6-SP.2,5d Electoral College

Alignments to Content Standards: 6.SP.A.2 6.SP.B.5.d

Task

Unlike many elections for public office where a person is elected strictly based on the results of a popular vote (i.e., the candidate who earns the most votes in the election wins), in the United States, the election for President of the United States is determined by a process called the Electoral College. According to the National Archives, the process was established in the United States Constitution "as a compromise between election of the President by a vote in Congress and election of the President by a popular vote of qualified citizens." (*http://www.archives.gov/federal-register/electoral-college/about.html* accessed September 4, 2012).

Each state receives an allocation of electoral votes in the process, and this allocation is determined by the number of members in the state's delegation to the US Congress. This number is the sum of the number of US Senators that represent the state (always 2, per the Constitution) and the number of Representatives that represent the state in the US House of Representatives (a number that is directly related to the state's population of qualified citizens as determined by the US Census). Therefore the larger a state's population of qualified citizens, the more electoral votes it has. Note: the District of Columbia (which is not a state) is granted 3 electoral votes in the process through the 23rd Amendment to the Constitution.

The following table shows the allocation of electoral votes for each state and the District of Columbia for the 2012, 2016, and 2020 presidential elections. (*http://www.archives.gov/federal-register/electoral-college/allocation.html* accessed September 4, 2012).

State	Electoral Votes	State	Electoral Votes	State	Electoral Votes
Alabama	9	Kentucky	8	North Dakota	3
Alaska	3	Louisiana	8	Ohio	18
Arizona	11	Maine	4	Oklahoma	7
Arkansas	6	Maryland	10	Oregon	7
California	55	Massachusetts	11	Pennsylvania	20
Colorado	9	Michigan	16	Rhode Island	4
Connecticut	7	Minnesota	10	South Carolina	9
Delaware	3	Mississippi	6	South Dakota	3
District of Columbia	3	Missouri	10	Tennessee	11
Florida	29	Montana	3	Texas	38
Georgia	16	Nebraska	5	Utah	6
Hawaii	4	Nevada	6	Vermont	3
Idaho	4	New Hampshire	4	Virginia	13
Illinois	20	New Jersey	14	Washington	12
Indiana	11	New Mexico	5	West Virginia	5
Iowa	6	New York	29	Wisconsin	10
Kansas	6	North Carolina	15	Wyoming	3

a. Which state has the most electoral votes? How many votes does it have?

b. Based on the given information, which state has the second highest population of qualified citizens?

c. Here is a dotplot of the distribution.

Electoral Votes
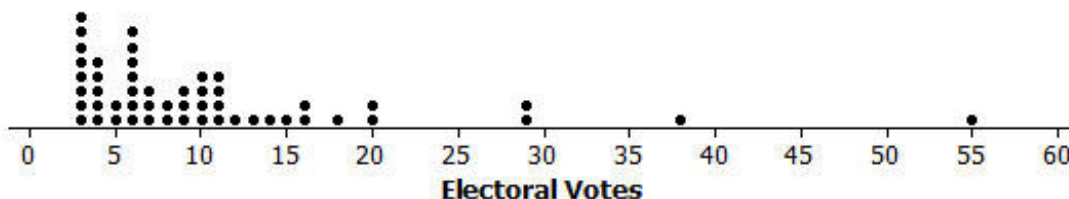
i. What is the shape of this distribution: skewed left, symmetric, or skewed right?

ii. Imagine that someone you are speaking with is unfamiliar with these shape terms. Describe clearly and in the context of this data set what the shape description you have chosen means in terms of the distribution.

d. Does the dotplot lead you to think that any states are outliers in terms of their number of electoral votes? Explain your reasoning, and if you do believe that there are outlier values, identify the corresponding states.

e. What measure of center (mean or median) would you recommend for describing this data set? Why did you choose this measure?

f. Determine the value of the median for this data set (electoral votes).

IM Commentary

In addition to providing a task that relates to other disciplines (history, civics, current events, etc.), this task is intended to demonstrate that a graph can summarize a distribution as well as provide useful information about specific observations. With the

table provided, the graph and values have context. The purpose of this task is to help students understand that a distribution can be described in terms of shape and center, and also to provide practice in selecting and calculating measures of center.

This task was designed so that it does not require the use of technology. If students have access to technology, you can also consider having students calculate the value of the mean and then comparing the values of the mean and the median for this data set. You could then facilitate a discussion of the effect of outliers on the value of the mean, which would support the choice of the median to describe the center for this data set.

Edit this solution

Solution

a. 55 is the maximum value in the distribution, and that is California's value.

b. As explained in the introduction, the larger a state's population of qualified citizens, the more electoral votes it has. Thus, the second highest number of electoral votes would be associated with the state with the second highest number of qualified citizens. 38 is the second highest value in the distribution, and that is the electoral vote count for Texas.

 c. i. This distribution is skewed right.

 ii. Said another way, most of the states have a small number of electoral votes (nearly 2/3 of the states have between 3 and 10 votes) while a very few states have a large number of electoral votes (for example, only 4 states have more than 20 votes; 1 state has 38, 1 state has 55).

d. Students should explain their choices carefully. California at 55 electoral votes and Texas at 38 votes should be listed as outliers based on the visible gaps in the dotplot and/or based on a numerical argument that their values are very far away from the cluster of the other observations. Many students will also say that New York and Florida are outliers, because of the gap of 9 electoral votes between these observations and the "3 to 20" votes cluster.

e. Because the data distribution is skewed to the right and there are outliers, the median would be a better choice to describe center for this data set.

f. Median = 8. Since there are 51 observations, the median would be the 26th

observation when the observations are arranged in order from smallest to largest. Since the data are not presented in ordered form, students should NOT simply pick the 26th observation in the list (Missouri = 10). Note: particularly if the median is computed without the assistance of software or calculator, students may realize that they need only count up to (or down to) the 26th ordered observation and that they do not need to order the entire dataset.