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COLLATERAL DAMAGE FROM COVID

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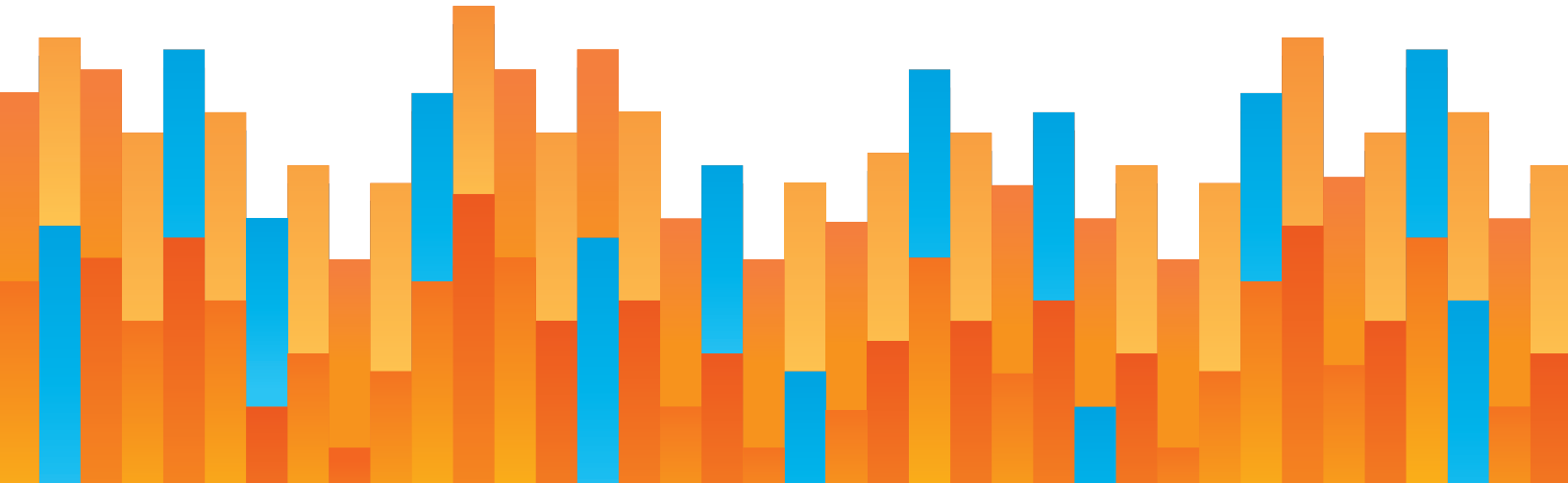
October 2021



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PART 1

INTRODUCTION

We are flooded with data and stories on infections, hospitalizations, and deaths attributed to COVID-19. At nearly 650,000 U.S. deaths as of the beginning of September 2021, those numbers are very large, and the immediate day-to-day impact of the pandemic has tended to dominate the news. But there is also a great deal of underreported collateral damage, costing many lives while shattering hopes and dreams, especially among the working poor.

> *Excess deaths from causes other than COVID have been sharply higher than normal during the pandemic.*

This collateral damage—unintended consequences—of our personal and policy responses to the virus is immense. Excess deaths from causes other than COVID have been sharply higher than normal during the pandemic. These consequences can be extreme, such as violence and deaths of despair, but many other all-too-human costs—divorces, alcoholism, drug abuse, and derailed careers—have yet to be measured. It will be some time before all the costs can be tallied, but we can start to see and quantify many of them, and also highlight others that need to be investigated.

Understanding the full scope of the damage will help close gaps between conventional wisdom and reality. Ideally, it should also inform our future personal and policy responses to pandemics and other emergencies. We owe it to ourselves to dispassionately study policy choices that were made, so that we can respond faster and better in the future. It will be invaluable if we can also recognize that scientific method does not mean seeking out evidence that supports one's personal opinion, but involves actively seeking to test our hypotheses, and openly exploring alternative perspectives.

PART 2

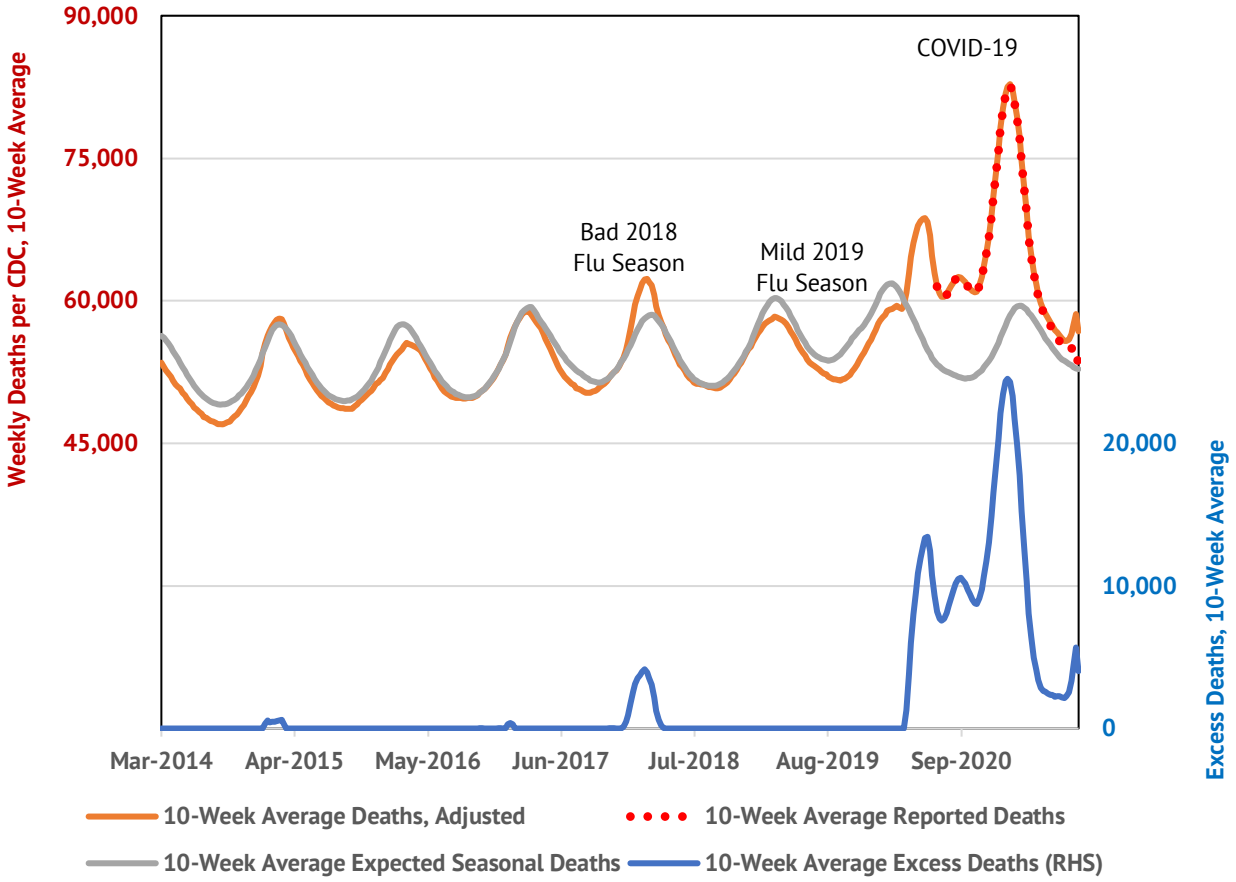
EXCESS DEATHS AND THE COMING DROP IN DEATH TOLL

Figure 1 shows the horrific surge in the national death toll during the pandemic, but also shows that, before the current spike attributed to the Delta variant, the trend had nearly reverted to normal. The current trend is following the same pattern and soon we will likely see another return to normal death rates. But there will be some overhang.

On one hand, some categories of normal deaths will likely be lower in the coming few years. Given how concentrated the COVID death toll was in the very elderly and those in nursing homes, many deaths that would have occurred in 2022–2023 for example, were brought forward into 2020–21 by the virus. This will push up life expectancy to pre-pandemic levels reasonably quickly.

If the research that led to the highly successful mRNA vaccines and impressive Regeneron antibody infusions also leads to vaccines and antibody treatments for other diseases, such as HIV or cancers, we might see a sustained surge in life expectancy.

FIGURE 1: AGGREGATE U.S. DEATHS, ROLLING 10-WEEK AVERAGES, MARCH 2014–AUGUST 2021



Source: Smoothed time series, based on raw data from the Centers for Disease Control:
https://data.cdc.gov/api/views/xkkf-xrst/rows.csv?accessType=DOWNLOAD
https://data.cdc.gov/api/views/muzy-jte6/rows.csv?accessType=DOWNLOAD

At the same time, however, some impacts of the pandemic may fuel excess deaths for years to come. Economic disruption and poverty shorten lives, while lost careers, divorces, and broken families can fester into deaths of despair, often for years after the original events. It will be some time before we know the full toll of those and similar collateral effects.

Returning to Figure 1 we can see:

- The gray line shows a rolling 10-week average of the normal weekly seasonal death rates that the CDC estimates, based on past mortality statistics. It oscillates between 50,000 and 62,000 deaths per week, on a seasonal basis. Winter is hard on the frail.

- The dashed red line on the far right shows the rolling 10-week average of the *known* deaths. For instance, the report for the week ending July 31, which was issued on August 11, showed 34,000 deaths for the week, and a 10-week average of just over 50,000 weekly deaths in the U.S. These initial reports are adjusted upward as delayed data roll in. The eventual average adjustment for the latest week is about 14,000, with huge variability, and roughly 3,600 for the 10-week average, with much less uncertainty.
- The solid orange line shows the rolling 10-week average of deaths that has been adjusted by the CDC to correct for errors and incomplete data. At the far right, rising above the dashed red line, the solid orange line shows our estimate of where the CDC adjusted death totals will go, based on our best estimates of where we expect these weekly death tallies will settle in, once all additional but delayed death reports have come in. We therefore estimate that this latest 10-week average will be amended upward from just over 50,000 to not quite 54,000 deaths per week, which is barely above the normal seasonal death toll for this time of year of 53,000. The Appendix shows a short history of how large these subsequent adjustments have been, both for the total deaths in Figure 1, and for unnatural and the four main causes of natural deaths in Figures 2 and 4.
- The solid blue 10-week average excess deaths line in Figure 1, in the bottom right and measured on the right hand scale, makes it clear that COVID is Very Bad News, leading to a large number of deaths, over and above the normal run rate (the gray line). The CDC refers to the difference as "excess deaths," which have never been close to this magnitude in the historical CDC data (though they were undoubtedly far larger, at least proportional to population, in the Spanish Flu of 1918–1919). Secondly, the total U.S. deaths in the first year of the pandemic, from March 2020 through February 2021, were above the normal annual toll by about 0.19% of the U.S. population. This is less than one-third the mortality spike from the 1918 Spanish flu, and includes the collateral deaths that are a focus of this report.

In the first year of the U.S. COVID pandemic (the 52 weeks ended February 27, 2021) there were 665,000 excess deaths (deaths above the normal seasonal death rate) reported by the CDC.[1] The official COVID death toll for that span was 514,000. Shockingly, this means that

[1] Total reported deaths for the year ended February 28, 2021 were 3,524,473, some 23% above normal expectations of 2,860,387. This figure is not yet fully adjusted for late reporting. But, as data through February already reflect most of these adjustments, we expect final adjustments will add only at most 0.1% to this figure. (Same sources as Figure 1).

non-COVID deaths caused by the pandemic and possibly by our policy choices, are likely to total at least this 151,000 difference. Knowing the details of the extent of non-COVID excess deaths and their causes is challenging, but we can estimate the total with reasonable accuracy.

We already know that the official COVID toll may be overstated, as it likely includes many people dying *with* COVID but not *from* COVID.[2] It is also likely that some died with COVID, especially early in the pandemic, and were not tested or counted as COVID deaths. The 2020 CARES Act added substantial financial incentives for hospitals to attribute deaths to COVID, though we can't measure to what extent that may have affected reported numbers.[3] That said, for many of these, doctors were doing their best at making tough judgment calls under very difficult circumstances. Whether the total excess death toll that's unrelated to the virus is 151,000, or somewhat more or less, where did these deaths come from?

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That answer is straightforward. Excess deaths due to unnatural causes surged by an estimated 82,000 above the normal levels, from March 2020 through August 2021. Unnatural causes are dominated by homicides, suicides, overdoses, and accidents. And, excess deaths due to the Big Four natural causes (heart and lung disease, cancer, and

2 Some argue that the reported Covid deaths are understated. It is beyond the scope of this paper to explore this debate in any detail.

3 Angelo Fichera, "Hospital Payments and the COVID-19 Death Count," FactCheck.org, April 21, 2020, https://www.factcheck.org/2020/04/hospital-payments-and-the-COVID-19-death-count/ and Michelle Rogers, "Fact check: Hospitals get paid more if patients listed as COVID-19, on ventilators," USA TODAY, April 24, 2020, https://www.usatoday.com/story/news/factcheck/2020/04/24/fact-check-medicare-hospitals-paid-more-COVID-19-patients-coronavirus/3000638001/

stroke) soared by over 86,000 over those same 18 months, mostly during 2020.[4] These two categories alone total 168,000 excess deaths.

While we get regular updates on COVID deaths, these 151,000 or 168,000 additional excess deaths garner scant attention. As with the COVID deaths, each represents a personal and family tragedy. In many cases, as we'll show, these deaths cost far more years of life, on average, than the COVID deaths, most of whom were elderly or frail. We should seek to draw lessons from these scores of thousands of excess deaths, not just from the COVID deaths.

[4] Again, these figures include the amounts by which these figures are normally amended upward in the weeks to come.

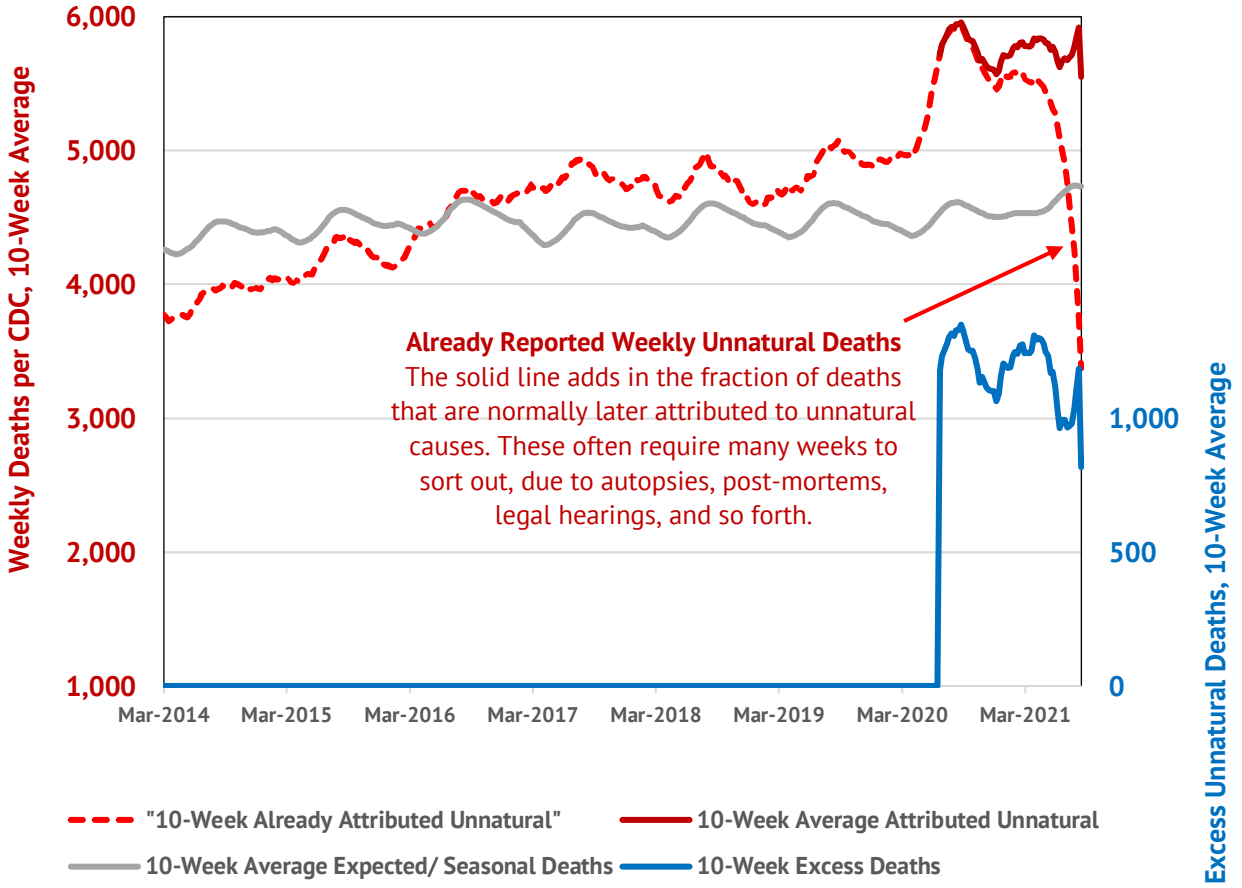
PART 3

THE MAKEUP OF EXCESS DEATHS

3.1 UNNATURAL DEATHS UP 82,000 AND COUNTING

Figure 2 tracks the CDC data on unnatural deaths. As with the first figure, the gray line shows the "normal" weekly level of unnatural deaths, per CDC estimates. The lightly dotted red line shows the already-reported number of unnatural deaths, on a rolling 10-week basis. Note that the last few plot points are very uncertain. State agencies were severely understaffed for the shutdown, and there are normal reporting delays due to police investigations, autopsies, inquests, legal delays, and so forth. While accurate figures take months to accumulate, it is clear that unnatural deaths are up markedly, by scores of thousands, over expected normal levels. Since the COVID shutdowns began last March, we estimate 82,000 excess unnatural deaths. Unnatural deaths are dominated by homicides, suicides, overdoses, and accidents. Apart from auto accidents, most accidental deaths are in the home.

FIGURE 2: UNNATURAL DEATH TOLL (ACCIDENTS, SUICIDES, OVERDOSES, HOMICIDES), ACTUAL VERSUS EXPECTED, MARCH 2014–AUGUST 2021



Source: Smoothed time series, based on raw data from the Centers for Disease Control. For data from 2014 through 2019: https://data.cdc.gov/NCHS/Weekly-Counts-of-Deaths-by-State-and-Select-Causes/3yf8-kanr; for data from 2010 through 2021: https://data.cdc.gov/NCHS/Weekly-Provisional-Counts-of-Deaths-by-State-and-S/muzy-jte6

Over 21,000 of these were overdose deaths in 2020 alone, in the recently released CDC tally for 2020.[5] The focus on the pandemic meant we have been getting daily reports on COVID deaths. The medical system was under pressure to quickly report COVID deaths and the media followed every new data release. This necessarily sidelined other causes. Indeed, overdose deaths are only reported by the CDC twice a year. So, we had to wait until mid-July to get the *preliminary* tally of overdose deaths for 2020. This despite the fact that overdose deaths are less ambiguous as to cause and are typically known to the doctors and families of the victims within hours! The remaining 60,000 excess unnatural deaths (which would include excess overdose deaths in 2021, which are reportedly running above 2020 levels) will require many additional months before an accurate attribution will be possible.

[5] CDC Drug Overdose Data page, https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm

The solid red line in Figure 2 adds in the share of unattributed deaths that are normally later assigned to unnatural causes. The first release of unnatural deaths is unreliable, capturing only a small fraction of the eventual total, and is eventually amended upward by an average of just over 4,000 (see Appendix). The latest 10-week average is officially just over 3,400, but normal upward adjustments, as delayed reports trickle in, would push this up to 5,600, as shown in the graph.

Unnatural deaths are still running "hot." While the numbers are far smaller than the COVID death toll, it is very troubling to see unnatural deaths still running 1,000 per week above historical norms, even as the COVID death toll has been tumbling.

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Unlike the aggregate death figures, these show no signs yet of converging toward historical norms. These unnatural deaths get far less attention than the daily updates on COVID deaths, perhaps because the numbers are smaller. But, they typically cost their victims far more years of life than COVID does. Whether homicides, suicides, or overdoses, these are victims of depression, anger, desperation, and boredom (while suicides are reportedly down, the increase in overdose deaths may include many suicides that are not labeled as such).[6] Even accidents, far more common at home than at work, may be part of the collateral damage from the pandemic and its associated lockdowns.[7] For most of us,

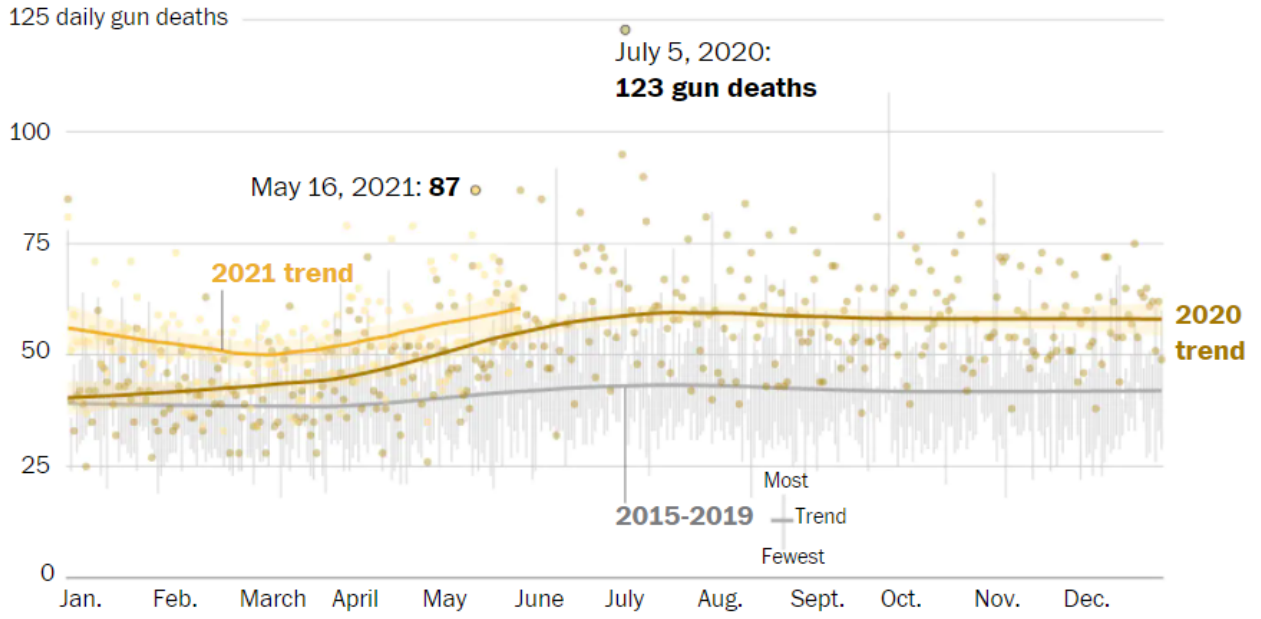
6 Farida B. Ahmad and Robert N. Anderson, The Leading Causes of Death in the US for 2020, *Journal of the American Medical Association* (JAMA), March 31, 2021, https://jamanetwork.com/journals/jama/fullarticle/2778234

7 Home accidents have been on the rise in recent years. National Safety Council, "Home and Community Overview," https://injuryfacts.nsc.org/home-and-community/home-and-community-overview/introduction/ More time spent at home during pandemic likely led to an increase in home injuries and deaths. A.C. Gielen, et al., "National survey of home injuries during the time of COVID-19: who is at risk?" *Injury Epidemiology,* 7, 63, 2020.

"shelter in place," is not safer than the workplace, at least with regard to accidents. Whether these unnatural deaths are a consequence of shuttered businesses, shutdowns, lost opportunities, or discretionary changes in behavior, the lives lost are hardly less worthy than the lives lost to the virus.

In the unnatural death category, homicides merit special mention, because these data are reasonably complete at this stage. As Figure 3 shows, gun deaths soared once COVID spread, with gun deaths from mid-2020 through the spring of 2021 at roughly double 2019 levels. This year, 2021, seems to be on track to be perhaps even worse.

FIGURE 3: 2020-2021 U.S. DAILY GUN DEATHS, RAW DATA AND SMOOTHED



Source: *The Washington Post*, June 14, 2021, https://www.washingtonpost.com/nation/2021/06/14/2021-gun-violence/

We can hope that there will be fewer murders, suicides, and overdoses as herd immunity kicks in and the pandemic wanes. But, there's a very real possibility that this will happen slowly. Stimulus and unemployment checks will stop at some stage, and their own negative longer-term consequences will take time to become evident, and the rebuilding of careers and lives will take time. For many, it may take years to put their lives back on track. For many age 50 and up, it may not be possible. Non-lethal human consequences—like divorce, alcoholism, and child abuse—are likely also elevated by the stress of job loss, isolation, and sickness, but will take years to tally.

3.2 CANCER, HEART AND LUNG, AND STROKE DEATHS UP 86,000 TO DATE

Numerous observers expected that COVID deaths would include many facing near-term death from other natural causes. If large numbers of these patients died some weeks or months early due to COVID, then we might have expected that concurrent deaths from so-called comorbidities would be down, not up. That was far from the case, as Figure 4 shows.

The four leading natural causes of death are heart and lung disease, cancer and stroke, constituting just over half of all U.S. deaths.[8] Deaths from these four natural causes initially spiked in February and March last year, shortly *before* the death toll from COVID surged. It is entirely possible that COVID was already making the rounds, mistaken for a bad flu. COVID may have accelerated deaths that were imminent, and many deaths from typical natural causes like heart and lung disease may have been accompanied by COVID symptoms but not caused by COVID. Making such distinctions is difficult at best and probably was not a priority when hospitals and nursing homes were overloaded.

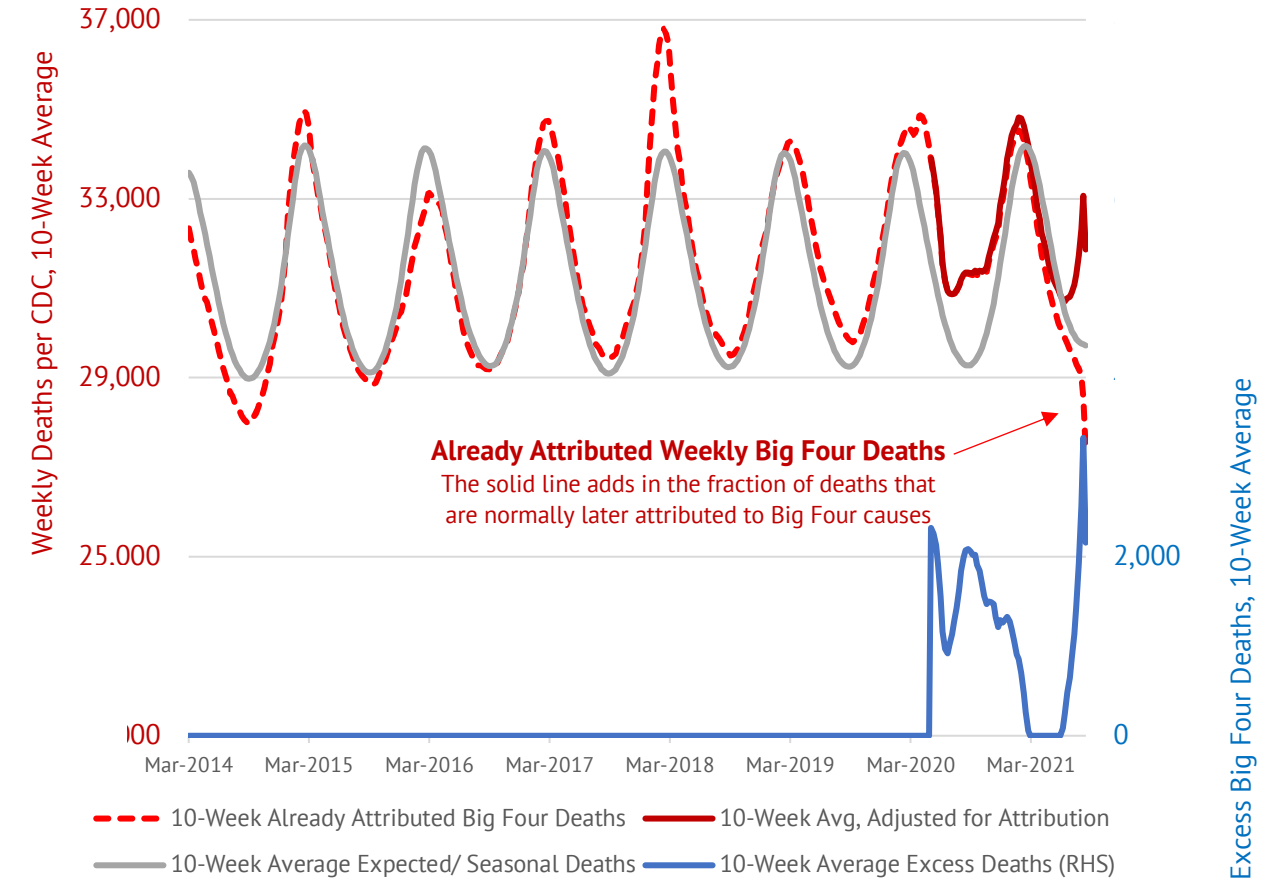
But then the Big Four natural death causes *remained* above normal levels (apart from a brief dip below normal during the second COVID surge this past winter), until falling below historical norms from March to June of 2021.[9] As with Figures 1 and 2, note the solid red line adds in the fraction of not-yet-attributed deaths that are normally later attributed to Big Four causes. In 2020, we estimate excess Big Four deaths at 74,000, a figure that has subsequently grown to 86,000.

The blue line represents the 10-week average for excess deaths, above normal levels, from the Big Four of the COVID period. The largest pre-COVID spike in early 2018 is a consequence of the bad seasonal flu outbreak that year. We find it noteworthy that Big Four deaths are 86,000 above historical norms, even though the 2020 flu season—for non-COVID flu variants—was the mildest on record.

8 CDC Leading Cause of Death data page, https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm

9 The July spike may or may not be "real." These recent data are typically amended sharply higher. If the amendments in the weeks ahead are smaller than past norms, then there may not have been a July spike. If the spike is legitimate, we would surmise that patients with Big Four ailments may be avoiding the hospital because of fear of the Delta COVID variant.

FIGURE 4: CANCER, HEART AND LUNG, AND STROKE DEATHS, MARCH 2014 – AUGUST 2021



Source: Smoothed time series, based on raw data from the Centers for Disease Control. https://data.cdc.gov/api/views/muzy-jte6/rows.csv?accessType=DOWNLOAD

Higher than normal deaths from the Big Four may have been driven by people not getting normal treatments because during COVID peaks many routine procedures were canceled, because hospital beds and equipment may not have been available due to COVID cases, or people were afraid to go get treatments and risk exposing themselves to COVID.

More recently, Big Four deaths were running *below* normal levels from March through June. It seems likely that many died a few weeks or months early due to the pandemic. Many who were otherwise likely to die 2021-23 instead died in 2020-21 because of COVID. The recent surge in Big Four deaths may well be due, once again, to a reluctance to go to the hospital, in fear of the surge in Delta variant cases, even though COVID deaths remain far below the prior surge. The months ahead will likely see Big Four deaths fall well below normal levels and remain below-normal for some time.

3.3 ECONOMIC IMPACTS OF PANDEMIC AND POSSIBLE EXCESS DEATHS

As Table 1 shows, the economic dislocations were less severe in Republican states, presumably because of shorter shutdowns. But, COVID didn't much care who was in charge, Democrats or Republicans. While the death toll ranged from nearly 3,000 deaths per million in New York and New Jersey to roughly 400 deaths per million in Vermont and Hawaii, the simple fact is that the overall averages were nearly identical, regardless of whether a state was run by Democrats or Republicans.

TABLE 1: U.S. COVID CASES AND DEATHS PER MILLION, BY POLITICAL LEADERSHIP

As of 08/31/2021	Cases /mm	Deaths /mm	July 2021 Unemp	Change from Feb 2020	GDP Growth 2020-2021Q1
Democratic Trifecta	88,990	1,910	6.9%	2.9%	0.2%
Lean Democratic	100,508	1,893	5.0%	1.8%	1.1%
Lean Republican	117,282	1,940	5.1%	1.1%	1.5%
Republican Trifecta	135.117	2,025	4.9%	0.8%	2.7%

Source: Authors' calculations from CDC data on cases and deaths and other sources.[10]

This evidence seems to support a simple notion: shutdowns—especially after a surge has begun—are ineffective unless borders are also sealed.[11] Hawaii was the one state that could close its borders, and largely did so. Their death toll per million was the lowest in the country, 80% below the national average, but their unemployment is still nearly four times pre-pandemic levels, and their drop in per-capita GDP remains largest in the nation.

10 U.S. Bureau of Labor Statistics, "Unemployment Rates for States," https://www.bls.gov/web/laus/laumstrk.htm; Ballotpedia, "State government trifectas," https://ballotpedia.org/State_government_trifectas#Changes_in_trifectas_status; and Wikipedia, List of U.S. states and territories by GDP per capita, https://en.wikipedia.org/wiki/List_of_U.S._states_and_territories_by_GDP_per_capita.

11 Patricio Goldstein, Eduardo Levy Yeyati, and Luca Sartorio, "Lockdown fatigue: The declining effectiveness of lockdowns ," *VOX, CEPR*, 30 March 2021, https://voxeu.org/article/declining-effectiveness-lockdowns

> *UNICEF has documented the widespread impacts of the pandemic on children's health and well-being worldwide, separate from COVID itself, and the World Health Organization has similarly pointed out collateral health impacts on adults.*

The broad health side-effects of shutdowns and economic disruption and other collateral damage are significant and examined in a great many research studies.[12] UNICEF has documented the widespread impacts of the pandemic on children's health and well-being worldwide, separate from COVID itself, and the World Health Organization has similarly pointed out collateral health impacts on adults.[13] Likewise the extensive effects of the pandemic on mental health and consequent impacts on physical health.[14]

12 I. Bavli, B. Sutton, and S. Galea, "Harms of public health interventions against COVID-19 must not be ignored," *BMJ,* 2020, https://www.bmj.com/content/371/bmj.m4074

13 UNICEF, "How the COVID-19 pandemic has scarred the world's children," https://www.unicef.org/coronavirus/COVID-19-pandemic-scarred-world-children and WHO, "Impact of COVID-19 on people's livelihoods, their health and our food systems," https://www.who.int/news/item/13-10-2020-impact-of-COVID-19-on-people's-livelihoods-their-health-and-our-food-systems

14 Nirmita Panchal , Rabah Kamal, Cynthia Cox, "The Implications of COVID-19 for Mental Health and Substance Use," Kaiser Family Foundation, Feb 10, 2021, https://www.kff.org/coronavirus-COVID-19/issue-brief/the-implications-of-COVID-19-for-mental-health-and-substance-use/

PART 4

YEARS LOST VERSUS LIVES LOST

One other nuance garners very little attention: consider years lost, rather than lives lost. We know from the CDC reports that the average COVID death victim is nearly 80 years old with an average of three comorbidities, that 94% of all COVID deaths had comorbidities, that almost half of the deaths were nursing home patients, and that only 7% of the deaths were under age 50, almost all with comorbidities. For an octogenarian in a nursing home, with stage four cancer, dying a few months early from COVID is still a personal and family tragedy. But most would agree that it's a greater loss when a child or sibling in their 20s, struggling with depression after their career has been derailed, gives up on that career, runs away from their family, overdoses, or commits suicide.

One other nuance garners very little attention: consider years lost, rather than lives lost.

With some 650,000 COVID deaths, about 86,000 excess Big Four deaths, and about 82,000 excess unnatural deaths, which cause of death cost the victims more years of life? The

answer is surprising, and has garnered scant attention from the media, from our political elite, or from the medical profession.

It seems reasonable to surmise that the unnatural deaths are scattered randomly across the age spectrum, perhaps even skewed slightly younger than the population averages. If so, then the average unnatural death costs its victims half a lifetime or more. To illustrate, if we suppose these 82,000 excess unnatural deaths lost an average of perhaps 35 years of life, then nearly 2.9 million years of life were lost just to the surge in unnatural deaths alone.

It seems highly likely that the surge in unnatural deaths has cost far more years of life than the pandemic. To get a rough idea of how many years of life have been lost due to the virus, let's assume that those in nursing homes or hospice care—half of the deaths—lost zero to one year of life (otherwise facing near-term death from other causes). Let's assume that the other 44% who died with multiple comorbidities lost one to five years (averaging three years), and let's assume that the remaining 6% lost an average of 15 years of life, since the death toll for those under age 50 is quite low. Then the average years lost would be around two and a half (30 months). If these figures are correct, then the pandemic cost the American populace some 650,000 lives and 1.6 million years of life. Again, this is just a crude estimate to show the rough scale we are talking about. All lives matter, but years of life are also important.

> *COVID cost us far more lives than the surge in unnatural and Big Four deaths, mostly in the lowest-quality end-of-life years, but this "collateral damage" may well have cost twice as many years of life as COVID.*

Adding together the above-normal death toll from unnatural deaths and from the Big Four causes of natural deaths, it would seem that these causes cost over three million years of

life in the U.S. alone.[15] COVID cost us far more lives than the surge in unnatural and Big Four deaths, mostly in the lowest-quality end-of-life years, but this "collateral damage" may well have cost twice as many years of life as COVID.

It's tempting to blame these lost years of life on our policy responses to COVID. But, that's a simplistic answer. Absent shutdowns, the pandemic would still have induced massive changes in human behavior, massive economic dislocations, massive supply chain disruptions, fear of going to the hospital, and so forth.[16] So, this "collateral death toll" might well have been similar, regardless of our policy choices. That said, the COVID death toll per million was broadly similar in states with limited shutdowns and those with severe shutdowns, but the economic toll and consequent collateral health impacts were different.

[15] The life expectancy for those diagnosed with heart disease, COPD, stroke or cancer, which averages roughly six years, albeit with a very wide range. Those whose deaths were accelerated by health care problems associated with the pandemic are likely to be mostly on the shorter end of that range. If the elevated Big Four toll of 86,000 lost an average of 4.5 years (the mid-point of a three to six-year range), then the years-of-life toll is likely to be around 400,000 years of life lost.

[16] It is for this reason that we refer to "personal and policy choices." It is simplistic to blame these consequences on shutdowns and other policy choices. Personal choices – often driven by fear, anger or despair – are no less important.

PART 5

COMPARING WITH THE SPANISH FLU

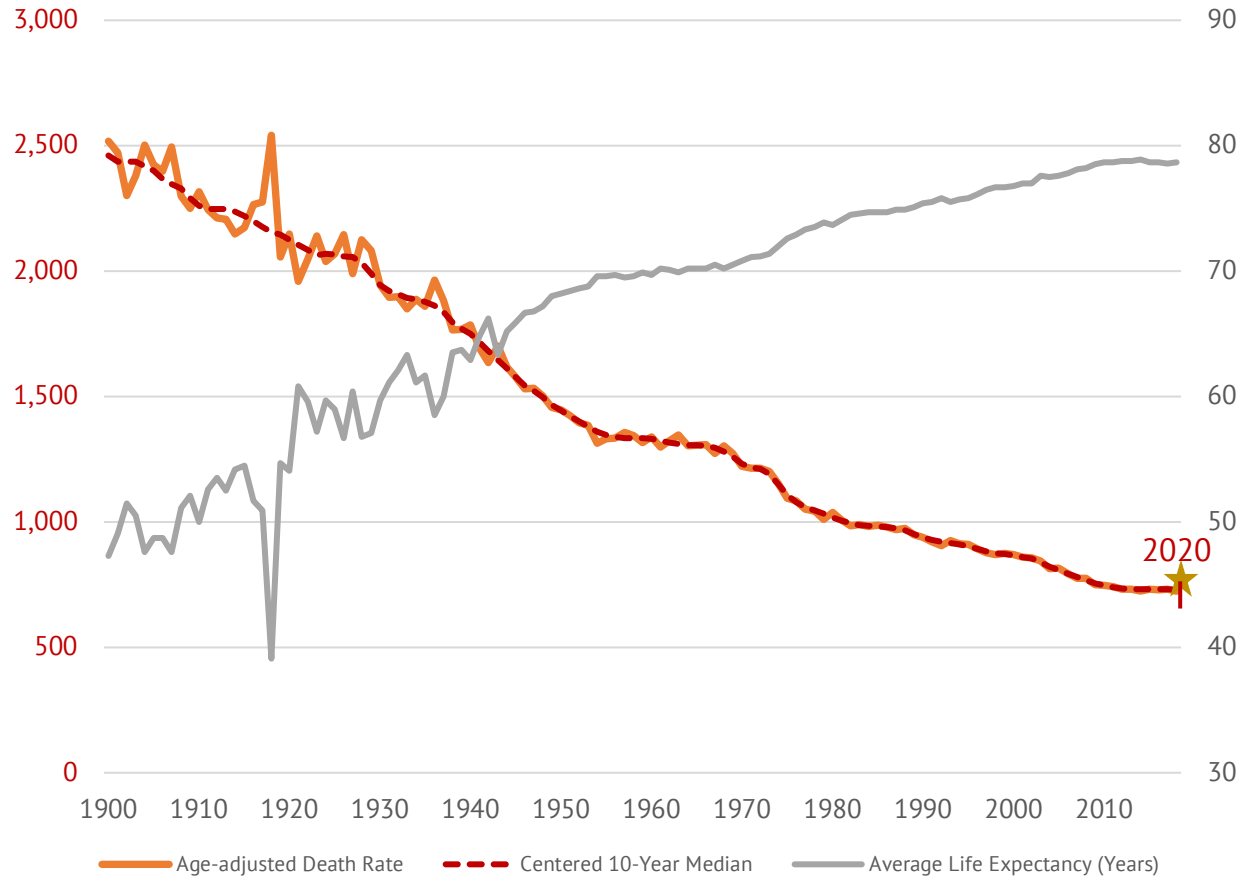
The so-called "Spanish Flu" of 1918–1919 was famously lethal, and notably worse than COVID in that it killed so many young people. More U.S. soldiers died from Spanish Flu than from even the deadliest battle in World War I.[17] With so many young adults dying, the "years lost" to the Spanish Flu were far larger than for COVID, even if the total absolute death toll is remarkably similar (albeit with a population in 2020 three times that of 1918, at 331 million versus 104 million).

As Figure 5 shows, the death rate in 1918 jumped about 18% from 1914–1915 levels before World War I. COVID has been less daunting on at least three dimensions:

- The death rate in 2020 was up about 12% from 2019, two-thirds that of Spanish Flu, but from a far lower base. Deaths rose in 2020 by 100 per 100,000 relative to 2019, and by 350 per 100,000 in 1918 relative to the pre-WWI base of 1915.
- COVID has been particularly lethal for the elderly and the infirm, while the Spanish Flu was famously lethal for both young and old.
- COVID has temporarily cut U.S. life expectancy by about two years, a small fraction of the 13-year impact of the Spanish Flu.

17 Harry Thetford, "Flu killed more World War I troops than any battle," https://www.worldwar1centennial.org/index.php/communicate/press-media/wwi-centennial-news/3978-flu-killed-more-world-war-i-troops-than-any-battle.html

FIGURE 5: U.S. DEATH RATES, AGE-ADJUSTED RATE PER 100,000 PEOPLE, 1900–2018



Source: Research Affiliates, based on data from the Centers for Disease Control. https://www.cdc.gov/nchs/data-visualization/mortality-trends/index.htm

The aftermath is no less impressive. The elevated death rate in 1918 set the stage for a reduced death toll in 1920–1921. This makes sense, because some of those who would otherwise have died in 1920–1921 instead died in 1918–1919. By 1921, the death rate had fallen to nearly 10% below 1914–1915 levels, and life expectancy had soared six years beyond the previous peak. For another nine years, death rates did not then achieve a new low, nor life expectancy a new high, in an otherwise relentless 20th century progression to lower death rates and longer life expectancy.

We will likely see a repeat of this in 2022–2023. Many of those who died from COVID would have died from other causes in 2022–2023, if not sooner. Many of those who died from Big Four causes ahead of schedule, because they could not get their meds on schedule, or were afraid of going to the hospital when they needed urgent care, would also have died in 2022–2023. Accordingly, deaths in 2022 and 2023 are likely to be the lowest per million in U.S. history.

PART 6

THIS TOO SHALL PASS

In the midst of any crisis, it's easy to forget that they all pass with time. At this moment in September of 2021, the third wave with the Delta variant of COVID is now receding. The number of cases is on par with the previous two waves. But, in the developed world, deaths are nowhere near the levels of the first two waves. For the most part, the U.S., U.K., and E.U. governments are not talking about new lockdowns.

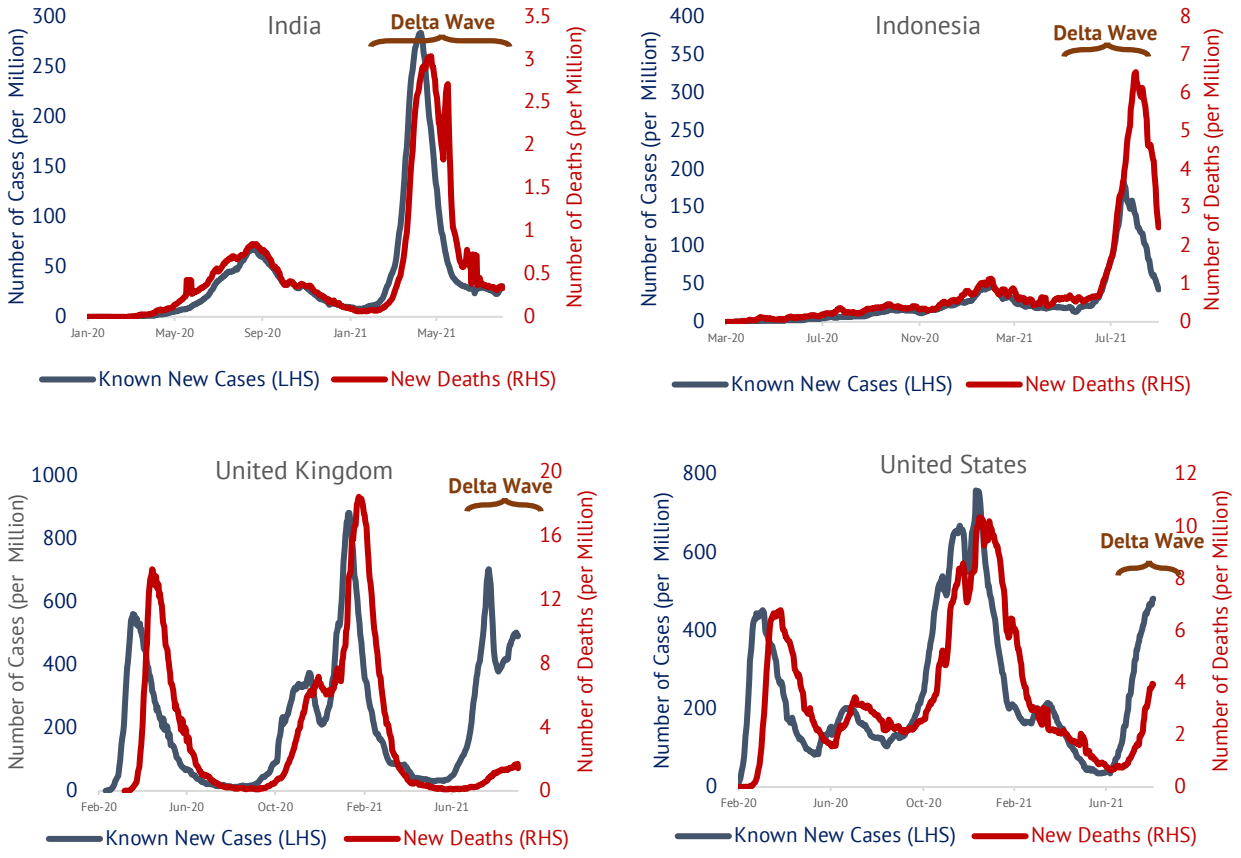
In Figure 6, we display the reported number of known COVID cases and the number of COVID-related deaths for India and Indonesia, two countries hit hard by the Delta variant, as well as for the U.K. and U.S., two countries that were largely vaccinated ahead of the latest wave. There is a stark contrast in the relationship between the COVID cases and death over time. For each country, until much of the country was vaccinated, the ratio stayed quite steady over time before the Delta wave. This means that the virulence of the virus—its severity and harmfulness—has not changed between variants. But the death toll is falling sharply in the case of the U.K., where much of the population has been immunized, considerably for the U.S., where also a smaller (but considerable) share of the population has been immunized, and less so for India and even an increase in Indonesia, where immunizations have a long way to go.

The Delta variant, with its higher transmissibility, is able to continue spreading despite the high percentage of the population with prior immunity to COVID (through natural or

vaccine-induced exposure). But the death toll is drastically lower. If the Delta variant is no less lethal than the earlier variants, this difference is presumably the result of vaccinations and natural immunity. It bears mention that when the second wave hit in the U.K., many had contracted and recovered from the first wave, but essentially no one was vaccinated. When the third wave hit, roughly half the country had received at least one dose of vaccine, and many more had contracted and recovered from the first two waves. Why is the U.S. not seeing as large a drop in mortality as the U.K.? Perhaps more people in the U.K. caught COVID in the first and second waves, because of higher population density. In recent testing, 91% of the U.K. population (and 94% in London) have antibodies. It is interesting that mortality is down a near-identical percentage (89%).

FIGURE 6: COVID DEATHS EVOLUTION, FOUR ILLUSTRATIVE COUNTRIES, JANUARY 2020–AUGUST 2021

Panel A: Case and Death Statistics, by Country



Panel B: Comparative Decline in COVID Virulence, by Country

	Peak Deaths per Million / Peak Cases per Million			**August 31, 2021**
Country	Delta Wave	Previous Wave	Drop in Fatalities	**Vaccination Rate (%-age Fully/Partially Vaccinated)**
India	3 / 281 =1.08%	0.8 / 67 =1.26%	-14%	11%/36%
Indonesia	6.5 / 173 =3.78%	1.1 / 46 = 2.46%	+54%	13%/23%
U.K.	2 / 703 = 0.24%	18 / 881 =2.09%	-89%	63%/71%
U.S.	4 / 482 =0.82%	10 / 759 = 1.36%	-40%	52%/61%

Note: Known new cases and new deaths are the seven-day averages of the known cases and deaths per million. The peak cases and death are also the peaks of the seven-day average cases and deaths for the corresponding periods.
Source: Research Affiliates, LLC, based on https://ourworldindata.org, through August 31, 2021.

As some 71% of the U.K. population had at least one dose of vaccine and 63% were fully vaccinated by August 2021, deaths relative to known cases (the Case Fatality Rate, or CFR) dropped to about 0.24% even with the Delta variant. It is very important to note that this 10-fold drop in lethality is despite the fact that immunization is neither mandatory nor total, and despite the fact that existing vaccines don't yet target the Delta variant.[18] The CFR for seasonal flu is estimated at about 0.1% for the general population and about 0.2% for the individuals aged 50–64. So, at current vaccination levels in the developed world, the Delta variant of COVID appears to be roughly as lethal as a moderately bad flu season.

We are not suggesting that COVID is no longer a threat. COVID still kills far too many people. Nor do we suggest that the early lockdowns were a mistake. The simple fact is that, early in the pandemic, we did not know how serious the threat would be, nor could we know the ideal policy responses. But the lockdowns may now be as dangerous as the virus, perhaps even more so, as the harms remain while any benefits attenuate.[19] Lockdowns kill businesses, disrupt global supply chains, impede communication and travel, and importantly hit the working poor hardest, while reducing the opportunities for young adults

[18] We provide in Appendix C a more detailed examination of the U.K. case fatality rates, taking into account the lead-lag relationships between COVID cases and deaths. Our estimates still provide about 0.2% CFR rate.

[19] Goldstein, et. al., "Lockdown fatigue."

to get their first job experiences. Lockdowns fuel waves of depression or anger, among those most affected by them, and can lead to despair and self-destructive behaviors.

> *Lockdowns kill businesses, disrupt global supply chains, impede communication and travel, and importantly hit the working poor hardest, while reducing the opportunities for young adults to get their first job experiences. Lockdowns fuel waves of depression or anger, among those most affected by them, and can lead to despair and self-destructive behaviors.*

Existing vaccines clearly work, and new, multi-variant vaccines are in development right now. The vaccines can hardly be thought to be more dangerous than the virus. Even the vaccines that target the original COVID virus are remarkably effective with new and different variants of COVID in slowing disease transmission, reducing the severity of the symptoms, and preventing deaths.

The good news for the global economy is that most of the major developed economies are quickly approaching the U.K. vaccination numbers. As the developing countries are catching up (faster than most observers realize), COVID becomes a flu-like threat.

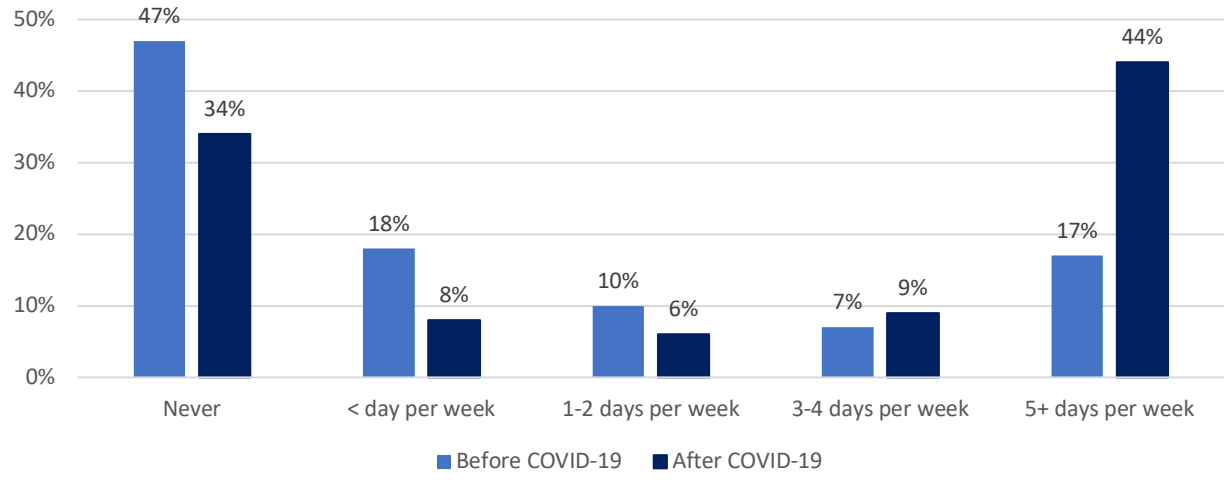
6.1 OTHER UNDERAPPRECIATED TRENDS

The COVID-induced changes in behaviors and lockdowns were the strongest shock to the global economy since the Second World War. Much of the commentaries around COVID are on the number of COVID cases, the number of deaths, the stringency of the lockdowns, and the scale of the government stimulus efforts. But there are a few other COVID-induced short-term and potentially long-term trends that are less discussed. Here are a few:

6.1.1 CHANGES IN WORKING HABITS

The COVID pandemic has materially impacted the way people work. Before the pandemic in the U.S. IT sector, only 17% worked from home five or more days per week, while 47% never worked from home (Figure 7). As the pandemic hit, the share of employees that never work from home dropped from 47% to 34%, while the share working from home five or more days per week soared from 17% to 44%. As COVID recedes, this will reverse direction, but will certainly not return to the pre-pandemic norms.

FIGURE 7: COVID-INDUCED CHANGE IN WORKING HABITS: SHARE OF RESPONDENTS WORKING FROM HOME, U.S. IT SECTOR, 2020



Source: Research Affiliates, LLC, based on https://www.statista.com/.

Work from the office will hardly disappear. We humans are social creatures; offices provide an opportunity for better communication and interpersonal frictions are more quickly and easily resolved. Most of us have developed friendships, and many have met their eventual spouse, at the office. Also, it is much harder to hire and train employees remotely. At the same time, it is highly likely that employers will allow more work from home, and experiment with an array of flex-time arrangements. This evolution in the work environment is already having a significant impact on commercial real estate, though nimble real estate companies are already finding ways to adapt.

6.1.2 HIGHER ACCEPTANCE OF REMOTE EDUCATION

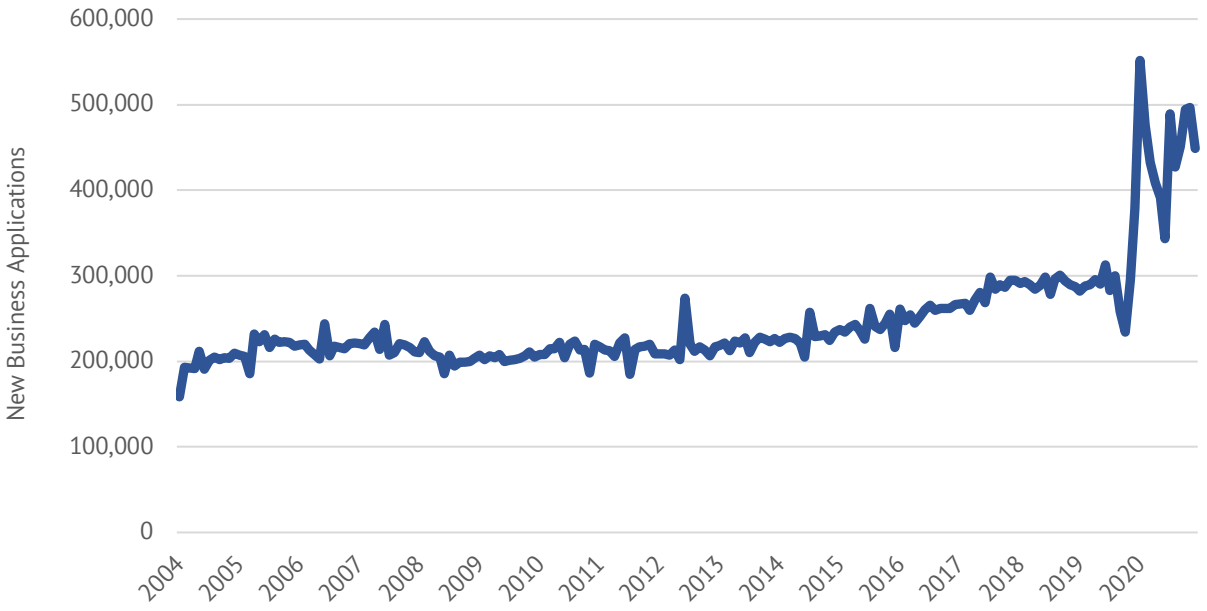
A trend related to work-from-home took place in education, where before the lockdown online and remote education had a stigma of being inferior to in-person education. As almost all of

the education facilities had to move their education process to remote during the pandemic, universities and students realized that much of the education process could be done remotely. This can potentially bring down the cost of education and make the best educational facilities accessible to more people across the globe. Imagine a Nobel Laureate speaking to a remote class of 10,000, instead of teaching an Ivy League class of 20. If each student pays $100 per class for the privilege, with 100 teaching assistants grading papers and tests, the economics—and the potential for an elevated standard of learning—become compelling.

6.1.3 MORE NEW BUSINESS CREATION

One unexpected and materially under-reported trend that occurred after the pandemic is a substantial increase in the number of new business applications. In Figure 8 we display the number of seasonally adjusted new business applications. Even before the pandemic, the applications displayed a long-term growth trend, rising about 50% from 2010 through 2019. After a brief drop in the first months of the COVID lockdowns in 2020, new applications shot up; the 2021 numbers are more than 50% higher than the then-record levels of 2019.

FIGURE 8: SEASONALLY ADJUSTED NEW MONTHLY BUSINESS APPLICATIONS, U.S., 2004–JUNE 2021



Source: Research Affiliates, LLC, based on https://www.census.gov/.

Why are more businesses starting now, in the waning days of the pandemic? Likely several factors are at play. First, in the first few weeks of the pandemic, many small businesses were shuttered. Some of this surge may simply be a matter of replacing or restarting businesses that failed during the pandemic. Secondly, we saw the fastest growth in unemployment in the past century. Having lost work, many seized an opportunity to become self-employed business owners. Third, many have discovered that they can be equally productive working from home and can efficiently run a business that now serves multiple employers. Fourth, lockdown and funding from stimulus programs may have had given those with an entrepreneurial spirit a nudge to start a new chapter in life. Only the first of these would suggest that the surge in new enterprise creation is temporary.

PART 7

CONCLUSION

In the midst of the daily flow of information about COVID health impacts and deaths, we missed the fact that other deaths also soared during the pandemic, possibly a result of our personal and policy choices. Another question begging more research is comparing outcomes in different nations, or maybe even in various U.S. states, that had different rates of rollout for the vaccine, different lockdown rules. We should seek to learn—dispassionately and with open minds—how those differences are linked to different collateral health consequences, to differences in lives and years lost, adjusted for the states' and countries' demographic profiles (notably the population of senior citizens).

COVID will be with us for years, and perhaps decades, to come. We need to get used to it. And we have so much to learn from the many mistakes of the past 18 months, if only we are open to a thoughtful review of the many lessons available to us. The collateral damage from our mistakes is substantial:

- The non-COVID death toll that has accompanied the pandemic is large, well into six digits. The aggregate toll from "collateral deaths" for the country, measured in years of life, almost certainly exceeds the aggregate years of life lost to the virus itself, perhaps by two-fold or worse.
- The death toll from COVID is falling sharply with each new variant of the virus, as we approach herd immunity, even as the number of cases from each new variant is still shockingly large. Yes, it's a new surge in cases. But those who have either been vaccinated or have recovered from COVID (or, for many of us, both!) often shrug off

new bouts of COVID without hospitalization, and face very low risk of death from any currently extant variant, except for those who have avoided the vaccine.

- Meanwhile, the death toll from the "Big Four" natural causes of death, far above historical norms in the first year of the pandemic, tumbled below historical norms from March through June of 2021. While the surge in cases from the Delta COVID variant appears to have driven these deaths back above normal levels, we think this surge will quickly recede, as it did earlier in the year.
- The death toll from unnatural causes has risen sharply and is not likely to fall as quickly. Research shows that collateral effects on health, direct and indirect, following unemployment and other economic disruption remain elevated for several years. The same seems likely to be true for overdoses and homicides, due to lingering mental health effects, though perhaps not for accidental deaths.
- The surge in deaths from COVID will soon reverse, and the surge in deaths from other natural causes (notably the Big Four) has already once tumbled below normal levels (because these people died early from the pandemic or from our responses to the pandemic), and will likely soon do so again. We will likely have two or three years of below-normal death rates from natural causes, as the pandemic accelerated many 2022–2023 deaths into 2020–2021.

While this policy brief focused mainly on negative collateral damage from COVID, we should not overlook the future positives, including medical advances seeded by this crisis, a potentially lasting step-up in life expectancy, and lasting improvements in productivity, stemming from some of the new ways we work, shop, bank, and communicate. Any of these that are not already widely known and understood may provide compelling business and investment opportunities.

ABOUT THE AUTHORS

Rob Arnott is the founder and chairman of the board of Research Affiliates, a global asset manager dedicated to profoundly impacting the global investment community through its insights and products. The firm creates investment strategies and tools based upon award-winning research, and delivers these solutions in partnership with some of the world's premier financial institutions. Rob plays an active role in the firm's research, portfolio management, product innovation, business strategy and client-facing activities. With Chris Brightman, he is co-portfolio manager on the PIMCO All Asset and All Asset All Authority funds and the PIMCO RAE™ funds.

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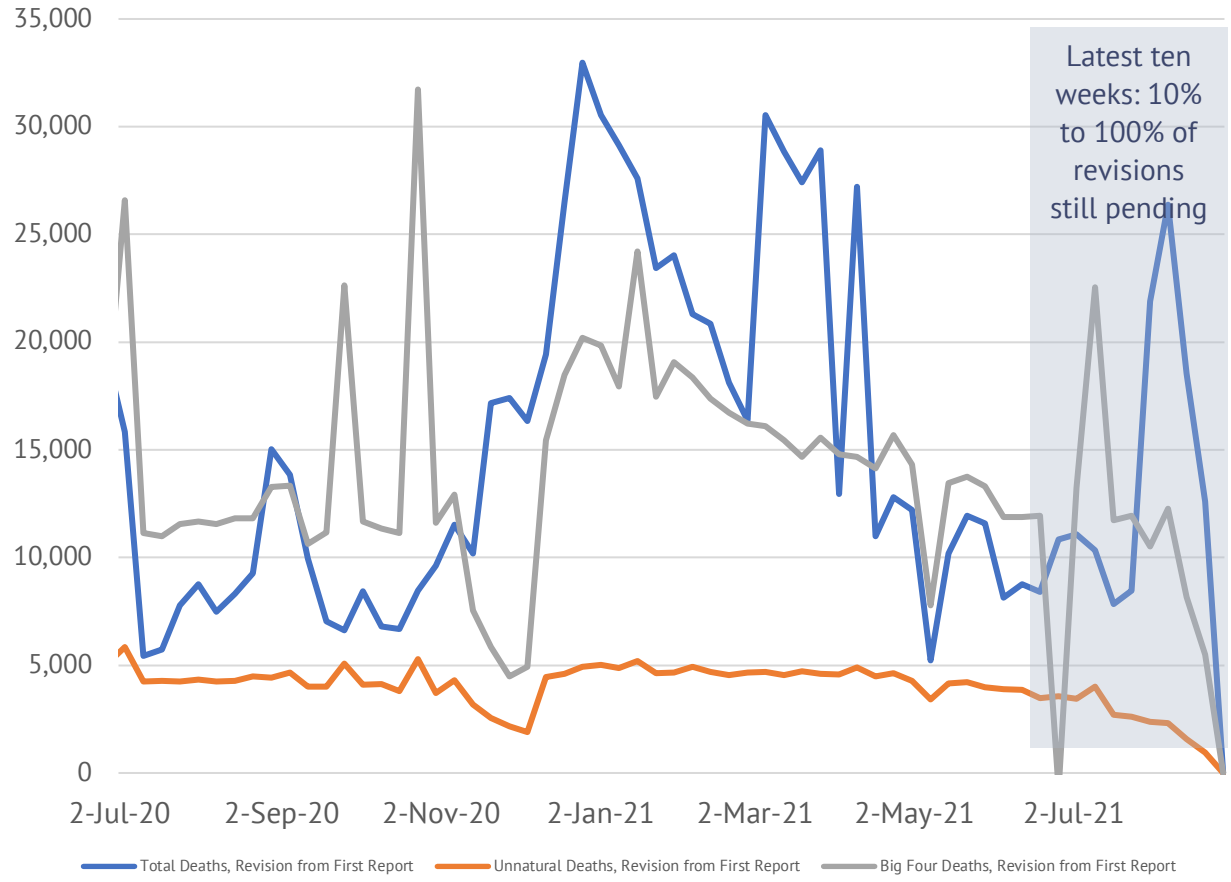
He has co-authored articles that have been recognized with three Graham and Dodd Scroll Awards bestowed by CFA Institute, a *Financial Analysts Journal* Readers' Choice Award, a William F. Sharpe Indexing Achievement Award, a Bernstein Fabozzi/Jacobs Levy Award, and a Graham and Dodd Top Award for "What Is Quality?" His research strengthens and expands Research Affiliates' products—in particular, RAFI™ Fundamental Index™ strategies—and supports the firm's global tactical asset allocation products.

Lillian Wu is a vice president of Research Affiliates. She focuses on promoting the firm's thought leadership through the firm's publications, educational materials, and client outreach. Lillian has co-authored a number of papers that have been published in investment industry practitioner journals.

APPENDIX

All of these data are subject to substantial change (usually, but not always, upward), especially in the first few weeks after an initial report. The ranges in the subsequent revisions are substantial. Total weekly deaths have been revised upward by anywhere from 5,000 to 32,000. Big Four Deaths have been revised upward by anywhere from 5,000 to 31,000. And unnatural deaths, the focus of much of our commentary, have been eventually revised upward by a far steadier 3,000 to 5,000. Fortunately, after about 10 weeks, roughly 90% of these eventual revisions are in. So, current CDC reports ending May 2021 or earlier can be viewed as reasonably reliable.

FIGURE A1: REVISIONS IN CAUSES OF DEATH, AFTER INITIAL REPORTS, JULY 2020 TO AUGUST 2021



Source: Research Affiliates, based on data from the CDC. [Same CDC links as before.]