Addressing Neighborhood-Level Opioid Data Gaps: Development of an Interactive Dashboard for Prescription Trends and Buprenorphine Access in California

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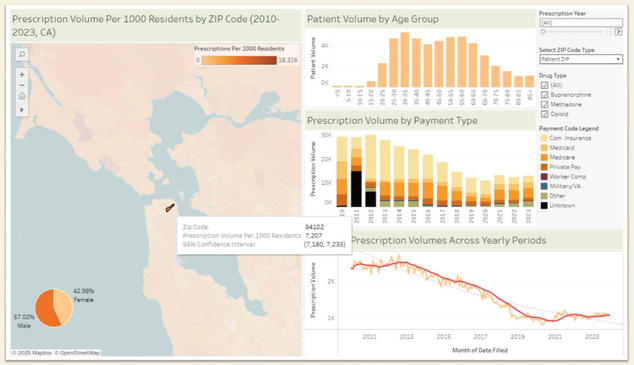
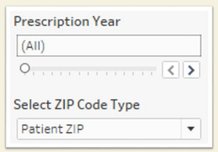
Abstract

The **opioid crisis** is complex, with ongoing challenges in:
- ensuring safe opioid prescribing
- addressing unequal access to medications for opioid use disorder (MOUD), and
- adapting to new policies, such as the removal of Drug Addiction Treatment Act of 2000 (DATA 2000) waiver.

While state and federal agencies track opioid overdose data at the county level, they sometimes lack detailed community-level data on prescription opioid use, MOUD distribution, and the availability of buprenorphine prescribers. To address this, **our project created an interactive dashboard** using California's Prescription Drug Monitoring Program (PDMP) data from 2010 to 2023. This tool helps stakeholders explore local patterns in opioid prescribing and treatment, enabling more targeted and effective responses.





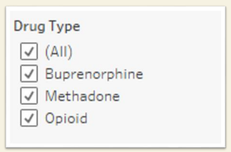


Figure 1: Interactive Dashboard for Exploring Opioid & MOUD Prescription Trends

Top: Users can **explore prescribing rates** per 1,000 people by **searching a ZIP code**, which dynamically updates associated demographic and prescribing trend graphics. *Bottom*: Filters for **prescription year, ZIP code type, and drug type** allow for customized, detailed analysis.

Methodology

Data Source:

We utilized 14 years of data from **California's Prescription Drug Monitoring Program (PDMP)** to develop the interactive dashboard. The data was collected by prescription encounters consisting of:
- *prescription opioids*
- *methadone prescriptions and*
- *buprenorphine prescriptions.*

Population data from the **U.S. Census Bureau** was also utilized for calculating prescription rates per 1,000 people.

Data Processing & Processing Software:

Data cleaning was performed to address missing values, standardized for consistency, and categorized into key metrics such as ***opioid prescription volumes, MOUD dispensing patterns, and buprenorphine prescriber activity***. **Tableau** software was used to design the dashboard, enabling users to explore trends through interactive visualizations and geographic insights.

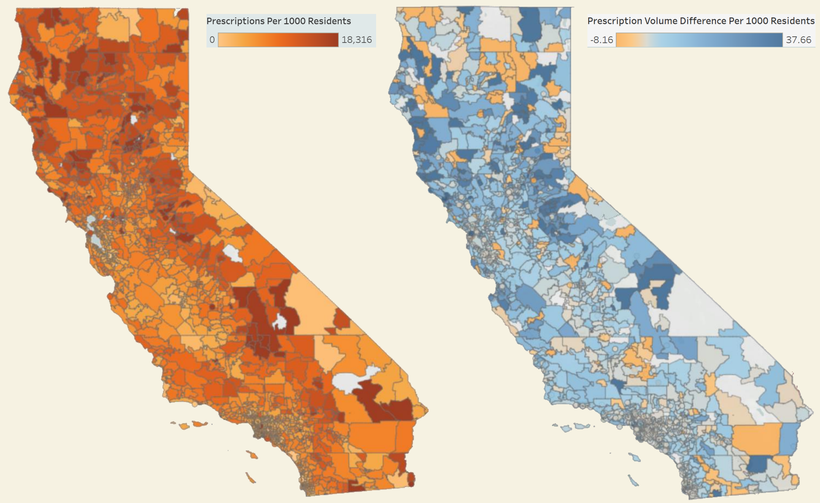


Figure 2: Geographic Distribution of Opioid Prescriptions and Impact of X-Waiver Removal

Left: **Cumulative opioid & MOUD prescription rates** per 1,000 people across all years by ZIP code in California. *Right*: Annual changes in prescription trends per 1,000 people following the removal of the **DATA 2000 Waiver (X-Waiver)**, highlighting **shifts in buprenorphine prescribing patterns** at the ZIP code level.

Results

Our **interactive dashboard** allows users to:
- Explore prescription opioid distributions, MOUD patterns, and active buprenorphine prescribers by entering a 5-digit ZIP code,
- Offers a clear view of patient demographics, including *age, gender, and payment types for prescriptions*.
- Evaluate annual difference trends after the removal of the DATA 2000 Waiver (X-Waiver) for buprenorphine prescriptions.

By combining prescribing data with demographics, the dashboard reveals trends and insights into healthcare patterns in local communities across California.

Conclusion

Our **interactive dashboard** offers a *tool for tracking opioid-related data at the micro-geographic level in California*, supporting evidence-based decision-making for healthcare professionals, policymakers, and community leaders.

This **real-time data platform** could enhance the understanding of regional prescribing patterns and inform targeted interventions to address the opioid crisis across the state of California. Additionally, future integrations, such as with overdose fatality data or potential expansions to other states, could *further strengthen efforts to combat the opioid epidemic* on a broader scale.

Acknowledgements

We acknowledge that CURES is not associated with the interactive dashboard and that any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the California Department of Justice CURES Program.

Use this QR code to view the dashboard.