QUESTION 3: WHERE IS THIS HAPPENING?

Thanks Ross!

So let’s take a closer look at the geographic significance of local COVID outbreaks.

NEXT SLIDE – COVID HEAT MAP

What we see here is a heat map with the intensity indicating the total number of COVID cases in the individual county as of June 15th.

Besides looking terribly frightening, we can also confirm what we might expect. That being there are more cases seen in locations with a more dense population. The East coast was particularly hard hit along with the deep south. As you move further West where the population is less dense, the intensity wanes.

NEXT SLIDE – NORTHEAST CASES

This slide lets us comprehend, visually, the top 6 states that Ross had indicated previously via his histogram of hardest hit states.

What we can see is interesting, if not a bit predictable. The hardest hit states are located in the Northeast US.

NEXT SLIDE – ANOVA ANALYSIS

However, even though we can visually determine roughly where the case hot-spots are located, it is of significant value to perform an Anova analysis to see if any of the regions (being Northeast, South, Midwest and West) have a statistically significant variance from the other regions.

What we learned through this particular method of analyses, was that the p value approaches zero and therefore we can say with confidence that the proportion of cases varies regionally in the United States.

So that begs the question: “Does geography alone play an important role in determining the spread of the virus?”

NEXT SLIDE – LATITUDE SCATTER

Uhh, not quite. After looking at a scatterplot with the total deaths per state vs their latitude, we can see that it isn’t solely geography that is affecting COVID deaths.

NEXT SLIDE – SO WHAT IS DRIVING IT?

So what is driving these infections and deaths?

NEXT SLIDE – HEALTHCARE

Could it possibly be access to high quality healthcare?

NEXT SLIDE – HPSA SCATTER/JOINT PLOT

But first is a quick background on the HPSA Score. An HPSA (Health Professional Shortage Area) score is given to each county (and a large number of clinics) in the United States and is a measure of each location’s need for clinicians. The score for primary care (general medical care) ranges from 1-25 with the higher number indicating that location has a higher need for medical staff.

As one would expect, counties with a higher HPSA score, and therefore a greater need for medical professionals, tend to generally have higher total deaths per capita when compared to their more well-equipped counterparts.

NEXT SLIDE – MORTALITY LINEAR REGRESSION

However, what does seem slightly counterintuitive is that the HPSA score is not indicative of a higher mortality rate. Surprisingly, access to better healthcare does not improve survival odds.

NEXT SLIDE - AARON