Smoking Cessation Leadership Center



University of California San Francisco

Tobacco Use Behavior among Race and Ethnic Populations

Eliseo Pérez-Stable, MD

Director of the National Institute on Minority Health and Health Disparities at the National Institutes of Health

February 10, 2022

Moderator

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A National Center of Excellence for Tobacco-Free Recovery

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Disclosures

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- SCLC's own campaign funded by Robert Wood Johnson Foundation
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- FREE videos, digital images and toolkit for your use at ICOVIDQUIT.org
- We continue to seek and share more stories, particularly from those who represent underserved communities! Please email <u>anita.browning@ucsf.edu</u> if you would like to share a story



Today's Presenter

Eliseo Pérez-Stable, MD

Director of the National Institute on Minority Health and Health Disparities National Institutes of Health





Tobacco Use Behavior among Racial and Ethnic Populations

February 10, 2022

UCSF Smoking Cessation Leadership Center Webinar

Eliseo J. Pérez-Stable, M.D.

Director, National Institute on Minority Health and Health Disparities

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Summary of Presentation

- Minority Health and Health Disparities Science
- Tobacco use epidemiology
- COVID-19 and tobacco use
- Biological markers of tobacco use
- Smoking cessation interventions
- Structural determinants and policy





Populations with Health Disparities

- •Racial/ethnic minority populations defined by Census
- •Less privileged socio-economic status
- Underserved rural residents
- •Sexual and gender minorities
- Social disadvantage that results in part from being subject to discrimination or racism, and being underserved in health care
- •A health outcome that is worse in these populations compared to a reference group defines a health disparity





Census Race/Ethnic Classification

- African American or Black
- American Indian and Alaska Native
- Asian American
- Native Hawaiian and Pacific Islander
- Latino or Hispanic
- White
- More than one race





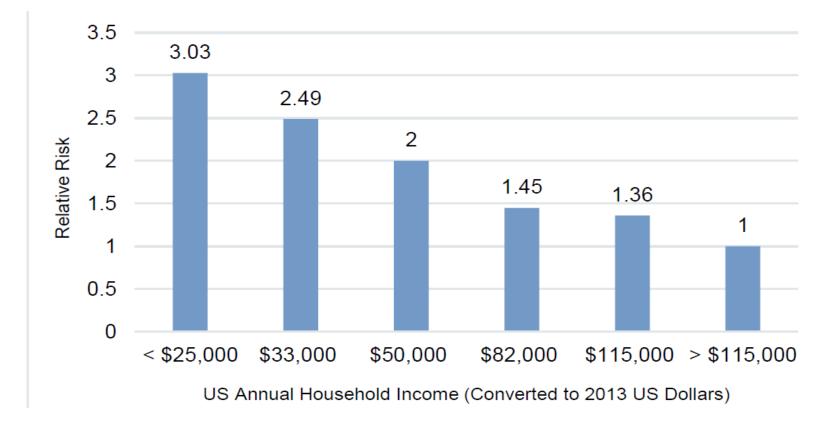
Race/Ethnicity and Socioeconomic Status are Fundamental in Determining Health

- Race/ethnicity and SES predict life expectancy and mortality that are not fully explained
- African Americans have more strokes when compared to Whites for same level of SBP
- Most chronic diseases are more common in persons of less privileged SES
- Among persons with diabetes, all race/ethnic minority populations have less heart disease and more ESRD, compared to Whites





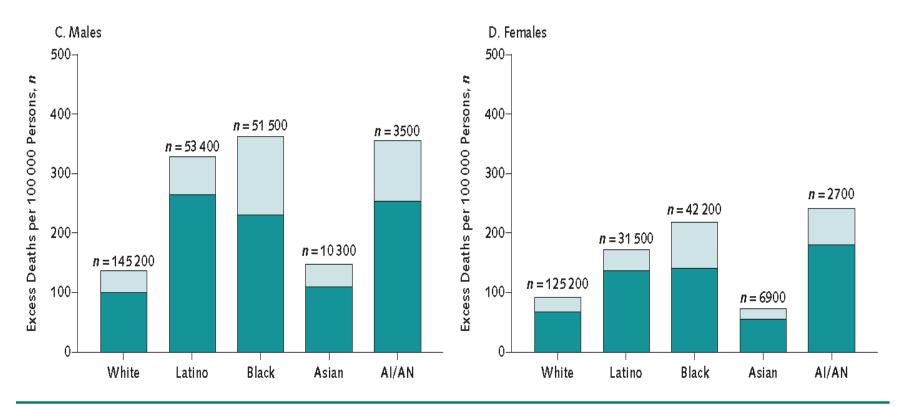
Relative risk of All-Cause Mortality by US Annual Household Income Level







477,000 Excess Deaths, 74% from COVID, 2 to 4 Times more in AA/B, AI/AN, L/H, 2020



Shiels M, et al., Ann Intern Med 2021; doi:10.7326/M21-2134



National Institute on Minority Health and Health Disparities Research Framework

		Levels of Influence*			
		Individual	Interpersonal	Community	Societal
Domains of Influence (Over the Lifecourse)	Biological	Biological Vulnerability and Mechanisms	Caregiver–Child Interaction Family Microbiome	Community Illness Exposure Herd Immunity	Sanitation Immunization Pathogen Exposure
	Behavioral	Health Behaviors Coping Strategies	Family Functioning School/Work Functioning	Community Functioning	Policies and Laws
	Physical/Built Environment	Personal Environment	Household Environment School/Work Environment	Community Environment Community Resources	Societal Structure
	Sociocultural Environment	Sociodemographics Limited English Cultural Identity Response to Discrimination	Social Networks Family/Peer Norms Interpersonal Discrimination	Community Norms Local Structural Discrimination	Social Norms Societal Structural Discrimination
	Health Care System	Insurance Coverage Health Literacy Treatment Preferences	Patient–Clinician Relationship Medical Decision-Making	Availability of Services Safety Net Services	Quality of Care Health Care Policies
Health Outcomes		A Individual Health	Family/ Organizational Health	合 Community 合合 Health	Health

National Institute on Minority Health and Health Disparities, 2018

*Health Disparity Populations: Race/Ethnicity, Low SES, Rural, Sexual/Gender Minority

Other Fundamental Characteristics: Sex/Gender, Disability, Geographic Region

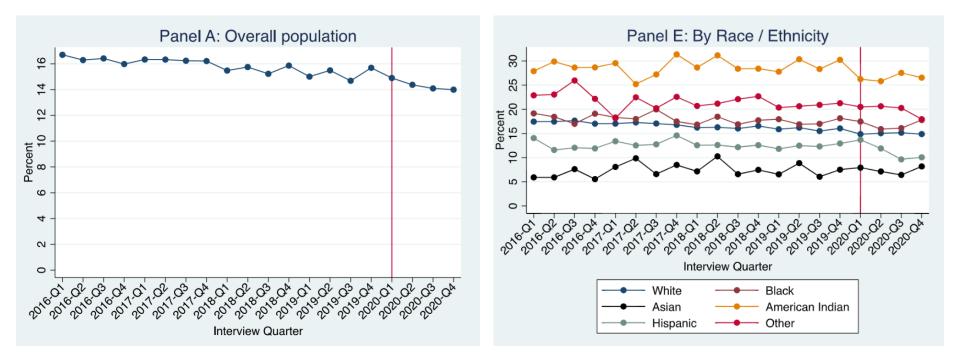
Tobacco Use Epidemiology







Smoking Prevalence by Interview Quarter, BRFSS, U.S., 2016-2020



The red line demarcates the beginning of the COVID-19 pandemic in the US. Quarter 1=Jan-Mar; Quarter 2=Apr-Jun; Quarter 3=Jul-Sep; Quarter 4=Oct-Dec

Gaffney A, et al. Ann Am Thorac Soc. 2022; Online ahead of print.





Cigarette Smoking in the U.S., 2019

Race/ethnicity	Percentage
AI/AN	20.9%
White	15.5%
Black	14.9%
Latino/a	8.8%
Asian	7.2%
Other or More than 1 race	19.7%
Gen. ed. development	35.3%
High school graduate	19.6%
Undergraduate degree	6.9%

National Health Interview Survey, MMWR-November 20, 2020; 69(46);1736-1742





Tobacco Use in the U.S., Age ≥18 y, 2019

Race/ethnicity	Combustible	E-Cigs
AI/AN	22.3%	N/A
Black	18.6%	3.4%
White	18.3%	5.1%
Latino	11.2%	2.8%
Asian	8.6%	2.7%
Other	22.0%	9.3%
Lesbian, gay, bisexual	22.7%	11.5%
High school diploma	21.9%	4.3%
Undergraduate degree	10.0%	3.2%

National Health Interview Survey, MMWR-November 20, 2020; 69(46);1736-1742





Very Light and Non-Daily Smokers

- New paradigm: No physiological addiction
- 53% Latinos, 44% Asians, 36% Blacks
- Smoke average 11.7 days / month
- Younger, more educated, more women, ethnic minority groups, people with mental health or substance use challenges
- Average 3.7 cigarettes on smoke days
- Cigarettes per month as a new metric?
- Tobacco control paradigm remains stuck





Tobacco Product Use among Middle and High School Students, NYTS, US, 2019-20 (MMWR 2020 69(50);1881-1888)

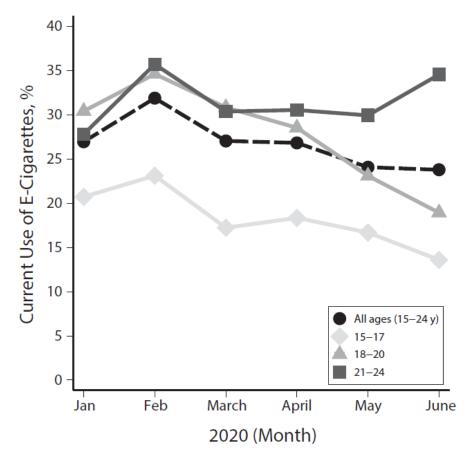
Race/ethnicity	Any tobacco	Cigarettes
White	17.8%	3.7%
Latino	17.2%	3.6%
Black	13.2%	2.5%
Other	10.1%	N/A
Sexual identity	Any tobacco	Cigarettes
Lesbian, gay, bisexual	25.5%	7.0%
Heterosexual	15.1%	2.7%





Estimated Monthly Prevalence of Past-30-Day E-Cigarette Use Among Youths and Young Adults

E-Cig Use Among Youths and Young Adults Before and During the COVID-19 Pandemic by Age Group (n = 5164): United States, January 1–June 29, 2020



Kreslake JM, et al. Am J Public Health 2021; 111(6): 1132-1140





SHS Exposure in the U.S., 2013-4

Serum cotinine = 0.05-10 ng/ml in non-smokers

Demographic Factor	Percent
White	21.4%
Black	50.3%
Mexican American	20.0%
Age 3 to 11 y	37.9%
Below Poverty Level	47.9%
Above Poverty Level	21.2%
Lives with smoker	73.0%
High school graduate or equivalent	28.8%
Undergraduate degree or higher	10.8%

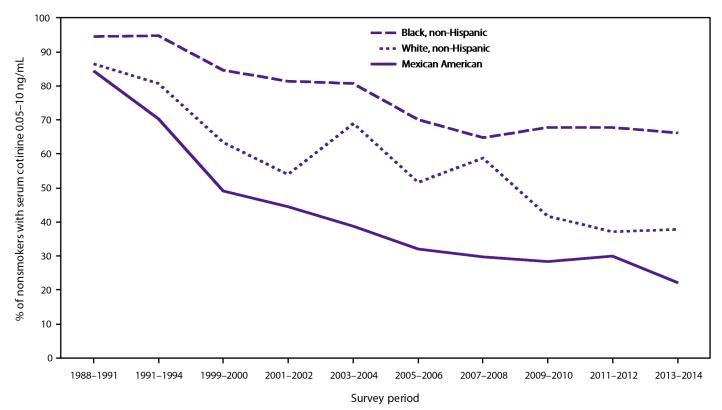
NHANES, MMWR, December 7, 2018; 67(48);1342-1346





Exposure to SHS by Race and Ethnicity, Ages 3-11 years, NHANES, 1988-2014

Percentage of nonsmokers aged 3–11 years* with evidence of secondhand smoke exposure (serum cotinine levels 0.05–10 ng/mL), by race and Hispanic origin[†] — National Health and Nutrition Examination Survey (NHANES), United States, 1988–2014



* Nonsmokers aged ≥4 years for NHANES III 1988–1994.

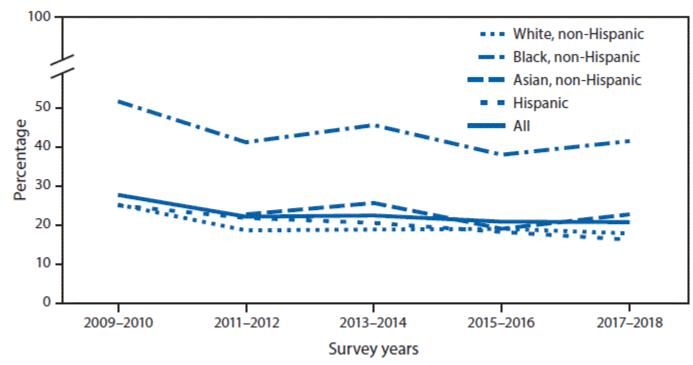
⁺ Because of sample design, racial and Hispanic origin categories were limited to non-Hispanic whites, non-Hispanic blacks, and Mexican Americans across all survey cycles.





Exposure to SHS by Race and Hispanic Origin, NHANES, 2009-2018

Percentage of nonsmoking adults exposed to secondhand smoke (SHS)



* Secondhand smoke exposure was defined as serum cotinine level of 0.05–10 ng/mL.

† All includes persons reporting other races not shown separately or more than one race. Data are not available for 2009–2010 for non-Hispanic Asian.

NHANES, MMWR, February 12, 2021; 70(6);224





Tobacco Related Disparities

- Gradual progress over past 30 years
- American Indian/Alaska Native higher
- Second-hand smoke exposure affects Blacks and poor disproportionately
- Are Mixed Race persons at higher risk?
- Dynamic of immigration and SES
- E-cigarettes > smoking in White youth
- LGBTQ+ have higher smoking rates





COVID-19 and Tobacco Use







COVID-19 and Smoking

- "Smoker's paradox" myth
- Risk of smoking history
 - Higher risk of severe disease (OR = 1.53)
 - Higher relative risk of death (OR = 1.25)
- Patterns in smoking cessation
 - 33% of cigarette users and 23% of e-cig users increased use due to stress
- Behavior common among smokers may heighten risk
 - $_{\odot}$ Touching face, sharing e-cig devices





COVID-19 and Youth Tobacco Users

- Preliminary study shows e-cig use is an underlying risk factor for COVID-19
- •Youth (aged 13-24) ever e-cig users 5x more likely to test positive
- Prevalence of e-cig use in youth (aged 13-24 y) decreased during stay-at-home orders: accessibility
- Current understanding on e-cig and COVID-19 is mostly based on preclinical studies and theoretical models





Association between COVID-19 and use of inhaled tobacco products, adjusting for sociodemographic factors, weighted

National cross-sectional survey of adolescents and young adults aged 13-24 years (n = 4351): United States, May 6– May 14, 2020

* indicates statistical significance

	Ever-use of inhaled tobacco + COVID-19 symptoms	Ever-use of inhaled tobacco + COVID-19 diagnosis
Race/ethnicity	OR	OR
Asian/NH or PI	1.92	0.08*
Black	2.06*	1.18
Latino	2.01*	2.84*
White	Ref	Ref
Other/multi-race	1.89*	3.88*

Gaiha SM, et al. J Adolesc Health 2020; 67(4): 519-523





Biological Markers of Tobacco Use







Optimal Serum Cotinine for Distinguishing Smokers and Nonsmokers

- NHANES: 13,078 nonsmokers and 3,078 smokers; based on ROC curves
- Whites: 5.92 ng/ml
- African Americans: 4.85 ng/ml
- Mexican Americans: 0.84 ng/ml
- Overall cut point is 3.08 ng/ml; 96% sensitivity and 97% specificity
- 14 ng/ml underestimates smokers

Benowitz N, et al Am J Epidemiology 2009; 169: 236-248





Nicotine Metabolism in Blacks, Whites, Chinese and Latinos

- Metabolic clearance of nicotine and cotinine in 40 Latinos was similar to that in 40 Whites, higher among 40 Blacks and lower among 40 Chinese smokers
- Intake of nicotine (mg) per cigarette:

0	Chinese:	0.73
0	Latinos:	1.05
0	Whites:	1.10

- Blacks: 1.41
- Nicotine intake = tobacco smoke

Perez-Stable EJ, et al., JAMA 1999 280:152-156; Benowitz NL, JNCI 2002; 94:108-115





Multiethnic Cohort Study Update: Racial/Ethnic Differences in Lung Cancer

- 4993 cases lung cancer ascertained by 2012
- Model Excess RR of smoking 50 y at 10 CPD
- Native Hawaiians = 21.9, African Americans = 19.1, Whites = 11.9, Japanese Americans = 10.1, Latinos=8.0
- After adjustment for predicted total nicotine equivalents, AA and JA did not differ from Whites
- Latino and NHOP risks are not explained



Genome-wide Association Study of Smoking in the HCHS/SOL

- Hispanic Community Health Study / Study of Latinos: genetic associations with smoking behavior in 12,741 participants; 5119 ever smokers
- CHRNA5, encodes the α5 cholinergic nicotinic receptor subunit, associated with heavy smoking defined as ≥10 CPD at genome-wide significance (p ≤ 5 x10⁻⁸)
- Loci on chromosomes 2 and 4 genome wide significance association with non-daily smoking
- Replication attempts were limited by small Latino samples and lack of items on non-daily use

Saccone NL, et al, Nicotine and Tobacco Research, 2018; 20: 448-457





Smoking Cessation Interventions: Gaps in the Evidence







Receipt of health professional advice to quit smoking among smokers aged ≥18 years, NHIS, US, 2015

Demographic Factor	Percent
White	60.2%
Black	55.7%
Latino	42.2%
AI/AN	38.1%
Asian	34.2%
Multiple race	69.6%

NHIS, MMWR, January 6, 2017; 65(52);1457-1464





Smoking Cessation Interventions

- Maximize reach and efficacy: Web, text
- Medication trials needed with minorities
- Implement electronic referrals from EHR to website or telephone help line
- Dependence measure predicts success in Blacks: Time to first cigarette
- Menthol smokers have less success
- We need trials with Non-Daily Smokers!





Cessation Interventions for Minorities

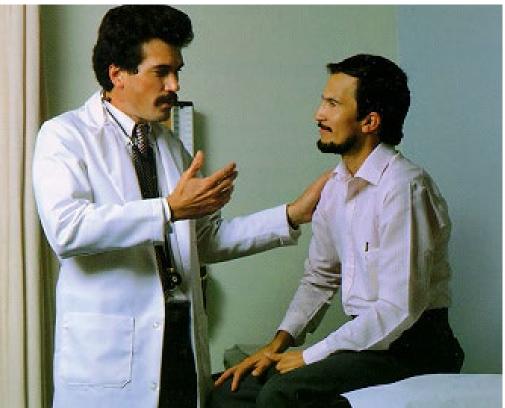
- Motivations to quit vary by race, culture
- Effects on family is a major factor
- Magnified concern with personal health
- Adverse influence on interpersonal relations in Latinos and Asians
- Language specific tailored components needed
- Addiction paradigm may not apply
- Access to pharmacological aids limited

Marin G, et al. Hispanic J Behavioral Sciences 1990; 12 (4): 422-436















Tomando Control website: Results of RCT of 1000 smokers at one year

Intervention	<u>% Quit</u>
Guia alone	19.8%
Guia + ITEM	19.1%
Guia + ITEM + Mood	20.7%
Above + Virtual Group	22.7%

Muñoz RF, et al, Nicotine and Tobacco Research 2009; 11: 1025-1034





Intervention Strategies for Nondaily Smokers

- Less emphasis on pharmacological approaches
- Adapt cessation efforts to fit the needs of nondaily smokers, which differ from daily smokers
- Differ in their motives and personal goals
- Targeting vulnerable subpopulations, where nondaily smoking is prevalent
- Racial/ethnic minorities, people with mental health and substance use challenges

Hoeppner B, et al. Nicotine and Tobacco Research 2021; 23 (6): 1038-1046





Methods that may Enhance Cessation

- African Americans: menthol smoking bans
- AI/AN: cessation interventions need to differentiate between traditional and recreational tobacco use
- Asians: using family and/or social support in cessation interventions
- Latinos: using text message interventions, adapt interventions to incorporate cultural characteristics (familism)





Structural Determinants and Policy







Targeted by the Tobacco Industry



80% of blacks smoke menthol cigs compared to 30% of whites

Menthol marketing

In 1969 Lorillard increased its "Negro market budget" by 87% over 1968





Trajectories of Cigarette Smoking Behaviors

- Cohort study to examine the effect of tobacco coupons and progression of smoking behaviors
- Current smokers with less education and higher poverty were more likely to have received these coupons
- Receipt of coupons associated with progression of smoking behaviors, lower likelihood of cessation, and higher likelihood of relapse



(Choi et al., <u>Tobacco Control</u>, 2018)



Home Smoking Bans in US Households with Children and Smokers

Tobacco Use Supplement, Am J Prev Med 2011; 41: 559-65

	1992-1993	2006-2007
Total	14.1%	50%
Asian/PI	28.5%	65.9%
Whites	12.7%	48%
African Am	9.2%	32.8%
Latinos	26.7%	72.2%
HS Grad or <	11.1%	42%





Policies to Limit Tobacco Use

- Implement mobile and web-based technologies to promote quit attempts
- Taper nicotine content of tobacco to prevent addiction and promote cessation
- Ban on flavorings and menthol
- Control the wild west internet market
- Incorporate electronic cigarettes as pharmacological option





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