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COVID-19 Deaths
A Look at US Data

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Editorial Committee Summary / Abstract

There is emerging and accumulating evidence that US COVID-19 mortality data presented to the public may be inaccurate. Peculiarities in this reported data include the following: The mean age of those whose deaths were attributed to COVID-19 is older than the US life expectancy, and COVID-19 mortality sharply peaked the week of April 11, 2020 in the US, yet weekly all-cause mortality in the US did not show any significant shift in distribution of deaths across age groups for any week in 2020. Also, throughout 2020, the number of deaths attributed to COVID-19 rose, as the sum of deaths attributed to at least several other causes, compared to prior years, decreased, from no apparent cause, by similar quantities. Have diagnoses diverged from true causes of death?

Dr. Briand's paper examines Morbidity and Mortality Weekly Report (MMWR) data published by the US Centers for Disease Control and Prevention (CDC) of select causes of death in 2020, to determine which, if any, other causes of death might have been attributed mistakenly to COVID-19. Heart disease, chronic lower respiratory diseases, influenza and pneumonia as cause of death showed the most anomalous and unlikely decline from prior years, even as the US population increased, while COVID-19 deaths rose by a similar quantity to the sum of declines of several death causes. As a result, the 1.0% of the US population that died in 2020 is similar to the 0.8 to 0.9% of the US population that died during each of the previous twenty years. Considering a year seasonally, from week 33 of one year through week 32 of the next year, each seasonally based year for the last 4 years, including 2019-2020, encompassing peak COVID-19 mortality, shows that 0.9 % of the US population died in each of those seasonally based years. Moreover, the US population grew by 0.5% in 2020, which is the same rate as in the two previous years. US population growth must be considered when assessing the mortality impact of epidemic/pandemic disease.

Further mortality analysis reveals such significantly greater COVID-19 mortality in the northeast United States, particularly in and near New York City/New Jersey, that COVID-19's impact was more endemic than pandemic or even epidemic. Excluding New York City, New Jersey and to a lesser extent, bordering states, from all cause weekly deaths, no evidence appears of pandemic-level

mortality in the US in 2020. The impact of COVID-19 as a high mortality pandemic is not reflected in demographic data.

Future governmental, institutional, cultural, medical and individual responses to disease outbreaks would do well to consider, and must be viewed in light of, the widespread 2020 mortality miscalculations and misinterpretations, and how future mortality data might be recorded and announced more accurately, as events unfold with regard to new outbreaks of infectious diseases in the future.

The Editors

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COVID-19 Deaths: A Look at U.S. Data

Summary

Readers are invited to write their own summary.

Introduction

Professor Hal R. Varian points out that ideas for research projects come as much from everyday life experiences than from review of previous work in academic journals (19). Everyone has been living COVID-19, but everyone's real life experience of it (as opposed to virtual), is unique. COVID-19 has inflicted an economic and societal toll that is still being measured. This paper concentrates on the effect of COVID-19 on U.S. deaths. For a comprehensive assessment of that effect, overall deaths and deaths due to select causes are analyzed. Graphs of weekly All Cause deaths across 2014-15-2019-20 seasons are also provided for each U.S. jurisdiction (50 states, District of Columbia, New York City and Puerto Rico territory). Readers are invited to consult them.

I would like to thank JHU Advanced Academic Programs for the opportunity to give the Nov. 11, 2020 webinar this paper is based on (J). This paper has not been endorsed by the Krieger School of Arts or Johns Hopkins University. It has been written and is being circulated to further discussion and comments on the original webinar. The data have been updated some, as more became available for more recent time periods. The analysis has also been expanded to individual U.S. jurisdictions.

I also would like to thank Dr. Lauren M. Rossen from the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), for patiently answering my questions about the CDC data contained in the datasets used for this analysis (4).

Thank you to Ms. Gu for covering the Nov. 11, 2020 webinar in her Nov. 22, 2020 JHU News-Letter Article, A Closer Look at U.S. deaths due to COVID-19 (2). Thank you to all who emailed me, for their interest, feedback and testimonies, as well as questions, I will try to address in this paper.

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1 Methodology

1.1 Overview

The methodology used for this analysis is very simple-put the data downloaded from publicly available CDC datasets in graphical or tabular form, and try to make sense of them. This analysis can easily be replicated by anyone who cares to do so. No statistical software per se, but a simple spreadsheet, was used. Microsoft Excel was chosen, but any spreadsheet software could be used. To guide the interpretation of the graphs and tables, the methodology adopted is to use simple statistics and logic. The objective of this analysis is not to produce an "excess deaths number estimate", but to assess whether the total deaths number the U.S. experienced in 2020 was unexpected or alarming.

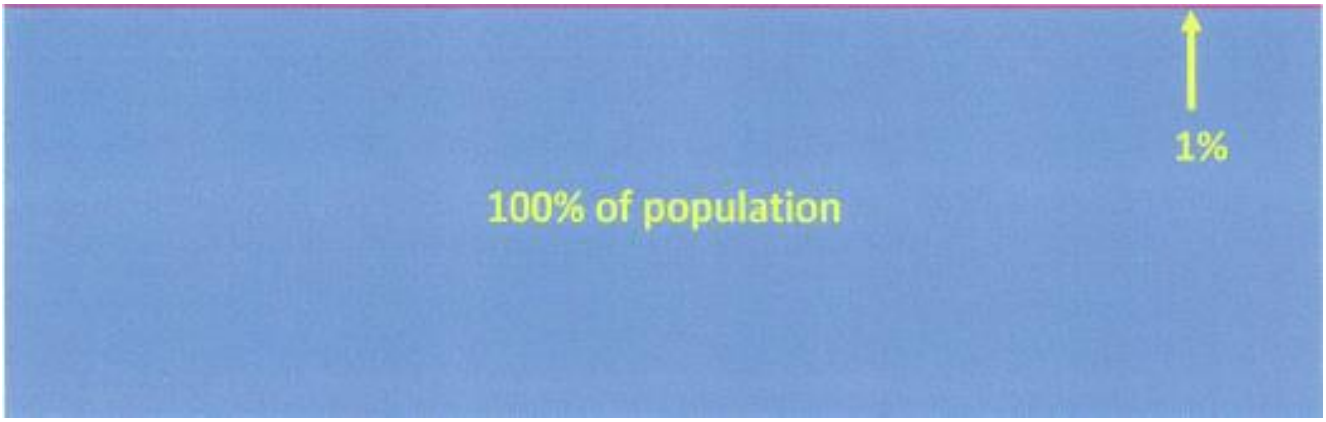
In contrast, Roosen et al. produce excess deaths estimates, associated with COVID-19. Their results are presented in the October 23, 2020 Morbidity and Mortality Weekly Report (5). As explained on the CDC webpage that Rossen and her team maintain, the methodology they use is much more elaborate, "Estimates of excess deaths presented in this webpage were calculated using Farrington surveillance algorithms" (7).

The Center for Disease Control and Prevention (CDC) data are the best available data on U.S. deaths. The CDC indicates that the most recent deaths data made available are still provisional, and that is why the dates the datasets were downloaded are provided in table captions and list of references. The data presented in this paper are not estimates-they are records of past deaths, maintained and made publicly available by the CDC. They have not been produced, adjusted, nor tampered with, in any way, by the author.

1.2 Line charts

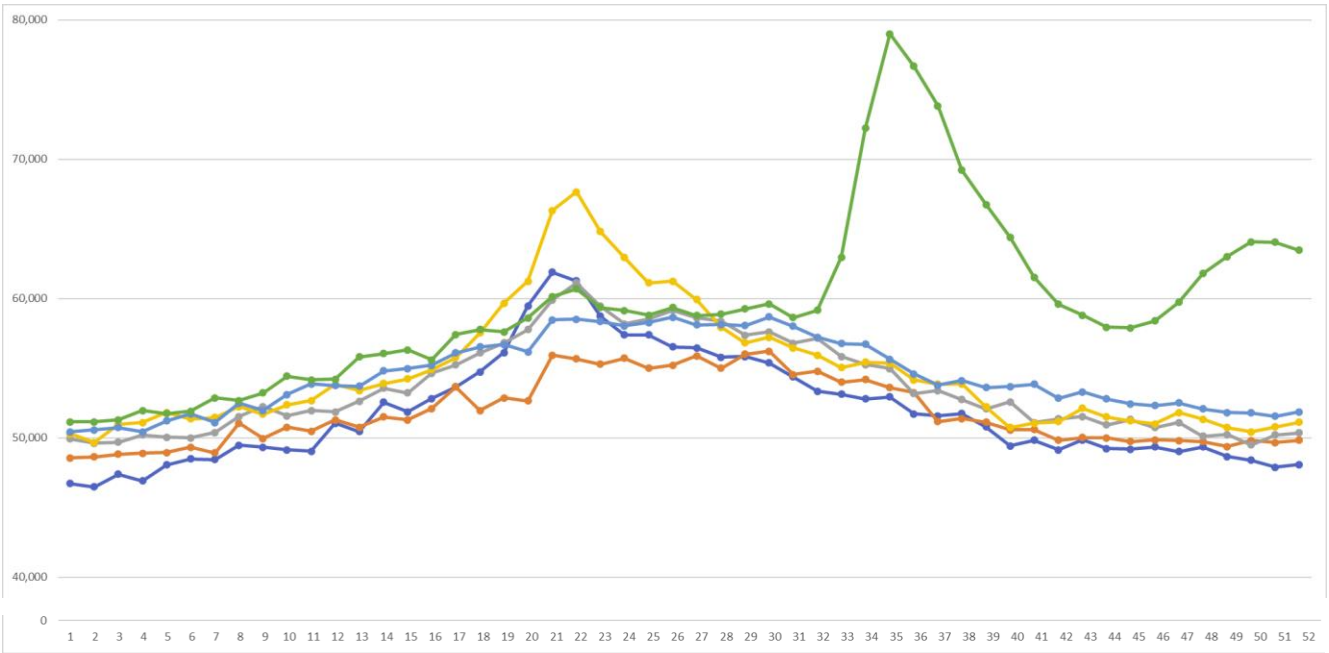
Many visuals about COVID-19 deaths have been deceptive. Plots, or line charts, in this paper, can be too. The reason for this, is that plots present visuals of changes that cannot directly be interpreted as relevant proportions.

Graph 1: Visually accurate graphical representation of 1 percent death rate.



To illustrate, consider Graph 1. If the blue rectangle is defined as representing 100% of the U.S. population, then the pink line, at its top, represents 1 % of it. Imagine the blue rectangle representing 100 blue lines, like the pink line atop, stacks up together. In other words, the surface area of the pink line represents 1 % of the blue rectangle surface area. One could borrow a child's graph paper and colored pencils to reproduce a similar graph.

Graph 2: U.S. All Cause Weekly Deaths per Season, 2014-15 to 2019-20



In contrast, consider Graph 2. This is the plot of U.S. weekly All Cause deaths from season 2014-15 to season 2019-20 (why seasons are considered, and which weeks are included in each season and calendar year, are questions addressed in the upcoming data section). Graph 2 itself will be considered in further details in the upcoming "Weekly deaths per cause" section.

When you look at Graph 2, what is your interpretation of the extent of the change in All Cause deaths experienced by the U.S. during the 2019-20 season, compared to prior seasons? Is your read from Graph 2 that the total deaths number the U.S. experienced in 2019-20 was unexpected or alarming? Do you come up with a percentage death rate?

Please, take a second to answer these questions.

Can you read from Graph 2 that the All Cause deaths number in 2019-20 was 9.2% higher than in 2018-19? With a little bit of time, you could. Now, most importantly, can you read from Graph 2 that the death rate for season 2019-20 was 0.9%? No, you cannot. Because a death rate is a deaths number, in proportion of its population level, and you are missing a key piece of information—the 2019-20 population level. Note, a death rate of 0.9% is a usual death rate, one that has been experienced in recent years—more on that in the upcoming "US deaths: Short-term historic context" section.

Compare your answers to the previous questions, to the answers given above, and draw your own conclusion about whether Graph 2 was deceptive.

Despite the limitations of line charts, this tool will be used to analyze changes of death patterns across years and causes, in sections "Weekly deaths per cause: Seasonality" and "Weekly deaths per jurisdiction: Variability".

2 Data

2.1 CDC data sources

The data used and their sources are as follows:

- Data from page 2 of 2 of "Provisional Death Counts for Coronavirus Disease 2019 (COVID-19) By Week of Death" table, https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm. Downloaded 12-26-20. (*9*)

- "Weekly Counts of Deaths by State and Select Causes, 2014-2018" dataset found via https://data.cdc.gov/browse, https://data.cdc.gov/NCHS/Weekly-Counts-of-Deaths-by-State-and-Select-Causes/3yf8-kanr. Last updated by CDC Nov. 10, 2020. Downloaded 12-26-20. (*10*)

- "Weekly Counts of Deaths by State and Select Causes, 2019-2020" dataset found via https://data.cdc.gov/browse, https://data.cdc.gov/NCHS/Weekly-Counts-of-Deaths-by-State-and-Select-Causes/muzy-jte6. Last updated by CDC Dec. 23, 2020. Downloaded 12-26-20. (*11*)

2.2 Can the data be wrong?

The most recent CDC deaths data are still provisional. This is not an issue. It has always been the case. It is normal and understandable: Collecting and making U.S. deaths data available to the public, in a timely fashion, is quite an undertaking! The Center for Disease Control and Prevention (CDC) data are the best available data on U.S. deaths. Because the most recent deaths data made available are still provisional, the dates the datasets were downloaded are provided in table captions and list of references.

The reader, who cares to replicate this analysis, will download the data at a later date than the one they were downloaded at, for this paper. This means, because the most recent deaths data are still provisional, such reader might get slightly different numbers.

The care with which the CDC collects, keep records of and make publicly available deaths data, is not questioned here. Reporting errors, if any, are minimized by procedures adopted by the CDC.

The data presented in this paper are not estimates—they are records of past deaths, maintained and made publicly available, by the CDC. They have not been produced, adjusted, nor tampered with, in any way, by the author.

2.3 Can deaths be overcounted?

All deaths are assigned one and only one underlying cause of death (*4*).

"The International Classification of Diseases (ICD) is designed to promote international comparability in the collection, processing, classification, and presentation of mortality statistics", (*13*). The tenth revision (ICD-10) covers years from 1999 to the present (*14*). An online version of all ICD-10 codes is found on the World Health Organization's website (*20*); the latest version is the 2019 one (*21*).

Old age is not an underlying cause of death.

The new ICD code for COVID-19 deaths, ICD code U071, issued by the World Health Organization (WHO), was introduced and implemented by the Division of Vital Statistics of the U.S. National Center for Health Statistics (NCHS), on March 24, 2020 (*15*).

All Cause deaths are the actual number of dead bodies accounted for at one point in time and no dead body is double counted. When those numbers are not yet final, All Cause numbers may become higher, at a later date.

2.4 MMWR weeks

Table 1: MMWR weeks comprised within each calendar year, 2014-2020.

Year	1st MMWR Week ending date	Last MMWR Week ending date	Total MMWR weeks
2014	01/04/2014	01/03/2015	53
2015	01/10/2015	01/02/2016	52
2016	01/09/2016	12/31/2016	52
2017	01/07/2017	12/30/2017	52
2018	01/06/2018	12/29/2018	52
2019	01/05/2019	12/28/2019	52
2020	01/04/2020	01/02/2021	53

Deaths are recorded per Morbidity and Mortality Weekly Report (MMWR) week. "MMWR weeks" refers to the sequential numbering of weeks (Sunday through Saturday) during a calendar year (*12*). For MMWR year 2014, MMWR Week 1's ending date is 01/04/2014 and MMWR year 2014's last MMWR week is Week 53, ending 01/03/2015. Calendar year 2020 also has 53 MMWR weeks, while years 2015-2019, each have 52: See Table 1.

[Entire paper with all references at:
https://www.researchgate.net/deref/http%3A%2F%2Fdx.doi.org%2F10.13140%2FRG.2.2.15125.86242]