Death Rate by Race, Place, and Age Distribution

Miriam Dombrowski & Steven Herrera Tenorio

Topic

- The visualizations illustrate: 1) all-cause mortality by state, and 2) age distribution by race in a few states of interest (in this case, California, Utah, and Florida). We selected these three states because we suspected they would tell interesting stories, and be of high contrast. We hypothesized this from the fact that Utah has a lower age of marriage, while Florida tends to be a retirement destination.
- We were interested in more complex ideas than our ability to find a complete data set allowed. So we came away from this with a greater understanding of the effort distribution of a project being weighted toward finding good data.

What the aggregate of academic literature suggests about mortality by race:

Note: We use these racial categories because they are the categories used by the CDC and Census.

Black vs. White Mortality

- Black Americans have the highest death rates of any of America's racial and ethnic groups, except at the oldest ages (which our guest speaker Casey presented as a well-known demographic question called the "Black-White Cross Over).
- The disadvantage for blacks appears for all the major causes of death.
- The disadvantage is greatest in deaths from HIV infection, for which the risk to blacks is over seven times the risk to white Americans.
- Some of this can be attributed to inequalities in economic status, education, and occupation. However, the racial differences in mortality persist even in studies that compare individuals with similar levels of income and education.

Indigenous vs. White Mortality

- Death rates for Indigenous peoples are similar to those of whites for most causes, expect for higher rates of Indigenous suicide, homicide, and cirrhosis of the liver.

Asian and Pacific Islander, and Hispanic vs. White Mortality

- Asian and Pacific Islanders and Hispanics have much lower mortality rates than would be expected from their social and economic status in the United States. Their advantage is especially apparent in the leading causes of death — heart disease and cancers.
- One prominent theory to explain this outcome, is the fact that both Asian and Hispanic populations include a higher proportion of recent immigrants than do either white non-Hispanic or black non-Hispanic populations. The literature observes that international immigrants tend to have better health trajectories than "native born" people. This health advantage generally persists over time, with minimal "unhealthy assimilation."

Why Doesn't Our Visualization Match The Literature:

All-Cause Mortality By State

- Our data on all-cause mortality is from the Center for Disease Control and Prevention (CDC). Data about health--like what we used to create our visualizations--has holes in it partly because of legal restrictions aimed at protecting individuals' privacy. Specifically, the restrictions applicable here are for small data values. When data is on only a few people, it becomes much easier to identify those

individuals. So for this data, wherever there are small values (which the CDC defines as falling below a certain ratio of the representative demographic population), the CDC deletes that data and substitutes in the word “suppressed.” This is only a partial explanation, because it only explains data holes for small data values.

- We have a few theories to more broadly account for data holes.
    - For Native peoples,
        - it could be that a large proportion of native peoples are living on reservation land, where there are fewer (sometimes no) medical facilities. This would require people living on reservation land to travel greater distances for medical treatment. This lack of access to emergency treatment might result in people dying far from a hospital, and this could account for fewer documented deaths. It could be possible that different groups within the Indigenous population have particular cultural rituals and practices around the treatment of the dead that prevent them from being documented by institutions of the US government.
        - or, it could be that the medical facilities that *are* on reservation land, are less likely to be connected to US Government data systems.
        - Another potential explanation for the lack of data on Native peoples, concerns whether the race of an individual was self-identified, or tagged by someone else, like a medical admin or staff. If medical staff were tasked with identifying the races of others, then there would be a high probability of mis-identification (despite the fact that these categories are oversimplified franken-amalgamations of distinct groups). In say, California, where there is a large and expanding population of Hispanics, a medical personnel might incorrectly identify a Native person as Hispanic. This theory, however, would not explain data gaps for Black (non-Hispanic) or Asian.
    - For the data holes around Black (non-Hispanic),
        - it could be that accurate and complete data capture is a function of the resources of the hospital. And we know that people of color have less access to high-resource medical facilities, and are more often served by hospitals that are understaffed.
    - For Hispanics, it is worth noting that the categories given to us do not allow Hispanics to identify as any of these other races, even though they could be labeled as that race by institutions and people in daily life and thus live the experience of that racial group. If an individual identifies as Hispanic, then they must go into the Hispanic (all race category). That might make the category look larger and other categories that this individual could fit into, look smaller. So this need to make each individual fit into one, and only one of these categories, changes the data in interesting ways.

<u>Age Distribution By Race in Select States (California, Utah, Florida)</u>

- Our data on age distribution is from IPUMS, so is collected by the census. We expect this data is more complete than the data from the CDC, however it is worth noting that the collection practices of Census have their limitations, and those limitations are unequally distributed across groups. Much Census data is either proactively offered by respondents, or collected by businesses of door-to-door personnel. This form of data collection incentivizes: residents with citizenship documentation; people with, not only addresses, but long-term addresses; and people interacting with select businesses on a regular basis. Ultimately, this data collection makes it more difficult to collect data on groups in low socioeconomic conditions (greater proportion people of color), and people without citizenship documents (greater proportion recent immigrants, which are greater proportion Hispanic).

Observations:

Age Distribution

	Florida	California	Utah
Black (NH)	Distribution seems left-skewed, with relatively uniform populations between ages 5-64. Max is at 25-29 (~5.3k).	Most of the data is concentrated in ages 15-64, with the most in the 25-29 age bracket (~387k). Distribution seems bimodal (peak at 25-29 and at 55-59).	Little data on older populations (75+). Most of the population is concentrated between ages 5-39, with the most in the 20-24 age bracket (~8k).
Asian (NH)	2nd smallest population, with a relatively normal distribution. Concentrated between ages 10-64, with the max at 40-44 (~96k). Relatively small older age populations (80+).	Concentrated data seems normally spread, mostly between ages 25-59, with the most in the 30-34 age bracket (~960k).	Larger population age brackets than Black populations. Concentrated between ages 15-49, with the most in the 25-29 age bracket (~22k).
Indigenous (NH)	Smallest population. Roughly uniform distribution between ages 5-79, with the max at 45-49 (~7k). Little data on older populations (85+).	Smallest population. Roughly uniform distribution between ages 05-79 and very little data past that in older ages. Distribution seems slightly bimodal too (peak at 30-34 and 55-64), the max being ~21k.	Smallest population. Roughly equal bracket sizes between ages 05-59, but little data on older populations (75+) and none in the oldest (85+). Max is in the 30-34 age bracket (~8k).
White (NH)	Largest population. Distribution seems right-skewed, potentially bimodal at the 25-29 and 60-64 age brackets, with the max at 60-64 (~1.81 million). Oldest population is relatively larger by a lot (~325k in 90-96 vs ~68k for the 2nd highest group).	Not the distribution with the highest max, but has a relatively larger older population than any other group by a lot (~356k in 90-96 vs ~81k for the 2nd highest group). Population seems bimodal at the 30-34 and 60-64 age brackets, but the max is at 60-64 (~2.28 million).	All age brackets are higher than any of the single age brackets for Black, Asian, & Indigenous populations. Concentrated in mostly younger ages: between ages 5-44, with the most in the 10-14 age bracket (~396k).
Hispanic (All Races)	2nd largest population of people, but considerably lower than the White population. Distribution seems normal, ranging in concentration between 5-59 age brackets. Max is at 35-39 (~845k).	Potentially the largest population of people, but close to White population. Only distribution that seems left-skewed, with the max at 10-14 (~2.78 million).	2nd largest population of people, but considerably lower than the White population. Concentrated in mostly younger ages: between ages 5-44, with the most in the 10-14 age bracket (~99k).

Connecting Crude Death Rates with Age Distribution

	Crude Death Rate Data with 3 State Comparisons
Black (NH)	In this group, crude death rates can be summarized from smallest to largest as Utah, Florida, & California (ranging ~0.0042 to ~0.0093).
Asian (NH)	In this group, crude death rates can be summarized from smallest to largest as Utah, Florida, & California (ranging ~0.0026 to ~0.0047).
Indigenous (NH)	In this group, crude death rates can be summarized from smallest to largest as Florida, Utah, & California (ranging ~0.0042 to ~0.0082).
White (NH)	In this group, crude death rates can be summarized from smallest to largest as Utah, California, & Florida (ranging ~0.0067 to ~0.0133).
Hispanic (All Races)	In this group, crude death rates can be summarized from smallest to largest as Utah, California, & Florida (ranging ~0.0023 to ~0.0049).

	Crude Death Rate Data with Age Distribution Comparisons Between States
Black (NH)	Utah had the relatively smallest Black population between the states, while Florida had the largest. All three states seem to have age distributions indicative of a growing population, while some could argue California's bimodal distribution could indicate stagnation. This could be related to California having higher crude death rates.
Asian (NH)	Utah and Florida had both relatively smaller Asian populations, while California stood out having the largest. All have similar normal distributions, with very similar maximums located near the 25-34 age brackets, where fertility conditions are usually most prominent. Asian populations had the lowest crude death rates than any group, but California still had the highest crude death rates for this group, approximately twice that of Utah.
Indigenous (NH)	The only case when Utah did not have the lowest crude death rate was for Indigenous people. Also, the ranges in crude death rates are very similar to Black people. Indigenous people have relatively uniform population distributions, usually centered at ages 30-49.
White (NH)	In this group, the relationship between age structure and death rates are most clearly evident. In age structures weighted toward younger ages, death rates are lowest, while in age structures weighted toward older ages, death rates are the highest. This suggests that causes of mortality are mostly the deterioration and biological failure that is a simple product of cell expiration over time (i.e. people die when they get old).
Hispanic (All Races)	California had the highest population out of three states, for all groups, but Florida had the highest crude death rate. Most of the distributions seemed left-skewed, suggesting this group has a considerably growing population. One note here: Hispanics had very low crude death rate ranges similar to Asians.

*Notably, the death rate for Black and Asian is highest in California, which also happens to be the state out of the three with the largest population of these groups. One theory to connect these observations is the idea that perhaps larger population correlate to a more distinct sense of community and group identity, and these communities are the sights of cultural preservations, where group differences are kept distinct. The result is, distinct group coming in contact with one another, social frontier constantly interacting, and conflict arising as a

result. The confrontation of social frontiers often results in the articulation of unnamed assumptions and social norms--invisible systems of oppression made visible. Great death rates could come from greater group conflict that come with fighting for the right to difference/group identity and simultaneous valuation.