

Social Determinant of Health in Patients with Kidney Diseases

Kidney Updates

3:30-4:00PM

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No COI

Learning Objectives:

- Define social determinants of health (SDOH)
- Explain impact of SD on health (kidney disease)
- Factors contributing to SDOH
- Actionable items

What comes to your mind when thinking about SDOH?

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Definition

- CDC defines SDOH as **"conditions in the environments in which people live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks."**



More than **1** in **7**

15% of US adults are estimated to have chronic kidney disease—that is about 37 million people.



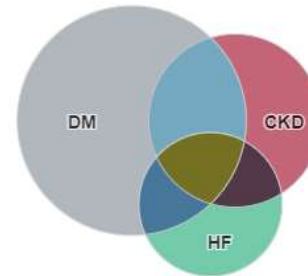
CDC – CKD facts

- As many as 9 in 10 adults with CKD do not know they have CKD.
- About 2 in 5 adults with severe CKD do not know they have CKD.

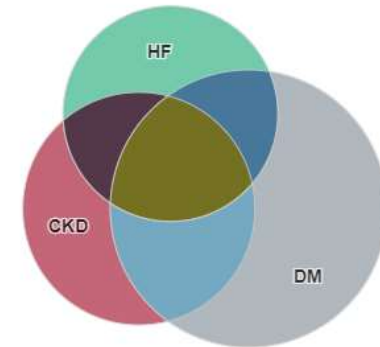
Value based (\$\$\$)

- ≥66 years
- spending among older adults with CKD (excluding ESRD), diabetes, and heart failure, 2019

Percentage of population (n=24.53M) ≡



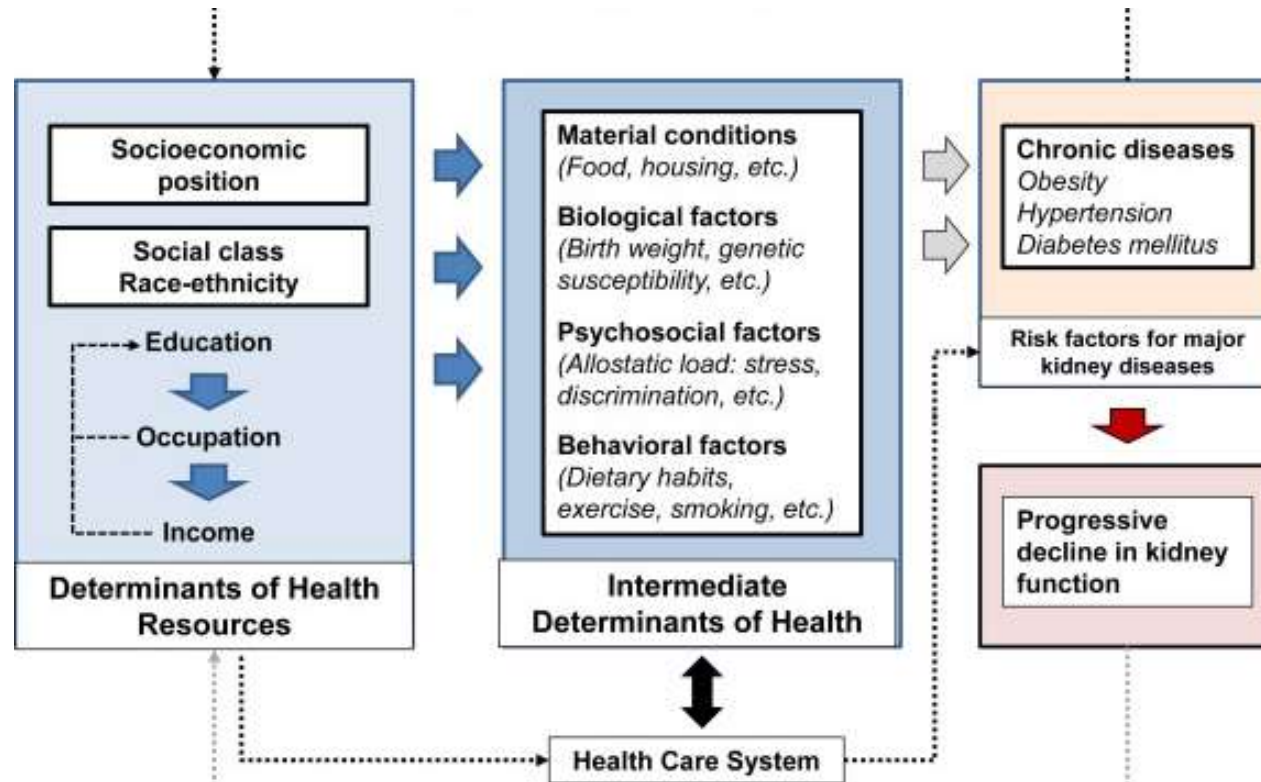
Percentage of costs (total \$308.55B) ≡



Social Determinant of Health in Patients with Kidney Diseases



SDOH



SDOH...

are powerful predictors of mortality and morbidity—shown in numerous studies in the **general population**.

SDOH are critical factors in determining patient adherence and ability to receive medical care—as well as morbidity and mortality—demonstrated in **both ESKD and CKD populations**

Racism

- Not biological
- Is a social construct
- **Race is not a risk factor; racism is!**
- In short, racism kills. Whether through force, deprivation, or discrimination, it is a **fundamental cause of disease and the strange but familiar root of racial health inequities.**

<https://www.healthaffairs.org/doi/10.1377/forefront.20200630.939347/>

Race & Racism Defined

RACE

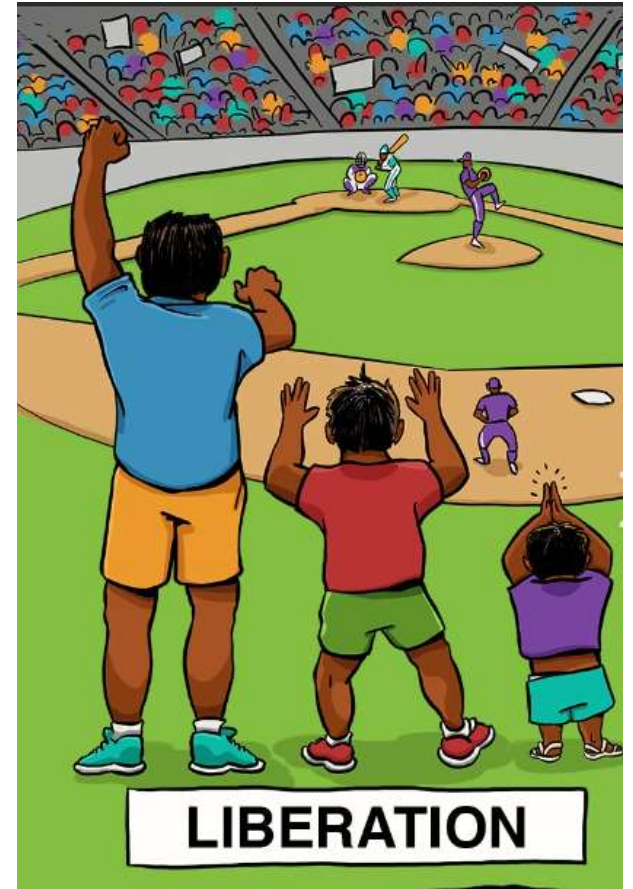
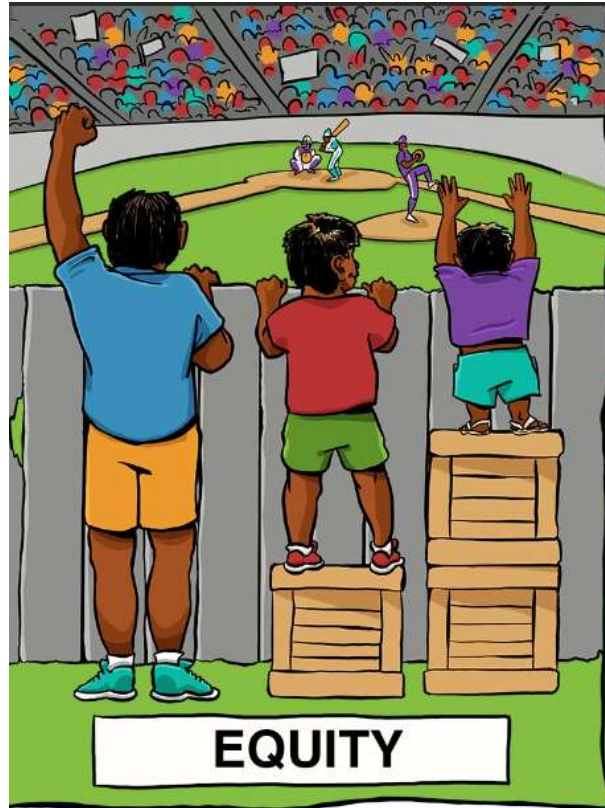
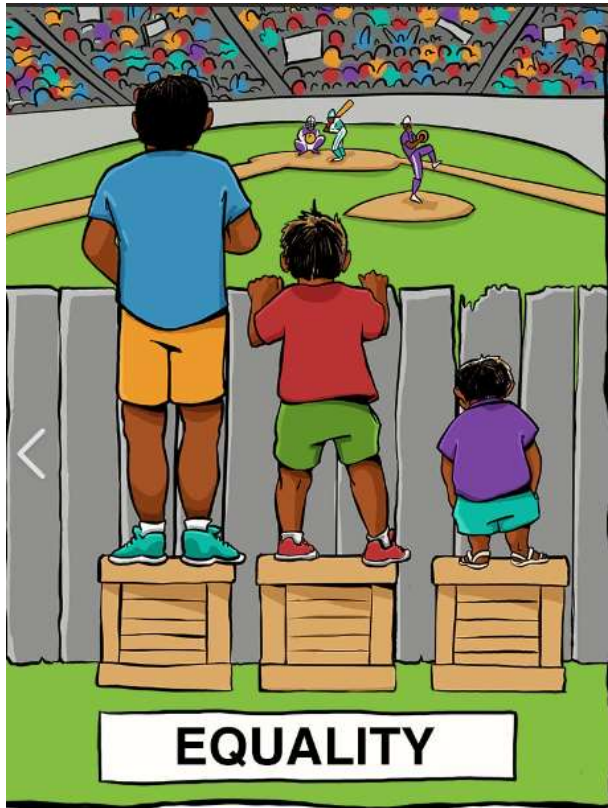
A social construct based on physical characteristics

We as a species share 99.9% of our DNA with each other

RACISM

The false belief in the superiority of one group of people over another based on race

- Unfairly disadvantages some individuals and communities
- Unfairly advantages other individuals and communities
- Saps strength of the whole society by wasting human resources



Health Equity

- Is not simply a moral imperative, but a necessity.
- “Health equity means that **everyone** has a fair and just opportunity to be as healthy as possible.
- This requires **removing obstacles** to health such as poverty, discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care.”

Impact – Poor health outcomes

Know the stats

Due to high rates of DM and HTN— the two leading causes of kidney disease — communities of color have disproportionately high rates of kidney disease.

- AA
 - make up just 13% of the U.S. population, but they account for 35% of Americans with kidney failure.
 - **are 3 times more** likely than white Americans to develop kidney failure.
- Hispanic Americans
 - About 14% have kidney disease.
 - For every 3 non-Hispanics who develop kidney failure, 4 Hispanics do.
 - **are 1.6 times more** likely than non-Hispanics to develop kidney failure.
- Native Americans
 - **are 1.2 times more likely** than white Americans to develop kidney failure.

Impact – Poor health outcomes

Negative health disparities between racial and ethnic communities during the COVID-19 pandemic:

- African Americans
 - have experienced the highest rates of mortality due to COVID-19 — **92.3 deaths** per 100,000 people.
- Hispanic Americans
 - have experienced a mortality rate of **74.3 deaths** per 100,000 people.
- White Americans
 - have experienced a mortality rate of **45.2 deaths** per 100,000.
- Asian Americans
 - have experienced a mortality rate of **34.5 deaths** per 100,000 people.

Factors contributing to SDOH

- Unstable Housing
- Behavior in health care- Safety and mistrust
- Environment Pollutions
- Food insecurity
- Economic instability
- Education





Housing

Housing: A Critical Contributor to Kidney Disease Disparities

ASN Healthcare Justice Committee Advocacy and Scholarship Work Group

REVIEW | VOLUME 4, ISSUE 4, 100443, APRIL 01, 2022

Unstable Housing and Kidney Disease: A Primer

Tessa K. Novick   • Margot Kushel • Deidra Crews

Open Access • Published: March 08, 2022 • DOI: <https://doi.org/10.1016/j.xkme.2022.100443> •

**Kidney
Medicine**



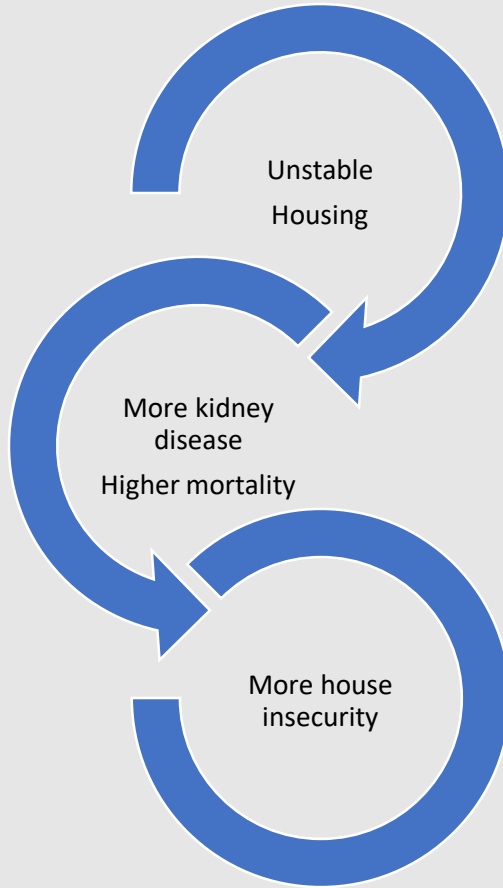
NATIONAL KIDNEY
FOUNDATION®

1. JASN August 2022, 33 (8) 1471-1473
2. Clin J Am Soc Nephrol 7: 1094–1102, 2012

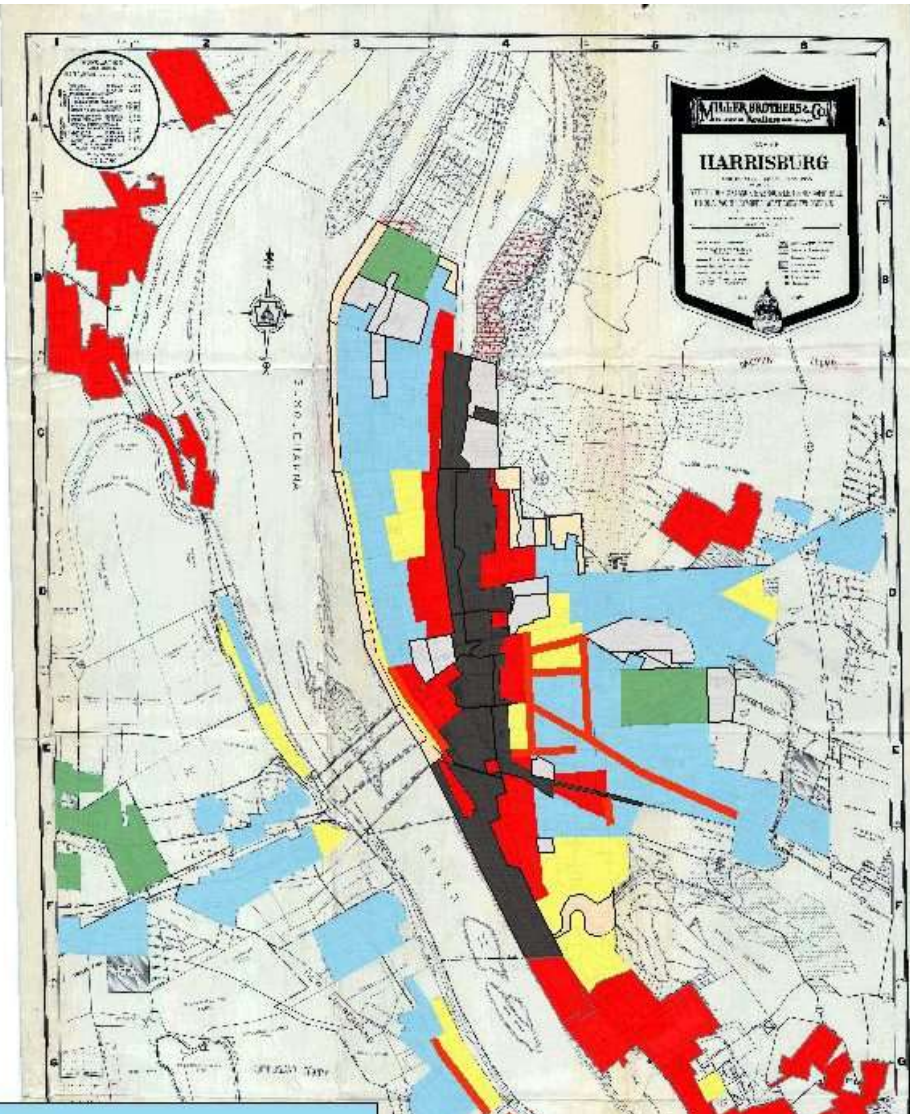
- Kidney disease disproportionately affects individuals living with lower socioeconomic status.
- 34% of individuals with newly diagnosed kidney failure live in areas where more than 1 in 5 households live below the federal poverty level.
- decades of racist housing policies and lending practices
- homelessness face higher mortality, higher acute care utilization, and higher rates of suicide, unintentional injuries, infectious diseases, mental health problems, substance misuse, and abuse.
- people with CKD experiencing homelessness are **30% more** likely to develop kidney failure or **die than people with CKD who are stably housed**

Housing (Redlining)

Segregation and Economic inequality



1968: Fair Housing Act



Stable housing is a basic human right that is tightly connected to health and outcomes among people with kidney disease

Housing insecurity



defined as having high housing costs or living in overcrowded or unsafe living conditions.



3 x more likely to develop albuminuria, **60%** more likely to postpone needed medical care, and less likely to achieve kidney protective measures such as control of DM and HTN.



a lack of a permanent address may result in a discontinuation of **benefits** or insurance.



unable to **store or manage** complicated **medication** regimens.



unable to follow **dietary restrictions** due to lack of control over available food



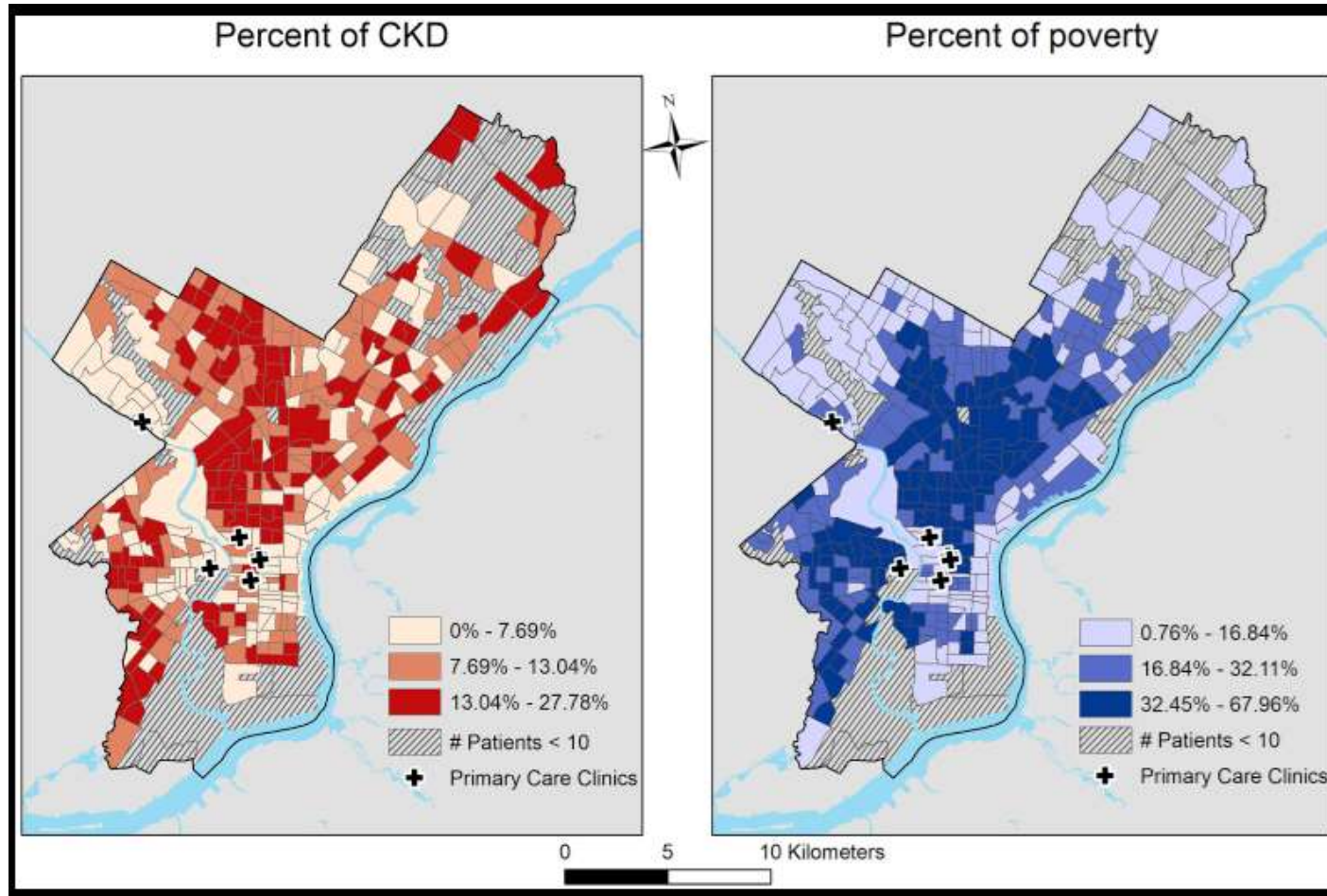
miss dialysis sessions due to **frequent moves** and difficulty securing regular **transportation**



many housing interventions involve **shared restroom facilities**, which are **not conducive to home dialysis modalities**.

Poverty

Neighborhood context and kidney disease in Philadelphia



In unadjusted models,

- lower neighborhood walkability
- lower % of high school graduates
- lower median household income
- higher % of residents living below the federal poverty line
- higher % of non-Hispanic Black residents
- higher violent crime rate
- lower neighborhood social capital

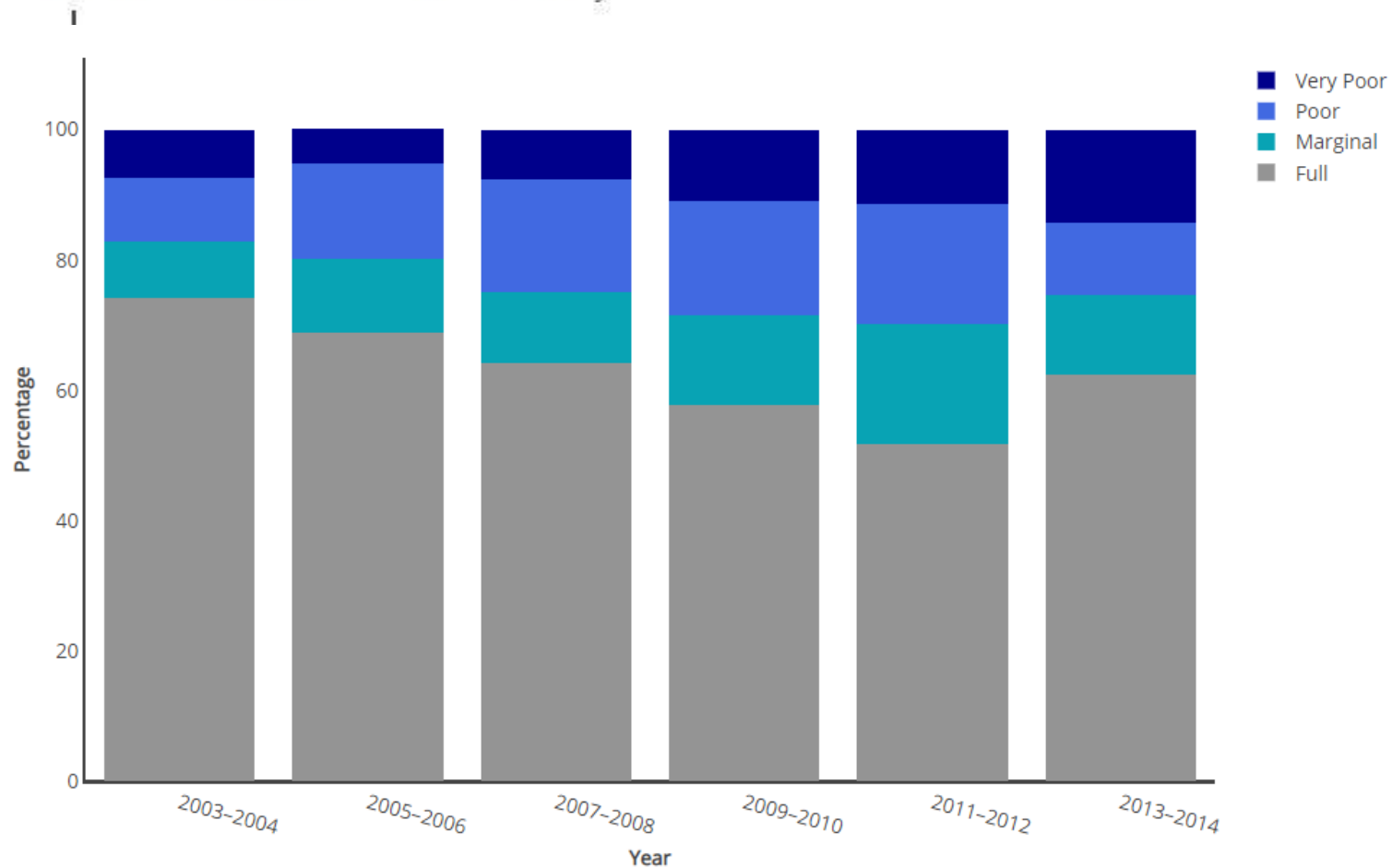
were associated with higher CKD prevalence

Distribution of chronic kidney disease and percentage of residents living below the federal poverty line across Philadelphia census tracts.

Food insecurity

Trends in Food Insecurity Among Adults with Early Chronic Kidney Disease (stages 1 and 2) in the United States, by Year

National Health and Nutrition Examination Survey



One in 4 Adults With Advanced Chronic Kidney Disease Is Food Insecure

March 2020, CDC

Food insecurity

- the perception that food is not available
- affects 11% of households in the United States(1 in 9 households did not have enough food each day)
- associated with an unhealthy diet,² which increases the risk of DM and HTN, **the major causes of chronic kidney disease (CKD).**



End Stage Renal Disease Treatment Choice (ETC) payment model

- a **national effort** to increase kidney transplantation and use of home dialysis modalities
- ?? accessible when someone is experiencing unstable housing
- Solutions:
 - Housing research
 - advocacy and program development
 - permanent supportive housing
 - hospital investments in rental assistance, and tiny home communities
 - rental assistance in the form of housing vouchers for people who have an extremely low income
 - the conversion of hotels into transitional housing facilities etc.



Environmental Factors

We Must all Join the Effort to Dismantle Environmental Racism

Ziyad Al-Aly 

Clinical Epidemiology Center, Research and Development Service, VA St. Louis Health Care System, St. Louis, Missouri

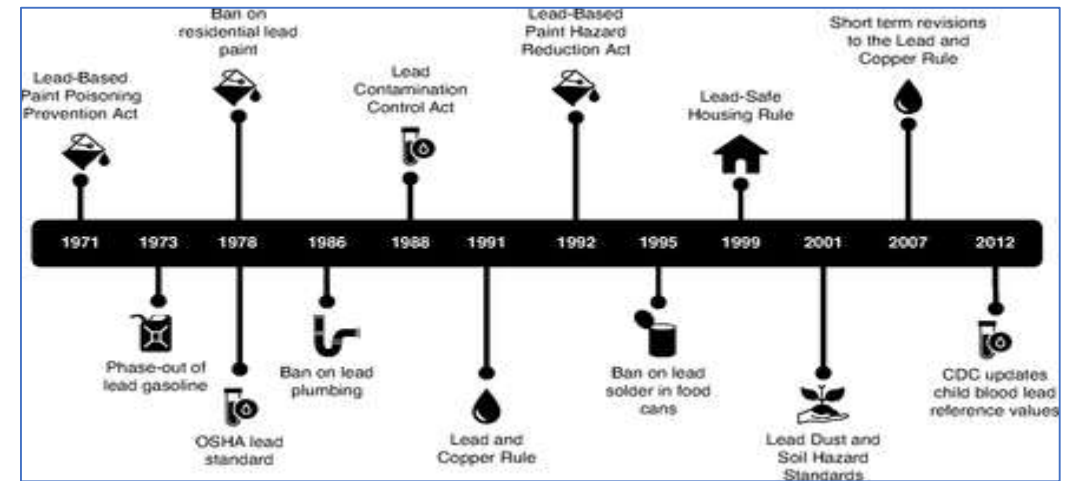
PM_{2.5}, water pollution, lead, pesticides, radiation, toxic waste, noise, less residential green space

- Air pollution
 - Exposure to fine particulate matter (PM_{2.5}) is associated with increased risk of early death, and **increased risk of CKD, CKD progression, and ESKD** (1-5)
- Pollution disadvantage
 - Black and Hispanic communities are exposed to 56%–63% more
- Pollution inequity
 - disparity between the pollution experienced by Black and Hispanic communities and the pollution caused by their consumption of goods and services
- Clean Air Act
 - air quality in the United States has dramatically improved, but primarily for White communities
- Action
 - Data from surveillance networks that monitor levels of environmental exposures should, to the greatest extent possible, be integrated with clinical research datasets.

1. Particulate matter air pollution and the risk of incident CKD and progression to ESRD J Am Soc Nephrol 29: 218–230, 2018
2. Burden of cause-specific mortality associated with PM_{2.5} air pollution in the United States JAMA Netw Open 2: e1915834, 2019
3. Ambient fine particulate matter air pollution and risk of weight gain and obesity in United States veterans Environ Health Perspect 129: 47003, 2021
4. The global and national burden of chronic kidney disease attributable to ambient fine particulate matter air pollution: A modelling study. BMJ Glob Health 5: e002063, 2020
5. Estimates of the 2016 global burden of kidney disease attributable to ambient fine particulate matter air pollution. BMJ Open 9: e022450, 2019

Lead

- living in cities with higher lead levels in the drinking water supply had significantly **lower HB** concentrations and more **ESA**. [1]
- these associations were observed at lead levels significantly below those that the Environmental Protection Agency mandates as actionable. [1]
- Adult Black patients with ESKD were exposed to higher levels of lead in public drinking water than White patients, and **higher** public water **lead** exposure was associated with **more severe** kidney disease. [2]



- **no safe level of lead exposure**
- majority of lead is stored **in bone with a half-life of decades**, even childhood exposure disparities remain relevant for the development and severity of adult chronic disease.
- Action: Infrastructure investment

1. Racial Inequalities in Drinking Water Lead Exposure: A Wake-Up Call to Protect Patients with End Stage Kidney Disease JASN October 2021, 32 (10) 2419-2421
2. Associations of Community Water Lead Concentrations with Hemoglobin Concentrations and Erythropoietin-Stimulating Agent Use among Patients with Advanced CKD JASN October 2021, 32 (10) 2425-2434; DOI: <https://doi.org/10.1681/ASN.2020091281>

Environment



Among Incarcerated

Kidney Disease among People Who Are Incarcerated

Matthew Murphy, Ann Ding, Justin Berk, Josiah Rich and George Bayliss

CJASN November 2021, 16 (11) 1766-1772; DOI: <https://doi.org/10.2215/CJN.01910221>

- Risk factors for CKD

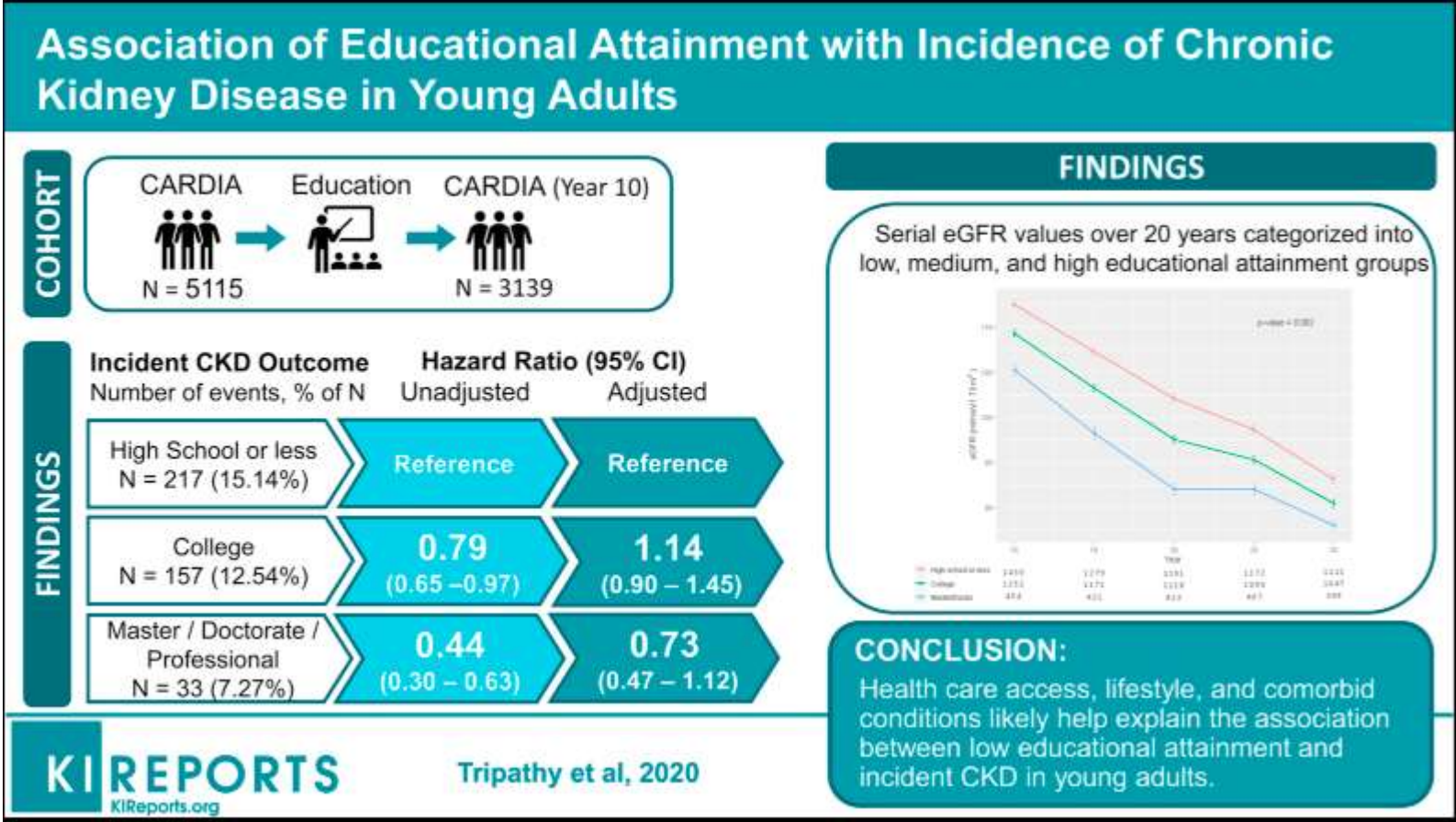
- predominantly non-White communities ~ higher risk of developing multiple chronic diseases
- **Hispanic and Black men was almost 3x and 6x** that of sentenced White men, respectively
- communities of **lower socioeconomic status ~ higher prevalence of chronic disease**
- individuals aged 55 and older increased by 79% between 2000 and 2009
- aged 65 and older increased by 282% from 1995 to 2010
- **estimated that by 2030, individuals aged 55 years or older will constitute over one third of the entire prison population**
- Obesity
 - Black > White
 - F > M
- DM, HTN, Use of tobacco, alcohol and drugs on rise (> than gen. population)

Among who are incarcerated...

- CKD care
 - very little accountability or even data on access to, quantity, type, or quality of health care that is available for people who are incarcerated
 - **basic health measures, such as BP screening and laboratory work measuring creatinine and blood glucose levels, may not be readily available to the many millions of individuals who pass through the criminal justice system annually.** Yet, identifying CKD or its risk factors is impossible without these fundamental health screening capabilities.
- dialysis and kidney transplantation
 - on-site dialysis or facilitate Ktx- these efforts are not analyzed or standardized at a national level.
 - No published data on how many individuals are on the tx list from the criminal justice setting or how many have already received Ktx while incarcerated.
- post-prison release
 - Highest mortality in first 2 weeks, > 12 fold higher than gen. population.
 - Drug overdose, then CVD (linked with CKD)

Education

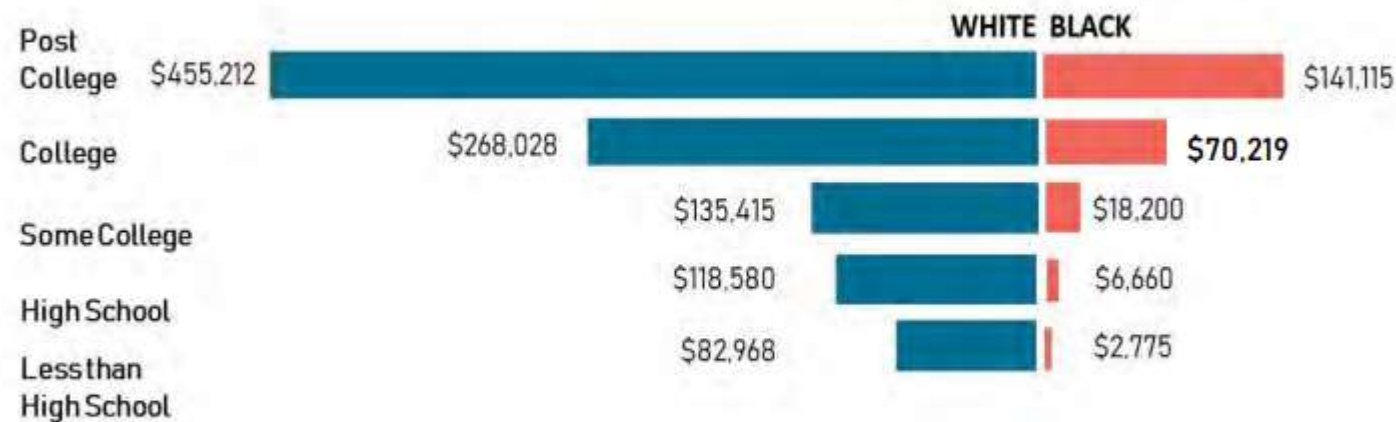
Education



?Solution:

Improve education + lower poverty = better outcomes for CKD and other chronic conditions

Figure 1: Median Household Net Worth by Race and Education



Source: Authors calculations, Survey on Income and Program Participation (SIPP) 2014.

Note: Many of these figures were updated from a prior report entitled *Umbrellas Don't Make it Rain: Why Studying Hard and Working Hard Isn't Enough for Black Americans* (Hamilton et al. 2015).

- White households with a bachelor's degree or postgraduate education (such as with a Ph.D., MD, and JD) are more than **three times** as wealthy as black households with the same degree attainment.
- Moreover, on average, a **black** household with a **college-educated** head has **less** wealth than a **white** family whose head **did not even obtain a high school diploma**

Total household wealth by race/ethnicity

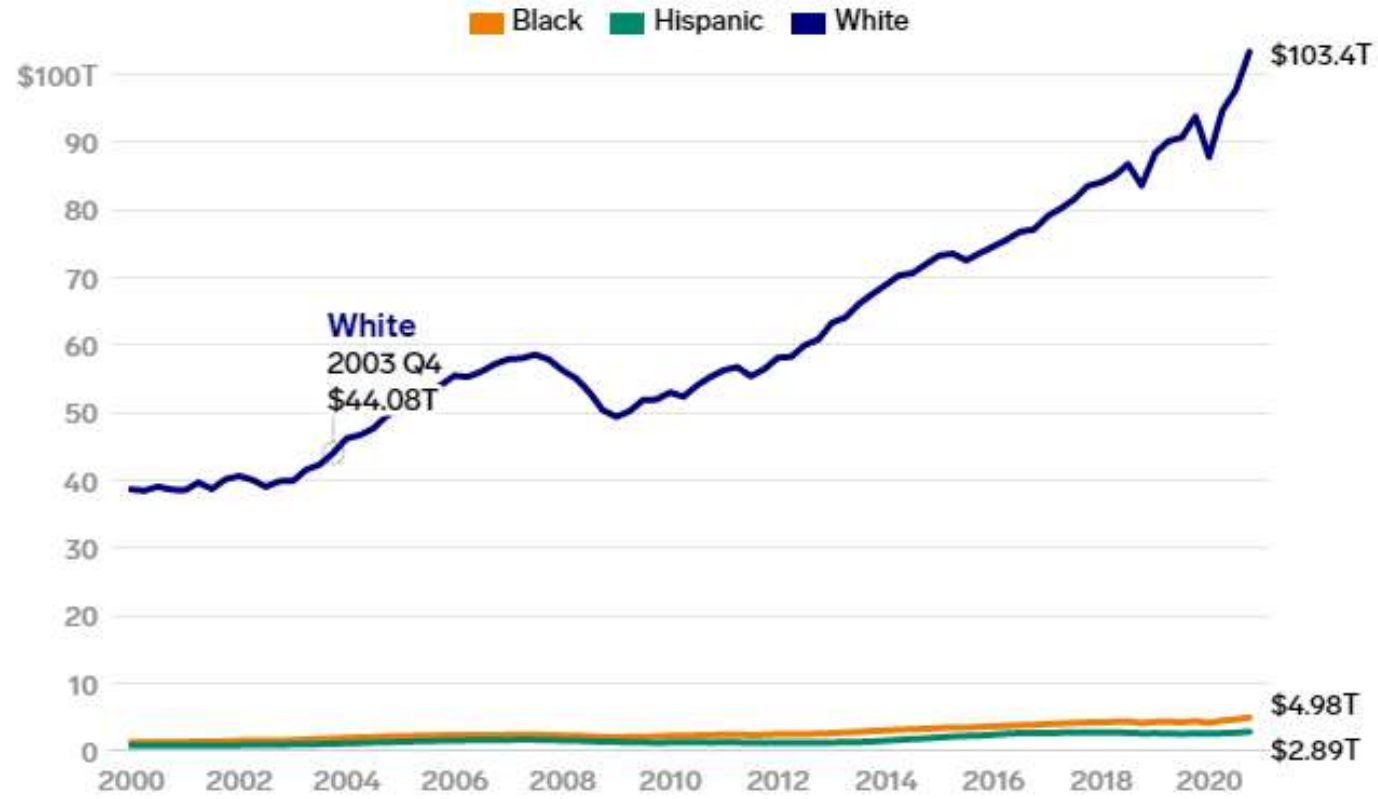


Chart: Madison Hoff/Insider • Source: The Federal Reserve, Distributional Financial Accounts

INSIDER



Mistrust

- Any mistrust Black patients may harbor toward the US health care system is a result of their never-ending mistreatment, not the cause of it.
- People who repeatedly face systemic racism, discrimination, social isolation, demoralization, mental health problems, and violence, and **may not view medical facilities as safe**.



Interventions

Actions

Acknowledging that racial and ethnic inequity are neither normal nor acceptable.

Discovery and documentation is important, but not resulted in improvement

Call for action for **proposing strategies that will make a difference**; and calling upon **funding** to support testing of these proposed strategies.

exposition of how policies of the CMS, intended to improve value and quality, actually penalize dialysis facilities serving predominantly Black communities.

1. Introducing a Special Series: Addressing Racial and Ethnic Disparities in Kidney Disease; Josephine P. Briggs and Donald Wesson; JASN October 2021, 32 (10) 2417-2418
2. Toward Antiracist Reimbursement Policy in End-Stage Kidney Disease: From Equality to Equity; Kathryn Taylor and Deidra C. Crews; JASN October 2021, 32 (10) 2422-2424; DOI:

Actions...conti

promoting policies that affect the physical environment

Race-free approaches to estimate kidney function

need to explicitly acknowledge that race is a social construct

Antiracist Reimbursement Policy in ESKD

1. Introducing a Special Series: Addressing Racial and Ethnic Disparities in Kidney Disease; Josephine P. Briggs and Donald Wesson; JASN October 2021, 32 (10) 2417-2418
2. Toward Antiracist Reimbursement Policy in End-Stage Kidney Disease: From Equality to Equity; Kathryn Taylor and Deidra C. Crews; JASN October 2021, 32 (10) 2422-2424; DOI:

Conti...

- The Goal is Elimination of kidney health disparities
- Education and screening are two suggestions brought up in literature for tackling SDOH, specifically in the primary care settings most applicable to CKD.
- Housing research
 - Prevalence of housing among people with kidney disease
 - Including housing status (2728 form); tracking in USRD system
- Think before saying non-compliant/non-adherent
 - Probe about housing and social challenges.
 - SW referral

Equity Matters

- The **ONLY** way to achieve equity and eliminate disparities is by
 - Identifying, confronting and overcoming **SYSTEMIC** racism in health care, science and kidney medicine.
 - DEI and anti-racism initiative for physicians and medical leadership

How ASN evaluates policies?

- Principles that drive decisions

- What is best for people with kidney diseases and their families?
- What is best for strengthening the relationship between patients and their health professionals?
- What is best for the specialty of kidney medicine?
- What is best for the kidney community?
- What is best for the ASN Alliance for Kidney Health?
 - Vision, mission, and goals
 - Resources
 - Revenue, expense, and margin

SDOH - Name it - Code it

ICD-10 code	Description	Examples
	(Z55) Problems related to education and literacy	
Z55.0	Illiteracy and low-level literacy	
Z55.1	Schooling unavailable and unattainable	
Z55.2	Failed school examinations	
Z55.3	Underachievement in school	
Z55.4	Educational maladjustment and discord with teachers and classmates	
Z55.8	Other problems related to education and literacy	Problems related to inadequate teaching
Z55.9	Problems related to education and literacy, unspecified	Academic problems NOS
	(Z56) Problems related to employment and unemployment	
Z56.0	Unemployment, unspecified	
Z56.1	Change of job	
Z56.2	Threat of job loss	
Z56.3	Stressful work schedule	
Z56.4	Discord with boss and workmates	
Z56.5	Uncongenial work environment	Difficult conditions at work
Z56.6	Other physical and mental strain related to work	
	Other problems related to employment	
Z56.81	Sexual harassment on the job	
Z56.82	Military deployment status	
Z56.89	Other problems related to employment	
Z56.9	Unspecified problems related to employment	Occupational problems NOS
	(Z57) Occupational exposure to risk factors	
Z57.0	Occupational exposure to noise	
Z57.1	Occupational exposure to radiation	
Z57.2	Occupational exposure to dust	
	Occupational exposure to other air contaminants	
Z57.31	Occupational exposure to environmental tobacco smoke	
Z57.39	Occupational exposure to other air contaminants	
Z57.4	Occupational exposure to toxic agents in agriculture	Occupational exposure to solids, liquids, gases or vapors in agriculture
Z57.5	Occupational exposure to toxic agents in other industries	Occupational exposure to solids, liquids, gases or vapors in other industries
Z57.6	Occupational exposure to extreme temperature	
Z57.7	Occupational exposure to vibration	
Z57.8	Occupational exposure to other risk factors	
Z57.9	Occupational exposure to unspecified risk factor	

	(Z59) Problems related to housing and economic circumstances	
Z59.0	Homelessness	
Z59.1	Inadequate housing	Lack of heating; Restriction of space; Technical defects in home preventing adequate care; Unsatisfactory surroundings
Z59.2	Discord with neighbors, lodgers and landlord	
Z59.3	Problems related to living in residential institution	Boarding-school resident
Z59.6	Low income	
Z59.7	Insufficient social insurance and welfare support	
Z59.8	Other problems related to housing and economic circumstances	Foreclosure on loan; Isolated dwelling; Problems with creditors
Z59.9	Problem related to housing and economic circumstances, unspecified	
	(Z60) Problems related to social environment	
Z60.0	Problems of adjustment to life-cycle transitions	Empty nest syndrome; Phase of life problem; Problem with adjustment to retirement [pension]
Z60.2	Problems related to living alone	
Z60.3	Acculturation difficulty	Problem with migration; Problem with social transplantation
Z60.4	Social exclusion and rejection	Exclusion and rejection on the basis of personal characteristics, such as unusual physical appearance, illness or behavior.
Z60.5	Target of (perceived) adverse discrimination and persecution	
Z60.8	Other problems related to social environment	
Z60.9	Problem related to social environment, unspecified	
	(Z62) Problems related to upbringing	
Z62.0	Inadequate parental supervision and control	
Z62.1	Parental overprotection	
	Upbringing away from parents	
Z62.21	Child in welfare custody	Child in care of non-parental family member; Child in foster care
Z62.22	Institutional upbringing	Child living in orphanage or group home
Z62.29	Other upbringing away from parents	
Z62.3	Hostility towards and scapegoating of child	
Z62.6	Inappropriate (excessive) parental pressure	
	Other specified problems related to upbringing	
	Personal history of abuse in childhood	
Z62.810	Personal history of physical and sexual abuse in childhood	
Z62.811	Personal history of psychological abuse in childhood	
Z62.812	Personal history of neglect in childhood	
Z62.813	Personal history of forced labor or sexual exploitation in childhood	
Z62.819	Personal history of unspecified abuse in childhood	
	Parent-child conflict	
Z62.820	Parent-biological child conflict	Parent-child problem NOS
Z62.821	Parent-adopted child conflict	
Z62.822	Parent-foster child conflict	
	Other specified problems related to upbringing	
Z62.890	Parent-child estrangement NEC	
Z62.891	Sibling rivalry	
Z62.898	Other specified problems related to upbringing	
Z62.9	Problem related to upbringing, unspecified	



Z63.1	Problems in relationship with in-laws	
	Absence of family member	
Z63.31	Absence of family member due to military deployment	Individual or family affected by other family member being on military deployment
Z63.32	Other absence of family member	
Z63.4	Disappearance and death of family member	Assumed death of family member; Bereavement
Z63.5	Disruption of family by separation and divorce	Marital estrangement
Z63.6	Dependent relative needing care at home	
	Other stressful life events affecting family and household	
Z63.71	Stress on family due to return of family member from military deployment	Individual or family affected by family member having returned from military deployment (current or past conflict)
Z63.72	Alcoholism and drug addiction in family	
Z63.79	Other stressful life events affecting family and household	Anxiety (normal) about sick person in family; Health problems within family; Ill or disturbed; Isolated family
Z63.8	Other specified problems related to primary support group	Family discord NOS; Family estrangement NOS; High expressed emotional level within family; Inadequate family support NOS; Inadequate or distorted communication within family
Z63.9	Problem related to primary support group, unspecified	Relationship disorder NOS
	(Z64) Problems related to certain psychosocial circumstances	
Z64.0	Problems related to unwanted pregnancy	
Z64.1	Problems related to multiparity	
Z64.4	Discord with counselors	Discord with probation officer; Discord with social worker
	(Z65) Problems related to other psychosocial circumstances	
Z65.0	Conviction in civil and criminal proceedings without imprisonment	
Z65.1	Imprisonment and other incarceration	
Z65.2	Problems related to release from prison	
Z65.3	Problems related to other legal circumstances	Arrest; Child custody or support proceedings; Litigation; Prosecution
Z65.4	Victim of crime and terrorism	Victim of torture
Z65.5	Exposure to disaster, war and other hostilities	
Z65.8	Other specified problems related to psychosocial circumstances	Religious or spiritual problem
Z65.9	Problem related to unspecified psychosocial circumstances	

Rigorous Standards For Publishing On Racial Health Inequities

Researchers

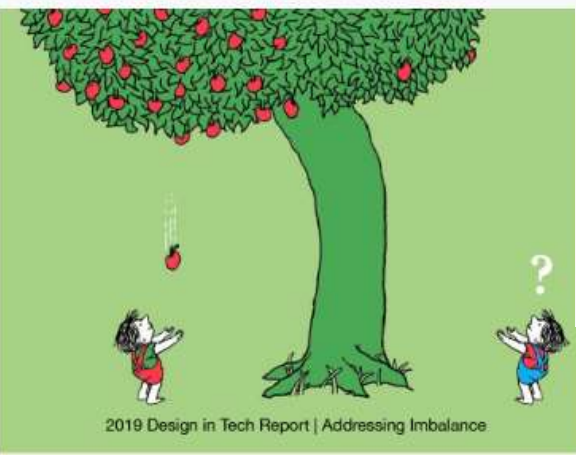
- *Define race* during the experimental design, and [specify the reason](#) for its use in the study.
- *Never offer genetic interpretations of race* because such suppositions are [not grounded in science](#).

Journals

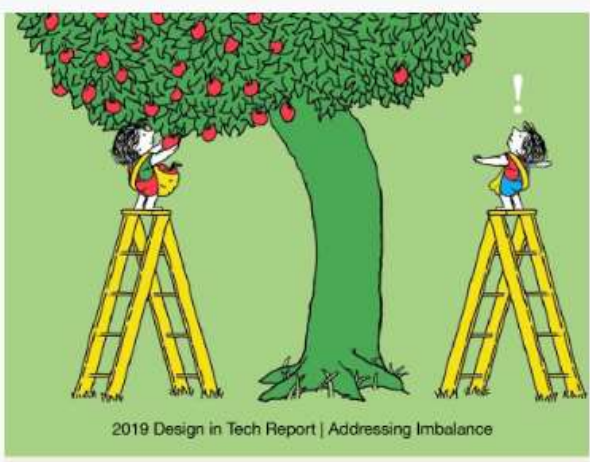
- *Reject articles on racial health inequities that fail to rigorously examine racism.*

Reviewers

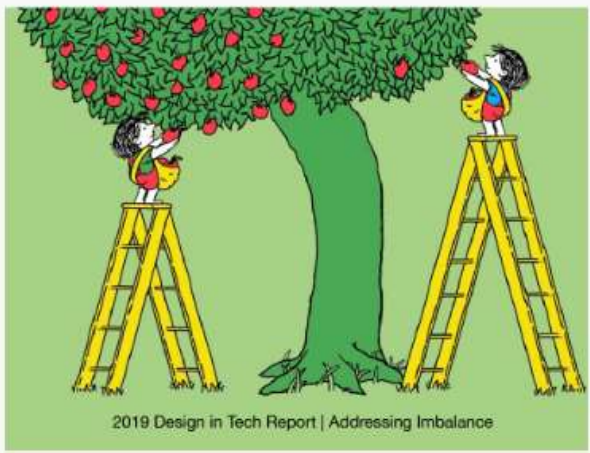
- *Be critical of work that reifies biological race* or provides a genetic basis for racial differences in health outcomes.
- *Review the citations*



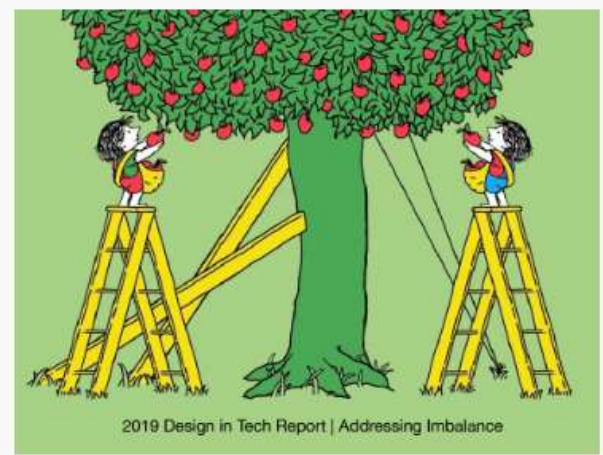
INEQUALITY



EQUALITY



EQUITY



JUSTICE



Thank you

