Disease Incidence Based on Demographic and Geographic Location in Treating the World’s Most Deadly Diseases

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Background:

Over time people have tracked different diseases and how often they see people getting sick. Our goal is to find patterns of incidence among four different diseases (Hepatitis B, Tuberculosis, Measles, Polio) and how their respective vaccines altered those rates of incidence. We have found 4 different datasets from ourworldindata.org tracking the number cases of Hepatitis B, Tuberculosis, Measles, and Polio for different regions around the world. The problem we are trying to address is where and when we are seeing these outbreaks while also including information on the vaccine accessibility and geographic location.

Table

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Graphical user interface, text, application

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https://www.unicef.org/parenting/health/vaccines-and-diseases-they-prevent

Results:

We can see from the plot below that all the rate of incidence of the diseases we are interested in are going down over time. Some diseases like Polio and Measles have been almost completely eradicated but diseases like Hepatitis B are still prevalent today. We can also see track trends we have heard in the news, like the Measles outbreak in 2019.

Chart, bar chart, histogram

Description automatically generated

Although many factors may be influencing this, our hypothesis is that the main factors affecting the decreased rate of incidence is demographic and vaccine accessibility. We can address this question by breaking down our rates of incidence by different demographic groups and locations. The first location we are going to look at is the United States.

Chart

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Chart, bar chart, histogram

Description automatically generated Chart, bar chart

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The first thing we notice is that there is 0 incidence of Polio in the USA after 1986. That means that all the incidence we are seeing after 1986 are coming from countries outside of the USA. Measles has a similar distribution over time but there do seem to be occasional cases seen in the USA. Both Hepatitis B and Tuberculosis are still seen today but their rate of occurrence is going down more steadily than the world as a whole. These trends make sense when taking into account the high level of access to vaccinations and medical services. As you keep adding