COVID-19 inequities in:
(1) exposure, due to working & living conditions
(2) risk of dying, if infected, due to pre-existing social, economic, and health inequities
(3) vaccine roll-outs & access & institutional mistrust
(4) data for action to change these terrible facts

Nancy Krieger, PhD
Harvard T.H. Chan
School of Public Health

US COVID-19 Health Equity Task Force
“Data challenges and opportunities”
(virtual)
February 26, 2021

https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6
https://www.apmresearchlab.org/covid/deaths-by-race
HEALTH INEQUITIES &
THE TWO-EDGED SWORD OF DATA

DATA: NEVER A “GIVEN” – despite being past participle of Latin verb “dare,” to give – ALWAYS must ask:

-- Who produces & controls the data? – i.e., who is vs is not at the proverbial table?
-- And be aware of long US histories of contested production & use of racialized data, in relation to:

(1) scientific racism + eugenics vs. (2) social justice + equity

SWORD EDGE 1: “No data, no problem” (denial)

SWORD EDGE 2: “Problematic data, big problem”

COVID-19 & MISSING DATA: denial of inequities & erasure of structural injustice

Missing data on race/ethnicity

Early months of the pandemic (2020):
- Feb & March: racial/ethnic data missing from CDC for cases, hospitalizations, deaths
- April: journalists, politicians, and public health professionals & advocates demand data
- June 4: new regulations mandating these data be reported by August 1, 2020

BUT:
- Sept 16, 2020: checked the CDC website – and determined that race/ethnicity was missing for 43% of COVID-19 cases added between Aug 28, 2020 and Sept 16, 2020
- Feb 4, 2021: checked again, and these data still missing for 33% of COVID-19 cases reported between December 2, 2020 and February 3, 2021

Ongoing problems: missed opportunity to get it right with vaccination data
- Feb 1: CDC reported racial/ethnic data missing for 48.1% of persons vaccinated against COVID-19 in the 1st month of roll-out (Dec 14, 2020-Jan 14, 2021), but only 0.1% and 3% were missing data respectively on age and sex – and once again, demands for these data

AND: no economic, occupational, community, or other contextual data, leaving the decontextualized racial/ethnic data open to narratives of victim-blaming

**PROBLEMATIC PROPORTIONS: Part 1**

Figure 1: Simplified example of CDC's geographical weighting using a fictitious state with three counties & (2) Actual CDC weighting of counties in New York State by population, household crowding, and percent of county population who are people of color.

- **County A:** Similar to Bronx
  - 50% (10/20) POC; n=4 (80%) deaths
- **County B:** Similar to Saratoga
  - 0% (0/10) POC, n=0 (0%) deaths
- **County C:** Similar to Albany
  - 20% (2/10) POC; n=1 (20%) deaths

**Figure 2**

<table>
<thead>
<tr>
<th>Racial/ethnic group</th>
<th>CDC/NCHS Weighted Pop.</th>
<th>U.S. Census Pop.</th>
<th>Difference</th>
<th>Ratio</th>
<th>Difference</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>American Indian and Alaska Native (AIAN)</strong>&lt;sup&gt;5&lt;/sup&gt;</td>
<td>0.4%</td>
<td>0.2%</td>
<td>0.7%</td>
<td>0.2%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>2.00&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-0.3%</td>
</tr>
<tr>
<td><strong>Asian American</strong></td>
<td>5.8%</td>
<td>11.5%</td>
<td>5.7%</td>
<td>-5.7%</td>
<td>0.50</td>
<td>0.1%&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>22.4%</td>
<td>18.2%</td>
<td>12.5%</td>
<td>4.2%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.23&lt;sup&gt;*&lt;/sup&gt;</td>
<td>9.9%&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Latinx</strong></td>
<td>16.6%</td>
<td>26.8%</td>
<td>18.3%</td>
<td>-10.2%</td>
<td>0.62</td>
<td>-1.7%</td>
</tr>
<tr>
<td><strong>Other Race</strong>&lt;sup&gt;6&lt;/sup&gt;</td>
<td>2.5%</td>
<td>1.9%</td>
<td>2.4%</td>
<td>0.6%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.32&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.1%&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>52.3%</td>
<td>41.4%</td>
<td>60.4%</td>
<td>10.9%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.26&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-8.1%</td>
</tr>
</tbody>
</table>

**Data as of May 13, 2020**

<table>
<thead>
<tr>
<th>Racial/ethnic group</th>
<th>COVID-19 Deaths&lt;sup&gt;2&lt;/sup&gt;</th>
<th>CDC/NCHS Weighted Pop.</th>
<th>U.S. Census Pop.</th>
<th>Difference</th>
<th>Ratio</th>
<th>Difference</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>American Indian and Alaska Native (AIAN)</strong>&lt;sup&gt;5&lt;/sup&gt;</td>
<td>0.4%</td>
<td>0.2%</td>
<td>0.7%</td>
<td>0.2%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>2.00&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-0.3%</td>
<td>0.57</td>
</tr>
<tr>
<td><strong>Asian American</strong></td>
<td>5.8%</td>
<td>11.5%</td>
<td>5.7%</td>
<td>-5.7%</td>
<td>0.50</td>
<td>0.1%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.02&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>22.4%</td>
<td>18.2%</td>
<td>12.5%</td>
<td>4.2%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.23&lt;sup&gt;*&lt;/sup&gt;</td>
<td>9.9%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.79&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Latinx</strong></td>
<td>16.6%</td>
<td>26.8%</td>
<td>18.3%</td>
<td>-10.2%</td>
<td>0.62</td>
<td>-1.7%</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>Other Race</strong>&lt;sup&gt;6&lt;/sup&gt;</td>
<td>2.5%</td>
<td>1.9%</td>
<td>2.4%</td>
<td>0.6%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.32&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.1%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.04&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>52.3%</td>
<td>41.4%</td>
<td>60.4%</td>
<td>10.9%&lt;sup&gt;*&lt;/sup&gt;</td>
<td>1.26&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-8.1%</td>
<td>0.87</td>
</tr>
</tbody>
</table>

**Type III error: right answer to wrong question**

Source: Cowger et al, *JAMA Open Network*, July 28, 2020
PROBLEMATIC PROPORTIONS: Part 2

Current CDC website: 0 total population data

Cases by Race/Ethnicity:

Data from 21,123,263 cases. Race/Ethnicity was available for 10,986,570 (52%) cases.

Deaths by Race/Ethnicity:

Data from 360,375 deaths. Race/Ethnicity was available for 268,786 (74%) deaths.

https://covid.cdc.gov/covid-data-tracker/#demographics
COVID-19 IN THE US: IT IS FEASIBLE TO DOCUMENT HEALTH INEQUITIES, NOW

Examples (from our unfunded team*):

-- April 19: we reported US COVID-19 mortality by county-level metrics of inequities

-- May 9: we reported on the surge in MA excess deaths by city/town & ZIP Code metrics

-- Oct 5: we reported on national complaints to OSHA in relation to COVID-19 death rates

This week: using data newly showing up on the CDC website, we report on national COVID-19 mortality by race/ethnicity + education

* Core team members: Nancy Krieger, Jarvis T. Chen, Pamela D. Waterman, Christian Testa

ICE for racialized economic segregation

\[ ICE_i = \frac{A_i - P_i}{T_i} \]

where:
- \( A_i \) = N of most privileged
- \( P_i \) = N of most deprived
- \( T_i \) = total N

- 1 = 100% deprivation
- 1 = 100% privilege

people living in the most disadvantaged counties have the highest COVID-19 death rates

A new analysis: Coronavirus death rate surged in Massachusetts locations that already faced challenges

Harvard analysis finds mortality rate surged higher in communities with more poverty, people of color, and crowded housing. *Boston Globe front page* Sun, May 10, 2020

**ICE for racialized economic segregation:**

-1 = 100% low-income households of color

1 = 100% high-income white non-Hispanic households

COVID-19 and Overall Mortality Inequities in the Surge in Death Rates by Zip Code Characteristics: Massachusetts, January 1 to May 19, 2020

*AJPH* December 2020, Vol 110, No. 12

Nancy Kruger, PhD, Pamela D. Waterman, MPH, and Jarvis T. Chen, ScD

**By Index of Concentration at the Extremes, 2015–2019**

**By Index of Concentration at the Extremes, 2020**

At peak, most disadvantaged quintile of ICE RR=1.26 (1.11-1.44) relative to most advantaged quintile of ICE

**By % crowding, 2015–2019**

**By % crowding, 2020**

At peak, 3.1-45.4% crowding RR=1.42 (1.25-1.61) relative to 0-0.6% crowding

Fig 1. National OSHA complaints and COVID—19 deaths per million (7 Day Average), January 16-September 18, 2020

Fig 2. Heatmaps showing the lagged correlations between OSHA complaint volume and COVID-19 cases and COVID-19 deaths, nationally and by US region, January 16, 2020—September 30, 2020

Source: Hanage et al, Eur J Epidemiol (epub Nov 2, 2020)
COVID-19 Mortality rates (per 100,000 person-years) and rate ratios: Jan 1, 2020 – Jan 31, 2021

Note: education has been a standard variable on the standard death certificate since 1989!

Note: occupation is ALSO on the standard death certificate – especially relevant to working-age adults
COVID-19, DATA, & HEALTH JUSTICE: THE POINT IS HEALTH EQUITY

NEED BETTER DATA TO INFORM ACTION

-- REVEAL RACIALIZED ECONOMIC HEALTH INEQUITIES, IN REAL TIME

-- ALWAYS PRESENT COVID DATA BY RACIALIZED + ECONOMIC GROUP for: testing, cases, hospitalization, deaths & vaccination -- & by age + gender

Recommendations:

immediate: use informative contextual ZIP Code data for ALL COVID-19 outcomes
  use individual-level education & occupation data (for mortality data)
  use real-time US Census Household Pulse survey data (states & 15 big MSAs)
create real-time public roster of new social data CDC is adding for COVID-19

bigger picture: structural problems require structural solutions
-- ensure data reveal problems tied to work conditions, crowded housing, lack of paid sick
leave, lack of health care, & congregate living (including for incarcerated persons)
-- mandate all racialized data must be reported with contextualized social metrics and
mandate funds for the necessary resources (people & technology) to do the work
-- expand data governance to ensure real representation of those whose lived experiences
of inequities are being documented, so this is done fairly & shows structural causes


**EXTRA**

**Additional references for the extra slides:**


Source: Hanage et al, Eur J Epidemiol (epub Nov 2, 2020)
Yet: for 10/20-1/21, overlap of misery, using real-time economic data

Food insecurity: households with children < 18 yo

Renters behind on last month’s rent

Covid-19 death per million (cumulative since 10/1/20)
## US Census Household Pulse Survey: US (50 states + District of Columbia)

<table>
<thead>
<tr>
<th>Racialized Group</th>
<th>Food insecurity</th>
<th>Housing insecurity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 4 yrs college</td>
<td>4+ yrs college</td>
</tr>
<tr>
<td>White alone, not Hispanic (NH)</td>
<td>15.7%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Black alone, NH</td>
<td>29.2%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>26.2%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Asian alone, NH</td>
<td>15.8%</td>
<td>4.4%</td>
</tr>
<tr>
<td>2+ races + Other races, NH</td>
<td>26.7%</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

### Notes
- Oct 28, 2020 – Jan 18, 2021