

Understanding COVID-19's Outcomes and Possible Trajectory: Implications for Social Insurance Programs

By: Neil R. Powe, Bethany Cole, William J. Arnone, and Fay Lomax Cook for the Epidemiology Working Group

Executive Summary

The goal of the National Academy of Social Insurance's COVID-19 Task Force Epidemiology Working Group is to provide government officials, policymakers, and the public with an independent assessment of the pandemic's trajectory through 2022. The Epidemiology Working Group, composed of thirteen public health experts from various institutions, examined current epidemiological studies and data, identified key variables that affect pandemic outcomes, and assessed the pandemic's possible trajectory. The report describes three scenarios – optimistic, probable, and pessimistic. These scenarios are based on data available as of April 2021. Their likelihoods will no doubt be affected by subsequent developments in the trajectory of the pandemic. (See pages 20-22 of this report for a table with the probable trajectory, along with pessimistic and optimistic scenarios.)

Neil R. Powe, MD, served as the Chair of Epidemiology Working Group. He is the Constance B. Wofsy Distinguished Professor of Medicine at the University of California, San Francisco, and Chief of Medicine at the Priscilla Chan and Mark Zuckerberg San Francisco General Hospital. **Bethany Cole** served as Policy Analyst at the National Academy of Social Insurance during the writing of the report and is currently a graduate student in the Trachtenberg School of Public Policy and Public Administration at George Washington University. **William J. Arnone** is the Chief Executive Officer of the National Academy of Social Insurance. **Fay Lomax Cook**, Distinguished Visiting Fellow at the Academy, is Professor Emerita of human development and social policy at Northwestern University, and Director Emerita of Northwestern's Institute for Policy Research. **A full list of Epidemiology Working Group members is available at the end of this report.**

Under the probable scenario, effective vaccines are made available in 2021 for all adults and adolescents in the U.S. and reach 70 percent of that population by fall 2021. As a result of vaccinations and naturally occurring infections, the U.S. achieves reasonable community protection i.e., “herd immunity” by the end of 2021. Meeting community protection level thresholds, defined as 70- to- 90 percent of the U.S. population with immunity through either exposure or vaccinations, is critical to curtailing the pandemic. Even as the U.S. is delivering highly effective vaccines, outbreaks are likely to continue to occur, and COVID-19 prevention policies are essential to reduce cases and prevent deaths.

Policies and actions – including emergency orders, laws, regulations, guidance, and financial support provided by federal, state, and local government agencies – affect the actions of individuals, as well as corporations and organizations. These in turn shape the overall toll of COVID-19, including hospitalizations, deaths, disability, unemployment, and racial and ethnic disparities. These direct effects and outcomes of COVID-19 (see page 4, conceptual framework diagram) have a profound impact on social insurance programs – Social Security, Medicare, Unemployment Insurance, and Workers’ Compensation.

This moment offers an opportunity to evaluate the state of our current social insurance infrastructure. Subsequent briefs and reports from the Academy’s COVID-19 Task Force will examine funding, benefit coverage, and equity challenges – and the degree to which our social insurance systems might better protect large segments of our population from the economic and health risks posed by the COVID-19 pandemic, and by future local, regional, national, and global crises that are inevitable.

Introduction and Working Group Approach

In the fall of 2020, the National Academy of Social Insurance launched a COVID-19 Task Force to study the pandemic’s potential impacts on U.S. social insurance programs. Drawing on the Academy’s interdisciplinary membership, the Task Force began with an Epidemiology Working Group, comprised of thirteen public health experts from various institutions. The Working Group examined current epidemiological studies and data, and identified key variables that affect pandemic outcomes. This report provides government officials, policymakers, and the public

with an independent assessment of the pandemic's trajectory through 2022, focusing in particular on potential impacts on social insurance programs.

The work of the Epidemiological Working Group also lays the foundation for the second phase of the Academy's COVID-19 Task Force and a Policy Translation Working Group that will begin deliberations in June 2021. The Policy Translation Working Group will provide insights on the potential long-term impacts of COVID-19 on social insurance – Social Security, Medicare, Unemployment Insurance, Workers' Compensation, and Universal Family Care – including financing, benefits, and equity challenges. The Policy Translation Working Group will also consider policy options to repair and reinvigorate our social insurance infrastructure to meet new challenges revealed and exacerbated by the pandemic.

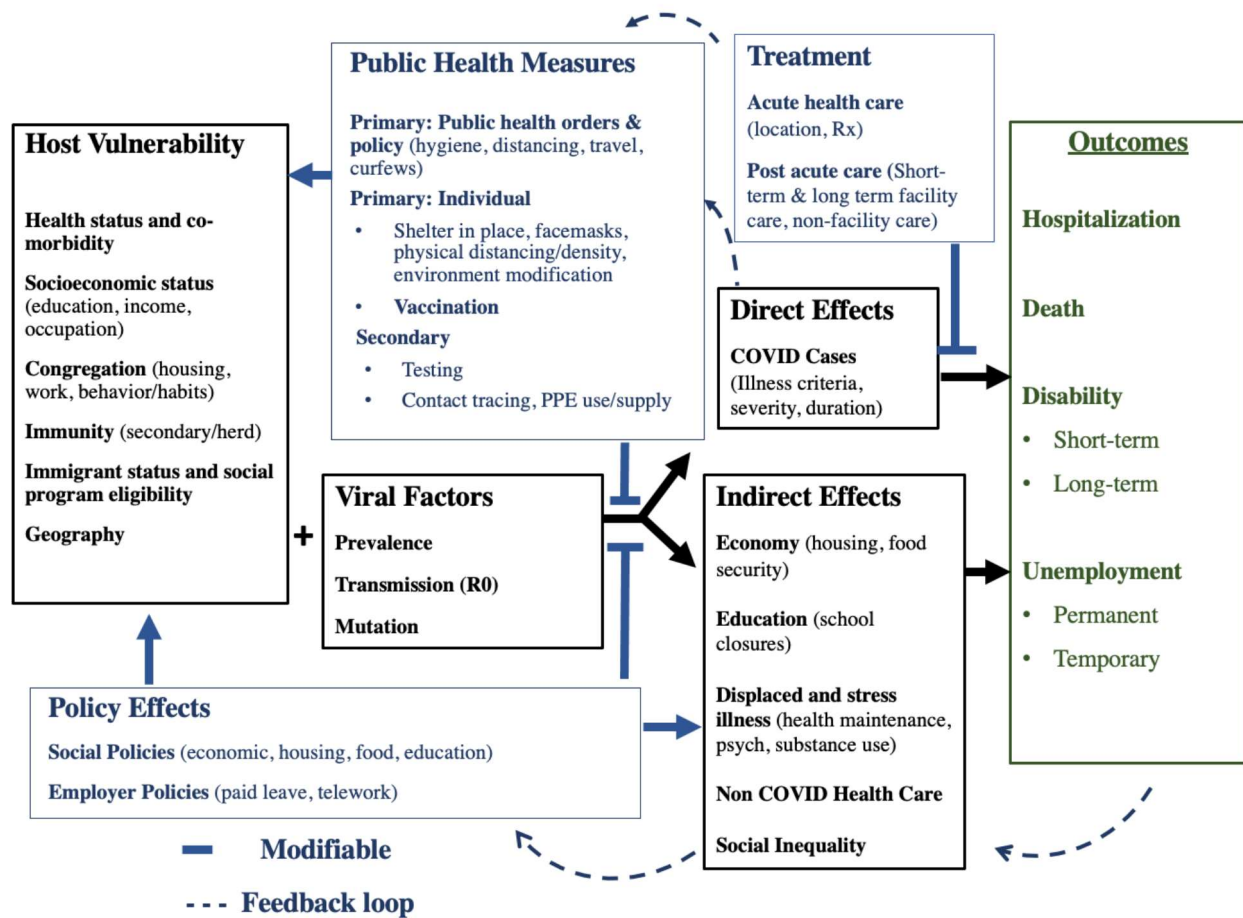
Conceptual Framework

The work of the Epidemiology Working Group was informed by a conceptual framework that identified patient characteristics, social policies, public health measures, and treatments with direct and indirect effects that, in combination, influence the outcomes of the pandemic that affect social insurance. **This framework is designed to connect the various factors affecting the pandemic's trajectory and the outcomes that impact social insurance programs.** Review of available data on the driving factors in the conceptual framework were then used to construct optimistic, probable, and pessimistic scenarios, which can be used to inform projections of the potential impacts on Social Security and Medicare and other social insurance programs.

The conceptual framework begins with a variety of **host vulnerability factors** – such as socioeconomic status and health status and comorbidity – that impact an individual's likelihood of exposure to the virus and potential serious illness. The underlying vulnerability of infection for individuals is affected by health and social policies that play important roles in exposure to SARS-CoV-2 and vulnerability to severe illness due to COVID-19. (COVID-19 is the disease caused by SARS-CoV-2 as the virus/etiologic agent.) These factors of exposure vary by race/ethnicity, age, and sex and gender orientation. Combined with viral factors, such as virus prevalence and variants, these factors lead to both direct and indirect effects of COVID-19 on the economy, school closures, and inequality. This pathway is impacted by federal, state, and local

policies, public health measures (including vaccination), and the availability and effectiveness of treatments. As Figure 1 below illustrates, **both direct and indirect effects will shape the trajectory of the pandemic's outcomes (hospitalization rates, death rates, disability rates, and unemployment rates) that affect social insurance programs.**

Figure 1: Conceptual Framework of Factors Affecting the Pandemic's Trajectory



Credit: COVID-19 Task Force Epidemiology Working Group, National Academy of Social Insurance

The Epidemiology Working Group relied on several existing models to create the scenarios of potential pandemic trajectories. Data, including on disproportionately affected populations, are incomplete, and further data are needed to model pandemic outcomes and inform the U.S. pandemic response. In January 2021, the Biden-Harris Administration issued an executive order

requiring the Department of Health & Human Services (HHS) to reevaluate the federal government's COVID-19 data collection systems and issue a report on its findings.

Policy Effects and Public Health Measures

Policies and actions – including emergency orders, laws, regulations, guidance, and financial support provided by the federal, state, and local government agencies – drive the actions of individuals, as well as corporations and organizations, which shape the overall toll of COVID-19, including racial and ethnic disparities.

Data

High quality data are essential to informing COVID-19 prevention policies and remain a critical investment as the pandemic and new variants continue. More than a year into the pandemic, the U.S. has case and death surveillance data by state and county, but low-quality data on racial and ethnic disparities, and on transmission across settings or occupations. **There are not high quality, national data on workplace COVID-19 transmission, although death records and case reports suggest that workers in food and agriculture,^{1,2} transportation and logistics, and facilities and manufacturing have suffered high rates of cases and excess deaths at younger ages.³** Similarly, there are not high quality data on transmission through schools, although there is substantial evidence that children are less likely than adults to test positive for COVID-19 or die of COVID-19. There is initial evidence that schools may be a significant source of transmission with substantial impacts on teachers.⁴ Improving surveillance and contact tracing data collection and reporting by race, ethnicity, age group, and occupation remains a top policy priority.

Vaccines

Vaccines are among the most effective approaches to preventing COVID-19. The federal government shaped vaccine acquisition and delivery through federal contracts with pharmacies.

¹ <https://www.cdc.gov/mmwr/volumes/69/wr/mm6918e3.htm>

² <https://www.pnas.org/content/117/50/31706>

³ <https://www.medrxiv.org/content/10.1101/2021.01.21.21250266v1>

⁴ <https://www.pnas.org/content/118/9/e2020834118>

The federal government also provided recommendations to states about vaccine distribution priorities through guidelines developed by the Advisory Committee on Immunization Practices (ACIP) and an HHS recommendation to dispense vaccines based on age-based thresholds. States have directly managed vaccine delivery and set priorities that determined who could and could not receive the vaccine, affecting COVID-19 targeting and equity. Age-based vaccine eligibility thresholds affected disparities, as 30 percent of the U.S. population is Black and Latinx, but only 18 percent of the population over the age of 65 is Black and Latinx. ACIP did not recommend prioritizing prisoners and detainees for vaccines, despite high rates of COVID-19 cases and deaths in these settings, and most states did not prioritize incarcerated individuals.⁵

Mass vaccination efforts have significantly reduced the impact of the pandemic on older people and others who have been vaccinated. At the same time, vaccine priorities, access to the Internet to make vaccine appointments, access to transportation to travel to vaccine appointments without risking COVID-19 transmission, and other factors have contributed to large racial and ethnic disparities in vaccine uptake. Local prioritization of high-risk communities – such as in Central Falls, Rhode Island⁶ and in Riverside, California⁷ – as well as successful vaccination efforts by the Indian Health Service,⁸ demonstrate that vaccine delivery efforts, including mobile delivery, that target Black, Latinx, and Native American communities at high risk of COVID-19 death have high uptake and success.

Strategies and campaigns are needed to address vaccine hesitancy in the U.S. According to a Kaiser Family Foundation poll conducted in March 2021, vaccine hesitancy is declining with the largest decline among Black Americans. Approximately 55 percent of Black adults said they had been vaccinated or would be soon, up 14 percent from February. The rate was 61 percent for Hispanics and 64 percent for White adults. According to the poll, 37 percent of respondents overall expressed vaccine hesitancy with 13 percent saying they will “definitely” not be vaccinated, 7 percent saying “only if required,” and 17 percent saying they will “wait and see.”

⁵ <https://www.nytimes.com/interactive/2021/04/10/us/covid-prison-outbreak.html>

⁶ <https://www.bostonglobe.com/2020/12/30/metro/central-falls-residents-get-first-doses-covid-19-vaccine/>

⁷ <https://www.nytimes.com/2021/03/01/us/coronavirus-vaccine-farmworkers-california.html>

⁸ <https://www.cnn.com/2021/03/23/navajo-nation-reports-no-new-coronavirus-cases-deaths-for-the-first-time-in-six-months-.html>

Vaccine hesitancy rates were highest among Republicans and White evangelicals.⁹ This information remains a concern for the country's vaccination campaign.

Stay-at-Home Orders, Physical Distancing, and Density Policies

States implemented various emergency public health measures, including stay-at-home orders, non-essential business and school closures, physical distancing and density policies, with strong evidence of an impact on community transmission with some differences in efficacy among these individual non-pharmaceutical interventions. However, many people in low-income households continued working and faced high rates of COVID-19 infection during stay-at-home orders and non-essential business closures. Stay-at-home orders and non-essential business closures negatively affected income and mental well-being. Physical distancing and density measures limiting large gatherings, especially in indoor spaces, where people take off masks to eat or drink (such as in indoor restaurants and bars) took on increased importance. There is increasing evidence that opening indoor dining too soon was associated with increased community transmission of COVID-19.¹⁰ Cooks and bakers made up two of the five professions with the greatest increases in deaths during COVID-19 in California.¹¹ Despite this evidence, many states permitted indoor dining.¹² There is also initial evidence that travel quarantines reduced COVID-19 transmission.¹³

Mask and Respirator Policies

Studies indicate that state mask orders were associated with reduced COVID-19 cases and deaths.^{14,15} Although the federal government recommended that state and local governments put mask orders in place, as of March 31, 2021, 16 states did not have mask orders in place,¹⁶ and some states have policies pre-empting local mask orders. There is compelling evidence that

⁹ <https://khn.org/news/article/covid-vaccine-hesitancy-drops-among-americans-new-kff-survey-shows/>

¹⁰ <https://www.cdc.gov/mmwr/volumes/69/wr/mm6950e3.htm>

¹¹ <https://www.brookings.edu/research/exposure-on-the-job/>

¹² <https://www.statepolicies.com>

¹³ <https://www.rand.org/pubs/tools/TLA173-1.html>

¹⁴ <https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.00818>

¹⁵ <https://www.cdc.gov/mmwr/volumes/70/wr/mm7010e3.htm>

¹⁶ <https://www.statepolicies.com>

exposure to tiny virus particles (called aerosols) is an important mode of transmission.^{17,18} While surgical and cloth masks are particularly useful in limiting exposure to droplets that also are important in virus transmission, they are less useful in controlling aerosol transmission. N95 masks and elastomeric respirators are more effective but have been primarily reserved to protect the supply for health care workers in direct contact with suspected or actual COVID-19 patients.^{19,20}

Since aerosols travel greater distances than droplets, remain suspended, and accumulate in the indoor air in places where infected persons are present, policies that result in increased ventilation and filtration will also reduce exposure and prevent cases. The U.S. Occupational Health and Safety Administration (OSHA) recommended wearing masks in many workplaces and respirators in high exposure workplaces. The federal government might further support the manufacture and distribution of the most effective personal protective equipment (PPE), such as N95 masks and elastomeric respirators, to workers.

Routine Testing and Tracing

Routine testing and contact tracing of populations with high exposure to COVID-19 may prevent onward transmission by detecting asymptomatic cases and permitting quarantine. The inability of the U.S. to provide broad diagnostic testing was viewed by some as a critical failure in its efforts to contain the virus. Testing capacity was overwhelmed in many parts of the country. “Smart” testing ensures that the right test is given to the right person at the right time, with results provided in a timely manner.

Tests, however, represent only one point in time. Most people get tested because they have experienced symptoms or have come into close contact with someone who has. Relying on symptoms to guide testing will miss asymptomatic and pre-symptomatic cases. Confirmed cases are only identified from those who are tested and who test positive.

¹⁷ <https://science.sciencemag.org/content/368/6498/1422>

¹⁸ <https://academic.oup.com/cid/article/71/9/2311/5867798>

¹⁹ <https://www.cdc.gov/mmwr/volumes/70/wr/mm7007e1.htm>

²⁰ <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/mask-fit-and-filtration.html>

A test positivity rate is the percent of tests performed in a community that come back positive. The lower the number, the fewer new cases detected. A low test positivity rate suggests that current COVID transmission, relative to testing in a community, is low. Lower rates might also indicate that testing may be sufficiently widespread to also identify asymptomatic individuals.

Contact tracing, which is critical to reducing community spread, helps identify people who might have recently encountered an infected individual and enables identification of close contacts, who may be notified to self-quarantine as a precautionary measure. A centralized national COVID tracing mobile phone app does not exist in the U.S., due largely to privacy concerns. Some states have produced tracing apps for their respective constituents. Other countries – such as India, Israel, Singapore, and South Korea – have used cellphone apps to track infections. The U.S. has no nationwide system for checking virus genomes for new mutations. As a result, the U.S. lags other countries in genome sequencing surveillance.

Economic Security Policies

Food and housing insecurity rose precipitously during the pandemic, with large racial and ethnic disparities shaped by existing structural inequities.²¹ **Social policies to mitigate the impacts of the pandemic will also alter the trajectory, especially those that target problems related to equity.** For example, there was initial evidence that eviction moratoriums were associated with reduced COVID-19 transmission.²² Extending the eviction moratorium might decrease the number of new families entering crowded homeless shelters or doubling up in already crowded housing units where they are more likely to be exposed to the virus.

Allocation of funding to prevent food and housing insecurity might also impact the pandemic's trajectory. In general, improved family financial support will enable some people to avoid situations where there is uncontrolled virus exposure. Policies that exclude people from social supports, such as the Public Charge Rule and provisions prohibiting stimulus payments from going to people who are not U.S. citizens, might be associated with increased COVID-19

²¹ <https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-recessions-effects-on-food-housing-and>

²² https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3739576

transmission.^{23,24,25} The decision of the U.S. Department of Labor to extend Unemployment Insurance (UI) payments to workers who have left jobs out of fear of exposure may also reduce risk. Similarly, emergency sick leave payments allow workers who have been exposed and may be infectious to quarantine without facing food and housing insecurity, and therefore reduce their risk of spreading the infection to co-workers.^{26,27}

The U.S. UI system covers a low proportion of unemployed people for a brief duration of time and with low amounts compared with other countries.²⁸ There are also racial and ethnic disparities in exclusions from UI, such as self-employment or earning too little to qualify.²⁹ The Coronavirus Aid, Relief, and Economic Security (CARES) Act included additional resources for state UI programs, along with requirements for enhanced and extended benefits for states willing to participate. The enhancement and extended benefit was renewed under the American Rescue Plan (ARP) Act. During the pandemic, the provision of UI was associated with reduced food and housing insecurity,³⁰ and the \$600/week federal supplement to UI provided by the CARES Act from March to July 2020 was associated with further reductions in food insecurity.³¹

Current Epidemiological Data: Direct Effects and Outcomes of COVID-19

Since the beginning of the pandemic in January 2020, government officials and policymakers have faced unprecedented public health and economic challenges. Given conflicting federal public health guidelines, state level variations, and low adherence to public health measures, the COVID-19 pandemic has had, and will continue to have, serious health and economic consequences in the U.S. **The pandemic's direct effects and outcomes – including cases,**

²³ <https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.01040>

²⁴ <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2768245>

²⁵ <https://www.healthaffairs.org/doi/abs/10.1377/hlthaff.2020.00763>

²⁶ <https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.00863#:~:text=Thus%2C%20granting%20access%20to%20paid,influenza%20activity%20during%20normal%20times>

²⁷ <https://www.medrxiv.org/content/10.1101/2021.03.01.21252723v1>

²⁸ https://doi.org/10.1787/empl_outlook-2018-en

²⁹ <https://www.latimes.com/opinion/story/2020-10-03/racial-disparities-unemployment-benefits>

³⁰ <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2773234>

³¹ <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2775731#:~:text=Receipt%20of%20UI%20was%20associated,greater%20reductions%20in%20food%20insecurity>

hospitalizations, deaths, disability, and unemployment – significantly affect the funding, benefits, and equity of Social Security, Medicare, and other social insurance programs.

Cases

As of April 2021, the U.S. had the highest reported numbers of total cases and deaths in the world, followed by Brazil, India, France, Russia, and the United Kingdom. In late 2020, cases had been reported to be increasing in nearly all U.S. states with some states experiencing increased hospitalizations, filled intensive care units, and business re-closings. As of April 30, 2021, there had been an estimated 32 million cases of COVID-19 in the United States.³²

Following the peak in new cases in mid-January 2021, cases in the U.S. declined for two months and then began to plateau and, in some states, rise. Experts have pointed to a variety of reasons for this decline. These include: more widespread use of masks and social distancing methods; better knowledge about which public health measures are most effective; more coordinated and consistent public health messaging; and a growing number of people who have been vaccinated. Scientists and public health experts warn about a “fourth wave” if: people who have not been vaccinated become more complacent about wearing masks and socially distancing; states lift public health restrictions too quickly, more contagious variants become dominant and may be able to evade existing vaccines; and/or there is significant vaccine hesitancy.

Recent significant variants and their mutations include: the U.K. variant (B.1.1.1.7), which has been found to be more transmissible, and may have a higher mortality risk than previous variants; Brazil (P.1); and South Africa (B.1.351) variants, which have been reported to have caused re-infections of previously infected individuals. All three variants have surfaced in the U.S. As of the issuance of this report, current vaccines available in the U.S. appear to remain effective in preventing severe illness, hospitalization, and death from any of these variants.

Hospitalizations

On April 30, 2021, over 37,000 people were currently hospitalized with a diagnosis of COVID 19. Cumulative hospitalization data for the U.S. are vastly underreported, as only two-thirds of

³² <https://covid.cdc.gov/covid-data-tracker/#datatracker-home>

states and territories report data for cumulative hospitalization, and even fewer report cumulative ICU or cumulative ventilator rates (COVID-19 cases requiring ventilators).³³ Similar to the trend in daily new cases of COVID-19, daily hospitalization rates steadily declined before reaching a plateau in late March 2021. The number of Americans currently hospitalized for COVID-19 is at its lowest point since early November, just before the December 2020 holiday surge. Since the peak 7-day average in early January, hospitalizations have declined by 73.4 percent through the end of March 2021. However, since then, hospitalizations have been steadily rising with significant variation among age groups.³⁴ Hospitalizations are continuing to decline among the oldest age group (age 70+) who are more likely to be vaccinated, but hospitalizations are increasing among adults under 60 years of age.³⁵

Deaths

As of April 30, 2021, the U.S. had over 571,000 deaths.³⁶ Approximately half of those deaths occurred during a period of just over three months (November 1, 2020, through February 8, 2021), sometimes referred to as the “winter wave” of COVID-19. Following the peak new death rate in January 2021, the number of new COVID-19 deaths is declining. Although cases are beginning to rise following the decline after the “winter wave,” deaths have continued to decline, likely due to the rise in vaccinations. The Centers for Disease Control and Prevention (CDC) data show that 6.7 percent of cases resulted in death in April 2020, compared with 1.9 percent in September 2020.³⁷ However, the data on total number of deaths may underestimate the total impact of the pandemic on mortality.

COVID-19 has had a disproportionate effect on the elderly, people with disabilities, people with dementia, and people of color. For individuals under age 50, who represent two-thirds of all U.S. adults, the COVID-19 fatality rate has been under one percent. While less than one

³³ <https://covidtracking.com/about-data/faq#why-have-you-stopped-reporting-national-cumulative-hospitalizations-icu-and-ventilation-numbers-on-your-website>

³⁴ <https://covid.cdc.gov/covid-data-tracker/#hospitalizations>

³⁵ <https://www.nytimes.com/interactive/2021/04/06/us/variants-cases-spread.html>

³⁶ https://covid.cdc.gov/covid-data-tracker/#cases_totaldeaths

³⁷ <https://www.journalofhospitalmedicine.com/jhospmed/article/230561/hospital-medicine/trends-covid-19-risk-adjusted-mortality-rates?channel=327>

percent of America's population lives in long-term-care facilities, as of March 2021, this small fraction of the country's population accounted for 35 percent of U.S. COVID-19 deaths.³⁸

Historically racist policies – such as slavery, Jim Crow laws, and redlining, combined with modern social policies, such as a low federal minimum wage and a low number of states with paid sick leave policies – have affected racial, ethnic, and gender disparities in wealth, work, income, and housing.³⁹ For example, the median wealth of white people (\$188,200) in 2019 was 7.8 times that of Black people (\$24,100) and 5.2 times that of Latinx people (\$36,100).⁴⁰ Existing disparities translated into racial and ethnic disparities in exposure to SARS-CoV-2 infections through work and crowding in homes, as well as increased vulnerability to severe illness for those infected.

As the federal government did not coordinate a national response at the beginning of the pandemic, the U.S. experienced high COVID-19 related mortality compared with other countries into September 2020.⁴¹ COVID-19 has disproportionately affected Black, Indigenous, Latinx, and other people of color, who have been at increased risk of exposure. Nationwide, Black people have died at 1.4 times the rate of white people.⁴² This disparity, however, varies significantly by age group and region.⁴³

³⁸ <https://covidtracking.com/nursing-homes-long-term-care-facilities>

³⁹ <https://pubmed.ncbi.nlm.nih.gov/32464654/>

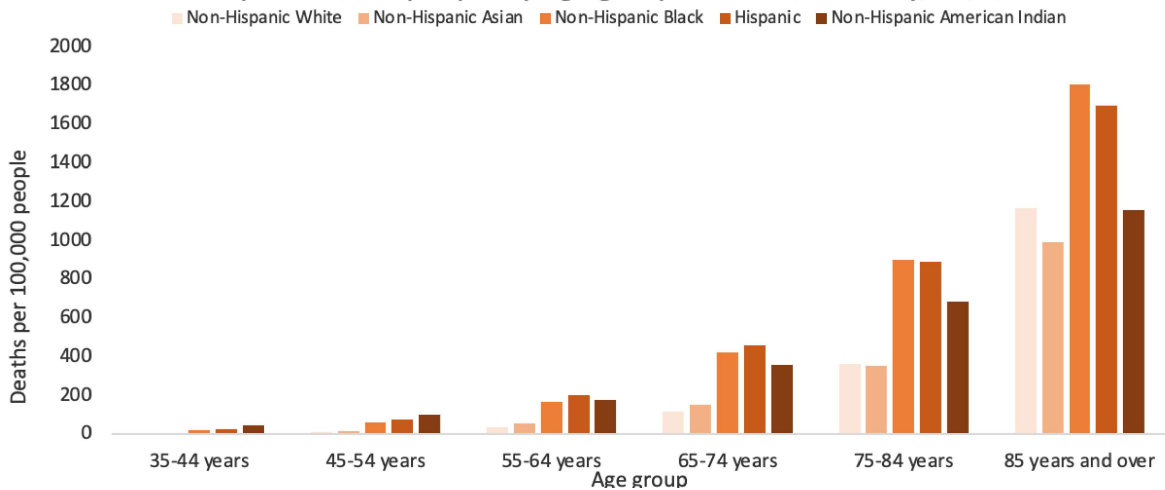
⁴⁰ <https://www.federalreserve.gov/econres/notes/feds-notes/disparities-in-wealth-by-race-and-ethnicity-in-the-2019-survey-of-consumer-finances-20200928.htm>

⁴¹ <https://jamanetwork.com/journals/jama/fullarticle/2771841>

⁴² <https://covidtracking.com/race>

⁴³ <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003402>

Figure 2: COVID-19 Deaths per 100,000 People by Age and Race/Ethnicity



Source: <https://data.cdc.gov/NCHS/Deaths-involving-coronavirus-disease-2019-COVID-19/ks3g-spdg>

Notes: Deaths per 100,000 people by age group and race/ethnicity, 12/5/2020

COVID-19 is responsible for an important increment, termed “excess deaths,” in all age groups, including young adults. Excess deaths are defined as the number of persons who have died in excess of the expected number of deaths for a given place and time. The number of deaths in the U.S. between March 1 and August 1, 2020, was 20 percent greater than in the previous year, with 67 percent of those excess deaths attributed to COVID-19.⁴⁴ For white people, deaths were 11.9 percent higher between January 26, 2020, through October 3, 2020, compared to average numbers during 2015-2019. Deaths were 28.9 percent higher for non-Hispanic American Indian or Alaska Natives, 32.9 percent higher for Black people, 36.6 percent higher for Asian persons, and 53.6 percent higher for Hispanic people.^{45,46}

The pandemic was estimated to have reduced life expectancy in the first six months of 2020 overall by a full year (to 77.8 years), and for Black and Hispanic people by 2.7 and 1.9 years respectively, compared to 0.8 years for white people.⁴⁷ The life expectancy gap between Black and white Americans, which had been narrowing, is at six years. **In addition, it was estimated**

⁴⁴ <https://jamanetwork.com/journals/jama/fullarticle/2771761>

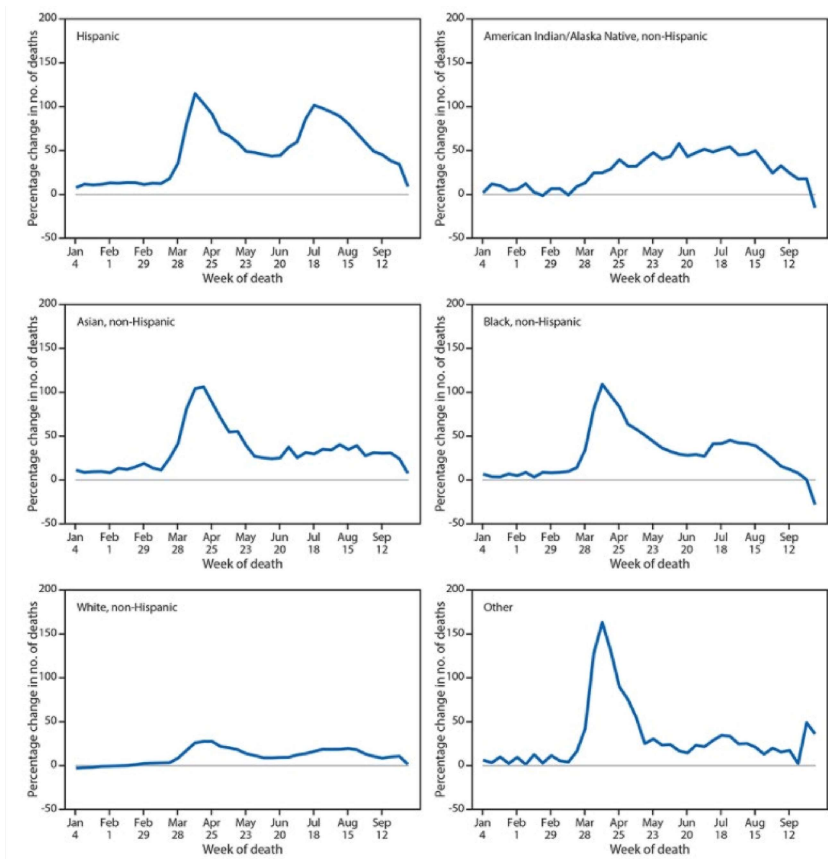
⁴⁵ This report uses the term Latinx to refer to people of Latin American descent except when citing or referring to data or research that uses the term Hispanic.

⁴⁶ <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6942e2-H.pdf>

⁴⁷ <https://www.nytimes.com/2021/02/18/us/covid-life-expectancy.html>

that mortality from COVID-19 caused between 37,300-43,000 children between the ages of 0 and 17 years to experience the death of at least one parent, with significant racial disparities in parental loss. For example, although Black children comprise 14 percent of the child population in the U.S., they experienced 20 percent of the parental loss from COVID-19.⁴⁸

Figure 3: Percentage Change in Weekly Number of Deaths



Source: <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6942e2-H.pdf>

Notes: Percentage change in the weekly number of deaths in 2020 relative to average numbers in the same weeks during 2015-2019 by race and Hispanic Ethnicity.

⁴⁸ <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2778229>

Disability

The symptoms and health impacts of COVID-19 are highly variable, ranging from asymptomatic individuals to patients who develop severe respiratory illness. However, the possible long-term symptoms and health impacts of COVID-19 are of significant concern. Post-acute manifestations of COVID-19 have been reported among all age groups with diverse post-acute health experiences.⁴⁹ For example, one study found that, four months after hospitalization for COVID-19, a cohort of patients reported lung-scan abnormalities, as well as symptoms that were not previously present.⁵⁰ A high burden of neurological and psychiatric sequelae has also been reported after COVID-19 infection.⁵¹ Long-term effects on the heart, brain, and other organs are unknown and continue to be investigated. It is also not yet clear whether successive SARS-CoV-2 infections will occur in measurable numbers of persons over a period of years and might have cumulative negative effects for longevity or disability/chronic illness risk.

One of the likely disabling impacts of COVID-19 is on individuals who have been seriously infected, but have survived after being placed on ventilators. After older individuals have been on ventilators and spent weeks in intensive care units, they have often developed physical debilitation (such as lung, kidney, heart, liver, and circulatory damage), urinary and metabolism problems, blood clotting, difficulty swallowing or breathing, and bedsores. Health care professionals, however, have become more adept at assessing which patients require a ventilator and at deploying less invasive techniques to help COVID-19 patients breathe.

The prevalence of disability requires further research. It is not yet known the extent to which persistent compromises for survivors of SARS-CoV-2 infections lessen their functional capacity, making them more likely to become unable to work. In addition, it is not yet known whether successive SARS-CoV-2 infections over time will increase these risks. It is also not yet known the extent to which those who would have had disabling conditions in the absence of COVID-19 will be more likely to die, either before applying for Social Security disability benefits, or die soon after starting benefit receipt. Data on the COVID-19 death rate of those beneficiaries

⁴⁹ <https://www.acpjournals.org/doi/10.7326/M21-1043>

⁵⁰ <https://jamanetwork.com/journals/jama/fullarticle/2777787>

⁵¹ [https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366\(21\)00084-5/fulltext](https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(21)00084-5/fulltext)

currently receiving Social Security disability payments are not yet available. Many people with mild or even no apparent SARS-CoV-2 infection might still have long-term symptoms or sequelae. Research has found that beyond the first 30 days of illness, COVID-19 patients exhibit a higher risk of death and health care resource utilization.⁵²

Unemployment

The COVID-19 pandemic has significantly affected employment across the country, especially for younger workers, women, part-time workers, and workers of color. The unemployment rate peaked in April 2020, at 14.8 percent before declining to a still-elevated level of 6.7 percent in December 2020, and 6.1 percent in April 2021. During the peak in April 2020, every state and the District of Columbia reached unemployment rates higher than the peak unemployment rates during the Great Recession.

Racial and ethnic disparities in education, income, and occupation shaped disparities in unemployment during the COVID-19 pandemic. People in low-income households were most likely to lose work during the COVID-19 pandemic. Black, Latinx, and Native American people were more likely to be low-income. In April 2020, the unemployment rate for Black workers reached 16.7 percent, compared to 14.2 percent for white workers and 18.9 percent for Hispanic workers – rates that have not been seen for over a decade. These disparities in unemployment rates have persisted.⁵³ In regard to women’s employment losses during the pandemic, although women represented 52 percent of the employed population pre-pandemic, they accounted for 66 percent of the overall decline in employment in the spring of 2020, 63 percent in the summer, and 59 percent in the fall.⁵⁴ That dramatic and persistent drop in labor force participation by women – especially among women with children at home – might have long-term implications for women’s economic security and their contributions to social insurance programs. However, it is important to note that by April 2021, women’s unemployment rate declined to 5.8 percent, below that for men, which was 6.3 percent.

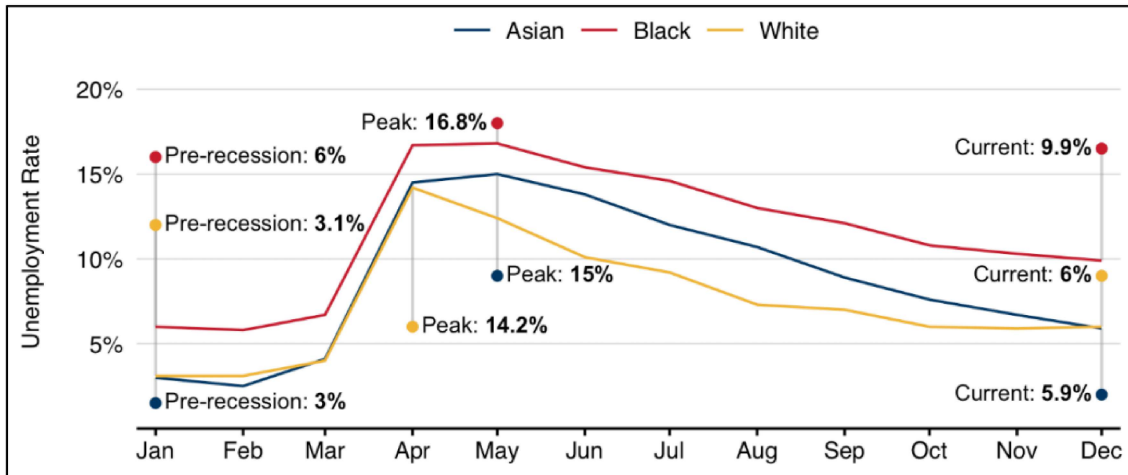
⁵² <https://www.nature.com/articles/s41586-021-03553-9>

⁵³ <https://fas.org/sgp/crs/misc/R46554.pdf>

⁵⁴ https://www.nber.org/system/files/working_papers/w28505/w28505.pdf

Figure 4: Monthly Unemployment Rates by Racial Group

Seasonally adjusted data, January 2020 to December 2020



Source: Created by CRS using data from the Bureau of Labor Statistics (BLS).

Source: <https://fas.org/sgp/crs/misc/R46554.pdf>

Scenarios of U.S. COVID-19 Pandemic Trajectory

Through the end of 2022, the pandemic may take on a variety of trajectories based on the factors identified in the conceptual framework. **The Epidemiological Working Group identified the following key variables that will significantly affect the short- and long-term pandemic outcomes and impacts on social insurance programs:**

- Future mutations of SARS-CoV-2
- Future transmission of SARS-CoV-2
- Vaccination efforts
- Treatment effectiveness
- Short and long-term COVID-19 effects
- Testing access and supportive services
- Public health measures engagement
- Outbreaks
- Community protection
- Economic impacts
- Social policy

- Education
- Other (International virus containment efforts, etc.)

Based on existing knowledge and review of current epidemiological research, the Working Group then constructed optimistic, probable, and pessimistic scenarios of the outcomes for each key factor. **The following scenarios provide epidemiological insights to inform projections of the pandemic's trajectory and examine the potential impacts on social insurance programs. These scenarios are based on data available as of April 2021. Their likelihoods will no doubt be affected by subsequent developments in the trajectory of the pandemic.**

Scenarios of U.S. COVID-19 Pandemic Trajectory

	OPTIMISTIC	PROBABLE	PESSIMISTIC
Future mutations of SARS-CoV-2	As the virus mutates, there is no measurable increase in transmissibility or disease severity. There is little reduction in natural or acquired immunity to new strains for severe disease or death. Genomic sequencing is adequate to enable early identification and containment of any new variants of concern in the U.S.	As the virus mutates, some strains will be more transmissible and/or have potential for causing more severe illness and death. There is some reduction in natural or acquired immunity to new strains for severe disease or death. Genomic sequencing is improved to enable greater identification and containment of any new variants of concern in the U.S.	As the virus mutates, it becomes much more transmissible, produces more severe disease and death, and evades existing natural and acquired immunity. Genomic sequencing is inadequate to enable early identification of variants in the U.S.
Future transmission of SARS-CoV-2	Like other previous short-lived outbreaks, this virus is controlled by the end of 2021 or in 2022.	As a result of vaccinations and naturally occurring infections, U.S. achieves reasonable community protection i.e., “herd immunity” by end of 2021. Outbreaks continue to occur, but overall case rates and average disease severity levels decline. Like other coronaviruses, SARS CoV-2 becomes endemic and/or persists in some form.	Like other coronaviruses, SARS CoV-2 continues to be a pandemic though 2023, persists in some form, and recurs seasonally. Due to lack of worldwide vaccination efforts, the virus undergoes mutations that weaken impact of current vaccinations and increases likelihood of recurrent U.S. epidemic.
Vaccination efforts	There are highly utilized and effective vaccines in 2021 that reach 80 percent of the U.S. adult and adolescent population, inclusive of the most at-risk populations. Vaccines prove to be 100 percent effective at preventing serious illness and death. Vaccines are over 90 percent effective in preventing any illness and transmission. Vaccine effectiveness duration lasts over a year. Emergency use authorization is extended to pediatric vaccines (6 months to 11 years) by the end of 2021.	Effective vaccines are made available in 2021 for all U.S. adults and adolescents and reach 70 percent of that population by fall of 2021. Vaccines are proved to be over 90 percent effective in preventing hospitalizations and death, block 80 percent of non-severe illness, and 70 percent of transmissions. Studies evaluating a “booster shot” show value-added and are incorporated into public health policy. Emergency use authorization is extended to pediatric vaccines (6 months to 11 years) by mid-2022.	Vaccines reach less than 60 percent of the U.S. adult and adolescent population. Vaccine resistance continues to be a problem among workers in public sector and health industry, and for certain high-risk populations. Vaccines prove to be less effective against new strains emerging in the U.S. Immunity duration lasts less than a year.
Treatment effectiveness	There are widely available, highly utilized, and effective treatments for mild and serious disease in 2021 and into 2022. New treatments succeed in clinical trials. These may include strategies for post-exposure prophylaxis and treatments for those cases identified at asymptomatic or early symptomatic stages.	There are better and accessible inpatient and outpatient therapies that moderately reduce hospitalizations, ICU admissions in symptomatic cases, and prevent deaths.	There are few new widely available, highly utilized, and effective treatments in 2021 or into 2022. New treatments in clinical trials fail.
Short and long-term COVID-19 effects	Therapies emerge to prevent short- and long-term sequela, and sequela are self-limited.	Up to one-third of patients with clinical disease develop long-term sequela (physical or behavioral) that require additional medical care and interfere with employment.	Up to one-half of patients with clinical disease develop long-term sequela (physical or

Scenarios of U.S. COVID-19 Pandemic Trajectory

	<p>There is increased supply of rapid tests, expanded access to tests nationwide, and enhanced surveillance for outbreaks. As a result, there is greater availability of sensitive and specific rapid testing (including for use at home), and supportive services for all populations who need tests and services to isolate and quarantine.</p>	<p>Accurate and rapid testing is generally available, including home testing. There is some provision of services to support persons during isolation and quarantine, such as paid leave.</p>	<p>behavioral) that require additional medical care and interfere with employment. Testing continues to be spotty and not easily available. New cases are not diagnosed in a timely manner. There are no supportive services for isolation or quarantine, leading workers to avoid isolation and quarantine to earn wages.</p>
<p>Public health measures engagement</p>	<p>Federal agencies release stronger, more uniform national guidance. The federal and most state governments issue strong regulations requiring masks and other precautionary measures for those who have not been vaccinated. Significant segments of the U.S. population adhere to more vigorous public health measures in 2021 and into 2022, including during holiday periods.</p>	<p>Federal agencies release stronger, more uniform national guidance. The federal and many state governments issue strong regulations requiring masks and other precautionary measures for those who have not been vaccinated. Public compliance with public health measures declines modestly as vaccination rates increase.</p>	<p>Federal agencies fail to release additional national guidance for those who have not been vaccinated and many states lift regulations. Significant segments of the U.S. population fail to adhere to public health measures in 2021 and into 2022.</p>
<p>Outbreaks</p>	<p>Fewer outbreaks occur in congregate settings causing fewer deaths of residents and workers. There are pharmacological (e.g., ring vaccination) and non-pharmacological interventions.</p>	<p>Regional outbreaks persist into 2022 among high-risk populations and in congregate settings (such as incarceration facilities and nursing homes) where community protection is low.</p>	<p>Outbreaks persist in congregate settings leading to ongoing excess deaths of residents, inmates, and workers, and contribute to serious shortages of workers in these facilities. Regional outbreaks enhance the development of new variants.</p>
<p>Community protection</p>	<p>Over 80 percent of the U.S. population achieves immunity by the end of 2021 and into 2022 through a combination of vaccinations and natural infection.</p>	<p>Immunity protection levels approach 70 percent of the U.S. population in 2021 and into 2022 through a combination of vaccinations and natural infection.</p>	<p>Immunity protection levels remain below 70 percent and significant degrees of immunity are not achieved in 2021 or into 2022.</p>
<p>Economic impacts</p>	<p>Economic growth increases in 2021 and into 2022, resulting in widespread business re-openings, increased employment at higher wages, increased productivity, reductions in poverty and inequality, and increased consumer spending, but without increased inflation.</p>	<p>Moderate economic growth occurs in 2021 and into 2022, resulting in increased business re-openings, moderate employment increases at somewhat higher wages, some reductions in poverty (especially child poverty) and inequality, moderately increased consumer spending, and moderate increases in inflation.</p>	<p>Recession deepens in 2021 and into 2022, resulting in a broad contraction and “doom loop” of widespread business closings, lockdowns, increased unemployment and permanent layoffs, substantially lower wages and productivity, lower consumer spending, deepening poverty, and increased inequality.</p>
<p>Social policy</p>	<p>The federal government successfully implements the American Rescue Plan</p>	<p>The federal government successfully implements the American Rescue Plan (including extended and increased Unemployment</p>	<p>The federal government fails to implement many provisions of the American Rescue Plan</p>

Scenarios of U.S. COVID-19 Pandemic Trajectory

	<p>(including cash payments, Unemployment Insurance, an extended eviction moratorium, and an expanded Child Tax Credit) and stimulus legislation with automatic stabilizers in 2021 and 2022. The Affordable Care Act is upheld by the U.S. Supreme Court. Medicaid is expanded in most remaining states.</p>	<p>Insurance and an extended eviction moratorium) in 2021 and 2022. The Affordable Care Act is upheld by the U.S. Supreme Court. Medicaid is expanded in some remaining states.</p>	<p>in 2021 or 2022. The Affordable Care Act is overturned by the U.S. Supreme Court, including its mandate covering preventive services, like COVID-19 vaccines. Medicaid is expanded in few to no remaining states.</p>
<p>Education</p>	<p>Preschools, elementary, middle, and high schools are open in fall of 2021 and all of 2022. Colleges and universities are also open in fall of 2021 and all of 2022.</p>	<p>Most preschools, elementary, middle, and high schools are open for significant periods in 2021 and 2022. Most colleges and universities are open for significant periods in 2021 and 2022.</p>	<p>Most preschools, elementary, middle, and high schools, open in fall 2021, but then close for significant periods in 2021 and 2022 due to outbreaks. Most colleges and universities open in fall 2021, but then close for significant periods due to outbreaks.</p>
<p>Other</p>	<p>Incidents of individual and group unrest decline substantially. U.S. rejoins international virus containment efforts and assists with vaccination efforts – either directly or indirectly – in neighboring countries from which large numbers of immigrants come.</p>	<p>Incidents of individual and group unrest decrease. U.S. rejoins international virus containment efforts.</p>	<p>Social unrest widens and incidents of individual rage and group unrest increase. There is increased international unrest and strife with large-scale global economic ramifications.</p>
<p>Credit: COVID-19 Task Force Epidemiology Working Group, National Academy of Social Insurance</p>			

Scenario Implications

The Working Group’s scenarios of potential trajectories of the COVID-19 pandemic – optimistic, probable, and pessimistic – have been developed as of April 2021. **These scenarios recognize the importance of engagement with public health measures, vaccination effectiveness and rates of immunization, and social and health policies in shaping when and whether community protection level thresholds are met.** Meeting community protection i.e., “herd immunity” level thresholds, defined as 70 percent to 90 percent of the U.S. population with immunity either through exposure or vaccinations, is critical to curtailing the pandemic.

Reaching community protection levels will require continuing mass vaccine distribution and campaigns to address vaccine hesitancy among the U.S. public. Additionally, increasing the capacity for genomic sequencing to enable greater identification and containment of any new variants of concern in the U.S. is critical for containment efforts. This would also require greater involvement in international virus containment efforts to prevent the spread of variants.

A *PHICOR* model explores scenarios of when the U.S. might reach community protection levels based on the speed of vaccinations and duration of immunity, level of public health measure engagement, and spread of more contagious variants.⁵⁵ The CDC compiles mathematical models from various modeling groups to forecast cases, deaths, and hospitalizations four weeks out.⁵⁶ Longer-term modeling of pandemic outcomes is challenging, as it involves various assumptions about human behavior, including the level of social distancing and uptake of other interventions, such as wearing face coverings and vaccination, which may not reflect actual federal and state policies or individual behaviors.

The health and social policies that have shaped and will continue to shape wealth, education, income, and health take on increased importance in the context of widespread risk exposure. Even as the U.S. is delivering highly effective vaccines, COVID-19 prevention policies that reduce cases and deaths might prevent hundreds of thousands of people from dying, and millions from suffering potential long-term disability due to COVID-19. More effective

⁵⁵ <https://www.nytimes.com/interactive/2021/02/20/us/us-herd-immunity-covid.html>

⁵⁶ <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/forecasts-cases.html>

prevention and social policies will likely prevent the most cases and deaths among essential workers, who are more likely to be Latinx, Black, Native American, or Asian/Pacific Islander, and who face high exposure to COVID-19.

Data, especially on at-risk populations, are key to informing pandemic response. Although all states report COVID-19 data by race and ethnicity to some extent, a large proportion of data are still missing this information. Even more importantly, age-adjusted data on COVID-19 cases and deaths by race and ethnicity are not easily available on the CDC website. There is also little information on sources of COVID-19 transmission in key settings, including long-term care facilities, prisons and jails, through essential work, and in schools.

Future Considerations

Social insurance encompasses broad-based systems that help workers and their families pool risks to avoid loss of income due to retirement, death, disability, unemployment, or illness, and to ensure access to health care. **During the COVID-19 pandemic, social insurance and related programs – including Unemployment Insurance, Medicare, Medicaid, and Affordable Care Act health coverage, Social Security Old Age, Survivors, and Disability Insurance, and Supplemental Security Income – are vital to the economic and health security of millions of Americans. However, the COVID-19 pandemic has highlighted the inadequacy of, and major inequities in, our social insurance infrastructure.**

Due in part to the existing gaps in our social insurance infrastructure – such as the continued erosion of the Unemployment Insurance program, the lack of adequate coverage for long-term care, and inadequate support for direct care workers – the COVID-19 pandemic has wreaked havoc on the lives of millions of Americans, especially older Americans, people of color, incarcerated individuals, and people with disabilities. **Addressing the gaps in social insurance protections – systemic inequities around gender, race, age, and sexual orientation – will improve the economic security and the quality of life for all Americans.**

This moment offers an opportunity to evaluate the state of our current social insurance infrastructure including funding, benefit coverage, and equity challenges – and the degree to which our system might better protect large segments of our population from the economic and health risks posed by the COVID-19 pandemic, and by future local, regional, national, and global crises that are inevitable.

Epidemiology Working Group Members

***Chair: Neil R. Powe, MD**, Constance B. Wofsy Distinguished Professor of Medicine, University of California, San Francisco, and Chief of Medicine, Priscilla Chan and Mark Zuckerberg San Francisco General Hospital

***Donald Berwick, MD**, President Emeritus and Senior Fellow, Institute for Healthcare Improvement, and former Administrator of the Centers for Medicare & Medicaid Services

Benjamin Djulbegovic, MD, PhD, Professor and Director of Evidence-based Medicine and Comparative Effectiveness Research, Beckman Research Institute, Department of Computational and Quantitative Medicine, City of Hope

Diane Havlir, MD, Professor of Medicine, University of California, San Francisco and Chief, Division of HIV, Infectious Diseases and Global Medicine, Priscilla Chan and Mark Zuckerberg San Francisco General Hospital

***Jay Himmelstein, MD**, Professor Emeritus, Department of Population and Quantitative Health Sciences, University of Massachusetts Medical School

***Paula Lantz, PhD**, Associate Dean for Academic Affairs, James B. Hudak Professor of Health Policy, and Professor of Public Policy and Health Management & Policy, University of Michigan

***Mark McClellan, MD, PhD**, Robert J. Margolis Professor of Business, Medicine, and Policy, Duke University, and former Administrator of the Centers for Medicare & Medicaid Services, and former Commissioner of the U.S. Food and Drug Administration

***David Michaels, PhD**, Professor, Department of Environmental and Occupational Health/Epidemiology, Milken Institute School of Public Health, George Washington University, and former Assistant Secretary of Labor for Occupational Safety and Health

***Jewel Mullen, MD**, Associate Dean for Health Equity and Associate Professor, Department of Population Health, Dell Medical School, University of Texas, and former Principal Deputy Assistant Secretary for Health, U.S. Department of Health & Human Services

Jennifer Nuzzo, DrPH, Senior Scholar,
Johns Hopkins Center for Health Security,
and Associate Professor, Department of
Environmental Health and Engineering and
Department of Epidemiology, Johns
Hopkins Bloomberg School of Public Health

Julia Raifman, ScD, Assistant Professor,
Health Law, Policy, and Management,
School of Public Health, Boston University

George Rutherford, MD, Salvatore Pablo
Lucia Professor of Epidemiology,
Preventive Medicine, Pediatrics and History,
Head, Division of Infectious Disease and

Global Epidemiology, University of
California, San Francisco

David Weber, MD, Professor of Medicine,
Division of Infectious Diseases; Professor of
Pediatrics, University of North Carolina
(UNC) School of Medicine; Professor of
Epidemiology, Gillings School of Global
Public Health; Medical Director, UNC
Hospitals' Departments of Hospital
Epidemiology (Infection Prevention)

*Member of the National Academy of
Social Insurance as of May 2021

About the National Academy of Social Insurance

Since the Academy was founded in 1986, it has provided rigorous inquiry and insights into the functioning of our nation's social insurance programs – Social Security, Medicare, Unemployment Insurance, and Workers' Compensation. Comprised of over 1,200 Members – the nation's top experts in social insurance and related policies and programs – the Academy studies how social insurance can continue to meet the changing needs of American families, employees, and employers, including uninsured or underinsured economic risks.

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Contact information:

National Academy of Social Insurance
1441 L Street, NW, Suite 530
Washington, DC 20005
Phone: (202) 452-8097
Fax: (202) 452-8111
Email: nasi@nasi.org