

HOW DO COVID-19 DEATH RATES COMPARE TO THE 15 LEADING CAUSES OF DEATH IN ARIZONA?



Arizona Public Health Association, February 4, 2021

Allan N. Williams, MPH, PhD
Retired, Minnesota Department of Health
Adjunct Assistant Professor, University of Minnesota School of Public Health

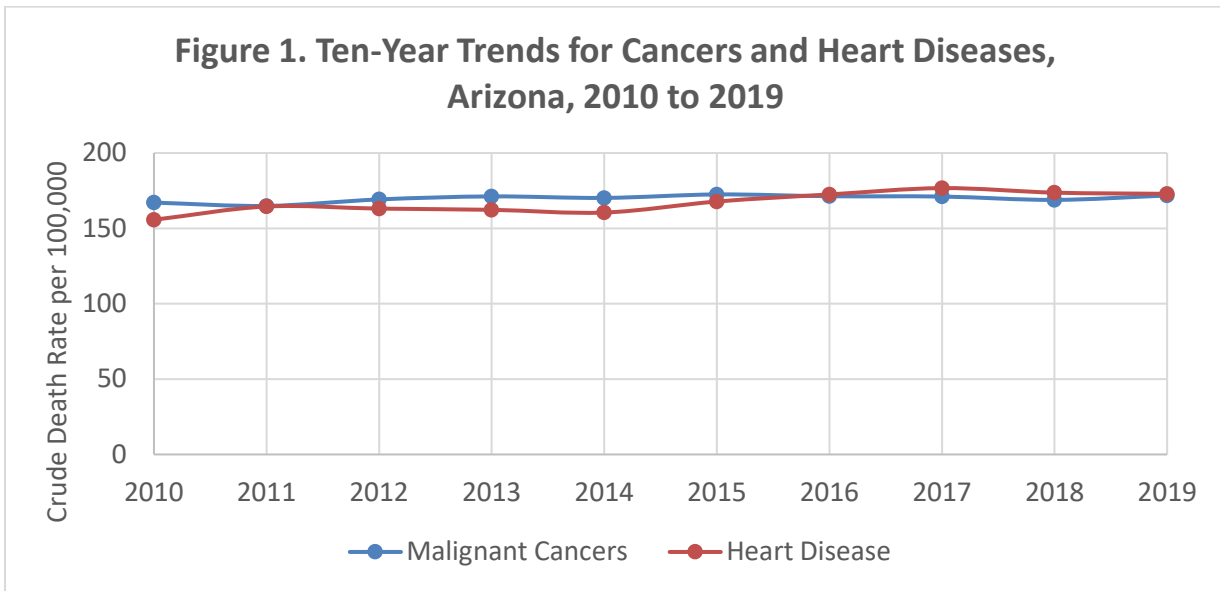
Background and Purpose:

Public health agencies and the media have done an admirable job of reporting daily updates on the numbers and rates of COVID-19 cases and deaths. However, these numbers are often missing useful context that may better inform the public as to how serious a health risk COVID-19 represents. To provide additional context, this analysis utilizes publicly available mortality data to compare rates of COVID-19 deaths to the usual 15 leading causes of death in Arizona.

Methods:

Two measures were used for the comparing causes of death: average daily deaths and the crude rate of deaths per 100,000. COVID-19 deaths were obtained from the ADHS COVID-19 [Data Dashboard](#) for the period 03/17/20 (date of the first reported death in Arizona) until 02/01/21. The average daily COVID-19 deaths were calculated by dividing the total number of deaths by the number of days over which those deaths had occurred (322 days). Population data for Arizona for 2019 are from estimates by the National Center for Health Statistics. The crude mortality rate was calculated as: total deaths/state population X 100,000.

Data for the 15 leading underlying causes of death were obtained from the [CDC Wonder Online Database](#). Detailed final 2020 mortality data are not yet available from CDC or ADHS. However, annual mortality rates over the past decade, particularly for heart diseases and cancers (all types combined) are relatively constant as shown in **Figure 1**. The 2019 data were therefore used to provide a reasonable estimate of the expected causes of death during 2020 in the absence of the COVID-19 pandemic. CDC Wonder data included 15 disease categories and corresponding ICD10 codes, total deaths for each category, the July 2019 estimate of the state population, and the crude death rate per 100,000.



Findings:

The Table below (Page 3) shows CDC Wonder data for the 15 most frequent underlying causes of death in Arizona during 2019, the corresponding ICD10 codes, number of deaths, population estimate, and the crude rate per 100,000 persons. Total deaths in 2019 were 60,236 (which differs very slightly from ADHS totals).

Figure 2 shows the average daily deaths from COVID-19 reported between 03/17/20 and 02/01/21 (322 days) compared to the 15 leading underlying causes of death during 2019 in Arizona. Since the date of the first reported COVID-19 death, there were 40.8 deaths per day on average, exceeding the average daily deaths from heart disease (34.3/day) and cancer (33.7/day) or any other cause.

As shown in **Figure 3**, the crude rate of COVID-19 deaths per 100,000 is the leading cause of death by this measure as well. Even if deaths that occurred only in 2020 (N~10,270 = 35.4 deaths/day) are included, COVID-19 remains at or near the top of the leading causes of death in Arizona.

National data shows a similar picture. As noted in the CBS *60 Minutes* broadcast of January 31, 2021, and recent local media, COVID-19 is the third leading cause of death currently in the U.S. Based on 2019 mortality data from CDC Wonder (data not shown), there was an average of 1,806 daily deaths from heart disease and 1,643 daily deaths from cancer (all types) in the U.S. Average daily COVID-19 deaths between March 1, 2020 and February 1, 2021 (338 days) were 1,306, thus becoming the third leading cause of death in the U.S.

UCD – 15 Leading Causes of Death in Arizona, 2019	Deaths	Population	Crude Rate
Diseases of heart (I00-I09,I11,I13,I20-I51)	12,587	7,278,717	172.9
Cancer (Malignant neoplasms) (C00-C97)	12,503	7,278,717	171.8
Accidents (unintentional injuries) (V01-X59,Y85-Y86)	4558	7,278,717	62.6
Chronic lower respiratory diseases (J40-J47)	3685	7,278,717	50.6
Alzheimer disease (G30)	3047	7,278,717	41.9
Cerebrovascular diseases (I60-I69)	2851	7,278,717	39.2
Diabetes mellitus (E10-E14)	2173	7,278,717	29.9
Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	1419	7,278,717	19.5
Chronic liver disease and cirrhosis (K70,K73-K74)	1217	7,278,717	16.7
Essential hypertension and hypertensive renal disease (I10,I12,I15)	1010	7,278,717	13.9
Influenza and pneumonia (J09-J18)	955	7,278,717	13.1
Parkinson disease (G20-G21)	807	7,278,717	11.1
Nephritis, nephrotic syndrome and nephrosis (N00-N07,N17-N19,N25-N27)	760	7,278,717	10.4
Nutritional deficiencies (E40-E64)	417	7,278,717	5.7
Assault (homicide) (*U01-*U02,X85-Y09,Y87.1)	414	7,278,717	5.7

Figure 2. Average Daily Deaths from COVID vs 15 Leading Causes, Arizona 2019

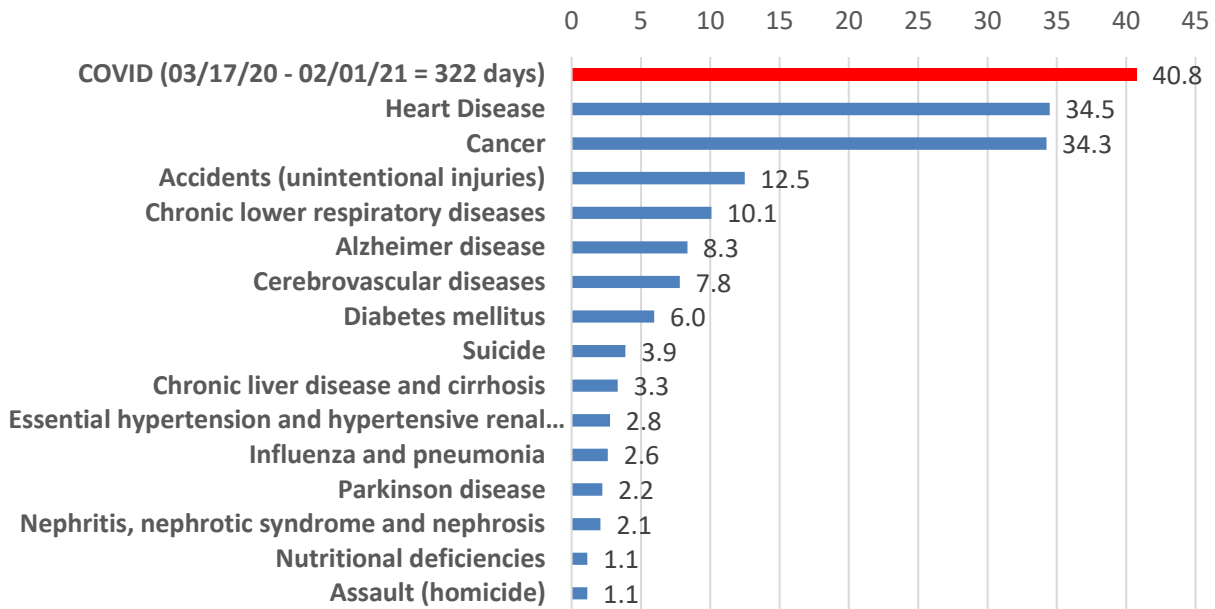
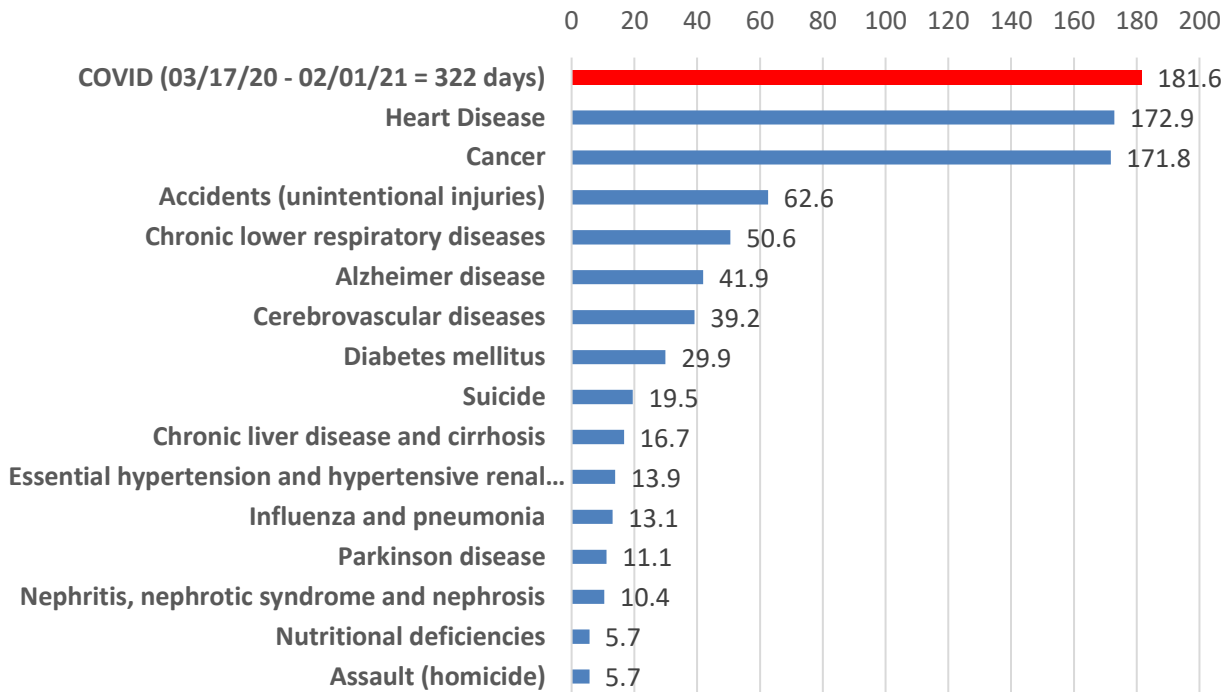


Figure 3. Death Rates per 100,000 for COVID-19 vs 15 Leading Causes of Death, Arizona



Discussion:

The available data indicate that *COVID-19 is currently the leading cause of death in Arizona and the third leading cause of death in the U.S.* The fact that COVID deaths are currently comparable in prevalence to our two long-standing major killers – heart disease and cancer – is a sobering statistic and represents a deadly failure to control this pandemic. Furthermore, the toll from COVID-19 is likely to be considerably higher than the currently reported numbers.

As previously noted in the January 24, 2021 AzPHA Report [2020 All-Cause Mortality Trends in Arizona During the COVID-19 Pandemic](#) and in recent media (*Arizona Republic*, Feb. 1, 2021 “Arizona Deaths Rose 25% in 2020”), preliminary 2020 mortality data show a significant increase (14,972 additional deaths) in overall deaths compared to 2019. While most of this increase is clearly attributable to COVID-19 deaths, the AzPHA mortality analysis indicated that some 3,444 of the excess deaths were not reported as COVID-19 deaths.

This is consistent with estimates indicating that [35% of COVID-19 deaths are unreported](#). It is also possible that [deferral of care for serious non-COVID-19](#) medical conditions or [reduced screenings](#) during the pandemic also account for a portion of the non-COVID-19 excess. While there is clearly room for optimism as vaccinations slowly ramp up and new vaccines are now imminent, there is at the same time growing concern about the rapid spread of more transmissible variants of the SARS-CoV-2 virus and whether [current vaccines will be less effective](#) against these variants. Unfortunately, COVID-19 will remain a significant cause of death well into 2021.

Join Us!

You can join us at on our [membership web link](#).

[Individual memberships](#) are only \$75/year w/ student memberships only \$25/year.

We also have various [Organizational Memberships](#)

www.azpha.org: [Arizona Public Health Policy – AZ Public Health Association](#)

