Introduction

Fair internet access is important in our current society. As a result of the pandemic, there are many more opportunities to do things online that weren't possible or just not nearly as popular. This is especially true for work and learning opportunities. According to the Democratic and Chronicle, 1 in 5 houses in the New York City area alone did not have access to high-speed internet during the transition to online schooling. (Taddeo, 2020)

Income data and internet access data potentially being linked is an issue because poverty does not affect the population randomly. Specific groups of people in NYC make up a larger percentage of the population of residents below the poverty line. In 2018, The New York City Government Poverty Measure Report found that the poverty line was under $35,044 a year for a two-parent household. (New York City Government Poverty Measure 2018 an Annual Report from the Office of the Mayor, 2018) Hispanic residents had the highest percentage of poverty, the gender breakdown revealed that this was slightly partial to Hispanic women. Similarly, residents who were not citizens, residents who didn't graduate high school, and residents of the Bronx also had higher percentages of poverty than their categorical counterparts. These residents would all be more likely to face the consequences of inequitable internet access.

Methods

For my findings on this matter, I used the ACS PUMS 1-year data from 2018. I retrieved this data on April 5, 2024, straight from the census data website. (US Census, 2020) I filtered the data for the columns ST, HISPEED, HINCP, and PINCP. The ST column is used to indicate the state from which the individual claims residence. I filtered the dataset for only rows with individuals from New York State. New York State's numerical value in this column is '36'. The

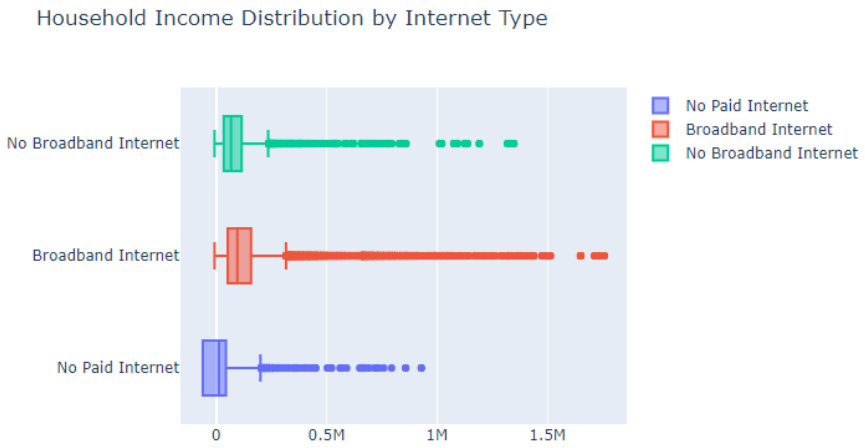
HISPEED column is used to indicate whether the individual has access to high-speed, broadband internet or not. The value options for this column were 0 indicating no paid internet access, 1 indicating access to broadband internet, and 2 indicating internet access but not broadband internet. I used all available values in this column. The HINCP column is used to indicate the total income of the individual's household. I used all available values in this column, including the value'-60,000' which was used to indicate group quarters. The PINCP column is used to indicate the total income earned by the individual in the past year, including that from wages/salaries, government assistance, and self-employment. I filtered this column to exclude the rows of individuals less than 15 years old. The final dataset had no null values.

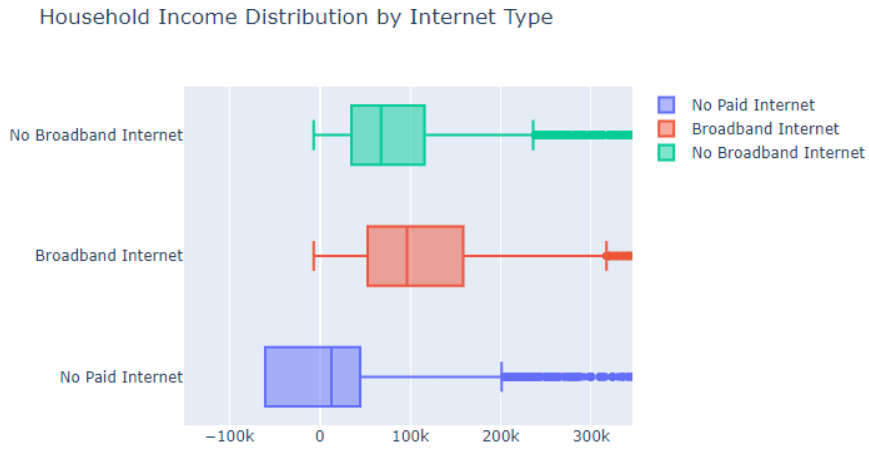
To test for statistical differences in the income of individuals and households based on their access to the Internet, I first calculated the mean HINCP and PINCP values for the whole New York State dataset. I then filtered the data based on the HISPEED values and did one-sample t-tests for all three values against the total dataset mean. I did one-sided t-tests, with the null hypothesis being that the means are greater than the mean of the total dataset. I did it this way because I wanted to get a better understanding of how exactly the two values compared to each other, not just whether they were equal. These tests were done at a confidence level of 95%.

Results

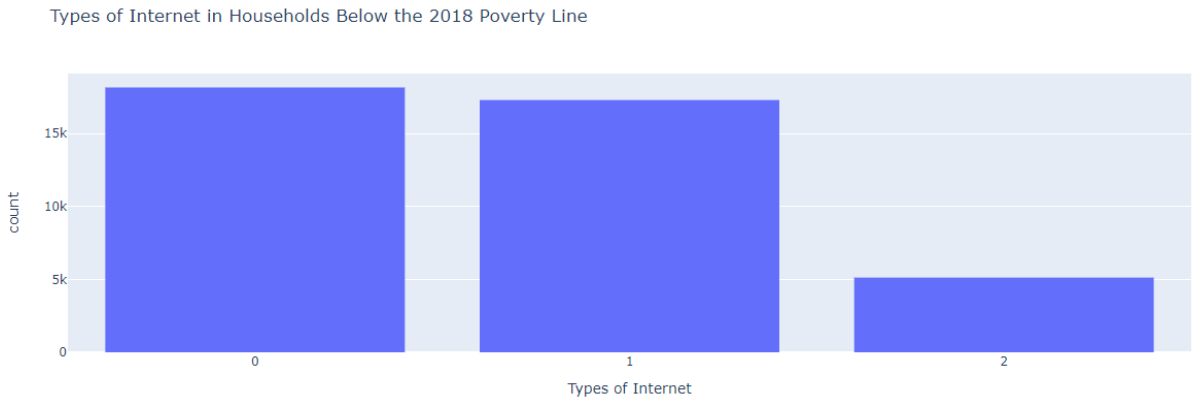
For the test conducted on the PINCP values the results revealed that well the averages for the households with no broadband Internet in the households with no Internet access were both lower than the total data set mean, the average for households with broadband Internet access was higher. For the no Internet access and no broadband Internet tests, the P values were significantly lower than 0.5. This indicates that the null hypothesis that they are greater than the total data set average must be rejected. Similarly, the P value for the broadband Internet access

test was higher than 0.5 indicating that the hypothesis can be accepted. The test for the HINCP values followed similar patterns. We can conclude that the average household income and individual income for people with broadband Internet is higher than the average household income and individual income for people in New York State.





The differences in household income by type of Internet can also be seen in these graphs. The first figure shows the graphs of the data including the outliers. There are many data points on the right of our graphs skewing the data. 95% of individuals in New York are represented on the graph in between the two tails. The second figure zooms in on that 95%. In this graph, you can see that the median (center line) and the higher end (right sideline) of the broadband Internet household incomes are significantly higher than their corresponding values in the other two groups. You can also see that the lower 50% of individuals in the no-paid Internet group had a household income of under $13,000, with some having an income equal to or lower than $0.00. This suggests a high concentration of '-60,000' values in this group which would imply a high concentration of homeless individuals or individuals living in group quarters.



Filtering for individuals whose household income was below the poverty line in 2018 shows that the largest of the three groups is the one of individuals without internet access (approximately 44%). This shows that there is potentially a relationship between homelessness and lack of internet access.

Discussion

Overall, there is a disparity in access to broadband Internet based on income level. While I expected this because I expect that relationship with all paid services, I was not expecting to see a potential relationship between homelessness and lack of broadband access. However, I believe that this relationship makes sense on the basis that people without secure housing might not have the means to get or a space for personal Internet.

Because access to adequate Internet is important to actors of living such as work and education opportunities, I believe New York State does have a responsibility to work towards expanding broadband coverage. Staying on the basis that people without secure housing might not be able to implement personal broadband Internet, New York State can help even this disparity by creating more spaces that provide free access to high-speed Internet. This might look like utilizing government buildings such as libraries or implementing a public Wi-Fi system. These solutions must be available outside of regular working hours so that individuals can utilize

them without having to risk or choose between Internet access and then employment opportunities. However, these solutions are most effective in population-dense areas. In more rural or population-scarce areas, you can't fix this disparity by providing public options as even those might still be hard to access. New York State should consider partnering with Internet providers to possibly allow low-income residents to have discounted internet plans adjusted for their incomes. Doing more research into broadband dead zones or geographic poverty trends and implementing income plans in those areas should help make broadband internet a more equitable resource.

Works Cited

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