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Human Demography of Survivorship Pre and Post 1950 According to Gender

Abstract

We strive to determine the survivorship rates of humans based on their gender as well as the time period they were alive as well as factors that might have influenced their lifespans. After collecting data from the Westview Cemetery in Farmville, VA., we concluded that humans lived longer in the post 1950 era. In addition, females in the pre 1950 era lived shorter than the male counterparts and females post 1950 lived longer than their male counterparts. This is predicted to be due to many factors such as disease, war, health, etc. (Kinsella, 1992).

Introduction

Survivorship is defined as the state of survival. Human survivorship rates constantly change based on various factors, including disease, healthcare, technology, and more. Studies have been done to try and determine what specific factors lead to varying demographics, including location, race, gender, etc. (Kinsella, 1992). Two important factors relevant to this study that affect survivorship are time period and gender. Historically, those born in previous generations have lived shorter lifespans than those born in the 20th century and on (Bongaarts, 2009). The human population is constantly rising, as it is expected to reach 9.2 billion people by 2050 (Bongaarts, 2009). As time goes on, more and more improvements in technology and expert knowledge are leading to an increase in overall lifespans. When it comes to gender, there is a fairly equal rate of overall survivorship between the two, even though certain time periods have been seen to create differing survivorship rates for each. For example, earlier periods in time are predicted to have high women mortality rates due to childbirth complications that were more common in earlier generations (Roser et al. 2013). Similarly, there have been predictions made to causes in lower men survivorship as well during certain time periods, including men being in war (Bongaarts, 2009). In addition, medical standards have changed over generations and led to higher survivorship rates over time (Helmuth, 2013).

In this study, we would like to compare survivorship rates of different genders in both the pre and post 1950 era and research factors that can contribute to the results. We hypothesize that the survivorship rate of humans before 1950 will be lower than those post 1950. This is because of factors such as disease outbreaks, lack of proper healthcare availability, etc. (Helmuth, 2013). When comparing gender survivorship, we hypothesize that men pre 1950 will have a shorter lifespan, while both genders will have similar life spans post 1950. I believe this because in the pre 1950 era, it was very common for men to be fighting in war, which led to high mortality rates (Congressional Research Service, 2020).

Methods

Data was collected from Westview Cemetery in Farmville, Virginia. Tombstones were examined in order to determine lifespans of four groups of individuals. Each group had 100 total samples. These groups were the independent variables and included males before 1950, females before 1950, males after 1950, and females after 1950. A line graph was created including all four of these groups in order to compare each. Survivorship rates, representing the dependent variable, were calculated by dividing up the ages at death into 10-year intervals (0-9, 10-19, 20-29, etc.). The number of deaths at each interval were divided by the total number of individuals to determine the survivorship rates. There was a t-test ran on four groups, males, females, pre 1950, and post 1950, in order to determine if there was a significant correlation. Lastly, all raw data representing lifespans collected from the tombstones was transformed into descriptive statistics to determine the mean and standard deviation of each. Bar graphs including error bars were then created using the *p* Value found from the t test and the means and standard deviations found from the descriptive statistics in order to compare the following groups: males, females, pre 1950, and post 1950.

Results

It is shown that both genders seemed to have survived longer post 1950. After 1950, females survived longer on average, with 16% living until 80-89 years old, while males appeared to have survived longer pre 1950, with 4% making it to the 80-89-year age interval. As a whole, figure 1 indicates that both genders lived longer lifespans in the post 1950 era than the pre 1950 era.

Figures 2-5 represent individual comparisons of four different pairs of data. Figure 2 shows that in the pre 1950 era, males lived a slightly longer lifespan than women. The *P* value for this data was 0.50, which does not give us significant evidence to conclude that these results did not happen by chance. Figure 3 represents the data comparison between males and females in the post 1950 era, showing that females had a higher lifespan on average. The reported *P* value was .07, meaning that at the .05 significance, there is not enough evidence to conclude that these results did not happen by chance. Figure 4 compares the mean lifespans of females in both time periods, with post 1950 being higher. The reported *P* value is less than .001, giving significant evidence to conclude that the results did not happen by chance. Figure 5 represents comparisons between male average lifespans in both time periods, showing that males lived longer on average in the post 1950 era. The reported *P* value is less than .001, giving significant evidence to assume that the results did not happen by chance.

The mean lifespan of women pre 1950 was 54.96 years, with a range of 93 years, ranging from 0 to 93. The mean lifespan of women post 1950 is 76.16 years, with a range of 91, ranging from 5 to 96. The mean lifespan of men pre 1950 was 57.23 years with a range of 99, from 0-99 years. The mean lifespan of post 1950 males is 71.56 years with a range of 100, from 1 to 101 years.

***Figure 1. Survivorship rates of humans based on gender and time period, including pre 1950 and post 1950.*** *People alive in the pre 1950 era lived shorter on average than those alive post 1950. Women pre 1950 had shorter survivorship rates than males pre 1950. Females post 1950 lived longer than men in this time period.*

*P=*.50

***Figure 2. Average lifespans of males and females in the pre 1950 era.*** *Males in this time period lived a slightly longer lifespan on average. The female mean lifespan was 54.96 and the male’s was 57.23.*

*P=*.07

***Figure 3. Average lifespans of males and females post 1950.*** *Females had a slightly longer lifespan after 1950. The mean of females was 76.16 years while the male’s was 71.56 years.*

*P<*.001

***Figure 4. Average lifespans of females pre and post 1950.*** *Females had a longer lifespan after 1950. The mean of females changed from 54.96 to 76.16 years.*

*P<*.001

***Figure 5. Average lifespans of males pre and post 1950.*** *Males had a longer lifespan after 1950. The mean of males went from 57.23 to 71.56 years.*

Discussion

There are many factors that affect survivorship, relating to both gender as well as time period. When looking at time periods, our hypothesis was supported because people seemed to live shorter lives in the pre 1950 era due to factors such as disease that did not yet have proper medical treatment at the time (Helmuth, 2013). This includes a very serious form of tuberculosis that was discovered in the 1800s, among many others that people back then easily contracted (Talbot et al., 2010).

The *P* values determined that there was significant evidence to conclude that there was a difference in survivorship pre and post 1950, while the evidence was not significant while comparing gender alone in each time period. This indicates that time period had a greater effect on survivorship than gender. When comparing gender, males had higher survivorship pre 1950, which was 2.27 years higher on average. Females had higher survivorship post 1950, being 4.6 years higher. The declining survivorship of women pre 1950 occurred mainly around the childbearing age, so it is predicted that childbirth had a high effect on women’s survivorship, as the death rate during childbirth was higher decades ago when technology and medical care was not as exceptional (Roser et al., 2013).

This data was taken from the Westview Cemetery in Farmville, VA alone, which therefore could cause some bias within the results. For example, collecting the data in only one area of the cemetery could have led to bias in the results. There is a possibility that a phenomenon could have occurred and caused a handful of deaths around the same time, which would skew our results if we were collecting data in a location where those a part of this phenomenon were buried. To counteract this bias, it would be beneficial to extract survivorship data from various locations spread out throughout the cemetery, throughout Virginia, and possibly other states as well. The conclusions made in this paper can be used to further research major causes of death in history and how that effects different demographics. Each factor influencing survivorship effects various demographics of people differently and determining the specifics can help prevent low survivorship among certain groups in the future.

Works Cited

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