

COVID-19: Unintended Consequences?

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(Preliminary and Incomplete)

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The United States death toll from the novel coronavirus has steadily increased in the last few days, with over 2,200 COVID-19 deaths, and more than half of the deaths in the last three days alone. The death toll is expected to only get worse in the coming weeks as cases increase and the capacity of the health care system is stretched. However, one silver lining might be that the death toll could be lower than anticipated due to individuals changing their behavior during the coronavirus pandemic. We use CDC data (detailed below) to analyze weekly US deaths over the last five years (as accessed on March 28, 2020).

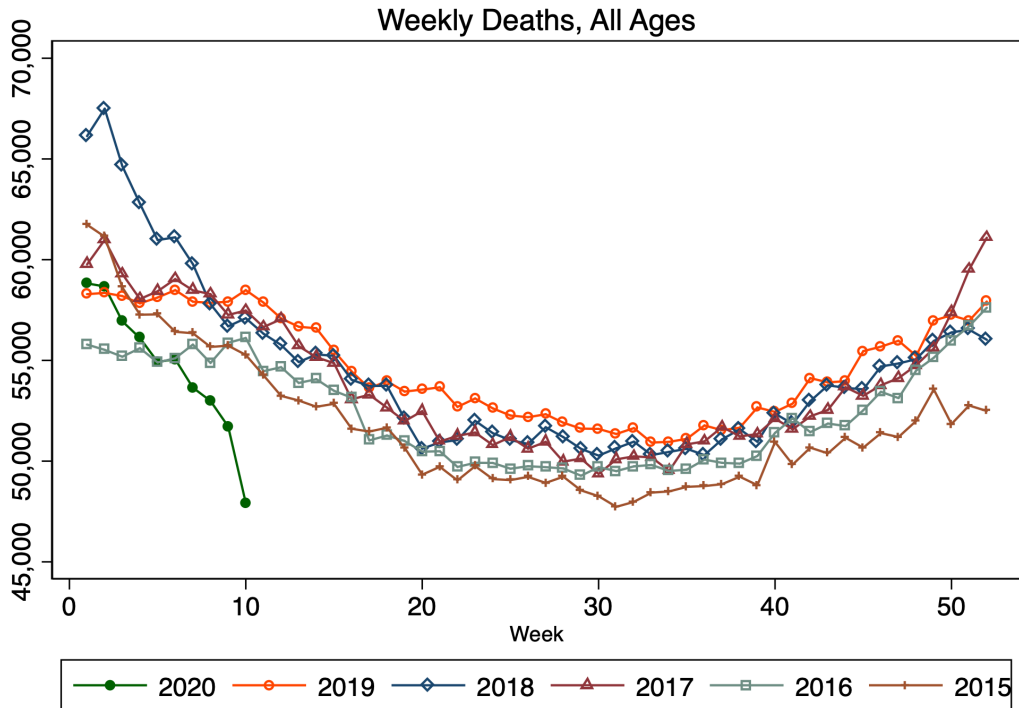
Figure 1 shows weekly deaths for all ages. For the year 2020, we have data through week 10, or through the week of March 7, 2020. There is a clear strong downward sloping trend in the number of deaths at all ages for the current year as compared to the previous 5 years. **Moreover, the current year appears to be a break in trend from the previous 5 years.** Comparing the difference of the previous 5-year average with 2020 deaths through March 7 and we find that for week 10, **there were close to 9000 fewer deaths** – this is nearly a 20 percent decrease in the number of the deaths! The decrease is most evident after week 7 (week ending February 15, 2020).

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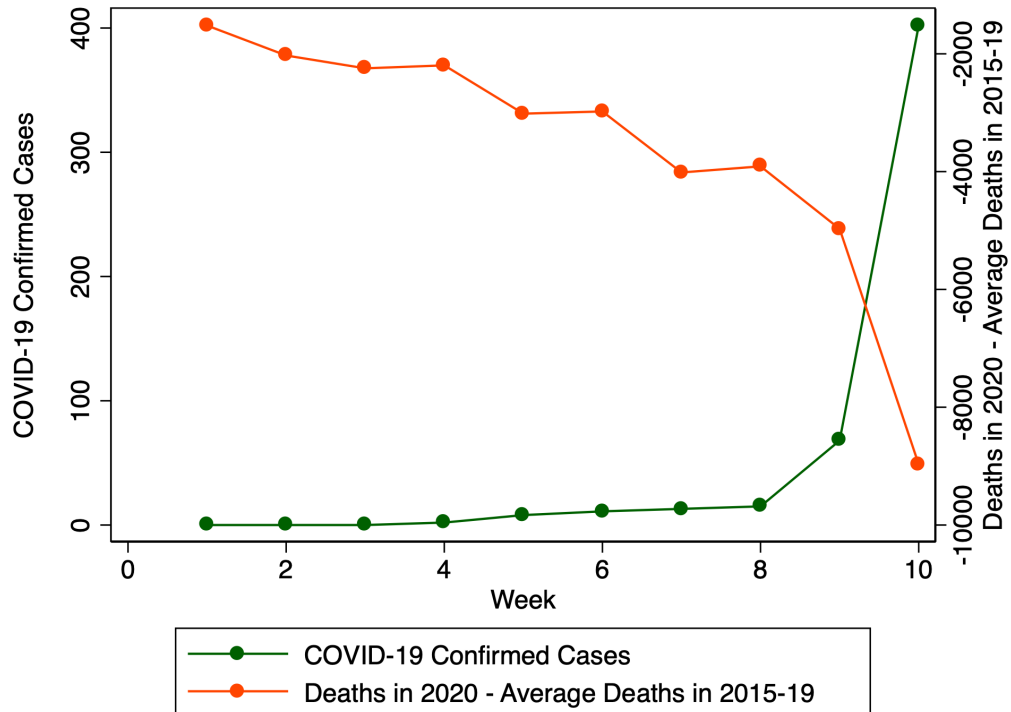
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Source: Authors' calculation based on CDC FluView Data accessed on March 28 2020

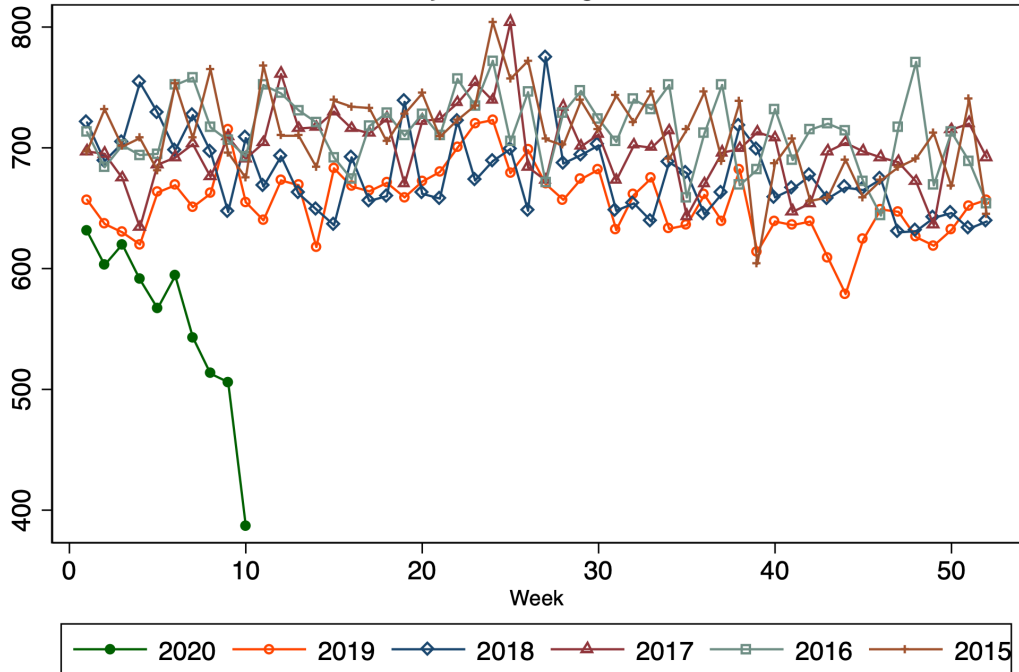
Since coronavirus concerns have increased as US spread has become more evident, the decline in deaths in recent weeks suggests that the fall in deaths might be an 'un-intended' consequence of the COVID-19 due to people adjusting their behavior to avoid getting and spreading COVID-19. Comparing the deviation with the COVID-19 confirmed cases in the US, we see a high negative correlation of 0.9271. One suggestive mechanism is that as people stay at home more, crime and accidental deaths may decrease. As the CDC continues to update the data, the data for the week ending March 14 and March 21, 2020 will be useful in understanding this behavioral aspect – however, after that, the behavioral effect may be harder to disentangle, as deaths due to coronavirus will become more prominent in the aggregate data.



Source: Authors' calculation based on CDC FluView Data accessed on March 28 2020

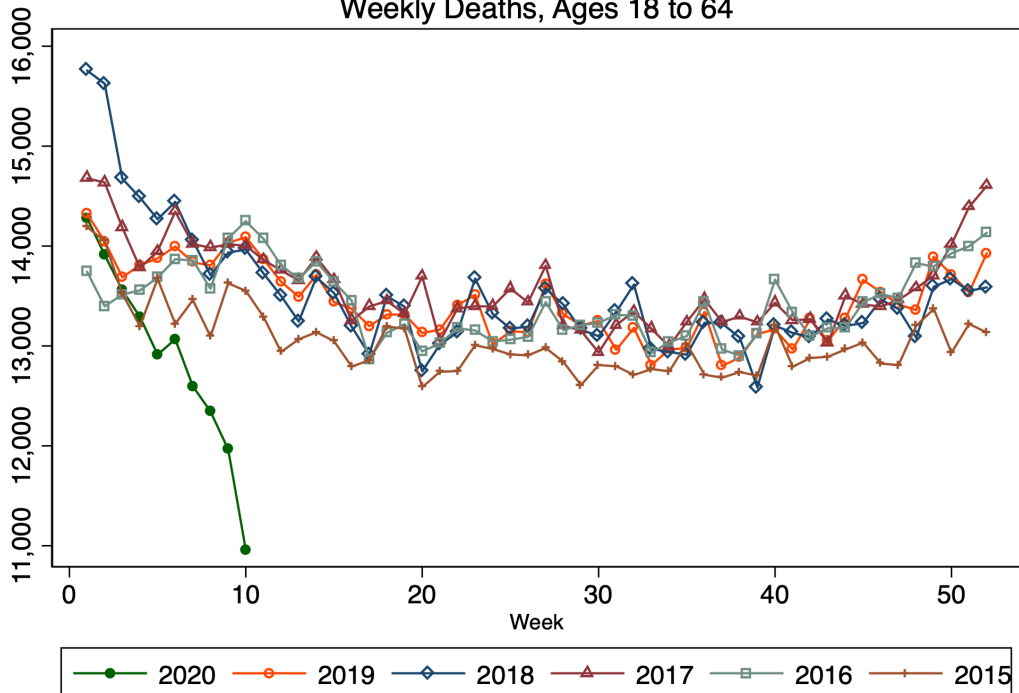
The mechanism we propose should primarily affect the younger population, as the younger population tends to be more mobile, and the older population is more likely to die of other natural causes. This is exactly what we observe when breaking up these trends by age group. We see that the deviation from the trend is the starkest for children (<18 years) - there is a decline of 297 deaths, which is a 76 percent decrease! At the point through which data is available, most schools had not yet shut down and even so, we observe this large decrease. We observe a similar but smaller decline of 27 percent in the age group of 18 to 65. This is suggestive of the possibility that as coronavirus mitigation measures become more widespread, non-coronavirus deaths may decrease further.

Weekly Deaths, Ages 0 to 17

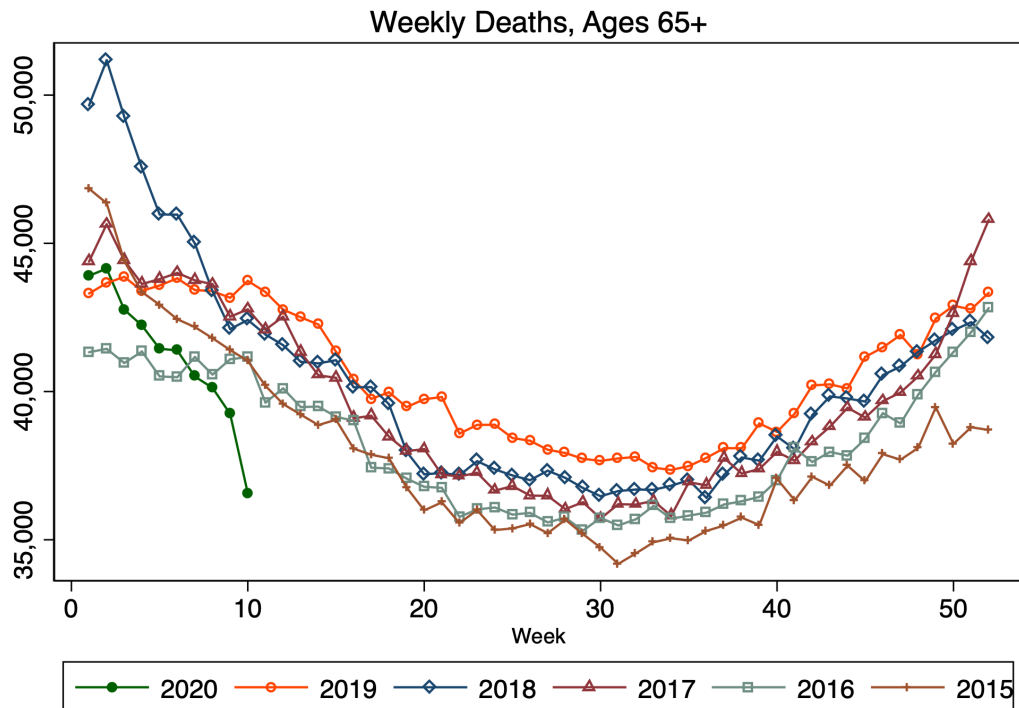


Source: Authors' calculation based on CDC FluView Data accessed on March 28 2020

Weekly Deaths, Ages 18 to 64



Source: Authors' calculation based on CDC FluView Data accessed on March 28 2020



Source: Authors' calculation based on CDC FluView Data accessed on March 28 2020

Data Sources

We take total weekly deaths in the US by three age groups from CDC FluView data¹. The data provides weekly total national deaths and the deaths caused by Pneumonia and Influenza. We take the national data from 2015 week 1 to 2020 week 10, i.e. the week ending March 7 2020, since week 11 numbers were not complete at the time of our access. National deaths can be sliced into three age groups: 0-18, 18-65 and 65+. The dataset also has state-level deaths, but state data was not available for week 8-10, so we were unable to use that for our analysis². We plan to include state-level deaths and data for later weeks as this becomes available.

We also use total number of COVID-19 cases reported by Johns Hopkins for our analysis.

Ongoing Work

We will be updating the figures as more data becomes available. In ongoing work, we are exploring ways to de-compose reductions in mortality attributed to lower accident and crime rates as well as other 'un-intended consequences'.

¹<https://gis.cdc.gov/grasp/fluview/mortality.html>

²More specifically, we use the data for which "Percent Complete" was ">100%"