Ranked_choice Voting

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Ranked-Choice Voting in Maine Congressional District 2: Nov. 6, 2018.

The data are published on a Maine Secretary of State website.

Click Here"Certified Updated Results"

Click Here"Ranked-Choice Rules"

Load libraries

Write functions to shift column data to the left

Round 1 Results
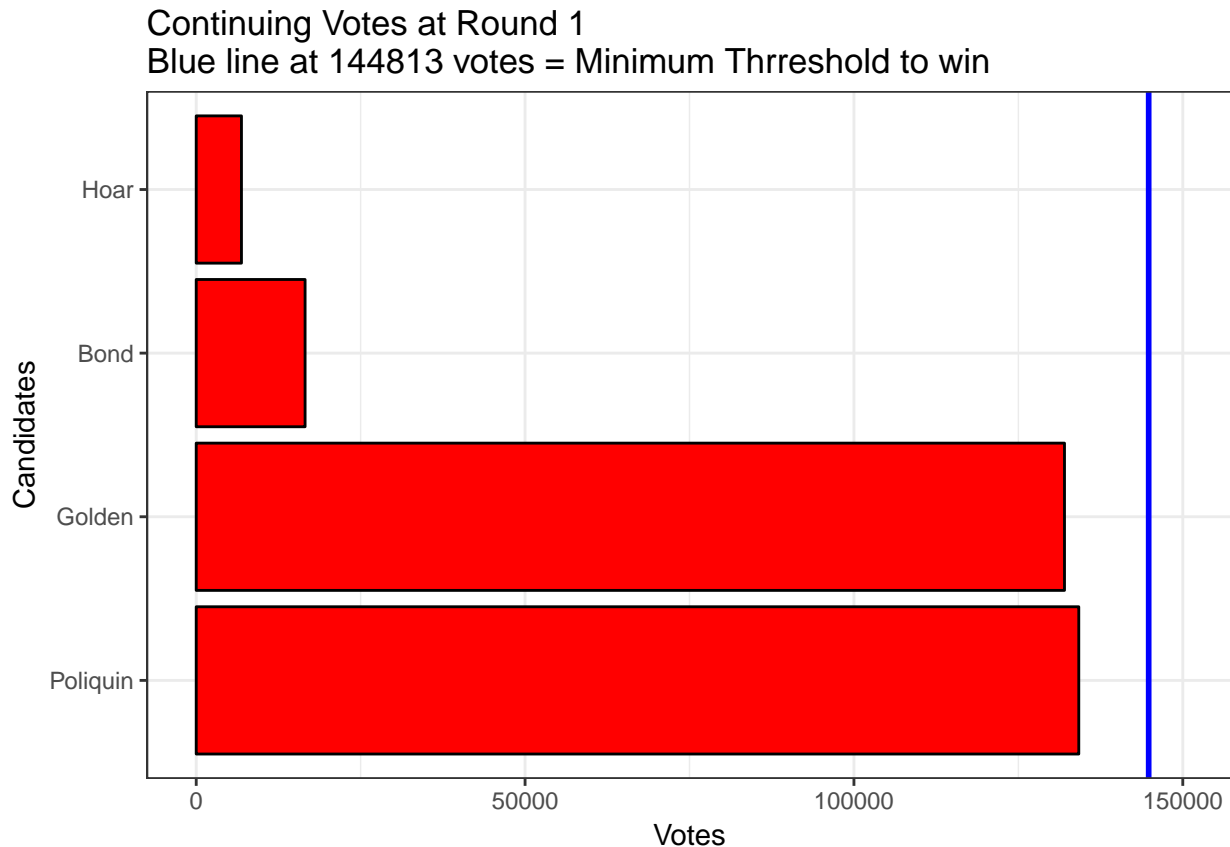
```
## 
##     Bond   Golden     Hoar Poliquin
##    16552   132013     6875   134184

## 
##     Bond   Golden     Hoar Poliquin
##   0.0571   0.4558   0.0237   0.4633
```

The vote totals are identical to those in the updated certified report.

Poliquin with 134184 votes, led in Round 1 with 46.3%. According to the rules of ranked-choice voting, to be declared a winner, a candidate had to have at least as many votes as the winning threshold.

```
## The winning threshold was 144813 continuing votes
```

```
## Poliquin fell short of winning by 10629 votes
```
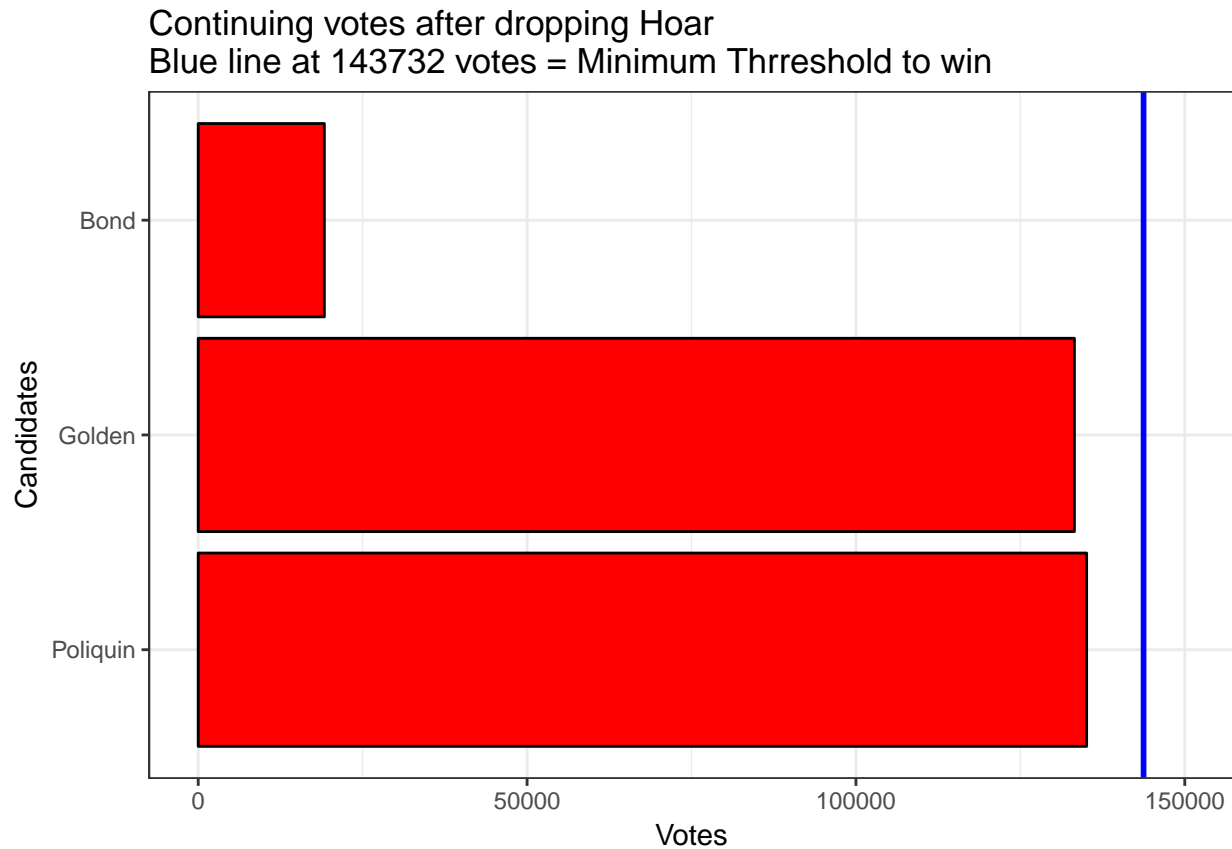
Continuing Votes at Round 1
Blue line at 144813 votes = Minimum Thrreshold to win

We now proceed to the next round by dropping the candidate with the fewest votes: Hoar.

Results after dropping Hoar

```
##
##     Bond   Golden Poliquin
##    19173   133216   135073

##
##     Bond   Golden Poliquin
##   0.0667   0.4634   0.4699
```

All three remaining candidates gained votes from the alternative choices of the Hoar voters. Now Poliquin led with 47.0 to 46.3 for Golden, but the tally was still less than 50% +1.

```
## The winning threshold was 143732 continuing votes
```

```
## Poliquin fell short of winning by 8659 votes
```

Continuing votes after dropping Hoar
Blue line at 143732 votes = Minimum Thrreshold to win

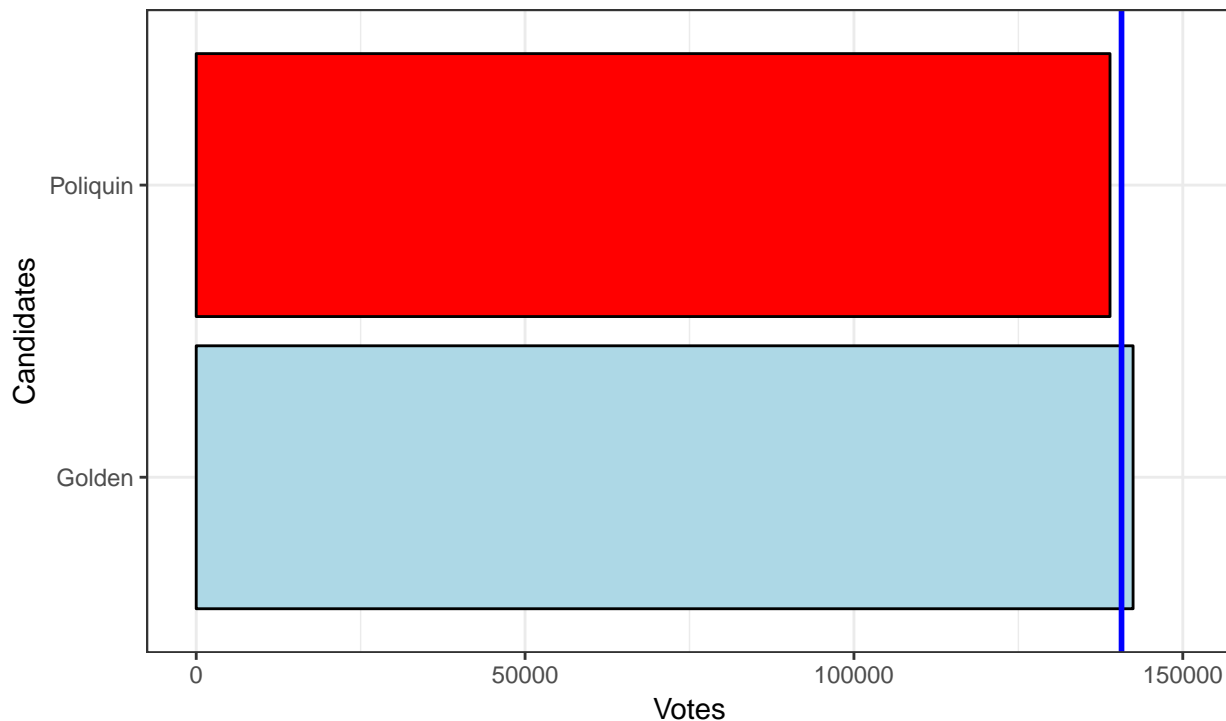So we now remove Bond votes and continue the analysis.

```
##
##   Golden Poliquin
##   142440   138931

##
##   Golden Poliquin
##   0.5062   0.4938
```

Final Results

The ranked-choice process has produced a clear winner. Golden now has 142440 (50.62%) of the continuing votes, compared to 138931 (49.38%) for Poliquin.

```
## The winning threshold was 140686 continuing votes
```

```
## Golden exceeded the minimun threshold by 1754 votes
```

Vote tally at Final Round
Blue line at 140686 votes = Minimum Thrreshold.
The winner,Jared Golden got 1754 more votes than needed.

Some have questioned the validity of the election results, because the software used by the Secretary of State was "propriety". In other words, we don't know what it is and what algorithms it used. Thus it was important to demonstrate that "open" software, available to all, can get the identical results, and give voters confidence that the process is fair, accurate and transparent.

The gold standard for data analysis in science, elections, etc. is "Reproducibility". This analysis was done with the programming language "R", using Rmarkdown to produce this pdf file. It could also be output to Word and html formats.

Here are the same results obtained by the "Python" programming language.

Click Here"Maine Congressional District 2: Replication"

	A	B	C	D	E	F	G
Report Name		**Summary Report**					
Election Name		**General Election**					
Election Date		**11.06.18**					
Office Title		**Congressional District 2**					
			Round 1			**Round 2**	
Candidate Names		**Votes**	**Percentage**	**Transfer**	**Votes**	**Percentage**	**Transfer**
Bond, Tiffany L.		16552	05.71%	-16552	0	00.00%	0
DEM Golden, Jared F.		132013	45.58%	**10427**	142440	**50.62%**	**0**
Hoar, William R.S.		6875	02.37%	-6875	0	00.00%	0
REP Poliquin, Bruce		**134184**	**46.33%**	**4747**	138931	49.38%	0
Ballot Exhausted							
By Overvotes		435		98	533		0
By Undervotes		6018		7820	13838		0
By Exhausted Choices		0		335	335		0
Continuing Ballots		289624		0	281371		0
TOTAL		**296077**		**0**	**296077**		**0**
Winning threshold by round		144813			140686		
Generated: 11/21/2018 19:36							
Total = Ballot Exhausted by Overvotes + Ballot Exhausted by Undervotes + Exhausted Ballot + Continuing Ballots							
Winning Threshold = [Continuing ballots/(Vote for [number] +1)] + 1							
"*" symbol signifies elimination due to Tie Resolution.							

Figure 1: Maine Secretary of State Spreadsheet