



Bringing the heat: the effect of climate change on wildfires in California

By:

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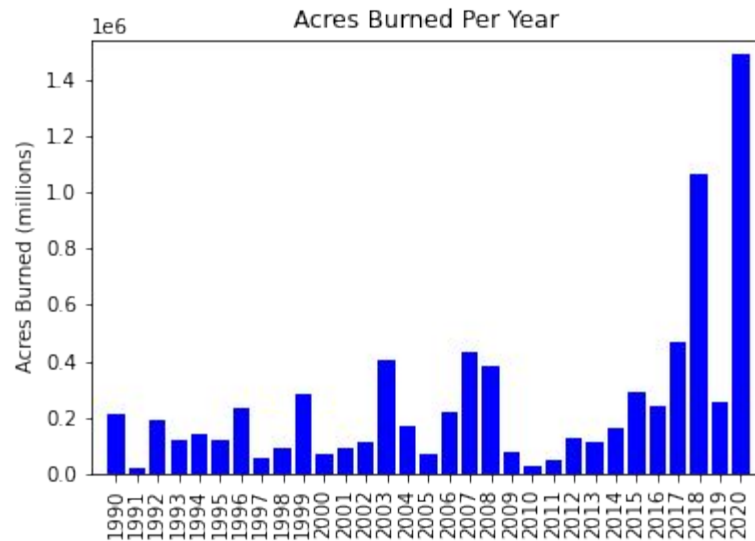
Agenda

- Wildfires over the past 30 years
- Effect of climate change on wildfires
- Largest fires in California
- Conclusion



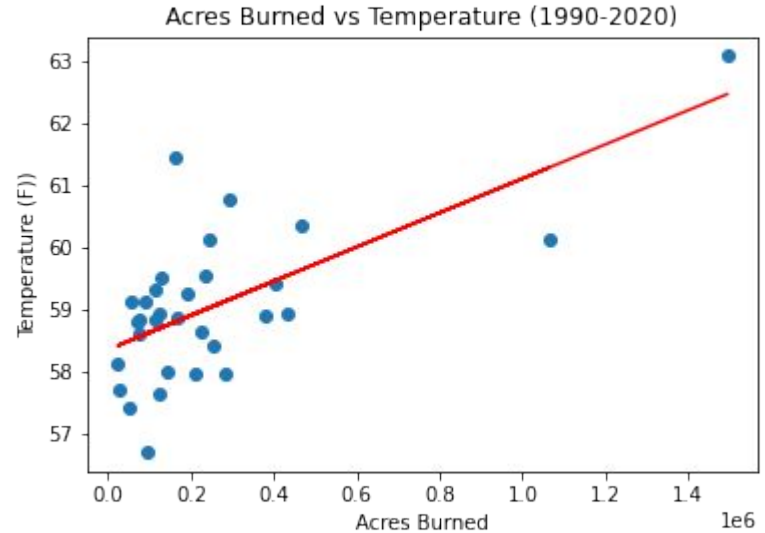
California Wildfire Acres Burned (1990-2020)

- Wildfire destruction has increased slightly over the past 30 years, with a few critical outliers in recent years.
- 2020 fires burned 2,155,852 acres.
- 2018 fires burned 1,063,414 acres.



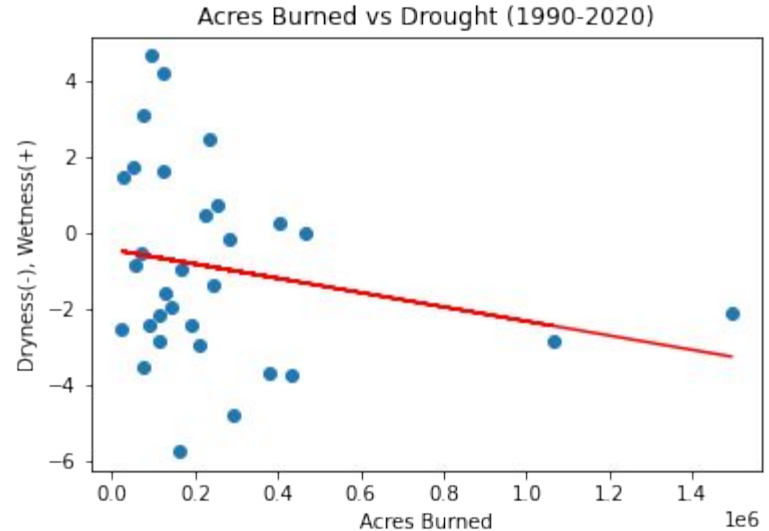
Acres Burned vs Temperature (1990-2020)

- The linear regression shows a positive correlation between Temperature and Acres Burned.
- r-squared: 0.67



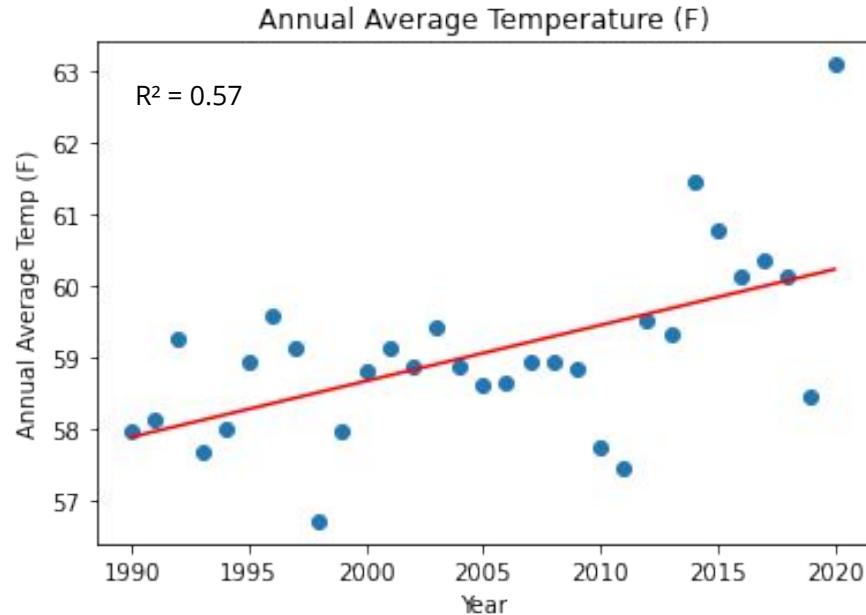
Acres Burned vs Drought (1990-2020)

- The linear regression shows a negative correlation between Wetness and Acres Burned.
- r-squared: -0.224



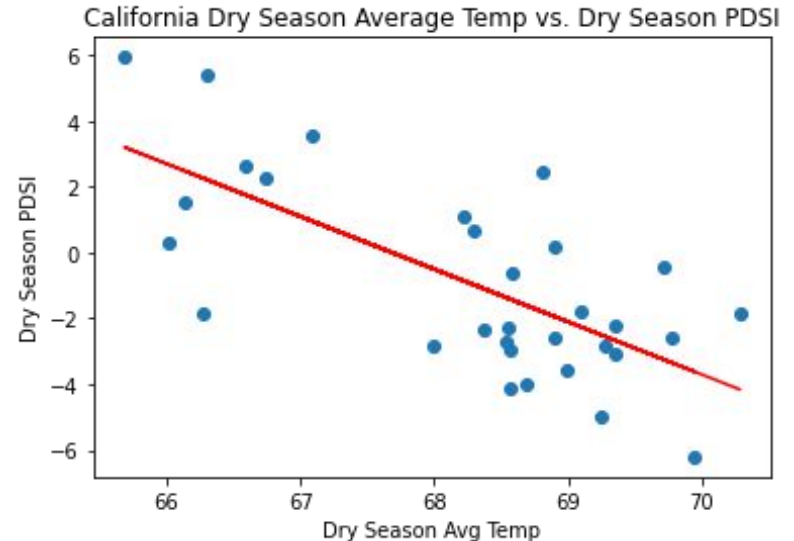
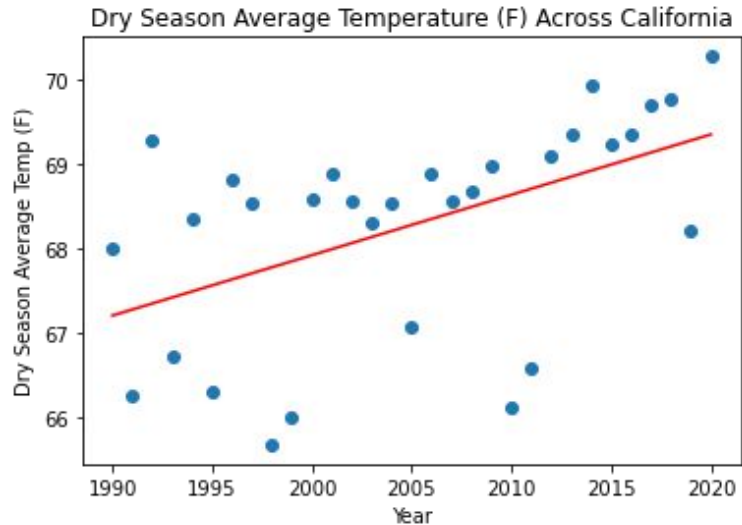
California Annual Temperatures

- Increase in California average temperature over 30 years.



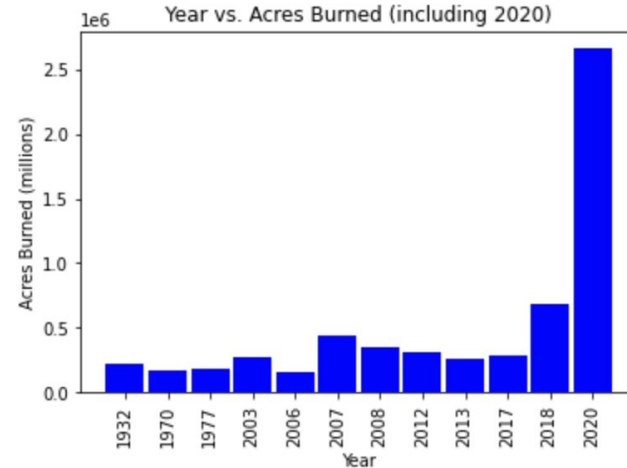
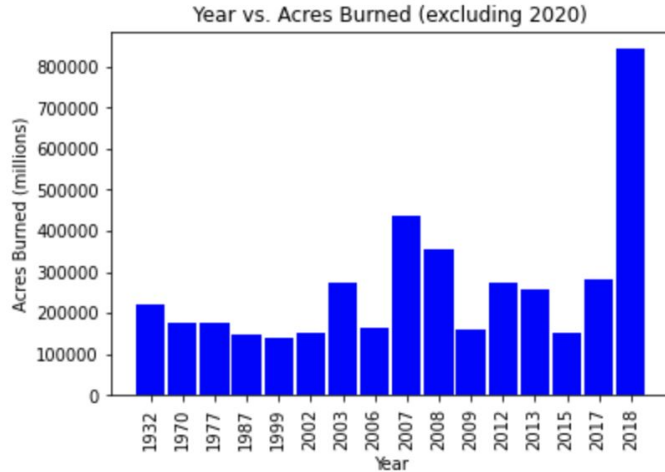
Dry Season Temperatures and Drought

- Dry season is May to October.
- PDSI is an index that spans -10 to 10 (-10 is most dry and 10 is wettest).



Top 20 Largest Fires

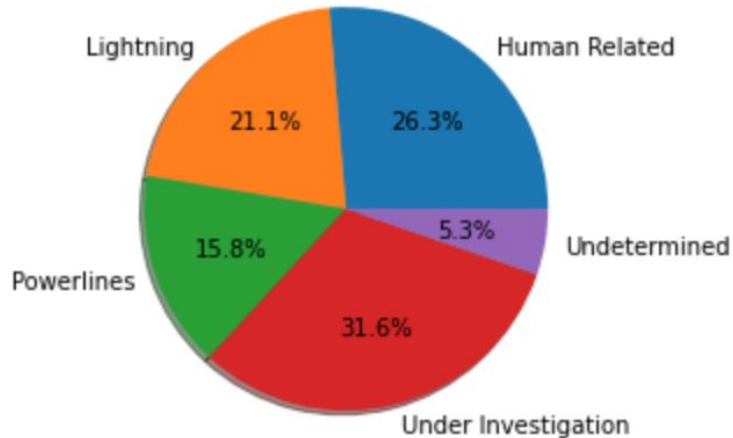
- Top 20 wildfires date back to 1932
- 17 of 20 fires happened after 2003
- Worst year is 2020 with 6 of 20 fires
 - August Complex - 1,032,649 acres burned, 935 structures destroyed, and 1 death.



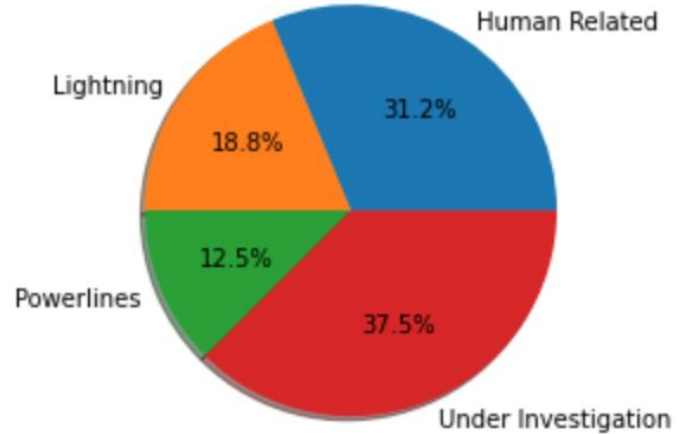
Causes

- Climate change is a major factor for wildfires.
- Human behavior and necessity

20 Largest Fires Cause

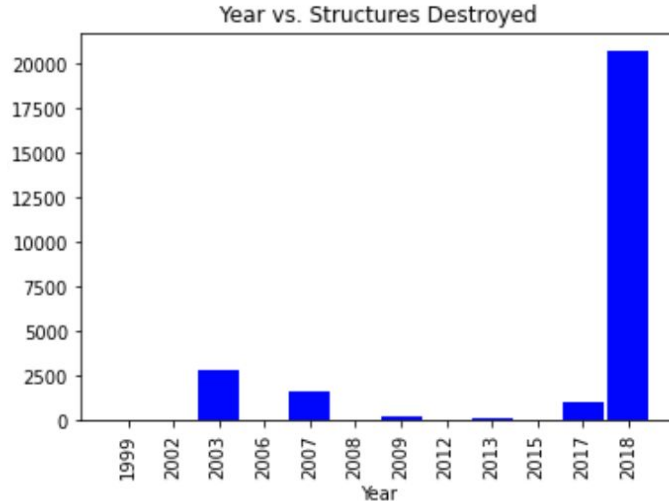
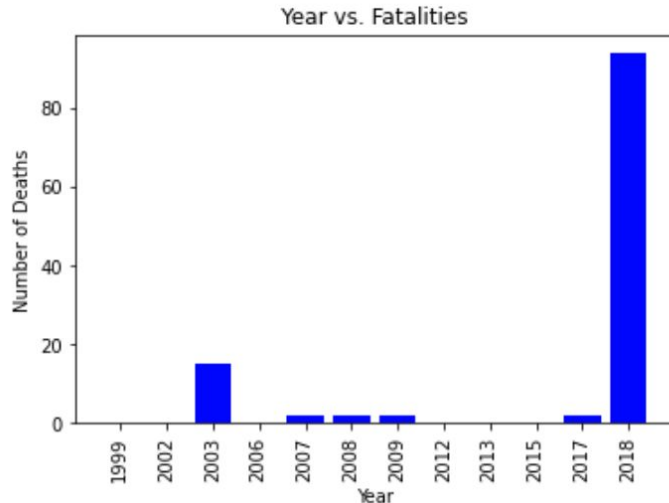


Last 30 Years Cause



Deadliest & Most Destructive

- The Camp Fire in 2018 has been the deadliest and most destructive in California history resulting in 85 deaths and 18,804 structures destroyed (CAL Fire).



Conclusions

- Wildfire intensity has recently increased with rising temperature and dryness
- California annual and dry season average temperatures are increasing.
- Education and activism.



Challenges and Further Investigation

- Challenges:
 - Finding datasets for a prediction that others have already made.
 - Isolating climate related fires from non-climate related fires
- Further investigation:
 - Regional average annual and dry season temperatures and drought.
 - Investigate wildfire prone areas such as Santa Rosa and look for patterns.
 - Effects of California weather patterns on drought and increased wildfires.



Sources

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