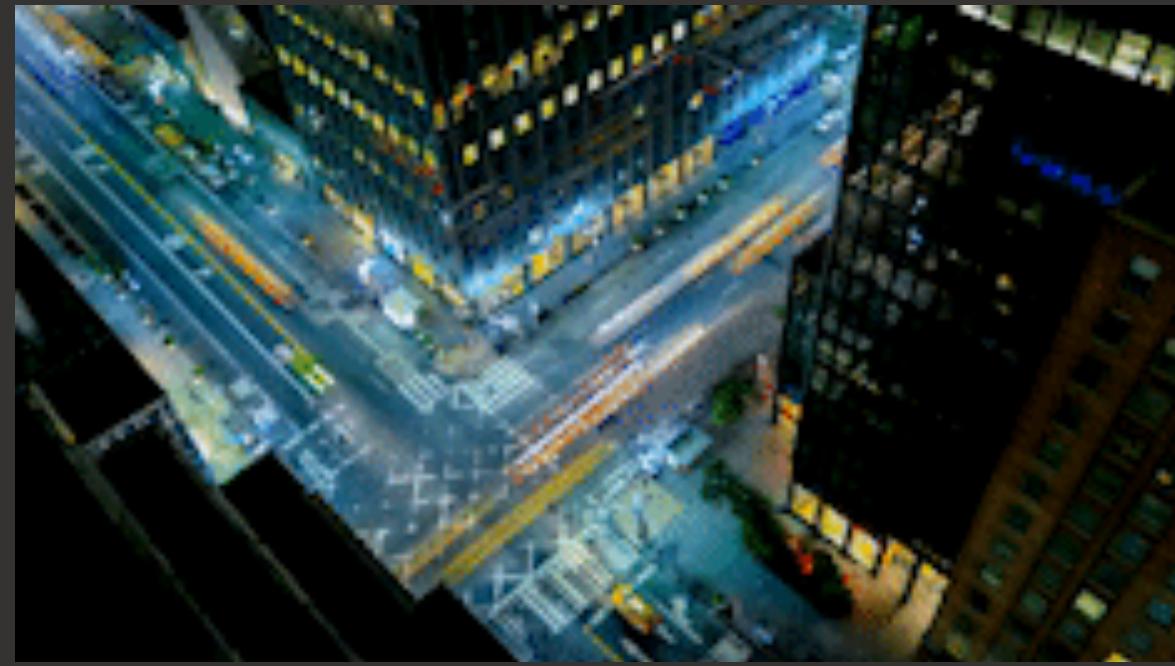


IDENTIFYING AREAS AT RISK FOR COVID- 19 AND OTHER DISASTERS

- Emiko Sano
- Minoo Taghavi
- Cameron Vann

General Assembly, Washington- DC



- 1- Natural disasters can aggravate the impact of the COVID-19 pandemic.
- 2- Lack of tools for visualizing the combined risk.

PROBLEM STATEMENT



SOLUTION

1

Data
Gathering/
Cleaning

2

Combine data
by County

3

Identify CA
counties with a
combined risk
(Clustering)

4

Map combined
risks for easy
identification.

5

Make
recommendations.



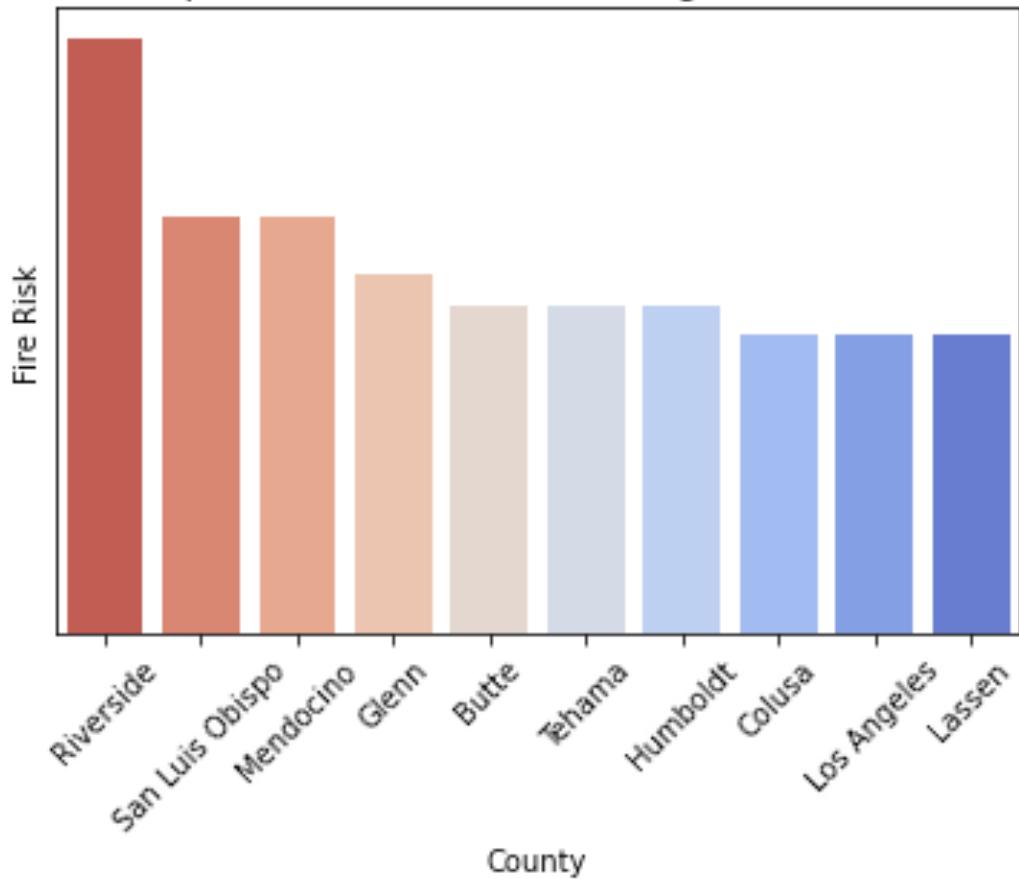
Wildfires Has Devastated California in 2020.

As of October 17th :

- ❖ 202 Total Fires.
- ❖ 19 Currently Active Fires.
- ❖ 32 People Killed.
- ❖ 3,549,923 Acres Burned (3% of all California)



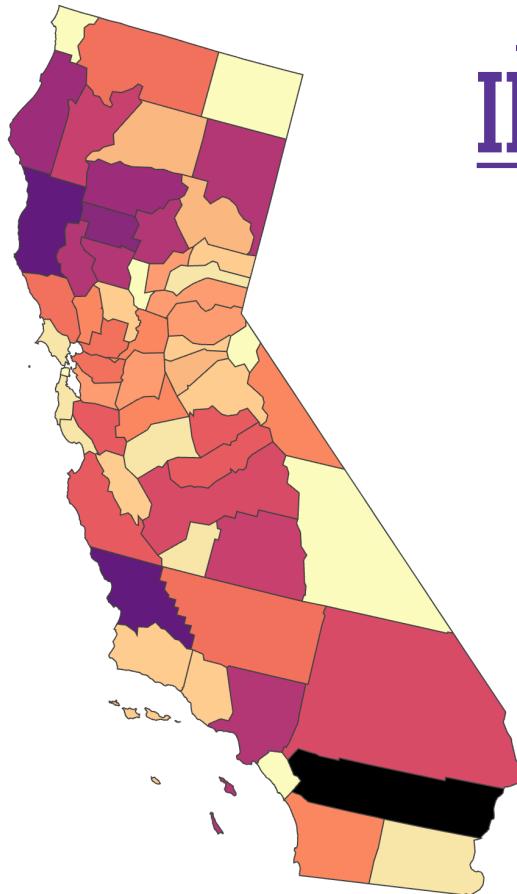
Top 10 CA counties with the Highest Fire Risk



**FIRES HAS
DEVASTATED
RIVERSIDE
COUNTY IN
2020 !**



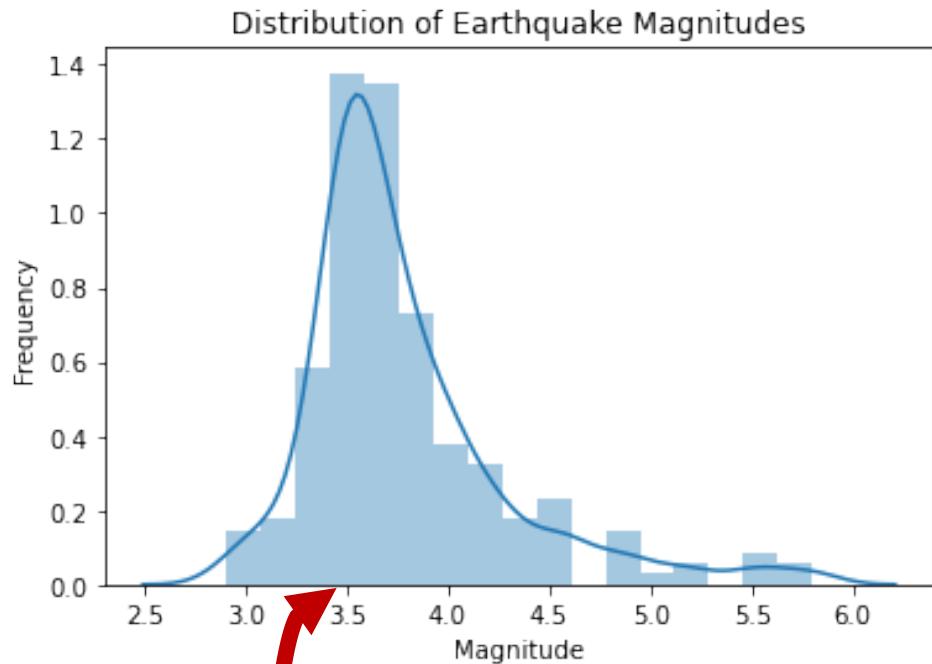
FIRE SCORE PER COUNTY IN CALIFORNIA



Fire Score per County
20



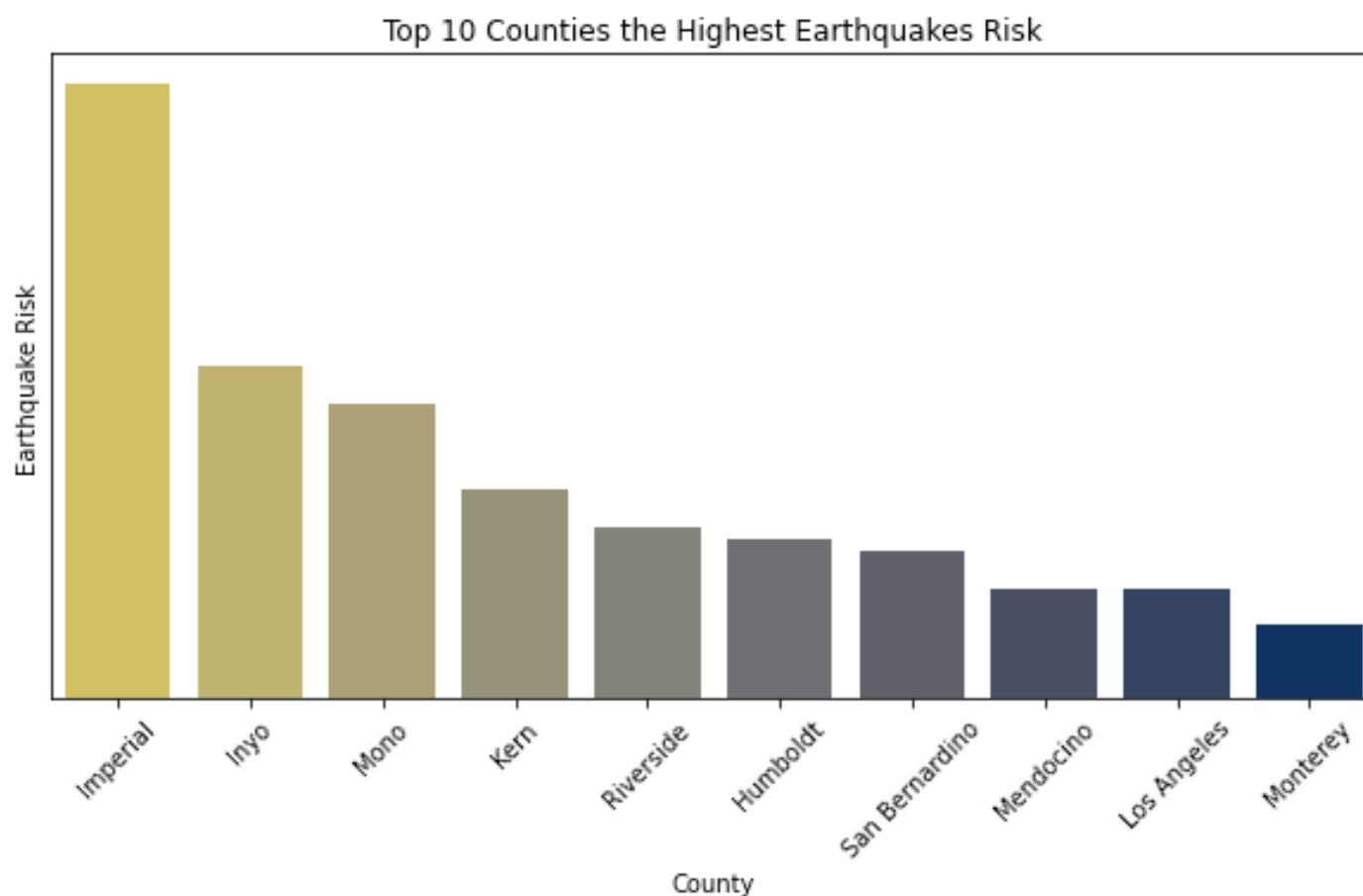
➤ California Is Shaking A Lot ...
But “Lightly”
200 Earthquakes Recorded as of October 17.



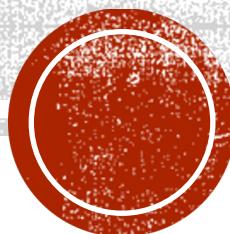
Class	Magnitude
Great	8 or more
Strong	7 - 7.9
Moderate	6 - 6.9
Light	5 - 5.9
Minor	4 - 4.9
	3 - 3.9

EARTHQUAKE

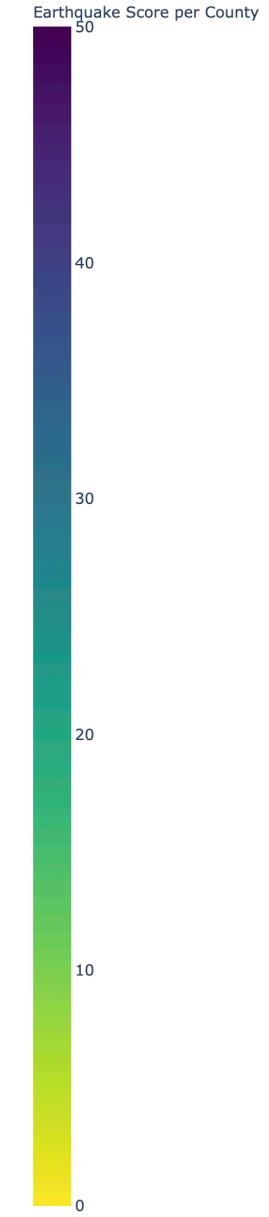
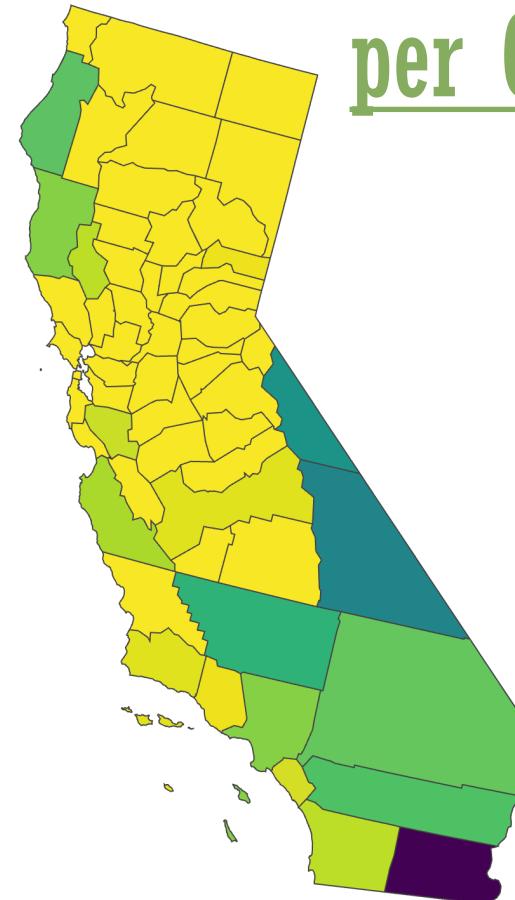
A large, stylized red arrow points upwards, overlaid on a background image of a city skyline at night. The word "EARTHQUAKE" is written in bold, black, sans-serif capital letters across the middle of the arrow.



EARTHQUAKES
HAVE BEEN
SHAKING MAINLY
IMPERIAL COUNTY
IN 2020.



Earthquake Score per County in California



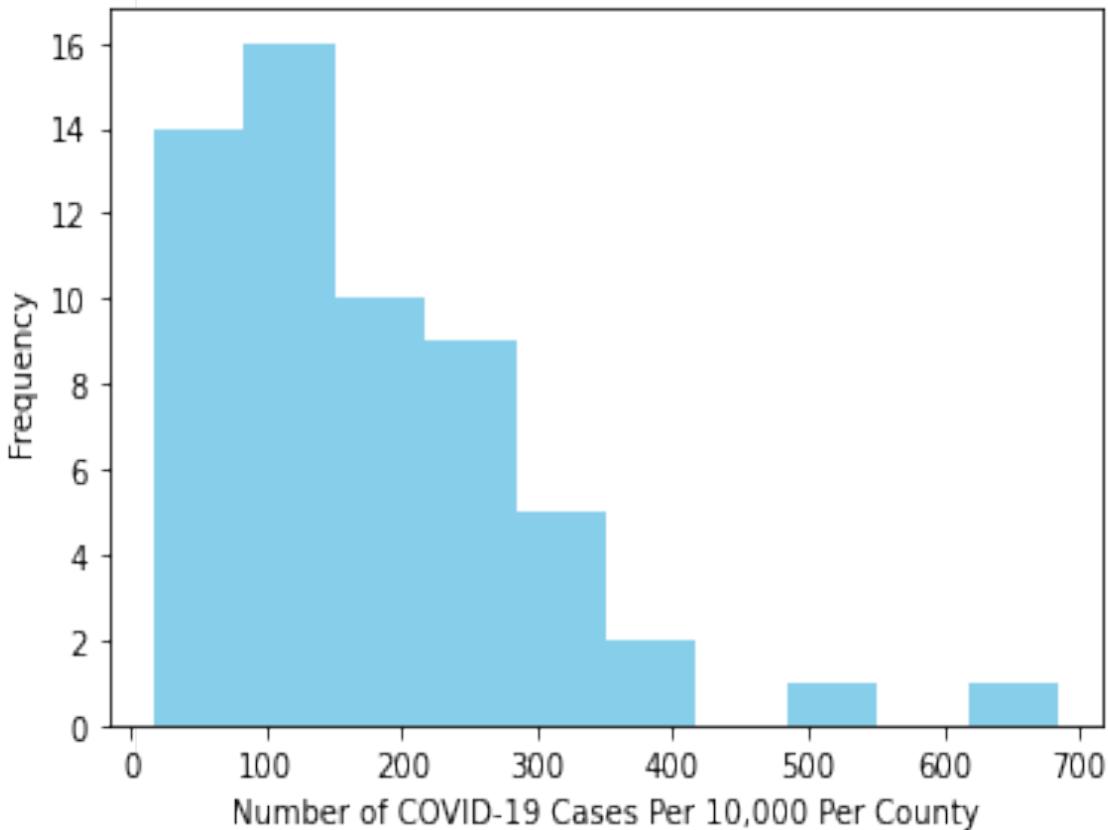


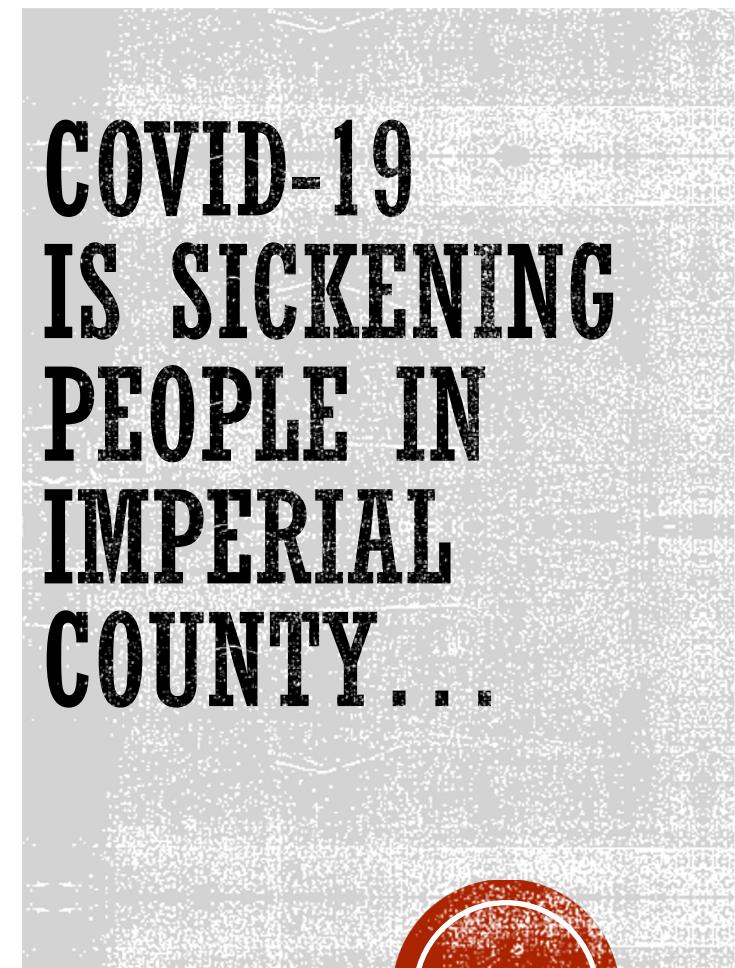
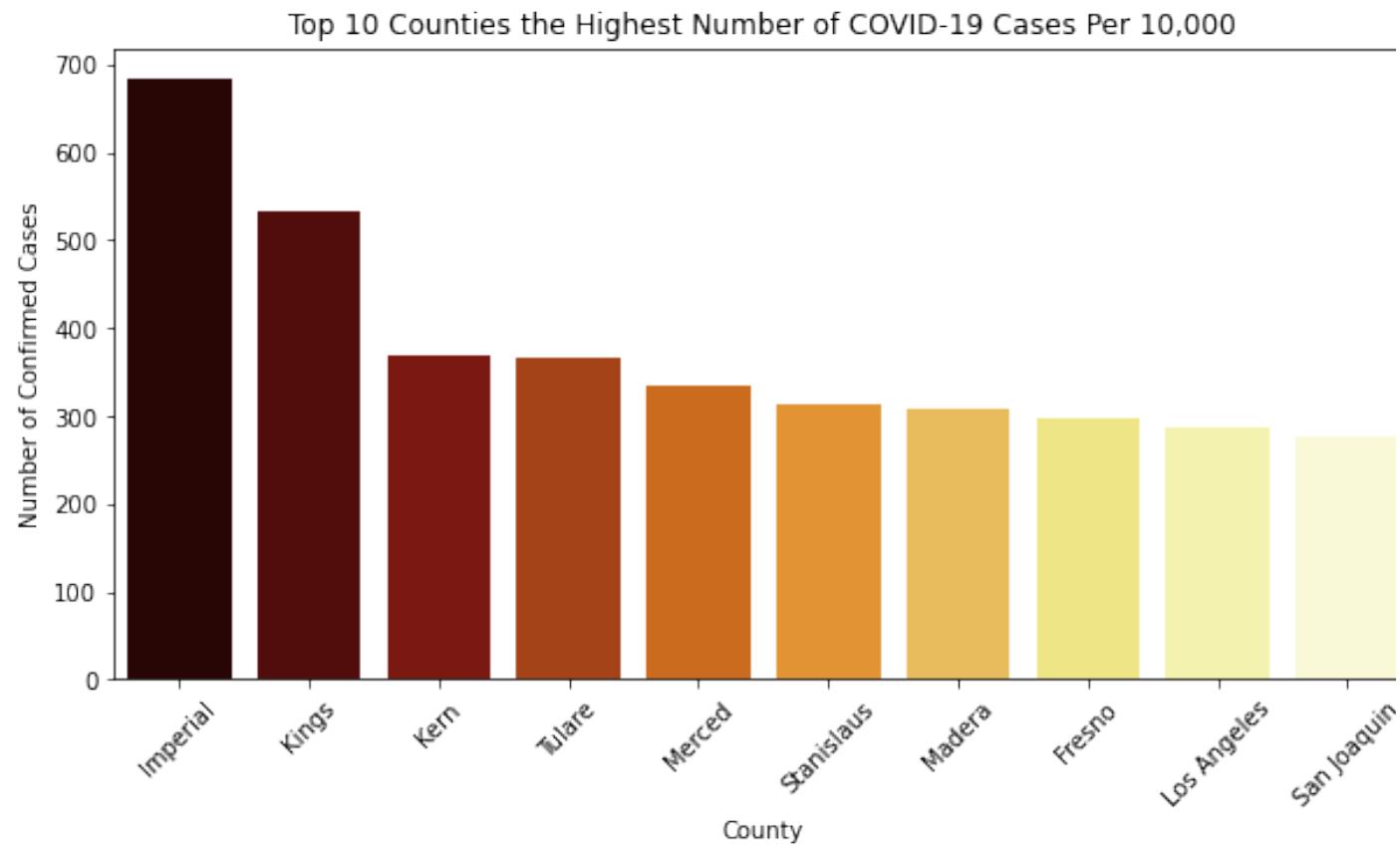
COVID-19

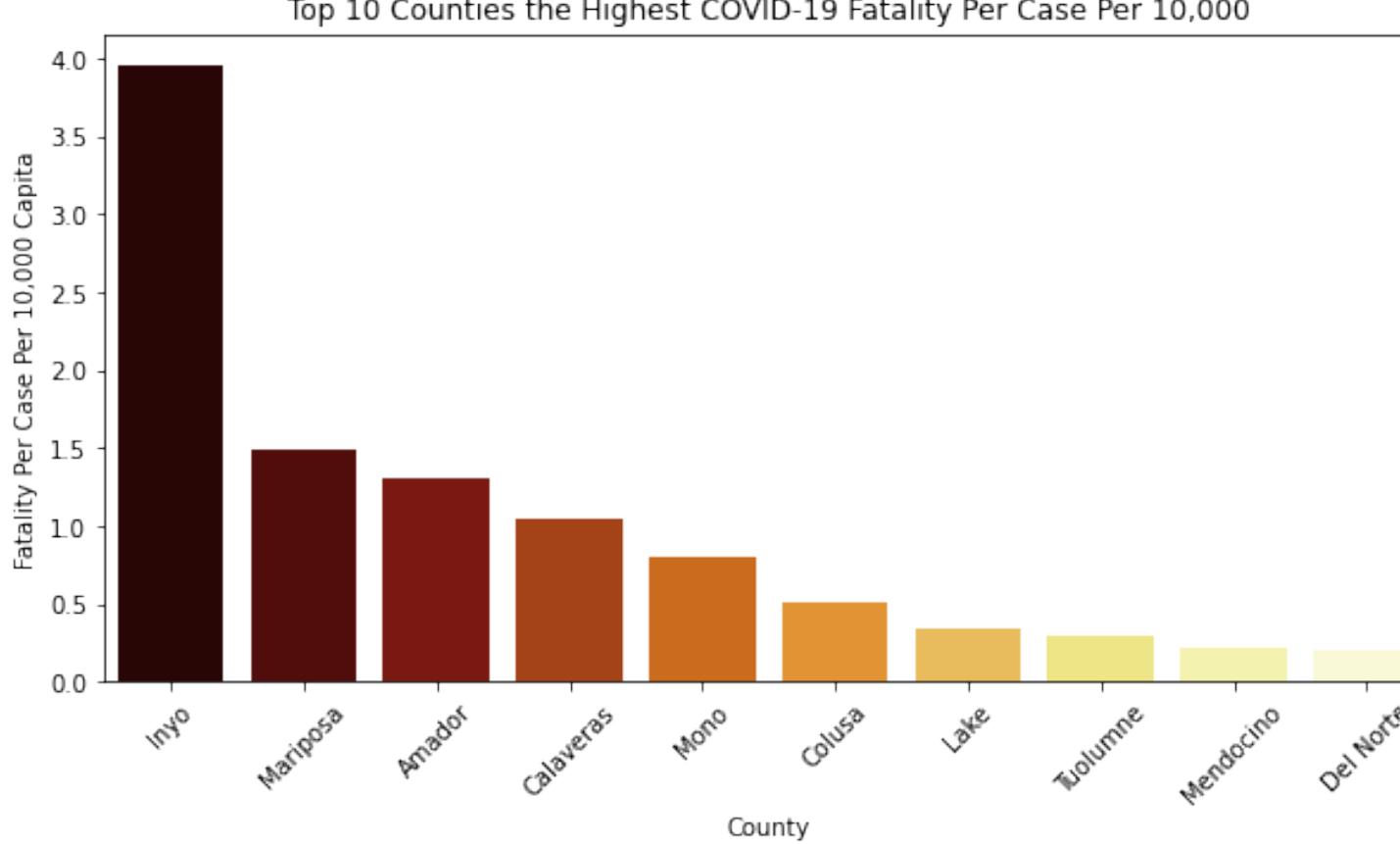
Is Affecting Some Counties More Than Others...

* 220 People per 10,000 have COVID-10 in CA.

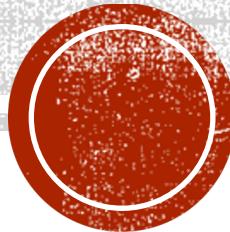
Distribution of the Number of COVID-19 Cases Per 10,000 Due to COVID-10



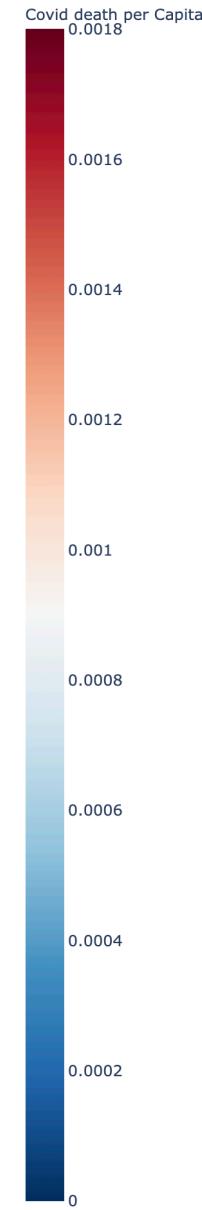
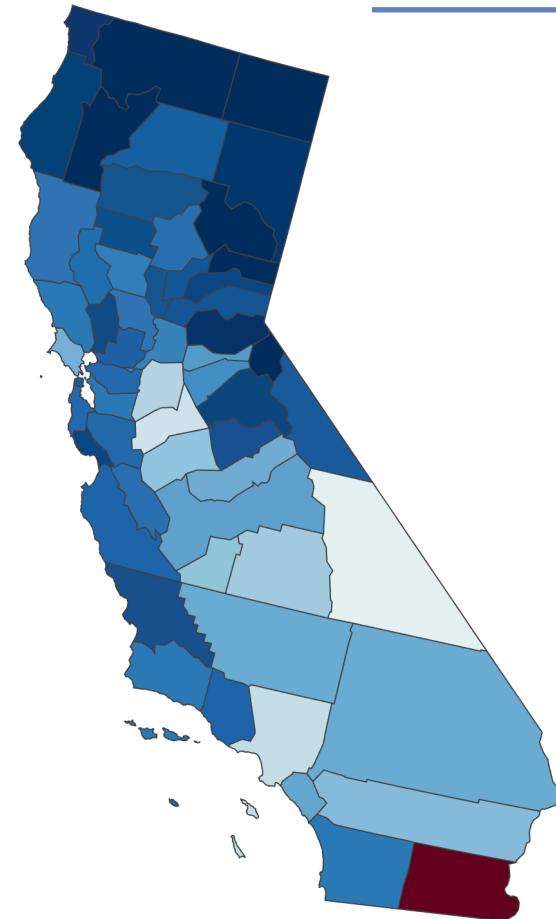


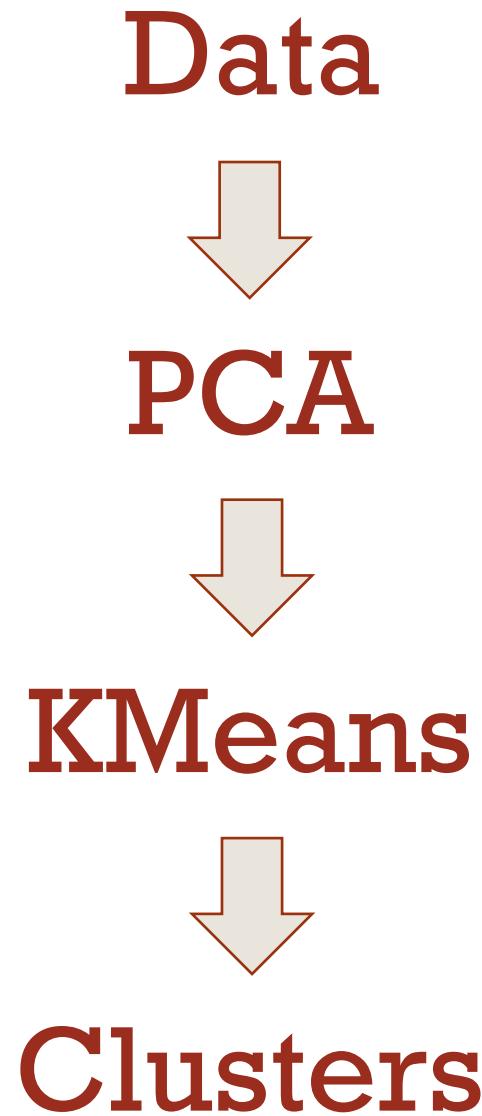


IS INYO COUNTY
LAGGING IN
EFFECTIVE
COVID-19
TREATMENTS?



Covid Death per Capita in California





MODELING FOR COMBINED RISK

- The Approach
 - Variable Engineering
 - Clustering Trial and Error
 - Algorithm Selection
 - PCA
 - Kmeans



FINDING THE CLUSTERS

Principle Component Analysis (PCA)

Dimension Reduction

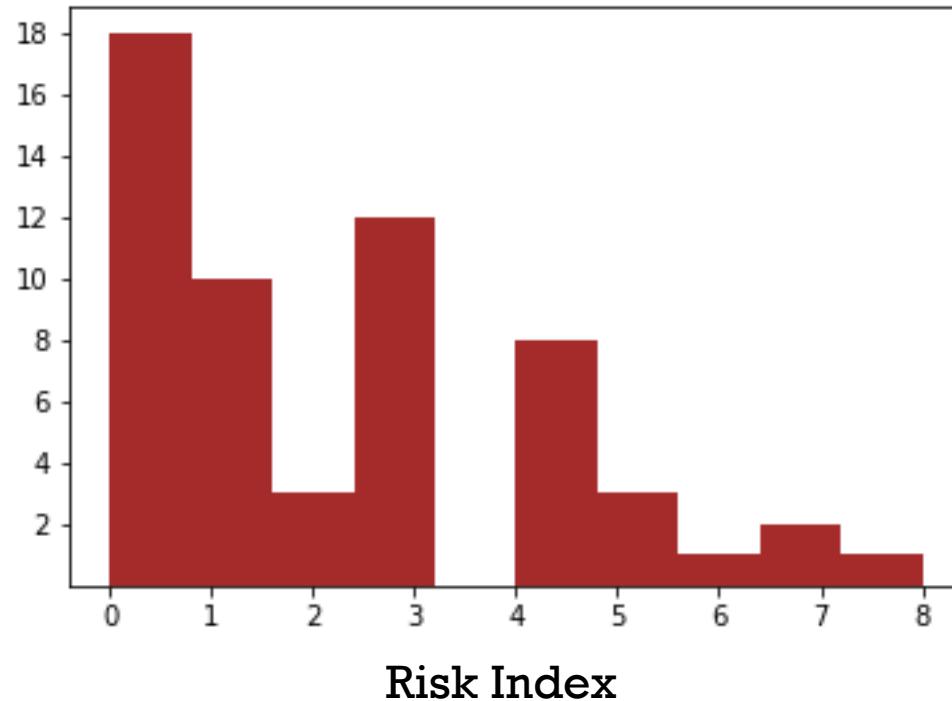
26 Variables → 2

Variability Explained

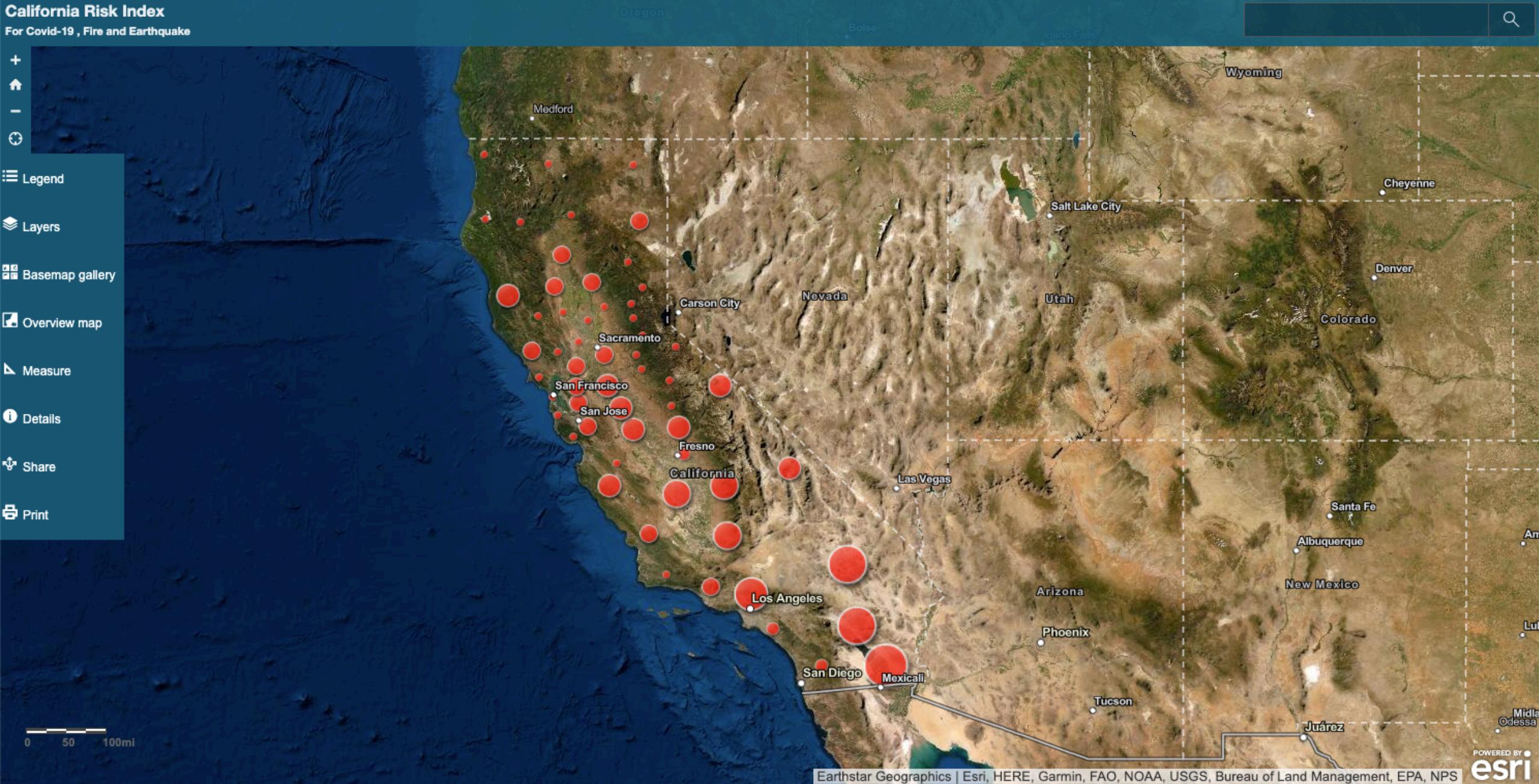
62%

K-Means

Distribution of Risk (Zero = Safest)



California Risk Index for Covid-19, Fire and Earthquake



SUMMARY/ CONCLUSION

- We made a series of maps that can identify :
 - Fire risk alone
 - Earthquake risk alone
 - COVID-19 risk alone
 - Combined risk
- We recommend that Imperial county considers a preparedness plan.