpha = 0.05$ set as criterion for significance. In order to assess the representativeness of the results, the responses were reviewed by gender, classification (staff, faculty, or student), and tobacco use status. Each individual survey item was analyzed using Chi-squared analysis to determine relationships that exist between biological sex, campus status, or tobacco status. One-way analysis of variance (ANOVA) was used to analyze differences in mean subscale values when looking at biological sex, campus status (staff, faculty, or student), and tobacco use status.

Table 3.1 Statistical Procedures to Answer Research Questions

Research Question	Independent Variables	Dependent Variables	Proposed Analysis
R1: What is the overall perception of designated tobacco areas (gazebos) & tobacco use of students, faculty, and staff?		Perception subscale: items 73-1, 73-2, 73-3, 73-4	Descriptive Statistics (Mean/SD) Chi-Squared for item-by-item comparison with collapsed categories
R.1.1: Are there significant differences in perception when comparing biological sex?	Male/female	Perception subscale: items 73-1, 73-2, 73-3, 73-4	ANOVA on sub-scale
R.1.2: Are there significant differences in perception when comparing students versus employees?	Student/ Employee	Perception subscale: items 73-1, 73-2, 73-3, 73-4	ANOVA on sub-scale
R.1.3: Are there significant differences in perception when comparing tobacco use status?	Non-User/User	Perception subscale: items 73-1, 73-2, 73-3, 73-4	ANOVA on sub-scale
R2: What is the general appeal to the designated tobacco use areas on campus considering students, faculty, and staff?		Attractive Gazebos subscale: items 19, 20, 21, 42-1, 45-5	Descriptive Statistics (Mean/SD) Chi-Squared for item-by-item comparison with collapsed categories
R.2.1: Are there significant differences in gazebo appeal when comparing biological sex?	Male/female	Attractive Gazebos subscale: items 19, 20, 21, 42-1, 45-5	ANOVA on sub-scale
R.2.2: Are there significant differences in gazebo appeal when comparing students, faculty, and staff?	Student/ Employees	Attractive Gazebos subscale: items 19, 20, 21, 42-1, 45-5	ANOVA on sub-scale
R.2.3: Are there significant differences in gazebo appeal when comparing tobacco use status?	Non-User/User	Attractive Gazebos subscale: items 19, 20, 21, 42-1, 45-5	ANOVA on sub-scale

Table 3.1 (continued)

R3: What are the relationships to social influences of the designated tobacco area policy among students, faculty, and staff?		Social Influence subscale: items 22, 42-2, 42-3, 42-4, 42-6	Descriptive Statistics (Mean/SD) Chi-Squared for item-by-item comparison with collapsed categories
R3.1: Are there significant differences in social influences when comparing biological sex?	Male/Female	Social Influence subscale: items 22, 42-2, 42-3, 42-4, 42-6	ANOVA on sub-scale Chi-Squared for item-by-item comparison with collapsed categories
R3.2: Are there significant differences in social influences when comparing students, faculty, and staff?	Student/ Employees	Social Influence subscale: items 22, 42-2, 42-3, 42-4, 42-6	ANOVA on sub-scale Chi-Squared for item-by-item comparison with collapsed categories
R3.3: Are there significant differences in social influences when comparing tobacco use status?	Non-User/User	Social Influence subscale: items 22, 42-2, 42-3, 42-4, 42-6	ANOVA on sub-scale Chi-Squared for item-by-item comparison with collapsed categories
R4: What is the actual observed compliance of the designated tobacco area policy?		Compliance/Non-Compliance observation measures	Descriptive Statistics (Mean/SD)
R4.1: Are there significant differences in observed compliance of the designated tobacco area policy when comparing demographic factors?	Male/female	Compliance/Non-Compliance observation measures	Chi-squared

CHAPTER 4. DESIGNATED TOBACCO AREA POLICIES: ATTITUDES AND THE ROLE OF TOBACCO SOCIAL INFLUENCES ON A COLLEGE IN KENTUCKY

4.1 Introduction

The health effects of tobacco use are well documented, with cigarette smoking remaining as the most important risk factor linked to lung cancer and other comorbidities (American Cancer Society, 2014; USDHHS, 2014; USDHHS, 2006). Secondhand smoke exposure poses a great risk for non-smokers as well, increasing the risk for developing heart disease and lung cancer by 20 to 30 percent (USDHHS, 2006, 2010, 2014). With an estimated 480,000 deaths annually associated with use of tobacco products (USDHHS, 2014), the obvious consequences of tobacco use continue to be of concern. This especially holds true when considering the state of Kentucky. In Kentucky, one in four adults report current cigarette smoking in comparison to the national rate of 17.1% (CDC, 2017) and 14.3% of high school students report smoking cigarettes on at least one day in the past 30 days compared to 8.8% nationally (CDC, 2017). Tobacco use, especially when it comes to smoking, continues to be a major health issue in the state of Kentucky.

College campus environments may contribute to tobacco initiation and use due to visibility of tobacco products while on campus, tobacco advertising and promotion, easy access to purchasing tobacco, and a lack of tobacco restrictions (Halperin & Rigotti, 2003). While a multitude of higher education institutions have adopted tobacco-free policies to minimize tobacco use, increase quit attempts, and reduce exposure to secondhand smoke on college campuses (Fallin, Murrey, Johnson, Riker, Rayens & Hahn, 2012; Fallin, Roditis, & Glantz, 2015; Lechner, Meier, Miller, Wiener, & Fils-Aime, 2012; Russette, Harris, Schuldberg, & Green, 2014; Seo, Macy, Torabi, & Middlestadt, 2011), the majority of campuses in the U.S. still have non-comprehensive

tobacco policies (i.e., policies with designated areas). Higher rates of smoking have been found on campuses with less comprehensive policies (Fallin et al., 2015; Borders et al., 2005; Lochbihler et al., 2014; Bennett et al., 2017), reinforcing the need for additional research on attitudes of employees and students on these campuses and social factors that may influence tobacco use and exposure.

Although less is known about campuses with designated area policies, Wallar et al. (2013) reported that smokers are more likely to oppose all smoking or tobacco control policies other than designated smoking areas. In addition, Hall et al. (2015) found that males are less likely to oppose the feasibility of designated smoking areas than females, which is consistent with other studies researching attitudinal differences in gender concerning tobacco policies (Loukas et al., 2010; Williams et al., 2011). However, Hall et al. (2015) did point out the importance of the consideration of attitudinal differences within the campus population toward tobacco policies, aiming to ensure that the needs of all involved in the community are adequately addressed. Therefore, it is important to develop research that addresses perceptions of designated tobacco areas and what may attract individuals to these locations on college campuses.

Due to the fact that college and university campus tobacco policies impact both individual and environmental changes, a social ecological approach serves as the best framework to understand perceptions and attitudes on campuses with designated tobacco area policies. Hall et al. (2015) pointed out that strong tobacco control policies (i.e., comprehensive policies) result in a shift of the social norms surrounding tobacco use, which may be significant enough to elicit decreased tobacco usage. While social norms have been linked to tobacco use (De Vries et al., 1995; Gryczynski & Ward, 2011;

Lazuras et al., 2011), less is known regarding the impact campus designated area policies may have on social norms of tobacco use. As pointed out by Lochbihler et al. (2014), students using tobacco in designated areas were more likely to experience some sort of positive effects of social interaction while smoking. The social interaction while smoking on campus significantly increased perceived rewards associated with smoking and increased the frequency of visits to designated smoking areas (Lochbihler et al., 2014; Bennett et al., 2017). Given the lack of research on campuses with designated tobacco use areas, there is a need to explore the overall attitudes and perceptions that staff, faculty, and students possess when it comes to designated tobacco area policies, as well as what role designated areas play in influencing tobacco use and related social norms on campus.

4.2 Purpose

The purposes of this research study were to 1.) Assess the appeal to designated tobacco areas considering biological sex, campus status, and tobacco user status 2.) Assess perceptions of a designated tobacco area policy considering biological sex, campus status, and tobacco use status and 3.) Determine differences that exist considering demographic variables and the tobacco social influences of designated tobacco use areas on a college campus.

4.3 Research Design

A non-experimental cross-sectional design was used in this study. A cross-sectional design was selected as it is a method for testing many individuals

simultaneously affording the ability to draw comparisons at a single and specific point in time (Baumgartner & Hensley, 2013). This design was selected as it is observational in nature, without manipulating the research environment. Furthermore, a major benefit of utilizing a cross-sectional design is that it provides the researcher with the ability to compare differing variables at the same time. As a result, it was possible to draw comparisons across groups at the specific point in which the research was conducted, considering a multitude of factors in a less time-consuming and efficient manner (Baumgartner & Hensley, 2013).

4.4 Study Setting and Population

The study took place at a small liberal arts college in Kentucky during the fall 2018 semester. Berea College is an undergraduate school which includes approximately 1600 students and 800 employees. The college was the first interracial and coeducational college in the south. All students receive a full academic scholarship while also participating in a work-study program. An emphasis is placed on promoting understanding and kinship among all people, service to communities in Appalachia and beyond, and sustainable living (Berea College, 2017).

According to campus marketing and communications data for the fall semester of 2019, there were 1,684 students enrolled, 975 female and 709 male students, representing 43 states, the District of Columbia, two U.S. Territories, and 70 countries. The majority of students (74%) come from the Appalachian region and Kentucky. Similarly, the majority of students are White/Caucasian, with 25% classified as non-white, and 8% classified as international students. Additionally, there are 182 faculty members (98

female, 84 male; includes all full and part-time faculty) and approximately 707 staff (456 female, 251 male; includes full and part-time staff). Additional demographic data for employees were not available.

The college is a private institution in a rural setting with a campus size of 140 acres. The college currently possesses a designated area use policy for tobacco products. The use of tobacco products is permitted in seven gazebos located throughout the campus. The seven gazebos are spread out, but close in proximity to most classroom and residence hall buildings. For the purpose of this study, all staff, faculty, and students were emailed the survey regarding the designated tobacco area policy on campus.

4.5 Measures and Procedures

A self-administered, online survey link was distributed and collected through a campus email containing a link to the survey through Qualtrics (Qualtrics, LLC, 2013) (See Appendix D), and was sent via campus email to all students and employees. Previous studies show that similar survey recruitment strategies have been successful in recruiting tobacco users (Ickes et al., 2017; Hall et al., 2015; Noland et al., 2016; Okoli et al., 2016). The survey consisted of items related to the perceptions of the designated areas (gazebos), overall attitude towards the current designated area tobacco policy, current tobacco use, and demographics. No validated measures existed for a majority of the outcomes summarized below; therefore, almost all questions in the survey were modified from items in existing measures (Plaspohl et al., 2012; Ickes et al., 2017; Ickes et al., 2018; ACHA, 2014; USDHHS, 1986). A total of 605 surveys were completed for this

study: 185 staff (30.58%), 88 faculty (14.55%), and 332 students (54.88%). No full surveys were excluded due to missing data, but item-by-item analysis was conducted.

4.5.1 Appeal of Designated Tobacco Areas (Gazebos)

Items assessed the appeal of the gazebos on campus. A subscale score was created, with higher values indicating a more positive appeal to the gazebos on campus (individual survey item scores: 0-1-2-3; subscale minimum score of 0 and maximum score of 15; $\alpha = 0.91$). Questions asked in this subscale included: “The gazebos on campus are an attractive place to gather with friends or co-workers or to meet new friends or co-workers”, “The gazebos on campus are a great place to relax”, “Whenever I am bored, I like to spend time at the gazebos on campus”, and “I enjoy spending time in the gazebos on campus”. Responses to these items included: strongly disagree, disagree, agree, and strongly agree. Strongly disagree and disagree responses were combined as were agree and strongly agree responses for chi-square analysis.

4.5.2 Social Influence of Designated Areas

Questions were developed in order to determine possible social norms/influences associated with designated tobacco areas on campus. These questions focused on interpersonal and intrapersonal factors. A subscale score was created, with higher values indicating greater influences toward visiting the gazebos (individual survey item scores: 0-1-2-3; subscale minimum score of 0 and maximum score of 15; $\alpha = 0.78$). The following items were included: “I am more likely to stop at the gazebos only if there are other people already there,” “I met many of my Berea College friends or co-workers in the gazebos on

campus,” “I enjoy meeting and talking with other students and/or employees in the gazebos on campus,” “The only time I get to see or catch up with my friends, colleagues, or others is at the gazebos on campus,” and “I do not usually spend time in the gazebos, but it looks like the people in the gazebos are having a good time.” Responses to these items included: strongly disagree, disagree, agree, and strongly agree. Strongly disagree and disagree responses were combined as were agree and strongly agree responses for chi-squared analysis.

4.5.3 Perceptions of Designated Tobacco Areas (Gazebos) & Tobacco Use

Several items determined the overall perceptions of the designated tobacco areas (i.e., gazebos) and tobacco use on campus. A subscale score was created, with higher values indicating more positive attraction (survey item scores: 0-1-2-3) to the gazebos on campus (subscale minimum score of 0 and maximum of 12; $\alpha = 0.67$). Items included: “Everyone that spends time in the gazebos uses tobacco products,” “I started using tobacco products after visiting the gazebos on campus,” “The gazebos on campus make it hard to fight tobacco addiction,” and “The gazebos on campus increase the likelihood that someone will utilize more tobacco products than they otherwise would if they were not there.” Responses to these items included: strongly disagree, disagree, agree, and strongly agree. Strongly disagree and disagree responses were combined as were agree and strongly agree responses for chi-squared analysis.

4.5.4 Tobacco Use

The tobacco use section includes two standardized questions to assess smoking status (ACHA, 2014; US Department of Health & Human Services, 1986). ‘Have you smoked at least 100 cigarettes in your life?’ was asked with responses as yes or no. ‘Do you currently smoke cigarettes every day, some days, or not at all on campus?’ utilized the following responses: every day, some days, not at all. ‘Which of the following tobacco products have you used in the last 30 days? Check all that apply’ provides a list of tobacco products with the following options: I have used, but not in the past 30 days; I have used in the past 30 days; no, I have not used in the past 30 days. Survey participants that responded to using any tobacco products in the last 30 days were coded as a tobacco user for comparisons made in this study.

4.5.5 Secondhand Smoke Exposure

Participants were asked to respond to one question regarding secondhand smoke exposure. The question “In the past 7 days, have you been exposed to other people’s smoke on campus at Berea College?” provided the options: Yes, I have been exposed while in the designated tobacco use areas on campus; Yes, I have been exposed on campus outside of the designated tobacco use areas only; Yes, I have been exposed both while in the designated tobacco use areas and outside of designated use areas on campus; and No, I have not been exposed on campus.

4.5.6 Demographic Characteristics

Participants were asked to respond to biological sex with response options as male, female, or transgender. Participants were asked to respond to Race/ethnicity with response options as White; black or African American; Asian; Pacific Islander; American Indian, Alaskan Native; 2 or more races; or other (please specify). If a student, they were asked their classification with response options as first-year, second-year, third-year, or fourth-year.

4.6 Data Analysis

Data were summarized using descriptive statistics and graphical methods using SPSS Statistics 25 (Armonk, NY) with $\alpha = 0.05$ set as criterion for significance. In order to assess the representativeness of the results, the responses were reviewed by gender, classification (staff, faculty, or student), and tobacco use status. Each individual survey subscale item was analyzed using Chi-squared analysis with collapsed categories in order to determine relationships that existed between biological sex, campus status, or tobacco status. One-way analysis of variance (ANOVA) was used to analyze differences in mean subscale values when looking at biological sex, campus status (staff, faculty, or student), and tobacco use status.

4.7 Results

After data cleaning, no survey had more than twenty percent of responses with missing data, therefore no surveys were eliminated from the study. As observed in table 1, of the 561 participants in the study, the majority of participants responded as female

(65.6%) and White or non-Hispanic (79.3%). Just over half of all participants were students (54.9%), with slightly more than one quarter being staff (30.6%) and 14.6% faculty. There were 93 participants that responded as being tobacco users. When compared to the 561 total participants in the study: 12.7% of students were tobacco users ($n = 71$), 3.2% of staff ($n = 3.2\%$), and 0.7% of faculty ($n = 4$). Students who completed the survey were evenly distributed with 45.4% being lower undergraduate and 54.6% being upper undergraduate. Roughly three-quarters of survey participants were not current tobacco users (74.6%).

Table 4.1. Descriptive Analysis of Sample Demographic and Personal Characteristics ($N = 548$)

Demographic or personal characteristic	<i>n (%) or M (SD)</i>
Sex	
Male	187 (34.4%)
Female	357 (65.6%)
Race or Ethnicity	
White or non-Hispanic	434 (79.3%)
Other	113 (20.7%)
Campus Status	
Staff	185 (30.58%)
Faculty	88 (14.55%)
Student	332 (54.88%)
Academic Status	
Lower undergraduate	138 (45.4%)
Upper undergraduate	166 (54.6%)
International Student	
Yes	23 (7.6%)
No	281 (92.4%)
Exposed to Secondhand Smoke on Campus (Last 7 Days)	227 (49.5%)
Tobacco Status	
Non-user	344 (74.6%)
Current Tobacco User (Past 30 Days)	117 (25.4%)

4.7.1 Appeal of Designated Tobacco Areas (Gazebos)

Table 2 displays the relationships between demographic variables and the *Appeal of Designated Tobacco Areas sub-scale*. Pearson's Chi-squared analysis was used on individual survey items while ANOVA was applied when analyzing subscale means across demographic variables. No significant relationships were discovered when considering each subscale item according to biological sex. When considering campus status (staff, faculty, or student), there was an observable relationship with every subscale item: "Attractive Place to Gather or Meet" $\chi^2(2, N = 505) = 20.44, p = 0.00$; "Great Place to Relax" $\chi^2(2, N = 506) = 18.47, p = 0.00$; "Spend Time When Bored" $\chi^2(2, N = 504) = 54.41, p = 0.00$; "I enjoy spending time in the gazebos on campus" $\chi^2(2, N = 476) = 36.04, p = 0.00$; and "I avoid the gazebos on campus" $\chi^2(2, N = 473) = 12.68, p = 0.002$. Tobacco use status also resulted in observable relationships with every subscale item: "Attractive Place to Gather or Meet" $\chi^2(1, N = 457) = 21.04, p = 0.00$; "Great Place to Relax" $\chi^2(1, N = 458) = 24.54, p = 0.00$; "Spend Time When Bored" $\chi^2(1, N = 457) = 60.92, p = 0.00$; and "I enjoy spending time in the gazebos on campus" $\chi^2(1, N = 459) = 62.17, p = 0.00$.

ANOVA was calculated on subscale means for the appeal of designated tobacco areas (gazebos) subscale. The analysis was significant when considering campus status $F(2, 504) = 17.48, p = 0.00$. Comparisons indicated that students were significantly different from the staff, $t(433) = 5.31, p = 0.00$ and faculty $t(349) = 4.29, p = 0.00$. The staff were not significantly different from the faculty, $t(226) = 0.42, p = 0.67$. Significant differences were not found when considering biological sex $F(1, 501) = 2.34, p = 0.13$ or tobacco status $F(1, 457) = 0.10, p = 0.75$.

4.7.2 Social Influences Related to Designated Areas (Gazebos)

Table 3 displays the relationships between demographic variables and *Social Influences Related to Designated Areas (Gazebos)*. Pearson's Chi-squared analysis was used on individual survey items while ANOVA was applied when analyzing subscale means across demographic variables. No observable relationships were discovered when considering each subscale item according to biological sex. When considering campus status (staff, faculty, or student), there was an observable relationship with four of the subscale items: "I am more likely to stop at the gazebos only if there are other people already there" $\chi^2(2, N = 503) = 10.09, p = 0.006$; "I met many of my Berea College friends or co-workers in the gazebos on campus" $\chi^2(2, N = 476) = 30.38, p = 0.00$; "I enjoy meeting and talking with other students and/or employees in the gazebos on campus" $\chi^2(2, N = 476) = 34.19, p = 0.00$; and "The only time I get to see or catch up with my friends, colleagues, or others is at the gazebos on campus" $\chi^2(2, N = 474) = 20.13, p = 0.00$.

Considering tobacco use status, there was an observable relationship with the following four items: "I am more likely to stop at the gazebos only if there are other people already there" $\chi^2(1, N = 456) = 11.46, p = 0.001$; "I met many of my Berea College friends or co-workers in the gazebos on campus" $\chi^2(1, N = 459) = 67.25, p = 0.00$; "I enjoy meeting and talking with other students and/or employees in the gazebos on campus" $\chi^2(1, N = 459) = 67.73, p = 0.00$; and "The only time I get to see or catch up with my friends, colleagues, or others is at the gazebos on campus" $\chi^2(1, N = 458) = 75.14, p = 0.00$.

ANOVA of subscale means resulted in a significant mean difference when considering campus status $F(2, 505) = 14.68, p = 0.00$. Comparisons indicated that students were significantly different from the staff, $t(432) = 4.88, p = 0.00$, and faculty $t(349) = 4.06, p = 0.00$. The staff were not significantly different from the faculty, $t(225) = 0.56, p = 0.58$. ANOVA was also calculated on tobacco use status and had a significant result $F(1, 457) = 11.41, p = 0.001$. Tobacco users reported significantly higher social influences related to the designated tobacco areas (gazebos) ($M = 2.94, SD = 1.51$) when compared to tobacco non-users ($M = 1.31, SD = 1.09$). Significant differences were not found when considering biological sex $F(1, 500) = 3.63, p = 0.06$.

4.7.3 Perceptions of Designated Tobacco Areas (Gazebos) & Tobacco Use

Table 4 displays the subscale relationships between demographic variables and *Perceptions of Designated Tobacco Areas (Gazebos) & Tobacco Use*. Pearson's Chi-squared analysis was used on individual survey items while ANOVA was applied when analyzing subscale means of demographic variables. No significant relationships were observed when looking at biological sex or campus status (staff, faculty, or student). Significant relationships observed included the following when looking at individual items from the subscale and tobacco use status: "Everyone that spends time in the gazebos uses tobacco products" $\chi^2(1, N = 457) = 8.41, p = 0.004$; "I started using tobacco products after visiting the gazebos on campus" $\chi^2(1, N = 448) = 19.62, p = 0.00$; and "The gazebos on campus make it hard to fight tobacco addiction" $\chi^2(1, N = 450) = 87.16, p = 0.007$.

ANOVA was conducted on the subscale means for perceptions of the designated tobacco areas (gazebos) and tobacco use. The result was significant $F(2, 456) = 4.56, p = 0.033$. Tobacco non-users reported significantly higher perceptions of the designated tobacco areas (gazebos) and tobacco use ($M = 1.34, SD = 1.15$) when compared to tobacco users ($M = 0.86, SD = 1.03$). Significant differences were not found when considering biological sex $F(2, 470) = 0.15, p = 0.70$ or campus status $F(2, 472) = 0.06, p = 0.94$.

Table 4.2

Relationships between Demographic Variables and Appeal of Designated Tobacco Areas (Gazebos)

Survey Item	Sex		χ^2	p	Status			χ^2	p	Tobacco Status		χ^2	p
	Male	Female			Staff	Faculty	Student			Non-User	Tobacco User		
Attractive Place to Gather or Meet	97 (56.4%)	189 (57.3%)	0.04	0.85	105 (68.2%)	48 (66.7%)	133 (46.5%)	20.44	0.00*	253 (60.0%)	7 (20.0%)	21.04	0.00*
	75 (43.6%)	141 (42.7%)			49 (31.8%)	24 (33.3%)	146 (52.3%)			169 (40.0%)	28 (80.0%)		
Great Place to Relax													
Disagree	98 (57.0%)	190 (57.4%)	0.008	0.93	104 (67.1%)	49 (68.1%)	135 (48.4%)	18.47	0.00*	255 (60.3%)	6 (57.0%)	24.54	0.00*
	Agree	74 (43.0%)			141 (42.6%)	51 (32.9%)	23 (31.9%)			144 (51.6%)	168 (39.7%)		
Spend Time When Bored													
Disagree	148 (86.5%)	278 (84.2%)	0.47	0.49	142 (92.8%)	69 (95.8%)	218 (78.1%)	24.41	0.00*	375 (88.9%)	14 (40.0%)	60.92	0.00*
	Agree	23 (13.5%)			52 (15.8%)	11 (7.2%)	3 (4.2%)			61 (21.9%)	47 (11.1%)		
I enjoy spending time in the gazebos on campus													
Disagree	131 (81.4%)	240 (77.2%)	1.11	0.29	130 (89.0%)	64 (95.5%)	181 (68.8%)	36.04	0.00*	353 (83.5%)	10 (27.8%)	62.17	0.00*
	Agree	30 (18.6%)			71 (22.8%)	16 (11.0%)	3 (4.5%)			82 (31.2%)	70 (16.5%)		

Table 4.2 (continued)

Subscale Total	<i>M</i>	1.17	1.22		0.81	0.74	1.55		1.17	1.22	
	<i>SD</i>	1.39	1.47		1.19	1.10	1.55		1.39	1.47	
	<i>F</i>	2.34			17.48				0.10		
	<i>p</i>	0.13			0.00*				0.75		

Table 4.3

Relationships between Demographic Variables and Social Influences Related to Designated Tobacco Areas (Gazebos)

Survey Item	Sex		χ^2	<i>p</i>	Status			χ^2	<i>p</i>	Tobacco Status		χ^2	<i>p</i>
	Male	Female			Staff	Faculty	Student			Non-User	Tobacco User		
I am more likely to stop at the gazebos only if there are other people already there													
Disagree	132 (77.6%)	263 (79.7%)	0.28	0.59	132 (85.7%)	60 (84.5%)	205 (73.7%)	10.09	0.006*	342 (81.2%)	20 (57.1%)	11.46	0.001*
Agree	38 (22.4%)	67 (20.3%)			22 (14.3%)	11 (15.5%)	73 (26.3%)			79 (18.8%)	15 (42.9%)		
I met many of my BC friends or co-workers in the gazebos on campus													
Disagree	139 (86.3%)	257 (82.6%)	1.07	0.30	134 (91.8%)	66 (98.5%)	199 (75.7%)	30.38	0.00*	373 (88.2%)	13 (36.1%)	67.25	0.00*
Agree	22 (13.7%)	54 (17.4%)			12 (8.2%)	1 (1.5%)	64 (24.3%)			50 (11.8%)	23 (63.9%)		
I enjoy meeting & talking with other students &/or employees in the gazebos on campus													
Disagree	126 (78.3%)	238 (76.5%)	0.18	0.67	126 (86.3%)	64 (95.5%)	177 (67.3%)	34.19	0.00*	347 (82.0%)	8 (22.2%)	67.73	0.00*

Table 4.3 (continued)

	Agree	35 (21.7%)	73 (23.5%)			20 (13.7%)	3 (4.5%)	86 (32.7%)			76 (18.0%)	28 (77.8%)		
The only time I get to see or catch up with my friends, colleagues, or others is at the gazebos on campus														
	Disagree	150 (93.8%)	279 (90.0%)			141 (96.6%)	67 (100.0%)	225 (86.2%)			400 (94.8%)	19 (52.8%)		
	Agree	10 (6.3%)	31 (10.0%)	1.86	0.17	5 (3.4%)	0 (0.00%)	36 (13.8%)	20.13	0.00*	22 (5.2%)	17 (47.2%)	75.14	0.00*
I do not usually spend time in the gazebos, but it looks like the people in the gazebos are having a good time														
	Disagree	32 (20.0%)	74 (24.1%)			35 (24.3%)	8 (12.1%)	64 (24.5%)			93 (22.1%)	11 (32.4%)		
	Agree	128 (80.0%)	233 (75.9%)	1.01	0.32	109 (75.7%)	58 (87.9%)	197 (75.5%)	4.91	0.09	327 (77.9%)	23 (67.6%)	1.86	0.17
Subscale Total	<i>M</i>	1.36	1.38			1.08	1.01	1.69			1.31	2.94		
	<i>SD</i>	1.1	1.28			0.97	0.66	1.38			1.09	1.51		
	<i>F</i>	3.63				14.68					11.41			
	<i>p</i>	0.06				0.00*					0.001*			

Table 4.4

Relationships between Demographic Variables and Perceptions of Designated Tobacco Areas (Gazebos) & Tobacco Use

Survey Item	Sex		χ^2	<i>p</i>	Status			χ^2	<i>p</i>	Tobacco Status		χ^2	<i>p</i>
	Male	Female			Staff	Faculty	Student			Non-User	Tobacco User		
Everyone that spends time in the gazebos uses tobacco products													
Disagree	113 (70.2%)	214 (69.0%)			103 (71.0%)	43 (64.2%)	184 (70.2%)			287 (68.0%)	32 (91.4%)		
Agree	48 (29.8%)	96 (31.0%)	0.07	0.80	42 (29.0%)	24 (35.8%)	78 (29.8%)	1.12	0.57	135 (32.0%)	3 (8.6%)	8.41	0.004*
I started using tobacco products after visiting the gazebos on campus													
Disagree	153 (96.8%)	296 (97.4%)			138 (97.9%)	61 (98.4%)	253 (96.6%)			406 (98.3%)	30 (85.7%)		
Agree	5 (3.2%)	8 (2.6%)	0.11	0.74	3 (2.1%)	1 (1.6%)	9 (3.4%)	0.95	0.62	7 (1.7%)	5 (14.3%)	19.62	0.00*
The gazebos on campus make it hard to fight tobacco addiction													
Disagree	171 (56.3%)	86 (53.8%)			75 (52.8%)	35 (54.7%)	150 (57.5%)			223 (53.7%)	27 (77.1%)		
Agree	133 (43.8%)	74 (46.3%)	0.27	0.61	67 (47.2%)	29 (45.3%)	111 (42.5%)	0.84	0.66	192 (46.3%)	8 (22.9%)	7.16	0.007*

Table 4.4 (continued)

The gazebos on campus increase the likelihood that someone will utilize more tobacco products than they otherwise would if they were not there														
Disagree		74 (46.0%)	137 (45.2%)			66 (46.5%)	28 (43.8%)	120 (46.0%)			184 (44.2%)	21 (60.0%)		
Agree		87 (54.0%)	166 (54.8%)	0.02	0.88	76 (53.5%)	36 (56.3%)	141 (54.0%)	0.14	0.93	232 (55.8%)	14 (40.0%)	3.24	0.072
Subscale Total	<i>M</i>	1.33	1.3			1.30	1.34	1.29			1.34	0.86		
	<i>SD</i>	1.16	1.15			1.12	1.11	1.19			1.15	1.03		
	<i>F</i>	0.15				0.06					4.56			
	<i>p</i>	0.70				0.94					0.03*			

4.8 Discussion

The purposes of this research study were to provide an assessment of the perceptions of designated tobacco areas and tobacco use, appeal to the designated tobacco areas, and social influences related to designated tobacco areas when considering biological sex, campus status (staff, faculty, or student), and tobacco use status. Only tobacco user status had significant differences when looking at perceptions of designated tobacco areas and tobacco use. As reported by Lochbihler et al. (2014), higher rates of smoking are found on designated tobacco area campuses, which may be due to the positive social interactions and experiences that occur inside of the designated areas. Consequently, tobacco users may be more likely to develop, maintain, or strengthen positive attitudes associated with those spaces, as they serve as positive locations for social rewards.

The response rate of tobacco users found in this study (25.4%) was high in comparison to survey data from Fallin et al. (2015) on other designated area campuses which resulted in a response rate of 19% past-30-day tobacco use, and Hall et al. (2015) that obtained a response of 6% tobacco users on a campus with a tobacco free policy. It was important to consider why the responses would yield such a high amount of tobacco users even when compared to other designated tobacco area campuses. This may tie back to Lochbihler et al. (2014), where positive social interactions and experiences were stated to play a role.

Direct ties from this may be drawn to more students having responded in disagreement in comparison to staff and faculty when it came to the belief that the gazebos on campus made it hard to fight tobacco addiction (57%). Although the campus

continually provides convenient receptacles to dispose of tobacco product waste in the designated areas as well as regularly cleaning up all litter in and around these areas on campus, which prevents the tobacco litter from serving as an environmental cue to engage in tobacco use behaviors, a multitude of issues remain. Students may lack the information necessary to understand the consequences of tobacco use, as well as be aware of social interactions tied to negative behavior choices that occur inside of the gazebos on campus. In addition, the findings when regarding the survey item “Everyone that spends time in the gazebos uses tobacco products” reinforces that there are a lot of people on campus spending time in the gazebos that are not even tobacco users. As Lochbihler et al. (2014) pointed out, the positive effects of social interaction while smoking, or perhaps just being exposed to secondhand smoke, may increase the perception of tobacco as a reward while on campus. This may leave students at a greater risk for tobacco initiation, increased tobacco consumption, or secondhand smoke exposure by frequenting a space that they have positive associations with, but has definite negative health ramifications. The dangers associated with this are easily observed when considering that tobacco users (77.1%) responded as being less likely to agree that the gazebos make it hard to fight tobacco addiction, yet 14.3% of survey responses indicated that they started using tobacco after visiting the gazebos on campus. Students may be more in disagreement with the belief that the gazebos make it hard to fight tobacco addiction (57%), but the reality of the 14.3% that started using tobacco after visiting those same gazebos cannot be ignored. Although the perceptions of tobacco users and students overall may be in disagreement, there is a real negative impact that was observed where the designated area

tobacco policy resulted in 14.3% of the survey participants initiating tobacco use only after visiting those areas on campus.

Also alarming was that 24.3% of students and 63.9% of tobacco users reported that they met many of their friends and co-workers in the gazebos on campus. This further reinforces negative health behaviors that are associated with positive social interaction rewards. This holds especially true when observing that 50% of survey participants reported secondhand smoke exposure on campus and 1 in 4 survey participants responding as currently using tobacco. There is a clear need on this campus for health promotion efforts targeting the people who visit the gazebos on campus as well as tobacco itself, such as tobacco treatment and cessation services. Findings by Baillie et al. (2011) serve as a reminder that there is a definite link between policy and intended outcome, and that students are greatly influenced by what they see, hear, and experience on campus. Efforts should be geared toward opportunities in the future to recognize and change the designated areas being gazebos as this has made them more attractive. Future research can determine whether conveniently located safe spaces out in the open make it easier for students to socially interact on campus while being exposed to tobacco. If researchers find these locations to be more appealing and spread throughout campus for convenience, there may be unintended consequences of the college designated tobacco area policy that drives increased social interactions that result in increased tobacco initiation, consumption, and increased secondhand smoke exposure. If the campus in this study aims to maintain a designated tobacco area campus while simultaneously decreasing tobacco use and secondhand smoke exposure, there is a clear opportunity to discover whether it may be time to part ways with gazebos and make designated areas look less inviting and attractive

for social gatherings and interactions that involve tobacco. Future researchers should also consider whether having fewer designated areas that are not as socially inviting and convenient results in less unintended consequences decouple the link of designated tobacco areas as positive social rewards to negative health behaviors and outcomes related to tobacco.

4.9 Implications for Practice and/or Policy and Research

The information gained in this study may best serve to aid the field of tobacco research that is limited in the amount of research that exists when considering college and university campuses that possess designated tobacco area policies. With an emphasis placed on the appeal of designated area locations, social influences of designated areas, and perceptions of the designated tobacco use areas, this study brought more attention to the need for further research concerning the culture that is created in such areas, and the apparent susceptibility of college students when it comes to tobacco initiation, increased tobacco consumption, and increased secondhand smoke exposure on college campuses that possess designated tobacco area policies. As leadership of college campuses seek to improve upon the health risks associated with tobacco for all students, faculty, and staff, emphasis must be placed on campuses that maintain designated tobacco area policies. The information gained in this study may also serve to reinforce the need for tobacco-free policies on all college campuses. Designated tobacco area policies may serve an unintended consequence that yields increased tobacco initiation, utilization, and secondhand smoke exposure.

CHAPTER 5. DIRECT OBSERVATIONAL METHODS OF TOBACCO USE AND COMPLIANCE AT A SMALL PRIVATE COLLEGE WITH A DESIGNATED TOBACCO AREA POLICY

5.1 Introduction

Consequences of tobacco use continue to be of concern on college and university campus settings. Negative impacts associated with tobacco utilization for students or employees include increased medical costs attributable to smoking, increased absenteeism, decreased productivity, increased injuries, and increased rates for accidents (Batenburg & Reinken, 1990; Halpern, Rentz, Shikiar, Khan, 2001; Hocking, Grain, & Gordon, 1994; Kristein, 1983; MacKenzie, Bartecchi, & Schrier, 1994; Penner & Penner, 1990; Ryan, Zwerling, & Jones, 1996; Ryan, Zwerling, & Orav, 1992).

Findings from the National Health Interview Survey (NHIS) conducted in 2017 revealed an estimated 19.3% of U.S. adults currently use any tobacco product, including cigarettes (14.0%); cigars, cigarillos, or filtered cigarettes (3.8%); electronic cigarettes (e-cigarettes) (2.8%); smokeless tobacco (2.1%); and pipes, water pipes, or hookahs (1.0%). Among current tobacco users, 86.7% smoked combustible tobacco products and 19.0% used ≥ 2 tobacco products (Wang, et al., 2018). According to the American College Health Association National College Health Assessment Spring 2018 Executive Summary, 10.1% of male and 6.2% of female college students reported cigarette use in the past 30 days, 12.8% of male and 7.3% of female students reported e-cigarette use within the last 30 days, and 3.3% of male and 2.4% of female students reported hookah use within the past 30 days (ACHA, 2018). These statistics reinforce the risk for tobacco initiation and use on college campuses among employees and students.

As a result of the negative impact of tobacco use on the adult population, a multitude of higher education institutions have adopted comprehensive smoke- and tobacco-free policies to minimize tobacco use, increase quit attempts, and reduce exposure to secondhand smoke while on campus (Russette, Harris, Schuldberg, & Green, 2014). College and university campuses are in a unique position to provide an atmosphere for primary and secondary tobacco prevention as well as evidence-based cessation.

While the number of 100% smoke- and tobacco-free campuses continues to increase (ANR, 2019), the majority of campuses in the U.S. still have non-comprehensive tobacco policies (i.e., policies with designated areas). Fallin and colleagues (2015) investigated varying strengths of tobacco policies at eight public four-year colleges and universities, concluding that as policy provisions got stronger, the reported exposure to secondhand smoke decreased as well as the likelihood of seeing someone smoking on campus. Students on tobacco-free campuses reported the lowest intentions to smoke on campus within the next six months compared to those with less comprehensive policies (Fallin et al., 2015).

There is limited research on tobacco use and/or compliance with college and university campuses that have designated smoking and tobacco use policies. Concluded by Bennett et al. (2017), there were three studies that resulted in an association between designated smoking areas and higher rates of smoking compared with smoke-free and tobacco-free policies. Lochbihler et al. (2014) found that the designated areas may actually increase the rewards associated with nicotine for the smokers who use them, possibly increasing how many times someone may visit those areas. Additional research

is warranted utilizing observational methods for detecting tobacco use, compliance and non-compliance on campuses that possess designated tobacco area policies.

As previously pointed out by Russette et al., (2014), the main reason that comprehensive tobacco policies were developed was to combat the negative impact of tobacco use on the adult population. With the extremely limited amount of research on campuses with designated tobacco area policies, it is necessary to further investigate the amount of tobacco utilization on campus inside and outside of campus designated areas and assess compliance with such policies. Furthermore, using direct observational methods may provide an opportunity to gain a more accurate depiction of tobacco utilization on campuses that possess designated tobacco area policies.

5.2 Purpose

The purposes of this study were to: assess observed tobacco usage and policy compliance in the vicinity of designated tobacco use areas at a small private college in Kentucky; and to evaluate whether there were significant associations between observations of tobacco violations or compliance and biological sex, type of tobacco product used, time of day, and campus location.

5.3 Research Design

This observational study used a non-experimental cross-sectional design. Observational data were collected during a two-week period during the fall semester, starting on November 5 and ending on November 16, 2018. The primary investigator collected data from five designated tobacco areas on campus, focusing on the most heavily populated campus locations during the day: Classroom Building/Residence Hall

A, Classroom Building Residence Hall B, Residence Hall C, Residence Hall D, and Residence/Central Building E.

5.4 Study Setting & Population

The study took place at a small liberal arts college in Kentucky during Fall 2018. The college was the first interracial and coeducational college in the south. All students receive a full academic scholarship while also participating in a work-study program. An emphasis is placed on promoting understanding and kinship among all people, service to communities in Appalachia and beyond, and sustainable living (Berea College, 2017).

According to registrar data and marketing and communications for the fall semester of 2019, there were 1,684 students enrolled, 975 female and 709 male students, representing 43 states, the District of Columbia, two U.S. Territories, and 70 countries. The majority of students (74%) come from the Appalachian region and Kentucky. Similarly, the majority of students are White/Caucasian, with 25% classified as non-white, and 8% classified as international students. Additionally, there are 182 faculty members (98 female, 84 male; includes full and part-time faculty) and approximately 707 staff (456 female, 251 male; includes full and part-time staff). Additional demographic data for employees were not available.

The college is a private institution in a rural setting with a campus size of 140 acres. The college currently possesses a designated area use policy for tobacco products. The use of tobacco products is permitted in seven gazebos located throughout the campus. The seven gazebos are spread out, but close in proximity to most classroom and residence hall buildings. For the purpose of this study, the five main gazebo locations

were selected to collect observational data: Gazebo A was close in proximity to residence halls and two main classroom buildings; Gazebo B was close in proximity to two residence halls, one main classroom building, and a highly trafficked non-classroom building; Gazebo C was in close proximity to multiple residence halls, classroom buildings, an two administrative or employee buildings; Gazebo D was in a central campus location with high traffic, close to a main use but non-classroom building as well as one residence hall and two administrative buildings; and Gazebo E was close in proximity to three residence halls. According to the policy, if anyone is observed violating the policy outside of these locations, anyone observing the person should politely inform them of the violation and inform where the closest designated area is (Berea College Employee Handbook, 2015).

5.5 Measures and Procedures

For the purpose of this study direct observation was operationally defined as the number of violators of the designated area policy in a given time period. Direct observations of violators is a valid measure of compliance compared to counting cigarette butts (Ickes et al., 2014), and also allows for observation of all tobacco products both inside and outside of designated area boundaries. Additionally, direct observational methods may serve as a better methodology when compared to cigarette butt collection due to the nature of emerging tobacco devices that are electronic in nature, and do not result in cigarette butt litter. Additionally, direct observational methods served as the best potential protocol for this campus since the designated areas provided convenient waste

receptacles and any cigarette butt litter was regularly cleaned up from these locations on campus.

With designated areas being considered as inside of the provided gazebos at each designated location, any observation of tobacco use outside of a gazebo at the specific location was recorded as a violation of the designated area policy. Also, it was important for observations to be counted for all individuals in compliance with the policy that were smoking or using tobacco products inside of the designated areas. The main investigator observed and collected data on any violations occurring outside of the designated areas, in a predetermined perimeter that was approximately a 30-ft diameter surrounding the corresponding gazebo location. Any observation case of a compliant tobacco user that then became non-compliant (i.e. individual observed continued to use tobacco while walking away or leaving the gazebo) were only recorded as a non-compliant observation.

Data were collected by the main investigator during a specified schedule, at fifty minutes past the hour, every hour, starting at 7:50 am and ending at 4:50 pm. Each location was observed on Monday, Wednesday, and Friday for a minimum of three times, for ten minutes each time, during a two-week period. These time intervals were selected due to class block schedules and to be inclusive of a variety of times throughout the typical workday. Furthermore, observation times were grouped into three separate categories: morning (7:50 – 10:00am), mid-day (10:50 – 2:00pm), and late-day (2:50 – 5:00pm). At each collection time point, the investigator systematically completed an observation sheet capturing the following data points specific to the visit: location of designated area, date, precipitation status, arrival time, departure time, and total number of minutes spent at location. In addition, for each observed tobacco user, the sheet was

used to record biological sex of observed individual, whether the individual was compliant (y/n), type of tobacco product used (cigarettes, e-cigarettes/vape, cigars, pipes), and any general notes from observations to be made (Ickes et al., 2013; Ickes et al., 2014). Data from these collection sheets were entered into a spreadsheet that was converted to SPSS for analysis.

5.6 Data Analysis

Data analysis was accomplished using SPSS Statistics 25 (Armonk, NY); an alpha of 0.05 was used for inferential testing. All study variables were summarized using frequency distributions. This allowed estimation of total observed tobacco use as well as percent compliance and non-compliance with the designated tobacco use area policy. In addition, to evaluate the observed demographic-and setting-level factors associated with compliance, a chi-square test of association was used. This enabled assessment of whether compliance status (i.e., within or outside the designated use area when tobacco products are being consumed) was associated with biological sex, time of day, campus location, and type of tobacco product used.

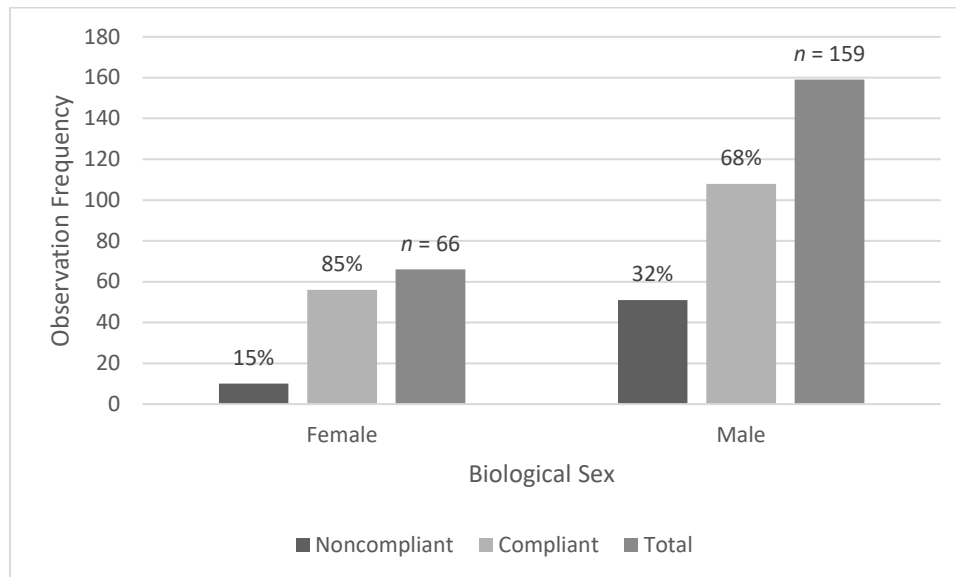
5.7 Results

There were 239 total observations of individuals using tobacco on campus during the 600 minutes of observation time that occurred over a two-week time period in this study. At this rate, there were 0.4 observations per minute of observation time. Of these observations, 68.6% ($n = 164$) were compliant and 31.4% ($n = 75$) were not.

5.7.1 Observations and Sex

There were a total of 26.8% female ($n = 64$) and 67.4% male ($n = 161$) observations (5.9% were categorized as unknown sex with $n = 14$) of tobacco use on campus. As observed in Figure 1, of the female observations, 84.8% were compliant and 15.2% were non-compliant. A little over two-thirds of males (67.9%) were compliant and 32.1% were non-compliant. Overall, there was a significant association when comparing sex and total tobacco use observations on campus $\chi^2(2, N = 239), = 38.722, p = 0.00$. Males were significantly more likely to be observed using tobacco, both being compliant inside of the designated area locations and non-compliant outside of designated areas, when compared to females ($p = 0.00$).

Figure 5.1
Observation Frequencies Comparing Biological Sex



5.7.2 Observations and Tobacco Products

During the two-week period, of the 239 total observations, there were 178 cigarette observations (117 male and 61 female) totaling 74.5% of all observations, 58 e-cigarette/vape observations (43 male, 1 female, 14 unknown sex) totaling 24.3% of all observations, 2 cigar observations (0 male and 2 female) totaling 0.8%, and 1 pipe observation (1 male and 0 female) totaling 0.4% of all observations. Cigarettes were overwhelmingly the most utilized tobacco product observed on campus.

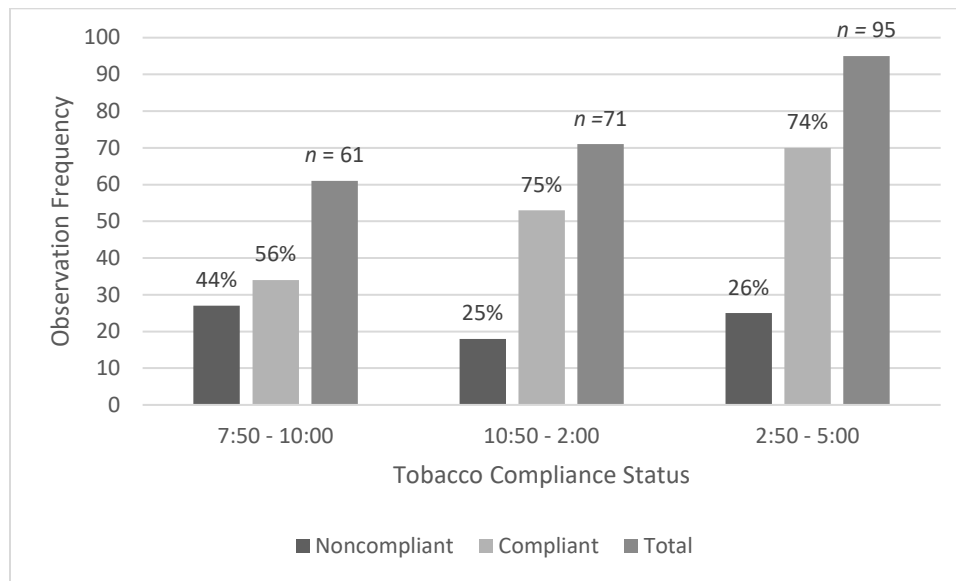
Of the compliant observations ($n = 164$), 92.7% were using cigarettes, 4.3% e-cigarettes/vapes, and 1.2% cigars. The majority of individuals not complying with the policy ($n = 75$) were using e-cigarettes (65.3%; $n = 49$), with one-third (33.3%, $n = 25$) of the observations of non-compliant observations using cigarettes and 1.3% using a tobacco pipe ($n = 1$). There were also 1.8% observations of individuals inside of the designated areas not using any tobacco products during the observation time intervals ($n = 3$).

5.7.3 Observations and Time

Figure 2 displays the comparison of the percent of noncompliant tobacco observations versus compliant observations at each time interval. Over half (58.6%, $n = 140$) of all tobacco observations took place after the typical lunch block (12:00 pm) and 16.3% ($n = 39$) of all observations occurred between 4:50pm – 5:00pm. The largest number of compliant observations (17%, $n = 28$) occurred during the 4:50pm – 5:00pm observation time. The largest amount of non-compliant observations (23%, $n = 17$) happened during the 7:50am – 8:00am observation time.

Only the very first time interval at 7:50 – 8:00am contains a higher proportion of non-compliant observations ($n = 17$) compared to compliant observations ($n = 8$) during the same observation time. Overall, the difference in compliant versus non-compliant observations during the various individual time intervals was significant ($\chi^2 = 20.781$, $p = 0.014$). Time intervals were then categorized into three groups: morning (7:50am – 10:00am), mid-day (10:50am – 2:00pm), and late-day (2:50pm – 5:00pm) (Figure 2). There was a significant difference in association with the three time categories and non-compliant tobacco observations ($\chi^2 = 6.352$, $p = 0.042$), with non-compliant observations more likely to occur between 7:50am – 10:00am.

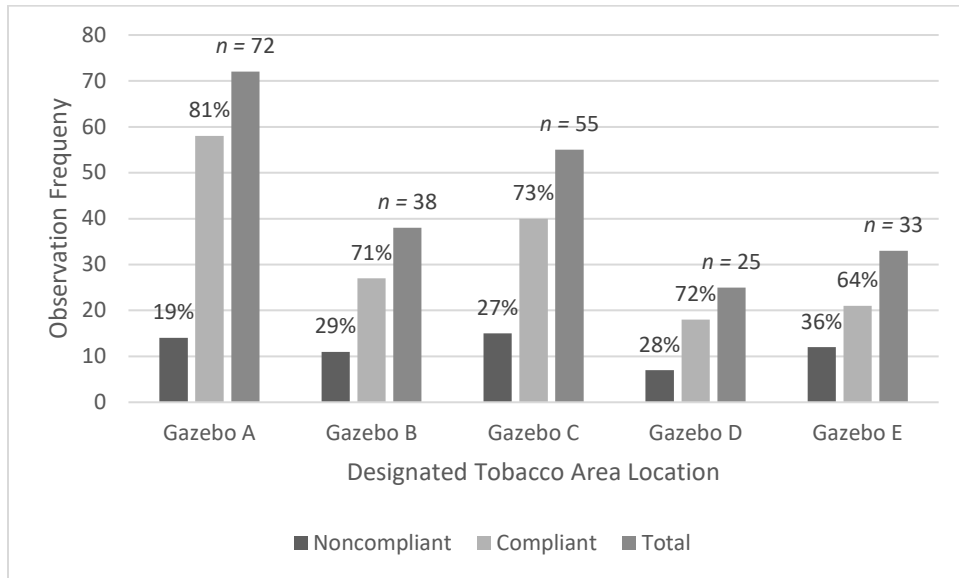
Figure 5.2
Observation Frequencies During Grouped Time Intervals



5.7.4 Observations and Designated Area Location

Displayed in Figure 3 is the total percent of compliant and noncompliant tobacco observations made at each of the designated area locations. There was a total of 239 tobacco observations during this study. The largest number of observations for compliant users was in the Classroom Building/Residence Hall Gazebo A area (35%, $n = 83$), with non-compliant observations appearing to be fairly evenly distributed throughout all locations. Gazebo E had the highest noncompliance rate at 36% ($n = 12$). To test whether proportions of overall tobacco observations, including both compliant and non-compliant, were different in each group, a χ^2 test of independence was used. This resulted in a significant relationship between location and overall observations ($\chi^2 (5, N = 239) = 40.799$), $p = 0.00$, with more observations of tobacco use occurring at Gazebo A. When running the same statistic on violations only, this resulted in a significant relationship with location ($\chi^2 (5, N = 75) = 0.89$, $p = 0.02$). A significant relationship was also established when observing compliant tobacco users and location ($\chi^2 (5, N = 164) = 0.97$, $p = 0.00$).

Figure 5.3
Percent of Tobacco Observation Frequencies at Each Location



5.8 Discussion

The purpose of this study was to determine observed tobacco use and compliance with a designated tobacco area policy at a small private college in Kentucky. Findings reinforce tobacco use continues to be of concern on this campus, with almost 250 individual observations of individuals using tobacco on campus within the vicinity of the gazebos across a two week period during select time intervals. The current study found that significant differences in campus tobacco observations were observed across sex,

time, and location of observed tobacco use as well as compliance. These findings contribute to the very limited existing research on campuses with designated policies.

There were 0.4 tobacco observations per minute and 3.98 observations per observation period in this study when considering all tobacco observations. This is an alarming figure considering the short duration of time per observation (10 minutes), and how small the student and employee population is on this college campus. This may be a strong indicator of issues that exist with designated tobacco area policies. As a result of this study, it may reinforce the importance of tobacco-free policies, as has been found in the literature (Fallin et al., 2013; Seo et al., 2011). Increased tobacco use is linked to increased health risks as well as increased secondhand smoke exposure for all individuals on campus. In addition, as pointed out by Caggiula et al. (2001), environmental cues may influence nicotine consumption. As pointed out by Lochbihler et al. (2014), visual and environmental cues, including social context, may lead to increased self-administration of nicotine. In the case of the current study, this may mean that the very act of seeing the designated areas, which were gazebos on campus, and/or other people inside of those areas may increase tobacco utilization. This would be directly opposing the main goal of campus tobacco policies in the first place, which were previously outlined as minimizing tobacco use, increasing quit attempts, and reducing exposure to secondhand smoke while on campus (Russette, Harris, Schuldberg, & Green, 2014). Further research is needed to determine the impact designated tobacco area campus policies might have on increased tobacco utilization regardless of whether in violation or compliance with the campus policy.

A significant relationship existed between sex and policy compliance. Males had much higher frequencies for both compliant and non-compliant tobacco usage. These findings align with current national data on college campuses, with males reporting higher rates of current, past 30 day cigarette use (10%) compared to 6.2% of female college students (ACHA, 2018). Additionally, this is similar to findings of Jancy et al. (2014) where a majority of tobacco smoking observations on a smoke-free campus were males (82%; $n = 41$), and Ickes et al. (2015) which reported 57% ($n = 335$) of all observed tobacco users (including all tobacco products) on a tobacco-free campus being male. With males having much higher rates of smoking, overall tobacco use observations on campuses, and more violations of campus tobacco policies, future research is necessary to determine why this disparity of tobacco use and policy violations exist. Male students may serve as the biggest target for potential positive impact considering campus initiatives geared towards tobacco prevention programming and policy compliance strategies.

Combustible cigarettes were found to be the number one observed tobacco product on campus (75%) as well as those used most frequently within the designated tobacco areas (92.7%). Given the high rates of combustible cigarette smoking in Kentucky, these findings are not surprising. One in four Kentucky adults report current cigarette smoking in comparison to the national rate of 17.1% (CDC, 2017) and 14.3% of Kentucky high school students report smoking cigarettes on at least one day in the past 30 days in comparison to the national average of 8.8% (CDC, 2017). With unintended consequences such as secondhand smoke exposure increasing heart disease risk by 25 to 30 percent and lung cancer risk by 20 to 30 percent (USDHHS, 2014), there is clearly

still a need in Kentucky to advocate for comprehensive tobacco control initiatives that support tobacco treatment, minimize secondhand smoke exposure, and increase tobacco policy compliance efforts.

E-cigarettes were observed 24% of the time, but almost three-quarters of all campus policy violations observed (65.3%) were using e-cigarettes. E-cigarette use continues to increase among adults, including in Kentucky. Kentucky reported overall adult use of e-cigarettes as 6.1%, and those aged 18 to 24 years as 13.1% (CDC, 2017). E-cigarette use is challenging to detect since they may be used quickly and hidden either in a pocket, purse, or backpack. The designated area policy did little to deter use of e-cigarette use on campus outside of designated areas, potentially increasing secondhand aerosol exposure on campus. Considering the ease of use and ability to quickly store e-cigarettes after use, compliance efforts need to be developed in order to address this issue in the future on all campuses. While we were not able to indicate if those observed were students or employees, this would also be an interesting area of future research.

Observation data collected also portrayed that certain time intervals had stronger correlations with increased observations of tobacco utilization. Over half of all tobacco observations took place after the typical lunch block on campus. This may be associated with typical times that cravings naturally occur for tobacco users. These findings reinforce an opportunity on this campus to intervene with support systems to help tobacco users manage cravings and abide by tobacco policies during times where cravings and tobacco utilization may be more likely. Strategies such as those described in “The Three Ts of Adopting Tobacco-free Policies on College Campuses” (Hahn et al., 2012) would serve this campus greatly. Given the observational findings in this study, the

treatment strategy outlined by Hahn et al. (2012) may best serve the campus, assessing the interest in tobacco cessation and providing the support necessary to promote compliance, minimizing tobacco consumption and secondhand smoke exposure.

Even though over half of all tobacco observations took place after the typical lunch block, the first two observations times on campus resulted in high frequencies as well. This is not surprising, as everyone is starting their day and getting ready for class or work while cravings may be high (Russette et al., 2014). Additionally, during the busiest academic and work times of the day the least amount of time to be out on campus for extended periods is afforded, leaving little opportunity to spend time at a designated area. As a result, users may be more likely to violate the tobacco policy as they are rushing to their next engagement without time to stop in a designated area. Perhaps this is why there are dips in observation frequencies for both compliant and non-compliant tobacco users on the entire campus between 9:50 am -12:00 pm as well as 1:50 pm – 2:50 pm. Tobacco use may be occurring, but away from the designated areas provided on campus. This would potentially explain why over half of all tobacco observations occurred after the typical lunch block on this campus. As there was a natural break in the day during these times for most people on campus, this afforded more time and opportunity to utilize designated areas and socialize. Future research should consider addressing trends of tobacco use, with a particular emphasis considering the time of day, type of tobacco product used, and mediating effects of strength of tobacco policies.

A significant relationship was also discovered regarding designated area location and tobacco use observations (compliant and non-compliant), however there was no significant differences between the designated area locations. Overall, where designated

areas are available, a higher number of tobacco-users were observed in comparison to violations surrounding the designated areas. This is supported by Bennett et al. (2017), where it was explained that designated area policies may result in higher levels of compliance with tobacco policies on campus, but with the simultaneous negative consequence of increased tobacco utilization as well. However, the highest frequency counts of compliant tobacco observations were in the Gazebo A location, which was surrounded by two dormitories and three main classroom buildings, while the highest number of non-compliant tobacco observations were in the Gazebo E area, which was surrounded by three dormitories. With this higher frequency count of non-compliant observations, the Gazebo E area would require the greater focus for future efforts to increase policy compliance.

5.9 Implications for Practice and/or Policy and Research

The information gained in this study may best serve to add to the limited amount of research that exists concerning college and university campuses that possess designated area tobacco policies. Data from this study may be shared in an effort to reinforce the need for tobacco-free policies. As depicted in this study, designated tobacco area policies may actually either increase or maintain high levels of tobacco utilization and secondhand smoke exposure. Adding additional data such as self-report tobacco use, intention to smoke or use tobacco products on campus, socialization factors, and convenience of tobacco use may aid in determining how designated tobacco area policies contribute to a culture of tobacco use on college campuses. In addition, the academic institution of the college campus studied, particularly administration, may use this information when considering best strategies to increase tobacco policy compliance and

minimize the negative health impacts of tobacco on campus. More comprehensive policies that are completely tobacco-free may have a better chance at increasing policy compliance while simultaneously limiting secondhand smoke exposure and the amount of tobacco consumed on campus.

Additional research is warranted regarding designated tobacco areas on college and university campuses. Determining whether the significant relationships found in this study exist on other campuses that possess designated tobacco area policies would aid in determining the overall effectiveness of such policies. Of the limited designated tobacco area policy research studies that exist, conclusions provide that such policies may actually result in an increase of individuals using tobacco on campus and the amount of tobacco each individual consumes (Bennet et al., 2017). Stronger tobacco policies are associated with decreased secondhand smoke exposure and increased policy compliance (Fallin et al., 2015) as well as decreased cigarette butt litter (Lee et al., 2013) and decreased smoking intent (Bennett et al., 2017). As a result, additional research on designated areas may result in increased advocacy for comprehensive tobacco-free policies and reinforce the need for all campuses to integrate evidence-based implementation and compliance strategies.

CHAPTER 6. CONCLUSIONS AND IMPLICATIONS

The purpose of this study was to assess the attitudes, perceptions, and social factors that were related to tobacco and designated tobacco use areas on a college campus in Kentucky in phase one and to provide direct tobacco observational data on a campus that possessed a designated tobacco area policy in phase two. With this purpose, this study aimed to provide much needed information that is lacking when studying such policies in the literature. This study was a non-experimental cross-sectional design across both phases, the campus survey that went out to all staff, faculty, and students, as well as the direct observational study. Limited data exist regarding college campuses that possess designated tobacco use areas, and it is entirely self-report.

6.1 Summary of Results

The first phase of this study consisted of a self-administered, online survey that was distributed to all members of the campus that possessed a college e-mail address. Significant findings included:

- Only tobacco user status had significant differences when looking at perceptions of designated tobacco areas and tobacco use – tobacco-users had more positive perceptions of the designated areas and tobacco use
- Appeal of designated tobacco areas was significant when considering campus status ($p = 0.00$)
- Social Influences resulted in significant differences when considering campus status ($p = 0.00$) and tobacco use status ($p = 0.001$)

- Perceptions of designated tobacco area (gazebos) and tobacco use resulted in significant differences when considering tobacco use status (0.03), with higher perceptions of the designated tobacco areas for non-users ($M = 1.34$, $SD = 1.15$) when compared to users ($M = 0.86$, $SD = 1.03$).
- More students responded in disagreement in comparison to staff and faculty when it came to the belief that the gazebos on campus made it hard to fight tobacco addiction (57%)
- Tobacco users (77.1%) responded as being less likely to agree that the gazebos make it hard to fight tobacco addiction, yet 14.3% of survey responses indicated that they started using tobacco after visiting the gazebos on campus
- 24.3% of students and 63.9% of tobacco users reported that they met many of their friends and co-workers in the gazebos on campus
- 50% of survey participants reported secondhand smoke exposure on campus
- 1 in 4 survey participants responding as currently using tobacco

The second phase of this study consisted of direct observations in order to assess the observed tobacco usage and policy compliance in the vicinity of designated tobacco use areas. The current study found that a significant difference in campus tobacco observations were observed across sex ($p = 0.00$) with males being observed more both complying with and violating the tobacco policy. A significant difference also existed with observation time ($p = 0.04$), where over half of all tobacco observations took place after the typical lunch time block on campus. A significant difference was also found in regards to observation location ($p = 0.00$), showing that wherever the designated areas

were a higher number of tobacco observations would be made. These findings contribute to the very limited existing research on campuses with designated policies

6.2 Strengths

The current study provides data to help fill a gap in the current literature surrounding designated tobacco use areas on college campuses. One major strength includes using a theoretical framework to shape the phases of this research study. By utilizing the social ecological theory, the current study may provide a better understanding of the constructs related to intrapersonal and interpersonal factors that contribute to tobacco utilization, especially when it comes to visiting and using designated tobacco areas. The results demonstrate that additional research is warranted on campuses with designated tobacco use area policies and the role that they may play in promoting social factors that are tied to tobacco use initiation, increased tobacco utilization, and secondhand smoke exposure.

This study took place on a small college campus in Kentucky with high tobacco use rates. Phase two utilized observational data collection methods, which are a strength of this study. Furthermore, by collecting data from all campus members (staff, faculty, and students) in phase one, it served as a better method to determine the overall campus climate concerning the way the designated tobacco use area policy, as well as tobacco itself, is perceived. This may be a better way to understand the influences, and perhaps unintended consequences, designated tobacco use area policies may result in across all members of the campus. If the goal of tobacco policies are to minimize tobacco initiation and use as well as minimize secondhand smoke exposure, the perceptions and social

influences of tobacco policies are important to study in order to determine their overall impact on college campuses.

6.3 Limitations

Limited research currently exists on college campuses that possess designated tobacco use area policies. The current study serves as a step towards filling that gap, as there are many college and university campuses that possess such policies. Although there are some studies with self-report data, observational approaches are a large gap in the literature when it comes to designated tobacco use areas. Although this study was an important step, one limitation is that it may not be generalizable to all campuses, particularly considering various campus sizes, geographic locations, or other unique campus factors. An additional limitation was that some tobacco users did not complete all survey items. One unique difference in comparison to other campuses was that the campus observed for this study provided attractive gazebos as designated tobacco use areas. Furthermore, students came from lower socio-economic backgrounds, which may already yield higher tobacco use rates (USDHHS, 2014; Substance Abuse & Mental Health Services Administration, 2017). Due to the unique population and appeal to the gazebos on campus, perhaps other campuses may not result in the same level of social influences or perceptions toward designated areas.

Specific to the observational study, all tobacco observations surrounded the five designated tobacco use areas, or gazebos, and only for ten-minute intervals every hour between 7:50am – 5:00pm. Although violators of the policy in these areas were observed, violations occur everywhere on campus and at all hours of the day. The observations

made may have been limited in representing the whole picture when it comes to tobacco use on the campus studied. Additionally, observations only included tobacco use within a thirty foot perimeter surrounding and including the gazebos on campus. Without including a larger part of campus or locations outside of the designated areas, there may have been a number of tobacco violations that were simply not occurring at such close proximity to the gazebos.

Limitations specific to the survey study included that validated measures did not exist for a majority of the items. All questions were modified from existing measures. Furthermore, the campus had been surveyed within the previous six months regarding tobacco policies on campus. Due to the timing of the study, perhaps less people were willing to fill out an additional tobacco-related survey, or more passionate people regarding this topic were likely to participate. Measuring secondhand smoke exposure, and all other data, based on self-report data was also a limiting factor. Air quality studies would be needed to obtain an accurate representation of secondhand smoke exposure on the campus in this study. Lastly, the length of the survey may have been a limitation, being sixty-five questions in length, some with multiple parts, and requiring significant reading. A more concise survey may have elicited more completed surveys.

6.4 Implications for Researchers and Health Promotion Professionals

The current study provides a unique contribution to research on campus tobacco policies. First, the study utilized the social ecological model. In using the social ecological model, it enables the researcher to study the multiple levels of influence that exist related to tobacco: intrapersonal factors, interpersonal processes and primary

groups, institutional factors, community factors, and public policy. Future research has the opportunity to identify which levels have the greatest impact, best serving campuses in identifying where health promotion programming may have the greatest impact as well as what works and what does not work regarding the campus policy, or perhaps utilizing other theories with cues to action, such as the health belief model.

Although this study may not be generalizable to all campuses or all tobacco policies, the findings presented suggest additional tobacco research is needed on campuses with varying strength of policy and may serve in application in a variety of additional settings. Application of this research may still be considered on other college campuses, worksites, or other locations that possess designated tobacco use areas where addressing appeal, social influences, and perceptions of these locations may be important. This study serves as a potential step towards expanding designated tobacco area policy research into considering these populations as well, considering ways to minimize tobacco initiation, overall consumption, and secondhand smoke exposure.

As discovered by Fallin et al. (2014), stronger tobacco policies result in decreased tobacco observations and exposure to secondhand smoke on campus. Likewise, it was found that comprehensive tobacco-free policies were more effective in reducing exposure to smoking and decreasing intentions to smoke on campus. However, these findings were in one state that may not be representative of all states. In addition, campus tobacco policies should be researched over time in order to realize the full impact of outcomes. Without studying these policies on campuses over time, and without the ability to compare like campuses throughout the process, it may be impossible to determine the actual impact of campus tobacco policies. Further studies regarding direct observations of

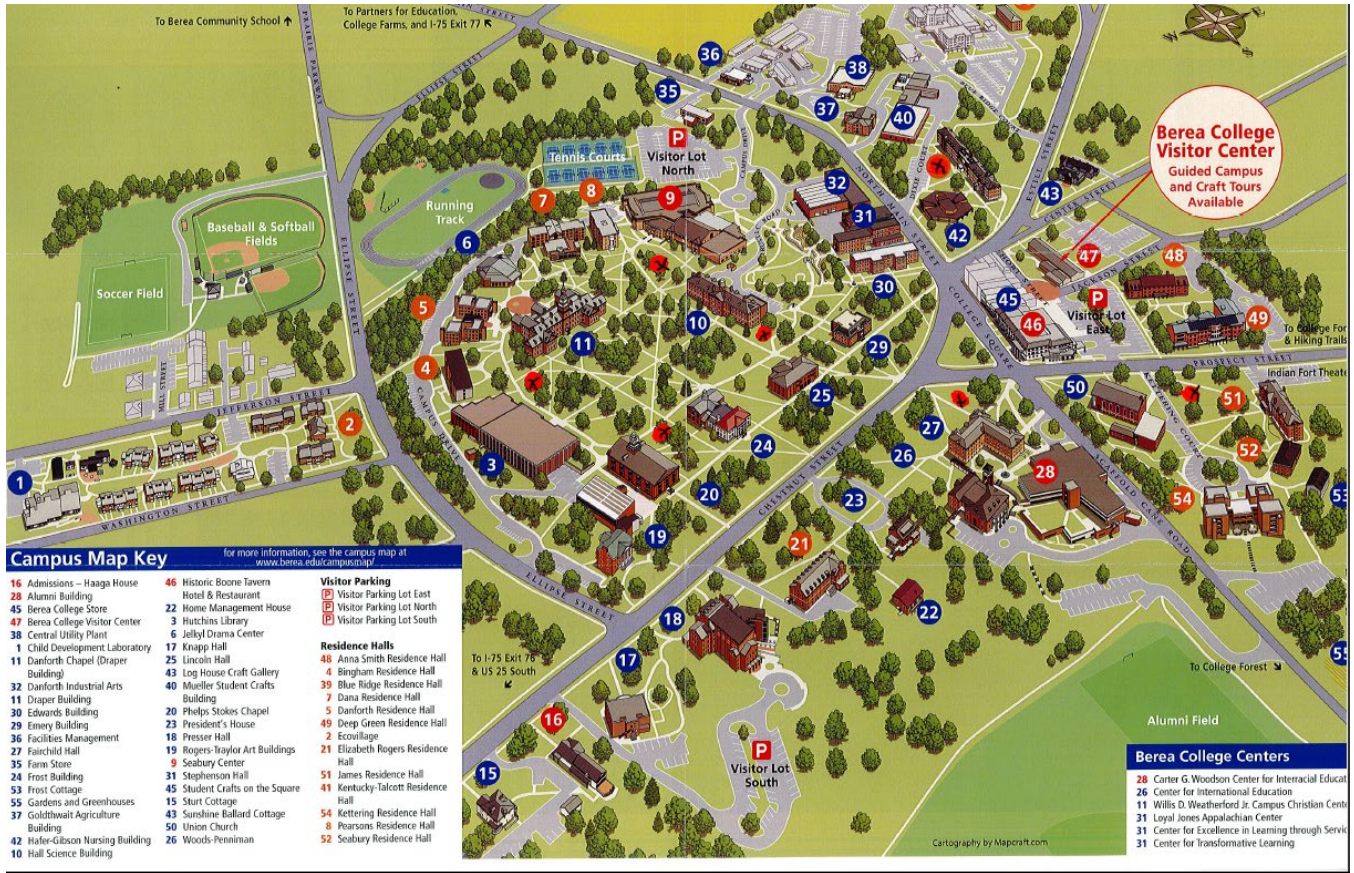
tobacco use on campuses with designated tobacco area policies, the social influences of designated tobacco use areas, attitudes, and perceptions towards such policies are warranted, especially if the goal is to decrease tobacco initiation, utilization, and minimize secondhand smoke exposure on college campuses across the nation.

6.5 Conclusions

Results from this study reinforce that tobacco use continues to be of concern on college campuses, particularly those with designated tobacco use areas. Significant differences in campus observations were observed across sex, time, and location of tobacco use, as well as whether individuals observed were in compliance or violation of the campus policy. The tobacco observation rate observed in this study may be a strong indicator of issues that exist with designated tobacco use area policies. Surveys from this study indicate the potential links between demographic factors and perception of designated tobacco use areas, attraction to designated tobacco use areas, and social influences related to designated tobacco use areas. It appears that health promotion efforts should target the various aspects of designated tobacco area policies, developing programs that minimize social incentives and rewards associated with tobacco use while minimizing tobacco use initiation, increased utilization of tobacco, and secondhand smoke exposure in order to achieve the goals set forth by the ACHA guidelines. This study is a step towards a large gap in the literature that future research should elucidate.

APPENDICES

APPENDIX A. Designated Area (Gazebo) Map.



All red circles with an X placed in them indicate one of the designated tobacco use areas (gazebos) on the Berea College campus, totaling 7 locations.

APPENDIX B. OBSERVATION SCHEDULE.

Monday Day 1	Location				
Time	Gazebo 1	Gazebo 2	Gazebo 3	Gazebo 4	Gazebo 5
7:50 - 8:00	x				
8:50 - 9:00		x			
9:50 - 10:00			x		
10:50 - 11:00				x	
11:50 - 12:00					x
12:50 - 1:00	x				
1:50 - 2:00		x			
2:50 - 3:00			x		
3:50 - 4:00				x	
4:50 - 5:00					x

Wednesday Day 2	Location				
Time	Gazebo 1	Gazebo 2	Gazebo 3	Gazebo 4	Gazebo 5
7:50 - 8:00		x			
8:50 - 9:00	x				
9:50 - 10:00				x	
10:50 - 11:00					x
11:50 - 12:00			x		
12:50 - 1:00		x			
1:50 - 2:00	x				
2:50 - 3:00					x
3:50 - 4:00			x		
4:50 - 5:00				x	

Friday Day 3	Location				
Time	Gazebo 1	Gazebo 2	Gazebo 3	Gazebo 4	Gazebo 5
7:50 - 8:00					x
8:50 - 9:00			x		
9:50 - 10:00		x			
10:50 - 11:00	x				
11:50 - 12:00				x	
12:50 - 1:00			x		
1:50 - 2:00				x	

2:50 - 3:00	x				
3:50 - 4:00					x
4:50 - 5:00		x			

Monday Day 4	Location				
Time	Gazebo 1	Gazebo 2	Gazebo 3	Gazebo 4	Gazebo 5
7:50 - 8:00				x	
8:50 - 9:00					x
9:50 - 10:00	x				
10:50 - 11:00		x			
11:50 - 12:00			x		
12:50 - 1:00					x
1:50 - 2:00			x		
2:50 - 3:00				x	
3:50 - 4:00		x			
4:50 - 5:00	x				

Wednesday Day 5	Location				
Time	Gazebo 1	Gazebo 2	Gazebo 3	Gazebo 4	Gazebo 5
7:50 - 8:00			x		
8:50 - 9:00				x	
9:50 - 10:00	x				
10:50 - 11:00		x			
11:50 - 12:00					x
12:50 - 1:00				x	
1:50 - 2:00					x
2:50 - 3:00		x			
3:50 - 4:00	x				
4:50 - 5:00			x		

Friday Day 6	Location				
Time	Gazebo 1	Gazebo 2	Gazebo 3	Gazebo 4	Gazebo 5
7:50 - 8:00		x			
8:50 - 9:00	x				
9:50 - 10:00			x		
10:50 - 11:00				x	
11:50 - 12:00					x
12:50 - 1:00					x
1:50 - 2:00				x	

2:50 - 3:00			x		
3:50 - 4:00		x			
4:50 - 5:00	x				

APPENDIX C. OBSERVATION DATA SHEET.

Date:	Location:
Arrival Time:	Name (observer):
Number of Compliant Tobacco Users: Male: Female:	Number of Non-Compliant Tobacco Users: Male: Female:
Departure Time:	Total Minutes Spent at Location:
Tobacco Products Observed Being Used:	
Notes:	

Berea College Tobacco Policy Survey

Start of Block: Consent to Participate

Q68 What is your classification at Berea College?

- Staff (1)
- Faculty (2)
- Student (3)

Display This Question:

If What is your classification at Berea College? = Staff

Or What is your classification at Berea College? = Faculty

Q70 The purpose of this research study is to assess the attitudes and perceptions of students, faculty, and staff regarding the designated tobacco area policy on the Berea College Campus. Your responses will help us better understand and improve on-campus tobacco prevention efforts. As a member of the Berea College campus community, we invite you to complete one brief on-line survey. Although you will not receive any personal benefit from taking part in this research study, your responses may help us better understand and improve on-campus tobacco prevention efforts. We hope to receive completed surveys from 800 Berea College employees (faculty and staff), so your answers are important to us. Your consent to participate in the study is determined by the completion and submission of the survey. You do not have to complete the survey, and if you do, you are free to skip any questions or discontinue at any time. The survey will take about 15-20 minutes to complete. The survey will include questions related to your attitudes and perceptions of the current tobacco policy on Berea College's campus. You will have until Friday, December 7, 2018 to complete this survey. There are no known risks to participating in this study. Your response to the survey will be kept confidential to the extent allowed by law. We may be required to show information which identified you to people who need to be sure we have done the research correctly; these would be

people from such organizations as the University of Kentucky. When we write about the study, you will not be identified. While we make every effort to protect your data once received from the online survey company, given the nature of online surveys, as with anything involving the Internet, we cannot fully guarantee the confidentiality of the data while it is on the survey company's servers, or while it is in transit to either them or us. It is also possible the raw data collected for research purposes may be used for marketing or reporting purposes by the software company after the research is concluded, depending on the company's Terms of Service and Privacy policies. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at (859) 257-9428 or toll-free at 1-866-400-9428. If you have any questions about the research itself, please feel free to contact me directly. Thank you in advance for your assistance with this project. Michael A. Dalessio, M.S. Department of Kinesiology and Health Promotion University of Kentucky Phone: (859) 200-8737 Email: Michael.Dalessio@uky.edu Faculty Advisor: Melinda Ickes, Ph.D. Associate Professor Department of Kinesiology and Health Promotion College of Education 111 Seaton Building University of Kentucky 859-257-1625

Display This Question:

If What is your classification at Berea College? = Student

Q71 The purpose of this research study is to assess the attitudes and perceptions of students, faculty, and staff regarding the designated tobacco area policy on the Berea College Campus. Your responses will help us better understand and improve on-campus tobacco prevention efforts. As a member of the Berea College campus community, we invite you to complete one brief on-line survey. As a student, if you decide not to take part in this study, your choice will have no effect on your academic status or class grade(s). Although you will not receive any personal benefit from taking part in this research study, your responses may help us better understand and improve on-campus tobacco prevention efforts. We hope to receive completed surveys from 1600 Berea College students, so your answers are important to us. Your consent to participate in the study is determined by the completion and submission of the survey. You do not have to complete the survey, and if you do, you are free to skip any questions or discontinue at any time. The survey will take about 15-20 minutes to complete. The survey will include questions related to your attitudes and perceptions of the current tobacco policy on Berea College's campus. You will have until Friday, December 7, 2018 to complete this survey. There are no known risks to participating in this study. Your response to the survey will be kept confidential to the extent allowed by law. We may be required to show information which identified you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of

Kentucky. When we write about the study, you will not be identified. While we make every effort to protect your data once received from the online survey company, given the nature of online surveys, as with anything involving the Internet, we cannot fully guarantee the confidentiality of the data while it is on the survey company's servers, or while it is in transit to either them or us. It is also possible the raw data collected for research purposes may be used for marketing or reporting purposes by the software company after the research is concluded, depending on the company's Terms of Service and Privacy policies. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at (859) 257-9428 or toll-free at 1-866-400-9428. If you have any questions about the research itself, please feel free to contact me directly. Thank you in advance for your assistance with this project. Michael A. Dalessio, M.S. Department of Kinesiology and Health Promotion University of Kentucky Phone: (859) 200-8737 Email: Michael.Dalessio@uky.edu Faculty Advisor: Melinda Ickes, Ph.D. Associate Professor Department of Kinesiology and Health Promotion College of Education 111 Seaton Building University of Kentucky 859-257-1625

Q72 Do you give your consent to participate in this research study?

- Yes (1)
- No (2)

Skip To: End of Survey If Do you give your consent to participate in this research study? = No

End of Block: Consent to Participate

Start of Block: Section 1 - These Questions Refer to Your Background

Q1 **Section 1 - These Questions Refer to Your Background**

Q2 What is your gender?

- Male (1)
 - Female (2)
 - Transgender (3)
-

Q3 Are you of Hispanic, Latino, or Spanish origin?

- No, not of Hispanic, Latino, or Spanish origin (1)
 - Yes, Mexican, Mexican American, Chicano (2)
 - Yes, Puerto Rican (3)
 - Yes, Cuban (4)
 - Yes, another Hispanic, Latino, or Spanish origin (5)
-

Q4 Which of these groups would you say best represents your race?

- White (1)
 - Black or African American (2)
 - Asian (3)
 - Pacific Islander (4)
 - American Indian, Alaskan Native (5)
 - 2 or more races (6)
 - Other (please specify) (7)
-

Display This Question:

If What is your classification at Berea College? = Staff

Or What is your classification at Berea College? = Faculty

Q6 How many years have you worked at Berea College?

Display This Question:

If What is your classification at Berea College? = Student

Q7 What is your classification in school?

- First Year (1)
 - Sophomore (2)
 - Junior (3)
 - Senior (4)
-

Display This Question:

If What is your classification at Berea College? = Student

Q8 Are you an in-state, out-of-state, or international student?

- In-State (1)
 - Out-of-State (2)
 - International Student (3)
-

Q9 Is your home residence in Kentucky?

- Yes (1)
 - No (2)
-

Display This Question:

If Is your home residence in Kentucky? = Yes

Q10 Select which county in Kentucky your home residence is in.

▼ Adair (1) ... Woodford (10)

End of Block: Section 1 - These Questions Refer to Your Background

Start of Block: Section 2

Q12

Section 2 - The following questions refer to your knowledge of the tobacco policy on Berea College's Campus

It is important to gather insight into how much the students, faculty, and staff members at Berea College know about the current tobacco policy on campus. For the following questions, please mark the most accurate statement according to what you **know** regarding the tobacco policy.

Q13 What type of tobacco policy does Berea College have?

- No policy - There are no regulations where tobacco can or cannot be used on campus, inside or out (1)
- Designated areas - There are certain areas on campus where tobacco products are allowed to be used outside (2)
- Smoke-Free - The use of all smoke-producing tobacco products, such as cigarettes, cigars, cigarillos, mini-cigars, and hookah are prohibited in all locations on campus, both inside and outside (3)
- Tobacco-Free - The use of all tobacco products, including, but not limited to, cigarettes, cigars, cigarillos, mini-cigars, hookah, spit tobacco, snus, and other smokeless products like e-cigarettes are prohibited in all locations on campus, both

inside and outside. It also oftentimes includes products such as electronic cigarettes (e.g., Juuls, vaping devices). (4)

Don't Know (5)

Other - Please explain in the box provided (6)

Q14 Wherever tobacco use is regulated at Berea College, what tobacco products are **not allowed** to be used?

Cigarettes only (1)

Cigarettes, pipes, water pipes, hookah only (2)

Cigarettes, pipes, water pipes, hookah, smokeless tobacco (e.g., snuff, snus, chew) only (3)

Cigarettes, pipes, water pipes, hookah, smokeless tobacco (e.g., snuff, snus, chew), electronic cigarettes (e.g. vaping devices), or any other unregulated nicotine products (4)

Tobacco use is not regulated on our campus (5)

Q15 Where can tobacco products be used on the Berea College campus?

- Nowhere on campus (inside or outside) (1)
 - Anywhere on campus (inside and outside) (2)
 - Campus parking lots and sidewalks (outside/non-enclosed places) (3)
 - Designated areas only (outside areas designated for tobacco use) (4)
 - Don't Know (5)
-

Q16

Please respond to the following statement:

Berea College promotes prevention and education initiatives that actively support non-use of tobacco products.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q17 Please indicate which of the following services are provided on Berea College's campus:

	Yes (1)	No (2)	Don't Know (3)
Nicotine replacement therapy, such as nicotine patches/gum (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referral to tobacco treatment services on-campus (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referral to off-campus tobacco treatment services (e.g. health department, American Cancer Society) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Section 2

Start of Block: Block 3

Q18 Section 3 - The Following Questions Refer to the Gazebos on Campus

At Berea College, there are several gazebos that are located on campus. For the following questions, we would like to ask you several questions regarding your opinion of the gazebos. Please mark the answer which most accurately represents your opinion.

Q19 The gazebos on campus are an attractive place to gather with friends or co-workers or to meet new friends or co-workers.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q20 The gazebos on campus are a great place to relax.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q21 Whenever I am bored, I like to spend time at the gazebos on campus.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q22 I am more likely to stop at the gazebos only if there are other people already there.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q23 How often do you visit the gazebos on campus?

- Never (1)
 - A few times per month (2)
 - Most days (3)
 - Every day (4)
-

Display This Question:

If How often do you visit the gazebos on campus? = Every day

Or How often do you visit the gazebos on campus? = Most days

Q24 How many times per day on average do you visit the gazebos on campus?

0 2 4 6 8 10 12 14 16 18 20

Please select a number between 0 and 20
()



End of Block: Block 3

Start of Block: Block 4

Q25 **Section 4 - Attitude towards the current tobacco policy and designated areas (e.g. gazebos) on campus**

For the following questions, we would like to know what your attitude is towards the current tobacco policy on the Berea College campus. Please mark the answer that best represents your attitude.

Q26 To what extent do you support or oppose the current tobacco policy at Berea College?

- Very supportive (1)
 - Supportive (2)
 - Opposed (3)
 - Very opposed (4)
-

Q27 How beneficial are the designated tobacco use areas on campus?

- Very beneficial (1)
 - Beneficial (2)
 - Not very beneficial (3)
 - Not beneficial at all (4)
-

Q28 In your opinion, which of the following statements do you most agree with as being the best tobacco policy for Berea College:

- A person should be able to use tobacco wherever they choose (1)
 - Tobacco users should be provided specific outdoor places on campus to go if they choose (2)
 - Tobacco users should not be allowed to use any tobacco products anywhere on campus, indoors or outside (3)
 - I am unsure which tobacco policy is best (4)
-

Q30 Being exposed to second-hand smoke while on Berea College's property makes you concerned for your health.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q31 I typically take an alternate walking route around the designated tobacco use areas on campus.

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly agree (4)

End of Block: Block 4

Start of Block: Block 5

Q32 **Section 5 - Perceived Effectiveness**

For all of the following questions, we would like to know what your opinion is on how effective you believe the current tobacco policy is on the Berea College campus. Please mark the answer that most represents your belief of the current tobacco policy.

Q33 The designated areas for tobacco use on campus are effective in cutting down on secondhand smoke on campus.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q34 The current designated areas for tobacco use have decreased smoking and overall tobacco use among people at Berea College.

- Strongly disagree (1)
 - Disagree (2)
 - Agree (3)
 - Strongly agree (4)
-

Q35 How successful do you think the current designated tobacco use areas are in encouraging people at Berea College to quit using tobacco?

- Very successful (1)
- Successful (2)
- Unsuccessful (3)
- Very unsuccessful (4)

Q36 How has the current Berea College designated tobacco use area policy affected your motivation to quit using tobacco products or stay quit?

- N/A - I have never used any tobacco product (1)
- It increased my motivation to quit using tobacco products or to stay quit (2)
- It decreased my motivation to quit using tobacco products or to stay quit (3)
- It did not have an effect on my motivation to quit using tobacco products or to stay quit (4)

End of Block: Block 5


Start of Block: Block 6

Q37
Section 6

The following questions, we are interested in your thoughts regarding tobacco utilization on campus and your opinions/attitudes towards the social atmosphere surrounding the gazebos.


Q38
Out of every 100 people at Berea College, how many of them do you think smoke cigarettes?

0 10 20 30 40 50 60 70 80 90 100

Please select a whole number between 0 and 100 ()	
---	--

Q39 Out of every 100 people at Berea College, how many of them do you think use other tobacco products (e.g., smokeless tobacco product, cigarillo, hookah, e-cigarette)?

0 10 20 30 40 50 60 70 80 90 100

Please select a whole number between 0 and 100 ()	
---	--

Q40 How many of your 5 closest friends use any form of tobacco (smoke cigarettes, or use smokeless tobacco products, cigarillos, e-cigarettes, chewing tobacco, snuff, etc.)?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)

Q41 For the following questions, please mark the response with the appropriate value for both questions.

	0 (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (6)
How many of your 5 closest friends visit the gazebos at least one time per day? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How many of your 5 closest friends visit the gazebos and do not use tobacco products? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q42 After each statement, mark the response which you agree with the most.

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
I enjoy spending time in the gazebos on campus (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I met many of my Berea College friends or co-workers in the gazebos on campus (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy meeting and talking with other students and/or employees in the gazebos on campus (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The only time I get to see or catch up with my friends, colleagues, or others is at the gazebos on campus (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I avoid the gazebos on campus (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I do not usually
spend time in
the gazebos, but
it looks like the
people in the
gazebos are
having a good
time (6)



Q73 After each statement, mark the response which you agree with the most.

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
Everyone that spends time at the gazebos uses tobacco products (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I started using tobacco products after visiting the gazebos on campus (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The gazebos on campus make it hard to fight tobacco addiction (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The gazebos on campus increase the likelihood that someone will utilize more tobacco products than they otherwise would if they were not there (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 6

Start of Block: Block 7

Q43 Section 7 - Perceived Compliance

For the following questions, we would like to know what your perception is regarding whether tobacco users on the Berea College campus abide by the current tobacco policy. Please mark the answer that best reflects your opinion.

Q44 To what extent do people smoke/use tobacco products outside of the designated tobacco use areas on campus?

- Never (1)
 - Almost never (2)
 - Sometimes (3)
 - All the time (4)
-

Q45 In the past 7 days, have you been exposed to other people's smoke on campus at Berea College? (select the best answer)

- Yes, I have been exposed while in the designated tobacco use areas on campus only (1)
 - Yes, I have been exposed on campus outside of the designated tobacco use areas only (2)
 - Yes, I have been exposed both while in the designated tobacco use areas and outside of designated use areas on campus (3)
 - No, I have not been exposed on campus (4)
-

Q46 In the past 7 days, have you seen someone (not including yourself) smoking on campus at Berea College, inside or outside?

- Yes, while in the designated tobacco use areas on campus only (1)
 - Yes, outside of the designated tobacco use areas only (2)
 - Yes, in both designated tobacco use areas and outside of designated use areas on campus (3)
 - Yes, but unsure if it was in a designated tobacco use area or not (4)
 - No (5)
-

Q47 In the past 7 days, have you seen someone (not including yourself) using tobacco products at Berea College on campus, inside or outside?

- Yes, while in the designated tobacco use areas on campus only (1)
 - Yes, outside of the designated tobacco use areas only (2)
 - Yes, in both designated tobacco use areas and outside of designated use areas on campus (3)
 - Yes, but unsure if it was in a designated tobacco use area or not (4)
 - No (5)
-

Q48 In the past 7 days, have you observed at least one student using tobacco products on campus outside of one of the designated tobacco use areas?

- Yes (1)
 - No (2)
 - Unsure whether the person was a student, employee of Berea College, or a visitor (3)
-

Q49 In the past 7 days, have you observed at least one employee (faculty or staff member) using tobacco products on campus outside of one of the gazebos?

- Yes (1)
 - No (2)
 - Unsure whether the person was an employee, student, or visitor (3)
-

Q50 In the past 7 days, have you smoked on Berea College's property, inside or outside?

- Yes, while in the designated tobacco use areas on campus only (1)
 - Yes, outside of the designated tobacco use areas only (2)
 - Yes, in both designated tobacco use areas and outside of designated use areas on campus (3)
 - Yes, but unsure if it was in a designated tobacco use area or not (4)
 - No (5)
 - I do not use any tobacco products (6)
-

Q51 In the past 7 days, have you used another type of tobacco product on Berea College's property, inside or outside (e.g., smokeless tobacco product, cigarillo, hookah, e-cigarettes)?

- Yes, while in the designated tobacco use areas on campus only (1)
 - Yes, outside of the designated tobacco use areas only (2)
 - Yes, in both designated tobacco use areas and outside of designated use areas on campus (3)
 - Yes, but unsure if it was in a designated tobacco use area or not (4)
 - No (5)
 - I do not use any tobacco products (6)
-

Q52 To what extent do you feel comfortable asking other people to not smoke/use tobacco when outside of the designated areas on campus?

- Very uncomfortable (1)
- Uncomfortable (2)
- Comfortable (3)
- Very comfortable (4)

End of Block: Block 7

Start of Block: Block 8

Q53 **Section 8 - These questions refer to a comprehensive tobacco-free campus policy**

For the following questions, if Berea College were to implement a tobacco-free campus policy (100% tobacco-free) we would like to know some of your opinions. Please mark the answer that best represents your opinion.

Q54 If Berea College prohibited use of all tobacco products on campus inside and out (100% tobacco-free policy), how beneficial would it be?

- Very beneficial (1)
 - Somewhat beneficial (2)
 - Not beneficial (3)
 - Not beneficial at all (4)
-

Q55 How successful do you think a 100% tobacco-free policy would be in reducing people's exposure to second-hand smoke at Berea College?

- Very successful (1)
 - Successful (2)
 - Unsuccessful (3)
 - Very unsuccessful (4)
-

Q56 How successful do you think a 100% tobacco-free policy would be in encouraging people at Berea College to quit using tobacco?

- Very successful (1)
 - Successful (2)
 - Unsuccessful (3)
 - Very unsuccessful (4)
-

Q57 Do you think that the people at Berea College would comply with a 100% tobacco-free policy?

- Never (1)
- Almost never (2)
- Sometimes (3)
- All the time (4)

End of Block: Block 8

Start of Block: Block 9

Q58 Section 9 - Tobacco Use

For the following questions, we are interested in your tobacco usage. As a reminder, your responses are anonymous and cannot be tied to your identity. Please mark the answer that best reflects your current tobacco use.

Q59 Do you currently smoke cigarettes every day, some days, or not at all?

- Every day (1)
 - Some days (2)
 - Not at all (3)
-

Q60 Have you smoked at least 100 cigarettes in your life?

- Yes (1)
 - No (2)
-

Q61 Which of the following tobacco products have you used in the last 30 days? Check all that apply.

	I have used, but not in the past 30 days (1)	I have used in the past 30 days (2)	I have never used (3)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars, Cigarillos, Little Cigars (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah or Water Pipe (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chewing Tobacco, Snuff, Snus, or Dip (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electronic Cigarette (e.g., vape pen, Juul) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please list) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 9

Start of Block: Block 10

Q62

Section 10 - Your Thoughts

We would like to know any additional thoughts or insights that you have regarding the following questions:

Q63 What are your thoughts about using the gazebos as designated tobacco use areas on the Berea College campus?

Q64 What are your thoughts about Berea College becoming a 100% tobacco-free campus?

Q65 Do you have other comments about tobacco use or campus tobacco policies?

End of Block: Block 10

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VITA

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EDUCATION

- Ed.D. - University of Kentucky** - December 2019 (expected) Lexington, KY
Program: Health Promotion
Dissertation: Attitudes, Perceptions, and Observations of a Designated Area Tobacco Policy at a Small Private Liberal Arts College in Kentucky
- M.S. - University of Kentucky** (2006 – 2011) Lexington, KY
Program: Exercise Physiology
Thesis: The Effects of an Acute Bout of Proprioceptive Neuromuscular Facilitation Stretching On Strength, Power, Balance, Range Of Motion, and Functional Performance In Elderly Males Aged 65 Years and Older
- Graduate Certificate Program:* Developmental Disabilities, UK Human Development Institute (2008—2009)
- B.S. - Berea College** (2001 - 2005) Berea, KY
Major: Physical Education
Concentration: Exercise Science
Minor: Business Administration

PROFESSIONAL EXPERIENCE

- Berea College** (August 2013 - present) Berea, KY
Lecturer & Advisor – Health and Human Performance
- Berea College** (December 2013 - present) Berea, KY
Assistant Track and Field Coach
- Eastern Kentucky University**
Lecturer – Physical Education (Fall 2013 – Fall 2015)
- The University of Kentucky Underground Fitness Gym** (August 2012 - August 2013) Lexington, KY
Director of Personal Training
- University of Kentucky Tobacco-Free Ambassador Program** (May 2012 - present) Lexington, KY
Tobacco-Free Take Action! Ambassador

Berea College (2010 - 2011) <i>Physical Education Instructor</i>	Berea, KY
University of Kentucky Health and Wellness Program (2007 - 2012) <i>Graduate Assistant</i>	Lexington, KY
Dalessio Fitness, LLC (2008 - 2010) <i>Owner and Programmer</i>	Lexington, KY
Bluegrass Area Development District (BGAAA) (2009 - 2010) <i>Respite Care Provider/Michelle P. Waiver</i>	Lexington, KY
Lexington Police Academy Gym (2006 - 2007) <i>Facility Supervisor</i>	Lexington, KY
Berea College Physical Education Department (February 2005 – December 2005) <i>Teaching Assistant – Lifetime Wellness</i>	Berea, KY
Berea College Student Life Department (2004 - 2005) <i>Personal Trainer</i>	Berea, KY
Berea College Physical Education Department (2003) <i>Teaching Assistant – Weight Training</i>	Berea, KY

PROFESSIONAL & RESEARCH PRESENTATIONS

- Health & Wellness Lunch and Learn Series: Exercise and Stress (University of Kentucky, Fall 2011)
- Health & Wellness Lunch and Learn Series: Health Promotion Strategies in the Workplace (University of Kentucky, Spring 2012)
- Developmental Disabilities Conference: Adapted Fitness Training Techniques—Strategies and Application (Lexington, Fall 2010)
- Health & Wellness Lunch and Learn Series: Fitness Techniques to Combat Osteoporosis (University of Kentucky, Fall 2009)
- University of Kentucky Exercise Science Graduate Seminar Lecture: The Effects of An Acute Bout of Proprioceptive Neuromuscular Facilitation Stretching On Strength, Power, Balance, Range of Motion, and Functional Performance in Elderly Males Aged 65 Years and Older (Spring 2011)
- Exercise and Disease Presentations: Exercise Strategies For Individuals With Cerebral Palsy (University of Kentucky Human Development Institute, Fall 2008)
- Ergonomic and Physiologic Assessment In the Workplace: Exercise Strategies to Reduce Injury and Improve Productivity For Individuals In the Workplace (University of Kentucky, Fall 2008)
- A Comparison of Maximal Oxygen Consumption Testing on the Elliptical Trainer and Treadmill (Kentucky Association for Health, Physical Education, Recreation, and Dance – KAHPERD – Conference, November 2014)
- A Comparison of Maximal Oxygen Consumption Testing on the Elliptical Trainer and Treadmill (Society of Health and Physical Educators – SHAPE America – Conference, March 2015, February 2016)

- The Effects of Kettlebell Training on Lower Back Health and Strength (Society of Health and Physical Educators – SHAPE America – Conference, January 2017)
- Sustenance of Small Portion Size Consumption Behavior In Rural Appalachia: An Application of Multi-Theory Model (Kentucky Association for Health, Physical Education, Recreation, and Dance – KAHPERD – Conference, November 2018)
- Yukigassen – Winter Olympics New Sport or Glorified Dodgeball? (Kentucky Association for Health, Physical Education, Recreation, and Dance – KAHPERD – Conference, November 2018)
- Observations of a designated tobacco area policy at a small private college in Kentucky (University of Kentucky Research Symposium, Spring 2019).

PUBLICATIONS

- Mortara, AJ, Dalessio, M, Bodenstein, C, Huff, T. (2014). A comparison of maximal oxygen consumption testing on the elliptical trainer and treadmill. (Currently under review for publication in Research Quarterly for Exercise and Sport).