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Racial/Ethnic and Nativity Patterns of U.S. Adolescent and Young Adult Smoking

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Abstract

We document racial/ethnic and nativity differences in U.S. smoking patterns among adolescents and young adults using the 2006 Tobacco Use Supplement to the Current Population Survey (n=44,202). Stratifying the sample by nativity status within five racial/ethnic groups (Asian American, Mexican American, other Hispanic, non-Hispanic black, and non-Hispanic white), and further by sex and age, we compare self-reports of lifetime smoking across groups. U.S.-born non-Hispanic whites, particularly men, report smoking more than individuals in other racial/ethnic/ nativity groups. Some groups of young women (e.g., foreign-born and U.S.-born Asian Americans, foreign-born and U.S.-born Mexican Americans, and foreign-born blacks) report extremely low levels of smoking. Foreign-born females in all of the 25–34 year old racial/ethnic groups exhibit greater proportions of never smoking than their U.S.-born counterparts. Heavy/ moderate and light/intermittent smoking is generally higher in the older age group among U.S.born males and females whereas smoking among the foreign-born of both sexes is low at younger ages and remains low at older ages. Taken together, these findings highlight the importance of considering both race/ethnicity and nativity in assessments of smoking patterns and in strategies to reduce overall U.S. smoking prevalence and smoking-attributable health disparities.

Keywords

Race/ethnicity; nativity; smoking; adolescents; young adults

Introduction

Significant recent attention has been given to the smoking patterns of U.S. adolescents and young adults, who stand at the critical ages at which people typically quit smoking for good

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or establish long-term habits (Biener and Albers 2004; Cummings et al. 1997; Ling, Neilands, and Glantz 2009). On a given day in the United States, approximately 3,450 individuals between twelve and seventeen years old smoke their first cigarette, and the vast majority of adult smokers first smoked at age seventeen or younger (Campaign for Tobacco-Free Kids 2009; United States Department of Health and Human Services [U.S. DHHS] 2012). Complicating this situation, however, are demographic characteristics—such as race/ ethnicity, nativity, sex, and age—all of which are related to individuals' likelihood to initiate and continue smoking. Thus, a thorough understanding of U.S. smoking patterns necessitates attention to demographic heterogeneity, and particularly so given the rapidly changing racial/ethnic composition of the population.

We provide a contemporary descriptive analysis of racial/ethnic and nativity differences in U.S. adolescent and young adult smoking patterns using data from the 2006 Tobacco Use Supplement to the Current Population Survey (TUS-CPS). Our primary research questions are twofold. First, what are the current patterns of smoking behavior by race/ethnicity and nativity among adolescents and young adults in the United States? Second, do the racial/ ethnic and nativity differences in smoking behavior among adolescents and young adults vary by specific age group and sex? Before turning to the analysis, the next section provides a review of related literature.

Current Literature on Race/Ethnicity, Nativity, and Smoking

Surprisingly, despite a very large public health literature documenting U.S. smoking patterns, demographers have not been heavily involved in this work. Most such work by demographers has focused on estimates of smoking-attributable mortality (e.g., Fenelon and Preston 2012; Hummer, Nam, and Rogers 1998; Rogers et al. 2005; Roston and Wilmoth 2011), which is of course a critically important topic. Only a few demographic studies, however, have focused on clearly documenting U.S. smoking patterns across subgroups of the population and it is upon this work that we aim to build. Rogers, Nam, and Hummer (1995), for example, show that non-Hispanic white adults exhibit the highest smoking prevalence, black males show an elevated prevalence of light smoking, and Mexican-American females have the lowest probability of being current or ever smokers. More recently, Lopez-Gonzalez, Aravena, and Hummer (2005) demonstrate that foreign-born individuals are much less likely to smoke than native-born persons, though the gap is much larger among women than among men. And Pampel (2008) documents a racial convergence of smoking over the life course, in which African American smoking prevalence is lower among adolescents and young adults but converges to that of whites by mid-adulthood. Given the clear relevance of this topic to population health patterns and to health policy, the shortage of demographic studies that focus on the accurate documentation of smoking behavior is both surprising and concerning.

The public health literature has given greater attention to racial/ethnic differences in smoking initiation patterns (Anderson and Burns 2000; Ellickson et al. 2004; Johnson and Hoffman 2000), smoking behaviors (Fagan et al. 2009; Trinidad et al. 2009), and persistence of smoking (Griesler, Kendel, and Davies 2002; Kiefe et al. 2001; Stahre et al. 2010). The most recent report of the U.S. Surgeon General on tobacco use (and the first since 1994 to

exclusively address tobacco use among adolescents and young adults) illustrates that, in 2009, Hispanic and white high school students demonstrated a current smoking prevalence (19.2% and 19.4%, respectively) that was more than twice that of African-Americans (7.4%). Middle school students exhibited a different pattern in 2009, as more Hispanics (6.7%) and African-Americans (5.1%) smoked than whites (4.3%) (U.S. DHHS 2012:229). Siahpush and colleagues (2010) examine racial/ethnic and socioeconomic differences in lifetime smoking duration and report that whites typically smoke four years longer than Hispanics, but two years shorter than blacks and four years shorter than American Indians. Though less studied, smoking differences between immigrant and U.S.-born adolescents and young adults have also been documented. Immigrants generally report a lower smoking prevalence (Georgiades et al. 2006), stronger support for smoke-free policies (Osypuk and Acevedo-Garcia 2010), and different perceptions of the social consequences of smoking (Trinidad et al. 2005) than their U.S.-born counterparts. Despite these advances in the smoking literature, however, more research is needed that simultaneously considers race/ ethnicity and nativity as they relate to smoking patterns among adolescents and young adults.

While the racial/ethnic and nativity patterns of smoking outlined above may characterize the groups as a whole, they do not necessarily describe the smoking patterns for each group by age and sex. For example, white females on average begin smoking at younger ages than black females, but the two groups converge in smoking prevalence by age 25 (Geronimus, Neidert, and Bound 1993). Subsequently, a crossover appears by age 30, after which black females show a higher prevalence than their white counterparts (Geronimus et al. 1993; Harrell et al. 1998). Although Asian Americans exhibit much lower smoking prevalence relative to other racial/ethnic groups and are thus often excluded from smoking study samples, smoking prevalence is higher among U.S.-born Asians American females than among Asian immigrant females, whereas the nativity gap is small or nonexistent among Asian males (Baluja, Park, and Myers 2003; Weiss and Garbanati 2006; Zhang and Wang 2008).

Finally, Chahine, Subramanian, and Levy (2011) offer a comprehensive study of the influence of several compositional and contextual characteristics on smoking prevalence upon which we aim to build and clarify. While they also draw on the 2006–2007 TUS-CPS, they use the entire adult sample of those aged 18 years old and older without considering the unique smoking patterns of adolescents and young adults and include four broad race/ ethnicity classifications of non-Hispanic white, non-Hispanic black, Hispanic, and other. In contrast, we focus on younger individuals (aged 15 to 34) and more specific racial/ethnic categories in our sample, and consider not only a dichotomous measure of whether someone smokes, but smoking history and frequency of current smoking. Given the existing literature in this area, our study aims to fill a gap in the demographic literature by providing up-to-date estimates of racial/ethnic and nativity differences in U.S. cigarette smoking among adolescents and young adults, with specific attention given to how such patterns may also differ by age and sex.

Data, Measures, and Methods

Data and Sample

To investigate racial/ethnic and nativity patterns of smoking among U.S. adolescents and young adults, we drew upon the May and August waves of the 2006 TUS-CPS. The Current Population Survey (CPS) is a stratified, multistage probability sample based on the results of the 2000 Census and is jointly administered by the U.S. Bureau of Labor Statistics and U.S. Census Bureau, with coverage in every state and the District of Columbia. Its sampling design first divides the U.S. into primary sampling units (PSUs), most of which consist of a metropolitan area, a large county, or a group of smaller counties, then groups the PSUs into strata. The Tobacco Use Supplement (TUS), which is sponsored by the National Cancer Institute (and the Centers for Disease Control and Prevention since 2001), uses a large, nationally representative sample of about 240,000 individuals in each survey period and comprises a crucial source of national-level information on tobacco use in the U.S. The sample was designed to represent the civilian, non-institutionalized population aged 15 years and older. The 2006–2007 version of the TUS-CPS contains a range of detailed questions about smoking and tobacco use, and allows for a cross-sectional analysis of race/ethnicity and nativity as they relate to smoking disparities among adolescents and young adults.

While the 2006–2007 TUS-CPS included three separate samples (May 2006, August 2006, and January 2007), we only used the May and August samples in our analyses because the January 2007 sample did not include individuals 15-17 years old. All household members at least 15 years of age who answered the May and August 2006 core CPS questionnaire were eligible for participation in the TUS. Data were collected through in-person (around 36%) and telephone (64%) interviews and mostly through self-reports (for a few measures of use, about 20% were by proxy). Response rates for the May and August 2006 supplements are lower than for the basic CPS but are still reasonably high: 80.7% and 81.7%, respectively (see U.S. Census Bureau [2008] for additional information regarding TUS-CPS). Combined, the May (n=86,093) and August (n=66,009) TUS-CPS surveys yielded a sample size of 152,102 respondents. After excluding individuals outside of this study's target age range of 15-34 years, from small racial/ethnic groups, and with missing values on any of the key smoking measures, we were left with a final analytic sample of 44,202 individuals. In order to most accurately represent the entire non-institutionalized United States population, we apply the supplement non-response adjustment weight after combining the May and August surveys.

Measures

Smoking status, the outcome variable, was measured by combining three questions of lifetime cigarette use: "Have you smoked at least 100 cigarettes in your entire life?"; "Do you now smoke cigarettes every day, some days, or not at all?"; and "On the average, about how many cigarettes do you now smoke each day?" The resulting smoking status variable was divided into the following four categories: *never smokers* report smoking fewer than 100 cigarettes in their entire life, *former smokers* smoked 100 or more cigarettes but do not currently smoke, *intermittent/light current smokers* currently smoke some days or smoke fewer than 10 cigarettes every day, and *moderate/heavy smokers* report smoking 10 or more

cigarettes every day. This categorization is more comprehensive than the dichotomous smoker/non-smoker categorization used in most demographic studies of U.S. cigarette smoking and captures important patterns (e.g., intermittent/light current smoking) that have been identified as common among some minority populations in related public health literature (Fagan and Rigotti 2009; Lariscy et al. 2013; Trinidad et al. 2009).

We constructed race/ethnicity/nativity from four variables: race, Hispanic ethnicity, detailed Hispanic origin group, and nativity. Every respondent self-identified as one of the following racial/ethnic categories, each of which was divided between foreign-born and U.S.-born respondents: Mexican American, other Hispanic, non-Hispanic Asian American, non-Hispanic black, non-Hispanic white, American Indian or Alaskan Native, Hawaiian/Pacific Islander, or multiracial. Because not all of the categories yielded large enough sample sizes for analysis, this paper includes analyses on the five largest racial/ethnic groups (Asian Americans, Mexican Americans, other Hispanics, non-Hispanic blacks, and non-Hispanic whites), each further subdivided by nativity. Thus, we excluded respondents who identified as American Indian or Alaskan Native, Hawaiian/Pacific Islander, or multiracial. We used categories of sex (female and male) and age (15–24 and 25–34) in our analysis to carefully document smoking differences within racial/ethnic and nativity groups. Examination of the smoking habits of 25–34 year olds is critical since this group is regularly ignored in the smoking literature; they are beyond the typical age of smoking initiation and too young to exhibit substantial smoking-attributable morbidity and mortality.

Analytic Approach

First, chi-squared tests of contingency tables determined whether an association exists between the variables race/ethnicity/nativity and smoking status (Agresti and Finlay 1997). That is, we compared the overall smoking status distribution of each race/ethnicity/nativity minority group to that of U.S.-born non-Hispanic white respondents in age- and sex-specific subgroups (two-tailed, p < .05, df = 3). In Tables 1–3, shaded entries indicate that the smoking status distribution of the racial/ethnic/nativity subpopulation is statistically different from that of U.S.-born non-Hispanic whites. This first analytic step does not determine whether one racial/ethnic/nativity group smokes more or less relative to U.S.-born non-Hispanic whites, but whether their smoking status distribution is significantly different from that of U.S.-born whites. Second, we calculated the proportion and 95% confidence intervals in each smoking status by race/ethnicity/nativity subgroup. This analytic step allowed us to test whether foreign-born respondents were more or less likely to be in one of the four smoking statuses than their U.S.-born counterparts as well as to compare proportions within smoking status categories across racial/ethnic/nativity groups. Third, in sex-specific analyses (Tables 2 and 3), we compared the smoking status distributions of each 25-34 year old group to their 15-24 year old counterparts. We indicate significant differences (two-tailed, p < .05, df = 3) in smoking status distribution by age group along the bottom rows of Tables 2 and 3. As with the first analytic step, distribution comparisons do not determine whether the 25-34 year old group smokes more than the 15-24 year old group, but whether the smoking status distribution of the younger group is statistically different from the distribution of the older group, within racial/ethnic/nativity groups. Finally, we use the proportions and 95% confidence intervals to determine whether 25-34

year olds were more or less likely to be in a smoking status relative to 15–24 year olds of their same sex and race/ethnicity/nativity. All analyses were performed using StataSE 12.0 (StataCorp 2011).

Results

Descriptive Statistics for Full Sample

We first describe the smoking status distributions for persons of all ages (15–34 years old) and both sexes together. Table 1 shows the percentage distributions and 95% confidence intervals of smoking status, as well as percentage distributions of age and sex, stratified by race/ethnicity and nativity. The smoking status distribution of every minority racial/ethnic/ nativity group is statistically different from that of U.S.-born non-Hispanic whites, the reference group. Focusing now on specific smoking statuses rather than overall distributions, we find that moderate and heavy current smoking is more prevalent among U.S.-born persons than among foreign-born persons for all racial/ethnic groups except Asian Americans. U.S.-born non-Hispanic whites demonstrate, by far, the greatest proportion of moderate/heavy current smokers (10.7%, CI 10.3%-11.1%), while foreign-born non-Hispanic whites show a much lower proportion (4.7%, CI 3.5%—6.2%). In contrast, U.S.born respondents are no more likely to report that they are light/intermittent smokers than foreign-born respondents in all groups. Also noteworthy are the differences in proportions of never smoking across groups. More foreign-born other Hispanics and non-Hispanic whites report never smoking than their U.S.-born counterparts. Foreign-born Asian Americans, Mexican Americans, and non-Hispanic blacks, on the other hand, exhibit roughly equal proportions of never smoking as the U.S.-born. Overall, U.S.-born non-Hispanic whites exhibit the lowest prevalence of never smoking (73.2%, CI 72.6%—73.8%), while foreignborn blacks exhibit the highest (90.5%, 86.9%–93.3%). Asian Americans are the only group for which there are no significant differences in smoking status by nativity.

Sex- and Age-Specific Variation in Racial/Ethnic and Nativity Smoking Patterns

Next, we illustrate smoking status differences by race/ethnicity/nativity, separately by age group for females (Table 2) and then for males (Table 3). In each table, shaded entries signify racial/ethnic/nativity minority groups that have smoking status distributions that are statistically different from those of U.S.-born non-Hispanic whites within the same age category. We also indicate significant differences in smoking status distribution by age group along the bottom row of each table.

Looking first at females (Table 2), several specific racial/ethnic/nativity patterns stand out. First, all nine of the racial/ethnic/nativity smoking status distributions among females aged 25–34 are significantly different from the U.S.-born white reference group. Among the younger (15–24 years old) females, eight of the nine groups differ from U.S.-born whites, the exception being foreign-born non-Hispanic whites. Thus, there are clearly differences in females' smoking behavior by race/ethnicity/nativity in the United States. Second, Table 2 shows that less than 1% of foreign- and U.S.-born Asian American, foreign-born Mexican American, foreign-born other Hispanic, and foreign-born black females in either age group are current moderate/heavy smokers. Therefore, it is clearly possible for population

subgroups to be characterized by very low levels of smoking in the current U.S. context. Unfortunately, U.S.-born white, U.S.-born other Hispanic, and U.S.-born black females are characterized by much higher levels of current smoking. For example, among women aged 25–34, 14.5% (CI 13.6%—15.4%) of U.S.-born white women, 7.5% (CI 4.6%—11.9%) of U.S.-born other Hispanic women, and 5.1% (CI 3.8%—6.6%) of U.S.-born black women are current moderate/heavy smokers.

While there are no nativity differences in smoking status within racial/ethnic groups at ages 15–24, foreign-born females in all five of the 25–34 year old racial/ethnic groups exhibit higher proportions of never smoking than their U.S.-born counterparts. Additionally, we observe substantially higher moderate/heavy smoking in the 25–34 year old group among U.S.-born other Hispanic females (7.5%, CI 4.6%—11.9%) relative to foreign-born other Hispanic females (0.6%, CI 0.2%—1.8%) and among U.S.-born white females (14.5%, CI 13.6%—15.4%) relative to foreign-born white females (3.0%, CI 1.6%—5.5%). Among Mexican American women ages 25–34, the proportions of both light/intermittent smoking and moderate/heavy smoking are significantly higher among the U.S.-born relative to the foreign-born.

Table 2 also shows that, in general, smoking prevalence is higher among the 25–34 year old females than among the 15–24 year old females. The smoking status distribution is significantly different by age group for all five U.S.-born female groups. In contrast, only two foreign-born female groups (Mexican Americans and non-Hispanic whites) exhibit significantly different smoking distributions when comparing 15–24 and 25–34 year olds. U.S.-born Mexican, other Hispanic, black, and white females most clearly demonstrate this pattern. Among U.S.-born blacks, for example, light/intermittent current smoking grows from 3.7% (CI 2.8%—5.0%) among 15–24 years olds to 6.8% (CI 5.4%—8.6%) of 25–34 years olds. Age-related smoking increases are even more pronounced among U.S.-born other Hispanics; here, the percentage who are moderate/heavy smokers increases more than threefold from 2.2% (CI 1.1%—4.4%) among those aged 15–24 to 7.5% (CI4.6%—11.9%) among those aged 25–34. U.S.-born Mexican American and U.S.-born white women exhibit significant increases for both light/intermittent and moderate/heavy smoking.

Turning now to males (Table 3), we find that, similar to females, racial/ethnic/nativity minority groups have significantly different smoking patterns relative to U.S.-born non-Hispanic whites in the same age groups. Six out of nine racial/ethnic/nativity groups of males in the younger age category (15–24 years) exhibit significantly different distributions of smoking status than U.S.-born non-Hispanic whites and eight of the nine minority groups of males in the 25–34 age category exhibit significantly different distributions of smoking status relative to U.S.-born whites, the only exception being U.S.-born Asian Americans. While higher proportions of U.S.-born males typically smoke than foreign-born males in the same racial/ethnic group, there are few significant differences. Two exceptions are higher moderate/heavy smoking in the 25–34 year old group among U.S.-born other Hispanic males (9.5%, CI 6.1%—14.6%) relative to foreign-born other Hispanic males (2.8, CI 1.5% —5.2%) and among U.S.-born white males (15.0%, CI 14.0%—16.0%) relative to foreign-born white males (6.5%, CI 4.1%—10.2%). A brief comparison of Tables 2 and 3 shows generally higher proportions of male than female smokers in most comparative cells of the

respective tables. For example, among individuals in the 25–34 age group, moderate/heavy smoking is substantially higher among U.S.-born Asian American males (6.0%, CI 2.5%—13.4%) than females (0.3%, CI 0.0%—1.3%).

Additionally, as also seen among females, smoking prevalence is typically higher among older males compared to younger males. Smoking status distributions are significantly different by age group for all U.S.-born male groups but only two foreign-born male groups (Mexican Americans and non-Hispanic whites). For example, among U.S.-born non-Hispanic black males, the proportion of current moderate/heavy smokers more than doubles from 3.3% (CI 2.3%—4.8%) among those aged 15–24 years to 8.6% (CI 6.6%—11.1%) among those aged 25–34 years. Also, light/intermittent smoking among U.S.-born Mexican American men is significantly higher among 25–34 year olds (10.6%, CI 7.9%—14.1%) than among 15–24 year olds (5.0%, CI 3.5%—7.0%).

Finally, Table 3 reveals the relatively high levels of smoking across almost all racial/ethnic/ nativity subgroups of males aged 25–34. U.S.-born non-Hispanic whites and U.S.-born non-Hispanic blacks, in particular, represent two of the largest subpopulations and their patterns differ markedly from the other racial/ethnicity/nativity groups. At ages 25–34, for example, nearly a quarter (23.2%) of U.S.-born white men are either light/intermittent or moderate/ heavy current smokers; similarly, 19.5% of U.S.-born black men aged 25–34 are either light/ intermittent or moderate/heavy current smokers. But we also find that 14.6% of foreign-born Asian American men, 16.6% of U.S.-born other Hispanic men, and 16.6% of foreign-born white men aged 25–34 are current smokers of one level or another.

Discussion

Despite declines in cigarette use among U.S. adults in the 1990s, the proportion of young smokers increased during that time and remains relatively high. Every year, an estimated 1.4 million youth under the age of 18 begin smoking (U.S. DHHS 2012). Early exposure to cigarettes bears a strong connection to later established use, as over 80% of adult smokers started smoking before their eighteenth birthday (Green et al. 2007; Campaign for Tobacco-Free Kids 2009). Adolescents are at a clear disadvantage when interpreting and responding to tobacco advertisements, exemplified by findings that cigarette marketing has a more powerful influence on young individuals, who tend to gravitate towards the most heavily marketed brands, than on adults (Cummings et al. 1997). Adolescents, then, constitute a highly vulnerable population for cigarette experimentation and the initiation of harmful practices that can, and too often do, endure over the life course. Combined with the extensively documented health consequences of smoking (e.g., bladder, esophageal, laryngeal, lung, and throat cancers; heart disease; and respiratory diseases) and the strong association between tobacco use and premature and preventable death, the heightened vulnerability of young individuals to smoking poses both a continued threat to U.S. population health and the potential to improve it (Biener and Albers 2004; Nam, Hummer, and Rogers 1994; U.S. DHHS 2012).

The understanding of overall U.S. smoking patterns without attention to the widely differing patterns by race/ethnicity and nativity results in clouded conclusions that are often too

general to specifically inform smoking reduction efforts. Differences across broad racial and ethnic groups and contrasts between immigrants and the U.S.-born are documented in a number of studies, but very few simultaneously consider both race/ethnicity and nativity. Investigating both racial/ethnic and nativity differences in smoking, as well as how such racial/ethnic and nativity patterns in smoking vary by age and sex among young Americans, is an imperative part of addressing the health consequences associated with cigarette use and reducing U.S. health disparities. Thus, we aimed to fill an important gap in the literature by documenting specific demographic differences in smoking patterns among the adolescent and young adult U.S. population.

Our results align with prior literature (e.g., Lopez-Gonzalez et al. 2005; Georgiades et al. 2006) indicating that foreign-born young adults generally, but with some important exceptions, smoke less than their U.S.-born counterparts. Possible explanations for this general pattern include less parental tobacco use among immigrant families, a decreased likelihood of affiliating with smoking peers among immigrant adolescents, and cultural factors that immigrants bring with them to the United States (Georgiades et al. 2006; Ma et al. 2004). But foreign-born Asian American males were equally as likely to be smokers as their U.S.-born counterparts, demonstrating that immigrant groups are not always characterized by healthier behavior in comparison to their U.S.-born counterparts. The continued monitoring of health behavior patterns among U.S. immigrants will be important, particularly as Western smoking patterns and marketing efforts penetrate into the Asian and Latin American countries that send large numbers of immigrants to the U.S.

In recent decades, tobacco marketing efforts have aggressively targeted young people, demonstrated by the upsurge of cigarette smoking in movies and in the use of age-specific promotions at bars and other venues frequented by young adults (Charlesworth and Glantz 2005; Sepe, Ling, and Glantz 2002). To the extent that adolescents and young adults who came to the U.S. as immigrants were either less exposed to such marketing in their countries of origin or are shielded from them once they arrived in the U.S., this pattern may also help to explain the generally lower levels of smoking we found among foreign-born adolescents and young adults. Much of the research in this domain also suggests an acculturation effect of smoking, in which immigrant individuals or groups conform to some aspects of the culture in their new country, and consequently exhibit worse health in conjunction with increased years of U.S. residence (Ma et al. 2004). For example, Baluja and colleagues (2003), Chen and colleagues (1999), and Kimbro (2009) show that the smoking behavior of Hispanic and Asian American adolescents, two groups with substantial immigrant populations, is significantly associated with their extent of acculturation: youth who are more acculturated to the U.S. are more likely to smoke than their less acculturated counterparts. Thus, future demographic work on this topic should go beyond nativity to more comprehensively examine such acculturation indicators as age at immigration, English language ability, and residence in an ethnic enclave.

Our results show higher smoking among U.S.-born non-Hispanic whites than among members of other racial/ethnic/nativity groups, with U.S.-born non-Hispanic white men exhibiting especially high levels. This result aligns with a great deal of literature (e.g., Blum et al. 2000; Griesler et al. 2002) that evidences higher levels of risky behavior among non-

Hispanic white adolescents and young adults. Despite these findings of wide smoking disparities by race/ethnicity/nativity in the United States population, most subgroups of young men continue to exhibit levels of smoking that will undoubtedly result in far-less-than-optimal health and mortality patterns in the coming decades. Remarkably, a few racial/ ethnicity/nativity subgroups in our data, the majority of which are female and foreign-born, contain very few, if any, current moderate/heavy smokers. These findings demonstrate that it is possible for some subpopulations to live without high levels of smoking or to even remain virtually smoke-free. At the same time, the marked contrast between the low smoking levels among these groups and the high prevalence among U.S.-born non-Hispanic whites, and U.S.-born non-Hispanic blacks and other Hispanics to a lesser degree, exhibits the persistence of racial/ethnic and nativity disparities in one key health behavior that has a firmly established and powerful influence on the premature and preventable death rate in the United States (U.S. DHHS 2004).

Limitations

Despite the contribution of this paper to the adolescent and young adult smoking literature, several limitations must be considered. The TUS-CPS is a cross-sectional assessment and is thus subject to the drawbacks that are associated with all studies using data taken at a single point in time. While it does not afford any longitudinal analyses, the TUS-CPS, with its detailed smoking questions and large, nationally representative sample, still allows for a thorough documentation of smoking patterns among adolescents and young adults. Relatedly, our data do not allow us to observe cohort patterns and distinguish them from age and period effects. Preston and Wang (2006) demonstrate that U.S. smoking patterns vary by birth cohort and that male and female smoking rates have converged across cohorts. Thus, when the 18–24 year olds in 2006 age into the 25–34 year old group, they will not necessarily exhibit the same smoking patterns as the 25–34 year olds in 2006. Also, while ideally we would have included more than five racial/ethnic groups in our analysis, small sample sizes prevented us from including individuals who self-identify as American Indian or Alaskan Native, Hawaiian/Pacific Islander, or multiracial. Nor were sample sizes large enough to calculate prevalence of cigarette use among immigrants from specific countries of origin among the Asian and other Hispanic groups. For instance, Weiss and Garbanati (2006) demonstrate that smoking prevalence rates vary among subpopulations of Asian American adolescents, with adolescents of Korean origin smoking the most and those of Chinese origin smoking the least. Finally, individuals living in institutionalized settings (e.g., prisons) were not included in the sampling frame, so the results may be different had we been able to include those persons.

Policy Implications and Conclusion

Taken together, our findings have clear policy and research implications. Our research emphasizes the necessity of considering both race/ethnicity and nativity in assessments of smoking patterns, as catchall demographic categories tend to obscure significant differences between specific subgroups of the population. Only with a specific understanding of the smoking status and habits of various racial/ethnic/nativity groups can progress be made in reducing the smoking rates of each group and addressing the enduring health disparities in the United States.

Importantly, our results strongly suggest that future reductions in U.S. health disparities may be especially responsive to efforts at curbing smoking among U.S.-born non-Hispanic whites and blacks, among whom high levels of smoking continue to exhibit substantial levels of morbidity and tragic death tolls. Further, our findings provide some support that the Hispanic paradox of favorable health (Markides and Coreil 1986) and the documented positive health outcomes among Asian Americans (National Center for Health Statistics 2007) are potentially related to the overall low levels of smoking among these groups (Blue and Fenelon 2011; Fenelon 2013). This may be particularly true for Hispanic and Asian American women. Assuring continued relatively low levels of smoking among Hispanics and Asian Americans should be a key goal for U.S. health policymakers, particularly given that these groups continue to exhibit rapid population growth and comprise greater shares of the U.S. adult population.

This work also highlights the need for more demographic studies that analyze smoking patterns among the adolescent and young adult populations. Their behavior does not always conform to that of older adults, around whom most previous demographic studies of smoking have focused. Knowledge of specific patterns of adolescent and young adult smoking will be useful in the identification of certain groups who are at especially heightened risk of cigarette experimentation and nicotine addiction. The targeting of effective prevention and cessation efforts for each subpopulation, with sensitivity to each group's unique cultural and historical context, can only be accomplished when specific patterns of smoking behavior are known.

In order to fully appreciate the influence of race/ethnicity and nativity on smoking patterns and the way that they change over time, future studies are needed that draw on longitudinal data sets that monitor respondents' cigarette use as they transition from adolescence to adulthood. Including smaller racial/ethnic/nativity minority groups in addition to the major ones considered in this study will also foster a deeper understanding of specific and important smoking differences across subpopulations. And finally, although it was beyond the scope of this paper, a consideration of other relevant predictors of smoking, such as educational attainment and social networks, will contribute to the pursuit of an explanation for and solution to the demographic disparities in smoking that we documented.

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Variable frequencies by race/ethnicity/nativity (weighted percentages and 95% confidence intervals)

	Asian An	nerican	Mexican A	merican	Other Hi	spanic	Non-Hispa	nic black	Non-Hispa	<u>nic white</u>
	Foreign-born	U.Sborn	Foreign-born	U.Sborn	Foreign-born	U.Sborn	Foreign-born	U.Sborn	Foreign-born	U.Sborn
Age										
15-24	30.6	63.8	37.0	58.4	36.6	60.7	41.6	56.6	41.9	52.7
25-34	69.4	36.2	63.1	41.6	63.4	39.3	58.4	43.4	58.1	47.3
Sex										
Female	53.1	48.4	43.2	50.9	48.6	49.2	51.8	53.6	53.0	50.7
Male	46.9	51.6	56.8	49.1	51.4	50.8	48.2	46.4	47.0	49.3
Smoking status										
Never smoker	88.9	88.3	88.6	85.8	89.3	83.2	90.5	86.1	79.8	73.2
	(86.9, 90.7)	(85.2, 90.1)	(87.1, 89.9)	(84.3, 87.2)	(87.3, 91.0)	80.7, 85.4)	(86.9, 93.3)	(84.8, 87.2)	(77.2, 82.2)	(72.6, 73.8)
Former smoker	3.4	5.4	4.4	5.5	3.1	5.3	2.5	3.2	9.4	9.7
	(2.5, 4.7)	(3.8, 7.8)	(3.6, 5.4)	(4.6, 6.6)	(2.2, 4.2)	(4.1, 6.9)	(1.3, 5.0)	(2.6, 3.8)	(7.7, 11.3)	(9.3, 10.1)
Light/intermittent smoker	5.2	4.1	5.8	6.1	6.3	6.3	5.4	6.2	6.1	6.4
	(4.0, 6.7)	(2.6, 6.3)	(4.9, 6.9)	(5.1, 7.1)	(5.0, 8.0)	(4.9, 8.0)	(3.4, 8.4)	(5.4, 7.1)	(4.8, 7.8)	(6.1, 6.7)
Moderate/heavy smoker	2.4	2.2	1.3	2.6	1.4	5.2	1.6	4.6	4.7	10.7
	(1.6, 3.6)	(1.2, 3.9)	(0.9, 1.9)	(2.0, 3.4)	(0.8, 2.3)	(4.0, 6.8)	(0.7, 3.8)	(3.9, 5.3)	(3.5, 6.2)	(10.3, 11.1)
N (unweighted)	1,354	711	2,511	2,472	1,345	1,210	460	4,253	1,240	28,646

Note: Shaded entries indicate that the smoking status distribution of the race/ethnicity/nativity subpopulation is statistically different from that of U.S.-born non-Hispanic whites (p < 0.05).

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Smoking status by age group and race/ethnicity/nativity, females (weighted percentages)

	Asian Am	ierican	Mexican A	merican	Other Hi	spanic	Non-Hispa	nic black	Non-Hispa	nic white
	Foreign-born	U.Sborn								
Ages 15–24 (N)	220	229	449	759	256	396	95	1,303	260	7,525
Never smoker	9.96	96.6	96.8	93.6	95.1	6.06	98.8	91.8	88.4	82.9
	(92.0, 98.6)	(93.1, 98.4)	(94.4, 98.2)	(91.5, 95.2)	(91.4, 97.3)	(87.3, 93.6)	(92.0, 99.8)	(90.0, 93.3)	(83.5, 92.0)	(81.9, 83.8)
Former smoker	1.4	1.2	0.4	3.5	1.9	2.3	0.0	1.8	3.4	4.6
	(0.4, 5.0)	(0.4, 3.4)	(0.1, 2.7)	(2.3, 5.2)	(0.7, 4.9)	(1.1, 4.7)		(1.1, 2.7)	(1.7, 6.7)	(4.0, 5.1)
Light/intermittent smoker	2.1	2.2	2.7	2.4	2.1	4.6	1.2	3.7	3.9	5.6
	(0.7, 6.4)	(0.8, 5.8)	(1.5, 5.0)	(1.5, 3.8)	(0.8, 5.0)	(2.8, 7.5)	(0.2, 8.0)	(2.8, 5.0)	(2.1, 7.1)	(5.0, 6.2)
Moderate/heavy smoker	0.0	0.0	0.1	0.5	0.9	2.2	0.0	2.7	4.4	7.1
			(0.0, 0.8)	(0.2, 1.2)	(0.2, 3.5)	(1.1, 4.4)		(1.9, 3.9)	(2.3, 8.2)	(6.4, 7.8)
Ages 25–34 (N)	511	135	719	553	438	250	167	1,142	404	7,308
Never smoker	95.5	86.9	96.3	79.4	90.7	71.6	95.3	84.2	81.6	63.1
	(93.0, 97.2)	(77.9, 92.6)	(94.5, 97.5)	(75.6, 82.7)	(87.0, 93.4)	(64.8, 77.6)	(90.1, 97.8)	(81.7, 86.3)	(77.1, 85.4)	(61.8, 64.4)
Former smoker	1.8	9.8	2.2	8.1	3.6	10.3	0.9	4.0	11.0	15.2
	(0.9, 3.6)	(4.9, 18.5)	(1.3, 3.7)	(6.0, 10.8)	(2.1, 6.1)	(6.8, 15.4)	(0.1, 5.8)	(2.9, 5.4)	(8.1, 14.7)	(14.3, 16.2)
Light/intermittent smoker	1.8	3.1	1.2	8.2	5.2	10.6	3.9	6.8	4.5	7.2
	(0.9, 3.6)	(1.1, 8.7)	(0.6, 2.3)	(6.1, 11.0)	(3.2, 8.3)	(6.8, 16.1)	(1.7, 8.7)	(5.4, 8.6)	(2.7, 7.3)	(6.5, 7.9)
Moderate/heavy smoker	0.9	0.3	0.4	4.3	0.6	7.5	0.0	5.1	3.0	14.5
	(0.3, 2.7)	(0.0, 1.8)	(0.1, 1.6)	(2.9, 6.5)	(0.2, 1.8)	(4.6, 11.9)		(3.8, 6.6)	(1.6, 5.5)	(13.6, 15.4)
Age difference in smoking distribution $(p < 0.05)$		*	*	*		*		*	*	*

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Source: May and August 2006 Tobacco Use Supplement-Current Population Survey.

Note: Shaded entries indicate that the smoking status distribution of the race/ethnicity/nativity subpopulation is statistically different from that of U.S.-born non-Hispanic whites in the corresponding age group (p < 0.05).

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Table 3

Smoking status by age group and race/ethnicity/nativity, males (weighted percentages and 95% confidence intervals)

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	Asian Am	erican	Mexican A	merican	Other Hi	spanic	Non-Hispar	nic black	Non-Hispa	nic white
	Foreign-born	U.Sborn	Foreign-born	U.Sborn	Foreign-born	U.Sborn	Foreign-born	U.Sborn	Foreign-born	U.Sborn
Ages 15–24 (N)	212	226	522	719	256	342	91	1,090	244	7,219
Never smoker	84.9	91.1	87.5	89.5	90.5	89.2	81.8	90.1	84.6	82.6
	(78.5, 89.7)	(85.7, 94.6)	(84.0, 90.3)	(86.8, 91.6)	(86.0, 93.6)	(85.0, 92.3)	(70.6, 89.4)	(87.8, 92.0)	(78.5, 89.2)	(81.6, 83.6)
Former smoker	4.1	1.0	2.7	3.3	1.6	2.1	2.8	1.6	4.1	4.6
	(1.9, 8.6)	(0.3, 3.5)	(1.5, 4.8)	(2.2, 5.1)	(0.6, 4.2)	(0.9, 4.8)	(0.7, 11.2)	(0.9, 2.7)	(1.9, 8.5)	(4.0, 5.2)
Light/intermittent smoker	7.5	5.0	8.5	5.0	7.2	4.7	11.9	5.0	5.9	5.7
	(4.3, 12.7)	(2.5, 9.8)	(6.2, 11.5)	(3.5, 7.0)	(4.5, 11.3)	(2.8, 7.8)	(6.0, 22.1)	(3.7, 6.8)	(3.2, 10.6)	(5.1, 6.3)
Moderate/heavy smoker	3.5	3.0	1.3	2.2	0.7	4.0	3.5	3.3	5.4	7.2
	(1.5, 7.7)	(1.3, 6.9)	(0.6, 2.8)	(1.3, 3.7)	(0.2, 3.4)	(2.2, 7.1)	(0.9, 12.5)	(2.3, 4.8)	(3.0, 9.7)	(6.5, 7.9)
Ages 25–34 (N)	411	121	821	441	395	222	107	718	332	6,594
Never smoker	79.4	71.6	79.8	75.9	84.1	73.3	86.0	74.0	67.1	62.0
	(74.7, 83.4)	(61.2, 80.1)	(76.7, 82.6)	(71.5, 79.9)	(79.7, 87.7)	(66.5, 79.2)	(77.0, 91.9)	(70.3, 77.5)	(61.3, 72.5)	(60.6, 63.4)
Former smoker	6.1	16.0	8.7	9.1	4.0	10.1	6.2	6.5	16.3	15.8
	(4.0, 9.2)	(9.8, 24.9)	(6.9, 11.0)	(6.6, 12.3)	(2.4, 6.6)	(6.5, 15.3)	(2.6, 14.0)	(4.8, 8.8)	(12.4, 21.2)	(14.8, 16.8)
Light/intermittent smoker	9.7	6.5	0.6	10.6	9.1	7.1	4.7	10.9	10.1	7.3
	(7.0, 13.3)	(2.7, 15.1)	(7.1, 11.3)	(7.9, 14.1)	(6.4, 12.9)	(4.3, 11.6)	(1.9, 11.4)	(8.6, 13.8)	(7.0, 14.3)	(6.6, 8.0)
Moderate/heavy smoker	4.9	6.0	2.4	4.4	2.8	9.5	3.1	8.6	6.5	15.0
	(3.0, 7.8)	(2.5, 13.4)	(1.5, 3.8)	(2.8, 6.9)	(1.5, 5.2)	(6.1, 14.6)	(1.0, 9.4)	(6.6, 11.1)	(4.1, 10.2)	(14.0, 16.0)
Age difference in smoking distribution $(p < 0.05)$		*	*	*		*		*	*	*
Source: May and August 2006 Tobacco U	se Supplement-Cu	rrent Populatio	n Survey.							

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Note: Shaded entries indicate that the smoking status distribution of the race/ethnicity/nativity subpopulation is statistically different from that of U.S.-born non-Hispanic whites in the corresponding age group (p < 0.05).