Monograph 22: A Socioecological Approach to Addressing Tobacco-Related Health Disparities

NCI Tobacco Control Monograph Series

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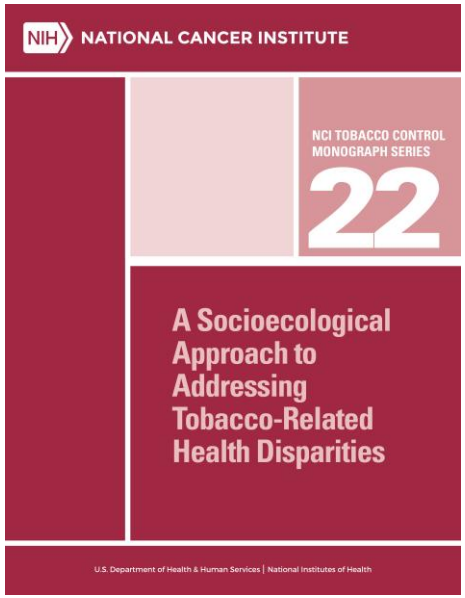


Contributors

- Senior Volume Editor: Linda Alexander, West Virginia University
- Scientific Advisor: Pebbles Fagan, University of Arkansas
- Section Editors
  - Catherine Cubbin, University of Texas at Austin
  - Cheryse Sankar, National Institutes of Health
  - Dennis Trinidad, University of California at San Diego
  - Donna Vallone, Truth Initiative
  - K. Vish Viswanath, Harvard T.H. Chan School of Public Health
  - David R. Williams, Harvard T.H. Chan School of Public Health

This monograph drew on the expertise of more than 50 subject matter specialists and was peer-reviewed by more than 40 scientific experts.

Monograph Contents

The monograph's contents are organized as follows:

Section I – Overview and Epidemiology

1. Introduction and Overview
2. The Epidemiology of Tobacco-Related Health Disparities (TRHD)

Section II – Intrapersonal/Individual Factors Associated With Tobacco-Related Health Disparities

3. Genetics, Physiological Processes, and TRHD
4. Flavored Tobacco and Chemosensory Processes
5. Stress-Related Processes and TRHD

Monograph Contents (continued)

Section III – Interpersonal and Contextual Factors That Contribute to TRHD

6. Social Relationships and TRHD
7. TRHD Among Immigrant Populations
8. Occupation, the Work Environment, and TRHD
9. Socioeconomic Status and TRHD

Section IV – Societal-Level Influences of Tobacco-Use

10. Communication, Marketing, and TRHD
11. Federal, State, and Local Tobacco Control Policy and TRHD
12. Simulation Modeling of TRHD: *SimSmoke*

Major Accomplishments

This monograph:

- Synthesizes research literature on the many factors that influence and contribute to TRHD across the tobacco use continuum
- Presents evidence on the extent of TRHD for specific populations and highlights the multiple factors associated with TRHD
- Provides guidance for future research studies and the implementation of known effective strategies.

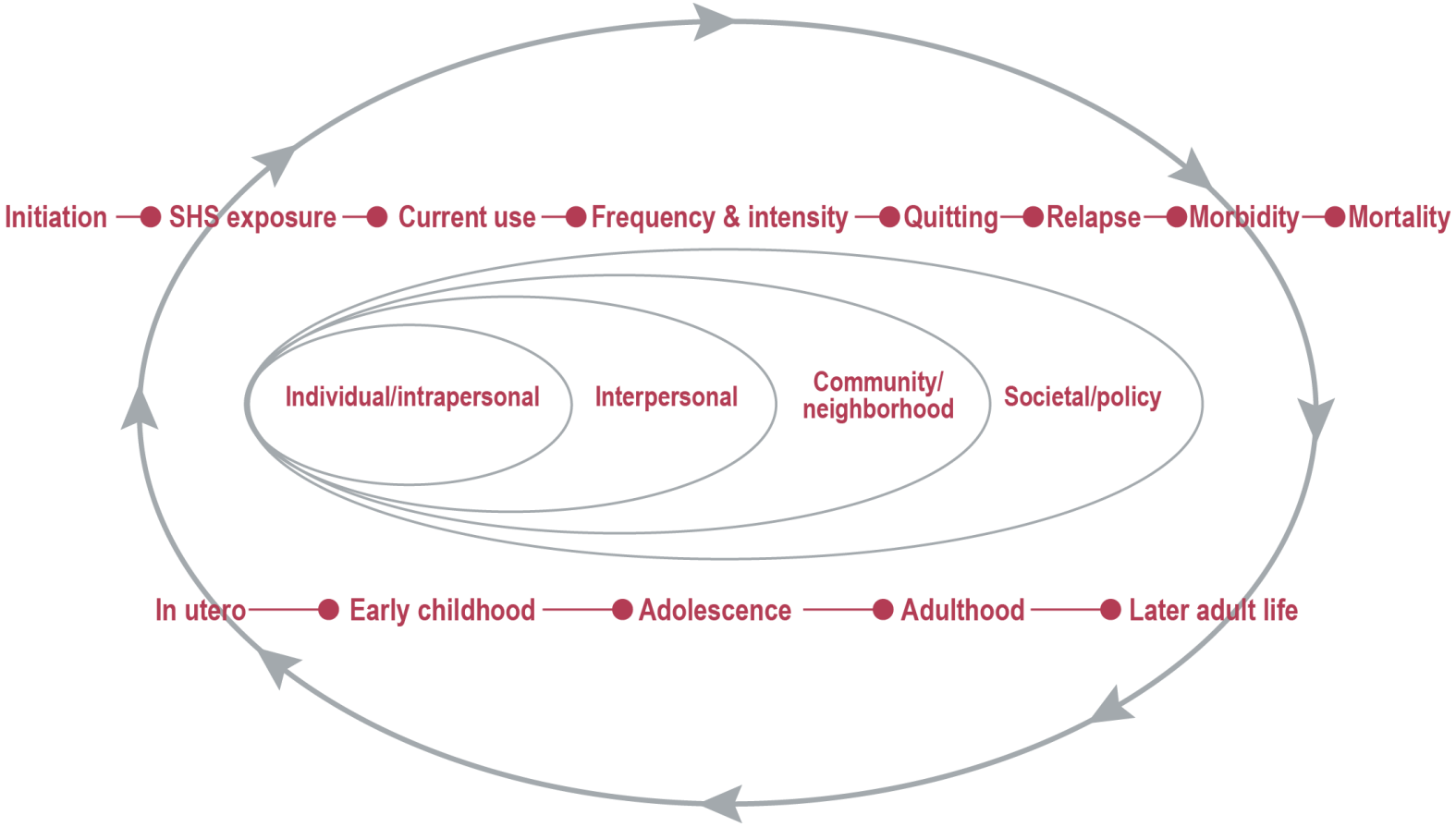
The research summarized in this monograph demonstrated that continued effort is needed to accelerate declines in tobacco use and secondhand smoke exposure in order to reduce current TRHD and to prevent future increases in TRHD.

Major Conclusions

The monograph's 5 major conclusions are as follows:

1. Enormous progress has been made in reducing overall tobacco use. However, some population groups have benefited less or at a slower pace from efforts to reduce tobacco use.
2. Many factors at multiple levels contribute to TRHD.
3. Research, including simulation modeling, indicates that broader implementation of known effective strategies to reduce tobacco use would contribute substantially to reducing TRHD.
4. Research to understand and address TRHD is of increasing importance to reducing the burden of tobacco use and tobacco-related cancer in the United States.
5. Improved surveillance of individual populations and factors that contribute to TRHD will increase our ability to understand and address TRHD.

The Socioecological Model



In addition to the experience of TRHD over time, there may be critical periods during development and throughout the life course when tobacco use or secondhand smoke exposure is significantly more detrimental than at other times.

Future Directions in TRHD Research

- **Most studies of TRHD have focused on race/ethnicity, particularly on the largest population groups: African Americans and Hispanics.** More research is needed on less populous racial/ethnic groups with high smoking prevalence.
- **Aggregating ethnic and nationality groups can mask underlying differences in smoking prevalence**. Examining more specific ethnic or nationality groups is important but can lead to small sample sizes, limiting statistical power and generalizability.
- **Surveys indicate lesbian, gay, bisexual and transgender (LGBT) groups are at increased risk for tobacco use.** There is limited evidence on tobacco use knowledge, attitudes, and behaviors and on disease-related disparities in these groups. Including questions about sexual orientation and gender identity will facilitate research.
- **Most studies focus on the impact of membership in a single population group (by race/ethnicity, SES, or sexual orientation);** however, people who are part of more than one vulnerable population group may be at especially high risk of experiencing TRHD. These interactions require further research.

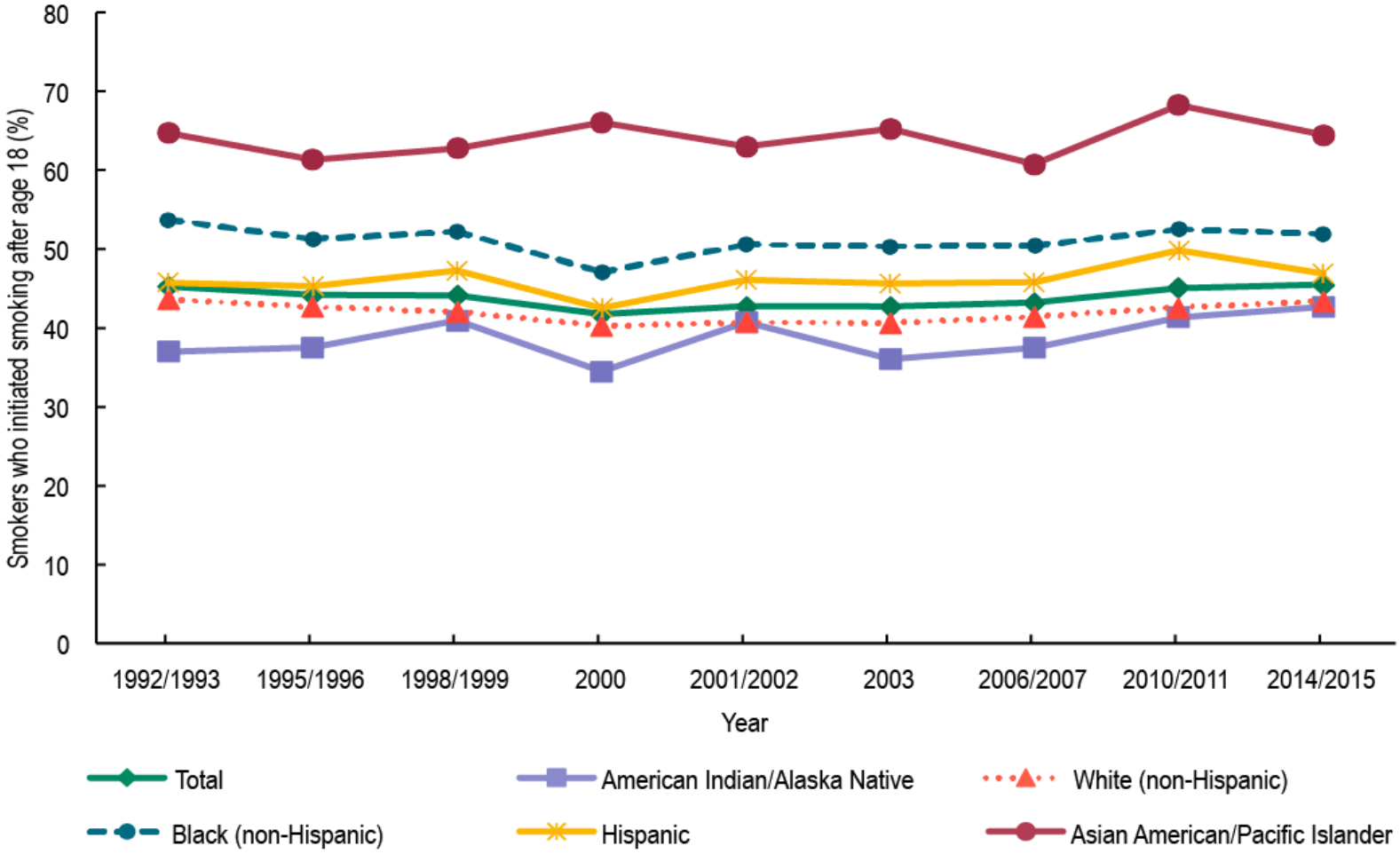
Future Directions in TRHD Research (cont.)

- Research is needed to determine whether and to what extent programs that are effective among the general population are sufficient to address tobacco use among specific populations, or whether tailored programs are needed.
- New surveillance systems or the expansion of existing surveillance systems may be necessary to track trends in the use of new and emerging tobacco products such as electronic cigarettes. They should also address the use of flavored tobacco products, including menthol products, particularly among youth and young adults.
- Surveillance systems should be augmented by the study of contextual factors that affect TRHD. Linking national studies and surveillance systems to systems for monitoring federal, state, and local policies would result in more robust systems and contribute to a more complete picture of tobacco use behaviors and TRHD.

Major Trends and Conclusions

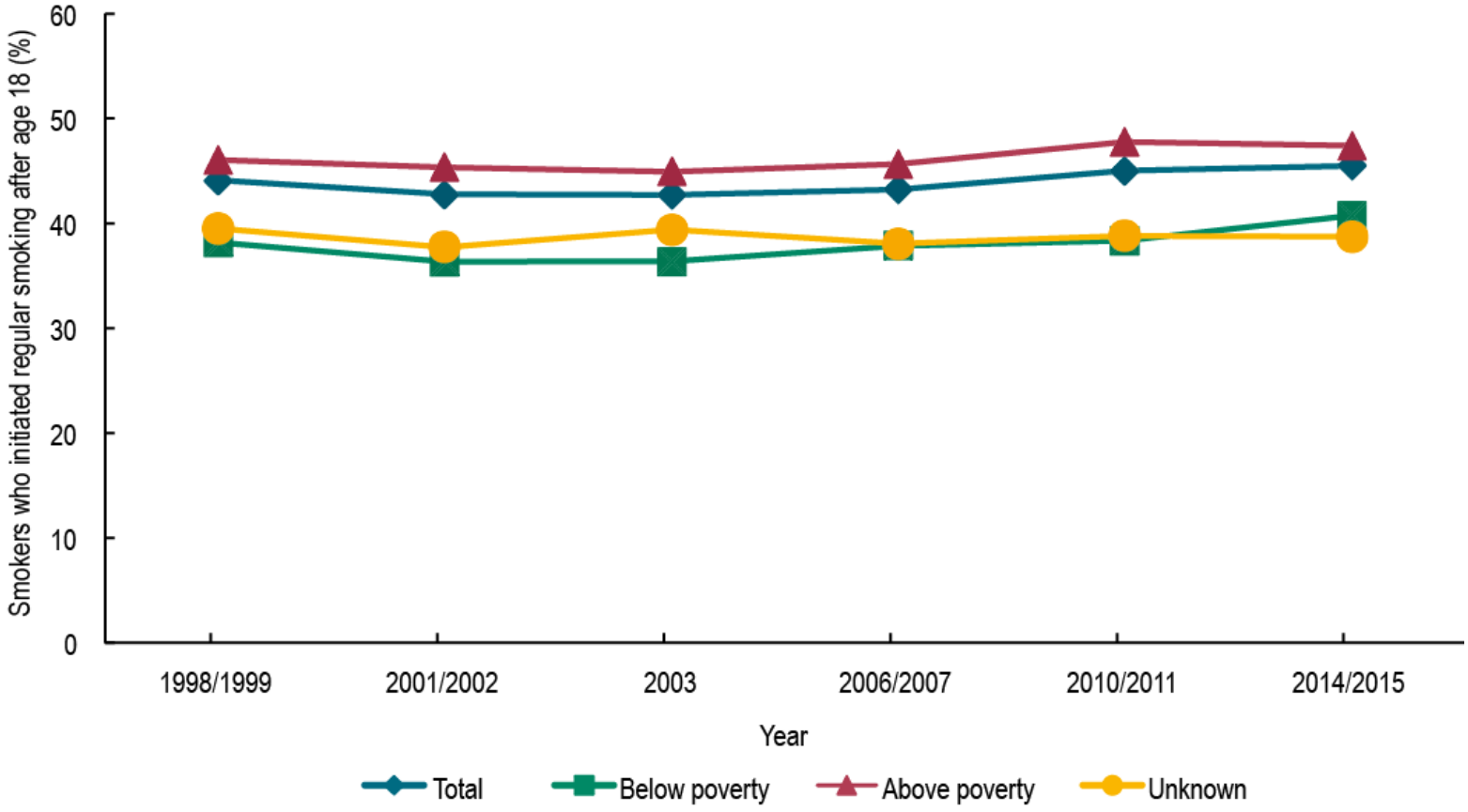
Selected Monograph Figures and Tables

Figure 2.1: Percentage of U.S. Current Smokers Who Initiated Regular Smoking After Age 18, by Race/Ethnicity, 1992/1993–2014/2015



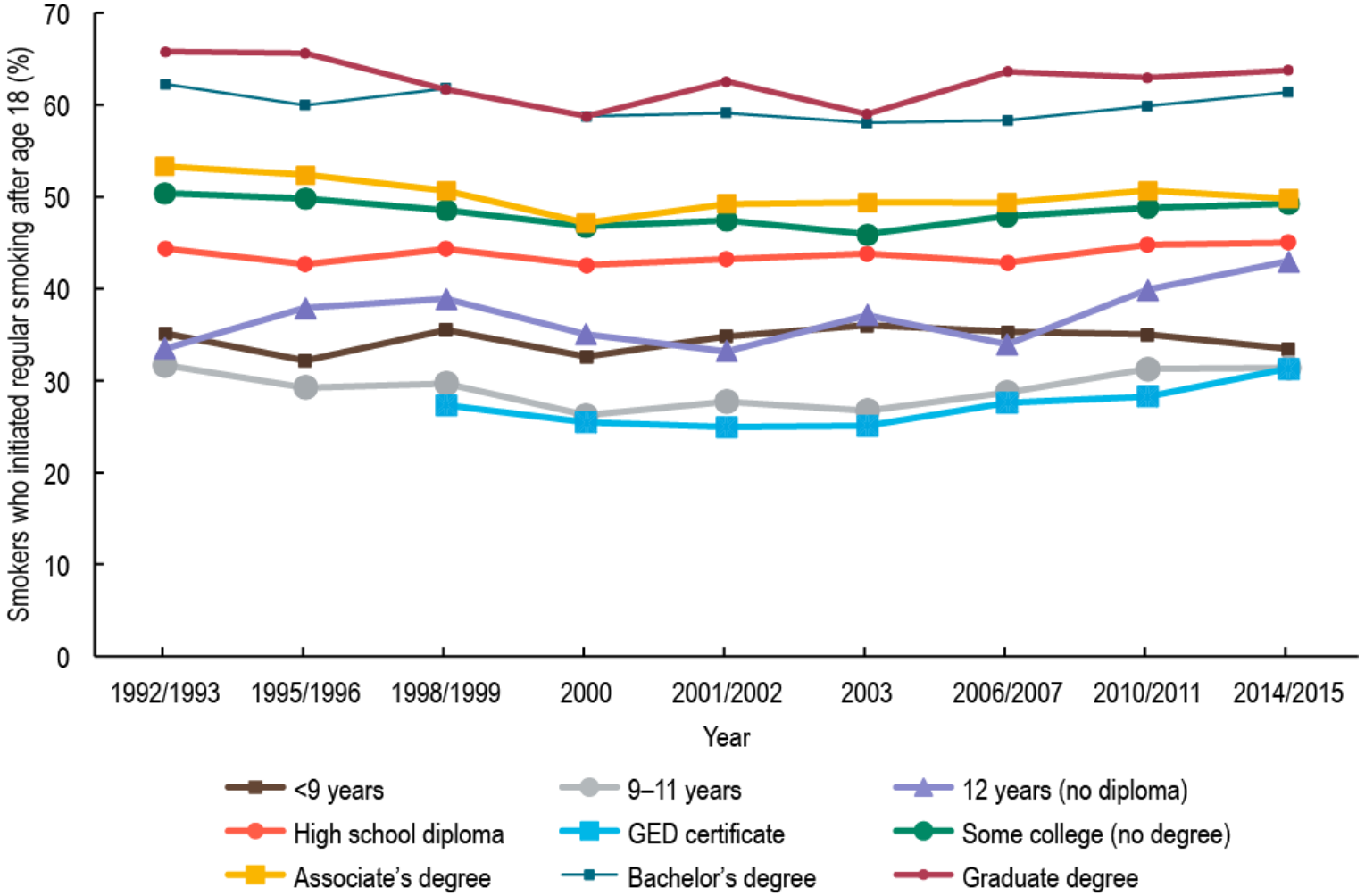
Note: Survey respondents were asked, “How old were you when you first started smoking cigarettes fairly regularly?”
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 1992/1993–2014/2015.

Figure 2.2: Percentage of U.S. Current Smokers Who Initiated Regular Smoking After Age 18, by Poverty Status, 1992/1993–2014/2015



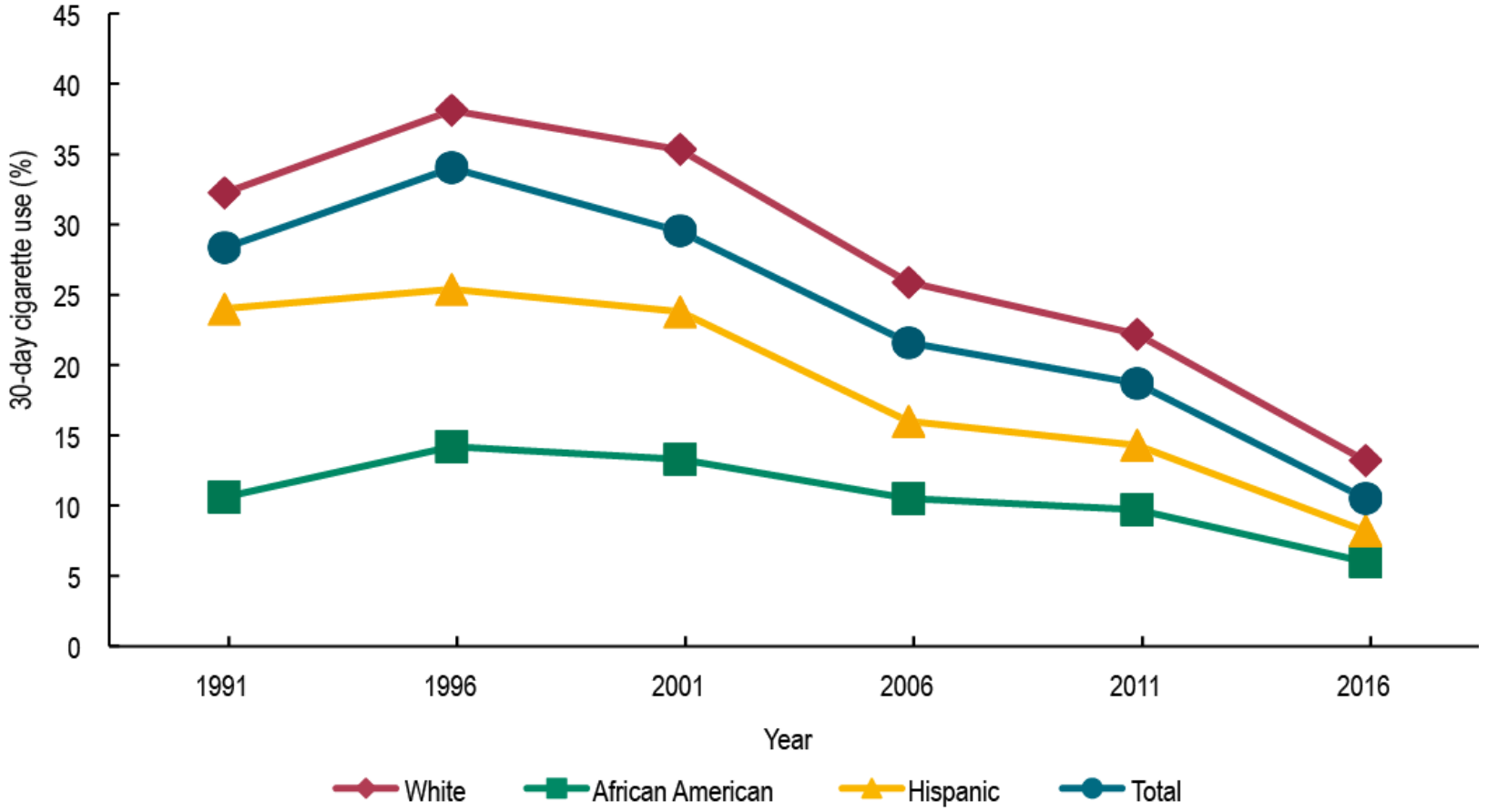
Note: Survey respondents were asked, "How old were you when you first started smoking cigarettes fairly regularly?" Unknown indicates that respondents were not part of a family to calculate poverty level (e.g., unmarried partners or roommates).
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 1992/1993–2014/2015.

Figure 2.3: Percentage of U.S. Current Smokers Who Initiated Regular Smoking After Age 18, by Educational Attainment, 1992/1993–2014/2015



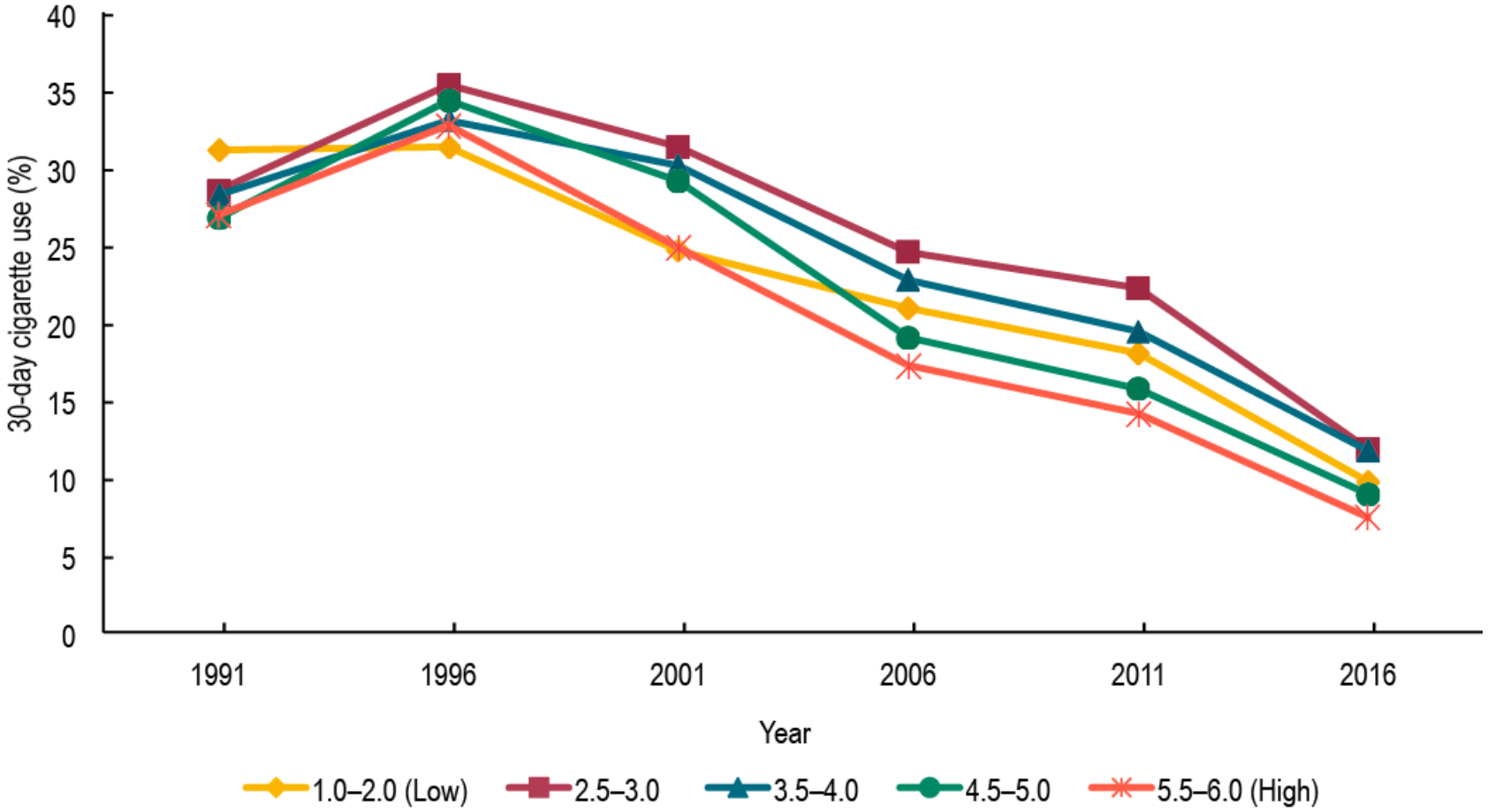
Note: GED = general educational development certificate. Data collection by GED certificate began in 1998/1999. Survey respondents were asked, "How old were you when you first started smoking cigarettes fairly regularly?"
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 1992/1993–2014/2015.

Figure 2.4: 30-Day Prevalence of Cigarette Use Among U.S. 12th Graders, by Race/Ethnicity, 1991–2016



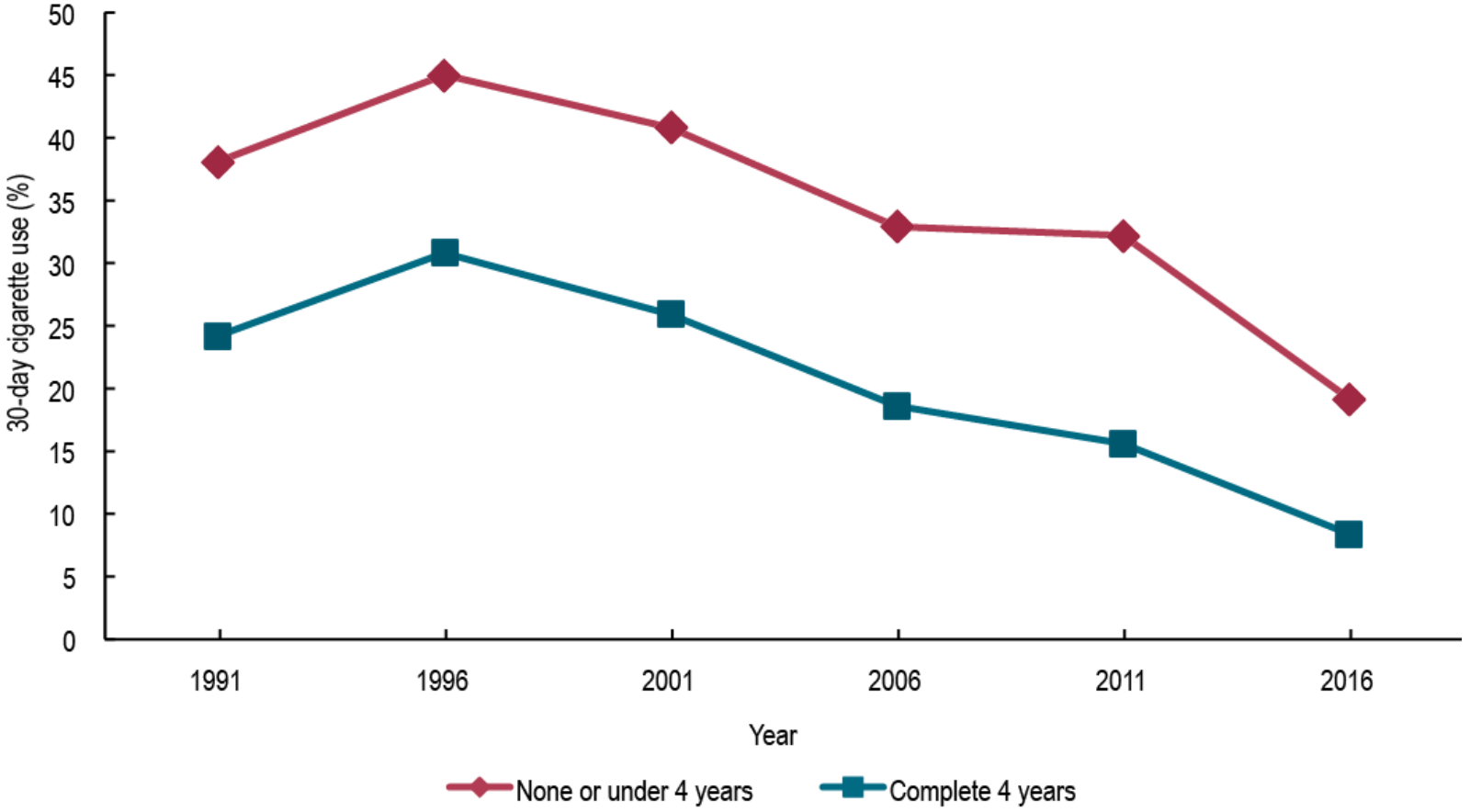
Source: Miech et al. 2016.

Figure 2.5: 30-Day Prevalence of Cigarette Use Among U.S. 12th Graders, by Parental Educational Attainment, 1991–2016



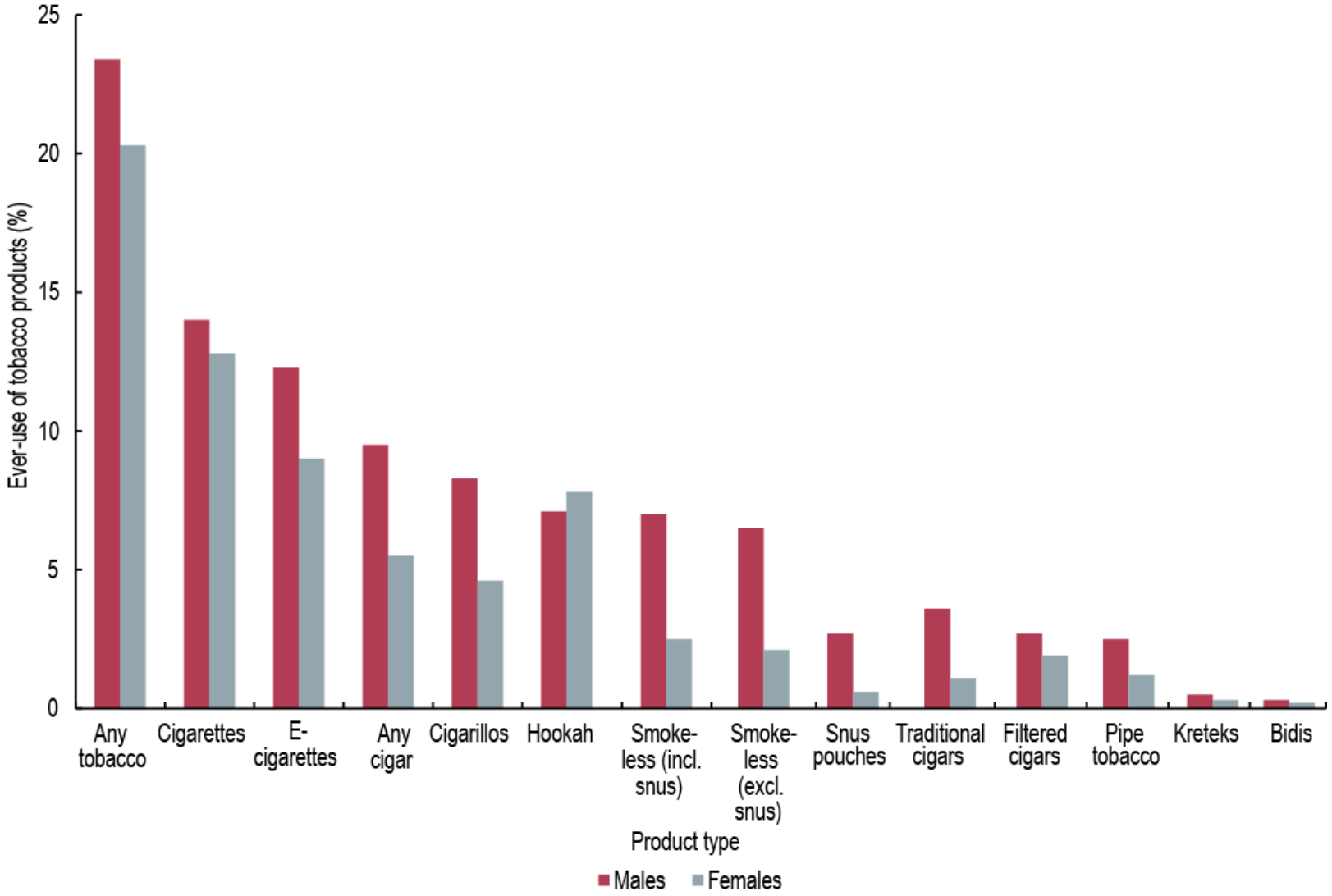
Notes: Parental educational attainment was assessed by taking the average of the mother's reported education and the father's reported education and was categorized as follows: 1 = completed grade school or less, 2 = some high school, 3 = completed high school, 4 = some college, 5 = completed college, and 6 = graduate or professional school after college.
Source: Miech et al. 2016.

Figure 2.6: 30-Day Prevalence of Cigarette Use Among U.S. 12th Graders, by College Plans, 1991–2016



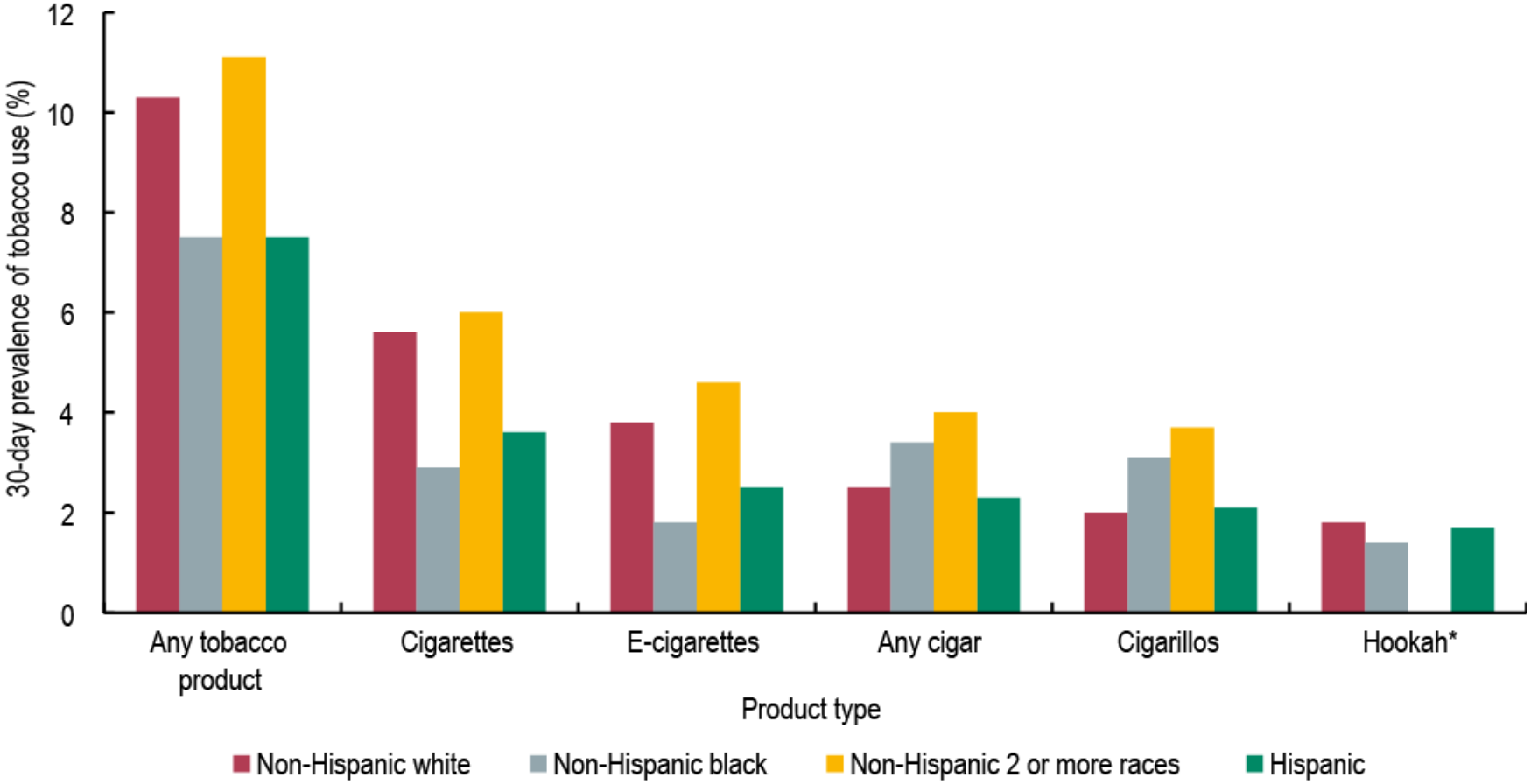
Source: Miech et al. 2016.

Figure 2.7: Ever-Use of Tobacco Products, By Product Type and Sex, 2013-2014



Source: Kasza et al. 2017.

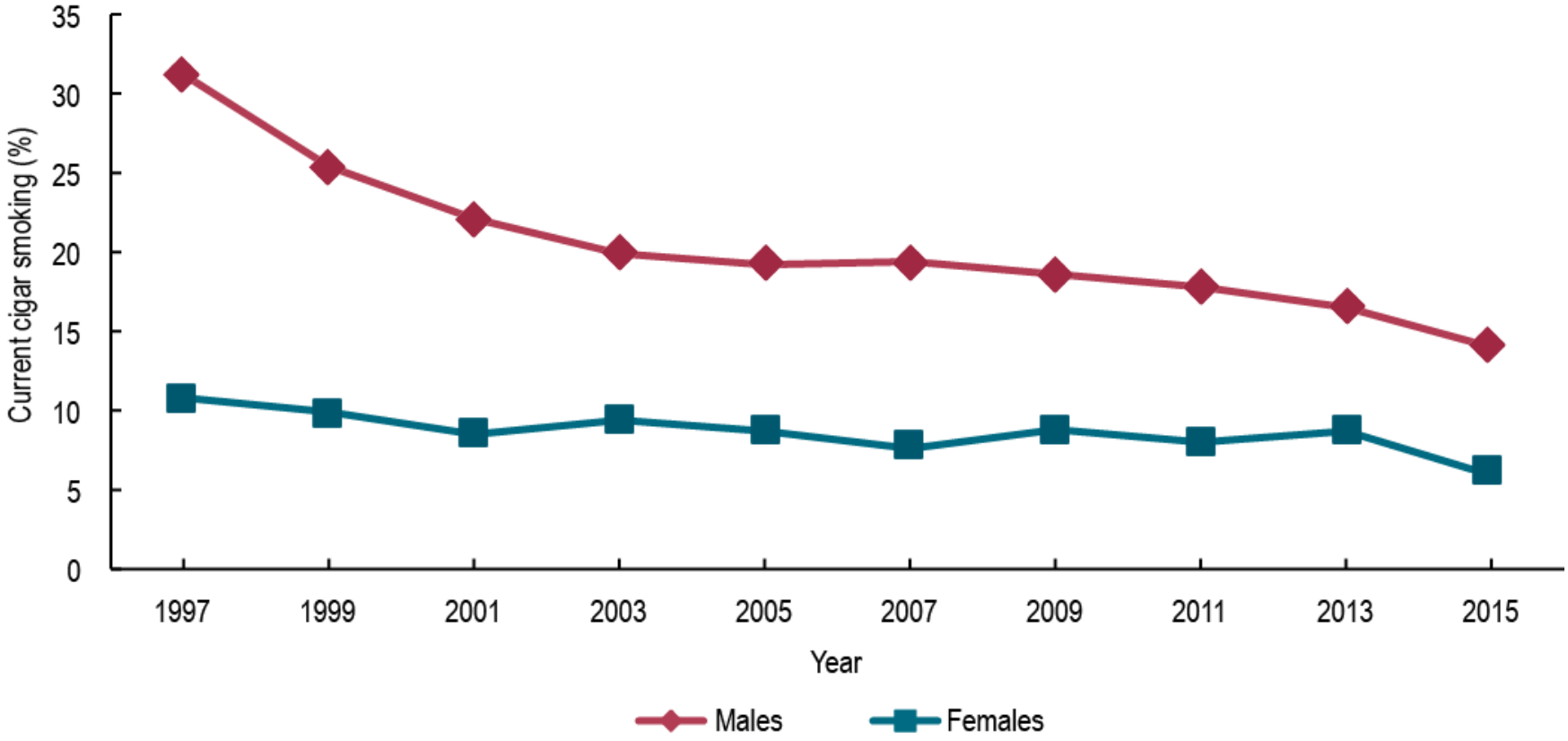
Figure 2.8: 30-Day Prevalence of Tobacco Product Use, by Product Type and Race/Ethnicity, 2013-2014



*Data not shown for hookah use by people who were non-Hispanic 2 or more races because the relative standard error was greater than 30%.

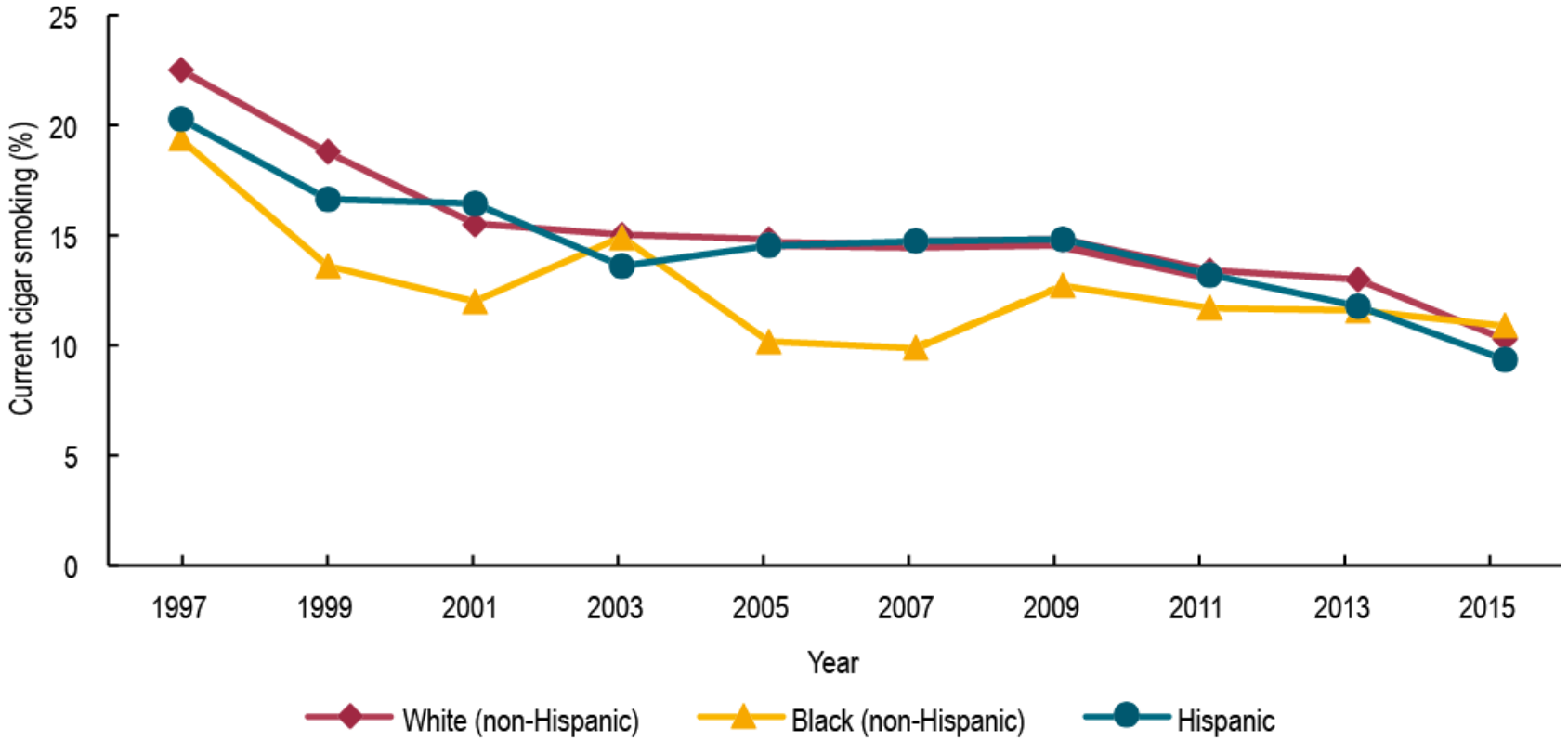
Source: Kasza et al. 2017.

Figure 2.9: Prevalence of Current Smoking of Any Type of Cigar Among U.S. High School Students, by Sex, 1997–2015



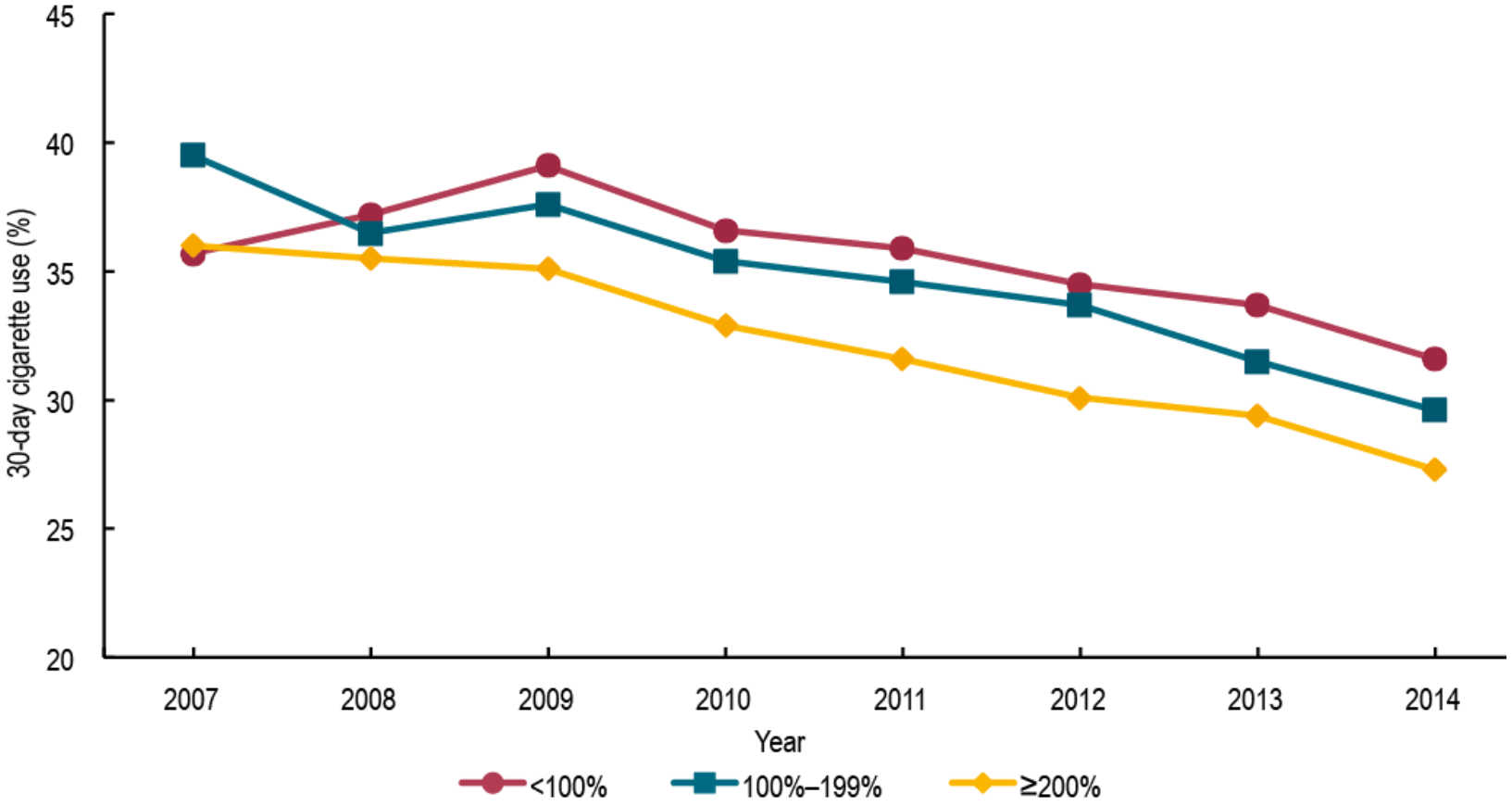
Notes: Based on responses to the question, “During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?” Respondents who reported that they had smoked any of these tobacco products on 1 or 2 days or more were classified as current cigar smokers.
Sources: Data based on the National Youth Risk Behavior Survey 1997–2009; 2011; 2013; 2015.

Figure 2.10: Prevalence of Current Smoking of Any Type of Cigar Among U.S. High School Students, by Race/Ethnicity, 1997–2015



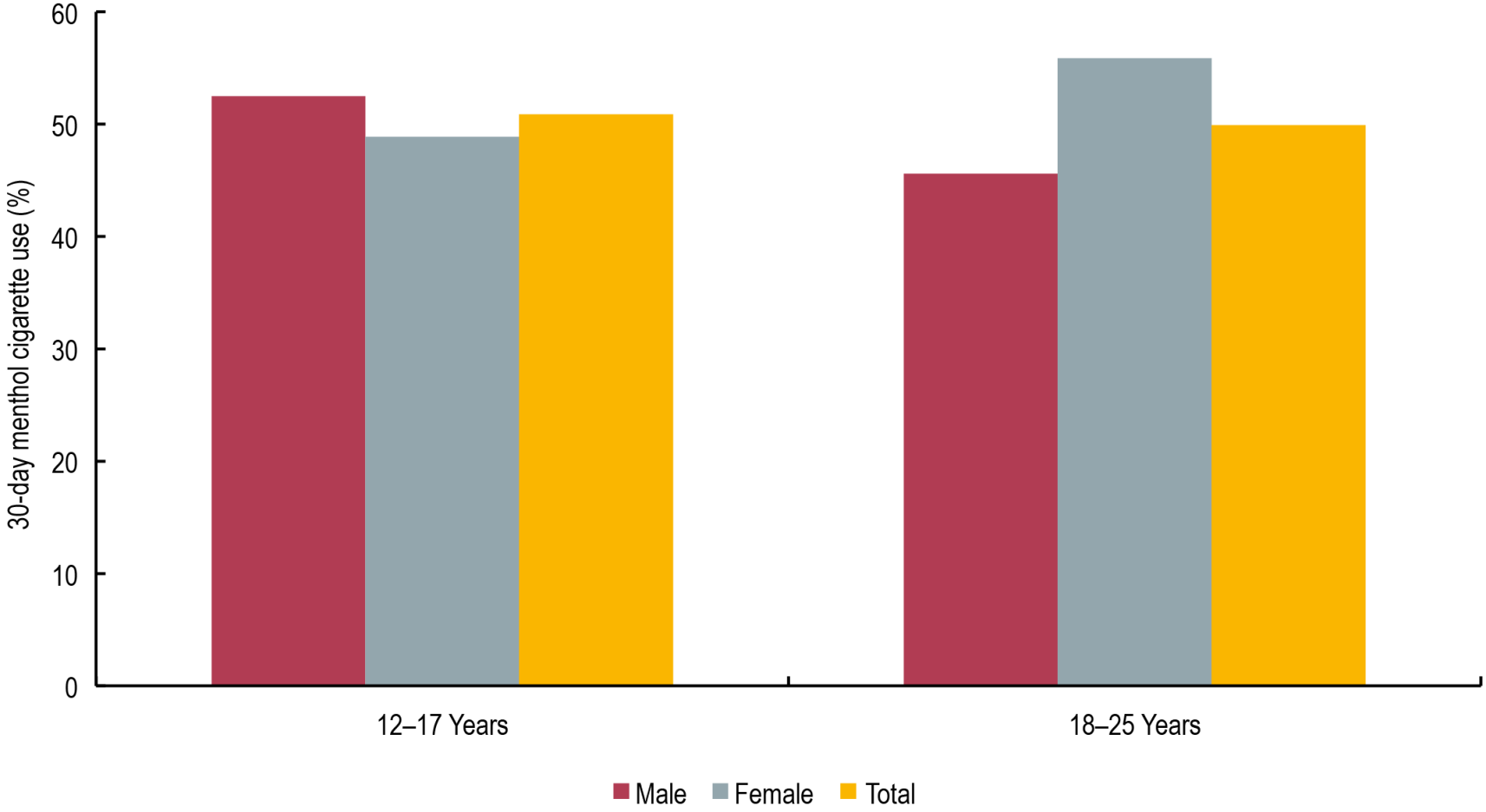
Notes: Based on responses to the question, "During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?" Respondents who reported that they had smoked any of these tobacco products on 1 or 2 days or more were classified as current cigar smokers.
Sources: Data based on the National Youth Risk Behavior Survey 1997–2009; 2011; 2013; 2015.

Figure 2.11: 30-Day Prevalence of Cigarette Use Among Adults Ages 18–25, by Poverty Level, 2007–2014



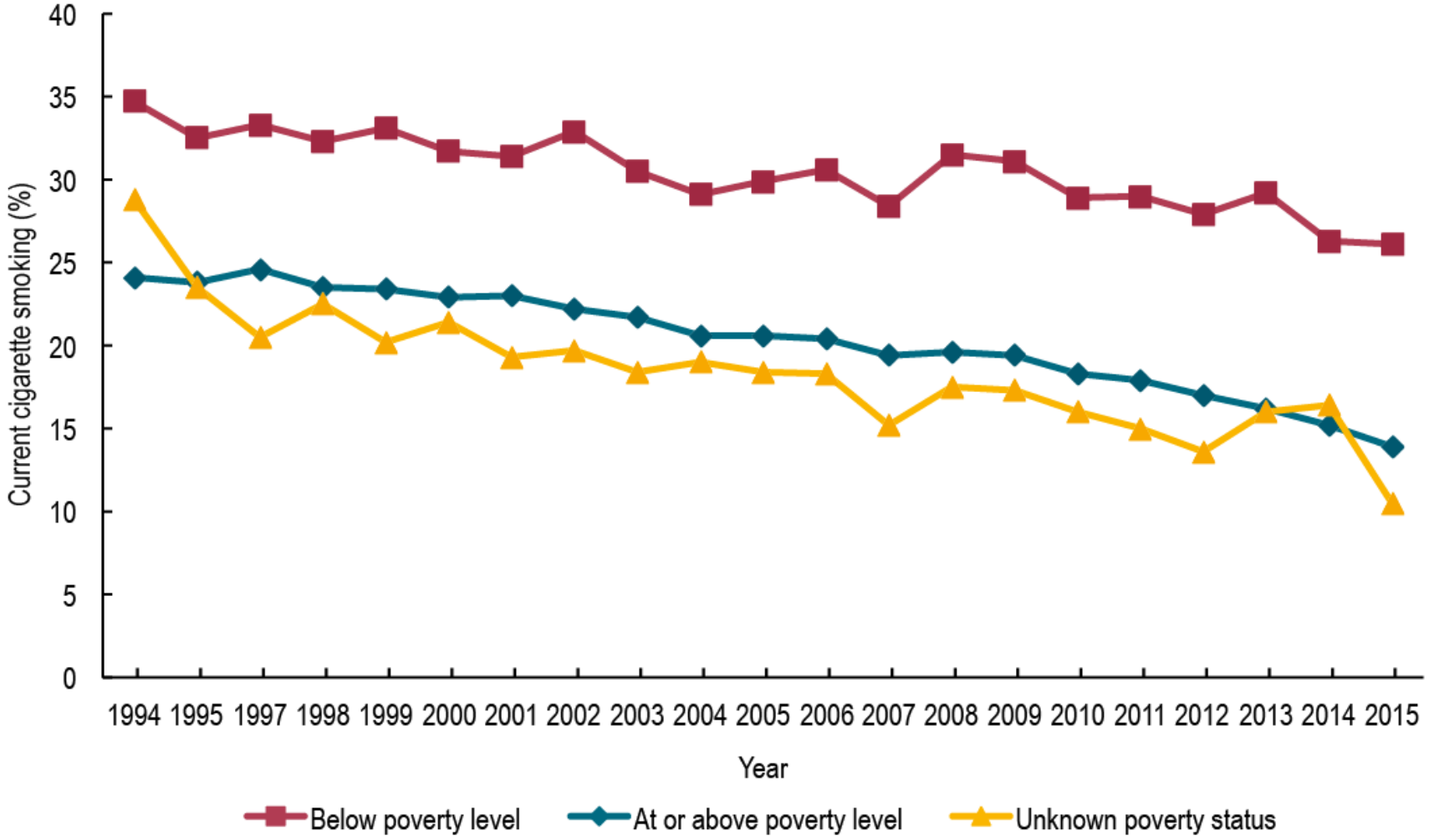
Source: Based on data from the National Survey on Drug Use and Health 2007–2014.

Figure 2.12: 30-Day Prevalence of Menthol Cigarette Smoking Among Youth and Young Adults, by Age Group and Sex, 2015



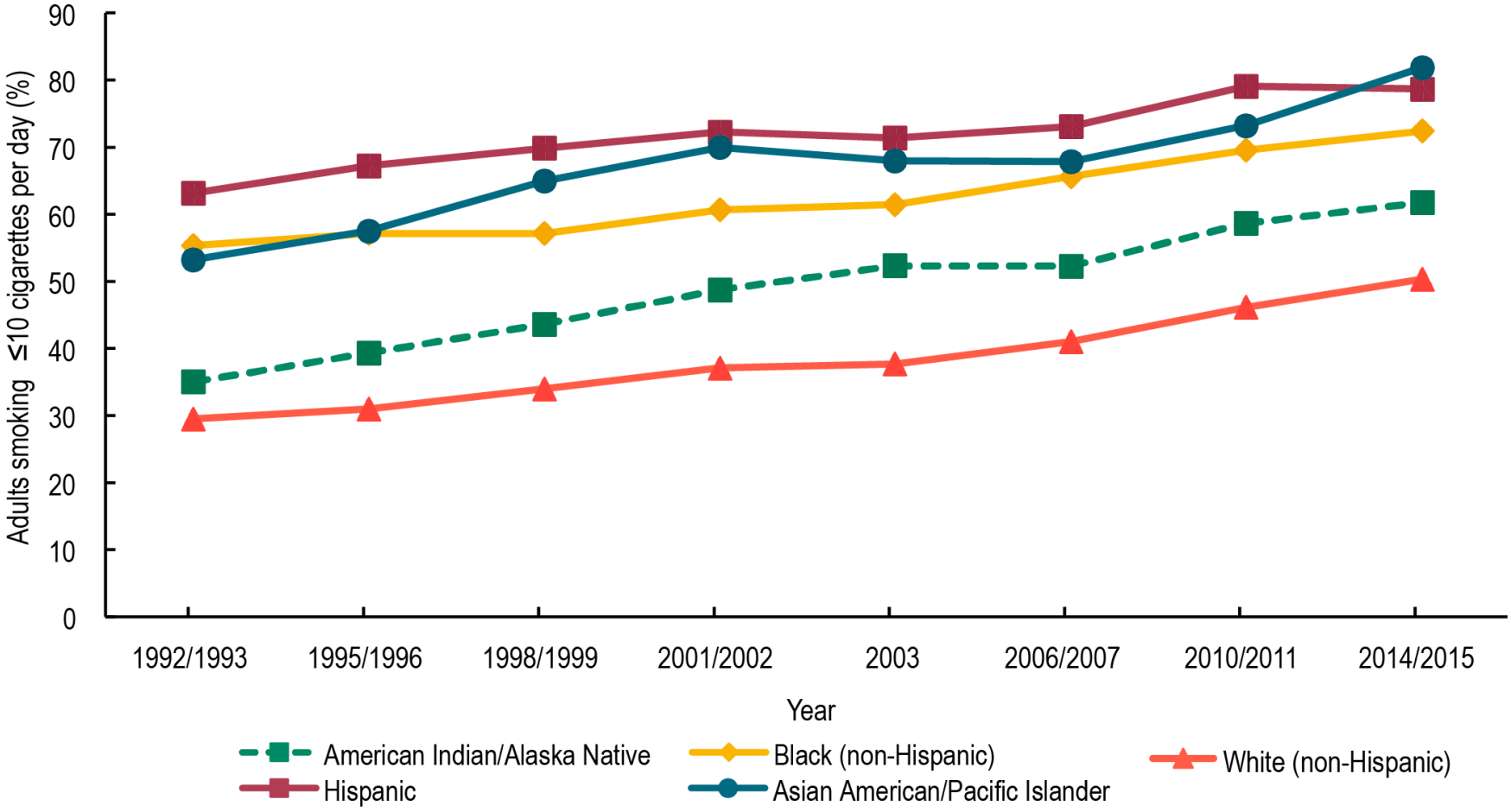
Source: Based on data from the National Survey on Drug Use and Health 2015.

Figure 2.13: Current Smoking Among U.S. Adults, by Poverty Status, 1994–2015



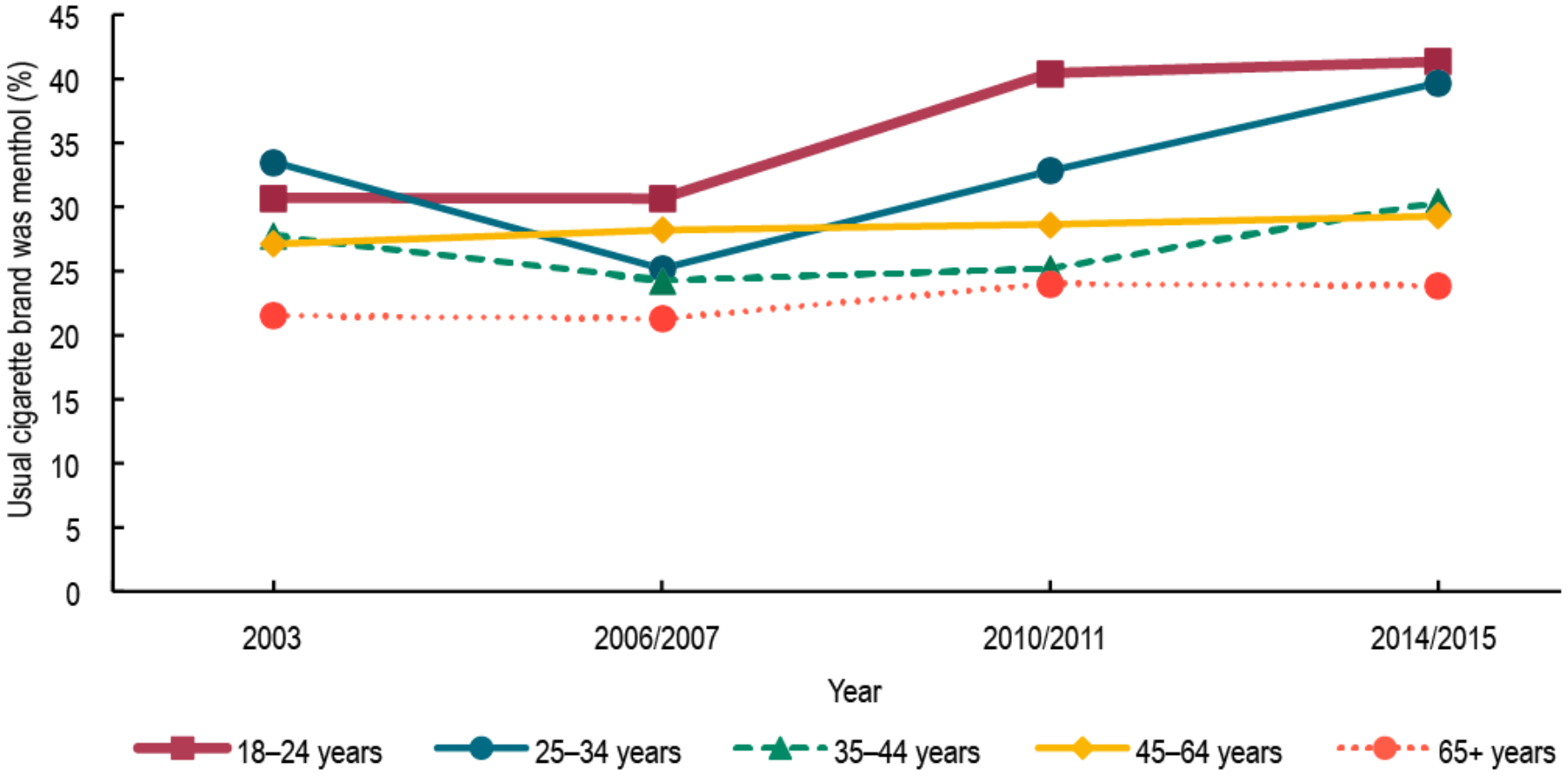
Note: Data not reported for 1996. NHIS was redesigned in 1997, and trend analysis and comparison with data prior to 1997 should be conducted with caution.
Source: Based on data from the National Health Interview Survey 1994–2015.

Figure 2.14: Percentage of U.S. Adults Smoking ≤10 Cigarettes per Day, by Race/Ethnicity, 1992/1993–2014/2015



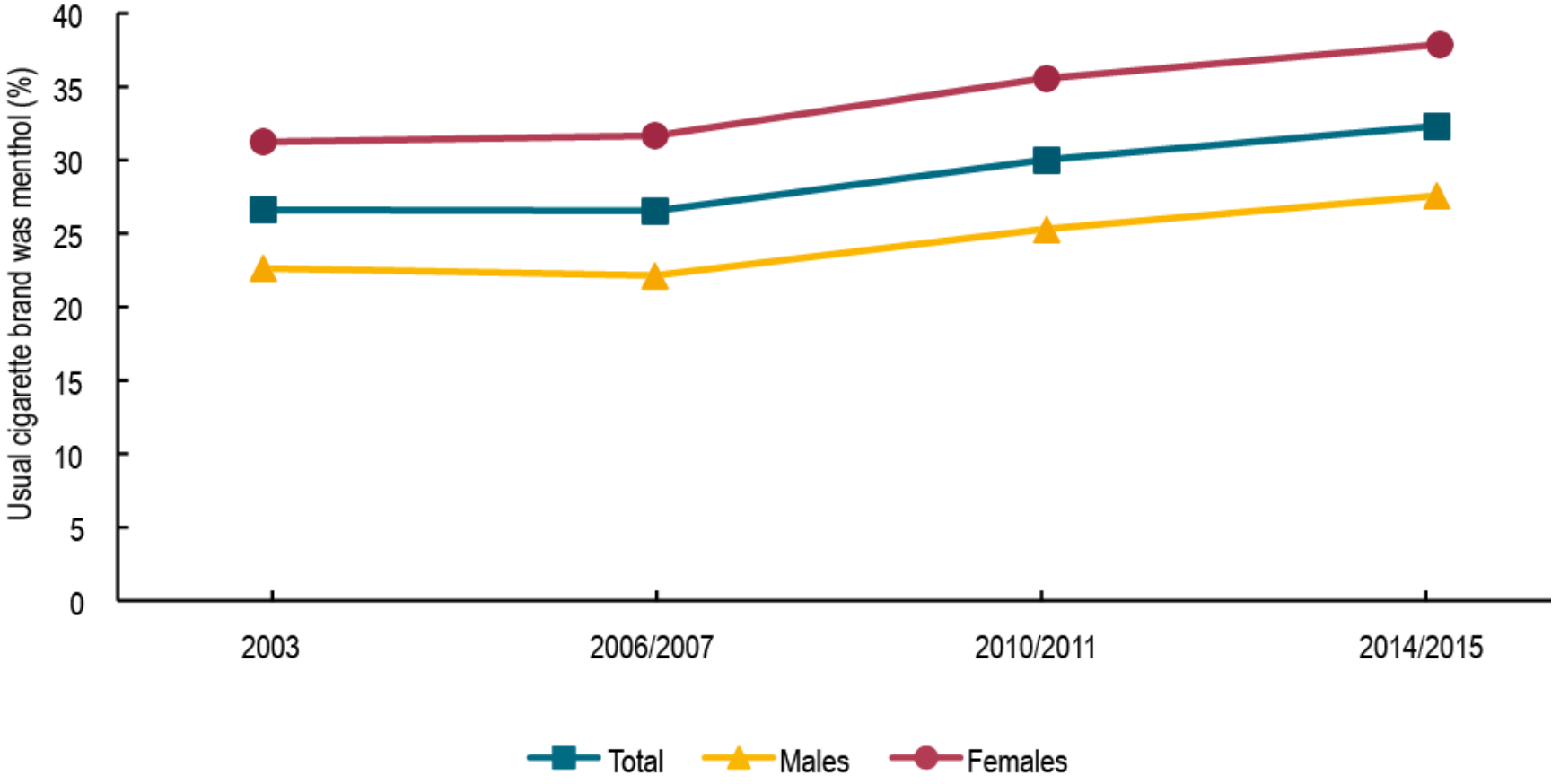
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 1992/1993–2014/2015.

Figure 2.15: Percentage of U.S. Adult Smokers Whose Usual Cigarette Brand Was Menthol, by Age, 2003–2014/2015



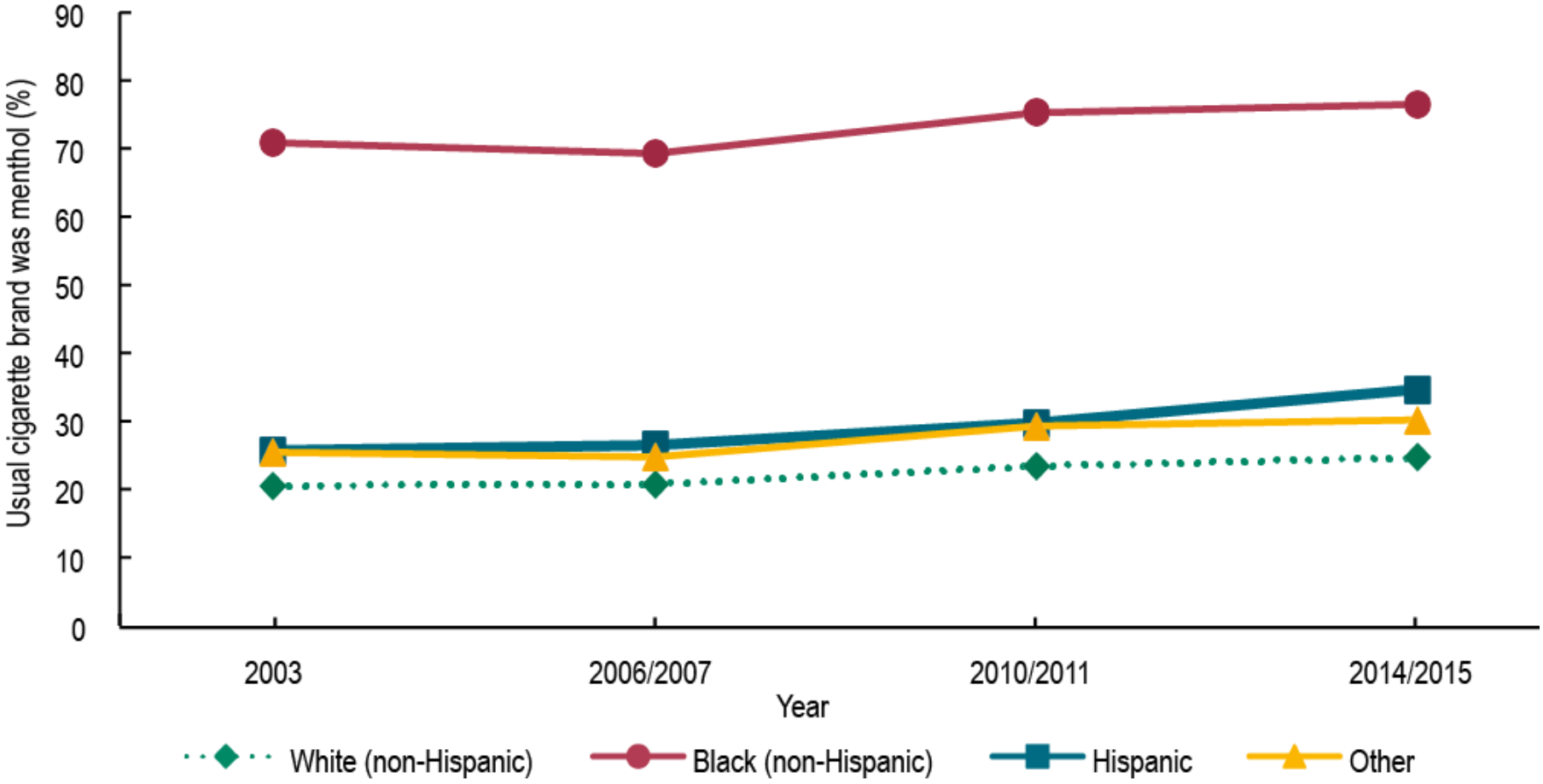
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 2003–2014/2015.

Figure 2.16: Percentage of U.S. Adult Smokers Whose Usual Cigarette Brand Was Menthol, by Sex, 2003–2014/2015



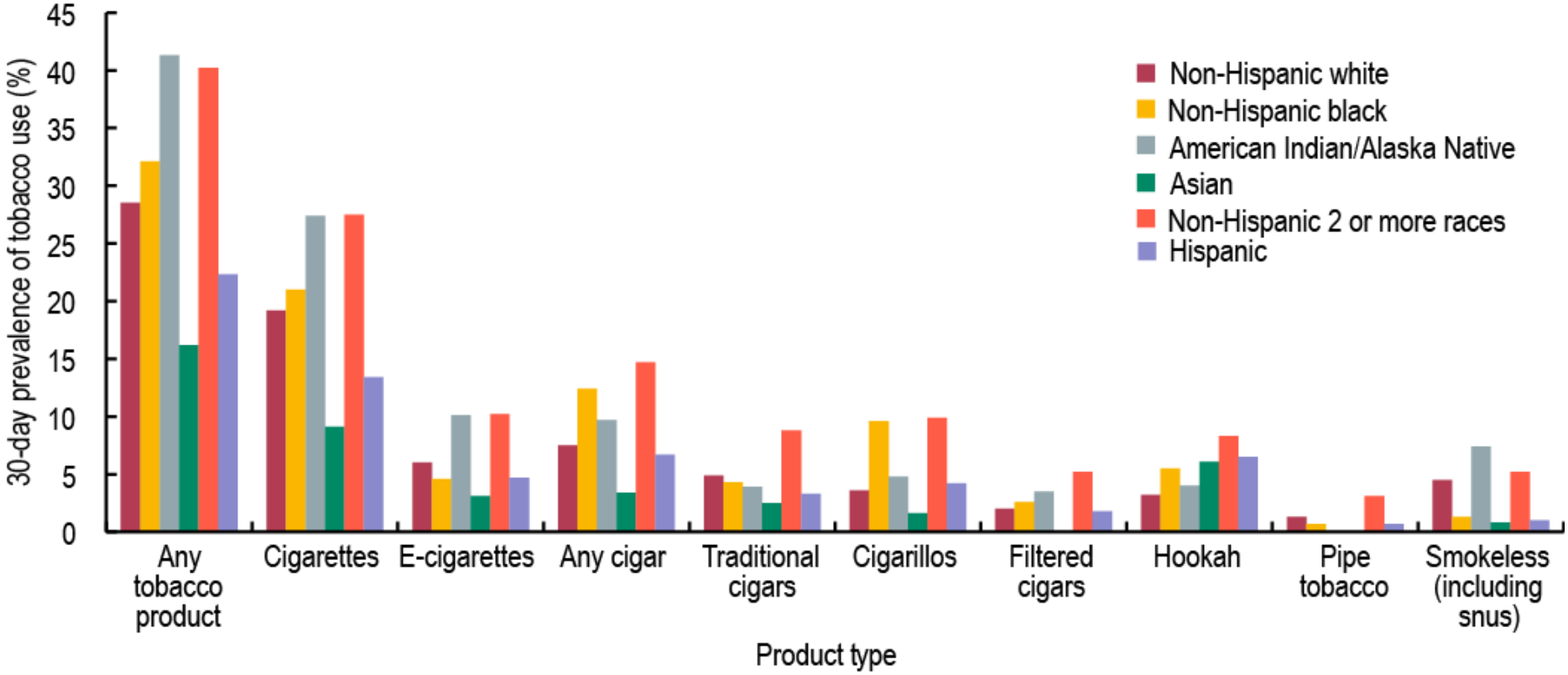
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 2003–2014/2015.

Figure 2.17: Percentage of U.S. Adult Smokers Whose Usual Cigarette Brand Was Menthol, by Race/Ethnicity, 2003–2014/2015



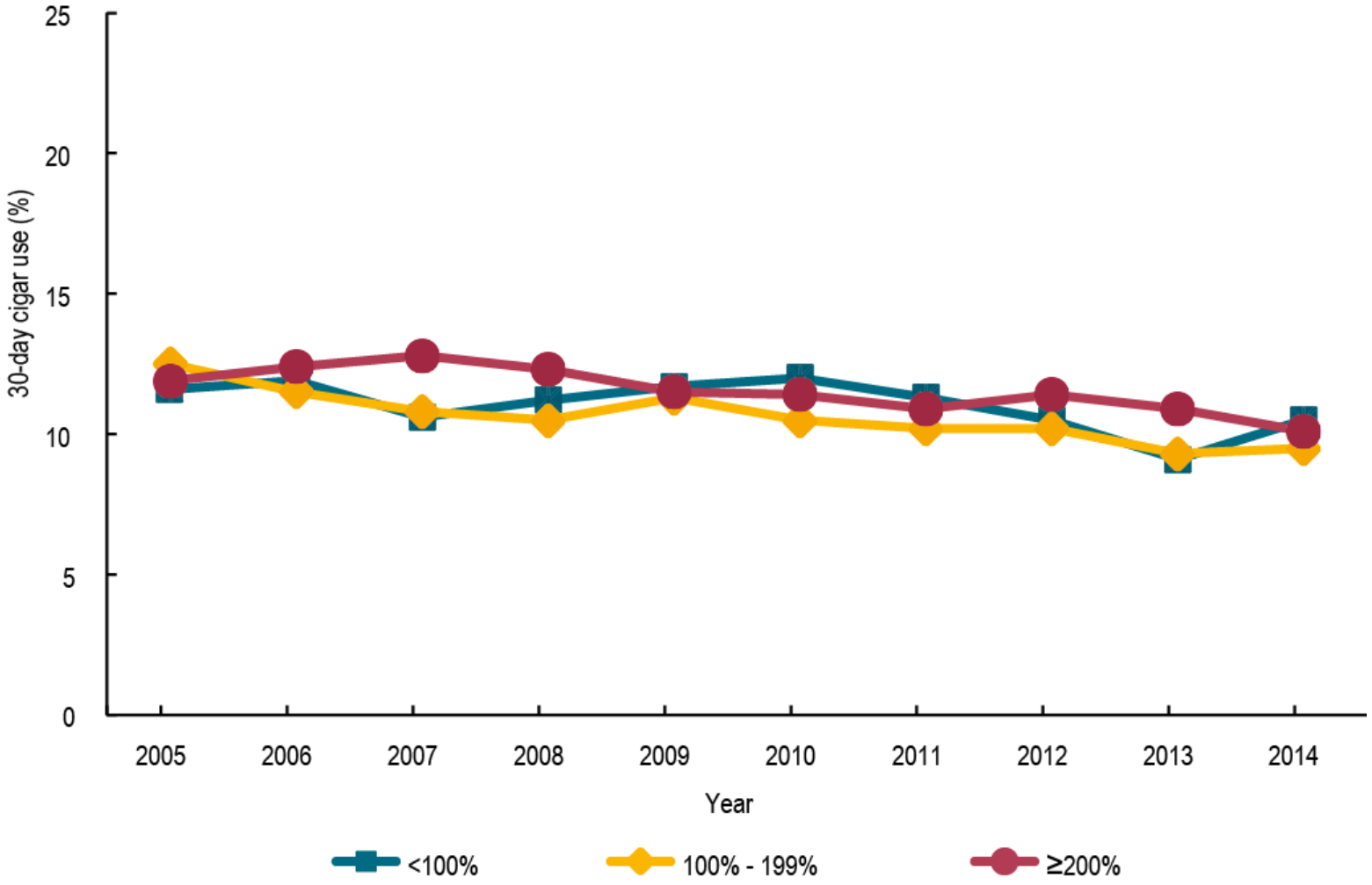
Source: Based on data from the Tobacco Use Supplement to the Current Population Survey 2003–2014/2015.

Figure 2.18: 30-Day Prevalence of Tobacco Product Use Among U.S. Adults, by Product Type and Race/Ethnicity, 2013-2014



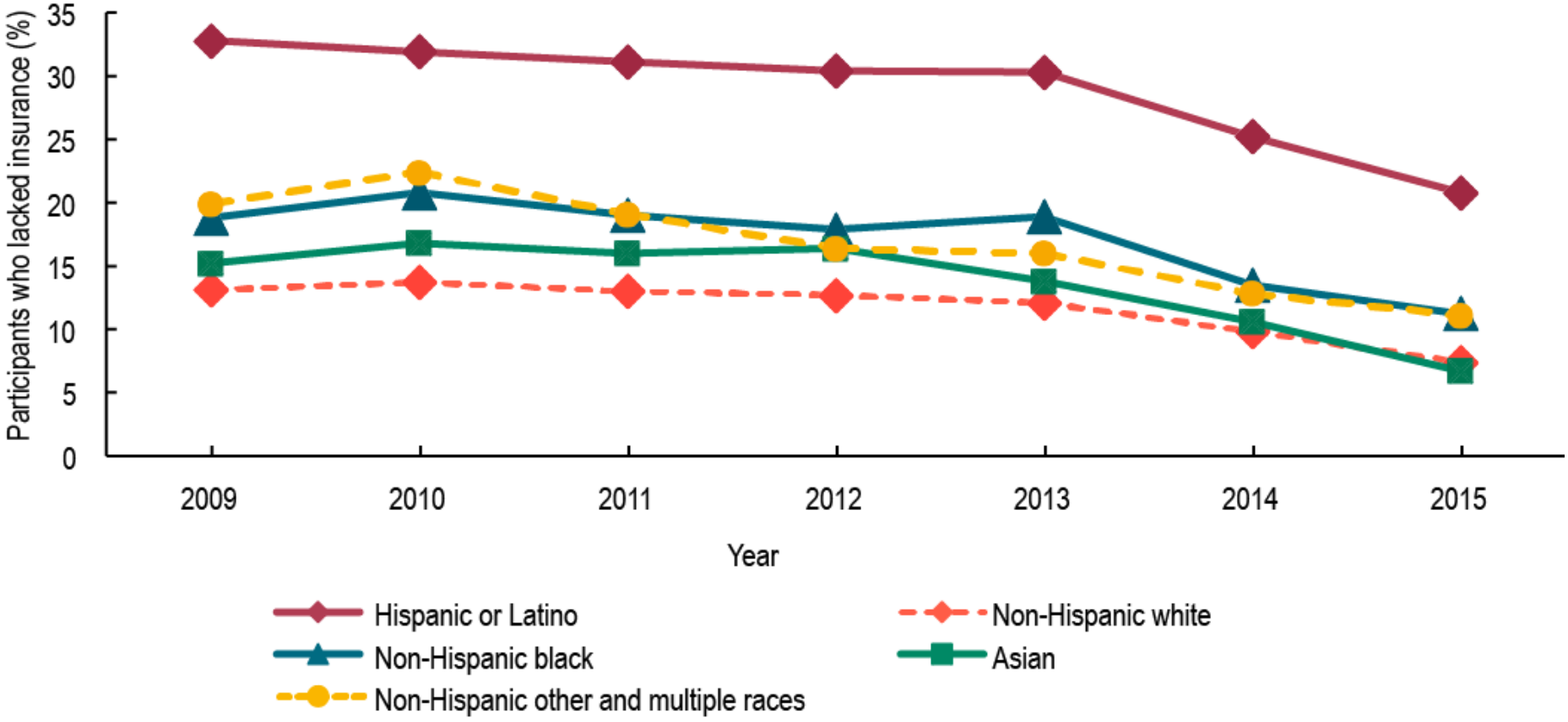
Source: Kasza et al. 2017.

Figure 2.19: 30-Day Prevalence of Cigar Use Among Young Adults Ages 18–25, by Poverty Level, 2005–2014



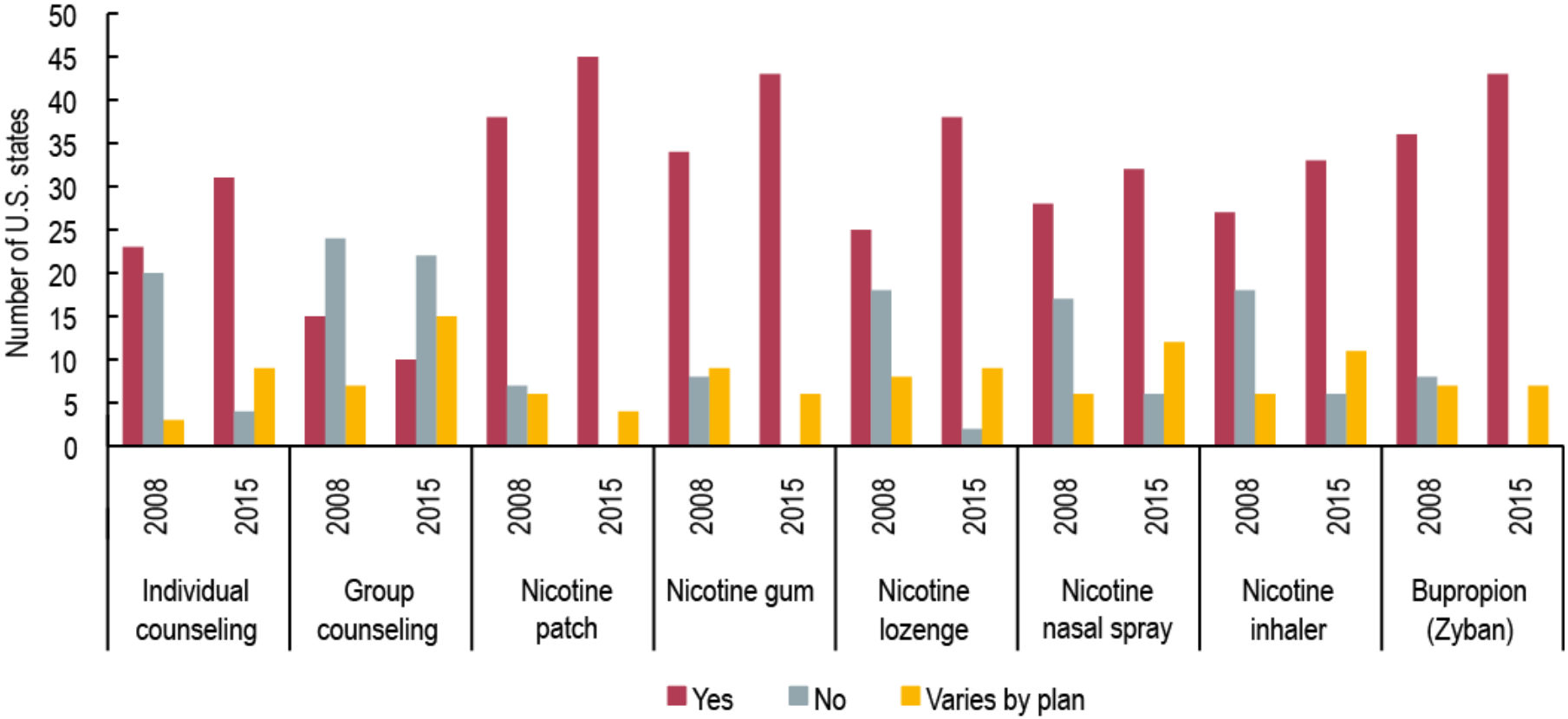
Source: Based on data from the National Survey on Drug Use and Health 2005–2014.

Figure 2.20: NHIS Participants Under Age 65 Who Lacked Health Insurance Coverage at Time of Interview, by Race/Ethnicity, 2009–2015



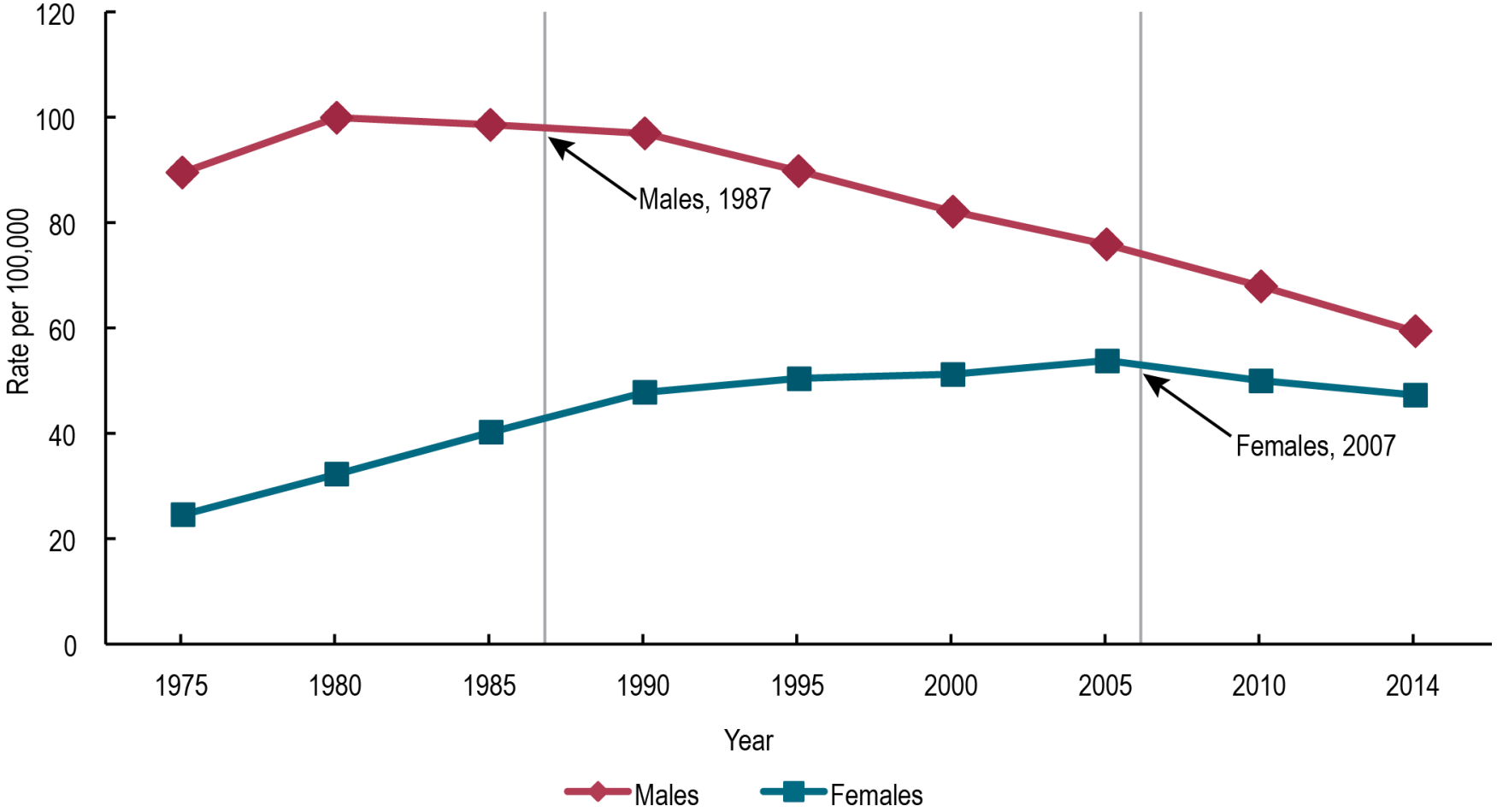
Sources: Martinez and Cohen 2014; Cohen et al. 2016.

Figure 2.21: State Medicaid Coverage of Tobacco Dependence Treatments, 2008 and 2015



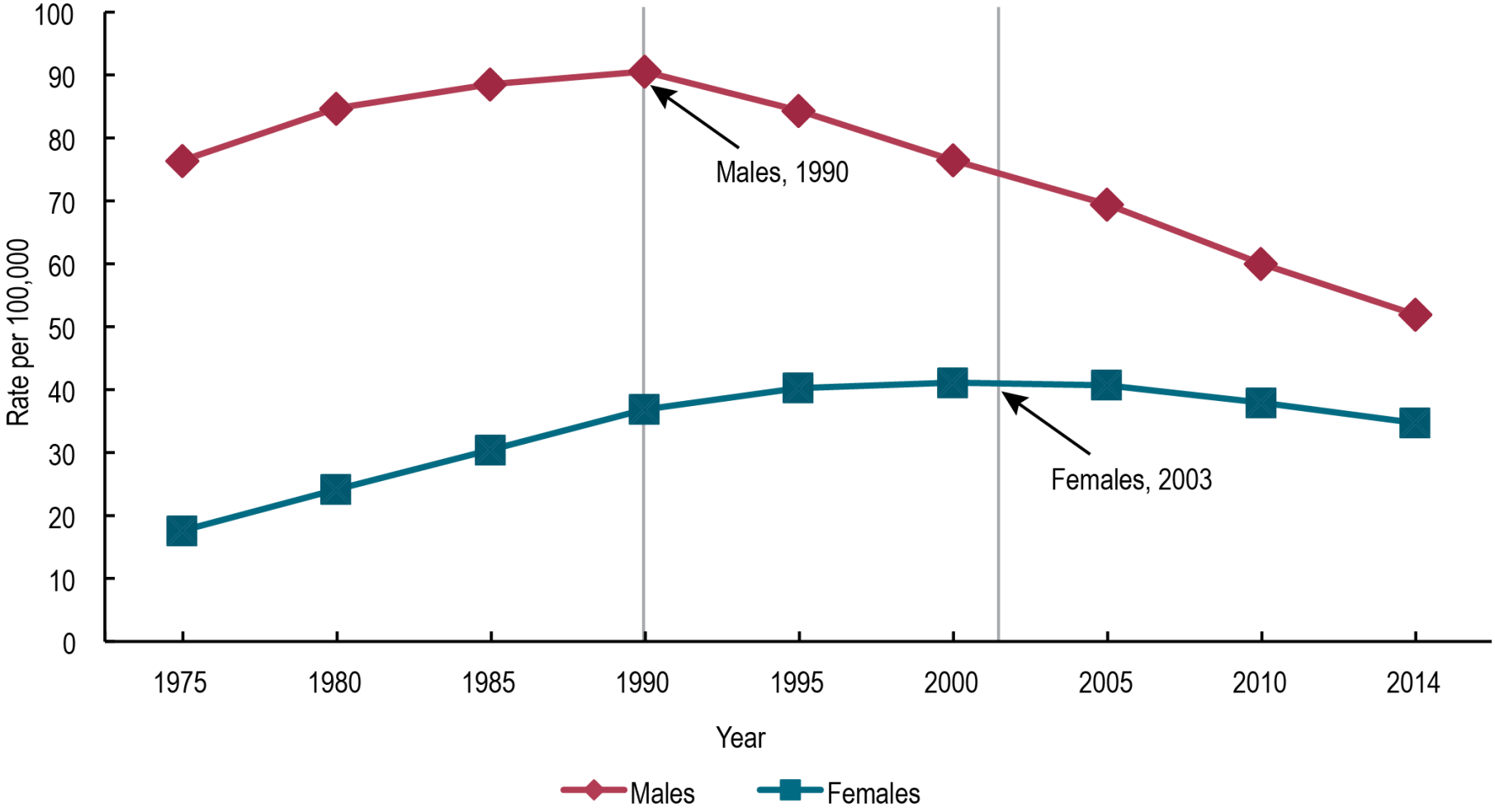
Notes: Yes = state Medicaid coverage for treatment; No = no state Medicaid coverage for treatment; Varies by plan = varies by state Medicaid insurance plan.
Source: Singleterry et al. 2015.

Figure 2.22: Age-Adjusted U.S. Incidence of Lung and Bronchus Cancers, by Sex, 1975–2014



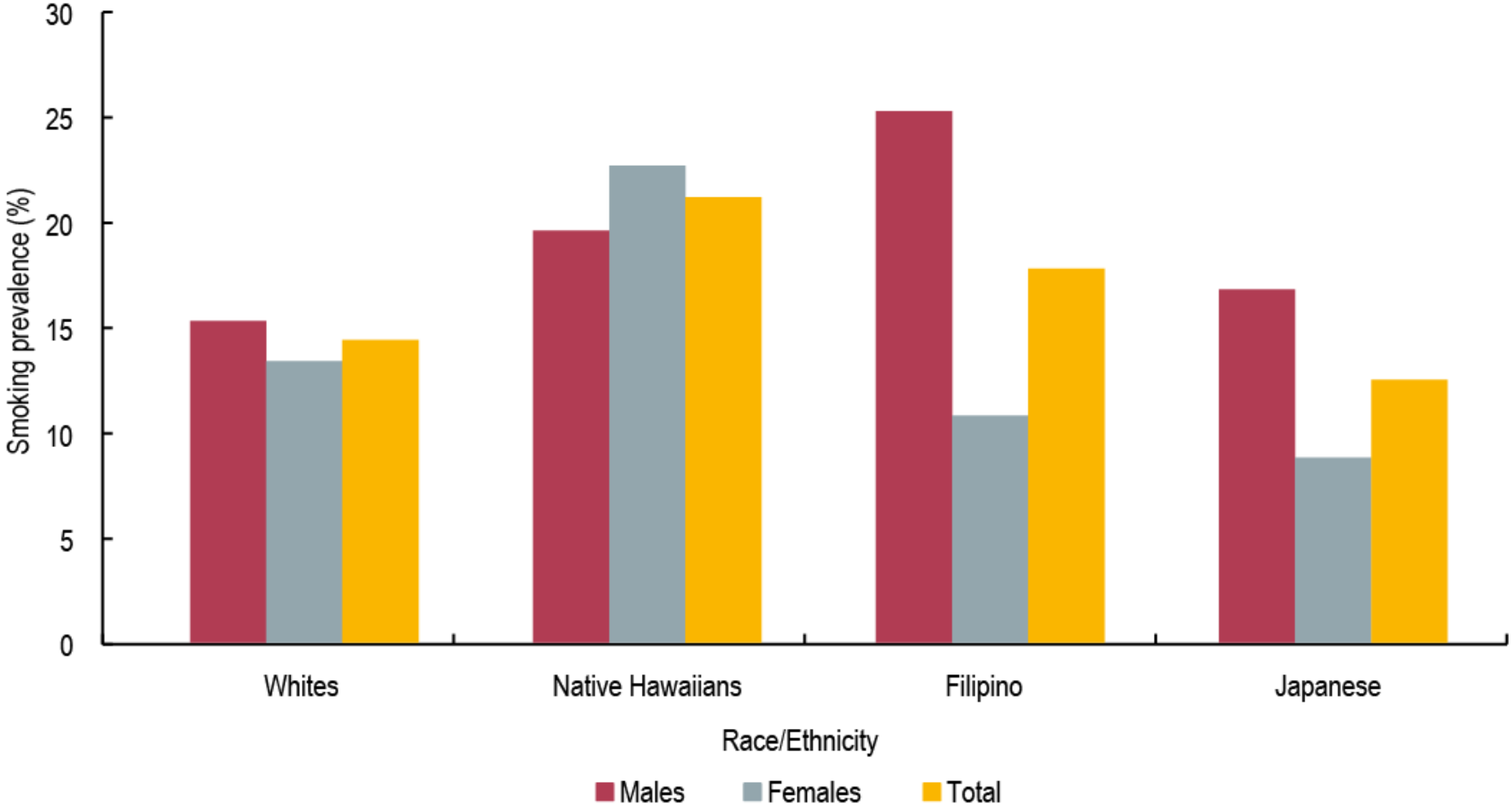
Note: Vertical lines denote the year in which incidence peaked, by sex.
Source: Based on data from the National Cancer Institute, Surveillance, Epidemiology, and End Results Program 1975–2014.

Figure 2.23: Age-Adjusted U.S. Mortality from Lung and Bronchus Cancers, by Sex, 1975–2014



Note: Vertical lines denote the year in which incidence peaked, by sex.
Source: Based on data from the National Cancer Institute, Surveillance, Epidemiology, and End Results Program 1975–2014.

Figure 2.24: Smoking Prevalence in Hawaii, by Ethnicity and Sex, 2008



Source: Adapted from Pobutsky and Lowery St. John 2010.

Figure 3.5: Genetic Factors Influence Cancer Risk by Modulating Smoking Behaviors, Activity of Carcinogens, and Susceptibility to Damage Caused by Carcinogens

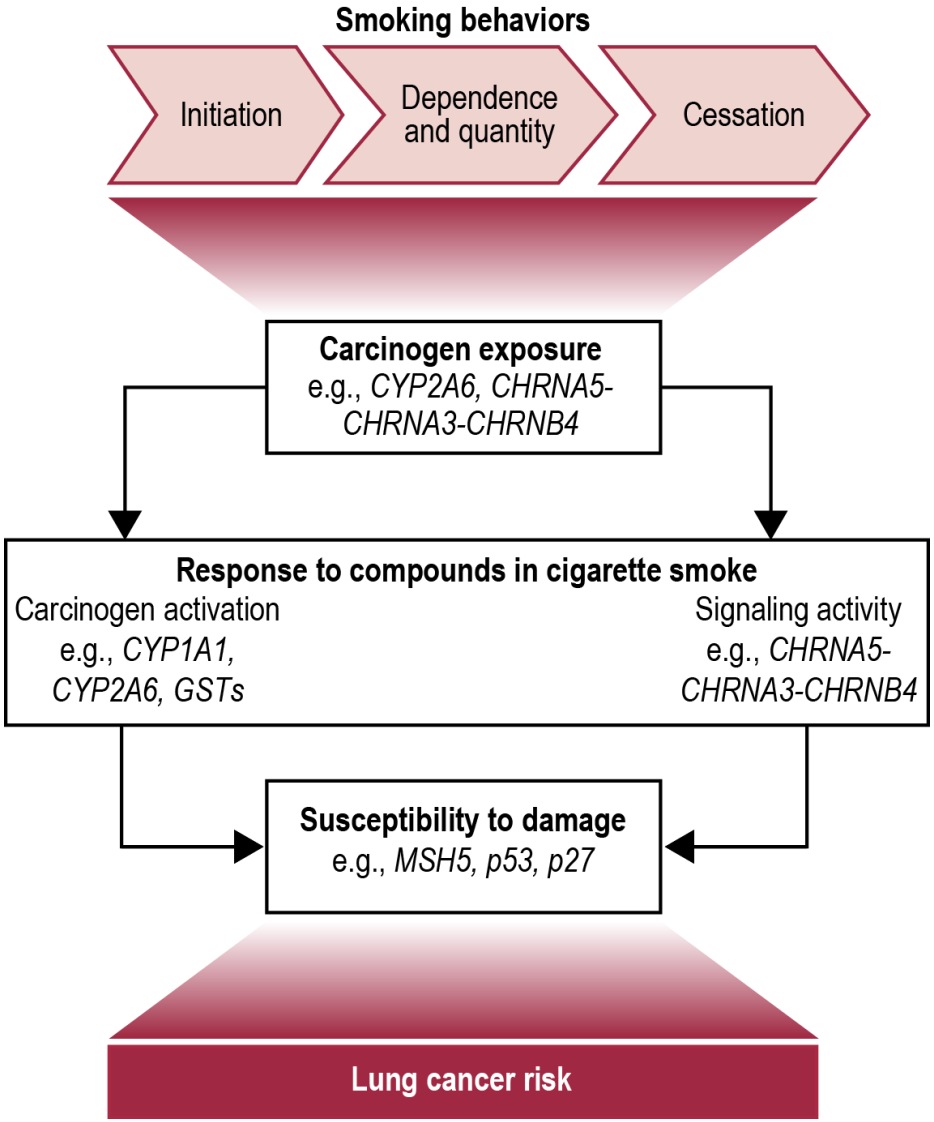
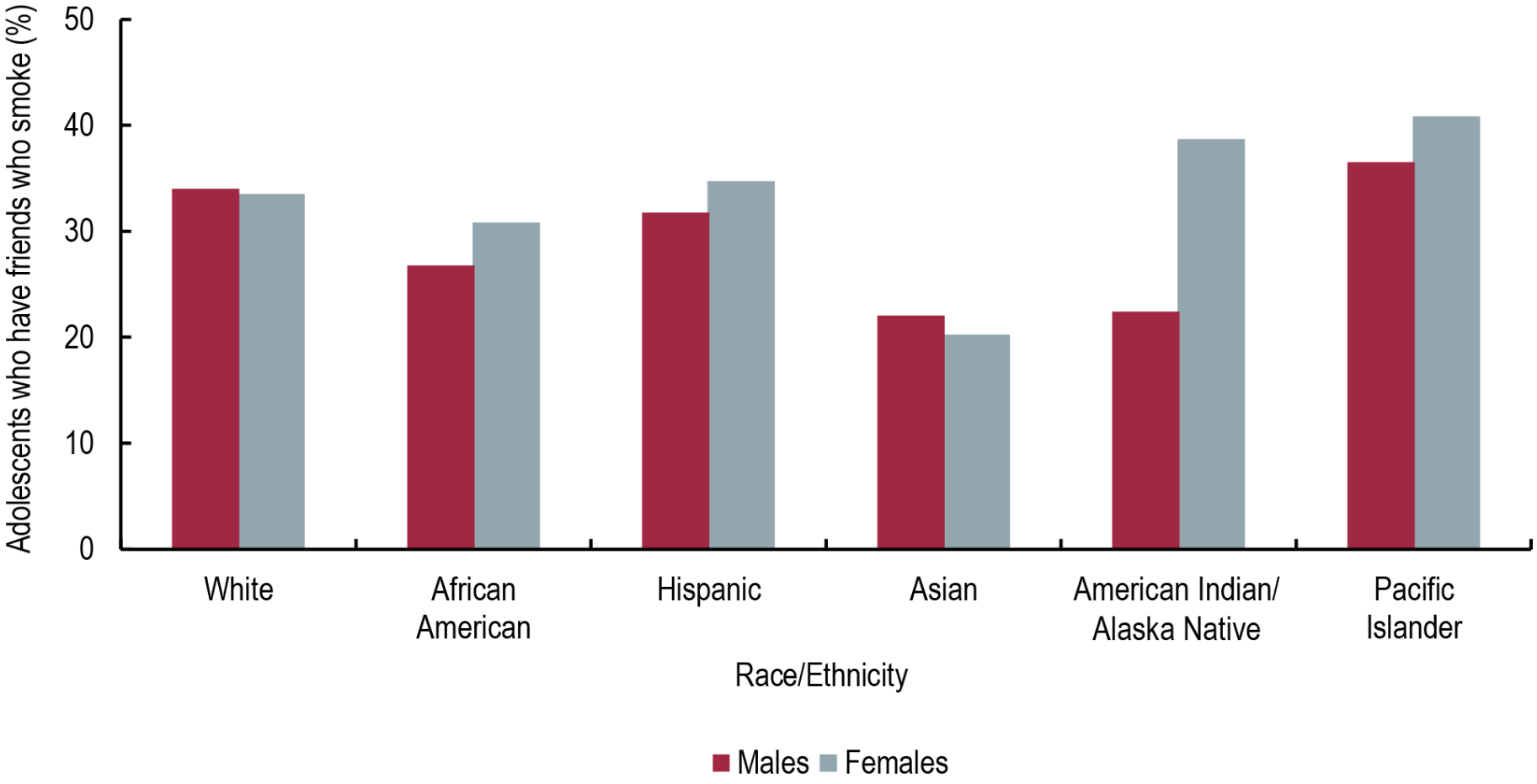
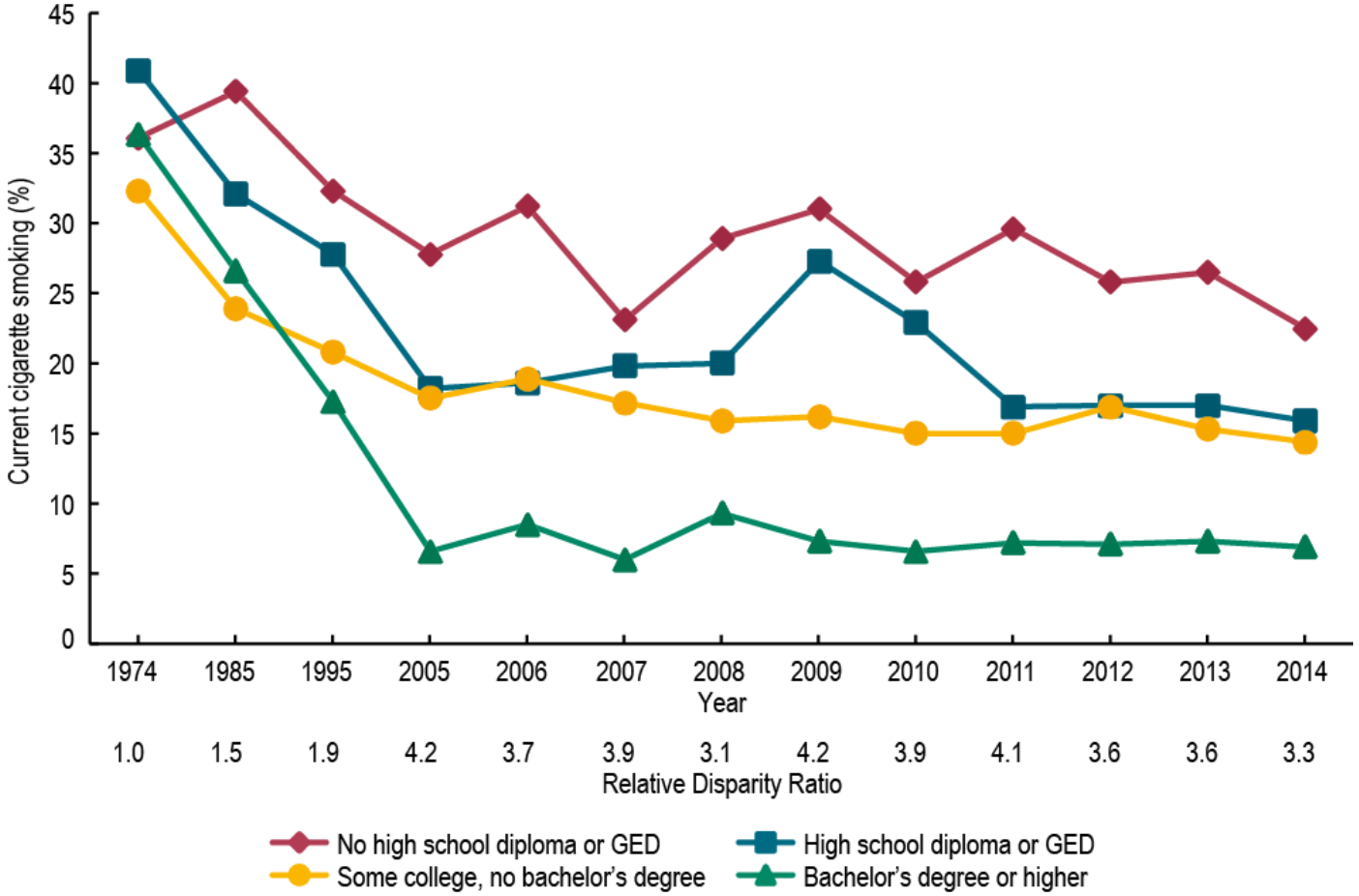


Figure 6.2: Percentage of Adolescents Who Report Having One or More Friends Who Smoke, by Race/Ethnicity and Sex, 2013



Source: Centers for Disease Control and Prevention 2013.

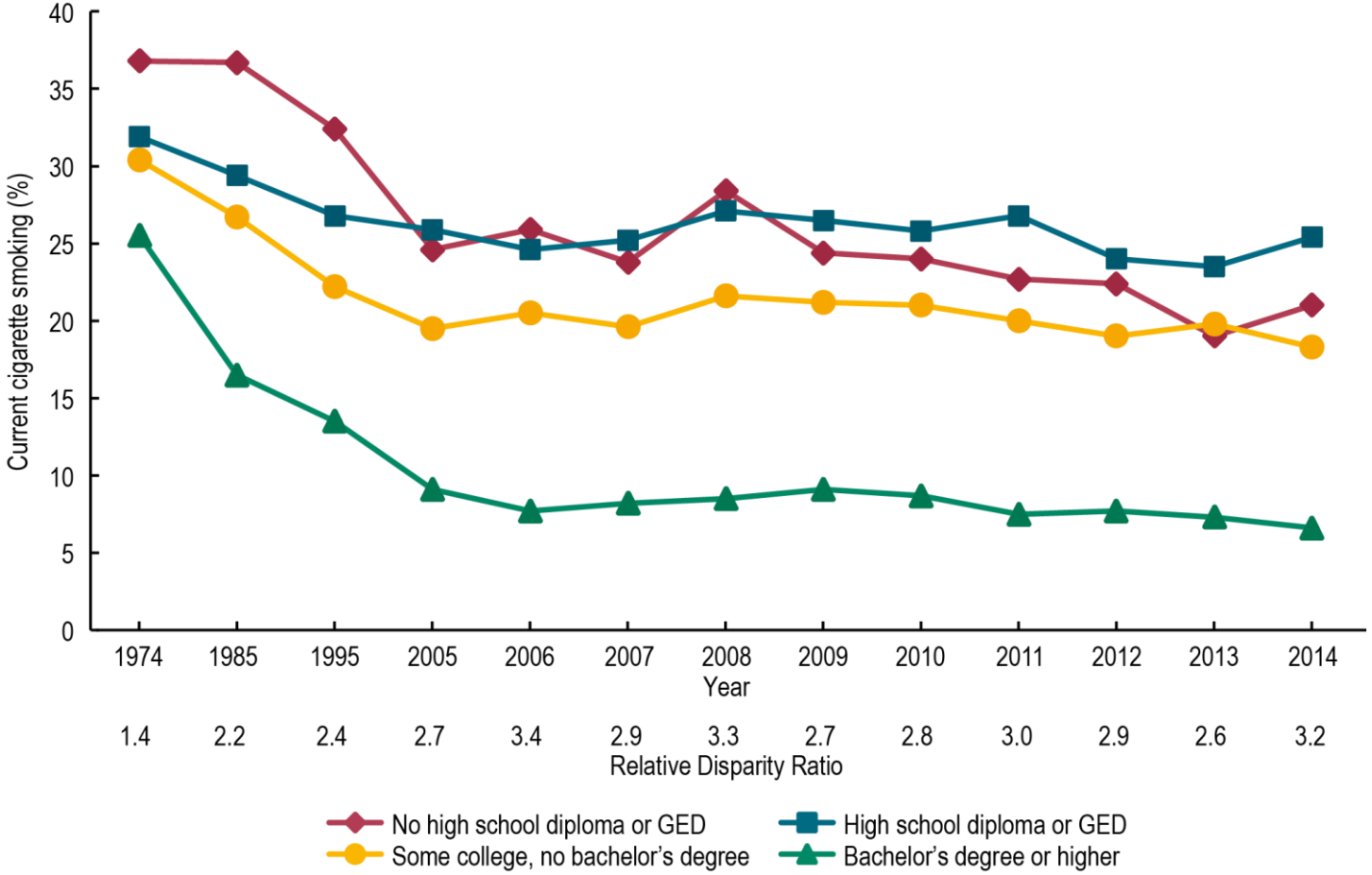
Figure 9.1: Current Cigarette Smoking Among Black or African American Women, by Educational Attainment, Selected Years, 1974–2014



Notes: Includes people of Hispanic and non-Hispanic origin. GED = general education development certificate. Data prior to 1997 are not strictly comparable with data for later years due to the 1997 questionnaire redesign. See Appendix I, National Health Interview Survey. Estimates are age-adjusted to the year 2000 standard population using four age groups: 25–34 years, 35–44 years, 45–64 years, and 65 years and over. The following estimates have large standard errors (20–30% relative standard error) and are not considered reliable: bachelor's degree or higher in 1974, 2005, and 2010. Relative disparity ratios were calculated by dividing number with high school diplomas or GEDs by number with bachelor's degree or higher.

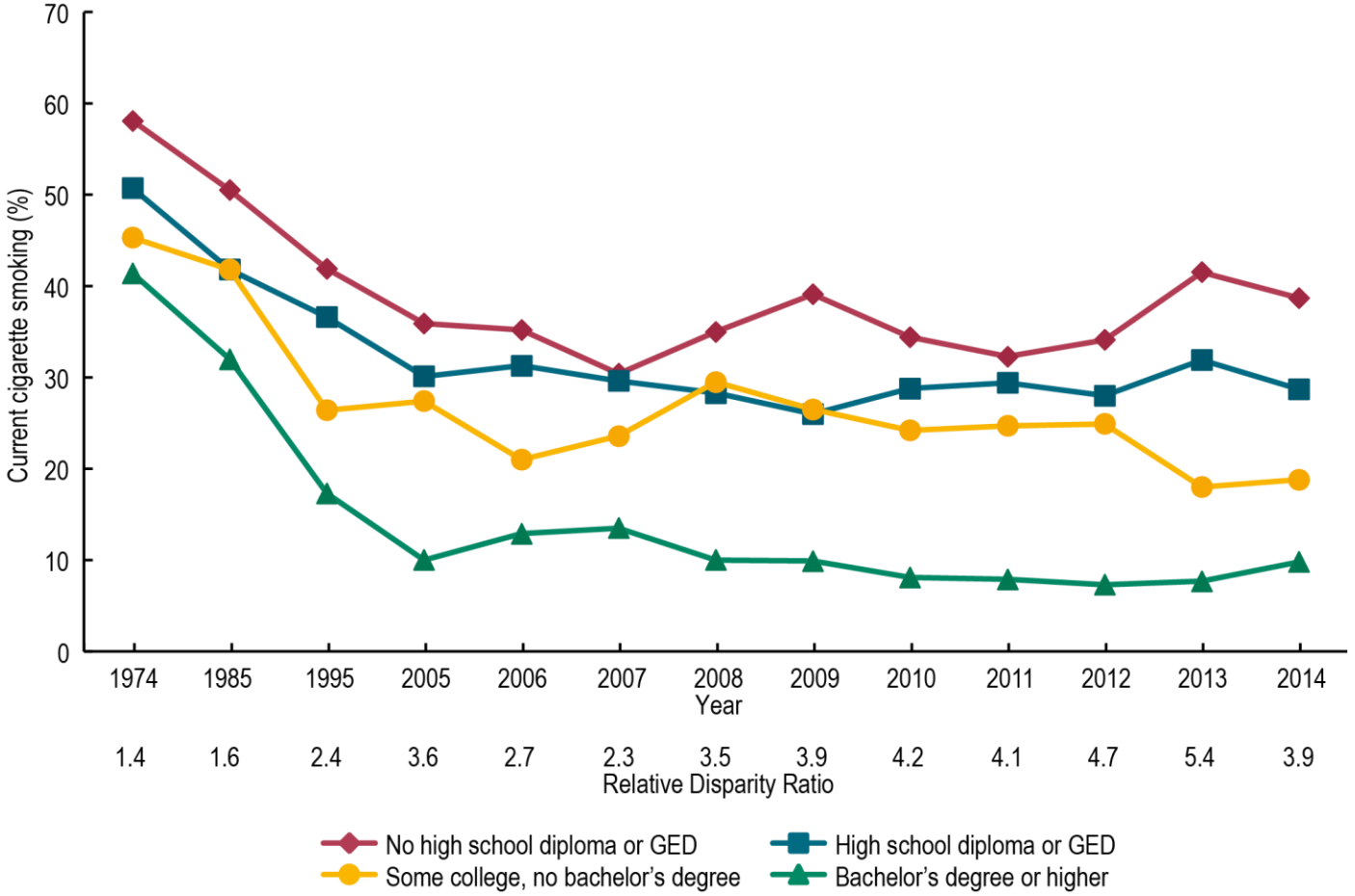
Source: Data were obtained from Centers for Disease Control and Prevention 2015 [Table 48], based on National Health Interview Survey data.

Figure 9.2: Current Cigarette Smoking Among White Women, by Educational Attainment, Selected Years, 1974–2014



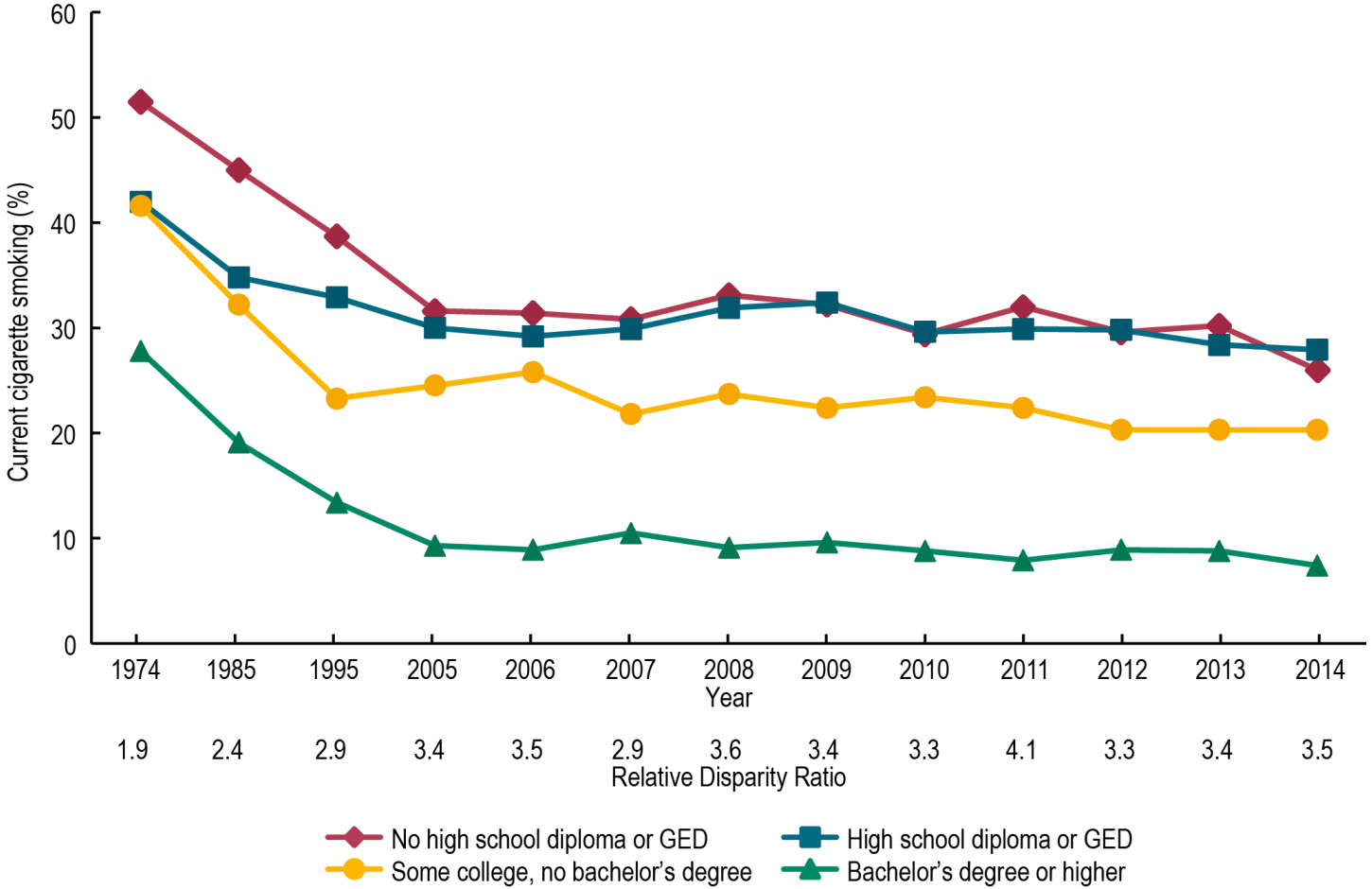
Notes: Includes people of Hispanic and non-Hispanic origin. GED = general education development certificate. Data prior to 1997 are not strictly comparable with data for later years due to the 1997 questionnaire redesign. See Appendix I, National Health Interview Survey. Estimates are age-adjusted to the year 2000 standard population using four age groups: 25–34 years, 35–44 years, 45–64 years, and 65 years and over. Relative disparity ratios were calculated by dividing number with high school diplomas or GEDs by number with bachelor's degree or higher.
Source: Data were obtained from Centers for Disease Control and Prevention 2015 [Table 48], based on National Health Interview Survey data.

Figure 9.3: Current Cigarette Smoking Among Black or African American Men, by Educational Attainment, Selected Years, 1974–2014



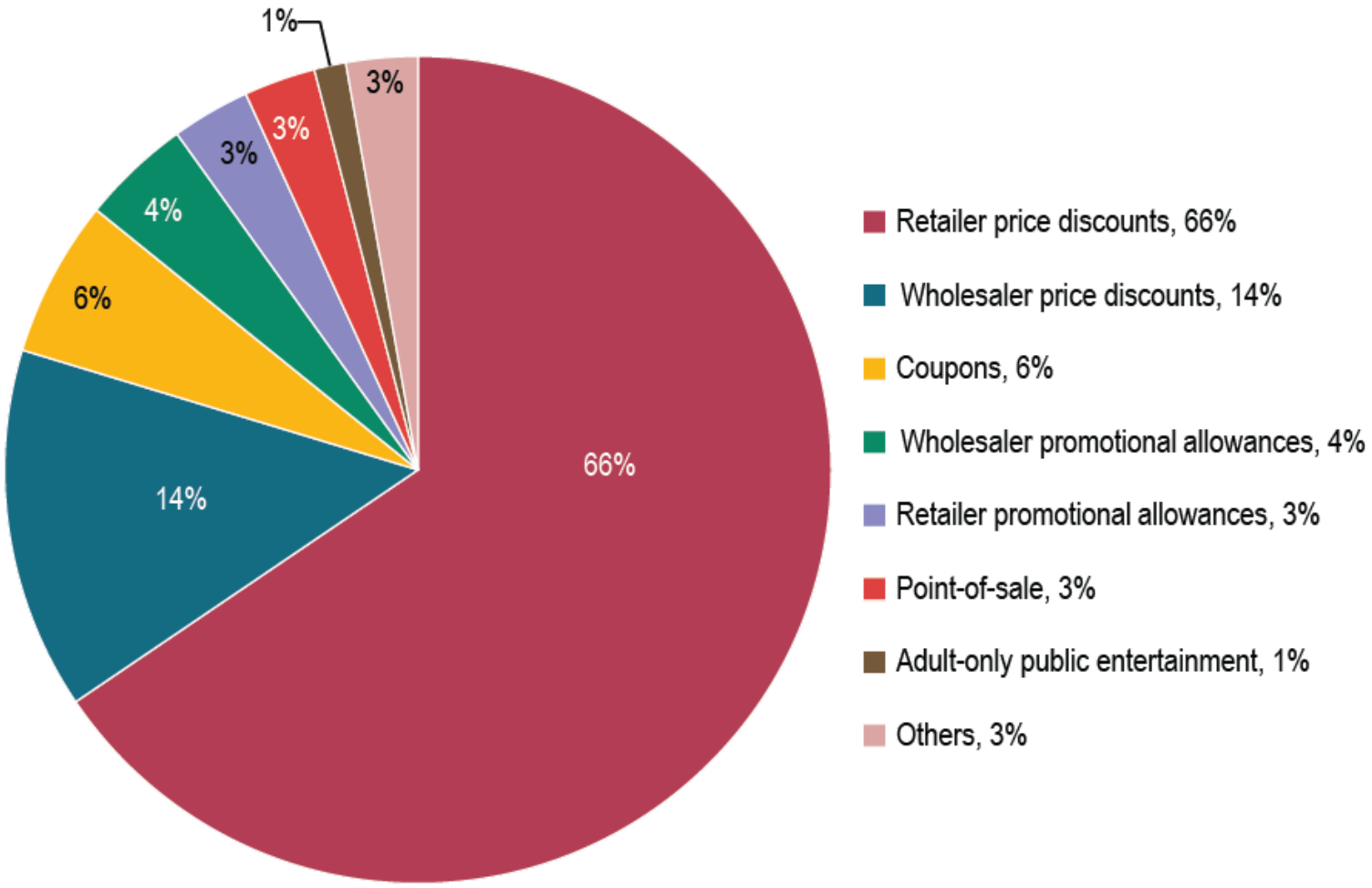
Notes: Estimates are age-adjusted to the year 2000 standard population using four age groups: 25–34 years, 35–44 years, 45–64 years, and 65 years and over. GED = general education development certificate. The following estimates for black women and men have large standard errors (20–30% relative standard error) and are not considered reliable: high school diploma or GED in 1974; some college, no bachelor's degree in 1974; bachelor's degree or higher in 1974, 1985, 1995, 2002, 2003, 2007, 2008, and 2012. Relative disparity ratios were calculated by dividing number with high school diplomas or GEDs by number with bachelor's degree or higher.
Source: Data were obtained from Centers for Disease Control and Prevention 2015 [Table 48], based on National Health Interview Survey data.

Figure 9.4: Current Cigarette Smoking Among Men, by Educational Attainment, Selected Years, 1974–2014



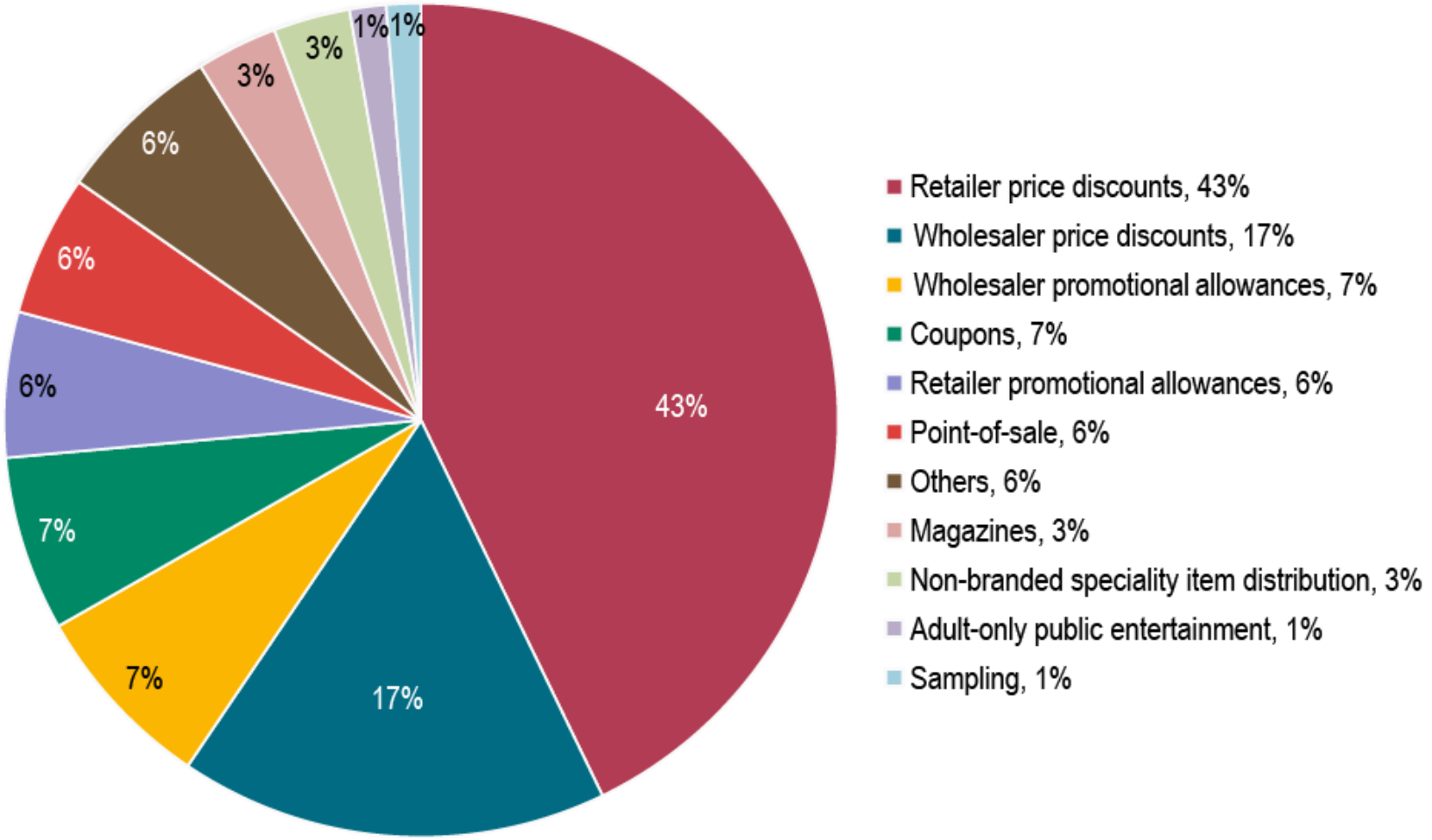
Notes: Includes people of Hispanic and non-Hispanic origin. GED = general education development certificate. Estimates are age-adjusted to the year 2000 standard population using four age groups: 25–34 years, 35–44 years, 45–64 years, and 65 years and over. Data prior to 1997 are not strictly comparable with data for later years due to the 1997 questionnaire redesign. See Appendix I, National Health Interview Survey. Relative disparity ratios were calculated by dividing number with high school diplomas or GEDs by number with bachelor's degree or higher.
Source: Data were obtained from Centers for Disease Control and Prevention 2015 [Table 48], based on National Health Interview Survey data.

Figure 10.10: Distribution of U.S. Cigarette Advertising and Promotional Expenditures, 2014



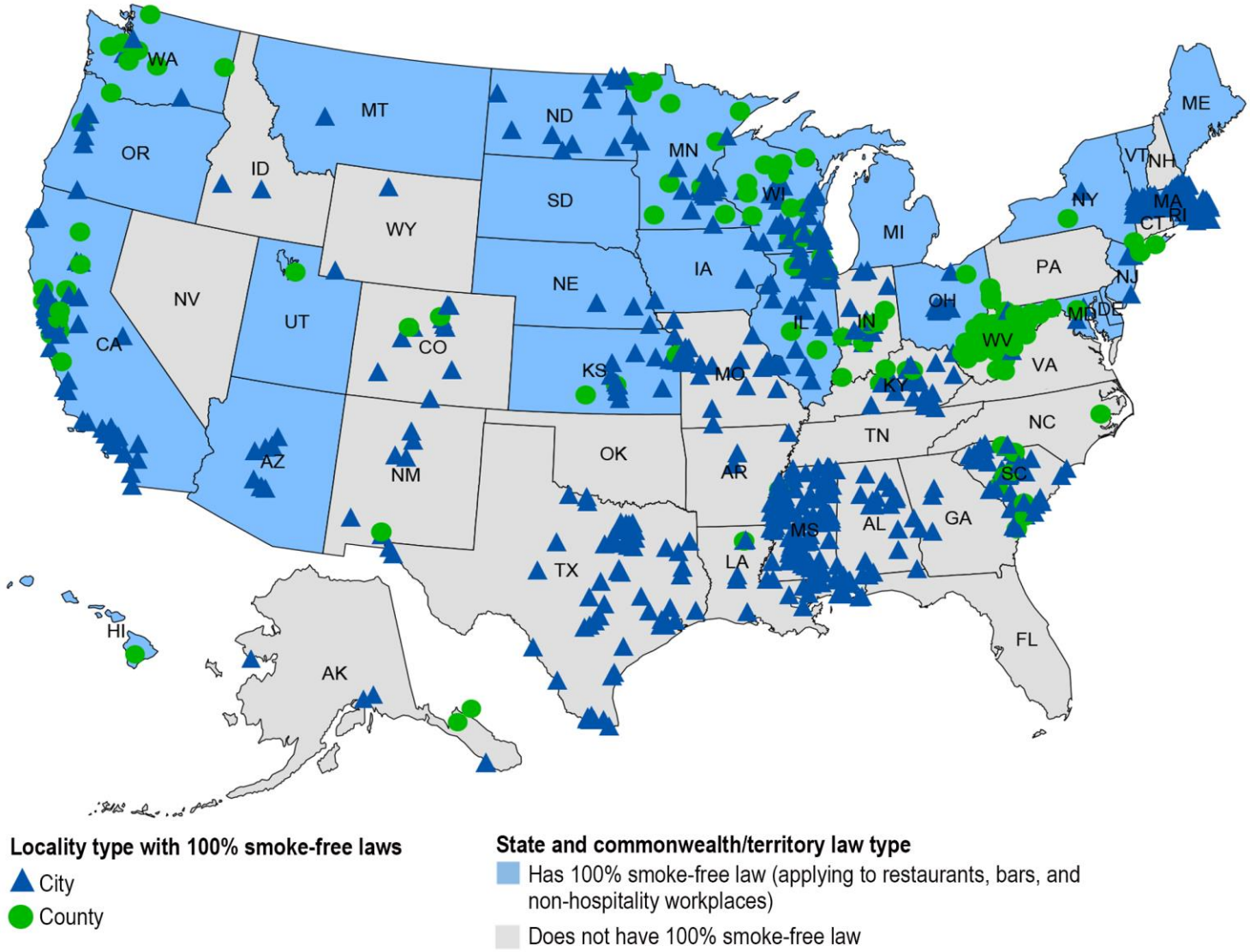
*Note: "*Others" include magazines, direct mail, non-branded specialty item distribution, company website, outdoor, branded specialty item distribution, other promotional allowances, telephone, and all others (newspapers, sampling distribution, and other Internet).
Source: Adapted from Federal Trade Commission 2016.

Figure 10.11: Distribution of U.S. Smokeless Tobacco Advertising and Promotional Expenditures, 2014



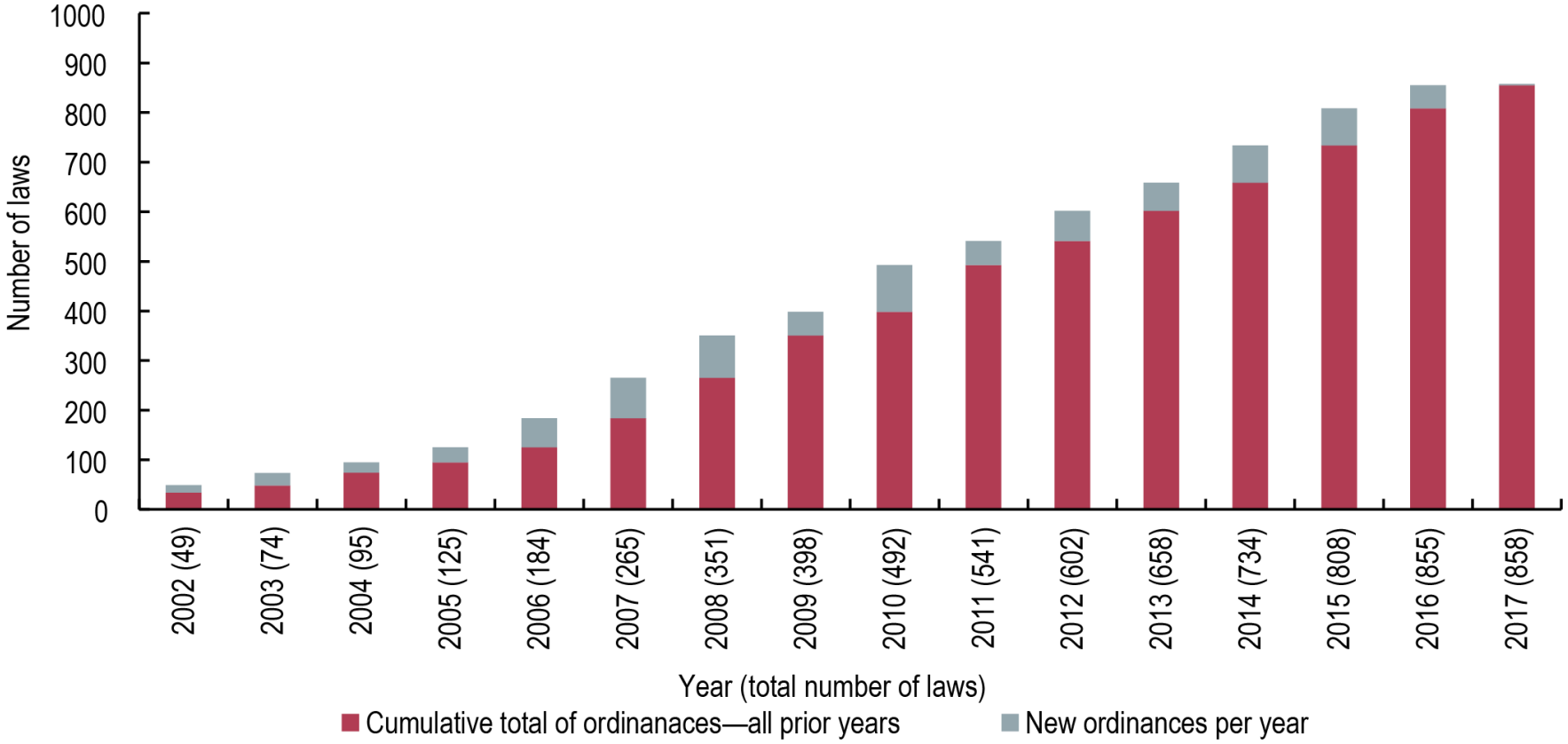
*Note: "*Others" include direct mail, company website, outdoor, Internet – other, other promotional allowances, and all others (newspapers, retail-value-added—bonus smokeless tobacco product, and social media).
Source: Adapted from Federal Trade Commission 2016.

Figure 11.1: 100% Smoke-Free Policies in the United States, 2017



Source: Adapted from Americans for Nonsmokers' Rights 2017.

Figure 11.2: Local Smoke-Free Laws Covering Workplaces, Restaurants, and Bars, 2002–2017



Notes: This figure only includes ordinances or regulations that have effective dates through 2017, do not allow smoking in attached bars or separately ventilated rooms, and do not have size exemptions. The jurisdictions affected by county-level laws vary widely. Workplaces are defined as both public and private non-hospitality workplaces, including, but not limited to, offices, factories, and warehouses. Restaurants include any attached bar in the restaurant.
Source: Adapted from Americans for Nonsmokers' Rights 2017.

Table 12.10: Smoking-Attributable Deaths, from *SimSmoke* Model, Lowest Income Quintile

Policies and Effects	2014	2015*	2025*	2045*	2064*	2015–2064*
Status quo policies	119,526	119,151	111,280	74,671	62,207	4,382,226
Independent policy effects						
1. Tax increases (per pack)						
By $1.00	119,526	119,151	110,115	72,235	58,411	4,270,483
By $2.00	119,526	119,151	109,161	70,273	55,421	4,180,505
By $3.00	119,526	119,151	108,366	68,657	53,066	4,106,466
2. Comprehensive, well-enforced smoke-free laws	119,526	119,151	110,512	73,220	60,674	4,320,096
3. High-intensity mass media anti-tobacco campaigns	119,526	119,151	109,881	71,678	59,040	4,261,227
4. Comprehensive, well-enforced marketing bans	119,526	119,151	110,037	72,366	59,613	4,281,115
5. Strong health warnings	119,526	119,151	109,620	71,281	58,579	4,241,867
6. Cessation treatment policies	119,526	119,151	109,878	71,193	58,523	4,250,476
7. Strong youth access enforcement	119,526	119,151	111,280	74,467	61,152	4,369,917
Combined policy effects						
2–7 above, plus $1.00 tax increase	119,526	119,151	102,837	57,572	42,793	3,663,201
2–7 above, plus $2.00 tax increase	119,526	119,151	102,055	56,066	40,662	3,593,766
2–7 above, plus $3.00 tax increase	119,526	119,151	101,405	54,831	38,950	3,536,825

*Predicted smoking-attributable deaths using the *SimSmoke* model.

Table 12.10: Smoking-Attributable Deaths, from *SimSmoke* Model, Lowest Income Quintile (cont.)

Policies and Effects	2014	2015*	2025*	2045*	2064*	2015–2064*
Attributable deaths with the status quo policies minus attributable deaths with recommended policies						
Independent policy effects						
1. Tax increases (per pack)						
By $1.00	—	—	1,166	2,436	3,797	111,743
By $2.00	—	—	2,120	4,399	6,786	201,721
By $3.00	—	—	2,915	6,015	9,201	275,760
2. Comprehensive, well-enforced smoke-free laws	—	—	768	1,451	1,534	62,130
3. High-intensity mass media anti-tobacco campaigns	—	—	1,400	2,993	3,167	120,999
4. Comprehensive, well-enforced marketing bans	—	—	1,244	2,305	2,595	101,111
5. Strong health warnings	—	—	1,660	3,391	3,629	140,359
6. Cessation treatment policies	—	—	1,402	3,479	3,685	131,750
7. Strong youth access enforcement	—	—	—	204	1,055	12,310
Combined policy effects						
2–7 above, plus $1.00 tax increase	—	—	8,444	17,100	19,414	719,025
2–7 above, plus $2.00 tax increase	—	—	9,223	18,606	21,545	788,461
2–7 above, plus $3.00 tax increase	—	—	9,875	19,840	23,258	845,401

*Predicted smoking-attributable deaths using the *SimSmoke* model.

Table 12.11: Smoking-Attributable Deaths, from *SimSmoke* Model, Second-Lowest Quintile

Policies and Effects	2014	2015*	2025*	2045*	2064*	2015–2064*
Status quo policies	95,986	96,366	95,629	67,723	54,395	3,842,548
Independent policy effects						
1. Tax increases (per pack)						
By $1.00	95,986	96,366	94,694	65,560	51,124	3,745,356
By $2.00	95,986	96,366	93,929	63,817	48,551	3,667,859
By $3.00	95,986	96,366	93,291	62,381	46,473	3,603,789
2. Comprehensive, well-enforced smoke-free laws	95,986	96,366	95,008	66,466	53,064	3,789,373
3. High-intensity mass media anti-tobacco campaigns	95,986	96,366	94,607	65,498	52,018	3,751,328
4. Comprehensive, well-enforced marketing bans	95,986	96,366	94,621	65,707	52,152	3,755,695
5. Strong health warnings	95,986	96,366	94,294	64,832	51,243	3,723,103
6. Cessation treatment policies	95,986	96,366	94,882	65,787	52,204	3,767,696
7. Strong youth access enforcement	95,986	96,366	95,629	67,574	53,680	3,833,878
Combined policy effects						
2–7 above, plus $1.00 tax increase	95,986	96,366	89,353	54,284	39,023	3,277,993
2–7 above, plus $2.00 tax increase	95,986	96,366	88,715	52,900	37,120	3,216,322
2–7 above, plus $3.00 tax increase	95,986	96,366	88,184	51,765	35,588	3,165,727

*Predicted smoking-attributable deaths using the *SimSmoke* model.

Table 12.11: Smoking-Attributable Deaths, from *SimSmoke* Model, Second-Lowest Quintile (cont.)

Policies and Effects	2014	2015*	2025*	2045*	2064*	2015–2064*
Attributable deaths with the status quo policies minus attributable deaths with recommended policies						
Independent policy effects						
1. Tax increases (per pack)						
By $1.00	—	—	935	2,163	3,270	96,792
By $2.00	—	—	1,700	3,907	5,844	174,689
By $3.00	—	—	2,339	5,342	7,922	238,759
2. Comprehensive, well-enforced smoke-free laws	—	—	621	1,257	1,331	53,175
3. High-intensity mass media anti-tobacco campaigns	—	—	1,022	2,225	2,377	91,220
4. Comprehensive, well-enforced marketing bans	—	—	1,008	2,017	2,243	86,853
5. Strong health warnings	—	—	1,335	2,891	3,151	119,445
6. Cessation treatment policies	—	—	747	1,936	2,190	74,852
7. Strong youth access enforcement	—	—	—	150	714	8,670
Combined policy effects						
2–7 above, plus $1.00 tax increase	—	—	6,276	13,439	15,371	564,555
2–7 above, plus $2.00 tax increase	—	—	6,975	14,823	17,275	626,226
2–7 above, plus $3.00 tax increase	—	—	7,445	15,959	18,806	676,821

*Predicted smoking-attributable deaths using the *SimSmoke* model.

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