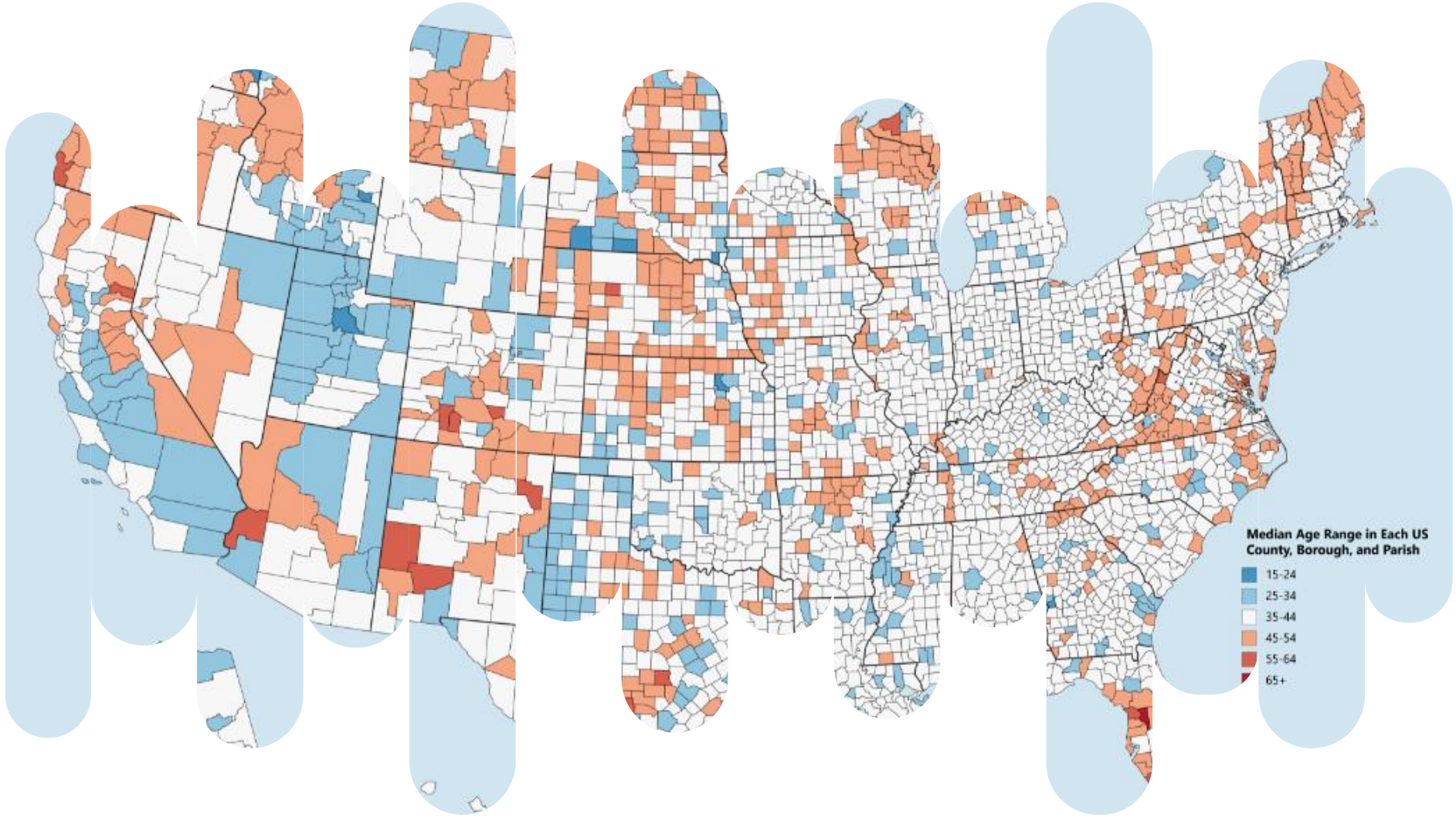
Obesity Rate in United States Counties



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RESEARCH QUESTION

How do personal choices affect obesity rates across counties in the U.S?

HYPOTHESIS

We predict that health-related personal choices such as alcohol consumption, smoking, exercise, sleep, and other factors such as income and political affiliation of each county in the United States will influence obesity rates per county

Motivation

Group Interest

A dimension of the effect of personal choice habits

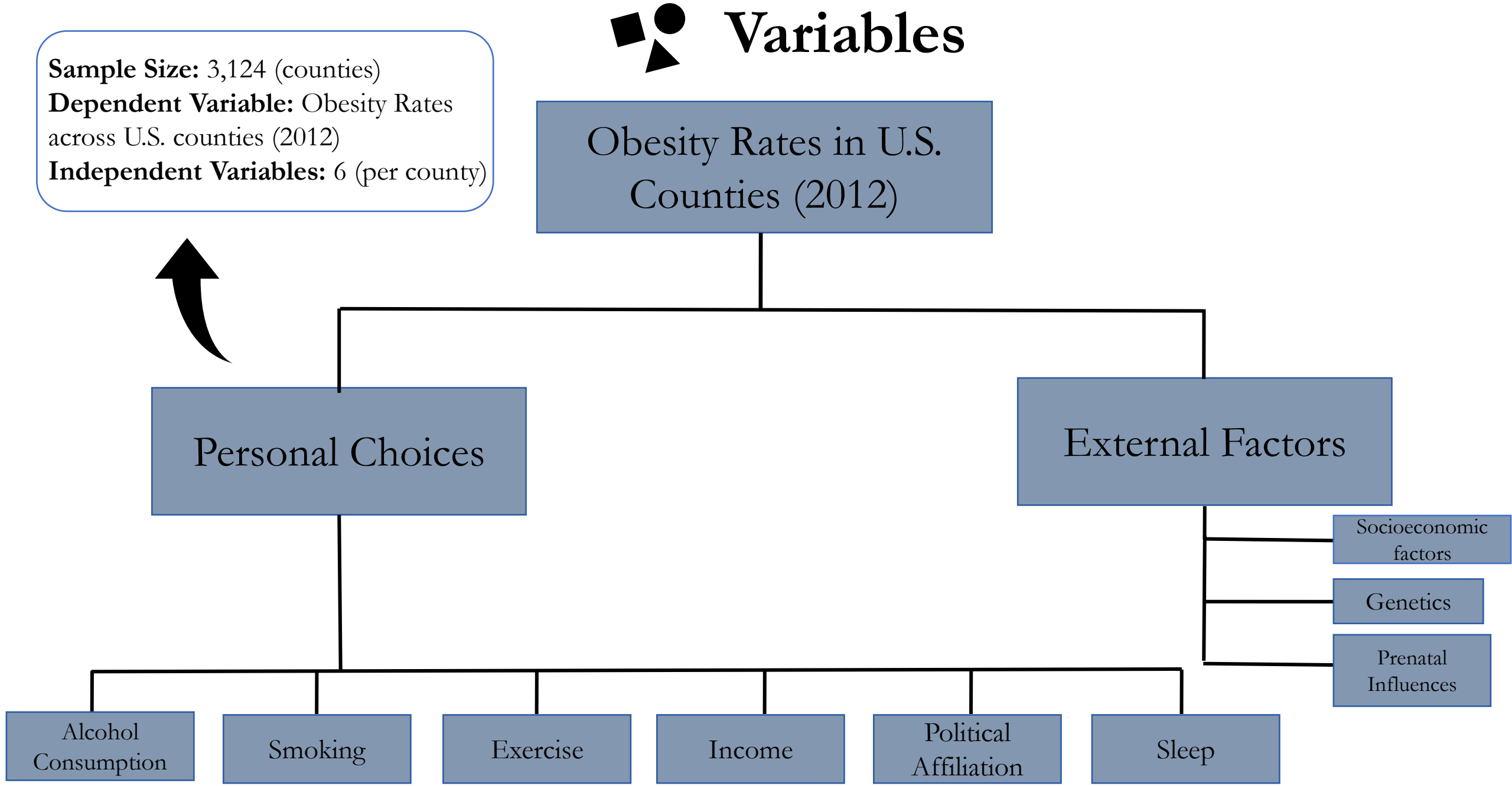
College students indulge in similar behavior

Many inconclusive studies

Help identify behavioral patterns that contribute to Obesity

Variables

Sample Size: 3,124 (counties)
Dependent Variable: Obesity Rates across U.S. counties (2012)
Independent Variables: 6 (per county)



Summary Statistics

VARIABLE	MEAN	MEDIAN	MODE	STANDARD DEVIATION	RANGE
Smoking (% of smokers/county)	0.212	0.210	0.210	0.059	0.450
Alcohol consumption (%/ county)	0.499	0.504	0.623	0.118	0.677
Exercise (% inactive/county)	0.279	0.280	0.300	0.052	0.420
Income (avg med household income $/county)	$43,102.1	$41,237.5	$32,643.0	$10,696.9	$98,498.0
Sleep (% of sleep deprived/county)	0.368	0.368	0.377	0.040	0.235
Political Affiliation (Rep OR Dem/county ; Rep = 1 and Dem = 0)	0.777	1.000	1.000	0.412	1.000

Regression Output

REGRESSION STATISTICS

Multiple R	0.68756019
R Square	0.47273901
Adjusted R Square	0.47172407
Standard Error	0.03228057
Observations	3124

ANOVA STATISTICS

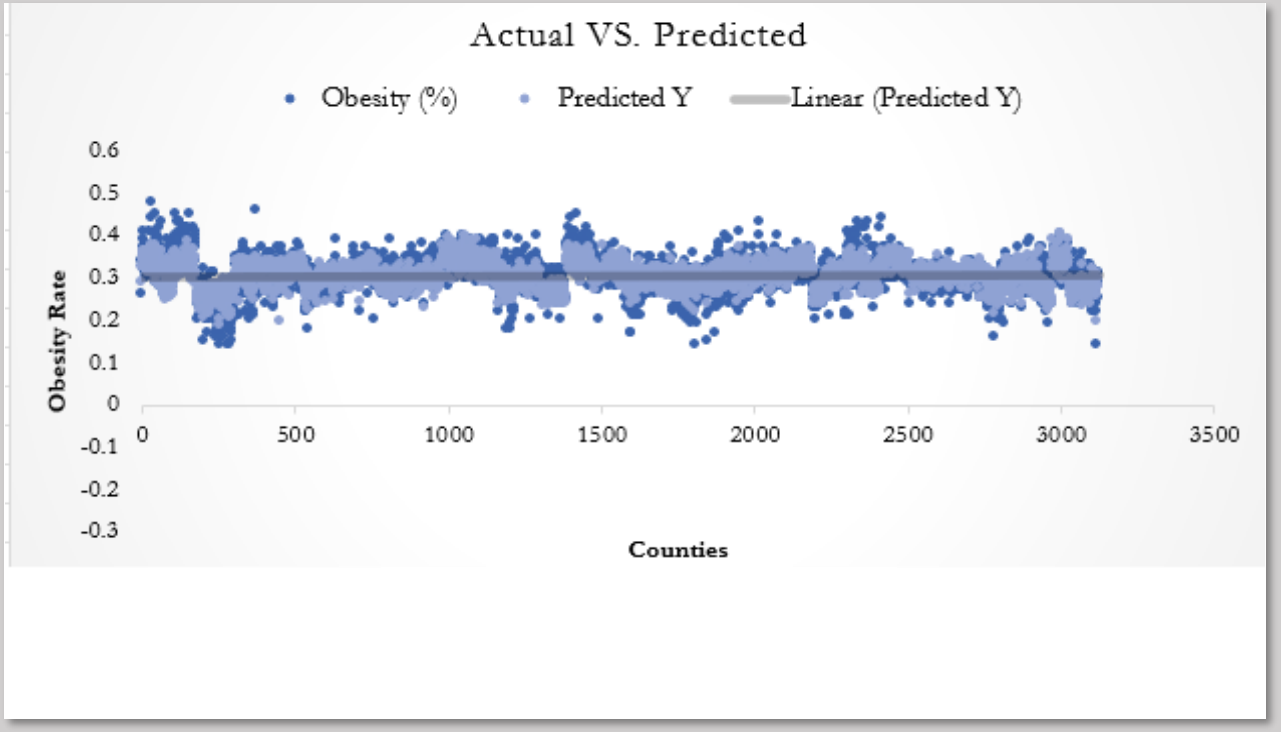
	df	SS	MS	F	Significance F
Regression	6	2.912158711	0.4854	465.78	0
Residual	3117	3.248024028	0.001		
Total	3123	6.160182738			

REGRESSION RESULT

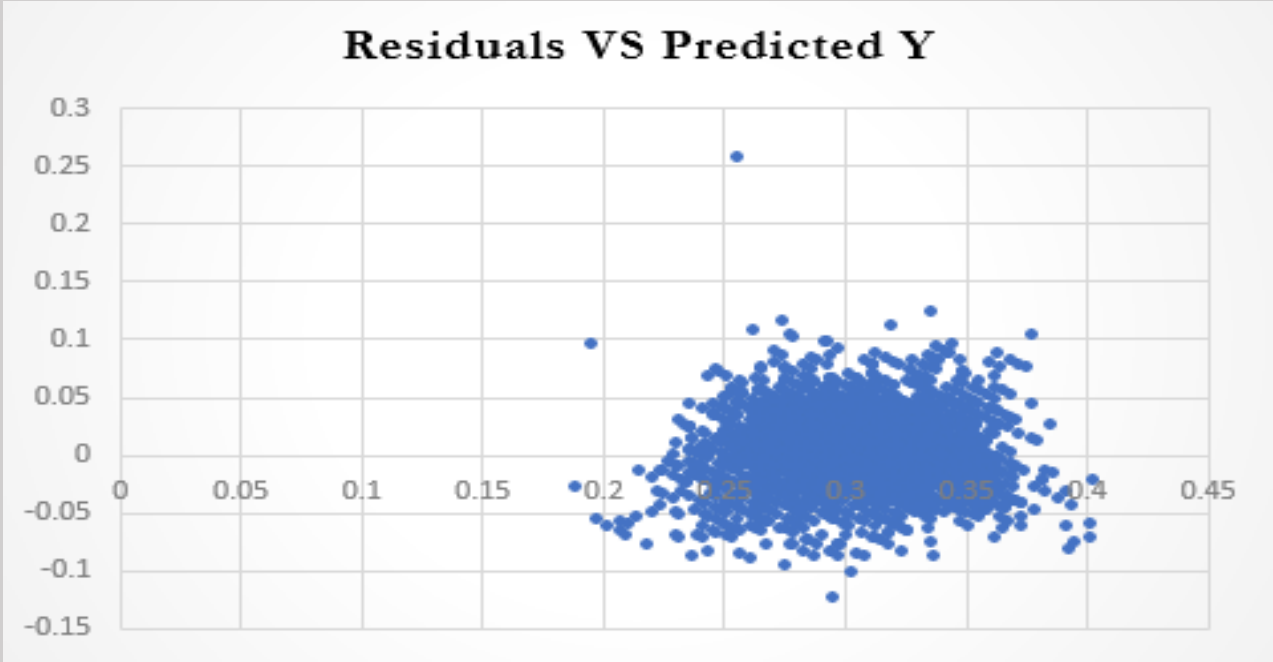
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.14104899	0.010348294	13.63	4E-41	0.120758829	0.161339156
Smoking	0.03871269	0.011314963	3.4214	0.0006	0.016527157	0.060898225
Alchohol Consumption	0.42855941	0.015320415	27.973	8E-154	0.398520287	0.45859854
Inactivity	-0.0208699	0.007095179	-2.941	0.0033	-0.034781589	-0.006958196
Sleep Deprivation	0.1711096	0.020295699	8.4308	5E-17	0.131315312	0.210903897
Income	-3.117E-07	6.13683E-08	-5.08	4E-07	-4.32058E-07	-1.91405E-07
Political Affiliation	-0.0036132	0.001488237	-2.428	0.0152	-0.006531185	-0.000695137

MODEL FIT

High overlap between predicted and actual



Our residual plot shows no pattern



Conclusion

47.3%
(r-squared)

Model Accuracy

Alcohol
&
Sleep

Influential Variables

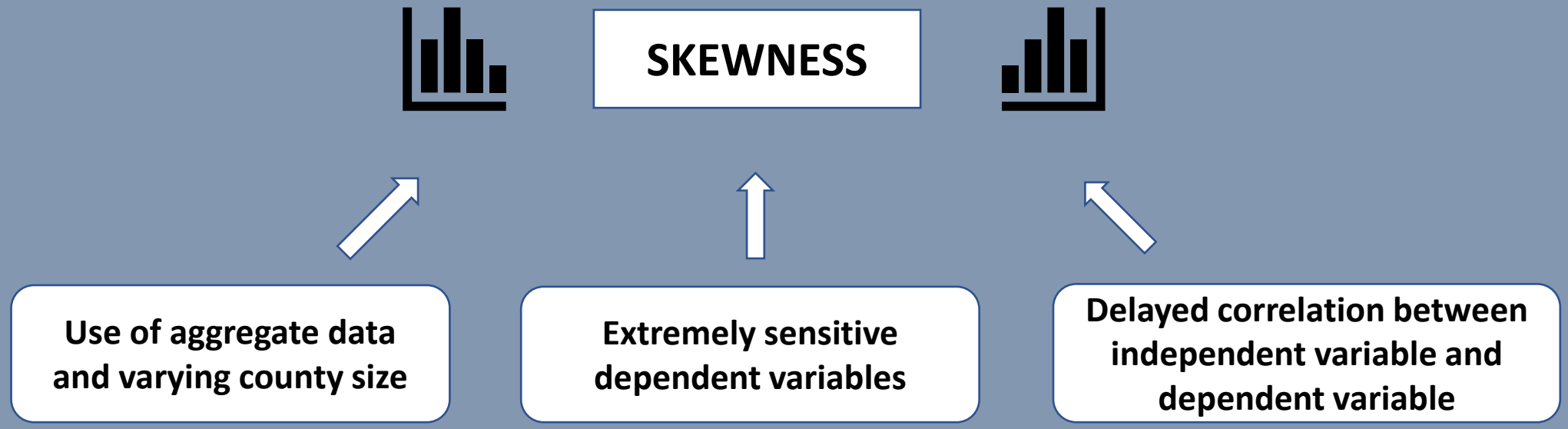
Are Democrats more obese?!

Surprising findings

Our Recommendation

We reject the null hypothesis and based on our findings we recommend people to be most careful about their alcohol consumption and sleeping hours in order to achieve a lower obesity rate

Limitations

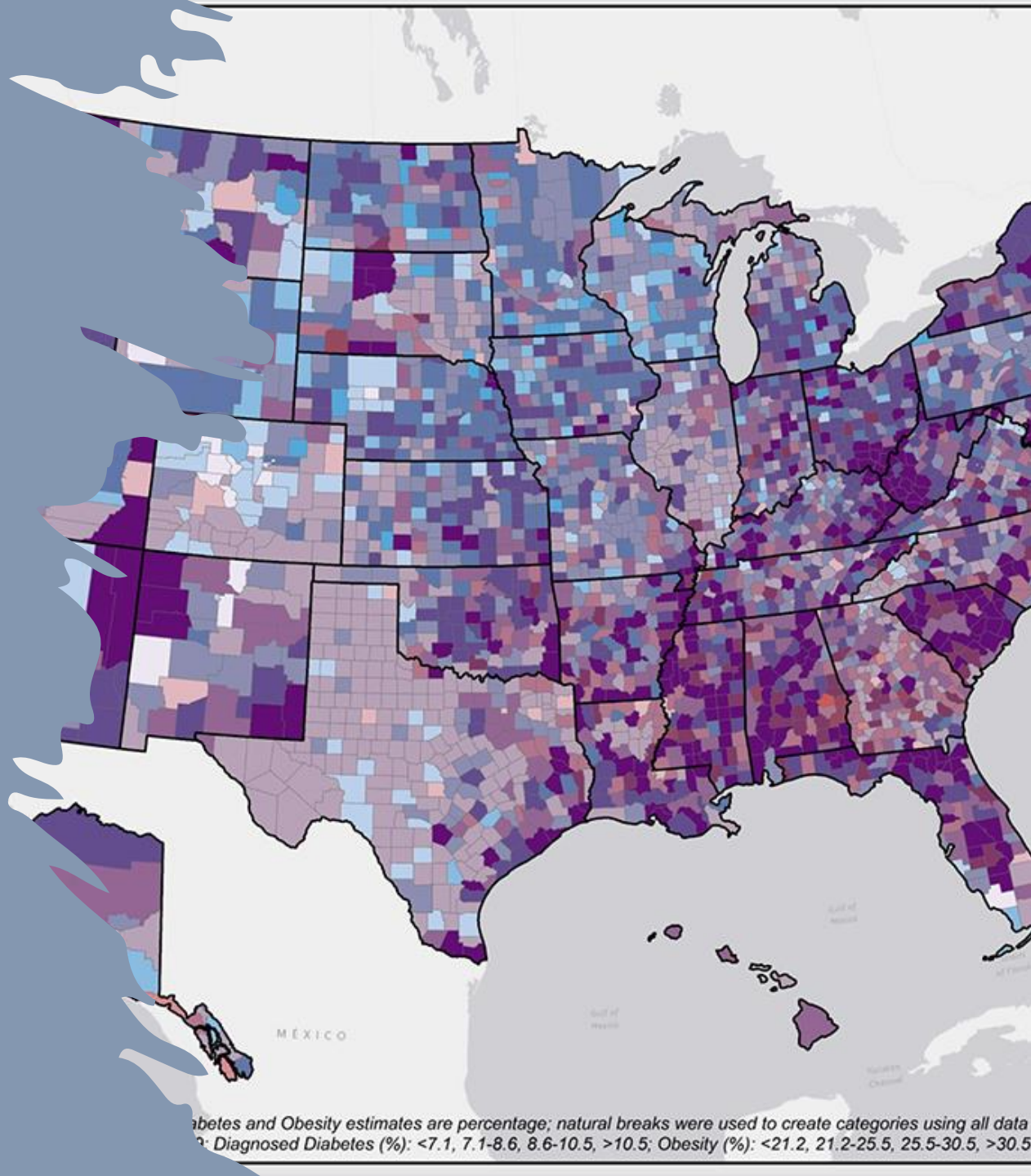


Alternative Research Method

- Time lagged research to establish a more solid causality that takes into account health habits/health trends of different time periods

Sources

- Center For Disease Control (CDC)
- County Health Rankings
- US HealthData
- MIT Election Lab



Conclusion

- 47.3% of the obesity rate can be explained by our model
- Which variable stood out the most? Alcohol and sleep. Least were income and political
- Surprisingly, income and exercise weren't as much of a contributor factors in terms of increasing obesity as we had estimated
- Another interesting observation was that the more democratic counties has higher obesity rates than the republicans.