Photo Credit – Lucy Todd (https://modus.medium.com/https-medium-com-lucy-todd-how-to-master-data-visualization-7b82217a665a)

Prevent Overdose KS Data Visualization Strategy

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Presentation Overview

- Why do we need to “visualize” data
- Prevent Overdose KS Strategy
- Acknowledgements

Why Visualization of Health Data is Important

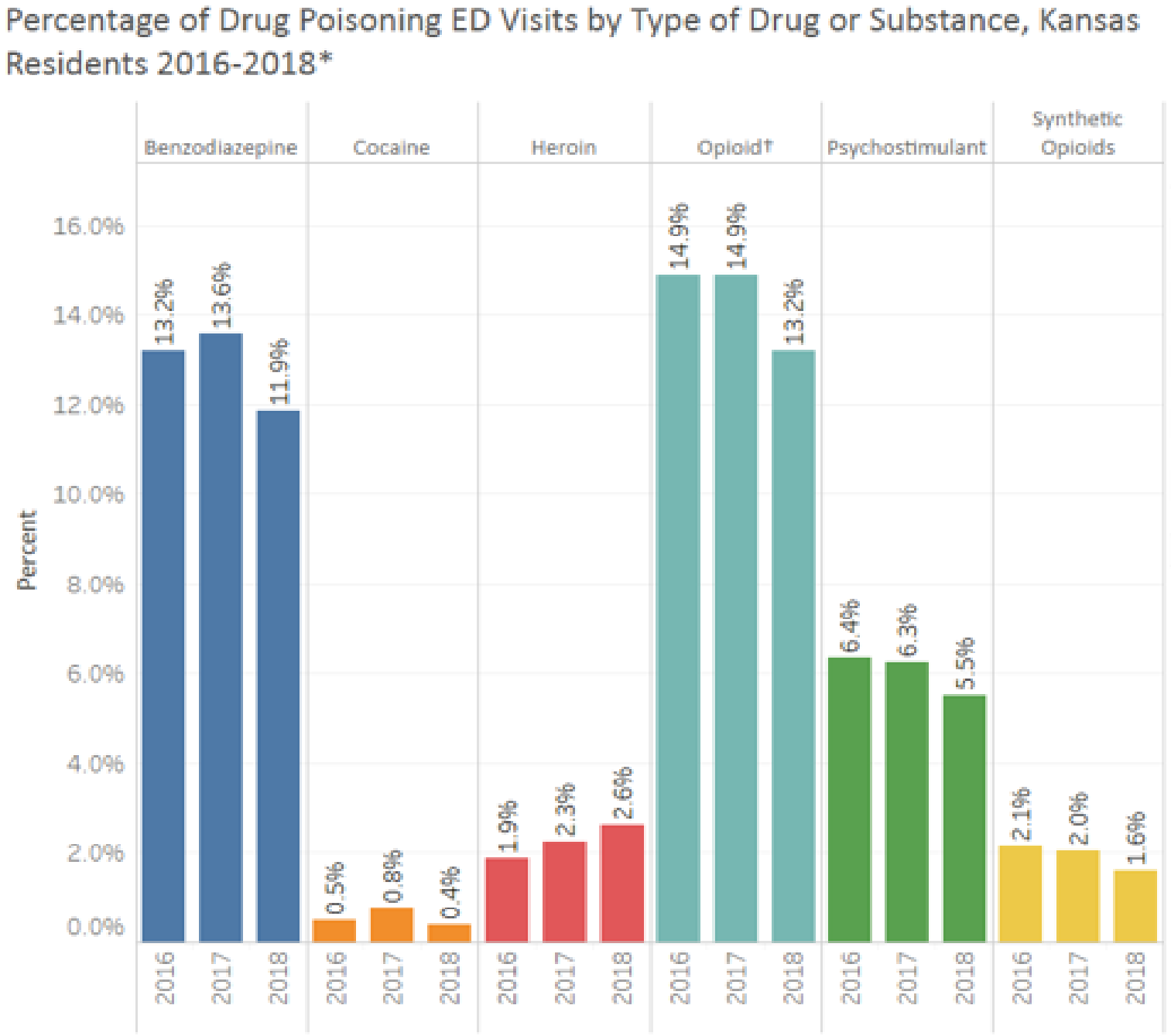
- Portray complex data in understandable manner
  - Infographics
  - Maps
  - Charts and Graphs
- Enhance the utility of public health information
  - Prescription Drug monitoring program data
  - Death Certificate data
  - Hospitalization and Emergency Room Administrative Data
  - Syndromic Surveillance (real time Emergency Department data)
- Make data accessible to community members local public health and other partners

See the Data

- Syndromic Surveillance Data Dashboard
- Mortality Data Dashboard
- K-TRACS PDMP Data Dashboard
- National Center for Health Statistics
- CDC Website

Prevent Overdose KS Tableau Dashboard Data Metrics

- Summary Counts by Drug Category & Year
- Trends Over Time by Drug Category
- County Level Rate Map by Drug Category & Year
- Summary Counts by Age, Sex, Drug Category and Year
- Technical Notes and Definitions



Prevent Overdose KS Tableau Dashboard Data Metrics

- Kansas Hospital Association Data
- Emergency Room Admissions
- Data Received Quarterly
- Based on ICD-10 CM Diagnosis Coding

Summary of ED Visits for 2018

As reported to Kansas Syndromic Surveillance Program

All Drugs	All Opioids	Heroin	Synthetic Opioids	Benzodiazepine	Psychostimulants
5,517	944	153	49	743	409

Data Notes:

The data summarizes the total non-fatal ED visits that occurred in Kansas reported to the syndromic surveillance (BioSense) platform and analyzed using the Centers for Disease Control and Prevention (CDC) ESSENCE tool for various drug overdoses (Unintentional/Undetermined). The predefined CCDD category definitions (Chief Complaints and Discharge Diagnosis codes) are used for querying this data from ESSENCE tool.

How the data are classified in various categories:

All Drugs: Poisonings or overdoses with any drug reference across all classifications of opioids, heroin, psychostimulants, cocaine, benzodiazepine, and synthetic opioids.
All Opioids: Poisonings or overdoses caused by either prescription or illicit opioids
Heroin: Poisoning or overdoses caused by heroin only.
Synthetic Opioids: Poisoning or overdoses caused by synthetic opioid other than methadone which includes drugs such as fentanyl and tramadol.
Benzodiazepine: Poisoning or overdoses caused by benzodiazepine only.
Psychostimulants: Poisoning or overdoses caused by cocaine, methamphetamines,dextroamphetamine, etc..

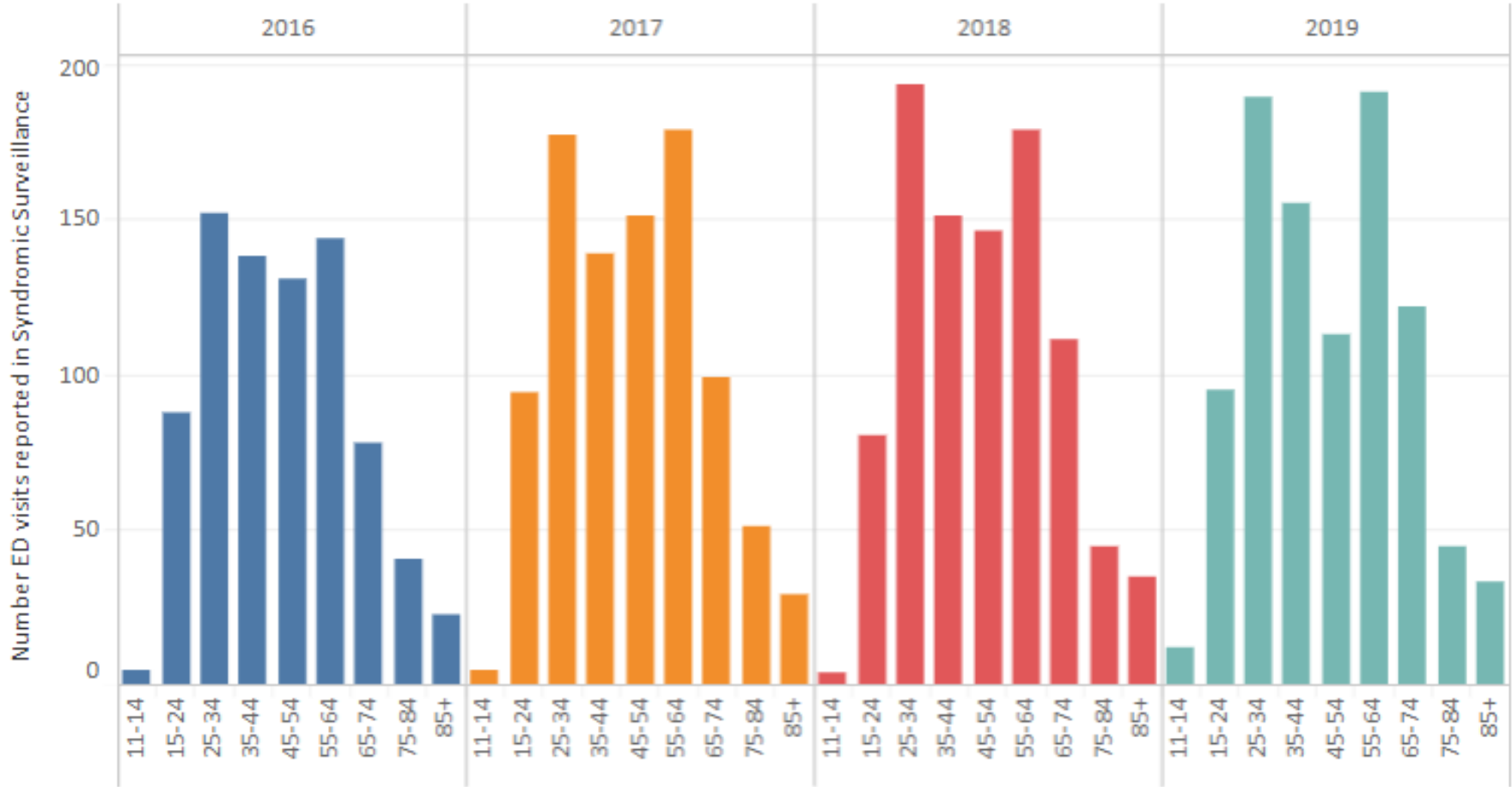
Important: Drug categories presented are not mutually exclusive; non-fatal ED visits may have involved abuse of more than one substance.

Note: Current year data is updated as of September 30, 2019.

Prevent Overdose KS Tableau Dashboard Data Metrics

- Kansas Syndromic Surveillance Program
- Real Time Emergency Department Visits, but updated quarterly on Dashboard
- Based on ICD-10 CM, Chief Complaint and Discharge Diagnosis (CDC Surveillance Definitions)

As reported to Kansas Syndromic Surveillance Program, Drug Type : Opioid



Year
2016
2017
2018
2019

Distribution of ED Visits by Age Group and Year

The graph gives the counts and percentages of non-fatal ED visits across years for different age groups and drug type.

Age Group: (Years)

Note: For current year, data is updated as of September 30, 2019.

Summary of Drug Overdose Deaths: 2018

As reported to the Kansas Office of Vital Statistics

All Drugs	All Opioids	Prescription Opioids	Heroin	Methadone	Synthetic Opioids	Benzo-diazepines	Psycho-stimulants
346	169	83	33	16	52	56	114

Data Notes:

The data summarizes the total number of deaths attributed to drug overdoses occurring in Kansas as reported to the Kansas Office of VItal Statistics for state residents by year. Drug overdose deaths were identified using the International Classification of Diseases, Tenth Revision (ICD10) , based on the ICD-10 underlying cause-of-death and specific drug codes as outlined in the CDC annual drug related risks and outcomes report (https://www.cdc.gov/drugoverdose/pdf/pubs/2019-cdc-drug-surveillance-report.pdf).

How the data are classified in various categories:

All Drugs: Poisoning or overdose death with any drug ICD-10 (T-code) as a cause-of-death code.
All Opioids: Deaths involving any opioid (T40.0 (opium), T40.1, T40.2, T40.3, T40.4 and T40.6 (other and unspecified narcotics)), which includes drugs such as those listed above, as well as opioids where the type of opioid was not specified
Prescription Opioids: Natural/semisynthetic opioids (T40.2), which includes drugs such as hydrocodone and oxycodone
Heroin: T40.1 cause of death code
Methadone: T40.3 cause of death code
Synthetic Opioids: Synthetic opioids other than methadone (T40.4), which includes drugs such as fentanyl and tramadol
Benzodiazepine: Poisoning or overdoses caused by benzodiazepines (T42.4)
Psychostimulants: Psychostimulants with abuse potential (T43.6), which includes such drugs as methamphetamine, and 3,4-methylenedioxy-methamphetamine (MDMA)

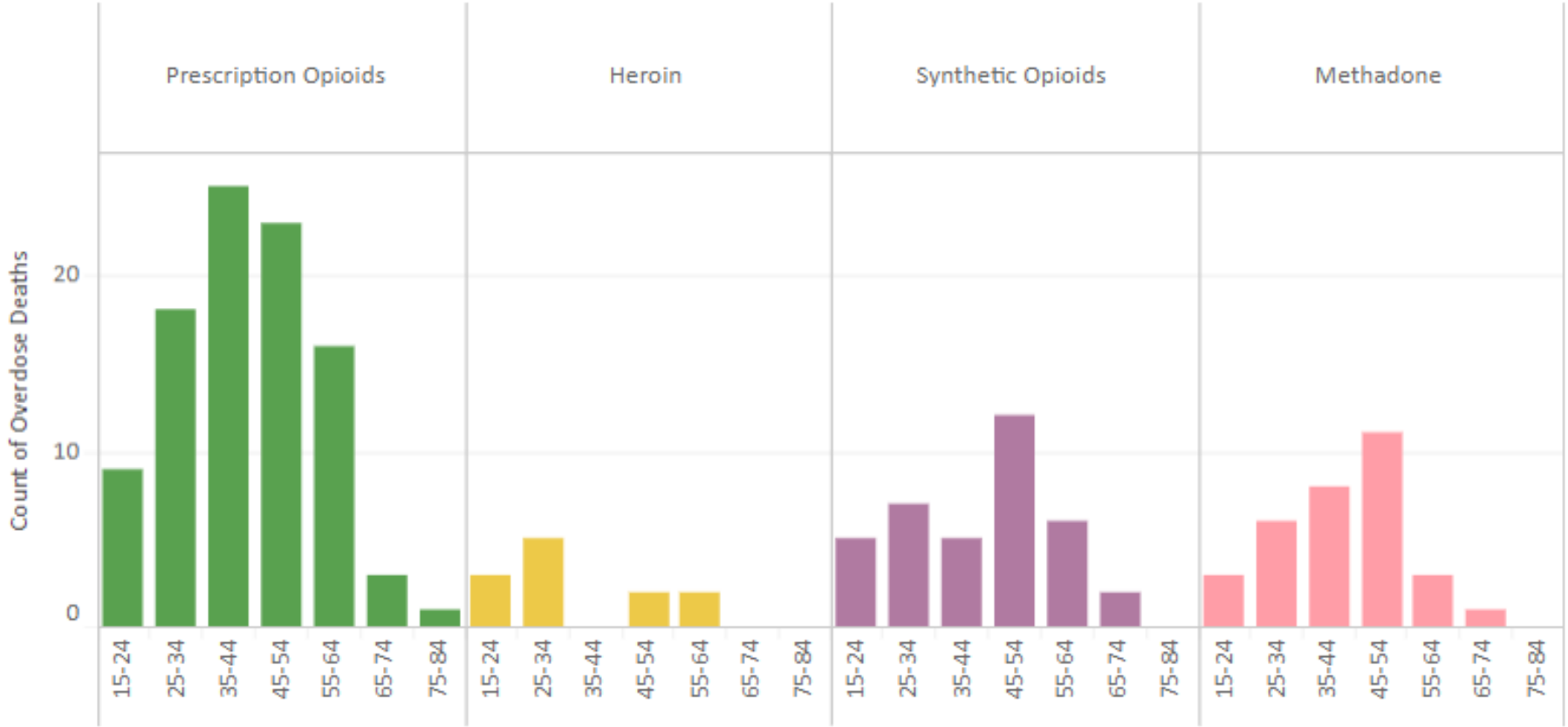
Data for 2019 are provisional and only include partial year counts of drug overdose deaths from January - September 2019.
Important: Drug categories presented are not mutually exclusive, as deaths might have involved more than one substance.

Prevent Overdose KS Tableau Dashboard Data Metrics

- Office of Vital Statistics Death Certificate Data
- Final Mortality Data - Approximately July
- Some Year to Data Provisional Data
- Based on ICD-10 Diagnosis Coding (CDC Surveillance Definitions)

Drug Overdose Deaths by Age Group and Year

As reported to the Office of Vital Statistics at the Kansas Department of Health and Environment



Drug type
- Prescription Opioids
- Heroin
- Synthetic Opioids
- Methadone

Distribution of overdose deaths by age group

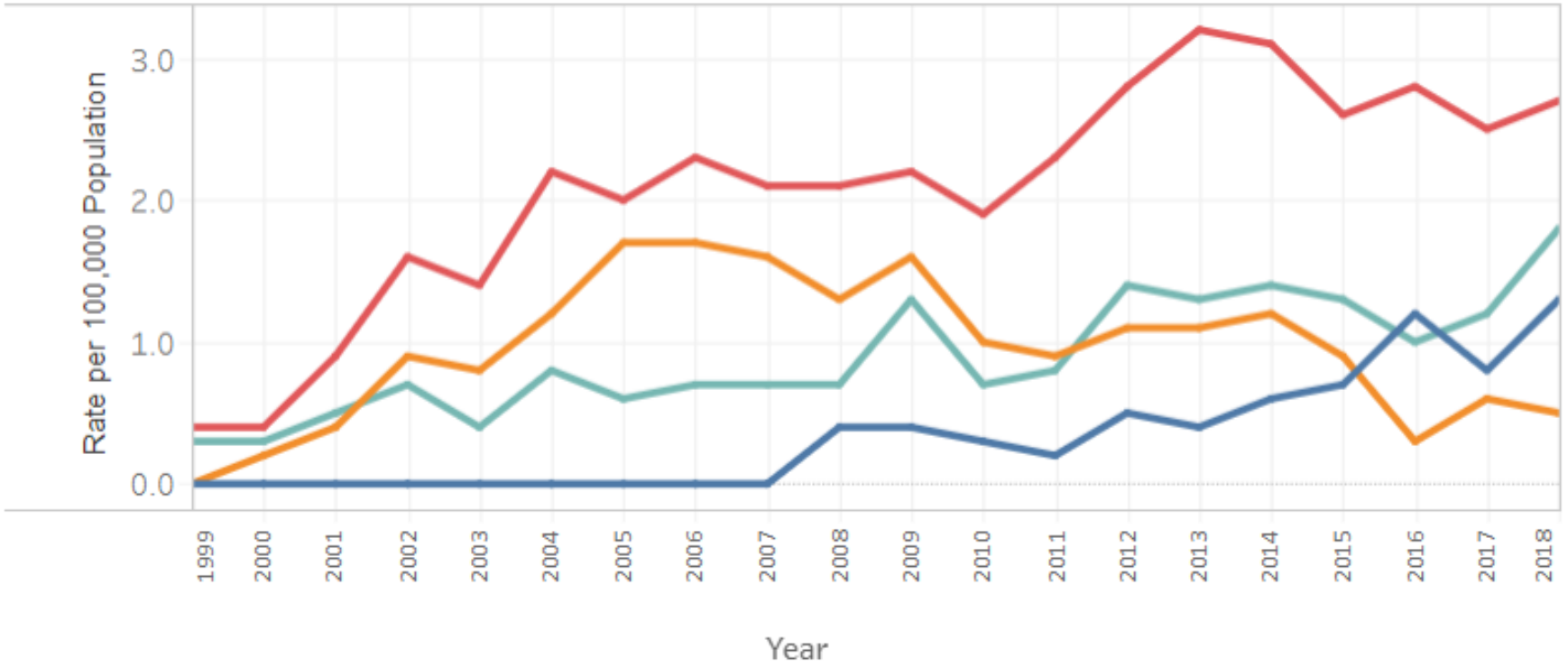
The graph gives the distribution of the total number of overdose deaths for each specific drug catagory/type among Kansas residents by age group.

Data for 2019 are provisional and only include partial year counts of drug overdose deaths from January - September 2019.

Important: Drug categories presented are not mutually exclusive, as deaths might have involved more than one substance.

Trends of Opioid Related Drug Overdose Deaths (1999-2018)

As reported to the Office of Vital Statistics at the Kansas Department of Health and Environment



Drug Type

- Heroin
- Methadone
- Prescription Opioids
- Synthetic Opioids

Trends over time for drug overdose deaths, by drug catagory

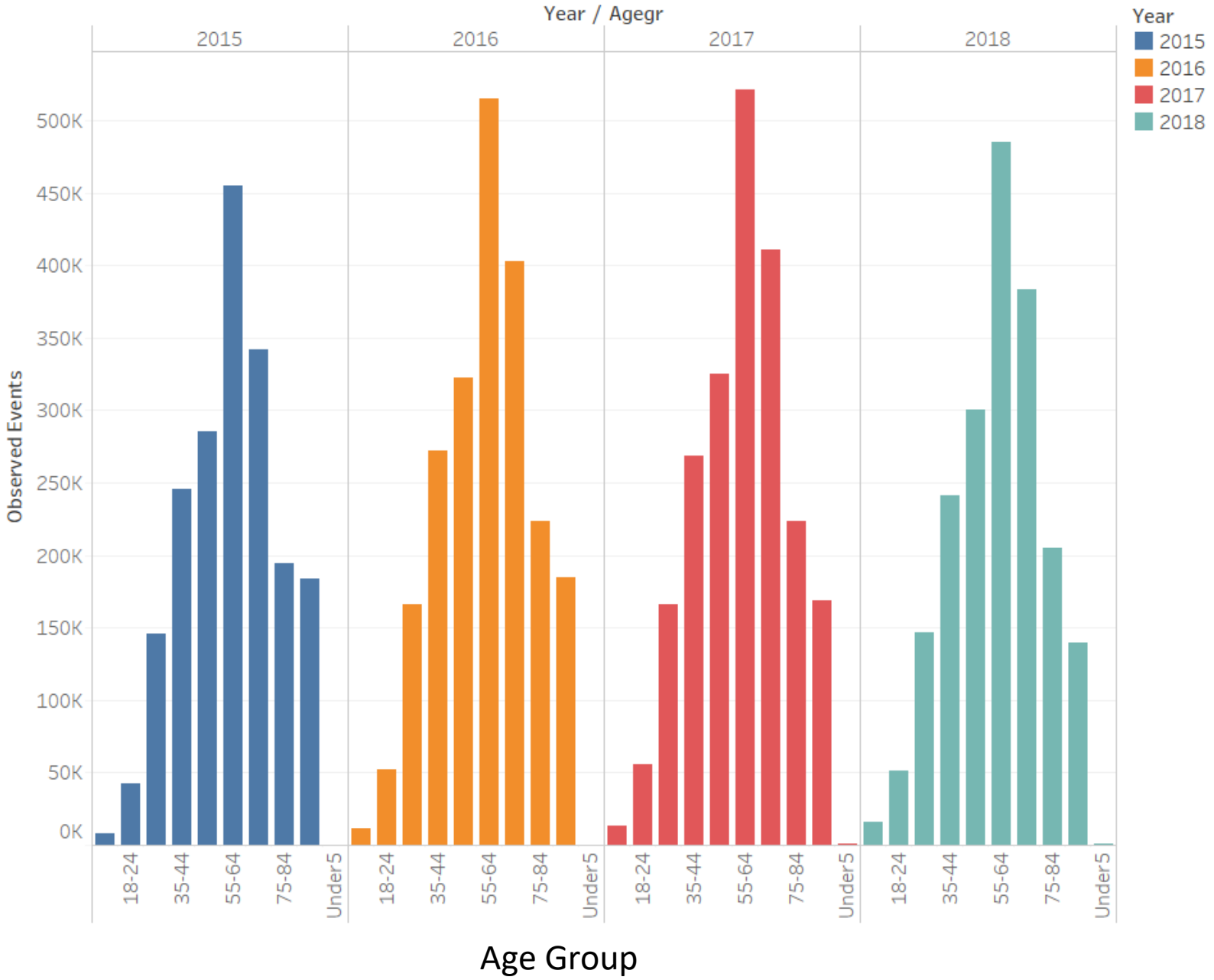
The graph displays trends of drug overdose deaths among Kansas residents over a 20 year time frame (1999-2018).

The Y-axis displays the age adjusted mortality rate per 100,000 populaiton. The user can hover over a point on the graph and rate will be displayed.

Important: Drug categories presented are not mutually exclusive, as deaths might have involved more than one substance.

Note: Prior to 2008 annual age adjusted rates for heroin are suppressed due to small cell counts (less than 6 deaths).

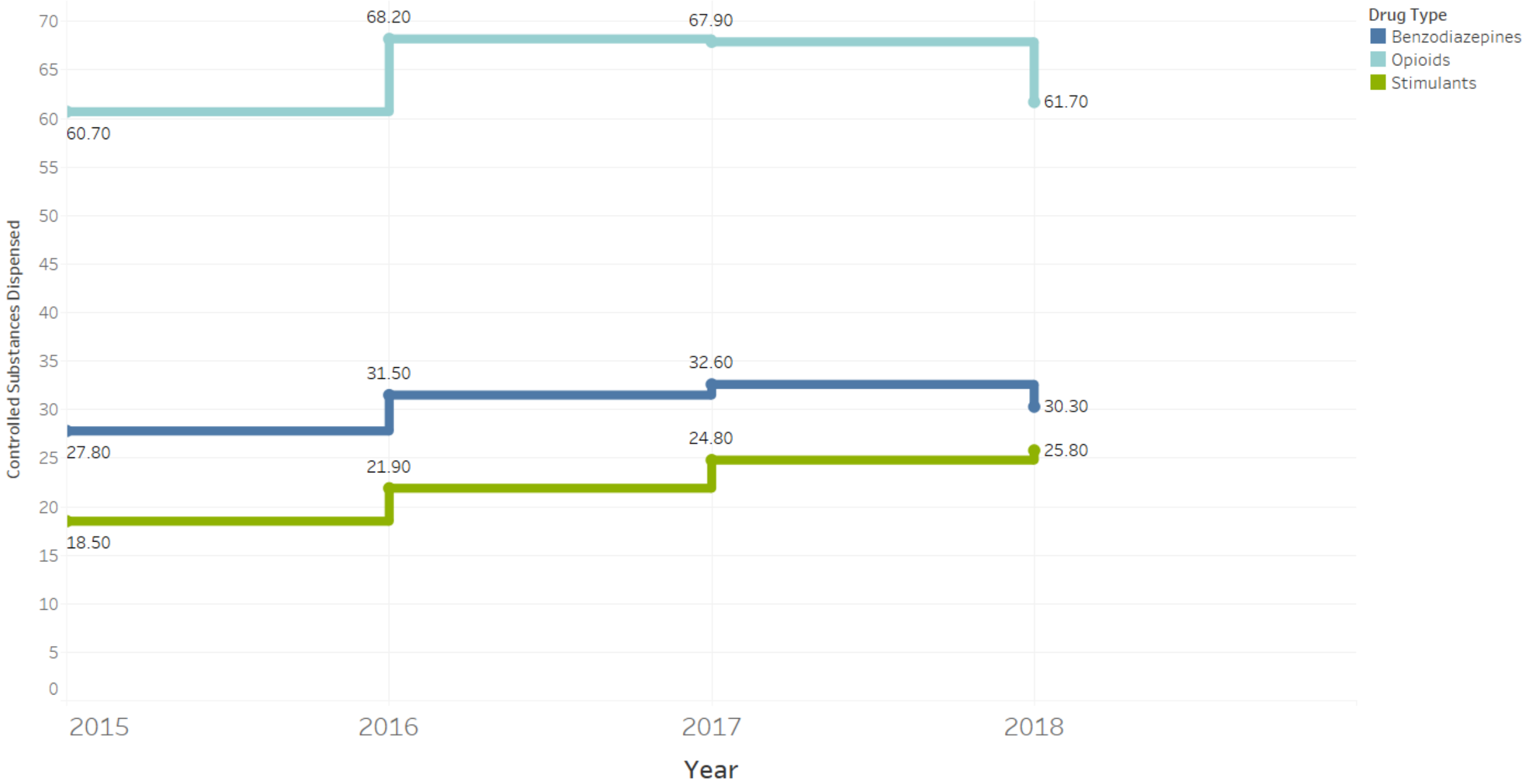
Distribution of Opioid Prescriptions Dispensed to Kansas Residents (2018), K-TRACS



Prevent Overdose KS Tableau Dashboard Data Metrics

- K-TRACS, Kansas Prescription Drug Monitoring Program
- Real Time Instate and Out of State Controlled Substance Dispensation Data
- Excludes hospital inpatient care, Long term care facilities, veterinarians, hospice settings and methadone clinics
- All Controlled substances (II-IV) and drugs of concern for any Kansas Resident

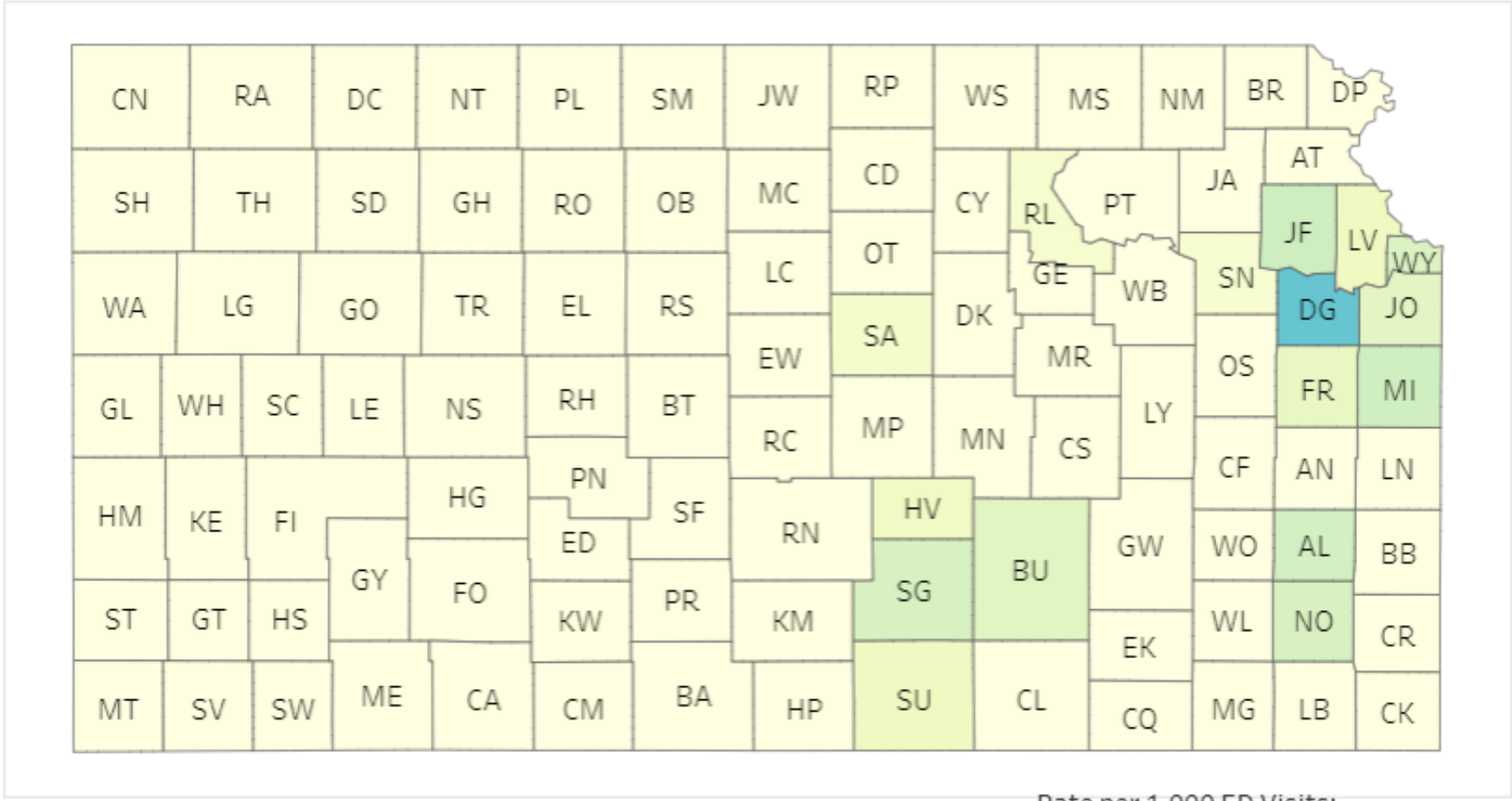
Annual Age Adjusted Controlled Substance Prescribing Rates per 100 Population - Kansas



Using Maps for Data Visualization

County Level Non-Fatal Overdose ED Visits by Year:

Indicators from Syndromic Surveillance



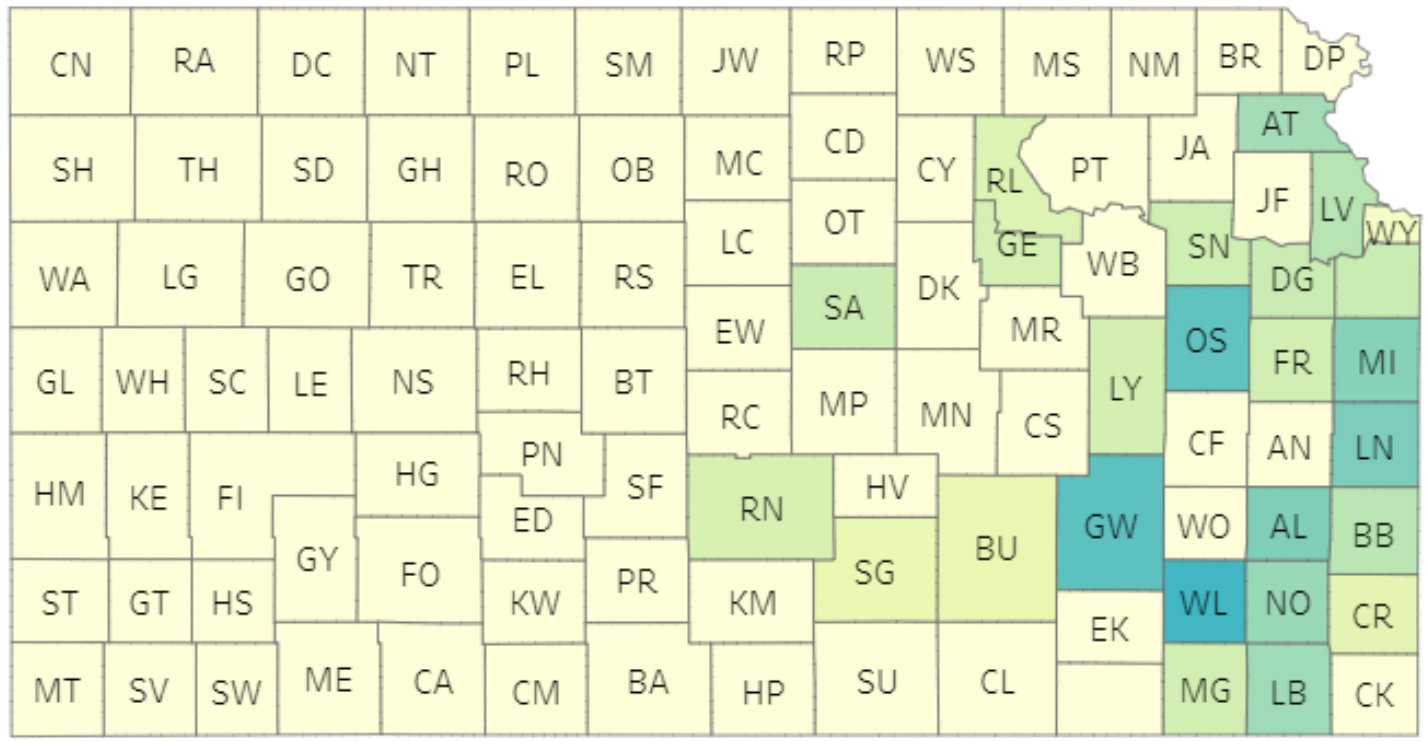
Kansas state map displaying non-fatal ED visit counts and rate per 1,000 ED visits by county. Select the required filters. Click on the specific county to view the statistics for that county.

Suppression Criteria: Due to the instability of rates calculated using small number, non-fatal ED visits counts less than 6 are suppressed and rates will be not be displayed.

Note: For current year, data is updated as of September 30, 2019.

10-Year Annual Average Age Adjusted Mortality Rate per 100,000 Population for Kansas Counties - 2009 -2018

As reported to the Office of Vital Statistics at the Kansas Department of Health and Environment



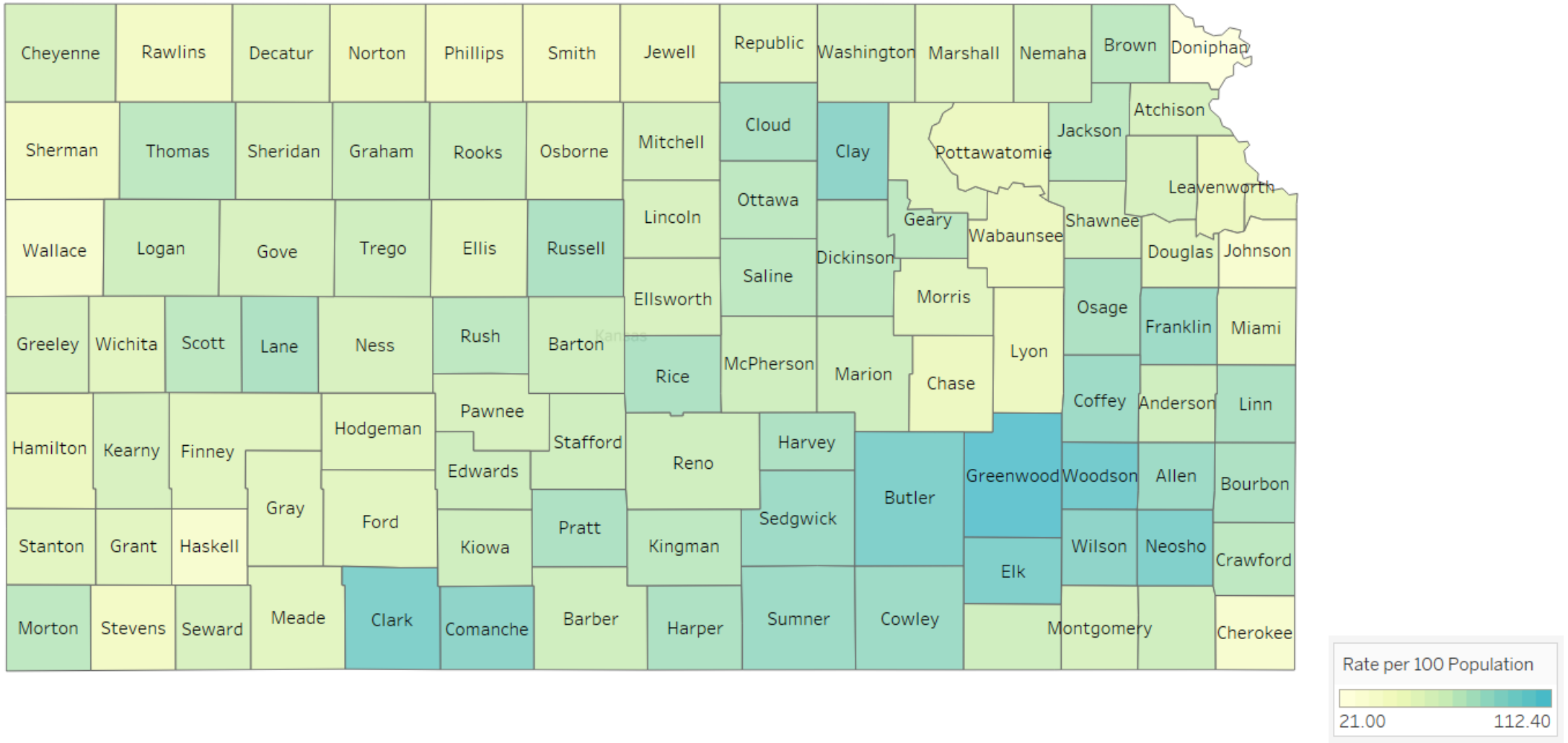
Kansas state map displaying 10-year average age adjusted rate per 100,000 population and 10 year aggregate number of deaths by selected drug type.

To use this map, select the drug type from the filter. Hover or click on the county of interest to view the statistics for that county.

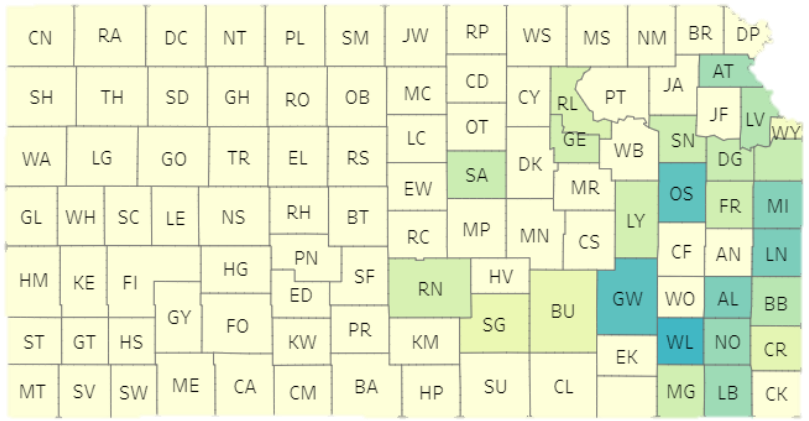
Suppression criteria: Counties with aggreaged 10 year death counts less than 6 or unstable rates (Relative Standard Error (RSE) of 50% or greater) are suppressed and displayed as NULL values per KDHE date release standards. Rates with a RSE of 30% or higher should be interpreted with caution.

Note: The standard population used for calculating age adjusted rates is the Standard 2000 US populaiton.

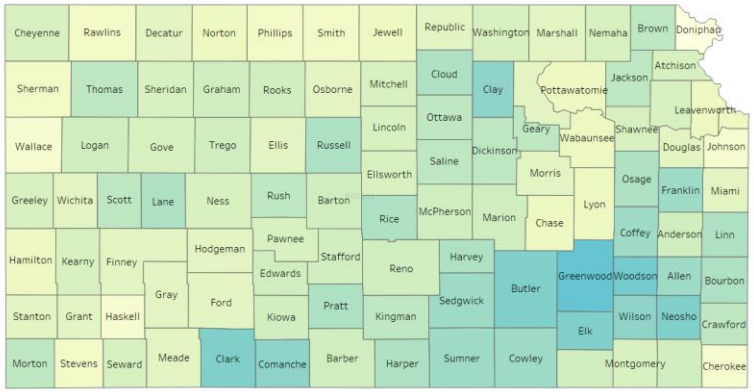
Annual Age Adjusted Opioid Prescribing Rate per 100 population for Kansas Counties – KTRACS, 2018



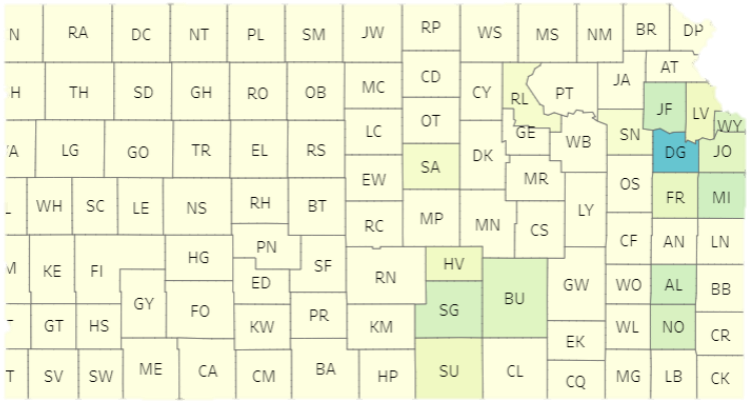
10 year Average AA Mortality Rate Prescription Opioids



2018 Dispensation Rate Prescription Opioids



2018 Syndromic Surveillance ED Visits Any Opioid



How do the maps compare?

Final Thoughts

- Data Visualizations are intended to tell a story
- Often one data source does not give an adequate picture
- Technical notes and definitions are critical to help the audience understand
- Well-labeled graphics help reduce misinterpretation
- Stakeholder input is critical

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Acknowledgements

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Questions & Discussion

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