Visualization Project Team 2

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Overview

Drug Overdose Deaths: A Public Health Crisis

- **403,498** drug overdose deaths in the U.S. (2020-2023)
- Ohio consistently ranks in the **top 5** states for overdose deaths
- **2021**: Ohio had the **4th highest overdose death rate** with over **5,000 deaths**
- **Age-adjusted death rate**: **~45.6 per 100,000 people**

Ohio's Overdose Deaths by County

- **Top 5 counties**: (Franklin, Cuyahoga, Hamilton, Montgomery and Lucas)
- **Bottom counties** (Auglaize, Harrison, Mercer, Morgan, Monroe,Wyandot)

Benefits of Data for Planning & Resource Allocation

- Informs **public health strategies** and resource targeting
- Supports **opioid treatment** expansion and naloxone distribution efforts

Focus Areas for Intervention

- **Prevention programs** targeting opioid misuse
- **Mental health services** and substance abuse treatment expansion
- **Education & outreach** to at-risk populations

Data source

Data Source: The data used in this project comes from the CDC's Provisional Drug Overdose Deaths dataset.

- The dataset includes county-level overdose death counts for all U.S. states, focusing on Ohio from years 2020 to 2023.
- CDC Provisional Drug Overdose Deaths Dataset

Geojson Boundaries Source:

- 8DancingElephants' GitHub repository
- Geojson of the 88 Ohio County Boundaries

Limitations and Ethical Practices

Limitations:

- The numbers are provisional and subject to change as investigations conclude and/or corrections are made.
- Counts between 1-9 are suppressed in accordance with NCHS confidentiality standards.
- Some regions may have incomplete or inconsistent reporting that could affect the overall analysis.

Ethical Considerations:

- Acknowledge the limitations of provisional data to prevent drawing definitive conclusions from incomplete (ongoing) information.
- Use the visualizations with caution, considering the ongoing nature of the drug addiction crisis and its impact on communities.

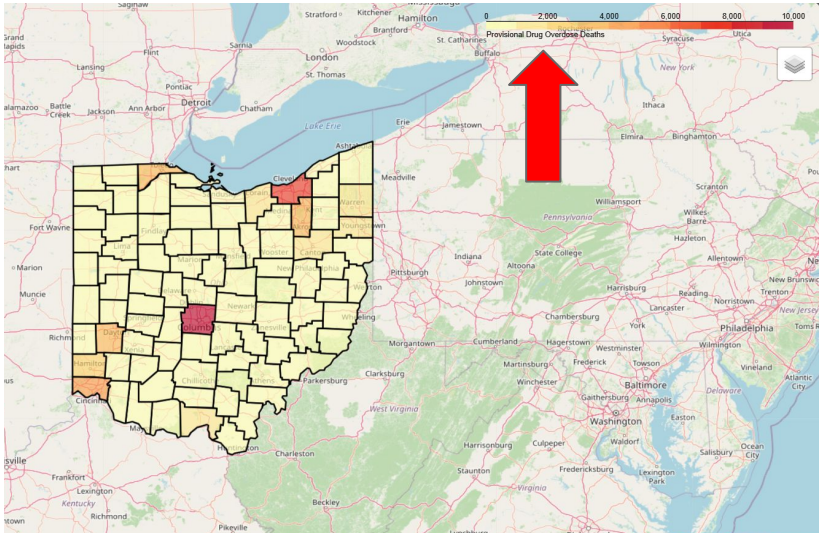
Libraries

- **psycopg2**
  - Access PostGresSQL database
- **pandas**
  - Dataframe creation and manipulation
- **geopandas**
  - Dataframe with geometry specific column
- **json**
  - Used to open geojson file
- **folium**
  - Creates map visualization with leaflet in python
- **branca**
  - Creates colormap for visualization
- **shapely**
  - Used in conversion of geometry column into geometry datatype for folium

Layers

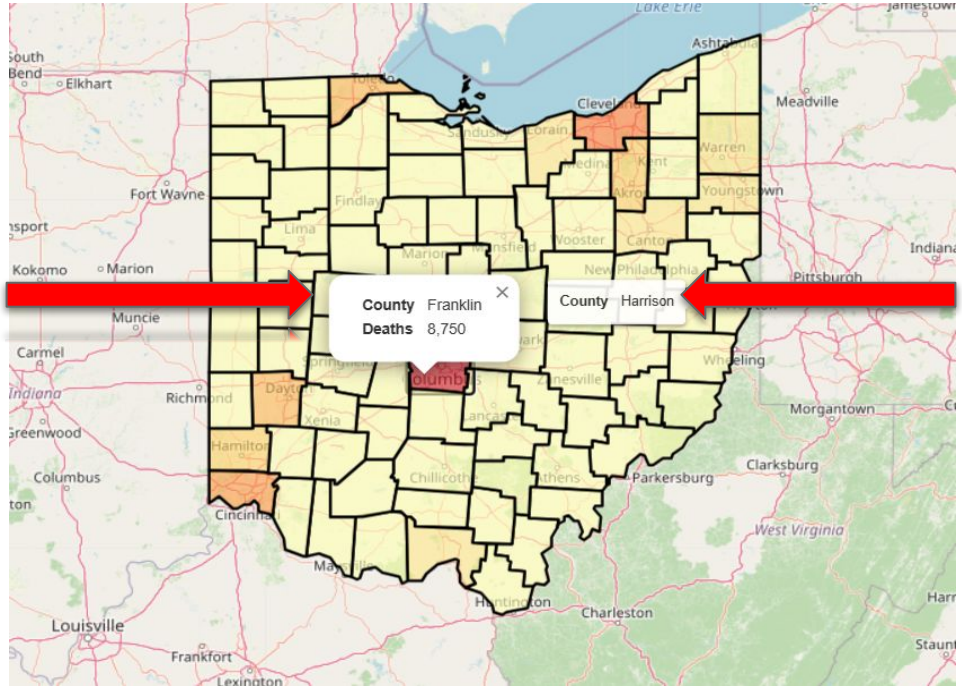
To get started, open the html file where the map will display.

There is a colormap scale and layer control for different year data.



Hover & Popup Features

Click on a specific county to see the county name and death count for the designated year



Hover over a specific county to see its name

Visualization (analysis)

- Overall, counties remain largely consistent between years.
- Deaths are concentrated in areas with larger cities and higher populations.
- The most notable difference would be in 2020 specifically in Franklin and Cuyahoga County where each had a decrease in deaths by about 1,000. One possible explanation for this change would be Covid-19 and the lockdowns.
- Changes in counties with less than 10 deaths are difficult to analyze because their death count is changed to 0.

Final thoughts

- One thing we would do differently in the future would be to add population data so that the amount of deaths could be analyzed per capita.
- Finding data at the level of zip codes would also improve geographical analysis.
- Further analysis could aid in preventing overdoses by directing resources to areas that are the most at risk.