

2013 American States: Graduation Rates, Unemployment Rates, and Party Affiliation

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The United States federal government yields power to the states in a multitude of ways, many of which result in differing success levels. Many factors contribute to a state's success, including party affiliation, and thus the government's ability to make decisions and compromises, as well as the financial situations of the people within a state. Success might also be related to location, as some states in similar parts of the country often have similar success. One measure of success is graduation rates, which reports the amount of people who drop out of high school, often for reasons related to a failure of government support. This report seeks to understand which factors contribute to higher graduation rates, by investigating the relationships between geography, unemployment rates, party unification, and graduation rates.

Data Collection

In an attempt to explore the relationships between political affiliation, unemployment rates, graduation rates, and geographic regions of American states in 2013, the following variables were collected:

- Governor party affiliation ("Former governors," 2018; Kaplan, 2020)
- State House party affiliation (National Conference of State Legislatures, 2013)
- State Senate party affiliation (National Conference of State Legislatures, 2013)
- Whether the three branches of government are unified in party affiliation
- State unemployment rate (U.S. Bureau of Labor Statistics, 2023)
- State graduation rate ("Understanding Idaho's adjusted cohort graduation rate," 2018; "Public high school 4-year adjusted cohort graduation rate (ACGR) for the United States, the 50 states and the District of Columbia: School years 2010-11 to 2012-13," 2015)
- Region (U.S. Department of Commerce Economics and Statistics Administration, n.d.)

- Whether the state is southern.

Some problems arose when collecting this data. Rather than having a traditional bicameral legislature with a house and senate, Nevada has a unicameral legislature where each elected official has no party affiliation. Thus, Nevada was removed from consideration for each variable, leaving 49 states of interest for which data was collected. Additionally, the Virginia state senate had an even split of Republican and Democratic senators, so there was no majority party controlling the senate. Thus, the three branches of government were considered not unified in party affiliation.

Analysis and Results

Descriptive Data Analysis

The data collected, with some data analysis, can provide information about party affiliation, graduation rates, and unemployment rates across the country in 2013.

Table 1

Pivot Table, Average Graduation Rate by Region

<i>Region</i>	AVERAGE of Graduation Rate (%)
Midwest	84.83
Northeast	84.67
South	81.19
West	76.93
Grand Total	81.58

Table 1 provides the average graduation rate by geographic region. The region with the highest rate is the Midwest, with an 84.83% graduation rate. The region with the lowest rate is the West, with a 76.93% graduation rate.

Table 2

Measures of Central Tendency

Mode of Governor Party Affiliation	Republican
Mode of State House Party Affiliation	Republican
Mode of State Senate Party Affiliation	Republican
Mode of Unified Government vs Non-Unified	Unified
Median of Unemployment Rate (%)	6.7
Median of Graduation Rate (%)	83
Mode of Region	South
Mode of Southern State vs Non-Southern	Non-Southern

Table 2 provides simple summary statistics for each variable, with the measure of central tendency reported. Data related to party affiliation or region is nominal, categorical data, so the best measure of central tendency is the mode. For all three branches of government, the most common party affiliation is Republican. Additionally, more often than not, all three branches are unified in party affiliation for each state. The southern region has the highest number of states, but most states are not southern. However, graduation and unemployment rates are quantitative variables, so the best measure of central tendency is either the mean or the median. For this paper, unemployment and graduation rate are reported with the median, as the variation within each variable affected the mean. The median unemployment rate is 6.7%, and the median graduation rate is 83%.

Figure 1

Histogram of State Unemployment Rate

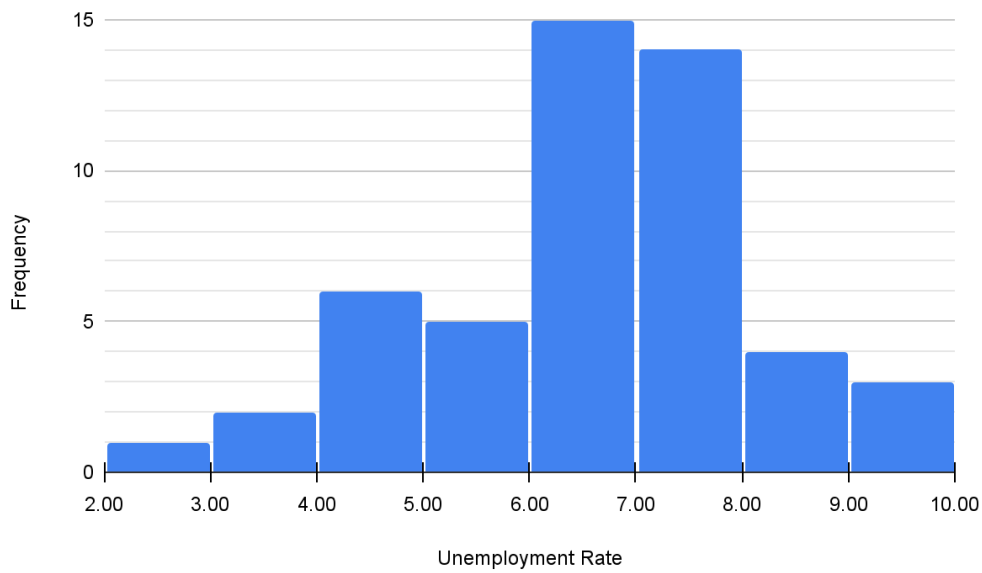


Figure 1 shows the distribution of unemployment rate for each state. The data range falls between 2 and 10 percent, with most states reporting an unemployment rate of 6-8%. The data is slightly skewed to the left, but seems to be close to symmetrical.

Figure 2

Histogram of State Graduation Rate

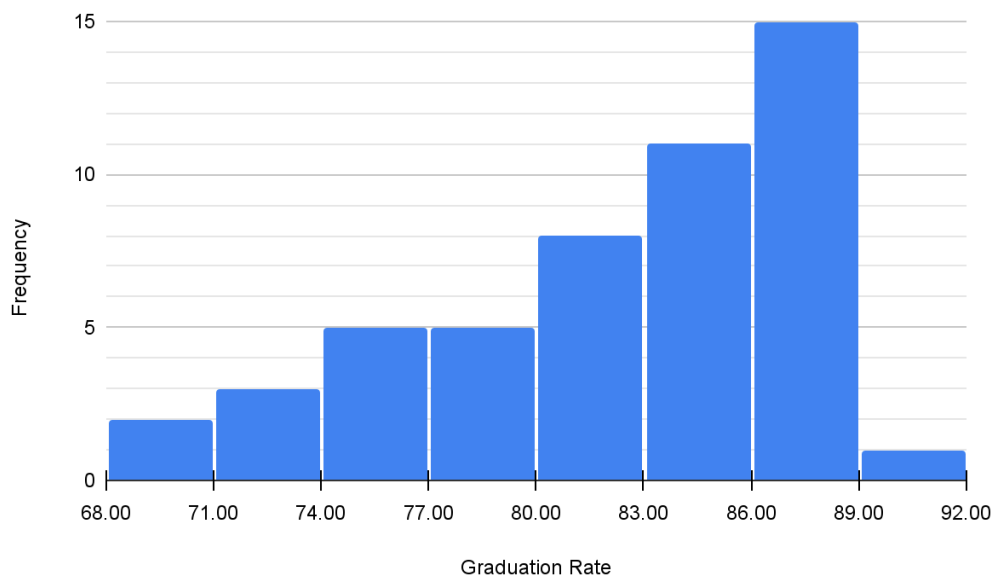


Figure 2 shows the distribution of graduation rate for each state. The data range falls between 68 and 92 percent, with most states reporting an unemployment rate of 86-89%. The data is strongly skewed to the left, however only one state reports a graduation rate above 89%.

Regression Analysis

While the data shows some information on its own, the causal relationships between different variables are also investigated. In order to examine the relationship between certain variables, the following paragraphs perform ordinary least-squares regression.

Table 3

Unemployment Rate vs Graduation Rate

Variables	Coefficient (standard error)
Unemployment Rate (%)	-1.37 (0.49)*
Constant	90.52 (3.33)
R ²	.1424
Number of Observations	49

Note. Variables denoted with a * have an associated p-value of less than 0.05.

Table 3 shows my regression model, examining the relationship between the state unemployment rate and the state graduation rate. I am confident that the unemployment rate is related to decreased graduation rate. For every 1% increase in unemployment rate, the graduation rate goes down by 1.37%, on average. My model explains about 14.24% of the variation in graduation rate.

Table 4

Graduation Rate vs Unemployment Rate, Unified Party Affiliation, Southern State

Variables	Coefficient (standard error)
Unemployment Rate (%)	-1.35 (0.49)*
Unified Government	-2.69 (1.69)
Southern State	0.27 (1.56)

Constant	92.34 (3.51)
R ²	0.1879
Number of Observations	49

Note. Variables denoted with a * have an associated p-value of less than 0.05.

Table 4 shows my regression model, examining the relationship between the state graduation rate and the state unemployment rate, whether the state government has unified party affiliation, and whether or not the state is southern. I am confident that the state unemployment rate is related to a decrease in the graduation rate, when the other variables are held constant. For every 1% increase in unemployment, the graduation rate decreases by 1.35%, on average. I am not confident that having all three branches of government (governor, senate, and legislature) with the same party affiliation is related to graduation rate. I am not confident that a state being southern is related to the graduation rate. My model explains about 18.79% of the variation in graduation rate.

Conclusion

As reported by Table 3, a higher unemployment rate leads to a lower graduation rate. Without employment, a family's financial security is lessened, and thus children might choose to begin working rather than graduating high school, either to contribute to the family or because secondary education is not a financial possibility. There are many factors relating graduation rates to unemployment rates, and further study is required to analyze each one. As reported by Table 4, party unification does not seem to have an effect on graduation rates. Further investigation is required to explore whether party affiliation has an effect on graduation rates. Additionally, both regression models explain under 20% of the variation in graduation rates, implying that there exist other unexplored factors.

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Appendix

[2013 State Data & Analysis](#): Contains the collected state data and subsequent analysis. The contents of each sheet contained in this data set are described below:

- Data (Clean): collected data with codebooks (including Nevada), histograms of graduation rate and unemployment rate
- Data (Dirty): removed Nevada data, only numerical data for use in analysis tools
- Pivot Table: average graduation rate for each region in a pivot table
- Variable Summaries: descriptive statistics for each variable, appropriate measures of central tendency
- Unemployment vs Graduation Rate: regression output as referenced in Table 3
- Unemployment/Unified/Southern vs Graduation Rate: regression output as referenced in Table 4