

Mapping With More Data

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11/11/2020

1. Overview

1.1 Introduction

This project focuses on digging into the dataset of Public Assistance Funded Projects Details for hurricane from 2009 to 2018. Our main objective is to produce US county-level maps that shows declared hurricane. For each map, details about public assistance projects such as the number of projects and the amount of federal share obligated are shown. We built a shiny app to show the map.

1.2. Dataset: Public Assistance Funded Projects Details

Source: [Public Assistance Funded Projects Details](#)

2. Data Cleaning

2.1 Clean Disaster Declaration Summaries Dataset

The data was downloaded from the FEMA website. There are total 23 variables in this dataset. For our aim of the project, we filtered down to include only the hurricanes and the dates of interest. The new dataset call DisasterSummariesCleaned. The head of five observations and importnat variables are listed below:

femaDeclarationString	disasterNumber	incidentType	paProgramDeclared	designatedArea	year
DR-1866-AL	1866	Hurricane	1	Baldwin (County)	2009
DR-1866-AL	1866	Hurricane	1	Mobile (County)	2009
DR-1931-TX	1931	Hurricane	1	Dawson (County)	2010
DR-1931-TX	1931	Hurricane	1	Cottle (County)	2010
DR-1931-TX	1931	Hurricane	1	Garza (County)	2010

2.2 Clean Public Assistance Funded Projects Details Dataset

The data was downloaded from the FEMA website. There are total 22 variables in this dataset. For our aim of the project, we filtered down to include only the hurricanes and the dates of interest, and we took 11 variables out to make a new dataset call hurricaneClean. The head of five observations and selected variables are listed below:

disasterNumber	year	damageCategory	county	state	projectAmount	federalShareObligated	totalObligated
1866	2009	Public Utilities	Mobile	Alabama	0.00	0.00	0.00
1866	2009	Public Utilities	Mobile	Alabama	58425.34	43819.01	43819.01
1866	2009	Public Utilities	Mobile	Alabama	0.00	0.00	0.00
1866	2009	Public Utilities	Mobile	Alabama	12778.47	9583.85	9583.85
1866	2009	Protective Measures	Mobile	Alabama	15290.26	11467.70	11467.70

3. Mapping

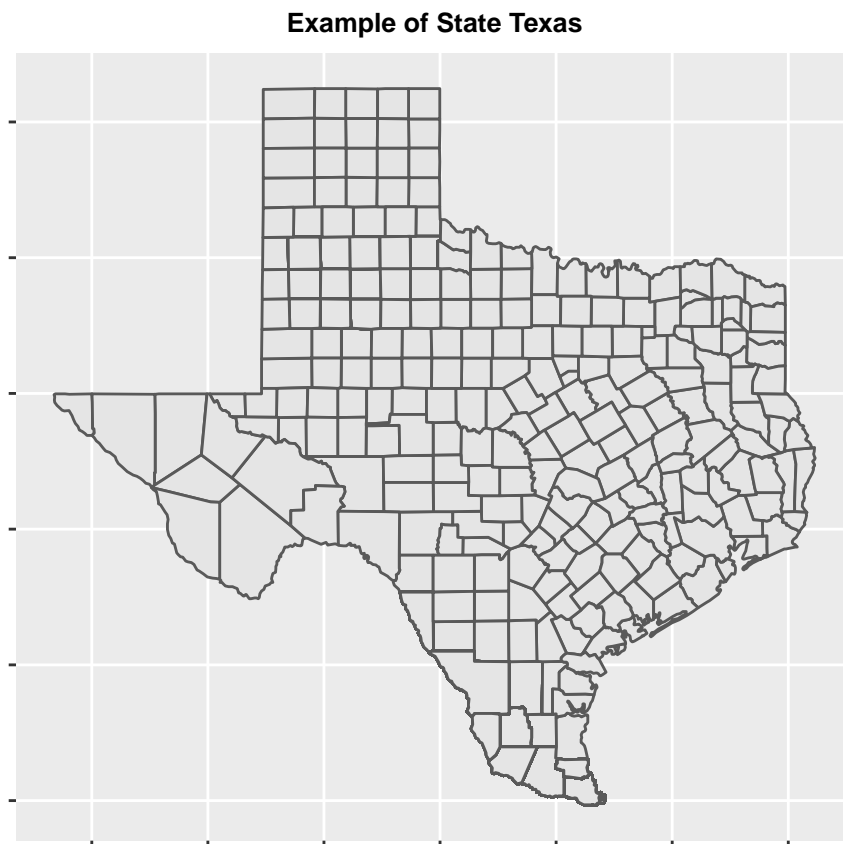
3.1 Data Modification

In order to map these hurricanes, dataset had to be merged together with state and county mapping data from the “maps” R package. Below is the result of merged state data with county fips name and their longitude and latitude.

state	county	Project.Number	Federal.Share.Obligated	Designated.Counties	X	Y	geom
texas	anderson	0	0	No Designation	-95.65829	31.82821	MULTIPOLYGON (((-95.75271 3...
texas	andrews	0	0	No Designation	-102.64154	32.29676	MULTIPOLYGON (((-102.2042 3...
texas	angelina	0	0	No Designation	-94.61539	31.27645	MULTIPOLYGON (((-94.13123 3...
texas	aransas	0	0	No Designation	-96.95149	28.23596	MULTIPOLYGON (((-96.80122 2...
texas	archer	0	0	No Designation	-98.68359	33.61261	MULTIPOLYGON (((-98.42269 3...

3.2 Basic Map

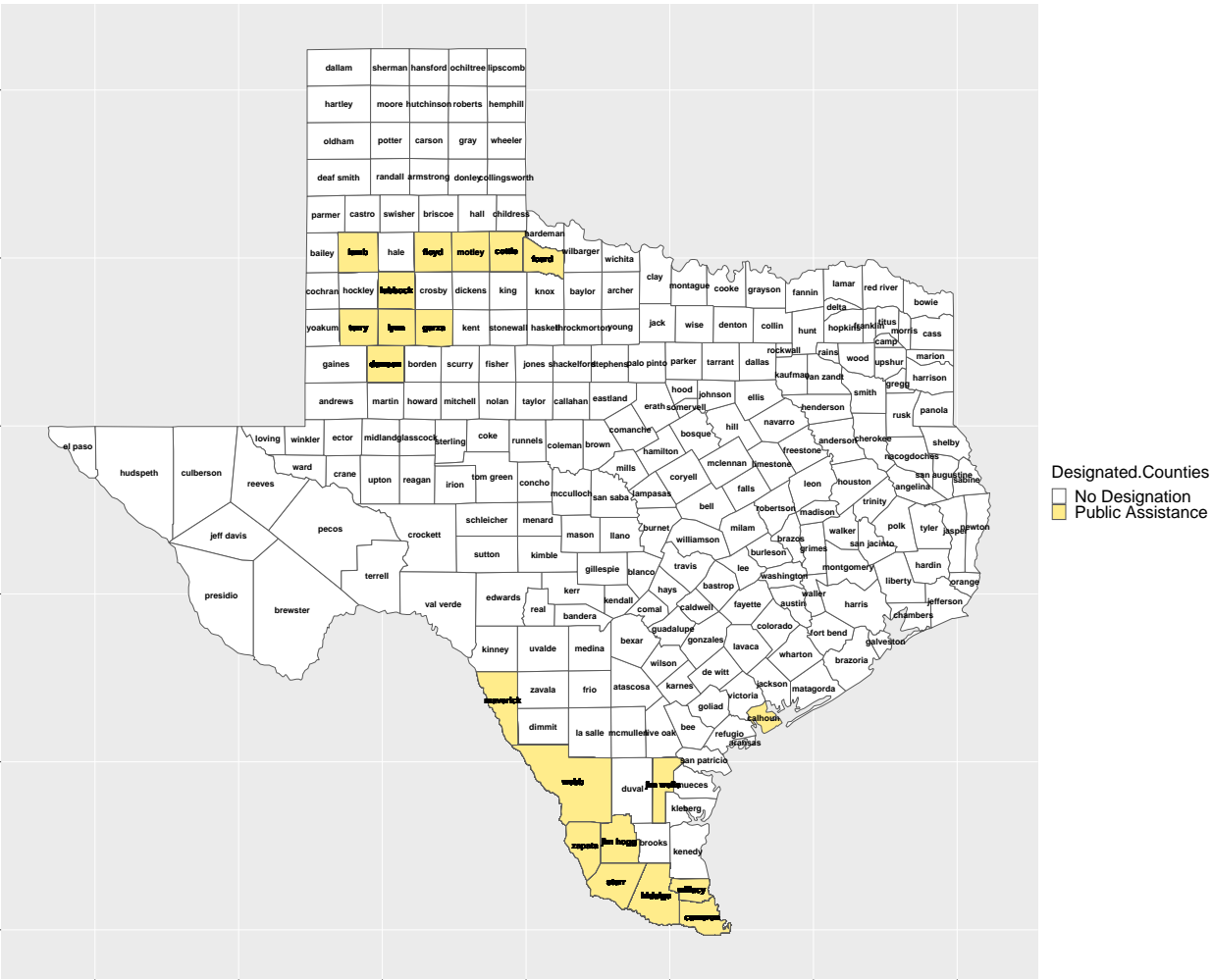
Once the data was cleaned, the next step was to map the data for each hurricane on separate state maps using the ggplot2 R package. An example of state Texas can be previewed below.



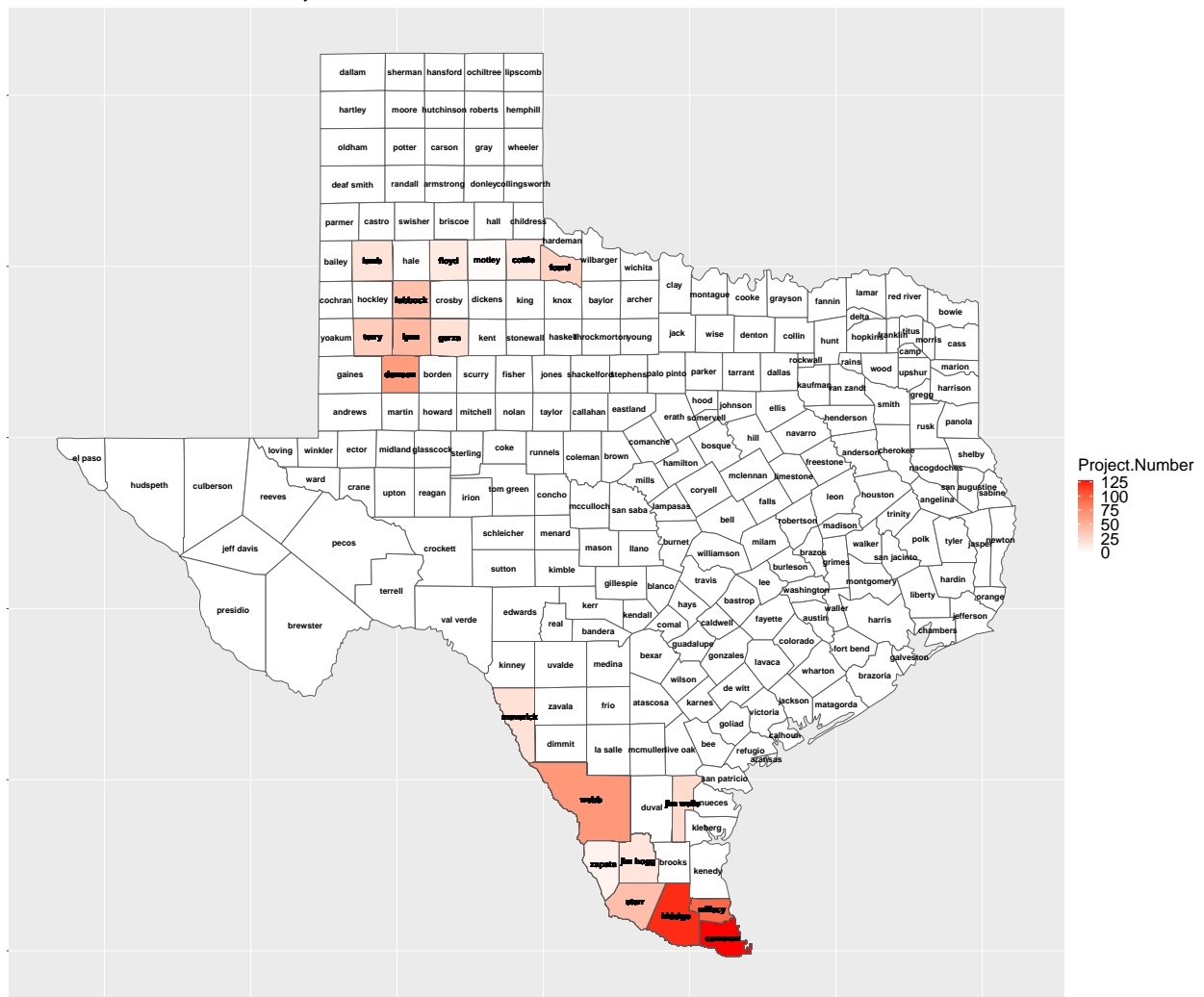
3.3 Feature Added

Next step is to add Public Assistance Project, Project Number and Federal Share Obligated feature to our map. Below is an example for state Taxes.

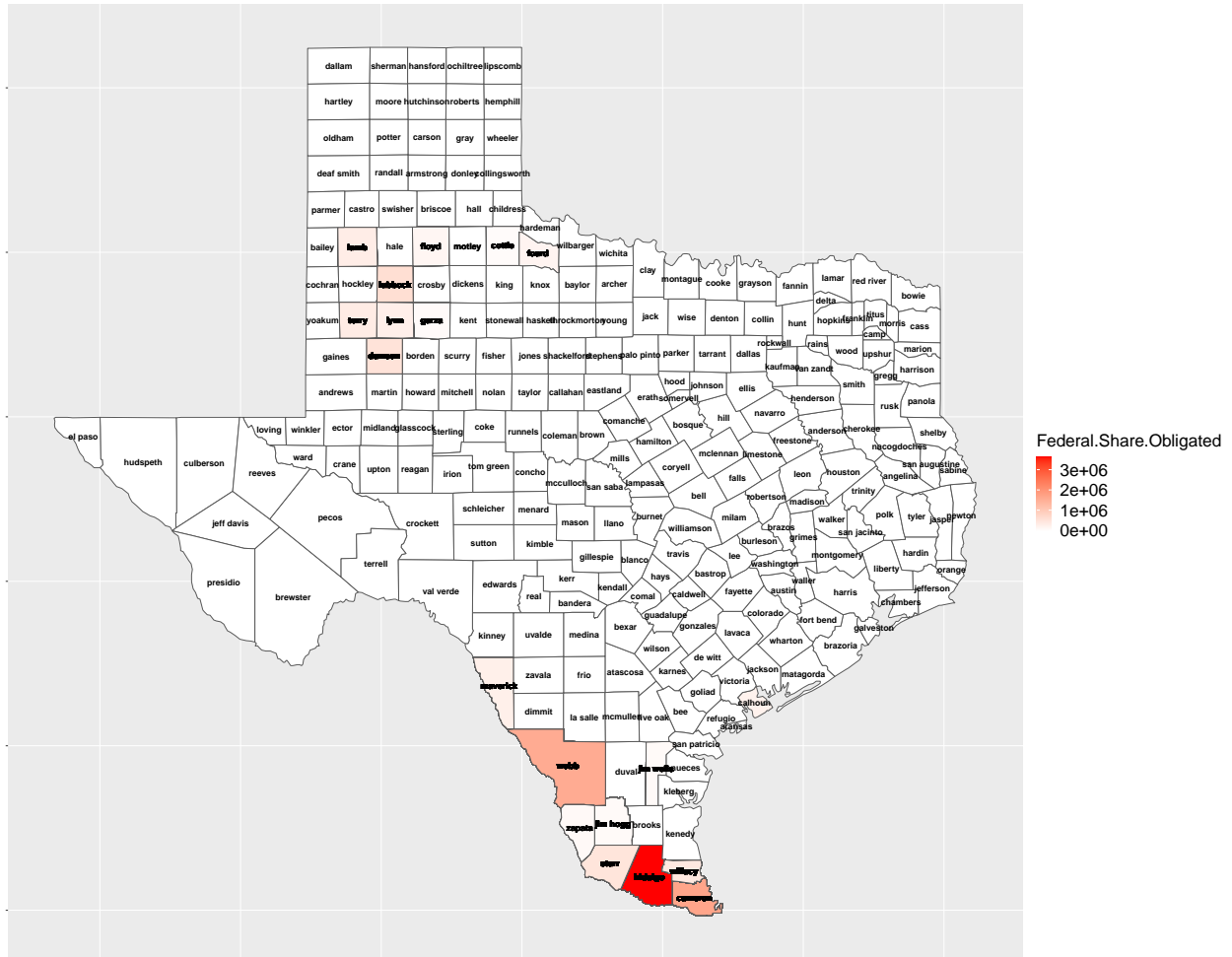
FEMA-1931-DR, Texas Disaster Declaration as of 2010-08-04



FEMA-1931-DR, Texas Disaster Declaration as of 2010-08-04



FEMA-1931-DR, Texas Disaster Declaration as of 2010-08-04



4. Shiny App

Finally, a shiny application was created in order to further explore the maps. The shiny app can be viewed [here](#)