

The Unknown Death Toll of COVID-19: How The Pandemic Killed One Million Americans Long Before 2022

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Abstract

In this paper, I intend to convince the reader that the actual number of deaths caused both directly and indirectly by the COVID-19 pandemic in the United States of America has been much more than officially reported. According to an excess death regression model which accounts for circumstantial and unreported COVID deaths, there are approximately 130,000 additional pandemic-related deaths in 2020 and 140,000 in 2021. Adding the officially reported 831,000 COVID deaths in these two years, the pandemic may have caused over 1 million deaths much sooner than the officially reported date, May 24th, 2022.

Keywords: Bioinformatics; Computational Biomodeling; Coronavirus; Death Toll; Excess Deaths

1. Introduction

As of April 5th, 2022, approximately 981,000 Americans have passed away from COVID-19 (Elflein, 2022). Such a statistic is already dismal enough, but these deaths only include deaths that are directly listed as from COVID-19. The true number of deaths is in actuality far higher for a multitude of reasons. Faulty or inconsistent reporting has, of course, resulted in statistical snafus. While most sources give off relatively accurate and reliable information that is recorded to the best of the government's ability, they still have significant shortcomings. Much of the time, information is simply not up to date. According to the Center for Disease Control and Prevention, it can take up to 60 days for a death to be reported and logged in government records (CDC, 2020). A study conducted by the Cable News Network claims that COVID positive and mortality results are often sent by fax, email or even snail mail, meaning that staff and volunteers can take several days to log the

information (McPhilips, 2022). Human random error was also present, as staff logging two people with the same name as one patient or incorrectly logging dates is not unknown. Sometimes, COVID reports are simply lost to time and space due to system malfunctions or inexplicable gaps in recording (Banco, 2021). Then there is also the question of what defines a COVID death. Deaths from pandemic-related complications, such as those with underlying health conditions exacerbated by COVID, are often not reported as COVID deaths and therefore not included in the official death count. It seems reasonable to me to count such deaths as COVID deaths, but this sentiment sees little praxis officially. The cause of death is often hard to directly ascertain in many cases, and as a result deaths from coronavirus complications are often not listed as from COVID. Many COVID deaths have also been from other underlying conditions, not COVID itself.

Additionally, direct mortality caused by COVID infection is only but a facet of the death toll in reality. Not often considered is the economic aspect: the

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effects of the pandemic on the economy have emphatically led to a higher death rate amongst the American population. In 2021, millions of Americans lived paycheck to paycheck. The federal minimum wage has not been adjusted for the skyrocketing cost of living (Desilver, 2017). This means a large number of Americans were living on the brink even before COVID. However, the pandemic has exacerbated the already dismal homelessness crisis (11). Along with the layoffs and downsizing, many workers who tested positive for the virus were left without a source of income. Megan Ranney, M.D., summarizes that “...for much of America, living with long Covid is enough to put folks over the edge financially, with very limited safety nets.” Many stories have surfaced on the internet of people who have lost their jobs, homes and livelihoods due to the pandemic (12). Consequently, homeless deaths have increased directly (13). Furthermore, a 2009 Harvard Medical School study found that 45,000 Americans die every year as a direct consequence of lacking health insurance coverage. A December 2019 poll claims that 25% of Americans have had delayed medical treatment because of the cost (Sainato, 2020). 100,000 American diabetics die each year from the cost of insulin, and insulin costs soared as a direct result of the pandemic (Marquardt, 2022). With the waves of layoffs and overwhelmed hospitals in the pandemic’s wake, these numbers have increased, resulting in a larger death toll for those who are not able or cannot afford to access healthcare (Chokshi and Murthy, 2022). The aforementioned factors mean that the number of deaths in truth is most certainly higher than claimed.

These are all examples of mortality from “COVID related” causes, and not the coronavirus itself. Such numbers are typically not reported in official death counts, as Figure 1 will attest to. Thanks to Figure 1’s highly accessible and readable nature, it is easy to see why so many people would be misled about the true death count of the pandemic. This underreporting of COVID mortality reveals a broader issue: access to accurate and authentic information. Despite it being easy to obtain death statistics from various online resources, it is not straightforward for the general public to estimate the actual numbers of people who die of COVID. Hyper-individualist movements like

the anti-maskers and anti-vaxxers have emerged as a result of distrust in mainstream media sources and inaccurate reporting. They may be the face of this growing insecurity about misinformation, but of course they do not necessarily represent the American population in its entirety. Still, roughly half or more Americans do get their information about COVID from online or social media sources (4). And when COVID death counts are so drastically underreported as mentioned above, there is little doubt that most Americans will drastically underestimate the total number of pandemic related deaths.

Therefore, the subject of this paper is to convince the reader of the true size and scale of the pandemic’s human toll in America. By analyzing morality data from the years 2020 and 2021, an estimate can be made about how many pandemic related deaths have not been reported or commonly considered in official death counts, with causes ranging from unreported COVID infection to the other effects of the pandemic.

U.S. deaths from wars and major pandemics

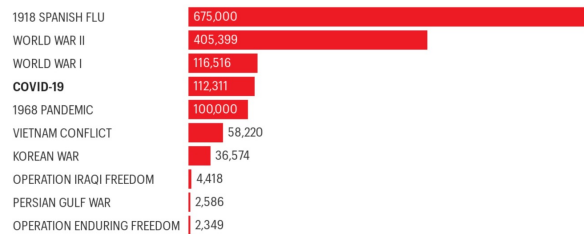


Figure 1. Easily digestible infographics like such only show the recorded number of confirmed COVID deaths and completely ignore the excess mortality resulting from the other effects of the pandemic (Lambert, 2020).

2. Materials and Methods

The main crux of the research conducted was analyzing excess mortality data for the entirety of the United States of America. Excess mortality is defined as the number of deaths that exceed the expected or “normal” number of deaths. The expected number of deaths is usually calculated through analyzing previous mortality data and finding a general estimate or trend. Using excess death data can mitigate the

effects of poor recording or faulty labeling, since death certificates will be reported regardless of the cause. Excess deaths are defined as the deaths outside of predicted numbers, which would then include pandemic-related deaths. Political tensions, random error and system malfunctions can also cause significant delays of up to sixty days for COVID case logging. Complications resulting from COVID and death from lack of adequate healthcare as a result of the pandemic are not recorded in official confirmed COVID death counts. This means that confirmed COVID deaths are likely to experience statistically significant effects due to logistic failures, and cannot be relied upon as a true measure of the pandemic's net mortality. Therefore, comparing excess mortality and expected mortality rates is the most accurate and objective form of analysis, as it factors in both underreported COVID deaths as well as pandemic-related deaths with minimal error.

Official CDC government records were chosen, as they are the most easily accessible and generally accurate (CDC, 2017). All recorded and confirmed COVID deaths will be excluded from consideration in the scope of the research. This data is essentially irrelevant, as confirmed cases are already counted in most conventional estimates. I am only trying to find the deaths that are not commonly considered so as to not be redundant. I have chosen only 2020 and 2021 to be the scope of my study, as data from 2022 appears too recent and cannot be determined to be as accurately reported. As has already been mentioned, significant delays in reporting data is not uncommon. Thus, the data is established to be the number of excess deaths excluding confirmed COVID cases, with the desired numbers being the pandemic-related deaths.

A simple regression model can be used to compare excess mortality with predicted mortality rates. Regression is essentially a model or function that describes the relationship between an independent and dependent value quantitatively, and can be used to predict future occurrences. In other words, it takes numerous pieces of data and finds a general trend, which can then be used to predict future occurrences. Through the Python numpy-based Seikit-Learn modification, a regression curve of best

fit can be applied to a set of data, and then compared with another set of data. In my experiment, I will first use a sinusoidal regression model to fit the total 2019 pre-pandemic death counts recorded per week and establish a general trend curve. The 2019 pre-pandemic death data would be a reasonable prediction for 2020 and 2021, since population growth was negligible. Official CDC data states that the trend of mortality rates holds constant or at least similar for the past decade, so the regression model used the mortality data for the pre-pandemic year 2019 as a basis for training and recognition. Population growth in 2019 was roughly 0.6%, and population growth rates in America have been declining, to the point of almost flatlining in the last decade. Since in 2020 and 2021 the population growth was less than 0.1%, this new growth have been assumed to be not statistically significant to the model. This will be the benchmark for which I will then use the regression trend curve and superimpose it over total non-COVID mortality data from 2020 and 2021, and then contrast. The excess amount will obtain the total number of pandemic-related deaths that were not officially listed as from COVID-19. The CDC has also provided rough estimates of predicted mortality rates, based on 6 years of previous data and adjusted to population growth. This will be another form of analysis that can be used to determine the rough number of pandemic-related deaths.

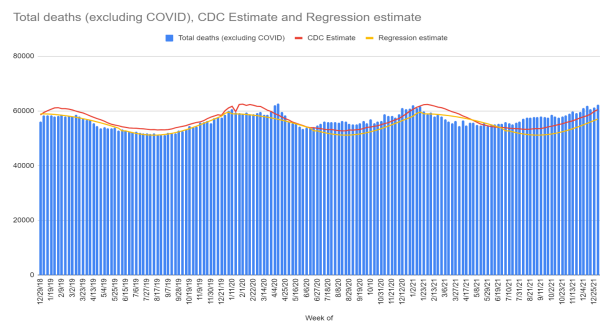


Figure 2. A bar chart of recorded total death count excluding those OFFICIALLY listed as COVID compared with the CDC estimate curve and regression estimate. Estimated excess deaths are denoted by the total death counts that exceed the estimates.

3. Results

January 20th was when the first lab-tested coronavirus case was confirmed in the US, and roughly a month later February 29th the first death. The data shown in Figure 2 is a representation of all recorded excess deaths from 2019 to 2021, excluding confirmed COVID-19 counts. My regression estimate, represented by the yellow line, has been curve fitted with only data from 2019, since that year is assumed to be COVID-free. (Some sources have claimed that the coronavirus was present in America in 2019. However, these cases are generally few and far between, and assumed to be statistically negligible.) The CDC estimate, in red, is based on six years of previous data. It consistently overestimates the actual number of deaths, with an average percent of error of 2.91%. In contrast, the regression estimate used in this paper only has a 0.223% percent error, suggesting it can be used to accurately predict the deaths count trend.

4. Discussion

When comparing recorded non-COVID death counts with expected total deaths counts from 2020 to 2021, there is a clear difference. A comparison of the regression model's expected death trend line and the recorded number of total non-COVID deaths for 2020 yields approximately 130,000 excess deaths in 2020, and 140,000 in 2021, as seen in Figure Three. The percent error of 0.223% can be generally assumed to be negligible. The CDC estimate yields approximately 40,000 deaths above the expected number in 2020. However, one must keep in mind that the CDC estimate was consistently much higher than the actual number of deaths for 2019, with a 2.91% error. Therefore, the CDC estimate, when weighted with respect to the error, shows up to 129,000 pandemic-related excess deaths in 2020 and up to 132,000 in 2021.

Viewing the chart, the peak number of overall deaths in 2020 and 2021 is clearly greater than the peak number from 2019, despite population growth being minimal. Although the CDC model took population growth into account, my regression model did not, on the assumption that it would be minimal.

This likely is the reason for my regression model's lower death count. I also did not take into account other confounding variables that may impact death count, such as volume of traffic, suicide rate, crime rate, and other such events that may have been affected by COVID lockdown procedures and such. Therefore, the actual number of pandemic-related deaths will likely be even higher than my estimates.

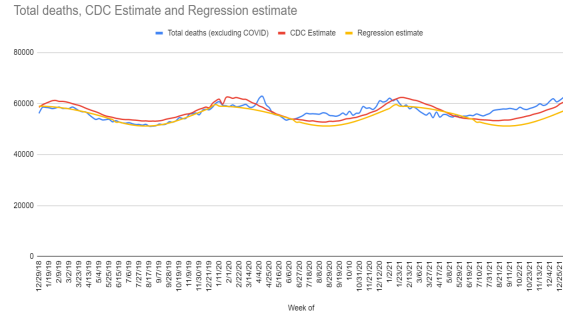


Figure 3. A line chart showing total deaths excluding those officially designated as COVID compared with the curves for the CDC estimate and the regression estimate. Estimated excess deaths are denoted by the total death counts that exceed the estimates. It is clear that in 2020 and 2021 the number of excess pandemic-related deaths, combined with deaths officially labeled as COVID, has far exceeded one million before May 24th, 2022.

5. Conclusion

In 2019, approximately 2.9 million Americans died in total. In 2020, approximately 3.3 million Americans died in 2020. In 2021, there were even more. Roughly 385,000 COVID-confirmed deaths were reported in 2020, and according to my estimates 130,000 other pandemic related deaths occurred. In 2021, there were 446,000 US deaths attributed directly to COVID-19, while my estimates record an additional 130-140,000 pandemic-related deaths. As of May 24th, 2022, the mainstream conclusion is that over one million Americans have officially been reported to have died of COVID-19.

Regrettably, the modeling method employed by said media outlets did not factor in major factors that could have impacted excess death count. For example, vehicular accidents and suicides would have both been impacted by the lockdown policies.

Given the logistical restraints, this data was impossible to implement and represent. Of course, these conclusions are based on the assumption that the government data is reasonably accurate. Such a method may not be employed in regions where government record-keeping is obviously and indubitably neglected.

If these pandemic-related deaths are considered, then well over one million Americans have died from the pandemic. As they say, “the death of one is a tragedy, but a million is a statistic.” It becomes infinitely more heartbreaking when one realizes that one million is composed of one million “ones.” Families have been bereaved, communities torn apart, and the image of a “shining city upon a hill” irreparably shattered.

However, the fact that the pandemic-related deaths are not commonly depicted in official death counts available to the public is of considerable concern. If these effects of the pandemic are ignored or overlooked by the general public, then there can be no possibility for solutions. The pandemic-related deaths did not suddenly materialize. They are the result of long-standing issues like a weak public health system, political tensions, and growing inequalities (Ortiz, 2022). Many of these pandemic-related deaths were preventable and this has significant policy implications for the future.

The accurate tabulation of mortality and related information is almost just as important as medical research itself, and this is why the knowledge of pandemic-related deaths must be widely disseminated. Only with an informed public can there be change. If the information is faulty, incomplete or inconsiderate, then the decisions made from that information will be so too. The American public must realize that death and infection counts are not the only effects of this pandemic, and clamor for positive changes in the future.

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