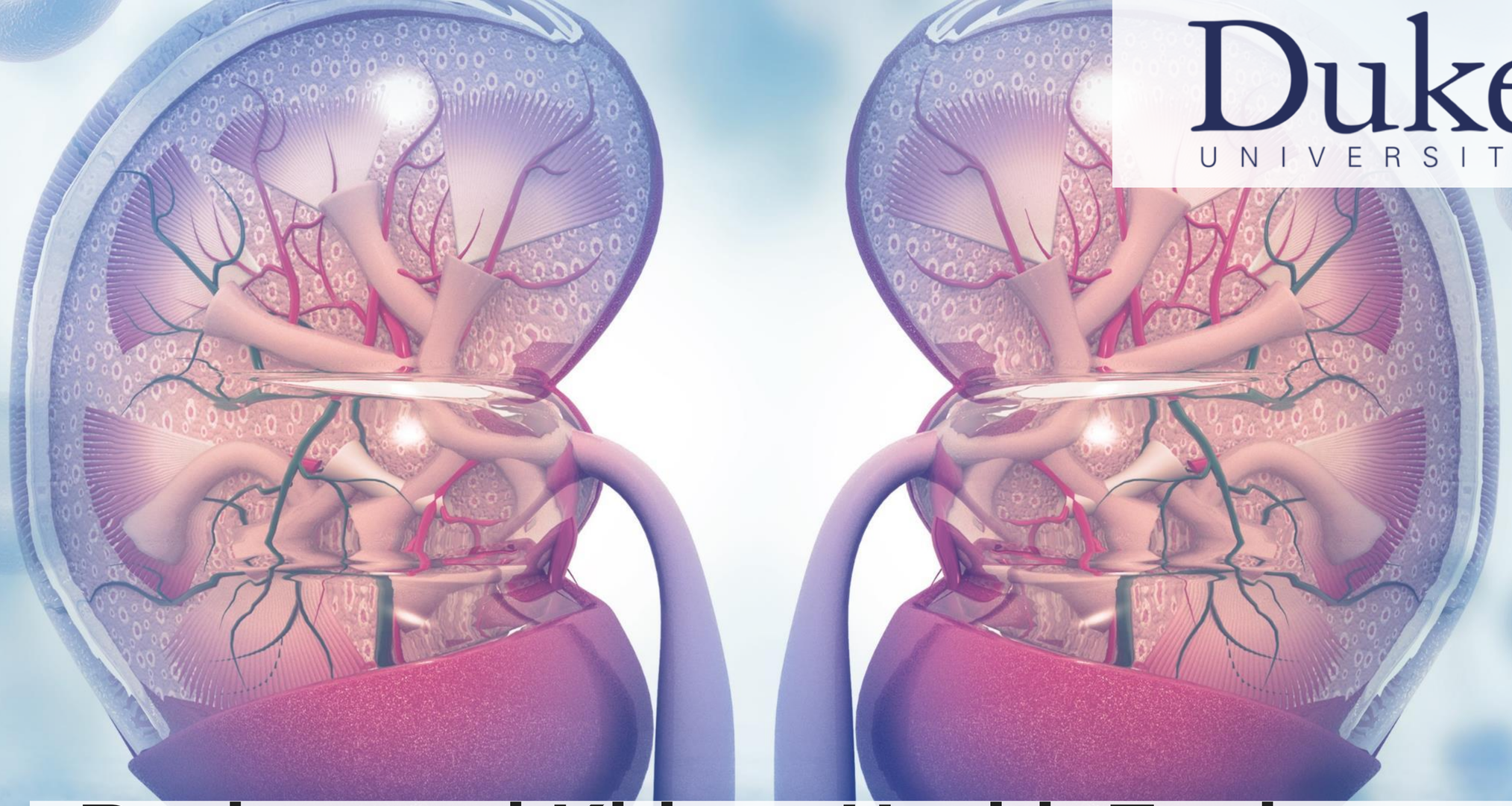


Racism and Kidney Health Equity:
Turning equity and justice into reality

DINUSHIKA MOHOTTIGE, MD, MPH

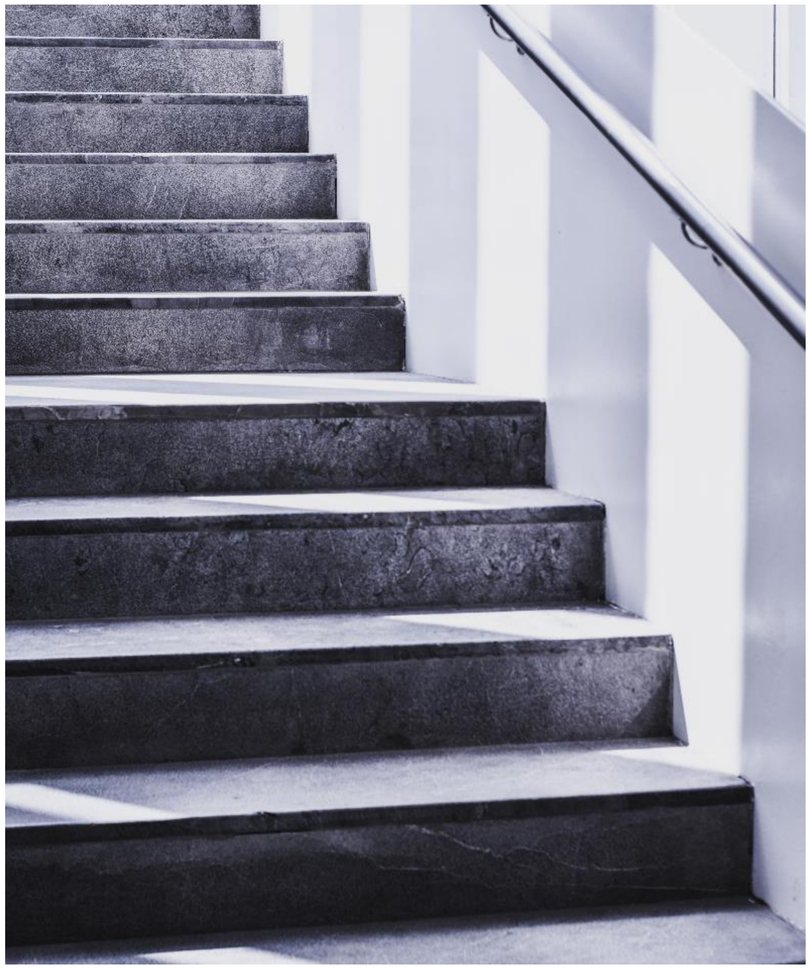
DISCLOSURES

Member: National Kidney Foundation Health Equity Advisory Committee and National Kidney Foundation Transplant Advisory Committee

Current Funding: Reach Equity Career Development Award, Supported by NIMHD under award number U54MD012530
Mario Family Foundation Award
National Kidney Foundation Young Investigator Award

Prior Funding: 2T32-DK007731-22, Duke Stead Grant

LEARNING OBJECTIVES



Define race and racism in the context of enhancing kidney health equity

Identify examples of racialized medicine as they pertain to kidney disease

Apply equity focused race consciousness to enhance clinical care and kidney research

Polling Question #1

- **How often does race impact your <u>diagnostic reasoning</u>?**
  A. Never
  B. Sometimes
  C. It depends
  D. Often
  E. Always
  F. Unsure

Polling Question #2

- **How often does race impact your <u>clinical decision making</u>?**
  A. Never
  B. Sometimes
  C. It depends
  D. Often
  E. Always
  F. Unsure

RACISM GALVANIZES

Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation

Tanjala S. Purnell ✉, Dinee C. Simpson, Clive O. Callender, L. Ebony Boulware

SOCIAL AND ETHICAL ISSUES IN 2020

Stony the road we trod: towards racial justice in kidney care

O. N. Ray Bignall II and Deidra C. Crews

POLICY FORUM PERSPECTIVE | VOLUME 77, ISSUE 6, P951-962, JUNE 01, 2021

Racism and Kidney Health: Turning Equity Into a Reality

Dinushika Mohottige • Clarissa J. Diamantidis • Keith C. Norris • L. Ebony Boulware

June 6, 2022

Race-Free Estimation of Kidney Function
Clearing the Path Toward Kidney Health Equity

L. Ebony Boulware, MD, MPH[1]; Dinushika Mohottige, MD, MPH[2]; Matthew L. Maciejewski, PhD[1,3,4]

Author Affiliations

JAMA. 2022;327(23):2289-2291. doi:10.1001/jama.2022.7310

Year in Review | Published: 07 December 2021

SOCIAL AND ETHICAL ISSUES IN 2021

Staying on track to achieve racial justice in kidney care

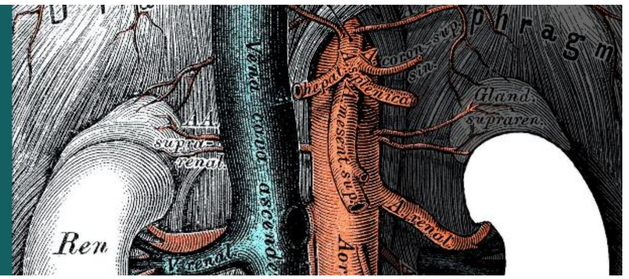
Dinushika Mohottige & Keisha Gibson ✉

Nature Reviews Nephrology **18**, 72–73 (2022) | Cite this article

RACE AND KIDNEYS

MEDICAL EXAMINER

Jordan Crowley Would Be in Line for a Kidney—if He Were Deemed White



ORIGINAL ARTICLE

New Creatinine- and Cystatin C–Based Equations to Estimate GFR without Race

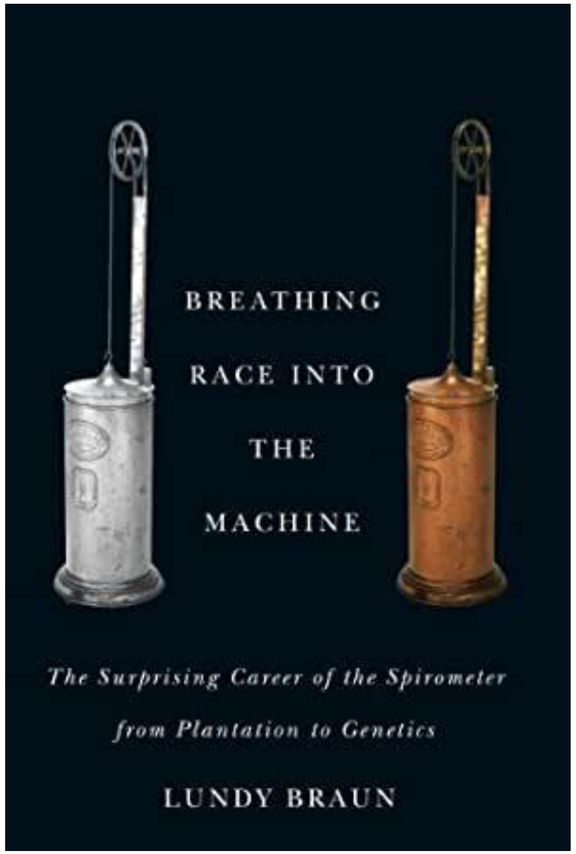
Lesley A. Inker, M.D., Nwamaka D. Eneanya, M.D., M.P.H., Josef Coresh, M.D., Ph.D., Hocine Tighiouart, M.S., Dan Wang, M.S., Yingying Sang, M.S., Deidra C. Crews, M.D., Alessandro Doria, M.D., Ph.D., M.P.H., Michelle M. Estrella, M.D., M.H.S., Marc Froissart, M.D., Ph.D., Morgan E. Grams, M.D., M.H.S., Ph.D., Tom Greene, Ph.D., et al., for the Chronic Kidney Disease Epidemiology Collaboration*

A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease

Cynthia Delgado, Mukta Baweja, Deidra Crews, Nwamaka Eneanya, Crystal Gadegbeku, Lesley Inker, Mallika Mendu, W. Greg Miller, Marva Moxey-Mims, Glenda Roberts, Wendy St. Peter, Curtis Warfield and Neil Powe

JASN September 2021, ASN.2021070988; DOI: https://doi.org/10.1681/ASN.2021070988

RACE AND MEDICINE



Kidney Donor Profile Index

KDPI calculator | Learn about KDPI

All fields are required.

Age: (years)

Height: ft in cm

Weight: lbs kg

Ethnicity/Race:

History of Hypertension:

History of Diabetes:

Cause of Death:

Serum Creatinine:(mg/dL)

HCV Status

Donor meets DCD Criteria?

? African American

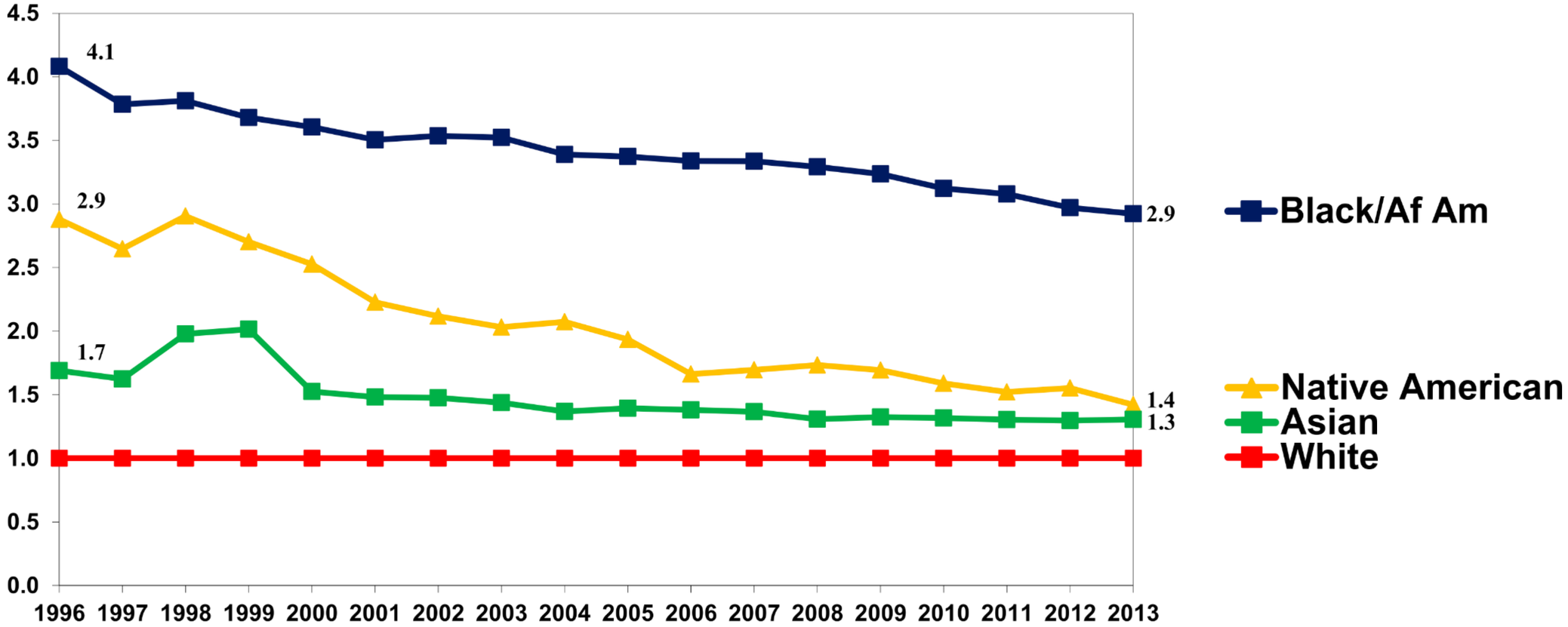
Eneanya ND, Boulware LE, Tsai J, et al. Health inequities and the inappropriate use of race in nephrology. *Nature Reviews Nephrology.* 2021.
Mohottige D, Boulware LE, Ford CL, Jones C, Norris KC. Use of Race in Kidney Research and Medicine: Concepts, Principles, and Practice. *Clin J Am Soc Nephrol.* 2022;17(2)

ESKD RACE DISPARITIES

Social Determinants of Racial Disparities in CKD

Jenna M. Norton,*† Marva M. Moxey-Mims,*† Paul W. Eggers,*† Andrew S. Narva,*† Robert A. Star,*† Paul L. Kimmel,*† and Griffin P. Rodgers†‡

Adjusted ESKD incident rate by race in U.S.

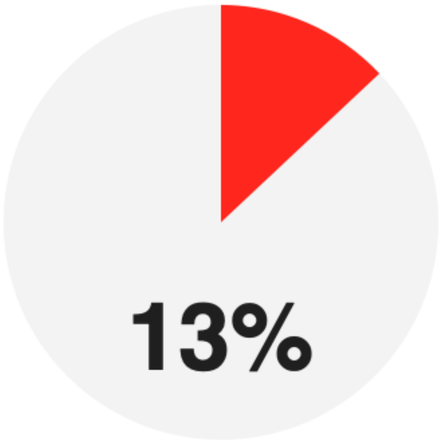


JASN

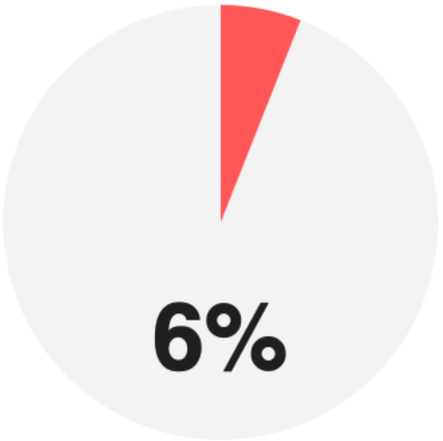
A CALL TO ACTION

CHRONIC KIDNEY DISEASE SURVEILLANCE SYSTEM
TRACKING KIDNEY DISEASE IN THE UNITED STATES

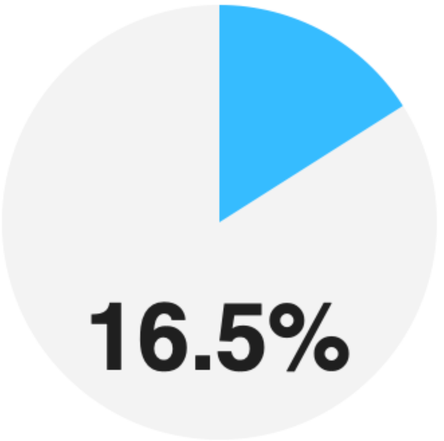
USRDS
UNITED STATES RENAL DATA SYSTEM



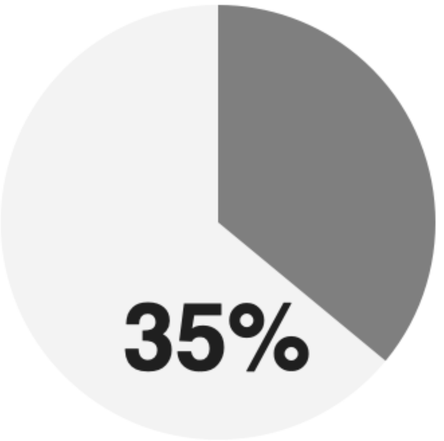
Black % of U.S. population



CKD III in Black vs. 11.5% Whites (VA)

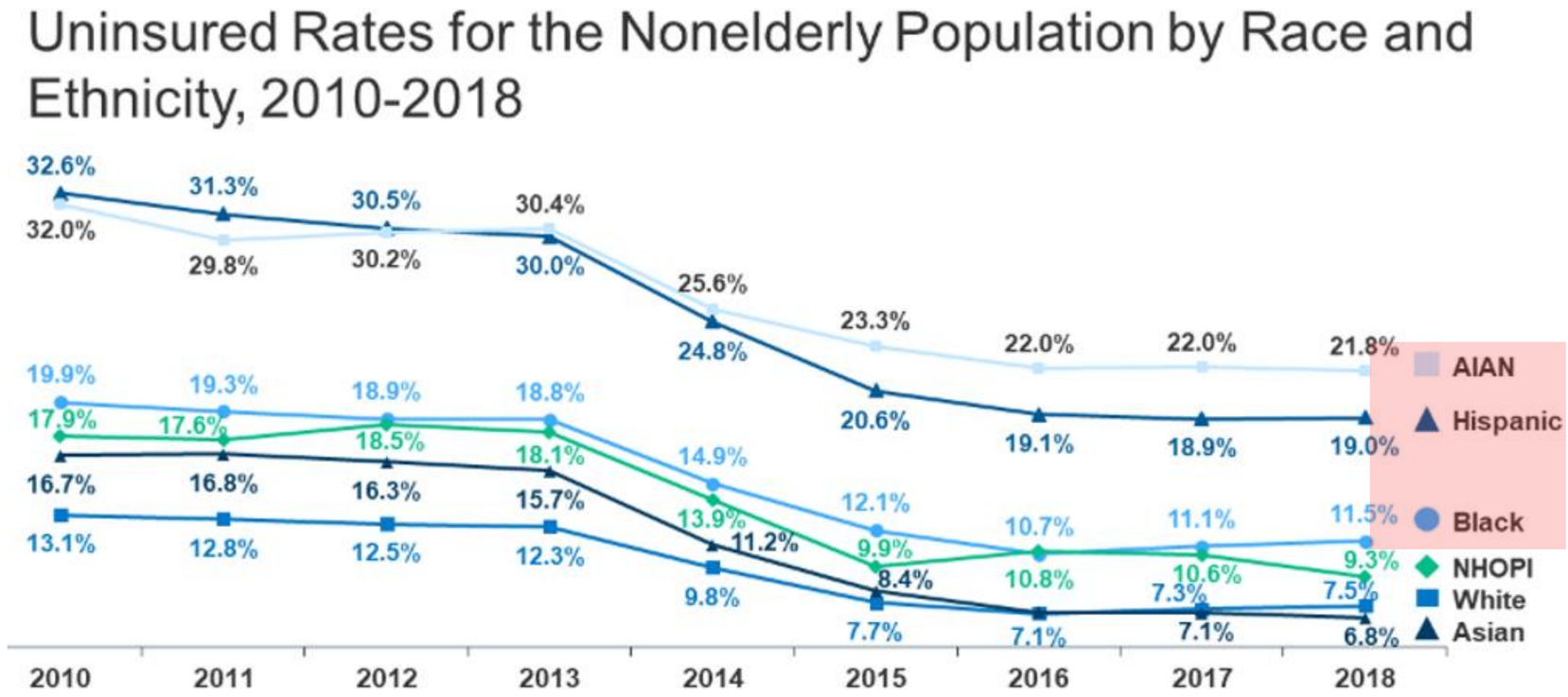


CKD I-IV in Black vs. 13% Whites (NHANES)



% Black of U.S. on dialysis

U.S. CKD “RISKS”



Where do social contexts and social drivers including racism fit in our understanding of risk?

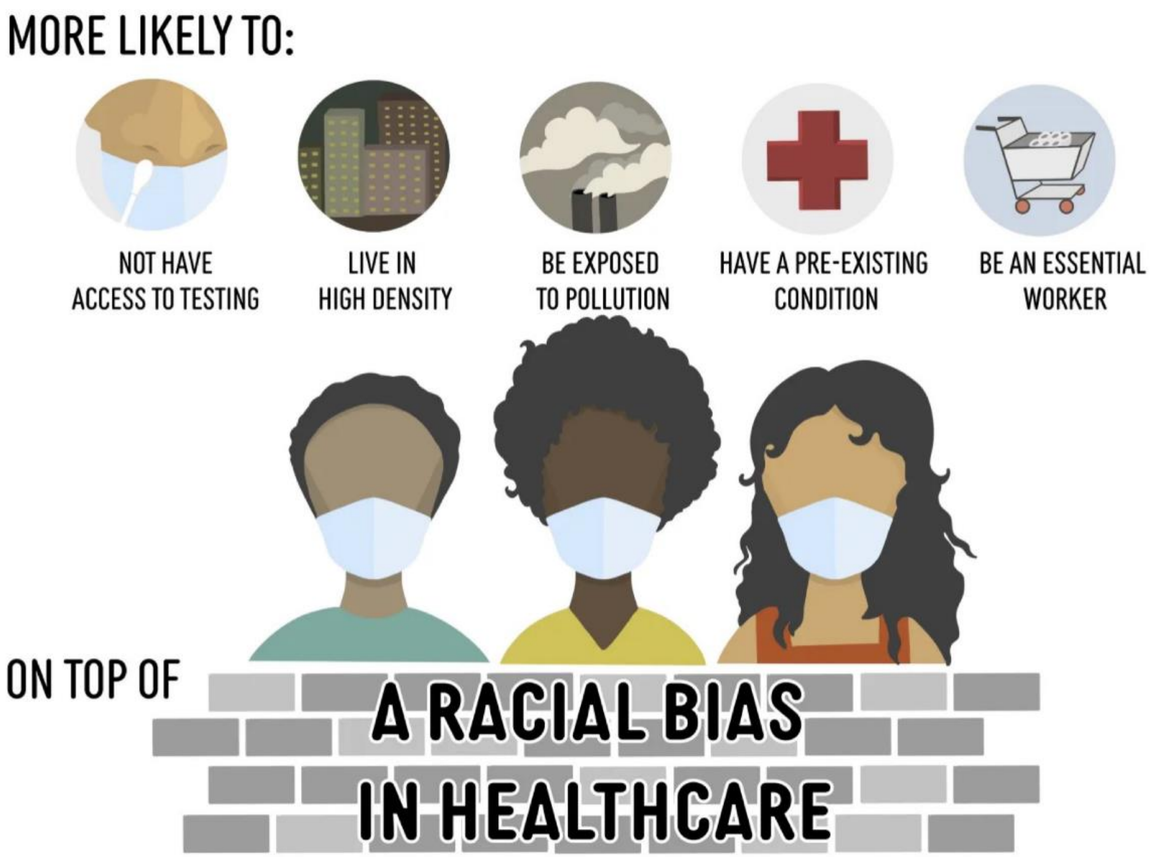
BRFSS 2015; CDC NIDDK

Hill-Briggs, Felicia, Nancy E. Adler, Seth A. Berkowitz, Marshall H. Chin, Tiffany L. Gary-Webb, Ana Navas-Acien, Pamela L. Thornton, and Debra Haire-Joshu. 2021. "Social Determinants of Health and Diabetes: Scientific Review." *Diabetes Care* 44 (1):258-279. doi: 10.2337/dci20-0053.

ROOT CAUSES: NOT RACE

Health care disparities: **systematic…avoidable** health differences according to race, ethnicity, skin color, religion, or nationality; socioeconomic resources or position, gender, sexual orientation, gender identity; age,geography, disability, illness, political or other affiliation; or other characteristics **associated with discrimination or marginalization**.

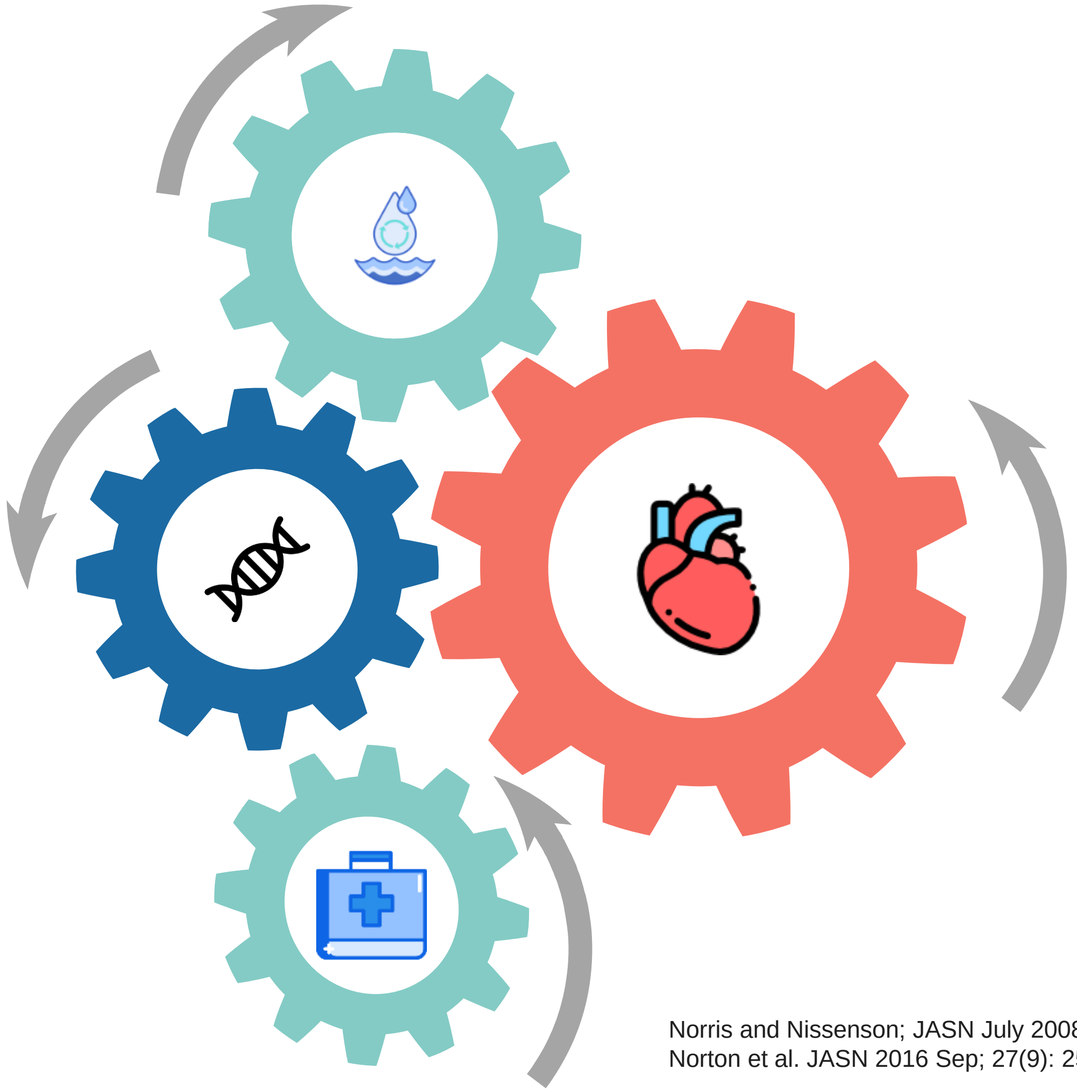
Black, Indigenous/Native, and Latinx/Hispanic Individuals are…



Braveman, Paula A., Shiriki Kumanyika, Jonathan Fielding, Thomas Laveist, Luisa N. Borrell, Ron Manderscheid, and Adewale Troutman. 2011. "Health disparities and health equity: the issue is justice." *American journal of public health* 101 Suppl 1 (Suppl 1):S149-S155. doi: 10.2105/AJPH.2010.300062.

What does race have to do with it?

INFLUENCES ON CKD RISK



CKD Disparities

Interconnected determinants include:

Health Care Access

Disparate access and quality, SES

Environment

Environmental hazards (water, nephrotoxins)
Neighborhood resources and infrastructure
Social capital and cohesion

Co-morbidity, Behavior, and Stress

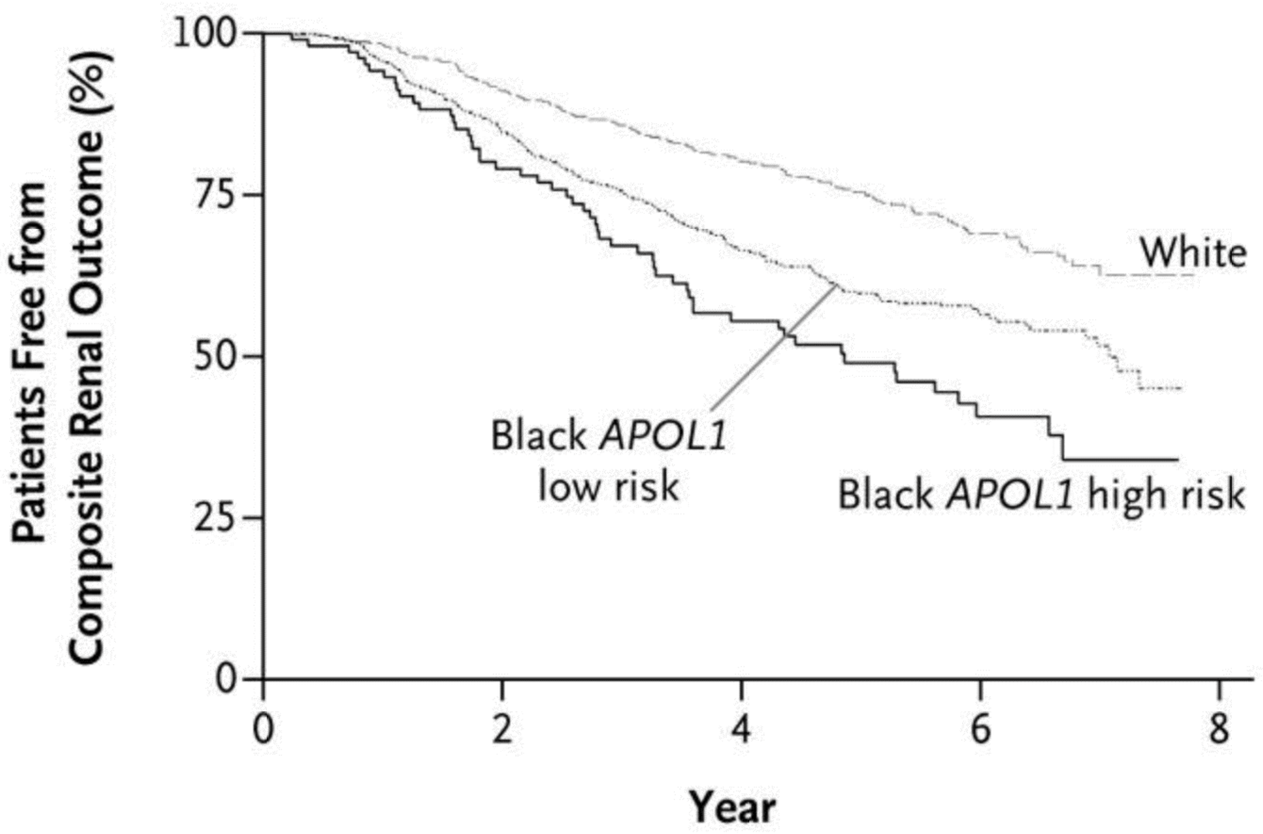
Disparities in CVD, HTN, DM risk
Stress
Health behaviors

Genes and Biology

APOL1 high risk alleles and polymorphisms

Norris and Nissenson; JASN July 2008; 369:2183–2196
Norton et al. JASN 2016 Sep; 27(9): 2576–2595. .

APOL1: PART OF STORY



% of patients with diabetes free from ESKD or 50% GFR reduction **differed** by **race** and APOL1 risk alleles

APOL1 risk alleles **fail** to account for all racial disparities in rates of ESKD and CKD progression

Parsa A,, et al; AASK Study Investigators; CRIC Study Investigators. APOL1 risk variants, race, and progression of chronic kidney disease. N Engl J Med 2013; 369:2183–2196.

The NEW ENGLAND JOURNAL of MEDICINE

CONTEXTUALIZE “RISKS”

Individually based risk factors must be **contextualized**

Race is a key factor upon which social determinants and resources are determined.

Race is not the risk.

SOCIAL DOMAINS (e.g. race)
SOCIAL STRATIFICATION
RACISM

SOCIAL DETERMINANTS

ENVIRONMENT

POOR KIDNEY OUTCOMES

Link B.G. and Phelan J. Social Conditions as Fundamental Causes of Disease. 1995, Journal of Health and Social Behavior.

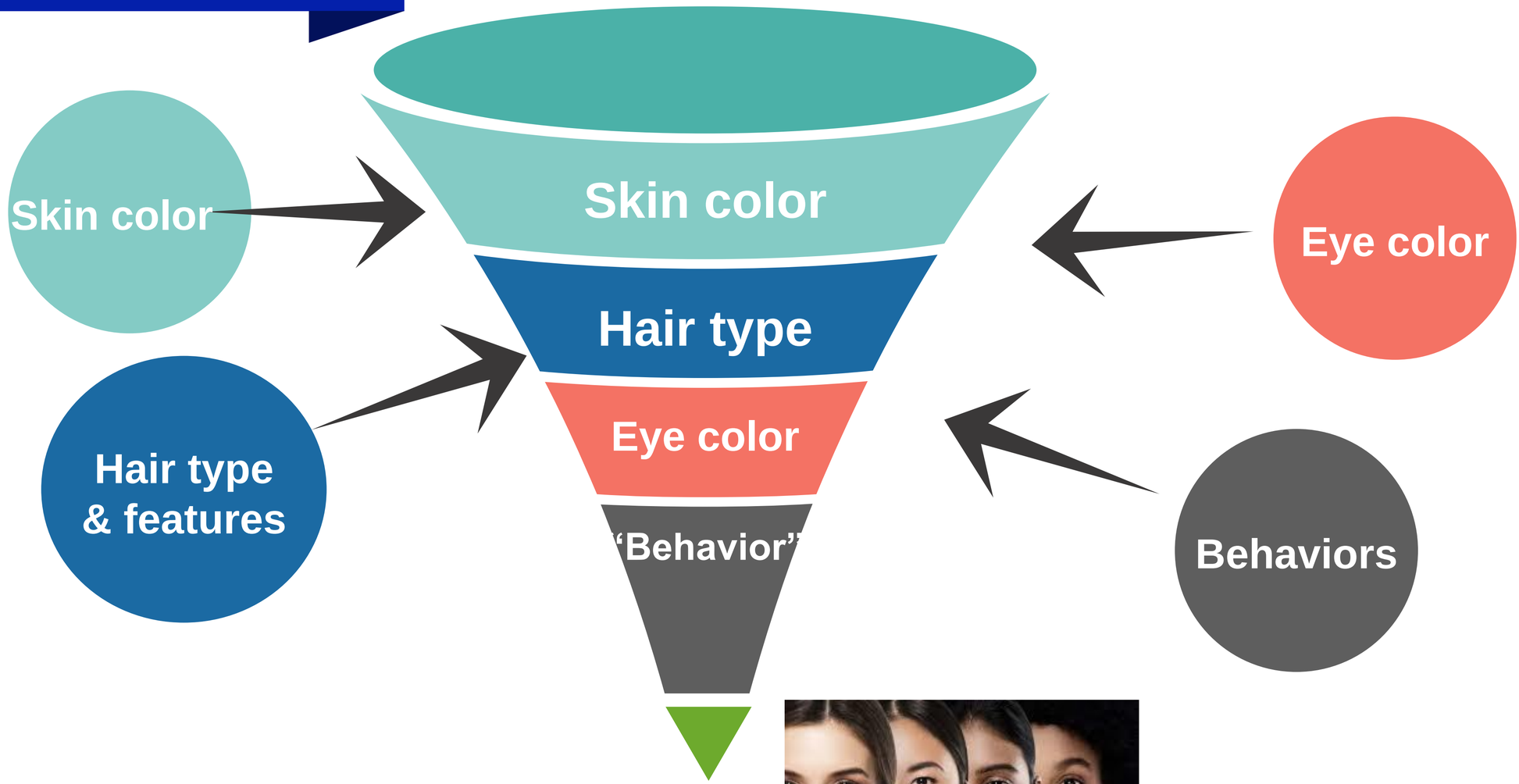
How often does race impact your diagnostic reasoning?

How did race emerge as a potent force in science?

CLASSIFICATION + ORDER

Mammalia

	1758	1767
Primates	*Homo*	*Homo*
	Simia	*Simia*
	Lemur	*Lemur*
	Vespertilio	*Vespertilio*
Bruta	*Elephas*	*Elephas*
	Trichechus	*Trichechus*
	Bradypus	*Bradypus*
	Myrmecophaga	*Myrmecophaga*
	Manis	*Manis*
		Dasypus
Ferae	*Phoca*	*Phoca*
	Canis	*Canis*
	Felis	*Felis*
	Viverra	*Viverra*
	Mustela	*Mustela*
	Ursus	*Ursus*
Bestiae	*Sus*	*Erinaceus*
	Dasypus	*Talpa*
	Erinaceus	*Sorex*
	Talpa	*Didelphis*
	Sorex	
	Didelphis	
Glires	*Rhinoceros*	*Hystrix*
	Hystrix	*Lepus*
	Lepus	*Castor*
	Castor	*Mus*
	Mus	*Sciurus*
	Sciurus	*Noctilio*
Pecora	*Camelus*	*Camelus*
	Moschus	*Moschus*
	Cervus	*Cervus*
	Capra	*Capra*
	Ovis	*Ovis*
	Bos	*Bos*
Belluae	*Equus*	*Equus*
	Hippopotamus	*Hippopotamus*
		Rhinoceros
		Sus
Cete	*Monodon*	*Monodon*
	Balaena	*Balaena*
	Physeter	*Physeter*
	Delphinus	*Delphinus*



1950: UNESCO ON RACE

FALLACIES OF RACISM EXPOSED

UNESCO PUBLISHES DECLARATION BY WORLD'S SCIENTISTS

MORE than fifteen years ago, men and women of goodwill proposed to publish an international declaration which would expose "racial" discrimination and "racial" hatred as unscientific and false, as well as ugly and inhuman. The world at that time was running downhill toward World War II, and so-called "practical" considerations prevented publication of the statement — even if they could not prevent the war.

False myths and superstitions about race contributed directly to the war, and to the murder of peoples which became known as genocide — but victims of the war were of all colours and of all "races". Despite the universality of this agony and destruction, the myths and superstitions still survive — and still threaten the whole of mankind. The need for a sound unchallengeable statement of the facts, to counter this continuing threat, is a matter of urgency.

Accordingly, Unesco has called together a group of the world's most noted scientists, in the fields of biology, genetics, psychology, sociology and anthropology. These scientists have prepared a historic declaration of the known facts about human race.

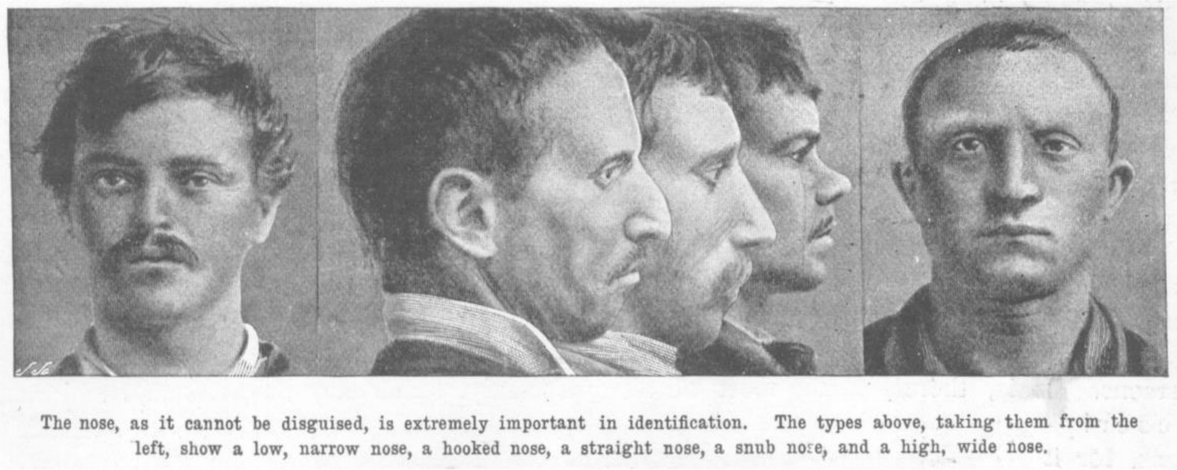
"Scientists have reached general agreement in recognizing that [human]kind is one: that all [persons] belong to the same species, Homo sapiens.

The myth of race has created an enormous amount of human and social damage."

In: The race question

UNESCO 1950

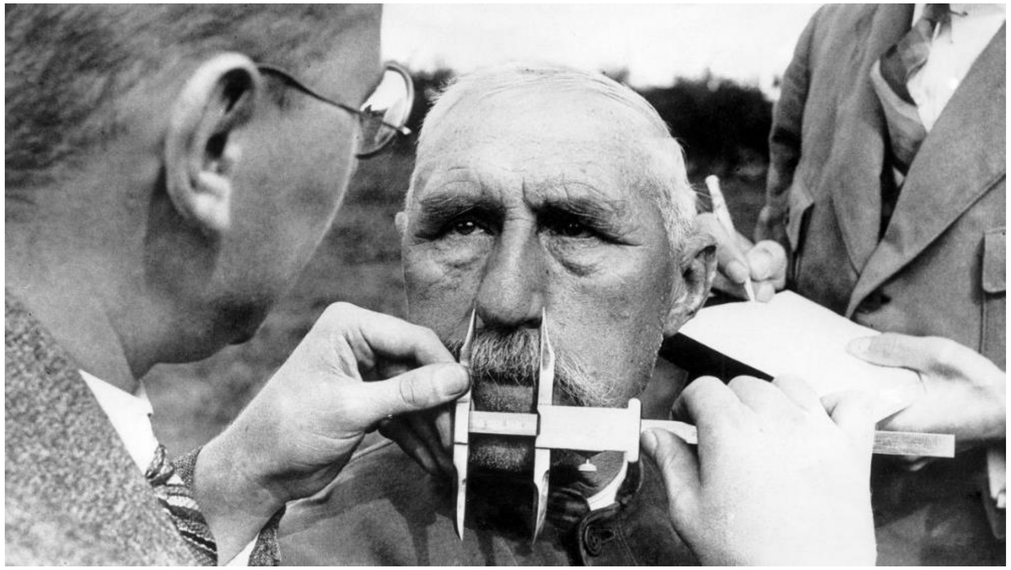
2019: RACE AND RACISM



The nose, as it cannot be disguised, is extremely important in identification. The types above, taking them from the left, show a low, narrow nose, a hooked nose, a straight nose, a snub nose, and a high, wide nose.

Executive Summary: American Association of Physical Anthropologists Statement on Race and Racism (2019)

“Race does not provide an accurate representation of human biological variation…Instead, the Western concept of race must be understood as a classification system that emerged from, and in support of, European colonialism, oppression, and discrimination.

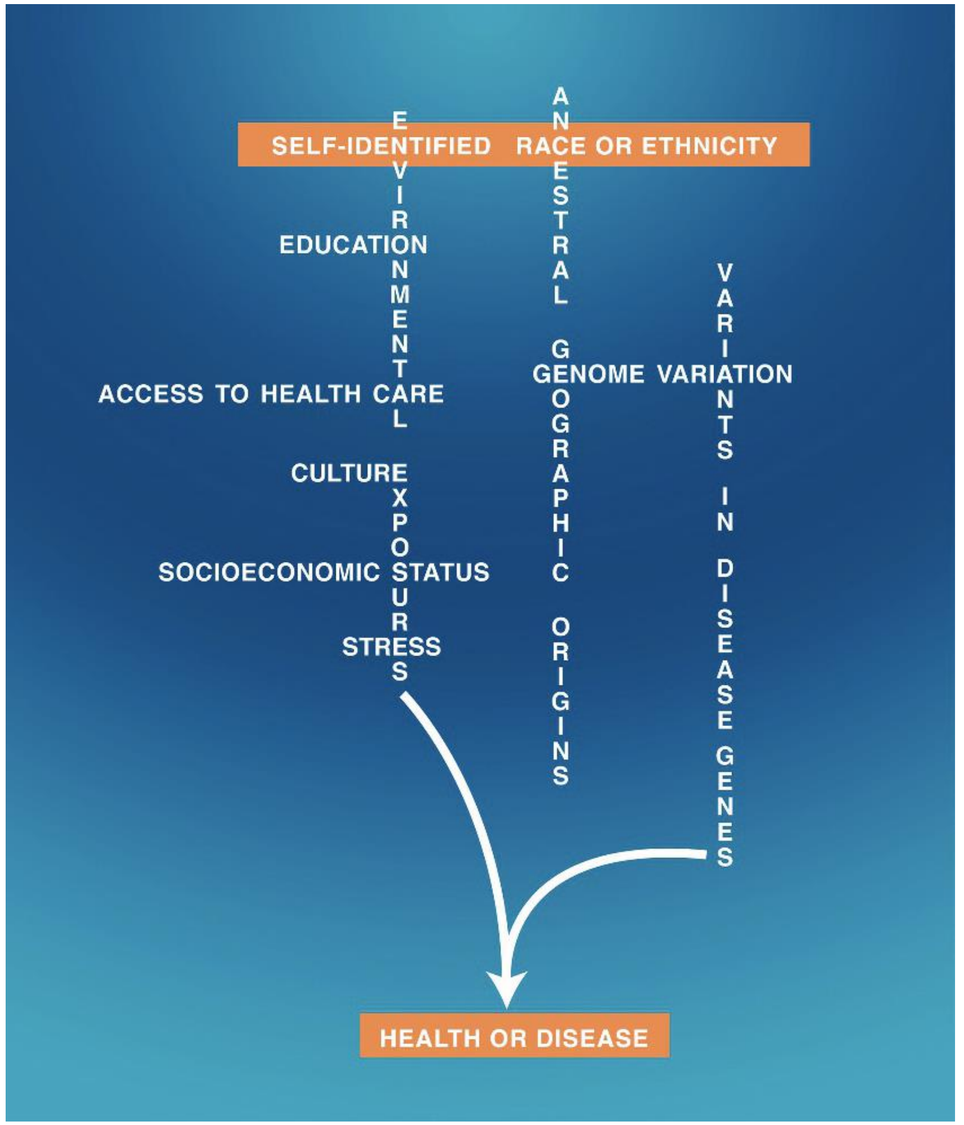


BEYOND RACE AND ETHN.

'Race' and 'ethnicity' are poorly defined terms that serve as **flawed surrogates** for multiple environmental and genetic factors in disease causation, including ancestral geographic origins, socioeconomic status, education and access to health care.

Research must **move beyond these weak and imperfect proxy relationships t**o define the more proximate factors that influence health.

Francis Collins, MD, PhD
16th Director of the NIH
Nature Genetics 2004



CLASSIFICATION ORIGIN

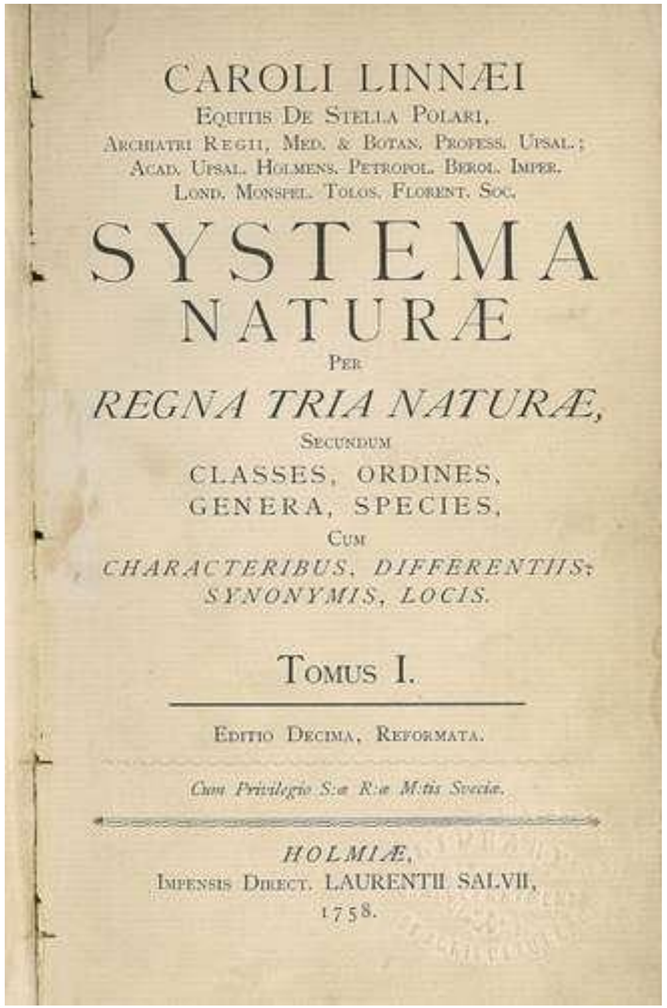
Americanus (American Indian): *reddish*, choleric, and erect; hair black, straight, thick, wide nostrils, scanty beard; obstinate, merry, free; paints himself with fine red lines; *regulated by customs*

Asiaticus (Asian): *sallow*, melancholy, stiff; hair black; dark eyes; severe, haughty, avaricious; covered with loose garments; *ruled by opinions*

Africanus (black): *black*, phlegmatic, relaxed; hair black, frizzled; skin silky, nose flat; lips tumid; women without shame, they lactate profusely; crafty, indolent, negligent; anoints himself with grease; *governed by caprice*

Europeaeus (white): *white*, sanguine, muscular; hair long, flowing; eyes blue; gentle, acute, inventive; covers himself with close vestments; *governed by laws*

Racial classification scheme by Linneaus (as summarized from *Systemae Naturae*[25] p. 164)


CAROLI LINNÆI
EQUITIS DE STELLA POLARI,
ARCHIATRI REGII, MED. & BOTAN. PROFESS. UPSAL.;
ACAD. UPSAL. HOLMENS. PETROPOL. BEROL. IMPER.
LOND. MONSPEL. TOLOS. FLORENT. SOC.

SYSTEMA NATURÆ

PER

REGNA TRIA NATURÆ,

SECUNDUM

CLASSES, ORDINES,
GENERA, SPECIES,

CUM

CHARACTERIBUS, DIFFERENTIIS,
SYNONYMIS, LOCIS.

TOMUS I.

EDITIO DECIMA, REFORMATA.

Cum Privilegio S:æ R:æ M:tis Sveciæ.

HOLMIÆ,
IMPENSIS DIRECT. LAURENTII SALVII,
1758.

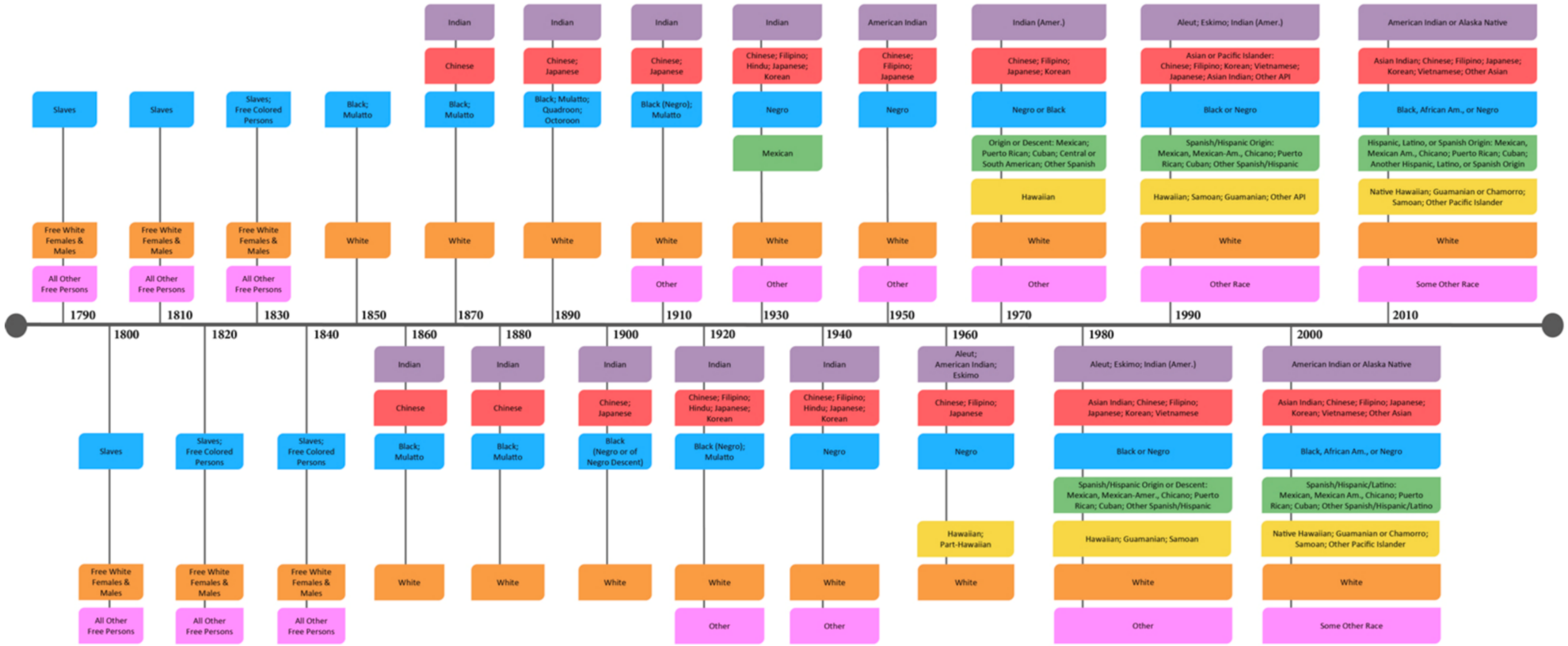
Harawa NT, Ford CL. The foundation of modern racial categories and implications for research on black/white disparities in health. *Ethn Dis.* 2009;19(2):209-217.

RACE: SOCIO-POLITICAL

United States® Census Bureau

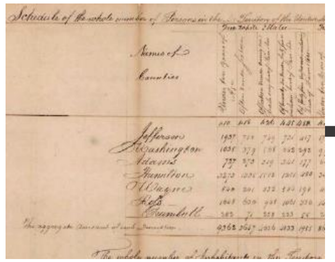
Measuring Race and Ethnicity Across the Decades: 1790–2010

Mapped to 1997 U.S. Office of Management and Budget Classification Standards



1790

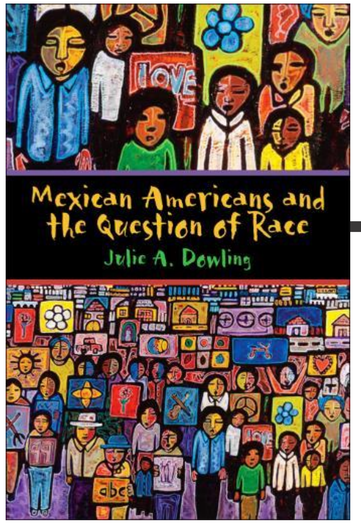
Counts “whites”
“slaves” and
“other free persons”



United States® Census Bureau

1880

Enumerators are instructed to pay careful attention to respondent’s “color”



1930

“Mexican” is counted as a race and subsequently removed
Prior to this Mexicans had been categorized as “white”

1970

“Korean” is added back with other Asian groups

A question re: origin or descent is included to ID Mexican, Cuban, PR, Other Hispanic

1980

Added Q: “Is this Person of Spanish/Hispanic Origin”

4 Races include: White, Black, AI/AN Asian or Pacific Islander and “Other”

United States® Census Bureau

2000

For the first time, respondents Can select more than one race

2010

“Other” is the nation’s third largest racial Category in 2000 and 2010

2020

Debates over “citizenship” Question dominate controversy

RACIALIZATION STRATIFICATION

“Racialization” refers to a process whereby a group is defined by their race.

“Racialized” social systems hierarchically categorize individuals by race.

This may begin by attributing “meaning” to identity, based on skin color and other phenotypic features.

New Yorker

Bonilla-Silva E. Rethinking Racism: Toward a Structural Interpretation. American Sociological Review 1997;62(3):465-480. DOI: 10.2307/2657316.

RACIAL STRATIFICATION

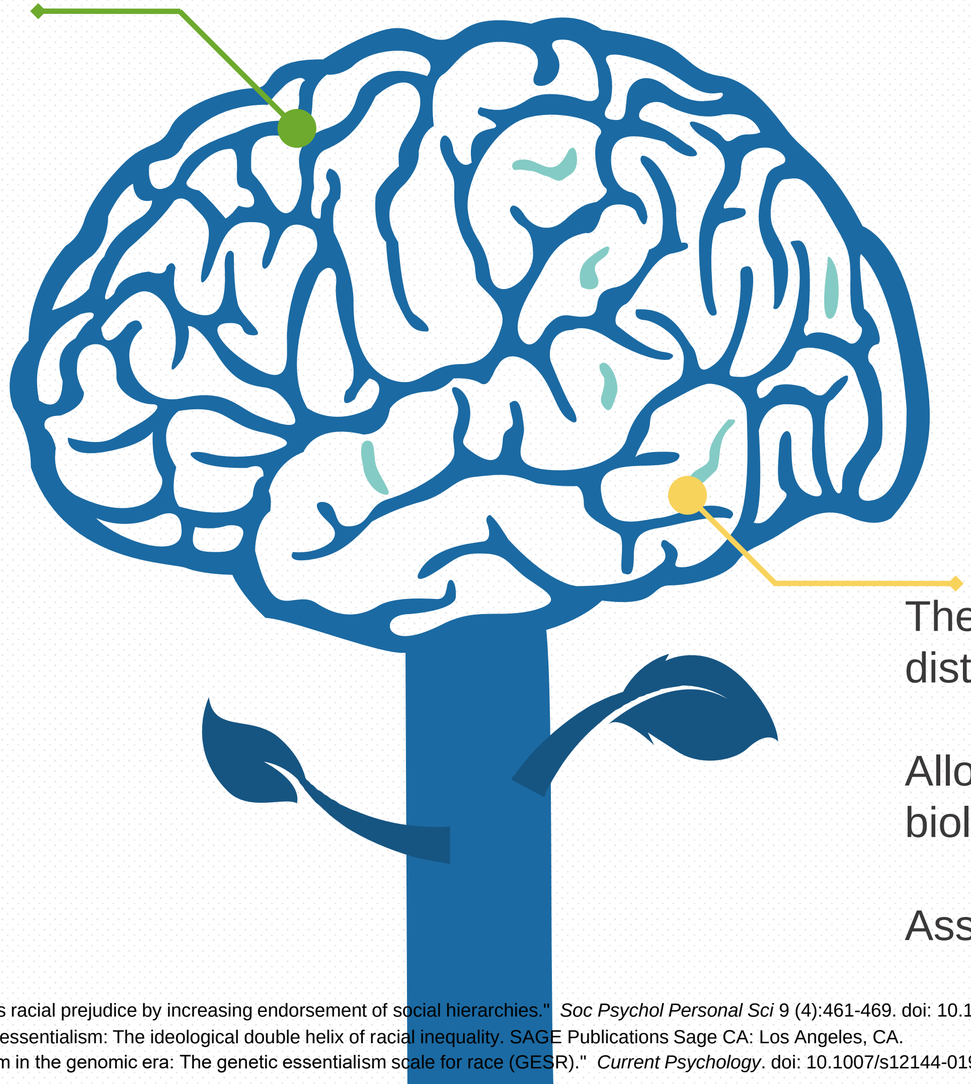
The race placed in the superior position receives **greater economic remuneration** and access to **better occupations** and/or prospects in the labor market, occupies a **greater position in the political system**, is granted **higher social estimation** (viewed as ‘smarter”), often has the l**icense to draw physical segregation** as well as social etiquette between itself and others

New Yorker

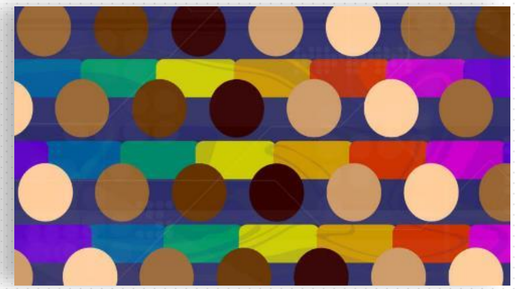
Bonilla-Silva E. Rethinking Racism: Toward a Structural Interpretation. American Sociological Review 1997;62(3):465-480. DOI: 10.2307/2657316.

Biological determinism

A belief that individual behaviors are determined by inherited factors including genes, and other attributes that are biologically transferred



Racial essentialism



The belief that races capture biological distinctions with defining core essences

Allows for categorization of large groups of biologically heterogenous people as same

Associated with racial bias

Mandalaywala, T. M., D. M. Amodio, and M. Rhodes. 2018. "Essentialism promotes racial prejudice by increasing endorsement of social hierarchies." *Soc Psychol Personal Sci* 9 (4):461-469. doi: 10.1177/1948550617707020.

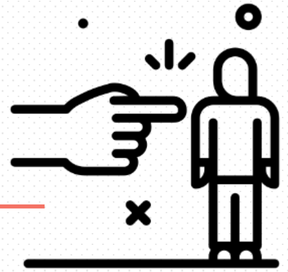
Byrd, W Carson, and Matthew W Hughey. 2015. Biological determinism and racial essentialism: The ideological double helix of racial inequality. SAGE Publications Sage CA: Los Angeles, CA.

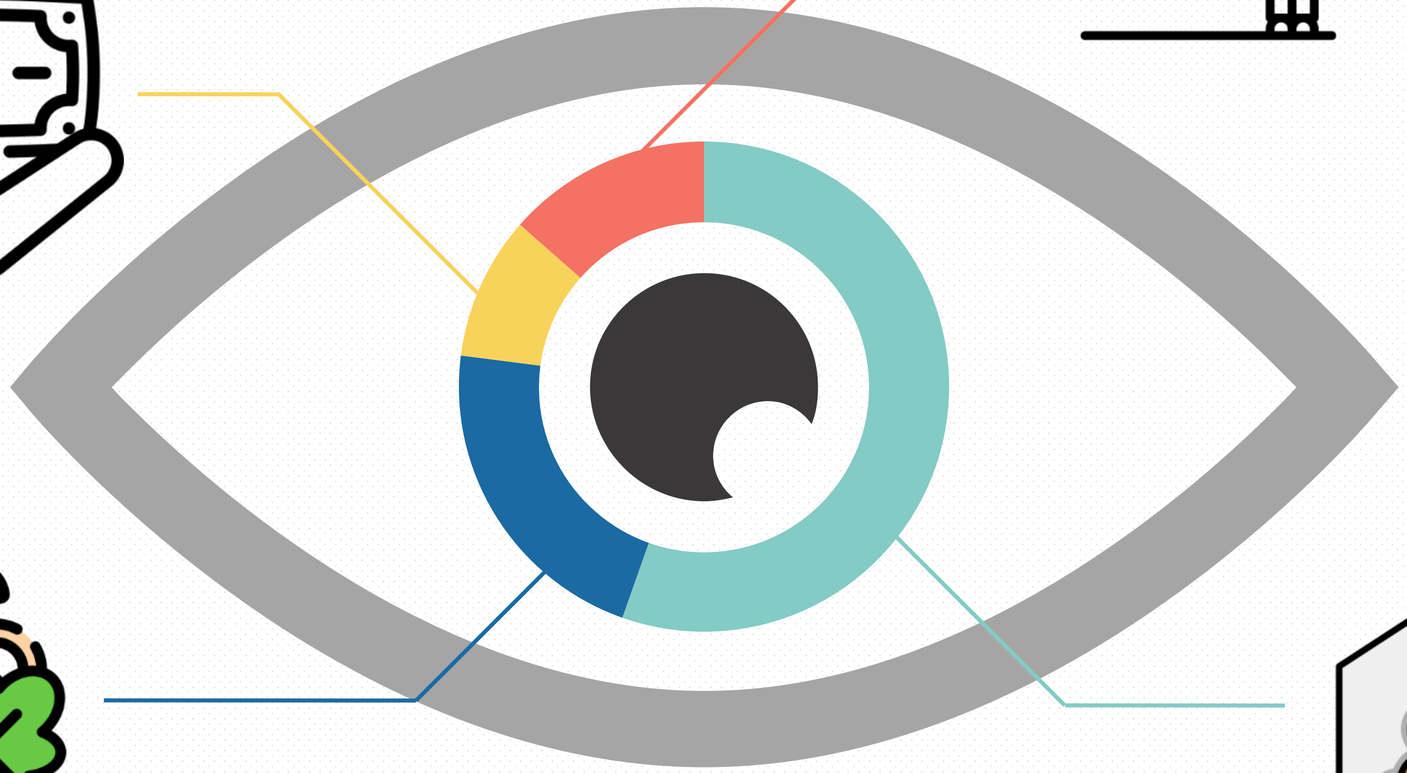
Yaylacı, Şule, Wendy Roth, and Kaitlyn Jaffe. 2019. "Measuring racial essentialism in the genomic era: The genetic essentialism scale for race (GESR)." *Current Psychology*. doi: 10.1007/s12144-019-00311-z.

What is race measuring?

Socioeconomic status

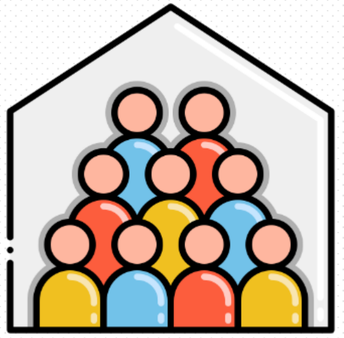
Racism and discrimination



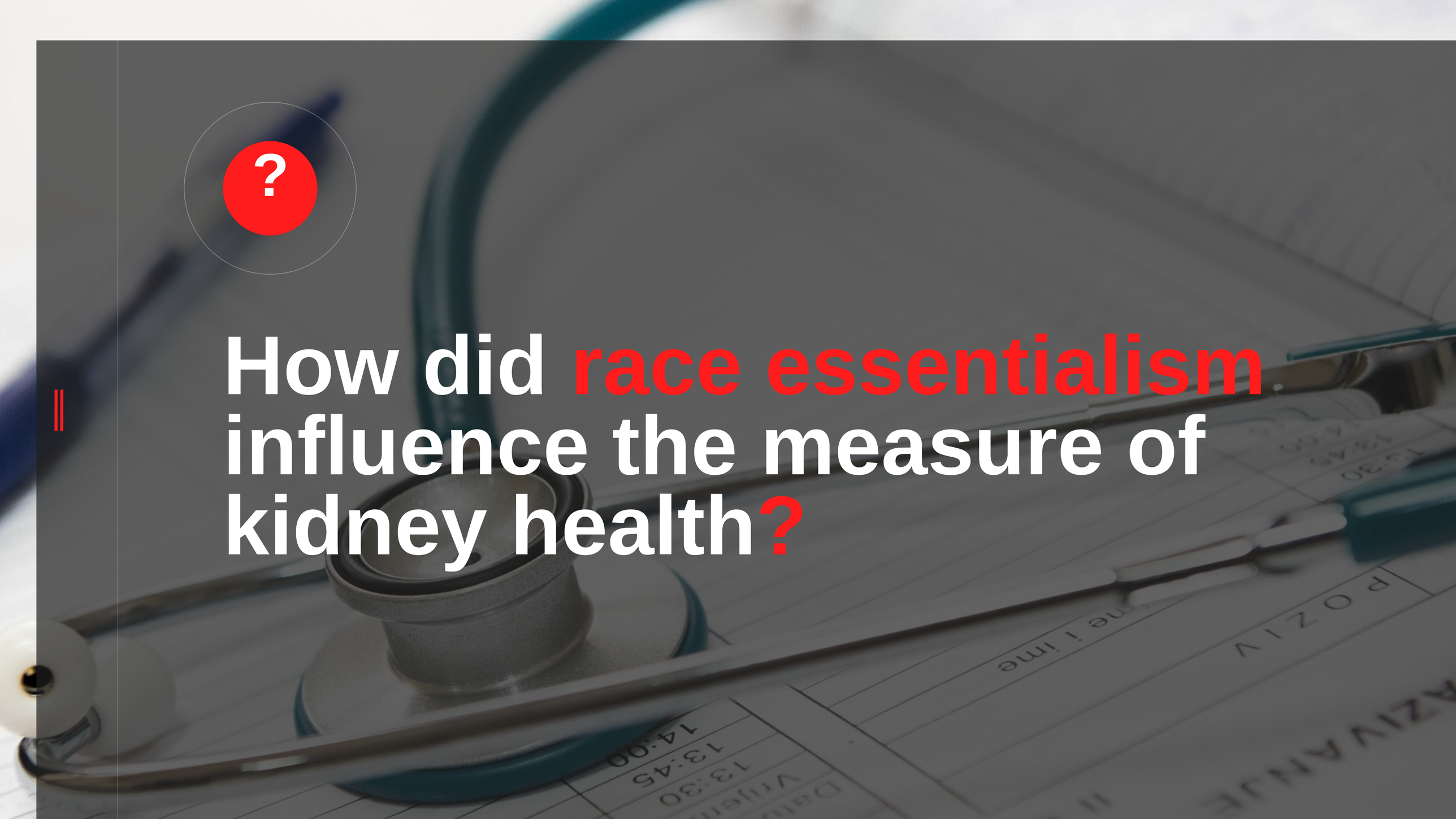


Culture, behavior

Ancestry or genetics



How often does race impact your clinical decision-making?



How did race essentialism influence the measure of kidney health?

EQUATION EVOLUTION

Cockgroft Gault

eGFR = [(140-Age) x (Mass in kg) x(0.85 if female)] / (72 x Serum creatinine)

1976

Schwarz equation

eGFR = (d x Height)/(serum creatinine)

*d is based on age group of child and accounts for LBW

1987

MDRD

eGFR = 186 × Serum $Cr^{-1.154}$ × $age^{-0.203}$ × 1.212 (**if black**) × 0.742 (if female)

* **21% higher eGFR if Black vs. non-Black**

1999

2009

CKD-EPI

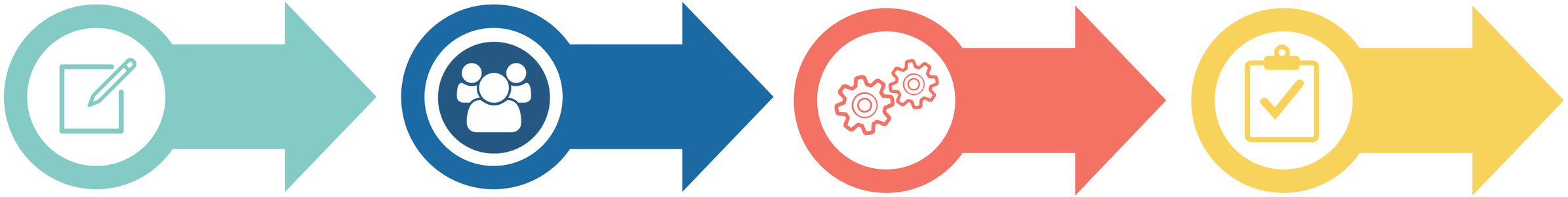
eGFR = 141 × $\min(Scr/k,1)^{a}$ × $\max(Scr/k,1)^{-1.209}$ × 0.993^{Age} × (1.018 if female) × **(1.159) if black). 16% higher eGFR if Black vs. non-Black**

Levey AS, Stevens LA, Schmid CH, et al. A new equation to estimate glomerular filtration rate [published correction appears in Ann Intern Med. 2011 Sep 20;155(6):408]. *Ann Intern Med*. 2009;150(9):604-612. doi:10.7326/0003-4819-150-9-200905050-00006

Schwartz GJ, Muñoz A, Schneider MF, et al. New equations to estimate GFR in children with CKD. *J Am Soc Nephrol*. 2009;20(3):629-637. doi:10.1681/ASN.2008030287

Levey, A. S., Bosch, J. P., Lewis, J. B., Greene, T., Rogers, N., & Roth, D. (1999). A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. *Annals of internal medicine*, *130*(6), 461-470.

CKD-EPI: Develop a new estimating equation (because current equations limited in precision and underestimate measured GFR at higher levels)



Design

Cross sectional study

NHANES 1999-2006 used for prevalence estimates

Patients

N = 8254
Equation developed using 10 studies (iothalamate)

Validated using 16 studies (n=3896) (Iothal, Iohexol, EDTA)

Methods

Stepwise multivariable regression to determine variables that predict GFR
* Cr, sex, race, and age

Internal:prediction GFR compared to mGFR
External validation: prediction GFR compared to mGFR and other markers

Results

“Age, race, and sex [are] surrogates for non-GFR determinants of serum creatinine. These variables are associated with muscle mass, the main determinant of creatinine generation.”

Levey, A. S., Bosch, J. P., Lewis, J. B., Greene, T., Rogers, N., & Roth, D. (1999). A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. *Annals of internal medicine*, *130*(6), 461-470.

MISUSE OF RACE

Evidence supporting a-priori notion that Black race is associated with greater muscle mass have been debunked:

- Small sample sizes
- Selection bias, convenience samples
- “Healthy” participants
- No validated analytic tool for muscle mass determination in several studies
- Inconsistent often external determination of “race”

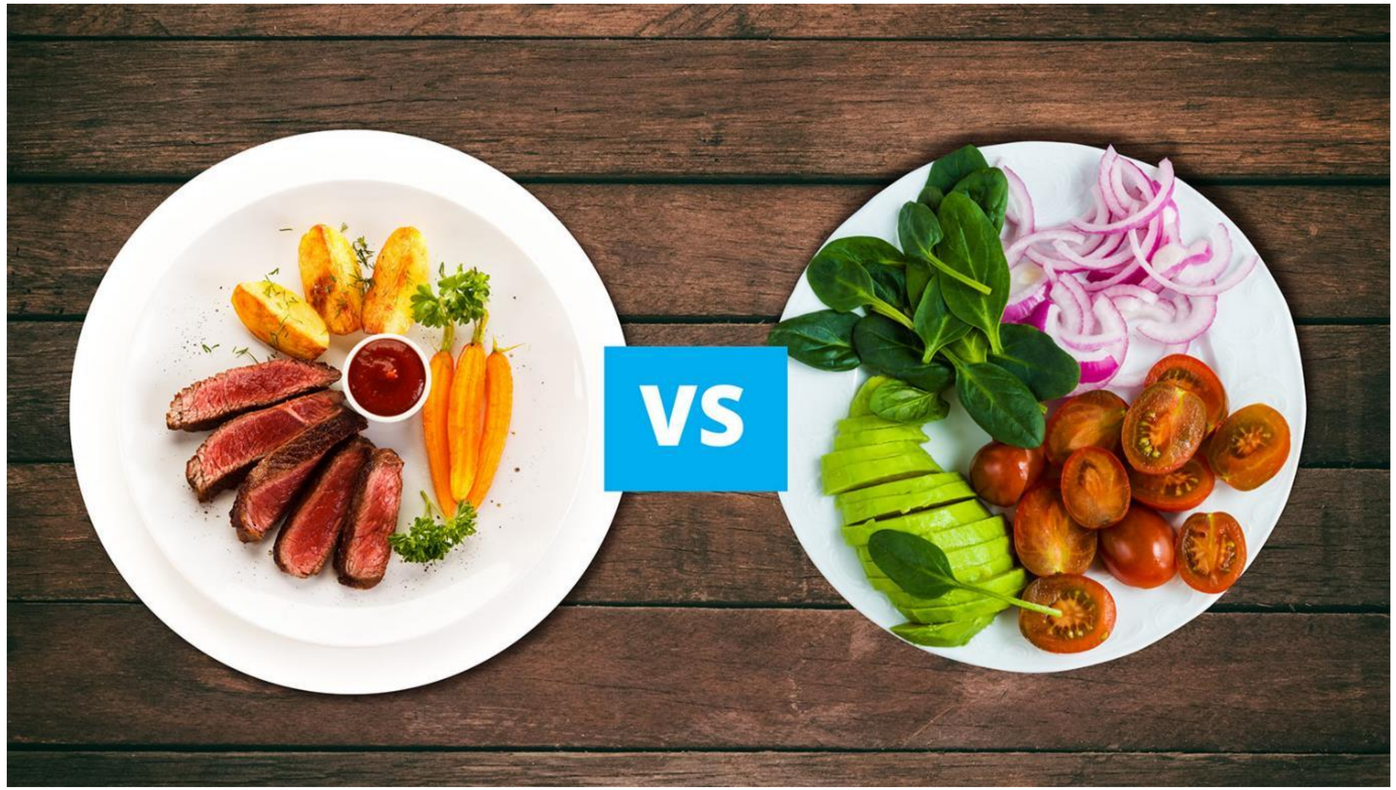
Gallagher D, Visser M, De Meersman RE, Sepu´lveda D, Baumgartner RN, Pierson RN, Harris T, Heymsfield SB: Appendicular skeletal muscle mass: Effects of age, gender, and ethnicity. J Appl Physiol (1985) 83: 229–239, 1997
Cohn, S. H., et al. "Body elemental composition: comparison between black and white adults." *American Journal of Physiology-Endocrinology And Metabolism* 232.4 (1977): E419.
Harsha, David W., Ralph R. Frerichs, and Gerald S. Berenson. "Densitometry and anthropometry of black and white children." *Human biology* (1978): 261-280.
Worrall, J. G., et al. "Racial variation in serum creatine kinase unrelated to lean body mass." *Rheumatology* 29.5 (1990): 371-373.
Hsu, Joy, et al. "Higher serum creatinine concentrations in black patients with chronic kidney disease: beyond nutritional status and body composition." *Clinical Journal of the American Society of Nephrology* 3.4 (2008): 992-99

COMPLEX AND VARIABLE

Cr based eGFR estimates problematic in acute kidney injury

eGFR is an ESTIMATE of kidney function and factors like albuminuria are essential markers for prognostication

Variability with diet, muscle mass, medications, pregnancy, tubular secretion, etc.



eGFR AND AWARENESS

National Institute of Diabetes and Digestive and Kidney Diseases

1950 70 years 2020

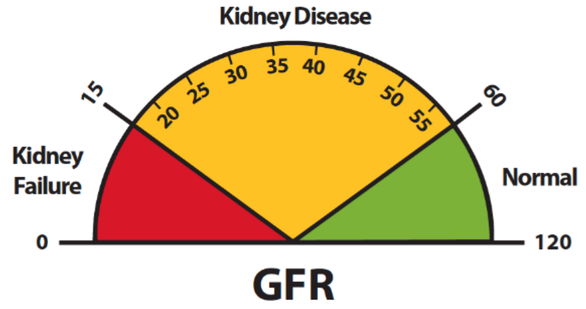
eGFR is a key component of educational materials aimed to enhance patient knowledge and awareness

How well are your kidneys working?

Explaining Your Kidney Test Results

Your GFR result on _____ was _____.
Date

- ☐ A GFR of *60 or higher* is in the normal range.
- ☐ A GFR *below 60* may mean kidney disease.
- ☐ A GFR of *15 or lower* may mean kidney failure.



What is GFR?

GFR stands for glomerular filtration rate. GFR is a measure of how well your kidneys filter blood.

RACE AND “RISK”

National Kidney Foundation™

Race, sex, and age related differences in estimated GFR are components of existing patient-facing educational materials which reinforce the idea that **race confers fundamental biological difference in kidney function**

THE SAME SERUM CREATININE: VERY DIFFERENT eGFR			
	 22-YR-OLD BLACK MAN	 58-YR-OLD WHITE MAN	 80-YR-OLD WHITE WOMAN
Serum creatinine	1.2 mg/dL	1.2 mg/dL	1.2 mg/dL
GFR as estimated by the MDRD equation	98 mL/min/1.73 m²	66 mL/min/1.73 m²	46 mL/min/1.73 m²
Kidney function	Normal GFR *or* stage 1 CKD if kidney damage is also present	Stage 2 CKD if kidney damage is also present	Stage 3 CKD

RACIALIZED HARMS

National Kidney Foundation™

981,038 new individuals with GFR 30-59 (RAS-I, SGLT2-inhibitor use)

67,957 with new GFR <30 who need KRT education and discussion re: LDKT

Removal of Black race coefficient resulted in reduction by **1.9** years in median wait time for transplant eligibility (eGFR <20)

CKD is classified based on: · Cause (C) · GFR (G) · Albuminuria (A)				Albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30-299 mg/g 3-29 mg/mmol	≥300 mg/g ≥30 mg/mmol
GFR categories (ml/min/1.73m²) Description and range	G1	Normal or high	≥90	1 if CKD	Treat 1	Refer* 2
	G2	Mildly decreased	60-89	1 if CKD	Treat 1	Refer* 2
	G3a	Mildly to moderately decreased	45-59	Treat 1	Treat 2	Refer 3
	G3b	Moderately to severely decreased	30-44	Treat 2	Treat 3	Refer 3
	G4	Severely decreased	15-29	Refer* 3	Refer* 3	Refer 4+
	G5	Kidney failure	<15	Refer 4+	Refer 4+	Refer 4+

Bragg-Gresham J, Zhang X, Le D, et al. Prevalence of Chronic Kidney Disease Among Black Individuals in the US After Removal of the Black Race Coefficient From a Glomerular Filtration Rate Estimating Equation. JAMA Netw Open. 2021;4(1):e2035636. doi:10.1001/jamanetworkopen.2020.35636
Diao JA, Wu GJ, Taylor HA, et al. Clinical Implications of Removing Race From Estimates of Kidney Function. Jama. 2020.
Zelnick LR, Leca N, Young B, Bansal N. Association of the estimated glomerular filtration rate with vs without a coefficient for race with time to eligibility for kidney transplant. JAMA Netw Open. 2021;4(1):e2034004.
Vassalotti, Joseph A., et al. "Practical approach to detection and management of chronic kidney disease for the primary care clinician." *The American journal of medicine* 129.2 (2016): 153-162.
Norris KC, Eneanya ND, Boulware LE. Removal of Race From Estimates of Kidney Function: First, Do No Harm. Jama. 2020
Hoenig, M. P., et al. (2022). "Removal of the Black race coefficient from the estimated glomerular filtration equation improves transplant eligibility for Black patients at a single center." Clin Transplant **36**(2): e14467.
Inker, L. A., et al. (2021). "New Creatinine- and Cystatin C–Based Equations to Estimate GFR without Race." New England Journal of Medicine **385**(19): 1737-1749.
Boulware LE, Purnell TS, Mohottige D. Systemic Kidney Transplant Inequities for Black Individuals: Examining the Contribution of Racialized Kidney Function Estimating Equations. *JAMA Netw Open.* 2021;4(1):e2034630.

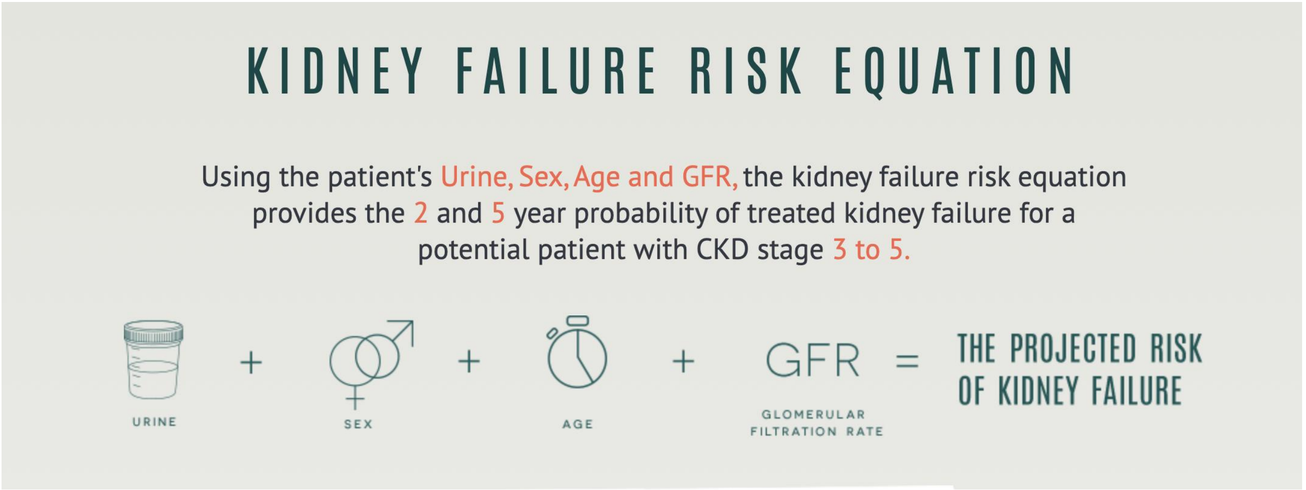
CLINICAL BOTTOM LINE

2021 (race-free) eGFRcr **can help estimate** kidney function **with caveats

Serum cystatinC can help among individuals with CKD or at risk for CKD

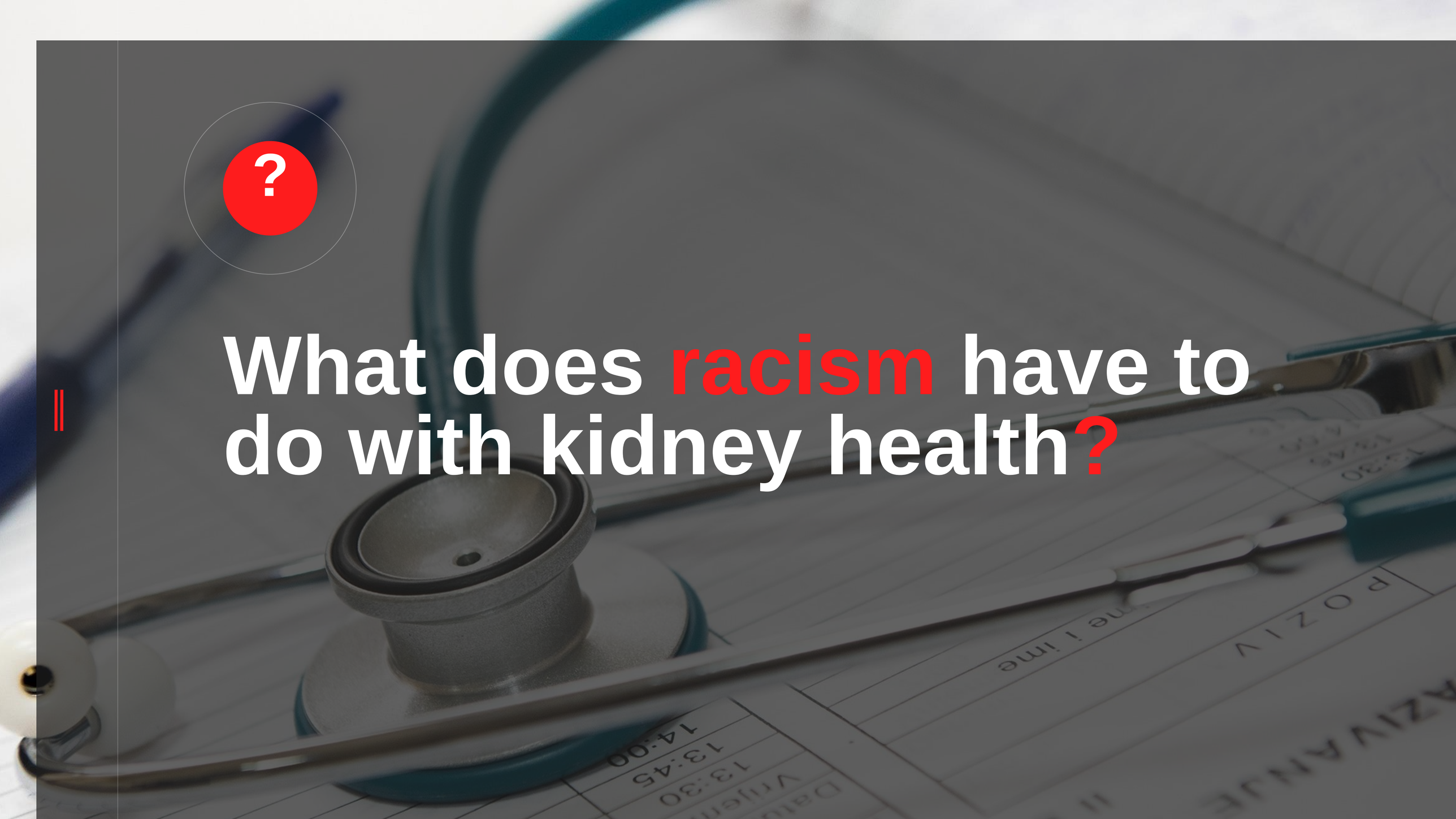
eGFRcys may underestimate actual GFR in individuals who use steroids, have hypothyroidism, smoke cigarettes etc

KFRE **prognosticates** well for ESKD



Bundy JD, Mills KT, Anderson AH, Yang W, Chen J, He J. Prediction of End-Stage Kidney Disease Using Estimated Glomerular Filtration Rate With and Without Race. *Ann Intern Med.* 2022;175(3):305-313.

Tangri N, Stevens LA, Griffith J, et al. A predictive model for progression of chronic kidney disease to kidney failure. *Jama.* 2011;305(15):1553-1559.



What does racism have to do with kidney health?

“Racism is a system of power that delineates differential value resources and opportunities to individuals based on their racialized social status and racism is a primary mechanism through which racial and other health inequities are generated.”

Feagin, Joe, and Zinobia Bennefield. 2014. "Systemic racism and US health care." *Social science & medicine* 103:7-14.

Jones, C. P. 2000. "Levels of racism: a theoretic framework and a gardener's tale." *Am J Public Health* 90 (8):1212-5.

- Mohottige, D; Ford, C; Jones, C; Boulware LE; and Norris K. Use of Race in Kidney Research and Medicine: Distinguishing between Society and Biology. CJASN

INTERPERSONAL

NDIVIDUAL

CULTURAL

STRUCTURAL/INSTITUTIONAL

Jones, C. P. 2000. "Levels of racism: a theoretic framework and a gardener's tale." *Am J Public Health* 90 (8):1212-5. doi: 10.2105/ajph.90.8.1212.

STRUCTURAL RACISM

Environmental, and occupational inequity

Inequity in health care access and delivery

Targeted marketing of health-harming products

Psychosocial stressors

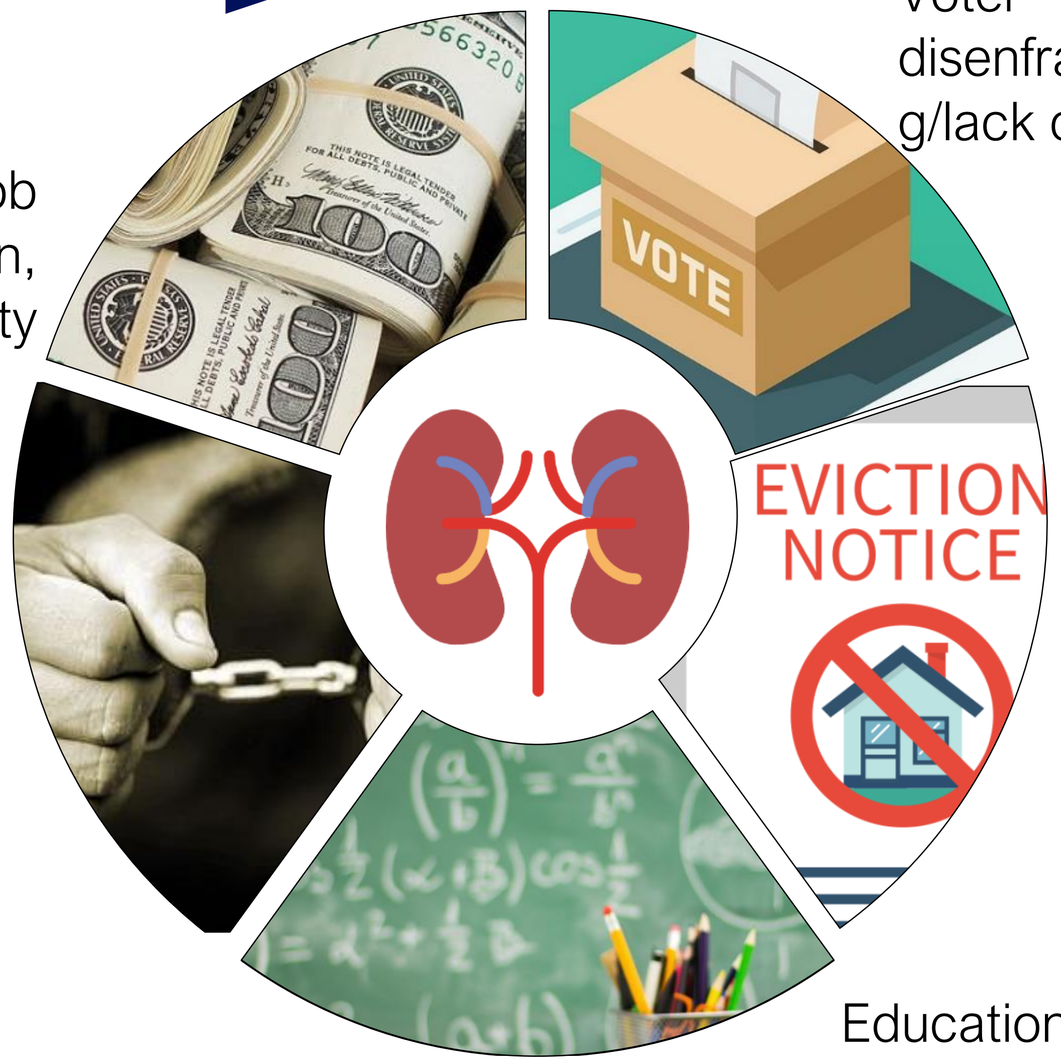
Neighborhood resources: redlining and disinvestment

Bailey ZD, Krueger N, Agénor M Graves J, Laos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. The Lancet 2017; 389(10077): 1453-1463.
Mohottige, D., et al. (2021). "Time to Repair the Effects of Racism on Kidney Health Inequity." American Journal of Kidney Diseases.
Purnell, T. S., et al. (2021). "Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation." American Journal of Transplantation **n/a**(n/a).

STRUCTURAL RACISM

Voter disenfranchisement/gerrymandering/lack of political representation

Economic inequity, job discrimination, job segregation, wage inequity



Housing insecurity/unregulated gentrification and racialized disinvestment

Criminalization, policing and neighborhood safety

Educational inequity

Mohottige, D., et al. (2021). "Time to Repair the Effects of Racism on Kidney Health Inequity." American Journal of Kidney Diseases.
Purnell, T. S., et al. (2021). "Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation." American Journal of Transplantation **n/a**(n/a).
Alson JG, Robinson WR, Pittman L, Doll KM. Incorporating Measures of Structural Racism into Population Studies of Reproductive Health in the United States: A Narrative Review. Health EquBailey ZD, Krueger N, Agénor M Graves J, Laos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. The Lancet 2017; 389(10077): 1453-1463.

EVERY DAY RACISM

HEALTH EQUITY

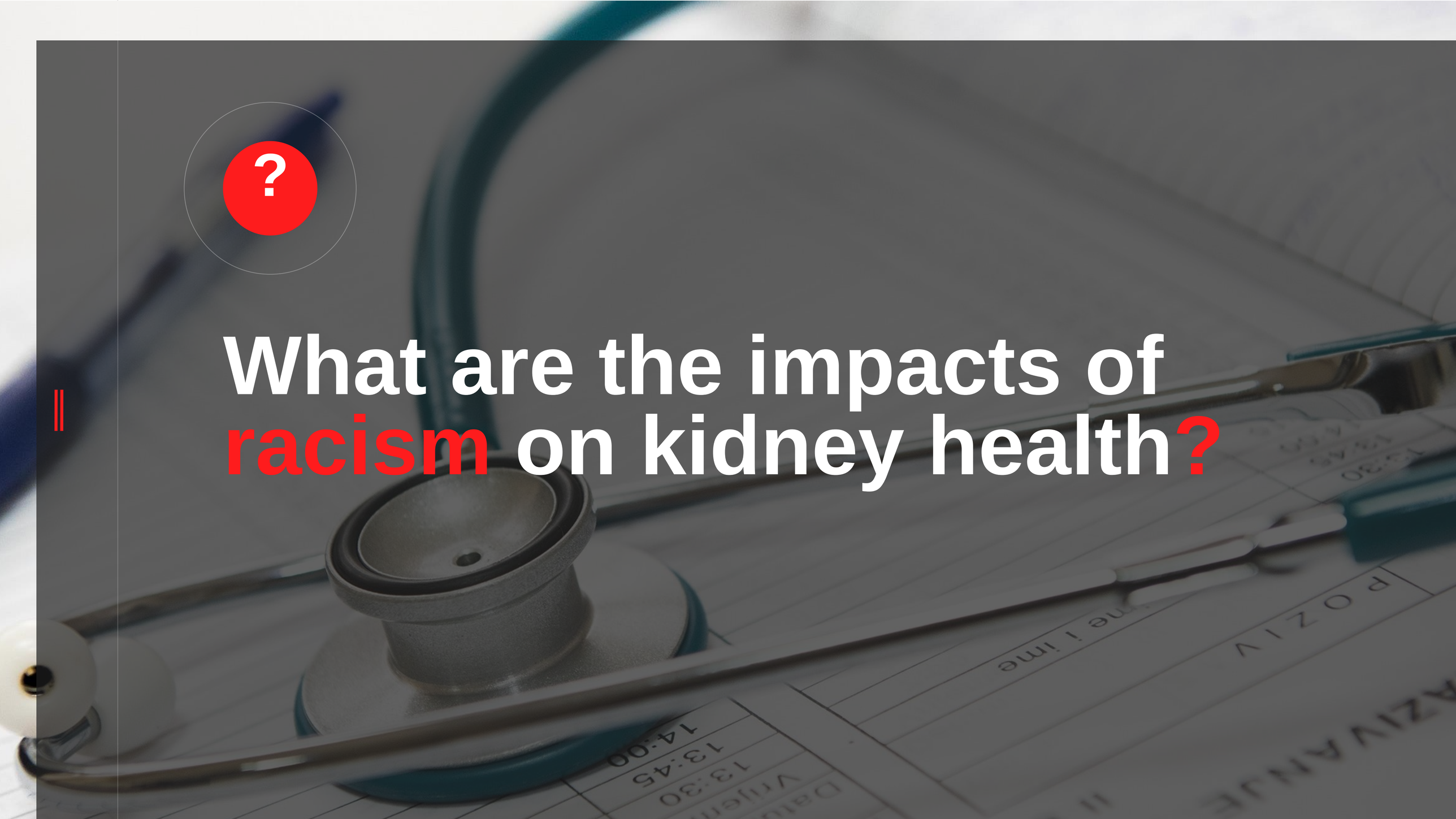
By Michael Sun, Tomasz Oliwa, Monica E. Peek, and Elizabeth L. Tung

Negative Patient Descriptors: Documenting Racial Bias In The Electronic Health Record

Compared with White patients, Black patients had **2.54 times** the odds of having at least one negative descriptor in the history and physical notes

Sun, M., et al. (2022). "Negative Patient Descriptors: Documenting Racial Bias In The Electronic Health Record." Health Affairs **41**(2): 203-211.
A, P. Goddu, K. J. O'Conor, S. Lanzkron, M. O. Saheed, S. Saha, M. E. Peek, C. Haywood, Jr., and M. C. Beach. 2018. "Do Words Matter? Stigmatizing Language and the Transmission of Bias in the Medical Record." *J Gen Intern Med* 33 (5):685-691. doi: 10.1007/s11606-017-4289-2.
Illustration Mike Casal, Johns Hopkins University

HealthAffairs



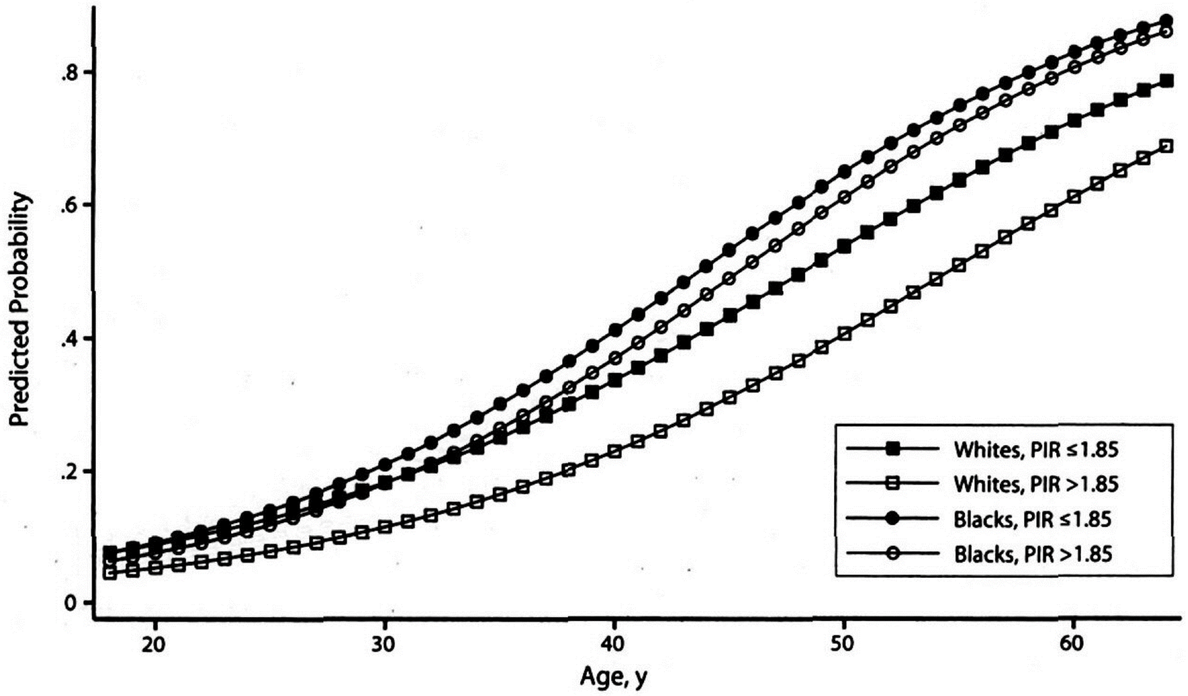
What are the impacts of racism on kidney health?

PRE:CKD WEATHERING

Black individuals experience early and deleterious health outcomes because of the cumulative impact of encountering **social, economic, and political adversity**, as well as persistent and high-effort coping

"Weathering" and Age Patterns of Allostatic Load Scores Among Blacks and Whites in the United States

Arline T. Geronimus, ScD, Margaret Hicken, MPH, Danya Keene, MAT, and John Bound, PhD



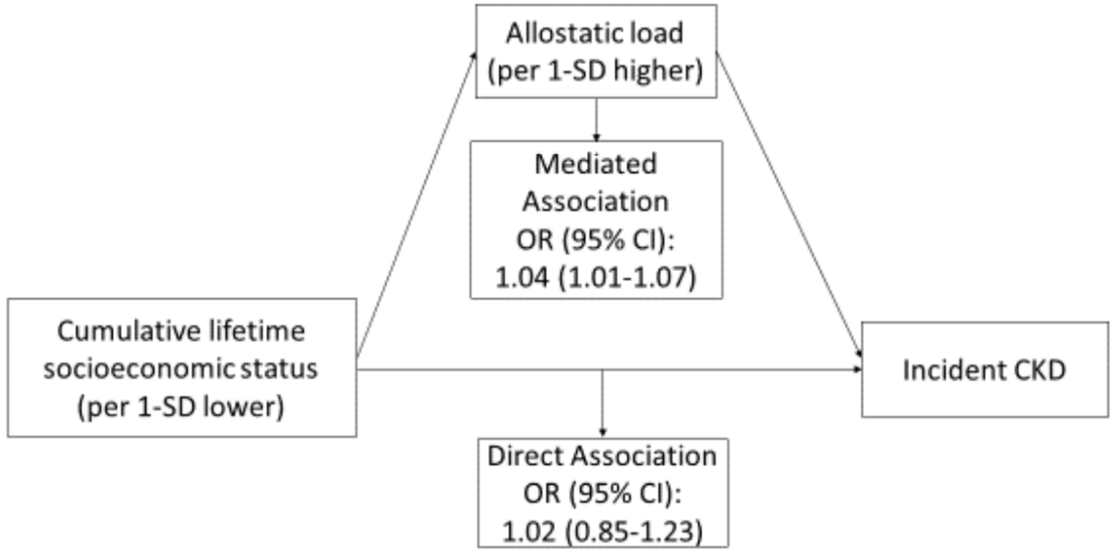
Note. PIR = poverty income ratio.

FIGURE 2—Probability of having an allostatic load of 4 or higher, as predicted by poverty income ratio (a) and poverty income ratio and race (b).

Geronimus AT, Hicken M, Keene D, Bound J. "Weathering" and age patterns of allostatic load scores among blacks and whites in the United States. American Journal of Public Health 2006; 96(5): 826-833.

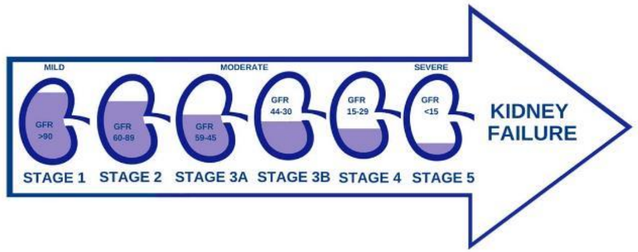
CKD: WEATHERING

Lower cumulative lifetime SES was **associated with CKD prevalence** and modestly with CKD incidence and eGFR decline via baseline allostatic load



Lunyera, J., J. W. Stanifer, C. A. Davenport, D. Mohottige, N. A. Bhavsar, J. J. Scialla, J. Pendergast, L. E. Boulware, and C. J. Diamantidis. 2020. "Life Course Socioeconomic Status, Allostatic Load, and Kidney Health in Black Americans." *Clin J Am Soc Nephrol* 15 (3):341-348. doi: 10.2215/cjn.08430719.

CKD Disparity



Greater CKD incidence in Black vs. White individuals

Greater mortality among young (<65 yo) Black vs. White individuals with CKD

Delayed referral to nephrology care and less pre-dialysis kidney care and transplant discussion

Evidence and root

Great exposure among Black vs. White individuals to discrimination, limited health-promoting resources and stress

Poorer quality communication around KRT options

Racial residential segregation associated with less likelihood of receiving pre-dialysis care

Purrnell TS, Simpson DC, Callender CO, Boulware LE. Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation. *American Journal of Transplantation.* 2021;n/a(n/a).
Mohottige, D., McElroy, L., and Boulware LE. (2021). "A Cascade of Structural Barriers Contributing to Racial Kidney Transplant Inequities." Advances in chronic kidney disease **28**(6): 517-527.

Dialysis disparity

Higher mortality among young Black vs. White patients receiving dialysis

Poorer quality dialysis among Black vs. White patients

Less likelihood of receiving home dialysis modalities

Evidence and root

Higher mortality and poorer quality HD linked to neighborhood composition

Lower rates of AVF use and fewer dialysis minutes prescribed in HD units

Less offering home dialysis in dialysis units primarily serving racial minorities

TXP DISPARITIES

In 2000, among those appropriate for transplant, **black individuals were less likely to be referred for evaluation, placed on waitlist, or complete (52% vs. 16.9%)** transplant compared to White counterparts.

Epstein et al. NEJM 343(21): November 2000

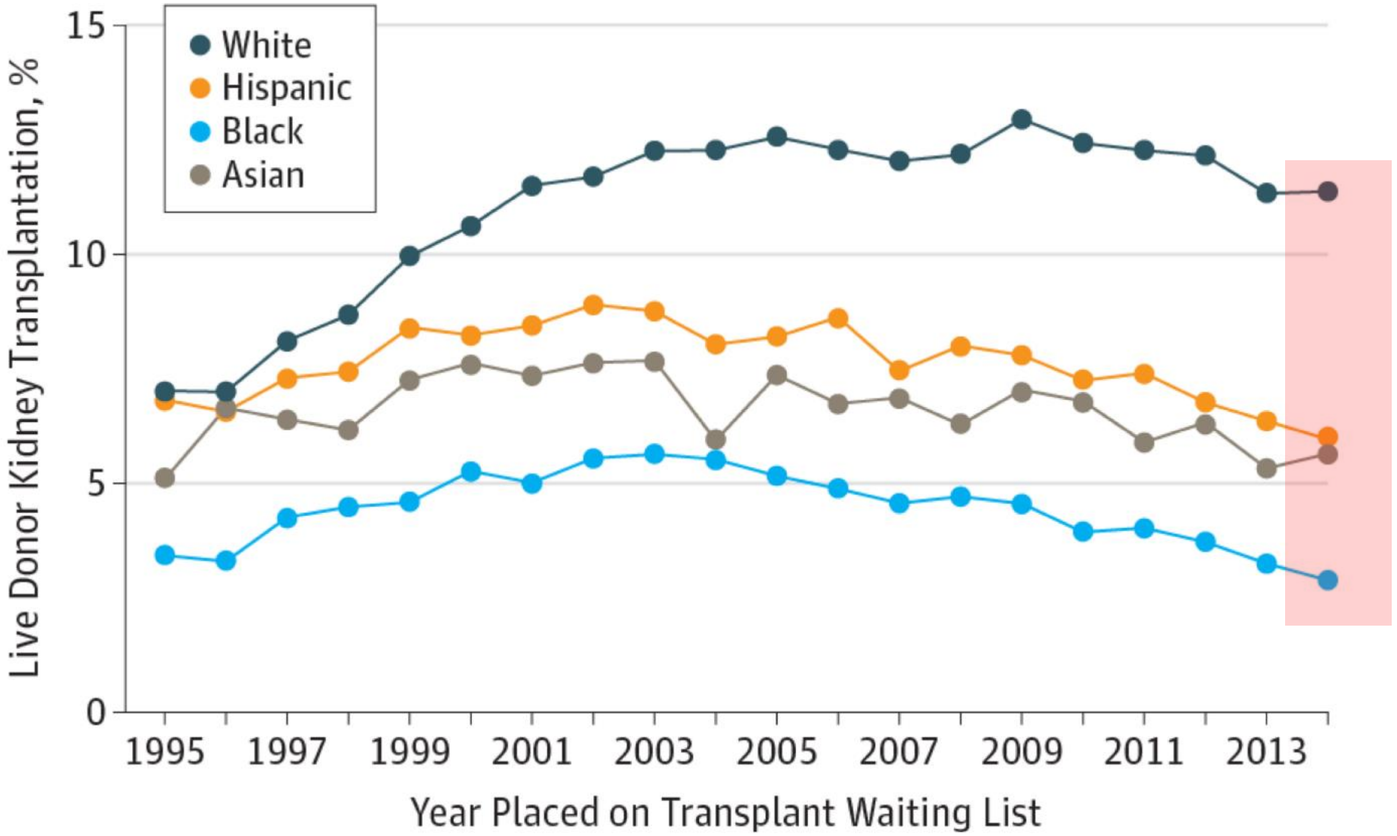
The NEW ENGLAND JOURNAL of MEDICINE

LDKT DISPARITIES GROW

Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014

Tanjala S. Purnell, PhD, MPH[1,2,3,4]; Xun Luo, MD, MPH[1]; Lisa A. Cooper, MD, MPH[2,3,4,5]; Allan B. Massie, PhD[1,2]; Lauren M. Kucirka, MD, PhD, ScM[1,2]; Macey L. Henderson, JD, PhD[1]; Elisa J. Gordon, PhD, MPH[6]; Deidra C. Crews, MD, ScM[4,7]; L. Ebony Boulware, MD, MPH[8]; Dorry L. Segev, MD, PhD[1,2]

Cumulative LDKT incidence declined among AA between 1995-2014



Racial disparities in LDKT **have widened** over time

Purnell TS, Luo X, Cooper LA, Massie AB, Kucirka LM, Henderson ML, Gordon EJ, Crews DC, Boulware LE, Segev DL. Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014. *Jama.* 2018;319(1):49-61
Gander JC, Zhang X, Plantinga L, Paul S, Basu M, Pastan SO, Gibney E, Hartmann E, Mulloy L, Zayas C, Patzer RE. Racial disparities in preemptive referral for kidney transplantation in Georgia. *Clinical transplantation.* 2018;32(9):e13380.

JAMA The Journal of the American Medical Association

CASCADING BARRIERS

Pre-transplant care

* Disparate co-morbidities
* Poorer access to care
* Poorer CKD awareness
* Suboptimal CKD discussions

Pre-txp care

Referral for transplant

* Racialized eGFR equations
* Structured inequities in insurance, housing
* Disparate referral patterns and transplant education

Referral

Evaluate

Evaluation

* Prior discrimination
* Bias in evaluation process including implementation of key criteria (e.g. adherence, substance use)

Waitlist

Waitlisting

* Longer time to waitlist and completion of key elements for evaluation
* Disparities in reasons for waitlist inactivation
* Structured inequities impede evaluation steps

Reese PP, Mohan S, King KL, Williams WW, Potluri VS, Harhay MN, Englanya ND. Racial disparities in preemptive waitlisting and deceased donor kidney transplantation: Ethics and solutions. Am J Transplant. 2021 Mar;21(3):958-967
Purnell TS, Simpson DC, Callender CO, Boulware LE. Dismantling structural racism as a root cause of racial disparities in COVID-19 and transplantation. *American Journal of Transplantation*. 2021;n/a(n/a).
Mohottige, D., McElroy, L., and Boulware LE. (2021). "A Cascade of Structural Barriers Contributing to Racial Kidney Transplant Inequities." Advances in chronic kidney disease **28**(6): 517-527.

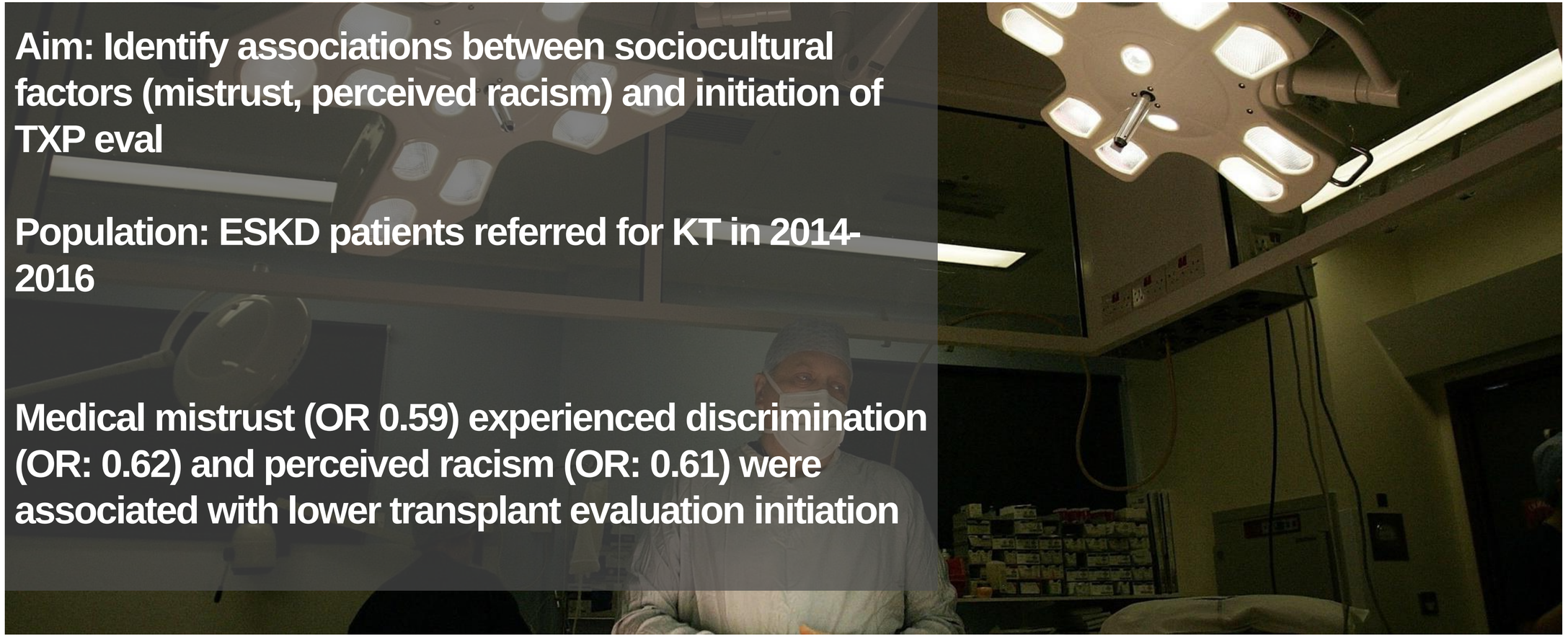
ROOT CAUSES: RACISM

Demographics
Comprehensiveness of health insurance coverage
Etiology of ESRD
Medical comorbidities
Perceived health status
Time on dialysis before presenting for transplant
Psychological health
Medical mistrust
Burden of kidney disease

Transplant education received prior to evaluation onset
Transplant knowledge
Perceived benefits and disadvantages of transplant
Attitudinal willingness to get a transplant
Number of living donors coming forward for patient

Harding. et al. Health Disparities in Kidney Transplantation for African Americans. American Journal of Nephrology 2017; 46(2):165-175 And Waterman. et al. CJASN 2013.

MISTRUST MATTERS



Aim: Identify associations between sociocultural factors (mistrust, perceived racism) and initiation of TXP eval

Population: ESKD patients referred for KT in 2014-2016

Medical mistrust (OR 0.59) experienced discrimination (OR: 0.62) and perceived racism (OR: 0.61) were associated with lower transplant evaluation initiation

Hamoda RE, McPherson LJ, Lipford K, Arriola KJ, Plantinga L, Gander JC, Hartmann E, Mulloy L, Zayas CF, Lee KN, Pastan SO, Patzer RE. Association of sociocultural factors with initiation of the kidney transplant evaluation process. *Am J Transplant.* 2019.

A cascade of challenges to transplant referral and evaluation

- Trauma, Discrimination (explicit or implicit)
- Financial/employment instability
- Untreated mental health concerns and substance abuse
- Un-insurance and underinsurance
- Food insecurity
- Transit insecurity
- Disproportionate exposure to disinvested environments

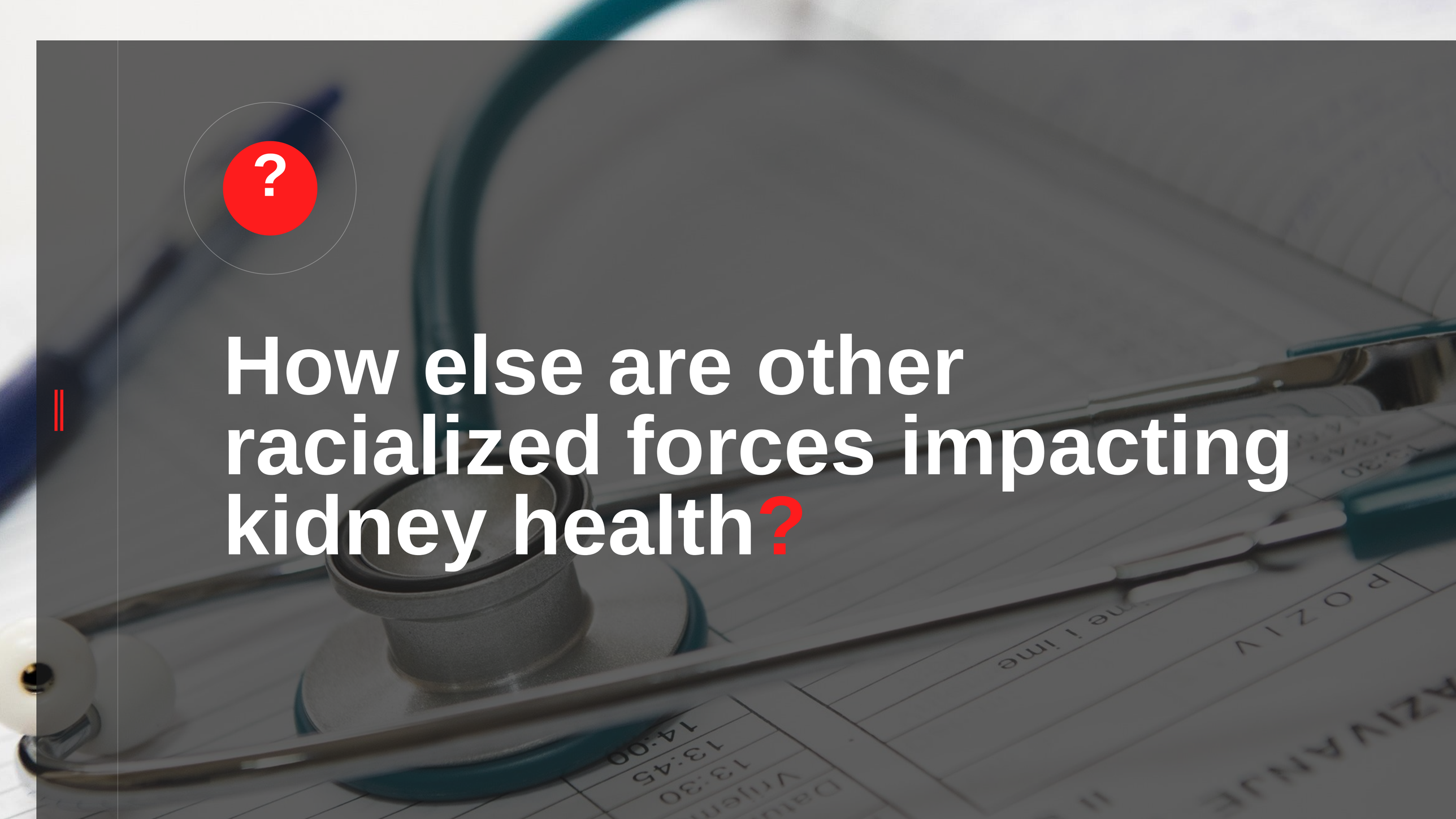
PROVIDER EQUITY CONCERNS

Those who have less resources are suffering the most; it’s not fair that you can’t get transplanted if you don’t have a caregiver or can’t take a day off work, no money to show up in the right outfit

The thing that is still unfair is transplant centers using small bits of data that are not validated about psychological health etc. to decide someone is not a candidate

I coach them {candidates} before the eval to be early, to take notes, what to wear, what to say. I always do that because I want them to succeed and I know how hard it is sometimes to get through the process

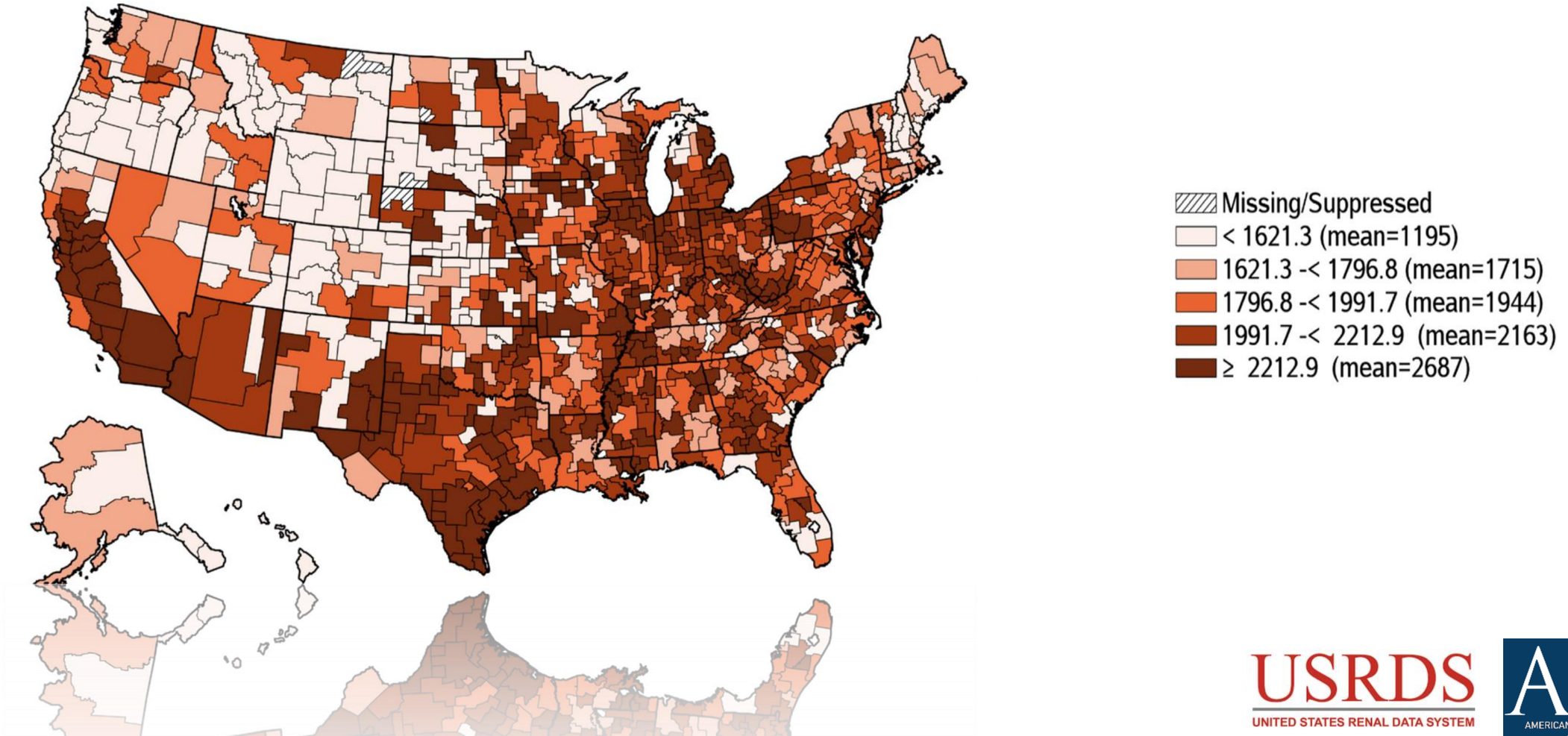
Semi structured interviews with general nephrologists about transplant equity 2022; unpublished



How else are other racialized forces impacting kidney health?

GEODISPARITIES

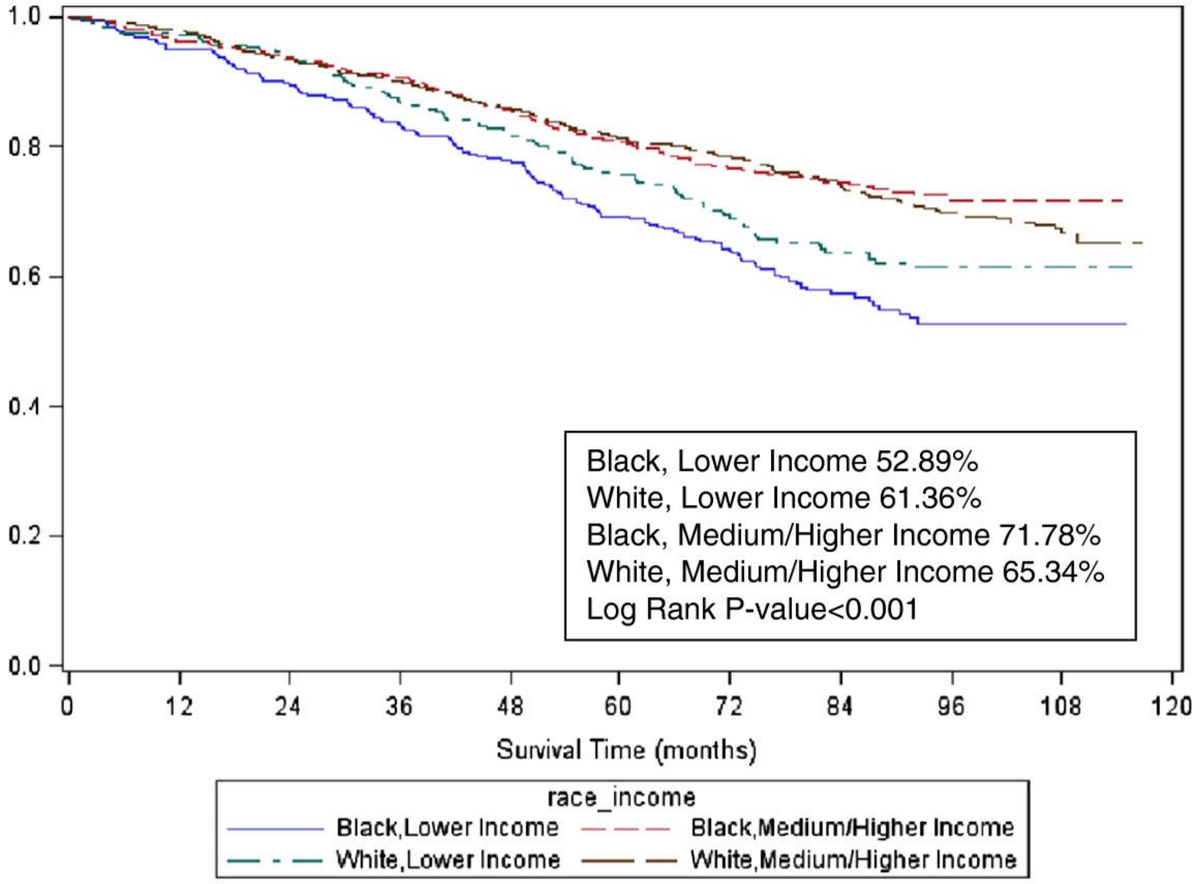
Adjusted ESKD incidence rate varies by county, 2011-2015



USRDS
UNITED STATES RENAL DATA SYSTEM

AJKD
AMERICAN JOURNAL OF KIDNEY DISEASES

INCOME EFFECTS



Low income associated with higher mortality:

- **1.53** HR for Black individuals
- **1.38** HR for White individuals

1.30 HR mortality for Black vs. White individuals **regardless** of income

Fedewa, Stacy A. et al. BMC Nephrology 2014; 15:136:1471-2369

BMC Nephrology

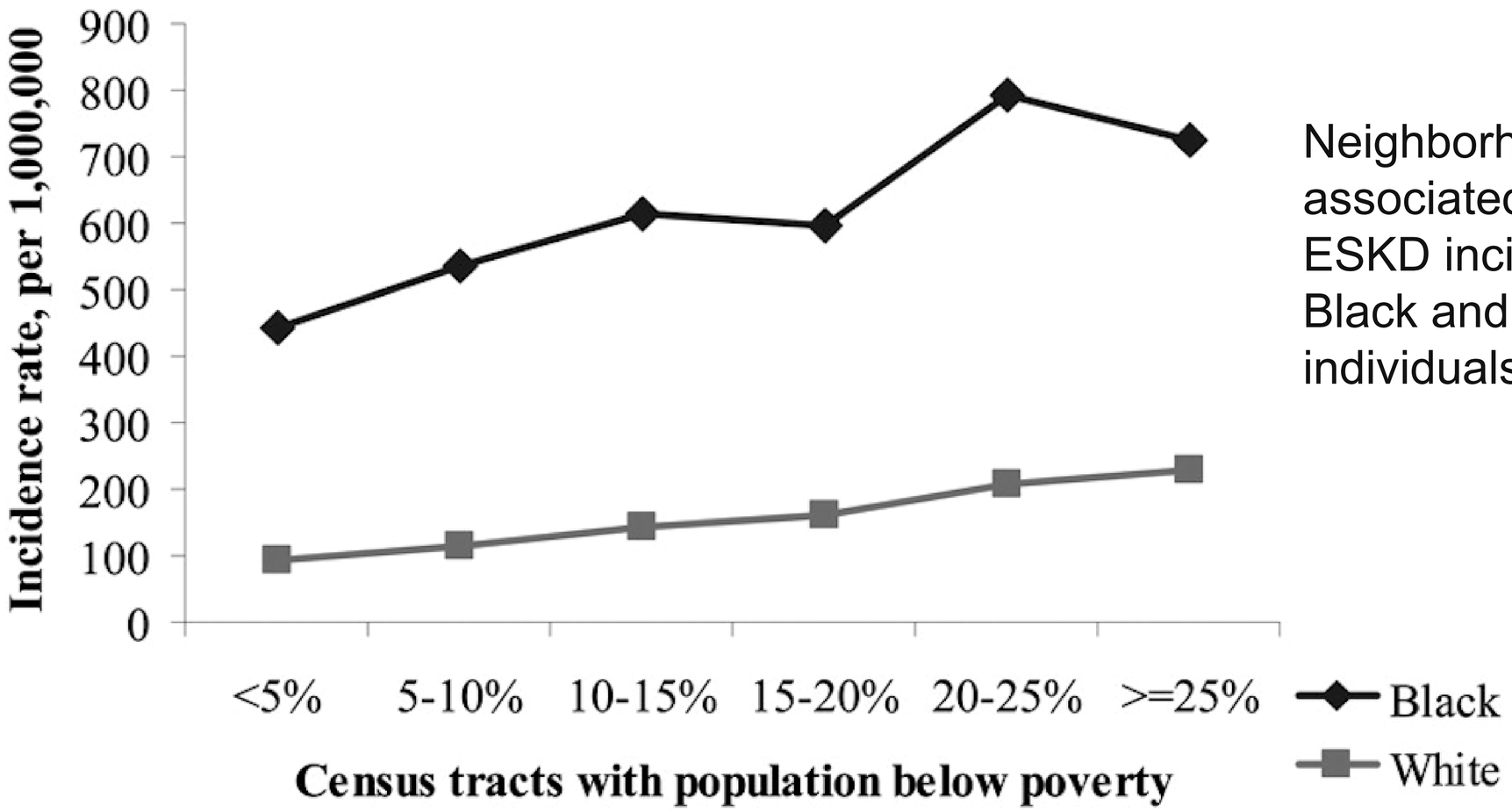
HOUSING STABILITY

Homeless adults with CKD 3-5 have higher risk ESKD or death **HR 1.28** (CI 1.04-1.58), even **after** controlling for sociodemographic, co-morbid and lab factors

Hall, Y.N.. et al. Homelessness and CKD: A cohort study. CJASN 2012; 7:1094-1102


?
What about the role of neighborhoods?

NEIGHBORHOODS

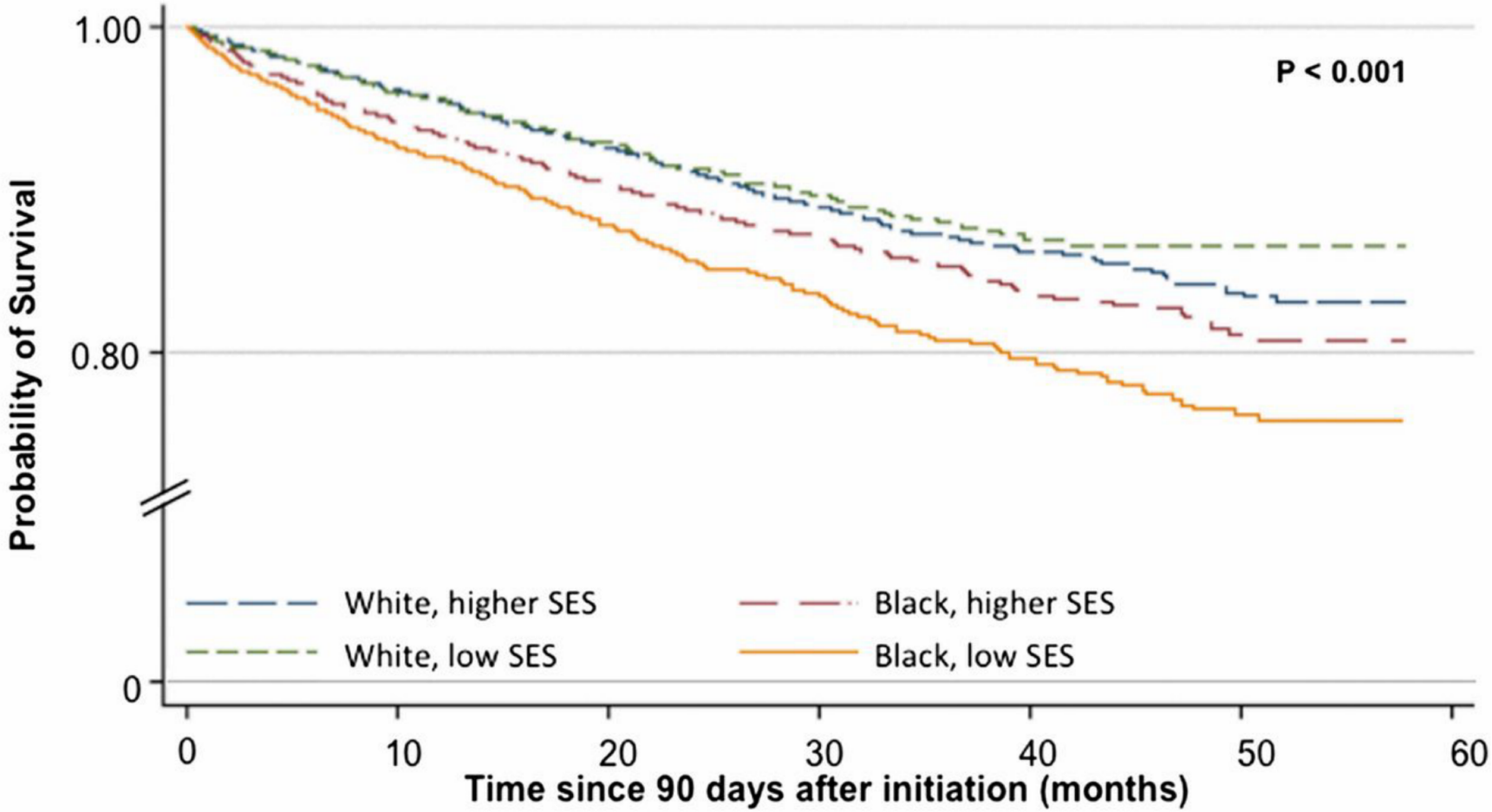


Neighborhood poverty is associated with higher ESKD incidence for Black and White individuals

Volkova N. et al; Neighborhood Poverty and Racial Differences in ESRD. JASN; 2008 19(2):356-364

JASN

NEIGHBORHOODS



Neighborhood SES impacts survival between young black and white dialysis patients

Tanya S. Johns et al. JASN 2014;25:2649-2657.

JASN

RACIAL COMPOSITION

Table 2. IRRs of Hospitalization Count With Percentage of Black Residents in the Community

Community Racial Composition	Unadjusted IRR (95% CI)	Model 1: Adj IRR (95% CI)	Model 2: Adj IRR (95% CI)	Model 3: Adj IRR (95% CI)	Model 4: Adj IRR (95% CI)	Model 5: Adj IRR (95% CI)	Model 6: Adj IRR (95% CI)
Tertile 1 (range: 0%-1.8%)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
Tertile 2 (range: >1.8%-14.4%)	1.11 (0.96-1.30)	1.12 (0.96-1.31)	1.20 (1.04-1.40)	1.23 (1.06-1.44)	1.25 (1.07-1.47)	1.21 (1.02-1.45)	1.22 (1.03-1.46)
Tertile 3 (range: >14.4%-92.6%)	1.28 (1.08-1.51)	1.29 (1.09-1.53)	1.34 (1.14-1.58)	1.30 (1.10-1.55)	1.30 (1.10-1.54)	1.27 (1.08-1.50)	1.32 (1.12-1.56)
P for trend	0.003	0.003	<0.001	0.001	0.001	0.001	<0.001

Neighborhood racial composition is associated with hospitalization risk for individuals on maintenance HD

Golestaneh, Ladan, et al. "Community racial composition and hospitalization among patients receiving in-center hemodialysis." *American Journal of Kidney Diseases* 76.6 (2020): 754-764.

AREA DEPRIVATION

Poverty Housing Employment Education

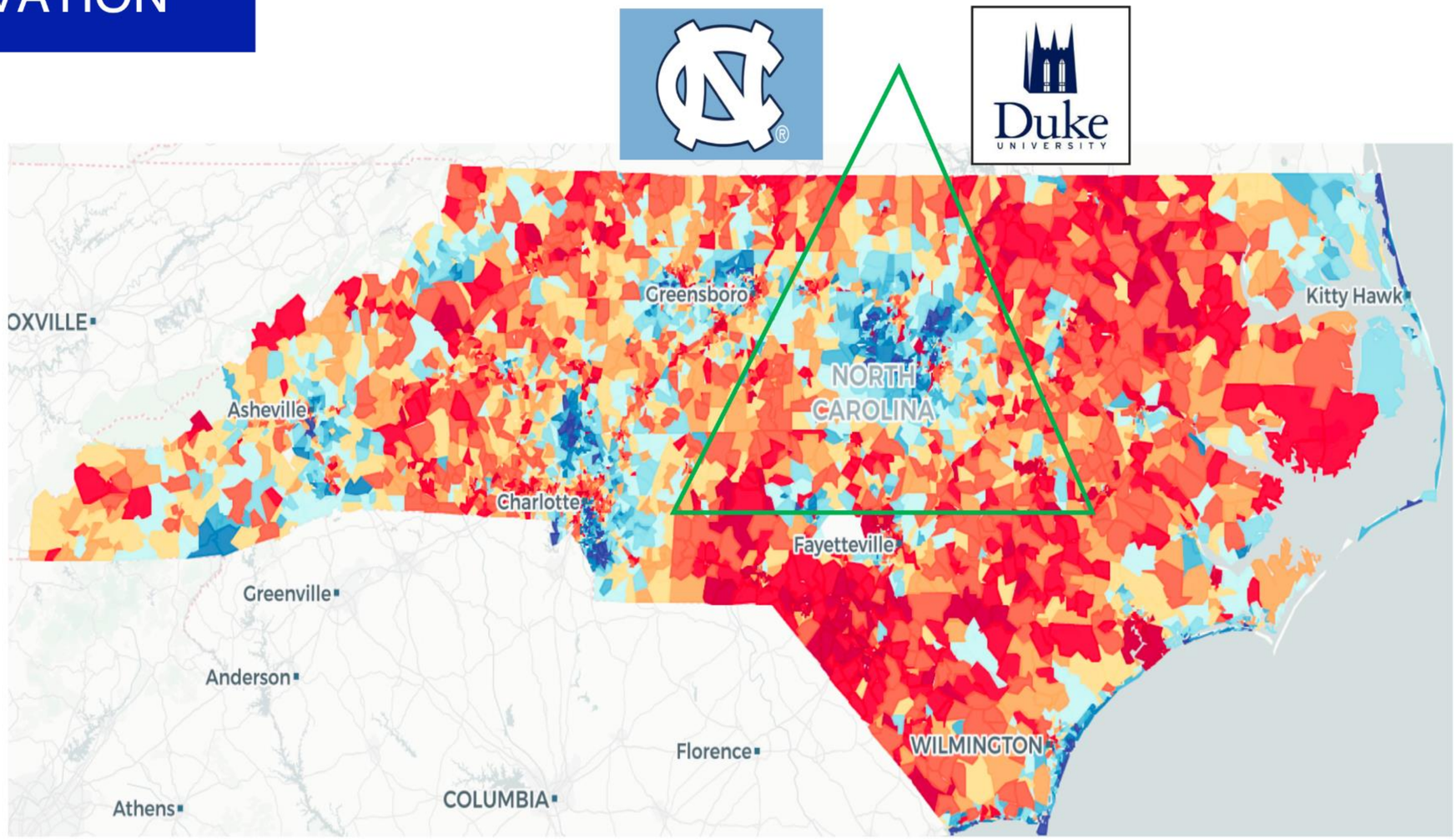
The NEW ENGLAND JOURNAL of MEDICINE

Kind et al; NEJM

NC AREA DEPRIVATION

Raleigh, Durham and Chapel Hill fall in a largely low disadvantage area.

Yet, block groups with **high disadvantage** are interspersed through Durham.



Decile 1
(Least Disadvantaged)

Decile 10
(Most Disadvantaged)

DEFINE NEIGHBORHOODS

NEIGHBORHOOD ASSETS

- Social cohesion (election voting)
- Employment
- Education
- Built environment (parks, drainage)
- Safety
- Wealth

NEIGHBORHOOD PROBLEMS

- Food source adequacy
- Kidney harming product availability
- Evictions
- Trash and litter
- Poor water quality
- Crime

Mid-sized US city of nearly 269,702

US news and world report “# 2 among best places to live”

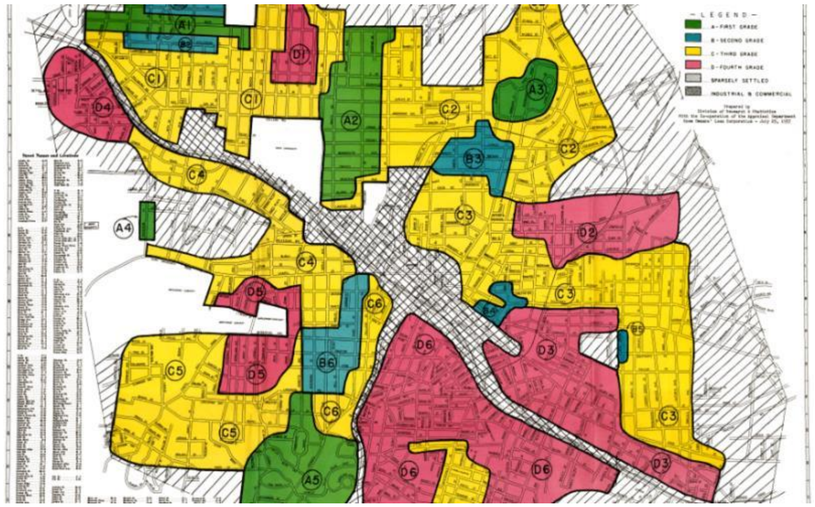
50 fastest growing U.S. Cities

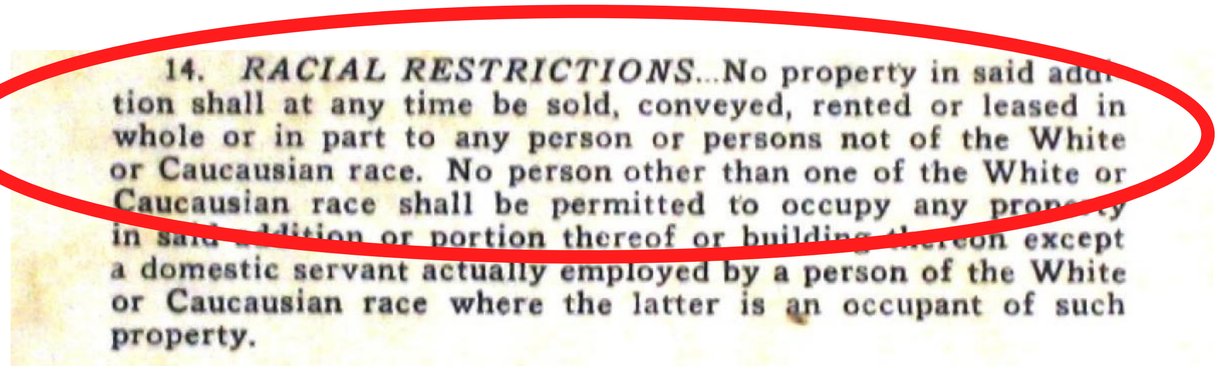
39% Black, 42% White, 14% Latinx

7.3% of adults have stage III CKD or higher
83% White
$85,598 Median Household income
10.1% Retirement age
20% Near convenient store or fast food
57.5% With Bachelor's degree or higher

12.8% of adults have stage III CKD higher
70% Black
$21,250 Median Household income
7.8% Retirement age
100% Near convenient store or fast food
7% With Bachelor's degree or higher

HOUSING: STRATIFIED





14. *RACIAL RESTRICTIONS*...No property in said addition shall at any time be sold, conveyed, rented or leased in whole or in part to any person or persons not of the White or Caucausian race. No person other than one of the White or Caucausian race shall be permitted to occupy any property in said addition or portion thereof or building thereon except a domestic servant actually employed by a person of the White or Caucausian race where the latter is an occupant of such property.

1937 Federal HOLC red-lining in Durham (segregation and disinvestment persists today)

Racialized disinvestment in infrastructure and racialized resources including health care

Junia Howell, Elizabeth Korver-Glenn, The Increasing Effect of Neighborhood Racial Composition on Housing Values, 1980–2015, *Social Problems*, 2020

DATA SOURCE

•**Electronic health data** from patients in Duke Health Systems and at Durham County's Federally Qualified Health Center

+

•**Novel locally and nationally sourced socio-contextual data** (at census block group level)

Includes 95% population in Durham County from Duke Health + Durham County FQHC

Duke Clinical & Translational Science Institute

DURHAM COUNTY DCO NC 1881 Public Health

NORTH CAROLINA Accredited Health Department 2017-2021 Local Health Department Accreditation Board

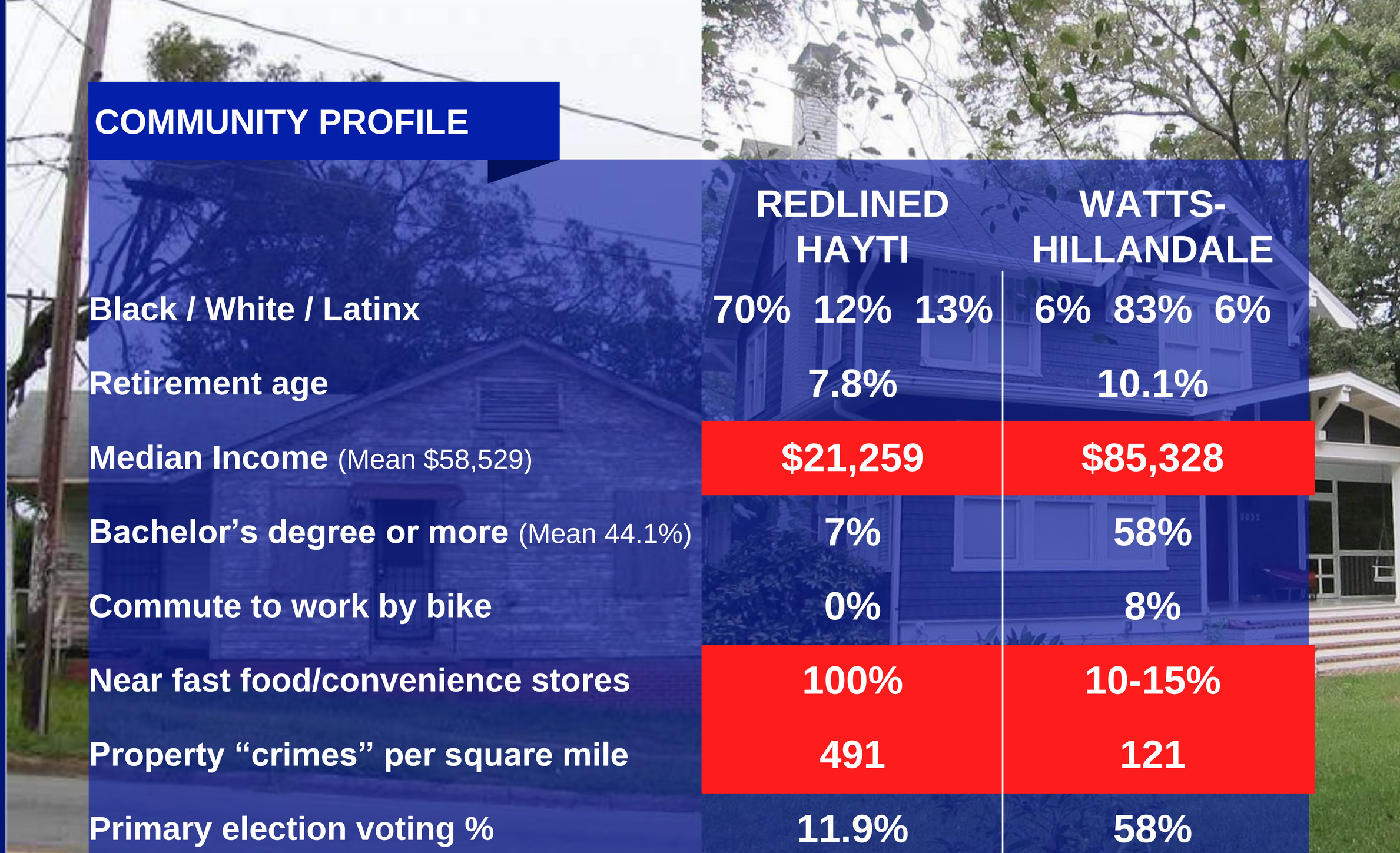
dataworks nc

lincoln community Health Center

Duke Center for Community and Population Health Improvement

CHOIR

DUKE CENTER FOR HEALTH OUTCOMES AND INNOVATION RESEARCH



COMMUNITY PROFILE

	REDLINED HAYTI	WATTS-HILLANDALE
Black / White / Latinx	**70% 12% 13%**	**6% 83% 6%**
Retirement age	**7.8%**	**10.1%**
Median Income (Mean $58,529)	**$21,259**	**$85,328**
Bachelor's degree or more (Mean 44.1%)	**7%**	**58%**
Commute to work by bike	**0%**	**8%**
Near fast food/convenience stores	**100%**	**10-15%**
Property "crimes" per square mile	**491**	**121**
Primary election voting %	**11.9%**	**58%**

Table 1. Social and Environmental Contexts in Durham Neighborhoods			
	Neighborhoods with ‘high’ CKD prevalence* N=51	Neighborhoods with ‘low’ CKD prevalence N=102	p
Total Population 2017	91,728	209,137	
% African American population	61.7 [34-76]	26.5 [11-38]	<0.01
% White population	12.7 [5-34]	58.0 [38-74]	<0.01
% Hispanic/Latino population	18.0 [11-29]	8.2 [3-16]	<0.01
Median age	33.5 [30.9-37.7]	36.0 [31.9-43.3]	0.01
Violent crimes per square mile	76.5 [27.6-156.3]	11.9 [2-45]	<0.01
Evictions per square mile	171.7 [46-341]	33.4 [7-131]	<0.01
% impervious areas	30.0 [25-36]	25.6 [18-32]	0.07
% of pop with long commutes	32.7 [21-42]	23.9 [16-33]	<0.01
% primary election participation	30.6 [23-38]	45 [36-51]	<0.01
Median household income ($)	35,521	64,453	<0.01
*CKD Prevalence 18-64 Mean(SD) = 1.5 (0.8); CKD Prevalence 65+ Mean(SD) = 11.7(4.3)%			

What about racialized marketing and CKD?

CASE PRESENTATION

A 52-year old man sees you to establish care in clinic. He has 14 years of poorly controlled type II diabetes and HTN. He has 3.5 grams of albuminuria and his Cr is 2.6 mg/dl. He denies ibuprofen and other NSAID use but tells you his back pain has gotten so bad, he uses a few BC powder packs each day.

What can we learn from tobacco control success?

TOBACCO USE IS NOT AN EQUAL OPPORTUNITY KILLER.

SMOKING DISPROPORTIONATELY AFFECTS THOSE MOST IN NEED SUCH AS THE POOR, THE HOMELESS, RACIAL MINORITIES, LGBTQ PERSONS AND THOSE SUFFERING FROM MENTAL ILLNESS AND SUBSTANCE USE DISORDERS.

THERE ARE MORE TOBACCO RETAILERS NEAR SCHOOLS IN LOW-INCOME AREAS THAN IN OTHER AREAS.

D'ANGELO, H., AMMERMAN, A., GORDON-LARSEN, P., LINNAN, L., LYTLE, L., & RIBISL, K. M. (2016). SOCIODEMOGRAPHIC DISPARITIES IN PROXIMITY OF SCHOOLS TO TOBACCO OUTLETS AND FAST-FOOD RESTAURANTS. AMERICAN JOURNAL OF PUBLIC HEALTH, 106(9), 1556-1562.

WHY POTENT NSAIDS?

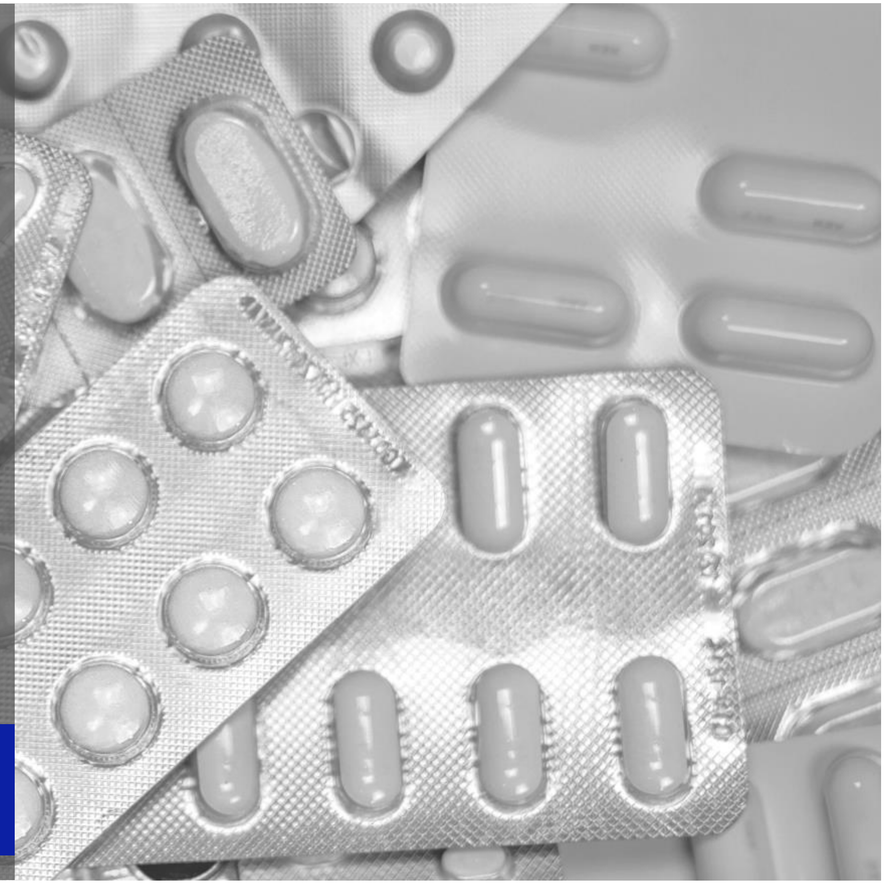
NSAID use common in CKD

NSAID use occurs in spite of CKD recognition

Poverty associated with lower NSAID knowledge and safety

NSAID Use persists post-AKI

No studies examine analgesic powder use



Fry RB et al. Racial/ethnic disparities in patient-reported nonsteroidal antiinflammatory drug (NSAID) risk awareness, patient-doctor NSAID risk communication, and NSAID risk behavior. Arthritis Rheum. 2007;57(8):1539-45

Plantinga L, Grubbs V, Sarkar U, Hsu CY, Hedgeman E, Robinson B, et al. Nonsteroidal anti-inflammatory drug use among persons with chronic kidney disease in the United States. Ann Fam Med. 2011;9(5):423-30

WHY POTENT NSAIDS?

Individuals with CKD are more likely to have pain.

Black and low SES individuals are less likely to have well-controlled pain compared to White individuals due to bias and structural inequity.

WHY POTENT NSAIDS?

No FDA warning for kidney health on single-use packets

Sold as BC, Goody, and Stanback powders

Each powder pack contains **500-1000mg** aspirin

A lot of our customers want the BC - not the Motrin. It works faster and it is cheaper. Have you seen the latest GOODY powder packs made just for hangover?

I actually have one kidney as it turns out…my whole family has kidney disease. But I didn't know this hurt the kidneys. It doesn't say that anywhere on the packet.

Trinity Mart

December 2019 • Durham, NC

NSAIDS in North Carolina

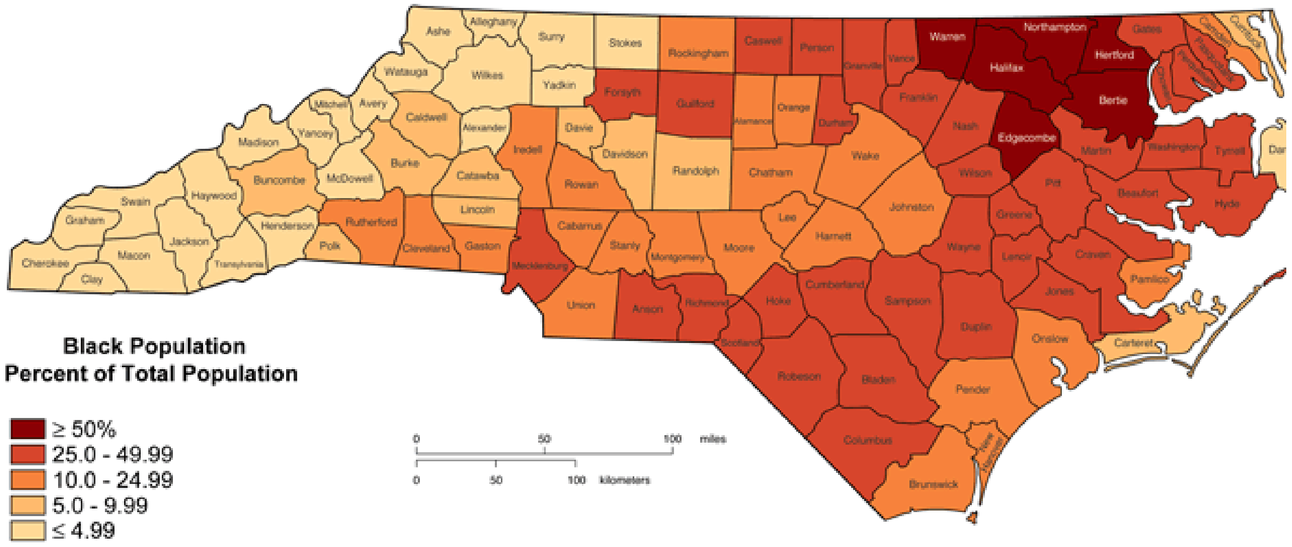
The North Carolina Colon Cancer Study (NCCCS): PI Robert S. Sandler, MD, MPH

Design

- Cross sectional secondary analysis of a population-based case-control study conducted in 1999

Population

- 1699 demographically diverse individuals living in NC (both cases and controls)
- 33 counties in Central and Eastern NC including rural, suburban and urban counties with mix of Black and White individuals



Mohottige, D., Diamantidis, C.J., Galanko, J., Sandler, R., and Boulware, L.E. NKF 2020, New Orlens, LA
Under Review JGIM

NSAIDS in North Carolina

Methods

- Summary statistics (Mann-Whitney and Fisher's exact tests) to determine **racial differences in self-reported use of 7 OTC NSAIDS**

- Logistic regression models which simultaneously adjusted for participants' race, age, sex, education, pain interference with daily function, arthritis status, and presence of a usual source of care

Baseline cohort characteristics of individuals at risk for CKD by race

	White (n=695)	**Black** (n=583)
Comorbidities		
Heart disease	242 (35%)	176 (30%)
Hypertension	384 (55%)	451 (77%)
Diabetes	131 (19%)	186 (32%)
Smoking history ≥ 20yr	390 (56%)	255 (44%)
Age (mean +- SD)		
	68 ± 9	66 ± 9
Sex		
Male	405 (58%)	263 (45%)
Female	290 (42%)	320 (55%)
Education		
High school or less	386 (56%)	427 (73%)
Some college or more	309 (44%)	155 (27%)
Poverty Status *		
Not in Poverty	555 (80%)	314 (54%)
In/Near Poverty	72 (10%)	178 (31%)
Unknown/refused	65 (9%)	86 (15%)
Pain †		
Not interfering with activities	525 (76%)	430 (74%)
Interfering with activities	170 (24%)	152 (26%)

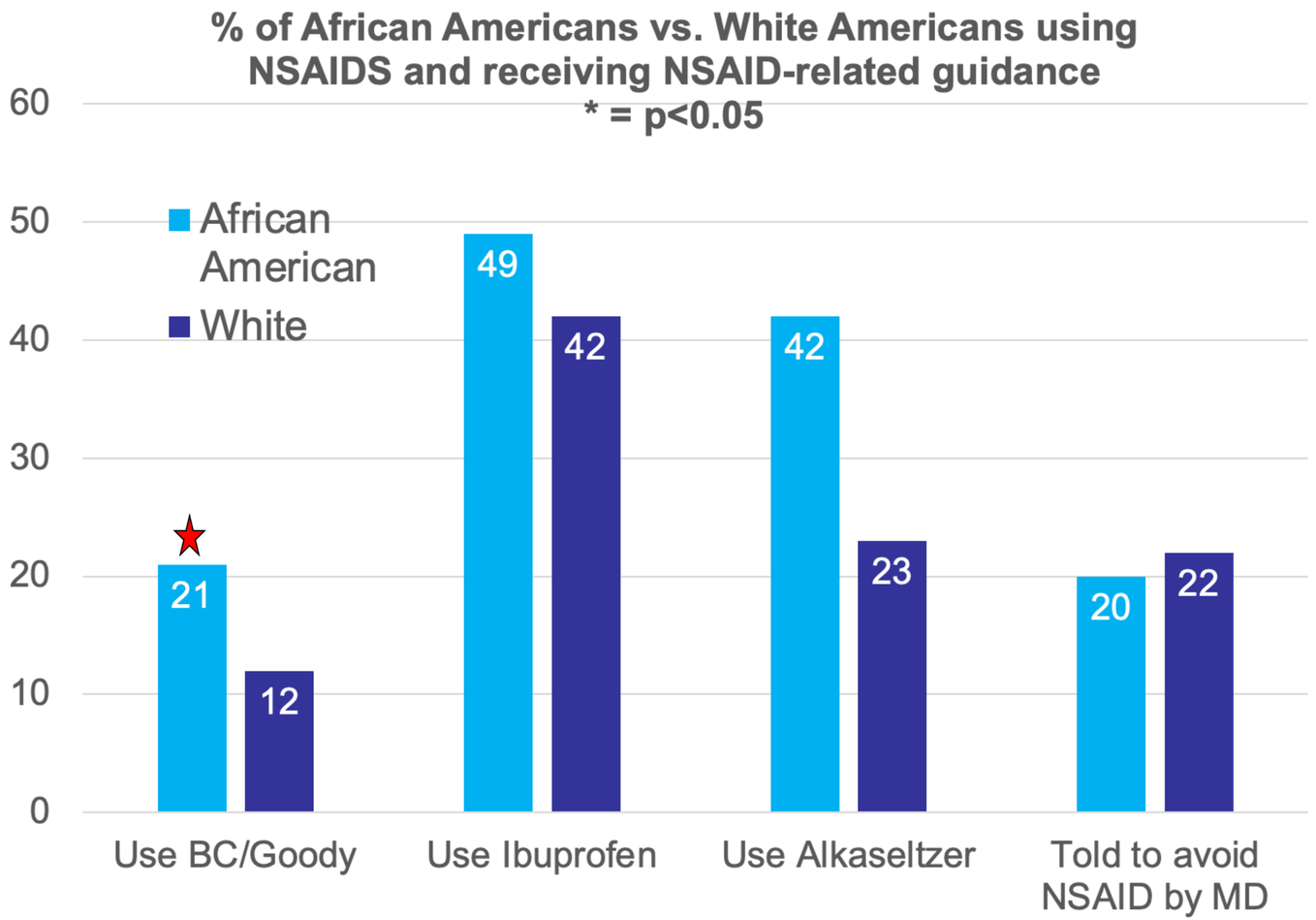
A greater proportion of Black individuals had DM, HTN, < HS education, and reported being in/near poverty.

Black race, younger age, and less than high school education were associated with use of high potency low cost powders.

Table 2. Adjusted Odds of 'high-potency, low-cost' analgesic powder use among individuals at risk for CKD

*** Red signifies p<0.05**

	OR (CI)
Age (per year)	**0.96 (0.94-0.98)**
African American Race (vs. White)	
Yes	**1.74 (1.19-2.56)**
Sex (Male)	
Yes	1.18 (0.80-1.74)
Has a USOC	
Yes	0.92 (0.30-2.86)
Education (< HS vs. > HS)	
Yes	**2.08 (1.34-3.23)**
Pain interferes w/function	
Yes	1.33 (0.88-2.01)
Has arthritis	
Yes	1.05 (0.71-1.54**)**
Smoked 100+ cigarettes	
Yes	1.14 (0.78-1.67)



A significantly **greater proportion** of Black/AA individuals at risk for CKD reported BC/Goody/Stanback use (vs. White participants)

SUMMARY OF DISPARITY

Price Promotion and Sales in Action and Safety

Cost of BC (2 pack) = $0.99

Cost of Motrin (2 pill) = $1.39

Cost of Tylenol (2 pill) = $1.50

Advertised for < $1.00

Ads use words “fast or best” and prominently feature the word “pain”

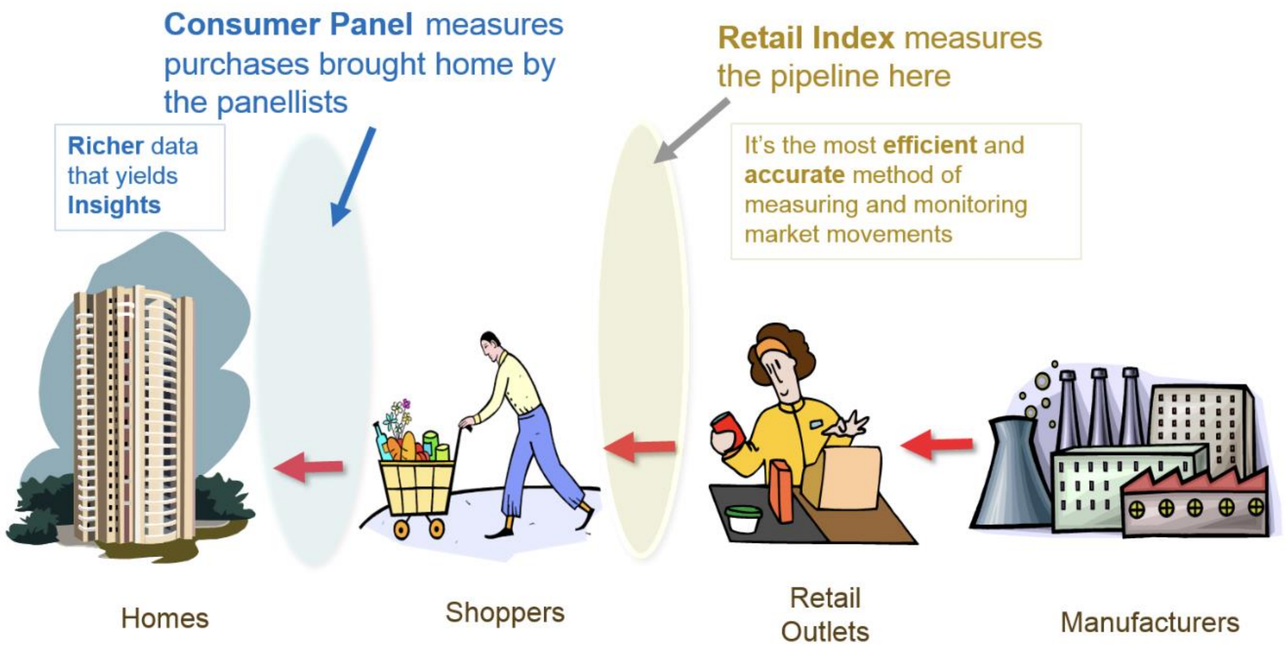
Ads and package do not contain a warning for kidney health

NIELSON MARKETING DATA

NielsenIQ Nielsen

CHICAGO BOOTH
Kilts Center
for Marketing

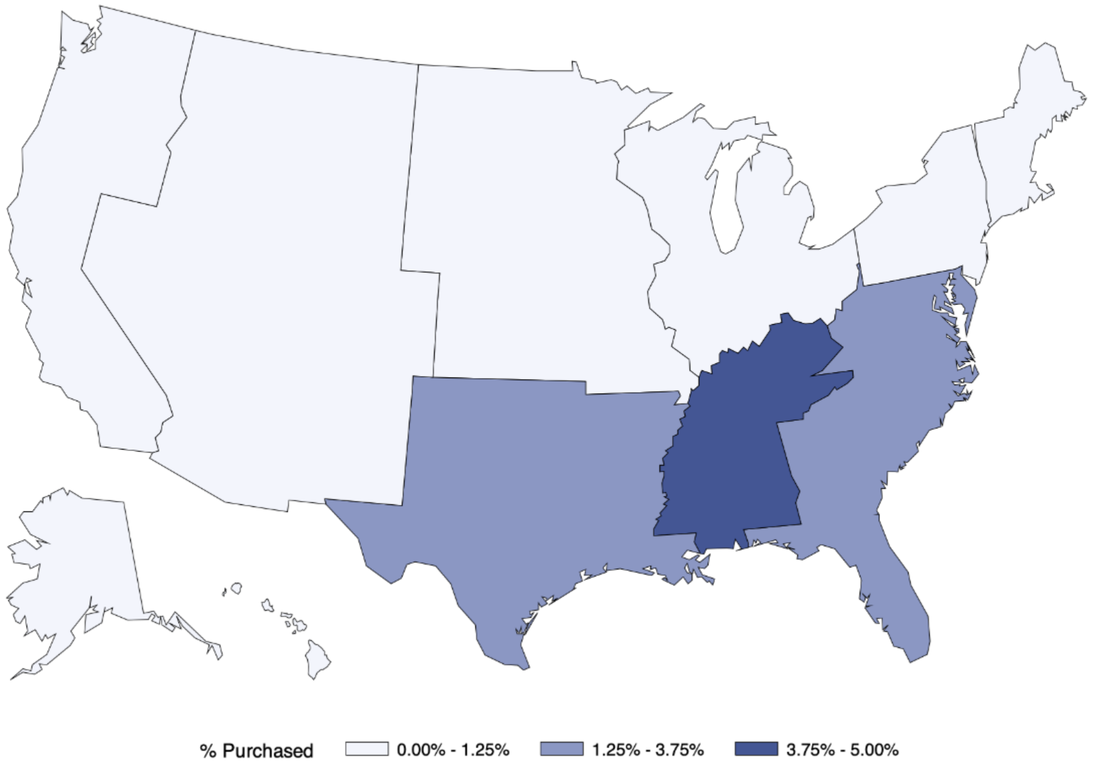
Consumer Panels



Data set:
longitudinal data track 40,000-60,000 US households and products from retail outlets

NIELSON MARKETING DATA

		Weighted	
		Purchased	**No Purchase**
Race	White	48,616 (3.6)	1,291,393 (96.4)
	Black	23,211 (4.7)	469,735 (95.3)
Income	<$25,000	29,935 (6.8)	410,691 (93.2)
	$100,000	7,068 (1.4)	487,881 (98.6)



Consumer purchasing varies regionally, and by household income and race

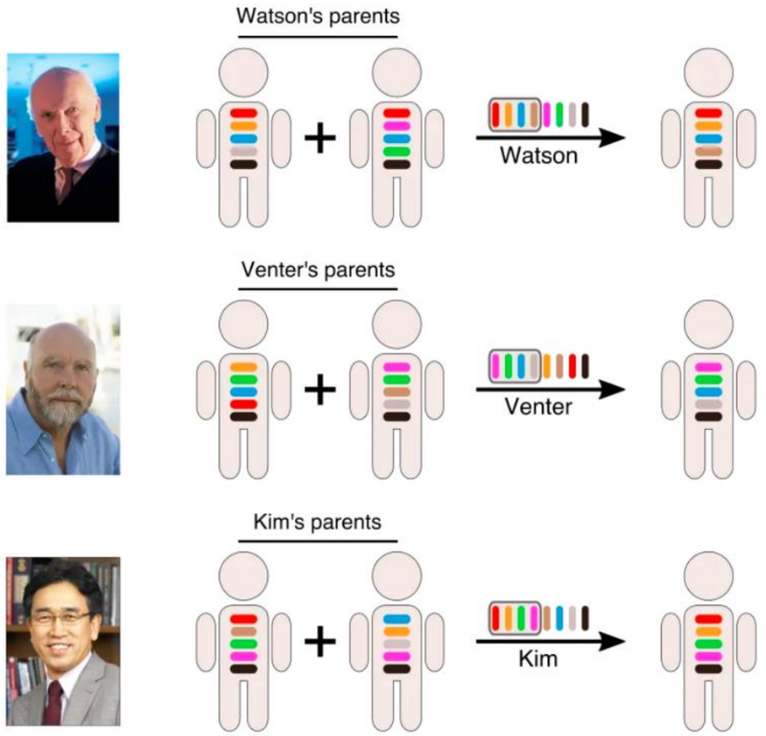
Mohottige, D., Wilson, J; Pendergast J; Diamantidis,B Benson K; and Boulware, L.E. Preliminary data unpublished

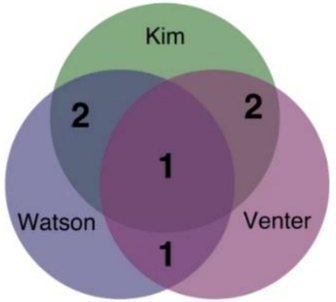
What lessons about race can we apply to kidney health?

MORE ALIKE THAN NOT

Within population differences among individuals account for 93-95% of genetic variation

Differences among major groups make up 3-5% of differences





Collins, F.S., Green, E.D., Guttmacher, A.E. & Guyer, M.S. A vision for the future of genomics research. Nature 422, 835–847 (2003).

Li, Jun Z., et al. "Worldwide human relationships inferred from genome-wide patterns of variation." *science* 319.5866 (2008): 1100-1104.

Rosenberg NA, Pritchard JK, Weber JL, et al. Genetic Structure of Human Populations. *Science.* 2002;298(5602):2381-2385.

Ahn, S. M., Kim, T. H., Lee, S., Kim, D., Ghang, H., Kim, D. S., ... & Park, D. (2009). The first Korean genome sequence and analysis: full genome sequencing for a socio-ethnic group. *Genome research*, 19(9), 1622-1629.

SICKLE CELL CASE STUDY

JAMA

This Issue

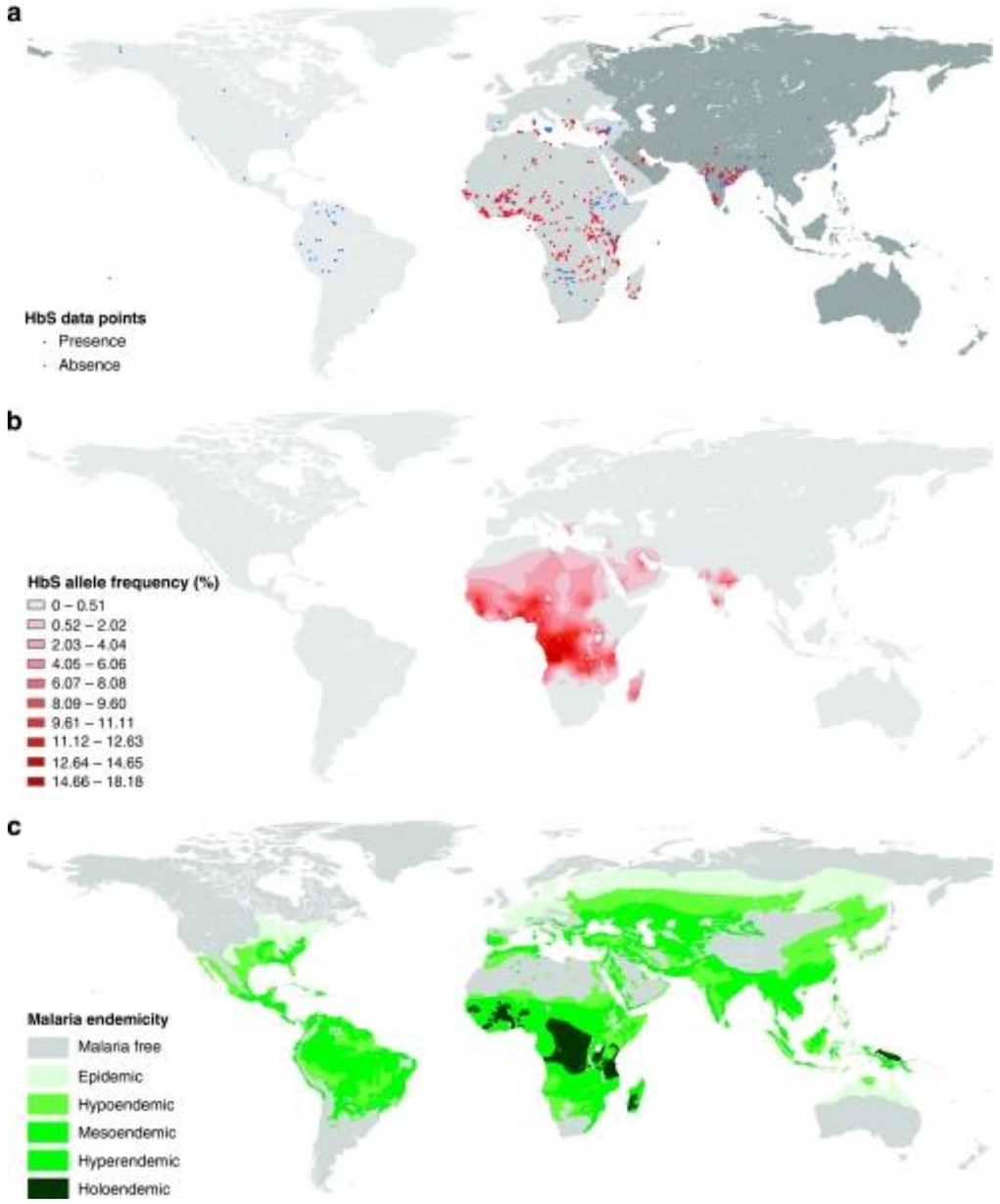
Article

January 4, 1947

SICKLE CELL ANEMIA, A RACE SPECIFIC DISEASE

JAMA. 1947;133(1):33-34. doi:10.1001/jama.1947.02880010035011

Geography and evolution explain the SS story: **not race**



Piel, Frédéric B et al. “Global distribution of the sickle cell gene and geographical confirmation of the malaria hypothesis.” *Nature communications* vol. 1 104. 2 Nov. 2010, doi:10.1038/ncomms1104

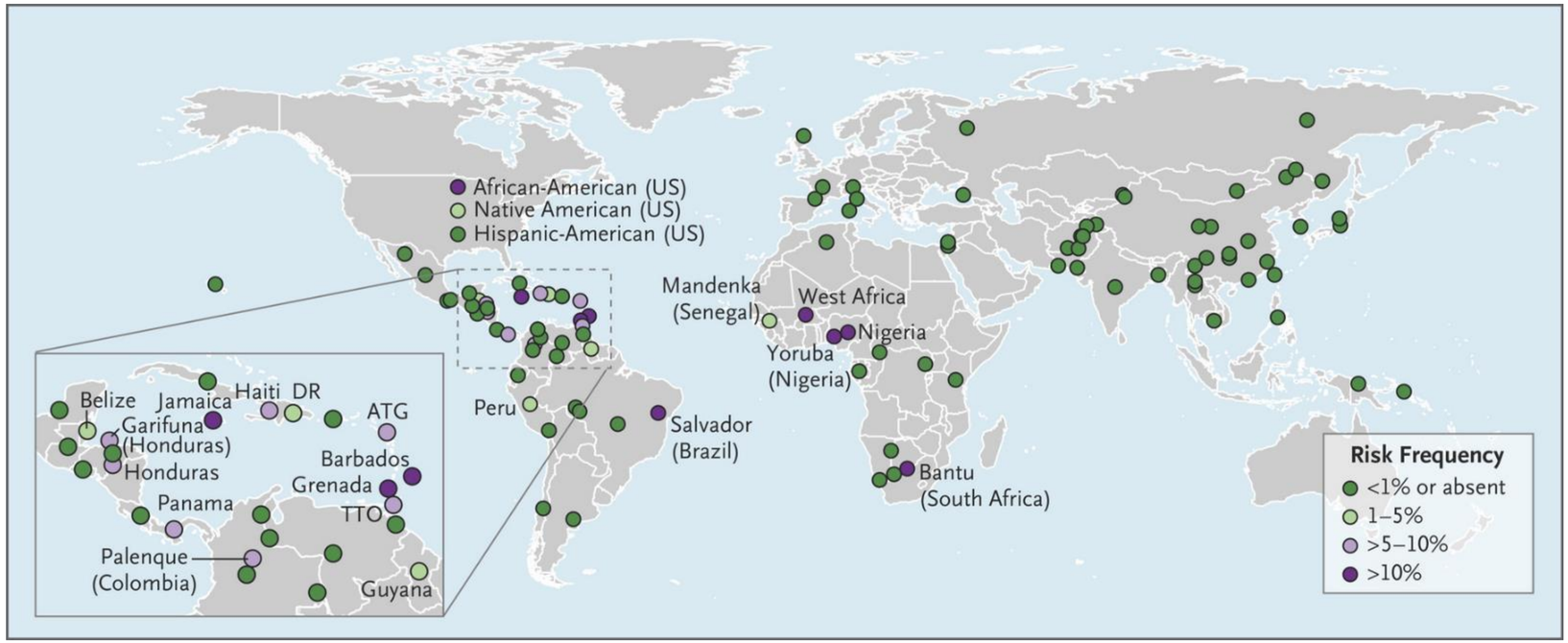
APOL1 NOT A RACE GENE

AJKD

Supplement Article

APOL1-Associated Nephropathy: A Key Contributor to Racial Disparities in CKD

Barry I. Freedman, Sophie Limou, Lijun Ma, and Jeffrey B. Kopp



Cerdeña JP, Tsai J, Grubbs V. APOL1, Black Race, and Kidney Disease: Turning Attention to Structural Racism. Am J Kidney Dis. 2021 Jun;77(6):857-860. doi: 10.1053/j.ajkd.2020.11.029. Epub 2021 Jan 22. PMID: 33485919.

Parsa A,, et al; AASK Study Investigators; CRIC Study Investigators. APOL1 risk variants, race, and progression of chronic kidney disease. N Engl J Med 2013; 369:2183–2196.

How can we achieve kidney health equity and justice?

FUTURE DIRECTIONS?

“Closing the gap in racial health outcomes in the United States will only be accomplished by identifying, confronting, and abolishing racism as an American tradition and root of inequity”

- Carefully define race and specify reasons for use

- Identify, name, and systematically examine the role of racism in producing health inequities

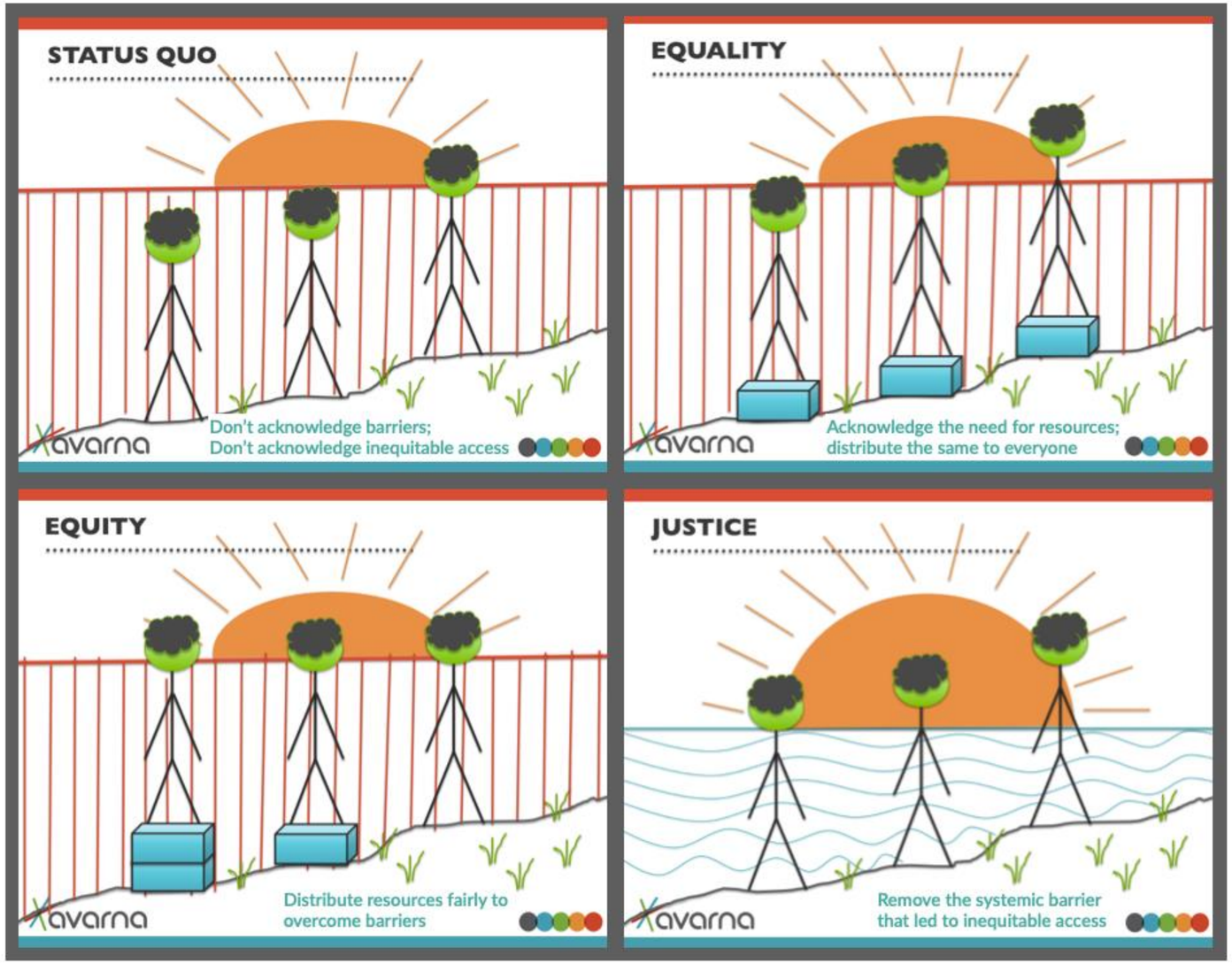
- Move beyond systems that perpetuate the erroneous association between race and genetics; push for an **evidence-based ideal**

Boyd, RW; Lindo EG, Weeks, LD, and McLemore, MR. On Racism: A New Standard For Publishing On Racial Health Inequities, " Health Affairs Blog, July 2, 2020.

EQUITY AND JUSTICE

Equity: assurance of the conditions for optimal health of all people which “requires valuing all individuals and populations equally, **recognizing and rectifying historical and contemporary injustices**, and providing resources **according to need”**

Justice: remove systemic barriers!



Jones CP. Systems of power, axes of inequity: parallels, intersections, braiding the strands. Medical care. 2014;52 3):S71-75.

STRUCTURAL COMP.

Individual behaviors (medication adherence) —— are a product of an individual's sociopolitical context

Avoid a lens which places blame or full responsibility on the individual

CKD/Transplant disparities

SDOH inequalities

(Poverty, housing education inequality)

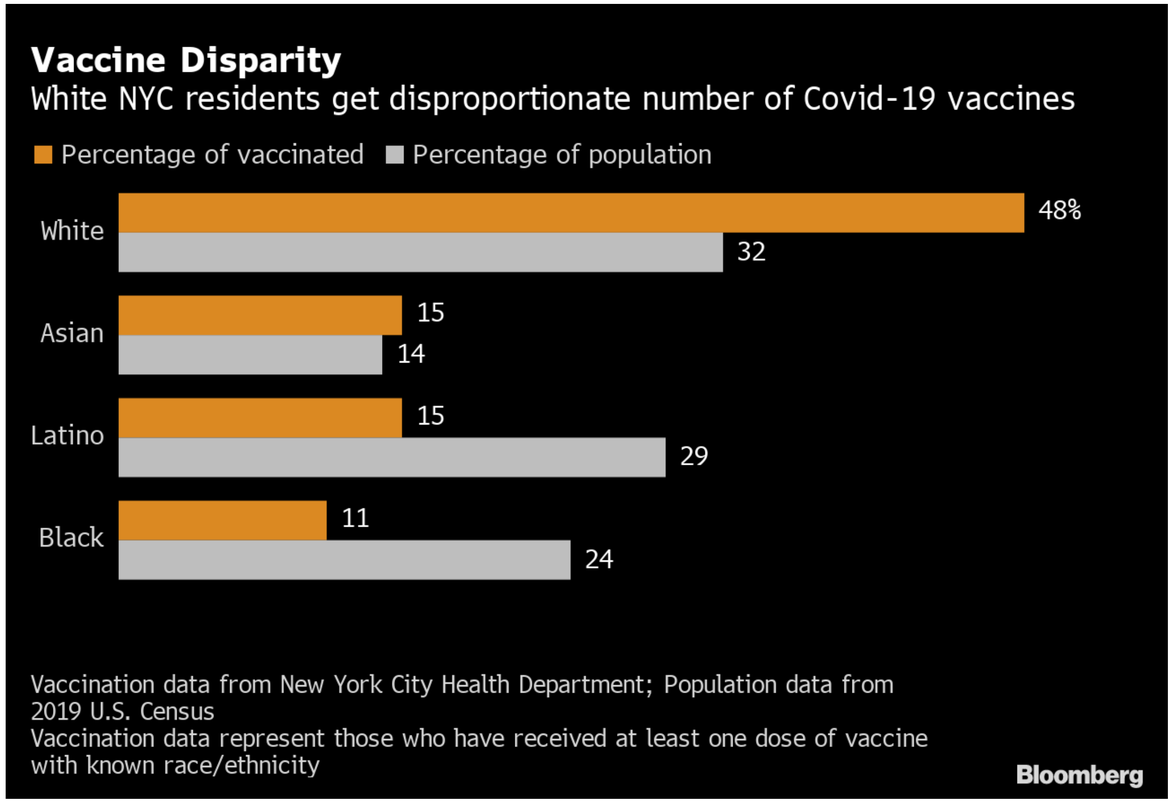
Social Structures

Policies, Economic Systems and Social hierarchies

(racism, sexism, ableism, transphobia…)

Metzl, J. M., and H. Hansen. 2014. "Structural competency: theorizing a new medical engagement with stigma and inequality." *Soc Sci Med* 103:126-133. doi: 10.1016/j.socscimed.2013.06.032.

DON’T IGNORE RACE



Without data about race, we fail to understand how racism and being a racialized person shapes experiences in the U.S.

We are unable to capture the disparities.

https://modules.ilabs.uw.edu/module/racing-towards-equality-why-talking-to-your-kids-about-race-is-good-for-everyone/the-problem-with-colorblind-or-colormute-approaches/

CENTER AT THE MARGINS

Ensuring socially marginalized perspectives are the **“central axis around which discourse revolves”**

This involves qualitative studies that highlight our patients’ experiences.

Colorado Changed Its Rules So Undocumented People Can Get Regular Dialysis. It’s Saved Lives and Dollars

By May Ortega | March 4, 2020

Ford, C. L., and C. O. Airhihenbuwa. 2010. "Critical Race Theory, race equity, and public health: toward antiracism praxis." *Am J Public Health* 100 Suppl 1 (Suppl 1):S30-5. doi: 10.2105/ajph.2009.171058.

Cervantes, L., S. Fischer, N. Berlinger, M. Zabalaga, C. Camacho, S. Linas, and D. Ortega. 2017. "The Illness Experience of Undocumented Immigrants With End-stage Renal Disease." *JAMA Intern Med* 177 (4):529-535. doi: 10.1001/jamainternmed.2016.8865.

Define and contextualize

Distinguish between race racism and other social domain markers. The risk is RACISM not race.

Enhance trustworthiness

Earn trust and actively dismantle barriers to trustworthiness. Engage patient and community stakeholders throughout research with attention to transparency . Center patient expertise in our studies.

Invest

Invest in sustainable partnerships with CBOs and community facing organizations caring for individuals with kidney disease

Promote rigorous Investigation

Expand funding for collaborative partnerships; promote rigorous study of how racism associates with kidney health inequities; invest in structural solutions

Structural Competency

Promote structural competency as a core competency in medical education

Enhance Education

Define and explore the context and reason for including measures like race in study design and avoid racial essentialism

Safety

Ensure that training environments are free from bias discrimination and harassment. Train individuals in up- stander intervention when biased incidents occur.

Embed anti racist practice into CME

Integrate key equity anti racist and anti biased principles into CME opportunities. Apply an intersectional lens to medical education

Embed an equity lens

Reconsider sources of bias during kidney care (e.g. social support, “adherence issues” in TXP eval) so providers can resist a deficit mindset and reframe disparities within the context of structural inequity

Invest in structural solutions

Apply an equity lens to existing and proposed policies (dialysis reimbursement); fund structural interventions for patients and communities

Enhance trustworthiness

Earn trust and actively dismantle barriers to trustworthiness. Engage patient and community stakeholders throughout research with attention to transparency . Center patient expertise in our studies.

Embed anti racism into care systems

Develop electronic health tools that bypass provider biases; analyze data regarding outcomes, referrals etc using equity lens across race, etc.

THANK YOU!

Any Questions?