



AZPHA DATA BRIEF:

**DECLINES IN ARIZONA LIFE  
EXPECTANCY: 2020 V. 2019**

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**AZPHA**

Arizona Public Health Association

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## Purpose:

In December 2021, CDC announced that life expectancy in the US had declined by about 2 years in 2020 compared to 2019. This was the largest single year decrease in more than 75 years and reflects the excess deaths in 2020 directly or indirectly related to the Covid pandemic. Since Arizona had experienced the largest percent of excess deaths of all the states in both 2020 and 2021, the purpose of this analysis was to determine to what extent life expectancy has declined in Arizona in 2020.

## Methods:

This analysis used an abridged period life table approach to determine life expectancy in Arizona for the overall population, as well as by gender, race, and ethnicity for 2019 and 2020. An "abridged" life table uses five-year age groupings for deaths and populations (data that is readily available) when exact single year of age population data to 100+ is not readily available. A "period" life table, the most used type, is determined by applying today's mortality rates for each age or age category to a hypothetical birth cohort, usually set to 100,000.

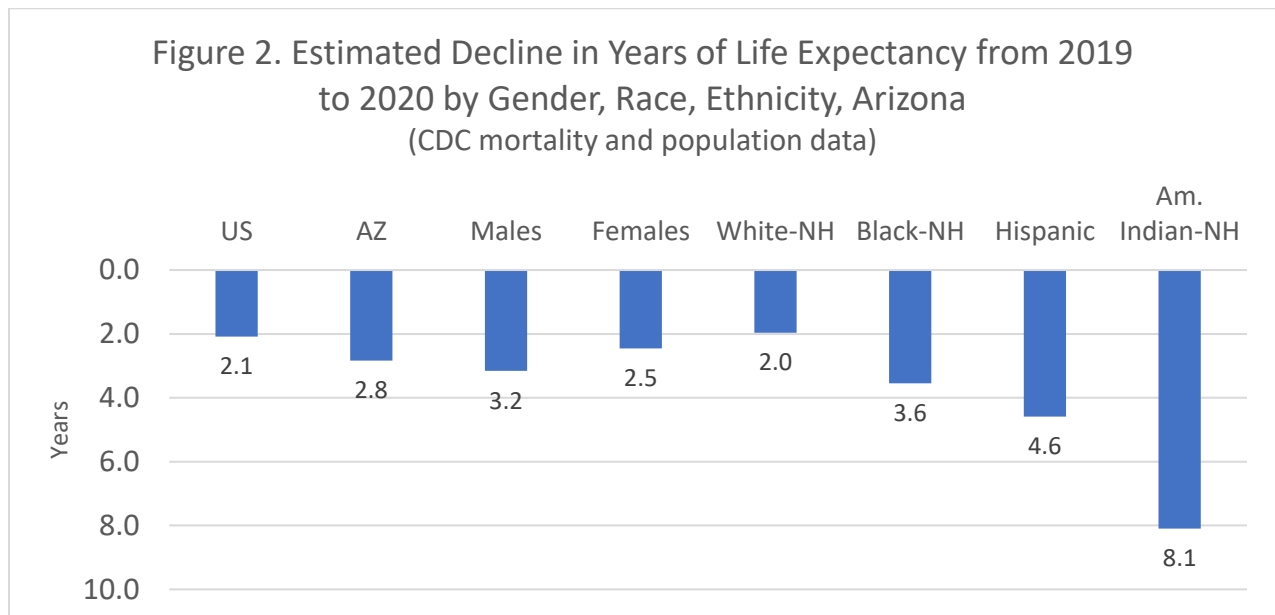
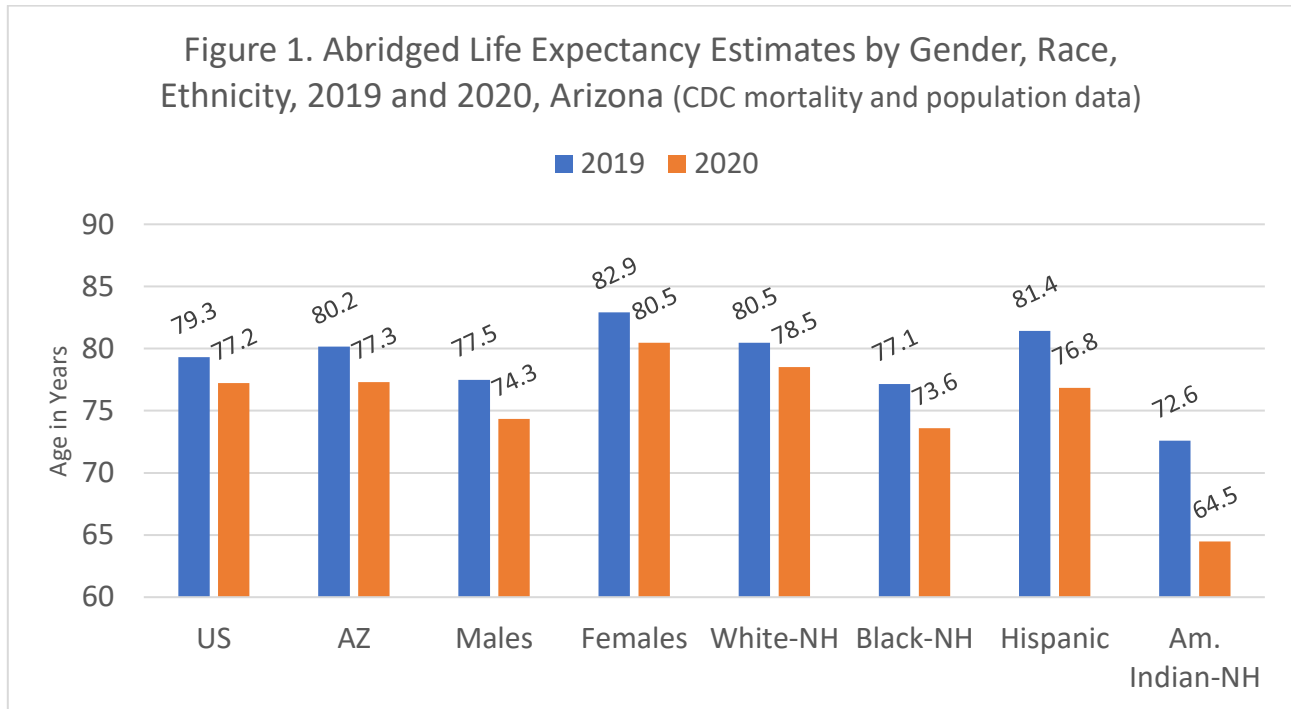
At each age interval, the average remaining years of life can be determined. Mortality rates do of course change slowly over time (generally declining, increasing life expectancy), but can change abruptly such as during world wars and pandemics. Life expectancy is a useful measure of trends in population health, showing what average life expectancy from birth or at any age category would be, based on current age-specific mortality rates.

Deaths and population data for 2019 and 2020 were obtained for five-year age intervals (<1, 1-4, 5-9, 10-14.....80-84, 85+) from the [CDC Wonder](#) database. It should be noted that the abridged life table method used here produces slightly different estimates than those published by the CDC for the 2019 state data ([Arias et al, 2022](#)) and the 2020 US data ([Murphy et al, 2021](#)) which utilized single-year deaths and populations out to 100+ years of age.

For example, the CDC analysis indicated a life expectancy of 78.8 years in the US in 2019 while an abridged analysis indicated a life expectancy of 79.3 years. Only the abridged life expectancies for the US are included in Figures 1 and 2 to allow comparison with the abridged life table data for Arizona. The life table calculations utilized a variety of publicly available Excel spreadsheets (e.g., from the [NJ Dept of Health](#) and from [Auger et al, 2014](#), all of which yielded virtually the same results.

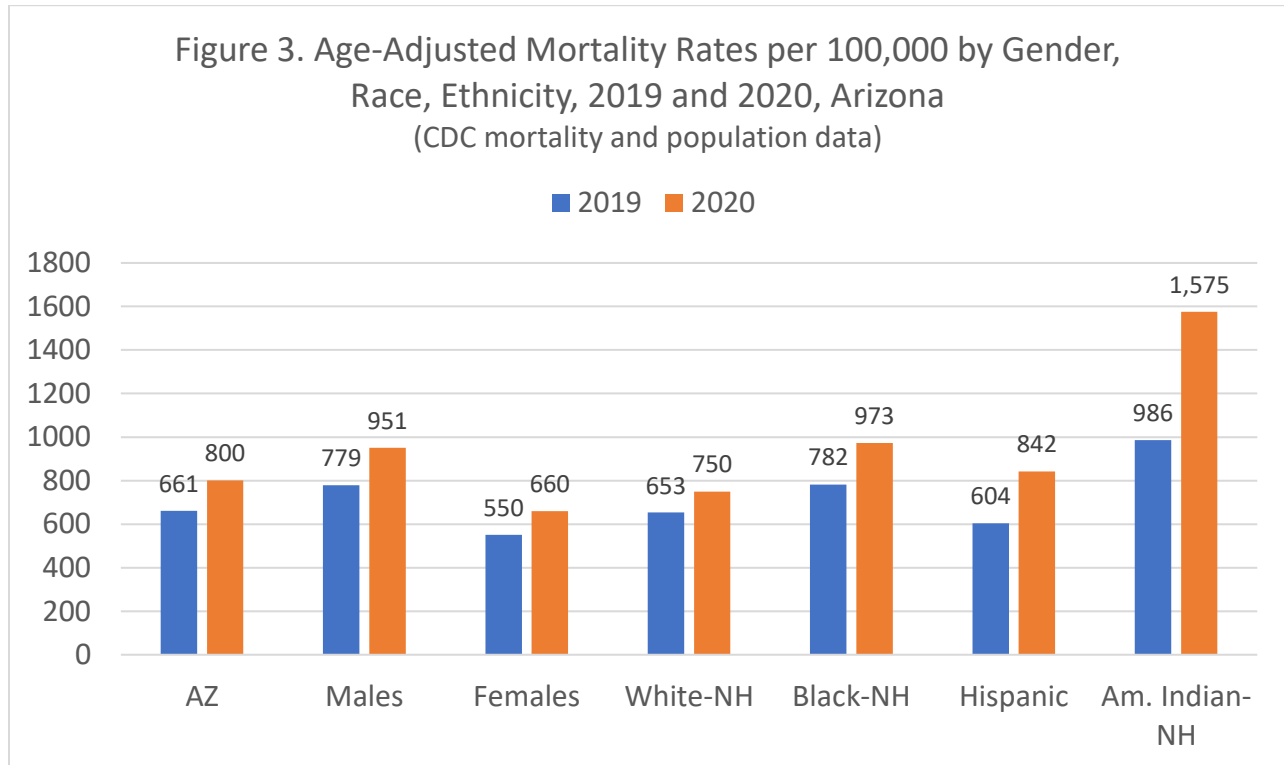
## Findings:

**Figure 1** shows the estimated average life expectancies from birth for 2019 and 2020 for the US and for Arizona overall, as well as by gender, race, and ethnicity in Arizona. Life expectancy varied greatly by gender, race, and ethnicity, as well as by year. As is well known, females had a greater life expectancy than males in both years, while non-Hispanic American Indians had the lowest life expectancy in both 2019 (72.6 years) and 2020 (64.5 years).



**Figure 2** (above) shows the decline in life expectancy in 2020 compared to 2019 for each of the demographic categories. The largest declines were in American Indians (8.1 years) and Hispanics (4.6 years). Males had a larger decline than females (3.2 years vs 2.5 years). **For the overall population, the decline in life expectancy in Arizona was 2.8 years, exceeding the US decline of 2.1 years.**

**Figure 3** shows the overall age-adjusted mortality rates for each demographic category and by year. Overall, there was 21.2% increase in the age-adjusted mortality rate in 2020 over 2019, exceeding the national increase of 16.8%. The largest percent increases were among American Indians (59.7%) and Hispanics (39.4%).



## Summary & Conclusions:

Earlier this year, CDC announced that 2020 life expectancy in the U.S. had the largest single year decrease since World War II. We set out to explore how Arizona compares with the U.S. overall with respect to the decrease in life expectancy in 2020 vs. 2019 given the results of our previous data briefs showing that Arizona: 1) [has the largest percent increase in all-cause mortality throughout the pandemic](#); 2) [is the only state in which COVID-19 has been the leading cause of death during the pandemic](#), and 3) that Arizona currently has the [2<sup>nd</sup> highest COVID-19 mortality rate](#) in the U.S. averaged over the pandemic

*Not surprisingly, we found that Arizona's decline in life expectancy during 2020 was significantly higher than the U.S. overall; 2.8 years in Arizona vs 2.1 years nationally. The decrease in life expectancy was not uniform across demographics, with American Indians experiencing a decrease in life expectancy of about eight years.*

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