FEMA data for Improving Disaster Resilience project

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CODE AND DATA WORKFLOW: Initial findings in Oct 2022

R Notebook:
censusFEMA_distributions_v4.rmd
Goal: answer whether disasters are increasing faster than a county's ability to respond

Data Input: Census API feed
Population (B01001_001) by county
Median income (B19013_001) by county

Data Input: Consumer price index
Consumer price index file downloaded from:
https://www.bls.gov/cpi/data.htm

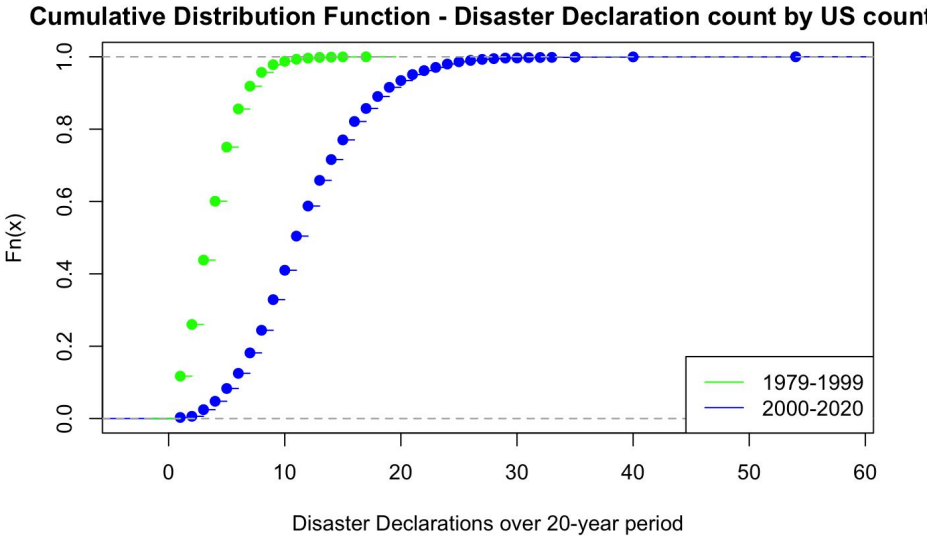
Data Input: FEMA Disaster Declarations
https://www.fema.gov/api/open/v2/DisasterDeclarationsSummaries?"

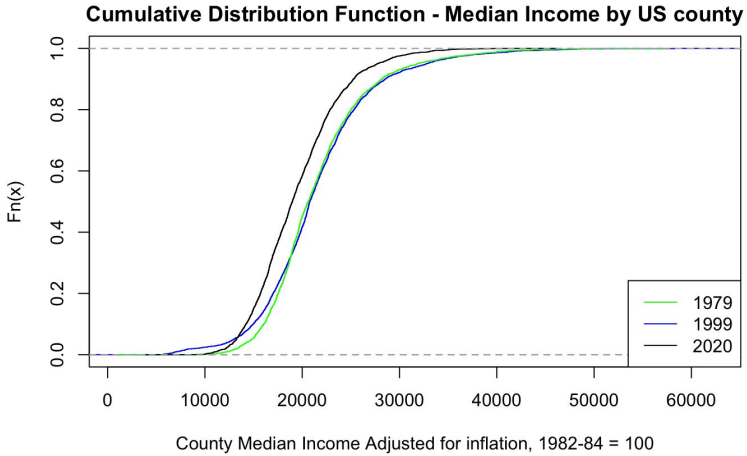
Data Output

Comparing disaster declaration and normalized median income from 1979 - 2000 versus 2001 -2021. Median income within a county has been relatively stable with a statistical difference in higher disaster declaration counts by county across those two decades.

More disaster declarations not more income* per county

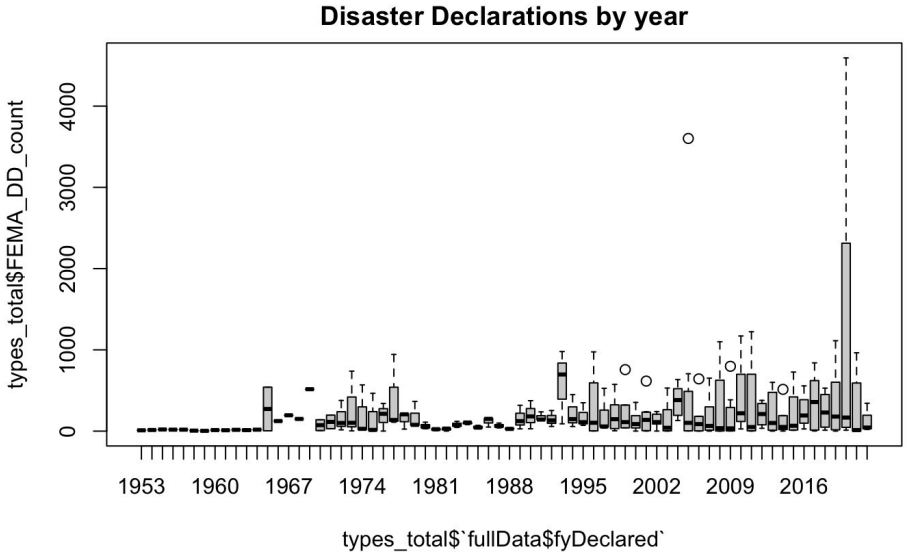
Comparing two decades: before and after 2000

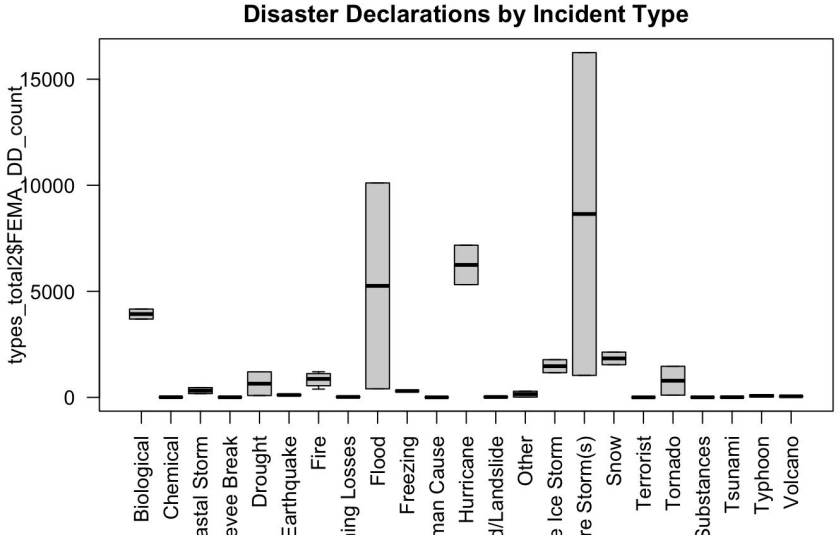




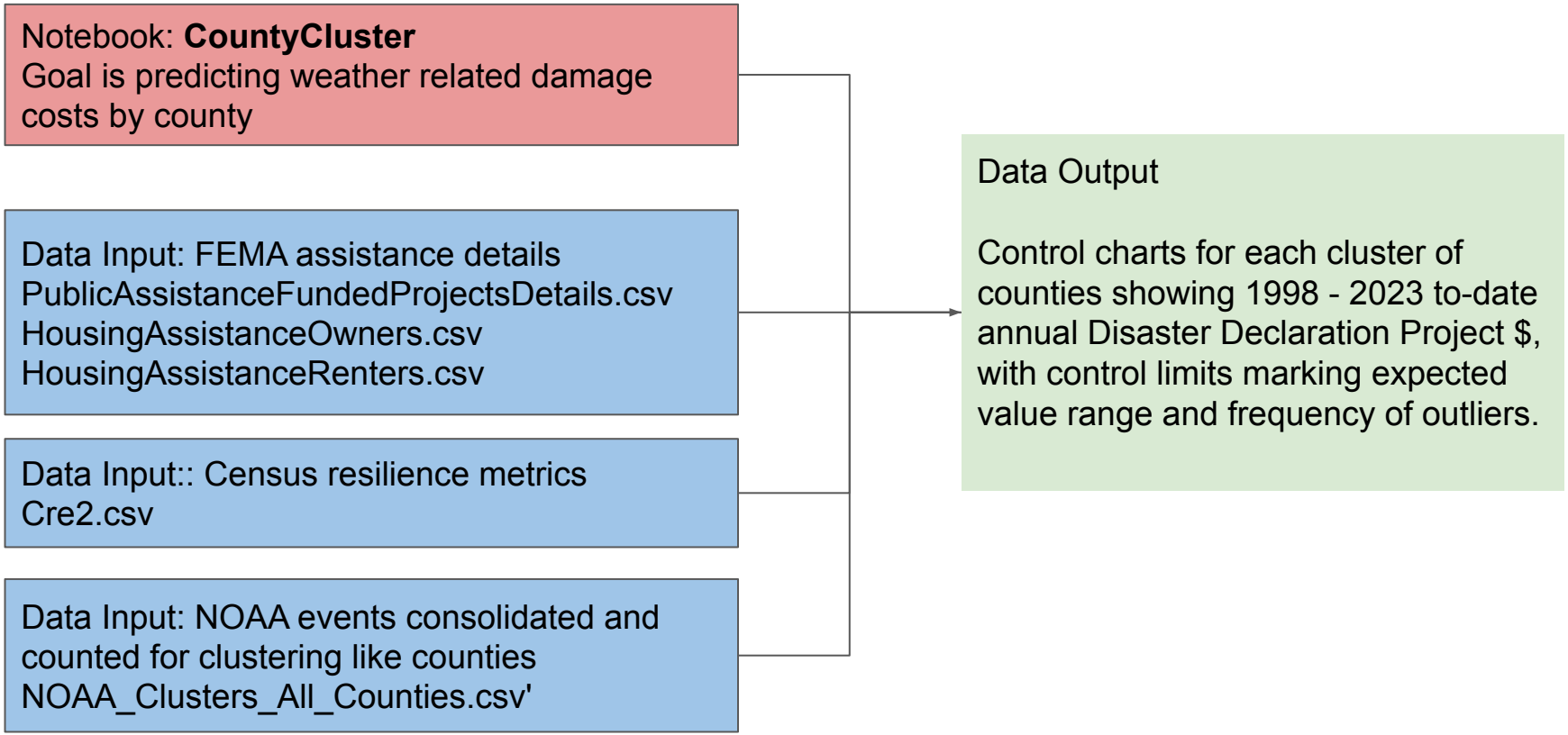
*inflation adjusted median income per county

Example output



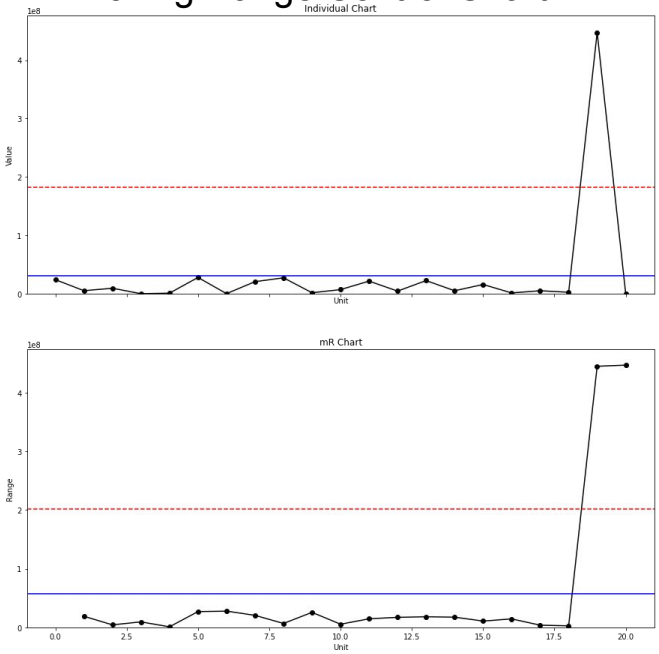


CODE AND DATA WORKFLOW: Applies clusters to quantify expected disaster $ costs

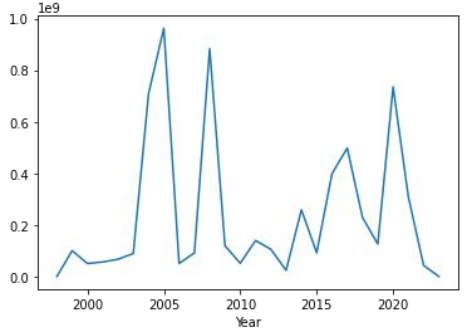


Using clusters to estimate annual county level disaster costs

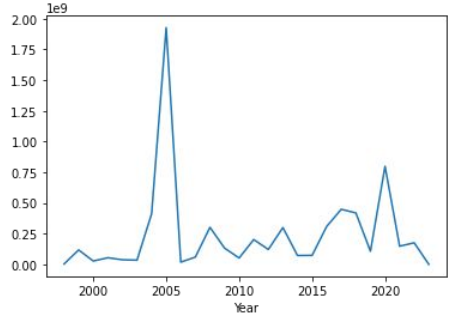
Cluster 4 using Individual & Moving Range Control Chart



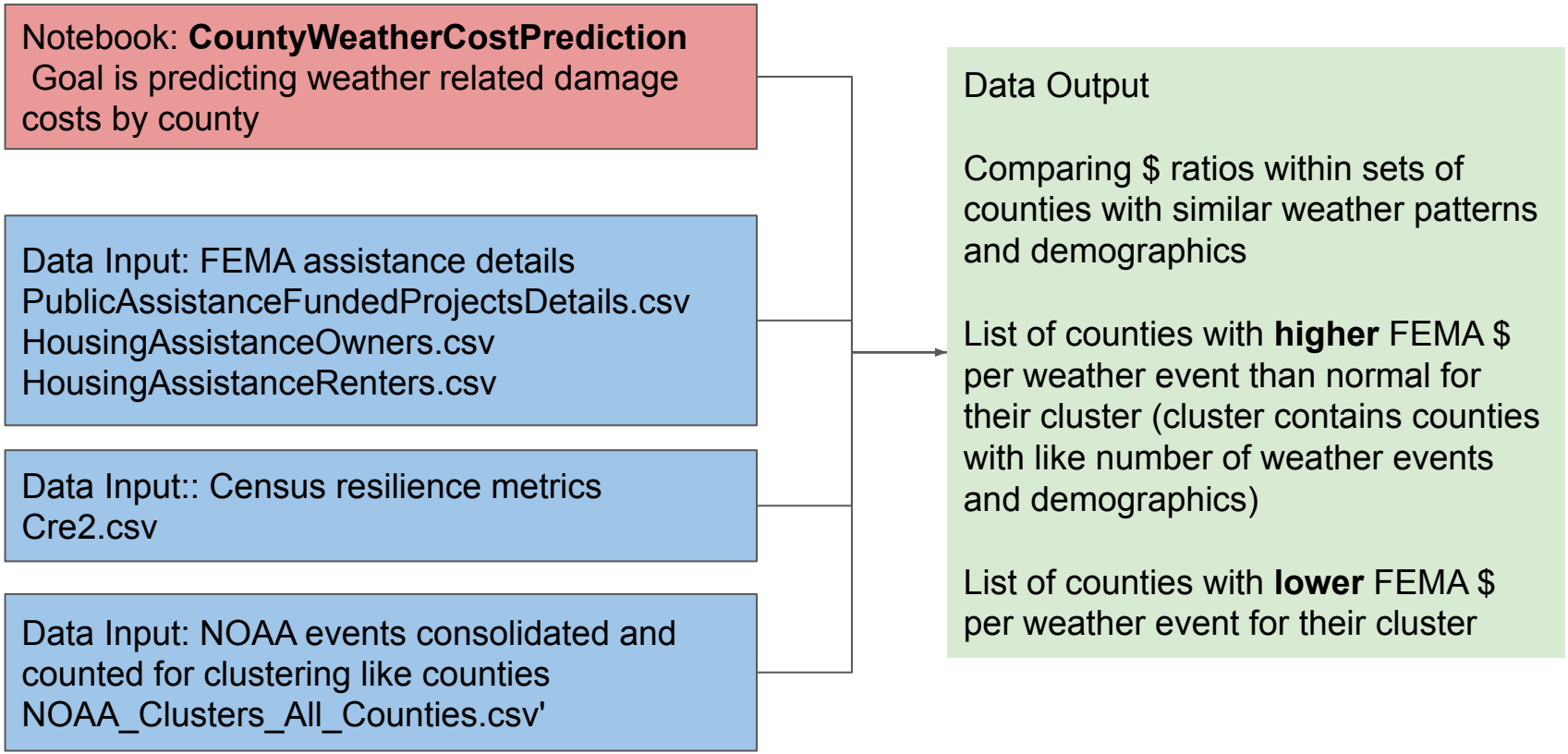
Cluster 10: includes Bartholomew County, IN



Cluster 5: includes Monroe County, IN



CODE AND DATA WORKFLOW: Using cluster averages to examine outliers



Example counties with FEMA $ higher than their cluster average

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{'ANDROSCOGGIN, MAINE',
 'ARLINGTON, VIRGINIA',
 'BREMER, IOWA',
 'BURLEIGH, NORTH DAKOTA',
 'CASS, NEBRASKA',
 'CATTARAUGUS, NEW YORK',
 'CHENANGO, NEW YORK',
 'CHITTENDEN, VERMONT',
 'DELAWARE, NEW YORK',
 'DICKINSON, KANSAS',
 'DODGE, NEBRASKA',
 'DOUGLAS, NEBRASKA',
 'FRANKLIN, ALABAMA',
 'GUILFORD, NORTH CAROLINA',
 'HAMILTON, TENNESSEE',
 'HENNEPIN, MINNESOTA',
 'JOHNSON, IOWA',
 'JOHNSON, KENTUCKY',
 'KENNEBEC, MAINE',
 'LEHIGH, PENNSYLVANIA',
 'LUZERNE, PENNSYLVANIA',
 'MADISON, ILLINOIS',
 'MILWAUKEE, WISCONSIN',
 'MONROE, NEW YORK',
 'MONTGOMERY, OHIO',
 'MORRIS, NEW JERSEY',
 'NICHOLAS, WEST VIRGINIA',
 'ONONDAGA, NEW YORK',
 'ORANGE, NEW YORK',
 'OTSEGO, NEW YORK',
 'PLATTE, NEBRASKA',
 'POTTAWATTAMIE, IOWA',
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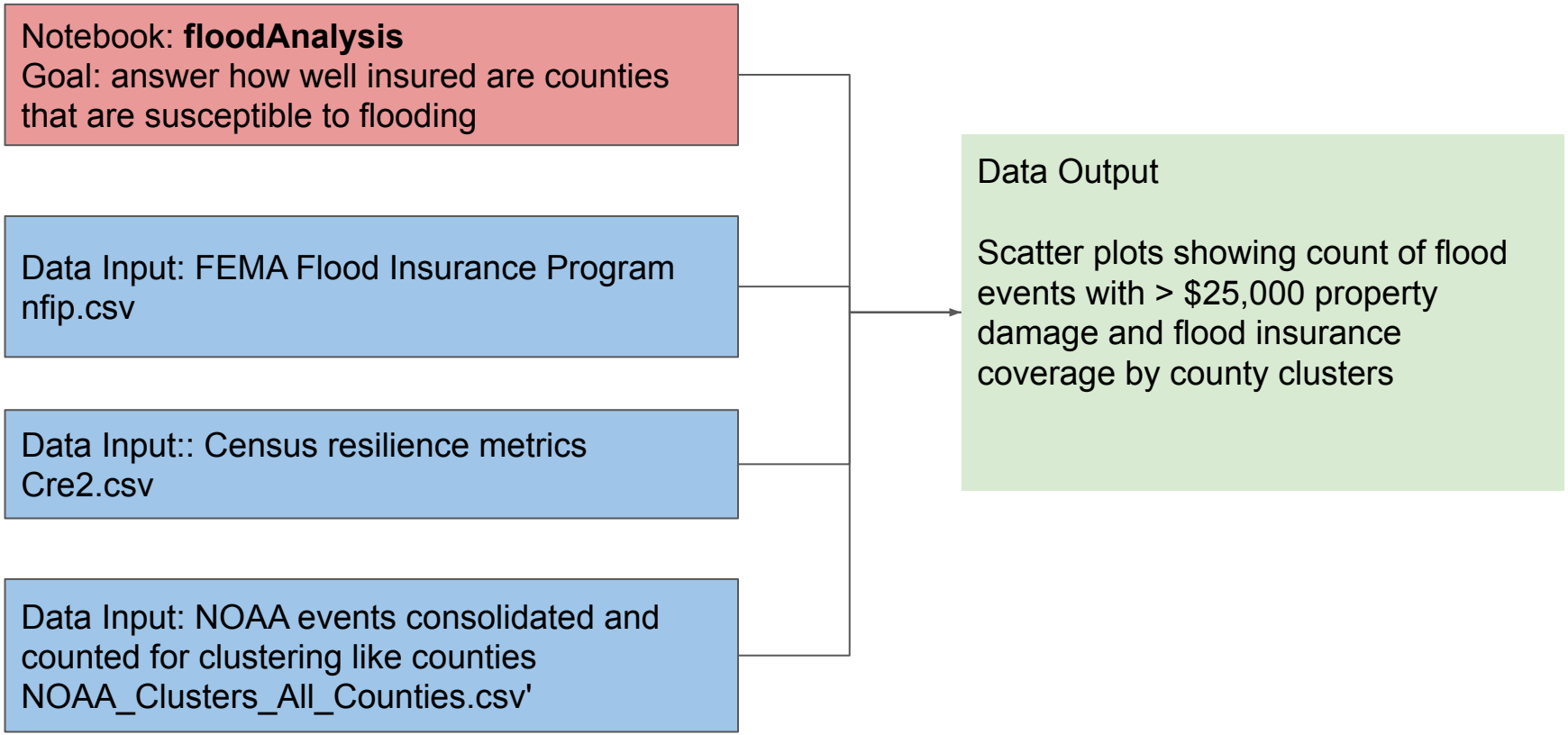
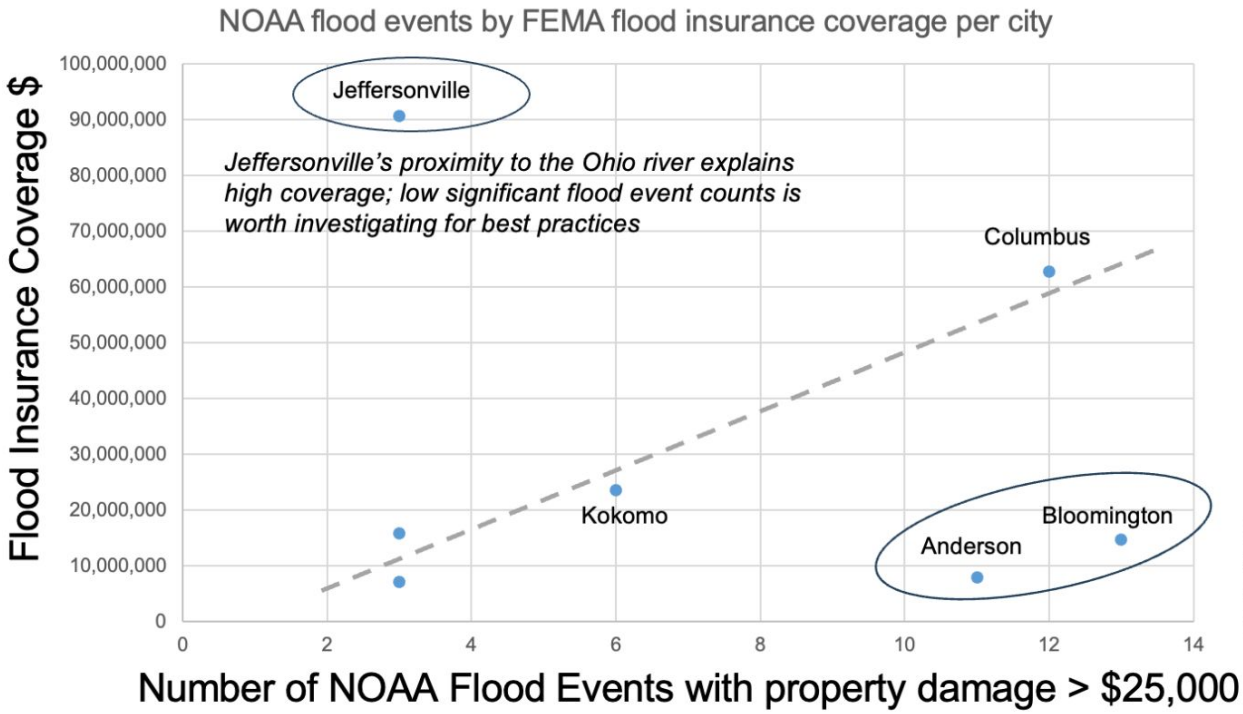
CODE AND DATA WORKFLOW: Using clusters to find vulnerabilities



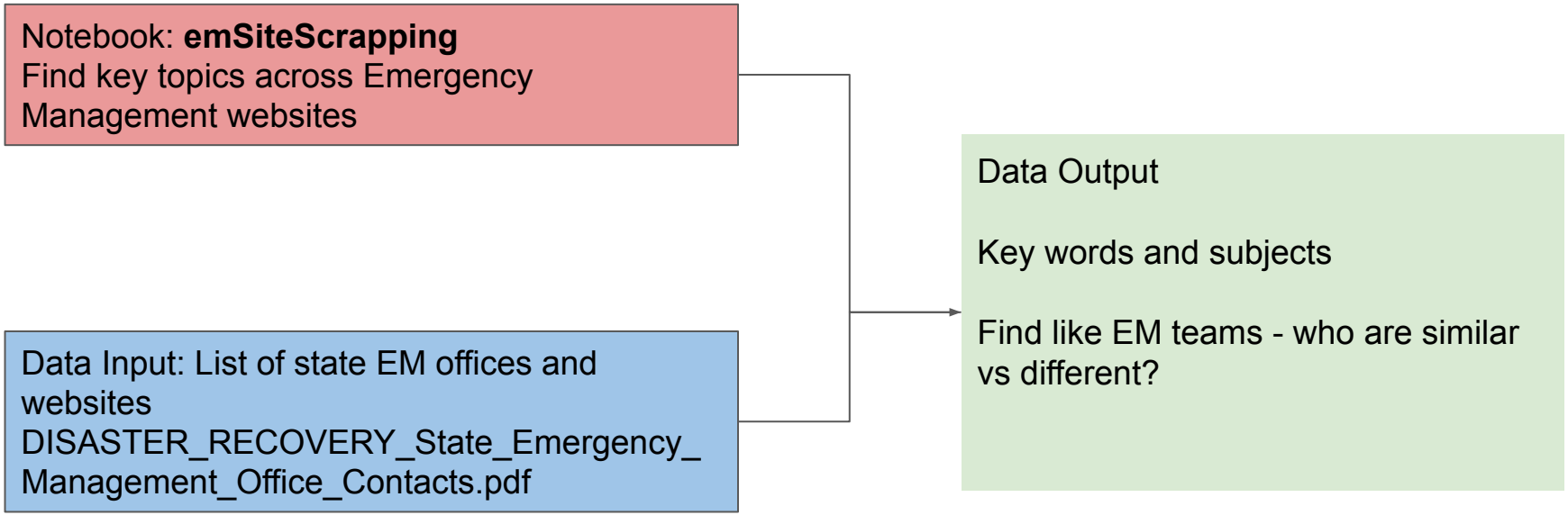
What's expected flood coverage for a city?



Primary_City	Flood and Related Events	Flood Insurance coverage
Bloomington	13	14,763,000
Columbus	12	62,808,000
Anderson	11	7,941,000
Kokomo	6	23,507,000
Jeffersonville	3	90,717,000
Warsaw	3	15,768,000
Greenfield	3	7,149,000

Bloomington and Anderson have similar significant flood event counts as Columbus with lower flood insurance coverage

CODE AND DATA WORKFLOW: How do county EM websites and communication tools compare to peers?



CODE AND DATA WORKFLOW: