

Federal Emergency Management Agency (FEMA) Disaster Declarations & Presidents

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Summary

Hypothesis: Presidents who serve longer terms will declare federal emergencies more frequently than presidents with shorter terms

Questions asked:

1. Does term length influence the frequency of federal emergencies declared by each President?
2. Does the President's term length influence the length of federal emergencies declared?
3. Does the political party influence the number of federal emergencies declared by each President?
4. Has the number of disasters declared by FEMA risen or fallen over time?

Data Sources:

- FEMA data pulled from Kaggle (From 1953 to February 2017)
- President data from theguardian.com

Data Cleanup & Exploration

- Basic data cleanup steps:
 - Merged dataframes by Year
 - Drop unnecessary columns & duplicate declarations
- Steps taken to resolve issues:
 - Re-formatted dates to integers
 - Added missing president data from 2014 - 2017
 - Removed all declarations starting in 2017 due to incomplete data
 - Found & corrected wrong year listing on FEMA data
 - Realized write to csv was duplicating information each time the cell was run

Starting to clean...

```
# Write missing president data to president dataframe through 2017 (FEMA data end date)
# with open(US_Presidents, "a") as myfile:
#     writer=csv.writer(myfile, delimiter=",")
#     myfile.write('\n')
#     writer.writerow(['2014', 'Barack Obama', 'Democrat'])
#     writer.writerow(['2015', 'Barack Obama', 'Democrat'])
#     writer.writerow(['2016', 'Barack Obama', 'Democrat'])
#     writer.writerow(['2017', 'Donald Trump', 'Republican'])
```

```
# Cleaning up data frames & preparing to merge
FEMA_df['Year'] = pd.DatetimeIndex(FEMA_df['Start Date']).year
FEMA_df['End Year'] = pd.DatetimeIndex(FEMA_df['End Date']).year
Pres_df = Pres_df.rename(columns={"Years (after inauguration)": "Year"})
```

```
# Merge FEMA dataframe and President dataframe on Year columns
merged_df = pd.merge(FEMA_df, Pres_df, on="Year", how="left")
```

More cleaning...

```
# Cleaning out unnecessary columns and dropping duplicate Declarations
cleaned_df = merged_df[["Year", "President", "Party", "Declaration Number", "Declaration Type", "Disaster Type", "State", "Start Date", "End Date"]]
cleaned_df = cleaned_df.drop_duplicates(subset = ["Declaration Number"], keep="first")
```

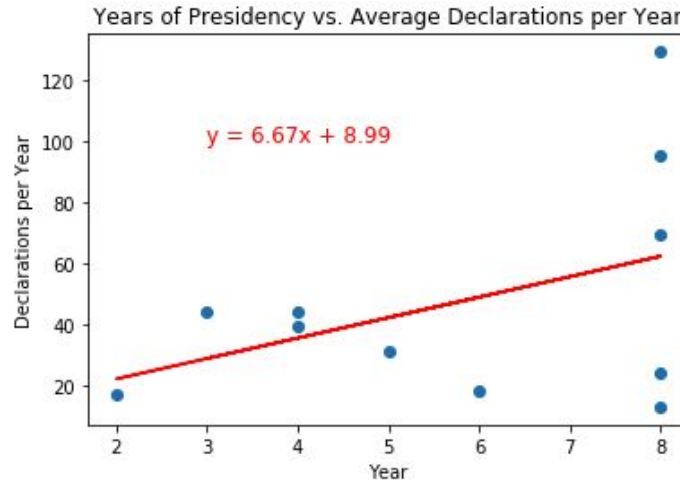
```
# Editing error in FEMA data
cleaned_df.loc[(cleaned_df['Declaration Number'] == 'DR-4255'), 'Start Date'] = '12/26/2015'
cleaned_df.loc[(cleaned_df['Declaration Number'] == 'DR-4255'), 'Year'] = 2015
```

```
# Adding column in cleaned_df for Disaster Length
cleaned_df["Disaster Length"] = pd.to_datetime(cleaned_df["End Date"]) - pd.to_datetime(cleaned_df["Start Date"])
```

```
# Removing 2017 from dataframe
drop_year = cleaned_df[cleaned_df["Year"]==2017].index
cleaned_df.drop(drop_year, inplace = True)
```

Data Analysis - Hypothesis/Question 1

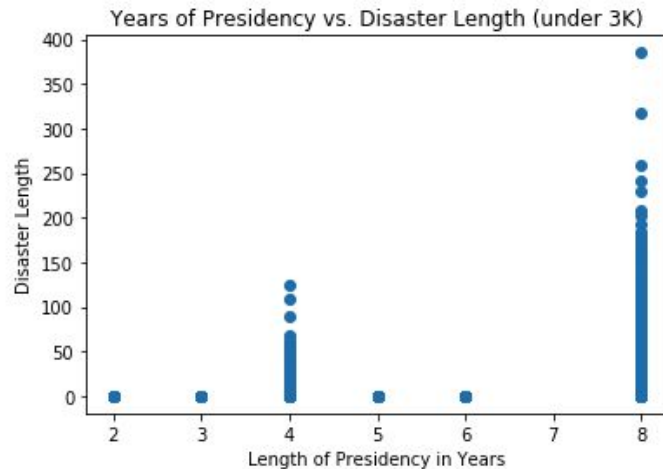
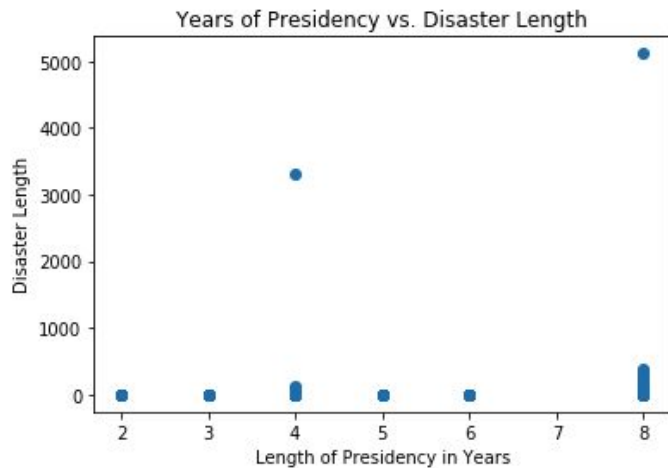
Does term length influence the frequency of federal emergencies declared by each President?



NOT STRONGLY RELATED - Correlation of 0.42

Data Analysis - Question 2

Does the President's term length influence the length of federal emergencies declared?

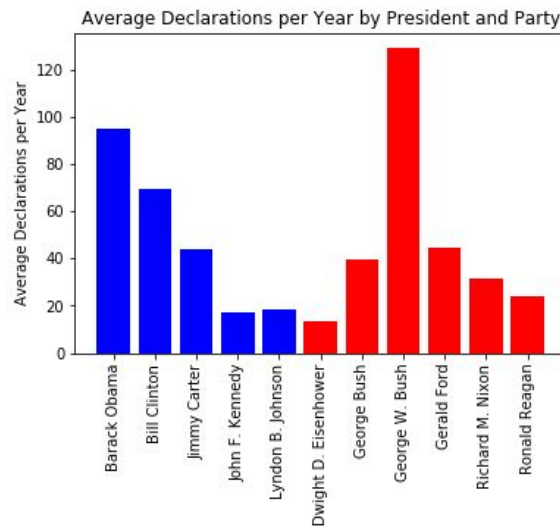
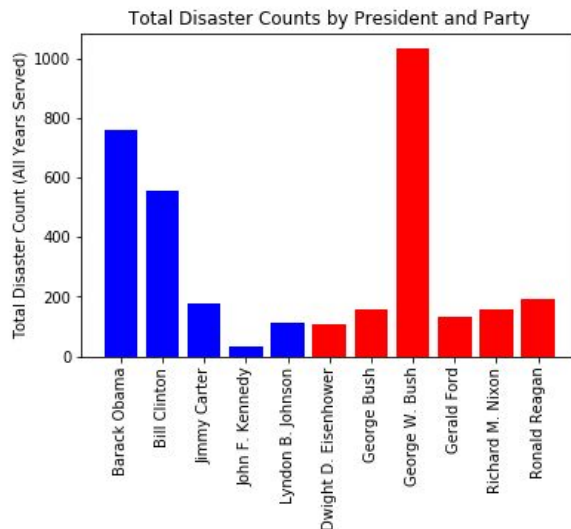


NOT RELATED - Correlation of 0.19

Data Analysis - Question 3

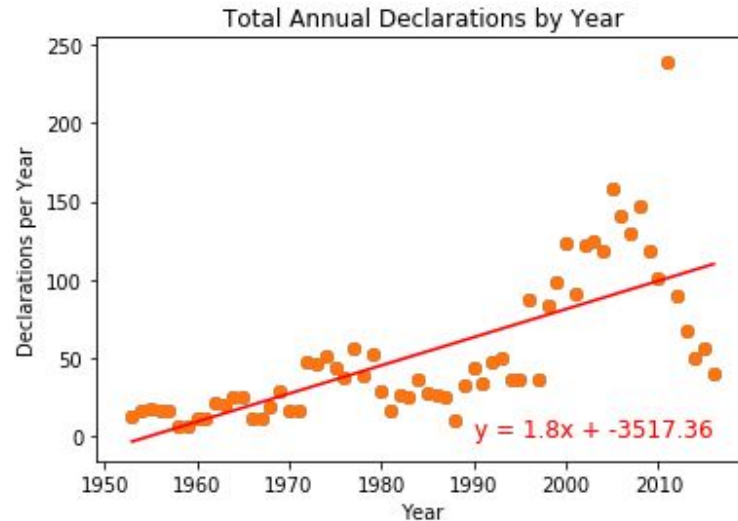
Does the political party influence the number of federal emergencies declared by each President? - **NOT RELATED**

	President Count	Average Length of Disaster	Median Length of Disaster	Average Number of Declarations per President
Party				
Democrat	5	14.366432	4.0	58.500000
Republican	6	16.132537	3.0	49.472222



Data Analysis - Question 4

Has the number of disasters declared by FEMA risen or fallen over time?



Implied positive relationship between number of declarations and the year - correlation of 0.72

Post Mortem

Additional Questions to potentially explore:

- Further analysis into Presidents who declared emergencies frequently
- Which disasters have lasted the longest?
- Which disasters were declared in the most states?
- How does 2017 - current affect the results?

Any Questions?