Wildfires in the United States from 1992-2015

Meet Our Team Members:

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Agenda

- Introduction
- Data
- Website and Analysis
- Questions?

Introduction

"Wildfires are unplanned fires, including lightning-caused fires, unauthorized human-caused fires, and escaped fire from prescribed burn projects." ---Wildfire Statistics (fas.org)

Wildfires Damages Affecting:

Wildfires Damages including but not limited to:

- Affecting Ecological resources
- Firefighters/civilians lives lost
- Structures destroyed
- Affecting wildlife habitats

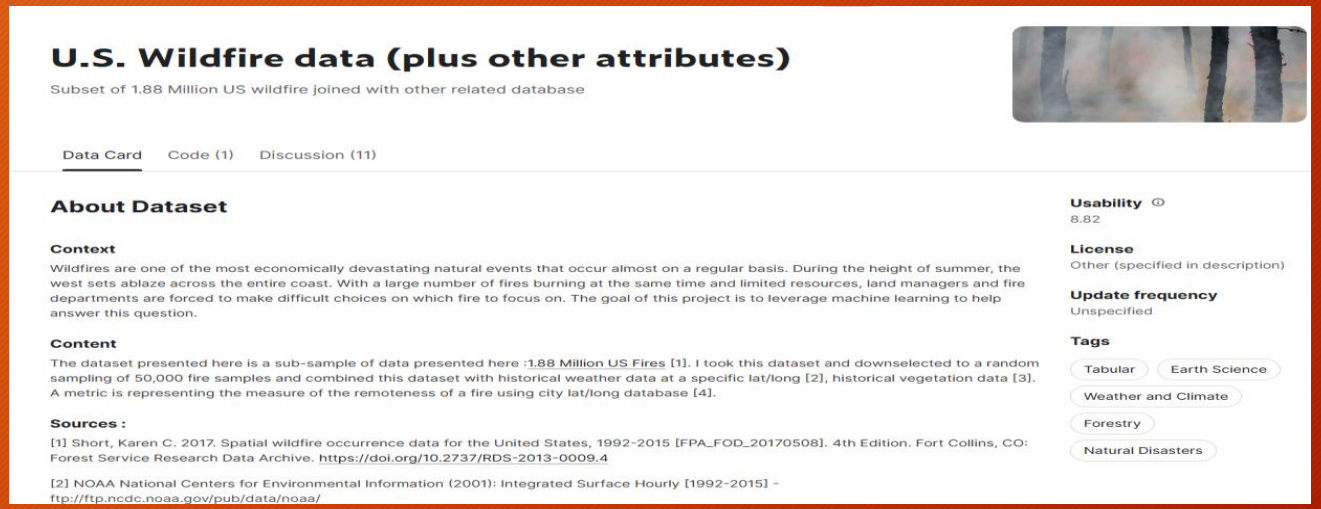
Benefits from Wildfires included:

-Clearing out the clutter of the forest such as old logs, leaves and dense undergrowth and restore them to the soil which makes it more fertile.

- Boost microbial life in the forest floor
- Clear out invasive weeds, insects or disease
- New grassland are sometimes formed after a fire, and that will benefit the wild animals.

DATA

- Our dataset is taken from Kaggle. The name of our data set is US Wildfire data (plus other attributes) - U.S. Wildfire data (plus other attributes) | Kaggle
- It is a CSV file with the size of 18.9 MB and have 43 columns.
- It contains a random selected of 50,000 fire samples from a huge dataset of 1.88 Million US Wildfires.
- This dataset contains data on wildfires in the US from 1992 to 2015
- Our goal is to analyze the dataset to see if there are any patterns regarding the months and areas where wildfires are most likely to occurred.



DATA CLEANING

- This dataset has a total of 43 columns. We used df.drop() to dropped off some unnecessary columns. Then we used df.notnull() to eliminate null items in the fire_name column. The data set after cleaned up contains a total of 28 columns. Finally, we convert the cleaned csv file to SQLite database.

Out[66]:

	Unnamed: 0.1	Unnamed: 0	fire_name	fire_size	fire_size_class	stat_cause_descr	latitude	longitude	state	disc_clean_date	...	Wind_cont	Hum_pre_30	H
0	0	0	NaN	10.0	C	Missing/Undefined	18.105072	-66.753044	PR	2/11/2007	...	3.250413	78.216590	
1	1	1	NaN	3.0	B	Arson	35.038330	-87.610000	TN	12/11/2006	...	2.122320	70.840000	
2	2	2	NaN	60.0	C	Arson	34.947800	-88.722500	MS	2/29/2004	...	3.369050	75.531629	
3	3	3	WNA 1	1.0	B	Debris Burning	39.641400	-119.308300	NV	6/6/2005	...	0.000000	44.778429	
4	4	4	NaN	2.0	B	Miscellaneous	30.700600	-90.591400	LA	9/22/1999	...	-1.000000	-1.000000	

5 rows × 43 columns

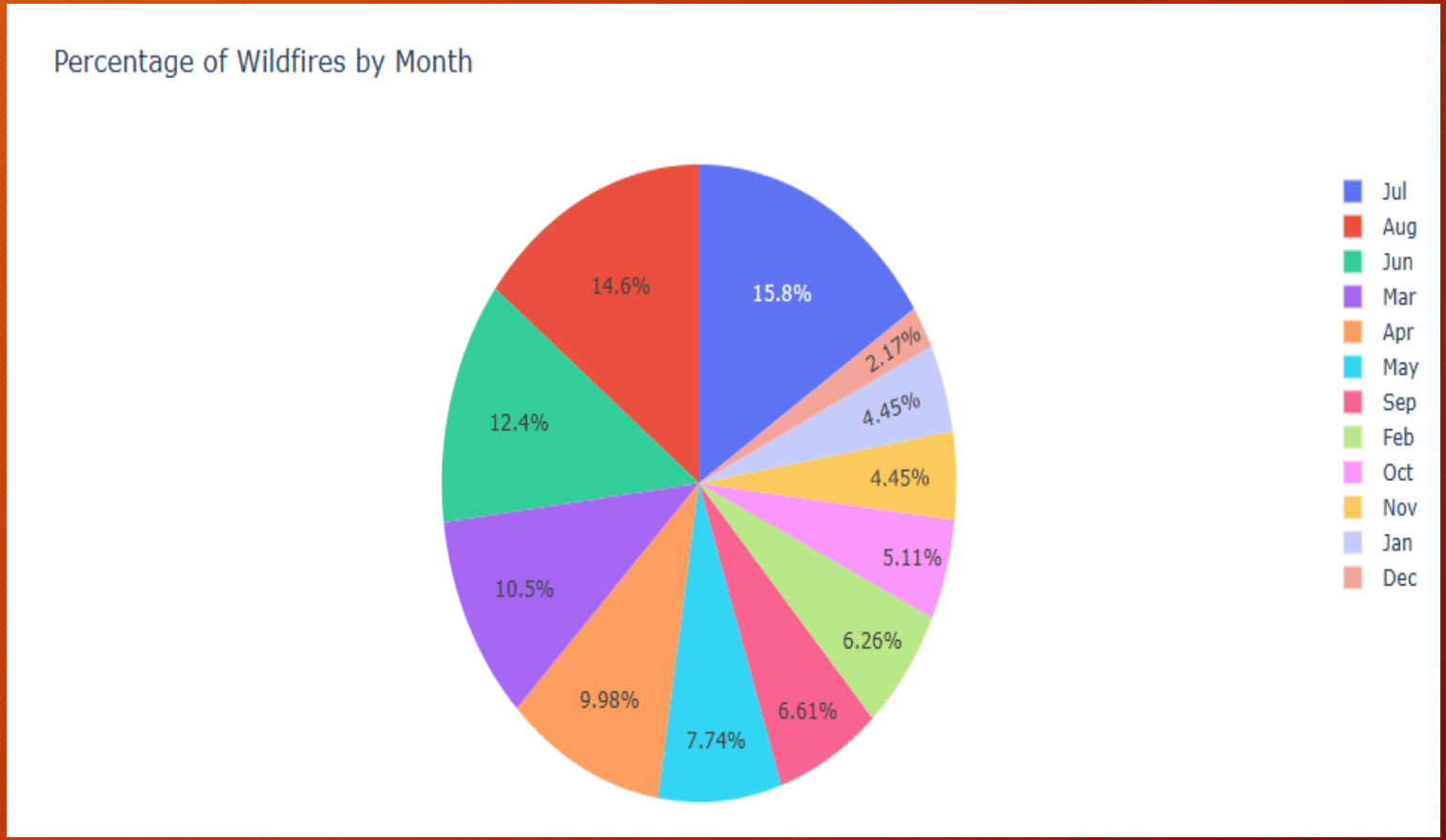
Data Analysis

	State	Wild Fire Counts
0	CA	3617
1	TX	3299
2	GA	1575
3	NC	1483
4	AZ	1099
5	ID	1067
6	NM	1053
7	OK	976
8	AK	970
9	FL	924
10	MT	918

- Based on the dataset, from 1992-2015, these are the top 10 states in the United States that have the highest number of wild fires. Notice how majority of the states listed here are from the Southern part of the US.

Data Analysis (cont.)

According to the data, July is the highest month in wildfire counts in the US followed by August and Jun. These are summer months. The previous chart showed top 10 states that has the most wild fires, and most of them located in the central/southern regions part of the US.



Data Analysis (cont)

Causes of Wildfires in the US from 1992-2015

```
Lightning              5280
Debris Burning         4074
Miscellaneous          3477
Arson                  2359
Equipment Use          1799
Missing/Undefined      1384
Campfire                544
Children                467
Powerline               352
Smoking                 351
Railroad                168
Fireworks               154
Structure                41
Name: stat_cause_descr, dtype: int64
```

Data Analysis (cont.)

Value	Description
A	Greater than 0 but less than or equal to 0.25 Acres
B	0.26 to 9.9 Acres
C	10.0 to 99.9 Acres
D	100 to 299 Acres
E	300 to 999 Acres
F	1000 to 4999 Acres
G	5000 to 9999 Acres
H	10000 to 49999 Acres
I	50000 to 99999 Acres
J	100000 to 499999 Acres
K	500000 to 999999 Acres
L	1000000 + Acres

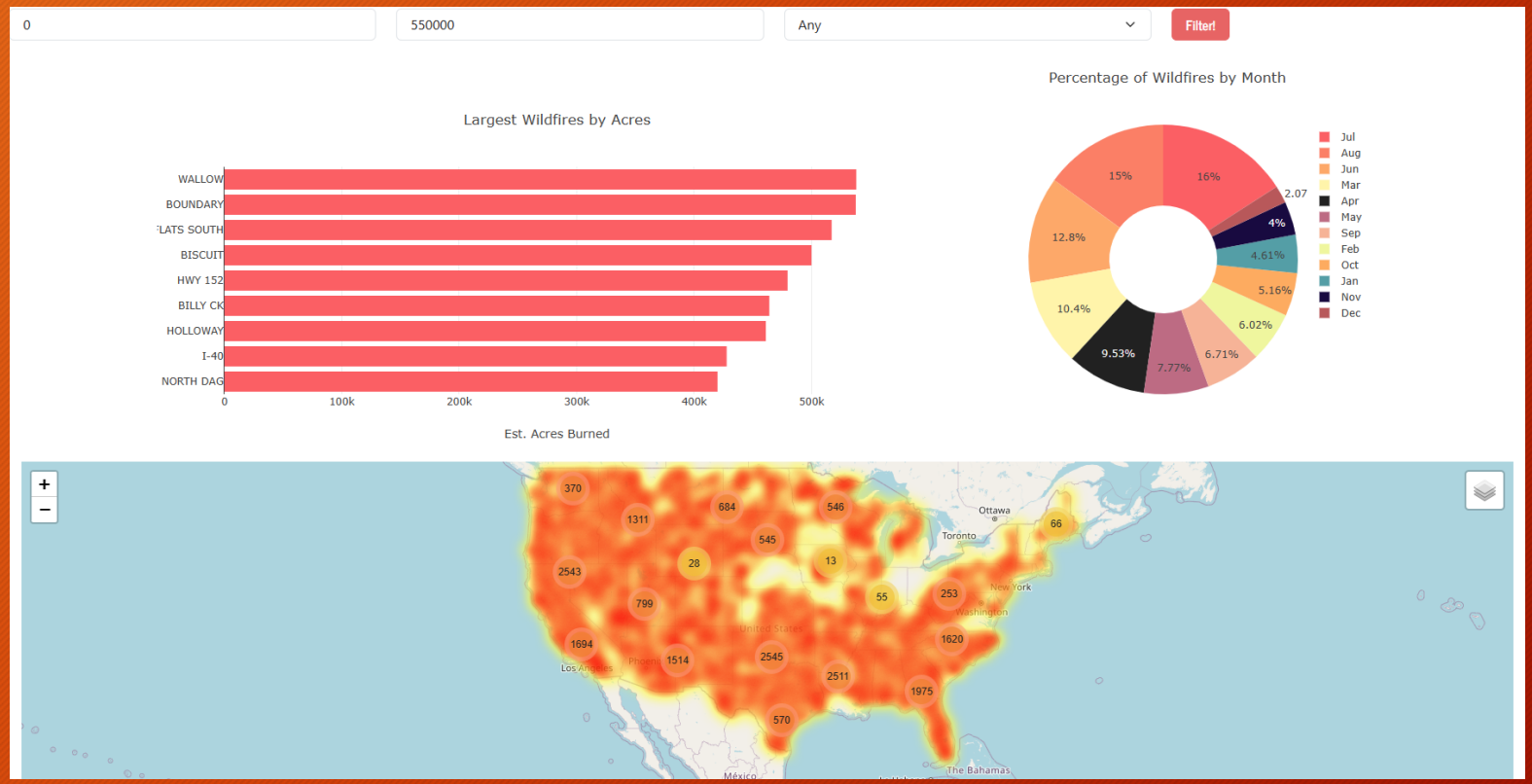
```
B    11214
C     3488
G     3135
F     1486
D      687
E      440
Name: fire_size_class, dtype: int64
```

Class	*Acres Affected*
B:	.26-9.9 Acres (most)
C:	10-99.9 Acres
G:	5000-9999 Acres
F:	1000-4999 Acres
D:	100-299 Acres
E:	300-999 Acres(least)

Source: Fire Size Class Code https://www.nwcg.gov.sites/default/files/data-standards/pdf/values.pdf

INTRODUCING OUR INTERACTIVE MAP INTERFACE

Using the data given, we were able to create a map as well as a bar graph and a pie chart with the option of filtering the wildfire data at a given location when you pick a state. The bar chart represents the top 10 fires in that identified state identified by their name. The pie chart is calculated based on the wildfire events that occurred in each month from 1992 through 2015. The map was integrated to be scalable to zoom in and out of specific regions and states.



Our Website URL:

http://therobmay.pythonanywhere.com/

References

-The benefits of wildfires

The Ecological Benefits of Forest Fires | Eartheasy Guides & Articles

- Wildfire Statistics

https://sgp.fas.org/misc/IF10244.pdf

-Fire Size Class Code

https://www.nwcg.gov.sites/default/files/data-standards/pdf/values.pdf

Questions?