Descriptive and Bivariate Statistical Analysis

Descriptive Statistics

The dependent variable of ICE arrest rates per 100,000 residents by state from January 20 through May 20, 2025, had a median of 15.25 and a mean of 18.318; this indicates that the data is right-skewed since there are a few large values causing the mean to be inflated compared to the majority of the data, which have smaller values. The ICE arrest rate per 100,000 residents ranged from 0.3 to 57.9, with an inter-quartile range of 17.65. These values also demonstrate that the data is right-skewed since the values below the median are close together, between 0.3 and 15.25, whereas the values above the median are spread apart more since they take up the larger space from 15.25 through 57.9. What the right skew demonstrates is that the majority of states have ICE arrest rates per 100,000 residents close to 15.25, but there are a few states that have significantly more arrests.

The first independent variable measured was a dichotomous variable on whether or not Trump obtained a plurality of votes within a state in the 2024 presidential election. Trump won the plurality in 62% of states and, thus, lost it in 38% of states. This means Trump winning had a mode of .62 and a proportion non-modal score of .38. The data demonstrates that Trump won the plurality of votes in the majority of different states; therefore, if a state is chosen at random, it is more likely than not that Trump won the plurality of votes within that state during the 2024 presidential election.

The next independent variable is the estimated percentage of residents who are White alone, excluding Hispanic or Latino, by state. The median percentage was 67.8, and the mean percentage was 65.84. The data ranged from 21.3 to 91.3 and had an inter-quartile range of 20.4. What this shows is that the vast majority of states have a similar proportion of people who are

White non-Hispanic, as half of the states fall within a range of 20.4 points centered on 67.8. Since the mean is less than the median, there is a greater variety of states under the median than above it, since that is what had to have pulled the mean down.

The third independent variable is the estimated percentage of unauthorized immigrants that make up the total population of each state as of 2023. The median was 0.7, and the mean was 1.988. This also suggests the distribution is right-skewed, indicating that a few states have substantially higher percentages of unauthorized immigrants compared to the majority of states. This can also be seen in the range of data, where there is a minimum value of 0.0 points and a maximum value of 21.2 points, where the minimum is much closer to the median than the maximum. The IQR was 1.775. And so, this demonstrates that the vast majority of states do not have a higher percentage of unauthorized immigrants; however, there are a few states with many unauthorized immigrants relative to their population.

The final independent variable was whether or not the Department of Justice (DOJ) lists a state as a sanctuary for undocumented immigrants. There was a mode of .78 for states not being on the list and a proportion non-modal score of 0.22 for states being on the list. This shows that the vast majority of states, 78% to be precise, are not labeled as a sanctuary for undocumented immigrants by the federal government; therefore, there are only a few states that this may have an effect on.

Bivariate Statistics

The first bivariate relationship explored was between Trump winning the plurality in a state and a state's ICE arrest rate. The two-sample t-test resulted in a value of -2.8453. The t-value indicates that if Trump won the plurality within a state, there is a greater chance of higher ICE arrest rates within that state. Since the absolute value of the t-value is greater than 2 and

almost 3, there is a very strong association, and it is unlikely that the variables are related by chance. This is not surprising since the mean arrest rate for states where Trump won the plurality is 21.46774, but only 13.17895 in states where he lost; thus, there is a very large difference in the rate of arrests depending on the outcome of the election in a state. The data is also statistically significant since the t-test resulted in a p-value of 0.006518, which is less than 0.05, so we can reject the null hypothesis with over 95% confidence. What this, thus, demonstrates is that if Trump won the plurality of votes in the 2024 presidential election in a state, the rate of ICE arrests per 100,000 residents is likely to be greater than in a state where Trump did not win the plurality of votes.

The next dependent variable that was examined for a relationship with ICE arrest rates was the estimated percentage of residents who are White and not Hispanic. Since both variables are measured at the ratio level, the correlation coefficient was calculated; it was -0.3354127. The value is a statistically significant value since the p-value was 0.01726, which is less than or equal to 0.05. The small negative value of the correlation coefficient indicates that there is a moderate negative relationship between the percentage of people who are White non-Hispanic in a state and ICE arrest rates; therefore, as the percentage of White residents increases, ICE arrest rates decrease to some extent. What this means, in reality, is that states with greater racial diversity were more likely to face higher rates of ICE arrests.

The third association considered was between the estimated percentage of unauthorized immigrants in each state and the rate of ICE arrests. The correlation coefficient was also calculated for this relationship, and it was 0.2889554. The correlation coefficient is statistically significant since the p-value was 0.04183, which is less than or equal to 0.05, meaning we reject the null hypothesis with over 95% confidence. The correlation coefficient is positive; therefore,

the relationship between unauthorized immigrants and ICE arrests is positive. Since the correlation coefficient is only 0.2889554, which is closer to 0 than 1, the relationship between unauthorized immigrants is existent but not too strong. Thus, it can be concluded that as the rate of unauthorized immigrants increased within a state, the rate of ICE arrests also increased to an extent.

Finally, the relationship between being labeled as a sanctuary state by the DOJ and ICE arrest rates was also explored. The mean rate of ICE arrests per 100,000 residents in states labeled as sanctuary states was only 10.51818, but the mean rate for states not labeled as sanctuary states was 20.51795; these means are very far apart, implying a strong association. The two-sample t-test yielded a t-value of 3.6562 with a p-value of 0.0009555, indicating that there is over 99.9% confidence in the association. Since the t-value is greater than 3, the strength of the relationship is very high. And so, the test illustrates that there is a very strong association between the DOJ labeling a state as a sanctuary state and said state having a lower rate of ICE arrests.