

# Impact of the Master Settlement Agreement on Smoking Prevalence Among Social Groups

by

Dale Mantey

An Applied Research Project  
(Political Science 5397)

Submitted to the Department of Political Science  
Texas State University-San Marcos  
In Partial Fulfillment for the Requirements  
for the Degree of  
Masters of Public Administration

Spring 2014

---

Hassan Tajalli, Ph.D.

---

Jayce Farmer, Ph.D.

---

Kyle Harward

## **Table of Contents**

<b>Chapter 1. Introduction</b>	<b>1</b>
<i>Public Health and Health Care</i>	1
<i>Research Purpose</i>	3
<b>Chapter 2. Setting and Literature Review</b>	<b>4</b>
<i>Public Health and Tobacco Control</i>	4
<i>Tobacco Control</i>	6
<i>Master Settlement Agreement</i>	7
<i>Policy</i>	12
<i>Federal Policy</i>	13
<i>State &amp; Local Policy</i>	14
<i>Figure 2.1: Map of Smoke-Free Laws</i>	15
<i>Program</i>	16
<i>Taxation</i>	21
<i>Federal Taxes</i>	23
<i>State &amp; Local Taxes</i>	23
<i>Table 2.1: State Cigarette Taxes in 2013</i>	26
<i>Conceptual Framework</i>	27
<i>Socioeconomic Status</i>	30
<i>Table 2.2: Conceptual Framework</i>	34-35
<b>Chapter 3. Methodology</b>	<b>36</b>
<i>Introduction</i>	36
<i>Development of Sample</i>	36
<i>Table 3.1: Datasets 1987-1995</i>	38
<i>Table 3.2: Operationalization Table</i>	39
<i>Dependent Variables</i>	40
<i>Design Strengths</i>	40
<i>Design Weaknesses</i>	40
<i>Statistics</i>	41
<i>Human Research</i>	41
<i>Reliability</i>	41
<i>Summary</i>	43

<b>Chapter 4. Results</b>	<b>44</b>
<i>Purpose</i>	44
<i>Regression Analysis</i>	44
<i>Gender</i>	44
<i>Table 4.1: Gender Outputs</i>	45
<i>Race &amp; Ethnicity</i>	46
<i>Table 4.2: Race Outputs</i>	49
<i>Marital Status</i>	49
<i>Education</i>	50
<i>Income</i>	52
<i>Poverty</i>	53
<i>Table 4.3: Socioeconomic Status Outputs</i>	54
<i>South &amp; Northeast</i>	54
<i>South &amp; Midwest</i>	55
<i>South &amp; West</i>	56
<i>Table 4.4: Geographic Region Outputs</i>	58
<i>Summary</i>	58
<b>Chapter 5. Conclusions</b>	<b>59</b>
<i>Assessment of Findings</i>	59
<i>Discussion</i>	60
<i>Limitations</i>	61
<i>Future Implications</i>	61
<b>Bibliography</b>	<b>63</b>

## **ABSTRACT**

*Purpose.* The purpose of this research project is to explain the impact of the Master Settlement Agreement on smoking prevalence. *Methods.* Data was collected from the National Health Interview Survey (NHIS) for the years 1987 – 2009. This research uses an interrupted time-series with comparison groups design. *Results.* The results show a limited difference in impact from the Master Settlement Agreement on smoking prevalence when comparing social groups and geographic regions. *Conclusion.* The Master Settlement Agreement did not generate the changes expected of a landmark shift in public policy. Groups with the greatest risk of smoking exposure appear to not have been particularly impacted by the Master Settlement Agreement.

## **Chapter 1 - Introduction**

The purpose of this research project is to compare the impact of the Master Settlement Agreement (MSA) on smoking prevalence among social groups and geographic regions. To properly evaluate and explain the effects of the MSA, it is vital to understand the details and context of this change in policy as it pertains to the fields of public health, health care, and tobacco control in the United States. This paper will detail what role the Master Settlement Agreement played in tobacco control, explain how tobacco control interventions work to impact smoking prevalence, and compare smoking prevalence trends between social demographics.

### *Public Health and Health Care*

The Institute of Medicine (IOM) describes public health as collective social actions aimed at assuring conditions for people to be healthy (Majette 2011). Examples of public health include public service announcements, community health initiatives, and tobacco warning labels. The field of public health is composed of researchers, administrators and policy makers (Cogan Jr. 2011). Public health differs from health care in that public health focuses on the masses while health care applies to the individual (Cogan Jr. 2011).

Utilization of public health and health care differ drastically in the United States as evident by the financial structure of the two fields. Approximately 95% of all health related dollars are spent on health care, with the remaining 5% devoted to public health initiative (Cogan Jr. 2011). This discrepancy calculates to \$8,000 spent, per person, on health care and only \$251 spent, per person, on public health in 2009 (Cogan Jr. 2011).

Historically, public health and health care were seen as overlapping disciplines. During the mid-20<sup>th</sup> century, advances in training, education, skills and technologies pushed health care to the forefront. As a result of these advances, biomedical responses became the norm in a one-size-fits-all, curative medical field. The national response to illness became individualized, with

less emphasis placed on “the impact of social, economic, behavioral and environmental factors on health” (Cogan Jr. 2011, 358). Disregarding public health has created a society that spends more on health care than any other developed country (Cogan Jr. 2011). The passive, responsive nature of the U.S. Health care system has resulted in preventable, chronic illness accounting for 75% of all health care expenditures (Berman 2011).

The lack of public health has led to a flawed health care system. The nation subscribes to an individualistic/biomedical paradigm for confronting the health of the individual. This model places great emphasis on health care and directs the attention of personal health towards reactive treatments, rather than preventing ailments and the subsequent need for medicine. The health care system currently ignores social, behavioral, economic, and environmental factors that comprise individual factors. It is best described by Ashton and Seymour’s (1988, vii) metaphor of a river sweeping away swimmers:

Every so often a drowning person is swept alongside. The lifesaver dives in to the rescue, retrieves the ‘patient’ and resuscitates them. Just as they have finished another casualty appears alongside. So busy and involved are the lifesavers in all of this rescue work that they have no time to walk upstream and see why it is that so many people are falling into the river.

The current health care model in the United States is a system that excels at treating expensive, complex and crippling disease but is ineffective in preventing treatable conditions. The American health care industry has “made extraordinary progress, albeit along a rather narrow path” (Brosco 2012, 1848), leaving much work to be done by public health officials.

With an expanding need for health care in the United States, public health measures have been taken to prevent chronic illness. Policies on the federal and state level have devoted financial support to public health initiatives, constructed agencies to

address health disparities, and regulate private industries profiting from the sale of harmful products, all with the hope of preventing chronic illness. An opportunity to achieve the goals of prevention appeared through the Master Settlement Agreement. This study will assess the effectiveness of this change in policy as well as any discrepancies in effectiveness among social groups.

### *Research Purpose*

The purpose of this research project is to compare the impact of the Master Settlement Agreement on smoking prevalence among social groups and geographic regions. The MSA provided states with funding to finance tobacco control initiatives and decrease the abilities of the tobacco industry to recruit new smokers. However, research indicates tobacco control efforts have plateaued, suggesting focus is needed towards specific demographics in order to continue and sustain public health goals. Using an interrupted time-series analysis, this project compares the rate of change in smoking prevalence among social demographics from 1987-2009 to compare the effect of the MSA on smoking prevalence among varying demographic groups. These comparisons are differences in gender, race, ethnicity, marital status, education, income, poverty level classification, and geographic region. Through this analysis, shortcomings within tobacco control may be identified and addressed by policy makers and administrators.

## **Chapter 2 – Settings & Literature Review**

Consequences of tobacco use on health and economics within the United States remains an area of concern for policy makers and administrators. Currently, 75% of U.S. health care expenditures are devoted to treating and managing chronic illness (Bunel et al. 2012). These diagnoses stem from poor health behaviors such as decreased physical inactivity, poor nutrition, and tobacco use (Center for Disease Control and Prevention [CDC] 2008). Among these behaviors, tobacco use has shown to have the greatest effect on economic loss, premature death, and years of potential life lost (YPLL) (CDC 2008).

Though tobacco control efforts have been in effect since the 1960s, smoking remains the leading cause of preventable death in the United States (CDC 2010). Each year, tobacco use accounts for approximately 443,000 deaths as well as \$193 billion in health care cost and lost productivity (CDC 2008). Cost and health outcomes associated with cigarettes are not limited to smokers. Of all premature deaths caused by tobacco in 2008, nearly 10% (49,400) resulted from secondhand smoke exposure (CDC 2008). This classifies smoking as a universal health hazard that extends beyond the users of the product, thus warranting government intervention.

Health outcomes are inherently tied to economics. Tobacco related illness costs \$96 billion in direct medical expenditures and \$97 billion in lost productivity per year (CDC 2008). This places tobacco use among the heaviest economic burdens for all levels of government, the private sector and tax payers (CDC 2008). The bulk of economic ramifications from this behavior stem from the long term treatment required of these conditions. For example, smoking is the leading cause of chronic illness, including stroke, chronic obstructive pulmonary disease, and heart disease. Smoking is also associated with increased risk for bladder, oral, cervical, pancreatic, stomach, and lung cancer (U.S. Department of Health and Human Services [DHHS]



2004). Furthermore, smoking is the most significant behavior tied to cancer mortality, accounting for 30% of all cancer deaths. Each of these results from smoking contributes to overall economic impact of this behavior.

In 2003, health care expenditures represent more than 15% of gross domestic product (GDP) - \$1.7 trillion - (Roberts 2006) of which “public sources absorbed 45.6% of these cost” (Roberts 2006, 223). Furthermore, each pack of cigarettes has a negative economic impact of approximately \$12.47 in health care expenditures and lost productivity (Simpson & Nonnemaker 2013). As medical expenditures continue to grow, and tobacco use remains responsible for a great of this growth, administrators must remain cognizant of program effectiveness and prevalence disparities.

Despite tobacco control efforts, these programs have had disproportionate effects on specific populations resulting in stalled reductions in prevalence. State and local level programs have recently focused on groups such as minorities, restaurant and bar employees, young adults, military personnel, and the LGBT community (Rexing & Ibrahim 2012). However, these efforts have had varying results. As such, appropriate direction is needed to strategically fund tobacco control efforts. Direction is established through identifying smoking trends within various populations and incorporating culturally relevant interventions (Rexing & Ibrahim 2012). Research suggests smoking prevalence remains higher among disadvantages populations with respect to gender, race, ethnicity, socioeconomic status, and other at risk populations (Lee et al. 2007).

Disparities in tobacco control effectiveness have been costly for the populations least affected. Through the development of chronic illness, vulnerable populations have experienced a disproportionately high level of negative outcomes related to tobacco use. For example, there

appears to be a link between income and health, with chronic illness more prevalent among the poor (Kaplan 2009). A primary reason for this disparity is the lack of preventative interventions for those with less income. This results in higher treatment expenses and poorer health outcomes, causing this population to account for a disproportionate share of health care expenditures (Kaplan 2009).

### *Tobacco Control*

The Center for Disease Control and Prevention (CDC) suggests the means of achieving long-term reductions in smoking prevalence is “evidence-based, statewide tobacco control programs that are comprehensive, sustained, and accountable” (CDC Best Practices 2007, 7). State level tobacco control programs are funded through “tobacco industry settlement payments, cigarette excise tax revenues, state general funds, the federal government, and nonprofit organizations” (CDC 2012, 370). Such programs are present in all 50 states and the District of Columbia (CDC 2012).

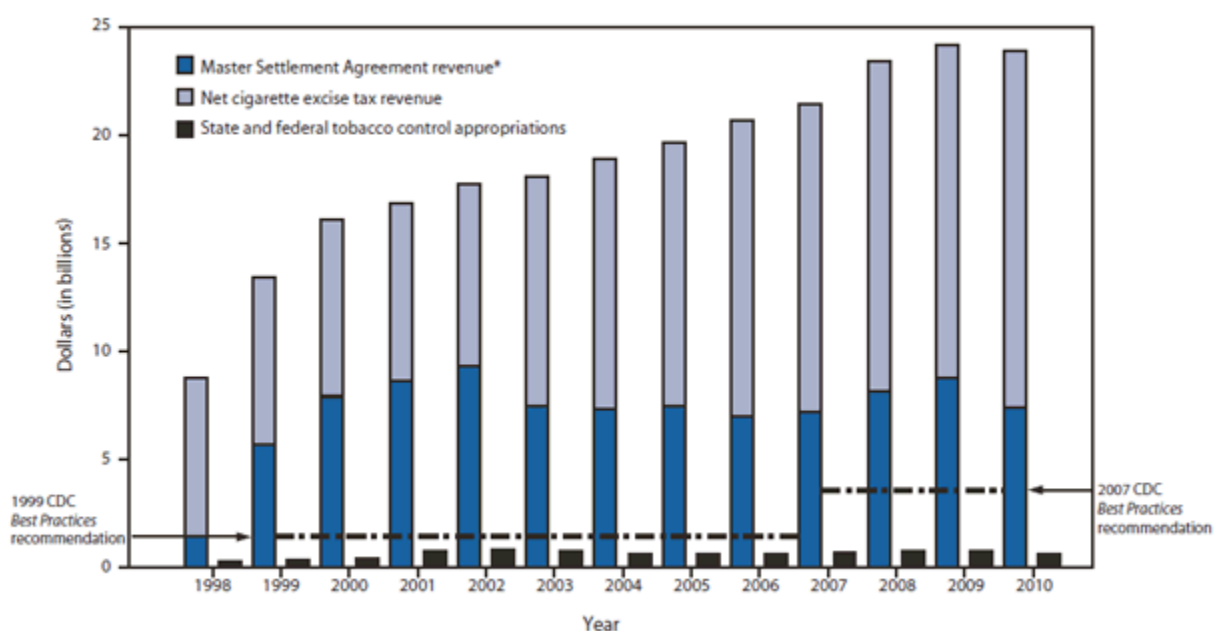
Evidence-based methods of tobacco control interventions “include increasing the price of cigarettes, enacting comprehensive smoke-free policies, funding mass campaigns, and making cessation services fully accessible to tobacco users” (CDC 2013, 370). Using this definition, tobacco control efforts have centered on three interventions: policy, program, and taxation (Dilley et al. 2012). Collectively, these interventions reduce the economic toll of tobacco use through reduction in environmental tobacco smoke exposure, decline in amount smoked by current smokers, and reductions in youth initiating tobacco use (Dilley et al. 2012, e22).

The CDC recommends an annual investment of \$2.5-\$5.5 billion in tobacco control programming nationwide (CDC Best Practices 2007). While this figure appears to be a significant financial contributions, more than \$243.8 billion in MSA dollars and tax revenues were collected on the state level from 1998 – 2010 (CDC 2012). However, including state and

federal dollars, only \$8.1 billion was appropriated towards tobacco control over this time frame. Per CDC recommendations, roughly \$30 billion should have been spent on tobacco control from 1998-2010 (CDC 2012, 370).

From 1998 – 2010, the revenue to expenditure ratio was 30:1. In 2012, the ratio widened to 37:1 (\$23.96 billion in revenues to \$640 million in expenditures). With minimal political support and dwindling funds, public health officials must devote resources efficiently and effectively in order to reach populations with the most potential for significant impact. A graphic of these figures is available below.

**Table 2.1: Revenue to Expenditures Ratio**



One of the financial mainstays of tobacco control has been the Master Settlement Agreement. The Master Settlement Agreement is the only constant in regards to tobacco control funding, currently providing Medicaid recovery dollars as well as funds specifically devoted to tobacco control. All three elements of a comprehensive tobacco control program were, to some extent, involved in the Master Settlement Agreement.

### *Master Settlement Agreement*

The Master Settlement Agreement (MSA) was a 1998 court settlement between the four largest tobacco companies and 46 states, the District of Columbia, and U.S. territories. The original lawsuit sought to recoup “tobacco-related health care cost” (Clark et al. 2011, 217) and change tobacco industry marketing tactics. The MSA resulted in the tobacco industry paying the states a total of \$206 billion from 1998 to 2025, financing more than \$1.5 billion worth of antismoking campaigns, and limiting promotional strategies (Clark et al. 2011). The four states not included in the Master Settlement Agreement individually settled similar lawsuits with the major tobacco companies.

The origins of the MSA stem from a congressional hearing in which congress summoned the heads of the four largest tobacco companies: Phillip Morris, R.J. Reynolds, Brown and Williamson Tobacco, and Lorillard. These individuals were called to testify on the addictive qualities of nicotine, the long term health ramifications of smoking, and if these companies were aware of the public health (Traylor 2010). Mississippi was the first state to bring litigation against the tobacco industry. This suit was an effort to recoup Medicaid expenditures incurred as a direct result of tobacco products and was eventually settled for \$3.6 billion in 1994 and served as precedent for similar lawsuits.

Following the Mississippi law suit, three states, independent of each other, brought identical litigation against the same companies. Though "Big Tobacco" executives downplayed the merit of these cases, settlements were reached with each state for the following sums: \$11.3 billion (Florida), \$15.3 billion (Texas), and \$6.6 billion (Minnesota). In November of 1998, the remaining forty six states, the District of Columbia and U.S. territories brought a joint suit against the tobacco industry. The tobacco industry quickly settled this lawsuit in what is now known as the Master

Settlement Agreement. For the purposes of this research, the Master Settlement Agreement will be operationalized to include all 50 states, the District of Columbia, and U.S. territories as all were included in some sort of tobacco settlement.

The legal argument for the MSA is the states' assertion "that the tobacco manufacturers violated consumption protection laws, misinformed the public about the health risks of smoking, and changed nicotine levels to keep smokers addicted" (Clark et al. 2011, 217). This legal theory originated with the Mississippi litigation, which held that the tobacco industry was financially liable for the costs of treating tobacco related disease resulting from their product (Taylor 2010). With a disproportionate number of tobacco users being "poor, undereducated, and unable to provide for their own medical care" (Taylor 2010, 1093), the burden of medical treatment had fallen on the state's Medicaid program. As this program was partially funded by taxpayer dollars, taxpayers had been paying for the end result of tobacco company's profitable gains.

There were three components of the Master Settlement Agreement. First was securing monetary payments from the tobacco industry in order to recoup past Medicaid expenditures. Second, the MSA aimed to limit or restrict tobacco industry advertisement, sponsorship, public presence, and targeting of children and teenagers (Cutler et al. 2002, 2). And third, the MSA provided funding for counter-advertising in effort to increase cessation and prevention.

Master Settlement dollars have been one of the financing mainstays for public health officials (Kennedy et al. 2012; Snow-Jones et al. 2007; Weber et al. 2012). MSA payments are broken down into a number of categories and earmarked for various uses. The bulk of the settlement is broken down into six installments and devoted to Medicaid

repayment, with the first \$12.7 billion of the settlement paid between 1993 and 2003. In addition to these payments, annual sums are to be distributed among the states, starting with “\$4.5 billion in 2000, growing to \$9.0 billion in 2018 and remaining at that level in each year thereafter” (Culter et al. 2002, 3).

The MSA mandates an increase in counter-advertising through the creation of a foundation (the National Public Education Fund) intended to "reduce youth smoking and support educational program designed to prevent tobacco-related diseases" (Taylor 201, 1100). This program was funded through \$25 million annual payments from 1999-2008 in addition to bulk payments of \$250 million in 1999 and \$300 million annually from 2000-2003. This brought the total dollar figured devoted to prevention to \$1.45 billion. To put this dollar figure in context, prevention and education expenditures “constitute less than 1% of the total settlement value” (Traylor 2010, 1100).

Aside from the financial penalties of the MSA, regulations were imposed in attempt to reduce the appeal of tobacco products to new users. Specifically, “the MSA prohibits or restricts certain forms of advertising, such as cartoon characters and tobacco-company sponsorship of public events” (Cutler et al. 2002, 2). Unfortunately, the advertising limitations of the MSA affect only a small percentage of tobacco advertising strategies. Public health officials predicted the restrictions on public advertising would not be felt in great magnitude as “outdoor and transit advertising was only 6.3 percent of tobacco industry advertising expenditures in 1996, and public entertainment was only 3.4 percent” (Cutler. et al 2002, 6). Furthermore, “there is no restriction on the tobacco industry’s increasing advertising through other ventures to compensate for these

restrictions” (Cutler et al. 2002, 6). Restrictions on advertisement resulting from the MSA appear to be easily adaptable for the tobacco industry.

The MSA sought two objectives: to recoup tobacco related Medicaid expenditures and to prevent initiation from the next generation of potential smokers. However, there were no requirements placed on the states’ use of MSA funds, only a recommendation that significant funds be devoted to tobacco control (Clark et al 2012). More than a decade after the implementation of the Master Settlement Agreement, the promises and obligations of the agreement appear to have gone unfulfilled. As stated by Clark et al (2011, 218), “the MSA indicated that the states’ purposes for entering into the settlement were to reduce youth smoking and promote public health”, a goal only achievable through adequate dedication to tobacco control programs. However, rather than increasing tobacco control spending, most states have used MSA funds for an array of purposes, including balancing budget shortfalls, infrastructure repair, and funding tax cuts (Clark et al. 2011).

It is safe to say MSA dollars have not been appropriated in line with expectations. Whether for political, economic, or social reasons, funds have been diverted from their original intent in virtually every state (Jones et al. 2007). One example of this occurred in North Carolina, where smoking prevalence is higher than the national average and tobacco remains a primary source of economic activity. Social and political pressures from the tobacco industry, the farming and manufacturing community, and a diminishing tax base created a power struggle for appropriation of funds towards tobacco control within the state (Jones et al. 2007). These influences acting in unison weakened the

political resolve to implement lasting change despite the influx of capital from the Master Settlement Agreement.

### *Policy*

The use of policy interventions is among the most effective methods of reducing tobacco consumption. The primary focus of policy intervention has been to limit smoking in public places through smoke free air laws (Dilley et al. 2012). One way these policies ensure improvements in health outcomes is through greater protection of non-smokers, reducing the occurrence of secondhand smoke related illnesses.

Multiple events culminated in a socially proactive attitude towards limiting the effects of tobacco use on the public health. In 1964, the United States Surgeon General released the first government sponsored report detailing the effects of tobacco use on health (Villanti et al. 2011). The release of this report is “considered to demarcate the beginning of the tobacco control era in the United States” (Warner et al. 2014, 83). To that point, smoking prevalence was approximately 60% in males and 30% in females (Emmons 1998). Due to health concerns outlined in the Surgeon General's Report, laws were enacted on the federal level to combat tobacco use. Two examples are the Federal Cigarette Labeling and Advertising Act of 1965 and the Public Health Cigarette Smoking Act of 1969. These laws established a number of rules, guidelines and restrictions for tobacco companies. These included requiring a health warning on cigarette packages, banning most advertising in media, and required an annual report on the health consequences of smoking (CDC Best Practices 2013).



## *Federal Policy*

Tobacco products have traditionally escaped federal regulation. While the Food and Drug Administration (FDA) was given jurisdiction over food, drugs, medical devices and cosmetics in 1938 (Emmons 1998), it was not granted the authority to regulate tobacco products until 2009 (Villanti et al. 2011).

The Family Smoking Prevention and Tobacco Control Act of 2009 gave the Food and Drug Administration (FDA) authority to “regulate tobacco products for the protection of the public health” (Villanti et al. 2011, 1160). This law adds funds to the FDA and authorizes the agency to implement policies and award grants to agencies with the intention of decreasing tobacco use. Since receiving the authority to regulate the tobacco industry, the FDA has banned flavored cigarettes, restricted youth access, and proposed larger, graphic warning labels on tobacco products (Villanti et al. 2011).

Another significant public health policy is the Patient Protection and Affordable Care Act (ACA). The law fundamentally “improve[s] the public health infrastructure of the United States” (Pollack 2011, 515). The ACA “changes the way evidence-based preventive services will be provided” and “transforms the U.S.’s public and private health care financing systems into vehicles for promoting public health” (Cogan Jr. 2011, 355). Though the central focus of this law is health care and insurance, it also facilitates the growth and development of the public health infrastructure, focusing on promoting preventative medicine (Majette 2012).

“There was no comprehensive prevention and wellness statute and no spending statute targeted to prevention and wellness” prior to the ACA (Majette 2011, 375). The new public health infrastructure established through Title IV has three large scale goals –

lifestyle-based chronic disease prevention and management, integrative health care practices, and health promotion. Most importantly, the law eliminates the fragmented approach to public health by devoting resources to federal agencies charged with reducing chronic illness.

The ACA allocates funds for tobacco control through Medicare/Medicaid reimbursements (Berman 2011) and federal grants aimed at increasing community-level, tobacco control activity. These funds are used to shift local policies, implement state and community based tobacco control programs, increase education and create a public health infrastructure.

#### *State & Local Policy*

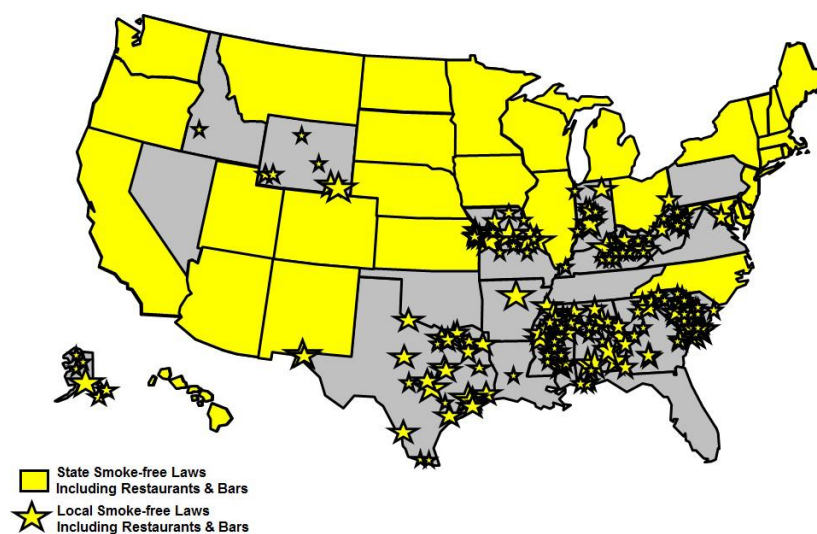
Clean Air/Smoke-Free policy intervention occur on the state, county, and city level. An upward trend in these policies began to occur after the 1990s. For example, from 2000 to 2010, the number of state level Smoke Free laws increased from 0 to 26 (25 states and the District of Columbia) (CDC 2011). This shows increased public pressure towards curbing the impact of smoking on the state level. However, due to the lack of uniformity in policy development among states, it is important to note possible geographic discrepancies in the impact of these policies on smoking prevalence.

Studies have consistently found a link between smoke-free policies and reduced smoking prevalence (Farrelly et al. 2013). The first of these policies originated in California during the mid-1990s. This policy, the California's Indoor Workplace Smoke-free Act of 1994, restricted smoking in bars, school grounds, and governments building (Satterlund et al. 2010). The effectiveness of a tobacco control policy depends on

“restrictions, penalties, enforcement, implementation, public support, compliance, and its lack of exemptions” (Francis et al. 2010, i16).

Though this method of intervention varies in protections and scale, it has spread on a national scale with more than 550 jurisdictions having passed Clean Air Laws by 2013 (Tobacco Free Kids [TFK] 2013, 1). Smoke-free laws specific to restaurants and bars have been passed in 30 states as of 2012 as seen in Figure 2.1 (TFK 2012).

**Figure 2.1: Map of Smoke-Free Laws**



Though this is great progress in policy adoption, there appears to be a regional disconnect in terms of implementation of tobacco control policies. Disparities exist in terms of policy protections by education level, income, and race/ethnicity, with communities on the higher end of the socioeconomic spectrum significantly more likely to adopt smoke free policies (Gonzalez et al. 2013). As such, it is conceivable that policy interventions may be more prevalence in communities with higher income and/or education levels.

## *Programs*

The task of a tobacco control program is to reduce tobacco prevalence through preventing nonsmokers from initiation and through assisting current smokers in quitting. Tobacco control programs incorporate statewide media campaigns, quit lines, and outreach. It is important to note the origin of any program is the policy that allocates funds and provides the legal recourse to perform the program interventions. An ideal example of this took place in California in 2004.

California has commissioned the California Tobacco Control Program (CTCP), “which administers and coordinates the efforts of 61 local health departments” (Weber et al. 2012, 785) and funds more than 100 local projects charged with reducing the exposure to the impact of tobacco use (Satterlund et al. 2010). Though the majority of work done by CTCP focuses on coalition building and policy development, these interventions highlight the relationship between policy and program effects. This program has greatly impacted legislative activity in regards to tobacco control. From 2004-2010, the number of tobacco control policies has increased by 427% in California, with only 15 policies adopted from 1998-2003 and 79 policies adopted from 2004-2010 (Weber et al. 2012).

The process of quitting smoking is a crucial element for any comprehensive tobacco control policy as “interventions that increase quitting can decrease premature mortality and tobacco-related health care cost in the short-term” (CDC Best Practices 2007, 40). While smoking is among the costliest behaviors in regards to health care expenditures, treating tobacco use is among the most cost-effective preventative interventions, even when compared to “mammography, colon cancer screening, pap tests, treatment of mild to moderate hypertension, and treatment of high cholesterol” (CDC 2007, 40).

Typical cessation treatment has a number of possible interventions. According to the CDC Best Practices (2007), brief advice from a medical provider or clinician is an effective intervention and a possible starting point for treatment. Counseling is also effective and available through individual or group sessions or telephone quitlines. Medication is also available for those interested in quitting through FDA-approved pharmacotherapy.

In effort to quit, many smokers have “relied on professional counseling and pharmaceutical aids” (Gollust et al. 2007, 603). The methods outlined by the CDC’s Best Practice have been shown to “double or triple the odds of quitting” (Gollust et al. 2007, 603) compared to quitting without any assistance. As such, an important element of any cessation program is to incorporate the use of these interventions within the at risk populations.

The success of smoking cessation programs has varied among social demographics. Though the benefits of smoking cessation are established, “resources and interventions are not sufficiently addressing unique factors driving smoking and quitting among disadvantaged communities” (Rosenthal et al. 2013, 1640). This is particularly concerning as these populations have the highest smoking prevalence and greatest morbidity/mortality from smoking related illness. Social barriers such as financial issues and education level have also been cited as a cause for the lack of cessation therapy utilization (Rosenthal et al. 2013).

Prevention is the second programmatic approach of tobacco control. The tobacco industry spent billions of dollar per year on advertising in effort “to make tobacco use appear to be attractive as well as an accepted and established part of American culture” during the 1990s and early 2000s (CDC 2007, 32). These advertisements and promotional activities aim to increase their client base as well as maintain current tobacco users. As such, preventative strategies are

necessary to combat smoking initiation and persuade current smokers to seek cessation resources.

Distribution of health information is among the most powerful preventative tools available to public health officials. Communicating the risk of smoking aids in “preventing smoking initiation, promoting and facilitating cessation, and shaping social norms related to tobacco use” (CDC 2007, 32). Health communication should adhere to two specific strategies – combatting specific tobacco advertisements and crafting population specific messages (Kaufman et al. 2004; CDC 2007). However, merely providing education will not provide a noticeable difference in smoking prevalence as health education interventions have been “ineffective if not coupled with more systemic environmental changes” (Berman 2011, 328).

The tobacco industry is among the most effective advertising enterprise. For example, “the five largest cigarette companies spent \$9.94 billion dollars – more than \$27 million dollars per day – advertising and marketing their product” (American Lung Association 2011, 10) in 2008. Evidence suggests tobacco companies have targeted at-risk individuals to recruit new smokers and maintain current smokers. Though the industry has largely denied such tactics, some theorize that campaigns targeting low income individuals and minorities have resulted in disproportionately high smoking prevalence among these individuals (Lee et al. 2007).

Understanding and combating tobacco advertising tactics is a requirement of any prevention and/or cessation program as advertising influences the onset of tobacco use. Counter-messaging is crucial as research shows a correlation between anti-smoking attitudes and beliefs and “exposure to at least one state-sponsored anti-tobacco advertisement” (CDC 2007, 33).

The scope of this research analysis ends at 2009 due to recent changes in policy, program, and taxation. The policies outlined in this chapter detail changes in tobacco regulation

and public health infrastructure. Another change that occurred after 2009 was an increased emphasis on program implementation headed by the CDC. The Communities Putting Prevention to Work (CPPW) grant, launched by the CDC in 2010, intended to accelerate and expand community level changes to public health. Though the CPPW grant focused on public health and chronic disease prevention as a whole, tobacco control was a large element of the program. CPPW funded 22 community level programs to combat tobacco use and second hand smoke exposure.

Programs funded through this grant reached 55 million people: 67% of the funded jurisdictions and roughly 20% of the U.S. population (Bunnell et al. 2012). This program notes two important facts germane to this research. First, there is a large scale, centralized tobacco control effort. And second, the program appears to have had far reaching effect on the national population, thus warrants exclusion in a research analysis of the Master Settlement Agreement.

The CDC became proactive in the influencing tobacco control efforts after 2009. Along with the CPPW grants of 2010, the CDC funded \$102 million in the Community Transformation Grants in 2011 (Koh 2012). The CTG grant “support[s] the implementation, evaluation, and dissemination of evidence-based community preventative health activities to reduce chronic disease” (Koh 2012, 1009). The CDC also launched the “Tips from Former Smokers” in 2012 – a national counter-advertising media program. This campaign “is designed to prevent initiation among youth, promote cessation among adults, and inform the public about the health consequences of tobacco” (Koh 2012, 1009). Though states and philanthropic entities have funded similar media campaigns in the past, this campaign is the first of its kind on the national level.

Most public health interventions originate on the state or local level; tobacco control is no different. Prior to the ACA, tobacco control programs were fragmented in terms of direction, funding, and methodology (Pollack 2011). Numerous states have funded programs that include cessation and prevention, with varying results. Florida (Kennedy et al. 2012), New York (Simpson & Nonnemaker 2013), and Washington (Dilley et al. 2012) are among the examples of the longest tenured and best state funded programs.

Florida funded the Tobacco Pilot Program (TPP) primarily through Master Settlement Agreement dollars. This program received the bulk of national attention in comparison to other state level programs due to the success of the Truth media campaign (Kennedy et al. 2012). This program focused on educating the public on the health effects of smoking. The Truth media campaign “achieved unprecedented success: smoking prevalence among middle school students dropped by 40% and among high schools 18% during the programs first two years” (Kennedy et al 2012, 807). The program was phased out through legislative defunding, with appropriations reduced from \$70.5 million in 2000 to \$1 million in 2004 (Kennedy et al 2012). The legislative defunding of the TPP occurred despite sustained Master Settlement Agreements revenues.

New York established a Tobacco Control Program (NYTCP) in 2000 through the Health Care Reform Act. This program is geared towards preventing smoking initiation and reducing the number of current smokers through funding of cessation programs, quitlines, and media anti-messaging. Analysis of this program suggests the NYTCP has saved more than \$800 million in health care expenditures for the State of New York (Simpson & Nonnemaker 2013).

The state of Washington implemented comprehensive tobacco control interventions utilizing all three pillars of a comprehensive tobacco control program. Washington began funding a statewide program in 2000 and enacted a state wide smoke-free public places law in



2005 (Dilley et al. 2012). The programs available in Washington include “a statewide media campaign, tobacco quit lines, and community and school programs” (Dilley et al. 2012, e23).

Though state level interventions appear to be on the rise, there have been many shortcomings within these programs. The primary issue within all state programs has been the general ineffectiveness in reducing smoking prevalence among disadvantaged populations. Discrepancies in smoking prevalence and smoking cessation continue to exist among gender, racial/ethnic, educational, and economic lines (Rexing & Ibrahim 2012). Furthermore, as these programs are adopted and enacted on a state by state basis, geographic discrepancies in smoking prevalence persist (Rutten et al. 2008).

States have begun to approach the issue of disproportionate smoking prevalence among social demographics. More than 40 states have developed strategies for reducing smoking prevalence within regionally specific populations, including “racial and ethnic minorities, restaurant and bar employees, pregnant women, youth aged 18-24, individuals with disabilities, military personal, and members of the LGBT community” (Rexing & Ibrahim 2012, 31).

### *Taxation*

Though taxation is primarily used to generate revenue, cigarette excise taxes are also used as a means of reducing tobacco consumption by making smoking cost prohibitive (Dilley et al. 2012). Taxation, though derived from legislative action, is separated from policy in terms of tobacco control (Dilley et al. 2012). The key distinction of taxation from policy and program interventions is an increase in taxes will decrease tobacco prevalence while “producing a net gain in government revenues” (Ahmad 2005, 276). The positive impact on government budgets is guaranteed as each smoker is faced

with two options: pay the increased tax (generating revenue) or quit/reduce smoking (reducing tobacco related expenditures).

Research has shown taxation increases to have an immediate effect on tobacco sales (Ahmad 2005). Research suggests “cigarette tax increases are associated with increase in smoking cessation and/or reducing cigarette consumption” (Choi & Boyle 2013, 1). Overall, “a 10% increase in the real price of cigarettes is estimated to reduce consumption by nearly 4%” (CDC 2009, 526). Furthermore, taxation provides the capital to implement prevention and cessation interventions.

Unfortunately, increases in taxation play only a limited role in long term tobacco cessation (Dilley et al. 2012). The limitations of this intervention are due to “inflation effectively decreas[ing] the cost when prices are fixed” (Dilley et al. 2010, e26), meaning the effectiveness of tax increases are erased overtime. As such, “continuous and frequent increase of cigarette prices to offset inflation is required” (Dilley et al. 2012, e26) to sustain the impact of taxation increases on tobacco sales and prevalence.

An increase in taxation acts as a cessation measure as smoking would be financially discouraged, causing current users to reduce or eliminate their tobacco consumption. Taxation also acts as a preventative measure as more adolescent smokers would be priced out of the tobacco market, reducing smoking initiation. Because 90% of smokers initiate use during adolescence, “when demand for cigarettes is more sensitive price” (Ahmad 2005, 276), tax increases would result in less youths having the financial means to develop a nicotine addiction during these years. Understanding the impact of taxation on tobacco prevalence and the subsequent economic benefits, public health advocates have consistently pushed for increased taxes on tobacco products (Dilley et al. 2012).

### *Federal Taxes*

Federal excise taxes have been increasing since the mid-1990s, beginning with a \$0.24 per pack increase in 1995. Overall, federal level tobacco excise taxes increased 321% from 1995 to 2009 (CDC 2009, 524). The largest increase of tobacco excise taxes on the federal level occurred on April 1, 2009 when cigarette taxes were increased to \$1.01 per pack (Choi & Boyle 2013).

Recently, federal taxation increases have been the result of political compromises rather than public health endeavors. For example, federal excise taxes increased “from \$0.24 per pack [in 1995] to \$0.34 per pack on January 1, 2000, and then to \$0.39 per pack on January 1, 2002” (CDC 2009, 525) as part of a congressional budget agreement. Federal excise taxes were increased in 2009 with the intent of funding the State Children’s Health Insurance Plan (SCHIP). Taxes were raised from \$0.39 to the current level of \$1.01 per pack to fund this program. This distinction is important to note as it separates the political will for taxation increases with program implementation. That is to say, simply because law makers increase cigarette taxation does not imply a willingness to fund prevention programs.

A benefit of this intervention is that excise taxes increase tobacco prices by more than the amount of the tax. Exponential price growth is a market response incorporated by tobacco companies in attempt to account for lost profits stemming from current smokers quitting or reducing consumption due to increases in price (Tiller et al. 2013). This has caused the national price for a pack of cigarettes to increase from \$1.65 in 1980 (adjusted for inflation) to \$4.35 in 2008 (Tiller et al. 2013), dwarfing the overall excise tax increases

### *State & Local Taxes*

There is drastic variance in excise tax levels on the state and local level. There have been more than 100 state level increases of cigarette excise taxes from 1995 to 2009 (CDC 2009).

Excise tax rates have almost universally increased over this period, even among tobacco growing states in the southern United States. For example, the average excise tax per pack increased more than 500% (\$0.07 to \$0.385) from December 31, 1995 to April 1, 2009 among the six tobacco growing states (Kentucky, Virginia, Georgia, Tennessee, and North and South Carolina).

Noteworthy of this analysis is one state, South Carolina, did not increase excise taxes during this analysis. In fact, a total of five states saw no change in excise tax levels from December 31, 1995 to April 1, 2009: Florida, Mississippi, Missouri, North Dakota, and South Carolina (CDC 2009).

From 1998 – 2011 “the average state cigarette excise tax among all states increased from \$0.39 to \$1.44 per pack” (CDC 2012, 370) from 1998 – 2011. However, this statistic does not accurately portray the status of excises taxes in each state. Excise taxes range from as low as \$0.17 per pack in Missouri to \$4.35 per pack in New York; this does not including city or county taxes.

When accounting for local excise taxes, the discrepancies widen further. More than 450 cigarette excise taxes exist at the local level, with the highest combined cigarette excise tax rate being in Chicago, IL. Each pack of cigarettes in Chicago carries \$6.16 in taxes: city - \$1.18, county (Cook) - \$3.00, and state - \$1.98. This does not include the federal excise tax of \$1.01, bringing the cost to \$7.17 per pack of cigarettes in taxes alone. Areas in Missouri have only a state excise tax of \$0.17 (or \$1.18 including Federal taxes). A detailed breakdown of state level excise taxes is available on Table 1. Assuming a negative relationship between price and consumption, it is realistic to expect varying levels of tobacco prevalence among geographical lines.

Revues from state level cigarette excise taxes have provided a consistent source of income. When combing all levels of excise tax income, ample revenues exist to fund public

health initiatives. From 1998-2010, more than \$243.8 billion in tobacco revenues was collected from tobacco industry settlement payments and cigarette excise taxes on the state level (CDC 2012). During this same period, state revenues from tobacco excise taxes have increased from \$7.4 billion to \$16.5 billion annually (CDC 2012).

**Table 2.1:** State Cigarette Taxes in 2013**State Cigarette Taxes, 2013**

STATE	TAX RATE (¢ per pack)	RANK	STATE	TAX RATE (¢ per pack)	RANK
Alabama (1)	42.5	47	Nebraska	64	38
Alaska	200	11	Nevada	80	35
Arizona	200	11	New Hampshire	168	20
Arkansas	115	31	New Jersey	270	6
California	87	33	New Mexico	166	21
Colorado	84	34	New York (1)	435	1
Connecticut	300	3	North Carolina	45	45
Delaware	160	22	North Dakota	44	46
Florida (2)	133.9	27	Ohio	125	28
Georgia	37	48	Oklahoma	103	32
Hawaii	320	4	Oregon	118	30
Idaho	57	42	Pennsylvania	160	22
Illinois (1)	198	16	Rhode Island	350	2
Indiana	198	16	South Carolina	57	42
Iowa	136	26	South Dakota	153	24
Kansas	79	36	Tennessee (1) (3)	62	39
Kentucky (3)	60	40	Texas	141	25
Louisiana	36	49	Utah	170	18
Maine	200	11	Vermont	262	7
Maryland	200	11	Virginia (1)	30	50
Massachusetts	251	9	Washington	302.5	5
Michigan	200	11	West Virginia	55	44
Minnesota (4)	123	29	Wisconsin	252	8
Mississippi	68	37	Wyoming	60	40
Missouri (1)	17	51	Dist. of Columbia (5)	250	10
Montana	170	17			
			U. S. Median	136	

(1) Counties and cities may impose an additional tax on a pack of cigarettes in AL, 1¢ to 6¢; IL, 10¢ to 15¢; MO, 4¢ to 7¢; NYC \$1.50; TN, 1¢; and VA, 2¢ to 15¢.

(2) Florida's rate includes a surcharge of \$1 per pack.

(3) Dealers pay an additional enforcement and administrative fee of 0.1¢ per pack in KY and 0.05¢ in TN.

(4) In addition, Minnesota imposes an in lieu cigarette sales tax determined annually by the Department. The current rate is 36.2¢ through December 31, 2013.

(5) In addition, District of Columbia imposes an in lieu cigarette sales tax calculated every March 31. The current rate is 36¢

Source: Federation of Tax Administrators, January 2013.

Available at <http://www.taxadmin.org/fta/rate/cigarette.pdf>

## **Conceptual Framework**

A review of the literature shows a national commitment to tobacco control since the 1960s. However, the literature suggests federal, state, and local tobacco control programs have had difficulties reducing tobacco prevalence among certain social demographics. These social barriers fluctuate by geography and cultural lines, creating tobacco-related disparities, defined as “differences in patterns, prevention, and treatment of tobacco use; differences in the risk, incidence, morbidity, mortality, and burden of tobacco-related illness that exist among specific population groups in the United States; and related difference in capacity and infrastructure, access to resources, and environmental tobacco smoke exposure” (Fagan et al. 2004, 211).

This research aims to identify smoking prevalence trends among social groups before and after the Master Settlement Agreement. As this research attempts to explain the impact of a change in policy on specific social groups, the necessary conceptual framework is that of formal hypotheses. The formal hypothesis conceptual framework “summarizes the underlying logic of impact program evaluation” (Shields & Rangarajan 2013, 48). The research question is best answered by an interrupted time series with comparison groups analysis. This quasi-experimental design compares trends before and after an intervention. Accordingly, “quasi-experimental designs are...ways of testing the formal hypothesis” (Shields & Rangarajan 2013, 48).

### *Gender*

The first hypothesis tested in this research is: Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among males as compared to females. Reported smoking rates are consistently higher for males compared to females (Parvanta et al. 2013), however “women have been less successful than men at quitting in clinical trials” (Parvanta et al. 2013, 857). Research suggested “women have more difficulty quitting smoking than men” (Bjornsmann et al. 1995, 223) though “women are as likely as men to attempt to quit

smoking” (Burgess et al. 2009, 1439). This suggests that while fewer females smoke compared to males, tobacco control efforts may have a greater impact in reducing male smoking prevalence.

The possibility of a discrepancy in tobacco control program effectiveness among women should be of note to public health officials. From a morbidity and mortality perspective, “tobacco dependence poses unique health risks for women (e.g., obstetrical and perinatal complication, cervical cancer), and compared with men, the rate of lung cancer among women has been steadily increasing over the past 50 years” (Schnoll et al. 2007, 1211). Furthermore, there has been a “600% increase in the incidence of lung cancer-related deaths among women over the past 50 years, whereas this rate has been decreasing among men” since the 1980s (Schnoll et al. 2007, 1212).

Though smoking prevalence is currently higher within males it is conceivable this demographic experienced a greater effect from tobacco control efforts. During the 1960s, more than half of all males smoked cigarettes while less than one third of females reported as smokers (Emmons 1998). However, assessing the impact of tobacco control programs on smoking prevalence along gender lines over time will provide insight into the effectiveness of current interventions among this demographic.

**H1:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among males as compared to females.

### *Race & Ethnicity*

Despite the perceived decline in tobacco use among the general population, “cigarette use among low-income African Americans appears to remain high and unchanged” (Delva et al. 2005, 218). A large reason for this disparity in smoking prevalence is concentrated advertisement



campaigns aimed at African Americans and other minorities. Studies have indicated smoking has a disproportionate impact on health outcomes among racial minorities, specifically African Americans (Oredein & Foulds 2011). High prevalence, low quit rates, and increased morbidity among African Americans appear to cross gender and economic lines (Delva et al. 2005; Vallone et al. 2011).

Racial and ethnic minorities are at an increased risk of smoking initiation and long term use. Cancer is the leading cause of death for Hispanic males and second leading cause of death for Hispanic females. Additionally, the three leading causes of deaths among all Hispanics are linked to smoking (Castro et al. 2012). This is particularly significant as “Hispanics are the largest minority group in the United States” (Webb et al. 2010, 115). As Hispanics are the fastest growing demographic, it is crucial to monitor smoking trends among this group as these individuals will account for a growing percentage of medical expenditures (Castro et al 2012).

**H2:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among whites as compared to African Americans.

**H3:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among whites as compared to Hispanics.

**H4:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among Hispanics as compared to African Americans

### *Marital Status*

Research consistently reveals a decrease in risk behavior among married individuals compared to their single counterparts (Khwaja et al. 2006). A study of young adults, aged 18-24, found that smoking prevalence was lower among married individuals (Eaton et al. 2007). This trend appears across age, gender, education, and racial demographics (Khwaja et al. 2006). The primary rationale for this phenomenon is the universal understanding that smoking has “significant implication for life cycle health and longevity” (Khwaja et al. 2006, 18). Because promoting an understanding of the health risk of smoking is a center piece of tobacco control

efforts, it is plausible tobacco control messaging and resources have had a greater impact on married individuals. If these findings are correct, it would be advantageous for public health officials to incorporate new messaging aimed at younger, single individuals as current interventions appear to be less effective towards this population.

**H5:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among married individuals as compared to single individuals

### *Socioeconomic Status*

Education, income, and poverty are highly related variables central to operationalizing socioeconomic status. This research will separate socioeconomic status by education, income, and poverty level, comparing smoking prevalence within each of these social groups. This will increase the effectiveness of this research as “studies suggest that each variable reflects a difference dimension of socioeconomic status” (Zhu et al. 1996, 1582).

### *Education*

Lack of education has been universally linked to increased smoking prevalence across racial and ethnic demographics (Delva et al 2005; Lee et al. 2007; Maher et al. 2005; Pampel 2009). One study (Delva et al. 2005) found a negative relationship between education and smoking status, indicating those with more education are less likely to smoke. The same study found that those with less education smoked more cigarettes per day. Zhu et al. (1996) found that as education increases, individuals are less likely to smoke and more likely to quit smoking. That is to say, those with less education are *more* likely to smoke but *less* likely to attempt quitting compared to those with more education. This leads to the following hypothesis:

**H6:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among those with High School education or less as compared to those with more than a High School education

## *Income & Poverty*

Studies consistently show a correlation between income level and smoking status. When comparing groups by income, it must be noted that as the margin of income discrepancy increases, so too does the discrepancy in smoking prevalence. For example, the CDC found a smoking prevalence of 29.7% among individuals with annual household incomes of \$15,000 or less compared to 17.2% for families earning \$50,000 or more (Lee et al. 2007).

The success in reducing smoking prevalence since the 1960s appears to be disproportionately concentrated among high income individual (Franks et al. 2007). Recent trends in smoking prevalence indicate “the gap in smoking participation between lower and higher income groups has not lessened and may be widening” (Franks et al 2007, 1873). Research shows low income individuals have less access to health information and resources to assist in preventing and quitting smoking.

Research indicates tobacco use is significantly higher among the poor (Armour et al. 2007; Roberts 2006). As of 1999, the CDC estimates that of the roughly 46.5 million smokers, nearly one third lived below the poverty line. Indicators associated with poverty such as homelessness (Deason et al. 2010), education level (Delva et al. 2012), and food insecurity (Armour et al. 2007) are all linked to increased smoking prevalence. This population accounts for a disproportionate amount of health care expenditures, largely due to tobacco consumption. Similar to low-income individuals, those in poverty appear to have less access to health related information as well as resources to assist in preventing and quitting smoking. As such, it is assumed those at or above the Federal Poverty Line (FPL) will experience a greater reduction in smoking prevalence as a result of the Master Settlement Agreement. This, along with the slowing

of reductions in smoking prevalence among low income individuals lead to the following hypotheses:

**H7:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals with household incomes of \$35,000 or more per year as compared to individuals with household incomes of less than \$35,000.

**H8:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals at or above the Federal Poverty Line as compared to individuals below the Federal Poverty Line.

### *Geographic Region*

Quantifying smoking prevalence on a national scale does not fully detail the effectiveness of smoking control programs as these are operated on the state and local level. Each element of a tobacco control program (policy, program, taxation) is, at least partially, influenced by state and geographic factors. For example, while federal taxes may universally impact tobacco prices, there remains wide discrepancy among states in terms of local taxes per pack of cigarettes. As of 2012, state excise taxes ranged from \$0.17 (Missouri) to \$4.35 (New York) per pack. While overall taxation rates may not accurately portray state's prioritization of tobacco control, the frequency of increases in excise tax is also separated by geographic region. From 1996-2009, five states (Florida, Mississippi, Missouri, North Dakota, and South Carolina) did not increase the cost of a pack of cigarettes. All but one of these states is located in the South Region.

Research shows variances in smoking trends among states since the early 1990s (Jai & Lubtkin 2010; Rutten et al. 2008). These changes appear to be clustered among geographic regions. For example, a national study of smoking trends revealed "smoking prevalence decreased for nearly all of the states with the exception of Alabama, Mississippi, Oklahoma, and DC" (Jai & Lubtkin 2010, 959) from 1993-2008. All four of these locations are located within the South Geographic Region. Furthermore, the South Region is home to 9 of the 10 states with

an excise tax of less than \$0.60 per pack of cigarettes (Jai & Lubtkin 2010). These states also had the highest smoking prevalence, smallest decline in smoking prevalence, and encounter the most smoking related health impacts on a fiscal and social level (Jai & Lubtkin 2010).

Programs and policies also vary by state. With a chief goal of programs and policies being to increase awareness of the health risk of smoking, it is important to note “knowledge and perceptions of associated risks of tobacco use may not be evenly distributed in the population” (Rutten et al. 2008, 1559). Literature suggests the need to compare smoking prevalence trends by geographic region as the effectiveness of these programs should vary by geographic region. This research assumes there will be a lagging decline in smoking prevalence within the South Region compared to other regions for various economic and cultural reasons.

**H9:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals in the South Region as compared to individuals in the Northeast Region.

**H10:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals in the South Region as compared to individuals in the Midwest Region.

**H11:** Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals in the South Region as compared to individuals in the West Region.

**Table 2.2:** Conceptual Framework

<p>Title: Impact of the Master Settlement Agreement on Smoking Prevalence among Social Groups</p> <p>Purpose: The purpose of this research is to explain the effect of the Master Settlement Agreement on smoking prevalence among various social groups.</p>	
Hypotheses	Sources
<b>H1:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among males as compared to females.	Bjornsmann, Rand, Connett, Lindgren, Nides, Pope, Buist, Hoppe-Ryan, & O'Hara (1995);
<b>H2:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among whites as compared to African Americans.	Lee, Turner, Burns & Lee (2007); Oredein & Foulds (2011);
<b>H3:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among whites as compared to Hispanics.	Bethel & Schenker (2005); Castro, Businelle, Correa-Fernandez, Kendzor, Mazas, Cofta-Woerpel, & Wetter (2012);
<b>H4:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among Hispanics as compared to African Americans	Bethel & Schenker (2005); Maher, Boysun, Rohde, Stark, Pizacani, Dilley, Mosback, & Pickle (2005); Webb, Rodriguez-Esquivel, & Baker (2010)
<b>H5:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among married individuals as compared to single individuals.	Pampel (2009); Vallone, Niederdeppe, Richards, Patwardhan, Niaura, & Cullen (2011); Zhu, Giovino, Mowery, & Eriksen (1996)
<b>H6:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among those with High School education or less as compared to those with more than a High School education	Armour, Pitts, & Lee (2007); Franks, Jerant, Leigh, Lee, Chiem, Lewis, & Lee (2007); Lee, Turner, Burns & Lee (2007);

**Table 2.2:** Conceptual Framework (Continued)

<b>H7:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals with household incomes of \$35,000 or more per year as compared to individuals with household incomes of less than \$35,000.	Armour, Pitts, & Lee (2007); Franks, Jerant, Leigh, Lee, Chiem, Lewis, & Lee (2007); Lee, Turner, Burns & Lee (2007);
<b>H8:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals at or above the Federal Poverty Line as compared to individuals below the Federal Poverty Line.	Armour, Pitts, & Lee (2007); Franks, Jerant, Leigh, Lee, Chiem, Lewis, & Lee (2007);
<b>H9:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals in the South Region as compared to individuals in the Northeast Region.	Jai & Lubtkin (2010); Rutten, Augustson, Moser, Beckjord, & Hesse (2008)
<b>H10:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals in the South Region as compared to individuals in the Midwest Region.	Jai & Lubtkin (2010); Rutten, Augustson, Moser, Beckjord, & Hesse (2008)
<b>H11:</b> Implementation of the Master Settlement Agreement has had a greater impact in reducing smoking among individuals in the South Region as compared to individuals in the West Region.	Jai & Lubtkin (2010); Rutten, Augustson, Moser, Beckjord, & Hesse (2008)

### ***Chapter 3 – Methodology***

#### ***Introduction***

This section details the method of data collection and analysis. Specifically, this section discusses the data used and the statistical analysis performed to compare trends in smoking prevalence within social demographics before and after the Master Settlement Agreement (MSA). This research utilizes an interrupted time series with comparison groups analysis. This statistical analysis is used to compute the effect of an intervention on a dependent variable over time. In this research, the intervention (Master Settlement Agreement) is tested to determine the impact on smoking prevalence among identified social demographics and geographic regions.

The hypotheses are operationalized through variables found in the literature. The dependent variables are smoking prevalence among: males, females, whites, African Americans, Hispanics, income level, poverty status, education, marital status, and geographic region. All dependent variables have been identified as an area of concern for tobacco control initiatives. The independent variables are standard coefficients present in an interrupted time series with comparison groups: time, dummy, counter, group, comparison time, comparison dummy, and comparison counter.

#### ***Development of Sample***

Data was accessed from the Interuniversity Consortium for Political and Social Research (ICPSR). ICPSR “maintains a data archive of more than 500,000 files of research in the social sciences” (<http://www.icpsr.umich.edu>). Through this archive, National Health Interview Survey (NHIS) datasets from 1987 to 2009 were collected. This annual survey, produced by the Center for Disease Control and Prevention (CDC), is used to collect information on the health of national population (User Guide 2009).



National Health Interview Survey data is collected through self-reported interview surveys. For the data used in this research, all participants are 18 years of age or older. Multiple individuals within a household are surveyed in order to complete the Household and Personal datasets, however, only one adult per family, chosen at random, is included in the Sample Adult data set. In 1995, the National Health Interview Survey began oversampling the African American and Hispanic population “to allow for more precise estimation of health characteristics in these growing minority populations” (User Guide 2009, 8).

The purpose of the NHIS study is to gather information on illness, disabilities, and health services received by individuals. In accordance with these goals, the NHIS obtains health behavior data to measure the effect of these behaviors on the public health. Personal data is obtained through this survey, including demographic information such as age, income, race, and education. This information is gathered through self-reported data from each participant.

The study has been revised significantly through the years. Fortunately, questions pertaining to the dependent variables of this study remained unchanged. The location of these survey questions shifted with the 1997 revision and is outlined in the NHIS User Guide (2009, 6):

The NHIS that was fielded from 1982-1996 consisted of two parts: (1) a set of basic health and demographic items (known as the Core questionnaire) that remained stable from one survey year to the next, and (2) one or more sets of questions on current health topics that varied with each survey, referred to as Supplements. Despite periodic revisions to the Core questionnaire, Supplements played an increasingly important role in the survey as a means of enhancing topic coverage in the Core. Eventually, certain Supplements, such as “Family Resources” and “Health Insurance,” were incorporated in the NHIS Core on an annual basis.

With the 1997 revision, the survey consists of a Basic Module or Core as well as variable Supplements. The Basic Module consists of three components: the Family Core, the Sample

Child Core, and the Sample Adult Core. (User Guide 2009). The Family Core Module is divided into three files: Household-Level, Family-Level, and Person-Level. For the purposes of this research, the Family-Level file and Person-Level file were merged together by “Household ID” number (Variable: HHX) and “Person ID” number (Variable: PX). This merged dataset was merged with the Sample Adult files from 1997-2009, creating a master file for each year.

Various NHIS supplement datasets were used for the years 1987-1995. These are outlined in the table below:

**Table 3.1:** Datasets 1987-1995

1995	2000 Objectives
1994	2000 Objectives
1993	2000 Objectives
1992	Cancer Epidemiology
1991	Health Promotion & Disease Prevention Public Use
1990	Health Promotion & Disease Prevention Sample Person
1988	Occupational Health Supplement
1987	Epidemiology Supplement

Data for the years 1989 and 1996 are not included within the analysis as adult smoking prevalence was not included in the surveys for these years.

**Table 3.2: Operationalization Table**

	<b>Hypotheses</b>	<b>Measurement</b>	<b>Description</b>
<b>Dependent Variable:</b> <ul style="list-style-type: none"> <li>Percent Smoking</li> </ul>	Applies to all Hyp.	% Smoking	Current every day or sometimes smoker. Smoked more than 100 cigarettes in lifetime
<b>Independent Variables:</b> <ul style="list-style-type: none"> <li>A. Year</li> <li>B. Short term Impact</li> <li>C. Trend before MSA</li> <li>D. Groups <ul style="list-style-type: none"> <li>1. Male vs. Female</li> <li>2. White vs. AA</li> <li>3. White vs. Hispanic</li> <li>4. Hispanic vs. AA</li> <li>5. Married vs. Single</li> <li>6. H.S. vs More than H.S.</li> <li>7. Hi Income vs. low Income</li> <li>8. Below FPL vs. At/Above FPL</li> <li>9. South vs. Northeast</li> <li>10. South vs. Midwest</li> <li>11. South vs. West</li> </ul> </li> <li>E. Diff. in Trends before MSA</li> <li>F. Diff. in short term impacts</li> <li>G. MSA impact</li> </ul>	<ul style="list-style-type: none"> <li>Applies to all Hyp.</li> <li>Applies to all Hyp.</li> <li>Applies to all Hyp.</li> <li>H<sub>1</sub></li> <li>H<sub>2</sub></li> <li>H<sub>3</sub></li> <li>H<sub>4</sub></li> <li>H<sub>5</sub></li> <li>H<sub>6</sub></li> <li>H<sub>7</sub></li> <li>H<sub>8</sub></li> <li>H<sub>9</sub></li> <li>H<sub>10</sub></li> <li>H<sub>11</sub></li> <li>Applies to all Hyp.</li> <li>Applies to all Hyp.</li> <li>Applies to all Hyp.</li> </ul>	<ul style="list-style-type: none"> <li>1-21</li> <li>0= before; 1=after</li> <li>MSA</li> <li>0=before; 1-11 after MSA</li> <li>0=Male; 1=Female</li> <li>0=White; 1=AA</li> <li>0=White; 1=Hispanic</li> <li>0=Hispanic; 1=AA</li> <li>0= Married; 1=Single</li> <li>0= H.S.;1=More EDU</li> <li>0= &lt; \$35k; &gt;= \$35K</li> <li>0= &gt; FPL; 1= &lt;= FPL</li> <li>0=South; 1=Northeast</li> <li>0=South; 1=Midwest</li> <li>0=South; 1=West</li> <li>D * A</li> <li>D * B</li> <li>D * C</li> </ul>	<ul style="list-style-type: none"> <li>years 1987-2009</li> <li>Short term change after MSA for the group coded 0 under D.</li> <li>Diff. of trends for the group coded 0 under D.</li> <li>Varies in each regression analysis:</li> <li>Used in the 1<sup>st</sup> regression only</li> <li>Used in the 2<sup>nd</sup> regression only</li> <li>Used in the 3<sup>rd</sup> regression only</li> <li>Used in the 4<sup>th</sup> regression only</li> <li>Used in the 5<sup>th</sup> regression only</li> <li>Used in the 6<sup>th</sup> regression only</li> <li>Used in the 7<sup>th</sup> regression only</li> <li>Used in the 8<sup>th</sup> regression only</li> <li>Used in the 9<sup>th</sup> regression only</li> <li>Used in the 10<sup>th</sup> regression only</li> <li>Used in the 11<sup>th</sup> regression only</li> <li>Diff. b/w the trends before MSA</li> <li>Diff. b/w the two short term effects</li> <li>Diff. of the differences. MSA impact</li> </ul>

### *Dependent Variables*

Smoking prevalence percentage will be used as the dependent variable. Determination of smoking status will be operationalized through self-reported survey responses. Participants answering “yes” to both of the following survey questions will be categorized as smokers: “Have you smoked at least 100 cigarettes in your entire life” and “Do you now currently smoke”.

Coding for all Dependent Variables is available in Table 3.2.

### *Design Strengths*

The interrupted time-series comparison groups design is a quasi-experimental research design that “examines whether and how an interruption affects a social process and whether the observed effect is different from the process observed in an untreated group or among different types of treatment” (Bingham & Felbinger, 2002, 123). This research design is considered very strong as “the nature of time-series design eliminates the bias that results when one makes only one observations of a phenomenon” (Bingham & Felbinger, 2002, 123). An interrupted time-series analysis tracks changes over time, eliminating possible threats to validity such as history, selection, and instrumentation. This evaluation allows greater assurance any statically significant results are attributable to the intervention studied.

### *Design Weaknesses*

The drawback of the interrupted time-series with comparison groups design is finding a suitable comparison group. This is accounted for through the research design as the intervention studied is a national change in policy, evenly affecting each participant. An additional weakness of this design is it is only quasi-experimental, with no randomization of samples. The design also focuses on a single intervention, which can be problematic within social science as policies and programs evolve over time and differ across all levels of government. Additionally, intuitive assumptions concerning demographic characteristics may differ across geographic regions. For

example, income classification may not translate evenly across geographic boundaries, with \$35,000 resulting in significantly different purchasing power in rural areas of Alabama compared to urban regions in California. Though the research design controls for these variations on a national scale, the findings may be less translatable to the local level.

### *Statistics*

This research uses existing data to test the hypotheses of this study. Through the use of regression analysis, specifically an interrupted time-series with comparison groups, this study compares two regression lines on a linear graph to determine differences and similarities in the rate of change for each independent variable.

### *Human Research*

The data used in this study is comprised of secondary datasets accessed through the Interuniversity Consortium for Political and Social Research (ICPSR). Participant data was recorded without the use of any identifiable characteristics, limiting the risk of respondents being harmed by the use of this information. The Texas State University at San Marcos, Office of Research Compliance declared this research exempt from full or expedited review by the Institutional Review Board on January 29, 2014. The Institutional Review Board application number for this research is: EXP2014C267695R

### *Reliability*

Ensuring reliability of the results is essential to sound research. The reliability of a measurement is described as achieving the same results each time a measurement is taken in a similar situation (Bingham & Felbinger, 2002). As this research design is built around self-reported data, many questions of reliability may arise. This is due to self-reported data being dependent on “the honesty and accuracy of the respondents in reporting their own behavior”

(Hatziandreu et al. 1989, 1020). Accuracy of survey responses, particularly when interacting with another individual, could be influenced by the social acceptability of the behaviors assessed within the survey. Remaining cognitive of the social stigma associated with smoking is imperative to this research as “the social acceptability of a behavior has been known to affect a person’s willingness to admit engaging in that behavior” (Hatziandreu et al.1989, 1020). The social acceptability of smoking has decreased since the 1960s as evident by social pressure to increase restrictions in smoking habits and access (Satterlund et al. 2010). These same pressures could restrict the reliability of the data as participants may be less likely to report tobacco use.

Threats to reliability in self-reported smoking data is a concern for public health academics. For example, citing a study of data collected from 1964-1975, researchers suggest “the dramatic decrease in self-reported smoking prevalence reported elsewhere may be, in part, artifactual” (Hatziandreu et al 1989, 1020). As such, it is important to investigate the reliability of smoking related self-reported data when possible.

Hatziandreu et al. (1989) compared self-reported data (NHIS 1974-1985) to Economic Research Service of the US Department of Agriculture (USDA) estimates of total cigarette consumption. This comparison used taxation statistics as a reliable standard for which to compare self-reported data. The findings of this article indicate self-report smoking prevalence rates mirrored the amount of purchased tobacco taxed from 1974-1985. This reinforces the reliability of self-report data as it pertains to smoking prevalence.

### *Summary*

This chapter presents the methodology for testing the formal hypotheses. Data was collected and analyzed for each demographic and compared to the opposing demographics’

smoking prevalence from 1987-2009. A linear regression, specifically an interrupted time series with comparisons groups design, is used to test the hypotheses of this study.

## Chapter 4 - Results

### *Purpose*

This chapter reports the findings of the statistical analysis used to test each hypothesis and details the outputs of the interrupted time-series regression analysis. The results will show the statistical effect of the Master Settlement Agreement (MSA) on smoking prevalence among the social demographics identified in the Methodology chapter.

### *Regression Analysis*

As previously discussed, an interrupted time-series analysis requires seven independent variables. These variables will produce “unstandardized coefficient[s] which measure the change in the dependent variable for every unit of change in the independent variable” (Holder 2009, 45), representing different time periods over the lifespan of the intervention, with the unstandardized coefficient reporting the slope during the corresponding time period

### *Gender*

Table 4.1 reports the regression coefficients comparing smoking prevalence among males and females over the course of the study (1987-2009). The first coefficient ( $B = -0.422$ ,  $p < .01$ ) represent the change in smoking prevalence among males prior to the Master Settlement Agreement. This output indicates a negative trend in male smoking prevalence before the Master Settlement Agreement. Because this coefficient is statistically significant, it is concluded that male smoking prevalence was decreasing 0.422% per year prior to the Master Settlement Agreement. The second coefficient ( $B = 0.111$ ) represents the immediate effect of the MSA on smoking prevalence among males. As this coefficient is not statically significant, there appears to be no immediate effect on male smoking prevalence as a result of the MSA. The third coefficient ( $B = 0.004$ ) represents the difference in male smoking prevalence before and after the



Master Settlement Agreement. As this coefficient is not statistically significant, there was no difference in smoking prevalence trends when comparing before and after the implementation of the Master Settlement Agreement among males.

Male smoking prevalence was compared to female smoking prevalence over the same time period. The fifth coefficient ( $B = -0.073$ ) represents the difference in smoking prevalence trends among males and females before the Master Settlement Agreement. As this coefficient is not statistically significant, there was no difference in smoking prevalence trends among males and females prior to the Master Settlement Agreement. The sixth coefficient ( $B = -0.382$ ) compares the difference in immediate drop in male and female smoking prevalence. As this coefficient is not statistically significant, there was no difference in immediate change of smoking prevalence between the two genders as a result of the Master Settlement Agreement. The seventh coefficient ( $B = 0.073$ ) represents the difference in smoking prevalence change between gender. As this coefficient is not statistically significant, the impact of the Master Settlement Agreement did not differ among males and females. The outcome of this analysis does not support Hypothesis 1.

**Table 4.1: Gender Outputs**

	H1: Gender
Year	-0.422**
Short term Impact	0.111
Trend Before MSA	0.004
Group	-4.400**
Diff. in Trends before MSA	-0.073
Diff. in short term impacts	-0.382
Impact of the MSA	0.073
Constant	30.980**
R <sup>2</sup>	.965
F	160.714**

### *Race & Ethnicity*

Table 4.2 reports the regression coefficients comparing smoking prevalence among whites and African Americans over the course of the study (1987-2009). The first coefficient ( $B = -0.400$ ,  $p < .01$ ) represent the rate of change in white smoking prevalence prior to the Master Settlement Agreement. This output indicates a negative trend in white smoking prevalence of 0.4% per year prior to the Master Settlement Agreement. The second coefficient ( $B = -0.002$ ) represents the immediate effect of the MSA on smoking prevalence among whites. There was no immediate effect on white smoking prevalence as a result of the MSA as this coefficient is not statically significant. The third coefficient ( $B = -0.006$ ) indicates no change in smoking trends among whites when comparing trends before and after the Master Settlement Agreement.

White smoking prevalence was compared to African American smoking prevalence over the same time period. The fifth coefficient ( $B = -0.378$ ,  $p < .01$ ) represents the difference in smoking prevalence trends among whites and African Americans before the Master Settlement Agreement. As this coefficient is statistically significant, smoking prevalence among African Americans was declining .378% per year more than whites prior to the MSA. The sixth coefficient ( $B = -0.845$ ) compares the difference in immediate drop in white and African American smoking prevalence. As this coefficient is not statistically significant, there was no statistical difference in immediate change of smoking prevalence among these two groups as a result of the Master Settlement Agreement. The seventh coefficient ( $B = 0.424$ ,  $p < .05$ ) represents the difference of the differences between smoking prevalence trends for the two groups. The coefficient indicates the MSA had a statistically significant greater impact on African American smoking prevalence than white smoking prevalence. This outcome rejects Hypothesis 2.

Table 4.2 reports the regression coefficients comparing smoking prevalence among whites and Hispanics over the course of the study (1987-2009). The first coefficient ( $B = -0.400$ ,  $p < .01$ ) represents rate of change in white smoking prevalence prior to the Master Settlement Agreement. Because this coefficient is statistically significant, it can be concluded that white smoking prevalence was decreasing by 0.4% per year prior to the Master Settlement Agreement. The second coefficient ( $B = -0.002$ ) represents the immediate effect of the MSA on smoking prevalence among whites. Because this coefficient is not statically significant, there appears to be no immediate effect on white smoking prevalence as a result of the MSA. The third coefficient ( $B = -0.006$ ) represents the change in white smoking prevalence after the Master Settlement Agreement. Because this coefficient is not statistically significant, we can conclude that the MSA did not change smoking prevalence among the white population.

White smoking prevalence was compared to Hispanic smoking prevalence over the same time period. The fifth coefficient ( $B = -0.186$ ) represents the difference in smoking prevalence trends among whites and Hispanics before the Master Settlement Agreement. As this coefficient is not statistically significant, there is no statistically significant difference between Hispanic and white smoking prevalence prior to the Master Settlement Agreement. The sixth coefficient ( $B = -0.578$ ) compares the difference in immediate change in smoking prevalence among whites and Hispanics as a result of the Master Settlement Agreement. As this coefficient is not statistically significant, there appears to be no difference in immediate change of smoking prevalence among these groups as a result of the Master Settlement Agreement. The seventh coefficient ( $B = 0.410$ ) represents the difference of the differences between smoking prevalence trends for the two groups. The insignificant coefficient suggests that the MSA did not cause any difference in smoking patterns of whites and Hispanics. This outcome does not support Hypothesis 3.

Table 4.2 reports the regression coefficients comparing smoking prevalence among Hispanics and African Americans over the course of the study (1987-2009). The first coefficient ( $B = -0.586$ ,  $p < .01$ ) represent the rate of change in Hispanic smoking prevalence prior to the Master Settlement Agreement. This output indicates a negative trend in Hispanic smoking prevalence. Because this coefficient is statistically significant, it can be concluded that Hispanic smoking prevalence was decreasing by 0.586% per year prior to the Master Settlement Agreement. The second coefficient ( $B = -0.580$ ) represents the immediate effect of the MSA on smoking prevalence among Hispanics. No immediate effect on Hispanic smoking prevalence as a result of the MSA can be inferred as this coefficient is not statically significant. The third coefficient ( $B = 0.403$ ) represents the difference in Hispanic smoking prevalence before and after the Master Settlement Agreement. As this coefficient is not statistically significant, there was no difference in smoking prevalence trends when comparing before and after the implementation of the Master Settlement Agreement among Hispanics.

This analysis compares Hispanic smoking prevalence to African American smoking prevalence before and after the Master Settlement Agreement. The fifth coefficient ( $B = -0.192$ ) represents the difference in trends of Hispanics and African Americans prior to the Master Settlement Agreement. This coefficient is not statistically significant, indicating no statistical difference in the smoking prevalence trends between Hispanics and African Americans prior to the Master Settlement Agreement. The sixth coefficient ( $B = -0.276$ ) compares the difference in immediate change in smoking prevalence among Hispanics and African Americans after the implementation of the MSA. As this coefficient is not statistically significant, there appears to be no difference in immediate change of smoking prevalence among these groups as a result of the Master Settlement Agreement. The seventh coefficient ( $B = 0.014$ ) represents the difference of

the differences between smoking prevalence trends for the two groups. The insignificant coefficient implies that the MSA did not cause any difference in smoking patterns of Hispanics and African Americans. This outcome does not support Hypothesis 4.

**Table 4.2: Race Outputs**

Op Table Indicator	H2: Whites v. African Americans	H3: Whites v. Hispanics	H4: Hispanics v. African Americans
Year	-0.400**	-0.400**	-0.586**
Short term Impact	-0.002	-0.002	-0.580
Trend Before MSA	-0.006	-0.006	0.403
Group	5.007**	-3.367*	8.373**
Diff. in Trends before MSA	-0.378**	-0.186	-0.192
Diff. in short term impacts	-0.845	-0.578	-0.276
Impact of the MSA	0.424*	.410	0.014
Constant	27.840**	27.840**	24.473**
R <sup>2</sup>	.931	.866	.922
F	79.723**	38.734**	57.149**

### *Marital Status*

Table 4.3 reports the regression coefficients comparing smoking prevalence among married and single individuals over the course of the study (1987-2009). The first coefficient (B= -0.570, p<.01) represent the rate of change in smoking prevalence prior to the Master Settlement Agreement among married individuals. Because this output is statistically significant, the research findings indicate smoking prevalence among married individuals was declining 0.570% per year prior to the Master Settlement Agreement. The second coefficient (B= -0.742) represents the immediate effect of the MSA on smoking prevalence among married individuals

after the Master Settlement Agreement. As this coefficient is not statically significant, there appears to be no immediate effect on smoking prevalence among this population as a result of the MSA. The third coefficient ( $B = 0.106$ ) represents the difference in married smoking prevalence before and after the Master Settlement Agreement. As this coefficient is not statistically significant, there was no difference in smoking prevalence trends when comparing before and after the implementation of the Master Settlement Agreement among married individuals.

The fifth coefficient ( $B = -0.123$ ) represents the difference in trends among married and non-married individuals before the Master Settlement Agreement. Because this coefficient is not statistically significant, no statistical difference in smoking prevalence trends prior to the Master Settlement Agreement when comparing individuals by marital status was observed. The sixth coefficient ( $B = 0.935$ ) compares the immediate effect of the Master Settlement Agreement on smoking prevalence among married and single individuals. There was no difference in the Master Settlement Agreement's immediate effect on smoking prevalence between married and single individuals. The seventh coefficient ( $B = 0.170$ ) represents the difference of the differences between smoking prevalence trends for the two groups. As this coefficient was not statistically significant, the MSA did not result in a difference in smoking patterns of married and single individuals. This outcome does not support Hypothesis 5.

### *Education*

Table 4.3 reports the regression coefficients comparing smoking prevalence between individuals with High School education or less and those with more than a High School education. The first coefficient ( $B = -0.432$ ,  $p < .01$ ) represent the change in smoking prevalence among individuals with High School education or less prior to the Master Settlement Agreement.

This output indicates a negative trend in smoking prevalence among individuals with High School education or less. Because this coefficient is statistically significant, it can be concluded that smoking prevalence among this group was decreasing by 0.432% per year prior to the Master Settlement Agreement. The second coefficient ( $B = 0.409$ ) represents the immediate effect of the MSA on smoking prevalence among those with a High School education or less. As this coefficient is not statistically significant, there was no immediate effect on smoking prevalence among this population as a result of the MSA. The third coefficient ( $B = -0.128$ ) represents the difference in trends before and after the Master Settlement Agreement. Because this output is not statistically significant, no difference in smoking prevalence trends when comparing before and after the implementation of the Master Settlement Agreement was observed.

The fifth coefficient ( $B = 0.226$ ) represents the difference in trends among those with a High School education or less and those with more than High School education. As this coefficient is not statistically significant, no statistical difference in smoking prevalence trends prior to the Master Settlement Agreement when comparing by education levels was observed. The sixth coefficient ( $B = -0.678$ ) represents the difference in immediate drop in smoking prevalence among those with a High School education or less and those with more than High School education. Because this coefficient is not statistically significant, there was no difference in the immediate change of smoking prevalence among education level resulting from the Master Settlement Agreement. The seventh coefficient ( $B = 0.132$ ) represents the difference of the differences between smoking prevalence trends for the two groups. This coefficient indicates there was no difference in the rate of change in smoking prevalence among education level following the Master Settlement Agreement. This outcome does not support Hypothesis 6.

### *Income*

Table 4.3 reports the regression coefficients comparing smoking prevalence among individuals with annual household incomes of less than \$35,000 and those earning \$35,000 or more over the course of the study (1987-2009). The first coefficient ( $B = -0.279$ ,  $P < .01$ ) represent the trend in smoking prevalence prior to the Master Settlement Agreement. This output indicates a negative trend among those with household incomes of less than \$35,000 per year. Because this coefficient is statistically significant, it can be concluded that smoking prevalence was decreasing 0.279% per year prior to the Master Settlement Agreement among this demographic. The second coefficient ( $B = 0.419$ ) represents the immediate effect of the MSA on smoking prevalence among this population. As this coefficient is not statically significant, findings suggest no immediate change in smoking prevalence within this group. The third coefficient ( $B = -0.067$ ) represents the difference in smoking rates for those with household incomes of less than \$35,000 per year before and after the Master Settlement Agreement. As this coefficient is not statistically significant, there appears to be no statistically significant difference in smoking prevalence trends when comparing before and after the Master Settlement Agreement within this demographic.

The fifth coefficient ( $B = 0.026$ ) represents the difference in trends of the designated income brackets. Because this coefficient is not statistically significant, there was no difference in smoking prevalence trends prior to the Master Settlement Agreement between the two groups. The sixth coefficient ( $B = 0.322$ ) represents the difference in immediate drop in smoking prevalence among the comparison and intervention group. There was no difference in the immediate change of smoking prevalence among income classification resulting from the Master Settlement Agreement. The seventh coefficient ( $B = -0.075$ ) represents the difference of the



differences between smoking prevalence trends for the two groups. The insignificant coefficient indicates no difference in smoking patterns of between the two groups after implementation of the Master Settlement Agreement. This outcome does not support Hypothesis 7.

### *Poverty*

Table 4.3 reports the regression coefficients comparing smoking prevalence among those below the Federal Poverty Line (FPL) and those at or above the FPL over the course of the study (1987-2009). The first coefficient ( $B = -.416$ ,  $p < .01$ ) represents the rate of change in smoking prevalence prior to the Master Settlement Agreement. This output indicates a negative trend among those below the FPL. Smoking prevalence among those below the FPL was declining 0.416% per year prior to the Master Settlement Agreement as evident by the coefficient being statistically significant. The second coefficient ( $B = -0.207$ ) represents the immediate effect of the MSA on smoking prevalence among this population. As this coefficient is not statically significant, findings suggest no immediate change in smoking prevalence resulting from the MSA. The third coefficient ( $B = 0.153$ ) represents the difference in smoking trends before and after the Master Settlement Agreement for those living below the FPL. As this coefficient is not statistically significant, no difference in smoking prevalence trends when comparing before and after the implementation of the Master Settlement Agreement was observed.

The fifth coefficient ( $B = 0.000$ ) represents the difference in smoking trends between those living below the FPL and those living at or above the FPL prior to the Master Settlement Agreement. Because this coefficient is not statistically significant, there was no difference in smoking prevalence trends prior to the Master Settlement Agreement among FPL classification. The sixth coefficient ( $B = 1.198$ ) represents the difference in immediate drop in smoking prevalence between the two groups after the MSA. There appears to be no difference in the

immediate change of smoking prevalence among FPL classification resulting from the Master Settlement Agreement, as this coefficient is not statistically significant. The seventh coefficient ( $B = -0.268$ ) represents the difference of the differences between smoking prevalence trends for the two groups. The insignificant coefficient implies that the MSA did not cause any difference in changes to smoking patterns between individuals live below or at/above the FPL. This outcome does not support Hypothesis 8.

**Table 4.3: Socioeconomic Status Outputs**

Op Table Indicator	H5: Marital Status	H6: Education	H7: Income	H8: Poverty
Year	-0.570**	-0.432**	-0.279**	-0.416**
Short term Impact	-0.742	0.409	0.491	-0.207
Trend Before MSA	0.106	-0.128	-0.067	0.153
Group	8.767**	-11.413**	-8.233**	-7.980**
Diff. in Trends before MSA	-0.123	0.226	0.026	0.000
Diff. in short term impacts	0.935	-0.678	0.322	1.198
Impact of the MSA	0.170	0.132	-0.075	-0.268
Constant	25.893**	32.627**	30.833**	35.287**
$R^2$	.981	.962	.965	.953
F	303.329**	124.559**	162.00**	121.046**

#### *South & Northeast*

Table 4.4 reports the regression coefficients comparing smoking prevalence among South Region and Northeast Region over the course of the study (1987-2009). The first coefficient ( $B = -0.462$ ) represent the change in smoking prevalence trends within the South Region prior to the Master Settlement Agreement. Because this coefficient is not statistically significant, no trend in smoking prevalence within the South Region was observed prior to the Master Settlement

Agreement. The second coefficient ( $B = -0.055$ ) represents the immediate effect of the MSA on smoking prevalence among South Region. As this coefficient is not statically significant, there was no immediate effect on smoking prevalence within the South Region as a result of the MSA. The third coefficient ( $B = 0.087$ ) represents the change in South Region smoking prevalence after the Master Settlement Agreement. As this coefficient is not statistically significant, there appears to be no statistically significant difference in smoking prevalence trends when comparing before and after the Master Settlement Agreement in the South Region.

South Region smoking prevalence was compared to Northeast Region smoking prevalence over the same time period. The fifth coefficient ( $B = -0.359$ ) represents the difference in trends of the South and Northeast Region before the Master Settlement Agreement. As this coefficient is not statistically significant, there appears to be no change in smoking trend in the years following the Master Settlement Agreement. The sixth coefficient ( $B = 2.885$ ) compares the difference in immediate drop in South Region and Northeast Region smoking prevalence. As this coefficient is not statistically significant, no difference in immediate change of smoking prevalence among these groups as a result of the Master Settlement Agreement was observed. The seventh coefficient ( $B = 0.283$ ) represents the difference of the differences between smoking prevalence trends for the two groups. The insignificant coefficient implies that the MSA did not cause any difference in changes to smoking patters between the South and Northeast Regions. This outcome does not support Hypothesis 9.

#### *South & Midwest*

The first coefficient ( $B = -0.462$ ,  $p < .01$ ) represent the change in smoking prevalence trends between the South Region and the Midwest Region prior to the Master Settlement Agreement. Because this coefficient is statistically significant, smoking prevalence within the South Region prior to the Master Settlement Agreement was declining at a rate of .462% per

year. This output differs from the South/Northeast comparison as the regression analyses for Hypothesis 9 and Hypothesis 10 have inherently different control variables. The second coefficient ( $B = -0.055$ ) represents the immediate effect of the MSA on smoking prevalence among South Region. As this coefficient is not statically significant, there was no immediate effect on smoking prevalence within the South Region as a result of the MSA. The third coefficient ( $B = 0.087$ ) represents the difference in smoking prevalence before and after the Master Settlement Agreement in the South Region. As this coefficient is not statistically significant, there appears to be no statistically significant difference in smoking prevalence trends when comparing before and after the Master Settlement Agreement in the South Region.

South Region smoking prevalence was compared to Midwest Region smoking prevalence over the same time period. The fifth coefficient ( $B = 0.285$ ) represents the difference in trends of the South and Midwest Region before the Master Settlement Agreement. As this coefficient is not statistically significant, there appears to be no change in smoking trend in the years following the Master Settlement Agreement. The sixth coefficient ( $B = -0.348$ ) compares the difference in immediate drop in South Region and Midwest Region smoking prevalence. As this coefficient is not statistically significant, there appears to be no difference in immediate change of smoking prevalence among these groups as a result of the Master Settlement Agreement. The seventh coefficient ( $B = -0.332$ ) represents the difference of the differences between smoking prevalence trends for the two groups. The insignificant coefficient implies that the MSA did not cause any difference in changes to smoking patters between the South and Midwest Regions. This outcome does not support Hypothesis 10.

#### *South & West*

Table 4.4 reports the regression coefficients comparing smoking prevalence among South Region and West Region over the course of the study (1987-2009). The first coefficient ( $B = -$

0.462) represent the change in smoking prevalence trends within the South Region prior to the Master Settlement Agreement. Because this coefficient is not statistically significant, no trend in smoking prevalence within the South Region was observed prior to the Master Settlement Agreement. The second coefficient ( $B = -0.055$ ) represents the immediate effect of the MSA on smoking prevalence among South Region. As this coefficient is not statically significant, there was no immediate effect on smoking prevalence within the South Region as a result of the MSA. The third coefficient ( $B = 0.087$ ) represents the difference in smoking prevalence before and after the Master Settlement Agreement in the South Region. As this coefficient is not statistically significant, there appears to be no statistically significant difference in smoking prevalence trends when comparing before and after the Master Settlement Agreement in the South Region.

South Region smoking prevalence was compared to West Region smoking prevalence over the same time period. The fifth coefficient ( $B = 0.031$ ) represents the difference in trends of the South and West Region prior to the Master Settlement Agreement. As this coefficient is not statistically significant, no change in smoking trend in the years following the Master Settlement Agreement was observed. The sixth coefficient ( $B = -1.918$ ) compares the difference in immediate drop in South Region and West Region smoking prevalence. As this coefficient is not statistically significant, there appears to be no difference in immediate change of smoking prevalence among these groups as a result of the Master Settlement Agreement. The seventh coefficient ( $B = -0.332$ ) represents the difference of the differences between smoking prevalence trends for the two groups. The insignificant coefficient implies that the MSA did not cause any difference in changes to smoking patters between the South and West Regions. This outcome does not support Hypothesis 11.

**Table 4.4:** Geographic Region Outputs

	H9: South v. Northeast	H10: South v. Midwest	H11: South v. West
Year	-0.462	-0.462**	-0.462
Short term Impact	-0.055	-0.055	-0.055
Trend Before MSA	0.087	0.087	-0.087
Group	-0.633	-0.227	-2.660
Diff. in Trends before MSA	-0.359	0.285	0.031
Diff. in short term impacts	2.885	-0.348	-1.918
Impact of the MSA	.283	-0.332	-0.163
Constant	29.020**	29.020**	29.020**
R <sup>2</sup>	.657	.821	.776
F	8.750**	21.028**	15.866**

*Summary*

There appears to be limited impact from the Master Settlement Agreement on smoking prevalence among geographic and social demographics. When comparing social demographics, the Master Settlement Agreement does not appear to have a particularly strong effect on one social group compared to others. Surprisingly, the Master Settlement Agreement appeared to have little immediate impact on certain demographics that would appear to be most vulnerable to the program, policy, and taxation changes stemming from the MSA. The next chapter will discuss the specifics of these outcomes for each dependent variable and provide an assessment of the findings.

## **Chapter 5 – Conclusion**

### *Assessment of Findings*

The Master Settlement Agreement did not generate the changes expected of a landmark shift in public policy. Policy makers did not capitalize on the potential of the MSA as evident by the unchanged trend of reductions in smoking prevalence among most demographics. Additionally, groups with the greatest risk of smoking exposure appear to not have been prioritized in the interventions of the Master Settlement Agreement. With the previously cited policy changes on the federal level, future changes in smoking prevalence cannot be contributed to the MSA, further cementing the failures of this policy. The findings of this study mark the end of a chapter in the history of tobacco control.

It appears the Master Settlement Agreement had little impact on smoking prevalence trends. Prior to the Master Settlement Agreement, smoking prevalence was on the decline for nearly all demographics and the nation as a whole. This analysis suggests the Master Settlement Agreement did nothing to improve or bolster the reductions in smoking prevalence that occurred through the late 1980s and early 1990s. The declines in smoking prevalence were not altered despite the influx of public health dollars, increases in tobacco prices, and restrictions on tobacco use and advertising. Details of the trend analysis for each dependent variable are detailed in this chapter.

Overall, the MSA appears to have had limited statistical impact on smoking prevalence when comparing social and regional demographics. The lone exception appears to be among African Americans and whites, where declines in African American smoking prevalence outpaced whites by .424% per year. The findings are available in tables 4.1 – 4.4.

## *Discussion*

There are a number of possibilities for the lack of observed changes in smoking prevalence after the Master Settlement Agreement. It is likely the tobacco industry developed effective recruiting techniques to combat sanctions resulting from the MSA. Furthermore, the MSA may not have provided strong enough restrictions on tobacco industry advertising. As regulatory authority over tobacco products and industry tactics did not coincide with the Master Settlement Agreement, the tobacco industry was simply able to adapt to new restrictions on advertising. Because tobacco products remained outside the scope of government regulation, no flexible long term solutions could be implemented. This left the victims of the tobacco industry unprotected by the predator identified in the Master Settlement Agreement lawsuit. In hindsight, the MSA appears to punish the Tobacco Industry for previous transgressions, but enacts no provisions to prevent the industry from continuing the punished actions.

Another suggestion is that public health was not prioritized during allocation of MSA dollars. As previously cited, no mandate forcing revenues from the tobacco industry be devoted to tobacco control was included in the Master Settlement Agreement. Consequently, these funds were used for an array of other purposes, leaving problems in tobacco control prior to the MSA unaddressed.

With the origins of the Master Settlement Agreement rooted in recouping Medicaid dollars, the preventative actions following the MSA should have been aimed at disadvantaged and underserved populations. This analysis shows no impact on the underserved population as a result of the Master Settlement Agreement. At best, the Master Settlement Agreement can be partially credited with the prolonged levels of reduced prevalence. At worst, the MSA was mismanaged and failed to achieve the outcomes originally intended by the litigation.



### *Limitations*

A limitation of this research is the lack of geographically specific data. While the geographic regions computed through the survey data are useful from a social perspective, a state by state analysis would have been optimal for this particular study. As tobacco control programs were operated on the state level prior to 2009, restricting the analysis to large geographic regions does not provide insight into the effect of the Master Settlement Agreement on the local level.

### *Future Implications*

In future, researchers should attempt to determine the effectiveness of individual programs on the state and local level funded by MSA dollars. Incorporating the groups compared by this research and analyzing them by state or geographic region could provide considerable insight into the varying degree of effectiveness of the Master Settlement Agreement. For example, comparing smoking prevalence trends of males to females in the South region would provide further detail into the effects of the MSA. Furthermore, trends in male smoking prevalence could be compared by region (i.e. South male smoking prevalence trends to Northeast male smoking prevalence trends). Additionally, research should investigate how best to infiltrate tobacco industry strongholds such as poor, single, or uneducated individuals. An understanding of how to reach these individuals could result in more efficient programs and greater relation of public health goals.

The current, one-size-fits-all, approach has sustained the cultural discrepancies in smoking prevalence. As such, administrators should begin tailoring their programs to the specific populations of their area in order to maximize public health achievements. Administrators should identify and prioritize populations with high smoking prevalence. Upon assessing the needs of these demographics, population specific programs aimed at influencing the cultures of these

demographics must be developed. A large disconnect appears to be present along demographic lines. Administrators must incorporate this fact into any tobacco control program in order to boost prevention and cessation outcomes. Understanding what mediums are best used to convey health information could lead to drastically increased effectiveness of tobacco control programs without significantly increasing cost. Approaching the smoker from a unified perspective, incorporating social, behavioral, economic, and environmental factors into prevention and cessation appears to be the appropriate response to these research findings.

## References

- Ahmad, S. 2005. Increasing Excise Taxes on Cigarettes in California: A Dynamic Simulation of Health and Economic Impacts. *Journal of Preventative Medicine*, 45 (1), 276-283.
- American Lung Association. 2011. Trends in Tobacco Use. *American Lung Association* 1-44
- Armour, B., Pitts, M., Lee, C. 2007. Cigarette Smoking and Food Insecurity in Low-Income Families in the United States. *American Journal of Health Promotion*, 22(6), 386-390
- Ashton, J., & Seymour, H. (1988). *The new public health: The Liverpool experience*. Milton Keynes
- Barnes, S. Robin, L. O'Toole, T. Dawkins, N. Khan, L. Leviton, L. 2011. Results of Evaluability Assessments of Local Wellness Policies in 6 US School Districts. *Journal of School Health Vol. 81, No. 8*. 386-390
- Berman, M. 2011. From Health Care Reform to Public Health Reform. *Journal of Law, Medicine & Law*, 13(8), 328-339
- Bethel, J. W., & Schenker, M. B. (2005). Acculturation and Smoking Patterns Among Hispanics: A Review. *American Journal of Preventive Medicine*, 29(2), 143-148.
- Bjornson, W., Rand, C., Connett, J. E., Lindgren, P., Nides, M., Pope, F., & ... O'Hara, P. (1995). Gender Differences in Smoking Cessation after 3 Years in the Lung Health Study. *American Journal of Public Health*, 85(2), 223-230.
- Burgess, D., Fu, S., Noorbaloochi, S., Clothier, B., Ricards, J., Widome, R., & van Ryn, M. (2009). Employment, Gender, and Smoking Cessation Outcomes in Low-Income Smokers Using Nicotine Replacement Therapy. *Official Journal of the Society For Research on Nicotine And Tobacco*, 11(12), 1439-1447.
- Cantrell, J., Vallone, D., Thrasher, J., Nagler, R., Feirman, S., Muenz, L., He, D., Viswanath, K. 2013. Impact of Tobacco-Related Health Warning Labels across Socioeconomic, Race and Ethnic Groups: Results from a Randomized Web-Based Experiment. *PLOS One* 8 (1), 1-11
- Castro, Y., Businelle, M., Correa-Fernandex, V., Kendzor, D., Mazas, C., Cofta-Woerpel, L., Wetter, W. 2012. Associations Between Indicators of Acculturation and Tobacco Dependence Among Spanish-speaking Latino Smokers. *The Journal of Addictive Behaviors*, 37 (2012), 1101-1108
- Center for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs – 2007*. Atlanta: U.S. Department of Health and Human Services, Center for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health; October 2007. *Reprinted with corrections*.

- Center for Disease Control and Prevention. 2008. Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses – United States 2000-2004. *Morbidity and Mortality Weekly Report* 2008, 57 (45), 1226-1228.
- Center for Disease Control and Prevention. History of the Surgeon General's Report on Smoking and Health. Retrieved from [http://www.cdc.gov/tobacco/data\\_statistics/sgr/history/](http://www.cdc.gov/tobacco/data_statistics/sgr/history/)
- Center for Disease Control and Prevention. 2009. Federal and State Cigarette Excise Taxes – United States, 1995-2009. *Morbidity and Mortality Weekly Report* 2009, 58(19), 524-527.
- Center for Disease Control and Prevention. 2011. Ten Great Public Health Achievements – United States, 2001-2010. *Morbidity and Mortality Weekly Report* 2011, 60(19), 619-623.
- Center for Disease Control and Prevention. 2011. State Preemption of Local Tobacco Control Policies Restricting Smoking, Advertising, Youth Access – U.S. 2000-2010. *Morbidity and Mortality Weekly Report* 2011, 60(33), 1124-1127.
- Center for Disease Control and Prevention. 2012. State Tobacco Revenues Compared with Tobacco Control Appropriations – U.S. 1998-2012. *Morbidity and Mortality Weekly Report* 2011, 61(20), 370-374.
- Choi, K., & Boyle, R. (2013). Minnesota Smokers' Perceived Helpfulness of 2009 Federal Tobacco Tax Increase in Assisting Smoking Cessation: A Prospective Cohort Study. *BMC Public Health*, 13, 965
- Clark, T., Sparks, M., McDonald, T., & Dickerson, J. (2011). Post-Tobacco Master Settlement Agreement: Policy and Practice Implications for Social Workers. *Health & Social Work*, 36(3), 217-224.
- Cogan Jr, J. 2011. The Affordable Care Act's Preventive Services Mandate: Breaking Down the Barriers to Nationwide Access to Preventive Services. *Journal of Law, Medicine & Ethics*, 355-365
- Cutler, D. M., Gruber, J., Hartman, R. S., Landrum, M., Newhouse, J. P., & Rosenthal, M. B. (2002). The Economic Impacts of the Tobacco Settlement. *Journal Of Policy Analysis & Management*, 21(1), 1-19.
- Daynard, R. (2013). Regulatory Approaches to Ending Cigarette-Caused Death and Disease in the United States. *American Journal Of Law & Medicine*, 39(2-3), 290-297.
- Deason, L., Adhikari, S., Clopton, T., Oches, B., Jenson, J. 2010. The Ohio Cross-Cultural Tobacco Control Alliance: Understanding and Eliminating Tobacco-Related Disparities Through the Integration of Science, Practice, and Policy. *American Journal of Public Health*, 100 (51), S240-S245.

- Delva, J., Tellez, M., Finlayson, T., Gretebeck, K., Siefert, K., Williams, D., & Ismail, A. (2005). Cigarette Smoking Among Low-Income African Americans: A Serious Public Health Problem. *American Journal Of Preventive Medicine*, 29(3), 218-220
- Dilley, J., Harris, J., Boysun, M., Reid, T. 2012. Program, Policy, and Price Intervention for Tobacco Control: Quantifying the Return on Investment of a State Tobacco Control Program. *American Journal of Public Health*. 102 (2). e22-e28.
- Eaton, D. K., Kann, L., Okoro, C. A., & Collins, J. (2007). Selected Health Status Indicators and Behaviors of Young Adults, United States-2003. *American Journal Of Health Education*, 38(2), 66-75.
- Emmons, K. (1999). Smoking Cessation and Tobacco Control: An Overview. *Chest*, 116(6), 490S-492S.
- Fagan, P., Moolchan, E. T., Lawrence, D., Fernander, A., & Ponder, P. K. (2007). Identifying Health Disparities Across the Tobacco Continuum. *Addiction*, 10, 25-29.
- Farrelly, M. C., Loomis, B. R., Han, B., Gfroerer, J., Kuiper, N., Couzens, G., & ... Caraballo, R. S. (2013). A Comprehensive Examination of the Influence of State Tobacco Control Programs and Policies on Youth Smoking. *American Journal of Public Health*, 103(3), 549-555.
- Francis, J., Abramsohn, E., & Park, H. (2010). Policy-driven tobacco control. *Tobacco Control*, 19 i16-i20.
- Franks, P., Jerant, A. F., Leigh, J., Lee, D., Chiem, A., Lewis, I., & Lee, S. (2007). Cigarette Prices, Smoking, and the Poor: Implications of Recent Trends. *American Journal Of Public Health*, 97(10), 1873-1877.
- Gollust, S. E., Schroeder, S. A., & Warner, K. E. (2008). Helping Smokers Quit: Understanding the Barriers to Utilization of Smoking Cessation Services. *Milbank Quarterly*, 86(4), 601-627
- Gonzalez, M., Sanders-Jackson, A., Song, A., Cheng, K., & Glantz, S. (2013). Strong Smoke-Free Law Coverage in the United States by Race/Ethnicity: 2000-2009. *American Journal Of Public Health*, 103(5), e62-e66
- Jones, A., Austin, W., Beach, R., & Altman, D. (2007). Funding of North Carolina tobacco control programs through the Master Settlement Agreement. *American Journal Of Public Health*, 97(1), 36-44.
- Kennedy, A., Sullivan, S., Hendin, Y., Barnes, R., Glantz, S. 2012. Strong Tobacco Control Program Requirements and Secure Funding are Not Enough: Lessons From Florida. *American Journal of Public Health*, 102 (5), 807-816.
- Khwaja, A., Sloan, F., Chung, S. 2006. The Effects of Spousal Health on the Decisions to Smoke: Evidence on Consumption Externalities, Altruism, and Learning within the Household. *Journal of Risk Uncertainty*, 32, 17-35

- Koh, H. (2012). A Federal Plan for Ending the Tobacco Epidemic. *Nicotine & Tobacco Research: Official Journal Of The Society For Research On Nicotine And Tobacco*, 14(9), 1006-1011.
- Lee, D., Turner, N., Burns, J., Lee, T. 2007. Tobacco Use and Low-Income African Americans: Policy Implications. *Journal of Addictive Behavior* 32 (2007), 332-341.
- Maher, J., Boysun, M., Rohde, K., Stark, M., Pizacani, B., Dilley, J., Mosbaek, C. H., & Pickle, K. (2005). Are Latinos Really Less Likely to Be Smokers? Lessons from Oregon. *Nicotine & Tobacco Research: Official Journal Of The Society For Research On Nicotine And Tobacco*, 7(2), 283-287.
- Majette, G. 2011. PPACE and Public Health: Creating a Framework to Focus on Prevention and Wellness and Improve the Public's Health. *Journal of Law, Medicine & Ethics*. 366-379
- Oredein, T., Foulds, J. 2011. Causes of the Decline in Cigarette Smoking Among African American Youths from the 1970s to the 1990s. *American Journal of Public Health*, 101 (10), e4-e14
- Pampel, F. C. (2009). The Persistence of Educational Disparities in Smoking. *Social Problems*, 56(3), 526-542.
- Pollack, H. (2011). Prevention and public health. *Journal Of Health Politics, Policy And Law*, 36(3), 515-520
- Rexing, C., Ibrahim, J. 2012. State Tobacco Control Plans: Who Falls Outside the Plan?. *American Journal of Public Health*. 27 (1), 29-36.
- Roberts, B. 2006. Area Poverty Effects on Local Health Care Cost: An Analysis of Mississippi. *Review of Policy Research*, 29 (1), 223-233.
- Rosenthal, L., Carroll-Scott, A., Earnshaw, V., Sackey, N., O'Malley, S., Santilli, A., & Ickovics, J. (2013). Targeting Cessation: Understanding Barriers and Motivations to Quitting Among Urban Adult Daily Tobacco Users. *Addictive Behaviors*, 38(3), 1639-1642
- Satterlund, T. Cassady, D. Treiber, J. Lemp, C. 2011. Barriers to Adopting and Implementing Local-Level Tobacco Control Policies. *Journal of Community Health*. 616-623
- Schnoll, R. A., Patterson, F., & Lerman, C. (2007). Treating Tobacco Dependence in Women. *Journal Of Women's Health* (15409996), 16(8), 1211-1218.
- Simpson, S., & Nonnemaker, J. (2013). New York Tobacco Control Program Cessation Assistance: Cost, Benefits, and Effectiveness. *International Journal of Environmental Research And Public Health*, 10(3), 1037-1047
- Sloan, F. A., & Trogdon, J. G. (2004). The Impact of the Master Settlement Agreement on Cigarette Consumption. *Journal Of Policy Analysis & Management*, 23(4), 843-855.
- Tiller, K. J., Feleke, S. T., & Starnes, J. H. (2013). Federal Excise Tax Increase and Its Effects on U.S. Tobacco Production. *Empirical Economics*, 44(2), 701-717

- Traylor, G. W. (2010). Big Tobacco, Medicaid-Covered Smokers, and the Substance of the Master Settlement Agreement. *Vanderbilt Law Review*, 63(4), 1081-1130.
- Vallone, D. M., Niederdeppe, J., Richardson, A., Patwardhan, P., Niaura, R., & Cullen, J. (2011). A National Mass Media Smoking Cessation Campaign: Effects by Race/Ethnicity and Education. *American Journal Of Health Promotion*, 25(S5), S38-S50.
- Villanti, A. Vargyas, E. Niaura, R. Beck, S. Pearson, J. Abrams, D. 2011. Food and Drug Administration Regulation of Tobacco: Integrating Science, Law, Policy and Advocacy. *American Journal of Public Health Vol 101, No 7*. 1160-1162
- Warner, K., Sexton, D., Gillespie, B., Levy, D., & Chaloupka, F. (2014). Impact of Tobacco Control on Adult per Capita Cigarette Consumption in the United States. *American Journal Of Public Health*, 104(1), 83-89.
- Webb, M. S., Rodríguez-Esquivel, D., & Baker, E. A. (2010). Smoking Cessation Interventions Among Hispanics in the United States: A Systematic Review and Mini Meta-analysis. *American Journal Of Health Promotion*, 25(2), 109-118.
- Weber, M. D., Simon, P., Messex, M., Aragon, L., Kuo, T., & Fielding, J. E. (2012). A Framework for Mobilizing Communities to Advance Local Tobacco Control Policy: The Los Angeles County Experience. *American Journal Of Public Health*, 102(5), 785-788.
- Zhu, B.P., Giovino, G. A., Mowery, P. D., & Eriksen, M. P. (1996). The Relationship between Cigarette Smoking and Education Revisited: Implications for Categorizing Persons' Educational Status. *American Journal Of Public Health*, 86(11), 1582-1589.