



# Path of destruction: recent trends in California wildfires

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# The situation

- In recent years, California has experienced multiple **large, destructive wildfires**
- Visualizing **wildfire trends over time** is important for:
  - Educating the public
  - Assisting state agencies in decision-making
- CalFire website lists all wildfires since 2013, but **lacks plotting tools**

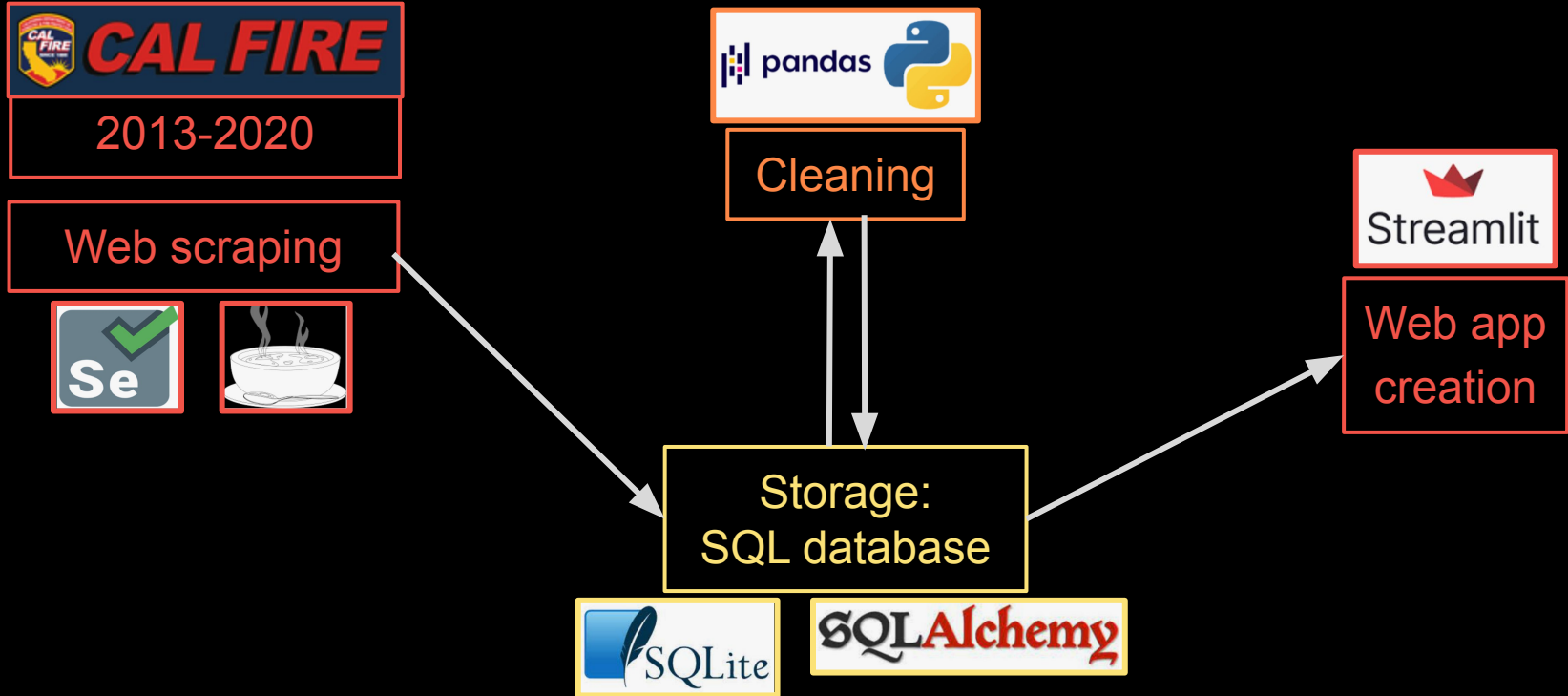




## Project Aims

- Engineer a **data pipeline** using the CalFire data
- Create a user-friendly **web dashboard** of state wildfire trends

# Data Pipeline

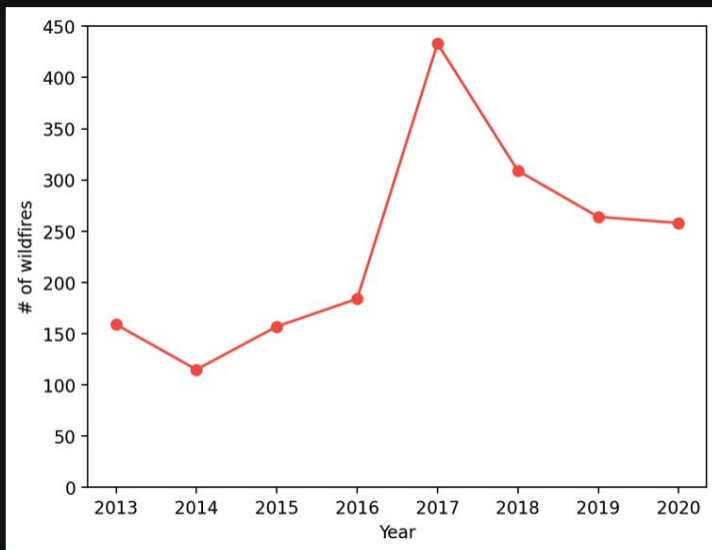


# Wildfire Trends in California (2013-2020)

## Major Trends

Select one:

- ☒ Number of fires per year
- ☐ Acres burned per year (in thousands)
- ☐ Structures destroyed per year
- ☐ Fatalities per year

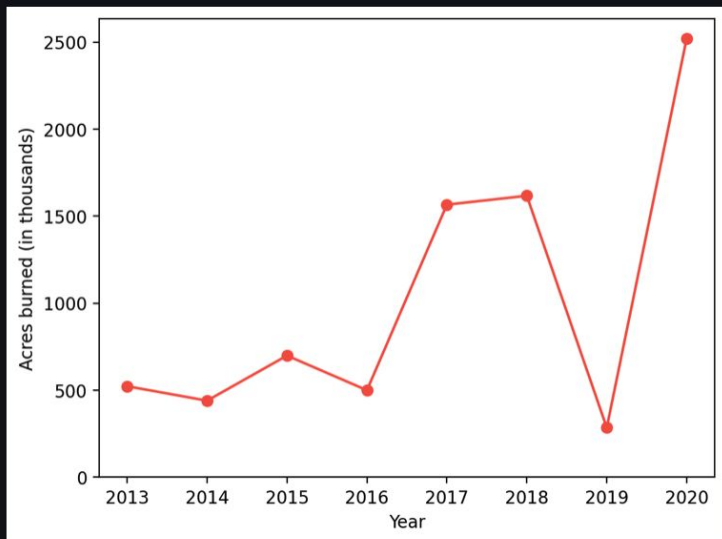


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## Largest fires (in thousands of acres)

	start_date	acres	destroyed	fatalities	counties
August Complex (include...	2020-08-16	1032	0	0	Mendocino, Humboldt, Tr...
Ranch Fire (Mendocino C...	2018-07-27	410	246	0	Colusa, Glenn, Lake and ...
SCU Lightning Complex	2020-08-18	396	222	0	Santa Clara, Alameda, Co...
LNU Lightning Complex (i...	2020-08-16	363	0	0	Napa, Sonoma, Lake, Yol...
Thomas Fire	2017-12-04	281	1063	0	Santa Barbara and Ventura
Rim Fire	2013-08-17	257	0	0	Tuolumne
Carr Fire	2018-07-23	229	1614	3	Shasta and Trinity
Chetco Fire	2017-07-12	191	0	0	<NA>
Camp Fire	2018-11-07	153	18804	85	Butte
Rough Fire	2015-07-21	151	0	0	El Dorado

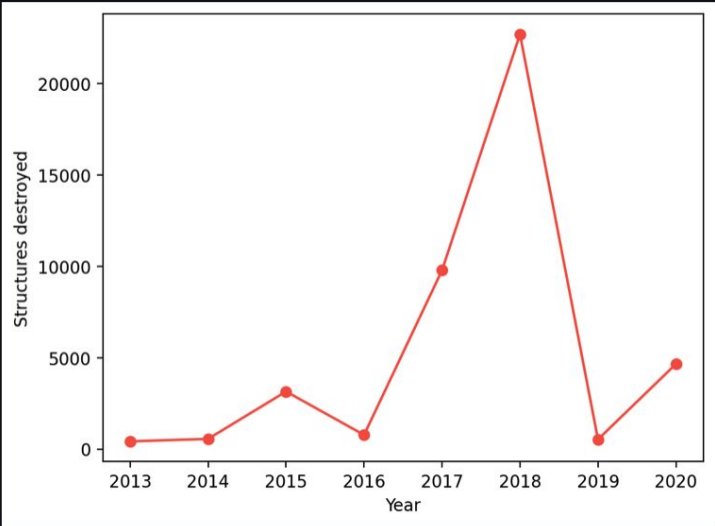


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## Most destructive fires

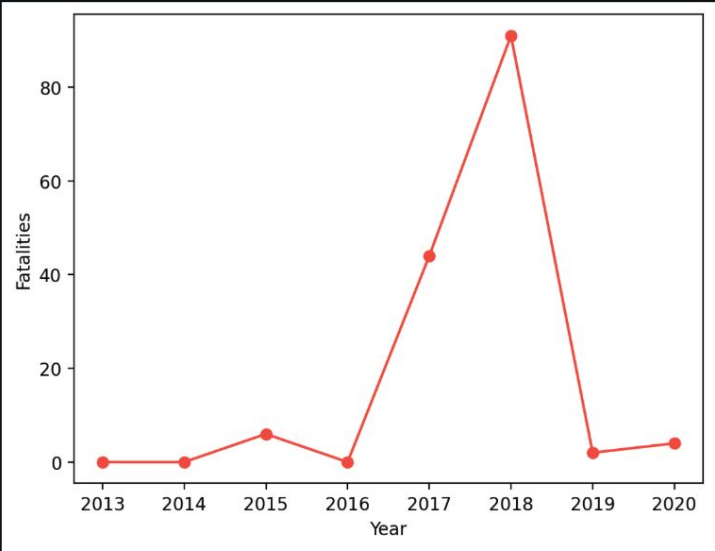
	start_date	acres	destroyed	fatalities	counties
Camp Fire	2018-11-07	153	18804	85	Butte
Tubbs Fire (Central LNU C...	2017-10-08	36	5636	22	Napa and Sonoma
Valley Fire	2015-09-12	76	1955	4	<NA>
Woolsey Fire	2018-11-08	96	1643	3	Los Angeles and Ventura
Carr Fire	2018-07-23	229	1614	3	Shasta and Trinity
Glass Fire	2020-09-26	67	1555	0	Napa and Sonoma
CZU Lightning Complex (l...	2020-08-15	86	1490	0	Santa Cruz and San Mateo
Nuns / Adobe / Norrbom/ ...	2017-10-08	56	1355	3	Napa and Sonoma
Thomas Fire	2017-12-04	281	1063	0	Santa Barbara and Ventura
Butte Fire	2015-09-09	70	877	2	<NA>

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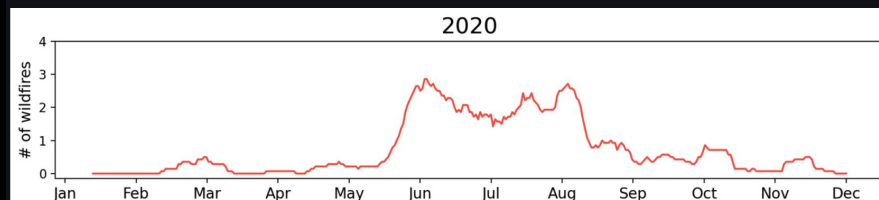
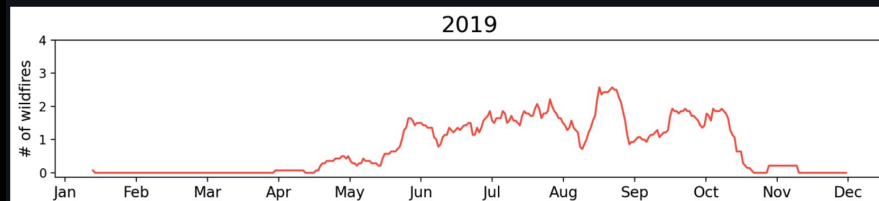
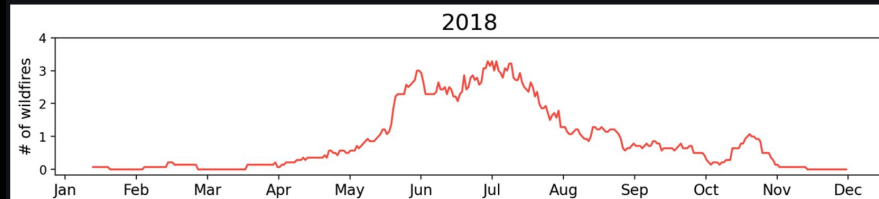
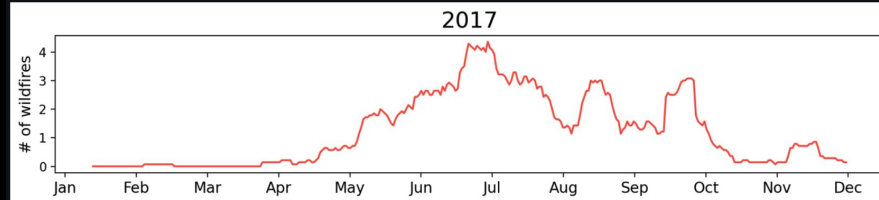
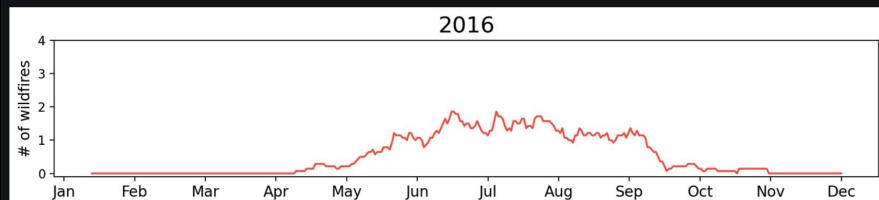
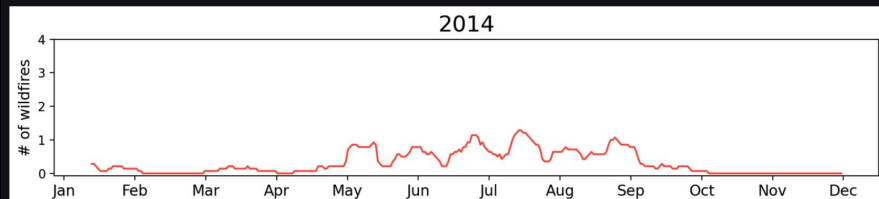
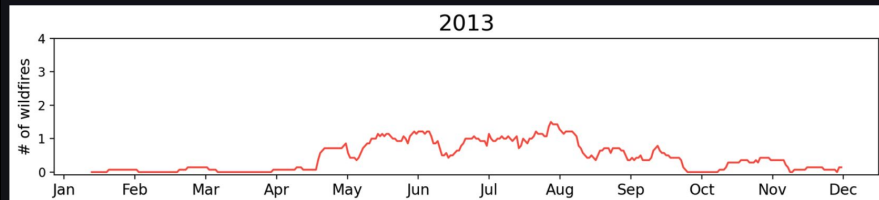


## Deadliest fires

	start_date	acres	destroyed	fatalities	counties
Camp Fire	2018-11-07	153	18804	85	Butte
Tubbs Fire (Central LNU C...	2017-10-08	36	5636	22	Napa and Sonoma
Redwood Valley Fire (Men...	2017-10-08	36	546	9	Mendocino
Atlas Fire (Southern LNU ...	2017-10-08	51	120	6	Napa and Solano
Cascade Fire (Wind Comp...	2017-10-08	9	264	4	Yuba
Zogg Fire	2020-09-27	56	204	4	Shasta and Tehama
Valley Fire	2015-09-12	76	1955	4	<NA>
Nuns / Adobe / Norrbom/ ...	2017-10-08	56	1355	3	Napa and Sonoma
Woolsey Fire	2018-11-08	96	1643	3	Los Angeles and Ventura
Carr Fire	2018-07-23	220	1614	2	Shasta and Trinity



# Number of new wildfires (14-day rolling average)



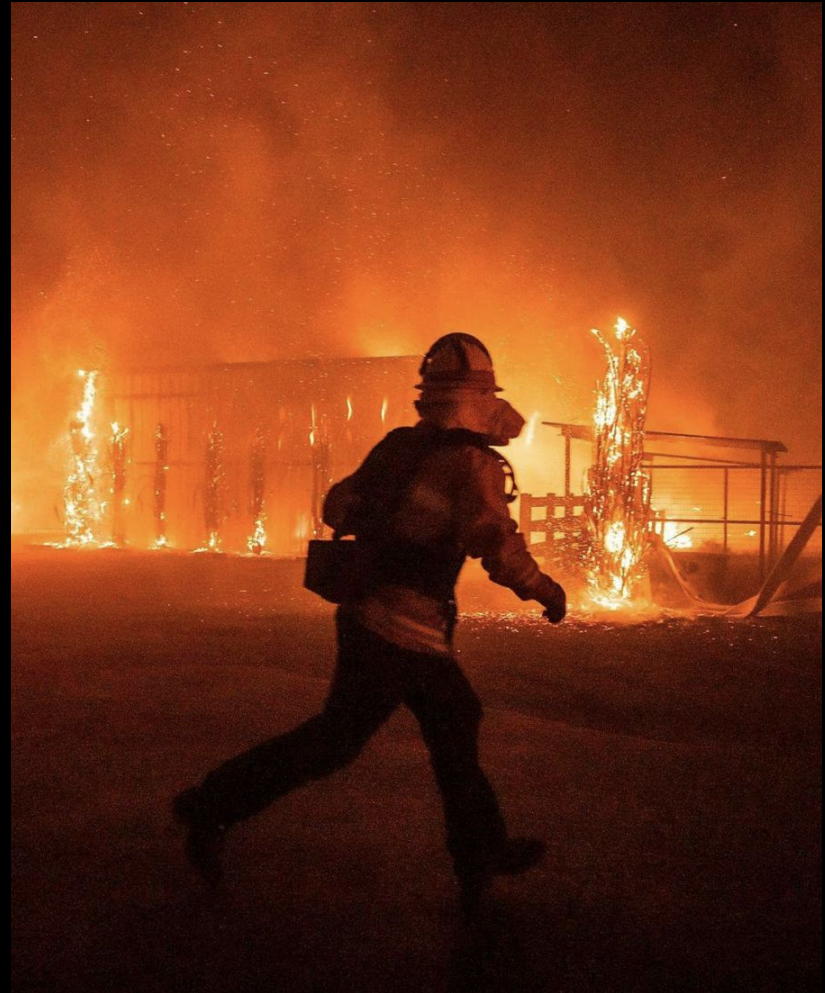


## Conclusion

- Successfully engineered a **data pipeline** and created a user-friendly **web dashboard** of wildfire trends
- California's fires are increasing in size and number
- 2018 was particularly destructive and deadly because of a single fire

# Future Directions

- Upgrade the pipeline to include:
  - New/active wildfires
  - Auto-update when new fires are posted
- Expand web app to include:
  - Search by county
  - Detailed maps



Thank you!