

# Who Funded the Bernie Sanders Campaign?

URP4273: Survey of Planning Information Systems

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Group 5

## **Background and Goal**

In the 2016 presidential election, Democratic nominee Bernie Sanders made quite the wake in his campaign run. Sanders platform consisted of low cost health care, distribution of the wealth, free college and an increase in income tax. While his campaign did appeal to a targeted population in the nation, Sanders fell short of securing the Democratic nomination. Despite falling short, Sanders still made history in his campaign run. Typically, presidential campaigns are funded by large donors. However, what made the Sanders campaign so unique is that the majority of donors came from ordinary people. In fact, over 9 million contributions were made by 2.5 million people, totaling up to 250 million dollars donated towards the campaign effort. The goal of this project is to find out who were these people that donated to the campaign.

## **Scope and Characteristics of the Study**

To accomplish this goal, we will focus our attention on the state of California. California was a key state in the entire Sanders campaign as it donated nearly 27 million dollars. This accounted for 11% of all of the money donated in the US. To analyze the population of California, we chose three variables for which we could identify the main demographic of contributors. The three variables are listed below:

- Household Annual Income
  - Less than 50,000\$
  - 50,000\$-65,000\$
  - 65,000\$-90,000\$
  - More than 90,000\$
- Education Level
  - No college degree
  - 2 year college degree
  - 4 year college degree
  - Advanced degree
- Age
  - 16-20 years of age
  - 21-27 years of age

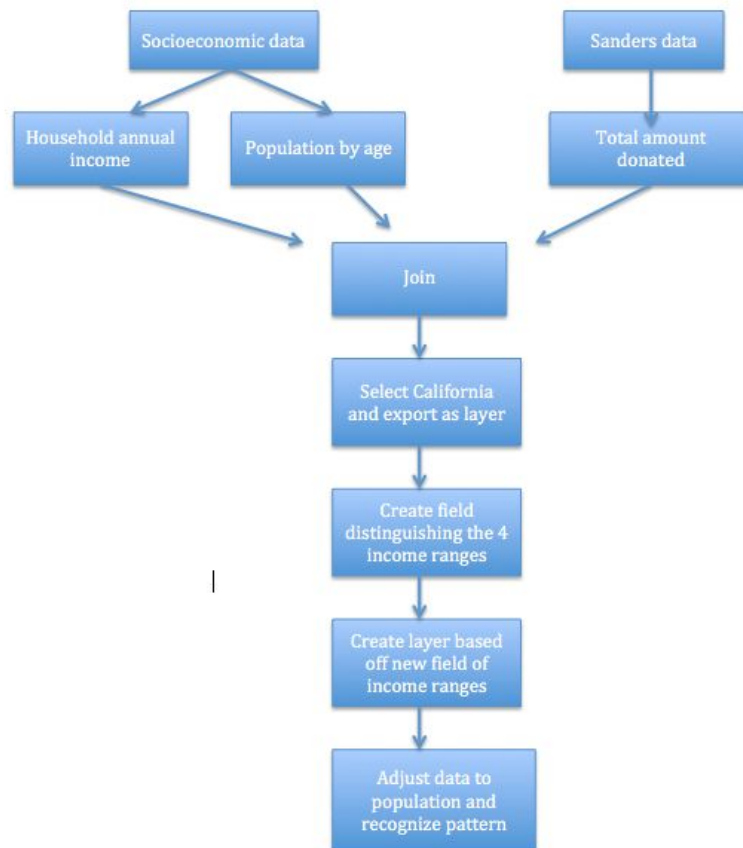
## **Hypothesis**

By looking at household annual income, we would be able to find the income range that not only donated the most money to the campaign, but also made the most number of donations. Knowing that California has the 3rd highest average annual income, we hypothesized that the upper middle and upper class population of California made the majority of donations to Sanders. The education level would show us the

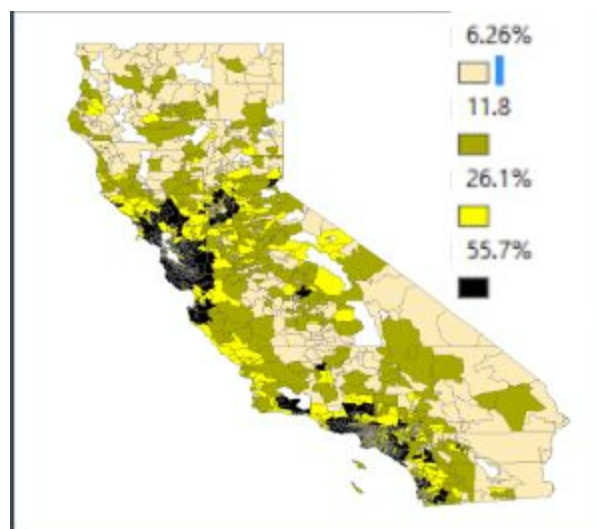
typical schooling of a Sanders donor. We hypothesized that the population with a higher education level (4 year college degree or advanced degree) would make greater contributions to the campaign. Also, we predicted that the younger population would make the majority of contributions from the state.

### Household Annual Income

Below is a flowchart and the cartographically intelligent maps that describe the methodology and results used to analyze the population that contributed to the Sanders campaign:

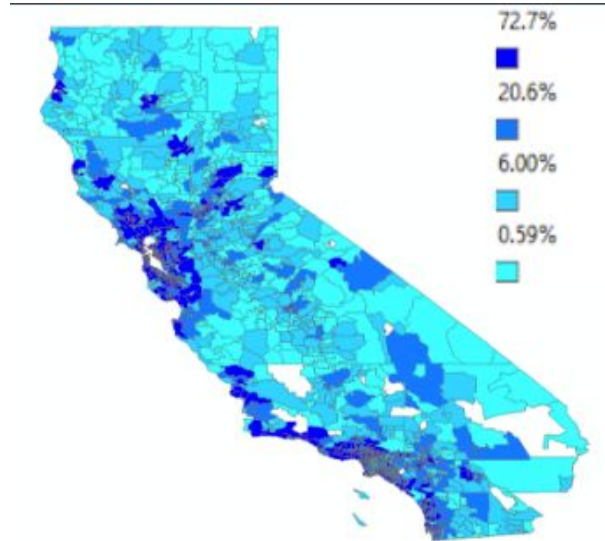


The map to the right illustrates the percentage of total amount donated by each zip code. After looking at this map, it became clear that the majority of the total amount donated (82%) came from only half of the population. This population consisted



of the households who earn greater than 65,000\$ a year.

Similarly, this map illustrates the percentage of number of donations by zipcodes. The results showed that 93% of the total number of donations made towards the campaign came from, again, households where annual income was greater than 65,000\$. The two data fields presented lead to the conclusion that the middle and upper class not only donated the majority of the money to the Sanders campaign, but also made the majority of the donations, thereby having the larger participation rate in the campaign. The charts below show the data adjusted to population for each income range. As shown, the trends remain the same:

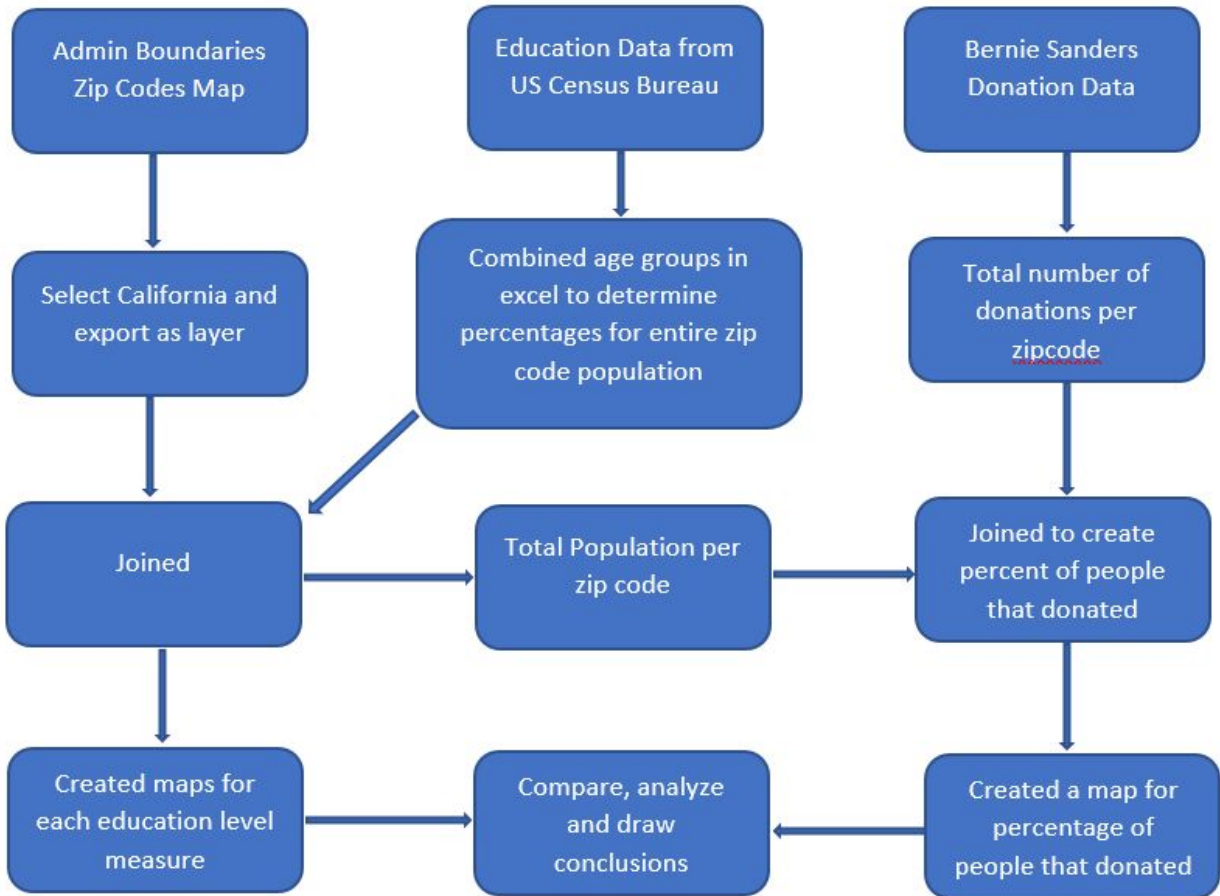


Income Range	Total Amount Donated (Dollars)	Percent of California Donations	Population	Average amount Donated per Person (Dollars)
Less than 50,000	1,695,111	6.26%	6,055,049	0.28
50,000-65,000	3,202,937	11.8%	8,799,858	0.36
65,000-90,000	7,086,227	26.1%	9,125,143	0.78
Greater than 90,000	15,086,319	55.7%	7,772,144	1.94

Income Range	Population	Number of Donations	Average Donation per person (for comparison)
Less than 50,000	6,055,049	61,742	0.010
50,000-65,000	8,799,858	130,977	0.014
65,000-90,000	9,125,143	258,871	0.028
Greater than 90,000	7,772,144	402,528	0.052

## Education Level

### Methodology

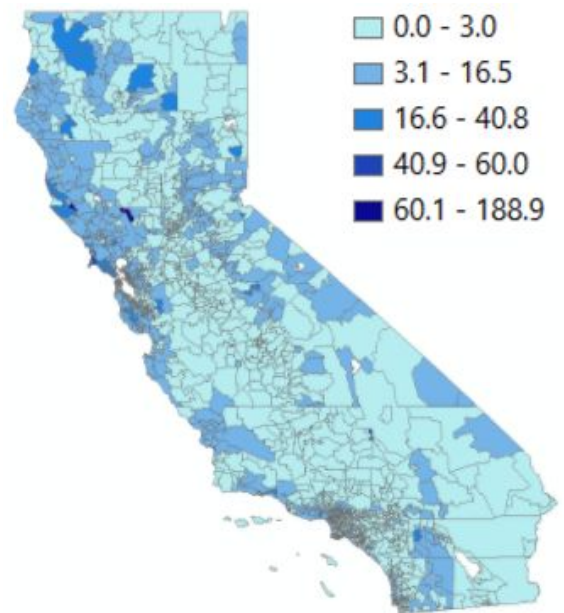


### Results

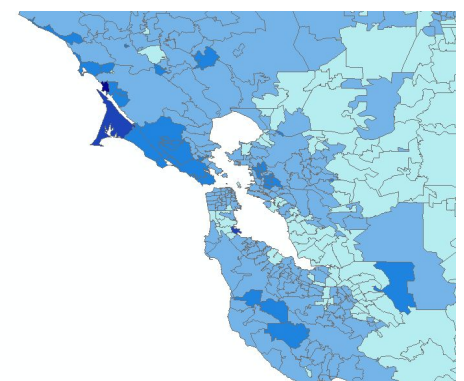
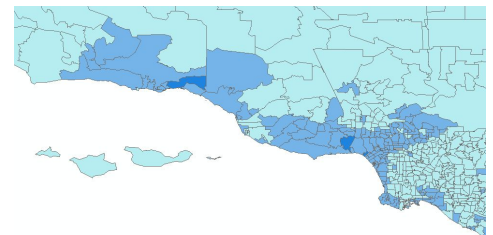
The second measure that we wanted to explore to learn the demographics of the Bernie Sanders supporters was education level. The entire population of California was divided into four groups, the ones who do not have a college degree, those with a two-year associate's degree, a four-year bachelor's degree, and an advanced degree, such as a master's or doctorate degree. The initial hypothesis was that the more educated zip codes in California were more likely to donate to Bernie Sanders' campaign. For the state of California, approximately 58.3% of the population does not have a college degree, 13.3% has an associate's degree, 18.3% has a bachelor's degree, and 10% has an advanced degree.

The main statistic from the Bernie Sanders donation data that was used to compare to the education data was the approximate percentage of people who donated to the campaign. This statistic was found by taking the total number of donations in

each zip code and dividing it by the total number of people that live in each zip code. However, there is one main drawback to this, which is that it assumes that each donation came from a different person, and no one donated more than once. While this is obviously not true, it is still the best way to determine support. This is because other statistics are biased a bit towards certain types of areas. The total amount donated favors areas where more rich people live, as since they have more money to give they'll give it. Also, looking at the total number of donations per zip code favors areas with high populations. If a rural, low populated area were to contribute significantly to his campaign, it would still not appear significant due to the overall lack of people there. The graph made from this statistic can be seen on the right. There is also a zoomed in view of the Los Angeles area and the San Francisco for clarity.



The 15 zip codes with the highest percentages are shown in the chart. There are two zip codes which contain over 100% people donating to the campaign, which is obviously not possible. This is due to people donating more than once and which probably happened in all 15 of these zip codes. There are several interesting areas that are worth noting in this group. One is Los Angeles, which is significant because there are two big colleges in this area, UCLA and USC. There is also Berkeley appearing twice on this chart, which contains UC Berkeley, one of the top college in the US. Due to this, there may be a correlation between the locations of major universities in California with high levels of donating to the Bernie Sanders campaign. Two other interesting zip codes are Brooks and Echo Lake. Brooks has a population of 18 people, which surprisingly, due to the initial hypothesis, did not include a single person with a college degree. On the other hand, Echo Lake has a population of 13 people, but every single one has an advanced degree. It is very interesting to see two opposite outliers within the same data.

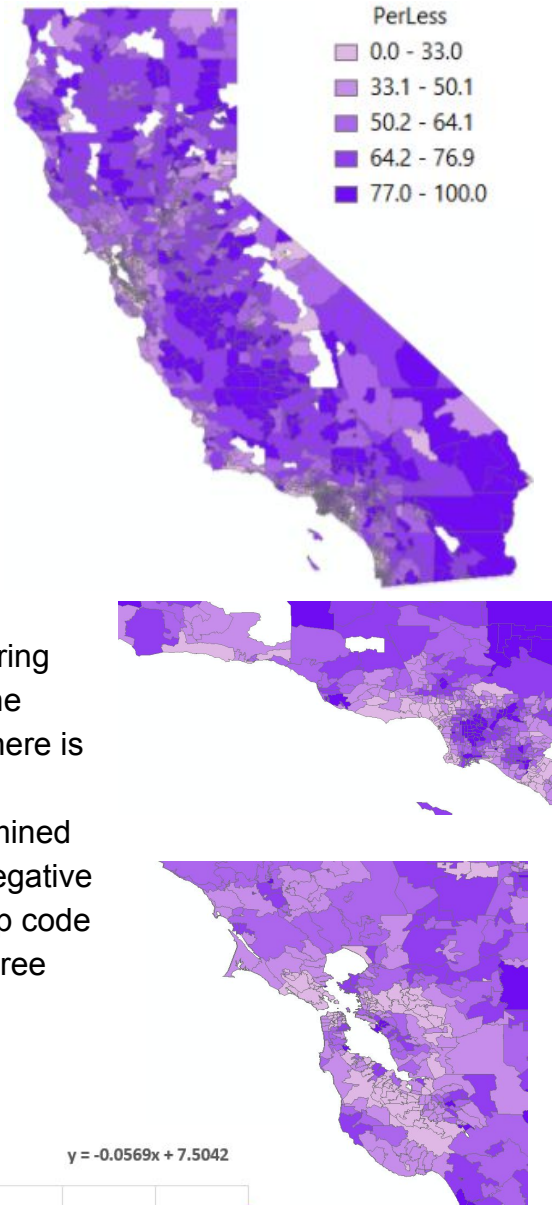


Zip Code	Name	Population	% Donated	% No Degree	% Associates	% Bachelors	% Advanced
95606	Brooks	18	188.89%	100%	0%	0%	0%
94929	Dillon Beach	116	106.03%	65.5%	0%	14.7%	19.8%
95679	Rumsey	54	75.93%	16.7%	48.1%	16.7%	18.5%
95494	Yorkville	71	74.65%	65.6%	0%	18.3%	7.1%
94104	San Francisco	293	66.55%	48.8%	10.6%	19.1%	21.5%
93528	Johannesburg	91	56.04%	70.3%	29.7%	0%	0%
94937	Inverness	711	53.31%	45.3%	5.3%	22.2%	27.2%
95140	Mount Hamilton	179	40.78%	70.4%	2.2%	4.5%	22.9%
94707	Berkeley	10165	38.47%	15.0%	3.6%	32.2%	49.2%
95721	Echo Lake	13	38.46%	0%	0%	0%	100%
90067	Los Angeles	2063	37.81%	36.4%	2.2%	40.3%	21.1%
94528	Diablo	557	37.70%	35.5%	0%	43.8%	20.7%
94956	Point Reyes	1149	37.08%	43.0%	7.0%	27.0%	23.0%
94708	Berkeley	9306	35.32%	13.4%	5.2%	31.8%	49.5%
95460	Mendocino	2064	34.32%	40.9%	8.9%	30.8%	19.4%

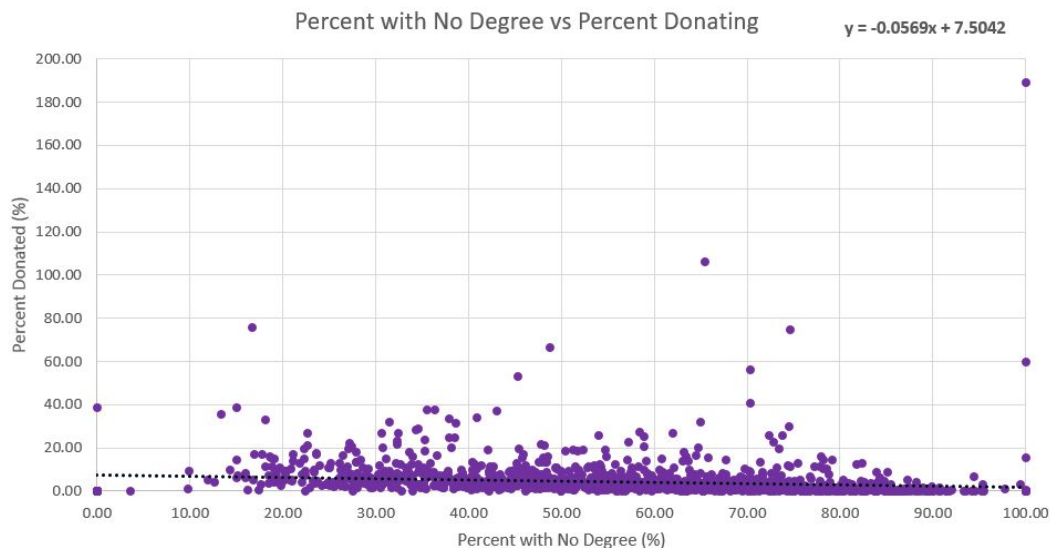
The chart is broken down by percentage of each zip code falls into each education category. Every instance where a percentage is significantly above average (approximately 8% more) for the state of California is highlighted in green, while every instance where the percentage is significantly below average for the state of California is highlighted in red. An obvious trend is visible, as the higher educations percentages, bachelor's and advanced degrees, for the top donating zip codes are generally more above average compared to the state averages, while the lower education levels, no degree and associate's degrees, are below average for the state of California. There are 9 of the top 15 which were significantly below average in not having a degree, while only 3 were above average. Also 10 were below average in having associate's degrees, with only 2 being above average. For bachelor's degrees, only 3 were below average, while 6 were above average. Lastly for advanced degrees a whopping 12 of the top 15 donating zip codes were above average compared to California, while only two of them were below average. While there is a visible trend suggesting that the higher the education level, the more likely one was to donate to Bernie Sanders' campaign, this will be explored more by analyzing the ArcGIS maps of each education group.

Looking at the map of the percentage of people without a college degree, you can see that there is a very visible contrast. The rural areas, more towards the right side

of the state did not contribute much to the campaign, which can be seen due to the light color of the donation map. However, these are the areas which have the highest percentage of people without a college degree. While there are not many people in these areas, largely due to the presence of nature areas here, including the Kings Canyon and Sequoia National Parks, Death Valley, and several National Forests, the data present still supports this contrast.

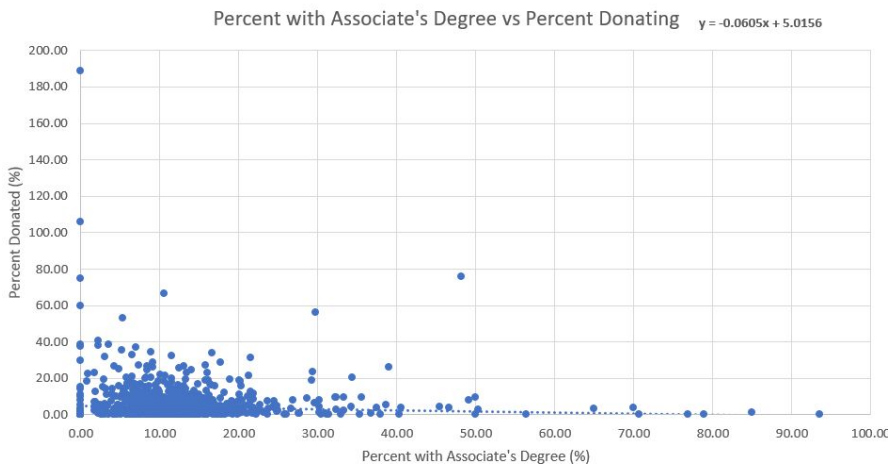
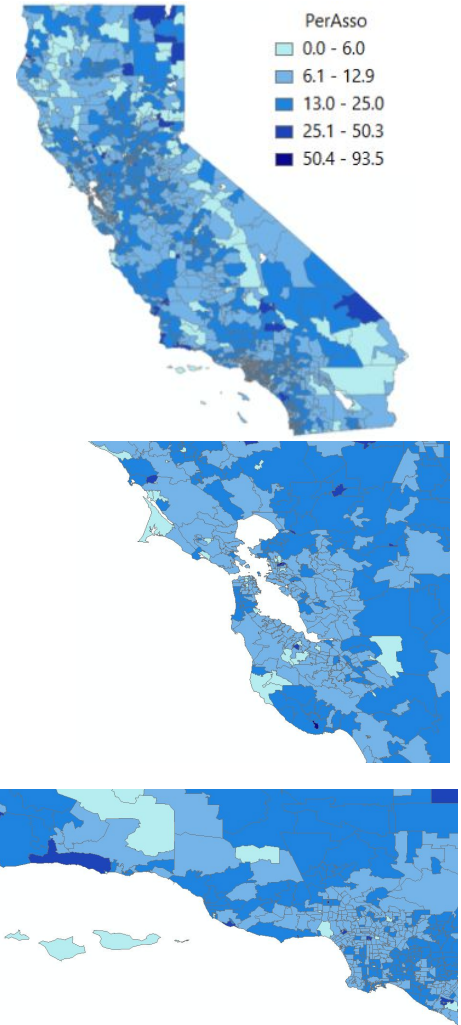


This can be further seen by looking at the more metropolitan areas in California, more along the coast. These areas are darker on the donation map, yet very light on the percentage of people without a degree map. A scatterplot was made comparing each zip code's percent of people who donated with the percent of people who don't have a college degree. There is a slight downward slope visible in the trendline. The correlation between these two data groups was determined to be  $-0.15043$ , which suggests that there is a slight negative correlation implying that as the percent donated per zip code increased, the percent of people without a college degree decreased slightly.

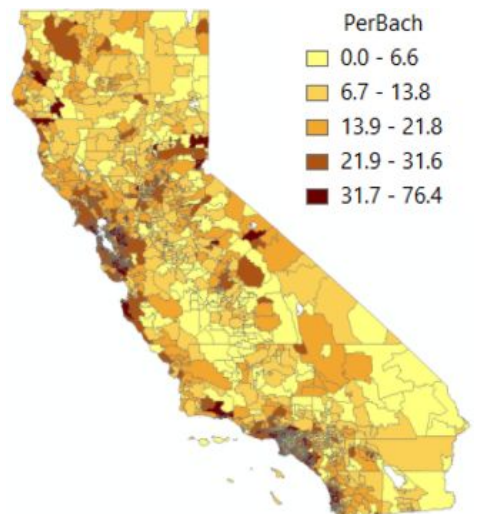




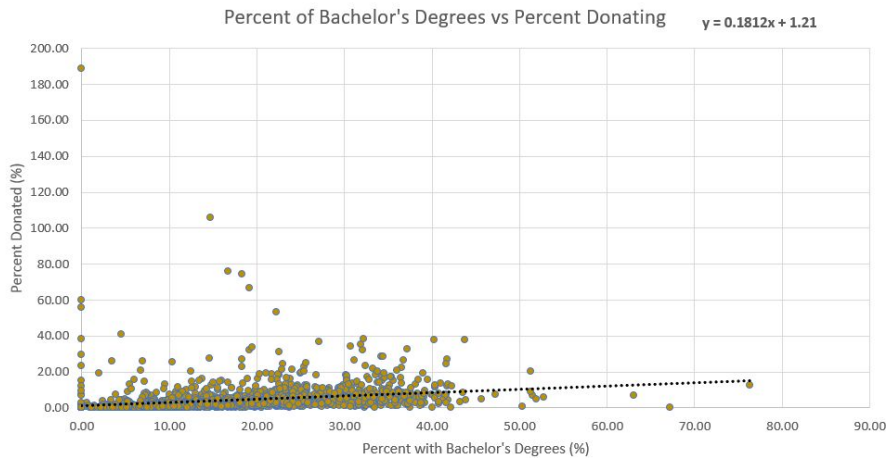
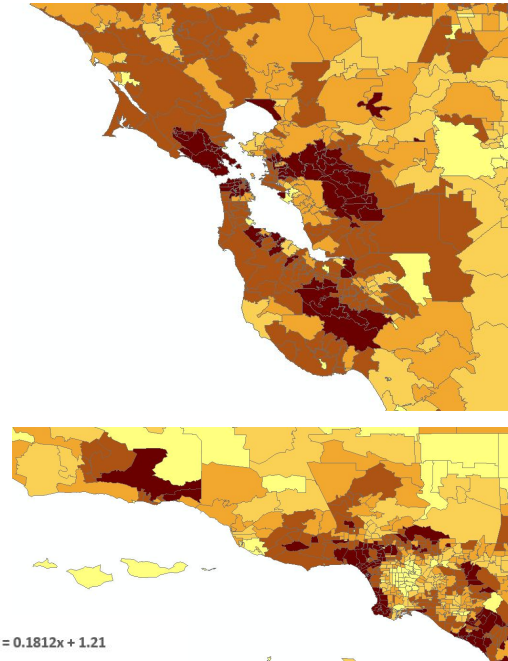
Next, looking at the maps containing the percentages of people with an associate's degree. While there is still a large contrast in the rural areas, still having a high percentage of people with these degrees, compared to the low percentage of people that donated in each zip code, the differences in the big cities is not as extreme. As you can see, there is a relatively high percentage in cities with an associate's degree, yet the percentage of people who donated is about the same. Even looking at the graph of each zip code's percentage of people that donated compared to the percentage with an associate's degree, is it visible that there is less of a correlation between the two compared to people with no degree. This is the case, as the correlation was calculated to be -0.05442.



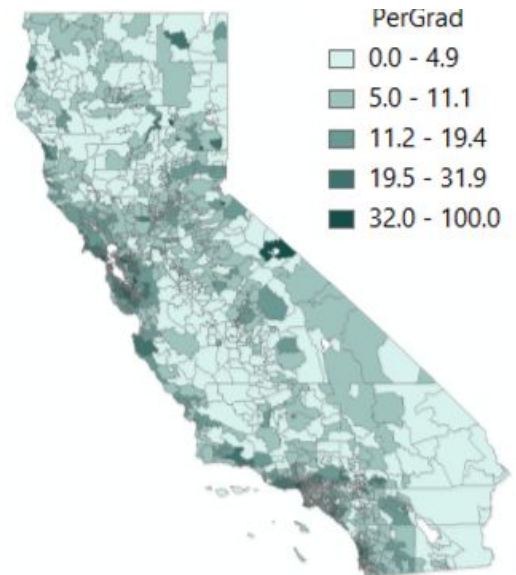
The next measure that was explored was the percentage of people with a bachelor's degree. In the graphs there is a more visible correlation than what was seen previously. The rural areas are now significantly lower in percentage of people with a bachelor's degree and this makes sense as there are not many universities in these areas. This relatively matches the percentage of people that donated in these zip codes, also very low. However, looking into the cities, especially in the Los Angeles and San Francisco areas that the percentage of people with a bachelor's degree is very high. This is very



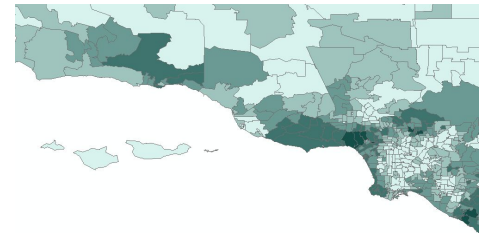
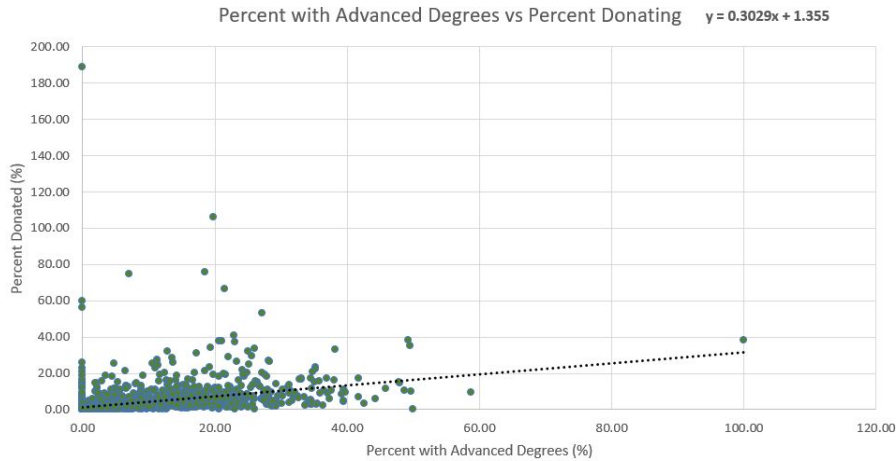
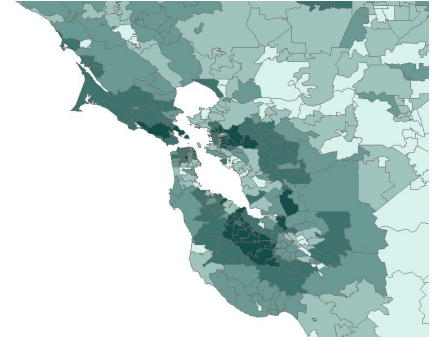
possibly due to the high concentration of universities in these areas. This includes UCLA and USC in Los Angeles, UC Santa Barbara in Santa Barbara, and UC Berkeley in Berkeley. This is comparable to the high percentage of people that donated to the Bernie Sanders campaign in these area. Even in the scatterplot of these variables compared, you can see the slope in the trendline, with the slight increase in donation percentage visible as the bachelor's degree rate increases. The correlation of these variables was determined to be 0.24325, which is not only an increase compared to the associate's degree, but it is a fairly strong correlation.



Lastly, the percentage of people with an advanced degree was looked into. Similarly to the map of bachelor's degrees, this map looks very similar to the map of the percentage of people in each zip code that donated to Bernie Sander's campaign. There is a very visible correlation as the rural areas are very light on both maps and the cities are once again very dark on both maps. The areas especially around the college cities are once again very high in both advanced degrees and in donations. Once again, the availability of these colleges could boost the percentage of people who get advanced degrees.



Colleges that are in these areas are Stanford in Palo Alto and all the other previously mentioned colleges. When the scatterplot was made comparing the percent who donated in each zip code with the percent with an advanced degree, there is an even more visible slope than seen previously. The correlation between these two factors was determined to be 0.34034.



### **Conclusion**

In conclusion, for the education level measure, there seem to be a trend that as the education level of a zip code increases, the chances that they donated to the Bernie Sanders campaign also increases. This is due to the trend that was visible in the chart of the 15 zip codes with the highest percentages of people donating. Not only this, but the correlation increased between the percentage of each education level and the percentage of people who donated in each zip code. Therefore, it is safe to assume that the more educated one is, the more likely they were to contribute to the Bernie Sanders campaign.

Measure	Correlation
No College Degree	-0.15043
Associate's Degrees	-0.05442
Bachelor's Degrees	0.24325
Advanced Degrees	0.34034

### **Age**

Throughout the duration of the Sanders' campaign there was one demographic by which the media seemed to want to define his supporters, that was age. Many liked to point out the overwhelming support Bernie received on college campuses and even

when he made these campaign stops he made mention of how promising it was that the future generation was becoming mobilized in politics. There was disagreement with this, as many of his supporters believed that Sanders' message appealed to a wider demographic than first time voters. We wanted to see whether conducting an analysis on the density of age groups by zipcode would correspond to the recorded average amount of money per donation per zipcode.

### **Conclusion**

Our original hypothesis was that the demographic that would contribute most to the Bernie Sanders campaign would be the younger generation coming from the upper middle and upper class as well as those who had an education level consisting of either a bachelor's degree or an advanced degree. After doing extensive research into each of the three measures, we determined that this hypothesis was correct. This is because we learned that 93% of the total donations for the campaign came from households with an annual income greater than 65,000\$ also with over half of the contributions coming from households with over \$90,000 in annual income. Not only this, but we discovered that the correlation between the percentage of those with a certain level of education and the percentage of people that donated to the campaign increased as the level of education increased, implying that the more educated one is, the more likely they were to donate to the Bernie Sanders campaign. Lastly, we learned that as the youth population of a zip code increased, the number of donations for that zip code also increased.