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Data Science 1
Midterm Project
11/12/19

A Comparative Analysis of Homelessness (2007-2018)

Note: All External Data Sources are properly attributed in comments at the beginning of the notebook.

I. Temporal Patterns between Chicago and Los Angeles

A basic comparison between the overall homeless populations in Chicago and Los Angeles seems to show that the homeless population in Chicago is both much smaller, and much more stable than that of Los Angeles. However, since Los Angeles and Chicago have total populations that differ from each other and vary based on time, Figure 1 isn't very insightful. Figure 2, which compares the rate of homelessness (overall homeless population/total population) in Chicago and Los Angeles—and therefore allows us to take into account population differences between the two cities as well as variations in population based on time—is much more revealing. It shows that the seemingly large dip in Los Angeles Homelessness after 2008 observed in Figure 1, is actually quite miniscule, and that in the grand scheme of things, homelessness in Los Angeles is not only more prevalent than in Chicago, but is also on the rise. Conversely, the rate of homelessness in Chicago seems to be steadily decreasing after 2015.

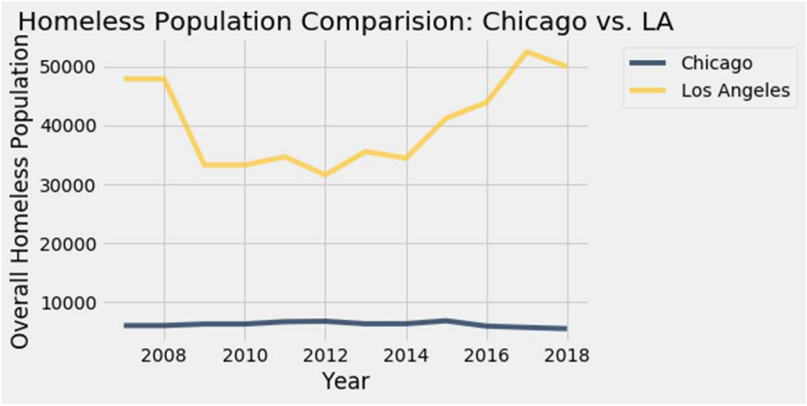

Figure 1

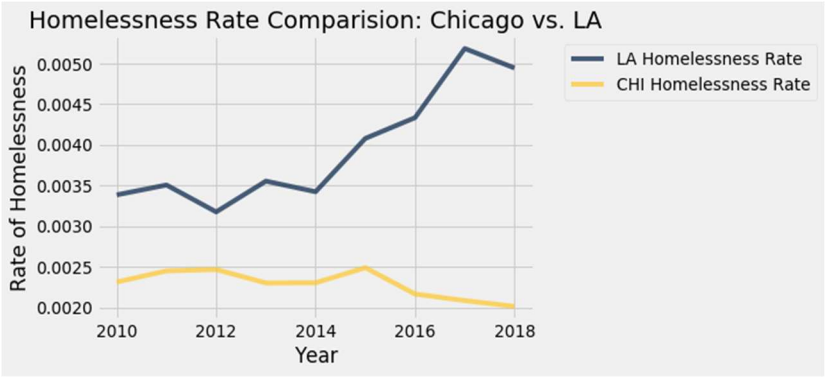

Figure 2

II. Nationwide Spatial Patterns in Homelessness

To track spatial patterns in homelessness, I opted to use a graph of rates of homelessness over time by census-defined region (Fig. 3), as I found it to be the most revelatory of the batch I created. Two interesting insights are apparent: 1. Since

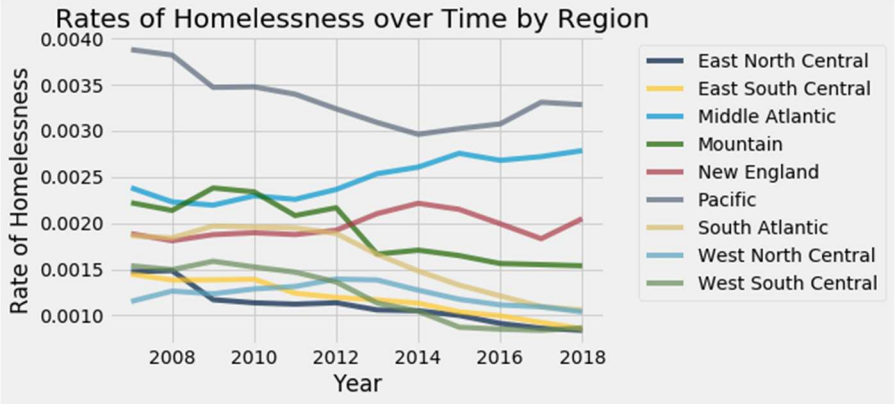

Figure 3

2007, homelessness rates have decreased in most regions, except for the Middle Atlantic and New England regions, which have experienced upticks in their rates of homelessness in recent years. 2.

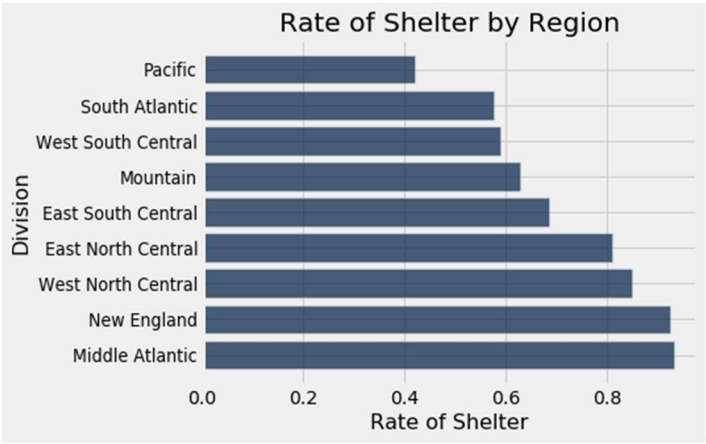

Figure 4

Rates of homelessness are highest near the coasts (Pacific and New England/Middle Atlantic), which is likely a result of the fact that large cities in the US (which typically have more expensive housing) are concentrated near the coasts. Figure 4 reveals that a region's rate of homelessness doesn't necessarily correspond with its rate of shelter; though the region with the highest rate of homelessness (the Pacific), also has the lowest rate of shelter, other regions with very high rates of homelessness (the Middle Atlantic and New England) have some of the highest rates of shelter.

III. Beds Inventory

Figure 5

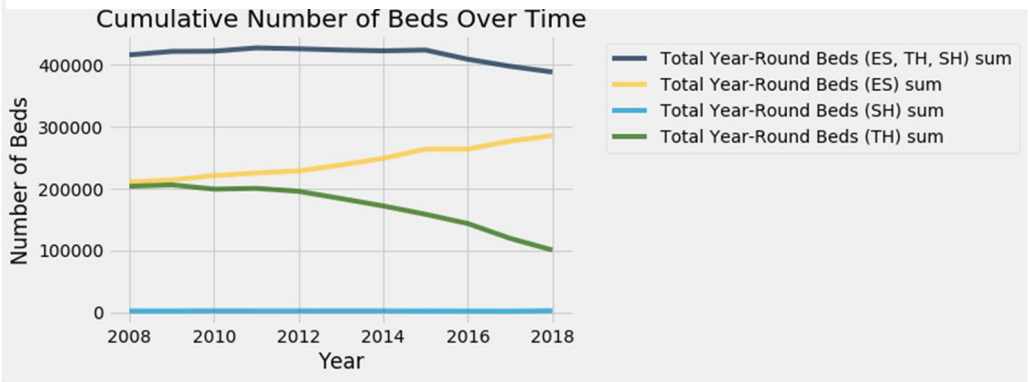

Figure 5 shows the total number of beds available over time and reveals two important insights. Firstly, it shows that the total number of beds available has been relatively stagnant for years, and only started to dip in 2016. Secondly, it shows that the number of beds available for temporary housing have steadily decreased, while the number of beds available for emergency shelter have increased over time in an almost mirrored fashion. These trends are both worrying, as they reveal that not only are less beds becoming available, but that increasingly, the most prevalent type of beds available are those that are only for emergencies. Like Figure 5, Figure 6 also shows a general downward trend of bed availability for most regions, but reveals that the Middle Atlantic is an outlier to this pattern, in that its bed capacity has been increasing over time. This increase in bed capacity explains why the Middle Atlantic had such a high rate of shelter in Figure 2.

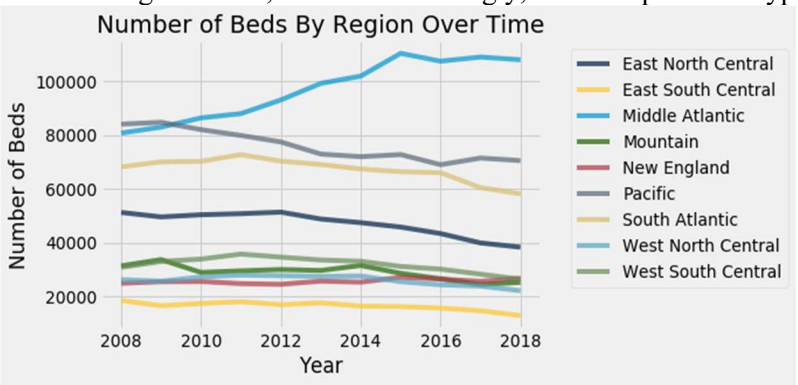

Figure 6

IV. Impact of Bed Availability on Homelessness

As one would expect, Figure 7 (California and New York have been edited out as they were large outliers which zoomed the table out) reveals that there is a strong correlation between the total number of beds and the number of sheltered homeless individuals. Interestingly however, most of the points lie below the line y=mx, meaning that in most states, there is a noticeable number of year-round beds that are not being utilized by the homeless. This reveals that a better utilization of pre-existing resources is necessary. Figure 8 compares the total number of homeless individuals and with the total amount of beds available over time, and finds that both numbers are decreasing, with the number of homeless individuals seeming to decrease at a quicker rate than the number of beds. While this is a slight reassurance, the fact that the total number of beds is decreasing at all when it is still significantly less than the number of homeless individuals is still concerning. Figure 8 also supports the underutilization of beds conclusion derived from Figure 7, as it shows a continuous and noticeable difference between the amount of beds and the number of sheltered individuals.

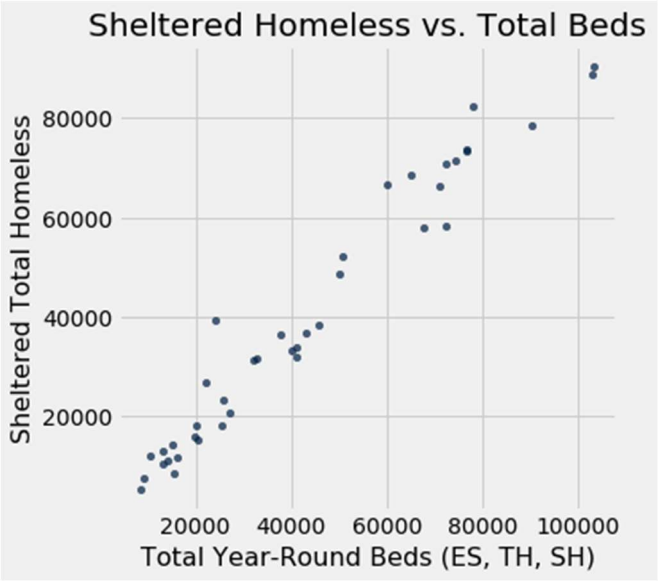

Figure 7

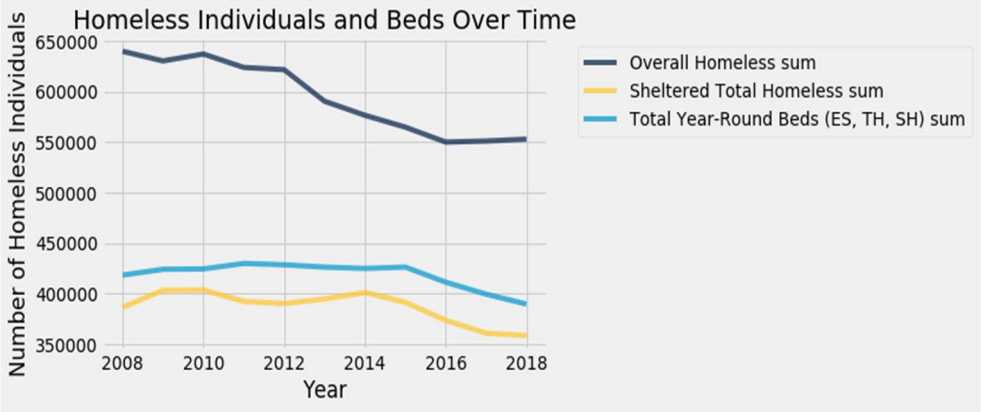

Figure 8

V. Solutions to Homelessness

To find practical solutions to homelessness, I decided to localize my datapoints to the top 10 most populous cities in the US, for two reasons. Firstly, major cities are typically those that have the largest homelessness crises, affecting the greatest number of people, so finding solutions that would work for them would have the greatest impact. Secondly, because bigger cities have larger news coverage and more data, working with such big cities would give me the largest amount of qualitative and quantitative data with which to work with. In Figure 9, I compared the rate of homelessness in my set of cities over time, and found two particular cases where there was a significant decrease in the rate of homelessness—Phoenix and Houston—which I decided to study closely to look for solutions. Upon researching the Phoenix case, I found that there was a clear policy shift that correlated with the downturn noticed in my data. In 2009, Phoenix implemented a Housing First program (a program which seeks to provide free or

subsidized permanent housing for the homeless), with the goal of ending chronic homelessness for veterans, (and became the first city to do so in 2015, with the success of the program)[1]. The article's evidence is supported by my own data; according to Fig. 9 Phoenix noticed a strong decline in its rate of homelessness during the period of 2009 to 2015. Thus, Housing First could be an effective method towards ending homelessness. Similarly, in the case of Houston, Figure 9 notes a sharp decline in homelessness rates from 2011 to 2015. Houston's Mayor through those years, Annise Parker, writes in an Op-ed that that decline was largely attributed to efforts by the city government to re-allocate resources properly[2]. She specifically notes that part of the problem was that available beds weren't being utilized. This dovetails with my data from Figures 7 and 8, which shows that noticeable numbers of available beds aren't being used to shelter the homeless. One last solution that I believe could be utilized in minimizing the rate of homelessness comes directly from my own analysis in comparing last year's homelessness rate with the median home price in my dataset of 10 major cities. With few outliers, Figure 10 shows that there is some reasonable correlation between how expensive housing is in a certain area and how high the homelessness rate is. This suggests that an effective solution to ending homelessness would be to build low-cost housing alternatives that provides means of cheaper housing.

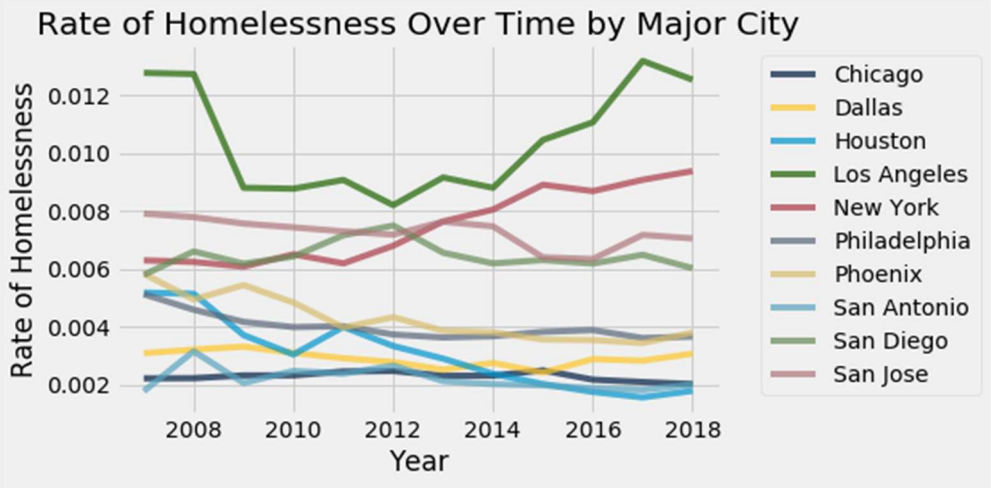

Figure 9

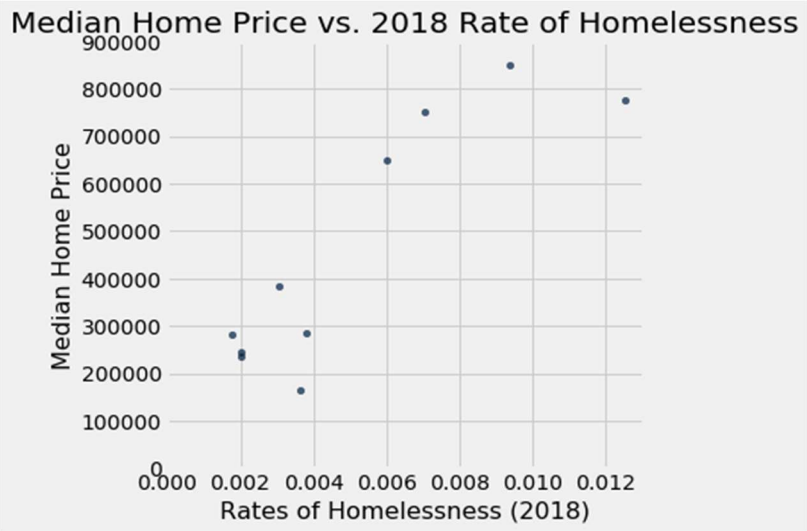

Figure 10

[1] Keyes, Scott. "Phoenix Becomes First City To End Chronic Homelessness Among Veterans." *ThinkProgress*, 23 Dec. 2013, thinkprogress.org/phoenix-becomes-first-city-to-end-chronic-homelessness-among-veterans-8ccd9887570e/.

[2] Parker, Annise. "Commentary: How Houston Reduced Homelessness." *Tribune*, San Diego Union-Tribune, 20 Oct. 2017, www.sandiegouniontribune.com/opinion/commentary/sd-utbg-homelessness-solutions-houston-20171020-story.html.