Maine Rank Choice

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Rank Chice Voting in Maine: Nov. 6, 2018

The data are published on the Secretary of State website.

Click Here" Certified Updated Results"

Load the data from 8 Excel csv files

```
rm(list = ls())
suppressMessages(library(dplyr)) # bind_rows
suppressMessages(library(data.table)) #select columns when loading
setwd("/Users/patrickkelly/Desktop/R Projects/Maine_Rank_Choice/Data")
files <- list.files(pattern = "*FINAL[1-38].csv")
data <- bind_rows(lapply(files, fread, select = c(2,4:8),header=FALSE, skip=1))
files2 <- list.files(pattern = "*FINAL[4-7].csv")
data2 <- bind_rows(lapply(files2, fread, select = c(2,4:8),header=FALSE, skip=1))
data2$V2 <- as.character(data2$V2)
data <- rbind(data,data2)
rm(data2,files,files2)
dim(data)
```

```
## [1] 296077      6
```

```
colnames(data) <- c("Precinct","first",
    "second", "third", "fourth","fifth")
names(data)
```

```
## [1] "Precinct" "first"    "second"   "third"    "fourth"   "fifth"
```

```
source("Clean_Names.R")
```

```
table(data$first)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##     16415    131822      6782       424    133993      6641
```

```
data<- filter (data,first != "overvote")
# Overvote removed
table(data$first)
```

```
##
##      Bond    Golden      Hoar  Poliquin undervote
##     16415    131822      6782    133993      6641
```

```
round(prop.table(table(data$first)),3)
```

```
##
##      Bond    Golden      Hoar  Poliquin undervote
##     0.056     0.446     0.023     0.453     0.022
```

```
Continuing_Votes <- filter (data,first != "undervote")
nrow(Continuing_Votes)
```

```
## [1] 289012
```

```
Winning_threshold <- nrow(Continuing_Votes)*0.5 +1
Winning_threshold
```

```
## [1] 144507
```

```
P_fell_short <- 144507 - 133993
cat("Poliquin fell short of winning in thefirst round by", P_fell_short,"votes." )
```

```
## Poliquin fell short of winning in thefirst round by 10514 votes.
```

```
table(Continuing_Votes$first)
```

```
##
##     Bond   Golden     Hoar Poliquin
##    16415   131822     6782   133993
```

```
round(prop.table(table(Continuing_Votes$first)),3)
```

```
##
##     Bond   Golden     Hoar Poliquin
##    0.057    0.456    0.023    0.464
```

```
undervote <- filter(data,first == "undervote")
#undervote2 <- undervote
#undervote2$first <- undervote2$second
#undervote2$second <- undervote2$third
#undervote2$third <- undervote2$fourth
#undervote2$fourth <- undervote2$fifth
#undervote2$fifth <- "undervote"
#table(undervote2$first)

uv2 <- function(x){
undervote2 <<- undervote
undervote2$first <<- undervote2$second
undervote2$second <<- undervote2$third
undervote2$third <<- undervote2$fourth
undervote2$fourth <<- undervote2$fifth
undervote2$fifth <<- "undervote"
table(undervote2$first)
# round(prop.table(table(undervote2$first)),3)
}
uv2(undervote)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##       137       191        93        11       191      6018
```

```
round(prop.table(table(undervote2$first)),3)
```

```
##
```

```
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##     0.021     0.029     0.014     0.002     0.029     0.906
```

```
undervote3 <- filter(undervote2,first != "undervote")
table(undervote3$first)
```

```
##
##     Bond   Golden     Hoar overvote Poliquin
##      137      191       93       11      191
```

```
undervote <- filter (undervote3,first != "overvote")
table(undervote$first)
```

```
##
##     Bond   Golden     Hoar Poliquin
##      137      191       93      191
```

```
data <- rbind(Continuing_Votes,undervote)
rm(Continuing_Votes,undervote,undervote2,undervote3)
table(data$first)
```

```
##
##     Bond   Golden     Hoar Poliquin
##    16552   132013     6875   134184
```

```
round(prop.table(table(data$first)),4)
```

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

Poliquin leads in round 1,but did not get over 50%.

So we proceed by dropping Hoar, and examining the second choices for Hoar.

```
data2 <- filter(data,first != "Hoar")
table(data2$first)
```

```
##
##     Bond   Golden Poliquin
##    16552   132013   134184
```

```
hoar <- filter(data,first == "Hoar")
hoar2 <- hoar
hoar2$first <- hoar2$second
hoar2$second <- hoar2$third
hoar2$third <- hoar2$fourth
hoar2$fourth <- hoar2$fifth
hoar2$fifth <- "undervote"
table(hoar2$first)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##      2571      1182       135        20       870      2097
```

```
hoar2<- filter (hoar2,first != "Hoar")
hoar2<- filter (hoar2,first != "overvote")
```

```r
table(hoar2$first)
```

```
##
##      Bond    Golden  Poliquin undervote
##      2571      1182       870      2097
```

```r
data3 <- filter(hoar2,first != "undervote")
table(data3$first)
```

```
##
##     Bond   Golden Poliquin
##     2571     1182      870
```

```r
undervote <- filter(hoar2,first == "undervote")
# undervote2 <- undervote
# undervote2$first <- undervote2$second
# undervote2$second <- undervote2$third
# undervote2$third <- undervote2$fourth
# undervote2$fourth <- undervote2$fifth
# undervote2$fifth <- "undervote"
# table(undervote2$first)
uv2(undervote)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##        35        12         6         1        16      2027
```

```r
undervote3 <- filter(undervote2,first != "undervote")
undervote3 <- filter(undervote3,first != "Hoar")
undervote3<- filter (undervote3,first != "overvote")
table(undervote3$first)
```

```
##
##     Bond   Golden Poliquin
##       35       12       16
```

```r
data4 <- rbind(data3,undervote3)
table(data4$first)
```

```
##
##     Bond   Golden Poliquin
##     2606     1194      886
```

```r
data <- rbind(data2,data4)
table(data$first)
```

```
##
##     Bond   Golden Poliquin
##    19158   133207   135070
```

```r
round(prop.table(table(data$first)),3)
```

```
##
##     Bond   Golden Poliquin
##    0.067    0.463    0.470
```

```r
rm(data2, data3,data4)
rm(hoar, hoar2)
rm(undervote,undervote2,undervote3)
```

Poliquin is still first at 47%, but not > 50%. So remove Bond

```
data2 <- filter(data,first != "Bond")
table(data2$first)
```

```
##
##   Golden Poliquin
##   133207   135070
```

```
bond <- filter(data,first == "Bond")
bond2 <- bond
bond2$first <- bond2$second
bond2$second <- bond2$third
bond2$third <- bond2$fourth
bond2$fourth <- bond2$fifth
bond2$fifth <- "undervote"
table(bond2$first)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##       279      6081      5554        43      2300      4901
```

```
bond2<- filter (bond2,first != "Bond")
bond2<- filter (bond2,first != "overvote")
table(bond2$first)
```

```
##
##    Golden      Hoar  Poliquin undervote
##      6081      5554      2300      4901
```

```
data3 <- filter(bond2,first != "undervote")
table(data3$first)
```

```
##
##   Golden     Hoar Poliquin
##     6081     5554     2300
```

```
undervote <- filter(bond2,first == "undervote")
#undervote2 <- undervote
#undervote2$first <- undervote2$second
#undervote2$second <- undervote2$third
#undervote2$third <- undervote2$fourth
#undervote2$fourth <- undervote2$fifth
#undervote2$fifth <- "undervote"
#table(undervote2$first)
uv2(undervote)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##         3        98        98         2        55      4645
```

```
# Remove Bond and overvote and undervote
undervote2<- filter (undervote2,first != "Bond")
undervote2<- filter (undervote2,first != "overvote")
undervote2 <- filter(undervote2,first != "undervote")
table(undervote2$first)
```

```
##
```

```
##   Golden     Hoar Poliquin
##       98       98       55
```

```
table(data3$first)
```

```
##
##   Golden     Hoar Poliquin
##     6081     5554     2300
```

```
data4 <- rbind(data3,undervote2)
table(data4$first)
```

```
##
##   Golden     Hoar Poliquin
##     6179     5652     2355
```

```
data <- rbind(data2,data4)
table(data$first)
```

```
##
##   Golden     Hoar Poliquin
##   139386     5652   137425
```

```
round(prop.table(table(data$first)),3)
```

```
##
##   Golden     Hoar Poliquin
##    0.493    0.020    0.487
```

```
# Poliquin leads with 50%
# Now remove Hoar again and check next round
data2 <- filter(data,first != "Hoar")
table(data2$first)
```

```
##
##   Golden Poliquin
##   139386   137425
```

```
hoar <- filter(data,first == "Hoar")
nrow(hoar)
```

```
## [1] 5652
```

```
hoar2 <- hoar
hoar2$first <- hoar2$second
hoar2$second <- hoar2$third
hoar2$third <- hoar2$fourth
hoar2$fourth <- hoar2$fifth
hoar2$fifth <- "undervote"
table(hoar2$first)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##        60      2872        20        24      1375      1301
```

```
hoar2<- filter (hoar2,first != "Hoar")
hoar2<- filter (hoar2,first != "overvote")
table(hoar2$first)
```

```
##
##      Bond    Golden  Poliquin undervote
```

```
##        60      2872      1375      1301
```

```
data3 <- filter(hoar2,first != "undervote")
# part of hoar
table(data3$first)
```

```
##
##     Bond   Golden Poliquin
##       60     2872     1375
```

```
undervote <- filter(hoar2,first == "undervote")
#undervote2 <- undervote
#undervote2$first <- undervote2$second
#undervote2$second <- undervote2$third
#undervote2$third <- undervote2$fourth
#undervote2$fourth <- undervote2$fifth
#undervote2$fifth <- "undervote"
#table(undervote2$first)
uv2(undervote)
```

```
##
##    Golden      Hoar  overvote  Poliquin undervote
##       147         2         5        99      1048
```

```
undervote3 <- filter(undervote2,first != "undervote")
undervote3 <- filter(undervote3,first != "Hoar")
undervote3<- filter (undervote3,first != "overvote")
table(undervote3$first)
```

```
##
##   Golden Poliquin
##      147       99
```

```
data4 <- rbind(data3,undervote3)
table(data4$first)
```

```
##
##     Bond   Golden Poliquin
##       60     3019     1474
```

```
data <- rbind(data2,data4)
table(data$first)
```

```
##
##     Bond   Golden Poliquin
##       60   142405   138899
```

```
round(prop.table(table(data$first)),2)
```

```
##
##     Bond   Golden Poliquin
##     0.00     0.51     0.49
```

```
rm(data2, data3,data4)
rm(hoar, hoar2)
rm(bond, bond2)
rm(undervote,undervote2,undervote3)
table(data$first)
```

```
##
```

```
##     Bond   Golden Poliquin
##       60   142405   138899
```

```
#---------- Remove Bond again
data2 <- filter(data,first != "Bond")
table(data2$first)
```

```
##
##   Golden Poliquin
##   142405   138899
```

```
bond <- filter(data,first == "Bond")
bond2 <- bond
bond2$first <- bond2$second
bond2$second <- bond2$third
bond2$third <- bond2$fourth
bond2$fourth <- bond2$fifth
bond2$fifth <- "undervote"
table(bond2$first)
```

```
##
##      Bond    Golden      Hoar  overvote  Poliquin undervote
##         8         1        30         2        12         7
```

```
bond2<- filter (bond2,first != "Bond")
bond2<- filter (bond2,first != "overvote")
table(bond2$first)
```

```
##
##    Golden      Hoar  Poliquin undervote
##         1        30        12         7
```

```
data3 <- filter(bond2,first != "undervote")
table(data3$first)
```

```
##
##   Golden     Hoar Poliquin
##        1       30       12
```

```
undervote <- filter(bond2,first == "undervote")
#undervote2 <- undervote
#undervote2$first <- undervote2$second
#undervote2$second <- undervote2$third
#undervote2$third <- undervote2$fourth
#undervote2$fourth <- undervote2$fifth
#undervote2$fifth <- "undervote"
#table(undervote2$first)
uv2(undervote)
```

```
##
## undervote
##         7
```

```
undervote2<- filter (undervote2,first != "Bond")
undervote2<- filter (undervote2,first != "overvote")
undervote2 <- filter(undervote2,first != "undervote")
table(undervote2$first)
```

```
## < table of extent 0 >
```

```
#--------
table(data3$first)
```

```
##
##   Golden     Hoar Poliquin
##        1       30       12
```

```
data4 <- rbind(data3,undervote2)
table(data4$first)
```

```
##
##   Golden     Hoar Poliquin
##        1       30       12
```

```
data <- rbind(data2,data4)
rm(data2, data3,data4)
rm(hoar, hoar2)
```

```
## Warning in rm(hoar, hoar2): object 'hoar' not found
```

```
## Warning in rm(hoar, hoar2): object 'hoar2' not found
```

```
rm(bond, bond2)
rm(undervote,undervote2,undervote3)
```

```
## Warning in rm(undervote, undervote2, undervote3): object 'undervote3' not
## found
```

```
table(data$first)
```

```
##
##   Golden     Hoar Poliquin
##   142406       30   138911
```

```
round(prop.table(table(data$first)),3)
```

```
##
##   Golden     Hoar Poliquin
##    0.506    0.000    0.494
```

```
final <- filter(data,first == "Golden"|
    first=="Poliquin"|first=="Hoar")
table(final$first)
```

```
##
##   Golden     Hoar Poliquin
##   142406       30   138911
```

```
round(prop.table(table(final$first)),3)
```

```
##
##   Golden     Hoar Poliquin
##    0.506    0.000    0.494
```

```
final<- filter(final,first == "Golden"|
    first=="Poliquin")
table(final$first)
```

```
##
##   Golden Poliquin
##   142406   138911
```

```
round(prop.table(table(final$first)),4)
```

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

Results

Golden won with about 3000 more valid votes than Poliquin.

People need training on how to fill out a rank choice ballot. Lots of votes were invalid because of overvoting and undervoting.

Comparison of results

Source	Candidate	Votes	Percent
SOS Nov 15	Golden	139231	50.53
	Poliquin	136326	49.47
SOS Nov 26	Golden	142240	50.62
	Poliquin	138931	49.38
MPR	Golden		50.53
	Poliquin		49.47
Press Herald	Golden	139231	50.53
	Poliquin	136326	49.47
My Analysis	Golden	142406	50.62
	Poliquin	138911	49.38

Poliquin has demanded a recount and if that doesn't give him the victory, he wants the judiciary to declare that Rank Choice voting is unconstitutional.

The recount is scheduled to start on December 4, and may take up to a month.

My guess is that the outcome will show no significant change, and that a judge will decide that there is nothinng unconstitutional about the RC process.