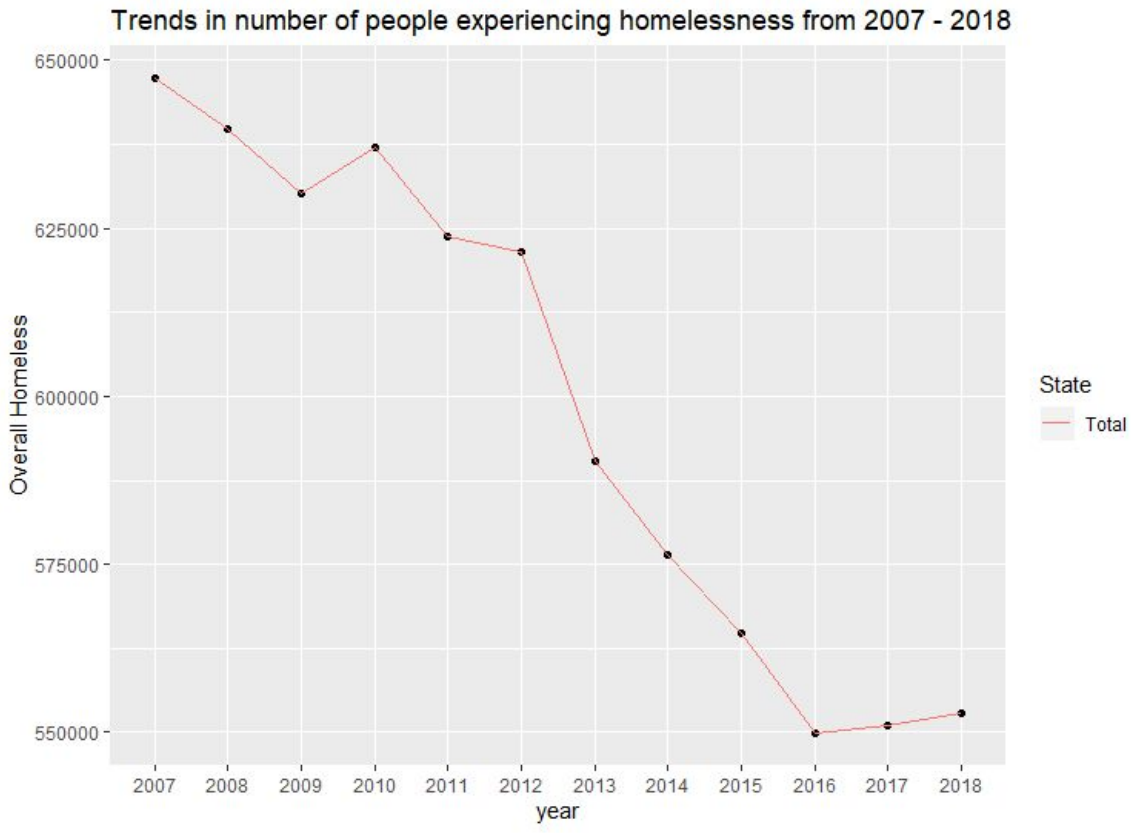
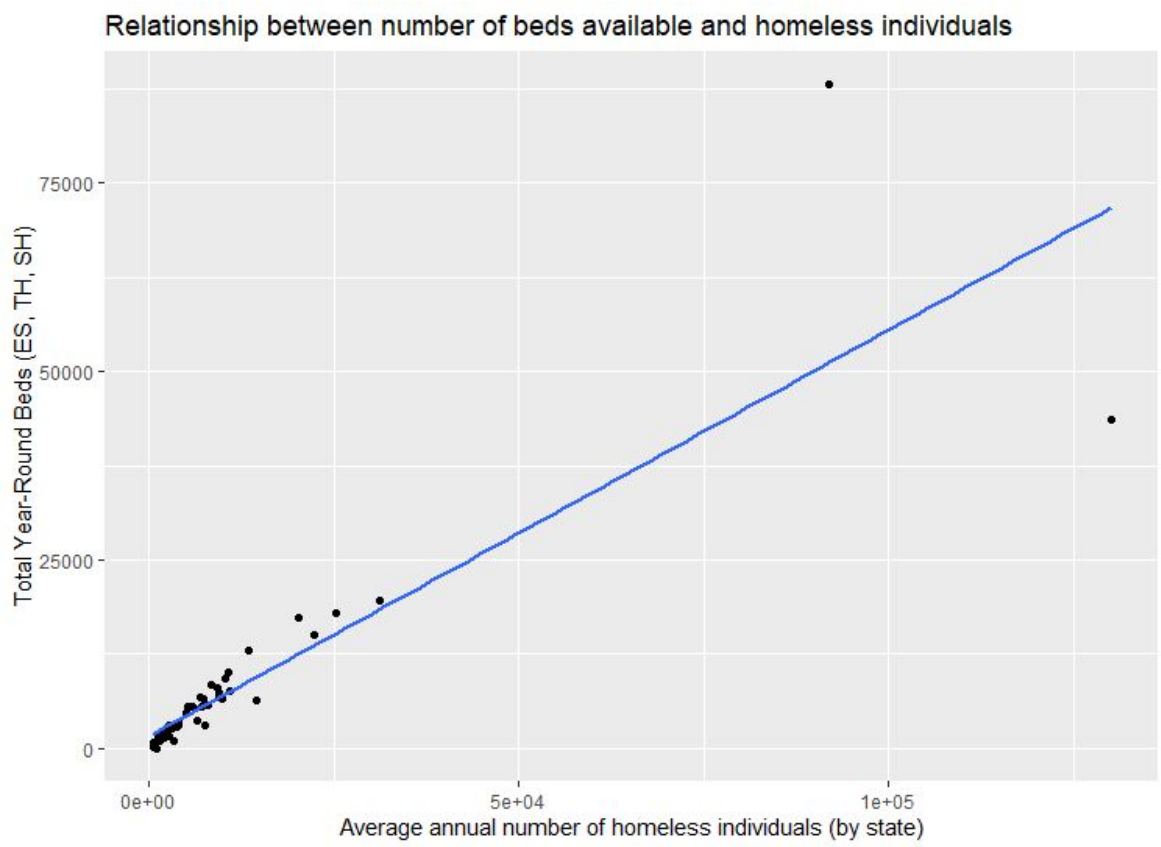
Homelessness in the U.S.

I was particularly interested in analyzing data related to homelessness because I work at a student-run youth homeless shelter in Harvard Square. Cambrdige has a pretty sizeable youth homeless population, so the 27 overnight beds that we provide usually get filled up on an average night. However, the demand varies from night to night. We run three different lotteries for beds a day with the goal of maximizing the number of guests we serve, but on some nights we have empty beds that don't get filled, and on others we have more guests enter the lotteries than there are beds available. In those cases, the guests who don't win a bed with us will either try to find another shelter they can go to in the area, or they will find a public location to spend the night.

I first wanted to examine overall trends in the number of people experiencing homelessness. Using data on aggregate numbers of homeless individuals from the years 2007 to 2018, we can observe a general downward trend. However, it's interesting to notice that when filtering by state, some states like Massachusetts and California have experienced a sudden increase in this number over the last couple of years. Regardless, this overall trend is a good sign for the U.S. on the whole.

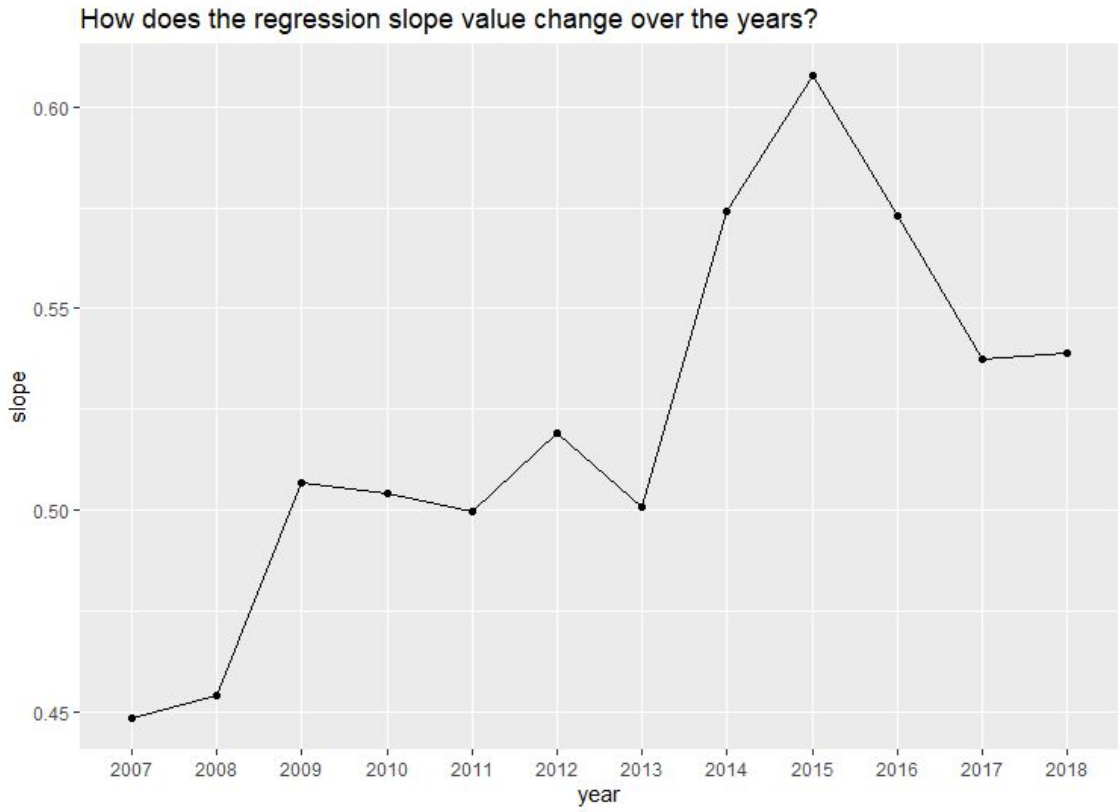


I also wanted to investigate how well our country meets the needs of its homeless population. I did this by graphing the average aggregate number of beds available against the number of individuals experiencing homelessness. For each year, I created a separate graph with data points from each state and then performed a linear regression. The graph shown below uses data from 2018 with the regression line in blue. Generally, we can observe that states who have a larger homeless population do also have a greater number of shelter beds available.



Ideally, we would want the number of available shelter beds on any given day to match the number of homeless individuals, or at least for the two numbers to be somewhat close to each other. This would mean that the slope of this blue regression line to be near 1. Obviously, we know this isn't true given the number of homeless individuals we observe on the streets every night, particularly in large cities. However, we can analyze whether or not this relationship has improved over the years. By extracting the slope value from the regression line in the above graph for each year, we can plot this value for the years 2007 through 2018. Looking at the graph below, we can observe an overall positive trend, despite the dip in the last few years.

This



implies that our country on the whole is improving in matching the need for overnight shelter beds for homeless individuals. However, this data compares the number of people and beds within each state. The issue with this analysis is that the evaluation of effectiveness in serving the homeless population is not entirely accurate. For example, a bed isn't useful to an individual if it is located on the other side of the state, since the person could not reasonably travel that far to make use of it. We can't know whether or not individuals or beds are clustered in specific locations. For this reason, I would love to get access to data on homeless populations and shelters by cities or counties and perform a similar analysis.

Additional Info

My name is Sanjana Ramrajvel, and I'm a sophomore at Harvard studying applied math and psychology. These graphics were created from two large datasets containing data on homeslessness and homeless shelters in the United States by state from the years 2007 - 2018. Both datasets were taken from the US Department of Housing and Urban Development. The source code for this project can be found at my GitHub here. Also, feel free to contact me at sramrajvel@college.harvard.edu.