

# R Notebook

ELEC13: Percent vote for senators by province

```
## Warning: package 'dplyr' was built under R version 3.5.2
```

```
##
```

```
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
```

```
##
```

```
## filter, lag
```

```
## The following objects are masked from 'package:base':
```

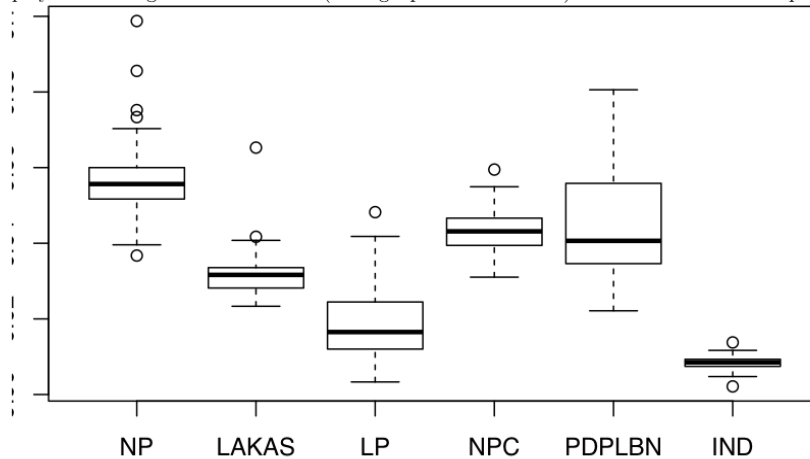
```
##
```

```
## intersect, setdiff, setequal, union
```

prty13: Average share of votes (average percent of votes) for a senator in the party per province

ELEC19: Percent vote for senators by province

prty19: Average share of votes (average percent of votes) for a senator in the party per province

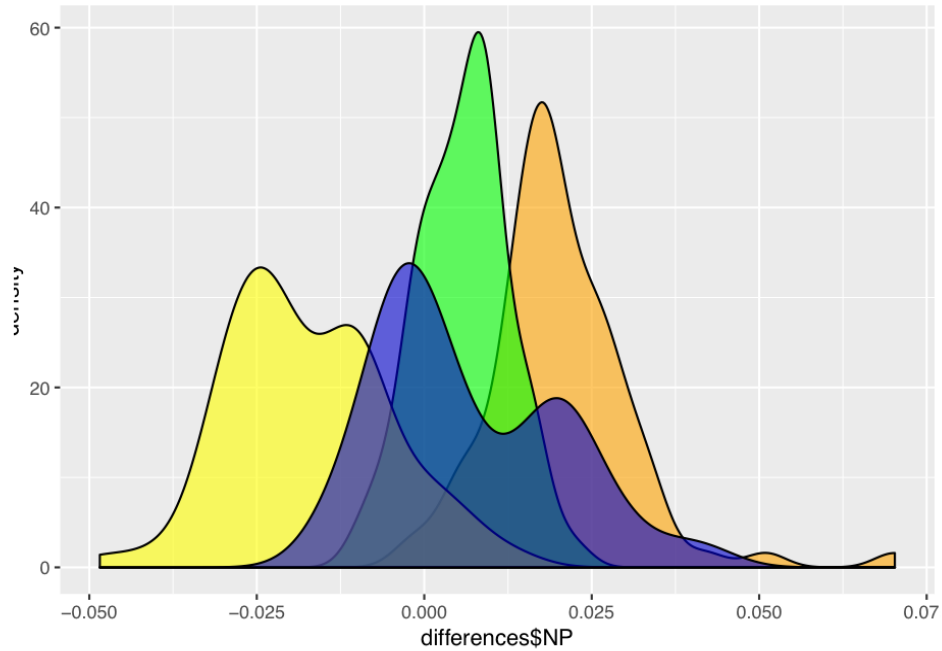


## Party Affiliation & Strength

Did provinces support the same parties throughout 2013, 2016, 2019?

Plot of difference in average share of votes received by candidates in party X in a province of 2013 and 2019 (orange - NP, green - NPC, yellow - LP, blue - PDP)

```
## [1] 0.0202198
```



Which provinces voted for PDP Laban?

```
## [1] AGUSAN DEL NORTE      BASILAN
## [3] CAMIGUIN               COMPOSTELA VALLEY
## [5] COTABATO (NORTH COT.)  DAVAO (DAVAO DEL NORTE)
## [7] DAVAO OCCIDENTAL       DAVAO ORIENTAL
## [9] LANA DEL NORTE         LANA DEL SUR
## [11] MAGUINDANAO            MISAMIS ORIENTAL
## [13] SARANGANI              SULU
## [15] SURIGAO DEL SUR        TAWI-TAWI
## [17] ZAMBOANGA DEL NORTE    ZAMBOANGA DEL SUR
## 84 Levels: ABRA AGUSAN DEL NORTE AGUSAN DEL SUR AKLAN ALBAY ... ZAMBOANGA SIBUGAY
```

pres16: Number of votes for president

vp16: Number of votes for vice president

Are they the same provinces that supported Duterte?

Provinces supporting Duterte in 2016 and PDP in 2019

```
## [1] "AGUSAN DEL NORTE"      "BASILAN"
## [3] "COMPOSTELA VALLEY"     "COTABATO (NORTH COT.)"
## [5] "DAVAO (DAVAO DEL NORTE)" "DAVAO OCCIDENTAL"
## [7] "DAVAO ORIENTAL"        "LANA DEL NORTE"
## [9] "LANA DEL SUR"           "MAGUINDANAO"
## [11] "MISAMIS ORIENTAL"      "SARANGANI"
## [13] "SULU"                  "SURIGAO DEL SUR"
```

```
## [15] "TAWI-TAWI"          "ZAMBOANGA DEL NORTE"
## [17] "ZAMBOANGA DEL SUR"
```

Provinces voting Duterte in 2016 that didn't vote PDP in 2019

```
setdiff(proDuterte2016, proPDP2019)
```

```
## [1] "ABRA"
## [2] "AGUSAN DEL SUR"
## [3] "BATAAN"
## [4] "BATANGAS"
## [5] "BILIRAN"
## [6] "BOHOL"
## [7] "BUKIDNON"
## [8] "BULACAN"
## [9] "CAVITE"
## [10] "CEBU"
## [11] "DAVAO DEL SUR"
## [12] "DINAGAT ISLANDS"
## [13] "ILOCOS NORTE"
## [14] "LAGUNA"
## [15] "LEYTE"
## [16] "MIDDLE EAST AND AFRICAS"
## [17] "NATIONAL CAPITAL REGION - FOURTH DISTRICT"
## [18] "NATIONAL CAPITAL REGION - MANILA"
## [19] "NATIONAL CAPITAL REGION - SECOND DISTRICT"
## [20] "NATIONAL CAPITAL REGION - THIRD DISTRICT"
## [21] "PALAWAN"
## [22] "PAMPANGA"
## [23] "RIZAL"
## [24] "SOUTH COTABATO"
## [25] "SOUTHERN LEYTE"
## [26] "SULTAN KUDARAT"
## [27] "SURIGAO DEL NORTE"
## [28] "TAGUIG - PATEROS"
## [29] "ZAMBOANGA SIBUGAY"
```

Provinces voting PDP in 2019 that didnt' vote Duterte in 2016

```
setdiff(proPDP2019, proDuterte2016)
```

```
## [1] "CAMIGUIN"
```

### Do members of the same party perform equally well?

Across 4 major parties, there is at least one member of the party who received a significantly different share of votes per province in comparison to the other members of the party at a significance level of 0.05.

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## name      2 0.02852 0.014258   66.78 <2e-16 ***
## Residuals 249 0.05317 0.000214
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##           Df Sum Sq Mean Sq F value Pr(>F)
## name      1 0.002251 0.0022508   30.13 1.49e-07 ***
## Residuals 166 0.012402 0.0000747
## ---
```

```

## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##           Df Sum Sq Mean Sq F value Pr(>F)
## name      5 0.05218 0.010436  65.53 <2e-16 ***
## Residuals 498 0.07931 0.000159
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##           Df Sum Sq Mean Sq F value Pr(>F)
## name      4 0.06875 0.017188  73.44 <2e-16 ***
## Residuals 415 0.09713 0.000234
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## Pairwise comparisons using t tests with pooled SD
##
## data:  NPsumm$votes and NPsumm$name
##
##           CAYETANO..PIA..NP. MARCOS..IMEE..NP.
## MARCOS..IMEE..NP.      0.013      -
## VILLAR..CYNTHIA..NP. 1.5e-15      < 2e-16
##
## P value adjustment method: none

##
## Pairwise comparisons using t tests with pooled SD
##
## data:  NPCsumm$votes and NPCsumm$name
##
##           EJERCITO..ESTRADA.JV..NPC.
## LAPID..LITO..NPC. 1.5e-07
##
## P value adjustment method: none

##
## Pairwise comparisons using t tests with pooled SD
##
## data:  LPsumm$votes and LPsumm$name
##
##           ALEJANO..GARY..LP.
## AQUINO..BENIGNO.BAM...LP. < 2e-16
## DIOKNO..CHEL..LP.      0.1382
## GUTOC..SAMIRA..LP.      0.9459
## ROXAS..MAR..LP.      5.8e-14
## TA.ADA.LORENZO.ERIN.TAPAT..LP. 0.1130
##           AQUINO..BENIGNO.BAM...LP. DIOKNO..CHEL..LP.
## AQUINO..BENIGNO.BAM...LP.      -      -
## DIOKNO..CHEL..LP.      < 2e-16      -
## GUTOC..SAMIRA..LP.      < 2e-16      0.1571
## ROXAS..MAR..LP.      1.3e-07      8.8e-10
## TA.ADA.LORENZO.ERIN.TAPAT..LP. < 2e-16      0.0022
##           GUTOC..SAMIRA..LP. ROXAS..MAR..LP.
## AQUINO..BENIGNO.BAM...LP.      -      -
## DIOKNO..CHEL..LP.      -      -
## GUTOC..SAMIRA..LP.      -      -

```

```

## ROXAS..MAR..LP.          9.2e-14      -
## TA.ADA.LORENZO.ERIN.TAPAT..LP. 0.0984    < 2e-16
##
## P value adjustment method: none
##
## Pairwise comparisons using t tests with pooled SD
##
## data:  PDPsumm$votes and PDPsumm$name
##
##          DELA.ROSA..BATO..PDPLBN. GO..BONG.GO..PDPLBN.
## GO..BONG.GO..PDPLBN.          0.022      -
## MANGUDADATU..DONG..PDPLBN.    < 2e-16    < 2e-16
## PIMENTEL..KOKO..PDPLBN.       6.7e-09    2.7e-15
## TOLENTINO..FRANCIS..PDPLBN.   2.7e-07    3.2e-13
##          MANGUDADATU..DONG..PDPLBN.
## GO..BONG.GO..PDPLBN.          -
## MANGUDADATU..DONG..PDPLBN.    -
## PIMENTEL..KOKO..PDPLBN.       7.4e-13
## TOLENTINO..FRANCIS..PDPLBN.   6.5e-15
##          PIMENTEL..KOKO..PDPLBN.
## GO..BONG.GO..PDPLBN.          -
## MANGUDADATU..DONG..PDPLBN.    -
## PIMENTEL..KOKO..PDPLBN.       -
## TOLENTINO..FRANCIS..PDPLBN.   0.491
##
## P value adjustment method: none

```