COVID-19, the road ahead

Sandro Galea

Boston University School of Public Health
COVID-19 calls for a Marshall Plan for health

BY SANDRO GALEA, OPINION CONTRIBUTOR — 04/17/20 09:30 AM EDT
THE VIEWS EXPRESSED BY CONTRIBUTORS ARE THEIR OWN AND NOT THE VIEW OF THE HILL

110 SHARES

Just In...

Sanders tells Maher 'there will be a number of challenges' to overcome
1. First, we need to understand health
The spending mismatch: health determinants vs. health expenditures

Determinants

- 10% Physical environment
- 20% Medicine
- 30% Healthy behaviors
- 40% Socioeconomic factors

National health expenditures

- Medicine 90%
- Healthy behaviors 9%
- Other 1%
Health Care Spending as a Percent of GDP, 1980–2018

Notes: Current expenditures on health. Based on System of Health Accounts methodology, with some differences between country methodologies. GDP = gross domestic product. OECD average reflects the average of 36 OECD member countries, including ones not shown here. * 2018 data are provisional or estimated.

Figure 3 | Historical and projected federal spending: health care and other programs.
SOURCE: Data from Congressional Budget Office.
B3: **Percentage Spending Growth FY2001-2015**

- Health Care
- Transportation
- Housing (including Emergency Assistance)
- Housing (net of Emergency Assistance)
- Primary and Secondary Education
- Law Enforcement and Public Safety
- Mental Health
- Higher Education
- Early Childhood Care and Education
- Public Health
- Environment and Recreation

All data adjusted by CPI to 2015 dollars

Data from the Massachusetts Budget and Policy Center, State Budget Browser
American exceptionalism
Life expectancy at birth, selected OECD countries

Source: OECD, U.S. Census Bureau

American exceptionalism
Life expectancy at birth, selected OECD countries

<table>
<thead>
<tr>
<th>Year</th>
<th>Australia</th>
<th>France</th>
<th>Canada</th>
<th>Finland</th>
<th>U.K.</th>
<th>U.S. (2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>68.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>70.0</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1980</td>
<td>72.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>74.0</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>76.0</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>2015</td>
<td>78.6</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: OECD, U.S. Census Bureau

Parks, opportunity for recreation
Poverty
Unstable housing
Isolation
Life expectancy vs. health expenditure over time (1970-2014)

Health spending measures the consumption of health care goods and services, including personal health care (curative care, rehabilitative care, long-term care, ancillary services and medical goods) and collective services (prevention and public health services as well as health administration), but excluding spending on investments. Shown is total health expenditure (financed by public and private sources).

2. Compounding underlying social divides
The income of the richest 20% grew by $4 trillion; a trillion more than what the entire poorest 80% made.
Racial income and wealth gaps
Median income and wealth of black and white families over time, in 2016 dollars

Sources: Survey of Consumer Finances
THE WASHINGTON POST

Figure 1: Median Household Net Worth by Race and Education

<table>
<thead>
<tr>
<th>Education</th>
<th>White</th>
<th>Black</th>
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<tbody>
<tr>
<td>Post College</td>
<td>$455,212</td>
<td>$141,115</td>
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<tr>
<td>College</td>
<td>$268,028</td>
<td>$70,219</td>
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<tr>
<td>Some College</td>
<td>$135,415</td>
<td>$18,200</td>
</tr>
<tr>
<td>High School</td>
<td>$118,580</td>
<td>$6,660</td>
</tr>
<tr>
<td>Less than High School</td>
<td>$82,968</td>
<td>$2,775</td>
</tr>
</tbody>
</table>

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).
Figure 3: Median Household Net Worth by Race and Household Income Quintile

Source: Authors' calculations, SIPP, 2014.

The Racial Wealth Divide Has Grown Over Three Decades

Median wealth by race, 1983 and 2016

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>White</th>
<th>Black</th>
<th>Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>$84,111</td>
<td>$110,160</td>
<td>$7,323</td>
<td>$4,289</td>
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<tr>
<td>2016</td>
<td>$81,704</td>
<td>$146,984</td>
<td>$3,557</td>
<td>$6,591</td>
</tr>
</tbody>
</table>


Fig. 1. Detroit home owners loan corporation redlining map, 1939.
In Detroit, amongst the most segregated cities in America, 8 Mile Road serves as a sharp racial dividing line.  
*Image: Dustin Cable*
3. The inevitable consequent health divides
Figure 1. Life expectancy, by race: United States, 1970–2010


https://www.cdc.gov/nchs/data/databriefs/db125.pdf
Figure 1. County-level slave population density in the year 1860. Map of US counties in 1860 with heat map of slave density (percent slaves per 100 county inhabitants). Counties in white did not have slaves or were nonslave counties. Areas in gray were excluded from final analysis because they were not yet considered states or were recently admitted states that were considered free of slaves. Data derived from map showing the distribution of the slave population of the southern states of the United States. Compiled from the census of 1860 by E. Hergesheimer, Engraved by Th. Leonhardt, in Library of Congress, Geography, and Map Division.
Figure 2. All-race stroke mortality for the years 2011 to 2013. Map of county-level stroke mortality rates for all stroke subtypes for years 2011 to 2013. Data are age adjusted and only includes those aged ≥35 years. Data derived from the Centers of Disease Control and Prevention, National Vitals Statistics System.
African American v. White mortality rate

Prevalence of High Blood Pressure and Diabetes by Age and Race

High blood pressure

- Ages 18-34: Black 10, White 20
- Ages 35-49: Black 30, White 40
- Ages 50-64: Black 50, White 60

Diabetes

- Ages 18-34: Black 5, White 10
- Ages 35-49: Black 15, White 20
- Ages 50-64: Black 25, White 30

Fig. 3. Redlined areas in city of Detroit planning and development department historic neighborhood.

Fig. 4. A. Change in Neighborhood Foreclosure Rate 2009–2011; Fig. 4B. Change in Prevalence of Poor Self-rated Health 2008–2012.
Figure 1. Overall Age-Standardized Prevalence of Cardiovascular Disease Among Participants 20 Years or Older Stratified by Income Group, 1999-2016

Figure 3. Comparison of Age-Standardized Prevalence in 1999-2000 vs 2015-2016, Stratified by Income Group

Prevalence of health conditions across census tracts, by median household income and race

Note: Prevalence estimates are based on 2016 and 2017 data. | Sources: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health (disease prevalence); American Community Survey (household income, race)
4. The Covid-19 moment
Between February and April, 10 percent of Americans ages 25 to 54 lost their jobs. The employed percentage of the population dropped to its **lowest level since 1975**, according to Labor Department data.

Hispanic Americans saw the steepest initial employment losses and still have the most ground to make up to reach pre-pandemic employment.
The recovery is also spread unequally. White Americans have recovered more than half of their jobs lost between April and February. Meanwhile, Black Americans have recovered just over a third of employment lost in the pandemic.

Unemployment rate by degree type, Oct. 2020

- Advanced degree
- Bachelor’s degree
- Associate degree
- High-school diploma
- Less than a high-school diploma

Note: Average monthly rate, 12 months ended Oct. 2020
Source: Labor Department

The coronavirus crisis is different

Job growth (or loss) since each recession began, based on weekly earnings

**1990 recession**

**2001 recession**

**2008 recession**

**Coronavirus crisis**

Notes: Based on a three-month average to show the trend in volatile data.
Source: Labor Department via IPUMS, with methodology assistance from Ernie Tedeschi of Evercore ISI

THE WASHINGTON POST
TWIN CRISIS AND SURGING ANGER CONVULSE U.S.

Pandemic Leaves Nation's Nerves on the Edge

By JACK HEALY and BRIONNE BURGER

They are parallel plagues ravaging America. The coronavirus... (text continues)

Black Voters’ Message to Democrats: Back to Normal Won’t Do

By ASTRAEUS WARD

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Videos From Protests Deepen Scrutiny of Aggressive Police Tactics

By SHAH A. DEMON and MIKE BAKER

Demonstrations continued across the United States on Sunday as the nation braced for another grinding night of unrest over police shootings and the killing of George Floyd, a black man who died in Minneapolis police custody. The demonstrations have led to reports of police using aggressive tactics to quell protests.

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Trump Offers No Calming Words As Taxi Unrest Reaches White House

By PETE BAKER and MAGGIE HAMBURGER

WASHINGTON — Inside the White House, the mood was bristling with tension. Hundreds of protesters gathered outside the gates, shouting curses at President Trump and in some cases throwing bricks and bottles. Television service providers were hit hard by hackers who took their websites offline. The protesters slammed the president's handling of the crisis. The scene was tense, with some protesters facing off against police officers.

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A Demand for Lasting Change As Protests Sweep Streets

By IAN SWIFT

The United States is in the midst of a national reckoning over police brutality and racial injustice. Protests have erupted across the country, demanding change and justice for George Floyd and other black Americans killed by police. The demand for lasting change is not new, but the intensity of the protests has grown in recent weeks.

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"All the News That's Fit to Print"
5. Covid-19 and health divides
We’ve lost at least 61,730 Black lives to COVID-19 to date

Black people account for:

- 13% of the US population
- 16% of deaths where race is known

This means Black people are dying at a rate nearly 1.5 times higher than their population share.
Nationwide, Black people have died at 1.5 times the rate of white people.

Deaths per 100,000 people by race or ethnicity:

- Black or African American: 150
- American Indian or Alaska Native: 142
- Hispanic or Latino: 123
- Native Hawaiian and Pacific Islander: 113
- White: 100
- Other: 83
- Asian: 74
- Two or more races: 15

[Notes ↓](https://covidtracking.com/race)
Cases by deprivation quintile, England

Deaths by deprivation quintile, England

Number of positive Covid-19 deaths

- Quintile 1 - most deprived
- Quintile 2
- Quintile 3
- Quintile 4
- Quintile 5 - least deprived

Week ending

6. Health haves, health have nots, and Covid-19
Figure. Odds Ratios Comparing Likelihood of Admission by Patient’s Race/Ethnicity Among Patients With a Positive COVID-19 Test Result

A. Unadjusted OR

<table>
<thead>
<tr>
<th>Group</th>
<th>OR (95% CI)</th>
<th>P value</th>
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<tbody>
<tr>
<td>White, non-Hispanic</td>
<td>1 [Reference]</td>
<td></td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>0.7 (0.6-0.9)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.0 (0.9-1.2)</td>
<td>.74</td>
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<tr>
<td>Asian, non-Hispanic</td>
<td>0.8 (0.6-0.9)</td>
<td>.03</td>
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<tr>
<td>Multiracial or other/non-Hispanic</td>
<td>1.1 (0.9-1.4)</td>
<td>.45</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.4 (0.3-0.5)</td>
<td>&lt;.001</td>
</tr>
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</table>

B. Adjusted for demographic characteristics, comorbidities, week, and insurance status

<table>
<thead>
<tr>
<th>Group</th>
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<td></td>
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<tr>
<td>Black, non-Hispanic</td>
<td>0.9 (0.7-1.1)</td>
<td>.34</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.1 (0.9-1.3)</td>
<td>.49</td>
</tr>
<tr>
<td>Asian, non-Hispanic</td>
<td>1.5 (1.1-2.0)</td>
<td>.01</td>
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<td>Multiracial or other/non-Hispanic</td>
<td>1.5 (1.1-2.0)</td>
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<tr>
<td>Unknown</td>
<td>0.8 (0.6-1.2)</td>
<td>.35</td>
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C. Adjusted for demographic characteristics, comorbidities, week, insurance status, and SES

<table>
<thead>
<tr>
<th>Group</th>
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<th>P value</th>
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</thead>
<tbody>
<tr>
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<td>1 [Reference]</td>
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<tr>
<td>Black, non-Hispanic</td>
<td>0.9 (0.7-1.1)</td>
<td>.23</td>
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<td>Hispanic</td>
<td>1.0 (0.8-1.2)</td>
<td>.90</td>
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<td>1.6 (1.1-2.3)</td>
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<td>1.4 (1.0-1.9)</td>
<td>.03</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.9 (0.6-1.4)</td>
<td>.74</td>
</tr>
</tbody>
</table>

OR indicates odds ratio; SES, socioeconomic status.
Fig. 1 | Proportion of smartphone users staying home all day. Income Q1 represents the lowest income group. Outcomes are presented as weekly averages. Period covered is 6 January to 3 May 2020. Sample comprises 210,288 census BGs with a mean of 89 active devices per BG per day.

Fig. 2 | Proportion of smartphone users working outside the home. Income Q1 represents the lowest income group. Outcomes are presented as weekly averages. Period covered is 6 January to 3 May 2020. Sample comprises 210,288 census BGs with a mean of 89 active devices per BG per day.
Ability to work remotely

- Bottom 25: 9%
- 25-50: 20%
- 50-75: 37%
- Top 25: 62%

Data: Bureau of Labor Statistics
Likely employed in essential industry

- Asian: 26.2%
- White: 26.9%
- Hispanic: 27.2%
- Black or African American: 37.8%

Data: Bureau of Labor Statistics
Figure 16. Medical vulnerability to COVID-19 or the effects of social isolation, by income

![Bar chart showing medical vulnerability by income decile](https://www.ifs.org.uk/publications/14879)

Note: Diagnoses include asthma, congestive heart failure, coronary heart disease, emphysema, chronic bronchitis, cancer or malignancy, diabetes and high blood pressure. Mental health based on self-reported mental health condition lasting or expected to last over 12 months. Deciles based on equivalised net household incomes, using modified OECD equivalence scale.

Source: Authors’ calculations using UK Household Longitudinal Survey wave 9 (ever diagnosed) and Family Resources Survey 2018–19 (mental health).
Death Rate For COVID-19 Patients In China Higher For Those With Underlying Conditions

- Cardiovascular disease: 10.5%
- Diabetes: 7.3%
- Chronic respiratory disease: 6.3%
- Age 60+: 6.0%
- Preexisting condition undetermined: 2.6%
- None: 0.9%

Notes: Preexisting condition death rates based on 504 deaths out of 20,812 cases.

Source: Chinese CDC
Credit: Ruth Talbot/NPR and Chris Zubak-Skees/Center for Public Integrity
Race-Ethnic Disparities in Prevalence of CDC Risk Factors for Severe Illness from COVID-19

A. Share with Risk Factors by Race/Ethnicity

B. Share with Risk Factors by Income

W= White, H= Hispanic, B= Black, AI= American Indian, A= Asian

Figure 2. Huge race gaps in COVID-19 death rates, especially in middle age

Ratio of death rates

Source: CDC data from 2/1/20-6/6/20 and 2018
Census Population Estimates for USA
Depression in U.S. adults before and during the COVID-19 pandemic

High assets and low stressors
High assets and high stressors
Low assets and low stressors
Low assets and high stressors

Ettman et al. COVID-19 stressors together with limited assets increase risk for depression. Under review.
7. Covid-19, the long-view
Pandemic Effect
 Estimated weekly deaths this year, by cause

Cerebrovascular diseases
5,000

Diabetes
3,000

2015-19 average

Hypertension
3,000

Alzheimer’s and dementia
7,000

Note: Includes weighted data to account for potential underreporting due to lag-time in collecting death certificates. Excludes deaths where Covid-19 was the underlying cause. Source: Centers for Disease Control and Prevention

Fig. 1. US Black and White (A) logged deaths per 100,000 and (B) life expectancy, 1900–2017.
Fig. 2. Hypothetical excess White mortality that would raise White mortality, or lower White life expectancy, to best-ever Black levels. (A) Logged deaths per 100,000 and (B) life expectancy for non-Hispanic Blacks and Whites, 2006 to 2017, representing all years with official US life tables for these populations. The bolded numbers represent the number of excess White deaths in 2020 needed to raise the most recent documented White mortality to the lowest-ever Black mortality, or lower the most recent documented White life expectancy to the highest-ever Black life expectancy, respectively.
Fatality rate of major virus outbreaks worldwide in the last 50 years as of 2020

Fatality rate of major virus outbreaks in the last 50 years as of 2020

Note: Worldwide; as of January 31, 2020
Further information regarding this statistic can be found on page 63.
Source(s): WHO; ScienceAlert; CDC; United Nations; China Global Television Network; Johns Hopkins University; Lancet; Various sources (Malaysian Journal of Pathology, CIDRAP; NEJM; ID 1095129

Number of deaths involving coronavirus disease 2019 (COVID-19), pneumonia, and influenza in the U.S. as of November 7, 2020

Deaths from all causes: 2,465,323
Deaths with pneumonia, influenza, or COVID-19: 359,119
Pneumonia deaths: 230,445
COVID-19 deaths: 225,683
Deaths with pneumonia and COVID-19: 102,780
Influenza deaths: 6,793

Sources
NCHS; CDC
© Statista 2020

Additional Information:
United States; as of November 7, 2020

Figure 3: Distribution of within-student change from winter 2019-fall 2019 vs. winter 2020-fall 2020 in math. Note: The vertical red and blue lines display the median growth estimate for winter 2019-fall 2019 and winter 2020-fall 2020 respectively. The black dashed line represents zero growth (e.g., winter and fall test scores were equivalent).
Most students are falling behind, but students of color are faring worse.

Amount students learned in the 2019–20 school year, % of historical scores¹

- Schools with >50% students of color
- All schools average
- Schools with >50% white students

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²Percent of an “average” year of learning gained by students in 2019–20 school year, where 100% is equivalent to historical matched scores over previous 3 years. Source: Curriculum Associates

Figure 5.
Mortality Rate Differences Relative to Persons with 17+ Years of Education, U.S. Women by Race/Ethnicity

Figure 2. Estimated Years of Life Lost

8. The road ahead
WARNING:
WE ARE NOT READY FOR
THE NEXT PANDEMIC

SCIENCE KNOWS
HOW TO FIGHT
AN OUTBREAK—
BUT POLICY STILL
GETS IN THE WAY
BY BRYAN WALSH

HOW TO KEEP THE
WORLD SAFE
BY BILL GATES
twitter/@sandrogalea
sgalea@bu.edu