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# [VBA FINAL PROJECT: SENATE VULNERABILITY]

Over the last eight years, the Democratic Party has controlled the United States Senate. With the 2014 election around the corner, many political analysts believe Republicans could gain Senate majority. This report presents the VBA code used to analyze the vulnerability of Senators based on their current party representation and the 2012 Presidential Election results.

# Executive Summary

Over the last eight years, the Democratic Party has controlled the United States Senate. Though they currently hold 53 of the 100 positions, many political analysts believe the Republicans could take the majority after the 2014 election. Among these analysts is Nate Silver, a political statistician who correctly forecast every state during the 2012 Presidential Election. With only 45 current Republican Senators, this would require them to hold all the positions they currently have and gain 6 additional seats from their opponents. Is this likely?

Due to my interest in national politics, I used this final project as an opportunity to conduct my own analysis on the topic. This project consisted of three primary steps:

1. Transfer 2012 presidential election results from the internet into MS Excel
2. Transfer data about our current U.S. Senate from the internet into MS Excel
3. Determine which Senate positions are most vulnerable in 2014

Vulnerability was based on which Senate positions are currently held by a different political party then the state's preference during the 2012 Presidential Election. For example, I determined which states voted for Mitt Romney in 2012 but currently have a Democratic Senator up for re-election later this year. In contrast, I looked at which states recently voted for Barack Obama but have a Republican Senator up for re-election. Since the presidential election is the most recent indication of public sentiment within each state, I believe we can safely conclude that the senate positions under these conditions are most vulnerable.

The results revealed that there are seven vulnerable Democratic Senators from West Virginia, South Dakota, Montana, North Carolina, Alaska, Louisiana, and Arkansas. On the other hand, only one Republican Senator from Maine is in a similar position. Based on these results and the low approval rating of President Obama, I believe the Republican Party has a viable shot at taking over the Senate next year. We will know shortly as we enter the general election in November.

## Introduction

Over the last eight years, the Democratic Party has controlled the United States Senate. Though they currently hold 53 of the 100 positions, many political analysts believe the Republicans could take the majority after the 2014 election. Among these analysts is Nate Silver, a political statistician who correctly forecasted every state during the 2012 Presidential Election. With only 45 current Republican Senators, this would require them to hold all the positions they currently have and gain 6 additional seats from their counterparty. Is this likely?

Due to my interest in national politics, I used this final project as an opportunity to conduct my own analysis on the topic. I discuss in this report the (1) implementation of my code, (2) lessons learned from this experience, (3) conceptual difficulties I faced, (4) any assistance I received, and (5) the results of my analysis.

## Implementation Documentation

This project consisted of three primary elements, each of which included different tasks to complete.

1. Transfer 2012 presidential election results from the internet into MS Excel
2. Transfer data about our current U.S. Senate from the internet into MS Excel
3. Determine which Senate positions are most vulnerable in 2014

In order to keep my code organized, I created several sub-procedures for the different tasks and made reference to each in a summary subprocedure. The specific tasks are shown to the left.

```
Sub Summary()

Application.ScreenUpdating = False

Call RetrievePresResults
Call DetermineWinner
Call RetrieveSenators
Call Analysis
Call Results
Call Formatting

Application.ScreenUpdating = True

End Sub
```

The first task was identifying a website with the results of the 2012 Presidential Election for each state. This information was found at www.elections.nbcnews.com. You can see in the figure below that the election results appear by moving your cursor over each state. To access this data in MS Excel, I created a new agent in VBA labeled "PresResults." I then used the HTML code from the website to find the state name, state abreviation, number of electoral votes, and the percent of votes that Mitt Romney and Barack Obama both received. A portion of the code is shown below.

```
Do While PresResults.moveTo("{""StateName"":""")
    State = PresResults.getText("""")
    PresResults.moveTo ":"""
    StateAbr = PresResults.getText("""")
    PresResults.moveTo "ElectoralVotes"":"
    ElectoralVotes = PresResults.getText(",")
```
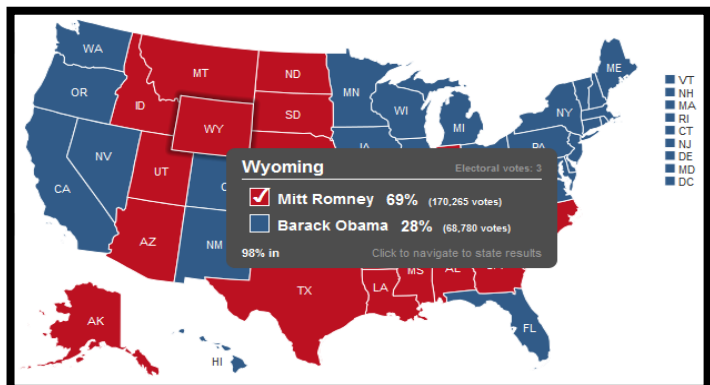
For each piece of information, a new variable was created (i.e., State, ElectoralVotes, RepPercent, etc.) and then put into an excel worksheet that organized the data. I used the next subprocedure to determine which candidate won each state by comparing the voting percentages. This was an easy If/Then statement in VBA. If the Republicans had a greater percentage of votes than the Democrats, then I put "Romney" is the adjacent cell as illustrated below. Else, Obama won that state during the election.

The next step entailed gathering information about the Senators who would be up for re-election this year. Since Senators serve for 6-year terms, only 1/3 of them are voted in every two years. Fortunately, I was able to view this information at www.senate.gov

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | State | Abr. | Electoral Votes | Mitt Romney | Barack Obama | Winner |
| 2 | Alabama | AL | 9 | 61% | 38% | Romney |
| 3 | Connecticut | CT | 7 | 40% | 58% | Obama |
| 4 | District of Columbia | DC | 3 | 7% | 91% | Obama |
| 5 | Delaware | DE | 3 | 40% | 59% | Obama |
| 6 | Arkansas | AR | 6 | 61% | 37% | Romney |

and then filter for class II, which includes those 33 Senators up for re-election in 2014. The data on the website is presented in the following format as shown below.

Alexander, Lamar - (R - TN)                              Class II
455 Dirksen Senate Office Building Washington DC 20510
(202) 224-4944
Contact: www.alexander.senate.gov/public/index.cfm?p=Email

Begich, Mark - (D - AK)                                  Class II
111 Russell Senate Office Building Washington DC 20510
(202) 224-3004
Contact: www.begich.senate.gov/public/index.cfm?p=EmailSenator

Booker, Cory A. - (D - NJ)                               Class II
141 Hart Senate Office Building Washington DC 20510
(202) 224-3224
Contact: www.booker.senate.gov/?p=contact

Just as I did with the presidential election results, I created a new agent called "Senators." I then evaluated the HTML code and created a Do While/Loop that gathered the name of the Senator, which state he/she represents, and their political party. A portion of the subprocedure is presented below. This data was then

```
Do While Senators.moveTo("""><a href=""http://")
    Website = Senators.getText("""")
    Senators.moveTo ">"
    Name = Senators.getText("  ")
    Senators.moveTo "("
    Party = Senators.getText(" ")
    Senators.moveTo "- "
    State = Senators.getText(")")

    Row = Row + 1
    Cells(Row, 1) = Left(Name, Len(Name) - 1)

    Cells(Row, 2).Value = State
    Cells(Row, 3).Value = Party
Loop
```

transferred into a worksheet labeled "Senators."

With this information, I was able to analyze the data to determine the vulnerability of each Senator. The next subprocedure, "Analysis," entailed two parts. First, I needed to tranfer the senate information from the "Senator" sheet to the "Analysis" sheet so I could compare the data. The

```
'Transfers data about each Senator to the "Analysis" worksheet
Dim x As Integer
Dim i As Integer

Worksheets("Analysis").Select
Cells(1, 7).Value = "Senate Position: Election in 2014"
Cells(1, 8).Value = "Current Party"

For x = 2 To 34
  For i = 2 To 52
      If Worksheets("Senators").Cells(x, 2) = Worksheets("Analysis").Cells(i, 2) Then
          Worksheets("Analysis").Cells(i, 7) = Worksheets("Senators").Cells(x, 1)
      End If

      If Worksheets("Senators").Cells(x, 1) = Worksheets("Analysis").Cells(i, 7) Then
          Worksheets("Analysis").Cells(i, 8) = Worksheets("Senators").Cells(x, 3)
      End If
  Next i
Next x
```

VBA code for this task is shown to the left. It used a For/Next loop to match the Senator and his/her corresponding political party with each state on the "Analysis" worksheet. Once completed, the second step determined which Senators are vulnerable. As

earlier defined, vulnerability was based on whether the current Senator represents a political party that is different than the party that received the majority vote during the 2012 Presidential Election. Since the presidential election is the most recent indication of public sentiment within each state, I believe we can safely

```
For y = 2 To 52
  If Cells(y, 8) = "D" And Cells(y, 6) = "Romney" Then
      Cells(y, 9) = "Yes"
  Else: Cells(y, 9) = ""
  End If

  If Cells(y, 8) = "R" And Cells(y, 6) = "Obama" Then
      Cells(y, 10) = "Yes"
  Else: Cells(y, 10) = ""
  End If
Next y
```

conclude that the senate positions under these conditions are most vulnerable. This task was performed in VBA by also using a For/Next loop and two sets of If/Then statements. In order to clearly identify the "Yes" in the worksheet, I inserted an empty cell instead of "No." The code for this task is shown above. You can also view a portion of the worksheet below. In this case, LA, AK, and NC all have vulnerable Democratic Senators running for re-election this year.

| 18 | Louisiana | LA | 8 | 58% | 41% | Romney | Landrieu, Mary L. | D | Yes |
| 19 | Massachusetts | MA | 11 | 38% | 61% | Obama | Markey, Edward J. | D | |
| 20 | Alaska | AK | 3 | 55% | 41% | Romney | Begich, Mark | D | Yes |
| 21 | Missouri | MO | 10 | 54% | 44% | Romney | | | |
| 22 | North Carolina | NC | 15 | 51% | 48% | Romney | Hagan, Kay R. | D | Yes |

After determining vulnerability of each Senator, I compiled a summary of this information in a separate worksheet called "Results." Lastly, I created a subprocedure to properly format the worksheets to make them easy to understand and view. This task included bolding and underlining

```
'Format "Senators" Worksheet
Worksheets("Senators").Select
Range("A1:C1").Select
    With Selection
        .HorizontalAlignment = xlCenter
        .Font.Bold = True
        .Borders(xlEdgeBottom).LineStyle = xlContinuous
        .Borders(xlEdgeBottom).Weight = xlMedium
    End With

Columns("A:C").EntireColumn.AutoFit
```

the headers, autofitting the columns, and centering the text. The figure above shows the code specificially for the "Senators" worksheet.

**Lessons Learned**

This project was a wondeful opportunity to apply several of the skills we have learned during the course of the semester. Among those skills, the most valuable was working with HTML code. I have very limited programming experience so reading VBA and HTML code a few months ago would have been very overwhelming. However, I now feel like I have a solid foundation in these principles and can apply it to various circumstances. Specifically, I can now download information from a website into MS Excel where I can analyze it more thoroughly. We only discussed this skill during a couple class sessions and our book doesn't address the topic so I am pleased to have spend quality time learning it. I was also able to use a variety of loops to repeat tasks. That is by far one of the most helpful tools in VBA. What could be a very complicated task can be written with very little code if loops are properly applied. I also learned the value of using multiple subprocedures. By separating the tasks into separate subs, the code is easier to understand by others and problems can be isolated and fixed more quickly.

**Conceptual Difficulties**

Conceptually, none of the tasks for this project were particular overwhelming or too challenging. There were several times I had to review my book or other code to know how to address challenges, but I was able to complete everything I wanted to do for this project. Though I resolved the challenge, one problem I faced concerned the HTML code. The code would switch which percentage of votes were revealed first. Sometimes the first percentage value was for Mitt Romney and the next time it was for Barack Obama. This made it challenging to use a For/Loop because it wasn't always consistent. After evalating the code more closely, I figured how it changed so I used an If/Then statement with the loop to adjust for the difference. Other than that, I felt I had the proper resources with my book, previous assignments, and google to find any solution I needed.

**Assistance**

I did not receive any assistance on this project other than verifying that the scope of the project was sufficient.

**Results**

The results from this analysis revealed that there are seven vulnerable Democratic Senators from West Virginia, South Dakota, Montana, North Carolina, Alaska, Louisiana, and Arkansas. On the other hand, only one Republican Senator from Maine is in a similar position. Based on these results and the low approval rating of President Obama, I believe the Republican Party has a viable shot at taking over the Senate next year. We will know shortly as we enter the general election in November.

| Vulnerable Democratic Senators | Vulnerable Republican Senators |
|---|---|
| AR | ME |
| LA | |
| AK | |
| NC | |
| MT | |
| SD | |
| WV | |

# Appendix

A screenshot of the "Analysis" worksheet

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | State | Abr. | Electoral Votes | Mitt Romney | Barack Obama | Winner | Senate Position: Election in 2014 | Current Party | Vulnerable Dem. Senators | Vulnerable Rep. Senators | | | |
| 2 | Alabama | AL | 9 | 61% | 38% | Romney | Sessions, Jeff | R | | | | | |
| 3 | Connecticut | CT | 7 | 40% | 58% | Obama | | | | | | | |
| 4 | District of Columbia | DC | 3 | 7% | 91% | Obama | | | | | | | |
| 5 | Delaware | DE | 3 | 40% | 59% | Obama | Coons, Christopher A. | D | | | | | |
| 6 | Arkansas | AR | 6 | 61% | 37% | Romney | Pryor, Mark L. | D | Yes | | | | |
| 7 | Arizona | AZ | 11 | 54% | 44% | Romney | | | | | | | |
| 8 | Colorado | CO | 9 | 47% | 51% | Obama | Udall, Mark | D | | | | | |
| 9 | California | CA | 55 | 38% | 59% | Obama | | | | | | | |
| 10 | Kansas | KS | 6 | 60% | 38% | Romney | Roberts, Pat | R | | | | | |
| 11 | Georgia | GA | 16 | 53% | 45% | Romney | Chambliss, Saxby | R | | | | | |
| 12 | Iowa | IA | 6 | 46% | 52% | Obama | Harkin, Tom | D | | | | | |
| 13 | Indiana | IN | 11 | 54% | 44% | Romney | | | | | | | |
| 14 | Kentucky | KY | 8 | 61% | 38% | Romney | McConnell, Mitch | R | | | | | |
| 15 | Maine | ME | 4 | 41% | 56% | Obama | Collins, Susan M. | R | | Yes | | | |
| 16 | Idaho | ID | 4 | 65% | 33% | Romney | Risch, James E. | R | | | | | |
| 17 | Illinois | IL | 20 | 41% | 57% | Obama | Durbin, Richard J. | D | | | | | |
| 18 | Louisiana | LA | 8 | 58% | 41% | Romney | Landrieu, Mary L. | D | Yes | | | | |
| 19 | Massachusetts | MA | 11 | 38% | 61% | Obama | Markey, Edward J. | D | | | | | |
| 20 | Alaska | AK | 3 | 55% | 41% | Romney | Begich, Mark | D | Yes | | | | |
| 21 | Missouri | MO | 10 | 54% | 44% | Romney | | | | | | | |
| 22 | North Carolina | NC | 15 | 51% | 48% | Romney | Hagan, Kay R. | D | Yes | | | | |
| 23 | North Dakota | ND | 3 | 59% | 39% | Romney | | | | | | | |
| 24 | New Jersey | NJ | 14 | 41% | 58% | Obama | Booker, Cory A. | D | | | | | |
| 25 | Nevada | NV | 6 | 46% | 52% | Obama | | | | | | | |

[Button: Determine Senate Vulnerability]

A screenshot of the "Senators" worksheet

| | A | B | C |
|---|---|---|---|
| 1 | U.S. Senators: 2014 Re-Election | State | Party |
| 2 | Alexander, Lamar | TN | R |
| 3 | Begich, Mark | AK | D |
| 4 | Booker, Cory A. | NJ | D |
| 5 | Chambliss, Saxby | GA | R |
| 6 | Cochran, Thad | MS | R |
| 7 | Collins, Susan M. | ME | R |
| 8 | Coons, Christopher A. | DE | D |
| 9 | Cornyn, John | TX | R |
| 10 | Durbin, Richard J. | IL | D |
| 11 | Enzi, Michael B. | WY | R |
| 12 | Franken, Al | MN | D |
| 13 | Graham, Lindsey | SC | R |
| 14 | Hagan, Kay R. | NC | D |
| 15 | Harkin, Tom | IA | D |
| 16 | Inhofe, James M. | OK | R |
| 17 | Johanns, Mike | NE | R |
| 18 | Johnson, Tim | SD | D |
| 19 | Landrieu, Mary L. | LA | D |
| 20 | Levin, Carl | MI | D |
| 21 | Markey, Edward J. | MA | D |
| 22 | McConnell, Mitch | KY | R |
| 23 | Merkley, Jeff | OR | D |

NOTE: Additional portions of the VBA code can be viewed in the attached excel workbook.