TEAM DARK ORCHID

Coal power plants, air pollution, and health outcomes

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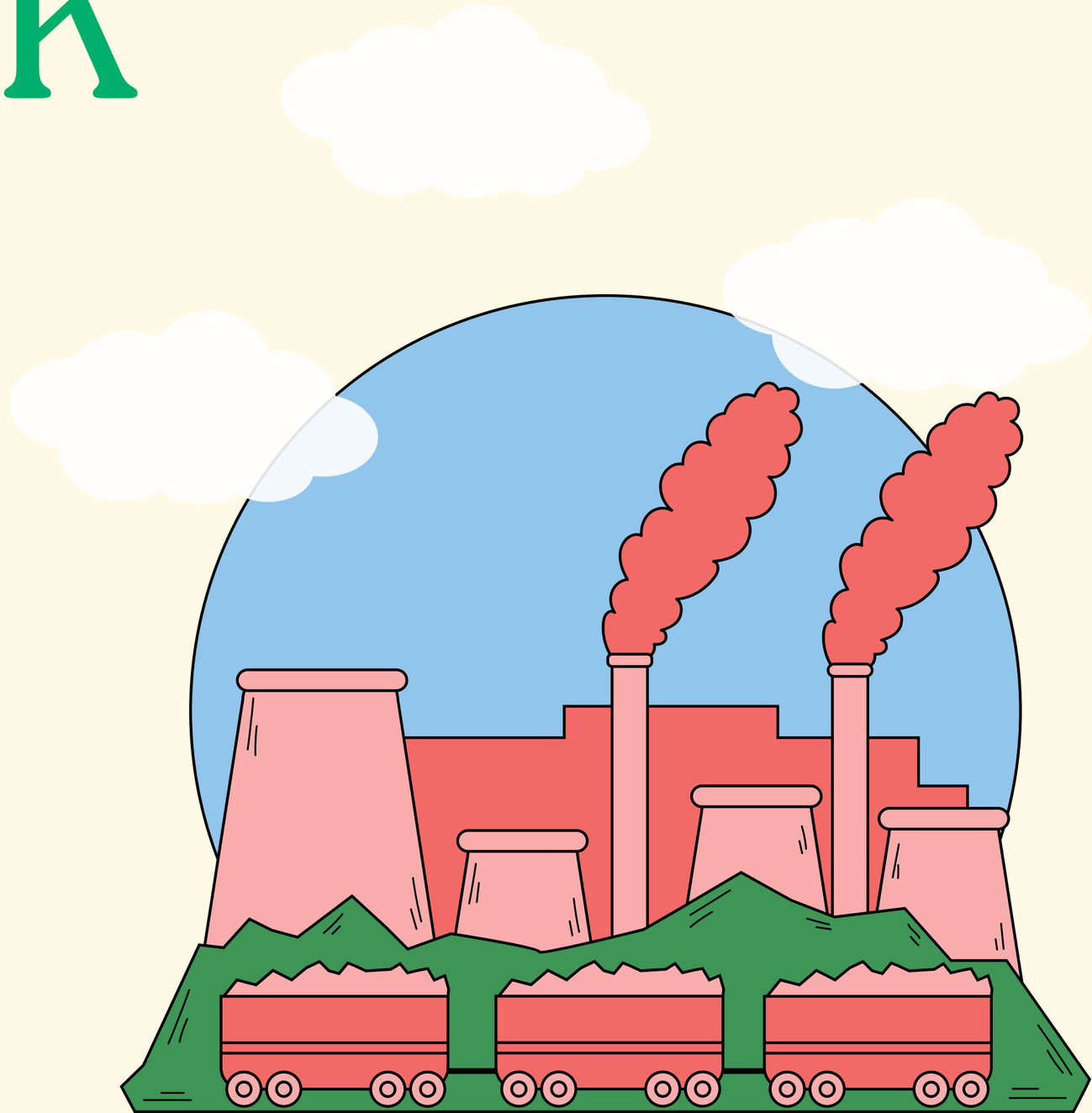


Research Questions

Does the proximity of coal fired power plants to county centroids exacerbate the effects of air pollutants on health outcomes in the continental U.S.?

How do these pollutants affect health outcomes in general?

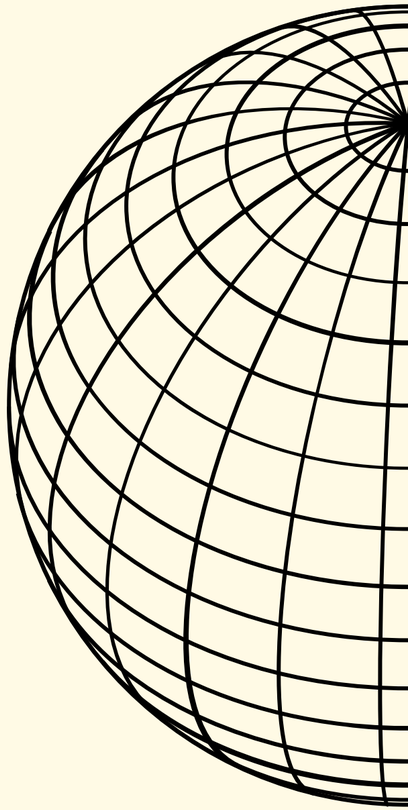
The Data

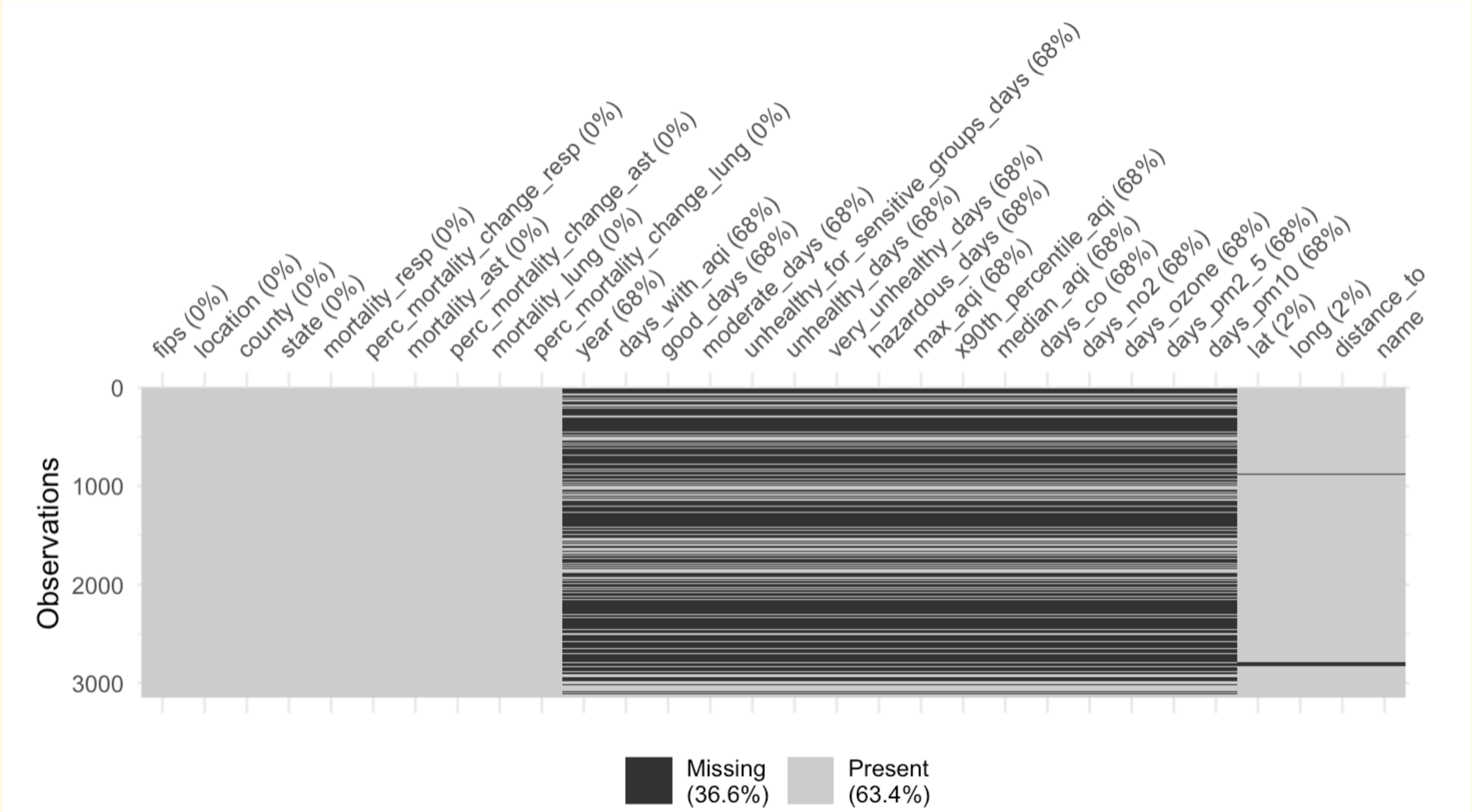
- Source of data: **EPA** (air pollution) and **Institute for Health Metrics and Evaluation** (health outcomes)
    - Focus on continental U.S.

- Feature engineering to create "distance_to_nearest__plant variable"

- Stringr to change health outcome variables from range to the average

- Missingness in AQI (Air Quality Index) variables




fips (0%)
location (0%)
county (0%)
state (0%)
mortality_resp (0%)
perc_mortality_change_resp (0%)
mortality_ast (0%)
perc_mortality_change_ast (0%)
mortality_lung (0%)
perc_mortality_change_lung (0%)
year (68%)
days_with_aqi (68%)
good_days (68%)
moderate_days (68%)
unhealthy_for_sensitive_groups_days (68%)
unhealthy_days (68%)
very_unhealthy_days (68%)
hazardous_days (68%)
max_aqi (68%)
x90th_percentile_aqi (68%)
median_aqi (68%)
days_co (68%)
days_no2 (68%)
days_ozone (68%)
days_pm2_5 (68%)
days_pm10 (68%)
lat (2%)
long (2%)
distance_to
name
Observations
0
1000
2000
3000
Missing
(36.6%)
Present
(63.4%)

The Variables

Health Variables

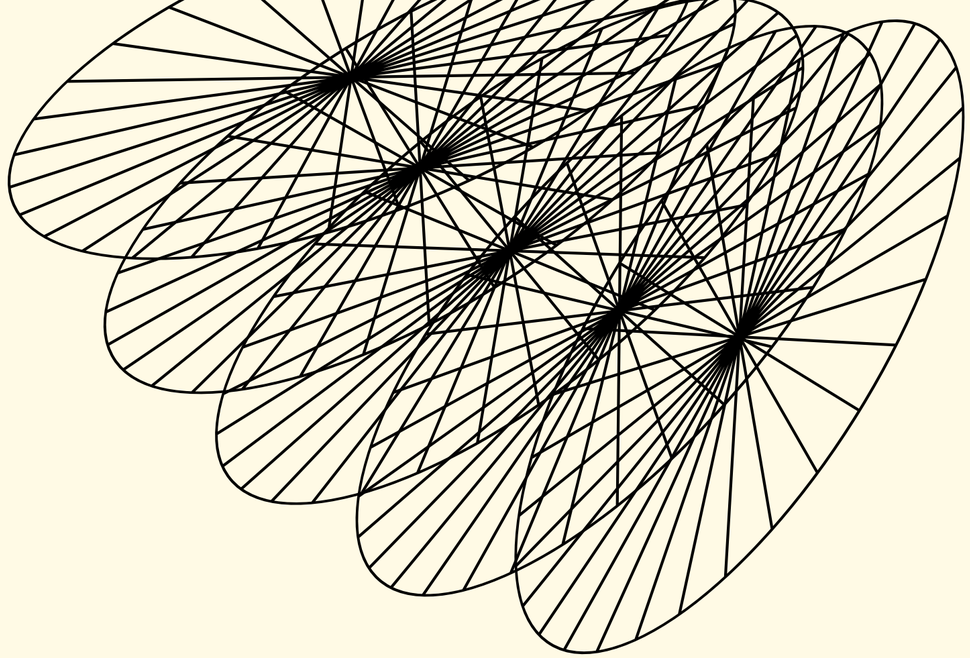
- mortality from respiratory disease, lung disease, and asthma
- percent change from 1980-2014

AQI Variables

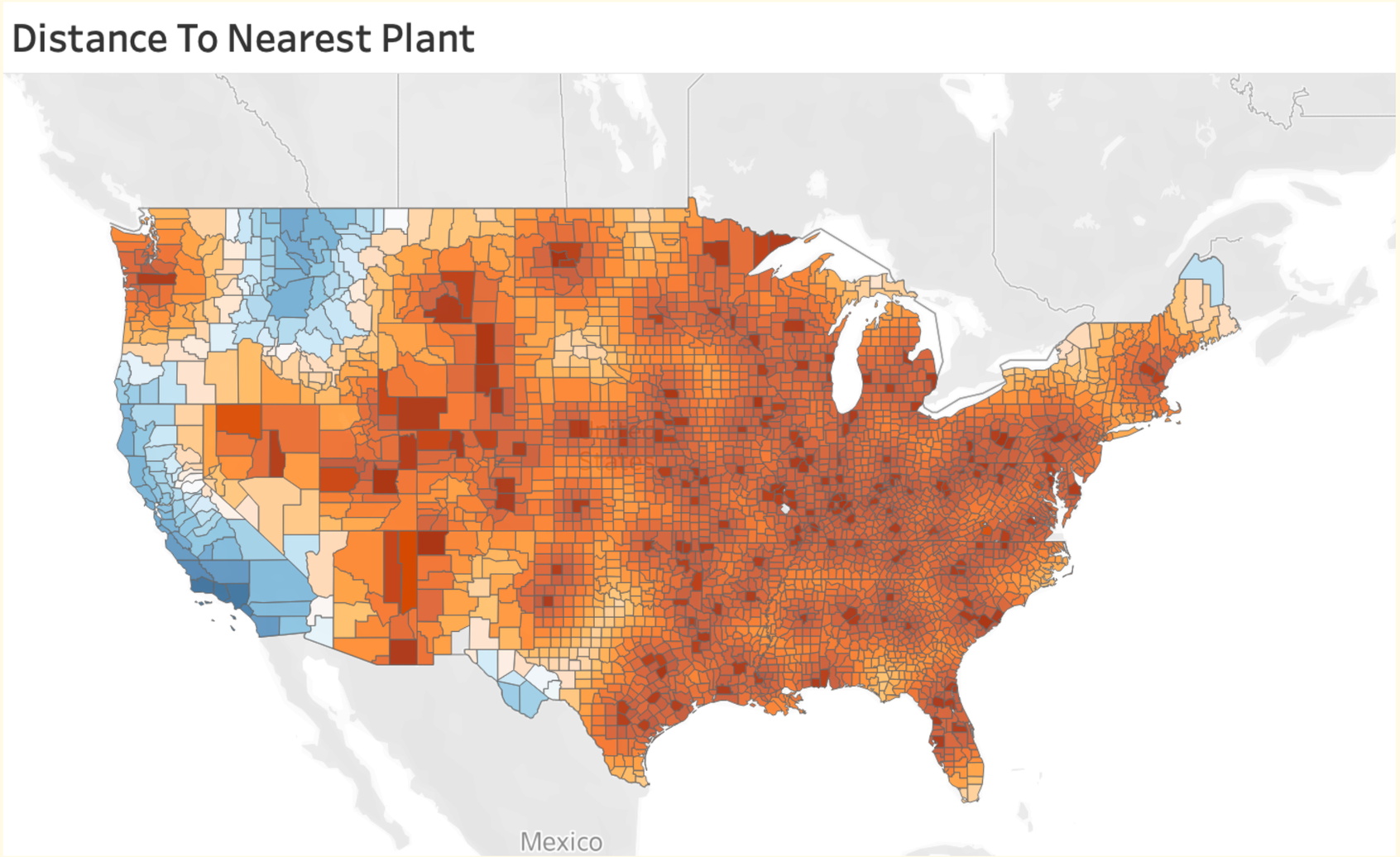
- good days (0-50)
- moderate days (51-100)
- unhealthy for sensitive days (101-150)
- unhealthy days (151-200)
- very unhealthy days (201-300)
- hazardous days (301 +)

Other Variables

- state
- distance_to_nearest_plant
- median_aqi



Coal Plants Proximity

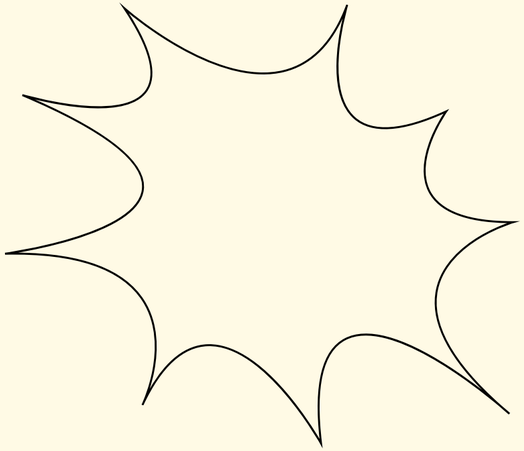


Health Outcomes Tableau

Lung Mortality

Asthma Mortality

Respiratory Mortality

Preliminary Regression Analysis

Link to sexy regression