COVID-19 Pandemic in the United States

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Abstract

Objectives: The paper highlights US health policy and technology responses to the COVID-19 pandemic from January 1, 2020 – June 10, 2020.

Methods: A review of primary data sources in the US was conducted. The data were summarized to describe national and state-level trends in the spread of COVID-19 and in policy and technology solutions.

Results: The US policy response is best characterized by its federalist, decentralized nature. The national government has led in terms of economic and fiscal response and in creating more favorable regulations for the use of telemedicine. State governments have been responsible for many of the containment, testing, and treatment responses, often with little federal government support.

Conclusions: While all US states have begun to “re-open” economic activities, this trend appears to be largely driven by social tensions and economic motivations than an ability to effectively test and surveil populations.

Electronic copy available at: https://ssrn.com/abstract=3657404
1. Introduction

This paper presents an overview of the COVID-19 pandemic in the United States (US). We first provide context for the pandemic and response by discussing US population health and the health care system. We then describe the spread of the virus between January and June 2020, and the health policy and technology responses at both the national and state-levels.

A primary issue in the US has been the poor coordination of testing efforts and inability to test at-scale to provide comprehensive national (or even state) surveillance. This is part because the defining characteristic of the US response is federalism: much has been decided by individual states, and even within states at the county level with little guidance from the national government. There has also been a strong tension between the desire to “re-open” the economy to mitigate financial hardship and efforts to contain the spread of the virus and reduce the health impacts.

2. Population Health and Health Care System Context

2.1 Population Health

Table 1 provides an overview of US population health, and Table 2 summarizes the ten leading causes of death as of 2017. As shown in Table 1, life expectancy and poverty vary substantially by race/ethnicity.

[Insert Table 1]

Life expectancy also diverges by income: the difference in life expectancy for women in the top 1% of households by income and the bottom 1% is 10 years; for men, this difference is almost 15 years (8). The US is also home to approximately 44.7 million immigrants, with 11.3 million estimated to be undocumented (without legal status) (9). About 2.3 million people in the US are incarcerated (the US
incarceration rate is 698, the highest in the world), and approximately 1.3 million individuals live in nursing facilities (10,11).

Prior to the emergence of COVID-19, one of the most significant challenges in US health care policy was the opioid epidemic. In 2017, the US Department of Health and Human Services (HHS) declared a public health emergency. Approximately 2 million people had an opioid use disorder and an estimated 130 people died every day from an opioid-related drug overdose in 2018 (12). At both the federal and state levels, policies primarily focus on decreasing prescribing rates, harm reduction, and expanded treatment (13).

[Insert Table 2]

2.2 Health Care System

Although the US spends more per capita on health care than any other nation, it has relatively poor health outcomes and health care coverage (15). The US has a primarily private employer-based and individual insurance system, where enrollment is voluntary. 49% of individuals obtain their insurance coverage via their employer, 14% from Medicare (primarily age-based, federal program), 20% from Medicaid (low-income/safety net state-based program), 6% from the private individual market, 1% from the military/Veterans Administration, and 9% uninsured (15).

[Insert Table 3]

2.2.1 Telemedicine Coverage

In 2019, telemedicine coverage and policies were determined largely on a state-by-state basis: 16 states had payment parity between telehealth services and in-person services for private coverage, and 28 had coverage parity policies for their state Medicaid programs. Most states did not have a restriction around provider types or patient setting as a condition for payment. While most states allowed for remote patient
monitoring or “store and forward” (provider reviews previously recorded video/audio), 16 states limited telehealth services to synchronous technologies (19).

3. COVID-19 Trends in the United States

3.1 Data Availability

Data collection in the US is continually evolving. The Centers for Disease Control and Prevention (CDC) is the leading federal public health institute in the US and releases daily updates on the number of total COVID-19 cases, new cases, total deaths, new deaths, and testing (the CDC began reporting testing data as of May 9, approximately 15 weeks after the first known US case; on May 25 it was reported that the CDC had been conflating the results of antibody and viral tests) (20). The national totals are based on state health department reports, and case rates are based on these reports and the 2018 US Census Bureau American Community Survey (21). The CDC provides a weekly report of provisional COVID-19 deaths by age and sex, and releases weekly updates of total provisional deaths by race/ethnicity (22).

The Johns Hopkins University (JHU) Coronavirus Resource Center also tracks COVID-19 cases through a map-based dashboard and is updated multiple times per day. Unlike the CDC, the JHU dashboard has included testing and hospitalization data for the US from the beginning of the outbreak, making it a preferable data source. Specifically, the JHU dashboard includes US state and county-level data on the data elements listed in Table 4. The JHU dashboard gathers data from the Center for Systems Science and Engineering at JHU, and multiple other sources, including US county and state health departments and data aggregating websites including the COVID Tracking Project (23). The COVID Tracking Project obtains testing and hospitalization data from state public health authorities (24).¹

[Insert Table 4]

¹ After the CDC began releasing testing data, the COVID Tracking Project compared their data from state health departments to the CDC’s and found substantial discrepancies in some cases (with the CDC often reporting higher rates of testing). The CDC has also not released historical testing data for the first 3 months of the outbreak. See COVID Tracking Project comparison paper for more details (94).
3.1.1 Nursing facilities

As of April 19, the Centers for Medicare and Medicaid Services (CMS) began requiring long-term care (LTC) and nursing facilities to report COVID-19 cases among residents and staff to the CDC, staff, residents, and families of facility residents (25). Updated guidance provided May 8 required reports every seven days beginning May 17 (26). Although states are not required to publicly report these data, as of June 1, 47 states report at least some form of LTC and nursing facility data (17). The federal government released nursing-home level data on June 4 (with plans to release new data on a weekly basis) but due to early optional reporting, the numbers as of May 31 reflect only about 88% of nursing facilities (27).

3.2 COVID-19 Spread

The first COVID-19 case in the US was reported in Washington state on January 20, the same day as the first reported case in South Korea (28,29). Twelve weeks later, on April 11, the US surpassed Italy as the country with the most reported COVID-19 deaths (approximately 24,000, while South Korea had 10,450 deaths at that date). Below we describe national-level trends in greater detail, followed by state-level trends, which vary widely between and within states.

3.2.1 National trends

Figure 1 displays cases and deaths per day (Panel A), the case incidence rate (cases per 100,000 persons, Panel B), and the case-fatality rate (number of deaths per case (%), Panel C) over time. As of June 10, 2020, the total number of cases was 1,999,392 million and the total number of deaths was 112,878. While the case incidence rate was still increasing at the beginning of June, the case-fatality ratio had stabilized to about 5.8%. Deaths have primarily been concentrated in older age groups (Figure 2)

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2 During early testing phases, the case fatality rate may be biased upward because testing is more likely to occur for more severe cases. Basu 2020 estimates the infection fatality rate to be between 0.6%-2.1% based on data through April 20, 2020 (95).
and have disproportionately burdened Black Americans (Table 5). As of May 31, CMS reported approximately 95,500 confirmed cases in nursing home residents and 31,700 total deaths (27).

Figures 3 shows hospitalization rates over time (based on states reporting cumulative hospitalizations: cumulative hospitalizations/total confirmed cases). As of June 1, the average US hospitalization rate was at approximately 12%.

Figure 4 displays testing rates, defined as positive and negative results per 100,000 individuals. The US has struggled to implement widespread testing due in large part to three main factors: i) early issues with verification of tests disseminated by the CDC (30,31), ii) regulatory delays with the Food & Drug Administration (FDA) to approve new tests before relaxing these rules in March to allow broader development and manufacture (32), and iii) false and conflicting statements issued by the Trump Administration (33).

3.2.2. State trends
Data collection, reporting, and COVID-19 spread has varied widely by state. Figure 5 shows the progress of state-level case incidence rates between April 1 and June 1, 2020. Although Washington state experienced the first COVID-19 case, the figure illustrates how New York state became the epicenter of the US outbreak.

[Insert Figure 5]

Figure 6 demonstrates the slow rollout of testing between April 1 and June 1, 2020, as well as the variation in testing rates between states and the overall low rates of testing. As of June 1, Rhode Island had the highest testing rate of approximately 15%, New York state had a rate of about 11%, and over half of states had testing rates under 5%.

[Insert Figure 6]

4. Policy and Technology Response

Overall, the policy and technology response in the US can be characterized by a strongly decentralized nature, with the federal government bearing responsibility for large economic stimulus packages and states taking the lead on many containment and health measures. Figure 7 contains a timeline of major national-level policies and measures taken in response to COVID-19.

[Insert Figure 7]

4.1 Mitigation Policy

Early mitigation efforts took the form of travel restrictions and warnings, but by March 13 the federal government escalated from a public health to a national emergency, and by March 16 all states had declared a state of emergency or a public health emergency (17). Emergency declarations allow governors to exercise emergency powers, which can include activating emergency personnel and funds...
and adjusting regulations to improve health care access. Many of the additional mitigation policies have been enacted at the state level, including school closures, large gathering bans, non-essential business closures, stay-at-home orders, bar/restaurant limits, and primary election postponements.

Figure 8 illustrates when states implemented three types of policies: declaring a state of emergency, the closure of non-essential businesses, and the re-opening of non-essential businesses. The figure visually demonstrates how the US government has decided to manage the crisis: by having states determine the content and timing of policy implementation. While the declaration of a state of emergency was made within a two-week period for nearly all states, 11 states did not implement a strict closure of non-essential business at all and the re-opening of businesses throughout the states has been stretched over six weeks.

[Insert Figure 8]

4.1.1 Public tension regarding re-opening of states

The month of April saw a surge in protests urging officials to re-open the economy, including some armed protests and demonstrators supporting misstatements such as COVID-19 being no more dangerous than the seasonal flu (34). These protests and the backlash against them have been representative of a larger divide between parts of the country wanting to lift public health measures to reduce their immediate damage to the economy and keeping public health measures in place to avoid a “second wave” of infection. This conflict can also be observed between the national government and states, for example: The Trump Administration has publicly supported the re-opening movements by declaring that all states have enough resources to lift restrictions, a claim which several governors from both major parties have disagreed with (35).

In early May the White House issued a general plan according to which states and local officials could orient themselves to have a structured approach to exit their versions of lockdowns (36). The plan shares
similarities with New Zealand’s strategy in that it recommends a certain number of restrictions according to the risk level. Unlike New Zealand’s approach, the White House proposal does not contain clear guidance regarding levels of disease transmission or how to measure a “downward trajectory” of cases. By late May, all states except for Illinois began to lift lockdown measures and seven states had lifted their ban on large gatherings fully. While no states had completely lifted their restrictions on hospitality, many had re-opened restaurants for dine-in service with capacity limits (17).

4.1.2 Mitigation policies in institutionalized contexts

In addition to the high prevalence of comorbidities of incarcerated populations, jails and prisons introduce further risk factors for COVID-19 spread (38). Policies to address these risk factors include reducing the incarcerated population overall, decreasing barriers to seeking medical attention, and reducing outside contact through the limitation of visits (39,40). LTC and nursing facilities have adopted similar measures. Many states have taken to recommending or completely prohibiting visitations, screening nursing home staff, and requiring the use of PPE to reduce the spread of COVID-19 in such facilities (41). Although the Trump Administration plans to allocate funding for combating COVID-19 to nursing facilities based on quality ratings, a higher rate of COVID-19 cases in nursing homes is not associated with quality rating but is associated with large facility size, urban location, and a greater percentage of Black residents (42,43).

4.2 Economic Policy

The major components of US economic policy response have occurred at the federal level and include a series of large stimulus bills and Federal Reserve actions. The first two stimulus acts, Coronavirus Preparedness and Response Supplemental Appropriations Act and Families First Coronavirus Response Act, provided $8.3 and $192 billion respectively for health policy measures and are described in more detail in Section 4.3 below.
On March 27, the Coronavirus Aid, Relief and Economic Security (CARES) Act provides $2.2 trillion in funds for individuals, small businesses, large corporations, state and local governments, and other public health measures (44). Table 6 broadly outlines the funding allocations. The individual relief included $1,200 cash payments per person and unemployment payments of $600/week in addition to base amounts paid by states for a period of four months. Of the small business funding, $350 billion went to the Small Business Administration for providing loans via the Paycheck Protection Program. In health care, hospitals were allocated $100 billion, community health centers $1.3 billion, and the CDC $4.3 billion. Colleges and universities received $14 billion, while K-12 schools were allocated $13.5 billion. The CARES Act also extended student loan relief to defer all loan and interest payments through September 30 without penalties for federally owned student loans.

[Insert Table 6]

The Paycheck Protection Program funds were depleted in a matter of days, leading to the passage of the Paycheck Protection Program and Health Care Enhancement Act (PPPHCEA, or “CARES Act 3.5”) on April 24 (45). The PPPHCEA replenished the funding from the CARES Act with an additional $321 billion for the Paycheck Protection Program. The bill also included an additional $60 billion for emergency loans and grants, and a new $25 billion fund for COVID-19 testing.

In addition to the stimulus bills, the Treasury Department announced on March 20 that the federal tax filing deadline would be moved from April 15 to July 15; by April 1, most states had also pushed back their state filing deadlines (46). On March 3, the Federal Reserve cut interest rates by 0.5 percent, and on March 15 the Federal Reserve performed another emergency cut of 1 percent to effectively cut interest rates to zero (47). The Federal Reserve also announced a plan to buy at least $700 billion in Treasury Bills and mortgage-backed securities (a “quantitative easing” program similar to that implemented to address the 2008 recession) (48).

4.3 Health Policy
CMS has led many of the regulatory changes regarding coverage and capacity. These changes have included allowing ambulatory surgery centers to bill as hospitals, physician-owned hospitals to temporarily increase capacity, the expansion of scope of practice for nurses and physicians assistants to perform orders without a physician’s signoff, and allowing physicians to practice across state lines during the national emergency period (49). CMS also waived cost-sharing for COVID-19 tests and treatments and removed prior authorization requirements (50). Additionally, elective surgeries and non-essential medical and dental procedures have been recommended to be delayed until after the COVID-19 public health emergency (51).

Regarding telehealth policies and coverage, CMS has added more than 80 services to the Medicare telehealth benefit and increased reimbursement to the same rates as in-person visits. Many private payers have announced zero co-pay telemedicine for their members in the short term (52). At the state-level, several Medicaid programs have expanded their coverage to include telehealth (53).

The first major COVID-19 bill passed by Congress, the Coronavirus Preparedness and Response Supplemental Appropriations Act, provided $8.3 billion in emergency funding for response to the COVID-19 outbreak (54). The Office of the Secretary for Health and Human services received $3.1 billion of this funding, which is available until 2024; $950 million was dispersed to state and local health departments by the CDC; and $300 million was allocated to vaccine and treatment purchase. On March 18, Families First Coronavirus Response Act (FFCRA) was signed into law (55). As the primary federal legislation on health policy, the FFCRA addresses paid sick leave, insurance coverage for COVID-19 testing and treatment, and unemployment benefits. Specifically, FFCRA allows employees to take up to 12 weeks of sick-leave when under lockdown, in state-ordered self-isolation, and when seeking testing for COVID-19 or up to two weeks at partial pay when having to take care of someone due to COVID-19. Companies with fewer than 500 employees are covered completely by the FFCRA, while smaller employers with less

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3 In US health policy, it is often the case that when CMS makes payment changes in the Medicare program, private payers follow suit (see, for example, Clemens and Gottlieb 2017 (96)).
than 50 employees may be exempt from providing leave for parents due to school closure (56). Further, health plans are required to cover costs at no additional co-payments at no additional cost, to reduce any disincentives of getting tested or treated for COVID-19. This includes uninsured individuals which may be covered by Medicaid for COVID-19 testing and treatment (17).

4.4 Technology Policy

The CARES Act allocated $945 million to the National Institutes of Health (NIH), the leading health research organization and funding body in the US. In addition to calling for special addendums to existing grants to address COVID-19, the NIH launched a new rapid test development program on April 29, Rapid Acceleration of Diagnostics. This initiative will award $500 million for development of early stage technologies on developing rapid and widely accessible COVID-19 tests (57). In addition to testing, the US has also fast-tracked vaccine development, spurring high ranking officials such as the country’s leading public health official, Dr. Anthony Fauci, to say that a vaccine may be available for the US population as soon as January 2021 (58). To do so the government introduced ‘Operation Warp Speed’, which will fund the production of vaccines while they are still being tested for efficacy and safety – trading off the speed at which the vaccine will be disseminated against a wasteful investment in all the vaccine candidates which do not pass efficacy and safety standards (59).

Early in the spread of the pandemic, tracking apps were appraised as one of the principal ways to mitigate infection spread, and several countries which are combating the virus successfully (e.g., Singapore and South Korea) have supported the use of such apps (60). Although there are efforts from universities such as Stanford (Covid Watch) and MIT (Safe Paths), there is no endorsement on a national government level for any of the initiatives. Instead, states have been left to decide which application to adopt, if any (61). Several states have endorsed the app developed by the cooperation of Google and Apple, while for example Utah decided to develop their own app (62). Some states, including California, have also opted to train teams of individuals to perform manual contact tracing (63).
5. Health Care System Response

Although there are not yet systematic national data available, some primary care practices are reporting reductions in use of services up to 70% (64). Similarly, there are reports of elective procedures and care declining across the country by up to 50% and emergency department visits dropping by 42% compared to the year 2019 (65,66). Despite the demand in some areas of the country for medical professionals, this corresponds to reduced staffing: employment in health care declined by an estimated 43,000 from mid-February through mid-March (66). It is likely that many smaller and rural hospitals will close, even with extra funds from the federal government, and some smaller primary care practices may also not be able to financially weather the outbreak (67). It is uncertain how much of the demand for elective or preventive care will be deferred to later in the year or even 2021, and what the expenditure consequences will be (68).

The combination of improving coverage and loosening regulations for telehealth and the recommendations to defer in-person non-emergency health care led to the increase in telehealth visits during the pandemic. Teladoc, one of the leading American telehealth providers, expects to see between 8 and 9 million visits in 2020, compared to 4.1 million 2019. Between January and March Teladoc had 2 million visits, and over 60% of these were from new users (69). Individual health care systems are also reporting increases in telehealth usage. For example, NYU Langone Health, operating at the epicenter of the US outbreak in New York City, experienced an increase in tele-visits for urgent care from 102 per day to 802 per day between March 2 and April 14 (70).

Next to the overall decrease in reported cases of physical disease there have been concerns over increases in mental health problems as well as domestic abuse. (71). Mental health conditions are likely to be amplified through the additional stress and social isolation that the virus and the pandemic bring, including exacerbating the existing opioid epidemic (72,73). Survey results from late March show that nearly half of Americans say the coronavirus has had a negative impact on their mental health (74). While tele-therapy may help to alleviate some of this burden, there are particular concerns about a coming
mental health crisis for health care workers and for children and adolescents (75–77). Regarding domestic abuse, some cities are reporting increases in calls and text messages to domestic violence hotlines, while others are seeing declines, possibly due to safety concerns about calling while in the same space as an abuser (78). In April, phone calls and texts to the National Child Abuse Hotline increased by 17 percent compared to the same time in 2019 (71).

6. Economic and Financial Market Response

Mitigation efforts such as stay-at-home orders and non-essential business shutdowns severely impacted the US economy and financial markets. Below we highlight some major economic and fiscal performance indicators.

The first quarter of 2020 saw a 4.8 percent decrease in US GDP (Figure 9; (79)). Domestic purchases and sales declined 5.9 percent and 5.4 percent, respectively during this period (80). From February to March, exports decreased 9.6 percent and imports decreased 6.2 percent (81).

[Insert Figure 9]

In April, US unemployment reached 14.7 percent, 10 percentage points higher than in March, (Figure 10), and an estimated 30% of Americans either lost a job or took a pay cut due to COVID-19 (82,83). Based on a survey of businesses and households, the Bureau of Labor Statistics (BLS) reported that US unemployment fell to 13.1 in May; the BLS counts individuals receiving pay under the Payroll Protection Program and individuals furloughed but not receiving pay as employed – accounting for this misclassification, the unemployment rate for May would be closer to 19% (84,85). Accordingly, as the unemployment rate steadily increased and the economic circumstances of many Americans became uncertain, the consumer confidence index declined (Figure 11; (86)).

[Insert Figure 10]
During the pandemic, the price of goods and services has generally decreased, notably gasoline, which declined 17 percentage points from March to April 2020 (Figure 12; 83). However, not all commodities decreased in price. Consumer prices of food increased almost 2 percentage points from January to April 2020 while other commodities such as medical care services, electricity, and education, increased by less than 1 percentage point during this period (80). As the Consumer Price Index (CPI) decreased, the inflation rate also decreased, beginning the year at 2.5 percent and down to 0.3 percent in April (88).

Figure 13 displays the trends in 3-month (Panel A) and 10-year (Panel B) treasury yields, which declined beginning in March (89). Lastly, Figure 14 demonstrates the stock market trends during the pandemic, which declined once the virus reached the US and began to rebound after the $2 trillion CARES Act relief package was signed into law (29,90).

7. Conclusions

For the remainder of the pandemic the OECD has described four key measures which health care systems should implement: i) ensuring access of the vulnerable to diagnostics and treatment; ii) improving health systems delivery for rapid response to outbreaks; iii) increase the availability of digital solutions and data to improve surveillance and care; and iv) invest in research and development for
accelerated production of diagnostics, treatments, and vaccines (91). These elements have all been partially addressed by the policies described in this paper. The US is falling most behind regarding surveillance and equitable access to treatment and care. Although some states are continuing to see the numbers of confirmed cases rise, containment measures have been relaxed in all states – due to the poor testing implementation, it is not possible to disentangle the detection of new cases versus an underlying increase in infection spread. Arguably the most effective areas of US policy response have been in economic stimulus and in the change in regulations around telemedicine.

The heterogeneous policy response is rooted in the American federalist tradition, and while it poses challenges to effectively containing infection spread, it also allows states to tailor responses that may be more appropriate for the local context. Although there are institutional barriers to implementing stronger, more centralized responses, there are also legitimate privacy and ethics questions regarding technology solutions such as phone tracing and credit card monitoring, and the arguments regarding the economic and public health consequences of continued strict shelter-in-place orders should be carefully considered. The nation-wide protests sparked by the police murders of Black Americans have raised concerns regarding the spread of COVID-19, but these have been countered by the framing of systemic racism and white supremacy as a public health issue in its own right that has contributed to the disproportionate burden of COVID-19 cases and deaths in Black communities (92,93).

The health policy and technology response in the US has been highly decentralized and fractured both politically and in terms of public sentiment. Future management of the pandemic, including responses to potential second or third wave of infection, will depend greatly on the outcome of the November 2020 presidential and congressional elections.

References

1. Division UNS. UNData: United States [Internet]. United Nations. 2020 [cited 2020 Jun 9]. Available from: https://data.un.org/en/iso/us.html
2. Bureau UC. Population Estimates Show Aging Across Race Groups Differs.

3. Indian Health Service. Disparities | Fact Sheets [Internet]. [cited 2020 Jun 9]. Available from: https://www.ihs.gov/newsroom/factsheets/disparities/

4. Centers for Disease Control and Prevention. Chronic Diseases in America | CDC [Internet]. [cited 2020 Jun 9]. Available from: https://www.cdc.gov/chronicdisease/resources/infographic/chronic-diseases.htm

5. Centers for Disease Control and Prevention. FastStats - Overweight Prevalence [Internet]. [cited 2020 Jun 9]. Available from: https://www.cdc.gov/nchs/fastats/obesity-overweight.htm

6. OECD. Health - OECD Data [Internet]. [cited 2020 Jun 9]. Available from: https://data.oecd.org/health.htm

7. Proctor BD, Semega JL, Kollar MA. Income and poverty in the United States: 2015 [Internet]. Vol. 256, Current Population Reports. 2016 [cited 2020 Jun 9]. Available from: https://www.census.gov/library/publications/2019/demo/p60-266.html

8. Chetty R, Stepner M, Abraham S, Lin S, Scuderi B, Turner N, et al. The association between income and life expectancy in the United States, 2001-2014. JAMA - J Am Med Assoc. 2016 Apr 26;315(16):1750–66.

9. Batalova J, Blizzard B, Bolter J. Frequently Requested Statistics on Immigrants and Immigration in the United States | migrationpolicy.org [Internet]. 2020 [cited 2020 Jun 9]. Available from: https://www.migrationpolicy.org/article/frequently-requested-statistics-immigrants-and-immigration-united-states

10. Wagner P, Sawyer W. States of Incarceration: The Global Context 2018 | Prison Policy Initiative [Internet]. Prison Policy Initiative. 2020 [cited 2020 Jun 9]. Available from: https://www.prisonpolicy.org/global/2018.html

11. Foundation KF. Total Number of Residents in Certified Nursing Facilities | KFF [Internet]. Kaiser Family Foundation State Health Facts. 2017 [cited 2020 Jun 9]. Available from: https://www.kff.org/other/state-indicator/number-of-nursing-facility-residents/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Electronic copy available at: https://ssrn.com/abstract=3657404
12. HHS.GOV/OPIOIDS. About the Epidemic | HHS.gov [Internet]. US Department of Health and Human Services. 2019 [cited 2020 Jun 9]. Available from: https://www.hhs.gov/opioids/about-the-epidemic/index.html

13. Pitt AL, Humphreys K, Brandeau ML. Modeling health benefits and harms of public policy responses to the US opioid epidemic. Am J Public Health. 2018 Oct 1;108(10):1394–400.

14. Centers for Disease Control and Prevention. FastStats - Leading Causes of Death [Internet]. Centers for Disease Control and Prevention. 2017 [cited 2020 Jun 9]. Available from: https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm

15. Papanicolas I, Woskie LR, Jha AK. Health care spending in the United States and other high-income countries. Vol. 319, JAMA - Journal of the American Medical Association. American Medical Association; 2018. p. 1024–39.

16. OECD. Doctors (indicator) [Internet]. 2020 [cited 2020 Jun 9]. p. Accessed 21 January 2020. Available from: https://data.oecd.org/healthres/doctors.htm#indicator-chart

17. Kaiser Family Foundation. State Data and Policy Actions to Address Coronavirus | KFF [Internet]. Kaiser Family Foundation. 2020 [cited 2020 Jun 9]. Available from: https://www.kff.org/health-costs/issue-brief/state-data-and-policy-actions-to-address-coronavirus/#stateleveldata

18. Halpern NA, See Tan K. SCCM | United States Resource Availability for COVID-19 [Internet]. The Society of Critical Care Medicine. 2020 [cited 2020 Jun 10]. Available from: https://sccm.org/Blog/March-2020/United-States-Resource-Availability-for-COVID-19

19. American Telemedicine Association. 2019 State of the States Report: Coverage and Reimbursement. 2019; Available from: https://cdn2.hubspot.net/hubfs/5096139/Files/ThoughtLeadership_ATA/2019 State of the States summary_final.pdf

20. Madrigal AC, Meyer R. The CDC and States Are Misreporting COVID-19 Test Data - The Atlantic. The Atlantic [Internet]. 2020 May [cited 2020 Jun 9]; Available from: https://www.theatlantic.com/health/archive/2020/05/cdc-and-states-are-misreporting-covid-19-test-data-pennsylvania-georgia-texas/611935/

21. Centers for Disease Control and Prevention. CDC COVID Data Tracker [Internet]. Centers for Disease Control and Prevention. 2020 [cited 2020 Jun 9]. Available from:
22. Centers for Disease Control and Prevention. COVID-19 Provisional Counts - Weekly Updates by Select Demographic and Geographic Characteristics [Internet]. Centers for Disease Control and Prevention. 2020 [cited 2020 Jun 9]. Available from: https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm

23. CSSE at JHU. COVID-19 Data Repository [Internet]. GitHub. 2020 [cited 2020 Jun 9]. Available from: https://github.com/CSSEGISandData/COVID-19

24. CovidTracking.com. The COVID Tracking Project | The COVID Tracking Project [Internet]. The Atlantic Monthly Group. 2020 [cited 2020 Jun 9]. Available from: https://covidtracking.com/

25. CMS.gov. Upcoming Requirements for Notification of Confirmed COVID-19 (or COVID-19 Persons under Investigation) Among Residents and Staff in Nursing Homes | CMS [Internet]. CMS.gov. 2020 [cited 2020 Jun 9]. Available from: https://www.cms.gov/medicareprovider-enrollment-and-certiﬁcationsurveycertiﬁcationgeninfopolicy-and-memos-states-and/upcoming-requirements-notification-confirmed-covid-19-or-covid-19-persons-under-investigation-among

26. Proctor J. / Rules and Regulations [Internet]. Vol. 85, Federal Register. 2020 [cited 2020 Jun 9]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/

27. Data.CMS.gov. COVID-19 Nursing Home Data | Data.CMS.gov [Internet]. Data.CMS.gov. 2020 [cited 2020 Jun 9]. Available from: https://data.cms.gov/stories/s/COVID-19-Nursing-Home-Data/bkwz-xpvg

28. Holshue ML, DeBolt C, Lindquist S, Lofy KH, Wiesman J, Bruce H, et al. First Case of 2019 Novel Coronavirus in the United States. N Engl J Med [Internet]. 2020 Mar 5 [cited 2020 Jun 9];382(10):929–36. Available from: http://www.nejm.org/doi/10.1056/NEJMoa2001191

29. World Health Organization. Novel Coronavirus (2019-nCOV) Situation Report - 1 [Internet]. 2020 [cited 2020 Jun 9]. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-sitrep-1-2019-ncov.pdf?sfvrsn=20a99c10_4

30. William D. Contamination at CDC lab delayed rollout of coronavirus tests - The Washington Post. The Washington Post [Internet]. 2020 Apr 18 [cited 2020 Jun 9]; Available from: https://www.washingtonpost.com/investigations/contamination-at-cdc-lab-delayed-rollout-of-
31. Whoriskey P, Satija N. While CDC coronavirus tests stalled for six weeks, a German lab made 1.4 million tests - The Washington Post. The Washington Post [Internet]. 2020 Mar 16 [cited 2020 Jun 9]; Available from: https://www.washingtonpost.com/business/2020/03/16/cdc-who-coronavirus-tests/

32. DePillis L, Chen C. The FDA Is Forcing the CDC to Waste Time Double Testing Some Coronavirus Cases — ProPublica [Internet]. ProPublica. 2020 [cited 2020 Jun 9]. Available from: https://www.propublica.org/article/the-fda-is-forcing-the-cdc-to-waste-time-double-testing-some-coronavirus-cases

33. Paz C. All of Trump’s Lies About the Coronavirus - The Atlantic. The Atlantic [Internet]. 2020 [cited 2020 Jun 9]; Available from: https://www.theatlantic.com/politics/archive/2020/05/trumps-lies-about-coronavirus/608647/

34. Jeffrey A. Coronavirus: Scenes of protests across the country demanding states reopen the economy [Internet]. CNBC. 2020 [cited 2020 Jun 11]. Available from: https://www.cnbc.com/2020/04/18/coronavirus-scenes-of-protests-across-the-country-demanding-states-reopen-the-economy.html

35. News Wires. “Delusional”: US governors excoriate Trump’s Covid-19 lockdown exit plan [Internet]. France24. 2020 [cited 2020 Jun 11]. Available from: https://www.france24.com/en/20200419-delusional-us-governors-excoriate-trump-s-covid-19-lockdown-exit-plan

36. Opening Up America Again | The White House [Internet]. [cited 2020 Jun 11]. Available from: https://www.whitehouse.gov/openingamerica/

37. KFF. State Data and Policy Actions to Address Coronavirus | KFF.

38. Woodall J, Freeman C. Promoting health and well-being in prisons: an analysis of one year’s prison inspection reports. Crit Public Health. 2019;

39. Prison Policy Initiative. Criminal justice responses to the coronavirus pandemic | Prison Policy Initiative [Internet]. Prison Policy Initiative. 2020 [cited 2020 Jun 9]. Available from: https://www.prisonpolicy.org/virus/virusresponse.html#copays

40. Dolovich S, Littman A, Nagai H, Cheng T, Choi J, DiLaura G, et al. UCLA Law Covid-19 Behind
41. Grabowski DC, Mor V. Nursing Home Care in Crisis in the Wake of COVID-19. JAMA [Internet]. 2020 May 22 [cited 2020 Jun 9]; Available from: https://jamanetwork.com/journals/jama/fullarticle/2766599

42. Abrams HR, Loomer L, Gandhi A, Grabowski DC. Characteristics of U.S. Nursing Homes with <scp>COVID</scp>-19 Cases. J Am Geriatr Soc [Internet]. 2020 Jun 2 [cited 2020 Jun 9]; jgs.16661. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/jgs.16661

43. CMS.gov Newsroom. Trump Administration Unveils Enhanced Enforcement Actions Based on Nursing Home COVID-19 Data and Inspection Results | CMS [Internet]. CMS.gov Newsroom. 2020 [cited 2020 Jun 9]. Available from: https://www.cms.gov/newsroom/press-releases/trump-administration-unveils-enhanced-enforcement-actions-based-nursing-home-covid-19-data-and

44. Text - S.3548 - 116th Congress (2019-2020): CARES Act. S.3548 Mar 19, 2020.

45. Text - H.R.266 - 116th Congress (2019-2020): Paycheck Protection Program and Health Care Enhancement Act. H.R.266 Apr 24, 2020.

46. Internal Review Service. Tax Day now July 15: Treasury, IRS extend filing deadline and federal tax payments regardless of amount owed | Internal Revenue Service [Internet]. IRS News Release. 2020 [cited 2020 Jun 13]. Available from: https://www.irs.gov/newsroom/tax-day-now-july-15-treasury-irs-extend-filing-deadline-and-federal-tax-payments-regardless-of-amount-owed

47. The Federal Reserve. Federal Reserve Board - Open Market Operations [Internet]. federalreserve.gov. 2020 [cited 2020 Jun 13]. Available from: https://www.federalreserve.gov/monetarypolicy/openmarket.htm

48. Liesman S. Federal Reserve cuts rates to zero and launches massive $700 billion quantitative easing program [Internet]. CNBC. 2020 [cited 2020 Jun 13]. Available from: https://www.cnbc.com/2020/03/15/federal-reserve-cuts-rates-to-zero-and-launches-massive-700-billion-quantitative-easing-program.html
49. Trump Administration Makes Sweeping Regulatory Changes to Help U.S. Healthcare System Address COVID-19 Patient Surge | CMS [Internet]. [cited 2020 Jun 9]. Available from: https://www.cms.gov/newsroom/press-releases/trump-administration-makes-sweeping-regulatory-changes-help-us-healthcare-system-address-covid-19

50. CMS Issues Guidance to help Medicare Advantage and Part D Plans Respond to COVID-19 | CMS [Internet]. [cited 2020 Jun 9]. Available from: https://www.cms.gov/newsroom/press-releases/cms-issues-guidance-help-medicare-advantage-and-part-d-plans-respond-covid-19

51. CMS Releases Recommendations on Adult Elective Surgeries, Non-Essential Medical, Surgical, and Dental Procedures During COVID-19 Response | CMS [Internet]. [cited 2020 Jun 9]. Available from: https://www.cms.gov/newsroom/press-releases/cms-releases-recommendations-adult-elective-surgeries-non-essential-medical-surgical-and-dental

52. Augenstein J. Opportunities To Expand Telehealth Use Amid The Coronavirus Pandemic [Internet]. Health Affairs Blog. 2020 [cited 2020 Jun 9]. Available from: https://www.healthaffairs.org/do/10.1377/hblog20200315.319008/full/

53. Weigel G, Ramaswamy A, Sobel L, Salganicoff A, Cubanski J, Freed M. Opportunities and Barriers for Telemedicine in the U.S. During the COVID-19 Emergency and Beyond | KFF [Internet]. Kaiser Family Foundation. 2020 [cited 2020 Jun 10]. Available from: https://www.kff.org/womens-health-policy/issue-brief/opportunities-and-barriers-for-telemedicine-in-the-u-s-during-the-covid-19-emergency-and-beyond/

54. H.R.6074 - 116th Congress (2019-2020): Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020. H.R.6074 2020.

55. Text - H.R.6201 - 116th Congress (2019-2020): Families First Coronavirus Response Act. H.R. 6201 United States; 2020.

56. Federal Register :: Paid Leave Under the Families First Coronavirus Response Act [Internet]. [cited 2020 Jun 9]. Available from: https://www.federalregister.gov/documents/2020/04/06/2020-07237/paid-leave-under-the-families-first-coronavirus-response-act

57. National Insitutes of Health. NIH mobilizes national innovation initiative for COVID-19 diagnostics | National Institutes of Health (NIH) [Internet]. National Institutes of Health News Releases. 2020

Electronic copy available at: https://ssrn.com/abstract=3657404
Smith D. Trump unveils “warp-speed” effort to create coronavirus vaccine by year's end | US news | The Guardian. The Guardian [Internet]. 2020 [cited 2020 Jun 9]; Available from: https://www.theguardian.com/us-news/2020/may/15/trump-coronavirus-warp-speed-vaccine-white-house

Jacobs J, Armstrong D. Trump Coronavirus Vaccine: “Operation Warp Speed” Project News - Bloomberg. Bloomberg [Internet]. 2020 [cited 2020 Jun 9]; Available from: https://www.bloomberg.com/news/articles/2020-04-29/trump-s-operation-warp-speed-aims-to-rush-coronavirus-vaccine

Howell O’Neill P, Ryan-Mosley T, Johnson B. A flood of coronavirus apps are tracking us. Now it’s time to keep track of them. | MIT Technology Review [Internet]. MIT Technology Review. 2020 [cited 2020 Jun 9]. Available from: https://www.technologyreview.com/2020/05/07/1000961/launching-mitr-covid-tracing-tracker/

Leibrand S, Kakade S, Latta S, Lewis D, Tessaro S, Weyl G, et al. Outpacing the Virus: Digital Response to Containing the Spread of COVID-19 while Mitigating Privacy Risks. 2020.

Gold H, CNN Business. What happened to all the coronavirus tracking apps? - CNN [Internet]. CNN Business. 2020 [cited 2020 Jun 9]. Available from: https://edition.cnn.com/2020/06/05/tech/coronavirus-tracking-apps/index.html

Office of Governor Newsom. Governor Newsom Launches California Connected – California’s Contact Tracing Program and Public Awareness Campaign | California Governor [Internet]. CA.gov. 2020 [cited 2020 Jun 9]. Available from: https://www.gov.ca.gov/2020/05/22/governor-newsom-launches-california-connected-californias-contact-tracing-program-and-public-awareness-campaign/

Cutler D. How Will COVID-19 Affect the Health Care Economy? JAMA Heal Forum. 2020 Apr 1;1(4):e200419–e200419.

Cutler DM, Nikpay S, Huckman RS. The Business of Medicine in the Era of COVID-19. Vol. 323, JAMA - Journal of the American Medical Association. American Medical Association; 2020. p.
2003–4.

66. Hartnett KP, Kite-Powell A, Devies J, Coletta MA, Boehmer TK, Adjemian J, et al. Morbidity and Mortality Weekly Report Impact of the COVID-19 Pandemic on Emergency Department Visits - United States [Internet]. 2019 [cited 2020 Jun 9]. Available from: https://www.hhs.gov/about/agencies/iea/regional-offices/index.html.

67. Scott D. Coronavirus’s effect on health care, from coverage to vaccines - Vox [Internet]. Vox. 2020 [cited 2020 Jun 9]. Available from: https://www.vox.com/the-highlight/2020/4/15/21211905/coronavirus-covid-19-pandemic-medical-health-care-hospitals

68. Cox C, Rudowitz R, Neuman T, Cubanski J, Rae M. How health costs might change with COVID-19 - Peterson-KFF Health System Tracker [Internet]. 2020 [cited 2020 Jun 9]. Available from: https://www.healthsystemtracker.org/brief/how-health-costs-might-change-with-covid-19/

69. Pifer R. Teladoc hikes 2020 guidance after seeing visits double in Q1 | Healthcare Dive [Internet]. HealthcareDive. 2020 [cited 2020 Jun 10]. Available from: https://www.healthcaredive.com/news/teladoc-hikes-2020-guidance-after-seeing-visits-double-in-q1/577030/

70. Mann DM, Chen J, Chunara R, Testa PA, Nov O, Mann D. COVID-19 transforms health care through telemedicine: Evidence from the field. [cited 2020 Jun 10]; Available from: https://academic.oup.com/jamia/advance-article-abstract/doi/10.1093/jamia/ocaa072/5824298

71. Bosman J. Domestic Violence Calls Mount as Restrictions Linger: ‘No One Can Leave’ - The New York Times. New York Times [Internet]. 2020 May 15 [cited 2020 Jun 9]; Available from: https://www.nytimes.com/2020/05/15/us/domestic-violence-coronavirus.html

72. Ransing R, Adiukwu F, Pereira-Sanchez V, Ramalho R, Orsolini L, Teixeira ALS, et al. Mental Health Interventions during the COVID-19 Pandemic: A Conceptual Framework by Early Career Psychiatrists. Asian J Psychiatr. 2020 Jun 1;51:102085.

73. Slat S, Thomas J, Lagisetty P. Coronavirus Disease 2019 and Opioid Use—A Pandemic Within an Epidemic. JAMA Heal Forum. 2020 May 1;1(5):e200628–e200628.

74. Kirzinger A, Kearney A, Hamel L, Brodie M. KFF Health Tracking Poll – Early April 2020: The Impact Of Coronavirus On Life In America | KFF [Internet]. 2020 [cited 2020 Jun 9]. Available
Wan W. Coronavirus is causing a historic rise in mental health problems, experts warn - The Washington Post. Washington Post [Internet]. 2020 May 4 [cited 2020 Jun 9]; Available from: https://www.washingtonpost.com/health/2020/05/04/mental-health-coronavirus/

Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. Vol. 7, The Lancet Psychiatry. Elsevier Ltd; 2020. p. 228–9.

Golberstein E, Wen H, Miller BF. Coronavirus Disease 2019 (COVID-19) and Mental Health for Children and Adolescents. JAMA Pediatrics. American Medical Association; 2020.

Haridasani Gupta A, Stahl A. For Abused Women, a Pandemic Lockdown Holds Dangers of Its Own - The New York Times. New York Times [Internet]. 2020 Mar 24 [cited 2020 Jun 9]; Available from: https://www.nytimes.com/2020/03/24/us/coronavirus-lockdown-domestic-violence.html

Gross Domestic Product, 1st Quarter 2020 (Advance Estimate) | U.S. Bureau of Economic Analysis (BEA) [Internet]. [cited 2020 Jun 14]. Available from: https://www.bea.gov/news/2020/gross-domestic-product-1st-quarter-2020-advance-estimate

Food at home prices up, gasoline and airfare prices down, over the year ended April 2020 : The Economics Daily: U.S. Bureau of Labor Statistics [Internet]. [cited 2020 Jun 14]. Available from: https://www.bls.gov/opub/ted/2020/food-at-home-prices-up-gasoline-and-airfare-prices-down-over-the-year-ended-april-2020.htm

U.S. International Trade in Goods and Services, March 2020 | U.S. Bureau of Economic Analysis (BEA) [Internet]. [cited 2020 Jun 14]. Available from: https://www.bea.gov/news/2020/us-international-trade-goods-and-services-march-2020

US Bureau of Labor Statistics. Employment Situation Summary [Internet]. US Bureau of Labor Statistics. 2020 [cited 2020 May 26]. Available from: https://www.bls.gov/news.release/empsit.nr0.htm

Pew Research Center. About three-in-ten Americans have lost a job or taken a pay cut due to COVID-19 [Internet]. 2020 [cited 2020 May 28]. Available from: https://www.pewresearch.org/fact-tank/2020/05/15/majority-of-americans-who-lost-a-job-or-wages-due-to-covid-19-concerned-
states-will-reopen-too-quickly/ft_2020-05-15_jobloss_02/

84. US Bureau of Labor Statistics. Employment Situation Summary [Internet]. 2020 [cited 2020 Jun 10]. Available from: https://www.bls.gov/news.release/empsit.nr0.htm

85. PBS NewsHour. The May jobs report ‘misclassification error’ explained | PBS NewsHour Weekend [Internet]. PBS. 2020 [cited 2020 Jun 10]. Available from: https://www.pbs.org/newshour/show/the-may-jobs-report-misclassification-error-explained

86. OECD. Consumer Confidence Index (CCI) [Internet]. 2020 [cited 2020 May 27]. Available from: https://data.oecd.org/leadind/consumer-confidence-index-cci.htm

87. US Bureau of Labor Statistics. Food at home prices up, gasoline and airfare prices down, over the year ended April 2020 [Internet]. 2020 [cited 2020 May 26]. Available from: https://www.bls.gov/opub/ted/2020/food-at-home-prices-up-gasoline-and-airfare-prices-down-over-the-year-ended-april-2020.htm

88. Trading Economics. United States Inflation Rate [Internet]. 2020 [cited 2020 May 29]. Available from: https://tradingeconomics.com/united-states/inflation-cpi

89. Daily Treasury Yield Curve Rates [Internet]. [cited 2020 Jun 14]. Available from: https://www.treasury.gov/resource-center/data-chart-center/interest-rates/pages/TextView.aspx?data=yieldYear&year=2020

90. Bloomberg L.P. S&P 500 Index [Internet]. 2020 [cited 2020 Jun 10]. Available from: https://www.bloomberg.com/quote/SPX:IND

91. OECD. Beyond Containment: Health systems responses to COVID-19 in the OECD - OECD [Internet]. 2020 [cited 2020 Jun 9]. Available from: https://read.oecd-ilibrary.org/view/?ref=119_119689-ud5comtf84&title=Beyond_Containment:Health_systems_responses_to_COVID-19_in_the_OECD

92. Galea S, Abdalla SM. COVID-19 Pandemic, Unemployment, and Civil Unrest. JAMA [Internet]. 2020 Jun 12 [cited 2020 Jun 14]; Available from: https://jamanetwork.com/journals/jama/fullarticle/2767354

93. Greiner A, Laviana A, Stewart A, Sapru A, Cartus A, Lee A, et al. Open Letter Advocating for Anti-Racist Public Health Response [Internet]. Google Drive. 2020 [cited 2020 Jun 10]. Available from:
94. The COVID Tracking Project. Assessment of New CDC COVID-19 Data Reporting | The COVID Tracking Project [Internet]. The COVID Tracking Project. 2020 [cited 2020 Jun 9]. Available from: https://covidtracking.com/cdc-paper

95. Basu A. Estimating The Infection Fatality Rate Among Symptomatic COVID-19 Cases In The United States. Health Aff (Millwood). 2020 May 7;

96. Clemens J, Gottlieb JD. In the shadow of a giant medicare’s influence on private physician payments. J Polit Econ. 2017 Feb 1;125(1):1–39.
### Table 1: US Population Health Summary

| Characteristic                                      | Summary Statistic |
|-----------------------------------------------------|-------------------|
| Total Population (1)                                | 329 million       |
| Population <14 years (1)                            | 18.5%             |
| Population >60 years (1)                            | 22.4%             |
| Median Age (1)                                       | 38.2 years        |
| Average Life Expectancy, Total (1)                  | 78.6 years        |
| Men                                                 | 76.1 years        |
| Women                                               | 81.1 years        |
| Average Life Expectancy of White Americans (2)      | 78.8 years        |
| Average Life Expectancy of Black Americans (2)      | 75.3 years        |
| Average Life Expectancy of Hispanic Americans (2)   | 81.8 years        |
| Average Life Expectancy of Native Americans (3)     | 73.0 years        |
| At Least 1 Chronic Disease (4)                      | 60%               |
| Obese or Overweight (5)                             | 71%               |
| Daily Smokers (6)                                   | 10.3%             |
| Average Annual Alcohol Consumption per Capita (>14 Years Old) (6) | 8.9L |
| Population Density (1)                              | 36/km$^2$ (93/mi$^2$) |
| Urban-dwelling (1)                                  | 83%               |
| Population Below Poverty Line (7)                   |                   |
| White                                               | 10.1%             |
| Black                                               | 20.8%             |
| Hispanic                                            | 17.6%             |

### Table 2: Leading Causes of Death in the US, 2017

| Rank | Cause of Death                                      |
|------|-----------------------------------------------------|
| 1    | Heart disease                                       |
| 2    | Cancer                                              |
| 3    | Accidents/unintentional injuries                    |
| 4    | Chronic lower respiratory diseases                  |
| 5    | Stroke/cerebrovascular disease                      |
| 6    | Alzheimer’s disease                                 |
| 7    | Diabetes                                            |
| 8    | Influenza and pneumonia                             |
| 9    | Kidney disease                                      |
| 10   | Intentional self-harm/suicide                       |

Source: Centers for Disease Control and Prevention (14)
Table 3: Health Care Workforce, Capacity, and Supply

| Characteristic                                      | Summary Statistic                  |
|-----------------------------------------------------|------------------------------------|
| Physicians (16)                                     | 2.6 / 1,000 population             |
| Nurses (16)                                          | 11.7 / 1,000 population            |
| Primary Care Practitioners (15)                     | 43%                                |
| General Hospital Beds (17)                          | 23.5 / 10,000 population           |
| ICU Beds (17)                                        | 2.7 / 10,000 population            |
| Community Health Centers (safety net outpatient care) (17) | 1,331                              |
| MRI Units (16)                                       | 18.5 / 1 million population        |
| CT Units (16)                                        | 28.9 / 1 million population        |
| Ventilator Units*                                   | 609 / 1 million population         |

*In a March 2020 bulletin, the Society for Critical Care Medicine estimated that US hospitals have approximately 62,000 full-featured mechanical ventilators; including older models, the emergency supply from the Strategic National Stockpile and anesthesia machines, there are an estimated 200,000 units nationally (approximately 609 units per 1 million individuals) (18).*

Table 4: US COVID-19 Data from JHU Coronavirus Resource Center

| Data Element            | Definition                                                                 |
|-------------------------|-----------------------------------------------------------------------------|
| Confirmed Cases         | Presumptive positive cases                                                  |
| Deaths                  | Confirmed and probable                                                       |
| Recovered Cases         | Based on local media reports, state and local reporting                     |
| Active Cases            | Total confirmed - total recovered – total deaths                             |
| Incidence Rate          | Confirmed Cases per 100,000 people                                           |
| Case-Fatality Ratio     | Number recorded deaths / number confirmed cases (%)                          |
| Testing Rate            | Total test results per 100,000 people                                        |
| Cumulative Hospitalization Rate | Total number hospitalized / number of confirmed cases (%)                  |

Table 5: Total Provisional COVID-19 Deaths by Race/Ethnicity as of May 28, 2020

| Race/Ethnicity                        | COVID-19 Deaths (%) | Weighted Population Distribution (%) |
|---------------------------------------|---------------------|--------------------------------------|
| Non-Hispanic White                    | 53.2                | 42.1                                 |
| Non-Hispanic Black                    | 22.9                | 17.9                                 |
| Non-Hispanic American Indian or Alaska Native | 0.5                | 0.2                                 |
| Non-Hispanic Asian                    | 5.4                 | 11.0                                 |
| Hispanic                              | 16.4                | 26.8                                 |
| Other                                 | 1.7                 | 1.9                                  |

Source: Centers for Disease Control and Prevention (22)

Table 6: CARES Act Funding Allocations

| Group                         | Funding (Billions, USD) |
|-------------------------------|-------------------------|
| Individuals                   | 560                     |
| Small Businesses              | 377                     |
| Large Corporations            | 500                     |
| State/Local Government        | 340                     |
| Health Care                   | 135                     |
| Education                     | 43                      |

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Figure 1: US COVID-19 Trends

Figure 2: Weekly Provisional COVID-19 Deaths by Age Group, January 27, 2020 – June 6, 2020
Figure 3: Daily Hospitalization Rate

Figure 4: Daily Testing Rate

Figure 5: Case Incidence Rates April 1, 2020 – June 1, 2010

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Figure 6: Testing Rates April 1, 2010 – June 1, 2020
Figure 7: Timeline of COVID-19 National US Policy Response

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Figure 8: Mitigation Policies by State

| Start of week | AL | AK | AZ | CA | CO | HI | ID | MT | NV | NM | OR | UT | WA | WY |
|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 24.02.2020    | 9  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 02.03.2020    | 10 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 09.03.2020    | 11 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 16.03.2020    | 12 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 23.03.2020    | 13 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 30.03.2020    | 14 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 06.04.2020    | 15 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 13.04.2020    | 16 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 20.04.2020    | 17 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 27.04.2020    | 18 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 04.05.2020    | 19 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 11.05.2020    | 20 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 18.05.2020    | 21 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 25.05.2020    | 22 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 01.06.2020    | 23 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 08.06.2020    | 24 |    |    |    |    |    |    |    |    |    |    |    |    |    |

- **West**
- **South**
- **Midwest**
- **Northeastern US**

- **State of Emergency**
- **Closure of non essential business**
- **Opening strategies - reopening businesses restar**

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Figure 9: Gross Domestic Product, 2018 – Q1 2020

Figure 10: US Unemployment Rate January to May 2020

Figure 11: US Consumer Confidence Index January to April 2020

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Figure 12: US Consumer Price Index January to April 2020

Figure 13: 3-Month and 10-year Treasury Yields

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Figure 14: S&P 500 Trends January – June 2020

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