Title: A Policy Analysis of the Effectiveness of Tobacco and Vaping Legislation in Adolescents and Adults in New York State

Date: January 22, 2024

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Project was not individually reviewed by the UNE IRB.
ABSTRACT

Background

In 2021, the prevalence of smoking was 12% among adults in New York State (NYS), which resulted in 28,170 deaths. Among adolescents in NYS, the smoking rate was 2.40%, while vaping (e-cigarette) usage was 22.5% in 2020.

Aims

The purpose of this policy analysis is to ascertain the effectiveness of tobacco and vaping legislation in adolescents and adults in NYS. This policy analysis discussed the Adolescent Tobacco Use Prevention Act (ATUPA), which is a tobacco policy aimed at tobacco prevention among adolescents and young adults.

Methods

This policy analysis collected data on tobacco and vaping statistics, including NYS smoking rates, morbidity and mortality rates, and prevalence in both adults and adolescents. Data were collected from the NYS Department of Health, the Centers for Disease Control and Prevention (CDC), and others. The socioecological and CDC Policy Analysis Frameworks were used to guide this analysis. In addition, a literature review and an environmental scan were conducted.

Conclusion

Although several successful tobacco policies exist in NYS, increased legislation and funding are needed to continue current tobacco control efforts.

Recommendations

Efforts to continue increasing the price of tobacco and vaping products are needed. Revenues from these increases would be used to support additional tobacco control programs.
There is also a need to extend regulations limiting tobacco and vaping product availability and accessibility, especially near schools. These recommendations could have a lasting impact on tobacco and vaping product usage rates and overall community health.

INTRODUCTION

Problem Statement

Magnitude of Problem

The public health problem is tobacco and vape usage in adolescents and adults living in New York State (NYS). As of 2022, the population of NYS was 19,677,151. In NYS, tobacco is the primary cause of preventable morbidity and mortality, resulting in 28,170 deaths annually. In 2021, some counties in NYS have reported smoking rates as high as 28.5% among adults, and NYS schools have an adolescent smoking rate of 2.40%. In previous years, county smoking rates ranged from 11% to 21% (see Figure 1). Vape usage is a significant health concern, with 22.5% of NYS high school students using e-cigarettes in 2020. There are many adverse health concerns associated with tobacco use, including cancer, heart disease, lung disease, and others. Also, there are negative health concerns with vaping, such as asthma, which had a prevalence of 6.2% among adolescents in 2018.

Current Knowledge

In NYS, numerous tobacco control policies, programs, and legislation have been implemented to address this public health problem. One of these policies was the Adolescent Tobacco Use Prevention Act (ATUPA), which was passed in 1992 with the objective of addressing tobacco and vape usage in adolescents and young adults. ATUPA is a
comprehensive tobacco policy aimed at tobacco prevention by limiting sales of tobacco and vaping products, enforcing retailer compliance, and monitoring tobacco advertising.\textsuperscript{7,8}

\textit{Gap}

Although ATUPA has been in effect since 1992 with multiple amendments, its overall effectiveness in NYS has not been fully explored through the lens of the diverse communities in this state.\textsuperscript{7} It would be important to have strategies that prevent tobacco usage in underserved communities. This would include working with tobacco stores to limit the distribution of smoking and vaping items in these communities.

\textit{Justification for Gaps}

Since the enactment of ATUPA, smoking rates in youth have declined, and tobacco retailer enforcement has increased.\textsuperscript{9} However, there is a need to understand the impact of specific ATUPA amendments for NYS residents, especially in minority or underserved populations.\textsuperscript{8} There is also a need to expand policies so that ATUPA can have a greater effect.

\textit{Long Term Goal}

The first goal is to reduce the rate of tobacco and vape usage among NYS residents, including adolescents, in the next 4 to 5 years. This is possible through ongoing collaboration between various stakeholders and organizations invested in reducing tobacco and vape usage. This would also require partnerships with tobacco companies. The second goal is to support tobacco Endgame policies.\textsuperscript{10} Endgame is an initiative developed with the American Heart Association and has partners around the world.\textsuperscript{10} The objective of the Endgame movement is to reduce and eliminate all tobacco use before the year 2040.\textsuperscript{11}

\textit{Purpose of Study}

\textit{Objective}
The objective of the policy analysis is to address the gap in the research regarding the overall effectiveness of tobacco and vaping policies, including ATUPA. This policy analysis will also explore the impact of tobacco and vaping policies on individuals living in racially/ethnically diverse or underserved communities.

**Approach**

The approach of this policy analysis will be guided by the CDC Policy Analytical Framework and Socioecological Model. The CDC Framework was selected to identify and describe policy options that would best address the proposed public health problem. The Socioecological Model was selected as a theoretical framework to better understand behaviors that drive tobacco consumption at the individual, community, and societal levels.

**Specific Aims**

The aims of this analysis were to 1) ascertain the effectiveness of tobacco policies (ATUPA) in NYS and 2) evaluate if increases or decreases in allocated funds could impact tobacco and vape product usage.

**Importance of Study**

The importance of this study is the anticipated impact on the public health problem of tobacco and vape usage. Tobacco policies have the potential to reduce tobacco use by 4% and 7% in adults and adolescents, respectively. In addition, this policy analysis could identify opportunities for additional research and future policies to improve the quality of life and overall health of NYS residents. This study has the potential to decrease the number of lives lost to tobacco and vaping, decrease the number of smokers, and increase revenues to help support tobacco control programs.
BACKGROUND

Overview of the Public Health Problem

Definition

The public health problem for analysis is tobacco and vape use in adolescents and adults who reside in New York State (NYS). In the United States (US), approximately 11.5% (28.3 million) of adults (13.1% men and 10.1% women) are cigarette smokers in 2021 (see Figure 2).\textsuperscript{15} Approximately 11.7% of non-Hispanic Blacks, 12.9% of non-Hispanic White adults, and 14.9% of non-Hispanic adults from other racial groups smoked cigarettes in 2021.\textsuperscript{15} Approximately 3.08 million adolescents use tobacco products, including vapor products.\textsuperscript{15} In the US, about 500,000 individuals die from tobacco use or secondhand smoke, and healthcare costs associated with tobacco use are about $225 billion annually.\textsuperscript{15}

In 2021, tobacco was the leading cause of preventable morbidity and mortality in NYS.\textsuperscript{2} The rate of adult smoking in NYS in 2021 was 12%, and some counties had rates as high as 28.5%.\textsuperscript{3} During 2017 to 2023, there was a decrease in adult smoking rates by 3%.\textsuperscript{16} In NYS, adolescent smoking is still a significant health problem, with 25.6% of students in 2020 reporting tobacco usage (e.g., e-cigarettes, etc.) in some areas despite recent declines.\textsuperscript{2} Moreover, despite the decline, inequities continue to exist (e.g., tobacco retailers in minority communities), and research that would decrease the use of tobacco use in this age group is much needed.\textsuperscript{2}

Magnitude and Consequences

The magnitude and consequences of the problem include a variety of outcomes. Negative health consequences due to tobacco and vaping usage include cancer, heart disease, lung disease, and diabetes.\textsuperscript{5} Tobacco consumption is one of the leading causes of lung cancer, with nine out of ten lung cancer cases caused directly by smoking.\textsuperscript{17} Chemicals in vape products (e.g., propylene
glycol) contribute to increased rates of asthma, heart disease, and cancer.\textsuperscript{18} Tobacco consumption in NYS is estimated to be associated with 28,170 deaths per year.\textsuperscript{2} In addition, tobacco consumption in adolescents has been connected with increased rates of depression and anxiety.\textsuperscript{19}

\textit{Key Determinants}

The key determinants of tobacco and vaping use include income, education, gender, attitudes/behaviors, and race/ethnicity. For example, for income, persons impacted more are those living in low socioeconomic status (SES) communities who have tobacco use rates that are higher than those in high SES communities.\textsuperscript{20} Those in low SES communities spend approximately 10\% of their disposable income on smoking products.\textsuperscript{20} This problem may happen because low-income populations do not have the power to engage in policies addressing tobacco use, and these low-income populations reside in underserved areas where tobacco use is acceptable and available.\textsuperscript{20} In terms of education/occupation, those working lower-level jobs are more susceptible to tobacco use because these individuals tend to work outside and have lower education status.\textsuperscript{20} This occurs when lower SES individuals do not have the connections that provide the ability to influence policy level changes.\textsuperscript{20} Males with low SES are impacted by social pressure to be masculine and engage in tobacco use.\textsuperscript{20} This can occur due to the challenges of dealing with living with low SES.\textsuperscript{20} Females with low SES are impacted due to the pressure of parenting, which leaves them vulnerable to using tobacco products to address stress.\textsuperscript{20} For the attitudes/behaviors of adolescents, fathers play a more significant role in how adolescents develop attitudes toward tobacco use.\textsuperscript{20} Some youth are raised by two smoking parents.\textsuperscript{20} This may cause adolescents to be more accepting of smoking behaviors.\textsuperscript{20} For race/ethnicity, adult NYS White, Non-Hispanic (12.5\%) and Black, Non-Hispanic (12.3\%) individuals had the highest prevalence of cigarette smoking in 2020 (see Table 1).\textsuperscript{21} In adolescents, flavored tobacco
product usage has been as high as 43% in Hispanic, 30% in Black, and 18% in White students living in some areas of NYS.\textsuperscript{22}

The entire population is impacted. Smoking adolescents are impacted by family, social, and cultural factors. Non-smoking adolescents are impacted by exposure to smokers, social factors, and environmental factors. Smoking adults are impacted by similar factors as youth, as well as their personal smoking history. Non-smoking adults are impacted by social and environmental factors. Some populations that include ethnic/racial minority groups may be impacted more than other groups. For example, tobacco use is greater in non-Hispanic adults compared to others.\textsuperscript{23} Individuals from different ethnic/racial groups also experience social and cultural factors, as well as SES factors, which make them vulnerable to smoking and its outcomes.\textsuperscript{24}

Tobacco use leads to diseases such as cancer, heart disease, etc.\textsuperscript{5} In adolescents, it leads to anxiety and depression.\textsuperscript{19} Targeted marketing of adolescents impacts smoking rates by promoting smoking behaviors.\textsuperscript{25} Smoking is influenced by disparities, barriers, and complexities. Minority individuals who experience difficulty obtaining healthcare could have greater severity of disease due to tobacco use.\textsuperscript{26} Another disparity is among low SES individuals, especially those living in public housing.\textsuperscript{26} Due to the disparities in income and education, these individuals are susceptible to the negative effects of tobacco use.\textsuperscript{26} Based on the disparities, such as low SES and minority communities, these individuals may have barriers to receiving healthcare to treat tobacco-related diseases. The majority of barriers are related to the inability to access community resources/programs.\textsuperscript{27} Social perceptions of tobacco use need to be overcome by changing knowledge and attitudes.\textsuperscript{20}
All of these factors, such as disparities, barriers, and health problems, are compounded together into a very complex issue. Systems thinking can be considered to implement change and address the public health problem. Various systems, such as healthcare access, political access, and social access, would need to be addressed. The public health problem of tobacco use is a complicated issue with many factors associated with it and requires systems thinking. By implementing systems thinking, the tobacco and vaping problem can be better understood in its etiology, the various ways to address policy decisions, working with stakeholders, and finding answers.

Three Levels of the Framework

There are three levels of complexities when using the Socioecological Model to analyze tobacco and vape use in NYS.

Level 1 Analysis

At level 1, which is the individual level, there are several factors that increase the likelihood of becoming a smoker or vape user. Some of these factors, including age, ethnicity, education, income, substance abuse, mental health status, and secondhand smoke, help determine the likelihood of using tobacco products. Research has shown greatest initiation of tobacco and vape products occurs in youth in grades 6 to 12. A solution to addressing the individual component might be to improve behavioral education with the assistance of healthcare providers and schools in order to prevent the initiation of tobacco use in adolescents. Encouraging family knowledge about the dangers of tobacco products is necessary to reduce the public health problem at the individual level.
Level 2 Analysis

At the community level, which is level 2, social relationships in schools, work environments, and communities play a key role in the levels of smoke and vape usage. Vape products have also played a role in youth tobacco use. Studies show high levels of vape usage drove increases in youth use from 2014 to 2018, but overall tobacco use has decreased from a high in 2018 of 30.6% to 25.6% in 2020. Communities should be aware of tobacco and vape usage among their population due to the persistence of the public health issue. In terms of communities, Black communities smoke more menthol cigarettes than any other race/ethnicity. This is true for middle and high school students, where 51.4% of non-Hispanic Black students and 50.6% of Hispanic students smoke menthol compared to 42.8% of non-Hispanic Whites in 2018. Even more extreme are the adult smokers, with 70% of Black adults using menthol cigarettes compared to 39% of White adults. Communities benefit from being responsible for restricting tobacco use in public, engaging community leaders in advocacy work, and connecting community sources with youth involvement to create healthy environments without tobacco.

Level 3 Analysis

At the societal level (level 3), there is a historical relationship between American society and its long-standing relationship with tobacco products. Media, film, music, and literature have become factors in making tobacco use acceptable. Social policies have existed that have helped promote, maintain, and expand tolerance of cigarettes among various populations. While smoking rates in the US have decreased overall, the history of smoking has targeted certain populations disproportionately. For example, these populations include rural adults (19%) vs urban adults (11.4%), veterans (21.6%), Lesbian/Gay/Bisexual adults (LGB) (16.1%), American
Indians/Alaska Natives (27.1%), and those in public housing (33.6%).\textsuperscript{32} Society and government have legislative powers to impact tobacco policies by taxing tobacco products, enforcing policies, and managing media.\textsuperscript{13}

**Significance of the Policy Analysis**

Several contributions from this policy analysis have already been observed that attest to the effectiveness of this policy. Tobacco rates have gone down due to tobacco control policies and subsequent interventions across many jurisdictions. Historically, cigarette smoking rates among adults have decreased from 42.6\% in 1965 to 13.7\% in 2018.\textsuperscript{33} Cigarette smoking rates among adolescents have declined from 27.5\% in 1991 to 8.8\% in 2017.\textsuperscript{33} Several programs/initiatives have resulted from tobacco policies implemented in NYS. A rural NYS tobacco awareness, tri-county coalition is focused on reducing morbidity and mortality from tobacco consumption with the aim of addressing economic and social issues associated with tobacco use and exposure to secondhand smoke.\textsuperscript{34}

Another NYS health program is a pre-cessation and cessation program in schools for smoking-addicted students.\textsuperscript{35} This program’s goal is to prevent the initiation of tobacco use among adolescents by students engaging in conferences, leadership programs, and other similar methods.\textsuperscript{35} A third program in NYS is based on partnerships of community-based organizations and individuals.\textsuperscript{36} This program utilizes a comprehensive approach through education on the adverse effects of smoking, encouraging tobacco cessation, advocating for tobacco control awareness, and engaging local media to support tobacco control.\textsuperscript{36} Other states, such as California, have had success with similar programs, which offer free, evidence-based tobacco cessation programs, are inclusive to the diverse population in the state, offer the program in six languages, and offer features including texting, phones, and apps.\textsuperscript{37,38}
The aim of these contributions is to improve health outcomes and decrease morbidity and mortality associated with tobacco use. The increased awareness of tobacco-related health risks, the decline in social acceptance of tobacco use, the engagement of stakeholders, enforcement, and assessment of policy compliance are important for the success of policy implementation.39

METHODS

Overview of Framework

This policy analysis collected data relating to tobacco and vaping product policies and use, such as NYS smoking rates, morbidity and mortality rates, and tobacco and vape prevalence in both adults and adolescents. Data sources included the NYS Department of Health, CDC, NYS Health Data, and County Health Rankings. The framework that was used to guide the analysis of the levels of the public health issue was the socioecological framework.

The socioecological framework provides a model to better understand the various social and individual factors necessary for developing prevention interventions.13 It has been suggested as a model in low SES communities for tobacco prevention in the pediatric population, including caregivers.40 These communities see greater tobacco use due to “intergenerational” patterns.40 Therefore, this framework was selected as the appropriate approach for this policy analysis.

How the Policy will be Analyzed

Stakeholders and Policy Information

During the policy analysis, ATUPA and related policies were discussed with nine stakeholders.8 Stakeholder organizations included government, philanthropic groups, advocacy groups, public health law centers, and private citizens. Stakeholders were identified based on who was affected, involved with, and who would utilize the policy analysis findings.41
Stakeholders who participated in the analysis were contacted by phone and included individuals from the NYSDOH, local tobacco control programs, philanthropic foundations, and local tobacco coalitions. Information collected from the stakeholders was used to further understand the impact and challenges related to tobacco and vape policies (including ATUPA).8

Additional analyses that were conducted for this policy analysis included a literature review, an environmental scan, and an application of the CDC Policy Analysis Framework.12 For the literature review, PubMed and Google Scholar databases were searched for ATUPA and tobacco-related keywords between 2013 and 2023. The search produced 490 articles, many of which were included in the policy analysis. The environmental scan was conducted to identify other jurisdictions that had implemented similar tobacco-related policies. A policy analysis following the CDC Framework was also conducted to describe the public health impact, feasibility, and economic and budgetary impacts.12

IRB Approval

Since the policy analysis was based on secondary data and not a human subject study, the IRB approved it as an exempt research project for full IRB review. Therefore, the policy analysis could proceed. Documents for Determination of Human Subjects Research and the Principal Investigator Certification were also completed. (See Figure 3).

POLICY ANALYSIS

History of the Policy

A precursor to current tobacco control laws in NYS was the Clean Indoor Air Act (CIAA), which was enacted in 1989.8 This act prevented the use of both tobacco and vaping products indoors and in many outdoor locations.8 After 1989, the act was amended
several times, with each amendment making the act stronger. ATUPA, a complimentary policy, was passed in 1992. As an amendment to the CIAA, ATUPA added prohibitions to restrict youth and young adult access to tobacco and vaping products.

Federal Level

The Surgeon General’s report in 1964 emphasized the importance of decreasing smoking prevalence due to health repercussions. While the Surgeon General’s report was clear in its implications, social and economic conditions (e.g., the acceptance of smoking culture, the Vietnam War, etc.) limited its effectiveness. Additional reasons that the report was not initially accepted were due to poor information release. State insurance companies were among the earliest organizations to explore health differences between smokers and non-smokers. This led to insurance companies offering less expensive policies to non-smokers, which helped drive national policy efforts to reduce smoking. This national smoking policy movement was the impetus for state anti-smoking legislation.

State Level

At the state level, several changes were made in the ATUPA law after 1992, aimed at preventing the sale of tobacco and vape products to adolescents. In 1997, all retailers became subject to penalties if they sold these products to individuals under 18. Another important change implemented in 2019 was the requirement for individuals purchasing tobacco products to be at least 21 years old. Since 2019, ATUPA has had many other amendments broadening the scope of this statewide policy.

Local / County Level

At the local/county level, all counties in NYS are responsible for the enforcement and implementation of ATUPA. These activities are accomplished in various ways. For example,
county health departments support tobacco control programs and coalitions. One of these coalitions is in rural NY and is focused on improving health, social, and economic outcomes related to tobacco use.34 Other counties enforce ATUPA through the education of individuals on tobacco marketing that targets youth.36 Additional amendments over time have brought ATUPA to its current state.

Current Status of the Policy

Definition of Policy

ATUPA is a legislative policy in NYS that is implemented and enforced by the NYSDOH.8 The ultimate aim of ATUPA is to prevent the initiation of tobacco and vaping usage in adolescents. An objective of this policy is to enforce sanctions on retailers who are involved in the selling and marketing of these products to adolescents.7,8

What Does it Include

ATUPA includes legislation that bans flavored tobacco products, creates penalties for tobacco retailers who sell tobacco products to youth, bans tobacco advertising near schools, and ends the sale of tobacco products in pharmacies.8

How Does it Work

ATUPA is managed and enforced by the NYSDOH.8 This policy is funded primarily by NYS, specifically the NYS Tobacco Control Program (NYSTCP), with assistance from the CDC.30 The NYSTCP was provided $39.8 million by NYS for tobacco prevention legislation, and the CDC provided $2.9 million in 2018-2020.30

Who is In

ATUPA’s goal is to prevent tobacco and vaping initiation and continuation of smoking in all NYS youth. The policy seeks to address health equity by including those individuals uniquely
affected by negative tobacco outcomes (for example, those with low SES, low literacy, etc.)

There are many stakeholder groups who support ATUPA and tobacco/vaping legislation. These include the NYS government, the CDC (at the federal level), community leaders, healthcare providers, advocacy groups, businesses and funders, and others.

Who is Out

There are a few stakeholder groups who do not support ATUPA and other tobacco legislation, such as tobacco companies, tobacco producers, tobacco lobbyists, retailers, and individuals who smoke but do not want to quit.

Gaps and Barriers

Overall Policy Gaps

Previous evidence has identified several gaps and barriers to ATUPA and similar tobacco control policies. One of these policy-related gaps is the need for further research on the role of tobacco price increases within communities. Another current gap is the importance of researching tobacco use behavior and contributing factors such as peer pressure and family influence. Additionally, previous evidence-based research has indicated a need for geospatial mapping measures to better understand retailer location and tobacco consumption trends. The importance of acknowledging this gap is the ability to monitor tobacco retailer density between vulnerable neighborhoods, particularly locations near schools.

Budget Gaps

From a budget perspective, there are many benefits to this policy; however, previous research has identified existing gaps. A budget gap associated with tobacco control price policies is the potential for increased tobacco smuggling.
smuggling is defined as the illegal redirection of large numbers of tobacco products to the black market.\textsuperscript{49} Tobacco smuggling hinders tobacco control policies, with tens of billions of tobacco products diverted to the black market annually.\textsuperscript{49} Rates for this illegal activity have increased by 13\% in NYS since 2010.\textsuperscript{48}

\textit{Social and Economic Gaps}

Factors associated with greater use of tobacco and vaping products include other negative behaviors such as substance and alcohol abuse.\textsuperscript{50} The social aspect of these behaviors impacts society, especially the youth, where most initiation of these behaviors begins. Among adolescents initiating tobacco products in NYS from 2017-2019, rates of use were 1.6\% for cigarettes, 5.7\% for marijuana, and 8.9\% for alcohol.\textsuperscript{51} The gap is a need for interventions to reduce the negative health behaviors that may accompany tobacco and vaping usage. In addition, limiting the availability and accessibility of tobacco and vape products is needed to address the references to tobacco use in the smoking culture (as seen in film, music, and general media).\textsuperscript{52}

\textit{Health Disparity Gaps}

Factors associated with greater use of tobacco and vaping products are seen in low SES, minorities, and low literacy communities.\textsuperscript{53} There is a need to address the gaps of high retailer tobacco density, challenges in enforcing tobacco policies, and limited tobacco cessation resources, particularly in rural communities.\textsuperscript{54} A gap would be the challenge of enforcing tobacco policies such as ATUPA in underserved areas where there is an increased tobacco retailer density. The association between the high density of retailers selling tobacco products and comorbidities such as diabetes and mental disease in rural areas has been reported and needs
further investigation. Rural areas have higher smoking rates yet lower access to health and mental services; therefore, these barriers need to be addressed.

**Other Public Health/Environmental Gaps**

Evidence shows that there is a need to stop sales of tobacco products near schools. Researchers found a higher density of these retailers near schools, making the availability of tobacco items easily accessible to students. Cities in New York State, such as Buffalo, have approximately 50% of schools with tobacco stores close to 1,000 feet of schools. The proximity to schools of these retailers is important as it disproportionately impacts students in low SES communities. Another gap is to remove tobacco-flavored vaping items from the market so that adolescents do not initiate or smoke these products.

**Analysis of Better Models**

The state of California can serve as an example of successful tobacco control policies and programs. The California Department of Public Health’s Tobacco Control Program is focused on changing social behaviors regarding tobacco use. One of its key efforts is to reduce the availability of tobacco. Specifically, the availability of nicotine-containing products for treatment that are not allowed by the Food and Drug Administration (FDA). This involves the sale and dispensation of nicotine products.

California has other tobacco control initiatives focused on price control where the state manages tobacco prices. For example, all tobacco-containing products are taxed fairly at appropriate rates. California makes sure that both prevention and cessation of tobacco programs receive equitable tax revenue distribution.

**How Would this Policy Address the Current Gaps**
The California policy regarding limiting tobacco availability can address the current NYS gap of removing tobacco-flavored vaping products to prevent youth from starting smoking. In addition, this policy could provide a template to NYS on how to restrict the sales of smoking or vaping products in retailers near schools. California’s Tobacco Control Program is estimated to have saved a million lives and approximately $134 billion in healthcare savings. This program involves multiple platforms, such as media campaigns and tobacco cessation programs, which can improve public health knowledge. NYS can implement a similar policy limiting tobacco availability using existing infrastructure and media platforms.

The California policy to prohibit the sale of tobacco items may deter new and current users of tobacco products to not purchase these products. For example, California’s 25 cents per cigarette pack increase yielded approximately a 9% reduction in tobacco use initially and an 11.5% reduction in tobacco use eventually. This California policy could be replicated in NYS to reduce the sales of tobacco products. This strategy could be successful in addressing gaps related to tobacco retailer density and tobacco pricing, particularly in underserved areas. Increasing the price of tobacco and vaping products in NYS could reduce smoking. Previous increases in these products in NYS have been initially successful in supporting this policy.

Stakeholder Strategies

There are strategies that can make tobacco policy initiatives accepted more quickly in NYS. Strategies that have strengthened partnerships in California include engaging a diverse group of stakeholders (including minority, rural, and underserved communities), and ensuring that all tobacco products are taxed equally (including
tobacco and vaping products) at all levels of the state.\textsuperscript{57} This would ensure the reduction of all tobacco products simultaneously in NYS. This diverse group of stakeholders also ensures that no one department or authority is removed from tax distributions (the revenues received from taxing tobacco products) because this diverse group includes those at the state, county, and local levels.\textsuperscript{57}

\textit{Feasibility}

Policies such as limiting tobacco availability and increasing tobacco pricing would be feasible in accomplishing NYS’s long-term goals. Evidence suggests that these policies would be feasible based on the example set by California.\textsuperscript{56,59} California has successfully demonstrated that it is possible to both limit the availability of tobacco products and decrease use through tobacco price controls.\textsuperscript{56,59} Some counties in California have successfully prohibited the opening of new places selling tobacco items within 1,000 feet of schools.\textsuperscript{61} Other cities, including New Orleans and Philadelphia, have also been successful in restricting the sale of tobacco near schools.\textsuperscript{61} Therefore, similar programs in NYS are feasible. Initial changes in California show promise for ultimate change in NYS. NYS can increase its tobacco price per pack and decrease the availability of tobacco products by using the same strategies that California has.\textsuperscript{56,59}

\textit{Cost-Effectiveness}

Policies such as limiting tobacco availability and increasing tobacco pricing would be cost-effective in accomplishing NYS’s long-term goals. California's tobacco pricing policy has been shown to be cost-effective.\textsuperscript{62} An increase in the price of cigarettes of 25 cents per pack yielded a decrease in the number of smokers by 11.8\% from 1989 to 2019.\textsuperscript{62} Furthermore, this same increase in price produced a total savings of $816 billion in healthcare expenses as a result of the California Tobacco Control Program from 1989-2019.\textsuperscript{62} In NYS, additional cost-savings
would be seen with taxes on other tobacco products (e.g., e-cigarettes).\footnote{This is evidence of the cost-effectiveness, reflecting that each dollar spent on increasing the price of tobacco may produce a decrease in healthcare burden.} For California, initiatives to limit the availability of tobacco products involve multiple policies addressing availability (e.g., sale, distribution, etc.).\footnote{NYS could benefit from such policies. With such policies in place, NYS could see the same cost-effectiveness as California. Due to California and NYS being similarly diverse across sociodemographic characteristics, California’s smoking policies can work and be cost-effective in NYS.}

\section*{DISCUSSION}

\subsection*{Highlights of Current Policy and Gaps}

NYS is one of the few states in the nation with strong tobacco control policies and has a proven record of success in the implementation of these policies.\footnote{NYS has two prominent policies that were enacted to address the smoking epidemic. The first one is the Clean Indoor Air Act, which does not allow the use of tobacco and vaping products in all indoor and some outdoor public places and work environments. \footnote{The second one is the ATUPA, which specifically limits the sale of tobacco and vaping items to adolescents. \footnote{Gaps in these policies exist. For example, gaps in ATUPA include that the law regulating these products is not inclusive and allows the sale of non-menthol flavored tobacco products. \footnote{ATUPA prohibits pharmacies from selling tobacco and vaping items, however, not retailers that may be selling near schools.}}}} NYS has two prominent policies that were enacted to address the smoking epidemic. The first one is the Clean Indoor Air Act, which does not allow the use of tobacco and vaping products in all indoor and some outdoor public places and work environments.\footnote{The second one is the ATUPA, which specifically limits the sale of tobacco and vaping items to adolescents.\footnote{Gaps in these policies exist. For example, gaps in ATUPA include that the law regulating these products is not inclusive and allows the sale of non-menthol flavored tobacco products.\footnote{ATUPA prohibits pharmacies from selling tobacco and vaping items, however, not retailers that may be selling near schools.}}}

\subsection*{Highlights of Better Policies}

California has a better tobacco control policy compared to NYS because it has both price controls on tobacco products and ways to reduce the availability of tobacco products.\footnote{California has a better tobacco control policy compared to NYS because it has both price controls on tobacco products and ways to reduce the availability of tobacco products.}
California manages tobacco prices by taxing all such products fairly.\textsuperscript{57} This is important because this policy includes all tobacco products. Another aspect of California’s tobacco control policy is that it attempts to reduce the availability of nicotine products.\textsuperscript{56} California does not allow either menthol or tobacco-flavored products to be sold.\textsuperscript{66} Whereas NYS does not allow menthol-flavored products to be sold but permits tobacco-flavored products.\textsuperscript{8} The NYS tobacco control policy can benefit from implementing the policies regarding continuous increases in prices of tobacco products and support limiting the availability and accessibility of these products.

**Importance of Addressing the Current Gap**

Given that flavored products are marketed more in vulnerable, minority communities (especially among Hispanic adolescents), addressing the gaps in this issue may reduce smoking initiation and smoking rates, but it can also potentially reduce morbidity and mortality, resulting in savings of healthcare costs.\textsuperscript{67} There is also a need to minimize tobacco marketing exposure near schools for adolescents.\textsuperscript{68} It is important to address this gap to reduce tobacco use among adolescents.\textsuperscript{68} Another gap that should be addressed is the higher smoking rates in rural areas compared to urban areas in NYS.\textsuperscript{69} The smoking rate is double in some rural areas when compared to the averages in NYS.\textsuperscript{69} Tobacco retailer density may be important due to its association with smoking rates, and there is a need to address this gap to better understand smoking behaviors in rural communities.

**RECOMMENDATIONS**

**Recommendation 1**

The best recommendation for this policy is to increase the price of tobacco and vaping products, which would address each gap. Evidence has shown that one of the most effective
methods to combat smoking behaviors and decrease smoking rates is to increase the price of tobacco and vaping products. The goal is to prevent the initiation in adolescents and help adults to quit smoking. Currently, NYS is among the states with the highest price for a pack of cigarettes and one of the highest taxes for cigarettes. However, there is a gap in taxation and price policies in NYS. More efforts are needed in NYS to increase taxes on vaping products. NYS vaping taxes are substantially lower in comparison to other states, such as Minnesota, which has one of the highest taxes.

In NYS, increasing the price of tobacco and vaping products and increasing taxation of these products can be incentives for smokers to quit. In addition, revenue from these increases can support the implementation and enforcement of tobacco control initiatives. However, there is a need for NYS to enforce and monitor the potential consequences of increasing tobacco and vaping prices. For example, it has been reported that increases in taxation of tobacco led to increases in the smuggling of these products. In addition, NYS would need to continue enforcement of tobacco retailer compliance. Many of these gaps are addressed in ATUPA, however, a continuum of efforts and more comprehensive taxation is the best strategy for meeting many of the goals of ATUPA.

**Recommendation 2**

A related recommendation would be limiting tobacco availability and accessibility. There is a gap in limiting access to tobacco products, especially among minorities, underserved areas, rural areas, and retailers located near schools. In particular, flavored products aimed at adolescents need to be addressed, especially in vulnerable communities. Currently, there is growing interest in supporting this recommendation among stakeholders. However, more collaborative efforts are needed to be inclusive of underserved areas that lack representation and
engagement to ensure equitable benefits from this policy.\textsuperscript{20,57} This policy has the potential to be cost-effective in the long term because limiting the availability of tobacco products could decrease its use in the population.\textsuperscript{74} Implementation of this policy can include several strategies using multiple outlets, including tobacco cessation programs, as well as media and educational platforms.\textsuperscript{58} The high density of tobacco retailers in rural areas is associated with smoking rates and higher morbidity.\textsuperscript{54} Therefore, addressing this issue is important because of the limited access to tobacco cessation programs and healthcare resources in rural areas.\textsuperscript{54} Currently, NYS prohibits the display of advertisements in stores selling tobacco products near schools.\textsuperscript{8} NYS also does not allow tobacco and vaping products to be sold in pharmacies.\textsuperscript{8} NYS limits accessibility to tobacco products in pharmacies, but there is a need to make this policy broader.\textsuperscript{8}

Therefore, limiting tobacco products from being sold near schools among all retailers should be considered in order to prevent the initiation of smoking among adolescents. This is especially important in low SES communities where there is a high density of tobacco retailers.\textsuperscript{55} Each proposed recommendation addresses an existing gap in ATUPA. These strategies are important in reducing the availability and accessibility of tobacco products, which should be implemented as part of ATUPA.

**Recommendation 3**

Another recommendation for anti-tobacco efforts is to engage in the Endgame aspiration of eliminating smoking once and for all. An ultimate goal of Endgame is to reduce tobacco use in all ages, including adolescents and adults.\textsuperscript{11} The objective of Endgame, a worldwide campaign, is spearheaded by the American Heart Association in the US.\textsuperscript{10} The aim of this movement is to completely eliminate the use of tobacco by 2040.\textsuperscript{11} Endgame focuses on price control and point of sales.\textsuperscript{11} The importance of preventing the initiation of tobacco use among adolescents will be a
necessary intervention in ending access to all tobacco products. NYS’s current efforts align with the Endgame philosophy. Current ATUPA amendments are already making strides in meeting Endgame goals. However, these current bans/amendments need to be better connected to solidify tobacco prevention efforts.

CONCLUSION

Tobacco is the leading cause of preventable morbidity and mortality in NYS. Smoking among adults in NYS reached 12% in 2021. In 2020, the smoking rate among adolescents was 2.4%, and the vaping usage was 22.5% in adolescents. This policy analysis identified relevant gaps and the importance of consistent funding to the success of ATUPA. It is recommended that in order to reduce adult smoking and initiation of adolescent smoking, ATUPA needs to increase tobacco and vape prices and, at the same time, implement efforts to limit tobacco and vaping product availability and accessibility.

ATUPA policymakers can learn from community-level efforts that incorporate individual and community tobacco education and cessation activities. Legislators and government have the ability to manage media; changing the social environment by managing media is necessary to end tobacco use. Also, it is recommended that NYS engage in Endgame to end tobacco use. Recommended strategies for increasing tobacco prices and reducing tobacco availability can be merged so that ATUPA may effectively meet the needs of both smokers and non-smokers. NYS policymakers should use other jurisdictions (e.g., states and cities) as examples for meeting tobacco prevention and control goals. In conclusion, the results from this policy analysis provide a valuable contribution for tobacco and vape legislation and prevention efforts in NYS.
REFERENCES:


46. Travis N, Levy DT, McDaniel PA, Henriksen L. Tobacco retail availability and cigarette and e-cigarette use among youth and adults: a scoping review. Tob Control. 2022;31:e175-e188. doi.org/10.1136/tobaccocontrol-2020-056376


APPENDIX

**Figure 1:** Percent Adults Reporting Currently Smoking in NYS (2020)

Data adapted from County Health Rankings.\(^4\)
Figure 2: Total Number of Adults Currently Smoking in US and NYS (2021)\textsuperscript{a,b}

\textsuperscript{a}Data adapted from New York State Department of Health.\textsuperscript{3}
\textsuperscript{b}Data adapted from Centers for Disease Control and Prevention.\textsuperscript{15}

Figure 2 shows the number of adults who smoked in 2021, comparing the United States with 28.3 million to NYS at 1.8 million.\textsuperscript{3,15}
### Table 1: Prevalence of Cigarette Smoking by Demographic in NYS, BRFSS 2020\(^a\)

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent</th>
<th>Estimated Weighted Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total New York State</strong></td>
<td>12.0</td>
<td>1,700,000</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14.2</td>
<td>963,000</td>
</tr>
<tr>
<td>Female</td>
<td>10.0</td>
<td>737,000</td>
</tr>
<tr>
<td><strong>Race and Ethnicity</strong></td>
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<td></td>
</tr>
<tr>
<td>White, Non-Hispanic</td>
<td>12.5</td>
<td>970,000</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>12.3</td>
<td>235,000</td>
</tr>
<tr>
<td>Other Race or Multiracial</td>
<td>10.8</td>
<td>171,000</td>
</tr>
<tr>
<td>Hispanic</td>
<td>11.4</td>
<td>292,000</td>
</tr>
<tr>
<td><strong>Age</strong></td>
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<td></td>
</tr>
<tr>
<td>18-24</td>
<td>5.5</td>
<td>89,000</td>
</tr>
<tr>
<td>25-34</td>
<td>13.2</td>
<td>336,000</td>
</tr>
<tr>
<td>35-44</td>
<td>16.7</td>
<td>358,000</td>
</tr>
<tr>
<td>45-54</td>
<td>15.9</td>
<td>336,000</td>
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<tr>
<td>55-64</td>
<td>15.5</td>
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<td>65+</td>
<td>6.8</td>
<td>213,000</td>
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<tr>
<td><strong>Education</strong></td>
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<td></td>
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<tr>
<td>Less than High School</td>
<td>19.0</td>
<td>341,000</td>
</tr>
<tr>
<td>High School or GED</td>
<td>15.8</td>
<td>582,000</td>
</tr>
<tr>
<td>Some Post High School</td>
<td>13.7</td>
<td>514,000</td>
</tr>
<tr>
<td>College Graduate</td>
<td>5.4</td>
<td>259,000</td>
</tr>
</tbody>
</table>

\(^a\)Data adapted from Centers for Disease Control and Prevention.\(^21\)
IRB Application

APPLICATION INSTRUCTIONS:
1. Determine if your proposed research project conforms to one or more of the 6 allowable exemption categories recognized at UNE by completing the Exemption Eligibility Checklist provided in Appendix A of this application.
2. If your research project meets exemption criteria, complete the Exemption Submission Checklist located in Appendix B to determine what documents aside from this form are required as part of your application.
3. Submit your completed application along with any required supplemental documentation to irb@une.edu for review.

Contact the Office of Research Integrity at irb@une.edu for any questions you may have with regard to your proposed research project or the exemption application process.

Version Date: 08/02/2023
Title of Project: A policy analysis of the effectiveness of tobacco and vaping legislation in adolescents and adults in New York State (NYS).

A. PRINCIPAL INVESTIGATOR & RESEARCH TEAM

Principal Investigator Name: Samina Mian
You are: □ Faculty □ Staff □ Student □ Resident
You are: □ Faculty □ Staff □ Student □ Resident
E-Mail: smian1@une.edu
Phone #: 5184282264

Estimated Start Date: 08/30/2023
Estimated End Date: 12/20/2023
UNE Center or College: Health Professions
UNE Program of Study: Master of Public Health

Faculty Advisor Name: George R. Smith, Jr., EdD, MPH
E-Mail: gsmith14@une.edu
Phone #: N/A

Please list and describe the role(s) and the institutional affiliation for all key personnel on this research project.

- For example: Bill Jones is affiliated with UNE and will be responsible for recruitment, data collection, and analysis.
- Key personnel are defined as all individuals who contribute in a substantive, meaningful way to the scientific development or execution of the research project.
- Examples include participant screening, recruitment, and consenting activities, data collection via intervention or interaction with participants, or obtaining/using/analyzing personally identifiable information or biospecimens pertaining to a research participant.
- Note: The Principal Investigator and Faculty Advisor(s) must be listed as key personnel in this section.

Samina Mian is affiliated with UNE as a student conducting this research as part of the ILE requirement and will be responsible for all data collection and analysis.
Dr. George Smith is affiliated with UNE as a faculty advisor and will supervise all activities conducted by the student.

1 Record the date when you expect to stop (1) obtaining data through interaction or intervention with participants; and/or (2) collecting, using, or analyzing personally identifiable information about participants.

RES-F-001; Rev 1   Effective Date: 11/14/2022
Principal Investigator Certification

Principal Investigator: Samina Mian
Faculty Mentor: George R. Smith, Jr., EdD, MPH
Project or Study Title: A policy analysis of the effectiveness of tobacco and vaping legislation in adolescents and adults in New York State (NYS).

By signing below, I certify that the information contained in this application, the research proposal/protocol, and any associated materials accurately reflects how the research will be conducted. Any proposed changes to the research will be submitted for IRB review and approval prior to implementation (unless necessary to eliminate an apparent immediate risk of harm, in which case the issue and action taken will be reported to the IRB promptly).

Principal Investigator Signature & Date: Samina Mian 08/02/2023

I have read and approve of the proposed research plan. I believe that the student is competent to conduct the activity as described herein. I understand my roles and responsibilities for the oversight and conduct of this research.

Faculty Advisor Signature & Date:

For IRB Office Use Only
RES-F-002; Rev 1; Effective Date: 11/14/2022
HANDWRITTEN SUBMISSIONS ARE NOT ACCEPTED

DETERMINATION OF HUMAN SUBJECTS RESEARCH FORM

The UNE IRB is required to review and approve all Research involving Human Subjects. This form is intended to help you determine if your project meets these definitions and therefore requires an IRB submission.

If you require written documentation from the Office of Research Integrity, complete this entire form and email the signed form along with any supporting documents (e.g., surveys, recruitment materials, consent forms) to the IRB staff at IRB@une.edu.

You may contact the Director of Research Integrity with any questions at IRB@une.edu.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Samina Mian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>Public Health</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:Smian1@une.edu">Smian1@une.edu</a></td>
</tr>
<tr>
<td>Are you Faculty, Staff or Student:</td>
<td>Student</td>
</tr>
<tr>
<td>If Student, please list your Faculty Mentor:</td>
<td>Faculty Mentor: George R. Smith, Jr., EdD, MPH</td>
</tr>
<tr>
<td>Project Title:</td>
<td>A policy analysis of the effectiveness of tobacco and vaping legislation in adolescents and adults in New York State (NYS).</td>
</tr>
</tbody>
</table>

Section A: Project Description

1. Please provide a brief description of your project: This policy analysis will evaluate the effectiveness of the Adolescent Tobacco Use Prevention Act (ATUPA) on tobacco and vape usage in NYS. Tobacco is the leading cause of preventable morbidity and mortality in NYS. The approach that will be used in this policy analysis will be guided by the CDC’s Policy Analytical Framework. This framework can be used to analyze policies in order to understand their potential health, economic, and budgetary impacts. Through this policy analysis, additional information about the effectiveness of the ATUPA will be obtained.

12/2021