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Length of Widowhood: According to the Grave

Charles Geisel

Widows have outlived their husbands in every society for thousands of years, but medical advances have almost doubled people's life-spans in the last century. This growing longevity could affect the spouse survivorship, as average life expectancy for females increases more quickly than for males. Lengths of survivorship for the last 150 years and tendencies of age groups for husbands and wives show that widows are adapting to this life-span. Demographic research at Wyuka Cemetery in Lincoln, Nebraska, provided data for a statistical test of changes in survivorship.

Life expectancy has increased dramatically in the Western world over the last century as a result of medical advances. As these advances increase longevity, what effects does it have on the survivorship of spouses? Demographic data collected at Wyuka Cemetery in Lincoln Nebraska will consider these problems.

METHODS OF DATA COLLECTION

The data employed here were collected at Wyuka Cemetery in Lincoln, Nebraska, in the fall of 1996. Two visits to three different sections of the cemetery (including both the oldest section and the newest section) yielded information on gender, year of birth and death, recorded by four archaeology students using a prescribed method of data collection. Two individuals were assumed to be married if they shared one grave stone or if two gravestones with the same surname appeared side by side. To reduce the possibility of recording a brother and sister pair as married, the collectors made certain each couple was old enough to be married and that the birth dates were approximately the same.

The validity of these observations is assumed to be great because a wide sample was taken throughout the cemetery. Such a diversified sample could represent individuals living in the area as far back as the late 1800s. The data collectors recorded only the year of death, and excluded the month and date. Although this reduced the precision of these data, not every gravestone contained a date and month. Data that appeared to be irregular was not entered into the database, e.g., if a possible spouse was married before he/she were a teenager.

Other variables were constructed from the collected data, e.g., the length of widowhood or how much longer a spouse outlived their partner, time periods, first partner to die, and age group of the first spouse to die. These new variables provided a way to determine if becoming a widow at a young age allowed women to outlive their husbands longer. Also, it allowed the analysis of whether widows have a longer widowhood than widowers.

Three time periods were created on the basis of the males' year of death. The first time period, between 1885-1930, will be called the *early period*, and represents a time in which non-family financial support to survivors would have been very limited. The next period, 1931-1960, includes the Great Depression and World War II and will be known as the *middle period*. At this time, Social Security was inaugurated. The period was between 1961-1996, during which time widow support agencies such as Widow-to-Widow began to appear. This latter time period will be referred to as the *late period*. The standard mean of age at death for males in the first period was 68.8, the second period was 71.5, and the third period was 77.2. Likewise, for females the first period was 68.2, the second was 79.3, and the third period was 77.1.

STATISTICAL ANALYSIS

Length of Widowhood Through Time

The question of whether spouse survivorship has changed over that past hundred years will be considered. Since social support for individuals has increased, there may be a relationship between this social support and how much longer a widow will live past her husband's death. The three time periods can be used to examine this relationship.

The analysis began with determining whether length of widowhood increased through the three time periods. The null hypothesis is that there is no difference in length of widowhood for the three periods; this was examined using a one-way ANOVA test. The dependent variable was the length of widowhood and the independent variable was time period. Boxplots (not presented here) indicated that widowhood length was normally distributed for each time period, so no transformations were performed. Skewness also was not a factor. The variance for the three stem-and-leaves were similar and each period was independent. Thus, ANOVA test results are likely reliable because all three assumptions were met.

A one-way analysis of variance showed a significant relationship between the three time periods and length of widowhood ($df = 2$, $f = 7.8$, and $p = 0.0005$). Widows living during 1960-1996 outlived their spouses much less than did the woman in either of the earlier periods (see Table 1 at end of article).

Widows lived longer than their husbands, especially during the middle period, when women outlived their husbands for more than ten years. A possible reason for this result is that husbands may have died during World War II. The average age of death for men was 71 years old, however, at which age most husbands were finished with their service in the military. In this middle time period, only sixteen percent of the male deaths occurred during 1941-1945 (the years the US took part in WW II). One case may have been related to the war; the male died at the age of 49. For men that died during the WW II time period (but not necessarily in the war), the length of widowhood for their wives was three years lower than when compared to those in the middle period as a whole. That is, the length dropped to 7.4 from 10.8 years.

Another reason why the widows from the middle period might have had the longest widowhood is that the average age expectancy could have been the most uneven during this time. The mean year of birth for males in the middle period was 1877. One life expectancy table showed men born in 1880 and reaching their twentieth birthday were expected to live to be 62.2 years old, while females' life expectancy was 62.8 years (US Department of Commerce 1970), a difference of only a sixth of a year, or two months. Wives were only expected to outlive their husbands by a half a year at the beginning of the marriage, so the mean length of widowhood in the middle period is not explained by life expectancy tables.

The 1880 census was used with the same results (US Census 1880). The report suggests that if an average male lived to 20 years old (the age at which marriage was possible), he could expect to live to the age of 59.9. A woman who was born in 1880 had an average life expectancy was 63.5, if she first lived to 20. Thus, a 20-year-old male in 1880 could expect to live 3.6 years less than his wife. These differences in life expectancy would suggest a smaller length of widowhood for the middle period than what was observed.

In the early time period widows outlived their husbands an average of 8.6 years. World War I, between 1914-1918, does not appear to have had an impact on the length of widowhood in the first time period. Fourteen men in this sample died during the years of WWI; only one of these (age 37 years) was at all likely to be in the armed services (the others were much older). It should be considered that casualties of war could have been

placed in a national cemetery like Arlington National Cemetery (Hinkel 1970). Arlington became a national cemetery in 1864, much earlier than WWI. Over 5,000 servicemen serving in WWI were brought to the cemetery in 1922. Many soldiers were young and not married.

The mean year early period males were born was 1847. The life expectancy for males that reached 20 years old in 1850 was 60.1, and for females it was 60.2. The expected age at death are essentially identical, and one might assume length of widowhood would be short. However, widow outlived their husbands for more than eight years in this period.

It was assumed that victims of Vietnam War and Desert Storm and their spouses for the late period were not buried at Wyuka Cemetery. The mean birth year for men who died in the late period was 1896. The life expectancy for this period for men of 20 years old was 61.2, and females' average life expectancy was only 62.8. The life expectancy discrepancy is much higher for this period, but the length of widowhood is shorter. No statistical test was conducted, but there appears to be a negative correlation between life expectancy and length of widowhood. The larger the expected age discrepancy for people over twenty, the shorter the length of widowhood.

Survivorship of widows dropped dramatically after 1960, and reached the smallest margin in the last thirty years. The average life expectancy does not increase for men or woman during the late period, when compared to the two other time periods. Thus, life expectancy is not the mechanism causing this decline in survivorship during the last 35 years. Also, it appears that the major US wars did not influence the outcome of length of widowhood among this sample population.

First Partner to Die

The first partner to die in the marriage should be the individual that was the oldest, because average life expectancy for males and females is not different enough to cause a different outcome. One would expect males to die first, since they are usually older than their wives. In cases where the couple were the same age, the male considered here has a better chance to die first because his life expectancy is shorter. The null hypothesis is that the person to die first in the marriage is not older than his/her partner. An analysis of variance was performed, and significant results were found ($Df = 1$, $f\text{-value} = 15.32$, and $p = .001$; Table 2). The null hypothesis should be rejected. The data show men are older than their spouses 63 percent of the time out of 187 marriages, which indicates why most women outlive their husbands.

When husbands are older than their wives, the average difference in age is four years; when wives are older, there is a smaller difference of only a year and a half.

When the life expectancy discrepancy between males and females and how much older the partner is compared to the other are added together, one should be able to predict the length of widowhood. Male life expectancy at the age of 20 in the United States between 1900-1925 was 62.19; females were expected to live to 63.77 years. The males born during these 25 years were used to get the predicted expected mean length of widowhood for that time period, using the method above. The new results indicated an expected mean of 3.76 years of widowhood, while the original mean was only 2.45. It appears that life expectancy and how much older one partner is than the other are not the only two variables which explain how much longer a wife will outlive her husband.

Figure 1 (end of article) displays the mean of how long a widow or widower will outlive their spouse when they die last. There were six cases where the husband and wife died in the same year. Since the data do not indicate which one died first, those cases were removed from the study. The mean number of years women live past their husbands was 16.4, and men live only 10.5 years longer when their wives died first, a difference of 6.1 years. The outliers were from particular spouses living much longer than their partner. These cases are reliable and point out both that there were more widows in the last hundred years and that these widows lived longer than their husbands.

A stem-and-leaf diagram shows that five spouses died in the first year. However, in the second year of widow(er)hood 13 males had died, and only 17 females died. The numbers jump to 57 males and 58 females after nine years. The numbers of deaths rise equally for the first ten years, but the numbers for males drop rapidly after that point. Seventeen years after the first partner died, only 14 (13.3%) men were still alive, while 77 (42.5%) widows lived past that juncture. Widows have a 29.2 percent chance of living longer than the widowers, once seventeen years has passed since their spouses died. The outliers for the female dying first indicate that two men lived for 34 years after their wives. Fourteen widows outlived their husbands by 34 years, with the longest-living widow surviving 53 years after her husband.

Men die first in the marriage because they are older 63 percent of the time. When the women die first, they are older than their husbands. Males who die first pass away at different ages than females who die first, according to the analysis of variance test. The mean age of the older

partner and the average life expectancy for those couples show why widows live longer than widowers.

Age Groups

Widows could possibly outlive their husbands longer because when males die first, they may die at an earlier age. To examine this idea, age group categories were assigned according to the age category of the first partner to die. The age groups are used to determine whether there was a relationship between at what age males died and at what age females died. The groups are not indicative of time period, but rather the age of death. The age groups defined here are as follows: 1=32-45, 2=46-60, 3=61-75, 4=76-90 and 5=90-105.

Figure 2 (end of article) displays the mean age group for the first partner to die. It does not show that males die at an earlier age than females. The mean age for females who die first (2.91) is a few hundredths of a point lower than males who die first (2.97). No women died first after the fourth age group, which indicates that husbands preceded them in death. The average age for the first person to die in the sample for both males and females was about 60. The mean age for a couple to die in the same year was approximately 70. Bowling (1989) reports that widowers over the age of 75 will pass away within five months of their spouse's death.

A chi-square test was performed with the null hypothesis stating that there is no difference in male and female deaths with increasing age. The results show that the null hypothesis should not be rejected, (chi-square = 5.29, df = 4, probability = .26; Table 3). The death rate by age is statistically indistinguishable for men and women. (The six cases in which the couple died in the same year were not utilized here, because it created too many poorly behaved cells with less than the expected frequency.)

Each age group shows that the widows have a longer life span after their spouses' death than do widowers. The negative numbers on Figure 3 represent the widowers, and the positive figures represent the widows. In every category except the first one the median falls above the positive mark. The median values shows which sex experienced the most death within a specific age group. For example, more women died between the age of 32-45 than men. The mean for the length of widowhood for all cases is largest for the second category. The first and third categories have similar lengths of widowhood. When individuals die between age 32-45, they outlive their partner only 6.3 years. This implies that younger individuals are less prepared for losing a spouse. It may be related to having children as dependents. Women are

more likely to have fewer dependents and a better job after the age of 52 (Lopata 1973). It was expected that the last two age groups would have a shorter widowhood, as they are much older. It is interesting to note that, when the man dies first and is over 90, the widow lives 3.4 years longer after his death. The mean could be related to the woman being much younger than the man; however, the number of cases (five) was small. In one of those cases the wife died in the same year. Two other spouses died two years later after their husbands died at 90+ years. The mean is slightly skewed to the right because one widow lived eight years past her husband in the last age group. This widow was only one year younger than her husband, and died at age 99. Two widows were twelve years younger, but still died either in the same year or two years later. Older age after a woman's husband dies does lead to shorter widowhood.

The age group variable indicates many expected outcomes. A chi-square test shows no relationship between the first-to-die partner in each age group and sex (Table 3). It does show a weak relationship between length of widowhood and age group of the first one to die. The categories do not explain why widowhood decreases with age. It was assumed that length of widowhood does get smaller because the ages get higher.

DISCUSSION

Flaws in the data used were noted during analysis. One problem was the failure to record whether the husband or wife died during a major war. Loss of the spouse's life in battle may have led to a longer widow(er)hood than expected. Another variable that was neglected was whether the married couple had any children. These data could have explained why some length of widowhood were shorter than others. Dependents need financial, emotional, and social support. This stress on the surviving spouse can result in mental and physical health problems. At the same time, children could provide some of these supports to their parent. The individual who died first should have been indicated when the couple died in the same year.

The research and analysis provided a detailed look at the length of widow(er)hood as it manifests at Wyuka Cemetery. The surprising results indicated that widows outlived their husbands longer in the past. Individuals that were born in the late nineteenth century and died in the late twentieth century had relatively short widowhoods. The reason this is true is not clear; it is not completely explained by life expectancy charts, which exhibit an increasing gap between the life expectancy of

men and women. This problem might be examined in future research.

The last area to be analyzed showed no relationship between the first partner to die and in which age group they died, i.e., either men or women were likely to die first. Other variables must determine why widows outlive their husbands in every age group. There was a significant relationship between length of widowhood by age groups. The general pattern shows that the older the first partner to die, the shorter the length of widow(er)hood will be. The pattern represents all the cases in the study, and age group of the first to die was not broken up into time periods.

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APPENDIX

Table 1.

Dependent Variable Length of Widowhood
Independent Variable Time Periods

Analysis of Variance					
Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	4015.2440	2007.6220	7.8122	.0005
Within Groups	290	74525.8686	256.9858		
Total	292	78541.1126			

Group	Count	Mean Length of Widowhood	Standard Deviation	Standard Error	95 Pct Conf Int for Mean
1885-1930	80	8.6625	18.2964	2.0456	4.5908 To 12.7342
1931-1960	76	10.8026	16.5304	1.8962	7.0253 To 14.5800
1961-1996	137	2.4526	14.2421	1.2168	.0463 To 4.8588
Total	293	6.3140	16.4005	.9581	4.4283 To 8.1997

Figure 1.

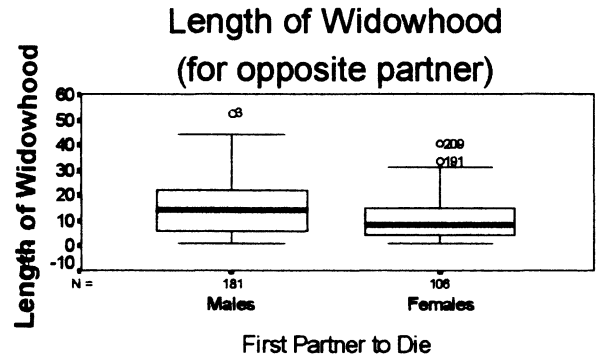


Table 2.

Dependent Variable Age Difference
Independent Variable First Partner to Die

Analysis of Variance					
Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	411.4443	411.4443	15.3174	.0001
Within Groups	285	7655.4686	26.8613		
Total	286	8066.9129			

Group	Count	Mean of Age Difference	Standard Deviation	Standard Error	95 Pct Conf Int for Mean
Male Born Before Female	181	3.9337	4.9817	.3703	3.2030 To 4.6644
Female Born Before Male	106	1.4528	5.5104	.5352	-.3916 To 2.5141
Total	287	3.0174	5.3109	.3135	2.4004 To 3.6345

Figure 2.

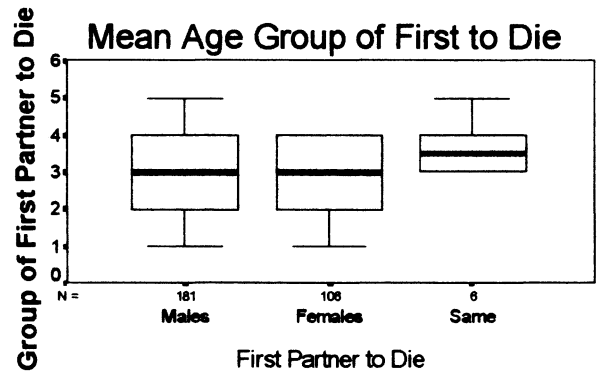


Table 3.

First Partner to Die by Age Group of First Partner to Die

FASTDEAD		Age Group					Total
		1	2	3	4	5	
Males	Count	9	42	79	47	4	181
	Row Pct	5.0%	23.2%	43.6%	26.0%	2.2%	63.1%
	Col Pct	47.4%	66.7%	64.8%	59.5%	100.0%	
	Tot Pct	3.1%	14.6%	27.5%	16.4%	1.4%	
	Std Res	-.9	.4	.2	-.4	.9	
Females	Count	10	21	43	32	0	106
	Row Pct	9.4%	19.8%	40.6%	30.2%	.0%	36.9%
	Col Pct	52.6%	33.3%	35.2%	40.5%	.0%	
	Tot Pct	3.5%	7.3%	15.0%	11.1%	.0%	
	Std Res	1.1	-.5	-.3	.5	-1.2	
Column Total		19	63	122	79	4	287
Column Total		6.6%	22.0%	42.5%	27.5%	1.4%	100.0%

Chi-Square	Value	DF	Significance
Pearson	5.28532	4	.25925

Minimum Expected Frequency = 1.477
Cells with Expected Frequency < 5 = 2 of 10 (20.0%)

Figure 3.

