

EMS Naloxone Administration for Implication of Opioid Overdose and Its Potential Disparities

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Outline

- Background
- Research Question
- Method
- Results
- Limitations
- Conclusion

Background

Public Health Concern:

- Drug overdose deaths are a significant public health burden in the United States.
- In 2016, 42,249 deaths in the U.S. involved with opioids, and opioid overdose deaths were five times higher compared to 1999 (Centers for Disease Control and Prevention [CDC], 2017).
- In 2016, Florida had a higher age-adjusted fatality rate (23.73 per 100,000 population) compared to California, Texas, New York (11.15, 10.09, 17.86, respectively) (CDC WISQARS).

Background (Continued)

Naloxone (Narcan®):

- Medication to prevent and counter opioid overdoses (Substance Abuse and Mental Health Services Administration [SAMHSA], 2016)
- Route of administration: intranasal, intramuscular, subcutaneous, or intravenous (SAMHSA, 2016)
- Non-addictive (CDC, 2017; SAMHSA, 2016)

Research Question

- How well does the Emergency Medical Services (EMS) naloxone administration data estimate opioid overdose incidence?

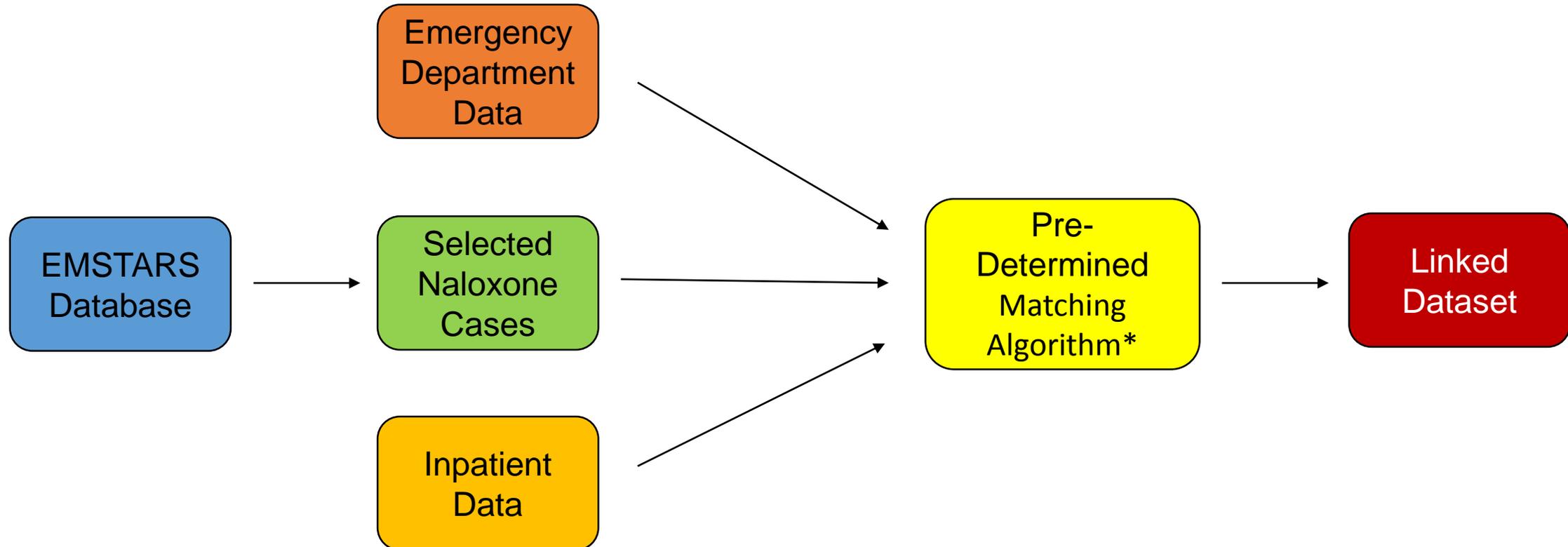
Method

- Data Sources:
 - Emergency Medical Services Tracking and Reporting Systems (EMSTARS)
 - Florida Agency for Health Care Administration (AHCA) emergency department and hospital inpatient data
- Case Definition:
 - Hospital Data: Any diagnosis fields (965.00, 965.01, 965.02, 965.09) or any external cause of injury (E-Code) fields (E850.0, E850.1, E850.2)
 - EMS Data: Administration of naloxone (*MedicationGiven* variable=4375)

Method (Continued)

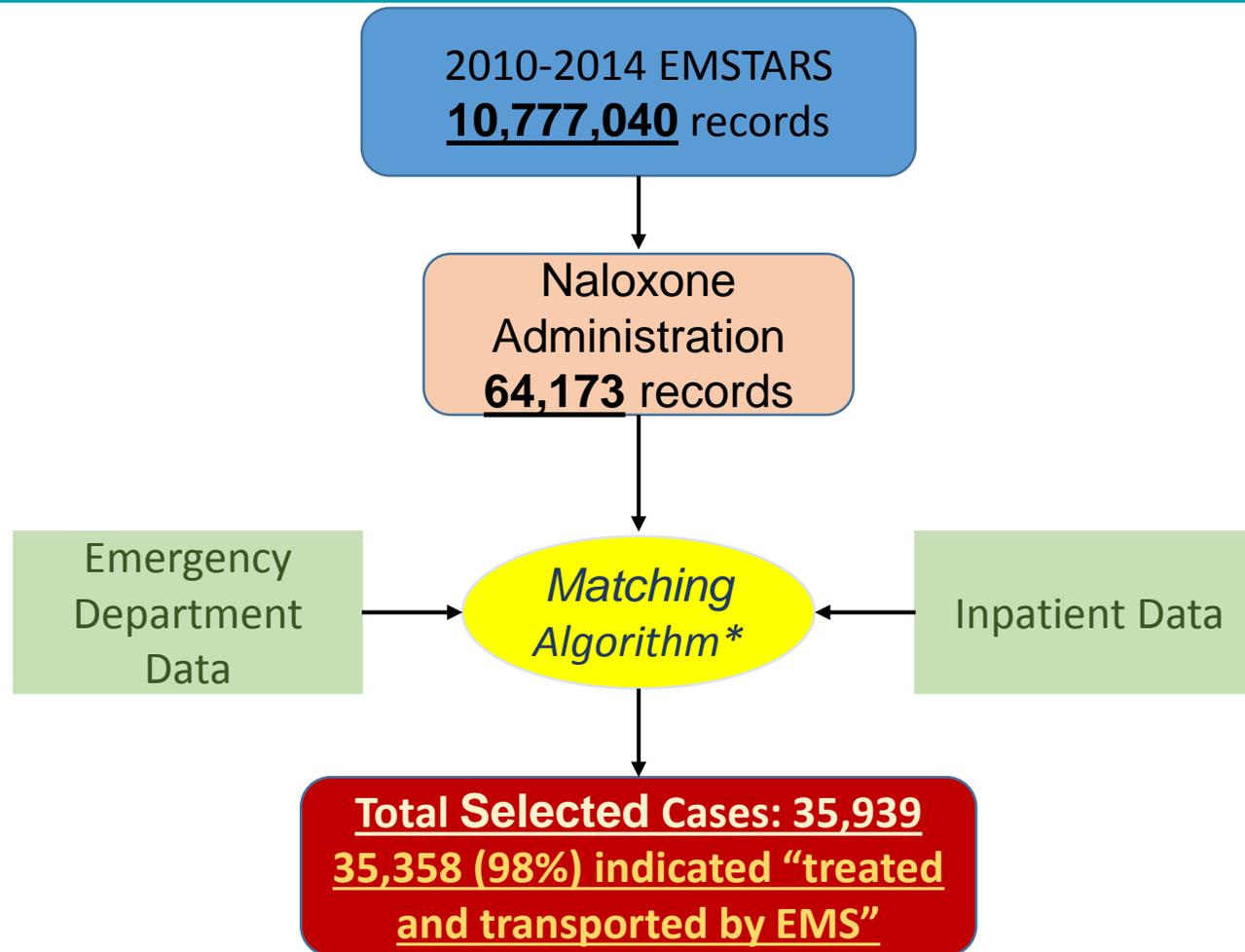
- Data linkage with EMSTARS and AHCA data
 - Years 2010-2014

Method (Continued)



* Based on patient social security numbers (SSN) and dates of admission

Results - Linking Diagram



* 5,025,408 EMS records linked to hospital records from 2010 to 2014 (in general)

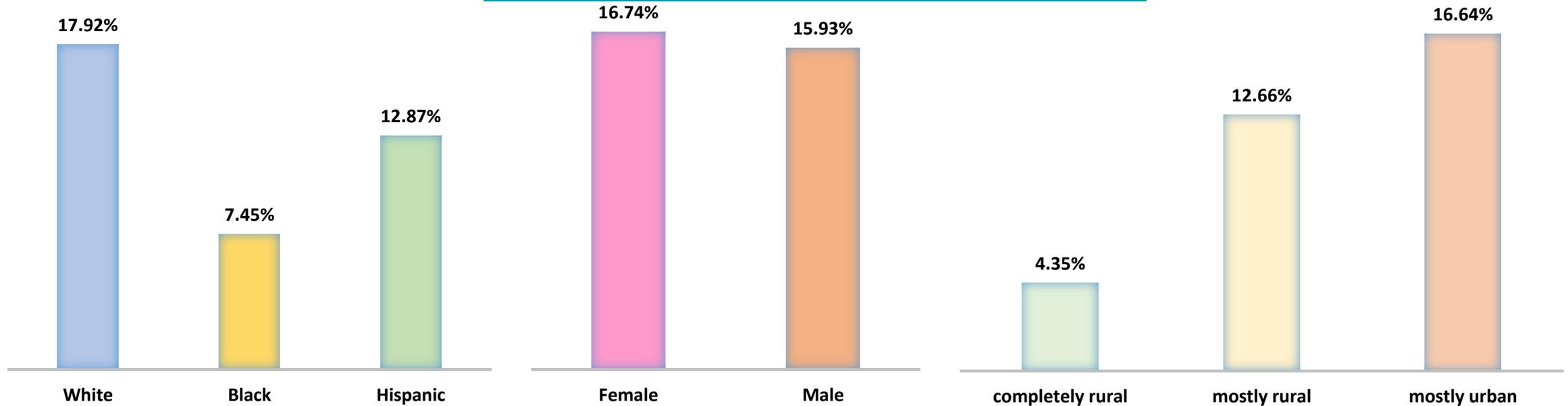
Results - Risk Factors and Modeling

- Risk Factors: Race/Ethnicity, Gender, Age, Urban/Rural Settings
- Chi-Square test was performed for all risk factors and results indicated all were correlated with the outcome---confirmed opioid overdose
- Stepwise Logistic Regression was conducted and results showed that all risk factors should remain in the model
- Among the “treated and transported” cases, 16.34% (5,778) were hospital-confirmed opioid overdose

Results by Race/Ethnicity, Gender, & Urban-Rural Classification

- Highest among Whites and those living in mostly urban settings

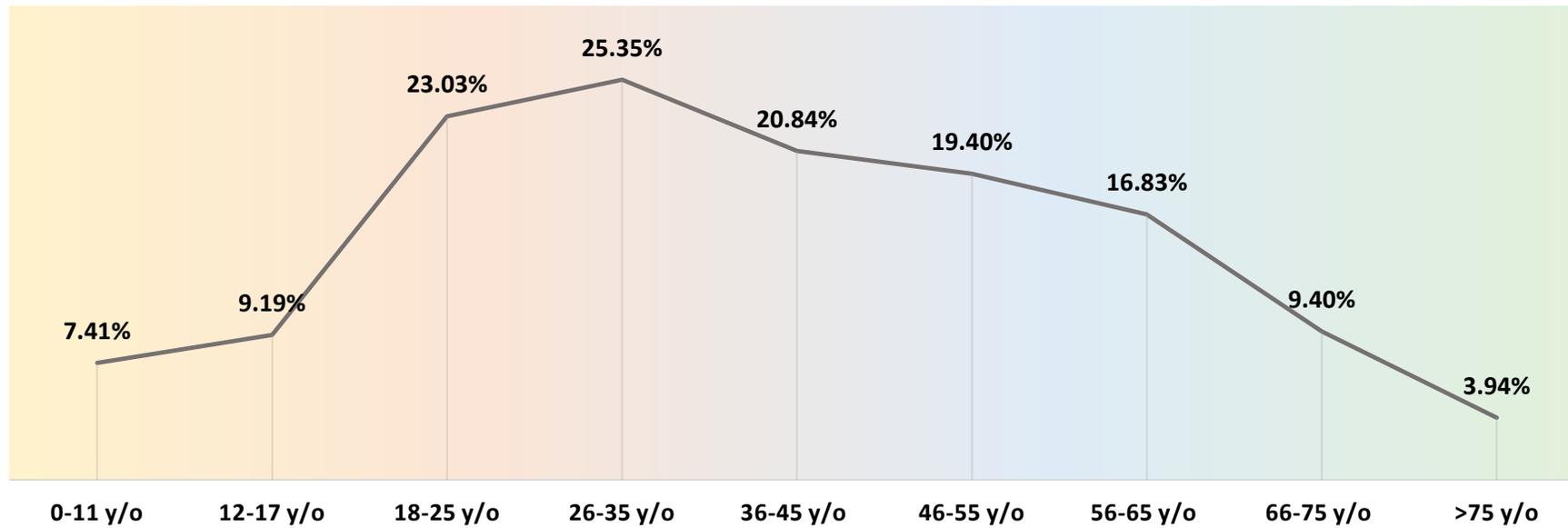
Percentage of Hospital-Confirmed Opioid Overdose



Results by Age Group

- Highest among age group 18-45 years old

Percentage of Hospital-Confirmed Opioid Overdose



*y/o indicates years old

Results - Odds Ratio

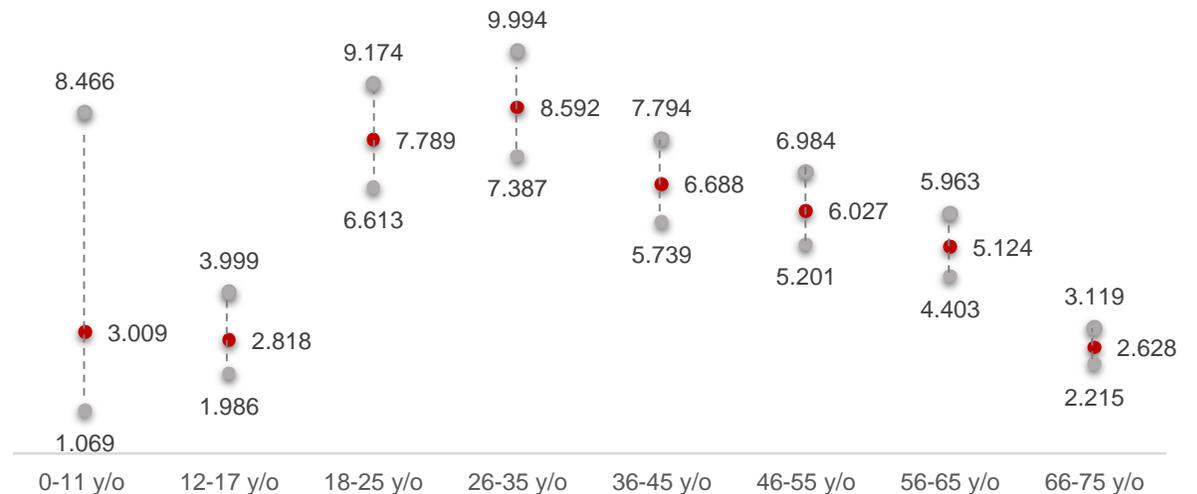
Odds Ratio

Race/Ethnicity	Adjusted OR	95% Confidence Interval	P-value
Black	0.351	0.310 - 0.397	<.0001
Hispanic	0.617	0.548 - 0.695	<.0001
White	Ref		

Gender	Adjusted OR	95% Confidence Interval	P-value
Female	1.116	1.052 - 1.184	0.0003
Male	Ref		

Urban/Rural	Adjusted OR	95% Confidence Interval	P-value
Mostly Rural	0.708	0.626 – 0.799	<0.0001
Mostly Urban	Ref		

All P-values are less than 0.05. Patients that are older than 75 years old were selected as reference group



*y/o indicates years old

Limitations

- Low data linkage rate
 - Potential undocumented groups who either do not have or refuse to provide a SSN
- Time constraints which prevent further in-depth analysis
- Multiple hospital drug overdose ICD case definition
 - Principal diagnosis or first E-Code V.S. Any diagnosis/E-Code fields

Limitations (Continued)

- Limited information on validation and research of naloxone administration proxy indicator
- Utilized EMSTARS version 1.4 for data linkage
 - EMSTARS version 3 in transition

Conclusions

- Better understanding on using EMS naloxone administration to estimate opioid overdose
- Address limitations in the use of this data linkage method
- Potential recommendations to enhance EMS data surveillance
 - Expand case definitions criteria to capture more information

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Any Questions?