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U.S. Response to COVID-19 Compared to Other Diseases

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start something **big**

Background

- December 31, 2019 – A "pneumonia" of unknown causes detected in Wuhan, China.

- CDC established a COVID-19 Incident Management System on January 7, 2020. On January 21, CDC activated its Emergency Operations Center to better provide ongoing support to the COVID-19 response.

- January 2020 - The U.S. government took unprecedented steps with respect to travel in response to the growing public health threat posed by the new coronavirus.
- January 21, 2020 - First confirmed case in the U.S.

- U.S. Department of Health and Human Services/Centers for Disease Control and Prevention as well as Chinese authorities identified an outbreak caused by a novel – or new – coronavirus, identified as SARS-CoV-2.

- On March 11, 2020, the World Health Organization declared COVID-19 a pandemic.

- On March 13, 2020, the President of the United States declared a National Emergency.

- As of April 28, 2020, 981,246 cases have been reported, with 55,258 deaths in the U.S.

- Since 31 December 2019 and as of 28 April 2020, 2,982,688 cases of COVID-19 (in accordance with the applied case definitions and testing strategies in the affected countries) have been reported, including 210,193 deaths.

Cumulative number of reported COVID-19 cases per 100 000
- < 1.0
- 1.0 - 9.9
- 10.0 - 99.9
- 100.0 - 199.9
- ≥ 200.0
- Countries without cases reported

Geographic distribution of cumulative number of reported COVID-19 cases per 100 000 population, worldwide
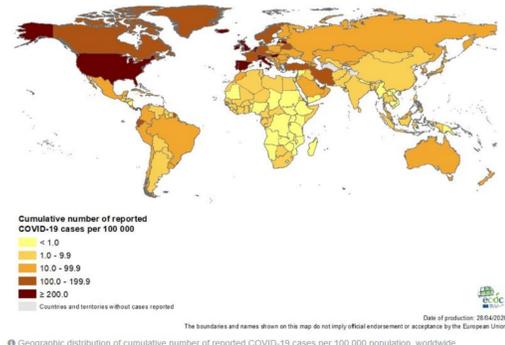
REVIEW OF THE UNITED STATES'S RESPONSE TO THE COVID-19 CRISIS:

Emergence of a new infectious disease out of China has caused a global reaction to combat the spread. Governments around the world responded to the threat by instituting lockdowns, closing businesses, using experimental medications, and even closing boarders. Citizens responded in kind by increasing social distancing and the usage of personal protective devices such as facemasks and gloves. The U.S. response was in line with most countries around the world, following guidelines set forth by the World Health Organization ("WHO").
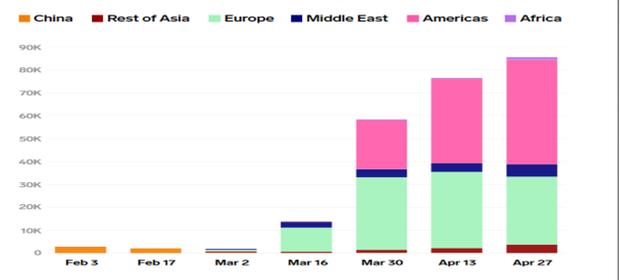
Despite efforts to curb the spread of the disease it has become a global pandemic with 2,982.688 cases across the globe as of April 28, 2020. Looking at various individual state responses, an evaluation of each step must be performed to determine what has been successful and to avoid repeating any past failures. Comparative studies have been completed on the different measures each state instituted. Although, a majority of initial communication and response continually changed due to evolving WHO and CDC guidelines, which led to false reporting. Wading through endless news reports and information portals can only compound the confusion.

The following COVID-19 statistics may surprise, frighten or enlighten you:

- For most people, the immediate risk of becoming seriously ill from the virus that causes COVID-19 is thought to be low. TRUE

- You can protect yourself from COVID-19 by injecting, swallowing, bathing in or rubbing onto your body bleach, disinfectants or rubbing alcohols. FALSE

- Diseases can make anyone sick regardless of their race or ethnicity. TRUE

- Ordering or buying products shipped from overseas will make a person sick. FALSE

Even the healthcare system became overloaded and received continual modifications on testing methods. Such methods were modified as new processes were developed, but how accurate were they? With past concerns such as SARS 2002-2003, Swine Flu 2009, Zika Virus 2015, and Ebola 2018 outbreaks, why is our response in dealing with this pandemic different?

Evaluating exposure rates, how testing is performed, how accurate information is spread, and what helped to flatten the curve in each governor's response across the United States, is key in preventing another global pandemic from spreading so rapidly.

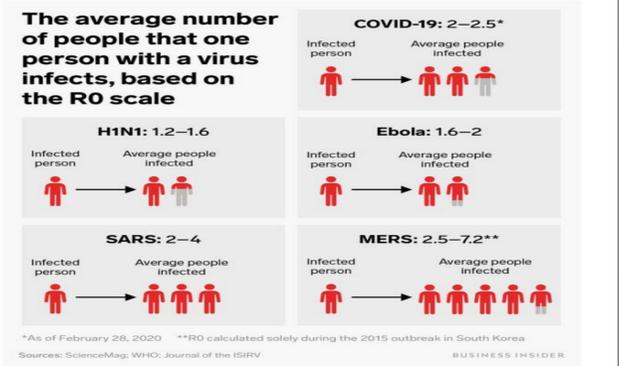---

Daily new COVID-19 cases around the globe

Legend: China, Rest of Asia, Europe, Middle East, Americas, Africa

Data reflects the number of new confirmed cases for each specific date listed.
Source: WHO
INSIDER

About 90% of all Americans have been ordered to stay at home in an effort to slow the spread of the virus.

Status of US stay-at-home orders

- Partial lockdown
- State-wide lockdown
- State reopen

DC*
PR*
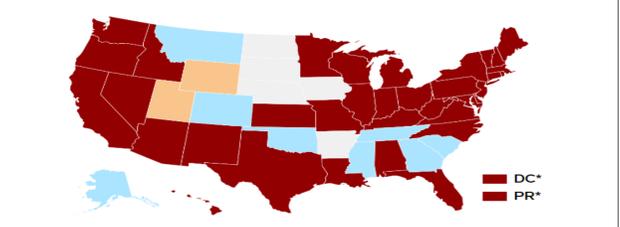
*Puerto Rico and Washington DC issued "stay-at-home" orders that went into effect March 30 and March 27, respectively.
Updated as of April 28, 2020 at 2:00 pm ET.
INSIDER

An average coronavirus patient infects 2 to 2.5 others.

The average number of people that one person with a virus infects, based on the R0 scale

COVID-19: 2–2.5*
Infected person → Average people infected

H1N1: 1.2–1.6
Infected person → Average people infected

Ebola: 1.6–2
Infected person → Average people infected

SARS: 2–4
Infected person → Average people infected

MERS: 2.5–7.2**
Infected person → Average people infected

*As of February 28, 2020   **R0 calculated solely during the 2015 outbreak in South Korea
Sources: ScienceMag; WHO; Journal of the ISIRV
BUSINESS INSIDER

Study Objectives

Due to the global pandemic of COVID-19 we will evaluate U.S. response for the following by state:

- Patient/Population: U.S. COVID-19 cases and treatment plans.

- Interventions Carried Out: Lockdowns, experimental drugs, infection rates.

- Intervention Results: Successful testing or negative results in treatment plans.

- Outcomes of Interest: Success and failure rates with regard to flattening the curve.
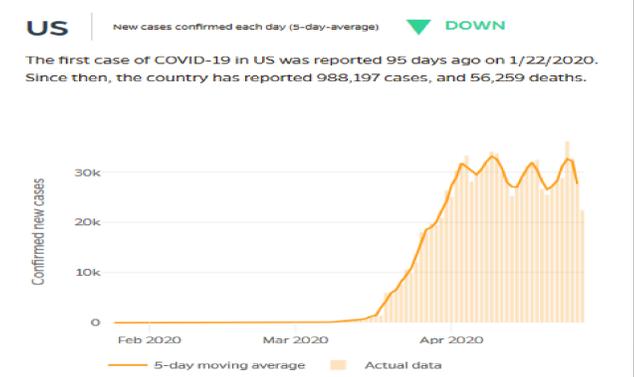
- Timeframe for Follow-up: 14 weeks.

Results

At this time, research is incomplete and as such results are ever-changing. Evaluating the study objectives and the aforementioned comparisons can truly only be performed in an ongoing manner while the pandemic is still active.

Current methods for evaluating results are evolving and as response to this disease increases in accuracy, data and findings will prove what methods were successful in flattening the curve. As information flows from reliable sources, we will be able to narrow down the most efficient response.

Conclusion

At this time we can only evaluate current data. Progression will likely result in modification. Improved accuracy in data will result in better planning for the future.

US   New cases confirmed each day (5-day-average)   ▼ DOWN

The first case of COVID-19 in US was reported 95 days ago on 1/22/2020. Since then, the country has reported 988,197 cases, and 56,259 deaths.

Legend:
- 5-day moving average
- Actual data

The above analysis depicts a 5-day moving average to visualize the number of new COVID-19 cases and to calculate the rate of change. This was calculated for each day by averaging the values of that day, the two days before, and the next two days. This approach helps prevent major events, such as a change in reporting methods, from skewing the data.

The U.S. has responded differently to several pandemics over the course of its almost 244-year history. CDC guidelines have differed as each pandemic has been declared. Each iteration required different infection control responses and preventions due to contamination and transmissibility as well as lethality.
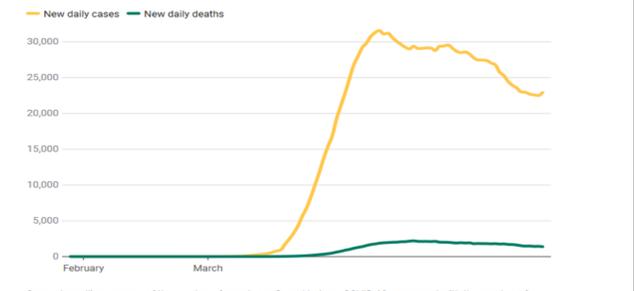
2019 novel coronavirus compared to other major viruses

VIRUS	YEAR IDENTIFIED	CASES	DEATHS	FATALITY RATE	NUMBER OF COUNTRIES
Ebola	1976	33,577	13,562	40.4%	9
Nipah	1998	513	398	77.6%	2
SARS	2002	8,096	774	9.6%	29
MERS*	2012	2,494	858	34.4%	28
COVID-19**	2020	4,498,579	304,631	6.8%	188

Sources: Johns Hopkins, CDC, World Health Organization, New England Journal of Medicine, Malaysian Journal of Pathology, CGTN
*As of November 2019   **As of May 15, 2020
BUSINESS INSIDER

In the case of COVID-19, each state had separate responses to the pandemic and its progression. U.S. Governors ordered varying modifications that required citizens to adjust their daily actions and lifestyles. The following diagram depicts how responses across the U.S. has helped to flatten the curve.

COVID-19 new cases and deaths in the US

Legend:
- New daily cases
- New daily deaths

Seven day rolling average of the number of people confirmed to have COVID-19, compared with the number of people who die per day (not including today). This chart gets updated once per day with data by Johns Hopkins. Johns Hopkins university didn't provide reliable data for March 12 and March 13.
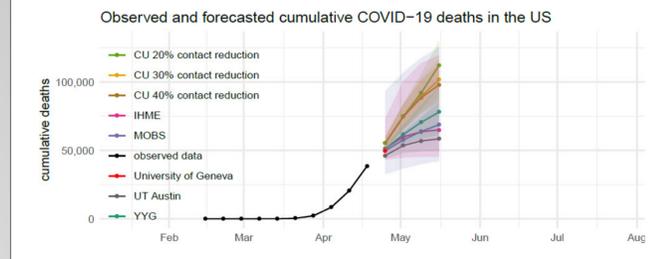Source: Johns Hopkins CSSE · Get the data · Created with Datawrapper

Comparing states that had an increasing number of cases to those in which cases decreased per capita will provide accurate data on prevention and treatment successes.

Future Implications

WHAT THE FORECASTS AIM TO PREDICT:

Forecasts based on the use of statistical or mathematical models (subsequently referred to as "models") aim to predict changes in national- and state-level cumulative reported COVID-19 deaths for the next four weeks. Forecasting teams predict numbers of deaths using different types of data (e.g., COVID-19 data, demographic data, mobility data), methods (see below), and estimates for the impacts of interventions (e.g. social distancing, use of face coverings).

National Forecast

Observed and forecasted cumulative COVID-19 deaths in the US

Legend:
- CU 20% contact reduction
- CU 30% contact reduction
- CU 40% contact reduction
- IHME
- MOBS
- observed data
- University of Geneva
- UT Austin
- YYG

The CU models make various assumptions about the effectiveness of current interventions. All other models are conditional on existing social distancing measures continuing through the projected time-period shown. The University of Geneva model (red) only produces point forecasts 1 week into the future. Intervals shown are at the 95% uncertainty level.

Response to the COVID-19 pandemic has forever changed how the U.S. and its citizens will react in kind to future situations resulting from diseases and other illnesses. COVID-19 has affected individuals drastically, changing their awareness of everyday activities and the impact that those choices may have on their health. The pandemic has also impacted healthcare systems and businesses significantly. Despite the varying degrees and methods in which the U.S. has responded to pandemics in its history, COVID-19 seems as though it will have a more permanent and lasting affect on U.S. organizations and citizens.

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