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UNIVERSITY of WASHINGTON

Reflections on race and ethnicity in epidemiology

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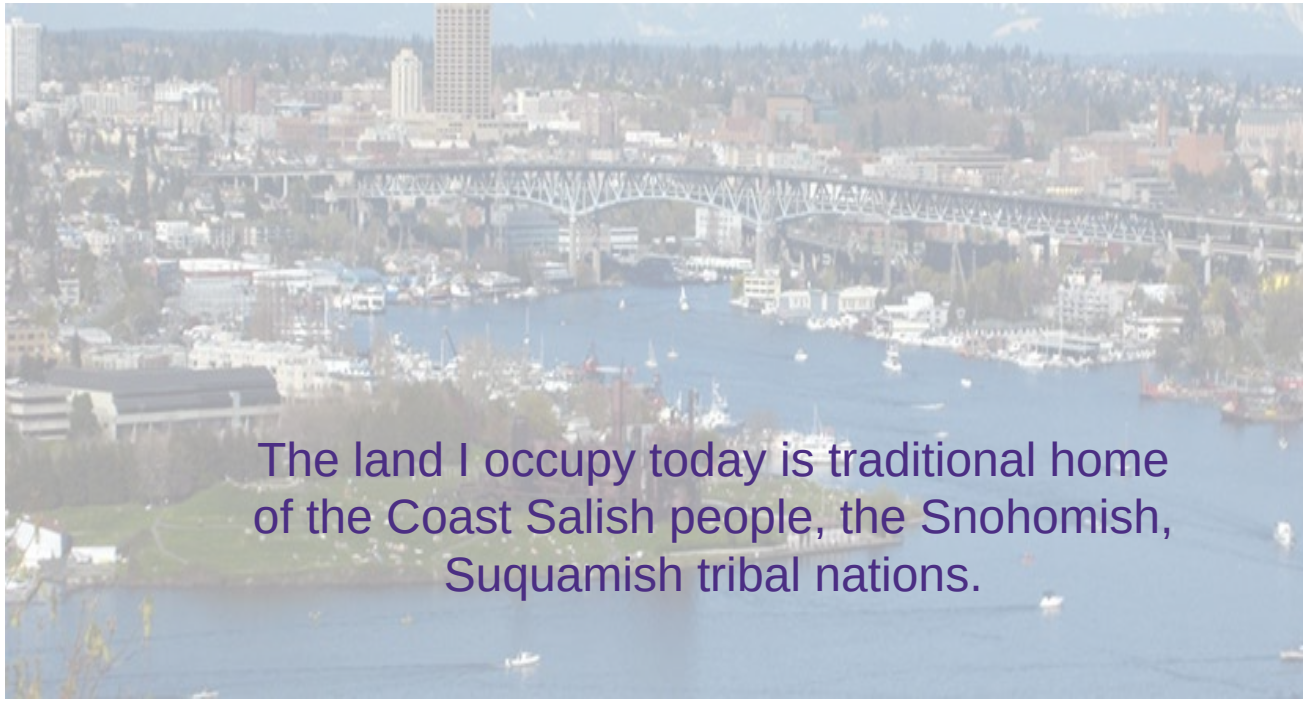
Land Acknowledgement



For information on North American Indigenous territories see: https://native-land.ca/

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Outline

> **In this talk I will discuss a variety of issues related to the study of race & racism and epidemiologic investigations**

1. **Study design: Field studies and natural experiments**
2. **Data collection: Alternative approaches to race measurement**
3. **Analysis: Choice of referent group for health disparities research**
4. **Analysis: Data disaggregation and small populations**
5. **Analysis: Race as a cause**

Background

- **Epidemiological research has long been interested in understanding race/ethnic disparities**

- **Some research perpetuates the myth that race is a biological construct either explicitly or implicitly**
  - **Role of science in creating and perpetuating racism**

- **Race capture important social stratification and for that reason continues to be widely used**

To avoid using race inappropriately

- **Explain the reasons you are using race**
  - **Not providing an explanation implies a natural and neutral grouping of people**
- **Explain how race was measured (e.g, open vs closed ended question, number of pre-specified categories)**
- **Biological/genetic explanations for racial differences are unacceptable**
  - **Use genetic data to back up explanations like this**

Boyd 2020, Kaplan 2001

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Race as a proxy for racism

- **Sometimes we are considering race as a proxy for racism if so**
  - **Define the form (interpersonal, institutional or internalized)**
  - **The mechanism by which its operating**
  - **Other intersecting forms of oppression (gender, age, sexual orientation)**
- **Some study designs can effectively evaluate racism**

Boyd 2020

Study designs to assess the effect of racism

- **Field studies allow for clear assessment of racism**
- **Controlled experiments allow all factors to be the same except race**
- **In these studies race can mean only one thing – racism/discrimination**
- **Disadvantage: limited in types of questions you can ask**

The effect of race and sex on physicians recommendations for cardiac catherization

- Recruited 8 actors based on age, race and sex
- Physicians viewed video recordings with information on symptoms, risk factors, insurance etc.
- Asked to make decisions on care, probability of coronary artery disease
- Black women less likely to be recommended for cardiac catherization

Schulman 1999

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Study designs to assess the effect of racism

- **Natural experiments can also evaluate racism**
- **Any event not under the control of a researcher that divides a population into exposed and unexposed groups**
  - **Use this naturally occurring variation in exposure to identify the impact of the event on some outcome of interest**
- **Need appropriate data for before/after comparisons**

Study designs to assess the effect of racism

Birth Outcomes Among Arab Americans in Michigan Before and After the Terrorist Attacks of September 11, 2001

Objective: To assess whether the incidence of adverse birth outcomes among Arab Americans in Michigan changed after September 11, 2001.

Abdulrahman El-Sayed, BS; Craig Hadley, PhD; Sandro Galea, MD, DrPH

Change in birth outcomes among infants born to Latina mothers after a major immigration raid

Nicole L Novak,[1]* Arline T Geronimus[2,3] and Aresha M Martinez-Cardoso[2]

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Novak et al

- **Largest immigration raid in US history at that time**
- **900 ICE agents and 60 helicopters**
- **Used presumed race/ethnicity to identify undocumented workers**

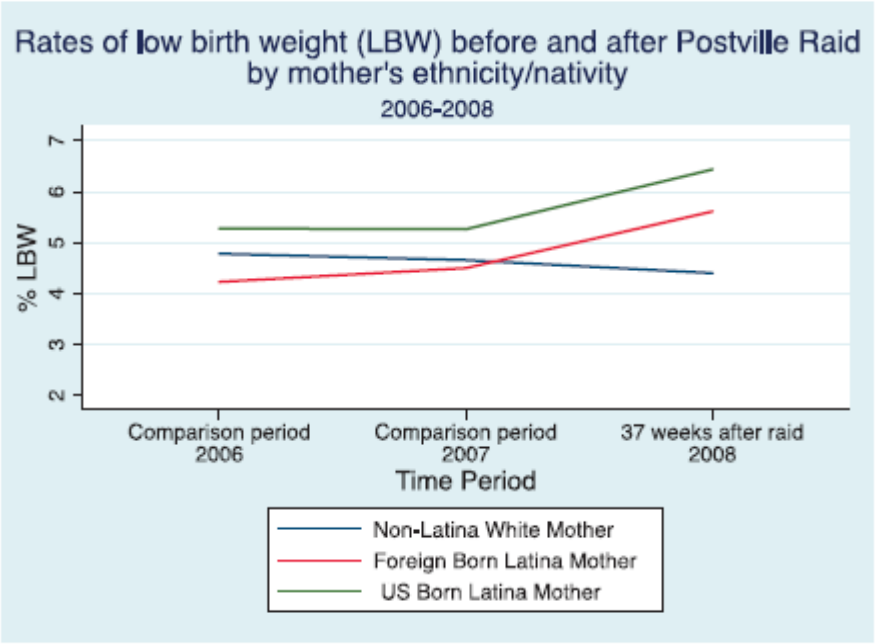

Figure 1. Descriptive graph: rates of low birthweight (LBW) in the 37 weeks following the Postville raid compared with the same time period 1 and 2 years earlier.

Data collection: Measurement of race

- **Many dimensions of race all measuring distinct but related concepts**
- **Racial categories are imprecise, broad and overlapping**
  - **Obscure within group heterogeniety**
- **The word “race” is a proxy for each of the measures**
- **Measures that follow are:**
  - **Not an exhaustive list**
  - **Other terms used to describe these measures**

Roth WD. 2016 The multiple dimensions of race. Ethnic and Racial Studies.

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Measures of Race

Dimension of race	Description	Typical measurement
Racial self-classification	Box to check on form	Closed-ended question
Racial identity	Subjective self identification, not limited to pre-set options	Open-ended question
Observed race	The race others believe you to be	Interviewer classification
• Appearance based	Based on readily observable characteristics	Classify at first observation
• Interaction based	Based on characteristics revealed through interaction	Classify at end of interaction

Roth WD. 2016 The multiple dimensions of race. Ethnic and Racial Studies.

Measures of Race

Dimension of race	Description	Typical measurement
Reflected Race	The race you believe others assume you to be	What race do most people think you are?
Phenotype, e.g., skin color, other features	Racial appearance	Interviewer classification
	Racial appearance	Self-reported
	Objective measurement	Spectrophotometer; reflectance meter

Roth WD. 2016 The multiple dimensions of race. Ethnic and Racial Studies.

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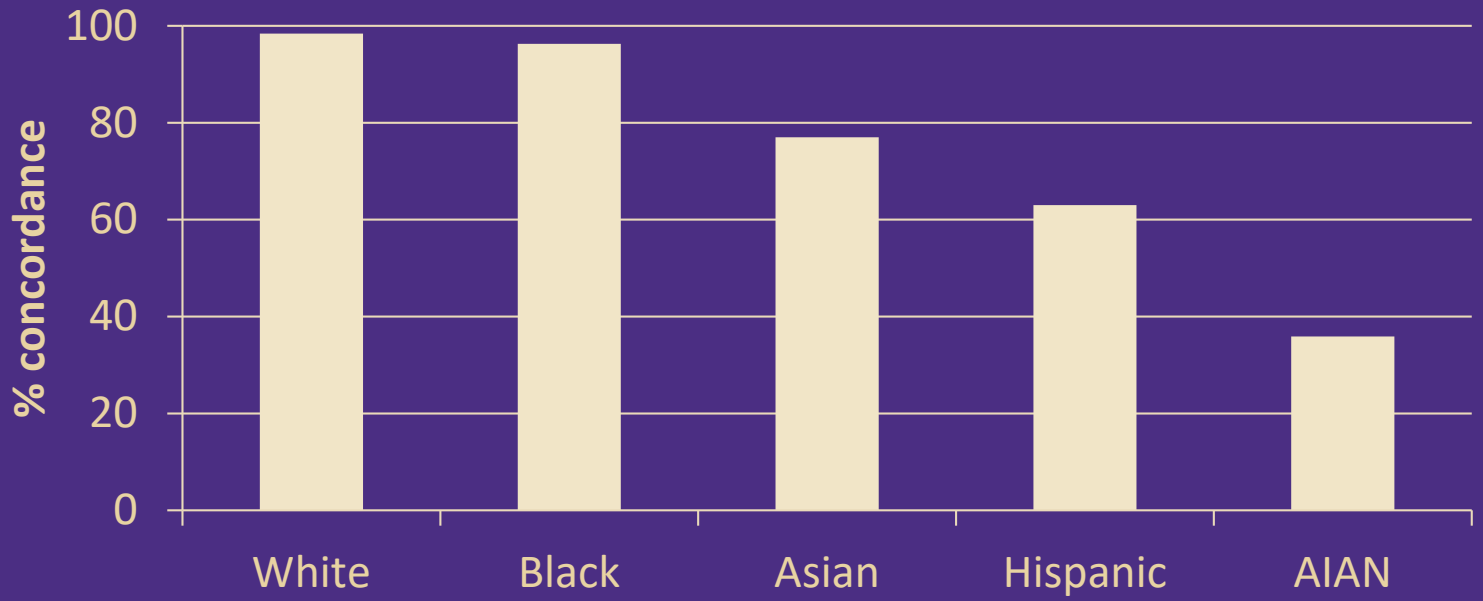
Comparing self-identified to reflected race

- **BRFSS module Reactions to Race asked following questions:**
  - **Racial self-classification: “Are you Hispanic or Latino?” And “Which one or more of the following would you say is your race?”**
  - **Reflected race (i.e. socially assigned race): “How do other people usually classify you in this country?”**
    - **Responses: White, Black or African American, Hispanic or Latino, Asian, Native Hawaiian or Other Pacific Islander, AIAN or Some other group**

Jones CP et al, 2008

Concordance between self-identified and reflected race



Jones CP et al, 2008

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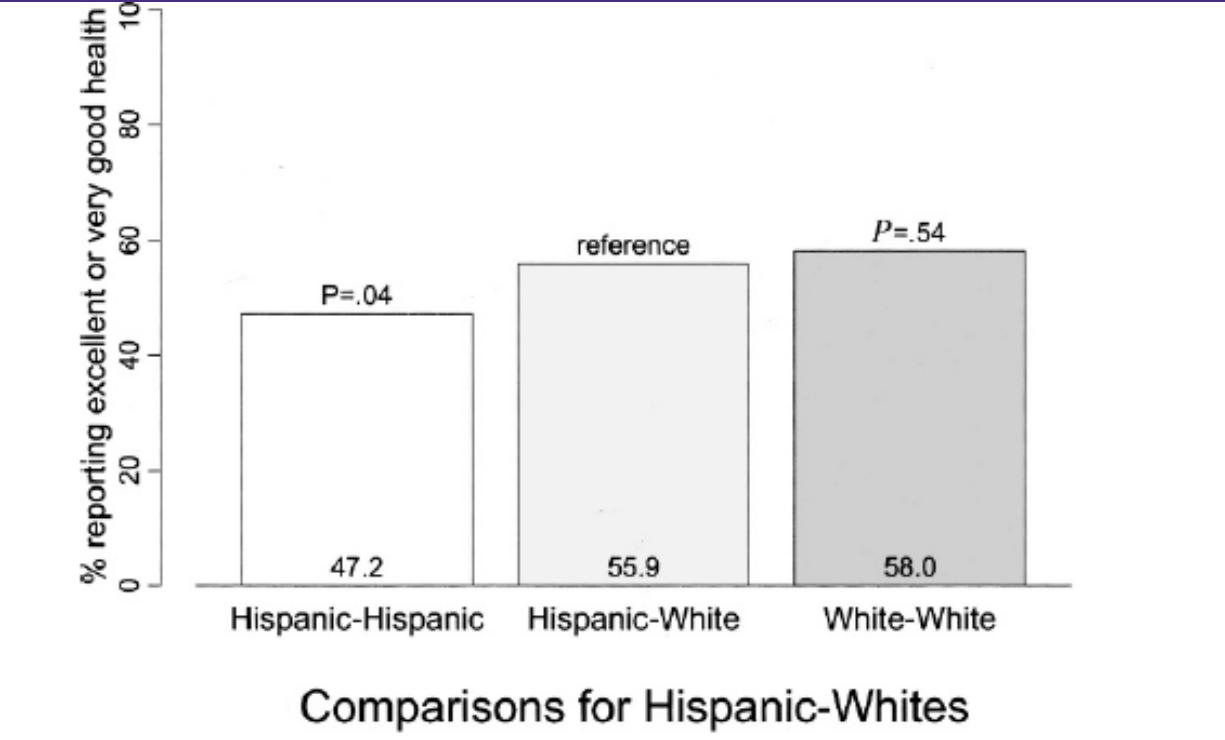
% reporting excellent/very good health Latinx



Jones CP et al, 2008

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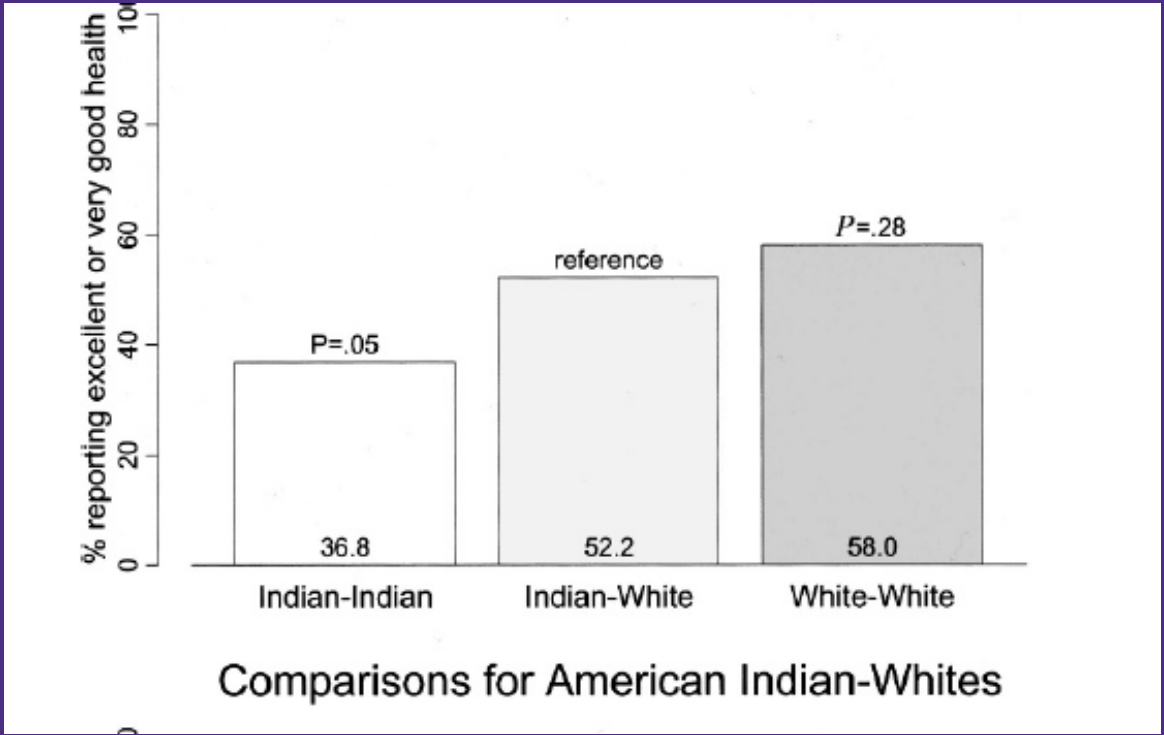
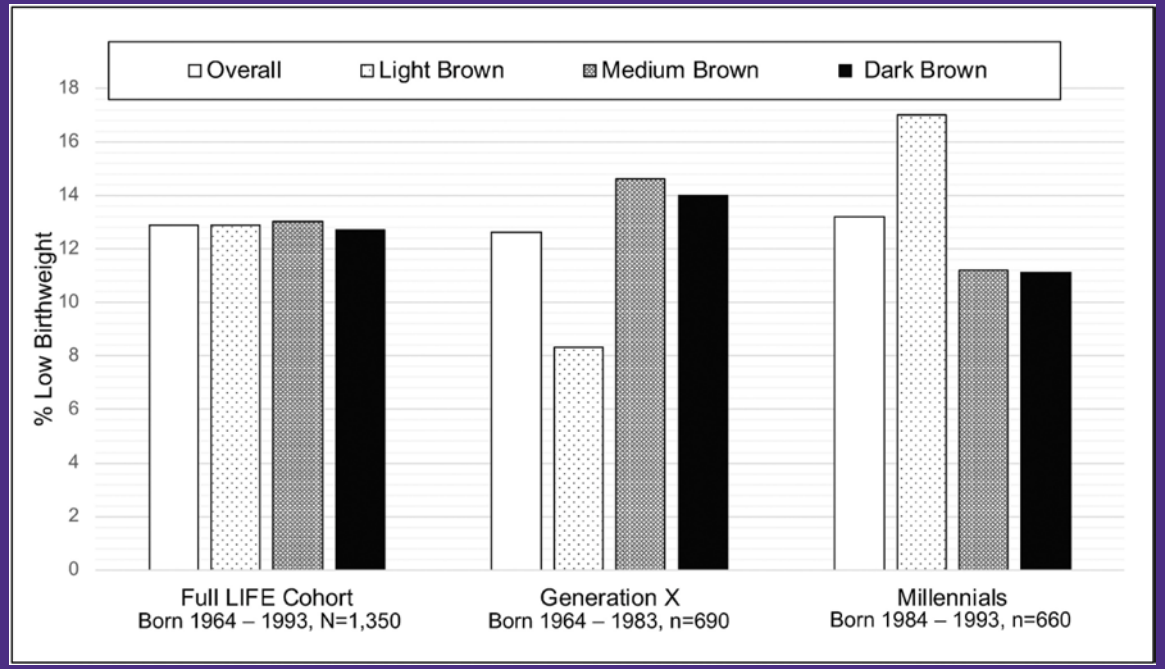
% reporting excellent/very good health AIAN



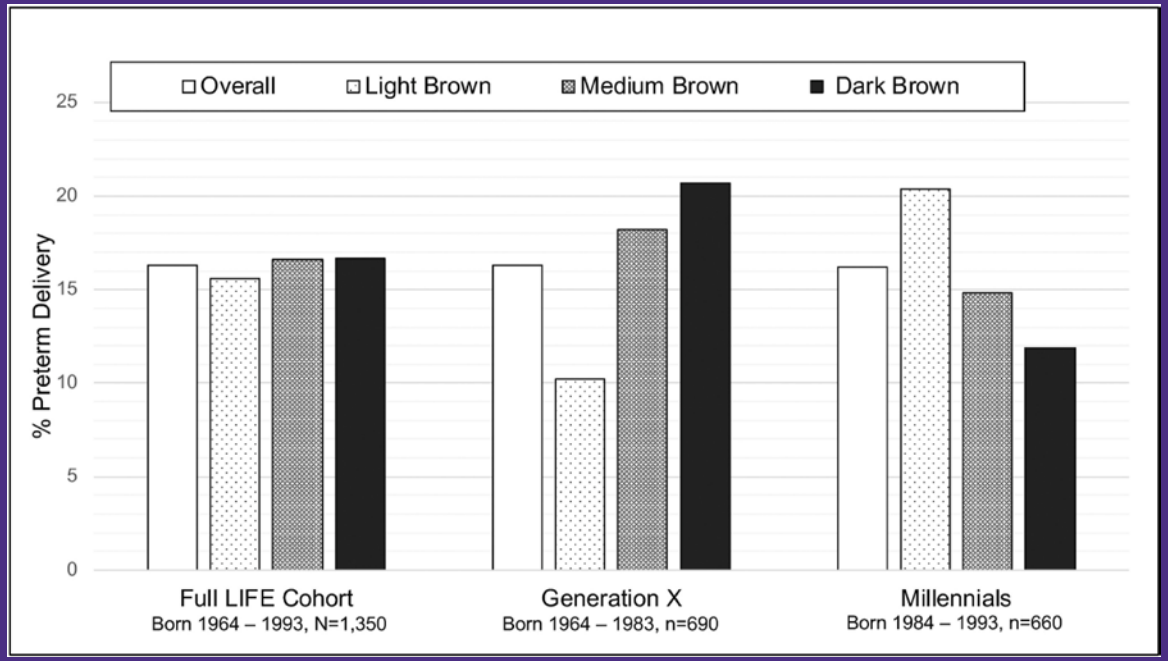
Jones CP et al, 2008

Distribution of low birthweight stratified by generation and skin tone



Slaughter-Acey et al, 2020

Distribution of preterm birth stratified by generation and skin tone



Slaughter-Acey et al, 2020

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Measurement of race

- **Different dimensions of race can produce different findings of inequality**
  - **Some dimensions may be more appropriate for evaluating health outcomes than others**
  - **Skin tone, observed or reflected race may better measure perceived discrimination**

- **Racial identity may change over time and is influenced by context**

- **Racial categories are imprecise, broad and overlapping**
  - **Obscure within group heterogeneity**

Roth WD. 2016, Kaplan 2003

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Analysis: Selecting a reference group

- **The referent group is who other members of the population are compared to**
- **Many health disparities studies use non-Hispanic whites as the referent group**
- **This practice centers whiteness and implies that white populations are the norm**

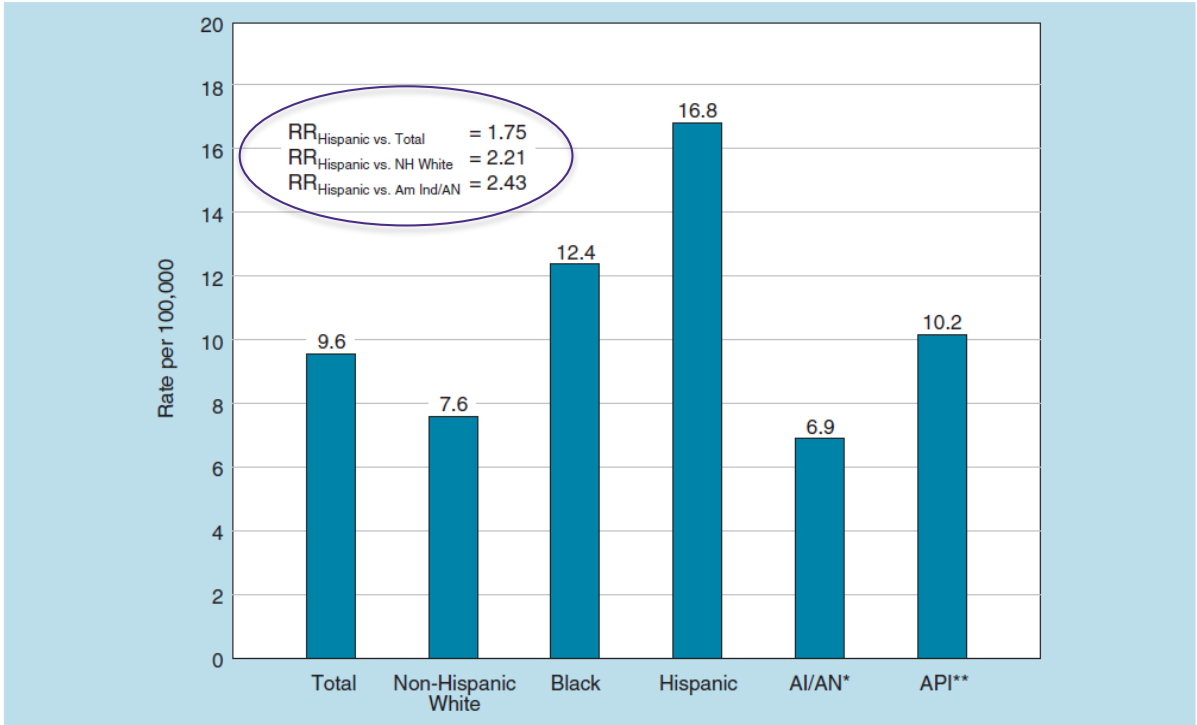
Harper 2005, 2013

Analysis: Selecting a reference group

- **Best off group**
- **All those who are better off (combine multiple groups)**
  - **Instability in best-off group could make this a better comparator**
  - **Characterizes the full range of health risks**
- **The average or some other point on the distribution**
  - **Can be used to define what constitutes the health disparity**
- **Fixed or target rate**
  - **Remains constant over time (e.g., Healthy People target)**

Harper 2005, 2013

Figure 6. Relative Risk (RR) of Incident Cervical Cancer Among Hispanics According to Varying Reference Groups, 1996–2000



*AI/AN = American Indian/Alaska Native
**API = Asian/Pacific Islander
Source: SEER Cancer Statistics Review, 1975–2000.

Harper 2005

Poll question 1

Which referent group would you pick?

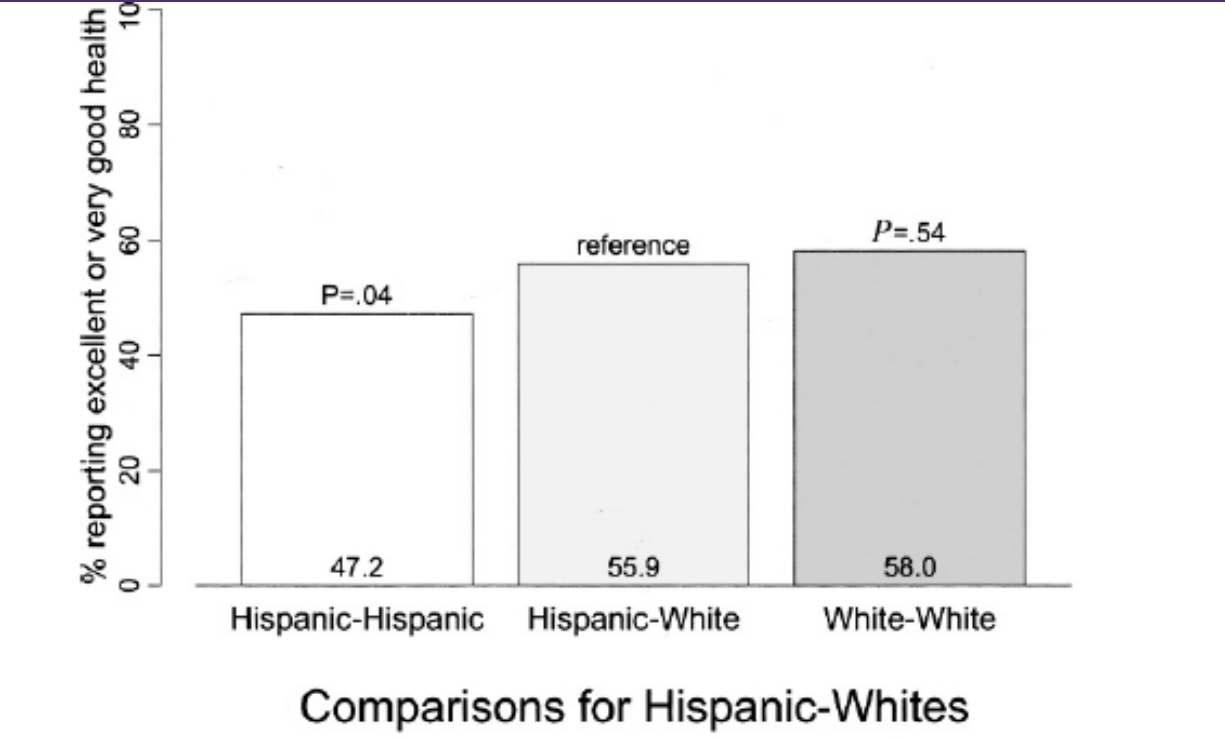
a. **Total**

b. **White**

c. **American Indian/Alaska Native (AI/AN)**

d. **Something else**

% reporting excellent/very good health Latinx



Jones CP et al, 2008

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Poll question 2

Authors selected Hispanic-white as referent. Do you agree with this choice?

a. **Yes, seems reasonable**

b. **No, I would have picked white-white**

Analysis: Selecting a reference group

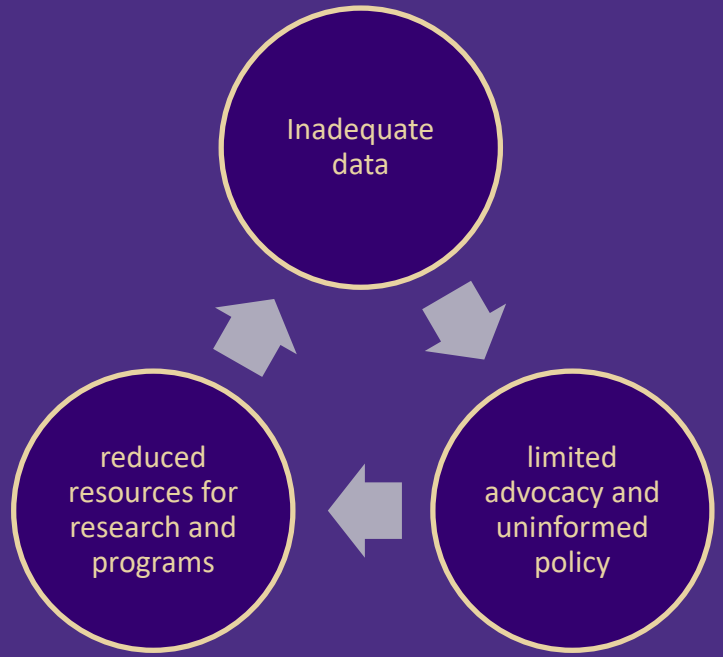
- **If evaluating trends over time referent group should be stable (not too much variability)**

- **Careful consideration of referent group is needed especially when trying to understand racial/ethnic health disparities**

- **Articulation of why referent group was chosen**
  - e.g., “To evaluate disparities in the prevalence of SMM, we conducted multivariable logistic regression models ***with White women as the reference group because they had the lowest risk of SMM***.” Leonard et al 2019

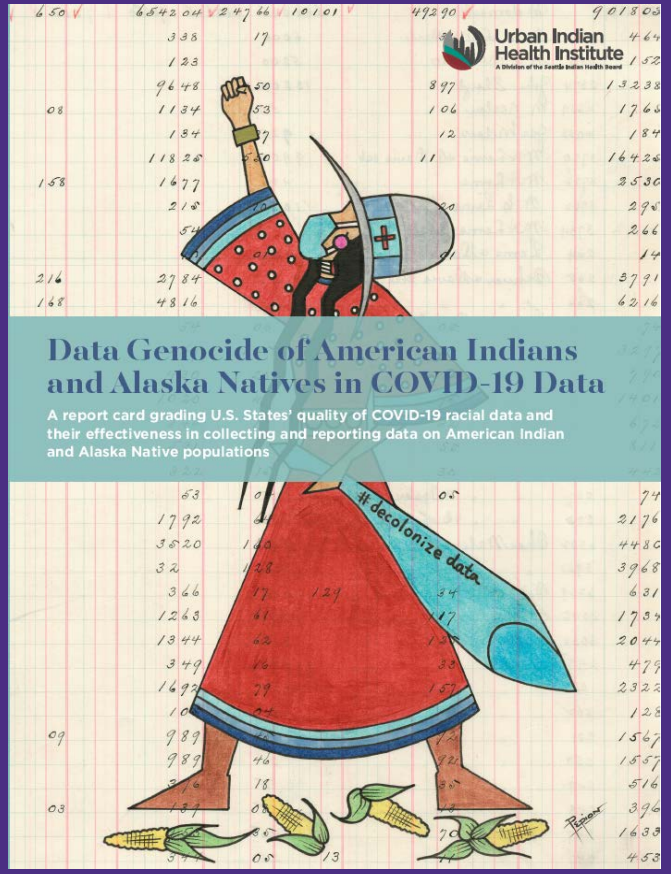
Analysis: Data disaggregation and small populations

- Absence of data can perpetuate and exacerbate poor health and health disparities for small populations
- Lack of data masks health disparities
- Limits ability to make data-driven decisions about resources and policy
- Data is power



Korngiebel 2015, UIHI 2021

State Information		State Reported COVID-19 Information		Centers for Disease Control and Prevention COVID-19 National Surveillance Data		Overall Grade
State	American Indian/Alaska Native (AI/AN) Population*†	Is AI/AN Population Included on State Dashboard	% of Cases with Complete Racial Information Reported on State Dashboard	% of Confirmed Cases from the State Reported to CDC	% of Confirmed Cases with Complete Racial Information Reported on CDC Database	
Minnesota	124,345	Yes (100%)	B+ (88%)	A+ (100%)	B (83%)	A (93%)
Mississippi	31,669	Yes (100%)	B (83%)	F (29%)	B (84%)	C (74%)
Missouri	87,760	Yes (100%)	D- (60%)	F (13%)	C- (70%)	D- (61%)
Montana	90,472	Yes (100%)	C- (70%)	A (96%)	C- (72%)	B (84%)
Nebraska	43,760	Yes (100%)	F (58%)	F (27%)	C+ (78%)	D (66%)
Nevada	85,953	Yes (100%)	B+ (87%)	B+ (89%)	F (53%)	B- (82%)
New Hampshire	12,534	No (0%)	F (57%)	F (20%)	B- (81%)	F (39%)
New Jersey	102,441	No (0%)	D (63%)	A+ (98%)	F (48%)	F (52%)
New Mexico	257,858	Yes (100%)	C (76%)	F (35%)	D (64%)	D+ (69%)
New York	318,858	No (0%)	F (0%)	D+ (69%)	F (39%)	F (27%)
North Carolina	245,724	Yes (100%)	C- (70%)	A+ (99%)	C- (70%)	B (85%)
North Dakota	51,664	Yes (100%)	D (63%)	F (50%)	F (6%)	F (55%)
Ohio	107,899	Yes (100%)	C- (70%)	—	C (73%)	B- (81%)
Oklahoma	553,509	Yes (100%)	C (74%)	B- (80%)	C+ (77%)	B (83%)
Oregon	146,851	Yes (100%)	F (56%)	A (94%)	F (57%)	C+ (77%)
Pennsylvania	117,073	No (0%)	F (59%)	A+ (99%)	D (63%)	F (55%)



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Alternative approaches to better capture small populations

- **Collect in-language data**
- **Create sampling frames & oversample small populations**
- **Standardize data collection to better pool across data sets**
- **Changes to surveillance and other public health data collection systems**
- **Advocacy at the state and institutional level**

Rubin 2018, UIUI 2021

Combining data to deal with small numbers

- **Collapsing dissimilar groups masks health disparities**
  - **e.g., native Hawaiians and Asian Americans**
- **Combining data from similar neighboring groups**
  - **When deciding which groups to collapse community engaged research (using qualitative methods)**
  - **Consider historical, social, cultural factors when deciding how to combine groups**
- **Specifically for AI/AN scarcity of data is harmful to communities**

Korngiebel 2015, UIHI 2021

Poll question 3

Under the potential outcomes framework of causation, can race be an cause of disease?

a. **Yes**
b. **No**
c. **Sometimes/it depends**
d. **I don’t know**

Analysis: Can race be a cause?

- **Counterfactual model of causality allows for changes in exposure, while all other factors remain the same**
  - **Exchangeability**
- **This implies that exposure must be manipulable, not fixed attributes**
- **If not manipulable can not distinguish between associations and causation**

Kaufman 2001

Poll question 4

In epidemiology, is adjusting for a variable that is in the causal pathway an acceptable practice?

a. **Yes, it is common practice**
b. **No, it biases the effect estimate**
c. **Sometimes/it depends**
d. **I don’t know**

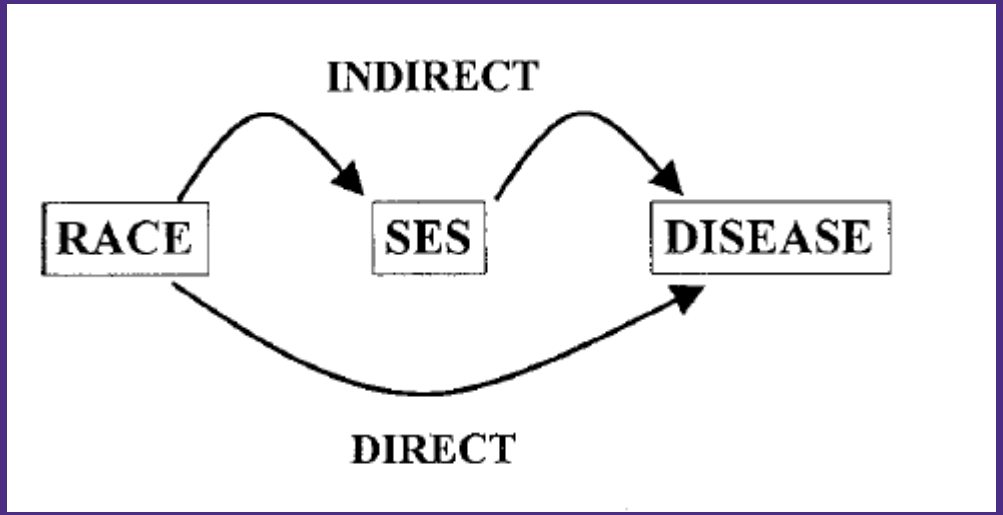
Adjustment for covariates

- **Most other variables are consequences of race**
- **Adjustment for other variables (e.g., SES) means adjustment for a variable on the causal pathway (mediator/intermediary)**
- **Adjustment for intermediaries biases effect estimates**
  - **Measurement error in intermediaries**
  - **Will not get valid estimates of direct effect**

Kaufman 2001

Adjustment for covariates

> **Can decompose direct and indirect effects**



Conclusions

- **Explain the reasons you are using race in your research**
- **Do not offer biological explanations for race**
- **Consider race in every stage of study from design to analysis**
  - **Experimental designs and natural experiment may allow for exploration of racism**
  - **Exploring alternative approaches to race measurement may yield different findings**
  - **Carefully consider and justify choice of referent group**
  - **Disaggregation of data can unmask disparities and empower small communities**
  - **Many considerations around analysis**

Thank you

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