

## VOTING RATES IN U.S. PRESIDENTIAL ELECTIONS

### RELEVANT JMP PLATFORMS AND STATISTICAL TECHNIQUES

Graph Builder : Time series graphs ; Simple Linear Regression

### PROBLEM STATEMENT

High participation rates in elections is a sign of a healthy democracy as it's an indication of the engagement the citizenry has in the political process and it increases the likelihood that election results will align with what the majority of a population wants. Political scientists examine these participation rates not just in aggregate but also across various demographics (e.g., age, education, race, gender, among others).



Data has been gathered on voting rates in U.S. presidential elections from 1964 - 2020. Purpose of the analysis of these data will be to create various visualizations to examine these voting rates identifying trends and differences.

## DATA SET

### Voting\_Rates\_US\_Presidential\_Elections.jmp

Year	Presidential Election years from 1964 to 2020
Overall	Percentage of the total voting-age population that voted
Male	Percentage of the male voting-age population that voted
Female	Percentage of the female voting-age population that voted
Age_18-24	Percentage of the voting-age population between the ages of 18 to 24 that voted
Age_25-44	Percentage of the voting-age population between the ages of 25 to 44 that voted
Age_45-64	Percentage of the voting-age population between the ages of 45 to 64 that voted
Age_65+	Percentage of the voting-age population age 65 or older that voted
White	Percentage of the voting-age White population that voted
African American	Percentage of the voting-age African American population that voted
Asian	Percentage of the voting-age Asian population that voted
Hispanic	Percentage of the voting-age Hispanic population that voted
Ed_No High School	Percentage of the voting-age population that has not attended high school that voted
Ed_9 <sup>th</sup> -12 <sup>th</sup> Grade	Percentage of the voting-age population that has attended but not completed high school that voted
Ed_No High School	Percentage of the voting-age population that has completed high school that voted
Ed_Some College or Associates Degree	Percentage of the voting-age population that has completed some college or attained an associates degree that voted
Ed_Bachelors Degree or More	Percentage of the voting-age population that has attained a bachelors degree or more that voted

## EXERCISES

1. Create a time series graph of the voting rates (overall and for each group). Describe any trends or features. As a mean to determine if there is enough statistical evidence to support any trends you have identified, fit a linear regression equation to each and examine the p-values.

*Hint: Use Graph Builder. Select these in the graph palette.*



*Choose 'Equation' and 'F Test' in the control panel on the lower left of the graph.*

2. Create a time series graph showing the voting rates for males and females together. Describe any trends or features.
3. Create a time series graph showing the voting rates for the four different age groups together. Describe any trends or features.
4. Create a time series graph showing the voting rates for the four different ethnic groups together. Describe any trends or features.
5. Create a time series graph showing the voting rates for the five education levels together. Describe any trends or features.
6. What other data would be helpful to have to better understand potential trends and differences in voting rates?

## COMPLIMENTARY MATERIALS

Data Source: <https://usafacts.org/data/topics/people-society/democracy-and-society/elections/presidential-voting-rate/>

**Note:** Please adhere to any citation requirements for distribution and use of this data.