



# Historical declines and disparities in cigarette coupon saving among adolescents in the United States, 1997–2013



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## ABSTRACT

Exposure to cigarette coupons is associated with smoking initiation and likelihood of cigarette purchase among adolescents. Some adolescents who are exposed to cigarette coupons take a step further by choosing to save or collect these coupons, a further risk factor for cigarette smoking. This study examines historical trends and disparities in cigarette coupon saving among adolescents in the United States from 1997 to 2013. National samples of 10th and 12th grade students ( $n = 129,111$ ) were obtained from Monitoring the Future surveys in 1997–2013. Prevalence of lifetime and current cigarette coupon saving was estimated in each year in the overall adolescent population, and in race/ethnicity, parent education level, sex, and urban/rural subgroups. Prevalence of lifetime and current cigarette coupon saving was then estimated in each year based on smoking status. Prevalence of cigarette coupon saving has decreased dramatically among adolescents; only 1.2% reported currently saving coupons in 2013. However, disparities in cigarette coupon saving remain with prevalence higher among rural, White, and low parental education level students. Adolescent smokers continue to save coupons at high rates; 21.2% had ever saved coupons and 6.9% currently saved coupons as of 2013. Despite overall declines in adolescent cigarette coupon saving, existing sociodemographic disparities and the considerably high prevalence of coupon saving among adolescent smokers suggest that cigarette coupons remain a threat to smoking prevention among youth. Additional research is needed to further elucidate longitudinal associations between cigarette coupon saving and smoking initiation and maintenance among adolescents.

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## 1. Introduction

Federal, state, and local tobacco control policies have contributed to the decline in smoking prevalence among US adolescents in part through efforts to limit tobacco marketing (Pierce et al., 2012; Hawkins et al., 2016; Farrelly et al., 2013; Jones & Silvestri, 2010; U.S. Department of Health and Human Services, 2012). Although adolescent smoking prevalence declined from 36.4% in 1997 to 15.7% in 2013 (Centers for Disease Control and Prevention, 2014), sociodemographic disparities remain. In 2015, prevalence of cigarette smoking was higher among White (versus Black and Hispanic, 12.4% vs 9.2% and 6.5%, respectively) (Kann et al., 2016) and rural (versus urban, 9.2% vs 3.4%) adolescents (Substance Abuse and Mental Health Services Administration, 2017). Smoking prevalence was also higher among low (versus high) socioeconomic status high school students (9.3% vs 3.3% among 10th grade students, and 12.9% vs 7.5% among 12th grade students) (Johnston et al., 2017). Continuous investigative monitoring and evaluation of policies is needed to identify loopholes in existing adolescent

smoking prevention efforts. One such loophole is the continued exposure of adolescents to tobacco industry marketing via cigarette coupons, which have been shown to increase adolescents' susceptibility to smoking (Tessman et al., 2014; Soneji et al., 2014; Cavazos-Regh et al., 2014).

Cigarette coupon distribution is a common marketing strategy employed by the tobacco industry to promote sales (Chaloupka et al., 2002; Choi et al., 2012). Although major federal legislation has restricted tobacco marketing to youth, there is little federal regulation on cigarette coupon distribution specifically (National Association of Attorneys General, 1998; Tobacco Control Legal Consortium, 2013a). Most states now have laws that prohibit the distribution of cigarette coupons to adolescents (Tobacco Control Legal Consortium, 2013a; Tobacco Control Legal Consortium, 2015a), yet opportunities to access coupons remain. Evidence suggests that adolescents are still exposed to cigarette coupons through mailings, online sources, cigarette packages, and social sources (Tessman et al., 2014; Soneji et al., 2014; Cavazos-Regh et al., 2014; Choi, 2016). Recent work found that 86.5% of direct tobacco company mailings to consumers contained at least one coupon (Brock et al., 2015). Although adolescents may not be the intended recipients of these mailings, 6% of adolescents aged 15–17 years reported exposure to direct tobacco mails in a 2011 national telephone study (Soneji et

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al., 2014). Similarly, a 2012 study using National Youth Tobacco Survey (NYTS) found that 13.1% of middle and high school students were exposed to cigarette coupons, with 6% reporting exposure through the mail (Tessman et al., 2014). Adolescents also reported exposure to cigarette coupons through digital communications including email, text messages, and social networking sites such as Facebook and Twitter (Tessman et al., 2014). Also using the NYTS, a 2011 study reported that 11% of adolescents were exposed to tobacco advertisements and promotions, including coupons, through social networking sites, and 4% via text messages (Cavazos-Regh et al., 2014). Thus, adolescents continue to have access to cigarette coupons through a variety of channels.

Cigarette coupons primarily take two forms: price discounts and loyalty programs. Price discount coupons reduce the effect of price increases caused by taxation of tobacco products (Chaloupka et al., 2002; Choi et al., 2012). Proof-of-purchase redemption programs, such as Camel Cash and Marlboro Miles, were attached to cigarette packages and used to promote brand loyalty (Richards et al., 1995; Coeytaux et al., 1995; Sumner & Dillman, 1995). These loyalty programs offered point accumulation in exchange for catalogued, and often tobacco branded merchandise (Coeytaux et al., 1995; Sumner & Dillman, 1995). Camel Cash and Marlboro miles were discontinued in 2006 and 2007, respectively, but price discount coupons remain.

The majority of studies on adolescents and cigarette coupons have focused on exposure to coupons, which is generally defined as receiving a coupon from a tobacco company through any of a variety of channels (e.g. direct mail, online, text messages) (Tessman et al., 2014; Soneji et al., 2014; Cavazos-Regh et al., 2014; Choi, 2016). Exposure to cigarette coupons has been shown to be associated with increased susceptibility to cigarette smoking among adolescents (Tessman et al., 2014; Soneji et al., 2014; Cavazos-Regh et al., 2014). Also, adolescent smokers who are exposed to cigarette coupons have an increased likelihood to purchase cigarettes in the next 30 days (Choi, 2016). Receipt of coupons in the mail is associated with decreased quit attempts, and unsuccessful quitting among young adult smokers (Choi & Forster, 2014a).

Some youth who are exposed to cigarette coupons take a step further by choosing to save or collect these coupons (Richards et al., 1995; Coeytaux et al., 1995). Adolescent current smokers are more likely than experimental or never smokers to report exposure to cigarette coupons and to collect cigarette coupons (Tessman et al., 2014; Soneji et al., 2014; Richards et al., 1995). Cigarette coupon saving may be indicative of susceptibility to cigarette smoking among non-smokers. Among smokers, saving cigarette coupons may be an attempt to offset price increases in cigarettes. Therefore, the desired decline in cigarette consumption—by increasing cigarette prices—may not be achieved among adolescent smokers who have access to cigarette coupons.

Despite the fact that most smoking onset occurs during adolescence and exposure to tobacco marketing increases adolescents' susceptibility to smoking (U.S. Department of Health and Human Services, 2012; Altman et al., 1996), studies examining exposure to cigarette coupons in the U.S. have largely focused on adult smokers (Choi & Forster, 2014a; Choi & Forster, 2014b; Choi et al., 2013; Lewis et al., 2004; Lewis et al., 2015). The few studies of adolescents have primarily examined the association between exposure to coupons and smoking behavior in a single wave of data, showing that prevalence of exposure to coupon saving is highest among smokers compared with non-smokers, and adolescents exposed to coupons have elevated susceptibility to smoking (Tessman et al., 2014; Soneji et al., 2014; Cavazos-Regh et al., 2014). Sociodemographic disparities in exposure to coupons among adolescents are yet to be thoroughly examined. Previous studies found no sex differences in adolescent exposure to tobacco coupons, but reported racial disparities in channels of exposure (Tessman et al., 2014; Soneji et al., 2014; Cavazos-Regh et al., 2014). Whites were found to be more likely than Blacks (6.6% vs 4.6%) to be exposed to tobacco coupons through the mail, and Hispanics were more likely than Whites to report exposure through digital communication (9.2% vs 6.3%) (Tessman et al., 2014). These previous studies were all conducted using just one year

of data, and disparities in adolescent coupon exposure based on socioeconomic status (SES) and urbanicity were not investigated. Historical trends in adolescents' exposure to cigarette coupons, variation in coupon saving among demographic subgroups known to differ in their tobacco use, and historical trends in coupon saving among adolescent smokers compared to nonsmokers are yet to be examined. It is important to document historical trends in order to understand the effects over time of existing policies and programs and the gaps still remaining. Further, it is important to document disparities in order to identify groups of young people who are most involved in coupon saving and potentially most vulnerable to smoking.

The current study aims to (1) examine historical trends in cigarette coupon saving by US adolescents, (2) identify disparities among sociodemographic groups in coupon saving, and (3) examine the historical trends in cigarette coupon saving among adolescents based on their smoking status. We hypothesize the overall prevalence of cigarette coupon saving has decreased historically, but significant sociodemographic disparities exist. Also, the prevalence of cigarette coupon saving will remain high among adolescent cigarette smokers.

## 2. Methods

National samples of 10th and 12th grade students ( $n = 129,111$ ) from 1997 to 2013 were obtained from the Monitoring the Future (MTF) Study and analyzed in 2016. MTF is an ongoing, national survey focused on adolescent substance use (Miech et al., 2014). The sample is representative of 10th and 12th grade students in the United States. Data were accessed via the Inter-University Consortium for Political and Social Research ([www.icpsr.umich.edu](http://www.icpsr.umich.edu)). This study was determined to be exempt from IRB oversight by University of Texas Institutional Review Board because we analyzed de-identified secondary data. 51.4% of participants were female; 75.7% were White, 15.1% Black, and 9.1% Hispanic. 20.5% resided in a rural area (outside of a metropolitan statistical area). Participants' self-reported father and mother education level, respectively, were 14.6% and 11.9% less than high school, 29.1% and 26.7% high school, 16.5% and 19.8% some college, and 39.7% and 41.6% college or higher.

Cigarette coupon saving was measured via two items. Lifetime coupon saving was measured via the item "Have you ever saved coupons from cigarettes (whether or not you bought them yourself)?" Current coupon saving was measured via the item "Are you currently saving coupons from cigarettes?" Responses to each item were dichotomous (Yes/No). Participants were labeled "ever coupon savers" if they responded yes to the first item, regardless of current coupon saving behavior. Participants were labeled "current coupon savers" if they responded yes to the second item. All "current coupon savers" were also included in the "ever coupon savers" group.

Cigarette smoking in the past 30 days was measured via one item: "How frequently have you smoked cigarettes during the past 30 days?" Response was on a 7-point scale ranging from "not at all" to "two packs or more per day." For purposes of the current study, those who reported they had smoked cigarettes "not at all" were coded as non-smokers. Those who reported smoking at least one puff or anything more in the past 30 days were coded as smokers.

Sociodemographic variables were race/ethnicity, sex, age, parental education (an indicator of socioeconomic status), and urbanicity. Race/ethnicity categories were limited to Black and White prior to 2005 and to White, Black, and Hispanic from 2005 onward. Urbanicity was based on students' school location and classified as either metropolitan statistical area (MSA or urban) ( $\geq 50,000$  population) or non-metropolitan statistical area (non-MSA or rural) ( $< 50,000$  population). Parental education was measured as the average of highest level of education achieved by each parent (or the highest education achieved by one parent in the case of single-parent families) ranging from "completing grade school or less" to "graduate or professional school after college." Parental education level was stratified into four quartiles, with

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