# Introduction

I went and looked at the following graph. The number for the skew is Democrat Votes-Republican Votes. So, a positive number means Democrat skew and a negative number means Republican skew.

Chart, scatter chart

Description automatically generated

It seems to show me that the real relationship is between what color the state and that total migration didn’t play a part. But we need to look at the numbers.

So, I did linear regressions for all these relationships:

* Migration to 2020 skew
* 2016 skew to 2020 skew
* 2016 skew + Migration to 2020 skew

# Migration to 2020 skew

## Results:

*Call:*

*lm(formula = skew2020 ~ totalMigration, data = ForStatisticalAnalysis2020)*

*Residuals:*

*Min 1Q Median 3Q Max*

*-772447 -339174 -219566 -20749 4694954*

*Coefficients:*

*Estimate Std. Error t value Pr(>|t|)*

*(Intercept) 197813.707 117432.417 1.684 0.09845 .*

*totalMigration 2.683 1.001 2.681 0.00998 \*\**

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*Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1*

*Residual standard error: 823500 on 49 degrees of freedom*

*Multiple R-squared: 0.1279, Adjusted R-squared: 0.1101*

*F-statistic: 7.185 on 1 and 49 DF, p-value: 0.009984*

## Analysis

This shows a positive relationship between migration and the resultant skew. It is a slight relationship with an adjusted R of only .11. It shows it to be significant at the .01 level.

# 2016 skew to 2020 skew

## Results

Call:

*lm(formula = skew2020 ~ skew2016, data = ForStatisticalAnalysis2020)*

*Residuals:*

*Min 1Q Median 3Q Max*

*-311996 -50790 -17798 56238 230230*

*Coefficients:*

*Estimate Std. Error t value Pr(>|t|)*

*(Intercept) 70703.43712 13836.42005 5.11 0.0000053 \*\*\**

*skew2016 1.15483 0.01855 62.27 < 0.0000000000000002 \*\*\**

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*Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1*

*Residual standard error: 98510 on 49 degrees of freedom*

*Multiple R-squared: 0.9875, Adjusted R-squared: 0.9873*

*F-statistic: 3878 on 1 and 49 DF, p-value: < 0.00000000000000022*

## Analysis

This is a big relationship as I suspected from the visualization. It is highly significant with a tiny p value and an adjusted R of .99. So this is an almost absolute predictor which is not that surprising. Most states do not change their party status from year to year.

## 2016 skew + Migration to 2020 skew

## Results

*Call:*

*lm(formula = skew2020 ~ skew2016 + totalMigration, data = ForStatisticalAnalysis2020)*

*Residuals:*

*Min 1Q Median 3Q Max*

*-309409 -48181 -15277 64001 225733*

*Coefficients:*

*Estimate Std. Error t value Pr(>|t|)*

*(Intercept) 67676.85290 14248.19500 4.750 0.0000188 \*\*\**

*skew2016 1.16168 0.02003 58.010 < 0.0000000000000002 \*\*\**

*totalMigration -0.11834 0.12927 -0.915 0.365*

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*Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1*

*Residual standard error: 98670 on 48 degrees of freedom*

*Multiple R-squared: 0.9877, Adjusted R-squared: 0.9872*

*F-statistic: 1933 on 2 and 48 DF, p-value: < 0.00000000000000022*

## Analysis

This once again shows that state is highly predictive, but that migration doesn’t make the prediction any better. In fact, it is a negative correlation though it is not significant.

# Conclusion

It seems that migration is not a significant predictor to whether a state will change their party affiliation in the next election.

# Fairness

There isn’t any real fairness issues from this conclusion. It really looks like the better predictor is normal demographic skews. The actual voting itself might be skewed due to demographic patterns but that is not something that can picked up in this data.