Analysis of Connecticut Drug Related Deaths (2012-2023)

Candace DeWitt 02/24/2025 Sources: DATA.GOV, 02/06/2025 CT.GOV, 03/03/2025

Data Overview

Data source: https://catalog.data.gov/dataset/accidental-drug-related-deaths-2012-2018

This is a reliable source because it's the official open data portal of the U.S. federal government. This means the data comes directly from government agencies, which are generally considered authoritative sources for information related to their respective domains.

Data Description:

This dataset details accidental drug overdose deaths in Connecticut from 2012 to 2023, compiled by the Office of the Chief Medical Examiner. It lists each death, specifying the year and indicating which substances were detected in the deceased's system. A "Y" in a substance column signifies its presence. The data is comprehensive, drawing from toxicity reports, death certificates, and scene investigations. A key nuance is the distinction between "Morphine (Not Heroin)" and regular morphine. This arises because heroin metabolizes into morphine. If heroin use is evident from the scene investigation (e.g., needles present), but the toxicity report only shows morphine, it's classified as "Morphine (Not Heroin)." If the medical examiner can't definitively determine if the morphine is from heroin or a prescription, and scene investigation doesn't clarify the source, "Any Opioid" may be marked. This distinction is crucial for accurate analysis of opioid-related deaths.

Data Overview

Data source: https://portal.ct.gov/sots/register-manual/section-vii/population-of-connecticut-by-counties

The Connecticut Office of the Secretary of State is considered a reliable source for several key reasons, including legal mandate, oversight, and public accountability, primarily due to its official governmental function and the nature of the information it manages.

Data Description:

This data set includes population data by city, county, and (or) town for the State of Connecticut as of 07/01/2021.

Variable Definitions

Injury County The county where the injury occurred (text field)

Age The age of the individual at the time of the injury (whole number)

Age (bins) Age categorized into ranges (12-23,24-35,36-47,48-59,60-71,72-83,84-87) (text field)

Any Opioid A binary (Yes/No) variable indicating whether any opioid was involved in the injury or death (text field)

Benzodiazepine (Valium/Xanax) A binary variable indicating whether benzodiazepines (specifically Valium or Xanax, or potentially others) were involved (text field)

Cause(s) of Death The reported cause of death (text field)

City of Death The city where the death occurred. This may or may not be the same as the injury location (text field)

Cocaine A binary variable indicating whether cocaine was involved (text field)

CustomCityA user-defined or grouped city. This allows you to aggregate smaller cities or create custom regions for analysis (text field)

CustomDeathCity A user-defined or grouped city where the death occurred (text field)

CustomInjuryCity A user-defined or grouped city where the injury occurred (text field)

CustomInjuryState A user-defined or grouped state where the injury occurred (text field)

CustomState A user-defined or grouped state (text field)

Description of Injury A textual description of the injury sustained (text field)

Drug Type A more detailed classification of the drugs involved (text field)

Variable Definitions (cont)

Ethanol A binary variable indicating whether ethanol (alcohol) was involved in the injury or death (text field)

Fentanyl A binary variable indicating whether fentanyl was involved (text field)

Gabapentin (Seizure Medication)

A binary variable indicating whether gabapentin was involved. Note that while it's a seizure medication, it's also sometimes misused (text field)

Heroin A binary variable indicating whether heroin was involved (text field)

Heroin Death Certificate

This variable likely indicates whether heroin was specifically mentioned on the death certificate (text field)

Heroin/Morph/Codeine A binary variable indicating the involvement of any of these three substances. This groups them together (text field)

Hydrocodone A binary variable indicating whether hydrocodone was involved (text field)

Hydromorphone A binary variable indicating whether hydromorphone was involved (text field)

Injury City The city where the injury occurred (text field)

Injury Place A more detailed description of the location of the injury (e.g., "residence," "street," "workplace") (text field)

Injury State The state where the injury occurred (text field)

Manner of Death The official classification of how the death occurred (e.g., "Accident," "Suicide," "Homicide," "Undetermined") (text field)

Meth/Amphetamine A binary variable indicating the involvement of methamphetamine or other amphetamines (text)

Methadone A binary variable indicating whether methadone was involved. Methadone is often used in addiction treatment, so its presence might have different

implications than other opioids (text field)

Morphine (Not Heroin)

A binary variable indicating the involvement of morphine excluding cases where heroin was also involved (text)

Variable Definitions (cont)

Opiate NOS "Opiate NOS" likely refers to "Opiate, Not Otherwise Specified," meaning a general opiate was involved, but the specific type wasn't recorded (text field)

Other A catch-all category for substances not specifically listed (text field)

Other Opioid A category for opioids other than those specifically listed (text field)

Oxycodone A binary variable indicating whether oxycodone was involved (text field)

Oxymorphone A binary variable indicating whether oxymorphone was involved (text field)

Place of Death The specific location where the death occurred (text field)

Race The race of the individual (text field)

Residence City The city where the individual resided (text field)

Residence State The state where the individual resided (text field)

Sex The sex of the individual (Male/Female/Other/Unknown) (text field)

State of Death The state where the death occurred (text field)

Tramadol A binary variable indicating whether tramadol was involved (text field)

Xylazine (Tranq) A binary variable indicating whether xylazine was involved. This is a veterinary tranquilizer increasingly found in the illicit drug supply (text field)

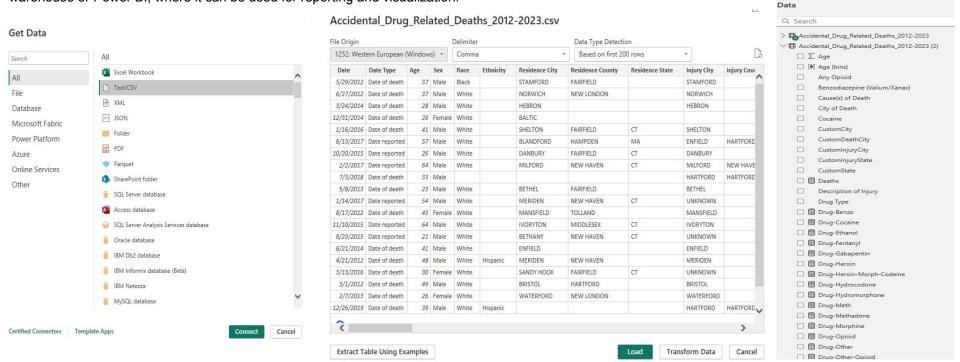
Year of Death The year in which the death occurred (text field)

Data Acquisition/Extraction Tools

Power BI's (Get Data) - CSV to PBI

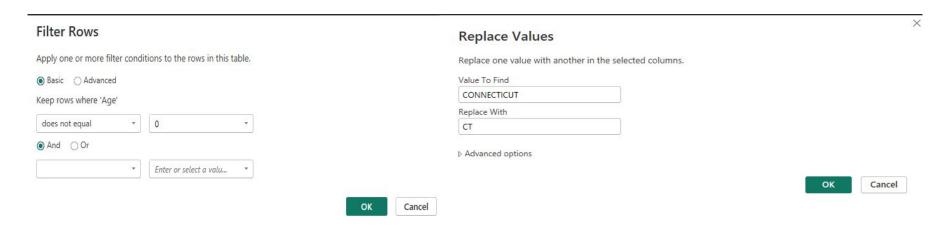
ETL Process

ETL stands for **Extract**, **Transform**, **Load**. It's the process of getting data ready for analysis. First, we **Extract** data from various sources, like files or databases. Then, we **Transform** it by cleaning, shaping, and preparing it for analysis. Finally, we **Load** the transformed data into a destination, like a data warehouse or Power BI, where it can be used for reporting and visualization.



Power Query Transformations

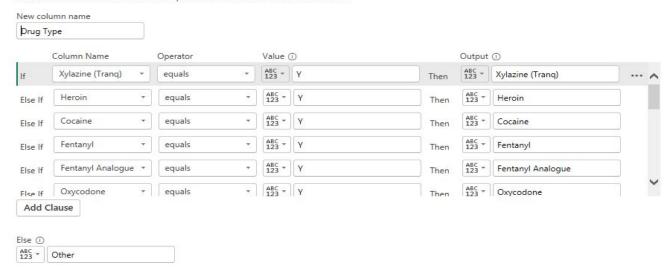
Power Query transformation is the process of manipulating and reshaping data within the Power Query Editor before it's loaded into the Power BI data model. Basically, it's about getting your data into the right format for analysis.



Power Query Transformations(cont)

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

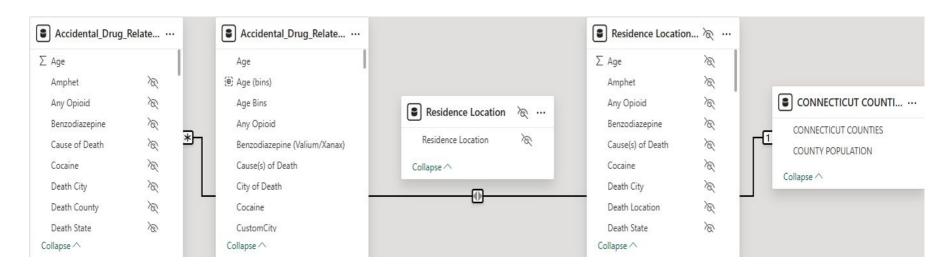


Queries

```
Source = Csv.Document(File.Contents("C:\Users\mypri\Downloads\Accidental Drug Related Deaths 2012-2023.csv"),[Delimiter=",", Columns=48, Encoding=1252,
Quote Style=Quote Style.Csv1).
#"Removed Columns" = Table.RemoveColumns(#"Changed Type",("Injury County", "Residence County", "Ethnicity")),
#"Merged Columns" = Table. Combine Columns (#"Removed Columns", "Location", "Location if Other"), Combiner. Combine TextByDelimiter ("", Quote Style. None), "Merged"),
#"Replaced Value" = Table.ReplaceValue(#"Merged Columns","","Not Listed",Replacer.ReplaceValue,{"Injury Place"}),
#"Replaced Value1" = Table.ReplaceValue(#"Replaced Value","","Not Listed",Replacer.ReplaceValue,("Description of Injury")),
#"Removed Columns1" = Table.RemoveColumns(#"Replaced Value1", {"Death County"}),
#"Renamed Columns" = Table.RenameColumns(#"Removed Columns1", {{"Merged", "Place of Death"}}),
#"Replaced Value2" = Table.ReplaceValue(#"Renamed Columns"," ","",Replacer.ReplaceText,{"Place of Death"}),
#"Replaced Value3" = Table.ReplaceValue(#"Replaced Value2","","Not Listed",Replacer.ReplaceValue,{"Place of Death"}),
#"Replaced Value4" = Table.ReplaceValue(#"Replaced Value3"," ","",Replacer.ReplaceText,{"Other Significant Conditions "}),
#"Replaced Value5" = Table.ReplaceValue(#"Replaced
Value4", "HypertensiveandAtheroscleroticCardiovascularDisease", "-HypertensiveandAtheroscleroticCardiovascularDisease", ReplaceText, {"Other Significant Conditions"}),
#"Replaced Value6" = Table.ReplaceValue(#"Replaced
Value5", "AtheroscleroticandHypertensiveCardiovascularDisease, Diabetes", "-AtheroscleroticandHypertensiveCardiovascularDisease, Diabetes", ReplaceText, f"Other Significant
Conditions "3).
```

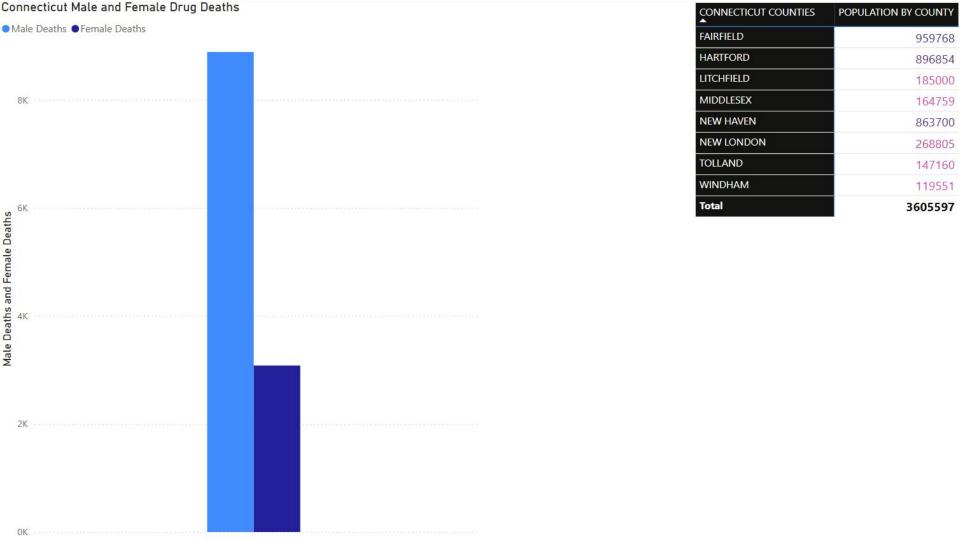
Entity Relationship Diagram

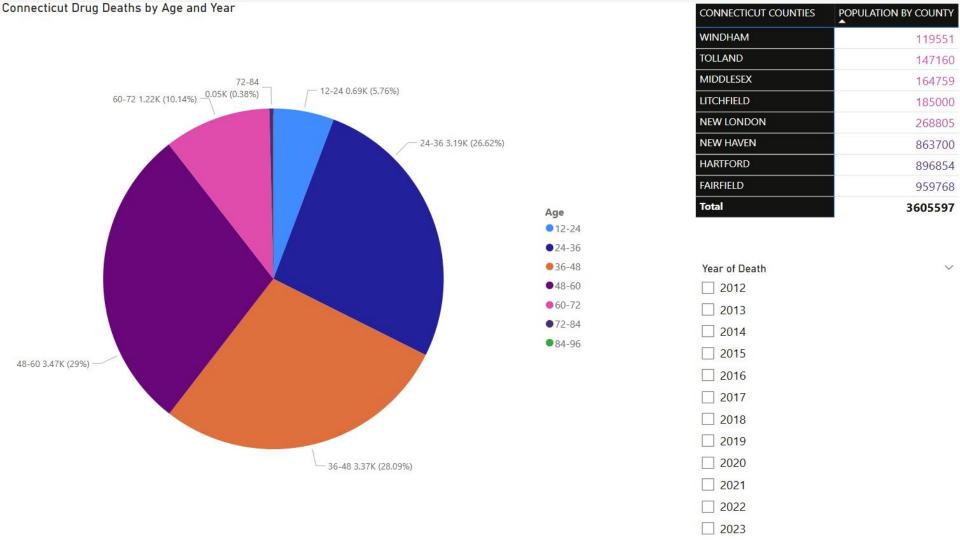
The root of my data model is the **Accidental_Drug_Related_Deaths** table. This table contains detailed information about each drug-related death, including the deceased's age, the substances involved (like fentanyl, cocaine, and heroin), the cause of death, and the location of death. Here you can see how these tables are connected.



DEMO

POWER BI





Connecticut Drug Deaths by Age and Year CONNECTICUT COUNTIES WINDHAM TOLLAND MIDDLES 60-72 16 (4.51%) 12-24 40 (11.27%) LITCHFIE NEW LO 48-60 90 (25.35%) FAIRFIELD Total Age 12-24 ●24-36 **36-48** 2012 ●48-60 ●60-72 2014 ●72-84 24-36 2016 103 (29.01%) 2017 36-48 104 (29.3%) 2023

EX	
LD	
NDON	

POPULATION BY COUNTY

119551

147160

164759

185000

268805

863700

896854

959768

3605597

NEW HAVEN HARTFORD

Year of Death

2013

2015

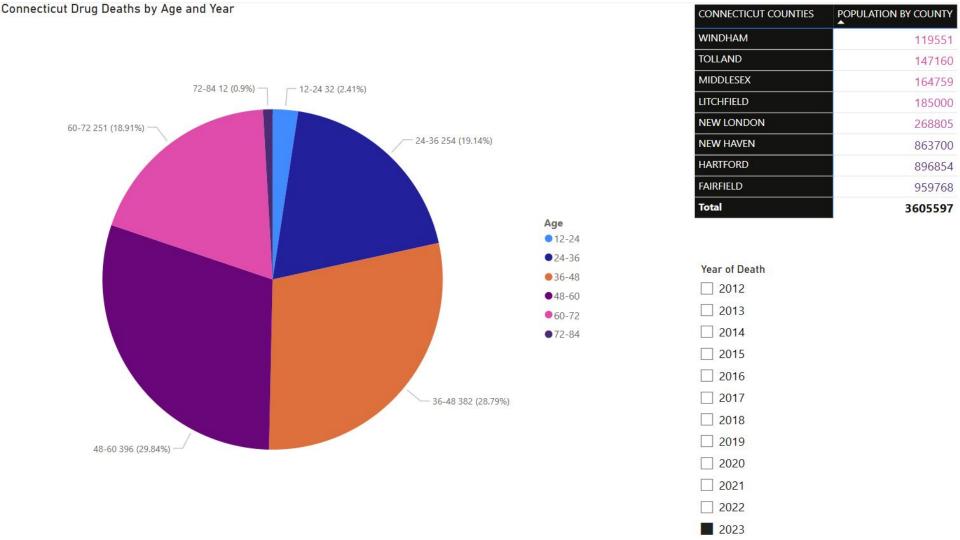
2018

2019

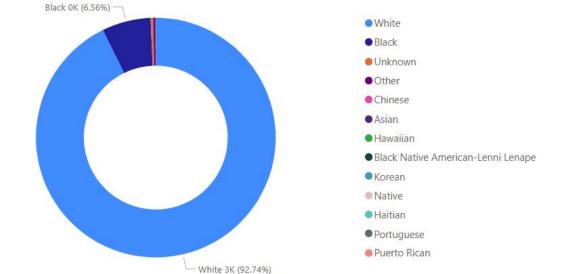
2020

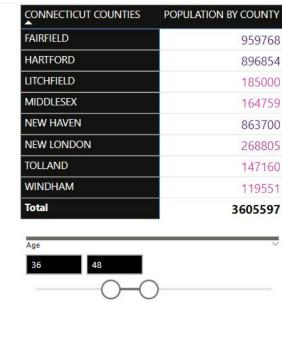
2021

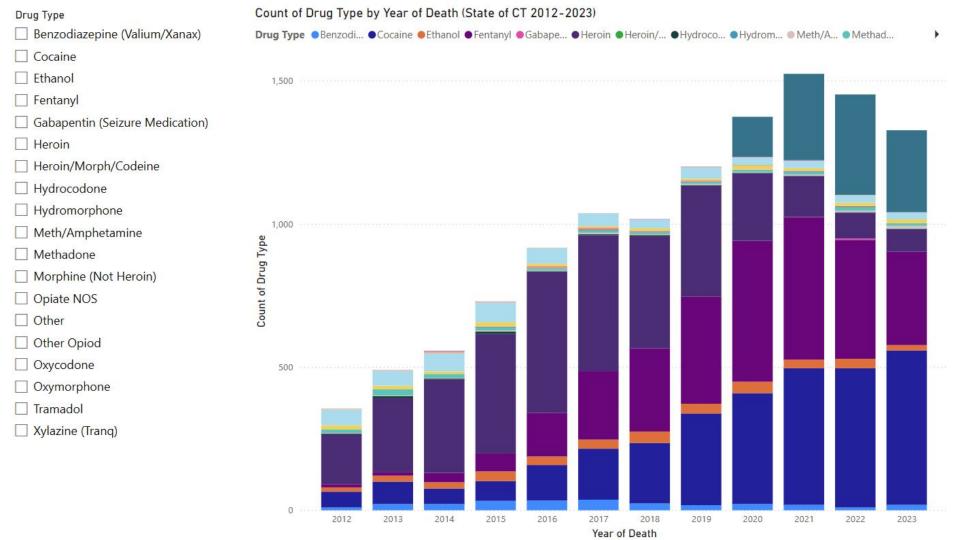
2022

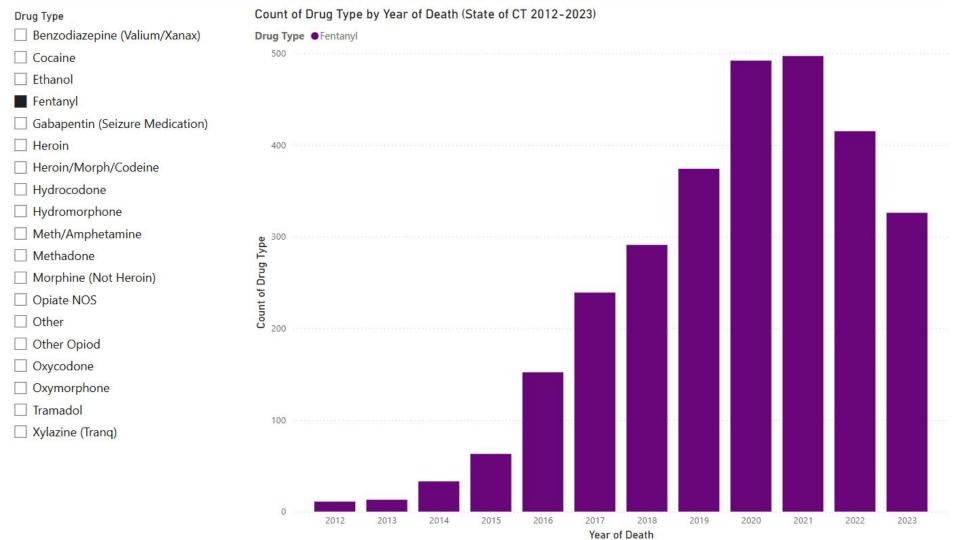


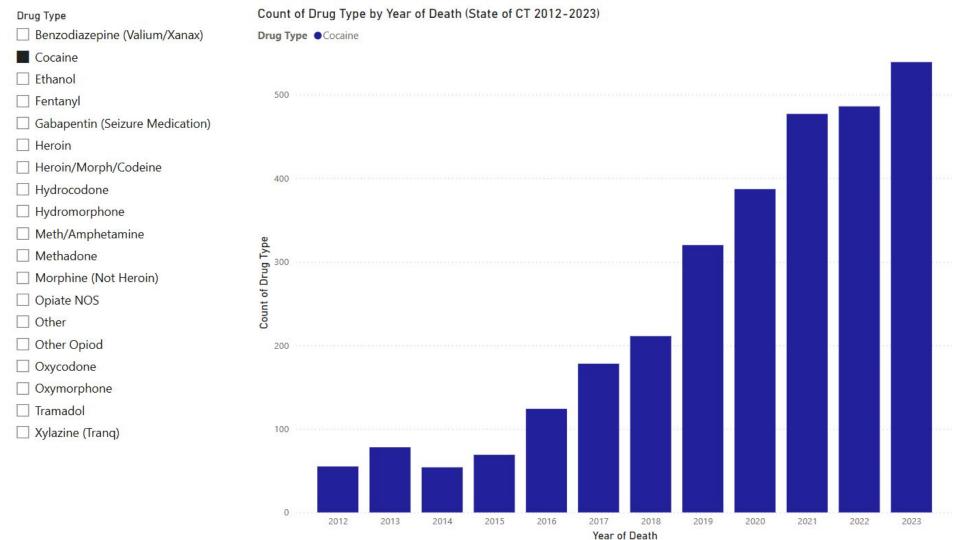
Drug Deaths by Race and Age Range

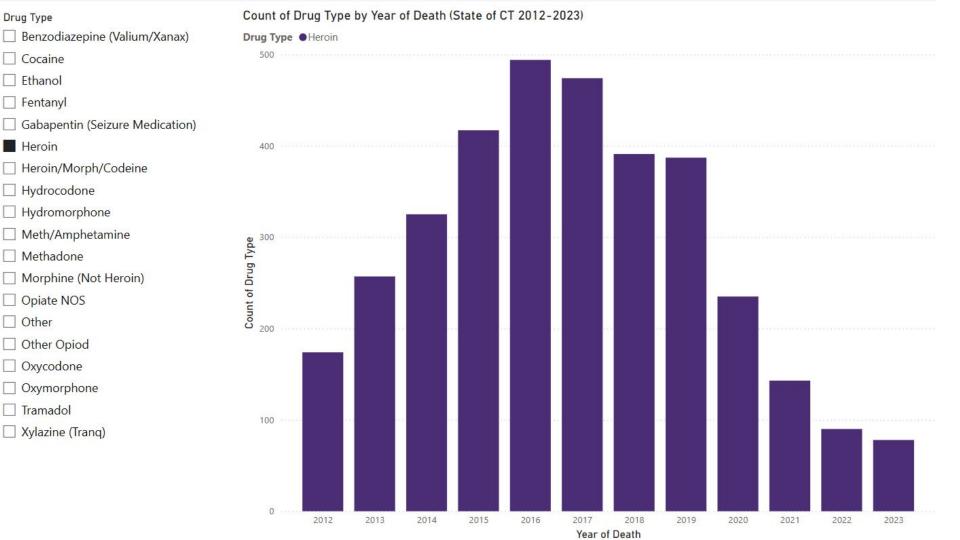






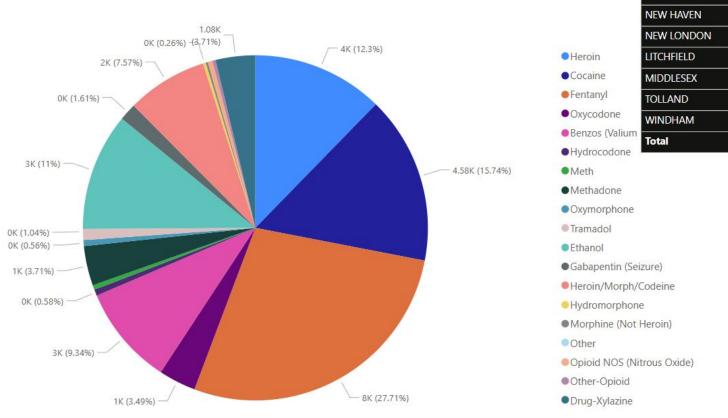






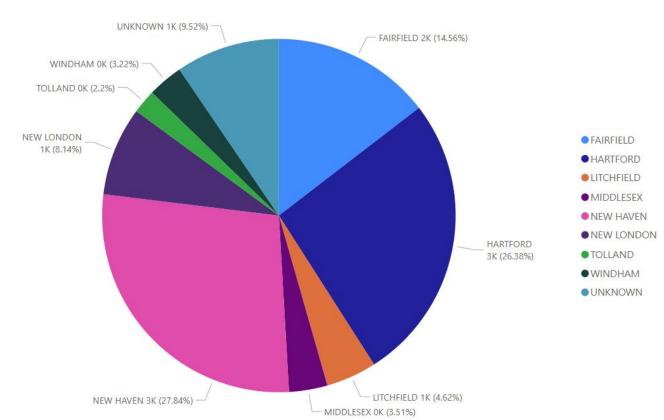
Drug Deaths by Drug Type

Heroin, Cocaine, Fentanyl, Oxycodone, Benzos (Valium), Hydrocodone, Meth, Methadone, Oxymorphone, Tramadol, Ethanol, Gabapentin (Seizure), Heroin/Morph/Codeine, Hydromorphone, Morphine (Not Heroin), Other, Opioid NOS (Nitrous Oxide), Other-Opioid and Drug-Xylazine



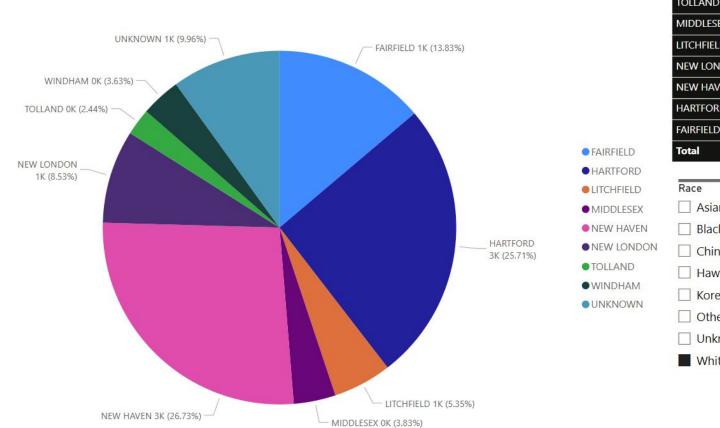
POPULATION BY COUNTY
959768
896854
863700
268805
185000
164759
147160
119551
3605597

Connecticut Drug Deaths by County and Race (2012-2023)



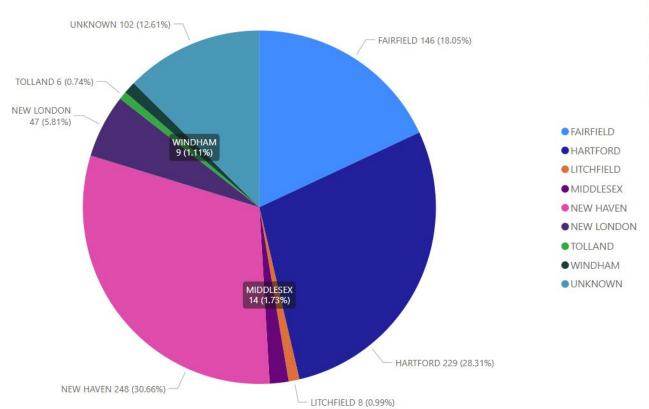
CONNECTICUT COUNTIES	POPULATION BY COUNTY
WINDHAM	119551
TOLLAND	147160
MIDDLESEX	164759
LITCHFIELD	185000
NEW LONDON	268805
NEW HAVEN	863700
HARTFORD	896854
FAIRFIELD	959768
Total	3605597
Race	
Asian	
☐ Asian ☐ Black	
Black	
☐ Black ☐ Chinese	
☐ Black ☐ Chinese ☐ Hawaiian	
☐ Black ☐ Chinese ☐ Hawaiian ☐ Korean	

Connecticut Drug Deaths by County and Race (2012-2023)

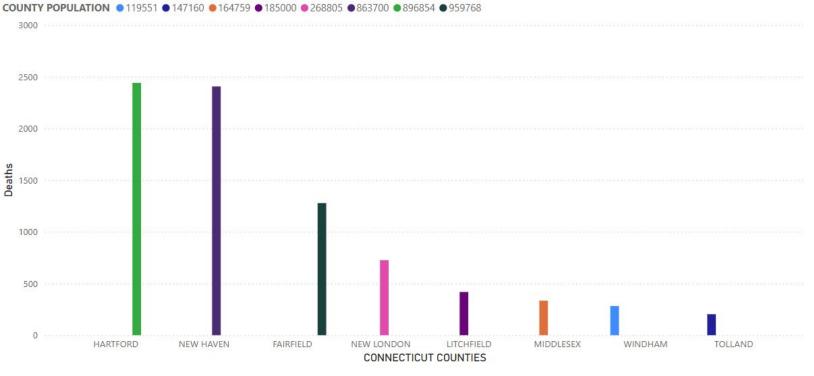


CONNECTICUT COUNTIES	POPULATION BY COUNTY
VINDHAM	119551
OLLAND	147160
MIDDLESEX	164759
ITCHFIELD	185000
NEW LONDON	268805
NEW HAVEN	863700
HARTFORD	896854
AIRFIELD	959768
⁻ otal	3605597
Race	
Asian	
Black	
Chinese	
Hawaiian	
Korean	
Other	
Unknown	
White	

Connecticut Drug Deaths by County and Race (2012-2023)

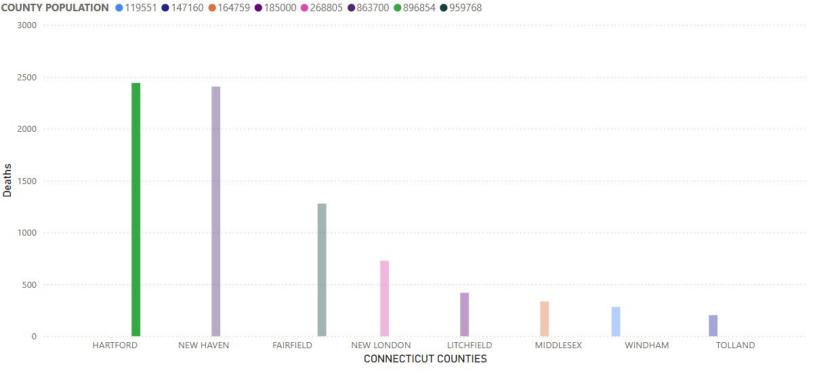


CONNECTICUT COUNTIES	POPULATION BY COUNTY
WINDHAM	119551
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MIDDLESEX	164759
LITCHFIELD	185000
NEW LONDON	268805
NEW HAVEN	863700
HARTFORD	896854
FAIRFIELD	959768
Total	3605597
Race Asian Black Chinese Hawaiian Korean Other Unknown White	



12K

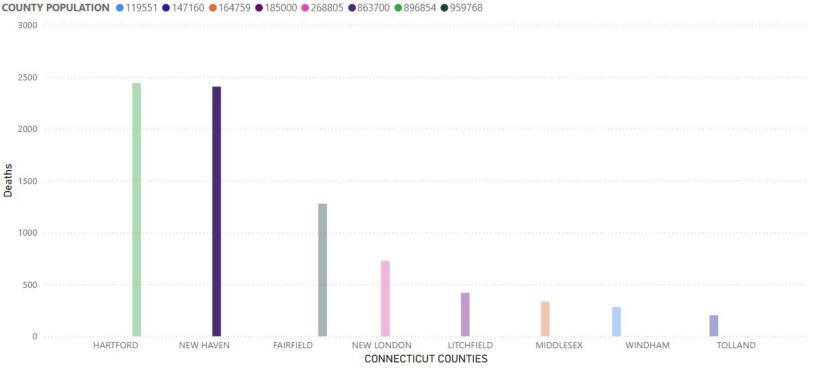
4M
POPULATION



2441

897K POPULATION

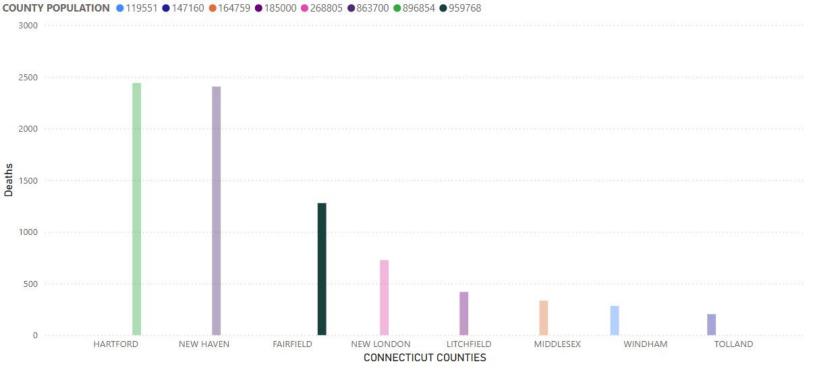
Deaths



2406 Deaths

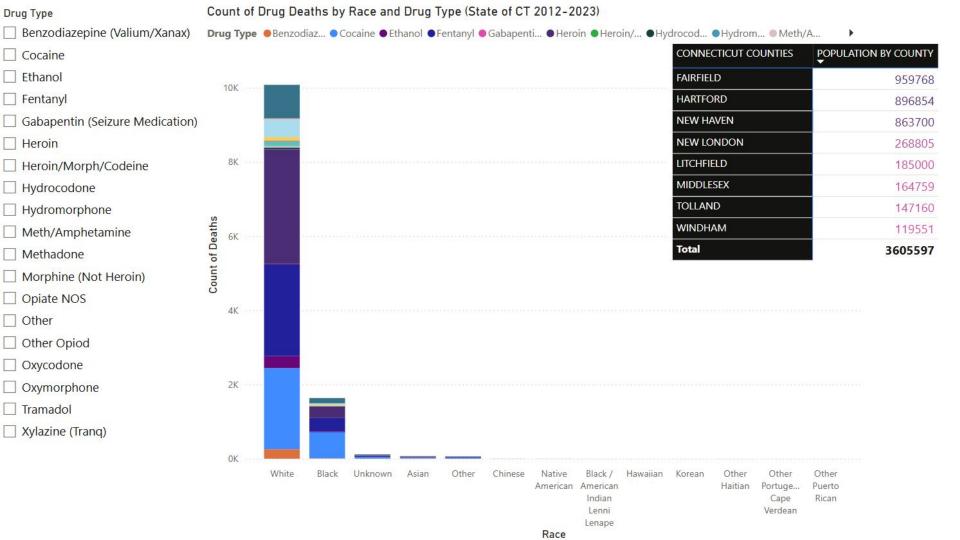
864K

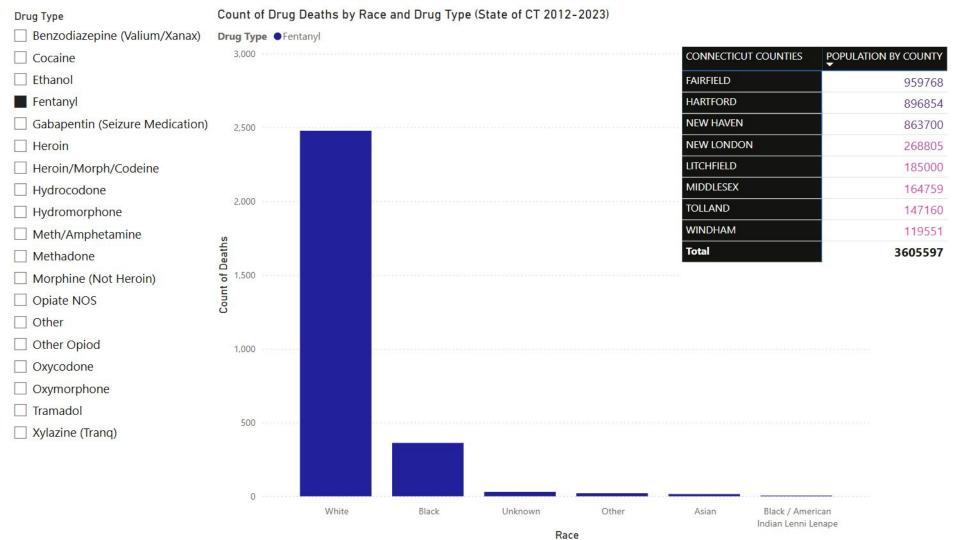
POPULATION

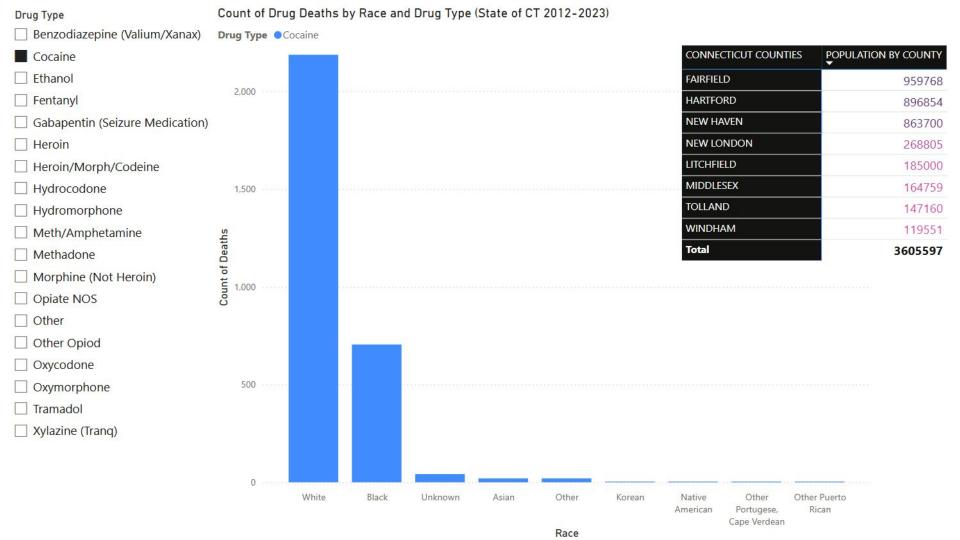


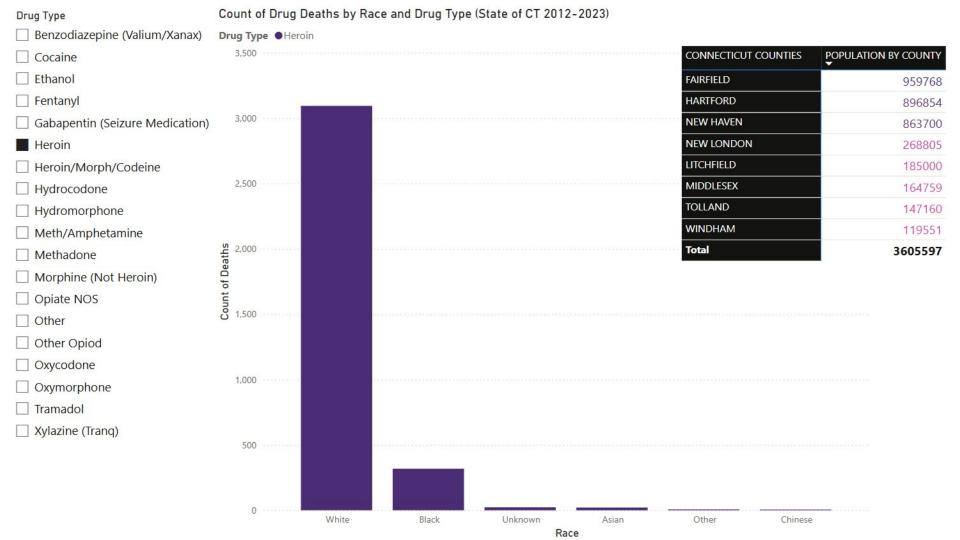
1278
Deaths

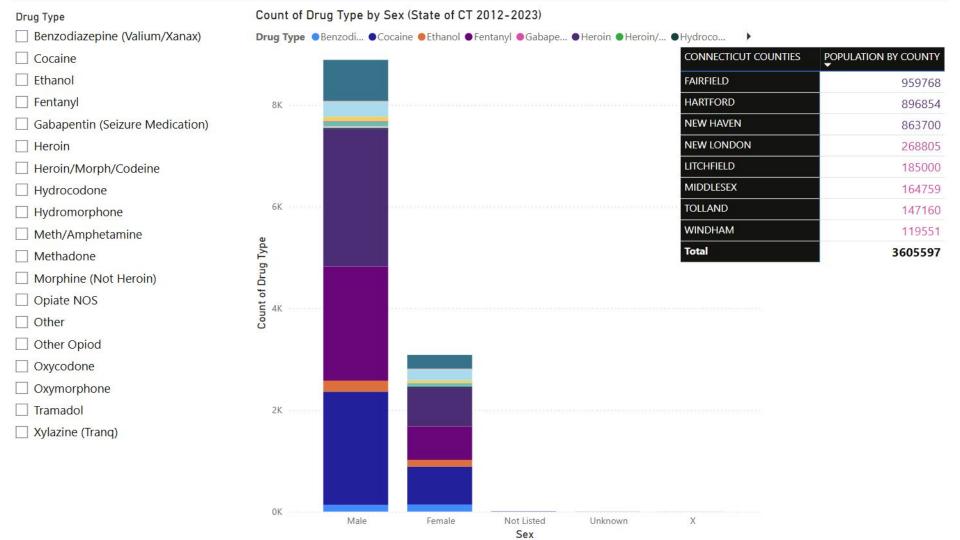
960K

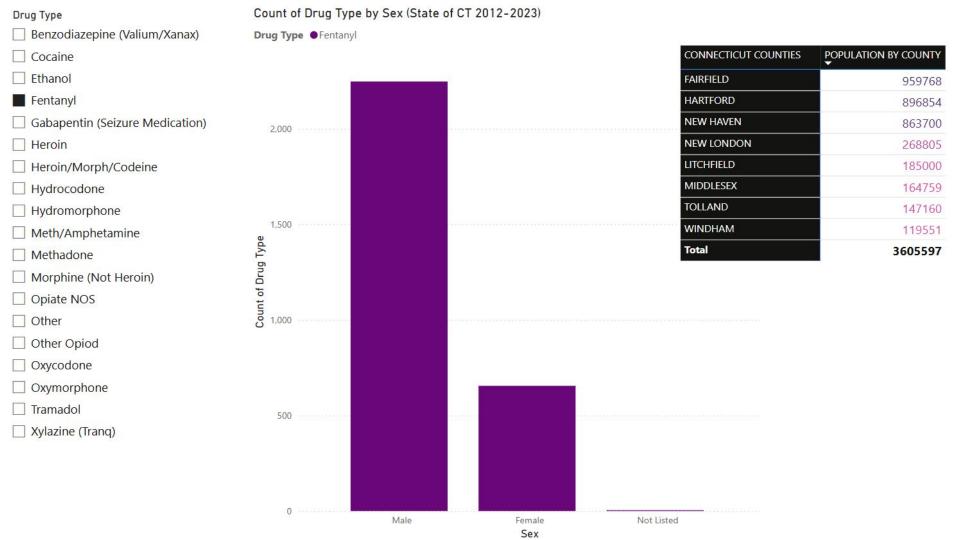


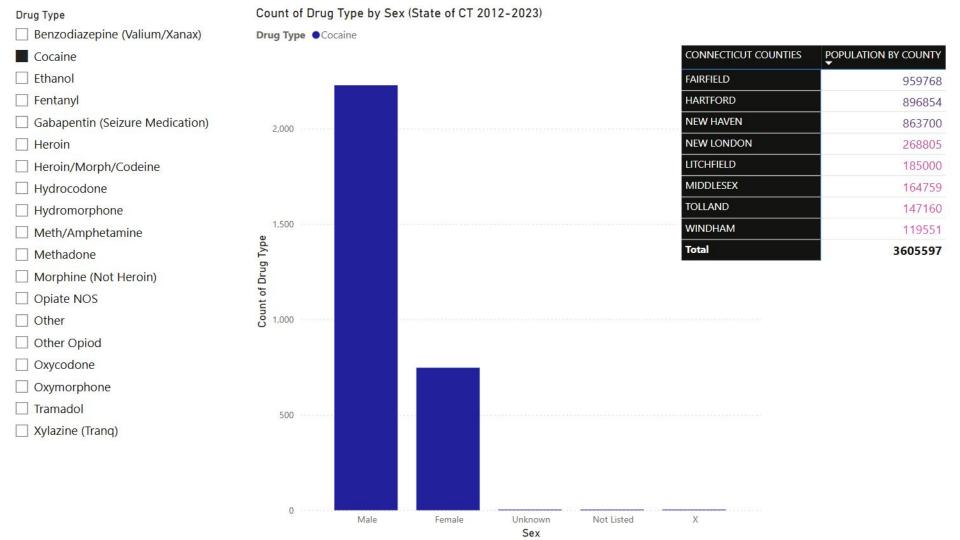


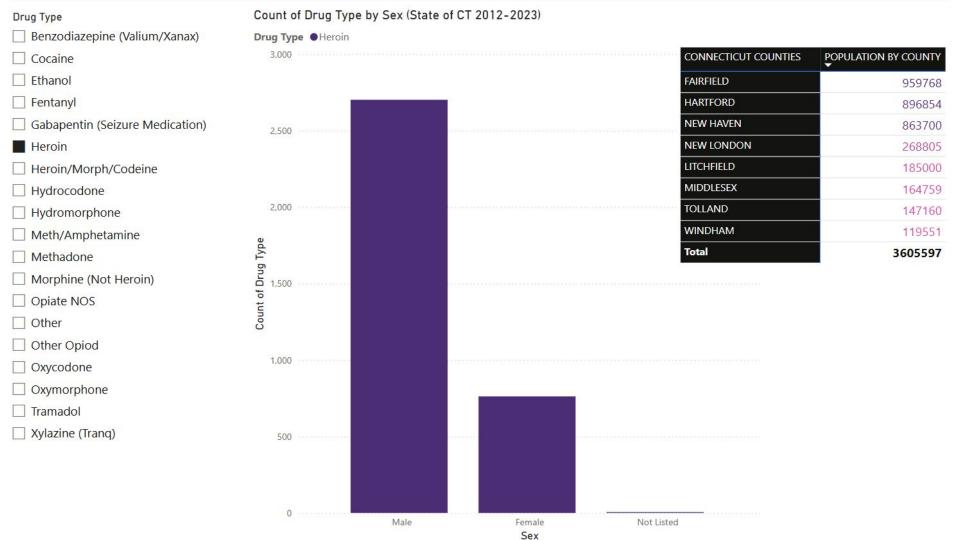






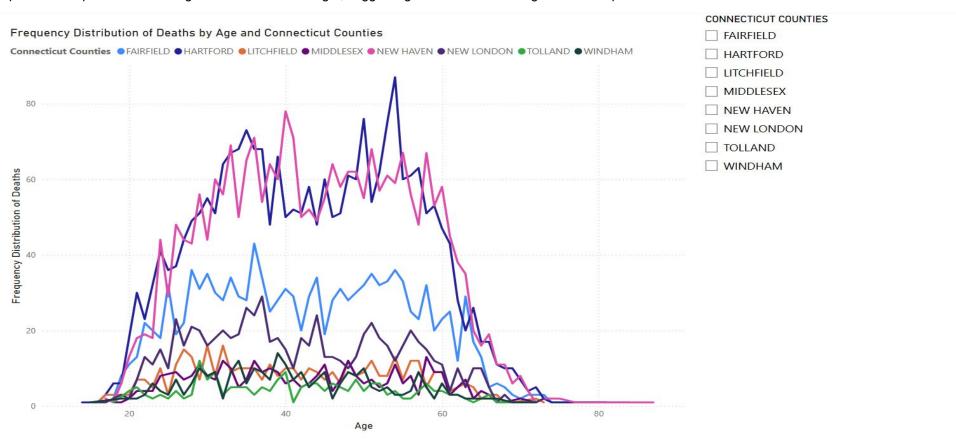






The frequency distribution chart shows a **rightward skew (positive skew)** for most of the counties. The longer tail on the right side of the distribution indicates that there are more deaths at older ages compared to what a symmetrical distribution would show.

The degree of skewness varies somewhat between counties. For example, some counties (like New Haven and Hartford, both urban counties) show a more pronounced peak and a more gradual decline to the right, suggesting a more noticeable right skew compared to others.



Conclusion

In conclusion the most significant portion of drug deaths consistently involved white males and fentanyl overdoses. I observed a shift in the age range most affected. In 2012, the age range most affected was between 36 and 48 years. By 2023, this range had increased to between 48 and 60 years.

Fentanyl was the deadliest drug in Connecticut, accounting for 8,061 deaths between 2012 and 2023. There were a total of 11,969 drug deaths in CT between 2012 and 2023. There was a slight decline in Fentanyl deaths in 2022 and 2023.

A key factor that may have contributed to the decline in fentanyl overdoses in 2022 and 2023 includes:

Increased access to treatment and harm reduction services (e.g., Narcan distribution) In 2019, a generic
version of the nasal spray was approved, but it didn't go on the market until 2021, which would explain the drop
in fentanyl drug deaths in 2022 and 2023

Connecticut experienced a dramatic increase in drug-related fatalities from 2012 to 2023. In 2012, there were 315 drug deaths, compared to 1,327 in 2023.

New Haven, CT, an urban county, consistently showed a high concentration of drug-related deaths, with white males between 48 and 60 years, being the most affected group.

These findings underscore the severity and evolving nature of the drug crisis in Connecticut.