Information Visualization for Prescription Drug Monitoring Program Data

Bolarin Lawrence

This research was supported by grant T15LM011271
About Me

Bolarin Lawrence

- Second Year at UC San Diego
- Nanoengineering Major with a Biology Focus
- Interest in the pharmaceutical industry
Opioid Crisis

The Opioid Epidemic has been a **major medical issue** in the United States for decades.

- The National Safety Council stated in their 2019 report that Americans are **more likely to die from opioid overdoses** than from car crashes (Bursztynsky).

There are **two types of opioids: prescription and illegally obtained**. A patient, however, can become dependent and addicted to prescription opioids.

- Individuals who become **addicted** may schedule their lives around these drugs, prioritizing them over other activities.
National Drug Overdose Deaths Involving Prescription Opioids, Number Among All Ages, 1999-2017

National Drug Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2017

Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018
Number of pills per person per year
Average county yearly total 2006 through 2012

Opioid Deaths
Cumulative opioid death rate 2006 through 2012

Source: Data compiled by the DEA and CDC and analyzed by The Post
So how do we solve this?

A change in how doctors monitor patients needs to occur!
What we have currently!

Prescription Drug Monitoring Program (PDMP)
- A program created that promotes public health by identifying the misuse of prescription medications.

Controlled Substance Utilization Review and Evaluation System
- A PDMP platform for controlled substances in California.
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List patient sex and age:
- Sex: Male
- Date of Birth: 02/23/1986
- Address: 123 Main Ave, San Diego, CA 88885

C.U.R.E.S. Data
These are visual representations of the CURES Data for John Smith.
These are the locations of the pharmacies that John Smith visited during the time period:
Total Acetaminophen (MG)
68250

Payment Methods

Medicare 5

Com. Insurance 2

Private Pay 1
FM (Number of Prescriptions = 3)

HYDROCODONE BITARTRATE ACETAMINOPHE ( = 3)

WALGREENS ( = 3)

BH (Number of Prescriptions = 1)

HYDROCODONE BITARTRATE ACETAMINOPHE ( = 1)

WALGREENS ( = 1)
Average MME Per Day in Drug Prescriptions: David Brown

Total Prescription Days Supplied: 470 days
Number of Unique Drugs: 3
If MME per day > 49 mg, suggest naloxone
If MME per day > 89 mg, recommend naloxone
Next steps
What I learned

Professional

- R (programming language)
- Data Visualization
- Opioids (Epidemics, Prescription Drugs, MME)

Personal

- Independent learning
- Communication
Thank you!

Dr. Jejo Koola
Dr. Gregory Polston
Dr. Zaid Yousif
Reid Otsuji
Stephanie Labou
Mary Linn Bergstrom
Elizabeth Santillanez

National Library of Medicine (Training Grant T15LM011271)

Questions?


“Shiny.” *Shiny*, shiny.rstudio.com/.