Average Age of Death between Marital Status (For Year 2015)

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Introduction

The question we decided to research was if there was an effect of average age of death based upon the marital status of an individual in the US. The martial statuses we will be looking at are Divorced and Married. The value of this question is that if we can determine if this has an effect, there could be influential data in the insurance realm, and probably cause research in to areas of why this happens to be.

Literature Review

A study was conducted by Dustin C. Brown about Life Expectancy Differentials by Marital Status, Individuals' Own Education, and Spousal Education in the United States. (http://paa2014.princeton.edu/papers/142823) This was interesting, but did not exactly match the study that we are conducting. He used life expectancy as his research and we are using average age of death. His conclusion was that there is a difference between many groups for life expectancy at age 55.

Methods

We gathered our data from Kaggle.com. (Cite: https://www.kaggle.com/cdc/mortality/home) From the documentation for this data set, it states that "[a]ll data comes from the CDC's National Vital Statistics Systems, with the exception of the Icd10Code, which are sourced from the World Health Organization." We choose to go with a Normal-Normal-Inverse-Gamma prior distribution. This is because we feel that deaths will be normally spread out around the center of the data. We went with an uninformative prior of N(0, 10^2) and IG(0.01, 0.01). We felt that this was appropriate given the vast amount of data we had.

Exploratory Data Analysis

Included in the following section is a summary of the data, as well as density distributions of the data. The first chart that will be shown is a boxplot. We are able to include a boxplot in this report because the extreme outliers were removed, and the chart looks normal and is easier to understand.

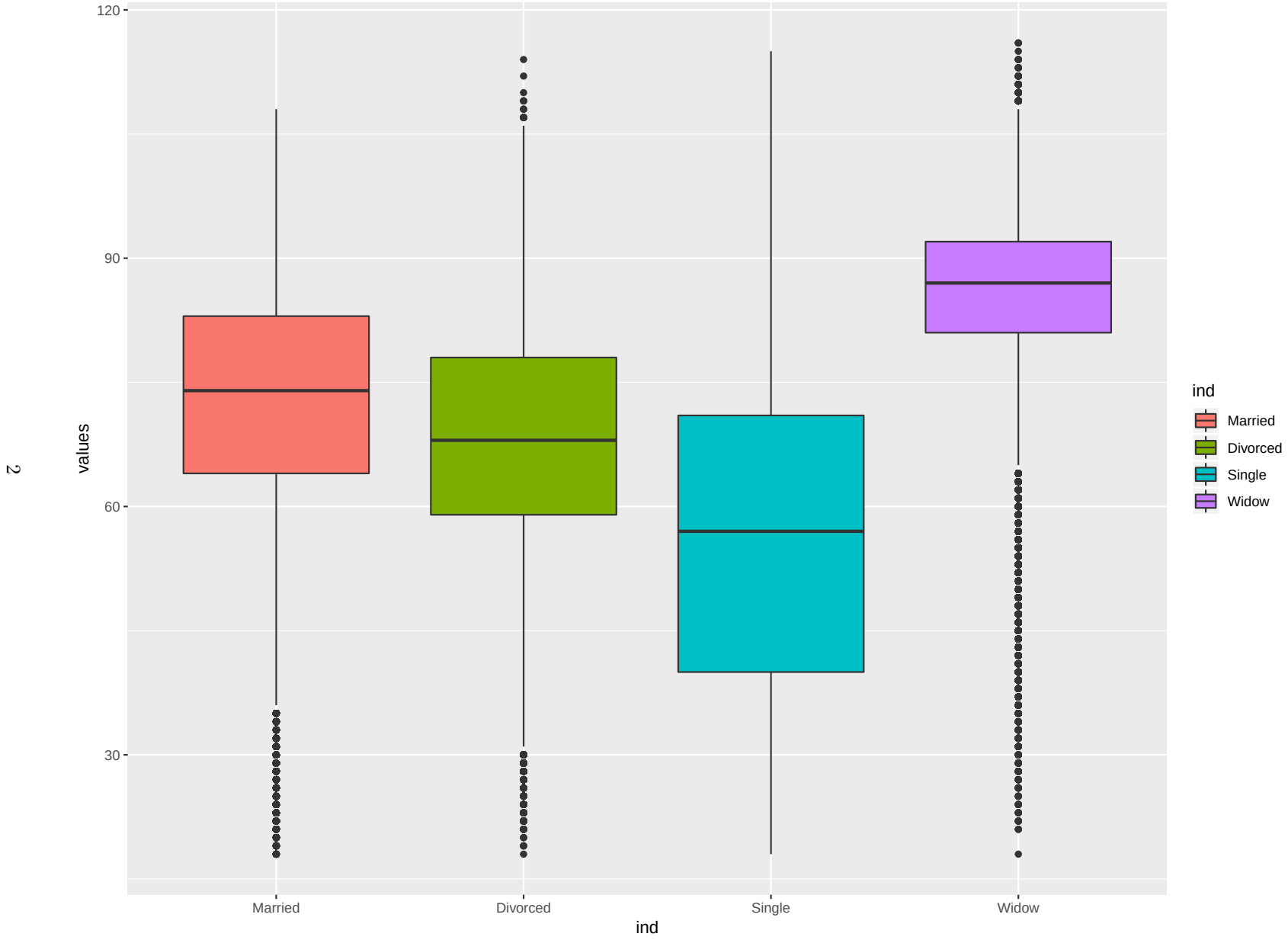

Figure 1: Boxplot

Shown in the table below, are the summary statistics for each of the groups we were testing.

Table 1: Summary Statistics (age of death)

	mean	sd	median	min	max	n
Married	72.13459	13.741310	74	18	108	1002469
Divorced	68.25280	13.685330	68	18	114	422284
Single	56.09009	20.718660	57	18	115	316921
Widow	85.35779	9.619899	87	18	116	921989

The mean, median and standard deviation for the groups are shown. The mean and the median for each group of people are almost the same for each group.

Shown on the next page are several density distribution charts. This helped us determine which of the two groups to compare.

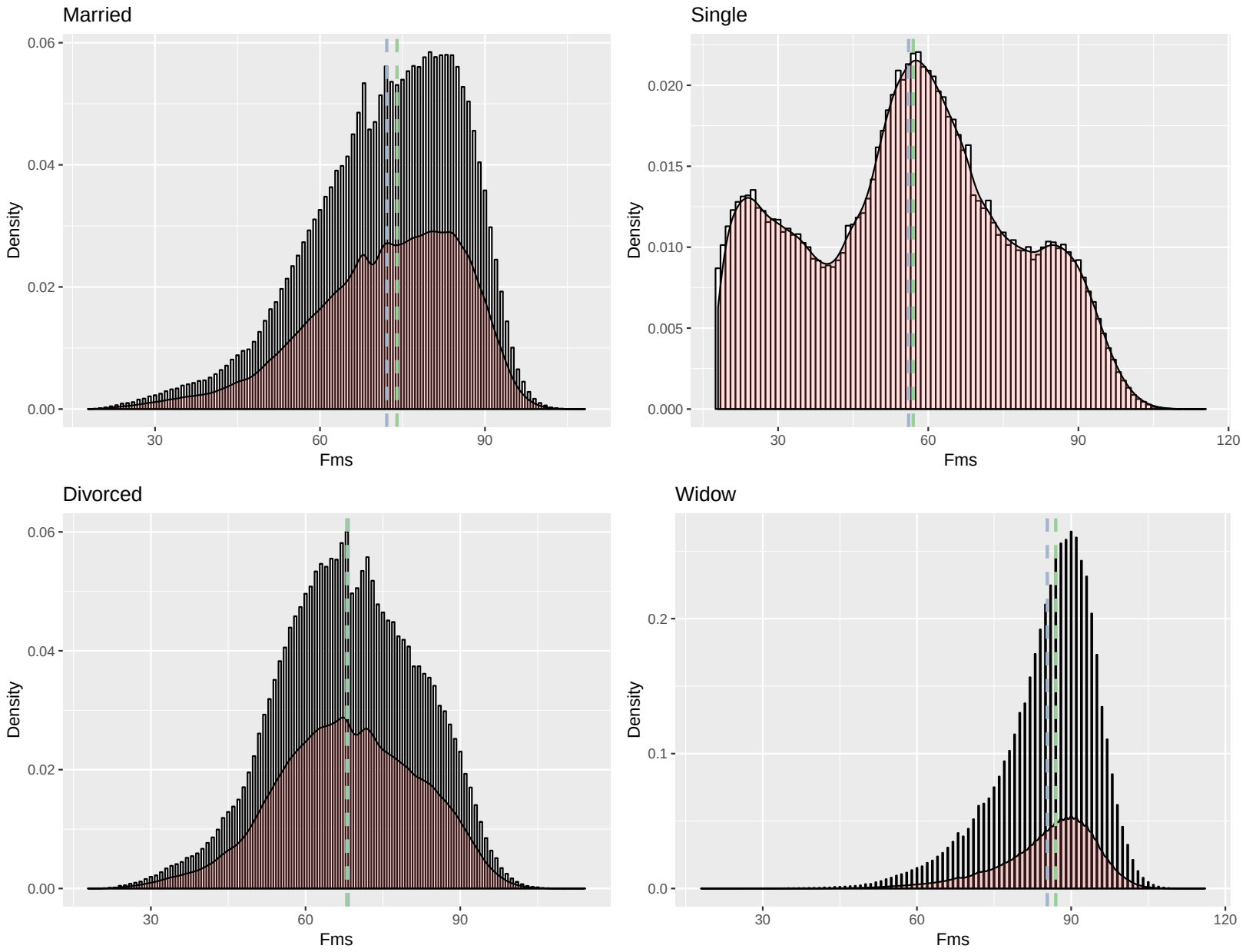

Figure 2: Density Plots

Results