Analyzing Voter Turnout in Douglas County, Nebraska

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**Abstract**

Historically, the trend in voter turnout for elections in the United States is based on the expansion of voting rights. Voter turnout becomes gradually larger over the years when the restrictions are lifted to all citizens who are eighteen years or older. In this research, the analysis of voter turnout will be focused on Douglas County, Nebraska. Using public data from the Douglas County Election Commission, we will create data products to investigate how voter turnout may differ between presidential and non-presidential election years. We will also compare primary and general elections, analyze how voter registration has changed since 1998, and how demographics have changed which could affect voter registration. Ultimately, we will use our data products to predict how past voter turnout could affect voter turnout in the 2020 general election.

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**Data Setup and Cleaning**

**Presidential vs Gubernatorial Election Years**

total\_turnout democrat\_turnout

0.6

0.5

0.4

0.3

0.2

e

election\_cycle

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republican\_turnout third\_party\_turnout

0.6

0.5

0.4

0.3

0.2

2000 2005 2010 2015 2000 2005 2010 2015 election\_year

2

gubernatorial presidential

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0.5

0.4

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0.3

2000 2005 2010 2015 election\_year

election\_cycle gubernatorial

presidential

**We will also compare primary and general elections** ## Warning: Removed 1 rows containing missing values (geom\_point).

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total\_turnout democrat\_turnout

0.8

0.6

0.4

0.2

0.0

republican\_turnout third\_party\_turnout

0.8

0.6

0.4

0.2

0.0

2000 2005 2010 2015 2000 2005 2010 2015 election\_year

4

election\_type general

primary

**analyze how voter registration has changed since 1998** Number of Voter Registration in Primary Election

gubernatorial presidential

2018

2016

2014

2012

r

2010

a

e

Y

2008

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t

c

2006

e

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E

2004

2002

2000

1998

0e+00 2e+05 4e+05 6e+050e+00 2e+05 4e+05 6e+05 Voter Registration

5

variable

democrat\_registered

republican\_registered third\_party\_registered total\_registered

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c

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lE

Number of Voter Registration in General Election gubernatorial presidential

2018

2016

2014

2012

2010

2008

2006

2004

2002

2000

1998

variable

democrat\_registered

republican\_registered third\_party\_registered total\_registered

0e+00 2e+05 4e+05 6e+050e+00 2e+05 4e+05 6e+05

Voter Registration

Overall, we see an increase trend in voter registration from 1988 to 2018 for both the primary as well as general gubernatorial and presidential elections. Looking at all four plots, the number of third party registration is minuscule comparing to the numbers of republican and democrat parties. In addition, the upward trend is more consistent for gubernatorial election. As for the presidential election, there’s small break in the plot as the trend slightly dips down in 2008 and picks up again in 2012.

**Geography of Voter Registrations**

electionsByWard <- elections **%>%**

**filter**(election\_year **==** 2020) **%>%**

**mutate**(

total\_turnout = total\_voted**/**total\_registered,

democrat\_turnout = democrat\_voted**/**democrat\_registered,

republican\_turnout = republican\_voted**/**republican\_registered,

nonpartisan\_turnout = nonpartisan\_voted**/**nonpartisan\_registered,

third\_party\_turnout = third\_party\_voted**/**third\_party\_registered)

electionsByWardGeom <- **left\_join**(wpgeom, electionsByWard, by = **c**("Ward\_Preci" = "wp")) 6

41.4°N

41.35°N

41.3°N

41.25°N

41.2°N

96.5°W 96.4°W 96.3°W 96.2°W 96.1°W 96°W 95.9°W 7

total\_turnout

0.5

0.4

0.3

0.2

0.1

democrat\_turnout 0.2

0.4

0.6

democrat\_turnout republican\_turnout third\_party\_turnout

value

0.6

0.4

0.2

0.0

Proportion Republican vs Democrat Registrants by Precinct

registration\_weight

0.50

0.25

0.00

−0.25

We evaluated voter turnout for the 2020 presidential primary election, the most recently available data. Uniform turnout was observed overall and by party, with some higher or lower geographical pockets. The most recent voter registration data indicates that the eastern portion of the county has the highest weight of democrats, with the western portion of the county with the highest weight of republicans.

**demographics have changed which could affect voter registration**

## `summarise()` ungrouping output (override with `.groups` argument) ## `summarise()` regrouping output by 'PUMACE10' (override with `.groups` argument)

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420000 400000 380000 360000

120000 100000 80000

Overall Douglas County Population 2006−2018

2010 2015

Year

Douglas County Population 2006−2018 by Location

Location

Douglas County Northeast

Douglas County Northwest

Douglas County Southeast

Douglas County Southwest

2010 2015

Year

9

Douglas County Population 2006−2018 by Sex

210000

200000

nSex

o

i

t

a

l

u

p

o

Male

Female

P

n

o

it

a

lu

po

P

190000 180000

3e+05 2e+05 1e+05 0e+00

2010 2015

Year

Douglas County Population 2006−2018 by Race

2010 2015

Year

10

Race

White/Caucasian

Black/African American Other Non−white

Asian

Two or more races

Racial Proportions of Douglas County by PUMA Area White/Caucasian

Black/African American

total

0.8

Other Non−white Asian

Two or more races

0.6

0.4

0.2

We find that Douglas County has

been growing steadily in population since 2010. The growth in population, however, seems to be caused mostly by those who identify as White/Caucasian, with racial minority groups not realizing similar growth.

Douglas County Election Commission. (2020a). *Douglas County Election Voter Precinct Maps* [Data set]. Retrieved from https://www.votedouglascounty.com/maps.aspx

Douglas County Election Commission. (2020b). *Douglas County Voter Turnout* [Data set]. Retrieved from https://www.votedouglascounty.com/voter\_turnout.aspx

United States Census Bureau. (2019). *2010 Census Public Use Microdata Area (PUMA) Reference Maps* [Data set]. Retrieved from https://www.census.gov/geographies/reference-maps/2010/geo/2010-pumas.html

United States Census Bureau. (2020). *Public Use Microdata Sample (PUMS)* [Data set]. Retrieved from https://www.census.gov/programs-surveys/acs/microdata.html

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