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Original Contribution

The US Midlife Mortality Crisis Continues: Excess Cause-Specific Mortality During 2020

Dana A. Glei*

* Correspondence to Dr. Dana A. Glei, 5985 San Aleso Court, Santa Rosa, CA 95409 (e-mail: dag77@georgetown.edu).

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Whether monthly excess mortality in the United States during 2020 varied by age and cause of death is investigated in this analysis. Based on national-level death counts and population estimates for 1999–2020, sex-specific negative binomial regression models were used to estimate monthly cause-specific excess mortality by age group during 2020. Among men, 71% non-COVID excess deaths occurred at working ages (25–64 years), but those ages accounted for only 36% of non-COVID excess deaths among women. Many excess deaths resulted from external causes (particularly among men), heart disease, diabetes, Alzheimer disease (particularly among women), and cerebrovascular disease. For men, the largest share of non-COVID excess deaths resulted from external causes, nearly 80% of which occurred at working ages. Although incorrectly classified COVID-19 deaths may explain some excess non-COVID mortality, misclassification is unlikely to explain the increase in external causes of death. Auxiliary analyses suggested that drug-related deaths may be driving the increase in external mortality, but drug overdoses were already increasing for a full year before the pandemic. The oldest Americans bore the brunt of COVID-19 deaths, but working-age Americans, particularly men, suffered substantial numbers of excess non-COVID deaths, most commonly from external causes and heart disease.

age variation; cause of death; COVID-19; excess mortality; United States

Abbreviation: COVID-19, coronavirus disease 2019.

Older Americans have suffered the highest coronavirus disease 2019 (COVID-19) mortality. Yet, the pandemic may have exacerbated deaths from other causes as well, some of which could have taken a heavier toll among younger Americans. Indeed, only 38% of the excess mortality (i.e., from all causes including COVID-19) among Americans aged 25–44 years during March–July 2020 could be attributed directly to COVID-19 (1). At these younger ages, nearly two-thirds of the excess mortality associated with the pandemic appears to have resulted from causes other than COVID-19 (1). Thus, although the oldest Americans suffered most of the direct effects of the pandemic, working-age Americans may have been more heavily affected by the indirect impact of the pandemic on non-COVID mortality.

Although much less likely than older Americans to die of COVID-19, younger Americans bore the brunt of the economic consequences because their work lives were abruptly altered. Essential workers continued to be in high demand but faced additional stressors (e.g., fear of exposure to the virus; shortages of personal protective equipment). An additional threat was posed by recalcitrant individuals who resisted public health orders, particularly when enforced by low-wage workers (e.g., grocery and retail store employees). Business owners had to grapple with logistical challenges resulting from new public health regulations and the financial aftermath of reduced demand for their services. Other workers suffered sudden income decline because of job loss or reduced hours. The most fortunate workers retained their jobs with reduced exposure to SARS-CoV-2 but had to adapt to working from home and learning new technologies.

The unexpected closure of childcare centers and schools further exacerbated the conflicts between work and family life for young and midlife Americans. With no warning, parents of young children lost access to childcare services and became responsible for helping to homeschool their children while continuing to juggle work demands and the potential needs of their own parents, who were particularly vulnerable to COVID-19.

Depending on the period of coverage and methodology, prior studies have reported 16% to 23% excess mortality during the pandemic (2–4), but only 72% to 89% of the excess deaths could be attributed directly to COVID-19 (2–5). During the period from January 26, 2020, to October 3, 2020, Americans aged 25–44 years had the largest relative increase in excess mortality, whereas those aged ≥85 years experienced a smaller increment (6). Excess mortality peaked earlier—in April—and declined more rapidly for Americans aged ≥45 years than for their younger counterparts (aged 25–44 years), among whom excess mortality was persistently high throughout early April to early August, peaking in mid-July (6).

It remains unclear how excess mortality from causes other than COVID-19 is distributed by cause and the extent to which it varies by sex and age. Compared with 2019, the absolute number of deaths in 2020 increased for various causes (i.e., diabetes; unintentional injuries; Alzheimer disease; stroke; influenza and pneumonia; and heart disease) (7). That same report showed virtually no change in the number of deaths as a result of cancer or kidney disease and revealed a small decline in the number of deaths from chronic lower respiratory diseases and suicide. Other evidence suggested that the number of deaths due to drug overdoses (8), homicides (9), and motor vehicle accidents (10) also increased during the pandemic. The extent of change in alcohol-related deaths for the United States as a whole remains unknown, but some evidence showed increased alcohol consumption, particularly among women and Americans aged 30–59 years (11), and provisional data for Minnesota implied that alcohol-attributable deaths were 25% to 65% higher in June–December 2020 than in the same months in 2019 (12). To the author's knowledge, no US study has been published in which researchers investigated the extent to which excess mortality for specific causes of death varies by sex and age.

In this analysis, the changes in US mortality for selected causes of death during the COVID-19 pandemic up to December 31, 2020, were quantified. In addition, the models were used to evaluate the extent to which the levels of excess mortality varied by sex, age group, and across the months of 2020.

METHODS

Data

These analyses were based on national-level monthly death counts by sex, age group (0–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and ≥85 years), and selected causes of death for the period from January 1999 to December 2020 (see Web Appendix 1 for more details) (available at https://doi.org/10.1093/aje/kwac055) (13, 14). Although the provisional data covered the period through June 2021 (14), this analysis was restricted to the period through December 31, 2020, because the data for 2021 are likely to be incomplete (15). Annual mid-year population estimates by sex and age (16, 17) were used to compute the cause-specific death rates. Collectively, the data set represented 56.8 million deaths over 6.7 billion person-years of observation for the entire US population.

Measures

Outcome: Age-specific death rates for selected causes of death The first model comprised all-cause mortality (including deaths from COVID-19). Next, models were fit separately for 8 groups of underlying causes (Web Appendix 2).

Control variables To account for the prepandemic patterns of mortality during 1999–2019, the models controlled for age, calendar year, and seasonality. The specification of the time trend varied by outcome (described under *Analytical Strategy*).

Mortality during 2020 The key variables of interest were the dichotomous indicators for each month during 2020. To test whether excess mortality differed by age, a set of dummy variables for broad age groups (i.e., < 15, 15–24, 25–44, 45–64, 65–74, and ≥75 years) was interacted with a dummy variable for the pandemic period (March–December 2020).

Analytical strategy

The monthly age-specific mortality rates for each cause of death were modeled separately by sex using a negative binomial model (see Web Appendix 3 for the detailed equation). The model included control variables to account for the age pattern, seasonality, and the prepandemic time trend. Because the seasonality of mortality can vary by age (18), interactions between month and age were included in the models for all-cause mortality and external causes. Those interactions did not improve model fit for the remaining outcomes and thus were omitted. The functional form for the time trend varied by outcome to maximize predictive accuracy in 2019, as follows: linear specification for influenza- and pneumonia-related deaths; quadratic specification for all causes, heart disease, cerebrovascular disease, Alzheimer disease, diabetes, and external causes; and cubic specification for other respiratory diseases (excluding COVID-19) and cancer. All models included interactions between the time trend and age because recent mortality decline has varied by age (19).

An additional set of dummy variables for each month of 2020 was included to estimate the extent to which monthly mortality differed from the prepandemic time trend. Prior to March, there were few COVID-19 deaths in the United States, and the pandemic had yet to make a substantial impact on everyday life here. Thus, the excess mortality rate ratios were expected to be close to 1.0 for January and February. Interactions between broad age groups and a dichotomous indicator for the pandemic period (March–December) of 2020 were used to test for age differences in excess mortality.

To evaluate the sensitivity of the results to the specification of the prepandemic time trend, an auxiliary set of models was estimated using alternative specifications for the time trend. Additional models assessed the sensitivity to the length of the time series used to fit the model by restricting the data series to: 1) the period since 2009 and 2) the period since 2014.

Finally, auxiliary models were estimated to test whether excess mortality varied by both age group and wave of the pandemic. Those additional interactions were omitted from the final analysis because they did not improve model fit, based on the Bayesian Information Criterion.

For some groups of causes, the death rates were exceptionally low at young ages, which can result in very high rate ratios. Thus, the cause-specific models were restricted to the age range within which the average death rates in each age group across 1999–2020 were at least 1 per 1 million: age ≥15 years for heart diseases; age ≥25 years for other respiratory diseases, cerebrovascular diseases, and diabetes mellitus; age ≥35 years for influenza and pneumonia; and age ≥55 years for Alzheimer disease.

The estimated number of excess deaths was computed as the difference between 1) the predicted number of deaths in 2020 based on the model coefficients, and 2) the predicted number of deaths when the 2020 monthly parameters and the interactions between age and the pandemic indicator were reset to zero (i.e., "expected" deaths in the absence of a pandemic). The estimated number of excess non-COVID deaths was derived by subtracting the reported number of COVID-19 deaths from the estimated number of excess deaths from all causes.

Statistical tests were 2-sided at the 0.05 level. The analyses were performed using Stata 16.1 (StataCorp, LLC, College Station, TX).

RESULTS

Death rates during January and February 2020 were generally similar to or lower than expected, based on the prepandemic trends, with 1 major exception: deaths from influenza and pneumonia combined were notably higher (Web Tables 1–3). Throughout April–December 2020, all-cause death rates of those older than 15 years were substantially higher than expected (Figure 1). In relative terms, excess mortality from all causes was similar across age ≥15 years, but the absolute number of excess deaths was much larger at the oldest ages (Figure 2). At younger ages, when mortality rates are low, a substantial increase in the relative risk can translate into a very small absolute increment in the number of deaths. For example, the excess mortality ratio ratios at ages 25–44 years were as high, if not higher, than at ages 64–74 years, but the estimated number of excess deaths in March–December 2020 was much lower for those aged 25–44 years (n = 21,300 men; n = 8,260 women) than for those 65–74 years (n = 54,284 and 36,815, respectively; Tables 1 and 2). Americans aged ≥65 years accounted for 64% (Web Table 4) of the 252,199 excess deaths among men (Table 1) and 81% (Web Table 5) of the 196,481 excess deaths among women (Table 2).

The bulk of excess mortality at the oldest ages resulted from COVID-19 (i.e., ≥80% for those older than 65 years; Web Tables 4 and 5), but COVID-19 accounted for only a small fraction of the excess deaths at ages 15–24 years (7% for men, 18% for women) and <35% of excess deaths at ages 25–44 years. Among men, 71% of the 59,271 non-COVID excess deaths occurred at working ages (25–64 years), but those ages accounted for only 36% of the 37,996 non-COVID excess deaths among women. Non-COVID excess mortality was more skewed toward older ages for women: age ≥75 or older accounted for 44% of non-COVID excess deaths among women versus 11% among men.

The cause-specific models imply that, in males, the largest share of non-COVID excess deaths resulted from external causes (n = 17,341), nearly 80% of which occurred at working ages (Web Table 4). For males, the relative increase in the rates of death due to external causes was largest at ages 15–24 years (Figure 3A), but the absolute number of excess deaths from external causes was highest at ages 25–44 years (Figure 3B). For females, external causes contributed fewer excess deaths (n = 3,536; Table 2) and both relative mortality and absolute excess mortality from external causes were highest at ages 25–44 years (Web Figure 1).

Heart disease was the largest contributor of non-COVID excess deaths among women (n = 10,566; Table 2) and the second biggest contributor among men (n = 15,943; Table 1). The majority of excess deaths from heart disease occurred at working ages among men but after age 75 years among women.

Diabetes accounted for a substantial number of excess deaths in both sexes (n = 7,292 men; n = 6,433 women). The excess mortality rate ratios for diabetes were highest at ages 25–44 years but only slightly lower at >45 years (Web Figures 2B and 3B). However, because prepandemic rates of diabetes-related mortality were much higher at older ages, the absolute number of excess deaths was much higher at age >45 years. Most of the excess deaths from diabetes occurred in those older than 65 years (63% for men, 78% for women) and >92% occurred in those older than 45 years.

Alzheimer disease contributed a sizeable number of excess deaths among women (n = 7,716), but less so in men (n = 2,046). The vast majority of those deaths occurred at age >75 years (87% for men, 91% for women). Cerebrovascular disease accounted for a notable share of excess deaths in both sexes. Most of those deaths occurred at age >65 years (55% for men, 75% for women).

During March and April 2020, the excess mortality rate ratios for influenza and pneumonia were elevated at all ages (Web Figures 2E and 3E), but mortality rates were significantly lower than expected in October–December 2020 among those aged ≥75 years, especially women. When aggregated across the entire pandemic period (March–December 2020), influenza and pneumonia contributed 2,441 excess deaths in men but no excess deaths in women, because excess deaths in January–February were offset by lower-than-expected mortality later in the year.

There was little evidence of excess mortality from other respiratory diseases (Web Figures 2F and 3F) or cancer (Web Figures 2G and 3G). In fact, at the oldest ages, there were fewer deaths than expected for these 2 groups of causes (Tables 1 and 2).

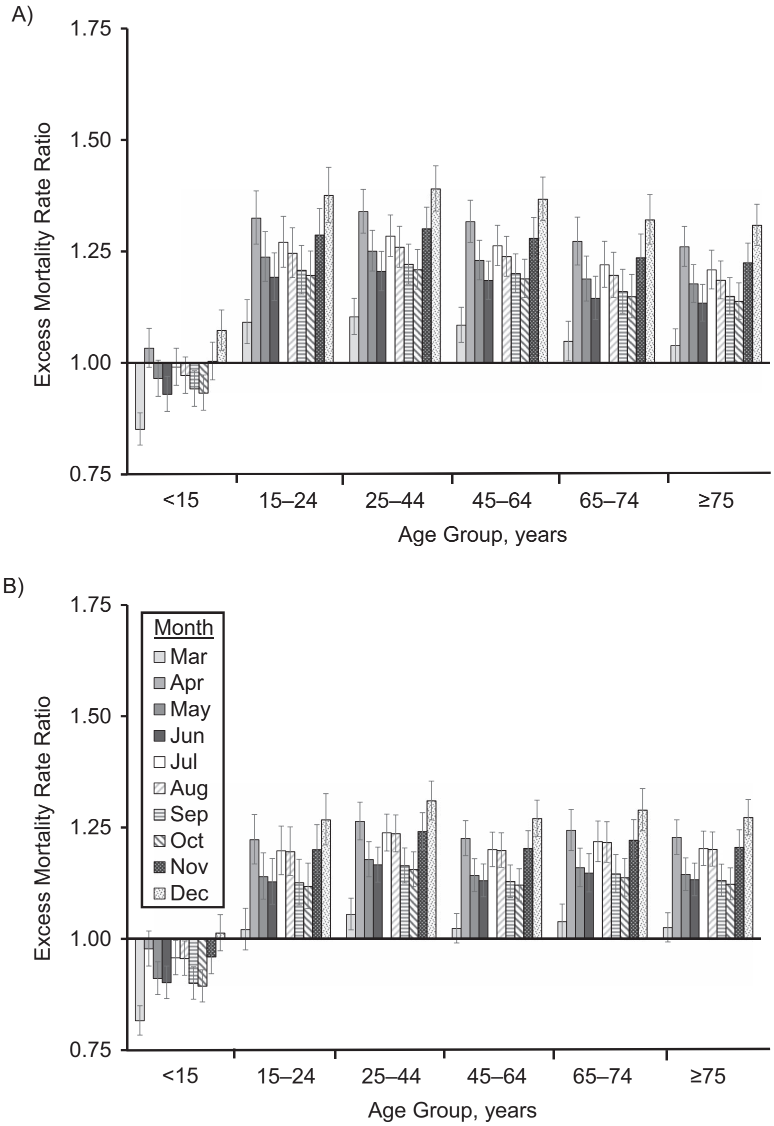

Figure 1. Excess mortality rate ratios from all-cause mortality (including COVID-19) by age group during March–December 2020, United States. A) Males; B) females. These estimates are based on the regression models in Web Table 1. A rate ratio >1.0 implies that the mortality rates were higher than expected based on the prepandemic trends, whereas a value <1.0 suggests lower-than-expected mortality rates. The bars on the graph of excess mortality rate ratios represent the 95% confidence intervals.

Sensitivity of the results to specification of the prepandemic time trend

For all-cause mortality (Web Figure 4) and most of the cause-specific models (Web Figure 5), the estimated number of excess deaths was similar across various specifications of the prepandemic time trend, although model 1, which is based on the full time series with a linear prepandemic time trend, yielded the highest estimates for all causes, heart disease, cerebrovascular disease, diabetes, and external causes. For all of those outcomes, the estimates from model 2 match those in Tables 1 and 2.

The causes for which the estimated number of excess deaths were the most sensitive to specification of the prepandemic time trend were heart disease, external causes, and cerebrovascular disease. More detailed analyses suggested that model 1 probably overestimated excess mortality, whereas model 3 may have underestimated excess mortality from these causes as well as all-cause mortality (Web Appendix 4, Web Table 6, and Web Figures 6–10). Among women, there was also considerable variation in the estimates of excess mortality from Alzheimer disease; model 2 (which corresponds to the estimates provided in Table 2) had the best predictive accuracy for 2019 but also yielded the highest estimates of excess mortality from Alzheimer disease (Web Figures 5, 11, and 12).

The only other cause for which the main results indicated a substantial number of excess deaths was diabetes. The

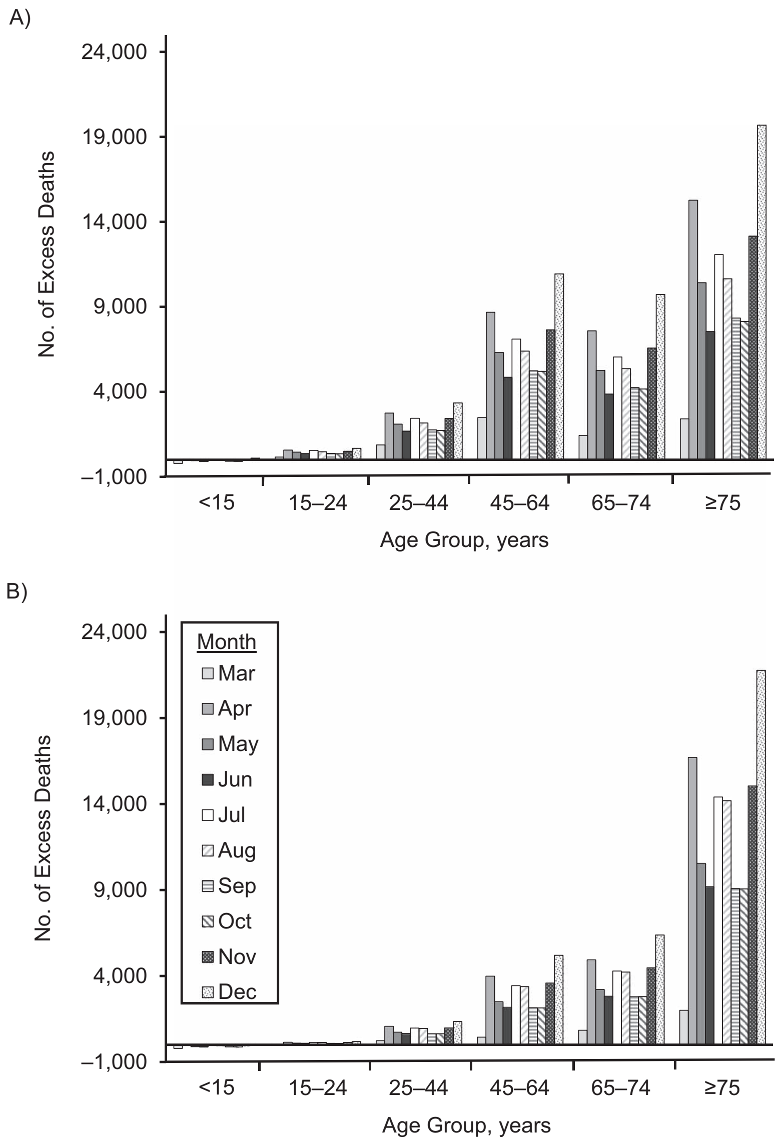

Figure 2. Number of excess deaths from all-cause mortality (including COVID-19) by age group during March–December 2020, United States. A) Males; B) females. These estimates are based on the regression models in Web Table 1. Negative values are not shown.

estimates of excess diabetes mortality presented in Tables 1 and 2 (i.e., model 2 in Web Figure 5) are somewhere between the lowest and the highest values.

Analysis of subcategories of death from external causes

Unfortunately, monthly death counts by sex and age group are not yet available for subcategories within external causes. Nonetheless, it was possible to analyze crude monthly death rates for drug overdoses, homicides, suicides, motor vehicle accidents, and unintentional injuries as a whole (Web Appendix 5) (20). Drug overdoses had the highest excess mortality (peaking 49% higher than expected in May; rate ratio = 1.49, 95% CI = 1.27–1.74) followed by homicides (peaking 43% higher than expected in October; rate ratio = 1.43, 95% CI = 1.17, 1.75). During March–May 2020, there was no evidence of significant excess mortality from motor vehicle accidents; in fact, rates were 16% lower than expected in April (rate ratio = 0.84, 95% CI = 0.72, 0.97). However, the mortality rate from motor vehicle accidents was significantly higher than expected in June and August–December 2020, with the excess mortality rate ratio peaking at 1.20 (95% CI = 1.03, 1.39) in September 2020. As demonstrated in earlier studies, the suicide rate was significantly lower than expected throughout March–December 2020, with the biggest decline in April (–19%; HR = 0.81, 95% CI = 0.76, 0.86).

Table 1. Estimated Number of Excess Deaths During March–December 2020 by Age Group and Cause, US Males

Cause of Death	Total	Age, years					
		<15	15–24	25–44	45–64	65–74	≥75
All causes	252,199	–446	4,495	21,300	64,862	54,284	107,703
COVID-19 (underlying cause)	192,928	62	309	5,552	38,555	47,137	101,313
All causes excluding COVID-19[a]	59,271	–508	4,186	15,748	26,307	7,147	6,390
Modeled separately by underlying cause							
Influenza and pneumonia	2,441	[b]	[b]	64[c]	682	1,100	595
Other respiratory disease	–1,150	[b]	[b]	228	591	–300	–1,669
Heart disease	15,943	[b]	0	1,589	7,122	2,534	4,698
Cerebrovascular disease	2,881	[b]	[b]	187	1,121	615	958
Cancer	266	–24	9	41	672	73	–506
Alzheimer disease	2,046	[b]	[b]	[b]	24[d]	247	1,775
Diabetes	7,292	[b]	[b]	535	2,183	1,947	2,626
External causes	17,341	189	3,764	8,959	4,869	76	–515

[a] Derived by subtracting the reported number of COVID-19 deaths (as the underlying cause) from the estimated number of excess deaths from all causes.
[b] These ages were excluded from the model because mortality rates from this cause are extremely low.
[c] The model was restricted to age ≥35 years or older, because mortality rates from this cause are exceptionally low below age 35 years.
[d] The model was restricted to age ≥55 years, because there are very few deaths due to Alzheimer disease at age <55 years.

DISCUSSION

It is not surprising that heart disease, external causes, diabetes, Alzheimer disease, and cerebrovascular disease were major contributors of excess deaths, because they were among the most common causes of death in the United States during 2019 (21). Even a small relative increase in mortality from these causes would translate into many

Table 2. Estimated Number of Excess Deaths During March–December 2020 by Age Group and Cause, US Females

Cause of Death	Total	Age, years					
		<15	15–24	25–44	45–64	65–74	≥75
All causes	196,481	–798	1,113	8,260	29,047	36,815	122,045
COVID-19 (underlying cause)	158,485	41	196	2,848	20,701	29,296	105,403
All causes excluding COVID-19[a]	37,996	–839	917	5,412	8,346	7,519	16,642
Modeled separately by underlying cause							
Influenza and pneumonia	–54	[b]	[b]	22[c]	166	487	–729
Other respiratory disease	–5,433	[b]	[b]	87	115	–1,037	–4,598
Heart disease	10,566	[b]	21	607	2,110	2,294	5,535
Cerebrovascular disease	2,440	[b]	[b]	74	538	694	1,134
Cancer	–2,429	–17	–5	–330	–821	675	–1,931
Alzheimer disease	7,716	[b]	[b]	[b]	14[d]	685	7,018
Diabetes	6,433	[b]	[b]	279	1,149	1,551	3,455
External causes	3,536	10	638	2,605	1,150	–278	–589

[a] Derived by subtracting the reported number of COVID-19 deaths (as the underlying cause) from the estimated number of excess deaths from all causes.
[b] These ages were excluded from the model because mortality rates from this cause are extremely low.
[c] The model was restricted to age ≥35 years, because mortality rates from this cause are exceptionally low below age 35 years.
[d] The model was restricted to age ≥55 years, because there are very few deaths due to Alzheimer disease at age <55 years.

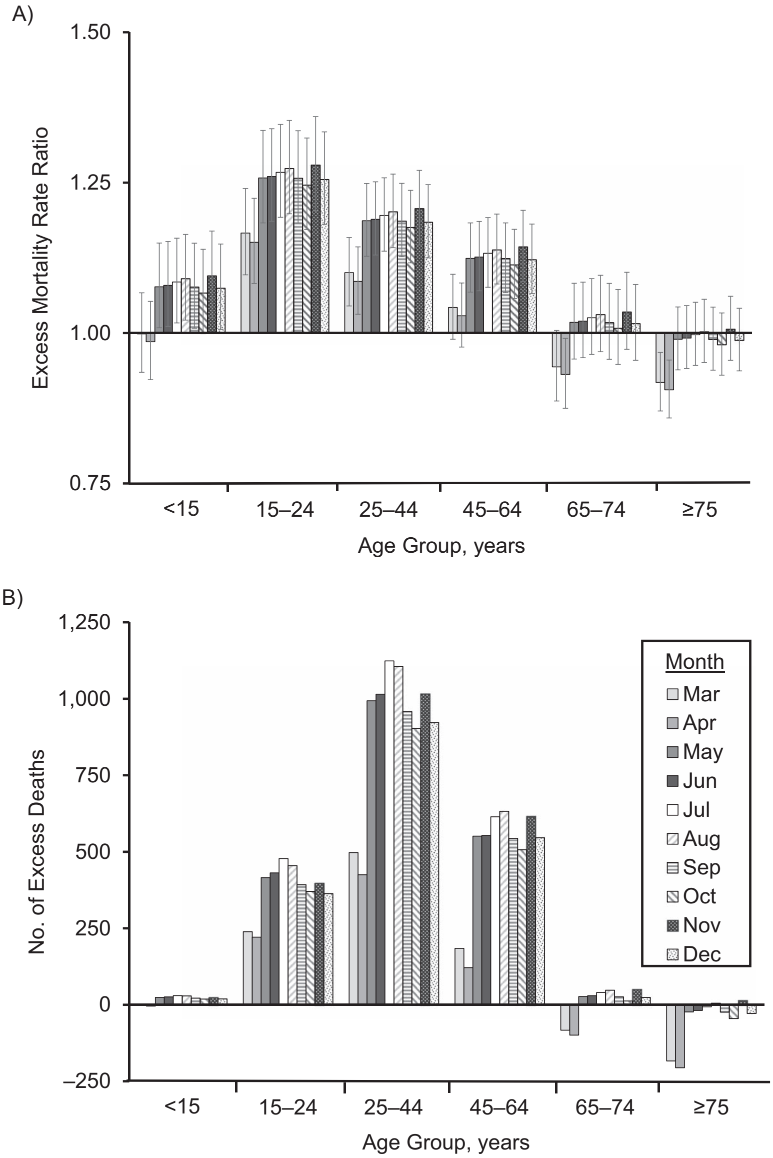

Figure 3. Excess mortality from external causes by age group during March–December 2020 in US males. A) Rate ratios; B) number of excess deaths. These estimates are based on the regression models in Web Table 2. The bars on the graph of excess mortality rate ratios represent the 95% confidence intervals. Negative values are not shown in (B).

deaths because mortality rates were high even before the pandemic.

Diabetes exhibited a substantial relative increase in mortality across ages ≥25 years that persisted throughout April–December throughout 2020. To a lesser extent, excess mortality rate ratios were also elevated for heart disease, particularly at ages 25–74 years. Delayed health care because of fear of infection, diversion of health care resources, and shortages of staff and equipment could have contributed to excess mortality from chronic diseases such as diabetes and heart disease. The social and economic consequences of the pandemic were also likely to pose a special challenge for people with chronic diseases that require careful daily management. Economic distress, disruptions of social life and support networks, and other stressors induced by the pandemic may have further hampered the management of chronic conditions. For people with diabetes, a lapse in glucose control or the temptation to ration insulin because of financial difficulty or loss of employer-sponsored health insurance could have deadly consequences.

Although the results showed no evidence of excess cancer mortality, there could be a lagged effect. Delays in standard screening and reluctance to visit a doctor for a suspected problem may have reduced early detection and could later manifest as increasing cancer mortality.

Misclassification of COVID-19 deaths could account for some excess mortality. For example, during March–April 2020, influenza and pneumonia had the highest excess mortality in relative terms (Web Figure 2E and 3E), with rate ratios as high as 1.75 among men aged 65–74 years in March 2020, but this category is particularly likely to include misclassified COVID-19 deaths, especially early in the pandemic when testing for SARS-CoV-2 was limited. Although misclassification of COVID-19 deaths could account for some of the excess mortality from influenza, pneumonia, circulatory diseases, and other natural causes, it is unlikely to explain the increase in mortality from external causes. Instead, excess mortality from injury-related causes was likely to be an indirect result of economic distress, the disruption of normal life, and heightened uncertainty related to the pandemic. Analyses of crude death rates within subcategories of external causes suggest that the increase in external mortality may have been driven primarily by drug-related deaths. Although the pandemic may have exacerbated the drug epidemic, provisional data suggest that the number of drug overdoses increased every month after February 2019, although the pace increased in autumn 2019 and even more sharply after March 2020 (22). Alcohol-related deaths also increased 26% between 2019 and 2020 (23). Early in the pandemic, many experts predicted that the number of suicides would increase, yet the evidence suggests that suicide rates declined during April–December 2020.

Limitations

Any estimate of excess mortality relies on the accuracy of hypothetical expected mortality (in the absence of the event of interest). Unfortunately, it is impossible to verify the accuracy of those estimates. Some of the apparent excess mortality could merely be a result of statistical noise. For example, the CIs around the estimated rate ratios for excess Alzheimer disease–related mortality among men (Web Figure 2C) were so wide that, in most cases, the null hypothesis (i.e., there was no excess mortality) cannot be rejected.

In addition to statistical uncertainty, it is important to consider other sources of uncertainty. First, there is potential uncertainty associated with model specification. For example, if the model does not adequately account for the prepandemic increases in drug overdoses, or if other factors unrelated to the pandemic contributed to increased numbers of drug-related deaths after March 2020, then the model would overestimate excess drug overdoses associated with the pandemic. Variation in the estimates across alternative specifications reflects this type of uncertainty: some of the alternative models yielded lower estimates of excess mortality, whereas others implied even higher levels of excess mortality.

Possible lags in reporting can also contribute to uncertainty. These analyses are based on provisional death counts for 2020, which may be underestimated, particularly during wave 3 of the pandemic. Because of reporting lags, some of the deaths in December are likely to be missing from the provisional data used for this analysis (updated on July 27, 2021), especially for injury-related deaths (e.g., only 93% of drug overdoses are reported within 26 weeks after the death) (15).

Another source of uncertainty is misclassification (e.g., deaths owing to COVID-19 that were mistakenly coded as another cause of death), which is likely to plague the cause-specific mortality data. Over the course of the pandemic, as the availability of testing increased and medical examiners became more experienced identifying COVID-19, cause-of-death reporting undoubtedly improved. For example, the results presented here suggest very high levels of excess mortality from influenza and pneumonia in March–April 2020 that abated later in the pandemic. Some of those early deaths may have actually resulted from COVID-19 but were misclassified. Such misclassification would lead to an underestimate of COVID-19 mortality and a corresponding overestimate of excess mortality from influenza or pneumonia. Thus, some of the excess mortality attributed to influenza and pneumonia, and perhaps other causes as well, may have been actually resulted from COVID-19, especially early in the pandemic.

Data availability also constrains the ability to investigate age variation in excess mortality for more detailed causes of death and by race/ethnicity. Data are not yet available to examine age and sex variation in excess mortality from drug- and alcohol-related deaths, suicide, and homicide. Once county-level data become available, this analysis will be extended to explore geographic variation in the impact of the pandemic on subcategories of non-COVID deaths. There is already ample evidence that socioeconomically disadvantaged communities were harder hit by COVID-19 than more advantaged communities (5, 24–26). It seems likely that the pandemic further exacerbated socioeconomic disparities in drug- and alcohol-related mortality rates. Similarly, it will be interesting to investigate whether the decline in suicide benefited all communities equally. Well-off communities may have been able to mount a more effective response that benefited all residents, whereas more-disadvantaged communities experienced further social disintegration.

Similarly, the data required to incorporate racial/ethnic variation into the model are not yet available. The National Center for Health Statistics recently published provisional monthly death counts for selected causes of death by age, sex, and race/ethnicity (14), but that file uses a different racial classification than the bridged-race mortality data for 1999–2019 (13). Inconsistency in racial classification could bias the results. It may not be possible to incorporate race/ethnicity into the current model until the final bridged-race death counts for 2020 are released.

Conclusion

Overall, most non-COVID excess deaths among men occurred at working ages (71%), whereas those ages accounted for only 36% of non-COVID excess deaths among women. Undoubtedly, the oldest Americans suffered the brunt of COVID-19 mortality, but among working-age Americans, particularly men, there were substantial increases in the rates of death from other causes during 2020. The number of excess deaths at younger ages may seem small compared with COVID-19 mortality at the oldest ages, but early deaths have a disproportionate effect on overall life expectancy. The United States already had a midlife mortality crisis; the pandemic has deepened that crisis.

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Author affiliation: Center for Population and Health, Georgetown University, Washington, DC, United States (Dana A. Glei).

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