

2006

## The influence of tobacco merchant education and enforcement activities on the rate of tobacco use among youth in Louisiana

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THE INFLUENCE OF TOBACCO MERCHANT EDUCATION  
AND ENFORCEMENT ACTIVITIES ON THE RATE OF TOBACCO USE  
AMONG YOUTH IN LOUISIANA

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The School of Human Resource Education and Workforce Development

by  
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May 2006

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## ACKNOWLEDGMENTS

I would like to thank those who have aided me in my journey toward receiving my Ph.D. First and foremost, I would like to thank my family for the unconditional love and support they have given me through the many years of my education. I would like to thank my sister, Kimberly, for her editing expertise. To my boss, Sanford, and colleagues (especially Bill), thank you for picking up the slack when I needed to take time from my job to work on my dissertation. To my friends, Bernetta, Darris, Elliott, and Kali, my heart-felt thanks for your continued support and understanding through the craziness.

To my co-chairs, Dr. Betty Harrison and Dr. Michael Burnett, I offer my sincere gratitude. Dr. Burnett, thank you for your guidance, but even more for your patience. Dr. Harrison, thank you for never giving up on me, even when I wanted to give up on myself. You inspired me to follow my dreams...I thank you from the bottom of my heart. Finally, I would like to acknowledge and express my gratitude to the other members of my dissertation committee: Dr. Joe Kotrlik, Dr. Earl Johnson, and Dr. Julie Schroeder.

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## ABSTRACT

The purpose of this study is two-fold: 1) to determine whether a relationship exists between the self-reported tobacco use by secondary students in Louisiana and the tobacco sale rate to persons under the age of 18 in those parishes; and 2) to investigate the relationship between merchant education in a parish and the parish tobacco sale rate to persons under the age of 18 in those parishes. Multiple data sources were utilized to include tobacco use among secondary students, education provided to merchants, and tobacco sales to minors compliance checks. Aggregated parish data for each of the data sources were examined. The prevalence of tobacco use among secondary students was obtained from summary data from the 2002 Louisiana Communities that Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey. Merchant education activities were obtained from summary reports provided by community contractors that provide merchants with educational materials related to the sale of tobacco products to minors. Finally, tobacco compliance check data were obtained from summary reports provided by the Louisiana Office of Alcohol and Tobacco Control with the number of compliance checks conducted and the number of compliance checks resulting in a violation. Findings from the study indicated that: a) The self-reported level of tobacco use among secondary students has decreased; b) There is no relationship between parish youth tobacco use and the parish rate of merchant education; c) There was no relationship between the change in parish youth tobacco use and the parish rate of tobacco sales to minors; and d) A greater number of tobacco merchants in a parish tended to be associated with lower levels of tobacco use among secondary students. It is recommended that continued examination of youth tobacco use, merchant education, and youth access to tobacco be continued over time.

## CHAPTER ONE: INTRODUCTION

### Rationale of the Study

In the United States, it is estimated that 440,000 deaths each year are caused by tobacco use, resulting in an annual cost of \$75 billion in direct medical expenses. Nationally, the health consequences of smoking result in the potential loss of life. Each year, more than 5.6 million years of life are potentially lost (Centers for Disease Control [CDC], 2002). In addition, more deaths are caused by tobacco use each year than by all deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined (McGinnis & Foege, 1993).

The World Health Organization (1997) reported in “Tobacco Use: A Public Health Disaster,” that tobacco use is a risk factor for 25 diseases, inclusive of cancers of the mouth, larynx, lung, esophagus, bladder, pancreas, pelvis, stomach, and cervix. Smoking is also a cause of heart disease, stroke, vascular disease, chronic obstructive lung disease and other respiratory diseases, and low birth-weight babies. Smoking is a probable cause of peptic ulcer disease, unsuccessful pregnancies and increased infant mortality, including sudden infant death syndrome (SIDS).

*The Morbidity and Mortality Weekly Report* (CDC, 2002a) attributed the following number of annual deaths to cigarette smoking during the time period 1995-1999: lung cancer 124,813; chronic lung disease 82,431; heart disease 81,976; other cancers 30,948; secondhand smoke 38,053; stroke 17,445; and other diagnoses 66,732.

It is estimated that tobacco use kills over three million people each year worldwide. Based on current trends, the death toll will rise to 10 million deaths per year by the 2020s or

2030s, with 70% of these deaths occurring in developing countries (World Health Organization [WHO], 1997). In addition to the health effects experienced by the smoker, secondhand smoke has been linked to the lung cancer deaths of 3,000 non-smokers. Approximately 150,000 to 300,000 children under the age of 18 months experienced lower respiratory tract infections and asthma as a result of being exposed to secondhand smoke (United States Department of Health and Human Services [USDHHS], 2010, 2000). The National Institute on Drug Abuse (NIDA) reported that in addition to the health consequences suffered by smokers ingesting the nicotine found in cigarettes, cigarette smoke contains more than 4,000 substances, many of which are known to cause cancer or damage the lungs (National Institute on Drug Abuse [NIDA], 1998).

Results from the National Household Survey on Drug Abuse conducted in 2002 by the Substance Abuse and Mental Health Services Administration (SAMHSA) revealed that 71.5 million people in the United States reported use of a tobacco product during the last month. This calculated into a prevalence rate of 30.4% for the population age 12 and older. Of the population age 12 and older, 26% reported smoking cigarettes, 12.8% reported smoking cigars, 7.8% reported using smokeless tobacco, and less than 1% reported smoking tobacco in a pipe. Other studies have shown even higher rates of tobacco use (Substance Abuse and Mental Health Services Administration [SAMHSA], 2003).

The Report of the Surgeon General (USDHHS, 1994) revealed that 90% of adult smokers smoke before the age of 18. It is estimated that 4,000 young people under the age of 18 have tried their first cigarette by the time they were 12 years old. Furthermore, more than 6.4 million children alive today will die prematurely as adults from a smoking-related illness if they choose to begin using tobacco products as adolescents (CDC, 1998).

The 2002 National Youth Tobacco Survey is a self-administered, anonymous survey conducted in schools throughout the United States. This survey monitors tobacco use, exposure to environmental tobacco smoke, and other tobacco-related issues. The survey revealed that 57% of high school students and 33% of middle school students reported having smoked cigarettes in the past month. Of those youth surveyed, 11% of high school and three percent of middle school students reported smoking at least 20 days over the last 30 days (CDC, 2003b).

The Report of the Surgeon General (USDHHS, 1994) revealed that the majority of tobacco use began before youth graduated from high school; and thereby suggested that if adolescents could be kept from tobacco products, most would never begin using tobacco. In addition, most adolescent smokers became addicted to the nicotine found in tobacco products and when asked, admitted that they wanted to quit smoking, but were unable to do so. Youth reported relapse rates and withdrawal symptoms similar to those of smoking adults. The Report further indicated that tobacco is typically the first drug used by young people who use alcohol and other drugs.

The World Health Organization (1997) reported a number of factors that influence young people to smoke. The first of these factors is related to the health-related consequences of smoking. Health-related consequences of smoking do not occur immediately; therefore, adult smokers, who have been smoking for many years, are more likely to suffer from tobacco-related illnesses than young smokers. For this reason, young people often minimize the health risks associated with tobacco use, denying that they will ever experience such smoking-related consequences. The second factor that influences young persons to smoke is media messages targeting youth. Youth are exposed to advertisements promoting tobacco products as glamorous,

popular and harmless. Another factor that influences youth to smoke is that young persons tend to model smoking behaviors exhibited by older siblings and adults. Youth often observe older siblings, parents, and other adults in smoking behaviors. Finally, youth are strongly influenced by others in their peer group. If encouraged by smoking peers to smoke, youth often respond by engaging in smoking behaviors. Further, although young people may initiate smoking as a result of the above influences, they tend to remain smoking due to the addictive nicotine found in cigarettes. The nation has become concerned about the health-related consequences of smoking and youth tobacco use. For this reason, tobacco-related legislation has been passed in an effort to combat these growing tobacco-related problems. One example of tobacco-related legislation is the Synar Amendment.

In 1992, Congress passed the Synar Amendment (PL # 102-321) to the Alcohol, Drug Abuse and Mental Health Administration Reorganization Act. The Synar Amendment, named after congressional sponsor Representative Mike Synar, requires states to develop laws reducing the sale and distribution of tobacco products to individuals under the age of 18. This law was based upon research evidence that nearly 90% of adult smokers smoke before the age of 18, and that they regularly purchase their own cigarettes from stores and vending machines (Centers for Disease Control, 1996). In essence, the Synar Amendment presumed that by limiting the availability of tobacco to minors, tobacco use by youth would also decrease.

The Substance Abuse and Mental Health Services Administration (SAMHSA) issued an amended Synar Regulation in January 1996. The amended Synar Regulation designated that the single state agency that receives the SAMHSA Substance Abuse Prevention and Treatment (SAPT) Block Grant be responsible for oversight, management, and implementation of the Synar

Amendment. Each state is required to conduct random, unannounced inspections of retail outlets to assess the extent of tobacco sales to minors. These random, unannounced inspections are required to be conducted annually, and the SAPT Block Grant recipient must submit a report detailing the outcome of these inspections to SAMHSA. The Synar Amendment requires that each state maintain a compliance rate of at least 80%, meaning that no more than 20% of merchants in a state can be non-compliant with the law by selling tobacco products to minors. If a state is unable to meet and maintain an 80% compliance rate, the SAPT Block Grant recipient will lose a portion of its block grant funds.

The State of Louisiana Department of Health and Hospitals Office for Addictive Disorders is the SAPT Block Grant recipient and thus coordinates and prepares this required Annual Synar Report to examine the current level of accessibility of tobacco products to minors. Since 1996, Louisiana has been able to document compliance with the Synar Amendment and has exceeded the Synar Amendment requirement by maintaining a compliance rate greater than 90% (Ulmer, 2004). The State of Louisiana has conducted a bi-annual survey since 1998 of Louisiana students enrolled in Grades 6, 8, 10, and 12. The survey measures the self-reported current and lifetime use of alcohol, tobacco and other drugs (ATOD). In reviewing results beginning in 1998, the survey has found that the use of tobacco among the above-mentioned youth has declined; however, the direct cause of this decline is unknown (Louisiana Office for Addictive Disorders, 2004; Louisiana Office for Addictive Disorders, 2002).

To date, there have been no statewide studies conducted to examine the link between youth access to tobacco and youth tobacco use. It is imperative that a thorough investigation of the link between access and use be examined to ascertain if the assumptions made by Congress

can be validated. The State of Louisiana is in a unique position to validate or discredit the assumptions on which the Synar legislation was based by examining the 2002 Communities That Care® Youth Survey (Louisiana Office for Addictive Disorders, 2002) and the 2004 Louisiana Caring Communities Youth Survey (Louisiana Office for Addictive Disorders, 2004), as well as utilizing data collected regarding the access of tobacco products to minors.

#### Purpose of the Study

The primary purpose of this study was two-fold: 1) to determine if a relationship exists between the self-reported tobacco use by secondary students in Louisiana and the tobacco sale rate to persons under the age of 18 in those parishes; and 2) to investigate the relationship between the level of merchant education in a parish and the parish tobacco sale rate to persons under the age of 18 in those parishes.

#### Objectives of the Study

Objectives were developed and guided the researcher to:

- Objective 1: Determine the self-reported level of tobacco use in 2002 and 2004 among selected students in Grades 6, 8, 10, and 12 in Louisiana.
- Objective 2: Determine if the self-reported level of tobacco use changed between 2002 and 2004 among selected students in Grades 6, 8, 10, and 12 in Louisiana.
- Objective 3: Determine the Louisiana parish rate of merchant education related to sales to minors (defined as receiving merchant education during an unconsummated compliance check) as measured by the number of merchants who received educational materials divided by the total number of licensed tobacco merchants in a parish.

- Objective 4: Determine the Louisiana parish rate of compliance checks related to the sale of tobacco to minors (defined as the total number of compliance checks divided by the total number of licensed tobacco merchants in a parish).
- Objective 5: Determine the Louisiana parish minor tobacco sale rate as measured by the number of sales to minors, i.e., violations divided by the number of compliance checks completed.
- Objective 6: Determine if a relationship exists between the Louisiana parish rate of merchant education related to the sales to minors and the Louisiana parish minor tobacco sale rate (as measured by the number of sales to minors, i.e., violations, divided by the number of compliance checks) in Louisiana.
- Objective 7: Determine if a relationship exists between the Louisiana parish rate of merchant education related to sales of tobacco to minors and the self-reported level of tobacco use among selected secondary students in Louisiana.
- Objective 8: Determine if a relationship exists between the Louisiana parish minor tobacco sale rate and the change, if any, in the self-reported level of tobacco use among selected secondary students in Louisiana.
- Objective 9: Determine if a model exists to explain a significant portion of the variance in the self-reported level of tobacco use among selected secondary students in Louisiana from the following factors:
- a. Louisiana parish rate of merchant education related to sales to minors;
  - b. Louisiana parish minor tobacco sale rate as measured by the number of sales to minors (violations) divided by the number of compliance checks;

- c. Louisiana parish number of compliance checks completed; and
- d. Total number of licensed tobacco merchants in the Louisiana parishes.

#### Limitations of the Study

The following characteristics of the study design posed potential limitations on the outcomes of the study: 1) The surveys conducted with secondary students in Louisiana from which the measures of tobacco use were derived rely on self-reports of the behaviors included in the questionnaire. Even though study participants were assured of complete confidentiality regarding the responses they provided to these surveys, as with all self-report measures, the possibility exists that students reported inaccurate values in response to these items. This is of particular concern if the younger students were not convinced of the confidentiality of their responses and they feared their parents and/or teachers learning of their tobacco use. 2) Only aggregated parish data was utilized for responses from selected questions from the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey. Aggregating data always creates a lower level of precision in the measurements than might be desirable which creates a limitation to the study. However, in this study, where the primary variable of investigation was merchant education actions, parish level data is the highest level of precision that could reasonably be used since this is the most precise measurement for the merchant education variable. With aggregated data, parishes (sampling units in this study) with a smaller number of respondents would be weighted equally with parishes with a larger number of respondents which may also create limitations in the data. However, access to the data was contingent on use of only parish level aggregated data.

## CHAPTER TWO: REVIEW OF LITERATURE

Numerous sources were researched and reviewed as a part of this review of literature. In an effort to organize this review of literature, topic areas under sub-headings divide previous research.

### Economic Cost of Tobacco Use in the United States

Tobacco use is the single most preventable cause of death and disease in the United States and produces substantial health-related economic costs to society. The Center for Chronic Disease (CDC) reported that direct medical expenses attributed to smoking equal more than \$75 billion per year (CDC, 2002), and smoking costs an estimated \$82 billion per year in lost productivity; totaling approximately \$159 billion annually (CDC, 2003a).

*The Morbidity and Mortality Weekly Report* (CDC, 2002a) indicated that during 1995 – 1999, the average mortality-related productivity losses attributable to smoking for adults were \$81.9 billion. For this particular study, the annual medical costs of smoking for individuals over the age of 18 were estimated by multiplying the 1998 personal health-care expenditures. Health care expenditures related to ambulatory, hospital, prescription drugs, nursing home, and other health care could be reduced or avoided if the use of tobacco products were eliminated.

In 1998, smoking-attributable personal health-care medical expenditures were \$75.5 billion. For each of the approximately 46.4 million adult smokers in 1999, these costs represented \$1,760 in lost productivity and \$1,623 in excess medical expenditures. Smoking-attributable neonatal expenditures were \$366 million in 1996 (\$704 per maternal smoker). Maternal smoking accounted for 2.3 % of total neo-natal medical expenditures in 1996. The economic costs of tobacco totaled \$3,391 per smoker per year. The report further described that for each of the 22

billion packs of cigarettes sold in the United States in 1999, \$3.45 was spent on smoking-attributable medical care costs and \$3.73 in productivity costs were incurred for a total of \$7.18 per pack (Centers for Disease Control, 2002a).

### Health Effects of Tobacco Use

Nearly one of every five, or 440,000 deaths, has been attributed to tobacco use in the United States each year (Centers for Disease Control, 2002). Tobacco use causes more deaths each year than all deaths from human immunodeficiency virus, illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined (McGinnis & Foege, 1993).

Since the release of the first Surgeon General's Report in 1964, knowledge about the health consequences of tobacco use has increased greatly. It is now well documented that smoking cigarettes causes chronic lung and heart disease as well as cancer of the lung, esophagus, larynx, mouth, and bladder. Additionally, cigarette smoking contributes to cancer of the pancreas, kidney, and cervix. Consequences of using smokeless tobacco include cancer of the gum, mouth, pharynx, larynx, and esophagus. Women who use tobacco during pregnancy can experience increased risk for infertility and pre-term deliveries. Women smokers are also more likely to have spontaneous abortions and adverse birth outcomes, including low birth weight babies, which is the leading cause of death among infants. In addition, evidence is accumulating that shows maternal tobacco use is associated with mental retardation and birth defects, such as oral clefts (Centers for Disease Control, 2003a).

The Report of the Surgeon General (USDHHS, 1994) indicated that smoking accounts for 85% of all lung cancer deaths, 80% of all chronic obstructive pulmonary disease deaths, and 30% of all heart disease deaths. The Report indicated that the risk of dying from lung cancer is more

than 22 times higher among men and about 12 times higher among women who smoke cigarettes, compared to men and women who never smoke. Cigarette smoking approximately doubles a person's risk for stroke. Cigarette smokers are more than 10 times as likely to develop peripheral vascular disease; two to four times more likely to develop coronary heart disease; and are 10 times more likely to develop peripheral vascular disease than non-smokers. Of all deaths from chronic obstructive lung diseases, 90% are attributable to cigarette smoking. Post-menopausal women who smoke have lower bone density, increasing their risks for hip fractures, than women who never smoked.

*The Morbidity and Mortality Weekly Report* (CDC, 2002a) showed that in the United States during 1995-1999, smoking caused an annual average of 264,087 deaths among men and 178,311 deaths among women. Among adults, most smoking-related deaths were attributed to lung cancer (124,813), heart disease (82,431), and chronic airways obstruction (64,735). Smoking during pregnancy resulted in the death of 599 male and 408 female infants annually. During 1994-1998, the total annual smoking-attributable mortalities included the deaths of 589 males and 377 females by residential fire and the deaths of 15,517 males and 22,536 females from lung cancer and heart disease attributable to exposure to secondhand smoke.

Smoking cigarettes shortens the life span. The WHO (1997) reported that lifelong smokers, on an average, have a 50% chance of dying from a tobacco-related disease. Half died in middle age, before reaching the age of 70. Smokers who die from smoking before the age of 70 years will lose, on average, 22 years of normal life expectancy. The CDC supports that adults will die earlier than non-smokers and further report that, based on current cigarette smoking patterns, an estimated 25 million Americans who are alive today will die prematurely from

smoking-related illnesses, including more than five million youth under the age of 18 (CDC, 1996).

The United States Environmental Protection Agency (1997) reported that smokers are not the only individuals that suffer health consequences from cigarette smoking. More than 4,000 chemical compounds are found in tobacco smoke (at least 50 are known to cause cancer). The Morbidity and Mortality Weekly Report (CDC, 2002a) indicated that each year, because of environmental tobacco smoke, an estimated 3,000 non-smoking Americans die of lung cancer, and 300,000 children suffer from lower respiratory tract infections. It is also reported by this source that for every one person who dies of a smoking-attributable disease, there are 20 more people suffering with at least one serious illness from smoking.

#### Tobacco Products: Addictive Drugs

The Drug Watch International issued a position statement specific to tobacco and alcohol as gateway drugs indicating that in July 1995, the United States Food and Drug Administration (FDA) concluded for the first time that nicotine is a drug and that it should be regulated as a controlled substance. The report further explained that if tobacco were a new product seeking FDA clearance today, it would likely be rejected as hazardous and addictive (Drug Watch International, n.d., Retrieved November 24, 2004, from [http://www.drugwatch.org/Alcohol%20&%20Tobacco\\_Gateway%20](http://www.drugwatch.org/Alcohol%20&%20Tobacco_Gateway%20)).

The U.S. Department of Health and Human Services National Institute on Drug Abuse (NIDA) (2002) described nicotine as one of the most used addictive drugs in the United States. Cigarette smoking was identified as the most popular method of taking nicotine since the beginning of the 20th century, referring to the 1989 Report of the U.S. Surgeon General. It was

concluded that cigarettes and other forms of tobacco, such as cigars, pipe tobacco, and chewing tobacco, are addictive and that nicotine is the drug in tobacco that causes addiction.

The effects of nicotine on the brain and body initiate a chain reaction in the body. When a person inhales cigarette smoke, nicotine in the tobacco smoke is absorbed rapidly into the blood and starts affecting the brain within seconds. In the brain, nicotine activates the same reward system, although to a lesser degree, similar to other drugs of abuse such as cocaine or amphetamines. Nicotine's immediate action on this reward system is thought to be responsible for the drug-induced feelings of pleasure, and over time, addiction. Nicotine is also found to increase alertness and enhance mental acuity. In the cardiovascular system, nicotine increases heart rate and blood pressure and restricts blood flow to the heart muscle. Nicotine stimulates the release of the hormone epinephrine, further stimulating the body's nervous system and enhancing the immediate effects of the drug. Nicotine promotes the release of the hormone beta-endorphin, a chemical in the brain, which inhibits pain (The National Institute on Drug Abuse [NIDA], 1998).

Nicotine stimulates the central nervous system, and other endocrine glands, causing a sudden release of glucose. This stimulation is then followed by depression and fatigue, leading the abuser to seek more nicotine. Nicotine is absorbed from tobacco smoke in the lungs when using cigarettes, cigars, and pipes and is absorbed into the gums when tobacco is chewed. It is interesting to note that with regular use of tobacco, levels of nicotine accumulate in the body during the day and persist overnight. Therefore, individuals who smoke or chew tobacco daily are exposed to the effects of nicotine 24 hours a day. Nicotine, like cocaine, heroin, and marijuana, increases the level of dopamine in the body, affecting the portions of the brain that control reward and pleasure (NIDA, 1998).

When individuals have become addicted to nicotine, attempts to stop smoking result in withdrawal symptoms. Signs of withdrawal begin when smokers are without nicotine for a 24-hour period. When withdrawing from nicotine, smokers often become angry, hostile, aggressive, and argumentative. Individuals that suffer from withdrawal symptoms take longer to regain emotional stability following a stressful event. During periods of abstinence, smokers will crave nicotine and often show signs of psychomotor impairment. Some smokers may find it difficult to concentrate and comprehend during conversations (NIDA, 2002).

“Preventing Tobacco Use Among Young People: A Report of the Surgeon General” (USDHHS, 1994) reported that among students who were high school seniors during 1976 – 1986, 44% of daily smokers believe that in five years they would not be smoking. However, follow-up studies indicated that five to six years later, 73% of these individuals smoke daily. Among adults in the United States who have ever smoked daily, 82% tried their first cigarette before the age of 18 years. Among current daily adult smokers, 55% became daily smokers before the age of 18.

The report (USSDHHS, 2004) further indicated that 90% of adult smokers started smoking well before the age of 18. It is estimated that 4,000 young people under the age of 18 try their first cigarette by the time they are 12 years old. If current smoking patterns continue, it is estimated that 6.4 million children living today will die prematurely because of the decision they make as adolescents to smoke cigarettes (USDHHS, 1994).

#### Tobacco Use in the United States

“Preventing Tobacco Use Among Young People: A Report of the Surgeon General” (USDHHS, 1994) indicated that youth are put at increased risk of initiating tobacco use by socio-

demographic, environmental, and personal factors. Coming from a family with low socio-economic status is described as a socio-demographic risk factor. Environmental risk factors included accessibility and availability of tobacco products, cigarette advertisements and promotion practices, the price of tobacco products, perceptions that tobacco use is normal, peer and sibling use, approval of tobacco use, and lack of parental involvement. Personal risk factors included low self-image and low self-esteem, the belief that tobacco use provides a benefit, and the lack of skills to refuse accepting tobacco products from others.

The National Survey on Drug Use and Health (2002) presents a series of questions in regard to the use of several tobacco products, including cigarettes, chewing tobacco, snuff, cigars, and pipe tobacco. Data for chewing tobacco and snuff were combined and referred to as smokeless tobacco. Cigarette use was defined as smoking part or all of a cigarette. Findings from the survey indicated that 71.25 million Americans reported current use (tobacco use during the past month) of tobacco products. A prevalence rate of 30.4% of current tobacco use was reported for the population aged 12 years or older. Among individuals aged 12 years or older, 61.1 million (26.0%) smoked cigarettes, 12.8 million (5.4%) smoked cigars, 7.8 million (3.3%) used smokeless tobacco and 1.8 million (0.8%) smoked tobacco in pipes. Young adults, aged 18 to 25 years, reported the highest rate (45.3%) of use in tobacco products. Cigarette smoking rates increased by year of age up to age 21 as follows: 1.7% at age 12, 4.7% at age 13, 8.5% at age 14, 14.1% at age 15, 21.9% at age 16, and 28.1% at age 17. The highest smoking rate was reported at age 21 at 46.2%. The overall prevalence rate of cigarette use was 13.0% among youth ages 12 to 17 years, 40.8% among young adults ages 18 to 25 years, and 25.2% among adults ages 26 or older (SAMHSA, 2003).

Results from the 2002 National Youth Tobacco Survey (NYTS) were outlined in “Tobacco Use among Middle and High School Students – United States, 2002” (CDC, 2003b). The National Youth Tobacco Survey is a self-administered, anonymous survey conducted in schools throughout the United States. The survey monitors tobacco use, exposure to environmental tobacco smoke, and other tobacco related issues. The 2002 NYTS revealed that 57% of high school students and 33% of middle school students reported having smoked cigarettes in the past month. Of those youth surveyed, 11% of high school and 3% of middle school students reported frequent smoking (smoking during 20 days or more of the last 30 days).

A Report of the Surgeon General (USDHHS, 1998c) indicated that tobacco use varied within and among racial/ethnic minority groups; among adults, American Indians and Alaska Natives had the highest prevalence of tobacco use, and African American and Southeast Asian men also have a high prevalence of smoking. Asian American and Hispanic women had the lowest prevalence of tobacco use. Among adolescents, cigarette smoking prevalence increased in the 1990s among African Americans and Hispanics after several years of substantial decline among adolescents of all four racial/ethnic minority groups. This increase is particularly striking among African American youths, who had the greatest decline of the four groups during the 1970s and 1980s.

The Report of the Surgeon General (USDHHS, 1998c) also indicated that no single factor determined patterns of tobacco use among racial/ethnic minority groups. These patterns were the result of complex interactions of multiple factors, such as socioeconomic status, cultural characteristics, acculturation, stress, biological elements, targeted advertising, price of tobacco products, and varying capacities of communities to mount effective tobacco control initiatives.

## Tobacco Use by Youth in Louisiana

The 2004 Louisiana Caring Communities Youth Survey (formerly the Louisiana Communities That Care® Survey) recorded self-reported current use of alcohol, tobacco and other drugs by Louisiana students enrolled in Grades 6, 8, 10 and 12. This survey generated the following results related to tobacco use: 19% of students in Grade 6, 37.1% of students in Grade 8, 45.7% of students in Grade 10, and 52.1% of students in Grade 12 reported using tobacco at some time in their life. When asked about tobacco use during the past 30 days, the following were reported: (a) 4.3% by Grade 6, (b) 12.4% by Grade 8, (c) 17.5% by Grade 10, and (d) 23.8% by Grade 12. National comparisons have not yet been provided for this 2004 survey (Louisiana Office for Addictive Disorders, 2004). The 2002 Louisiana Communities That Care® Youth Survey compared smoking rates with the national average with the following findings: Tobacco use by Louisiana students in Grades 8 and 10 was higher than the national survey. In Louisiana among students in Grade 8, 14.6% indicated past-month cigarette use in 2002, while 10.7% of the national sample reported use. In looking at lifetime usage of cigarettes, 40.4% of Louisiana students in Grade 8 smoked cigarettes in their lifetime, while 31.4% of those in Grade 8 nationwide had smoked cigarettes. Louisiana and national 30-day smoking rates were similar in the Grade 12 with the national rate being slightly higher, while use in lower grade levels was higher in the Louisiana sample (Louisiana Office for Addictive Disorders, 2002).

The 2000 Louisiana Youth Tobacco Survey was administered to a representative sample of Louisiana public middle schools (Grades 6, 7, and 8) by the Louisiana Office of Public Health (LOPH). Findings from the survey indicated that 50% of Louisiana public middle school students had tried or experimented with cigarette smoking. Six out of 10 public middle school students

reported ever using any form/type of tobacco (i.e. cigarettes, smokeless tobacco, cigars, and pipes). Almost 20% of Louisiana youth had smoked cigarettes on one or more occasion in the past 30 days. One out of four students had used some form of tobacco in the past 30 days (Louisiana Office of Public Health [LOPH], 2002).

#### Tobacco as a Gateway to the Use and Abuse of Alcohol and Illicit Drugs

Johnston, O'Malley, and Bachman (1994) reported that young people who use nicotine experience the drug effects of tobacco and in essence learn how to use a powerfully psychoactive and highly addictive drug. Initial effects of nicotine are unpleasant and distasteful, but these effects become recognizable and acceptable by the smoker and over time, become ritualistic and necessary. Youth learn to recognize the immediate effects from the first cigarette in the morning. Youth identify the nervousness, anxiety, and tension of withdrawal and treat these symptoms by ingesting more nicotine. With nicotine, youth learn about drug-taking behaviors. The authors further reported that the more often tobacco is used by a young person, the more likely the advance to other drugs such as marijuana, cocaine, heroin, and hallucinogens. The younger the age of the tobacco user and the more frequently that this young person uses tobacco, the more likely they are to begin using other drugs. Torabi, Bailey, and Majd-Jabbari (1993) reported that smokers who smoke at least one pack of cigarettes per day were three times more likely to use alcohol, 45 times more likely to use marijuana, 79 times more likely to use cocaine, and 10 to 80 times more likely to use other drugs than non-smokers.

The 2002 National Survey on Drug Use and Health reported that current cigarette smokers, more than current non-smokers, were likely to use other tobacco products, i.e., smokeless tobacco, cigars, pipe tobacco, together with alcohol and illicit drugs. Of current

smokers, 43% reported binge drinking (drinking five or more drinks in a row), while only 15.8% of non-smokers reported binge drinking. When questioned about their use of illicit drugs, 15.9% of smokers and 3.5% of non-smokers reported using illicit drugs during the last 30 days (SAMHSA, 2003).

### Sources of Tobacco Products for Youth

With many smoking behaviors beginning in adolescence, it is important to examine how youth obtain tobacco. It is known that youth obtain tobacco from a variety of sources. Non-commercial sources of tobacco include friends, siblings, parents, relatives, and even baby-sitters. Youth most commonly obtain their first cigarettes from friends or siblings, although it is not uncommon for youth to obtain their first cigarettes from parents. After their first cigarette, young people who continue to smoke typically relied on their peers to provide them with cigarettes (DiFranza, Eddy, Brown, Ryan, & Bogojavlensky, 1994).

Rigotti, DiFranza, Chang, Tisdale, Kemp, and Singer (1997) reported that youth typically acquire their first cigarette from a friend or sibling. However, as dependence on or addiction to nicotine develops, young smokers begin to look for more reliable sources from which to obtain tobacco than from siblings or friends. The young smoker typically begins to attempt to purchase his or her own tobacco and will then become a source for tobacco distribution to peers and younger siblings. The authors explained that when a young smoker finds a merchant who is willing to make an illegal sale of tobacco, he or she might tell their smoking friends. The young smoker and his or her friends will then return regularly to the same store to purchase more tobacco. Youth tend to be very observant and will quickly learn that there are certain clerks within a particular store who are willing to sell. Youth will plan their tobacco purchases around

the schedule of the clerk who has sold to them or their friends previously, while avoiding clerks who have not been willing to sell tobacco products to them. The authors further explained that even if only a few merchants in a community are willing to sell tobacco to youth, the youth living in that community may experience little difficulty obtaining tobacco from these familiar sources. Although half of young smokers identify friends as a frequent source of obtaining tobacco, most of these friends are underage and are buying their tobacco products from retailers. Thus, the majority of cigarettes consumed by youth come from illegal sales to underage youth.

Another source of obtaining tobacco for young smokers is by shoplifting a tobacco product from a retail outlet. As many as 50% of young smokers admitted to shoplifting a tobacco product at least once in their lifetime, despite known illegality. Self-service displays make tobacco easily accessible to young shoplifters. In addition, self-service displays make the purchase of tobacco products easy for minors, since little interaction is required between the youth and store clerk. With a self-service display, a youth can remove a pack of cigarettes from the display and place them on the counter without having to request the cigarettes from the clerk (DiFranza et al., 1994).

Results from the 1999 National Youth Tobacco Survey indicated that the majority, or 79%, of youth in Grades 6 through 12 reported no use of cigarettes or other tobacco products. Among those who did report cigarette or other tobacco product use, the more common methods of obtaining cigarettes were identified. The most frequently used method for youth to obtain cigarettes was reported to be the action of youth giving money to someone over the age of 18 to purchase cigarettes for them (26%). The second most frequent method for youth to obtain cigarettes was reported to be the action of borrowing cigarettes from friends and/or family

members (24%). The third most frequent method for youth to obtain cigarettes was reported to be the action of youth purchasing cigarettes from a retail outlet (21%). Among youth that reported purchasing cigarettes from a retail outlet, 74% identified gas stations or convenient stores as their primary place of purchase. Of those youth purchasing from a retail outlet, only 37% reported being asked to show proof of age with a valid, pictured source of identification (CDC, 2000).

The above findings were supported by the 2003 Youth Risk Behavior Surveillance Survey (YRBSS), conducted with students from grades 9 and 12. The 2002 YRBSS found that 26% of students in Grade 12 were able to obtain cigarettes from a retail outlet, while only 12% of the students in Grade 9 were able to do the same. This resulted in an overall percentage of 19% of youth in Grades 9 and 12 being able to obtain cigarettes from a convenience store or gas station (CDC, 2004).

### Historical Overview of Tobacco-Related Legislation

Much legislation has been passed during the last century in an attempt to regulate tobacco, tobacco sales, and marketing of tobacco. In addition, such legislation has significantly impacted tobacco use as well as tobacco manufacturers and tobacco consumers. Legislation of particular interest includes the Comprehensive Smoking Act (1984), the Comprehensive Smokeless Health Education Act (1986), Public Law 100-102 (1987), Public Law 101-164 (1989), and the Synar Amendment (1992).

First, the Comprehensive Smoking Act of 1984 mandated that four labels, rotated in turn, were to be placed as health warnings on cigarette packages and advertisements. The legislation required that the Department of Health and Human Services publish a biennial status report to

Congress on smoking and health; in addition, the Act created the Federal Interagency Committee on Smoking and Health. The Act further required that the cigarette industry provide a confidential list of ingredients added to cigarettes. Second, the Comprehensive Smokeless Tobacco Health Education Act of 1986 applied the same standards to smokeless tobacco as the Comprehensive Smoking Act of 1984 had applied, in regard to cigarettes. Third, Public Law 100-202 (1987) and Public Law 101-164 (1989) banned smoking on domestic airline flights scheduled for two hours or less and for six hours or less, respectively. Third, the Synar Amendment to the Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act of 1992 required all states to adopt and enforce restrictions on tobacco sales and distribution of tobacco products to minors (CDC, n.d., Retrieved November 9, 2004 from <http://www.cdc.gov/tobacco/overview/regulate.htm>).

#### The Synar Amendment

Much explanation has been given for the rationale behind the passage of the Synar Amendment. DiFranza, Norwood, Garner, and Tye (1997) described the Synar Amendment in terms of a supply-demand approach. The authors explained that reducing the willingness of merchants to supply tobacco products to youth would weaken the ability of youth to demand tobacco products. The authors further explained that the Synar Amendment was based on the hypothesis that fewer youth would use tobacco if they were unable to obtain it from retailers. The Synar Amendment was grounded in evidence that nearly 90% of adult smokers began smoking before the age of 18. These adult smokers reported that as youths under the age of 18, they were able to regularly purchase their own cigarettes from retail outlets and vending machines (CDC, 1996).

The Substance Abuse and Mental Health Services Administration (SAMHSA) issued an amended Synar Regulation in January 1996 (Section 1926, Public Health Service Act 42 U.S.C. 300x-26). The amended regulation designated that the single state agency receiving the SAMHSA Substance Abuse Prevention and Treatment (SAPT) Block Grant would be responsible for oversight, management, and implementation of the Synar Amendment. Each state is required to conduct random, unannounced inspections of tobacco retail outlets to assess the extent of tobacco sales to minors. These random, unannounced inspections are required to be conducted annually, and a report detailing the outcome of these inspections must be submitted by the SAPT Block Grant recipient to SAMHSA. In addition, this annual report must include a description of how the random, unannounced inspections were conducted, as well as the methods employed to identify potential outlets for inspection. Finally, this annual report must include a description of future plans for maintaining compliance with the law regarding the sale of tobacco products to minors.

The Synar Amendment also requires that each state maintain a compliance rate of at least 80%, meaning that no more than 20% of merchants in a state can be non-compliant with the law by selling tobacco products to minors. Under the Synar Amendment, should the Secretary of the Department of Health and Human Services determine that a state does not comply with the enforcement stipulated in the regulation, the statute (42 USC 300X-26(c)) requires that the Secretary reduce that state's SAPT Block Grant allotment by 10% for non-compliance in the first applicable fiscal year, 20% for non-compliance in the second applicable fiscal year, 30% for non-compliance in the third applicable fiscal year, and 40% for non-compliance in the fourth and all subsequent fiscal years.

By 1997, all states were provided a baseline sale rate or non-compliance rate of tobacco products to minors. Based on negotiations with SAMHSA, all states were required to reach the goal of 80% compliance by Federal Fiscal Year 2002. Baseline tobacco non-compliance rates ranged from 7.2 % to 72.7 % non-compliance, with an average rate of 40.6%. The State of Louisiana was reported to have the highest rate of non-compliance at 72.7% (USDHHS, 1998b).

Interestingly, Louisiana achieved the federal target compliance rate of 80% or 20% non-compliance during federal fiscal year 1999. This accomplishment was made three years ahead of the required target of federal fiscal year 2002 (Harris, 1999). Since achieving the required 20% non-compliance target in federal fiscal 1999, Louisiana reported a non-compliance rate of below 10% each year, beginning in federal fiscal year 2000 at a non-compliance rate reported as 6.7 % (Harris, 2000). At present, non-compliance rate for the state of Louisiana is 7.5 %, as reported for federal fiscal year 2005 (Ulmer, 2005).

#### Guidance to Address Youth Tobacco Use and Youth Access to Tobacco

The Substance Abuse and Mental Health Services Administration Center for Substance Abuse Prevention published “Implementing the Synar Regulation: Strategies for Reducing Sales of Tobacco Products to Minors” (USSDHHS, 1998a). This technical report suggested a number of guidelines for a state effort to reduce the sales of tobacco products to minors. The first suggestion is to capitalize on the synergy created by using comprehensive, well-sequenced, and consistent strategies that support and enhance one another. The second suggestion is to plan interventions with multiple components that utilize various strategies. The third suggestion is to enact clear-cut policies and strict laws at the state and local levels. The fourth suggestion is to consistently enforce strict compliance strategies at an on-going basis. The fifth suggestion is to

provide positive reinforcement to merchants who do not sell to minors. This positive reinforcement encourages merchant support for and compliance with the law. The final suggestion is to gain community support for the reduction of tobacco sales to minors through media advocacy (USDHHS, 1998a).

“Best Practices for Comprehensive Tobacco Control Programs” (CDC, 1999) provided states with recommended strategies and funding levels for effective programs to prevent and reduce tobacco use. Strategies were also provided to eliminate public exposure to secondhand smoke, as well as to identify and eliminate disparities related to tobacco use and its effects among different target populations. The report indicated that there are nine components of comprehensive tobacco control programs. The nine components are inclusive of the following: community programs, chronic disease programs (e.g., heart disease prevention and cancer registries) to reduce the burden of tobacco-related disease, school programs, enforcement of existing policies, statewide programs, counter-marketing, tobacco cessation or abatement programs, surveillance and evaluation, and administration and management.

#### Limiting the Access/Availability of Tobacco Products to Minors

Youth access to tobacco is an expression used to describe the availability and accessibility of tobacco (i.e. cigarettes, chewing tobacco, snuff, cigars, and pipe tobacco) to minors. In the context of the guide, however, the term *youth access* is defined more narrowly as the sale of tobacco products to persons under the age of 18. Though tobacco products may be accessible or available to minors through channels other than retail sales (e.g. through free distribution or from family members), the retail sale of tobacco products to minors is the primary concern (USDHSS, 1995).

Enforcing youth access laws sends a strong and undeniable message that tobacco use is harmful. If youth access laws are not enforced, the message is conveyed that the laws are not serious and that enforcement is not important. Such a message undermines the efforts of communities, schools, and health professionals working to educate young people about the dangerous effects of smoking (Institute of Medicine, 1994).

The most common strategies to limit the accessibility of tobacco products to minors involve merchant education and enforcement activities. “Reducing Tobacco Use Among Youth: Community-Based Approaches” (USDHHS, n.d.) revealed several lessons learned from retailer-directed interventions. Merchant education is a helpful component of a community-based prevention strategy. Merchant education, in the context of a comprehensive community-based prevention program, assists in the promotion of community involvement and allows the community an opportunity to organize around a public health issue. Effective merchant and community education includes not only education about youth tobacco use, but also laws prohibiting the sale of tobacco products to minors. Authors reported that passage of a law prohibiting tobacco sales to minors, yet without merchant education and enforcement activities, was ineffective; laws must be enacted and enforced, together with consequences imposed on violators of the law. The authors recommended that adolescents and adult sponsors alike should take an active role in merchant education and other tobacco prevention efforts. Finally, the authors contended that the action of decreasing retail sales of tobacco to youth within a given community brings no solution to the problem of availability or accessibility. Youth may obtain tobacco from a variety of other sources.

The continued retail sale of tobacco products to minors has underscored the need to involve retailers in any overall strategy to reduce the use of tobacco products to minors. Potential partners from the retail community may be representatives from convenience stores, supermarkets, gas stations, and drug stores; additionally, respective trade associations are recommended partners in any campaign to educate tobacco retailers. The authors also explained the importance of working with small, independent stores. Interestingly, independent stores were more likely than chains and franchises to have formal policies and training programs regarding the sale of tobacco products to minors (USDHHS, 1995).

Biglan, Henderson, and Humphreys (1995) described a study in which corporate representatives of 91 chain and franchise stores that sold tobacco (e.g., grocery and franchise stores, gas stations, mini-marts, liquor stores, and drug stores) were interviewed about their beliefs, attitudes, knowledge, and practices regarding youth access to tobacco. These individuals expressed at least moderate support for policies limiting youth access to tobacco. The findings indicate that tobacco merchants are concerned about selling tobacco products to minors.

#### Relationship between Youth Access and Youth Tobacco Use

Research on the relationship between youth access and youth tobacco use is limited and results vary. Siegel, Biener, and Rigotti (1999) conducted a study to determine whether local tobacco sales laws decreased the rate of adolescent tobacco use. The authors defined progressive, tobacco use as youth having smoked 100 or more cigarettes in their lifetime. The study was longitudinal in nature. The study included baseline interviews with 592 Massachusetts youths between the ages of 12 to 15 who did not smoke in 1993 and the subsequent re-interviews with these youth in 1997. In addition to information obtained through interviews, the authors

examined local ordinances and enforcement practices specific to the law regarding the sale of tobacco products to minors. The authors reported that youth living in towns with local sales ordinances at the time of the initial (baseline) interview were significantly less likely to progress to more frequent or heavier cigarette use. Findings of the study were unable to support that enforcement activities specific to limiting tobacco products to minors had an effect on adolescent smoking rates.

A similar study conducted by Jason, Berk, Schnopp-Wyatt, and Talbot (1999) documented the effects of enforcement activities on youth tobacco use. The research described by the authors took place in the city of Woodridge, Illinois. In 1998, the City of Woodridge, Illinois, passed legislation prohibiting the sale of tobacco products to minors and began to actively enforce the law. Active enforcement of the law included compliance checks of retail outlets. Fines were levied against those retail outlets that were found to be in violation of the law prohibiting the sale of tobacco products to minors. Youth tobacco use was measured by a self-reported survey of youth in the seventh and eighth grades. For the purpose of this study, the researchers were interested in youth who were regular cigarette smokers. Regular cigarette use was defined as smoking cigarettes at least two to five times during the last 30 days. Findings from the study revealed that two years after passage of this legislation, the percentage of youth reporting regular cigarette had decreased. Regular use of cigarettes among youth in seventh and eighth grade students decreased from 16% to 5%. The authors briefly described a seven-year follow-up study demonstrating a similar effect. A sample of high school youth living in communities with regular enforcement was compared with high school youth living without

regular enforcement. The rate of smoking among high school students was 8.1% in communities with regular enforcement versus 15.5% in communities without regular enforcement.

Another study investigating the relationship between enforcement of youth access to tobacco laws and youth tobacco use was examined. In the fall of 1989, a baseline survey consisting of questions related to current and lifetime tobacco use was conducted among a sample of 501 students in grades 7-12 in Leominster, Massachusetts. After completion of the youth tobacco use baseline survey, a merchant compliance program was implemented. The merchant compliance program consisted of the following: (a) conducting of compliance checks, (b) reporting of outcomes of these compliance checks, and (c) enactment of penalties for non-compliant merchants, such as a \$25.00 fine. In November 1990, a survey was conducted to determine the rate of tobacco sales to minors. The majority of merchants, or 81%, were compliant with the law restricting the sale of tobacco products to minors. Compliance was measured utilizing a 10-year-old boy and a 13-year-old girl to conduct compliance inspections. In March 1991, a similar survey was conducted to determine the rate of tobacco sales to minors. It was found that 84% of merchants were compliant with the law restricting the access of tobacco products to minors. Compliance was measured utilizing two boys, 11 and 12 years of age, to conduct compliance inspections. Finally, in July 1991, a survey was conducted to determine the rate of tobacco sale to minors. Alarming, only 35% of merchants were compliant with the law restricting the sale of tobacco products to minors. Compliance was measured utilizing two 16-year-old girls to conduct compliance inspections. In 1991, during the months of June and July, a follow-up youth tobacco use survey was conducted. Results were mixed among the various age groups. Youth who were 12, 13, 16, and 17 years of age reported lower rates of tobacco use

than at baseline; while students who were 14 and 15 years of age reported higher rates of tobacco use than at baseline. The authors acknowledged that the study provided only minimal support regarding the belief that active enforcement of the laws regarding the sale of tobacco products to minors would have an effect on youth tobacco consumption rates (DiFranza, Carlson, & Caisse, 1992).

Forster, Murray, Wolfson, Blaine, Wagenaar, and Hennrikus (1998) reported on a study that was conducted in 14 Minnesota communities. These 14 communities were randomly assigned to either an experimental or control group. The seven experimental communities hired community members to mobilize and garner support for more stringent local youth access laws. Each experimental community successfully passed a youth access ordinance, inclusive of (a) banning tobacco vending machines, (b) limiting advertisement and promotion of tobacco products, and (c) increasing the number of smoke-free places where the general public has access. Although results indicated that the ability of youth to purchase tobacco products declined more in experimental communities than in control communities, the decline was statistically insignificant. However, the authors reported that an increase in daily cigarette smoking by adolescents was significantly less rapid in the intervention communities than in the control communities. The authors explained that since merchant compliance with laws restricting the sale of tobacco products to minors was not significantly different between the experimental and control communities, the decrease in youth smoking rates among some age groups was likely due to uncontrolled factors (such as changing community norms in response to the community organizing), rather than to the presence of the youth access law.

Altman and Feighery (1991) conducted a study to examine the effects of merchant education and active enforcement of the laws prohibiting the sale of tobacco products to minors on subsequent tobacco sales to minors. The researchers employed a two-year pre and post intervention evaluation of four suburban communities in California, ranging from 25,000 to 100,000 in population. In June 1988, a baseline rate of the sale of tobacco products to minors was computed from the results of compliance checks conducted by youth aged 14 and 16. Results from the 1988 baseline compliance checks revealed that 71% of the merchants who sold tobacco products over-the-counter violated the law by selling tobacco to minors. Of the merchants who sold tobacco products in vending machines, 92% violated the law by selling tobacco products to minors. These baseline results served as encouragement for implementation of an on-going merchant education program, as well as regular enforcement activities.

In May 1990, a follow-up survey determined the rate of tobacco sales to minors. The results of the survey indicated that 24% of merchants who sold tobacco products over-the-counter violated the law by selling tobacco products to minors. Of merchants who sold tobacco products in vending machines, 93% of these merchants violated the law by selling tobacco products. The authors concluded that merchant education alone had limited effect on reducing illegal tobacco sales to minors and in response, promoted the garnering of community support for more aggressive and on-going enforcement activities. In regard to over-the-counter sales of tobacco products, merchant education in conjunction with enforcement activities significantly decreased over-the-counter sales; however, vending machine sales remained unaffected by merchant education and enforcement activities.

A two-year controlled study was conducted in six communities in Massachusetts to determine the sale of tobacco products to minors, accessibility of tobacco products by youth, and tobacco use among youth. Three communities were assigned to the experimental group and three communities were assigned to the control group. The experimental group consisted of three communities that would actively enforce the law prohibiting the sale of tobacco products to minors. The control group consisted of three communities that would not enforce the law prohibiting the sale of tobacco products to minors. Compliance with or enforcement of the law was measured by the results of youth attempting to purchase tobacco at retail outlets. Results of these purchase attempts were recorded as a sale or a refusal to sell. Compliance was measured for all six communities prior to the intervention. The intervention was active enforcement through compliance checks. Interventions consisted of one compliance check every six months for merchants within the experimental communities. In addition, accessibility of tobacco products by youth and tobacco use among youth were measured by three annual, anonymous, self-reported youth surveys. Throughout the course of the study, a total of 22,021 students in grades 9 through 12 completed the survey. The survey asked questions specific to access of tobacco products to youth and smoking behaviors. Results of the study found that at baseline, 68% of 487 vendors sold tobacco to minors. After the intervention, 82% of the merchants in the experimental communities were compliant with the law, as compared to 45% in the control communities. Furthermore, adolescents under the age of 18 reported only a minimal decrease in their ability to purchase tobacco and reported no decline in tobacco use (Rigotti, DiFranza, Chang, Tisdale, Kemp, & Singer, 1997). This review of literature is void of any statewide studies conducted to determine the relationship between youth access to tobacco products and youth tobacco use.

## CHAPTER THREE: METHODOLOGY

### Data Sources

The procedures and methodology used to accomplish the objectives of the study are presented in this chapter. It is important to note that multiple data sources were utilized to include tobacco use among secondary students, education provided to merchants (defined as receiving merchant education during an unconsummated compliance check), and tobacco sales to minors compliance checks. Each data source is described in detail to include population, sample, instrumentation, data collection and analysis.

An unconsummated compliance check is operationally defined in this study as an activity in which a youth volunteer attempts to purchase a tobacco product; however, the protocol involves an incomplete purchase. No actual tobacco purchase is made. Unconsummated compliance checks are not conducted for enforcement purposes as no law is actually violated (SAMHSA, 1996b).

The merchant education component of this study builds on the protocol of the unconsummated compliance check by providing education to merchant involved in unconsummated compliance checks. A merchant education action is an activity in which a minor youth requests a tobacco product from a store clerk. If the clerk is willing to sell tobacco to the minor by placing the tobacco on the counter, the minor presents the clerk with a card indicating that the minor is underage and is unable to purchase tobacco. The card also states that if this action had been an actual compliance check, a fine could have been levied against the clerk. If the clerk is unwilling to sell tobacco to the minor by recognizing the youth as underage and refusing to sell tobacco to the minor, the minor presents the clerk with a card thanking the clerk for not

selling tobacco products to a minor. After the minor has presented the appropriate card to the clerk, the minor leaves the location, and an adult volunteer approaches the clerk to provide educational materials related to the sale of tobacco products to minors. In addition, if the clerk had been unwilling to sell tobacco to the minor, the adult volunteer presents the clerk with a certificate of appreciation for being unwilling to sell tobacco to a minor.

A compliance check is operationally defined in this study as an enforcement activity as it is being conducted by a designated enforcement agency that has the authority to assess penalties against noncompliant merchants (SAMHSA, 1996a). During a compliance check, a minor youth, employed by the Louisiana Office of Alcohol and Tobacco Control, attempts to purchase a tobacco product, and if able, does purchase the tobacco product. The tobacco product is then kept as evidence by OATC. If a tobacco sale is made, the OATC agent that witnessed the sale issues the store clerk a citation.

#### Tobacco Use Data

The target population for this component of the study was defined as all secondary students in Louisiana. The accessible population was all students enrolled in Grades 6, 8, 10, and 12 in Louisiana schools located in the 63 parishes that provided useable data for the Louisiana Communities That Care® Youth Survey in 2002 and the Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey) in 2004.

The sample for this component of the study included aggregated parish data for the 109,299 students in Grades 6, 8, 10, and 12 in Louisiana schools in the 63 parishes (one parish did not participate in the survey) that provided useable data for the Louisiana Communities That Care® Youth Survey in 2002 and aggregated parish data for the 99,778 students in the 62

parishes (two parishes did not participate in the survey) that provided useable data for the Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey) in 2004.

#### Merchant Education Data

The target population for this component of the study was defined as all merchants in Louisiana, licensed by the Office of Alcohol and Tobacco Control to conduct retail sale of tobacco products. The accessible population for this component of the study included all merchants in Louisiana who were licensed at the time of the study by the Office of Alcohol and Tobacco Control to conduct retail sales of tobacco products to which the general public had open access. The total number of merchants in Louisiana who were licensed at the time of the study was 10,161 statewide.

The sample for this component of the study included all merchants in Louisiana who were licensed by the Office of Alcohol and Tobacco Control to conduct retail sales of tobacco products for which a merchant education action through an unconsummated compliance check were conducted from July 1, 2003 through June 30, 2004. The total number of merchants in Louisiana for which a merchant education action was conducted was 3,439 statewide.

#### Tobacco Compliance Check Data

The target population for this component of the study was defined as all merchants in Louisiana who were licensed by the Office of Alcohol and Tobacco Control to conduct retail sale of tobacco products. The accessible population for this component of the study included all merchants in Louisiana who were licensed at the time of the study by the Office of Alcohol and

Tobacco Control to conduct retail sales of tobacco products to which the general public had open access.

The sample for this component of the study included all merchants in Louisiana who were licensed by the Office of Alcohol and Tobacco Control to conduct retail sales of tobacco products for which OATC compliance check were conducted from July 1, 2003 through June 30, 2004. The total number of compliance checks conducted was 5,216 statewide.

#### Instrumentation

The measuring instrument used to collect data for this study was a researcher-designed data extraction tool, which included the variables of investigation for the study. The information regarding these variables was derived from three different sources and recorded onto the instrument. The researcher used the data extraction tool to collect data on each of the following measurements: (a) tobacco use data, (b) merchant education data, and (c) tobacco compliance check data.

#### Tobacco Use Data

Tobacco use data included aggregated parish data regarding responses of secondary school youth in Louisiana to questions about their use of tobacco products. This included information related to both current and lifetime use of tobacco products. The summary data was drawn from the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey) and consisted of response data from the following five (5) questions:

1. How old were you when you first smoked a cigarette, even just a puff?
2. Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?
3. How often have you used or taken smokeless tobacco during the past 30 days?
4. Have you ever smoked cigarettes?
5. How frequently have you smoked cigarettes during the past 30 days?

#### Merchant Education Data

Merchant education data included the number of merchant education actions in each parish from July 1, 2003 through June 30, 2004. This information was obtained from the community coalition unconsummated compliance check reports, which were prepared for each merchant education action.

#### Tobacco Compliance Check Data

Tobacco compliance check data included the number of tobacco compliance checks conducted by the Office of Alcohol and Tobacco Control in each parish from July 1, 2003 through June 30, 2004 and the number of these compliance checks which were classified as a violation of the laws regarding tobacco sales to minors. This information was obtained from OATC compliance checks reports, which were prepared for each compliance check.

#### Data Collection

#### Tobacco Use Data

The Southwest Prevention Center at the University of Oklahoma was contacted to acquire tobacco use data. Summary data was acquired from the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the

Communities That Care® Youth Survey). Only data specific to the responses of students to each of the five survey items was recorded. For the survey item, “How old were you when you first smoked a cigarette, even just a puff?,” nine (9) possible responses were provided to the students who participated in the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey). These available responses were “Never,” “10 or Younger,” “11,” “12,” “13,” “14,” “15,” “16,” and “17 or Older.”

For the survey item, “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?,” five (5) possible responses were provided to the students who participated in the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey). These available responses were “Never,” “Once or Twice,” “Once in a while,” “Regularly in the past,” and “Regularly now.”

For the survey item, “How often have you used or taken smokeless tobacco during the past 30 days?,” five (5) responses were provided to the students who participated in the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey). These available responses were “Never,” “Once or Twice,” “Once or twice per week,” “Three to five times per week,” “About once a day,” and “More than once a day.”

For the survey item, “Have you ever smoked cigarettes?,” five (5) responses were provided to the students who participated in the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities

That Care® Youth Survey). These available responses were “Never,” “Once or Twice,” “Once in a while,” “Regularly in the past,” and “Regularly now.”

For the survey item, “How frequently have you smoked cigarettes during the past 30 days?,” seven (7) responses were provided to the students who participated in the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey). These available responses were “Not at all,” “Less than one cigarette per day,” “One to five cigarettes per day,” “About one-half pack per day,” “About one pack per day,” “About one and one-half packs per day,” and “Two packs or more per day.”

The aggregated information recorded on the study instrument included the percentage of students in a parish who provided each of the available responses. This information was recorded for each parish for which archived data were available.

#### Merchant Education Data

The Synar Coordinator for the Department of Health and Hospitals’ Office for Addictive Disorders was contacted to acquire merchant education data. Parish data for tobacco merchants that received educational materials during unconsummated compliance checks in each parish from July 1, 2003 through June 30, 2004 was acquired. Only data specific to the number of merchants educated in a given parish was recorded. In addition, the total number of merchants licensed to sell tobacco products in a parish was recorded.

#### Tobacco Compliance Check Data

The Department of Revenue Office of Alcohol and Tobacco Control determined to acquire tobacco compliance check data. In response, the department collected parish data for

tobacco compliance checks conducted in each parish from July 1, 2003 through June 30, 2004.

The recorded data included the total number of compliance checks conducted in a parish and the number of sale violations in the parish. In addition, the total number of merchants licensed to sell tobacco products in a parish was recorded.

## CHAPTER FOUR: FINDINGS

### Objectives and Results

#### Objective One

The first objective of the study was to determine the self-reported level of tobacco use in 2002 and 2004 among selected students in Grades 6, 8, 10, and 12 in Louisiana. For each of the two measurements of self-reported tobacco use, assimilated in the years 2002 and 2004, a series of questions were taken from the Communities That Care® Youth Survey (2002), as well as the Caring Communities Youth Survey (2004), were analyzed. These data represent collected and aggregated data with the parish as the unit of analysis; therefore, each measurement represents the composite measure for the parish. Results of each survey by year are described. For example, students who were participants in the survey from which these data were derived were asked to indicate, “How old were you when you first smoked a cigarette, even just a puff?” The data collected in this study display the percentage of responses in each of the nine age categories provided to the participants within each parish in the state. This procedure was followed for each of the five items, after which a validated procedure was utilized to compute a self-reported level of tobacco use score. All data for the 2002 measurement are presented first, followed by the 2004 data.

Regarding responses to the variable, “How old were you when you first smoked a cigarette, even just a puff?,” participants in the 2002 Communities That Care® Youth Survey were provided nine possible responses to the question and asked to select the one response that was accurate for them. The age response category reported by the largest percentage of the

subjects was “Never Smoked” (mean parish percentage = 55.5). The percentage of respondents in a parish that indicated this response ranged from 40.5% to 75.3% (See Table 1). The second most frequently reported age category was “10 or Younger” and ranged from 8.7% to as much as 21.9% of students in a parish, indicating that these individuals first smoked at this age (mean parish percentage = 15.2).

Table 1: Mean 2002 Parish Percentages of Secondary Students in Louisiana Who Indicated that They First Smoked at Different Ages

Response	Mean Parish Percentage	Standard Deviation	Range
Never Smoked	55.5	6.08	40.5 – 75.3
17 or Older	1.0	.42	.4 – 2.5
16	1.5	.51	.5 – 3.6
15	2.9	1.74	1.4 – 15.5
14	3.8	.88	1.7 – 6.4
13	5.8	1.17	2.6 – 8.3
12	7.0	1.45	3.5 – 11.9
11	7.3	1.41	3.6 – 10.7
10 or Younger	15.2	2.76	8.7 – 21.9

Note. Source: 2002 Louisiana Communities That Care® Youth Survey

The second aspect of tobacco use for aggregated parish data in the study was the extent of lifetime use of smokeless tobacco, collected by response to the question, “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?” Respondents in the 2002 Louisiana Communities That Care® Youth Survey were asked to select from the possible options, “Never,” “Once or Twice,” “Once in a while,” “Regularly in the past,” and “Regularly now.” The responses of the aggregated parish data indicate the mean parish percentage of students (See Table 2).

Table 2: Mean 2002 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Used Smokeless Tobacco during Their Lifetime

Response	Mean Parish Percentage	Standard Deviation	Range
Never	79.2	5.31	64.9 – 90.8
Once or twice	9.4	2.51	3.4 – 14.7
Once in a while	3.1	1.49	.6 – 9.4
Regularly in the past	2.3	.79	.9 – 4.6
Regularly now	6.0	1.79	2.2 – 11.1

Note. Source: 2002 Louisiana Communities That Care® Youth Survey

The majority of students indicated that they had “Never” used smokeless tobacco (mean parish percentage = 79.2%), with the parish percentages ranging from 64.9% – 90.8%. However, examination of the overall parish mean revealed that 6% (SD = 1.79) indicated that they used smokeless tobacco “Regularly now.” The percentage of students reporting regular use ranged from 2.2% to 11.1%.

The third aspect of tobacco use for collected aggregated parish data in the study, the extent of use of smokeless tobacco during the past 30 days, was collected through responses to the question, “How often have you used or taken smokeless tobacco during the past 30 days?” Respondents in the 2002 Louisiana Communities That Care ® Youth Survey were asked to select from the possible responses, “Never,” “Once or Twice,” “Once or twice per week,” “About once a day,” and “More than once a day.” The percentage of students in each parish who indicated each of the available options is presented in Table 3.

Most students indicated that they had “Never” used smokeless tobacco in the past 30 days (mean parish percentage = 89.6) with the parish percentages ranging from 81.3% – 94.6%. There were a small percentage of students (mean = 3.22; SD = 1.23) who revealed that they used

smokeless tobacco more than once a day during the last 30 days. The percentage of students reporting this response ranged from 1.2% to 6.7% (See Table 3).

Table 3: Mean 2002 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Used Smokeless Tobacco during the Past 30 Days

Response	Mean Parish Percentage	Standard Deviation	Range
Never	89.6	2.61	81.3 – 94.6
Once or twice	4.0	1.03	1.9 – 6.7
Once or twice per week	1.4	0.91	.2 – 7.1
About once a day	1.8	0.66	.5 – 3.9
More than once a day	3.2	1.23	1.2 – 6.7

Note. Source: 2002 Louisiana Communities That Care® Youth Survey

The fourth aspect of tobacco use for which aggregated parish data was collected in the study was the extent of lifetime cigarette use by responding to the question “Have you ever smoked cigarettes?” Respondents in the 2002 Louisiana Communities That Care Youth Survey were asked to select from the possible options, “Never,” “Once or Twice,” “Once in a while,” “Regularly in the past,” and “Regularly now.” The percentage of students in each parish who indicated each of the available options is presented in Table 4.

Table 4: Mean 2002 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Smoked Cigarettes in Their Lifetime

Response	Mean Parish Percentage	Standard Deviation	Range
Never	56.0	6.39	38.8 – 75.8
Once or twice	19.8	1.96	13.8 – 24.8
Once in a while	8.6	2.29	3.3 – 16.5
Regularly in the past	5.4	1.39	2.2 – 9.0
Regularly now	10.2	2.64	4.7 – 17.6

Note. Source: 2002 Louisiana Communities That Care® Youth Survey

More than half of the students indicated that they had not smoked cigarettes in their lifetime (mean parish percentage = 56.0, SD = 6.39) with the parish percentages ranging from 38.8% – 75.8%. Examination of the overall mean of the parish percentages revealed that just over 10% (mean parish percentage = 10.2, SD = 2.64) indicated that they smoke cigarettes “Regularly now” (See Table 4). The percentage of students reporting “Regularly now” in response to their lifetime use of cigarettes ranged from 4.7% to 17.6%.

The final aspect of tobacco use for which aggregated parish data was collected in the study was the extent of cigarette smoking during the last 30 days by responding to the question “How frequently have you smoked cigarettes during the past 30 days?” Respondents in the 2002 Louisiana Communities That Care® Youth Survey were asked to select from the following responses: “Not at all,” “Less than one cigarette per day,” “One to five cigarettes per day,” “About one-half pack per day,” “About one pack per day,” “About one and one-half packs per day,” and “Two packs or more per day.” The percentage of students in each parish who indicated each of the available options is presented in Table 5.

The majority of students indicated that they had not smoked cigarettes during the past 30 days (mean parish percentage = 80.9), with the parish percentages ranging from 58.8% – 90.6% (SD = 4.65). Examination of the overall parish means revealed that only 1.1% (SD = 0.48) indicated that they smoked “Two packs or more per day” of cigarettes (See Table 5). The percentage of students who reported smoking “Two packs or more per day” of cigarettes ranged from 0.0% – 2.7%.

Table 5: Mean 2002 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Smoked Cigarettes in the Past 30 Days

Response	Mean Parish Percentage	Standard Deviation	Range
Not at all	80.9	4.65	58.8 – 90.6
Less than one cigarette per day	7.5	2.25	4.0 – 21.2
One to five cigarettes per day	5.4	1.85	1.9 – 14.1
About one-half pack per day	3.0	0.93	0.9 – 5.4
About one pack per day	1.5	0.60	0.0 – 2.9
About one and one-half packs per day	0.6	0.31	0.0 – 1.5
Two packs or more per day	1.1	0.48	0.0 – 2.7

Note. Source: 2002 Louisiana Communities That Care® Youth Survey

The following findings are specific to the 2004 Caring Communities Youth Survey. Regarding the variable, “How old were you when you first smoked a cigarette, even just a puff?,” participants in the 2004 Caring Communities Youth Survey were provided nine possible responses to the question and asked to select the one response that was accurate for them. The age response category reported by the largest portion of subjects was “Never Smoked” (mean parish percentage= 57.7%). The percentage of respondents in a parish that indicated this response ranged from 37.9% to 83.8% (See Table 6). The second most frequently reported age category was “10 or Younger” (mean parish percentage = 15.3%, SD = 7.83%). The percentage of students in a parish who reported this response as the age at which they first smoked ranged from 8.5% to 27.9%.

Table 6: Mean 2004 Parish Percentages of Secondary Students in Louisiana Who Indicated that They First Smoked at Different Ages

Response	Mean Parish Percentage	Standard Deviation	Range
Never Smoked	57.7	7.83	37.9 – 83.8
17 or Older	0.9	0.46	0.0 – 2.4
16	1.5	0.86	0.0 – 5.4
15	2.5	0.99	0.0 – 4.4
14	3.5	1.23	0.0 – 6.3
13	5.4	1.51	0.6 – 7.8
12	6.4	1.55	1.3 – 10.7
11	6.8	1.58	2.2 – 12.0
10 or Younger	15.3	7.83	8.5 – 27.9

Note. Source: 2004 Louisiana Caring Communities Youth Survey

The second aspect of tobacco use for which aggregated parish data was collected in the study was the extent of lifetime use of smokeless tobacco by responding to the question “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?” Respondents in the 2004 Caring Communities Youth Survey were asked to select from the possible options: “Never,” “Once or Twice,” “Once in a while,” “Regularly in the past,” and “Regularly now.” The percentage of students in each parish who indicated each of the available options is presented in Table 7.

Table 7: Mean 2004 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Used Smokeless Tobacco during Their Lifetime

Response	Mean Parish Percentage	Standard Deviation	Range
Never	83.8	5.62	70.9 – 97.4
Once or twice	7.7	2.35	2.6 – 11.8
Once in a while	2.8	1.26	0.0 – 6.9
Regularly in the past	2.3	1.19	0.0 – 7.3
Regularly now	3.4	1.66	0.0 – 7.6

Note. Source: 2004 Louisiana Caring Communities Youth Survey

The majority of students indicated that they had “Never” used smokeless tobacco (mean parish percentage = 83.8, SD = 5.62) with the parish percentages ranging from 70.9% – 97.4%. However, examination of the overall mean of the parish percentages revealed that 3.4% (SD = 1.66) indicated that they use smokeless tobacco “Regularly now” (See Table 7). The parish percentage of students reporting this response ranged from 0.0% to 7.6%.

The third aspect of tobacco use for which aggregated parish data was collected in the study was the extent of use of smokeless tobacco during the past 30 days by responding to the question “How often have you used or taken smokeless tobacco during the past 30 days?” Respondents in the 2004 Caring Communities Youth Survey were asked to select from the possible responses, “Never,” “Once or Twice,” “Once or twice per week,” “Three to five times per week,” “About once a day,” and “More than once a day.” The percentage of students in each parish who indicated each of the available options may be seen below (Table 8).

Table 8: Mean 2004 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Used Smokeless Tobacco during the Past 30 Days

Response	Mean Parish Percentage	Standard Deviation	Range
Never	91.4	2.91	84.3 – 98.7
Once or twice	3.4	1.36	0.0 – 8.5
Once or twice per week	0.9	0.49	0.0 – 2.5
Three to five times per week	1.0	0.61	0.0 – 4.1
About once a day	1.0	0.48	0.0 – 2.5
More than once a day	2.3	1.26	0.0 – 6.9

Note. Source: 2004 Louisiana Caring Communities Youth Survey

Most students indicated “Never” as their response to the use of smokeless tobacco during the past 30 days (mean parish percentage = 91.4, SD = 2.91) with the parish percentages ranging from 84.3% – 98.7%. A small percentage of students (mean parish percentage = 2.34; SD =

1.26) reported that they used smokeless tobacco “More than once a day” during the last 30 days. The percentage of students reporting this response ranged from 0.0% – 6.9% (See Table 8).

The fourth aspect of tobacco use for which aggregated parish data was collected in the study was the extent of lifetime use of cigarettes by responding to the question “Have you ever smoked cigarettes?” Respondents in the 2004 Caring Communities Youth Survey were asked to select from the possible options: “Never,” “Once or Twice,” “Once in a while,” “Regularly in the past,” and “Regularly now.” The parish percentages of secondary students who indicated that they smoked cigarettes in their lifetime are presented in Table 9.

Table 9: Mean 2004 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Smoked Cigarettes in Their Lifetime

Response	Mean Parish Percentage	Standard Deviation	Range
Never	60.9	7.79	41.3 – 86.1
Once or twice	18.9	3.38	11.1 – 31.1
Once in a while	8.3	2.46	1.4 – 15.2
Regularly in the past	5.0	1.84	0.0 – 10.7
Regularly now	7.0	2.49	0.0 – 13.1

Note. Source: 2004 Louisiana Caring Communities Youth Survey

The majority of students indicated that they had “Never” smoked cigarettes in their lifetime (mean parish percentage = 60.9, SD = 7.79) with the parish percentages ranging from 41.3% – 86.1%. Examination of the overall mean of the parish percentages revealed that 7% (SD = 2.49) indicated that they smoke cigarettes “Regularly now” (See Table 9). The percentage of students reporting “Regularly now” in lifetime cigarette use ranged from 0.0% – 13.1%.

The final aspect of tobacco use for which aggregated parish data was collected in the study was the extent of cigarette smoking during the last 30 days by responding to the question “How frequently have you smoked cigarettes during the past 30 days?” Respondents in the 2004

Caring Communities Youth Survey were asked to select from the following responses: “Not at all,” “Less than one cigarette per day,” “One to five cigarettes per day,” “About one-half pack per day,” “About one pack per day,” “About one and one-half packs per day,” and “Two packs or more per day.” The percentage of students in each parish who indicated each available option is presented in Table 10.

Table 10: Mean 2004 Parish Percentages of Secondary Students in Louisiana Who Indicated that They Smoked Cigarettes in the Past 30 Days

Response	Mean Parish Percentage	Standard Deviation	Range
Not at all	84.0	4.59	75.2 – 100.0
Less than one cigarette per day	6.4	1.79	0.0 – 10.9
One to five cigarettes per day	4.3	1.59	0.0 – 8.0
About one-half pack per day	2.5	0.98	0.0 – 4.5
About one pack per day	1.3	0.55	0.0 – 2.7
About one and one-half packs per day	0.5	0.29	0.0 – 1.2
Two packs or more per day	1.0	0.52	0.0 – 2.5

Note. Source: 2004 Louisiana Caring Communities Youth Survey

The majority of students indicated “Not at all” regarding their use of cigarettes during the past 30 days (Mean Percentage = 84.0%, SD = 4.59%), with the parish percentages ranging from 75.2% – 100.0%. Examination of the overall mean of the parish percentages revealed that 1% (SD = 0.52) indicated that they smoked “Two packs or more per day” of cigarettes (See Table 10). The percentage of students reporting this level of cigarette use ranged from 0.0% – 2.5%.

Since this objective of the study was to measure the self-reported level of tobacco use among secondary students in Louisiana, the researcher used the information derived from the previously reported parish responses to the questions regarding tobacco use to compute a tobacco use score for each of the two years included in the study (2002 and 2004). To compute this

score, the researcher established an initial scoring system for the combination of the data from the five relevant items. This initial scoring system was then submitted to a five-member panel of experts consisting of professionals working in the field of substance abuse prevention for validation. This panel had a combined number of years of experience in the field exceeding 30 years. The panel reviewed the proposed scoring system and made recommendations for needed changes in the point values assigned to each of the response percentages for the five items. The changes recommended were implemented, and the established and validated scoring system was utilized to calculate the tobacco use score for each of the two years included in the study.

When developing the calculation of the tobacco use score, it was decided that the higher the tobacco use score, the more serious the tobacco use behavior. Each question was examined and possible responses reviewed. Each possible response was assigned a point value based on the gravity of the response. For example, in regards to the question, “How old were you when you first smoked a cigarette, even just a puff?,” there were nine (9) possible responses including the following: “Never,” “10 or Younger,” “11,” “12,” “13,” “14,” “15,” “16,” and “17 or Older.”

The highest point value of “18” was assigned to the response “10 or Younger,” based on the knowledge that the younger a person is when smoking behaviors begin, the more likely that this behavior will continue into adulthood. The response point value lessened with each increase in age, as delaying the initiation of tobacco use as long as possible tends to reduce the likelihood that a young person will smoke. Assigned point values for each response are presented in Table 11.

For the survey item, “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?,” point values were assigned to the five (5) possible responses. Assigned point values for each available response are presented in Table 12.

For the survey item, “How often have you used or taken smokeless tobacco during the past 30 days?,” point values were assigned to the five (5) possible responses for 2002 and the six (6) possible responses for 2004. Assigned point values for each available response are presented in Table 13.

Table 11: Point Value Assigned to Each Available Response from Secondary Students in Louisiana for the Survey Item, “How old were you when you first smoked a cigarette, even just a puff?”

Available Responses	Assigned Point Value
10 or Younger	18
11	15
12	12
13	10
14	8
15	6
16	4
17 or Older	2
Never	0

Note. Source: 2002 Louisiana Communities That Care® Youth Survey and 2004 Louisiana Caring Communities Youth Survey

Table 12: Point Value Assigned to Each Available Response from Secondary Students in Louisiana for the Survey Item, “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?”

Available Response	Assigned Point Value
Regularly now	9
Regularly in the past	7
Once in a while	5
Once or twice	3
Never	0

Note. From 2002 Louisiana Communities That Care® Youth Survey and 2004 Louisiana Caring Communities Youth Survey

Table 13: Point Value Assigned to Each Available Response from Secondary Students in Louisiana for the Survey Item, “How often have you used or taken smokeless tobacco during the past 30 days?”

Available Response	Assigned Point Value
More than once a day	11
About once a day	9
Three to five times per week	7
One or twice per week	5
Once or twice	3
Never	0

Note. From 2002 Louisiana Communities That Care® Youth Survey and 2004 Louisiana Caring Communities Youth Survey

For the survey item, “Have you ever smoked cigarettes?,” point values were assigned to the five (5) available responses. Assigned point values for each available response are presented in Table 14.

For the survey item, “How frequently have you smoked cigarettes during the past 30 days?,” point values were assigned to the seven (7) available responses. Assigned point values for each available response are presented in Table 15.

Table 14: Point Value Assigned to Each Available Response from Secondary Students in Louisiana for the Survey Item, “Have you ever smoked cigarettes?”

Available Response	Assigned Point Value
Regularly now	9
Regularly in the past	7
Once in a while	5
Once or twice	3
Never	0

Note. From 2002 Louisiana Communities That Care® Youth Survey and 2004 Louisiana Caring Communities Youth Survey

Table 15: Point Value Assigned to Each Available Response from Secondary Students in Louisiana for the Survey Item, “How frequently have you smoked cigarettes during the past 30 days?”

Available Response	Assigned Point Value
Two packs or more per day	13
About one and one-half packs per day	11
About one pack per day	9
About one-half pack per day	7
One to five cigarettes per day	5
Less than one cigarette per day	3
Not at all	0

Note. From 2002 Louisiana Communities That Care® Youth Survey and 2004 Louisiana Caring Communities Youth Survey

Each item value was multiplied by the mean parish percentage from the parish providing the response. A sum for each of the five items was computed. Finally, each of the item scores were added to obtain a tobacco use score for each parish in each of the survey years of 2002 and 2004.

The tobacco use score for the 2002 Communities That Care Youth Survey was computed. The unit of analysis was parish for which 62 observations were analyzed. The minimum score possible for the 2002 tobacco use score was zero (0) and the maximum score possible was 60. The mean was 10.8 (SD = 1.75). Scores ranged from 5.9 to 14.6. Finally, the tobacco use score for the 2004 Caring Communities Youth Survey was computed. The unit of analysis was parish for which 60 observations were analyzed. The minimum score possible for the 2004 tobacco use score was zero (0) and the maximum score possible was 60. The mean was 9.7 (SD = 2.10). Scores ranged from 3.2 to 15.5.

#### Objective Two

The second objective of the study was to determine if the self-reported level of tobacco use among secondary students in Louisiana changed between 2002 and 2004. To accomplish this

objective, the researcher statistically compared the 2002 tobacco use score with the 2004 tobacco use score, each of which was computed as part of the completion of Objective One. The mean overall 2002 tobacco use score was 10.8 (SD = 1.75) and the mean overall 2004 tobacco use score was 9.7 (SD = 2.10). When these two scores were compared using the dependent t-test procedure, the results indicated that there was a statistically significant decrease in the tobacco use score from 2002 to 2004 ( $t_{59} = 5.811, p < .001$ ). Therefore, the tobacco use score among secondary students in Grades 6, 8, 10, and 12 in Louisiana significantly declined from 2002 to 2004. To provide a measure of the substantive significance of the difference between these measures, the researcher computed the effect size using Cohen's D. The computed effect size was .76, which according to Cohen (1998) was classified as a medium effect.

In addition to computing a tobacco use score for 2002 and 2004, the researcher computed a tobacco use change score, defined as the 2004 parish tobacco use score minus the 2002 parish tobacco use score. This score was designed to provide an indicator of the change in the self-reported level of tobacco use among secondary students in Louisiana. Since the score used the most recent measure (2004) as the base, a negative score represents a decline in the tobacco use, and a positive score represents an increase in tobacco use. When the tobacco use change score was examined descriptively, the overall mean score was -1.2 (SD = 1.57), with scores ranging from -6.7 to +2.1 (See Table 16). When the scores were examined in categories, the grouping that had the greatest number of parishes represented was the "-1.99 to 0" category ( $n = 38, 64.4\%$ ). Additionally, only 10 parishes (17.0%) were found to have a positive score, indicating an increase in the self-reported tobacco use scores.

Table 16: Change in Self-Reported Level of Tobacco Use among Secondary Students in Louisiana Parishes from 2002 and 2004

Tobacco Use Change Score Range	Number of Parishes	Percent
-6.0 or lower	1	1.7
-5.99 to -4.0	3	5.1
-3.99 to -2.0	7	11.9
-1.99 to 0	38	64.4
.01 to 2	9	15.3
2.0 or higher	1	1.7
Total	59	100.0

Note. Tobacco Use Change Score: Mean = -1.2 (SD = 1.57); Range: -6.7 to 2.1

### Objective Three

The third objective of the study was to determine the Louisiana parish rate of merchant education in regard to sales to minors (defined as receiving merchant education during an unconsummated compliance check), as measured by the number of merchants who received educational materials divided by the total number of licensed tobacco merchants in a parish.

The unit of analysis for this objective was the parish; therefore, the maximum number of observations was the number of parishes in the state (N=64). Data was available for all 64 of the units in the population. To accomplish this objective, the first step was to present the descriptive information regarding the components in the calculation of the merchant education score. These components consisted of the total number of licensed tobacco merchants educated (merchants receiving educational materials) in a parish, and the total number of licensed tobacco merchants in a parish. The number of merchants educated ranged from 0 to 401 (See Table 17), with the mean number of merchants educated being 53.7 (SD = 82.39). When the number of merchants educated in a parish was examined in frequency categories, the size category with the largest number of parishes was the “1 – 25” merchants group ( $n = 16, 25.0\%$ ). In addition, 15 parishes

(23.4%) had no (0) merchants educated during the study period. The frequency category that had the fewest number of parishes was the “126 – 150” group with only one (1.6%) of the parishes in this frequency group.

The second step in completion of this objective was specific to the parish total number of licensed tobacco merchants. In regard to the total number of licensed tobacco merchants in a parish, there were 64 observations analyzed. The parish total number of licensed tobacco merchants ranged from 14 to 1,445 (See Table 18). The mean number of licensed tobacco merchants was 158.6 (SD = 74.50). When the number of licensed tobacco merchants was examined in categories, the size category that had the largest number of parishes was the “26 – 75” licensed tobacco merchants groups ( $n = 29$ , 45.3%). The licensed tobacco merchant category that had the smallest number of parishes was the “0 – 25” group with three (3) parishes (4.7%). Approximately 19% of parishes ( $n = 12$ ) fell within the largest size category of licensed tobacco merchants (“226 or higher”).

Table 17: Number of Licensed Tobacco Merchants in Louisiana Parishes Who Received Educational Materials during Unconsummated Compliance Checks

Number of Merchants Educated	Number of Parishes	Percent
0	15	23.4
1 – 25	16	25.0
26 – 50	13	20.3
51 – 75	8	12.5
76 – 100	3	4.7
101 – 125	2	3.1
126 – 150	1	1.6
151 or more	6	9.4
Total	64	100.0

Note. Number of Merchants Educated: Mean = 53.7 (SD = 82.39); Range: 0 – 401

Table 18: Number of Tobacco Merchants Licensed in a Parish by the Louisiana Office of Alcohol and Tobacco Control to Conduct Retail Sales of Tobacco

Number of Licensed Tobacco Merchants in Each Parish	Number of Parishes	Percent
0 - 25	3	4.7
26 – 75	29	45.3
76 – 125	10	15.6
126 – 175	5	7.8
176 – 225	5	7.8
226 or higher	12	18.8
Total	64	100.0

Note. Number of Tobacco Merchants: Mean = 158.6 (SD = 74.50); Range: 14 – 1,445

The final step in the accomplishment of this objective was the computation of a merchant education score (defined as the total number of merchants who received educational materials divided by the total number of licensed tobacco merchants in the parish). The merchant education score ranged from 0.00 to 1.86. The mean parish merchant education score was 0.40 (SD = 0.35) indicating that statewide, a mean of four (4) merchant education activities were conducted per parish for each 10 licensed tobacco merchants in the parish.

#### Objective Four

The fourth objective of the study was to determine the parish rate of compliance checks related to the sale of tobacco to minors (defined as the total number of compliance checks divided by the total number of licensed tobacco merchants in a parish). The unit of analysis for this objective was the parish; therefore, the maximum number of observations was the number of parishes in the state (N = 64). Data was available for all 64 of the units in the population.

To accomplish this objective, the first step was to present the descriptive information regarding the components in the calculation of the compliance check score. These components consisted of the total number of compliance checks conducted in a parish, and the total number of

licensed tobacco merchants in a parish. The mean number of compliance checks was 81.5 (SD = 127.50). The number of compliance checks ranged from 2 to 712 (See Table 19). When the number of compliance checks completed in a parish was examined in frequency categories, the size category with the largest number of parishes was the “1 – 25” group ( $n = 19$ , 29.7 %). The category having the second largest number of compliance checks was the “26 – 50” group ( $n = 17$ , 2.6%). The category with the fewest number of parishes was the “126 – 150” group, with only one (3.1%) of the parishes in this group.

Table 19: Number of Compliance Checks Conducted in a Parish by the Louisiana Office of Alcohol and Tobacco Control

Number of Compliance Checks in Each Parish	Number of Parishes	Percent
0	0	0.0
1 – 25	19	29.7
26 – 50	17	26.6
51 – 75	6	9.4
76 – 100	7	10.9
101 – 125	3	4.7
126 – 150	2	3.1
151 or more	10	15.6
Total	64	100.0

Note. Number of Compliance Checks: Mean = 81.5 (SD = 127.50); Range: 2 – 712

The second step for completion of this objective was specific to the total number of licensed tobacco merchants per parish. As described in the previous section for Objective Two, there were 64 observations analyzed specific to the total number of licensed tobacco merchants in a parish. The total number of licensed tobacco merchants ranged from 14 to 1,445 (See Table 12). The mean was 158.6 (SD = 74.50).

The final step in accomplishment of this objective was the computation of a parish compliance check score (defined as the total number of compliance checks divided by the total

number of licensed tobacco merchants in the parish). The parish compliance check score ranged from 0.03 to 2.46 (See Table 20), with a mean score of 0.60 (SD = 0.49) indicating that statewide, a mean of six (6) compliance checks were conducted per parish for each 10 licensed tobacco merchants in the parish.

Table 20: Range of Louisiana Parish Compliance Check Scores Defined as the Total Number of Compliance Checks Conducted by the Louisiana Office of Alcohol and Tobacco Control Divided by the Total Number of Licensed Tobacco Merchants in a Parish

Compliance Check Score Range	Number of Parishes	Percent
0 - .25	14	21.9
.251 - .50	22	34.4
.51 - .75	7	10.9
.76 - 1.0	14	21.9
1.01 – 1.50	3	4.7
1.51 – 2.0	2	3.1
2.01 or higher	2	3.1
Total	64	100.0

Note. Compliance Check Score Range: Mean = 0.60 (SD = 0.49); Range: 0.03 to 2.46

#### Objective Five

The fifth objective of the study was to determine the parish minor tobacco sale rate as measured by the number of sales to minors (violations) divided by the number of compliance checks completed. As in the previous two objectives, the unit of analysis for this objective was the parish; therefore, the maximum number of observations was the number of parishes in the state (N = 64). Data were available for all 64 of the units (parishes) in the population.

To accomplish this objective, the first step was to present the descriptive information regarding the components in the calculation of the parish minor tobacco sale rate. These components consisted of the total number of sales to minors and the total number of compliance checks completed. The number of violations per parish ranged from 0 to 41 (See Table 21), with a mean of 4.4 (SD = 7.42). When the total number of violations was examined in frequency

categories, the size category with the largest number of parishes was “1 – 5” ( $n = 27$ , 42.2%). The second largest size category was “0” at 31.3% ( $n = 20$ ). The size category that had the fewest parishes was “16 – 20” ( $n = 1$ , 1.6%).

Table 21: Number of Tobacco Violations Issued to Merchants in a Parish during Compliance Checks Conducted by the Louisiana Office of Alcohol and Tobacco Control

Number of Violations	Number of Parishes	Percent
0	20	31.3
1 – 5	27	42.2
6 – 10	10	15.6
11 – 15	3	4.7
16 – 20	1	1.6
21 or more	3	4.7
Statewide Total	64	100.0

Note. Number of Violations: Mean = 4.4 (SD = 7.42); Range: 0 – 41

The second step in completion of this objective was specific to the parish total number of compliance checks completed. As described in the previous section for Objective Four, there were 64 observations analyzed specific to the number of compliance checks related to the sale of tobacco products to minors. The number of compliance checks ranged from 2 to 712 (See Table 19). The mean number of compliance checks was 81.5 (SD = 127.50).

The final step in the accomplishment of this objective was the computation of the parish tobacco sale rate. The parish tobacco sale rate (as measured by the number of sales to minors or violations, divided by the number of compliance checks completed) ranged from 0.00 to 0.31 (See Table 22) with a mean of 0.10 (SD = 0.06) indicating that statewide, a mean of one (1) violation occurred per parish each 10 licensed tobacco merchants in the parish.

Table 22: Range of Louisiana Parish Tobacco Sale Rates as Measured by the Number of Violations Issued by the Louisiana Office of Alcohol and Tobacco Control Divided by the Number of Compliance Checks Completed by the Louisiana Office of Alcohol and Tobacco Control in a Parish

Parish Tobacco Sale Rate Range	Number of Parishes	Percent
0	20	31.3
.001 - .049	16	25.0
.05 - .099	19	29.7
.10 - .149	5	7.8
.15 - .199	1	1.6
.20 or higher	3	4.7
Total	64	100.0

Note. Tobacco Sale Rate Range: Mean = 0.10 (SD = 0.06); Range: 0.00 to 0.31

### Objective Six

The sixth objective of the study determined if a relationship exists between the Louisiana parish rate of merchant education in regard to the sales to minors and the Louisiana parish minor tobacco sale rate (as measured by the number of sales to minors or violations divided by the number of compliance checks) in Louisiana.

When the relationship between the Louisiana parish rate of merchant education related to the sales to minors and the Louisiana parish minor tobacco sale rate was examined, merchant education was found to correlate with the parish minor tobacco sale rate. The relationship was significant at  $r = .257$  ( $p = .040$ ).

The significant relationship of sale rates and merchant education indicated that higher merchant education actions were associated with higher tobacco sale rates. To provide a measure of the substantive significance of the relationship between these measures, the researcher identified the effect size using Davis' Descriptors. The effect size was .257 which, according to Davis (1971), was classified as a low effect.

## Objective Seven

The seventh objective of the study was to determine if a relationship exists between the Louisiana parish rate of merchant education related to sales of tobacco to minors and the self-reported level of tobacco use among selected secondary students in Louisiana. To accomplish this objective, the researcher determined the relationship between the 2004 tobacco use score (computed as part of Objective One), and the Merchant education score (computed as part of this Objective Three). This relationship was determined using the Pearson Product Moment correlation coefficient. When the relationship between the Louisiana parish rate of merchant education relating to the self-reported level of tobacco use among selected secondary students in Louisiana in 2004 and the merchant education score was examined, the calculated correlation coefficient ( $r = .12$ ,  $p = .38$ ) was not found to be significant. Therefore, no significant relationship exists between these two measures.

## Objective Eight

The eighth objective of the study was to determine if a relationship exists between the Louisiana parish minor tobacco sale rate and the change (if any) in the self-reported level of tobacco use among selected secondary students in Louisiana. The tobacco sale rate was presented descriptively in Objective Five (See Table 22). The tobacco change score related to the self-reported level of tobacco use among secondary students in Louisiana was presented descriptively in Objective Two (See Table 16).

The relationship between the Louisiana parish minor tobacco sale rate and the change in the self-reported level of tobacco use among selected secondary students in Louisiana from 2002

and 2004 was examined, using the Pearson Product Moment correlation coefficient. Results of this analysis indicated that the correlation was not statistically significant ( $r = .11$ ,  $p = .39$ )

#### Objective Nine

The ninth objective of the study was to determine if a model exists explaining a significant portion of the variance in the self-reported level of tobacco use among selected secondary students in Louisiana from the following factors:

1. Louisiana parish rate of merchant education related to sales to minors;
2. Louisiana parish minor tobacco sale rate as measured by the number of sales to minors or violations divided by the number of compliance checks;
3. Louisiana parish number of compliance checks completed; and
4. Total number of licensed tobacco merchants in Louisiana parishes.

To accomplish this objective, multiple regression analysis was performed. This was accomplished using the self-reported level of tobacco use among selected secondary students in Louisiana as the dependent variable. The other variables were treated as independent variables and were entered as appropriate by the researcher.

The bivariate correlations between the dependent variable and each of the independent variables in the study were examined. This procedure was used to accomplish two purposes. First, it provides the reader with a descriptive assessment of the relationships between the variables. Second, it enabled the researcher to select only those independent variables that were significantly related to the dependent variable for inclusion in the regression analysis. This was necessary since the maximum usable sample size with parish as the unit of analysis was 64. With this small potential sample size, minimizing the number of independent variables in the analysis to

increase the number of observations per independent variable is crucial. The result of this analysis was that only two of the variables planned for entry into the regression model met the criteria for being retained. These variables included the total number of tobacco merchants in a parish and the total number of compliance checks in a parish.

The bivariate correlations between the dependent variable and each of the independent variables planned for entry into the model are presented in Table 23. When these correlations were examined, the variable that was found to have the highest relationship with self-reported tobacco use among secondary students in Louisiana was the total number of tobacco merchants in a parish ( $r = -.33$ ,  $p = .004$ ). This relationship indicates that a greater number of tobacco merchants in a parish tends to be associated with lower levels of tobacco use among secondary students. Additionally, the variable total number of compliance checks in a parish was significantly related with the self-reported level of tobacco use among secondary students in Louisiana ( $r = -.29$ ,  $p = .01$ ). The nature of this association was such that a greater number of compliance checks in a parish tended to be associated with lower levels of tobacco use among secondary students.

Table 23: Relationship between Selected Variables Used as Independent Variables in the Regression and Self-Reported Level of Tobacco Use among Secondary Students in Louisiana

Selected Variables	n	$r^a$	p
Total Number of Tobacco Merchants	64	-.33	.004
Total Number of Compliance Checks	64	-.29	.01
Tobacco Sale Rate	64	.17	.09
Merchant Education	64	.12	.18

<sup>a</sup> Pearson Product Moment Correlation Coefficient

Following the examination of the bivariate correlations, the researcher examined the retained independent variables for the presence of excessive collinearity. The correlation between the two variables retained for inclusion in the model (total number of tobacco merchants and total number of compliance checks) was found to be  $r = .90$ . This correlation yields a percentage of explained variance of 81 ( $r^2 = .81$ ). As suggested by Hair, Anderson, Tatham, and Black (1998) a collinearity problem exists when the percent of variance in one variable explained by one or more other independent variables exceeds 90% (.90). Therefore, both of the independent variables that were significantly related to the dependent variable were included in the regression analysis.

The regression analysis was conducted with the 2004 tobacco use score entered as the dependent variable and the total number of tobacco merchants in a parish and the total number of compliance checks in a parish treated as independent variables in the analysis. The variables were entered using the forward entry method due to the exploratory nature of the study.

The first variable that entered the model was the total number of compliance checks completed in a parish. This variable was a significant contributing 11.4% to the explanatory model ( $R^2_{\text{change}} = .114, p = .01$ ). This was the only variable that made a significant contribution to the explanatory model; and therefore, the cumulative variance explained by the model was 11.4% ( $R^2_{\text{cumulative}} = .114, p = .01$ ). To provide a measure of the substantive significance of the significant regression model, the researcher reported the effect size using Cohen's  $R^2$  (.114) which in this instance indicated a small effect size (Cohen, 1988). The results of the multiple regression analysis utilizing self-reported level of tobacco use among selected secondary students in Louisiana as the dependent variable are presented in Table 24.

Table 24: Multiple Regression Analysis of Self-Reported Tobacco Use among Selected Secondary Students in Louisiana

Source of Variation	<u>df</u>	<u>Ms</u>	<u>F-ratio</u>	<u>p</u>
Regression	1	28.279	7.170	.01
Residual	58	3.944		
Total	59			

Variables in the Equation

Model Variable	R <sup>2</sup> Cumulative	R <sup>2</sup> Change	F Change	p Change	Beta
Total Number of Tobacco Merchants	.114	.114	.010	.010	-.332

Variables not in the Equation

Variable	t	Sign. T
Total Number of Compliance Checks	.293	.771

## CHAPTER FIVE: SUMMARY

### Summary

#### Purpose

The primary purpose of this study was two-fold: 1) to determine if a relationship exists between the self-reported tobacco use by secondary students in Louisiana and the tobacco sale rate to persons under the age of 18 in those parishes; and 2) to investigate the relationship between the level of merchant education in a parish and the parish tobacco sale rate to persons under the age of 18 in those parishes.

#### Objectives

The following objectives were developed and guided the researcher to:

- Objective 1: Determine the self-reported level of tobacco use in 2002 and 2004 among selected Grades 6, 8, 10, and 12 of students in Louisiana.
- Objective 2: Determine if the self-reported level of tobacco use among selected students in Grades 6, 8, 10, and 12 grade students in Louisiana changed between 2002 and 2004.
- Objective 3: Determine the Louisiana parish rate of merchant education related to sales to minors (defined as receiving merchant education during an unconsummated compliance check), as measured by the number of merchants who received educational materials divided by the total number of licensed tobacco merchants in a parish.

- Objective 4: Determine the Louisiana parish rate of compliance checks related to the sale of tobacco to minors (defined as the total number of compliance checks divided by the total number of licensed tobacco merchants in a parish).
- Objective 5: Determine the Louisiana parish minor tobacco sale rate as measured by the number of sales to minors (violations) divided by the number of compliance checks completed.
- Objective 6: Determine if a relationship exists between the Louisiana parish rate of merchant education related to the sales to minors and the Louisiana parish minor tobacco sale rate as measured by the number of sales to minors (violations), divided by the number of compliance checks in Louisiana.
- Objective 7: Determine if a relationship exists between the Louisiana parish rate of merchant education related to sales of tobacco to minors and the self reported level of tobacco use among selected secondary students in Louisiana.
- Objective 8: Determine if a relationship exists between the Louisiana parish minor tobacco sale rate and the change (if any) in the self-reported level of tobacco use among selected secondary students in Louisiana.
- Objective 9: Determine if a model exists explaining a significant portion of the variance in the self-reported level of tobacco use among selected secondary students in Louisiana from the following factors:
- a. Louisiana parish rate of merchant education related to sales to minors;
  - b. Louisiana parish minor tobacco sale rate as measured by the number of sales to minors (violations) divided by the number of compliance checks;

- c. Louisiana parish number of compliance checks completed; and
- d. Total number of licensed tobacco merchants in the Louisiana parishes.

### Methodology

Multiple data sources were utilized to include tobacco use among secondary students, education provided to merchants (defined as receiving merchant education during an unconsummated compliance check), and tobacco sales to minors compliance checks.

### Data Sources

#### Tobacco Use Data

Tobacco use data among secondary students was provided through a sample of aggregated parish data for students in Grades 6, 8, 10, and 12 in Louisiana schools in the 63 parishes (2002 Communities That Care® Youth Survey) and 62 parishes (2004 Caring Communities Youth Survey) that provided useable youth survey data.

Tobacco use data was provided through aggregated parish data regarding responses of secondary school youth in Louisiana to questions about their use of tobacco products, both current and lifetime use from the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey) and consisted of response data from the following five questions: “How old were you when you first smoked a cigarette, even just a puff?,” “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?,” “How often have you used or taken smokeless tobacco during the past 30 days?,” “Have you ever smoked cigarettes?,” and “How frequently have you smoked cigarettes during the past 30 days?”

Tobacco use data was collected from information provided by the Southwest Prevention Center at the University of Oklahoma through summary data from the 2002 Louisiana Communities That Care® Youth Survey and the 2004 Louisiana Caring Communities Youth Survey (formerly the Communities That Care® Youth Survey). Only data specific to the responses of students to each of the five survey items was recorded.

#### Merchant Education Data

Merchant education actions were conducted in retail outlets licensed by the Office of Alcohol and Tobacco Control to sell tobacco products. Merchant education data was provided through aggregated parish data for unconsummated compliance checks conducted by community coalitions from July 1, 2003 to June 30, 2004.

Merchant education was provided through the number of merchant education actions in each parish from July 1, 2003 through June 30, 2004, obtained from the community coalition unconsummated compliance check reports which were prepared for each merchant education action. Merchant education data was provided by the Synar Coordinator for the Department of Health and Hospitals' Office for Addictive Disorders from tobacco merchants that received educational materials during unconsummated compliance checks in each parish from July 1, 2003, through June 30, 2004. Only data specific to the number of merchants educated in a given parish was recorded.

#### Tobacco Compliance Check Data

Tobacco compliance checks were conducted in retail outlets licensed by the Office of Alcohol and Tobacco Control to sell tobacco products. Compliance check data was provided through aggregated parish data for compliance checks conducted by the Office of Alcohol and

Tobacco Control from July 1, 2003, to June 30, 2004. Tobacco compliance check data were provided through the number tobacco compliance checks conducted by the Office of Alcohol and Tobacco Control in each parish from July 1, 2003, through June 30, 2004; the number of these compliance checks classified as a violation of the tobacco sales to minors laws. This information was obtained from OATC compliance checks reports, prepared for each compliance check.

#### Instrumentation

The measuring instrument used to collect data for this study was a researcher-designed data extraction tool, which included the variables of investigation for the study. The information regarding these variables was derived from the three different data sources and recorded onto the data extraction tool.

#### Findings

##### Objective One

The first objective of the study utilized aggregated data with the parish as the unit of analysis; therefore, each measurement represented the composite measure for the Parish. Results of each survey were described by the year. The data collected for completion of Objective One reflected the percentage of responses for each of the five survey items related to smoking behaviors for both the 2002 Communities That Care® Youth Survey and the 2004 Caring Communities Youth Survey. The five survey items included the following: “Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?,” “How often have you used or taken smokeless tobacco during the past 30 days?,” “Have you ever smoked cigarettes?,” and “How frequently have you smoked cigarettes during the past 30 days?” Each survey item is presented in Chapter Four, inclusive of the Mean Percentage, SD, and Frequency Table for both years of survey data (2002 and 2004).

In addition, a tobacco use score was computed for both years of the survey data (2002 and 2004). The tobacco use score for the 2002 Communities That Care Youth Survey was computed using a scoring procedure validated by a panel of experts. The unit of analysis was the parish for which 62 observations were analyzed. The mean was 10.8 (SD = 1.75). Scores ranged from 5.9 to 14.6. The tobacco use score for the 2004 Caring Communities Youth Survey was computed using the same scoring procedure validated by a panel of experts. The unit of analysis was the parish for which 60 observations were analyzed. The mean was 9.7 (SD = 2.10). Scores ranged from 3.2 to 15.5.

#### Objective Two

The mean overall 2002 tobacco use score was 10.8 (SD = 1.75) and the mean overall 2004 tobacco use score was 9.7 (SD = 2.10). When these two scores were compared using the dependent t-test procedure, the results indicated a statistically significant decrease in the tobacco use score from 2002 to 2004 ( $t_{59} = 5.811, p < .001$ ). Therefore, the tobacco use score among secondary students in Grades 6, 8, 10, and 12 in Louisiana significantly declined from 2002 to 2004 with a moderate effect size for the resulting statistical comparison.

In addition to computing a tobacco use score for 2002 and 2004, the researcher computed a tobacco use change score. When the tobacco use change score was examined descriptively, the overall mean score was -1.2 (SD = 1.57), with scores ranging from -6.7 to +2.1. When the scores were examined in categories, the grouping with the greatest number of parishes represented was the “-1.99 to 0” category ( $n = 38, 64.4\%$ ). Additionally, only 10 parishes (17.0%) were found to have a positive score indicating an increase in the self-reported tobacco use scores.

### Objective Three

The number of merchants educated ranged from 0 to 401 (See Table 12), with the mean number of merchants educated being 53.7 (SD = 82.39). When frequency categories were examined, the category size with the largest number of parishes was the “1 – 25” merchants group ( $\underline{n} = 16$ , 25.0%). Fifteen parishes (23.4%) had no (0) merchants educated during the study period. The frequency category with the fewest number of parishes was the “126 – 150” group with only one (16%) of the parishes in this frequency group.

The parish total number of licensed tobacco merchants ranged from 14 to 1,445. The mean number of licensed tobacco merchants was 158.6 (SD = 74.50). When frequency categories were examined, the size category with the largest number of parishes was the “26 – 75” licensed tobacco merchants groups ( $\underline{n} = 29$ , 45.3%). The licensed tobacco merchant category showing the smallest number of parishes was the “0 – 25” group with three (3) parishes or 4.7%. Approximately 19% of parishes ( $\underline{n} = 12$ ) fell within the largest number of licensed tobacco merchants “226 or higher.”

Finally, the merchant education parish score was computed. The merchant education score ranged from 0.00 to 1.86. The mean parish merchant education score was 0.4 (SD = 0.35).

### Objective Four

The mean number of compliance checks was 81.5 (SD = 127.50). The number of compliance checks ranged from 2 to 712 (See Table 14). When frequency categories were examined, the size category displaying the largest number of parishes was the “1 – 25” merchants group ( $\underline{n} = 19$ , 29.7 %). The second category showing the largest number of compliance checks was the “26 – 50” group ( $\underline{n} = 17$ , 2.6%). The frequency category with the fewest number of

parishes was the “126 – 150” group, with only one (3.1%) of the parishes in this frequency group.

As in Objective Two, the total number of licensed tobacco merchants was examined. The total number of licensed tobacco merchants ranged from 14 to 1,445. The mean was 158.6 (SD = 74.50). Finally, the parish compliance check score was computed. The parish compliance check score ranged from 0.03 to 2.46, with a mean score of 0.6 (SD = 0.49).

#### Objective Five

The number of violations per parish ranged from 0 to 41 (See Table 16), with a mean of 4.4 (SD = 7.42). The total number of violations ranged from 0 to 41. When the total number of violations was examined in frequency categories, the size category with the largest number of parishes was “1 – 5” ( $\underline{n} = 27$ , 42.2%). The second largest size category was “0” at 31.3% ( $\underline{n} = 20$ ). The smallest size category was “16 – 20” ( $\underline{n} = 1$ , 1.6%)

As in Objective Four, the total number of compliance checks completed was examined. The number of compliance checks ranged from 2 to 712. The average (mean) number of compliance checks was 81.5, with a standard deviation of 127.50. Finally, the parish tobacco sale rate ranged from 0.00 to 0.31, with mean of 0.1. The standard deviation was 0.06.

#### Objective Six

When the Louisiana parish rate of merchant education related to sales to minors and the Louisiana parish minor tobacco sale rate, merchant education was found to correlate with the parish minor tobacco sale rate. The relationship was significant at  $r = .257$  ( $p < .05$ ), but had a low effect size for the resulting correlation. This relationship indicated that higher merchant education actions were associated with higher tobacco sale rates.

### Objective Seven

When the Louisiana parish rate of merchant education relating to the self reported level of tobacco use among selected secondary students in Louisiana in 2004 and the merchant education score was examined, the calculated correlation coefficient ( $r = .12$ ,  $p = .38$ ) was found to be insignificant. Therefore, no significant relationship exists between these two variables.

### Objective Eight

The relationship between the Louisiana parish minor tobacco sale rate and the change in the self-reported level of tobacco use among selected secondary students in Louisiana from 2002 and 2004 was examined, using the Pearson Product Moment correlation coefficient. Results of this analysis indicated that the correlation was not statistically significant ( $r = .11$ ,  $p = .39$ ).

### Objective Nine

To accomplish this objective, multiple regression analysis was performed. This was accomplished using the self-reported level of tobacco use among selected secondary students in Louisiana as the dependent variable. The other variables were treated as independent variables and were entered according to the analysis plan developed by the researcher.

Bivariate correlations between the dependent variable and each of the independent variables were examined. The variable that was found to have the highest relationship with self-reported tobacco use among secondary students in Louisiana was the total number of tobacco merchants in a parish ( $r = -.33$ ,  $p = .004$ ). Additionally, the variable total number of compliance checks in a parish was significantly related with the self-reported level of tobacco use among secondary students in Louisiana ( $r = -.29$ ,  $p = .01$ ).

The regression analysis was conducted with the 2004 tobacco use score entered as the dependent variable and the total number of tobacco merchants in a parish and the total number of compliance checks in a parish treated as independent variables in the analysis. The variables were entered using the forward entry method due to the exploratory nature of the study.

The first variable that entered the model was the total number of compliance checks completed in a parish. This variable made a significant contribution to the explanatory model contributing 11.4% to explanatory model ( $R^2_{\text{change}} = .114, p = .01$ ). This was the only variable that made a significant contribution to the explanatory model, and therefore, the cumulative variance explained by the model was 11.4% ( $R^2_{\text{cumulative}} = .114, p = .01$ ). To provide a measure of the substantive significance of the significant regression model, the researcher reported the effect size using Cohen's  $R^2$  which in this instance indicated a small effect size (Cohen, 1988).

### Conclusions, Implications, and Recommendations

The researcher drew the following conclusions, implications, and recommendations from the analyses of data:

First, secondary students use less tobacco. The self-reported level of tobacco use among secondary students in Louisiana has decreased. This conclusion is based on results from a dependent t-test, which found that there was a statistically significant decrease in the tobacco use score from 2002 to 2004 ( $t_{59} = 5.811, p < .001$ ), reflecting a positive outcome in that Louisiana has experienced a decrease in tobacco use among secondary students. However, caution must be exercised; these results are based on self-reported tobacco use among secondary students in Grades 6, 8, 10, and 12. Although these youth surveys are anonymous, there is a possibility of measurement error and dishonesty of youth responses. Based on this conclusion, the researcher

recommends longitudinal research with the same youth over time to ascertain whether this downward trend in youth tobacco use is maintained. In an effort to track tobacco use among these youth upon graduation of high school, it is recommended that a self-reported survey of college and career and technical education students be conducted. This survey should include the same questions and available responses as used in the 2002 and 2004 survey for secondary students in Grades 6, 8, 10, and 12.

Second, an unacceptable level of tobacco use exists among secondary students in Louisiana. This conclusion is based on the self-reported tobacco use among secondary students in 2004, indicating that 3.4% of current students regularly used smokeless tobacco, with 2.3% reporting a use of smokeless tobacco more than once a day. In addition, 7% of secondary students reported current and regular use of cigarettes, with more than 5% reporting smoking one-half pack to two or more packs daily. It is recommended that youth tobacco prevention programs continue to be developed and pilot-tested to prevent and/or reduce youth tobacco use. In the experience of the researcher, having worked in the field of substance abuse prevention, youth often perceive much higher rates of substance use and other unhealthy behaviors among their peers. Youth often make the assumption that certain behaviors are acceptable by and widespread among their peers. Youth may rationalize, “Everyone is doing it, so I’ll try it.” Importantly, educational programs for youth present factual information on the health effects of tobacco use and current data regarding tobacco use among youth. In addition, factual information should be presented to adults in an effort to educate adults in regard to the consequences of youth tobacco use. Adult smokers and parents who smoke may also benefit from the presentation of factual information concerning the effects of smoking on both adults and

youth. This educational initiative could be employed through media coverage and parent-teacher organizations at local, regional, and national levels. It would also be beneficial to provide information to youth and adults on support services and resources available to help smokers quit smoking, should these individuals realize a personal addiction to nicotine.

Third, merchant education is not conducted consistently throughout Louisiana, based on the varying number of merchants educated within a parish. The number of merchants educated in a parish ranged from 0 – 401. Fifteen parishes had no merchants educated. In addition, when the merchant education score was computed, scores ranged from 0.00 to 1.86, indicating that while some parishes had no merchants educated, other parishes had almost two merchant education actions to every licensed tobacco merchant. Currently, community contractors choose which merchants will be educated. It is recommended by the researcher that community contractors be required to educate merchants who are randomly selected by the State Synar Coordinator for a portion of the merchant education actions in diverse parish and geographical regions. The random selection of a portion of merchants, based on the total number of licensed tobacco merchants in a parish, would ensure that all parishes receive some merchant education actions. The remaining merchant education actions could be selected at the community contractor's discretion to ensure that merchant education activities may be continued with those merchants who are perceived by the community to sell tobacco products to youth. In addition, the researcher recommends that a uniform reporting system be developed so that those merchants who have been educated may be tracked over time.

Fourth, compliance checks are not conducted consistently across the state. This conclusion is based on the varying number of merchants educated in a parish. The number of compliance checks conducted in a parish range from 2 – 712. In addition, when the compliance check score was computed, scores ranged from 0.03 to 2.46, indicating that while some parishes had no compliance check for every licensed tobacco merchant, other parishes had at least two compliance checks conducted for every licensed tobacco merchant. While a portion of compliance checks (about 50%) are randomly selected, the remaining compliance checks are conducted at the discretion of OATC Agents who select where the remaining compliance checks will take place. The researcher recommends that the location of a greater portion of compliance checks be randomly selected. Random selection of a greater portion of compliance checks would ensure that all parishes receive comparable compliance checks, based on the number of licensed tobacco merchants in a given parish. This procedure would allow OATC agents to continue to use their discretion in selecting the remaining compliance checks. However, further research to examine the location of those compliance checks not randomly selected is recommended also. This measure could be initiated by tracking the physical address of those merchants visited for a compliance check (those not randomly selected) to ascertain if there are any patterns of choice (i.e. selection of merchants located on interstates only).

Fifth, the rate of tobacco sales to minors varies among parishes. This conclusion is based on the varying violation rates among parishes. The number of violations among parishes ranged from 0 – 41. Consequently, the parish sale rate, defined as the number of violations divided by the number of compliance checks completed in a parish, ranged from 0.0 to 0.31. This range indicated that while some parishes had a violation rate of 0%, there were parishes displaying a

violation rate of 30%. Though this disparity between violation rates may be alarming at first examination, it is equally important to note that 20 parishes had a violation rate of 0%, meaning there were no merchants in the parish in violation of the law prohibiting the sale of tobacco products to minors. In addition, only two parishes of the 64 parishes failed to meet the national non-compliance rate of 20%. The researcher recommends that targeted compliance checks and perhaps a greater portion of compliance checks be conducted in those parishes found to have high violation rates; additionally, surveillance and compliance checks might be conducted.

Sixth, merchant education rates are related to higher violation rates. This conclusion is based on the finding that when the relationship between the parish rate of merchant education and the parish minor tobacco sale rate was examined, merchant education was found to significantly correlate with the parish minor tobacco sale rate ( $r = .257$ ,  $p < .05$ ), but with a low effect. While this may seem discouraging at first examination, it is important to ascertain the antecedent and consequence involved.

The possibility exists that prior violation rates tend to precede merchant education actions. Community contractors conduct merchant education actions, and these same community contractors decide on which merchants will be educated. The possibility exists that merchant education actions may be more often conducted with those merchants perceived by the community to be selling tobacco to youth. It is therefore recommended, in addition to randomly selecting merchants to be educated, that targeted merchant education actions be conducted. The action may be implemented by providing community contractors with a list of merchants found to be in violation during compliance checks conducted by the Office of Alcohol and Tobacco Control. Hopefully, progressive action will cause merchants to realize that refusal to sell tobacco

products to youth reflects a positive action toward the health of youth, both in community and for the overall good of society.

Seventh, no relationship exists between parish youth tobacco use and the parish rate of merchant education. This conclusion is based on the finding that in regard to the parish tobacco use score and the parish merchant education score, the relationship proved insignificant ( $r = .12$ ,  $p = .38$ ). Though this conclusion may seem discouraging, it is directly related to the finding that the number of merchants in a parish varies greatly. If the level of merchant education across parishes may be controlled by a random selection of merchants to be educated, then the relationship between parish rate of merchant education and parish youth tobacco use may also be examined over time. At present, the current results are specific to a single year of merchant education actions and display varying coverage among parishes.

Eighth, no relationship exists between parish youth tobacco use and the parish rate of tobacco sales to minors. This conclusion is based on the finding that the relationship between the parish minor tobacco sale rate and the change in the self-reported level of tobacco use among selected secondary students in Louisiana was not significant ( $r = .11$ ,  $p = .39$ ). It is recommended that this relationship continue to be examined in future research to compare the state's youth tobacco use with the rate of tobacco sales to minors. The researcher also recommends that a study be undertaken to research other sources from which youth obtain tobacco products. A survey utilizing interviews could be conducted with youth to find how they obtain tobacco. Future planning of programs for tobacco use prevention in regard to our youth requires knowledge as to the source of the obtained tobacco, i.e., whether it is also obtained from parents, older siblings, and/or older peers. It is equally important to know whether minors are

obtaining tobacco products from merchants who are not licensed for the retail sale of tobacco products. Indeed, through the survey and interviews recommended earlier, additional questions might be asked regarding the physical location of merchants who have sold to these youth in the past. Information regarding the physical location of merchants who sell to these youth could be forwarded to the Office of Alcohol and Tobacco Control for inclusion in further investigations. Further investigation could initiate surveillance activities and compliance checks of merchants identified as violating the law that prohibits sale of tobacco products to minors.

Ninth, use of tobacco by youth cannot be explained by sales rate or education. The level of merchant education and the tobacco sale rate in a parish are not significantly related to self-reported level of tobacco use among secondary students. This conclusion is based on findings that the bivariate correlation between these factors and the 2004 tobacco use score were not significant ( $r$  values of .17 and .12). The researcher recommends that this analysis be revisited when multiple years of data have been collected, to identify trends in the data. In addition, other variables may account for a significant portion of the variance of self-reported level of tobacco use among secondary students in the parish. The first variable recommended for future examination is the number of tobacco education programs provided in a parish to include school-based and community-based educational programs. The second variable recommended is the number and nature of local tobacco ordinances (i.e., smoke-free restaurants and banning of vending machines) implemented in a parish. Finally, it is recommended that the current rate of adult tobacco use be examined among adult smokers who typically begin using tobacco products as youth. If the level of adult tobacco use is found to be declining, then this data would strongly

impact youth tobacco use among those youth who tend to emulate behaviors in which adults engage.

Tenth, a relationship exists between number of tobacco merchants and tobacco use by youth. A greater number of tobacco merchants in a parish tends to be associated with lower levels of tobacco use among secondary students. This conclusion is based on the significant bivariate ( $r = -.33$ ,  $p = .004$ ). The researcher acknowledges the importance of the role of the Office of Alcohol and Tobacco Control (OATC). The OATC enforcement of the law in regard to the sale of tobacco products to minors is accomplished by conducting compliance checks of licensed tobacco merchants. If what is being done is making a difference in tobacco use by youth (as it appears to be based on this study), then the current practices should be continued and perhaps intensified. The researcher also recommends that surveillance and subsequent education about the law relating to retail tobacco sales target merchants who sell tobacco products, but are not currently licensed by OATC for tobacco retail sales. In addition, a community education campaign should be implemented to educate the community on the importance of unlicensed merchants becoming licensed by OATC for retail sale of tobacco products. The community, like OATC, might conduct surveillance activities of tobacco merchants. Community members can be instructed to look for appropriate indications that a tobacco merchant is legally licensed.

#### Additional Recommendations for Future Research

Analyses were conducted with the parish as the unit of analysis. This researcher recommends future research utilizing geographical regions as the unit of analysis within Louisiana. Funding for merchant education is allocated to specific geographic regions of the state. Currently, there are 10 exclusive geographic regions (See Appendix) in the state, composed of

multiple parishes. Geographic regions may benefit from such analysis in a comparison with other geographic regions. This researcher acknowledges there may be some difficulty statistically analyzing the 10 regions. Therefore, the issue of a small unit of analysis ( $N = 10$ ) should be carefully examined.

The Synar Amendment requires that all states actively enact and enforce laws limiting the access of tobacco products to minors. The State of Louisiana has been successful in limiting the access of tobacco products to minors and has seen a decrease in the use of tobacco among youth. This researcher recommends using this study as a model for analysis of baseline data for replication among other states. Furthermore, baseline data outlined in this study can be utilized for future research and planning for this State and others.

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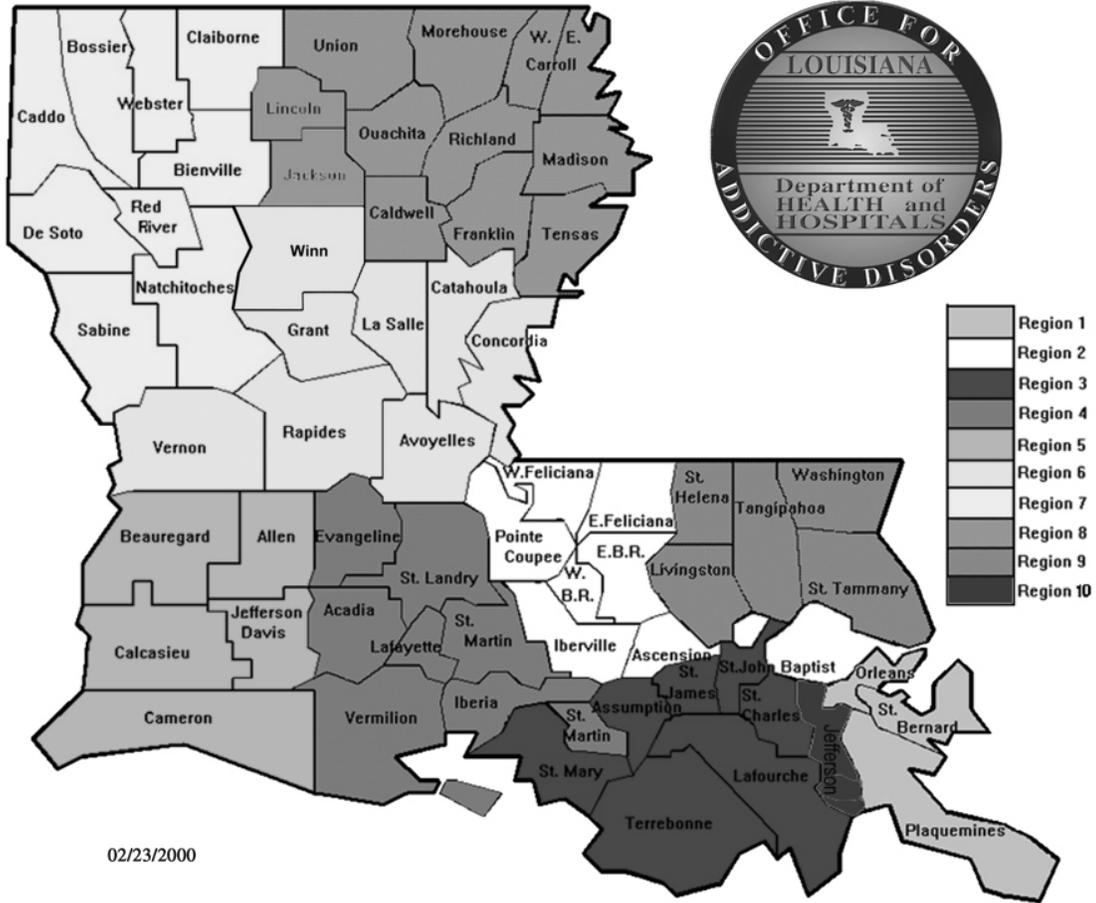
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# APPENDIX

## ADMINISTRATIVE REGIONS FOR THE LOUISIANA OFFICE FOR ADDICTIVE DISORDERS



## VITA

Leslie Hope Brougham was born on June 24, 1969, in Lake Charles, Louisiana. She graduated from LaGrange Senior High School in Lake Charles, Louisiana, in 1987. She earned her Bachelor of Arts degree in psychology from McNeese State University in 1991. She then received her Master of Social Work degree from Louisiana State University in 1994, while working full time as a substance abuse prevention coordinator for the Louisiana Office for Addictive Disorders. Upon receiving her Master of Social Work Degree, she moved to Baton Rouge, Louisiana, and began working for the Louisiana Office of Mental Health as a mental health social worker. In 1997, she returned to work for the Louisiana Office for Addictive Disorders as a program manager in prevention services. While working full-time as a program manager, she enrolled in the doctoral program in Vocational Education (later named the School of Human Resource Education and Workforce Development). Leslie is a May 2006 candidate for the degree of Doctor of Philosophy in human resource education at Louisiana State University.

Ms. Brougham has over 15 years of experience working in the field of substance abuse prevention. She is a member of the National Prevention Network and has presented at numerous statewide and national conferences in the topic area of limiting the access of tobacco products to minors.

Leslie is the daughter of Mr. and Mrs. James Brougham of Lake Charles, Louisiana. She has an older sister, Kimberly, and a younger brother, Branndon. Leslie currently resides in Baker, Louisiana. Her interests include walking, cooking, salt-water fishing, and spending time with her dogs, Coby and Lucky.