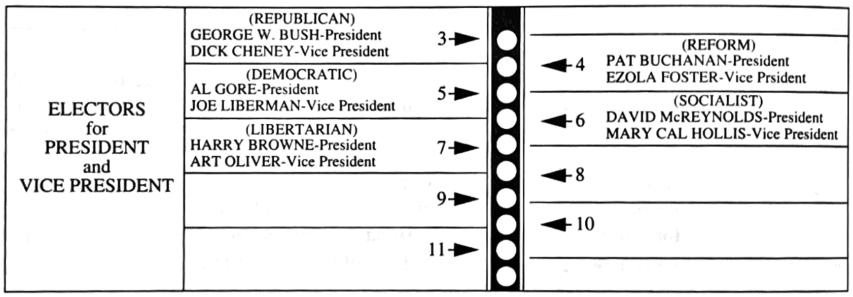
SDS 291: Case Study # 1

Data Problem 8.25 in The Statistical Sleuth, 2nd Edition (Ramsey and Schafer).

The US presidential election of November 7, 2000 was one of the closest in history. As returns were counted on election night it became clear that the outcome in the state of Florida would determine the next president. At one point in the evening, television networks projected that the state was carried by the Democratic nominee, Al Gore, but a retraction of the projection followed a few hours later. Then, early in the morning of November 8, the networks projected that the Republican nominee, George W. Bush, had carried Florida and won the presidency. Gore called Bush to concede. While on route to his concession speech, though, the Florida count changed rapidly in his favor. The networks once again reversed their projection, and Gore called Bush to retract his concession. When the roughly 6 million Florida votes had been counted, Bush was shown to be leading by only 1,738 votes, and the narrow margin triggered an automatic recount. The recount, completed in the evening of November 9, showed Bush's lead to be less than 400 votes.

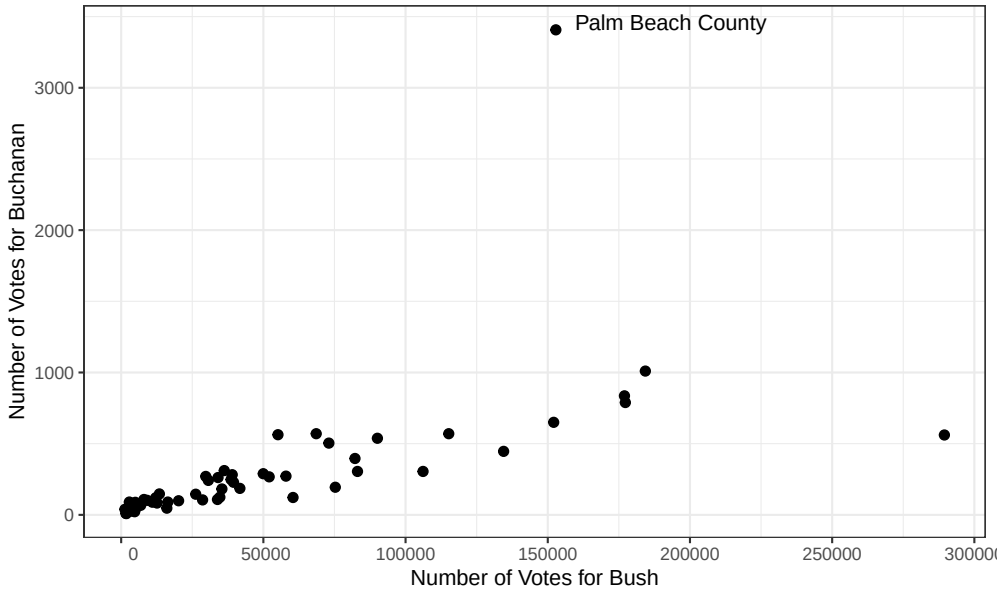
Meanwhile, Democratic voters in Palm Beach County complained that a confusing "butterfly" lay-out ballot caused them to accidentally vote for the Reform Party candidate Pat Buchanan instead of Gore. The ballot, as shown below, listed presidential candidates on both a left-hand and right-hand page. Voters were to register their vote by punching the circle corresponding to their choice, from the column of circles between the pages. it was suspected that since Bush's name was listed first on the left-hand page, Bush voters likely selected the first circle. Since Gore's name was listed second on the left-hand side, many voters—who already knew who they wished to vote for—did not bother examining the right-hand side and consequently selected the second circle in the column; the one actually corresponding to Buchanan. Two pieces of evidence supported this claim: Buchanan had an unusually high percentage of the vote in that county, and an unusually large number of ballots (19,000) were discarded because voters had marked two circles (possibly by inadvertently voting for Buchanan and then trying to correct the mistake by then voting for Gore).

Display 8.23 Confusing ballot in Palm Beach County, Florida



The table below shows the first few rows of a data set containing the numbers of votes for Buchanan and Bush in all 67 counties in Florida, followed by a scatterplot of all 67 data points.

County	Buchanan Votes	Bush Votes
Alachua	262	34062
Baker	73	5610
Bay	248	38637
Bradford	65	5413
Brevard	570	115185



What evidence is there in the scatterplot that Buchanan received more votes than expected in Palm Beach County? **Analyze the data without Palm Beach County results to obtain an equation for predicting Buchanan votes from Bush votes. Obtain a 95% prediction interval for the number of Buchanan votes in Palm Beach from this result—assuming the relationship is the same in this county as in the others. Assuming that some of the votes cast for Buchanan were intended as votes for Gore, use the prediction interval to give an estimate for the likely number of votes intended for Gore but cast for Buchannon.** (Consider transformations.)

Note: To access the dataset for this case study, you will need to run the following lines in R; they are also included in the template file for the first case study.

```
# Loading the Statistical Sleuth data library
library(Sleuth2)

# Reading in and saving the data
election <- Sleuth2::ex0825

# Creating a second dataset with Palm Beach County excluded
election_wo_pb <- election |> filter(County != "Palm Beach")
```