1. **Methods**

PVI for all 50 states from the 2012 and 2016 US presidential elections was extracted from the Cook Political Report website and averaged to create one blended PVI value. PVI is calculated by measuring how strongly each state leans toward the Democratic or Republican party, compared to the nation as a whole, in US presidential elections. In this study, Democratic-leaning states were denoted by positive PVI values and Republican-leaning states were denoted negative PVI values. For example, Alabama voted 14% more Republican than the national popular vote over the 2012 and 2016 US presidential election cycles and, thus, was assigned a PVI value of -14.

Additionally, data regarding multiple measures of childhood health were obtained from the CDC from 2012 to 2016 and the median value of each was calculated for each state. The variables assessed were widely varied, but encompassed statistics regarding neonatal/infant health (low birthweight rates, very low birthweight rates, preterm birth rates, neonatal mortality rates and infant mortality rates), childhood health (childhood death rates, rates of children without medical insurance, childhood suicide rates, rates of children who are overweight or obese, childhood poverty rates), teenage health (teenage death rates, teenage birth rates, teenage rates of tobacco and cigarette use) and long-term outcomes (life expectancy at birth). In addition to these values, the median number of primary care physicians per 100k people from 2012-2016 was obtained from the US Census Bureau website. This included family practice doctors and pediatricians.

Summary statistics of each of the variables of interest were generated, including mean and standard deviation. Bivariate regression analyses were performed to assess the relationship between PVI and each of the 16 childhood health outcome variables. Pearson’s Rho was used to determine the statistical significance of these relationships, using a Bonferroni adjustment to the p value of 0.003 (derived from 0.05 divided by 16 for the number of variables of interest) to make the criteria more robust. The beta value (slope) was also calculated for each outcome to determine directionality of each relationship. Linear regression diagnostics were conducted for PVI versus each outcome variable.

An adjusted regression analysis was conducted to investigate the association between PVI and each of the health outcomes, while adjusting for state-level measures of children without health insurance, primary care physicians per 100,000 people, and childhood poverty. Pearson’s Rho, also using the Bonferroni adjustment of 0.003, and beta values were again obtained for PVI. Linear regression diagnostics were conducted for PVI versus each variable of interest after adjusting.

Next, states were designated as “moderately” Republican or “moderately” Democratic if their PVI was 5%-9.9% more Republican or Democratic than the national popular vote.16 Childhood health measures were compared in these states and differences between mean values were evaluated using Kruskal-Wallis non-parametric tests. Again, the Bonferroni adjustment of 0.003 was applied to determine significance. Additionally, those states with a PVI ≥10% more Republican or Democratic than the national mean were designated as either “extremely” Republican or “extremely” Democratic states. Similarly, the childhood health outcomes among these extremely partisan states were compared against one another. Kruskal Wallis non-parametric tests were used again to compare the childhood health measures between the two groups with a Bonferroni adjustment of 0.003.

Finally, regression analysis was performed for states 5% or more Democratic or Republican. In other words, states with a PVI between -4.9 to 4.9 were excluded and bivariate analyses were conducted with the remaining states for each health outcome. Additionally, regression was conducted for states 10% or more Democratic or Republican as well (PVI of -9.9 to 9.9 excluded). The Bonferroni adjustment was applied again to each health outcome. All analyses were conducted in R Studio.

1. **Results:**

PVI ranged greatly between states, with the lowest value, and thus most Republican state, being Utah at -21 and the highest value, and thus most Democratic state, being Hawaii at 19. Additionally, there was a relatively wide range of the outcomes for each of the variables in question, especially for teenage birth rates, teenage death rates and the percentage of children in poverty (see table 1).

Bivariate regression analysis revealed that Democratic-leaning states (PVI > 0) had statistically better outcomes for 6 out of 16 variable measures using the Bonferroni adjustment of p<0.003. These included teenage death rates, teenage birth rate, life expectancy at birth, childhood death rates, rates of uninsured children, and infant mortality rates (see table 2). In the adjusted model, controlling for children without health insurance, primary care physicians per 100k people, and children in poverty, Democratic-leaning states were found to have significantly better outcomes for 7 out of the 16 variables (p <0.003, see table 2). These included teenage death rates, life expectancy at birth, teenage birth rates, childhood death rates, teenage tobacco use rates, teenage cigarette use rates, and infant mortality rates. No outcomes were significantly better in Republican-leaning states.

Among only moderately-partisan states, childhood death rates, life expectancy at birth, and teenage birth rates were statistically significant in Democratic leaning states (p <0.003, see table 3). Moreover, the same 3 outcomes were statistically superior in extremely-Democratic states (p<0.003, see table 3), when compared to their extremely-Republican counterpart states. No outcome was statistically superior in moderately-Republican or extremely-Republican states.

For states that were at least 5% or more Republican- or Democratic-leaning, 7 health outcomes were significantly better in Democratic states using regression analysis. These included teenage birth rates, teenage tobacco use rates, teenage cigarette use rates, life expectancy at birth, percentage of children without health insurance, teenage death rates, and childhood death rates (p <0.003, see table 4). Furthermore, for states 10% or more Republican- or Democratic-leaning, 3 variables were statistically better in Democratic states. These were teenage death rates, teenage birth rates as well as life expectancy at birth (p<0.003, see table 4).