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Attitudes Toward Smoke-Free Public Housing Among U.S. Adults, 2016

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Abstract

Introduction—Effective February 2017, the U.S. Department of Housing and Urban Development published a rule requiring each public housing agency to implement a smoke-free policy within 18 months. This study assessed the prevalence and determinants of favorability toward smoke-free public housing among U.S. adults.

Methods—Data from 2016 Summer Styles, a nationally representative web-based survey conducted among adults (n=4,203), were analyzed in 2017. Participants were asked, “Do you favor or oppose prohibiting smoking in public housing, including all indoor areas of living units, common areas, and office buildings, as well as in all outdoor areas within 25 feet of buildings?” Multivariate Poisson regression was used to calculate adjusted prevalence ratios of favorability (*strongly* or *somewhat*).

Results—Overall, 73.7% of respondents favored smoke-free public housing. Favorability was 44.3% among current cigarette smokers, 73.2% among former smokers, and 80.4% among never smokers. The adjusted likelihood of favorability was greater among non-Hispanic, non-Black racial/ethnic minorities than whites, and among those in the West than the Northeast (p<0.05). Favorability was lower among adults with a high school education or less compared to those with a college degree; adults with annual household income <\$15,000 than those with income \$60,000; multiunit housing residents than non-multiunit housing residents; current cigarette smokers than never smokers; and current non-cigarette tobacco product users than never users (p<0.05).

Conclusions—Most U.S. adults favor prohibiting smoking in public housing. These data can inform the implementation and sustainment of smoke-free policies to reduce the public health burden of tobacco smoking in public housing.

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INTRODUCTION

Secondhand smoke (SHS) exposure is an established cause of lung cancer, heart disease, and stroke among adults, as well as more frequent and severe asthma, respiratory illness, ear infections, and Sudden Infant Death Syndrome (SIDS) among children and infants.^{1,2} The Surgeon General has concluded there is no risk-free level of SHS exposure, and that eliminating indoor smoking is the only way to fully protect nonsmokers from SHS in these settings.¹

Multiunit housing (MUH) residents are particularly susceptible to SHS exposure in their homes.³ One-quarter (80 million) of U.S. residents live in MUH.⁴ Although most MUH residents (80%) have smoke-free home rules, approximately one-third of those who prohibit smoking in their homes have experienced involuntary SHS exposure from incursions into their living units from elsewhere in or around their buildings.⁴⁻⁶

The U.S. Department of Housing and Urban Development (HUD) finalized a rule effective February 3, 2017, requiring each U.S. public housing agency (PHA) to implement a smoke-free policy.⁷ The rule, which PHAs are given 18 months to implement, prohibits the use of lit tobacco products (e.g. cigarettes, cigars, pipes, and hookah) in all living units, indoor common areas, administrative offices, and all outdoor areas within 25 feet of housing and administrative buildings.

No study has assessed national-level attitudes toward smoke-free public housing. Therefore, this study examined the prevalence and determinants of favorability toward smoke-free public housing among a nationally representative sample of U.S. adults in 2016.

METHODS

Data Source

Data came from Summer Styles, a web-based national consumer panel survey conducted by Porter Novelli to assess health-related indicators among U.S. adults aged 18 years. Respondents are drawn from the KnowledgePanel®, which randomly recruits online panelists regardless of landline or Internet access using address-based probability sampling.⁸ In 2016 (June—July), 4,203 adults completed the survey, yielding a 68% minimum response rate. Data were weighted to be nationally representative and match U.S. Current Population Survey proportions of nine demographic variables, including sex, age, household income, race/ethnicity, household size, education, census region, metropolitan area, and Internet access.⁹ This secondary analysis of de-identified data was exempt from human subjects review.

Measures

A preamble stated, “In November 2015, a proposed rule was announced that would prohibit smoking in public housing across the United States.” Respondents were then asked, “Do you favor or oppose prohibiting smoking in public housing, including all indoor areas of living units, common areas, and office buildings, as well as in all outdoor areas within 25 feet of buildings?” Response options were: “strongly favor,” “somewhat favor,” “somewhat

oppose,” and “strongly oppose.” Adults who responded “strongly favor” or “somewhat favor” were considered to favor smoke-free public housing.

Favorability was assessed overall and by sex, age, race/ethnicity, education, annual household income, U.S. region, and housing type. For housing type, MUH residents were defined as respondents living in a “one-family house attached to one or more houses” or “building with 2 or more apartments”. Cigarette smoking status, and use of other tobacco products (e.g. cigars, electronic vapor products, water pipes, roll-your-own cigarettes, and dissolvable tobacco) were also assessed.

Analysis

Point estimates and 95% confidence intervals were calculated overall and by sociodemographics, cigarette smoking, and other tobacco product use. Adjusted prevalence ratios (aPRs) of the association between favorability and sociodemographics, cigarette smoking, and other tobacco use, were calculated using multivariate Poisson regression. Analyses were conducted in 2017 using R, version 3.2.3.

RESULTS

In 2016, 73.7% of U.S. adults favored (52.3% strongly favored; 21.4% somewhat favored) prohibiting smoking in public housing, whereas 26.2% opposed (15.2% somewhat opposed and 11.0% strongly opposed) the rule (Table 1). Prevalence of favorability was 76.1% among women and 71.2% among men. Favorability ranged from 71.5% among adults aged 45–64 years to 76.5% among adults aged 18–24 years; from 67.3% among non-Hispanic blacks to 82.5% among non-Hispanic other races; from 66.6% among adults with less than a high school education to 81.5% among those with a college degree; from 58.4% among those with annual household income <\$15,000 to 77.1% among those with income \$60,000; and from 70.4% in the Northeast to 81.0% in the West. By housing type, favorability was 69.6% among MUH residents and 75.1% among non-MUH residents. By cigarette smoking status, favorability was 44.3% among current smokers, 73.2% among former smokers, and 80.4% among never smokers. By other tobacco use status, favorability was 51.6% among current users, 73.2% among former users, and 76.7% among never users.

The adjusted likelihood of favorability was significantly ($p<0.05$) greater among non-Hispanic, non-Black “Other” racial/ethnic minorities than whites (aPR=1.09), and among those in the West (aPR = 1.10) than the Northeast (Table 2). In contrast, the likelihood of favorability was lower among those with a high school education (aPR=0.87) and less than high school education (aPR=0.89) than those with a college degree; among adults with annual household income <\$15,000 (aPR=0.89) than those with income \$60,000; among MUH residents (aPR=0.94) than non-MUH residents; among current cigarette smokers (aPR=0.61) than never smokers; and among current other tobacco product users (aPR=0.83) than never users.

DISCUSSION

Approximately three-quarters of U.S. adults favored prohibiting smoking in public housing in 2016. Favorability was high across population groups, with some variability by sociodemographics and tobacco use. Even two-fifths of cigarette smokers and one-half of other tobacco product users favored the action.

These results are consistent with previous studies indicating that the majority of MUH residents support smoke-free policies.^{10–11} Residents with lower education and socioeconomic status were less likely to favor smoke-free public housing, even though substantial proportions are known to experience SHS incursions in MUH environments.¹⁰ Current cigarette smokers, who comprise one-third of HUD-assisted adults,¹² were also less likely to favor the rule than never smokers. These variations underscore the importance of demographically targeted outreach and educational efforts to reinforce the public health benefits of smoke-free policies in this setting, particularly among those with the greatest burden of tobacco use and SHS exposure.

Public housing is a key platform for improving health and quality of life through evidence-based interventions, including smoke-free environments. Aside from reducing tobacco related disease and death, smoke-free policies have the potential to reduce health disparities associated with cigarette smoking and exposure to SHS among low-income populations, reduce health care and renovation costs, and improve quality of life for public housing residents.¹³ Previous estimates suggest that prohibiting smoking in public housing would yield an annual national cost savings of over \$150 million in averted health care, renovation, and fire-related costs.¹⁴ Given the high prevalence of smoking and smoking-related health outcomes among public housing residents,¹² smoke-free policy implementation, in coordination with comprehensive and sustained cessation support, could improve the health and well-being of the nation's more than 2 million public housing residents, including approximately 760,000 children.¹⁵

LIMITATIONS

This study is subject to limitations. First, Styles is a web-based panel survey and may have limited generalizability. However, these data are generally consistent with other national household surveys.¹⁶ Second, data were self-reported, which could result in recall bias of tobacco use behaviors. Third, Styles did not assess public housing status.

CONCLUSION

Most U.S. adults favor smoke-free public housing. Population-level attitudes toward smoke-free public housing can help inform the implementation and sustainment of efforts to reduce the burden of tobacco related disease and death among U.S. children and adults residing in public housing.

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Table 1

Attitudes^a Toward Smoke-Free Public Housing Among U.S. Adults, 2016

Characteristic	n (%)	weighted % (95% CI)			
		Strongly favor	Somewhat favor	Somewhat oppose	Strongly oppose
Overall	4,152	52.3 (50.5, 54.2)	21.4 (19.9, 22.9)	15.2 (13.9, 16.6)	11.0 (9.9, 12.2)
Sex					
Male	2005 (48.3)	47.6 (44.9, 50.2)	23.6 (21.3, 25.9)	16.5 (14.5, 18.5)	12.3 (10.6, 14.1)
Female	2147 (51.7)	56.8 (54.3, 59.4)	19.3 (17.3, 21.2)	14.0 (12.3, 15.8)	9.8 (8.3, 11.4)
Age (years)					
65	800 (19.3)	55.6 (51.9, 59.4)	18.8 (15.9, 21.7)	14.6 (12.0, 17.3)	10.9 (8.4, 13.4)
45–64	1434 (34.5)	50.8 (47.9, 53.6)	20.7 (18.4, 23.0)	16.1 (14.1, 18.2)	12.4 (10.5, 14.3)
25–44	1406 (33.9)	52.5 (49.2, 55.9)	22.1 (19.4, 24.8)	14.7 (12.3, 17.0)	10.7 (8.6, 12.8)
18–24	512 (12.3)	51.2 (44.7, 57.7)	25.3 (19.5, 31.1)	15.3 (10.6, 20.0)	8.2 (4.8, 11.6)
Race/Ethnicity					
White, NH	2707 (65.2)	51.0 (49.0, 53.1)	21.9 (20.1, 23.6)	16.4 (14.8, 18.0)	10.7 (9.4, 12.0)
Black, NH	475 (11.4)	45.9 (40.3, 51.7)	21.4 (16.8, 26.0)	16.9 (12.5, 21.3)	15.8 (11.4, 20.2)
Other, NH	329 (7.9)	62.7 (54.6, 70.8)	19.8 (12.9, 26.7)	9.0 (4.2, 13.8)	8.5 (4.2, 12.8)
Hispanic	641 (15.4)	57.4 (52.2, 62.8)	20.2 (15.8, 24.6)	12.3 (8.8, 15.8)	10.1 (6.9, 13.3)
Education					
College Degree	1248 (30.1)	61.7 (58.6, 64.7)	19.8 (17.4, 22.3)	10.8 (8.9, 12.6)	7.7 (6.0, 9.4)
Some college	1178 (28.4)	53.5 (50.2, 56.8)	22.0 (19.2, 24.8)	14.2 (11.9, 16.5)	10.3 (8.3, 12.2)
High school	1234 (29.7)	45.4 (42.2, 48.7)	21.6 (18.8, 24.3)	19.3 (16.7, 22.0)	13.7 (11.4, 15.9)
< High school	491 (11.8)	43.2 (36.6, 50.0)	23.3 (17.6, 29.0)	18.9 (13.7, 24.1)	14.6 (9.7, 19.4)
Annual Household Income					
\$60,000	2237 (53.9)	55.7 (53.2, 58.2)	21.4 (19.3, 23.4)	13.5 (11.8, 15.2)	9.4 (7.9, 10.9)
\$40,000–\$59,999	656 (15.8)	53.8 (49.2, 58.4)	20.5 (16.7, 24.3)	15.9 (12.4, 19.5)	9.8 (7.3, 12.2)
\$25,000–\$39,999	537 (12.9)	52.2 (47.5, 56.8)	22.2 (18.2, 26.2)	15.4 (12.0, 18.7)	10.2 (7.5, 13.0)
\$15,000–\$24,999	356 (8.6)	42.9 (36.0, 49.9)	23.3 (17.4, 29.2)	20.5 (14.9, 26.0)	13.3 (8.3, 18.2)
<\$15,000	366 (8.8)	38.5 (32.8, 44.3)	19.9 (15.0, 24.7)	19.4 (14.5, 24.3)	22.2 (17.0, 27.4)

Characteristic	n (%)	weighted % (95% CI)			
		Strongly favor	Somewhat favor	Somewhat oppose	Strongly oppose
Housing Type^b					
non-MUH	3102 (74.7)	53.4 (51.3, 55.5)	21.7 (20.0, 23.5)	15.0 (13.5, 16.5)	9.9 (8.6, 11.1)
MUH	1050 (25.3)	49.3 (45.4, 53.1)	20.3 (17.2, 23.4)	16.0 (13.1, 18.8)	14.4 (11.7, 17.2)
US Census Region^c					
Northeast	748 (18.0)	49.0 (44.8, 53.2)	21.4 (17.9, 24.8)	18.8 (15.4, 22.2)	10.8 (8.2, 13.5)
Midwest	890 (21.4)	50.3 (46.6, 54.0)	22.5 (19.5, 25.6)	14.3 (11.6, 17.0)	12.8 (10.2, 15.5)
South	1544 (37.2)	50.8 (47.8, 53.9)	20.5 (18.0, 23.0)	16.8 (14.5, 19.1)	11.9 (9.9, 13.9)
West	970 (23.3)	59.3 (55.4, 63.2)	21.7 (18.4, 25.1)	10.9 (8.4, 13.3)	8.1 (6.0, 10.2)
Cigarette Smoking Status^d					
Never smoker	2512 (62.3)	60.6 (58.3, 63.1)	19.8 (17.8, 21.7)	11.8 (10.1, 13.4)	7.8 (6.5, 9.1)
Former smoker	1008 (25.0)	50.8 (47.5, 54.2)	22.4 (19.6, 25.3)	16.5 (14.0, 19.1)	10.2 (8.2, 12.1)
Current smoker	511 (12.7)	18.1 (14.1, 22.1)	26.2 (21.6, 30.9)	28.7 (24.1, 33.3)	27.0 (22.2, 31.8)
Non-cigarette Tobacco Products^e					
Never user	2513 (60.7)	57.5 (55.1, 59.9)	19.2 (17.3, 21.1)	13.6 (11.6, 15.3)	9.6 (8.2, 11.1)
Former user	1316 (31.8)	48.3 (45.3, 51.4)	24.9 (22.2, 27.6)	15.8 (13.6, 18.1)	10.9 (9.0, 12.8)
Current user	310 (7.5)	27.2 (21.2, 33.3)	24.4 (18.3, 30.5)	25.6 (19.9, 31.4)	22.7 (17.0, 28.4)

Abbreviations: CI=confidence interval; MUH=multitunit housing; NH=Non-Hispanic

^a Respondents were asked: "Do you favor or oppose prohibiting smoking in public housing, including all indoor areas of living units, common areas, and office buildings, as well as in all outdoor areas within 25 feet of buildings?" Responses were: "strongly favor," "somewhat favor," "somewhat oppose," and "strongly oppose."

^b A multiunit housing resident was defined as any respondent who reported living in "a one-family house attached to one or more houses", or "a building with 2 or more apartments". All other responses (i.e. "a one-family house detached from any other house"; "a mobile home"; or "boat, RV, van, etc.") were classified as non-MUH housing.

^c Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

^d Current cigarette smokers are defined as respondents who smoked 100 cigarettes in their lifetime and reported smoking "everyday" or "some days" at the time of the survey. Former are defined as respondents who smoked 100 cigarettes in their lifetime and reported smoking "not at all" at the time of the survey. Never smokers are defined as respondents who reported "no" to smoking 100 cigarettes in their lifetime.

Respondents are asked about the ever or current (past 30-day) use of the following non-cigarette tobacco products: cigars or big cigars; cigarillos; little cigars; chewing tobacco, snuff or dip; e-cigarettes; e-hookahs; some other electronic vapor product such as e-cigars; water pipes; roll your own cigarettes; flavored cigars; snus; dissolvable tobacco products.

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Table 2Adjusted Prevalence Ratios^a of Favorability^b Toward Smoke-Free Public Housing Among U.S. Adults, 2016

Characteristic	n (%)	% Favorability (95% CI)	aPR (95% CI)
Overall	4,152	73.7 (72.1, 75.4)	
Sex			
Male	2005 (48.3)	71.2 (68.8, 73.6)	Referent
Female	2147 (51.7)	76.1 (73.9, 78.3)	1.04 (0.99, 1.09)
Age (years)			
65	800 (19.3)	74.4 (71.1, 77.8)	Referent
45–64	1434 (34.5)	71.5 (68.9, 74.0)	0.99 (0.93, 1.04)
25–44	1406 (33.9)	74.6 (71.7, 77.6)	1.01 (0.96, 1.07)
18–24	512 (12.3)	76.5 (71.1, 81.9)	1.02 (0.94, 1.11)
Race/Ethnicity			
White, NH	2707 (65.2)	72.9 (71.0, 74.7)	Referent
Black, NH	475 (11.4)	67.3 (61.8, 72.8)	0.97 (0.89, 1.06)
Other, NH	329 (7.9)	82.5 (76.3, 88.7)	1.09 (1.01, 1.17)
Hispanic	641 (15.4)	77.6 (73.2, 82.1)	1.06 (0.99, 1.14)
Education			
College Degree	1248 (30.1)	81.5 (79.1, 83.9)	Referent
Some college	1178 (28.4)	75.5 (72.7, 78.3)	0.96 (0.91, 1.01)
High school	1234 (29.7)	67.0 (63.9, 70.1)	0.87 (0.83, 0.93)
< High school	491 (11.8)	66.5 (60.2, 72.9)	0.89 (0.80, 0.98)
Annual Household Income			
\$60,000	2237 (53.9)	77.1 (75.0, 79.2)	Referent
\$40,000–\$59,999	656 (15.8)	74.3 (70.3, 78.3)	0.99 (0.93, 1.05)
\$25,000–\$39,999	537 (12.9)	74.4 (70.4, 78.4)	1.05 (0.98, 1.11)
\$15,000–\$24,999	356 (8.6)	66.2 (59.6, 72.9)	0.97 (0.88, 1.08)
<\$15,000	366 (8.8)	58.4 (52.4, 64.4)	0.89 (0.80, 0.99)
Housing Type^c			
non-MUH	3102 (74.7)	75.1 (73.3, 76.9)	Referent
MUH	1050 (25.3)	69.6 (66.0, 73.1)	0.94 (0.89, 0.99)
US Census Region^d			
Northeast	748 (18.0)	70.4 (66.5, 74.3)	Referent
Midwest	890 (21.4)	72.8 (69.4, 76.3)	1.06 (0.99, 1.14)
South	1544 (37.2)	71.3 (68.5, 74.1)	1.03 (0.97, 1.10)
West	970 (23.3)	81.0 (77.9, 84.1)	1.10 (1.03, 1.18)
Cigarette Smoking Status^e			
Never smoker	2512 (62.3)	80.4 (78.5, 82.4)	Referent

Characteristic	n (%)	% Favorability (95% CI)	aPR (95% CI)
Former smoker	1008 (25.0)	73.2 (70.3, 76.2)	0.94 (0.90, 1.01)
Current smoker	511 (12.7)	44.3 (39.1, 49.5)	0.61 (0.54, 0.69)
Non-cigarette Tobacco Products^f			
Never user	2513 (60.7)	76.7 (74.6, 78.8)	Referent
Former user	1316 (31.8)	73.2 (70.5, 76.0)	1.01 (0.96, 1.06)
Current user	310 (7.5)	51.6 (44.8, 58.4)	0.83 (0.73, 0.94)

Abbreviations: CI=confidence interval; MUH=multiunit housing; NH=Non-Hispanic

Note: Boldface indicates statistical significance (p<0.05).

^a Adjusted for sex, age, race/ethnicity, education, annual household income, housing type, census region, cigarette smoking status, and non-cigarette tobacco product use.

^b Favorability was defined as a response of “strongly favor” or “somewhat favor” to the question, “Do you favor or oppose prohibiting smoking in public housing, including all indoor areas of living units, common areas, and office buildings, as well as in all outdoor areas within 25 feet of buildings?”

^c A multiunit housing resident was defined as any respondent who reported living in “a one-family house attached to one or more houses”, or “a building with 2 or more apartments”. All other responses (i.e. “a one-family house detached from any other house”; “a mobile home”; or “boat, RV, van, etc.”) were classified as non-MUH housing.

^d Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

^e Current cigarette smokers are defined as respondents who smoked ≥100 cigarettes in their lifetime and reported smoking “everyday” or “some days” at the time of the survey. Former are defined as respondents who smoked <100 cigarettes in their lifetime and reported smoking “not at all” at the time of the survey. Never smokers are defined as respondents who reported “no” to smoking ≥100 cigarettes in their lifetime.

^f Respondents are asked about the ever or current (past 30-day) use of the following non-cigarette tobacco products: cigars or big cigars; cigarillos; little cigars; chewing tobacco, snuff or dip; e-cigarettes; e-hookahs; some other electronic vapor product such as e-cigars; water pipes; roll your own cigarettes; flavored cigars; snus; dissolvable tobacco products.