Director's Report

National Advisory Council on Minority Health and Health Disparities

May 21, 2019

Eliseo J. Pérez-Stable, M.D.

Director, National Institute on Minority Health and Health Disparities

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NIH Appointment: Noni H. Byrnes, Ph.D.

- Appointed as the Director of the NIH Center for Scientific Review (CSR)
- Oversees an annual budget of more than \$130 million and review of all grant proposals for NIH and other federal agencies
- Earned her B.S. in chemistry from Allegheny College, Meadville, Pennsylvania, and her Ph.D. in analytical chemistry from Emory University, Atlanta, Georgia
- Acting Director of CSR since May 2018



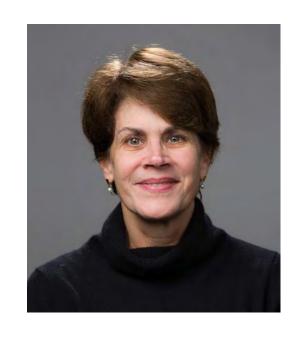
NIH Transition Norman E. "Ned" Sharpless, M.D.

- Became Acting Commissioner of the Food and Drug Administration on April 5, 2019
- Previously, he was appointed as the 15th director of the National Cancer Institute (NCI) in 2017
- NCI's Deputy Director, Douglas R. Lowy, M.D., will serve as the NCI Acting Director once more until a new presidential appointment is made



NIH Appointment: Debara L. Tucci, M.D., M.S., M.B.A.

- Appointed as the Director of the National Institute on Deafness and Other Communication Disorders
- Will oversee an annual budget of approximately \$459 million and lead the Institute's research and training programs in hearing, balance, taste, smell, voice, speech and language
- Comes from Duke University Medical Center, where she led the Duke Hearing Center focused on cochlear implants
- Oral, head, and neck surgeon with a robust research track record in hearing disorders
- Expected to join NIH in September 2019







June 19-20, 2019
Natcher Conference Center
NIH Main Campus
Watch live or later at https://videocast.nih.gov/



NIH Facilitates First Tribal Data-Sharing Agreement with Navajo Nation

Navajo Birth Cohort Study (NBCS) will share participant data as part of major NIH research initiative

- Signed by the Navajo Nation, Johns Hopkins University, and RTI International
- Enables the NBCS to continue as part of the ECHO program and NBCS individual participant data to be shared with <u>Environmental influences on Child Health</u> <u>Outcomes (ECHO)</u> Program consortium members
- Does not cover genetic data or sharing of biospecimens
- Respects Navajo Nation cultural beliefs, Tribal sovereignty and community values
- Represents first Tribal data-sharing agreement for a nationwide research consortium creating a large-scale database, and lays the groundwork for discussion with other Tribal Nations



A Mother's Love. Mallery Quetawki (Zuni Pueblo). University of New Mexico College of Pharmacy-Community Environmental Health Program.

NIMHD Staff Updates

Permanent Appointment

Rada Dagher, Ph.D., M.P.H.
 Health Science Administrator
 Clinical and Health Services Research
 <u>Special Recognition</u>



Vincent A. Thomas, Jr., M.S.W., M.P.A., A.C.S.W.
 HHS Honor Awards recipient for 50-plus years of federal service with special ceremony at Humphrey Building on May 8

<u>Departures</u>

- Kina Hendrick
 Ethics Specialist
- Juliet Peña, M.D., M.P.H.
 Senior Health Science Writer/Editor
 Office of Communications and Public Liaison



NIMHD Intramural New Hires

Charmaine Chan
 Post Baccalaureate Fellow
 Division of Intramural Research



Collins Perryman
 Predoctoral Fellow
 Division of Intramural Research



Calais Prince, Ph.D.
 Postdoctoral Fellow
 Division of Intramural Research, NIA



Legislative Update

Congressional Hearings with NIH Leadership

- April 2, 2019: House Appropriation Subcommittee on Labor, Health and Human Services, Education, and Related Agencies held a hearing on the President's FY 2020 budget request for NIH
 - NIH Director, Francis S. Collins, M.D., Ph.D., testified along with Directors from NCI, NICHD, NIAID, NHLBI, and NIDA
- April 11, 2019: Senate Appropriation Subcommittee on Labor, Health and Human Services, Education, and Related Agencies held a hearing on the President's FY 2020 budget request for NIH
 - NIH Director, Francis S. Collins, M.D., Ph.D., testified along with Directors from NCI, NIAID, NIGMS, NIDDK, NIA, and NIDA





NIMHD Congressional Activities

- February 26, 2019: Children's Inn congressional reception on Capitol Hill
- March 12, 2019: Director met with Senator Bill Cassidy (R-LA) and Dr. Thomas A. LaVeist, dean of the Tulane University School of Public Health and Tropical Medicine, to discuss health disparities research
- March 14, 2019: Presentation at the Congressional Hispanic Caucus Institute on the importance of diversity in clinical trials
- April 15, 2019: Participated in a congressional briefing on Health Disparities – A National Crisis that Impacts Us All, sponsored by the Friends of the NIMHD hosted by Representative Jamie Raskin (D-MD)







Director's Presentations

Inter-Society Coordinating Committee for Practitioner Education in Genomics
Bethesda, Maryland, February 7, 2019

Medical College of Wisconsin Department of Medicine Grand Rounds and Research Seminar

Milwaukee, Wisconsin, February 14, 2019

Society for Research on Nicotine and Tobacco, Keynote on Public Health Science San Francisco, California, February 21, 2019

3rd Annual Cancer Disparities Symposium Case Western Reserve University Cleveland Ohio, March 1, 2019

Marshall University School of Medicine Huntington, West Virginia, March 11, 2019

Lupus Research Alliance, NIAMS Washington DC, March 18, 2019

Society for Research in Child Development Biennial Meeting — Panel Baltimore, Maryland, March 20, 2019

12th Health Disparities Conference Xavier University College of Pharmacy New Orleans, Louisiana, April 8, 2019

NIH SciEd 2019: Annual Conference for NIH Science Education Projects Washington, DC, April 23, 2019

2019 Pediatric Academic Societies Annual Meeting: Racism Panel Baltimore, Maryland, April 28, 2019

George Mason University
College of Health and
Human Services
Commencement
Fairfax, Virginia
May 16, 2019

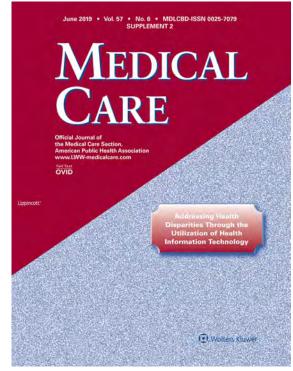




New Supplement: Leveraging Information Technology to Address Health Disparities

Supplement 2, 2019, Vol 57, No 6

- Articles provide data toward applying Health IT to promote health equity in clinical setting
- Features commentary and research on the potential application of Health IT in reducing disparities via access to care, higher quality of care and patient-clinician communication
- Introductory editorial led by NIMHD Director Eliseo J. Pérez-Stable, M.D., with Beda Jean-François, Ph.D., and Courtney Ferrell Aklin, Ph.D.
- 12 original research papers, 5 editorials and perspective pieces



"Health IT has tremendous potential for promoting health equity for disparity populations, and the clinical setting provides an optimal opportunity to better understand and address factors influencing health disparities in these patient groups."

NIMHD Director Eliseo J. Pérez-Stable, M.D.



NIDDK-NIMH Rwanda Fellowship Program

Regine Mugeni, M.D., Visiting Physician

- NIH international partnership involving NIMHD, the Rwanda Ministry of Health, and the National Institute of Diabetes and Digestive and Kidney Diseases
- Dr. Mugeni is working to develop a costeffective and reliable model to diagnose diabetes in Africans
- Many Africans are undiagnosed as they have different thresholds for standard diabetes tests, but Dr. Mugeni found a combination of two tests could help capture this at risk population

Prior Rwandan Fellows

- Jean Nepo Utumatwishima, M.D. (2016-17)
- J. Damascene Kabakambira, M.D. (2017-18)







NIMHD Insights Blog

Addressing Social Needs and Structural Inequities to Reduce Health Disparities: A Call to Action for Asian American and Pacific Islander Heritage Month



Marshall H. Chin, M.D., M.P.H

Visit: http://nimhd.blogs.govdelivery.com

National Minority Health Month

Active and Healthy Bilingual Twitter Chat April 17, 2019

- 56 Million impressions
- Partners: HHS Office of Minority Health; Office of Disease Prevention and Health Promotion



3rd Annual Minority Health 5K Walk/Run April 24, 2019

~ 400 registered participants

Guest speakers

- U.S. Surgeon General Jerome Adams
- Assistant Secretary for Minority Health CAPT Felicia Collins





NIMHD Budget

NIMHD Budget Update

NIMHD Appropriations by Fiscal Year



- FY 20 President's Budget released on March 18th
- Proposes a \$43.8 million reduction (13.9%) from FY 19 appropriation level
- Organizes spending into new scientific areas (IBBS, CHSR, CHPS)

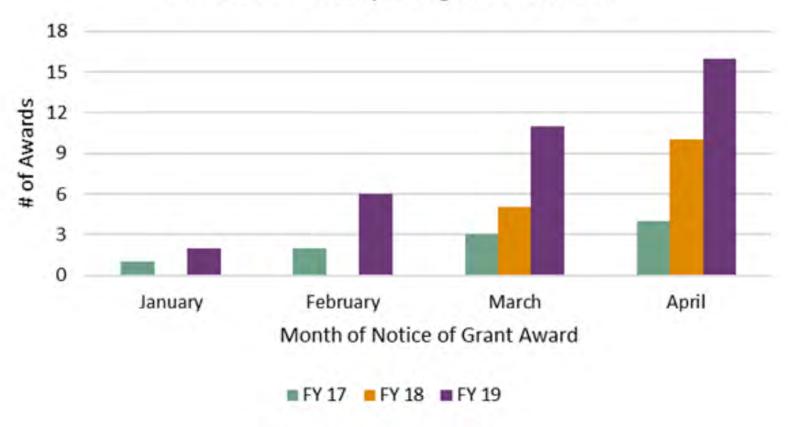
https://officeofbudget.od.nih.gov/approp_hist.html





Extramural Funding Trends

Cumulative Competing RPG Awards



FY 19 Research Areas with Largest Projected Growth (in Millions)



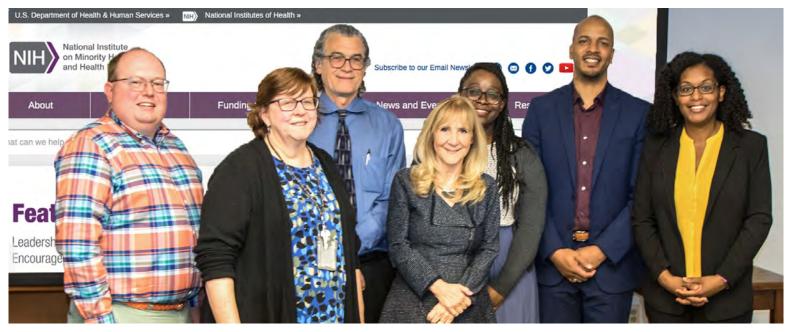
Projections are based on mid-year spending estimates





NIMHD-Supported Grants and Programs

Health Disparities Bioethics Scholars from Fordham HIV and Drug Abuse Prevention Research Ethics Training Institute April 4, 2019, Bethesda, Maryland



Photo, left to Right- Drs. Randy Hubach (Oklahoma State University), Nancy Jones (NIMHD), Eliseo Pérez-Stable (NIMHD), Celia Fisher (Fordham University), Ms. Aaliyah Gray (Fordham University), and Drs. Anthony Estreet (Morgan State University), and Stacy Ryan-Pettes (Baylor University)

Dr. Celia Fisher, Fordham University, brought four early-stage investigators to share their bioethics research on minority health and health disparities research topics with NIMHD staff



Clinical Research Education and Career Development (CRECD) Annual Scholars Meeting March 2019, Bethesda, Maryland

The purpose of the CRECD (R25) program is to encourage and prepare clinical researchers from diverse backgrounds to pursue translational and/or patient-oriented research on diseases that disproportionately impact health disparity populations

The meeting included

- Program progress reports by principal investigators
- Grantsmanship bootcamp and panel discussion with NIMHD program staff



Women's History Month A Conversation with Anna María Nápoles, Ph.D., M.P.H. NIH's First Latina Scientific Director

- Interview for NIH's Office of Equity,
 Diversity, and Inclusion to help celebrate Women's History Month
- 2019 theme, "The Whole Woman," focused on the issues that are most important to women and their mental, physical, or emotional well-being
- During her <u>segment</u>, Dr. Nápoles discussed her journey and offered advice to young women who are aspiring scientists
- Also an NIMHD Insights Blog post





Visit: http://nimhd.blogs.govdelivery.com/





2019 Jarvik-Russel New Investigator Award

- Kelvin Choi, Ph.D., M.P.H., received the 2019 Jarvik-Russell New Investigator Award presented by the Society for Research on Nicotine and Tobacco
- Recognized as an early-career scientist who have made extraordinary contributions to the field of nicotine and tobacco research



Division of Intramural Research

2019 Society for Research on Nicotine and Tobacco Annual Meeting: Choi Lab

Kelvin Choi, Ph.D. and trainees

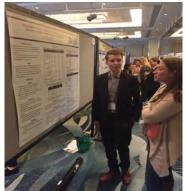
2019 Society for Behavioral Medicine Annual Meeting: Choi and El-Toukhy Labs

Sherine El-Toukhy, Ph.D., M.A., and Kristyn Kamke, Ph.D.
 Kelvin Choi, Ph.D. and Julia Chen-Sankey, Ph.D.

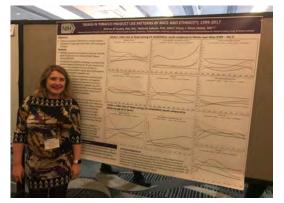
2019 American Association of Cancer Research Annual Meeting: Nápoles Transcreation and Genomics Labs

 Cristian Escalera, B.S., Anna Nápoles, Ph.D., and Eliseo J. Pérez-Stable, M.D.

 Jung Byun, Ph.D., Anna Nápoles, Ph.D., and Eliseo J. Pérez-Stable, M.D.



Aaron Broun from Dr. Choi's lab



Kristyn Kamke, Ph.D.







NIMHD-Supported Science Advances

Time to Follow-up After Colorectal Cancer Screening by Health Insurance Type

- Patients with Medicaid may have longer average times to follow-up colonoscopy after a positive fecal immunochemical test (FIT) than patients with other insurance
- 35,000 patients aged 50-64 with a positive FIT were evaluated in Northern and Southern California Kaiser Permanente systems between 2011 and 2012 using Kaplan-Meier estimation and Cox regression
- Within the same integrated system, patients with Medicaid were less likely to complete follow-up compared to those with other insurance within 3 months after positive FIT: 63% vs 75%

(Breen et al., American Journal of Preventive Medicine, 2019)

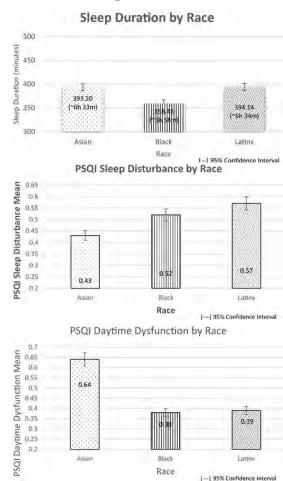




Racial Disparities in Sleep: Associations with Discrimination Among Ethnic/Racial Minority Adolescents

Explored if discrimination was associated with worse sleep for minority adolescents

- Black adolescents slept 35 minutes less than
 Asian and 36 minutes less than Latino/a youth
- Latino/a youth reported highest levels of sleep disturbance; Asian youth reported highest levels of daytime dysfunction
- Daily discrimination associated with lower levels of same-night sleep onset latency, more sleep disturbance, more next-day daytime dysfunction and higher next-day daytime sleepiness



NIH Grant No. U54-MD-007593

(Yip et al., Child Development, 2019)



Smoking Behavior among Sexual and Gender Minority Young Adults

- SGM young adults have higher smoking prevalence
- Put It Out Project, a Facebook smoking cessation intervention for SGM young adults (N = 165, age = 21.8)
- Lesbian women began smoking at an older age (M = 18.0, SD = 2.0) than "other" sexual orientation participants (M = 15.7, SD = 2.2), P < .05
- Transgender participants smoked the most cigarettes per day (M = 11.3, SD = 6.7), cisgender (M = 8.1, SD = 5.6), non-binary (M = 5.7, SD = 3.5) (P < .001; pairwise comparisons P values < 0.05)
- Smoking characteristics were mostly similar across sexual and gender identities

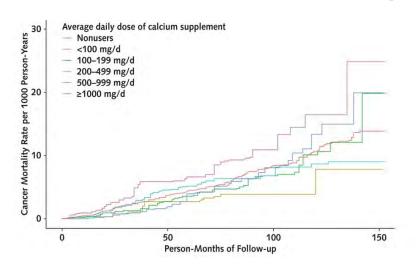
NIH Grant No. R21-MD-011765

(Vogel et al., <u>Addictive Behavior</u>, 2019)



Association Among Dietary Supplement Use, Nutrient Intake, and Mortality Among U.S. Adults: A Cohort Study

- Individuals who reported taking dietary supplements had about the same risk of dying as those who got their nutrients through food — no benefit
- NHANES data 1999 to 2010, linked to National Death Index mortality data
- Blacks, Latinos, ≤ high school graduate, and <1.30 family income poverty are less likely to use dietary supplements



- Mortality benefits associated with adequate intake of nutrients were limited to food consumption
- Excess intake of calcium was associated with increased risk for cancer death related to calcium intake from supplements

NIH Grant No. R01-MD-011501

(Chen et al., <u>Annals of Internal Medicine</u>, 2019)



Effects of Changes in Earned Income Tax Credit: Time-Series Analyses of Washington, D.C.

 Previous analyses across all states indicated improvements in birth outcomes in states with more generous Earned Income Tax Credit (EITC) benefits for lowincome workers

This analysis examined changes in the EITC in Washington DC compared to

states with no EITC from 1990 to 2015

 There were significant improvements in pre-term birth, birth weight, gestational weeks as the size of the credit increased

- Inclusion of comparison states allowed for control for nationwide changes in other policies
- Findings related to first-trimester prenatal care and maternal smoking were inconsistent

Future work is needed to identify the mechanisms linking more generous
 EITC benefits to improved birth outcomes

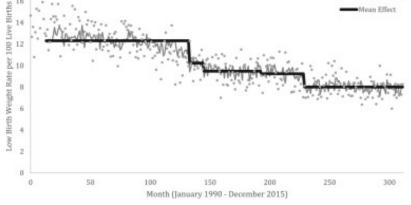


Fig. 1. Effects of Changes in the Earned Income Tax Credit on Low Birth Weight in Washington, DC. This figure shows the raw monthly rate of low birth weight, the model predicted rate of low birthweight, and the average rate of low birthweight in each EITC period, after adjustment for low birth weight rates in the comparison group and the underlying ARIMA noise structure in the baseline period.

NIH Grant No. R01-MD-010241

(Wagenaar et al., <u>SSM Popul Health</u>, 2019)

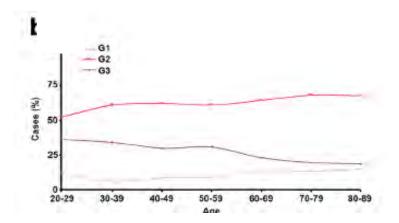




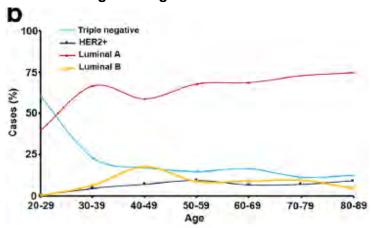
- Model Predicted

Clinical Characteristics and Pathological Subtypes of Breast and Ovarian Cancers in Puerto Rico

- Review of archived pathology reports from 2000-2015 to determine the prevalence of cancer subtypes in Puerto Rican sample
- 21 to 89 years old
- Subtype distribution comparable to national averages
- Low rate of highly aggressive ovarian CA
- Some cases missing histological data
- Breast CA diagnosed at an earlier age and are more aggressive and higher grade tumors
- A significant number of breast CA cases are missing critical clinical and pathological information
- May not be receiving appropriate patient management and BC treatment



Age at Diagnosis for BC Grade



Age at Diagnosis for BC Sub-cancer type

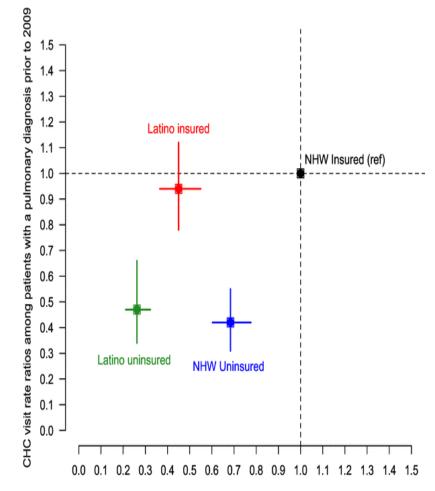
(Rodriguez-Velasquez et al., BMC Cancer, 2018)

NIH Grant No. G12-MD-007579



Asthma/COPD Disparities in Diagnosis and Basic Care Utilization among Low-Income Patients

- Retrospective analysis of 34,849 lowincome patients seen at Oregon community health centers (2009-2013)
- Latinos had lower odds of obstructive lung disease diagnosis than Whites
- Decreasing odds of diagnosis were observed among uninsured Whites (OR= 0.68), insured Latinos (OR=0.45), and uninsured Latinos (OR=0.26), compared to insured Whites
- Among diagnosed patients, the uninsured had lower visit rates over 5 years (2009-2013) than their insured racial/ethnic counterparts (Whites: 58% lower visit rates; Latinos: 53% lower visit rates)



Pulmonary diagnosis odds ratios among patients with no diagnosis prior to 2009

(Heintzman et al., <u>J Immigr Minor Health</u>, 2019)

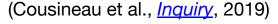
NIH Grant No. R01-MD-011404





Insurance Coverage and Having a Regular Clinician Among Childhood Cancer Survivors

- Utilization of cancer follow-up tests and noncancer health care
- Latinos were twice as likely to lack a regular source of care for cancer-related care compared with non-Latinos
- The uninsured were more than two times as likely to report no regular source of care for cancer follow-up compared to those with private insurance coverage
- Research is needed with Latinos and other racial/ethnic groups of childhood cancer survivors to understand the barriers to survivorship care





Automated Detection of Social Isolation in Prostate Cancer Patients Using Clinical Narratives

- Social isolation, an important social determinant of health, not typically coded data in health care systems but possibly collected from clinical narratives
- Researchers at the Medical University of South Carolina used 55,516 clinical notes from 3,138 patients to test the feasibility of using natural language processing (NLP) to identify socially isolated patients from clinical narratives
- The NLP method demonstrated 90% precision, 97% recall, and 93% F-measure, suggesting that NLP can be a highly accurate approach to detect social isolation
- African American patients had lower prevalence of social isolation compared to Whites, consistent with previous findings that social network ties are more prevalent
- Results imply that social isolation does not contribute to prostate cancer disparities in African American men

NIH Grant No. U54-MD-010706

(Zhu et al., <u>BMC Med Inform Decis Mak</u>, 2019)



Effects of Self-Silencing and Egalitarian Attitudes on HIV Prevention Behaviors Among Latina Immigrant Farmworkers

- Little is known about vulnerable circumstances and factors influencing HIV prevention behaviors of Latina farmworker
- Using secondary analysis, this cross-sectional study found that self-silencing behaviors were adversely associated with:
 - Self-efficacy for HIV prevention;
 - Intentions to negotiate safe sex; and,
 - HIV-related knowledge
 - In contrast, egalitarian attitudes were positively associated with these three preventive behaviors
- May help advance understanding of sociocultural determinants of HIV prevention behaviors among Latinas



(Ramirez-Ortiz et al., *J. Immi. Min. Health*, 2019)



Racial and Ethnic Estimates of Alzheimer's Disease and Related Dementias (ADRD) in the United States

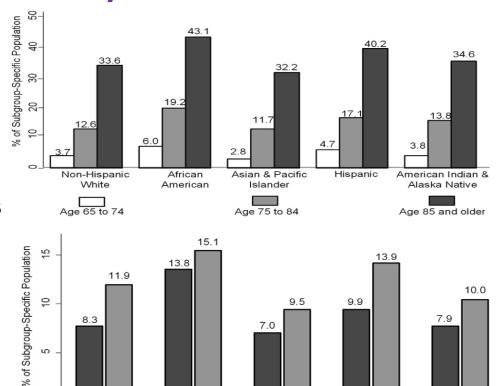
Non-Hispanic

White

African

American

- The burden of ADRD in 2014 was an estimated 5 million adults aged >65 yrs in the U.S. and that there will be 13.9 million Americans with ADRD by 2060
- Claims data for population among Medicare Fee-for-Service beneficiaries aged >65 y in 2014
- Blacks had the highest prevalence of ADRD, followed by Latinos
- Among adults age 85 and older, over 43% of Blacks and 40% of Latinos have the greatest estimated burden of disease due to ADRD
- Women had a higher rate of ADRD than men in all race/ethnic groups
- Study by CRECD scholar at Morehouse SOM



(Matthews et al., Alzheimer's & Dementia, 2019)

Asian & Pacific

Islander

Male

Hispanic





American Indian &

Alaska Native

Protective Factors Buffer Life Stress and Behavioral Outcomes Among High-Risk African American Youth

- Cumulative risk represents the additive effect of multiple interrelated risk factors across individual, family, and environmental contexts
- Protective factors may buffer the negative impacts of stressors
- Internalizing problems, externalizing problems, and polydrug use among African American youth (n = 576) in high-poverty neighborhoods
- Tested potential protective effects of religiosity, parental monitoring, and neighborhood collective efficacy on life stress and behavior
- Structural equation modeling: cumulative risk significantly predicted internalizing problems, externalizing problems, and polydrug use
- Internalizing problems were buffered by adolescent religiosity and neighborhood collective efficacy
- Externalizing problems were buffered by parental monitoring and collective efficacy

NIH Grant No. R01-MD-011727

(Sharma et al., *J Abnorm Child Psychol*, 2019)

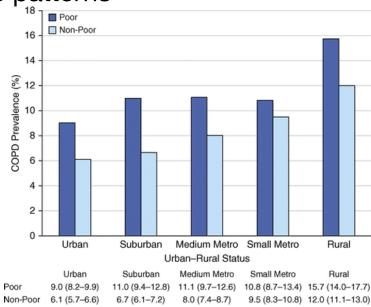


Rural Residence and Poverty and COPD in the U.S.

 National Health Interview Survey data (2012-2015) linked with neighborhood data from the U.S. Census American Community Survey and the National Center for Health Statistics Urban-Rural Classification Scheme to examine urban vs. rural COPD prevalence patterns

 COPD prevalence in poor, rural areas was almost two times that in the overall population

- In adjusted models, rural residence and census-level poverty were both associated with COPD prevalence, as were indicators of household wealth
- Among never-smokers, rural residence was associated with COPD, as was neighborhood use of coal for heating
- Findings indicate that rural residence, poverty, and coal heating are risk factors for COPD, even among never-smokers



NIH Grant No. P50-MD-010431

(Raju et al., <u>Am J Respir Crit Care Med.</u>, 2019)





Tobacco-Use Behaviors Among 47,857 U.S. Blacks and Immigrant Blacks Living in the U.S.

- 2006-2015 Tobacco Use Supplement to the Current Population Survey
- Regions: U.S. territories, Africa, West Indies, and Europe
- Tobacco-use behaviors vary among Blacks living in the U.S.

"	Full Sample		Established Smokers		Current Smokers	
Variable	Current Cigarette Smoker (n=47,556)	Current Cigar Smoker (n=47,126)	Former Smoker (n=14,011)	Started Regular Smoking as Minor (n=13,175)	First Cigarette <30 Minutes After Waking (n=7,405)	Regular Menthol Cigarette Smoker (n=7,747)
Global region of origin						
U.SBorn Blacks	17.4%	3.2%	40.6%	45.5%	47.4%	74.4%
Europe-Born Blacks	17.7%	2.6%	33.1%	42.1%	42.1%	64.3%
Africa-Born Blacks	4.7%	0.1%	51.0%	32.7%	25.5%	35.1%
West Indies-Born Blacks	4.9%	1.1%	55.3%	45.4%	34.2%	54.0%

(St. Fort L & Choi K, *J Immigrant Minority Health*, 2019)





Online Tobacco Marketing Among U.S. Adolescent Sexual, Gender, Racial, and Ethnic Minorities

- Population
 Assessment of
 Tobacco and Health
 (PATH) Study Wave 1
 survey youth sample
 (n=8,015)
- Sexual/gender and racial/ethnic minority youth more likely to report engagement with online tobacco marketing than their heterosexual and non-Hispanic White peers

9		
Variable	Engaged with online marketing	Adjusted odds ratios
Race/ethnicity		
Latino	23.4%	1.31*
Black	26.2%	1.42*
Other	25.4%	1.18
White	22.3%	Ref.
Sexual/gender identity		
Transgender	35.1%	1.37
Sexual minority women	37.2%	1.25
Sexual minority men	30.5%	1.57*
Straight women	22.9%	0.86
Straight men	21.3%	Ref.

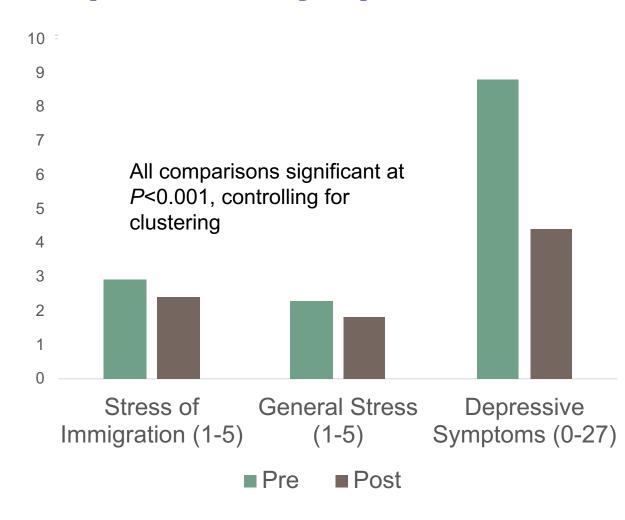
(Soneji, Knutzen, Tan, ... & Choi, Addictive Behaviors, 2019)





Decreased Stress of Immigration, General Stress and Depressive Symptoms

- Promotores-delivered 8-week stress management intervention to stressed low-income Spanish-speaking Latino immigrants (N=50)
- Single group study with pre and postintervention outcomes



(Sternberg ... & Nápoles, Community Mental Health, In Press)





Youth Cigarette Smoking, U.S. 2011-2018

National Youth Tobacco Survey, grades 9-12 Use ≥ 1 day in past 30 days

Race or Ethnicity	Combustible %	E-cigarettes %
Whites	14.7	26.8
Blacks	13.2	7.5
Latinos	13.7	14.8
Other race	8.1	14.5

Gentzke et al., MMWR, 2019





Observed trend in severe maternal morbidity by race/ethnicity, California, 1997-2014



Black (· −) Latina (− −) Asian (· ·) White (−)

Leonard et al., Annals of Epi, 2019





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



Stram et al., Journal of the National Cancer Institute, 2019



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Discussion

