Zombie Apocalypse

Simulating the Spread of a Zombie Outbreak across the United States

Project Goal:

- Our goal is to model the spread of a zombie outbreak in the U.S. using the COVID-19 pandemic as a comparative study.

- This will help us:

    - Identify the virus's behavior and its monthly spread across each state.

    - Determine which states seem the safest based on hospital distribution, gun sales and military base presence.

    - Assess overall preparations of the U.S. in the event of a zombie outbreak.

Key Questions

1) Which regions will be greatly impacted from the zombie outbreak?

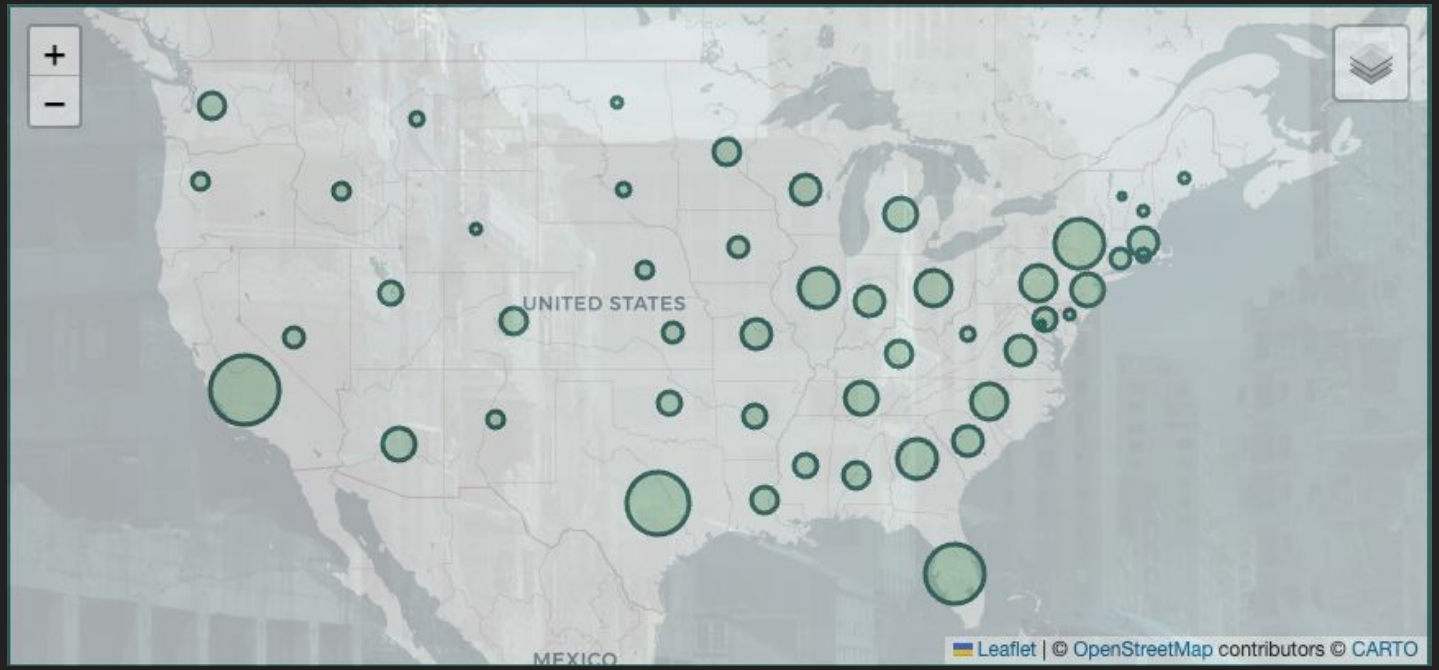
2) Which states are better prepared in defending against the apocalypse based on gun sales?

3) Which states have the strongest military presence?

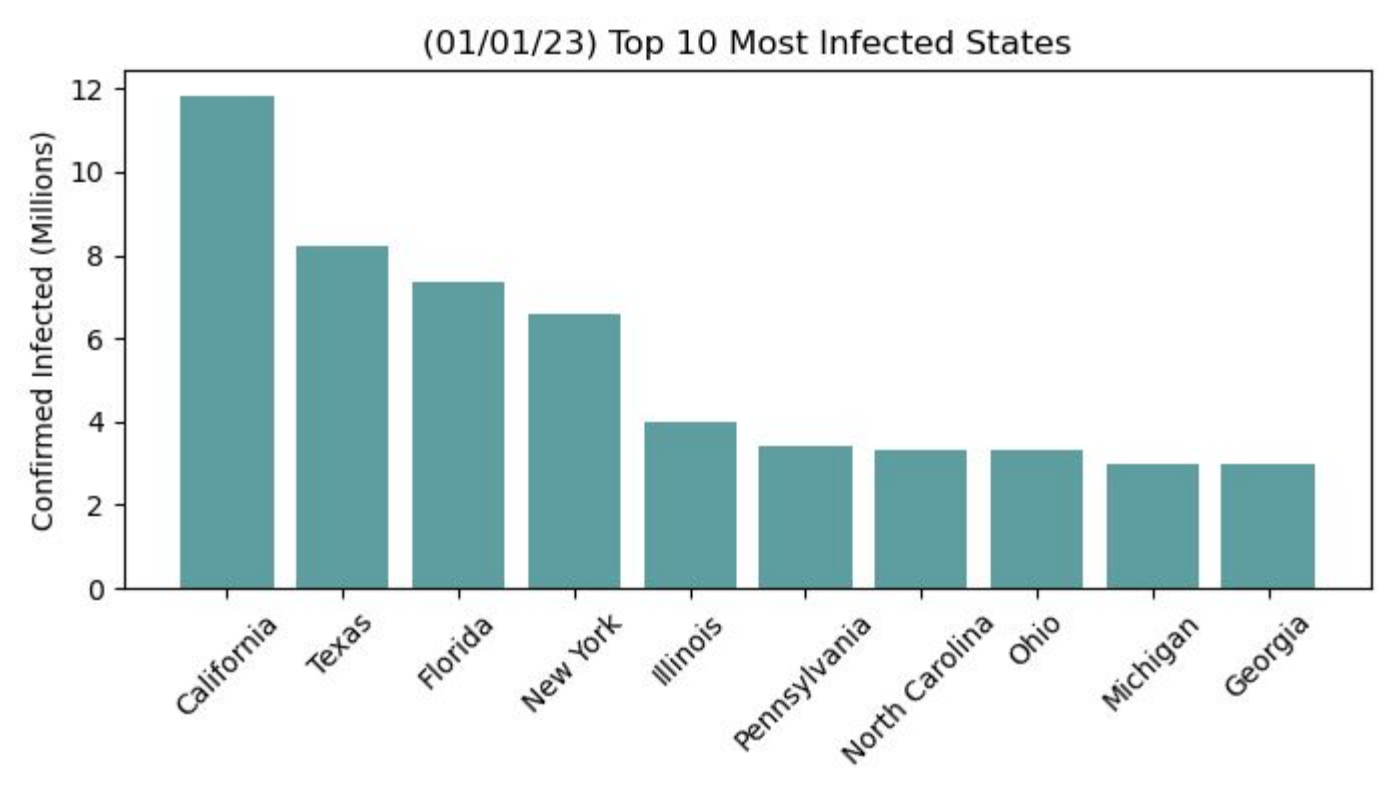
4) Are the hospitals in each state capable of accommodating the projected number of infected patients?


Findings & Insights

1) Which regions will be greatly impacted from the zombie outbreak?

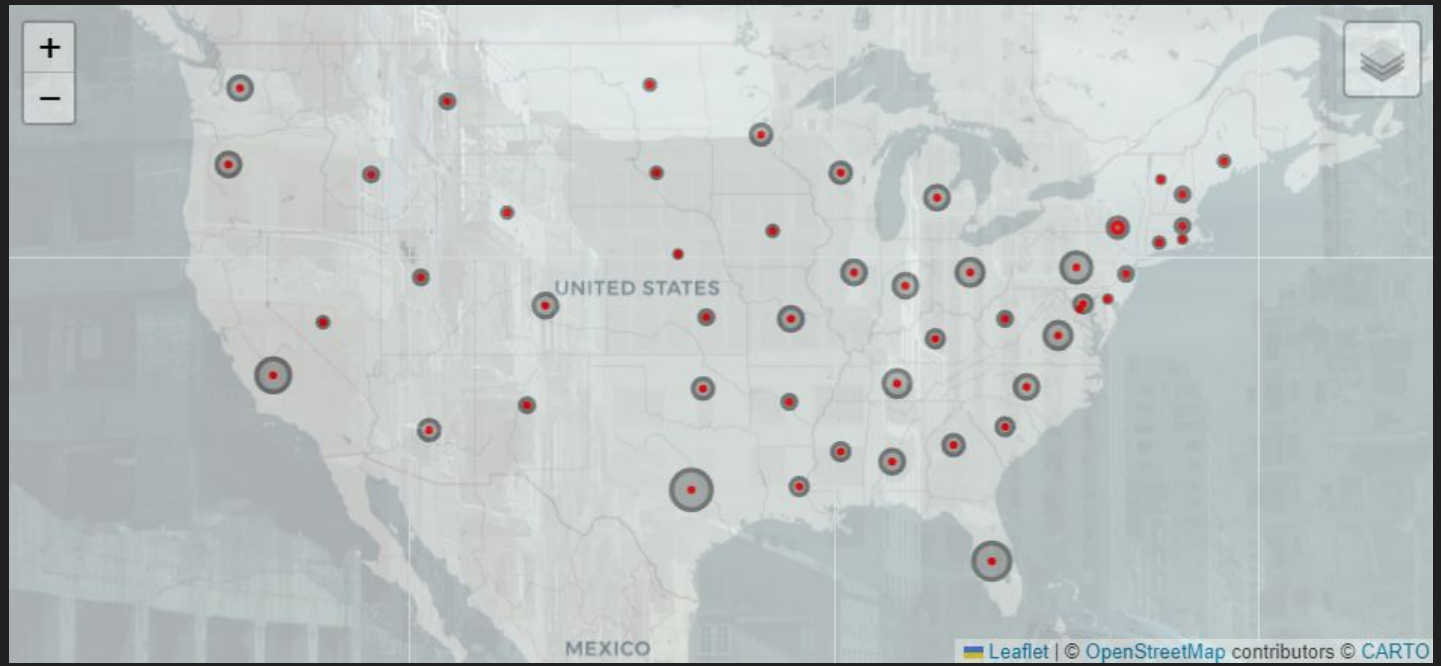


- Visual record halfway into the outbreak (Sep 2021)
- Virus is spreading more extensively to the Eastern region
- Upper midwest regions appear to be the least affected by the infection

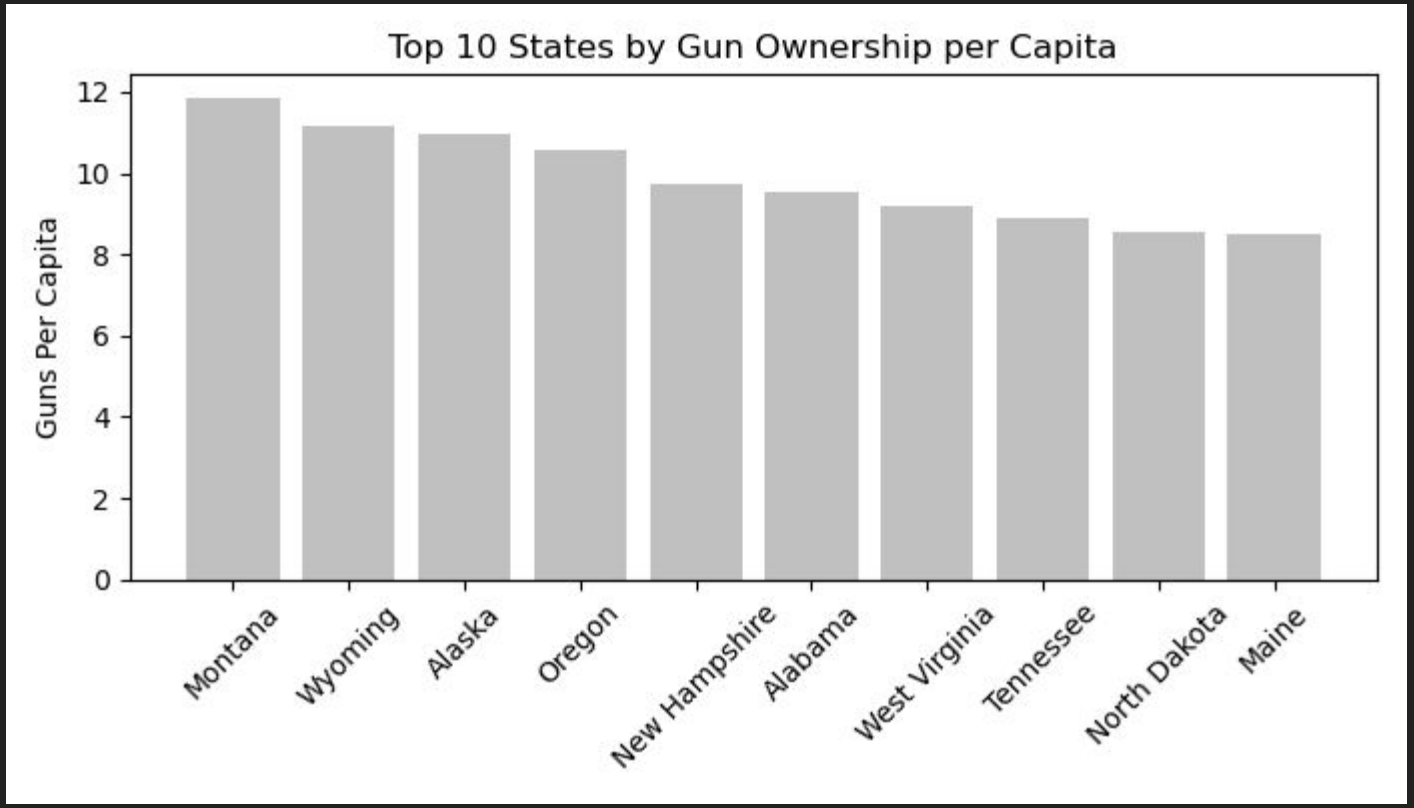


- These same states also include the largest populations in America
- Northeast and Southeast regions have the highest number of infected states

2) Which states are better prepared in defending against the apocalypse?

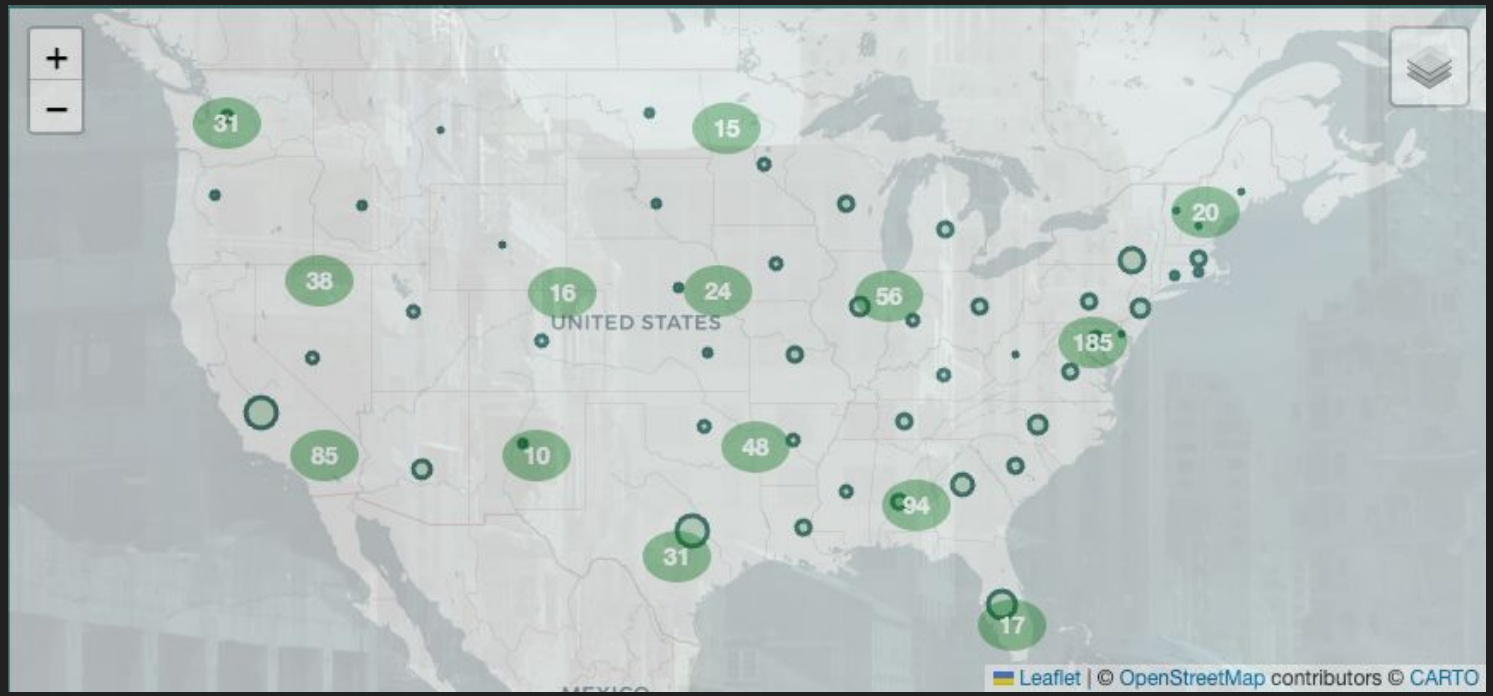


- Eastern region has a higher presence of gun sales
- By September 2020, the # of infected the # surpassed gun sales.



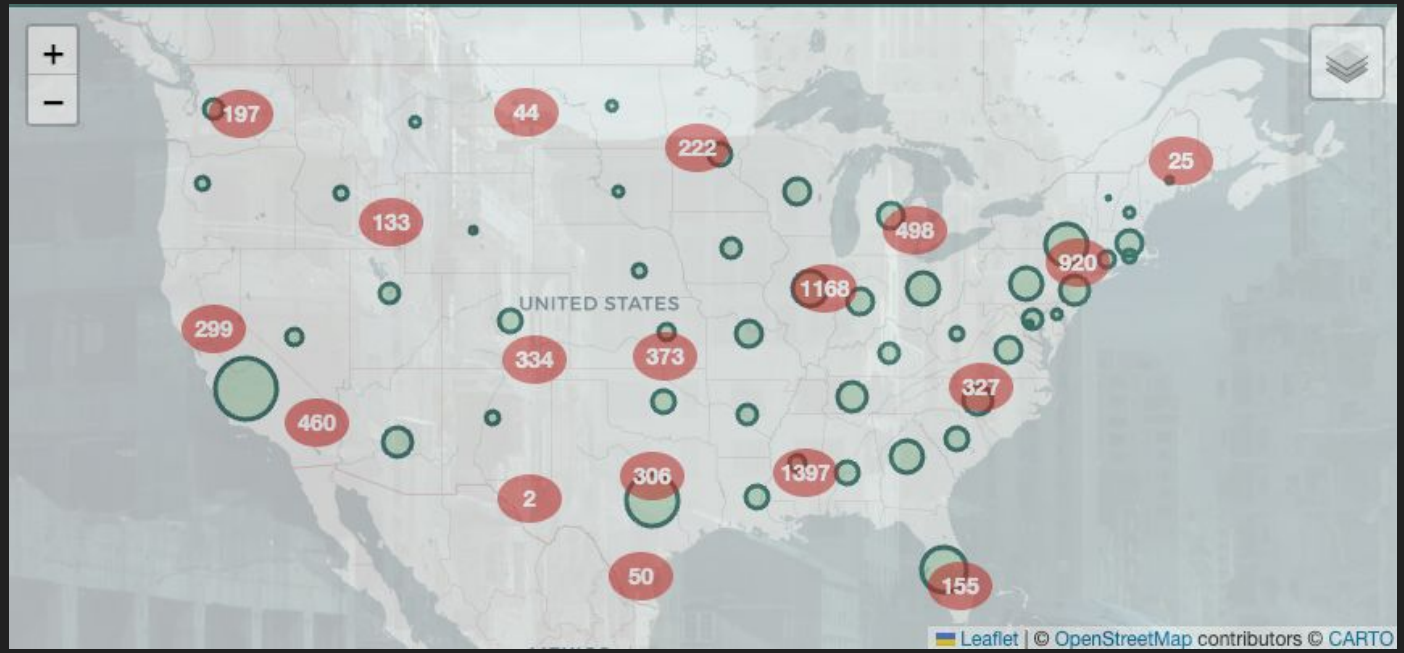
- Northwestern states possess the highest number of guns per capita
- States are not within the top 10 most infected

3) Which states have the strongest military presence?

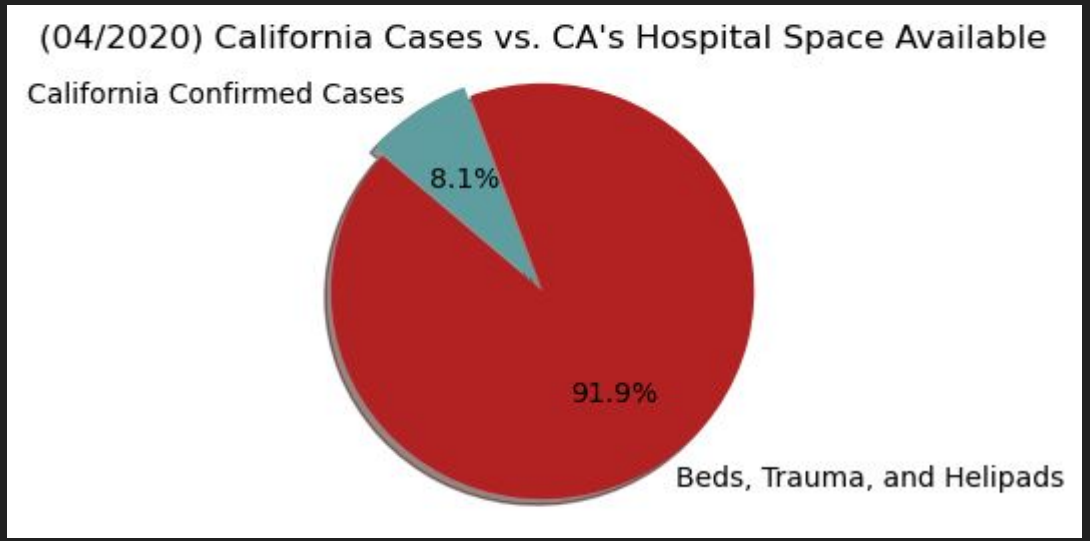


- Mainly coastal regions host a significant number of military bases
    - Those regions would provide the best defenses against the outbreak
- Virginia, California, and Texas, have the strongest military presence.

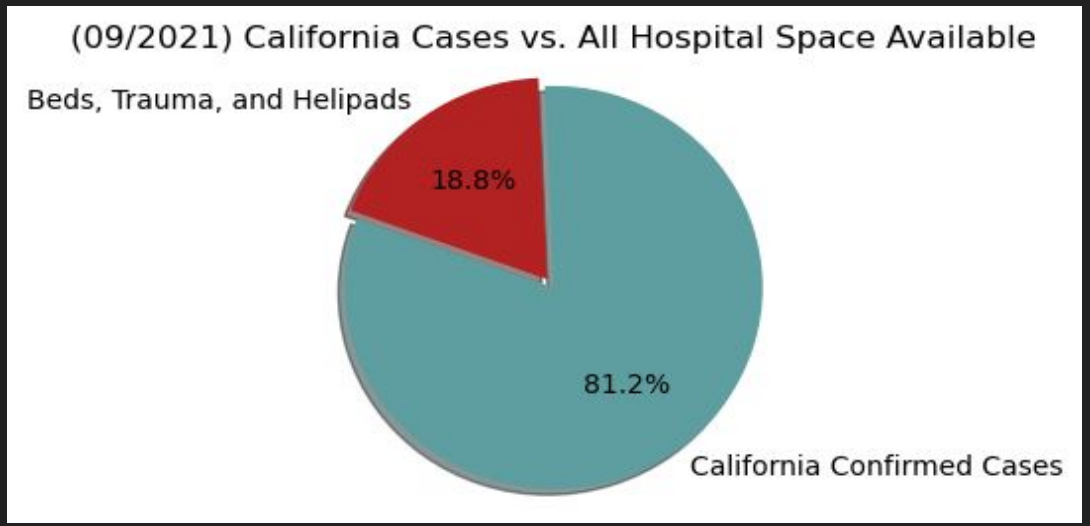
3) Are the hospitals in each state capable of accommodating the projected number of infected patients?



- Red markers represent hospital clusters
- Regions between the southern and mid-western areas contain the highest concentration of hospitals



- Start of the outbreak (CA data)
- At its lowest levels, the state's hospitals would have had ample capacity to accommodate the infected



- Midpoint of the outbreak
  (CA cases VS all U.S. hospital spaces)
- The infected became overwhelming by the midpoint
  - Even with all hospital bases combined against CA’s cases


Summary

Summary of Findings

- ***Regions impacted the most from the outbreak***
  - *Eastern region experienced the highest impact*
  - *Top populous states have the highest rates of infection*

- ***States best prepared for the apocalypse***
  - *Eastern region possess a higher number of guns per capita*
  - *Coastal regions have a greater concentration of military bases*
  - *No later than Aug 2020, every state had more guns per capita than the number of zombies*
    - *Regarding preparedness, this assumes each citizen is armed with a firearm to defend against the infected*

- ***Hospital accommodations versus the zombie outbreak***
  - *Hospital spaces are in nowhere near as prepared to accommodate the number of infected*

- ***Signs that the country is able to contain the infected***
  - *Confirmed cases continue to skyrocket without any indication of slowing down from Apr 2020 - Mar 2023*

Recommended Actions

- Seek ways to enhance hospital facilities and services
  - Grant necessary fundings to improve preparations against future superspreader viruses
    - Expand medical capacity for incoming patients and plan potential relocations to alternative facilities (e.g. military bases)

- Discuss methods to mitigate the virus's spread
  - Establish a rapid response system (RRS) to identify the virus's behavior and develop testing and quarantine protocols
  - Enact policies that enforce self-quarantine, lockdowns, travel restrictions, etc.

Closing Thoughts

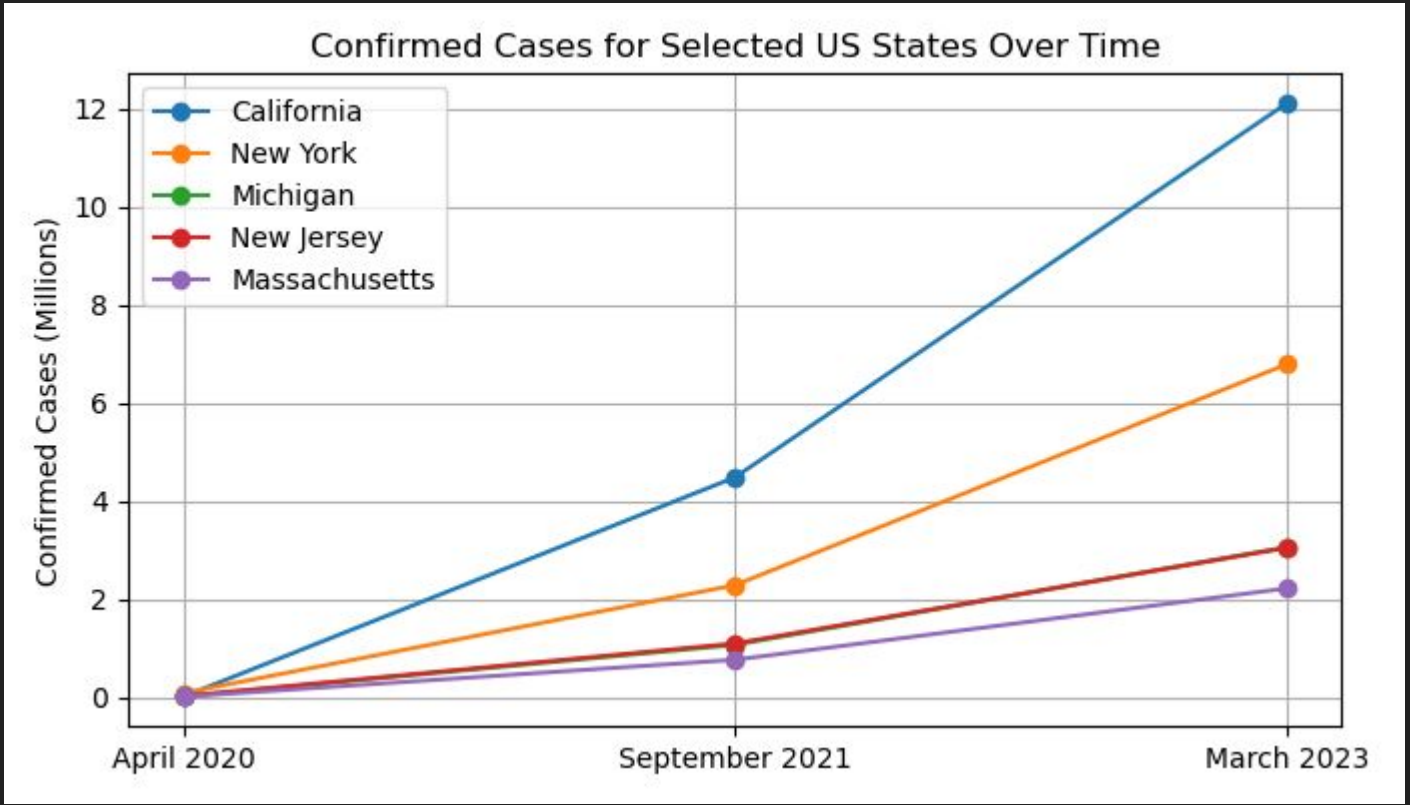
- Our findings help provide detailed visualizations of a hypothetical scenario, illustrating the monthly spread of the virus in each state from various views and times; while also implementing other variables to compare with the rising infection rates.
    - e.g. the inclusion of guns sales/guns per capita data to push a zombie survival narrative.

- Elements of this model can apply to track future superspreader viruses, analyze virus behavior and status, map confirmed cases and key facilities, and recommend optimal strategies based on recorded data.


Thank you!


Appendix

4) Based on the available data, how did the infection progress?



- CA, NY, MI, NJ, and MA recorded the highest initial confirmed cases in the country.
- The infection rate is showing a rapid increase and would require serious interventions to curb growth.
    - CA between Sep 2021 to Mar 2023, there's been a 186% increase in confirmed cases