Trends in US Youth Tobacco Use, Access and Media Exposure from 2004 to 2011

THESIS

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By

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Abstract

The Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act) aims to prevent and reduce tobacco use in adolescents by imposing FDA regulations on tobacco in regards to its manufacture, distribution, and marketing (US Department of Health and Human Services, 2012). Using data from the National Youth Tobacco Survey from years 2004-2011, trends in tobacco use, access and exposure were examined through three primary research aims.

The first research primary aim was analyzed by examining types of tobacco used from 2004-2011. Consistent with previous literature, use of cigarettes, the most popular form of tobacco, declined from 2004 to 2011. There was a significant association between kretek use and year; this statistic is consistent with them being banned in 2009. The second primary research aim, trends in tobacco access, was studied by looking at changes in refusal of cigarette sales due to age. Over time, it appeared that a lower percentage of adolescents were refused sale. In order to assess the third primary aim, trends in reported print, internet and television/movie exposure were examined over time. There was a notable change in reporting often seeing internet and print ads; specifically, there was an association between both print and internet ads and year when just examining 2009 and 2011 data.

The study also examined several secondary research aims. The first three secondary aims address tobacco use. The first primary research aim involved assessing commonly used forms of tobacco as well as factors often associated with tobacco use. When examining multiple tobacco users, cigarettes were the most commonly used form of tobacco. After conducting logistic
regressions by school level, when controlling for race, sex was found to be associated with multiple tobacco use among both middle and high school students across the four waves of the NYTS. The second secondary research aim surrounded assessing factors associated with menthol cigarette use. After performing a logistic regression on 2011 data, race, school-level, current kretek use and current flavored cigarette use were found to be associated with menthol cigarette use. The third secondary research aim addressed assessing use of alternative tobacco. Further analysis of 2011 data showed that approximately 18% of youth use newer forms of alternative tobacco and that 27% of youth had tried at least one of these forms of tobacco at least one time. Tobacco access was further examined in the last aim by looking at factors associated with attempting to purchase cigarettes and factors associated with refusal of cigarette purchase. Across all four waves, among high school students, females had higher odds of attempting to purchase cigarettes than males, adjusting for race. Across all four waves, among high school students, males had higher odds of being refused cigarette sales than females, adjusting for race.

While a causal relationship between the 2009 Tobacco Control Act and tobacco use, access and media exposure cannot be drawn, there was a demonstrated change in tobacco use and exposure. Furthermore, after looking at the percentage of adolescents who have tried the newer forms of tobacco at least once, there is a need to emphasize that these newer forms of alternative tobacco are not safe. The National Youth Tobacco Survey aligns well with aims of the Tobacco Control Act and serves as an appropriate instrument to continue studying policy impacts of tobacco control.
I would like to acknowledge Dr. Amy Ferketich and Dr. Bo Lu for their support and guidance throughout this project.
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Chapter 1: Introduction

Youth tobacco use remains a significant public health concern despite numerous regulations on sale, advertising and manufacture of tobacco. This issue is particularly alarming due to the fact that over 80% of adults smokers begin smoking by 18 years of age (Morbidity and Mortality Weekly Report, 2010). Unfortunately, tobacco use is a behavior that persists throughout adulthood. Although use of certain forms of tobacco has decreased, this reduction does not extend to all varieties of tobacco. When examining trends from 2000 to 2011, the CDC reports that among both middle and high school students, prevalence of current tobacco, combustible tobacco, and cigarette use has considerably declined (Eaton et al., 2012). Despite the decline in cigarette smoking among US adolescents, there has been a reported increase in use of alternative tobacco products such as cigars/cigarillos, smokeless tobacco, and hookah; little cigars and cigarillos, in particular, have grown to make up a large portion of the cigar market (SAMHSA, 2011; Kozlowski, Dollar, & Giovino, 2008). Several risk factors have been linked to tobacco use; these factors include being male, country region, peer influence, exposure to advertisements, ability to obtain cigarettes, and willingness to use promotional items (Bombard, Rock, Pederson, & Asman, 2008). This study hopes to address several of these factors in order to investigate the impact of the Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act).

The Tobacco Control Act aims to prevent and reduce tobacco use in adolescents by imposing FDA regulations on tobacco. These regulations extend to the manufacture, distribution, and marketing of tobacco-related products (US Department of Health and Human Services, 2012). It has been suggested that there should be investigation surrounding the impact of the 2009
legislative achievements on trends in cigarette use (Nasim, Blank, Cobb, & Eissenberg, 2012). As a result of gaps in the 2009 Tobacco Control Act, such as the exclusion of several alternative tobacco products in regulation, there is the potential for an increase in alternative tobacco use (Freiberg, 2012).

This study examines trends adolescent tobacco use, access and media exposure through National Youth Tobacco Survey data from 2004 to 2011. There are three primary aims and four secondary aims to this study. The first primary aim is to estimate the change in use of tobacco from 2004 to 2011. Based on previous literature, it is expected that there will be a shift in tobacco use from cigarettes to alternative tobacco products. The second primary aim is to examine trends in tobacco access. It is hypothesized that tobacco access will change to reflect increased restrictions on sales; specifically, it is hypothesized that more youth with be refused sale due to age. The third primary aim is to examine trends in tobacco media exposure. Due to the shifts in advertising from print to internet, it is hypothesized that print tobacco advertising will decrease and internet tobacco advertising will increase.

The secondary aims include analyses investigating multiple tobacco use and menthol cigarette use as well as factors associated with access to cigarettes. The first secondary aim examines forms of tobacco used by multiple users in addition to factors associated with multiple tobacco use. Using only 2011 NYTS, the second secondary aim is assessed by examining factors associated with menthol cigarette use. The third secondary aim assesses ever and current use of newer forms of alternative tobacco. The fourth secondary aim examines factors associated with attempting to purchase cigarettes and refusal of cigarette sales due to age.
Chapter 2: Background Information

There are several forms of tobacco used by youth, ranging from combustible forms, such as cigarettes and cigars, to non-combustible forms, such as smokeless tobacco and snus. Several factors, such as sex and age, play a role in the use of tobacco in addition to its access and exposure. Changes in tobacco policy have also affected access and exposure to tobacco.

Types of Tobacco

Cigarettes

Cigarettes are the most commonly used form of tobacco among United States (US) youth (Centers for Disease Control and Prevention, 2012a). The Centers for Disease Control and Prevention defines a cigarette as a “thin cylinder of ground or shredded tobacco that is wrapped in paper, lit, and smoked” (“NHIS - Adult Tobacco Use - Glossary,” 2009). National Youth Tobacco Survey (NYTS) data from 2000-2011 indicated that the prevalence of current cigarette use, defined as using cigarettes at least once in the past 30 days, decreased from 10.7% to 4.3% among middle school students and from 27.9% to 15.8% among high school students (Centers for Disease Control and Prevention, 2012a). When looking at just high school seniors, findings from the 2009 Youth Risk Behavior Survey (YRBS) report that one out of four is a regular cigarette smoker (Eaton et al., 2010). Trends in cigarette use as well as differences in use are related to several factors.

A number of factors are associated with cigarette use and access to cigarettes. When barriers to cigarette use are removed and cigarettes are easier to obtain, cigarette smoking among
US youth increases. Smoking prevalence has been found to be associated with lower cigarette prices as well as increased tobacco outlet density and retail cigarette advertising (Henriksen et al., 2008; Slater, Chaloupka, Wakefield, Johnston, & O’Malley, 2007). Removing barriers such as government-level restrictions also contributes to an increase in cigarette use. A study looking at US high school students found that students living in states with no or minimal restrictions were more likely to be daily smokers when compared to states with strict restrictions (Botello-Harbaum et al., 2009).

Flavored cigarettes now face their own restrictions. Flavored cigarettes, a popular tobacco item among teenagers, were banned as part of the Tobacco Control Act of 2009. Tobacco companies have a history of targeting teenagers, and flavored cigarettes contributed to this targeting. Researchers have uncovered documentation suggesting that the tobacco industry purposefully strategized tobacco flavors to appeal to youth (Carpenter, Wayne, Pauly, Koh, & Connolly, 2005). Specifically, in publicly available documents, RJ Reynolds reports a potential for flavored cigarette appeal among younger smokers (“Flavored Cigarettes. A Review. RJR History.,” 2012). Flavored cigarettes were financially beneficial to tobacco companies. Coincidentally, when RJ Reynolds’ Camel Brand introduced flavored cigarettes, the Camel Brand family had a 9.8% increase in sales during that year compared to an overall decrease in cigarette sales (Carpenter et al., 2005). These teenagers were targeted due to their potential as customers. Youth have developed an affinity to these products, much to the pleasure of tobacco companies. Flavored cigarettes have been shown to be appealing to youth (Manning, Kelly, & Comello, 2009). However, it was not until recently, after such cigarettes were banned, did surveys such as the NYTS begin asking about flavored cigarette use; thus there are few estimates available regarding flavored cigarette use.

Despite the ban on flavored cigarettes as part of the Tobacco Control Act of 2009, menthol cigarettes remain untouched. This lack of regulation misses a key component of cigarette
sales. A quarter of the cigarettes sold in the United States are considered menthol cigarettes. Menthol cigarette use is common among adolescent smokers; when examining National Youth Tobacco Survey Data from 2004-2009, approximately 50% of middle school smokers and 45% of high school smokers reported smoking menthol cigarettes (Caraballo & Asman, 2011; Wackowski, 2007). Many researchers and policymakers fear that menthol cigarettes lure youth into smoking. It has been suggested that menthol products could be a starter product for youth; middle school teens who have been smoking for less than a year are more likely to report smoking menthol cigarettes than teens who have been smokers for more than a year (Hersey, Nonnemaker, & Homsi, 2010). Furthermore, a review of US tobacco industry documents found that the tobacco industry attracted new smokers by promoting cigarettes with lower menthol content; these cigarettes are often used by adolescent smokers (Kreslake, Wayne, Alpert, Koh, & Connolly, 2008). It has been hypothesized that menthol cigarettes are more addictive than non-menthol cigarettes. This hypothesis is supported by the fact that there is a shorter time to the first cigarette of the day in menthol smokers compared to non-menthol smokers (Collins, 2006). Menthol cigarettes were not included in the Tobacco Control Act ban despite the increase of their reported use from 2004 to 2008 (Caraballo & Asman, 2011; Rock, Davis, Thorne, Asman, & Caraballo, 2010). The American Association for Cancer Research has even suggested that menthol should be banned from cigarettes (American Association for Cancer Research, 2010; Viswanath, Herbst, Land, Leischow, & Shields, 2010).

Alternative Tobacco

Despite a recent decrease in cigarette use, alternative tobacco use continues to rise. There are several forms of alternative tobacco products; alternative tobacco products consist of smokeless tobacco, cigars/cigarillos, pipes, bidis, and kreteks (Saunders & Geletko, 2011). Certain types of tobacco have increased more than others. Surveys have shown an increase in youth experimentation with cigars, bidis and kreteks (Centers for Disease Control and Prevention, 2010).
This increase in use could be attributed to easier access and lower prices. Ease of access is not uniform across tobacco type. Researchers have expressed concern that youths are beginning to shift to cigar use due to lack of regulation and taxes (Delnevo, Foulds, & Hrywna, 2005). Lower prices also make tobacco easier to obtain. A Massachusetts study found cigars and bidis to be cheaper than cigarettes (Soldz & Dorsey, 2005). These forms of alternative tobacco use contribute to a significant portion of current tobacco use.

**Cigars/cigarillos**

Cigar and cigarillo use, like other forms of alternative tobacco use, has increased in the last decade. Cigars are physically different from cigarettes and thus avoid some of the regulations and stigma surrounding use. While there is no universal definition of a cigar, one consistency in its definition is that cigars contain fermented tobacco (Baker, 2000). This fermentation leads to differences in smoke pH and oxygen concentration. The public also perceives cigarettes differently than cigars. Attributed to the glamorization of cigar smokers, compared with non-smokers, cigar smokers underestimate cancer risk (Baker, Dye, Denniston, & Ainsworth, 2001). In addition to their deceptive image, cigars vary in content. An issue with cigars lies in the variation in nicotine from cigar to cigar. Cigars are no less harmful than cigarettes; even if not inhaled. Cigars can still provide high enough levels of nicotine to result in dependence (Baker, 2000). This variation makes it difficult to measure nicotine exposure among users.

After cigarettes, cigars are the most commonly use tobacco product among youth. The 2011 NYTS found that 3.5% of middle school and 11.6% of high school students reported current cigar use (Centers for Disease Control and Prevention, 2012a). There is a variation in cigar reporting when including and not including brand name suggesting that oftentimes, youth do not consider the form of tobacco that they are using to be a cigar. A study that investigated cigar use among adolescents found that identifying the brand name of cigar was associated with an increase in reported cigar use (Trapl et al., 2011). Youth also have distinct cigar preferences. One study
reported Phillies as the most popular brand among youth (Soldz, Huyser, & Dorsey, 2003b).

Cigar use has been associated with a variety of risk factors. A Chicago study found that among high school students, both ever and past 30-day cigar, cigarillo and little cigarette use were strongly associated with being male and concurrent use of hookah (Schuster, Hertel, & Mermelstein, 2012). Cigar use is also related to the use of other forms of tobacco. Past 30-day cigar, cigarillo and little cigarette use was associated with most other forms of tobacco use (Schuster et al., 2012). From 2004-2011, the NYTS found an increase in current cigar use (7.1% to 11.7%) among non-Hispanic blacks (Centers for Disease Control and Prevention, 2012a).

**Bidis and Kreteks**

Bidis and kreteks are among the most commonly used forms of tobacco among adolescents. Both forms of tobacco originate from outside of the US. Bidis are made of cured flakes and dark tobacco that are hand-rolled in dried tendu leaves and have been marketed as a new alternative to cigarettes (Yen, Hechavarria, & Bostwick, 2000). Bidi cigarettes are small, thin, hand-rolled, flavored and imported from India and sold in locations such as convenience stores and gas stations (“NHIS - Adult Tobacco Use - Glossary,” 2009). Bidis were first introduced to the United States in the 1970s and began their popularity among the college-aged crowd (Yen et al., 2000). They gained their popularity due to lack of regulation and lower cost (Deckers, Farley, & Heath, 2006). Despite their popularity, they remain hazardous. Although bidis have less tobacco than regular cigarettes, they have more nicotine, carbon monoxide and tar; there is up to three times more nicotine in a bidi compared to a standard cigarette (Malson, Lee, Murty, Moolchan, & Pickworth, 2003; Watson, Polzin, Calafat, & Ashley, 2003). These findings suggest that bidis are more dangerous than regular cigarettes. Kreteks were banned in the Tobacco Control Act. Kreteks are clove cigarettes made up of Indonesian tobacco and clove spice (Prokhorov et al., 2006). Kreteks have less nicotine and tar than conventional cigarettes. However, the increased delivery of tar during interaction negates the lower levels of nicotine,
(Malson et al., 2003). Youth have reported that both are something new and different to try. The appearance of bidi cigarettes attracts youth while the scent of kreteks also attracts youth use (Soldz & Dorsey, 2005).

Smokeless Tobacco

Smokeless tobacco is one of the most popular and oldest forms of alternative tobacco (Deckers et al., 2006). Smokeless tobacco is used orally or nasally. While there are over 30 different types of smokeless tobacco (Prokhorov et al., 2006), there are two main types: chewing tobacco and snuff. Chewing tobacco is a piece of twisted or shredded tobacco kept in the mouth whereas snuff is a finely ground tobacco that can either be inhaled or kept in a pouch in the mouth (“NHIS - Adult Tobacco Use - Glossary,” 2009). Several factors are associated with smokeless tobacco use. In a West Virginia study of youth, smokeless tobacco use was associated with having a family member who uses, having a friend who uses and having tried cigarettes (Gilpin & Pierce, 2003). Although the use of smokeless tobacco has decreased in the late 1990s, there is little change recently (Preventing Tobacco Use Among Youth and Young Adults, 2012). As with most other forms of tobacco, there is also a variation in smokeless tobacco use by gender. Smokeless tobacco use among males is significantly higher than females (12.9% vs. 1.6%) (Centers for Disease Control and Prevention, 2012a). Smokeless tobacco products, in addition to cigarettes, were included in the Tobacco Control Act of 2009.

Pipes

Pipes make up the last category of tobacco investigated by the NYTS. A tobacco pipe is made up of a tube with a small bowl at one end; this bowl is filled up with tobacco and smoked (“NHIS - Adult Tobacco Use - Glossary,” 2009). Despite reported use by youth, little recent research exists on tobacco pipe use among adolescents. Water tobacco pipes, which are not included as part of the pipe question on the NYTS, are more commonly investigated. For example, an Arizona study found that after cigarettes and cigars, water pipe is the third most
common source of tobacco (Primack, Walsh, Bryce, & Eissenberg, 2009). Consistent with other gender-related tobacco findings, a Florida study found that among adolescents, boys were more likely than girls to use water pipes (Barnett, Curbow, Weitz, Johnson, & Smith-Simone, 2009). Consistently, across tobacco type, use of one form of tobacco is often associated with use of another form of tobacco.

Polytobacco Use

In addition to alternative tobacco use, polytobacco use is also a growing problem. Even in non-cigarette smokers, when evaluating the 2004-2009 NYTS, there has been an increase in reported alternative tobacco product use by approximately 5.9% each year (Saunders & Geletko, 2011). Polytobacco use is especially important to examine because adverse health effects and nicotine addiction are more common among those who use multiple forms of tobacco (Bombard et al., 2008). Cigarette use among adolescents has been shown to be associated with use of cigars, smokeless tobacco, pipes, bidis, and kreteks (Soldz et al., 2003a). Bidi use has been found to be associated with cigarette use (Delnevo & Hrywna, 2006; Taylor & Biener, 2001). Polytobacco use is associated with being male, in middle school, and residing in the Midwest, South or West (Bombard et al., 2008). In examining the pattern of dual use of cigars and smokeless tobacco among US males using NYTS data, researchers found a significant association between current cigarette smoking and current smokeless tobacco use (Tomar, Alpert, & Connolly, 2010). While using one form of tobacco is a risk factor for using another form, there are also several other risk factors for tobacco use.

Risk Factors Associated with Tobacco Use

There are numerous factors associated with use of tobacco, many of which are addressed by the National Youth Tobacco Survey. For example, in a study of California adolescents, researchers found that there were several factors associated with use of alternative tobacco products among cigarette smokers including peers who use alternative tobacco products and
reception to tobacco promotion (Gilpin & Pierce, 2003). Some factors associated with tobacco use include age, sex, race, access media and outside exposure.

Age

Age has been shown to be associated with all forms of tobacco use. Several studies show that older youth more often use tobacco use. Adolescents were more likely to smoke cigarettes if they were older (Tyc et al., 2004). Consistent with previous studies, according to the 2009 Youth Risk Behavior Survey, upperclassmen were more likely to have ever smoke cigarettes than underclassmen (Eaton et al., 2010). The National Youth Tobacco Survey has also found an increase in tobacco use among its older respondents (high school students), compared to its younger respondents (middle school students) (Centers for Disease Control and Prevention, 2012a). These differences in use could partially be explained by differences in access across ages. Younger smokers are more price sensitive than older smokers (Slater et al., 2007).

Sex

In addition to age variation, sex has also been shown to be related to tobacco use. Males have consistently reported higher tobacco use when compared to females. Several studies report that adolescent males are more likely to use all forms of tobacco when compared to females (Nasim et al., 2012; Proctor, Barnett, & Muilenburg, 2012; Saunders & Geletko, 2011; Soldz et al., 2003a). Specifically, males are more likely to use cigarettes, smokeless tobacco, and bidis (Horn, Gao, Dino, & Kamal-Bahl, 2000; Taylor & Biener, 2001). Regardless of cigarette smoking, men are more likely to use smokeless tobacco (Saunders & Geletko, 2011). This difference extends to polytobacco use as well. Using data from both the 2000 and 2004 NYTS, researchers observed that among current male smokers 60% reported using other forms of tobacco while only 30% of females also reported using other forms of tobacco (Bombard et al., 2008). Cigarette-only users are more likely to be female than male (Brooks, Gaier Larkin, Kishore, & Frank, 2008). Despite females reporting more facility in obtaining tobacco, boys
report greater use. The 2005 Virginia Tobacco Survey found that boys and girls used significantly different strategies for obtaining tobacco (Kaestle, 2009). Girls were more likely than boys to receive cigarettes for free and be able to purchase smokeless tobacco in person (Kaestle, 2009). Males were more likely than females to show proof of age (Proctor et al., 2012). This variation could be attributed to additional factors.

Race

Race has been associated with differences in tobacco use as well as tobacco access. Not only are there differences in types of tobacco use across race but also in quantities of tobacco use. Hispanic students have been found to be less likely than whites to smoke kreteks or use smokeless tobacco according to a Massachusetts study (Soldz et al., 2003a). Whites are more likely to smoke compared to blacks, Hispanics, Asians, Hawaiian/Pacific Islanders; however, American Indians were equally likely to report cigarette use (Rudatsikira, Muula, & Siziya, 2009). Rates of smoking also differ across race. NYTS data shows that daily smoking is higher among whites than in minorities (Nasim et al., 2012). Differences in source of cigarettes and purchase location are shown to vary by race and gender (Proctor et al., 2012). For example, in a study examining youth access to tobacco in Florida, researchers found that in majority-Hispanic neighborhoods, retailers were more likely to sell to underage youth than in non-majority Hispanic neighborhoods (Asumda & Jordan, 2009). Further factors influence tobacco access across race. There have been variations in social sources like friends and family between ethnic groups as well (Ma, Shive, Legos, & Tan, 2003).

Access

Understandably, differences in tobacco access would be associated with differences in tobacco use. The 2005 Virginia Tobacco Survey found that the most common way to obtain cigarettes get someone to buy them whereas the most common way to get smokeless tobacco was to buy it in the store (Kaestle, 2009). Access to tobacco is associated with retailer density. A
Massachusetts study found that low-income and minority communities had more tobacco retailers (Seidenberg, Caughey, Rees, & Connolly, 2010). Logically, a New York study looking at reported smoking among youth from data pooled from 2000-2008, compliance with the law was inversely associated with youth reporting that a retail store is their usual source for cigarettes (Loomis et al., 2012).

Tobacco Marketing

In addition to targeting tobacco access, the Tobacco Control Act of 2009 also addressed tobacco media exposure. Marketing strategies have been used to target youth. In a review of tobacco industry data, researchers found that marketing strategies were used to promote flavored tobacco products to youth (Carpenter et al., 2005). Tobacco marketing varies across location. A Massachusetts study found that in low income and minority communities, advertisements were more likely to be larger, promote menthol products, have a lower advertised price, and occur within 1000 feet of a school (Seidenberg et al., 2010). Higher levels of advertising as well as reducing barriers, such as lower prices and greater availability, to cigarettes have been associated with increase used in smoking uptake (Slater et al., 2007). There is consistent evidence to suggest a casual association between tobacco promotion and initiation (DiFranza et al., 2006). Not only is advertising associated with an increase in initiation of smoking but increasing promotion availability also increases the likelihood that adolescents move from experimentation to regular smoking (Slater et al., 2007). Additionally, exposure to tobacco in the media has been associated with tobacco use. Exposure to smoking by actors has been found to increase the likelihood that a person will begin to smoke (Sargent et al., 2005).

Social Exposure

In addition to outside tobacco exposure, peer exposure has also been shown to be related to tobacco use. Being around people who use tobacco has been associated with tobacco use. Furthermore, having a close social circle member smoke makes someone more likely to smoke.
Living with a smoker and having friends who smoke has been shown to be positively associated with smoking (Rudatsikira et al., 2009). Among students who used both combustible and smokeless tobacco, sibling and friend smokeless tobacco use was significantly associated with use (Horn et al., 2000). However, the influence of peer smoking on current smoking decreases with age (Villanti, Boulay, & Juon, 2011). This impact of social exposure could magnify policy impacts.

**Important Events in Tobacco Policy**

Although states have been individually regulating tobacco for years, it was not until the 1990s that these laws were strongly enforced (Jason, Ji, Anes, & Birkhead, 1991). This regulation came as a result of the 1992 Synar Amendment which went into effect in 1996; the amendment required an enforcement of not selling tobacco to minors (DiFranza, 2011). While only banning the sale to tobacco has been shown to be ineffective, actually implementing the laws has been shown to be associated with adolescent smoking (Cummings, Hyland, Perla, & Giovino, 2003; Jason, Berk, Schnopp-Wyatt, & Talbot, 1999). However, it is difficult to measure whether or not a retailer is actually enforcing policy. Since 1994, there have been several legal and scientific developments that inhibited the tobacco companies’ ability to market to young people. The 1998 Master Settlement Agreement limited youth exposure to cigarette advertising in addition to increasing the prices of cigarettes and smokeless tobacco. Consequently, there was a sharp decrease in tobacco use among youth which has stalled in recent years (Preventing Tobacco Use Among Youth and Young Adults, 2012).

Through 2004-2011, there have been a few key tobacco-related events in the United States. Most notably were the tobacco regulations in 2009. Congress raised the federal excise taxes on cigarettes from 0.62 to 1.01 per pack (Grob, 2011). The Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act) aims to prevent and reduce tobacco use by adolescents by imposing FDA regulations on tobacco in regards to its manufacture, distribution,
and marketing (US Department of Health and Human Services, 2012). By regulating tobacco, it established standards and restrictions on advertising, labels, ingredients and new products. In 2010, the tobacco industry was banned from using labels such as “low tar” and “mild” (Grob, 2011). The Tobacco Control Act banned the manufacture and sale of cigarettes with fruit, candy and clove flavors (Cruz & Deyton, 2010). This ban is especially relevant because youth and young adults use flavored tobacco more than adults; in fact, among people 17-26, the highest rate of flavored tobacco is at 17-19 (Klein et al., 2008).

The Youth Access and Advertising Regulation is part of the Tobacco Control Act’s re-issuing of 1996 regulations. These regulations limit the sale and distribution of cigarettes and smokeless tobacco products whereas the Tobacco Control Act focuses on manufacturing, marketing and distribution of tobacco (Food and Drug Administration, 2012). More specifically, Youth Access and Advertising Regulations, emphasize advertising, access, and marketing restrictions on cigarettes and smokeless tobacco. Age and ID regulations include not being able to sell cigarettes to anyone under 18 and requiring proof of age for tobacco purchase. Packaged or unpackaged cigarettes must not be sold in amounts smaller than 20 and smokeless tobacco must not be unpackaged; furthermore, cigarettes and smokeless tobacco must not be sold through self-service in places where someone under 18 is allowed. These regulations were aimed at reducing access to tobacco. The regulation extends to free samples, rebates and coupons by prohibiting free samples of cigarettes, not allowing free samples of smokeless tobacco in places where someone under 18 is allowed and not allowing the coupons to be mailed. Furthermore, the regulation places limits on audio, video and print advertising. It also prohibits manufacturers from selling non-tobacco items and sponsoring events. It is important to note that this regulation applies to cigarettes, smokeless tobacco and roll-your-own cigarette tobacco but not to cigars, pipe tobacco, and hookah tobacco. Thus the Tobacco Control Act has its own set of limitations.
Chapter 3: Methods

Data Source: National Youth Tobacco Survey (NYTS)

The data were collected as part of the Centers for Disease Control and Prevention’s National Youth Tobacco Survey. Due to structural and content changes of the survey, only the last four waves (2004, 2006, 2009 and 2011) were examined. Since its implementation in 1999, the National Youth Tobacco Survey (NYTS) has been administered to students across the United States. The NYTS is comprised of a nationally representative sample of middle and high school students in grades 6-12 enrolled in public, private and Catholic schools. These students are selected from a stratified sample of the 50 states as well as the District of Columbia. The survey is sufficiently powered so that estimates of tobacco characteristics can be produced by school type (middle vs. high school), grade in school, gender and race/ethnicity (Centers for Disease Control and Prevention, 2004). The survey excludes students unable to complete the questionnaire without special assistance or children enrolled at other types of schools such as alternative, special education, Department of Defense oriented, and vocational schools. The NYTS samples geographically in three stages: Primary Sampling Units (PSUs), schools within PSUs and classes within schools (Centers for Disease Control and Prevention, 2004, 2006, 2009). Although there have been changes to the NYTS sampling design and questions over time, the survey aims to address the same key points. Response rates across the four waves are displayed in Table 1.
<table>
<thead>
<tr>
<th>Year</th>
<th>Overall Response Rate</th>
<th># Eligible Schools (%)</th>
<th># Students (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>82.00%</td>
<td>267 (93%)</td>
<td>27,933 (88%)</td>
</tr>
<tr>
<td>2006</td>
<td>80.20%</td>
<td>285 (91.6%)</td>
<td>27,038 (87.6%)</td>
</tr>
<tr>
<td>2009</td>
<td>84.80%</td>
<td>205 (92.3%)</td>
<td>22,679 (91.9%)</td>
</tr>
<tr>
<td>2011</td>
<td>72.70%</td>
<td>178 (87.4%)</td>
<td>18,866 (87.4%)</td>
</tr>
</tbody>
</table>

Table 1. Response rates among schools and students, by year


2004 Survey

The 2004 National Youth Tobacco Survey stratified by census region and metropolitan statistical area and then implicitly stratified by state. Primary Sampling Units (PSUs) were identified as counties, groups of small counties or portions of large counties, and were organized into 8 strata based on urban/rural location and regional division. Based on urban/rural location and region, the PSUs were arranged into eight strata; after sorting PSUs by zip-code, PSUs were selected with probability proportional to their size. Using a modified measure of size which increased the probability of sampling schools with high minority student concentration, African American, Hispanic and Asian students were oversampled at the PSU-level. At the first stage of sampling, a total of 91 PSUs were chosen without replacement. In the second stage of sampling, schools were chosen from selected PSUs. Within selected PSUs, schools were sorted by highest grade, lowest grade, zip code and enrollment. Schools were then classified as either large (greater than 125 students) or small (less than 125 students). Three large schools were selected from each selected PSU; schools that refused were not replaced. In a sub-sample of selected PSUs, one small school was also selected; overall, sixteen small schools were selected. In the final stage of sampling, classrooms were chosen from selected schools in a manner that no student could be selected more than once. With a goal of sampling 125 students per school (less if the school was small), classes were selected using an Excel program. The study required approximately 24,500
students in order to yield reliable estimates by grade, grades by gender, and race/ethnicity by middle and high school in addition to accounting for response rates.

Overall, schools from 35 states participated in the survey. Schools were invited in 2003 and then consenting schools were sent pre-survey materials. Data collectors facilitated meetings with faculty, survey administration and post-survey meetings; data was collected from March to June of 2004. Students who missed survey dates were eligible for make-up sessions. Later analysis showed that there was a 93% response rate among schools and an 88% response rate among students; the overall response rate was 82%. Similar methods were continued in the 2006 survey.

2006 Survey

Sampling strategies for the 2006 NYTS followed that of the 2004 NYTS; sampling procedures remained probabilistic, in a three-stage design and with over-sampling of the same populations. Again, 91 PSUs were selected and schools from 41 states were selected to participate in the survey. Recruitment began in 2005 and data collection lasted from March to June of 2006. The 2006 NYTS was impacted by Hurricane Katrina; four of the schools selected in Louisiana were removed from the survey due to school being closed. There was a 91.6% response rate among schools and 87.6% response rate among students leading to an overall response rate of 80.2% (Centers for Disease Control and Prevention, 2006). Between 2006 and 2009, several changes were made to the NYTS sampling design.

2009 Survey

The 2009 NYTS followed the same key aspects of the sampling design as the previous two surveys. However, in 2009, only Non-Hispanic black and Hispanic students were over-sampled. In 2009, the NYTS was coordinated with the National Youth Risk Behavior Survey leading to design modifications. This time, 80 PSUs were selected and two large schools were selected from each PSU; PSUs were stratified by urban versus non-urban and minority
concentration. There were 200 school selections: 160 large, 20 medium and 20 small schools; these schools were stratified on size and type (high or middle school). At each school, 1 or 2 classes were selected per grade.

There were several sampling design modifications for the 2009 NYTS compared to the 2006 NYTS. First, stratification occurred by minority concentration and urban status as opposed to region and urban status in order to mirror the design of the YRBS. The PSUs were more proportional to the actual population distribution of previous NYTS and YRBS surveys; this change increased precision by lowering variances and design effects. As previously noted, there was no over-sampling of Asians and a reduced oversampling of Blacks and Hispanics. School size was defined as small (less than 25 students in a grade), medium (between 25 to 50 eligible students in a grade) and large (at least 50 students in a grade) as opposed to small and large in order to maintain better control of the sample size and allow for effective sampling within schools. Sample size was also reduced which was more cost-efficient and allowed for more efficient data collection.

Recruitment took place in 34 states and began in 2008. Survey administration lasted from February to June of 2009. Students again were allowed to make up the survey if possible. There was a 92.3% response rate among schools and 91.9% response rate among students leading to an overall response rate of 84.8% (Centers for Disease Control and Prevention, 2009).

2011 Survey

Sampling strategies for the 2011 NYTS followed that of the 2009 NYTS; the survey was again coordinated with the national 2011 YRBS. This time, 82 PSUs were selected and two large schools were selected from each stratum; PSUs were again stratified by urban vs. non-urban and minority concentration. There were 194 total school selections: 164 large, 18 medium and 12 small schools; these schools were stratified on size and type (high vs. middle). At each school, 1 or 2 classes were selected per grade; in high-minority schools, 2 classes per grade were selected.
Recruitment took place in 34 states and began in 2011. Survey administration lasted from February to June of 2011. Students again were allowed to make up the survey if possible. There was a 83.2% response rate among schools and 88.0% response rate among students leading to an overall response rate of 73.0% (Centers for Disease Control and Prevention, 2012b).

Measures

Demographics

Demographics assessed include: school type (middle or high), gender and race. The school type variable was created from grade level in school (reported as grades 6-12) and dichotomized into middle (grades 6-8) and high school (grades 9-12) where middle school was the reference group for the analyses. Gender was coded so that females represented the reference group. Race/ethnicity was also recoded into a factor with four categories: black non-Hispanic, white non-Hispanic, Hispanic and Other non-Hispanic; the variable was then coded into three dummy variables using white as the reference group. Other than race, levels treated as the reference group were coded as such due to their tendencies to report lower rates of tobacco use (Eaton et al., 2012; Morbidity and Mortality Weekly Report, 2010).

Tobacco Use

Tobacco use was categorized into current use and ever tobacco use. Current tobacco users reported using the given form of tobacco at least once within the past 30 days. Ever-users were classified as someone who had used the given form of tobacco at least once in their lifetime. Tobacco use was analyzed separately by type of tobacco. Types of tobacco examined include cigarettes, cigars, smokeless tobacco, pipe tobacco, bidis and kreteks as well as additional forms of alternative tobacco that were only part of the 2011 survey. These other alternative tobacco types included roll-your-own cigarettes, clove cigarettes, flavored cigars and cigarettes, dissolvable tobacco, snus and hookah. In the 2011 survey analysis, Menthol cigarette use was
only examined through current use and was dichotomized into a binary variable by classifying users as menthol or non-menthol users.

Tobacco Media Exposure

Tobacco media exposure was measured by examining advertising to youth. Advertising was captured by variables measuring frequency of internet and print media ad exposure as well as frequency exposure to tobacco use by actors in movies. All three ad exposures were dichotomized into three separate binary variables represented by rarely (never exposed, rarely) and not-rarely (sometimes, most of the time, always).

Tobacco Access

Due to variations in question format, cigarettes were the only form of tobacco analyzed for facility of access. Further inconsistency in question design limited cigarette access to being measured by a proxy of refusal of sale due to age with the idea that refusal of sale would be inversely associated with access. This variable has three categories: never attempted to buy cigarettes, refused due to age and not refused. Cigarette access was assessed in examining trends of time and in comparison of 2009 and 2011 data.

Data Analysis

The data were analyzed using SAS version 9.3 (SAS Institute Inc, Carry, NC) to examine three research goals. The objectives of this project included observing trends in forms of tobacco use, estimating the effects of enforcement of tobacco sales restriction to youth, and examining trends in exposure to tobacco marketing. There are three primary aims and four secondary aims to this study. The first primary aim is to estimate the change in use of tobacco from 2004 to 2011. The second primary aim examines trends in tobacco access from 2004 to 2011. The third primary aim examines trends in tobacco media exposure from 2004 to 2011. The secondary aims include analyses investigating tobacco use use as well as factors associated with access to cigarettes. The first secondary aim examines forms of tobacco used by multiple users in addition to factors
associated with multiple tobacco use. Using only 2011 NYTS, the second secondary aim is assessed by examining factors associated with menthol cigarette use. The third secondary aim assesses ever and current use of newer forms of alternative tobacco. The fourth secondary aim examines factors associated with attempting to purchase cigarettes and refusal of cigarette sales due to age.

To study the first primary research aim, assessment of forms of tobacco use from 2004-2011, trends in tobacco use were examined descriptively for years 2004, 2006, 2009 and 2011. Tobacco use was stratified into tobacco categories such as cigarettes, cigars, smokeless tobacco, pipes, and bidis and kreteks. Due to missing values in some strata, descriptive analyses could not be stratified by age, sex and race after already being stratified by tobacco type. Additionally, trends in use of alternative tobacco as well as multiple forms of tobacco among youth were assessed both descriptively and statistically for the last two survey waves. In order to compare years 2009 and 2011, both datasets were merged into one dataset; tobacco use prevalence was tested against year. Stratified by type, tobacco use prevalence was compared using a two-tailed $\chi^2$ test for years 2009 and 2011, using the Rao $\chi^2$ test-statistic. Trends over time were also assessed by comparing overlapping confidence intervals of a given form of tobacco use from 2004-2011; non-overlapping intervals signified changes in tobacco use over time.

To examine the second primary research aim, assessment of access to tobacco 2004-2011, trends in cigarette access were examined descriptively for years 2004, 2006, 2009 and 2011. These trends were examined in order to estimate the impact of sales restriction to youth requiring proof of age. Due to missing values in some strata, descriptive analyses could not be stratified by age, sex and race. In order to compare years 2009 and 2011, both datasets were merged into one dataset; tobacco exposure prevalence was tested against year. Stratified by type, tobacco access prevalence was compared using a two-tailed $\chi^2$ test for years 2009 and 2011.
using the Rao $\chi^2$ test-statistic. Trends over time were also assessed by comparing overlapping confidence intervals from 2004-2011; non-overlapping intervals signified changes in tobacco access over time.

To examine the third primary research aim, assessment of exposure to tobacco-related media from 2004-2011, trends in tobacco exposure were examined descriptively for years 2004, 2006, 2009 and 2011. These trends were examined by investigating exposure to internet advertising, print advertising and actors using tobacco. Due to missing values in some strata, descriptive analyses could not be stratified by age, sex and race after already being stratified by exposure type. In order to compare years 2009 and 2011, both datasets were merged into one dataset; tobacco exposure prevalence was tested against year. Stratified by type, tobacco exposure prevalence was compared using a two-tailed $\chi^2$ test for years 2009 and 2011, using the Rao $\chi^2$ test-statistic. Trends over time were also assessed by comparing overlapping confidence intervals of a given form of tobacco media exposure from 2004-2011; non-overlapping intervals signified changes in tobacco media exposure over time.

Additional analyses were conducted on tobacco use; these analyses are part of the first three secondary research aims. The first secondary aim examines forms of tobacco used by multiple users in addition to factors associated with multiple tobacco use. This first analysis was conducted by describing what forms of tobacco were used by multiple tobacco users. This aim was further investigated by creating logistic regression models by school level in order to assess the relationship between race and age on multiple tobacco use. The 2011 NYTS was examined more thoroughly in additional analyses. The second secondary aim was assessed by examining factors associated with menthol cigarette use. A model predicting menthol cigarette use only from flavored tobacco (bidis, kreteks, flavored cigars and cigarettes, cloves) was run; this model adjusted for demographic factors. The third secondary aim assesses ever and current use of newer
forms of alternative tobacco; this aim was addressed by examining percentages of alternative tobacco use by form of tobacco.

The fourth secondary aim examines factors associated with attempting to purchase cigarettes and refusal of cigarette sales due to age. Tobacco access was further examined to determine differences in those who did and did not buy cigarettes in addition to differences in those who were and were not refused cigarette sale due to age. This analysis was conducted by creating logistic models predicting attempt to purchase cigarettes from descriptive characteristics such as age, gender and school. Among those who did try to purchase cigarettes, another set of logistic regression models was performed comparing differences in refusal of sale due to age between the groups.
Chapter 4: Results

This analysis considers four survey waves of the National Youth Tobacco Survey, collected from middle and high school students during 2004, 2006, 2009, and 2011. All four samples are predominantly non-Hispanic white and approximately half of the participants are male (Table 2). Across all four waves, approximately 55% of the individuals are high school students. It is important to note that the other race category is comprised of participants who reported themselves as Asian, American Indian or Alaskan Native, or Native Hawaiian or Other Pacific Islander; this category was collapsed due to extremely small strata.

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2006</th>
<th>2009</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weighted N</td>
<td>%</td>
<td>Weighted N</td>
<td>%</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>12,778,780</td>
<td>50.4</td>
<td>13,355,474</td>
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<td>Male</td>
<td>12,588,373</td>
<td>49.6</td>
<td>12,780,129</td>
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</tr>
<tr>
<td>School</td>
<td></td>
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</tr>
<tr>
<td>Middle School</td>
<td>11,648,493</td>
<td>45.8</td>
<td>11,976,873</td>
<td>45.7</td>
</tr>
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<td>High School</td>
<td>13,767,173</td>
<td>54.2</td>
<td>14,240,320</td>
<td>54.3</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>16,586,128</td>
<td>67.0</td>
<td>16,839,046</td>
<td>65.9</td>
</tr>
<tr>
<td>Black</td>
<td>3,783,237</td>
<td>15.3</td>
<td>3,857,630</td>
<td>15.1</td>
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<td>Hispanic</td>
<td>3,325,097</td>
<td>13.4</td>
<td>3,763,456</td>
<td>14.7</td>
</tr>
<tr>
<td>Other</td>
<td>1,078,915</td>
<td>4.4</td>
<td>1,105,560</td>
<td>4.3</td>
</tr>
</tbody>
</table>

Table 2. Demographic characteristics of sample by year
In assessing trends over time, there are several differences in use, access and exposure. The first primary aim is to estimate the change in use of tobacco from 2004 to 2011. Current cigarette and cigar use appear to decrease from 2004 to 2011, dropping from 16% to 11% and 10% to 8%, respectively (Table 3). Weighted frequencies are presented in Appendix A (Table 12). When examining the 2009 and 2011 waves, there was a statistically significant association between current kretek use and year ($\chi^2=5.742$, p=0.0166); the percentages indicate a decrease in reported kretek use (Table 3). The percentage of participants reporting ever trying a cigarette at least once decreased from 40% in 2004 to less than 30% in 2011. The percentage of participants reporting ever use of bidis and/or kretakes decreased from 7% in 2004 to 4% in 2011. When looking at just 2009 and 2011, there is evidence of a significant association between ever bidi/kretek use and year ($\chi^2=6.247$, p=0.0124); these percentages indicate a decrease in reported bidi/kretek use (Table 3). While there were other fluctuations in ever tobacco use, none appeared noteworthy.

Table 3 also provides the opportunity to examine overlapping confidence intervals; non-overlapping intervals are more clearly presented in Figures 1-5 in Appendix B. Looking at overlapping confidence intervals in Figure 1, it is visible that there is no overlap between 2004 current cigarette use (14.0% to 17.3%) and both 2009 and 2011 (10.7% to 13.3% and 9.2% and 12.5%, respectively). This figure demonstrates a change in current cigarette use from 2004 to 2011; in particular, there appears to be a decrease in cigarette use. Looking at overlapping confidence intervals in Figure 2, it is visible that there is no overlap between 2004 current bidi use (2.3% to 2.9%) and 2011 current bidi use (1.5% to 2.2%). This figure demonstrates a change in current bidi use from 2004 to 2011; specifically, there appears to be a decrease in bidi use. Looking at overlapping confidence intervals in Figure 3, it is visible that there is no overlap between 2004 current kretek use (1.8% to 2.4%) and 2011 current kretek use (1.2% to 1.7%). This figure demonstrates a change in current kretek use from 2004 to 2011; specifically, there
appears to be a decrease in current kretek use. Looking at overlapping confidence intervals in Figure 4, it is visible that there is no overlap between 2004 ever cigarette use (37.6% to 42.9%) and both 2009 and 2011 (29.6% to 34.7% and 26.7% to 32.3%, respectively). This figure demonstrates a change in ever cigarette use from 2004 to 2011; specifically, there appears to be a decrease in ever cigarette use. Looking at overlapping confidence intervals in Figure 5, it is visible that there is no overlap between 2004 ever bidi/kretek use (6.5% to 7.8%) and both 2009 and 2011 (4.8% to 6.0%, 4.0% to 5.0%, respectively). This figure demonstrates a change in ever bidi/kretek use from 2004 to 2011; in particular, there appears to be a decrease in ever trying bidis and/or kreteks.

The second primary aim examines trends in tobacco access. Cigarette access was examined by looking at refusal of cigarette sales due to age. When looking at Table 4, it is visible that the percentages of refusal and no refusal remain relatively constant until 2011. Additional analyses examining only the youth who tried to purchase cigarettes in 2009 vs. 2011, there is evidence of a significant association between year and refusal of cigarettes sales ($\chi^2=52.720$, $p<0.0001$); fewer participants were refused sale in 2011 compared to 2009 (Table 4). Table 4 also provides the opportunity to examine overlapping confidence intervals; these non-overlapping intervals are more clearly presented in Figures 6. Looking at overlapping confidence intervals in Figure 6, it is visible that there is no overlap between 2004 refusal of cigarette sales due to age (2.6% to 3.2%) and 2011 (1.5% to 2.4%); this suggests a decrease in refusal of cigarette sales due to age.
<table>
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</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
</tr>
<tr>
<td><strong>Current Tobacco Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>15.6 (14.0, 17.3)</td>
<td>13.6 (2.3, 14.9)</td>
<td>12.0 (10.7, 13.3)</td>
<td>10.8 (9.2, 12.5)</td>
<td>1.18 (0.28)</td>
</tr>
<tr>
<td>Cigars</td>
<td>9.5 (8.5, 10.4)</td>
<td>8.2 (7.7, 8.8)</td>
<td>7.9 (6.8, 8.9)</td>
<td>8.1 (7.2, 9.0)</td>
<td>0.09 (0.76)</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>4.3 (3.6, 5.1)</td>
<td>4.5 (3.8, 5.3)</td>
<td>4.9 (3.9, 6.0)</td>
<td>5.2 (4.2, 6.1)</td>
<td>0.10 (0.75)</td>
</tr>
<tr>
<td>Pipe</td>
<td>3.0 (2.6, 3.4)</td>
<td>3.0 (2.6, 3.4)</td>
<td>3.2 (2.7, 3.7)</td>
<td>3.3 (2.8, 3.8)</td>
<td>0.02 (0.89)</td>
</tr>
<tr>
<td>Bidi</td>
<td>2.6 (2.3, 2.9)</td>
<td>2.3 (2.1, 2.6)</td>
<td>2.1 (1.7, 2.4)</td>
<td>1.9 (1.5, 2.2)</td>
<td>0.49 (0.49)</td>
</tr>
<tr>
<td>Kretek</td>
<td>2.1 (1.8, 2.4)</td>
<td>2.1 (1.9, 2.4)</td>
<td>1.9 (1.6, 2.2)</td>
<td>1.5 (1.2, 1.7)</td>
<td>5.74 (0.02)</td>
</tr>
<tr>
<td>Alternative Tobacco</td>
<td>12.3 (11.1, 13.5)</td>
<td>11.8 (10.9, 12.8)</td>
<td>11.6 (10.2, 13.0)</td>
<td>12.1 (10.7, 13.5)</td>
<td>0.25 (0.61)</td>
</tr>
<tr>
<td>Multiple Tobacco</td>
<td>8.0 (7.0, 9.0)</td>
<td>7.2 (6.5, 8.0)</td>
<td>6.5 (5.5, 7.6)</td>
<td>6.9 (5.9, 7.9)</td>
<td>0.20 (0.66)</td>
</tr>
<tr>
<td><strong>Ever Tobacco Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>40.2 (37.6, 42.9)</td>
<td>36.4 (34.0, 38.8)</td>
<td>32.1 (29.6, 34.7)</td>
<td>29.5 (26.7, 32.3)</td>
<td>2.14 (0.14)</td>
</tr>
<tr>
<td>Cigars</td>
<td>23.2 (21.6, 24.7)</td>
<td>21.7 (20.2, 23.2)</td>
<td>20.6 (18.9, 22.2)</td>
<td>20.1 (18.2, 22.0)</td>
<td>0.14 (0.71)</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>10.8 (9.3, 12.3)</td>
<td>10.7 (9.2, 12.2)</td>
<td>10.6 (8.9, 12.4)</td>
<td>11.0 (9.2, 12.8)</td>
<td>0.09 (0.77)</td>
</tr>
<tr>
<td>Pipe</td>
<td>7.8 (7.1, 8.6)</td>
<td>7.5 (6.8, 8.1)</td>
<td>7.7 (6.7, 8.6)</td>
<td>7.6 (6.7, 8.5)</td>
<td>0.02 (0.89)</td>
</tr>
<tr>
<td>Bidi/Kretek</td>
<td>7.1 (6.5, 7.8)</td>
<td>6.7 (6.0, 7.5)</td>
<td>5.4 (4.8, 6.0)</td>
<td>4.5 (4.0, 5.0)</td>
<td>6.25 (0.01)</td>
</tr>
<tr>
<td>Alternative Tobacco</td>
<td>28.7 (26.9, 30.5)</td>
<td>26.9 (25.0, 28.7)</td>
<td>25.4 (23.5, 27.2)</td>
<td>25.4 (23.2, 27.6)</td>
<td>0.00 (0.99)</td>
</tr>
<tr>
<td>Multiple Tobacco</td>
<td>23.9 (22.0, 25.8)</td>
<td>21.8 (20.0, 23.6)</td>
<td>20.1 (18.1, 22.0)</td>
<td>19.9 (17.7, 22.0)</td>
<td>0.02 (0.90)</td>
</tr>
</tbody>
</table>

Table 3. Trends in tobacco use from 2004-2011
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
</tr>
<tr>
<td>Did Not Try to Purchase</td>
<td>90.1</td>
<td>(89.0, 91.1)</td>
<td>91.1</td>
<td>(90.3, 92.0)</td>
<td>91.6</td>
</tr>
<tr>
<td>Refused Due to Age</td>
<td>2.9</td>
<td>(2.6, 3.2)</td>
<td>2.7</td>
<td>(2.3, 3.0)</td>
<td>2.5</td>
</tr>
<tr>
<td>No Refusal</td>
<td>7.1</td>
<td>(6.2, 7.9)</td>
<td>6.2</td>
<td>(5.5, 6.9)</td>
<td>5.9</td>
</tr>
</tbody>
</table>

| Attempt to Purchase Cigarettes|            |            |            |            |                |                | Rao χ2  | p-value |
| Did Not Try to Purchase       | 90.1       | (89.0, 91.1)| 91.1       | (90.3, 92.0)| 91.6           | (90.6, 92.6)  | 89.8     | (88.4, 91.1) | 4.95   | 0.03   |
| Tried to Purchase             | 9.9        | (8.9, 11.0)| 8.9        | (8.0, 9.7) | 8.4            | (7.4, 9.4)    | 10.2     | (8.9, 11.6)   |        |        |

| Refusal of Cigarette Sales    |            |            |            |            |                |                | Rao χ2  | p-value |
| Refused Due to Age            | 28.9       | (26.7, 31.0)| 30.0       | (27.0, 33.1)| 29.8           | (26.9, 32.7)  | 18.8     | (15.9, 21.7) | 52.72  | <.0001 |
| No Refusal                    | 71.1       | (69.0, 73.3)| 70.0       | (66.9, 73.0)| 70.2           | (67.3, 73.1)  | 81.2     | (78.3, 84.1)  |        |        |

Table 4. Trends in tobacco access from 2004-2011
The third primary aim examines trends in tobacco media exposure. There are visible patterns in tobacco media exposure over time. Specifically, there is an increase in reporting often seeing internet ads for tobacco over time whereas there is a decrease in reported print ads (Table 5). When looking at just 2009 and 2011, there is significant evidence of an association between year and often seeing internet ads ($\chi^2=17.353$, p<0.0001); this percentage increased from 37% to 41% (Table 5). When looking at just 2009 and 2011, there is significant evidence of an association between year and often seeing print ads; this percentage increased from 49 to 52% ($\chi^2=9.223$, p=0.0024). The percentage of youth reporting often seeing actors use tobacco decreased over time (Table 5). There was a decrease (78% to 74%) in percentage of students reporting often seeing actors using tobacco from 2009 to 2011; there was significant evidence of an association between year and reported actor tobacco use ($\chi^2=12.720$, p=0.0004).

Table 5 also provides the opportunity to examine overlapping confidence intervals; non-overlapping intervals are more clearly presented in Figures 7-9. Looking at overlapping confidence intervals in Figure 7, it is visible that there is no overlap between 2004 reported internet exposure (35.5% and 37.7%) and both 2009 and 2011 (35.2% to 38.3% and 39.3% to 41.9%, respectively); this figure indicates an increase in internet exposure. Looking at overlapping confidence intervals in Figure 8, it is visible that there is no overlap between 2004 reported print ad exposure (58.5% to 61.4%) and both 2009 and 2011 (47.0% to 50.1% and 50.2% to 53.1%, respectively); this figure indicates a decrease in print ad exposure from 2004 to 2011. Looking at overlapping confidence intervals in Figure 9, it is visible that there is no overlap between 2004 reported internet exposure (81.5% to 83.5%) and both 2009 and 2011 (75.4% to 79.8% and 72.1% to 79.8%, respectively); this figure indicates a decrease in actor tobacco use exposure.
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
</tr>
<tr>
<td>Internet Ads</td>
<td>36.6 (35.5, 37.7)</td>
<td>38.2 (37.2, 39.2)</td>
<td>36.8 (35.2, 38.3)</td>
<td>40.6 (39.3, 41.9)</td>
<td>17.35</td>
</tr>
<tr>
<td>Print Ads</td>
<td>59.9 (58.5, 61.4)</td>
<td>58.5 (57.0, 59.9)</td>
<td>48.6 (47.0, 50.1)</td>
<td>51.7 (50.2, 53.1)</td>
<td>9.22</td>
</tr>
<tr>
<td>TV Actors</td>
<td>82.5 (81.5, 83.5)</td>
<td>81.2 (79.8, 82.6)</td>
<td>77.6 (75.4, 79.8)</td>
<td>73.5 (72.1, 74.9)</td>
<td>12.72</td>
</tr>
</tbody>
</table>

Table 5. Trends in tobacco media exposure from 2004-2011
The secondary aims include analyses investigating multiple tobacco use, menthol cigarette use, and use of newer forms of alternative tobacco as well as factors associated with access to cigarettes. The first secondary aim examines forms of tobacco used by multiple users in addition to factors associated with menthol tobacco use. Use of multiple forms of tobacco is further analyzed in Tables 6 and 7. When looking across waves at forms of tobacco that users of multiple forms of tobacco consume, roughly 88-90% use cigarettes and 76-83% use cigars, 35-46% use smokeless tobacco, 28-33% currently use pipe tobacco, 18-23% use bidis and 16-22% use kreteks (Table 6). Weighted frequencies are presented in Table 13. For each survey wave, two separate logistic regression models were fit to examine factors associated with multiple tobacco use (Table 7). Among high school students across the four waves, males had over two times the odds of reporting use of multiple forms of tobacco when compared with females after adjusting for race; this association is significant across waves (p<0.0001). Among high school students across the four waves, black students had less than half the odds of reporting use of multiple forms of tobacco compared to white students when adjusting for sex (p<0.0001, p<0.05). Among middle school students across the four waves, males had between 1.4 and 1.7 times the odds of being users of multiple forms of tobacco compared to females when adjusting for race; this association is statistically significant (p<0.05). Among middle school students across the four waves, the odds of reporting using multiple forms of tobacco among Hispanic students is between 1.4 and 2.3 times that of white students when adjusting for sex; this association is statistically significant (p<0.05).
<table>
<thead>
<tr>
<th>Tobacco Product</th>
<th>2004</th>
<th>95% CI</th>
<th>2006</th>
<th>95% CI</th>
<th>2009</th>
<th>95% CI</th>
<th>2011</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>89.3</td>
<td>(87.2, 91.5)</td>
<td>90.1</td>
<td>(88.2, 92.1)</td>
<td>88.0</td>
<td>(85.6, 90.3)</td>
<td>88.7</td>
<td>(86.2, 91.2)</td>
</tr>
<tr>
<td>Cigars</td>
<td>82.6</td>
<td>(79.6, 85.5)</td>
<td>77.7</td>
<td>(74.4, 81.0)</td>
<td>77.4</td>
<td>(74.0, 80.7)</td>
<td>76.3</td>
<td>(72.5, 80.1)</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>34.9</td>
<td>(31.2, 38.8)</td>
<td>38.3</td>
<td>(34.1, 42.5)</td>
<td>46.0</td>
<td>(41.1, 51.0)</td>
<td>45.3</td>
<td>(40.9, 49.7)</td>
</tr>
<tr>
<td>Pipe</td>
<td>27.6</td>
<td>(24.3, 31.0)</td>
<td>29.7</td>
<td>(26.2, 33.1)</td>
<td>29.0</td>
<td>(24.4, 33.7)</td>
<td>33.3</td>
<td>(29.0, 37.7)</td>
</tr>
<tr>
<td>Bidi</td>
<td>22.4</td>
<td>(19.9, 24.9)</td>
<td>22.7</td>
<td>(20.2, 25.2)</td>
<td>18.4</td>
<td>(15.1, 21.7)</td>
<td>19.5</td>
<td>(16.4, 22.6)</td>
</tr>
<tr>
<td>Kretek</td>
<td>18.8</td>
<td>(16.4, 21.3)</td>
<td>21.6</td>
<td>(18.8, 24.5)</td>
<td>17.8</td>
<td>(14.2, 21.4)</td>
<td>16.1</td>
<td>(13.3, 18.9)</td>
</tr>
</tbody>
</table>

Table 6. Current tobacco use among multiple tobacco users
### High School

<table>
<thead>
<tr>
<th></th>
<th>Sex</th>
<th>Female</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Male</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Race</th>
<th>White</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Black</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Hispanic</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Other</th>
<th>OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>1.000</td>
<td>---</td>
<td>1.000</td>
<td>2.262</td>
<td>&lt;.0001</td>
<td>1.000</td>
<td>0.459</td>
<td>0.355, 0.594</td>
<td>&lt;.0001</td>
<td>0.981</td>
<td>0.690, 1.395</td>
<td>0.9161</td>
<td>0.9161</td>
<td>1.352</td>
<td>1.038, 1.760</td>
<td>0.0253</td>
<td>0.485</td>
<td>0.268, 0.878</td>
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<td></td>
<td></td>
<td></td>
<td>2.34 (1.962, 2.792)</td>
<td>&lt;.0001</td>
<td>2.736 (2.304, 3.248)</td>
<td>&lt;.0001</td>
<td>1.000</td>
<td>0.283</td>
<td>0.159, 0.504</td>
<td>&lt;.0001</td>
<td>1.318</td>
<td>0.551, 1.493</td>
<td>0.7016</td>
<td>0.2934</td>
<td>2.736</td>
<td>1.128, 2.107</td>
<td>0.0067</td>
<td>0.727</td>
<td>0.374, 1.413</td>
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### Middle School

<table>
<thead>
<tr>
<th></th>
<th>Sex</th>
<th>Female</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Male</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Race</th>
<th>White</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Black</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Hispanic</th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>Other</th>
<th>OR (95% CI)</th>
<th>p-value</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
<td>---</td>
<td>1.000</td>
<td>1.668</td>
<td>&lt;.0001</td>
<td>1.000</td>
<td>0.981</td>
<td>0.690, 1.395</td>
<td>0.9161</td>
<td>0.907</td>
<td>0.551, 1.493</td>
<td>0.7016</td>
<td>0.2934</td>
<td>1.541</td>
<td>1.128, 2.107</td>
<td>0.0067</td>
<td>1.843</td>
<td>1.318, 2.798</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1.39 (1.135, 1.702)</td>
<td>0.0014</td>
<td>1.391</td>
<td>(1.015, 1.907)</td>
<td>0.0402</td>
<td>1.000</td>
<td>0.9161</td>
<td>0.690, 1.395</td>
<td>0.9161</td>
<td>0.907</td>
<td>0.551, 1.493</td>
<td>0.7016</td>
<td>0.2934</td>
<td>1.541</td>
<td>1.128, 2.107</td>
<td>0.0067</td>
<td>1.843</td>
<td>1.318, 2.798</td>
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</table>

Table 7. Factors associated with multiple tobacco use
Using only 2011 NYTS, the second secondary aim is assessed by examining factors associated with menthol cigarette use. The 2011 NYTS provided additional tobacco use information regarding current use of newer forms of alternative tobacco and ever use of these forms of tobacco. One model was created to measure the association between demographics and current tobacco use with current menthol cigarette use. Purposeful selection was used to construct a model that described the association between demographic factors; initial predictors not making it into the final model include sex, clove cigars and flavored little cigars (Hosmer, Lemeshow, & Sturdivant, 2013). In order to include main effects and interactions, factors with a p-value <0.01 were retained in the model. This model is displayed in Table 8. The odds of menthol cigarette use among black participants are 0.718 times the odds among white participants, adjusting for school-level and current tobacco use; this association is not statistically significant (p=0.0750). The odds of menthol cigarette use among Hispanic participants are 0.854 times the odds among white participants, adjusting for school-level and current tobacco use; this association is not statistically significant (p=0.2418). The odds of menthol cigarette use among other-race participants are 0.406 times the odds among white participants, adjusting for school-level and current tobacco use; this association is statistically significant (p=0.0022). The odds of menthol cigarette use among high school students are 1.681 times the odds among middle school students, adjusting for race and current tobacco use; this association is statistically significant (p=0.0007). Among non-flavored cigarette users, the odds of menthol cigarette use among kretek users are 5.709 times the odds of non-kretek users, adjusting for race and school-level; this association is statistically significant (p<0.0001). Among non-kretek users, the odds of menthol cigarette use among flavored cigarette users are 3.990 times the odds of menthol cigarette use among non-flavored cigarette users; adjusting for race and school level; this association is statistically significant (p<0.0001). There is
also a statistically significant interaction between current kretek and flavored cigarette use (p<0.0001).

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Model</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1.000</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black</td>
<td>0.718</td>
<td>0.499, 1.034</td>
<td>0.0750</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.854</td>
<td>0.656, 1.112</td>
<td>0.2418</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.406</td>
<td>0.228, 0.723</td>
<td>0.0022</td>
<td></td>
</tr>
<tr>
<td>School Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle School</td>
<td>1.000</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>High School</td>
<td>1.681</td>
<td>1.245, 2.268</td>
<td>0.0007</td>
<td></td>
</tr>
<tr>
<td>Current Tobacco Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Kretek Use</td>
<td>5.709</td>
<td>3.540, 9.207</td>
<td>&lt;.0001</td>
<td></td>
</tr>
<tr>
<td>Current Flavored Cigarette Use</td>
<td>3.990</td>
<td>3.135, 5.077</td>
<td>&lt;.0001</td>
<td></td>
</tr>
<tr>
<td>Current Kretek*Flavored Cigarette Use</td>
<td>0.141</td>
<td>0.053, 0.374</td>
<td>&lt;.0001</td>
<td></td>
</tr>
</tbody>
</table>

Table 8. Factors associated with menthol cigarette use

The third secondary aim assesses use of newer forms of alternative tobacco products. The 2011 NYTS provides estimates on ever and current tobacco use of newer tobacco products (Table 9). Approximately 27% of youth report using at least one of the newer tobacco products. The most common products tried at least once are flavored cigarettes (10%), flavored cigars (9%), roll-your own cigarettes (8%) and hookah (7%). While almost a third of respondents report ever-using one of the newer forms of tobacco, less than a fifth report current use; approximately 18% of youth report current use of at least one of the newer tobacco products. The most common products currently used are flavored cigarettes (4%), flavored cigars (3%), roll-your own cigarettes (3%) and hookah (3%).
### 2011 New Tobacco Use

<table>
<thead>
<tr>
<th>Current Tobacco Use</th>
<th>Weighted N</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll-your-own Cigarettes</td>
<td>905,479</td>
<td>3.3</td>
<td>(2.7, 4.0)</td>
</tr>
<tr>
<td>Flavored Cigarettes</td>
<td>1,146,133</td>
<td>4.2</td>
<td>(3.4, 5.0)</td>
</tr>
<tr>
<td>Clove Cigars</td>
<td>213,187</td>
<td>0.8</td>
<td>(0.6, 0.9)</td>
</tr>
<tr>
<td>Flavored Little Cigars</td>
<td>909,560</td>
<td>3.3</td>
<td>(2.8, 3.8)</td>
</tr>
<tr>
<td>Hookah/Waterpipe</td>
<td>720,272</td>
<td>2.6</td>
<td>(2.2, 3.1)</td>
</tr>
<tr>
<td>Snus</td>
<td>524,439</td>
<td>1.9</td>
<td>(1.5, 2.4)</td>
</tr>
<tr>
<td>Dissolvable Tobacco</td>
<td>88,792</td>
<td>0.3</td>
<td>(0.2, 0.4)</td>
</tr>
<tr>
<td>E-Cigarettes</td>
<td>284,315</td>
<td>1.0</td>
<td>(0.8, 1.3)</td>
</tr>
<tr>
<td>Other New Product</td>
<td>550,794</td>
<td>2.0</td>
<td>(1.7, 2.4)</td>
</tr>
<tr>
<td>No New Tobacco Products</td>
<td>22,357,975</td>
<td>81.8</td>
<td>(80.3, 83.2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ever Tobacco Use</th>
<th>Weighted N</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll-your-own Cigarettes</td>
<td>2,070,307</td>
<td>7.6</td>
<td>(6.5, 8.7)</td>
</tr>
<tr>
<td>Flavored Cigarettes</td>
<td>2,743,752</td>
<td>10.0</td>
<td>(8.6, 11.5)</td>
</tr>
<tr>
<td>Clove Cigars</td>
<td>599,281</td>
<td>2.2</td>
<td>(1.8, 2.6)</td>
</tr>
<tr>
<td>Flavored Little Cigars</td>
<td>2,434,101</td>
<td>8.9</td>
<td>(7.8, 10.0)</td>
</tr>
<tr>
<td>Hookah/Waterpipe</td>
<td>1,990,128</td>
<td>7.3</td>
<td>(6.3, 8.2)</td>
</tr>
<tr>
<td>Snus</td>
<td>1,352,371</td>
<td>4.9</td>
<td>(4.0, 5.9)</td>
</tr>
<tr>
<td>Dissolvable Tobacco</td>
<td>200,198</td>
<td>0.7</td>
<td>(0.5, 0.9)</td>
</tr>
<tr>
<td>E-Cigarettes</td>
<td>855,112</td>
<td>3.1</td>
<td>(2.5, 3.8)</td>
</tr>
<tr>
<td>Other New Product</td>
<td>1,076,443</td>
<td>3.9</td>
<td>(3.4, 4.4)</td>
</tr>
<tr>
<td>No New Tobacco Products</td>
<td>19,900,741</td>
<td>73.0</td>
<td>(71.1, 74.8)</td>
</tr>
</tbody>
</table>

Table 9. 2011 New tobacco use

The fourth secondary aim examines factors associated with attempting to purchase cigarettes and refusal of cigarette sales due to age. Cigarette access is further analyzed in Tables 10 and 11. In Table 10, two separate logistic models were run predicting attempt to purchase cigarettes by demographic characteristics. Among high school students across the four waves, the odds of attempting to purchase cigarettes among males is between 0.5 and 0.7 times that among females when adjusting for race; this association is statistically significant (p<0.0001). Among
middle school students across the four waves, males had between 0.7 and 0.8 times the odds of attempting to purchase cigarettes compared to females when adjusting for race; this association is statistically significant (p<0.05). Among middle school students across the four waves, black students had between 0.4 and 0.6 times the odds of attempting to purchase cigarettes compared to white students when adjusting for sex; this association is statistically significant (p<0.01). Among middle school students across the four waves, Hispanic students had between 0.3 and 0.4 times the odds of attempting to purchase cigarettes compared to white students when adjusting for sex; this association is statistically significant (p<0.0001). Table 1 examines the differences in those who were and were not refused cigarette sales among those who attempted to purchase cigarettes.

Among high school students across the four waves, the odds of refusal of cigarette sales due to age among males is between 1.2 and 1.9 that among females when adjusting for race; this association is statistically significant for all years except 2006 (p<0.05).

Missing values are presented by item in Tables 14 and 15 in Appendix C. There were not any extreme variations in trends. Table 14 presents trends over time in tobacco use, access and media exposure; all values are less than 10.0% with a majority being below 5.0%. While in 2004-2009, all missing values for sex and school were less than 1.0%, in 2011 these values were 1.5% and 1.7%. Values for tobacco media exposure range from 2-4% in 2004-2009 but are below 2% in 2011. Missing values for 2011 tobacco data are presented in Table 15; all current and ever-tobacco missing value data are less than 0.5% except for menthol tobacco use which was 1.8%.
<table>
<thead>
<tr>
<th></th>
<th>2004 OR</th>
<th>2004 95% CI</th>
<th>2006 OR</th>
<th>2006 95% CI</th>
<th>2009 OR</th>
<th>2009 95% CI</th>
<th>2011 OR</th>
<th>2011 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td></td>
<td></td>
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Table 10. Factors associated with attempt to purchase cigarettes
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Table 11. Factors associated with refusal of cigarette sales
Chapter 5: Discussion

The Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act) aims to prevent and reduce tobacco use in adolescents by imposing FDA regulations on tobacco in regards to its manufacture, distribution, and marketing (US Department of Health and Human Services, 2012). This study had three initial aims: to estimate the change in forms of tobacco use from 2004 as well as the impact of banning cigarettes with characterizing flavors on both cigarette and alternative tobacco use, to estimate the impact of sales restriction to youth requiring proof of age and face-to-face purchases, and to estimate the change in exposure of tobacco marketing that youth are exposed to from 2004 with a focus on the impact of the Tobacco Control Act. Of particular interest is the result of restrictions in both tobacco advertising and sales to youth, as well as increased FDA authority over tobacco manufacturing.

Trends in tobacco use were examined descriptively. Replicating previous research, cigarettes were found to be the most commonly used form of tobacco amongst youth with cigars coming in second (Centers for Disease Control and Prevention, 2012a). Consistent with other studies, cigarette and cigar use decreased over time (Saunders & Geletko, 2011). As a result of gaps in the 2009 Tobacco Control Act, there is the potential for an increase in alternative tobacco use. The study showed a slight increase in smokeless tobacco use and pipe use. This finding is consistent with previous literature showing that despite the decline in cigarette smoking among US adolescents, there has been a reported increase in alternative tobacco products such as
cigars/cigarillos and smokeless tobacco (SAMHSA, 2011). The lack of dramatic change in alternative tobacco use is consistent with research demonstrating plateaus in use (Preventing Tobacco Use Among Youth and Young Adults, 2012). Although examination of trends in cigar use from 2004 to 2011 appear to show a decrease in use, looking at 2009 and 2011 show an increase in use. This increase is consistent with prior literature. Research shows that little cigars and cigarillos have grown to make up a large portion of the cigar market (Kozlowski et al., 2008). Consistent with the banning of kreteks and restriction surrounding bidis, the use of either decreased from 2004 to 2011. From 2009 to 2011, current kretek use decreased; there was a significant association between year and use.

While previous literature has suggested an increase in multiple forms of tobacco, most of the literature has only extended to 2009. When looking at NYTS data from 2004 to 2011, there was a decrease in use of multiple forms of tobacco. It is possible that using the NYTS might not represent all forms of alternative tobacco. Consistent with prior literature, however, is the fact that males are more likely than females to be users of multiple forms of tobacco (Bombard et al., 2008). Also consistent with recent findings suggesting an increase of tobacco among Hispanic/Latino youth, Hispanics were found to be more likely than non-Hispanic whites to use multiple forms of tobacco (Baezconde-Garbanati, 2001).

Despite the ban on flavored cigarettes as part of the Tobacco Control Act of 2009, menthol cigarettes remain untouched. This aspect is especially alarming since approximately a quarter of cigarettes sold are menthol cigarettes (Caraballo & Asman, 2011). However, several forms of flavored tobacco have been banned in the Tobacco Control Act. Because flavored cigarettes were previously targeted towards youth and menthol cigarettes have been shown to be a starter product for youth, it is possible that cigarette companies may shift their interest (Carpenter
et al., 2005; Hersey, 2006). A logistic model was fit to measure the association between demographic factors, flavored tobacco use and menthol tobacco. High school users were found to be more likely to use menthol cigarettes than middle school users. Menthol use was associated with flavored cigarette and kretek use, both of which were banned in the Tobacco Control Act. A point of concern lies in what will happen to these dual-users; by banning flavored cigarettes it is possible that they might simply shift use of tobacco as compared to stopping use completely.

Although cigarette use has declined, use of alternative forms of tobacco has not. Unfortunately 2011 was the first wave of the NYTS to dive into more comprehensive questions. Furthermore, these forms of tobacco (roll-your own cigarettes, clove cigars, flavored little cigars, hookah, snus, dissolvable tobacco, e-cigarettes) were not considered part of the alternative tobacco use variable created in order to be consistent with previous waves. When looking at the 2011 NYTS, it was found that at least 28% of respondents have used at least one form of newer tobacco at least once. Furthermore, at least 18% of participants responded to currently using at least one form of the newer tobacco. Researchers have cautioned that a shift towards newer forms of tobacco may occur (Delnevo et al., 2005). Therefore, there is reason for concern regarding newer forms of alternative tobacco.

Tobacco access was another extension of the Tobacco Control Act. The NYTS does not directly address tobacco access but instead asked about cigarette access. Overall, there appear to be no drastic changes in tobacco access from 2004 to 2011. Comparing 2009 and 2011, it appears that of those who attempted to purchase cigarettes, fewer individuals were refused cigarettes in 2011. Two separate analyses were conducted in order to more closely examine cigarette access: examining the differences between those who attempted and did not attempt to purchase cigarettes and those who were and were not refused cigarette sales. Females are more likely to
attempt to buy cigarettes across both middle and high school. These findings were consistent with findings from the 2005 Virginia Tobacco Survey showing females were more likely to be able to purchase cigarettes in person (Kaestle, 2009). However, across those who attempted to purchase cigarettes, males were more likely to be refused cigarettes among high school students. These findings were consistent with research showing males are more likely to have to show proof of age when purchasing cigarettes (Proctor et al., 2012). No significant associations were found across middle-school students.

The Tobacco Control Act also extended to tobacco advertising. This action is especially important due to the connection between tobacco advertising and use. Higher levels of cigarette advertising have been associated with smoking uptake (Slater et al., 2007). It was hypothesized that due to the media shift heading towards more frequent use of the internet, that there would be a shift in advertising, specifically with frequency of internet ads increasing and frequency of print ads decreasing. By looking at trends, it is clear that there was an increase in internet ads over time. From 2004 to 2011, there was a decrease in print ads; however, when looking at 2009 and 2011, there was a statistically significant association between year and print ads. It could be that overall print magazines decreased but those with tobacco ads stayed the same; there is no way to tease out where these ads were seen and what kinds of tobacco they featured. While tobacco events in youth-rated movies has been shown to increase, often seeing actors using tobacco has decreased (Centers for Disease Control and Prevention, 2013). This inconsistency could be partially due to prior studies measuring tobacco-events while this variable representing often versus not often use by actors or due to stricter monitoring of youth and movies.

There were changes in response rates and missing data across time. Response rates decreased from 2004 to 2011; no explanation was provided in NYTS methodology. Looking at
individual questions, no question had more than 10% missing values where the majority of values were below 5%. Looking at changes over time, several of the changes in 2011 tobacco media exposure and use could be attributed to questions being shifted around the survey into different sections.

This study contained several limitations. Limitations of the study include limitations within the National Youth Tobacco Survey. Firstly, the NYTS only surveys public, Catholic and private school students enrolled in grades 6-12 in regular middle and high schools (CDC 2012). Students who are home-schooled, attend Department of Defense Schools or other non-typical schools or do not go to school are excluded. Therefore, results can only be generalized to youth in typical schooling situations like those sampled. Although four waves of the survey were examined, the cross-sectional format of the survey does not allow for causality to be examined (Saunders & Geletko, 2011). Furthermore, this survey is based on self-report; this factor is not considered a significant limitation due to studies showing reliability of similar survey instruments (Fendrich, Mackesy-Amiti, Johnson, Hubbell, & Wislar, 2005; Messeri et al., 2007).

There are also several study-specific limitations. Due to changes in sampling methodology, it would be inappropriate to statistically compare years 2004 to 2011. Therefore, only 2009 and 2011 were compared statistically which does not fully capture the construct of trends over time. Additionally, due to small strata and empty cells, stratification was not possible; this lack of stratification could mask true relationships. Empty cells also required combining racial groups together; this combination could have masked an association amongst these smaller groups. Menthol cigarette use and forms of alternative tobacco were not examined until 2011; these would have been useful factors to examine in 2004 to 2011 analysis. Furthermore, several constructs were assessed through proxy; some of which might not be the most appropriate
measures. There may be more appropriate measures of tobacco access, for example. Only cigarette access was examined; access also differs across form of tobacco (Soldz et al., 2003a).

One important omitted confounder is the location of participant. Location is associated with changes in prices of tobacco and outlet density (Seidenberg et al., 2010). These factors are important because state restrictions are associated with odds of being a daily smoker (Botello-Harbaum et al., 2009). Research has also shown there to be an association between race and location and ability to purchase cigarettes (Asunda & Jordan, 2009). Furthermore, tobacco marketing also has been shown to vary across locations (Seidenberg et al., 2010). Because states vary in strictness regarding tobacco control, it could be possible that location is associated with differences in tobacco use, access and exposure; therefore state-by-state regional analysis would beneficial.

There are several areas which would benefit from future research. Future research would extend beyond the 2011 NYTS wave. This extension would allow for assessment of use of these newer forms of tobacco. Furthermore, providing sampling strategies stay the same, it would allow for more appropriate assessment of trends over time. Future research would also examine the association between use of the newer forms of tobacco and more traditional forms of tobacco. Looking at the data available, it would also be useful to look at trends in alternative tobacco use among cigarette smokers. From a methodology perspective, this study highlights the need to investigate methods for handling changes in sampling strategy. In particular, this study demonstrates gaps in assessing trends over time when changes in sampling methodology take place; this change is a common occurrence across cross-sectional surveys. This analysis provides a foundation for additional investigations.

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This study examined trends in tobacco use, access and exposure over time with hopes of assessing the possible impact of the 2009 Tobacco Control Act. With increased acts in policy, use of tobacco, specifically cigarettes, has decreased. Looking at 2011 NYTS data shows that although cigarette use has decreased, youth still use tobacco. If the study extended past 2011, it would give a better impression of the potential policy impact on the use of alternative tobacco. The 2009 Tobacco Control Act did not extend to menthol cigarettes; this limitation is particularly important due to the common use of menthol among cigarette smokers and association with banned forms of tobacco. Research surrounding cigarette access provided inconclusive results; this issue could be related to the proxy used for cigarette access. While the data was not assessed statistically over time, there were visible trends in tobacco exposure and use of tobacco. Trends in use, access and media exposure would suggest areas in which current tobacco interventions have room for improvement. Despite not being able to demonstrate causality, there were changes before and after the Tobacco Control Act. In regards to tobacco use, we need to be aware of these newer forms of tobacco and emphasize that they are not safe alternatives. Furthermore, we must be aware of gaps in the Tobacco Control Act, such as their limitations to cigarettes and smokeless tobacco. The National Youth Tobacco Survey aligns well with aims of the Tobacco Control Act and serves as an appropriate tool to continue studying policy impacts of tobacco control.
References


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doi:10.1093/ntr/ntq149


under-reporting of smoking? Addictive Behaviors Addictive Behaviors, 32(7), 1532–1536.


## Appendix A: Additional Tables

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<td>2,855,765</td>
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</tr>
<tr>
<td>Pipe</td>
<td>1,929,851</td>
<td>1,747,493</td>
<td>2,044,999</td>
<td>2,045,312</td>
</tr>
<tr>
<td>Bidi/Kretek</td>
<td>1,780,428</td>
<td>1,621,644</td>
<td>1,443,084</td>
<td>1,199,714</td>
</tr>
<tr>
<td>Alternative Tobacco</td>
<td>7,221,616</td>
<td>6,700,964</td>
<td>6,838,345</td>
<td>6,880,339</td>
</tr>
<tr>
<td>Multiple Tobacco</td>
<td>5,629,996</td>
<td>5,092,375</td>
<td>5,109,938</td>
<td>5,083,854</td>
</tr>
<tr>
<td><strong>Tobacco Access</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did Not Try to Purchase</td>
<td>22,238,822</td>
<td>23,729,917</td>
<td>24,655,840</td>
<td>23,724,852</td>
</tr>
<tr>
<td>Refused Due to Age</td>
<td>707,372</td>
<td>692,634</td>
<td>675,226</td>
<td>509,699</td>
</tr>
<tr>
<td>No Refusal</td>
<td>1,741,637</td>
<td>1,613,112</td>
<td>1,590,830</td>
<td>2,197,369</td>
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<tr>
<td><strong>Tobacco Exposure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet Ads</td>
<td>8,063,748</td>
<td>8,879,822</td>
<td>9,240,827</td>
<td>10,600,028</td>
</tr>
<tr>
<td>Print Ads</td>
<td>12,158,402</td>
<td>11,961,879</td>
<td>9,625,717</td>
<td>11,516,011</td>
</tr>
<tr>
<td>TV Actors</td>
<td>19,953,606</td>
<td>20,386,662</td>
<td>19,913,277</td>
<td>19,399,034</td>
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</table>

Table 12. Estimated weighted frequencies, demographics, tobacco use, access and exposure
<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2006</th>
<th>2009</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigars</td>
<td>1,574,970</td>
<td>1,380,450</td>
<td>1,301,630</td>
<td>1,363,611</td>
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<tr>
<td>Smokeless Tobacco</td>
<td>666,701</td>
<td>680,263</td>
<td>774,497</td>
<td>809,784</td>
</tr>
<tr>
<td>Pipe</td>
<td>526,886</td>
<td>526,872</td>
<td>488,293</td>
<td>595,513</td>
</tr>
<tr>
<td>Bidi</td>
<td>428,105</td>
<td>403,147</td>
<td>309,450</td>
<td>347,706</td>
</tr>
<tr>
<td>Kretek</td>
<td>359,467</td>
<td>383,999</td>
<td>299,433</td>
<td>287,618</td>
</tr>
</tbody>
</table>

Table 13. Estimated weighted frequencies, current tobacco use among multiple tobacco users
Appendix B: Figures

Figure 1. Percentage of reported current cigarette users by year

Figure 2. Percentage of reported current bidi users by year
Figure 3. Percentage of reported current kretek users by year

Figure 4. Percentage of reported ever cigarette users by year
Figure 5. Percentage of reported ever bidi/kretek users by year

Figure 6. Percentage of youth reporting refusal of cigarette sale due to age by year
Figure 7. Percentage of youth reporting seeing internet ads often by year

Figure 8. Percentage of youth reporting seeing print ads often by year
Figure 9. Percentage of youth reporting viewing actors often using tobacco by year
Appendix C: Missing Data Tables

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>%</th>
<th>95% CI</th>
<th>%</th>
<th>95% CI</th>
<th>%</th>
<th>95% CI</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>0.6</td>
<td>(0.5, 0.8)</td>
<td>0.8</td>
<td>(0.7, 0.9)</td>
<td>0.2</td>
<td>(0.1, 0.3)</td>
<td>1.5</td>
<td>(1.0, 2.0)</td>
</tr>
<tr>
<td>School</td>
<td>0.5</td>
<td>(0.4, 0.5)</td>
<td>0.5</td>
<td>(0.4, 0.6)</td>
<td>0.3</td>
<td>(0.2, 0.4)</td>
<td>1.7</td>
<td>(0.9, 2.4)</td>
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<td>Race</td>
<td>3.0</td>
<td>(2.1, 3.8)</td>
<td>3.0</td>
<td>(2.5, 3.4)</td>
<td>3.1</td>
<td>(2.6, 3.6)</td>
<td>2.5</td>
<td>(1.9, 3.1)</td>
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<tr>
<td>Current Tobacco Use</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>3.2</td>
<td>(2.9, 3.5)</td>
<td>2.9</td>
<td>(2.5, 3.3)</td>
<td>3.1</td>
<td>(2.7, 3.6)</td>
<td>2.9</td>
<td>(2.5, 3.3)</td>
</tr>
<tr>
<td>Cigars</td>
<td>1.6</td>
<td>(1.3, 1.9)</td>
<td>1.3</td>
<td>(1.1, 1.5)</td>
<td>2.2</td>
<td>(1.6, 2.8)</td>
<td>1.5</td>
<td>(1.2, 1.8)</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>2.0</td>
<td>(1.7, 2.3)</td>
<td>1.5</td>
<td>(1.3, 1.8)</td>
<td>2.7</td>
<td>(2.0, 3.4)</td>
<td>1.5</td>
<td>(1.1, 1.7)</td>
</tr>
<tr>
<td>Pipe</td>
<td>2.8</td>
<td>(1.7, 3.8)</td>
<td>3.2</td>
<td>(1.1, 5.4)</td>
<td>2.8</td>
<td>(1.8, 3.8)</td>
<td>1.6</td>
<td>(1.3, 1.9)</td>
</tr>
<tr>
<td>Bidi</td>
<td>2.6</td>
<td>(1.7, 3.4)</td>
<td>3.4</td>
<td>(1.2, 5.5)</td>
<td>3.0</td>
<td>(2.1, 3.9)</td>
<td>1.6</td>
<td>(1.4, 1.9)</td>
</tr>
<tr>
<td>Kretek</td>
<td>2.8</td>
<td>(1.9, 3.7)</td>
<td>3.3</td>
<td>(1.2, 5.4)</td>
<td>2.9</td>
<td>(2.0, 3.9)</td>
<td>1.6</td>
<td>(1.3, 1.8)</td>
</tr>
<tr>
<td>Alternative Tobacco</td>
<td>0.8</td>
<td>(0.6, 1.1)</td>
<td>0.6</td>
<td>(0.5, 0.8)</td>
<td>1.4</td>
<td>(0.9, 2.0)</td>
<td>0.7</td>
<td>(0.5, 0.8)</td>
</tr>
<tr>
<td>Multiple Tobacco</td>
<td>6.9</td>
<td>(5.8, 8.0)</td>
<td>6.8</td>
<td>(4.6, 8.9)</td>
<td>6.7</td>
<td>(5.6, 7.7)</td>
<td>5.3</td>
<td>(4.7, 5.8)</td>
</tr>
<tr>
<td>Ever Tobacco Use</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>1.9</td>
<td>(1.6, 2.1)</td>
<td>1.9</td>
<td>(1.6, 2.2)</td>
<td>2.0</td>
<td>(1.6, 2.3)</td>
<td>1.8</td>
<td>(1.5, 2.0)</td>
</tr>
<tr>
<td>Cigars</td>
<td>1.9</td>
<td>(1.5, 2.2)</td>
<td>1.7</td>
<td>(1.4, 1.9)</td>
<td>2.7</td>
<td>(1.9, 3.5)</td>
<td>3.8</td>
<td>(3.3, 4.3)</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>2.0</td>
<td>(1.7, 2.3)</td>
<td>1.7</td>
<td>(1.5, 1.9)</td>
<td>2.5</td>
<td>(1.9, 3.1)</td>
<td>1.7</td>
<td>(1.5, 2.0)</td>
</tr>
<tr>
<td>Pipe</td>
<td>3.5</td>
<td>(2.4, 4.6)</td>
<td>3.7</td>
<td>(1.6, 5.9)</td>
<td>3.1</td>
<td>(2.2, 4.0)</td>
<td>1.4</td>
<td>(1.1, 1.6)</td>
</tr>
<tr>
<td>Bidi/Kretek</td>
<td>2.5</td>
<td>(2.1, 2.8)</td>
<td>2.0</td>
<td>(1.7, 2.3)</td>
<td>3.3</td>
<td>(2.4, 4.1)</td>
<td>1.8</td>
<td>(1.6, 2.1)</td>
</tr>
<tr>
<td>Alternative Tobacco</td>
<td>1.4</td>
<td>(1.1, 1.7)</td>
<td>1.1</td>
<td>(0.9, 1.4)</td>
<td>2.2</td>
<td>(1.4, 2.9)</td>
<td>1.0</td>
<td>(0.8, 1.2)</td>
</tr>
<tr>
<td>Multiple Tobacco</td>
<td>7.7</td>
<td>(6.6, 8.9)</td>
<td>7.9</td>
<td>(5.7, 10.1)</td>
<td>7.5</td>
<td>(6.5, 8.5)</td>
<td>6.6</td>
<td>(5.9, 7.3)</td>
</tr>
</tbody>
</table>

Table 14. Missing data on demographics, tobacco use, access and exposure
Table 14 continued

| Tobacco Access | 3.3 (2.9, 3.7) | 1.2 (1.0, 1.4) | 2.3 (1.5, 3.0) | 3.5 (2.6, 4.5) |
| Tobacco Exposure | | | | |
| Internet Ads | 3.5 (2.4, 4.6) | 3.8 (1.6, 6.0) | 4.1 (3.0, 5.2) | 1.6 (1.3, 1.8) |
| Print Ads | 3.8 (2.7, 4.9) | 3.8 (1.6, 6.0) | 4.1 (3.1, 5.2) | 1.7 (1.4, 2.1) |
| TV Actors | 2.8 (2.0, 3.5) | 2.1 (1.7, 2.5) | 4.1 (2.9, 5.2) | 1.7 (1.4, 2.0) |

| % | 95% CI |
| Current Tobacco Use | | |
| Roll-your-own Cigarettes | 0.2 | (0.1, 0.3) |
| Flavored Cigarettes | 0.2 | (0.1, 0.3) |
| Clove Cigars | 0.2 | (0.1, 0.3) |
| Flavored Little Cigars | 0.2 | (0.1, 0.3) |
| Hookah/Waterpipe | 0.2 | (0.1, 0.3) |
| Snus | 0.2 | (0.1, 0.3) |
| Dissolvable Tobacco | 0.2 | (0.1, 0.3) |
| E-Cigarettes | 0.2 | (0.1, 0.3) |
| Other New Product | 0.2 | (0.1, 0.3) |
| No New Tobacco Products | 0.2 | (0.1, 0.3) |
| Menthol Cigarettes | 1.8 | (1.4, 2.2) |

| Ever Tobacco Use | | |
| Roll-your-own Cigarettes | 0.2 | (0.1, 0.3) |
| Flavored Cigarettes | 0.2 | (0.1, 0.3) |
| Clove Cigars | 0.2 | (0.1, 0.3) |
| Flavored Little Cigars | 0.2 | (0.1, 0.3) |
| Hookah/Waterpipe | 0.2 | (0.1, 0.3) |
| Snus | 0.2 | (0.1, 0.3) |
| Dissolvable Tobacco | 0.2 | (0.1, 0.3) |
| E-Cigarettes | 0.2 | (0.1, 0.3) |
| Other New Product | 0.2 | (0.1, 0.3) |
| No New Tobacco Products | 0.4 | (0.3, 0.6) |

Table 15. Missing data on 2011 new tobacco and menthol cigarette use
Appendix D: SAS Code

 /********************************************************************
*******************************2004**********************************
********************************************************************/
libname first "H:\Thesis\Thesis Data";
OPTIONS FMTSEARCH=(first.nyts04fmts) nocenter nodate;
data nyts2004;
  set first.nyts04data;

  *race/ethnicity - sum up answers to white, black, etc to determine if there is > 1 race answered;
  mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
  label mrace="Number of races chosen from Q5";

  *hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;
  if qn4=1 then RACE_S=3; *hispanic;
  else if qn4=2 then do; *non-hispanic;
    if mrace=1 then do; *one-race;
      if qn5e=1 then RACE_S=1; *nh-white;
      else if qn5c=1 then RACE_S=2; *nh-black;
      else if qn5b=1 then RACE_S=4; *nh-asian;
      else if qn5a=1 then RACE_S=5; *nh-ai/an;
      else if qn5d=1 then RACE_S=6; *nh-nhopi;
    end;
  else if mrace > 1 then do; *multiple races;
    *the order of these conditional statements determines race priority - based on previous surveys when there is more than 1 race, but the main race question was not picked;
    if qn5e=1 then RACE_S=1; *nh-white;
    else if qn5c=1 then RACE_S=2; *nh-black;
    else if qn5b=1 then RACE_S=4; *nh-asian;
    else if qn5a=1 then RACE_S=5; *nh-ai/an;
    else if qn5d=1 then RACE_S=6; *nh-nhopi;
  end;
else mrace > 1 then do; *multiple races;
  *the order of these conditional statements determines race priority - based on previous surveys when there is more than 1 race, but the main race question was not picked;
  if qn5e=1 then RACE_M=1; *nh-white;
  else if qn5c=1 then RACE_M=2; *nh-black;
  else if qn5b=1 then RACE_M=4; *nh-asian;
  else if qn5a=1 then RACE_M=5; *nh-ai/an;
  else if qn5d=1 then RACE_M=6; *nh-nhopi;
end;
label RACE_S="RECODE: Race/Eth - no mult grp";

  *race/ethnicity - based on NHIS where when there is > 1 race, then put that person in "multiple" race; *hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;
  if qn4=1 then RACE_M=3; *hispanic;
  else if qn4=2 then do;
    *non-hispanic;
    if mrace=1 then do; *one-race;
      if qn5e=1 then RACE_M=1; *nh-white;
      else if qn5c=1 then RACE_M=2; *nh-black;
      else if qn5b=1 then RACE_M=4; *nh-asian;
      else if qn5a=1 then RACE_M=5; *nh-ai/an;
      else if qn5d=1 then RACE_M=6; *nh-nhopi;
    end;
  else if mrace > 1 then RACE_M=7; *multiple race;
end;
label RACE_M="RECODE: Race/Eth - mult grp";

/***DEMOGRAPHICS***/
*Collapse over 19 to 19+;
if Qn1= then rQn1=;
    else if Qn1=1 then rQn1=1;
    else if Qn1=2 then rQn1=2;
    else if Qn1=3 then rQn1=3;
    else if Qn1=4 then rQn1=4;
    else if Qn1=5 then rQn1=5;
    else if Qn1=6 then rQn1=6;
    else if Qn1=7 then rQn1=7;
    else if Qn1=8 then rQn1=8;
    else if Qn1=9 then rQn1=9;
    else if Qn1=10 then rQn1=10;
    else if Qn1=11 or Qn1=12 or Qn1=13 then rQn1=11;
label rQn1="RECODE: Age";

/***BIDIS AND KRETEKS***/
*Bidis;
if Qn48= then rQn48=;
    else if Qn48=1 then rQn48=1;
    else if Qn48=2 then rQn48=2;
    else if Qn48=3 or Qn48=4 then rQn48=3;
    else if Qn48=5 then rQn48=4;
    else if Qn48=6 then rQn48=5;
    else if Qn48=7 then rQn48=6;
label rQn48="RECODE: Days Smoked Bidis";

*Kreteks;
if Qn49= then rQn49=;
    else if Qn49=1 then rQn49=1;
    else if Qn49=2 then rQn49=2;
    else if Qn49=3 or Qn49=4 then rQn49=3;
    else if Qn49=5 then rQn49=4;
    else if Qn49=6 then rQn49=5;
    else if Qn49=7 then rQn49=6;
label rQn49="RECODE: Days Smoked Kreteks";

/***QUITTING TOBACCO***/
if Qn29= then rQn29=;
    else if Qn29=1 then rQn29=1;
    else if Qn29=2 then rQn29=2;
    else if Qn29=3 or Qn29=5 then rQn29=4;
    else if Qn29=6 then rQn29=5;
    else if Qn29=7 then rQn29=6;
    else if Qn29=8 then rQn29=7;
    else if Qn29=9 then rQn29=8;
label rQn29="RECODE: Quit Length";

/***EXPOSURE TO TOBACCO***/
if Qn57= then rQn57=;
    else if Qn57=1 then rQn57=3;
    else if Qn57=2 then rQn57=2;
    else if Qn57=3 or Qn57=4 then rQn57=1;
label rQn57="RECODE: Housing Smoking Rules";

/*Done to make analysis easier*/
if Qn3= then middlehigh=;
    else if Qn3=1 or Qn3=2 or Qn3=3 then middlehigh=1;
    else if Qn3=4 or Qn3=5 or Qn3=6 or Qn3=7 then middlehigh=0;
label middlehigh="RECODE: School Level";

/*CURRENT TOB USE*/
*cigarettes;
if Qn13- then curcigs=.;
   else if Qn13-1 then curcigs=0;
   else if Qn13-2 or Qn13-3 or Qn13-4 or Qn13-5 or Qn13-6 or Qn13-7 then curcigs=1;
*cigars;
if Qn44- then curcigar=.;
   else if Qn44-1 then curcigar=0;
   else if Qn44-2 or Qn44-3 or Qn44-4 or Qn44-5 or Qn44-6 or Qn44-7 then curcigar=1;
*smokeless;
if Qn40- then cursmkls=.;
   else if Qn40-1 then cursmkls=0;
   else if Qn40-2 or Qn40-3 or Qn40-4 or Qn40-5 or Qn40-6 or Qn40-7 then cursmkls=1;
*pipes;
if Qn46- then curpipe=.;
   else if Qn46-1 then curpipe=0;
   else if Qn46-2 or Qn46-3 or Qn46-4 or Qn46-5 or Qn46-6 or Qn46-7 then curpipe=1;
*bidis;
if rQn48- then curbid=.;
   else if rQn48-1 then curbid=0;
   else if rQn48-2 or rQn48-3 or rQn48-4 or rQn48-5 or rQn48-6 or rQn48-7 then curbid=1;
*kretaks;
if rQn49- then currekret=.;
   else if rQn49-1 then currekret=0;
   else if rQn49-2 or rQn49-3 or rQn49-4 or rQn49-5 or rQn49-6 or rQn49-7 then currekret=1;
if curcigar=1 then curalt=1;
   else if cursmkls=1 or curpipe=1 or curbid=1 or curkret=1 then curalt=1;
   else if curcigar=0 or cursmkls=0 or curpipe=0 or curbid=0 or curkret=0 then curalt=0;
   else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then curalt=.;
sumtob=.
sumtob=curcigs+curcigar+cursmkls+curpipe+curbid+currekret;
if sumtob= then multtob=.
   else if sumtob>=2 then multtob=1;
else multtob=0;
*Recode biddie/kretek to biddie and or kretek;
if Qn47- then rQn47-.
   else if Qn47-1 then rQn47-1;
   else if Qn47-2 then rQn47-1;
   else if Qn47-3 then rQn47-1;
   else if Qn47-4 then rQn47-0;
run;

proc format;
   value agefmt 1="9 yrs" 2="10 yrs" 3="11 yrs" 4="12 yrs" 5="13 yrs" 6="14 yrs"
   7="15 yrs" 8="16 yrs" 9="17 yrs" 10="18 yrs" 11="19+
   yrs";
   value schoolfmt 1="Middle School"
   0="High School"
   value quitfmt 1="I have never smoked cigarettes"
   2="I have never tried to quit"
   3="Less than a day"
   4="1 to 7 days"
   5="More than 7 days but less than 30 days"
   6="More than 30 days but less than 6 months"
   7="More than 6 months but less than 1 year"
   8="1 year or more";
   value biddiekretek 1="0 days" 2="1 or 2 days"
value homesmk 1="Always allowed"
2="Allowed only at some times or in some places"
3="Never allowed";
run;

data nyts2004;
  set nyts2004 (rename = (qn8=evdcigs qn42=evdcigar qn38=evdsmkls qn45=evdpipe rqn47=evdbidkret));
run;

data nyts2004;
  set nyts2004;
if evdcigar=1 or evdsmkls=1 or evdpipe=1 or evdbidkret=1 then evdalt=1;
  else if evdcigar=0 or evdsmkls=0 or evdpipe=0 or evdbidkret=0 then evdalt=0;
  else if evdcigar=. or evdsmkls=. or evdpipe=. or evdbidkret=. then evdalt=.;
if evdcigs=1 then ebcigs=1;
  else if evdcigs=. then ebcigs=.;
  else ebcigs=0;
if evdcigar=1 then ebcigar=1;
  else if evdcigar=. then ebcigar=.;
  else ebcigar=0;
if evdsmkls=1 then ebsmkls=1;
  else if evdsmkls=. then ebsmkls=.;
  else ebsmkls=0;
if evdpipe=1 then ebpipe=1;
  else if evdpipe=. then ebpipe=.;
  else ebpipe=0;
if evdbidkret=1 then ebbidkret=1;
  else if evdbidkret=. then ebbidkret=.;
  else ebbidkret=0;
evdsamtob=ebcigs+ebcigar+ebsmkls+ebpipe+ebidkret;
if evdsamtob=. then evdmulttob=.;
  else if evdsamtob>2 then evdmulttob=1;
  else evdmulttob=0;
format rQn1 agefmt. rQn29 quitfmt. rQn48 rQn49 biddiekretek. rQn57 homesmk. middlehigh schoolfmt.;
run;

data nyts2004;
  set nyts2004;
if race_s=1 then racer=0; /*White*/
  else if race_s=2 then racer=1; /*Black*/
  else if race_s=3 then racer=2; /*Hispanic*/
  else if race_s=4 then racer=3; /*Other*/
  else if race_s=5 then racer=3;
  else if race_s=6 then racer=3;
  else if race_s=. then racer=.;
if middlehigh=. then hschool=.;
  else if middlehigh=1 then hschool=0;
  else if middlehigh=0 then hschool=1;
run;

title1 'NYTS 2004';
/*DESCRIPTIVE STATISTICS*/
title2 'Ages';
proc surveyfreq nosummary;
   tables rQn1/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

title2 'Sex';
proc surveyfreq nosummary;
   tables Qn2/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

title2 'Grade';
proc surveyfreq nosummary;
   tables Qn3/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

title2 'School Level';
proc surveyfreq nosummary;
   tables middlehigh/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

title2 'Race/Ethnicity';
proc surveyfreq nosummary;
   tables race_m/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary;
   tables race_s/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary;
   tables racer/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

******/
CURRENT TOBACCO USE
*******/
proc surveyfreq nosummary;
   tables curcigs/cv deff wchisq row cl;
   weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables cursmkis/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curbld/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

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proc surveyfreq nosummary;
tables curcigar/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
tables cursmkls/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
tables curpipe/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
tables curbid/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
tables curkret/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

*By sex;

proc sort;
  by Qn2;
run;

proc surveyfreq nosummary;
tables curcigs/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

proc surveyfreq nosummary;
tables curcigar/ cv deff nowt row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

proc surveyfreq nosummary;
tables cursmkls/ cv deff nowt row cl;

proc sort;
  by Qn2;
run;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curbid/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curkret/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

*By race: no multiple race group;
proc sort;
by race_s;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables cursmkls/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curbid/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curkret/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curalt/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables curalt/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables curalt/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables curalt/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary data=nyts2004;
tables multtob/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables multtob/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
   tables multtob/cv deff nowt row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
   tables multtob/cv deff nowt row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by race_s;
run;
/*****************************/
/*CIGARETTE ACCESS*/
/*****************************/
proc surveyfreq nosummary;
   tables qn24/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

*Did anyone refuse to sell you cigs due to age;

data refusal;
   set nyts2004;
   if Qn24=1 then delete;
run;

proc surveyfreq nosummary data=refusal;
   tables Qn24/cv deff nowt row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

data hrefusal;
   set nyts2004;
   if Qn24=1 then delete;
   if middlehigh=1 then delete;
run;

data mrefusal;
   set nyts2004;
   if Qn24=1 then delete;
   if middlehigh=0 then delete;
run;

data trybuy;
   set nyts2004;
   if Qn24=1 then trycig=0;
   else if Qn24=2 then trycig=1;
   else if Qn24=3 then trycig=1;
   else if Qn24=-. then trycig=-.;
DATA htrybuy;
  set nyts2004;
  if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24=. then trycig=.;
  if middlehigh=1 then delete;
RUN;

DATA mtrybuy;
  set nyts2004;
  if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24=. then trycig=.;
  if middlehigh=0 then delete;
RUN;

PROC SURVEYFREQ NOsummary;
  TABLES trycig/ Deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
RUN;

PROC SURVEYLOGISTIC DATA=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  CLASS hschool/ ref=first param=ref;
  model trycig = hschool / link=glogit;
RUN;

PROC SURVEYLOGISTIC DATA=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  CLASS qn2 / ref=first param=ref;
  model trycig = qn2 / link=glogit;
RUN;

PROC SURVEYLOGISTIC DATA=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  CLASS racer/ ref=first param=ref;
  model trycig = racer / link=glogit;
RUN;

PROC SURVEYLOGISTIC DATA=htrybuy;
  weight wt;
  strata stratum;
  cluster psu;
  CLASS qn2 racer/ ref=first param=ref;
  model trycig = qn2 racer / link=glogit;
RUN;

PROC SURVEYLOGISTIC DATA=mtrybuy;
  weight wt;
  strata stratum;
  cluster psu;
  CLASS qn2 racer/ ref=first param=ref;
model trycig = qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer qn2*racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool/ ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = hschool /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class qn2 / ref=first param=ref;
model qn24 (ref="No, no one refused because of my age")= qn2 /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class racer/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=hrefusal;
   weight wt;
   strata stratum;
   cluster psu;
   class qn2 racer/ref=first param=ref;
   model qn24 (ref="No, no one refused because of my age") = qn2 racer/link=glogit;
run;

proc surveylogistic data=mrefusal;
   weight wt;
   strata stratum;
   cluster psu;
   class qn2 racer/ref=first param=ref;
   model qn24 (ref="No, no one refused because of my age") = qn2 racer/link=glogit;
run;

proc surveylogistic data=refusal;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool qn2 racer/ref=first param=ref;
   model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic data=refusal;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool qn2 racer/ref=first param=ref;
   model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=refusal;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool qn2 racer/ref=first param=ref;
   model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer qn2*racer/link=glogit;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=trybuy;
   tables trycig*race_s/cv deff nowt row cl chisq chisq1 wchisq;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=refusal;
   tables Qn24/cv deff nowt row cl chisq chisq1 wchisq;
   weight wt;
   strata stratum;
   cluster psu;
   by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary data=refusal;
   tables Qn24/cv deff nowt row cl chisq chisq1 wchisq;
   weight wt;
   strata stratum;
   cluster psu;
   by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=refusal;
   tables Qn24/cv deff nowt row cl chisq chisq1 wchisq;
   weight wt;
   strata stratum;
   cluster psu;
   by race_s;
run;

proc surveyfreq nosummary data=nyts2004;
   tables Qn75/cv deff nowt row cl chisq chisq1 wchisq;
   weight wt;
   strata stratum;
   cluster psu;
run;

/******************************/
/***TOBACCO EXPOSURE***/
/******************************/
data internet;
   set nyts2004;
   if Qn75=2 or Qn75=3 then intad=1;
   else if Qn75=4 or Qn75=5 then intad=0;
   if Qn75=1 then delete;
run;
proc surveyfreq nosummary data=internet;
   tables intad/cv deff nowt row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=internet;
   tables intad/cv deff nowt row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=internet;
   tables intad/cv deff nowt row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

data print;
set nyts2004;
if Qn76=2 or Qn76=3 or Qn76=4 then printad=1;
else if Qn76=5 or Qn76=6 then printad=0;
if Qn76=1 then delete;
run;

proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

data act;
set nyts2004;
if Qn74=2 or Qn74=3 then act=1;
else if Qn74 or Qn74=5 then act=0;
if Qn74=1 then delete;
run;

proc surveyfreq nosummary data=nyts2004;
tables Qn74/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveymfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveymfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveymfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

/**********************/
/*EVER TOBACCO USE*/
/**********************/
*Cigarette;
proc surveymfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveymfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveymfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveymfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
*Cigar;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
*Smokeless;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort by race_s; run;
proc surveyfreq nosummary;
   tables evdskls/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by race_s;
run;

*Pipe;
proc surveyfreq nosummary;
   tables evdpipe/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc sort by middlehigh; run;
proc surveyfreq nosummary;
   tables evdpipe/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by middlehigh;
run;

proc sort by qn2; run;
proc surveyfreq nosummary;
   tables evdpipe/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by qn2;
run;

proc sort by race_s; run;
proc surveyfreq nosummary;
   tables evdpipe/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by race_s;
run;

*Bidis/Kreteks;
proc surveyfreq nosummary;
   tables evdbidkret/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc sort by middlehigh; run;
proc surveyfreq nosummary;
   tables evdbidkret/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
   by middlehigh;
run;

proc sort by qn2; run;
proc surveyfreq nosummary;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdbidkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

*Alternative tobacco;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

*Mult tobacco;
proc surveyfreq nosummary;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
/********************/
/***MULTIPLE TOB USE***/
/********************/

proc sort; by multtob; run;
proc surveyfreq nosummary nomcar;
tables curcigs curcigar cursmkls curpipe curkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by multtob;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool/ref=first param=ref;
model multtob(ref="0") = hschool/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class qn2/ref=first param=ref;
model multtob (ref="0")-qn2 /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer/ref=first param=ref;
model multtob(ref="0")-racer /link=glogit;
run;

proc surveylogistic data=nyts2004;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model multtob(ref="0")-hschool qn2 racer /link=glogit;
run;
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer / ref=first param=ref;
  model multtob (ref="0")=hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer / ref=first param=ref;
  model multtob (ref="0")=hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer / ref=first param=ref;
  model multtob (ref="0")=hschool qn2 racer qn2*racer/link=glogit;
run;

*Looking at just high school;
data hschool;
  set nyts2004;
  if middlehigh=0 then delete;
run;

proc surveylogistic data=hschool;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer / ref=first param=ref;
  model multtob (ref="0")=qn2 racer/link=glogit;
run;

*Looking at just middle school;
data mschool;
  set nyts2004;
  if middlehigh=1 then delete;
run;

proc surveylogistic data=mschool;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer / ref=first param=ref;
  model multtob (ref="0")=qn2 racer/link=glogit;
run;

*Missing data analysis;

proc surveyfreq nosummary missing;
  tables curcigs/cv deff row c1;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary missing;
  tables curcigar/cv deff row c1;
  weight wt;
  strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables cursmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curbid/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables evdpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables Qn75/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables Qn76/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables Qn74/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables Qn2/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables middlehigh/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
    tables racer/cv deff wchisq row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

******************************************************************************
*******************************2006*******************************************
******************************************************************************
libname second "H:\Thesis\Thesis Data";
OPTIONS FMTSEARCH=(second.nyts06fmts);
data nyts2006;
    set second.nyts06data;
*Create mrace, a new variable that sums the number of races selected in QN5;
    mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
    label mrace="Number of races chosen from Q5";
*Hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;
*This code set pertains to respondents who marked only one answer;
    if qn4=1 then RACE_S=3; *Hispanic;
    else if qn4=2 then do; *Non-Hispanic;
        if mrace=1 then do; *one-race;
            if qn5e=1 then RACE_S=1; *NH-White;
            else if qn5c=1 then RACE_S=2; *NH-Black;
            else if qn5b=1 then RACE_S=4; *NH-Asian;
            else if qn5a=1 then RACE_S=5; *NH-AI/AN;
            else if qn5d=1 then RACE_S=6; *NH-NHOPI;
        end;
        else if mrace > 1 then do; *multiple races;
    end;
    label RACE_S="RECODE: Race/Eth - no mult grp";
*This code set is a continuation of the above and pertains to respondents who marked more than one answer;
*The order of these conditional statements determines race priority - based on previous surveys with a race question that allows respondents to select more than one answer;
    if qn5e=1 then RACE_S=1; *NH-White;
    else if qn5c=1 then RACE_S=2; *NH-Black;
    else if qn5b=1 then RACE_S=4; *NH-Asian;
    else if qn5a=1 then RACE_S=5; *NH-AI/AN;
    else if qn5d=1 then RACE_S=6; *NH-NHOPI;
end;
lable RACE_S="RECODE: Race/Eth - no mult grp";
*race/ethnicity - based on NHIS where when there is > 1 race, then put that person in "multiple" race;*Hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;
if qn4=1 then RACE_M=3; *Hispanic;
else if qn4=2 then do; *non-Hispanic;
    if mrace=1 then do; *one-race;
        if qn5e=1 then RACE_M=1; *nh-white;
        else if qn5c=1 then RACE_M=2; *nh-black;
        else if qn5b=1 then RACE_M=4; *nh-asian;
        else if qn5a=1 then RACE_M=5; *nh-ai/an;
        else if qn5d=1 then RACE_M=6; *nh-nhopi;
end;
else if mrace > 1 then RACE_M=7; *multiple race;
end;
label RACE_M="RECODE: Race/Eth - mult grp";

/***DEMOGRAPHICS***/
*Collapse over 19 to 19+;
if Qn1=. then rQn1=.;
else if Qn1=1 then rQn1=1;
else if Qn1=2 then rQn1=2;
else if Qn1=3 then rQn1=3;
else if Qn1=4 then rQn1=4;
else if Qn1=5 then rQn1=5;
else if Qn1=6 then rQn1=6;
else if Qn1=7 then rQn1=7;
else if Qn1=8 then rQn1=8;
else if Qn1=9 then rQn1=9;
else if Qn1=10 then rQn1=10;
else if Qn1=11 or Qn1=12 or Qn1=13 then rQn1=11;
label rQn1="RECODE: Age";

/***BIDIS AND KRETEKS***/
*Bidis;
if Qn48=. then rQn48=.;
else if Qn48=1 then rQn48=1;
else if Qn48=2 then rQn48=2;
else if Qn48=3 or Qn48=4 then rQn48=3;
else if Qn48=5 then rQn48=4;
else if Qn48=6 then rQn48=5;
else if Qn48=7 then rQn48=6;
label rQn48="RECODE: Days Smoked Bidis";

*Kreteks;
if Qn49=. then rQn49=.;
else if Qn49=1 then rQn49=1;
else if Qn49=2 then rQn49=2;
else if Qn49=3 or Qn49=4 then rQn49=3;
else if Qn49=5 then rQn49=4;
else if Qn49=6 then rQn49=5;
else if Qn49=7 then rQn49=6;
label rQn49="RECODE: Days Smoked Kreteks";

/***QUITTING TOBACCO***/
if Qn29=. then rQn29=.;
else if Qn29=1 then rQn29=1;
else if Qn29=2 then rQn29=2;
else if Qn29=3 then rQn29=3;
else if Qn29=4 or Qn29=5 then rQn29=4;
else if Qn29=6 then rQn29=5;
else if Qn29=7 then rQn29=6;
else if Qn29=8 then rQn29=7;
else if Qn29=9 then rQn29=8;
label rQn29="RECODE: Quit Length";

/***EXPOSURE TO TOBACCO***/
if Qn57=. then rQn57=.;
else if Qn57=1 then rQn57=1;
else if Qn57=2 then rQn57=2;
else if Qn57=3 or Qn57=4 then rQn57=3;
label rQn57="RECODE: Housing Smoking Rules";

/*Done to make analysis easier*/
if Qn3=. then middlehigh=.;
else if Qn3=1 or Qn3=2 or Qn3=3 then middlehigh=1;
else if Qn3=4 or Qn3=5 or Qn3=6 or Qn3=7 then middlehigh=0;
label middlehigh="RECODE: School Level";
run;

proc format;
  value agefmt 1="9 yrs" 2="10 yrs" 3="11 yrs" 4="12 yrs" 5="13 yrs" 6="14 yrs" 7="15 yrs" 8="16 yrs" 9="17 yrs" 10="18 yrs" 11="19+
  yrs";
  value schoolfmt 1="Middle School" 0="High School";
  value quitfmt 1="I have never smoked cigarettes" 2="I have never tried to quit" 3="Less than a day" 4="1 to 7 days" 5="More than 7 days but less than 30 days" 6="More than 30 days but less than 6 months" 7="More than 6 months but less than 1 year" 8="1 year or more";
  value biddiekretek 1="0 days" 2="1 or 2 days" 3="3 to 9 days" 4="10 to 19 days" 5="20 to 29 days" 6="All 30 days";
  value homesmk 1="Always allowed" 2="Allowed only at some times or in some places" 3="Never allowed";
run;

data nyts2006;
  set nyts2006;
/*CURRENT TOB USE*/
*cigarettes;
  if Qn13=. then curcigs=.;
    else if Qn13=2 or Qn13=3 or Qn13=4 or Qn13=5 or Qn13=6 or Qn13=7 then curcigs=1;
  *cigars;
  if Qn44=. then curcigar=.;
    else if Qn44=1 then curcigar=0;
    else if Qn44=2 or Qn44=3 or Qn44=4 or Qn44=5 or Qn44=6 or Qn44=7 then curcigar=1;
  *smokeless;
  if Qn40=. then cursmkls=.;
    else if Qn40=1 then cursmkls=0;
    else if Qn40=2 or Qn40=3 or Qn40=4 or Qn40=5 or Qn40=6 or Qn40=7 then cursmkls=1;
  *pipes;
  if Qn46=. then curpipe=.;
    else if Qn46=1 then curpipe=0;
    else if Qn46=2 or Qn46=3 or Qn46=4 or Qn46=5 or Qn46=6 or Qn46=7 then curpipe=1;
  *bidis;
  if rQn48=. then curbid=.;
    else if rQn48=1 then curbid=0;
    else if rQn48=2 or rQn48=3 or rQn48=4 or rQn48=5 or rQn48=6 or rQn48=7 then curbid=1;
  *kreteks;
  if rQn49=. then curkret=.;
    else if rQn49=1 then curkret=0;
    else if rQn49=2 or rQn49=3 or rQn49=4 or rQn49=5 or rQn49=6 or rQn49=7 then curkret=1;
  if curcigar=1 then curalt=1;
    else if curcigar=0 or cursmkls=1 or curpipe=1 or curbid=1 or curkret=1 then curalt=1;
    else if curcigar=0 or cursmkls=0 or curpipe=0 or curbid=0 or curkret=0 then curalt=0;
    else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then curalt=.;
run;
sumtob=curcigs+curcigar+cursmkls+curpipe+curbid+curkret;
if sumtob=. then multtob=.;
   else if sumtob>=2 then multtob=1;
   else multtob=0;

*Recode biddie/kretek to biddie and or kretek;
if Qn47=. then rQn47=.;
else if Qn47=1 then rQn47=1;
else if Qn47=2 then rQn47=1;
else if Qn47=3 then rQn47=1;
else if Qn47=4 then rQn47=0;
run;
data nyts2006;
set nyts2006 (rename = (qn8=evdcigs qn42=evdcigar qn38=evdsmkls qn45=evdpipe
rqn47=evdbidkret));
run;
data nyts2006;
set nyts2006;
if evdcigar=1 or evdsmkls=1 or evdpipe=1 or evdbidkret=1 then evdalt=1;
else if evdcigar=0 or evdsmkls=0 or evdpipe=0 or evdbidkret=0 then evdalt=0;
else if evdcigar=. or evdsmkls=. or evdpipe=. or evdbidkret=. then evdalt=.;
if evdcigs=1 then ebcigs=1;
   else if evdcigs=. then ebcigs=.;
   else ebcigs=0;
if evdcigar=1 then ebcigar=1;
   else if evdcigar=. then ebcigar=.;
   else ebcigar=0;
if evdsmkls=1 then ebsmkls=1;
   else if evdsmkls=. then ebsmkls=.;
   else ebsmkls=0;
if evdpipe=1 then ebpipe=1;
   else if evdpipe=. then ebpipe=.;
   else ebpipe=0;
if evdbidkret then ebbidkret=1;
   else if evdbidkret= then ebbidkret=.;
   else ebbidkret=0;
evdsutob=ebcigs+ebcigar+ebsmkls+ebpipe+ebbidkret;
if evdsutob=. then evdmuttob=.;
else if evdsutob>=2 then evdmuttob=1;
else evdmuttob=0;
    format rQn1 agefmt. rQn29 quitfmt. rQn48 rQn49 biddiekretek. rQn57 homesmk.
middlehigh schoolfmt. ;
run;
data nyts2006;
set nyts2006;
if race_s=1 then racer=0; /*White*/
   else if race_s=2 then racer=1; /*Black*/
   else if race_s=3 then racer=2; /*Hispanic*/
   else if race_s=4 then racer=3; /*Other*/
   else if race_s=5 then racer=3;
   else if race_s=6 then racer=3;
   else if race_s=. then racer=.;
if middlehigh=1 then hschool=1;
   else if middlehigh=0 then hschool=0;
else if middlehigh=0 then hschool=1;
run;
title1 'NYTS 2006';
/***************************/
/***DESCRIPTIVE STATISTICS***/
/*****************************/
title2 'Ages';
proc surveyfreq nosummary;
   tables rQn1<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'Sex';
proc surveyfreq nosummary;
   tables Qn2<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'Grade';
proc surveyfreq nosummary;
   tables Qn3<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'School Level';
proc surveyfreq nosummary;
   tables hschool<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'Race/Ethnicity';
proc surveyfreq nosummary;
   tables race_m<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
proc surveyfreq nosummary;
   tables race_s<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
proc surveyfreq nosummary;
   tables racer<cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
/*****************************/
/*CURRENT TOBACCO USE*/
/**********************/
proc surveyfreq nosummary;
  tables curcigs/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables curcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables cursmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables curpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables curbid/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables curkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables curalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary;
  tables multtob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc sort;
  by middlehigh;
run;
proc surveyfreq nosummary;
  tables curcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

*By sex;
proc sort;
  by Qn2;
run;

proc surveyfreq nosummary;
  tables curcigs/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

proc surveyfreq nosummary;
  tables curcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
  tables curcig/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
  tables curciger/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
  tables curcig/ cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc surveyfreq nosummary;
  tables curcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;
by Qn2;
run;

proc surveyfreq nosummary;
tables cursmkls/cv deff row cl; weight wt; strata stratum; cluster psu; by Qn2;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl; weight wt; strata stratum; cluster psu; by Qn2;
run;

proc surveyfreq nosummary;
tables curbid/cv deff row cl; weight wt; strata stratum; cluster psu; by Qn2;
run;

proc surveyfreq nosummary;
tables curkret/cv deff row cl; weight wt; strata stratum; cluster psu; by Qn2;
run;

*By race: no multiple race group;
proc sort;
by race_s;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff row cl; weight wt; strata stratum; cluster psu; by race_s;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl; weight wt; strata stratum; cluster psu; by race_s;
run;

proc surveyfreq nosummary;
tables cursmkls/cv deff row cl; weight wt; strata stratum; cluster psu; by race_s;
run;
proc surveyfreq nosummary;
  tables curpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
  tables curbid/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
  tables curkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
  tables curalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables curalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables curalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables curalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
  tables multtob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
data refusal;
  set nyts2006;
  if Qn24=1 then delete;
run;

proc surveyfreq nosummary data=refusal;
  tables Qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=refusal;
  tables Qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=refusal;
  tables Qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=refusal;
  tables Qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

/*TOBACCO ACCESSS*/
/***************************/
proc surveyfreq nosummary data=refusal;
  tables multtob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=refusal;
  tables multtob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=refusal;
  tables multtob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=refusal;
  tables multtob/cv deff row cl;
  weight wt;
strata stratum;
cluster psu;
by race_s;
run;

/******************************/
/*TOBACCO EXPOSURE*/
/******************************/
data internet;
set nyts2006;
if Qn75=2 or Qn75=3 then intad=1;
else if Qn75=4 or Qn75=5 then intad=0;
if Qn75=1 then delete;
run;

proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

data print;
set nyts2006;
if Qn76=2 or Qn76=3 or Qn76=4 then printad=1;
else if Qn76=5 or Qn76=6 then printad=0;
if Qn76=1 then delete;
run;

proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

data act;
set nyts2006;
if Qn74=2 or Qn74=3 then act=1;
else if Qn74 or Qn74=5 then act=0;
if Qn74=1 then delete;
run;

proc surveyfreq nosummary data=act;
tables Qn74/cv deff nowt row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
PROC SURVEYFREQ NOSUMMARY DATA=ACT;
   TABLES ACT/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
   BY RACE_S;
RUN;

/******************************/
/*EVER TOBACCO USE*/
/***************************/
*Cigarette;
PROC SURVEYFREQ NOSUMMARY;
   TABLES EVDCIGS/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
RUN;

PROC SORT; BY MIDDLEHIGH; RUN;
PROC SURVEYFREQ NOSUMMARY;
   TABLES EVDCIGS/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
   BY MIDDLEHIGH;
RUN;

PROC SORT; BY QN2; RUN;
PROC SURVEYFREQ NOSUMMARY;
   TABLES EVDCIGS/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
   BY QN2;
RUN;

PROC SORT; BY RACE_S; RUN;
PROC SURVEYFREQ NOSUMMARY;
   TABLES EVDCIGS/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
   BY RACE_S;
RUN;

*Cigar;
PROC SURVEYFREQ NOSUMMARY;
   TABLES EVDCIGAR/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
RUN;

PROC SORT; BY MIDDLEHIGH; RUN;
PROC SURVEYFREQ NOSUMMARY;
   TABLES EVDCIGAR/CV DEFF ROW CL;
   WEIGHT WT;
   STRATA STRATUM;
   CLUSTER PSU;
   BY MIDDLEHIGH;
RUN;

PROC SORT; BY QN2; RUN;
proc surveyfreq nosummary;
  tables evdcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

*Smokeless;
proc surveyfreq nosummary;
  tables evdsmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdsmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables evdsmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdsmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

*Pipe;
proc surveyfreq nosummary;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

*Bidis/Kreteks;
proc surveyfreq nosummary;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

*Alternative tobacco;
proc surveyfreq nosummary;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

*Mult tobacco;
proc surveyfreq nosummary;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

/**********************/
/*CIGARETTE ACCESS*/
/********************/

proc surveyfreq nosummary;
  tables qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

*Did anyone refuse to sell you cigs due to age;

data trybuy;
  set nyts2006;
  if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24=. then trycig=.;
run;

proc surveyfreq nosummary;
  tables trycig/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

data htrybuy;
  set nyts2006;
  if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24=. then trycig=.;
  if middlehigh=1 then delete;
run;

data mtrybuy;
  set nyts2006;
  if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24=. then trycig=.;
  if middlehigh=0 then delete;
run;

data refusal;
  set nyts2006;
  if Qn24=1 then delete;
run;

proc surveyfreq nosummary;
  tables Qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

data hrefusal;
  set nyts2006;
  if Qn24=1 then delete;
  if middlehigh=1 then delete;
run;

data mrefusal;
  set nyts2006;
  if Qn24=1 then delete;
  if middlehigh=0 then delete;
run;

proc surveylogistic data=trybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool/ ref=first param=ref;
   model trycig = hschool /link=glogit;
run;

proc surveylogistic data=trybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class qn2 / ref=first param=ref;
   model trycig = qn2 /link=glogit;
run;

proc surveylogistic data=trybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class racer/ref=first param=ref;
   model trycig = racer/link=glogit;
run;

proc surveylogistic data=trybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool qn2 racer/ref=first param=ref;
   model trycig = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=mtrybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class qn2 racer/ref=first param=ref;
   model trycig = qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool qn2 racer/ref=first param=ref;
   model trycig = hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic data=trybuy;
   weight wt;
   strata stratum;
   cluster psu;
   class hschool qn2 racer/ref=first param=ref;
   model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;
proc surveylogistic data=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model trycig = hschool qn2 racer/qs=first/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = hschool /link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = qn2/qs=first/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = racer/qs=first/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hs school qn2 racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer/qs=first/link=glogit;
run;

proc surveylogistic data=hrefusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = qn2 racer/qs=first/link=glogit;
run;

proc surveylogistic data=mrefusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = qn2 racer/qs=first/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer/qs=first/link=glogit;
run;

**proc surveylogistic data=refusal;**
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer
  hschool*racer/link=glogit;
run;

**proc surveylogistic data=refusal;**
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer
  qn2*racer/link=glogit;
run;

*Did anyone refuse to sell you cigs due to age;*

**data refusal;**
  set nyts2006;
  if Qn24=1 then delete;
run;

**data trybuy;**
  set nyts2006;
  if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24=. then trycig=.;
run;

**proc surveylogistic data=trybuy;**
  weight wt;
  strata stratum;
  cluster psu;
  class hschool/ ref=first param-ref;
  model trycig = hschool /link=glogit;
run;

**proc surveylogistic data=trybuy;**
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 / ref=first param-ref;
  model trycig = qn2 /link=glogit;
run;

**proc surveylogistic data=trybuy;**
  weight wt;
  strata stratum;
  cluster psu;
  class racer/ref=first param-ref;
  model trycig = racer/link=glogit;
run;

**proc surveylogistic data=trybuy;**
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model trycig = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer qn2*racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = hschool /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class qn2/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = qn2 /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class racer/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = racer /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer/light=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer
hschool*qn2/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param=ref;
  model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer
hschool*racer/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param=ref;
  model qn24 (ref="No, no one refused because of my age") = hschool qn2 racer
qn2*racer/link=glogit;
run;

/**********************/
/*MULTIPLE TOBACCO USE*/
/**********************/
proc sort; by multtob; run;
proc surveyfreq nosummary nomcar;
  tables curcigs curcigar cursmkls curpipe curkret/cv deff row cl;
weight wt;
  strata stratum;
  cluster psu;
by multtob;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool/ref=first param=ref;
  model multtob(ref="0") = hschool/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2/ref=first param=ref;
  model multtob (ref="0")=qn2 /link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer/ref=first param=ref;
  model multtob (ref="0")=racer /link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param=ref;
  model multtob (ref="0")=hschool qn2 racer /link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model multtob(ref="0")=hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model multtob(ref="0")=hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param-ref;
  model multtob(ref="0")=hschool qn2 racer qn2*racer/link=glogit;
run;

*Looking at just high school;

data hschool;
  set nyts2006;
  if middlehigh=0 then delete;
run;

proc surveylogistic data=hschool;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param-ref;
  model multtob(ref="0")=qn2 racer/link=glogit;
run;

data mschool;
  set nyts2006;
  if middlehigh=1 then delete;
run;

proc surveylogistic data=mschool;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param-ref;
  model multtob(ref="0")=qn2 racer/link=glogit;
run;

*Missing data analysis;

proc surveyfreq nosummary missing;
  tables curcigs/cv deff row c1;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary missing;
  tables curcigar/cv deff row c1;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables cursmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables qn75/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables qn76/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables qn74/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables qn2/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
**DEMOGRAPHICS**

*race/ethnicity* - sum up answers to white, black, etc to determine if there is > 1 race answered; 
mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e)); 
label mrace="Number of races chosen from Q5";

*hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;* 
if qn4=1 then RACE_S=3; *hispanic;* 
else if qn4=2 then do; *non-hispanic;* 
if mrace=1 then do; *one-race;* 
if qn5e=1 then RACE_S=1; *nh-white;* 
else if qn5c=1 then RACE_S=2; *nh-black;* 
else if qn5b=1 then RACE_S=4; *nh-asian;* 
else if qn5a=1 then RACE_S=5; *nh-ai/an;* 
else if qn5d=1 then RACE_S=6; *nh-nhopi;* 
end; 
else if mrace > 1 then do; *multiple races;* 
*the order of these conditional statements determines race priority - based on previous surveys when there is more than 1 race, but the mainrace question was not picked;* 
if qn5e=1 then RACE_S=1; *nh-white;* 
else if qn5c=1 then RACE_S=2; *nh-black;* 
else if qn5b=1 then RACE_S=4; *nh-asian;* 
else if qn5a=1 then RACE_S=5; *nh-ai/an;* 
else if qn5d=1 then RACE_S=6; *nh-nhopi;* 
end; 
label RACE_S="RECODE: Race/Eth - no mult grp";

*race/ethnicity - based on NHIS where when there is > 1 race, then put that person in "multiple" race;* 
*hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;* 
if qn4=1 then RACE_M=3; *hispanic;* 
else if qn4=2 then do; *non-hispanic;* 
if mrace=1 then do; *one-race;* 
if qn5e=1 then RACE_M=1; *nh-white;*
else if qn5c=1 then RACE_M=2; *nh=black;
else if qn5b=1 then RACE_M=4; *nh-asian;
else if qn5a=1 then RACE_M=5; *nh-ai/an;
else if qn5d=1 then RACE_M=6; *nh-nhopi;
end;
else if mrace > 1 then RACE_M=7; *multiple race;
end;

/***DEMOGRAPHICS/***
*Collapse over 19 to 19+;
if Qn1=. then rQn1=.;
else if Qn1=1 then rQn1=1;
else if Qn1=2 then rQn1=2;
else if Qn1=3 then rQn1=3;
else if Qn1=4 then rQn1=4;
else if Qn1=5 then rQn1=5;
else if Qn1=6 then rQn1=6;
else if Qn1=7 then rQn1=7;
else if Qn1=8 then rQn1=8;
else if Qn1=9 then rQn1=9;
else if Qn1=10 then rQn1=10;
else if Qn1=11 or Qn1=12 or Qn1=13 then rQn1=11;
label rQn1="RECODE: Age";

/***BIDIS AND KRETEKS/***
*Bidis;
if Qn48=. then rQn48=.;
else if Qn48=1 then rQn48=1;
else if Qn48=2 then rQn48=2;
else if Qn48=3 or Qn48=4 then rQn48=3;
else if Qn48=5 then rQn48=4;
else if Qn48=6 then rQn48=5;
else if Qn48=7 then rQn48=6;
label rQn48="RECODE: Days Smoked Bidis";

*Kreteks;
if Qn49=. then rQn49=.;
else if Qn49=1 then rQn49=1;
else if Qn49=2 then rQn49=2;
else if Qn49=3 or Qn49=4 then rQn49=3;
else if Qn49=5 then rQn49=4;
else if Qn49=6 then rQn49=5;
else if Qn49=7 then rQn49=6;
label rQn49="RECODE: Days Smoked Kreteks";

/***QUITTING TOBACCO/***
if Qn29=. then rQn29=.;
else if Qn29=1 then rQn29=1;
else if Qn29=2 then rQn29=2;
else if Qn29=3 then rQn29=3;
else if Qn29=4 or Qn29=5 then rQn29=4;
else if Qn29=6 then rQn29=5;
else if Qn29=7 then rQn29=6;
else if Qn29=8 then rQn29=7;
else if Qn29=9 then rQn29=8;
label rQn29="RECODE: Quit Length";

/***EXPOSURE TO TOBACCO/***
if Qn57=. then rQn57=.;
else if Qn57=1 then rQn57=1;
else if Qn57=2 then rQn57=2;
else if Qn57=3 or Qn57=4 then rQn57=1;
label rQn57="RECODE: Housing Smoking Rules";

/*Done to make analysis easier*/

/*Done to make analysis easier*/
if Qn3=. then middlehigh=.;
  else if Qn3=1 or Qn3=2 or Qn3=3 then middlehigh=1;
  else if Qn3=4 or Qn3=5 or Qn3=6 or Qn3=7 then middlehigh=0;
label middlehigh="RECODE: School Level";
run;

proc format;
  value agefmt 1="9 yrs" 2="10 yrs" 3="11 yrs" 4="12 yrs" 5="13 yrs" 6="14 yrs"
    7="15 yrs" 8="16 yrs" 9="17 yrs" 10="18 yrs" 11="19+
  yrs";
  value schoolfmt 1="Middle School"
      0="High School"
  value quitfmt 1="I have never tried to quit"
      2="I have never smoked cigarettes"
      3="Less than a day"
      4="1 to 7 days"
      5="More than 7 days but less than 30 days"
      6="More than 30 days but less than 6 months"
      7="More than 6 months but less than 1 year"
      8="1 year or more"
  value biddiekrete
  value homesmk 1="Always allowed"
      2="Allowed only at some times or in some places"
      3="Never allowed"
run;
data nyts2009;
  set nyts2009;
  /*CURRENT TOB USE*/
  *cigarettes;
  if Qn13=. then curcigs=.;
    else if Qn13=1 then curcigs=0;
    else if Qn13=2 or Qn13=3 or Qn13=4 or Qn13=5 or Qn13=6 or Qn13=7 then curcigs=1;
  *cigars;
  if Qn44=. then curcigar=.;
    else if Qn44=1 then curcigar=0;
    else if Qn44=2 or Qn44=3 or Qn44=4 or Qn44=5 or Qn44=6 or Qn44=7 then curcigar=1;
  *smokeless;
  if Qn40=. then cursmkls=.;
    else if Qn40=1 then cursmkls=0;
    else if Qn40=2 or Qn40=3 or Qn40=4 or Qn40=5 or Qn40=6 or Qn40=7 then cursmkls=1;
  *pipes;
  if Qn46=. then curpipe=.;
    else if Qn46=1 then curpipe=0;
    else if Qn46=2 or Qn46=3 or Qn46=4 or Qn46=5 or Qn46=6 or Qn46=7 then curpipe=1;
  *bidis;
  if rQn48=. then curbid=.;
    else if rQn48=1 then curbid=0;
    else if rQn48=2 or rQn48=3 or rQn48=4 or rQn48=5 or rQn48=6 or rQn48=7 then curbid=1;
  *kretek;
  if rQn49=. then curkret=.;
    else if rQn49=1 then curkret=0;
    else if rQn49=2 or rQn49=3 or rQn49=4 or rQn49=5 or rQn49=6 or rQn49=7 then curkret=1;
  if curcigar=1 then curalt=1;
    else if cursmkls=1 or curpipe=1 or curbid=1 or curkret=1 then curalt=1;
    else if curcigar=0 or cursmkls=0 or curpipe=0 or curbid=0 or curkret=0 then curalt=0;
else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then curalt=;

sumtob=curcigs+curcigar+cursmkls+curpipe+curbid+curkret;
if sumtob=. then multtob=;
   else if sumtob>=2 then multtob=1;
   else multtob=0;

*Recode biddie/kretek to biddie and or kretek;
if Qn47= then rQn47=1;
   else if Qn47=1 then rQn47=1;
   else if Qn47=2 then rQn47=1;
   else if Qn47=3 then rQn47=1;
   else if Qn47=4 then rQn47=0;
run;

data nyts2009;
   set nyts2009 (rename = (qn8=evdcigs qn42=evdcigar qn38=evdsmkls qn45=evdpipe rqn47=evdbidkret));
run;

data nyts2009;
   set nyts2009;
if evdcigar=1 or evdsmkls=1 or evdpipe=1 or evdbidkret=1 then evdalt=1;
   else if evdcigar=0 or evdsmkls=0 or evdpipe=0 or evdbidkret=0 then evdalt=0;
   else if evdcigar=. or evdsmkls=. or evdpipe=. or evdbidkret=. then evdalt=.;
if evdcigs=1 then ebcigs=1;
   else if evdcigs=. then ebcigs=.;
   else ebcigs=0;
if evdcigar=1 then ebcigar=1;
   else if evdcigar=. then ebcigar=.;
   else ebcigar=0;
if evdsmkls=1 then ebsmkls=1;
   else if evdsmkls=. then ebsmkls=.;
   else ebsmkls=0;
if evdpipe=1 then ebpipe=1;
   else if evdpipe=. then ebpipe=.;
   else ebpipe=0;
if evdbidkret then ebbidkret=1;
   else if evdbidkret=. then ebbidkret=.;
   else ebbidkret=0;

evdsumtob=ebcigs+ebcigar+ebsmkls+ebpipe+ebbidkret;
if evdsumtob=. then evdmulttob=.;
   else if evdsumtob>=2 then evdmulttob=1;
   else evdmulttob=0;

   format rQn1 agefmt. rQn29 quitfmt. rQn48 rQn49 biddiekretek. rQn57 homesmk.
middlehigh schoolfmt.;
run;

data nyts2009;
   set nyts2009;
if race_s=1 then racer=0; /*White*/
   else if race_s=2 then racer=1; /*Black*/
   else if race_s=3 then racer=2; /*Hispanic*/
   else if race_s=4 then racer=3; /*Other*/
   else if race_s=5 then racer=3;
   else if race_s=6 then racer=3;
   else if race_s=. then racer=.;
if middlehigh=. then hschool=.;
else if middlehigh=1 then hschool=0;
else if middlehigh=0 then hschool=1;

run;

/**************************
/***DESCRIPTIVE STATISTICS***/
/***************************/
title2 'Ages';
proc surveyfreq nosummary;
tables rQn1/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

title2 'Sex';
proc surveyfreq nosummary;
tables Qn2/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

title2 'Grade';
proc surveyfreq nosummary;
tables Qn3/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

title2 'School Level';
proc surveyfreq nosummary;
tables hschool/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

title2 'Race/Ethnicity';
proc surveyfreq nosummary;
tables race_m/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables race_s/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables racer/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

/**************************
/*CURRENT TOBACCO USE*/

/*****************************/

proc surveyfreq nosummary;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables cursmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curbid/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort;
  by middlehigh;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables cursmkis/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curbid/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

*By sex;

proc sort;
by Qn2;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
  tables cursmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

proc surveyfreq nosummary;
  tables curpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

proc surveyfreq nosummary;
  tables curbid/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

proc surveyfreq nosummary;
  tables curkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by Qn2;
run;

*By race: no multiple race group;
proc sort;
by race_s;
run;

proc surveyfreq nosummary;
  tables curcigs/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
  tables curcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
  tables cursmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
    tables curbid/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by race_s;
run;

proc surveyfreq nosummary;
    tables curkret/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by race_s;
run;

proc surveyfreq nosummary;
    tables curalt/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables curalt/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
    tables curalt/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
    tables curalt/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by race_s;
run;

proc surveyfreq nosummary;
    tables multtob/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

/**************************************************************/
/*TOBACCO ACCESS*/
/**************************************************************/
data refusal;
set nyts2009;
if Qn24=1 then delete;
run;

proc surveyfreq nosummary data=refusal;
tables Qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=refusal;
tables Qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=refusal;
tables Qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=refusal;
tables Qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
data internet;
set nyts2009;
if Qn75=2 or Qn75=3 then intad=1;
else if Qn75=4 or Qn75=5 then intad=0;
if Qn75=1 then delete;
run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
data print;
set nyts2009;
if Qn76=2 or Qn76=3 or Qn76=4 then printad=1;
else if Qn76=5 or Qn76=6 then printad=0;
if Qn76=1 then delete;
run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=print;
tables printad/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=print;
  tables printad/cv deff cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=print;
  tables printad/cv deff cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

data store;
  set nytst2009;
  if Qn77=2 or Qn77=3 or Qn77=4 then storead=1;
  else if Qn77=5 or Qn77=6 then storead=0;
  if Qn77=1 then delete;
run;

proc surveyfreq nosummary;
  tables qn77/cv deff cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary data=store;
  tables storead/cv deff cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=store;
  tables storead/cv deff cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=store;
  tables storead/cv deff cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=store;
  tables storead/cv deff cl;
  weight wt;
  strata stratum;
cluster psu;
by race_s;
run;

data act;
set nyts2009;
if Qn74=2 or Qn74=3 then act=1;
else if Qn74 or Qn74=5 then act=0;
if Qn74=1 then delete;
run;

proc surveyfreq nosummary data=act;
tables Qn74/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;

proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;

/lgplкратиняспспдпк
/*EVER TOBACCO USE*/
/lgplкратинясппдпдк

*Cigarette;
proc surveyfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdciigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdciigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
*Cigar;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

*Smokeless;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables evdsmkls/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
    tables evdsmkls/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
    tables evdsmkls/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by race_s;
run;

*Pipe;
proc surveyfreq nosummary;
    tables evdpipe/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables evdpipe/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
    tables evdpipe/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
    tables evdpipe/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by race_s;
run;

*Bidis/Kreteks;
PROC SURVEYFREQ NOPRINT;
  TABLES evdbidkret / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
RUN;

PROC SORT; BY middlehigh; RUN;
PROC SURVEYFREQ NOPRINT;
  TABLES evdbidkret / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
  BY middlehigh;
RUN;

PROC SORT; BY qn2; RUN;
PROC SURVEYFREQ NOPRINT;
  TABLES evdbidkret / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
  BY qn2;
RUN;

PROC SORT; BY race_s; RUN;
PROC SURVEYFREQ NOPRINT;
  TABLES evdbidkret / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
  BY race_s;
RUN;

*Alternative tobacco;
PROC SURVEYFREQ NOPRINT;
  TABLES evdalt / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
RUN;

PROC SORT; BY middlehigh; RUN;
PROC SURVEYFREQ NOPRINT;
  TABLES evdalt / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
  BY middlehigh;
RUN;

PROC SORT; BY qn2; RUN;
PROC SURVEYFREQ NOPRINT;
  TABLES evdalt / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
  CLUSTER psu;
  BY qn2;
RUN;

PROC SORT; BY race_s; RUN;
PROC SURVEYFREQ NOPRINT;
  TABLES evdalt / CV DEFF ROW CL;
  WEIGHT wt;
  STRATA stratum;
cluster psu;
by race_s;
run;

*Mult tobacco;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

/**************************
/*TOBACCO ACCESS*/
/**************************

*Did anyone refuse to sell you cigs due to age;
proc surveyfreq nosummary;
tables qn24/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

data trybuy;
set nyts2009;
if Qn24=1 then trycig=0;
else if Qn24=2 then trycig=1;
else if Qn24=3 then trycig=1;
else if Qn24=4 then trycig=1;
run;

proc surveyfreq nosummary;
tables trycig/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

data htrybuy;
set nyts2009;
if Qn24=1 then trycig=0;
  else if Qn24=2 then trycig=1;
  else if Qn24=3 then trycig=1;
  else if Qn24= then trycig=.;
if middlehigh=1 then delete;
run;

data mtrybuy;
set nyts2009;
if Qn24=1 then trycig=0;
else if Qn24=2 then trycig=1;
else if Qn24=3 then trycig=1;
else if Qn24= then trycig=.;
if middlehigh=0 then delete;
run;

data refusal;
set nyts2009;
if Qn24=1 then delete;
run;

proc surveyfreq nosummary;
  tables Qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

data hrefusal;
set nyts2009;
if Qn24=1 then delete;
if middlehigh=1 then delete;
run;

data mrefusal;
set nyts2009;
if Qn24=1 then delete;
if middlehigh=0 then delete;
run;

proc surveylogistic data=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool/ ref=first param=ref;
  model trycig = hschool /link=glogit;
run;

proc surveylogistic data=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 / ref=first param=ref;
  model trycig = qn2 /link=glogit;
run;

proc surveylogistic data=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
class racer/ref=first param=ref;
model trycig = racer/link=glogit;
run;

proc surveylogistic data=htrybuy;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param=ref;
model trycig = qn2 racer/link=glogit;
run;

proc surveylogistic data=mtrybuy;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param=ref;
model trycig = qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer qn2*racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool/ ref=first param=ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") =
hschool /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class qn2 / ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = qn2 /link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=hrefusal;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = qn2 racer/link=glogit;
run;

proc surveylogistic data=mrefusal;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = qn2 racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param-ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = hschool qn2 racer hschool*qn2/link=glogit;
run;
class hschool qn2 racer/ref=first param=ref;
model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = hschool qn2 racer qn2*racer/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  class hschool qn2 racer/ref=first param=ref;
  model qn24 (ref="No, no one refused to sell me cigarettes because of my age") = hschool qn2 racer qn2*racer/link=glogit;
run;

proc sort; by multtob; run;
proc surveyfreq nosummary nomcar;
  tables curcigs curcigar cursmkls curpipe curkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by multtob;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool/ref=first param=ref;
  model multtob(ref="0") = hschool/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2/ref=first param=ref;
  model multtob (ref="0")=qn2 /link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer/ref=first param=ref;
  model multtob(ref="0")=racer /link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param=ref;
run;
model multtob(ref="0")=hschool qn2 racer /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model multtob(ref="0")=hschool qn2 racer hschool*qn2 /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model multtob(ref="0")=hschool qn2 racer hschool*racer /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model multtob(ref="0")=hschool qn2 racer qn2*racer /link=glogit;
run;

proc freq;
tables middlehigh;
run;

*Looking at just middle school;
data mschool;
set nyts2009;
if middlehigh=0 then delete;
run;
proc surveylogistic data=mschool;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param=ref;
model multtob(ref="0")=qn2 racer /link=glogit;
run;

data hschool;
set nyts2009;
if middlehigh=1 then delete;
run;
proc surveylogistic data=hschool;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param=ref;
model multtob(ref="0")=qn2 racer /link=glogit;
run;

*Looking at missing data;
proc surveyfreq nosummary missing;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
    tables curcigar/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables cursmkla/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables curpipe/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables curbid/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables curkret/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables curalt/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables multtob/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables evdcigs/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
    tables evdciaga/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary missing;
proc surveyfreq nosummary missing;
  tables evdsmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables evdbidkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables evdalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables evdmulttob/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables qn24/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables Qn75/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables Qn76/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables Qn74/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;
proc surveyfreq nosummary missing;
  tables Qn2/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
  tables middlehigh/cv deff wchisq row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary missing;
  tables racer/cv deff wchisq row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

/*******************************************************************************
*******************************2011*********************************************/
libname fourth "H:\Thesis\Thesis Data"
OPTIONS FMTSEARCH=(fourth.nyts11fmts) nonumber nodate;
data nyts2011;
  set fourth.nyts11data;
  /*Courtesy of NYTS*/
  *race/ethnicity -sum up answers to white, black, etc to determine if there is > 1 race answered;
  mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
  label mrace="Number of races chosen from Q5"
  *race/ethnicity -based on NHIS where when there is > 1 race, then put that person in "multiple" race; *hispanic ethnicity takes precedent -similar to previous NYTS datasets & race recoding;
  if qn4 in(2,3,4,5) then RACE_M=3; *hispanic;
  else if qn4=1 then do; *non-hispanic;
    if mrace=1 then do; *one-race;
      if qn5e=1 then RACE_M=1; *NH-White;
      else if qn5c=1 then RACE_M=2; *NH-Black;
      else if qn5b=1 then RACE_M=4; *NH-Asian;
      else if qn5a=1 then RACE_M=5; *NH-AI/AN;
      else if qn5d=1 then RACE_M=6; *NH-NHOPI;
      end;
      else if mrace > 1 then RACE_M=7; *multiple race;
    end;
  label RACE_M="RECODE: Race/Eth - mult grp"
  *Create mrace, a new variable that sums the number of races selected in QN5;
  mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
  label mrace="Number of races chosen from Q5"
  *Hispanic ethnicity takes precedent -similar to previous NYTS datasets & race recoding;
  *This code set pertains to respondents who marked only one answer;
  if qn4 in(2,3,4,5) then RACE_S=3; *Hispanic;
  else if qn4=1 then do; *Non-Hispanic;
    if mrace=1 then do; *one-race;
      if qn5e=1 then RACE_S=1; *NH-White;
      else if qn5c=1 then RACE_S=2; *NH-Black;
      else if qn5b=1 then RACE_S=4; *NH-Asian;
      else if qn5a=1 then RACE_S=5; *NH-AI/AN;
      else if qn5d=1 then RACE_S=6; *NH-NHOPI;
  else if mrace > 1 then RACE_S=7; *multiple race;
end;

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end;
else if mrace > 1 then do; *multiple races;
*This code set is a continuation of the above and pertains to respondents who marked more than one answer;*The order of these conditional statements determines race priority - based on previous surveys with a race question that allows respondents to select more than one answer;
if qn5e=1 then RACE_S=1; *NH-White;
  else if qnS1=1 then RACE_S=2; *NH-Black;
  else if qnSb=1 then RACE_S=4; *NH-Asian;
  else if qn5a=1 then RACE_S=5; *NH-AI/AN;
  else if qn5d=1 then RACE_S=6; *NH-NHOPI;
end;
label RACE_S="RECODE: Race/Eth -no mult grp";

/*Done to make analysis easier*/
if Qn3=. then middlehigh=.;
  else if Qn3=1 or Qn3=2 or Qn3=3 then middlehigh=1;
  else if Qn3=4 or Qn3=5 or Qn3=6 or Qn3=7 then middlehigh=0;
label middlehigh="RECODE: School Level";

/*Done to be consistent with other surveys*/
/**DEMOGRAPHICS***/
*Recode Hispanic to yes/no;
if Qn4=. then hispanic=.;
  else if Qn4=1 then hispanic=0;
  else if Qn4=2 or Qn4=3 or Qn4=4 or Qn4=5 then hispanic=1;

/***CIGARETTES***/
*Recode place of cigarettes combining mail and other;
if Qn19h=1 then rQn19h=1;
  if Qn19i=1 then rQn19h=1;
label rQn19h="Other place";

/***CIGARS***/
*Recode age of cigar use combining 17, 18, 19 to 17+;
if Qn22=. then rQn22=.;
  else if Qn22=1 then rQn22=1;
  else if Qn22=2 then rQn22=2;
  else if Qn22=3 then rQn22=3;
  else if Qn22=4 then rQn22=4;
  else if Qn22=5 then rQn22=5;
  else if Qn22=6 then rQn22=6;
  else if Qn22=7 then rQn22=7;
  else if Qn22=8 then rQn22=8;
  else if Qn22=9 then rQn22=9;
  else if Qn22=10 then rQn22=10;
  else if Qn22=11 or Qn22=12 or Qn22=13 then rQn22=11;
label rQn22="RECODE: Age at first cigar";

/***DIP***/
*Recode age of dip use combining 17, 18, 19 to 17+;
if Qn27=. then rQn27=.;
  else if Qn27=1 then rQn27=1;
  else if Qn27=2 then rQn27=2;
  else if Qn27=3 then rQn27=3;
  else if Qn27=4 then rQn27=4;
  else if Qn27=5 then rQn27=5;
  else if Qn27=6 then rQn27=6;
  else if Qn27=7 then rQn27=7;
  else if Qn27=8 then rQn27=8;
  else if Qn27=9 then rQn27=9;
  else if Qn27=10 then rQn27=10;
  else if Qn27=11 or Qn27=12 or Qn27=13 then rQn27=11;
label rQn27="RECODE: Age at first dip"

/***BIDIS AND KRETeks/*** 
*Recode order of bidis and kreteks; 
if Qn33=. then rQn33=.; 
else if Qn33=1 then rQn33=4; 
else if Qn33=2 then rQn33=1; 
else if Qn33=3 then rQn33=2; 
else if Qn33=4 then rQn33=3; 
label rQn33="RECODE: Bidi/Kretek use";

/***ISSUES RELATED TO TOBACCO***/
*Recode using internet/ads; 
if Qn40=. then rQn40=.; 
else if Qn40=1 then rQn40=1; 
else if Qn40=2 then rQn40=5; 
else if Qn40=3 then rQn40=4; 
else if Qn40=4 then rQn40=3; 
else if Qn40=5 or Qn40=6 then rQn40=2; 
label rQn40="RECODE: Tobacco internet ads";

*Recode reading newspaper/mags and ads; 
if Qn41=. then rQn41=.; 
else if Qn41=1 then rQn41=1; 
else if Qn41=2 then rQn41=6; 
else if Qn41=3 then rQn41=5; 
else if Qn41=4 then rQn41=4; 
else if Qn41=5 then rQn41=3; 
else if Qn41=6 then rQn41=2; 
label rQn41="RECODE: Tobacco print ads";

*Recode actors using tobacco; 
if Qn46=. then rQn46=.; 
else if Qn46=1 then rQn46=1; 
else if Qn46=2 then rQn46=5; 
else if Qn46=3 then rQn46=4; 
else if Qn46=4 then rQn46=3; 
else if Qn46=5 or Qn46=6 then rQn46=2; 
label rQn46="RECODE: Actor tobacco use";

/***EXPOSURE TO TOBACCO***/
*Collapse vehicle exposure; 
if Qn61=. then rQn61=.; 
else if Qn61=1 then rQn61=1; 
else if Qn61=2 or Qn61=3 then rQn61=2; 
else if Qn61=4 or Qn61=5 then rQn61=3; 
else if Qn61=6 or Qn61=7 then rQn61=4; 
else if Qn61=8 then rQn61=5; 
label rQn61="RECODE: Car Tobacco Exposure";

/*CURRENT TOB USE*/
*cigarettes; 
if Qn13=. then curcigs=.; 
else if Qn13=1 then curcigs=0; 
else if Qn13=2 or Qn13=3 or Qn13=4 or Qn13=5 or Qn13=6 or Qn13=7 then curcigs=1; 
*cigars; 
if Qn23=. then curcigar=.; 
else if Qn23=1 then curcigar=0; 
else if Qn23=2 or Qn23=3 or Qn23=4 or Qn23=5 or Qn23=6 or Qn23=7 then curcigar=1; 
*smokeless; 
if Qn28=. then cursmkls=.; 
else if Qn28=1 then cursmkls=0; 
else if Qn28=2 or Qn28=3 or Qn28=4 or Qn28=5 or Qn28=6 or Qn28=7 then cursmkls=1; 
*pipes; 
if Qn32=. then curpipe=.;
else if Qn32=1 then curpipe=0;
else if Qn32=2 or Qn32=3 or Qn32=4 or Qn32=5 or Qn32=6 or Qn32=7 then curpipe=1;
*bidis;
if Qn34= then curbid=-1;
else if Qn34=1 then curbid=0;
else if Qn34=2 or Qn34=3 or Qn34=4 or Qn34=5 or Qn34=6 then curbid=-1;
*kreteks;
if Qn35= then curkret=-1;
else if Qn35=1 then curkret=0;
else if Qn35=2 or Qn35=3 or Qn35=4 or Qn35=5 or Qn35=6 then curkret=1;
if curcigar=1 or cursmkls=1 or curpipe=1 or curbid=1 or curkret=1 then curalt=1;
else if curcigar=0 or cursmkls=0 or curpipe=0 or curbid=0 or curkret=0 then curalt=0;
else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then curalt=.;
if curcigar=1 then curalt=1;
else if cursmkls=1 or curpipe=1 or curbid=1 or curkret=1 then curalt=1;
else if curcigar=0 or cursmkls=0 or curpipe=0 or curbid=0 or curkret=0 then curalt=0;
else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then curalt=.;
cursmtob=curcigs+curcigar+cursmkls+curpipe+curbid+curkret;
if cursmtob= then multtob=0;
else if cursmtob=2 then multtob=1;
else multtob=0;
if Qn17=1 then curmenth=1;
else if Qn17=3 then curmenth=2;
else if Qn17=4 then curmenth=3;
else if Qn17=. then curmenth=.;
label curmenth="RECODE: Current Menthol Smoker";
if Qn17=2 then curbimenth=1;
else if Qn17=3 then curbimenth=0;
else if Qn17=. then curbimenth=.
label curbimenth="RECODE: Current Menthol Smoker Y/N";
*Recode biddie/kretek to biddie and or kretek;
if Qn33= then bkQn33=1;
else if Qn33=2 then bkQn33=1;
else if Qn33=3 then bkQn33=1;
else if Qn33=4 then bkQn33=1;
else if Qn33=1 then bkQn33=0;
run;
data nyts2011;
set nyts2011 (rename=('qn7=evdcigs qn21=evdcigar qn26=evdsmkls qn31=evdpipe bkQn33=evdbidkret'));
run;
proc format;
  value firstuse 1="8 yrs" 2="9 yrs" 3="10 yrs" 4="11 yrs" 5="12 yrs" 6="13 yrs" 7="14 yrs" 8="15 yrs" 9="16 yrs" 10="17+";
  value schoolfmt 1="Middle School" 0="High School";
  value rQn19hfmt 1="Other";
  value biddiekretek 1="Bidis" 2="Kreteks" 3="I have tried both bidis and kreteks" 4="I have never smoked bidis or kreteks";
  value internetads 1="I do not use the Internet" 2="Most of the time"
Some of the time
Hardly ever
Never

value printads 1="I do not read newspapers or magazines"
2="All of the time"
3="Most of the time"
4="Some of the time"
5="Hardly ever"
6="Never"

value tvactors 1="I don't watch TV or go to the movies"
2="Most of the time"
3="Some of the time"
4="Hardly ever"
5="Never"

value carexp 1="0 days"
2="1 or 2 days"
3="3 or 4 days"
4="5 or 6 days"
5="7 days"

run;
data nyts2011;
set nyts2011;
if evd cigar=1 or evd smkls=1 or evd pipe=1 or evd bidkret=1 then evd alt=1;
else if evd cigar=0 or evd smkls=0 or evd pipe=0 or evd bidkret=0 then evd alt=0;
else if evd cigar=. or evd smkls=. or evd pipe=. or evd bidkret=. then evd alt=.;

if evd cigar=1 then ebcigs=1;
else if evd cigar=. then ebcigs=.;
else ebcigs=0;
if evd cigar=1 then ebcigar=1;
else if evd cigar=. then ebcigar=.;
else ebcigar=0;
if evd smkls=1 then ebsmkls=1;
else if evd smkls=. then ebsmkls=.;
else ebsmkls=0;
if evd pipe=1 then ebpipe=1;
else if evd pipe=. then ebpipe=.;
else ebpipe=0;
if evd bidkret then ebbidkret=1;
else if evd bidkret=. then ebbidkret=.;
else ebbidkret=0;

if ebsmkls ebcigs+ebcigar+ebsmkls+ebpipe+ebbidkret;
if ebsmkls=0 then evd multtob=0;
if ebsmkls=0 then evd multtob=0;
else if ebsmkls=0 then evd multtob=1;
else evd multtob=0;
format rQn22 rQn27 firstuse. middlehigh schoolfmt. rQn19h rQn19hfmt. rQn40 internetads. rQn41 printads. rQn46 tvactors. rQn33 biddiekretek. rQn61 carexp.;
run;
data nyts2011;
set nyts2011;
if race_s=1 then racer=0; /*White*/
else if race_s=2 then racer=1; /*Black*/
else if race_s=3 then racer=2; /*Hispanic*/
else if race_s=4 then racer=3; /*Other*/
else if race_s=5 then racer=3;
else if race_s=6 then racer=3;
else if race_s=7 then racer=3;

if middlehigh= then hschool=.;
else if middlehigh=1 then hschool=0;
else if middlehigh=0 then hschool=1;
run;
/*****************************/
/***DESCRIPTIVE STATISTICS***/
/*****************************/
title2 'Ages';
proc surveyfreq nosummary;
   tables Qn1/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'Sex';
proc surveyfreq nosummary;
   tables Qn2/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'Grade';
proc surveyfreq nosummary;
   tables Qn3/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'School Level';
proc surveyfreq nosummary;
   tables hschool/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
title2 'Race/Ethnicity';
proc surveyfreq nosummary;
   tables race_m/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
proc surveyfreq nosummary;
   tables race_s/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
proc surveyfreq nosummary;
   tables racer/cv deff wchisq row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;
/*****************************/
/*CURRENT TOBACCO USE*/
/*****************************/
proc surveyfreq nosummary;
  tables curcigs/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary;
  tables curcigar/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary;
  tables cursmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary;
  tables curpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary;
  tables curbid/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary;
  tables curkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc surveyfreq nosummary;
  tables curalt/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort;
  by middlehigh;
run;

proc surveyfreq nosummary;
  tables curcigs/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables cursmkis/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curbid/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc surveyfreq nosummary;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

*By sex;

proc sort;
   by Qn2;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by Qn2;
run;
proc surveyfreq nosummary;
tables cursmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curbid/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

proc surveyfreq nosummary;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by Qn2;
run;

*By race: no multiple race group;
proc sort;
by race_s;
run;

proc surveyfreq nosummary;
tables curcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curcigar/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables cursmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables curpipe/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;
proproc surveyfreq nosummary;
tables curbid/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;
proc surveyfreq nosummary;
tables curkret/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;
proc surveyfreq nosummary;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary;
tables curalt/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables multtob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

proc surveyfreq nosummary;
tables qn20/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

/********************
/*TOBACCO ACCESS*/
/********************

data refusal;
set nyts2011;
if Qn20=1 then delete;
run;

proc surveyfreq nosummary data=refusal;
tables Qn20/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=refusal;
tables Qn20/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=refusal;
tables Qn20/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary data=refusal;
tables Qn20/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary data=refusal;
tables race_s*Qn20/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;

data internet;
set nyts2011;
if rQn40=2 or rQn40=3 then intad=1;
else if rQn40=4 or rQn40=5 then intad=0;
if rQn40=1 then delete;
run;
proc surveyfreq nosummary data=internet;
tables rQn40/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary data=internet;
tables intad/cv deff row cl;
weight wt;
strata stratum;
ccluster psu;
by race_s;
run;
data print;
    set nyts2011;
    if rQn41=2 or rQn41=3 or rQn41=4 then printad=1;
    else if rQn41=5 or rQn41=6 then printad=0;
    if rQn41=1 then delete;
run;

proc surveyfreq nosummary data=print;
    tables rQn41/cv deff nowt row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc surveyfreq nosummary data=print;
    tables printad/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=print;
    tables printad/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=print;
    tables printad/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=print;
    tables printad/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
    by race_s;
run;

data act;
    set nyts2011;
    if rQn46=2 or rQn46=3 then act=1;
    else if rQn46=4 or rQn46=5 then act=0;
    if rQn46=1 then delete;
run;

proc surveyfreq nosummary data=act;
    tables rQn46/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;
proc surveyfreq nosummary data=act;
    tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary data=act;
tables act/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

/**********************/
/*EVER TOBACCO USE*/
/**********************/
*Cigarette*
proc surveyfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdcigs/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
*Cigar;
proc surveyfreq nosummary;
tables evdciag/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdciag/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdciag/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdciag/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
*Smokeless;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdsmkls/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdsmkls/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
by race_s;
run;

*Pipe;
proc surveyfreq nosummary;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
  tables evdpipe/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by race_s;
run;

*Bidis/Kreteks;
proc surveyfreq nosummary;
  tables evdbidkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables evdbidkret/cv deff row cl;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
  tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdbidkret/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

*Alternative tobacco;
proc surveyfreq nosummary;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;

proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdalt/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;

*Mult tobacco;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;
proc sort; by qn2; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by qn2;
run;
proc sort; by race_s; run;
proc surveyfreq nosummary;
tables evdmulttob/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by race_s;
run;
proc contents;
run;
/*Will need to recode variables alllll to 0/1*/
proc freq;
tables curbimenth race_s qn2 middlehigh curbid curkret curcigar curcigs;
run;
data logmodel;
set nyts2011;
if race_s=1 then racer=0; /*White*/
  else if race_s=2 then racer=1; /*Black*/
  else if race_s=3 then racer=2; /*Hispanic*/
  else if race_s=4 then racer=3; /*Other*/
  else if race_s=5 then racer=3;
  else if race_s=6 then racer=3;
  else if race_s=. then racer=.;
if middlehigh=1 then hschool=0;
  else if middlehigh=0 then hschool=1;
if qn2=1 then male=0;
  else if qn2=2 then male=1;
run;
proc freq;
tables curbimenth racer male hschool;
run;
*Univariate models;
proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer/ ref=first param=ref;
model curbimenth (ref='0') = racer/link=glogit;
run;
proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class male/ ref=first param=ref;
model curbimenth (ref='0') = male/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool/ ref=first param=ref;
model curbimenth (ref='0') = hschool/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class curbid / ref=first param=ref;
model curbimenth (ref='0') = curbid /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class curkret / ref=first param=ref;
model curbimenth (ref='0') = curkret/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class qn37b / ref=first param=ref;
model curbimenth (ref='0') = qn37b/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class qn37c / ref=first param=ref;
model curbimenth (ref='0') = qn37c/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class qn37d / ref=first param=ref;
model curbimenth (ref='0') = qn37d/link=glogit;
run;

*Model with only significant variables {no male};

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curbid curkret qn37b qn37c qn37d/ ref=first param=ref;
model curbimenth (ref='0') = racer hschool curbid curkret qn37b qn37c qn37d/link=glogit;
run;

*Male remains insignifican - does not change coefficients - do not add;
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curbcurkret qn37b qn37c qn37d ref=first param=ref;
  model curbimenth (ref='0') = racer hschool curbcurkret qn37b qn37c qn37d
  male/link=glogit;
run;

*Start removing insignifican variables (clove cigars);
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curbcurkret qn37b qn37d ref=first param=ref;
  model curbimenth (ref='0') = racer hschool curbcurkret qn37b qn37d/link=glogit;
run;

*remove 36d (little cigars);
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curbcurkret qn37b ref=first param=ref;
  model curbimenth (ref='0') = racer hschool curbcurkret qn37b/link=glogit;
run;

*Preliminary main effects*;
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curkret qn37b ref=first param=ref;
  model curbimenth (ref='0') = racer hschool curkret qn37b/link=glogit;
run;

proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curkret qn37b male ref=first param=ref;
  model curbimenth (ref='0') = racer hschool curkret qn37b male/link=glogit;
run;

*Male still not significant;
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curkret qn37b ref=first param=ref;
  model curbimenth (ref='0') = racer hschool curkret qn37b/link=glogit;
run;

*testing interactions;
proc surveylogistic;
  weight wt;
  strata stratum;
  cluster psu;
  class racer hschool curkret qn37b ref=first param=ref;
  model curbimenth (ref='0') = racer hschool hschool curkret qn37b/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curkret qn37b/ ref=first param=ref;
model curbimenth (ref='0') = racer racer*curkret hschool curkret qn37b/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curkret qn37b/ ref=first param=ref;
model curbimenth (ref='0') = racer racer*qn37b hschool curkret qn37b/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curkret qn37b/ ref=first param=ref;
model curbimenth (ref='0') = racer hschool hschool*curkret curkret qn37b/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curkret qn37b/ ref=first param=ref;
model curbimenth (ref='0') = racer hschool hschool*qn37b curkret qn37b/link=glogit;
run;

*All significant interactions in model;
*Only significant predictors (and curkret*36b);
proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curkret qn37b/ ref=first param=ref;
model curbimenth (ref='0') = racer hschool curkret curkret*qn37b qn37b/link=glogit clparm;
run;

*Only main effects;
proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer hschool curkret qn37b/ ref=first param=ref;
model curbimenth (ref='0') = racer hschool curkret qn37b/link=glogit clparm;
run;

/****************************/
/*TOBACCO ACCESS*/
/****************************/

*Did anyone refuse to sell you cigs due to age;

proc surveyfreq nosummary;
    tables qn20/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

data refusal;
    set nyts2011;
    if Qn20=1 then delete;
run;

proc surveyfreq nosummary;
    tables qn20/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

data hrefusal;
    set nyts2011;
    if Qn20=1 then delete;
    if middlehigh=1 then delete;
run;

data mrefusal;
    set nyts2011;
    if Qn20=1 then delete;
    if middlehigh=0 then delete;
run;

*Did you try and buy cigarettes;

data trybuy;
    set nyts2011;
    if Qn20=1 then trycig=0;
    else if Qn20=2 then trycig=1;
    else if Qn20=3 then trycig=1;
    else if Qn20=. then trycig=.;
run;

proc surveyfreq nosummary;
    tables trycig/cv deff row cl;
    weight wt;
    strata stratum;
    cluster psu;
run;

data htrybuy;
    set nyts2011;
    if Qn20=1 then trycig=0;
    else if Qn20=2 then trycig=1;
    else if Qn20=3 then trycig=1;
    else if Qn20=. then trycig=.;
    if middlehigh=1 then delete;
run;

data mtrybuy;
set nyts2011;
if Qn20=1 then trycig=0;
   else if Qn20=2 then trycig=1;
   else if Qn20=3 then trycig=1;
   else if Qn20=4 then trycig=4;
if middlehigh=0 then delete;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool/ ref=first param=ref;
model trycig = hschool /link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class qn2 / ref=first param=ref;
model trycig = qn2 /link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class racer/ref=first param=ref;
model trycig = racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=htrybuy;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param=ref;
model trycig = qn2 racer/link=glogit;
run;

proc surveylogistic data=mtrybuy;
weight wt;
strata stratum;
cluster psu;
class qn2 racer/ref=first param=ref;
model trycig = qn2 racer/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic data=trybuy;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=trybuy;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param=ref;
  model trycig = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool/ ref=first param=ref;
  model qn20 (ref="No") = hschool /link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 / ref=first param=ref;
  model qn20 (ref="No") = qn2 /link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class racer/ref=first param=ref;
  model qn20 (ref="No") = racer/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class hschool qn2 racer/ref=first param=ref;
  model qn20 (ref="No") = hschool qn2 racer/link=glogit;
run;

proc surveylogistic data=hrefusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param=ref;
  model qn20 (ref="No") = qn2 racer/link=glogit;
run;

proc surveylogistic data=mrefusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param=ref;
  model qn20 (ref="No") = qn2 racer/link=glogit;
run;

proc surveylogistic data=refusal;
  weight wt;
  strata stratum;
  cluster psu;
  class qn2 racer/ref=first param=ref;
  model qn20 (ref="No") = qn2 racer/link=glogit;
run;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model qn20 (ref="No") = hschool qn2 racer hschool*qn2/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model qn20 (ref="No") = hschool qn2 racer hschool*racer/link=glogit;
run;

proc surveylogistic data=refusal;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model qn20 (ref="No") = hschool qn2 racer qn2*racer/link=glogit;
run;

*Looking at multiple tobacco users*;
proc sort; by multtob; run;
proc surveymfreq nosummary nomcar;
tables curcigs curcigar cursmkls curpipe curkreb cv deff row cl;
weight wt;
strata stratum;
cluster psu;
by multtob;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool/ref=first param=ref;
model multtob(ref="0") = hschool/link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class qn2/ref=first param=ref;
model multtob (ref="0")=qn2 /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class racer/ref=first param=ref;
model multtob(ref="0")=racer /link=glogit;
run;

proc surveylogistic;
weight wt;
strata stratum;
cluster psu;
class hschool qn2 racer/ref=first param=ref;
model multtob (ref="0")=hschool qn2 racer /link=glogit;
run;
**Multiple tobacco unique to 2011;**
```
proc surveyfreq nosummary nomcar;
   tables qn36a qn36b qn36c qn36d qn36e qn36f qn36g qn36h qn36i qn36j/cv deff row cl
   chisq;
   weight wt;
   strata stratum;
   cluster psu;
run;
```
```
cluster psu;
run;
proc surveyfreq nosummary missing;
tables curcigs/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables curcigar/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables cursmkls/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables curpipe/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables curbid/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables curkret/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables curalt/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables multtob/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
tables evdcigs/cv deff cl;
weight wt;
strata stratum;
cluster psu;
run;
proc surveyfreq nosummary missing;
   tables evdciar/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables evdsmkls/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables evdpipe/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables evdbidkret/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables evdalt/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables evdmulttob/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables qn20/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables Qn40/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
   tables Qn41/cv deff row cl;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc surveyfreq nosummary missing;
tables Qn46/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables Qn2/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables middlehigh/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary missing;
tables racer/cv deff wchisq row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary nomcar;
tables qn36a qn36b qn36c qn36d qn36e qn36f qn36g qn36h qn36i qn36j/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary nomcar;
tables qn37a qn37b qn37c qn37d qn37e qn37f qn37g qn37h qn37i qn37j/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary nomcar;
tables qn36a qn36b qn36c qn36d qn36e qn36f qn36g qn36h qn36i qn36j/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

proc surveyfreq nosummary nomcar;
tables qn17/cv deff row cl;
weight wt;
strata stratum;
cluster psu;
run;

/********************************************************************
*************************2009vs2011**********************************
********************************************************************/

/**2009**/
libname third "H:\Thesis\Thesis Data";
OPTIONS FMTSEARCH=(third.nyts09fmts);
data nyts2009;
  set third.nyts09data;

/***DEMOGRAPHICS***/

*race/ethnicity - sum up answers to white, black, etc to determine if there is > 1 race answered;
  mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
  label mrace="Number of races chosen from Q5";

  *hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;
  if qn4=1 then RACE_S=3; *hispanic;
  else if qn4=2 then do; *non-hispanic;
    if mrace=1 then do; *one-race;
      if qn5e=1 then RACE_S=1; *nh-white;
      else if qn5c=1 then RACE_S=2; *nh-black;
      else if qn5b=1 then RACE_S=4; *nh-asian;
      else if qn5a=1 then RACE_S=5; *nh-ai/an;
      else if qn5d=1 then RACE_S=6; *nh-nhopi;
    end;
    else if mrace > 1 then do; *multiple races;
      *the order of these conditional statements determines race priority -
      based on previous surveys when there is more than 1 race, but the
      mainrace question was not picked;
      if qn5e=1 then RACE_S=1; *nh-white;
      else if qn5c=1 then RACE_S=2; *nh-black;
      else if qn5b=1 then RACE_S=4; *nh-asian;
      else if qn5a=1 then RACE_S=5; *nh-ai/an;
      else if qn5d=1 then RACE_S=6; *nh-nhopi;
    end;
  end;
  label RACE_S="RECODE: Race/Eth - no mult grp";

  *race/ethnicity - based on NHIS where when there is > 1 race,
  then put that person in "multiple" race;
  *hispanic ethnicity takes precedence - similar to previous NYTS datasets & race recoding;
  if qn4=1 then RACE_M=3; *hispanic;
  else if qn4=2 then do; *non-hispanic;
    if mrace=1 then do; *one-race;
      if qn5e=1 then RACE_M=1; *nh-white;
      else if qn5c=1 then RACE_M=2; *nh-black;
      else if qn5b=1 then RACE_M=4; *nh-asian;
      else if qn5a=1 then RACE_M=5; *nh-ai/an;
      else if qn5d=1 then RACE_M=6; *nh-nhopi;
    end;
    else if mrace > 1 then do; *multiple race;
      if qn5e=1 then RACE_M=1; *nh-white;
      else if qn5c=1 then RACE_M=2; *nh-black;
      else if qn5b=1 then RACE_M=4; *nh-asian;
      else if qn5a=1 then RACE_M=5; *nh-ai/an;
      else if qn5d=1 then RACE_M=6; *nh-nhopi;
    end;
  end;

/***DEMOGRAPHICS***/

*Collapse over 19 to 19+;
  if Qn1=. then rQn1=.;
  else if Qn1=1 then rQn1=1;
  else if Qn1=2 then rQn1=2;
  else if Qn1=3 then rQn1=3;
  else if Qn1=4 then rQn1=4;
  else if Qn1=5 then rQn1=5;
  else if Qn1=6 then rQn1=6;
  else if Qn1=7 then rQn1=7;
  else if Qn1=8 then rQn1=8;
  else if Qn1=9 then rQn1=9;
  else if Qn1=10 then rQn1=10;
  else if Qn1=11 or Qn1=12 or Qn1=13 then rQn1=11;
  label rQn1="RECODE: Age";
***BIDIS AND KRETEKS***

*Bidis;

if Qn48= . then rQn48= .;
else if Qn48= 1 then rQn48= 1;
else if Qn48= 2 then rQn48= 2;
else if Qn48= 3 or Qn48= 4 then rQn48= 3;
else if Qn48= 5 then rQn48= 4;
else if Qn48= 6 then rQn48= 5;
else if Qn48= 7 then rQn48= 6;
label rQn48="RECODE: Days Smoked Bidis";

*Kreteks;

if Qn49= . then rQn49= .;
else if Qn49= 1 then rQn49= 1;
else if Qn49= 2 then rQn49= 2;
else if Qn49= 3 or Qn49= 4 then rQn49= 3;
else if Qn49= 5 then rQn49= 4;
else if Qn49= 6 then rQn49= 5;
else if Qn49= 7 then rQn49= 6;
label rQn49="RECODE: Days Smoked Kreteks";

/*Done to make analysis easier*/
if Qn3= . then middlehigh= .;
else if Qn3= 1 or Qn3= 2 or Qn3= 3 then middlehigh= 1;
else if Qn3= 4 or Qn3= 5 or Qn3= 6 or Qn3= 7 then middlehigh= 0;
label middlehigh="RECODE: School Level";
run;

data nyts2009;
set nyts2009;
/*CURRENT TOB USE*/
cigarettes;
if Qn13= . then curcigs= .;
else if Qn13= 1 then curcigs= 0;
else if Qn13= 2 or Qn13= 3 or Qn13= 4 or Qn13= 5 or Qn13= 6 or Qn13= 7 then curcigs= 1;

cigars;
if Qn44= . then curcigar= .;
else if Qn44= 1 then curcigar= 0;
else if Qn44= 2 or Qn44= 3 or Qn44= 4 or Qn44= 5 or Qn44= 6 or Qn44= 7 then curcigar= 1;

smokeless;
if Qn40= . then cursmkls= .;
else if Qn40= 1 then cursmkls= 0;
else if Qn40= 2 or Qn40= 3 or Qn40= 4 or Qn40= 5 or Qn40= 6 or Qn40= 7 then cursmkls= 1;

pipes;
if Qn46= . then curpipe= .;
else if Qn46= 1 then curpipe= 0;
else if Qn46= 2 or Qn46= 3 or Qn46= 4 or Qn46= 5 or Qn46= 6 or Qn46= 7 then curpipe= 1;

bidis;
if rQn48= . then curbid= .;
else if rQn48= 1 then curbid= 0;
else if rQn48= 2 or rQn48= 3 or rQn48= 4 or rQn48= 5 or rQn48= 6 or rQn48= 7 then curbid= 1;

kreteks;
if rQn49= . then curkret= .;
else if rQn49= 1 then curkret= 0;
else if rQn49= 2 or rQn49= 3 or rQn49= 4 or rQn49= 5 or rQn49= 6 or rQn49= 7 then curkret= 1;

if curcigar= 1 then curalt= 1;
else if cursmkls= 1 or curpipe= 1 or curbid= 1 or curkret= 1 then curalt= 1;
else if curcigar= 0 or cursmkls= 0 or curpipe= 0 or curbid= 0 or curkret= 0 then curalt= 0;
else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then
curalt=;

sumtob=curcigs+curcigar+cursmkls+curpipe+curbid+curkret;
if sumtob=. then muttob=1;
if sumtob=2 then muttob=-1;
else if sumtob>=2 then muttob=0;

*Recode biddie/kretok to biddie and or kretok;
if Qn47=. then rQn47=1;
else if Qn47=1 then rQn47=1;
else if Qn47=2 then rQn47=1;
else if Qn47=3 then rQn47=1;
else if Qn47=4 then rQn47=0;
run;
data nyts2009;
set nyts2009 (rename = (qn8=evdcigs qn42=evdcigar qn38=evdsmkls qn45=evdpipe
rqn47=evdbidkret));
run;
data nyts2009;
set nyts2009;
if evdcigar=1 or evdsmkls=1 or evdpipe=1 or evdbidkret=1 then evdalt=1;
else if evdcigar=0 or evdsmkls=0 or evdpipe=0 or evdbidkret=0 then evdalt=0;
else if evdcigar=. or evdsmkls=. or evdpipe=. or evdbidkret=. then evdalt=.;
if evdcigs=1 then ebcigs=1;
else if evdcigs=0 then ebcigs=0;
if evdcigar=1 then ebcigar=1;
else if evdcigar=0 then ebcigar=0;
if evdsmkls=1 then ebsmkls=1;
else if evdsmkls=0 then ebsmkls=0;
if evdpipe=1 then ebpipe=1;
else if evdpipe=0 then ebpipe=0;
if evdbidkret then ebbidkret=1;
else if evdbidkret=0 then ebbidkret=.;
evdalt=;
else if evdsumtob=. then evdmulttob=.;
else if evdsumtob=2 then evdmulttob=-1;
else evdsumtob=0;
run;
data nyts2009;
set nyts2009;
rename rqn1=age qn2=sex qn3=grade
qn8=trycig qn58=cigsmkyyr qn61=cigtrysoon qn60=offercig qn10=timesmkcig
qn13=daysmkcig qn14=perdaycig qn18=lastpuffcig qn15=brandcig qn24=refusesalecig
qn42=trycigar qn43=agecigar qn44=daysmkcig
qn38=trychew qn39=agechew qn30=dayschew
qn45=trypipe qn46=daysmkpipe
qn47=trybiddkretn rqn48=daysmkkbidi rqn49=daysmkkret
qn75=webtobad qn76=printtobad qn74=actortob qn66=getlogo qn67=wearlogo
qn26=quitwant qn28=quittry rqn29=quitlength
qn51=ridecarsmk rqn57=smkinhome qn55=fourfriendsmk qn56=fourfriendschew
qn65=coolsmk qn53=livewsmt qn54=livewchew;
run;
**data nyts09;**
**set nyts2009;**
**keep schoolID PSU stratum wt year**
  age sex grade middlehigh race_m race_s curcigs curcigar cursmkls curpipe curbid curkret curalt multtob evdcsigs evdcsigar evdsmkls evdpipe evdbidkret evdmulttob evdalt refusesalecig webtobad printtobad actortob;**
**run;**

**libname fourth "H:\Thesis\Thesis Data";**
**OPTIONS FMTSEARCH=(fourth.nyts11fmts) nonumber nodate;**

/***2011/***
**data nyts2011;**
**set fourth.nyts11data;**
/*Courtesy of NYTS*/
*race/ethnicity -sum up answers to white, black, etc to determine if there is > 1 race answered;*
mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
**label mrace="Number of races chosen from Q5";**
*race/ethnicity -based on NHIS where when there is > 1 race, then put that person in "multiple" race;*hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;*This code set pertains to respondents who marked only one answer;*
if qn4 in(2,3,4,5) then RACE_M=3; *hispanic;*
else if qn4=1 then do; *non-hispanic;*
  if mrace=1 then do; *one-race;*
    if qn5e=1 then RACE_M=1; *NH-white;*
    else if qn5c=1 then RACE_M=2; *NH-black;*
    else if qn5b=1 then RACE_M=4; *NH-asian;*
    else if qn5a=1 then RACE_M=5; *NH-AI/AN;*
    else if qn5d=1 then RACE_M=6; *NH-NHOPI;*
  end;*
  else if mrace > 1 then do; *multiple races;*
  *This code set pertains to respondents who marked only one answer;*The order of these conditional statements determines race priority - based on previous surveys with a race question that allows respondents to select more than one answer;*
end;
**label RACE_M="RECODE: Race/Eth - mult grp";**

*Create mrace, a new variable that sums the number of races selected in QN5;*
mrace = sum(qn5a, qn5b, qn5c, qn5d, qn5e);
**label mrace= "Number of races chosen from Q5";**
*Hispanic ethnicity takes precedent - similar to previous NYTS datasets & race recoding;*
*This code set pertains to respondents who marked only one answer;*
if qn4 in(2,3,4,5) then RACE_S=3; *hispanic;*
else if qn4=1 then do; *non-hispanic;*
  if mrace=1 then do; *one-race;*
    if qn5e=1 then RACE_S=1; *NH-white;*
    else if qn5c=1 then RACE_S=2; *NH-black;*
    else if qn5b=1 then RACE_S=4; *NH-asian;*
    else if qn5a=1 then RACE_S=5; *NH-AI/AN;*
    else if qn5d=1 then RACE_S=6; *NH-NHOPI;*
  end;*
  else if mrace > 1 then do; *multiple races;*
  *This code set is a continuation of the above and pertains to respondents who marked more than one answer;*The order of these conditional statements determines race priority - based on previous surveys with a race question that allows respondents to select more than one answer;*
end;
else if mrace=1 then do; *NH-NHOPI;*
end;
label RACE_S="RECODE: Race/Eth -no mult grp";

/*Done to make analysis easier*/
if Qn3=. then middlehigh=.;
else if Qn3=1 or Qn3=2 or Qn3=3 then middlehigh=1;
else if Qn3=4 or Qn3=5 or Qn3=6 or Qn3=7 then middlehigh=0;
label middlehigh="RECODE: School Level";

/**CIGARETTES**/
*Recode place of cigarettes combining mail and other;
if Qn19h=1 then rQn19h=1;
else if Qn19i=1 then rQn19h=1;
label rQn19h="Other place";

/**CIGARS**/
*Recode age of cigar use combining 17, 18, 19 to 17+;
if Qn22=. then rQn22=.;
else if Qn22=1 then rQn22=1;
else if Qn22=2 then rQn22=2;
else if Qn22=3 then rQn22=3;
else if Qn22=4 then rQn22=4;
else if Qn22=5 then rQn22=5;
else if Qn22=6 then rQn22=6;
else if Qn22=7 then rQn22=7;
else if Qn22=8 then rQn22=8;
else if Qn22=9 then rQn22=9;
else if Qn22=10 then rQn22=10;
else if Qn22=11 or Qn22=12 or Qn22=13 then rQn22=11;
label rQn22="RECODE: Age at first cigar";

/**DIP**/
*Recode age of dip use combining 17, 18, 19 to 17+;
if Qn27=. then rQn27=.;
else if Qn27=1 then rQn27=1;
else if Qn27=2 then rQn27=2;
else if Qn27=3 then rQn27=3;
else if Qn27=4 then rQn27=4;
else if Qn27=5 then rQn27=5;
else if Qn27=6 then rQn27=6;
else if Qn27=7 then rQn27=7;
else if Qn27=8 then rQn27=8;
else if Qn27=9 then rQn27=9;
else if Qn27=10 then rQn27=10;
else if Qn27=11 or Qn27=12 or Qn27=13 then rQn27=11;
label rQn27="RECODE: Age at first dip";

/**BIDIS AND KRETEKS**/
*Recode order of bidis and kretes;
if Qn33=. then rQn33=.;
else if Qn33=1 then rQn33=1;
else if Qn33=2 then rQn33=1;
else if Qn33=3 then rQn33=2;
else if Qn33=4 then rQn33=3;
label rQn33="RECODE: Bidi/Kretake use";

/**ISSUES RELATED TO TOBACCO**/
*Recode using internet/ads;
if Qn40=. then rQn40=.;
else if Qn40=1 then rQn40=1;
else if Qn40=2 then rQn40=2;
else if Qn40=3 then rQn40=3;
else if Qn40=5 or Qn40=6 then rQn40=2;
literal rQn40="RECODE: Tobacco internet ads";

*Recode reading newspaper/mags and ads;
if Qn41=. then rQn41=.;
else if Qn41=1 then rQn41=1;
else if Qn41=2 then rQn41=6;
else if Qn41=3 then rQn41=5;
else if Qn41=4 then rQn41=4;
else if Qn41=5 then rQn41=3;
else if Qn41=6 then rQn41=2;
literal rQn41="RECODE: Tobacco print ads";

/*CURRENT TOB USE*/
cigarettes;
if Qn13=. then curcigs=.;
else if Qn13=1 then curcigs=0;
else if Qn13=2 or Qn13=3 or Qn13=4 or Qn13=5 or Qn13=6 or Qn13=7 then curcigs=1;
cigars;
if Qn23=. then curcigar=.;
else if Qn23=1 then curcigar=0;
else if Qn23=2 or Qn23=3 or Qn23=4 or Qn23=5 or Qn23=6 or Qn23=7 then curcigar=1;
smokeless;
if Qn28=. then cursmkls=.;
else if Qn28=1 then cursmkls=0;
else if Qn28=2 or Qn28=3 or Qn28=4 or Qn28=5 or Qn28=6 or Qn28=7 then cursmkls=1;
pipes;
if Qn32=. then curpipe=.;
else if Qn32=1 then curpipe=0;
else if Qn32=2 or Qn32=3 or Qn32=4 or Qn32=5 or Qn32=6 or Qn32=7 then curpipe=1;
*bidis;
if Qn34=. then curbid=.;
else if Qn34=1 then curbid=0;
else if Qn34=2 or Qn34=3 or Qn34=4 or Qn34=5 or Qn34=6 then curbid=1;
*kreteks;
if Qn35=. then curkret=.;
else if Qn35=1 then curkret=0;
else if Qn35=2 or Qn35=3 or Qn35=4 or Qn35=5 or Qn35=6 then curkret=1;
if curcigar=1 or cursmkls=1 or curpipe=1 or curbid=1 or curkret=1 then curalt=1;
else if curcigar=0 or cursmkls=0 or curpipe=0 or curbid=0 or curkret=0 then curalt=0;
else if curcigar=. or cursmkls=. or curpipe=. or curbid=. or curkret=. then curalt=;
if Qn17=2 then curmenth=1;
  else if Qn17=3 then curmenth=2;
  else if Qn17=4 then curmenth=3;
  else if Qn17=. then curmenth=.;
  label curmenth="RECODE: Current Menthol Smoker";
if Qn17=2 then curbimenth=1;
  else if Qn17=3 then curbimenth=0;
  else if Qn17=4 then curbimenth=.;
  label curbimenth="RECODE: Current Menthol Smoker Y/N";

*Recode biddie/kretek to biddie and or kretek;
if Qn33=. then bkQn33=.;
  else if Qn33=2 then bkQn33=1;
  else if Qn33=3 then bkQn33=1;
  else if Qn33=4 then bkQn33=1;
  else if Qn33=1 then bkQn33=0;
run;

data nytss2011;
  set nytss2011 (rename = (qn7=evdcigs qn21=evdcigar qn26=evdsmkls qn31=evdpipe
  bkQn33=evdbidkret));
run;

data nytss2011;
  set nytss2011;
  if evdcigar=1 or evdsmkls=1 or evdpipe=1 or evdbidkret=1 then evdalt=1;
  else if evdcigar=0 or evdsmkls=0 or evdpipe=0 or evdbidkret=0 then evdalt=0;
  else if evdcigar=. or evdsmkls=. or evdpipe=. or evdbidkret=. then evdalt=.;
if evdcigs=1 then ebcigs=1;
  else if evdcigs=. then ebcigs=.;
  else ebcigs=0;
  if evdcigar=1 then eb cigar=1;
  else if evdcigar=. then eb cigar=.;
  else eb cigar=0;
  if evdsmkls=1 then ebsmkls=1;
  else if evdsmkls=. then ebsmkls=.;
  else ebsmkls=0;
  if evdpipe=1 then ebpipe=1;
  else if evdpipe=. then ebpipe=.;
  else ebpipe=0;
  if evdbidkret then eb bidkret=1;
  else if evdbidkret=0 then eb bidkret=0;
  else eb bidkret=.;
  if evdsumtob=ebcigs+ebcigar+ebsmkls+ebpipe+ebbidkret;
  if evdsumtob=2 then evdmulttob=1;
  else evdmulttob=0;
run;

data nytss2011;
  set nytss2011;
  rename Qn1=age Qn2=sex Qn3=grade
  Qn7=trycig Qn8=cigsmkyyr Qn9=trycigsoon Qn10=offer cig Qn12=timesmkcig
  Qn13=dayssmkcig Qn14=perdaycig Qn15=lastpuffcig Qn16=brandcig Qn20=refusesalecig
  Qn21=trycigar rQn22=agecigar Qn23=dayssmkcig
  Qn26=trychew rQn27=agechew Qn28=dayschew
  Qn31=trybidikret Qn32=daysmkpipe
  rQn33=trybidikret Qn34=daysmbidi Qn35=dayssmkret
  rQn40=webtobad rQn41=printtobad rQn46=actortob Qn50=getlogo Qn51=wearlogo
  Qn54=quitwant Qn56=quittry Qn57=quitlength

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data nyts11;
set nyts2011;
keep schoolID PSU stratum wt year
age sex grade middlehigh race_m race_s
curcigs curcigar cursmkls curpipe curkret curalt multtob
evdcigs evdcigar evdsmkls evdpipe evdbidkret evdmulttob evdalt
refusesalecig webtobad printtobad actortob;
run;
proc contents data=nyts11;
run;
proc contents data=nyts09;
run;
proc sort data=nyts09;
by year;
run;
proc sort data=nyts11;
by year;
run;
proc freq;
tables refusesalecig;
run;
options nofmterr;
data nyts0911;
set nyts09 nyts11;
run;
data nyts0911;
set nyts0911;
if race_s=1 then racer=0; /*White*/
   else if race_s=2 then racer=1; /*Black*/
   else if race_s=3 then racer=2; /*Hispanic*/
   else if race_s=4 then racer=3; /*Other*/
   else if race_s=5 then racer=3; 
   else if race_s=6 then racer=3; 
   else if race_s=. then racer=.;
if middlehigh=. then haschool=.;
   else if middlehigh=1 then haschool=0;
   else if middlehigh=0 then haschool=1;
if sex=. then male=.;
   else if sex=1 then male=0;
   else if sex=2 then male=1;
run;
proc contents data=nyts0911;
run;
proc surveyfreq nosummary;
tables year*curcigs/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables year*curcigs/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;
proc sort; by sex; run;
proc surveyfreq nosummary;
tables year*curcigs/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by sex;
run;
proc sort; by racer; run;
proc surveyfreq nosummary;
tables year*curcigar/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by racer;
run;
proc surveyfreq nosummary;
tables year*curcigar/chisq wchisq row nototal;;
weight wt;
strata stratum;
ccluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables year*curcigar/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;
proc sort; by sex; run;
proc surveyfreq nosummary;
tables year*curcigar/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by sex;
run;
proc sort; by racer; run;
proc surveyfreq nosummary;
tables year*curcigar/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by racer;
run;
proc surveyfreq nosummary;
    tables year*cursmkls/wchisq chisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables year*cursmkls/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
    tables year*cursmkls/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
    tables year*cursmkls/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by racer;
run;

proc surveyfreq nosummary;
    tables year*curpipe/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables year*curpipe/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
    tables year*curpipe/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
    tables year*curpipe/chisq wchisq row nototal;
    weight wt;
    strata stratum;
cluster psu;
by racer;
run;

proc surveyfreq nosummary;
    tables year*curbid/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables year*curbid/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
    tables year*curbid/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
    tables year*curbid/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by racer;
run;

proc surveyfreq nosummary;
    tables year*curkret/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
    tables year*curkret/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
    tables year*curkret/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
   tables year*curkret/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by racer;
run;

proc surveyfreq nosummary;
   tables year*curalt/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
   tables year*curalt/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
   tables year*curalt/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
   tables year*curalt/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by racer;
run;

proc surveyfreq nosummary;
   tables year*multtob/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
   tables year*multtob/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
   tables year*multtob/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
  tables year*multtob/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by racer;
run;

/***EVER TOBACCO USE***/
proc surveyfreq nosummary;
  tables year*evdcigs/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables year*evdcigs/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
  tables year*evdcigs/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
  tables year*evdcigs/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by racer;
run;

proc surveyfreq nosummary;
  tables year*evdcigar/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables year*evdcigar/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
  tables year*evdcigar/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
tables year*evdcigar/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by racer;
run;

proc surveyfreq nosummary;
tables year*evdsmkls/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables year*evdsmkls/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
tables year*evdsmkls/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
tables year*evdsmkls/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by racer;
run;

proc surveyfreq nosummary;
tables year*evdpipe/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables year*evdpipe/chisq wchisq row nototal;
weight wt;
strata stratum;
ccluster psu;
by middlehigh;
run;
proc sort; by sex; run;
proc surveyfreq nosummary;
  tables year*evpipe/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
  tables year*evpipe/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by racer;
run;

proc surveyfreq nosummary;
  tables year*evbidkret/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables year*evbidkret/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
  tables year*evbidkret/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
  tables year*evbidkret/wchisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
  by racer;
run;

proc surveyfreq nosummary;
  tables year*evdalt/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
  tables year*evdalt/chisq wchisq row nototal;
  weight wt;
  strata stratum;
  cluster psu;
by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
tables year*evdalt/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
tables year*evdalt/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
by racer;
run;

proc surveyfreq nosummary;
tables year*evdmulttob/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary;
tables year*evdmulttob/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary;
tables year*evdmulttob/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary;
tables year*evdmulttob/chisq wchisq row nototal;
weight wt;
strata stratum;
cluster psu;
by racer;
run;

proc freq;
tables middlehigh hschool;
run;

/*Access*/

data trybuy;
  set nyts0911;
  if refusesalecig=1 then trycig=0;
  else if refusesalecig=2 then trycig=1;
else if refusesalecig=3 then trycig=1;
else if refusesalecig= then trycig=; run;

proc surveyfreq nosummary data=trybuy;
    tables year*trycig/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;

data refusal;
    set nyts0911;
    if refusesalecig=1 then delete;
run;

proc surveyfreq nosummary data=refusal;
    tables year*refusesalecig/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;

proc sort; by middlehigh; run;
proc surveyfreq nosummary data=refusal;
    tables year*refusesalecig/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;

proc sort; by sex; run;
proc surveyfreq nosummary data=refusal;
    tables year*refusesalecig/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;

proc sort; by racer; run;
proc surveyfreq nosummary data=refusal;
    tables year*refusesalecig/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by racer;
run;

/*Exposure*/
data internet;
    set nyts0911;
    if webtobad=2 or webtobad=3 then intad=1;
    else if webtobad=4 or webtobad=5 then intad=0;
    else if webtobad=1 then delete;
    else if webtobad=. then intad=.;
run;

proc surveyfreq nosummary data=internet;
    tables year*intad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
proc sort by middlehigh; run;
proc surveyfreq nosummary data=internet;
    tables year*intad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;
proc sort by sex; run;
proc surveyfreq nosummary data=internet;
    tables year*intad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;
proc sort by racer; run;
proc surveyfreq nosummary data=internet;
    tables year*intad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by racer;
run;
data print;
    set nyts0911;
    if printtobad=2 or printtobad=3 or printtobad=4 then printad=1;
    else if printtobad=5 or printtobad=6 then printad=0;
    if printtobad=1 then delete;
run;
proc surveyfreq nosummary data=print;
    tables year*printad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
run;
proc sort by middlehigh; run;
proc surveyfreq nosummary data=print;
    tables year*printad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by middlehigh;
run;
proc sort by sex; run;
proc surveyfreq nosummary data=print;
    tables year*printad/chisq wchisq row nototal;
    weight wt;
    strata stratum;
    cluster psu;
    by sex;
run;
proc sort by racer; run;
proc surveyfreq nosummary data=print;
    tables year*printad/chisq wchisq row nototal;
    weight wt;
strata stratum;
cluster psu;
by racer;
run;

data act;
   set nyts0911;
   if actortob=2 or actortob=3 then act=1;
   else if actortob=4 or actortob=5 then act=0;
   else if actortob=1 then delete;
   else if actortob= then act=.;
run;

proc surveyfreq nosummary data=act;
   tables year*act/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
run;
proc sort; by middlehigh; run;
proc surveyfreq nosummary data=act;
   tables year*act/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
by middlehigh;
run;
proc sort; by sex; run;
proc surveyfreq nosummary data=act;
   tables year*act/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by sex;
run;
proc sort; by racer; run;
proc surveyfreq nosummary data=act;
   tables year*act/chisq wchisq row nototal;
   weight wt;
   strata stratum;
   cluster psu;
   by racer;
run;