

Exploring FEMA Hazard Mitigation Grants and Declared Disasters

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Motivation

- Areas with higher rates of declared disasters will have higher amounts of funding in the form of Hazard Mitigation Grants.
- Questions we asked:
 - Which states have the highest incidents of disaster declarations?
 - Which type of disaster is the most commonly declared across the US and US territories?
 - Of the most commonly declared disaster types, which states are the most impacted (have the highest number of declared disasters)?
 - Which states receive the most funding for a specific disaster type?
 - Is there a discrepancy between disaster declarations and funding across locations

Finding and Cleaning Data

- Locate a reliable source of data. FEMA has a surplus of data - <https://www.fema.gov/about/openfema/data-sets>
- Understand the data found and determine how different datasets relate to each other
- Select relevant data to focus on answering preliminary questions
- Use Jupyter Notebooks to clean data by merging, dropping and grouping data to tell an accurate story
- Validate data to ensure data was correct and no unnecessary duplication occurred

First a Bit of Terminology

Declared Disaster - There are three types of declarations: emergency, major disasters and fire management. All declaration types authorize the President to provide supplemental federal disaster assistance.

Hazard Mitigation Grants - Assists in implementing long-term hazard mitigation planning and projects following a disaster declaration.

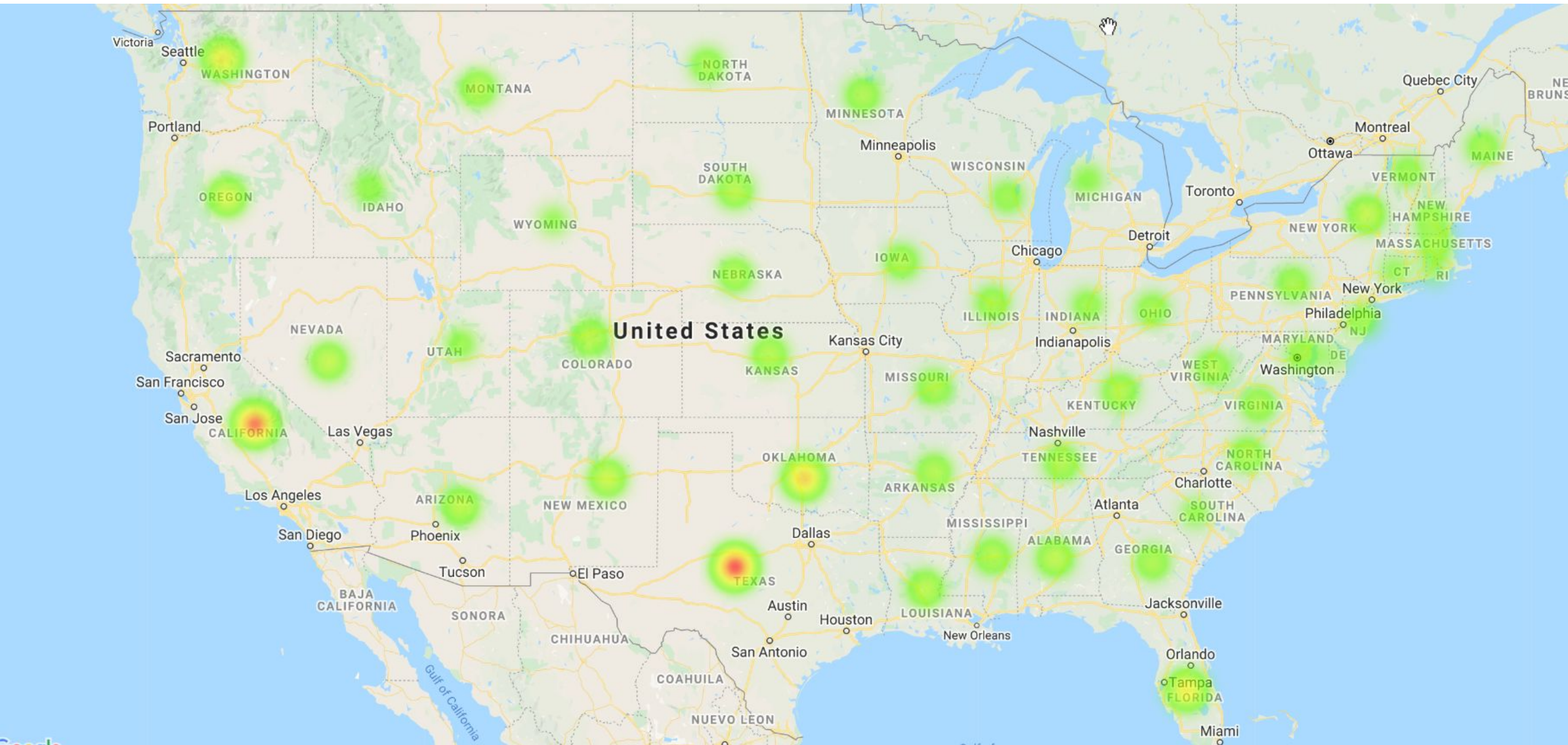
Disaster Number - Sequentially assigned number used to designate an event or incident declared as a disaster. This number is consistent across all states and counties associated with a specific disaster.

Total Obligated Amount - Total amount obligated for the disaster in dollars. Specifically referring to the Hazard Mitigation Grant.

THE FINDINGS

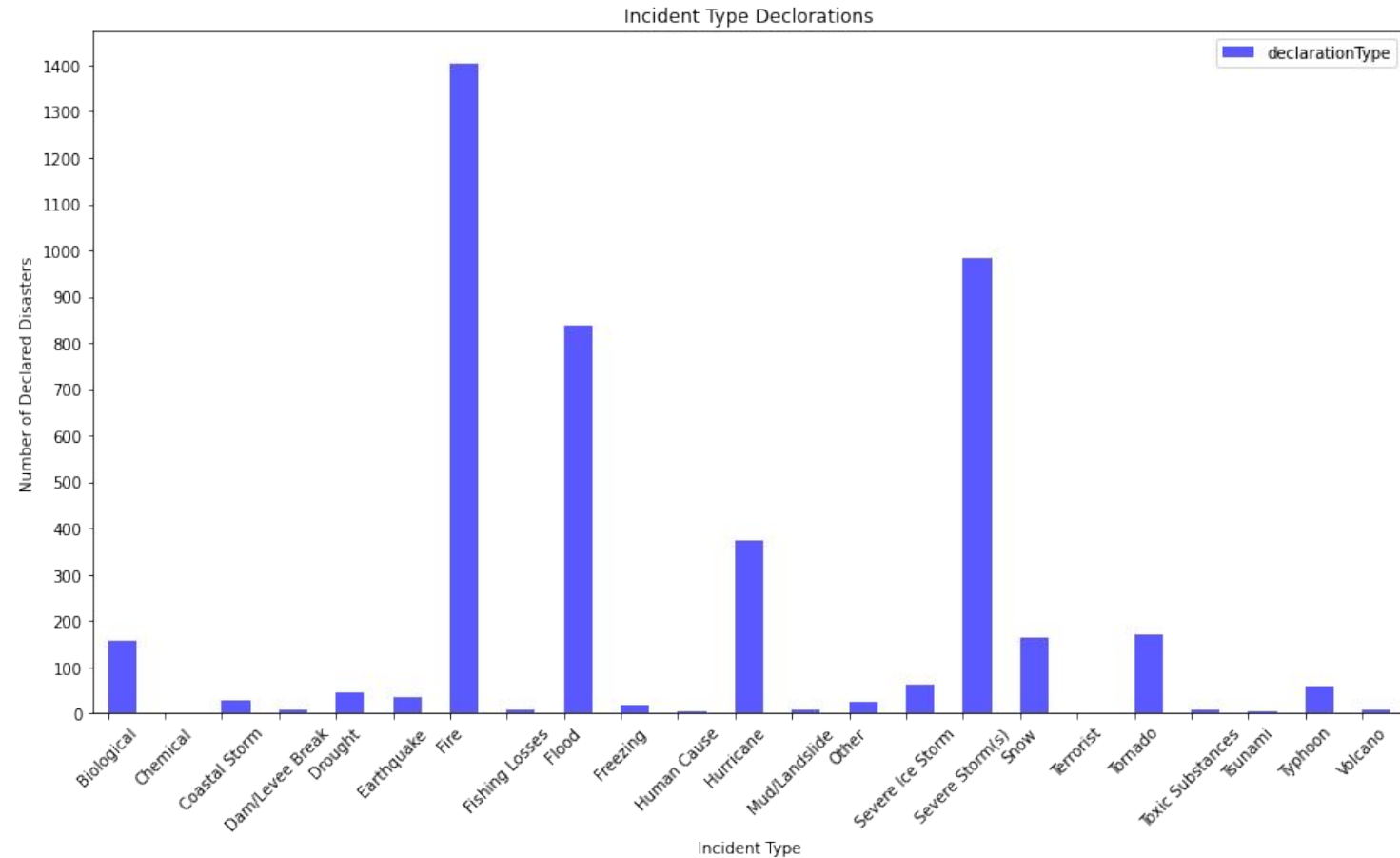


States Having the Most Disaster Declarations



Which Disasters Are The Most Common?

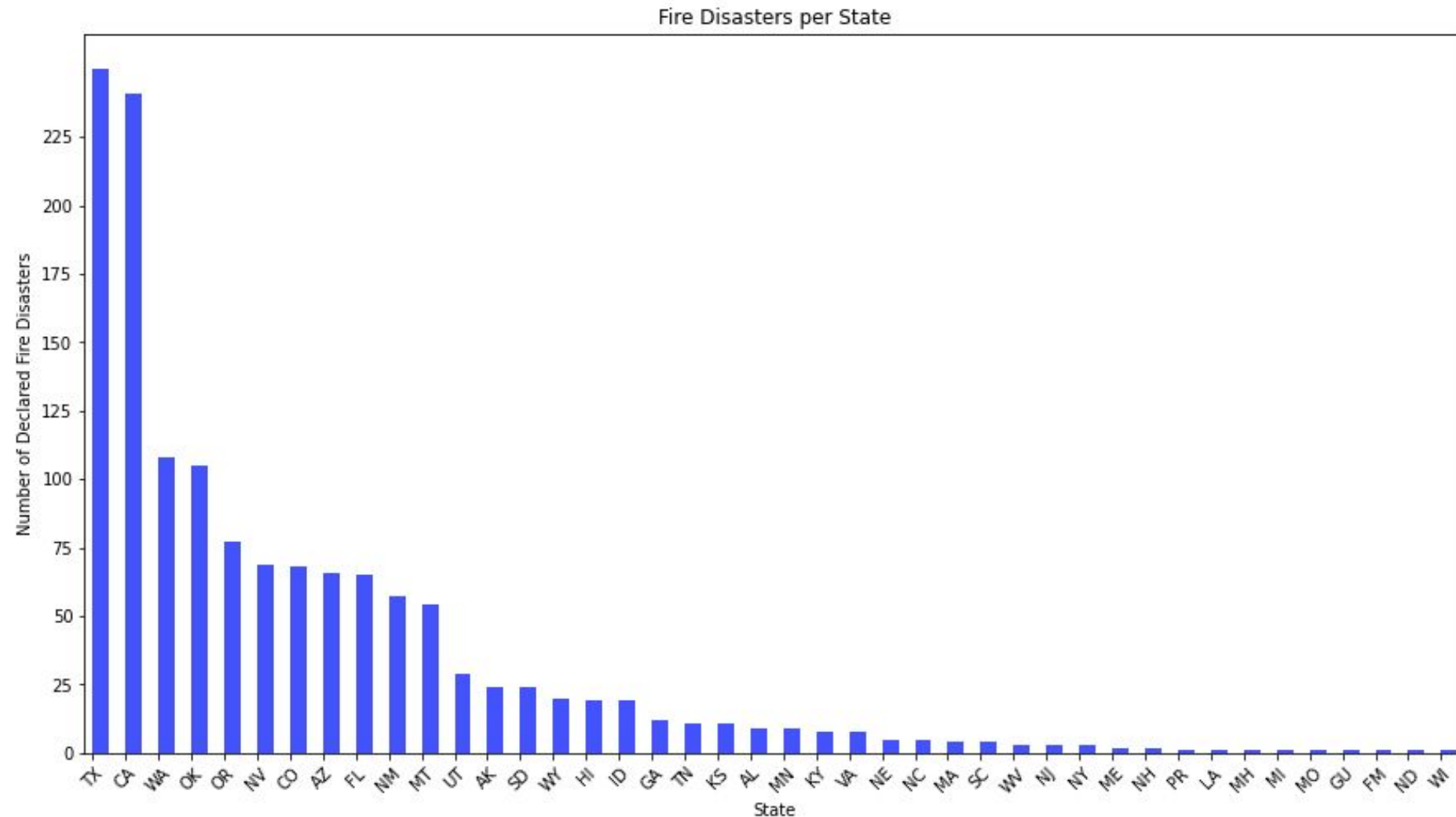
incidentType	declarationType
Fire	1403
Severe Storm(s)	982
Flood	836
Hurricane	374
Tornado	170
Snow	165
Biological	157
Severe Ice Storm	62
Typhoon	58
Drought	46
Earthquake	35
Coastal Storm	29
Other	26
Freezing	18
Toxic Substances	8
Mud/Landslide	7
Fishing Losses	6
Dam/Levee Break	6
Volcano	6
Human Cause	4
Tsunami	3
Terrorist	2
Chemical	1



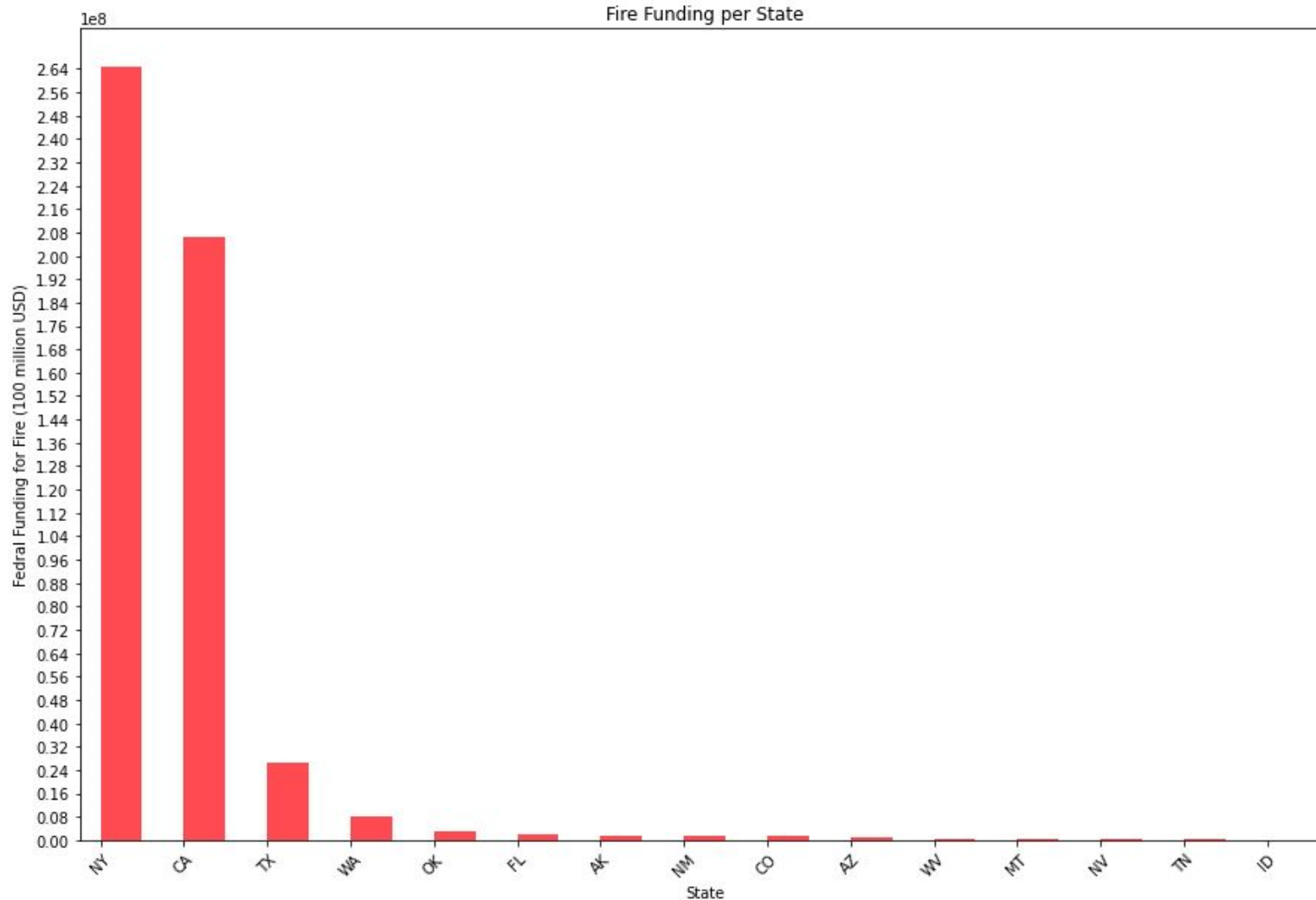
ANALYZING TOP DISASTER TYPES



Where Were Fire Disasters the Most Common



Fire: Which states receive the most funding?



Funding in USD

NY	264635280
CA	206326360
TX	26401012
WA	7955984
OK	2823556
FL	1786788
AK	1713242
NM	1557307
CO	1368123
AZ	1206341
WV	631471
MT	541772
NV	533754
TN	397255
ID	13056

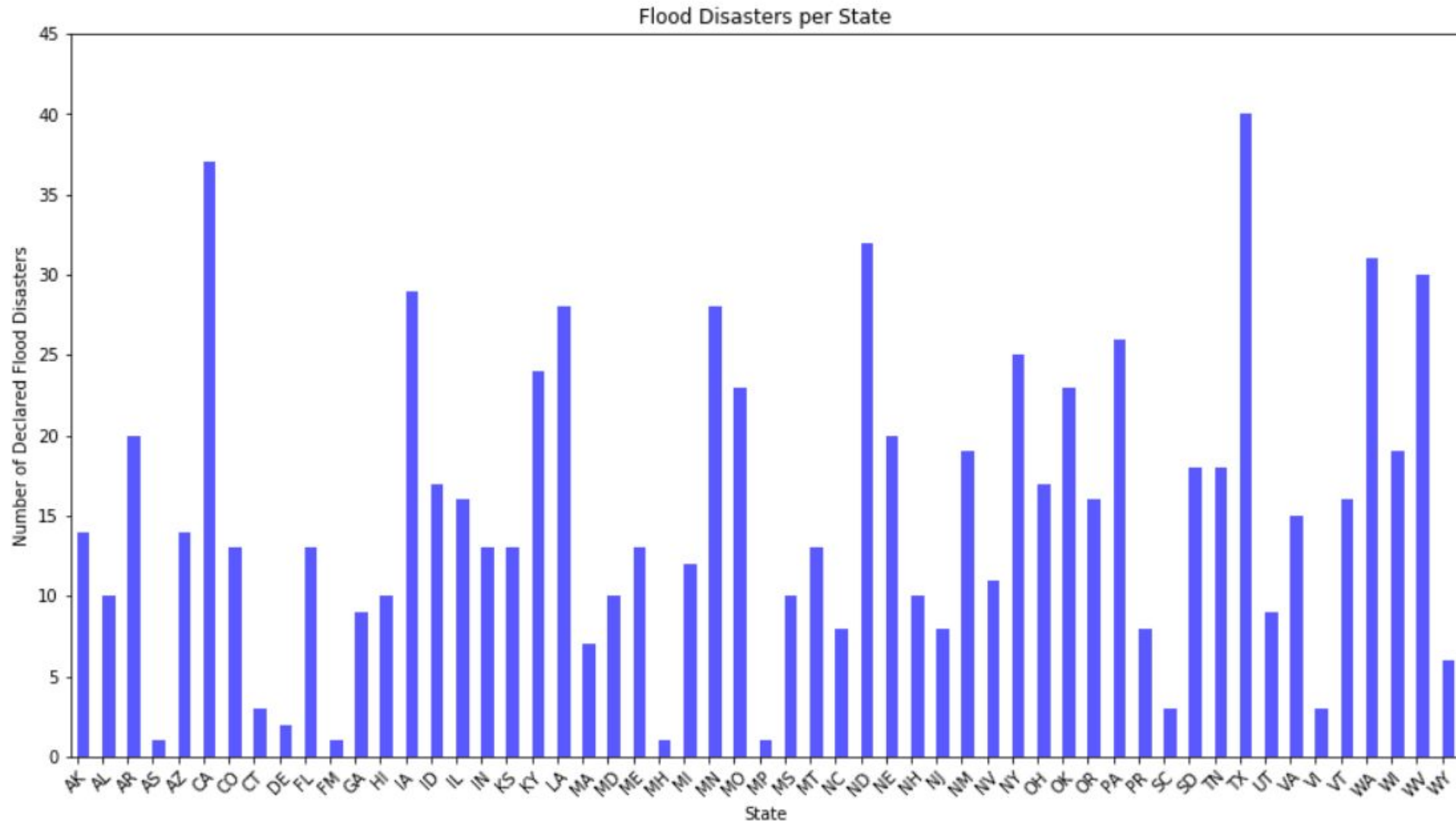
New York's funding doesn't add up...

disasterNumber	state	declarationType	fyDeclared	incidentType	obligatedTotalAmount	
11	1391	NY	DR	2001	Fire	2.646353e+08

Disaster Number 1391 was the Terrorist Attack that took place on Sept. 11, 2001.



Where Were Floods Most Common?

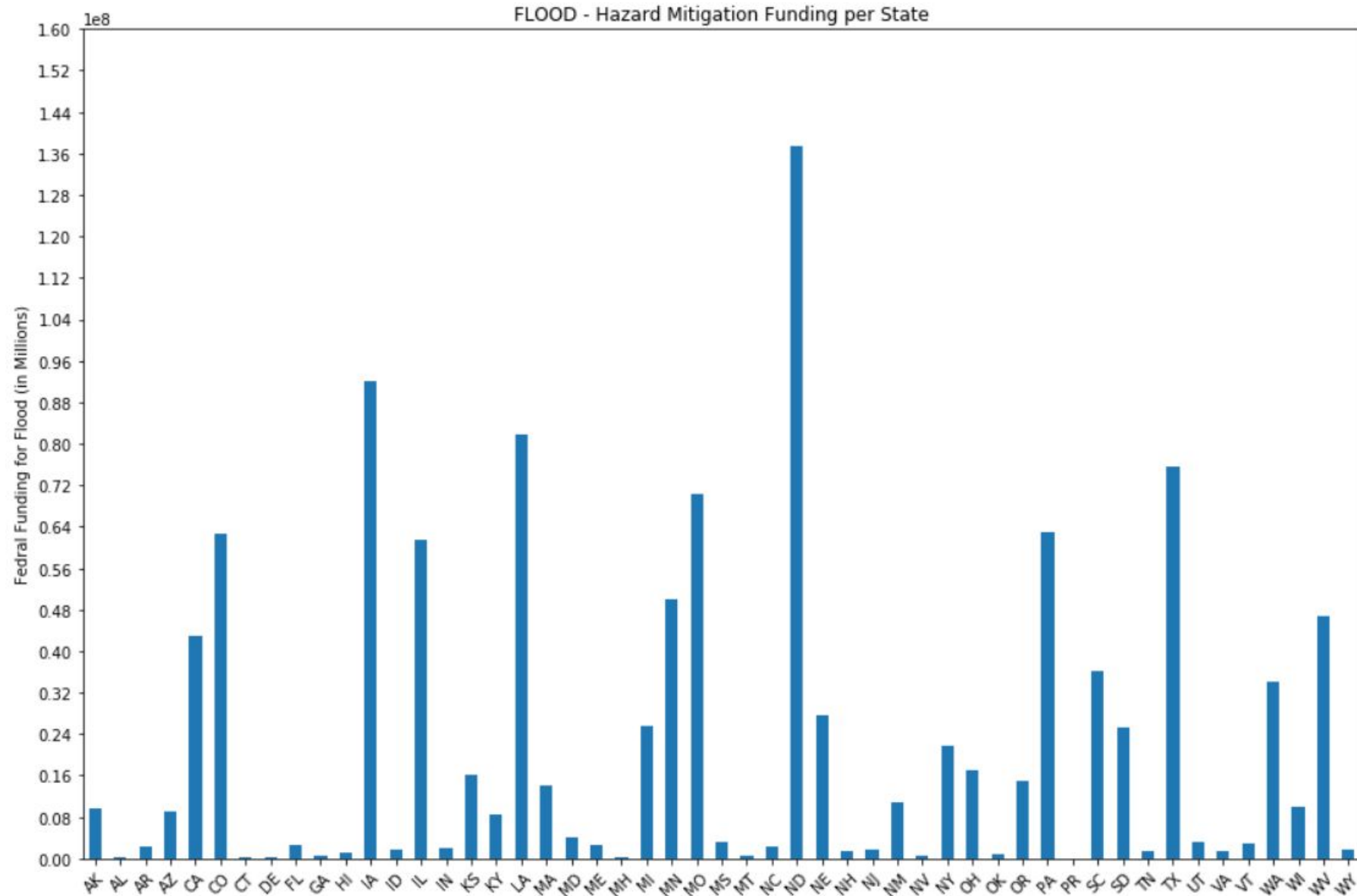


Flood: Did All Disaster Declarations Result in Hazard Mitigation Grant?

No, only 35% of flood disasters had mitigation grant submitted and/or approved.

	Declared Floods	Hazard Mitigation Grants
incidentType		
Flood	836	295

Flood: Which States Receive the Most Hazard Mitigation Funding?

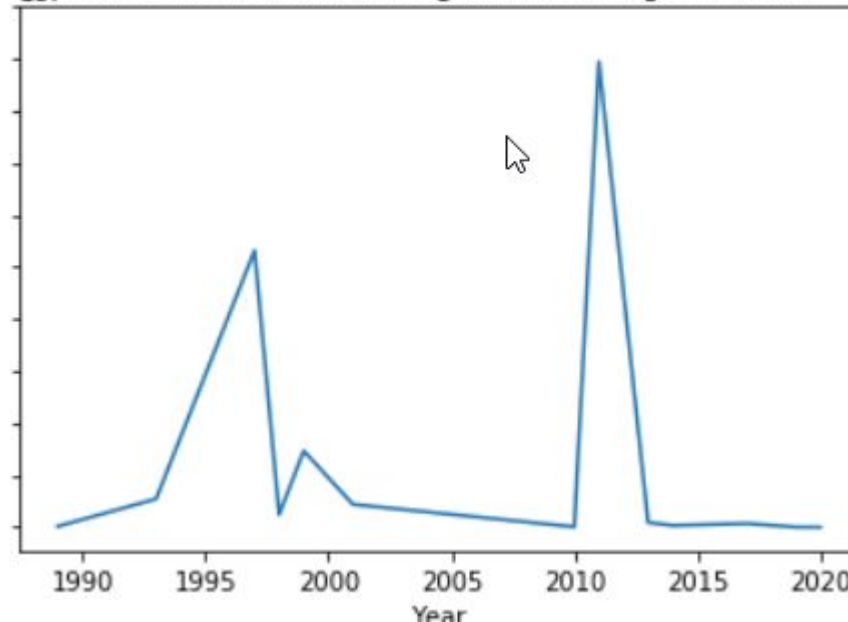


Flood: What Happened in North Dakota?

There is a discrepancy between North Dakota's hazard mitigation funding and the incidents of declared flood disasters for the state.

Reason: 2011 Souris River Flood

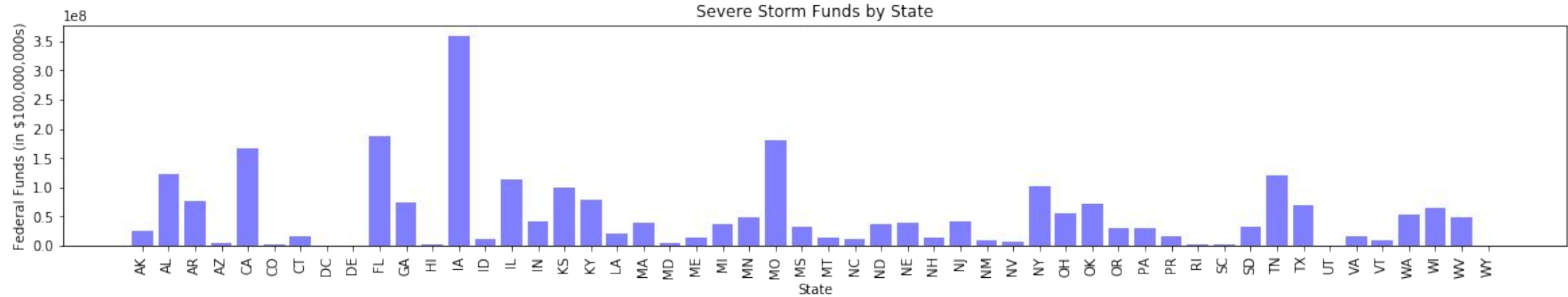
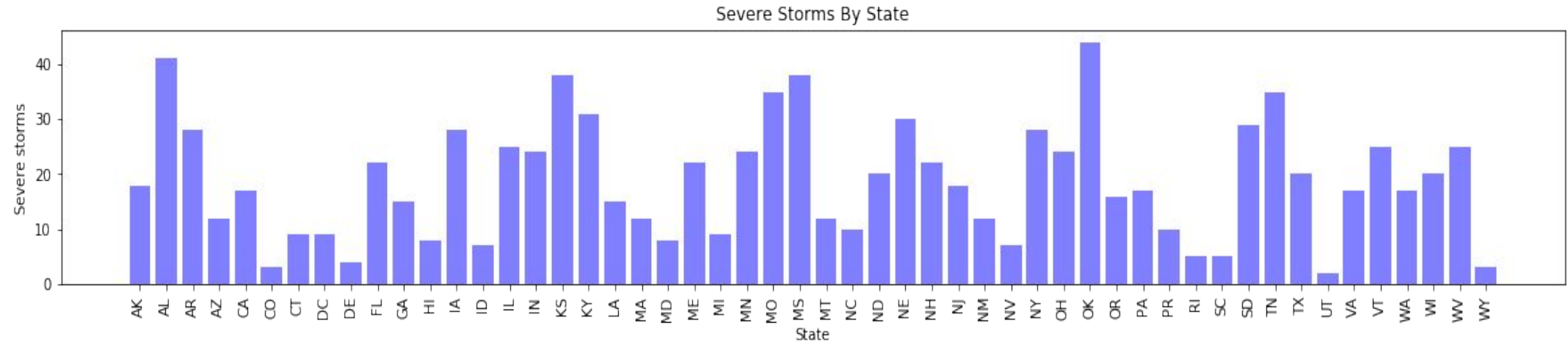
North Dakota Hazard Mitigation Funding Over Time



fyDeclared

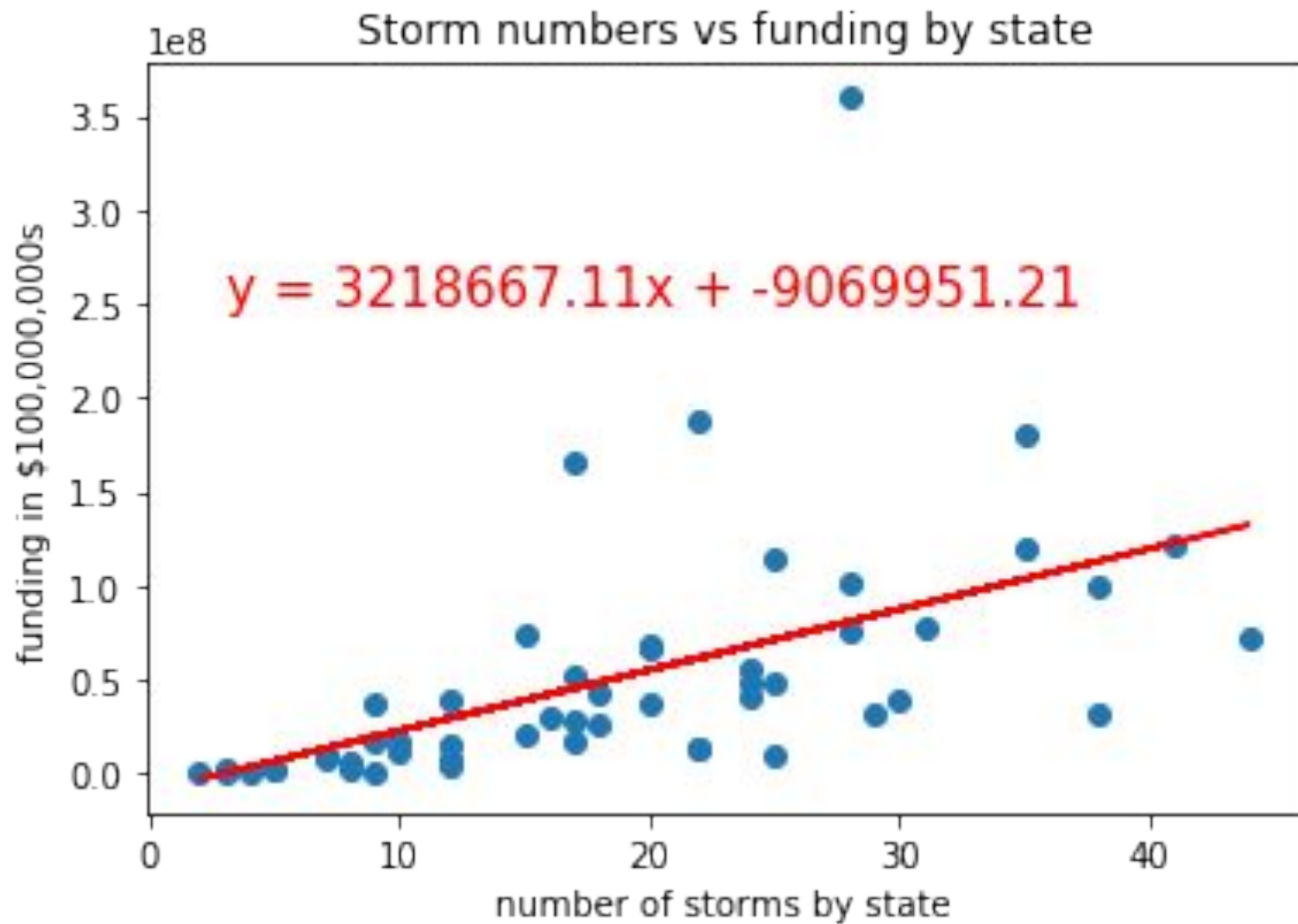
1989	132551.00
1993	4361615.00
1997	42532037.00
1998	1959913.00
1999	11742244.00
2001	3517976.00
2010	58901.00
2011	71549737.00
2013	734810.00
2014	268862.00
2017	576314.04
2019	20788.84
2020	0.00

Severe storm findings:

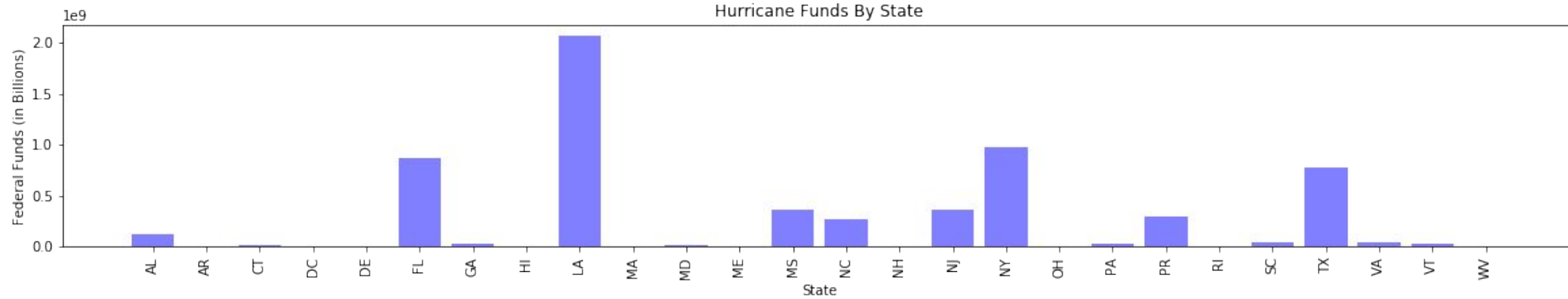
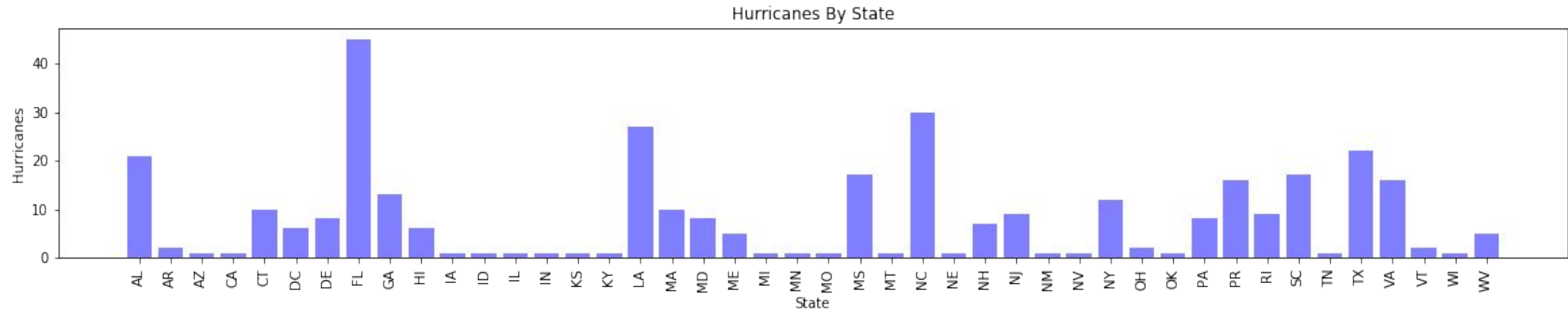


Number of Severe Storms vs Funding by State:

IA: 3.596392e+08
FL 1.870653e+08
MO 1.802492e+08
CA 1.657678e+08
AL 1.221393e+08



Hurricane findings:



Number of Hurricanes vs Funding by State:

Top 5 states:

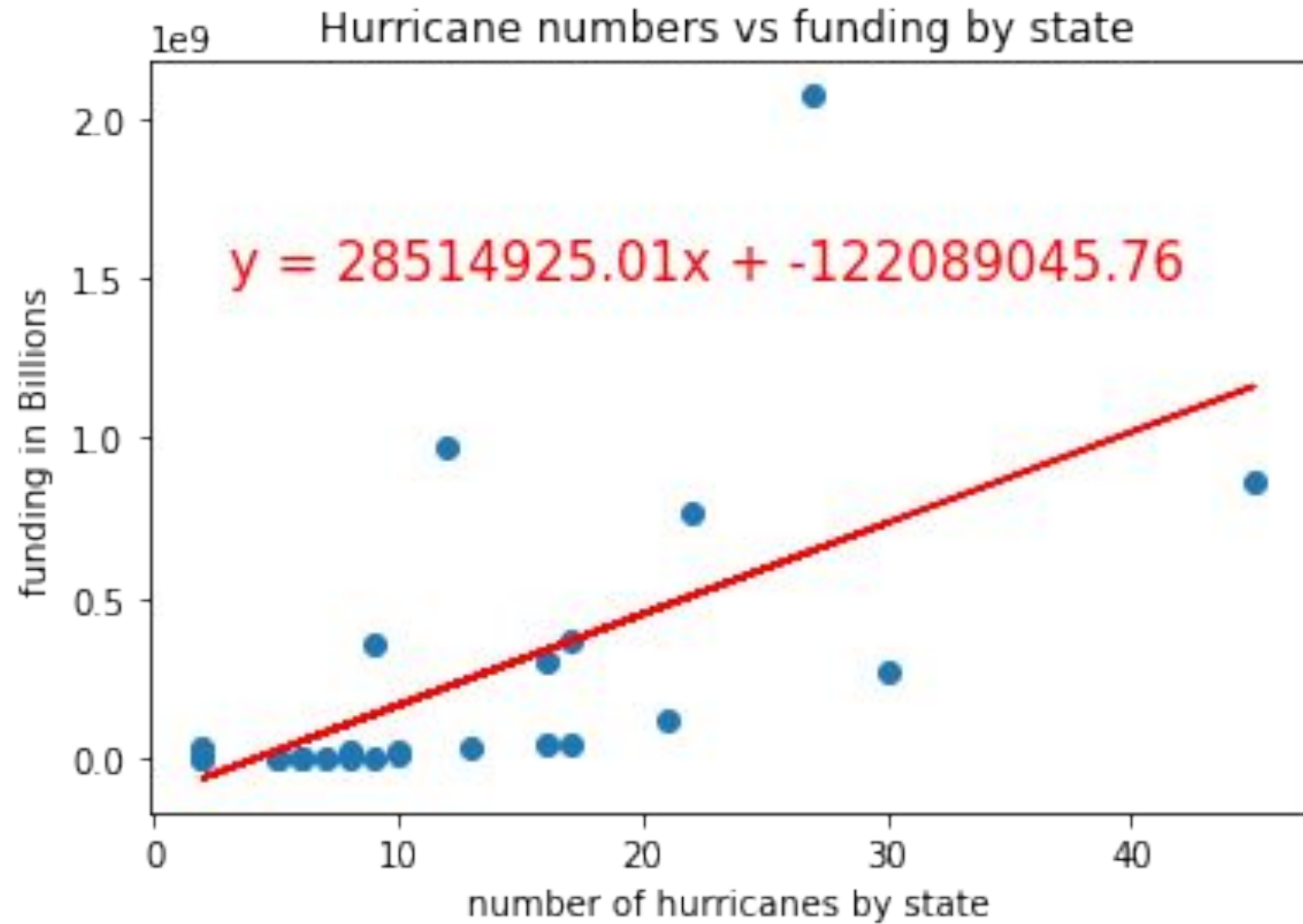
LA: \$2.072860e+09

NY: \$9.723742e+08

FL: \$8.650535e+08

TX: \$7.716226e+08

MS: \$3.627005e+08



Without Hurricane Katrina

