

Predictive Data Analysis to Address the Opioid Epidemic

A Perspective From the Pennsylvania Department
of Health

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▶ Predictive Modeling in Pennsylvania

- Partner: University of Pittsburgh, School of Medicine
- Data utilized:
 - ▣ PA PDMP
 - ▣ Fatal overdose
 - ▣ Non-fatal overdose
 - ▣ EMS naloxone distribution
 - ▣ Hospitalizations

➤ Predictive Modeling in Pennsylvania

- **Cohort:** 3,025,192 PA residents with a prescription dispensation record in the PA PDMP
- **Index date:** A random date chosen after the first prescription fill in the PDMP
- **Outcome:** Starting at the index date, the model predicts fatal overdose in the next 6 months
- **Variables:** potential predictor variables are created for each person, including demographics, prescription fill variables, and county-level predictors derived from EMS and hospitalization data

▶ Future Use of the Model

- Individual-level
 - Improve clinical alerts within the PDMP
 - Educate providers on individual-level factors associated with increased risk of overdose
- Population-level
 - Create maps of potential overdose hotspots for use in state and local resource allocation

Considerations for Predictive Modeling

- Nonfatal overdoses are important, but not available in an identified format
- Predicting rare outcomes like overdoses are difficult. Use caution with risk scores!
- Consider delays in data sources
- Algorithms developed for one cohort may not be generalizable to other cohorts
- Consider how the model might be implemented in practice

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