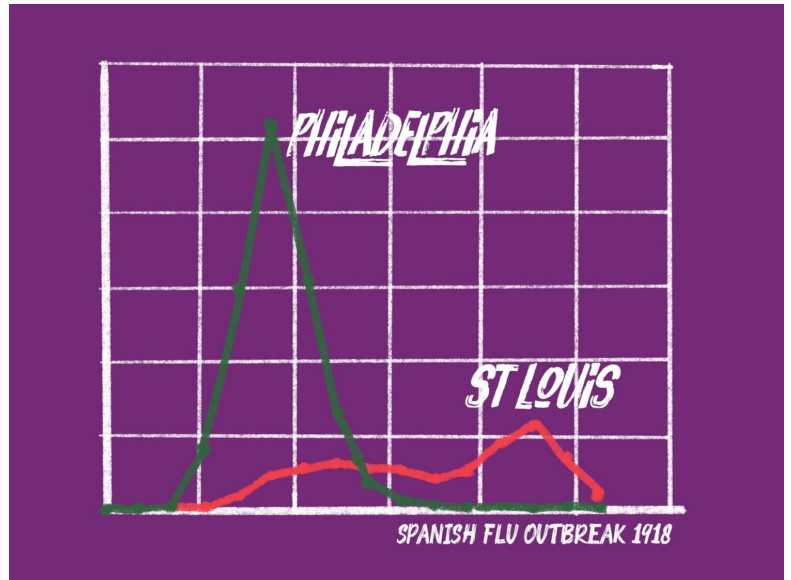


Flatten the Curve

Background

Why are schools being canceled?

As the Covid-19 virus spreads around the world you might find yourself asking why such extreme measures are being taken when no one that you know has contracted the virus yet. The reason is that public health experts are asking us all to do what we can to help **flatten the curve** through social distancing. Take a look at this dataset from two cities affected by the H1N1 Influenza pandemic of 1918 and think about why your school made the decision to close temporarily. Although Covid-19 is a coronavirus and not influenza, it is a highly contagious respiratory illness and looking at these data can provide insights that may be relevant to the current situation.



Influenza pandemics have occurred multiple times throughout history. The influenza pandemic of 1918 was particularly severe and resulted in the deaths of 50-100 million people worldwide, with 500,000-675,000 deaths in the U.S. alone. Some American cities were hit much harder than others and this is believed to be partly the result of the different degrees to which individual cities implemented policies to increase social distancing. Some cities closed schools and put bans on public gatherings, while others did not or waited until later in the outbreak to take such actions.

An interesting comparison of these response strategies can be made between Philadelphia and St. Louis during the 1918 influenza pandemic. The first confirmed cases of the disease were reported in Philadelphia on September 17, 1918. City officials did not take swift action and allowed a large city-wide parade to take place as scheduled on September 28th. Schools remained open in Philadelphia until October 3rd when the disease began to fill all local hospitals past capacity. At that time the city began to shut down and encourage social distancing. In contrast, St. Louis's first

confirmed cases were reported on October 5, 1918. By October 7th, St. Louis moved quickly to put social distancing measures in place.

Dataset

These data were collected and reported in [this study](#) from the Proceedings of the National Academy of Sciences. The study says: “we obtained data on the timing of 19 classes of [Nonpharmaceutical interventions] in 17 U.S. cities during the 1918 pandemic and tested the hypothesis that early implementation of multiple interventions was associated with reduced disease transmission”. (Abstract)

Variables

City - this categorical variable describes which city the participant was located.

Date - this categorical variable lists the date of analysis. It's simply helping track what's happening in the days after the possible spreader incident.

Days since Sept. 14, 1918 - this numerical variable helps describe how long it had been since the possible spreader incident. It is calculated based on the “Date” variable.

Death Rate / 100k people - this numerical variable describes how many people have died on that date. It is simplified to a percentage based on 100k people (so it is not a raw number).

Activity

- 1) Make a graph to look at the data. Show “Date” on the X-axis and “Death Rate/100K people” on the Y-axis. Show “City” on Z and then check the box to “connect dots”. Include a screenshot of your graph here:
- 2) How is the shape of the curve for the outbreak in Philadelphia different from the shape of the curve for St. Louis?
- 3) Looking closely at the data, what happened to the death rate in Philadelphia immediately following the city-wide parade held on September 28th?
- 4) Keeping limited space and resources in hospitals and medical facilities in mind, how do you think the two different curves would affect the quality of health care available to patients during the epidemics in each of the two cities?

- 5) Do you think these data are relevant to public health officials in cities around the world as they make decisions about how to handle the current coronavirus pandemic? Explain your answer.