

1. How many of these bonds were approved by voters, and how many were defeated? Are there any differences in the rates of approved bonds across the four different government types? Calculate the appropriate descriptive statistics to answer these questions.

7210 bonds were approved by voters and 1638 were defeated. The ratios of approved bonds to defeated bonds across the four government types are as follows: 1547:220 for city bonds (87.55% approved), 207:43 for county bonds (82.8% approved), 3282:1249 for ISD bonds (72.32% approved), and 2174:126 for WD bonds (94.52% approved). The rate of bonds being approved is highest for WD bonds and lowest for ISD bonds.

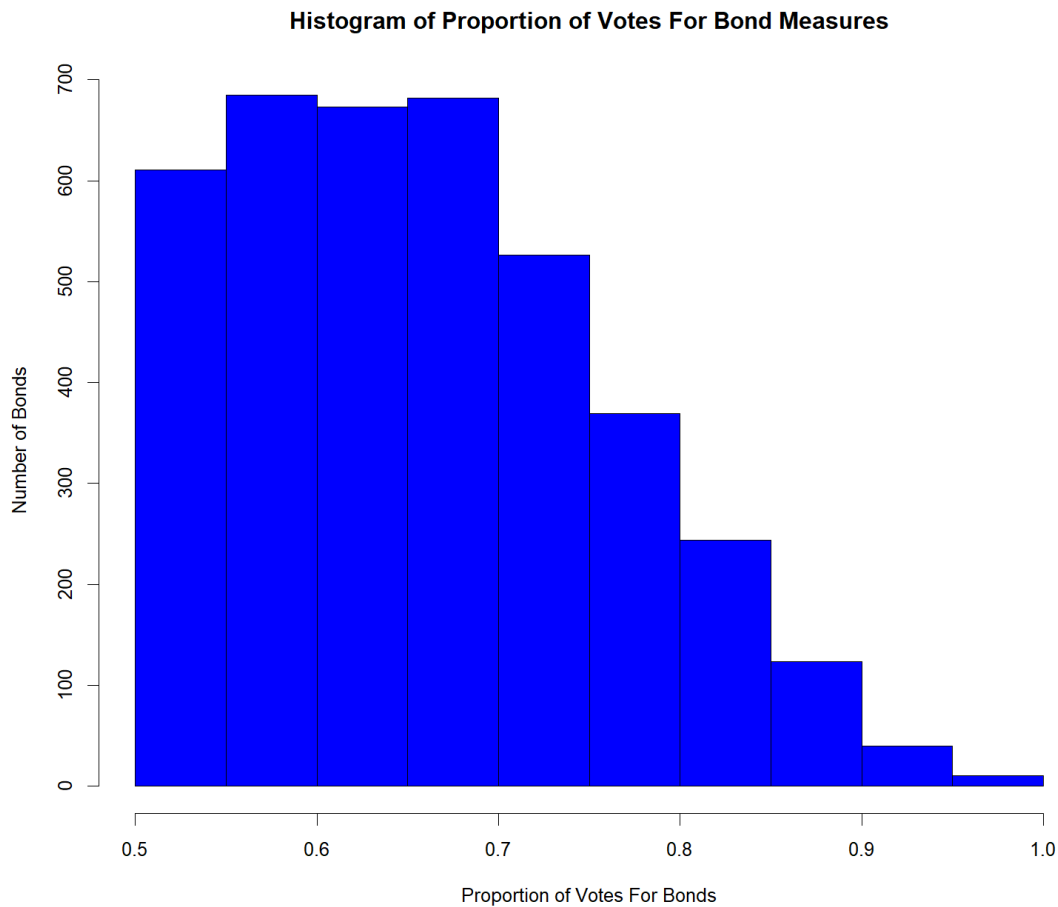
2. Some of these bonds were on the ballot during presidential elections and therefore had very high voter turnout. Calculate a new variable in the dataframe called "Votes\_Total" that is the sum of the votes "for" and "against" the bond measure. When and where did the bond measure with the highest voter turnout occur? What was it for?

The bond measure with the highest voter turnout occurred in Harris County on 11/8/22. The purpose of this bond was for road utilities.

3. Let's look at the margins by which the carried bonds were approved, ignoring those with very low voter turnout. Create a subset of this dataset that contains the bond measures that were approved and had at least 100 total votes. Next, create a new variable within the subset dataframe that gives the percentage of total votes that were for the bond measure and make a graph of the distribution of this new variable. Describe its distribution with the appropriate statistics.

The histogram constructed comparing the number of bonds approved for the proportion of votes for said bonds is skewed to the right. There are no unusual features. The center is between the proportions of 0.65-0.7. The spread is from 0.5 to 1.

The graph constructed is attached below:



4. Is the margin a bond was approved by related to its cost? Use your subset from #3 to create a graph to display this relationship. Then, answer this question, citing the appropriate descriptive statistic.

There appears to be a weak inverse correlation between the cost of a bond and the margin it was approved by. As we can see from the graph, the bonds with higher costs tend to have smaller margins of approval while the bonds with lower costs tend to have larger margins of approval.

The graph constructed is attached below:

Bond Voting Margins vs Bond Costs

